HORIBA Medical

Yumizen H550

Hematology Analyzer from V3.0.x

Output Format for Host Connection

Ref: RAA086AEN

Output Format for Host Connection

HORIBA ABX SAS
Parc Euromédecine
Rue du Caducée
BP 7290
34184 Montpellier Cedex 4
FRANCE

Output Format for Host Connection
Ref: RAA086AEN

Contents

1. Foreword

1.1. Revisions

Internal Reference	Software Version used for Documentation	Document Date Issued
RAA086AEN	3.0.x	06/2022

2. Connection

2.1. Serial Connection (RS232)

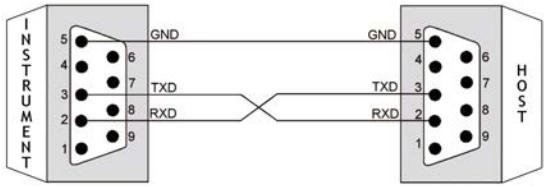
2.1.1. RS232 Connection Overview

The RS232 connection mode is available only for the ASTM format on the Yumizen H550.

Communications can use the RS232 communication protocol, based on the Electronics Industries Association (EIA) standard RS232-C. As part of the conformance to this standard, the Yumizen H550 Data Management System is configured as Data Terminal Equipment (DTE).

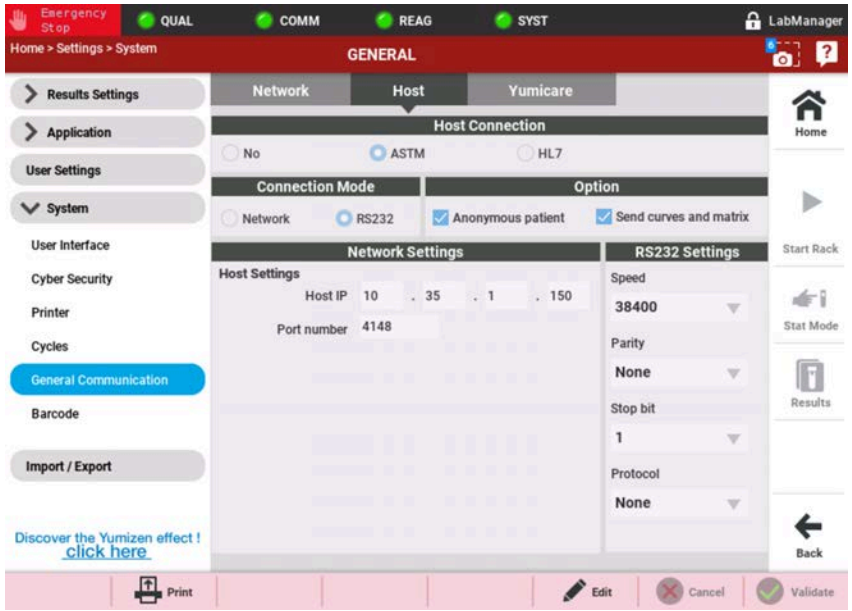
The Yumizen H550 should be connected to the Host via the DB-9 connector of the instrument computer connection.

Pin (DB-9) data management	Host port configuration	Host cable must provide
2	RXD	TXD
3	TXD	RXD
5	Ground	Ground



2.1.2. To Configure the RS232 Connection Mode

Access: ***Home*** > ***Settings*** > ***System*** > ***General Communication*** > ***Host***



1. Press **Edit** in the contextual toolbar.
2. Select the **ASTM** connection format and select the **RS232** connection mode.
3. Configure the instrument communication port in the ***RS232 Settings*** area.

Option	Function	Default value
Speed	Speed transmission selection	38400
Parity	Parity selection	None

Option	Function	Default value
Stop bit	Stop bit selection	1
Protocol	Protocol selection	None

4. Press **Validate** in the contextual toolbar.

2.2. Ethernet Connection

2.2.1. Ethernet Connection Overview

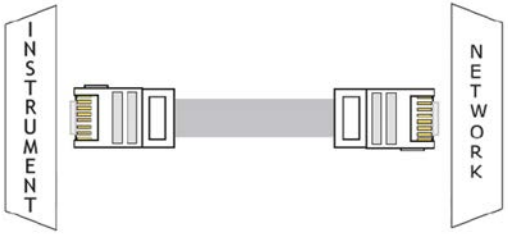
The network connection mode is available for the ASTM and HL7 formats on the Yumizen H550.

The implementation of network-based communication is based on the Windows Socket standard.

The data transmitted between the client and the server takes the form of ASTM or HL7 high level packets.

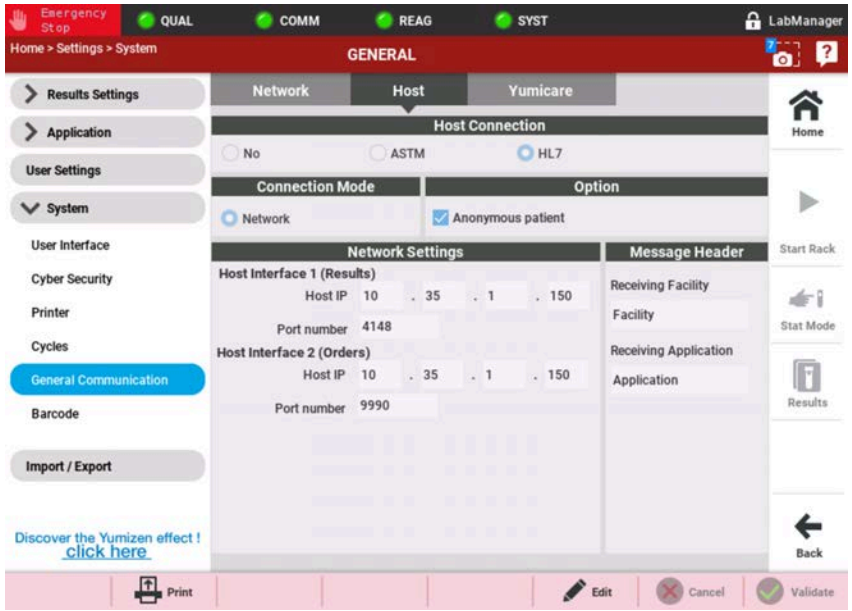
This connection is made through the RJ45 connector on the instrument.

The keepalive feature is activated on the Yumizen H550. The instrument sends a keepalive signal to the Host every 15 minutes in order to preserve the connection.



2.2.2. To Configure the Network Connection Mode

Access: ***Home*** > ***Settings*** > ***System*** > ***General Communication*** > ***Host***



1. Press **Edit** in the contextual toolbar.
2. Select the **ASTM** or **HL7** connection format and select the **Network** connection mode.
3. If the **ASTM** connection format is selected, configure the IP address and the port number where the Host is awaiting connection in the ***Host Settings*** area.
4. If the **HL7** connection format is selected, configure the IP address and the port number to send results to the Host in the ***Host Interface 1 (Results)*** area and those to receive orders from the Host in the ***Host Interface 2 (Orders)*** area.
5. If the **HL7** connection format is selected, configure the receiving facility and the receiving application in the ***Message Header*** area

6. From the ***Network*** tab, in the ***Analyzer Settings*** area, configure the instrument network settings:
   - ***Connection Mode***
   - ***Analyzer Name***
   - ***IP address***
   - ***Subnet mask***
   - ***Default gateway***
   - ***Primary DNS*** (optional)
   - ***Secondary DNS*** (optional)
7. Press **Validate** in the contextual toolbar.

3. ASTM Format

The HORIBA Medical analyzers format corresponds to the ASTM specifications LIS01-A2 & LIS2-A2:

- LIS01-A2: Standard specification for low level protocol to transfer messages between clinical and laboratory instruments and computer systems.
- LIS2-A2: Standard specification for transferring information between clinical and laboratory instruments and computer systems.

3.1. Introduction

A connection between a computer (host) and a HORIBA Medical instrument can be performed when the protocol, the format description and the connection mode have been properly setup.

Term	Definition
<ACK>	Acknowledgment (ASCII decimal 6)
[C1]	The most significant character of checksum
[C2]	The least significant character of checksum
[DATA]	The data contents of the record
<ENQ>	Inquire (ASCII decimal 5)
<ETB>	End of transmission block (ASCII decimal 23). For use only when a single record is too large to fit into one frame.
<ETX>	End of text (ASCII decimal 3). Required at the end of each record.
[frame number]	Single digit frame number "0" to "7", starts with "1".
<LF>	Line feed (ASCII decimal 10).
<NAK>	Negative acknowledgment (ASCII Decimal 21).
<STX>	Start of frame (ASCII decimal 2).

Term	Definition
Communications packet	All framing required for transmission of data. This framing includes: <STX>[frame number][DATA] [<ETB> or <ETX>][C1][C2] <LF>
Component Field	One of several related pieces of information within a field.
Field	A specific location within a record for a piece of information, indicated by a field delimiter and position.
Frame	A complete communications packet.
LIS	Laboratory Information System
Message	A collection of related information; a group of records that begins with a "Header" record and ends with a "Terminator" record. A single record could theoretically constitute a message, but within this context, a message always contains multiple records.
<EOT>	End of transmission (ASCII decimal 4)
<CR>	Carriage return (ASCII decimal 13)
Record	In reference to the low level protocol, a record is the message data (shown as [DATA]) as described within the communications packet. If the data is longer than 240 characters, then it must be split in two (or more) parts and sent in two (or more) communications packets. The intermediate packet uses the <ETB> character, and the ending packet uses the <ETX> character. No single communications packet contains more than one record. In reference to the message layer, a record can be one of the following codes: H (header), P (patient), O (order), R (result), L (terminator), C (comment).
Session	A total unit of communication activity used in this standard to indicate the events starting with the establishment phase and ending with the termination phase.
Test	A determination of a single analyte or a combination of values from other determinations or observations from which a variable or gradable result is derived.

3.2. Connection Specifications (LIS01-A2)

3.2.1. Hardware and Software Characteristics

The default format for emitted character is 1 bit start, 8 data bits, No parity, 1 bit stop.

The default communication speed is 38400 bauds.

Hardware settings of the interface:

- RS232 connection via a DB9 connector
- Ethernet connection via an RJ45 cable

3.2.2. Output Data Characteristics

- Characters: ASCII
- Maximum message length: 247 characters
- Xon/Xoff protocol

3.2.3. Communication Protocol

Standard control characters

Control String	Hexadecimal value
<ENQ>	$05
<ACK>	$06
<NAK>	$15
<STX>	$02
<ETX>	$03
<ETB>	$17
<CR>	$0D
<LF>	$0A
<EOT>	$04

Typical discussion between the instrument and the host

Instrument	<>	Host
<ENQ>	>	
	<	<ACK>
<STX>1...Data...<CR><ETX>xx <CR><LF>	>	
	<	<ACK>
<STX>2...Data...<CR><ETX>xx <CR><LF>	>	
	<	<ACK>
<EOT>	>	

Typical discussion between the host and the instrument

Instrument	<>	Host
	<	<ENQ>
<ACK>	>	
	<	<STX>1...Data...<CR><ETX>xx <CR><LF>
<ACK>	>	
	<	<STX>2...Data...<CR><ETX>xx <CR><LF>
<ACK>	>	
	<	<EOT>

Discussion with conflict between the instrument and the host

No answer from Host for an <ENQ>

- Timeout: 15 seconds
- In case of conflict: 1 second before a new transmission, up to 3 transmissions. Host timeout: 20 seconds
- In case of negative answer <NAK>: No time before a new transmission, up to 6 transmissions

Instrument	<>	Host
<ENQ>	>	
	<	<ENQ>
Wait 1 second		Wait 20 seconds
<ENQ>	>	
	<	
	...	
<EOT>	>	

Defect packet during discussion between instrument and host

Instrument	<>	Host
<ENQ>	>	
	<	<ACK>
<STX>1...Data...<CR><ETX>xx <CR><LF>	>	
	<	<NAK>
<STX>1...Data...<CR><ETX>xx <CR><LF>	>	
	<	<ACK>
<STX>2...Data...<CR><ETX>xx <CR><LF>	>	
	<	<ACK>
<EOT>	>	

3.2.4. ASTM Data Frame Format

A sequential number located after the <STX> character is inserted into each data frame. The frame number is set to 1 when the transfer phase is initialized and is incremented by 1 for each frame up to 7 and then returns to 0.

The frame number allows the receiver to distinguish new and re-transmitted frames. In case of re-transmitted frame (after a <NAK> response from the host), the frame number is not incremented: <STX>1...Data...<CR><ETX>xx<CR><LF>.

Frame format

ASTM field	Definition	Transmitted data	# of bytes	Comments
0	STX	$02	1	
1	Frame number	1 to 7, 0, ...	1	Frame number is set to 1, incremented by 1 for each frame up to 7, and then returns to 0
2	Data message		240 max.	Header, Patient, Order, Result and Comment messages
3	End of data message ETX if end frame		1	
4	Checksum		2	
5	CRLF	$0D $0A	2	

Frame checksum

According to LIS01-A2, the frame checksum (<STX>1...Data...<CR><ETX>xx<CR><LF>) is defined as modulo 256 of ASCII values sum between <STX> not included and <ETX> included characters: 1...Data...<CR><ETX>.

3.3. Records General Format Specifications (LIS2-A2)

Data frames encapsulate records defined by the LIS-A2 norm, records themselves encapsulate ASTM fields.

Record ID	ASTM Definition
H	Header
P	Patient
O	Order
R	Result
C	Comment
Q	Query (Request information order)
M	Manufacturer information
L	Terminator record

3.3.1. Structure of Records

Structure of records for order transmission

- H (Header)
- P (Patient)
- C (Patient Comments) optional
- .. O (Order)
- .. C (Order Comments) optional
- L (Terminator)

The transmission of an order without patient record, even if not allowed in LIS2-A2, is accepted and managed in the Yumizen H550.

Instrument patient file modification by host

- H (Header)
- P (Patient)
- C (Patient Comments) optional
- L (Terminator)

Structure of records for result transmission

- H (Header)
- P (Patient)
- C (Patient Comments) optional
- .. O (Order)
- .. C (Order Comments) optional
- .. M (Curves and Matrix points)
- .. M (Curves and Matrix points)
- ... . R (Result)
- ... . C (Flag Result) optional
- ... . R (Result)
- ... . C (Flag Result) optional
- .....
- .....
- ... . R (Result)
- ... . C (Flag Result) optional
- L (Terminator)

3.3.2. Description of Records

Only fields described with their specified length are used by HORIBA Medical instruments.

The length of a field can be less than the maximum value but must not be more.

Delimiters must be used even if a field is empty.

Field inside records are separated by "|" (ASCII $7C).

Component inside fields are separated by "^" (ASCII $5E).

Repeated fields inside records are separated by "\".

3.3.2.1. Alphanumeric Data

UTF-8 encoding is used for alphanumeric fields.

When alphanumeric data is sent, all the characters below 0x20 are replaced by an escape sequence with the following format: &Xhhh&.

"hhhh" is the hexadecimal value of ASCII character completed with zero on 4 digits.

For example, <ETB> should be replaced by: <&X0017&>.

When alphanumeric data is received, the escape sequence &Xhhhh& is converted to the corresponding characters.

When alphanumeric data is transmitted, all delimiters characters they can contain must be replaced by their corresponding escape sequence as below:

Delimeter	Escape sequence
Field delimiter	&F&
Component delimiter	&S&
Repeat delimiter	&R&
Escape delimiter	&E&

3.3.2.2. Records to Send

Fields that are not used are sent empty.

When sending records, the ASTM-CI sends only non-empty components, ie. without component delimiters for the last empty components of the field.

3.3.2.3. Received Records

If a field value, length, delimiter of a received record does not correspond to the required input type, the instrument generates an error log, and can ignore the record and its following ones (depending on the error and the message).

For more information about errors and messages, refer to the *Appendices* > *Error Management* chapter.

3.3.2.4. Header Record

ASTM field	Definition	Transmitted data	Field max. length	Input type	Repeat delimiter	Mandatory
6.1	Record Type	H	1	Fixed	No	Yes
6.2	Delimiters definition	idem standard: ■ | field delimiter ■ \ Repeat delimiter ■ ^ Component delimiter ■ & Escape delimiter	4	Text	No	Yes
6.3	Message Control ID					
6.4	Access Password					
6.5	Sender Name (from instrument to host)	H500^SerialNumber^Software version	42 (15^15^10)	Fixed^Alphanumeric^Fixed	No	Yes
6.5	Sender Name (from host to instrument)	Host name	32	Alphanumeric	No	No
6.6	Sender Address					
6.7	Reserved					
6.8	Sender Telephone Nb					
6.9	Characteristics of Sender					
6.10	Receiver ID (from instrument to host)	Host name	32	Alphanumeric	No	No
6.10	Receiver ID (from host to instrument)	InstrumentCode^SerialNumber^Software version	42 (15^15^10)	Alphanumeric^Alphanumeric^Alphanumeric	No	No
6.11	Comments or Special Instructions					

ASTM field	Definition	Transmitted data	Field max. length	Input type	Repeat delimiter	Mandatory
6.12	Processing ID	P: Patient message Q: Quality control message D: Technician	1	Fixed list	No	Yes
6.13	ASTM Version Nb	LIS2-A2	9	Fixed	No	Yes
6.14	Date and Time of message	YYYYMMDDH HMMSS	14	Date and time	No	No

There should not be the field delimiter between 6.1 and 6.2 fields (as it is in the 6.2 field value).

In case of a response to a request (query, ...), the field 6.5 should be an exact copy from the 6.10 field sent in the request.

3.3.2.5. Patient Record

ASTM field	Definition	Transmitted data	Field max. length	Input type	Repeat delimiter	Mandatory
7.1	Record Type	P	1	Fixed	No	Yes
7.2	Sequence Nb	1, 2, ...	2	Numeric	No	Yes
7.3	Practice Assigned Patient ID					
7.4	Laboratory Assigned Patient ID	Patient Id	25	Alphanumeric	No	No
7.5	Patient ID No 3					
7.6	Patient Name This field is not transmitted if the **Anonymous patient** check box is selected in the ***General Communica*** screen.	Name^First name	41 (20^20)	Alphanumeric	No	No
7.7	Mother's Maiden Name					
7.8	Birth date	YYYYMMDD^AGE^U ■ YYYYMMDD: Date of birth ■ AGE: Patient age ■ U: Unit of Age (Y, M, D or H for Year, Month, Day or Hour)	20 (14^3^1)	Date^Numeric^ Fixed List	No	No
7.9	Patient Sex	M = Male F = Female U = Unknown	1	Fixed list	No	No
7.10	Patient Race-Ethnic Origin					
7.11	Patient Address					
7.12	Reserved					
7.13	Patient Telephone Nb					
7.14	Attending Physician ID	PhysicianID^PhysicianName	20^30	Alphanumeric^ Alphanumeric	No	No^No
7.15	Special Field 1					

ASTM field	Definition	Transmitted data	Field max. length	Input type	Repeat delimiter	Mandatory
7.16	Special Field 2					
7.17	Patient Height					
7.18	Patient Weight					
7.19	Patient's Known or Suspected Diagnosis					
7.20	Patient Active Medication					
7.21	Patient's Diet					
7.22	Practice Field 1					
7.23	Practice Field 2					
7.24	Admission and Discharge Dates					
7.25	Admission Status					
7.26	Location			Alphanumeric Max length: 20	No	No
7.27	Nature of Alternative Diagnostic Code and Classifiers					
7.28	Nature of Alternative Diagnostic Code and Classifiers					
7.29	Patient Religion					
7.30	Martial status					
7.31	Isolation Status					
7.32	Language					
7.33	Hospital Service					
7.34	Hospital Institution					
7.35	Dosage Category	CHILD1, CHILD2, CHILD3, CHILD4, CHILD5, CHILD6, CHILD7	20	Fixed list	No	No

3.3.2.6. Order Record

ASTM field	Definition	Transmitted data	Field max. length	Input type	Repeat delimiter	Mandatory
8.1	Record Type	O	1	Fixed	No	Yes
8.2	Sequence Nb	1, 2, ...	2	Numeric	No	Yes
8.3	Sample ID	SampleID^RackLoadingNb^RackID^RackPosition	31 (16^2^8^2)	Alphanumeric	No	No
8.4	Instrument Specimen ID					
8.5	Universal Test ID	^^^Testname (CBC or DIF)	13 (^^^10)	Fixed list	Yes	From instrument to Host: yes From Host to instrument: no
8.6	Priority	R: routine S: STAT	1	Fixed list	No	No
8.7	Requested/Ordered Date and Time	YYYYMMDDHHMMSS	14	Date and time	No	No

ASTM field	Definition	Transmitted data	Field max. length	Input type	Repeat delimiter	Mandatory
8.8	Specimen Collection Date and Time	YYYYMMDDHHMMSS	14	Date and time	No	No
8.9	Collection End Time	YYYYMMDDHHMMSS	14			
8.10	Collection Volume					
8.11	Collector ID					
8.12	Action Code	From instrument to Host: not used From Host to instrument: A: add on existing order N: new order C: cancel order	1	Fixed list	No	From instrument to Host: no From Host to instrument: yes
8.13	Danger Code					
8.14	Relevant Clinical Information					
8.15	Date/Time Specimen Received	YYYYMMDDHHMMSS	14	Date and time	No	No
8.16	Specimen Descriptor	SpecimenType^^SpecimenLiquid SpecimenType: ■ BLOOD ■ CONTROL SpecimenLiquid: ■ CTRL LOW ■ CTRL MEDIUM ■ CTRL HIGH	42 (20^^20)	Fixed list^^Fixed list	No	No^^No
8.17	Ordering Physician					
8.18	Physician Tel Nb					
8.19	User Field 1					
8.20	User Field 2					
8.21	Laboratory Field 1					
8.22	Laboratory Field 2					
8.23	Date and Time Results reported or last modified					
8.24	Instrument Charge to Computer System					
8.25	Instrument Section ID					
8.26	Report Types	From instrument to Host: F: final X: order cannot be done From Host to instrument: Q: response to request information Z: no record for this patient Y: no test for this record	1	Fixed list	No	Yes
8.27	Reserved					
8.28	Location or Ward of Specimen Collection					
8.29	Nosocomial Infection Flag					
8.30	Specimen Service					
8.31	Specimen institution					

The order must follow the following conditions, otherwise, the received order is ignored:

- Sample ID data of Specimen ID field (8.3) match the Sample ID data of the pending query
- At least one of Universal Test ID field (8.5) shall contain a TestName data
- In case of several Universal Test ID field (8.5), with at least one with a "DIF" TestName, and at least another one with a "CBC" TestName, the requested analysis is set to DIF
- Action code field (8.12) is "N" (New order)
- Report Types field from Host (8.26) is one of the following values: Q, Z, Y

If a received order contains a Universal Test ID (field 8.5) with a TestName different from CBC or DIF, the Yumizen H550 will send back the order with the record type field set to "X" and the received order will be ignored.

3.3.2.7. Result Record

ASTM field	Definition	Transmitted data	Field max. length	Input type	Repeat delimiter	Mandatory
9.1	Record Type	R	1	Fixed	No	Yes
9.2	Sequence Nb	1, 2, ...	2	Numeric	No	Yes
9.3	Universal Test ID	^^^English result name^LOINC LOINC: From instrument to Host: code associated with the result frame, if available From host to instrument: not used	24 (^^^10^10)	^^^Open list^Open list^Numeric	No	^^^Yes^No^No
9.4	Data or Measurement Value	Test result or --- or +++	16	Alphanumeric	No	No
9.5	Unit or Set of units	Unit text (ISO 2955 or specific)	10	Open list	No	Yes but No if observation
9.6	Reference Ranges	From instrument to Host: Ranges^RangeDescription Ranges: lower limit to upper limit RangeDescription: ■ REFERENCE_RANGE ■ CRITICAL_RANGE From host to instrument: not used	20^15	Alphanumeric^Fixed list	Yes	No
9.7	Result Abnormal Flag	From instrument to Host: L: below low normal H: above high normal LL: below panic normal HH: above panic normal <: below absolute low >: above absolute high A: rejected N: normal X: invalid value >>: above absolute visibility From host to instrument: not used		Fixed list	No	Yes
9.8	Nature of Abnormality Testing					

ASTM field	Definition	Transmitted data	Field max. length	Input type	Repeat delimiter	Mandatory
9.9	Result Status	From instrument to Host: W: warning (suspicion on validity) X: order cannot be done (result) F: final result From host to instrument: not used	1	Fixed list	No	Yes
9.10	Date of Change in Normative Values or Units					
9.11	Operator Identification	From instrument to Host: Login^^User profile or LastName FirstName^^User profile User profile: TECHNICIAN / LABMANAGER / USER From host to instrument: not used	63 (41^^20)	Alphanumeric ^^ Alphanumeric	No	Yes
9.12	Date/Time Test Starting	YYYYMMDDHHMMSS	14	Date	No	Yes
9.13	Date/Time Test Completed	YYYYMMDDHHMMSS	14	Date	No	No
9.14	Device Identification	From instrument to Host: 9380BDED579C From host to instrument: not used	15	Alphanumeric	No	Yes

3.3.2.8. Comment Record

ASTM field	Definition	Transmitted data	Field max. length	Input type	Repeat delimiter	Mandatory
10.1	Record Type	C	1	Fixed	No	Yes
10.2	Sequence Nb	1, 2, ...	2	Numeric	No	Yes
10.3	Comment Source	I: Clinical instrument system	1	Fixed list	No	Yes
10.4	Comment Text	From instrument to Host: For result comment (after R frame): alarm	200	Alphanumeric	Yes	Yes
		For order comment (after O frame): AlarmType^MeasurementType^AlarmMain^AlarmDetail	103 (20^20^30^30)	Open list^Open list^Open list^Open list	Yes	Yes^No^Yes^No
		For patient comment or sample comment (after P or O frame): free text	200	Alphanumeric	Yes	Yes
		From Host to instrument: comments	200	Alphanumeric	No	Yes
10.5	Comment Type	I: Instrument flag comment	1	Fixed list	No	Yes

Alarms specifications

The Comment Text (10.4) field can contain an alarm type data as follows:

- **CONDITIONS** for alarms linked to analysis conditions such as blank failed, reagent expired, …
- **D** or **S** for alarms linked to the calculation of data such as Unstable Count, High linearity. **D** (Device) indicates an alarm linked to an instrument technical problem. **S** (Sample) indicates an alarm linked to the blood sample.
- **SUSPECTED_PATHOLOGY** for suspected pathologies alarms such as Leukocytosis or Large Immature Cells.
- **CONTROL_FAILED** for alarms due to bad control result.

The Comment Text (10.4) field can contain a measurement type data as follows:

- **WBC** if the alarm is linked to the white blood cells count.
- **DIFF** if the alarm is linked to the white blood cells differential.
- **PLT** if the alarm is linked to the platelets measurement.
- **RBC** if the alarm is linked to the red blood cells measurement.
- **RBC_OTH** if the alarm is linked to other measurements such as HGB and HCT.

The Comment Text (10.4) field can contain an alarm data as follows:

- One of the analytical alarms or suspected pathologies specified in Analytical Alarms in case of **D**, **S** or **SUSPECTED_PATHOLOGY** alarm type.
- The default condition in case of **CONDITIONS** alarm type.
- The reason of the control failure in case of **CONTROL_FAILED** alarm type.

3.3.2.9. Request Information Record

ASTM field	Definition	Transmitted data	Field max. length	Input type	Repeat delimiter	Mandatory
11.1	Record type ID	Q	1	Fixed	No	Yes
11.2	Sequence number	1..99	2	Numeric	No	Yes
11.3	Starting Range ID Number	^SampleID	17 (^16)	^Alphanumeric	No	No
11.4	End Of identifier List					
11.5	Universal Test ID	ALL	3	Fixed	No	Yes
11.6	Time limits					
11.7	Time Max limits					
11.8	Time Min limits					
11.9	Physician Name					
11.10	Telephone Number					
11.11	Reserved for User					
11.12	Reserved for User					
11.13	Request Information Status Codes	O: request for test information	1	Fixed	No	Yes

3.3.2.10. Traceability record

ASTM field	Definition	Transmitted data	Field max. length	Input type	Repeat delimiter	Mandatory
14.1	Record type	M	1	Fixed	No	Yes
14.2	Sequence number	1..99	2	Numeric	No	Yes
14.3	Message type	"REAGENT" "QC" "XB" "STARTUP" "SETTING"	10	Closed list	No	Yes

ASTM field	Definition	Transmitted data	Field max. length	Input type	Repeat delimiter	Mandatory
14.4	Traceability name	"REAGENT": reagent name (CLEANER, DILUENT, LYSE) "SETTING": setting name (RUO, WBCDIFF)	20	Open list	Yes	Yes
14.5	Traceability Information	"REAGENT": ReagentID^Loaded date/ time^Expiration Date 120130H1*^20120327151737^20120727 "QC", "XB", "STARTUP": status "SETTING": setting value ■ RUO: TRUE, FALSE ■ WBCDIFF: 5, 6	39 (15^14^8) 20 20	Alphanumeric^ Date and Time^Date Open list Alphanumeric	Yes Yes Yes	Yes^No^Yes Yes Yes

3.3.2.11. Terminal record

ASTM field	Definition	Transmitted data	Field max. length	Input type	Repeat delimiter	Mandatory
12.1	Record type	L	1	Fixed	No	Yes
12.2	Sequence number	1	1	Fixed	No	Yes
12.3	Termination code	N: Normal	1	From instrument to host: fixed From host to instrument: not used	From instrument to host: No From host to instrument : not used	From instrument to host: Yes From host to instrument: not used

3.4. Special Characteristics for HORIBA Medical Data

3.4.1. Data Presentation

The CBC and DIF codes correspond to the Universal Test ID field 9.3 and the units correspond to the Unit field 9.5.

3.4.1.1. Parameters

LOINC Code: Logical Observation Identifiers Names & Codes

CBC Codes	LOINC Code	Definition
RBC	789-8	Red Blood Cells
HGB	718-7	Hemoglobin Concentration
HCT	4544-3	Hematocrit
MCV	787-2	Mean Corpuscular Volume
MCH	785-6	Mean Corpuscular Hemoglobin
MCHC	786-4	Mean Corpuscular Hemoglobin Concentration
RDW-SD	21000-5	Red Distribution Width Standard Deviation
RDW-CV	788-0	Red Distribution Width
MIC	X-MIC	Microcytic Red Blood Cells percentage (versus RBC)
MAC	X-MAC	Macrocytic Red Blood Cells percentage (versus RBC)
PLT	777-3	Platelets
PCT	51637-7	Plateletcrit
PDW	51631-0	Platelets Distribution Width
MPV	32623-1	Mean Platelet Volume
P-LCC	96354-6	Platelets - Large Cell Count
P-LCR	48386-7	Platelets - Large Cell Ratio
WBC	6690-2	White Blood Cells

DIF Codes	LOINC Code	Definition
LYM#	731-0	Lymphocytes absolute value
LYM%	736-9	Lymphocytes percentage
MON#	742-7	Monocytes absolute value
MON%	5905-5	Monocytes percentage
NEU#	751-8	Neutrophils absolute value
NEU%	770-8	Neutrophils percentage
EOS#	711-2	Eosinophils absolute value
EOS%	713-8	Eosinophils percentage
BAS#	704-7	Basophils absolute value

DIF Codes	LOINC Code	Definition
BAS%	706-2	Basophils percentage
IMG#	53115-2	Immature Granulocytic cells absolute value
IMG%	71695-1	Immature Granulocytic cells percentage
IMM#	X-IMM#	Immature Cells Medium granulometry absolute value
IMM%	X-IMM%	Immature Cells Medium granulometry percentage
IML#	X-IML#	Immature Cells Low granulometry absolute value
IML%	X-IML%	Immature Cells Low granulometry percentage
ALY#	43743-4	Atypical Lymphocytes absolute value
ALY%	42250-1	Atypical Lymphocytes percentage
LIC#	55432-9	Large Immature Cells absolute value
LIC%	55433-7	Large Immature Cells percentage

3.4.1.2. Units

CBC Codes	SI (international)	Conventional	mmol/L	Japan	China
RBC	10^{12}/L	10^{6}/mm^3	10^{12}/L	10^{4}/µL	10^{12}/L
HGB	g/L	g/dL	mmol/L	g/dL	g/L
HCT	L/L	%	L/L	%	%
MCV	fL	fL	fL	fL	fL
MCH	pg	pg	fmol	pg	pg
MCHC	g/L	g/dL	mmol/L	g/dL	g/L
RDW-SD	fL	fL	fL	fL	fL
RDW-CV	%	%	%	%	%
MIC	%	%	%	%	%
MAC	%	%	%	%	%
PLT	10^{9}/L	10^{3}/mm^3	10^{9}/L	10^{4}/µL	10^{9}/L
PCT	%	%	%	%	%

CBC Codes	SI (international)	Conventional	mmol/L	Japan	China
PDW	fL	fL	fL	fL	fL
MPV	fL	fL	fL	fL	fL
P-LCC	10^9/L	10^3/mm^3	10^9/L	10^4/µL	10^9/L
P-LCR	%	%	%	%	%
WBC	10^9/L	10^3/mm^3	10^9/L	10^2/µL	10^9/L

DIF Codes	SI (international)	Conventional	mmol/L	Japan	China
LYM#	10^9/L	10^3/mm^3	10^9/L	10^2/mm^3	10^9/L
LYM%	%	%	%	%	%
MON#	10^9/L	10^3/mm^3	10^9/L	10^2/mm^3	10^9/L
MON%	%	%	%	%	%
NEU#	10^9/L	10^3/mm^3	10^9/L	10^2/mm^3	10^9/L
NEU%	%	%	%	%	%
EOS#	10^9/L	10^3/mm^3	10^9/L	10^2/mm^3	10^9/L
EOS%	%	%	%	%	%
BAS#	10^9/L	10^3/mm^3	10^9/L	10^2/mm^3	10^9/L
BAS%	%	%	%	%	%
IMG#	10^9/L	10^3/mm^3	10^9/L	10^2/mm^3	10^9/L
IMG%	%	%	%	%	%
IMM#	10^9/L	10^3/mm^3	10^9/L	10^2/mm^3	10^9/L
IMM%	%	%	%	%	%
IML#	10^9/L	10^3/mm^3	10^9/L	10^2/mm^3	10^9/L
IML%	%	%	%	%	%
ALY#	10^9/L	10^3/mm^3	10^9/L	10^2/mm^3	10^9/L
ALY%	%	%	%	%	%
LIC#	10^9/L	10^3/mm^3	10^9/L	10^2/mm^3	10^9/L
LIC%	%	%	%	%	%

3.4.2. Alarms and Pathologies

3.4.2.1. Suspicion and Reject

When a result is suspected of being abnormal or false, it is not reliable and the instrument returns a flag in field 9.9.

