QRTMD TSX and TSXV Level 1

TL1/CL1

Functional Specifications

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Chapter 1　Introduction

This specification defines the communications interface and the information records transmitted on the Quantum RTMD (QRTMD) Toronto Stock Exchange Level 1 (TL1) and TSX Venture Level 1 (CL1) services.

These data feeds are comprised of trades, quotes, symbol, stock state, and market state messages from Toronto Stock Exchange and TSX Venture Exchange.

The intended audience of this specification consists of business analysts and programmer analysts.

- Business analysts should focus primarily on Chapter 3, "Business Content Messages", Chapter 4, "Equity Price Updating Rules" and Chapter 5, "Market on Close (MOC)". These sections define how the trading information is defined in the Toronto Level 1and TSX Venture Exchange Level 1 services. In addition to these sections, the business analysts should be familiar with the trading rules and trading scenarios that these messages represent.

- Programmer analysts should be familiar with the entire specification, although their focus should be on message structure and parsing.

To develop and implement systems that can receive and process TL1/CL1 data, this document must be used with the Quantum RTMD Protocol Specification and Service Access Guide.

Chapter 2   Transmission Format

Each message is framed by STX and ETX characters. The format used is:

STX	HEADER	MESSAGE	ETX

STX and ETX indicate the beginning and end of the record being transmitted.

2.1   Data format

All times contained in messages are based on a 24-hour clock, Eastern Standard Time (EST).

Whenever a field is "blank", it contains the ASCII space character (HEX 20). Unless stated otherwise:

- All numeric fields are right justified, zero-filled.
- All alphanumeric fields are left justified, blank filled

2.2   Message header

The following standard message header is supplied on each message (size in bytes, fields in ASCII):

Message Length	Sequence Number	Service Identifier	Retransmission Identifier	Continuation Identifier	Message Type	Exchange Identifier
4	9	3	1	1	2	2

- **Message Length**: Does not include the STX and ETX characters
- **Sequence Number**: Every message is assigned a sequence number from 000000001 to 999999999 (decimal, ASCII), with wrap-around. The sequence number is incremented by 1 for each message sent.
- Service Identifier: "TL1" or "CL1"
- **Re-transmission Identifier**: Contains the following value:

0	Normal transmission

- **Continuation Identifier**: Contains the following value:

0	Stand-alone message

- **Message Type**: Left justified, padded with a blank when necessary.
- **Exchange Identifier**: Left justified, padded with a blank when necessary and contains the value of "T" for the TL1 service or "V" for the CL1 service.

Related topics:

- Chapter 3, "Business Content Messages"

2.3   Message retransmission

The Level 1 services includes support for automated message retransmission as described in Reference [1].

Chapter 3   Business Content Messages

This chapter provides the message record formats and definitions for the following messages.

Table 1: Messages transmitted on Level 1

Message Type	Message
A	Equity Trade
B	Symbol Status
C	MOC Imbalance Notification
CA	MOC Price Movement Delay
D	Stock State
E	Equity Quote
G	General
H	Equity Trade Cancellation
S	Market State
T	Trading Tier Status
X	Equity Trade Correction

3.1 Message Type A – Equity Trade

Field Name	Length (Bytes)	Data Type	Definition	Validation Rules/Comments
Message Header	22			See Section 2.2
Symbol	8	Alphanumeric	Stock symbol	"XXX.XX.X"
Volume	9	Numeric	Volume of shares traded	
Trade Price	11	Numeric	Price at which the transaction took place	6 digits + 5 digits, no decimal. Divide by 100,000 to obtain the price.
Buyer ID	3	Numeric	Identifies the buying broker	
Seller ID	3	Numeric	Identifies the selling broker	
Trade Time Stamp	6	Numeric	Time of trade	HHMMSS
Last Sale	11	Numeric	Last sale price of the symbol	6 digits + 5 digits, no decimal. Divide by.100,000 to obtain the actual last sale price.
Trade ID	9	Numeric	Unique identifier per stock assigned to each trade	
Cross Type	1	Alphanumeric	Refers to one of five specialty cross types. These crosses are treated differently from regular crosses with respect to interference and or price validation	Valid values are: • I: Internal • B: Basis • C: Contingent • S: STS (Special Trading Session) • V: VWAP (Volume Weighted Average Price) • Default: " "
MOC	1	Alphanumeric		"Y"	"N"; default is "N"

