

CANADA

SUPERIOR COURT
(Class Actions)

PROVINCE OF QUÉBEC
DISTRICT OF MONTREAL

STEVE HOLCMAN

- and -

TARIQUE PLUMMER

N° : 500-06-001164-215

Applicants

v.

LIGHTSPEED COMMERCE INC. ET AL.

Defendants

**DEFENDANTS' APPLICATION FOR LEAVE *DE BENE ESSE* TO EXAMINE PROPOSED CLASS REPRESENTATIVES AND PLAINTIFFS' EXPERTS UNDER THE QUÉBEC *SECURITIES ACT*, FOR LEAVE TO EXAMINE PROPOSED CLASS REPRESENTATIVES UNDER THE *CODE OF CIVIL PROCEDURE* AND TO STRIKE EXHIBIT P-71
(SECTION 225.4 OF THE QUÉBEC *SECURITIES ACT* AND ART. 169, 574 AL. 3 AND 575 CCP)**

TO THE HONOURABLE JUSTICE GRANOSIK OF THE SUPERIOR COURT, SITTING IN AND FOR THE DISTRICT OF MONTREAL, THE DEFENDANTS LIGHTSPEED COMMERCE INC. (PREVIOUSLY LIGHTSPEED POS INC.), DAX DASILVA, JEAN PAUL CHAUVET, MARIE-JOSÉE LAMOTHE, PATRICK PICHETTE, ROB WILLIAMS, PAUL MCFEETERS, MERLINE SAINTIL, DANIEL MICAK, ASHA BAKSHANI AND BRANDON NUSSEY, RESPECTFULLY SUBMIT THE FOLLOWING:

I INTRODUCTION

1. On October 1, 2021, the Plaintiffs filed a hybrid application for authorization of a class action pursuant to ss. 574 and ff of the *Code of Civil Procedure*, CQLR c C-25.01 ("**CCP**") and for authorization to bring an action pursuant to s. 225.4 of the *Securities Act* (Quebec) (CQLR, c. V-1.1) (the "**Securities Act**") against the Defendants.
2. The Plaintiffs filed an application for leave to amend their application on February 14, 2022, which was granted on April 11, 2022.
3. On June 17, 2022, the Plaintiffs sought leave to re-amend their application and communicated a *Re-Amended Application for Authorization of a Class Action and for Authorization to Bring an Action Pursuant to Section 225.4 of the Quebec Securities Act* (the "**Re-Amended Application**"). The Court granted leave to amend on September 8, 2022.
4. Defendants Lightspeed Commerce Inc. ("**Lightspeed**") (previously Lightspeed POS Inc.), Dax Dasilva, Jean Paul Chauvet, Marie-Josée Lamothe, Patrick Pichette, Rob Williams, Paul McFeeters, Merline Saintil, Daniel Micak, Asha Bakshani and Brandon

Nussey (collectively referred to as the “**Defendants**”) hereby seek leave, *de bene esse*, to examine the proposed class representatives, Steven Holchman and Tarique Plummer, and to cross-examine the Plaintiffs’ experts, Frank C. Torchio and Professor Ramy Elitzur, in the context of the leave application under section 225.4 of the *Securities Act*.

5. Defendants are of the view that they are entitled, as of right, to examine the proposed class representatives and to cross-examine Plaintiffs’ experts pursuant to the *Securities Act*. Plaintiffs, however, oppose Defendants’ cross-examination of their experts at the pre-authorization stage, hence the need for the present *de bene esse* application.
6. Defendants also seek leave to examine the proposed class representatives, Steven Holchman and Tarique Plummer, in the context of Plaintiff’s leave to institute the proposed class action pursuant to ss. 574 and ff CCP.
7. Finally, Defendants seek to strike Exhibit P-71 and remove it from the Court record, a copy of which is disclosed herewith as **Exhibit R-1**.

II CONTEXT

8. Pursuant to their Re-Amended Application, the Plaintiffs seek to institute a hybrid class action, both under the *Securities Act* and the CCP, on behalf of the following class, other than the Excluded Persons as defined in the Re-Amended Application, namely:
 - (i) **Primary Market Sub-Class:** All persons and entities who acquired Lightspeed Commerce Inc. or Lightspeed POS Inc. securities in an Offering on or after March 7, 2019, and held some or all of those securities until after the close of trading on (1) September 28, 2021 or (2) November 3, 2021, excluding United States residents who acquired Lightspeed Commerce Inc. or Lightspeed POS Inc. securities in an Offering in the United States between September 11, 2020 and September 28, 2021; and
 - (ii) **Secondary Market Sub-Class:** All persons and entities who acquired Lightspeed Commerce Inc. or Lightspeed POS Inc. securities on the secondary market on or after March 7, 2019, and held some or all of those securities until after the close of trading on (1) September 28, 2021, or (2) November 3, 2021, excluding investors who acquired Lightspeed Commerce Inc. or Lightspeed POS Inc. securities on a U.S. exchange between September 11, 2020, and September 28, 2021;
9. In their Re-Amended Application, the Plaintiffs essentially allege that Lightspeed misrepresented its growth, customer accounts, gross transaction volume and total addressable market before becoming public and until corrective disclosures were made respectively on September 29, 2021, and on November 4, 2021.
10. According to the Plaintiffs, the short seller report titled “*Putting the Brakes on Lightspeed*”, published by Spruce Point Capital Management LLC (“**Spruce Point Report**”) on September 29, 2021, constituted a corrective disclosure, since it revealed some of the alleged misrepresentations made by Lightspeed.

11. The Plaintiffs further allege that Lightspeed's release of its quarterly earnings on November 4, 2021, as it appears from its Second Quarter 2022 Financial Results, constituted a second corrective disclosure, to the extent that it disclosed lower growth in organic revenue than previously anticipated by Lightspeed.
12. The Plaintiffs filed two expert reports in support of their claim, as will be discussed in more detail below. The first is a report authored by Frank C. Torchio, dated June 17, 2022 (the "**Torchio Report**"), a copy of which is disclosed herewith as **Exhibit R-2**. The second is a report authored by Professor Ramy Elitzur, dated August 1, 2022 (the "**Elitzur Report**"), a copy of which is disclosed herewith as **Exhibit R-3**.
13. During a case management conference held on September 8, 2022, the Court gave Defendants until November 8, 2022, to disclose the preliminary applications they intend to file, as appears from the Court record.
14. Accordingly, in a letter dated November 8, 2022, a copy of which is attached herewith as **Exhibit R-4**, Defendants disclosed their intention to file, *inter alia*, the following applications by the end of March 2023:
 - An application for leave to adduce relevant evidence, consisting in:
 - an expert report of Ernst & Young responding to certain allegations set out in the Re-amended Application and to certain elements contained in the report of Dr. Ramy Elitzur dated August 1st, 2022;
 - an expert report of Professor Daniel Taylor, Ph.D., responding to other elements contained in the report of Dr. Elitzur;
 - one or more sworn statements of representatives of Lightspeed, along with documents, responding to certain allegations set out in the Authorization Application.
 - An application for leave to examine the proposed class representatives and the Plaintiffs' experts; and
 - An application to have Exhibit P-71 removed from the Court record.
15. The Court agreed with the proposed timeline on November 9, 2022, as appears from Justice Granosik's email disclosed herewith as **Exhibit R-5**.

III EXAMINATION OF THE PLAINTIFFS AS PROPOSED CLASS REPRESENTATIVES

16. The Defendants seek leave (*de bene esse* as it pertains to the authorization sought under the *Securities Act*) to examine the Plaintiffs as proposed class representatives within the following parameters:
 - a) The attendance for each Plaintiff will be two (2) hours;
 - b) The Plaintiffs' examinations may be conducted via technological means;

- c) The scope of each examination for the purpose of the CCP authorization will be limited to the following subjects:
 - i. The facts surrounding the Plaintiffs' alleged purchase of Lightspeed securities and subsequent disposal;
 - ii. The Plaintiffs' knowledge of Lightspeed's public disclosure documents at the time of purchase and disposal;
 - iii. The facts relating to the Plaintiffs' knowledge of the proposed class action;
 - iv. Documents, information, and other factors which influenced their decision to purchase and sell Lightspeed securities; and
 - v. Their suitability as representatives of the proposed class.
 - d) The scope of each examination in respect of the leave application under s. 225.4 of the *Securities Act* shall be any facts relevant to the leave application under section 225.4 of the *Securities Act*.
17. Defendants' examination of the Plaintiffs as proposed class representatives is necessary to assist the Court in determining whether the criteria for authorization under the CCP and *Securities Act* are met.

IV CROSS-EXAMINATION OF THE PLAINTIFFS' EXPERTS

18. Defendants seek leave *de bene esse* to cross-examine the Plaintiffs' experts on the content of their report in the context of the leave sought under the *Securities Act*, for the following reasons: (1) the cross-examinations of the Plaintiffs' experts are relevant, useful, and necessary to the authorization process under the *Securities Act*; (2) the cross-examinations are proportionate and in the interest of justice; (3) the cross-examinations would not delay the proceedings.

The Torchio Report

19. In the Torchio Report, the Plaintiffs' expert provided an opinion on the economic materiality of the alleged corrective disclosures on the value of Lightspeed's shares.
20. In his report, Mr. Torchio concluded that the value of Lightspeed's shares declined both on September 29, 2021, and September 30, 2021, following the release of a *Business Wire* story on September 29, 2021, reporting on the Spruce Point Report.
21. Mr. Torchio added that the value of Lightspeed's shares declined on November 4, 2021, following Lightspeed's release of its quarterly earnings and updated guidance that same day.
22. Mr. Torchio did not find any alternative or contributory cause for the price variation of Lightspeed's shares on September 29, 2021, or November 4, 2021.

The Elitzur Report

23. The Plaintiffs' second expert, Professor Ramy Elitzur, authored a report dated August 1st, 2022, in which he provided an opinion on accounting, auditing, financial analysis, and related matters.
24. In particular, Professor Elitzur was asked to opine, *inter alia*, on whether Lightspeed complied with accounting and/or reporting standards during the class period with respect to its reported revenues, expenses, and goodwill, and on the quality of Lightspeed's internal controls during the same period.
25. Professor Elitzur concluded that Lightspeed materially violated accounting standards during the class period regarding its reported revenues, expenses, earnings, and goodwill, and that there were confirmed and potential material weaknesses affecting Lightspeed's internal control system during the same period.

The cross-examinations of the experts are relevant, useful, and necessary

26. First, the cross-examinations of both Plaintiffs' experts are directly relevant to a core issue of the authorization process under the *Securities Act*, that is, whether there is a reasonable possibility that the action will be resolved in favour of the Plaintiffs. The Torchio Report touches upon the causes of the decline in value of Lightspeed's shares, while the Elitzur Report deals with Lightspeed's reporting practices and alleged misrepresentations, which lie at the heart of the proposed securities class action.
27. Furthermore, Defendants' cross-examinations are necessary to assist the court during the authorization process. Indeed, Defendants' cross-examinations would be narrow and focused. Defendants intend to cross-examine the Plaintiffs' experts notably on the following subjects:
 - a) For Mr. Torchio:
 - i. his prior experience as an expert on issues of market efficiency and market impact;
 - ii. relating to question (ii) posed to the expert – the contributory causes considered in determining whether any alternative or contributory cause had contributed to the price variation on or after September 29 or November 4, 2021;
 - iii. his choice of industry proxy;
 - iv. relating to question (iii) posed to the expert – the consideration given, and methodology used (a) to consider the impact of allegations made in the Spruce Point Report which could not, even if true, amount to misrepresentations, and (b) to consider the impact of other information disclosed by Lightspeed on November 4, 2021.
 - b) For Professor Elitzur:
 - i. the context in which the expert was mandated in this class action;

- ii. the expert's experience applying and opining on the applicable financial, auditing and reporting standards;
 - iii. the expert's methodology, and in particular:
 - 1. the estimated materiality calculation used in the Elitzur Report, since it concludes that Lightspeed materially violated accounting standards, but this amount is not indicated in the Elitzur Report;
 - 2. the use of the Beneish Manipulation Index as a basis for his conclusion that there was "a high probability that earnings management, inflammation of revenues, and misreporting of expenses, amongst others, occurred at Lightspeed during the Class Period";
 - 3. further information about the applicability of the Beneish Manipulation Index as applied to industries and other situations;
 - 4. the use of Benford's Law to conclude that "there is a 99.8% probability of anomalies in Lightspeed's reporting";
 - 5. the determination of the peer group used by the expert;
 - 6. the information and documents used, relied upon, or consulted by the expert to produce the Elitzur Report;
 - 7. the data and data analytics tools used, consulted, and relied upon by the expert for the "Beneish Manipulation Index Analysis" and the "Benford's Law Analysis";
 - 8. further explanations about how measurement error was accounted for in the Elitzur Report;
 - iv. the expert's potential bias for Plaintiffs in a securities class action.
28. Given the narrow scope of the cross-examinations, Defendants submit that each should last approximately two (2) hours and could be conducted out of court shortly after judgment is rendered on the present application, using technological means.
 29. The cross-examinations of the Plaintiffs' experts on the subjects listed above are necessary to the Defendants' challenge of the authorization under the *Securities Act* and to gain a better understanding of the experts' findings and their methodologies, which are not self-evident from the reports themselves, and are proportionate.
 30. Moreover, the cross-examination of Professor Elitzur is necessary to enable Defendants' own expert, Dr. Taylor, to properly respond to the Elitzur Report.
 31. It is well established that in contesting an authorization pursuant to s. 225.4 of the *Securities Act*, Defendants are entitled to file proof in support of their contestation.

32. Defendants further submit that the cross-examinations will not delay the proceedings. Per Defendants' letter dated November 8, 2022, Defendants were prepared to proceed with the cross-examination of Mr. Torchio before the end of 2022, and that of Professor Elitzur in January or February 2023.
33. It is only as a result of the Plaintiffs' refusal to allow the Defendants to proceed to the cross-examinations, even under reserve of their objection, that this matter has been prevented from progressing.
34. With respect to the CCP authorization by Plaintiffs, Defendants intend to file in due course their remaining preliminary applications to adduce relevant evidence under the CCP, as provided for in their letter of November 8, 2022, **Exhibit R-4**.

V MOTION TO STRIKE EXHIBIT P-71

35. In support of their Re-Amended Application, Plaintiffs rely on Exhibit P-71, which contains heavily redacted notes of meetings between unidentified third parties, allegedly private investigators and former Lightspeed employees, which is improper and prevents Defendants from adequately defending themselves.
36. In addition, Exhibit P-71 amounts to inadmissible hearsay and is devoid of any probative value whatsoever, such that its admission into evidence would bring the administration of justice into disrepute. It must therefore be struck from the Re-Amended Application and removed from the court record.

FOR THESE REASONS, MAY IT PLEASE THE COURT:

GRANT the present *Application for Leave De Bene Esse to Examine Proposed Class Representatives and Plaintiffs' Experts Under the Québec Securities Act, for Leave to Examine Proposed Class Representatives Under the Code of Civil Procedure and to Strike Exhibit P-71*;

DECLARE that Lightspeed Commerce Inc. (previously Lightspeed POS Inc.), Dax Dasilva, Jean Paul Chauvet, Marie-Josée Lamothe, Patrick Pichette, Rob Williams, Paul McFeeters, Merline Saintil, Daniel Micak, Asha Bakshani and Brandon Nussey ("**Defendants**"), are entitled as of right to examine the Plaintiffs, Steven Holchman and Tarique Plummer, as proposed class representatives in the context of the leave application under section 225.4 of the Québec *Securities Act*;

AUTHORIZE Defendants to examine Plaintiffs on any facts relevant to the leave application under section 225.4 of the Québec *Securities Act*;

GRANT Defendants leave under article 574 of the *Code of Civil Proceedings* to examine Plaintiffs as proposed class representatives in the context of the authorization proceeding under the *Code of Civil Procedure* on the following subjects:

- a) The facts surrounding the Plaintiffs' alleged purchase of Lightspeed securities and subsequent disposal;
- b) The Plaintiffs' knowledge of Lightspeed's public disclosure documents at the time of purchase and disposal;

- c) The facts relating to the Plaintiffs' knowledge of the proposed class action;
- d) Documents, information, and other factors which influenced their decision to purchase and sell Lightspeed securities; and
- e) Their suitability as representatives of the proposed class.

AUTHORIZE Defendants to examine Plaintiffs as proposed class representatives in both proceedings for two (2) hours each, out-of-court through technological means;

DECLARE that Defendants are entitled as of right to examine Plaintiffs' experts, Professor Ramy Elitzur, Ph.D., and Mr. Frank C. Torchio, in the context of the leave application under section 225.4 of the Québec *Securities Act*,

AUTHORIZE Defendants to cross-examine Plaintiffs' expert, Mr. Frank C. Torchio, for two (2) hours, out-of-Court through technological means on any facts relevant to the leave application under section 225.4 of the Québec *Securities Act*, and in particular, on the following subjects:

- a) his prior experience as an expert on issues of market efficiency and market impact;
- b) relating to question (ii) posed to the expert – the contributory causes considered in determining whether any alternative or contributory cause had contributed to the price variation on or after September 29 or November 4, 2021;
- c) his choice of industry proxy;
- d) relating to question (iii) posed to the expert – the consideration given, and methodology used (a) to consider the impact of allegations made in the Spruce Point Report which could not, even if true, amount to misrepresentations, and (b) to consider the impact of other information disclosed by Lightspeed on November 4, 2021.

AUTHORIZE Defendants to cross-examine the Plaintiffs' expert, Professor Ramy Elitzur, Ph.D., for two (2) hours, out-of-Court through technological means, on any facts relevant to the leave application under section 225.4 of the Québec *Securities Act*, and in particular, on the following subjects:

- a) the context in which the expert was mandated in this class action;
- b) the expert's experience applying and opining on the applicable financial, auditing and reporting standards;
- c) the expert's methodology, and in particular:
 - i. the estimated materiality calculation used in the Elitzur Report, since it concludes that Lightspeed materially violated accounting standards, but this amount is not indicated in the Elitzur Report;
 - ii. the use of the Beneish Manipulation Index as a basis for his conclusion that there was "a high probability that earnings management,

inflammation of revenues, and misreporting of expenses, amongst others, occurred at Lightspeed during the Class Period”;

- iii. further information about the applicability of the Beneish Manipulation Index as applied to industries and other situations;
- iv. the use of Benford's Law to conclude that “there is a 99.8% probability of anomalies in Lightspeed’s reporting”;
- v. the determination of the peer group used by the expert.
- vi. the information and documents used, relied upon, or consulted by the expert to produce the Elitzur Report;
- vii. the data and data analytics tools used, consulted, and relied upon by the expert for the “Beneish Manipulation Index Analysis” and the “Benford’s Law Analysis”;
- viii. further explanations about how measurement error was accounted for in the Elitzur Report;
- ix. the expert’s potential bias for Plaintiffs in a securities class action.

ORDER that Exhibit P-71 be struck from the Re-Amended Application, including in the list of exhibits, and removed from the court record;

ORDER that Plaintiffs notify on Defendants and file into the court record a Re-Re-Amended Application within ten (10) days from the judgment to be rendered on this motion;

THE WHOLE without costs, save in case of contestation.

MONTREAL, January 9, 2023

Stikeman Elliott

Stikeman Elliott LLP

1155 René-Lévesque Blvd. W.
41st Floor
Montréal (Québec) H3B 3V2

Me Stéphanie Lapierre

Direct: +1 514 397-3029
Email: slapierre@stikeman.com

Me Frédéric Paré

Direct: +1 514 397-3690
Email: fpare@stikeman.com

**ATTORNEYS FOR DEFENDANTS
LIGHTSPEED COMMERCE INC. (PREVIOUSLY
LIGHTSPEED POS INC.), DAX DASILVA, JEAN
PAUL CHAUVET, MARIE-JOSÉE LAMOTHE,
PATRICK PICHETTE, ROB WILLIAMS, PAUL
MCFEETERS, MERLINE SAINTIL, DANIEL
MICAÏ, ASHA BAKSHANI AND BRANDON
NUSSEY**

CANADA
PROVINCE OF QUÉBEC
DISTRICT OF MONTRÉAL

SUPERIOR COURT
(Class Action)

No: 500-06-001164-215

STEVEN HOLCMAN

- and -

TARIQUE PLUMMER

Applicants

v.

LIGHTSPEED COMMERCE INC. ET AL.

Defendants

NOTICE OF PRESENTATION
(articles 146 AND 574 al. 2 N.C.P.C.)

To: **LPC Avocat Inc.**
c/o Mtre Joey Zukran
276 Saint-Jacques Street, Suite 801
Montréal, Québec, H2Y 1N3

Faguy & Co.
c/o Mtres Elizabeth Meloche / Shawn K. Faguy
329 de la Commune Street West, Suite 200
Montréal, Québec, H2Y 2E1

Attorneys for Plaintiffs

To: **OSLER, HOSKIN & HARCOURT LLP**
c/o c/o Mtres Éric Préfontaine / Frédéric Plamondon / Josy-Ann Therrien
1000 de La Gauchetière Street West, Suite 2100
Montréal, Québec H3B 4W5
Attorneys for Defendant PricewaterhouseCoopers LLP

TAKE NOTICE that the *Application for Leave De Bene Esse to Examine Proposed Class Representatives and Plaintiffs' Experts Under the Québec Securities Act, for Leave to Examine Proposed Class Representatives Under the Code of Civil Procedure and to Strike Exhibit P-71* will be presented for hearing before the Honourable Lukasz Granosik of the Superior Court of Québec, on **February 22, 2023**, at **9:30 a.m.**, in **Room 15.09** of the Montréal Courthouse, located at 1 Notre-Dame Street East, Montreal, Québec, H2Y 1B6.

GOVERN YOURSELVES ACCORDINGLY.

Montréal, January 9, 2023



STIKEMAN ELLIOTT LLP

1155 René-Lévesque blvd. West #4100
Montréal (Québec) H2B 3V2

Mtre. Stéphanie Lapierre

Tel.: (514) 397-3029

Email: Slapierre@stikeman.com

Mtre. Frédéric Paré

Tel: (514) 397-3690

Email : Fpare@stikeman.com

**ATTORNEYS FOR DEFENDANTS
LIGHTSPEED COMMERCE INC.
(PREVIOUSLY LIGHTSPEED POS
INC.), DAX DASILVA, JEAN PAUL
CHAUVET, MARIE-JOSÉE LAMOTHE,
PATRICK PICHETTE, ROB WILLIAMS,
PAUL MCFEETERS, MERLINE SAINTIL,
DANIEL MICAÏK, ASHA BAKSHANI AND
BRANDON NUSSEY**

**SUPERIOR COURT
(Class Actions)**

No : 500-06-001164-215

**PROVINCE OF QUÉBEC
DISTRICT OF MONTRÉAL**

STEVE HOLCMAN

- and -

TARIQUE PLUMMER

Applicants

- v. -

LIGHTSPEED COMMERCE INC. ET AL.

Defendants

BS0350

File no. : 144699-1025

NOTICE OF PRESENTATION

ORIGINAL

**Me Stéphanie Lapierre
514 397 3029 | slapierre@stikeman.com**

**Me Frédéric Paré
514 397 3690 | fpare@stikeman.com**

**STIKEMAN ELLIOTT
Stikeman Elliott LLP LAWYERS
1155 René-Lévesque Blvd. W., 41st Floor
Montréal, Québec, Canada H3B 3V2**

CANADA

SUPERIOR COURT
(Class Actions)

PROVINCE OF QUÉBEC
DISTRICT OF MONTREAL

STEVE HOLCMAN

- and -

TARIQUE PLUMMER

N° : 500-06-001164-215

Applicants

v.

LIGHTSPEED COMMERCE INC. ET AL.

Defendants

LIST OF EXHIBITS

(In support of Application for Leave De Bene Esse to Examine Proposed Class Representatives and Plaintiffs' Experts Under the Québec Securities Act, for Leave to Examine Proposed Class Representatives Under the Code of Civil Procedure and to Strike Exhibit P-71)

Exhibit	Description
R-1	Exhibit P-71 (Confidential) <i>En liasse</i> , copy of notes of meetings between independent private investigators and former Lightspeed employees
R-2	Expert Report Authored by Frank C. Torchio, dated June 17, 2022
R-3	Expert Report Authored by Professor Ramy Elitzur, dated August 1, 2022
R-4	Letter from Defendants dated November 8, 2022
R-5	Email from Justice Granosik dated November 9, 2022

MONTREAL, January 9, 2023

Stikeman Elliott

Stikeman Elliott LLP

1155 René-Lévesque Blvd. W.
41st Floor
Montréal (Québec) H3B 3V2

Me Stéphanie Lapierre

Direct: +1 514 397-3029
Email: slapierre@stikeman.com

Me Frédéric Paré

Direct: +1 514 397-3690
Email: fpare@stikeman.com

**ATTORNEYS FOR DEFENDANTS
LIGHTSPEED COMMERCE INC.
(PREVIOUSLY LIGHTSPEED POS INC.),
DAX DASILVA, JEAN PAUL CHAUVET,
MARIE-JOSÉE LAMOTHE, PATRICK
PICHETTE, ROB WILLIAMS, PAUL
MCFEETERS, MERLINE SAINTIL, DANIEL
MICAÏ, ASHA BAKSHANI AND BRANDON
NUSSEY**

**SUPERIOR COURT
(Class Actions)**

No : 500-06-001164-215

**PROVINCE OF QUÉBEC
DISTRICT OF MONTRÉAL**

STEVE HOLCMAN

- and -

TARIQUE PLUMMER

Applicants

- v. -

LIGHTSPEED COMMERCE INC. ET AL.

Defendants

BS0350

File no. : 144699-1025

DEFENDANTS' LIST OF EXHIBITS

ORIGINAL

**Me Stéphanie Lapierre
514 397 3029 | slapierre@stikeman.com**

**Me Frédéric Paré
514 397 3690 | fpare@stikeman.com**

**STIKEMAN ELLIOTT
Stikeman Elliott LLP LAWYERS
1155 René-Lévesque Blvd. W., 41st Floor
Montréal, Québec, Canada H3B 3V2**

EXHIBIT R-1

INVESTIGATIVE MEMORANDUM

Confidential [REDACTED]

March 22, 2022

TO: [REDACTED]
FR: [REDACTED] and [REDACTED], On Point Investigations LLC
RE: Lightspeed - [REDACTED]

[REDACTED]

[REDACTED]
[REDACTED] worked for Lightspeed from [REDACTED] 2014 to [REDACTED]
2021 as a [REDACTED] Support Specialist [REDACTED]

[REDACTED]

[REDACTED] can be reached at [REDACTED]. The following is a summary of her comments during the March 21 phone interview.

SUMMARY

- Lightspeed's acquisitions of companies like ShopKeep, Upserve and Vend were explained internally as, "Our developers do not have the bandwidth to continue working on the products we developed in-house. So we will be purchasing those products from these other companies to integrate to the LightSpeed ecosystem."
- To [REDACTED], the explanation was "the same thing" as stating that the acquisitions were for the purpose of combatting a decline in Lightspeed's organic growth.
- During town hall meetings between January and June 2021, employees raised questions about "severe issues affecting Lightspeed Retail and its

[REDACTED]

associated products.”

- The response from leadership – likely President JP Chauvet – was to not really answer the question, ██████ said. “The answers would be that, ‘We don’t have developer resources to fix these issues and that we are to wait on changes coming soon’ – those changes being new acquisitions.”
- A senior leader – possibly President JP Chauvet, according to ██████’s recollection – told employees during a companywide town hall meeting in about June 2021 that Lightspeed planned to move all of its customers from Lightspeed Retail to Vend within five years, ██████ said, adding that CEO Dax Dasilva was present at the meeting.
- For years, Lightspeed Retail was plagued by technical and development issues that were “extremely” affecting customers and that may have contributed to a decline in the company’s organic growth, prompting Lightspeed to move toward acquisitions, ██████ said.
- For example, until 2020, Lightspeed Retail “miscalculated” customers’ average cost metric “every single time” because of an integration with QuickBooks that “didn’t function correctly,” ██████ said. “We’re talking years of this where developers just weren’t fixing the bug.”
- Lightspeed used Salesforce to track its customer count and details about customers, including billing, hardware purchased and any add-ons.
- Employees could view metrics such as gross transaction volume in an internal system known as “RAD.”

Job description

████████ joined Lightspeed in ██████████ 2014 as a ██████████ Support Specialist ██████████ she ██████████ provided support for Lightspeed Retail and “all of its integrations,” she said. This included documenting issues internally and supporting customers over the phone, email and via live chat.

████████ was then promoted ██████████

████████ was promoted to ██████████

[REDACTED]

[REDACTED] left Lightspeed in [REDACTED] 202[REDACTED].

“Frankly, it was largely due to leadership issues internally, which is to say things weren’t getting fixed,” she said, adding that the problems included “issues with the product,” or Lightspeed Retail, and “not great management around getting those addressed.”

[REDACTED] is currently [REDACTED].

Lightspeed Retail issues

For years, dating back to 2016, Lightspeed Retail was plagued by technical and development issues that were “extremely” affecting customers and that may have contributed to a decline in the company’s organic growth, prompting Lightspeed to move toward acquisitions, [REDACTED] said.

For example, [REDACTED] explained that for years, Lightspeed Retail “miscalculated” a metric used by customers called average cost, which shows the average cost of product over a historical period of time.

“Lightspeed Retail has an issue that causes average cost across products to miscalculate every single time,” she said.

[REDACTED] explained that the issue was rooted in Lightspeed Retail’s integration with the accounting software QuickBooks.

“Even though Lightspeed Retail had accounting product integration with QuickBooks, it didn’t function correctly,” she said, “[REDACTED]

[REDACTED]

“We’re talking years of this where developers just weren’t fixing the bug,” she said. “This stuff balloons.”

The issue continued until 2020, when Lightspeed’s developers finally implemented a new way to track inventory using unit cost instead, [REDACTED] said.

“In order to fix the issues, we basically forced all clients to change the way they were accounting,” she said, explaining that the “issue didn’t get fixed, but now clients aren’t affected by it.”

The issue that caused miscalculated average cost was communicated to Senior Vice President – Customer Support [REDACTED].

“We spoke to her directly, and she was working on addressing the same problems,” [REDACTED] said.

[REDACTED] said she did not know if the issues were communicated to [REDACTED]

Lightspeed's top executives, though she noted that [REDACTED] reported to either CEO Dax Dasilva or President JP Chauvet.

In another example of Lightspeed Retail's issues, [REDACTED] said that in 2016, Lightspeed "had a bunch of API issues and migrated to Amazon Web Services servers to address those issues. Following that, we started seeing a significant decrease in attention of development toward those products - Lightspeed Retail and all of its integrations."

[REDACTED] explained that an API is used to "allow a company to talk to another company and share information."

"Lightspeed greenlit a number of new integrations ... that would use the API to communicate with" Lightspeed Retail's integrations. But those integrations "were not rate limited," she said, explaining that rate limiting "helps us decrease the rate at which information is exchanged so as not to cause the system to crash."

Because of this problem, "these integrations would start sending requests to Lightspeed at such a high request amount that the whole system would go down for everybody," [REDACTED] said. "In order to get tools for rate limiting, they migrated to AWS servers."

[REDACTED] said she did not know if the issues with Lightspeed Retail caused the company to lose customers. She said access to information about key business metrics - like customer count, gross transaction volume and average revenue per user - was siloed and for the most part not accessible to her and her colleagues on the Support team.

Reports containing key business metrics were "noticeably absent," she said, adding that such reports and information were kept within the Sales operation.

Although [REDACTED] said she did not know for certain that Lightspeed was losing customers, "I can say that customers were extremely" affected by the issues with Lightspeed Retail.

Because of the issues, [REDACTED] said she would regularly have to pass along customers who had experienced issues and wanted compensation to Lightspeed's Client Success team, "whose job was to evaluate that client according to other compensation requests given out to evaluate whether the revenue we were receiving from the client is worth the compensation."

[REDACTED] also said that during the end of her tenure at Lightspeed, she was dealing with "100 different cases a day," which was "too many."

Salesforce and "RAD"

Lightspeed used Salesforce to track its customer count and details about customers, including billing, hardware purchased and any add-ons, ██████ said. Initially, ██████ had access to Salesforce because Lightspeed was also using it to "take support cases."

But the company took away Salesforce access for ██████ and other Support employees in about 2016 when it started using another product - VenDesk or Zendesk - to manage technical support cases.

Lightspeed could view metrics such as gross transaction volume in an internal system known as "RAD," which was in effect an internal-facing version of Lightspeed Retail, ██████ said, adding that she did not remember what "RAD" stood for. Lightspeed referred to "RAD" as "a super user access tool."

"From there, the main landing page, is a list of all active and nonactive Lightspeed Retail accounts," she said. "And in there, there's a quick summary view that shows their historical transaction total."

The transaction totals were shown for each customer, meaning an employee "would have to do some math" to calculate the transaction total for all customers.

Explanation for acquisitions

Lightspeed's acquisitions of companies like ShopKeep, Upserve and Vend were explained internally as, "Our developers do not have the bandwidth to continue working on the products we developed in-house. So we will be purchasing those products from these other companies to integrate to the LightSpeed ecosystem," ██████ said, recalling statements made during weekly "Bug Ticket Triage Meetings" with developers and product managers.

To ██████, the explanation was "the same thing" as stating that the acquisitions were for the purpose of combatting a decline in Lightspeed's organic growth, she said.

"The fact of the matter is, it's the same thing," she said. "It's like a different way of wording that this is about our customers. It's saying that we're not putting any developer resources on ... current offerings."

██████ explained that the "Big Ticket Triage Meetings" were weekly meetings with developers or product managers or both groups that she and her colleagues on the Tier III Support team attended. During the meetings, she and her colleagues would ask for "estimated resolution times" on various issues.

The highest-ranking person in the meetings was likely a product manager, though the product manager who attended any given meeting "would have

rotated." [REDACTED] said she did not remember the names of the product managers who attended the meetings.

Separately, [REDACTED] said that after the acquisitions of companies like ShopKeep, Upserve and Vend, Lightspeed sent out marketing materials to clients and likely investors as well stating that, "This is a new product that Lightspeed has purchased, and now that we are white labeling this product, these are the customers we've added."

The information was communicated in the form of an infographic, she said.

[REDACTED] explained that "a white-labeled product is a product that is owned by one company but developed by another."

Additionally, [REDACTED] said that after acquiring ShopKeep, Lightspeed never integrated the company's employees into the Lightspeed team, even though Lightspeed had said it was going to upon acquiring ShopKeep.

Lightspeed Retail issues communicated to CEO Dasilva, President Chauvet

During companywide town hall meetings between January and June 2021, employees raised questions about "severe issues affecting Lightspeed Retail and its associated products," [REDACTED] said, adding that CEO Dax DaSilva and President JP Chauvet were present during the town hall meetings. CFO Brandon Nussey might have been at the meetings as well, though [REDACTED] said she did not know for certain.

During the meetings, employees asked, "Can leadership outline what their plans are to address this ongoing problem?" [REDACTED] said.

The response from leadership - likely President Chauvet - was to say this issue was of "high concern" but not really answer the question, [REDACTED] said.

"The answers would be that, 'We don't have developer resources to fix these issues and that we are to wait on changes coming soon' - those changes being new acquisitions," she said.

For the town hall meetings employees were able to submit questions anonymously, possibly via the employee experience platform Culture Amp, [REDACTED] said.

Plan to phase out Lightspeed Retail in favor of Vend

A senior leader - possibly President Chauvet - told employees during a

companywide town hall meeting in about June 2021 that Lightspeed planned to move all of its customers from Lightspeed Retail to Vend within five years, [REDACTED] said, adding that CEO Dasilva was present at the meeting.

She said Vend was the “point of sale” product Lightspeed acquired to replace its “flagship point of sale” product: Lightspeed Retail.

In regard to Chauvet, [REDACTED] said, “JP has been acting as CEO much longer than he’s been in name.”

Lightspeed Payments

[REDACTED] said a product called Lightspeed Payments is “how Lightspeed is making money.”

“Lightspeed went from a subscription-based model where all clients would be subscribing to the point of sale” to then introducing Lightspeed Payments, she said.

At that point, “anybody who signed up with Lightspeed Payments, every payment they process through Lightspeed Payments, pennies of their transaction would go directly to Lightspeed,” she said. “As a result, almost overnight with Lightspeed Payments, Lightspeed was no longer really a SaaS company; it was more of a payments company. Suddenly, all of the value of the POS clients went out the window.”

[REDACTED] said she did not remember when Lightspeed Payments came online. She said she thinks the product was linked to a relationship with one of the first payment providers used by Lightspeed – a company called Worldpay.

Lightspeed later switched to Square as its underwriter, she said.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

INVESTIGATIVE MEMORANDUM

Confidential [REDACTED]

April 14, 2022

TO: [REDACTED]
FR: [REDACTED] and [REDACTED], On Point Investigations LLC
RE: Lightspeed - [REDACTED]

[REDACTED]

[REDACTED]
[REDACTED] worked for Lightspeed from [REDACTED] 2021 to [REDACTED] 2022 as a [REDACTED].

[REDACTED] worked [REDACTED]. She reported to a number of different supervisors, including [REDACTED].

[REDACTED]

[REDACTED] can be reached at [REDACTED]. The following is a summary of her comments during the April 13 phone interview.

SUMMARY

- VP - Partnerships Peter Dougherty told [REDACTED] in January or February 2021 that Lightspeed was "able to report" a gross transaction volume equal to the "entire transaction" with customers, "not what we're making on the transaction," she said. "It's the full volume instead of what we're actually making on it ... I thought it was strange that that's how it worked, that we could report like that."
- Dougherty also said that Lightspeed used the payment processing platform Stripe because it "allows us to report on the entire transaction,"

[REDACTED]

she said.

- Jake West, a now-former Lightspeed employee who came over from Vend [REDACTED], said Lightspeed's way of calculating GTV (as Dougherty described to [REDACTED]) was what a former Lightspeed employee was referring to as "smoke and mirrors," as cited in the Spruce Point Capital report, [REDACTED] said, based on her conversations with West about the report.
- [REDACTED] said she and West "tried to get information on how" Lightspeed tracked GTV but kept running into a "dead end."
- After the Spruce Point Capital report, CFO Brandon Nussey sent a companywide email "dogging on the article" and saying that the same type of thing had happened to now-successful companies like Square and Shopify. "Look where they are now ... This is just something that happens," he wrote.
- In December 2021, a Lightspeed senior leader - likely CFO Nussey - sent an email to all employees offering "a bunch of RSUs," or restricted stock units, as an incentive to get employees to stay after the company's stock declined, [REDACTED] said.
- CEO Dax Dasilva, CFO Nussey and President JP Chauvet spoke to employees during monthly all-hands meetings. [REDACTED] recalled leadership repeating that the company needed to focus on "payments, payments, payments. We must attach payments to every customer," she said.
- Employees could submit questions for leadership in advance of the all-hands meetings, either through the app Culture Amp or via a form included in the company's calendar invite for the meetings, [REDACTED] said.

Job description

[REDACTED] joined Lightspeed in [REDACTED] 2021 upon the company's acquisition of ShopKeep, where [REDACTED] had worked since [REDACTED] 2014 as an [REDACTED].

[REDACTED] said ShopKeep had "let the ball drop" in its Partnership Development unit, which is why she was brought into that role.

At Lightspeed, [REDACTED] held the role of [REDACTED]. After Lightspeed acquired Vend, [REDACTED] began focusing on an area she knew very well - payments partnerships. She worked to help Lightspeed partner with "ISOs," or independent sales organizations, and credit card providers that provided payment processing services.

[REDACTED] worked [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] said she resigned from Lightspeed in [REDACTED] 2021 in large part because her role did not align with the company's broader goals. She explained that while Lightspeed was asking her to secure partnerships with payment processing providers, Lightspeed's goal was to process payments for customers themselves.

"I felt like everything I was doing was irrelevant," she said, adding that she also felt bad setting up partnerships with companies knowing that Lightspeed planned to conduct payment processing in-house.

"I didn't feel like what I was doing was something that aligned with the company's goals," she said.

Gross Transaction Volume (GTV) reporting

VP - Partnerships Peter Dougherty told [REDACTED] in January or February 2021 that Lightspeed was "able to report" a gross transaction volume equal to the "entire transaction" with customers, "not what we're making on the transaction," she said.

"He said that it was important for us to track what we're able to do - what we're able to do on the payments side, what we're able to report on the GTV is the entire transaction, not what we're making on the transaction," [REDACTED] said, adding that this was during a one-on-one conversation between her and Dougherty.

As an example, [REDACTED] said that say Lightspeed facilitates a \$100 transaction by a customer. After taking out fees, Lightspeed receives \$85. (These were not actual numbers but simply hypotheticals, she said.)

"We wouldn't report \$85," she said. "We would report on the full \$100 in terms of revenue."

"That's what the guy was referring to as far as 'smoke and mirrors,'" she said, referring to the statement by a former Lightspeed employee cited in the Spruce Point Capital report.

"It's basically like what we can report on paper is not the actual, full, true amount because it's the full volume instead of what we're actually making on it," she said. "I thought it was strange that that's how it worked, that we could report like that."

Dougherty also told [REDACTED] that Lightspeed used the payment

[REDACTED]

type of thing had happened to now-successful companies like Square and Shopify.

"He sent an interesting email to the company after the short seller article came out," [REDACTED] said, adding that Nussey likely sent the email in September or October 2021.

"Basically dogging on the article and saying this has happened in the past with competitors like Square. An article came out and the stock drops. Now look at Square and Shopify and where they are and how they've grown. This is just something that happens."

At that point, [REDACTED] said she was already thinking of moving on to another job.

"I snickered at it," she said about Nussey's email. "I don't remember having a conversation about it with anybody."

In his email, Nussey disputed specific claims from the Spruce Capital Report, though [REDACTED] said she could not remember the specifics.

"He definitely picked it apart a little bit and sent screenshots and different things," she said.

Separately, [REDACTED] recalled that in December 2021, a Lightspeed senior leader - likely CFO Nussey - sent an email to all employees offering "a bunch of RSUs," or restricted stock units, as an incentive to get employees to stay after the company's stock declined.

"I forgot exactly how they worded it," she said. "They were granting everybody a bunch of RSUs ... because the stock took a hit and they didn't want to lose employees."

[REDACTED] said she thinks the email was sent to employees on about December 22 [REDACTED]

"

All-hands meetings, Culture Amp

CEO Dax Dasilva, CFO Nussey and President JP Chauvet spoke to employees during monthly all-hands meetings, [REDACTED] said.

She recalled that during the meetings, leadership repeated that the company needed to focus on "payments, payments, payments. We must attach payments to every customer. "

Employees could submit questions for leadership in advance of the all-hands meetings, either through the app Culture Amp or via a form included in the company's calendar invite for the meetings, [REDACTED] said.

Tracking customers

Lightspeed used Salesforce to manage its customers, [REDACTED] said.

[REDACTED] said she had to use three different iterations of Salesforce – for Vend, ShopKeep and Upserve – which made things more difficult.

[REDACTED] said Lightspeed conducted “rolled-up reporting” of data in Salesforce through the software/data analytics platform Looker, which she said is likely where employees would have been able to see the company’s customer count.

In regard to the assertion in the Spruce Point Capital report that Lightspeed overstated its customer count, [REDACTED] said that if this occurred, it may have been linked to the fact that Lightspeed could “have one customer, and that one customer would have five different locations.”

The company could have then reported this as five customers, [REDACTED] said, adding that this was simply speculation on her part and that she did not know if this is how Lightspeed in fact counted and reported customers.

[REDACTED] said she did not have any knowledge about how Lightspeed tracked average revenue per user.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

- [REDACTED]

- [REDACTED]

- [REDACTED]

- [REDACTED]

- [REDACTED]

- [REDACTED]

- [REDACTED]

- [REDACTED]

- [REDACTED]

- [REDACTED]

[REDACTED]

INVESTIGATIVE MEMORANDUM

Confidential [REDACTED]

March 11, 2022

TO: [REDACTED]
FR: [REDACTED] and [REDACTED], On Point Investigations LLC
RE: Lightspeed - [REDACTED]

[REDACTED]

[REDACTED]
[REDACTED] worked for Lightspeed from [REDACTED] 202[REDACTED] to [REDACTED] 202[REDACTED]
as an [REDACTED]

[REDACTED]

[REDACTED] can be reached at [REDACTED]. The following is a summary of his comments during the March 9 phone interview.

SUMMARY

- Although Lightspeed was touting upgraded capabilities of Lightspeed Retail to customers based on the advantages of ShopKeep, in reality, the company did not build those advantages into Lightspeed Retail, [REDACTED] said.
- Lightspeed's Sales representatives had a goal of \$3,600 in monthly recurring revenue, which measured software and numbers associated with assumed volume from processing, [REDACTED] said.
- CEO Dax Dasilva spoke to employees during town hall meetings, but [REDACTED] did not recall Dasilva discussing business metrics, such as customer count or gross transaction volume.
- Senior Vice President of Global Sales JD St-Martin led Sales meetings every Monday that involved "going over goals and where" the company

[REDACTED]

After April 2021, new customers could not sign up for a ShopKeep account, he said. Existing merchants could if they were adding new locations.

██████████ said that prior to the acquisition, ShopKeep was the “most direct competitor” to Lightspeed Retail, or “R-Series.”

“They didn’t differ a ton,” he said. “They really targeted the same size retailers, a lot of the same price points, same functions.”

██████████ said Lightspeed was likely the superior product to ShopKeep, though ShopKeep did have “more functionality” in a couple areas, such as the ability to do “fractional quantities.”

Although Lightspeed was touting upgraded capabilities of Lightspeed Retail to customers based on the advantages of ShopKeep, in reality, the company did not build those advantages into Lightspeed Retail, ██████████ said.

He explained that Lightspeed touted the advantages of ShopKeep from a sales perspective, but “I definitely wouldn’t say that happened functionality-wise.”

██████████ said he assumed Lightspeed’s plan was to build the advantages of ShopKeep into Lightspeed Retail.

██████████ said he did not know how Lightspeed’s acquisition of ShopKeep affected customer growth, average revenue per user or other key indicators.

Lightspeed’s Sales operation

Lightspeed’s Sales representatives had a goal of \$3,600 in monthly recurring revenue, which measured software and numbers associated with assumed volume from processing, ██████████ said.

Asked if there was any change in the Sales department’s success in meeting sales goals after the ShopKeep acquisition, he said, “I would say that the company hit their goals or came close to their goals most months.”

Senior Vice President of Global Sales JD St-Martin led Sales meetings every Monday that involved “going over goals and where” the company was tracking related to its goals, ██████████ said. CEO Dax Dasilva was not on the calls.

██████████ said he did not know how Lightspeed kept track of customer count, gross transaction volume or average revenue per user. He said the company might have used Salesforce to track some of these metrics, adding that Lightspeed tracked sales leads in Salesforce.

Once a lead turned into a customer, ██████████ would pass the customer off to the company’s Onboarding team to get them set up with an account.



Lightspeed's Sales staff were segmented into one of four verticals in which they specialized: 1) Gifts, hobby shops and music stores; 2) Sports, which also included pet stores; 3) Apparel and footwear; and 4) High-risk businesses, such as those that sold CBD, for example, and those "that can't typically process payments because of having high-risk laws tied to that," [REDACTED] said.

[REDACTED]'s focus was the gifts, hobby shops and music stores vertical.

Lightspeed Sales staff were not assigned to geographic territories - they could make sales anywhere in the U.S. or Canada, he said.

CEO Dax Dasilva, companywide meetings

CEO Dax Dasilva spoke to employees during companywide, town hall meetings, but [REDACTED] did not recall Dasilva discussing business metrics, such as customer count or gross transaction volume.

[REDACTED] said he did not remember how often the companywide meetings took place.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

INVESTIGATIVE MEMORANDUM

Confidential [REDACTED]

March 24, 2022

TO: [REDACTED]
FR: [REDACTED] and [REDACTED], On Point Investigations LLC
RE: Lightspeed - [REDACTED]

[REDACTED]

[REDACTED]
[REDACTED] worked for Lightspeed from [REDACTED] 2021 to [REDACTED] 2022 as
Senior Manager [REDACTED]

[REDACTED]

[REDACTED] can be reached at [REDACTED]. The following is a summary of her
comments during the March 22 phone interview.

SUMMARY

- Lightspeed's internal reporting on key business metrics and other data was "like smoke and mirrors," and the company's data strategy was "pretty horrendous," [REDACTED] said.
- Lightspeed used Salesforce and the business intelligence software/ data analytics platform Looker to track user count, gross transaction volume, average revenue per user, credit card processing sales, MRR (monthly recurring revenue) and other metrics, she said.
- CEO Dax Dasilva and President JP Chauvet had direct access to Salesforce and Looker, which [REDACTED] knew "because they were always pulling reports," she said.
- Lightspeed's Data team was overseen by Executive Vice President - Product Guillaume Jacquet, who reported directly to CEO Dasilva.

[REDACTED]

EXHIBIT R-2

CANADA
PROVINCE OF QUÉBEC
DISTRICT OF MONTREAL
No.: 500-06-001164-215

SUPERIOR COURT
(Class Action)

STEVEN HOLCHMAN

and

TARIQUE PLUMMER,

Applicants

-v-

LIGHTSPEED COMMERCE INC., et al.

Respondents

EXPERT REPORT OF FRANK C. TORCHIO

June 17, 2022

TABLE OF CONTENTS

I. INTRODUCTION AND SUMMARY OF OPINIONS.....	1
II. QUALIFICATIONS AND COMPENSATION	3
III. MATERIALS REVIEWED	5
IV. BACKGROUND.....	5
V. OVERVIEW OF EVENT STUDY METHODOLOGY.....	10
A. Event Study – Statistical Analysis	10
B. Market Model for Lightspeed.....	19
i) Proxies for Market and Industry	19
ii) Time Period for Regression Analysis.....	21
iii) Computation of Predicted Returns, Excess Returns, and Statistical Significance	22
VI. ECONOMIC EVIDENCE OF MATERIALITY	22
A. September 29-30, 2021 Event.....	26
i) September 29, 2021.....	26
ii) September 30, 2021.....	30
B. November 4, 2021 Event.....	32
VII. METHODOLOGIES FOR CALCULATING DAMAGES.....	39
A. Statutory Damages.....	40
B. Civil Code Claims	41
i) Analysis of Information from Disclosures in Event Studies.....	42
ii) Techniques Used in Calculating Artificial Inflation	46
C. Aggregate Damages	50
i) Trading Models.....	51

I. INTRODUCTION AND SUMMARY OF OPINIONS

1. I am the President of Forensic Economics, Inc. and have been retained by LPC Avocat Inc. and Faguy & Co. Avocats/Barristers in this Action (“Counsel”). For this Report, I have been asked to provide an opinion regarding the economic materiality¹ following the alleged corrective disclosures on the Subordinate Voting Shares of Lightspeed Commerce Inc. (“Lightspeed” or the “Company”).² It is my understanding that Class members include the following, other than the Excluded Persons:

- (i) **Primary Market Sub-Class:** All persons and entities who acquired Lightspeed Commerce Inc. or Lightspeed POS Inc. securities in an Offering on or after March 7, 2019, and held some or all of those securities until after the close of trading on (1) September 28, 2021 or (2) November 3, 2021, excluding United States residents who acquired Lightspeed Commerce Inc. or Lightspeed POS Inc. securities in an Offering in the United States between September 11, 2020 and September 28, 2021; and
- (ii) **Secondary Market Sub-Class:** All persons and entities who acquired Lightspeed Commerce Inc. or Lightspeed POS Inc. securities on the secondary market on or after March 7, 2019, and held some or all of those securities until after the close of trading on (1) September 28, 2021 or (2) November 3, 2021; excluding investors who acquired Lightspeed Commerce Inc. or Lightspeed POS Inc. securities on a U.S. exchange between September 11, 2020 and September 28, 2021;^{3,4}

2. I have been asked to answer the following questions:

¹ The *Québec Securities Act* defines in Section 5 a “material fact” as a “fact that may reasonably be expected to have a significant effect on the market price or value of securities issued or securities proposed to be issued.”

² From March 7, 2019 through December 1, 2020, Lightspeed also had Multiple Voting Shares, which were owned by Dax Dasilva. As of December 1, 2020, the Multiple Voting Shares had been converted to Subordinate Voting Shares.

³ Re-Amended Application for Authorization of a Class Action and for Authorization to Bring an Action Pursuant to Section 225.4 of the *Québec Securities Act* dated June 17, 2022 (the “Application”), ¶ 0.1 f.

⁴ “Excluded Persons” refers to the Defendants and, at all relevant times, members of their immediate families, their legal representatives, heirs, successors and/or assigns, directors, officers, subsidiaries, and affiliates. See Application, ¶ 0.1 p.

- i. Please explain which Lightspeed securities were outstanding during the class period and the exchanges on which they traded. Please also provide details about the primary market issuances which took place during the class period. In your answers to the below questions, please explain any salient points regarding each category of securities, if required.

Answer: Following Lightspeed’s IPO in Canada on March 7, 2019, Lightspeed had two class of shares based on voting rights: Subordinate Voting Shares (entitled to 1 vote) and Multiple Voting Shares (entitled to 4 votes). The Subordinate Voting Shares were listed and traded on the Toronto Stock Exchange. The Multiple Voting Shares were not listed and did not trade on an exchange. As of December 1, 2020, all of the Multiple Voting Shares had been converted to Subordinate Voting Shares. On September 11, 2020, Lightspeed had an IPO in the United States where the Subordinate Voting Shares were listed and traded on the New York Stock Exchange. Prior to the September 11, 2020 IPO in the United States, shares of Lightspeed were traded over-the-counter in the United States.

- ii. Why did the value of Lightspeed’s securities decline on or after September 29 and November 4, 2021 (“Public Correction Dates”)? Also, please identify any alternative or contributory cause for the price variation on those dates.

Answer: Based on my event study analysis, Lightspeed’s Subordinate Voting Shares declined on September 29, 2021 and September 30, 2021 following the issuance of a September 29, 2021 *Business Wire* story reporting on a Spruce Point Capital Management Report (“Spruce Point Report”) titled “Putting the Brakes on Lightspeed”. Lightspeed’s Subordinate Voting Shares declined on November 4, 2021 following Lightspeed’s release of its Q2 2022 MD&A, financial results and updated guidance on November 4, 2021. I did not find any alternative or contributory cause for the price variation on these dates. *See* Section VI.

- iii. Assuming the allegations in the Application relating to client base, transaction volume, growth, earnings and revenue are true:
 1. did they have a significant impact on the market price of Lightspeed’s securities?; and
 2. would they affect a reasonable investor’s decision to purchase Lightspeed’s securities?

Please comment on the impact of the Public Corrections individually and in the aggregate.

Answer: Based on my event study analysis, the information disclosed in the Spruce Point Report on September 29, 2021, and in Lightspeed’s Q2 2022 MD&A, financial results, and updated guidance on November 4, 2021, indicate that the allegations in the Application (taken as true) were

material to investors, and had a significant impact on Lightspeed's Subordinate Voting Shares when corrected. The excess price change on September 29-30, 2021 is \$18.86 per share and the excess price change on November 4, 2021 is \$36.36 per share. The total excess price change for both events is \$55.22 per share. In my opinion, the misrepresentations and omissions would have affected an investor's decision to invest in Lightspeed or to invest in Lightspeed at the same price. *See* Section VI.

It is my opinion that an event study analysis provides strong economic evidence of materiality of the public disclosures that revealed prior misrepresentations alleged in this action. These "corrective disclosures" include the Spruce Point Report, as well as Lightspeed's release of its Q2 2022 MD&A, financial results and updated guidance on November 4, 2021.

- iv. and please indicate how damages for the Class can be calculated under the Québec Securities Act and for the Civil Code claim.

Answer: The Québec Securities Act provides statutory formulas set forth in Section 225.28, which are calculated for all Class Members based on the timing of purchases and sales obtained, with sales price limitations after the 10 trading days following the final corrective event. For the Civil Code claim, damages could be estimated using the event study analysis for the corrective events to determine the level of artificial inflation present in Lightspeed's share price throughout the class period. At this time, I have not been asked to opine on the damages under either measure. Based on the estimate of per-share damages for the Statutory claims and the Civil Code claims, aggregate damages can be estimated with the use of a trading model. *See* Section VII.

3. I reserve the right to amend my conclusions to reflect new information made available to me.

II. QUALIFICATIONS AND COMPENSATION

4. I am the President of Forensic Economics, Inc., located in Rochester, New York. I founded Forensic Economics, Inc. in 1989. I have consulted on issues pertaining to financial valuations, regulatory economics, transfer pricing, financial-economic analysis, and analysis of the response of share prices to public information in securities fraud lawsuits for over 30 years.

Forensic Economics, Inc. historically has been retained by both plaintiffs and defendants in litigation matters.

5. I am also an Adjunct Professor and a former Executive Professor of finance at the Simon School of Business at the University of Rochester. My courses cover topics including market efficiency, event studies, damages in securities litigation, valuation of businesses and securities, and managerial economics.

6. I have testified at trials, arbitrations, and depositions in U.S. federal district courts, in state courts including the Delaware Court of Chancery, Australia, the United Kingdom, and in Switzerland. I have submitted expert reports in numerous securities litigation matters in Canada, as well as the United States, Australia, and the United Kingdom.

7. I have co-authored an article with Professor Michael Barclay about trading models used for calculating damages in securities lawsuits. The article is published in *Duke University School of Law's Law and Contemporary Problems* (Volume 64, Spring-Summer 2001). I have authored a published article about the proper event study analysis in securities litigation, which was published in *The Journal of Corporation Law* (Volume 35:1, 2009). I have also co-authored a paper about the effect of size premiums from the lack of liquidity, which was published in the *Journal of Business Valuation and Economic Loss Analysis* (Volume 9:1, 2014), as well as a paper titled "Benchmarking Market Efficiency Indicators for Securities Litigation," which was published in the *University of Illinois Law Review Online* (Volume 96, 2020).

8. I hold an MBA in Finance and Economics (1982) from the University of Rochester's Simon Business School. I was the 1991 Rosenthal Fellow at the University of Rochester for innovative developments in applying financial economic theory. I have also been

awarded the Chartered Financial Analyst (CFA®) designation and am a member of the CFA Institute. My resume is attached as Exhibit 1.

9. My compensation is based on the number of hours worked on this assignment, as well as out-of-pocket expenses. My hourly rate is \$625. To assist me, I used employees of Forensic Economics, Inc. who worked under my supervision and at my direction for this assignment. Forensic Economics, Inc.'s hourly rates for those employees range from \$190 to \$360.

III. MATERIALS REVIEWED

10. In the course of my assignment in this Action, I have reviewed numerous documents. The attached Exhibit 2 is a comprehensive list of materials I considered in connection with this report. Specific documents and information relied upon in reaching my opinions are cited throughout this Report.

IV. BACKGROUND

11. Lightspeed described its business as a software platform mainly for small and medium sized businesses with functionality to engage with consumers, manage operations, and accept payments. Lightspeed states that it generates revenue primarily from the sale of cloud-based software subscription licenses:

Lightspeed provides an easy-to-use, omni-channel commerce-enabling SaaS [Software as a Service] platform. Our software platform provides our customers with the critical functionality they need to engage with consumers, manage their operations, accept payments, and grow their business. We operate globally in approximately 100 countries, empowering single- and multi-location small and medium-sized businesses (SMBs) to compete successfully in an omni-channel market environment by engaging with consumers across online, mobile, social, and physical

channels. We believe that our platform is essential to our customers' ability to run and grow their business. As a result, most of our revenue is recurring and we have a strong track-record of growing revenue per customer over time.

...

Our cloud platform is designed around three interrelated elements: front-end consumer experience, back-end operations management to improve our customers' efficiency and insight, and the facilitation of payments. Key functionalities of our platform include full omni-channel capabilities, point of sale ("POS"), product and menu management, inventory management, analytics and reporting, multi-location connectivity, loyalty and customer management.

...

We sell our platform primarily through our direct sales force in North America, Europe and Australia, supplemented by indirect channels in other countries around the world. Our platform is well-suited for various types of SMBs, particularly single and multi-location retailers with complex operations, such as those with a high product count, diverse inventory needs or a service component, and restaurants ranging from quick service to fine dining establishments .

...

We generate revenue primarily from the sale of cloud-based software subscription licenses and other recurring revenue sources including payments solutions for both retailers and restaurants. We offer pricing plans designed to meet the needs of our current and prospective customers that enable Lightspeed solutions to scale with SMBs as they grow. Our subscription plans vary from monthly plans to one-year and multi-year terms, with the majority of our Customer Locations contracted for at least 12 months as of March 31, 2019. In addition, our software is integrated with certain third parties that enable electronic payment processing and as part of integrating with these payment processors, we have entered into revenue share agreements with each of them. We have recently launched Lightspeed Payments, our in-house payment processing solution, which provides our customers with full visibility into the final steps of their sale process⁵

⁵ See Lightspeed's 2019 Annual Report, pp. 9-10.

12. **Figure 1** below is a summary of Lightspeed’s selected financial data for fiscal years 2019 to 2021:⁶

FIGURE 1: LIGHTSPEED SELECTED FINANCIAL DATA

<i>\$000 in USD</i>	Fiscal year ended March 31:		
	2019	2020	2021
Revenue	\$77,451	\$120,637	\$221,728
Adjusted EBITDA	(\$13,105)	(\$21,660)	(\$21,199)
Net Loss	(\$183,525)	(\$53,531)	(\$124,278)
Net Loss per share	(\$5.53)	(\$0.62)	(\$1.18)

13. On March 7, 2019, Lightspeed announced the pricing of its Initial Public Offering (“IPO”).⁷ Lightspeed intended to sell 15 million Subordinate Voting Shares at \$16 per share, as well as an overallotment of 2.25 million Subordinate Voting Shares to the underwriters, also at \$16 per share.⁸ On March 15, 2019, Lightspeed announced the closing of its IPO of 17.25 million Subordinate Voting Shares at \$16 per share, including the overallotment.⁹ The subordinate shares began trading on the Toronto Stock Exchange (“TSX”) under the symbol “LSPD”.¹⁰

⁶ See Lightspeed’s 2019 Annual Report, pp. 12, 20 and 2021 Annual Report, pp. 6, 14.

⁷ See Lightspeed’s press release, “Lightspeed Announces Pricing of Initial Public Offering,” March 7, 2019.

⁸ See Lightspeed’s press release, “Lightspeed Announces Pricing of Initial Public Offering,” March 7, 2019.

⁹ See Lightspeed’s press release, “Lightspeed Announces Closing of Initial Public Offering and Over-Allotment Option,” March 15, 2019.

¹⁰ See Lightspeed’s press release, “Lightspeed Announces Closing of Initial Public Offering and Over-Allotment Option,” March 15, 2019.

14. On September 9, 2020, Lightspeed announced a marketed public offering of its subordinate shares, including an IPO of its subordinate shares in the United States.¹¹ Lightspeed intended to sell 10 million subordinate shares and Lightspeed investor Caisse de dépôt et placement du Québec intended to sell 1.65 million Subordinate Voting Shares in the marketed public offering.¹² In addition, an overallotment of 1,747,500 subordinate shares was available to the underwriters. Lightspeed also announced that it had filed an application with the New York Stock Exchange (the “NYSE”) to list its Subordinate Voting Shares under the ticker “LSPD”.¹³ On September 10, 2020, Lightspeed announced the pricing of its marketed public offering at US\$30.50 per share, to begin trading on NYSE on September 11, 2020, as well as the closing of the offering on September 15, 2020.¹⁴ On September 15, 2020, Lightspeed announced the closing of its marketed public offering, having sold a total of 13,039,004 Subordinate Voting Shares, including those sold by the selling shareholder.¹⁵ The underwriters did not fully subscribe to the overallotment and acquired 1,389,004 Subordinate Voting Shares.¹⁶

¹¹ See Lightspeed’s press release, “Lightspeed Announces Initial Public Offering in the United States,” September 9, 2020.

¹² See Lightspeed’s press release, “Lightspeed Announces Initial Public Offering in the United States,” September 9, 2020.

¹³ See Lightspeed’s press release, “Lightspeed Announces Initial Public Offering in the United States,” September 9, 2020.

¹⁴ See Lightspeed’s press release, “Lightspeed Announces Pricing of Initial Public Offering in the United States,” September 10, 2020.

¹⁵ See Lightspeed’s press release, “Lightspeed Announces Closing of US\$397.7 Million Initial Public Offering in the United States, September 15, 2020.

¹⁶ See Lightspeed’s press release, “Lightspeed Announces Closing of US\$397.7 Million Initial Public Offering in the United States, September 15, 2020.

15. Throughout the class period, the Company’s Subordinate Voting Shares continued to list on the TSX under the symbol “LSPD,” and, as of September 11, 2020, on the NYSE under the symbol “LSPD.”¹⁷

16. After the IPO in Canada, Lightspeed had 67.68 million Subordinate Voting Shares outstanding and 16.05 million Multiple Voting Shares outstanding, a total of 83.7 million shares.¹⁸ The market capitalization after the IPO in Canada was \$1.59 billion based on the \$19.00 closing price on March 8, 2019, the first trading day after the IPO.

17. Throughout the class period, Lightspeed made several acquisitions wherein the Company issued over 25 million new Subordinate Voting Shares to partially finance the transactions.¹⁹ In addition to the shares offered in the IPO in the U.S., Lightspeed also issued new Subordinate Voting Shares multiple times including: 4.7 million Subordinate Voting Shares in a February 2020 bought deal offering;²⁰ 8.9 million Subordinate Voting Shares in a February 2021 marketed public offering;²¹ and 8.9 million Subordinate Voting Shares in an August 2021 public offering.²² Also, during the class period, existing shareholders sold some of their Subordinated Voting Shares multiple times including, but not limited to: 6.2 million Subordinate Voting Shares in an August 2019 marketed public offering;²³ 3.0 million Subordinate Voting

¹⁷ See Lightspeed’s 2020 Annual Report, p. 37, and 2021 Annual Report, p. 30.

¹⁸ See Lightspeed’s Supplemented Prep Prospectus, March 8, 2019, pp. 8, 65.

¹⁹ For example, Lightspeed issued 7.4 million shares when it acquired ShopKeep Inc. in November 2020 (Lightspeed Interim Financial Statement filed with SEDAR on February 4, 2021, p. 7) and issued 5.9 million shares when it acquired Upserve Inc. in December 2020 (Lightspeed’s press release “Lightspeed Announces Acquisition of Upserve to Further Omnichannel Revolution of American Restaurant Industry,” December 1, 2020).

²⁰ See Lightspeed’s Audited Financial Statements, May 21, 2020, p. 36.

²¹ See Lightspeed’s 2021 Annual Report, p. 25.

²² See Lightspeed’s Interim Financial Statements, November 4, 2021, p. 15.

²³ See Lightspeed’s press releases, “Lightspeed Launches Offering of Subordinate Voting

Shares in a February 2020 bought deal offering;²⁴ and 800 thousand Subordinate Voting Shares in a February 2021 marketed public offering.²⁵ As of December 1, 2020, all remaining Lightspeed Multiple Voting Shares were converted into Subordinate Voting Shares on a one-for-one basis.²⁶

18. As of December 1, 2020, Lightspeed’s common shares consisted of only one class of stock, the Subordinated Voting Shares. Prior to December 1, 2020, Lightspeed’s founder and Chief Executive Officer, Dax Dasilva, owned 14,429,466 Multiple Voting Shares, which converted to Subordinated Voting Shares on December 1, 2020.²⁷

19. As of November 3, 2021, the last day of the class period, Lightspeed had 148.1 million Subordinate Voting Shares outstanding. Based on the \$122.76 closing price on November 3, 2021, Lightspeed had a market capitalization of \$18.2 billion. *See* Exhibit A-1.

V. OVERVIEW OF EVENT STUDY METHODOLOGY

A. Event Study – Statistical Analysis

20. As a general proposition, modern finance theory holds that the market price of a common stock reflects the discounted value of expected future cash flows to the stockholder. In finance, the measure of annual profits used to compute a company’s value is called cash flows or

Shares,” August 12, 2019, and “Lightspeed Announces Closing of Secondary Offering of Subordinate Voting Shares,” August 22, 2019. Lightspeed disclosed that it had decided to not “proceed with its previously announced treasury offering of 1,160,000 subordinate voting shares.” *See* Lightspeed press release, “Lightspeed Announces Pricing of Secondary Offering of Subordinate Voting Shares,” August 15, 2019.

²⁴ *See* Lightspeed’s Audited Financial Statements, May 21, 2020, p. 36.

²⁵ *See* Lightspeed’s Audited Financial Statements, May 20, 2021, pp. 35-36.

²⁶ *See* Lightspeed’s 2021 Annual Report, p. 30.

²⁷ *See* Lightspeed press release, “Lightspeed Announces Automatic Conversion of All Outstanding Multiple Voting Shares,” December 1, 2020.

free cash flows. A company's annual cash flow is essentially its annual accounting earnings adjusted for the timing of the receipt of cash from sales and the timing of cash payments for the company's costs. Because accounting earnings are computed on an "accrual" basis, finance theory teaches that revenue and costs on an accrual basis should be converted to a cash basis before discounting to a present value.²⁸ Discounting future cash flows refers to the financial concept that a dollar received today is worth more than a dollar received next year. This is called the time value of money, which takes into account the "riskiness" of generating such cash flows. Thus, when computing a company's present value, future years' cash flow profits are discounted to today's dollars. This sum of future cash flows discounted to today's dollars is called a Discounted Cash Flow ("DCF") analysis. For example, if a company (with no debt or excess cash) has 10 million shares outstanding and its traded price is \$15 per share, then the present value of the market expectation of future profits for that company is \$150 million (\$15 times 10 million).

21. Valuation ratios (or valuation multiples) such as a price-earnings (P/E) ratio, are effectively one-period discounted cash flow analyses that reflect long-term growth in earnings/cash flow from the market. A one-period DCF is sometimes referred to as the first year's cash flow divided by the capitalization rate, where the capitalization rate equals the difference between the discount rate and the long-term growth rate. There is an intimate and mathematical connection between DCF analyses and market valuation multiples.²⁹

²⁸ See Robert W. Holthausen and Mark E. Zmijewski, Corporate Valuation: Theory, Evidence & Practice, First Edition, Cambridge Business Publishers, 2014, p. 257.

²⁹ "Any market multiple can be converted into a capitalization rate and vice versa." See Shannon P. Pratt, The Market Approach to Valuing Businesses, Second Edition, John Wiley & Sons, Inc., 2005, p. 23.

22. New information that causes the market to significantly alter its expectation of or risk of future cash flows will cause a prompt re-pricing of the security to reflect the new expectations.³⁰ Since the publication in 1969 of a classic paper by Fama, Fisher, Jensen, and Roll, financial economists have used the event study methodology as a tool to measure the effect on market prices of new information relevant to a company's equity valuation.³¹ New information may include, for example, earnings reports, dividend changes, stock splits, regulatory rulings, acquisition bids, asset sales, company press releases, ratings agency actions, and analyst reports.

23. The event study methodology involves an empirical analysis that measures the effect of new information on the market prices of a company's publicly traded securities. The metric used to measure the effect on a company's stock price from an event is called a "return," which is the percentage change in the market price of a company's shares over a specific time period such as one trading day. When new information about the company is disclosed to the market, a "market model" is used to determine the component of the security return that would have been expected based on the return predicted by the market model, *i.e.*, from the movement in the market index and, possibly, an industry index.³² The remaining component of the security

³⁰ See Eugene F. Fama, "Efficient Capital Markets: II," *Journal of Finance* 46(5), December 1991, 1575-1617; Robert Jennings and Laura Starks, "Information Content and the Speed of Stock Price Adjustments," *Journal of Accounting Research* 23(1), Spring 1985, 336-350.

³¹ See Eugene F. Fama, Lawrence Fisher, Michael C. Jensen and Richard Roll, "The Adjustment of Stock Prices to New Information," *International Economic Review* 10(1), February 1969, 1-21.

³² An industry index is generally composed of companies similar to the subject company and it is used to account for additional movements in the industry above and beyond those in the general market to ensure that the price movements analyzed are company specific. More than one industry index can be included in the market model.

return (that which cannot be explained by the return predicted by the market model) is known as the “excess return” or “abnormal return.”

24. Market models are empirical models that follow the theoretical Capital Asset Pricing Model (“CAPM”) explained in finance literature.³³ The inference from the CAPM is that the returns for a given stock are correlated with the returns of the general market. The sensitivity of the returns for a given stock to the general market is referred to as the stock’s “beta,” which I discuss more fully below.

25. Thus, a market model describes the normal relation between the return on the company’s security and the return on a broad-based market index, such as the S&P 500 Index or the S&P/TSX Index, and possibly an industry index of stocks of companies that are similar to the company of interest or an index of stocks of companies from which the company of interest derives its revenues. The indexes that are used in a market model are also called “independent variables.”³⁴ Once a disclosure has been identified as a potential event related to the wrongdoing, an event study analysis can measure the company-specific component of the return on that event date.³⁵ The company-specific component is the excess return discussed above, which I explain more fully below.

³³ See, for example, G. William Schwert, “Using Financial Data to Measure Effects of Regulation,” *The Journal of Law and Economics* 24(1), 1981, 121-158.

³⁴ A “variable” is a mathematical term that refers to a quantity that may change within the context of a mathematical problem.

³⁵ See David I. Tabak and Frederick C. Dunbar, “Materiality and Magnitude: Event Studies in the Courtroom,” Chapter 19 in Litigation Services Handbook: The Role of the Financial Expert, 3rd ed., ed. by Roman L. Weil, Michael J. Wagner and Peter B. Frank, Wiley, 2001, 19.2-3.

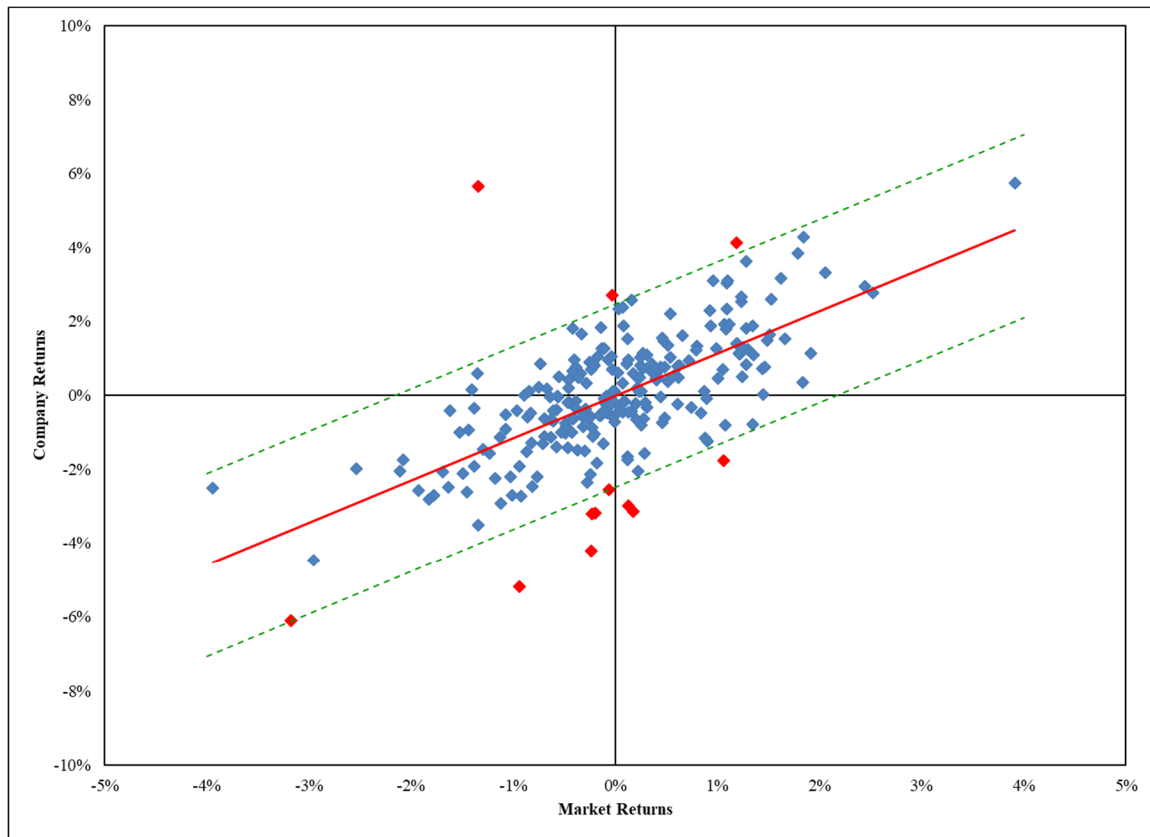
26. A market model is derived from linear regression analysis.³⁶ The company's return is regressed against the returns of the market index and industry index(es) (if applicable) to estimate the historical relation (the "betas") between the index variables and the company returns.³⁷ In essence, the indexes in the market model can "explain" or account for some measurable portion of the company's total return. This is done to isolate the share price movements that result from company-specific factors.

27. **Figure 2** below shows graphically an example of a market model regression using the S&P 500 Index as the independent variable. The red line is a result of a regression analysis. The red line in **Figure 2** represents the predicted returns of the company. It shows the relationship, or beta, between the daily movement in the share price and that for the general market.

³⁶ See John Y. Campbell, Andrew W. Lo and A. Craig MacKinlay, The Econometrics of Financial Markets, Princeton University Press, 1997, p. 155. "A **regression line** is a straight line that describes how a response variable y changes as an explanatory variable x changes. We often use a regression line to **predict** the value of y for a given value of x ." See David S. Moore and George P. McCabe, Introduction to the Practice of Statistics, 4th ed., W. H. Freeman and Company, 2003, p. 135 (emphasis in original).

³⁷ The return on an industry index is generally measured "net-of-market" to minimize the effects of a statistical phenomenon called multicollinearity, in which two or more independent variables in a multiple regression model are highly correlated. Net-of-market means that the return on the market index is subtracted from the return on the industry index before running the regression.

FIGURE 2: ILLUSTRATION OF A MARKET MODEL REGRESSION



28. The regression analysis is represented by the generalized equation:

$$\text{Company Return} = \alpha + \beta \cdot \text{Market Return.}$$

29. The slope of the regression line is the beta (β). The market beta or slope of the regression line indicates the expected return caused by a 1% change in the market return. The α is the constant term or intercept of the equation. It represents the value of the regression line where the market return is zero. It is called an intercept because it is the value where the regression line crosses or intercepts the Company Returns axis.

30. The predicted return represents an estimate of a company's return based on the return for the market (and possibly industry) index on a given day. For example, if a company's returns regressed against the market returns yields a regression with an intercept of 0.01% and a

market beta of 1.20, the expected or predicted return for this company when there is a 2% increase in the market index is 2.41% ($= 0.01\% + [1.20 * 2.0\%]$).

31. For a market model with an industry index, predicted returns are equal to the intercept term from the regression plus: (i) the market beta multiplied by the return on the market; and (ii) the net-of-market industry beta multiplied by the net-of-market return on the industry.³⁸

32. After calculating predicted returns, excess returns are calculated on each day by subtracting the predicted return from the company's return on each day. This represents the company-specific portion of the return on a given day.

33. Event studies also assess the probability that an excess return was the result of new information disclosed in an event, and not due to random price movements (*i.e.*, due to chance).

34. A statistically significant excess return at significance level (α) of 5% means that the excess return could be due to chance only 5% of the time. A statistically significant excess return at a significance level of 1% means that the excess return could be due to chance only 1% of the time. Significance levels in statistics are closely related to confidence intervals. For instance, a 5% significance level is equivalent to a 95% confidence interval and a 1% significance level is equivalent to 99% confidence interval (a confidence interval "C" equals $1 - \alpha$).³⁹

³⁸ Additional variables can be utilized if the analyst deems it necessary.

³⁹ See David S. Moore and George P. McCabe, Introduction to the Practice of Statistics, 4th ed., W. H. Freeman and Company, 2003, pp. 442-452.

35. The statistical significance for each daily excess return is measured by the t-statistic, which is calculated as a day's excess return divided by the standard error of the regression:

$$\text{t-statistic} = \text{Excess Return} \div \text{Standard Error of Regression.}$$

36. The standard error is the measure of normal volatility, which is one of the parameters obtained from the regression for a market model.

37. A t-statistic greater than 1.96 in absolute value (either positive or negative) means that the excess return is significant at the 5% significance level; a t-statistic greater than 2.58 in absolute value means that the excess return is significant at the 1% significance level. As is generally accepted in financial economics research,⁴⁰ I use the 5% level of significance for my analyses and consider excess returns with a t-statistic greater than 1.96 in absolute value as statistically significant.

38. Statistical significance can also be depicted graphically. In **Figure 2** above, the dashed green lines represent 1.96 times the standard error of the regression away from the regression line. The red diamonds indicate excess returns that are statistically significant because they are outside of the dashed lines. This means that those excess returns have t-statistics greater than 1.96 (in absolute value).

39. Not every news item is expected to generate a statistically significant return. For example, if a news story, analyst report, or company disclosure only repeats information that was

⁴⁰ "In practice, statistical analysts typically use levels of 5% and 1%. The 5% level is the most common in social science, and an analyst who speaks of significant results without specifying the threshold probably is using this figure." See David H. Kaye and David A. Freedman, "Reference Guide on Statistics," in Reference Manual on Scientific Evidence, Third Edition, National Academy of Sciences, 2011, 211-302 at 251, footnote omitted.

already fully known or merely confirms investors' current expectations, no price reaction in the security would be expected. A news story, analyst report, or company disclosure will cause a statistically significant return only when the information is new and unexpected, and when the information materially changes the total mix of information in the market, which will change the value of the security to investors. A disclosure that omits material information would not be expected to change the price of the security.

40. Event studies are most useful in determining the effects of new information on security prices under the following conditions: (i) there are well-defined public disclosures or announcements; (ii) the time that the news items reach the market is known; (iii) there is no reason to believe that the market fully anticipated the news items; and (iv) it is possible to reasonably isolate the effect of the news items from market, industry, and other issuer-specific factors simultaneously affecting the issuer's security prices.⁴¹

41. I primarily rely on event study analysis as the basis of my opinions. The focus of event studies in securities litigation is predominantly on disclosures that correct prior disclosure failures. Negative price reactions from corrective disclosures can provide economic evidence of materiality and loss causation.⁴²

⁴¹ See David I. Tabak and Frederick C. Dunbar, "Materiality and Magnitude: Event Studies in the Courtroom," Chapter 19 in Litigation Services Handbook: The Role of the Financial Expert, 3rd ed., ed. by Roman L. Weil, Michael J. Wagner and Peter B. Frank, Wiley, 2001, 19.2.

⁴² See Mark Mitchell and Jeffrey Netter, "The Role of Financial Economics in Securities Fraud Cases: Applications at the Securities and Exchange Commission," *The Business Lawyer* 49, February 1994, 545-590; and David Tabak and Frederick Dunbar, "Materiality and Magnitude: Event Studies in the Courtroom," Chapter 19 in Litigation Services Handbook: The Role of the Financial Expert, 3rd ed., ed. by Roman L. Weil, Michael Wagner, and Peter Frank, Wiley, 2001.

42. The degree of reliability of an event study analysis is correlated with the degree to which the security trades in an efficient market. A finding of market efficiency for a security generally means that the price of the security reflects all relevant, publicly available information. I, therefore, performed certain analyses to ascertain the efficiency of Lightspeed's Subordinate Voting Shares during the period from December 1, 2020, through November 30, 2021 (the "Market Efficiency Period"). In my opinion, Lightspeed's Subordinate Voting Shares traded in an efficient market at the time of the corrective disclosures, which then allows me to rely on the results of my event study analysis of the September 29, 2021, and November 4, 2021 events. See Appendix A.

B. Market Model for Lightspeed

i) Proxies for Market and Industry

43. Throughout the class period, Lightspeed was listed on the TSX under the symbol "LSPD", and as of September 11, 2020, on the NYSE also under the symbol "LSPD".⁴³ I ran various market model test regressions using the S&P/TSX Composite Total Return Index (Bloomberg ticker; 0000AR) for as a proxy for the theoretical market index.⁴⁴

44. Because Lightspeed operates as a software platform company, I tested multiple industry indexes related to information technology, including (Bloomberg identifier in parentheses, total return indexes used if available): S&P/TSX Composite Information Technology GICS Level Sector Total Return Index (STINFTR); S&P/TSX Composite Software & Services GICS Industry Group Total Return Index (STSFTW); S&P/TSX Composite Index

⁴³ Prior to the IPO in the United States, shares of Lightspeed did trade over-the-counter in the U.S.

⁴⁴ In practice, commercially available market indexes are used as proxies for the market index, which in theory contains all publicly traded companies.

Software GICS Industry Total Return Total Index (STSOFTTR); and the S&P/TSX Composite Index Application Software GICS Sub Industry Total Return Index (STAPLSR). For those market and industry indexes for which Lightspeed was a member, I removed Lightspeed's daily return based on its weight in the index at the beginning of each month obtained from Bloomberg.⁴⁵

45. I ran market model test regressions over the Market Efficiency Period. Each of these market model regressions include the S&P/TSX Composite Total Return Index and one of the potential industry indexes, measured net-of-market.⁴⁶

46. To determine which market and industry combination to use, I examined the R-squared (and adjusted R-squared) statistics, the t-statistics for the index coefficients, and the standard errors of the regressions. The R-squared measures how well the variation in the independent variables (the market and the net-of-market industry index returns) explain the variation in the day-to-day stock price returns of Lightspeed.⁴⁷ The adjusted R-squared makes an adjustment to the R-squared statistic to account for the number of independent variables in the model. The t-statistics on the beta coefficient of an index provide a measurement of whether

⁴⁵ According to Bloomberg, Lightspeed was a member of the following market and industry indexes beginning in December 2019 (Bloomberg tickers in parenthesis): S&P/TSX Composite Total Return Index (0000AR); S&P/TSX Composite Information Technology GICS Level Sector Index (STINFT); S&P/TSX Composite Software & Services GICS Industry Group Index (STSFTW); S&P/TSX Composite Index Software GICS Industry Index (STSOFT); and the S&P/TSX Composite Index Application Software GICS Sub Industry Index (STAPLS).