Refer to Description of Records.

3.4.2.2. Normal and Panic Ranges

Flags when result exceeds normal or panic ranges are transmitted through field 9.7, they should be compared, to obtain a full result information, to the ranges set by the user.

Refer to Description of Records.

3.4.2.3. Analytical Alarms

Analytical alarms and suspected pathologies are transmitted in field 10.4.

Transmitted analytical alarms list:

Alarm type	Measurement type	Transmitted data	Description
D	DIFF	ANA_ERR^BUBBLE_DIFF	Optical Noise
S	DIFF	WBC_ABN_MAT^ABN_NEU	Abnormal NEU
S	DIFF	WBC_ABN_MAT^BLAST	Blasts?
S	DIFF	WBC_ABN_MAT^NEU_NOISE	Presence of a significant large population of cells located on the left-hand side of the neutrophil area
S	DIFF	WBC_ABN_MAT^NRBC	NRBC?
S	DIFF	WBC_ABN_MAT^SEP_LYM_MON	Separation threshold is not found between the lymphocytes and monocytes areas

Alarm type	Measurement type	Transmitted data	Description
S	DIFF	WBC_ABN_MAT^SEP_LYM_MON	Presence of a significant large population of cells located in the separation area between lymphocytes and monocytes
S	DIFF	WBC_ABN_MAT^SEP_LYM_MON WBC_ABN_MAT^SEP_MON_IMM	MON Interference
S	DIFF	WBC_ABN_MAT^SEP_LYM_NEU	Separation threshold is not found between the lymphocytes and neutrophils areas
S	DIFF	WBC_ABN_MAT^SEP_LYM_NEU	Presence of a significant large population of cells located in the separation area between lymphocytes and neutrophils
S	DIFF	WBC_ABN_MAT^SEP_MON_NEU	Separation threshold is not found between the monocytes and neutrophils areas
S	DIFF	WBC_ABN_MAT^SEP_MON_NEU	Presence of a significant large population of cells located in the separation area between monocytes and neutrophils
S	DIFF	WBC_ABN_MAT^SEP_NEU_EOS	Separation threshold is not found between the eosinophils and neutrophils areas
S	DIFF	WBC_ABN_MAT^SEP_NEU_EOS	Presence of a significant large population of cells located in the separation area between neutrophils and eosinophils
S	DIFF	WBC_ABN_MAT^SUSP_NB_ALY0 WBC_ABN_MAT^SUSP_NB_ALY1 WBC_ABN_MAT^SUSP_NB_ALY2 WBC_ABN_MAT^SUSP_NB_ALY3 WBC_ABN_MAT^SUSP_NB_ALY4 WBC_ABN_MAT^SUSP_P_ALY	Presence of a significant large population of cells in the atypical lymphocytes area
S	DIFF	WBC_ABN_MAT^SUSP_NB_IML WBC_ABN_MAT^SUSP_P_IML	Presence of a significant large population of cells in the lower part of the large immature cells area
S	DIFF	WBC_ABN_MAT^SUSP_NB_IMM WBC_ABN_MAT^SUSP_P_IMM	Presence of a significant large population of cells in the middle part of the large immature cells area
S	DIFF	WBC_ABN_MAT^SUSP_NB_LIC0 WBC_ABN_MAT^SUSP_NB_LIC1 WBC_ABN_MAT^SUSP_NB_LIC2 WBC_ABN_MAT^SUSP_P_LIC	Presence of a significant large population of cells in the large immature cells area
D	PLT	ANA_ERR^CLOG_PLT	No count
D	PLT	ANA_ERR^CLOG_PLT	Low Count
D	PLT	ANA_ERR^UNST_PLT	Unstable Count
D	PLT	ANA_ERR^UNST_PLT	Background noise
S	PLT	OOR_PLT^LOQ	Result out of LoQ (Limit of Quantitation)
S	PLT	PLT_INTERF^PLTAGR	PLT aggregates?
S	PLT	PLT_ABN_HIST^ABN_PDW	Abnormal PDW
S	PLT	PLT_ABN_HIST^SEP_RBC_PLT	RBC PLT Interference
S	PLT	WBC_ABN_MAT^NRBC_PLTAGR	PLT aggregates or NRBC?
D	RBC	ANA_ERR^BAL_RBC_HGB	Abnormal MCH
D	RBC	ANA_ERR^BAL_RBC_HGB	Abnormal MCHC
D	RBC	ANA_ERR^CLOG_RBC	No count
D	RBC	ANA_ERR^CLOG_RBC	Low Count
D	RBC	ANA_ERR^UNST_RBC	Unstable Count
S	RBC	OOR_PLT^LINEARITY	High linearity
S	RBC	OOR_PLT^VISIBILITY	High visibility
S	RBC	OOR_RBC^LINEARITY	High linearity
S	RBC	OOR_RBC^LOQ	Result out of LoQ (Limit of Quantitation)
S	RBC	OOR_RBC^VISIBILITY	High visibility
S	RBC	PLT_CONCENT	PLT Concentrate Mode
S	RBC	RBC_ABN_HIST^INTERF	Interference?

Alarm type	Measurement type	Transmitted data	Description
S	RBC	RBC_ABN_HIST^INTERF_RBC_WBC	Nucleated cells interference
D	RBC_OTH	ANA_ERR^UNST_HGB	HGB blank measurements out of the intensity ranges
D	RBC_OTH	ANA_ERR^UNST_HGB	Intensity instability during the three HGB blank measurements
D	RBC_OTH	ANA_ERR^UNST_HGB	Intensity instability during the nine HGB measurements
S	RBC_OTH	HGB_MEAS_BIAS^INTERF_HGB_WBC	HGB/WBC Interference
S	RBC_OTH	OOR_HCT^LINEARITY	High linearity
S	RBC_OTH	OOR_HCT^LOQ	Result out of LoQ (Limit of Quantitation)
S	RBC_OTH	OOR_HCT^VISIBILITY	High visibility
S	RBC_OTH	OOR_HGB^LINEARITY	High linearity
S	RBC_OTH	OOR_HGB^LOQ	Result out of LoQ (Limit of Quantitation)
S	RBC_OTH	OOR_HGB^VISIBILITY	High visibility
S	RBC_OTH	PLT_ABN_HIST^SCH_MACRO_PLT	Schistocytes/Macro PLT?
S	RBC_OTH	RBC_ABN_HIST^ABN_DISTRI	Abnormal distribution
S	RBC_OTH	RBC_ABN_HIST^DBL_POP	RBC double population
D	WBC	ANA_ERR^CLOG_DIFF	No count
D	WBC	ANA_ERR^LIGHT_BEAM_DIFF	Optical bench light error
D	WBC	ANA_ERR^UNST_DIFF	Unstable Count
D	WBC	ANA_ERR^UNST_DIFF	Low correlation between the resistive and optical measurements on the matrix
D	WBC	ANA_ERR^UNST_DIFF	No cells counted in the flowcell
S	WBC	OOR_WBC^LINEARITY	High linearity
S	WBC	OOR_WBC^LOQ	Result out of LoQ (Limit of Quantitation)
S	WBC	OOR_WBC^VISIBILITY	High visibility
S	WBC	WBC_ABN_MAT^INTERF_TNC	Counted WBC abnormally low
S	WBC	WBC_ABN_MAT^INTERF_WBC	WBC Interference
S	WBC	WBC_ABN_MAT^NEU_EOS_NOISE	Background noise
S	WBC	WBC_ABN_MAT^SEP_LYM_NRBC	Presence of a significant large population of cells located in the separation area between the background noise low and lymphocytes areas

Transmitted suspected pathologies list:

- Leukocytosis
- Leukopenia
- Lymphocytosis
- Lymphopenia
- Neutrophilia
- Neutropenia
- Extrem Neutropenia
- Eosinophilia
- Monocytosis
- Basophilia
- Large Immature Cells
- Atypic Lymphocytes
- Pancytopenia
- Aplasia
- Erythrocytosis
- Anemia
- Macrocytosis
- Microcytosis
- Hypochromia
- Anisocytosis
- Poikilocytosis
- Cold Agglutinins
- Thrombocytosis
- Thrombocytopenia

- Malaria P. falciparum?
- Malaria P. vivax?
- Dengue?

3.5. Curves and Matrix Transmission

3.5.1. Curves and Matrix

ASTM field	Definition	Transmitted data	Field max. length	Input type	Repeat delimiter	Mandatory
14.1	Record type	M	1	Fixed	No	Yes
14.2	Sequence number	1..99	2	Numeric	No	Yes
14.3	Message type	"HISTOGRAMS" "MATRIX"	10	Closed list	No	Yes
14.4	Measurement type	"RBC" "PLT" "WBC" "DIFF"	10	Open list	No	Yes
14.5	Name	Graphic name	20	Alphanumeric	No	Yes
14.6	Thresholds	Encode Type^Threshold data "FLOATLE-stream/ deflate:base64"		Alphanumeric^ Alphanumeric	Yes	No^Yes
14.7	Points	Encode Type^Graphic data		Alphanumeric^ Alphanumeric	Yes	No^Yes

3.5.2. General Decoding

The image data must be uncompressed using first the *base64* and secondly the *deflate* algorithms.

The data must be converted from binary to text format.

3.5.3. DIFF Matrix

Matrix manufacturer message record is as follows:

- The Message type field (14.3) is set to "MATRIX".
- The Measurement type field (14.4) is set to "DIFF".
- The Name field (14.5) is set to LMNERESABS.
- The Thresholds field (14.6) contains the "Encode Type" data. The Threshold data of Thresholds field (14.6) contains the FLOATLE-stream/deflate:base64 coded value of the DIFF matrix polygons.
- The Points field (14.7) contains the "Encode Type" data. The Graphic data of Points field (14.7) contains the FLOATLE-stream/deflate:base64 coded value of the DIFF matrix.

Matrix thresholds

DIFF matrix polygons thresholds data shall be in accordance with the following framing:

Number of bytes	Data	Format	Meaning
4	X display min	FLOATLE FLOATLE : IEEE 754 floating point value transmitted in Little Endian byte order (Intel)	X min value for Matrix start
4	X display max	FLOATLE	X max value for Matrix end
4	Y display min	FLOATLE	Y min value for Matrix start
4	Y display max	FLOATLE	Y max value for Matrix end

Number of bytes	Data	Format	Meaning
4	NumberOfList = 3	FLOATLE	One list for X coordinates of polygons, one list for Y coordinates of polygons, one list for box identifiers
4	ListLength	FLOATLE	Always 0

As matrix thresholds are never displayed nor printed, matrix thresholds must not be sent too (ListLength = 0).

Matrix points

DIFF matrix shall be in accordance with the following framing:

Number of bytes	Data	Format	Meaning
4	X display min	FLOATLE	X min value for Matrix start
4	X display max	FLOATLE	X max value for Matrix end
4	Y display min	FLOATLE	Y min value for Matrix start
4	Y display max	FLOATLE	Y max value for Matrix start
4	X scale NB	FLOATLE	Number of X ticks in the list to display
4 x X scale NB	X scale	FLOATLE	X tick values
4 x X scale NB	Y scale	FLOATLE	Y tick values
4	NumberOfList = 4	FLOATLE	One list for X points, one list for Y points, one list for the number of points for this coordinate, one list for the population to which the point belongs (X, Y coordinates)
4	ListLength	FLOATLE	Number of elements in the list
4 x ListLength	X	FLOATLE	X (Coordinate)
4 x ListLength	Y	FLOATLE	Y (Coordinate)
4 x ListLength	Qty	FLOATLE	Quantity (number of points for the (X, Y) coordinate)
4 x ListLength	Pop	FLOATLE	Population to witch the point (X, Y coordinates) belongs

PopulationID shall be set to:

- 0 for LYM box
- 1 for MON box
- 2 for NEU box
- 3 for EOS box
- 4 for IMG box
- 5 for ALY box
- 6 for LL box
- 7 for RN box
- 8 for RM box
- 9 for IMM box
- 10 for IML box
- 11 for LN box
- 12 for BNL box
- 13 for BNH box
- 14 for BASO box
- 15 for LOC box
- 16 for BNBUBBL box
- 100 for NOT_IDENT box

3.5.4. Histograms

Histogram manufacturer message record shall be in accordance with the following specifications:

- The Message type field (14.3) is set to "HISTOGRAM".
- The "Measurement type" field (14.4) is set to one of the following values: RBC, PLT or WBC.
- The Name field (14.5) is set to one of the following values: RBCALONGRES, PLTALONGRES, WBCALONGRES.
- The Thresholds field (14.6) contains the "Encode Type" data. The Threshold data of Thresholds field (14.6) contains one of the following FLOATLE-stream/deflate:base64

coded value of: RBCALONGRES thresholds, PLTALONGRES thresholds or WBCALONGRES thresholds.

- The Points field (14.7) contains the "Encode Type" data. The Graphic data of Points field (14.7) contains one of the following FLOATLE-stream/deflate:base64 coded value of: RBCALONGRES data, PLTALONGRES data or WBCALONGRES data.

Histogram points

PLT histogram, RBC histogram and WBC histogram data shall be in accordance with the following framing:

Number of bytes	Data	Format	Meaning
4	X display min	FLOATLE	X min value for Histogram start
4	X display max	FLOATLE	X max value for Histogram end
4	Y display min	FLOATLE	Y min value for Histogram start
4	Y display max	FLOATLE	Y max value for Histogram end
4	X scale NB	FLOATLE	Number of X ticks in the list to display
4 x X scale NB	X scale	FLOATLE	X tick values
4	Y scale NB	FLOATLE	Number of Y ticks in the list to display
4 x X scale NB	Y scale	FLOATLE	Y tick values
4	NumberOfList = 2	FLOATLE	Number of list of data. One list for X positions and one list for the Y positions (quantity on each X position)
4	ListLength	FLOATLE	Number of elements in the list
4 x ListLength	X	FLOATLE	X (Coordinate)
4 x ListLength	Y	FLOATLE	Y (Coordinate)

Histogram thresholds

PLT histogram, RBC histogram and WBC histogram data shall be in accordance with the following framing:

Number of bytes	Data	Format	Meaning
4	X display min	FLOATLE	X min value for Histogram start
4	X display max	FLOATLE	X max value for Histogram end
4	Y display min	FLOATLE	Y min value for Histogram start
4	Y display max	FLOATLE	Y max value for Histogram end
4	NumberOfList = 2	FLOATLE	Number of list of thresholds. One list for X threshold positions and one list of threshold Identifiers.
4	ListLength	FLOATLE	Number of thresholds in the list
4 x ListLength	X	FLOATLE	X value of the threshold for each threshold
4 x ListLength	ThrsID	FLOATLE	ID of each threshold (listed below)

ThrsID for RBCALONGRES: None (so ListLength = 0)

ThrsID for PLTALONGRES: (ListLength = 3)

Threshold name	ThrsId	Value
Pec	0	3
PltL	1	11
PltRbc	2	Mobile

ThrsID for WBCALONGRES: None (so ListLength = 0)

3.6. Example of Data Frame

3.6.1. Example of a Query With the Response

<- Instrument

-> Host

<- <ENQ>

-> <ACK>

<- <STX>1H|\^&|||H550^112YADH47745^3.0.0.3a|||||||P|LIS2-A2|
20210709175737<CR><ETX>A6<CR><LF>

-> <ACK>

<- <STX>2Q|1|^0124||ALL||||||||O<CR><ETX>E1<CR><LF>

-> <ACK>

<- <STX>3L|1|N<CR><ETX>06<CR><LF>

-> <ACK>

<- <EOT>

-> <ENQ>

<- <ACK>

-> <STX>1H|\^&|||||||||P|LIS2-A2|20210709175757<CR><ETX>94<CR><LF>

<- <ACK>

-> <STX>2P|1||0123||NAME^FIRSTNAME||19900522|M|||||PHYSICIANNAME||||||||||
echotomogr<CR><ETX>20<CR><LF>

<- <ACK>

-> <STX>3C|1|I|Patient Comment|G<CR><ETX>4E<CR><LF>

<- <ACK>

-> <STX>4O|1|0124||^^^DIF|R||19900522035000||||N||||BLOOD|||||||||Q<CR><ETX>B9<CR><LF>

<- <ACK>

-> <STX>5C|1|I|Order Comment|G<CR><ETX>47<CR><LF>

<- <ACK>

-> <STX>6L|1|N<CR><ETX>09<CR><LF>

<- <ACK>

-> <EOT>

3.6.2. Example of a Query Without Response

<- Instrument

-> Host

<- <ENQ>

-> <ACK>

<- <STX>1H|\^&|||H550^112YADH47745^3.0.0.3a|||||||P|LIS2-A2|
20210709175737<CR><ETX>A6<CR><LF>

-> <ACK>

<- <STX>2Q|1|^0124||ALL||||||||O<CR><ETX>E1<CR><LF>

-> <ACK>

<- <STX>3L|1|N<CR><ETX>06<CR><LF>

-> <ACK>

<- <EOT>

-> <ENQ>

<- <ACK>

-> <STX>1H|\^&|||||||||P|LIS2-A2|20210709175757<CR><ETX>94<CR><LF>

<- <ACK>

-> <STX>2P|1|<CR><ETX>BB<CR><LF>

<- <ACK>

-> <STX>3O|1|0124||^^^|||||||N|||||||||||||Y<CR><ETX>67<CR><LF>

<- <ACK>

-> <STX>4L|1|N<CR><ETX>07<CR><LF>

<- <ACK>

-> <EOT>

3.6.3. Example of Patient Result Sent by the Instrument

<- Instrument

-> Host

<- <ENQ>

-> <ACK>

<- <STX>1H|\^&|||H550^112YADH47745^3.0.0.3a||||||P|LIS2-A2|
20210709175022<CR><ETX>99<CR><LF>

-> <ACK>

<- <STX>2P|1|||||^31^Y|M|||||||||||||||echotomogr|||||||MAN<CR><ETX>14<CR><LF>

-> <ACK>

<- <STX>3O|1|0566^^12345R^5||^^^DIF|R|20210707172907|||||||BLOOD|||||||||
F<CR><ETX>12<CR><LF>

-> <ACK>

<- <STX>4C|1|I|CONDITIONS^^REAGENT_EXPIRED\S^PLT^PLT_ABN_HIST^SEP_RBC_PLT
\SUSPECTED_PATHOLOGY^^LARGE_IMMATURE_CELLS
\SUSPECTED_PATHOLOGY^^DENGUE|I<CR><ETX>B7<CR><LF>

-> <ACK>

<- <STX>5C|2|I|This is a comment 567 ?|G<CR><ETX>52<CR><LF>

-> <ACK>

<- <STX>6M|1|HISTOGRAM|RBC|RBCALONGRES|FLOATLE-stream/
deflate:base64^Y2AAgW5nMMUQ5QIkHEAsAA==|FLOATLE-stream/
deflate:base64^bdUNaJtFHMfxU6tVs5eqJXNu08Rt3ToTnLW2cS/2ee6ysbm2pnZ1y3RaZ
+zcHKZadZLNLattGq2yIIFUG6Qw1ISkUMIYZRhWmUIQIWIUmS9tKUNsEUTaooyifp/
kC<ETB>3D<CR><LF>

-> <ACK>

<- <STX>7TwEAz/ucrnn87/nnpcIYXy6VbYR
+7xCaJoQO6QQaWI3xwVjJ1TA2V0TcNo0e9Kn0ddS00P0x7RgaJbvNr2nc6WemnbrM3U1OnN0ZT
+gB0Nten2wXWe
+HsqcYU5cT1SfY96Qnum7wNxLOrWYP6a7A1c4Zkr3p2c4blaPuBY49nrpT98k8WUwtFSGMnfliOt
OSS0ZH3fIRPVamYyVS+rKtKyQmb4qOTG3SbIGOT+gpHEuNn+tZ<ETB>CB<CR><LF>

-> <ACK>

<- <STX>0D3SaWuS7oBfelL7JWuT9cEW7MPYQew27KPYx3HC/
NaO1cHvEbwoc7ox32Peadwe5p7Bfp/5vfgfsp44NT5iTf3UOcu6zlErwdo+pt4nrG
+ImsPYSezz2BewR7AvYqewL2F/hn0Z+4vs/kdcX2J/hf0N9hj2t9jfY/+AfQX7J+xfsCewp7CvYv+K/
Rv2DPbv2H9g/4k9iz2P/Rf2NewF7H84Riib/zrFPquezhtUpq9I2ZM3K<ETB>A4<CR><LF>

-> <ACK>

<-
<STX>1vZcxceL1cTczcppu5Vrb1OJ6kVqpm6xcgeWKK6FSsZK1PzAbcqTuI1xXVRquIQZ94yyL1N
cI5WWy7Hvwl6BvRJ7Ffbd2PdgO7Cd2Kux12CvxS7DXoe9HrscewP2fdgubDf2/dgbsR/ArsB+ELsS
+yHsKuxqbA/2w9ibsLdgb8V+BLsGW8PWsSW2wvZib8Pejr0Deyf2o9i7sGux67DrsR/D9mE3YD
+O3YjdhP0E9h7svdh+7<ETB>97<CR><LF>

-> <ACK>

<- <STX>2H3YT2I/hb0f+2nsZ7CfxT6A/Rx2APt57Bbsg9gvYB/
CPoz9IvYR7Jewg9it2C9jv4Ldhv0q9mvYr2MfxX4DO4R9DPs49pvYJ7BP0g+rma/DfD
+l3FdPMdaugtfaqfmWSpZ0ULdDzZd1UrtTebZGqB9RocYu1tClUoeirCOqRPht1vIONSZ5/
pt5TodJEffPGrKF1Jox3hde4iGVZrvenOcgJUSQv7PPes7Jp5/0khhpJT6zt<ETB>B1<CR><LF>

-> <ACK>

<- <STX>3cYYc5ASIv4no1ou/WbCBX3jnSYs0SytdW6hYx0XZv2NRNNz
+2GsedA8p0k9d46LLPuzmxwh75IBMkp+NPaCPV1MlpNyspk0kBZyjHSx9x/
QnqVNksvkOzLJ2Bztv7TFXqEt9YrRUt7ZK8hq+utoN5AKrwhX025mTKO/
i76PfiP9Pd7se350L6Ef3s33Bvr1ZCf9bbQcF66iddGWMeagJWIVNZcxTt3wLWSBdUyTn8kYGWVt5
<ETB>88<CR><LF>

-> <ACK>

<- <STX>42kTufVz/whxkhwkTUSRSnIvMd4Vxcb5sB9T5v/
Np2SQxM09ayfNxGfuZ6V5P5WaKTLvKWPvx8iIeT8Z1yVqSa85br3XwpbELGPWe67ZMlY4z9rP18j
Xs64hXzc/J7+WwjZm6Q+az8ZIwbMybPmtv6B+q6WftwYtKTzvaEG9z9nLi2ScLMn
+7/8H<CR><ETX>E3<CR><LF>

-> <ACK>

<- <STX>5M|2|HISTOGRAM|PLT|PLTALONGRES|FLOATLE-stream/
deflate:base64^Y2AAAQ4nMMXQA6IdgMjhxW9P+1dqO+3f1Yg7QuQa7EFyAA==|FLOATLE-
stream/deflate:base64^rZV/TJVVGMevcGdQUTBpREYDh0jmiJgSCfE
+z3szxqChozF02DBZMhZOpkjGQERTAhKDVAwKEkI0qGui/
AgIDEUwSIiQoC4E8cOgI<ETB>91<CR><LF>

-> <ACK>

<- <STX>6DSEwur7cs9d1xvjnzrju+d9z3me83z3Oe89qFTKsJDngiodMYnwADmySpUPTbB
+TZnbq4nWrfCdtT3uW7+221ejfUBy0bhLFp0bpNHIndJwQqoU6pcjNVmXSN7d1VJJQYvkEK2TMjz
HJaW+MsKCYpqsaaWbPQ1kOlHO7cfpxTAPsqpfS5eWaygxNYCeHg
+m8eAwKq6IoC0O0WSfHEvtQwlY30/LQg8hJ426qzOQl0VZTtnIz<ETB>4A<CR><LF>

-> <ACK>

<- <STX>7aXAg/nILyT1aDFqSqkm6CzqztPuskrU1pCb/UVKDbhMwwnNpNG2Ul5/
O83aXqdQvx4q29NLNiUDFK0bpibrMXLRTFBy7C3SnZom7+5Z7K3i1/
PMuLhCzZ1ti1k9asEe6vt4i4MVZ3g
+yDVBNjwauYTtkx9ivxw73l1mz4UtS7l9yIEVhjeXLOPBFc7c5e3CV4NcuXbrStbGreKCNDc
+lufOKec8OL5xNW/v8eTwcS8ONvfm5<ETB>EC<CR><LF>

-> <ACK>

<- <STX>0+2e5WeekBh//Fiwhm22rWPzeD+eOuzPN04GcM
+FF7i1OYjrdRu4bDKYixaH8llHQjndbRMnymEcE/ISR0SFc0jiy+yfGcE+Ra/wk1WR7NQaxbb9r/
l9U9t5xjKGxxx2cu9Tsdy2Lo4bNu7h8uh4PrMvgXOP7uXGjiTsv4+rRpLRYz+Xzh5An4Ocb30lvVl40/
lN9EvlN7zS0DOdXwt8C30Pc1R4Bnof4c273kb/TF6fkgUP7<ETB>D2<CR><LF>

-> <ACK>

<- <STX>17CcexQ+jvEa7XF4yWbXhhPw8y4v7cqBp1y2GnsPvt6f+
+ZmLD8At5PwVwB2hfD4lfgVwecpMCyG19PgeAZ+PwLLEnguBc
+P4fsTMNVyxumz4PopJ9ecA9sy3tV2Hnwv8LbBcjCu4E0zleD8GQdaVYN1DUtOteD9OXusqQPzel
7ufxHcv2C7zQ1gf4nvjbkM/o1858AVnEETj2c34xyucn/
JlziLFv6mrhXn8RWYXQOzNjBrB<ETB>EA<CR><LF>

-> <ACK>

<-
<STX>27OvwawDzDrB7DqYdYHZt2DWDWY9YPYdmH0PZjow6wWzPjD7Acz6wWwAzH4Es0EwG
wKzYTAbAbMbYPYTmI2C2RiY/
Qxmv8z9RmcsfwWzSTC7CWa3wOw3MJsCs9tgNg1mM2D2O5j9AWazYHYHzP4Es7+wrpIbO1Ry
w8ZFcr1ukVy71UyuGjGTy6PN5bJJc1kbp5ZLZ9Xijvi/RhLuBMKdsgP
+i6FsERXZKr2ElHlnxD7WS1nrQ<ETB>36<CR><LF>

-> <ACK>

<- <STX>3lyN+DBkDbIDavHuCk2LvEeh+yEfUaO8O8r6tedErpesv+PUIt9HrE+IfGV
+lejTJTyMQNdYf29eEe8VJtKK+zMFqoOOiBgu5taLHBJ52Ulk5C5YKHGHiEpNHZj1kf7ZUeTW0T/
PyppKzBlyFc75RjLMGSKJ3CRRmy/+B8zNSfrnuTMT0VBnOMM+o2fTurlodN5Ed38DKro7zzjHsB
+Z5BiG6V7GvUy/NeN145x5l/27xuB/v<ETB>95<CR><LF>

-> <ACK>

<- <STX>4j0WHLSwv/m8/tcx3x6m52Hqb+H9/gY=<CR><ETX>03<CR><LF>

-> <ACK>

<- <STX>5M|3|MATRIX|DIFF|LMNERESABS|FLOATLE-stream/deflate:base64^Y2AAggf/
XRjgtIMDiAkA|FLOATLE-stream/deflate:base64^7ZwJtF1llee/
FkqZShDQAinkIpPFGBTRQiQH3kPmQcIgYPACxTxPxQyHOYEEEkiATHATMg8QghDCeAIREZFBE
BQbvNgyCaIlzlRh79//vx9x1erutbp62VW67lvrW+fec8/9<ETB>FC<CR><LF>

-> <ACK>

<- <STX>6hj3v/973lRJ/3T/2lz+96q+uSnejHUv30v5S3xzjjP7SGd5fmpviel28P6y/tKbG+/i8c3V/
qXaL7361v3TreH1w3N8pxkXxeljcj2s5Kb7DXPFMa2yMuN9Miffj47OD
+kv78nj2iJjryngdo5wfn58V1xviGvM3O8fn58X7EbHGpHi/Ybw/J74/
Lb4zOea7lu7F91uxt3Jh3GeeeLYda3djneb6eD72Xu0dn8c+Suy/2Suu<ETB>6C<CR><LF>

-> <ACK>

<- <STX>7x8T1aK/RnRPXf4754gyty+J6Tbz/qvdQro3vbhLzfi0+uzFebx/
Xy71edXGMU2KteKaJ73bifb17jIlxf3Z89/i4Bg3LJXHdLr4zOp4ZFe/
jHHXMXZ2VnwUN6+NNJ2gGjaqYp4l9dWl/
zedij7F2Nz7rdOL9BTFizVas0Qk6lFi3mR6fQ6/4bntc3AuatEeaZ524Nsd7z
+1Yt94zng1edGfGvaBVdWK8jjN3ppoOzdnxzJfj<ETB>1B<CR><LF>

-> <ACK>

<- <STX>0/QzTrDPM67fjLJ34fjfmr8bEM7F+E7Row984W31u3L/
QNGyYE7q0Y46+uBfnroJX9Zlx76qYZ168Pt+0Zl4SctaK9TrxWR1nbAXfOsG3wuugQ0H24PXcuA/
9rjGNCvQ+0edpwbegRQk61HGOerD51oz3/uF1tWY8Nyvunxz3Yp/VIXE/5kXem
+BRh7MgN7elbB9onlRBkxL3mjhne0KM2F+DPAyybLag/cH+vlKu7P0Ky3wb<ETB>D8<CR><LF>

-> <ACK>

<- <STX>12uyW5w35rM+xbjUbxDX0o3WRadXhfGMs5+WLcYVe15pH9V6WZfhTgn/
1rnENOevMTBmK8zRV3D/EczaxRjf43uaMO/t+a4LlozrVNGoHTzqXW57ql6yj0JnvoI/
sRfQOenXiWuJ9BT2nWeY5M8+2kIdjLe+t4amv6M6stAPIZNwv/2Q9aXaz3nSQvVizPcM6ivy0a
+teO/jYRcaOS54EjZrjrEPYnhp5iLXrkLfmy6aV9hJz<ETB>4B<CR><LF>

-> <ACK>

<- <STX>2Nbt4TXQN2jZBh3Ka+VSg/R659smevxlq/kNj6lKesUfkpUaXbvS+tKe4FmQBu8K5Y
+56n7iGnHSCvlXwuM33gsbVJb4in+hevYPPVlKG5YB4Hv0Jua/O8PrQr4l52tNsp0p8r
+yXMhX7rI4x/6vB1tkqztSCL8g9urqt7Sef6R4yP9z2sQq9qi6wjDEn32XeGrrfYjrV51n26zhfF/
t8gXnTHubR9Md1pvfBPNgwvteJZzvj<ETB>36<CR><LF>

