labXpert

COMMUNICATION PROTOCOL

Table of Contents

Revision History

Protocol Ver.	Manual Version	ECR	Position	Revision Description	Revised by
1.0	1.0	/	/	Initial release The communication protocol for the labXpert software is compatible with the BC-6800/6600 communication protocol and is therefore prepared on the basis of the BC-6800 communication protocol (H-046-004436-00-9.0 BC-6800_BC-6600 通信协议（英文）, 9.0 version). The new information added to the BC-6800/6600 protocol include: ● Communication protocols for the CRP parameters and CRP parameter-related flags ● Support for the CRP analysis mode in the Bidirectional LIS/HIS Request Response ● New mark for reviewed samples.	Mao Rongrong
2.0	/	EIV006	Appendix C, Table 19, Table 21	Added the following information: Communication protocols for new parameters, flags, and the WNB scattergram in BC-6800Plus series analyzers In the Request Response Message, added the support for SMST mode.	Mao Rongrong
3.0	/	EIV008	Appendix C, table 19	Added the following items in the Appendix C, Data type and coding system: “Review results” (code 09999), “aspiration abnormal” (code 12105)	Mao Rongrong

4.0	2.0	EJ319	Appendix C table 29, table 31 Chapter 1, section 1.5 Chapter 2,3, 4 Appendix A Appendix F Appendix G	Added the following based on the previous version: 1. Modify the code 12227-5(WBC_CORRECT), change its name to 12227-5(WBC_CORRECT) 2. Add new modes: CR/PLT-8X, CDR/PLT-8X 3. Added the information of the new parameters and scattergrams for BC-6800Plus 4. Add the code for genders 5. Add a new section 1.5 6. Add Appendix F Enabling Guest Account 7. Add new Chapter 4: simplified communication protocol for labXpert 8. Add Appendix G JSON standard 9. Update figure, table, and TOC lists.	Mao Rongrong
5.0	3.0	EJ340	Appendix C, table 27, table 28	1. Added “Validation Rule details” in table 27; 2. In table 28, change the parameter unit “um3” to “um\S\3”	Li Jinqiang Xu Baozhong Mao Rongrong
6.0	4.0	EJ362	Appendix C, table 27 Chapter 2 Chapter 3 Chapter 4	Add the new flag information, delete the useless flag information, modify the wrong flag information, to make them be consistent with the software interface. New version protocol 6.0: 1. “Table 27 Data Type and Coding System”: analyzer corrects FR-CRP by default, LIS, LIS tests ID 2. Support LIS requests sample skipped for analysis. 3. Differentiate the transmission mode for Chinese patient names from that for the non-Chinese names	Xu Baozhong Zhou Xinbiao Chao Xuebin Mao Rongrong
7.0	/	EKE004	/	1. New version protocol 7.0: add “TNC-B” in 2. Update MREz protocol to version 2.0: add LisTestID in Table 16, add DefaultCrp, TNC-B in Table 18, update example in 4.2.5.2.	Xu Baozhong

8.0	5.0	EIE014	Appendix C, table 28 Chapter 2 Chapter 3 Chapter 4 Table 15, 17, 19, 22, 23, 30	1. Added new ORC messages in section 2.5.7 2. Added sample messages for the new “LIS receiving samples by SN” function in section 2.6.6 3. Add chapter 2.6.1.4, 2.6.1.5 4. Add chapter 3.6.1.5 5. Added information about the communication of A1C results in 4.2.5.2 6. Appendix C, added glycohemoglobin test parameters, flags, chromatographs, chromatograph peaks and the related coding rule 7. Add new table 22 8. Table 15, added chromatograph messages, chromatograph peak messages 9. Table 17, added information about the A1C parameters 10. Table 19, added glycohemoglobin test flags 11. Section 3.6.2.2, added CRL-1, CRL-2 12. Table 23, added CRL-1, CRL-2 13. Table 30, added new test mode A1C, “STANDARD”, “EXTEND”, added new control levels CRL-1, CRL-2 14. Table 12, added HbA1c Mode Group	Liuping Chao Xuebin

9.0	6.0	EKE007	Appendix C, table 29, table 32 Chapter 2 Chapter 3 Chapter 4	1. New table 32; 2. Revised table 29; Adding Hema analyzer WBC graph data coding field; Adding Hema analyzer WBC graph cell type coding fields Adding cell morphology analysis results codes; Adding expert tips and customized parameter codes 3. Revising the message examples in Chapter 2, 3 and 4, adding Hema analyzer WBC graph communication message examples 4. Chapter 2, adding NTE field to HL7 protocol 5. Chapter 3, adding C filed to ASTM protocol 6. Chapter 2, adding OBR-5 filed to HL7 protocol 7. Chapter 3, adding O-6 field to ASTM protocol 8. Chapter 4, Simplified Communication Protocol, add communication protocol for STAT samples	Li Jinqiang Xu Baozhong Zhou Xinbiao Mao Rongrong
11.0	7.0	EKF009	Section 1.5; Chapter 2, table 7, section 2.6 Section 3.6.4 Appendix C table 29, table 31	1. Added morphology analyzer-related information to the “shared folder” communication section. 2. Table 7: add positive flag P 3. Table 7: add new symbols for reference range: <= 4. 2.6.7: add Mindray morphology analyzer LIS response rules and examples 5. 3.6.4.3: add Mindray morphology analyzer LIS response rules and examples 6. Table 29: Add coding system for morphology analzyers 7. Table 31: add test panels for morphology analyzer 8. Appendix C, add Table 34	Liu Longhua

12.0	8.0	EKE018	Appendix C, table 29, table 30 Chapter 3 Chapter 4	1. Table 29: add definitions of new parameters, flags and graphs for BC-700 series; 2. Table 30: add new parameter units defintions for BC-700 series; 3. Section 3.6.2.3, added parameters and graphs for BC-700 series; 4. Table 13: add new test panels of BC-700 series	Wang Qiuyang
13.0	8.0	EKE018	Appendix C table 29; Section 2.6.1.7	1. Added flags of Mindray morphology analyzers 2. Added flag message examples of Mindray morphology analyzers	Liu Longhua
14.0	8.0	EKE018	Chapter 4, table 20 Appendix C, table 29	1. Table 20: added new flags: “sampling probe clogged”, “new SAA latex, no calibrate”; change “new latex, no calibrate” to “new CRP latex, no calibrate”. 2. Table 29: added new flags: “sampling probe clogged”, “SAA new latex, no calibrate”; change “new latex, no calibrate” to “CRP new latex, no calibrate”.	Wang Qiuyang

Chapter 1Connection Control

1.1 labXpert as TCP Server

The TCP server starts monitoring after the labXpert is started up or the communication setup is modified. It can accept one LIS/HIS connection which sustains until message transmission fails, the communication setup is modified or the labXpert is closed.

1.2 labXpert as TCP Client

After the labXpert starts up or communication setup is modified, the system will try to reconnect to LIS/HIS once. If the connection is not established in 10s, it is regarded as failed. But the connection failing is not reported as an error on the software screen, and the system will try to reconnect until the communication is established.

If the connection is not built up, the TCP client will try to reconnect when there is a communication call. If the connection is not established in 10s, a communication error will be reported and the communication will be canceled.

If the connection is established successfully, it will sustain until the communication setup is modified or the labXpert is closed.

1.3 HL7 Communication between Network Interfaces

As for one-way LIS/HIS communication messages like the analysis results of blood or control samples, you can select synchronous response in HL7 protocol, which means after the labXpert sends a message, it will send the next message after receiving the response from LIS/HIS or after response time-out. The 15ID protocol does not support synchronous response.

While saving worklist, or run a count without worklist, the labXpert initiates a LIS/HIS search request, and LIS/HIS responds to the request in 10s. If the response is received successfully, the labXpert will save the information or run the count in the mode acquired from LIS/HIS.

1.4 ASTM Communication

ASTM is different from the other two protocols as it defines an independent communication control protocol based on TCP/IP and serial interface communication. In the ASTM protocol, the data transmission process has two layers: message and data frame. See Chapter 4 for details. All the messages need to be transmitted in the form of data frame, so the the smallest unit of the communication control defined in this section is frame.

Note: in communication between network interfaces, there are more one-byte control characters (like ENQ, ACK, NAK, EOT, etc.). To reduce the responding time, it is suggested to disable the "NoDelay" function.

1.4.1 Sending Message

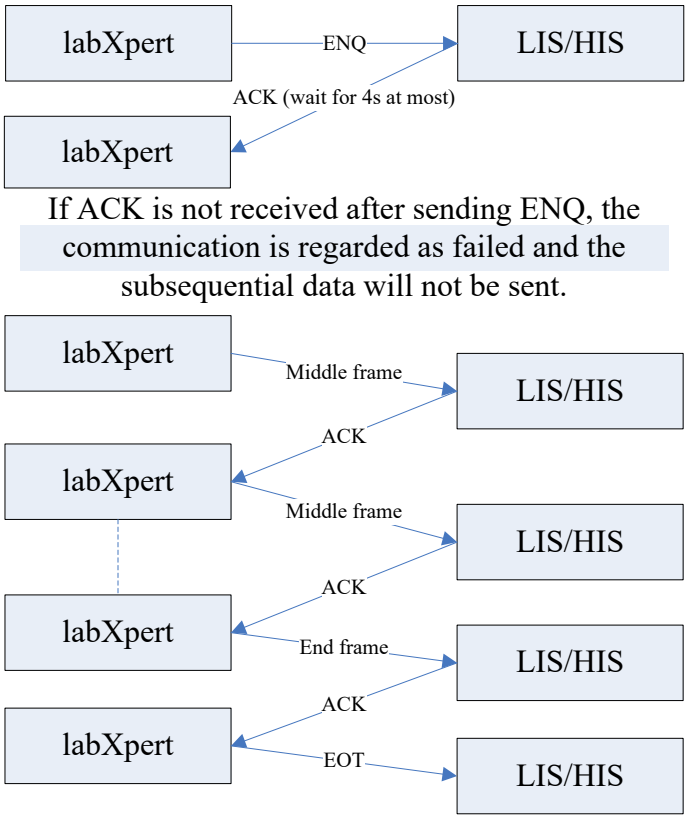


Figure 1 labXpert transmitting data to LIS/HIS

Before data transmission, the sender needs to send ENQ to the receiver asking for establishing a connection. The receiver will send back ACK if it is ready to receive data; otherwise it will send NAK. When the sender receives ACK, it will get ready to send data since the connection is successfully established; otherwise, it will end the data transmission. Figure 1 shows the complete process of message transmission from labXpert to LIS/HIS.

When labXpert receives ACK, it starts sending data frames as the connection is established; if the response is NAK, it means the connection is not established and the communication is failed.

After the connection between labXpert and LIS/HIS is established successfully, the labXpert starts sending data frames to LIS/HIS, and LIS/HIS responds with ACK if it is ready to receive data, or with NAK if it wants labXpert to resend the data. The EOT control character will be sent after the communication is finished.

For transmission from LIS/HIS to labXpert, the roles of the sender and receiver reverses. LIS/HIS sends ENQ asking for establishing a connection, sends data frames after receiving ACK response, and then waits for the ACK message for successful transmission.

A transmission refers to the transmission of one message (see Chapter 2 for message definitions). The data frames of a message consist of middle frame(s) and end frame. The end frame refers to the last frame of the message; while the middle frame refers to other data frame(s) except the end frame.

The response waiting time is 4 seconds. If there is no response within 4s, the connection establishing is regarded as failed, and the communication ends.

1.4.2 Resending Message

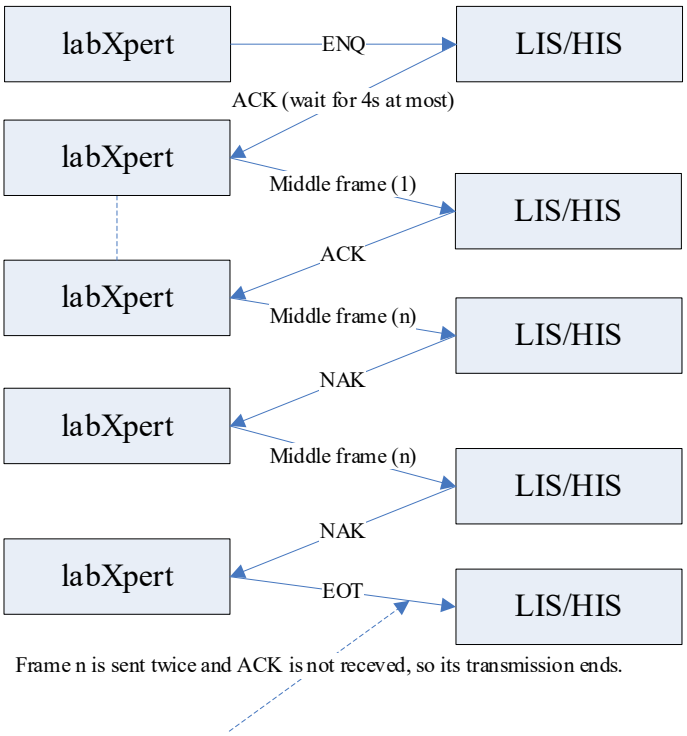


Figure 2 Re-sending data

In the process of data transmission, if LIS/HIS requires a data resending since there is error in the received data frames or for other reasons, it will respond with NAK; if the sender still receives NAK after resending the same data frame, the transmission will be regarded as failed and it will end.

1.4.3 2-Way LIS/HIS

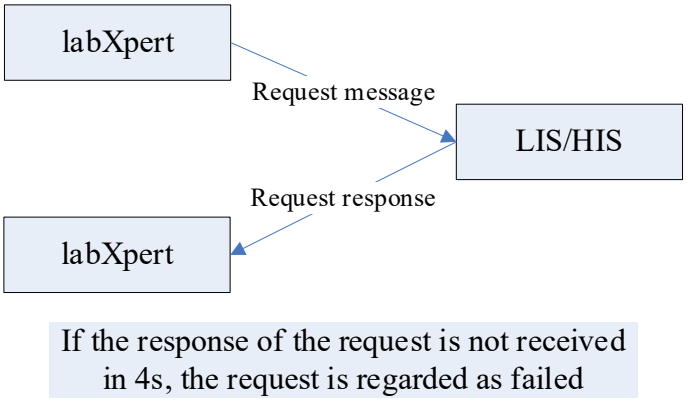


Figure 3 2-way transmission between labXpert and LIS/HIS

First, the labXpert sends a request message to LIS/HIS which is the same as that in the "sending message" process; and then it waits the LIS/HIS to respond (See Chapter 2 for

message definitions) for 4s. The LIS/HIS responding process is the same as as that in the "sending message" process.

1.5 Communication with Windows Shared Folders

1. The Mindray labXpert exchanges files with the LIS through Windows shared folders.
    - The shared folders are located on a PC that serves as the labXpert server or on a PC that does not serve as the labXpert server. Two folders are used respectively to send results and receive work orders. The communication setting interface is as follows:

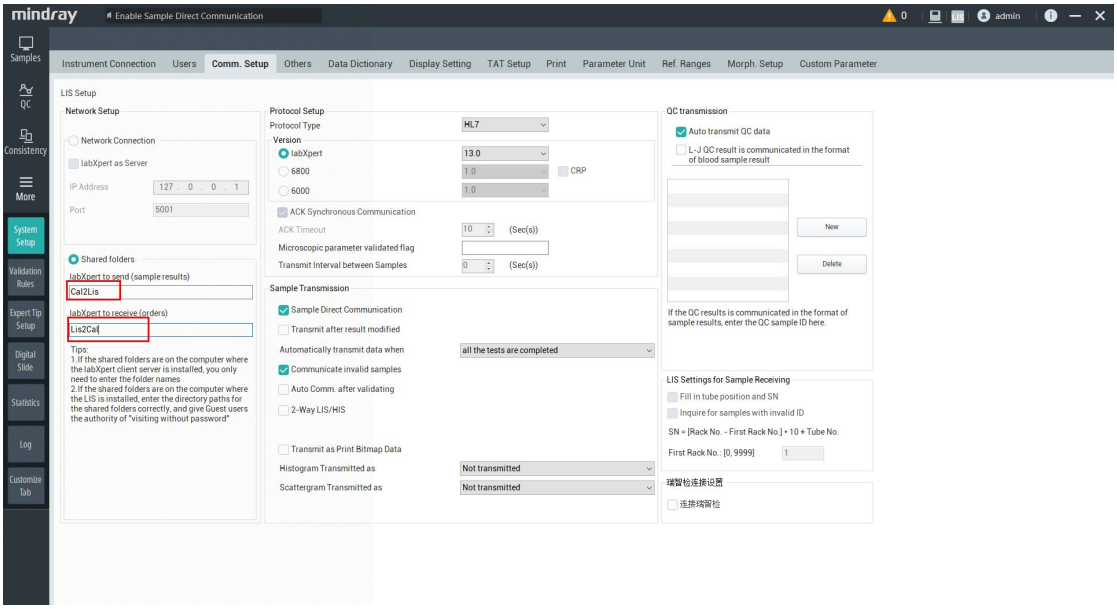


Figure 4 Communication Settings

If the folders are located on a PC that serves as the labXpert server, the folders are set as follows:

Folder name	Description
Cal2Lis	1. Used to store the result files sent from labXpert to the LIS. 2. The path for the LIS to read results is \\IP address of the PC installed with labXpert server\Cal2Lis
Lis2Cal	1. Used to store the sample reception work orders related to the labXpert only. 2. The path for the LIS to read results is \\IP address of the PC installed with labXpert server\ Lis2Cal

The path for the LIS to write the work orders is \\IP address of the PC installed with labXpert server end\Cal2Lis.

If the folders are located on a PC that serves as the labXpert server, the folders are set as follows:

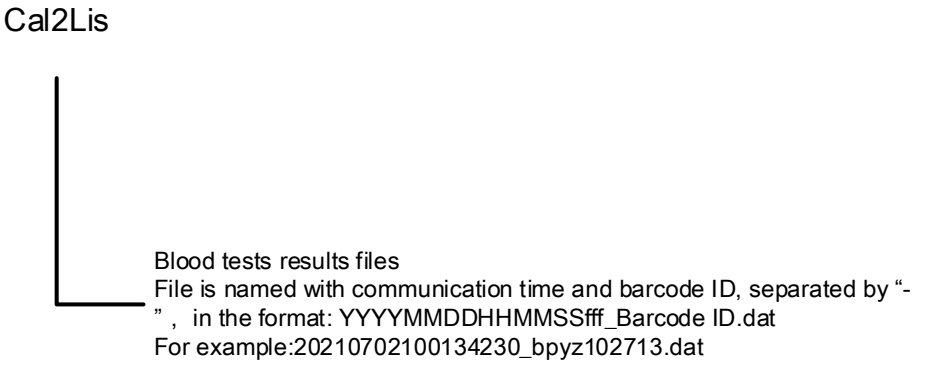
Folder name	Description
\\IPaddress\Cal2Lis	Used to store the result files sent from labXpert to the LIS.
\\IPaddress\ Lis2Cal	Used to store the sample reception work orders related to the labXpert only.

The IP address here refers to the IP address of the PC where the shared folders are located, and can also be set to the host name.