Field Name	Length (Bytes)	Data Type	Definition	Validation Rules/Comments
Bypass	1	Alphanumeric	To indicate orders are tradable against only visible/disclosed volumes and bypasses Iceberg orders, RT participation and autofill, and special terms book. Any part of the OrderQty balance not filled immediately is "killed/cancelled".	"Y" | "N"; default is "N"
Opening Trade	1	Alphanumeric	An indicator as to whether the trade occurred at the opening or was the first board lot trade of the day.	"Y" | "N"; default is "N"
Settlement Terms	1	Alphanumeric	Settlement terms associated with the order	Valid values are: • "C"" Cash • "N": NN (non-net) • "M": MS (derivatives-related contingent equity trade) • "T": CT (cash today) • "D": If there is a valid Settlement Date associated with the order
Trading System Time Stamp	20	Numeric	The time at which the business action occurred	YYYYMMDDHHMMSSmmmmmm (year, month, day, hour, minute, second, millionths of a second)

Total: **107**

3.2   Message type B – Symbol Status

Field Name	Length (Bytes)	Data Type	Definition	Validation Rules/Comments
Message Header	22			See Section 2.2
Symbol	8	Alphanumeric	Stock symbol	"XXX.XX.X"
Trading System Time Stamp	20	Numeric	The time at which the business action occurred	YYYYMMDDHHMMSSmmmmmm (year, month, day, hour, minute, second, millionths of a second)
Exchange ID	3	Alphanumeric	Identifies the exchange from which the message originated	
CUSIP	12	Alphanumeric	Clearing and settlement registration number	
Board Lot	9	Numeric	Board lot volume	BoardLot = Volume
Currency	1	Alphanumeric	The currency of a price	"C" | "U"
Face Value	9	Numeric	The face value of a debenture	6 digits +3 digits, no decimal. Divide by 1,000 to obtain the actual face value.
Last Sale	11	Numeric	Last sale price of the symbol	6 digits + 5 digits, no decimal. Divide by.100,000 to obtain the actual last sale price.
MOC Eligible	1	Alphanumeric	Identifies whether the stock is eligible to participate in the Market On Close session each day.	"Y" | "N" ; default is "N"
Product Type	1	Alphanumeric	The product type for a symbol	Valid values are: • "B": Debenture • "E": Equity
Symbol Name	40	Alphanumeric	The security/issue symbol's complete company name	1*40PrintableASCII ; no default
Stock Group	2	Numeric	An indicator of stock group	1*2Digit

Field Name	Length (Bytes)	Data Type	Definition	Validation Rules/Comments
Stock State	2	Alphanumeric	The state of the stock	Valid Values are: • "AR": AuthorizedDelayed • "IR": InhibitedDelayed • "AS": AuthorizedHalted • "IS": InhibitedHalted • "AG": AuthorizedFrozen • "IG": InhibitedFrozen • "AE": Authorized Price Movement Delayed • "AF": Authorized Price Movement Frozen • "IE": Inhibited Price Movement Delayed • "IF": Inhibited Price Movement Frozen • "A": Authorized • "I": Inhibited •

Total   141

3.3 Message type C – MOC Imbalance Notification

Field Name	Length (Bytes)	Data Type	Definition	Validation Rules/Comments
Message Header	22			See Section 2.2
Symbol	8	Alphanumeric	Stock symbol	"XXX.XX.X"
Imbalance Side	1	Alphanumeric	Marker to indicate which side has a Volume Imbalance for Market On Close	Valid values are: • "B": Buy • "S": Sell • " ": Not applicable
Imbalance	9	Numeric	Identifies the volume of shares of the Imbalance side of Market on Close.	

Total: 40

The message is transmitted at 3:40 p.m. EST each trading day. If the Imbalance side is blank, there is no imbalance.