-> <ACK>

<- <STX>3zCf4yXvJwDXml9a
+0LpQnxBzTLEdqslulLDLzSXmL3YPmURfRetb45lDrUvYBfS2GhLPHh7fi8/
qkKHmMPuo5qC005+OsWO8D1mrj7bf0n5H+grvqhM8Vwl9LcGfLjZ5lPdehx2twy63g1/
N17wnzsAaXfT
+GstwXScPRlhGoCV2DbvX3Gxb17nEA71D7zlTE3vv4FOuTtk7zfazi88ImSiXWyexdTX
+ZX3rZ7ksdePolIMd<ETB>E6<CR><LF>

-> <ACK>

<- <STX>4TcMGep2b8nNbytxVlnFoWR1vG1eG2C+z7wbb
+Y9x70r7Cvngr8QeJ6Z8jzRfsAfoFXtH1/EF+H7mrNNnNPhrbHms2451y6EZIwy3vWM/0L4+zfaK/
dfB9+po76V1g20c/qAVzzb7pB0YZR1vz7bs4xOIM5q9ra
+yyYO8JnYKWajDBlU3WOb5PvqDnWlfnSmWyWor+yrsQ71+8v6ouB/f6V6S9iV42hCL7GKbK/uE/
UKWLjPv<ETB>A0<CR><LF>

-> <ACK>

<- <STX>5xIfPOjbCXkC/5kzbpHKu14Wv2J0ucUG/z1Wvbl1oOt4zfON8vNfrr
+XzB6ecj7IMVdBnpHUFv9S62H4RXmLvK/zMZPMN+16dnjYEe3+N5Qzdq861bpTYb
+H94fbRkrUDPS9xWXOIdao+0DpQD3XchU6UU/7Ez5xsG4fNwo+zLraeeAOZYM76yPjOUN
+TzTnHstUcmjbvtIwfTvaaso+c/6Cc/1D7dc1/smO3Oj/nOXwJ8Q5n<ETB>6B<CR><LF>

-> <ACK>

<- <STX>6QUYUpx6bvj/PyNnro3L+4X6NHcA2Mhf7VEx4sG0KelqwtcQFp9oO4SPLIfZP
+KImz1YN9b5E98vt52SDL0r7FM9VB+U+8B1XWVaw
+8xRjrWP4TzQpWqnnz3VvJFs4e9/31fqkPkm/EizkmNKYqs6YhpixKbE+3+NZ9aOa+h/WSVGPF//
XYyQ1aoV12XjHu/39bPVf4vXEdM223sNYpISstrw+YoxNorPl8m1N/
O9aq0Y7CHm<ETB>04<CR><LF>

-> <ACK>

<- <STX>7LFulvY3XTfifet347DNxXT4+2zxeY49jXxW+iTN80vuuPxLXD8b7DWPEfhvs0RaOe/
Bj1XrxzJfi+vf+Xh3r1p+P97H3aq88d8Q15b3YV5yz3tJ0qD8Qn3887ocvaMJPNtvE+9hfvX
+ML3htaFW2jvdrxAiaVJ+K95/POVb2mSqe5xwRa5W/
jRF0aWlvTdiMahmfq3A29sxzMUcNXT7meaAFcZr2AA1jzWpz75czNXHOaou0<ETB>6D<CR><LF>

-> <ACK>

<- <STX>07+wrYpjqi6ZV/Yc
+2akSZ6mXSz6vZ5qwV87YbG66NFv6fFXQtYn1qjhHCR7UQzyPnv2s5yrBsxK0qWI/
1fLeP7FT2clnKMtYruqVvC/4DH20xiB/
pwm6lcFJqy28XhX0aQ7wXusNfQadH95WSas4d7NOvP6c1xJd4HPYw7Jpysaulht8fFnVssJ6dchJx
TPx/fpjyR/8QMhNHXJTs9Zm3hexDXyuV4vXQecqzkbMX3b2uZm3<ETB>20<CR><LF>

-> <ACK>

<- <STX>1JhdkH5+wvDbM9w8xPmE6EUdIH7bK/
cW5yjapG4McB5FblJW9FvpU7WddafYwvZHRZv/UCWi6iWPKErxE55q
+lOPwBe2p9mnEdsRg5azMZQ6zT8l24KPgFfE0trLaMG0DZyVPx/
5eZ58hm3Klc5TqsLTtlX1ZdZLto2z4CPtpYh1sO/Eh9ruJPZXwJ
+QK5Gvl8lxXjrWPUqw31jkdQ3Fz0Je8vU18Oca62Rzp+lh4sHt9xj9X<ETB>D5<CR><LF>

-> <ACK>

<- <STX>226aT4+Br8CfKXYgdRqSPZs6z7IM6N6bfie+TT5QJ9mnkF8SMBb8RclPtknn7xc4/
OTf5PD52IP4sR9uHKCYcZ7oQv5JHVxlP1PjYOGd7elxvddygOGqT9BOTzCdwDnhHDqnchJiBs1+
XfN0mc/WLl/pv7GRBV2ekzIR8dkc4XmnVpmvB353mM5IvKOcixjrGfoJ8QzEwOjLd
+Idsw0jLqzCHXSxfxEbEs/C8vtw+sBW8IP4i<ETB>5B<CR><LF>

-> <ACK>

<- <STX>3v1Vsit+5ynEPPCQ/0p5Yj/iM9YkJrjf9FJ/CH2K7oxw/
1RGHdCOHINZRrESucoNp0r3KOBE+Xfl78JXYUb7+XOfS+BKew7/
Kj5KHQEdi7DPTN5zqOaC78AjirN1y/QMyxx6avuyyjCdHW9fJVZi/iT0Sq/
Pd5nTvg5wEeSfGRS6labrIA/HFhT5vs579OrlaZ7TlBh+MvlFdda+zTSN25qzkf80/
WP7Ya0k8BJmULA4zjqJY<ETB>C4<CR><LF>

-> <ACK>

<- <STX>4CTm70jLenZHYycXWHfAc9kGsjixhG5gHfcSW6EynO85Av+oJmdM/
GPfRjymevwbvuKNfcbLy85Dr1jzTHplt3RnjUuNpxCZVx3LH/N25PkNN7rbIcW25r1/xMLwu2J3b4/
v3GCeoFsR34h45ZXdq6mfQs465u5xzYu5rrHUaGVFudruflS8vsf9WzNOJ9Zr5ccV2xP7b80zzVjxb5
pg35EAl9tiO9SrsaDynPGWebQpnBa8o<ETB>E9<CR><LF>

-> <ACK>

<- <STX>5C+P1LGNHnYWmNVgh8l3usa1so+/
znZd3GufsnK3NWpOtS2Bg5IHEhTU6cbVzlBrcYbbPgX1lH8K5kl1bjUuQqzdxrvYY76l1W9rPabZB9f
2W2e5k27n2nda1Tny/
fXfMfYvXgict8vSrff7OAmOdrdh766EY1zqna8V85PdgA8lLb7Rsdx4xDtGemHo7yjhSM9NnaJb0C7u
S/Qs+dWLO9mLTrLPYNKyYa1byLWjSAs+akPgi<ETB>21<CR><LF>

-> <ACK>

<- <STX>6NmmS8ZA6aF2g2V3xbNieJs7WPGw9AN8jtwevrYLe3Xm2T
+g99oF8CTyDmHkgXia36lzk+9hF5avktNiMq/oix4wxJcbdMR6N
+OfSGPP69Fk9N8YNcX9+XH8a1+ti3BvjIng/
LK6XxJgWY3iMhTEeivt3+7vlt3GNUb4f1yVxvcFz1WPj9YQYM
+P1WzHui9cvxHgmxi9ixPv64Rgz4vWFuc7UuE6PcWO8vj6usX55Je9dE2NM<ETB>FE<CR><LF>

-> <ACK>

<- <STX>7DOaI12V8jNHeU70gxuXx
+mrvWeOyuDfJn5XnY9wZY4z3pX3e5TPWi2OMi9fM8XqM0Umj22L895ybc58X15Ex+M5s76P
+ps9XXorXj8f4l3gd56lZ+80YT+TZ47l6hGlTuE6O94/EuCcG5/hJfj7Xe61v8j7YT/
lVjMfyzKx9UYzYe93E++diQGfu3eY59N2Red4b88refhyDfULXK0xbzcXZR5l/
JfYTDll8kXxcl8+yp07S<ETB>3D<CR><LF>

-> <ACK>

<-
<STX>0+iWfr0CL7+V5kYfvWr4031lLz1e4H7ypZya9fpnnDrqXJfmdoGe5MsYPvU690OeG7vWjKQ8
xZ4Ee98d7xnMp088mn19O/vH9t/298rPkwVMpo/
+S9ODZ2ryov5XyNT7lNj6vg971K96fdGRh8iPOVv8q15+aMjDJ/lGukvegdZlkesAT6cU34nrtUjmoJ
+Qzj+b5r8j935Z8RdbRk9CJ+tqkFWvMSpm4MOXq5hgTPXdBjn+a<ETB>0F<CR><LF>

-> <ACK>

<- <STX>1fB6d8gufbo33X/d
+4VX5XvLoTetQvSjlG37PifFL81b6gz1A709LWs1K3Xo1BnOcmfudZb2QfUGuxuRen7IslVNiPJ3PxT
qlY1mrJ6eMPGCbU/P922O8nbZiVu7j0dTdBbYf9YN9tll3p32ZaBmCj+URry
+9nGD6cVbx4vwYbyUPRqZMjjOvRU908dtxfdLPif7PpaxDH/hyecrqpaZB/eu4sjbP/o/
UhbFJg2kpJ7OWyojk<ETB>FB<CR><LF>

-> <ACK>

<- <STX>24mafp7DO6NzPAA8fSV18O+X10ZSxb5tO4u9v0kZNsSzKNmA/r7BsYMfLdNuG
+sp8jTzf7L2Vf066smfktdsneyWZeSnnHJdz3Zj6NTPpis0/vU82S37itNTfpy3fZVHy/dWcb3HKxHdi/
CLnm5s0DdnExkKDilgj/HIHHxv+vVrk+KOJa/d2xzydhx0/dMPn1xELtR9wzNO61/GQYovF8Xn4/
Va87tzneAmcR/l55O7UJMj/<ETB>F2<CR><LF>

-> <ACK>

<- <STX>3G7AJcltyc2pVYEQHZC5JrksO/WFjA9Q2qRWBPZBXgnkIB1ih37jsv/
Up91ZeTf6yp3ET4T0f7RfGDJZQ/
41z3Gpj4wSaC8wB3GDFzM83Mg5DHE0+U30psQEwk8r5uPKRLzhnpw5cb
+A5wCUaMJ6li8FbygrGCoTngGu0jJU05O77+Kw1uf76xk2EubD/
mKOJ75X9TR9wKHKjwjnBFd7tEz2aWB+sV/RYx/mKcInV+oV3NMs5<ETB>DE<CR><LF>

-> <ACK>

<- <STX>4n1MeRv37I/3CWZo1jX1wftbhfGA08KQBJ9rDc0JDYS9g7v3x3MrGEMASwlzq9ZlnW/
u8YBPCuAYZ/wCrE763hmnA98F2xIsN/ZzwNHAkcIhYr/lgv+qnYDfgajX75bk1M996N3lN3rtFv2upf
+wTtiSMOWgKhsO
+hQGCZ2xjXIX6OnPVlWnZbOY9lg8mjb9oetbkqWsYm6ihJ5jghyxvrAvuBkYG7slzrCn5AW/
axXJNnZoa<ETB>F2<CR><LF>

-> <ACK>

<-
<STX>5sLAp8uXN8jlkHzxtlbgPBraS94Y8kjcK59rUtBeGB34T75s4XxOy0oSMFeR3TZ8FrAjMEVkVp
jPla6BD4FLUssQLzgTNwKPAYj9hPEAYFPjPih7IkDAZ5Glz6yW4GTJEHg8uJawO3u5l/
RReFrLW7G55pl6tmu/ufi29BjMDZ6gSzwCjC91sNvW56lXTTjA3tcXEP8E1wV/
RSfhQ72fbwD34gXxJXtHxdc0H9Ktin9umzdnU<ETB>B1<CR><LF>

-> <ACK>

<- <STX>6clt92PoLVgfmAYaIjWk
+ZdlXLbzfexROGGcGrwYfLB927jyAaVYrptxsnPq3t88pbHSTtHPoJusGT+kPEU/Xtb4TM
+JjFBcQHxCP/yj9F/6VOAhfjM8lTnw2ffYc+xF8qZ6/Ke14k/b/J35WsePFfY7piePe6HO8elf9oPwz/
usSr1fO7XNsOTe/M8L+rL7D/kGx/
V3274pD7809sB6+57fph17K9zekH1tgf6349U77a8UT<ETB>E1<CR><LF>

-> <ACK>

<- <STX>7v7UfVizG+YiBn8tz46de9ncUrwzPtWenb77ZPlcxG/u/Mf35BX2OUe
+zD1aMMi397ku5t8h5FLM+ks/dnXFM5BfEhDyjOOqs5A2fjcgzvZk+PWJW8iPFlhEzy/
ZROwjfQsxQr2PbKDuLT/iw7Z+w4z8m38M/V+DRq6VdW862sMJGL2ufImwfOx42RDlA+DcwW
+y65O8x7wlZr1a1jSqxh5qayEfT98Xrslo+z/fAn1dKe8V+<ETB>BE<CR><LF>

-> <ACK>

<- <STX>0gn/C3IMvqt0sZ5vAc/Xv
+mQvqlXSLq3ldTiX8ivOS91gDZ8Df6u9fTJ1YkXTRDgzur2C1y0DOveBtF/
45X3SJmyb9gY78iHbyZp60MqeC11UrYiYafn0NR8wjYn9VWvCTsOrtWyLwcO1l83z7MQcwSfZ82V
t42Rv8AErJA1WS9u8csYhK9qOlp/
36fzcp14OBtLquKcFzABMi5onvUjdiKfKgqzZj4rrwn5hYSXiqC740Oz4<ETB>DC<CR><LF>

-> <ACK>

<- <STX>1zrR4PmIlsBawp85010tVd5xu/AxsBExH/
TfgnmBqU4wLlSbmHpf4y22eDzyxdZfjOTDr1q2Jr95pLKYNXj2xX/gP/
gGMFmyu9U3vv8yLexHjCSNAP8+2jSJ3kR4+lHEzsSV+Gr0hfv5dPoes/
tTPyY7wOnIVYRro6pyMq2Mu1VTAQMjR0Pev25YVbBd69nDGshG/Cssnfgg9x2/
IZj7g2Fhx1r22idrnxmlzJ3of8jlzHBsX<ETB>82<CR><LF>

-> <ACK>

<- <STX>2BnNGbIT9Ps79o/js28QRce7vxPdeDnr8IOj5ZFxfQGfjmRid9+Kzx+OZuJbn4zXPx2i/
4ns8U70ez8Uc5Vsx3xu+147RxDyduNLT2DwR13imzXeei/s/jtc/ifvxPFg1/
XqqsR7ar3q46qzgwrwGo6bGS+3jKPdgUfsAP6VGDC4Nrg5eTm2burPqutTS6fkBRw6ZUWz/
MDS0rNTE7Asdx/NZ9+tx5fXhQafjYvz9DqUcFNcj<ETB>A0<CR><LF>

-> <ACK>

<- <STX>3Y5wYY2iMY/P9Cfl6lxjHxDg0xhFB22fiXJz7ezGe6hdWrlrOGYmP/
TDWi2daj8X12bgXPChB8/qd+N472JZ+YXhgnsRB9P2pfn181ll2t89XXLdrxp/YotCbZj/Hf
+g9dKRGSp1N8fmQjM/BBqHPSY7F8dWKC9AJavm75uvBSc+zM
+bqc2xBv41iGOKXeB7MXeuvbHorVqPHJWtxqueQS
+zsuAccm9hOsfHqtpGqrx2cMd9e<ETB>22<CR><LF>

-> <ACK>

<-
<STX>4juexTc2Kjqeo02DH1EdEbXMjx0nwWnUsYlpkARnZxzFPTS3lCtONM6lHalvHUsQ71JroAVB
OsZxjRMU/GTOqL4MzfSXt+s62d/gz8HnVKokBb/aekFX6c
+gbos5F7UjfJ2YkHtzc9p86unozqWNTUzjSPFOfbvASbJWeD+UqxLDZtwKGqx4z
+psitqe3RXV8aEltZk9/n9fUXXhW9fND80q8eETmBfT8xTmpgXAW4lT5lXoi<ETB>85<CR><LF>

-> <ACK>

<- <STX>5ju1XvUm9F6dlL+YRlhlyTPITajTEvarpJS/
Vpzo6e332sKzQh0guqZzsRPNxgPf0N9HPKXuF3zvM5yL
+Jp99X0aZF19CnrNT9sYNtjyqhzN0lhyPvhRkUXXozbNuRp7KOQ+yzZesY1el/
Q82DVRfpwfjKMtItavjWNVHdnRMT85Ab6xyEHRgmP0t+Qt1leSCOVRzJn75WPpm+iXg1QXpaz
+Ze6de/0/WV8nydqmnW1sn0Rft<ETB>7B<CR><LF>

-> <ACK>

<- <STX>6aZ9c/2LXfairUGdRDDDOfXjkW+QY6uXZwOdU3rG+8xrql8gm8ktNXj1Gn3AeoZoBvm
+gJ4ealrj+p1OGDki5xZbu5CtrwzPyCXoksMfQHL1XLTPkXfW1wT6jep/I8cixuG5suSjBM/p/1H/
Ksxtan7ElxBGq6W5pOURnyE/gN3tEV5VrkKPT5wWf17G9VO2afleeof3NI/
UJXOR9EKPCe3Ir0eRk2wTlgptZZ6XvMW+X3iT0<ETB>5C<CR><LF>

-> <ACK>

<- <STX>7ZXXbOtnAtW0fyNfUa4FcjnZPHr12wkfAVEJHqj3M/2aI5UU82dL2Vn0/W9p
+MXcTdKx3su9TPyu54YE+u3qEP+u11IdxWdo47p1gmUaPJYcXWKbVd84a9FRB48r2lBwSnZC
+bGdbKMwjfIT6cpA/6Axv0Uvq9Of4LPSQYWclA
+gCtPuc5ZgeCGroNXkiPWPrpM9e2XOSk9KTqnx1fOrWqKx5Ew/Ta8Bz5LxnWKfxJ6pJ/
6Np<ETB>3D<CR><LF>

-> <ACK>

<- <STX>0Rv8C9pnaMzVP6Rz9COjOue53qOjJpt/soJRf7O+I5Nd21k/
1xIlzDbKuqQdlcO6XWPhoy6VsW3/q0+6WI7CGaoOUg8rfo7dG/
ovYeZjtozAS9IE68XqpW8QjW1vGsIvlyNQz+tA+6uf0TNgK+nUV/yMbn09dQx+2TPqETCo/
oR4M9gYdsYMbp51ifXrjDrF/lB6s5vfKkaDnpraVxF3EKeqBJGb
+uP0l9l72+PzUz33NY8kV<ETB>4F<CR><LF>

-> <ACK>

<- <STX>1n6Hf2KgtXGvHJqiGPVD/x0b/nfeELdDvTza2r9JvR/Zl3wGGAsb0ZcuYfhcCHT+Tz/
TZP6CLshfo3Mk+L3GGMMS1Ux/XtV8TX45LOm9mvuv7lXWUuEZ+eCXrgmJLbOma5oX6M
+kNW9X2UbX/w5Mm6/tc+Bv6QNWjB/9GWl/oP1NPGLoWOte
+xHSuwfCl08kvyllf7FOtCPxPOD7YNrnjt42DUBNQfQJMYUnElpEzCs8Ym3kH<ETB>E3<CR><LF>

-> <ACK>

<- <STX>2NcYHnWvoeXJ36lg/6FMNSXj6FOMs6i0ES405qKsKZ/
hDn3Ax5SfPJAYyIzGWiYkXzEkcYZKxCOHy1KdeMc5APq96Fmd6o8856jec0wj/
eKfP9Q6wg0WJPbxojKX+WZ9y6TJQe3vO+ZHqdTN8X7kRedYrPh95UZ11WnAgYTvUOsCJlk9V/
k7ONd5no56kNRaZflprQZ7hDedFDdgDGOvkPtVHeC1ciFx8tnGbgdxN52D
+ibnm<ETB>4C<CR><LF>

-> <ACK>

<- <STX>3ONMXnikPvN84jGhPHeyFmH+ZftdIbk3cBnzi56aX6ERtD3mg3gG9wY+oGYK/
3Oxzip9gXuBd1BdDXlSr2rPPuNE400K42sykyZLcH7VGsKxRSdNu5plgPNR7vuu8lnqJsKs/
GO9RLa7uE94jWVuQNABnW5i0+Lfk842Zy87OfHmhn9F8QV/hHtCR3PV574mzSMbB/JC5b/
pcmuMB58SSN/h+ZfLn/tzDnbmnl5N+lfPU8TiP<ETB>E4<CR><LF>

-> <ACK>

<- <STX>4+PGGzyC8aFTSDfztoeQLsgfuNz3n
+7FlV7jZq3l9KvXg4pR9eEtujv6Ru4eMNKFXogu6Rb3pmTwz9e+RXku9tU/
kunf7zOIN9cmUc9Fren4PuQTrG5+6xDleTf2an3RApn+Y+/i+9VR1RORqoB
+CeuCivC7JM1CDnpBydk/K61zLpWSMuai3UiOblvTCxhxnuZX9aVLH0A+wpDdy/
9QPsWUDcvAN24j35fCRnC/uNdiyMd6L<ETB>AC<CR><LF>

-> <ACK>

<- <STX>5MJfHk6czTC/pPXXQF9MWXJ17ejlIHHn7SdqRJ/MMv89zIp
+vpS1B98DFXsvzvZfzULt8O9fYwTEa+Yd884EZqw9Jn/f5jB3o09w9/dsO6WuoN4C3kS/gq/
scCxGvqaf38ozlPpMD/x3PC/8kBjnXMV6bmOTjjlnAVYnd1Yv+VcdMxKDkY6xJzK9+njMd
+9DzrvgcrHJNxwryt+RdRzm/VF57umPw8inHJ/p9xeccD9CnSs6k<ETB>9B<CR><LF>

-> <ACK>

<- <STX>6fI0Y9CzHm6qtZU2DOInfm0Av+hXVw09NZtOlcTN1LsXE59u3sw/5/2Mdn
+s3A3326frt1nZeQz2Hqzt2ZS/gHMp7pnrvxP74cWpA4CDcU3y6ifM8YWTE9NsYS1Lthnjywlz/
VnEOoHrSRzKfI17LHnHiau1vd8c01PeEF+zsWJV+fegLvfWbh4NMV+XrO+d+P21aqQYCv7Yyf/
U7WuIK+LWO96TfOhKrLu/cDr4qDhni9eu2<ETB>D8<CR><LF>

-> <ACK>

<- <STX>7Yxb15Z6TOMcQx3bK9dnrkJRJZBH6DHFOo9/orJz5x/4Z2+/u/
Eq9peenjHwh48ShjgeVB9CvvG2eYePMk8AZtk5ZONd6ot8KjnB8r3xwdcdl
+o3eaqad8riNTQf0qDnJv5ui149+M8WCu1o2VAfY2rkjPd2Sv884xm+R063pPSJzZS/Hg
+iGaqmxfne07xH/g4mpBjbIsqwa6/EZv2/qWJzfxeh3Hcs7jqW3G5qp9w87clT1<ETB>77<CR><LF>

-> <ACK>

<- <STX>0WrVEcLYdnY
+AD5ATq7d9F8fTxIHUYRVXhv0VfkF8uG7qw4opH0OcA1LD0ffACpZxLqfflBD3oAN/
a7tK7Y34Ub85+HDKK3jCj1wLF0a/hs+peJ6cC59CrZq6JVj1bpZ51cTpG
+F3KMUxJnlys0rG4Ks6ppfNxG5T/836iWJ4cBV8BXH28tYt9E84Fv5gh9T/nS3j9B1I/
6il75XyFbZNMSw5UMRz+m0odZ4NHNdjl+hBF46x<ETB>AB<CR><LF>

-> <ACK>

<- <STX>1dup4K20WMdoKlkNiF+J91b2edTyjPHOQZRofLQxmX+dJ5KT4e/
GSmBaaEU8OTv6tZBvcfMl0YU3VUddM3XnNMRmxujC2XXNt5IzY6YGM2WJO/
fYg7innl4Zc235AWAzxKTzb0PGmfCGv87cP0Fq6TY5CvERMMtT8lo/FjxG3bpy8/nT/
+7+JoYZG7CTM9FnHMpKhVZKP22Tuhr0GuyLuf6vPOC+2Yq2Uzb2dL6o+xB7YJ/
10<ETB>5A<CR><LF>

-> <ACK>

<- <STX>2v3B9Xfx7L+Md4g9kiX2Sg/wyY6177fPV84M8PpSx43cc4xFLKF95N337/
PyM2OrSjKPmOc7RdaLjLnp7FL/clDHJW/
mdxblH5PPXGdsQs83MeHNaxlnTHH8Rnyr2OC9jQOLPRzL++Ib3oL64+zOOYT
+3ZpyyKONFYmxinsmO0fQ94unhecbrM94iVqEHjXUOTrow9xWmk2i3xPuA3u/
HtvuZRoqr6Jc6O88x1XOrn4uYr+24<ETB>BC<CR><LF>

-> <ACK>

<- <STX>3byA/U733tox9eP4O77lkn5Sefc5zvd8v+aTnVZ14vvesHktq2NSaI/
ZSr9jcjEfh3YTc125Leae68UTHWMiBcpI5GeOdkXs
+LPm1MHINbnIS7vfEfJZ4eLxprLo3sSP1cmSJOvpi00g2jD2clWd9Iek1OWPDJy0LkpWjTHfFjuQ3x
NqcnVjzl6aZ+szmWEbqgfh8qmVQ+S25APQ/NZ9lX8+k7hO/XmWaKv6GF
+Qn5ADZMyc6<ETB>19<CR><LF>

-> <ACK>

<-
<STX>4sR9yPWLkfzXtlc9OyDM3KTvlBvpJjH1V0uQO65Lk7XavL1lCFh91LqK4/0f57IWWLfErbZT6
A8bmXm9KuZyUOjEh5WtR8mdO8mVCzkVPdvZdSNfOzHWCt+qPmJl8QU/
Iz7EV85KH0OiW1K1pKU/Zk6lc7zbLovpIR+T9C1MOp6bufCBzi+wrlS7PSJlGRrF756bc3JnyyBrneL/
0bQgHAWe5LPl2j+muHg/6XrHrP08dQUfJ<ETB>D3<CR><LF>

-> <ACK>

<- <STX>5E8lxRvUt7Qu+wnJEvQ9+qV+WHG1W2onzkjbkI5O8huQLes43bbQ/
aPurpOkpppPs0ou5t0UpE53k3YSk1ZdSjuEpee99ycP7TAvly3PTNtHPQt57x5/lCvx/
KM93d9qHr3oO9Ew6PDV5sSDl8aC+pX2ufH5B8hjbdVPSg9e/83v1eS60/VB/
yKzUq3kpk52UvTtSFvg+tM1eF9kw9lve08fye6eYVrl16O9ZOQff/3XK7Qzr<ETB>0E<CR><LF>

-> <ACK>

<- <STX>6oPp7LrUuaI/oz8PmnzB3cHFqUof2+/8DjM1cid/NzczfWh3rXIT/X8Mz+g3QAcYX
+c0HuD99DtRY+O2Tfqv3cOr0bOudMJfbk5bZZywb/0PjTvLr0OU5yxB5MTSUHM1Iu0HO/
XTye3TKGbLObwXAB7+TvH496cW80AkaEZ88bfqX7D0u
+yQPBrAm7Bt2FGxhALvjPbqQPl73F5v22gc2a4TnlzzgdwbwG56911fhdtynfxhM<ETB>D1<CR><L
F>

-> <ACK>

<- <STX>7CV0bk/udmbRANqekXZmdOolMgnGB+4S9FGZIHDHMcqy+Kj5/NPc1IXnPnOBr9FKjZ/
d6bdkkvv+maSs/flnSb45lT99fkvxbnOd+POUXPOm6PBfy/m7OscR6rn2jP8/
nnLemvr2Wn3Ee7PJw01cYzmLrk/QI//yblGXkHTuOTwvbJf97p3VJ9LvS
+qB4PPmMHRD280jqTdc0k13L3z4lp5uSfJ6Sc/3Uui4ZeCrXhG/gWBMs<ETB>62<CR><LF>

-> <ACK>

<- <STX>0wxoD9IMX+OB3UraJ/140b9WfPoBBMh/YHPboZtNAPP
+6ZVQ2G7l9JeXpVdNEuo4vfSL3uqjvfSxTNuIHlpkB/yl
+P2kdkc48kHR5zOupR469gAOlDZUthhaPW5dEn9+kvkxOHbg99ell81q2g/7z5/
OsxEwPpk6DoY5PXixrmRGP51oGZetuzzNB+29aLhVPXpt6xpoL7Z+ETxFDzU/dYr2xKffjUz8W
+KyKd+abh8Jpx+a9<ETB>26<CR><LF>

-> <ACK>

<- <STX>14ZYvyTZ+cEBmH7FOi+7oDvaBGAzfihyho3NTNn+e58e3DMRC
+Nsn3HMmDA9fe12e6xafR9+/1WtK95G1B1MfUqd1H5n4m4x5b7LMCTOdlDIDf05Ons1Jvj2Y/
Ho89epbuS7ywVzo8IcyDro9aYKtnNH3/u83JMtTTNt6QE/HWG6EaR/T5xhqQsrDV/qW4tGzLY/
S15Epax3rrfBz+oD2tr4id8isYg7WfSHvPZDzwid0DZs+<ETB>EC<CR><LF>

-> <ACK>

<- <STX>28Psl5o34sn4n6fiMdVL3z05ejUod
+27q1L1JH57FXtbmh3Kgx1LWhlkOxC8+Y47pOSe0pq5yi2VQtJiftOr6OX2GPY3clP
+DBqap3krwFPoHtjPmIAzpMOfSwgSXMy6g3obd/f9LwEXoy1l9HDyDWhz1vK
+53tiAfxzsmprqe5sYc6BPXf9z5WhjPtQd1dtc+TP9L4NNEpPa03iafn9A7r2Xc2b+pwX1O/
ok9b9BwLf2NTak<ETB>E0<CR><LF>

-> <ACK>

<- <STX>3PoiPJdaxfeIVOxmnAZtSP8J5iYWNSbwDrGpY4gg7GgPU/y7Z1pgpGAj/e0C5/
V6mj/6XW/6vM/2+INai/in8eC3jHerbHJxYCdjal41RiTYbGRdSHZbaJ3Vj+q+PSSyaejk16KxXK6/
fyhgPe6DfQb/DaOU9+kJWS3zqJGPA9BMI8/yi79O/
QG8GOIB0D15vZGxENf3XbFPlweCbYhbos8R9rPx+QnkXPOU3cugS/B+c
+ddd<ETB>BD<CR><LF>

-> <ACK>

<- <STX>4tu3qVQ2br76g5RK/Ab+jD5GexFfdQ6j/k/h2XN9zj2HrN+AS/oxR3oz778b16X71MvJcl9/
x0Pf4R8/VvBXf+4M/D8H2ecCaTjDGB3ai/5cE7naR+03BWfW/Dhb0u74Lv8Aj10is5ch
+9ycsnzjohu7ZYg56KfXbn5Utx/o9ArK4h/Euyd5mxsGqd30e+mS6DxvfVJ8//Urs/eNx7xXjf
+qxfD32t6RffUStuM//3KNfoOT/<ETB>91<CR><LF>

-> <ACK>

<- <STX>5U6G/RWemf+9C0wjcs5V9nvrfSC/2+3/9DDWNWL/1aFxH+XfY+n+L7/n/damXFxnl/
zFM8+/PVd/O3k+eU88a/wPhRI+S96mlg4XL72HDp9nvK1/idwDEtcTJ
+EB89i9sywf61uU7fpDvf5a26yH7C2EK2F7sZ8Qz+n9O+/p/Cuh/CQ41Xsv/
LFSvE4MeQf6vx0DdcgArwi/hfw/sU01UPfmjc0/EDRekP5jhPF353TvGImXz<ETB>28<CR><LF>

-> <ACK>

<- <STX>6P2QcVL6VHGwN45DyP8ShYIuPZTygGmS/
+2zrwb3RG73RG73RG73RG73RG73RG73RG73RG73RG73RG73RG73RG73RG73RG73RG73RG73RG73RG
73RG73RG73RG73RG73xlzDoQe6N3uiN3uiN3uiN3uiNv+zx6Pa98Zc6Or3RG73xVzfm90Zv9EZv/D
+Omb3RG38lY7kd/mPjqe17ozd6ozd6ozf+a47v/xlH76/31/vr/fX+lv41VW/8<ETB>61<CR><LF>

-> <ACK>

<- <STX>7tYxId+iN/ypj7+3//43/7F64u7f/845BMar/wyg7/OWPuvpfj2b7/5zRqf78o/t/MX63/X98dP/daP+7Uf434/U/GVXF+J8=<CR><ETX>91<CR><LF>