⁴⁶ To eliminate the potential effect of the alleged corrective disclosures on my market model, I include dummy variable on the following impact dates on which alleged fraud-related information was disclosed to the market during the Market Efficiency Period on September 29, 2021, the day after on September 30, 2021, and on November 4, 2021.

⁴⁷ The R-squared statistic is between 0% and 100%, where 0% means that the model explains none of the movement for Lightspeed stock and 100% means it explains all of the movement in in Lightspeed stock. Typically, the R-squared statistic for a stock is 10% to 30%.

there is a non-zero statistical relationship between the index and security returns.⁴⁸ The standard error of the regression provides a measurement of the variability of the residual returns of the model (*i.e.*, the variability of the returns to the security that is not explained by the model).

47. Based on my analysis, along with the S&P/TSX Composite Total Return Index as the market proxy, I chose the S&P/TSX Composite Information Technology GICS Level Sector Total Return Index (STINFTR) (the “Industry Index”) as the industry proxy based on the criteria discussed above.⁴⁹

ii) Time Period for Regression Analysis

48. I customarily use a period of approximately one-year of data to estimate my market model regression. Here, I used an estimation period beginning on December 1, 2020, and ending on November 30, 2021, as the estimation period for my market model, which is a time period that includes the dates of the alleged corrective disclosures on September 29, 2021, and November 4, 2021, and the ten days following the last corrective disclosure. It is preferred that most of the data precede the corrective disclosures. This is done so that the measure of volatility from the market model is representative of the normal volatility at the time of the disclosure.

49. When the estimation period includes an event which reveals some aspect of the alleged disclosure failure, it is customary to use “dummy” or “indicator” variables.⁵⁰ This is because dummy variables for specific days eliminate the effect on market model parameters

⁴⁸ That is, a statistically significant beta coefficient means that by including the index increases the degree to which the model explains the daily price movements.

⁴⁹ I remove the effects of Lightspeed’s returns from the Industry Index.

⁵⁰ Indicator or dummy variables are used frequently in regression analysis of stock returns. The use of dummy variables in regressions is contained in virtually every general statistics book that covers regression analysis and in every econometric book I have ever used. For example, *see* Bruce L. Bowerman, Richard T. O’Connell, and Anne B. Koehler, Forecasting, Time Series, and Regression, Fourth Edition, Brooks/Cole, 2005, pp. 183-193.

from the price effect of the days that are dummied (the dummy variable is set to 1). In securities litigation, a dummy variable is used to remove any effect that the return on a corrective disclosure date may have on the regression results. This ensures that price effects related to misrepresentations influencing the parameters of a market model are minimized.

50. For this analysis, to eliminate the potential effect of the alleged corrective disclosures on my market model, I include dummy variables on the impact dates for which Applicants' alleged misrepresentations and omissions were disclosed to the market on September 29, 2021, the day after on September 30, 2021, and November 4, 2021.⁵¹

51. Exhibit 3 contains my market model parameters that I used for Lightspeed Subordinate Voting Shares.

iii) Computation of Predicted Returns, Excess Returns, and Statistical Significance

52. Exhibit 4 contains the daily statistics that are used in my analysis of economic materiality and market efficiency for Lightspeed's Subordinate Voting Shares.

VI. ECONOMIC EVIDENCE OF MATERIALITY

53. Applicants allege the Defendants misrepresented certain material facts, the inaccuracy of which was first partially revealed on September 29, 2021, in a report by Spruce Point Capital Management LLC titled "*Putting the Brakes on Lightspeed.*" In the Application, the Applicants claim:

This action stems from Defendants' misrepresentations and failure to make periodic or timely disclosures of material facts or changes concerning Lightspeed's business, operations, revenues, earnings,

⁵¹ If the news for alleged corrective disclosure was released after the markets closed, I used the next trading day for my impact date.

earnings management, and internal control systems, including DC&P and ICFR.⁵²

54. Specifically, the Application quoted the Spruce Point Report stating:

We find irrefutable evidence that LSPD overstated its customer count by 85%, while GTV, a measure of payment volume through its platform was overstated by at least 10%. Using the Wayback Machine to scrape customer and GTV counts suggests that LSPD's business was already stalling pre-IPO. LSPD has shifted its discussion from customers to locations:

GTV overstatement identified as early as 2014 and revisions were made pre-IPO, reducing it by ~\$1.5 billion. A former employee told us to be careful of GTV as a metric, and that it is "smoke and mirrors"

Customer overstatement from 50k to 27k verified by two methods, using GTV per customer and ARPU per customer

At its IPO, LSPD's prospectus promoted a Total Addressable Market (TAM) of \$113bn to grow to \$542bn:

Yet, after \$2.5bn spent on acquisitions since its IPO, its recent prospectus showed a current TAM of just \$16 billion (85% less)

A compensation clawback policy was formally adopted at IPO for material misstatement of financials

After its IPO, LSPD laid out its organic growth plan and listed "attracting new merchants" as its first objective in its year end conference call. On the following call it reported 2,000 net new merchants on its system. Thereafter, LSPD stopped disclosing net new merchant adds and it began a string of acquisitions

Hardware margins have recently turned negative and deferred revenue quality has deteriorated. Hardware sales, formerly a profit center, is now a cost center as competition gives it away for free. LSPD used to get upfront payments from customers for long-term contracts and reported long-term deferred revenue. Now, it charges monthly payments and long-term deferred revenue is declining. A

⁵² See Application, ¶ 0.2. "DC&P" means disclosure controls and procedures;" and "ICFR" means internal control over financial reporting." See Application, ¶ 0.1m and 0.1t.

former employee told us definitively LSPD's ARPU has been declining, but management claims it is growing

LSPD initially told investors that operating cash flow was the best way to measure its growth. However, it quickly suspended its cash flow guidance and didn't promptly call out the change to investors

LSPD's income statement disclosures make it difficult to determine organic growth. However, balance sheet allocation from recent acquisitions gives us some insights:

In Q3 2021, LSPD shifted towards larger acquisitions: ShopKeep (\$545m), Upserve (\$412m), and Vend (\$372m). By backing out each acquisition's contributions to deferred revenue and receivables, we find evidence of double digit organic decline. This contrasts with LSPD's claims of 42% organic software and payments revenue growth in its core business

However, recent deals have come at escalating costs, and with little clear path to profitability. A few glaring issues surface:

LSPD has said it won't buy old platforms, but that's exactly what we believe it's done: Example: ShopKeep was near bankruptcy and had limited growth, Upserve's business was in decline, and Vend was falling severely short of its financial expectations

LSPD's ARPU has been bizarrely stable and growing while most acquisitions have come in at lower ARPUs

GTV and customer numbers simply aren't adding up with the recent acquisition of Vend for \$372m. We estimate Vend either overstated transacting customers by 25% or reported customers that didn't exist

Speaking with former employees, we find evidence that not all acquisitions have gone smoothly or met internal expectations, while some acquired platforms have been sunsetted

Yet, LSPD has never taken a goodwill or intangible asset impairment, and recently changed its goodwill testing criteria to make it more liberal. There is a likelihood these changes were made to avoid impairments

LSPD appears to have loosened its revenue recognition disclosure post IPO to allow for earlier recognition. There is evidence of a

revenue restatement post IPO (along with COGS revisions), without explanation

Revenues barely went down during the peak COVID-19 shutdowns, while other peers with retail and hospitality POS businesses saw revenues decline by 20% and DSOs worsen:

LSPD's reported DSOs actually improved during this period

The Company changed its story a year later about customers adding modules in early 2020, to now say in 2021 that customers who cut modules are coming back

LSPD's allowance for bad debts as a % of gross receivables is 21% vs 3%-4% for peers. Despite admitting it tracks churn, CAC and LTV, LSPD doesn't disclose these metrics to investors. We believe it would expose a low quality customer base

LSPD has constantly shifted Key Performance Indicators (KPIs): Notably it has presented three versions of its ARPU definition We believe LSPD hasn't been transparent about accounting revenue recognition changes from "net" to "gross" from recent acquisitions ShopKeep and Upserve that have artificially bolstered revenue growth⁵³

55. For the purposes of this Report, I was asked to assume that the misrepresentations or omissions contained in the Application should have been revealed to investors at least as early as the beginning of the class period.

56. I conclude from my analysis below that these alleged misrepresentations of material facts by Defendants that came to light in the Spruce Point Report and Lightspeed's Q2 2022 MD&A, financial results and updated guidance on November 4, 2021, which resulted in statistically significant stock price declines for Lightspeed, and thus provide objective, scientific economic evidence of materiality.

⁵³ See Application, ¶ 9.

A. September 29-30, 2021 Event

i) *September 29, 2021*

57. Before the market opened on September 29, 2021, Spruce Point Capital Management (“Spruce Point”) issued a press release via *Business Wire* wherein Spruce Point announced a strong sell research opinion and issued a more detailed research report on Lightspeed outlining why they believed the Company faced a 60% to 80% long-term Downside Risk:

Spruce Point Capital Management, LLC (“Spruce Point” or “we” or “us”), a New York-based investment management firm that focuses on forensic research and short-selling, today issued a detailed report entitled “Putting the Brakes on Lightspeed” that outlines why we believe shares of Lightspeed Commerce Inc. (NYSE: LSPD / TSX: LSPD) (“Lightspeed” or the “Company”), face up to 60% to 80% long-term downside risk, or \$22.50--\$45.00 per share.⁵⁴

58. In the same press release, the Spruce Point Report was summarized as follows stating that Spruce Point:

Provides Evidence To Show A Pattern Of Lightspeed’s Material Inflation Of Key Metrics, Including Customer Counts, Gross Transaction Volume And Total Addressable Market

Questions Lightspeed’s Ever-Changing Definition Of Average Revenue Per User, Which The Company Claims Is Growing Despite A Former Employee Telling Us That “Average Revenue Per User As A Whole Has Dropped Significantly”

Reveals Evidence That Lightspeed’s Costly \$2.5 Billion Acquisition Spree Has Been Plagued By Growth Issues And May Be Used As Means To Paper Over The Company’s Declining Double-Digit Organic Growth Challenges And Shrinking Total Addressable Market

⁵⁴ See “Spruce Point Capital Management Announces Investment Opinion: Releases Report and Strong Sell Research Opinion on Lightspeed Commerce Inc.,” *Business Wire*, September 29, 2021, 9:15 am.

Believes Lightspeed's Heavily-Promoted Payments Business Has Experienced Rapid Margin Decay And Discloses Comments From A Former Payments Employee Who Revealed That The Company's Gross Transaction Volume Metric Is "Smoke And Mirrors" And "Not Verified Payments"

Asserts That Lightspeed Will Lose Out To Existing Competitors Like Shopify And New Competitors Like Amazon Due To Its Lagging Ecommerce And Omnichannel Capabilities

Sees 60% To 80% Long-Term Downside Risk To Lightspeed's Share Price

59. News articles attributed the price movement on September 29, 2021, to the Spruce Point Report.

The Globe and Mail:

Lightspeed Commerce Inc. shares were the biggest losers on the TSX Wednesday after a short-seller expressed doubts about the company's customer counts, revenue growth, and competitive position. The company's stock dipped 11.7 per cent, to \$126, wiping out more than \$2-billion in market capitalization.⁵⁵

Bloomberg First Word (9:27 am):

Shares fell as much as 6.67% in U.S. premarket trading⁵⁶

Reuters News (4:46 pm):

The TSX's technology sector fell 1.8%, posting its lowest closing level since July 30. It included a decline of 11.7% for the shares of Lightspeed Commerce Inc after short seller Spruce Point Capital Management issued a "strong sell" opinion on the stock.⁵⁷

Theflvonthewall.com (9:22 am):

⁵⁵ See "More than \$2-billion in market cap zapped as short-seller takes aim at Lightspeed," *The Globe and Mail (online)*, September 29, 2021.

⁵⁶ See "Lightspeed Shares Fall as Spruce Point Sees Downside Risks," *Bloomberg First Word*, September 29, 2021, 9:27 am.

⁵⁷ See "CANADA STOCKS-Toronto market slips as technology falls to 2-month low," *Reuters News*, September 29, 2021, 4:46 pm.

Shares of Lightspeed are down 5% to \$107.00 in pre-market trading.⁵⁸

60. In addition, multiple analyst reports were issued following the release of the Spruce Point Report. These reports also attributed the decline in Lightspeed's Subordinate Voting Share price to the revelations about Lightspeed in the Spruce Point Report:

RBC Capital Markets (9/29/2021):

LSPD is trading down ~10% on the heels of a short report that was released this am.⁵⁹

Barclays (9/29/2021):

We view Lightspeed's share price weakness today as an attractive buying opportunity, following a bearish report from a U.S.-based short seller.⁶⁰

Scotiabank (9/30/2021):

LSPD shares came under pressure yesterday due to the publication of a short report which raised a number of concerns including changes to revenue quality and recognition, changes in KPIs & definitions over time, pre-IPO performance, and margin profile in a key segment.⁶¹

61. Lightspeed Subordinate Voting Shares opened at \$134.99 per share on Wednesday, September 29, 2021, and closed at \$126.00 per share, down \$16.76 per share, or -11.74%, from its previous day's closing price of \$142.76 per share. The excess return on September 29, 2021, was -10.99% and is statistically significant at the 1% level. The excess price change was -\$15.69 (after accounting for market and industry movements). *See Exhibit 4.*

⁵⁸ *See* "09:22 EDT Spruce Point puts 'Strong Sell' on Lightspeed, sees 60%-80% share," Theflyonthewall.com, September 29, 2021, 9:22 am.

⁵⁹ *See* "LSPD under pressure on short report," RBC Capital Markets research report, September 29, 2021.

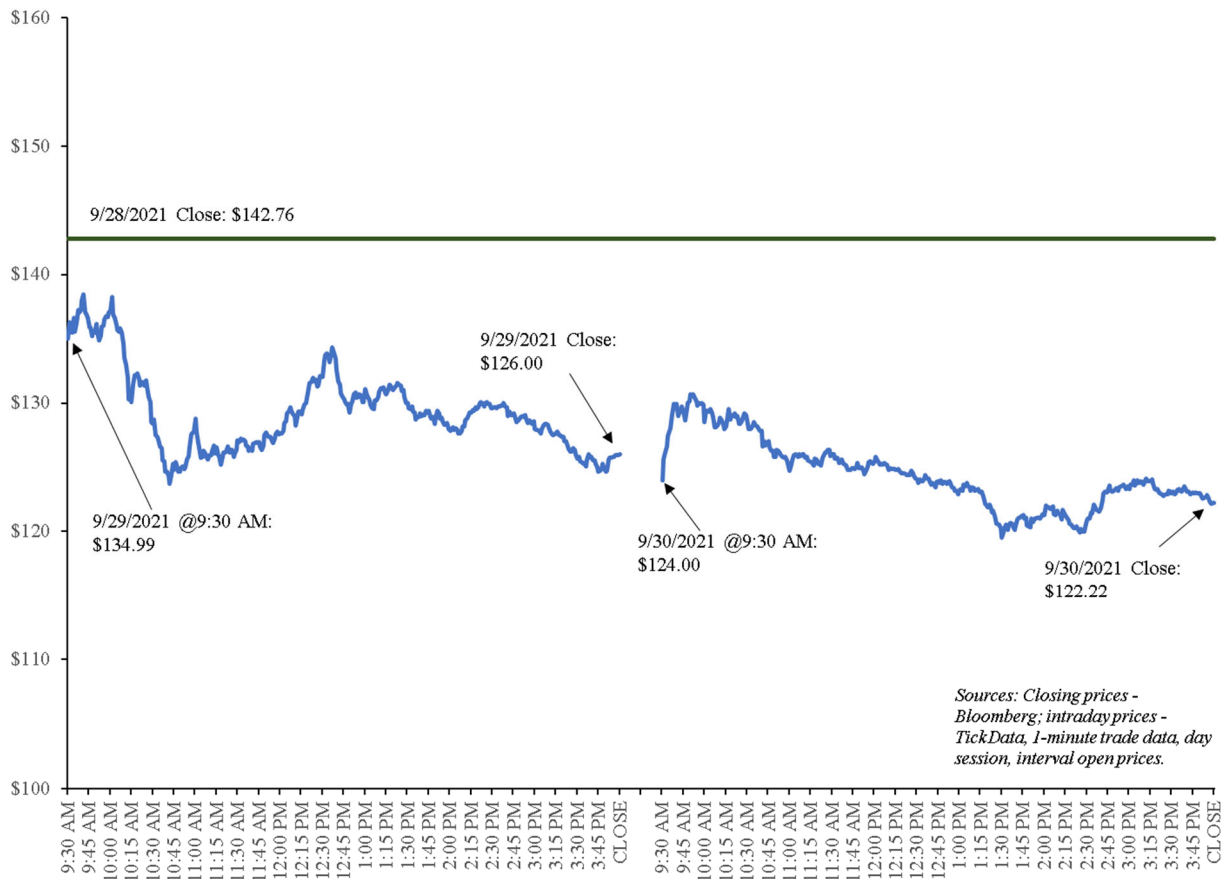
⁶⁰ *See* "Points To Consider Post Sell-Off," Barclays research report, September 29, 2021.

⁶¹ *See* "Perspective On Evolving Business," Scotiabank research report, September 30, 2021.

The daily Canadian trading volume of 5.2 million shares on September 29, 2021, was approximately 4.3 times the average daily Canadian trading volume of 1.2 million shares during the Market Efficiency Period. Lightspeed’s volume on September 29, 2021, was in the 99th percentile of daily volume, or the third largest single daily volume of any day during the Market Efficiency Period.

62. **Figure 3** below is a chart of Lightspeed’s intraday prices on September 29-30, 2021.

FIGURE 3: INTRADAY PRICES SEPTEMBER 29, 2021 – SEPTEMBER 30, 2021



63. The statistically significant price reaction on September 29, 2021, and the extraordinary high trading volume for Lightspeed’s Subordinate Voting Shares means that there

is strong economic evidence that the misrepresentations and omissions alleged in the Application were material.

ii) September 30, 2021

64. After the market close on September 29, 2021, Lightspeed filed a press release with SEDAR responding to the allegations in the Spruce Point Report, calling it “misleading” and that it contained “numerous important inaccuracies”:

Lightspeed Commerce Inc. (NYSE: LSPD) (TSX: LSPD) today commented on the short seller report published today by Spruce Point Capital Management.

The report contains numerous important inaccuracies and mischaracterizations which Lightspeed believes are misleading and clearly intended to benefit Spruce Point, which itself has disclosed that it stands to profit in the event that the stock price of Lightspeed declines. Lightspeed cautions investors to not make decisions based on this report and instead strongly encourages them to consult credible sources, including Lightspeed’s filings with the Canadian securities regulatory authorities and the U.S. Securities and Exchange Commission, prior to making their investment decisions.

Lightspeed is confident in its governance, financial reporting and business practices. Lightspeed has consistently delivered revenue growth since its initial listing on the Toronto Stock Exchange in March 2019. In the quarter ended June 30, 2021, revenue of \$115.9M increased 220% from the prior year quarter with organic software and transaction-based revenue growth of 78%.

The Company will not be providing further comment on the report at this time as it maintains its focus on building its business and delivering exceptional products and services for customers.⁶²

65. Analysts commented on the Company’s after-hours press release:

⁶² See “Lightspeed comments on short seller report,” Lightspeed Press Release filed with SEDAR on September 29, 2021, 6:30 pm. A Form 6-K containing the same information was filed with the SEC on September 29, 2021, 7:30 pm.

Barclays (9/29/2021):

We note that after-market close Lightspeed commented on the report, saying that it contains “numerous important inaccuracies and mischaracterizations”, and reiterated confidence in its governance and reporting practices Lightspeed also said that it would not provide further comment at this time.⁶³

Scotiabank (9/30/2021):

Response from the firm. Lightspeed issued a comment on the short report stating that the report had “numerous important inaccuracies” which were “misleading” and cautioned investors not to make decisions based on the report. The firm reiterated confidence in its governance, financial reporting and business practices and indicated that it has consistently delivered revenue growth since its IPO in 2019 and quoted last quarter’s (Q1/22) revenue growth of 220% (78% organic) to \$116M. The firm indicated that it will not provide further comment to the report at this time.⁶⁴

66. Lightspeed Subordinate Voting Shares opened at \$124.00 per share on Thursday, September 30, 2021, and closed at \$122.22 per share, down \$3.78 per share, or -3.00%, from its previous day’s closing price of \$126.00 per share. The excess return on September 30, 2021, was -2.51% and is not statistically significant at the 5% level. The excess price change was -\$3.17 (after accounting for market and industry movements). *See* Exhibit 4. The daily Canadian trading volume of 2.9 million shares on September 30, 2021, was approximately 2.4 times the average daily Canadian trading volume of 1.2 million shares during the Market Efficiency Period.

67. The two-day excess price change was -\$18.86. The two-day cumulative excess return of -13.23% was highly statistically significant. The return for the following day, October 1, 2021 is not statistically significant, which indicates that the information from the Spruce

⁶³ *See* “Points To Consider Post Sell-Off,” Barclays research report, September 29, 2021.

⁶⁴ *See* “Perspective On Evolving Business,” Scotiabank research report, September 30, 2021, emphasis in original.

Capital Report and Lightspeed's response was impounded in the stock price by September 30, 2021.

68. Therefore, even after accounting for the Company's response to the Spruce Point Report, the net two-day excess price decline of \$18.86 per share is statistically significant. This means that there is strong economic evidence that the information contained in the Spruce Point Report was material. Because Applicants allege that the information in the Spruce Point Report in its entirety constitutes disclosure of prior misrepresentations or disclosure failures, the price reaction to the Spruce Point Report is economic evidence that the misrepresentations were material to investors. I did not find any new, unrelated ("confounding") information disclosed during this event window that might account for some portion of the measured share price decline.

B. November 4, 2021 Event

69. Before the markets opened on Thursday, November 4, 2021, Lightspeed issued a press release disclosing its financial results for the quarter ending September 30, 2021, its second quarter for fiscal year 2022.⁶⁵ Lightspeed also updated its financial outlook for its fiscal third quarter and for the remainder of fiscal year 2022.⁶⁶

70. The updated guidance was below the market consensus and the Applicants allege that the second quarter organic growth of 58% was below the Company's previously guided 78% organic growth provided on September 29, 2021 following the Spruce Point Report.⁶⁷

⁶⁵ See "Lightspeed Announces Second Quarter 2022 Financial Results," *PR Newswire*, November 4, 2021, 7:00 am.

⁶⁶ See "Lightspeed Announces Second Quarter 2022 Financial Results," *PR Newswire*, November 4, 2021, 7:00 am.

⁶⁷ See for example, Application, ¶ 19.17.

Furthermore, the Applicants allege that Lightspeed’s updated guidance reflected the financial consequences of prior misrepresentations and omissions.⁶⁸

71. News articles throughout the day on November 4, 2021 discussed the decline in Lightspeed’s Subordinate Voting Share price:

Bloomberg First Word (10:28 am):

Lightspeed Commerce plunges as much as 32%, the most on record, after posting an adjusted Ebitda loss outlook for the fiscal third quarter and fiscal 2022 that was more than analysts expected.

The company flagged uncertainties in the macro environment including the ongoing effects of Covid-19 in various markets, supply-chain issues that crimped merchants’ ability to stock inventory, and the company’s ability to add new customers due to its supply-chain shortages.⁶⁹

Bloomberg News (11:12 am):

Lightspeed Commerce Inc.’s attempt to dispel concerns raised by a short seller was washed away by a soft earnings outlook and concerns about supply chain problems. The shares fell by almost a third. ...

But the stock plunged on the outlook for the rest of the fiscal year, which was weaker analysts expected, and concerns about the impact of supply-chain woes on customers ahead of the holiday season. Low inventories could translate into smaller transaction volumes for some Lightspeed clients, affecting the company’s revenue. Lightspeed fell as much as 32% in Toronto, the most in the company’s history. It was down 29% to C\$87.49 as of 11:09 a.m.⁷⁰

The Canadian Press (12:30 pm):

Shares in Lightspeed Commerce Inc. plunged more than 30 per cent in early trading after reporting its latest quarterly results.

⁶⁸ See Application, ¶ 19.18.

⁶⁹ See “Lightspeed Posts Record Drop on Wider-Than-Expected Loss View,” *Bloomberg First Word*, November 4, 2021, 10:28 am.

⁷⁰ See “Lightspeed Plummets 32% on Weak Outlook, Supply-Chain Woes,” *Bloomberg News*, November 4, 2021, 11:12 am.

The company says it expects strong year-over-year growth, but warned it is facing uncertainties in the macro environment including the ongoing effects of the pandemic.⁷¹

The Globe and Mail (11/5/2021):

Lightspeed Commerce Inc. stock plummeted more than 27 per cent on Thursday, wiping out more than \$5-billion in market capitalization, after the company released a revenue forecast for the next several months that was below what investors were expecting.

The guidance was part of an earnings announcement that featured significant sales growth and above-forecast results for the company's second fiscal quarter ended Sept. 30. It was also the first extensive public comment for the Montreal-based company since short-seller Spruce Point Capital Management released a critical report on Lightspeed in late September.⁷²

72. In addition, multiple analyst reports were issued following the release of the Lightspeed's second quarter results and updated guidance. These reports also attributed the decline in Lightspeed's Subordinate Voting Share price to Lightspeed's results and updated guidance:

Barclays (11/4/2021):

Lightspeed delivered strong Q2 results Organic subscription and transaction-based revenue growth of 58% remained above the historical ~40% level but, as we saw with other industry players, decelerated from last quarter. The main question for the call will be around Q3 revenue guidance as it came in below consensus. Due to the acquisitions there are many moving parts, but we see this as the key to the share price reaction today. Initial share price reaction could be unfavorable.

The company provided Q3 guidance, with revenue expected to be in the range of \$140-145mn (vs. consensus of \$145mn) and adjusted EBITDA of -\$12mn to -\$10mn (vs. consensus of -\$12mn). For FY22, the company now expects revenue in the range

⁷¹ See "Lightspeed Commerce reports US\$59.1M Q2 loss, revenue nearly triples," *The Canadian Press*, November 4, 2021, 12:30 pm.

⁷² See "Lightspeed shares crushed on sales forecast, wiping out more than \$5-billion in market capitalization," *The Globe and Mail*, November 5, 2021.

of \$520mn-535mn (vs. prior guidance of \$510-530mn and consensus of \$531mn), and adjusted EBITDA of -\$45mn to -\$40mn (vs. prior guidance of -\$35mn, consensus of -\$36mn).⁷³

BMO Capital Markets (11/4/2021):

LSPD reported Q2/22 results that exceeded expectations, while Q3/22 guidance was slightly below consensus, and implied Q4/22 guidance was a more meaningful miss. LSPD has a well-established track record of guiding conservatively, and we believe the stock is overreacting to the guidance miss—particularly in light of the revenue beat and strong organic growth in the quarter.⁷⁴

National Bank of Canada (11/4/2021):

As far as we're concerned, Lightspeed's fiscal Q2 results were solid. No doubt, the action in the stock price suggests otherwise. But given the prominence of a vocal short casting doubt, we can't say the pullback is entirely surprising. The reality is that we've seen similar situations before over our many years covering the sector and know all too well these situations can leave an overhang, even in the face of strong results. Yet, with Lightspeed's results and outlook reinforcing our investment thesis, we think investors who can look through the short overhang have the potential to benefit meaningfully looking ahead.⁷⁵

Raymond James (11/4/2021):

LSPD shares got re-rated significantly lower following its F2Q22 print. The print itself was solid (beat, strong organic, ARPU up q/q). But guidance was not raised to reflect current market constraints (supply chain in retail). We believe the market quickly re-assessed LSPD future growth lower and its trading multiple, accordingly.⁷⁶

⁷³ See "First Take – Strong Q2 – Questions on Guidance," Barclays research report, November 4, 2021.

⁷⁴ See "First Look at Q2/22 Results," BMO Capital Markets research report, November 4, 2021.

⁷⁵ See "We've Seen This Before," National Bank of Canada research report, November 4, 2021.

⁷⁶ See "Show-Me For 2H; Growth Runway Still There Longer Term," Raymond James research report, November 4, 2021.

RBC Capital Markets (11/4/2021):

Overall FQ2/22 came in ahead of our estimates and likely in line with buy-side expectations, but FQ3 & FY22 guidance suggests a slower near-term growth path, as COVID-related lockdowns (heavily influenced by APAC) and supply chain concerns resulted in tempered guidance and thus the stock's weakness today, which we would take advantage of as the underlying fundamentals remain strong and believe the transitory issues will abate within the next 1-2 quarters.⁷⁷

TD Securities (11/4/2021):

The stock is trading down 28% following a quarter where Lightspeed beat expectations. We believe the sell-off is largely a result of the quarter and guidance not exceeding expectations enough. F2022 revenue guidance increased by \$7.5mm, while Q2/F22 revenue beat the midpoint of guidance by \$11.2mm. While we understand the negative sentiment, especially following the short report, we believe the reaction is overdone.⁷⁸

ATB Capital Markets (11/4/2021):

Before market open on Thursday November 4, Lightspeed reported Q2/FY22 results; the stock sold off immediately, and ended the day down 27.6%. We believe organic location growth disappointed investors, despite attractive results across a number of other metrics.⁷⁹

CIBC Capital Markets (11/4/2021):

Lightspeed's second fiscal quarter came in above consensus on nearly every key metric. However, the company provided a muted outlook for the remainder of the fiscal year due to supply chain constraints and COVID-19 shutdowns in the Asia-Pacific region that could have a detrimental impact on the company. Lightspeed also expects some seasonality in its FQ4.⁸⁰

⁷⁷ See "LT fundamentals intact; near-term guidance suffers from transitory issues," RBC Capital Markets research report, November 4, 2021.

⁷⁸ See "Q2/F22 Call Highlights: Overdone," TD Securities research report, November 4, 2021.

⁷⁹ See "Q2/FY22: Locations, Locations, Locations," ATB Capital Markets research report, November 4, 2021.

⁸⁰ See "A Strong FQ2 Offset by Lower Near-term Guidance," CIBC Capital Markets research report, November 4, 2021.

Cormark Securities (11/5/2021):

Q2 results were strong, highlighted by strong payments execution. However, investors were focused on the guidance which incorporated the potential for payments softness in H2 on supply chain/seasonality as well as commentary surrounding rising CAC, adding fuel to the short-report noise.⁸¹

J.P. Morgan (11/5/2021):

UW-rated LSPD closed down 27% (Russell 2000 flat), joining the trend of harsh stock reactions to imperfect results this earnings season. F2Q results beat, but guidance was raised by less on lower expectations for near-term customer location growth and GTV during the key holiday season.⁸²

SMBC Nikko Securities America (11/5/2021):

While we think the move in shares may have been overdone, we need greater transparency and disclosure to help us pin down organic growth in the near-medium term before becoming incrementally constructive and reiterate our Neutral rating.⁸³

73. Lightspeed Subordinate Voting Shares opened at \$94.64 per share on Thursday, November 4, 2021, and closed at \$88.93 per share, down \$33.83 per share, or -27.56%, from its previous day's closing price of \$122.76 per share. The excess return on November 4, 2021, was -29.62% and is statistically significant at the 1% level. The excess price change was -\$36.36 (after accounting for market and industry movements). *See* Exhibit 4. The daily Canadian trading volume of 7.4 million shares on November 4, 2021, was approximately 6.1 times the average daily Canadian trading volume of 1.2 million shares during the Market Efficiency

⁸¹ *See* "Strong Q2/F22 While H2/F22 Guide Disappoints," Cormark Securities research report, November 5, 2021.

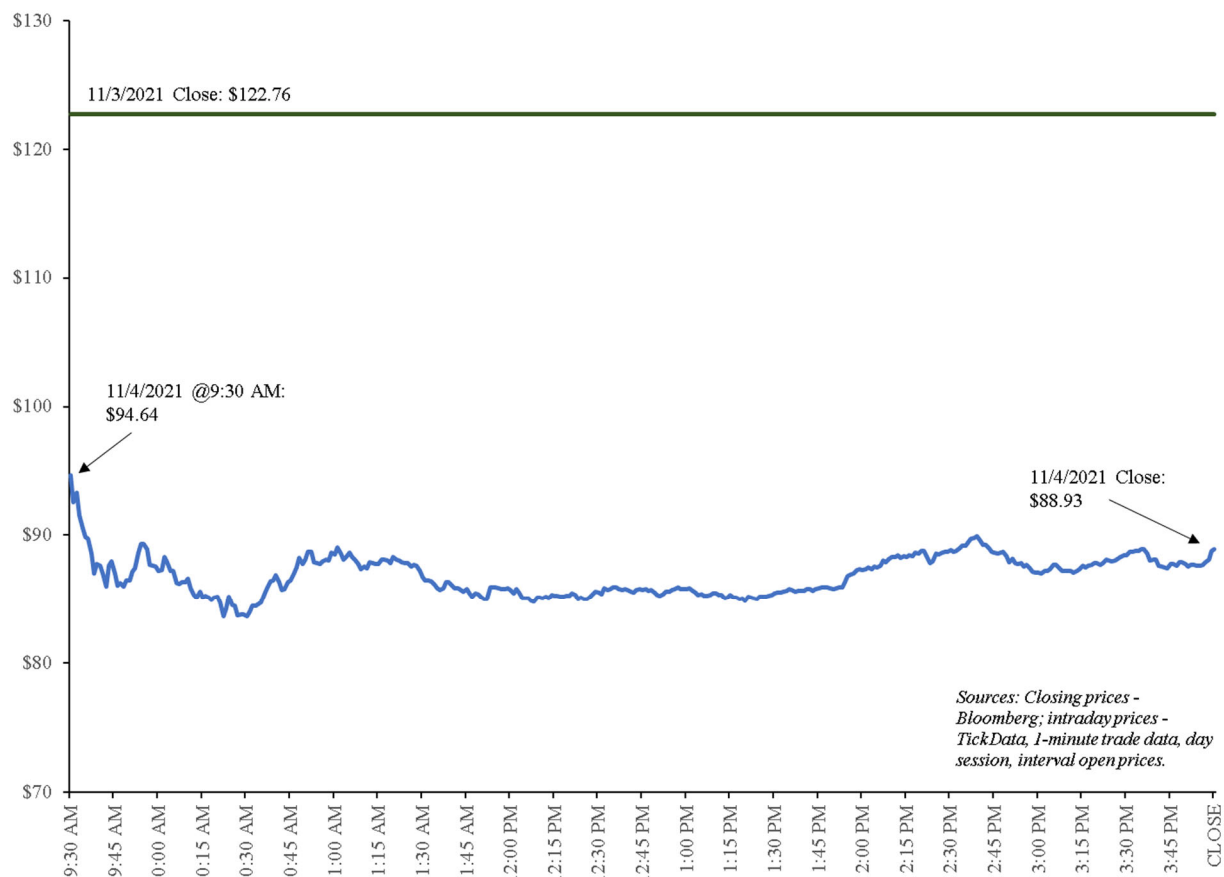
⁸² *See* "F2Q Recap: Lower Expectations on Locations, GTV Drive Harsh Reaction," J.P. Morgan research report, November 5, 2021.

⁸³ *See* "Lightspeed (LSPD) – Blinded by the Light," SMBC Nikko Securities America research report, November 5, 2021, emphasis removed.

Period. Lightspeed’s volume on November 4, 2021, was in the 99th percentile of daily volume, or the second largest single daily volume of any day during the Market Efficiency Period.

74. **Figure 4** below is a chart of Lightspeed’s intraday prices on November 4, 2021.

FIGURE 4: LIGHTSPEED INTRADAY PRICES NOVEMBER 4, 2021



75. The statistically significant price reaction on November 4, 2021, and the extraordinary high trading volume for Lightspeed’s Subordinate Voting Shares means that there is strong economic evidence that the information contained in Lightspeed’s second quarter results and updated guidance was material. Aside from the misrepresentations and omissions alleged in the Application and discussed in the Spruce Point Report and the November 4, 2021

filings, I did not find any new, confounding information disclosed during this event window that might account for some portion of the measured share price decline.

76. **Figure 5** below depicts Lightspeed’s closing prices beginning in March 2019 through May 31, 2022.

FIGURE 5: LIGHTSPEED CLOSING PRICES FROM MARCH 8, 2019 TO MAY 31, 2022



VII. METHODOLOGIES FOR CALCULATING DAMAGES

77. This section discusses the methodologies used for the calculation of damages for Lightspeed Subordinate Voting Shares in accordance with: 1) the statutory formulas set forth in Sections 225.28 and 225.30 of the *Québec Securities Act* (QSA), which are calculated for all Class Members who acquired shares on the secondary market based on the timing of purchases

and sales obtained; 2) the steps to estimating per-share damages for the Civil Code claims; 3) the steps to estimating the aggregate damages under either the statutory claims or the Civil Code claims.

A. Statutory Damages

78. Pursuant to Section 225.28 of the QSA, damages for the shares purchased during a class period and sold after the corrective disclosure are calculated as follows:

225.28. Damages are assessed as follows in favour of a plaintiff that acquired an issuer's securities:

(1) in respect of securities that the plaintiff has not disposed of, assessed damages are to be equal to the number of securities acquired and not disposed of, multiplied by the difference between the average price paid per security (including commissions) and, if the issuer's securities trade on a published market, the trading price of the issuer's securities on the principal market for the 10 trading days following the public correction of the misrepresentation or the disclosure of the material change in the manner required under this Act or the regulations or, if there is no organized market, the amount that the court considers just;

(2) in respect of securities that the plaintiff subsequently disposed of on or before the last of the 10 trading days referred to in paragraph 1, assessed damages are to be equal to the difference between the average price paid for those securities (including commissions) and the price received on the disposition of those securities (without deducting commissions), calculated taking into account the result of hedging or other risk limitation transactions; and

(3) in respect of securities that the plaintiff subsequently disposed of after the last of the 10 trading days referred to in paragraph 1, assessed damages are to be equal to the lesser of (a) the number of those securities, multiplied by the difference determined under paragraph 1; and (b) the difference determined under paragraph 2.

79. The 10-day volume-weighted average price following the September 29, 2021 corrective disclosure is \$118.92 per share.⁸⁴ The 10-day volume-weighted average price following the November 4, 2021 corrective disclosure is \$88.50 per share.⁸⁵ The methodologies contemplated in section 225.28 can be applied to each corrective disclosure to calculate damages suffered at each point in time during the class period.

80. According to Section 225.30, “Assessed damages are not to include any amount that the defendant proves is attributable to a change in the market price of securities that is unrelated to the misrepresentation or the failure to make timely disclosure.”

81. I have not been asked at this time to anticipate what arguments may be raised by the defendants on the estimation of damages. If asked, I will respond to the analyses performed by defendants under Section 225.30, or any other argument linked to my field of expertise.

B. Civil Code Claims

82. I have also been asked how I would estimate the damages per share pursuant to the Applicants’ Civil Code claims. I have been informed by Counsel that Civil Code claims are generally based on an out-of-pocket measure – the difference between the artificial inflation on the date of purchase and the artificial inflation on the date of sale if shares are sold within the class period. If shares are held past the end of the class period after a final disclosure that reveals the wrongdoing, then damages equal the artificial inflation at purchase. Artificial inflation is defined as the difference between the actual stock price and the “true value” of the stock on each day in a class period, where the true value of the stock is its value after accounting for the effect

⁸⁴ Based on the volume and closing prices from September 29, 2021 through October 13, 2021. Source: Bloomberg.

⁸⁵ Based on the volume and closing prices from November 4, 2021 through November 17, 2021. Source: Bloomberg.

of the disclosure failures. Damages experts routinely provide economic evidence to assist the court or jury in determining whether or not certain misrepresented information is material, and the amount of the losses that were caused when such information was revealed to the market.

83. In addition to providing evidence of loss causation and materiality (as discussed above), the results of event study analysis are used to translate the measured stock price reactions from corrective disclosures into damages.

i) Analysis of Information from Disclosures in Event Studies

84. The first step in performing this part of the event study analysis is to identify disclosures that informed market investors of the alleged misconduct and its direct and foreseeable economic effects. Then the results of the statistical analysis discussed above are used to determine whether the identified disclosures resulted in statistically significant stock price declines and to quantify the per-share losses caused by the revelation of alleged disclosure failures. This is the method I used above to assess the materiality of the corrective disclosure.

85. There are several important factors, which I discuss below, that should be considered when identifying which disclosures are relevant in securities litigation.

a) Economic Correspondence

86. As discussed above, in general, losses that result from disclosure failures are manifested as this conduct is revealed through the release of “curative” or “corrective” information that eventually brings the alleged disclosure failure and/or its economic effects to light. If the new information disclosed has sufficient economic correspondence or equivalence to the information alleged to have been previously misrepresented and/or omitted, then the

information is said to “correct,” to some degree, the previous misrepresentation and/or omission.⁸⁶

87. Corrective information can emanate from issuers or from various other sources, including securities analysts, rating agencies, news media, regulators, whistleblowers, and activist shareholders. The market will generally react quickly to the release of new important information. To measure the full effect of a disclosure of complex information will often require the inclusion of subsequent, related or follow-on disclosures, such as reports or statements by expert analysts and additional media reports.

88. In addition to analysis of the disclosures that correct prior disclosure failures, event study analysis can also be used in certain circumstances to examine the stock price reaction on the date of an “affirmative misstatement.” An affirmative misstatement is a statement containing misleading information for which such information was unanticipated or unexpected by the market. Only in circumstances for which there are affirmative misstatements can an event study analysis for the disclosure day containing a misrepresentation provide useful economic evidence.⁸⁷

89. I refer to economic correspondence as the extent to which disclosures of economic information connect or correspond to the alleged misrepresentations (misstated or omitted information) or the reasonably foreseeable economic consequences of those misrepresentations and other activities that together constitute the alleged disclosure failure. Thus, economic correspondence means that the economic content and substance of the

⁸⁶ See Bradford Cornell and R. Gregory Morgan, “Using Finance Theory to Measure Damages in Fraud on the Market Cases,” *UCLA Law Review* 37, June 1990, 883-924, at 894.

⁸⁷ See Frank Torchio, “Proper Event Study Analysis in Securities Litigation,” *The Journal of Corporation Law* 35(1), Fall 2009, 159-168.

information disclosed accords with economic content and substance and the foreseeable economic effects of the alleged misrepresentations and related misconduct.

90. In securities litigation, it is rare to encounter language in a corrective disclosure that is identical to the language describing the alleged misrepresentations.

b) Truth-on-the-Market

91. “Truth-on-the-market” means that the information identified in a specific disclosure that corrects the alleged misrepresentations has already been fully disclosed and, therefore, is already in the total mix of publicly available information and incorporated in the company’s market price.⁸⁸ If the information that corrects the misrepresentations and/or omissions has already been fully disclosed so that the market price has already adjusted to this news, then the same news cannot later cause any stock-price changes, all else held equal.

92. An economic analysis of truth-on-the-market requires that “new” information must be analyzed, not only with regard to the specific language and economic content of a disclosure but, in context of the disclosure.⁸⁹ The economic context is comprised of the relevant facts and circumstances that surround the disclosure, which allows the researcher to determine the likely interpretation of the disclosure by the market.

93. For example, a disclosure by a securities analyst speculating that there will be a takeover of Company A by Company B may contain similar language as a subsequent announcement made by Company A itself two days later when it officially announces the acquisition. The fact that the company made the second announcement, however, may allow the

⁸⁸ See Daniel Fischel, “Use of Modern Finance Theory in Securities Fraud Cases Involving Actively Traded Securities,” *The Business Lawyer* 38, November 1982, 1-20.

⁸⁹ See Lucy Chang, “The Truth-on-the-Market Defense and its Relevance in SEC Enforcement Actions,” *Law and Contemporary Problems* 76(3/4), 2013, 341-365, at 348-349.

market to place significantly more weight on the same news content. Thus, despite the prior disclosure by the securities analyst, the market price would still react to the company's disclosure made two days later. Therefore, it would be incorrect to conclude that the securities analyst's disclosure constituted truth-on-the-market regarding the subsequent takeover announcement. While the content of the two disclosures may be similar, the economic context is certainly not.

94. Similarly, if a company previously disclosed that its financial results may be adversely affected by declining commodity prices but misleads the market regarding the true extent of its financial exposure to declining commodity prices, then it may be incorrect to conclude that the prior disclosure of potential risk exposure constitutes truth-on-the-market. The misstatement can still cause the stock price to be artificially inflated (or deflated) because the degree of economic exposure was withheld.

95. Therefore, economic analysis of truth-on-the-market requires an analysis of the content, context, and source of disclosures so the researcher may correctly determine the interpretation by the market of the disclosure.

c) Confounding Information

96. Confounding information refers to other information that affects the valuation of a stock that enters the market in the event window and is unrelated to the alleged disclosure failure or its foreseeable economic consequences. Such news can have a simultaneous, "confounding" effect on the stock's price.

97. It is important to understand that the multi-factor market model is designed to account for and "net out" from the subject company's stock returns the effects of simultaneous movements in the market and the industry indices, so that the excess return should be largely free of any confounding macro-economic and industry-specific news on that day.

98. If the analyst believes that confounding information outside of market-wide and industry-specific influences may still be present, there are several analyses that may shed light on the potential magnitude of any confounding firm-specific information.

d) Length of Event Window

99. As discussed previously, the length of the event window used to measure the full effect on the stock price of new information is often an important consideration. It is common to use windows of one or two days depending on the information that is being disclosed. But a window of more than two days can also be appropriate in certain circumstances. The determination of the appropriate length of an event window is dependent on case-specific circumstances such as the complexity of the disclosure, the extent of its distribution and dissemination among the investing public, whether or not the defendants are denying or otherwise influencing the market's interpretations of the event, as well as the degree to which additional information from securities analysts and other commentators is forthcoming in subsequent hours or days.

100. If a particular material disclosure continues to generate analyst commentary and additional news stories beyond the first event day and the excess returns are statistically significant in active trading, then the analyst should consider lengthening the event window to include the effects of this continued market response. Otherwise, improperly excluding a day with a significant negative excess return can understate damages, and improperly excluding a day with a significant positive excess return can overstate damages.

*ii) **Techniques Used in Calculating Artificial Inflation***

101. In general, losses per share caused by disclosures of alleged misrepresentations and omissions are translated into artificial inflation per share for each day of a class period. Thus, artificial inflation is generally computed by first starting with the losses measured from the

declines in the stock price over the event window used for each identified corrective disclosure, which generally occur toward the end of a class period. As discussed previously, corrective disclosures are relevant disclosures that reveal or partially reveal the disclosure failures to the market. Artificial inflation for each day is then determined by working backward from the dates of the measured losses from identified corrective disclosures to the beginning of the class period.⁹⁰

a) Methods of Calculating Artificial Inflation

102. There are several different ways or methods to translate the computed losses per share into a computation of artificial inflation per share. Among the commonly used methods are the “constant dollar” (sometimes called the “constant ribbon”) method and the “constant percentage” method.⁹¹

103. Under a constant dollar method, the “dollar per share” measure of losses from each correction of a disclosure failure is applied to all days preceding that corrective disclosure. This approach is better understood by the following example.

104. Assume that the class period is one year ending December 30, 2007. Further assume that there are two corrective disclosures – one impacting the market price on December 14, 2007, and the other impacting the market price on December 31, 2007. The loss per share as measured by the excess price decline on December 14, 2007, is \$2.00, and on December 31,

⁹⁰ See Bradford Cornell and R. Gregory Morgan, “Using Finance Theory to Measure Damages in Fraud on the Market Cases,” *UCLA Law Review* 37, June 1990, 883-924; David Tabak and Chudozie Okongwu, “Inflation Methodologies in Securities Fraud Cases: Theory and Practice,” NERA White Paper, July 2002; David Tabak, “Loss Causation And Damages in Shareholder Class Actions: When It Takes Two Steps To Tango,” NERA White Paper, May 2004; David Tabak, “Inflation and Damages in a Post-*Dura* World,” NERA White Paper, September 2007.

⁹¹ See, e.g., David Tabak and Chudozie Okongwu, “Inflation Methodologies in Securities Fraud Cases: Theory and Practice,” NERA White Paper, July 2002.

2007, the loss per share is \$5.00. Starting from the end of the class period and working backward, the artificial inflation is \$5.00 per share until December 14, 2007, when the artificial inflation becomes \$7.00 per share (or the sum of \$2.00 and \$5.00) on days prior to December 14, 2007. The economic logic is that just before December 14, 2007, all the inflation, as measured by the total losses of \$7.00 per share, is still in the stock price. After the December 14, 2007 disclosure, the market price would then reflect that \$2.00 (of the total \$7.00 artificial inflation) has come out of the stock price and hence inflation goes from \$7.00 to \$5.00 starting on December 14, 2007. Starting on December 31, 2007, the inflation is zero because the remaining \$5.00 of inflation has now come out of the stock price.

105. Using the constant dollar approach, and continuing to work backward from December 14, 2007, artificial inflation will equal a constant \$7.00 per share on each day going back to January 1, 2007, the first day of the class period.

106. The constant percentage method is similar but instead of using the dollar losses, it uses the measured losses as a percentage of the price before a corrective disclosure. This percentage is multiplied by the prices on each day in the class period that precedes the date of the corrective disclosure. Under the constant percentage method, the dollar amount of artificial inflation will generally change on a daily basis with the changes in the stock price. For circumstances in which the stock price is generally declining prior to a corrective disclosure, the constant percentage approach will yield higher artificial inflation than the constant dollar method.

107. The choice between the constant dollar method and the constant percentage method is dependent on case-specific factors relating to the disclosure failure.

b) Methods of Scaling Artificial Inflation

108. There can be circumstances for which it is appropriate and necessary to adjust the artificial inflation that is measured by share losses from the corrective disclosures. This can occur when economic conditions are substantially different at the time of the corrective disclosures relative to the economic conditions that existed during a class period, or if the financial impact of the wrongdoing became greater over time.⁹² In such circumstances, inflation can be scaled by some reasonable parameter to better reflect the economic reality.

109. Scaling methods for artificial inflation generally start with the same dollar losses used for the constant dollar approach (or constant percentage) but then those measured losses are scaled or indexed to a selected economic or accounting variable. Examples of scaling using accounting variables can be seen in cases involving earnings overstatements in which the amount of overstated earnings increase over the class period. In these situations, inflation can be scaled to the amount of overstated earnings.⁹³ Examples of scaling using economic variables include changing expectations about the likelihood of outcomes as in the case of misrepresentations concerning a possible merger. In these situations, inflation can be scaled to the probabilities of such an outcome at various times during the relevant period.

110. One can also scale artificial inflation to economic variables such as industry metrics or bond yields to reflect changes in the broader economy.⁹⁴ Scaling inflation is designed

⁹² See Nicolas I. Crew, Kevin L. Gold, and Marnie A. Moore, “Federal Securities Acts and Areas of Expert Analysis,” in Litigation Services Handbook: The Role of the Financial Expert, Fifth Edition, ed. by Roman L. Weil, Daniel G. Lentz, and David P. Hoffman, Wiley, 2012, 24.13.

⁹³ See, for example, *In re California Micro Devices Sec. Litig.*, 965 F. Supp. 1327 (N.D. Cal. 1997), and *In re Cendant Corp. Sec. Litig.*, 109 F. Supp. 2d 235, 256 (D.N.J. 2000).

⁹⁴ See Declaration of Frank C. Torchio for Settlement Purposes, *In re Countrywide Fin. Corp. Sec. Litig.*, Lead Case No. CV 07-05295 MRP (MANx) (C.D. Cal. June 29, 2010).

to provide a reasonable and objective approach to account for factors that may have affected the degree of inflation during a class period.

C. Aggregate Damages

111. I have also been asked to discuss the methodology I would use to estimate the aggregate damages under either the Statutory claims or the Civil Code claims. For the purposes of this Report, potentially damaged shares are shares purchased during a class period and held by the investor until a stock price decline caused by a correction of a prior alleged misrepresentation or omission. Trading volume cannot be directly used to compute damaged shares because trading volume will also include the turnover of shares purchased in a class period. For example, 10 shares of stock purchased in a class period may create 25 shares of trading volume because those shares turn over (i.e., are purchased and then sold to another investor) during a class period.⁹⁵ But, in this example, only 10 shares would be damaged because that is the total number of shares that were purchased and held by some investor until after the operative price decline. So, regardless of how many times each of the ten shares turned over before that price decline, only ten shares are retained and therefore potentially damaged as defined above.

112. Because damages experts generally do not have access to the trading records for all investors during the class period, the number of damaged shares can be culled out of total trading volume by use of a mathematical model called a trading model. The trading model uses certain algorithms and statistical analyses to separate reported traded volume into shares that were purchased during the class period and held through the last day of the class period (the “retained” volume) from those that were purchased during the class period and sold before the

⁹⁵ See Larry Harris, Trading & Exchanges: Market Microstructure for Practitioners, Oxford University Press, 2003, pp. 487-489.

end of the class period (the “in-and-out” volume). In general, these models can be used to calculate the portion of total trading volume during the class period that is damaged and the portion of trading volume that represents the turnover of shares that is not damaged.⁹⁶

i) Trading Models

113. Historically, the most commonly used trading model has been the proportional trading model, which contains a proportionality assumption about trading turnover or trading propensities. The proportional trading model assumes that the probability of turnover for damaged shares is the same as for other shares in the float, where float is generally defined as the portion of total shares outstanding that were available to have been traded.⁹⁷

114. Since the 1990s, the proportionality assumption has received criticism. The critics of the proportional trading model have characterized the proportionality assumption as an assumption that all investors have exactly the same propensity to trade or, alternatively, the same turnover rate.⁹⁸ To respond to the criticism that the proportional model is not appropriate if

⁹⁶ See, e.g., Dean Furbush and Jeffrey W. Smith, “Estimating the Number of Damaged Shares in Securities Fraud Litigation: An Introduction to Stock Trading Models,” *The Business Lawyer* 49, 1994.

⁹⁷ In the trading model, float is generally calculated by deducting from total shares outstanding, shares held by insiders and shares held by institutional investors deemed to have been held from the start of the class period through each quarter of the class period (and, thus, not damaged).

⁹⁸ Several researchers have advanced and advocated use of a multi-trader model as superior to the proportional trading model and more representative of actual trading behavior, including researchers associated with defense-oriented firms such as NERA and Cornerstone Research. See William H. Beaver and James K. Malernee, “Estimating Damages in Securities Fraud Cases,” Cornerstone Research, 1990 ; William H. Beaver, James K. Malernee and Michael C. Keeley, “Potential Damages Facing Auditors in Securities Fraud Cases,” *Accountants’ Liability: The Need for Fairness, National Legal Center for the Public Interest*, 1994; Marcia Kramer Mayer, “Best-Fit Estimation of Damaged Volume in Shareholder Class Actions: The Multi-Sector, Multi-Trader Model of Investor Behavior,” NERA, Third Edition, October 2000.

there are investors with differing turnover rates, I generally use a multi-trader model to compute damaged share volume and turnover volume.⁹⁹

115. Multi-trader models are similar to the proportional trading model, except that multi-trader models are not restricted by the proportionality assumption discussed earlier. Rather, multi-trader models allow the specification of differing turnover rates for different types of investors.

a) *Volume*

116. The first step in developing inputs for a trading model is to determine reported volume that can be potentially damaged. There are several adjustments to the daily reported volume to determine the volume that can be potentially damaged. I would first exclude insider share purchases and stock repurchases, if any, from the reported volume.

117. The second adjustment involves removing intraday trades (i.e., shares purchased and sold within the same day) because they are not damaged in a model based on daily closing prices. Sources of intraday volume could include trades by high frequency traders, trades by the market maker or other middlemen who buy from one investor and sell to another within the same day, or trades by retail or institutional investors that are bought and sold within the same day.¹⁰⁰

⁹⁹ See Michael Barclay and Frank C. Torchio, "A Comparison of Trading Models Used for Calculating Aggregate Damages in Securities Litigation," *Law and Contemporary Problems*, 64(2&3), Spring/Summer 2001.

¹⁰⁰ See, e.g., Jonathan Brogaard, Terrence Hendershott, and Ryan Riordan, "High-Frequency Trading and Price Discovery," *The Review of Financial Studies* 27(8), 2014, 2267-2306; "The HOT Study Phases I and II of IIROC's Study of High Frequency Trading Activity on Canadian Equity Marketplaces," Investment Industry Regulatory Organization of Canada, December 2012; "Market Quality in a Rapidly Changing Environment," Investment Industry Regulatory Organization of Canada Presentation, November 21, 2013; "Identifying Trading Groups Methodology and Results," Investment Industry Regulatory Organization of Canada, September 2014.

b) Float

118. The next step in developing the inputs required for a trading model is to estimate the “float.” Float, which is defined for the model as the number of shares that were available for trading and potentially damaged, can be estimated by deducting from total shares outstanding, shares held by institutional investors and shares held by insiders.

c) Trading Groups

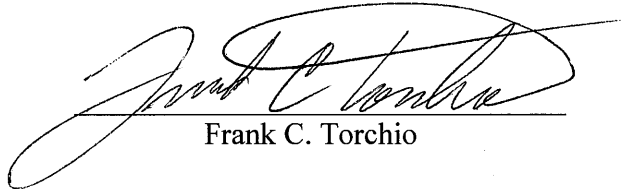
119. As mentioned, I generally use a multi-trader model to estimate when secondary market purchases and sales occurred. A multi-trader model divides the defined float into groups: shares held by traders with higher turnover rates; and shares held by traders with lower turnover rates. Daily trading volume is then apportioned across the trader groups. The fraction of daily volume that is attributed to each trader group is determined by the fraction of the float that is owned by traders in each group and their relative propensity to trade. The relative propensity to trade measures how often a share of one investor group will turn over compared to another investor group.

120. Given the assumptions about the fraction of total float held by each trader group, and the fraction of total volume attributed to each group, the multi-trader model calculates the number of retained shares and in-and-out shares over the class period.

I certify that, to the best of my knowledge and belief:

- the statements of fact contained in this Report are true and correct;
- the reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and are my personal, unbiased professional analyses, opinions, and conclusions;
- I have no present or prospective interest in the parties to this case, and I have no personal interest or bias with respect to the parties involved;
- I have made all the inquiries that I believe are desirable and appropriate and that no matters of significance that I regard as relevant have, to my knowledge, been withheld from the Court; and
- my compensation is not contingent on an action or event resulting from the analyses, opinions, or conclusions in, or the use of, this Report.

June 17, 2022
Date


Frank C. Torchio

MODEL ESTABLISHED BY THE MINISTER OF JUSTICE

**Declaration regarding the carrying out of
the mission of an expert
(article 235 C.C.P.)**

I declare that I will carry out my mission as an expert with objectivity, impartiality and rigour. To enlighten the court in making its decision, I will give my opinion on the basis of my qualifications concerning the points submitted to me, taking into account the facts relating to the dispute or, if my services are required as a court bailiff, I will make an ascertainment describing the materials facts or situation of which I have personal knowledge.

I will, on request, provide the court and the parties with details on my professional qualifications, the progress of my work and, if applicable, the instructions received from a party. I will also comply with the time limits given to me and, if necessary, request the directives from the court that are necessary to carry out my mission.

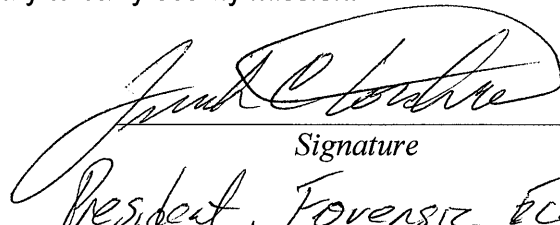

Signature
President, Forensic Economics
Title
June 17, 2022
Date

Exhibit 1

June 2022

FRANK C. TORCHIO, CFA

<u>Business Address:</u>	<u>School Address:</u>	<u>Home Address:</u>
Forensic Economics, Inc. 95 Allens Creek Road Building 2, Suite 303 Rochester, NY 14618 (585) 385-7440 frank@forensiceconomics.com	Simon Business School University of Rochester Carol Simon Hall Rochester, NY 14627 frank.torchio@simon.rochester.edu	68 Knollwood Drive Rochester, NY 14618 (585) 249-9455

Employment and Education

- 9/97-present **Simon Business School**, University of Rochester, Rochester, NY. Adjunct Professor and Former Executive Professor of Finance.
- 8/89-present **Forensic Economics, Inc.** (incorporated in 1993), Rochester, NY. President. Consulting in financial valuations and financial-economic analysis in securities litigation and business disputes.
- 6/82-8/89 **Rochester Gas and Electric Corporation**, Rochester, NY.
- 6/88-8/89 Vice President for Utilicom, an RG&E venture subsidiary.
- 4/87-6/88 Economist - Strategic Planning Department.
- 6/82-3/87 Financial Analyst - Treasury Department.
- 9/80-12/81 **M.B.A., Economics and Finance**, Simon Business School, University of Rochester, Rochester, NY.
- 9/78-8/80 **Insurance Services Office**, New York, NY. Statistician - Commercial Lines.
- 9/74-5/78 **B.A., Mathematics**, Niagara University, Niagara Falls, NY.

Publications

- “Benchmarking Market Efficiency Indicators for Securities Litigation,” with Bharat Bhole and Sunita Surana, 2020 *University of Illinois Law Review Online* 96, May 4, 2020.
- “Effect of Liquidity on Size Premium and its Implications for Financial Valuations,” with Sunita Surana, *The Journal of Business Valuation and Economic Loss Analysis*, Vol. 9, Issue 1, Jan 2014.

Exhibit 1

“Event Study Analysis in Securities Litigation and the Bonferroni Correction,” Working Paper, 2010.

“Proper Event Study Analysis in Securities Litigation,” *The Journal of Corporation Law*, 35:1, 2009, pp.159-168.

“The Circularity of Life in Securities Class Actions,” Working Paper, 2008.

“A Comparison of Trading Models Used for Calculating Aggregate Damages in Securities Litigation,” with Michael Barclay, *Law and Contemporary Problems: Complex Litigation at the Millennium*, Vol. 64, Nos. 2 & 3, Spring/Summer 2001.

“University of Rochester’s Endowment Fund Review,” with Gregg A. Jarrell, University of Rochester Simon School Working Paper, 11/93.

“The Longer-Term Relation Between Accounting Performance and Stock Returns,” with Gregg A. Jarrell, Working Paper - Bradley Policy Research Center, 8/92.

“Calculating Proper Transfer Prices,” with Gregg A. Jarrell, *Public Utilities Fortnightly*, 1/1/91.

“Proper Transfer Pricing Aids Success,” with Gregg A. Jarrell, *Rochester Business Journal*, 7/30/90.

Awards

Awarded the Chartered Financial Analyst (CFA)[®] designation by the CFA Institute (2002).

William E. Simon Graduate School of Business Administration Alumni Service Award (1992).

The Richard L. Rosenthal Fellowship at the University of Rochester (1991).

Activities

Panelist for “Arguing Damages in Securities Litigation,” The Advocates’ Society, April 6, 2022.

Speaker at the Securities Litigation: The Public and Private Enforcement of Securities Law course, University of Toronto Faculty of Law, October 15, 2019 and February 10, 2022.

Presenter on Class Actions – Expert Event Study Evidence in Shareholder Class Actions at Judicial Education Seminar, Adelaide, Australia, March 23, 2018.

Speaker and Panelist on Damages at DRRT’s 9th Annual European Global Investor Protection Conference, Frankfurt, Germany, February 6, 2017.

Speaker and Panelist on Damages at DRRT’s 8th Annual European Global Investor Protection Conference, Frankfurt, Germany, February 1, 2016.

Exhibit 1

Panelist on the Market Efficiency segment of the 2015 Winter Bench and Bar Conference (Feb. 14-21, 2015) sponsored by the *Federal Bar Council*.

Participant at Roundtable Discussion at Duke University Law School composed of 30 judges, academics, practitioners, and policy makers designed to examine the future landscape of corporate and securities law private and public enforcement in the aftermath of recent U.S. Supreme Court and Delaware decisions, September 26, 2014.

Presenter for “Business Litigation and Regulatory Agency Review in the Era of the Roberts Court” for Institute for Law & Economic Policy, April 4, 2014.

Panelist for “Fraud on the Market” for the Federal Bar Council, February 25, 2014.

Speaker at 1st DRRT Conference on securities class actions around the world for institutional investors, Oct. 28-29, 2013

Chairperson and speaker on Transfer Pricing Economics at the International Institute of Manufacturing.

Former adjunct faculty for economics and finance at Rochester Institute of Technology Graduate School of Business.

Member of the National Association of Forensic Economics.

Volunteer for entertaining at nursing homes and senior citizen communities to raise funds for the American Cancer Society.

Expert Testimony and Expert Consulting Experience

Expert Report of Frank C. Torchio in California State Teachers Retirement System et al. vs. Vivendi SE in the International Chamber of the Paris Court of Appeal, RG Numbers 21/19200, RG 22/01623 and RG22/01711 (June 15, 2022).

Expert Report of Frank C. Torchio in Tarique Plummer v. Nuvei Corporation et al. before the Superior Court of Justice, Province of Quebec, District of Montreal, File No. 500-06-001173-216 (June 15, 2022).

Testimony of Frank C. Torchio in Pedro Ramirez, Jr., Individually and on Behalf of All Others Similarly Situated v. Exxon Mobil Corporation et al. in the United States District Court for the Northern District of Texas, Dallas Division, Civil Action No. 3:16-CV-3111-K (June 7, 2022).

Exhibit 1

Expert Report of Frank C. Torchio in Nykredit Portefølje Administration A/S, Oklahoma Firefighters Pension and Retirement System, Oklahoma Law Enforcement Retirement System, Oklahoma Police Pension and Retirement System, Oklahoma City Employee Retirement System, Police and Fire Retirement System of the City of Detroit v. ProPetro Holding Corp., Dale Redman, Jeffrey Smith, Ian Denholm, and Spencer D. Armour III, in the United States District Court for the Western District of Texas, Midland/Odessa Division, Civil Action No. MO:19-CV-217-DC (May 27, 2022).

Affidavit of Frank C. Torchio in re: Renren Inc. Derivative Litigation, in the Supreme Court of the State of New York, County of New York, Index No. 653594/2018 (March 2, 2022).

Affidavit of Frank C. Torchio in re: Howard Green, et al. v. Canadian Imperial Bank of Commerce, et al., in Ontario Superior Court of Justice, Court File No: CV-08-359335 (December 28, 2021).

Testimony of Frank Torchio in Lei Guan, Novamax Financial Group Corp., 10109266 Canada, Inc., Juan Du, Zhuhua Xu, Weixuan Zhou, Wenbo Guo, Mofei Li, and Ruyu Yan vs. EDE Capital Inc. in the Matter of an Arbitration (November 8, 2021).

Witness Statement of Frank Torchio in Lei Guan, Novamax Financial Group Corp., 10109266 Canada, Inc., Juan Du, Zhuhua Xu, Weixuan Zhou, Wenbo Guo, Mofei Li, and Ruyu Yan vs. EDE Capital Inc. in the Matter of an Arbitration (October 1, 2021).

Trial Testimony of Frank C. Torchio in Daniel Kleeberg, Lisa Stein, and Aubrey Hays v. Lester Eber, Alexbay, LLC f/k/a Lester Eber, LLC., Elliot W. Gumaer, Wendy Eber, et al. in the United States District Court for the Southern District of New York, Civil Action No. 16-CV-9517(LAK) (KDP) (September 22, 2021).

Declaration of Frank C. Torchio in Daniel Kleeberg, Lisa Stein, and Aubrey Hays v. Lester Eber, Alexbay, LLC f/k/a Lester Eber, LLC., Elliot W. Gumaer, Wendy Eber, et al. in the United States District Court for the Southern District of New York, Civil Action No. 16-CV-9517(LAK) (KDP) (September 6, 2021).

Expert Reply Report of Frank C. Torchio in re: BofI Holdings, Inc. Securities Litigation, in the United States District Court for the Southern District of California, Case No. 3:15-cv-02324-GPC-KSC (July 23, 2021).

Deposition of Frank C. Torchio in re: BofI Holdings, Inc. Securities Litigation, in the United States District Court for the Southern District of California, Case No. 3:15-cv-02324-GPC-KSC (June 18, 2021).

Expert Report of Frank C. Torchio in re: BofI Holdings, Inc. Securities Litigation, in the United States District Court for the Southern District of California, Case No. 3:15-cv-02324-GPC-KSC (May 28, 2021).

Expert Reply Report of Frank C. Torchio in re: Howard Green, et al. v. Canadian Imperial Bank of Commerce, et al., in Ontario Superior Court of Justice, Court File No: CV-08-359335 (May 21, 2021).

Exhibit 1

Expert Report of Frank C. Torchio in re: Howard Green, et al. v. Canadian Imperial Bank of Commerce, et al., in Ontario Superior Court of Justice, Court File No: CV-08-359335 (October 6, 2020).

Expert Report of Frank C. Torchio in Allianz Global Investors, et al. v. Toshiba Corporation in the Tokyo District Court, Civil Affairs 8, No. 2016 (Wa) No. 20446 Damages Claim Case (August 27, 2020).

Joint Report of Share Price Inflation/Valuation Experts in Mastoris & Another v DSHE Holdings Limited (receivers and managers appointed) (in liquidation) & Others, Supreme Court of New South Wales Proceedings No. 52431 of 2018 and Findlay & Another v DSHE Holdings Limited (receivers and managers appointed) (in liquidation) & Others, Supreme Court of New South Wales Proceedings No. 294069 of 2017 (June 19, 2020).

Expert Report of Frank C. Torchio in Excel Texel Pty LTD V. Quintis LTD in the Federal Court of Australia, New South Wales District Registry, General Division, No. NSD1983/2017 (June 12, 2020).

Expert Response Report of Frank C. Torchio in Mastoris & Another v DSHE Holdings Limited (receivers and managers appointed) (in liquidation) & Others, Supreme Court of New South Wales Proceedings No. 52431 of 2018 and Findlay & Another v DSHE Holdings Limited (receivers and managers appointed) (in liquidation) & Others, Supreme Court of New South Wales Proceedings No. 294069 of 2017 (April 16, 2020).

Expert Response Report of Frank C. Torchio in Mastoris & Another v DSHE Holdings Limited (receivers and managers appointed) (in liquidation) & Others, Supreme Court of New South Wales Proceedings No. 52431 of 2018 and Findlay & Another v DSHE Holdings Limited (receivers and managers appointed) (in liquidation) & Others, Supreme Court of New South Wales Proceedings No. 294069 of 2017 (December 19, 2019).

Trial Testimony of Frank C. Torchio in Larry Crowley v WorleyParsons Limited ACN 096 090 158 in the Federal Court of Australia, New South Wales District Registry, General Division, Case No. NSD 1292 of 2015 (September 19-20, 2019).

Deposition of Frank C. Torchio in Daniel Kleeberg, Lisa Stein, and Aubrey Hays v. Lester Eber, Alexbay, LLC f/k/a Lester Eber, LLC., Elliot W. Gumaer, Wendy Eber, et al. in the United States District Court for the Southern District of New York, Civil Action No. 16-CV-9517(LAK) (KDP) (August 23, 2019).

Expert Reply Report of Frank C. Torchio in Tajdin Abdulla v. Canadian Solar Inc., Shawn Xiaohua Qu, and Arthur Chien in the Superior Court of Justice, Ontario, Canada, Court File No. C-710-10 (August 19, 2019).

Joint Report of the Economic Experts in Larry Crowley v WorleyParsons Limited ACN 096 090 158 in the Federal Court of Australia, New South Wales District Registry, General Division, Case No. NSD 1292 of 2015 (August 4, 2019).

Exhibit 1

Joint Report of the Economic Experts in Larry Crowley v WorleyParsons Limited ACN 096 090 158 in the Federal Court of Australia, New South Wales District Registry, General Division, Case No. NSD 1292 of 2015 (July 26, 2019).

Expert Report of Frank C. Torchio in Clime Capital Limited v. UGL Pty Limited in the Federal Court of Australia, Victoria Registry, No. VID 1390/2017 (June 28, 2019).

Expert Report of Frank C. Torchio in Daniel Kleeberg, Lisa Stein, and Aubrey Hays v. Lester Eber, Alexbay, LLC f/k/a Lester Eber, LLC., Elliot W. Gumaer, Wendy Eber, et al. in the United States District Court for the Southern District of New York, Civil Action No. 16-CV-9517(LAK) (KDP) (June 28, 2019).

Expert Report of Frank C. Torchio in Mastoris & Another v DSHE Holdings Limited (receivers and managers appointed) (in liquidation) & Others, Supreme Court of New South Wales Proceedings No. 52431 of 2018 and Findlay & Another v DSHE Holdings Limited (receivers and managers appointed) (in liquidation) & Others, Supreme Court of New South Wales Proceedings No. 294069 of 2017 (June 23, 2019).

Expert Report of Frank C. Torchio in Tajdin Abdulla v. Canadian Solar Inc., Shawn Xiaohua Qu, and Arthur Chien in the Superior Court of Justice, Ontario, Canada, Court File No. C-710-10 (May 27, 2019).

Deposition of Frank C. Torchio in Pedro Ramirez, Jr., Individually and on Behalf of All Others Similarly Situated v. Exxon Mobil Corporation et al. in the United States District Court for the Northern District of Texas, Dallas Division, Civil Action No. 3:16-CV-3111-K (March 20, 2019).

Expert Rebuttal Report of Frank C. Torchio in Pedro Ramirez, Jr., Individually and on Behalf of All Others Similarly Situated v. Exxon Mobil Corporation et al. in the United States District Court for the Northern District of Texas, Dallas Division, Civil Action No. 3:16-CV-3111-K (March 1, 2019).

Expert Report of Frank C. Torchio in Clime Capital Limited v. UGL Pty Limited in the Federal Court of Australia, Victoria Registry, No. VID 1390/2017 (February 5, 2019).

Expert Response Report of Frank C. Torchio in Larry Crowley v WorleyParsons Limited ACN 096 090 158 in the Federal Court of Australia, New South Wales District Registry, General Division, Case No. NSD 1292 of 2015 (January 31, 2019).

Expert Report of Frank C. Torchio in Pedro Ramirez, Jr., Individually and on Behalf of All Others Similarly Situated v. Exxon Mobil Corporation et al. in the United States District Court for the Northern District of Texas, Dallas Division, Civil Action No. 3:16-CV-3111-K (December 21, 2018).

Expert Response Report of Frank C. Torchio in Inabu Pty Ltd as trustee for Alidas Superannuation Fund CIMIC Group Limited in Federal Court of Australia, Australian Capital Territory District Registry, General Division, Case No. ACD 93 of 2016 (November 28, 2018).

Exhibit 1

Expert Report of Frank C. Torchio in Mastoris & Another v DSHE Holdings Limited (receivers and managers appointed) (in liquidation) & Others, Supreme Court of New South Wales Proceedings No. 52431 of 2018 and Findlay & Another v DSHE Holdings Limited (receivers and managers appointed) (in liquidation) & Others, Supreme Court of New South Wales Proceedings No. 294069 of 2017 (October 31, 2018).

Expert Supplemental Report of Frank C. Torchio in Larry Crowley v WorleyParsons Limited ACN 096 090 158 in the Federal Court of Australia, New South Wales District Registry, General Division, Case No. NSD 1292 of 2015 (October 18, 2018).

Expert Report of Frank C. Torchio in Inabu Pty Ltd as trustee for Alidas Superannuation Fund CIMIC Group Limited in Federal Court of Australia, Australian Capital Territory District Registry, General Division, Case No. ACD 93 of 2016 (June 29, 2018).

Expert Report of Frank C. Torchio in David Scott Hopkins (As Trustee of the David Hopkins Super Fund) v. Macmahon Holdings Limited in Federal Court of Australia, New South Wales District Registry, General Division, Case No. NSD 1346 of 2015 (April 6, 2018).

Expert Report of Frank C. Torchio in Larry Crowley v WorleyParsons Limited ACN 096 090 158 in the Federal Court of Australia, New South Wales District Registry, General Division, Case No. NSD 1292 of 2015 (April 2, 2018).

Expert Report of Frank C. Torchio in Findlay & Anor v DSHE Holdings Limited & Ors in the Supreme Court of New South Wales, Equity Division, Case No. 2017/294069 (February 27, 2018).

Trial Testimony of Frank C. Torchio in The Lloyds/HBOS Litigation in the High Court of Justice, Chancery Division, London, England, Case No. HC 2014 002092, HC 2014 001010, HC 2014 001387, HC 2014 001388, HC 2014 001389, HC 2015 000103, and HC 2015 000105 (December 21, 2017).

Statement of Opinions By Mr Torchio and Dr Unni in The Lloyds/HBOS Litigation in the High Court of Justice, Chancery Division, London, England, Case No. HC 2014 002092, HC 2014 001010, HC 2014 001387, HC 2014 001388, HC 2014 001389, HC 2015 000103, and HC 2015 000105 (October 6, 2017).

Expert Report of Frank C. Torchio in Isabel Newson v. OnX USA, LLC, et al. in the United States District Court, District of New Jersey (Newark Vicinage), Civil Action No. 3:16-CV-0276-MAS-DEA (August 14, 2017).

Expert Report of Frank C. Torchio in The Lloyds/HBOS Litigation in the High Court of Justice, Chancery Division, London, England, Case No. HC 2014 002092, HC 2014 001010, HC 2014 001387, HC 2014 001388, HC 2014 001389, HC 2015 000103, and HC 2015 000105 (June 22, 2017).

Testimony of Frank C. Torchio at hearing in Deka Investment GmbH v. Santander Consumer USA Holdings Inc. in the United States District Court, Northern District of Texas, Dallas Division, Case No. 3:15-CV-2129-K (May 31, 2017).

Exhibit 1

Expert Report of Frank C. Torchio in Claire R. McDonald v. Home Capital Group, Inc., Gerald M. Soloway, Robert Morton, and Robert J. Blowes in the Superior Court of Justice, Ontario, Canada, Court File No. 349/17CP (May 16, 2017).

Expert Report of Frank C. Torchio in Hemlock Semiconductor Corporation v. Kyocera Corporation and Hemlock Semiconductor, LLC v. Kyocera Corporation in the United States District Court, Eastern District of Michigan, Northern Division, Case No. 15-CV-11236-BC (March 15, 2017).

Deposition of Frank C. Torchio in Deka Investment Gmbh v. Santander Consumer USA Holdings Inc. in the United States District Court, Northern District of Texas, Dallas Division, Case No. 3:15-CV-2129-K (January 31, 2017).

Expert Report of Frank C. Torchio in Deka Investment Gmbh v. Santander Consumer USA Holdings Inc. in the United States District Court, Northern District of Texas, Dallas Division, Case No. 3:15-CV-2129-K (December 2, 2016).

Joint Report of the Economic Experts in Blairgowrie Trading Ltd v. Allco Finance Group Ltd in the Federal Court of Australia, New South Wales District Registry, General Division, No. NSD 1609 of 2013 (October 30, 2016).

Expert Report of Frank C. Torchio in Caason Investments Pty Limited v. Simon Xiao Fan Cao & ORS in the Federal Court of Australia, New South Wales District Registry, General Division, No. NSD 1558 of 2012 (October 20, 2016).

Expert Response Report of Frank C. Torchio in Blairgowrie Trading Ltd v. Allco Finance Group Ltd in the Federal Court of Australia, New South Wales District Registry, General Division, No. NSD 1609 of 2013 (September 22, 2016).

Deposition of Frank C. Torchio in Terry Wright v. Detour Gold Corporation and Gerald Panneton. in the Superior Court of Justice, Ontario, Canada, Court File No.: CV-14-504010 (September 21, 2016).

Expert Report of Frank C. Torchio in Celso Catucci and Nicole Aubin, Es Qualité Trustee of the Aubin Family Trust v. Valeant Pharmaceuticals International Inc. et al., before the Superior Court of Justice, Province of Quebec, District of Montreal, Court File No. 500-06-000783-163 (July 21, 2016).

Expert Report of Frank C. Torchio in Le Mouvement d'Education et de Defense des Actionnaires (Medac), and Marc Lamoureux, as a person designated for Le Mouvement d'Education et de Defense des Actionnaires (Medac) v. Manulife Financial Corporation, et al., before the Superior Court of Justice, Province of Quebec, District of Quebec City, Court File No. 200-06-000117-096 (July 8, 2016).

Joint Report of the Valuation Experts in Tobias Mitic v. OZ Minerals Limited in the Federal Court of Australia, Victoria Registry, No. VID114/2014 (June 3, 2016).

Exhibit 1

Joint Report of the Economic Experts in Tobias Mitic v. OZ Minerals Limited in the Federal Court of Australia, Victoria Registry, No. VID114/2014 (May 25, 2016).

Expert Response Report of Frank C. Torchio in Tobias Mitic v. OZ Minerals Limited in the Federal Court of Australia, Victoria Registry, No. VID114/2014 (April 8, 2016).

Expert Report of Frank C. Torchio in Blairgowrie Trading Ltd v. Allco Finance Group Ltd in the Federal Court of Australia, New South Wales District Registry, General Division, No. NSD 1609 of 2013 (March 17, 2016).

Deposition of Frank C. Torchio in Bausch & Lomb Inc., v. Faezeh Mona Sarfarazi, Western District of New York, Case No. 6:09-cv-06041-EAW (February 29, 2016).

Expert Response Report of Frank C. Torchio in Earglow Pty Limited v. Newcrest Mining Ltd in the Federal Court of Australia, Victoria District Registry, No. VID 406 of 2014 (January 21, 2016).

Supplemental Affidavit of Frank C. Torchio in Terry Wright v. Detour Gold Corporation and Gerald Panneton, in the Superior Court of Justice, Ontario, Canada, Court File No.: CV-14-504010 (January 8, 2016).

Declaration of Frank C. Torchio in Securities and Exchange Commission against CR Intrinsic Investors, et al., United States District Court for the Southern District of New York, No. 12 Civ. 8466 (VM) (December 10, 2015).

Trial Testimony of Frank C. Torchio in United States of America v. Donald L. Blankenship, United States District Court for the Southern District of West Virginia, Case No. 5:14-cr-00244 (November 9, 2015).

Expert Report of Frank C. Torchio in Tobias Mitic v. OZ Minerals Limited in the Federal Court of Australia, Victoria Registry, No. VID114/2014 (October 27, 2015).

Expert Report of Frank C. Torchio in Earglow Pty Limited v. Newcrest Mining Ltd in the Federal Court of Australia, Victoria District Registry, No. VID 406 of 2014 (October 6, 2015).

Expert Report of Frank C. Torchio in Bausch & Lomb Inc., v. Faezeh Mona Sarfarazi, Western District of New York, Case No. 6:09-cv-06041-EAW (September 30, 2015).

Joint Memorandum of Experts in Ipay Express Pte Limited & Ors v Macquarie Equities Limited in the Federal Court of Australia, New South Wales District Registry, NSD508/2012 (August 21, 2015).

Trial Testimony of Frank C. Torchio in Niall Iain MacFirbhisgh et al. v. CI Trustees & Executors Limited et al. in the Royal Court of the Island of Jersey, File no: 2009/448, (July 21, 2015).

Exhibit 1

Expert Rebuttal Report of Frank C. Torchio in David M. Loritz v. Exide Technologies, et al., Central District of California, Case Nos. 2:13-cv-02607-SVW-E, 2:13-cv-03194-SVW-E , and 2:13-cv-03991-SVW-E (May 26, 2015).

Joint Memorandum of Experts in Niall Iain MacFirbhisgh et al. v. CI Trustees & Executors Limited et al. in the Royal Court of the Island of Jersey, File no: 2009/448, (April 28, 2015).

Deposition of Frank C. Torchio in David M. Loritz v. Exide Technologies, et al., Central District of California, Case Nos. 2:13-cv-02607-SVW-E, 2:13-cv-03194-SVW-E , and 2:13-cv-03991-SVW-E (April 17, 2015).

Expert Report of Frank C. Torchio in Niall Iain MacFirbhisgh et al. v. CI Trustees & Executors Limited et al. in the Royal Court of the Island of Jersey, File no: 2009/448, (April 10, 2015).

Expert Report of Frank C. Torchio in David M. Loritz v. Exide Technologies, et al., Central District of California, Case Nos. 2:13-cv-02607-SVW-E, 2:13-cv-03194-SVW-E , and 2:13-cv-03991-SVW-E (March 30, 2015).

Deposition of Frank C. Torchio in Jacqueline Coffin and Sandra Lowry v. Atlantic Power Corp. et al. in the Superior Court of Justice, Ontario, Canada, Court File No.: CV-13-480939 -00CP (March 19 and 24, 2015).

Reply Affidavit of Frank C. Torchio in Jacqueline Coffin and Sandra Lowry v. Atlantic Power Corp. et al. in the Superior Court of Justice, Ontario, Canada, Court File No.: CV-13-480939 -00CP (January 14, 2015).

Expert Reply Report of Frank C. Torchio in Ipay Express Pte Limited & Ors v Macquarie Equities Limited in the Federal Court of Australia, New South Wales District Registry, NSD508/2012 (November 25, 2014).