3.4 Message type CA – MOC Price Movement Delay

Field Name	Length (Bytes)	Data Type	Definition	*Validation Rules/Comments*
Message Header	22			*See Section 2.2*
Symbol	8	Alphanumeric	Stock symbol	*"XXX.XX.X"*
Trading System Time Stamp	20	Numeric	The time at which the business action occurred	YYYYMMDDHHMMSSmmmmmm (year, month, day, hour, minute, second, millionths of a second)
Stock State	2	Alphanumeric	The state of the stock	Valid Values are: • "AE": Authorized Price Movement Delayed • "AF": Authorized Price Movement Frozen • "IE": Inhibited Price Movement Delayed • "IF": Inhibited Price Movement Frozen
CCP	11	Numeric	The price at which the maximum amount of stock will trade	6 digits + 5 digits, no decimal. Divide by 100,000 to obtain the actual calculated closing price.
VWAP	11	Numeric	Volume weighted average price based on trades	6 digits + 5 digits, no decimal. Divide by 100,000 to obtain the actual volume weighted average price.
Total	**74**			

If Price Movement Extension is invoked, this message is transmitted at 4:00 p.m. EST.

3.5 Message type D – Stock State

Field Name	Length (Bytes)	Data Type	Definition	Validation Rules/Comments
Message Header	22			See Section 2.2
Symbol	8	Alphanumeric	Stock symbol	"XXX.XX.X"
Trading System Time Stamp	20	Numeric	The time at which the business action occurred	YYYYMMDDHHMMSSmmmmmm (year, month, day, hour, minute, second, millionths of a second)
Comment	40	Alphanumeric		
Stock State	2	Alphanumeric	The state of the stock	Valid Values are: • "AR": AuthorizedDelayed • "IR": InhibitedDelayed • "AS": AuthorizedHalted • "IS": InhibitedHalted • "AG": AuthorizedFrozen • "IG": InhibitedFrozen • "A": Authorized • "I": Inhibited
Opening Time	6	Numeric	The opening time for a stock	HHMMSS
Total	**98**			

3.6   Message type E – Equity Quote

Field Name	Length (Bytes)	Data Type	Definition	Validation Rules/Comments
Message Header	22			See Section 2.2
Symbol	8	Alphanumeric	Stock symbol	"XXX.XX.X"
Bid Price	9	Numeric	Bid price for the equity	6 digits + 3 digits, no decimal. Divide by 1,000 to obtain the actual bid price.
Bid Size	9	Numeric	Volume on the bid side.	Volume
Ask Price	9	Numeric	Ask price for the equity	6 digits + 3 digits, no decimal. Divide by 1,000 to obtain the actual ask price.
Ask Size	9	Numeric	Volume on the ask side.	Volume
Trading System Time Stamp	20	Numeric	The time at which the business action occurred	YYYYMMDDHHMMSSmmmmmm (year, month, day, hour, minute, second, millionths of a second)

Total   86

If either the bid or the ask has changed, a full update quote is transmitted.

When the stock resumes trading, a new quote is sent.

3.7   Message type G – General Message

Field Name	Length (Bytes)	Data Type	Definition	Validation Rules/Comments
Message Header	22			See Section 2.2
Trading System Time Stamp	20	Numeric	The time at which the business action occurred	YYYYMMDDHHMMSSmmmmmm (year, month, day, hour, minute, second, millionths of a second)
Bulletin Indicator	1	Alphanumeric	Indicates the message is a bulletin	"Y"	"N"; default is "N"
Message Text	80	Alphanumeric	Bulletin in textual format	Left justified and blank filled
Total	**123**			

3.8   Message type H – Equity Trade Cancellation

Field Name	Length (Bytes)	Data Type	Definition	Validation Rules/Comments
Msg Header	22			See Section 2.2
Symbol	8	Alphanumeric	Stock symbol	"XXX.XX.X"
Volume	9	Numeric	Volume of shares traded	
Trade Price	11	Numeric	Price at which the transaction took place	6 digits + 5 digits, no decimal. Divide by 100,000 to obtain the price.
Buyer ID	3	Numeric	Identifies the buying broker	
Seller ID	3	Numeric	Identifies the selling broker	
Trade Time Stamp	6	Numeric	Time of trade	HHMMSS
Original Trade ID	9	Numeric	Trade number	
Last Sale	11	Numeric	Last sale price of the symbol	6 digits + 5 digits, no decimal. Divide by.100,000 to obtain the actual last sale price.
Trading System Time Stamp	20	Numeric	The time at which the business action occurred	YYYYMMDDHHMMSSmmmmmm (year, month, day, hour, minute, second, millionths of a second)

Total   102

Message types H is used to transmit trade cancellations of equity trades.

A trade cancellation reduces total volume, value, and transactions by the amount of the cancellation.