-> <ACK>

<- <STX>0M|4|REAGENT|CLEANER\DILUENT\LYSE|150206I1*^20200525000000^20260206\171108H1*^20180227000000^20220714\150520M11^20200915000000^20160520<CR><ETX>F7<CR><LF>

-> <ACK>

<- <STX>1M|5|SETTING|RUO\WBCDIFF|TRUE\5<CR><ETX>E9<CR><LF>

-> <ACK>

<- <STX>2R|1|^^^WBC^6690-2|9.45|1E03/mm3|3.50 - 10.00^REFERENCE_RANGE|N||F||LabMan_111^^LABMANAGER|20210707172907|20210707172907|112YADH47745<CR><ETX>EF<CR><LF>

-> <ACK>

<- <STX>3R|2|^^^RBC^789-8|3.61|1E06/mm3|4.20 - 6.00^REFERENCE_RANGE|L||F||LabMan_111^^LABMANAGER|20210707172907|20210707172907|112YADH47745<CR><ETX>91<CR><LF>

-> <ACK>

<- <STX>4R|3|^^^HGB^718-7|10.9|g/dL|13.0 - 17.0^REFERENCE_RANGE|L||F||LabMan_111^^LABMANAGER|20210707172907|20210707172907|112YADH47745<CR><ETX>B2<CR><LF>

-> <ACK>

<- <STX>5R|4|^^^HCT^4544-3|41.1|%|40.0 - 54.0^REFERENCE_RANGE|N||F||LabMan_111^^LABMANAGER|20210707172907|20210707172907|112YADH47745<CR><ETX>CD<CR><LF>

-> <ACK>

<- <STX>6R|5|^^^MCV^787-2|99.7|fL|80.0 - 100.0^REFERENCE_RANGE|N||F||LabMan_111^^LABMANAGER|20210707172907|20210707172907|112YADH47745<CR><ETX>76<CR><LF>

-> <ACK>

<- <STX>7R|6|^^^MCH^785-6|28.7|pg|27.0 - 34.0^REFERENCE_RANGE|N||F||LabMan_111^^LABMANAGER|20210707172907|20210707172907|112YADH47745<CR><ETX>60<CR><LF>

-> <ACK>

<- <STX>0R|7|^^^MCHC^786-4|31.7|g/dL|32.0 - 35.0^REFERENCE_RANGE|L||F||LabMan_111^^LABMANAGER|20210707172907|20210707172907|112YADH47745<CR><ETX>00<CR><LF>

-> <ACK>

<- <STX>1R|8|^^^RDW-CV^788-0|9.7|%|12.0 - 18.0^REFERENCE_RANGE|LL||F||LabMan_111^^LABMANAGER|20210707172907|20210707172907|112YADH47745<CR><ETX>97<CR><LF>

-> <ACK>

<- <STX>2R|9|^^^RDW-SD^21000-5|38.1|fL|37.0 - 56.0^REFERENCE_RANGE|N||F||LabMan_111^^LABMANAGER|20210707172907|20210707172907|112YADH47745<CR><ETX>60<CR><LF>

-> <ACK>

<- <STX>3R|10|^^^PLT^777-3|218|1E03/mm3|150 - 400^REFERENCE_RANGE|N||W||LabMan_111^^LABMANAGER|20210707172907|20210707172907|112YADH47745<CR><ETX>56<CR><LF>

-> <ACK>

<- <STX>4R|11|^^^PDW^51631-0|16.8|fL|11.0 - 20.0^REFERENCE_RANGE|N||W||LabMan_111^^LABMANAGER|20210707172907|20210707172907|112YADH47745<CR><ETX>D0<CR><LF>

-> <ACK>

<- <STX>5R|12|^^^PCT^51637-7|0.327|%|0.150 - 0.400^REFERENCE_RANGE|N||W||LabMan_111^^LABMANAGER|20210707172907|20210707172907|112YADH47745<CR><ETX>E1<CR><LF>

-> <ACK>

<- <STX>6R|13|^^^MPV^32623-1|9.2|fL|7.4 - 12.0^REFERENCE_RANGE|N||W||LabMan_111^^LABMANAGER|20210707172907|20210707172907|112YADH47745<CR><ETX>83<CR><LF>

-> <ACK>

<- <STX>7R|14|^^^P-LCC^96354-6|0|1E03/mm3|44 - 140^REFERENCE_RANGE|L||W||LabMan_111^^LABMANAGER|20210707172907|20210707172907|112YADH47745<CR><ETX>8C<CR><LF>

-> <ACK>

<- <STX>0R|15|^^^P-LCR^48386-7|0.1|%|18.0 - 50.0^REFERENCE_RANGE|L||W||LabMan_111^^LABMANAGER|20210707172907|20210707172907|112YADH47745<CR><ETX>94<CR><LF>

-> <ACK>

<- <STX>1R|16|^^^LYM#^731-0|3.77|1E03/mm3|1.00 - 4.00^REFERENCE_RANGE|N||F||LabMan_111^^LABMANAGER|20210707172907|20210707172907|112YADH47745<CR><ETX>EC<CR><LF>

-> <ACK>

<- <STX>2R|17|^^^LYM%^736-9|39.4|%|15.0 - 45.0^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210707172907|20210707172907|
112YADH47745<CR><ETX>17<CR><LF>

-> <ACK>

<- <STX>3R|18|^^^MON#^742-7|0.27|1E03/mm3|0.20 - 0.80^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210707172907|20210707172907|
112YADH47745<CR><ETX>EE<CR><LF>

-> <ACK>

<- <STX>4R|19|^^^MON%^5905-5|2.8|%|4.0 - 13.0^REFERENCE_RANGE|L||F||
LabMan_111^^LABMANAGER|20210707172907|20210707172907|
112YADH47745<CR><ETX>D3<CR><LF>

-> <ACK>

<- <STX>5R|20|^^^NEU#^751-8|5.14|1E03/mm3|1.50 - 7.00^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210707172907|20210707172907|
112YADH47745<CR><ETX>EC<CR><LF>

-> <ACK>

<- <STX>6R|21|^^^NEU%^770-8|55.0|%|40.0 - 75.0^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210707172907|20210707172907|
112YADH47745<CR><ETX>04<CR><LF>

-> <ACK>

<- <STX>7R|22|^^^EOS#^711-2|0.25|1E03/mm3|0.00 - 0.50^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210707172907|20210707172907|
112YADH47745<CR><ETX>DA<CR><LF>

-> <ACK>

<- <STX>0R|23|^^^EOS%^713-8|2.6|%|0.5 - 7.0^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210707172907|20210707172907|
112YADH47745<CR><ETX>66<CR><LF>

-> <ACK>

<- <STX>1R|24|^^^BAS#^704-7|0.02|1E03/mm3|0.00 - 0.20^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210707172907|20210707172907|
112YADH47745<CR><ETX>C4<CR><LF>

-> <ACK>

<- <STX>2R|25|^^^BAS%^706-2|0.2|%|0.0 - 2.0^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210707172907|20210707172907|
112YADH47745<CR><ETX>45<CR><LF>

-> <ACK>

<- <STX>3R|26|^^^LIC#^55432-9|0.30|1E03/mm3|0.00 - 0.20^REFERENCE_RANGE|H||F||
LabMan_111^^LABMANAGER|20210707172907|20210707172907|
112YADH47745<CR><ETX>2F<CR><LF>

-> <ACK>

<- <STX>4R|27|^^^LIC%^55433-7|3.2|%|0.0 - 3.0^REFERENCE_RANGE|HH||F||
LabMan_111^^LABMANAGER|20210707172907|20210707172907|
112YADH47745<CR><ETX>FD<CR><LF>

-> <ACK>

<- <STX>5R|28|^^^ALY#^43743-4|0.28|1E03/mm3|0.00 - 99999.00^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210707172907|20210707172907|
112YADH47745<CR><ETX>36<CR><LF>

-> <ACK>

<- <STX>6R|29|^^^ALY%^42250-1|3.0|%|0.0 - 100.0^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210707172907|20210707172907|
112YADH47745<CR><ETX>1C<CR><LF>

-> <ACK>

<- <STX>7R|30|^^^MIC^X-MIC|0.3|%|0.0 - 20.0^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210707172907|20210707172907|
112YADH47745<CR><ETX>B7<CR><LF>

-> <ACK>

<- <STX>0R|31|^^^MAC^X-MAC|0.2|%|2.0 - 10.0^REFERENCE_RANGE|L||F||
LabMan_111^^LABMANAGER|20210707172907|20210707172907|
112YADH47745<CR><ETX>9F<CR><LF>

-> <ACK>

<- <STX>1R|32|^^^IMM#^X-IMM#|0.28|1E03/mm3|0.00 - 0.10^REFERENCE_RANGE|H||F||
LabMan_111^^LABMANAGER|20210707172907|20210707172907|
112YADH47745<CR><ETX>5D<CR><LF>

-> <ACK>

<- <STX>2R|33|^^^IML#^X-IML#|0.18|1E03/mm3|0.00 - 0.05^REFERENCE_RANGE|H||F||
LabMan_111^^LABMANAGER|20210707172907|20210707172907|
112YADH47745<CR><ETX>60<CR><LF>

-> <ACK>

<- <STX>3R|34|^^^IMG#^53115-2|0.01|1E03/mm3|0.00 - 100.00^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210707172907|20210707172907|
112YADH47745<CR><ETX>8B<CR><LF>

-> <ACK>

<- <STX>4R|35|^^^IMM%^X-IMM%|3.0|%|0.0 - 0.5^REFERENCE_RANGE|HH||F||
LabMan_111^^LABMANAGER|20210707172907|20210707172907|
112YADH47745<CR><ETX>2C<CR><LF>

-> <ACK>

<- <STX>5R|36|^^^IML%^X-IML%|1.9|%|0.0 - 0.2^REFERENCE_RANGE|H||F||
LabMan_111^^LABMANAGER|20210707172907|20210707172907|
112YADH47745<CR><ETX>E8<CR><LF>

-> <ACK>

<- <STX>6R|37|^^^IMG%^71695-1|0.1|%|0.0 - 2.0^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210707172907|20210707172907|
112YADH47745<CR><ETX>C0<CR><LF>

-> <ACK>

<- <STX>7L|1|N<CR><ETX>0A<CR><LF>

-> <ACK>

<- <EOT>

3.6.4. Example of QC Result Sent by the Instrument

<- Instrument

-> Host

<- <ENQ>

-> <ACK>

<- <STX>1H|\^&|||H550^112YADH47745^3.0.0.3a||||||Q|LIS2-A2|
20210709175358<CR><ETX>A6<CR><LF>

-> <ACK>

<- <STX>2P|1<CR><ETX>3F<CR><LF>

-> <ACK>

<- <STX>3O|1|QCL4||^^^DIF|R|20210706094947||||||||CONTROL^^CTRL LOW|||||||||
F<CR><ETX>6F<CR><LF>

-> <ACK>

<- <STX>4C|1|I|CONDITIONS^^REAGENT_EXPIRED
\CONTROL_FAILED^^RBC_ABOVE_TOLERANCE
\CONTROL_FAILED^^HGB_ABOVE_TOLERANCE
\CONTROL_FAILED^^HCT_ABOVE_TOLERANCE
\CONTROL_FAILED^^PLT_ABOVE_TOLERANCE
\CONTROL_FAILED^^WBC_ABOVE_TOLERANCE
\CONTROL_FAILED^^MCV_ABOVE_<ETB>62<CR><LF>

-> <ACK>

<- <STX>5TOLERANCE\CONTROL_FAILED^^MCH_ABOVE_TOLERANCE
\CONTROL_FAILED^^MCHC_ABOVE_TOLERANCE\CONTROL_FAILED^^RDW-
CV_ABOVE_TOLERAN\CONTROL_FAILED^^RDW-SD_ABOVE_TOLERAN
\CONTROL_FAILED^^MPV_ABOVE_TOLERANCE\CONTROL_FAILED^^NEU
%_ABOVE_TOLERANCE\CONTROL_FA<ETB>B1<CR><LF>

-> <ACK>

<- <STX>6ILED^^LYM%_ABOVE_TOLERANCE\CONTROL_FAILED^^EOS
%_ABOVE_TOLERANCE\CONTROL_FAILED^^BAS%_ABOVE_TOLERANCE
\CONTROL_FAILED^^NEU#_ABOVE_TOLERANCE
\CONTROL_FAILED^^LYM#_ABOVE_TOLERANCE|I<CR><ETX>FF<CR><LF>

-> <ACK>

<- <STX>7C|2|I|Name_QCL4|G<CR><ETX>30<CR><LF>

-> <ACK>

<- <STX>0M|1|HISTOGRAM|RBC|RBCALONGRES|FLOATLE-stream/
deflate:base64^Y2AAgW5nMMUQ5QIkHEAsAA==|FLOATLE-stream/
deflate:base64^bdUNaJtFHMfxU6tVs5eqJXNu08Rt3ToTnLW2cS/2ee6ysbm2pnZ1y3RaZ
+zcHKZadZLNLattGq2ylIFUG6Qw1ISkUMIYZRhWmUIQlWIUmS9tKUNsEUTaooyifp/
kC<ETB>37<CR><LF>

-> <ACK>

<- <STX>1TwEAz/ucrnn87/nnpcIYXy6VbYR
+7xCaJoQO6QQaWI3xwVjJ1TA2V0TcNo0e9Kn0ddS00P0x7RgaJbvNr2nc6WemnbrM3U1OnN0ZT
+gB0Nten2wXWe
+HsqcYU5cT1SfY96Qnum7wNxLOrWYP6a7A1c4Zkr3p2c4blaPuBY49nrpT98k8WUwtFSGMnfliOt
OSS0ZH3fIRPVamYyVS+rKtKyQmb4qOTG3SbIGOT+gpHEuNn+tZ<ETB>C5<CR><LF>

-> <ACK>

<- <STX>2D3SaWuS7oBfelL7JWuT9cEW7MPYQew27KPYx3HC/
NaO1cHvEbwoc7ox32Peadwe5p7Bfp/5vfgfsp44NT5iTf3UOcu6zlErwdo+pt4nrG
+ImsPYSezz2BewR7AvYqewL2F/hn0Z+4vs/kdcX2J/hf0N9hj2t9jfY/+AfQX7J+xfsCewp7CvYv+K/
Rv2DPbv2H9g/4k9iz2P/Rf2NewF7H84Riib/zrFPquezhtUpq9I2ZM3K<ETB>A6<CR><LF>

-> <ACK>

<-
<STX>3vZcxceL1cTczcppu5Vrb1OJ6kVqpm6xcgeWKK6FSsZK1PzAbcqTul1xXVRqulQZ94yyL1N
cI5WWy7Hvwl6BvRJ7Ffbd2PdgO7Cd2Kux12CvxS7DXoe9HrscewP2fdgubDf2/dgbsR/ArsB+ELsS
+yHsKuxqbA/2w9ibsLdgb8V+BLsGW8PWsSW2wvZib8Pejr0Deyf2o9i7sGux67DrsR/D9mE3YD
+O3YjdhP0E9h7svdh+7<ETB>99<CR><LF>

-> <ACK>

<- <STX>4H3YT2I/hb0f+2nsZ7CfxT6A/Rx2APt57Bbsg9gvYB/
CPoz9IvYR7Jewg9it2C9jv4Ldhv0q9mvYr2MfxX4DO4R9DPs49pvYJ7BP0g+rma/DfD
+l3FdPMdaugtfaqfmWSpZ0ULdDzZd1UrtTebZGqB9RocYu1tClUoeirCOqRPht1vIONSZ5/
pt5TodJEffPGrKF1Jox3hde4iGVZrvenOcgJUSQv7PPes7Jp5/0khhpJT6zt<ETB>B3<CR><LF>

-> <ACK>

<- <STX>5cYYc5ASlv4no1ou/WbCBX3jnSYs0SytdW6hYx0XZv2NRNNz
+2GsedA8p0k9d46LLPuzmxwh75IBMkp+NPaCPV1MlpNyspk0kBZyjHSx9x/
QnqVNksvkOzLJ2Bztv7TFXqEt9YrRUt7ZK8hq+utoN5AKrwhX025mTKO/
i76PfiP9Pd7se350L6Ef3s33Bvr1ZCf9bbQcF66iddGWMeagJWIVNZcxTt3wLWSBdUyTn8kYGWVt5
<ETB>8A<CR><LF>

-> <ACK>

<- <STX>62kTufVz/whxkhwkTUSRSnIvMd4Vxcb5sB9T5v/
Np2SQxM09ayfNxGfuZ6V5P5WaKTLvKWPvx8ileT8Z1yVqSa85br3XwpbELGPWe67ZMlY4z9rP18j
Xs64hXzc/J7+WwjZm6Q+az8ZIwbMybPmtv6B+q6WftwYtKTzvaEG9z9nLi2ScLMn
+7/8H<CR><ETX>E5<CR><LF>

-> <ACK>

<- <STX>7M|2|HISTOGRAM|PLT|PLTALONGRES|FLOATLE-stream/
deflate:base64^Y2AAAQ4nMMXQA6IdgMjhxe+Tdo+qahx02tc4QOQa7EFyAA==|FLOATLE-
stream/deflate:base64^rZV/TJVVGMevcGdQUTBpREYDh0jmiJgSCfE
+z3szxqChozF02DBZMhZOpkjGQERTAhKDVAwKEkI0qGui/
AgIDEUwSliQoC4E8cOgI<ETB>22<CR><LF>

-> <ACK>

<- <STX>0DSEwur7cs9d1xvjnzrju+d9z3me83z3Oe89qFTKsJDngiodMYnwADmySpUPTbB
+TZnbq4nWrfCdtT3uW7+221ejfUBy0bhLFp0bpNHIndJwQqoU6pcjNVmXSN7d1VJJQYvkEK2TMjz
HJaW+MsKCYpqsaaWbPQ1kOlHO7cfpxTAPsqpfS5eWaygxNYCeHg
+m8eAwKq6IoC0O0WSfHEvtQwlY30/LQg8hJ426qzOQl0VZTtnIz<ETB>44<CR><LF>

-> <ACK>

<- <STX>1aXAg/nlLyT1aDFqSqkm6CzqztPuskrU1pCb/UVKDbhMwwnNpNG2Ul5/
O83aXqdQvx4q29NLNiUDFK0bpibrMXLRTFBy7C3SnZom7+5Z7K3i1/
PMuLhCzZ1ti1k9asEe6vt4i4MVZ3g
+yDVBNjwauYTtkx9ivxw73l1mz4UtS7l9yIEVhjeXLOPBFc7c5e3CV4NcuXbrStbGreKCNDc
+lufOKec8OL5xNW/v8eTwcS8ONvfm5<ETB>E6<CR><LF>

-> <ACK>

<- <STX>2+2e5WeekBh//Fiwhm22rWPzeD+eOuzPN04GcM
+FF7i1OYjrdRu4bDKYixaH8llHQjndbRMnymEcE/ISR0SFc0jiy+yfGcE+Ra/wk1WR7NQaxbb9r/
I9U9t5xjKGxxx2cu9Tsdy2Lo4bNu7h8uh4PrMvgXOP7uXGjiTsv4+rRpLRYz+Xzh5An4Ocb30IvVI40/
lN9EvlN7zS0DOdXwt8C30Pc1R4Bnof4c273kb/TF6fkgUP7<ETB>D4<CR><LF>

-> <ACK>

<- <STX>37CcexQ+jvEa7XF4yWbXhhPw8y4v7cqBp1y2GnsPvt6f+
+ZmLD8At5PwVwB2hfD4IfgVwecpMCyG19PgeAZ+PwLLEnguBc
+P4fsTMNVyxumz4PopJ9ecA9sy3tV2Hnwv8LbBcjCu4E0zleD8GQdaVYN1DUtOteD9OXusqQPzel
7ufxHcv2C7zQ1gf4nvjbkM/o1858AVnEETj2c34xyucn/
JlziLFv6mrhXn8RWYXQOzNjBrB<ETB>EC<CR><LF>

-> <ACK>

<-
<STX>47OvwawDzDrB7DqYdYHZt2DWDWY9YPYdmH0PZjow6wWzPjD7Acz6wWwAzH4Es0EwG
wKzYTAbAbMbYPYTmI2C2RiY/
Qxmv8z9RmcsfwWzSTC7CWa3wOw3MJsCs9tgNg1mM2D2O5j9AWazYHYHzP4Es7+wrpIbO1Ry
w8ZFcr1ukVy71UyuGjGTy6PN5bJJc1kbp5ZLZ9Xijvi/RhLuBMKdsgP
+i6FsERXZKr2ElHlnxD7WS1nrQ<ETB>38<CR><LF>

-> <ACK>

<- <STX>5lyN+DBkDblDavHuCk2LvEeh+yEfUaO8O8r6tedErpesv+PUlt9HrE+lfGV
+lejTJTyMQNdYf29eEe8VJtKK+zMFqoOOiBgu5taLHBJ52Ulk5C5YKHGHiEpNHZj1kf7ZUeTW0T/
PyppKzBlyFc75RjLMGSKJ3CRRmy/+B8zNSfrnuTMT0VBnOMM+o2fTurlodN5Ed38DKro7zzjHsB
+Z5BiG6V7GvUy/NeN145x5l/27xuB/v<ETB>97<CR><LF>

-> <ACK>

<- <STX>6j0WHLSwv/m8/tcx3x6m52Hqb+H9/gY=<CR><ETX>05<CR><LF>

-> <ACK>

<- <STX>7M|3|MATRIX|DIFF|LMNERESABS|FLOATLE-stream/deflate:base64^Y2AAggf/
XRjgtIMDiAkA|FLOATLE-stream/deflate:base64^7Zx5tF1Vle6XUioiTaFASQlyAJVOBEMrRbOTe
+kpWpFO4NBIlygIoSlE2TEQEpIgoQtpgJOEkEASAgkhAYxumghIlzaICMhREEEUSywtVIT6fvObN
+GPctR79Wpo8ca5Y8yx<ETB>AF<CR><LF>

-> <ACK>

<- <STX>0z9l77bXmmt2a3bml6K/7Rn958zX+6qp0N9i5tM/vL51r+0tzVn+pdS2f7i/VUH0/
V9dz9OyC/tK9WM+O1L3DBP39pVVr3FG6DtezUYKrdP8UjddcjcbVl+vzSF0/o+v+uneoxozQ5+MEF
+n+aF3P01VjGq3RHa/PrKE5m8mCf9L8H9GYawTXaZ1Lde+LAs1RH+zv9ZcFY/
QcnPfTHFq7HGNofUX3T9D4vv7SvlKfTxbonUpr<ETB>3B<CR><LF>

-> <ACK>

<- <STX>1dG/UPeHPvpvTNZY5tH5L+6hZZxPBEdq39lQNMX71hRp/
me5p3q6uldbuXqF7wr8rfMsswVDToCOc6896bLOjAPpdorFXaw2tU3bT+5/XGPCFbpcnPbV+s4/
eE37VOO+nM0H39Lk9TNeO3jnXODKm0Twd7aecrbHQUWPr4zWXcC1jdQ8egKs+t9n7P/
tePVNjda8Wro3Gd7+q59eZ/9W/+N32RNO0Fu2a841bW7i2NLYWzbq6<ETB>8D<CR><LF>

-> <ACK>

<- <STX>239J6lWhQoKdo0BGeRbSqNG+X9bTnrnDpiNfl3OTdmcn/
GXp2kWWgpfcq0bsRbdpT9Jl9aJ4CT2Z5P505ei76dSbmXqGjeNpmP
+AEfXYwreBdvYdgN49nvkZ0aiFfa3r/1Wl6V7JbjbB8twT19hrX1nWqnt3k9yvJexlmfMAX+oMP/
Czib3t80qU2T8oWGiP6FeFUHZy8m2m96lzocY3GdMaaPs2elq
+ygcac7H0gX2WGZa5o<ETB>C6<CR><LF>

-> <ACK>

<- <STX>3f81czSGcKu2v6J1ql9072PM1yKvkt3O1+dsSHyrtqzlV70t2i3SxoJeSkYKca71a
+l1P0vedrX/gWuCdeFGO1fpjrcMFflVLLdo0ujbwa2/dg+ZzUr40V5HslO3Mu5BHjW
+jJ4Iywet30K3zrC9lF703ynysZQ
+aYZZR5klu2ujP2f5cDtd6V3h8JZ1qatsY9LdzyTLc4GeHuaWXzQGmTXeG9TdkYaR5B13KPqZ/
0EjzN7IT<ETB>7F<CR><LF>

-> <ACK>

<-
<STX>49V6aE9swzDRqj02ZmWAdjPv76rNo20lesEX7WUbrCX7WEk2b86xPFfbnen2Xnnfg52B91j5
qyWbZxnJdnWEdR1/CHmhMWzQuyM10wVF+1kgumk/p
+Um2adX2OV57boZYrhvJa0vrle1Nd2w3uNef0/rwFz0fbR4jVzW6KZnsiu91bXpX51qWyjTTl/
1Ul9uWxnvwRnwou1r/a+yreNIakfYAHUSmJyav0Sv073jTMs6EU6wn<ETB>BA<CR><LF>

-> <ACK>

<- <STX>5dZ/xx8Z0NG8zMuealPb6K7btyD462ZVMtIR/5yLbitYNPleqY7x+S
+Oqo23DsMEFeZhkmtbSt7berb+gZ7t4Hexz2MATdRWNypc05gbrO/
a1nGobjHyAHzagkW2sxbNmW+tFOcJy2YaWk7zHUnu
+luZuXWX5rfpNF3QAWxP8vDbt4Z6mbxdbNNH740ytjrJdrD9p210utpyyr7rSOGzyQbp3oedpZnue
Gvv3Ze+rSF6anb12<ETB>EA<CR><LF>

-> <ACK>

<- <STX>6kbzW8BEbto/tCHauuso2Al41Q73Pbm2Zwr4221nvsUPoQftC
+wD1ZO8VvYXX2Hn237nO5wpnQpwv6MIhlsfQyZGWs/YY48tZH2cse/
usz0dsGutj88G5OdY8qT5uO4zsxphZfqeZkr7J/ml367SbX/B534gWFTo7KvV1VMqpdKhcavw5i
+tp5k3ZSnNDn2PsgzAWHwfc6qHeA/xC39Ap5AObX432WRm6MNz38QWwV/
g25Tjj<ETB>21<CR><LF>

-> <ACK>

<- <STX>7Um/
lMwufqly0DUCm4FFzmmUfOS2chV807erVbV8L9uJIyxi2qIjvnTHGp77l99GzTsd2sJxpO4J
+gQN0gK9xvoquzSHJ56N8XtWHpI3StTrdtMKPCbofbpuJzkGn4DV8PyNtr/
iNbxbn6mH29ZrD7XtxXmJjwrfU+xU6x/5Pt/
7Aq3KWZRH5wp6H3RmRNlt8LofZ7oFndaptYX20fR78zNI2jswBP2qNbY6xDQw/
Z6TxDHn8<ETB>53<CR><LF>

-> <ACK>

<- <STX>0TPqEn8m9HmabUB9qP4534DX8hCflaNsx7D72h7Wx05xf0AvbAuBPBD6nWl/qtttfDJ2X/
2KHwrYd6P2F/jrKvyftBkyMte+y1OTp5Il+kfqOvNOjAP2jM1nr
+lV13so1riq56Vl7tK5X812oF3Vu7P8YX2ZCi86leTtdVdW
+QYA2NGWxZ5/1qPd17l66au5bvXX9YsLznK3/UunvZjpbVBJXPgHp3gXCo/
k5X1sfObaxnkuUG<ETB>9E<CR><LF>

-> <ACK>

<- <STX>126Q5mnfrO37IconDCj7/OG+LfLGykW0gNq18QvC+/vCPm63sE1XaX/WP
+q53Gl2LcGvW1b0tvN9mJ++lES7N+rq3nu+Vv8/3tYdK45uWvq+jz8QVH+0Pv7zm/ND5U+l+Yb
+bCdjf+h6P7eR9dLMBvz+JFuCquSvh18CHvf0sfC09r1c1b/AzC3hDQ/CVPlfYUtGt+aTnwGdq3q/
rDt4v69Tr59zQaA0/Z18Rk8i/q0Wjejvz<ETB>3C<CR><LF>

-> <ACK>

<- <STX>2EtybFZOeW+Xzjwm2FByU8wwxHrXwLJvr+yq53w1ShqDpIPO25tmmlg/uVWta1uodTa
+g0SY+EyrW1H6rd+j+isYT/zTm+1jOL7kpW1o2ysbeYy3a42fXyOnbTZvyHt/
je6XxDfL8T8av0T4b5tsigfP8D5p3s5T9nS0vdStpOcTnW8M879V88P2d3ht0qSrLYemzn8fnBlz1Ti08
mhXy2a6WL+hRI7fgtnJetzadC2tuZn5W<ETB>03<CR><LF>

-> <ACK>

<- <STX>36+f59IHkFTT9oGUDOxy+u+hfXtO+I7PuRbxCjLGZ34Fu6Hi1kq5r+
+xBvuAfuDbvSZ0UfsS1tXBjLmjIWvC7hnfSgRp/
EXnYyTJQreZ3iBEq6WSznukTz9AbZEH6X9Ywj6AvODQ6dyrkXfsqmjNsywamC3tqNk26Im9rWV/
xVauPek7wR+eYA3kua+V6u6bMSK4q+AcPPpQyInmqJS/V6taXsr/
Is5KOE7Ngs0Kft7ROh23B<ETB>27<CR><LF>

-> <ACK>

<- <STX>4hn3QOlVWMh2aDfV5R9sVbBO2C9ybvY0b9KkONL2gbdgNbODGHgffm41MS
+wreGKvyoBtYp7zMm8w3T4hZxufmz1s//HbuBK/4Y/iV/As4mHxFx
+Us6HSO5XO7OpYx8uc0y29Q5xL3EmcGevJp6vP8rz4AbEmcdsZeX7gp3Ju7mVcwo9jzXPSx9zG
diLWl068Pu24zsKW/Jb29fY/6ms8Hr+OeC5ig/PTTzjCOloJj9Ycn921<ETB>91<CR><LF>

-> <ACK>

<- <STX>5zj3yBsSZdcexBfkW8gXVTOskNogYK3lzZ3peYtHwf2qf6eUE+/lt3id2xCcmx/
DljF848/Us/E/tozPe/gf60Zlp2uBjk6PApyfnRJ4n/
HL5Sl3GEMuCN76j5KJDLHODz5DwefCRJHv18DwziJvJBZ1kvwS8w/8mnhuIn8Y4bmb/xKnx/
ITkL2c6752a/vP6Ho/sNfhne5oP4UPL72iPy9gLH2GO/W7iV2JDdKtAb/
mqFXKk<ETB>03<CR><LF>

-> <ACK>

<- <STX>6tcjZ4N91tYc2fMCnJ5bW/skxFPxSfcbfR/4qXcMPHu64Fn8aPoFf5NiAQ1MPjrfvBM25H
+9DW3wYZJR4DBqQL7jaeRT2iO2Cr+Q7kKuKHBixHOctz0/JmIzv+O1H+Hsz2rIH/
fARkTvsBbwrw/08/NkLLd/
wnvvgEDQebB3gbEfvwv8c5PewXcTnxGHkoNC1eiBnhQ3C14WX8Av5lJx0iYske/jiNfKJrCIHB3t9/
EL0GZ6h<ETB>C2<CR><LF>

-> <ACK>

<- <STX>7L81w61NnluNudCR85tMzthFfO1/PGJe4cmbGd/P03lznsyImmJv
+vvjfnuTYqV7g9espGSeSD8w8K/mKDp+JNxb1OyfyNfu85GeqO3RPa3Xna+x02yPWIs/
QnpC25yLnMrt6r77CekEci/y3brZ8t7+hd4Rr53Z9vtl7qvS9Ip7R9/astBm63xHPGslp67rUB
+2l3KbnkhPiuXqhdSjyhMKvaL2iOZq7jH99i+cj70k+LPIr<ETB>8C<CR><LF>

-> <ACK>

<-
<STX>05NHu0bOJzhmHfeEZOVNBd7pxJT6stdfOPOfTyCMEvdH7+aZVmWvcoEE1yzlETQv0XpC5
kdtTb2bZDlVznAtnLuiDXLTmeQx4EU8Gr77mnAUxIPsjB0SekP2QUynYr2mpnzc494DMNPf2Oy
+A3b/JfGg0b0O+l7ma1N3J5hVxA3ytbjY/iTeRl6DNhc45t6dIPle0L9f6ObFid7ZtHTlwgFgTmxGx3hk
+U4hJl2cpHSDnjU3l<ETB>A4<CR><LF>