Affidavit of Frank C. Torchio in Terry Wright v. Detour Gold Corporation and Gerald Panneton. in the Superior Court of Justice, Ontario, Canada, Court File No.: CV-14-504010 (November 4, 2014).

Affidavit of Frank C. Torchio in Jacqueline Coffin and Sandra Lowry v. Atlantic Power Corp. et al. in the Superior Court of Justice, Ontario, Canada, Court File No.: CV-13-480939 -00CP (November 3, 2014).

Declaration of Frank C. Torchio in In Re Gentiva Securities Litigation in the United States District Court, Eastern District of New York, Case No. 10-CV-5064 (ADS)(SIL) (October 15, 2014).

Expert Report of Frank C. Torchio in Countrywide Financial Corp. Mortgaged-Backed Securities Litigation, Central District of California Western Division, Case No. ML-02265-MRP (September 8, 2014).

Exhibit 1

Deposition of Frank C. Torchio in Bluegreen Corporation Shareholder Litigation in the Circuit Court of the 15th Judicial Circuit in and for Palm Beach County, Florida, Case No. 502011CA018111 (September 3, 2014).

Cross-Examination of Frank C. Torchio in The Trustees of the Labourers' Pension Fund of Central and Eastern Canada, The Trustees of the International Union of Operating Engineers Local 793 Pension Plan for Operating Engineers in Ontario, Sjunde AP-Fonden, David Grant and Robert Wong v. Sino-Forest Corporation, et al. in the Superior Court of Justice, Ontario, Canada, Court File No.: CV-11-431153-00CP (July 18, 2014).

Supplemental Affidavit of Frank C. Torchio in Scott Bardwell v. Martinrea International, Inc. et al. in the Superior Court of Justice, Ontario, Canada, Court File No.: CV13-20310 CP (July 9, 2014).

Affidavit of Frank C. Torchio in Scott Bardwell v. Martinrea International, Inc. et al. in the Superior Court of Justice, Ontario, Canada, Court File No.: CV13-20310 CP (June 13, 2014).

Expert Report of Frank C. Torchio Responding to Bluegreen Experts in Bluegreen Corporation Shareholder Litigation in the Circuit Court of the 15th Judicial Circuit in and for Palm Beach County, Florida, Case No. 502011CA018111 (June 3, 2014).

Expert Report of Frank C. Torchio in Ipay Express Pte Limited & Ors v Macquarie Equities Limited in the Federal Court of Australia, New South Wales District Registry, NSD508/2012 (May 29, 2014).

Expert Report of Frank C. Torchio in Bluegreen Corporation Shareholder Litigation in the Circuit Court of the 15th Judicial Circuit in and for Palm Beach County, Florida, Case No. 502011CA018111 (May 19, 2014).

Declaration of Frank C. Torchio in The City of Farmington Hills Employees Retirement System and the Board of Trustees of the Arizona State Carpenters Pension Trust Fund and the Arizona State Carpenters Defined Contribution Trust Fund, Individually and on Behalf of All Others Similarly Situated v. Wells Fargo Bank, N.A. in the United States District Court, Northern District of Minnesota, Court File No. 0:10-CV-04372-DWF/JJG (March 13, 2014).

Expert Report of Frank C. Torchio in In Re Charles Hodges and Mark Hodges v. Waters & Ors and Wellington Capital Limited v. Waters & Anor in the Federal Court of Australia, New South Wales District Registry, No. NSD 324 of 2009 and No. NSD 557 of 2013 (December 23, 2013).

Affidavit of Frank C. Torchio in The Trustees of the Labourers' Pension Fund of Central and Eastern Canada, The Trustees of the International Union of Operating Engineers Local 793 Pension Plan for Operating Engineers in Ontario, Sjunde AP-Fonden, David Grant and Robert Wong v. Sino-Forest Corporation, et al. in the Superior Court of Justice, Ontario, Canada, Court File No.: CV-11-431153-00CP (November 7, 2013).

Exhibit 1

Deposition of Frank C. Torchio in Trustees of the Mill Wright Regional Council of Ontario Pension Fund v. Celestica Inc., Stephen W. Delaney and Anthony P. Puppi; Nabil Berzi v. Celestica Inc., Stephen W. Delaney and Anthony P. Puppi; and Huacheng Xing v. Celestica Inc., Stephen W. Delaney and Anthony P. Puppi, in the Superior Court of Justice, Ontario, Canada, Court File No.: CV-11-424069-00CP (October 24, 2013).

Declaration of Kenneth N. Kotz and Frank C. Torchio in In Re Fannie Mae Securities Litigation in the United States District Court, District of Columbia, Consolidated Civil Action No. 1:04-CV-01639 (October 11, 2013).

Affidavit of Frank C. Torchio in Jacqueline Coffin and Sandra Lowry v. Atlantic Power Corp. et al. in the Superior Court of Justice, Ontario, Canada, Court File No.: CV-13-480939 -00CP (October 2, 2013).

Deposition of Frank C. Torchio in David D. Schumann, Keith W. Schumann and Heidi Schumann v. Douglas D. Schumann and P-Q Controls, Inc. in the United States District Court, District of Connecticut, Civil Action No. 3:11-cv-00888 (WWE) (September 24, 2013).

Amended Expert Report of Frank C. Torchio in David D. Schumann, Keith W. Schumann and Heidi Schumann v. Douglas D. Schumann and P-Q Controls, Inc. in the United States District Court, District of Connecticut, Civil Action No. 3:11-cv-00888 (WWE) (September 11, 2013).

Deposition of Frank C. Torchio in Tuckerbrook Alternative Investments, LP, Tuckerbrook Global Special Situations GP, LLC, and Tuckerbrook S/B Global Special Situations Fund, LP. v. Alkek & Williams, Ltd, Alkek and Margaret Alkek Foundation, and Scott B. Seaman in the Superior Court Department, State of Connecticut, Stamford-Norwalk County, Docket No. CV-11-6010952-S (September 6, 2013).

Expert Report of Frank C. Torchio in David D. Schumann, Keith W. Schumann and Heidi Schumann v. Douglas D. Schumann and P-Q Controls, Inc. in the United States District Court, District of Connecticut, Civil Action No. 3:11-cv-00888 (WWE) (September 3, 2013).

Deposition of Frank C. Torchio in Stichting Pensioenfond ABP, et al. v. Bank of America Corp., et al., No. 10-CV-2284 (PKC); Thomas P. DiNapoli, Comptroller of the State of New York, as Administrative Head of the New York State and Local Retirement Systems and as Sole Trustee of the New York State Common Retirement Fund, et al. v. Bank of America Corp., et al., No. 10-CV-5563 (PKC); Steve R. Graber, individually and as assignee of claims of the SRG 2008 Trust v. Bank of America Corp., et al., No. 11-CV-7070 (PKC); and Schwab S&P 500 Index Fund, et al. v. Bank of America Corp., et al., No. 11-CV-7779 (PKC) in the United States District Court, Southern District of New York (July 25, 2013).

Exhibit 1

Rebuttal Expert Report of Frank C. Torchio in Stichting Pensioenfonds ABP, et al. v. Bank of America Corp., et al., No. 10-CV-2284 (PKC); Thomas P. DiNapoli, Comptroller of the State of New York, as Administrative Head of the New York State and Local Retirement Systems and as Sole Trustee of the New York State Common Retirement Fund, et al. v. Bank of America Corp., et al., No. 10-CV-5563 (PKC); Steve R. Graber, individually and as assignee of claims of the SRG 2008 Trust v. Bank of America Corp., et al., No. 11-CV-7070 (PKC); and Schwab S&P 500 Index Fund, et al. v. Bank of America Corp., et al., No. 11-CV-7779 (PKC) in the United States District Court, Southern District of New York (July 8, 2013).

Expert Report of Frank C. Torchio in Tuckerbrook Alternative Investments, LP, Tuckerbrook Global Special Situations GP, LLC, and Tuckerbrook S/B Global Special Situations Fund, LP. v. Alkek & Williams, Ltd, Alkek and Margaret Alkek Foundation, and Scott B. Seaman in the Superior Court Department, State of Connecticut, Stamford-Norwalk County, Docket No. CV-11-6010952-S (June 17, 2013).

Expert Report of Frank C. Torchio in Stichting Pensioenfonds ABP, et al. v. Bank of America Corp., et al., No. 10-CV-2284 (PKC); Thomas P. DiNapoli, Comptroller of the State of New York, as Administrative Head of the New York State and Local Retirement Systems and as Sole Trustee of the New York State Common Retirement Fund, et al. v. Bank of America Corp., et al., No. 10-CV-5563 (PKC); Steve R. Graber, individually and as assignee of claims of the SRG 2008 Trust v. Bank of America Corp., et al., No. 11-CV-7070 (PKC); and Schwab S&P 500 Index Fund, et al. v. Bank of America Corp., et al., No. 11-CV-7779 (PKC) in the United States District Court, Southern District of New York (May 24, 2013).

Declaration of Frank C. Torchio in The City of Farmington Hills Employees Retirement System Individually and on Behalf of All Others Similarly Situated v. Wells Fargo Bank, N.A. in the United States District Court, Northern District of Minnesota, Court File No. 0:10-CV-04372-DWF/JJG (May 6, 2013).

Rebuttal Declaration of Frank C. Torchio in K B Partners I, L.P., Individually and on Behalf of All Others Similarly Situated v. Pain Therapeutics, Inc., Remi Barbier, Nadav Friedman, and Peter S. Roddy in the United States District Court, Western District of Texas, Case No. 1-11-CV-01034 (SS) (April 22, 2013).

Affidavit of Frank C. Torchio in Elizabeth Fricke And Maryanne Mallinos v. Nevsun Resources Ltd. et al. in the Superior Court of Justice, Ontario, Canada, Court File No.: 12-CV-17903 (April 19, 2013).

Deposition of Frank C. Torchio in The City of Farmington Hills Employees Retirement System Individually and on Behalf of All Others Similarly Situated v. Wells Fargo Bank, N.A. in the United States District Court, Northern District of Minnesota, Court File No. 0:10-CV-04372-DWF/JJG (March 22, 2013).

Expert Report of Frank C. Torchio in Olympus Corporation Securities Litigation (Japan) in the Tokyo District Court Civil Affairs Department (March 14, 2013).

Exhibit 1

Deposition of Frank C. Torchio in K B Partners I, L.P., Individually and on Behalf of All Others Similarly Situated v. Pain Therapeutics, Inc., Remi Barbier, Nadav Friedman, and Peter S. Roddy in the United States District Court, Western District of Texas, Case No. 1-11-CV-01034 (SS) (March 14, 2013).

Deposition of Frank C. Torchio in AFA Livförsäkringsaktiebolag et al. v. Agnico-Eagle Mines Limited et al. in the Superior Court of Justice, Ontario, Canada, Court File No.: CV-12-448410-00CP (March 1, 2013).

Updated Expert Report of Frank C. Torchio in The City of Farmington Hills Employees Retirement System Individually and on Behalf of All Others Similarly Situated v. Wells Fargo Bank, N.A. in the United States District Court, Northern District of Minnesota, Court File No. 0:10-CV-04372-DWF/JJG (February 11, 2013).

Declaration of Frank C. Torchio in K B Partners I, L.P., Individually and on Behalf of All Others Similarly Situated v. Pain Therapeutics, Inc., Remi Barbier, Nadav Friedman, and Peter S. Roddy in the United States District Court, Western District of Texas, Case No. 1-11-CV-01034 (SS) (January 22, 2013).

Expert Report of Frank C. Torchio in The City of Farmington Hills Employees Retirement System Individually and on Behalf of All Others Similarly Situated v. Wells Fargo Bank, N.A. in the United States District Court, Northern District of Minnesota, Court File No. 0:10-CV-04372-DWF/JJG (January 18, 2013).

Trial Testimony of Frank C. Torchio in In re Wehle, File Nos. 2006-1463, 2006-1463/A, 2006-1463/B, 2007-2911 in the Surrogate's Court, Monroe County, State of New York (January 16, 2013).

Affidavit of Frank C. Torchio in The Trustees of the Labourers' Pension Fund of Central and Eastern Canada, The Trustees of the International Union of Operating Engineers Local 793 Pension Plan for Operating Engineers in Ontario, Sjunde AP-Fonden, David Grant and Robert Wong v. Sino-Forest Corporation, et al. in the Superior Court of Justice, Ontario, Canada, Court File No.: CV-11-431153-00CP (January 11, 2013).

Expert Report of Frank C. Torchio in David Hoppaugh, Individually and On Behalf of All Others Similarly Situated v. K12 Inc., Ronald J. Packard, and Harry T. Hawks, in the United States District Court, Eastern District of Virginia, Alexandria Division, Civ. A. No. 1:12-cv-00103-CMH-IDD (December 23, 2012).

Affidavit of Frank C. Torchio in Trustees of the Mill Wright Regional Council of Ontario Pension Fund v. Celestica Inc., Stephen W. Delaney and Anthony P. Puppi; Nabil Berzi v. Celestica Inc., Stephen W. Delaney and Anthony P. Puppi; and Huacheng Xing v. Celestica Inc., Stephen W. Delaney and Anthony P. Puppi, in the Superior Court of Justice, Ontario, Canada, Court File No.: CV-11-424069-00CP (December 14, 2012).

Declaration of Frank C. Torchio in In re General Electric Co. Sec. Litig., in the United States District Court, Southern District of New York, Case No. Civ. No. 09-CIV-1951 (DLC), (December 3, 2012).

Exhibit 1

Declaration of Frank C. Torchio in In re General Electric Co. Sec. Litig., in the United States District Court, Southern District of New York, Case No. Civ. No. 09-CIV-1951 (DLC), (November 2, 2012).

Declaration of Frank C. Torchio in United States Securities and Exchange Commission, v. A.C.L.N., Ltd., Abderrazak “Aido” Labiad, Joseph J.H. Bisschops, Alex De Ridder, Boo International (Cyprus), Minas Ioannou, Christakis Ioannou, Emerald Sea Marine, Inc., Pearlrose Holdings International, S.A., and Scott Investments S.A. in the United States District Court, Southern District of New York, Case No. 02CV7988 (September 27, 2012).

Affidavit of Frank C. Torchio in E. Eddy Bayens, John Sinclair, Luc Fortin, Pierre Racicot and Stanley Shortt, in their capacity as Trustees of the Musicians, Pension Fund of Canada v. Kinross Gold Corporation, Tye W. Burt, Paul H. Barry, Glen J. Masterman and Kenneth G. Thomas in the Superior Court of Justice, Ontario, Canada, Court File No.: CY-12-44865100CP (September 27, 2012).

Deposition of Frank C. Torchio in In re Wehle, File Nos. 2006-1463, 2006-1463/A, 2006-1463/B, 2007-2911 in the Surrogate’s Court, Monroe County, State of New York (August 30, 2012).

Affidavit of Frank C. Torchio in AFA Livförsäkringsaktiebolag et al. v. Agnico-Eagle Mines Limited et al. in the Superior Court of Justice, Ontario, Canada, Court File No.: CV-12-448410-00CP (August 28, 2012).

Deposition of Frank C. Torchio in Marvin Neil Silver and Cliff Cohen v. IMAX Corporation, Richard L. Gelfond, Bradley J. Wechsler, Francis T. Joyce, Neil S. Braun, Kenneth G. Copland, Garth M. Girvan, David W. Leebron and Kathryn A. Gamble in the Superior Court of Justice, Ontario, Canada, Court File No.: CV-06-3257-00 (June 19, 2012).

Affidavit of Frank C. Torchio in The Trustees of the Labourers’ Pension Fund of Central and Eastern Canada, The Trustees of the International Union of Operating Engineers Local 793 Pension Plan for Operating Engineers in Ontario, Sjunde AP-Fonden, David Grant and Robert Wong v. Sino-Forest Corporation, et al. in the Superior Court of Justice, Ontario, Canada, Court File No.: CV-11-431153-00CP (June 19, 2012).

Affidavit of Frank C. Torchio in Support of Motion to Correct Judgment in Tull N. Gerreald, Jr., et al. v. Just Care, Inc. in the Court of Chancery of the State of Delaware, C.A. No. 5233-VCP (June 12, 2012).

Affidavit of Frank C. Torchio in Gerald Czamanske v. Canadian Royalties et al. in the Superior Court of Justice, Ontario, Canada, Court File No.: CV-10-405156 00CP (June 1, 2012).

Affidavit of Frank C. Torchio in Marvin Neil Silver and Cliff Cohen v. IMAX Corporation, Richard L. Gelfond, Bradley J. Wechsler, Francis T. Joyce, Neil S. Braun, Kenneth G. Copland, Garth M. Girvan, David W. Leebron and Kathryn A. Gamble in the Superior Court of Justice, Ontario, Canada, Court File No.: CV-06-3257-00 (May 9, 2012).

Exhibit 1

Expert Report of Frank C. Torchio in Response to Defendants' Experts in In Re MoneyGram International, Inc. Securities Litigation in the Court of Chancery of the State of Delaware, C.A. No. 6387-VCL (April 18, 2012).

Deposition of Frank C. Torchio in Kehoe Component Sales, Inc. d/b/a Pace Electronics Products v. Best Lighting Products, Inc. in the United States District Court Southern District of Ohio Eastern Division, C.A. No. 2:08-cv-752 (April 4, 2012).

Affidavit of Frank C. Torchio in The Trustees of the Labourers' Pension Fund of Central and Eastern Canada and the Trustees of the International Union of Operating Engineers Local 793 Pension Plan for Operating Engineers in Ontario v. Sino-Forest Corporation, et al. in the Superior Court of Justice, Ontario, Canada, Court File No.: CV-11-431153-00CP (April 2, 2012).

Second Supplemental Expert Report of Frank C. Torchio in In Re MoneyGram International, Inc. Securities Litigation in the Court of Chancery of the State of Delaware, C.A. No. 6387-VCL (February 24, 2012).

Supplemental Report of Frank C. Torchio in Kehoe Component Sales, Inc. d/b/a Pace Electronics Products v. Best Lighting Products, Inc. in the United States District Court Southern District of Ohio Eastern Division, C.A. No. 2:08-cv-752 (February 9, 2012).

Affidavit of Frank C. Torchio in The Trustees of the Labourers' Pension Fund of Central and Eastern Canada and the Trustees of the International Union of Operating Engineers Local 793 Pension Plan for Operating Engineers in Ontario v. Sino-Forest Corporation, et al. in the Superior Court of Justice, Ontario, Canada, Court File No.: CV-11-431153-00CP (November 30, 2011).

Expert Report of Frank C. Torchio in Kehoe Component Sales, Inc. d/b/a Pace Electronics Products v. Best Lighting Products, Inc. in the United States District Court Southern District of Ohio Eastern Division, C.A. No. 2:08-cv-752 (November 23, 2011).

Expert Report of Frank C. Torchio in In Re Talecris Biotherapeutics Holdings Shareholder Litigation in the Court of Chancery of the State of Delaware, C.A. No. 5614-VCL (November 22, 2011).

Rebuttal Report of Frank C. Torchio in In Re Appraisal of The Aristotle Corporation in the Court of Chancery of the State of Delaware, C.A. No. 5137-VCS, John Crawford, et al. v. The Aristotle Corporation in the Court of Chancery of the State of Delaware, C.A. No. 5361-VCS (September 1, 2011).

Consultant in Centro Securities Litigation in the Federal Court of Australia, Victoria District Registry, No. 366 of 2008 (August 28, 2011).

Expert Report of Frank C. Torchio in In Re Appraisal of The Aristotle Corporation in the Court of Chancery of the State of Delaware, C.A. No. 5137-VCS, John Crawford, et al. v. The Aristotle Corporation in the Court of Chancery of the State of Delaware, C.A. No. 5361-VCS (August 1, 2011).

Exhibit 1

Trial Testimony of Frank C. Torchio in Tull N. Gerreald, Jr., et al. v. Just Care, Inc. in the Court of Chancery of the State of Delaware, C.A. No. 5233-VCP (July 19, 2011).

Deposition of Frank C. Torchio in Tull N. Gerreald, Jr., et al. v. Just Care, Inc. in the Court of Chancery of the State of Delaware, C.A. No. 5233-VCP (June 14, 2011).

Expert Rebuttal Report of Frank C. Torchio in Tull N. Gerreald, Jr., et al. v. Just Care, Inc. in the Court of Chancery of the State of Delaware, C.A. No. 5233-VCP (May 31, 2011).

Supplemental Expert Report of Frank C. Torchio in Willie R. Pittman, et al. v. MoneyGram International, Inc., et al. in the Court of Chancery of the State of Delaware, C.A. No. 6387-VCL (May 13, 2011).

Expert Report of Frank C. Torchio in Tull N. Gerreald, Jr., et al. v. Just Care, Inc. in the Court of Chancery of the State of Delaware, C.A. No. 5233-VCP (May 9, 2011).

Expert Report of Frank C. Torchio in Willie R. Pittman, et al. v. MoneyGram International, Inc., et al. in the Court of Chancery of the State of Delaware, C.A. No. 6387-VCL (May 6, 2011).

Deposition of Frank C. Torchio in In Re Fannie Mae Securities Litigation in the United States District Court, District of Columbia, Consolidated Civil Action No. 1:04-CV-01639 (February 10-11, 2011).

Expert Rebuttal Report of Frank C. Torchio in In Re Fannie Mae Securities Litigation in the United States District Court, District of Columbia, Consolidated Civil Action No. 1:04-CV-01639 (December 20, 2010).

Trial Testimony of Frank C. Torchio in New York State Electric & Gas Corporation v. FirstEnergy Corp. in the United States District Court for the Northern District of New York, Civil Action No.3:03-CV-0438 (DEP) (December 13, 2010).

Affidavit of Frank C. Torchio in New York State Electric & Gas Corporation v. FirstEnergy Corp. in the United States District Court for the Northern District of New York, Civil Action No.3:03-CV-0438 (DEP) (November 30, 2010).

Supplemental Affidavit of Frank C. Torchio in In Re The Student Loan Corporation Litigation in the Court of Chancery of the State of Delaware, Consolidated C.A. No. 5832-VCL (November 29, 2010).

Affidavit of Frank C. Torchio in In Re The Student Loan Corporation Litigation in the Court of Chancery of the State of Delaware, Consolidated C.A. No. 5832-VCL (November 19, 2010).

Declaration of Frank C. Torchio in In Re Countrywide Financial Corporation Securities Litigation in the United States District Court, Central District of California, Western Division, Lead Case No. CV 07-05295 MRP (MANx) (October 6, 2010).

Exhibit 1

Expert Report of Frank C. Torchio in In Re Fannie Mae Securities Litigation in the United States District Court, District of Columbia, Consolidated Civil Action No. 1:04-CV-01639 (September 14, 2010).

Expert Report of Frank C. Torchio and James L. Canessa in Beechwood Restorative Care Center, et al. v. Laura E. Leeds, et al. in the United States District Court, Western District of New York, Case No. 02-CV-6235 (August 25, 2010).

Declaration of Frank C. Torchio for Settlement Purposes in In Re Countrywide Financial Corporation Securities Litigation in the United States District Court, Central District of California, Western Division, Lead Case No. CV 07-05295 MRP (MANx) (June 29, 2010).

Expert Report of Frank C. Torchio in Franz Schliecher, et al. vs. Gary C. Wendt, William J. Shea, Charles B. Chokel and James S. Adams in the United States District Court for the Southern District of Indiana, Indianapolis Division, No.02 CV 1332 TWP-TAB (June 28, 2010).

Deposition of Frank C. Torchio in New York State Electric & Gas Corporation v. FirstEnergy Corp. in the United States District Court for the Northern District of New York, Civil Action No.3:03-CV-0438 (DEP) (June 24, 2010).

Deposition of Frank C. Torchio in Alexander Dobbie and Michael Benson v. Arctic Glacier Income Fund, Arctic Glacier Inc., Richard L. Johnson, Keith W. McMahon, Douglas A. Bailey, James E. Clark, Robert J. Nagy, Gary A. Filmon and David R. Swaine in the Superior Court of Justice, Ontario, Canada, No. 59725 (June 4, 2010).

Expert Report of Frank C. Torchio in New York State Electric & Gas Corporation v. FirstEnergy Corp. in the United States District Court for the Northern District of New York, Civil Action No.3:03-CV-0438 (DEP) (May 28, 2010).

Affidavit of Frank C. Torchio in Alexander Dobbie and Michael Benson v. Arctic Glacier Income Fund, Arctic Glacier Inc., Richard L. Johnson, Keith W. McMahon, Douglas A. Bailey, James E. Clark, Robert J. Nagy, Gary A. Filmon and David R. Swaine in the Superior Court of Justice, Ontario, Canada, No. 59725 (April 30, 2010).

Declaration of Frank C. Torchio in Akanthos Capital Management, LLC; Aria Opportunity Fund Ltd.; AQR Absolute Return Master Account, L.P.; CC Arbitrage, Ltd; CNH CA Master Account, L.P.; Galileo Partners Fund I, L.P.; GLG Investments plc: sub-fund GLG Global Convertible UCITS Fund; GLG Investments IV plc: sub-fund GLG Global Convertible UCITS (Distributing) Fund; GLG Global Convertible Fund plc; GLG Market Neutral Fund; Highbridge International LLC; Kamunting Street Master Fund, Ltd.; KBC Financial Products (Cayman Islands) Ltd.; Kingstown Partners, L.P.; Pandora Select Advisors, LLC; Parsoon Opportunity Fund Ltd.; Tenor Opportunity Master Fund, Ltd.; Whitebox Advisors, LLC; Whitebox Combined Advisors, LLC; Whitebox Convertible Arbitrage Advisors, LLC; and Whitebox Hedged High Yield Advisors, LLC, v CompuCredit Holdings Corporation in the United States District Court for the Northern District of Georgia, No. 1:10-CV-844-TCB (April 28, 2010).

Exhibit 1

Expert Report of Frank C. Torchio in Eugene Singer v. Anthony Dubreville and i2 Technologies, Inc. (Nominal Defendant) in the Court of Chancery of the State of Delaware, Civil Action No. 3310-CC (December 28, 2009).

Testimony of Frank C. Torchio at hearing in Irwin J. Barkan & D&D Barkan, LLC v. Dunkin Donuts, Inc., and Baskin-Robbins USA, Co. in the United States District Court For The District of Rhode Island, No. 05-50-L (December 18, 2009).

Arbitration Testimony of Frank C. Torchio in Mid-Lakes Management Corp. as fiduciary for Mid-Lakes Management Employee Pension Trust v. Eagle Steward Wealth Management, LCC, Arbitration Proceeding in Monroe County, New York (November 23, 2009).

Arbitration Testimony of Frank C. Torchio in SEI, Societa Esplosivi Industriali Spa v. L3-KDI Precision Products, Inc., International Chamber of Commerce, Geneva, Switzerland, ICC Case No. 15513/FM111 (November 5-6, 2009).

Expert Report of Frank C. Torchio in Mid-Lakes Management Corp. as fiduciary for Mid-Lakes Management Employee Pension Trust v. Eagle Steward Wealth Management, LCC, Arbitration Proceeding in Monroe County, New York (October 22, 2009).

Declaration of Frank C. Torchio in Reba Bagley, Scott Silver, Tolan Beck, and Rod Huges vs. KB Home et al. in the United States District Court Central District of California Western Division, No. CV-07-01754 DSF (Ssx) (October 1, 2009).

Expert Report of Frank C. Torchio in SEI, Societa Esplosivi Industriali Spa v. L3-KDI Precision Products, Inc., International Chamber of Commerce, Geneva, Switzerland, ICC Case No. 15513/FM111 (September 9, 2009).

Expert Report of Frank C. Torchio in Marsh & McLennan Companies, Inc. Securities Litigation in the United States District Court for the Southern District of New York, Civil Action No. 04-CV-08144 (SWK) (July 27, 2009).

Deposition of Frank C. Torchio in Irwin J. Barkan & D&D Barkan, LLC v. Dunkin Donuts, Inc., and Baskin-Robbins USA, Co. in the United States District Court For The District of Rhode Island, No. 05-50-L (July 8, 2009 and July 10, 2009).

Trial Testimony of Frank C. Torchio in The Matter of the Judicial Settlement of the Final Account of JPMorgan Chase Bank (successor by merger to The Chase Manhattan Bank, successor by merger to The Chase Manhattan Bank, N.A., successor by merger to The Chase Lincoln First Bank, N.A., successor in interest to Lincoln First Bank, N.A., successor by consolidation to Lincoln First Bank of Rochester) as Trustee for the Trust under Article "EIGHTH-B" of the Will of BLANCHE D. HUNTER, deceased, for the benefit of PAMELA TOWNLEY CREIGHTON, now also deceased in the Surrogate's Court of the State of New York, County of Westchester, File No. 30-1973 B (July 2, 2009).

Supplemental Declaration of Frank C. Torchio in Vivendi Universal, S.A. Securities Litigation in the United States District Court for the Southern District of New York, No. 02 Civ. 5571 (RJH) (HBP) (June 29, 2009).

Exhibit 1

Expert Report of Frank C. Torchio in Irwin J. Barkan & D&D Barkan, LLC v. Dunkin Donuts, Inc., and Baskin-Robbins USA, Co. in the United States District Court For The District of Rhode Island, No. 05-50-L (June 16, 2009).

Declaration of Frank C. Torchio in Vivendi Universal, S.A. Securities Litigation in the United States District Court for the Southern District of New York, No. 02 Civ. 5571 (RJH) (HBP) (April 29, 2009).

Expert Report of Frank C. Torchio in Clover Pool Supply Co., Inc. V. Central NY News, Inc. in the United States District Court Western District of New York, No. 05-CV-6372(T)P (December 18, 2008).

Affidavit of Frank C. Torchio in Virgin Islands Government Employees' Retirement System v. UnionBanCal Corp., et al. in the Court of Chancery of the State of Delaware, Civil Action No. 3976-VCS (November 25, 2008).

Supplemental Affidavit of Frank C. Torchio in BP Prudhoe Bay Royalty Trust Securities Litigation in the United States District Court, Western District of Washington at Seattle, Case No. C06-1505 MJP (November 21, 2008).

Expert Rebuttal Report of Frank C. Torchio in Dr. Bernhard Sabel v. Titan Pharmaceuticals, Inc., et al. in the Court of Chancery of the State of Delaware in and for New Castle County, Civil Action No. 1186-N (October 20, 2008).

Deposition of Frank C. Torchio in MBNA Corporation Securities Litigation in the United States District Court, District of Delaware, Case No. 1:05-CV-00272-GMS (October 8, 2008).

Expert Report of Frank C. Torchio in Dr. Bernhard Sabel v. Titan Pharmaceuticals, Inc., et al. in the Court of Chancery of the State of Delaware in and for New Castle County, Civil Action No. 1186-N (October 6, 2008).

Expert Rebuttal Report of Frank C. Torchio in MBNA Corporation Securities Litigation in the United States District Court, District of Delaware, Case No. 1:05-CV-00272-GMS (September 8, 2008).

Affidavit of Frank C. Torchio in BP Prudhoe Bay Royalty Trust Securities Litigation in the United States District Court, Western District of Washington at Seattle, Case No. C06-1505 MJP (September 5, 2008).

Affidavit of Frank C. Torchio in Vesta Insurance Group, Inc. Securities Litigation in the United States District Court for the Northern District of Alabama, Southern Division, Case No. CV 98-AR-1407KOB (August 4, 2008).

Expert Report of Frank C. Torchio in MBNA Corporation Securities Litigation in the United States District Court, District of Delaware, Case No. 1:05-CV-00272-GMS (July 15, 2008).

Affidavit in St. Paul Travelers Securities Litigation II in the United States District Court of Minnesota, 04-CV-4697-JRT-FLN (June 26, 2008).

Exhibit 1

Deposition of Frank C. Torchio in Vesta Insurance Group, Inc. Securities Litigation in the United States District Court for the Northern District of Alabama, Southern Division, Case No. CV 98-AR-1407KOB (June 16, 2008).

Deposition of Frank C. Torchio in Vivendi Universal, S.A. Securities Litigation in the United States District Court for the Southern District of New York, No. 02 Civ. 5571 (RJH) (HBP) (June 11-12, 2008).

Expert Report of Frank C. Torchio in Vivendi Universal, S.A. Securities Litigation in the United States District Court for the Southern District of New York, No. 02 Civ. 5571 (RJH) (HBP) (May 15, 2008).

Deposition of Frank C. Torchio in the Arbitration of Metropolitan Creditors' Trust, et al. v. Ernst & Young, LLP., CPR File No. G-06-62N (May 2, 2008).

Trial Testimony of Frank C. Torchio in John A. Gentile, et al. v. Pasquale David Rossette, et al. in the Court of Chancery of the State of Delaware in and for New Castle County, Civil Action No. 20213-NC (April 3, 2008).

Supplemental Affidavit of Frank C. Torchio in HealthSouth Corporation Securities Litigation, HealthSouth Corporation Stockholder Litigation and HealthSouth Corporation Bondholder Litigation in the United States District Court Northern District of Alabama, Southern Division, Master File No. CV-03-BE-1500-S, Consolidated Case No. CV-03-BE-1501-S and Consolidated Case No. CV-03-BE-1502-S (February 5, 2008).

Affidavit of Frank C. Torchio in HealthSouth Corporation Securities Litigation, HealthSouth Corporation Stockholder Litigation and HealthSouth Corporation Bondholder Litigation in the United States District Court Northern District of Alabama, Southern Division, Master File No. CV-03-BE-1500-S, Consolidated Case No. CV-03-BE-1501-S and Consolidated Case No. CV-03-BE-1502-S (January 24, 2008).

Deposition of Frank C. Torchio in John A. Gentile, et al. v. Pasquale David Rossette, et al. in the Court of Chancery of the State of Delaware in and for New Castle County, Civil Action No. 20213-NC (January 23, 2008).

Expert Report of Frank C. Torchio in Vesta Insurance Group, Inc. Securities Litigation in the United States District Court for the Northern District of Alabama, Southern Division, Case No. CV 98-AR-1407KOB (January 15, 2008).

Expert Report of Frank C. Torchio in the Arbitration of Metropolitan Creditors' Trust, et al. v. Ernst & Young, LLP., CPR File No. G-06-62N (November 30, 2007).

Consultant in the Mediation of The Merger Fund, et al. v. Instinet Group Incorporated before the Court of Chancery of the State of Delaware in and for New Castle County, C.A. No. 2014-VCL (2007).

Exhibit 1

Affidavit of Frank C. Torchio in First BanCorp Securities Litigation in the United States District Court for the District of Puerto Rico, Civil Action No. 3:05-cv-02148-GAG (November 21, 2007).

Affidavit of Frank C. Torchio in Delphi Corp. Class Action Litigation in the United States District Court for the Eastern District of Michigan, Southern Division, MDL No. 1725, Master Case No. 05-md-1725 (November 2, 2007).

Trial Testimony in Rochester Gas and Electric Corporation v. FirstEnergy Corp. in the United States District Court for the Western District of New York, Civil Action 00 CV 6369 (Fe) (October 30, 2007).

Declaration of Frank C. Torchio in Metropolitan Creditors' Trust, et al. v. PricewaterhouseCoopers, LLP. in the United States District Court for the Eastern District of Washington, Case No. CV-05-0290-FVS (October 12, 2007).

Expert Report of Frank C. Torchio in Sunrise Equity Partners, L.P., et. al. v. Workstream, Inc. et. al. in the United States District Court for the Southern District of New York, Civil Action No. 06-Civ-7754 (CLB) (MDF) (October 9, 2007).

Affidavit of Frank C. Torchio in DHB Industries, Inc. Class Action Litigation in the United States District Court for the Eastern District of New York, Civil Action No. 2:05-cv-04296-JS-ETB (September 28, 2007).

Deposition of Frank C. Torchio in Metropolitan Creditors' Trust, et al. v. PricewaterhouseCoopers, LLP. in the United States District Court for the Eastern District of Washington, Case No. CV-05-0290-FVS (September 26, 2007).

Expert Report of Professor Michael J. Barclay - Revised, signed by Frank C. Torchio in Metropolitan Creditors' Trust, et al. v. PricewaterhouseCoopers, LLP. in the United States District Court for the Eastern District of Washington, Case No. CV-05-0290-FVS (September 25, 2007).

Expert Rebuttal Report of Frank C. Torchio in Metropolitan Creditors' Trust, et al. v. PricewaterhouseCoopers, LLP. in the United States District Court for the Eastern District of Washington, Case No. CV-05-0290-FVS (September 21, 2007).

Deposition of Frank C. Torchio in Rochester Gas and Electric Corporation v. FirstEnergy Corp. in the United States District Court for the Western District of New York, Civil Action 00 CV 6369 (Fe) (September 20, 2007).

Expert Rebuttal Report of Frank C. Torchio in John A. Gentile, et al. v. Pasquale David Rossette, et al. in the Court of Chancery of the State of Delaware in and for New Castle County, Civil Action No. 20213-NC (August 14, 2007).

Expert Report of Frank C. Torchio in Rochester Gas and Electric Corporation v. FirstEnergy Corp. in the United States District Court for the Western District of New York, Civil Action 00 CV 6369 (Fe) (August 10, 2007).

Exhibit 1

Expert Report of Frank C. Torchio in John A. Gentile, et al. v. Pasquale David Rossette, et al. in the Court of Chancery of the State of Delaware in and for New Castle County, Civil Action No. 20213-NC (July 30, 2007).

Supplemental Affidavit of Frank C. Torchio in TD Banknorth Shareholders Litigation in the Court of Chancery in the State of Delaware in and for New Castle County, Consolidated C.A. No. 2557-VCL (June 26, 2007).

Affidavit of Frank C. Torchio in TD Banknorth Shareholders Litigation in the Court of Chancery in the State of Delaware in and for New Castle County, Consolidated C.A. No. 2557-VCL (June 17, 2007).

Declaration of Frank C. Torchio in Oscar S. Wyatt, et al. vs. El Paso Corporation, et al. in the United States District Court, Southern District of Texas, Houston Division, Civil Action No. H-02-2717 (March 5, 2007).

Declaration of Frank C. Torchio in Keri Evans v. John F. Akers, et al., and Lawrence W. Bunch, et al. v. W. R. Grace & Co., et al. in the United States District Court For the District of Massachusetts, Consolidated Case No. 04-11380-WAY (February 16, 2007).

Declaration of Frank C. Torchio in Oscar S. Wyatt, et al. vs. El Paso Corporation, et al. in the United States District Court, Southern District of Texas, Houston Division, Civil Action No. H-02-2717 (February 13, 2007).

Affidavit of Frank C. Torchio in Avista Corp. Securities Litigation in the United States District Court for the Eastern District of Washington at Spokane, Case No. CV-02-0328-FVS (December 12, 2006).

Affidavit of Frank C. Torchio in ICG Communications, Inc. Securities Litigation in the United States District Court for the District of Colorado, Civil Action No. 00-CV-1864-REB-BNB (December 8, 2006).

Expert Report of Frank C. Torchio in United States of America vs. Kevin Howard in the United States District Court for the Southern District of Texas, Cr. No. H-03-93-06 (December 4, 2006).

Rebuttal Report of Frank C. Torchio in In re: Quovadx, Inc. Securities Litigation in the United States District Court for the District of Colorado, Civil Action No. 1:04-cv-01006-RPM (November 6, 2006).

Expert Report of Frank C. Torchio in In re: Quovadx, Inc. Securities Litigation in the United States District Court for the District of Colorado, Civil Action No. 1:04-cv-01006-RPM (October 8, 2006).

Declaration of Frank C. Torchio In re: NPS Pharmaceuticals, Inc. Securities Litigation in the United States District Court for the District of Utah, Central Division, Master File No. 2:06cv00570 PGC (consolidated with 2:06cv00597 TS, 2:06cv00647 DB, 2:06cv00648 BSJ, & 2:06cv00699 TS) (October 8, 2006).

Exhibit 1

Deposition of Frank C. Torchio in Marion Barner, et al. vs. KPMG Peat Marwick LLP and William Wathen in the Circuit Court in and for the Thirteenth Judicial District in and for Hillsborough County, Florida, Case No. 98-7697 (Division I) (October 4, 2006).

Declaration of Frank C. Torchio in In re: Freddie Mac F.k.a. Federal Home Loan Mortgage Corporation in the United States District Court for the Southern District of New York, Civil Action , MDL – 1584, Lead Case No. 03-CV-4261 (JES) (October 2, 2006).

Deposition of Frank C. Torchio in In re: Audiovox Corporation Derivatives Litigation in the Court of Chancery of the State of Delaware in and for New Castle County, Cons. C.A. No. 787-N (September 1, 2006).

Deposition of Frank C. Torchio in New York State Electric & Gas Corporation v. FirstEnergy Corp. in the United States District Court for the Northern District of New York, Civil Action No. 3:03-CV-0438 (DEP) (August 21, 2006).

Expert Rebuttal Report of Frank C. Torchio in In re: Audiovox Corporation Derivatives Litigation in the Court of Chancery of the State of Delaware in and for New Castle County, Cons. C.A. No. 787-N (August 14, 2006).

Expert Report of Frank C. Torchio in In re: Audiovox Corporation Derivatives Litigation in the Court of Chancery of the State of Delaware in and for New Castle County, Cons. C.A. No. 787-N (July 21, 2006).

Deposition of Frank C. Torchio in In re: Entropin, Inc. Securities Litigation in the United States District Court Central District of California Western Division, No. CV-04-06180 RSWL (Cwx) (June 13, 2006).

Expert Report of Frank C. Torchio in New York State Electric & Gas Corporation v. FirstEnergy Corp. in the United States District Court for the Northern District of New York, Civil Action No.3:03-CV-0438 (DEP) (June 9, 2006).

Affidavit of Frank C. Torchio in Bristol-Myers Squibb Securities Litigation in the United States District Court District of New Jersey, Civil Action No. 00-1990 (SRC) (May 2, 2006).

Expert Report of Frank C. Torchio in In re: Entropin, Inc. Securities Litigation in the United States District Court Central District of California Western Division, No. CV-04-06180 RSWL (Cwx) (April 21, 2006).

Declaration of Frank C. Torchio in In re: Entropin, Inc. Securities Litigation in the United States District Court Central District of California Western Division, No. CV-04-06180 RSWL (Cwx) (April 10, 2006).

Deposition of Frank C. Torchio in Richard Schoon and Steel Investment Company v. Troy Corporation in the Court of Chancery of the State of Delaware in and for New Castle County, C.A. No. 1677-N (February 28, 2006).

Exhibit 1

Declaration of Frank C. Torchio in In re: Teachers' Retirement System of Louisiana, et al. v. A.C.L.N., Limited, et al. in the United States District Court Southern District of New York, 01-CV-11814 (LAP) (January 20, 2006).

Expert Report of Frank C. Torchio in Stephen M. Berger v. HB Fairview Holdings LLC. in the Court of Chancery of the State of Delaware in and for New Castle County, C.A. No. 997-N (January 17, 2006).

Declaration of Frank C. Torchio in In re: McKesson HBOC, Inc. Securities Litigation in the United States District Court Northern District of California, San Jose Division, 99-CV-20743 RMW and consolidated cases (January 12, 2006).

Consultant in Valeant Pharmaceuticals International v. Milan Panic and Adam Jerney before the Court of Chancery of the State of Delaware in and for New Castle County, Civil Action No. 19947-NC (2006).

Affidavit of Frank C. Torchio in St. Paul Travelers Securities Litigation in the United States District Court of Minnesota, 04-CV-3801-JRT-FLN (December 21, 2005).

Expert Report of Frank C. Torchio in The Matter of the Judicial Settlement of the Intermediate Accounting of Proceedings of Glens Falls National Banks And Trust Company and Samuel P. Hoopes as Trustees under the Will of Charlotte P. Hyde, Deceased, Article Ninth Trust (for Louis H. Whitney and The Matter of the Judicial Settlement of the Intermediate Accounting of Proceedings of BankNorth, N.A and Byron J. Lapham, Jr., as Co-Trustees under the Trust created by Nell Pruyn Cunningham in the Surrogate's Court of the State of New York, County of Warren, File Nos. 16,241 and 26,916 (October 12, 2005).

Expert Report of Frank C. Torchio in James Bayer, et al. v. The Harris Bank, N.A. in the Circuit Court of the State of Oregon, County of Jackson, Case No. 03-2370-L-7 (September 30, 2005).

Affidavit of Frank C. Torchio in Adelphia Communications Corp. Securities Derivatives Litigation in the United States District Court Southern District of New York, 03 MD 1529 (LMM) (September 15, 2005).

Affidavit of Frank C. Torchio in Bristol-Myers Squibb Securities Litigation in the United States District Court District of New Jersey, Civil Action No. 00-1990 (SRC) (May 23, 2005).

Trial Testimony of Frank C. Torchio in Sleepy's, Inc. v. Leon Orzechowski and Resnick's Mattress Outlet, in the Supreme Court of New York State, County of Nassau, Index No. 03-001575 (May 10-11, 2005).

Affidavit of Frank C. Torchio in Bank One Securities Litigation - First Chicago Shareholder Claims in The United States District Court For The Northern District of Illinois Eastern Division, Civil Action No. 00-CV-0767 (May 2, 2005).

Deposition of Frank C. Torchio in Sleepy's, Inc. v. Leon Orzechowski and Resnick's Mattress Outlet, in the Supreme Court of New York State, County of Nassau, Index No. 03-001575 (March 23, 2005).

Exhibit 1

Deposition of Frank C. Torchio in The Matter of the Ruth Lilly Charitable Remainder Annuity Trust #1 U/A/ January 18, 2002, National City Bank of Indiana, Trustee and in The Matter of the Ruth Lilly Charitable Remainder Annuity Trust #1 U/A/ January 18, 2002, National City Bank of Indiana, Trustee in the Marion Superior Court Probate Division, Cause No. 49D08 0211 TR002770 (February 11, 2005).

Deposition of Frank C. Torchio in Bristol-Myers Squibb Securities Litigation in the United States District Court District of New Jersey, Civil Action No. 00-1990 (SRC) (February 1, 2005).

Consultant in re: 7-Eleven, Inc. Shareholder Litigation, Cause No. 05-08944-M; Gillespie v. Suzuki, et al., Cause No. CC-05-11878-C and Alaska Laborers Employers Retirement Fund v. Seven-Eleven Japan Co., et al., Cause No. CC-05-12893-D (2005).

Consultant in re: GSC Recovery Inc., v. Donaldson Lufkin & Jenrette Securities Corporation, et al. before the Superior Court of New Jersey, Law Division: Morris County, Docket No. MRS-L-3685-00 (2005).

Consultant in Benz Research And Development v. Dennis J. McGillicuddy, et al. before the Circuit Court of the Twelfth Judicial Circuit in and for Manatee County, Florida, Case No. 01-CA-3635 Division B (2005).

Consultant in re: iGames Entertainment, Inc., v. Chex Services, Inc., C.A. No. 04-180-KAJ, Equitex, Inc., and Chex Services, Inc., v. iGames Entertainment, Inc., C.A. No. 04-256-KAJ, Chex Services, Inc., d/b/a FASTFUNDS, v. iGames Entertainment, Inc., C.A. No. 04-0885-KAJ, before the United States District Court for the District of Delaware, (2005).

Declaration of Frank C. Torchio in Support of Motion of Ohio Public Employees Retirement System, State Teachers Retirement System of Ohio, and Ohio Bureau of Workers' Compensation v. Federal National Mortgage Association (operating as Fannie Mae), Franklin Raines, J. Timothy Howard and Leanne G. Spencer in The United States District Court For The Southern District of Ohio Eastern Division, Civil Action No. C2-04-1106 (December 10, 2004).

Supplemental Report of Frank C. Torchio in Bank One Securities Litigation - First Chicago Shareholder Claims in The United States District Court For The Northern District of Illinois Eastern Division, Civil Action No. 00-CV-0767 (December 3, 2004).

Affidavit of Frank C. Torchio in Elizabeth Frazer, Werner Uhlmann, Per Hedblom, Luc Verelst, Bernt Hofstad, Neil MacLachlan and Total Investment Services, B.V., against Richard L. Klass, Anne S. Klass and Connecticut Capital Markets, LLC, in The United States District Court, Southern District of New York, Docket No. 03 CIV 6725 (CLB) (September 30, 2004).

Expert Report of Frank C. Torchio in Bristol-Myers Squibb Securities Litigation in the United States District Court District of New Jersey, Civil Action No. 00-1990 (SRC) (August 25, 2004).

Expert Report of Frank C. Torchio in Bank One Securities Litigation - First Chicago Shareholder Claims in The United States District Court For The Northern District of Illinois Eastern Division, Civil Action No. 00-CV-0767 (June 21, 2004).

Exhibit 1

Deposition of Frank C. Torchio in Anthony V. DeMarco on Behalf of Himself and All Others Similarly Situated, against Lehman Brothers Inc. and Michael E. Stanek in the United States District Court Southern District of New York, Civil Action No. 03 CV 3470 (JSR) (June 4, 2004).

Declaration of Frank C. Torchio in Anthony V. DeMarco, on Behalf of Himself and All Others Similarly Situated, against Lehman Brothers Inc. and Michael E. Stanek in the United States District Court Southern District of New York, Civil Action No. 03 CV 3470 (JSR) (May 28, 2004).

Deposition of Frank C. Torchio in FirstWorld Communications, Inc. Securities Litigation in the United States District Court For The District of Colorado, Civil Action No. 00-K-1376 (Consolidated with Civil Actions Nos. 00-K-1398, 00-K-1403, 00-K-1432, 00-K-1464, 00-K-1474, 00-K-1601, 00-K-1602, 00-K-1606, 00-K-1661) (May 6-7, 2004).

Expert Report of Frank C. Torchio in Anthony V. DeMarco, on Behalf of Himself and All Others Similarly Situated, against Lehman Brothers Inc. and Michael E. Stanek in the United States District Court Southern District of New York, Civil Action No. 03 CV 3470 (JSR) (May 3, 2004).

Expert Report of Frank C. Torchio in FirstWorld Communications, Inc. Securities Litigation in the United States District Court For The District of Colorado, Civil Action No. 00-K-1376 (Consolidated with Civil Actions Nos. 00-K-1398, 00-K-1403, 00-K-1432, 00-K-1464, 00-K-1474, 00-K-1601, 00-K-1602, 00-K-1606, 00-K-1661) (April 2, 2004).

Supplemental Declaration of Frank C. Torchio in McKesson HBOC, Inc. Securities Litigation in the United States District Court Northern District of California San Jose Division, Master File No. 99-CV-20743 RMW (March 11, 2004).

Declaration of Frank C. Torchio in McKesson HBOC, Inc. Securities Litigation in the United States District Court Northern District of California San Jose Division, Master File No. 99-CV-20743 RMW (February 26, 2004).

Trial Testimony of Frank C. Torchio in Dumont Trust v. Chase Manhattan Bank State of New York Surrogate's Court Monroe County (January 22, 2004).

Deposition of Frank C. Torchio in AMF Bowling Securities Litigation in the United States District Court Southern District of New York, Civil Action No. 99 Civ. 3023 (HB) (January 14, 2004).

Consultant in re: Charles T. Gholl and Michelle L. Gholl v. eMachines, Inc. before the Court of Chancery of the State of Delaware in and for New Castle County, C.A. No. 19444-NC (2004).

Declaration of Frank C. Torchio in DPL, Inc. Securities Litigation in the United States District Court Southern District of Ohio, Western Division (Dayton), Case No. C-3-02-355 (December 18, 2003).

Exhibit 1

Declaration of Frank C. Torchio in Lucent Technologies, Inc. Securities Litigation in the United States District Court For The District Of New Jersey, Case No. 00-CV-621 (JAP) (November 14, 2003).

Declaration of Frank C. Torchio in Cendant Corporation Litigation in the United States District Court For The District Of New Jersey, Master File No. 98-1664 (WHW) (October 15, 2003).

Affidavit of Frank C. Torchio in Worldcom, Inc. Securities Litigation in the United States District Court Southern District of New York, Master File No. 02 Civ. 3288 (DLC) (September 25, 2003).

Affidavit of Frank C. Torchio in Chalk & Vermillion, LLC and Chalk & Vermillion Fine Arts, Inc., v. Thomas F. McKnight, LLC, as Successor in interest to Thomas F. McKnight, Inc., Thomas F. McKnight, Inc., Thomas McKnight and Renate McKnight in the Supreme Court of the State of New York County of New York, Index No. 01/602909 (September 15, 2003).

Affidavit of Frank C. Torchio in Chronimed Inc. Securities Litigation in the United States District Court for the District of Minnesota, Master File No. 00-CV-1092 (DWF/AJB) (August 18, 2003).

Affidavit of Frank C. Torchio in Independent Energy Holdings PLC Securities Litigation in the United States District Court Southern District of New York, Master File No. 00 Civ. 6689 (SAS) (August 8, 2003).

Supplemental Declaration of Frank C. Torchio in Jason Stanley, et al. v. Safeskin Corporation, et al. in the United States District Court Southern District of California, Lead Case No. 99cv0454-BTM (LSP) (June 2, 2003).

Expert Report of Frank C. Torchio in AMF Bowling Securities Litigation in the United States District Court Southern District of New York, Civil Action No. 99 Civ. 3023 (HB) (March 10, 2003).

Declaration of Frank C. Torchio in Jason Stanley, et al. v. Safeskin Corporation, et al. in the United States District Court Southern District of California, Lead Case No. 99cv0454-BTM (LSP) (February 28, 2003).

Consultant in re: Cede & Co. v. JRC Acquisition Corp., LLR, Inc. and 800-JR Cigar, Inc. before the Court of Chancery of the State of Delaware in and for New Castle County, C.A. No. 18648-NC (2003).

Consultant in re: DTM Research, L.L.C. v. AT&T Corporation before the United States District Court for the District of Maryland, Southern Division, Civil Action No. PJM 96-1852 (2003).

Consultant in re: Telecorp PCS, Inc. Shareholders Litigation before the Court of Chancery of the State of Delaware in and for New Castle County, Consolidated C.A. No. 19260-NC (2003).

Consultant in re: Michael Comrie, et al. v. Enterasys Networks, Inc., et al. before the Chancery Court of the State of Delaware in and for New Castle County, Civil Action No. 19254 (2003).

Exhibit 1

Rebuttal Report of Frank C. Torchio in Independent Energy Holdings PLC Securities Litigation in the United States District Court Southern District of New York, Master File No. 00 Civ. 6689 (SAS) (December 9, 2002).

Expert Report of Frank C. Torchio in Independent Energy Holdings PLC Securities Litigation in the United States District Court Southern District of New York, Master File No. 00 Civ. 6689 (SAS) (October 11, 2002).

Rule 26(e)(1) Expert Report of Frank C. Torchio in SmarTalk Securities Litigation in the United States District Court Southern District of California, Lead Case No. 99cv0454-BTM (LSP) (August 30, 2002).

Expert Report of Frank C. Torchio in Hamilton Bancorp, Inc. Securities Litigation in the United States District Court Southern District of Florida, Miami Division, Case No. 01-CIV-0156 GOLD/SIMONTON (August 12, 2002).

Expert Report of Frank C. Torchio in Sykes Enterprises, Inc. Securities Litigation in the United States District Court, Middle District of Florida, Tampa Division, Case No.:8:00-CV212-T-26F (July 31, 2002).

Affidavit of Frank C. Torchio in Conseco Inc. Securities Litigation in the United States District Court, Southern District of Indiana, Indianapolis Division, IP00-0585-C Y/S (July 16, 2002).

Declaration of Frank C. Torchio in Bristol-Myers Squibb Company Securities Litigation in the United States District Court, Southern District of New York (July 2, 2002).

Deposition of Frank C. Torchio in Jason Stanley, et al. v. Safeskin Corporation, et al. in the United States District Court Southern District of California, Lead Case No. 99cv0454-BTM (LSP) (June 25, 2002).

Supplemental Expert Report of Frank C. Torchio in SmarTalk Securities Litigation in the United States District Court Southern District of Ohio Eastern Division, Master File No. C2: 98-948 also in the Superior Court of the State of California County of Los Angeles, Case No. BC194788 (June 15, 2002).

Supplemental Report of Frank C. Torchio in Jason Stanley, et al. v. Safeskin Corporation, et al. in the United States District Court Southern District of California, Lead Case No. 99cv0454-BTM (LSP) (June 5, 2002).

Expert Report of Frank C. Torchio in Jason Stanley, et al. v. Safeskin Corporation, et al. in the United States District Court Southern District of California, Lead Case No. 99cv0454-BTM (LSP) (May 14, 2002).

Affidavit of Frank C. Torchio in Emil Rossdeutscher and Dennis Kelly v. Viacom, Inc. in the Superior Court of the State of Delaware in and for New Castle County, C.A. No. 98C-03-091 (JEB) (April 23, 2002).

Exhibit 1

Arbitration in Philip Michael Thomas et al. v. New Lauderdale, LLC et al. in the Circuit Court of the 17th Judicial Circuit in and for Broward County, Florida (February 26, 2002).

Declaration of Frank C. Torchio in Assisted Living Concepts, Inc. Securities Litigation, in the United States District Court District of Oregon, Lead Case No. 99-167-AA (February 14, 2002).

Expert Report of Frank C. Torchio in SmarTalk Securities Litigation in the United States District Court Southern District of Ohio Eastern Division, Master File No. C2: 98-948 also in the Superior Court of the State of California County of Los Angeles, Case No. BC194788 (February 13, 2002).

Declaration of Frank C. Torchio in Janet Kay Adam, et al. v. Critical Path, Inc., et al. in the United States District Court Northern District of California, Case No. C-01-3756-WHA (January 30, 2002).

Consultant in re: The Matter of the Arbitration of Dartnell Enterprises, Inc. and Compaq Computer Corp. before the CPR Institute for Dispute Resolution (2002).

Consultant in re: United States Securities and Exchange Commission v. Scott K. Ginsburg, Mark J. Ginsburg, and Jordan E. Ginsburg before the United States District Court Southern District of Florida West Palm Beach Division, Case No. 99-8694-CIV-RYSKAMP/VITUNAC (2002).

Deposition of Frank C. Torchio in Assisted Living Concepts, Inc. Securities Litigation, in the United States District Court District of Oregon, Lead Case No. 99-167-AA (December 18, 2001).

Expert Report of Frank C. Torchio in Assisted Living Concepts, Inc. Securities Litigation, in the United States District Court District of Oregon, Lead Case No. 99-167-AA (November 16, 2001).

Deposition of Frank C. Torchio in Emil Rossdeutscher and Dennis Kelly v. Viacom Inc., in the Superior Court of the State of Delaware in and for New Castle County, C.A. No. 98C-03-091 (JEB) (November 15, 2001).

Affidavit of Frank C. Torchio in Accelr8 Technology Corp. Securities Litigation, in the United States District Court for the District of Colorado, Civil Action No. 00-K-938 (November 8, 2001).

Affidavit of Frank C. Torchio in Sykes Enterprises, Inc. Securities Litigation, in the United States District Court Middle District of Florida Tampa Division, Case No. 8:00-CV-212-T-26F (November 1, 2001).

Deposition of Frank C. Torchio in Camden Asset Management, LP; Frolely Revy Investment Company, Inc.; JMG Convertible Investments L.P.; Hamilton Partners, LTD.; and all others similarly situated v. Sunbeam Corporation; Albert J. Dunlap; Russell A. Kersh; Robert C. Gluck; and Arthur Andersen LLP, in the United States District Court Southern District of Florida Miami Division, 99-8275-Civ-Middlebrooks MDL No. 1297 (October 26, 2001).

Exhibit 1

Affidavit of Frank C. Torchio in Emil Rossdeutscher and Dennis Kelly v. Viacom, Inc., in the Superior Court for the State of Delaware in and for New Castle County, C.A. No. 98C-03-091 (JEB) (October 5, 2001).

Deposition of Frank C. Torchio in Shelter General Insurance Co., et al. V. Shell Oil Company, et al. in the United States District Court for the District of Arizona, Civil Action No. 16809 (August 9, 2001).

Expert Report and Rebuttal Report of Frank C. Torchio in Camden Asset Management, LP; Frolej Revy Investment Company, Inc.; JMG Convertible Investments L.P.; Hamilton Partners, LTD.; and all others similarly situated v. Sunbeam Corporation; Albert J. Dunlap; Russell A. Kersh; Robert C. Gluck; and Arthur Andersen LLP, in the United States District Court Southern District of Florida Miami Division, 99-8275-Civ-Middlebrooks MDL No. 1297 (June 23, 2001 and October 1, 2001).

Affidavit of Frank C. Torchio in Shelter General Insurance Co., et al. V. Shell Oil Company, et al. in the United States District Court for the District of Arizona, Civil Action No. 16809 (June 21, 2001).

Affidavit of Frank C. Torchio in re Zila, Inc. Securities Litigation in the United States District Court for the Southern District of Arizona, No. Civ. 99-0155-PHX-EHC (OMP) (May 2001).

Deposition of Frank C. Torchio in Research International, LTD. v. Numico Investment Corp. and Koninklijke N.V., in the United States District Court for the Western District of Pennsylvania, Civil Action No. 99-1264 (December 2000).

Expert Report of Frank C. Torchio in Research International, LTD. v. Numico Investment Corp. and Koninklijke N.V., in the United States District Court for the Western District of Pennsylvania, Civil Action No. 99-1264 (November 2000).

Deposition of Frank C. Dorkey in Kayne, et, al., v. MTC, et al. in the U.S. District Court for the Eastern District of New York, CV-95-2459 (JG) (May and September 2000).

Affidavit of Frank C. Dorkey in re Cendant Corporation Litigation in the United States District Court for the District of New Jersey, Master File No. 98-1664 (WHW) (July, 2000).

Deposition of Frank C. Dorkey in re Cendant Corporation Litigation in the United States District Court for the District of New Jersey, Master File No. 98-1664 (WHW) (June, 2000).

Affidavit of Frank C. Dorkey in re Cendant Corporation Litigation in the United States District Court for the District of New Jersey, Master File No. 98-1664 (WHW) (June, 2000).

Affidavit of Frank C. Dorkey in re Cendant Corporation Litigation in the United States District Court for the District of New Jersey, Master File No. 98-1664 (WHW) (May, 2000).

Affidavit of Frank C. Dorkey in re Physician Computer Network, Inc. Securities Litigation in the United States District Court for the District of New Jersey, Civil Action No. 98-981 (MTB) (March, 2000).

Exhibit 1

Expert Report of Frank C. Dorkey in Lucian B. Cox, III, City of Philadelphia, Philip Andrew Garner, Dan Babor and Joseph J. Szlavik, Jr. v. Software AG Systems, Inc., Daniel F. Gillis, Carl J. Rickersten, Dr. Philip S. Dauber, Dr. Erwin Koenig, Harry K. McCreery, Derek Brigden, Dr. Paul G. Stern and Thayer Equity Investors III, L.P. in the United States District Court for the Eastern District of Virginia, Civil Action No. 99-496-A (January, 2000).

Affidavit of Frank C. Dorkey in Lucian B. Cox, III, City of Philadelphia, Philip Andrew Garner, Dan Babor and Joseph J. Szlavik, Jr. v. Software AG Systems, Inc., Daniel F. Gillis, Carl J. Rickersten, Dr. Philip S. Dauber, Dr. Erwin Koenig, Harry K. McCreery, Derek Brigden, Dr. Paul G. Stern and Thayer Equity Investors III, L.P. in the United States District Court for the Eastern District of Virginia, Civil Action No. 99-496-A (January, 2000).

Consultant in re: ALL PRO Sports Camps, Inc., Nicholas Stracick and Edward Russell v. Walt Disney Company, Walt Disney World Company, Inc. Disney Development Company and Steven B. Wilson before the Circuit Court of the Ninth Judicial Circuit in and for Orange County, Florida, Case No. CI97-134 (2000).

Affidavit of Frank C. Dorkey in re Interneuron Pharmaceuticals Litigation, in the United States District Court District of Massachusetts, C.A. No. 1:97-12254-REK and all related cases (April, 1999).

Expert Report of Frank C. Dorkey in Miller Brick Litigation (May, 1998).

Expert Report of Frank C. Dorkey in re: The Boeing Company vs. United States of America, in the United States District Court Western District of Washington at Seattle, Civil Action No. C96-1990C (March, 1998).

Expert Report of Frank C. Dorkey in Kayne, et, al., v. MTC, et al. in the U.S. District Court for the Eastern District of New York, CV-95-2459 (JG) (1998).

Expert Report and Affidavit of Frank C. Dorkey in Steve Georgallas v. Martin Color-FI, Inc., in the U.S. District Court for the District of South Carolina (August, 1997).

Expert Report of Frank C. Dorkey in John J. Stevens v. Chase Manhattan Bank, N.A. (1997).

Expert Report of Frank C. Dorkey in Robert J. Douglas v. Chase Manhattan Bank, N.A. (1997).

Exhibit 2

Materials Reviewed

Re-Amended Application for Authorization of a Class Action and for Authorization to Bring an Action Pursuant to Section 225.4 of the *Quebec Securities Act*, dated June 17, 2022.

Lightspeed Commerce Inc. filings with SEDAR.

Daily reported composite volume and prices for Lightspeed Commerce Inc. common shares (Bloomberg tickers: “LSPD CN”, LSPD CT and LSPD US) for the period March 2019 to May 2022. Source: Bloomberg.

Daily index levels for the following indexes for the period March 2019 to November 2021 (Bloomberg identifier in parenthesis): S&P TSX Composite Total Return Index (Bloomberg identifier: 0000AR); S&P/TSX Composite Information Technology GICS Level Sector Total Return Index (STINFTR); S&P/TSX Composite Software & Services GICS Industry Group Total Return Index (STSFTWR); S&P/TSX Composite Index Software GICS Industry Total Return Index (STSOFTR); and the S&P/TSX Composite Index Application Software GICS Sub Industry Total Return Index (STAPLSR). Source: Bloomberg.

Monthly weights of Lightspeed Commerce Inc. common shares in the following indexes for the period March 2019 to November 2021 (Bloomberg identifier in parenthesis): S&P TSX Composite Total Return Index (Bloomberg identifier: 0000AR); S&P/TSX Composite Information Technology GICS Level Sector Total Return Index (STINFTR); S&P/TSX Composite Software & Services GICS Industry Group Total Return Index (STSFTWR); S&P/TSX Composite Index Software GICS Industry Total Return Index (STSOFTR); and the S&P/TSX Composite Index Application Software GICS Sub Industry Total Return Index (STAPLSR). Source: Bloomberg.

Number of analysts making recommendations for Lightspeed Commerce Inc. for the period December 2020 to November 2021. Source: Bloomberg.

Short interest for Lightspeed Commerce Inc. common shares for the period December 2020 to November 2021. Source: Bloomberg.

Bid/Ask intraday quotes data for Lightspeed Commerce Inc. common shares on the TSX for the period December 2020 to November 2021. Source: TickData.

Intraday 1-minute trade data for Lightspeed Commerce Inc. common shares, day session, interval open prices for September 29-30, 2021 and November 4, 2021. Source: TickData.

Quarterly institutional ownership of Lightspeed Commerce Inc. common shares for the period March 2019 to December 2021. Source: Refinitiv.

Lightspeed Commerce Inc. common shares held by insiders and affiliates for the period March 2019 to November 2021. Sources: Lightspeed Commerce Inc. SEDAR filings.

Exhibit 2 Materials Reviewed

Shares outstanding for Lightspeed Commerce Inc. common shares for the period March 2019 to November 2021. Source: Lightspeed Commerce Inc. SEDAR filings.

News stories regarding Lightspeed Commerce Inc. during the period March 2019 to November 2021. Sources: Bloomberg and Factiva.

List of analyst reports regarding Lightspeed Commerce Inc. during the period March 2019 to November 2021. Sources: Refinitiv and Capital IQ electronic databases.

Academic literature, treatises, or articles relied on:

- Eugene F. Fama, Lawrence Fisher, Michael C. Jensen and Richard Roll, "The Adjustment of Stock Prices to New Information," *International Economic Review* 10(1), February 1969.
- Eugene F. Fama, Foundations of Finance: Portfolio Decisions and Security Prices, Basic Books, Inc., 1976.
- G. William Schwert, "Using Financial Data to Measure Effects of Regulation," *The Journal of Law and Economics* 24(1), 1981.
- Daniel Fischel, "Use of Modern Finance Theory in Securities Fraud Cases Involving Actively Traded Securities," *The Business Lawyer* 38, November 1982.
- Robert Jennings and Laura Starks, "Information Content and the Speed of Stock Price Adjustments," *Journal of Accounting Research* 23(1), Spring 1985.
- Jonathan M. Karpoff, "The Relation Between Price Changes and Trading Volume: A Survey," *Journal of Financial and Quantitative Analysis* 22(1), March 1987.
- Bradford Cornell and R. Gregory Morgan, "Using Finance Theory to Measure Damages in Fraud on the Market Cases," *UCLA Law Review* 37, June 1990.
- William H. Beaver and James K. Malernee, "Estimating Damages in Securities Fraud Cases," Cornerstone Research, 1990.
- Eugene F. Fama, "Efficient Capital Markets: II," *Journal of Finance* 46(5), December 1991.
- Stephen A. Ross, Randolph W. Westerfield, and Bradford D. Jordan, Fundamentals of Corporate Finance, Second Edition, Irwin, 1992 and 1993.
- Mark Mitchell and Jeffrey Netter, "The Role of Financial Economics in Securities Fraud Cases: Applications at the Securities and Exchange Commission," *The Business Lawyer* 49, February 1994.
- William H. Beaver, James K. Malernee and Michael C. Keeley, "Potential Damages Facing Auditors in Securities Fraud Cases," *Accountants' Liability: The Need for Fairness, National Legal Center for the Public Interest*, 1994.
- Dean Furbush and Jeffrey W. Smith, "Estimating the Number of Damaged Shares in Securities Fraud Litigation: An Introduction to Stock Trading Models," *The Business Lawyer* 49, 1994.
- Brad M. Barber, Paul A. Griffin, and Baruch Lev, "The Fraud-on-the-Market Theory and the Indicators of Common Stocks' Efficiency," *The Journal of Corporation Law* 19, Winter 1994.
- John Y. Campbell, Andrew W. Lo and A. Craig MacKinlay, The Econometrics of Financial Markets, Princeton University Press, 1997.

Exhibit 2 Materials Reviewed

- Burton G. Malkiel, "Efficient Market Hypothesis," in The New Palgrave: A Dictionary of Economics, Volume 2, E to J, ed. by John Eatwell, Murray Milgate and Peter Newman, The Macmillan Press Limited, 1998.
- Marcia Kramer Mayer, "Best-Fit Estimation of Damaged Volume in Shareholder Class Actions: The Multi-Sector, Multi-Trader Model of Investor Behavior," NERA, Third Edition, October 2000.
- Randall S. Thomas and James F. Cotter, "Measuring Securities Market Efficiency in the Regulatory Setting," *Law and Contemporary Problems* 63(3), Summer 2000.
- Michael Barclay and Frank C. Torchio, "A Comparison of Trading Models Used for Calculating Aggregate Damages in Securities Litigation," *Law and Contemporary Problems*, 64(2&3), Spring/Summer 2001.
- David I. Tabak and Frederick C. Dunbar, "Materiality and Magnitude: Event Studies in the Courtroom," Chapter 19 in Litigation Services Handbook: The Role of the Financial Expert, 3rd ed., ed. by Roman L. Weil, Michael J. Wagner and Peter B. Frank, Wiley, 2001.
- David Tabak and Chudozie Okongwu, "Inflation Methodologies in Securities Fraud Cases: Theory and Practice," NERA White Paper, July 2002.
- David S. Moore and George P. McCabe, Introduction to the Practice of Statistics, 4th ed., W. H. Freeman and Company, 2003.
- Larry Harris, Trading & Exchanges: Market Microstructure for Practitioners, Oxford University Press, 2003.
- Burton G. Malkiel, "The Efficient Market Hypothesis and Its Critics," *Journal of Economic Perspectives* 17(1), Winter 2003.
- Edwin J. Elton, Martin J. Gruber, Stephen J. Brown, and William N. Goetzmann, Modern Portfolio Theory and Investment Analysis, Sixth Edition, John Wiley & Sons, Inc., 2003.
- Michael Aitken and Audris Siow, "Ranking World Equity Markets on the Basis of Market Efficiency and Integrity," Working Paper, November 2003.
- David Tabak, "Loss Causation and Damages in Shareholder Class Actions: When It Takes Two Steps To Tango," NERA White Paper, May 2004.
- Paul A. Ferrillo, Frederick C. Dunbar, and David Tabak, "The 'Less Than' Efficient Capital Markets Hypothesis: Requiring More Proof From Plaintiffs In Fraud-On-The-Market Cases," *St. John's Law Review* 78(1), Winter 2004.
- Shannon P. Pratt, The Market Approach to Valuing Businesses, Second Edition, John Wiley & Sons, Inc., 2005.
- David Tabak, "Inflation and Damages in a Post-Dura World," NERA White Paper, September 2007.
- Qi Chen, Itay Goldstein, and Wei Jiang, "Price Informativeness and Investment Sensitivity to Stock Price," *The Review of Financial Studies*, 20(3) 2007.
- Frederick Dunbar and Arun Sen, "Counterfactual Keys to Causation and Damages in Shareholder Class Actions," *Wisconsin Law Review*, 2009.
- Bradford Cornell and James Rutten, "Collateral Damage and Securities Litigation," *Utah Law Review* 3, 2009.
- Frank Torchio, "Proper Event Study Analysis in Securities Litigation," *The Journal of Corporation Law*, 35:1, 2009.

Exhibit 2 Materials Reviewed

- Sudipto Dasgupta, Jie Gan, and Ning Gao, “Transparency, Price Informativeness, and Stock Return Synchronicity: Theory and Evidence,” *Journal of Financial and Quantitative Analysis*, 45(5), Oct. 2010.
- David Tabak, “Use and Misuse of Event Studies to Examine Market Efficiency,” NERA White Paper, April 30, 2010.
- Nicolas I. Crew, Kevin L. Gold, and Marnie A. Moore, “Federal Securities Acts and Areas of Expert Analysis,” in Litigation Services Handbook: The Role of the Financial Expert, Fifth Edition, ed. by Roman L. Weil, Daniel G. Lentz, and David P. Hoffman, Wiley, 2012.
- David H. Kaye and David A. Freedman, “Reference Guide on Statistics,” in Reference Manual on Scientific Evidence, Third Edition, National Academy of Sciences, 2011.
- “The HOT Study Phases I and II of IIROC’s Study of High Frequency Trading Activity on Canadian Equity Marketplaces,” Investment Industry Regulatory Organization of Canada, December 2012.
- Steven S. Crawford, Darren T. Roulstone, and Eric C. So, “Analyst Initiations of Coverage and Stock Return Synchronicity,” *The Accounting Review*, 87(5), 2012.
- “Market Quality in a Rapidly Changing Environment,” Investment Industry Regulatory Organization of Canada Presentation, November 21, 2013.
- Lucy Chang, “The Truth-on-the-Market Defense and its Relevance in SEC Enforcement Actions,” *Law and Contemporary Problems* 76(3/4), 2013.
- Jonathan Brogaard, Terrence Hendershott, and Ryan Riordan, “High-Frequency Trading and Price Discovery,” *The Review of Financial Studies* 27(8), 2014.
- Robert W. Holthausen and Mark E. Zmijewski, Corporate Valuation: Theory, Evidence & Practice, First Edition, Cambridge Business Publishers, 2014.
- “Identifying Trading Groups Methodology and Results,” Investment Industry Regulatory Organization of Canada, September 2014.
- Bharat Bhole, Sunita Surana, and Frank Torchio, “Benchmarking Market Efficiency Indicators for Securities Litigation,” *University of Illinois Online Law Review* 96, 2020.
- Bruce L. Bowerman, Richard T. O’Connell, and Anne B. Koehler, Forecasting, Time Series, and Regression, Fourth Edition, Brooks/Cole, 2005.

Court opinions and reports:

- In re Alstom SA Securities Litigation*, 253 F.R.D. 266 (S.D. N.Y. 2008).
- Bromberg & Lowenfels*, 4 Securities Fraud and Commodities Fraud, § 8.6 (Aug. 1988).
- Cammer v. Bloom*, 711 F. Supp. 1264 (D.N.J. 1989).
- In re California Micro Devices Sec. Litig.*, 965 F. Supp. 1327 (N.D. Cal. 1997).
- In re Cendant Corp. Sec. Litig.*, 109 F. Supp. 2d 235, 256 (D.N.J. 2000).
- Krogman v. Sterritt*, 202 F.R.D. 467, (ND TX 2001).
- Cheney v. CyberGuard Corp.*, 213 F.R.D. 484 at 501-02 (S.D. Fla. 2003).
- Lehocky v. Tidel*, 220 F.R.D. 491 at 506-07 (S.D. Tex. 2004).
- In Re Polymedica Corp. Sec. Litig.*, 453 F. Supp. 2d 260 (D. Mass. 2006).
- In re. DVI Securities Litigation*, 249 F.R.D. 196 at 208 (E.D. PA. 2008).
- Declaration of Frank C. Torchio for Settlement Purposes, *In re Countrywide Fin. Corp. Sec. Litig.*, Lead Case No. CV 07-05295 MRP (MANx) (C.D. Cal. June 29, 2010).
- Vinh Nguyen v. Radiant Pharmaceuticals Corporation et al.*, 287 F.R.D. 563 (S.D. CA.

Exhibit 2 Materials Reviewed

2012).

Christel Billhofer, et al v. Flamel Technologies, S.A., et al, 281 F.R.D. 150 (S.D. N.Y. 2012).

News:

Lightspeed press release, “Lightspeed Announces Automatic Conversion of All Outstanding Multiple Voting Shares,” December 1, 2020.

Lightspeed’s press release, “Lightspeed Announces Pricing of Initial Public Offering,” March 7, 2019.

Lightspeed’s press release, “Lightspeed Announces Closing of Initial Public Offering and Over-Allotment Option,” March 15, 2019.

Lightspeed’s press release, “Lightspeed Announces Initial Public Offering in the United States,” September 9, 2020.

Lightspeed’s press release, “Lightspeed Announces Pricing of Initial Public Offering in the United States,” September 10, 2020.

Lightspeed’s press release, “Lightspeed Announces Closing of US\$397.7 Million Initial Public Offering in the United States, September 15, 2020.

Lightspeed’s press release “Lightspeed Announces Acquisition of Upserve to Further Omnichannel Revolution of American Restaurant Industry,” December 1, 2020.

“More than \$2-billion in market cap zapped as short-seller takes aim at Lightspeed,” *The Globe and Mail (online)*, September 29, 2021.

“Lightspeed Shares Fall as Spruce Point Sees Downside Risks,” *Bloomberg First Word*, September 29, 2021, 9:27 am.

“CANADA STOCKS-Toronto market slips as technology falls to 2-month low,” *Reuters News*, September 29, 2021, 4:46 pm.

“09:22 EDT Spruce Point puts ‘Strong Sell’ on Lightspeed, sees 60%-80% share,” *Theflyonthewall.com*, September 29, 2021, 9:22 am.

“Lightspeed comments on short seller report,” Lightspeed Press Release filed with SEDAR on September 29, 2021, 6:30 pm.

“Lightspeed Announces Second Quarter 2022 Financial Results,” *PR Newswire*, November 4, 2021, 7:00 am.

“Lightspeed Posts Record Drop on Wider-Than-Expected Loss View,” *Bloomberg First Word*, November 4, 2021, 10:28 am.

“Lightspeed Plummets 32% on Weak Outlook, Supply-Chain Woes,” *Bloomberg News*, November 4, 2021, 11:12 am.

“Lightspeed Commerce reports US\$59.1M Q2 loss, revenue nearly triples,” *The Canadian Press*, November 4, 2021, 12:30 pm.

“Lightspeed shares crushed on sales forecast, wiping out more than \$5-billion in market capitalization,” *The Globe and Mail*, November 5, 2021.

Analyst Reports:

Spruce Point Capital Management Announces Investment Opinion: Releases Report and Strong Sell Research Opinion on Lightspeed Commerce Inc.,” *Business Wire*, September 29, 2021.

Exhibit 2 Materials Reviewed

- “LSPD under pressure on short report,” RBC Capital Markets research report, September 29, 2021.
- “Points To Consider Post Sell-Off,” Barclays research report, September 29, 2021.
- “Perspective On Evolving Business,” Scotiabank research report, September 30, 2021.
- “First Take – Strong Q2 – Questions on Guidance,” Barclays research report, November 4, 2021.
- “First Look at Q2/22 Results,” BMO Capital Markets research report, November 4, 2021.
- “We’ve Seen This Before,” National Bank of Canada research report, November 4, 2021.
- “Show-Me For 2H; Growth Runway Still There Longer Term,” Raymond James research report, November 4, 2021.
- “LT fundamentals intact; near-term guidance suffers from transitory issues,” RBC Capital Markets research report, November 4, 2021.
- “Q2/F22 Call Highlights: Overdone,” TD Securities research report, November 4, 2021.
- “Q2/FY22: Locations, Locations, Locations,” ATB Capital Markets research report, November 4, 2021.
- “A Strong FQ2 Offset by Lower Near-term Guidance,” CIBC Capital Markets research report, November 4, 2021.
- “Strong Q2/F22 While H2/F22 Guide Disappoints,” Cormark Securities research report, November 5, 2021.
- “F2Q Recap: Lower Expectations on Locations, GTV Drive Harsh Reaction,” J.P. Morgan research report, November 5, 2021.
- “Lightspeed (LSPD) – Blinded by the Light,” SMBC Nikko Securities America research report, November 5, 2021, emphasis removed.

SEDAR and SEC Filings Cited:

- Lightspeed’s 2019 Annual Report.
- Lightspeed’s 2020 Annual Report.
- Lightspeed’s 2021 Annual Report.
- Lightspeed Supplemented Prep Prospectus, March 8, 2019.
- Lightspeed Audited Financial Statements, May 21, 2020.
- Lightspeed Interim Financial Statement, February 4, 2021.
- Lightspeed Interim Financial Statements, November 4, 2021.
- Form 6-K filed with the SEC on September 29, 2021.

Miscellaneous:

- World Federation of Exchanges 2009 Annual Report and Statistics (2009 statistics).
<https://www.tsx.com/trading/toronto-stock-exchange/order-types-and-features/market-maker-program>.
- TSX Market Making Program Guide, version 3.2, effective November 1, 2021 available at
<https://www.tsx.com/resource/en/1834>.

All other materials cited in the text of the Report, Appendix and Exhibits.

Exhibit 3
Lightspeed Commerce, Inc. Market Model Regression Statistics

Variable	Coefficient	t-stat
Intercept	0.0005	0.25
Market Index [1]	1.7879	5.59
Industry Index (net of market) [2]	0.7579	6.98
Dummy 1 (September 29, 2021)	-0.1099	-3.56
Dummy 2 (September 30, 2021)	-0.0251	-0.81
Dummy 3 (November 4, 2021)	-0.2962	-9.59
Observations (December 1, 2020 to November 30, 2021)		251
Standard Error		3.08%
Adjusted R-Squared		43.93%

[1] Market Index: S&P/TSX Total Return Index (Bloomberg ticker: 0000AR), after removing the effect of Lightspeed from the index return.

[2] Industry Index: S&P/TSX Composite Information Technology GICS Level Sector Total Return Index (Bloomberg ticker: STINFTR), after removing the effect of Lightspeed from the index return.