3.9 Message type S – Market State

Field Name	Length (Bytes)	Data Type	Definition	Validation Rules
Message Header	22			See Section 2.2
Trading System Time Stamp	20	Numeric	The time at which the business action occurred	YYYYMMDDHHMMSSmmmmmm (year, month, day, hour, minute, second, millionths of a second)
Stock Group	2	Numeric	An indicator of stock group	1*2Digit
Market State	1	Alphanumeric	The indication of the current market state.	Valid Values are: • "P": Pre-open • "O": Opening • "S": Open • "C": Closed • "R": Extended Hours Open • "F": Extended Hours Close • "N": Extended Hours CXLs • "M": MOC Imbalance • "A": CCP Determination • "E": Price Movement Extension • "L": Closing •

Total **45**

3.10   Message type T – Trading Tier Status

Field Name	Length (Bytes)	Data Type	Definition	Validation Rules
Message Header	22			See Section 2.2
Exchange ID	3	Alphanumeric	Identifies the exchange from which the message originated	
Total Number of Symbols	5	Numeric	The total number of stocks per trading tier and Exchange ID	
Total Number of Stock Groups	3	Numeric	Total number of stock groups per trading tier and exchange ID	
Trading System Time Stamp	20	Numeric	The time at which the business action occurred	YYYYMMDDHHMMSSmmmmmm (year, month, day, hour, minute, second, millionths of a second)
Trading Tier ID	6	Alphanumeric	A Trading Engine identifier	
Total	**59**			

XATS send Trading Tier Status messages to the client at the beginning of each trading day. The Trading Tier Status message provides statistical information on the number of symbols and stock groups for the current trading day.

3.11   Message type X – Equity Trade Correction

Field Name	Length (Bytes)	Data Type	Definition	Validation Rules
Message Header	22			See Section 2.2
Symbol	8	Alphanumeric	Stock symbol	"XXX.XX.X"
Volume	9	Numeric	Volume of shares traded	
Trade Price	11	Numeric	Price at which the transaction took place	6 digits + 5 digits, no decimal. Divide by 100,000 to obtain the price.
Buyer ID	3	Numeric	Identifies the buying broker	
Seller ID	3	Numeric	Identifies the selling broker	
Trade Time Stamp	6	Numeric	Time of trade	HHMMSS
Last Sale	11	Numeric	Last sale price of the symbol	6 digits + 5 digits, no decimal. Divide by.100,000 to obtain the actual last sale price.
Trade ID	9	Numeric	Unique identifier per stock assigned to each trade	
Cross Type	1	Alphanumeric	Refers to one of five specialty cross types. These crosses are treated differently from regular crosses with respect to interference and or price validation	Valid values are: • I: Internal • B: Basis • C: Contingent • S: STS (Special Trading Session) • V: VWAP (Volume Weighted Average Price) • Default: " "
MOC	1	Alphanumeric		"Y"	"N"; default is "N"

Field Name	Length (Bytes)	Data Type	Definition	Validation Rules
Bypass	1	Alphanumeric	To indicate orders are tradable against only visible/disclosed volumes and bypasses Iceberg orders, RT participation and autofill, and special terms book. Any part of the OrderQty balance not filled immediately is "killed/cancelled".	"Y" | "N"; default is "N"
Opening Trade	1	Alphanumeric	An indicator as to whether the trade occurred at the opening or was the first board lot trade of the day.	"Y" | "N"; default is "N"
Settlement Terms	1	Alphanumeric	Settlement terms associated with the order	Valid values are: • "C"" Cash • "N": NN (non-net) • "M": MS (derivatives-related contingent equity trade) • "T": CT (cash today) • "D": If there is a valid Settlement Date associated with the order
Original Trade ID	9	Numeric	Trade number	
Trading System Time Stamp	20	Numeric	The time at which the business action occurred	YYYYMMDDHHMMSSmmmmmm (year, month, day, hour, minute, second, millionths of a second)
Total	**116**			

Chapter 4   Equity Price Updating Rules

4.1   Odd Lot trades

Trades for less than a board lot (odd lot) do not set official open, high, low, and last prices. Vendors should indicate that trading prices for such messages reflect odd lot trading only and are not official statistics for that trading session.

The Alpha does not set open, high, low and last prices until the first board lot trade.

Odd Lot prices remain in effect only for the current day and do not establish previous closing prices. The previous closing price is always set by the last board lot trade price.

Note: If the *only* trades for the day are odd lot trades, previous close for the stock will not be changed.