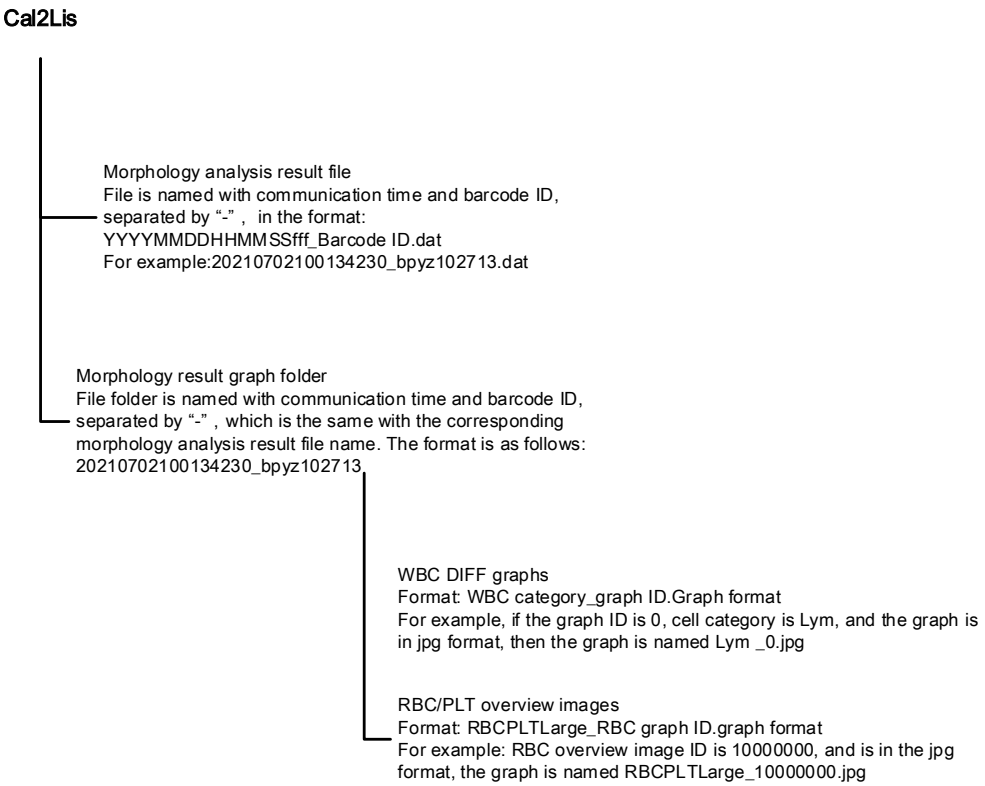
2. File format and interaction process

1） File hierarchy

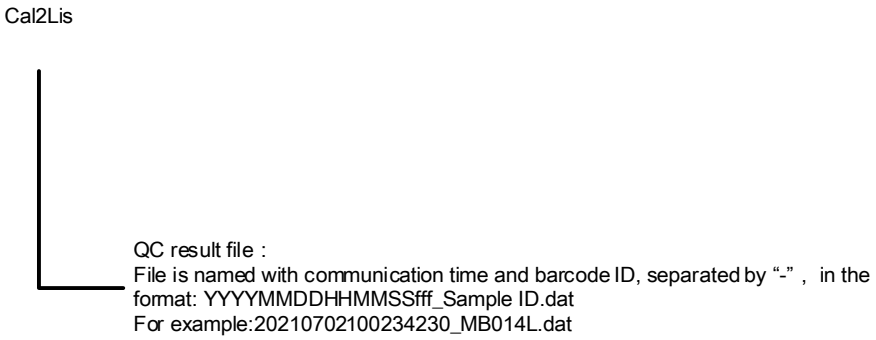
- File hierarchy for routine blood tests samples



- File hierarchy for morphology analysis samples



- File hierarchy for QC tests samples



Sample/QC results from labXpert to LIS

- Writing in graphs: for Mindray morphology analyzers, a sub-folder will be created and into which the graphs will be written. This process is not used for routine blood tests.

Naming standard for sub-folders: YYYYMMDDHHMMSSfff_barcode ID (or sample ID), refer to the file hierarchy for morphology analysis results.

- Writing in files: Mindray system writes the files into the folders, and ensures no repeated folder names.
- Naming standard for-folders: YYYYMMDDHHMMSSfff_barcode ID (or sample ID).dat
- File reading: After labXpert writes in the file, LIS reads the file within 3s, and then deletes the file after reading the file.

When receiving blood test results (which has no graph folder), LIS directly reads the results. When receiving morphology analysis results, LIS reads the graphs in the graph folder; and then the graph folder will be deleted.

- The interaction process as follows:

Figure 5 Blood test results transmission

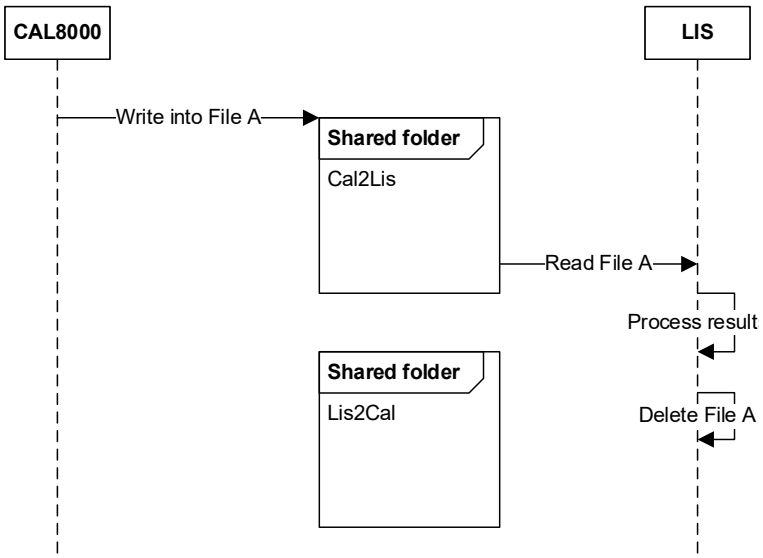
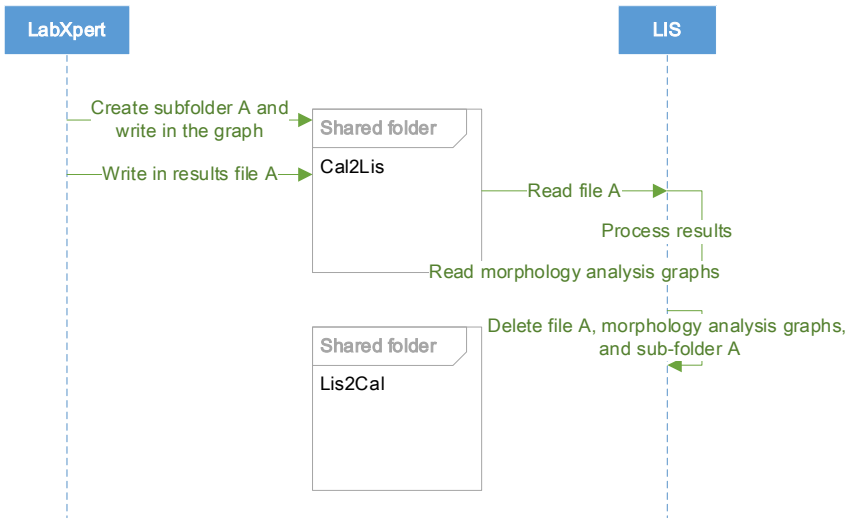


Figure 6 Mindray morphology analysis results transmission



- Sample results Demo file
- MSH|^~\&|LabXpert|Mindray|||20160729112109||ORU^R01|1|P|2.3.1||||||UNICODE
  PID|1||^^^^MR
  PV1|1
  OBR|1||14030406305|00001^Automated Count^99MRC|||20140304181721||||||||||||||20160729112109||HM|Validated|||admin||||admin
  OBX|1|IS|08001^Take Mode^99MRC||A||||||F
  OBX|2|IS|08002^Blood Mode^99MRC||W||||||F
  OBX|3|IS|08003^Test Mode^99MRC||CBC+DIFF||||||F
  OBX|4|IS|01002^Ref Group^99MRC||通用||||||F
  OBX|5|IS|05007^Project Type^99MRC||BL||||||F
  OBX|6|ST|01012^Shelf No^99MRC||46||||||F
  OBX|7|ST|01013^Tube No^99MRC||10||||||F
  OBX|8|NM|6690-2^WBC^LN||4.21|10*9/L|4.00-10.00|N|||F
  OBX|9|NM|704-7^BAS#^LN||0.02|10*9/L|0.00-0.10|N|||F
  OBX|10|NM|706-2^BAS%^LN||0.4|%|0.0-1.0|N|||F
  OBX|11|NM|751-8^NEU#^LN||2.54|10*9/L|2.00-7.00|N|||F
  OBX|12|NM|770-8^NEU%^LN||60.3|%|50.0-70.0|N|||F
  OBX|13|NM|711-2^EOS#^LN||0.19|10*9/L|0.02-0.50|N|||F
  OBX|14|NM|713-8^EOS%^LN||4.6|%|0.5-5.0|N|||F
  OBX|15|NM|731-0^LYM#^LN||1.19|10*9/L|0.80-4.00|N|||F
  OBX|16|NM|736-9^LYM%^LN||28.3|%|20.0-40.0|N|||F
  OBX|17|NM|742-7^MON#^LN||0.27|10*9/L|0.12-1.20|N|||F
  OBX|18|NM|5905-5^MON%^LN||6.4|%|3.0-12.0|N|||F
  OBX|19|NM|789-8^RBC^LN||5.55|10*12/L|3.50-5.50|H~N|||F
  OBX|20|NM|718-7^HGB^LN||160|g/L|110-160|N|||F
  OBX|21|NM|787-2^MCV^LN||87.4|fL|80.0-100.0|N|||F

OBX|22|NM|785-6^MCH^LN||28.7|pg|27.0-34.0|N|||F
OBX|23|NM|786-4^MCHC^LN||329|g/L|320-360|N|||F
OBX|24|NM|788-0^RDW-CV^LN||13.6|%|11.0-16.0|N|||F
OBX|25|NM|21000-5^RDW-SD^LN||41.9|fL|35.0-56.0|N|||F
OBX|26|NM|4544-3^HCT^LN||48.6|%|37.0-54.0|N|||F
OBX|27|NM|777-3^PLT^LN||161|10*9/L|100-300|N|||F
OBX|28|NM|32623-1^MPV^LN||10.4|fL|6.5-12.0|N|||F
OBX|29|NM|32207-3^PDW^LN||16.7||15.0-17.0|N|||F
OBX|30|NM|10002^PCT^99MRC||0.168|%|0.108-0.282|N|||F
OBX|31|NM|10014^PLCR^99MRC||31.3|%|11.0-45.0|N|||F
OBX|32|NM|10013^PLCC^99MRC||50|10*9/L|30-90|N|||F
OBX|33|NM|51584-1^IMG#^LN||0.00|10*9/L||N|||F
OBX|34|NM|38518-7^IMG%^LN||0.1|%||N|||F
OBX|35|NM|10020^HFC#^99MRC||0.01|10*9/L||N|||F
OBX|36|NM|10021^HFC%^99MRC||0.2|%||N|||F
OBX|37|NM|10022^PLT-I^99MRC||161|10*9/L||N|||F
OBX|38|NM|10024^WBC-D^99MRC||4.23|10*9/L||N|||F
OBX|39|NM|10025^WBC-B^99MRC||4.21|10*9/L||N|||F
OBX|40|NM|12227-5^WBC^LN||4.21|10*9/L|4.00-10.00|N|||F
OBX|41|NM|15203^WBC DIFF Scattergram. Meta len^99MRC||1||||||F
OBX|42|NM|15205^WBC DIFF Scattergram. Fsc dimension^99MRC||128||||||F
OBX|43|NM|15206^WBC DIFF Scattergram. Ssc dimension^99MRC||128||||||F
OBX|44|NM|15207^WBC DIFF Scattergram. FL dimension^99MRC||128||||||F
OBX|45|NM|15208^WBC DIFF Scattergram. FSC-LOG dimension^99MRC||128||||||F
OBX|46|NM|15253^Baso Scattergram. Meta Len^99MRC||1||||||F
OBX|47|NM|15255^Baso Scattergram. Fsc dimension^99MRC||128||||||F
OBX|48|NM|15256^Baso Scattergram. Ssc dimension^99MRC||128||||||F
OBX|49|NM|15257^Baso Scattergram. FL dimension^99MRC||128||||||F
OBX|50|NM|15258^Baso Scattergram. FSC-LOG dimension^99MRC||128||||||F
OBX|51|NM|15307^RET Scattergram. Meta Len^99MRC||1||||||F
OBX|52|NM|15303^RET Scattergram. Fsc dimension^99MRC||128||||||F
OBX|53|NM|15304^RET Scattergram. Ssc dimension^99MRC||128||||||F
OBX|54|NM|15305^RET Scattergram. FL dimension^99MRC||128||||||F
OBX|55|NM|15308^RET Scattergram FSC-LOG dimension^99MRC||128||||||F
OBX|56|NM|15355^NRBC Scattergram. Meta Len^99MRC||1||||||F
OBX|57|NM|15351^NRBC Scattergram. Fsc dimension^99MRC||128||||||F
OBX|58|NM|15352^NRBC Scattergram. Ssc dimension^99MRC||128||||||F
OBX|59|NM|15353^NRBC Scattergram. FL dimension^99MRC||128||||||F
OBX|60|NM|15356^NRBC Scattergram FSC-LOG dimension^99MRC||128||||||F

- QC results example:
- MSH|^~\&|LabXpert|Mindray|||20160729112955||ORU^R01|3|Q|2.3.1||||||UNICODE
  PID|1||MB014L||||20140310000000

OBR|1||1|00003^LJ QCR^99MRC|||20140301161246|||||||||||||||HM|||||||admin
OBX|1|IS|05001^Qc Level^99MRC||L||||||F
OBX|2|IS|08001^Take Mode^99MRC||A||||||F
OBX|3|IS|08002^Blood Mode^99MRC||W||||||F
OBX|4|IS|08003^Test Mode^99MRC||CBC+DIFF||||||F
OBX|5|NM|6690-2^WBC^LN||3.66|10*9/L|2.79-4.39|N|||F
OBX|6|NM|704-7^BAS#^LN||0.05|10*9/L|0.00-0.14|N|||F
OBX|7|NM|706-2^BAS%^LN||1.4|%|0.2-2.2|N|||F
OBX|8|NM|751-8^NEU#^LN||2.04|10*9/L|1.52-2.52|N|||F
OBX|9|NM|770-8^NEU%^LN||55.8|%|44.0-68.0|N|||F
OBX|10|NM|711-2^EOS#^LN||0.91|10*9/L|0.59-1.19|N|||F
OBX|11|NM|713-8^EOS%^LN||24.9|%|17.9-31.9|N|||F
OBX|12|NM|731-0^LYM#^LN||0.55|10*9/L|0.14-0.94|N|||F
OBX|13|NM|736-9^LYM%^LN||15.0|%|5.5-24.5|N|||F
OBX|14|NM|742-7^MON#^LN||0.11|10*9/L|0.00-0.22|N|||F
OBX|15|NM|5905-5^MON%^LN||2.9|%|0.0-5.9|N|||F
OBX|16|NM|789-8^RBC^LN||2.49|10*12/L|2.28-2.64|N|||F
OBX|17|NM|718-7^HGB^LN||60|g/L|56-64|N|||F
OBX|18|NM|787-2^MCV^LN||80.7|fL|73.8-83.8|N|||F
OBX|19|NM|785-6^MCH^LN||23.9|pg|21.9-26.9|N|||F
OBX|20|NM|786-4^MCHC^LN||297|g/L|280-340|N|||F
OBX|21|NM|788-0^RDW-CV^LN||15.8|%|11.0-21.0|N|||F
OBX|22|NM|21000-5^RDW-SD^LN||44.1|fL|34.4-54.4|N|||F
OBX|23|NM|4544-3^HCT^LN||20.1|%|17.4-21.4|N|||F
OBX|24|NM|777-3^PLT^LN||64|10*9/L|40-80|N|||F
OBX|25|NM|32623-1^MPV^LN||9.8|fL|6.5-12.5|N|||F
OBX|26|NM|32207-3^PDW^LN||16.3||10.9-20.9|N|||F
OBX|27|NM|10002^PCT^99MRC||0.062|%|0.007-0.107|N|||F
OBX|28|NM|10014^PLCR^99MRC||27.2|%|15.6-35.6|N|||F
OBX|29|NM|10013^PLCC^99MRC||17|10*9/L|7-23|N|||F
OBX|30|NM|51584-1^IMG#^LN||0.12|10*9/L||N|||F
OBX|31|NM|38518-7^IMG%^LN||3.2|%||N|||F
OBX|32|NM|10020^HFC#^99MRC||0.00|10*9/L||N|||F
OBX|33|NM|10021^HFC%^99MRC||0.0|%||N|||F
OBX|34|NM|10022^PLT-I^99MRC||64|10*9/L||N|||F
OBX|35|NM|10024^WBC-D^99MRC||3.74|10*9/L||N|||F
OBX|36|NM|10025^WBC-B^99MRC||3.66|10*9/L||N|||F
OBX|37|NM|12227-5^WBC^LN||3.66|10*9/L|2.79-4.39|N|||F

2） LIS providing the work orders

- File writing: Upon receipt of samples, the LIS immediately writes the file into the Lis2Cal folder. The file is named "Date&Time_Sample barcode.dat", where Date&Time is in the format of "YYYYMMDDhhmmss".
- For example, "20160729150913_30521678.dat”
- If sample information changes after receipt, the work order file must be re-written.

- File reading: labXpert reads the file within 3s, and delete the file after reading the file.
- The interaction process as follows:

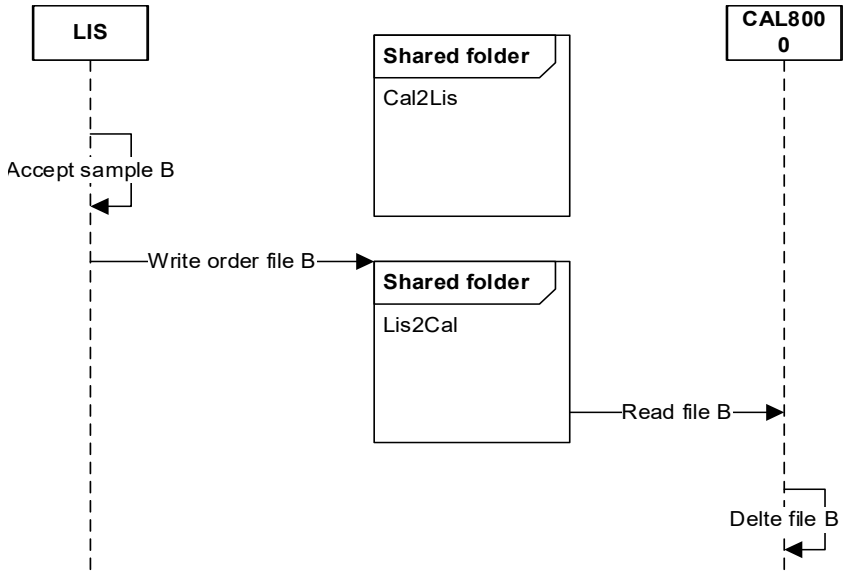


Figure 7 Receive orders through shared folder

- Demo file example of a work order result:
- MSH|^~\&|||||20160729134313||ORR^O02|14|P|2.3.1||||||UNICODE
  MSA|AA|14
  PID|1||ChartNo^^^^MR||LastName^FirstName|||Gender
  PV1|1|PatientType|Department^^BedNo|||||||||||||||ChargeType
  ORC|AF||order1
  OBR|1|order1||00001^Automated Count^99MRC||||||Sender|||Diagnose||||||||||HM
  OBX|1|IS|08001^Take Mode^99MRC||A||||||F
  OBX|2|IS|08002^Blood Mode^99MRC||W||||||F
  OBX|3|IS|08003^Test Mode^99MRC||CBC+DIFF||||||F
  OBX|4|IS|01002^Ref Group^99MRC|||||||F
  OBX|5|NM|30525-0^Age^LN||2|yr|||||F
  OBX|6|ST|01001^Remark^99MRC||Remark||||||F
  OBX|7|IS|01007^Sample Type^99MRC||SampleType||||||F
  OBX|8|IS|05007^Project Type^99MRC||BL||||||F
  OBX|9|IS|01008^Patient Area^99MRC||PatientArea||||||F
  OBX|10|ST|01009^Custom patient info 1^99MRC|||||||F
  OBX|11|ST|01010^Custom patient info 2^99MRC|||||||F
  OBX|12|ST|01011^Custom patient info 3^99MRC|||||||F
  OBX|13|ST|01014^Report Time^99MRC|||||||F

3. Technical requirements on file reading/writing
   - File writing
     - ✓ Write mode: Write a file in exclusive mode to prevent that the peer end reads the file before the file is completely written.