Exhibit 4
Lightspeed Commerce, Inc. Subordinate Voting Shares Data
March 7, 2019 to November 30, 2021

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]
Date	Lightspeed			Market Return	Industry Return	Coefficient		Predicted Return	Excess Return	Standard Error	t-statistic	p-Value	Excess Price Change	
	Volume	Price	Return			Intercept	Market							Industry
3/7/2019		\$16.00												
3/8/2019	8,334,777	\$19.00	18.75%	-0.36%	-0.22%	0.00	1.79	0.76	-0.49%	19.24%	3.08%	6.25	0.00% **	\$3.08
3/11/2019	2,018,228	\$20.00	5.26%	0.70%	1.83%	0.00	1.79	0.76	2.15%	3.11%	3.08%	1.01	31.29%	\$0.59
3/12/2019	778,807	\$20.75	3.75%	0.19%	0.38%	0.00	1.79	0.76	0.54%	3.21%	3.08%	1.04	29.72%	\$0.64
3/13/2019	1,098,913	\$22.95	10.58%	0.09%	-0.39%	0.00	1.79	0.76	-0.16%	10.73%	3.08%	3.49	0.06% **	\$2.23
3/14/2019	617,358	\$22.80	-0.63%	-0.30%	0.59%	0.00	1.79	0.76	0.19%	-0.82%	3.08%	-0.27	78.95%	(\$0.19)
3/15/2019	436,456	\$21.80	-4.39%	0.33%	0.10%	0.00	1.79	0.76	0.46%	-4.85%	3.08%	-1.58	11.64%	(\$1.11)
3/18/2019	744,182	\$21.39	-1.88%	0.69%	0.26%	0.00	1.79	0.76	0.96%	-2.84%	3.08%	-0.92	35.67%	(\$0.62)
3/19/2019	114,632	\$20.51	-4.11%	-0.39%	-0.83%	0.00	1.79	0.76	-0.98%	-3.13%	3.08%	-1.02	30.99%	(\$0.67)
3/20/2019	235,859	\$20.50	-0.05%	-0.13%	-0.34%	0.00	1.79	0.76	-0.34%	0.29%	3.08%	0.09	92.49%	\$0.06
3/21/2019	272,926	\$21.50	4.88%	0.50%	1.64%	0.00	1.79	0.76	1.81%	3.07%	3.08%	1.00	31.91%	\$0.63
3/22/2019	137,821	\$21.00	-2.33%	-0.94%	-1.71%	0.00	1.79	0.76	-2.22%	-0.11%	3.08%	-0.04	97.15%	(\$0.02)
3/25/2019	195,129	\$20.50	-2.38%	-0.15%	-0.04%	0.00	1.79	0.76	-0.13%	-2.25%	3.08%	-0.73	46.55%	(\$0.47)
3/26/2019	123,580	\$21.14	3.12%	0.56%	0.90%	0.00	1.79	0.76	1.30%	1.82%	3.08%	0.59	55.53%	\$0.37
3/27/2019	68,501	\$21.04	-0.47%	-0.11%	-0.18%	0.00	1.79	0.76	-0.20%	-0.27%	3.08%	-0.09	92.93%	(\$0.06)
3/28/2019	70,326	\$21.01	-0.14%	0.24%	1.49%	0.00	1.79	0.76	1.43%	-1.57%	3.08%	-0.51	61.04%	(\$0.33)
3/29/2019	106,055	\$20.61	-1.90%	-0.33%	0.79%	0.00	1.79	0.76	0.31%	-2.21%	3.08%	-0.72	47.24%	(\$0.47)
4/1/2019	264,816	\$21.38	3.74%	0.83%	0.06%	0.00	1.79	0.76	0.95%	2.79%	3.08%	0.91	36.58%	\$0.57
4/2/2019	300,474	\$21.52	0.65%	0.22%	0.28%	0.00	1.79	0.76	0.49%	0.17%	3.08%	0.05	95.68%	\$0.04
4/3/2019	234,035	\$21.85	1.53%	0.10%	0.42%	0.00	1.79	0.76	0.47%	1.07%	3.08%	0.35	72.90%	\$0.23
4/4/2019	117,408	\$21.25	-2.75%	0.20%	-2.07%	0.00	1.79	0.76	-1.32%	-1.43%	3.08%	-0.46	64.30%	(\$0.31)
4/5/2019	105,431	\$21.35	0.47%	0.52%	0.97%	0.00	1.79	0.76	1.32%	-0.85%	3.08%	-0.28	78.31%	(\$0.18)
4/8/2019	429,529	\$22.26	4.26%	0.07%	-0.09%	0.00	1.79	0.76	0.05%	4.21%	3.08%	1.37	17.20%	\$0.90
4/9/2019	211,926	\$21.71	-2.47%	-0.37%	0.62%	0.00	1.79	0.76	0.13%	-2.60%	3.08%	-0.85	39.80%	(\$0.58)
4/10/2019	237,360	\$21.97	1.20%	0.37%	0.39%	0.00	1.79	0.76	0.72%	0.47%	3.08%	0.15	87.79%	\$0.10
4/11/2019	103,045	\$22.06	0.41%	0.02%	1.04%	0.00	1.79	0.76	0.86%	-0.45%	3.08%	-0.15	88.37%	(\$0.10)
4/12/2019	329,952	\$23.90	8.34%	0.50%	0.79%	0.00	1.79	0.76	1.16%	7.18%	3.08%	2.34	2.03% *	\$1.58
4/15/2019	270,007	\$24.25	1.46%	0.21%	0.27%	0.00	1.79	0.76	0.47%	1.00%	3.08%	0.32	74.64%	\$0.24
4/16/2019	213,471	\$24.96	2.93%	-0.08%	-0.93%	0.00	1.79	0.76	-0.73%	3.66%	3.08%	1.19	23.49%	\$0.89
4/17/2019	139,374	\$25.15	0.76%	0.26%	0.24%	0.00	1.79	0.76	0.49%	0.27%	3.08%	0.09	93.04%	\$0.07
4/18/2019	84,693	\$24.25	-3.58%	0.41%	1.10%	0.00	1.79	0.76	1.31%	-4.89%	3.08%	-1.59	11.34%	(\$1.23)
4/22/2019	67,982	\$24.50	1.03%	-0.21%	-0.03%	0.00	1.79	0.76	-0.19%	1.22%	3.08%	0.40	69.18%	\$0.30
4/23/2019	126,966	\$25.00	2.04%	0.56%	0.78%	0.00	1.79	0.76	1.22%	0.83%	3.08%	0.27	78.87%	\$0.20
4/24/2019	173,948	\$24.12	-3.52%	-0.43%	-0.81%	0.00	1.79	0.76	-1.01%	-2.51%	3.08%	-0.82	41.46%	(\$0.63)

Exhibit 4
Lightspeed Commerce, Inc. Subordinate Voting Shares Data
March 7, 2019 to November 30, 2021

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]
Date	Lightspeed			Market Return	Industry Return	Coefficient		Predicted Return	Excess Return	Standard Error	t-statistic	p-Value	Excess Price Change	
	Volume	Price	Return			Intercept	Market							Industry
4/25/2019	140,979	\$24.14	0.08%	-0.06%	0.17%	0.00	1.79	0.76	0.11%	-0.03%	3.08%	-0.01	99.18%	(\$0.01)
4/26/2019	89,815	\$24.42	1.16%	0.23%	0.59%	0.00	1.79	0.76	0.73%	0.43%	3.08%	0.14	88.80%	\$0.10
4/29/2019	76,845	\$24.28	-0.57%	-0.06%	0.66%	0.00	1.79	0.76	0.49%	-1.06%	3.08%	-0.35	73.00%	(\$0.26)
4/30/2019	224,556	\$24.99	2.92%	-0.08%	1.87%	0.00	1.79	0.76	1.38%	1.55%	3.08%	0.50	61.52%	\$0.38
5/1/2019	146,082	\$24.98	-0.04%	-0.47%	0.86%	0.00	1.79	0.76	0.22%	-0.26%	3.08%	-0.08	93.33%	(\$0.06)
5/2/2019	127,341	\$25.00	0.08%	-0.56%	1.61%	0.00	1.79	0.76	0.70%	-0.62%	3.08%	-0.20	84.11%	(\$0.15)
5/3/2019	162,861	\$25.11	0.44%	0.51%	0.88%	0.00	1.79	0.76	1.24%	-0.80%	3.08%	-0.26	79.41%	(\$0.20)
5/6/2019	88,769	\$24.76	-1.39%	-0.01%	0.19%	0.00	1.79	0.76	0.18%	-1.58%	3.08%	-0.51	60.85%	(\$0.40)
5/7/2019	138,866	\$23.95	-3.27%	-0.82%	-1.90%	0.00	1.79	0.76	-2.24%	-1.04%	3.08%	-0.34	73.66%	(\$0.26)
5/8/2019	172,304	\$23.85	-0.42%	0.24%	0.79%	0.00	1.79	0.76	0.90%	-1.32%	3.08%	-0.43	66.83%	(\$0.32)
5/9/2019	109,777	\$23.68	-0.71%	-0.46%	-0.42%	0.00	1.79	0.76	-0.74%	0.03%	3.08%	0.01	99.28%	\$0.01
5/10/2019	82,087	\$23.68	0.00%	-0.15%	-0.04%	0.00	1.79	0.76	-0.13%	0.13%	3.08%	0.04	96.55%	\$0.03
5/13/2019	160,649	\$22.90	-3.29%	-0.62%	-1.67%	0.00	1.79	0.76	-1.85%	-1.44%	3.08%	-0.47	64.02%	(\$0.34)
5/14/2019	80,601	\$23.10	0.87%	0.63%	0.87%	0.00	1.79	0.76	1.36%	-0.48%	3.08%	-0.16	87.51%	(\$0.11)
5/15/2019	58,065	\$23.23	0.56%	0.21%	1.64%	0.00	1.79	0.76	1.51%	-0.95%	3.08%	-0.31	75.73%	(\$0.22)
5/16/2019	98,778	\$23.93	3.01%	0.78%	2.59%	0.00	1.79	0.76	2.81%	0.20%	3.08%	0.07	94.78%	\$0.05
5/17/2019	115,650	\$23.83	-0.42%	-0.26%	-0.40%	0.00	1.79	0.76	-0.52%	0.10%	3.08%	0.03	97.48%	\$0.02
5/21/2019	31,566	\$23.40	-1.80%	0.15%	-0.43%	0.00	1.79	0.76	-0.13%	-1.68%	3.08%	-0.55	58.56%	(\$0.40)
5/22/2019	54,373	\$23.64	1.03%	-0.59%	1.33%	0.00	1.79	0.76	0.45%	0.58%	3.08%	0.19	85.07%	\$0.14
5/23/2019	77,576	\$23.00	-2.71%	-0.98%	-1.04%	0.00	1.79	0.76	-1.75%	-0.96%	3.08%	-0.31	75.59%	(\$0.23)
5/24/2019	49,477	\$22.83	-0.74%	0.41%	0.17%	0.00	1.79	0.76	0.60%	-1.33%	3.08%	-0.43	66.47%	(\$0.31)
5/27/2019	51,082	\$23.34	2.23%	0.72%	0.88%	0.00	1.79	0.76	1.46%	0.78%	3.08%	0.25	80.11%	\$0.18
5/28/2019	96,500	\$24.25	3.90%	-0.29%	0.44%	0.00	1.79	0.76	0.09%	3.81%	3.08%	1.24	21.65%	\$0.89
5/29/2019	120,110	\$24.08	-0.70%	-1.02%	-2.34%	0.00	1.79	0.76	-2.78%	2.08%	3.08%	0.67	50.05%	\$0.50
5/30/2019	106,689	\$23.81	-1.12%	-0.20%	1.02%	0.00	1.79	0.76	0.62%	-1.74%	3.08%	-0.57	57.24%	(\$0.42)
5/31/2019	884,730	\$27.10	13.82%	-0.32%	-0.62%	0.00	1.79	0.76	-0.75%	14.57%	3.08%	4.74	0.00% **	\$3.47
6/3/2019	487,313	\$28.21	4.10%	-0.11%	-2.68%	0.00	1.79	0.76	-2.09%	6.18%	3.08%	2.01	4.55% *	\$1.68
6/4/2019	402,398	\$28.44	0.82%	0.94%	1.46%	0.00	1.79	0.76	2.12%	-1.31%	3.08%	-0.42	67.12%	(\$0.37)
6/5/2019	406,071	\$28.00	-1.55%	0.29%	2.69%	0.00	1.79	0.76	2.39%	-3.93%	3.08%	-1.28	20.22%	(\$1.12)
6/6/2019	279,746	\$28.32	1.14%	0.12%	0.97%	0.00	1.79	0.76	0.91%	0.24%	3.08%	0.08	93.85%	\$0.07
6/7/2019	595,299	\$31.40	10.88%	0.04%	1.22%	0.00	1.79	0.76	1.02%	9.86%	3.08%	3.21	0.15% **	\$2.79
6/10/2019	523,876	\$32.22	2.61%	-0.09%	0.65%	0.00	1.79	0.76	0.45%	2.16%	3.08%	0.70	48.26%	\$0.68
6/11/2019	321,453	\$32.01	-0.65%	0.20%	0.21%	0.00	1.79	0.76	0.42%	-1.07%	3.08%	-0.35	72.76%	(\$0.35)
6/12/2019	273,861	\$33.86	5.78%	-0.13%	0.89%	0.00	1.79	0.76	0.59%	5.19%	3.08%	1.69	9.31%	\$1.66

Exhibit 4
Lightspeed Commerce, Inc. Subordinate Voting Shares Data
March 7, 2019 to November 30, 2021

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]
Date	Lightspeed			Market Return	Industry Return	Coefficient		Predicted Return	Excess Return	Standard Error	t-statistic	p-Value	Excess Price Change	
	Volume	Price	Return			Intercept	Market							Industry
6/13/2019	695,723	\$36.44	7.62%	0.15%	-0.33%	0.00	1.79	0.76	-0.04%	7.66%	3.08%	2.49	1.34% *	\$2.59
6/14/2019	322,410	\$36.27	-0.47%	0.39%	0.29%	0.00	1.79	0.76	0.67%	-1.14%	3.08%	-0.37	71.14%	(\$0.42)
6/17/2019	531,767	\$32.87	-9.37%	0.32%	0.50%	0.00	1.79	0.76	0.75%	-10.13%	3.08%	-3.29	0.11% **	(\$3.67)
6/18/2019	438,940	\$33.50	1.92%	0.92%	0.14%	0.00	1.79	0.76	1.10%	0.82%	3.08%	0.27	79.07%	\$0.27
6/19/2019	510,370	\$34.00	1.49%	0.05%	1.95%	0.00	1.79	0.76	1.58%	-0.09%	3.08%	-0.03	97.76%	(\$0.03)
6/20/2019	206,309	\$33.67	-0.97%	0.39%	-0.55%	0.00	1.79	0.76	0.03%	-1.00%	3.08%	-0.32	74.61%	(\$0.34)
6/21/2019	267,533	\$33.89	0.65%	-0.30%	-0.65%	0.00	1.79	0.76	-0.75%	1.40%	3.08%	0.46	64.94%	\$0.47
6/24/2019	343,069	\$36.00	6.23%	0.00%	-1.39%	0.00	1.79	0.76	-1.00%	7.23%	3.08%	2.35	1.96% *	\$2.45
6/25/2019	356,823	\$33.51	-6.92%	-0.92%	-4.22%	0.00	1.79	0.76	-4.10%	-2.82%	3.08%	-0.92	36.06%	(\$1.01)
6/26/2019	317,503	\$35.05	4.60%	-0.36%	-0.17%	0.00	1.79	0.76	-0.45%	5.04%	3.08%	1.64	10.23%	\$1.69
6/27/2019	215,748	\$35.23	0.51%	0.10%	1.86%	0.00	1.79	0.76	1.56%	-1.04%	3.08%	-0.34	73.44%	(\$0.37)
6/28/2019	263,702	\$36.41	3.35%	0.51%	0.30%	0.00	1.79	0.76	0.80%	2.55%	3.08%	0.83	40.74%	\$0.90
7/2/2019	467,660	\$38.29	5.16%	0.54%	1.88%	0.00	1.79	0.76	2.03%	3.13%	3.08%	1.02	30.96%	\$1.14
7/3/2019	293,669	\$39.52	3.21%	0.64%	0.70%	0.00	1.79	0.76	1.23%	1.98%	3.08%	0.64	52.04%	\$0.76
7/4/2019	390,060	\$41.97	6.20%	0.08%	0.09%	0.00	1.79	0.76	0.20%	6.00%	3.08%	1.95	5.21%	\$2.37
7/5/2019	594,113	\$40.93	-2.48%	-0.28%	-0.67%	0.00	1.79	0.76	-0.75%	-1.73%	3.08%	-0.56	57.46%	(\$0.73)
7/8/2019	379,995	\$39.50	-3.49%	-0.48%	0.63%	0.00	1.79	0.76	0.03%	-3.53%	3.08%	-1.15	25.24%	(\$1.44)
7/9/2019	504,826	\$38.18	-3.34%	0.56%	0.59%	0.00	1.79	0.76	1.07%	-4.41%	3.08%	-1.43	15.26%	(\$1.74)
7/10/2019	415,279	\$40.21	5.32%	0.11%	-0.67%	0.00	1.79	0.76	-0.35%	5.67%	3.08%	1.84	6.67%	\$2.16
7/11/2019	255,656	\$39.87	-0.85%	-0.21%	-0.26%	0.00	1.79	0.76	-0.37%	-0.48%	3.08%	-0.15	87.73%	(\$0.19)
7/12/2019	108,953	\$39.51	-0.90%	-0.24%	-0.91%	0.00	1.79	0.76	-0.89%	-0.01%	3.08%	0.00	99.64%	(\$0.01)
7/15/2019	208,965	\$39.76	0.63%	0.14%	2.22%	0.00	1.79	0.76	1.88%	-1.24%	3.08%	-0.40	68.65%	(\$0.49)
7/16/2019	121,312	\$38.90	-2.16%	-0.05%	-1.12%	0.00	1.79	0.76	-0.85%	-1.31%	3.08%	-0.43	67.04%	(\$0.52)
7/17/2019	288,767	\$39.38	1.23%	-0.11%	0.75%	0.00	1.79	0.76	0.50%	0.73%	3.08%	0.24	81.23%	\$0.28
7/18/2019	163,611	\$39.21	-0.43%	0.06%	0.89%	0.00	1.79	0.76	0.79%	-1.22%	3.08%	-0.40	69.22%	(\$0.48)
7/19/2019	439,923	\$37.08	-5.43%	-0.05%	-0.27%	0.00	1.79	0.76	-0.20%	-5.23%	3.08%	-1.70	9.05%	(\$2.05)
7/22/2019	251,652	\$37.23	0.40%	0.20%	1.45%	0.00	1.79	0.76	1.35%	-0.95%	3.08%	-0.31	75.88%	(\$0.35)
7/23/2019	413,355	\$36.09	-3.06%	0.33%	-0.33%	0.00	1.79	0.76	0.14%	-3.20%	3.08%	-1.04	29.93%	(\$1.19)
7/24/2019	379,335	\$35.94	-0.42%	0.30%	0.87%	0.00	1.79	0.76	1.02%	-1.44%	3.08%	-0.47	64.05%	(\$0.52)
7/25/2019	238,916	\$37.34	3.90%	-0.74%	0.24%	0.00	1.79	0.76	-0.53%	4.43%	3.08%	1.44	15.12%	\$1.59
7/26/2019	188,955	\$38.60	3.37%	0.26%	1.16%	0.00	1.79	0.76	1.19%	2.18%	3.08%	0.71	47.93%	\$0.81
7/29/2019	264,179	\$36.40	-5.70%	-0.24%	-2.67%	0.00	1.79	0.76	-2.22%	-3.48%	3.08%	-1.13	25.91%	(\$1.34)
7/30/2019	339,161	\$38.80	6.59%	-0.14%	-0.85%	0.00	1.79	0.76	-0.74%	7.33%	3.08%	2.38	1.79% *	\$2.67
7/31/2019	548,563	\$39.64	2.16%	-0.33%	-0.37%	0.00	1.79	0.76	-0.57%	2.73%	3.08%	0.89	37.52%	\$1.06

Exhibit 4
Lightspeed Commerce, Inc. Subordinate Voting Shares Data
March 7, 2019 to November 30, 2021

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]
Date	Lightspeed			Market Return	Industry Return	Coefficient		Predicted Return	Excess Return	Standard Error	t-statistic	p-Value	Excess Price Change	
	Volume	Price	Return			Intercept	Market							Industry
8/1/2019	490,226	\$41.00	3.43%	-0.18%	2.90%	0.00	1.79	0.76	2.06%	1.37%	3.08%	0.45	65.67%	\$0.54
8/2/2019	263,523	\$40.10	-2.20%	-0.64%	-2.64%	0.00	1.79	0.76	-2.62%	0.42%	3.08%	0.14	89.13%	\$0.17
8/6/2019	361,893	\$39.62	-1.20%	-0.75%	-0.53%	0.00	1.79	0.76	-1.13%	-0.07%	3.08%	-0.02	98.14%	(\$0.03)
8/7/2019	400,376	\$41.90	5.75%	0.72%	1.48%	0.00	1.79	0.76	1.91%	3.84%	3.08%	1.25	21.30%	\$1.52
8/8/2019	970,135	\$45.89	9.52%	0.86%	2.33%	0.00	1.79	0.76	2.70%	6.82%	3.08%	2.22	2.75% *	\$2.86
8/9/2019	710,199	\$48.61	5.93%	-0.38%	0.70%	0.00	1.79	0.76	0.19%	5.74%	3.08%	1.87	6.32%	\$2.63
8/12/2019	806,712	\$47.73	-1.81%	-0.63%	-0.48%	0.00	1.79	0.76	-0.97%	-0.84%	3.08%	-0.27	78.44%	(\$0.41)
8/13/2019	1,169,564	\$43.07	-9.76%	0.70%	0.53%	0.00	1.79	0.76	1.17%	-10.93%	3.08%	-3.55	0.05% **	(\$5.22)
8/14/2019	946,991	\$39.73	-7.75%	-1.80%	-2.59%	0.00	1.79	0.76	-3.76%	-3.99%	3.08%	-1.30	19.57%	(\$1.72)
8/15/2019	1,936,517	\$39.53	-0.50%	-0.21%	0.26%	0.00	1.79	0.76	0.04%	-0.54%	3.08%	-0.18	86.08%	(\$0.21)
8/16/2019	536,898	\$39.57	0.10%	0.86%	1.54%	0.00	1.79	0.76	2.10%	-2.00%	3.08%	-0.65	51.67%	(\$0.79)
8/19/2019	624,749	\$42.04	6.24%	0.99%	1.09%	0.00	1.79	0.76	1.89%	4.35%	3.08%	1.41	15.89%	\$1.72
8/20/2019	542,827	\$42.11	0.17%	-0.56%	1.09%	0.00	1.79	0.76	0.31%	-0.14%	3.08%	-0.05	96.41%	(\$0.06)
8/21/2019	698,463	\$44.00	4.49%	0.60%	2.16%	0.00	1.79	0.76	2.31%	2.18%	3.08%	0.71	47.92%	\$0.92
8/22/2019	622,776	\$44.50	1.14%	-0.32%	0.07%	0.00	1.79	0.76	-0.23%	1.37%	3.08%	0.45	65.62%	\$0.60
8/23/2019	686,445	\$44.11	-0.88%	-1.33%	-2.11%	0.00	1.79	0.76	-2.92%	2.04%	3.08%	0.66	50.80%	\$0.91
8/26/2019	405,378	\$44.46	0.79%	0.38%	1.30%	0.00	1.79	0.76	1.43%	-0.63%	3.08%	-0.21	83.73%	(\$0.28)
8/27/2019	428,433	\$43.49	-2.18%	0.54%	2.07%	0.00	1.79	0.76	2.17%	-4.36%	3.08%	-1.42	15.81%	(\$1.94)
8/28/2019	253,375	\$43.89	0.92%	0.54%	-1.38%	0.00	1.79	0.76	-0.44%	1.36%	3.08%	0.44	65.99%	\$0.59
8/29/2019	215,977	\$43.45	-1.00%	0.75%	0.33%	0.00	1.79	0.76	1.08%	-2.08%	3.08%	-0.68	50.00%	(\$0.91)
8/30/2019	570,365	\$42.55	-2.07%	0.36%	-0.44%	0.00	1.79	0.76	0.08%	-2.15%	3.08%	-0.70	48.52%	(\$0.93)
9/3/2019	636,461	\$39.61	-6.91%	-0.23%	-0.11%	0.00	1.79	0.76	-0.27%	-6.64%	3.08%	-2.16	3.19% *	(\$2.82)
9/4/2019	536,304	\$40.05	1.11%	0.30%	0.38%	0.00	1.79	0.76	0.65%	0.46%	3.08%	0.15	88.05%	\$0.18
9/5/2019	374,523	\$39.71	-0.85%	0.77%	2.12%	0.00	1.79	0.76	2.45%	-3.29%	3.08%	-1.07	28.52%	(\$1.32)
9/6/2019	476,160	\$37.83	-4.73%	-0.21%	-1.72%	0.00	1.79	0.76	-1.47%	-3.26%	3.08%	-1.06	28.97%	(\$1.30)
9/9/2019	1,267,762	\$34.27	-9.41%	-0.23%	-3.04%	0.00	1.79	0.76	-2.49%	-6.92%	3.08%	-2.25	2.53% *	(\$2.62)
9/10/2019	1,164,690	\$36.11	5.37%	0.26%	-3.05%	0.00	1.79	0.76	-2.00%	7.37%	3.08%	2.39	1.74% *	\$2.52
9/11/2019	1,072,872	\$34.17	-5.37%	0.45%	2.07%	0.00	1.79	0.76	2.09%	-7.46%	3.08%	-2.42	1.60% *	(\$2.69)
9/12/2019	810,214	\$34.77	1.76%	0.23%	1.32%	0.00	1.79	0.76	1.29%	0.47%	3.08%	0.15	87.91%	\$0.16
9/13/2019	474,066	\$34.27	-1.44%	0.28%	-1.72%	0.00	1.79	0.76	-0.97%	-0.47%	3.08%	-0.15	87.95%	(\$0.16)
9/16/2019	462,693	\$33.39	-2.57%	0.42%	-0.23%	0.00	1.79	0.76	0.31%	-2.87%	3.08%	-0.93	35.11%	(\$0.98)
9/17/2019	451,204	\$33.33	-0.18%	0.50%	-0.85%	0.00	1.79	0.76	-0.08%	-0.10%	3.08%	-0.03	97.40%	(\$0.03)
9/18/2019	1,118,818	\$31.95	-4.14%	-0.20%	-0.13%	0.00	1.79	0.76	-0.26%	-3.88%	3.08%	-1.26	20.79%	(\$1.29)
9/19/2019	841,282	\$31.26	-2.16%	0.35%	0.28%	0.00	1.79	0.76	0.62%	-2.78%	3.08%	-0.90	36.70%	(\$0.89)

Exhibit 4
Lightspeed Commerce, Inc. Subordinate Voting Shares Data
March 7, 2019 to November 30, 2021

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]
Date	Lightspeed			Market Return	Industry Return	Coefficient		Predicted Return	Excess Return	Standard Error	t-statistic	p-Value	Excess Price Change	
	Volume	Price	Return			Intercept	Market							Industry
9/20/2019	1,050,298	\$33.10	5.89%	0.25%	-1.06%	0.00	1.79	0.76	-0.50%	6.38%	3.08%	2.08	3.90% *	\$2.00
9/23/2019	285,057	\$32.98	-0.36%	-0.19%	-0.67%	0.00	1.79	0.76	-0.66%	0.30%	3.08%	0.10	92.35%	\$0.10
9/24/2019	655,215	\$34.09	3.37%	-0.40%	-3.06%	0.00	1.79	0.76	-2.69%	6.05%	3.08%	1.97	5.02%	\$2.00
9/25/2019	428,410	\$31.92	-6.37%	-0.08%	2.53%	0.00	1.79	0.76	1.88%	-8.25%	3.08%	-2.68	0.78% **	(\$2.81)
9/26/2019	372,070	\$33.06	3.57%	0.07%	0.25%	0.00	1.79	0.76	0.31%	3.26%	3.08%	1.06	29.05%	\$1.04
9/27/2019	966,651	\$30.21	-8.62%	-0.47%	-1.48%	0.00	1.79	0.76	-1.56%	-7.06%	3.08%	-2.29	2.26% *	(\$2.33)
9/30/2019	470,122	\$30.64	1.42%	-0.17%	1.14%	0.00	1.79	0.76	0.75%	0.68%	3.08%	0.22	82.58%	\$0.20
10/1/2019	237,769	\$30.22	-1.37%	-1.27%	-0.78%	0.00	1.79	0.76	-1.85%	0.48%	3.08%	0.16	87.64%	\$0.15
10/2/2019	601,603	\$29.06	-3.84%	-0.83%	-0.61%	0.00	1.79	0.76	-1.27%	-2.57%	3.08%	-0.83	40.50%	(\$0.78)
10/3/2019	392,187	\$28.43	-2.17%	0.36%	2.11%	0.00	1.79	0.76	2.01%	-4.18%	3.08%	-1.36	17.55%	(\$1.21)
10/4/2019	261,109	\$29.57	4.01%	0.49%	0.69%	0.00	1.79	0.76	1.08%	2.93%	3.08%	0.95	34.16%	\$0.83
10/7/2019	312,427	\$30.55	3.31%	-0.15%	-0.34%	0.00	1.79	0.76	-0.36%	3.67%	3.08%	1.19	23.34%	\$1.09
10/8/2019	203,669	\$29.72	-2.72%	-0.79%	-1.99%	0.00	1.79	0.76	-2.28%	-0.44%	3.08%	-0.14	88.67%	(\$0.13)
10/9/2019	217,035	\$30.75	3.47%	0.59%	1.12%	0.00	1.79	0.76	1.50%	1.96%	3.08%	0.64	52.39%	\$0.58
10/10/2019	549,800	\$32.87	6.89%	0.26%	1.05%	0.00	1.79	0.76	1.11%	5.78%	3.08%	1.88	6.14%	\$1.78
10/11/2019	501,771	\$32.77	-0.30%	-0.04%	0.39%	0.00	1.79	0.76	0.30%	-0.61%	3.08%	-0.20	84.39%	(\$0.20)
10/15/2019	650,578	\$34.30	4.67%	0.02%	2.12%	0.00	1.79	0.76	1.67%	3.00%	3.08%	0.97	33.11%	\$0.98
10/16/2019	357,027	\$34.10	-0.58%	0.06%	-2.88%	0.00	1.79	0.76	-2.08%	1.49%	3.08%	0.49	62.81%	\$0.51
10/17/2019	508,539	\$35.37	3.72%	-0.01%	0.30%	0.00	1.79	0.76	0.27%	3.45%	3.08%	1.12	26.28%	\$1.18
10/18/2019	583,847	\$34.06	-3.70%	-0.30%	-3.14%	0.00	1.79	0.76	-2.64%	-1.06%	3.08%	-0.35	72.96%	(\$0.38)
10/21/2019	278,018	\$33.92	-0.41%	0.26%	1.35%	0.00	1.79	0.76	1.34%	-1.75%	3.08%	-0.57	57.01%	(\$0.60)
10/22/2019	481,967	\$31.57	-6.93%	-0.16%	-2.92%	0.00	1.79	0.76	-2.33%	-4.60%	3.08%	-1.49	13.64%	(\$1.56)
10/23/2019	388,713	\$32.09	1.65%	-0.27%	-0.45%	0.00	1.79	0.76	-0.57%	2.22%	3.08%	0.72	47.11%	\$0.70
10/24/2019	310,465	\$33.57	4.61%	0.21%	3.38%	0.00	1.79	0.76	2.83%	1.78%	3.08%	0.58	56.31%	\$0.57
10/25/2019	167,149	\$33.47	-0.30%	0.21%	-0.70%	0.00	1.79	0.76	-0.26%	-0.04%	3.08%	-0.01	98.94%	(\$0.01)
10/28/2019	265,962	\$34.08	1.82%	-0.10%	0.80%	0.00	1.79	0.76	0.55%	1.28%	3.08%	0.42	67.84%	\$0.43
10/29/2019	189,502	\$33.85	-0.67%	0.19%	-1.44%	0.00	1.79	0.76	-0.85%	0.18%	3.08%	0.06	95.39%	\$0.06
10/30/2019	203,624	\$33.59	-0.77%	0.53%	1.93%	0.00	1.79	0.76	2.05%	-2.82%	3.08%	-0.92	36.03%	(\$0.95)
10/31/2019	307,464	\$34.36	2.29%	-0.08%	-0.78%	0.00	1.79	0.76	-0.62%	2.91%	3.08%	0.95	34.45%	\$0.98
11/1/2019	205,030	\$34.22	-0.41%	0.67%	1.14%	0.00	1.79	0.76	1.61%	-2.01%	3.08%	-0.66	51.31%	(\$0.69)
11/4/2019	1,655,401	\$33.57	-1.90%	0.46%	-0.79%	0.00	1.79	0.76	-0.08%	-1.82%	3.08%	-0.59	55.51%	(\$0.62)
11/5/2019	378,478	\$31.85	-5.12%	0.07%	-2.39%	0.00	1.79	0.76	-1.69%	-3.43%	3.08%	-1.12	26.53%	(\$1.15)
11/6/2019	419,930	\$31.96	0.35%	0.38%	0.39%	0.00	1.79	0.76	0.74%	-0.40%	3.08%	-0.13	89.75%	(\$0.13)
11/7/2019	869,367	\$31.54	-1.31%	0.36%	-1.13%	0.00	1.79	0.76	-0.44%	-0.88%	3.08%	-0.28	77.62%	(\$0.28)

Exhibit 4
Lightspeed Commerce, Inc. Subordinate Voting Shares Data
March 7, 2019 to November 30, 2021

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]
Date	Lightspeed			Market Return	Industry Return	Coefficient			Predicted Return	Excess Return	Standard Error	t-statistic	p-Value	Excess Price Change
	Volume	Price	Return			Intercept	Market	Industry						
11/8/2019	664,144	\$30.69	-2.69%	0.43%	2.73%	0.00	1.79	0.76	2.56%	-5.25%	3.08%	-1.71	8.89%	(\$1.66)
11/11/2019	310,779	\$30.97	0.91%	0.03%	1.26%	0.00	1.79	0.76	1.04%	-0.12%	3.08%	-0.04	96.81%	(\$0.04)
11/12/2019	244,214	\$31.92	3.07%	0.16%	0.26%	0.00	1.79	0.76	0.41%	2.66%	3.08%	0.87	38.77%	\$0.82
11/13/2019	268,682	\$31.08	-2.63%	0.29%	1.74%	0.00	1.79	0.76	1.66%	-4.29%	3.08%	-1.40	16.40%	(\$1.37)
11/14/2019	284,832	\$31.75	2.16%	0.15%	0.07%	0.00	1.79	0.76	0.26%	1.90%	3.08%	0.62	53.73%	\$0.59
11/15/2019	212,210	\$31.04	-2.24%	0.33%	0.46%	0.00	1.79	0.76	0.74%	-2.98%	3.08%	-0.97	33.44%	(\$0.94)
11/18/2019	535,530	\$30.89	-0.48%	0.01%	1.26%	0.00	1.79	0.76	1.01%	-1.49%	3.08%	-0.49	62.77%	(\$0.46)
11/19/2019	251,248	\$31.24	1.13%	-0.08%	0.00%	0.00	1.79	0.76	-0.03%	1.17%	3.08%	0.38	70.51%	\$0.36
11/20/2019	537,785	\$30.60	-2.05%	-0.03%	0.24%	0.00	1.79	0.76	0.20%	-2.25%	3.08%	-0.73	46.52%	(\$0.70)
11/21/2019	391,285	\$30.27	-1.08%	-0.02%	0.14%	0.00	1.79	0.76	0.13%	-1.21%	3.08%	-0.39	69.50%	(\$0.37)
11/22/2019	326,837	\$30.28	0.03%	-0.26%	0.04%	0.00	1.79	0.76	-0.19%	0.22%	3.08%	0.07	94.31%	\$0.07
11/25/2019	486,587	\$31.04	2.51%	0.46%	0.80%	0.00	1.79	0.76	1.13%	1.38%	3.08%	0.45	65.50%	\$0.42
11/26/2019	1,180,358	\$33.04	6.44%	0.04%	2.63%	0.00	1.79	0.76	2.08%	4.36%	3.08%	1.42	15.74%	\$1.35
11/27/2019	790,474	\$34.50	4.42%	0.38%	0.57%	0.00	1.79	0.76	0.87%	3.55%	3.08%	1.15	24.96%	\$1.17
11/28/2019	353,824	\$34.72	0.64%	0.13%	0.03%	0.00	1.79	0.76	0.20%	0.44%	3.08%	0.14	88.74%	\$0.15
11/29/2019	254,483	\$34.48	-0.69%	-0.43%	-0.98%	0.00	1.79	0.76	-1.14%	0.45%	3.08%	0.14	88.48%	\$0.15
12/2/2019	304,593	\$34.10	-1.10%	-0.31%	-0.79%	0.00	1.79	0.76	-0.87%	-0.23%	3.08%	-0.08	94.01%	(\$0.08)
12/3/2019	233,178	\$34.32	0.65%	-0.52%	1.20%	0.00	1.79	0.76	0.42%	0.23%	3.08%	0.07	94.11%	\$0.08
12/4/2019	627,713	\$32.02	-6.70%	0.04%	1.81%	0.00	1.79	0.76	1.46%	-8.16%	3.08%	-2.65	0.85% **	(\$2.80)
12/5/2019	332,483	\$33.14	3.50%	-0.25%	-1.30%	0.00	1.79	0.76	-1.19%	4.69%	3.08%	1.52	12.87%	\$1.50
12/6/2019	241,922	\$33.66	1.57%	0.86%	0.53%	0.00	1.79	0.76	1.34%	0.23%	3.08%	0.08	94.01%	\$0.08
12/9/2019	449,978	\$34.03	1.10%	-0.27%	-0.55%	0.00	1.79	0.76	-0.64%	1.74%	3.08%	0.57	57.23%	\$0.59
12/10/2019	184,104	\$33.58	-1.32%	0.04%	-0.46%	0.00	1.79	0.76	-0.26%	-1.07%	3.08%	-0.35	72.92%	(\$0.36)
12/11/2019	169,756	\$33.16	-1.25%	-0.07%	0.32%	0.00	1.79	0.76	0.23%	-1.48%	3.08%	-0.48	63.12%	(\$0.50)
12/12/2019	152,948	\$33.20	0.12%	0.06%	-0.10%	0.00	1.79	0.76	0.03%	0.09%	3.08%	0.03	97.67%	\$0.03
12/13/2019	275,564	\$32.37	-2.50%	0.37%	1.65%	0.00	1.79	0.76	1.68%	-4.18%	3.08%	-1.36	17.54%	(\$1.39)
12/16/2019	660,502	\$33.05	2.10%	0.32%	0.73%	0.00	1.79	0.76	0.93%	1.17%	3.08%	0.38	70.49%	\$0.38
12/17/2019	520,223	\$33.79	2.24%	0.11%	-0.58%	0.00	1.79	0.76	-0.28%	2.52%	3.08%	0.82	41.40%	\$0.83
12/18/2019	639,730	\$35.24	4.29%	-0.25%	0.53%	0.00	1.79	0.76	0.19%	4.10%	3.08%	1.33	18.38%	\$1.39
12/19/2019	569,385	\$35.70	1.31%	0.19%	0.77%	0.00	1.79	0.76	0.83%	0.47%	3.08%	0.15	87.75%	\$0.17
12/20/2019	2,057,144	\$36.75	2.94%	0.32%	1.35%	0.00	1.79	0.76	1.41%	1.54%	3.08%	0.50	61.81%	\$0.55
12/23/2019	566,279	\$37.17	1.14%	0.06%	-1.17%	0.00	1.79	0.76	-0.77%	1.92%	3.08%	0.62	53.39%	\$0.70
12/24/2019	189,530	\$36.98	-0.51%	0.33%	0.52%	0.00	1.79	0.76	0.79%	-1.30%	3.08%	-0.42	67.33%	(\$0.48)
12/27/2019	205,145	\$36.45	-1.43%	-0.06%	0.70%	0.00	1.79	0.76	0.52%	-1.95%	3.08%	-0.63	52.64%	(\$0.72)

Exhibit 4
Lightspeed Commerce, Inc. Subordinate Voting Shares Data
March 7, 2019 to November 30, 2021

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]
Date	Lightspeed			Market Return	Industry Return	Coefficient		Predicted Return	Excess Return	Standard Error	t-statistic	p-Value	Excess Price Change	
	Volume	Price	Return			Intercept	Market							Industry
12/30/2019	297,133	\$35.96	-1.34%	-0.31%	-1.59%	0.00	1.79	0.76	-1.48%	0.14%	3.08%	0.05	96.40%	\$0.05
12/31/2019	238,607	\$36.07	0.31%	-0.20%	-0.35%	0.00	1.79	0.76	-0.43%	0.74%	3.08%	0.24	81.11%	\$0.26
1/2/2020	279,153	\$36.88	2.25%	0.21%	1.74%	0.00	1.79	0.76	1.59%	0.66%	3.08%	0.21	83.05%	\$0.24
1/3/2020	289,166	\$37.36	1.30%	-0.20%	-0.75%	0.00	1.79	0.76	-0.73%	2.03%	3.08%	0.66	51.03%	\$0.75
1/6/2020	386,099	\$37.01	-0.94%	0.28%	1.42%	0.00	1.79	0.76	1.41%	-2.35%	3.08%	-0.76	44.57%	(\$0.88)
1/7/2020	752,990	\$40.20	8.62%	0.36%	1.13%	0.00	1.79	0.76	1.28%	7.34%	3.08%	2.39	1.77% *	\$2.72
1/8/2020	799,807	\$41.20	2.49%	0.00%	1.06%	0.00	1.79	0.76	0.85%	1.64%	3.08%	0.53	59.51%	\$0.66
1/9/2020	692,550	\$42.30	2.67%	0.45%	2.21%	0.00	1.79	0.76	2.18%	0.49%	3.08%	0.16	87.45%	\$0.20
1/10/2020	707,350	\$42.01	-0.69%	-0.01%	-0.46%	0.00	1.79	0.76	-0.31%	-0.38%	3.08%	-0.12	90.18%	(\$0.16)
1/13/2020	466,379	\$42.83	1.95%	0.34%	1.48%	0.00	1.79	0.76	1.52%	0.43%	3.08%	0.14	88.96%	\$0.18
1/14/2020	366,856	\$42.12	-1.66%	0.35%	-0.27%	0.00	1.79	0.76	0.20%	-1.86%	3.08%	-0.60	54.62%	(\$0.80)
1/15/2020	372,466	\$42.58	1.09%	0.36%	0.86%	0.00	1.79	0.76	1.07%	0.02%	3.08%	0.01	99.51%	\$0.01
1/16/2020	340,889	\$41.83	-1.76%	0.42%	0.45%	0.00	1.79	0.76	0.82%	-2.58%	3.08%	-0.84	40.25%	(\$1.10)
1/17/2020	490,798	\$41.65	-0.43%	0.43%	0.55%	0.00	1.79	0.76	0.90%	-1.33%	3.08%	-0.43	66.58%	(\$0.56)
1/20/2020	157,718	\$42.31	1.58%	0.22%	0.27%	0.00	1.79	0.76	0.47%	1.11%	3.08%	0.36	71.85%	\$0.46
1/21/2020	430,933	\$42.72	0.97%	-0.14%	1.16%	0.00	1.79	0.76	0.78%	0.19%	3.08%	0.06	95.17%	\$0.08
1/22/2020	525,199	\$43.92	2.81%	0.16%	0.46%	0.00	1.79	0.76	0.56%	2.25%	3.08%	0.73	46.46%	\$0.96
1/23/2020	635,427	\$45.60	3.83%	0.13%	0.29%	0.00	1.79	0.76	0.40%	3.43%	3.08%	1.11	26.62%	\$1.51
1/24/2020	742,818	\$45.01	-1.29%	-0.26%	-0.41%	0.00	1.79	0.76	-0.53%	-0.77%	3.08%	-0.25	80.30%	(\$0.35)
1/27/2020	801,466	\$41.77	-7.20%	-0.69%	-1.72%	0.00	1.79	0.76	-1.97%	-5.23%	3.08%	-1.70	9.05%	(\$2.35)
1/28/2020	579,071	\$43.34	3.76%	0.33%	2.07%	0.00	1.79	0.76	1.96%	1.79%	3.08%	0.58	56.01%	\$0.75
1/29/2020	642,451	\$44.79	3.35%	0.06%	-1.25%	0.00	1.79	0.76	-0.84%	4.18%	3.08%	1.36	17.50%	\$1.81
1/30/2020	584,557	\$44.28	-1.14%	-0.10%	0.20%	0.00	1.79	0.76	0.10%	-1.24%	3.08%	-0.40	68.69%	(\$0.56)
1/31/2020	713,293	\$43.00	-2.89%	-0.95%	-1.41%	0.00	1.79	0.76	-2.00%	-0.89%	3.08%	-0.29	77.28%	(\$0.39)
2/3/2020	452,357	\$44.51	3.51%	0.35%	1.45%	0.00	1.79	0.76	1.51%	2.00%	3.08%	0.65	51.56%	\$0.86
2/4/2020	482,243	\$44.56	0.11%	0.77%	2.21%	0.00	1.79	0.76	2.52%	-2.41%	3.08%	-0.78	43.45%	(\$1.07)
2/5/2020	680,493	\$44.24	-0.72%	0.80%	-1.14%	0.00	1.79	0.76	0.01%	-0.72%	3.08%	-0.24	81.40%	(\$0.32)
2/6/2020	2,402,025	\$38.38	-13.25%	0.61%	0.76%	0.00	1.79	0.76	1.25%	-14.50%	3.08%	-4.71	0.00% **	(\$6.41)
2/7/2020	1,619,305	\$36.70	-4.38%	-0.57%	0.03%	0.00	1.79	0.76	-0.52%	-3.86%	3.08%	-1.26	21.05%	(\$1.48)
2/10/2020	858,229	\$38.01	3.57%	0.48%	1.67%	0.00	1.79	0.76	1.81%	1.76%	3.08%	0.57	56.78%	\$0.65
2/11/2020	915,302	\$38.22	0.55%	0.21%	-0.16%	0.00	1.79	0.76	0.14%	0.41%	3.08%	0.13	89.42%	\$0.16
2/12/2020	858,677	\$39.76	4.03%	0.31%	3.69%	0.00	1.79	0.76	3.17%	0.86%	3.08%	0.28	78.01%	\$0.33
2/13/2020	524,577	\$40.18	1.06%	0.00%	0.11%	0.00	1.79	0.76	0.14%	0.92%	3.08%	0.30	76.57%	\$0.36
2/14/2020	529,089	\$39.99	-0.47%	0.16%	-0.45%	0.00	1.79	0.76	-0.13%	-0.35%	3.08%	-0.11	91.07%	(\$0.14)

Exhibit 4
Lightspeed Commerce, Inc. Subordinate Voting Shares Data
March 7, 2019 to November 30, 2021

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]
Date	Lightspeed			Market Return	Industry Return	Coefficient		Predicted Return	Excess Return	Standard Error	t-statistic	p-Value	Excess Price Change	
	Volume	Price	Return			Intercept	Market							Industry
2/18/2020	368,373	\$39.52	-1.18%	0.06%	0.06%	0.00	1.79	0.76	0.15%	-1.33%	3.08%	-0.43	66.70%	(\$0.53)
2/19/2020	2,390,995	\$37.28	-5.67%	0.38%	0.28%	0.00	1.79	0.76	0.65%	-6.32%	3.08%	-2.05	4.10% *	(\$2.50)
2/20/2020	1,923,760	\$37.53	0.67%	0.10%	-0.68%	0.00	1.79	0.76	-0.36%	1.03%	3.08%	0.34	73.78%	\$0.38
2/21/2020	805,885	\$37.28	-0.67%	-0.56%	-2.33%	0.00	1.79	0.76	-2.29%	1.62%	3.08%	0.53	59.85%	\$0.61
2/24/2020	991,227	\$36.41	-2.33%	-1.54%	-3.33%	0.00	1.79	0.76	-4.07%	1.74%	3.08%	0.56	57.32%	\$0.65
2/25/2020	1,017,778	\$34.83	-4.34%	-2.19%	-3.68%	0.00	1.79	0.76	-5.00%	0.66%	3.08%	0.22	82.96%	\$0.24
2/26/2020	780,940	\$34.69	-0.40%	-0.78%	1.01%	0.00	1.79	0.76	0.01%	-0.41%	3.08%	-0.13	89.38%	(\$0.14)
2/27/2020	936,570	\$33.87	-2.36%	-1.84%	-0.99%	0.00	1.79	0.76	-2.60%	0.23%	3.08%	0.08	93.93%	\$0.08
2/28/2020	931,176	\$33.24	-1.86%	-2.70%	-0.61%	0.00	1.79	0.76	-3.20%	1.34%	3.08%	0.44	66.35%	\$0.45
3/2/2020	1,071,476	\$32.85	-1.17%	1.79%	2.56%	0.00	1.79	0.76	3.83%	-5.01%	3.08%	-1.63	10.48%	(\$1.66)
3/3/2020	1,089,330	\$31.58	-3.87%	-0.75%	-1.79%	0.00	1.79	0.76	-2.08%	-1.79%	3.08%	-0.58	56.22%	(\$0.59)
3/4/2020	810,611	\$33.96	7.54%	2.17%	4.86%	0.00	1.79	0.76	5.96%	1.57%	3.08%	0.51	60.95%	\$0.50
3/5/2020	568,256	\$32.79	-3.45%	-1.33%	-1.35%	0.00	1.79	0.76	-2.34%	-1.10%	3.08%	-0.36	72.07%	(\$0.37)
3/6/2020	1,367,440	\$29.90	-8.81%	-2.28%	-4.18%	0.00	1.79	0.76	-5.47%	-3.34%	3.08%	-1.09	27.79%	(\$1.10)
3/9/2020	1,343,947	\$26.03	-12.94%	-10.24%	-7.52%	0.00	1.79	0.76	-16.20%	3.25%	3.08%	1.06	29.14%	\$0.97
3/10/2020	1,187,212	\$28.02	7.65%	3.08%	6.11%	0.00	1.79	0.76	7.85%	-0.20%	3.08%	-0.07	94.74%	(\$0.05)
3/11/2020	1,286,272	\$24.68	-11.92%	-4.59%	-4.35%	0.00	1.79	0.76	-7.97%	-3.95%	3.08%	-1.28	20.08%	(\$1.11)
3/12/2020	3,054,782	\$17.45	-29.29%	-12.32%	-8.66%	0.00	1.79	0.76	-19.20%	-10.09%	3.08%	-3.28	0.12% **	(\$2.49)
3/13/2020	3,515,290	\$19.75	13.18%	9.72%	4.33%	0.00	1.79	0.76	13.34%	-0.16%	3.08%	-0.05	95.78%	(\$0.03)
3/16/2020	1,649,513	\$16.13	-18.33%	-9.87%	-12.38%	0.00	1.79	0.76	-19.50%	1.17%	3.08%	0.38	70.33%	\$0.23
3/17/2020	2,473,097	\$15.22	-5.64%	2.63%	4.55%	0.00	1.79	0.76	6.21%	-11.85%	3.08%	-3.85	0.01% **	(\$1.91)
3/18/2020	1,802,053	\$12.00	-21.16%	-7.59%	-2.85%	0.00	1.79	0.76	-9.93%	-11.23%	3.08%	-3.65	0.03% **	(\$1.71)
3/19/2020	2,289,401	\$13.23	10.25%	3.86%	1.48%	0.00	1.79	0.76	5.15%	5.10%	3.08%	1.66	9.86%	\$0.61
3/20/2020	2,992,547	\$13.50	2.04%	-2.61%	-1.23%	0.00	1.79	0.76	-3.58%	5.62%	3.08%	1.83	6.89%	\$0.74
3/23/2020	992,159	\$13.07	-3.19%	-5.26%	2.81%	0.00	1.79	0.76	-3.24%	0.05%	3.08%	0.02	98.60%	\$0.01
3/24/2020	1,885,996	\$15.60	19.36%	11.96%	11.14%	0.00	1.79	0.76	20.81%	-1.46%	3.08%	-0.47	63.61%	(\$0.19)
3/25/2020	1,769,341	\$18.00	15.38%	4.52%	-0.05%	0.00	1.79	0.76	4.67%	10.71%	3.08%	3.48	0.06% **	\$1.67
3/26/2020	3,629,474	\$23.75	31.94%	1.79%	1.86%	0.00	1.79	0.76	3.30%	28.64%	3.08%	9.31	0.00% **	\$5.16
3/27/2020	1,819,242	\$19.71	-17.01%	-5.09%	-5.60%	0.00	1.79	0.76	-9.44%	-7.57%	3.08%	-2.46	1.46% *	(\$1.80)
3/30/2020	1,191,939	\$18.90	-4.11%	2.90%	4.39%	0.00	1.79	0.76	6.36%	-10.47%	3.08%	-3.40	0.08% **	(\$2.06)
3/31/2020	1,374,731	\$19.04	0.74%	2.61%	-0.80%	0.00	1.79	0.76	2.13%	-1.39%	3.08%	-0.45	65.15%	(\$0.26)
4/1/2020	1,899,685	\$15.76	-17.23%	-3.75%	-4.04%	0.00	1.79	0.76	-6.87%	-10.36%	3.08%	-3.37	0.09% **	(\$1.97)
4/2/2020	1,945,261	\$14.25	-9.58%	1.72%	-4.55%	0.00	1.79	0.76	-1.62%	-7.96%	3.08%	-2.59	1.03% *	(\$1.25)
4/3/2020	2,341,972	\$13.67	-4.07%	-1.22%	0.14%	0.00	1.79	0.76	-1.10%	-2.97%	3.08%	-0.97	33.50%	(\$0.42)

Exhibit 4
Lightspeed Commerce, Inc. Subordinate Voting Shares Data
March 7, 2019 to November 30, 2021

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]
Date	Lightspeed			Market Return	Industry Return	Coefficient		Predicted Return	Excess Return	Standard Error	t-statistic	p-Value	Excess Price Change	
	Volume	Price	Return			Intercept	Market							Industry
4/6/2020	1,786,872	\$16.83	23.12%	5.11%	6.60%	0.00	1.79	0.76	10.31%	12.80%	3.08%	4.16	0.00% **	\$1.75
4/7/2020	2,930,834	\$16.64	-1.13%	0.16%	-1.59%	0.00	1.79	0.76	-0.99%	-0.14%	3.08%	-0.04	96.42%	(\$0.02)
4/8/2020	1,676,929	\$17.87	7.39%	2.36%	6.05%	0.00	1.79	0.76	7.07%	0.33%	3.08%	0.11	91.55%	\$0.05
4/9/2020	2,333,239	\$17.52	-1.96%	1.73%	0.16%	0.00	1.79	0.76	1.95%	-3.91%	3.08%	-1.27	20.47%	(\$0.70)
4/13/2020	1,165,659	\$18.48	5.48%	-0.64%	2.42%	0.00	1.79	0.76	1.22%	4.26%	3.08%	1.38	16.77%	\$0.75
4/14/2020	2,588,145	\$21.06	13.96%	1.30%	6.62%	0.00	1.79	0.76	6.40%	7.56%	3.08%	2.46	1.46% *	\$1.40
4/15/2020	2,459,178	\$20.50	-2.66%	-2.10%	-0.01%	0.00	1.79	0.76	-2.13%	-0.53%	3.08%	-0.17	86.26%	(\$0.11)
4/16/2020	2,211,983	\$20.49	-0.05%	-0.42%	3.95%	0.00	1.79	0.76	2.61%	-2.65%	3.08%	-0.86	38.90%	(\$0.54)
4/17/2020	1,307,523	\$21.00	2.49%	3.31%	7.53%	0.00	1.79	0.76	9.17%	-6.68%	3.08%	-2.17	3.09% *	(\$1.37)
4/20/2020	1,224,302	\$21.06	0.29%	0.20%	4.07%	0.00	1.79	0.76	3.34%	-3.05%	3.08%	-0.99	32.17%	(\$0.64)
4/21/2020	1,723,818	\$19.12	-9.21%	-3.11%	-5.69%	0.00	1.79	0.76	-7.47%	-1.75%	3.08%	-0.57	57.08%	(\$0.37)
4/22/2020	932,732	\$19.17	0.26%	2.58%	4.68%	0.00	1.79	0.76	6.25%	-5.99%	3.08%	-1.95	5.25%	(\$1.15)
4/23/2020	950,825	\$20.19	5.32%	-0.26%	-0.91%	0.00	1.79	0.76	-0.91%	6.23%	3.08%	2.02	4.40% *	\$1.19
4/24/2020	398,342	\$20.09	-0.50%	1.19%	2.65%	0.00	1.79	0.76	3.29%	-3.78%	3.08%	-1.23	22.01%	(\$0.76)
4/27/2020	1,337,068	\$22.00	9.51%	1.53%	-1.06%	0.00	1.79	0.76	0.82%	8.68%	3.08%	2.82	0.52% **	\$1.74
4/28/2020	1,748,183	\$23.46	6.64%	1.06%	-0.29%	0.00	1.79	0.76	0.93%	5.71%	3.08%	1.86	6.46%	\$1.26
4/29/2020	2,307,086	\$26.97	14.96%	2.92%	1.15%	0.00	1.79	0.76	3.93%	11.04%	3.08%	3.59	0.04% **	\$2.59
4/30/2020	1,936,126	\$26.37	-2.22%	-2.90%	-0.61%	0.00	1.79	0.76	-3.40%	1.18%	3.08%	0.38	70.28%	\$0.32
5/1/2020	1,731,356	\$25.15	-4.63%	-1.08%	-1.06%	0.00	1.79	0.76	-1.87%	-2.76%	3.08%	-0.90	37.06%	(\$0.73)
5/4/2020	1,706,567	\$25.33	0.72%	0.86%	4.65%	0.00	1.79	0.76	4.45%	-3.74%	3.08%	-1.21	22.56%	(\$0.94)
5/5/2020	1,258,070	\$26.40	4.22%	0.45%	2.66%	0.00	1.79	0.76	2.52%	1.70%	3.08%	0.55	58.11%	\$0.43
5/6/2020	912,002	\$26.40	0.00%	0.13%	4.59%	0.00	1.79	0.76	3.66%	-3.66%	3.08%	-1.19	23.46%	(\$0.97)
5/7/2020	1,172,767	\$26.56	0.61%	0.02%	-0.56%	0.00	1.79	0.76	-0.35%	0.96%	3.08%	0.31	75.55%	\$0.25
5/8/2020	1,608,623	\$28.96	9.04%	0.89%	-0.76%	0.00	1.79	0.76	0.39%	8.64%	3.08%	2.81	0.54% **	\$2.30
5/11/2020	1,452,453	\$28.28	-2.35%	0.91%	3.53%	0.00	1.79	0.76	3.67%	-6.01%	3.08%	-1.96	5.17%	(\$1.74)
5/12/2020	1,594,527	\$25.92	-8.35%	-1.47%	-0.63%	0.00	1.79	0.76	-1.94%	-6.41%	3.08%	-2.08	3.83% *	(\$1.81)
5/13/2020	1,939,488	\$23.79	-8.22%	-2.54%	0.33%	0.00	1.79	0.76	-2.31%	-5.91%	3.08%	-1.92	5.60%	(\$1.53)
5/14/2020	2,625,925	\$22.95	-3.53%	0.14%	-0.85%	0.00	1.79	0.76	-0.45%	-3.08%	3.08%	-1.00	31.73%	(\$0.73)
5/15/2020	1,512,966	\$22.44	-2.22%	0.92%	1.73%	0.00	1.79	0.76	2.31%	-4.53%	3.08%	-1.47	14.23%	(\$1.04)
5/19/2020	2,165,291	\$25.09	11.81%	1.68%	-1.40%	0.00	1.79	0.76	0.72%	11.09%	3.08%	3.61	0.04% **	\$2.49
5/20/2020	1,858,152	\$24.80	-1.16%	0.76%	2.06%	0.00	1.79	0.76	2.40%	-3.55%	3.08%	-1.16	24.89%	(\$0.89)
5/21/2020	6,223,843	\$34.18	37.82%	-0.76%	2.12%	0.00	1.79	0.76	0.87%	36.95%	3.08%	12.01	0.00% **	\$9.16
5/22/2020	3,765,010	\$33.01	-3.42%	0.20%	2.94%	0.00	1.79	0.76	2.49%	-5.91%	3.08%	-1.92	5.59%	(\$2.02)
5/25/2020	1,289,531	\$34.00	3.00%	1.08%	2.29%	0.00	1.79	0.76	2.90%	0.10%	3.08%	0.03	97.45%	\$0.03

Exhibit 4
Lightspeed Commerce, Inc. Subordinate Voting Shares Data
March 7, 2019 to November 30, 2021

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]
Date	Lightspeed			Market Return	Industry Return	Coefficient		Predicted Return	Excess Return	Standard Error	t-statistic	p-Value	Excess Price Change	
	Volume	Price	Return			Intercept	Market							Industry
5/26/2020	1,818,302	\$34.84	2.47%	0.50%	-6.92%	0.00	1.79	0.76	-4.68%	7.15%	3.08%	2.33	2.09% *	\$2.43
5/27/2020	2,233,718	\$33.75	-3.13%	0.82%	-2.31%	0.00	1.79	0.76	-0.85%	-2.27%	3.08%	-0.74	46.05%	(\$0.79)
5/28/2020	1,091,578	\$31.84	-5.66%	0.00%	0.26%	0.00	1.79	0.76	0.25%	-5.91%	3.08%	-1.92	5.58%	(\$2.00)
5/29/2020	1,561,052	\$32.86	3.20%	-0.46%	1.61%	0.00	1.79	0.76	0.80%	2.40%	3.08%	0.78	43.58%	\$0.76
6/1/2020	1,061,971	\$32.28	-1.77%	0.29%	-1.22%	0.00	1.79	0.76	-0.58%	-1.19%	3.08%	-0.39	69.97%	(\$0.39)
6/2/2020	1,131,858	\$34.56	7.06%	1.04%	1.74%	0.00	1.79	0.76	2.43%	4.63%	3.08%	1.50	13.36%	\$1.49
6/3/2020	3,471,511	\$34.93	1.07%	1.19%	-0.90%	0.00	1.79	0.76	0.60%	0.47%	3.08%	0.15	87.83%	\$0.16
6/4/2020	1,993,807	\$33.70	-3.52%	-0.30%	-2.44%	0.00	1.79	0.76	-2.11%	-1.41%	3.08%	-0.46	64.65%	(\$0.49)
6/5/2020	1,442,969	\$33.56	-0.42%	2.10%	-0.51%	0.00	1.79	0.76	1.83%	-2.24%	3.08%	-0.73	46.64%	(\$0.76)
6/8/2020	688,483	\$33.48	-0.24%	0.78%	0.04%	0.00	1.79	0.76	0.88%	-1.12%	3.08%	-0.36	71.59%	(\$0.38)
6/9/2020	675,898	\$33.90	1.25%	-0.86%	0.72%	0.00	1.79	0.76	-0.29%	1.54%	3.08%	0.50	61.69%	\$0.52
6/10/2020	692,044	\$32.86	-3.07%	-0.83%	0.58%	0.00	1.79	0.76	-0.37%	-2.70%	3.08%	-0.88	38.07%	(\$0.92)
6/11/2020	1,563,871	\$29.96	-8.83%	-4.12%	-1.71%	0.00	1.79	0.76	-5.49%	-3.34%	3.08%	-1.09	27.87%	(\$1.10)
6/12/2020	1,130,071	\$32.02	6.88%	1.42%	1.45%	0.00	1.79	0.76	2.61%	4.27%	3.08%	1.39	16.66%	\$1.28
6/15/2020	1,134,249	\$32.55	1.66%	0.68%	4.70%	0.00	1.79	0.76	4.31%	-2.65%	3.08%	-0.86	38.96%	(\$0.85)
6/16/2020	714,833	\$33.59	3.20%	1.03%	0.43%	0.00	1.79	0.76	1.43%	1.76%	3.08%	0.57	56.71%	\$0.57
6/17/2020	1,018,573	\$34.42	2.47%	-0.56%	0.62%	0.00	1.79	0.76	-0.06%	2.54%	3.08%	0.82	41.05%	\$0.85
6/18/2020	593,983	\$33.83	-1.71%	0.33%	3.64%	0.00	1.79	0.76	3.15%	-4.87%	3.08%	-1.58	11.49%	(\$1.68)
6/19/2020	1,152,261	\$33.25	-1.71%	-0.03%	1.38%	0.00	1.79	0.76	1.06%	-2.77%	3.08%	-0.90	36.79%	(\$0.94)
6/22/2020	780,772	\$34.72	4.42%	0.28%	1.50%	0.00	1.79	0.76	1.47%	2.95%	3.08%	0.96	33.81%	\$0.98
6/23/2020	856,582	\$35.25	1.53%	0.31%	0.25%	0.00	1.79	0.76	0.56%	0.97%	3.08%	0.31	75.31%	\$0.34
6/24/2020	1,007,928	\$33.44	-5.13%	-1.73%	-1.09%	0.00	1.79	0.76	-2.55%	-2.58%	3.08%	-0.84	40.24%	(\$0.91)
6/25/2020	1,005,553	\$34.70	3.77%	1.00%	2.20%	0.00	1.79	0.76	2.74%	1.02%	3.08%	0.33	73.95%	\$0.34
6/26/2020	658,397	\$33.82	-2.54%	-1.62%	-0.78%	0.00	1.79	0.76	-2.21%	-0.32%	3.08%	-0.11	91.63%	(\$0.11)
6/29/2020	700,437	\$33.49	-0.98%	1.43%	1.23%	0.00	1.79	0.76	2.46%	-3.44%	3.08%	-1.12	26.52%	(\$1.16)
6/30/2020	888,749	\$32.43	-3.17%	0.82%	1.28%	0.00	1.79	0.76	1.86%	-5.03%	3.08%	-1.63	10.34%	(\$1.68)
7/2/2020	2,266,280	\$36.95	13.94%	0.68%	5.76%	0.00	1.79	0.76	5.12%	8.82%	3.08%	2.87	0.45% **	\$2.86
7/3/2020	779,225	\$37.00	0.14%	-0.16%	-0.47%	0.00	1.79	0.76	-0.47%	0.61%	3.08%	0.20	84.31%	\$0.23
7/6/2020	1,156,510	\$37.21	0.57%	0.52%	-1.97%	0.00	1.79	0.76	-0.91%	1.48%	3.08%	0.48	63.12%	\$0.55
7/7/2020	738,108	\$35.92	-3.47%	-0.47%	1.69%	0.00	1.79	0.76	0.84%	-4.31%	3.08%	-1.40	16.23%	(\$1.60)
7/8/2020	729,485	\$37.10	3.29%	0.22%	0.36%	0.00	1.79	0.76	0.55%	2.74%	3.08%	0.89	37.41%	\$0.98
7/9/2020	551,746	\$36.70	-1.08%	-0.32%	1.99%	0.00	1.79	0.76	1.23%	-2.30%	3.08%	-0.75	45.46%	(\$0.85)
7/10/2020	749,451	\$35.59	-3.02%	0.94%	-0.74%	0.00	1.79	0.76	0.45%	-3.48%	3.08%	-1.13	25.91%	(\$1.28)
7/13/2020	1,042,269	\$33.65	-5.45%	-0.47%	-4.38%	0.00	1.79	0.76	-3.76%	-1.69%	3.08%	-0.55	58.23%	(\$0.60)

Exhibit 4
Lightspeed Commerce, Inc. Subordinate Voting Shares Data
March 7, 2019 to November 30, 2021

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]
Date	Lightspeed			Market Return	Industry Return	Coefficient		Predicted Return	Excess Return	Standard Error	t-statistic	p-Value	Excess Price Change	
	Volume	Price	Return			Intercept	Market							Industry
7/14/2020	1,390,975	\$32.50	-3.42%	1.73%	0.42%	0.00	1.79	0.76	2.15%	-5.56%	3.08%	-1.81	7.18%	(\$1.87)
7/15/2020	962,304	\$34.43	5.94%	0.97%	-1.01%	0.00	1.79	0.76	0.28%	5.66%	3.08%	1.84	6.71%	\$1.84
7/16/2020	473,342	\$33.90	-1.54%	-0.24%	-2.30%	0.00	1.79	0.76	-1.94%	0.40%	3.08%	0.13	89.64%	\$0.14
7/17/2020	376,238	\$33.79	-0.32%	0.62%	0.67%	0.00	1.79	0.76	1.19%	-1.52%	3.08%	-0.49	62.19%	(\$0.51)
7/20/2020	448,977	\$34.90	3.28%	0.37%	5.71%	0.00	1.79	0.76	4.76%	-1.47%	3.08%	-0.48	63.21%	(\$0.50)
7/21/2020	742,875	\$35.61	2.03%	-0.13%	-4.67%	0.00	1.79	0.76	-3.62%	5.66%	3.08%	1.84	6.71%	\$1.97
7/22/2020	785,219	\$34.55	-2.98%	0.05%	0.05%	0.00	1.79	0.76	0.14%	-3.12%	3.08%	-1.01	31.14%	(\$1.11)
7/23/2020	659,816	\$33.87	-1.97%	-0.94%	-1.93%	0.00	1.79	0.76	-2.38%	0.41%	3.08%	0.13	89.42%	\$0.14
7/24/2020	554,287	\$33.75	-0.35%	-0.07%	-0.27%	0.00	1.79	0.76	-0.22%	-0.13%	3.08%	-0.04	96.52%	(\$0.05)
7/27/2020	501,892	\$34.24	1.45%	1.03%	3.26%	0.00	1.79	0.76	3.58%	-2.13%	3.08%	-0.69	48.96%	(\$0.72)
7/28/2020	370,026	\$33.94	-0.88%	-0.25%	0.03%	0.00	1.79	0.76	-0.18%	-0.70%	3.08%	-0.23	82.10%	(\$0.24)
7/29/2020	1,280,553	\$36.46	7.42%	1.07%	5.15%	0.00	1.79	0.76	5.05%	2.37%	3.08%	0.77	44.14%	\$0.81
7/30/2020	1,608,080	\$38.71	6.17%	0.05%	1.30%	0.00	1.79	0.76	1.09%	5.09%	3.08%	1.65	9.95%	\$1.85
7/31/2020	1,598,194	\$37.84	-2.25%	-0.76%	-1.97%	0.00	1.79	0.76	-2.23%	-0.02%	3.08%	-0.01	99.59%	(\$0.01)
8/4/2020	2,371,938	\$41.54	9.78%	1.22%	3.16%	0.00	1.79	0.76	3.71%	6.07%	3.08%	1.97	4.95% *	\$2.30
8/5/2020	1,876,543	\$41.83	0.70%	0.82%	0.90%	0.00	1.79	0.76	1.58%	-0.88%	3.08%	-0.29	77.53%	(\$0.37)
8/6/2020	2,522,974	\$41.07	-1.82%	0.47%	0.34%	0.00	1.79	0.76	0.79%	-2.61%	3.08%	-0.85	39.77%	(\$1.09)
8/7/2020	925,654	\$41.08	0.02%	-0.21%	-2.56%	0.00	1.79	0.76	-2.11%	2.13%	3.08%	0.69	48.91%	\$0.88
8/10/2020	1,014,387	\$39.93	-2.80%	0.37%	-3.79%	0.00	1.79	0.76	-2.44%	-0.36%	3.08%	-0.12	90.81%	(\$0.15)
8/11/2020	730,464	\$39.51	-1.05%	-0.65%	-2.17%	0.00	1.79	0.76	-2.27%	1.22%	3.08%	0.40	69.25%	\$0.49
8/12/2020	595,083	\$38.94	-1.44%	0.48%	0.43%	0.00	1.79	0.76	0.86%	-2.31%	3.08%	-0.75	45.42%	(\$0.91)
8/13/2020	484,696	\$39.41	1.21%	-0.20%	0.32%	0.00	1.79	0.76	0.08%	1.12%	3.08%	0.37	71.50%	\$0.44
8/14/2020	329,732	\$39.29	-0.30%	-0.07%	-0.82%	0.00	1.79	0.76	-0.64%	0.34%	3.08%	0.11	91.32%	\$0.13
8/17/2020	511,247	\$39.53	0.61%	0.86%	1.19%	0.00	1.79	0.76	1.84%	-1.23%	3.08%	-0.40	69.07%	(\$0.48)
8/18/2020	402,295	\$39.28	-0.63%	-0.17%	0.59%	0.00	1.79	0.76	0.32%	-0.96%	3.08%	-0.31	75.60%	(\$0.38)
8/19/2020	469,350	\$38.85	-1.09%	-0.29%	-0.54%	0.00	1.79	0.76	-0.66%	-0.44%	3.08%	-0.14	88.74%	(\$0.17)
8/20/2020	755,867	\$40.70	4.76%	0.19%	2.43%	0.00	1.79	0.76	2.08%	2.68%	3.08%	0.87	38.45%	\$1.04
8/21/2020	520,811	\$40.58	-0.29%	-0.53%	-1.29%	0.00	1.79	0.76	-1.48%	1.18%	3.08%	0.39	70.06%	\$0.48
8/24/2020	586,089	\$41.05	1.16%	0.66%	-1.34%	0.00	1.79	0.76	-0.29%	1.44%	3.08%	0.47	63.93%	\$0.59
8/25/2020	823,815	\$42.20	2.80%	-0.04%	1.71%	0.00	1.79	0.76	1.30%	1.50%	3.08%	0.49	62.63%	\$0.62
8/26/2020	811,599	\$43.50	3.08%	1.04%	4.24%	0.00	1.79	0.76	4.34%	-1.25%	3.08%	-0.41	68.37%	(\$0.53)
8/27/2020	1,035,634	\$44.13	1.45%	-0.35%	-2.54%	0.00	1.79	0.76	-2.24%	3.69%	3.08%	1.20	23.18%	\$1.60
8/28/2020	1,201,185	\$46.12	4.51%	-0.11%	-0.91%	0.00	1.79	0.76	-0.75%	5.26%	3.08%	1.71	8.87%	\$2.32
8/31/2020	1,290,949	\$45.30	-1.78%	-1.14%	1.09%	0.00	1.79	0.76	-0.30%	-1.47%	3.08%	-0.48	63.20%	(\$0.68)

Exhibit 4
Lightspeed Commerce, Inc. Subordinate Voting Shares Data
March 7, 2019 to November 30, 2021

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]
Date	Lightspeed			Market Return	Industry Return	Coefficient		Predicted Return	Excess Return	Standard Error	t-statistic	p-Value	Excess Price Change	
	Volume	Price	Return			Intercept	Market							Industry
9/1/2020	1,118,571	\$47.60	5.08%	0.79%	5.29%	0.00	1.79	0.76	4.88%	0.20%	3.08%	0.06	94.87%	\$0.09
9/2/2020	1,038,894	\$47.49	-0.23%	0.32%	-3.33%	0.00	1.79	0.76	-2.14%	1.91%	3.08%	0.62	53.45%	\$0.91
9/3/2020	1,335,935	\$43.76	-7.85%	-1.47%	-4.42%	0.00	1.79	0.76	-4.81%	-3.05%	3.08%	-0.99	32.31%	(\$1.45)
9/4/2020	1,450,342	\$43.52	-0.55%	-1.40%	-3.93%	0.00	1.79	0.76	-4.37%	3.83%	3.08%	1.24	21.48%	\$1.67
9/8/2020	1,355,277	\$42.52	-2.30%	-0.70%	-2.95%	0.00	1.79	0.76	-2.91%	0.61%	3.08%	0.20	84.36%	\$0.26
9/9/2020	1,590,307	\$40.80	-4.05%	1.79%	2.74%	0.00	1.79	0.76	3.97%	-8.01%	3.08%	-2.60	0.98% **	(\$3.41)
9/10/2020	2,003,685	\$41.87	2.62%	-1.21%	-1.64%	0.00	1.79	0.76	-2.44%	5.06%	3.08%	1.65	10.12%	\$2.06
9/11/2020	1,844,429	\$40.05	-4.35%	0.23%	-1.51%	0.00	1.79	0.76	-0.85%	-3.49%	3.08%	-1.14	25.71%	(\$1.46)
9/14/2020	975,464	\$41.70	4.12%	0.89%	1.27%	0.00	1.79	0.76	1.93%	2.19%	3.08%	0.71	47.74%	\$0.88
9/15/2020	771,825	\$41.26	-1.06%	0.44%	0.08%	0.00	1.79	0.76	0.56%	-1.61%	3.08%	-0.52	60.01%	(\$0.67)
9/16/2020	1,622,146	\$41.13	-0.32%	-0.83%	-3.65%	0.00	1.79	0.76	-3.56%	3.25%	3.08%	1.06	29.19%	\$1.34
9/17/2020	923,705	\$40.23	-2.19%	-0.27%	-1.42%	0.00	1.79	0.76	-1.30%	-0.89%	3.08%	-0.29	77.28%	(\$0.37)
9/18/2020	1,423,210	\$38.92	-3.26%	-0.29%	2.40%	0.00	1.79	0.76	1.57%	-4.82%	3.08%	-1.57	11.81%	(\$1.94)
9/21/2020	1,347,062	\$40.08	2.98%	-1.34%	2.39%	0.00	1.79	0.76	0.48%	2.50%	3.08%	0.81	41.78%	\$0.97
9/22/2020	799,518	\$40.46	0.95%	1.01%	2.43%	0.00	1.79	0.76	2.93%	-1.98%	3.08%	-0.64	52.06%	(\$0.79)
9/23/2020	993,164	\$39.80	-1.63%	-2.02%	-2.27%	0.00	1.79	0.76	-3.75%	2.12%	3.08%	0.69	49.08%	\$0.86
9/24/2020	734,247	\$39.66	-0.35%	0.61%	-0.78%	0.00	1.79	0.76	0.09%	-0.44%	3.08%	-0.14	88.63%	(\$0.18)
9/25/2020	871,940	\$40.31	1.64%	1.00%	4.28%	0.00	1.79	0.76	4.33%	-2.69%	3.08%	-0.87	38.30%	(\$1.07)
9/28/2020	1,019,434	\$41.41	2.73%	1.10%	0.03%	0.00	1.79	0.76	1.21%	1.52%	3.08%	0.49	62.18%	\$0.61
9/29/2020	798,459	\$42.53	2.70%	-0.09%	3.82%	0.00	1.79	0.76	2.85%	-0.14%	3.08%	-0.05	96.25%	(\$0.06)
9/30/2020	1,101,257	\$42.66	0.31%	-0.56%	-0.51%	0.00	1.79	0.76	-0.91%	1.21%	3.08%	0.39	69.32%	\$0.52
10/1/2020	747,296	\$43.35	1.62%	0.39%	2.62%	0.00	1.79	0.76	2.44%	-0.82%	3.08%	-0.27	78.97%	(\$0.35)
10/2/2020	682,655	\$42.03	-3.04%	0.09%	-1.66%	0.00	1.79	0.76	-1.11%	-1.93%	3.08%	-0.63	53.07%	(\$0.84)
10/5/2020	755,660	\$43.02	2.36%	1.35%	2.25%	0.00	1.79	0.76	3.15%	-0.79%	3.08%	-0.26	79.73%	(\$0.33)
10/6/2020	1,441,047	\$44.29	2.95%	-1.07%	-1.79%	0.00	1.79	0.76	-2.41%	5.36%	3.08%	1.74	8.26%	\$2.31
10/7/2020	1,654,431	\$47.27	6.73%	1.18%	2.07%	0.00	1.79	0.76	2.83%	3.90%	3.08%	1.27	20.62%	\$1.73
10/8/2020	661,387	\$47.11	-0.34%	0.71%	-0.69%	0.00	1.79	0.76	0.26%	-0.60%	3.08%	-0.19	84.56%	(\$0.28)
10/9/2020	944,761	\$48.75	3.48%	0.17%	1.19%	0.00	1.79	0.76	1.13%	2.35%	3.08%	0.77	44.47%	\$1.11
10/13/2020	941,569	\$48.22	-1.09%	-0.31%	1.20%	0.00	1.79	0.76	0.64%	-1.73%	3.08%	-0.56	57.51%	(\$0.84)
10/14/2020	843,989	\$47.34	-1.82%	-0.33%	-1.85%	0.00	1.79	0.76	-1.69%	-0.13%	3.08%	-0.04	96.57%	(\$0.06)
10/15/2020	580,974	\$47.26	-0.17%	0.28%	0.13%	0.00	1.79	0.76	0.43%	-0.60%	3.08%	-0.20	84.53%	(\$0.28)
10/16/2020	487,495	\$47.19	-0.15%	-0.38%	-0.68%	0.00	1.79	0.76	-0.85%	0.71%	3.08%	0.23	81.86%	\$0.33
10/19/2020	627,403	\$45.99	-2.54%	-1.00%	-0.39%	0.00	1.79	0.76	-1.28%	-1.26%	3.08%	-0.41	68.16%	(\$0.60)
10/20/2020	498,956	\$45.46	-1.15%	0.00%	-0.98%	0.00	1.79	0.76	-0.69%	-0.46%	3.08%	-0.15	88.18%	(\$0.21)

Exhibit 4
Lightspeed Commerce, Inc. Subordinate Voting Shares Data
March 7, 2019 to November 30, 2021

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]
Date	Lightspeed		Market Return	Industry Return	Coefficient		Predicted Return	Excess Return	Standard Error	t-statistic	p-Value	Excess Price Change		
	Volume	Price			Intercept	Market							Industry	
10/21/2020	702,348	\$44.06	-3.08%	-0.26%	-2.40%	0.00	1.79	0.76	-2.04%	-1.04%	3.08%	-0.34	73.51%	(\$0.47)
10/22/2020	915,660	\$44.99	2.11%	0.31%	-1.31%	0.00	1.79	0.76	-0.62%	2.73%	3.08%	0.89	37.49%	\$1.20
10/23/2020	532,055	\$45.02	0.07%	0.22%	1.25%	0.00	1.79	0.76	1.22%	-1.16%	3.08%	-0.38	70.75%	(\$0.52)
10/26/2020	729,417	\$45.00	-0.04%	-1.38%	0.35%	0.00	1.79	0.76	-1.11%	1.06%	3.08%	0.35	73.03%	\$0.48
10/27/2020	549,124	\$45.95	2.11%	-0.37%	2.07%	0.00	1.79	0.76	1.24%	0.87%	3.08%	0.28	77.80%	\$0.39
10/28/2020	1,238,077	\$42.04	-8.51%	-2.70%	-3.64%	0.00	1.79	0.76	-5.50%	-3.01%	3.08%	-0.98	32.84%	(\$1.38)
10/29/2020	835,008	\$42.37	0.78%	0.56%	-2.90%	0.00	1.79	0.76	-1.57%	2.36%	3.08%	0.77	44.41%	\$0.99
10/30/2020	951,609	\$42.62	0.59%	-0.54%	-3.72%	0.00	1.79	0.76	-3.32%	3.91%	3.08%	1.27	20.48%	\$1.66
11/2/2020	649,709	\$41.36	-2.96%	0.75%	-1.39%	0.00	1.79	0.76	-0.23%	-2.72%	3.08%	-0.89	37.66%	(\$1.16)
11/3/2020	546,710	\$43.01	3.99%	1.54%	2.57%	0.00	1.79	0.76	3.58%	0.41%	3.08%	0.13	89.46%	\$0.17
11/4/2020	1,069,192	\$45.45	5.67%	0.37%	4.68%	0.00	1.79	0.76	3.98%	1.70%	3.08%	0.55	58.20%	\$0.73
11/5/2020	3,216,371	\$52.85	16.28%	1.85%	2.72%	0.00	1.79	0.76	4.02%	12.26%	3.08%	3.99	0.01% **	\$5.57
11/6/2020	1,188,513	\$51.53	-2.50%	-0.09%	1.11%	0.00	1.79	0.76	0.80%	-3.29%	3.08%	-1.07	28.53%	(\$1.74)
11/9/2020	1,251,777	\$50.75	-1.51%	1.19%	-9.22%	0.00	1.79	0.76	-5.71%	4.19%	3.08%	1.36	17.39%	\$2.16
11/10/2020	667,926	\$50.76	0.02%	0.85%	-1.89%	0.00	1.79	0.76	-0.51%	0.53%	3.08%	0.17	86.40%	\$0.27
11/11/2020	592,702	\$52.60	3.62%	0.95%	5.31%	0.00	1.79	0.76	5.05%	-1.43%	3.08%	-0.46	64.27%	(\$0.73)
11/12/2020	417,517	\$51.29	-2.49%	-1.07%	-2.05%	0.00	1.79	0.76	-2.61%	0.12%	3.08%	0.04	96.95%	\$0.06
11/13/2020	361,395	\$51.89	1.17%	0.56%	0.33%	0.00	1.79	0.76	0.88%	0.29%	3.08%	0.09	92.51%	\$0.15
11/16/2020	394,461	\$52.16	0.52%	1.29%	-0.11%	0.00	1.79	0.76	1.29%	-0.77%	3.08%	-0.25	80.29%	(\$0.40)
11/17/2020	623,395	\$54.73	4.93%	0.35%	-0.11%	0.00	1.79	0.76	0.32%	4.60%	3.08%	1.50	13.57%	\$2.40
11/18/2020	1,058,405	\$56.22	2.72%	-0.34%	1.32%	0.00	1.79	0.76	0.70%	2.03%	3.08%	0.66	51.06%	\$1.11
11/19/2020	982,799	\$55.80	-0.75%	0.13%	2.39%	0.00	1.79	0.76	1.99%	-2.74%	3.08%	-0.89	37.37%	(\$1.54)
11/20/2020	1,176,930	\$59.57	6.76%	0.66%	2.72%	0.00	1.79	0.76	2.80%	3.96%	3.08%	1.29	19.92%	\$2.21
11/23/2020	1,165,922	\$63.11	5.94%	0.44%	-0.33%	0.00	1.79	0.76	0.25%	5.70%	3.08%	1.85	6.53%	\$3.39
11/24/2020	1,316,081	\$61.97	-1.81%	1.09%	-0.86%	0.00	1.79	0.76	0.51%	-2.32%	3.08%	-0.75	45.12%	(\$1.47)
11/25/2020	1,149,854	\$66.36	7.08%	0.22%	2.75%	0.00	1.79	0.76	2.36%	4.73%	3.08%	1.54	12.55%	\$2.93
11/26/2020	1,030,428	\$68.50	3.22%	0.22%	1.19%	0.00	1.79	0.76	1.18%	2.05%	3.08%	0.67	50.64%	\$1.36
11/27/2020	1,130,796	\$71.65	4.60%	0.30%	0.71%	0.00	1.79	0.76	0.90%	3.70%	3.08%	1.20	23.06%	\$2.53
11/30/2020	2,090,538	\$67.54	-5.74%	-1.18%	2.14%	0.00	1.79	0.76	0.46%	-6.19%	3.08%	-2.01	4.52% *	(\$4.44)
12/1/2020	1,495,485	\$68.00	0.68%	0.62%	-0.45%	0.00	1.79	0.76	0.34%	0.34%	3.08%	0.11	91.28%	\$0.23
12/2/2020	2,093,855	\$75.07	10.40%	0.36%	0.65%	0.00	1.79	0.76	0.91%	9.48%	3.08%	3.08	0.23% **	\$6.45
12/3/2020	1,552,238	\$78.14	4.09%	0.23%	-0.75%	0.00	1.79	0.76	-0.29%	4.38%	3.08%	1.42	15.58%	\$3.29
12/4/2020	1,448,473	\$76.68	-1.87%	0.71%	-1.09%	0.00	1.79	0.76	-0.04%	-1.83%	3.08%	-0.59	55.29%	(\$1.43)
12/7/2020	983,205	\$77.74	1.38%	0.35%	2.09%	0.00	1.79	0.76	1.99%	-0.61%	3.08%	-0.20	84.27%	(\$0.47)