Odd Lot trades increase the volume, value, and number of transactions totals. Odd lot trade cancellations will reduce these totals.

4.2   Board Lot trades

Trades for board lot multiples set the open, high, low, and last price for the stock and are used to establish the next day's previous closing price. Board Lot trades will increase the volume, value, and number of transactions totals. Board Lot trade cancellations will reduce these totals.

4.3   Board lot rules

Price	Board lot Amount
Under $0.10	1,000 shares
$0.10 to $0.99	500 shares
$1.00 & over	100 shares

4.4   Equity price rules

Price	Increments
less than $0.50	half cents or $0.005
$0.50 & above	one cent or $0.01

4.5   Cross types

| Term	Description
Basis	A transaction whereby a basket of securities or an index participation unit is transacted at prices achieved through the execution of related exchange-traded derivative instruments, which may include index futures, index options and index participation units in an amount that will correspond to an equivalent market exposure. Basis trades are included in the volume, value, and transaction totals but do not affect open, high, low, last sale, and close prices.
By-Pass Trade	Regulatory Trade – indicating the "hidden" or iceberg portion of the order was not satisfied. Depending on whether the trade was used to move the price down in accordance with UMIR, or the ByPass Cross was put up, it may or may not set the last sale price. They are also included in the volume, value, and number of transactions.
Contingent Trade	Results from an order (e.g. to sell) placed by a Participating Organization (PO) on behalf of a client for one security which is contingent on the execution of a second order (e.g. to buy) placed by the same client for an offsetting volume of a related security Contingent trades can set the open, high, low, last sale and close prices. They are also included in the volume, value, and number of transactions.
Internal Cross	An "internal cross" is defined as a cross between two client accounts of a Participating Organization which are managed by a single firm acting as portfolio manager with discretionary authority to manage the investment portfolio granted by each of the clients.
STS (Special Trading Session)	Results from an order placed by a PO on behalf of a client for execution in the Special Trading Session at the last sale price. STS trades are executed at the closing price and are included in the volume, value of number of transactions.
VWAP	A transaction for the purpose of executing trades at a volume-weighted average price of the security traded for a continuous period on or during a trading day on the exchange. VWAP trades are included in the volume, value, and transaction totals but do not affect open, high, low, last sale, and close prices.

4.6   Settlement terms

Term	Description
Cash (C)	A trade that is settled the next day. Cash trades are included in the volume, value, and transaction totals but do not affect open, high, low, last sale, and close prices.
Delayed Delivery (D)	A transaction in which delivery of the security will be delayed beyond the normal settlement period.
	Delayed delivery trades are included in the volume, value, and number of transaction totals but do not affect the open, high, low, last sale, and close prices.
Special Terms Trading (M, T, N)	All trades executed and settled in other than the regular manner. Special Terms Trades do not affect the open, high, low, and last prices (as indicated by the trade markers).
	Special terms' trades are included in the volume, value, transactions totals.

Chapter 5   Market on Close (MOC)