- ✓ File permission: All users can have full control over files.
- ✓ On the PC where the shared folders are located, the Guest account must be activated, and the password of the Guest account must be set to null. For details about the configuration method, see the Appendix F.

- File reading

If a file cannot be read, the peer end is still writing the file. In this case, read the file later.

4. About the labXpert-LIS connection status indicator
   - In this file transfer mode, if shared folders exist, the indicator is on; otherwise, the indicator is off.
   - If LIS communication error occurs, support from the LIS side is needed.

Chapter 2HL7 Communication Protocol

2.1 Overview

The LIS/HIS communication function of the labXpert enabled the communication between the analyzer and the PC in laboratory through Ethernet, including sending analysis results to and receiving worklist from lab PC.

This communication protocol is defined based on the HL7 Standards. HL7 is a series of electronic data exchange standards for healthcare industry, which is originally defined by the US and is now adopted worldwide. This protocol is defined based on HL7 v2.3.1. For details of HL7 standards, see *HL7 Interface Standards Version 2.3*.1.

2.2 Low-Level Transmission Protocol

The labXpert communicates through TCP or serial port. See Connection Control for details.

2.3 HL7 Message Level Protocol

2.3.1 HL7 Protocol Overview

See Appendix A.

2.3.2 HL7 Low-Level Message Protocol

HL7 of high-level protocol is based on messages. The function of terminating the message is not provided. In order to determine the message boundary, the MLLP low-level protocol is used (see HL7 Interface Standards Version 2.3.1).

Communication Level

Messages are transmitted in the following format:

<SB> *ddddd* <EB><CR>

among which:

<SB> = Start Block character (1 byte)

ASCII <VT>, i.e. <0x0B>. Do not confuse with the SOH or STX character in ASCII.

***ddddd* = Data (variable number of bytes)**

ddddd is the effective data of HL7 message and expressed in the form of string. For the strings used in the HL7 interface messages of the labXpert the UTF-8 code is used.

<EB> = End Block character (1 byte)

ASCII <FS>, i.e. <0x1C>. Do not confuse with the ETX or EOT character in ASCII.

<CR> = Carriage Return (1 byte)

ASCII carriage return character, i.e. <0x0D>.

2.4 Duplex Communication

1. The labXpert directly sends the analysis results (or QC data) to LIS, as shown in Figure 8.

R01 event: the DMU sends the analysis results to LIS. Both sample analysis results and QC results can be sent in this way.

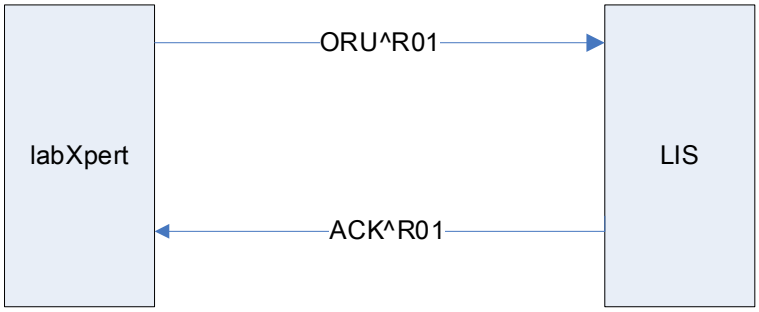


Figure 8 Analysis results, QC data communication process

2. Worklist information searching

Worklist belongs to the Order message. Thus, the corresponding HL7 messages: ORM (General Order Message), ORR (General Order Response Message) can be used. The communication process is shown in Figure 9.

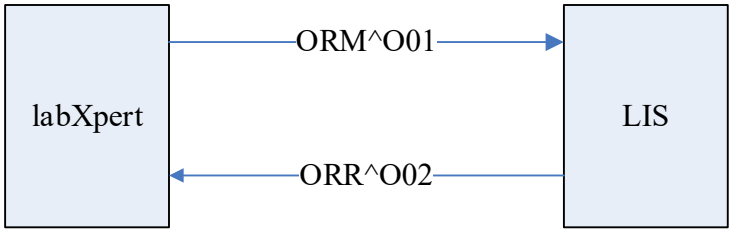


Figure 9 Worklist request communication process

2.4.1 Mostly used messages:

ORU^R01 message: it is mostly used for the transmission of the analysis results and QC data.

ORU	Observational Results (Unsolicited)	Description

MSH Message Header, mandatory, including the communication information like message No., sending time, message delimiter and coding method, etc.

{

PID Patient demographic information, including patient name, gender, patient ID, date of birth, etc.

[PV1] Patient visit information, including patient type, department, bed No. and payer*, etc.

{

OBR sample information, including sample No., operator and time of analysis, etc.

{ [NTE] } note messages {

[OBX] analysis data, including analysis results and mode of analysis, etc.

{ [NTE] } note messages

}

}

}

ACK^R01 message: it confirms the receival of ORU^R01 message.

ACK	Acknowledgment	Description
MSH	Message header	
MSA	message acknowledgment, describing whether it has received the transmitted message	

ORM^O01 message: Common order message, all the actions related to order basically use the message of this type. For example, create a new order or cancel an order. Here, the labXpert requests LIS/HIS to re-fill the order message.

ORM	General Order Message	Description
MSH	Message header	
{ORC}	Common message of Order, including the ID information of the sample searched	

ORR^O02 Message: acknowledgement of the ORM^O01 message. Here, returning the completed information of order (i.e. worklist).

ORR^O02	General Order Response Message	Description
MSH	Message header	
MSA	Message acknowledgment	
[PID	patient information	
[PV1]]	patient visit information	
{		
ORC	Common message of Order, including the sample ID	
[		
OBR	Sample information	
{[OBX]}	Data of other sample information, including analysis mode, etc.	
]		
}		

2.5 HL7 Segment Definitions

The tables in this section provide detailed definitions of the fields in all the message segments. Each row provides the information of one field, and the content of each column is described as follows:

1. No.: the HL7 message begins with the segment name of 3 characters followed by the fields which are separated by delimiters. "No." refers to the order of the field in the HL7 message segment.

E.g.

```
PID          | 1        |      |7393670^^^^MR||^Liu||19950804000000|F
 ↑           ↑                 ↑
Segment name  Field 1           Field 3
```

Message example 2-1 Example of HL7 segment No.

Note: for MSH segment, the field delimiter subsequential to the segment name is considered to be the first field, used to define the field delimiter values of the whole message.

2. Field name: the logic sense of the field.
3. Data type: the data type based on HL7 standards. See Appendix A for details;
4. Recommended Max Length the recommended max length based on HL7 standards. But during the communication process, the data length may be longer than recommended, in which case the fields shall be identified by delimiters while analyzing the message segment.
5. Description: description to the value of the field.
6. Example: example of the fields.

2.5.1 MSH

MSH (Message Header) segment contains basic information of HL7 messages, including delimiter value, message type and coding method etc. It is the first field of every HL7 message.

Message example:

MSH|^~\&|LabXpert|Mindray|||20101012092538||ORU^R01|1|P|2.3.1|||||UNICODE

See Table 1 for definition of each field in MSH segment.

Table 1 MSH Field Definitions

No.	Field/Delimiter Name	Data Type	Recommended Max Length	Description	Example
1	Field Delimiter	ST	1	Includes the delimiter of the first field after the segment name; used to determine the delimiter values of the rest part of the message.	|

No.	Field/Delimiter Name	Data Type	Recommended Max Length	Description	Example
2.	Encoding Characters	ST	4	Includes component delimiters, repetition delimiters, escape delimiters and subcomponent delimiters.	^~\&
3	Sending application	EI	180	Application of sending terminal.	labXpert
4	Sending Facility	EI	180	Device of sending terminal. Value: Mindray (in Chinese and English version)	Mindray
5	Date/Time of Message	TS	26	Time of creating the message (in the format of YYYY[MM[DD[HH[MM[SS]]]]]), using the system time	20101012092538
6	Message Type	CM	7	Message type, in the format of "message type^event type".	ORU^R01
7	Message Control ID	ST	20	Message control ID, used as the unique identifier of a message.	1
8	Processing ID	PT	3	Message processing ID. Value: “P”- sample and worklist request message; "Q"- QC analysis result message; In Ack messages, it is consistent with the previously received message.	P
9	Version ID	VID	60	HL7 version number. Value: "2.3.1".	2.3.1
10	Character Set	ID	10	Character set. Value: "UNICODE", which means the message in communication is expressed in UTF-8 strings.	UNICODE

2.5.2 MSA

The MSA (Message Acknowledgement) segment contains message acknowledge information.

Message example:

MSA|AA|1

See Table 2 for field definitions in use.

Table 2 MSA Field Definitions

No.	Field/Delimiter Name	Data Type	Recommended Max Length	Description	Example
1	Acknowledgment Code	ID	2.	Acknowledgment code:“AA”-received; “AE” – error; “AR”-rejected, “AS”-skipped.	AA
2.	Message Control ID	ST	20	Message control ID, consistent with the MSH-10 of the received message	1
3	Error Condition	CE	100	Error condition (status code), can be selected to transmit, and contains error condition descriptions; see Table 3 for the values.	

Table 3 Error Codes of MSA-6 Field

Status Code (MSA-6)	Status Text (MSA-3)	Description/Remark
Succeeded:		AA
0	Message accepted	Succeeded
Error status code:		AE
100	Segment sequence error	Segment sequence in the message is wrong, required segment missing
101	Required field missing	Required field in a segment missing
102	Data type error	Segment data type error, e.g. data type is character instead of numeric
103	Table value not found	Table value not found; not used temporarily
Rejected status code:		AR
200	Unsupported message type	Message type not supported
201	Unsupported event code	Event code not supported
202	Unsupported processing id	Processing ID not supported

Status Code (MSA-6)	Status Text (MSA-3)	Description/Remark
203	Unsupported version id	Version ID not supported
204	Unknown key identifier	Unknown key identifier, e.g. transmitting a nonexistent patient information
205	Duplicate key identifier	Repeated key words existed
206	Application record locked	Issues can not be executed in the application saving level, e.g. database is locked
207	Application internal error	Other unknown error of the application
Skipped:		AS

2.5.3 PID

The PID (Patient Identification) segment contains the patient demographic information.

Message example:

Example (CN):

PID|1||C1^^^^MR||^张三||20101005084346|Male

Example (Other langauges than CN)

PID|1||C1^^^^MR|| Jordan^Michael ||20101005084346|Male

See Table 4 for field definitions in use.

Table 4 MSA Field Definitions

No.	Field/Delimiter Name	Data Type	Recommended Max Length	Description	Example
1	Set ID - PID	SI	4	Serial No., used to identify different PID segments in a message	1
2	Patient Identifier List	CX	20	Used as patient ID in the sample analysis result messages, in the form of "MR"Number^^^^MR". Used as batch No. of control in QC messages.	C1^^^^MR
3	Patient Name	XPN	48	Patient name (consists of FirstName and LastName), in the form of "LastName^FirstName". For Chinese names, only enter FirstName. LastName is left blank.	Name (CN): ^张三 Name (non-Chinese): Jordan^Michael
4	Date/Time of	TS	26	Used as time of birth in sample	20101005084

No.	Field/Delimiter Name	Data Type	Recommended Max Length	Description	Example
	Birth			information messages. In the form of YYYY[MM[DD[HH[MM[SS]]]]]. Used as expiration date of the control in QC messages.	346
5	Sex	IS	1	Gender, string. Same with the strings displayed on the screen.	Male

2.5.4 PV1

The PV1 (Patient Visit) segment contains the patient visit information.

Message example:

PV1|1|Outpatient|Medicine^^BN1||||||||||||||||MedicalInsurance

See Table 5 for field definitions in use.

Table 5 PV1 Field Definitions

No.	Field/Delimiter Name	Data Type	Recommended Max Length	Description	Example
1	Set ID - PV1	SI	4	Serial No., used to identify different PV1 segments in a message.	1
2.	Patient Class	IS	1	Patient type, string, content not defined. Same with the strings displayed on the screen.	Outpatient
3	Assigned Patient Location	PL	80	Patient location information, in the form of "Department^ ^ Bed No."	Medicine^^BN1
4	Financial Class	FC	50	Payer, string, content not defined.	MedicalInsurance

2.5.5 OBR

The OBR (Observation Request) segment contains the test report information.

Message example:

OBR|1||TestSampleID1|00001^Automated Count^99MRC|R|20101006084439|20101009091515|||Li|||Cold|20101007084458||||||||HM|||||||admin

See Table 6 for field definitions in use.

Table 6 OBR Field Definitions

No.	Field/Delimiter Name	Data Type	Recommended Max Length	Description	Example
1	Set ID - OBR	SI	4	Serial No., used to identify different OBR segments in a message	1
2.	Placer Order Number	EI	22	Used as sample ID in the worklist searching response messages (i.e. ORR^O02 messages).。	
3	Filler Order Number +	EI	22	Used as sample ID in sample analysis result messages. Used as QC file No. in QC messages.	TestSampleID1
4	Universal Service ID	CE	200	Universal service ID, used to identify different types of analysis results. Refer to Appendix C for value definition.	00001^Automated Count^99MRC
5	Priority	ID	2	Marks for emergeny samples, indicating sample priority: S or s: STAT A or a: ASAP R or r: Routine	R
6	Requested Date/time	TS	26	Draw time. Used as the time when the blood sample is drawn.	20101006084439
7	Observation Date/Time #	TS	26	Time of analysis.	20101009091515
8	Collector Identifier *	XCN	60	Analysis orderer Here indicates the person who order the analysis.	Li
9	Relevant Clinical Info.	ST	300	Relevant clinical information. Can be used as the clinical diagnostic information of patient	Cold

No.	Field/Delimiter Name	Data Type	Recommended Max Length	Description	Example
				information.	
10	Specimen Received Date/Time *	TS	26	Time when the sample is received. Used as the time when the analysis is ordered.	20101007084458
11	Specimen Source *	CM	300	Source of the sample. Reserved field for labXpert.	
12	Results Rpt/Status Chng - Date/Time +	TS	26	Result report/Status change - Time. Used as the time of validation.	
13	Diagnostic Serv Sect ID	ID	10	Diagnosis maker ID; value: "HM" (means Hematology)	HM
14	Result Status +	XCN	150	Status of the analysis result. Used as the mark for “Validated”. Validated Not Validated	Validated
15	Result Copies To	XCN	150	Copy the result to. Used as the person who validate the sample results.	
16	Principal Result Interpreter +	CM	200	Principal result interpreter. Used as the operator of the sample analysis in sample messages. Used as the operator of the QC count in QC messages.	admin

2.5.6 OBX

The OBX (Observation/Result) segment contains the parameter information of each test result. In a complete sample/QC/bidirectional request message, there may be more than one OBX segment. These OBX segments are different according to the content for transmission. See Table 29 in Appendix C for detailed definitions.

Message example:

OBX|8|NM|6690-2^WBC^LN||2.20|10*9/L|4.00-10.00|L~A|||F|||20200728095739||^^SignOperator

See Table 7 for field definitions in use.

Table 7 OBX Field Definitions

No.	Field/Delimiter Name	Data Type	Recommended Max Length	Description	Example
1	Set ID - OBX	SI	10	Serial No., used to identify different OBX segments in a message.	8
2.	Value Type	ID	3	Data type of the analysis result. Value: "ST", "NM", "ED", "IS", etc. See Appendix B for details.	NM
3	Observation Identifier	CE	590	Analysis item identifier. In the form of "ID^Name^EncodeSys", where ID is the identifier of the analysis item; Name is the description of the item; EncodeSys is the coding system of the item. See the configuration files and Appendix C for the values of the codes for different items. Note: ID and EncodeSys are used to identify different analysis parameters, while Name is for description purpose rather than identification.	6690-2^WBC^LN
4	Observation Value	*	65535	Analysis result data, which can be numeric, string, enumeration value, binary data, etc. See Appendix C for detailed value definitions (Binary data like histogram or scattergram are converted to codes using the Base64 coding method. See Appendix D for the coding method).	2.20
5	Units	CE	60	Unit of analysis items. Use the standard units defined in HL7. See Appendix C for units used in communication.	10*9/L
6	References Range	ST	60	Reference range of analysis results, in the form of "lower limit-higher limit", "<upper limit"	4.00-10.00

No.	Field/Delimiter Name	Data Type	Recommended Max Length	Description	Example
				or ">lower limit". There are two types of reference interval for morphology analysis: First: higher/lower limits. See Table 34 in Appendix C for the parameters with high/low limits reference interval. The format is as follows: “Reference interval lower limit - reference interval higher limit”, or “< Reference interval higher limit”, or “> Reference interval lower limit”. Second: negative results. Except for the parameters with high/low limits reference intervals, the other parameters use negative results interval range. The format is as follows: “<negative reference range upper limit” or “<= negative reference range upper limit”.	
7	Abnormal Flags	ID	5	Analysis result flags. Value definitions: "N": normal "A": abnormal "H": higher than upper limit "L": lower than lower limit “P”- positive morphology analysis results (result higher than the upper limit of negative reference range upper limit”. Note: The flag for normal or abnormal and that for high or low result may appear in this field at the same time. In this case, the two types of flags are connected by a “~”, e.g. “H~A”	L~A
8	Observ Result Status	ID	1	Status of the analysis result. "F": final result.	F

No.	Field/Delimiter Name	Data Type	Recommended Max Length	Description	Example
9	User Defined Access Checks	ST	20	User-defined. For flags of reagent expiration or modification, etc. In the form of "Flag1~Flag2". There are 6 types of flags in all: O – reagent eexpired E – result edited e – result calculated from result edited C – result corrected V – result out of linearity range T – temperature error	
10	Date/Time of Observation	TS	26	Time of analysis. This field is used and transmitted as the time of signing off morphology analysis result. In the form of YYYY[MM[DD[HH[MM[SS]]]]].	20200728095739
11	Responsible observer	XCN	80	The responsible person for test results. This field is used and transmitted for morpholog y analysis results as the name of the person who signs off the results. The segment consists of 3 parts, i.e., ID number, FirstName, and LastName, in the format of “ID^LastName^FirstName”.	^^SignOperator

2.5.7 ORC

The ORC (Common Order) segment contains the common information of order.