Exhibit 4
Lightspeed Commerce, Inc. Subordinate Voting Shares Data
March 7, 2019 to November 30, 2021

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]
Date	Lightspeed			Market Return	Industry Return	Coefficient		Predicted Return	Excess Return	Standard Error	t-statistic	p-Value	Excess Price Change	
	Volume	Price	Return			Intercept	Market							Industry
12/8/2020	642,447	\$76.28	-1.88%	0.37%	1.09%	0.00	1.79	0.76	1.25%	-3.13%	3.08%	-1.02	30.97%	(\$2.43)
12/9/2020	1,014,604	\$74.12	-2.83%	-0.44%	-4.02%	0.00	1.79	0.76	-3.45%	0.62%	3.08%	0.20	84.13%	\$0.47
12/10/2020	1,094,279	\$74.35	0.31%	0.21%	1.60%	0.00	1.79	0.76	1.47%	-1.16%	3.08%	-0.38	70.62%	(\$0.86)
12/11/2020	812,060	\$75.55	1.61%	-0.26%	-0.69%	0.00	1.79	0.76	-0.74%	2.35%	3.08%	0.76	44.56%	\$1.75
12/14/2020	578,692	\$73.89	-2.20%	-0.87%	0.55%	0.00	1.79	0.76	-0.43%	-1.77%	3.08%	-0.57	56.59%	(\$1.34)
12/15/2020	515,006	\$73.53	-0.49%	0.69%	0.44%	0.00	1.79	0.76	1.09%	-1.58%	3.08%	-0.51	60.87%	(\$1.17)
12/16/2020	1,026,202	\$74.15	0.84%	0.35%	4.99%	0.00	1.79	0.76	4.19%	-3.35%	3.08%	-1.09	27.77%	(\$2.46)
12/17/2020	756,626	\$75.15	1.35%	0.49%	1.87%	0.00	1.79	0.76	1.97%	-0.62%	3.08%	-0.20	84.08%	(\$0.46)
12/18/2020	1,073,209	\$73.90	-1.66%	-0.66%	-0.82%	0.00	1.79	0.76	-1.25%	-0.41%	3.08%	-0.13	89.39%	(\$0.31)
12/21/2020	1,249,965	\$77.72	5.17%	-0.20%	2.16%	0.00	1.79	0.76	1.48%	3.69%	3.08%	1.20	23.14%	\$2.73
12/22/2020	1,547,499	\$86.65	11.49%	0.28%	5.64%	0.00	1.79	0.76	4.61%	6.88%	3.08%	2.24	2.62% *	\$5.35
12/23/2020	1,067,917	\$86.38	-0.31%	0.25%	-5.20%	0.00	1.79	0.76	-3.64%	3.33%	3.08%	1.08	28.01%	\$2.89
12/24/2020	326,360	\$87.87	1.72%	0.20%	1.15%	0.00	1.79	0.76	1.12%	0.60%	3.08%	0.20	84.47%	\$0.52
12/29/2020	897,346	\$87.84	-0.03%	-0.46%	-2.93%	0.00	1.79	0.76	-2.64%	2.61%	3.08%	0.85	39.71%	\$2.29
12/30/2020	727,067	\$89.16	1.50%	0.12%	-1.08%	0.00	1.79	0.76	-0.65%	2.15%	3.08%	0.70	48.50%	\$1.89
12/31/2020	690,692	\$89.84	0.76%	-0.64%	-1.94%	0.00	1.79	0.76	-2.08%	2.85%	3.08%	0.93	35.56%	\$2.54
1/4/2021	1,389,247	\$85.48	-4.85%	0.60%	-1.99%	0.00	1.79	0.76	-0.84%	-4.01%	3.08%	-1.30	19.38%	(\$3.60)
1/5/2021	888,515	\$84.36	-1.31%	0.89%	0.98%	0.00	1.79	0.76	1.71%	-3.02%	3.08%	-0.98	32.79%	(\$2.58)
1/6/2021	1,720,500	\$82.44	-2.28%	0.83%	-2.15%	0.00	1.79	0.76	-0.73%	-1.55%	3.08%	-0.50	61.51%	(\$1.31)
1/7/2021	761,630	\$85.41	3.60%	1.17%	4.50%	0.00	1.79	0.76	4.66%	-1.06%	3.08%	-0.35	73.04%	(\$0.87)
1/8/2021	750,103	\$86.12	0.83%	0.08%	2.62%	0.00	1.79	0.76	2.12%	-1.28%	3.08%	-0.42	67.65%	(\$1.10)
1/11/2021	628,258	\$85.84	-0.33%	-0.60%	-1.01%	0.00	1.79	0.76	-1.33%	1.00%	3.08%	0.33	74.45%	\$0.86
1/12/2021	666,645	\$88.04	2.56%	0.28%	0.25%	0.00	1.79	0.76	0.53%	2.04%	3.08%	0.66	50.87%	\$1.75
1/13/2021	1,084,455	\$95.09	8.01%	-0.30%	0.46%	0.00	1.79	0.76	0.09%	7.92%	3.08%	2.57	1.06% *	\$6.97
1/14/2021	1,433,907	\$94.55	-0.57%	0.13%	-1.19%	0.00	1.79	0.76	-0.71%	0.15%	3.08%	0.05	96.22%	\$0.14
1/15/2021	1,141,873	\$89.34	-5.51%	-0.26%	0.38%	0.00	1.79	0.76	0.07%	-5.58%	3.08%	-1.81	7.10%	(\$5.27)
1/18/2021	599,892	\$91.86	2.82%	0.19%	1.53%	0.00	1.79	0.76	1.41%	1.41%	3.08%	0.46	64.60%	\$1.26
1/19/2021	636,249	\$92.35	0.53%	0.07%	-0.06%	0.00	1.79	0.76	0.07%	0.46%	3.08%	0.15	88.16%	\$0.42
1/20/2021	594,807	\$91.27	-1.17%	0.34%	1.46%	0.00	1.79	0.76	1.51%	-2.67%	3.08%	-0.87	38.54%	(\$2.47)
1/21/2021	825,748	\$88.82	-2.68%	-0.54%	-0.56%	0.00	1.79	0.76	-0.93%	-1.75%	3.08%	-0.57	56.90%	(\$1.60)
1/22/2021	987,514	\$87.88	-1.06%	-0.39%	0.74%	0.00	1.79	0.76	0.21%	-1.27%	3.08%	-0.41	68.04%	(\$1.13)
1/25/2021	860,208	\$88.16	0.32%	0.40%	1.61%	0.00	1.79	0.76	1.68%	-1.36%	3.08%	-0.44	65.90%	(\$1.19)
1/26/2021	619,698	\$89.95	2.03%	-0.71%	-2.99%	0.00	1.79	0.76	-2.95%	4.98%	3.08%	1.62	10.65%	\$4.39
1/27/2021	1,071,077	\$83.84	-6.79%	-1.98%	-1.95%	0.00	1.79	0.76	-3.47%	-3.32%	3.08%	-1.08	28.12%	(\$2.99)

Exhibit 4
Lightspeed Commerce, Inc. Subordinate Voting Shares Data
March 7, 2019 to November 30, 2021

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]
Date	Lightspeed			Market Return	Industry Return	Coefficient			Predicted Return	Excess Return	Standard Error	t-statistic	p-Value	Excess Price Change
	Volume	Price	Return			Intercept	Market	Industry						
1/28/2021	758,488	\$86.91	3.66%	1.34%	-0.08%	0.00	1.79	0.76	1.37%	2.29%	3.08%	0.74	45.79%	\$1.92
1/29/2021	1,026,408	\$83.13	-4.35%	-1.78%	-2.78%	0.00	1.79	0.76	-3.89%	-0.46%	3.08%	-0.15	88.09%	(\$0.40)
2/1/2021	1,048,259	\$91.22	9.73%	2.04%	4.68%	0.00	1.79	0.76	5.70%	4.04%	3.08%	1.31	19.08%	\$3.35
2/2/2021	899,516	\$92.00	0.86%	1.03%	4.32%	0.00	1.79	0.76	4.39%	-3.53%	3.08%	-1.15	25.23%	(\$3.22)
2/3/2021	1,061,769	\$95.55	3.86%	0.23%	-1.14%	0.00	1.79	0.76	-0.58%	4.44%	3.08%	1.44	15.00%	\$4.09
2/4/2021	2,793,848	\$93.26	-2.40%	0.71%	2.13%	0.00	1.79	0.76	2.40%	-4.79%	3.08%	-1.56	12.06%	(\$4.58)
2/5/2021	1,229,707	\$92.48	-0.84%	0.52%	1.51%	0.00	1.79	0.76	1.73%	-2.57%	3.08%	-0.83	40.50%	(\$2.39)
2/8/2021	1,569,788	\$91.75	-0.79%	1.08%	3.16%	0.00	1.79	0.76	3.55%	-4.34%	3.08%	-1.41	15.94%	(\$4.01)
2/9/2021	1,360,885	\$92.63	0.96%	0.43%	3.80%	0.00	1.79	0.76	3.37%	-2.41%	3.08%	-0.78	43.39%	(\$2.21)
2/10/2021	1,608,420	\$90.73	-2.05%	0.27%	1.23%	0.00	1.79	0.76	1.26%	-3.32%	3.08%	-1.08	28.21%	(\$3.07)
2/11/2021	1,233,613	\$93.44	2.99%	-0.29%	-0.17%	0.00	1.79	0.76	-0.38%	3.37%	3.08%	1.10	27.44%	\$3.06
2/12/2021	987,409	\$92.89	-0.59%	0.38%	-0.38%	0.00	1.79	0.76	0.15%	-0.74%	3.08%	-0.24	81.07%	(\$0.69)
2/16/2021	1,388,577	\$90.49	-2.58%	0.18%	0.26%	0.00	1.79	0.76	0.43%	-3.02%	3.08%	-0.98	32.74%	(\$2.80)
2/17/2021	1,435,883	\$90.04	-0.50%	-0.64%	-2.15%	0.00	1.79	0.76	-2.24%	1.74%	3.08%	0.57	57.19%	\$1.58
2/18/2021	1,035,484	\$93.31	3.63%	-0.56%	-1.74%	0.00	1.79	0.76	-1.85%	5.48%	3.08%	1.78	7.62%	\$4.93
2/19/2021	1,232,612	\$97.91	4.93%	0.59%	1.97%	0.00	1.79	0.76	2.15%	2.78%	3.08%	0.90	36.73%	\$2.59
2/22/2021	1,287,308	\$102.44	4.63%	0.19%	-3.07%	0.00	1.79	0.76	-2.09%	6.71%	3.08%	2.18	3.01% *	\$6.57
2/23/2021	1,607,014	\$94.51	-7.74%	-0.45%	-4.34%	0.00	1.79	0.76	-3.70%	-4.04%	3.08%	-1.31	19.06%	(\$4.14)
2/24/2021	1,143,682	\$91.69	-2.98%	0.86%	0.06%	0.00	1.79	0.76	0.98%	-3.96%	3.08%	-1.29	19.89%	(\$3.75)
2/25/2021	1,519,479	\$88.45	-3.53%	-1.37%	-2.85%	0.00	1.79	0.76	-3.52%	-0.01%	3.08%	0.00	99.72%	(\$0.01)
2/26/2021	1,235,177	\$87.14	-1.48%	-0.87%	2.89%	0.00	1.79	0.76	1.35%	-2.83%	3.08%	-0.92	35.87%	(\$2.50)
3/1/2021	783,722	\$91.20	4.66%	1.32%	1.26%	0.00	1.79	0.76	2.37%	2.29%	3.08%	0.75	45.65%	\$2.00
3/2/2021	502,848	\$90.18	-1.12%	0.68%	-0.17%	0.00	1.79	0.76	0.62%	-1.74%	3.08%	-0.57	57.16%	(\$1.59)
3/3/2021	795,131	\$85.54	-5.15%	-0.52%	-5.13%	0.00	1.79	0.76	-4.38%	-0.77%	3.08%	-0.25	80.30%	(\$0.69)
3/4/2021	2,654,796	\$77.73	-9.13%	-1.03%	-4.40%	0.00	1.79	0.76	-4.35%	-4.78%	3.08%	-1.55	12.14%	(\$4.09)
3/5/2021	3,608,040	\$73.97	-4.84%	1.43%	-0.66%	0.00	1.79	0.76	1.02%	-5.85%	3.08%	-1.90	5.82%	(\$4.55)
3/8/2021	2,279,051	\$68.62	-7.23%	0.44%	-2.81%	0.00	1.79	0.76	-1.63%	-5.61%	3.08%	-1.82	6.96%	(\$4.15)
3/9/2021	2,121,360	\$75.07	9.40%	0.77%	4.34%	0.00	1.79	0.76	4.13%	5.27%	3.08%	1.71	8.80%	\$3.62
3/10/2021	1,578,607	\$73.36	-2.28%	0.51%	-2.75%	0.00	1.79	0.76	-1.51%	-0.77%	3.08%	-0.25	80.24%	(\$0.58)
3/11/2021	1,491,202	\$80.64	9.92%	0.81%	2.97%	0.00	1.79	0.76	3.13%	6.79%	3.08%	2.21	2.82% *	\$4.98
3/12/2021	1,659,944	\$86.18	6.87%	0.06%	-0.41%	0.00	1.79	0.76	-0.20%	7.07%	3.08%	2.30	2.24% *	\$5.70
3/15/2021	1,507,773	\$90.17	4.63%	0.54%	1.31%	0.00	1.79	0.76	1.60%	3.03%	3.08%	0.99	32.49%	\$2.61
3/16/2021	1,082,381	\$87.75	-2.68%	-0.42%	-0.82%	0.00	1.79	0.76	-1.00%	-1.69%	3.08%	-0.55	58.39%	(\$1.52)
3/17/2021	1,353,413	\$85.10	-3.02%	0.59%	1.13%	0.00	1.79	0.76	1.51%	-4.53%	3.08%	-1.47	14.19%	(\$3.98)

Exhibit 4
Lightspeed Commerce, Inc. Subordinate Voting Shares Data
March 7, 2019 to November 30, 2021

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]
Date	Lightspeed			Market Return	Industry Return	Coefficient		Predicted Return	Excess Return	Standard Error	t-statistic	p-Value	Excess Price Change	
	Volume	Price	Return			Intercept	Market							Industry
3/18/2021	1,378,414	\$79.58	-6.49%	-0.74%	-2.68%	0.00	1.79	0.76	-2.74%	-3.74%	3.08%	-1.22	22.50%	(\$3.18)
3/19/2021	1,580,707	\$79.66	0.10%	0.10%	0.40%	0.00	1.79	0.76	0.45%	-0.35%	3.08%	-0.11	90.87%	(\$0.28)
3/22/2021	827,324	\$82.25	3.25%	-0.21%	2.81%	0.00	1.79	0.76	1.96%	1.29%	3.08%	0.42	67.59%	\$1.03
3/23/2021	617,726	\$80.54	-2.08%	-0.77%	0.28%	0.00	1.79	0.76	-0.53%	-1.55%	3.08%	-0.50	61.48%	(\$1.28)
3/24/2021	1,089,222	\$75.72	-5.98%	-0.20%	-3.79%	0.00	1.79	0.76	-3.03%	-2.96%	3.08%	-0.96	33.77%	(\$2.38)
3/25/2021	1,169,073	\$76.56	1.11%	0.13%	-2.29%	0.00	1.79	0.76	-1.55%	2.66%	3.08%	0.86	38.85%	\$2.01
3/26/2021	914,525	\$75.90	-0.86%	0.58%	-0.20%	0.00	1.79	0.76	0.49%	-1.36%	3.08%	-0.44	65.96%	(\$1.04)
3/29/2021	1,012,406	\$74.04	-2.45%	-0.17%	-1.22%	0.00	1.79	0.76	-1.05%	-1.40%	3.08%	-0.45	64.96%	(\$1.06)
3/30/2021	754,648	\$75.45	1.90%	0.01%	0.87%	0.00	1.79	0.76	0.72%	1.18%	3.08%	0.38	70.07%	\$0.88
3/31/2021	750,009	\$79.03	4.74%	-0.04%	2.84%	0.00	1.79	0.76	2.16%	2.58%	3.08%	0.84	40.15%	\$1.95
4/1/2021	877,648	\$80.82	2.26%	1.55%	3.44%	0.00	1.79	0.76	4.25%	-1.98%	3.08%	-0.64	51.99%	(\$1.57)
4/5/2021	612,440	\$80.85	0.04%	0.23%	-0.45%	0.00	1.79	0.76	-0.05%	0.09%	3.08%	0.03	97.73%	\$0.07
4/6/2021	1,089,933	\$85.59	5.86%	0.39%	0.90%	0.00	1.79	0.76	1.13%	4.73%	3.08%	1.54	12.54%	\$3.82
4/7/2021	874,680	\$86.15	0.65%	0.13%	0.48%	0.00	1.79	0.76	0.55%	0.11%	3.08%	0.04	97.18%	\$0.09
4/8/2021	1,125,541	\$90.71	5.29%	0.56%	3.81%	0.00	1.79	0.76	3.51%	1.78%	3.08%	0.58	56.31%	\$1.53
4/9/2021	852,095	\$90.53	-0.20%	0.00%	0.09%	0.00	1.79	0.76	0.11%	-0.31%	3.08%	-0.10	91.95%	(\$0.28)
4/12/2021	645,473	\$90.42	-0.12%	-0.14%	-0.62%	0.00	1.79	0.76	-0.57%	0.45%	3.08%	0.14	88.51%	\$0.40
4/13/2021	616,599	\$91.96	1.70%	0.01%	1.78%	0.00	1.79	0.76	1.40%	0.30%	3.08%	0.10	92.25%	\$0.27
4/14/2021	740,221	\$89.12	-3.09%	-0.16%	-3.38%	0.00	1.79	0.76	-2.67%	-0.42%	3.08%	-0.13	89.27%	(\$0.38)
4/15/2021	3,948,822	\$86.50	-2.94%	0.79%	1.79%	0.00	1.79	0.76	2.22%	-5.16%	3.08%	-1.68	9.49%	(\$4.60)
4/16/2021	1,975,718	\$83.69	-3.25%	0.17%	-0.19%	0.00	1.79	0.76	0.07%	-3.32%	3.08%	-1.08	28.10%	(\$2.87)
4/19/2021	1,474,218	\$80.67	-3.61%	-0.75%	-3.95%	0.00	1.79	0.76	-3.72%	0.11%	3.08%	0.04	97.14%	\$0.09
4/20/2021	715,617	\$80.73	0.07%	-0.85%	-1.12%	0.00	1.79	0.76	-1.68%	1.75%	3.08%	0.57	56.97%	\$1.41
4/21/2021	1,187,655	\$85.09	5.40%	0.58%	0.86%	0.00	1.79	0.76	1.31%	4.10%	3.08%	1.33	18.43%	\$3.31
4/22/2021	737,967	\$83.56	-1.80%	-0.58%	-2.72%	0.00	1.79	0.76	-2.60%	0.80%	3.08%	0.26	79.39%	\$0.68
4/23/2021	779,960	\$86.94	4.04%	0.36%	0.03%	0.00	1.79	0.76	0.44%	3.60%	3.08%	1.17	24.29%	\$3.01
4/26/2021	527,352	\$88.06	1.29%	0.36%	3.08%	0.00	1.79	0.76	2.75%	-1.46%	3.08%	-0.48	63.49%	(\$1.27)
4/27/2021	374,119	\$86.33	-1.96%	0.03%	-0.45%	0.00	1.79	0.76	-0.26%	-1.71%	3.08%	-0.55	57.98%	(\$1.50)
4/28/2021	790,366	\$88.06	2.00%	0.95%	7.00%	0.00	1.79	0.76	6.33%	-4.32%	3.08%	-1.41	16.10%	(\$3.73)
4/29/2021	583,673	\$85.70	-2.68%	-0.50%	-3.02%	0.00	1.79	0.76	-2.76%	0.08%	3.08%	0.03	97.95%	\$0.07
4/30/2021	576,265	\$85.83	0.15%	-0.74%	-3.04%	0.00	1.79	0.76	-3.02%	3.17%	3.08%	1.03	30.37%	\$2.72
5/3/2021	756,423	\$83.17	-3.10%	0.56%	-3.11%	0.00	1.79	0.76	-1.73%	-1.37%	3.08%	-0.44	65.76%	(\$1.17)
5/4/2021	1,291,152	\$80.30	-3.45%	-0.12%	1.20%	0.00	1.79	0.76	0.84%	-4.29%	3.08%	-1.39	16.47%	(\$3.57)
5/5/2021	709,090	\$79.18	-1.39%	0.65%	-1.63%	0.00	1.79	0.76	-0.52%	-0.87%	3.08%	-0.28	77.68%	(\$0.70)

Exhibit 4
Lightspeed Commerce, Inc. Subordinate Voting Shares Data
March 7, 2019 to November 30, 2021

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]
Date	Lightspeed			Market Return	Industry Return	Coefficient		Predicted Return	Excess Return	Standard Error	t-statistic	p-Value	Excess Price Change	
	Volume	Price	Return			Intercept	Market							Industry
5/6/2021	1,618,496	\$75.11	-5.14%	-0.09%	-2.51%	0.00	1.79	0.76	-1.95%	-3.19%	3.08%	-1.04	30.04%	(\$2.53)
5/7/2021	857,622	\$76.18	1.42%	0.94%	1.27%	0.00	1.79	0.76	1.98%	-0.55%	3.08%	-0.18	85.74%	(\$0.42)
5/10/2021	1,435,702	\$71.22	-6.51%	-0.55%	-2.86%	0.00	1.79	0.76	-2.69%	-3.82%	3.08%	-1.24	21.54%	(\$2.91)
5/11/2021	1,305,083	\$72.59	1.92%	-0.46%	1.30%	0.00	1.79	0.76	0.56%	1.36%	3.08%	0.44	65.83%	\$0.97
5/12/2021	1,232,413	\$70.09	-3.44%	-0.86%	-1.27%	0.00	1.79	0.76	-1.79%	-1.65%	3.08%	-0.54	59.22%	(\$1.20)
5/13/2021	1,373,759	\$67.68	-3.44%	0.22%	-1.87%	0.00	1.79	0.76	-1.14%	-2.30%	3.08%	-0.75	45.58%	(\$1.61)
5/14/2021	1,213,534	\$71.21	5.22%	1.20%	2.08%	0.00	1.79	0.76	2.86%	2.35%	3.08%	0.76	44.52%	\$1.59
5/17/2021	832,641	\$70.29	-1.29%	0.58%	0.08%	0.00	1.79	0.76	0.71%	-2.00%	3.08%	-0.65	51.59%	(\$1.43)
5/18/2021	1,089,903	\$70.93	0.91%	0.16%	2.18%	0.00	1.79	0.76	1.87%	-0.96%	3.08%	-0.31	75.61%	(\$0.67)
5/19/2021	1,800,150	\$69.61	-1.86%	-0.45%	2.47%	0.00	1.79	0.76	1.46%	-3.32%	3.08%	-1.08	28.20%	(\$2.35)
5/20/2021	2,883,397	\$80.11	15.08%	0.62%	2.71%	0.00	1.79	0.76	2.74%	12.34%	3.08%	4.01	0.01% **	\$8.59
5/21/2021	2,180,976	\$84.97	6.07%	-0.09%	-0.01%	0.00	1.79	0.76	-0.05%	6.12%	3.08%	1.99	4.78% *	\$4.90
5/25/2021	2,155,947	\$87.75	3.27%	0.19%	1.13%	0.00	1.79	0.76	1.10%	2.17%	3.08%	0.70	48.15%	\$1.84
5/26/2021	1,562,148	\$88.77	1.16%	0.93%	0.41%	0.00	1.79	0.76	1.31%	-0.15%	3.08%	-0.05	96.06%	(\$0.13)
5/27/2021	7,637,907	\$88.33	-0.50%	0.17%	-0.65%	0.00	1.79	0.76	-0.27%	-0.23%	3.08%	-0.07	94.06%	(\$0.20)
5/28/2021	890,575	\$87.07	-1.43%	0.41%	0.54%	0.00	1.79	0.76	0.88%	-2.31%	3.08%	-0.75	45.31%	(\$2.04)
5/31/2021	270,126	\$87.73	0.76%	-0.61%	-0.94%	0.00	1.79	0.76	-1.29%	2.05%	3.08%	0.67	50.61%	\$1.78
6/1/2021	1,395,654	\$83.88	-4.39%	1.26%	1.97%	0.00	1.79	0.76	2.84%	-7.23%	3.08%	-2.35	1.96% *	(\$6.34)
6/2/2021	823,504	\$84.77	1.06%	-0.02%	-0.59%	0.00	1.79	0.76	-0.42%	1.48%	3.08%	0.48	63.04%	\$1.24
6/3/2021	895,829	\$83.90	-1.03%	-0.13%	-0.81%	0.00	1.79	0.76	-0.70%	-0.32%	3.08%	-0.10	91.66%	(\$0.27)
6/4/2021	979,493	\$86.72	3.36%	0.43%	0.23%	0.00	1.79	0.76	0.67%	2.69%	3.08%	0.87	38.27%	\$2.26
6/7/2021	991,162	\$87.21	0.57%	0.03%	1.51%	0.00	1.79	0.76	1.23%	-0.66%	3.08%	-0.21	83.00%	(\$0.57)
6/8/2021	1,449,063	\$89.46	2.58%	0.17%	0.34%	0.00	1.79	0.76	0.48%	2.10%	3.08%	0.68	49.45%	\$1.84
6/9/2021	1,252,383	\$85.74	-4.16%	-0.28%	-0.68%	0.00	1.79	0.76	-0.76%	-3.40%	3.08%	-1.11	26.97%	(\$3.04)
6/10/2021	602,651	\$85.97	0.27%	0.24%	0.80%	0.00	1.79	0.76	0.90%	-0.63%	3.08%	-0.20	83.82%	(\$0.54)
6/11/2021	514,407	\$87.74	2.06%	0.44%	1.21%	0.00	1.79	0.76	1.42%	0.64%	3.08%	0.21	83.51%	\$0.55
6/14/2021	1,710,781	\$92.26	5.15%	0.12%	3.22%	0.00	1.79	0.76	2.62%	2.54%	3.08%	0.82	41.05%	\$2.23
6/15/2021	786,332	\$89.46	-3.03%	0.38%	1.18%	0.00	1.79	0.76	1.33%	-4.36%	3.08%	-1.42	15.73%	(\$4.03)
6/16/2021	770,915	\$89.02	-0.49%	0.00%	1.93%	0.00	1.79	0.76	1.51%	-2.00%	3.08%	-0.65	51.52%	(\$1.79)
6/17/2021	1,709,731	\$95.73	7.54%	-0.43%	5.32%	0.00	1.79	0.76	3.64%	3.90%	3.08%	1.27	20.61%	\$3.47
6/18/2021	2,188,082	\$99.53	3.97%	-0.73%	0.95%	0.00	1.79	0.76	0.02%	3.95%	3.08%	1.29	19.99%	\$3.78
6/21/2021	1,358,007	\$101.78	2.26%	0.78%	0.14%	0.00	1.79	0.76	0.97%	1.29%	3.08%	0.42	67.41%	\$1.29
6/22/2021	721,435	\$101.02	-0.75%	0.23%	1.45%	0.00	1.79	0.76	1.39%	-2.13%	3.08%	-0.69	48.85%	(\$2.17)
6/23/2021	762,791	\$101.71	0.68%	-0.18%	-0.06%	0.00	1.79	0.76	-0.18%	0.87%	3.08%	0.28	77.85%	\$0.88

Exhibit 4
Lightspeed Commerce, Inc. Subordinate Voting Shares Data
March 7, 2019 to November 30, 2021

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]
Date	Lightspeed		Market Return	Market Return	Industry Return	Coefficient		Predicted Return	Excess Return	Standard Error	t-statistic	p-Value	Excess Price Change	
	Volume	Price				Return	Intercept							Market
6/24/2021	803,238	\$104.39	2.63%	0.26%	-0.90%	0.00	1.79	0.76	-0.37%	3.00%	3.08%	0.98	32.97%	\$3.06
6/25/2021	757,798	\$103.88	-0.49%	0.11%	-0.38%	0.00	1.79	0.76	-0.13%	-0.36%	3.08%	-0.12	90.74%	(\$0.37)
6/28/2021	685,621	\$106.33	2.36%	-0.43%	1.64%	0.00	1.79	0.76	0.85%	1.51%	3.08%	0.49	62.44%	\$1.57
6/29/2021	718,856	\$105.83	-0.47%	0.22%	-0.19%	0.00	1.79	0.76	0.13%	-0.60%	3.08%	-0.19	84.58%	(\$0.64)
6/30/2021	968,472	\$103.75	-1.97%	-0.02%	-1.27%	0.00	1.79	0.76	-0.94%	-1.03%	3.08%	-0.33	73.82%	(\$1.09)
7/2/2021	686,613	\$106.99	3.12%	0.29%	0.03%	0.00	1.79	0.76	0.37%	2.75%	3.08%	0.89	37.25%	\$2.85
7/5/2021	301,256	\$108.33	1.25%	0.31%	0.38%	0.00	1.79	0.76	0.65%	0.60%	3.08%	0.19	84.60%	\$0.64
7/6/2021	848,177	\$106.31	-1.86%	0.10%	3.67%	0.00	1.79	0.76	2.93%	-4.80%	3.08%	-1.56	12.01%	(\$5.20)
7/7/2021	901,875	\$103.93	-2.24%	-0.04%	-0.53%	0.00	1.79	0.76	-0.39%	-1.85%	3.08%	-0.60	54.91%	(\$1.96)
7/8/2021	712,300	\$102.66	-1.22%	-1.08%	-2.29%	0.00	1.79	0.76	-2.80%	1.57%	3.08%	0.51	60.94%	\$1.64
7/9/2021	626,365	\$106.02	3.27%	0.97%	1.21%	0.00	1.79	0.76	1.97%	1.30%	3.08%	0.42	67.22%	\$1.34
7/12/2021	450,396	\$104.91	-1.05%	-0.12%	-0.38%	0.00	1.79	0.76	-0.36%	-0.69%	3.08%	-0.22	82.40%	(\$0.73)
7/13/2021	464,280	\$103.18	-1.65%	0.19%	1.32%	0.00	1.79	0.76	1.25%	-2.90%	3.08%	-0.94	34.71%	(\$3.04)
7/14/2021	586,533	\$101.58	-1.55%	-0.60%	-2.57%	0.00	1.79	0.76	-2.52%	0.97%	3.08%	0.32	75.27%	\$1.00
7/15/2021	708,553	\$99.55	-2.00%	0.19%	-0.39%	0.00	1.79	0.76	-0.05%	-1.94%	3.08%	-0.63	52.78%	(\$1.98)
7/16/2021	569,335	\$98.89	-0.66%	-0.98%	-0.23%	0.00	1.79	0.76	-1.14%	0.47%	3.08%	0.15	87.75%	\$0.47
7/19/2021	658,439	\$98.92	0.03%	-1.30%	1.82%	0.00	1.79	0.76	0.09%	-0.06%	3.08%	-0.02	98.53%	(\$0.06)
7/20/2021	897,619	\$103.68	4.81%	1.08%	2.62%	0.00	1.79	0.76	3.15%	1.66%	3.08%	0.54	58.97%	\$1.64
7/21/2021	485,524	\$104.15	0.45%	0.84%	1.24%	0.00	1.79	0.76	1.86%	-1.41%	3.08%	-0.46	64.79%	(\$1.46)
7/22/2021	669,471	\$105.23	1.04%	-0.06%	1.11%	0.00	1.79	0.76	0.83%	0.21%	3.08%	0.07	94.62%	\$0.22
7/23/2021	704,431	\$108.03	2.66%	0.50%	2.40%	0.00	1.79	0.76	2.38%	0.28%	3.08%	0.09	92.73%	\$0.30
7/26/2021	908,538	\$110.47	2.26%	-0.12%	-2.81%	0.00	1.79	0.76	-2.20%	4.46%	3.08%	1.45	14.80%	\$4.82
7/27/2021	952,202	\$110.38	-0.08%	0.04%	-0.73%	0.00	1.79	0.76	-0.46%	0.38%	3.08%	0.12	90.26%	\$0.42
7/28/2021	628,292	\$112.06	1.52%	0.28%	-0.93%	0.00	1.79	0.76	-0.36%	1.89%	3.08%	0.61	54.02%	\$2.08
7/29/2021	542,553	\$110.05	-1.79%	0.42%	-1.16%	0.00	1.79	0.76	-0.39%	-1.40%	3.08%	-0.45	64.96%	(\$1.57)
7/30/2021	634,371	\$106.83	-2.93%	-0.08%	-0.62%	0.00	1.79	0.76	-0.50%	-2.42%	3.08%	-0.79	43.20%	(\$2.66)
8/3/2021	778,063	\$109.54	2.54%	0.38%	1.39%	0.00	1.79	0.76	1.49%	1.04%	3.08%	0.34	73.45%	\$1.12
8/4/2021	732,087	\$111.91	2.16%	-0.18%	1.45%	0.00	1.79	0.76	0.96%	1.20%	3.08%	0.39	69.62%	\$1.32
8/5/2021	1,534,118	\$119.89	7.13%	0.20%	-0.42%	0.00	1.79	0.76	-0.06%	7.19%	3.08%	2.34	2.02% *	\$8.05
8/6/2021	956,210	\$122.12	1.86%	0.49%	-0.37%	0.00	1.79	0.76	0.27%	1.59%	3.08%	0.52	60.52%	\$1.91
8/9/2021	1,622,412	\$116.57	-4.54%	-0.17%	1.06%	0.00	1.79	0.76	0.68%	-5.22%	3.08%	-1.70	9.08%	(\$6.38)
8/10/2021	1,325,832	\$116.87	0.26%	0.29%	-1.05%	0.00	1.79	0.76	-0.45%	0.71%	3.08%	0.23	81.76%	\$0.83
8/11/2021	1,055,594	\$119.49	2.24%	0.28%	-1.85%	0.00	1.79	0.76	-1.07%	3.31%	3.08%	1.08	28.28%	\$3.87
8/12/2021	1,479,006	\$119.14	-0.29%	-0.10%	1.06%	0.00	1.79	0.76	0.75%	-1.04%	3.08%	-0.34	73.55%	(\$1.24)

Exhibit 4
Lightspeed Commerce, Inc. Subordinate Voting Shares Data
March 7, 2019 to November 30, 2021

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]
Date	Lightspeed		Market Return	Industry Return	Coefficient		Predicted Return	Excess Return	Standard Error	t-statistic	p-Value	Excess Price Change		
	Volume	Price			Intercept	Market							Industry	
8/13/2021	828,923	\$118.95	-0.16%	-0.01%	-0.08%	0.00	1.79	0.76	-0.02%	-0.14%	3.08%	-0.04	96.48%	(\$0.16)
8/16/2021	1,035,307	\$119.18	0.19%	-0.15%	-0.06%	0.00	1.79	0.76	-0.15%	0.34%	3.08%	0.11	91.14%	\$0.41
8/17/2021	1,167,434	\$115.02	-3.49%	-0.57%	-0.10%	0.00	1.79	0.76	-0.61%	-2.88%	3.08%	-0.93	35.07%	(\$3.43)
8/18/2021	770,913	\$117.88	2.49%	-0.30%	0.62%	0.00	1.79	0.76	0.21%	2.27%	3.08%	0.74	46.07%	\$2.61
8/19/2021	863,930	\$115.68	-1.87%	-0.41%	0.04%	0.00	1.79	0.76	-0.35%	-1.52%	3.08%	-0.49	62.20%	(\$1.79)
8/20/2021	786,511	\$119.89	3.64%	0.60%	-0.02%	0.00	1.79	0.76	0.66%	2.98%	3.08%	0.97	33.31%	\$3.45
8/23/2021	879,111	\$122.18	1.91%	0.68%	0.77%	0.00	1.79	0.76	1.33%	0.58%	3.08%	0.19	85.01%	\$0.70
8/24/2021	587,405	\$123.65	1.20%	0.36%	2.34%	0.00	1.79	0.76	2.20%	-0.99%	3.08%	-0.32	74.70%	(\$1.21)
8/25/2021	1,039,401	\$126.31	2.15%	0.19%	0.42%	0.00	1.79	0.76	0.56%	1.59%	3.08%	0.52	60.63%	\$1.96
8/26/2021	629,908	\$125.30	-0.80%	-0.40%	-1.18%	0.00	1.79	0.76	-1.26%	0.46%	3.08%	0.15	88.14%	\$0.58
8/27/2021	835,965	\$131.84	5.22%	0.67%	0.86%	0.00	1.79	0.76	1.39%	3.83%	3.08%	1.24	21.46%	\$4.80
8/30/2021	1,200,911	\$136.13	3.25%	-0.22%	0.86%	0.00	1.79	0.76	0.48%	2.77%	3.08%	0.90	36.79%	\$3.66
8/31/2021	1,045,141	\$140.06	2.89%	-0.06%	-0.67%	0.00	1.79	0.76	-0.52%	3.41%	3.08%	1.11	26.85%	\$4.64
9/1/2021	1,110,695	\$145.33	3.76%	0.51%	1.00%	0.00	1.79	0.76	1.33%	2.43%	3.08%	0.79	43.05%	\$3.40
9/2/2021	1,187,158	\$148.79	2.38%	0.52%	-0.31%	0.00	1.79	0.76	0.35%	2.03%	3.08%	0.66	50.98%	\$2.95
9/3/2021	905,590	\$150.19	0.94%	0.12%	0.31%	0.00	1.79	0.76	0.41%	0.53%	3.08%	0.17	86.35%	\$0.79
9/7/2021	954,843	\$150.56	0.25%	-0.05%	0.14%	0.00	1.79	0.76	0.10%	0.15%	3.08%	0.05	96.14%	\$0.22
9/8/2021	1,200,724	\$147.81	-1.83%	-0.30%	-2.48%	0.00	1.79	0.76	-2.13%	0.31%	3.08%	0.10	92.07%	\$0.46
9/9/2021	1,406,150	\$157.01	6.22%	-0.19%	0.98%	0.00	1.79	0.76	0.59%	5.63%	3.08%	1.83	6.84%	\$8.32
9/10/2021	1,240,338	\$157.59	0.37%	-0.35%	-0.54%	0.00	1.79	0.76	-0.72%	1.09%	3.08%	0.35	72.37%	\$1.71
9/13/2021	1,522,244	\$150.21	-4.68%	0.19%	-1.02%	0.00	1.79	0.76	-0.53%	-4.15%	3.08%	-1.35	17.83%	(\$6.54)
9/14/2021	975,885	\$151.45	0.83%	-0.51%	-1.02%	0.00	1.79	0.76	-1.26%	2.08%	3.08%	0.68	49.94%	\$3.13
9/15/2021	907,071	\$155.06	2.38%	0.68%	0.88%	0.00	1.79	0.76	1.41%	0.97%	3.08%	0.32	75.29%	\$1.47
9/16/2021	1,131,945	\$156.62	1.01%	-0.43%	0.40%	0.00	1.79	0.76	-0.09%	1.10%	3.08%	0.36	72.12%	\$1.70
9/17/2021	3,271,562	\$158.84	1.42%	-0.55%	0.57%	0.00	1.79	0.76	-0.09%	1.50%	3.08%	0.49	62.56%	\$2.35
9/20/2021	1,133,051	\$155.27	-2.25%	-1.63%	-2.20%	0.00	1.79	0.76	-3.29%	1.05%	3.08%	0.34	73.39%	\$1.66
9/21/2021	1,021,104	\$156.70	0.92%	0.45%	0.27%	0.00	1.79	0.76	0.72%	0.20%	3.08%	0.07	94.70%	\$0.32
9/22/2021	1,159,924	\$158.93	1.42%	0.77%	1.12%	0.00	1.79	0.76	1.69%	-0.27%	3.08%	-0.09	93.00%	(\$0.42)
9/23/2021	876,669	\$156.85	-1.31%	0.31%	0.09%	0.00	1.79	0.76	0.44%	-1.75%	3.08%	-0.57	57.02%	(\$2.78)
9/24/2021	847,764	\$153.36	-2.23%	-0.27%	-1.53%	0.00	1.79	0.76	-1.39%	-0.83%	3.08%	-0.27	78.68%	(\$1.31)
9/27/2021	910,028	\$149.65	-2.42%	0.33%	-0.79%	0.00	1.79	0.76	-0.20%	-2.22%	3.08%	-0.72	47.18%	(\$3.40)
9/28/2021	1,558,693	\$142.76	-4.60%	-1.31%	-4.22%	0.00	1.79	0.76	-4.50%	-0.10%	3.08%	-0.03	97.32%	(\$0.15)
9/29/2021	5,246,236	\$126.00	-11.74%	-0.02%	-1.02%	0.00	1.79	0.76	-0.75%	-10.99%	3.08%	-3.57	0.04% **	(\$15.69)
9/30/2021	2,925,120	\$122.22	-3.00%	-0.42%	-0.13%	0.00	1.79	0.76	-0.49%	-2.51%	3.08%	-0.82	41.49%	(\$3.17)

Exhibit 4
Lightspeed Commerce, Inc. Subordinate Voting Shares Data
March 7, 2019 to November 30, 2021

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]
Date	Lightspeed		Market Return	Industry Return	Coefficient		Predicted Return	Excess Return	Standard Error	t-statistic	p-Value	Excess Price Change		
	Volume	Price			Intercept	Market							Industry	
10/1/2021	1,901,796	\$124.27	1.68%	0.40%	-0.12%	0.00	1.79	0.76	0.37%	1.31%	3.08%	0.43	67.03%	\$1.60
10/4/2021	2,340,084	\$113.69	-8.51%	-0.41%	-2.65%	0.00	1.79	0.76	-2.38%	-6.14%	3.08%	-1.99	4.72% *	(\$7.62)
10/5/2021	973,595	\$115.58	1.66%	0.65%	0.06%	0.00	1.79	0.76	0.76%	0.90%	3.08%	0.29	77.06%	\$1.02
10/6/2021	1,791,141	\$110.97	-3.99%	0.06%	2.00%	0.00	1.79	0.76	1.63%	-5.62%	3.08%	-1.83	6.91%	(\$6.49)
10/7/2021	1,213,393	\$116.34	4.84%	1.14%	2.95%	0.00	1.79	0.76	3.46%	1.38%	3.08%	0.45	65.47%	\$1.53
10/8/2021	1,259,330	\$108.14	-7.05%	0.04%	-1.88%	0.00	1.79	0.76	-1.34%	-5.71%	3.08%	-1.86	6.46%	(\$6.64)
10/12/2021	883,348	\$110.87	2.52%	0.09%	-1.26%	0.00	1.79	0.76	-0.81%	3.34%	3.08%	1.09	27.88%	\$3.61
10/13/2021	862,124	\$115.00	3.73%	0.87%	2.47%	0.00	1.79	0.76	2.82%	0.90%	3.08%	0.29	76.92%	\$1.00
10/14/2021	1,414,920	\$120.88	5.11%	0.96%	0.53%	0.00	1.79	0.76	1.44%	3.67%	3.08%	1.19	23.34%	\$4.23
10/15/2021	1,304,159	\$122.15	1.05%	0.52%	0.73%	0.00	1.79	0.76	1.14%	-0.09%	3.08%	-0.03	97.76%	(\$0.10)
10/18/2021	966,934	\$118.05	-3.36%	0.29%	2.15%	0.00	1.79	0.76	1.98%	-5.33%	3.08%	-1.73	8.41%	(\$6.52)
10/19/2021	626,502	\$120.19	1.81%	0.48%	1.12%	0.00	1.79	0.76	1.39%	0.42%	3.08%	0.14	89.07%	\$0.50
10/20/2021	538,970	\$118.47	-1.43%	0.49%	-0.06%	0.00	1.79	0.76	0.51%	-1.94%	3.08%	-0.63	52.86%	(\$2.33)
10/21/2021	832,674	\$123.49	4.24%	0.10%	0.97%	0.00	1.79	0.76	0.88%	3.35%	3.08%	1.09	27.66%	\$3.97
10/22/2021	975,568	\$118.62	-3.94%	0.04%	-3.05%	0.00	1.79	0.76	-2.22%	-1.73%	3.08%	-0.56	57.52%	(\$2.13)
10/25/2021	513,835	\$120.56	1.64%	0.37%	0.13%	0.00	1.79	0.76	0.52%	1.11%	3.08%	0.36	71.81%	\$1.32
10/26/2021	860,779	\$117.90	-2.21%	-0.51%	-2.96%	0.00	1.79	0.76	-2.73%	0.52%	3.08%	0.17	86.57%	\$0.63
10/27/2021	831,322	\$113.56	-3.68%	-1.02%	-1.05%	0.00	1.79	0.76	-1.79%	-1.89%	3.08%	-0.61	54.03%	(\$2.22)
10/28/2021	1,281,130	\$121.15	6.68%	1.14%	4.77%	0.00	1.79	0.76	4.84%	1.85%	3.08%	0.60	54.86%	\$2.10
10/29/2021	601,891	\$120.63	-0.43%	-0.73%	-0.20%	0.00	1.79	0.76	-0.86%	0.43%	3.08%	0.14	88.98%	\$0.52
11/1/2021	839,218	\$125.21	3.80%	0.98%	3.14%	0.00	1.79	0.76	3.44%	0.35%	3.08%	0.11	90.89%	\$0.43
11/2/2021	853,351	\$121.05	-3.32%	-0.35%	-1.81%	0.00	1.79	0.76	-1.68%	-1.64%	3.08%	-0.53	59.38%	(\$2.06)
11/3/2021	680,215	\$122.76	1.41%	0.45%	0.59%	0.00	1.79	0.76	0.95%	0.46%	3.08%	0.15	88.14%	\$0.56
11/4/2021	7,422,797	\$88.93	-27.56%	0.51%	1.96%	0.00	1.79	0.76	2.06%	-29.62%	3.08%	-9.63	0.00% **	(\$36.36)
11/5/2021	4,207,679	\$90.92	2.24%	0.52%	-0.43%	0.00	1.79	0.76	0.26%	1.98%	3.08%	0.64	52.08%	\$1.76
11/8/2021	1,970,949	\$90.27	-0.71%	0.48%	0.85%	0.00	1.79	0.76	1.18%	-1.90%	3.08%	-0.62	53.78%	(\$1.73)
11/9/2021	1,387,383	\$88.68	-1.76%	0.19%	0.92%	0.00	1.79	0.76	0.94%	-2.70%	3.08%	-0.88	38.11%	(\$2.44)
11/10/2021	1,571,185	\$84.89	-4.27%	-0.60%	-3.83%	0.00	1.79	0.76	-3.46%	-0.81%	3.08%	-0.26	79.27%	(\$0.72)
11/11/2021	1,070,860	\$84.16	-0.86%	0.57%	1.44%	0.00	1.79	0.76	1.72%	-2.58%	3.08%	-0.84	40.20%	(\$2.19)
11/12/2021	1,203,558	\$87.40	3.85%	0.91%	7.69%	0.00	1.79	0.76	6.81%	-2.96%	3.08%	-0.96	33.73%	(\$2.49)
11/15/2021	937,470	\$86.93	-0.54%	-0.39%	-0.90%	0.00	1.79	0.76	-1.04%	0.50%	3.08%	0.16	87.15%	\$0.44
11/16/2021	849,088	\$86.50	-0.49%	0.17%	1.53%	0.00	1.79	0.76	1.38%	-1.87%	3.08%	-0.61	54.29%	(\$1.63)
11/17/2021	790,232	\$85.48	-1.18%	-0.29%	-1.07%	0.00	1.79	0.76	-1.05%	-0.13%	3.08%	-0.04	96.75%	(\$0.11)
11/18/2021	2,428,895	\$79.44	-7.07%	-0.03%	1.47%	0.00	1.79	0.76	1.14%	-8.20%	3.08%	-2.67	0.82% **	(\$7.01)

Exhibit 4
Lightspeed Commerce, Inc. Subordinate Voting Shares Data
March 7, 2019 to November 30, 2021

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]
Date	Lightspeed		Market Return	Industry Return	Coefficient		Predicted Return	Excess Return	Standard Error	t-statistic	p-Value	Excess Price Change		
	Volume	Price			Intercept	Market							Industry	
11/19/2021	2,911,160	\$73.59	-7.36%	-0.34%	1.03%	0.00	1.79	0.76	0.48%	-7.84%	3.08%	-2.55	1.14% *	(\$6.23)
11/22/2021	1,937,976	\$73.44	-0.20%	-0.62%	-4.27%	0.00	1.79	0.76	-3.83%	3.62%	3.08%	1.18	23.98%	\$2.67
11/23/2021	2,753,797	\$67.67	-7.86%	0.22%	-1.39%	0.00	1.79	0.76	-0.78%	-7.07%	3.08%	-2.30	2.23% *	(\$5.19)
11/24/2021	2,714,399	\$70.06	3.53%	0.43%	2.30%	0.00	1.79	0.76	2.23%	1.30%	3.08%	0.42	67.35%	\$0.88
11/25/2021	848,102	\$72.25	3.13%	0.29%	0.70%	0.00	1.79	0.76	0.88%	2.25%	3.08%	0.73	46.60%	\$1.57
11/26/2021	1,337,328	\$69.33	-4.04%	-2.25%	-2.92%	0.00	1.79	0.76	-4.48%	0.44%	3.08%	0.14	88.71%	\$0.32
11/29/2021	1,402,212	\$68.16	-1.69%	0.15%	0.13%	0.00	1.79	0.76	0.30%	-1.99%	3.08%	-0.65	51.78%	(\$1.38)
11/30/2021	2,151,681	\$64.62	-5.19%	-2.27%	-2.37%	0.00	1.79	0.76	-4.09%	-1.11%	3.08%	-0.36	71.92%	(\$0.75)

Notes:

[1] Canadian trading day.

[2] Reported daily Canadian composite volume (LSPD CN). Source Bloomberg.

[3] Closing Canadian composite share price (LSPD CN). Source: Bloomberg.

[4] = { [3] / [3] on previous trading day } - 1.

[5] Daily return for the S&P/TSX Total Return Index (Bloomberg ticker: 0000AR), after removing the effect of Lightspeed from the index return based on Lightspeed's weight in the index at the beginning of each month, the Market Index. Source: Bloomberg.

[6] Daily industry return is the daily return for the S&P/TSX Composite Information Technology GICS Level Sector Total Return Index (Bloomberg ticker: STINFTR), after removing the effect of Lightspeed from the index return based on Lightspeed's weight in the index at the beginning of each month, the Industry Index.

[7] to [9]:

The coefficients are from a market model regression estimated over the period from December 1, 2020 to November 30, 2021 using the Market Index returns and the Industry Index returns (net of market returns) and three dummy dates: September 29, 2021; September 30, 2021; and November 4, 2021.

[10] = [7] + {[8] x [5]} + {[9] x ([6] - [5]) }.

[11] = [4] - [10].

[12] The standard error from the market model.

[13] = [11] / [12].

[14] Two-tailed p-value associated with the t-statistic in [13]. ** denotes p-value is less than or equal to 1% and * denotes p-value is less than or equal to 5%.

[15] = [11] x prior [3].

APPENDIX A MARKET EFFICIENCY FOR COMMON STOCK

1. To ascertain the reliability of using my market model to analyze the corrective disclosures, I assessed the degree of market efficiency of Lightspeed Subordinate Voting Shares. As stated in the body of the Report, Lightspeed’s Subordinate Voting Shares traded primarily in Canada during the Market Efficiency Period. I focus on market efficiency for the Company’s shares traded in Canada during the Market Efficiency Period from December 1, 2020, through November 30, 2021.

2. Below, I analyze the market for Lightspeed Subordinate Voting Shares commonly accepted indicia of an efficient market.¹ But first I discuss the market efficiency hypothesis.

A. Efficient Market Hypothesis

3. The Efficient Market Hypothesis (“EMH”) is conventionally divided into three categories by economists, each dealing with a different type of information:

- a) Weak-form – information contained in historic prices is fully reflected in current prices;
- b) Semi-strong form – publicly available information is fully reflected in current prices; and

¹ The United States district courts have accepted many of the factors that economists generally use to determine whether the market for a security is efficient. *See*, for example, *Cammer v. Bloom*, 711 F. Supp. 1264 (D.N.J. 1989) (“*Cammer*”). *See also* *Cheney v. CyberGuard Corp.*, 213 F.R.D. 484 at 501-02 (S.D. Fla. 2003) (“*CyberGuard*”); *In re. DVI Securities Litigation*, 249 F.R.D. 196 at 208 (E.D. PA. 2008) (“*DVI*”); and *Lehocky v. Tidel*, 220 F.R.D. 491 at 506-07 (S.D. Tex. 2004) (“*Lehocky*”). *See also* Burton G. Malkiel, “The Efficient Market Hypothesis and Its Critics,” *Journal of Economic Perspectives* 17(1), Winter 2003, 59-82, p. 60 (which states: “I conclude that our stock markets are far more efficient and far less predictable than some recent academic papers would have us believe.”). Throughout my Report and the accompanying exhibits and appendices, I frequently reference cases and analyses from U.S. matters due to the breadth of decisions made in U.S. Courts compared to those in other legal regimes, including Canada.

- c) Strong-form – all information, public and non-public, is fully reflected in current prices.²
4. A finding of market efficiency for a security generally means that the price of the security reflects all relevant, publicly available information or, in other words, that it satisfies the semi-strong form of the EMH.
5. The intuition behind market efficiency is explained succinctly by the following textbook quote:

What makes a market efficient is competition among investors. Many individuals spend their entire lives trying to find mispriced stocks. For any given stock, they study what has happened in the past to the stock price and its dividends. They learn, to the extent possible, what a company's earnings have been, how much it owes to creditors, what taxes it pays, what businesses it is in, what new investments are planned, how sensitive it is to changes in the economy, and so on.

Not only is there a great deal to know about any particular company, there is a powerful incentive for knowing it, namely, the profit motive. If you know more about some company than other investors in the marketplace, you can profit from that knowledge by investing in the company's stock if you have good news and selling it if you have bad news.

The logical consequence of all this information being gathered and analyzed is that mispriced stocks will become fewer and fewer. In other words, because of competition among investors, the market will become increasingly efficient. A kind of equilibrium comes into being where there is just enough mispricing around for those who are best at identifying it to make a living at it. For most other investors, the activity of information gathering and analysis will not pay.³

² See Edwin J. Elton, Martin J. Gruber, Stephen J. Brown, and William N. Goetzmann, Modern Portfolio Theory and Investment Analysis, Sixth Edition, John Wiley & Sons, Inc., 2003, p. 402.

³ See Stephen A. Ross, Randolph W. Westerfield, and Bradford D. Jordan, Fundamentals of Corporate Finance, Second Edition, Irwin, 1992 and 1993, pp. 359-60, (emphasis added, footnote omitted).

6. The profit motive can be explained as a simple cost-benefit analysis by the investor: an investor will trade when his appraised value of the stock differs enough from the market price (benefit) to justify incurring the transaction costs of trading (cost).

7. For this Report, my analyses include certain commonly accepted indicia of an informationally efficient market.

8. In a comparison of worldwide stock exchanges by researchers, the TSX's overall market efficiency ranking was 6th out of 25 worldwide exchanges, which is consistent with the conclusion of an efficient market for shares traded on the TSX.⁴

9. A finding of market efficiency for a security generally means that the price of the security reflects all relevant, publicly available information, which means it satisfies the semi-strong form of the EMH. If there is information flow, the costs of trading are low, and there is competition among investors, then an efficient market will exist. Many of the methods or analyses I use as indicators of an efficient market are designed to directly or indirectly measure the degree of information flow, the level of transaction costs, and/or the competition among investors (particularly those who "spend their entire lives trying to find mispriced stocks"⁵).

⁴ See Michael Aitken and Audris Siow, "Ranking World Equity Markets on the Basis of Market Efficiency and Integrity," Working Paper (Nov. 2003), Table 1. For general statistics on exchanges, see World Federation of Exchanges 2009 Annual Report and Statistics, (2009 statistics), pp. 101-122.

⁵ See Stephen A. Ross, Randolph W. Westerfield, and Bradford D. Jordan, Fundamentals of Corporate Finance, Second Edition, Irwin, 1992 and 1993, p. 359 (see ¶5 for the full context of this quote).

B. Transaction Costs and Liquidity

i) Weekly Trading Volume

10. Trading volume is generally viewed as an indicator of market efficiency because high volume implies significant investor interest in the company and liquidity.⁶ The more liquid is a market, the lower the costs of trading in the market. The average weekly trading volume for Lightspeed’s Subordinate Voting Shares over the Market Efficiency Period was 10.7 million shares.⁷ The average weekly trading volume as a percent of shares outstanding was 7.9%. Exhibit A-1 shows the daily market efficiency statistics for Lightspeed.

11. In a published paper, for the commonly accepted structural factors of market efficiency, my co-authors and I ranked the stocks listed on the NYSE and NASDAQ exchanges (“NYSE/Nasdaq Universe”), two of the most open and well-developed markets in the world, from best to worst.⁸ This allows for the benchmarking of Lightspeed statistics relative to the stocks in the NYSE/Nasdaq Universe. I compare several of Lightspeed structural statistics to the universe of stocks traded in the NYSE and Nasdaq markets because these markets are widely regarded as well-developed and efficient and because the statistics for the stock-universe is in a published paper.

12. The weekly turnover of Lightspeed shares during the Market Efficiency Period is between the 75th and 90th percentiles of the universe of NYSE/NASDAQ stocks during 2016-

⁶ The *Cammer* opinion states that weekly trading volume that represents one percent of shares outstanding would justify a “substantial presumption,” of market efficiency. *See Cammer* at 1286.

⁷ I include the volume from the United States after Lightspeed began trading on the NYSE on September 11, 2020.

⁸ The details of the analysis are discussed in: Bharat Bhole, Sunita Surana, and Frank Torchio, “Benchmarking Market Efficiency Indicators for Securities Litigation,” *University of Illinois Online Law Review* 96, 2020, 96-116 (“BST 2020”).

2018, meaning that the turnover of Lightspeed Subordinate Voting Shares is better than at least 75% of stocks that trade in these well-developed markets.⁹

13. The Company’s weekly trading volume provides support for my opinion that Lightspeed’s Subordinate Voting Shares traded in an efficient market during the Market Efficiency Period. In addition, Lightspeed’s trading volume exceeds the benchmark of weekly volume of 2% of shares outstanding that has been considered to justify “a strong presumption” that the market for a security is efficient.¹⁰

ii) Toronto Stock Exchange Market Maker

14. Large, well-established exchanges have processes and systems to allow investors the ability to execute trades quickly and efficiently and provide liquidity. In Canada, Lightspeed’s Subordinate Voting Shares traded primarily on the TSX, which uses a market maker system. The TSX describes the market maker program and the role of the market maker as follows:

Every security listed on TSX, except for debentures/notes has a designated Market Maker firm and Registered Trader (RT) who is responsible for supporting an orderly market for trading of the security.

The role of the Market Maker is to augment liquidity, and ensure a 2-sided market exists, while maintaining the primacy of an order-driven continuous auction market based on price-time priority. A Market Maker manages market liquidity through a mainly passive role, and is often only visible when natural market forces are not sufficiently supporting a liquid trading environment.¹¹

⁹ See BST 2020, Table 1 (p. 102). For comparison to BST 2020, Table 1, I calculate daily average turnover for Lightspeed common stock of 1.6% as the weekly average divided by 5.

¹⁰ See *Cammer* at 1286 (citing Bromberg & Lowenfels, 4 *Securities Fraud and Commodities Fraud*, § 8.6 (Aug. 1988)).

¹¹ See <https://www.tsx.com/trading/toronto-stock-exchange/order-types-and-features/market-maker-program>.

15. According to the TSX, the exchange has a dual market maker program where there are two market makers assigned to a security at any time, which means there were assigned market makers for Lightspeed Subordinate Voting Shares during the Market Efficiency Period.¹² The existence of an assigned market maker provides some assurance to investors that liquidity will be available if needed. The existence of a market maker is preferred to no market maker.¹³

iii) Bid-Ask Spread

16. Bid-ask spreads are one component of the cost of trading financial securities. They provide a measure of the difference in price between the highest price that a buyer is willing to pay for the stock and the lowest price that a seller is willing to accept. Bid-ask spreads are an indication of market efficiency because the lower the bid-ask spreads, the lower the costs of trading.¹⁴ Lower costs of trading reduce impediments to trade as new information enters the market.

17. To calculate Lightspeed's bid-ask spreads, I obtained intraday quotes from Tick Data, Inc. I use quotes classified by Tick Data as "day session" for the TSX exchange (Exchange Code = "XTSE"), which results in 13,976,640 quotes during the Market Efficiency

¹² Source: Email response from TSX and TSX Market Making Program Guide, version 3.2, effective November 1, 2021 available at <https://www.tsx.com/resource/en/1834>.

¹³ The *Cammer* opinion states that: "The existence of market makers and arbitrageurs would ensure completion of the market mechanism; these individuals would react swiftly to company news and reported financial results by buying or selling stock and driving it to a changed price level." *See Cammer v. Bloom*, 711 F. Supp. 1264 (D.N.J. 1989) at 1286-87.

¹⁴ United States courts have used excessive bid-ask spreads as an indication of an inefficient market because large spreads can make transactions in the security prohibitively expensive. For example, in *Krogman*, the court found that a bid-ask spread "...of 5.6% was extremely high, suggesting market inefficiency." *See Cheney v. CyberGuard Corp.*, 213 F.R.D. 484 (S.D. Fla. 2003) at 501. (citing *Krogman v. Sterritt*, 202 F.R.D. 467 (N.D. Tex. 2001) at 478). Whereas, in *CyberGuard*, that court found that a bid-ask spread of 2.44% "...weighs in favor of market efficiency...." *See Cheney v. CyberGuard Corp.*, 213 F.R.D. 484 (S.D. Fla. 2003), at 501.

Period.¹⁵ I next remove any instances where the ask quote is less than or equal to the bid quote (*i.e.*, a non-positive bid-ask spread).¹⁶ I then take the last quote each day (based on time of trade and the original order of the data obtained) for each exchange. Based on the last spread on the TSX during the day session, the average bid-ask spread for Lightspeed Subordinate Voting Shares was 0.10% during the Market Efficiency Period. *See* Exhibit A-1.

18. I also calculated the time-weighted average daily intraday spread for Lightspeed using the same intraday data obtained from Tick Data, Inc. Based on the same filtered set of nearly 14 million quotes, I obtain the last available bid-ask spread at each millisecond. I calculate the amount of time each bid-ask spread was outstanding. I then calculate a weighted-average intraday bid-ask spread each day with the weights being the amount of time each spread was outstanding (the last spread of the day is thus excluded from the average). The analysis is performed over 8,922,582 spreads (on a daily basis, the number of spreads in the analysis ranges from 4,593 to 102,363). The daily average and median intraday bid-ask spread during the Market Efficiency Period is 0.12%, and the daily intraday results range from 0.06% to 0.26%.

19. Lightspeed's average last and intraday bid-ask spread is between the 25th and 50th percentiles for stocks in the NYSE/Nasdaq Universe during 2016-2018 for this measure of efficiency, meaning that Lightspeed's average bid-ask spread was lower (better) than between 50% and 75% of the stocks within the universe.¹⁷

¹⁵ Tick Data data field definitions are obtained from TickData Canada Equity Trade and Quote Data File Format Document Version 3.3. To reduce complexity, I did not include bid and ask quotes from other Canadian exchanges; including other exchanges to create a "best bid and offer" series for the bid-ask spread could only reduce the magnitude of the measured spread.

¹⁶ I remove 1,585 quotes due to this condition. I also confirmed that all remaining quotes are not negative or zero.

¹⁷ *See* BST 2020 at Table 3, p. 105.

iv) Summary

20. Measures of liquidity include trading volume and turnover. The trading market for Lightspeed's Subordinate Voting Shares is characterized by active trading and relatively low trading costs. Lightspeed's average weekly trading volume in Canada was 10.7 million shares, which is 7.9% of shares outstanding over the Market Efficiency Period. The Company's share turnover in Canada was better than at least 75% of stocks that trade in the NYSE/Nasdaq Universe during 2016-2018 over the Market Efficiency Period. I found no trading days for which Lightspeed did not have trading volume. In addition, Lightspeed had a market maker assigned to it who would provide some assurance to investors that liquidity would be available if needed.

21. A key cost of trading is the spread between a stock's bid quote and its ask quote. Lightspeed's average bid-ask spread was 0.10% based on the last spread using intraday TSX data. Lightspeed's average bid-ask spread is between the 25th and 50th percentiles for stocks in the NYSE/Nasdaq Universe during 2016-2018 for this measure of efficiency. Thus, the cost of trading would not have deterred investors from transacting when there were only small differences between a bidder's and a seller's valuations.

22. Therefore, there was sufficient liquidity at relatively low cost for Lightspeed's Subordinate Voting Shares over the Market Efficiency Period, which supports a finding that Lightspeed's Subordinate Voting Shares traded in an efficient market.

C. Information Flow

i) *Analyst and Media Coverage*

23. The number of securities analysts following and reporting on the stock is an indicia of market efficiency.¹⁸ Significant analyst coverage implies that information about the company is disseminated to investors quickly and analysts' commentary and buy/sell recommendations are often provided. The greater the number of analysts, the more likely information about the company is promptly impounded into trading activity.

24. According to Bloomberg, over the Market Efficiency Period, the number of equity analysts providing Buy/Hold/Sell recommendations for Lightspeed Subordinate Voting Shares ranged from 15 to 18, with an average of approximately 16 analysts. *See* Exhibit A-1. Over 250 analyst reports were issued during the Market Efficiency Period by such firms as ATB Capital Markets, Barclays, BMO Capital Markets, BTIG, CIBC World Markets, Cormark Securities, Credit Suisse, Eight Capital, JPMorgan, Morgan Stanley, National Bank Financial, Piper Sandler, Raymond James Financial, RBC Capital Markets, Scotiabank, TD Securities, and Truist Securities. These analyst reports served the purpose of quickly disseminating publicly available information, and generally providing analyses and recommendations that would be of interest to investors.

25. I benchmarked Lightspeed statistics relative to the stocks in the NYSE/Nasdaq Universe. On average, analyst coverage for Lightspeed (based on Bloomberg data) was between the 75th and 90th percentiles of the stocks in the NYSE/Nasdaq Universe during 2016-2018, meaning that Lightspeed's analyst coverage is better than over 75% of stocks that trade in well-

¹⁸ The *Cammer* opinion states: "... it would be persuasive to allege a significant number of securities analysts followed and reported on a company's stock during the class period." *See Cammer v. Bloom*, 711 F.Supp. 1264 (D.N.J. 1989) at 1286.

developed markets.¹⁹ Consequently, Lightspeed’s analyst coverage provides support for my opinion that Lightspeed Subordinate Voting Shares traded in an efficient market during the Market Efficiency Period.

26. Another measure of information available about a company is the amount of media coverage, press releases, and regulatory filings.²⁰ During the Market Efficiency Period, over 1,500 news articles about Lightspeed appeared in leading financial and trade publications, as well as press release newswires, including Bloomberg News, Bloomberg First Word, Business Wire, Calgary Herald, Canada Newswire, Canada Stockwatch, Dow Jones Institutional News, Dow Jones Newswires, Edmonton Journal, Globe NewsWire, Montreal Gazette, National Post, Ottawa Citizen, PR Newswire, Reuters News, The Canadian Press, The Globe and Mail, and Theflyonthewall.com.²¹

27. Additional information about Lightspeed was distributed through Company SEDAR filings and SEC filings over the Market Efficiency Period.²² These filings included, among others, Audited Annual Financial Statements, Interim Financial Statements, Annual Information Forms, Management Information Circulars, Material Change Reports, Management Discussion and Analyses (“MD&A”), News Releases, Registration Statements, Management Proxy Materials, and Prospectuses.

¹⁹ See BST 2020 at Table 2, p. 104. What was earlier known as Thomson Reuters I/B/E/S is now known as Refinitiv I/B/E/S.

²⁰ See *Cheney v. CyberGuard Corp.*, 213 F.R.D. 484 (S.D. Fla. 2003) at 499.

²¹ I obtained news stories using Bloomberg and Factiva. For Bloomberg, I used the ticker “LSPD CN” with medium relevance. I searched Factiva for articles with Lightspeed Commerce Inc. as the specified company. I excluded duplicate stories obtained from the same source where the headline, lead paragraph, news source and date and time were identical. There were 1,109 articles from the Factiva search and 441 articles from the Bloomberg search for a total of 1,550 articles.

²² I compiled a list of all of the Company’s SEDAR filings filed from the SEDAR website and a list of SEC filings from the SEC EDGAR website.

28. In my opinion, the Company's analyst and media coverage provides support for my opinion that Lightspeed Subordinate Voting Shares traded in an efficient market during the Market Efficiency Period.

ii) Market Capitalization and Float

29. A large market capitalization and/or large public float are indicators of market efficiency because there is a greater incentive for investors to collect and analyze information about large corporations.²³ The public float refers to the number of outstanding shares not held by insiders of the Company. During the Market Efficiency Period, Lightspeed's market capitalization ranged from approximately \$8.0 billion to approximately \$22.7 billion, with an average of \$13.1 billion.²⁴ See Exhibit A-1. Excluding the holdings of company insiders, the market capitalization of the Company's public float ranged from \$5.3 billion to \$16.5 billion during the Market Efficiency Period, with an average of \$9.3 billion.²⁵ See Exhibit A-1.

30. Lightspeed's average market capitalization was between the 90th and 95th percentiles of the stocks in the NYSE/Nasdaq Universe during 2016-2018, meaning that Lightspeed's market capitalization is better than at least 90% of stocks that trade in well-developed markets.^{26,27}

²³ See *Cheney v. CyberGuard Corp.*, 213 F.R.D. 484 (S.D. Fla. 2003) at 501.

²⁴ For purposes of calculating Lightspeed's market capitalization, I use Lightspeed's Subordinate Voting Shares because as of December 1, 2020, the Multiple Voting Shares had been converted to Subordinate Voting Shares.

²⁵ For purposes of calculating Lightspeed's public float, I use Lightspeed's Subordinate Voting Shares less insider holdings of Lightspeed's Subordinate Voting Shares.

²⁶ See BST 2020 at Table 5, p. 107.

²⁷ I note that the market capitalization in *Krogman* was at the 60th percentile of a sample group of NYSE, Nasdaq, and Amex stocks. See *Krogman* at 478.

iii) Correlation between Price Changes and Trading Volume

31. Economists have studied the empirical correlation between absolute stock returns and volume since 1970 for stocks and other securities traded in the United States and elsewhere.²⁸ A strong, direct relationship is the widespread finding, and this evidence is generally interpreted as meaning that both volume and stock-price changes have common ties to the flow of new information about the security. Thus, new important information about a company that is perceived by different investors as having differing valuation effects for the security will typically also cause greater than normal trading volume.

32. Because of this, days with important news will tend to correspond with greater-than-normal trading volume as different investors alter positions in accordance with their differing valuation views.

33. Thus, I check for this statistical correlation between Lightspeed's reported volume and stock-price changes using both the Company's absolute returns and absolute excess stock returns. An "absolute return" means that each negative return is transformed into a positive return (*i.e.*, only the magnitude but not the direction of the return is considered). Both returns are regressed on (the natural log of) Lightspeed's trading volume on a daily basis over the Market Efficiency Period.

34. In both regressions, consistent with an efficient market, I find a strong, positive relationship between daily volume and the absolute value of Lightspeed's Subordinate Voting Shares price returns. The t-statistics of 9.5 and 9.3, respectively, indicate that these two estimated coefficients are positive at greater than the 1% significance level. *See Exhibit A-2.*

²⁸ For a survey of the literature, *see* Jonathan M. Karpoff, "The Relation Between Price Changes and Trading Volume: A Survey," *Journal of Financial and Quantitative Analysis* 22(1), March 1987, 109-126.

35. The results of my analysis of correlation between price changes and trading volume provide support for my opinion that Lightspeed common stock traded in an efficient market during the Market Efficiency Period.

iv) Summary

36. I found indicia of information flow about Lightspeed during the Market Efficiency Period. Over the Market Efficiency Period, Lightspeed had analyst coverage by 16 analysts (on average) who wrote over 250 reports. Lightspeed's average analyst coverage was better than at least 75% of stocks that trade in the NYSE/Nasdaq Universe during 2016-2018 over the Market Efficiency Period, meaning that Lightspeed's analyst coverage was greater than 75% of stocks in well-developed markets. Over 1,500 articles about Lightspeed appeared in numerous news wires, major newspapers, financial publications, and trade publications. Lightspeed's average market capitalization over the Market Efficiency Period was \$13.1 billion. Lightspeed's average market capitalization over the Market Efficiency Period was between the 90th and 95th percentiles of the stocks in the NYSE/Nasdaq Universe during 2016-2018, meaning that Lightspeed's market capitalization is better than at least 90% of stocks that trade in well-developed markets. In addition, Lightspeed Subordinate Voting Shares demonstrates a strong relationship between trading volume and absolute stock-price returns.

37. Therefore, I found indicia of information flow, which supports a finding of an efficient market.

D. Competition Among Investors

i) Institutional Investors

38. Generally, institutional investors have significant experience in evaluating investments and assessing the effect of new information on the future prospects of a traded company's stock. Several researchers comment on the use of institutional holdings as a proxy

for market efficiency. For example, a study by Barber, Griffin, and Lev concludes that, in isolation, institutional holdings are a proxy for market efficiency.²⁹ Thomas and Cotter also argue that the level of institutional investors' ownership in a company's stock is a proxy for market efficiency.³⁰

39. In addition, numerous sophisticated investors, many of whom are institutional investors, attempt to profit from trading mispriced securities. If the price of a security is too low, these investors can profit simply by purchasing the security and holding it until it appreciates. If the price is too high, however, the investors can short the stock (sell a stock that the investor does not own).

40. During the Market Efficiency Period, I identified an average of 40.4% of Lightspeed's Subordinate Voting Shares outstanding that were held by institutions.³¹ See Exhibit A-1. This figure represents only institutions that are required to report their holdings under the U.S. Securities and Exchange Commission requirements. Thus, this figure would necessarily exclude any Canadian institution that are not required to report its holdings under U.S. rules, which could be substantial.

ii) Short Interest

41. The presence of short sellers is an indication of investor activity, which is a necessary component of a well-functioning efficient market. The level of short interest for

²⁹ See Brad M. Barber, Paul A. Griffin, and Baruch Lev, "The Fraud-on-the-Market Theory and the Indicators of Common Stocks' Efficiency," *The Journal of Corporation Law* 19, Winter 1994, 285-312, p. 302.

³⁰ See Randall S. Thomas and James F. Cotter, "Measuring Securities Market Efficiency in the Regulatory Setting," *Law and Contemporary Problems* 63(3), Summer 2000, p. 106.

³¹ I note that the source, Thomson Eikon, reports the institutional holdings for the common stock held in both Canada and the U.S.

Lightspeed Subordinate Voting Shares during the Market Efficiency Period averaged 4.4 million shares, or 3.3% of the Company's Subordinate Voting Shares outstanding. *See* Exhibit A-1.

42. I examined the short interest coverage ratio, which indicates how many trading days it takes to cover a short position given the reported trading volume. The short interest coverage ratio equals short interest divided by average daily trading volume.³² The average short interest coverage ratio for Lightspeed Subordinate Voting Shares was approximately 2.3 days during the Market Efficiency Period. *See* Exhibit A-1. This indicates that, on average, it would take short sellers approximately 2.3 trading days to cover their entire short position in Lightspeed common stock, assuming historical trading volume remained constant. In my experience, 2.3 days coverage ratio is low and provides economic evidence that there were no constraints to cover short positions that would have affected Lightspeed's Subordinate Voting Share price.

iii) Autocorrelation

43. I conducted statistical tests to determine whether the returns for Lightspeed's Subordinate Voting Shares exhibited "autocorrelation," which is also referred to as "serial correlation." Autocorrelation has been studied in the financial economics literature and accepted by the courts.³³

³² For each day, the average trading volume equals the average volume for the previous 20 trading days through the current day.

³³ The lack of autocorrelation generally corresponds to the theory of random walk. "The term 'random walk' is usually used loosely in the finance literature to characterize a price series where all subsequent price changes represent random departures from previous prices. Thus, changes in price will be unrelated to past price changes." *See* Burton G. Malkiel, "Efficient Market Hypothesis," in *The New Palgrave: A Dictionary of Economics*, Volume 2, E to J, ed. by John Eatwell, Murray Milgate and Peter Newman, The Macmillan Press Limited, 1998, pp. 120-123. *See also* *Lehocky v. Tidel Techs., Inc.*, 220 F.R.D. 491, 506-07 (S.D. Tex. 2004); *In Re Polymedica Corporation Securities Litigation*, 453 F. Supp. 2d 260 (D. Mass 2006), ("*Polymedica 2006*") at 276-77.

44. Autocorrelation in a stock's returns means that tomorrow's stock price movement can be systematically predicted with a degree of statistical confidence based solely on the price movement today. This ability to predict stock price movements is a consequence of either of two problems. First, the market systematically overreacts to new information. A systematic overreaction allows investors to earn arbitrage profits by buying on days containing bad news (or selling short on the days containing good news) because there will be a reversal the next day (negative autocorrelation). Second, the market takes excessive time to incorporate new information or systematically underreacts to new information. A systematic underreaction to news allows investors to earn arbitrage profits by buying on a day with good news and selling short on days containing bad news (positive autocorrelation).

45. The presence of statistically significant autocorrelation over short subperiods may mean that there were instances in which there were consecutive days for which important news was disseminated. Under these circumstances, statistically significant autocorrelation would not indicate that any arbitrage opportunity existed, but rather is a figment of consecutive news days.

46. To test for autocorrelation, I first performed a regression analysis of Lightspeed's daily Subordinate Voting Shares returns on the returns from the previous day over the Market Efficiency Period. The autocorrelation for Lightspeed's returns was not statistically significant over the Market Efficiency Period, which means there is no statistical evidence of autocorrelation of Lightspeed's returns.³⁴ I also performed a regression analysis of Lightspeed's daily Subordinate Voting Share excess returns on the excess return from the previous day over the Market Efficiency Period. I found no statistically significant autocorrelation for Lightspeed's

³⁴ The coefficient for Lightspeed's return from the previous day over the Market Efficiency Period is 0.047 with a t-statistic of 0.75, which is not statistically significant. *See* Exhibit A-3.

excess returns, which means there is no statistical evidence of autocorrelation of Lightspeed's excess returns.³⁵ See Exhibit A-3.

47. The lack of autocorrelation provides support for my opinion that Lightspeed Subordinate Voting Shares traded in an efficient market during the market Efficiency Period.³⁶

iv) Cause-and-Effect Relationship to Unexpected New Information

48. Economists in academia and private practice have published research papers that present various analyses and statistical methodologies that can provide probative economic evidence concerning the existence of a cause-and-effect relationship between news events and movements in a stock price, which is consistent with market efficiency.

49. I performed several empirical analyses for efficiency in Lightspeed Subordinate Voting Shares related to the release of new information.

50. Most of the methods used in academic research concern event study analysis of a specific event (*e.g.*, a dividend cut announcement) using potentially hundreds of such occurrences for hundreds of different stocks. These "large-sample" studies are generally concerned with determining whether the average response across all such stocks is statistically significant as opposed to assessing whether each individual event for each company is statistically significant.

51. Consequently, not every disclosure or individual event is expected to generate a statistically significant return because not every disclosure contains new information that would cause a prompt re-pricing of the company's publicly traded common stock. For example, if the

³⁵ The coefficient for Lightspeed's excess return from the previous day over the Market Efficiency Period is 0.053 with a t-statistic of 0.85, which is not statistically significant at the 5% significance level. See Exhibit A-3.

³⁶ I note that the court in *Polymedica 2006* found the presence of autocorrelation to be direct evidence of an inefficient market. See *Polymedica 2006* at 276-77.

news story, analyst report or company disclosure only repeats information that was already fully known, merely confirms investors' current expectations, or discloses information that is not material, no price reaction in the security would be expected. A news story, analyst report, or company disclosure will cause a statistically significant return only when the information is new and unexpected, and when the information materially changes the value of the security to investors. Similarly, a disclosure that omits such material information would not be expected to change the price of the security.³⁷

52. I performed multiple tests used in academic research on large samples of multiple companies.

53. For many of the analyses I used to detect the presence of a cause-and-effect relationship between news events and resulting movements in the price of Lightspeed's Subordinate Voting Shares, I rely on an event study methodology, which is discussed in Section V. of the Report.³⁸

a) Reaction to Movements in Market and Industry Indices

54. As described in Section V. of the Report, a market model quantifies the statistical relationship between daily changes in the stock price in question to changes in the general market and industry. Therefore, the market model parameters can inform one about the degree to which market and industry information is reflected in the price of the security in question.³⁹

³⁷ See, for example, Frank Torchio, "Proper Event Study Analysis in Securities Litigation," *The Journal of Corporation Law*, 35:1, 2009, pp. 159-168.

³⁸ Academic literature uses event studies as a test of semi-strong market efficiency. For example, Professor Eugene Fama wrote: "Event studies are the cleanest evidence we have on efficiency...." See Eugene F. Fama, "Efficient Capital Markets: II," *Journal of Finance* 46(5), December 1991, 1575-1617, p. 1602.

³⁹ See Eugene F. Fama, Foundations of Finance: Portfolio Decisions and Security Prices, Basic Books, Inc., 1976, pp. 134-135.

55. The two-factor market model regression analysis discussed in Section V. of the Report produces beta coefficients that quantify the sensitivity of Lightspeed's Subordinate Voting Share return to the returns on the market and industry indexes for each daily market model estimated. Over the Market Efficiency Period, the coefficient on the market index is 1.79 and the coefficient on the net-of-market industry index is 0.76. Both the independent variables in Lightspeed's market model are also statistically significant at the 1% significance level for each regression, indicating that Lightspeed's Subordinate Voting Share price reacts quickly and consistently to new market and industry information over the Market Efficiency Period.

56. Another measure of the fit of a market model is the R-squared (as well as the adjusted R-squared). The R-squared measures how well the variation in the independent variables (the market and the net-of-market industry index returns) explain the variation in the day-to-day Subordinate Voting Share price returns of Lightspeed. The adjusted R-squared makes an adjustment to the R-squared statistic to account for the number of independent variables in the model. For Lightspeed's market model, the adjusted R-squared is 43.9%. See Exhibit 3 to the Report. An adjusted R-squared statistics of 43.94% is larger than those found for stocks in general which are in the 10% to 25% range.^{40,41} I note that an adjusted R-squared of approximately zero would signify no relationship with the market and industry, while an adjusted

⁴⁰ See, for example, Qi Chen, Itay Goldstein, and Wei Jiang, "Price Informativeness and Investment Sensitivity to Stock Price," *The Review of Financial Studies*, 20(3) 2007, 619-650 at 630-632, who find that, on average, the market and industry returns account for about 17% of firms' return variations. See also, Steven S. Crawford, Darren T. Roulstone, and Eric C. So, "Analyst Initiations of Coverage and Stock Return Synchronicity," *The Accounting Review*, 87(5), 2012, 1527-1553 at 1537, who find an average R-squared of 11.05%.

⁴¹ For a discussion of R-squared and how it relates to market efficiency, see, for example, Sudipto Dasgupta, Jie Gan, and Ning Gao, "Transparency, Price Informativeness, and Stock Return Synchronicity: Theory and Evidence," *Journal of Financial and Quantitative Analysis*, 45(5), Oct. 2010, 1189-1220 at 1189-90.

R-squared of 100% would denote perfect correlation and mean that the security returns were unaffected by company-specific information.

b) Event Study of News vs. Non-News Days

57. Another event study methodology used to analyze the cause-and-effect relationship that has been employed extensively by both plaintiff and defense experts in securities litigation⁴² and frequently accepted by the U.S. courts⁴³ is a statistical comparison of the stock-price movements for days in the class period on which important firm-specific news was released to days on which no such firm-specific news was released.⁴⁴

⁴² See David Tabak, “Use and Misuse of Event Studies to Examine Market Efficiency,” NERA White Paper, April 30, 2010; and Paul A. Ferrillo, Frederick C. Dunbar, and David Tabak, “The ‘Less Than’ Efficient Capital Markets Hypothesis: Requiring More Proof From Plaintiffs In Fraud-On-The-Market Cases,” *St. John’s Law Review* 78(1), Winter 2004, 81-129, pp. 119-122.