5.1   Hours of operation
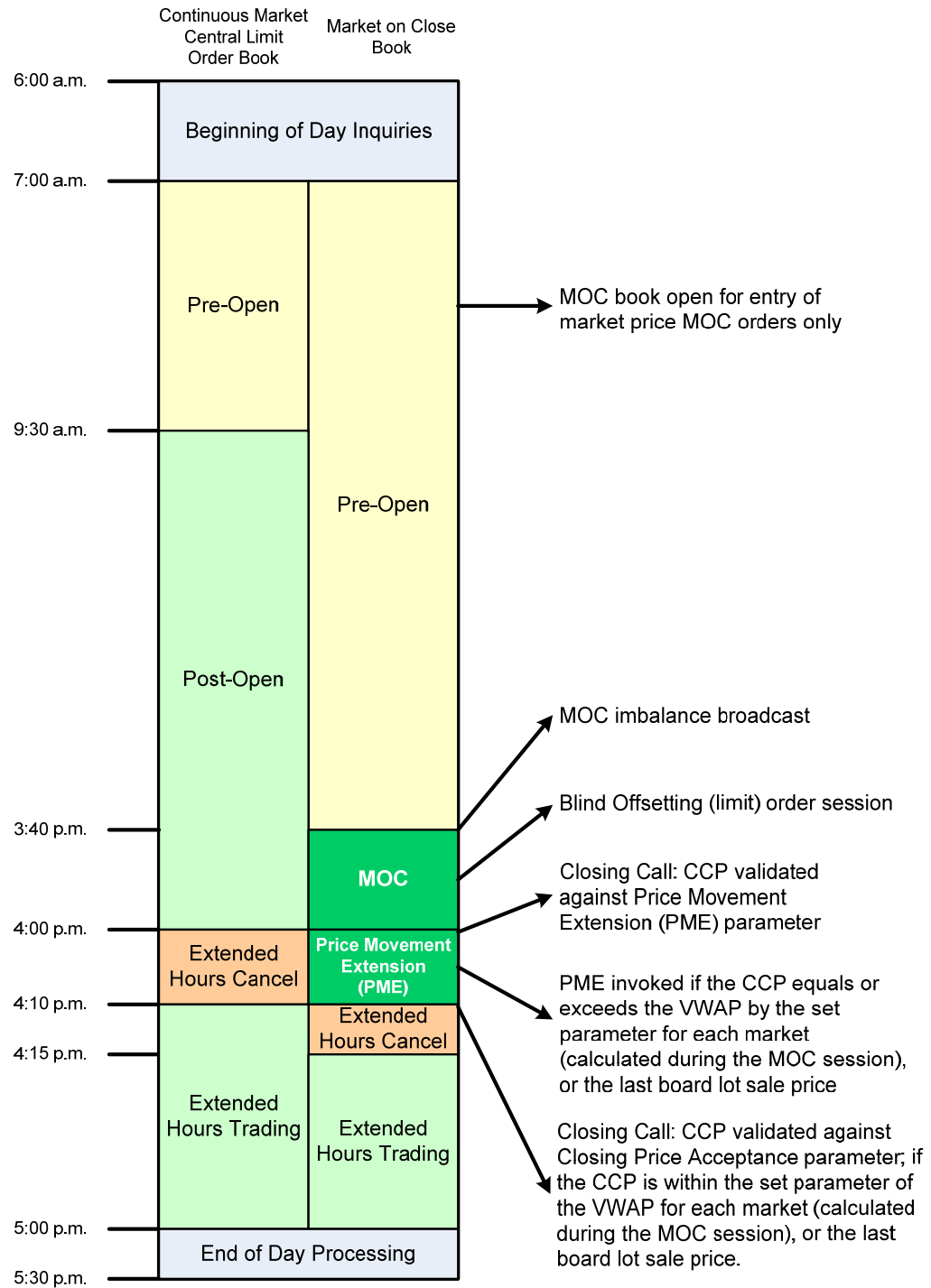
5.2   MOC definitions

The following definitions are provided as reference for terms used in this document.

Term	Definition
Blind Offsetting Order	If there is a MOC imbalance at 3:40 p.m., blind offset orders are permitted in the MOC book to realize untapped liquidity from participants worried about information leakage and market impact costs.
CPA	Closing Price Acceptance Parameter
CCP	Calculated Closing Price The CCP is the price at which the maximum amount of stock will trade The CCP is calculated using logic similar to the opening
Last sale price (last board lot sale)	Is considered a reference price for the purposes of this document
LSTS	Last Sale Trading Session
MOC Imbalance	The Imbalance is equal to the difference between total MOC Buy and Sell orders
MOC	Market on Close
MOC Book	The file that receives and holds all MOC orders separately from the continuous market between 7:00 a.m. and 4:00 p.m. Order entry access to the MOC book is available for anyone who has access to the continuous market
MOC-Eligible Stock	Stocks designated by the TSXV to participate in the MOC. For MOC rules, session times, and eligible stocks, refer to the TMX website: http://www.tmx.com/en/trading/products_services/market_on_close
MOC Order	An order for the purchase or sale of a MOC Security entered in the MOC Book on a Trading Day for the purpose of executing at the Last Sale Price of the security on that Trading Day, but does not include a Special Trading Session Order. MOC orders will be priced as market orders.
Non-specified Stocks	Includes any stocks outside of the S&P TSX 60
Offsetting Limit Order	An order for the purchase or sale of a MOC Security entered in the Closing Market Book on a Trading Day for the purpose of executing at the Last Sale Price of the security on that Trading Day, provided that the Last Sale Price does not exceed a specified maximum price or fall below a specified minimum price, but does not include a Special Trading Session Order.
Orders	Unless stated otherwise in this document, includes New orders, Cancel orders and CFOs.
Order Originator	The trader that enters the order. Also includes the firm from which the order was submitted.