Message example (searching by sample ID and sample type)

ORC|RF||SampleID|BL

Message example (searching by sample ID and sample type, in the meanwhile, for the “LIS Settings for Sample Receiving”, “Fill in tube position and SN” is enabled）

ORC|RF||SampleID|BL||2^3|13|||||||NW

See Table 8 for field definitions.

Table 8 ORC Field Definitions

No.	Field/Delimiter Name	Data Type	Recommended Max Length	Description	Example
1	Order Control	ID	2.	Order control.	RF

No.	Field/Delimiter Name	Data Type	Recommended Max Length	Description	Example
				In ORM message, the value is "RF", which means "re-fill order request" In ORR message, the value is "AF", which means "acknowledge order re-filling"	
2.	Placer Order Number	EI	22	Code for order placer.	
3	Filler OrderNum	EI	22	Code for order receiver. In ORM or ORR messages, the value is null.	SampleID
4	Placer group number	ST	22	Code for order placer group Used for test panel here	BL BF
6	Tube Position	CE	10	Tube position This field is used in the inqury messages when the “LIS receiving samples by SN” function is enabled (“More” - "System Setup" — "Comm. Setup"-“LIS Settings for Sample Receiving”) . When the function is disabled, the field is not used. The filed will be filled in the format of “rack No.^ tube position”. When the inquired sample is analyzed in another sample presentation mode than the autoloading mode, the field is filled as “^” .	2^3. In the above example, the field is filled as “2^3”, in which, “2” represents the rack number, “3” is the tube position where the sample is placed. When the inquired sample is analyzed in another sample presentation mode than the autoloading mode, the field is filled as “^” .
7	Lis Sign Serial No	ST	10	The serial number communicated to LIS when the “LIS receiving samples by SN” function is enabled (“More” - "System Setup" — "Comm. Setup"-“LIS Settings for Sample	In the above example, the field is filled as “2^3”, in which, “2” represents the rack

No.	Field/Delimiter Name	Data Type	Recommended Max Length	Description	Example
				Receiving”) . This field is used in the inqury messages when the “LIS receiving samples by SN” function is enabled (“More” - "System Setup" — "Comm. Setup"-“LIS Settings for Sample Receiving”) . When the function is disabled, the field is not used. The SN is calculated in accordance with below formula: SN= [Rack No. – First Rack No.) * 10 + Tube No. When the inquired sample is analyzed in another sample presentation mode than the autoloading mode, the field is left empty.	number, “3” is the tube position the sample is placed. The first rack No. is set to “1”, therefore the SN is 13.
8	Order Control Code Reason	CE	50	This field is used in the inqury messages when the “LIS receiving samples by SN” function is enabled (“More” - "System Setup" — "Comm. Setup"-“LIS Settings for Sample Receiving”) . When the function is disabled, the field is not used. The value is fixed as “NW” (New Order).	NW.

Note: for consistency and convenience, the sample IDs for both ORM message and for ORR message are put in Field 3. See the bi-directional LIS message examples (see 2.6.6 and 2.6.7 for details)

2.5.8 NTE

The NTE (Note and comment messages) segment contains note and comments messages.

Message example:

NTE|9|P|This is comment.|GR

See Table 9 for field definitions in use.

Table 9 NTE Field Definitions

No.	Field/Delimiter Name	Data Type	Recommended Max Length	Description	Example
1	Set ID – NTE	SI	4	Serial No., used to identify different NTE segments in a message.	9
2.	Source of comment	ID	8	The source of the comment. Its value can be either of the following three: L: Ancillary (filler) department is source of comment. P: Orderer (placer) is source of comment. O: Other system is source of comment. The field is always filled with “P” for morphology analysis result.	P
3	Comment	FT	64K	Content for comments	This is comment.
4	Comment Type	CE	60	The type of the comment. Its value can be either of the following eight: PI: Patient Instructions. AI: Ancillary Instructions. GI: General Instructions. 1R: Primary Reason. 2R: Secondary Reason. GR: General Reason. RE: Remark. DR: Duplicate/Interaction Reason. The field is always filled with “GR” for morphology analysis result.	GR

2.6 Complete Message Examples

The two message examples below shows the communication process of sample data

2.6.1 Sample Message

Note: The “Analyzer” OBX item is transmitted in integrated analyzer communication only.

2.6.1.1 Blood samples:

Example (Other languages than CN)

MSH|^~\&|LabXpert|Mindray|||20140909160725||ORU^R01|4|P|2.3.1||||||UNICODE<CR>

PID|1||patientID2001^^^^MR||Jordan^Michael||20081229160009|Male<CR>

PV1|1||Internal medicine^^1002<CR>

OBR|1||40139349110|00001^Automated Count^99MRC||20140705160009|20140805085635|||Jack|||Virus infections|20140716160009||||||||||HM|||||||admin<CR>

OBX|1|IS|08001^Take Mode^99MRC||A|||||F<CR>

OBX|2|IS|08002^Blood Mode^99MRC||W|||||F<CR>

OBX|3|IS|08003^Test Mode^99MRC||CBC+DIFF|||||F<CR>

OBX|4|IS|01002^Ref Group^99MRC||Child|||||F<CR>

OBX|5|NM|30525-0^Age^LN||5|yr|||||F<CR>

OBX|6|ST|01001^Remark^99MRC||Emergency patient|||||F<CR>

OBX|7|IS|01006^Recheck flag^99MRC||T|||||F<CR>

OBX|8|IS|05007^Project Type^99MRC||BL|||||F<CR>

OBX|9|IS|01007^Sample Type^99MRC||Venous blood|||||F<CR>

OBX|10|IS|01008^Patient Area^99MRC||A - 501|||||F<CR>

OBX|11|ST|01012^Shelf No^99MRC||54|||||F<CR>

OBX|12|ST|01013^Tube No^99MRC||8|||||F<CR>

OBX|13|ST|01014^Report Time^99MRC||20140907160009|||||F<CR>

OBX|14|ST|09001^Analyzer^99MRC||2#|||||F<CR>

OBX|15|NM|6690-2^WBC^LN||15.22|10*9/L|4.00-12.00|H~A|||F<CR>

OBX|16|NM|704-7^BAS#^LN||0.06|10*9/L|0.00-0.10|A|||F<CR>

OBX|17|NM|706-2^BAS%^LN||0.4|%|0.0-1.0|A|||F<CR>

OBX|18|NM|751-8^NEU#^LN||11.66|10*9/L|2.00-8.00|H~A|||F<CR>

OBX|19|NM|770-8^NEU%^LN||76.6|%|50.0-70.0|H~A|||F<CR>

OBX|20|NM|711-2^EOS#^LN||0.02|10*9/L|0.02-0.80|A|||F<CR>

OBX|21|NM|713-8^EOS%^LN||0.1|%|0.5-5.0|L~A|||F<CR>

OBX|22|NM|731-0^LYM#^LN||2.05|10*9/L|0.80-7.00|A|||F<CR>

OBX|23|NM|736-9^LYM%^LN||13.5|%|20.0-60.0|L~A|||F<CR>

OBX|24|NM|742-7^MON#^LN||1.43|10*9/L|0.12-1.20|H~A|||F<CR>

OBX|25|NM|5905-5^MON%^LN||9.4|%|3.0-12.0|A|||F<CR>

OBX|26|NM|789-8^RBC^LN||2.72|10*12/L|3.50-5.20|L~N|||F<CR>

OBX|27|NM|718-7^HGB^LN||8.8|g/dL|12.0-16.0|L~A|||F<CR>

OBX|28|NM|787-2^MCV^LN||129.8|fL|80.0-100.0|H~N|||F<CR>

OBX|29|NM|785-6^MCH^LN||32.2|pg|27.0-34.0|A|||F<CR>

OBX|30|NM|786-4^MCHC^LN||24.8|g/dL|31.0-37.0|L~A|||F<CR>

OBX|31|NM|788-0^RDW-CV^LN||24.8|%|11.0-16.0|H~N|||F<CR>

OBX|32|NM|21000-5^RDW-SD^LN||116.4|fL|35.0-56.0|H~N|||F<CR>

OBX|33|NM|4544-3^HCT^LN||0.354||0.350-0.490|N|||F<CR>

OBX|34|NM|777-3^PLT^LN||55|10*9/L|100-300|L~N|||F<CR>

OBX|35|NM|32623-1^MPV^LN||11.7|fL|6.5-12.0|N|||F<CR>

OBX|36|NM|32207-3^PDW^LN||17.2||15.0-17.0|H~N|||F<CR>

OBX|37|NM|10002^PCT^99MRC||0.064|%|0.108-0.282|L~N|||F<CR>

OBX|38|NM|10014^PLCR^99MRC||38.7|%|11.0-45.0|N|||F<CR>

OBX|39|NM|10013^PLCC^99MRC||21|10*9/L|30-90|L~N|||F<CR>

OBX|40|NM|51584-1^IMG#^LN||0.49|10*9/L||A|||F<CR>

OBX|41|NM|38518-7^IMG%^LN||3.2|%||A|||F<CR>

OBX|42|NM|10020^HFC#^99MRC||0.40|10*9/L||A|||F<CR>

OBX|43|NM|10021^HFC%^99MRC||2.6|%||A|||F<CR>

OBX|44|NM|10022^PLT-I^99MRC||55|10*9/L||N|||F<CR>

OBX|45|NM|10024^WBC-D^99MRC||14.73|10*9/L||A|||F<CR>

OBX|46|NM|10025^WBC-B^99MRC||15.22|10*9/L||A|||F<CR>

OBX|47|NM|10031^PDW-SD^99MRC||17.0|fL||N|||F<CR>

OBX|48|NM|10032^InR#^99MRC||0.01|10*9/L||N|||F<CR>

OBX|49|NM|10033^InR‰^99MRC||0.00|‰||N|||F<CR>

OBX|50|NM|12227-5^WBC^LN||15.22|10*9/L|4.00-12.00|H~A|||F<CR>

OBX|51|IS|12004^Neutrophilia^99MRC||T||||||F<CR>

OBX|52|IS|17790-7^WBC Left Shift?^LN||T||||||F<CR>

OBX|53|IS|34165-1^Imm Granulocytes?^LN||T||||||F<CR>

OBX|54|IS|15192-8^Atypical Lymphs?^LN||T||||||F<CR>

OBX|55|IS|15150-6^Anisocytosis^LN||T||||||F<CR>

OBX|56|IS|12075^Macrocytes^99MRC||T||||||F<CR>

OBX|57|IS|12014^Anemia^99MRC||T||||||F<CR>

OBX|58|IS|15180-3^Hypochromia^LN||T||||||F<CR>

OBX|59|IS|12015^HGB Interfere^99MRC||T||||||F<CR>

OBX|60|IS|12018^Thrombopenia^99MRC||T||||||F<CR>

OBX|61|IS|12053^Abn Lympho/ Blasts^99MRC||T||||||F<CR>

OBX|62|IS|12054^NRBC?^99MRC||T||||||F<CR>

OBX|63|NM|15051^RBC Histogram. Left Line^99MRC||29||||||F<CR>

OBX|64|NM|15052^RBC Histogram. Right Line^99MRC||250||||||F<CR>

OBX|65|NM|15053^RBC Histogram. Binary Meta Length^99MRC||1||||||F<CR>

OBX|66|NM|15057^RBC Histogram. Total^99MRC||51277||||||F<CR>

OBX|67|NM|15111^PLT Histogram. Left Line^99MRC||3||||||F<CR>

OBX|68|NM|15112^PLT Histogram. Right Line^99MRC||47||||||F<CR>

OBX|69|NM|15113^PLT Histogram. Binary Meta Length^99MRC||1||||||F<CR>

OBX|70|NM|15117^PLT Histogram. Total^99MRC||1004||||||F<CR>

OBX|71|NM|15203^WBC DIFF Scattergram. Meta len^99MRC||1||||||F<CR>

OBX|72|NM|15205^WBC DIFF Scattergram. Fsc dimension^99MRC||128||||||F<CR>

OBX|73|NM|15206^WBC DIFF Scattergram. Ssc dimension^99MRC||128||||||F<CR>

OBX|74|NM|15207^WBC DIFF Scattergram. FL dimension^99MRC||128||||||F<CR>

OBX|75|NM|15208^WBC DIFF Scattergram. FSC-LOG dimension^99MRC||128||||||F<CR>

OBX|76|NM|15253^Baso Scattergram. Meta Len^99MRC||1||||||F<CR>

OBX|77|NM|15255^Baso Scattergram. Fsc dimension^99MRC||128||||||F<CR>

OBX|78|NM|15256^Baso Scattergram. Ssc dimension^99MRC||128||||||F<CR>

OBX|79|NM|15257^Baso Scattergram. FL dimension^99MRC||128||||||F<CR>

OBX|80|NM|15258^Baso Scattergram. FSC-LOG dimension^99MRC||128||||||F<CR>

OBX|81|NM|15307^RET Scattergram. Meta Len^99MRC||1||||||F<CR>

OBX|82|NM|15303^RET Scattergram. Fsc dimension^99MRC||128||||||F<CR>

OBX|83|NM|15304^RET Scattergram. Ssc dimension^99MRC||128||||||F<CR>

OBX|84|NM|15305^RET Scattergram. FL dimension^99MRC||128||||||F<CR>

OBX|85|NM|15308^RET Scattergram FSC-LOG dimension^99MRC||128||||||F<CR>

OBX|86|NM|15355^NRBC Scattergram. Meta Len^99MRC||1||||||F<CR>

OBX|87|NM|15351^NRBC Scattergram. Fsc dimension^99MRC||128||||||F<CR>

OBX|88|NM|15352^NRBC Scattergram. Ssc dimension^99MRC||128||||||F<CR>

OBX|89|NM|15353^NRBC Scattergram. FL dimension^99MRC||128||||||F<CR>

OBX|90|NM|15356^NRBC Scattergram FSC-LOG dimension^99MRC||128||||||F<CR>

Example (CN):

MSH|^~\&|LabXpert|Mindray|||20140909160725||ORU^R01|4|P|2.3.1||||||UNICODE<CR>

PID|1||patientID2001^^^^MR||^张三||20081229160009|Male<CR>

PV1|1||Internal medicine^^1002<CR>

OBR|1||40139349110|00001^Automated Count^99MRC||20140705160009|20140805085635|||Jack|||Virus infections|20140716160009||||||||||HM|||||||admin<CR>