⁴³ The Court in *Polymedica 2006* accepted a similar analysis performed by Defense expert Dr. Frederick Dunbar calling his testimony “particularly credible and informative,” and concluded that “To approach usefulness, an analysis should statistically compare all news days with all non-news days.” See *Polymedica 2006* at 269; Citing a similar analysis performed in *Alstom*, the Court quoted the expert stating that: “Alstom was over 6 times more likely to have a statistically significant stock return on a day with news than on a day with no news.” See *In re Alstom SA Securities Litigation*, 253 F.R.D. 266 (S.D. N.Y. 2008), at 279; Regarding a similar analysis where days with company issued press releases were four times more likely to have a statistically significant stock return than days without, the Court in *Radiant* stated that the Plaintiff’s expert’s analyses “support a finding of market efficiency for the core *Cammer* factor.” See *Vinh Nguyen v. Radiant Pharmaceuticals Corporation et al.*, 287 F.R.D. 563 (S.D. CA. 2012), at 30; The Plaintiff’s expert in *Flamel Technologies* opined that the absolute residual price return on news days was over three times greater than on non-news days. The Court concluded that “...the event study methodology utilized by Plaintiff’s expert is based on accepted scientific, peer-reviewed protocols,” and that “Plaintiff has established by the preponderance of the evidence that Flamel’s ADRs traded in an efficient market during the Class Period and accordingly that the class is entitled to the presumption of reliance afforded by the fraud-on-the-market theory.” See *Christel Billhofer, et al v. Flamel Technologies, S.A., et al*, 281 F.R.D. 150 (S.D. N.Y. 2012) at 163.

⁴⁴ This analysis is similar to those performed during an FDA approval process for a new drug. During this process, two groups of patients are tested: i) one which is given the new drug (“news” group); and ii) one which is not (“non-news” group).

58. This statistical analysis, which I refer to as my event study of “News Days” and “Non-News Days,” was described in detail by Ferrillo, Dunbar, and Tabak (2004). The authors describe the analysis as follows:

In terms of the application of the EMH to securities class actions, an important question is whether any allegedly fraudulent information would cause a change in the issuer’s stock price. However, because the market does not know (at the time) whether any information it receives is legitimate or fraudulent, this question can be answered by testing whether the market for a particular issuer’s stock responds to news more generally. If it does, then one is more confident that the stock price would be affected by any material false information or would have responded to material omitted information. If the stock price does not generally respond to news, then the presumption should then become that the stock was not affected by any false news and may not have responded to allegedly omitted information.

Because stock prices move all the time, one must compare the movements in response to news stories with a control group of prices. One way to do this would be to look at a sample of days in a class period exclusive of those days alleged to be corrective disclosure(s) and perform a news search. An alternative would be to look at a sample just before the class period. Using whatever sample is chosen, one could then separate out those days on which the company is mentioned in the news from those on which it is not. Of course there are various ways to implement this procedure. For example, there is the choice of news sources to be searched (e.g., major newspapers and presswires versus all available news sources), and whether to limit the search to those stories where the company name and/or ticker is mentioned in the headline, the headline and lead paragraph, or anywhere in the story. One could also refine the search to only focus on particular types of news stories (e.g., earnings announcements). In any case, one would still have to be careful to assign stories to the proper dates (i.e., stories after a market close could only affect the next day’s stock price movements) and to remove any stories that exist because they report on a price movement.⁴⁵

⁴⁵ See Paul A. Ferrillo, Frederick C. Dunbar, and David Tabak, “The ‘Less Than’ Efficient Capital Markets Hypothesis: Requiring More Proof From Plaintiffs In Fraud-On-The-Market Cases,” *St. John’s Law Review* 78(81), Winter 2004, 81-129, pp. 119-120, (footnote omitted).

59. The first step in this analysis is to remove market and industry effects from a company's stock returns as described in Section V. of the Report.

60. The next step is to determine an appropriate definition of "news." To avoid making subjective decisions based on reading and attempting to "value" the actual news stories to determine "news days," I rely on a pre-set "objective" definition of news that is described below, with the understanding that no single definition of "news days" will perfectly identify all of the days in the Market Efficiency Period that in fact have value-relevant news.

61. After determining the definitions of news, the analyst then performs statistical analyses that compare the stock-price reactions on days with "news" to days without news.

Ferrillo, Dunbar, and Tabak describe this step as follows:

The final step involves comparing the percentage of days with news that have a statistically significant price movement to the percentage of days without news that have a statistically significant price movement. For example, if seven percent of the days with news have statistically significant price movements and four percent of the days without news have statistically significant price movements, then the analyst would test whether the difference between the seven percent and the four percent is statistically significant. If it is, then the evidence would show that, on average, the defendant's stock price reacts to news announcements; if the difference is not statistically significant, then there would be no basis for saying that the defendant's stock price is affected by news.⁴⁶

62. This analysis compares the proportion of statistically significant stock-price reactions on "news days" to the proportion on "non-news days." If Lightspeed's Subordinate Voting Share price did not react to news during the Market Efficiency Period, I would expect that the proportion of statistically significant stock-price reactions on "news days" would be

⁴⁶ See Paul A. Ferrillo, Frederick C. Dunbar, and David Tabak, "The 'Less Than' Efficient Capital Markets Hypothesis: Requiring More Proof From Plaintiffs In Fraud-On-The-Market Cases," *St. John's Law Review* 78 (81), Winter 2004, pp. 120-121.

equal to (or not significantly different than) the proportion on “non-news days.” Conversely, if the proportion of statistically significant stock-price reactions was greater on “news days” than on “non-news days,” this would provide evidence that Lightspeed’s Subordinate Voting Share price reacted to news during the Market Efficiency Period.

63. It is important to note that not all “news” is expected to cause a statistically significant stock-price reaction.

64. For this analysis, I define “news days” as: Days with Company news releases filed on SEDAR.⁴⁷

65. For my source of data, I identified all Company news releases filed on SEDAR. I have excluded from my definition of news days those days that contained only a company news release that simply identified the date on which the Company would release financial results or be presenting at a future date. I also retrieved time stamps from the SEDAR website. *See* Exhibit A-4 for days on which Company news releases were filed on SEDAR.

66. There were 21 trading days that contained Company news releases filed on SEDAR during the Market Efficiency Period. Of these 21 “news days,” 5 days (or 23.8%) were accompanied by statistically significant Subordinate Voting Share price movements at the 5% significance level. Conversely, of the 230 “non-news days,” only 11 (or 4.8%) had statistically significant excess returns at the 5% significance level, indicating that Lightspeed’s Subordinate Voting Shares were approximately 5 times (23.8% / 4.8%) more likely to react in a statistically significant manner on days when the company issued news releases than on days without. With

⁴⁷ As suggested by Ferrillo, Dunbar, and Tabak, to control for the timing of these news items, I measured the stock-price reactions on the same trading day if the news item was issued before the market closed on that day. If the news item was issued after the market closed, I measured the stock-price reaction on the following trading.

a z-statistic of 3.42 and a p-value of 0.063%, this difference in proportions is statistically significant at the 1% significance level. *See Exhibit A-5.*

v) Summary

67. Lightspeed had sufficient ownership by institutional investors of 40.4% on average over the Market Efficiency Period.

68. The degree of short interest implies that there were some investors who believed Lightspeed was overvalued (shorted Lightspeed), as well as investors who believed that Lightspeed was undervalued (long Lightspeed). Thus, the consensus trading price reflected keen interest and high trading activity. The low short interest coverage ratio, the high volume, sufficient institutional ownership (which is a prime source of borrowing shares), and low short interest indicates that covering short positions did not impede short investing in my opinion.

69. I conducted statistical analyses to determine whether the returns for Lightspeed's Subordinate Voting Shares exhibited autocorrelation. Autocorrelation in a stock's returns means that today's stock price movement can be systematically predicted with a degree of statistical confidence based solely on the price movement yesterday and consequently arbitrage profits can be earned. I found no significant autocorrelation for Lightspeed's raw and excess returns at the 5% significance level over the Market Efficiency Period. Because Lightspeed's raw and excess returns are not autocorrelated, my analysis of Lightspeed's autocorrelation is consistent with an efficient market.

70. The cause-and-effect analyses I perform based on event study techniques show that Lightspeed's Subordinate Voting Shares reacted to new information.

71. Lightspeed's market model shows that the Company's Subordinate Voting Share price reacted consistently and quickly to general market and industry information.

72. I conducted an analysis of Lightspeed's Subordinate Voting Share returns on news versus non-news days. In this analysis, a news day is defined as a day on which Lightspeed filed a news release on SEDAR. For this analysis, the difference in proportions of statistically significant excess returns on news days and non-news days, are statistically significant at the 1% level, which is consistent with market efficiency. This indicates that, on average, the market reacted more to information contained in news days – days Company news releases were filed on SEDAR – as compared to a control group containing non-news days, which is consistent with an efficient market.

73. Therefore, based on the preceding analyses, the preponderance of my findings provide strong indicia of competition among investors for Lightspeed's Subordinate Voting Shares.

E. Conclusion

74. The preponderance of evidence from my analyses shows indicia of information flow, low costs of trading, and competition among investors. The results of these analyses taken together form my opinion that Lightspeed's Subordinate Voting Shares traded in an informationally efficient market during the Market Efficiency Period.

75. Because the degree of reliability of an event study analysis is correlated with the degree to which the stock trades in an efficient market, my finding of market efficiency for Lightspeed means that the price of the security reflects all relevant, publicly available information. Therefore, in my opinion, my event study analyses of the September 29-30, 2021 event and the November 4, 2021 event are a reliable, objective, and scientific method to determine if the information disclosed on September 29, 2021 and November 4, 2021 was important to investors.

76. As I discussed above, my market efficiency analysis was conducted primarily on the Lightspeed Subordinate Voting Shares traded on the TSX. Lightspeed began trading on the NYSE on September 11, 2020. Because the correlation between the Lightspeed returns on the TSX and that for the NYSE trading is high (99.60% during the Market Efficiency Period), I only perform the market efficiency analysis on the TSX trading and conclude that the trading of Lightspeed on the NYSE is also efficient.

Exhibit A-1
Market Efficiency Statistics for Lightspeed Commerce, Inc. Common Shares (Subordinate Voting Shares)
December 1, 2020 to November 30, 2021

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]	[23]
Trading Dates (CN and US)	Daily Volume (CN)	Daily Volume (US)	Daily Volume (CN & US)	Weekly Volume	Weekly Volume / Subordinate Voting Shares Outstanding	Weekly Public Float	Analyst Coverage	Total Subordinate Voting Shares Outstanding	Insider Holdings	Public Float	Closing Price	Market Capitalization of Equity	Market Capitalization of Public Float	Last Bid-Ask Spread	Intraday Bid-Ask Spread	Institutional Holdings	Institutional Holdings as Percent of Public Float	Short Interest (CN and US)	Short Interest as Percent of Shares Outstanding	Short Interest as Percent of Public Float	Short Interest Ratio	
12/1/2020	1,495,485	495,892	1,991,377	--	--	--	15	117,804,218	39,513,405	78,290,813	\$68.00	\$8,010,686,824	\$5,323,775,284	0.13%	0.16%	38,978,195	33.09%	49.79%	4,806,271	4.08%	6.14%	3.2
12/2/2020	2,093,855	827,462	2,921,317	--	--	--	15	117,804,218	39,513,405	78,290,813	\$75.07	\$8,843,562,645	\$5,877,291,332	0.05%	0.15%	38,978,195	33.09%	49.79%	4,806,271	4.08%	6.14%	3.0
12/3/2020	1,552,238	779,140	2,331,378	--	--	--	15	117,804,218	39,513,405	78,290,813	\$78.14	\$9,205,221,595	\$6,117,644,128	0.10%	0.12%	38,978,195	33.09%	49.79%	4,806,271	4.08%	6.14%	3.2
12/4/2020	1,448,473	552,740	2,001,213	--	--	--	15	117,804,218	39,513,405	78,290,813	\$76.68	\$9,033,227,436	\$6,003,339,541	0.13%	0.13%	38,978,195	33.09%	49.79%	4,806,271	4.08%	6.14%	3.1
12/7/2020	983,205	700,591	1,683,796	--	--	--	15	117,804,218	39,513,405	78,290,813	\$77.74	\$9,158,099,907	\$6,086,327,803	0.06%	0.17%	38,978,195	33.09%	49.79%	4,806,271	4.08%	6.14%	3.1
12/8/2020	642,447	306,179	948,626	--	--	--	15	117,804,218	39,513,405	78,290,813	\$76.28	\$8,986,105,749	\$5,972,023,216	0.08%	0.15%	38,978,195	33.09%	49.79%	4,806,271	4.08%	6.14%	3.1
12/9/2020	1,014,604	392,197	1,406,801	--	--	--	15	117,804,218	39,513,405	78,290,813	\$74.12	\$8,731,648,638	\$5,802,915,600	0.22%	0.14%	38,978,195	33.09%	49.79%	4,806,271	4.08%	6.14%	3.1
12/10/2020	1,094,279	341,824	1,436,103	--	--	--	15	117,804,218	39,513,405	78,290,813	\$74.35	\$8,758,743,608	\$5,820,921,947	0.15%	0.16%	38,978,195	33.09%	49.79%	4,806,271	4.08%	6.14%	3.0
12/11/2020	812,060	280,691	1,092,751	6,568,077	5.58%	8.39%	15	117,804,218	39,513,405	78,290,813	\$75.55	\$8,900,108,670	\$5,914,870,922	0.05%	0.17%	38,978,195	33.09%	49.79%	4,806,271	4.08%	6.14%	2.9
12/14/2020	578,692	311,849	890,541	--	--	--	15	117,804,218	39,513,405	78,290,813	\$73.89	\$8,704,553,668	\$5,784,908,173	0.15%	0.16%	38,978,195	33.09%	49.79%	4,806,271	4.08%	6.14%	2.9
12/15/2020	515,006	435,327	950,333	--	--	--	15	117,804,218	39,513,405	78,290,813	\$73.53	\$8,662,144,150	\$5,756,723,480	0.19%	0.17%	38,978,195	33.09%	49.79%	4,476,413	3.80%	5.72%	2.7
12/16/2020	1,026,202	494,008	1,520,210	--	--	--	15	117,804,218	39,513,405	78,290,813	\$74.15	\$8,735,182,765	\$5,805,263,784	0.07%	0.13%	38,978,195	33.09%	49.79%	4,476,413	3.80%	5.72%	2.7
12/17/2020	756,626	315,112	1,071,738	--	--	--	15	117,804,218	39,513,405	78,290,813	\$75.15	\$8,852,986,983	\$5,883,554,597	0.13%	0.15%	38,978,195	33.09%	49.79%	4,476,413	3.80%	5.72%	2.7
12/18/2020	1,073,209	815,424	1,888,633	6,321,455	5.37%	8.07%	15	117,804,218	39,513,405	78,290,813	\$73.90	\$8,705,731,710	\$5,785,691,081	0.09%	0.13%	38,978,195	33.09%	49.79%	4,476,413	3.80%	5.72%	2.7
12/21/2020	1,249,965	703,818	1,953,783	--	--	--	15	117,804,218	39,513,405	78,290,813	\$77.72	\$9,155,743,823	\$6,084,761,986	0.17%	0.15%	38,978,195	33.09%	49.79%	4,476,413	3.80%	5.72%	2.7
12/22/2020	1,547,499	786,884	2,334,383	--	--	--	15	117,804,218	39,513,405	78,290,813	\$86.65	\$10,207,735,490	\$6,783,898,946	0.05%	0.16%	38,978,195	33.09%	49.79%	4,476,413	3.80%	5.72%	2.6
12/23/2020	1,067,917	485,766	1,553,683	--	--	--	15	117,804,218	39,513,405	78,290,813	\$86.38	\$10,175,928,351	\$6,762,760,427	0.08%	0.18%	38,978,195	33.09%	49.79%	4,476,413	3.80%	5.72%	2.6
12/24/2020	326,360	123,101	449,461	6,291,310	5.34%	8.04%	15	117,804,218	39,513,405	78,290,813	\$87.87	\$10,351,456,636	\$6,879,413,738	0.13%	0.21%	38,978,195	33.09%	49.79%	4,476,413	3.80%	5.72%	2.7
12/28/2020	n/a	235,481	235,481	--	--	--	16	117,804,218	39,513,405	78,290,813	\$88.63	\$10,441,336,542	\$6,939,146,497	n/a	n/a	38,978,195	33.09%	49.79%	4,476,413	3.80%	5.72%	2.8
12/29/2020	897,346	349,569	1,246,915	--	--	--	16	117,804,218	39,513,405	78,290,813	\$87.84	\$10,347,922,509	\$6,877,065,014	0.13%	0.17%	38,978,195	33.09%	49.79%	4,476,413	3.80%	5.72%	3.0
12/30/2020	727,067	265,693	992,760	--	--	--	16	117,804,218	39,513,405	78,290,813	\$89.16	\$10,503,424,077	\$6,980,408,887	0.12%	0.13%	38,978,195	33.09%	49.79%	4,476,413	3.80%	5.72%	3.1
12/31/2020	690,692	201,272	891,964	3,367,120	2.83%	4.24%	16	118,840,993	39,513,405	79,327,588	\$89.84	\$10,676,674,811	\$7,126,790,506	0.03%	0.16%	49,476,922	41.63%	62.37%	4,414,106	3.71%	5.56%	3.3
1/4/2021	1,389,247	522,398	1,911,645	--	--	--	16	118,840,993	39,513,405	79,327,588	\$85.48	\$10,158,528,082	\$6,780,922,222	0.13%	0.18%	49,476,922	41.63%	62.37%	4,414,106	3.71%	5.56%	3.3
1/5/2021	888,515	408,277	1,296,792	--	--	--	16	118,840,993	39,513,405	79,327,588	\$84.36	\$10,025,426,169	\$6,692,075,324	0.20%	0.13%	49,476,922	41.63%	62.37%	4,414,106	3.71%	5.56%	3.4
1/6/2021	1,720,500	771,185	2,491,685	--	--	--	17	118,840,993	39,513,405	79,327,588	\$82.44	\$9,797,251,463	\$6,539,766,335	0.10%	0.15%	49,476,922	41.63%	62.37%	4,414,106	3.71%	5.56%	3.3
1/7/2021	761,630	195,605	957,235	--	--	--	17	118,840,993	39,513,405	79,327,588	\$85.41	\$10,150,209,212	\$6,775,369,291	0.18%	0.15%	49,476,922	41.63%	62.37%	4,414,106	3.71%	5.56%	3.3
1/8/2021	750,103	250,939	1,001,042	7,658,399	6.44%	9.65%	17	118,840,993	39,513,405	79,327,588	\$86.12	\$10,234,586,317	\$6,831,691,879	0.08%	0.15%	49,476,922	41.63%	62.37%	4,414,106	3.71%	5.56%	3.4
1/11/2021	628,258	207,949	836,207	--	--	--	17	118,840,993	39,513,405	79,327,588	\$85.84	\$10,201,310,839	\$6,809,480,154	0.21%	0.17%	49,476,922	41.63%	62.37%	4,414,106	3.71%	5.56%	3.5
1/12/2021	666,645	238,574	905,219	--	--	--	17	118,840,993	39,513,405	79,327,588	\$88.04	\$10,462,761,024	\$6,984,000,848	0.10%	0.15%	49,476,922	41.63%	62.37%	4,414,106	3.71%	5.56%	3.5
1/13/2021	1,084,455	475,328	1,559,783	--	--	--	17	118,840,993	39,513,405	79,327,588	\$95.09	\$11,300,590,024	\$7,543,260,343	0.07%	0.14%	49,476,922	41.63%	62.37%	4,414,106	3.71%	5.56%	3.4
1/14/2021	1,433,907	1,009,873	2,443,780	--	--	--	17	118,840,993	39,513,405	79,327,588	\$94.55	\$11,236,415,888	\$7,500,423,445	0.17%	0.13%	49,476,922	41.63%	62.37%	4,414,106	3.71%	5.56%	3.2
1/15/2021	1,141,873	403,385	1,545,258	7,290,247	6.13%	9.19%	17	118,840,993	39,513,405	79,327,588	\$89.34	\$10,617,254,315	\$7,087,126,712	0.11%	0.14%	49,476,922	41.63%	62.37%	4,072,908	3.43%	5.13%	3.0
1/18/2021	599,892	n/a	599,892	--	--	--	17	118,840,993	39,513,405	79,327,588	\$91.86	\$10,916,733,617	\$7,287,032,234	0.10%	0.17%	49,476,922	41.63%	62.37%	4,072,908	3.43%	5.13%	3.0
1/19/2021	636,249	392,993	1,029,242	--	--	--	17	118,840,993	39,513,405	79,327,588	\$92.35	\$10,974,965,704	\$7,325,902,752	0.15%	0.14%	49,476,922	41.63%	62.37%	4,072,908	3.43%	5.13%	3.1
1/20/2021	594,807	192,419	787,226	--	--	--	17	118,840,993	39,513,405	79,327,588	\$91.27	\$10,846,617,431	\$7,240,228,957	0.13%	0.14%	49,476,922	41.63%	62.37%	4,072,908	3.43%	5.13%	3.2
1/21/2021	825,748	381,824	1,207,572	--	--	--	17	118,840,993	39,513,405	79,327,588	\$88.82	\$10,555,456,998	\$7,045,876,366	0.05%	0.14%	49,476,922	41.63%	62.37%	4,072,908	3.43%	5.13%	3.4
1/22/2021	987,514	724,770	1,712,284	5,336,216	4.49%	6.73%	17	118,840,993	39,513,405	79,327,588	\$87.88	\$10,443,746,465	\$6,971,308,433	0.10%	0.13%	49,476,922	41.63%	62.37%	4,072,908	3.43%	5.13%	3.4
1/25/2021	860,208	419,048	1,279,256	--	--	--	17	118,840,993	39,513,405	79,327,588	\$88.16	\$10,477,021,943	\$6,993,520,158	0.06%	0.19%	49,476,922	41.63%	62.37%	4,072,908	3.43%	5.13%	3.3
1/26/2021	619,698	390,880	1,010,578	--	--	--	17	118,840,993	39,513,405	79,327,588	\$89.95	\$10,689,747,320	\$7,135,516,541	0.09%	0.18%	49,476,922	41.63%	62.37%	4,072,908	3.43%	5.13%	3.2
1/27/2021	1,071,077	598,342	1,669,419	--	--	--	17	118,840,993	39,513,405	79,327,588	\$83.84	\$9,963,628,853	\$6,650,824,978	0.04%	0.20%	49,476,922	41.63%	62.37%	4,072,908	3.43%	5.13%	3.1
1/28/2021	758,488	361,448	1,119,936	--	--	--	17	118,840,993	39,513,405	79,327,588	\$86.91	\$10,328,470,702	\$6,894,360,673	0.20%	0.21%	49,476,922	41.63%	62.37%	4,072,908	3.43%	5.13%	3.1
1/29/2021	1,026,408	628,012	1,654,420	6,733,609	5.67%	8.49%	17	118,840,993	39,513,405	79,327,588	\$83.13	\$9,879,251,748	\$6,594,502,390	0.11%	0.19%	49,476,922	41.63%	62.37%	3,391,839	2.85%	4.28%	2.5
2/1/2021	1,048,259	553,536	1,601,795	--	--	--	17	118,840,993	39,513,405	79,327,588	\$91.22	\$10,840,675,381	\$7,236,262,577	0.20%	0.17%	49,476,922	41.63%	62.37%	3,391,839	2.85%	4.28%	2.5
2/2/2021	899,516	299,351	1,198,867	--	--	--	17	118,864,057	39,513,405	79,350,652	\$92.00	\$10,935,493,244	\$7,300,259,984	0.16%	0.16%	49,476,922	41.62%	62.35%	3,391,839	2.85%	4.27%	2.5
2/3/2021	1,061,76																					

Exhibit A-1
Market Efficiency Statistics for Lightspeed Commerce, Inc. Common Shares (Subordinate Voting Shares)
December 1, 2020 to November 30, 2021

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]	[23]
Trading Dates (CN and US)	Daily Volume (CN)	Daily Volume (US)	Daily Volume (CN & US)	Weekly Volume	Weekly Volume / Subordinate Voting Shares Outstanding	Weekly Public Float	Analyst Coverage	Total Subordinate Voting Shares	Insider Holdings	Public Float	Closing Price	Market Capitalization of Equity	Market Capitalization of Public Float	Last Bid-Ask Spread	Intraday Bid-Ask Spread	Institutional Holdings	Institutional Holdings as Percent of Public Float	Short Interest (CN and US)	Short Interest as Percent of Shares Outstanding	Short Interest as Percent of Public Float	Short Interest Ratio	
3/5/2021	3,608,040	2,205,245	5,813,285	13,854,569	10.85%	15.57%	17	127,724,057	38,713,405	89,010,652	\$73.97	\$9,447,748,496	\$6,584,117,928	0.12%	0.22%	49,476,922	38.74%	55.59%	3,846,029	3.01%	4.32%	1.6
3/8/2021	2,279,051	1,314,870	3,593,921	--	--	--	--	127,724,057	38,713,405	89,010,652	\$68.62	\$8,764,424,791	\$6,107,910,940	0.12%	0.21%	49,476,922	38.74%	55.59%	3,846,029	3.01%	4.32%	1.5
3/9/2021	2,121,360	1,253,770	3,375,130	--	--	--	--	127,724,057	38,713,405	89,010,652	\$75.07	\$9,588,244,959	\$6,682,029,646	0.16%	0.15%	49,476,922	38.74%	55.59%	3,846,029	3.01%	4.32%	1.5
3/10/2021	1,578,607	946,953	2,525,560	--	--	--	--	127,724,057	38,713,405	89,010,652	\$73.36	\$9,369,836,822	\$6,529,821,431	0.16%	0.22%	49,476,922	38.74%	55.59%	3,846,029	3.01%	4.32%	1.5
3/11/2021	1,491,202	1,278,438	2,769,640	--	--	--	--	127,724,057	38,713,405	89,010,652	\$80.64	\$10,299,667,956	\$7,177,818,977	0.14%	0.13%	49,476,922	38.74%	55.59%	3,846,029	3.01%	4.32%	1.5
3/12/2021	1,659,944	1,426,865	3,086,809	15,351,060	12.02%	17.25%	17	127,724,057	38,713,405	89,010,652	\$86.18	\$11,007,259,232	\$7,670,937,989	0.08%	0.18%	49,476,922	38.74%	55.59%	3,846,029	3.01%	4.32%	1.5
3/15/2021	1,507,773	930,248	2,438,021	--	--	--	--	127,724,057	38,713,405	89,010,652	\$90.17	\$11,516,878,220	\$8,026,090,491	0.09%	0.13%	49,476,922	38.74%	55.59%	3,620,808	2.83%	4.07%	1.4
3/16/2021	1,082,381	827,126	1,909,507	--	--	--	--	127,724,057	38,713,405	89,010,652	\$87.75	\$11,207,786,002	\$7,810,684,713	0.13%	0.17%	49,476,922	38.74%	55.59%	3,620,808	2.83%	4.07%	1.4
3/17/2021	1,353,413	925,323	2,278,736	--	--	--	--	127,724,057	38,713,405	89,010,652	\$85.10	\$10,869,317,251	\$7,574,806,485	0.26%	0.15%	49,476,922	38.74%	55.59%	3,620,808	2.83%	4.07%	1.4
3/18/2021	1,378,414	952,881	2,331,295	--	--	--	--	127,724,057	38,713,405	89,010,652	\$79.58	\$10,164,280,456	\$7,083,467,686	0.15%	0.14%	49,476,922	38.74%	55.59%	3,620,808	2.83%	4.07%	1.4
3/19/2021	1,580,707	680,828	2,261,535	11,219,094	8.78%	12.60%	17	127,724,057	38,713,405	89,010,652	\$79.66	\$10,174,498,381	\$7,090,588,538	0.11%	0.15%	49,476,922	38.74%	55.59%	3,620,808	2.83%	4.07%	1.4
3/22/2021	827,324	748,752	1,576,076	--	--	--	--	127,724,057	38,713,405	89,010,652	\$82.25	\$10,505,303,688	\$7,321,126,127	0.10%	0.16%	49,476,922	38.74%	55.59%	3,620,808	2.83%	4.07%	1.4
3/23/2021	617,326	485,174	1,102,900	--	--	--	--	127,724,057	38,713,405	89,010,652	\$80.54	\$10,286,895,551	\$7,168,917,912	0.09%	0.16%	49,476,922	38.74%	55.59%	3,620,808	2.83%	4.07%	1.5
3/24/2021	1,089,222	922,119	2,011,341	--	--	--	--	127,724,057	38,713,405	89,010,652	\$75.72	\$9,671,265,596	\$6,739,886,569	0.11%	0.16%	49,476,922	38.74%	55.59%	3,620,808	2.83%	4.07%	1.5
3/25/2021	1,169,073	841,719	2,010,792	--	--	--	--	127,724,057	38,713,405	89,010,652	\$76.56	\$9,778,553,804	\$6,814,655,517	0.21%	0.20%	49,476,922	38.74%	55.59%	3,620,808	2.83%	4.07%	1.5
3/26/2021	914,525	653,450	1,567,975	8,269,084	6.47%	9.29%	17	127,724,057	38,713,405	89,010,652	\$75.90	\$9,694,255,926	\$6,755,908,487	0.30%	0.19%	49,476,922	38.74%	55.59%	3,620,808	2.83%	4.07%	1.5
3/29/2021	1,012,406	772,921	1,785,327	--	--	--	--	127,724,057	38,713,405	89,010,652	\$74.04	\$9,456,689,180	\$6,590,348,674	0.26%	0.17%	49,476,922	38.74%	55.59%	3,620,808	2.83%	4.07%	1.5
3/30/2021	754,648	722,467	1,477,115	--	--	--	--	127,724,057	38,713,405	89,010,652	\$75.45	\$9,636,780,101	\$6,715,853,693	0.28%	0.18%	49,476,922	38.74%	55.59%	3,620,808	2.83%	4.07%	1.5
3/31/2021	750,009	617,010	1,367,019	--	--	--	--	128,528,515	38,713,405	89,815,110	\$79.03	\$10,157,608,540	\$7,098,088,143	0.11%	0.16%	53,910,819	41.94%	60.02%	3,990,288	3.10%	4.44%	1.6
4/1/2021	877,648	977,262	1,854,910	6,484,371	5.05%	7.22%	17	128,528,515	38,713,405	89,815,110	\$80.82	\$10,387,674,582	\$7,258,857,190	0.09%	0.11%	53,910,819	41.94%	60.02%	3,990,288	3.10%	4.44%	1.7
4/5/2021	612,440	544,494	1,156,934	--	--	--	--	128,528,515	38,713,405	89,815,110	\$80.85	\$10,391,530,438	\$7,261,551,644	0.20%	0.16%	53,910,819	41.94%	60.02%	3,990,288	3.10%	4.44%	1.9
4/6/2021	1,089,933	527,892	1,617,825	--	--	--	--	128,528,515	38,713,405	89,815,110	\$85.59	\$11,000,755,599	\$7,687,275,265	0.26%	0.15%	53,910,819	41.94%	60.02%	3,990,288	3.10%	4.44%	2.0
4/7/2021	874,680	597,853	1,472,533	--	--	--	--	128,528,515	38,713,405	89,815,110	\$86.15	\$11,072,731,567	\$7,737,571,727	0.13%	0.13%	53,910,819	41.94%	60.02%	3,990,288	3.10%	4.44%	2.1
4/8/2021	1,125,541	708,041	1,833,582	--	--	--	--	128,528,515	38,713,405	89,815,110	\$90.71	\$11,658,821,596	\$8,147,128,628	0.22%	0.12%	53,910,819	41.94%	60.02%	3,990,288	3.10%	4.44%	2.1
4/9/2021	852,095	660,265	1,512,360	7,593,234	5.91%	8.45%	17	128,528,515	38,713,405	89,815,110	\$90.53	\$11,635,686,463	\$8,130,961,908	0.10%	0.11%	53,910,819	41.94%	60.02%	3,990,288	3.10%	4.44%	2.2
4/12/2021	645,473	425,368	1,070,841	--	--	--	--	128,528,515	38,713,405	89,815,110	\$90.42	\$11,621,548,326	\$8,121,082,246	0.17%	0.15%	53,910,819	41.94%	60.02%	3,990,288	3.10%	4.44%	2.3
4/13/2021	616,599	335,616	952,215	--	--	--	--	128,528,515	38,713,405	89,815,110	\$91.96	\$11,819,482,239	\$8,259,397,516	0.12%	0.15%	53,910,819	41.94%	60.02%	3,990,288	3.10%	4.44%	2.4
4/14/2021	740,221	371,926	1,112,147	--	--	--	--	128,528,515	38,713,405	89,815,110	\$89.12	\$11,454,461,257	\$8,004,322,603	0.15%	0.16%	53,910,819	41.94%	60.02%	3,990,288	3.10%	4.44%	2.5
4/15/2021	3,948,822	631,329	4,580,151	--	--	--	--	128,528,515	38,713,405	89,815,110	\$86.50	\$11,117,716,548	\$7,769,007,015	0.12%	0.16%	53,910,819	41.94%	60.02%	4,398,696	3.42%	4.90%	2.5
4/16/2021	1,975,718	2,143,738	4,119,456	11,834,810	9.02%	12.79%	17	131,220,792	38,713,405	92,507,387	\$83.69	\$10,981,868,082	\$7,741,943,218	0.02%	0.08%	53,910,819	41.08%	58.28%	4,398,696	3.35%	4.75%	2.4
4/19/2021	1,474,218	1,071,186	2,545,404	--	--	--	--	131,220,792	38,713,405	92,507,387	\$80.67	\$10,585,581,291	\$7,462,570,909	0.06%	0.13%	53,910,819	41.08%	58.28%	4,398,696	3.35%	4.75%	2.4
4/20/2021	715,617	852,917	1,568,534	--	--	--	--	131,220,792	38,713,405	92,507,387	\$80.73	\$10,593,454,538	\$7,468,121,353	0.17%	0.16%	53,910,819	41.08%	58.28%	4,398,696	3.35%	4.75%	2.4
4/21/2021	1,187,655	822,488	2,010,143	--	--	--	--	131,220,792	38,713,405	92,507,387	\$85.09	\$11,165,577,191	\$7,871,453,560	0.09%	0.11%	53,910,819	41.08%	58.28%	4,398,696	3.35%	4.75%	2.3
4/22/2021	737,967	555,543	1,293,510	--	--	--	--	131,220,792	38,713,405	92,507,387	\$83.56	\$10,964,809,380	\$7,729,917,258	0.11%	0.17%	53,910,819	41.08%	58.28%	4,398,696	3.35%	4.75%	2.4
4/23/2021	779,960	452,391	1,232,351	8,649,942	6.59%	9.35%	17	131,220,792	38,713,405	92,507,387	\$86.94	\$11,408,335,656	\$8,042,592,226	0.20%	0.16%	53,910,819	41.08%	58.28%	4,398,696	3.35%	4.75%	2.4
4/26/2021	527,352	274,519	801,871	--	--	--	--	131,220,792	38,713,405	92,507,387	\$88.06	\$11,555,302,944	\$8,146,200,499	0.07%	0.13%	53,910,819	41.08%	58.28%	4,398,696	3.35%	4.75%	2.5
4/27/2021	374,119	226,545	600,664	--	--	--	--	131,220,792	38,713,405	92,507,387	\$86.33	\$11,328,290,973	\$7,986,162,720	0.19%	0.15%	53,910,819	41.08%	58.28%	4,398,696	3.35%	4.75%	2.6
4/28/2021	790,366	379,332	1,169,698	--	--	--	--	131,220,792	38,713,405	92,507,387	\$88.06	\$11,555,302,944	\$8,146,200,499	0.18%	0.16%	53,910,819	41.08%	58.28%	4,398,696	3.35%	4.75%	2.6
4/29/2021	583,673	290,534	874,207	--	--	--	--	131,220,792	38,713,405	92,507,387	\$85.70	\$11,245,621,874	\$7,927,883,066	0.08%	0.16%	53,910,819	41.08%	58.28%	4,398,696	3.35%	4.75%	2.6
4/30/2021	576,265	289,391	865,656	4,312,096	3.29%	4.66%	17	131,220,792	38,713,405	92,507,387	\$85.83	\$11,262,680,577	\$7,939,909,026	0.05%	0.16%	53,910,819	41.08%	58.28%	4,212,914	3.21%	4.55%	2.6
5/3/2021	756,423	568,594	1,325,017	--	--	--	--	131,220,792	38,713,405	92,507,387	\$83.17	\$10,913,633,271	\$7,693,839,377	0.10%	0.14%	53,910,819	41.08%	58.28%	4,212,914	3.21%	4.55%	2.6
5/4/2021	1,291,152	713,864	2,005,016	--	--	--	--	131,220,792	38,713,405	92,507,387	\$80.30	\$10,537,029,598	\$7,428,343,176	0.06%	0.14%	53,910,819	41.08%	58.28%	4,212,914	3.21%	4.55%	2.6
5/5/2021	709,090	415,818	1,124,908	--	--	--	--	131,220,792	38,713,405	92,507,387	\$79.18	\$10,390,062,311	\$7,324,734,903	0.16%	0.14%	53,910,819	41.08%	58.28%	4,212,914	3.21%	4.55%	2.6
5/6/2021	1,618,496	1,073,120	2,691,616	--	--	--	--	131,220,792	38,713,405	92,507,387	\$75.11	\$9,855,993,687	\$6,948,229,838	0.07%	0.14%	53,910,819	41.08%	58.28%	4,212,914	3.21%	4.55%	2.5
5/7/2021	857,622	8																				

Exhibit A-1
Market Efficiency Statistics for Lightspeed Commerce, Inc. Common Shares (Subordinate Voting Shares)
 December 1, 2020 to November 30, 2021

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]	[23]
Trading Dates (CN and US)	Daily Volume (CN)	Daily Volume (US)	Daily Volume (CN & US)	Weekly Volume	Weekly Volume / Subordinate Voting Shares Outstanding	Weekly Public Float	Analyst Coverage	Total Subordinate Voting Shares	Insider Holdings	Public Float	Closing Price	Market Capitalization of Equity	Market Capitalization of Public Float	Last Bid-Ask Spread	Intraday Bid-Ask Spread	Institutional Holdings	Institutional Holdings as Percent of Public Float	Short Interest (CN and US)	Short Interest as Percent of Shares Outstanding	Short Interest as Percent of Public Float	Short Interest Ratio	
6/7/2021	991,162	812,986	1,804,148	--	--	--	16	131,278,443	38,596,387	92,682,056	\$87.21	\$11,448,793,014	\$8,082,802,104	0.06%	0.09%	53,910,819	41.07%	5,790,495	4.41%	6.25%	2.3	
6/8/2021	1,449,063	1,039,733	2,488,796	--	--	--	16	131,278,443	38,596,387	92,682,056	\$89.46	\$11,744,169,511	\$8,291,336,730	0.11%	0.10%	53,910,819	41.07%	5,790,495	4.41%	6.25%	2.3	
6/9/2021	1,252,383	774,011	2,026,394	--	--	--	16	131,278,443	38,596,387	92,682,056	\$85.74	\$11,255,813,703	\$7,946,559,481	0.12%	0.10%	53,910,819	41.07%	5,790,495	4.41%	6.25%	2.3	
6/10/2021	602,651	691,527	1,294,178	--	--	--	16	131,278,443	38,596,387	92,682,056	\$85.97	\$11,286,007,745	\$7,967,876,354	0.16%	0.11%	53,910,819	41.07%	5,790,495	4.41%	6.25%	2.3	
6/11/2021	514,407	429,996	944,403	8,557,919	6.52%	9.23%	--	131,278,443	38,596,387	92,682,056	\$87.74	\$11,518,370,589	\$8,131,923,593	0.16%	0.10%	53,910,819	41.07%	5,790,495	4.41%	6.25%	2.4	
6/14/2021	1,710,781	1,430,771	3,141,552	--	--	--	16	131,278,443	38,596,387	92,682,056	\$92.26	\$12,111,749,151	\$8,550,846,487	0.09%	0.08%	53,910,819	41.07%	5,790,495	4.41%	6.25%	2.3	
6/15/2021	786,332	532,848	1,319,180	--	--	--	16	131,278,443	38,596,387	92,682,056	\$89.46	\$11,744,169,511	\$8,291,336,730	0.16%	0.11%	53,910,819	41.07%	5,110,609	3.89%	5.51%	2.0	
6/16/2021	770,915	894,656	1,665,571	--	--	--	16	131,278,443	38,596,387	92,682,056	\$89.02	\$11,686,406,996	\$8,250,556,625	0.07%	0.10%	53,910,819	41.07%	5,110,609	3.89%	5.51%	2.1	
6/17/2021	1,709,731	990,890	2,700,621	--	--	--	16	131,278,443	38,596,387	92,682,056	\$95.73	\$12,567,285,348	\$8,872,453,221	0.03%	0.10%	53,910,819	41.07%	5,110,609	3.89%	5.51%	2.2	
6/18/2021	2,188,082	1,445,067	3,633,149	12,460,073	9.49%	13.44%	--	131,278,443	38,596,387	92,682,056	\$99.53	\$13,066,143,432	\$9,224,645,034	0.06%	0.10%	53,910,819	41.07%	5,110,609	3.89%	5.51%	2.2	
6/21/2021	1,358,007	1,257,419	2,615,426	--	--	--	16	131,278,443	38,596,387	92,682,056	\$101.78	\$13,361,519,929	\$9,433,179,660	0.07%	0.11%	53,910,819	41.07%	5,110,609	3.89%	5.51%	2.2	
6/22/2021	721,435	822,469	1,543,904	--	--	--	16	131,278,443	38,596,387	92,682,056	\$101.02	\$13,261,748,312	\$9,362,741,297	0.13%	0.09%	53,910,819	41.07%	5,110,609	3.89%	5.51%	2.2	
6/23/2021	762,791	996,616	1,759,407	--	--	--	16	131,278,443	38,596,387	92,682,056	\$101.71	\$13,352,330,438	\$9,426,691,916	0.11%	0.08%	53,910,819	41.07%	5,110,609	3.89%	5.51%	2.3	
6/24/2021	803,238	863,180	1,666,418	--	--	--	16	131,278,443	38,596,387	92,682,056	\$104.39	\$13,704,156,665	\$9,675,079,826	0.13%	0.08%	53,910,819	41.07%	5,110,609	3.89%	5.51%	2.7	
6/25/2021	757,798	631,469	1,389,267	6,84%	6.84%	9.68%	--	131,278,443	38,596,387	92,682,056	\$103.88	\$13,637,204,659	\$9,627,811,977	0.10%	0.10%	53,910,819	41.07%	5,110,609	3.89%	5.51%	2.7	
6/28/2021	685,621	526,989	1,212,610	--	--	--	16	131,590,940	38,596,387	92,994,553	\$106.33	\$13,992,064,650	\$9,888,110,820	0.08%	0.09%	53,910,819	40.97%	5,110,609	3.88%	5.50%	2.7	
6/29/2021	718,856	768,723	1,487,579	--	--	--	16	131,590,940	38,596,387	92,994,553	\$105.83	\$13,926,269,180	\$9,841,613,544	0.09%	0.09%	53,910,819	40.97%	5,110,609	3.88%	5.50%	2.8	
6/30/2021	968,472	1,555,651	2,524,123	--	--	--	16	131,590,940	38,596,387	92,994,553	\$103.75	\$13,652,560,025	\$9,648,184,874	0.06%	0.08%	55,134,699	41.90%	5,929,290	4.650,889	3.53%	5.00%	2.4
7/1/2021	n/a	446,748	446,748	--	--	--	16	133,734,333	38,596,387	95,137,946	\$104.58	\$13,985,564,764	\$9,949,261,909	n/a	n/a	55,134,699	41.23%	5,795,950	4,650,889	3.48%	4.89%	2.5
7/2/2021	686,613	570,201	1,256,814	6,927,874	5.18%	7.28%	--	133,734,333	38,596,387	95,137,946	\$106.99	\$14,308,236,288	\$10,178,808,843	0.09%	0.09%	55,134,699	41.23%	5,795,950	4,650,889	3.48%	4.89%	2.5
7/5/2021	301,256	n/a	301,256	--	--	--	16	133,734,333	38,596,387	95,137,946	\$108.33	\$14,487,440,294	\$10,306,293,690	0.11%	0.10%	55,134,699	41.23%	5,795,950	4,650,889	3.48%	4.89%	2.6
7/6/2021	848,177	901,790	1,749,967	--	--	--	16	133,734,333	38,596,387	95,137,946	\$106.31	\$14,217,296,941	\$10,114,115,039	0.05%	0.10%	55,134,699	41.23%	5,795,950	4,650,889	3.48%	4.89%	2.7
7/7/2021	901,875	599,300	1,501,175	--	--	--	16	133,734,333	38,596,387	95,137,946	\$103.93	\$13,899,009,229	\$9,887,686,728	0.10%	0.10%	55,134,699	41.23%	5,795,950	4,650,889	3.48%	4.89%	2.7
7/8/2021	712,300	565,879	1,278,179	--	--	--	16	133,734,333	38,596,387	95,137,946	\$102.66	\$13,729,166,626	\$9,766,861,536	0.08%	0.12%	55,134,699	41.23%	5,795,950	4,650,889	3.48%	4.89%	2.7
7/9/2021	626,365	601,767	1,228,132	6,058,709	4.53%	6.37%	15	133,734,333	38,596,387	95,137,946	\$106.02	\$14,178,513,985	\$10,086,525,035	0.06%	0.09%	55,134,699	41.23%	5,795,950	4,650,889	3.48%	4.89%	2.7
7/12/2021	450,396	331,850	782,246	--	--	--	15	133,734,333	38,596,387	95,137,946	\$104.91	\$14,030,068,875	\$9,980,921,915	0.10%	0.11%	55,134,699	41.23%	5,795,950	4,650,889	3.48%	4.89%	2.9
7/13/2021	464,280	397,284	861,564	--	--	--	15	133,734,333	38,596,387	95,137,946	\$103.18	\$13,798,708,479	\$9,816,333,268	0.06%	0.11%	55,134,699	41.23%	5,795,950	4,650,889	3.48%	4.89%	2.9
7/14/2021	586,533	450,933	1,037,466	--	--	--	15	133,734,333	38,596,387	95,137,946	\$101.58	\$13,584,733,546	\$9,660,112,555	0.12%	0.13%	55,134,699	41.23%	5,795,950	4,650,889	3.48%	4.89%	3.0
7/15/2021	708,553	570,406	1,278,959	--	--	--	15	133,734,333	38,596,387	95,137,946	\$99.55	\$13,313,252,850	\$9,470,982,254	0.03%	0.12%	55,134,699	41.23%	5,795,950	4,562,252	3.41%	4.80%	3.1
7/16/2021	569,335	507,382	1,076,717	5,036,952	3.77%	5.29%	15	133,734,333	38,596,387	95,137,946	\$98.89	\$13,224,988,190	\$9,408,191,480	0.10%	0.12%	55,134,699	41.23%	5,795,950	4,562,252	3.41%	4.80%	3.4
7/19/2021	658,439	644,619	1,303,058	--	--	--	15	133,734,333	38,596,387	95,137,946	\$98.92	\$13,229,000,220	\$9,411,045,618	0.14%	0.11%	55,134,699	41.23%	5,795,950	4,562,252	3.41%	4.80%	3.6
7/20/2021	897,619	1,240,443	2,138,062	--	--	--	15	133,734,333	38,596,387	95,137,946	\$103.68	\$13,865,575,645	\$9,863,902,241	0.13%	0.10%	55,134,699	41.23%	5,795,950	4,562,252	3.41%	4.80%	3.5
7/21/2021	485,524	481,148	966,672	--	--	--	15	133,734,333	38,596,387	95,137,946	\$104.15	\$13,928,430,782	\$9,908,617,076	0.09%	0.09%	55,134,699	41.23%	5,795,950	4,562,252	3.41%	4.80%	3.6
7/22/2021	669,471	669,557	1,339,028	--	--	--	15	133,734,333	38,596,387	95,137,946	\$105.23	\$14,072,863,862	\$10,011,366,058	0.12%	0.08%	55,134,699	41.23%	5,795,950	4,562,252	3.41%	4.80%	3.6
7/23/2021	704,431	452,656	1,157,087	6,903,907	5.16%	7.26%	15	133,734,333	38,596,387	95,137,946	\$108.03	\$14,447,319,994	\$10,277,752,306	0.06%	0.09%	55,134,699	41.23%	5,795,950	4,562,252	3.41%	4.80%	3.7
7/26/2021	908,538	509,938	1,418,476	--	--	--	15	133,734,333	38,596,387	95,137,946	\$110.47	\$14,773,631,767	\$10,509,888,895	0.19%	0.10%	55,134,699	41.23%	5,795,950	4,562,252	3.41%	4.80%	3.6
7/27/2021	952,202	564,825	1,517,027	--	--	--	15	133,734,333	38,596,387	95,137,946	\$110.38	\$14,761,595,677	\$10,501,326,479	0.06%	0.10%	55,134,699	41.23%	5,795,950	4,562,252	3.41%	4.80%	3.6
7/28/2021	628,292	508,557	1,136,849	--	--	--	15	133,734,333	38,596,387	95,137,946	\$112.06	\$14,986,269,356	\$10,661,158,229	0.16%	0.10%	55,134,699	41.23%	5,795,950	4,562,252	3.41%	4.80%	3.8
7/29/2021	542,553	336,970	879,523	--	--	--	15	133,734,333	38,596,387	95,137,946	\$110.05	\$14,717,463,347	\$10,469,930,957	0.05%	0.08%	55,134,699	41.23%	5,795,950	4,562,252	3.41%	4.80%	3.8
7/30/2021	634,371	568,676	1,203,047	6,154,922	4.60%	6.47%	15	133,734,333	38,596,387	95,137,946	\$106.83	\$14,286,838,794	\$10,163,586,771	0.10%	0.09%	55,134,699	41.23%	5,795,950	4,115,398	3.08%	4.33%	3.4
8/2/2021	n/a	515,989	515,989	--	--	--	15	133,734,333	38,596,387	95,137,946	\$108.74	\$14,544,772,202	\$10,347,079,328	n/a	n/a	55,134,699	41.23%	5,795,950	4,115,398	3.08%	4.33%	3.4
8/3/2021	778,063	584,763	1,362,826	--	--	--	15	133,734,333	38,596,387	95,137,946	\$109.54	\$14,649,258,837	\$10,421,410,605	0.07%	0.10%	55,134,699	41.23%	5,795,950	4,115,398	3.08%	4.33%	3.4
8/4/2021	732,087	684,218	1,416,305	--	--	--	15	133,734,333	38,596,387	95,137,946	\$111.91	\$14,966,209,206	\$10,646,887,537	0.11%	0.09%	55,134,699	41.23%	5,795,950	4,115,398	3.08%	4.33%	3.4
8/5/2021	1,534,118	1,604,133	3,138,251	--	--	--	15	133,734,333	38,596,387	95,137,946	\$119.89	\$16,033,409,183	\$11,406,088,346	0.05%	0.10%	55,134,699	41.23%	5,795,950	4,115,398	3.08%	4.33%	3.2
8/6/2021	956,210	1,045,160	2,001,370	8,434,741	6.31%</																	

Exhibit A-1
Market Efficiency Statistics for Lightspeed Commerce, Inc. Common Shares (Subordinate Voting Shares)
 December 1, 2020 to November 30, 2021

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]	[23]
Trading Dates (CN and US)	Daily Volume (CN)	Daily Volume (US)	Daily Volume (CN & US)	Weekly Volume	Weekly Volume / Subordinate Voting Shares Outstanding	Weekly Public Float	Analyst Coverage	Total Subordinate Voting Shares	Insider Holdings	Public Float	Closing Price	Market Capitalization of Equity	Market Capitalization of Public Float	Last Bid-Ask Spread	Intraday Bid-Ask Spread	Institutional Holdings	Institutional Holdings as Percent of Public Float	Short Interest (CN and US)	Short Interest as Percent of Shares Outstanding	Short Interest as Percent of Public Float	Short Interest Ratio	
9/7/2021	954,843	866,766	1,821,609	--	--	--	15	142,589,333	38,596,387	103,992,946	\$150.56	\$21,468,249,976	\$15,657,177,950	0.10%	0.06%	55,134,699	38.67%	53.02%	3,744,078	2.63%	3.60%	1.8
9/8/2021	1,200,724	1,268,357	2,469,081	--	--	--	16	142,589,333	38,596,387	103,992,946	\$147.81	\$21,076,129,311	\$15,371,197,348	0.08%	0.07%	55,134,699	38.67%	53.02%	3,744,078	2.63%	3.60%	1.9
9/9/2021	1,406,150	1,675,791	3,081,941	--	--	--	16	142,589,333	38,596,387	103,992,946	\$157.01	\$22,387,951,174	\$16,327,932,451	0.06%	0.07%	55,134,699	38.67%	53.02%	3,744,078	2.63%	3.60%	1.8
9/10/2021	1,240,338	1,262,823	2,503,161	9,875,792	6.93%	9.50%	16	142,589,333	38,596,387	103,992,946	\$157.59	\$22,470,652,987	\$16,388,248,360	0.12%	0.08%	55,134,699	38.67%	53.02%	3,744,078	2.63%	3.60%	1.8
9/13/2021	1,522,244	1,335,650	2,857,894	--	--	--	16	142,589,333	38,596,387	103,992,946	\$150.21	\$21,418,343,710	\$15,620,780,419	0.01%	0.07%	55,134,699	38.67%	53.02%	3,744,078	2.63%	3.60%	1.8
9/14/2021	975,885	1,100,552	2,076,437	--	--	--	16	142,589,333	38,596,387	103,992,946	\$151.45	\$21,595,154,483	\$15,749,731,672	0.05%	0.07%	55,134,699	38.67%	53.02%	3,744,078	2.63%	3.60%	1.8
9/15/2021	907,071	707,990	1,615,061	--	--	--	16	142,589,333	38,596,387	103,992,946	\$155.06	\$22,109,901,975	\$16,125,146,207	0.09%	0.07%	55,134,699	38.67%	53.02%	4,114,059	2.89%	3.96%	2.0
9/16/2021	1,131,945	1,327,671	2,459,616	--	--	--	16	142,589,333	38,596,387	103,992,946	\$156.62	\$22,332,341,334	\$16,287,375,203	0.04%	0.06%	55,134,699	38.67%	53.02%	4,114,059	2.89%	3.96%	2.0
9/17/2021	3,271,562	1,308,099	4,579,661	13,588,669	9.53%	13.07%	16	142,589,333	38,596,387	103,992,946	\$158.84	\$22,648,889,654	\$16,518,239,543	0.01%	0.06%	55,134,699	38.67%	53.02%	4,114,059	2.89%	3.96%	1.8
9/20/2021	1,133,051	1,272,698	2,405,749	--	--	--	16	142,589,333	38,596,387	103,992,946	\$155.27	\$22,139,845,735	\$16,146,984,725	0.05%	0.09%	55,134,699	38.67%	53.02%	4,114,059	2.89%	3.96%	1.8
9/21/2021	1,021,104	881,334	1,902,438	--	--	--	16	142,589,333	38,596,387	103,992,946	\$156.70	\$22,343,748,481	\$16,295,694,638	0.06%	0.07%	55,134,699	38.67%	53.02%	4,114,059	2.89%	3.96%	1.8
9/22/2021	1,159,924	1,627,066	2,786,990	--	--	--	16	142,589,333	38,596,387	103,992,946	\$158.93	\$22,661,722,694	\$16,527,598,908	0.10%	0.09%	55,134,699	38.67%	53.02%	4,114,059	2.89%	3.96%	1.7
9/23/2021	876,669	937,495	1,814,164	--	--	--	16	142,589,333	38,596,387	103,992,946	\$156.85	\$22,365,136,881	\$16,311,293,580	0.04%	0.07%	55,134,699	38.67%	53.02%	4,114,059	2.89%	3.96%	1.7
9/24/2021	847,764	767,587	1,615,351	10,524,692	7.38%	10.12%	16	142,589,333	38,596,387	103,992,946	\$153.36	\$21,867,500,109	\$15,948,358,199	0.08%	0.07%	55,134,699	38.67%	53.02%	4,114,059	2.89%	3.96%	1.7
9/27/2021	910,028	1,191,192	2,101,220	--	--	--	16	142,589,333	38,596,387	103,992,946	\$149.65	\$21,338,493,683	\$15,562,544,369	0.06%	0.08%	55,134,699	38.67%	53.02%	4,114,059	2.89%	3.96%	1.7
9/28/2021	1,558,693	1,710,433	3,269,126	--	--	--	16	142,589,333	38,596,387	103,992,946	\$142.76	\$20,356,053,179	\$14,846,032,971	0.08%	0.09%	55,134,699	38.67%	53.02%	4,114,059	2.89%	3.96%	1.7
9/29/2021	5,246,236	7,407,928	12,654,164	--	--	--	16	142,589,333	38,596,387	103,992,946	\$126.00	\$17,966,255,958	\$13,103,111,196	0.01%	0.13%	55,134,699	38.67%	53.02%	4,580,064	3.21%	4.40%	1.5
9/30/2021	2,925,120	3,261,556	6,186,676	--	--	--	16	143,123,961	38,596,387	104,527,574	\$122.22	\$17,492,610,513	\$12,725,360,094	0.01%	0.10%	64,746,651	45.24%	61.94%	5,098,769	3.56%	4.88%	1.6
10/1/2021	1,901,796	2,211,085	4,112,881	28,324,067	19.14%	25.90%	16	147,966,635	38,596,387	109,370,248	\$124.27	\$18,387,813,731	\$13,591,440,719	0.14%	0.12%	64,746,651	43.76%	59.20%	5,098,769	3.45%	4.66%	1.6
10/4/2021	2,340,084	2,566,937	4,907,021	--	--	--	16	147,966,635	38,596,387	109,370,248	\$113.69	\$16,822,326,733	\$12,434,303,495	0.07%	0.11%	64,746,651	43.76%	59.20%	5,098,769	3.45%	4.66%	1.5
10/5/2021	973,595	1,372,622	2,346,217	--	--	--	16	147,966,635	38,596,387	109,370,248	\$115.58	\$17,101,983,673	\$12,641,013,264	0.06%	0.10%	64,746,651	43.76%	59.20%	5,098,769	3.45%	4.66%	1.5
10/6/2021	1,791,141	2,168,152	3,959,293	--	--	--	16	147,966,635	38,596,387	109,370,248	\$110.97	\$16,419,857,486	\$12,136,816,421	0.07%	0.12%	64,746,651	43.76%	59.20%	5,098,769	3.45%	4.66%	1.5
10/7/2021	1,213,393	1,278,866	2,492,259	--	--	--	16	147,966,635	38,596,387	109,370,248	\$116.34	\$17,214,438,316	\$12,724,134,652	0.12%	0.10%	64,746,651	43.76%	59.20%	5,098,769	3.45%	4.66%	1.5
10/8/2021	1,259,330	1,527,905	2,787,235	16,492,025	11.15%	15.08%	16	147,966,635	38,596,387	109,370,248	\$108.14	\$16,001,111,909	\$11,827,298,619	0.04%	0.11%	64,746,651	43.76%	59.20%	5,098,769	3.45%	4.66%	1.5
10/11/2021	n/a	609,858	609,858	--	--	--	16	147,966,635	38,596,387	109,370,248	\$108.08	\$15,992,266,465	\$11,820,760,465	n/a	n/a	64,746,651	43.76%	59.20%	5,098,769	3.45%	4.66%	1.5
10/12/2021	883,348	901,583	1,784,931	--	--	--	16	147,966,635	38,596,387	109,370,248	\$110.87	\$16,405,060,822	\$12,125,879,396	0.06%	0.12%	64,746,651	43.76%	59.20%	5,098,769	3.45%	4.66%	1.5
10/13/2021	862,124	979,150	1,841,274	--	--	--	16	147,966,635	38,596,387	109,370,248	\$115.00	\$17,016,163,025	\$12,577,578,520	0.08%	0.10%	64,746,651	43.76%	59.20%	5,098,769	3.45%	4.66%	1.5
10/14/2021	1,414,920	1,641,619	3,056,539	--	--	--	16	147,966,635	38,596,387	109,370,248	\$120.88	\$17,886,206,839	\$13,220,675,578	0.05%	0.09%	64,746,651	43.76%	59.20%	5,098,769	3.45%	4.66%	1.5
10/15/2021	1,304,159	1,376,472	2,680,631	9,973,233	6.74%	9.12%	16	147,966,635	38,596,387	109,370,248	\$122.15	\$18,074,124,465	\$13,359,575,793	0.02%	0.10%	64,746,651	43.76%	59.20%	4,467,212	3.02%	4.08%	1.4
10/18/2021	966,934	1,711,660	2,678,594	--	--	--	16	147,966,635	38,596,387	109,370,248	\$118.05	\$17,467,461,262	\$12,911,157,776	0.06%	0.08%	64,746,651	43.76%	59.20%	4,467,212	3.02%	4.08%	1.4
10/19/2021	626,502	752,065	1,378,567	--	--	--	16	147,966,635	38,596,387	109,370,248	\$120.19	\$17,784,109,861	\$13,145,210,107	0.04%	0.10%	64,746,651	43.76%	59.20%	4,467,212	3.02%	4.08%	1.4
10/20/2021	538,970	586,944	1,125,914	--	--	--	16	147,966,635	38,596,387	109,370,248	\$118.47	\$17,529,607,248	\$12,957,093,281	0.08%	0.10%	64,746,651	43.76%	59.20%	4,467,212	3.02%	4.08%	1.4
10/21/2021	832,674	809,452	1,642,126	--	--	--	16	147,966,635	38,596,387	109,370,248	\$123.49	\$18,272,399,756	\$13,506,131,926	0.12%	0.09%	64,746,651	43.76%	59.20%	4,467,212	3.02%	4.08%	1.4
10/22/2021	975,568	744,879	1,720,447	8,545,648	5.78%	7.81%	16	147,966,635	38,596,387	109,370,248	\$118.62	\$17,551,802,244	\$12,973,498,818	0.06%	0.09%	64,746,651	43.76%	59.20%	4,467,212	3.02%	4.08%	1.4
10/25/2021	513,835	622,094	1,135,929	--	--	--	16	147,966,635	38,596,387	109,370,248	\$120.56	\$17,838,857,516	\$13,185,677,099	0.06%	0.10%	64,746,651	43.76%	59.20%	4,467,212	3.02%	4.08%	1.4
10/26/2021	860,779	876,470	1,737,249	--	--	--	17	147,966,635	38,596,387	109,370,248	\$117.90	\$17,445,266,267	\$12,894,752,239	0.05%	0.11%	64,746,651	43.76%	59.20%	4,467,212	3.02%	4.08%	1.5
10/27/2021	831,322	661,530	1,492,852	--	--	--	17	147,966,635	38,596,387	109,370,248	\$113.56	\$16,803,091,071	\$12,420,085,363	0.05%	0.12%	64,746,651	43.76%	59.20%	4,467,212	3.02%	4.08%	1.8
10/28/2021	1,281,130	1,103,173	2,384,303	--	--	--	17	147,966,635	38,596,387	109,370,248	\$121.15	\$17,926,157,830	\$13,250,205,545	0.03%	0.10%	64,746,651	43.76%	59.20%	4,467,212	3.02%	4.08%	1.9
10/29/2021	601,891	561,560	1,163,451	7,913,784	5.35%	7.24%	17	147,966,635	38,596,387	109,370,248	\$120.63	\$17,849,215,180	\$13,193,333,016	0.08%	0.09%	64,746,651	43.76%	59.20%	4,043,765	2.73%	3.70%	1.9
11/1/2021	839,218	1,338,969	2,178,187	--	--	--	17	147,966,635	38,596,387	109,370,248	\$125.21	\$18,526,902,368	\$13,694,248,752	0.12%	0.09%	64,746,651	43.76%	59.20%	4,043,765	2.73%	3.70%	2.0
11/2/2021	853,351	1,068,198	1,921,549	--	--	--	18	148,121,333	38,596,387	109,524,946	\$121.05	\$17,930,087,360	\$13,257,994,713	0.14%	0.11%	64,746,651	43.71%	59.12%	4,043,765	2.73%	3.69%	2.0
11/3/2021	680,215	1,551,505	2,231,720	--	--	--	18	148,121,333	38,596,387	109,524,946	\$122.76	\$18,183,374,839	\$13,445,282,371	0.12%	0.11%	64,746,651	43.71%	59.12%	4,043,765	2.73%	3.69%	2.1
11/4/2021	7,422,797	13,510,215	20,933,012	--	--	--	18	148,121,333	38,596,387	109,524,946	\$88.93	\$13,172,430,144	\$9,740,053,448	0.11%	0.11%	64,746,651	43.71%	59.12%	4,043,765	2.73%	3.69%	1.4
11/5/2021	4,207,679	4,304,955	8,																			

Exhibit A-1
Market Efficiency Statistics for Lightspeed Commerce, Inc. Common Shares (Subordinate Voting Shares)
December 1, 2020 to November 30, 2021

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]	[23]
Trading Dates (CN and US)	Daily Volume (CN)	Daily Volume (US)	Daily Volume (CN & US)	Weekly Volume	Weekly Volume / Subordinate Voting Shares Outstanding	Weekly Volume / Public Float	Analyst Coverage	Total Subordinate Voting Shares Outstanding	Insider Holdings	Public Float	Closing Price	Market Capitalization of Equity	Market Capitalization of Public Float	Last Bid-Ask Spread	Intraday Bid-Ask Spread	Institutional Holdings	Institutional Holdings as Percent of Shares Outstanding	Institutional Holdings as Percent of Public Float	Short Interest (CN and US)	Short Interest as Percent of Shares Outstanding	Short Interest as Percent of Public Float	Short Interest Ratio
Market Efficiency Period (12/1/2020 - 11/30/2021)																						
Total 305,105,941 255,514,361 560,620,302 544,988,878																						
Maximum	7,637,907	13,510,215	20,933,012	35,777,102	24.15%	32.67%	18.0	148,121,333	39,513,405	109,524,946	\$158.93	\$22,661,722,694	\$16,527,598,908	0.43%	0.26%	64,746,651	45.24%	62.37%	5,790,495	4.41%	6.25%	3.8
Average	1,215,562	1,013,946	2,189,923	10,686,056	7.91%	11.12%	16.3	132,839,264	38,808,786	94,030,479	\$98.05	\$13,141,661,835	\$9,339,455,044	0.10%	0.12%	53,785,202	40.38%	57.19%	4,381,670	3.31%	4.70%	2.3
Median	987,514	783,012	1,810,950	8,816,918	6.71%	9.50%	16.0	131,278,443	38,596,387	92,682,056	\$90.23	\$11,556,526,431	\$8,132,387,004	0.10%	0.12%	53,910,819	41.08%	58.17%	4,414,106	3.35%	4.59%	2.3
Minimum	270,126	123,101	235,481	3,367,120	2.83%	4.24%	15.0	117,804,218	38,596,387	78,290,813	\$64.62	\$8,010,686,824	\$5,323,775,284	0.01%	0.06%	38,978,195	33.09%	49.79%	3,106,930	2.43%	3.49%	1.1

Notes:

[1] All Canadian and U.S. trading dates. Source: Bloomberg.

[2] Reported daily Canadian composite volume. Source: Bloomberg.

[3] Reported daily U.S. composite volume. Source: Bloomberg.

[4] = [2] + [3].

[5] Weekly volume is the sum of Canadian and U.S. daily volume during the week. The first and last weeks of the Market Efficiency Period are excluded because these are partial weeks.

[6] = [5] / [9].

[7] = [5] / [11].

[8] Number of analysts making recommendations for the security. For days on which data are not available, the last available data are used. Source: Bloomberg.

[9] The number of total Subordinate Voting Shares outstanding. Prior to December 1, 2020, common shares outstanding also included Multiple Voting Shares. On December 1, 2020, all Multiple Voting Shares outstanding converted to Subordinate Voting Shares. Source: Lightspeed SEDAR filings.

[10] The number of insider holdings is equal to Subordinate Voting Shares held by directors and executive officers and Caisse de dépôt et placement du Québec. Source: Lightspeed SEDAR filings.

[11] = [9] - [10].

[12] On Canadian trading days, equals the closing Canadian composite share price (CS). On non-trading days in Canada, equals the closing U.S. composite share price (in CS). Source: Bloomberg.

[13] = [9] x [12].

[14] = [11] x [12].

[15] Last Bid-Ask Spread is calculated using the last quote on TSX each day. Ask price minus bid price, divided by the mid-point of bid-ask prices. "n/a" indicates a non-trading day on TSX and for August 10, 2021 data was not available. Source: Tick Data.

[16] Intraday Bid-Ask Spread is the daily weighted-average intraday bid-ask spread on TSX (ask price minus bid price, divided by the mid-point of bid-ask prices) with the weights being the amount of time each spread was outstanding. "n/a" indicates a non-trading day on TSX and for August 10, 2021 data was not available. Source: Tick Data.

[17] Quarterly institutional holdings. Source: Refinitiv.

[18] = [17] / [9].

[19] = [17] / [11].

[20] Short interest for Lightspeed common shares traded in Canada and the U.S. For days on which data are not available, the last available data are used. Source: Bloomberg.

[21] = [20] / [9].

[22] = [20] / [11].

[23] = [20] / rolling average volume for 20 trading days through the current day from [4].

Exhibit A-2
Regression Results of Lightspeed Commerce, Inc. Common Shares Returns on Trading Volume

Regression Results for Absolute Return on the Natural Log of Trading Volume		
Intercept (t-statistic)	-0.385	(-8.82)
Coefficient on Natural Log of Trading Volume (t-statistic)	0.030	(9.50)
Adjusted R-Squared	26.30%	
Standard Error	2.46%	
F-Statistic	90.23	
Observations (December 1, 2020 to November 30, 2021)	251	

Regression Results for Absolute Excess Return on the Natural Log of Trading Volume		
Intercept (t-statistic)	-0.354	(-8.69)
Coefficient on Natural Log of Trading Volume (t-statistic)	0.027	(9.31)
Adjusted R-Squared	25.51%	
Standard Error	2.30%	
F-Statistic	86.62	
Observations (December 1, 2020 to November 30, 2021)	251	

Note:

See Exhibit 4 for daily returns and volume data.

Exhibit A-3
Results of Tests for Autocorrelation in Daily Lightspeed Commerce, Inc. Common Shares

Test of Previous Day Returns over the Market Efficiency Period		
Dependent Variable	Daily Lightspeed Returns	
Intercept (t-statistic)	0.001	(0.26)
Coefficient on Lightspeed Previous Day Returns (t-statistic)	0.047	(0.75)
Observations (December 1, 2020 to November 30, 2021)		251
Standard Error		4.11%
Adjusted R-Squared		-0.18%

Test of Previous Day Excess Returns over the Market Efficiency Period		
Dependent Variable	Daily Lightspeed Excess Returns	
Intercept (t-statistic)	-0.002	(-0.70)
Coefficient on Lightspeed Previous Day Excess Returns (t-statistic)	0.053	(0.85)
Observations (December 1, 2020 to November 30, 2021)		251
Standard Error		3.64%
Adjusted R-Squared		-0.11%

Note:

See Exhibit 4 for returns and excess returns.

Exhibit A-4
News Releases Filed on SEDAR by Lightspeed Commerce, Inc.
December 1, 2020 to November 30, 2021

Date of Filing	Time	Reaction Date	Headline
Dec 1 2020	5:30 PM	12/2/2020	Lightspeed Announces Acquisition of Upserve to Further Omnichannel Revolution of American Restaurant Industry
Dec 1 2020	5:35 PM	12/2/2020	Lightspeed Announces Automatic Conversion of All Outstanding Multiple Voting Shares
Feb 4 2021	6:56 AM	2/4/2021	Lightspeed Announces Third Quarter 2021 Financial Results, Provides Outlook for Fourth Quarter
Feb 8 2021	4:44 PM	2/9/2021	Lightspeed Announces Launch of Marketed Public Offering of Subordinate Voting Shares
Feb 10 2021	7:00 AM	2/10/2021	Lightspeed Announces Upsizing and Pricing of Marketed Public Offering of Subordinate Voting Shares
Feb 12 2021	11:05 AM	2/12/2021	Lightspeed Announces Closing of US\$676.2 Million Public Offering Including Full Exercise of the Over-allotment Option
Mar 11 2021	4:33 PM	3/12/2021	Lightspeed to Acquire Vend to Power Global Retail Expansion
Apr 16 2021	5:09 PM	4/19/2021	Lightspeed Announces Closing of Acquisition of Vend
May 20 2021	7:07 AM	5/20/2021	Lightspeed Announces Fourth Quarter and Full Year 2021 Financial Results and Provides Outlook for Fiscal 2022
Jun 3 2021	5:16 PM	6/4/2021	Lightspeed Announces Resignation of Board Member Manon Brouillette
Jun 7 2021	7:19 AM	6/7/2021	Lightspeed to Acquire Ewid and NuORDER to Unify Commerce Ecosystem and Ignite Business Creation
Jul 2 2021	7:04 AM	7/2/2021	Lightspeed Announces Closing of Acquisition of NuORDER
Aug 5 2021	7:10 AM	8/5/2021	Lightspeed Announces First Quarter 2022 Financial Results and Raises Outlook for Fiscal 2022
Aug 5 2021	9:23 PM	8/6/2021	Lightspeed Announces Voting Results on the Election of Directors Held During its Annual and Special Shareholders Meeting
Aug 9 2021	7:25 AM	8/9/2021	Lightspeed Announces Launch of Public Offering of Subordinate Voting Shares
Aug 9 2021	1:57 PM	8/9/2021	Lightspeed Announces Upsizing and Pricing of Public Offering of Subordinate Voting Shares
Aug 9 2021	5:26 PM	8/10/2021	Lightspeed Announces Corporate Name Change to Lightspeed Commerce Inc.
Aug 11 2021	10:11 AM	8/11/2021	Lightspeed Announces Closing of US\$716.1 Million Public Offering
Aug 13 2021	9:03 AM	8/13/2021	Lightspeed Announces Full Exercise of Over-allotment Option in Connection with Previously Announced Public Offering
Sep 29 2021	6:30 PM	9/30/2021	Lightspeed Comments on Short Seller Report
Oct 1 2021	1:34 PM	10/1/2021	Lightspeed Announces Closing of Acquisition of Ewid
Nov 4 2021	7:12 AM	11/4/2021	Lightspeed Announces Second Quarter 2022 Financial Results
Nov 25 2021	7:20 AM	11/25/2021	Lightspeed Commerce Highlights Integrated Business Model and Compelling Growth Opportunities at Inaugural Capital Markets Day

Source: www.sedar.com

Exhibit A-5
Comparison of Proportion of Days with Statistically Significant Excess Returns for Lightspeed Commerce, Inc. Common Shares
on News Days vs. Non-News Days
December 1, 2020 to November 30, 2021

[1]	[2]	[3] = [2] / [1]	[4]	[5]	[6] = [5] / [4]	[7]	[8]	[9]
News Days			Non-News Days			Difference Between News and Non-News Days		
Num. of Days	Num. of Stat. Sig. Days	Proportion Stat. Sig. Days	Num. of Days	Num. of Stat. Sig. Days	Proportion Stat. Sig. Days	Fisher's Exact Test p-Value	Z-Test	
							z-stat	p-Value
21	5	23.8%	230	11	4.8%	0.60% **	3.42	0.063% **

Notes:

A news day is defined as the impact date after the Company filed a news release on SEDAR. See Exhibit 4 for statistically significant days and Exhibit A-4 for news days.

[1] Number of news days during the Market Efficiency Period.

[2] Number of trading days in [1] that are associated with statistically significant excess stock returns at the 5% significance level.

[3] Proportion of statistically significant trading days in [1].

[4] Number of trading days that are not news days during the Market Efficiency Period.

[5] Number of trading days in [4] that are associated with statistically significant excess stock returns at the 5% significance level.

[6] Proportion of statistically significant trading days in [4].

[7] Two-sided p-value of the Fisher's Exact test. ** denotes statistically significant at the 1% level.

[8] $= ([3] - [6]) / \sqrt{p(1-p)(1/[1] + 1/[4])}$, where $p = ([2] + [5]) / ([1] + [4])$.

[9] Two-sided p-value of the z-test. ** denotes statistically significant at the 1% level.

EXHIBIT R-3

CANADA
PROVINCE OF QUÉBEC

DISTRICT OF MONTRÉAL
No.: 500-06-001164-215

SUPERIOR COURT
(Class Action)

STEVEN HOLCMAN ET AL.

Plaintiffs

v.

LIGHTSPEED COMMERCE INC. ET AL.

Defendants

NOTICE OF COMMUNICATION OF AN EXPERT REPORT
(Articles 239 al. 2 CCP)

TO:

Mtre Stéphanie Lapierre
Mtre Frédéric Paré
Stikeman Elliot LLP
1155 René-Lévesque Blvd. West
41st Floor
Montréal, Québec H3B 3V2
Telephone: 514 397 3000
Fax: 514 397 3222
Emails: slapierre@stikeman.com;
fpare@stikeman.com

Attorneys for Lightspeed Commerce Inc. and
for the Individual Defendants

Mtre Éric Préfontaine
Mtre Frédéric Plamondon
Osler, Hoskin & Harcourt LLP
1000 De La Gauchetière Street West
Suite 2100
Montréal QC H3B 4W5
Tel: 514.904.8100
Fax: 514.904.8101
Emails: eprefontaine@osler.com;
fplamondon@osler.com

Attorneys for
PricewaterhouseCoopers LLP

TAKE NOTICE that at the authorization hearing, the Plaintiffs, through their undersigned attorneys, intend on relying on the expert report by Ramy Elitzur, Ph.D., which is dated August 1, 2022.

Copy of this report is attached hereto.

DO GOVERN YOURSELVES ACCORDINGLY.

MONTRÉAL, this 1st day of August, 2022.

(S) *LPC Avocat Inc.*

LPC AVOCAT INC.

Mtre Joey Zukran
276 Saint-Jacques Street, Suite
801 Montréal, Québec, H2Y 1N3
Telephone: (514) 379-1572
Telecopier: (514) 221-4441
Email: jzukran@lpclex.com

Attorneys for the Plaintiffs

(S) *Faguy & Co.*

FAGUY & CO.

Mtre Elizabeth Meloche
Mtre Shawn K. Faguy
329 de la Commune Street West
Suite 200
Montréal, Québec, H2Y 2E1
Telephone: (514) 285-8100
Telecopier: (514) 285-8050
Emails: (emeloche@faguyco.com)
(skf@faguyco.com)

Avocats-conseils for the Plaintiffs

Holcman et al. v. Lightspeed Commerce, Inc. et al.

Quebec Superior Court

Case No. 500-06-001164-215

EXPERT REPORT OF PROFESSOR RAMY ELITZUR, Ph.D.,

DATED AUGUST 1, 2022

Prepared for the Quebec Superior Court, at the request of plaintiffs Steven Holcman and Tarique Plummer. This report can be used only in the context of Holcman et al. v. Lightspeed Commerce, Inc. et al.

TABLE OF CONTENTS

I. INTRODUCTION	3
A. Instructions.....	3
B. Summary of Opinions.....	3
C. Qualifications.....	4
D. Materials Relied Upon.....	4
II. EXECUTIVE SUMMARY	4
A. Question 1: Please discuss the applicable financial, auditing and/or reporting standards during the Class Period for Lightspeed and PWC, as well as the related terminology.....	4
B. Question 2: Please comment on the information contained in Lightspeed's public disclosures during the Class Period with regard to, <i>inter alia</i> , its reported revenues, expenses, earnings, and goodwill.	4
C. Question 3: Please comment on Lightspeed's internal controls during the Class Period.	5
D. Question 4: Please comment on PWC's conduct during the Class Period.....	5
III. ANALYSIS	6
A. Question 1: Financial, Auditing and Reporting Standards Applicable to Lightspeed and PWC during the Class Period.....	6
B. Question 2: The Information Contained in Lightspeed’s Public Disclosures During the Class Period Regarding its Reported Revenues, Expenses, Earnings, and Goodwill.....	12
C. Question 3: Lightspeed's Internal Controls During the Class Period.....	46
D. Question 4: PWC's Conduct During the Class Period.....	50
IV. CONCLUSION	65
APPENDIX I - C.V.	66
APPENDIX II - MATERIALS RELIED UPON.....	77
APPENDIX III – OUTPUT OF BENFORD’S LAW ANALYSES FOR LIGHTSPEED QUARTERLY INCOME STATEMENTS.....	83

APPENDIX IV – PEER GROUP SELECTION 85

APPENDIX V – DECLARATION REGARDING THE CARRYING OUT OF THE MISSION
OF AN EXPERT 88

I. INTRODUCTION

A. Instructions

1. I was retained by plaintiffs Steven Holcman and Tarique Plummer as an expert witness to provide testimony relating to an action filed as *Steven Holcman et al. v. Lightspeed Commerce Inc et al.*, Quebec Superior Court no 500-06-001164-215. In this regard, I am providing expertise on accounting, auditing, financial analysis, and related matters. I have been asked to opine on the following questions:
 - a) **Question 1:** Please discuss the applicable financial, auditing and/or reporting standards during the Class Period for Lightspeed and PWC, as well as the related terminology.
 - b) **Question 2:** Please comment on the information contained in Lightspeed's public disclosures during the Class Period with regard to, *inter alia*, its reported revenues, expenses, earnings, and goodwill.
 - c) **Question 3:** Please comment on Lightspeed's internal controls during the Class Period.
 - d) **Question 4:** Please comment on PWC's conduct during the Class Period.

B. Summary of Opinions

2. Based on my analysis, my conclusions are as follows:
3. In my opinion, Lightspeed Commerce, Inc. (Lightspeed or the Company) materially¹ violated accounting standards during the Class Period with regard to its reported revenues, expenses, earnings, and goodwill.
4. There are confirmed and potential material weaknesses affecting Lightspeed's internal control system during the Class Period.
5. During the Class Period, PricewaterhouseCoopers LLP (PWC) failed to comply with the relevant standards in its audit of Lightspeed's annual statements and its review of the Company's quarterly statements.

¹ "Material" or "materiality" in this report refers to accounting materiality, which is defined below.

C. Qualifications

6. My research and teaching interests have focused on auditing, financial accounting, and financial analysis for over 30 years. In completing my work, I have referenced my professional and academic experience (please see my C.V. attached as Appendix I) and my review of the relevant literature (please see the materials that I have relied upon listed as Appendix II).

D. Materials Relied Upon

7. My understanding of the issues related to these matters has been obtained through my review of pleadings and documents provided to me by Faguy & Co. and my own research based on publicly available information, as well as my analysis of Lightspeed's public disclosures. All documents I have relied upon are listed in Appendix II.

II. EXECUTIVE SUMMARY

A. Question 1: Please discuss the applicable financial, auditing and/or reporting standards during the Class Period for Lightspeed and PWC, as well as the related terminology.

8. The professional standards used in my analysis, and the related terminology, are discussed in my analysis of Question 1, below.

B. Question 2: Please comment on the information contained in Lightspeed's public disclosures during the Class Period with regard to, *inter alia*, its reported revenues, expenses, earnings, and goodwill.

9. My analysis reveals multiple violations of applicable accounting and reporting standards in relation to Lightspeed's reported revenues, expenses, earnings, and goodwill.
10. More specifically, I found violations of generally accepted accounting principles (GAAP) using Lightspeed's public disclosures and by using the Beneish Manipulation Index, which is an analytical tool designed to test for earnings manipulation. My analysis concludes that there is a high probability that earnings management, inflation of revenues, and misreporting of expenses, amongst others, occurred at Lightspeed during the Class Period. Using a second analytical tool, Benford's Law, which measures the statistical likelihood of anomalies in reported financial data, I conclude that there is a

99.88% probability of anomalies in Lightspeed's reporting, which is also consistent with earnings management.

C. Question 3: Please comment on Lightspeed's internal controls during the Class Period.

11. "Internal controls" is the system of checks and balances within a company that ensures the accuracy and integrity of financial reporting. A single material weakness in a company's internal control system can render the financial reporting of a company inaccurate and cast doubt on the enterprise's entire financial reporting system. I have identified numerous confirmed and potential weaknesses in Lightspeed's internal control system.

D. Question 4: Please comment on PWC's conduct during the Class Period.

12. I conclude that, during the Class Period, PWC failed to comply with the requisite standards for its audit of Lightspeed's annual statements and its review of Lightspeed's quarterly statements.
13. I find numerous breaches by PWC during 2019 of the applicable Canadian Auditing Standards (CAS) relating to CAS 200 *overall objectives of the independent auditor and the conduct of an audit in accordance with Canadian Auditing Standards*, CAS 265 *communicating deficiencies in internal control to those charged with governance and management*, CAS 315 *identifying and assessing the risks of material misstatement*, CAS 330 *the auditor's responses to assessed risks*, CAS 450 *evaluation of misstatements identified during the audit*, CAS 520 *analytical procedures*, CAS 700 *forming an opinion and reporting on financial statements*, and of the CPA Canada Handbook. Specialized Area. Section 7060. *Auditor Review of Interim Financial Statements*.
14. I find numerous breaches by PWC during 2020 and 2021 of the applicable Public Company Accounting Oversight Board (PCAOB) auditing standards (AS) relating to PCAOB, AS 1015 *Due Professional Care in the Performance of Work*, PCAOB Staff Audit Practice Alert No. 10 *Maintaining and Applying Professional Skepticism in Audits*, PCAOB, AS 1101 *Audit Risk*, PCAOB, AS 1105 *Audit Evidence*, PCAOB, AS 2110 *Identifying and Assessing Risk of Material Misstatement*, PCAOB, Staff Audit Practice Alert No. 12 *Matters Related to Auditing Revenue in An Audit of Financial Statements*, PCAOB, AS 2820 *Evaluating Consistency of Financial Statements*, and PCAOB, AS 4105 *Review of Internal Financial Information*.

15. I also find that the violations of GAAP by Lightspeed should have been discovered and reported by PWC. In addition, PWC should have identified Lightspeed's internal controls weaknesses and the high probability of earnings management.

III. ANALYSIS

A. Question 1: Financial, Auditing and Reporting Standards Applicable to Lightspeed and PWC during the Class Period

16. This section discusses the requisite applicable professional standards and terminology that I use in my analysis, which governed Lightspeed and PWC's conduct during the Class Period.