Term	Definition
PME	Price Movement Extension - The price movement extension provides the market the opportunity to react to a significant movement in the closing price. An additional 10-minute period is provided for entry of offsetting blind limit orders.
Special Trading Session	The period of time in which last sale trading is permitted.
Specified Stocks	Includes the S&P TSX 60 Also includes stocks being added or deleted from the S&P TSX 60 index as well as other specified stocks

Note: For MOC rules, session times and eligible securities, refer to the TMX website:
http://www.tmx.com/en/trading/products_services/market_on_close/

Chapter 6   Operating Sequence

6.1   Transmission times

1. Clients can listen on the TL1 port between 3:00 a.m. and 6:00 p.m. EST on any business day.
2. The following table contains message transmission times:

Message Type	Message Name	Transmission Times (EST)		Notes
		Start (approx)	End (approx)	
A	Equity Trade	9:30 a.m.	5:00 p.m.	As trades occur
B	Symbol Status			Symbol Status messages are disseminated at approximately 3:05 a.m.
C	MOC Imbalance Notification	3:40 p.m.	3:41 p.m.	One message for each stock
CA	MOC Price Movement Delay	4:00 p.m.	4:01 p.m.	Sent only if PME invoked for a stock
D	Stock State			Sent only when there is a change in stock status on the Trading Engine
E	Equity Quote	4:30 a.m.	4:35 a.m.	Start of day quotes
		7:00 a.m.	5:00 p.m.	Intra-Day quotes
G	General			Sent when a General message is sent from the Trading Engine.
H	Equity Trade Cancellation	9:30 a.m.	5:00 p.m.	As required
S	Market State			Sent when market state changes or the trading session changes in Trading Engine.
T	Trading Tier Status			One for each Trading Engine sent at beginning of the day at approximate 3:00 a.m.
X	Equity Trade Correction			Sent when a previously matched trade gets cancelled

6.2   Trading hours

Regular Trading Session (EST)			Last Sale Trading Session (EST)		
Pre-Open	Open	Close	Pre-Open	Open	Close
7:00 a.m.	9:30 a.m.	4:00 p.m.	N/A	4:15 p.m.	5:00 p.m.

Appendix A Symbology Rules

Description	Symbology
Debenture	.DB
Installment Receipt	.IR
Preferred Share	.PR
Preferred Share	.PE
Preferred Share	.PF
Rights	.RT
Notes	.NO
Notes	.NS
Notes	.NT
Units	.UN
Warrants	.WT
Class	See table below for Share Class

A.1   Share Classes

Note: All share classes will have a Level 1 Type of ' . '

Description	Descriptor
Class A, B, C, X	.A, .B, .C
Equity Dividend	.E
Capital Pool Company	.P
Legended Share	.L
BOOMS	.M
Subscription Receipt	.R
Second Subscription Receipts	.N
Third Subscription Receipts	.O
U.S. Trading Terms	.S
Second U.S. Trading Terms	.T
USD Traded Issue	.U
Second USD Traded Issue	.V
When Issued	.W
Second When Issued	.I
Redeemable Common Shares	.Y

A.2   Symbology Notes

Description	Note	Example
All	Symbol Roots can be 1, 2 or 3 digits in length	A – valid AB – valid ABC – valid ABCD – not valid
All	In limited cases, common and preferred shares can have different symbol roots. These cases arise when a company name change is only applicable to common share issues but preferred shares remain under the old company name	TransAlta Corp Common share – TA Preferred share – TAU.PR.A
All	A symbol cannot contain two single letter extensions	ABC.XX.Y – valid ABC.X.Y – not valid
Preferred Share	.PR, .PE, .PF extension must be followed by a second, single letter, extension	ABC.PR.A
Unit	.UN extension cannot be followed by a second, single letter, extension. A second Unit issue for the same issuer will be denoted with a single letter extension	1st Unit Issue – ABC.UN 2nd Unit Issue – ABC.A
Warrant	.WT extension can be followed by a single letter extension for additional warrant issues	1st Warrant – ABC.WT 2nd warrant – ABC.WT.A
Right	.RT extension can be followed by a single letter extension for additional rights issues	1st Right – ABC.RT 2nd Right – ABC.RT.A
Debenture	.DB extension can be followed by a single letter extension for additional debenture issues	1st debenture – ABC.DB 2nd debenture – ABC.DB.A