OBX|1|IS|08001^Take Mode^99MRC||A||||||F<CR>

OBX|2|IS|08002^Blood Mode^99MRC||W||||||F<CR>

OBX|3|IS|08003^Test Mode^99MRC||CBC+DIFF||||||F<CR>

OBX|4|IS|01002^Ref Group^99MRC||Child||||||F<CR>

OBX|5|NM|30525-0^Age^LN||5|yr|||||F<CR>

OBX|6|ST|01001^Remark^99MRC||Emergency patient||||||F<CR>

OBX|7|IS|01006^Recheck flag^99MRC||T||||||F<CR>

OBX|8|IS|05007^Project Type^99MRC||BL||||||F<CR>

OBX|9|IS|01007^Sample Type^99MRC||Venous blood||||||F<CR>

OBX|10|IS|01008^Patient Area^99MRC||A - 501||||||F<CR>

OBX|11|ST|01012^Shelf No^99MRC||54||||||F<CR>

OBX|12|ST|01013^Tube No^99MRC||8||||||F<CR>

OBX|13|ST|01014^Report Time^99MRC||20140907160009||||||F<CR>

OBX|14|ST|09001^Analyzer^99MRC||2#||||||F<CR>

OBX|15|NM|6690-2^WBC^LN||15.22|10*9/L|4.00-12.00|H~A|||F<CR>

OBX|16|NM|704-7^BAS#^LN||0.06|10*9/L|0.00-0.10|A|||F<CR>

OBX|17|NM|706-2^BAS%^LN||0.4|%|0.0-1.0|A|||F<CR>

OBX|18|NM|751-8^NEU#^LN||11.66|10*9/L|2.00-8.00|H~A|||F<CR>

OBX|19|NM|770-8^NEU%^LN||76.6|%|50.0-70.0|H~A|||F<CR>

OBX|20|NM|711-2^EOS#^LN||0.02|10*9/L|0.02-0.80|A|||F<CR>

OBX|21|NM|713-8^EOS%^LN||0.1|%|0.5-5.0|L~A|||F<CR>

OBX|22|NM|731-0^LYM#^LN||2.05|10*9/L|0.80-7.00|A|||F<CR>

OBX|23|NM|736-9^LYM%^LN||13.5|%|20.0-60.0|L~A|||F<CR>

OBX|24|NM|742-7^MON#^LN||1.43|10*9/L|0.12-1.20|H~A|||F<CR>

OBX|25|NM|5905-5^MON%^LN||9.4|%|3.0-12.0|A|||F<CR>

OBX|26|NM|789-8^RBC^LN||2.72|10*12/L|3.50-5.20|L~N|||F<CR>

OBX|27|NM|718-7^HGB^LN||8.8|g/dL|12.0-16.0|L~A|||F<CR>

OBX|28|NM|787-2^MCV^LN||129.8|fL|80.0-100.0|H~N|||F<CR>

OBX|29|NM|785-6^MCH^LN||32.2|pg|27.0-34.0|A|||F<CR>

OBX|30|NM|786-4^MCHC^LN||24.8|g/dL|31.0-37.0|L~A|||F<CR>

OBX|31|NM|788-0^RDW-CV^LN||24.8|%|11.0-16.0|H~N|||F<CR>

OBX|32|NM|21000-5^RDW-SD^LN||116.4|fL|35.0-56.0|H~N|||F<CR>

OBX|33|NM|4544-3^HCT^LN||0.354||0.350-0.490|N|||F<CR>

OBX|34|NM|777-3^PLT^LN||55|10*9/L|100-300|L~N|||F<CR>

OBX|35|NM|32623-1^MPV^LN||11.7|fL|6.5-12.0|N|||F<CR>

OBX|36|NM|32207-3^PDW^LN||17.2||15.0-17.0|H~N|||F<CR>

OBX|37|NM|10002^PCT^99MRC||0.064|%|0.108-0.282|L~N|||F<CR>

OBX|38|NM|10014^PLCR^99MRC||38.7|%|11.0-45.0|N|||F<CR>

OBX|39|NM|10013^PLCC^99MRC||21|10*9/L|30-90|L~N|||F<CR>

OBX|40|NM|51584-1^IMG#^LN||0.49|10*9/L||A|||F<CR>

OBX|41|NM|38518-7^IMG%^LN||3.2|%||A|||F<CR>

OBX|42|NM|10020^HFC#^99MRC||0.40|10*9/L||A|||F<CR>

OBX|43|NM|10021^HFC%^99MRC||2.6|%||A|||F<CR>

OBX|44|NM|10022^PLT-I^99MRC||55|10*9/L||N|||F<CR>

OBX|45|NM|10024^WBC-D^99MRC||14.73|10*9/L||A|||F<CR>

OBX|46|NM|10025^WBC-B^99MRC||15.22|10*9/L||A|||F<CR>

OBX|47|NM|10031^PDW-SD^99MRC||17.0|fL||N|||F<CR>

OBX|48|NM|10032^InR#^99MRC||0.01|10*9/L||N|||F<CR>

OBX|49|NM|10033^InR‰^99MRC||0.00|‰||N|||F<CR>

OBX|50|NM|12227-5^WBC^LN||15.22|10*9/L|4.00-12.00|H~A|||F<CR>

OBX|51|IS|12004^Neutrophilia^99MRC||T||||||F<CR>

OBX|52|IS|17790-7^WBC Left Shift?^LN||T||||||F<CR>

OBX|53|IS|34165-1^Imm Granulocytes?^LN||T||||||F<CR>

OBX|54|IS|15192-8^Atypical Lymphs?^LN||T||||||F<CR>

OBX|55|IS|15150-6^Anisocytosis^LN||T||||||F<CR>

OBX|56|IS|12075^Macrocytes^99MRC||T||||||F<CR>

OBX|57|IS|12014^Anemia^99MRC||T||||||F<CR>

OBX|58|IS|15180-3^Hypochromia^LN||T||||||F<CR>

OBX|59|IS|12015^HGB Interfere^99MRC||T||||||F<CR>

OBX|60|IS|12018^Thrombopenia^99MRC||T||||||F<CR>

OBX|61|IS|12053^Abn Lympho/ Blasts^99MRC||T||||||F<CR>

OBX|62|IS|12054^NRBC?^99MRC||T||||||F<CR>

OBX|63|NM|15051^RBC Histogram. Left Line^99MRC||29||||||F<CR>

OBX|64|NM|15052^RBC Histogram. Right Line^99MRC||250||||||F<CR>

OBX|65|NM|15053^RBC Histogram. Binary Meta Length^99MRC||1||||||F<CR>

OBX|66|NM|15057^RBC Histogram. Total^99MRC||51277||||||F<CR>

OBX|67|NM|15111^PLT Histogram. Left Line^99MRC||3||||||F<CR>

OBX|68|NM|15112^PLT Histogram. Right Line^99MRC||47||||||F<CR>

OBX|69|NM|15113^PLT Histogram. Binary Meta Length^99MRC||1||||||F<CR>

OBX|70|NM|15117^PLT Histogram. Total^99MRC||1004||||||F<CR>

OBX|71|NM|15203^WBC DIFF Scattergram. Meta len^99MRC||1||||||F<CR>

OBX|72|NM|15205^WBC DIFF Scattergram. Fsc dimension^99MRC||128||||||F<CR>

OBX|73|NM|15206^WBC DIFF Scattergram. Ssc dimension^99MRC||128||||||F<CR>

OBX|74|NM|15207^WBC DIFF Scattergram. FL dimension^99MRC||128||||||F<CR>

OBX|75|NM|15208^WBC DIFF Scattergram. FSC-LOG dimension^99MRC||128||||||F<CR>

OBX|76|NM|15253^Baso Scattergram. Meta Len^99MRC||1||||||F<CR>

OBX|77|NM|15255^Baso Scattergram. Fsc dimension^99MRC||128||||||F<CR>

OBX|78|NM|15256^Baso Scattergram. Ssc dimension^99MRC||128||||||F<CR>

OBX|79|NM|15257^Baso Scattergram. FL dimension^99MRC||128||||||F<CR>

OBX|80|NM|15258^Baso Scattergram. FSC-LOG dimension^99MRC||128||||||F<CR>

OBX|81|NM|15307^RET Scattergram. Meta Len^99MRC||1||||||F<CR>

OBX|82|NM|15303^RET Scattergram. Fsc dimension^99MRC||128||||||F<CR>

OBX|83|NM|15304^RET Scattergram. Ssc dimension^99MRC||128||||||F<CR>

OBX|84|NM|15305^RET Scattergram. FL dimension^99MRC||128||||||F<CR>

OBX|85|NM|15308^RET Scattergram FSC-LOG dimension^99MRC||128||||||F<CR>

OBX|86|NM|15355^NRBC Scattergram. Meta Len^99MRC||1||||||F<CR>

OBX|87|NM|15351^NRBC Scattergram. Fsc dimension^99MRC||128||||||F<CR>

OBX|88|NM|15352^NRBC Scattergram. Ssc dimension^99MRC||128||||||F<CR>

OBX|89|NM|15353^NRBC Scattergram. FL dimension^99MRC||128||||||F<CR>

OBX|90|NM|15356^NRBC Scattergram FSC-LOG dimension^99MRC||128||||||F<CR>

2.6.1.2 Blood sample message with graphics data

MSH|^~\&|LabXpert|Mindray|||20140909195447||ORU^R01|2|P|2.3.1||||||UNICODE<CR>

PID|1||P00000003^^^^MR<CR>

PV1|1<CR>

OBR|1||40162170410|00001^Automated Count^99MRC|||20140905091449||||||||||||||||HM|||||||admin<CR>

OBX|1|IS|08003^Test Mode^99MRC||CBC+DIFF||||||F<CR>

OBX|2|IS|01002^Ref Group^99MRC||General||||||F<CR>

OBX|3|IS|01006^Recheck flag^99MRC||T||||||F<CR>

OBX|4|ST|01012^Shelf No^99MRC||78||||||F<CR>

OBX|5|ST|01013^Tube No^99MRC||3||||||F<CR>

OBX|6|ST|09001^Analyzer^99MRC||1#||||||F<CR>

OBX|7|NM|6690-2^WBC^LN||5.82|10*9/L|4.00-10.00|A|||F<CR>

OBX|8|NM|704-7^BAS#^LN||0.04|10*9/L|0.00-0.10|A|||F<CR>

OBX|9|NM|706-2^BAS%^LN||0.7|%|0.0-1.0|A|||F<CR>

OBX|10|NM|751-8^NEU#^LN||2.91|10*9/L|2.00-7.00|A|||F<CR>

OBX|11|NM|770-8^NEU%^LN||50.0|%|50.0-70.0|A|||F<CR>

OBX|12|NM|711-2^EOS#^LN||0.14|10*9/L|0.02-0.50|A|||F<CR>

OBX|13|NM|713-8^EOS%^LN||2.4|%|0.5-5.0|A|||F<CR>

OBX|14|NM|731-0^LYM#^LN||****|10*9/L|0.80-4.00|N|||F<CR>

OBX|15|NM|736-9^LYM%^LN||****|%|20.0-40.0|N|||F<CR>

OBX|16|NM|742-7^MON#^LN||****|10*9/L|0.12-1.20|N|||F<CR>

OBX|17|NM|5905-5^MON%^LN||****|%|3.0-12.0|N|||F<CR>

OBX|18|NM|789-8^RBC^LN||3.97|10*12/L|3.50-5.50|N|||F<CR>

OBX|19|NM|718-7^HGB^LN||12.8|g/dL|11.0-16.0|N|||F<CR>

OBX|20|NM|787-2^MCV^LN||99.7|fL|80.0-100.0|N|||F<CR>

OBX|21|NM|785-6^MCH^LN||32.1|pg|27.0-34.0|N|||F<CR>

OBX|22|NM|786-4^MCHC^LN||32.2|g/dL|32.0-36.0|N|||F<CR>

OBX|23|NM|788-0^RDW-CV^LN||16.5|%|11.0-16.0|H~N|||F<CR>

OBX|24|NM|21000-5^RDW-SD^LN||61.3|fL|35.0-56.0|H~N|||F<CR>

OBX|25|NM|4544-3^HCT^LN||0.396||0.370-0.540|N|||F<CR>

OBX|26|NM|777-3^PLT^LN||120|10*9/L|100-300|N|||F<CR>

OBX|27|NM|32623-1^MPV^LN||10.2|fL|6.5-12.0|N|||F<CR>

OBX|28|NM|32207-3^PDW^LN||16.5||15.0-17.0|N|||F<CR>

OBX|29|NM|10002^PCT^99MRC||0.123|%|0.108-0.282|N|||F<CR>

OBX|30|NM|10014^PLCR^99MRC||28.2|%|11.0-45.0|N|||F<CR>

OBX|31|NM|10013^PLCC^99MRC||34|10*9/L|30-90|N|||F<CR>

OBX|32|NM|51584-1^IMG#^LN||0.33|10*9/L||A|||F<CR>

OBX|33|NM|38518-7^IMG%^LN||5.7|%||A|||F<CR>

OBX|34|NM|10020^HFC#^99MRC||****|10*9/L||N|||F<CR>

OBX|35|NM|10021^HFC%^99MRC||****|%||N|||F<CR>

OBX|36|NM|10022^PLT-I^99MRC||120|10*9/L||N|||F<CR>

OBX|37|NM|10024^WBC-D^99MRC||6.86|10*9/L||A|||F<CR>

OBX|38|NM|10025^WBC-B^99MRC||5.82|10*9/L||A|||F<CR>

OBX|39|NM|10031^PDW-SD^99MRC||11.8|fL||N|||F<CR>

OBX|40|NM|10032^InR#^99MRC||0.01|10*9/L||N|||F<CR>

OBX|41|NM|10033^InR‰^99MRC||0.00|‰||N|||F<CR>

OBX|42|NM|12227-5^WBC^LN||5.82|10*9/L|4.00-10.00|A|||F<CR>

OBX|43|IS|12000^WBC Abnormal scattergram^99MRC||T||||||F<CR>

OBX|44|IS|17790-7^WBC Left Shift?^LN||T||||||F<CR>

OBX|45|IS|34165-1^Imm Granulocytes?^LN||T||||||F<CR>

OBX|46|IS|12053^Abn Lympho/ Blasts^99MRC||T||||||F<CR>

OBX|47|IS|12054^NRBC?^99MRC||T||||||F<CR>

OBX|48|NM|15051^RBC Histogram. Left Line^99MRC||28||||||F<CR>

OBX|49|NM|15052^RBC Histogram. Right Line^99MRC||177||||||F<CR>

OBX|50|NM|15053^RBC Histogram. Binary Meta Length^99MRC||1||||||F<CR>

OBX|51|NM|15057^RBC Histogram. Total^99MRC||71544||||||F<CR>

OBX|52|ED|15050^RBC Histogram. Binary^99MRC||^Application^Octer-stream^Base64^AAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAQEBAQEBAQEBAgICAwMEBQYHCAoMDhASFhkdIScrMDc9REpSWV
9mbXN5f4aKj5GTlZWWlJOSjoqFgHp0bWZfV1BJRD85NDArJiIeGxgVExAPDQwLCgoJCAgH
BwcHBwYGBgYGBgYGBgYGBgYGBgYGBgYGBgYGBgYGBwYGBgYGBgYGBgYFBQUFB
QUEBAQEBAMDAwMDAwICAgICAgIBAQEBAQEBAQEBAQEAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAQEBAQ==|||
|||F<CR>

OBX|53|NM|15111^PLT Histogram. Left Line^99MRC||3||||||F<CR>

OBX|54|NM|15112^PLT Histogram. Right Line^99MRC||46||||||F<CR>

OBX|55|NM|15113^PLT Histogram. Binary Meta Length^99MRC||1||||||F<CR>

OBX|56|NM|15117^PLT Histogram. Total^99MRC||1850||||||F<CR>

OBX|57|ED|15100^PLT Histogram.
Binary^99MRC||^Application^Octer-stream^Base64^AAAADSRAYXeIk5aQhnpuYVZORkE8Ni
8oIx4aFxYVFBIREA0NDAsMCwsLCwoKCgoLCwsLDAwMDAsMDQ8QEBASEgAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA=
=||||||F<CR>

OBX|58|IS|15014^ScattergramParaVer^99MRC||V1||||||F<CR>

OBX|59|ED|15015^ScattergramGraphicFlags^99MRC||^Application^Octer-stream^Base6
4^BAUI||||||F<CR>

OBX|60|NM|15203^WBC DIFF Scattergram. Meta len^99MRC||1||||||F<CR>

OBX|61|NM|15205^WBC DIFF Scattergram. Fsc dimension^99MRC||128||||||F<CR>

OBX|62|NM|15206^WBC DIFF Scattergram. Ssc dimension^99MRC||128||||||F<CR>

OBX|63|NM|15207^WBC DIFF Scattergram. FL dimension^99MRC||128||||||F<CR>

OBX|64|NM|15208^WBC DIFF Scattergram. FSC-LOG
dimension^99MRC||128||||||F<CR>

OBX|65|ED|15201^WBC DIFF Scattergram.
BIN^99MRC||^Application^Octer-stream^Base64^Uk8rAAc7QzcABT9JMAAFOT4pAARHUB0
ABzMwQwAESV0jAAdBQBYABzE1OwAELjAvAAQ1UxgABzQ4MAAEP0M9AAVQTiMABzA1
QgAEKDsXAAQiMxMAAx5DDgADPFooAAc1Qw0AB0lQKgAHNFYRAAc3ODoABDpYIAAHM
TUxAARXaxoABiE0DQADJkcKAANLXCYABzMzNAAEIC0KAANAVR0AB0JXOAAJRkwgAAd
FWygABzM1PQAEMzRIAARMXycABx8yDgADMTY6AARAPxQAByI2DAADMjg8AARCXScA
B0dSIgAHPUYtAAVEWSoABxwxCwADOD0zAAQyNTkABEpaKQAHRVYiAAclNAwAAx00CQ
ADPUY6AAUdLQYAAzY/OwAFNkwZAAcyMzoABCwwQAAEMTU1AAQ3REAABTg6MAAEUl
UmAAc3QEoABS4yNAAELDsbAAQ6RDcABSd5BQADMjc0AAQcLAsAAzFODwAHHCwJAA
MeOgcAA0JQNgAJIz0JAAMjPxUAAz9MIwAHTVwlAAdGVh0AB1dyHAAGLjhAAAQ7UywABz
1aHwAHQk0tAAceMAwAA010cAAJOjwpAAREWiwABztQJgAHPEM1AAUvSg8AA05ZSQAJJ
kQPAAMfRg4AAzdFQwAFIjMPAAMuMDwABDxCPAAFTlYoAAdFWiMABzQ6MQAEHC0MAA
NKUicABzlDNgAFHzANAAM5RzQABSEtCwADLzM5AAQ9RDwABS4wHAAEHy0KAAMjMg8
AAy00FwAERVUlAAceNw0AA0NZIAAHMzMxAAQuNDcABDA5NwAERVwbAAccMQoAAytK
BwADNjsvAAQfTxcAAyRFBAADOUQ6AAUzOGwACCAuDgADMDs6AAREWh8ABzU+LgAE
NGMMAANCUiYAByMvDwADREcnAAdGVzIACTRLEwAHS1JGAAkzQDsABTIzNQAERVYk
AAcvO0QABEFBOAAFRF4lAAccMQsAAzI5NwAEMDk4AAQ0NS4ABCw8HgAEPkQwAAVPV
E0ACTpQIwAHSV8kAAcxMikABCMxDQADN1kiAAciLg0AAyJcFAADXXQgAAY7Q0YABUBN
HwAHKjEUAAQyNTUABD1ZHAAHOkM6AAVHXSgABz45LwAEMzUuAAQdMQwAA152HAA
GHigJAAMeJQYAAyApDAADQUVBAAU/RksABT9FNwAFMz1PAAUwOEkABBwtCQADP1ZF
AAkzODYABCIvDQADMTMyAARDUCIAB0hROAAJPU5NAAlJeXEACVpdRQAJOFgaAAceM
A4AAzVXGQAHIy4PAAM8SR8AB19tJAAGHzAQAAM9UyMABztPHQAHLE4TAAcgRQ4AAx0
7DgADIzkTAANATT0ABTlHJAAHMDcvAARATR0AB0NWHQAHNDQ3AAQfLQgAAyZQMgAH

Okk0AAVHXCsABzI9IQAEHi0JAAM3RD0ABUhfIwAHPUFCAAU7QkgABUhJGQAHRVIfAAc5
QUgABTE2OAAEHTkOAAMoMBIAAzEzMQAELz45AAQcKgkAAyFACQADOjsyAAQrMBMA
BEZfIAAHQ1cdAAcpNRkABB8uEAADSVYpAAceKAwAAx8uCgADQVokAAc1MSkABEBXHg
AHHS4KAANBVh4ABz1CFAAHJEsKAAMfJwQAAzU9QgAEHTELAAMrRRcABxwqDQADTFk
nAAcwN0EABEJJOQAFSFoeAAdDSjYABUdbOQAJR1I+AAIlTiEABx41DwADNzgqAAQ8RzI
ABVJQIQAHMzg1AAQ0MykABDk8MAAEMjc8AARGUyAABzU4NAAEMDg8AAQ5VR0ABz5
TJAAHQE8gAAcrQRUABztLMQAFODYxAAQzVBoAByEvDwADMDo2AARWbh4ABjtMJQAH
S2AkAAclMg0AA191GwAGIi0OAAM8WxYABzI3MAAEHzcOAAMzOi8ABERPIgAHL0cRAAdL
V1kACURbIgAHQ10aAAdIViQABzI0NQAENDYqAAQdLAoAA0FSHAAHM1sXAAc1NTQABC
81MQAEPlcYAAcjMQoAAzxLHwAHJSgMAAMcNQsAAyAoDAADHzIOAAMkQQgAA0ddIQAH
IC0OAANCUyQAB0NOGAAHMTY2AAQwQh4ABzEvNAAEQVQIAAcyMiwABEBTJAAHNCw
wAAQxNioABDk7HgAEUFNHAAkxOTMABEFUUwAJNDEZAAQdLgoAAyE1DwADQVkfAAd
MUh8AByAxDgADIkgLAAM9VRkAB0FaNwAJP0E9AAVcdh4ABkJVHwAHS1kiAAdCWSIABz
U2LQAEP1wgAAdBWh0AByQ1AwADOURFAAUqLBMABENPJgAHNkRAAAU6RTwABR8yC
gADQVs1AAkzNj4ABDc6VwAFPVQbAAccPggAAzA0OwAET1UfAAc8QUEABURWFwAHOE
UyAAU4QUAABURGIQAHR1ofAAdLVzwACSEtEAADRlgiAAc7RzkABTE0OgAERFYeAAc9O
yMABDE0LAAEIDoPAAM9WR0ABz5ZHwAHOzgpAAQcMgwAAzMxLAAERVYrAAdQVicABzI
5NQAEHjQKAAMdLwMAAyEyDQADHDQJAAMxNjoABFpxHwAGKUEmAAQxNTkABCpDHw
AHHTkHAAMxNTgABEpSIgAHQUU9AAUxUxUABy1UEwAHQVEgAAc6UxgABzxINwAFOkQ
oAAQ0ODAABEVZHwAHNjYkAAQ0OxsABB0qCAADQlkmAAdESBcAB0pfJgAHQUwjAAc2O
y4ABCQsDQADJTITAAMxP0QABUtPKAAHQ14fAAdDWSMABzVXFgAHPURDAAVARD4AB
TM2MAAEIigLAAMdLAoAA0FHLwAFWHAaAAYwNzsABElHIAAHPkQ8AAVAWyIAB0JTIAAH
IDMNAAMzaAYAAzNBBAADHS0LAANIXC4AB0BFOQAFJkEWAAdBRD4ABTMuJAAETFoe
AAdEWCgABz5HNgAFHj0IAAMgLwwAAz5GPgAFLTMxAARHXCQAByMtDQADIEcWAAMv
NUIABDhCRAAFITMPAAM2OR4ABBwoCwADPEdAAAU4SxkAByQyDgADNTotAARDWCgA
BzQ6JgAEMDI6AAQ+REEABU1YJAAHHUoLAAM3WBYABzE1NwAER1MmAAcxNzEABDE
1OwAEIDQQAANPTyYAB01ZNAAJMTc6AARfeRsABkddIQAHLTQ4AAQoQjUABTVWHQAH
OT5HAAUkORMAAz86FAAETFUhAAc1OC8ABD1RIgAHID0bAAM5Q0cABTJaEgAHR1c4AA
lFWCMAB1hwIgAGSlsiAAdDWx4AB0NHJgAHMTk/AAQ+WCEABx0wCgADRVImAAdAUhsA
Bx8wDQADP0Q9AAUyOScABDITFgAHSUskAAdNUCMABy42RgAEQ1IfAAcdMgsAAzE5Ow
AELkIxAAVCTCAAB0RLGwAHHDQLAAM0TE0ACU9dVwAJcGB9AAkgNhIAAyEhDAADPlYp
AAc0LzQABDc4MQAEHCcKAAMwOCwABDdMMgAFHTELAAM+VyIABykvEQADHC0KAAM
yNz0ABDQ3MgAELIETAAdLVCgABx0lDAADWHIdAAY4QEMABTgvLQAENjIoAAQ0P0YABS
o9DwADLIAbAAcyMzMABD0zIAAEMTUxAAQdRQcAA05XJgAHLzc9AARBWiQAByQxFwAD
MEpFAAVDRkIABSdNFAADMDoxAAQfMAsAAyBGCwADNDQ2AAQdMQgAA05bZAAJKEoQ
AAMwNy8ABDICSAAFSE0eAAcwODIABDMyLwAESFY+AAk+TiAABzM9JwAEOT9DAAU6Q
TkABTxYIAAHSlEnAAc7RDwABTlERgAFJDMPAAMhNhQAAzA5OQAEQFUnAAcxNz8ABEV
XJwAHNTtHAAQjMg0AAz5XIgAHQU0hAAc3PC8ABDI6MwAENjswAAQyLzkABExQKQAHMj
ImAAQzNDoABEJXGwAHNzgeAAQyNBsABERPIgAHRFolAAc0MykABE1VKwAHNDMoAAQ
9Qz4ABT9RGgAHLi80AAQ2MzIABFRYSQAJN1kUAAczQUoABSlMEQADKD8MAAMpNhEA
Ax4wCwADMzU5AAQ6RD4ABVt3GAAGJDINAAMyNjQABD1XBwADXXIdAAY1NiwABBwyC
wADNDg7AAQ6SScAB0BGNAAFLT42AARMXDUACTE4OwAENzo9AAQvNUMABCk2EAAD
QVEcAAdMXDAAByFJCQADOmENAAMzNi8ABB4sCwADNDUlAAQmOxMAAx8sCQADPEg
2AAUhLwwAAzI5KAAEPU81AAk0QjwABTI1LQAEMjYrAARQUy4ABzA4PwAERlMjAAdBWx
wABzU4LgAEQ1cfAAczNyMABEtmIgAHLzk1AAQ6WRsABzBTMgAJJDsUAAM9XR4AB0dUI