-> <ACK>

<- <STX>1fpxtX3Jeuh4pf+wq+b7DBA/q84WC2YLR
+n6TruN1Xajri7pe5muZps9f1bUWTNfn63W9RcC4ewSjBlt1/990fUXwlOAuwSWCK3X/
Ul2v0XWWrr8WfEOfn9b1u4L78p3bBXd7rflves6YMfo8VXCd3y/
Ms8Df64sEzwguzvujEqev6N51y96pb9b1Vl3Z1wLjxDXga/o+XPCoPoPHBM9fv
+D12VPQ5qtep14kgHZzde9UvxN7<ETB>A5<CR><LF>

-> <ACK>

<- <STX>2+qGuPxJ8S6A56mnGozDPrwTaVw1+4wRj9bkjWCK4Q99/np9/lJiU+D0reCnxul/
w9eQLe5tvmtW1eVhY/yKvW7TXerJA+y2PJG2e0/
UxXc9PEA71k8m7K5MGzLEk8Z7qdaBLLZ7UV6aMnKfP39F1hq5P5X6e0HVG4vNY0l30KWcJGsHj
uif61b8V3Jn3vpnr3Ohn5elcc4Zxqn+TvAW/pGflzCLTCxxq6Dggx48lzRnzC10f<ETB>3D<CR><LF>

-> <ACK>

<- <STX>3etP1leT9T02v8m1BJ3n8gK4/8fOQwfvM69CPW70GvI45vpzy
+UTiwzyXCyZ57vKQ6V6+b/zLHMsDuhGyvyTlR3Suf5z8mGgcg2aiby0+lRtyLPL2qHEJ
+qNjv0o5OFtwrXlc61ouS11D1q4QzBQg01N0ne6xoctjzIPAAzlAhy/OtReY/
iFbjLsx9fBfBezvAe8VmQ9c5pincW9x7n1a6hy68b3Uq6mJ7w+8txqafTf3zHu3<ETB>9A<CR><LF>

-> <ACK>

<- <STX>46fr1pNEAX36XMntB2pmHTlPQY/g/Nt/RPsvklOM5SWvGzUmdvTJ178mkuz5j40L/
vmL5gX7BP+lafXXK20uJzyjrZOgWe/lSn+1AbXkMe3hB8vvGpC20wwY9b50PXZuR
+52dunxZ6vqslIFLkk/
I1XjzJMY8kXp2b8rmEyl3k0zPWjyvv22aBD2eN79Cn5nvjJTlMbnf01OuOylTF6XOPZv6I1zKF63XYR
+m5nfGdFMmf537<ETB>61<CR><LF>

-> <ACK>

<- <STX>5eCLX+ULqw1XmOXITYy5P2RpnmQG30Mezkm/QVe/XjWnDOVT/
vs92aHTShjPkyaRhygs6GHgssh4hw7XsZ9jMa3NPnGuP59zjzJuYZ17K4lPmGbyA5nHm3WV5KDM
tf6F32JnxuQbPfmz5DZnqmHesh02N9djPCK8bZ9Ho1AHZjvpnpmfYqldSjiakvH4jaQz9rkmcH0k6/
VJXbNRN1vcYc23S+d/N4zgXhiUdmQtd/2Hu+zHr<ETB>A2<CR><LF>

-> <ACK>

<- <STX>6esj/9Ynz2cnrn+QaV1m/A59LU0bZwy+STvCZeW/P/
TMfeoluTk7+yGYV6NU1rmGfxptHrTvsJxX5aC35Z+VO+6PlFn9v3S24S2Pw3TS2o+/
dxbonf7Mj368l/7v6ht/Db6p0bfRuPc8+bXue/eTOYvu65HCIUcjN1OSA1nQOqHlbf
+RFyWmUVfqdGyTncWDmlPbNXBE5D40ll0bcTP6OWgX5JXJr1bYeT86K/
Ch53ch7kCMj<ETB>13<CR><LF>

-> <ACK>

<- <STX>7D9OXz3bx+JqcKnmX4s/kX8nPkOOpd3Buon6/czKRFyK+XD7xZM7tvB7Pohfh45njIR/
x9n7ncMltUg/XXskhkzeibh154c37XdMip0YeZpDzRMR89baZUyG3937neSK/mDkVcmCR/9nH
+ZbII5HXUJzdfMJzcwWib4T9/Fn8J4d2gHEipxewofNLhfoue31nv3Ob8lY80LtzDo2rX
+uLHE7z0cwzLZc5nxU1hrwhseHmjk/J<ETB>1B<CR><LF>

-> <ACK>

<- <STX>0L0YeSzRpVhKsnHuHVqvkPtZ0ron5yJORbyl3F/0FW/U7F7Zd0mY7x
+3xHJnZPvNLlWUg8uvQERnZxryLXNRO5lvlGHmIHcx3cIucOfG/
9h35sX7zKXKIWrsh38ec25gGQRd4Q359+by3nj6v4HfIlwcvV0laVMkT7u3ge9U+KRvkkCQf1XssM
+Tkgi7UGVayDBLXh3xuaRpGrYG6wnqWT3J70W/
BGPEizmjwJneJn7qmaYmM<ETB>FD<CR><LF>

-> <ACK>

<- <STX>1IYP1n21fyPWFbKxg/CtymO+y7MHXoCs+5fLGhVwnvjc55NjLyqYB76C/kUt+j
+nMXDxHp8K/e7f1EZtFThYdRqaYJ+io94psQtA85ahZ1fwLf5/
vg1JHJfPkz4P2y6XurJbPoONKSePlPAfyA90iF7uTxwStkCvyqazzqu0R98NX4xm04PzdPOkP7TgnV
84cyTTX0aN/Y6ZjSuJ2eimITXlOTEvsTlxL7pE4lLiaPF5rvnOE<ETB>F4<CR><LF>

-> <ACK>

<- <STX>2Td6v6XmRXaVPiF6MmGO042pi29bizGsQQ8vGdr4p0Pu17HP72swT6P1Ka9b3OO/
HffIO5AGI+cti50cqjeuSE7hVQBzM+lc5X0jOlZwYOQVsfa1n1STjTF6qw/
chtvtd4UDPGPnCtvZZcXY0/T6Xth8iu63riYKDBMcJThKcLDhKsGt+/
rzghL6oOdLrErnUQwWfzlj68H7XBE/LXBE1vKP6o2+n0rgOOR9qiKIZ+UHq/
QD5<ETB>75<CR><LF>

-> <ACK>

<-
<STX>3UHJWAYdkP0jOyZlG7wS5pmaBz67umJRRdEUySX0mzvj3WvaLbFNFPl1+Hd8j97+G7XvI
D/UqfHLs/zvSFupcoD4V9ULqf6vm+aHn5NWQS2o
+ce6glyv3+3xGXielj7YwfcqX0nfBZ1mcPgdj5qbvyRlPjIDfTh5wjH2nekrexw/
A18RnJ87Dt97DehVzym8Lm0FszXP8mQ1tC4jh8XXD98M/VPxDrEnMyHlQhvaFzwu98I
+o<ETB>13<CR><LF>

-> <ACK>

<- <STX>45TBfxCL4ivLfyR2yZvsP2usTgm+LDz/S+q/r+jr6r8/fEujaejjvPS4eveFn7Z/
pfd3rvogeCu7XZ33v8EzzVFxf97wdPW91Nddzur7QbxkckLXv6vmTev97urL+g3rv
+xqjtatHdO8x3fuOvv8YP0XvP4RNMD5t8Pmp1v2trq94TfLtnJnof/QIkVf8RNpx6tXr
+byjnkaui9pS2C7qG7Lz1OcafIvtbe/C11nd+bnoOTs9<ETB>55<CR><LF>

-> <ACK>

<- <STX>5z2adFVErpg5GHwa8oyZ5ic8JemroX6yodw2z/MbZRa6bWsfg9FM
+kGeZ9C3qwPgI1O8+ahsVdpdzDF+Fs4l6Eb4Gfgd1ZfKEh9mPifNLPgr1eGpB1GajrqT3yQlTz4veU
+pum+R+yDHTo0TdjRrEke7v6Yzoj3px9BJQR1nX/UjUnahxU0OO3rGjjCv+TOSH6Yui35L60nH9rk/
SD7BB+mbYP/ow3pc9Yut7Tnrjoi5LDZn6<ETB>B1<CR><LF>

-> <ACK>

<- <STX>68qmG0PHtzVN6GuALZ174Xyu67kK/B74RvV30PwQfhto+cV5EL8Ae6X8N9bz0FUaf3EY
+w5GRwAcf5NjMkVJXPMK+FP0KzXEpH3u4FhPndNs9P/Q7VPTAYCvPTr+WupXeoWYVNdH9bP/
wr8g54ndE3Zbc+vG6IjOsi4/0j+krb5o+wUrpA9CDJL6i0/AXH6li53ql548+4fO8n6j7S76id4T
+EvAi/yx/k/py9Gh80jhE3wB+<ETB>3B<CR><LF>

-> <ACK>

<- <STX>7GXWJW00z+n6iJ+AY7x37GT4VtZ/drUdx1sOjQyzTUbPH7mM7VzdvoneEcwQ/
k37C6eZHtXOut6l5Hnjs7VoPNTl8iOg9W812r5bsRt0e33Wt1JXsaYj4YW3zO/RYYxveQSeA/
dNP3Np6SO9P+lrr5ro6x6MvFd
+HmtgB3kfU93Z2HQLfKOqcjF838aFv7r2WiZDTo4wHZzB95PTqRL82cjfCMgUNeZ96aNSzd3YNkL
4S6tTh<ETB>A2<CR><LF>

-> <ACK>

<- <STX>0H2+V861j2lAbh/fUc0LX4Ad+3x4+H5F1Plcftk3hHXLoof/oALJ5sNcKn/
W8lFV6gzY1X6AN+0Z/g5ZZW4peH3oUqMUOMx
+pzUeP1TbmGXXJ6lMpr1tbN6OOfbZ5gT7Sa4aOY1+pmQctsl+fsgyBA32F0dd5ZsqyaBt
+AH0T2WtLfTT8y3VtF+kpixow9aujrRdRe2N/+B/js+eK7+fk512Mc9S8kZ/90tbgq
+6ddu9g6wdn<ETB>0F<CR><LF>

-> <ACK>

<- <STX>1SMS16OyEPAM+Y/
0aqHlH3R9ebJv8Zn180x1Tz9eybaauGT220IxYCzk8MvdGb9Mm2Td+WtrCD/
cvrfVHD5nilXwpvhM3RUy0su1r2K/1cv9b25Z0wRe/YZ3ECbmCv/Bm1ZxjK9sx+jSjp2Bn62esg
+6dY9tDPZZaCudO9Gh/2npBP2b0mX3K/j+xG7170Q+ELSOunGT7j3wTvxOTRjy7f/
p3O1r3wo7ulj34u6b87ZX6v1ae<ETB>68<CR><LF>

-> <ACK>

<- <STX>2Ux
+xvYvaPfaTmO5c9+lSt43zWOcJPQ5xtq6UtnSPPAeHmEdR00cO0aO2dTJ6jomDiG0/
nnK4umkQMjrS95FHznLOy/BttzAN+U6/N3Fk9JAgK/TP0VNzumkM/vymoM6+vpA3ztDzrL/
hv3wwbUGfdZ1+U3olyaFErR0bCw7jkk/sib2w5+NTfk82rhHfMi92B3+D9UYZz4gRD3BfJ/
2o0dtOvY59DvJ5F3Mfb12KvArnzGnp<ETB>45<CR><LF>

-> <ACK>

<- <STX>3g7zXY6LXdXfjH32QnE15Vkd8uF36CkNSZ1Y1HnE+/YP3T10c+xn3j/W
+2BO92+EzbWL7Qj8TehN2FFweyzzaG5kLfcS5QHIh9Tzn7MI/pj53n/1g6i1RcyMX+IDzgZGXX
+gcaOQNyXO/nj67nkeuS98bxQeRv9f9Qpz9mn3qcmfmQqfmXM84bxp5PvLAs51DJO8ecfjLfRH/
Rxw7UE/7vWOGePasY4OIY+58Uw6R/C4xB7Wk<ETB>33<CR><LF>

-> <ACK>

<- <STX>4W5zDjFwmcQ+5/1dyf7fkfIz9Zd+yOtbPct/Pe43li5LTvC3zp0tMK/
rgoo5C3nNg7tccm5AjjIoIdZhfZQxCz9xrvh+1r9+aF9E/+JRzrOAW9aRbTP/IT9+XPCOeuSbzpYsSH
+pcl3ptcr5R34KW8OAl86oiT0Du+X7ncsmBRK79DzmefC71ph8kjakZkNufYbqwbvPOfvMHGs1M/
Bdk3DU3ced6oK911ijK/Y7F4r3ncr2n<ETB>D4<CR><LF>

-> <ACK>

<- <STX>5LWPIXyFOI0dM7fle8yLqUMSLYzx/0Hxm4nllyghy+xO/E+uQrwcHvt+esSTzfStp82qu86+
+F3NckvPeZjmJmuYt+X1Rrv9qyk+T+oDMEOfOtxyHzD1vGsAPdCL4BE
+hGbkYZOzlxGuK6Rw6MFCnfjHjUeqkj3j9qDPAg2stb7HWvRnDQjfknX38NmUWmfya9ZEaTvCHe2
NTVhamDn0/ZR8Zn5WyzxX9/re+ZXU98FiS+jMl<ETB>EB<CR><LF>

-> <ACK>

<- <STX>66ca4e1N3f2PaRd1/
RvKLWsZpfc7dj821FpiuQSf0hHrF8KQ780DbF3Leq3JN6lNP5drfTNzuznXISzD
+4aTlnOT745ZZ7ofez0/cmtRJaDMueclc3+6LumgZ1rc0DxH7XJDy9pBtRsj0bSmfD6dtmJ7Pn/
Ueop5xT8rE00mLGSk7sz02dOaPxiPqbQN0uyxlB7jCuerQwYm2HdS3g8/QGttwXdKKOvo1nj/
k589pJ9CfZ1MH<ETB>9B<CR><LF>

-> <ACK>

<- <STX>7f5fy2DE/Y645qTPQ9ITc9x9zje8uk7GoqWW9OfbDWbHAclx
+lDSjZo0tmZZ7vCn5PNfzhMxNTzvBvAO1Xej/jK
+hd6NzHc6BO21rwkaI1uSv0NM4W1gDPaDvHNIC76ndUZ/K/pGo4bFX7Dm0uSv1HJmcl/
SlBjkhx3AeXZ+y9KD5gL2M3vbXk2/Tk4+Ss4hH+a3Ivo7LIpe+t+NM/Fd8BXrj4zcIB/jcjzrl4P7IEUQu/
yPp<ETB>4D<CR><LF>

-> <ACK>

<- <STX>0gx1v34seuPChbnQ8RiwRvUTUcuhd/
Zh9sMjjTXI8ULImwO9n4oxfyb5o9CniH1EnIHe3p31valPRt0kMt7x9E+Jp+vaoE4U/
SXxzhP3Jitge3yzz1dE/vFvGOod67/
iM0SN9aPZa7uWcB78RIX9NbYqcZeRDTuxfWnsiTxNx74b2/+J3gFXG30McN8XvLzPPQzwVPaAb
O7aL38sOsm8deYvz7A8RGxBPkGch7sEHon+SPBG+<ETB>72<CR><LF>

-> <ACK>

<- <STX>1b/iOa9vHwj/jNwoRhw5ybBPxB/78Fhl/4G/vb78vftcgny1+q7K7/
c7oKzwx1zzSMUDkpg4yvaPGs6d9t4i7s5c7fHxiojPtJ8dvtg6zb0peJWKMAxyzRF/
2oPRx97Ps1NQgiFUusP8ePaWr2BeMeHdwrnN0+p3IIb4mOYQDnVOg753cHj3EkR8nXyD5JE8Rv1
Ui1pyYPvc2/t1kxGBD/YzffcfvcLY3jyJPkL8niDqXYq7W<ETB>57<CR><LF>

-> <ACK>

<- <STX>2SK8RdVH8+8/bx4180UmpC9RJT3F8QJ0zfp9C3MfvYshFb2w5IRcSuUTRoc7aIbUQeIJ
+oH8Ri/yz6RRjtvD78RuWE/2Z3w1FfWifjBnXchwa
+MGHXRzHRa5pJfvbvBN1vYMyFts9Y5lDM9Za3TkucgnIShnojWesbHPUZ4k74Qm/
X1jB9iPyeOSr5RdFjKvzN3Tk7ZbHiDGx+eRXidHoUd/l9MOHgeeRB0GG6BHa3c
+o60Z8<ETB>77<CR><LF>

-> <ACK>

<- <STX>3xLm4j/kX/oV86vi9DPEcfVTkTrHrsocxL3Ww9xvv+F2EbDLxC3Ykfg
+DHWBefH1i8X2tz9CPMwMdJh6PHMw7UobJXSADP/b60Ct4vJv3EjrD+PUz/
sRnWsHvYEfDf9S5FnVM/FPs+ObmHTIQPizP17BdDFvFXKI7toR9x28Y5KNFbnFn+8URf61n
+Y2cC7W7Z/MM6DMu1BWiRoBvsYF9rsgDcmY+n/fRGe0t6LKF7Vf4UZyT<ETB>AC<CR><LF>

-> <ACK>

<- <STX>4K2ZMj88GXdZOOcOu7OPYPHzg5+3vRbxJb8hLrjvGebpJ
+nofStoP8r6jjogcZT2SOnz0fYnuUU/Pem/8ZucDlsOwZW+zTxo1Tc59aqa/t09ZwzN8lj/5XA0/k3ucx/
ja9ATxHv7vHfZF4hxe4rM+zmrkjLrZLemrDfSSPJRn8QV97t
+6/02+1Fz7edFjyJld27cp2YMS9Z0l6U/ir/
4mfQV6pmb5nfBn8HOmpx8qH5gzPPwC<ETB>8A<CR><LF>

-> <ACK>

<- <STX>54gn6j4hZb07fBf/k/PQt53qemOPr6e/d6rli3VF5pWdloGdzpvGJOS
+2n1UOyXH4IyPSP8RHeiD9nINybnpSb0t/6LS+pbFy+HKXpM/Jvj6Xvgz44bfelHhN8fsRB7IedB/
wQe9IPsxK2t/vtSOWgz6jve/ofRqIJ5jrGq8V/
nOTPJucuL2WPhTr0794fPqg0PIp0zR0E348nT7eSd5D9KXy/Lg++774tcTGM/
Nzx35n5CAy<ETB>66<CR><LF>

-> <ACK>

<- <STX>6Xo/PDydtnkj/LH0zejfLMX2u1S1M+s7I7/CcOvjvkmb0so1M
+binb2nuIfaBTHw234d30IcY8gemccSIoyxnNfgRR03z/
eA5NOHzlemDXpWyMSnxvc80i366Fy234La0h/hu27WI3+9L+s/x3APxB30hRTEBvnDIy1C/
F3jdkXS8I2V6ZsrnWOMR/Z+TkzcTvO+4N87v0YMbslXn/XuTP/P9DFpEP
+D0lMfJlseQoRFJi8OT<ETB>D0<CR><LF>

-> <ACK>

<- <STX>7H3ckTW7PuUf2Le3piz1NSTyY65P+/R/4xO8AWeP6pOHU1O9Hcn349Kj3HTjMz
+edXOs53wuf/lLjFXmXJbnP8cYhejIA9PVXfh45E+rQV1vOoq/
xc0lfYrLfpF24IeXunL7oR4p4fKp1OHoI5/QtjZFjj7ekbCNfZ/
a5ZxY8nkzZXmiZIO4I2euk3BC3oQt9ucd5uUfoMzH5/K2k1Y2pl9AH/mG/
H025uCFpzh7o6Ua3iRVH<ETB>02<CR><LF>

-> <ACK>

<- <STX>05BrU4Pk+0AvO2rwH/sjPrcm7IxOHcd5z9Kyy5jdTruZbpyLvNdFyF/
mq4davsMOn5R6fTTryzl1eK3SS7wtMo/BfxqecoX+zch3Ovm7fsnj7C6m/
4HG29xQ2BJ4ushwt1as8CyIGvit5uDDfR9+avH9z0uxB4xnn1KjUK3I02adMj07YnAdSbq7ONdGbB
9JOcGY0loPIG97gfFsZbHmE1xHfTs45Jif9hiVdkB/6nV43n+Md<ETB>8C<CR><LF>

-> <ACK>

<- <STX>11jg1+XBXyja84/yGJ/smD2/
yfolei1IeJ6cczsz9vCvjeM7wGXm9LvUYnT49P09Mmg5P3SB3eZtpxJjYa5MySO4Sm5t5q1hnScrR4
amHs5fRhX7TOGunJI1mpuwjI9g7fN6B34dwzvB7vM+nH36h//9S5PDPzt/
+XZ4xyyH20anL0XcUdQeN6wzze8Qu1MPrA52D7051nDHwf2T4fwT83jDyKvMTt8W2E/
F9Ye739tS3N0zX<ETB>DF<CR><LF>

-> <ACK>

<- <STX>2yO/eblkNOXrU++MsHDgnIt9G3m9yytdsy13I5jX5GZm/
z7pZ9kj5mGcaRL6CPnHyJtimn1tO4pyYlu9PTfo/
mrybnbKDz3xRfsdfnuo9BR63ph6Sw1mY8j7gXy1KvqF3j6RuvGjZCHympP7Ptq0IXfuZcQhZQX6xu
9j2B83bOPewE79MGRmXPGc/PzctAm5KvUp6x3mKTSOGIKc6LeX85qQT/
PmO9xl6OceyHmftHbYnwYdX<ETB>5C<CR><LF>

-> <ACK>

<- <STX>3kr7M0cn9P9u3rG/54pRFcrrYyIfTVtxtWob8P5z4Z34//MTHLSvkxqK/nvdeTl29vG/
p727Cbs20biz9nQr+/2LrVMjaAyIPmQcMe89ZBF3JS/
0w7cvU1KHbcu0XvdfYN74veVJ8+UvSHiwwHsGH6Sl3yCe0xe
+ZZJqHDC0wfcNWsN7Abzyey3HIJTlubDM+Gjnosb4fPssLlp3wPRrHYvw/lJK/
K4/6NPXhY5wXizh9G8ey<ETB>FF<CR><LF>

-> <ACK>

<- <STX>4kSNY2fmaqIGOcp4t/s8GMeG2js/JT0UtkbHbOf8Tv/3e0nrM/
5CJXqATXN8jTxH16xWdq2Lt6EkmTlzLcTK5i4jVyCeQYzgu8xfYlZbrhfG/R9bK
+O1A5yYijud3t1f4M/El//Mq/ifers5vBB47Oc6OWjN9GMRw2zve5l78tvtC5zXo46B2y/+Ri/9bRK/
3Hs5txP+WyP8fQf8V9f3oYd3BeavoFVgjcyrE0/SSkjtiDurG<ETB>79<CR><LF>

-> <ACK>

<- <STX>56zgODzlFB9bJnEFxviT2hByRGyCnRC4RWpM/w/YTf0oHyDcQc8e++Iw9QnbIj5Gn/
HPaJuwAsvO9PudS6InWs8gBsU/oTX82fTvUNvkfRvy2lN9Cn+yaP7127Z/rMz12L2scPXeC5t/
d70ZvXv1of/Td0YNHX3/0vNFn91O9+0udBX/y2A5j9h28zEfAZ/50n89d8tGX
+zwLm3eWbVnYTc7B8Wkv7nStM/Ln6M8v0g4+kzZ7<ETB>79<CR><LF>

-> <ACK>

<- <STX>6IN/9tswZdNKWYQ+zZhJ2bHHaC3If+LDQXfaKXkL+byP77fxCe/
ij4JnUAfhMr8pJmS8hXwnt6DlZLXMC2zpPGjlA8in0uW9sXYj/BYUebu1cVOSft3R
+If6PyI6ZO7jeebjoj9ow8478f5eP+Lex5Afjfw+QA+T/jdBnR17pcOcf4n8Mvc95EH4HG/834++ts/Al5F
+yxP8Oon8qepLQzbVSPsl9/8l8JKdBb3F8/kDmJNdM<ETB>DB<CR><LF>

-> <ACK>

<- <STX>7uXjR88RvKOglyr3Stx3/22p+f/Rjxf8KOc72ptzj5+Qqq+c0Zon2pGv8LuP17OWkB
+4p56OjL+91526b5Ev3/n73V9P/3Of34n+kbeZ14n8IbW15jJ5RrldnLhSfhnuHpJzPSx/
j1qzR4gfR88dZ9nLKya99D38LvKOn7wb/n6X4f2WnmD70mcY5N1BjwR7XO/
WgBz3oQQ960IMe9KAHPehBD3rQgx70oAc96EEPetCDHvSgBz3oQQ960IMe9KAHPehBD3rQgx70oAc<ETB>4F<CR><LF>

-> <ACK>

<- <STX>0Bz3oQQ960IMe9KAHPehBD3rQgx704K0ApepBD3rQgx70oAc96MH/z3D/
4B681aD31/vr/fX+en//u/5uHtyDHvSgB/81zOxBD/6XwfJD/t/
h0cE96EEPetCDHrw1oKl68FaFHw7+60KnBz3owf8o/N2QHvy14W/dZ/bfhW71n8Oiwf+z8Op/
AzrVXw+qvwD7Dv7bQxny1oFq8P89NH8D2PxN0P0/hLr6y/
DC4GXQHvwf<CR><ETX>99<CR><LF>

-> <ACK>

<- <STX>1M|4|REAGENT|CLEANER\DILUENT\LYSE|
150206I1*^20200525000000^20260206\171108H1*^20180227000000^20220714\150520M11^20
200915000000^20160520<CR><ETX>F8<CR><LF>

-> <ACK>

<- <STX>2M|5|SETTING|RUO\WBCDIFF|TRUE\5<CR><ETX>EA<CR><LF>

-> <ACK>

<- <STX>3R|1|^^^WBC^6690-2|9.68|1E03/mm3|0.00 - 2.00^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210706094947|20210706094947|
112YADH47745<CR><ETX>CA<CR><LF>

-> <ACK>

<- <STX>4R|2|^^^RBC^789-8|4.27|1E06/mm3|0.00 - 2.00^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210706094947|20210706094947|
112YADH47745<CR><ETX>99<CR><LF>

-> <ACK>

<- <STX>5R|3|^^^HGB^718-7|10.9|g/dL|0.0 - 2.0^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210706094947|20210706094947|
112YADH47745<CR><ETX>57<CR><LF>

-> <ACK>

<- <STX>6R|4|^^^HCT^4544-3|41.7|%|0.0 - 2.0^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210706094947|20210706094947|
112YADH47745<CR><ETX>75<CR><LF>

-> <ACK>

<- <STX>7R|5|^^^MCV^787-2|98.8|fL|0.0 - 2.0^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210706094947|20210706094947|
112YADH47745<CR><ETX>EC<CR><LF>

-> <ACK>

<- <STX>0R|6|^^^MCH^785-6|31.6|pg|0.0 - 2.0^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210706094947|20210706094947|
112YADH47745<CR><ETX>F0<CR><LF>

-> <ACK>

<- <STX>1R|7|^^^MCHC^786-4|31.7|g/dL|0.0 - 2.0^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210706094947|20210706094947|
112YADH47745<CR><ETX>A4<CR><LF>

-> <ACK>

<- <STX>2R|8|^^^RDW-CV^788-0|14.0|%|0.0 - 2.0^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210706094947|20210706094947|
112YADH47745<CR><ETX>15<CR><LF>

-> <ACK>

<- <STX>3R|9|^^^RDW-SD^21000-5|38.9|fL|0.0 - 2.0^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210706094947|20210706094947|
112YADH47745<CR><ETX>02<CR><LF>

-> <ACK>

<- <STX>4R|10|^^^PLT^777-3|260|1E03/mm3|0 - 2^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210706094947|20210706094947|
112YADH47745<CR><ETX>87<CR><LF>

-> <ACK>

<- <STX>5R|11|^^^MPV^32623-1|6.0|fL|0.0 - 2.0^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210706094947|20210706094947|
112YADH47745<CR><ETX>3A<CR><LF>

-> <ACK>

<- <STX>6R|12|^^^LYM#^731-0|2.94|1E03/mm3|0.00 - 2.00^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210706094947|20210706094947|
112YADH47745<CR><ETX>F4<CR><LF>

-> <ACK>

<- <STX>7R|13|^^^LYM%^736-9|33.8|%|0.0 - 2.0^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210706094947|20210706094947|
112YADH47745<CR><ETX>B5<CR><LF>

-> <ACK>

<- <STX>0R|14|^^^MON#^742-7|0.05|1E03/mm3|0.00 - 2.00^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210706094947|20210706094947|
112YADH47745<CR><ETX>E7<CR><LF>

-> <ACK>

<- <STX>1R|15|^^^MON%^5905-5|0.6|%|0.0 - 2.0^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210706094947|20210706094947|
112YADH47745<CR><ETX>A0<CR><LF>

-> <ACK>

<- <STX>2R|16|^^^NEU#^751-8|6.13|1E03/mm3|0.00 - 2.00^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210706094947|20210706094947|
112YADH47745<CR><ETX>EF<CR><LF>

-> <ACK>

<- <STX>3R|17|^^^NEU%^770-8|59.1|%|0.0 - 2.0^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210706094947|20210706094947|
112YADH47745<CR><ETX>A9<CR><LF>

-> <ACK>

<- <STX>4R|18|^^^EOS#^711-2|0.32|1E03/mm3|0.00 - 2.00^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210706094947|20210706094947|
112YADH47745<CR><ETX>E3<CR><LF>

-> <ACK>

<- <STX>5R|19|^^^EOS%^713-8|3.7|%|0.0 - 2.0^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210706094947|20210706094947|
112YADH47745<CR><ETX>74<CR><LF>

-> <ACK>

<- <STX>6R|20|^^^BAS#^704-7|0.24|1E03/mm3|0.00 - 2.00^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210706094947|20210706094947|
112YADH47745<CR><ETX>D5<CR><LF>

-> <ACK>

<- <STX>7R|21|^^^BAS%^706-2|2.8|%|0.0 - 2.0^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210706094947|20210706094947|
112YADH47745<CR><ETX>5A<CR><LF>

-> <ACK>

<- <STX>0R|22|^^^IMG#^53115-2|0.06|1E03/mm3|0.00 - 2.00^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210706094947|20210706094947|
112YADH47745<CR><ETX>37<CR><LF>

-> <ACK>

<- <STX>1R|23|^^^IMG%^71695-1|0.7|%|0.0 - 2.0^REFERENCE_RANGE|N||F||
LabMan_111^^LABMANAGER|20210706094947|20210706094947|
112YADH47745<CR><ETX>C8<CR><LF>