(i) Applicable Accounting Standards

(a) Generally Accepted Accounting Standards (GAAP) vs non-GAAP measures

17. GAAP is the set of rigorous accounting standards that is adopted and utilized on a national and international level. In this report, the term GAAP refers to Canadian GAAP.

18. Canadian GAAP:

- i. The past: Canadian GAAP, applicable to publicly traded Canadian companies, was historically set by the Canadian Institute of Chartered Accountants (CICA), specifically by its Accounting Standards Board (AcSB). The CICA was incorporated by the Canadian Institute of Chartered Accountants Act, a Special Act of the Canadian Parliament in 1902. The CICA developed accounting, auditing, and assurance standards for organizations in Canada and issued the professional designation of Chartered Accountant (CA).

- ii. The present: In 2006, the AcSB decided to merge Canadian GAAP with International Financial Reporting Standards (IFRS), which became the Canadian GAAP for publicly traded companies in January 2011. In 2014, the CICA was replaced by Chartered Professional Accountants of Canada (CPA Canada) after a merger of the CICA with two other major accounting bodies.

19. The International Financial Reporting Standards Foundation is the body that sets the International Financial Reporting Standards (IFRS) through the International Accounting Standards Board (IASB). International Accounting Standards (IAS) were issued by the former International Accounting Standards Council (IASC) and endorsed and amended by the International Accounting Standards

Board (IASB), the newer standards issued by the IASB are referred to as IFRS. IAS serves as the appropriate accounting standard in the absence of an IFRS.

20. The expression “GAAP measures” refers to items in the financial statements that are governed by GAAP (IFRS or IAS in Canada).
21. Non-GAAP measures are alternative financial measures that are not set by GAAP, such as Average Revenues Per User (ARPU)² or Earnings Before Interest, Taxes, Depreciation and Amortization (EBITDA).

(b) International Accounting Standard Board (IASB)

22. *The Conceptual Framework for Financial Reporting* (Framework) is the constitution behind all accounting standards issued by the IASB or the IASC. It therefore governs all reporting by public companies that use IFRS, including Lightspeed.
23. IFRS 15 *Revenue from Contracts with Customers*. This standard establishes the principles for reporting useful information for financial statement users (users) about the nature, amount, timing, and uncertainty of revenues and related cash flows as the result of a contract from a customer. IFRS 15 is the result of the IASB’s effort to harmonize the IFRS and US GAAP standards for revenue recognition. Another reason behind the promulgation of IFRS 15 by the IASB is the belief that the previous guidance for revenue recognition was not sufficiently detailed.
24. IAS 1 *Presentation of Financial Statements*. IAS 1 is important for understanding the concept of disclosure in financial statements and the definition of materiality. Misreporting and flawed disclosures are sanctionable if they are material.
25. IAS 8 *Accounting policies, changes in accounting estimates and errors*. This standard prescribes the criteria for selecting and changing accounting policies, together with the accounting treatment and disclosure of changes in accounting policies, changes in accounting estimates and corrections of errors.

² Inflation in reported revenues will inflate the metric of Average Revenues Per User (ARPU). ARPU is a major non-GAAP metric used by Lightspeed in its MD&A.

26. IAS 34 *Interim Financial Reporting*. This standard lays out the criteria for selecting and changing accounting policies, together with the accounting treatment and disclosure of changes in accounting policies, changes in accounting estimates and corrections of errors.
27. IAS 36 *Impairment of Assets*. This standard establishes the basis for recognition of the impairment of assets, including goodwill, to ensure that an entity's assets are not carried at more than their recoverable amount (i.e., the higher of fair value less costs of disposal and value in use). For goodwill in particular, the standard requires companies to conduct annual impairment tests. Each impaired asset must be written down (or completely written off) to reflect its impairment and the impairment is recognized as a loss on the income statement.

(c) Canadian Securities Administrators (CSA)

28. In Canada, the regulation of securities is conducted, *inter alia*, through securities regulators from the ten provinces and three territories. These regulators have joined forces to establish the Canadian Securities Administrators (CSA), which is responsible for developing a harmonized approach to securities regulation across the country. By collaborating on rules, regulations and other programs, the CSA helps avoid duplication of work and streamlines the regulatory process for companies seeking to raise investment capital, as well as companies working in the investment industry. The CSA issues rules and policies through national instruments, as well as staff notices on important reporting issues. The national instrument and its companion policy that I use in my analysis are:
 - i. *CSA (2008) National Instrument 52-109 Certification of Disclosure in Issuers' Annual and Interim Filings*. This instrument is important for understanding the internal control framework and systems, and the related duties of public companies.
 - ii. *CSA (2008). Companion Policy 52-109CP to National Instrument 52-109 Certification of Disclosure in Issuers' Annual and Interim Filings*. This Companion Policy to CSA (2008) National Instrument 52-109 is important as it sets out reporting and disclosure requirements for public companies with respect to annual and quarterly financial statements and MD&As. The Companion Policy provides important additional information on requirements in public companies regarding the internal control framework and systems beyond CSA (2008) National Instrument 52-109. Furthermore, the Companion Policy's importance lies in the information it provides on fair presentation of the annual and quarterly financial statements and MD&A.

(ii) Applicable Auditing Standards

29. PWC audited the annual financial statements of Lightspeed during the Class Period. In addition, PWC conducted reviews of Lightspeed's quarterly financial statements during this period.
30. The objective of auditing financial statements is to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, thereby enabling the auditor to express an opinion on whether the financial statements are prepared, in all material respects, in accordance with the applicable financial reporting framework (IFRS for Lightspeed).
31. The objective of a review of quarterly financial statements is to obtain a basis for reporting to the audit committee as to whether the auditor is aware of any material modification that should be made to the interim financial statements for those statements to be in accordance with the applicable financial reporting framework (IFRS in Lightspeed's case).
32. While both auditing and reviews of financial statements require scrutiny by auditors, the difference between the two is that while auditing is broad in its scope and deep in its scrutiny, a review is broad in its scope (though less than an audit) but less detailed.
33. As PWC's auditor reports state, it used the Canadian Auditing Standards (CAS) for its 2019 audit and reviews of quarterly financial information, and the Public Company Accounting Oversight Board's (PCAOB) Auditing Standards (AS) for its 2020 and 2021 audits and its reviews of quarterly financial information.

(a) Canadian Auditing Standards (CAS)

34. PWC's auditor report in Lightspeed's annual financial statements for 2019 states that PWC conducted this audit in accordance with the CAS.
35. CAS 200 *Overall objectives of the independent auditor and the conduct of an audit in accordance with Canadian Auditing Standards* sets out the overall objectives for auditors and explains the nature and scope of an audit. It also explains the scope, authority and structure of the CAS, and lays out the general responsibilities of auditors during audits, including their obligation to comply with the CAS.
36. CAS 265 *Communicating deficiencies in internal control to those charged with governance and management*. This standard requires auditors to appropriately communicate to management and those

charged with governance all deficiencies in internal control that were identified during an audit of financial statements.

37. CAS 315 *Identifying and assessing the risks of material misstatement* requires auditors to identify and assess the risks of material misstatement in the financial statements.
38. CAS 320 *Materiality in planning and performing an audit* outlines the auditor's responsibility to apply the concept of materiality in planning and performing an audit of financial statements.
39. CAS 330 *The auditor's responses to assessed risks* establishes the auditor's responsibility to design and implement responses to the risks of material misstatement identified and assessed by the auditor in accordance with CAS 315 in an audit of financial statements.
40. CAS 450 *Evaluation of misstatements identified during the audit* establishes the auditor's responsibility to evaluate the effect of identified misstatements on the audit, as well as the effect of any uncorrected misstatement on the company's financial statements.
41. CAS 520 *Analytical procedures* requires that auditors use analytical procedures as substantive procedures. It also deals with the auditor's responsibility to perform analytical procedures near the end of the audit that assist the auditor when forming an overall conclusion on the financial statements. As such, it further elaborates CAS 315 and CAS 330.
42. CAS 700 *Forming an opinion and reporting on financial statements* establishes the auditor's responsibility to form an opinion on the financial statements. It also prescribes the form and content of the auditor's report further to the audit of financial statements.
43. CAS 705 *Modifications to the opinion in the independent auditor's report* deals with the auditor's responsibility to issue an appropriate report in circumstances where, in forming an opinion in accordance with CAS 700, the auditor concludes that a modification to the auditor's opinion on the financial statements is necessary.
44. CPA Canada Handbook. Specialized Area. Section 7060. *Auditor Review of Interim Financial Statements* (Section 7060). Section 7060 lays out the auditor's responsibilities for the review of quarterly financial statements.

(b) Public Company Accounting Oversight Board's (PCAOB) Auditing Standards (AS)

45. PWC's auditor reports in Lightspeed's annual financial statements for 2020 and 2021 state that the auditor's audit was conducted in compliance with the Public Company Accounting Oversight Board's (PCAOB) Auditing Standards (AS).
46. AS 1015: *Due Professional Care in the Performance of Work*. This standard prescribes the due professional care that auditors must apply in the planning and performance of their audits and the preparation of their reports. This includes applying professional skepticism while auditing, in accordance with the framework provided in this standard.
47. AS 1101: *Audit Risk*. The objective of this standard is to guide auditors in managing audit risk and applying the concept of materiality in planning and performing an audit.
48. AS 1105: *Audit Evidence*. This standard outlines what constitutes audit evidence and establishes requirements regarding designing and performing audit procedures to obtain sufficient appropriate audit evidence.
49. AS 2105: *Consideration of Materiality in Planning and Performing an Audit*. This standard provides a framework for auditors to apply the concept of materiality appropriately in planning and performing audit procedures.
50. AS 2110: *Identifying and Assessing Risk of Material Misstatement*. This standard establishes requirements regarding the process of identifying and assessing risks of material misstatement in the financial statements. It stipulates that an auditor should use analytical procedures in the course of its audit to identify accounting misstatements. These analytical procedures could include, for instance, Beneish and Benford analyses, among other options.
51. AS 2820: *Evaluating Consistency of Financial Statements*. This standard establishes requirements and provides direction for the auditor's evaluation of the consistency of the financial statements, including how an auditor is called upon to deal with changes of accounting principles and classification in a company's financial statements.
52. AS 4105: *Reviews of Interim Financial Information*. This accounting standard provides guidance on the nature, timing, and extent of the procedures to be performed by an independent accountant when conducting a review of interim financial information.

53. PCAOB Staff Audit Practice Alert No. 10: *Maintaining and Applying Professional Skepticism in Audits*. This standard provides further explanations for AS 1015: *Due Professional Care in the Performance of Work*. Specifically, it alerts auditors to the importance of maintaining and applying their professional skepticism in auditing.
54. PCAOB Staff Audit Practice Alert No. 12: *Matters Related to Auditing Revenue in An Audit of Financial Statements*. This standard further explains AS 1105: *Audit Evidence* and highlights certain requirements of PCAOB standards relating to aspects of auditing revenue.

B. Question 2: The Information Contained in Lightspeed’s Public Disclosures During the Class Period Regarding its Reported Revenues, Expenses, Earnings, and Goodwill

55. In my opinion, Lightspeed materially violated accounting standards during the Class Period with regard to its reported revenues, expenses, earnings, and goodwill.

(i) Analysis of Lightspeed’s Accounting of Reported Revenues, Expenses, Earnings, and Goodwill During the Class Period

56. My conclusion regarding Lightspeed’s GAAP violations in regard to its reported revenues, expenses, earnings, and goodwill during the Class Period stems from:
- a) My use of data analytics tools:
 - i) A Beneish Manipulation Index analysis for the Class Period which demonstrates a very high probability that Lightspeed:
 - 1) Conducted earnings management in 2019, 2020, and 2021;
 - 2) Manipulated and inflated its revenues every year from 2019 to 2021;
 - 3) Manipulated its expense recognition in 2019; and
 - 4) Misreported its expenses, including its Cost of Revenues³, throughout the Class Period;
 - ii) A Benford's Law analysis that reveals a 99.8% probability of anomalies in Lightspeed’s reported income statements during the Class Period. Such anomalies constitute an additional indication of earnings management (Amiram et al., 2015);

³ The expression “Cost of Revenues” is used by the Company in its disclosures. It is equivalent to the commonly used term “cost of goods sold”, adapted to a context where Lightspeed’s revenues are not exclusively generated from goods sold.

- b) My analysis of specific items reported by Lightspeed in its financial statements during the Class Period, which supports the findings from the data analytics tools mentioned above and provides additional insights. More specifically, I analyzed:
- i) Lightspeed's allowance for bad debts during the Class Period;
 - ii) The discrepancy in the reported contribution to revenues of two acquisitions (ShopKeep and Upserve);
 - iii) Lightspeed's use of the gross instead of the net method for its revenue recognition in 2020 and 2021 in connection with revenues generated by ShopKeep and Upserve; and
 - iv) The Company's failure to recognize goodwill impairment losses with respect to at least two acquired companies (ShopKeep and Upserve) and its use of assumptions in testing goodwill impairment; and
- c) My analysis of the materiality of the violations of accounting standards discussed above.

(a) Data Analytics Tools

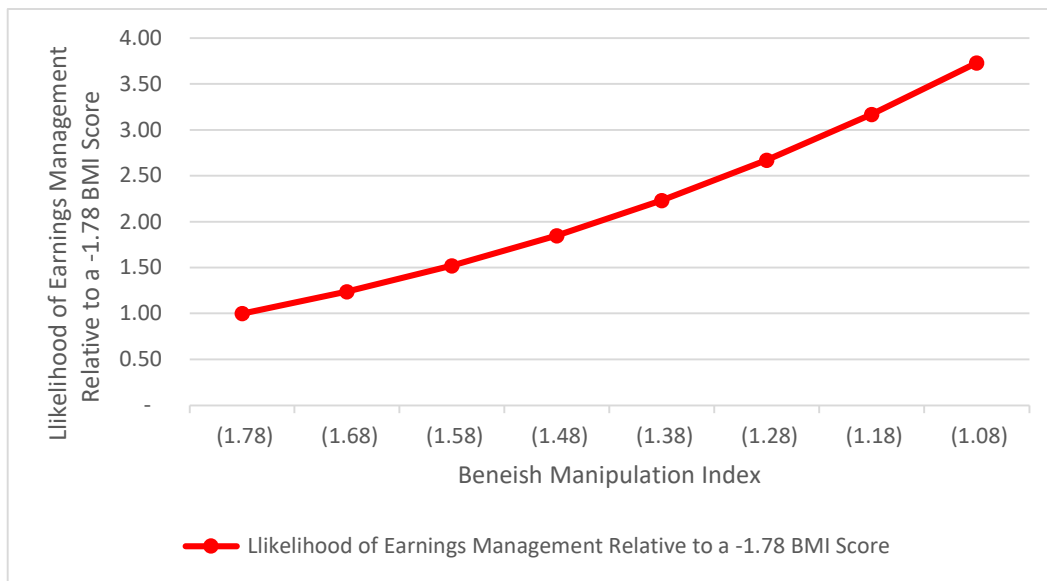
(i) Beneish Manipulation Index Analysis

(1) Introduction

57. The Beneish Manipulation Index is based on Beneish (1999) in which the author generated a statistical algorithm to test the likelihood of earnings manipulation. This analysis was accepted at the authorization stage by the Quebec Superior Court (*Catucci v. Valeant*, case no. 500-06-000783-163, August 29, 2017). The test is made up of eight indices that are weighted to create an aggregate score, which, in turn, translates to the probability of earnings management.
58. Earnings management is the manipulation of financial reporting by companies to gain something. It involves altering financial statements to provide false information about the company's underlying performance or to "influence contractual outcomes that depend on reported accounting numbers." (Healy and Whalen, 1999).
59. The threshold to conclude that earnings manipulation occurred pursuant to a Beneish Manipulation Index is -1.78. The theory states that any score of -1.78 or greater (i.e., moves toward positive) optimally predicts and categorizes companies as manipulators (as opposed to non-manipulators) based on their financial statements. The holdout dataset (also known as the test dataset) is a random

sample, different than the sample that is used to create the statistical model (the estimation sample) and is used to validate the statistical model⁴. The probability of a company engaging in earnings management increases exponentially as the score increases (i.e., moves toward positive). The relationship between a Beneish Manipulation Index (BMI) and the likelihood of earnings management relative to the -1.78 threshold score is provided in Figure 1 below.

Figure 1 – The Likelihood of Earnings Management Relative to the -1.78 Threshold Score



60. Figure 1 shows that, for example, a company with a Beneish Manipulation Index score of -1.48 is 1.85 times more likely to engage in earnings management than a company with a Beneish Manipulation Index score of -1.78. A company with a Beneish Manipulation Index score of -1.28 is 2.67 times more likely to engage in earnings management than a company with a Beneish Manipulation Index score of -1.78. A company with a Beneish Manipulation Index score of -1.08 is 3.73 times more likely to engage in earnings management than a company with a Beneish Manipulation Index score of -1.78.

⁴ Beneish, Lee and Nichols (2013, page 60) demonstrate that, using the -1.78 threshold score, they were able to accurately predict earnings management for 71% of well-known fraud cases over 1998-2002 (including Cendant Corporation, Enron, Global Crossing, Qwest Communications International and several other famous cases). Precision in the prediction of 71% of the outcomes is considered to be very good. Moreover, using a sample of 43,534 observations between 1993 and 2010, Beneish, Lee and Nichols (2013, Pages 69-73) show the high efficacy of the model in a period subsequent to the period used in Beneish (1999).

(2) High Probability of Earnings Management

61. As mentioned, based on Beneish (1999) and Beneish, Lee and Nichols (2013), an index of -1.78 or greater indicates a high probability of earnings management. Moreover, based on Beneish, Lee and Nichols (2013, Table A1, Page 77) an index greater than -1.84 would indicate anomalies that would fall into the top 3.1% for all publicly traded companies.
62. In the case at hand, my Beneish Manipulation Index analysis scores for Lightspeed are of -1.27 in 2019, -1.08 in 2020, and -1.49 in 2021, as appears from Table 1 below. Each and all of these index scores are greater than the -1.78 threshold score and represent, based on Figure 1, respectively, a 2.7 times, 3.75 times and 1.82 times, higher likelihood of earnings management than the -1.78 threshold value.
63. Lightspeed’s Beneish Manipulation Index score for each year during the Class Period is therefore also significantly higher than the index score of -1.84 of public companies (Beneish, Lee and Nichols (2013, Table A1, Page 77)), putting Lightspeed at the very top end of the bell curve, representing a high probability of earnings management in the Company’s financial statements in 2019, 2020 and 2021 (beginning on April 1, 2019 and ending on March 31, 2022).
64. Furthermore, there is an 8.4 times greater likelihood that earnings management occurred at a company with Beneish scores greater than -1.78 in three consecutive years (such as Lightspeed during the Class Period) than at a company with a -1.78 index score for a single year.

Table 1 - Beneish Manipulation Index Analysis for Lightspeed Financial Statements 2019-2021

Weighted Predictor Ratios	2019	2020	2021
Days Receivables Index	0.59200	1.23592	0.61753
Gross Margin Index	0.54724	0.62214	0.60820
Asset Quality Index	1.65743	0.50540	0.48907
Sales Growth Index	1.38937	1.63948	2.20607
Depreciation Index	0.15703	0.09775	0.08747
Sell. & Admin. Exp. Index	-0.17237	-0.16225	-0.14621
Leverage Index	-0.36129	-0.10587	-0.24932
Total Accruals/Total Assets	-0.24352	-0.06934	-0.26006
Constant	-4.84	-4.84	-4.84
Value of y	-1.27410	-1.07677	-1.48724

65. IFRS Conceptual Framework, QC12 states that *“To be useful, financial information must not only represent relevant phenomena, but it must also faithfully represent the phenomena that it purports to represent. To be a perfectly faithful representation, a depiction would have three characteristics. It would be complete, neutral and free from error.”*
66. IFRS Conceptual Framework, QC14 defines “neutral depiction” as: *“A neutral depiction is not slanted, weighted, emphasised, de-emphasised or otherwise manipulated to increase the probability that financial information will be received favourably or unfavourably by users.”*
67. Like the IFRS Conceptual Framework, IAS 1 *Presentation of financial statements* requires that *“Financial statements shall present fairly the financial position, financial performance and cash flows of an entity. Fair presentation requires the faithful representation of the effects of transactions, other events and conditions in accordance with the definitions and recognition criteria for assets, liabilities, income and expenses set out in the Framework. The application of IFRSs, with additional disclosure when necessary, is presumed to result in financial statements that achieve a fair presentation”*. (15)
68. Earnings management is contrary to each and all norms listed above, because it violates the requirement of faithful representation of accounting information and it reports earnings in a slanted, weighted, emphasised, de-emphasised or otherwise manipulated way to increase the probability that financial information will be received favourably by users.
69. The high probability that earnings management occurred at Lightspeed during the Class Period also raises a high probability that Lightspeed’s disclosures are in violation of CSA (2008) *Companion Policy 52-109CP to National Instrument 52-109 Certification of Disclosure in Issuers' Annual and Interim Filings* (Companion Policy), which states:
- “In order to have reliable financial reporting and financial statements to be prepared in accordance with the issuer’s GAAP, the amounts and disclosures in the financial statements must not contain any material misstatement”*. (Companion Policy, 4.3)
70. A violation of accounting standards due to earnings management is material, as discussed below.

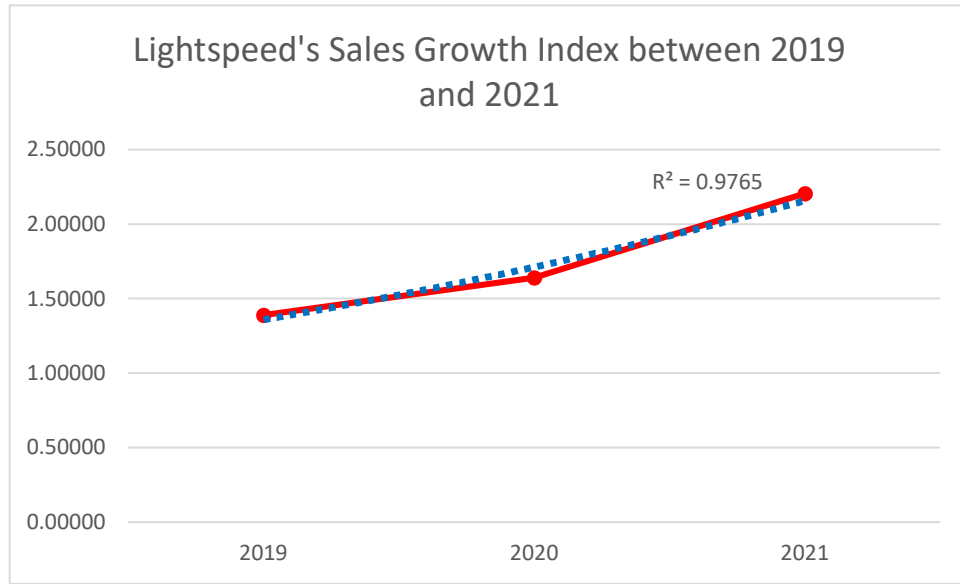
(3) High Probability of Revenue Inflation

71. My Beneish Manipulation Index analysis further revealed a high probability of revenue manipulations at Lightspeed in every year from 2019 to 2021 (from April 1, 2019 to March 31, 2022).
72. The Sales Growth Index is an index generated in the context of a Beneish analysis, as appears from Table 1 above. It measures a company's growth in sales between two consecutive years. Where the Sales Growth Index is over 1 in each year and monotonically increases at an accelerated rate, as in the case at hand, the theory (Beneish (1999, Table 3, Page 29) dictates that there is a significant probability that revenue or earnings manipulation has occurred (see my results in Table 1 above and in Figure 2 below)⁵.
73. The actual Sales Growth Index in Figure 2 is the convex solid red line whereas the trend line is the dotted blue line. The convexity of the actual index (the solid red line) demonstrates the accelerated rate of growth of this index. This is further confirmed by the trend line (the dotted blue line in Figure 2), which demonstrates an exponentially increasing upward trend of the index, with R² of 97.7%, i.e., the trend line explains 98% of the variability of the data⁶.

⁵ This is confirmed by my quarterly Beneish Manipulation Index analysis of Lightspeed's financial statements from Q1 2019 (ending on June 30, 2019) to Q2 2021 (ending on September 30, 2021). This analysis shows that the Sales Growth Index is over 1 in all quarters except Q1 2020 (ending on June 30, 2020). Beneish's study (1999) is based on annual statements only and, as such, analyzing the Index for quarterly statements is used in this report only to confirm the analysis laid out in Table 1.

⁶ R² in statistics is the proportion of the variation of the dependent (explained) variable that is predictable by the statistical model. The higher the R², the better the prediction of the model, with 100% being the highest. An R² of over 50% is considered to be very good, an R² of over 90% is considered to be excellent. Greater accuracy would be achieved with a larger sample size in this case.

Figure 2 - Lightspeed's Sales Growth Index between 2019 and 2021



74. The first index in the Beneish Manipulation Index, the Days Receivable Index, is the element that indicates possible revenue inflation as it gauges whether receivables and revenues are out of balance in two consecutive years by comparing the rate of change in receivables with the rate of change in revenues (Beneish, 1999, page 26). Sales and receivables should grow in tandem (Beneish, 1999, page 26). Consequently, when receivables grow at a higher rate than sales, yielding a Days Receivable Index of over 1, it suggests revenue inflation (Beneish, 1999, page 26).
75. Table 1 shows that Lightspeed’s revenues and accounts receivables are out of balance in 2020 as the Days Receivable Index is 1.24.
76. When both the Sales Growth Index and the Days Receivable Index indices are close to 1 or above, it indicates that sales are growing explosively (Sales Growth Index is over 1) and the disparity between sales and receivables is increasing even more (Days Receivable Index is over 1).
77. In 2020, this pattern of high probability of revenue manipulation is even more pronounced because both the Days Receivable Index and the Sales Growth Index are over 1 (highlighted in Table 1 above), capturing an exponential increase in sales and an even greater increase in accounts receivable. Further insights on the findings from the Beneish Manipulation Index analysis on the high probability of revenue manipulations are provided in paragraphs 113-156.

78. According to IFRS 15 *Revenue from contracts with customers*, “... the core principle of this Standard is that an entity shall recognise revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services.” (IFRS 15, 2). Based on this standard, revenue can be recognized only if all of the following criteria are met:

“(a) the parties to the contract have approved the contract (in writing, orally or in accordance with other customary business practices) and are committed to perform their respective obligations;

(b) the entity can identify each party's rights regarding the goods or services to be transferred;

(c) the entity can identify the payment terms for the goods or services to be transferred;

(d) the contract has commercial substance (ie the risk, timing or amount of the entity's future cash flows is expected to change as a result of the contract); and

(e) it is probable that the entity will collect the consideration to which it will be entitled in exchange for the goods or services that will be transferred to the customer. In evaluating whether collectability of an amount of consideration is probable, an entity shall consider only the customer's ability and intention to pay that amount of consideration when it is due. The amount of consideration to which the entity will be entitled may be less than the price stated in the contract if the consideration is variable because the entity may offer the customer a price concession (see paragraph 52).” (IFRS 15, 9)

79. Revenue manipulation violates IFRS 15.

80. Moreover, revenue manipulation violates the Conceptual Framework, which is the constitution underlying all accounting standards, because it prevents a company from faithfully representing revenue information. Revenue manipulation rather enables a company to present its revenue information in a slanted, weighted, emphasised, de-emphasised or otherwise manipulated way, to increase the probability that financial information will be received favourably by users (IFRS Conceptual Framework QC12).

81. Revenue manipulation also violates IAS 1 *Presentation of financial statements*, which also requires a fair presentation of financial statements and a faithful representation of the effects of transactions, other events and conditions in accordance with the definitions and recognition criteria for assets, liabilities, income and expenses set out in the Framework (IAS 1, 15).
82. In addition, revenue manipulation violates CSA (2008) *Companion Policy 52-109CP to National Instrument 52-109 Certification of Disclosure in Issuers' Annual and Interim Filings* (Companion Policy) because:
- a. The Companion Policy requires fair presentation of the annual and quarterly financial statements and MD&As (4.1 (1)). As such, public companies are required by the Companion Policy to select appropriate accounting policies, apply appropriate accounting policies, disclose financial information that is informative and reasonably reflects the underlying transactions, and provide additional disclosure necessary to provide investors with a materially accurate and complete picture of financial condition, results of operations and cash flows (Companion Policy, 4.1 (2)); and
 - b. The Companion Policy requires that financial reporting be reliable: the amounts and disclosures in the financial statements must not contain any material misstatement (Companion Policy, 4.3).
83. Revenue manipulations and earnings management clearly violate the requirements of the Companion Policy as they result in unreliable financial statements and contain material misstatements.

(4) High Probability of Expense Deferral

84. My analysis using the Beneish Manipulation Index also reveals a high probability of expense deferral by Lightspeed during the Class Period.
85. As Beneish (1999) states, the asset quality index (AQI) is a measure of a company's propensity to defer costs (capitalize them) instead of appropriately recognizing them as an expense (pages 26-27).
86. According to Beneish (1999, page 26-27), if the AQI is greater than 1, there is a high probability that a company is increasing its cost deferral.

87. Table 1 above shows that the AQI for Lightspeed is 1.66 in 2019, which indicates that it is highly probable that Lightspeed manipulated its expense recognition in 2019 (beginning on April 1, 2019 and ending on March 31, 2020)⁷.
88. Expense deferral violates the IFRS Conceptual Framework that requires financial information to be “... relevant *and faithfully represent what it purports to represent.*” QC4). To explain this further, the Conceptual Framework states:
- “To be useful, financial information must not only represent relevant phenomena, but it must also faithfully represent the phenomena that it purports to represent. To be a perfectly faithful representation, a depiction would have three characteristics. It would be complete, neutral and free from error.”* (QC12)
89. As previously discussed, neutral depiction must not be “...*slanted, weighted, emphasised, de-emphasised or otherwise manipulated to increase the probability that financial information will be received favourably or unfavourably by users.*” (QC14)
90. Consequently, any manipulation of expenses and their inappropriate capitalization violates the Conceptual Framework.
91. The Conceptual Framework requires expenses to be “...*recognised immediately in the income statement when an expenditure produces no future economic benefits or when, and to the extent that, future economic benefits do not qualify, or cease to qualify, for recognition in the balance sheet as an asset*”. (4.51)
92. Deferral of expenses instead of immediate recognition violates the Conceptual Framework and IAS 1 *presentation of financial statements*, because it is contrary to the requirements of faithful representation of financial statements.
93. IAS 34 *Interim financial statements* states that “*a cost that does not meet the definition of an asset at the end of an interim period is not deferred in the statement of financial position either to await future*

⁷ My quarterly Beneish Manipulation Index analysis of Lightspeed’s financial statements shows that AQI was greater than 1 in Q3 2020 (ending on December 31, 2020), thus, indicating a highly probable manipulation of expense recognition in that quarter. As discussed in footnote 5, Beneish (1999) is based on annual statements only.

information as to whether it has met the definition of an asset or to smooth earnings over interim periods within a financial year". (IAS 34, 30(b))

94. As such, deferral of expenses in Lightspeed's annual and quarterly reports during the Class Period would constitute a violation of IFRS, especially in light of the high probability of earnings management discussed above.
95. A deferral of expenses in annual and quarterly reports during the Class Period would also be in breach of CSA (2008) *Companion Policy 52-109CP to National Instrument 52-109 Certification of Disclosure in Issuers' Annual and Interim Filings* (Companion Policy), because of the high probability of earnings management above, which would violate the requirements of fair presentation in the financial statements and absence of material misstatement therein. (Companion Policy, 4.3)

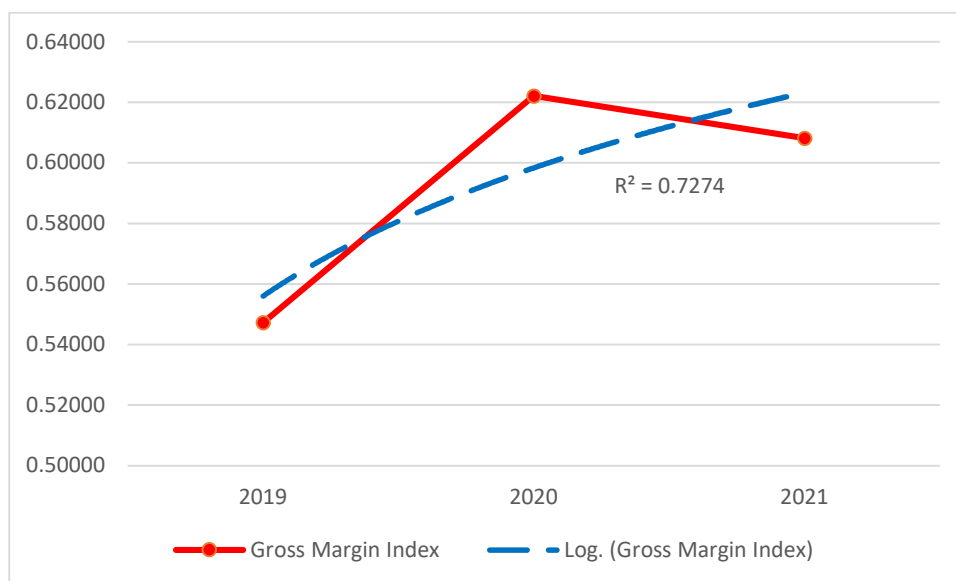
(5) High probability of Lightspeed Misreporting its Cost of Revenues

96. As explained in Beneish (1999), the Gross Margin Index measures the deterioration of the gross margin ratio $\frac{\text{Gross margin}}{\text{Sales}} = \frac{\text{Sales} - \text{Cos of Goods Sold}}{\text{Sale}}$, or the increase in the ratio of $\frac{\text{Cost of Goods Sold}}{\text{Sales}}$.
97. As Lev and Thiagarajan (1993) demonstrate, the deterioration of the Gross Margin ratio is a negative signal of a company's prospects, ensuing an increase in the probability of earnings management by a company.
98. In the case at hand, Table 1 above shows an increase in the Gross Margin Index between 2019 and 2021 (from April 1, 2019 to March 31, 2022) from 0.493 to 0.608, and particularly a 14% jump between 2019 and 2020 from 0.547 to 0.622, which together with the other components of the Beneish Manipulation Index produced a Beneish Manipulation Score of -1.08 in 2021, i.e., a likelihood of earnings management 3.75 times higher than the -1.78 threshold score (cf. Figure 1)⁸.
99. Figure 3 below provides a graphic depiction of the Index between 2019 and 2021. As the actual series shows (the red solid line), the index is upward trending in the three-year period between 2019 and 2021 with a jump of 14% between 2019 and 2020. Further insight is provided by the upward sloping

⁸ My analysis of Lightspeed's Gross Margin Index between 2017 and 2021 showed a 23% increase, demonstrating that the upward trend with this ratio has happened over a long period.

trend line (the broken blue line), which has an R^2 of 73%, i.e., it explains 73% of the variance in the index over time.⁹

Figure 3 - Lightspeed Gross Margin Index between 2019 and 2021



100. Misreporting costs of revenues constitutes a violation of the Conceptual Framework, because it prevents the financial statements from faithfully representing a company's financial position and the results of its operations and, moreover, it presents information in a slanted, weighted, emphasised, de-emphasised or otherwise manipulated way to increase the probability that financial information will be received favourably by users. (IFRS Conceptual Framework QC12)
101. Misreporting costs of revenues is also a violation of IAS 1 *Presentation of financial statements*, which requires, like the Conceptual Framework, fair presentation of financial statements in accordance with GAAP and faithful representation of the effects of transactions, other events and conditions in accordance with the definitions and recognition criteria for assets, liabilities, income and expenses set out in the Framework. (IAS 1, 15)
102. Misreporting costs of revenues further constitutes a violation of *CSA (2008) Companion Policy 52-109CP to National Instrument 52-109 Certification of Disclosure in Issuers' Annual and Interim*

⁹ For further explanations concerning R^2 , please refer to footnote 6 above.

Filings (Companion Policy), because it violates the requirement of fair presentation in the financial statements. (Companion Policy, 4.3)

(ii) Benford's Law Analysis

103. Benford's Law (1938) is a well-established data analysis tool to detect anomalies in reported numbers. It was developed more than 80 years ago and has been used successfully over time in forensic accounting to detect accounting frauds (Nigrini, 1999) and accounting manipulations (Amiram et al., 2015).
104. Benford's Law is used by tax authorities in the US and Canada to detect tax evasion (Mann, 2014, McGregor 2009). It has even been used to detect election fraud (Jimenez, 2011) and misreporting of Covid-19 by countries (Kilani and Georgiou, 2021). It is one of the tools that can be used by auditors in the conduct of their audits.
105. Benford's Law examines whether a series of numbers is anomalous by examining the first and second digits of these numbers. The law states that naturally occurring numbers follow a certain frequency distribution of their digits (for example, the first digit of the amounts shown and the second digit) and, therefore, deviations from those natural frequencies signify that the series is anomalous. For example, Benford's Law states that, for the leading digit, the digit 1 should occur with a 30.1% frequency, the digit 2 with a 17.6% frequency, the digit 3 with a 12.5% frequency, the digit 4 with a 7.9% frequency, the digit 5 with 7.9% frequency, the digit 6 with 6.7% frequency, the digit 7 with a 5.8% frequency, the digit 8 with a 5.1% frequency, and the digit 9 with a 4.6% frequency. For the second digit, the law states that the digit 0 should occur with 12% frequency, the digit 1 should occur with a 11.4% frequency, the digit 2 with a 10.9% frequency, the digit 3 with a 10.4% frequency, the digit 4 with a 10% frequency, the digit 5 with 9.7% frequency, the digit 6 with 9.3% frequency, the digit 7 with a 9% frequency, the digit 8 with a 8.8% frequency, and the digit 9 with a 8.5% frequency. (Hill, 1995)
106. The statistical test that is commonly used for the testing of whether a series of accounting numbers demonstrate anomalous patterns is the Pearson Chi Square Test. Statistically significant numbers indicate anomalous patterns. The null hypothesis (H0) is that the population's distribution of first and second digit numbers conforms to Benford's Law and H1 (the alternate hypothesis) is that population's distribution of first-and second-digit numbers is different from Benford's Law.

Significant statistical tests therefore show that the population's distribution of first-digit numbers conforms to Benford's Law. The commonly used threshold level of statistical significance is 5% or less, which means we are seeking a probability of anomalies of 95% or more. In my analysis, to be even more conservative, I used a significance level of 1% for anomalies (i.e., probability of anomalies of 99% or more)¹⁰.

107. In the case at hand, I conducted a Benford's Law analysis on Lightspeed's reported quarterly income statements from Q3 2018 (ending on December 31, 2018 and presented in the prospectus dated March 7, 2019 on Page F-4) to Q2 2021 (ending on September 30, 2021 and reported on November 4, 2021).
108. My analysis revealed a 99.88% probability of anomalies, as appears from the results of my Benford's Law analysis attached in Appendix III.
109. Such anomalies constitute an additional indication of earnings management (Amiram et al., 2015).
110. As discussed, earnings management leads to violations of the Conceptual Framework (QC 12 and QC14) and of IAS 1 (paragraph 15) because it prevents a company from reporting information faithfully.
111. The anomalies revealed by my Benford's Law analysis are indicative of a violation of CSA (2008) *Companion Policy 52-109CP to National Instrument 52-109 Certification of Disclosure in Issuers' Annual and Interim Filings* (Companion Policy) because of the high probability of earnings management. (Companion Policy, 4.3)
112. A violation of accounting standards due to earnings management is material, as discussed below.

(b) Analysis of Lightspeed's Accounting of Certain Financial Statement Items

113. I conducted an analysis of the following specific items reported by Lightspeed in its financial statements during the Class Period:
 - a. Lightspeed's allowance for bad debts;
 - b. The discrepancy in the reported contribution to revenues of two acquisitions (ShopKeep and Upserve);

¹⁰ The Pearson Chi Square Test is less accurate when the sample size is low. However, this problem is not present in this analysis for Lightspeed as it has 448 observations, as outlined in Appendix III (227 for the first digit and 221 for the second digit).

- c. Lightspeed's use of the gross instead of the net method for its revenue recognition in 2020 and 2021 for the revenues generated by ShopKeep and Upserve; and
- d. The Company's failure to recognize goodwill impairment losses with respect to at least two acquired companies (ShopKeep and Upserve) and its assumptions in testing goodwill impairment.

114. I found that the results of these additional analyses supported my findings from the data analytics tools discussed above and provided additional insights.

i. Analysis of the Allowance for Bad Debt

115. IFRS 15 *Revenue from Contracts with Customers* states that, in order for revenue to be recognized, it must be probable that the company will collect the consideration to which it will be entitled in exchange for the goods or services that will be transferred to the customer. (IFRS 15(e))

116. The allowance for bad debts, often known as allowance for doubtful accounts, measures a company's estimated value of accounts receivable that it does not expect to collect. A high amount of allowance for bad debts demonstrates low collectability of the receivables in that company and, in turn, may show revenue recognition problems contrary to IFRS 15.

117. In this case, my analysis reveals that Lightspeed's allowance for bad debts is anomalously high compared to that of its peer group, both with respect to gross trade receivables and sales. The collectability of Lightspeed's receivables is significantly lower than that of its peers¹¹.

118. In fact, I conducted a statistical analysis of Lightspeed's allowance for bad debt relative to accounts receivables (provided in Panel D of Table 2 below), which showed that Lightspeed's receivables were less collectible than those of 99.99% of the peer group. Similarly, my statistical analysis of Lightspeed's allowance for bad debt relative to sales showed that Lightspeed's receivables were less collectible than 99.99% of peer group.

119. Table 2 Panel A below shows that the ratio of Lightspeed's allowance for bad debt to gross trade receivables is on average 28.7% for 2019-2021, while the peer group's mean ratio, as shown on Panel

¹¹ My selection of peer companies in this analysis is discussed in Appendix IV.

C below, is 3.8%¹². In other words, Lightspeed’s ratio is 7.6 times the peer group’s mean ratio and, thus, Lightspeed’s receivables are 7.6 times less collectible than that of Lightspeed’s peer group. This reveals that Lightspeed was recognizing revenues with very low collectability, in contravention to IFRS 15(e).

120. Table 2 Panel B below shows that the average ratio of Lightspeed’s allowance for bad debts to sales is on average 2.6% for 2019-2021, while the peer group’s mean ratio, as shown on Panel C, is 0.5%¹³. Lightspeed’s ratio is 5.2 times the mean ratio of the peer group, which means that Lightspeed’s receivables are 5.2 times less collectible than those of Lightspeed’s peer group. Again, this demonstrates that Lightspeed was recognizing revenues with very low collectability, in breach of IFRS 15(e).

Table 2 -Analysis of Lightspeed’s Allowance for Bad Debts between 2019 and 2021

Panel A – Lightspeed Ratio of Allowance to Accounts Receivables

Lightspeed	2019	2020	2021
Gross Trade receivables	6,535	7,721	15,477
Loss allowance for bad debts	-1,703	-2,878	-3,519
%	26.1%	37.3%	22.7%

Panel B – Lightspeed Ratio of Allowance to Sales

Lightspeed	2019	2020	2021
Sales	221.7	120.6	77.5
allowance for bad debts	1.70	2.88	3.52
%	0.77%	2.39%	4.54%

Panel C - Lightspeed Ratios of Allowance Relative to Lightspeed’s Peer Group

Average ratios for 2019-2021	Toast	SHIFT4 PAYMENTS	Par	Shopify	Fiserve	NCR	Industry mean ratio	Lightspeed
Ratio of Allowance to Accounts Receivables	14.4%	4.4%	3.3%	6.8%	1.7%	3.2%	3.8%	28.7%
Ratio of allowance to revenues	0.5%	0.6%	0.7%	0.2%	0.3%	0.6%	0.5%	2.6%

¹² I calculated the ratio for each company for each year during 2019-2021, ensuing in three observations per company, and ultimately 18 observations (6 companies times 3 years). Following this, I calculated the mean ratio and standard error for each sample and created a confidence interval at 99.9%. In other words, a lower and an upper value was calculated for each allowance for bad debt ratio at 99.9% probability. Usually, one calculates confidence interval at 95% level. To be more conservative, I used a 99.9% probability.

¹³ The calculations of this ratio followed the same methodology as the one discussed in the previous note.

Panel D -Statistical Analysis of the Allowance for Bad Debt Ratios in Lightspeed’s Peer Group

Variable	Obs	Mean	Std. Err.	[99.9% Conf. Interval]	
Ratio of Allowance to Accounts Receivables	18	3.8%	0.00457	1.98%	5.61%
Ratio of allowance to revenues	18	0.5%	0.000612	0.27%	0.76%

121. It should be noted that the results laid out in the Spruce Report are similar to mine in this regard, although Spruce used a different peer group (Spruce Report, Page 10, Pages 55-57).
122. This conclusion is consistent with my findings pursuant to both my Beneish Manipulation Index and my Benford’s Law analyses. Lightspeed does not appear to have provided a faithful presentation of its situation in its financial statements.
123. This also constitutes a red flag in light of CSA (2008) *Companion Policy 52-109CP to National Instrument 52-109 Certification of Disclosure in Issuers' Annual and Interim Filings* (Companion Policy), because revenue manipulation would violate the requirement of fair presentation in the financial statements and, in turn, the requirement that the amounts and disclosures in the financial statements must not contain any material misstatement. (Companion Policy, 4.3)
124. In conclusion, my analysis of Lightspeed’s allowance for bad debts from 2019-2021 reveals that it recognized revenues in violation of accounting standards.

ii. Discrepancy in the Reported Contribution to Revenues of ShopKeep and Upserve in 2020

125. According to Lightspeed’s Q3 2020 MD&A, both ShopKeep and Upserve each contributed less than 5% to the Company’s quarterly revenues. This MD&A states:

“ShopKeep's contribution to our Condensed Interim Consolidated Statements of Loss and Comprehensive Loss for the three months ended December 31, 2020 was less than 5% of total revenues and total net loss. Additionally, as at December 31, 2020, ShopKeep's current assets and current liabilities were approximately 10% of consolidated current assets and current liabilities, and its non-current assets and non-current liabilities were under 10% of consolidated non-current assets and non-current liabilities, respectively.” (Lightspeed Q3 2020 MD&A, Pages 31-32 with my emphasis).

126. As Lightspeed's revenues in Q3 2020 were \$57.611 million, this translates to a contribution from ShopKeep to Lightspeed's revenues of less than $\$57.611 \text{ million} \times 5\% = \2.9 million .

*"Upserve's **contribution** to our Condensed Interim Consolidated Statements of Loss and Comprehensive Loss for the three months ended December 31, 2020 was **less than 5% of total revenues** and total net loss. Additionally, as at December 31, 2020, Upserve's current assets and current liabilities were below 10% of consolidated current assets and current liabilities, and its non-current assets and non-current liabilities were below 5% of consolidated non-current assets and non-current liabilities, respectively."* (Lightspeed Q3 2020 MD&A, Page 32, with my emphasis).

127. As Lightspeed's revenues in Q3 2020 were \$57.611 million, this translates to a contribution from Upserve to Lightspeed's revenues of less than $\$57.611 \text{ million} \times 5\% = \2.9 million .

128. Consequently, Upserve and ShopKeep's combined contribution to Lightspeed's revenues in Q3 2020 was less than $\$2.9 \text{ million} + \$2.9 \text{ million} = \$5.8 \text{ million}$.

129. However, according to the same MD&A, in the same quarter, the combined contribution of these two companies to Lightspeed's revenues was about \$7.4 million: *"Software and payments revenue for the three months ended December 31, 2020 increased by \$24.2 million or 85% as compared to the three months ended December 31, 2019. The increase was primarily due to growth in our subscription customer base including customers from the acquisitions of **ShopKeep and Upserve, which combined accounted for \$7.4 million of software and payments revenue in the quarter**, and when further excluding acquisitions which were not included in the same quarter last year, software and payments revenue grew 47% in the three months ended December 31, 2020."* (Lightspeed Q3 2020 MD&A, Page 16, with my emphasis)

130. The discrepancy between the two amounts representing ShopKeep and Upserve's combined contribution to Lightspeed's revenues in its Q3 2020 MD&A is $\$7.4 \text{ million} - \$5.8 \text{ million} = \$1.6 \text{ million}$, or 22% or more of \$7.4 million. A 22 % discrepancy is material by any quantitative criteria.

131. *CPA Canada's Management's Discussion and Analysis - Guidance on preparation and disclosure* (2014) requires MD&As to be balanced, complete and fair, as well as provide information that is material to the decision-making needs of users (Principle 3). The Guidance also indicates that an MD&A must present faithfully the substance of what it purports. Faithful representation according

to the IASB Conceptual Framework requires the financial information to be complete, neutral (i.e., without bias) and free from error.

132. CSA (2008). *Companion Policy 52-109CP to National Instrument 52-109 Certification of Disclosure in Issuers' Annual and Interim Filings* also requires fair presentation of the MD&A. (4.1 (1))
133. Here, the discrepancy between the numbers in Lightspeed's MD&A (combined contribution to revenue of \$7.4 million) and its income statement (maximum combined contribution of to revenues of \$5.8 million) demonstrates either a violation of the Companion Policy, or of reported revenues in the quarterly income statement.
134. This conclusion is consistent with my findings pursuant to both my Beneish Manipulation Index and my Benford's Law analyses. It further indicates that there is a high probability that Lightspeed did not report its revenues in accordance with IAS 1.15 *presentation of financial statements*, or with the Conceptual Framework (QC12 and QC14). Lightspeed does not appear to have provided a faithful presentation of its situation in its financial statements.
135. A violation of accounting standards due to a discrepancy in the reported contribution to revenues of ShopKeep and Upserve in Q3 2020 is material, as discussed below.

iii. Lightspeed's Use of the Gross Instead of Net Revenue Method in 2020 and 2021

136. Based on IFRS 15 *Revenue from contracts with customers*, “*When another party is involved in providing goods or services to a customer, the entity shall determine whether the nature of its promise is a performance obligation to provide the specified goods or services itself (i.e., the entity is a **principal**) or to arrange for those goods or services to be provided by the other party (i.e., the entity is an **agent**). An entity determines whether it is a principal or an agent for each specified good or service promised to the customer.*” (IFRS 15, B34 Principal versus agent considerations, with my emphasis)
137. The choice of the revenue recognition method as net or gross is based on the classification of the seller as an agent or a principal.
138. IFRS 15 describes the “net” method as follows: “*When (or as) an entity that is an agent satisfies a performance obligation, the entity recognises revenue in the amount of any fee or commission to*

*which it expects to be entitled in exchange for arranging for the specified goods or services to be provided by the other party. An entity's fee or commission might be the **net amount** of consideration that the entity retains after paying the other party the consideration received in exchange for the goods or services to be provided by that party.*" (IFRS 15, B36 with my emphasis)

139. In contrast, IFRS 15 states that the "gross" method is: "*When (or as) an entity that is a principal satisfies a performance obligation, the entity recognises revenue in the **gross amount** of consideration to which it expects to be entitled in exchange for the specified good or service transferred.*" (IFRS 15, B35B with my emphasis)

140. Based on the documents from the acquisitions of ShopKeep and Upserve, they consider themselves to be agents and thus used the net accounting method for revenue recognition prior to their acquisition by Lightspeed.

141. ShopKeep states:

*"Processing revenue — primarily consists of referral fee arrangements with third-party payment processors, which are generally annual contracts. The majority of processing revenue is generated from the Company's ShopKeep Payments offering, by merchants using the Company's POS product. In ShopKeep Payments arrangements, the Company refers its merchant customers to a third-party payment processor who processes the credit and debit card sales made by the merchant using the Company's POS product. Fees are variable and dependent on the dollar value and volume of transactions processed by merchants. The Company's obligation in these arrangements is to refer merchant transactions to the processor each day and revenue is recognized over time; variable consideration is recognized over time based on the fees for each day's transactions processed by the third-party. **The Company acts as an agent in these arrangements and revenue is recognized in the amount of the referral fees earned by the Company.**"* (ShopKeep's financial statements for the years ended December 31, 2019 and 2018, Note 3, Summary of Significant Accounting Policies, Page 15, included in Lightspeed Business Acquisition Report dated February 8, 2021, with my emphasis).

142. IFRS 15 states that when a company arranges for goods or services to be provided by another party, it is an agent (IFRS 15.B34 & IFRS 15.B36). The description of the processing revenues in the

previous paragraph shows that ShopKeep was clearly an agent prior to its acquisition by Lightspeed as ShopKeep merely referred its merchant customers to a third-party payment processor who processed the credit and debit card sales made by the merchant using the Company's POS product. As an agent, ShopKeep had to use the net method to recognize these revenues.

143. Upserve, like ShopKeep, considers itself to be an agent. Consequently, as required by IFRS 15, it used the net method to report its revenues prior to the acquisition:

*“Revenue consists of consideration earned on (a) subscriptions to the various software-as-a-service (“SaaS”) offerings provided by the Company (i.e., Upserve Point of Sale, Upserve HQ, Upserve Online Ordering); (b) sales of hardware used in connection with Upserve’s SaaS offerings; (c) professional services (e.g. implementation services); (d) diner-facing service fees assessed in connection with Upserve Online Ordering transactions; and (e) Upserve Payments payment processing services (both on a per-transaction and a per month basis). With respect to Upserve Payment revenue, related revenues are transaction based and priced either as a fixed fee per transaction or calculated as a percentage of the transaction value. **Fees collected with respect to Upserve Payments are charged for the processing services provided, and do not include the gross sales price paid by the diner to the restaurant. The Company offsets transactional processing revenues with Card Organization fees (e.g., interchange fees), and records revenue from transactions on a net basis.**”* (Upserve’s financial statements for the years ended December 31, 2019 and 2018, Note 23, Summary of Significant Accounting Policies, Page 10, included in Lightspeed Business Acquisition Report dated February 8, 2021, with my emphasis).

144. IFRS 15.B36 states: *“An entity that is an agent does not control the specified good or service provided by another party before that good or service is transferred to the customer. When (or as) an entity that is an agent satisfies a performance obligation, the entity recognises revenue in the amount of any fee or commission to which it expects to be entitled in exchange for arranging for the specified goods or services to be provided by the other party.”*

145. Upserve’s description of its processing revenues shows that it is an agent according to IFRS 15.B34 and IFRS 15.B36, as it does not control the specified service provided by the third parties before the service is transferred to customers and it receives from the third parties either a fixed fee per

transaction, or a given percentage of the transaction value. As an agent, Upserve had to use the net method to recognize these revenues.

146. Based on the above analysis, ShopKeep and Upserve served as agents and therefore had to use the net method to account for reporting revenues. Based on the information in the public reports of Lightspeed, the revenues derived from ShopKeep and Upserve's businesses subsequent to their acquisition by Lightspeed continued to be generated from an agent as defined in IFRS 15.
147. Moreover, the revenues from the acquisitions of ShopKeep and Upserve were material¹⁴. Therefore, at the very least with respect to these revenues, IFRS 15 required Lightspeed to continue using the net method to account for these revenues, as an agent.
148. Lightspeed, however, used the gross method to account for all its Payments services, which include ShopKeep's and Upserve's revenues, as the following two paragraphs show.

(b) "Transaction-based revenue

*The Company offers to its customers payment processing services, through connected terminals and online, that facilitate payment for goods and services sold by the customer to its consumers. The Company recognizes revenue from payment processing services at the time of the transaction on a **gross basis**, it having been determined that the Company is the **principal** in the arrangement."* (Lightspeed 2021 annual financial statements, Note 3 Significant accounting policies, Page 11, with my emphasis)

(c) "Lightspeed Payments

*The Company recognizes revenue from Lightspeed Payments at a point in time, at the time of the transaction, on a **gross basis**, as it has been determined that the Company is the **principal** in the arrangement."* (Lightspeed 2020 annual financial statements, Note 3 Significant accounting policies, Page 11, with my emphasis)

149. Consequently, in 2020 and 2021, Lightspeed changed the revenue recognition method from net to gross with regard to the revenues stemming from the Shopkeep and Upserve acquisitions, in contravention to IFRS 15.

¹⁴ For example, according to Lightspeed's Q4 2020 MD&A, ShopKeep and Upserve contributed \$28.3 million in that quarter (Page 15). The revenues in Q4 2020 were \$82.4 million. Therefore, these two companies contributed 34% to Lightspeed's revenues in Q4 2020.

150. I note that the Spruce Report reaches the same conclusion as mine (Pages 8, 107, and 109 of the Spruce Report).

151. In addition, the change in the revenue recognition method from net to gross with respect to the revenues generated by ShopKeep and Upserve contravenes IAS 8 *Accounting policies, changes in accounting estimates and errors*, which states that changes in accounting policies are allowed only if the change:

“(a) is required by an IFRS; or

(b) results in the financial statements providing reliable and more relevant information about the effects of transactions, other events or conditions on the entity's financial position, financial performance or cash flows.” (IAS 8, 14)

152. Moreover, such changes require a retrospective application when it is practical to do so (IAS 8, 22-27) and extensive disclosure:

“When a voluntary change in accounting policy has an effect on the current period or any prior period, would have an effect on that period except that it is impracticable to determine the amount of the adjustment, or might have an effect on future periods, an entity shall disclose:

(a) the nature of the change in accounting policy;

(b) the reasons why applying the new accounting policy provides reliable and more relevant information;

(c) for the current period and each prior period presented, to the extent practicable, the amount of the adjustment:

(i) for each financial statement line item affected; and

(ii) if IAS 33 applies to the entity, for basic and diluted earnings per share;

(d) the amount of the adjustment relating to periods before those presented, to the extent practicable; and

(e) if retrospective application is impracticable for a particular prior period, or for periods before those presented, the circumstances that led to the existence of that condition and a description of how and from when the change in accounting policy has been applied.

Financial statements of subsequent periods need not repeat these disclosures.” (IAS 8, 29)

153. In the case at hand, Lightspeed did not disclose its accounting change in accordance with IAS 8.
154. Furthermore, because this change is not the result of a new IFRS, Lightspeed could only make this change if “*results in the financial statements providing reliable and more relevant information about the effects of transactions, other events or conditions on the entity's financial position, financial performance or cash flows*” (IAS 8, 14). This condition was not met here because the accounting change was to a method contravening GAAP.
155. As such, the change in the accounting from net to gross for the revenues generated by ShopKeep and Upserve is a material violation of both IAS 8 and IFRS 15.
156. My finding of violation of accounting standards is consistent with my findings pursuant to both the Beneish Manipulation Index, which showed a high probability of revenue inflation and earnings management, and the Benford’s Law analyses, which demonstrated a high probability of anomalies in Lightspeed’s reporting.

iv. Lightspeed’s Failure to Recognize Goodwill Impairment Charges in 2020 and 2021

1- Goodwill Impairment Charge Recognition

157. Using the Business Acquisition Report dated February 8, 2021, I calculated the following average quarterly revenues for ShopKeep and Upserve prior to their acquisition by Lightspeed:

Table 3 - Calculated average quarterly revenues in 2019 for ShopKeep and Upserve

	ShopKeep	Upserve
Source	Page 5 of Schedule “A”, Audited consolidated financial statements of ShopKeep as of and for the years ended December 31, 2019, and 2018 Included in the Business Acquisition Report from February 8, 2021	Page 4 of Schedule “C” Audited consolidated financial statements of Al Dente Intermediate Holdings, LLC ¹⁵ as of and for the years ended December 31, 2019 and 2018. Included in the Business Acquisition Report from February 8, 2021
Annual revenues in 2019 (A)	\$54.3 million	\$44.7 million

¹⁵ Based on Lightspeed’s Business Acquisition Report dated February 8, 2021, **2.1 Nature of Businesses Acquired**, the name Upserve in Lightspeed’s reports refers to Al Dente Intermediate Holdings, LLC and its subsidiaries.

Divide by the number of quarters in the period (B)	4	4
Calculated average quarterly revenues for 2019 (C) = (A)/(B)	\$13.6 million	\$11.2 million
Calculated maximum contribution of the company in Q3 2020 (Paragraphs 125-129 of this report) (D)	\$2.9 million	\$2.9 million
Revenue underperformance in Q3 2020 = (D)-(C)	\$ -10.7 million (-78%)	\$ - 8.3 million (-72%)

158. Table 3 shows that ShopKeep and Upserve’s combined contribution to Lightspeed’s revenues was materially lower than the Company had expected (respectively, 78% and 72% worse than the \$13.6 million and \$11.2 million expected at the minimum for Shopkeep and Upserve, respectively, based on the average quarterly revenues in 2019, not even considering some growth in 2020).

159. The goodwill from the acquisition of these companies should therefore have been written down and recognized as a goodwill impairment loss in 2020 (the year ending on March 31, 2021), in accordance with the following accounting standards.

160. IAS 36 *Impairment of assets* states that:

“An asset is impaired when its carrying amount exceeds its recoverable amount.” (8):

“An entity shall assess at the end of each reporting period whether there is any indication that an asset may be impaired. If any such indication exists, the entity shall estimate the recoverable amount of the asset.” (IAS 36, 9)

161. One of the criteria in IAS 36 for the determination of asset impairment is that *“evidence is available from internal reporting that indicates that the economic performance of an asset is, or will be, worse than expected.”* (IAS 36, 12(g))

162. IAS 34 *Interim financial reporting* states that *“the principles for recognising and measuring losses from inventory write-downs, restructurings, or impairments in an interim period are the same as those that an entity would follow if it prepared only annual financial statements.”* (30(a))

163. In other words, the testing for impairment of goodwill must be done in both the Company’s quarterly and annual reports.

164. IAS 34 further specifically states that “a cost that does not meet the definition of an asset at the end of an interim period is not deferred in the statement of financial position either to await future information as to whether it has met the definition of an asset or to smooth earnings over interim periods within a financial year.” (30(b))
165. The lower-than-expected performance of ShopKeep and Upserve had to be recorded as an impairment loss in Lightspeed’s income statements and a reduction of the amount of goodwill shown in the balance sheet (a write-down or write-off) had to be effected in both 2020 and 2021.
166. Failure to do so constitutes a violation of IAS 34 and IAS 36.
167. In addition, such a failure violates the fair and faithful representation of financial statement requirements set out in the Conceptual Framework, IAS 1 *Presentation of financial statements*, and CSA (2008) *Companion Policy 52-109CP to National Instrument 52-109 Certification of Disclosure in Issuers' Annual and Interim Filings* (Companion Policy).
168. This finding is also consistent with the conclusions of my Beneish Manipulation Index’s analysis, discussed above with respect to expenses deferral.
169. A failure to recognize a goodwill impairment charge is material, as discussed below.

2- Lightspeed’s Goodwill Impairment Testing Methodology

170. In its 2020 annual financial statements, Lightspeed describes its goodwill impairment testing methodology as follows:

Table 4 – Lightspeed’s Goodwill Impairment Test in 2020 (with my emphasis)

“Impairment analysis

The following key assumptions were used to determine recoverable amounts for the impairment tests performed as at March 31, 2020:

Assumptions	Pre-tax discount rate	Terminal Value Multiple	Perpetual Growth Rate
	28%	4	30%

Fair value is based on a discounted cash flow model involving several key assumptions that were used in the test for goodwill impairment. Adjusted EBITDA was determined as a valuation basis, measuring a five-year projection based on actual year-end amounts and management’s best estimates. A terminal value was calculated based on revenues, with a weighted average cost of capital reflecting the current market assessment being used. The cost of sale was assumed to be 2.5% of the fair value amount.

The enterprise value (carrying amount) was compared with the fair value less cost of sale to test for impairment. Tests performed on the Segment demonstrated no impairment of goodwill for the years ended March 31, 2020, and 2019.

The factors used in the impairment analysis are inherently subject to uncertainty. Management believes that it has made reasonable estimates and assumptions to determine the fair value of the Segment. If actual results are not consistent with these estimates and assumptions, goodwill may be overstated, which could trigger an impairment charge to the consolidated financial statements.

Sensitivity of assumptions

The following table presents the change in the discount rate or in the perpetual growth rate used in the most recently performed tests that would have caused an impairment in the carrying amount of the Segment as at March 31, 2020:

Assumptions	Incremental increase in pre-tax discount rate	Decrease in terminal value multiple	Incremental decrease in perpetual growth rate
Assumptions	22%	55%	30%

(Lightspeed 2020 Annual Financial Statements, Note 18. Goodwill, Page 34)

171. The equivalent note in Lightspeed’s 2021 annual financial statements is as follows:

Table 5 – Lightspeed’s Goodwill Impairment Test in 2021 (with my emphasis)

“Impairment analysis

The Company completed its annual impairment test of goodwill as of December 31, 2021 using a fair value less costs of disposal model. There were no indicators of impairment between December 31, 2021, the date on which the Company completed its annual impairment test of goodwill, and March 31, 2022. Tests performed on the Segment, as defined in note 3, demonstrated no impairment of goodwill for the years ended March 31, 2022 and 2021.

The following key assumptions were used to determine recoverable amount for the impairment test performed during the year ended March 31, 2022:

Assumptions	Pre-Tax Discount Rate	Terminal Value Multiple	Revenue Growth Rate
Assumptions	30 %	8	32 %

Fair value is based on a discounted cash flow model involving several key assumptions that were used in the test for goodwill impairment. Adjusted EBITDA was determined as a valuation basis, measuring a five-year projection based on actual year-end amounts and management’s best estimates. A terminal value was calculated based on revenues, with a weighted average cost of capital reflecting the current market assessment being used. The costs to sell were assumed to be 2.5% of the fair value amount. The carrying value of the Segment was compared with the fair value less cost of sale to test for impairment.

No reasonably possible change in the key assumptions used in determining the recoverable amount would result in any impairment of goodwill.”

(Lightspeed annual statements 2021, Note 18 Goodwill, Pages 36-37).

172. Lightspeed’s testing of goodwill impairment is based on discounted future cash flows (which Lightspeed calculated based on EBITDA) for the next five years, adding the discounted terminal value of the acquired company (representing the value of future cash flows from year 6 until infinity). The terminal value is often the majority of the valuation of an acquired company and therefore its calculation is crucial. It goes without saying that the higher the value of the terminal value, the less likely the goodwill will be impaired. Between 2020 and 2021, Lightspeed substantially changed the way it calculated the present value, using assumptions that substantially increased the terminal value. These substantial changes made it less likely that the goodwill would need to be impaired based on the tests used by the Company.

173. In 2020, terminal value was calculated as [projected sales X 4]. In 2021, Lightspeed used a much higher sales multiple and calculated it as [projected sales X 8], with the multiple being twice the sales multiple used in 2020.

174. The following numerical example illustrates the effect of changing the sales multiple in such a way:

Table 6 –Numerical Example for the Change in Sales Multiple

	2020 method	2021 method
Projected sales in 5 years (A)	100	100
Multiple used (B)	4	8
Terminal value (C)=(A) X (B)	400	800
Discount rate used by Lightspeed	28%	30%
Discount factor for present value ¹⁶ calculation (D)	.291	.269
Discounted factor using present value=(C) X (D)	\$116.4 million	\$ 215.2 million

175. The numerical example in Table 6 above is based on the parameters detailed in the notes to Lightspeed’s annual 2020 and 2021 financial statements. It shows that the transition to a terminal

¹⁶ The present value factor, or discount rate, is calculated as $\frac{1}{(1+discount\ rate)^5}$. For 2020, it is $0.291 = \frac{1}{(1+28\%)^5}$ and for 2021, it is $0.269 = \frac{1}{(1+30\%)^5}$

value based on a sales multiple of 8 in 2021, from 4 in 2020, multiplied the terminal value of the Company by 1.849 between 2020 and 2021¹⁷. The doubling of the sales multiple from 4 to 8 within a year substantially increased the valuation of cash flows and significantly decreased the likelihood of goodwill impairment. No justification was provided by the Company to explain this.

176. Another change in Lightspeed’s goodwill impairment testing methodology between 2020 and 2021 is the increase in the long-term growth rate (sometimes referred to as perpetual growth rate) from 30% to 32%. Note that this long-term growth rate is higher in both years than the discount rate used (28% and 30% in 2020 and 2021, respectively). In my 34 years of teaching valuations, and in all my decades of consulting work on company valuations, I have never seen such high long-term growth rates.
177. To illustrate that Lightspeed used unreasonable assumptions for its goodwill impairment testing, even ignoring the fact that the long-term growth rate exceeds the discount rate, consider the following. Lightspeed’s market capitalization value on July 30, 2022 was around US\$3.2 billion. Assuming that this number grows up every year by 32 percent, the rate used by Lightspeed in 2021, it will become \$13.25 trillion in 30 years ($16.6 = 4 * 1.32^{30}$), 6.7 times Canada’s GDP, which was about US\$1.99 trillion in 2021¹⁸. Based on this flawed logic, Lightspeed will have a market capitalization value in 30 years far greater than the GDP of Canada, 6.7 times in fact.
178. As such, the assumptions used by Lightspeed in its goodwill impairment for both 2020 and 2021 bias the valuations upwards for Lightspeed’s acquired companies. In turn, this biases its tests against the recognition of goodwill impairment charges.
179. IAS 36 *Impairment of Assets* states: “*In using information from financial budgets / forecasts, an entity considers whether the information reflects **reasonable and supportable** assumptions and represents management's best estimate of the set of economic conditions that will exist over the remaining useful life of the asset.*” (IAS 36.38 with my emphasis)

¹⁷ A more general mathematical formula reveals the following. Assume that projected sales in Year 5 is X. The present value of the terminal value based on the 2020 method is $TV_{2020} = .291 * 4X$, compared with $TV_{2021} = .269 * 8X$, based on the 2021 formula. Rearranging this yields the following formula $\frac{TV_{2021}}{TV_{2020}} = \frac{.269 * 8X}{.291 * 4X} = 1.849$

¹⁸ Based on the World Bank data, available at <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=CA>, retrieved on July 30, 2022.

180. Using unreasonable and unsupported assumptions in goodwill impairment tests violates IAS 36 in regard to quarterly statements.
181. It should be noted that the conclusions laid out in the Spruce Report are similar to mine with regard to goodwill impairments (Spruce Report, Pages 8, 63, 66).
182. My analysis leads me to conclude that Lightspeed violated accounting standards, used unreasonable and unsupported assumptions in testing goodwill impairment, and failed to record goodwill impairment charges in regard to ShopKeep and Upserve.

(c) Materiality of the Accounting Standards Violations

183. Misreporting and flawed disclosures are sanctionable if they are “material”, as indicated by IAS 1 *Presentation of Financial Statements*.
184. The definition of materiality changed during the Class Period.
185. Until January 1, 2020, materiality was defined as follows in IAS 1 *Presentation of financial statements*:

“Material omissions or misstatements of items are material if they could, individually or collectively, influence the economic decisions that users make on the basis of the financial statements. Materiality depends on the size and nature of the omission or misstatement judged in the surrounding circumstances. The size or nature of the item, or a combination of both, could be the determining factor.” (Paragraph 7)

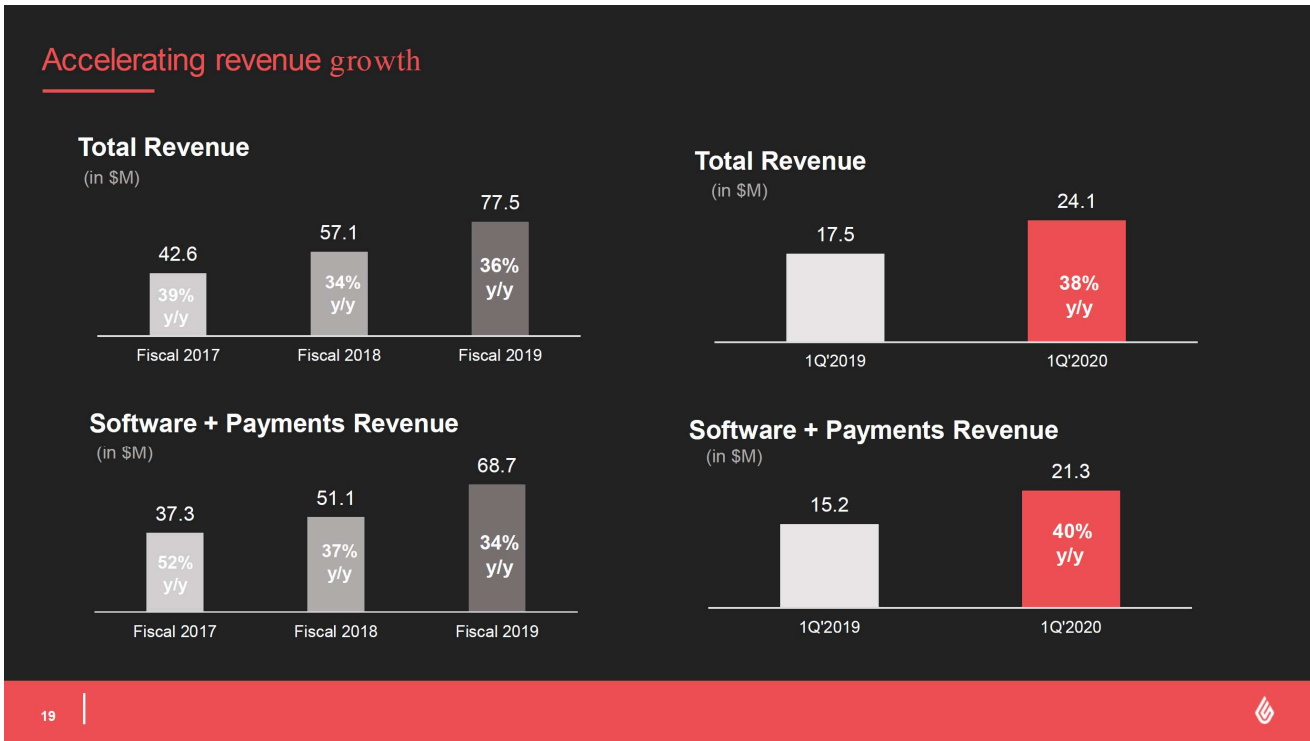
186. On January 1, 2020, the definition of materiality included in IAS 1, *Presentation of financial statements* was revised to read as follows (with my emphasis). This definition was applicable until the end of the Class Period.

“Information is material if omitting, misstating or obscuring it could reasonably be expected to influence decisions that the primary users of general purpose financial statements make on the basis of those financial statements, which provide financial information about a specific reporting entity.

Materiality depends on the nature or magnitude of information, or both. An entity assesses whether information, either individually or in combination with other information, is material in the context of its financial statements taken as a whole.” (Paragraph 7)

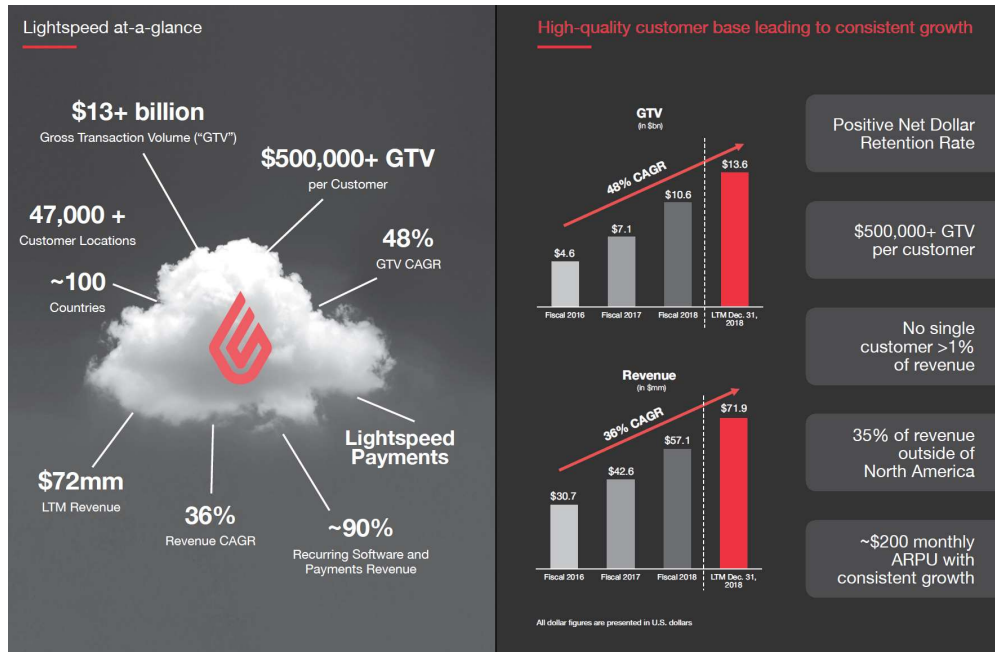
187. Generally, in cases of earnings management or revenue manipulations, violations of accounting standards are material.
188. As mentioned, earnings management is the manipulation of financial reporting by companies to provide false information about the company's underlying performance, or to "influence contractual outcomes that depend on reported accounting numbers." (Healy and Whalen, 1999)
189. The main idea behind revenue manipulation or earnings management is to influence decisions of users of financial statements. It is therefore always material, irrespective of the applicable definition of materiality.
190. As discussed above, there is a high probability that earnings management and revenue manipulations occurred at Lightspeed during the Class Period.
191. The revenue and expense accounting violations (and highly probable violations) identified herein are (or would be) material:
 - a. Violations in connection with changes in a company’s growth prospects, revenue amounts, and revenue trends are generally material as they could be expected to influence the economic decisions of users of a company’s financial statements and disclosures;
 - b. This is acutely true, as Lightspeed itself recognizes by the prominence given to its revenue growth, in the context of it being self-described as a SaaS company, as further discussed below;
 - c. Acquisitions are also at the core of Lightspeed’s growth strategy. Impairment charges on goodwill tied to these acquisitions could influence the economic decisions of users and failure to record such charges is material.
192. In order to portray itself as a growth company, Lightspeed emphasized its revenue growth throughout the Class Period in its MD&As, prospectuses, earnings calls and investors presentations, as shown in the examples below.
193. In its August 15, 2019 Investor Presentation, Lightspeed depicts accelerating revenue growth as a major factor in its success:

Figure 4 - Accelerating Revenue Growth
(Investor Presentation, August 15, 2019, Page 19)



194. Another example of the prominence of revenues and revenue growth in Lightspeed’s disclosures is the following figure (Figure 5) from its March 7, 2019 prospectus:

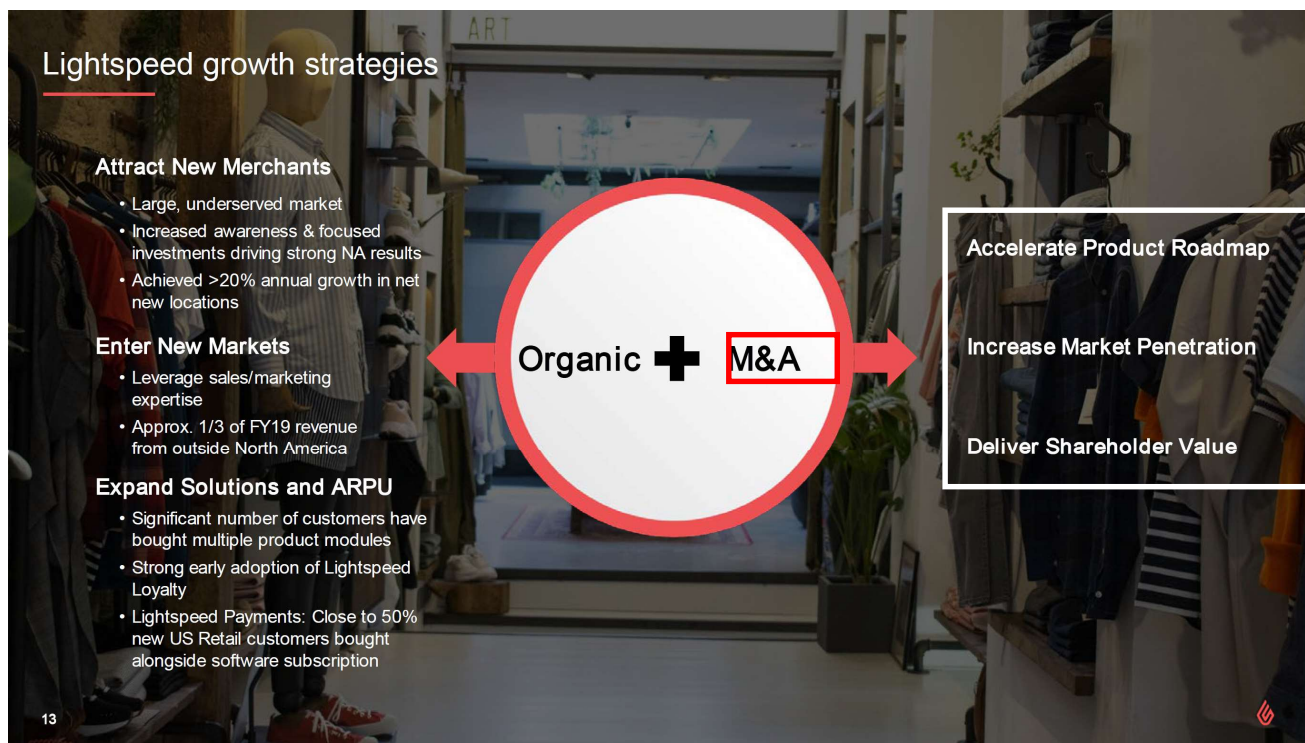
Figure 5 – Lightspeed At-A-Glance



195. Throughout the Class Period, Lightspeed has stated that acquisitions of companies to boost future growth form an integral part of its core strategy. As of April 1, 2019, the Company acquired numerous companies, including Chronofrog, iKentoo, Kounta, Gastofix, ShopKeep, Upserve, Vend, and Nuorder. Because of the key and core nature of these acquisitions, failure to take impairments where required is material as it could be expected to influence the economic decisions of users.

196. This acquisition spree is central to Lightspeed's strategy as Figure 6 shows:

Figure 6 - Lightspeed's Growth Strategies (Investor Presentation, August 15, 2019, Page 13)



197. Another example of the importance of acquisitions for Lightspeed's strategy is the following excerpt from the Company's Q4 2020 MD&A (with my emphasis):

*“During Fiscal 2021, we completed the acquisitions of **ShopKeep**, a leading cloud commerce platform provider for both retail and hospitality, and **Upserve**, a leading restaurant management cloud software company, both based in the United States. **These acquisitions expanded Lightspeed's U.S. market presence, allowing for increased investment in sales, marketing, and research and development to capitalize on the increasing demand for modern, cloud-based, omnichannel commerce solutions.** Subsequent to our fiscal year end, in April 2021, we completed the acquisition of **Vend**, a cloud-based retail management software company, based in New Zealand, **expanding our international presence. These acquisitions coupled with our organic growth have also created opportunities for us to leverage our increased scale to derive better economics from our payments partners**” (Q4 MD&A, Page 3).*

198. According to Lightspeed, the acquisitions of ShopKeep and Upserve were crucial and contributed to the increase in the Company's revenues (with my emphasis):

“Although the Company has shown a 84% increase in revenue for Fiscal 2021 compared to Fiscal 2020 in spite of the challenging macro-economic environment, and partially aided by our recent acquisitions of ShopKeep and Upserve, the future impact of the COVID-19 Pandemic on our business, financial condition, and results of operations remains uncertain”.
(MD&A Q4 2020, Page 10).

199. Furthermore, according to the Company, these acquisitions contributed to Lightspeed's revenues with \$28.3 million in Q4 2020, as the following excerpt from Q4 2020 MD&A shows (with my emphasis):

“Subscription and transaction-based revenue for the three months ended March 31, 2021 increased by \$43.5 million or 137% as compared to the three months ended March 31, 2020, with ShopKeep and Upserve contributing \$28.3 million this quarter. The increase was due to growth in our subscription customer base including customers from the acquisitions of ShopKeep and Upserve as well as customers adopting additional modules in the period.”
(MD&A Q4 2020, Page 15)

200. Because of the key and core nature of the acquisitions of ShopKeep and Upserve, failure to take the required impairments relating to the revenues associated with these acquisitions is material, as it could be expected to influence the economic decisions of users.

201. In conclusion, violations of accounting standards with regard to reported revenues, expenses, earnings, and goodwill, such as those discussed herein, are material.

C. Question 3: Lightspeed's Internal Controls During the Class Period

202. Based on my analysis, I conclude that there were confirmed and potential weaknesses affecting Lightspeed's internal control system during the Class Period.

203. My conclusion is based on the following analysis:

- a. A discussion of the internal control system and its two components:
 - i) The internal controls over financial reporting (ICFR); and
 - ii) Disclosure controls and procedures (DC&P).

- b. My analysis of Lightspeed’s internal control system during the Class Period, which consists of the following parts:
 - i) Assessment of Lightspeed’s internal control system in light of its deficient compliance with accounting standards during the Class Period, as revealed by my analysis of Question 2 above; and
 - ii) Analysis of the materiality of the weaknesses in Lightspeed's internal control system.

(i) Lightspeed’s Internal Control System

204. “Internal controls” is the system of checks and balances within a company, which is crucial to ensure the integrity of financial statements. Material weaknesses in the internal control system of a company will cast significant doubt on the entire financial reporting system and its outputs, including metrics reported in the MD&As.

205. It is necessary and required for both companies and their auditors to test the reliability of this system.

206. The two internal control subsystems that are important for financial reporting are:

- a. Internal controls over financial reporting (ICFR). The ICFR's objective is to provide reasonable assurance with respect to the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with the appropriate GAAP standards (IFRS for Lightspeed).