wAHHS4LAANBWyQABzM3PAAEVFVIAAk3RjsABSYzEgADKjQUAARVWSwAB0pZJwAHH
C4LAAMvMjoABDc4LgAEIC8LAAM3NxsABDxFPAAFNTU2AARDVyQABywxGAAEHDAHAA
NDVEYACT9OXwAJHToMAAMcKAoAAzdcGgAHMzE5AAQuMzQABDQ7NwAEHC8LAAM1
OD8ABD1COwAFNUAbAAQeMw4AAx0uCQADMzA0AARGWicABz1OGAAHNDs9AAQrOUY
ABDMxMwAEUloqAAcrPRoABDM4NgAEIjAPAAMqNkQABB0uDQADPlcfAAc5WhoABzlFNg
AFO0dDAAVGWioAB0NGKQAHQEQ6AAUwNUUABCc0FAADLzc3AARGWyIABzI1PAAEQE
0oAAcvNR4ABC02HwAEO0A6AAVOUCsABz1BEwAHMDU6AAQ9QkoABSArAwADOUYyAA
U3WTEACTI5NgAENT8gAAQ0Mz4ABC84NQAEVWwdAAYwTw8AB0ZaJAAHQEkzAAU4W
RgAB0RZRgAJT1coAAc9PBwABEtdIgAHMjcsAARCVx8AByQ3EwADMTk5AAQ0Ly0ABDpH
KAAHS1csAAclMgYAAyc3FAADOj0+AAQxMzsABC82SQAEHDIJAANFWhwAB0E+HgAEN0
8ZAAcuNzkABDIENgAFOVYbAAcwODcABB1JAwADLTA8AARPXyYAB0BJGAAHKi8RAAMh
LgoAA0lZJwAHIDQQAAM3Oi4ABC47NwAEHTcHAAMwNzAABDI2MwAEO0Y2AAVHTiMABy
9RDwADQ1AZAAc5RCEAByRXFQADIE8XAANCWh0AB0FLJwAHNDc2AARYdh8ABjtFOQA
FKD0VAAQdLQkAAzMwNQAEMjdCAAQ8Ty4AByYzEQADNTooAARMSyIABy5zBQADITwK
AAM6ViIAB05SKQAHRlwjAAc6NisABDlyOAAELjc5AARTVSQABzQ2MQAEQlYfAAdCTiEAB
yYrEAADID8JAAMyMkEABDlDRAAFNjUqAAQyMy4ABDEyNQAEIzALAAM5ShUABzU6KwA
EMVgmAAcfLwwAA0ZWOAAJICkNAAMdLwoAA0ZfGgAHHSoKAAMuWRYABzo2JgAEWnIa
AAY1NCsABDM1JAAEJCkTAANIWSIABy41OQAEHjELAAMvNjwABDQ1OAAESlUoAAcqNA
4AAz9cOgAJWFosAAc8RTYABTc5KAAEHjcPAAMhSQ0AAzU2LQAEOkYvAAUdMQgAAy80
PAAEPUQ3AAVCWh4AByk/DgADPFgfAAdHUikAB0JeGwAHOVYZAAdAOCsABBwzCgADN
00ZAAcjMw4AAxwxCQADMC43AAQhMQ0AAzpMNgAFRlshAAc9SzYABSAzDgADMTI2AAQ
gPiIABEthTwAJNjQuAAQyNjYABDpFQgAFOEY7AAUlLhMAAzM0LQAEHjwLAANJXi0AB0ha
JwAHWXYYAAY4OSMABDE0OQAENlUYAAdAUSYAB1tvHgAGLFoGAANXcBoABjM4LwAE
Mi8uAAQ8Q0MABSxWFw

.....

304^RET Scattergram. Ssc dimension^99MRC||128||||||F<CR>

OBX|75|NM|15305^RET Scattergram. FL dimension^99MRC||128||||||F<CR>

OBX|76|NM|15308^RET Scattergram FSC-LOG dimension^99MRC||128||||||F<CR>

OBX|77|NM|15355^NRBC Scattergram. Meta Len^99MRC||1||||||F<CR>

OBX|78|NM|15351^NRBC Scattergram. Fsc dimension^99MRC||128||||||F<CR>

OBX|79|NM|15352^NRBC Scattergram. Ssc dimension^99MRC||128||||||F<CR>

OBX|80|NM|15353^NRBC Scattergram. FL dimension^99MRC||128||||||F<CR>

OBX|81|NM|15356^NRBC Scattergram FSC-LOG dimension^99MRC||128||||||F<CR>

OBX|81|ED|15900-1^HemaScanningWbcGraph-1^99MRC||^Image^JPEG^Base64^
/9j/4AAQSkZJRgABAQEAYABgAAD/4QBuRXhpZgAASUkqABkAAABWaXNpb24gQ0FNIFYx
MjAwAAIAEAECABEAAAAIAAAAaYcEAAEAAABIAAAAAAAAAEFTQ0lJAAAANC43OTA1Mj
gAAgCGkgcAEQAAADcAAAB8kgIABAAAADQweAAAAAAA/9sAQwAIBgYHBgUIBwcHCQkI
CgwUDQwLCwwZEhMPFB0aHx4dGhwcICQuJyAiLCMcHCg3KSwwMTQ0NB8nOT04MjwuM
zQy/9sAQwEJCQkMCwwYDQ0YMiEcITIyMjIyMjIyMjIyMjIyMjIyMjIyMjIyMjIyMjIyM
jIyMjIyMjIy/8AAEQgAfAB8AwEiAAIRAQMRAf/EAB8AAAEFAQEBAQEBAAAAAAAAAAA
BAgMEBQYHCAkKC//EALUQAAIBAwMCBAMFBQQEAAABfQECAwAEEQUSITFBBhNRYQ
cicRQygZGhCCNCscEVUtHwJDNicoIJChYXGBkaJSYnKCkqNDU2Nzg5OkNERUZHSElKU1
RVVldYWVpjZGVmZ2hpanN0dXZ3eHl6g4SFhoeIiYqSk5SVlpeYmZqio6Slpqeoqaqys7S1tre4

ubrCw8TFxsflycrS09TV1tfY2drh4uPk5ebn6Onq8fLz9PX29/j5+v/EAB8BAAMBAQEBAQEBA
QEAAAAAAAABAgMEBQYHCAkKC//EALURAAIBAgQEAwQHBQQEAAECdwABAgMRBAU
hMQYSQVEHYXETIjKBCBRCkaGxwQkjM1LwFWJy0QoWJDThJfEXGBkaJicoKSo1Njc4OTp
DREVGR0hJSlNUVVZXWFlaY2RlZmdoaWpzdHV2d3h5eoKDhIWGh4iJipKTlJWWl5iZmqKjp
KWmp6ipqrKztLW2t7i5usLDxMXGx8jJytLT1NXW19jZ2uLj5OXm5+jp6vLz9PX29/j5+v/aAAwD
AQACEQMRAD8A7Fzz1qWC4dCMGoCcmnIjY4rRpSWpu9Tbt9RwMMeRW1p94sqkhs1xgfY
cGtewuEj6YGeTWbglJMlq7sdS84A61SmvQvO4ZrNnviBwx+lZNxdu56mnyu1yUjcfUlznIqSPU
Aw5wRXMqssp6k1OFki5yfpSVGe49TrImhlGcDNS+Wg6ACsHT7gg8nrW0H3DNVGUmrMTBj
2xToxzxTepqaNefaqJJQOORTGiVuCtTYwKYakCv9kjHOPwowi8YFLNLtXk1jS32JCMmm5Mp
LqcohzVhcheOKSSBo2zjvTfMI4AqrNGiYkhOas2vJAJNVG5NaNhFnqKGndB1JZAAnes8nMu
D61sXEYEfB5rDm+WQ4pyXYTNzT4UIBJFTXyxquRism2vCoxmn3F4GXr1rNTlsCH282yXFb
sNyCg57VySSEPnd+FXor4pgHpRyuPzC2h08UoZxjBz1rRjHGQOtctaXiCTcH/DNb1vcq6gA5p
WM2rF0mmNgg49KieTnNJ5u4H0p2sJFG+Yqp5rmppT5p/xrpL5dyE1zU0beaa0cblLY2bvTxyd
v6VkyWYUmupurhFXBwax55oSTwBR7ZdUNW6mJJCEf1q5bTCFcnFRXB4yoFVMMwIzik3d
plaXLF3qasdo69Kz5ZhtyfxqtcRlJdzHFY+rakIoCqt+tdCpKTshxTb1NGXVoos/MBj3rKuvEa79q
En+VcfLfPJKTuPXmhZAeeM1108FH7RrGF+p2dt4hGcMQKuNrkRUYdST6GvPpJTjrj8aW3lY
yA7jwaqeCi3daDcOx6TYX7zzggsBmu90htyrn0ryzRbgYUGvS9AJeNTntXHXgo6l55x5XY3Je
RgfjUCsVbGakIOD3qHOTx61zLsZE8kRkTj0rIks/nNbsQwo9MU8wqTnApxlbcr1Oc1Cc7iB1qh
FE0rdKnvyfM6U+xwe1ZpJO5SFay+TOOaoSQeWx4x+FdGQBHmsm+5VsDNauV0lYZwviW/
NuCq/e+tcDc3ss7kPmuz121kurxhg4Ga5u70loRnYa9nDUY8t+ppTd22ZCx55AqQIc4p23YSM
d6fGMmum50pIPIJHT9aFjMZ6VdjTCZNVJ5QGI49KfNpqVZI09NvDFKozXrnhO5E0A57f5/z/A
JPh1vL+9HPevX/ArF7cZPb/AD/n/J8vGxWjOeqtTsrlsGiAbjx2pswYuB1q3bx4XpXnvRHGTKM
DoKf+FGKXArPUDmtQtzkkDvVOBzEfpXR3VuHUkVjT2xVjgVo4qSui07Ev2guo57VA8Jkye2K
YquOK1LaAtH8wqFo9St2cfdWA+15K9f8AGsvWdOBgJVO3pXd3FkGnBI6HiorvTEngIAGcV6
FKvysVOVrnhN5bPHMQV71HEmD0rudd0IxuxCfjiuUmtmiJGK9SElJXR2QkmV3nCJjocVmTF
pDxUtyW3lcGlt7Z5XChc59qG7PUJyXUghDLIOK9e8AzHysH/PT/AD/nni7Xw1M8IkAHTODXa
+ErY2eVII9c1wYuUZx0OeU/eVzuZJNrg1agmBGKzZJA4FOik29681x0MbG0DkZFLn3H51Wg
l3DNWcj1rOwrDTyOlV5rZWGelSRShwKk49KabWwbGY1mynIAqeIlBgirfGOlV53CdelNu+4yO
UBxkHkVWcsopv2kGSpXKOvPeiLS0YWe6MHUohNkFa5K+0bcGIX9K717YOT3pP7LVxgjrXf
Rr8iKjJo8buNBkecgITz6VtaRoHlEO6fnXpH/AAj8CfMUBPuKr3FgqDCLirq4rmVol8/cxYEC4UK
OK2LSBEG4LjPpVeKzbzOnf0rYityYsAVwRupEt6lYyc4BqQMdvBpksRj521Grc4rTW2okaFvO
V/wq4L046mskK23I4qIyyA4yaxnF390DRsZmZRWqnK1j6UPkGccd6214FTpYl9xG4XGKzb6
UBTWhIQFNYGozjnmmtNRpFUzENkGnfa2A55qrCC7VNOhEf9aIxT3KSTLdvdo7YrbtyjJxjNc
RHKUm4rp9NmyoFZxunYRsFQ1Uby3UKWGMDmr6nK5xTZI1IUq3cVpF2ZCdjGtLczEsQMZr
VjgWMfhTobZIFwgwPpUhGaV1smF9DJv0XGRWPuXzMGtjUBhSP61zkjMkIXJNotG1FtZcD0
pjw5bNVbW4461d8xTzxUxnbRlF2wt9kYJrR6DgU2JQEGBT6HuZMp3RO3vXOXxO/wBq6e5
UbPwrnr1V3HgdapLQpENkBxnip7xQEODVeH5elLO7FTk0oys7GtkZW0+f0OM10mlLgCsWJ
Q0oyO9dJp6KMYFJLqZmsn3BT/emj7lOFSZid8minHpSetILIK6i3KT1rnb20IJIBrrX+5WXdxrk8
VtB9CkzII3Rt3qX7U44B4q9NEm48VU8lPSlKmrl3P/Z||||||F<CR>

OBX|82|ST|15901-1^HemaScanningWbcCellType-1^99MRC||M_WBC_MON||||||F<CR>

2.6.1.3 Body fluid samples

MSH|^~\&|LabXpert|Mindray|||20140910100530||ORU^R01|1|P|2.3.1||||||UNICODE<CR>

PID|1||^^^^MR<CR>

PV1|1<CR>

OBR|1||-13|00001^Automated Count^99MRC|||20140815141621||||||||||||||||HM|||||||admin<CR>

OBX|1|IS|08003^Test Mode^99MRC||CBC+DIFF||||||F<CR>

OBX|2|IS|01002^Ref Group^99MRC||General||||||F<CR>

OBX|3|ST|09001^Analyzer^99MRC||x1||||||F<CR>

OBX|4|NM|57845-0^WBC-BF^LN||0.000|10*9/L||N|||F<CR>

OBX|5|NM|23860-0^RBC-BF^LN||0.000|10*12/L||N|||F<CR>

OBX|6|NM|26490-3^MN#^LN||****|10*9/L||N|||F<CR>

OBX|7|NM|26493-7^MN%^LN||****|%||N|||F<CR>

OBX|8|NM|10034^PMN#^99MRC||****|10*9/L||N|||F<CR>

OBX|9|NM|10035^PMN%^99MRC||****|%||N|||F<CR>

OBX|10|NM|10036^TC-BF#^99MRC||0.000|10*9/L||N|||F<CR>

OBX|11|NM|35063-7^Eos-BF#^LN||****|10*9/L||N|||F<CR>

OBX|12|NM|26452-3^Eos-BF%^LN||****|%||N|||F<CR>

OBX|13|NM|10037^HF-BF#^99MRC||****|10*9/L||N|||F<CR>

OBX|14|NM|10038^HF-BF%^99MRC||****|%||N|||F<CR>

OBX|15|NM|10039^RBC-BF-R^99MRC||0.0000|10*12/L||N|||F<CR>

OBX|16|NM|10044^Neu-BF#^99MRC||****|10*9/L||N|||F<CR>

OBX|17|NM|10045^Neu-BF%^99MRC||****|%||N|||F<CR>

OBX|18|NM|15051^RBC Histogram. Left Line^99MRC||10||||||F<CR>

OBX|19|NM|15052^RBC Histogram. Right Line^99MRC||250||||||F<CR>

OBX|20|NM|15053^RBC Histogram. Binary Meta Length^99MRC||1||||||F<CR>

OBX|21|NM|15057^RBC Histogram. Total^99MRC||0||||||F<CR>

OBX|22|NM|15111^PLT Histogram. Left Line^99MRC||3||||||F<CR>

OBX|23|NM|15112^PLT Histogram. Right Line^99MRC||39||||||F<CR>

OBX|24|NM|15113^PLT Histogram. Binary Meta Length^99MRC||1||||||F<CR>

OBX|25|NM|15117^PLT Histogram. Total^99MRC||21||||||F<CR>

OBX|26|NM|15203^WBC DIFF Scattergram. Meta len^99MRC||1||||||F<CR>

OBX|27|NM|15205^WBC DIFF Scattergram. Fsc dimension^99MRC||128||||||F<CR>

OBX|28|NM|15206^WBC DIFF Scattergram. Ssc dimension^99MRC||128||||||F<CR>

OBX|29|NM|15207^WBC DIFF Scattergram. FL dimension^99MRC||128||||||F<CR>

OBX|30|NM|15208^WBC DIFF Scattergram. FSC-LOG dimension^99MRC||128||||||F<CR>

OBX|31|NM|15253^Baso Scattergram. Meta Len^99MRC||1||||||F<CR>

OBX|32|NM|15255^Baso Scattergram. Fsc dimension^99MRC||128||||||F<CR>

OBX|33|NM|15256^Baso Scattergram. Ssc dimension^99MRC||128||||||F<CR>

OBX|34|NM|15257^Baso Scattergram. FL dimension^99MRC||128||||||F<CR>

OBX|35|NM|15258^Baso Scattergram. FSC-LOG dimension^99MRC||128||||||F<CR>

OBX|36|NM|15307^RET Scattergram. Meta Len^99MRC||1||||||F<CR>

OBX|37|NM|15303^RET Scattergram. Fsc dimension^99MRC||128||||||F<CR>

OBX|38|NM|15304^RET Scattergram. Ssc dimension^99MRC||128||||||F<CR>

OBX|39|NM|15305^RET Scattergram. FL dimension^99MRC||128||||||F<CR>

OBX|40|NM|15308^RET Scattergram FSC-LOG dimension^99MRC||128||||||F<CR>

OBX|41|NM|15355^NRBC Scattergram. Meta Len^99MRC||1||||||F<CR>

OBX|42|NM|15351^NRBC Scattergram. Fsc dimension^99MRC||128||||||F<CR>

OBX|43|NM|15352^NRBC Scattergram. Ssc dimension^99MRC||128||||||F<CR>

OBX|44|NM|15353^NRBC Scattergram. FL dimension^99MRC||128||||||F<CR>

OBX|45|NM|15356^NRBC Scattergram FSC-LOG dimension^99MRC||128||||||F<CR>

2.6.1.4 Glycohemoglobin test samples

MSH|^~\&|LabXpert|Mindray|||20200511161940||ORU^R01|8|P|2.3.1||||||UNICODE

PID|1||mindray0001^^^^MR||^Jack||19950518000000|Male

PV1|1|outpatient|surgery^^NO.100|||||||||||||||social security

Count^99MRC||20200511155804|20200511161940|||nurse|||bacterial infection|20200511160804|||||||||HM|NotValidated