Appendix B ASCII Character Set

HEX	ASCII	HEX	ASCII	HEX	ASCII
00	NUL	2D	-	5A	Z
01	SOH	2E	.	5B	
02	STX	2F	/	5C	
03	ETX	30	0	5D	
04	EOT	31	1	5E	
05	ENQ	32	2	5F	
06	ACK	33	3		
07	BEL	34	4	5B	
08	BS	35	5	5C	
09	HT	36	6	5D	
0A	LF	37	7	5E	
0B	VT	38	8	60	
0C	FF	39	9	61	a
0D	CR	3A		62	b
0E	SO	3B		63	c
0F	SI	3C		64	d
10	DLE	3D		65	e
11	DC1	3E		66	f
12	DC2	3F		67	g
13	DC3	40	@	68	h
14	DC4	41	A	69	i
15	NAK	42	B	6A	j
16	SYN	43	C	6B	k
17	ETB	44	D	6C	l
18	CAN	45	E	6D	m
19	EM	46	F	6E	n
1A	SUB	47	G	6F	o
1B	ESC	48	H	70	p
1C	FS	49	I	71	q
1D	GS	4A	J	72	r
1E	RS	4B	K	73	s
1F	US	4C	L	74	t
20	SP	4D	M	75	u

HEX	ASCII	HEX	ASCII	HEX	ASCII
21	!	4E	N	76	v
22	"	4F	O	77	w
23	#	50	P	78	y
24	$	51	Q	79	z
25	%	52	R	7A	
26	&	53	S	7B	
27	'	54	T	7C	
28	(	55	U	7D	
29	)	56	V	7E	
2A	*	57	W	7F	DEL
2B	+	58	X		
2C	,	59	Y		

Appendix C References

[1]   *STAMP Specification*, Version 6.4, TMX Group, November 2012.

[2]   *QRTMD Protocol Specification and Service Access Guide*, Version 2.0 TMX Group, December 2012.

[3]   *QRTMD TL2/CL2 Functional Specifications*, Version 1.02, TMX Group, January 2013.

[4]   *RFC 791, Internet Protocol*, J. Postel, September 1981, http://www.ietf.org.

[5]   *RFC 792, Internet Control Message Protocol*, J. Postel, September 1981, http://www.ietf.org.

[6]   *RFC 793, Transmission Control Protocol*, J. Postel, September 1981, http://www.ietf.org.

[7]   *RFC 822, Standard for the Format of ARPA Internet Text Messages*, David M. Crocker, August 1982, http://www.ietf.org.

[8]   *RFC 2117, Protocol Independent Multicast Sparse Mode,* D. Estrin et al, June 1997, http://www.ietf.org.

[9]   *RFC 2770, GLOP Addressing in 233/8*, http://www.ietf.org.

Appendix D Glossary

ASCII	American Standard Code for Information Interchange
CCP	Calculated Closing Price
CPA	Closing Price Acceptance
CUSIP	Committee on Uniform Security Identification Procedures
EST	Eastern Standard Time
ETX	End Of Text
LSTS	Last Sale Trading Session
MOC	Market on Close
PME	Price Movement Extension
PO	Participating Organization
QRTMD	Quantum RTMD
RFC	Request for Comment
RT	Registered Trader
STAMP	Securities Trading Access Message Protocol
STS	Special Trading Session
STX	Start Of Text
TL2	Toronto Level 2
UMIR	Universal Market Integrity Rules
VWAP	Volume Weighted Average Price

Appendix E Revision History

Version	Date	Changes
1.3	2013/01/08	Added information about QRTMD Protocol Specification and Service Access Guide to Introduction. Added Appendix A: "Symbology Rules".
1.2	2012/06/05	Changed length of CCP and Last Sale Price fields to 11 digits (6 digits.5 digits). Changed length of Trade ID field to 9 digits.
1.1	2012/01/12	Added Stock State and Trading System Time Stamp fields to Message Type CA – MOC Price Movement Delay. Removed AE, AF, IE, and IF values from Stock State field in Message Type D Stock State. Removed Symbol tag from Message Type S – Market State.
1.0	2011/10/31	Document published.QRTMD TL1/CL1 Functional Specifications

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