“internal control over financial reporting means a process designed by, or under the supervision of, an issuer’s certifying officers, and effected by the issuer’s board of directors, management and other personnel, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with the issuer’s GAAP and includes those policies and procedures that:

(a) pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of the assets of the issuer;

(b) are designed to provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with the issuer’s GAAP, and that receipts and expenditures of the issuer are being made only in accordance with authorizations of management and directors of the issuer; and

(c) are designed to provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of the issuer's assets that could have a material effect on the annual financial statements or interim financial statements". (CSA, NI 51-109, 2008,1.1. Definitions)

b. Disclosure controls and procedures (DC&P). The DC&P system's objective is to ensure that required information is fully and timely disclosed.

"disclosure controls and procedures means controls and other procedures of an issuer that are designed to provide reasonable assurance that information required to be disclosed by the issuer in its annual filings, interim filings or other reports filed or submitted by it under securities legislation is recorded, processed, summarized and reported within the time periods specified in the securities legislation and include controls and procedures designed to ensure that information required to be disclosed by an issuer in its annual filings, interim filings or other reports filed or submitted under securities legislation is accumulated and communicated to the issuer's management, including its certifying officers, as appropriate to allow timely decisions regarding required disclosure". (CSA, NI 51-109, 2008,1.1. Definitions)

207. A company's management is ultimately responsible for establishing and maintaining effective ICFR and DC&P and signing certifications on the design of, and their evaluations of, the effectiveness of these systems in both annual and quarterly filings. (CSA NI 51-109, Part 4 and Part 5)

208. The ICFR and DC&P systems are connected. Even a single material weakness in either ICFR or DC&P could preclude internal control from being effective.

209. The foundation of the internal control system is that it would provide reasonable assurance that the financial reports are reliable and would prevent and flag material violations of accounting standards. CSA (2008) *Companion Policy 52-109CP to National Instrument 52-109 Certification of Disclosure in Issuers' Annual and Interim Filings* states that the ICFR systems should have in their design *"procedures for selecting and applying appropriate accounting policies that are in accordance with the issuer's GAAP."* (6.9(c))

210. The Companion Policy also states that factors for assessing the deficiencies in ICFR include:

a. The reasonable possibility of misstatement (9.3(1))

b. The magnitude of the misstatement (9.3(2))

211. Once a material internal control weakness is detected in the ICFR system, it needs to be disclosed, as well as the remediation plans and actions undertaken. (9.6)
212. In the case at hand, my analysis of Question 2 revealed that Lightspeed materially violated accounting standards during the Class Period with regard to its reported revenues, expenses, earnings, and goodwill.
213. It further revealed the high probability that earnings management occurred at Lightspeed during the Class Period.
214. In order for earnings management to take place, senior management could override the Company's internal controls. Alternatively, the internal control system could be improperly designed or have a material weakness independent of management's override. In either case, this constitutes a significant weakness in the internal control system, which casts doubts on the accuracy of all reports issued by the Company throughout the Class Period.
215. Lightspeed's internal control systems did not prevent or flag the highly probable material violations of accounting standards that took place during the Class Period.
216. These failures are indicative of Lightspeed's internal control system suffering from material, or even fatal, weaknesses during the Class Period. Moreover, no disclosure was provided during the Class Period for these material internal control weaknesses, in contravention to the standards set out in CSA (2008) *Companion Policy 52-109CP to National Instrument 52-109 Certification of Disclosure in Issuers' Annual and Interim Filings*.
217. The standards set out in CSA (2008) *Companion Policy 52-109CP to National Instrument 52-109 Certification of Disclosure in Issuers' Annual and Interim Filings* require public companies to provide investors with financial reports that are free of any material misstatements and convey a materially accurate and complete picture of the Company's financial condition, results of operations, and cash flows. The identified weaknesses in Lightspeed's internal controls prevented it from doing so.
218. In conclusion, there are confirmed and potential material weaknesses affecting Lightspeed's internal control system during the Class Period.

D. Question 4: PWC's Conduct During the Class Period

(i) Introduction

219. During the Class Period, PWC failed to comply with the requisite standards in its audit of Lightspeed's annual statements and its review of the Company's quarterly statements.
220. As PWC's audit reports state, it used the Canadian Auditing Standards (CAS) for its 2019 audit and review of quarterly information, and the Public Company Accounting Oversight Board's (PCAOB) Auditing Standards (AS) for its 2020 and 2021 audits and its review of the Company's quarterly statements.
221. My analysis of PWC's compliance with the applicable CAS in 2019 focussed on the following:
- a. CAS 200 *overall objectives of the independent auditor and the conduct of an audit in accordance with Canadian Auditing Standards*;
 - b. CAS 265 *communicating deficiencies in internal control to those charged with governance and management*;
 - c. CAS 315 *identifying and assessing the risks of material misstatement*;
 - d. CAS 330 *the auditor's responses to assessed risks*;
 - e. CAS 450 *evaluation of misstatements identified during the audit*;
 - f. CAS 520 *analytical procedures*;
 - g. CAS 700 *forming an opinion and reporting on financial statements*; and
 - h. CPA Canada Handbook. Specialized Area. Section 7060. *Auditor Review of Interim Financial Statements* (Section 7060).
222. My analysis of PWC's compliance with PCAOB Auditing Standards (AS) in 2020 and 2021 discusses:
- a. PCAOB, AS 1015: *Due Professional Care in the Performance of Work*;
 - b. PWC's consideration of audit risk in light of PCAOB AS, 1101: *Audit Risk*;
 - c. PWC's audit procedures in light of PCAOB, AS 1105: *Audit Evidence*;
 - d. PWC's identification and risk assessment of material misstatements in light of PCAOB, AS 2110: *Identifying and Assessing Risk of Material Misstatement*;
 - e. PCAOB, AS 2820: *Evaluating Consistency of Financial Statements*; and
 - f. PCAOB, AS 4105: *Reviews of Interim Financial Information*.

(ii) Analysis of PWC’s Compliance with Canadian Auditing Standards (CAS) in its 2019 Audit

(a) CAS 200 Overall objectives of the independent auditor and the conduct of an audit in accordance with Canadian Auditing Standards

223. CAS 200 states that “*The purpose of an audit is to enhance the degree of confidence of intended users in the financial statements. This is achieved by the expression of an opinion by the auditor on whether the financial statements are prepared, in all material respects, in accordance with an applicable financial reporting framework. In the case of most general purpose frameworks, that opinion is on whether the financial statements are presented fairly, in all material respects, or give a true and fair view in accordance with the framework.*” (CAS 200.3 with my highlights)
224. CAS 200 requires auditors to comply with professional competence and due care. (CAS 200.CA18)
225. CAS states that auditors are required to apply professional skepticism and be alert to conditions which may indicate a possible misstatement in the financial statements. (CAS 200, 13.(k))
226. The risk of material misstatement in the financial statements has two components:
- a. “*Inherent risk – The susceptibility of an assertion about a class of transaction, account balance or disclosure to a misstatement that could be material, either individually or when aggregated with other misstatements, before consideration of any related controls.*” (CAS 200.13.(n).(i))
 - b. “*Control risk – The risk that a misstatement that could occur in an assertion about a class of transactions, account balance or disclosure and that could be material, either individually or when aggregated with other misstatements, will not be prevented, or detected and corrected, on a timely basis by the entity's controls.*” (CAS 200.13.(n).(ii))
227. Auditors are required by CAS 200 to obtain sufficient audit evidence to enable them to form an audit opinion. (CAS 200.17)
228. My analysis of Question 2 above has revealed that Lightspeed materially violated accounting standards in 2019 with regard to its reported revenues, expenses and earnings.
229. It further indicated that there is a high probability that earnings management occurred at Lightspeed during the Class Period.

230. The fact that PWC missed such material misstatements that materially violated accounting standards as well as the highly probable earnings management indicates that PWC lacked in due professional competence and care in its audit of Lightspeed's annual financial statements in 2019, in contravention to CAS 200.
231. My analysis of Question 3 above led to the conclusion that there were confirmed and potential weaknesses affecting Lightspeed's internal control system in 2019.
232. The fact that PWC failed to report these weaknesses also reveals a lack of due professional competence and care by PWC in the audit of Lightspeed's annual financial statements in 2019, in breach of CAS 200.

(b) CAS 265 Communicating deficiencies in internal control to those charged with governance and management

233. CAS 265 requires auditors *“to obtain an understanding of the entity's system of internal control when identifying and assessing the risks of material misstatement. In making those risk assessments, the auditor considers the entity's system of internal control in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of internal control. The auditor may identify control deficiencies in the entity's system of internal control not only during this risk assessment process but also at any other stage of the audit. (CAS 265.2)*
234. Based on the audit work performed, auditors are required to determine whether there are one or more deficiencies in internal control and, if so, whether, individually or in combination, these deficiencies are significant. (CAS 265.7 and CAS 265.8)
235. According to CAS 265, *” The significance of a deficiency or a combination of deficiencies in internal control depends not only on whether a misstatement has actually occurred, but also on the **likelihood that a misstatement could occur and the potential magnitude of the misstatement.** (CAS 265.A5. with my emphasis)*
236. The results of my analysis of Question 2 above reveal that PWC did not comply with CAS 265.

(c) CAS 315 *Identifying and assessing the risks of material misstatement*

237. CAS 315 requires auditors to design and perform risk assessment procedures, such as the Beneish Manipulation Index, Benford's Law, or their equivalents, to obtain audit evidence that provides an appropriate basis for identification and assessment of risks of material misstatement, whether due to fraud or error, at the financial statement and assertion levels, and for the design of further audit procedures. (CAS 315.13)
238. My analysis of Question 2 above has revealed that Lightspeed materially violated accounting standards in its 2019 financial statements in regard to its reported revenues, expenses and earnings.
239. PWC either missed or has failed to report these GAAP violations.
240. This shows flaws in PWC's design and performance of risk assessment to provide an appropriate basis for identification and assessment of risks of material misstatement, in violation of CAS 315.
241. The fact that PWC did not address the high probability that earnings management occurred at Lightspeed during the Class Period is also a violation of CAS 315.
242. Risk procedures to identify and assess the risk of material misstatements must include analytical procedures to determine whether such a risk exists in a company's financial statements, account balances and disclosures. (CAS 315.14 and CAS 315.28)
243. As discussed below, PWC failed to conduct appropriate substantive analytical tests required by CAS 520 *Analytical procedures*, such as the Beneish Manipulation Index, Benford's Law, or their equivalents, or failed to appropriately act in response to the results of those tests, which also violates CAS 315.
244. CAS 315 requires auditors to obtain an understanding and evaluate the audited company's system of internal control. (CAS 315.19, CAS 315.21.-24, CAS 315.26, CAS 315.34)
245. Again, PWC failed to report the confirmed and potential material weaknesses affecting Lightspeed's internal control system in 2019, contrary to the requirements of CAS 315.

(d) CAS 330 *The auditor's responses to assessed risks*

246. CAS 330 requires auditors to design and implement overall responses to address the assessed risks of material misstatement at the financial statement level. (CAS 330.5)

247. *“The auditor shall perform audit procedures to evaluate whether the overall presentation of the financial statements is in accordance with the applicable financial reporting framework. In making this evaluation, the auditor shall consider whether the financial statements are presented in a manner that reflects the appropriate:*

- *Classification and description of financial information and the underlying transactions, events and conditions; and*
- *Presentation, structure and content of the financial statements.” (CAS 330.24)*

248. My analysis of Question 2 above has revealed material violations of accounting standards in Lightspeed’s 2019 annual statements with respect to revenue recognition and disclosure. Moreover, a high probability of earnings management during the Class Period was identified, in contravention to accounting standards.

249. The failure by PWC to identify these material violations of accounting standards in its 2019 audit constitutes a failure to comply with CAS 330.

250. *“In designing the further audit procedures to be performed, the auditor shall:*

- a. *Consider the reasons for the assessment given to the risk of material misstatement at the assertion level for each significant class of transactions, account balance, and disclosure, including:*
 - i. *The likelihood and magnitude of misstatement due to the particular characteristics of the significant class of transactions, account balance, or disclosure (that is, the inherent risk); and*
 - ii. *Whether the risk assessment takes account of controls that address the risk of material misstatement (that is, the control risk), thereby requiring the auditor to obtain audit evidence to determine whether the controls are operating effectively (that is, the auditor plans to test the operating effectiveness of controls in determining the nature, timing and extent of substantive procedures); and (Ref: Para. A9-A18)*
- b. *Obtain more persuasive audit evidence the higher the auditor's assessment of risk.” (CSA 330.6)*

251. CAS 330 requires auditors to perform substantive procedures, such as the Beneish Manipulation Index, Benford's Law, or their equivalents, that are specifically responsive to a specific risk when they have determined that an assessed risk of material misstatement at the assertion level is a significant risk. (CAS 330.21)
252. My analysis of Question 3 above revealed confirmed and potential material weaknesses affecting Lightspeed's internal control system in 2019.
253. During its 2019 audit, PWC failed either to identify these risks or to respond to them and perform substantive procedures that are specifically responsive to these specific risks, in contravention to CAS 315 and CAS 330.
254. Among other examples, failure to conduct well-established analytical procedures, such as the Beneish Manipulation Index, Benford's Law, or their equivalents, constitutes a violation of CAS 315, CAS 330, or both.

(e) CAS 450 Evaluation of misstatements identified during the audit

255. CAS 450 requires auditors to determine whether the overall audit strategy and audit plan need to be revised if, as a result of identified misstatements, auditors determine that other misstatements may exist. (CAS 450.6)
256. Once misstatements are identified by auditors, they need to immediately communicate them to management and request correction of the misstatements. (CAS 450.8)
257. My analysis of Question 2 shows that there were material violations of accounting standards in Lightspeed's 2019 annual statements with respect to revenue recognition and disclosure. My analysis also revealed a high probability of earnings management in the Class Period.
258. There is no mention of such misstatements in PWC's audit report in 2019.
259. As such, either PWC failed to identify these misstatements, or it failed to communicate them to management and request corrections, thereby violating CAS 315, CAS 450, or both.

(f) CAS 520 Analytical procedures

260. “The auditor shall design and perform analytical procedures near the end of the audit that assist the auditor when forming an overall conclusion as to whether the financial statements are consistent with the auditor's understanding of the entity.” (CAS 520.6)
261. “Various methods may be used to perform analytical procedures. These methods range from performing simple comparisons **to performing complex analyses using advanced statistical techniques**. Analytical procedures may be applied to consolidated financial statements, components and individual elements of information.” (CAS 520.A1 with my emphasis)
262. My analysis of Question 2 above uses well-established data analytics tools (Beneish Manipulation Index and Benford’s Law) that show a high probability of earnings management. The fact that PWC failed to identify this indicates that it did not use these or equivalent analytical procedures (or that it failed to provide an appropriate response to the results obtained). This constitutes a failure by PWC to comply with CAS 520 in its 2019 audit of Lightspeed.

(g) CAS 700 Forming an opinion and reporting on financial statements and CAS 705 Modifications to the opinion in the independent auditor's report

263. “The auditor shall evaluate whether the financial statements are prepared, in all material respects, in accordance with the requirements of the applicable financial reporting framework. This evaluation shall include consideration of the qualitative aspects of the entity's accounting practices, including indicators of possible bias in management's judgments.” (CAS 700.12)
264. “If financial statements prepared in accordance with the requirements of a fair presentation framework do not achieve fair presentation, the auditor shall discuss the matter with management and, depending on the requirements of the applicable financial reporting framework and how the matter is resolved, shall determine whether it is necessary to modify the opinion in the auditor's report in accordance with CAS 705.” (CAS 700.18)¹⁹

¹⁹ CAS 705 *Modifications to the opinion in the independent auditor's report* deals with the auditor's responsibility to issue an appropriate report in circumstances where, in forming an opinion in accordance with CAS 700, the auditor concludes that a modification to the auditor's opinion on the financial statements is necessary (i.e., that it is necessary that the auditor issue a qualified, adverse or disclaimer audit opinion).

265. CAS 705 requires auditors to issue a modified audit report (i.e., a qualified, adverse or disclaimer opinion, as discussed in the next paragraph) when they conclude, based on the audit evidence obtained, that the financial statements are not free from material misstatement. (CAS 705.4)
266. When the financial statements contain material misstatements, and the misstatements are not corrected, the auditor must issue a qualified opinion, adverse opinion, or in the case that the auditor is unable to obtain sufficient appropriate audit evidence to base an opinion, a disclaimer of opinion. (CAS 705.7- CAS 705. 9)
267. My analysis of Question 2 above has revealed material violations of accounting standards in Lightspeed’s 2019 annual statements with respect to revenue recognition and disclosure. I also found a high probability of earnings management during the Class Period.
268. PWC issued an unqualified opinion in 2019 despite the material misstatements discussed in the previous paragraph. As such, either PWC failed to identify the material misstatements, or it detected them and still issued an unqualified audit opinion. Irrespective of the scenario, PWC failed to comply with CAS 315, CAS 700 and/or CAS 705.
269. My analysis of Question 3 above identifies confirmed and potential material weaknesses affecting Lightspeed's internal control system in 2019.
270. PWC issued an unqualified audit opinion in 2019 despite these weaknesses. As such, PWC failed to comply with CAS 315, CAS 700 and/or CAS 705.

(h) CPA Canada Handbook. Specialized Area. Section 7060. Auditor Review of Interim Financial Statements (Section 7060)

271. Section 7060 requires auditors to “*have sufficient understanding of the entity and its environment, including internal control as it relates to the preparation of both annual and interim financial statements, to be able to provide a basis to identify the risks that are likely to result in the need for material modification to the interim financial statements for those statements to be in accordance with the applicable financial reporting framework.*” (Section 7060.10 with my emphasis)
272. Section 7060 also requires auditors to “*design and perform inquiries and analytical procedures to focus on addressing the identified risks that are likely to result in the need for material modification*

to the interim financial statements for those statements to be in accordance with the applicable financial reporting framework.” (Section 7060. 11)

273. The analysis above shows that PWC failed to comply with CAS 200 *overall objectives of the independent auditor and the conduct of an audit in accordance with Canadian Auditing Standards*, CAS 265 *communicating deficiencies in internal control to those charged with governance and management*, CAS 330 *the auditor's responses to assessed risks*, CAS 450 *evaluation of misstatements identified during the audit*, CAS 520 *analytical procedures*, CAS 700 *forming an opinion and reporting on financial statements*. These failures based on the previous two paragraphs also constitute a failure by PWC to comply with Section 7060.

(i) Conclusion

274. In sum, PWC failed to comply with CAS 200 *overall objectives of the independent auditor and the conduct of an audit in accordance with Canadian Auditing Standards*, CAS 265 *communicating deficiencies in internal control to those charged with governance and management*, CAS 330 *the auditor's responses to assessed risks*, CAS 450 *evaluation of misstatements identified during the audit*, CAS 520 *analytical procedures*, CAS 700 *forming an opinion and reporting on financial statements*, and the CPA Canada Handbook - Specialized Area - Section 7060 *Auditor Review of Interim Financial Statements*, in its audit of Lightspeed’s 2019 annual statement.

275. Failure to comply with just one of the foregoing auditing standards violates the auditor’s duty of due care.

(iii) Analysis of PWC’s compliance with PCAOB Auditing Standards (AS) in its 2020 and 2021 annual audits and quarterly reviews

(a) PCAOB, AS 1015: Due Professional Care in the Performance of Work

276. PCAOB AS, 1015: *Due Professional Care in the Performance of Work* requires auditors to exercise due professional care in the planning and performance of an audit and the preparation of an audit report. (PCAOB AS 1015 .01)

277. In performing these tasks, auditors are required to observe the standards applicable to their field of work and to reporting. (PCAOB AS 1015.02)

278. Due professional care requires that auditors exercise professional skepticism (PCAOB AS 1015.07, .08 and .09). “*Professional skepticism is an attitude that includes a questioning mind and a critical assessment of audit evidence.*” (PCAOB AS 1015.07)
279. PCAOB Staff Audit Practice Alert No. 10: *Maintaining and Applying Professional Skepticism in Audits* states (with my emphasis):
- “It is the responsibility of each individual auditor to appropriately apply professional skepticism throughout the audit, including in **identifying and assessing the risks of material misstatement, performing tests of controls and substantive procedures** to respond to the risks, and evaluating the results of the audit. This involves, among other things, considering what can go wrong with the financial statements, performing audit procedures to obtain sufficient appropriate audit evidence rather than merely obtaining the most readily available evidence to corroborate management's assertions, and critically evaluating all audit evidence regardless of whether it corroborates or contradicts management's assertions.”* (Page 2)
280. My analysis of Question 2 above has revealed that, in 2020 and 2021, Lightspeed materially violated accounting standards with regard to its reported revenues, expenses, earnings, and goodwill.
281. It further revealed a high probability of earnings management during the Class Period.
282. Material misstatements that violate accounting standards and earnings management that could have been detected by auditors by using appropriate analytical procedures, such as the Beneish Manipulation Index, Benford’s Law, or their equivalents, were either missed or ignored by PWC.
283. This shows lack of due professional care by PWC in the audit of Lightspeed’s annual financial statements in 2020 and 2021, in contravention to PCAOB, AS 1015.

(b) PCAOB, AS 1101: Audit Risk

284. PCAOB, AS 1101: *Audit Risk* states that “*To form an appropriate basis for expressing an opinion on the financial statements, the auditor must plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement due to error or fraud. Reasonable assurance is obtained by reducing audit risk to an appropriately low level through applying due professional care, including obtaining sufficient appropriate audit evidence.*” (PCAOB AS 1101.03)

285. Audit risk is defined as “*the risk that the auditor expresses an inappropriate audit opinion when the financial statements are materially misstated, i.e., the financial statements are not presented fairly in conformity with the applicable financial reporting framework. Audit risk is a function of the risk of material misstatement and detection risk.*” (PCAOB AS 1101.04)
286. “*The risk of material misstatement refers to the risk that the financial statements are materially misstated. AS 2110, Identifying and Assessing Risks of Material Misstatement, indicates that the auditor should assess the risks of material misstatement at two levels: (1) at the financial statement level and (2) at the assertion level.*” (PCAOB AS 1101.05)
287. My analysis of Question 2 above has revealed that, in 2020 and 2021, Lightspeed materially violated accounting standards with regard to its reported revenues, expenses, earnings, and goodwill, as well as a high probability of earnings management during the Class Period.
288. PWC missed this or failed to report it.
289. PWC’s consideration of audit risk was therefore lacking in the audit of Lightspeed’s 2020 and 2021 annual financial statements.
290. *Identifying and Assessing Risk of Material Misstatement.*
- “*Risk of material misstatement at the assertion level consists of the following components:*
- a. *Inherent risk, which refers to the susceptibility of an assertion to a misstatement, due to error or fraud, that could be material, individually or in combination with other misstatements, before consideration of any related controls.*
 - b. *Control risk, which is the risk that a misstatement due to error or fraud that could occur in an assertion and that could be material, individually or in combination with other misstatements, will not be prevented or detected on a timely basis by the company's internal control. Control risk is a function of the effectiveness of the design and operation of internal control.*” (PCAOB AS 1101.07).
291. My analysis of Question 3 above revealed that there were confirmed and potential material weaknesses affecting Lightspeed’s internal control system in 2020 and 2021. PWC’s failure to identify these risks during its 2020 and 2021 audits also constitutes a violation of PCAOB, AS 1101.07.

292. In conclusion, the consideration of audit risk by PWC was flawed in the audit of Lightspeed's annual financial statements in 2020 and 2021, and contrary to PCAOB AS 1101.

(c) PCAOB AS 1105: *Audit Evidence*

293. PCAOB, AS 1105: *Audit Evidence* states that auditors must plan and perform audit procedures to obtain sufficient appropriate audit evidence to provide a reasonable basis for their opinion (PCAOB, AS 1105.04). Sufficiency is the quantity of needed evidence and is affected by the risk “*of material misstatement (in the audit of financial statements) or the risk associated with the control (in the audit of internal control over financial reporting). As the risk increases, the amount of evidence that the auditor should obtain also increases. For example, ordinarily more evidence is needed to respond to significant risks.*” (PCAOB AS 1105.05)

294. My analysis of Question 2 revealed that Lightspeed materially violated accounting standards in 2020 and 2021 with regard to its reported revenues, expenses, earnings, and goodwill. It further revealed a high probability of earnings management during the Class Period.

295. Material misstatements such as these that were missed or ignored by the auditor over a significant period of time indicates that the audit evidence obtained by PWC was insufficient, or not acted upon, for the purposes of its 2020 and 2021 audits, in violation of PCAOB AS 1105: *Audit Evidence*.

296. My analysis of Question 3 has shown that there were confirmed and potential material weaknesses affecting Lightspeed's internal control system in 2020 and 2021.

297. PWC's failure to identify these risks constitutes a further indication that the evidence obtained by PWC in its 2020 and 2021 audits was insufficient, in violation of PCAOB, AS 1105: *Audit Evidence*.

298. Moreover, PCAOB, AS 1105 emphasizes the need for auditors to obtain quality audit evidence (PCAOB, AS 1105.05). Such evidence includes “*Substantive procedures, including tests of details and substantive analytical procedures.*” ((PCAOB AS 1105.13)

299. PWC failed to conduct, or ignored, appropriate substantive analytical tests, such as the Beneish Manipulation Index, Benford's Law, or their equivalents, in contravention to PCAOB, AS 1105.

(d) PCAOB AS 2110: *Identifying and Assessing Risk of Material Misstatement*

300. PCAOB AS 2110: *Identifying and Assessing Risk of Material Misstatement* states:

“The auditor should perform risk assessment procedures that are sufficient to provide a reasonable basis for identifying and assessing the risks of material misstatement, whether due to error or fraud, and designing further audit procedures.” (PCAOB AS 2110.04)

301. My analysis of Question 2 revealed that, in 2020 and 2021, Lightspeed materially violated accounting standards with regard to its reported revenues, expenses, earnings, and goodwill.
302. Moreover, it revealed a high probability of earnings management during the Class Period.
303. Material misstatements that violate accounting standards that are missed by auditors over a long period of time demonstrate their failure to comply with PCAOB AS 2110: *Identifying and Assessing Risk of Material Misstatement*.
304. PCAOB, AS 2110 requires that *“The auditor should obtain a sufficient understanding of each component of internal control over financial reporting (“understanding of internal control”) to (a) identify the types of potential misstatements, (b) assess the factors that affect the risks of material misstatement, and (c) design further audit procedures.” (.18)*
305. My analysis of Question 3 revealed that there were confirmed and potential material weaknesses affecting Lightspeed's internal control system in 2020 and 2021. PWC’s failure to identify these risks demonstrates PWC’s failure to comply with PCAOB, AS 2110: *Identifying and Assessing Risk of Material Misstatement*.
306. PCAOB, AS 2110 requires auditors to perform analytical procedures that are designed to:
- i. *“Enhance the auditor's understanding of the client's business and the significant transactions and events that have occurred since the prior year end; and*
 - ii. *Identify areas that might represent specific risks relevant to the audit, including the existence of unusual transactions and events, and amounts, ratios, and trends that warrant investigation.” (.46)*
307. PCAOB, AS 2110 also requires that *“In applying analytical procedures as risk assessment procedures, the auditor should perform analytical procedures relating to revenue with the objective of identifying unusual or unexpected relationships involving revenue accounts that might indicate a material misstatement, including material misstatement due to fraud.” (.47)*

308. My analysis of Question 2 above uses well-established data analytics tools (namely, Beneish Manipulation Index and Benford's Law) that show a high probability of earnings management. The fact that PWC failed to identify this indicates that these or equivalent analytical procedures were not used, or that the results were ignored, therefore indicating PWC's failure to comply with PCAOB 2110 in its 2020 and 2021 audits.
309. Pursuant to my analysis of Question 2 above, I found that Lightspeed violated IFRS 15 by using the net method for revenues instead of the gross method in 2020 and 2021. The lack of reference to this issue by PWC demonstrates that it did not comply with the PCAOB Staff Audit Practice Alert, nor with PCAOB, AS 2110: *Identifying and Assessing Risk of Material Misstatement*.

(e) PCAOB, AS 2820: Evaluating Consistency of Financial Statements

310. PCAOB, AS 2820: *Evaluating Consistency of Financial Statements* states:

“To identify consistency matters that might affect the report, the auditor should evaluate whether the comparability of the financial statements between periods has been materially affected by changes in accounting principles or by material adjustments to previously issued financial statements for the relevant periods.” (.02)

311. In testing for consistency of financial statements, the auditor must evaluate whether the disclosures related to an accounting change are adequate. (PCAOB, AS 2820, .07.c.)

312. Furthermore, PCAOB, AS 2820 states that:

“A change in accounting principle that has a material effect on the financial statements should be recognized in the auditor's report on the audited financial statements.” (.08)

313. Pursuant to my analysis of Question 2, I found that Lightspeed violated IFRS 15 by choosing the gross revenue recognition method in 2020 and 2021 for the revenues stemming from ShopKeep and Upserve, and by failing to provide adequate disclosure in this regard. Lack of recognition of a material accounting standard violation by PWC in an audit report is a violation of PCAOB, AS 2820.

314. Moreover, PWC had the obligation to report any change in Lightspeed's accounting policy, which it did not do in its 2020 and 2021 audit reports. Lack of recognition of an accounting change in an audit report is a violation of PCAOB, AS 2820.

315. In conclusion, PWC did not comply with PCAOB, AS 2820: *Evaluating Consistency of Financial Statements* in its 2020 and 2021 audits.

(f) AS 4105: Reviews of Interim Financial Information

316. AS 4105: *Reviews of Interim Financial Information* states:

“The accountant should apply analytical procedures to the interim financial information to identify and provide a basis for inquiry about the relationships and individual items that appear to be unusual and that may indicate a material misstatement.” (.15)

317. In my analysis of Question 2, I used well-established data analytics tools (namely, Beneish Manipulation Index and Benford's Law) which revealed a high probability of earnings management during the Class Period. The fact that PWC failed to identify this indicates that these or equivalent analytical procedures were not used by PWC, or that the results were ignored, therefore, indicating PWC's failure to comply with PCAOB, AS 4105 in its review of Lightspeed's quarterly statements during the Class Period.

318. *“To perform a review of interim financial information, the accountant should have sufficient knowledge of the entity's business and its internal control as they relate to the preparation of both annual and interim financial information to:*

- *Identify the types of potential material misstatements in the interim financial information and consider the likelihood of their occurrence.*
- *Select the inquiries and analytical procedures that will provide the accountant with a basis for communicating whether he or she is aware of any material modifications that should be made to the interim financial information for it to conform with generally accepted accounting principles.” (PCAOB 4105.10)*

319. My analysis of Question 3 reveals that there were confirmed and potential material weaknesses affecting Lightspeed's internal control system in 2020 and 2021. PWC's failure to identify these risks in its 2020 and 2021 audits, and in the course of its review of the quarterly reports, demonstrates failure by PWC to comply with AS 4105: *Reviews of Interim Financial Information*.

320. In conclusion, PWC failed to comply with PCAOB Audit Standards in its audit of Lightspeed's annual statements and its review of the Company's quarterly statements in 2020 and 2021.

321. It should be noted that PWC's failure to comply with just one of the foregoing auditing standards violates the auditor's duty of due care.

IV. CONCLUSION

322. Further to my analysis, I conclude that, during the Class Period:

- a. Lightspeed materially violated accounting standards with regard to its reported revenues, expenses, earnings, and goodwill;
- b. There were confirmed and potential material weaknesses affecting Lightspeed's internal control system; and
- c. PWC failed to comply with the relevant auditing standards in its audit of Lightspeed's annual statements and its review of the Company's quarterly statements.



Ramy Elitzur Ph.D.

APPENDIX I - C.V.

Ramy Elitzur
Rotman School of Management 105 St. George St.
Toronto, ON, Canada, M2R 3V6

EDUCATION

- 1984-1988 Stern School of Business
New York University, New York, NY
Ph.D. (January, 1988)
M. Phil (January, 1987)
- 1981-1984 Tel Aviv University, Tel Aviv, Israel
MBA (January, 1984)
- 1976-1981 Bar-Ilan University, Ramat Gan, Israel
BA (July, 1981)

ACADEMIC POSITIONS

- 2022 University of Toronto
Rotman School of Management
Full Professor
- 2005-2021 The Edward J. Kernaghan Professor in Financial Analysis
- 1993- 2022 University of Toronto
Rotman School of Management
Associate Professor (with tenure)
- January 99-June 99 Ben Gurion University
School of Management
Visiting Professor
- 1995 Tel Aviv University
Recanati School of Business
Visiting Professor
- 1990 New York University
Stern School of Business
Visiting Professor
- 1988-1993 University of Toronto

Rotman School of Management
Assistant Professor

1987 Fordham University
Graduate School of Business Administration
Visiting Assistant Professor of Accounting

1986-1987 New York University
Stern School of Business
Instructor

ADMINISTRATIVE POSITIONS

July 2002-Dec. 2002 University of Toronto
Rotman School of Management
Acting Academic Director, Executive MBA Program

July 1999-July 2001 University of Toronto
Rotman School of Management
Executive Director, MBA Programs

PUBLICATIONS

Scholarly Journals (All Refereed)

“Tax Advisors And Tax Aggressiveness: A Bargaining Model”, co-authored with Varda Yari, accepted for publication by the *Journal of Accounting, Auditing and Finance*.

“Does gender matter? Evidence from crowdfunding”, co-authored with Eliran Solodoha from Ben Gurion University, accepted for publication by the *Journal of Business Venturing Insights*.

“Analysis of The Sox Ban on Non-Audit Services from An Auction Model Perspective”, co-authored with Arie Gavious and Yizhaq Minchuk. Forthcoming, *Journal of Accounting, Auditing and Finance*.

“Data Analytics Effects in Major League Baseball”. *Omega- The International Journal of Management Science*, 90 (2020) 102001.

“Information Systems Outsourcing Projects as a Double Moral Hazard Problem”, co-authored with Arie Gavious and Anthony Wensley, *Omega- The International Journal of Management Science*, 40 (2012), 379–389.

“Selection of Entrepreneurs in the Venture Capital Industry: An Asymptotic Analysis”, co-authored with Arie Gavious, *European Journal of Operations Research* 215 (2011) 705–712.

“The Accounting Art of War: Bounded Rationality, Earnings Management and Insider Trading”, *Journal of Accounting and Public Policy*, 30 (2011) 203–216.

"Venture Capital Contracting with Renegotiation", (with Arie Gavious). *Economic Bulletin*, 29 (1), 2009, pp. 67-78.

“Contracting, Signaling and Free Riders: A Model of Entrepreneurs, ‘Angels’, and Venture Capitalists”, (with Arie Gavious). *Journal of Business Venturing*, 18, 2003, pp. 709-725.

“A Multi-Period Game Theoretic Model of Venture Capital Investment, (with Arie Gavious). *European Journal of Operational Research*. Vol 144, (2), 2003, pp. 440-453.

“Optimal Control in Homogeneous Projects: Analytically Solvable Deterministic Cases”, (with Konstantin Kogan and Tzvi Raz). *IIE Transactions on Design and Manufacturing*, Vol 34, 1, January 2002, pp. 63-75.

“Using Game Theory to Analyze Complex Projects: The Case of Information Systems Outsourcing Arrangements”, (with Anthony K.P. Wensley), *International Journal of Industrial Engineering - Applications and Practice*. Volume 6, Number 2, 1999, pp.141-150.

“Managerial Incentives and the Structure of Management Buyouts”, (with Paul Halpern, Robert Kieschnick and Wendy Rotenberg), *Journal of Economic Behavior and Organization*, Vol. 36, 1998, pp. 347-367.

“Game Theory as a Tool for Understanding Information Services Outsourcing”, (with Anthony K.P. Wensley). *Journal of Information Technology*, 12, 1997, 45-60.

"Planned Audit Quality", (with Haim Falk), *Journal of Accounting and Public Policy*, Vol. 15, 1996, pp. 247-269.

"Transfer Pricing Rules and Corporate Tax Competition", (with Jack Mintz), *Journal of Public Economics*, Volume 60, 1996, pp. 401-422.

"Auctions for Audit Services and Low-Balling", (with Haim Falk), *Journal of Auditing: Theory and Practice*, Vol 15, 1996, Supplement, pp. 41-59.

Reply to the discussant's comments on "Auctions for Audit Services and Low-Balling", (with Haim Falk), *Journal of Auditing: Theory and Practice*, Vol 15, 1996, Supplement, pp. 69-71.

"Executive Incentive Compensation and Earnings Manipulation in a Multi-Period Setting", (with Varda Yaari), Published in *The Journal Of Economic Behavior and Organization*, vol. 26, 1995, pp. 201-219.

"A Classroom Exercise on Executive Incentive Compensation Schemes", *Managerial and Decision Economics*, Vol. 16, 1995, 649-652.

"Using Historical Annual Reports in Teaching: Letting the Past Benefit the Future", (with Joel Amernic). *Accounting Historians Journal*, Vol. 19, Number 1, June 1992, pp. 29-50.

"A Model of Translation of Financial Statements Under Inflation in the U.S. and Canada", *Contemporary Accounting Research*, Spring, 1991, pp. 466-484.

"CPAs' Attitudes Toward GAAP for Closely Held Corporations and Small Businesses", (with Ran Bar-Niv). *International Journal of Accounting*, 1989, 24, pp. 343-364.

Other Scholarly Publications

"Further Thoughts on Information Structure, Knowledge Management and Outsourcing," (with Anthony Wensley), *Information Systems Outsourcing: Enduring Themes, Emergent Patterns and Future Directions*. R. Hirschheim, A. Heinzl and J. Dibbern editors, Springer-Verlag, Berlin Heidelberg, 2002, pp. 187-194.

"Can Game Theory Help Us Understand Information Systems Outsourcing Contracts?" (with Anthony Wensley), Chapter in *Outsourcing - Theory and Practice*, L. Willcocks and M. Lacity (Eds.), John Wiley, UK, 1996, pp. 103-136.

"Executive Compensation and Firm Value", (with P. Halpern), *Corporate Decision Making in Canada*, R. J. Daniels and R. Morck (Ed.). Industry Canada, Ottawa, Canada. 1995, 189-222.

A Review of J.E. Boritz's "Approaches to Dealing with Risk and Uncertainty". *Contemporary Accounting Research*, Fall 1991, pp. 309-314.

Professional

"Financial Competency Study Guide for DEP Participants," *Institute of Corporate Directors and Rotman School of Management*, 2010.

"FINANCIAL ANALYSIS: Integrative Thinking (or Lack of) and the Current Crisis," published in *The Finance Crisis and Rescue: What Went Wrong? Why? What Lessons Can Be Learned*, Ch. 5, November 2008.

"The Accounting Art of War: Enron and Other Cases," *Advisor Guide to Risk Management*, The Bonham Centre for Finance, Joseph L. Rotman School of Management, 2002, Ch. 10, pp. 59-66.

"Is Deming Dead? Quality Control In MBA Programs". *Proceedings of the American Society for Quality Conference*, Toronto, March 2001.

"When Accounting Firms Want to Wed", *CA Magazine*, June-July 1998, page 17.

“Executive Compensation Packages - The Theory Vs. The Israeli Practice,” *Roeh Haheshbon*, August 1996, pp. 381-389.

"Strategic Analysis of Cash Flows," *Roeh Haheshbon*, February 1996, pp. 5-9.

"The Impact of Data Bases On Auditing," *Roeh Haheshbon*, Spring 1983.

"Tax Planning in Light of the Israeli Inflationary Tax Law: A Mathematical Optimization Perspective", *Hapraklit*, Spring 1984.

Management Accounting Guidelines (MAGS)

"The Design of Executive Incentive Compensation Plans, *Management Accounting Guideline No. 18*, Society of Management Accountants of Canada, 1993.

"Outsourcing Information Systems (with A. Wensley), *Management Accounting Guideline No. 23*, Society of Management Accountants of Canada, 1994.

OTHER PUBLICATIONS

"Pandemic Moneyball: How COVID-19 has affected baseball odds”, April 26, 2021, an article *The Conversation*. <https://phys.org/news/2021-04-pandemic-moneyball-covid-affected-baseball.html>

"The COVID-19 vaccine rollout debacle: how did we get here?”, April 19, 2021, Op-Ed in *The Hill Times*. <https://www.hilltimes.com/2021/04/19/the-covid-19-vaccine-rollout-debacle-how-did-we-get-here/293061>

"Canadian airlines: an industry in crisis", April 5, 2021, Op-Ed in *The Hill Times*. <https://www.hilltimes.com/2021/04/05/canadian-airlines-an-industry-in-crisis/291005>

"Crisis in the World of Policing,” *HQ Magazine*, the publication of the Ontario Association of Chiefs of Police (OACP), Winter 2018/19.

"Ten Years to the Police Leadership Program, ", forthcoming in *HQ Magazine*, the publication of the Ontario Association of Chiefs of Police (OACP), January 2011.

"Characteristics of a 21st century police executive", *HQ Magazine*, the publication of the Ontario Association of Chiefs of Police (OACP), Summer 2007, pp. 23-26.

"Air Canada remedy must treat cause,” the Report on Business Section, *Globe and Mail*, April 8, 2003, <http://www.globeinvestor.com/servlet/WireFeedRedirect?cf=GlobeInvestor/config&vg=BigAdVariableGenerator&date=20030408&archive=gam&slug=RCOMM>

“The Implications of the Crisis in Southeast Asia for Israel”, *Ha’aretz*, February 18, 1998, pp. 8-9, in the Capital Markets Section.

Work in Progress

“Founder Exit and Ethnicity in Technology Entrepreneurship”, co-authored with Ilanit-Madar Gavious and Orit Milo. In second round with the *Journal of Business Venturing*.

“Crowdfunding and too Much Choice: A Recipe for Disasters,” co-authored with David Soberman and Peri Muttath in final stages of editing for submission.

" Machine Learning for Optimal Test Admission in the Presence of Resource Constraints". co-authored with Dmitry Krass and Eyal Zimlichman (the Sheba Medical Center and the Sackler Faculty of Medicine, Tel Aviv University), in second round with *Health Care Management Science*

“Machine Learning and the Prediction of Crowdfunding Campaigns’ Success,” co-authored with Noam Katz, Peri Muttath, and David Soberman. In editing for submission. Was accepted to for presentation at the upcoming International Conference on Crowdfunding Research in Oslo, Norway from November 30 to December 1, 2022.

“Earnings Management, Cultural Distance and Organizational Design,” co-authored with Joshua Ronen, Amir Shoham and Varda Yaari. In final stages of editing for submission

“Modelling PPP for Emergency Health Services in Emerging Economies”, co-authored with Senthil Kumar Anantharaman and Rohit Kapoor.

“Game Theory for Accounting”, an American Accounting Association Monograph with Masako Darrough, Joshua Ronen and Varda Yaari.

“Venture Capital Syndication and Bargaining”, co-authored with Arie Gavious and Miri Sitton.

“Predicting Concussions and Chronic Traumatic Encephalopathy” (working title), co-authored with Amza Ali, University Hospital of the West Indies. In progress.

Presentations in Academic Conferences

“Crowdfunding and too Much Choice: A Recipe for Disasters,” co-authored with David Soberman and Peri Muttath. The 41st ISMS Marketing Science Conference at University of Roma Tre in June 20-22, 2019.

“Selection of Entrepreneurs in the Venture Capital Industry: An Asymptotic Analysis” , co-authored with Arie Gavious, VICO final conference: Entrepreneurial finance: the real impact. Stresa – Italy, June 2011.

“Contests in the Venture Capital Industry” (with Arie Gavious), *The Third International Conference on Game Theory and Management (GTM 2009)*, St. Petersburg, Russia, June 2009.

“Contests in the Venture Capital Industry” (with Arie Gavious), *Operations Research Society of Israel (ORSIS)*, Herzeliya, Israel, May 10, 2009.

“Further Thoughts on Information Structure, Knowledge Management and Outsourcing,” (with Anthony Wensley), *Second International Conference on Outsourcing of Information Services (ICOIS’2001)* held in Bayreuth, Germany in June 2001.

“Using Game Theory to Analyze Information Systems Outsourcing Arrangements: Some Preliminary Findings,” (with Anthony Wensley), UK Academy of Information Systems Conference at Cranfield University, Cranfield, UK, April 1996.

Auctions for Audit Services and Low-Balling”, (with Haim Falk), 1995 University of Waterloo *Journal of Auditing: Theory and Practice* Symposium.

"Executive Compensation and Firm Value", (with P. Halpern), Industry Canada Conference on Corporate Decision-Making, March 1995.

"Transfer Pricing Rules and Corporate Tax Competition", (with J. Mintz), 1993 International Seminar on Public Economics in Linz, Austria.

"The Effects of Contract Type, Auditor's Efficiency, and Auditor's Size on the Choice of Audit Risk and Planned Evidence", 1991 CAAA Conference.

"Insider Trading, Managerial Effort, and Earnings Management", 1992 Northern Finance Association Conference.

"Managerial Equity Holdings and Earnings Management in A Multi Period Setting", (with Varda Yaari), CAAA 1990 conference and 1989 Queen's University Conference.

"Translation in the U.S. and Canada of Financial Statements for Inflationary Operations", 1989 CAAA Conference.

FELLOWSHIPS AND HONOURS

2021	Rotman School of Management Teaching Award
2020	Rotman School of Management Teaching Award
2019	Rotman School of Management Teaching Award
2018	Rotman School of Management Teaching Award
2015-2016	Rotman School of Management Teaching Award for each of these years
2014	Recipient of the Rotman School of Management Teaching Excellence Award, selected by the Committee of program Directors.

- 2005-2013 Excellence in Teaching Awards for the MBA, MFin and EMBA Programs for each of these years.
- 2006 The Dean's Award for Excellence in Teaching.
This teaching award is the most prestigious in the Rotman School of Management and can be won only once during a career.
- 2004 The Edward Kernaghan Professorship in Financial Analysis
- 2004 Teaching Excellence Award in the Executive MBA given by EMBA 22.
- 1995 *Teaching Excellence Award* in the MBA Program, Rotman School of Management, University of Toronto.
- 1993 Research grant from the Society of Management Accountants of Canada for a monograph on "Outsourcing of Information Systems". The grant was received with Anthony Wensley.
- 1992 Research grant from the Society of Management Accountants of Canada for a monograph on "The Design of Executive Incentive Compensation Plans".
- 1992 A grant from the Institute of Internal Auditors Research Foundation. The grant was received for a project with Haim Falk on "The Determination of Scope and Intensity of Internal Auditing in Industrial Organizations".
- 1992 *The 1992 Teaching Excellence Award* in the MBA Program, Rotman School of Management, University of Toronto.
- 1992 Recognition in the Faculty of Management's 1992 Awards Night of the teaching awards.
- 1991 Grant from the Certified General Accountants Canada Research Foundation
- 1991 Grant from the Centre of Accounting Studies, Rotman School of Management, University of Toronto
- 1989 Research grant from the Accounting Research and Education Centre, McMaster University
- 1987 Member of Beta Gamma Sigma, National Honour Society of Business Students
- 1986 The Taggart Fellowship, New York University, Stern School of Business Administration.
- 1984-1986 The Ginsberg Ingerman Fellowship for Israeli doctoral students.

OTHER ACADEMIC AND PROFESSIONAL ACTIVITIES

- 2021 Keynote address on *Data Visualization and Data Analytics in Sports* in the 6th Congress of Exercise and Sport Science.
- 2020 Webinar for the Ono Academic Center (Israel) on *What Does Data Science Tell Us About the COVID-19 Crisis*.
- 2020 Webinar organized by Merage Institute (California) for Israeli and American entrepreneurs on *What Does Data Science Tell Us About the COVID-19 Crisis*.
- 2020 Webinar organized by Rotman Executive Programs and the Canadian Police Association on *Data-Based Strategy for Police Leaders to Deal with COVID-19 in Policing*.
- 2020 Webinar organized by Rotman Executive Programs and the Ontario Association of Chiefs of Police (OACP) on *Data-Based Strategy for Police Leaders to Deal with COVID-19*.
- 2020 Presentation in the OACP Labour Conference in February 14, 2020 on *Data Analytics, Education, and the Police Leader*
- 2019 Presentation in the Ontario Securities Commission (OSC) Academy on *Game Theory, Data Analytics and the Accounting Art of War*
- 2019-Present Ad-hoc reviewer for *Accounting and Business Research*.
- 2019 Session chair at the Twelfth Annual Conference on Innovation Economics in the Searle Center on Law, Regulation, and Economic Growth, Northwestern Pritzker School of Law.
- 2019 2nd Annual Rotman CPA Ontario Centre for Accounting Innovation Research Conference. Moderated the Cyber Security session
- 2019 Panel member, 2019 OACP (Ontario Association of Chiefs of Police) Conference on *Under the Lens - Crisis and Confidence in Policing*
- 2018 Session chair at Eleventh Annual Innovation Economics Conference, The Northwestern University Center on Law, Business, and Economics.
- 2018 Gave a presentation on “*Raising Funds for Projects through Crowdfunding*” in the 2018 CPA Ontario Controllers Conference
- 2008-2012 Member of the Audit Committee, University of Toronto.

- 2008-2009 Member of the Accounting and Audit Committee, Canadian Coalition for Good Governance.
- 2007 Appearance before the House of Commons Standing Committee on Finance on the government's decision to tax income trusts, (Thursday February 1st, 2007).
- 2004 Ad hoc reviewer for *Management Science*
- 2006-Present Member of the editorial board, *Journal of Accounting and Public Policy*
- 2016-Present Member of the editorial board (Associate Editor), the *Journal of Concussion*
- 1997-2006 Ad hoc reviewer for *The Journal of Accounting and Public Policy*
- 1995-Present Ad hoc reviewer for the *Journal of Economic Behavior and Organization*
- 1995-Present Ad hoc reviewer for the *Journal of Public Economics*
- 1994 Discussant in the Capital Markets session at the 1994 Canadian Academic Accounting Association Conference.
- 1993 Special presentation before the Pharmaceutical Association of Canada on credit and risk analysis in the pharmaceutical industry.
- 1991-Present Ad hoc reviewer for the *Canadian Journal of Administrative Sciences*
- 1990-Present Ad hoc reviewer for *Accounting Review*
- 1989-Present Ad hoc reviewer for the *Contemporary Accounting Research*
- 1987-Present Ad hoc referee for the *Journal of Accounting, Auditing and Finance*
- 1990-1991 Member of the CICA Study Group that reported on "The Going concern Assumption", headed by Efrim Boritz.
- 1990 A speaker at the May 1990 SMAO symposium on incentive contracts and their effects on reporting.
- 1987-Present Ad hoc reviewer for the *European Journal of Operations Research*
- 1985-1999 Editor for the Israeli Dictionary of Accounting, (editor in Chief J. Angel)

PROFESSIONAL DESIGNATIONS

1986-Present Certified Public Accountant (USA)

1986-Present Certified Management Accountant (USA)

1983- Present Certified Public Accountant (Israel)

APPENDIX II - MATERIALS RELIED UPON

Academic and Practitioner Literature

- Amiram, D., Boazanic, Z., Rouen, E. 2015. Financial statement errors: evidence from the distributional properties of financial statement numbers. *Review of Accounting Studies*. 20: 1540-1593
- Benford, F. 1938. The Law of Anomalous Numbers. *Proceedings of the American Philosophical Society*, 78(4), 551–572.
- Beneish, M.D. 1999, The detection of earnings management, *Financial Analysts Journal*, vol. 5 no.5, pp. 24–36.
- Beneish, M. D., Lee, C. M. C., & Nichols, D. C. (2013). Earnings manipulation and expected returns. *Financial Analysts Journal*, 69(2), 57-82. <https://doi.org/10.2469/faj.v69.n2.1>
- Canadian Auditing Standards (CAS) 200 *overall objectives of the independent auditor and the conduct of an audit in accordance with Canadian Auditing Standards.*
- CAS 265 *communicating deficiencies in internal control to those charged with governance and management*
- CAS 315 *identifying and assessing the risks of material misstatement*
- CAS 320 *materiality in planning and performing an audit*
- CAS 330: *the auditor's responses to assessed risks*
- CAS 450 *evaluation of misstatements identified during the audit*
- CAS 520 *analytical procedures*
- CAS 705 *modifications to the opinion in the independent auditor's report*
- CAS 700 *forming an opinion and reporting on financial statements*
- Canadian Securities Administrators (CSA). 2008. National Instrument 52-109 *Certification of Disclosure in Issuers' Annual and Interim Filings*. Available at https://www.osc.ca/sites/default/files/pdfs/irps/rule_20081024_52-109_cert-of-disclosure.pdf

CSA. 2008. Companion Policy 52-109CP to National Instrument 52-109 Certification of Disclosure in Issuers' Annual and Interim Filings. Available at https://www.osc.ca/sites/default/files/pdfs/irps/rule_20081024_52-109_companion-policy.pdf

CSA. 2015. National Instrument 51-102 *Continuous Disclosure Obligations* (NI 51-102).

CSA. 2012. Revised Staff Notice 52-306 *Non-GAAP Financial Measures and Additional GAAP Measures*. Available at https://www.osc.ca/sites/default/files/pdfs/irps/csa_20120217_52-306_non-gaap.pdf

Cattuci v. Valeant. August 29, 2017. Quebec Superior Court case no. 500-06-000783-163. Retrieved on July 10, 2022 from [Canlii](#)

Chartered Professional Accountants Canada. 2014. *Management's Discussion and Analysis — Guidance on preparation and disclosure*. Available at <https://www.cpacanada.ca/en/business-and-accounting-resources/financial-and-non-financial-reporting/mdanda-and-other-financial-reporting/publications/guidance-for-md-a-preparation-and-disclosure>

Healy, P.M., and Wahlen, J. M. 1999. "A Review of the Earnings Management Literature and Its Implications for Standard Setting." *Accounting Horizons* 13 (4): 365–383.

Hill, T.P. 1995. "The Significant-Digit Phenomenon". *The American Mathematical Monthly*. 102 (4): 322–327.
<https://www.tandfonline.com/doi/abs/10.1080/00029890.1995.11990578doi:10.1080/00029890.1995.11990578>. <https://www.jstor.org/stable/2974952>

International Accounting Standard Board *The Conceptual Framework for Financial Reporting*.

International Accounting Standard (IAS) 1 *Presentation of Financial Statements*.

IAS 8 *accounting policies, changes in accounting estimates and errors*.

IAS 34 *interim financial reporting*

IAS 36 *impairment of assets*

International Financial Reporting Standard (IFRS) 15. *Revenue from Contracts with Customers*.

IFRS (N.D.) *About us*. Available at <https://www.ifrs.org/about-us/>

Jiménez, J. 2011. Forensic Analysis of the Venezuelan Recall Referendum. *Statist. Sci.* 26 (4) 564 - 583, November 2011. <https://doi.org/10.1214/11-STS375>

- Kilani, A, Georgiou, G.P. 2021. Countries with potential data misreport based on Benford's law, *Journal of Public Health*, Volume 43, Issue 2, June 2021, Pages e295–e296, <https://doi.org/10.1093/pubmed/fdab001>
- Lev, Baruch, and S. Ramu Thiagarajan. (1993). Fundamental Information Analysis. *Journal of Accounting Research* 31, no. 2 (1993): 190–215. <https://doi.org/10.2307/2491270>.
- Mann, A. 2014. Focus: Benford's law a key weapon for detecting fraud. *Law Times*. Available at <https://www.lawtimesnews.com/news/legal-analysis/focus-benfords-law-a-key-weapon-for-detecting-fraud/261374>
- McGregor, G. 2009. Thinking about tricking the tax man? Beware the long arm of Benford's Law. *Ottawa Citizen*. April 30, 2009. Available at <https://ottawacitizen.com/news/thinking-about-tricking-the-tax-man-beware-the-long-arm-of-benfords-law>
- Nigrini, Mark J. 1999. I've Got Your Number: How a mathematical phenomenon can help CPAs uncover fraud and other irregularities. *Journal of Accountancy*. Available at <https://www.journalofaccountancy.com/Issues/1999/May/nigrini>
- Public Company Accounting Oversight Board (PCAOB). Auditing Standard (AS) 1015: *Due Professional Care in the Performance of Work*. Available at <https://pcaobus.org/oversight/standards/auditing-standards/details/AS1015>
- PCAOB, AS 1101: *Audit Risk*. Available at <https://pcaobus.org/oversight/standards/auditing-standards/details/AS1101>
- PCAOB, AS 1105: *Audit Evidence*. Available at <https://pcaobus.org/oversight/standards/auditing-standards/details/AS1105>
- PCAOB. Auditing Standard (AS) 2105: *Consideration of Materiality in Planning and Performing an Audit*. Available at <https://pcaobus.org/oversight/standards/auditing-standards/details/AS2105>
- PCAOB, AS 2110: *Identifying and Assessing Risk of Material Misstatement*. Available at <https://pcaobus.org/oversight/standards/auditing-standards/details/AS2110>
- PCAOB, AS 2820: *Evaluating Consistency of Financial Statements*. Available at <https://pcaobus.org/oversight/standards/auditing-standards/details/AS2820>
- PCAOB, AS 4105: *Reviews of Interim Financial Information*. Available at <https://pcaobus.org/oversight/standards/auditing-standards/details/AS4105>

PCAOB Staff Audit Practice Alert No. 10: *Maintaining and Applying Professional Skepticism in Audits*. Available at https://pcaob-assets.azureedge.net/pcaob-dev/docs/default-source/standards/qanda/12-04-2012_sapa_10.pdf?sfvrsn=8098521e_0

PCAOB Staff Audit Practice Alert No. 12: *Matters Related to Auditing Revenue in An Audit of Financial Statements*. Available at https://pcaob-assets.azureedge.net/pcaob-dev/docs/default-source/standards/qanda/9-9-14_sapa_12.pdf?sfvrsn=5325368c_0

Varian, H. 1972. Benford's Law (Letters to the Editor). *American Statistician*, 26(3):65

World Bank, GDP (current US\$), available at <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD>, retrieved on July 30, 2022.

Lightspeed Public Disclosures

Document	Date of Disclosure
Prospectus	March 7, 2019
Prospectus	August 9, 2021
Investor Presentation (shows as Marketing Materials on Sedar)	August 15, 2019
Business Acquisition Report (Form 51-102F4)	February 8, 2021
MD&A – Q1 2019	August 7, 2019
MD&A – Q2 2019	November 7, 2019
MD&A – Q3 2019	February 6, 2020
MD&A –Q4 and the Year ended March 31, 2020	May 21, 2020
MD&A – Q1 2020	August 6, 2020
MD&A – Q2 2020	November 5, 2020
MD&A – Q3 2020	February 4, 2021
MD&A – Q4 2020 and the Year ended March 31, 2021	May 20, 2021
MD&A – Q1 2021	August 5, 2021
MD&A – Q2 2021	November 4, 2021
MD&A – Q3 2021	February 2, 2022

MD&A – Q4 and the Year ended March 31, 2022	May 19, 2022
Audited annual financial statements –Year ended March 31, 2019	May 30, 2019
Interim financial statements/report – Q1 2019	August 7, 2019
Interim financial statements/report – Q2 2019	November 7, 2019
Interim financial statements/report – Q3 2019	February 6, 2020
Audited annual financial statements –Year ended March 31, 2020	May 21, 2020
Interim financial statements/report – Q1 2020	August 6, 2020
Interim financial statements/report – Q2 2020	November 5, 2020
Interim financial statements/report – Q3 2020	February 4, 2021
Audited annual financial statements –Year ended March 31, 2021	May 20, 2021
Interim financial statements/report – Q1 2021	August 5, 2021
Interim financial statements/report – Q2 2021	November 4, 2021
Interim financial statements/report – Q3 2021	February 2, 2022
Audited annual financial statements –Year ended March 31, 2022	May 19, 2022

Lightspeed Earnings Calls

Lightspeed POS, Inc. Q4 2018 Earnings Call from May 30, 2019. Retrieved on July 14, 2022 from https://s28.q4cdn.com/517092977/files/doc_financials/2019/q4/LSPD-4Q19-Transcript.pdf

EDITED TRANSCRIPT, Q2 2021 Lightspeed POS Inc Earnings Call, EVENT DATE/TIME: NOVEMBER 05, 2020 / 12:30PM GMT, retrieved on July 12, 2022 from https://s28.q4cdn.com/517092977/files/doc_financials/2021/q2/Earnings-Transcript-FY21-Q2.pdf

Lightspeed Press Releases

Earnings Press Release Q3 2020 from February 6, 2020. Retrieved on July 14, 2020 from <https://investors.Lightspeedhq.com/English/newsroom/news-details/2020/Lightspeed-Announces-Third-Quarter-2020-Financial-Results-Updates-Outlook-2020-2-6/default.aspx>

Lightspeed's Website

<https://www.lightspeedhq.com/>

The Spruce Report

Spruce Point Capital Management. *Investment Research Report: Lightspeed Commerce Inc.* Available at <https://www.sprucepointcap.com/lightspeed-commerce-inc/>

Peer Group Financial Statements and Other Public Disclosures

Toast's annual reports for 2020 and 2021, available at <https://investors.toasttab.com/financials/quarterly-results/default.aspx>

Toast Prospectus dated September 21, 2021, available at <https://d18rn0p25nwr6d.cloudfront.net/CIK-0001650164/c6fbb5e4-fcf4-429c-838b-c9f8a25dd507.pdf>

Shift4 Payment Inc. annual reports for 2020 and 2021, available at <https://investors.shift4.com/financials/annual-reports/default.aspx>

PAR Technology Corp.'s annual reports for 2020 and 2021, available at <https://www.annualreports.com/Company/par-technology-corp>

Shopify Inc.'s annual reports for 2020 and 2021, available at <https://investors.shopify.com/financial-reports/default.aspx>

Fiserve Inc. annual reports for 2020 and 2021, available at <https://investors.fiserv.com/financial-information/annual-reports>

NCR's annual reports for 2020 and 2021, available at <https://investor.ncr.com/financial-information/annual-reports>

Use of Database

Some of the calculations use quarterly and annual financial statements data from the Global Market Intelligence - S&P Capital IQ Platform.

APPENDIX III – OUTPUT OF BENFORD’S LAW ANALYSES FOR LIGHTSPEED QUARTERLY INCOME STATEMENTS

Panel A: Benford’s Law Analysis for Q3 2018 – Q2 2021

Benford object:

Data: Benford_Quarterly_Data_Dec_2018_Sept_2021\$`Quart IS`

Number of observations used = 227

Number of obs. for second order = 221

First digits analysed = 2

Mantissa:

Statistic Value

Mean 0.507

Var 0.081

Ex.Kurtosis -1.209

Skewness 0.030

The 5 largest deviations:

	digits	absolute.diff
1	20	10.19
2	11	6.58
3	44	5.78
4	22	4.62
5	14	3.80

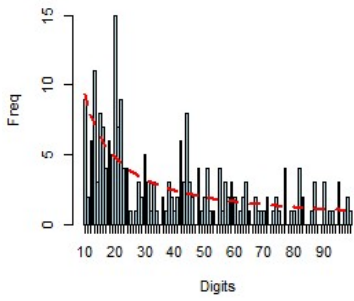
Pearson's Chi-squared test

data: Benford_Quarterly_Data_Dec_2018_Sept_2021\$`Quart IS`

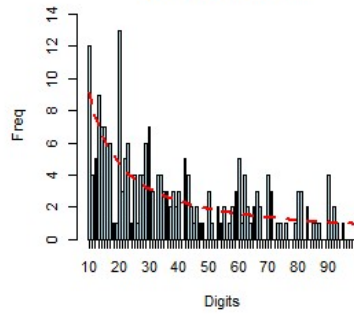
X-squared = 134.94, df = 89, p-value = 0.00121 → Probability of anomalies is 99.879%

Graphs

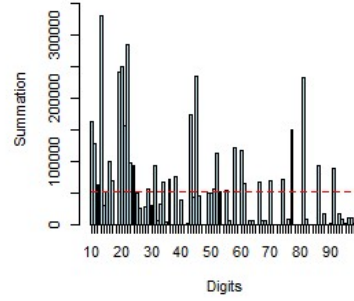
Digits Distribution



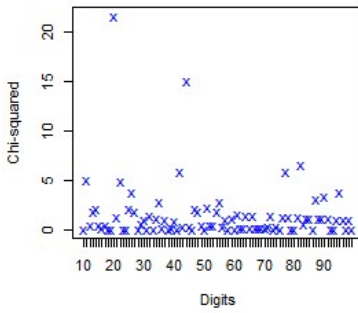
Digits Distribution Second Order Test



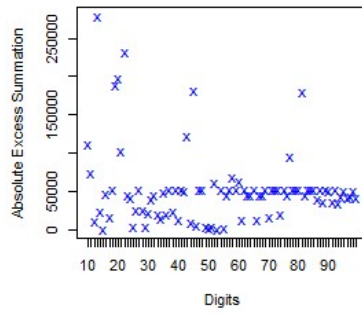
Summation Distribution by digits



Chi-Squared Difference



Summation Difference



Legend

: Benford_Quarterly_Data_Dec_2018_Sept_202

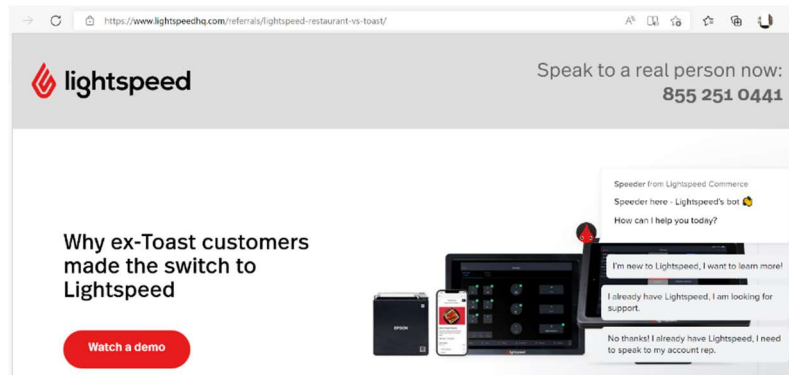


APPENDIX IV – PEER GROUP SELECTION

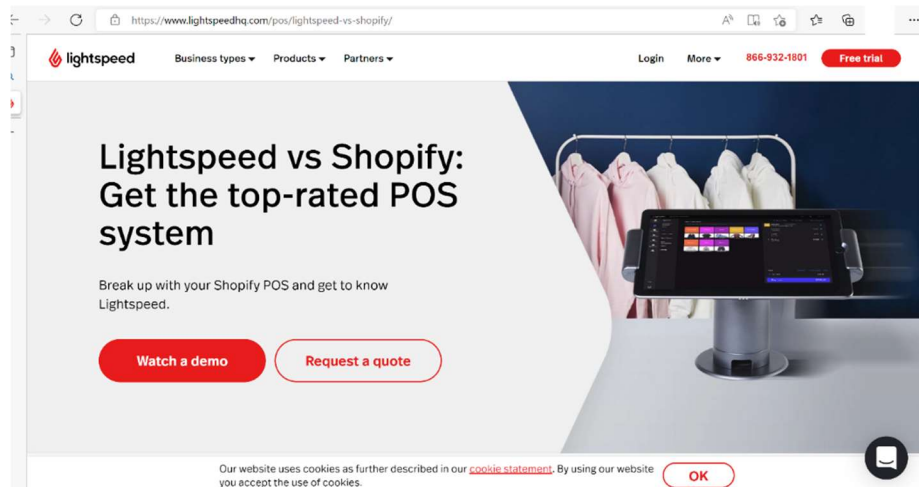
Lightspeed does not mention any specific competitors in any of its MD&As, financial statements, or prospectuses. As such, I had to create such a group.

The peer group of companies was selected as follows:

1. I analyzed Lightspeed's website to determine what platforms it compares itself with. The results showed the following:
 - a. Lightspeed compares its platforms with Toast, as shows in the following screen capture (<https://www.lightspeedhq.com/referrals/lightspeed-restaurant-vs-toast/>):



- b. Lightspeed compares its platform with Shopify, as shows in the following screen capture (<https://www.lightspeedhq.com/pos/lightspeed-vs-shopify/>):




c. Lightspeed further compares itself to the following companies:

The complete POS comparison

Here's a detailed list of the key features you need in a point of sale. Check out a side-by-side analysis of all contenders to see why Lightspeed remains the #1 choice among serious restauranters.

[Get a live comparison](#)

[Watch a demo](#)

Main Features			Toast	TouchBistro	Square for restaurant	Micros	Clover
Tablesides and QR code ordering ⓘ		✓	●	●	●	●	●
Always-on analytics ⓘ		✓	●			●	
Multi-location capabilities ⓘ		✓	●		●	●	●
Fast and transparent integrated payment processing ⓘ		✓		●		●	
PMS integration ⓘ		✓	●			●	
Free 1:1 onboarding ⓘ		✓		●		●	
Free 24/7 support ⓘ		✓	●	●			●
Cloud-based ⓘ		✓	●	●	●	●	●
Offline mode ⓘ		✓	●	●	●	●	●
Advanced coursing and bill-splitting options ⓘ		✓	●	●	●	●	●
Extensive partner network integrations ⓘ		✓	●	●	●	●	●
Flexible hardware options ⓘ		✓		●	●		

- d. As the screenshot shows, Lightspeed’s website compares its platform with that of:
- Micros Systems, acquired by Oracle and thus the financial statements are no longer available.
 - TouchBistro, which is not publicly traded and therefore, its financial statements are not available.
 - Clover Networks, which was acquired in 2012 and consequently, it is not publicly traded and therefore its financial statements are not available.

- d. Square. Square's settlements receivables have no valuation allowance as "as funds are due from large, well-established financial institutions with no historical collections issue." (Square's 2021 Proxy Statement, Page 97). Consequently, I did not include Square in Lightspeed's peer group.
 - e. As such, the only two companies identified on Lightspeed's website that I could use for the purposes of my comparison with a peer group are Toast and Shopify.
 - f. Unfortunately, this group is too small for comparison.
2. To remedy this problem, I reviewed the competition analysis included in Toast's Prospectus dated September 21, 2021 and found the following:

Our Competition

The markets in which we compete are competitive and evolving rapidly. Our platform combines functionality from numerous product categories, and we therefore compete in each of these categories:

- with respect to cloud-based point of sale platforms, we primarily compete with Square Inc., Touchbistro Inc., Clover Network Inc., and Lightspeed POS Inc.;
- with respect to legacy point of sale platforms, we primarily compete with Oracle Corporation – Micros, NCR Corporation, and PAR Technology Corporation;
- with respect to payments solutions, we primarily compete with Heartland Payment Systems, Inc., Shift4 Payments, Inc., Fiserv, Inc, and FreedomPay, Inc.; and
- we also compete with point technology providers with products addressing specific front of house or back of house operations. Many of these point technology providers integrate with our platform.

Toast Prospectus dated September 21, 2021 (page 165)

- a. I ruled out Square Inc., TouchBistro Inc., Clover Networks, Oracle Corporation – Micros for the reasons mentioned above.
 - b. I also had to rule out Heartland Payment Systems, Inc., and FreedPay Inc. as they are not public companies and thus do not publish financial statements.
 - c. Consequently, I added NCR Corporation, PAR Technology Corporation, Shift4Shop and Fiserve to my list of peer companies.
3. My final group of peer companies thus includes the following companies:
- a. Toast
 - b. Shopify
 - c. NCR Corporation
 - d. PAR Technology Corporation
 - e. SHIFT4 PAYMENTS, INC.
 - f. Fiserve

APPENDIX V – DECLARATION REGARDING THE CARRYING OUT OF THE MISSION OF AN EXPERT

MODEL ESTABLISHED BY THE MINISTER OF JUSTICE

Declaration regarding the carrying out of the mission of an expert
(article 235 C.C.P.)

I declare that I will carry out my mission as an expert with objectivity, impartiality and rigour. To enlighten the court in making its decision, I will give my opinion on the basis of my qualifications concerning the points submitted to me, taking into account the facts relating to the dispute or, if my services are required as a court bailiff, I will make an ascertainment describing the materials facts or situation of which I have personal knowledge.

I will, on request, provide the court and the parties with details on my professional qualifications, the progress of my work and, if applicable, the instructions received from a party. I will also comply with the time limits given to me and, if necessary, request the directives from the court that are necessary to carry out my mission.



Signature

Dr. Ramy Elitzur CPA (USA), CMA(USA)

Title

August 1, 2022

Date

SUPERIOR COURT
(Class Action)
Province of Québec
District of Montréal
N°: 500-06-001164-215

STEVEN HOLCMAN ET AL.

Plaintiffs

v.

LLIGHTSPEED COMMERCE INC. ET AL.

Defendants

**NOTICE OF COMMUNICATION OF AN EXPERT
REPORT**
(Articles 239 al. 2 CCP)

ORIGINAL

FAGUY & Co.

BARRISTERS & SOLICITORS INC.

Mtre Elizabeth Meloche

Mtre Shawn K. Faguy

emeloche@faguyco.com

sfaguy@faguyco.com

329 de la Commune Street West, S. 200

Montréal, Québec H2Y 2E1 Canada

Telephone: (514) 285-8100

Fax: (514) 285-8050

BM-1125

LPC AVOCAT INC.

Mtre Joey Zukran

276 Saint-Jacques Street,

Suite 801 Montréal, Québec,

H2Y 1N3 Telephone: (514)

379-1572

Telecopier: (514) 221-4441

Email: jzukran@lpclex.com

EXHIBIT R-4

Frédéric Paré
Direct: 514 397-3690
fpare@stikeman.com

November 8, 2022
File No.: 144699-1025

By email

The Honourable Lukasz Granosik, J.S.C.
Superior Court of Québec
Montreal Courthouse
1 Notre-Dame Street East
Montréal, Québec H2Y 1B6

Dear Mr. Justice:

**Re: Steve Holcman and Tarique Plummer v Lightspeed Commerce Inc. et al.
S.C. No 500-06-001164-215**

Following the case management conference held on September 8, 2022, you will find below the defendants' (other than PwC) position regarding the preliminary applications we intend to file on their behalf and the associated timeframes.

- Motion for leave to adduce relevant evidence, consisting in:
 - an expert report of Ernst & Young, which has formally been engaged, responding to certain allegations set out in the *Re-amended application for authorizing a class action* (the "Authorization Application") and to certain elements contained in the report of Dr. Ramy Elitzur dated August 1st, 2022.
 - an expert report of professor Daniel Taylor, Ph.D., who has just been formally engaged, responding to other elements contained in the report of Dr. Elitzur.
 - one or more sworn statements of representatives of Lightspeed Commerce Inc., along with documents, responding to certain allegations set out in the Authorization Application.
- Motion for leave to examine the proposed class representatives and the Plaintiffs' experts.
- Motion to have Exhibit P-71 removed from the Court record.

We do not intend at this stage to produce an expert report in response to that of Mr. Frank Torchio dated June 17, 2022.

After discussing with our Colleagues in defence and with our experts, we will be in a position to file our preliminary applications by the end of March 2023.

However, as indicated in Mtre Plamondon's letter of this day, our clients are prepared, in the context of the leave sought by the Plaintiffs under the *Québec Securities Act* and in order to expedite matters, to proceed with the cross-examination of Mr. Torchio before the end of this year, and that of Dr. Elitzur in January or February 2023.

We remain at your disposal and are available to answer any questions you may have regarding the above.

Yours truly,

Frédéric Paré

Frédéric Paré

FP/sc

cc. Mtre Joey Zukran, LPC Avocat Inc.
Mtre Elizabeth Meloche and Mtre Shawn K. Faguy, Faguy & Co.
Mtre Éric Préfontaine and Mtre Frédéric Plamondon, Osler, Hoskin & Harcourt LLP
Mtre Stéphanie Lapierre, Stikeman Elliott LLP

EXHIBIT R-5

De : [Frédéric Paré](#)
A : [Amara Khy](#)
Objet : TR: [EXTERNE] RE: Holcman v. Lightspeed et als. - 500-06-001164-215
Date : Monday, January 9, 2023 3:52:35 PM

De : Lukasz Granosik <lukasz.granosik@judex.qc.ca>

Envoyé : Wednesday, November 9, 2022 9:58 AM

À : Frédéric Paré <FPare@stikeman.com>; Madalina Vancu <madalina.vancu@judex.qc.ca>

Cc : Joey Zukran <jzukran@lpclex.com>; Shawn Faguy <skf@faguyco.com>; Stéphanie Lapierre <SLapierre@stikeman.com>; Elizabeth Meloche <emeloche@faguyco.com>; Préfontaine, Éric <eprefontaine@osler.com>; Plamondon, Frédéric <FPlamondon@osler.com>; Sylvie Cournoyer <SCournoyer@stikeman.com>

Objet : RE: [EXTERNE] RE: Holcman v. Lightspeed et als. - 500-06-001164-215

Merci Mes Plamondon et Paré.

J'attends donc les procédures à la fin mars 2023 et je remets le suivi du dossier à cette date.

Dans l'intervalle, n'hésitez pas si je peux vous être utile.

Salutations distinguées,



L'honorable Lukasz Granosik
Cour supérieure du Québec

Téléphone: 514-393-6681 (IP 52272)

Palais de justice de Montréal
1, rue Notre-Dame Est
Montréal, Québec H2Y 1B6

De : Frédéric Paré <FPare@stikeman.com>

Envoyé : 8 novembre 2022 11:19

À : Lukasz Granosik <lukasz.granosik@judex.qc.ca>; Madalina Vancu <madalina.vancu@judex.qc.ca>

Cc : Joey Zukran <jzukran@lpclex.com>; Shawn Faguy <skf@faguyco.com>; Stéphanie Lapierre <SLapierre@stikeman.com>; Elizabeth Meloche <emeloche@faguyco.com>; Préfontaine, Éric <eprefontaine@osler.com>; Plamondon, Frédéric <FPlamondon@osler.com>; Sylvie Cournoyer <SCournoyer@stikeman.com>

Objet : [EXTERNE] RE: Holcman v. Lightspeed et als. - 500-06-001164-215

***ATTENTION : Ce courriel provient de l'extérieur de votre organisation.**

Évitez de cliquer sur un hyperlien, d'ouvrir une pièce jointe ou de transmettre des informations personnelles si vous ne connaissez pas l'expéditeur du courriel. En cas de doute, communiquez verbalement avec lui.

Monsieur le Juge,

Nous vous référons à la lettre ci-jointe.

Meilleures salutations,

Frédéric Paré
Associé/Partner

Direct: +1 514 397 3690
Mobile: +1 514 217 2885
Email: fpare@stikeman.com

De : Castonguay, Anik <ACastonguay@osler.com>
Envoyé : Tuesday, November 8, 2022 10:12 AM
À : Lukasz Granosik <lukasz.granosik@judex.qc.ca>; Madalina Vancu <madalina.vancu@judex.qc.ca>
Cc : Joey Zukran <jzukran@lpclex.com>; Shawn Faguy <skf@faguyco.com>; Frédéric Paré <FPare@stikeman.com>; Stéphanie Lapierre <SLapierre@stikeman.com>; Elizabeth Meloche <emeloche@faguyco.com>; Préfontaine, Éric <eprefontaine@osler.com>; Plamondon, Frédéric <FPlamondon@osler.com>
Objet : Holcman v. Lightspeed et als. - 500-06-001164-215

Monsieur le juge,

Veuillez prendre connaissance de la lettre ci-jointe qui vous est transmise dans le dossier mentionné en titre.

Meilleures salutations,

OSLER

Anik Castonguay
Adjointe juridique
514.904.5797 | ACastonguay@osler.com
Osler, Hoskin & Harcourt S.E.N.C.R.L./s.r.l | osler.com
1000, rue de la Gauchetière ouest
Bureau 2100
Montréal (Québec) H3B 4W5
Télécopieur: 514.904.8101

This e-mail message is privileged, confidential and subject to copyright. Any unauthorized use or disclosure is prohibited.

Le contenu du présent courriel est privilégié, confidentiel et soumis à des droits d'auteur. Il est interdit de l'utiliser ou de le divulguer sans autorisation.

Suivez-nous / Follow us



[LinkedIn](#) / [Twitter](#) / [stikeman.com](#)

Stikeman Elliott S.E.N.C.R.L., s.r.l. Avocats

Stikeman Elliott LLP Barristers & Solicitors

[1155 boul. René-Lévesque Ouest, 41e étage, Montréal, QC H3B 3V2 Canada](#)

Ce message est confidentiel et peut contenir de l'information visée par le secret professionnel. Si vous n'en êtes pas le destinataire, veuillez supprimer ce message et nous avertir immédiatement. Toute utilisation ou communication non autorisée est interdite. / *This email is confidential and may contain privileged information. If you are not an intended recipient, please delete this email and notify us immediately. Any unauthorized use or disclosure is prohibited.*

Avis de confidentialité: Ce message est confidentiel. Il est à l'usage exclusif du destinataire ci-dessus. Toute autre personne est par les présentes avisée qu'il lui est strictement interdit de le diffuser, de le distribuer ou de le reproduire. Si le destinataire ne peut être joint ou vous est inconnu, nous vous prions d'en informer immédiatement l'expéditeur par courrier électronique et de détruire ce message et toute copie de celui-ci.

De : [Kelly Silverson](#) pour le compte de [Amara Khy](#)
A : [jzukran@lpclex.com](#); [emeloche@faguyco.com](#); [skf@faguyco.com](#); [eprefontaine@osler.com](#);
[fplamondon@osler.com](#); [jatherrien@osler.com](#)
Cc : [Frédéric Paré](#); [Stéphanie Lapierre](#); [Amara Khy](#); [Kelly Silverson](#)
Objet : NOTIFICATION | 500-06-001164-215 | STEVE HOLCMAN ET AL. v. LIGHTSPEED COMMERCE INC. ET AL. |
Application for leave to examine, cross-examination and strike Exhibit P-71
Date : Tuesday, January 10, 2023 2:34:52 PM
Pièces jointes : [Lightspeed - Motion for Leave to Examine Plaintiffs and Cross-Examine Plaintiff\(116589023.7\)\(116634060.1\).pdf](#)
Importance : Haute

TRANSMISSION SLIP OF NOTIFICATION BY EMAIL
(Art. 134 C.C.P.)

SENDERS

Names : **Mtre Stéphanie Lapierre / Mtre Frédéric Paré**
Firm : STIKEMAN ELLIOTT LLP
Address : Suite 4100, 1155 René-Lévesque Blvd, West, Montréal, Québec H3B
Phones : 3V2
Emails: 514-397-3029 / 514-397-3690
SLapierre@stikeman.com / FPare@stikeman.com

RECIPIENTS

Names : **Mtre Joey Zukran**
Firm: LPC Avocat Inc.
Address : 276 Saint-Jacques Street, Suite 801, Montréal, Québec, H2Y 1N3
Emails : jzukran@lpclex.com

Mtre Elizabeth Meloche / Mtre Shawn K. Faguy
Faguy & Co.
329 de la Commune Street West, Suite 200, Montréal, Québec H2Y 2E1
emeloche@faguyco.com / skf@faguyco.com

Mtre Éric Préfontaine / Frédéric Plamondon / Josy-Ann Therrien
OSLER, HOSKIN & HARCOURT LLP
1000 de la Gauchetière Street West, Suite 2100, Montréal, Québec H3B
4W5
eprefontaine@osler.com / fplamondon@osler.com /
jatherrien@osler.com

Place, date and time of transmission: Montreal, January 10 , 2023, *see time of email*

NATURE OF DOCUMENT : **DEFENDANT'S APPLICATION FOR LEAVE DE BENE
ESSE TO EXAMINE PROPOSED CLASS
REPRESENTATIVES AND PLAINTIFF'S EXPERTS
UNDER THE QUÉBEC SECURITIES ACT, FOR LEAVE
TO EXAMINE PROPOSED CLASS REPRESENTATIVES
UNDER THE CODE OF CIVIL PROCEDURE AND TO
STRIKE EXHIBIT P-71, NOTICE OF PRESENTATION
AND EXHIBITS R-1 TO R-5 .**

Court docket number : 500-06-001164-215

Our file : 144699-1025

Number of pages transmitted : 292

If transmission is not clear or complete, please call Kelly Silverson (514) 397- 3327

CONFIDENTIALITY CAUTION: This message is intended only for the use of the individual or entity to which it is addressed and contains information that is privileged and confidential. If the reader of this message is not the intended recipient, or the employee or agent responsible for delivering the message to the intended recipient, you are hereby notified that any dissemination, distribution, or copying of this communication is strictly prohibited. If you have received this communication in error, please notify us immediately by telephone.

SUPERIOR COURT (Class Actions)	
No : 500-06-001164-215	
PROVINCE OF QUÉBEC DISTRICT OF MONTRÉAL	
STEVE HOLCMAN	
- and -	
TARIQUE PLUMMER	
Applicants	
- v. -	
LIGHTSPEED COMMERCE INC. ET AL.	
Defendants	
BS0350	File no. : 144699-1025
DEFENDANTS' APPLICATION FOR LEAVE <i>DE BENE ESSE</i> TO EXAMINE PROPOSED CLASS REPRESENTATIVES AND PLAINTIFFS' EXPERTS UNDER THE QUÉBEC <i>SECURITIES ACT</i>, FOR LEAVE TO EXAMINE PROPOSED CLASS REPRESENTATIVES UNDER THE <i>CODE OF CIVIL PROCEDURE</i> AND TO STRIKE EXHIBIT P-71	
ORIGINAL	
Me Stéphanie Lapierre 514 397 3029 slapierre@stikeman.com Me Frédéric Paré 514 397 3690 fpare@stikeman.com STIKEMAN ELLIOTT Stikeman Elliott LLP LAWYERS 1155 René-Lévesque Blvd. W., 41st Floor Montréal, Québec, Canada H3B 3V2	