OBX|1|IS|08001^Take Mode^99MRC||O||||||F

OBX|2|IS|08002^Blood Mode^99MRC||W||||||F

OBX|3|IS|08003^Test Mode^99MRC||STANDARD||||||F

OBX|4|IS|01002^Ref Group^99MRC||Male||||||F

OBX|5|NM|30525-0^Age^LN||25|yr|||||F

OBX|6|ST|01001^Remark^99MRC||bacterial infection||||||F

OBX|7|IS|05007^Project Type^99MRC||BL||||||F

OBX|8|IS|01007^Sample Type^99MRC||blood||||||F

OBX|9|IS|01008^Patient Area^99MRC|||inpatient area||||||F

OBX|10|ST|09001^Analyzer^99MRC||H50||||||F

OBX|11|NM|17856-6^HbA1c%^LN||0.6|%(NGSP)|4.0-6.0|L~N|||F

OBX|12|NM|10093-6^HbA1c%^LN||0.6|%(NGSP)|2.9-5.0|L~N|||F

OBX|13|NM|59261-8^HbA1c-IFCC^LN||2|mmol/mol|20-42|L~N|||F

OBX|14|NM|10090^HbF^99MRC||2.1|%|0.0-99.9|N|||F

OBX|15|NM|10091^HbA1^99MRC||1.4|%|0.0-99.9|N|||F

OBX|16|NM|10092^eAG^99MRC||4.2|mmol/L|0.0-55.5|N|||F

2.6.1.5 Glycohemoglobin test samples with graphs

MSH|^~\&|LabXpert|Mindray|||20200511162145||ORU^R01|9|P|2.3.1||||||UNICODE

PID|1||C1^^^^MR||^Jack9950518000000|Male

PV1|1|outpatient|surgery^^NO.100|||||||||||||||social security

Count^99MRC||20200511155804|20200511161940|||nurse|||bacterial infection|20200511160804|||||||||HM|NotValidated

OBX|1|IS|08001^Take Mode^99MRC||O||||||F

OBX|2|IS|08002^Blood Mode^99MRC||W||||||F

OBX|3|IS|08003^Test Mode^99MRC||STANDARD||||||F

OBX|4|IS|01002^Ref Group^99MRC||Male||||||F

OBX|5|NM|30525-0^Age^LN||25|yr|||||F

OBX|6|ST|01001^Remark^99MRC||bacterial infection||||||F

OBX|7|IS|05007^Project Type^99MRC||BL||||||F

OBX|8|IS|01007^Sample Type^99MRC||blood||||||F

OBX|9|IS|01008^Patient Area^99MRC|||inpatient area||||||F

OBX|10|ST|09001^Analyzer^99MRC||H50||||||F

OBX|11|NM|17856-6^HbA1c%^LN||0.6|%(NGSP)|4.0-6.0|L~N|||F

OBX|12|NM|10093-6^HbA1c%^LN||0.6|%(NGSP)|2.9-5.0|L~N|||F

OBX|13|NM|59261-8^HbA1c-IFCC^LN||2|mmol/mol|20-42|L~N|||F

OBX|14|NM|10090^HbF^99MRC||2.1|%|0.0-99.9|N|||F

OBX|15|NM|10091^HbA1^99MRC||1.4|%|0.0-99.9|N|||F

OBX|16|NM|10092^eAG^99MRC||4.2|mmol/L|0.0-55.5|N|||F

OBX|17|NM|15425^Total Area^99MRC||0.00||||||F

OBX|18|NM|15407^A1a RTime^99MRC||1.0||||||F

OBX|19|NM|15408^A1a Area^99MRC||2.00||||||F

OBX|20|NM|15409^A1a Area Percent^99MRC||3.0||||||F

OBX|21|NM|15410^A1b RTime^99MRC||4.0||||||F

OBX|22|NM|15411^A1b Area^99MRC||5.00||||||F

OBX|23|NM|15412^A1b Area Percent^99MRC||6.0||||||F

OBX|24|NM|15413^F RTime^99MRC||7.0||||||F

OBX|25|NM|15414^F Area^99MRC||8.00||||||F

OBX|26|NM|15415^F Area Percent^99MRC||9.0||||||F

OBX|27|NM|15416^LA1c RTime^99MRC||10.0||||||F

OBX|28|NM|15417^LA1c Area^99MRC||11.00||||||F

OBX|29|NM|15418^LA1c Area Percent^99MRC||12.0||||||F

OBX|30|NM|15419^SA1c RTime^99MRC||13.0||||||F

OBX|31|NM|15420^SA1c Area^99MRC||14.00||||||F

OBX|32|NM|15421^SA1c Area Percent^99MRC||15.0||||||F

OBX|33|NM|15422^A0 RTime^99MRC||16.0||||||F

OBX|34|NM|15423^A0 Area^99MRC||17.00||||||F

OBX|35|NM|15424^A0 Area Percent^99MRC||18.0||||||F

OBX|36|NM|15426^P00 RTime^99MRC||19.0||||||F

OBX|37|NM|15427^P00 Area^99MRC||20.00|||||F

OBX|38|NM|15428^P00 Area Percent^99MRC||21.0|||||F

OBX|39|ED|15406^Chromatogram
BMP^99MRC||^Image^BMP^Base64^iVBORw0KGgoAAAANSUhEUgAAAVkAAAC2CAMAAA
BESQ4KAAAAAXNSR0IArs4c6QAAAARnQU1BAACxjwv8YQUAAAKgUExURQAAAAAAMw
AAZgAAmQAAzAAA/wAzAAAzMwAzZgAzmQAzzAAz/wBmAABmMwBmZgBmmQBmzABm/
wCZAACZMwCZZgCZmQCZzACZ/wDMAADMMwDMZgDMmQDMzADM/wD/AAD/MwD/ZgD
/mQD/zAD//zMAADMAMzMAZjMAmTMAzDMA/zMzADMzMzMzZjMzmTMzzDMz/zNmADNm
MzNmZjNmmTNmzDNm/zOZADOZMzOZZjOZmTOZzDOZ/zPMADPMMzPMZjPMmTPMzDP
M/zP/ADP/MzP/ZjP/mTP/zDP//2YAAGYAM2YAZmYAmWYAzGYA/2YzAGYzM2YzZmYzmWY
zzGYz/2ZmAGZmM2ZmZmZmmWZmzGZm/2aZAGaZM2aZZmaZmWaZzGaZ/2bMAGbMM2
bMZmbMmWbMzGbM/2b/AGb/M2b/Zmb/mWb/zGb//5kAAJkAM5kAZpkAmZkAzJkA/5kzAJkz
M5kzZpkzmZkzzJkz/5lmAJlmM5lmZplmmZlmzJlm/5mZAJmZM5mZZpmZmZmZzJmZ/5nMAJ
nMM5nMZpnMmZnMzJnM/5n/AJn/M5n/Zpn/mZn/zJn//8wAAMwAM8wAZswAmcwAzMwA/8w
zAMwzM8wzZswzmcwzzMwz/8xmAMxmM8xmZsxmmcxmzMxm/8yZAMyZM8yZZsyZmcyZz
MyZ/8zMAMzMM8zMZszMmczMzMzM/8z/AMz/M8z/Zsz/mcz/zMz///8AAP8AM/8AZv8Amf8Az
P8A//8zAP8zM/8zZv8zmf8zzP8z//9mAP9mM/9mZv9mmf9mzP9m//+ZAP+ZM/+ZZv+Zmf+Zz
P+Z///MAP/MM//MZv/Mmf/MzP/M////AP//M///Zv//mf//zP///8DAwICAgIAAAACAAAAAgICAAIAA
gACAgIvU5IAAAAAJcEhZcwAADsMAAA7DAcdvqGQAAAu7SURBVHhe7Z3NeaQ4E4D5jnN
zELt7+AhhI5gEuO1xEvBGQARAROwCFw2yDm5pvdMM8GsyVRAkFLpaoCAW3rfZ6Zxo0A8VIq
/XSPp7oV8lDM5qKYzUUxm4tiNhdhsz+rqvr3H/xh5v238W3zGixQmAmbff2BGwveKnj77X8vt/f
fX+DHn7BViBI2+3fQ2bP1/fMbmr29Ppm/C2GCZj++/79yAfn812/V01tVPd3e/7DNH7Si2beSD
wiCZo25n6jt+dvt4xf8+f7y9s2+8fHrB5pF1YUgnlnTK+EmAALtq0kB45/PbrY2Au6pcbcU3yy+Im
NW9cyiSIhelw1G1Z+ELqKw7nBDSNQsCLSvs1n78nl7sLbBjRW7mjVd0ysGpGd2Per6XB3Y
MODGirrHDSHhmIWZgtPmmYUU+4lnCk2LGyv2NfsVibX6mPEUxawjdvvF7EZiQ4No/k1RzC
KxoUExu5Wo2eiOBMUsUszmIiqwV05vi1mkmM1F1Gx00JDANwvg5hckq1l8/ZrEOyqll2IWKW
ZzETerXEYsZpFiNhfxSaxyGbGYRYrZXMTNKpcRi1mkmM1F3Gx8D0kxixSzuYj7i4/HSIpZJG5
WudhVzCJxs8olmWIWyWr2S68iEv2UzkqJWYQYtRazmyDM6pZkilmkmM0FZVa1JFPMIoRZ
YhdBMYsQ+ohhA0ExixSzuSDM6hYOilmkmM0FYVa3JFPMIsTQSrdwUMwixWwuqOmAykwx
i2Q1+6VXESmzqoWDfWK2V42lL8VFzQ6PH+ykWWJflH3MNlV8NPggXNRsPeg+Ob4QlD1iF
hFnH7PVloOvwTXNwlD6U5tVLXbtYrZttF/fvQ7UDZxnFq6sSvJXgjKrWuzaxSxoVaWiK3FRs51
y3f1CUGZVy4h7mdWtDl8IyqxqsWsXs3BkMbtmL7O6NcwLQZlVqdnDrLWqfy7XIKtZ7SpiMRv
CN4uvYmzXSdbsASDrr7m5Pcza3uvRzZJ3f6rZR58q0GYVM8w9zNpZwqc2q7m5Pcza6z76J
Oy6Zh99qkDevSZs9jBrs9CpZoe62vp50TXNmp5T+8uX9qBp2q6vt6kl714TNruZPXF6OzQd0
G9bIr6k2fFA9eFb6Woj1qjFN1SQ1dec+hOYrdvRbLfpA+QrmsU8cNYkrMWQBbZUgbx7Tap7f
LP1gF4haBUCHFc0i03lpM8YXZa16J9uwp3CjW9WuYqIHedJ09txYIA06kyb1yy+SsFh9EnT26
n/MvTae0iZVTSGRze7SAaQDrQN55JmMQ2cM71dJIOua2lBcVJm5Z3lfmbPmd5WfjIAKmUfd
kmzeNVE3fKwSgbQhylzUqL2iu55D7MYJtrjt7BKBpAOlLW4pFl33Blm18kA+jDdsDphVtE972j2
hEnYXTJQLx4kzCo6kcc2e5cM1EPaVC8hP+t2s1OdTpjeLqYJiG5ImwrKY82OJqc6nTC9rdCm
jy4dpMzKG+QGs8M4dpzqdPwkzFtAnNGlg5RZedhsMFuPE55p7nX8JKyZFxA9VG0nZVYeNn
qzcC2bWadrHm/2fsxlUM1wU2ZT++/xzcpWEUGrlTqFSKp73R2YygbRDFKS5qQtekPMQnFb
nek+DjcbTLOAZoZ7IbO27ZtD5sPEF99IOM3q+rCkWfGY0quErD42CZi/zjNb9ahyjWJknTQr7s
LUZm1N4HJeDjh4EhaY2iKKdJA0K+6ftWbHC4FW74qq4Y6ewNQWUSx4JcWJexGtWbRYd1
4rETeYbYSmtoi89aRDUvq0tGbxCTatF6jiBrONaJrVpIN03aVPS2m2wcJt7TWSY8320TSrmSw
wzAq7RZ3ZvnaF/YOOHdDG0ywgTgdps9JeRGe27kJmJWfYDpFmFekgbVbai6jMQsM432xka

jsiniykzUpznVcDdmXMNVzhxUFHDmhjU1tEuv6d9pYc8a7QmDUCg2aPHNA2VJqVfy0xbVba
iyjM2ocXNHvkgJZMs/J0wGjrwjN6xbmriNafK7k44kCzsRXECWEfltcsvqaw2TRoVpqKNpBIs+I
hLSMohL2lwqwtFzTLPsV2YiuIMzIRHLOyqYLngqlIDMyzzRJTW0TWhzHMCvtnudmxDmGzh
w27kskAEH0tkWGWUcRHbnZsFGGzhw270skA+rB0pzTD0CYcdsnNjsXCZoWPVU86GQgH
XpyaS863KM08cCzmCi8PYoxddoGTDGRByzEra5Fis9gmwmaPWu3iJANZ0HLMyuJGbBZP
HzbLPMdmOMkAEMwWWHIM1EGLzWIVImaP6cJ4yUAUtCyz7pMUFmKzOF6OmOVVcCu8
ZADwg5ZXccntic1iqYjZYxItMxIIpri8xibJtDubZZ5kG9QnYCvYy7TMNCa4Pa8o6ygXlK7w+qAj
Ei35CdgSdtAy6y3ow3yznFVE1x5iZo8Y0bKTAcANWqZZQeD4ZvGVxOXwmFneWTbBHRlYu
EHLVCYIHKlZt5QWNStca1Pg/aoIBszhATcY+YEjNbs2eneQJB107dCKV8eSnyYsge4ODyTh
muWng93N8k5jGepmaGoIQfyZR+KjxTt4+YBrrK+5Q1rPA0fJNF6Nm2V3n9hOu6EWZRBJ/2V
h/TMmdiwO3NmH0OzU1uNmufMUr9fua34KEfVfIxxr/FbODR2h2akCcbPMadiyfuALt1IkPg0P
wfntc4Jmw+xJhGYnAXGzvMe/LsQdeCpCIqWW/WQBjiix2amM2wgcdBe0gUoHUkbDivVamm
UtabWcm3fwMod3RsbJ5y8UEGaXV+6rqq7W7Sf4xQROtysby84kx14Ss7zfbSkzO4caZdZvW
uOYp13WJZaKh1RKUOUCS0Its3NAmprx225lZmdBpNm5nlO29+MxfhtdIiXocoFl9XBXiL/dk5
YlMuspIc1Ose1V2BtVUuFD3iJ7xTsEObSTzBwt6bGlyKyXQGmzt8YGyCl427qxRhNfCyLapX
T2tWaIJ3LuIHxG0iemVxG9m06YvRmNa4ctzGRhNkuKNVE7PoE1nbb3mumj/3us3Gx33y8v8
c3iaxT/8imzoLG6d9hXnBUYiO57AdC7oZ8twMMNuuUNpFbQB0nM+u00aTa8K3mNkbapqjG
hjJgA0XdeC+CJB2KNNY66g2x+3q2m7nqR5V1h4qDQrtQ1PEAB0PaDWRAbdvJq6IeqGVYm
UykqTFfDY4od6d1q6q4Xz9UVJg4K7UpdY01Vm5XGPb0aqnYAJX5bltYL6XrTedTV0LV3ido7
Zersi/3uB+Kg0K7UNdbIVrm52FpAxhn6HqNFWi+fvoVT1U3VNIum4J0ycfblkM8VJg4K7Upc44
6MZoHBxFvd9szPHSBEgXawwCDHHG2wW4CZx2NJILwZYpnkXWHioNCuxDXuyGvW0oOj
VdY1Ap1CJ21S2Ni3B3geAB6AQOziFuBvNuQwYinF/bR8d0FoF1E8SGaz1o5v0A/CUaEtwuzf
5n+ODPibkC/gRJGzrOZ/7jhCVWgXUTzIPmYhExoGyISNacXQakfWBrkKI8DgELeA1aZ5dAP
MnsZ3fFYtxh1HqArtIooHEZodDTqBBs+grxBPvzf+JDawCSOSwExl5cT9uHrbJ7SLKB4kYtYK
HEMQFY4GR4VW4JgHcymMwOjBOpgELeyuJ9auMKEqtIsoHgQyINeKDbNAvyvZ1op3I9aD4
aujh1Ha9F2A9QqUK0yoCu2KFbfxNZoa+xIrcPdEmJvBu7/wpqM3/1kcTOH91dURVzimCgjtqq
wea2rRjO2mfTtvIsyM/0uX/M0jmBWekggz44+Uw5uF7axiFjcL2ykxm4tiNhdas6WwT6iw996Fa
xnlwoW99y5cyygXLuy9Z8ebhY2gTOGjKQgoZnNRzObCmf34Vf37D24X2LzZ3PoU0ufMvv55
e33C7YKI999fQvrQ7Mf3l9v7HyVoNTz/GdSHZs3bZndBzBukgZC+YnYrELLFbA5Mli1mc/D2D
f4izJq3ze6CFDskCOlDs6ZAGXVpeP5h/g7oc2bLTEHHxy9rlpgpFPbldvsPtltMKNDNas4AAAA
ASUVORK5CYII=||||||F

2.6.1.6 Cell morphology samples (for CV Digital Cell Morphology Analyzer)

MSH|^~\&|LabXpert|Mindray|||20200807111516||ORU^R01|1|P|2.3.1||||||UNICODE

PID|1||^^^^MR

PV1|1

OBR|1||1|00001^Automated Count^99MRC|||20200805204522||||||||||||||||HM|NotValidated