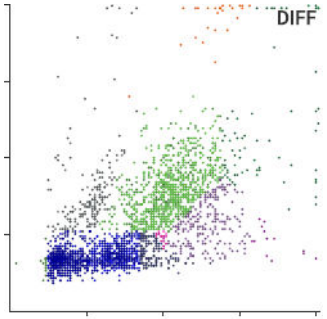
-> <ACK>

<- <STX>2L|1|N<CR><ETX>05<CR><LF>

-> <ACK>

<- <EOT>

3.6.5. Example of Data Frame for DIFF Matrix



M|3|MATRIX|LMNE|LMNERESABS|FLOATLE-stream/deflate:base64^Y2AAggf/
XRjgtIMDiAkA|FLOATLE-stream/deflate:base64^7ZwJtF1llee/
FkqZShDQAinkIpPFGBTRQiQH3kPmQcIgYPACxTxPxQyHOYEEEkiATHATMg8QghDCe
AIREZFBEBQbvNgyCaIlzlRh79//vx9x1erutbp62VW67lvrW+fec8/9hj3v/973lRJ/3T/2lz
+96q+uSnejHUv30v5S3xzjjP7SGd5fmpviel28P6y/tKbG+/i8c3V/
qXaL7361v3TreH1w3N8pxkXxeljcj2s5Kb7DXPFMa2yMuN9Miffj47OD
+kv78nj2iJjryngdo5wfn58V1xviGvM3O8fn58X7EbHGpHi/Ybw/J74/
Lb4zOea7Iu7F91uxt3Jh3GeeeLYda3djneb6eD72Xu0dn8c+Suy/2Suux8T1aK/
RnRPXf4754gyty+J6Tbz/qvdQro3vbhLzfi0+uzFebx/
Xy71edXGMU2KteKaJ73bifb17jIlxf3Z89/i4Bg3LJXHdLr4zOp4ZFe/
jHHXMXZ2VnwUN6+NNJ2gGjaqYp4l9dWl/
zedij7F2Nz7rdOL9BTFizVas0Qk6lFi3mR6fQ6/4bntc3AuatEeaZ524Nsd7z
+1Yt94zng1edGfGvaBVdWK8jjN3ppoOzdnxzJfj/QzTrDPM67fjLJ34fjfmr8bEM7F
+E7Row984W31u3L/QNGyYE7q0Y46+uBfnroJX9Zlx76qYZ168Pt
+0Zl4SctaK9TrxWR1nbAXfOsG3wuugQ0H24PXcuA/9rjGNCvQ
+0edpwbegRQk61HGOerD51oz3/uF1tWY8Nyvunxz3Yp/VIXE/5kXem
+BRh7MgN7elbB9onlRBkxL3mjhne0KM2F+DPAyybLag/cH
+vlKu7P0Ky3wb2uyW5w35rM
+xbjUbxDX0o3WRadXhfGMs5+WLcYVe15pH9V6WZfhTgn/1rnENOevMTBmK8zRV3D/
EczaxRjf43uaMO/t+a4LlozrVNGoHTzqXW57ql6yj0JnvoI/
sRfQOenXiWuJ9BT2nWeY5M8+2kIdjLe+t4amv6M6stAPIZNwv/
2Q9aXaz3nSQvVizPcM6ivy0a+teO/
jYRcaOS54EjZrjrEPYnhp5iLXrkLfmy6aV9hJzNbt4TXQN2jZBh3Ka+VSg/R659smevxlq/
kNj6lKesUfkpUaXbvS+tKe4FmQBu8K5Y+56n7iGnHSCvlXwuM33gsbVJb4in
+hevYPPVlKG5YB4Hv0Jua/O8PrQr4l52tNsp0p8r+yXMhX7rl4x/
6vB1tkqztSCL8g9urqt7Sef6R4yP9z2sQq9qi6wjDEn32XeGrrfYjrV51n26zhfF/
t8gXnTHubR9Md1pvfBPNgwvteJZzvjzCf4yXvJwDXml9a
+0LpQnxBzTLEdqslulLDLzSXmL3YPmURfRetb45lDrUvYBfS2GhLPHh7fi8/
qkKHmMPuo5qC005+OsWO8D1mrj7bf0n5H+grvqhM8Vwl9LcGfLjZ5lPdehx2twy63g1/
N17wnzsAaXfT
+GstwXScPRlhGoCV2DbvX3Gxb17nEA71D7zITE3vv4FOuTtk7zfazi88ImSiXWyexdTX
+ZX3rZ7ksdePoIIMdTcMGep2b8nNbytxVlnFoWR1vG1eG2C+z7wbb
+Y9x70r7Cvngr8QeJ6Z8jzRfsAfoFXtH1/EF+H7mrNNnNPhrbHms2451y6EZIwy3vWM/
0L4+zfaK/dfB9+po76V1g20c/qAVzzb7pB0YZR1vz7bs4xOIM5q9ra
+yyYO8JnYKWajDBIU3WOb5PvqDnWIfnSmWyWor+yrsQ71+8v6ouB/
f6V6S9iV42hCL7GKbK/uE/UKWLjPvxIfPOjbCXkC/5kzbpHKu14Wv2J0ucUG/
z1Wvbl1oOt4zfON8vNfrr+XzB6ecj7IMVdBnpHUFv9S62H4RXmLvK/zMZPMN
+16dnjYEe3+N5Qzdq861bpTYb+H94fbRkrUDPS9xWXOIdao+0DpQD3XchU6UU/
7Ez5xsG4fNwo+zLraeeAOZYM76yPjOUN+TzTnHstUcmjbvtIwfTvaaso+c/6Cc/1D7dc1/
smO3Oj/nOXwJ8Q5nQUYUpx6bvj/PyNnro3L
+4X6NHcA2Mhf7VEx4sG0KelqwtcQFp9oO4SPLIfZP
+KImz1YN9b5E98vt52SDL0r7FM9VB+U+8B1XWVaw
+8xRjrWP4TzQpWqnnz3VvJFs4e9/31fqkPkm/EizkmNKYqs6YhpixKbE+3+NZ9aOa+h/
WSVGPF//XYyQ1aoV12XjHu/39bPVf4vXEdM223sNYpISstrw+YoxNorPl8m1N/
O9aq0Y7CHmLFulvY3XTfifet347DNxXT4+2zxeY49jXxW
+iTN80vuuPxLXD8b7DWPEfhvs0RaOe/Bj1XrxzJfi+vf+Xh3r1p
+P97H3aq88d8Q15b3YV5yz3tJ0qD8Qn3887ocvaMJPNtvE+9hfvX
+ML3htaFW2jvdrxAiaVJ+K95/POVb2mSqe5xwRa5W/
jRF0aWlvTdiMahmfq3A29sxzMUcNXT7meaAFcZr2AA1jzWpz75czNXHOaou07+wrYpjqi
6ZV/Yc
+2akSZ6mXSz6vZ5qwV87YbG66NFv6fFXQtYn1qjhHCR7UQzyPnv2s5yrBsxK0qWl/
1fLeP7FT2clnKMtYruqVvC/4DH20xiB/
pwm6lcFJqy28XhX0aQ7wXusNfQadH95WSas4d7NOvP6c1xJd4HPYw7Jpysaulht8fFnVs
sJ6dchJxTPx/fpjyR/
8QMhNHXJTs9Zm3hexDXyuV4vXQecqzkbMX3b2uZm3JhdkH5+wvDbM9w8xPmE6EUd
lH7bK/cW5yjapG4McB5FblJW9FvpU7WddafYwvZHRZv/UCWi6iWPKErxE55q
+lOPwBe2p9mnEdsRg5azMZQ6zT8l24KPgFfE0trLaMG0DZyVPx/
5eZ58hm3Klc5TqsLTtlX1ZdZLto2z4CPtpYh1sO/Eh9ruJPZXwJ
+QK5Gvl8IxXjrWPUqw31jkdQ3Fz0Je8vU18Oca62Rzp
+Ih4sHt9xj9X26aT4+Br8CfKXYgdRqSPZs6z7IM6N6bfie
+TT5QJ9mnkF8SMBb8RclPtknn7xc4/
OTf5PD52IP4sR9uHKCYcZ7oQv5JHVxlP1PjYOGd7elxvddygOGqT9BOTzCdwDnhHDqn
chJiBs1+XfN0mc/WLl/

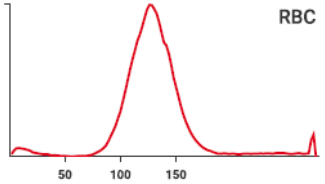
pv7GRBV2ekzIR8dkc4XmnVpmvB353mM5IvKOcixjrGfoJ8QzEwOjLd
+Idsw0jLqzCHXSxfxEbEs/C8vtw+sBW8IP4iv1Vsit+5ynEPPCQ/0p5Yj/iM9YkJrjf9FJ/
CH2K7oxw/1RGHdCOHINZRrESucoNp0r3KOBE+Xfl78JXYUb7+XOfS+BKew7/
Kj5KHQEdi7DPTN5zqOaC78AjirN1y/QMyxx6avuyyjCdHW9fJVZi/iT0Sq/
Pd5nTvg5wEeSfGRS6IabrIA/HFhT5vs579OrlaZ7TlBh+MvIFdda+zTSN25qzkf80/
WP7Ya0k8BJmULA4zjqJYCTm70jLenZHYycXWHfAc9kGsjixhG5gHfcSW6EynO85Av
+oJmdM/GPfRjymevwbvuKNfcbLy85Dr1jzTHplt3RnjUuNpxCZVx3LH/
N25PkNN7rbIcW25r1/xMLwu2J3b4/
v3GCeoFsR34h45ZXdq6mfQs465u5xzYu5rrHUaGVFudrufIS8vsf9WzNOJ9Zr5ccV2xP7b
80zzVjxb5pg35EAl9tiO9SrsaDynPGWebQpnBa8oC+P1LGNHnYWmNVgh8l3usa1so+/
znZd3GufsnK3NWpOtS2Bg5IHEhTU6cbVzlBrcYbbPgX1lH8K5kI1bjUuQqzdxrvYY76l1W
9rPabZB9f2W2e5k27n2nda1Tny/
fXfMfYvXgict8vSrff7OAmOdrdh766EY1zqna8V85PdgA8lLb7Rsdx4xDtGemHo7yjhSM9N
naJb0C7uS/Qs+dWLO9mLTrLPYNKyYa1byLWjSAs
+akPgiNmmS8ZA6aF2g2V3xbNieJs7WPGw9AN8jtwevrYLe3Xm2T
+g99oF8CTyDmHkgXia36lzk+9hF5avktNiMq/oix4wxJcbdMR6N
+OfSGPP69Fk9N8YNcX9+XH8a1+ti3Bvjlng/
LK6XxJgWY3iMhTEeivt3+7vlt3GNUb4f1yVxvcFz1WPj9YQYM
+P1WzHui9cvxHgmxi9ixPv64Rgz4vWFuc7UuE6PcWO8vj6usX55Je9dE2NMDOaI12V8jN
HeU70gxuXx
+mrvWeOyuDfJn5XnY9wZY4z3pX3e5TPWi2OMi9fM8XqM0Umj22L895ybc58X15Ex
+M5s76P+ps9XXorXj8f4l3gd56lZ+80YT+TZ47l6hGlTuE6O94/EuCcG5/hJfj7Xe61v8j7YT/
lVjMfyzKx9UYzYe93E++diQGfu3eY59N2Red4b88refhyDfULXK0xbzcXZR5l/
JfYTDll8kXxcl8+yp07S
+iWfr0CL7+V5kYfvWr4031lLz1e4H7ypZya9fpnnDrqXJfmdoGe5MsYPvU690OeG7vWjKQ
8xZ4Ee98d7xnMp088mn19O/vH9t/298rPkwVMpo/
+S9ODZ2ryov5XyNT7lNj6vg971K96fdGRh8iPOVv8q15+aMjDJ/
IGukvegdZlkesAT6cU34nrtUjmoJ+Qzj+b5r8j935Z8RdbRk9CJ
+tqkFWvMSpm4MOXq5hgTPXdBjn+afB6d8gufbo33X/d
+4VX5XvLoTetQvSjlG37PifFL81b6gz1A709LWs1K3Xo1BnOcmfudZb2QfUGuxuRen7IslV
NiPJ3PxTqlY1mrJ6eMPGCbU/P922O8nbZiVu7j0dTdBbYf9YN9tll3p32ZaBmCj+URry
+9nGD6cVbx4vwYbyUPRqZMjjOvRU908dtxfdLPif7PpaxDH/hyecrqpaZB/eu4sjbP/o/
UhbFJg2kpJ7OWyojk4mafp7DO6NzPAA8fSV18O+X10ZSxb5tO4u9v0kZNsSzKNmA/
r7BsYMfLdNuG+sp8jTzf7L2Vf066smfktdsneyWZeSnnHJdz3Zj6NTPpis0/
vU82S37itNTfpy3fZVHy/dWcb3HKxHdi/CLnm5s0DdnExkKDilgj/HIHHxv+vVrk+KOJa/
d2xzydhx0/dMPn1xELtR9wzNO61/GQYovF8Xn4/Va87tzneAmcR/l55O7UJMj/
G7AJcltyc2pVYEQHZC5JrksO/WFjA9Q2qRWBPZBXgnkIB1ih37jsv/
Up91ZeTf6yp3ET4T0f7RfGDJZQ/
41z3Gpj4wSaC8wB3GDFzM83Mg5DHE0+U30psQEwk8r5uPKRLzhnpw5cb
+A5wCUaMJ6li8FbygrGCoTngGu0jJU05O77+Kw1uf76xk2EubD/
mKOJ75X9TR9wKHKjwjnBFd7tEz2aWB+sV/RYx/mKcInV+oV3NMs5n1MeRv37l/
3CWZo1jX1wftbhfGA08KQBJ9rDc0JDYS9g7v3x3MrGEMASwIzq9ZInW/u8YBPCuAYZ/
wCrE763hmnA98F2xIsN/ZzwNHAkcIhYr/Igv+qnYDfgajX75bk1M996N3lN3rtFv2upf
+wTtiSMOWgKhsO
+hQGCZ2xjXlX6OnPVlWnZbOY9lg8mjb9oetbkqWsYm6ihJ5jghyxvrAvuBkYG7slzrCn5A
W/
axXJNnZoasLAp8uXN8jlkHzxtlbgPBraS94Y8kjcK59rUtBeGB34T75s4XxOy0oSMFeR3TZ
8FrAjMEVkVpjPla6BD4FLUssQLzgTNwKPAYj9hPEAYFPjPih7IkDAZ5GIz6yW4GTJEHg8
uJawO3u5l/RReFrLW7G55pl6tmu/
ufi29BjMDZ6gSzwCjC91sNvW56lXTTjA3tcXEP8E1wV/
RSfhQ72fbwD34gXxJXtHxdc0H9Ktin9umzdnUclt92PoLVgfmAYaIjWk
+ZdlXLbzfexROGGcGrwYfLB927jyAaVYrptxsnPq3t88pbHSTtHPoJusGT+kPEU/Xtb4TM
+JjFBcQHxCP/yj9F/6VOAhfjM8lTnw2ffYc+xF8qZ6/Ke14k/b/
J35WsePFfY7piePe6HO8elf9oPwz/usSr1fO7XNsOTe/M8L+rL7D/kGx/
V3274pD7809sB6+57fph17K9zekH1tgf6349U77a8UTv7UfVizG
+YiBn8tz46de9ncUrwzPtWenb77ZPlcxG/u/Mf35BX2OUe+zD1aMMi397ku5t8h5FLM+ks/
dnXFM5BfEhDyjOOqs5A2fjcgzvZk+PWJW8iPFlhEzy/ZROwjfQsxQr2PbKDuLT/iw7Z
+w4z8m38M/V+DRq6VdW862sMJGL2ufImwfOx42RDlA+DcwW
+y65O8x7wlZr1a1jSqxh5qayEfT98Xrslo+z/fAn1dKe8V+gn/C3IMvqt0sZ5vAc/Xv
+mQvqlXSLq3ldTiX8ivOS91gDZ8Df6u9fTJ1YkXTRDgzur2C1y0DOveBtF/
45X3SJmyb9gY78iHbyZp60MqeC11UrYiYafn0NR8wjYn9VWvCTsOrtWyLwcO1l83z7MQ
cwSfZ82Vt42Rv8AErJA1WS9u8csYhK9qOlp/
36fzcp14OBtLquKcFzABMi5onvUjdiKfKgqzZj4rrwn5hYSXiqC740Oz4zrR4PmIlsBawp850
10tVd5xu/AxsBExH/
TfgnmBqU4wLlSbmHpf4y22eDzyxdZfjOTDr1q2Jr95pLKYNXj2xX/gP/
gGMFmyu9U3vv8yLexHjCSNAP8+2jSJ3kR4+lHEzsSV+Gr0hfv5dPoes/
tTPyY7wOnIVYRro6pyMq2Mu1VTAQMjR0Pev25YVbBd69nDGshG/Cssnfgg9x2/
lZj7g2Fhx1r22idrnxmlzJ3of8jlzHBsXBnNGblT9Ps79o/
js28QRce7vxPdeDnr8IOj5ZFxfQGfjmRid9+Kzx+OZuJbn4zXPx2i/4ns8U70ez8Uc5Vsx3xu
+147RxDyduNLT2DwR13imzXeei/s/jtc/ifvxPFg1/XqqsR7ar3q46qzgwrwGo6bGS
+3jKPdgUfsAP6VGDC4Nrg5eTm2burPqutTS6fkBRw6ZUWz/MDS0rNTE7Asdx/
NZ9+tx5fXhQafjYvz9DqUcFNcjY5wYY2iMY/
P9Cfl6lxjHxDg0xhFB22fiXJz7ezGe6hdWrlrOGYmP/TDWi2daj8X12bgXPChB8/qd
+N472JZ+YXhgnsRB9P2pfn181ll2t89XXLdrxp/YotCbZj/Hf+g9dKRGSp1N8fmQjM/
BBqHPSY7F8dWKC9AJavm75uvBSc+zM
+bqc2xBv41iGOKXeB7MXeuvbHorVqPHJWtxqueQS
+zsuAccm9hOsfHqtpGqrx2cMd9ejuexTc2Kjqeo02DH1EdEbXMjx0nwWnUsYlpkARnZxz
FPTS3lCtONM6lHalvHUsQ71JroAVBOsZxjRMU/GTOqL4MzfSXt+s62d/gz8HnVKokBb/

aekFX6c+gbos5F7UjfJ2YkHtzc9p86unozqWNTUzjSPFOfbvASbJWeD
+UqxLDZtwKGqx4z+psitqe3RXV8aEltZk9/
n9fUXXhW9fND80q8eETmBfT8xTmpgXAW4lT5lXoiju1XvUm9F6dlL
+YRlhlyTPITajTEvarpJS/Vpzo6e332sKzQh0guqZzsRPNxgPf0N9HPKXuF3zvM5yL
+Jp99X0aZF19CnrNT9sYNtjyqhzN0lhyPvhRkUXXozbNuRp7KOQ+yzZesY1el/
Q82DVRfpwfjKMtItavjWNVHdnRMT85Ab6xyEHRgmP0t+Qt1leSCOVRzJn75WPpm
+iXg1QXpaz+Ze6de/0/WV8nydqmnW1sn0RftaZ9c/2LXfairUGdRDDDOfXjkW
+QY6uXZwOdU3rG+8xrql8gm8ktNXj1Gn3AeoZoBvm+gJ4ealrj
+p1OGDki5xZbu5CtrwzPyCXoksMfQHL1XLTPkXfW1wT6jep/l8cixuG5suSjBM/p/1H/
Ksxtan7ElxBGq6W5pOURnyE/gN3tEV5VrkKPT5wWf17G9VO2afIeeof3Nl/
UJXOR9EKPCe3lr0eRk2wTlgptZZ6XvMW
+X3iT0ZXXbOtnAtW0fyNfUa4FcjnZPHr12wkfAVEJHqj3M/2al5UU82dL2Vn0/W9p
+MXcTdKx3su9TPyu54YE+u3qEP
+u11IdxWdo47p1gmUaPJYcXWKbVd84a9FRB48r2IBwSnZC+bGdbKMwjfIT6cpA/
6Axv0Uvq9Of4LPSQYWcIA
+gCtPuc5ZgeCGroNXkiPWPrpM9e2XOSk9KTqnx1fOrWqKx5Ew/Ta8Bz5LxnWKfxJ6pJ/
6NpRv8C9pnaMzVP6Rz9COjOue53qOjJpt/soJRf7O+I5Nd21k/
1xIIzDbKuqQdlcO6XWPhoy6VsW3/q0+6WI7CGaoOUg8rfo7dG/
ovYeZjtozAS9IE68XqpW8QjW1vGsIvlyNQz+tA+6uf0TNgK+nUV/yMbn09dQx
+2TPqETCo/oR4M9gYdsYMbp51ifXrjDrF/lB6s5vfKkaDnpraVxF3EKeqBJGb
+uP0l9l72+PzUz33NY8kVn6Hf2KgtXGvHJqiGPVD/x0b/nfeELdDvTza2r9JvR/
Zl3wGGAsb0ZcuYfhcCHT+Tz/TZP6CLshfo3Mk+L3GGMMS1Ux/
XtV8TX45LOm9mvuv7lXWUuEZ+eCXrgmJLbOma5oX6M+kNW9X2UbX/w5Mm6/tc
+Bv6QNWjB/9GWl/oP1NPGLoWOte
+xHSuwfCl08kvyIlf7FOtCPxPOD7YNrnjt42DUBNQfQJMYUnElpEzCs8Ym3kHNcYHnWv
oeXJ36lg/6FMNSXj6FOMs6i0ES405qKsKZ/
hDn3Ax5SfPJAYyIzGWiYkXzEkcYZKxCOHy1KdeMc5APq96Fmd6o8856jec0wj/
eKfP9Q6wg0WJPbxojKX+WZ9y6TJQe3vO
+ZHqdTN8X7kRedYrPh95UZ11WnAgYTvUOsCJIk9V/
k7ONd5no56kNRaZflprQZ7hDedFDdgDGOvkPtVHeC1ciFx8tnGbgdxN52D
+ibnmONMXnikPvN84jGhPHeyFmH+Zftdlbk3cBnzi56aX6ERtD3mg3gG9wY+oGYK/
3Oxzip9gXuBd1BdDXlSr2rPPuNE400K42sykyZLcH7VGsKxRSdNu5plgPNR7vuu8lnqJsK
s/GO9RLa7uE94jWVuQNABnW5i0+Lfk842Zy87OfHmhn9F8QV/hHtCR3PV574mzSMbB/
JC5b/pcmuMB58SSN/h+ZfLn/tzDnbmnl5N+IfPU8TiP
+PGGzyC8aFTSDfztoeQLsgfuNz3n
+7FlV7jZq3l9KvXg4pR9eEtujv6Ru4eMNKFXogu6Rb3pmTwz9e+RXku9tU/
kunf7zOIN9cmUc9Fren4PuQTrG5+6xDleTf2an3RApn+Y+/i+9VR1RORqoB
+CeuCivC7JM1CDnpBydk/K61zLpWSMuai3UiOblvTCxhxnuZX9aVLH0A+wpDdy/
9QPsWUDcvAN24j35fCRnC/uNdiyMd6LMJfHk6czTC/

pPXXQF9MWXJ17ejllHHn7SdqRJ/MMv89zIp+vpS1B98DFXsvzvZfzULt8O9fYwTEa
+Yd884EZqw9Jn/f5jB3o09w9/dsO6WuoN4C3kS/gq/scCxGvqaf38ozlPpMD/x3PC/
8kBjnXMV6bmOTjjlnAVYnd1Yv+VcdMxKDkY6xJzK9+njMd+9DzrvgcrHJNxwryt+RdRzm/
VF57umPw8inHJ/p9xeccD9CnSs6kfl0Y9CzHm6qtZU2DOInfm0Av
+hXVw09NZtOlcTN1LsXE59u3sw/5/2Mdn+s3A3326frt1nZeQz2Hqzt2ZS/
gHMp7pnrvxP74cWpA4CDcU3y6ifM8YWTE9NsYS1Lthnjywlz/
VnEOoHrSRzKfI17LHnHiau1vd8c01PeEF+zsWJV+fegLvfWbh4NMV+XrO+d
+P21aqQYCv7Yyf/U7WuIK+LWO96TfOhKrLu/
cDr4qDhni9eu2Yxb15Z6TOMcQx3bK9dnrkJRJZBH6DHFOo9/orJz5x/4Z2+/u/
Eq9peenjHwh48ShjgeVB9CvvG2eYePMk8AZtk5ZONd6ot8KjnB8r3xwdcdl
+o3eaqad8riNTQf0qDnJv5ui149+M8WCu1o2VAfY2rkjPd2Sv884xm+R063pPSJzZS/Hg
+iGaqmxfne07xH/g4mpBjbIsqwa6/EZv2/
qWJzfxeh3Hcs7jqW3G5qp9w87clT1WrVEcLYdnY
+AD5ATq7d9F8fTxIHUYRVXhv0VfkF8uG7qw4opH0OcA1LD0ffACpZxLqfflBD3oAN/
a7tK7Y34Ub85+HDKK3jCj1wLF0a/hs+peJ6cC59CrZq6JVj1bpZ51cTpG
+F3KMUxJnlys0rG4Ks6ppfNxG5T/836iWJ4cBV8BXH28tYt9E84Fv5gh9T/nS3j9B1I/
6il75XyFbZNMSw5UMRz+m0odZ4NHNdjl+hBF46xdup4K20WMdoKlkNiF
+J91b2edTyjPHOQZRofLQxmX+dJ5KT4e/
GSmBaaEU8OTv6tZBvcfMl0YU3VUddM3XnNMRmxujC2XXNt5IzY6YGM2WJO/
fYg7innI4Zc235AWAzxKTzb0PGmfCGv87cP0Fq6TY5CvERMMtT8lo/FjxG3bpy8/nT/
+7+JoYZG7CTM9FnHMpKhVZKP22Tuhr0GuyLuf6vPOC+2Yq2Uzb2dL6o+xB7YJ/
10v3B9Xfx7L+Md4g9kiX2Sg/wyY6177fPV84M8PpSx43cc4xFLKF95N337/
PyM2OrSjKPmOc7RdaLjLnp7FL/clDHJW/
mdxblH5PPXGdsQs83MeHNaxlnTHH8Rnyr2OC9jQOLPRzL++Ib3oL64+zOOYT
+3ZpyyKONFYmxinsmO0fQ94unhecbrM94iVqEHjXUOTrow9xWmk2i3xPuA3u/
HtvuZRoqr6Jc6O88x1XOrn4uYr+24byA/U733tox9eP4O77lkn5Sefc5zvd8v
+aTnVZ14vvesHktq2NSal/ZSr9jcjEfh3YTc125Leae68UTHWMiBcpI5GeOdkXs
+LPm1MHlNbnlS7vfEfJZ4eLxprLo3sSP1cmSJOvpi00g2jD2clWd9Iek1OWPDJy0LkpWjT
HfFjuQ3xNqcnVjzl6aZ+szmWEbqgfh8qmVQ+S25APQ/NZ9lX8+k7hO/XmWaKv6GF
+Qn5ADZMyc6sR9yPWLkfzXtlc9OyDM3KTvIBvpJjH1V0uQO65Lk7XavL1lCFh91LqK4/0f
57IWWLfErbZT6A8bmXm9KuZyUOjEh5WtR8mdO8mVCzkVPdvZdSNfOzHWCt
+qPmJl8QU/lz7EV85KH0OiW1K1pKU/Zk6lc7zbLovpIR+T9C1MOp6bufCBzi
+wrlS7PSJlGRrF756bc3JnyyBrneL/0bQgHAWe5LPl2j+muHg/
6XrHrP08dQUfJE8lxRvUt7Qu+wnJEvQ9+qV+WHG1W2onzkjbkl5O8huQLes43bbQ/
aPurpOkpppPs0ou5t0UpE53k3YSk1ZdSjuEpee99ycP7TAvly3PTNtHPQt57x5/ICvx/
KM93d9qHr3oO9Ew6PDV5sSDl8aC+pX2ufH5B8hjbdVPSg9e/83v1eS60/VB/
yKzUq3kpk52UvTtSFvg+tM1eF9kw9Ive08fye6eYVrI16O9ZOQff/3XK7QzroPp7LrUuaI/
oz8PmnzB3cHFqUof2+/8DjM1cid/NzczfWh3rXIT/X8Mz+g3QAcYX+c0HuD99DtRY
+O2Tfqv3cOr0bOudMJfbk5bZZywb/0PjTvLr0OU5yxB5MTSUHM1Iu0HO/

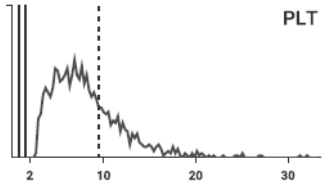
XTye3TKGbLObwXAB7+TvH496cW80AkaEZ88bfqX7D0u
+yQPBrAm7Bt2FGxhALvjPbqQPl73F5v22gc2a4TnlzzgdwbwG56911fhdtynfxhMCV0bk/
udmbRANqekXZmdOoIMgnGB+4S9FGZIHDHMcqy+Kj5/NPc1IXnPnOBr9FKjZ/
d6bdkkvv+maSs/flnSb45lT99fkvxbnOd+POUXPOm6PBfy/m7OscR6rn2jP8/
nnLemvr2Wn3Ee7PJw01cYzmLrk/QI//yblGXkHTuOTwvbJf97p3VJ9LvS
+qB4PPmMHRD280jqTdc0k13L3z4lp5uSfJ6Sc/3Uui4ZeCrXhG/gWBMswxoD9IMX
+OB3UraJ/140b9WfPoBBMh/YHPboZtNAPP
+6ZVQ2G7l9JeXpVdNEuo4vfSL3uqjvfSxTNuIHlpkB/yl
+P2kdkc48kHR5zOupR469gAOlDZUthhaPW5dEn9+kvkxOHbg99ell81q2g/7z5/
OsxEwPpk6DoY5PXixrmRGP51oGZetuzzNB+29aLhVPXpt6xpoL7Z+ETxFDzU/
dYr2xKffjUz8W+KyKd+abh8Jpx+a94ZYvyTZ+cEBmH7FOi+7oDvaBGAzfihyho3NTNn
+e58e3DMRC+Nsn3HMmDA9fe12e6xafR9+/
1WtK95G1B1MfUqd1H5n4m4x5b7LMCTOdlDIDf05Ons1Jvj2Y/
Ho89epbuS7ywVzo8IcyDro9aYKtnNH3/u83JMtTTNt6QE/HWG6EaR/T5xhqQsrDV/
qW4tGzLY/S15Epax3rrfBz+oD2tr4id8isYg7WfSHvPZDzwid0DZs
+8Psl5o34sn4n6fiMdVL3z05ejUod
+27q1L1JH57FXtbmh3Kgx1LWhlkOxC8+Y47pOSe0pq5yi2VQtJiftOr6OX2GPY3clP
+DBqap3krwFPoHtjPmlAzpMOfSwgSXMy6g3obd/f9LwEXoy1I9HDyDWhz1vK
+53tiAfxzsmprqe5sYc6BPXf9z5WhjPtQd1dtc+TP9L4NNEpPa03iafn9A7r2Xc2b+pwX1O/
ok9b9BwLf2NTakPoiPJdaxfelVOxmnAZtSP8J5iYWNSbwDrGpY4gg7GgPU/
y7Z1pgpGAj/e0C5/V6mj/6XW/6vM/2+INai/
in8eC3jHerbHJxYCdjal41RiTYbGRdSHZbaJ3Vj+q+PSSyaejk16KxXK6/fyhgPe6DfQb/
DaOU9+kJWS3zqJGPA9BMI8/yi79O/
QG8GOIB0D15vZGxENf3XbFPIweCbYhbos8R9rPx+QnkXPOU3cugS/B+c
+dddtu3qVQ2br76g5RK/Ab+jD5GexFfdQ6j/k/h2XN9zj2HrN+AS/
oxR3oz778b16X71MvJcl9/x0Pf4R8/VvBXf+4M/D8H2ecCaTjDGB3ai/5cE7naR+03BWfW/
Dhb0u74Lv8Aj10is5ch+9ycsnzjohu7ZYg56KfXbn5Utx/o9ArK4h/Euyd5mxsGqd30e
+mS6DxvfVJ8//Urs/eNx7xXjf+qxfD32t6RffUStuM//3KNfoOT/U6G/RWemf
+9C0wjcs5V9nvrfSC/2+3/9DDWNWL/1aFxH+XfY+n+L7/n/damXFxnl/zFM8+/PVd/O3k
+eU88a/wPhRI+S96mlg4XL72HDp9nvK1/idwDEtcTJ
+EB89i9sywf61uU7fpDvf5a26yH7C2EK2F7sZ8Qz+n9O+/p/Cuh/CQ41Xsv/
LFSvE4MeQf6vx0DdcgArwi/hfw/sU01UPfmjc0/
EDRekP5jhPF353TvGImXzP2QcVL6VHGwN45DyP8ShYIuPZTygGmS/
+2zrwb3RG73RG73RG73RG73RG73RG73RG73RG73RG73RG73RG73RG73RG73RG73RG73
RG73RG73RG73RG73RG73RG73RG73xlzDoQe6N3uiN3uiN3uiN3uiNv
+zx6Pa98Zc6Or3RG73xVzfm90Zv9EZv/D+Omb3RG38lY7kd/mPjqe17ozd6ozd6ozf
+a47v/xlH76/31/vr/fX+lv41VW/8tYxld+iN/ypj7+3//43/7F64u7f/845BMar/wyg7/
OWPuvpfj2b7/5zRqf78o/t/MX63/X98dP/daP+7Uf434/U/GVXF+J8=

3.6.6. Example of Data Frame for Histograms



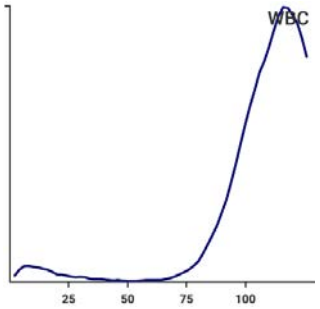
M|1|HISTOGRAM|RBC|RBCALONGRES|FLOATLE-stream/
deflate:base64^Y2AAgW5nMMUQ5QIkHEAsAA==|FLOATLE-stream/
deflate:base64^bdUNaJtFHMfxU6tVs5eqJXNu08Rt3ToTnLW2cS/
2ee6ysbm2pnZ1y3RaZ
+zcHKZadZLNLattGq2yIIFUG6Qw1ISkUMIYZRhWmUIQIWIUmS9tKUNsEUTaooyifp/
kCTwEAz/ucrnn87/nnpcIYXy6VbYR
+7xCaJoQO6QQaWI3xwVjJ1TA2V0TcNo0e9Kn0ddS00P0x7RgaJbvNr2nc6WemnbrM3
U1OnN0ZT+gB0Nten2wXWe
+HsqcYU5cT1SfY96Qnum7wNxLOrWYP6a7A1c4Zkr3p2c4blaPuBY49nrpT98k8WUwtF
SGMnfliOtOSS0ZH3fIRPVamYyVS+rKtKyQmb4qOTG3SbIGOT+gpHEuNn
+tZD3SaWuS7oBfelL7JWuT9cEW7MPYQew27KPYx3HC/
NaO1cHvEbwoc7ox32Peadwe5p7Bfp/5vfgfsp44NT5iTf3UOcu6zlErwdo+pt4nrG
+ImsPYSezz2BewR7AvYqewL2F/hn0Z+4vs/kdcX2J/hf0N9hj2t9jfY/+AfQX7J
+xfsCewp7CvYv+K/Rv2DPbv2H9g/4k9iz2P/Rf2NewF7H84Riib/
zrFPquezhtUpq9l2ZM3KvZcxceL1cTczcppu5Vrb1OJ6kVqpm6xcgeWKK6FSsZK1PzAbc
qTul1xXVRqulQZ94yyL1NcI5WWy7HvwI6BvRJ7Ffbd2PdgO7Cd2Kux12CvxS7DXoe9Hrs
cewP2fdgubDf2/dgbsR/ArsB+ELsS+yHsKuxqbA/2w9ibsLdgb8V
+BLsGW8PWsSW2wvZib8Pejr0Deyf2o9i7sGux67DrsR/D9mE3YD+O3YjdhP0E9h7svdh
+7H3YT2I/hb0f+2nsZ7CfxT6A/Rx2APt57Bbsg9gvYB/
CPoz9IvYR7Jewg9it2C9jv4Ldhv0q9mvYr2MfxX4DO4R9DPs49pvYJ7BP0g+rma/DfD
+l3FdPMdaugtfaqfmWSpZ0ULdDzZd1UrtTebZGqB9RocYu1tClUoeirCOqRPht1vIONSZ
5/
pt5TodJEffPGrKF1Jox3hde4iGVZrvenOcgJUSQv7PPes7Jp5/0khhpJT6ztcYYc5ASIv4no
1ou/WbCBX3jnSYs0SytdW6hYx0XZv2NRNNz+2GsedA8p0k9d46LLPuzmxwh75IBMkp
+NPaCPV1MlpNyspk0kBZyjHSx9x/QnqVNksvkOzLJ2Bztv7TFXqEt9YrRUt7ZK8hq
+utoN5AKrwhX025mTKO/
i76PfiP9Pd7se350L6Ef3s33Bvr1ZCf9bbQcF66iddGWMeagJWIVNZcxTt3wLWSBdUyTn8
kYGWVt52kTufVz/whxkhwkTUSRSnIvMd4Vxcb5sB9T5v/
Np2SQxM09ayfNxGfuZ6V5P5WaKTLvKWPvx8ileT8Z1yVqSa85br3XwpbELGPWe67ZMl

Y4z9rP18jXs64hXzc/J7+WwjZm6Q+az8ZIwbMybPmtv6B
+q6WftwYtKTzvaEG9z9nLi2ScLMn+7/8H



M|2|HISTOGRAM|PLT|PLTALONGRES|FLOATLE-stream/
deflate:base64^Y2AAAQ4nMMXQA6IdgMjhxW9P+1dqO+3f1Yg7QuQa7EFyAA==|
FLOATLE-stream/deflate:base64^rZV/TJVVGMevcGdQUTBpREYDh0jmiJgSCfE
+z3szxqChozF02DBZMhZOpkjGQERTAhKDVAwKEkI0qGui/
AgIDEUwSIiQoC4E8cOgIDSEwur7cs9d1xvjnzrju
+d9z3me83z3Oe89qFTKsJDngiodMYnwADmySpUPTbB
+TZnbq4nWrfCdtT3uW7+221ejfUBy0bhLFp0bpNHIndJwQqoU6pcjNVmXSN7d1VJJQYv
kEK2TMjzHJaW+MsKCYpqsaaWbPQ1kOlHO7cfpxTAPsqpfS5eWaygxNYCeHg
+m8eAwKq6IoC0O0WSfHEvtQwlY30/LQg8hJ426qzOQl0VZTtnIzaXAg/
nILyT1aDFqSqkm6CzqztPuskrU1pCb/UVKDbhMwwnNpNG2Ul5/
O83aXqdQvx4q29NLNiUDFK0bpibrMXLRTFBy7C3SnZom7+5Z7K3i1/
PMuLhCzZ1ti1k9asEe6vt4i4MVZ3g
+yDVBNjwauYTtkx9ivxw73l1mz4UtS7l9yIEVhjeXLOPBFc7c5e3CV4NcuXbrStbGreKCND
c+lufOKec8OL5xNW/v8eTwcS8ONvfm5+2e5WeekBh//Fiwhm22rWPzeD
+eOuzPN04GcM+FF7i1OYjrdRu4bDKYixaH8IlHQjndbRMnymEcE/lSR0SFc0jiy+yfGcE
+Ra/wk1WR7NQaxbb9r/
l9U9t5xjKGxxx2cu9Tsdy2Lo4bNu7h8uh4PrMvgXOP7uXGjiTsv4+rRpLRYz
+Xzh5An4Ocb30IvVl40/lN9EvlN7zS0DOdXwt8C30Pc1R4Bnof4c273kb/
TF6fkgUP77CcexQ+jvEa7XF4yWbXhhPw8y4v7cqBp1y2GnsPvt6f+
+ZmLD8At5PwVwB2hfD4lfgVwecpMCyG19PgeAZ+PwLLEnguBc
+P4fsTMNVyxumz4PopJ9ecA9sy3tV2Hnwv8LbBcjCu4E0zleD8GQdaVYN1DUtOteD9OX
usqQPzel7ufxHcv2C7zQ1gf4nvjbkM/o1858AVnEETj2c34xyucn/
JlziLFv6mrhXn8RWYXQOzNjBrB7OvwawDzDrB7DqYdYHZt2DWDWY9YPYdmH0PZjow
6wWzPjD7Acz6wWwAzH4Es0EwGwKzYTAbAbMbYPYTmI2C2RiY/
Qxmv8z9RmcsfwWzSTC7CWa3wOw3MJsCs9tgNg1mM2D2O5j9AWazYHYHzP4Es7+w
rpIbO1Ryw8ZFcr1ukVy71UyuGjGTy6PN5bJJc1kbp5ZLZ9Xijvi/RhLuBMKdsgP
+i6FsERXZKr2ElHlnxD7WS1nrQlyN+DBkDblDavHuCk2LvEeh+yEfUaO8O8r6tedErpesv
+PUlt9HrE+lfGV+lejTJTyMQNdYf29eEe8VJtKK
+zMFqoOOiBgu5taLHBJ52Ulk5C5YKHGHiEpNHZj1kf7ZUeTW0T/

PyppKzBlyFc75RjLMGSKJ3CRRmy/+B8zNSfrnuTMT0VBnOMM
+o2fTurlodN5Ed38DKro7zzjHsB+Z5BiG6V7GvUy/NeN145x5l/27xuB/vj0WHLSwv/m8/
tcx3x6m52Hqb+H9/gY=



M|3|HISTOGRAM|WBC|WBCALONGRES|FLOATLE-stream/
deflate:base64^Y2AAgX9OYIohygVlOIBYAA==|FLOATLE-stream/
deflate:base64^ddUBiN1zHADwH45tHDsc22zj2GxnDmfONu7Yu7s3NjvzZjc7MzzMDMN
hGMZeEkeXLkkj6YW4JF1raUl6sXRJurS0tPSSNJKWLl1a+Ly937/+vebq0/
d7v///vd/v/3+/7/
cXQuXvn64jIazPhlDlhDDaGcJyY68zGq8F4892u760mmcy1XuLlCgTfK6BJlrJkCNPPwUG
GGInRYYZYQ+lzurcY
+ynzEEOMUGwljomU08DjUxnFk3MpZkWWmljCR1kyHZVn62HHL30sYE8G9nMFvrZyja2
U+A5nucFBniZQV5hiFd5Lb67nbzJW7xNkXd4j/cZ5kM+4mNG2MVuPmEPn/IZn1PiC/
byVfxtvuYbvmWM79jH9+znBw7wI2V+4md+4SC/8Tt/cIg/GecvJvibw11xj/j9j
+FYjqOO4zmBSUxmCidyEvWczClMpYFTOY3TaeQMzmQa05nBWcxkFrM5m3No4lzOY
w5zOZ95zKeZC1jAhbRwERdzCa1cykIuo43LWcRilnAFV9JOB1dxNUvJ0EkX3WRZxjVcy
3JWcB0r6eF6VnEDOVZzI2voZS03sY4+bmY9t7CBW7mN28lzB3dyFxu5m03cw2bu5T7u
ZwsP8CAP0c/DPMKjbOUxHucJtvEkT/
E023mmu1r3lfrOx1qti3XWEeuoJ9ZUNtZaUnPN8b6mWKuV
+p2INT6SUoz9YCj2iVyMabnYVyr9JRxFKfahYlSoySv9KqRkUjF9b+33pMeT/
pb0tnxc83B8pnLsUfWp99Mbe8lgrPlSrMkQa2NG3LPtcW9siu/+xe5QeEN8V9zFl
+yjbGxc/FeclA2ZqdlQatS3ZzJHPl9cwMJsKCwW241l5CvlOfka+brskV5f6kNe6PX/
avkqVsiXiT5XWCS2iPOMNYmE2eacZty8hSkcto5fOcAYJWvbLX5QXX/hJfmOuD/
XxrppizVcqf9K3xiPfWk09rrh2DMHY7+t9OVcfJ9tcT81RnVxT5XjubEn7qeheNYkkvMmvdc
KKUOpsfSey6fGau9L58kcyXzpNSTzJvcka6mN/3cujtRIrhVr5j/
aGTucUvvcAzXz7Y3nTeWsqPTsEP4D

4. HL7 Format

HL7 content is enclosed by special characters to form a block.

The block format is <SB> HL7 Message <EB> <CR>.

The characters below shall surround the HL7 TCP message:

Element	Description	Value	Comment
<SB>	Start Block character (1 byte)	<0x0B> / <VT>	Vertical Tab
HL7 Message	This is the HL7 data content of the block	The data can contain any single-byte values greater than 0x1F and the ASCII carriage return character <CR>	
<EB>	End Block character (1 byte)	<0x1C> / <FS>	File Separator
<CR>	Carriage Return (1 byte)	<0x0D> / <CR>	Carriage Return

4.1. Protocol Description

4.1.1. Overview

Messages

A message is the atomic unit of data transferred between systems. It consists of a group of segments in a defined sequence. Each message has a message type that defines its purpose.

Segments and segment groups

A segment is a logical grouping of data fields. Segments of a message may be required or optional. They may appear only once in a message or they may be allowed to repeat.

Each segment is identified by a unique three-character code known as the Segment ID. Two or more segments may be organized as a logical unit called a segment group. A segment group may be required or optional and might or might not repeat.

Each message is defined in special notation that lists the segment IDs in the order they would appear in the message.

- Braces { . . . }, indicate one or more repetitions of the enclosed group of segments. The group may contain only a single segment.
- Brackets [. . .], show that the enclosed group of segments is optional.

If a group of segments is optional and may repeat it should be enclosed in brackets and braces [{ . . . }].

Fields

A field is a string of characters.

HL7 does not take into account how systems store data within an application.

When fields are transmitted, they are sent as character strings.

Separators

The HL7 messages must be created by using the separators below:

Separator	Name
\	Escape character
|	Field separator
~	Repetition separator
^	Component separator
&	Sub-component separator

Escape sequences

If producing HL7 messages that contain the separators in the fields content, the application should properly escape the data using the escape sequences below:

Special character	Escape sequence
\	\E\
|	\F\
~	\R\
^	\S\
&	\T\

Date and time format

Date and time fields and components must contain a date and time formatted as follows: YYYYMMDDhhmmss

Date fields and components must contain a date formatted as follows: YYYYMMDD

Numerical values

The numerical values must use the character "." as decimal separator.

Low level protocol

Two sockets are used. The first socket is dedicated to orders messages and their acknowledgments. The second socket is dedicated to results messages and their acknowledgments.

Records to send

Fields that are not used are sent empty.

When sending records, the HL7 sends only non-empty components, ie. without component delimiters for the last empty components of the field.

Received records

If a field value, length, delimiter of a received record does not correspond to the required input type, the instrument generates an error log, and can ignore the record and its following ones (depending on the error and the message).

For more information about errors and messages, refer to the *Appendices* > *Error Management* chapter.

Histograms, matrix and QC results are not sent.

4.1.2. Message Structure

The following table lists the message types supported by Yumizen H550 for the laboratory testing workflow transactions:

Message	Description
OML^O33	Order information (related to a single patient and a single specimen) used to send a request from an external system to Yumizen H550 (request downloading).
ORL^O34	Acknowledgment / Rejection of a request message sent from Yumizen H550 to an external system.
OUL^R22	Result information (related to a single order) used to send a test result from Yumizen H550 to an external system (result uploading).
ACK^R22	Acknowledgment / Rejection of a test result message sent from an external system to Yumizen H550.

The application must respect the following attribute descriptions to create and process the HL7 messages:

- Segment: the segment ID
- Meaning: the contain of this segment
- Usage: whether the segment is required (R) or optional (O)
- Card: whether the segment may repeat

Card.	Description
[0..1]	Element may be omitted and it can have at most one occurrence
[1..1]	Element must have exactly one occurrence
[0..*]	Element may be omitted or repeat for an unlimited number of times
[1..*]	Element must appear at least once and may repeat for an unlimited number of times

4.1.2.1. OML^O33^OML_O33

The following table lists the detailed structure for message OML^O33 used to send a request from an external system to Yumizen H550:

Segment	Meaning	Usage	Card.
MSH	Message Header	R	[1..1]
	--- PATIENT begin		
PID	Patient Identification	O	[0..1]
[{NTE}]	Notes and comments	O	[0..1]
	--- PATIENT end		
	--- SPECIMEN begin		
SPM	Specimen	R	[1..1]
[OBX]	Observation Result (for specimen)	O	[0..1]
[SAC]	Specimen Container	O	[0..1]
	--- ORDER begin		
ORC	Order Common	R	[1..1]
TQ1	Timing Quantity	O	[0..1]
	--- Observation Request begin		
OBR	Observation Request	R	[1..1]
[{NTE}]	Notes and comments	O	[0..1]
	--- Observation Request end		
	--- ORDER end		
	--- SPECIMEN end		

4.1.2.2. ORL^O34^ORL_O34 / ACK^R22^ACK_R22

The following table lists the detailed structure for messages ORL^O34 and ACK^R22 used to acknowledge a message reception by both Yumizen H550 and an external system:

Segment	Meaning	Usage	Card.
MSH	Message Header	R	[1..1]
MSA	Message Acknowledgment	R	[1..1]
[ERR]	Error	O	[0..1]

4.1.2.3. OUL^R22^OUL_R22

The following table lists the detailed structure for message OUL^R22 used to send a test result from Yumizen H550 to an external system:

Segment	Meaning	Usage	Card.
MSH	Message Header	R	[1..1]
	--- PATIENT begin		
[PID]	Patient Identification	O	[0..1]
[{NTE}]	Notes and comments	O	[0..1]
	--- PATIENT end		
	--- SPECIMEN begin		

Segment	Meaning	Usage	Card.
SPM	Specimen	R	[1..1]
[OBX]	Observation Result (for specimen)	O	[0..2]
[SAC]	Specimen Container	O	[0..1]
	--- ORDER begin		
OBR	Observation Request	R	[1..1]
[ORC]	Order Common	O	[0..1]
[NTE]	Notes and comments	O	[0..n]
{	--- RESULT begin		
OBX	Observation Result	R	[1..1]
}	--- RESULT end		
	--- ORDER end		
	--- SPECIMEN end		

4.2. Message Segments

Messages consist of segments of various types that are listed in the table below:

Segment Type	Name
MSH	Message Header
PID	Patient Identification
NTE	Notes and comments
SPM	Specimen
SAC	Specimen Container
ORC	Order Common
OBR	Observation Request
OBX	Observation Result
MSA	Message Acknowledgment
ERR	Error

Fields and components must contain a value that complies with the specified input type. The input types are listed in the table below:

Input type	Name	Description
F	Fixed	The corresponding fields and components must contain only this fixed value.
CL	Closed list	The corresponding fields and components must contain only the predefined values.
OL	Open list	The corresponding fields and components must contain only the values specified in the Yumizen H550.
AN	Alphanumeric	The corresponding fields and components must contain a free text.
N	Numeric	The corresponding fields and components must contain a numerical positive data including 0 (zero).
DT	Date and time	The corresponding fields and components must contain a date and time formatted as follows: YYYYMMDDhhmmss
D	Date	The corresponding fields and components must contain a date formatted as follows: YYYYMMDD

4.2.1. MSH - Message Header Segment

The MSH segment defines the intent, source, destination, and some specifics of the syntax of a message.

The Message Header segment contains general information and identifies the sender. The Message Header segment is always the first record in a transmission.

4.2.1.1. From Host to Yumizen H550

SEQ	LEN	OPT	Input type	Element name	Example
0	3	R	F	Segment ID	**MSH**
1	1	R	F	Field Separator	| (Pipe)
2	4	R	F	Encoding Characters	**^~\&** ^: component separator ~: repetition separator \: escape character &: sub-component separator
3		O	AN	Sending Application	Application setting
4		O	F	Sending Facility	Application setting
5	42		AN	Receiving Application	
6	14		AN	Receiving Facility	
7	14	R	DT	Date/Time of message	**20161012144125** YYYYMMDDhhmmss: date and time of the message
9	15	R	CL	Message Type	**OML^033^OML_033** OML: message code ID 033: trigger event ID OML_033: message structure ID
10	20	R	DT	Message Control ID	**20161012145002000 02** YYYYMMDDhhmmss: current date and time CCCCC: counter from 00001 to 99999
11	1	R	CL	Processing ID	**P** P (Production) D (Debugging) Default setting depending on user profile: ■ Tech: D ■ Others: P
12	3	R	F	Version ID	**2.5**
18	16	O	CL	Character Set	**UNICODE UTF-8**

Example of a message sent by Host:
MSH|^~\&|Application|Facility|||20220414163210||OML^O33^OML_O33|
20220414163210|P|2.5||||||UNICODE UTF-8<CR>

4.2.1.2. From Yumizen H550 to Host

SEQ	LEN	OPT	Input type	Element name	Example
0	3	R	F	Segment ID	**MSH**
1	1	R	F	Field Separator	| (Pipe)
2	4	R	F	Encoding Characters	**^~\&** ^: component separator ~: repetition separator \: escape character &: sub-component separator
3	42	R	AN	Sending Application	**H550^123456A^1.0.0**
	15				H550: instrument code
	15				123456A: serial number
	10				1.0.0: version
4	14	R	F	Sending Facility	**HORIBA_MEDICAL**
5		O	AN	Receiving Application	Application setting
6		O	AN	Receiving Facility	Application setting
7	14	R	DT	Date/Time of message	**20161012145002** YYYYMMDDhhmmss: date and time of the message

SEQ	LEN	OPT	Input type	Element name	Example
9	15	R	CL	Message Type	**OUL^R22^OUL_R22**: results
	3				OUL: message code ID
	3				R22: trigger event ID
	7				OUL_R22: message structure ID
10	17	R	DT	Message Control ID	**16101214500200002** YYMMDDhhmmss: current date and time CCCCC: counter from 00001 to 99999
11	1	R	CL	Processing ID	**P** P (Production) Q (QC) D (Debugging) Default setting depending on user profile: ■ Tech: D ■ Others: P
12	3	R	F	Version ID	**2.5**
18	16	R	F	Character Set	**UNICODE UTF-8**

Example of a message sent by Yumizen H550:
MSH|^~\&|H550^111YODH00001^3.0.0.3f|HORIBA_MEDICAL|Application|Facility|20220414153220||OUL^R22^OUL_R22|22041415322100001|P|2.5|||||UNICODE UTF-8

4.2.2. PID - Patient Identification Segment

The PID segment is used by all applications as the primary means of communicating patient identification information. This segment contains permanent patient identifying and demographic information.

4.2.2.1. From Host to Yumizen H550

SEQ	LEN	OPT	Input type	Element name	Example
0	3	R	F	Segment ID	**PID**
1	1	O	N	Set ID - PID	**1**
3	31	R		Patient Identifier List	**PID0002^^^^PI**
	25		AN		PID0002: ID number
	2		CL		PI: identifier type code
5	41	O	AN	Patient Name	**Doe^John**
	20				Doe: family name
	20				John: given name
7	14	O	D	Date/Time of Birth	**19800926000000** YYYYMMDDhhmmss: date and time of birth
8	1	O	CL	Administrative Sex	**M** M (Male) F (Female) U (Unknown)

Example of a patient identification segment sent by Host:
PID|1||PID0002^^^^PI||Doe^John||19800926000000|M

4.2.2.2. From Yumizen H550 to Host

SEQ	LEN	OPT	Input type	Element name	Example
0	3	R	F	Segment ID	**PID**
1	1	R	F	Set ID - PID	**1**
3	31	R		Patient Identifier List	**PID0002^^^^PI**
	25		AN		PID0002: ID number
	2		F		PI: identifier type code

SEQ	LEN	OPT	Input type	Element name	Example
5	41	O	AN	Patient Name	**Doe^John**
	20				Doe: family name
	20				John: given name
7	14	O	D	Date/Time of Birth	**19800926000000** YYYYMMDDhhmmss: date and time of birth
8	1	O	CL	Administrative Sex	**M** M (Male) F (Female) U (Unknown)

Example of a patient identification segment sent by Yumizen H550:
PID|1||PID0002^^^^PI||Doe^John||19800926000000|M

4.2.3. NTE - Notes and Comments Segment

The NTE segment is defined here for inclusion in messages defined in other chapters. It is commonly used for sending notes and comments. The NTE segment can be linked to a PID or an OBR segment.

4.2.3.1. From Host to Yumizen H550

SEQ	LEN	OPT	Input type	Element name	Example
0	3	R	F	Segment ID	**NTE**
1	1	O	N	Set ID - NTE	**1**
3	200	O	AN	Comment	**Patient Comment** Depends on the associated segment: ■ PID: patient comment ■ OBR: order comment
4	1	R	CL	Comment Type	**G** G (General): patient comment, order comment

Example of a message sent by Host:
NTE|1||the patient is afraid of needles|G

4.2.3.2. From Yumizen H550 to Host

SEQ	LEN	OPT	Input type	Element name	Example
0	3	R	F	Segment ID	**NTE**
1	1	R	N	Set ID - NTE	**1**
2	1	R	F	Source of comment	**L** L (Filler)
3		R		Comment	Depends on the comment content (refer to the table below).
4	1	R	CL	Comment Type	**G** G (General): patient comment, order comment I (Device Flag): analyzer and analytical alarms

Comment content

What?	Associated Segment	LEN	OPT	Input type	Example
Patient comment	PID	200	R	AN	**Patient Comment**
Order comment	OBR	200	R	AN	**Order Comment**
Analyzer alarm	OBR	103			**AlarmType^MeasurementType^AlarmMain^AlarmDetail~**
		20	R	OL	Alarm type: P (processing alarm, analyzer alarm, suspected pathologies)
		20	O	OL	Measurement type: empty
		30	R	OL	Alarm (main): name of the alarm or suspected pathology
		30	O	OL	Alarm (detail): empty
Analytical alarm	OBR	103			**AlarmType^MeasurementType^AlarmMain^AlarmDetail~**
		20	R	OL	Alarm type: D (device) if the analytical alarm is linked to an instrument technical problem or S (sample) if the analytical alarm is linked to the blood sample
		20	O	OL	Measurement type: name of the alarm family ■ WBC ■ DIFF ■ PLT ■ RBC ■ RBC_OTH
		30	R	OL	Alarm (main): name of the analytical alarm (main)
		30	O	OL	Alarm (detail): name of the analytical alarm (detail)

Example of a message sent by Yumizen H550:
NTE|1|L|D^PLT^ANA_ERR^CLOG_PLT|I

4.2.4. SPM - Specimen Segment

The intent of this segment is to describe the characteristics of a specimen.

It contains information about the sample.

4.2.4.1. From Host to Yumizen H550

SEQ	LEN	OPT	Input type	Element name	Example
0	3	R	F	Segment ID	**SPM**
1	1	O	N	Set ID - SPM	**1**
2	16	O	AN	Specimen ID	**0123456789**
4	20	R	CL	Specimen Type	**WB** WB (Whole Blood)
11	1	O	CL	Specimen Role	**P** P (Patient)
17	14	O	DT	Specimen Collection Date/Time	**20161012145110** YYYYMMDDhhmmss: date and time of the specimen collection
18	14	O	DT	Specimen Received Date/Time	**20161012181002** YYYYMMDDhhmmss: date and time of the specimen reception

Example of a specimen segment sent by Host:
SPM|1|0123456789||WB||||||P||||||20161012145110|20161012181002

4.2.4.2. From Yumizen H550 to Host

SEQ	LEN	OPT	Input type	Element name	Example
0	3	R	F	Segment ID	**SPM**
1	1	R	F	Set ID - SPM	**1**

SEQ	LEN	OPT	Input type	Element name	Example
2	16	O	AN	Specimen ID	**0123456789**
4	20	R	CL	Specimen Type	**WB** WB (Whole Blood)
11	1	R	F	Specimen Role	**P** P (Patient)
17	14	O	DT	Specimen Collection Date/Time	**20161012145110** YYYYMMDDhhmmss: date and time of the specimen collection
18	14	O	DT	Specimen Received Date/Time	**20161012181002** YYYYMMDDhhmmss: date and time of the specimen reception

Example of a specimen segment sent by Yumizen H550:
SPM|1|0123456789||WB||||||P|||||20161012145110|20161012181002

4.2.5. SAC - Specimen Container Segment

The intent of this segment is to give information about the specimen position in the laboratory rack management.

4.2.5.1. From Host to Yumizen H550

SEQ	LEN	OPT	Input type	Element name	Example
0	3	R	F	Segment ID	**SAC**
10	11	O		Carrier ID	**01234^2**
	8		AN		01234: rack ID
	2		N		2: rack loading number
11	2	O	N	Position in carrier	**1** 1: rack position

Example of a specimen container segment sent by Host:
SAC|||||||||01234^2|1

4.2.5.2. From Yumizen H550 to Host

SEQ	LEN	OPT	Input type	Element name	Example
0	3	R	F	Segment ID	**SAC**
10	11	O		Carrier ID	**01234^2**
	8		AN		01234: rack ID
	2		N		2: rack loading number
11	2	O	N	Position in carrier	**1** 1: rack position

Example of a specimen container segment sent by Yumizen H550:
SAC|||||||||01234^2|1

4.2.6. ORC - Common Order Segment

The Common Order segment (ORC) is used to transmit fields that are common to all orders.

However, the Yumizen H550 manages only one order at a time.

4.2.6.1. From Host to Yumizen H550

SEQ	LEN	OPT	Input type	Element name	Example
0	3	R	F	Segment ID	**ORC**
1	2	R	CL	Order Control	**NW** NW (New order)

SEQ	LEN	OPT	Input type	Element name	Example
17	21	O	AN	Entering Organization	**^Hematology_Department**
	20				Hematology_Department: department name

Example of a common order segment sent by Host:
ORC|NW|||||||||||||||^Hematology_Department

4.2.6.2. From Yumizen H550 to Host

SEQ	LEN	OPT	Input type	Element name	Example
0	3	R	F	Segment ID	**ORC**
1	2	R	F	Order Control	**SC** SC (Status Change)
17	21	O	AN	Entering Organization	**^Hematology_Department**
	20				Hematology_Department: department name

Example of a common order segment sent by Yumizen H550:
ORC|SC|||||||||||||||^Hematology_Department

4.2.7. OBR - Observation Request Segment

In the reporting of clinical data, the OBR serves as the report header. It identifies the observation set represented by the following atomic observations. It includes the relevant ordering information when that applies. It contains many of the attributes that usually apply to all of the included observations.

The Universal Service Identifier field corresponds to any parameters or compatible panels:

CBC
DIF

4.2.7.1. From Host to Yumizen H550

SEQ	LEN	OPT	Input type	Element name	Example
0	3	R	F	Segment ID	**OBR**
1	1	O	N	Set ID - OBR	**1**
4	10	R	OL	Universal Service Identifier	**CBC** Test panel: ■ CBC ■ DIF
16	51	O	AN	Ordering Provider	**789456^MISTER PHYSICIAN**
	20				789456: physician ID
	30				MISTER PHYSICIAN: physician name

Example of an observation request segment sent by Host:
OBR|1|||CBC||||||||||789456^MISTER PHYSICIAN

4.2.7.2. From Yumizen H550 to Host

SEQ	LEN	OPT	Input type	Element name	Example
0	3	R	F	Segment ID	**OBR**
1	1	R	F	Set ID - OBR	**1**

SEQ	LEN	OPT	Input type	Element name	Example
4	10	R	OL	Universal Service Identifier	**DIF** Test panel: ■ CBC ■ DIF
16	51	O	AN	Ordering Provider	**789456^JOHN DOE**
	20				789456: physician ID
	30				JOHN DOE: physician name
22	14	R	DT	Results Rpt / Status Chng Date	**20161012161021** YYYYMMDDhhmmss: date and time of the result delivery
25	1	R	F	Result Status	**F** F (Final)
34	41	R	AN	Technician	**LoginName** LoginName: user login name

Example of an observation request segment sent by Yumizen H550:
OBR|1|||CBC||||||||||789456^MISTER PHYSICIAN|||||20161012161552|||F|||||||LoginName

4.2.8. OBX - Observation Result Segment

The OBX segment is used to transmit a single observation or observation fragment. It represents the smallest indivisible unit of a report. The OBX segment can be linked to a SPM or an OBR segment.

4.2.8.1. From Host to Yumizen H550 with the SPM Segment

SEQ	LEN	OPT	Input type	Element name	Example
0	3	R	F	Segment ID	**OBX**
1	1	O	N	Set ID - OBX	**1**
2	2	O	CL	Value Type	**NM** NM (Numeric)
3	24	O	F	Observation Identifier	**35659-2^Age at specimen collection^LN**
	10				35659-2: LOINC code
	10				Age at specimen collection: name of the transmitted observation
	2				LN: Logical Observation Identifiers Names and Codes (LOINC)
5	3	O	N	Observation Value	**35** 35: patient age
6	2	O	CL	Units	**d** Unit: ■ a (Year) ■ m (Month) ■ d (Day) ■ h (Hour)
11	1	O	F	Observation Result Status	**F** F (Final)

Example of an observation result segment sent by Host:
OBX|1|NM|35659-2^Age at specimen collection^LN||36|a|||||F

4.2.8.2. From Yumizen H550 to Host with the SPM Segment

For the Patient Age

SEQ	LEN	OPT	Input type	Element name	Example
0	3	R	F	Segment ID	**OBX**
1	1	R	F	Set ID - OBX	**1**
2	2	R	F	Value Type	**NM** NM (Numeric)
3	40	R	F	Observation Identifier	**35659-2^Age at specimen collection^LN**
	10				35659-2: LOINC code
	26				Age at specimen collection: name of the transmitted observation
	2				LN: Logical Observation Identifiers Names and Codes (LOINC)
5	3	O	N	Observation Value	**35** 35: patient age
6	2	O	CL	Units	**d** Unit: ■ a (Year) ■ m (Month) ■ d (Day) ■ h (Hour)
11	1	R	F	Observation Result Status	**F** F (Final)

Example of an observation result segment sent by Yumizen H550:
OBX|1|NM|35659-2^Age at specimen collection^LN||36|a|||||F

For the Dosage Category

SEQ	LEN	OPT	Input type	Element name	Example
0	3	R	F	Segment ID	**OBX**
1	4	R	F	Set ID - OBX	**1**
2	2	R	F	Value Type	**ST** ST (String)
3	40	R	F	Observation Identifier	**^Dosage category**
5	20	O	AN	Observation Value	**CHILD1** Patient profile: CHILD1, CHILD2, CHILD3, CHILD4, CHILD5, CHILD6, CHILD7
11	1	R	F	Observation Result Status	**F** F (Final)

Example of an observation result segment sent by Yumizen H550:
OBX|1|ST|^Dosage category||CHILD1|||||F

4.2.8.3. From Yumizen H550 to Host with the OBR Segment

For Parameter Values

SEQ	LEN	OPT	Input type	Element name	Example
0	3	R	F	Segment ID	**OBX**
1	4	R	N	Set ID - OBX	**3** Incremented by one at each OBX segment in the OBR segment, starting with 1.
2	2	R	CL	Value Type	**ST** NM (Numeric) ST (String)

SEQ	LEN	OPT	Input type	Element name	Example
3	24			Observation Identifier	**742-7^MON#^LN**
	10	O	OL		742-7: LOINC code
	10	R	OL		MON#: parameter English name
	2	R	F		LN: Logical Observation Identifiers Names and Codes (LOINC)
5	16	O	AN	Observation Value	**2.4** 2.4: parameter value
6	10	R	OL	Units	**1E03/mm3** 1E03/mm3: parameter unit
7	110	O		References Range	**xx - yy^REFERENCE_RANGE&xx - yy^CRITICAL_RANGE** One or more ranges (used to evaluate the abnormal flags of the parameter) are sent as follows: range values1^range type1&range values2^range type2&...
	20		AN		xx - yy: range values
	15		CL		REFERENCE_RANGE: range type ■ REFERENCE_RANGE ■ CRITICAL_RANGE
8	2	R	CL	Abnormal Flags	**L~** L: abnormal flag ■ L (Low) ■ H (High) ■ LL (Critically low) ■ HH (Critically high) ■ < (Off scale low) ■ > (Off scale high) ■ A (Abnormal) ■ N (Normal) ■ X (Invalid value) ■ >> (Above absolute visibility)

SEQ	LEN	OPT	Input type	Element name	Example
11	1	R	CL	Observation Result Status	**F** F: result status ■ Z (Warning: suspicion on validity, reject or out of linearity range) ■ X (Order cannot be done: invalid value or out of visibility range) ■ F (Final)
16	41	R	AN	Responsible Observer	**LoginName** LoginName: user login name
17	30	O	AN	Observation Method	Laboratory name
19	14	R	DT	Date/Time of the Analysis	**20210707172928** YYYYMMDDhhmms: date and time of the analysis

Example of an observation result segment sent by Yumizen H550:
OBX|5|NM|789-8^RBC^LN||3.92|1E06/mm3|4.20 - 6.00^REFERENCE_RANGE|>|||Z|||| LabMan_111|||20210707172928

For Reagent Traceability

SEQ	LEN	OPT	Input type	Element name	Example
0	3	R	F	Segment ID	**OBX**
1	4	R	N	Set ID - OBX	**3** Incremented by one at each OBX segment in the OBR segment, starting with 1.
2	2	R	CL	Value Type	**ED** ED (Encapsulated Data)
3	20	R	OL	Traceability Name	**LYSE** LYSE: reagent name

SEQ	LEN	OPT	Input type	Element name	Example
5	39			Traceability Information	**150520M11^20200915000000^20201115**
	15	R	AN		150520M11: reagent ID
	14	O	DT		20200915000000: loaded date/time
	8	R	D		20201115: expiration date
6	7	R	F	Traceability type	**REAGENT** REAGENT: traceability type
11	1	R	F	Observation Result Status	**F** F (Final)

Example of an observation result segment sent by Yumizen H550:
OBX|3|ED|LYSE||150520M11^20200915000000^20201115|REAGENT|||||F

4.2.9. MSA - Message Acknowledgment Segment

The MSA segment contains information sent while acknowledging another message.

4.2.9.1. From Host to Yumizen H550

SEQ	LEN	OPT	Input type	Element name	Example
0	3	R	F	Segment ID	**MSA**
1	2	R	CL	Acknowledgment Code	**AA** AA (Accept) AE (Error) AR (Reject)
2	20	R	AN	Message Control ID	**20161012145002000002** Message Control ID of the corresponding message sent by the Yumizen H550.

Example of a message sent by Host:
MSA|AA|20161012145002000002

4.2.9.2. From Yumizen H550 to Host

SEQ	LEN	OPT	Input type	Element name	Example
0	3	R	F	Segment ID	**MSA**
1	2	R	CL	Acknowledgment Code	**AA** AA (Accept) AE (Error) AR (Reject)
2	20	R	AN	Message Control ID	**20161012145002000002** Message Control ID of the corresponding message sent by the Host.

Example of a message sent by Yumizen H550:
MSA|AA|20161012145002000002

4.2.10. ERR - Error Segment

The ERR segment is used to add error comments to acknowledgment messages.

4.2.10.1. From Host to Yumizen H550

SEQ	LEN	OPT	Input type	Element name	Example
0	3	R	F	Segment ID	**ERR**
3	20	R	CL	HL7 Error Code	**203** Error code

SEQ	LEN	OPT	Input type	Element name	Example
4	1	R	CL	Severity	**E** E (Error)
8	250	O	AN	User Message	**The Version ID is not supported** Error message

Example of a message sent by Host:
ERR|||203|E||||The Version ID is not supported

4.2.10.2. From Yumizen H550 to Host

SEQ	LEN	OPT	Input type	Element name	Example
0	3	R	F	Segment ID	**ERR**
3	20	R	CL	HL7 Error Code	**101** Error code
4	1	R	CL	Severity	**E** E (Error)
8	250	O	AN	User Message	**A required field is missing from a segment** Error message

Error code

When?	Error code	Name	Context	Concerned Segment / Field
Message rejected	200	Unsupported message type	The Message Type is not supported.	MSH-9
Message rejected	201	Unsupported event code	The Event Code is not supported.	MSH-9
Message rejected	202	Unsupported processing id	The Processing ID is not supported.	MSH-11
Message rejected	203	Unsupported version id	The Version ID is not supported.	MSH-12
Message rejected	204	Unknown key identifier	The order to delete does not exist.	SPM SAC
Message rejected	205	Duplicate key identifier	The ID of the patient, order, etc., already exists.	SPM
Message rejected	206	Application record locked	The analyzer is not be able to manage the message because of an error at the application storage.	Not applicable
Message rejected	207	Application internal error	A catch-all for internal errors not explicitly covered by other codes.	Not applicable
Message error	100	Segment sequence error	The message segments were not in the proper order, or required segments are missing.	Not applicable
Message error	101	Required field missing	A required field is missing from a segment or a required component is missing in the field.	Not applicable
Message error	102	Data type error	The field contains data of the wrong input type.	Not applicable
Message error	103	Table value not found	A field (that must contain only predefined value) was compared against the corresponding table, and no match was found.	Not applicable
Message error	104	Value too long	A value exceeded the normative length.	Not applicable

Example of a message sent by Yumizen H550:
ERR|||101|E||||A required field is missing from a segment

4.3. Special Characteristics for HORIBA Medical Data

4.3.1. Data Presentation

The CBC and DIF codes correspond to the parameter English name in field OBX.3 and the units correspond to the Units field OBX.6.

4.3.1.1. Parameters

LOINC Code: Logical Observation Identifiers Names & Codes

CBC Codes	LOINC Code	Definition
RBC	789-8	Red Blood Cells
HGB	718-7	Hemoglobin Concentration
HCT	4544-3	Hematocrit
MCV	787-2	Mean Corpuscular Volume
MCH	785-6	Mean Corpuscular Hemoglobin
MCHC	786-4	Mean Corpuscular Hemoglobin Concentration
RDW-SD	21000-5	Red Distribution Width Standard Deviation
RDW-CV	788-0	Red Distribution Width
MIC	X-MIC	Microcytic Red Blood Cells percentage (versus RBC)
MAC	X-MAC	Macrocytic Red Blood Cells percentage (versus RBC)
PLT	777-3	Platelets
PCT	51637-7	Plateletcrit
PDW	51631-0	Platelets Distribution Width
MPV	32623-1	Mean Platelet Volume
P-LCC	96354-6	Platelets - Large Cell Count
P-LCR	48386-7	Platelets - Large Cell Ratio
WBC	6690-2	White Blood Cells

DIF Codes	LOINC Code	Definition
LYM#	731-0	Lymphocytes absolute value
LYM%	736-9	Lymphocytes percentage
MON#	742-7	Monocytes absolute value
MON%	5905-5	Monocytes percentage
NEU#	751-8	Neutrophils absolute value
NEU%	770-8	Neutrophils percentage
EOS#	711-2	Eosinophils absolute value
EOS%	713-8	Eosinophils percentage
BAS#	704-7	Basophils absolute value
BAS%	706-2	Basophils percentage
IMG#	53115-2	Immature Granulocytic cells absolute value
IMG%	71695-1	Immature Granulocytic cells percentage
IMM#	X-IMM#	Immature Cells Medium granulometry absolute value
IMM%	X-IMM%	Immature Cells Medium granulometry percentage
IML#	X-IML#	Immature Cells Low granulometry absolute value
IML%	X-IML%	Immature Cells Low granulometry percentage
ALY#	43743-4	Atypical Lymphocytes absolute value
ALY%	42250-1	Atypical Lymphocytes percentage
LIC#	55432-9	Large Immature Cells absolute value
LIC%	55433-7	Large Immature Cells percentage

4.3.1.2. Units

CBC Codes	SI (international)	Conventional	mmol/L	Japan	China
RBC	10^{12}/L	10^{6}/mm^3	10^{12}/L	10^{4}/µL	10^{12}/L
HGB	g/L	g/dL	mmol/L	g/dL	g/L
HCT	L/L	%	L/L	%	%
MCV	fL	fL	fL	fL	fL
MCH	pg	pg	fmol	pg	pg
MCHC	g/L	g/dL	mmol/L	g/dL	g/L
RDW-SD	fL	fL	fL	fL	fL
RDW-CV	%	%	%	%	%
MIC	%	%	%	%	%
MAC	%	%	%	%	%
PLT	10^{9}/L	10^{3}/mm^3	10^{9}/L	10^{4}/µL	10^{9}/L
PCT	%	%	%	%	%
PDW	fL	fL	fL	fL	fL
MPV	fL	fL	fL	fL	fL
P-LCC	10^{9}/L	10^{3}/mm^3	10^{9}/L	10^{4}/µL	10^{9}/L
P-LCR	%	%	%	%	%
WBC	10^{9}/L	10^{3}/mm^3	10^{9}/L	10^{2}/µL	10^{9}/L

DIF Codes	SI (international)	Conventional	mmol/L	Japan	China
LYM#	10^{9}/L	10^{3}/mm^3	10^{9}/L	10^{2}/mm^3	10^{9}/L
LYM%	%	%	%	%	%
MON#	10^{9}/L	10^{3}/mm^3	10^{9}/L	10^{2}/mm^3	10^{9}/L
MON%	%	%	%	%	%
NEU#	10^{9}/L	10^{3}/mm^3	10^{9}/L	10^{2}/mm^3	10^{9}/L
NEU%	%	%	%	%	%
EOS#	10^{9}/L	10^{3}/mm^3	10^{9}/L	10^{2}/mm^3	10^{9}/L
EOS%	%	%	%	%	%
BAS#	10^{9}/L	10^{3}/mm^3	10^{9}/L	10^{2}/mm^3	10^{9}/L
BAS%	%	%	%	%	%
IMG#	10^{9}/L	10^{3}/mm^3	10^{9}/L	10^{2}/mm^3	10^{9}/L
IMG%	%	%	%	%	%
IMM#	10^{9}/L	10^{3}/mm^3	10^{9}/L	10^{2}/mm^3	10^{9}/L
IMM%	%	%	%	%	%
IML#	10^{9}/L	10^{3}/mm^3	10^{9}/L	10^{2}/mm^3	10^{9}/L
IML%	%	%	%	%	%
ALY#	10^{9}/L	10^{3}/mm^3	10^{9}/L	10^{2}/mm^3	10^{9}/L
ALY%	%	%	%	%	%
LIC#	10^{9}/L	10^{3}/mm^3	10^{9}/L	10^{2}/mm^3	10^{9}/L
LIC%	%	%	%	%	%

4.3.2. Alarms and Pathologies

4.3.2.1. Suspicion and Reject

When a result is suspected of being abnormal or false, it is not reliable and the instrument returns a flag in field OBX.8.

4.3.2.2. Normal and Panic Ranges

Flags when result exceeds normal or panic ranges are transmitted through field OBX.8, they should be compared, to obtain a full result information, to the ranges set by the user.

4.3.2.3. Analytical Alarms

Analytical alarms and suspected pathologies are transmitted in field NTE.3.

Alarm type	Measurement type	Transmitted data	Description
D	DIFF	ANA_ERR^BUBBLE_DIFF	Optical Noise
S	DIFF	WBC_ABN_MAT^ABN_NEU	Abnormal NEU
S	DIFF	WBC_ABN_MAT^BLAST	Blasts?
S	DIFF	WBC_ABN_MAT^NEU_NOISE	Presence of a significant large population of cells located on the left-hand side of the neutrophil area
S	DIFF	WBC_ABN_MAT^NRBC	NRBC?
S	DIFF	WBC_ABN_MAT^SEP_LYM_MON	Separation threshold is not found between the lymphocytes and monocytes areas
S	DIFF	WBC_ABN_MAT^SEP_LYM_MON	Presence of a significant large population of cells located in the separation area between lymphocytes and monocytes
S	DIFF	WBC_ABN_MAT^SEP_LYM_MON WBC_ABN_MAT^SEP_MON_IMM	MON Interference
S	DIFF	WBC_ABN_MAT^SEP_LYM_NEU	Separation threshold is not found between the lymphocytes and neutrophils areas
S	DIFF	WBC_ABN_MAT^SEP_LYM_NEU	Presence of a significant large population of cells located in the separation area between lymphocytes and neutrophils
S	DIFF	WBC_ABN_MAT^SEP_MON_NEU	Separation threshold is not found between the monocytes and neutrophils areas
S	DIFF	WBC_ABN_MAT^SEP_MON_NEU	Presence of a significant large population of cells located in the separation area between monocytes and neutrophils
S	DIFF	WBC_ABN_MAT^SEP_NEU_EOS	Separation threshold is not found between the eosinophils and neutrophils areas
S	DIFF	WBC_ABN_MAT^SEP_NEU_EOS	Presence of a significant large population of cells located in the separation area between neutrophils and eosinophils
S	DIFF	WBC_ABN_MAT^SUSP_NB_ALY0 WBC_ABN_MAT^SUSP_NB_ALY1 WBC_ABN_MAT^SUSP_NB_ALY2 WBC_ABN_MAT^SUSP_NB_ALY3 WBC_ABN_MAT^SUSP_NB_ALY4 WBC_ABN_MAT^SUSP_P_ALY	Presence of a significant large population of cells in the atypical lymphocytes area
S	DIFF	WBC_ABN_MAT^SUSP_NB_IML WBC_ABN_MAT^SUSP_P_IML	Presence of a significant large population of cells in the lower part of the large immature cells area
S	DIFF	WBC_ABN_MAT^SUSP_NB_IMM WBC_ABN_MAT^SUSP_P_IMM	Presence of a significant large population of cells in the middle part of the large immature cells area
S	DIFF	WBC_ABN_MAT^SUSP_NB_LIC0 WBC_ABN_MAT^SUSP_NB_LIC1 WBC_ABN_MAT^SUSP_NB_LIC2 WBC_ABN_MAT^SUSP_P_LIC	Presence of a significant large population of cells in the large immature cells area
D	PLT	ANA_ERR^CLOG_PLT	No count
D	PLT	ANA_ERR^CLOG_PLT	Low Count
D	PLT	ANA_ERR^UNST_PLT	Unstable Count
D	PLT	ANA_ERR^UNST_PLT	Background noise
S	PLT	OOR_PLT^LOQ	Result out of LoQ (Limit of Quantitation)
S	PLT	PLT_INTERF^PLTAGR	PLT aggregates?
S	PLT	PLT_ABN_HIST^ABN_PDW	Abnormal PDW
S	PLT	PLT_ABN_HIST^SEP_RBC_PLT	RBC PLT Interference
S	PLT	WBC_ABN_MAT^NRBC_PLTAGR	PLT aggregates or NRBC?

Alarm type	Measurement type	Transmitted data	Description
D	RBC	ANA_ERR^BAL_RBC_HGB	Abnormal MCH
D	RBC	ANA_ERR^BAL_RBC_HGB	Abnormal MCHC
D	RBC	ANA_ERR^CLOG_RBC	No count
D	RBC	ANA_ERR^CLOG_RBC	Low Count
D	RBC	ANA_ERR^UNST_RBC	Unstable Count
S	RBC	OOR_PLT^LINEARITY	High linearity
S	RBC	OOR_PLT^VISIBILITY	High visibility
S	RBC	OOR_RBC^LINEARITY	High linearity
S	RBC	OOR_RBC^LOQ	Result out of LoQ (Limit of Quantitation)
S	RBC	OOR_RBC^VISIBILITY	High visibility
S	RBC	PLT_CONCENT	PLT Concentrate Mode
S	RBC	RBC_ABN_HIST^INTERF	Interference?
S	RBC	RBC_ABN_HIST^INTERF_RBC_WBC	Nucleated cells interference
D	RBC_OTH	ANA_ERR^UNST_HGB	HGB blank measurements out of the intensity ranges
D	RBC_OTH	ANA_ERR^UNST_HGB	Intensity instability during the three HGB blank measurements
D	RBC_OTH	ANA_ERR^UNST_HGB	Intensity instability during the nine HGB measurements
S	RBC_OTH	HGB_MEAS_BIAS^INTERF_HGB_WBC	HGB/WBC Interference
S	RBC_OTH	OOR_HCT^LINEARITY	High linearity
S	RBC_OTH	OOR_HCT^LOQ	Result out of LoQ (Limit of Quantitation)
S	RBC_OTH	OOR_HCT^VISIBILITY	High visibility
S	RBC_OTH	OOR_HGB^LINEARITY	High linearity
S	RBC_OTH	OOR_HGB^LOQ	Result out of LoQ (Limit of Quantitation)
S	RBC_OTH	OOR_HGB^VISIBILITY	High visibility
S	RBC_OTH	PLT_ABN_HIST^SCH_MACRO_PLT	Schistocytes/Macro PLT?
S	RBC_OTH	RBC_ABN_HIST^ABN_DISTRI	Abnormal distribution
S	RBC_OTH	RBC_ABN_HIST^DBL_POP	RBC double population
D	WBC	ANA_ERR^CLOG_DIFF	No count
D	WBC	ANA_ERR^LIGHT_BEAM_DIFF	Optical bench light error
D	WBC	ANA_ERR^UNST_DIFF	Unstable Count
D	WBC	ANA_ERR^UNST_DIFF	Low correlation between the resistive and optical measurements on the matrix
D	WBC	ANA_ERR^UNST_DIFF	No cells counted in the flowcell
S	WBC	OOR_WBC^LINEARITY	High linearity
S	WBC	OOR_WBC^LOQ	Result out of LoQ (Limit of Quantitation)
S	WBC	OOR_WBC^VISIBILITY	High visibility
S	WBC	WBC_ABN_MAT^INTERF_TNC	Counted WBC abnormally low
S	WBC	WBC_ABN_MAT^INTERF_WBC	WBC Interference
S	WBC	WBC_ABN_MAT^NEU_EOS_NOISE	Background noise
S	WBC	WBC_ABN_MAT^SEP_LYM_NRBC	Presence of a significant large population of cells located in the separation area between the background noise low and lymphocytes areas

Transmitted suspected pathologies list:

- Erythrocytosis
- Anemia
- Double RBC population?
- Macrocytosis
- Microcytosis
- Hypochromia
- Anisocytosis

- Poikilocytosis
- Cold Agglutinins
- Thrombocytosis
- Thrombocytopenia
- Macroplatelets
- PLT aggregate?
- NRBC?
- PLT aggregate or NRBC?
- Low PLT Count
- Leukocytosis
- Leukopenia
- Lymphocytosis
- Lymphopenia
- Neutrophilia
- Neutropenia
- Eosinophilia
- Monocytosis
- Basophilia
- Large Immature Cells
- Atypic Lymphocytes
- Left Shift
- Extrem Neutropenia
- Pancytopenia
- Blank Cycle
- Malaria P. falciparum?
- Malaria P. vivax?
- Dengue?

4.4. Laboratory Testing Workflow Examples

4.4.1. Host to Yumizen H550 standard test request

Message Without Optional Segments

-> <VT>

-> MSH|^~\&|Application|Facility|||20210726134529||OML^O33^OML_O33|MCID12345678|P|2.5||||||UNICODE UTF-8<CR>

-> PID|1||PID_12345^^^^PI<CR>

-> SPM|1|SID_12345||WB<CR>

-> ORC|NW<CR>

-> OBR|1|||DIF<CR>

-> <FS><CR>

Message With Optional Segments

-> <VT>

-> MSH|^~\&|Application|Facility|||20210726134529||OML^O33^OML_O33|MCID12345678|P|2.5||||||UNICODE UTF-8<CR>

-> PID|1||PID2_111^^^^PI||Lname^Fname||19480827|M<CR>

-> NTE|1||Comment for Patient with PID2_111|G<CR>

-> SPM|1|SID2_111||WB||||||P||||||20210723161718|20210726161718<CR>

-> OBX|1|NM|35659-2^Age at specimen collection^LN||72|a|||||F<CR>

-> ORC|NW|||||||||||||||^HABX_Department<CR>

-> TQ1|||||||||S<CR>

-> OBR|1|||DIF|||20210522174812|||||||||PhysicianID^PhysicianName<CR>

-> NTE|1||Comment for Sample with SID2_111|G<CR>

-> <FS><CR>

4.4.2. Yumizen H550 to Host acknowledgment

Message Accepted

-> <VT>

-> MSH|^~\&|H550^112YADH47745^3.0.0.3b|HORIBA_MEDICAL|Application|Facility|
20210726134529||ORL^O34^ORL_O34|MCID12345678|P|2.5||||||UNICODE UTF-8<CR>

-> MSA|AA|MCID12345678<CR>

-> <FS><CR>

Message Rejected

-> <VT>

-> MSH|^~\&|H550^112YADH47745^3.0.0.3b|HORIBA_MEDICAL|Application|Facility|
20210726134529||ORL^O34^ORL_O34|MCID12345678|P|2.5||||||UNICODE UTF-8<CR>

-> MSA|AR|MCID12345678<CR>

-> ERR|||201|E||||The Event Code is not supported.<CR>

-> <FS><CR>

Message Error

-> <VT>

-> MSH|^~\&|H550^112YADH47745^3.0.0.3b|HORIBA_MEDICAL|Application|Facility|
20210726134529||ORL^O34^ORL_O34|MCID12345678|P|2.5||||||UNICODE UTF-8<CR>

-> MSA|AE|MCID12345678<CR>

-> ERR|||101|E||||A required field is missing from a segment<CR>

-> <FS><CR>

4.4.3. Yumizen H550 to Host standard result

-> <VT>

-> MSH|^~\&|H550^112YADH47745^3.0.0.3a|HORIBA_MEDICAL|Application|Facility|
20210707180555||OUL^R22^OUL_R22|21070718072400001|P|2.5||||||UNICODE UTF-8<CR>

-> PID|1||0565^^^^PI||NAME^FIRSTNAME||19900518000000|M<CR>

-> SPM|1|0566||WB<CR>

-> OBX|1|NM|35659-2^Age at specimen collection^LN||31|a|||||F<CR>

-> OBX|2|ST|^Dosage category||MAN|||||F<CR>

-> SAC|||||||||12345R|5<CR>

-> OBR|1|||DIF|||||||||||||||||20210707172907|||F|||||||||LabMan_111<CR>

-> ORC|UX|||||||||||||20210707172907||^echotomogr<CR>

-> NTE|1|L|
P^^REAGENT_EXPIRED~S^PLT^PLT_ABN_HIST^SEP_RBC_PLT~P^^LARGE_IMMATURE_CELL
S~P^^DENGUE|I<CR>

-> NTE|2|L|This is a comment 567 ?|G<CR>

-> OBX|1|ED|CLEANER||150206I1*^20200525000000^20200725|REAGENT|||||F<CR>

-> OBX|2|ED|DILUENT||171108H1*^20180227000000^20180427|REAGENT|||||F<CR>

-> OBX|3|ED|LYSE||150520M11^20200915000000^20201115|REAGENT|||||F<CR>

-> OBX|4|NM|6690-2^WBC^LN||9.45|1E03/mm3|3.50 - 10.00^REFERENCE_RANGE|N|||F|||||
LabMan_111|||20210707172907<CR>

-> OBX|5|NM|789-8^RBC^LN||3.61|1E06/mm3|4.20 - 6.00^REFERENCE_RANGE|L|||F|||||
LabMan_111|||20210707172907<CR>

-> OBX|6|NM|718-7^HGB^LN||10.9|g/dL|13.0 - 17.0^REFERENCE_RANGE|L|||F|||||LabMan_111|||
20210707172907<CR>

-> OBX|7|NM|4544-3^HCT^LN||41.1|%|40.0 - 54.0^REFERENCE_RANGE|N|||F|||||LabMan_111|||
20210707172907<CR>

-> OBX|8|NM|787-2^MCV^LN||99.7|fL|80.0 - 100.0^REFERENCE_RANGE|N|||F|||||LabMan_111|||
20210707172907<CR>

-> OBX|9|NM|785-6^MCH^LN||28.7|pg|27.0 - 34.0^REFERENCE_RANGE|N|||F|||||LabMan_111|||
20210707172907<CR>

-> OBX|10|NM|786-4^MCHC^LN||31.7|g/dL|32.0 - 35.0^REFERENCE_RANGE|L|||F|||||
LabMan_111|||20210707172907<CR>

-> OBX|11|NM|788-0^RDW-CV^LN||9.7|%|12.0 - 18.0^REFERENCE_RANGE|LL|||F|||||
LabMan_111|||20210707172907<CR>

-> OBX|12|NM|21000-5^RDW-SD^LN||38.1|fL|37.0 - 56.0^REFERENCE_RANGE|N|||F|||||
LabMan_111|||20210707172907<CR>

-> OBX|13|NM|777-3^PLT^LN||218|1E03/mm3|150 - 400^REFERENCE_RANGE|N|||Z|||||
LabMan_111|||20210707172907<CR>

-> OBX|14|NM|51631-0^PDW^LN||16.8|fL|11.0 - 20.0^REFERENCE_RANGE|N|||Z|||||LabMan_111|||
20210707172907<CR>

-> OBX|15|NM|51637-7^PCT^LN||0.327|%|0.150 - 0.400^REFERENCE_RANGE|N|||Z|||||
LabMan_111|||20210707172907<CR>

-> OBX|16|NM|32623-1^MPV^LN||9.2|fL|7.4 - 12.0^REFERENCE_RANGE|N|||Z|||||LabMan_111|||
20210707172907<CR>

-> OBX|17|NM|96354-6^P-LCC^LN||0|1E03/mm3|44 - 140^REFERENCE_RANGE|L|||Z|||||
LabMan_111|||20210707172907<CR>

-> OBX|18|NM|48386-7^P-LCR^LN||0.1|%|18.0 - 50.0^REFERENCE_RANGE|L|||Z|||||LabMan_111|||
20210707172907<CR>

-> OBX|19|NM|731-0^LYM#^LN||3.77|1E03/mm3|1.00 - 4.00^REFERENCE_RANGE|N|||F|||||
LabMan_111|||20210707172907<CR>

-> OBX|20|NM|736-9^LYM%^LN||39.4|%|15.0 - 45.0^REFERENCE_RANGE|N|||F|||||LabMan_111|||
20210707172907<CR>

-> OBX|21|NM|742-7^MON#^LN||0.27|1E03/mm3|0.20 - 0.80^REFERENCE_RANGE|N|||F|||||
LabMan_111|||20210707172907<CR>

-> OBX|22|NM|5905-5^MON%^LN||2.8|%|4.0 - 13.0^REFERENCE_RANGE|L|||F|||||LabMan_111|||
20210707172907<CR>

-> OBX|23|NM|751-8^NEU#^LN||5.14|1E03/mm3|1.50 - 7.00^REFERENCE_RANGE|N|||F|||||
LabMan_111|||20210707172907<CR>

-> OBX|24|NM|770-8^NEU%^LN||55.0|%|40.0 - 75.0^REFERENCE_RANGE|N|||F|||||LabMan_111|||
20210707172907<CR>

-> OBX|25|NM|711-2^EOS#^LN||0.25|1E03/mm3|0.00 - 0.50^REFERENCE_RANGE|N|||F|||||
LabMan_111|||20210707172907<CR>

-> OBX|26|NM|713-8^EOS%^LN||2.6|%|0.5 - 7.0^REFERENCE_RANGE|N|||F|||||LabMan_111|||
20210707172907<CR>

-> OBX|27|NM|704-7^BAS#^LN||0.02|1E03/mm3|0.00 - 0.20^REFERENCE_RANGE|N|||F|||||
LabMan_111|||20210707172907<CR>

-> OBX|28|NM|706-2^BAS%^LN||0.2|%|0.0 - 2.0^REFERENCE_RANGE|N|||F|||||LabMan_111|||
20210707172907<CR>

-> OBX|29|NM|55432-9^LIC#^LN||0.30|1E03/mm3|0.00 - 0.20^REFERENCE_RANGE|H|||F|||||
LabMan_111|||20210707172907<CR>

-> OBX|30|NM|55433-7^LIC%^LN||3.2|%|0.0 - 3.0^REFERENCE_RANGE|HH|||F|||||LabMan_111|||
20210707172907<CR>

-> OBX|31|NM|43743-4^ALY#^LN||0.28|1E03/mm3|0.00 - 99999.00^REFERENCE_RANGE|N|||F|||||
LabMan_111|||20210707172907<CR>

-> OBX|32|NM|42250-1^ALY%^LN||3.0|%|0.0 - 100.0^REFERENCE_RANGE|N|||F|||||LabMan_111|||
20210707172907<CR>

-> OBX|33|NM|X-MIC^MIC^LN||0.3|%|0.0 - 20.0^REFERENCE_RANGE|N|||F|||||LabMan_111|||
20210707172907<CR>

-> OBX|34|NM|X-MAC^MAC^LN||0.2|%|2.0 - 10.0^REFERENCE_RANGE|L|||F|||||LabMan_111|||
20210707172907<CR>

-> OBX|35|NM|X-IMM#^IMM#^LN||0.28|1E03/mm3|0.00 - 0.10^REFERENCE_RANGE|H|||F|||||
LabMan_111|||20210707172907<CR>

-> OBX|36|NM|X-IML#^IML#^LN||0.18|1E03/mm3|0.00 - 0.05^REFERENCE_RANGE|H|||F|||||
LabMan_111|||20210707172907<CR>

-> OBX|37|NM|53115-2^IMG#^LN||0.01|1E03/mm3|0.00 - 100.00^REFERENCE_RANGE|N|||F|||||
LabMan_111|||20210707172907<CR>

-> OBX|38|NM|X-IMM%^IMM%^LN||3.0|%|0.0 - 0.5^REFERENCE_RANGE|HH|||F|||||LabMan_111|||
20210707172907<CR>

-> OBX|39|NM|X-IML%^IML%^LN||1.9|%|0.0 - 0.2^REFERENCE_RANGE|H|||F|||||LabMan_111|||
20210707172907<CR>

-> OBX|40|NM|71695-1^IMG%^LN||0.1|%|0.0 - 2.0^REFERENCE_RANGE|N|||F|||||LabMan_111|||
20210707172907<CR>

4.4.4. Host to Yumizen H550 acknowledgment

-> <VT>

-> MSH|^~\&|Application|Facility|H550^112YADH47745^3.0.0.3b|HORIBA_MEDICAL|
20210726193805||ACK^R22^ACK_R22|21072618365400001|P|2.5<CR>

-> MSA|AA|21072618365400001<CR>

4.5. References

Title	Version	Date	Author
HL7 Messaging Standard	2.5	2013	HL7 Int.
IHE Laboratory (LAB) Technical Framework	5.0	2013	IHE Int.

5. Appendices

5.1. Error Management

Error Messages Displayed on the Instrument

Message	Definition
H01	Invalid data at order reception
H02	Contextual error at order reception
H03	Host connection error
H04	Communication protocol error (low level) Only for ASTM
H05	Communication protocol error (high level)
H06	Communication protocol error at sending
H07	Host software error

Low Level Protocol Errors (Only for ASTM)

Message	Definition
LL_ENQ_ERROR	Establishment phase conflict ENQ - ENQ
LL_NAK_ERROR	NAK control character received from Host
LL_FRAME_STRUCT_ERROR	Invalid frame structure
LL_LENGTH_ERROR	Invalid frame length
LL_FRAME_NUMBER_ERROR	Invalid frame number
LL_CHECKSUM_ERROR	Invalid frame checksum
LL_UNEXPECTED_CTRL_ERROR	Invalid control character received while expecting a specific one inside a set
LL_RESPONSE_TIMEOUT_ERROR	Timeout occurs while expecting a control character from Host
LL_FRAME_TIMEOUT_ERROR	Timeout occurs while expecting a data frame or a frame control character (EOT) from Host

High Level Protocol Errors

Message	Definition
HL_UNEXPECTED_RECORD_ERROR	An unexpected (at wrong place in the frame) record has been received and ignored
HL_NOT_MANAGED_RECORD_ERROR	A record not manageable has been received and ignored
HL_IGNORED_RECORD_ERROR	A record has been ignored (following a previous error)
HL_IGNORED_MESSAGE_ERROR	A message has been ignored due to: ■ an erroneous field value in a mandatory segment ■ a mandatory segment absent Only for HL7
HL_BYPASSED_RECORD_ERROR	A record of upper level has been ignored (following a previous error)
HL_TERMINATOR_MISSING_ERROR	The Terminator record of a message is missing Only for ASTM
HL_INVALID_ORDER_RECORD_ERROR	Order in response to a query is invalid, record ignored
HL_INVALID_FIELD_ERROR	Invalid field type or value, mandatory field absent, record ignored
HL_FIELD_LENGTH_ERROR	Invalid field length, field truncated or record ignored
HL_FIELD_REPEAT_DELIMITER_ERROR	Not allowed field repeat delimiter, record ignored
HL_FIELD_COMPONENT_DELIMITER_ERROR	Not allowed field component delimiter, field truncated