NTE|1|P|User comments:\.br\

UserCommentText.\.br\

WBC comments:\.br\

WBCRemark.\.br\

RBC comments:\.br\

RBCRemark.\.br\

PLT comments:\.br\

PLTRemark.|GR

OBX|1|IS|08003^Test Mode^99MRC||WBC+RBC+PLT||||||F

OBX|2|IS|01002^Ref Group^99MRC||General||||||F

OBX|3|IS|05007^Project Type^99MRC||BL||||||F

OBX|4|ST|09001^Analyzer^99MRC||CDMS||||||F

OBX|5|ST|09003^SN^99MRC||CV-1||||||F

OBX|6|ST|16403^Sender Facility^99MRC||Thai_CDMS||||||F

OBX|7|ST|16404^WBC Count^99MRC||100||||||F

OBX|8|ST|09999^AuditResult^99MRC||Review||||||F

OBX|9|NM|6690-2^WBC^LN||0.64|10*3/uL|4.00-10.00|L~N|||F

OBX|10|NM|789-8^RBC^LN||4.00|10*6/uL|3.50-5.50|N|||F

OBX|11|NM|718-7^HGB^LN||0.4|mmol/L|6.8-9.9|L~N|||F

OBX|12|NM|4544-3^HCT^LN||16.5|%|37.0-54.0|L~N|||F

OBX|13|NM|787-2^MCV^LN||6.9|fL|80.0-100.0|L~N|||F

OBX|14|NM|785-6^MCH^LN||14.6|pg|27.0-34.0|L~N|||F

OBX|15|NM|786-4^MCHC^LN||15|g/L|320-360|L~N|||F

OBX|16|NM|777-3^PLT^LN||29|10*9/L|100-300|L~N|||F

OBX|17|NM|788-0^RDW-CV^LN||17.2|%|11.0-16.0|H~N|||F

OBX|18|NM|32623-1^MPV^LN||20.3|fL|6.5-12.0|H~N|||F

OBX|19|NM|770-8^NEU%^LN||0.190||0.500-0.700|L~N|||F

OBX|20|NM|736-9^LYM%^LN||0.680||0.200-0.400|H~N|||F

OBX|21|NM|5905-5^MON%^LN||0.830||0.030-0.120|H~N|||F

OBX|22|NM|713-8^EOS%^LN||0.200||0.005-0.050|H~N|||F

OBX|23|NM|706-2^BAS%^LN||0.640||0.000-0.010|H~N|||F

OBX|24|NM|26461-4^NRBC%^LN||27.56|/100WBC|0.00-9999.99|N|||F

OBX|25|NM|16000-1^SNE#^99MRC||25||0-1541||||F|||20200805204522||^^SignOperator

OBX|26|NM|16000-2^SNE%^99MRC||19.0|%|0-100||||F|||20200805204522||^^SignOpera
tor

NTE|2|P|SegmentedNeutrophils:\.br\

CellCategoryRemarkWBC.|GR

OBX|27|NM|16001-1^EO#^99MRC||58||0-1541||||F|||20200805204522||^^SignOperator

OBX|28|NM|16001-2^EO%^99MRC||20.0|%|0-100||||F|||20200805204522||^^SignOperat
or

NTE|3|P|Eosinophils:\.br\

CellCategoryRemarkWBC.|GR

OBX|29|NM|16002-1^BA#^99MRC||18||0-1541||||F|||20200805204522||^^SignOperator

OBX|30|NM|16002-2^BA%^99MRC||64.0|%|0-100||||F|||20200805204522||^^SignOperato
r

NTE|4|P|Basophils:\.br\

CellCategoryRemarkWBC.|GR

OBX|31|NM|16003-1^LY#^99MRC||18||0-1541||||F|||20200805204522||^^SignOperator

OBX|32|NM|16003-2^LY%^99MRC||68.0|%|0-100||||F|||20200805204522||^^SignOperato
r

NTE|5|P|Lymphocytes:\.br\

CellCategoryRemarkWBC.|GR

OBX|33|NM|16004-1^MO#^99MRC||22||0-1541||||F|||20200805204522||^^SignOperator

OBX|34|NM|16004-2^MO%^99MRC||83.0|%|0-100||||F|||20200805204522||^^SignOperat
or

NTE|6|P|Monocytes:\.br\

CellCategoryRemarkWBC.|GR

OBX|35|NM|16005-1^BNE#^99MRC||96||0-1541||||F|||20200805204522||^^SignOperator

OBX|36|NM|16005-2^BNE%^99MRC||14.0|%|0-100||||F|||20200805204522||^^SignOpera
tor

NTE|7|P|BandNeutrophils:\.br\

CellCategoryRemarkWBC.|GR

OBX|37|NM|16006-1^VLY#^99MRC||49||0-1541||||F|||20200805204522||^^SignOperator

OBX|38|NM|16006-2^VLY%^99MRC||93.0|%|0-100||||F|||20200805204522||^^SignOperat
or

NTE|8|P|VariantLymphocyte:\.br\

CellCategoryRemarkWBC.|GR

OBX|39|NM|16007-1^RLY#^99MRC||96||0-1541||||F|||20200805204522||^^SignOperator

OBX|40|NM|16007-2^RLY%^99MRC||78.0|%|0-100||||F|||20200805204522||^^SignOperat
or

NTE|9|P|ReactiveLymphocytes:\.br\

CellCategoryRemarkWBC.|GR

OBX|41|NM|16008-1^ALY#^99MRC||29||0-1541||||F|||20200805204522||^^SignOperator

OBX|42|NM|16008-2^ALY%^99MRC||34.0|%|0-100||||F|||20200805204522||^^SignOperat
or

NTE|10|P|AbnormalLymphocyte:\.br\

CellCategoryRemarkWBC.|GR

OBX|43|NM|16009-1^PMY#^99MRC||55||0-1541||||F|||20200805204522||^^SignOperator

OBX|44|NM|16009-2^PMY%^99MRC||97.0|%|0-100||||F|||20200805204522||^^SignOpera
tor

NTE|11|P|Promyelocytes:\.br\

CellCategoryRemarkWBC.|GR

OBX|45|NM|16010-1^MY#^99MRC||9||0-1541||||F|||20200805204522||^^SignOperator

OBX|46|NM|16010-2^MY%^99MRC||32.0|%|0-100||||F|||20200805204522||^^SignOperat
or

NTE|12|P|Myelocytes:\.br\

CellCategoryRemarkWBC.|GR

OBX|47|NM|16011-1^MMY#^99MRC||70||0-1541||||F|||20200805204522||^^SignOperator

OBX|48|NM|16011-2^MMY%^99MRC||54.0|%|0-100||||F|||20200805204522||^^SignOper
ator

NTE|13|P|Metamyelocytes:\.br\

CellCategoryRemarkWBC.|GR

OBX|49|NM|16012-1^BL#^99MRC||68||0-1541||||F|||20200805204522||^^SignOperator

OBX|50|NM|16012-2^BL%^99MRC||36.0|%|0-100||||F|||20200805204522||^^SignOperato
r

NTE|14|P|Blasts:\.br\

CellCategoryRemarkWBC.|GR

OBX|51|NM|16013-1^PLY#^99MRC||34||0-1541||||F|||20200805204522||^^SignOperator

OBX|52|NM|16013-2^PLY%^99MRC||42.0|%|0-100||||F|||20200805204522||^^SignOperat
or

NTE|15|P|Prolymphocytes:\.br\

CellCategoryRemarkWBC.|GR

OBX|53|NM|16014-1^PC#^99MRC||20||0-1541||||F|||20200805204522||^^SignOperator

OBX|54|NM|16014-2^PC%^99MRC||9.0|%|0-100||||F|||20200805204522||^^SignOperator

NTE|16|P|PlasmaCells:\.br\

CellCategoryRemarkWBC.|GR

OBX|55|NM|16015-1^LGLY#^99MRC||98||0-1541||||F|||20200805204522||^^SignOperator

OBX|56|NM|16015-2^LGLY%^99MRC||26.0|%|0-100||||F|||20200805204522||^^SignOper
ator

NTE|17|P|LargeGranularLymphocytes:\.br\

CellCategoryRemarkWBC.|GR

OBX|57|NM|16016-1^IBO#^99MRC||88||0-1541||||F|||20200805204522||^^SignOperator

OBX|58|NM|16016-2^IBO%^99MRC||74.0|%|0-100||||F|||20200805204522||^^SignOperat
or

NTE|18|P|ImmatureBasophil:\.br\

CellCategoryRemarkWBC.|GR

OBX|59|NM|16017-1^IEO#^99MRC||88||0-1541||||F|||20200805204522||^^SignOperator

OBX|60|NM|16017-2^IEO%^99MRC||26.0|%|0-100||||F|||20200805204522||^^SignOperat
or

NTE|19|P|ImmatureEosinophil:\.br\

CellCategoryRemarkWBC.|GR

OBX|61|NM|16018-1^HC#^99MRC||37||0-1541||||F|||20200805204522||^^SignOperator

OBX|62|NM|16018-2^HC%^99MRC||37.0|%|0-100||||F|||20200805204522||^^SignOperat
or

NTE|20|P|HairyCells:\.br\

CellCategoryRemarkWBC.|GR

OBX|63|NM|16019-1^SEC#^99MRC||28||0-1541||||F|||20200805204522||^^SignOperator

OBX|64|NM|16019-2^SEC%^99MRC||86.0|%|0-100||||F|||20200805204522||^^SignOpera
tor

NTE|21|P|SezaryCells:\.br\

CellCategoryRemarkWBC.|GR

OBX|65|NM|16020-1^PMO#^99MRC||88||0-1541||||F|||20200805204522||^^SignOperator

OBX|66|NM|16020-2^PMO%^99MRC||7.0|%|0-100||||F|||20200805204522||^^SignOperat
or

NTE|22|P|Promonocyte:\.br\

CellCategoryRemarkWBC.|GR

OBX|67|NM|16021-1^SMU#^99MRC||19||0-1541||||F|||20200805204522||^^SignOperator

OBX|68|NM|16021-2^SMU%^99MRC||37.0|%|0-100||||F|||20200805204522||^^SignOpera
tor

NTE|23|P|SmudgeCells:\.br\

CellCategoryRemarkWBC.|GR

OBX|69|NM|16022-1^ERB#^99MRC||90||0-1541||||F|||20200805204522||^^SignOperator

OBX|70|NM|16022-2^ERB%^99MRC||27.0|%|0-100||||F|||20200805204522||^^SignOpera
tor

NTE|24|P|Erythroblasts:\.br\

CellCategoryRemarkWBC.|GR

OBX|71|NM|16023-1^ART#^99MRC||64||0-1541||||F|||20200805204522||^^SignOperator

OBX|72|NM|16023-2^ART%^99MRC||57.0|%|0-100||||F|||20200805204522||^^SignOpera
tor

NTE|25|P|Artefacts:\.br\

CellCategoryRemarkWBC.|GR

OBX|73|NM|16024-1^GT#^99MRC||12||0-1541||||F|||20200805204522||^^SignOperator

OBX|74|NM|16024-2^GT%^99MRC||22.0|%|0-100||||F|||20200805204522||^^SignOperato
r

NTE|26|P|GiantPlatelets:\.br\

CellCategoryRemarkWBC.|GR

OBX|75|NM|16025-1^MEK#^99MRC||66||0-1541||||F|||20200805204522||^^SignOperator

OBX|76|NM|16025-2^MEK%^99MRC||31.0|%|0-100||||F|||20200805204522||^^SignOpera
tor

NTE|27|P|Megakaryocytes:\.br\

CellCategoryRemarkWBC.|GR

OBX|77|NM|16026-1^NC#^99MRC||85||0-1541||||F|||20200805204522||^^SignOperator

OBX|78|NM|16026-2^NC%^99MRC||13.0|%|0-100||||F|||20200805204522||^^SignOperat
or

NTE|28|P|NotClassed:\.br\

CellCategoryRemarkWBC.|GR

OBX|79|NM|16027-1^TAG#^99MRC||25||0-1541||||F|||20200805204522||^^SignOperator

OBX|80|NM|16027-2^TAG%^99MRC||39.0|%|0-100||||F|||20200805204522||^^SignOpera
tor

NTE|29|P|PlateletsAggregations:\.br\

CellCategoryRemarkWBC.|GR

OBX|81|NM|16028-1^OTH#^99MRC||52||0-1541||||F|||20200805204522||^^SignOperator

OBX|82|NM|16028-2^OTH%^99MRC||59.0|%|0-100||||F|||20200805204522||^^SignOpera
tor

NTE|30|P|PlateletsAggregations:\.br\

CellCategoryRemarkWBC.|GR

OBX|83|NM|16200-1^SPOC^99MRC||2|||||F|||20200805204522||^^SignOperator

OBX|84|NM|16200-2^SPOC%^99MRC||49.0|%|||||F|||20200805204522||^^SignOperator

OBX|85|NM|16201-1^STD^99MRC||1|||||F|||20200805204522||^^SignOperator

OBX|86|NM|16201-2^STD%^99MRC||16.0|%|||||F|||20200805204522||^^SignOperator

OBX|87|NM|16202-1^SELC^99MRC||1|||||F|||20200805204522||^^SignOperator

OBX|88|NM|16202-2^SELC%^99MRC||12.0|%|||||F|||20200805204522||^^SignOperator

OBX|89|NM|16203-1^SOVC^99MRC||2|||||F|||20200805204522||^^SignOperator

OBX|90|NM|16203-2^SOVC%^99MRC||46.0|%|||||F|||20200805204522||^^SignOperator

OBX|91|NM|16204-1^SSI^99MRC||2|||||F|||20200805204522||^^SignOperator

OBX|92|NM|16204-2^SSI%^99MRC||45.0|%|||||F|||20200805204522||^^SignOperator

OBX|93|NM|16205-1^SSCC^99MRC||3|||||F|||20200805204522||^^SignOperator

OBX|94|NM|16205-2^SSCC%^99MRC||2.0|%|||||F|||20200805204522||^^SignOperator

OBX|95|NM|16206-1^SHE^99MRC||1|||||F|||20200805204522||^^SignOperator

OBX|96|NM|16206-2^SHE%^99MRC||25.0|%|||||F|||20200805204522||^^SignOperator

OBX|97|NM|16207-1^SACC^99MRC||2|||||F|||20200805204522||^^SignOperator

OBX|98|NM|16207-2^SACC%^99MRC||12.0|%|||||F|||20200805204522||^^SignOperator

OBX|99|NM|16208-1^SECC^99MRC||1|||||F|||20200805204522||^^SignOperator

OBX|100|NM|16208-2^SECC%^99MRC||15.0|%|||||F|||20200805204522||^^SignOperator

OBX|101|NM|16209-1^SSTC^99MRC||3|||||F|||20200805204522||^^SignOperator

OBX|102|NM|16209-2^SSTC%^99MRC||37.0|%|||||F|||20200805204522||^^SignOperator

OBX|103|NM|16210-1^STA^99MRC||1|||||F|||20200805204522||^^SignOperator

OBX|104|NM|16210-2^STA%^99MRC||43.0|%|||||F|||20200805204522||^^SignOperator
OBX|105|NM|16211-1^SSPC^99MRC||3|||||F|||20200805204522||^^SignOperator
OBX|106|NM|16211-2^SSPC%^99MRC||25.0|%|||||F|||20200805204522||^^SignOperator
OBX|107|NM|16212-1^IBST^99MRC||1|||||F|||20200805204522||^^SignOperator
OBX|108|NM|16212-2^IBST%^99MRC||28.0|%|||||F|||20200805204522||^^SignOperator
OBX|109|NM|16213-1^IPAB^99MRC||3|||||F|||20200805204522||^^SignOperator
OBX|110|NM|16213-2^IPAB%^99MRC||23.0|%|||||F|||20200805204522||^^SignOperator
OBX|111|NM|16214-1^IHJB^99MRC||2|||||F|||20200805204522||^^SignOperator
OBX|112|NM|16214-2^IHJB%^99MRC||25.0|%|||||F|||20200805204522||^^SignOperator
OBX|113|NM|16215-1^IPAR^99MRC||3|||||F|||20200805204522||^^SignOperator
OBX|114|NM|16215-2^IPAR%^99MRC||33.0|%|||||F|||20200805204522||^^SignOperator
OBX|115|NM|16216-1^CHYP^99MRC||1|||||F|||20200805204522||^^SignOperator
OBX|116|NM|16216-2^CHYP%^99MRC||46.0|%|||||F|||20200805204522||^^SignOperator
OBX|117|NM|16217-1^CPOL^99MRC||3|||||F|||20200805204522||^^SignOperator
OBX|118|NM|16217-2^CPOL%^99MRC||49.0|%|||||F|||20200805204522||^^SignOperator
OBX|119|NM|16218-1^ZANI^99MRC||1|||||F|||20200805204522||^^SignOperator
OBX|120|NM|16218-2^ZANI%^99MRC||8.0|%|||||F|||20200805204522||^^SignOperator
OBX|121|NM|16219-1^ZMIC^99MRC||3|||||F|||20200805204522||^^SignOperator
OBX|122|NM|16219-2^ZMIC%^99MRC||33.0|%|||||F|||20200805204522||^^SignOperator
OBX|123|NM|16220-1^ZMAC^99MRC||1|||||F|||20200805204522||^^SignOperator
OBX|124|NM|16220-2^ZMAC%^99MRC||17.0|%|||||F|||20200805204522||^^SignOperator
OBX|125|NM|16400^AVG^99MRC||5.0|||||F|||20200805204522||^^SignOperator
OBX|126|NM|16402^LVL^99MRC||N|||||F|||20200805204522||^^SignOperator

2.6.1.7 Cell morphology samples (for Mindray Cell Morphology Analyzer)

MSH|^~\&|LabXpert|Mindray|||20210729144639||ORU^R01|1|P|2.3.1|||||UNICODE
PID|1||2123^^^^MR||^Jack||19941201000000|Male
PV1|1|Outpatient|^^0412||||||||||||||||Self pay
OBR|1||33333|00001^Automated
Count^99MRC||20210728142200|20210729141648|||Tom||||20210729142200|||||||202107291
44634||HM|Validated|||admin
OBX|1|IS|08003^Test Mode^99MRC||100WBC+RBC+PLTPRO|||||F
OBX|2|NM|30525-0^Age^LN||26|yr|||||F
OBX|3|IS|05007^Project Type^99MRC||BL|||||F
OBX|4|IS|01007^Sample Type^99MRC||Blood|||||F
OBX|5|ST|09001^Analyzer^99MRC||MC80|||||F
OBX|6|ST|09003^SN^99MRC||SCANNER|||||F
OBX|7|NM|16711-2^Blastr#^99MRC||1|||P|||F
OBX|8|NM|16711-1^Blastr%^99MRC||1.0|%|<1.0|P|||F

OBX|9|NM|16703-2^Pro-Myer#^99MRC||1|||P|||F
OBX|10|NM|16703-1^Pro-Myer%^99MRC||1.0|%|<1.0|P|||F
OBX|11|NM|16706-2^Myer#^99MRC||1|||P|||F
OBX|12|NM|16706-1^Myer%^99MRC||1.1|%|<1.0|P|||F
OBX|13|NM|16708-2^Meta-Myer#^99MRC||1|||P|||F
OBX|14|NM|16708-1^Meta-Myer%^99MRC||1.1|%|<1.0|P|||F
OBX|15|NM|16701-2^Seg-Neur#^99MRC||38|||L|||F
OBX|16|NM|16701-1^Seg-Neur%^99MRC||40.8|%|50.0-70.0|L|||F
OBX|17|NM|16712-2^Basr#^99MRC||1|||H|||F
OBX|18|NM|16712-1^Basr%^99MRC||1.1|%|0.0-1.0|H|||F
OBX|19|NM|16710-2^Eosr#^99MRC||42|||H|||F
OBX|20|NM|16710-1^Eosr%^99MRC||45.1|%|0.5-5.0|H|||F
OBX|21|NM|16707-2^Monr#^99MRC||1|||L|||F
OBX|22|NM|16707-1^Monr%^99MRC||1.1|%|3.0-12.0|L|||F
OBX|23|NM|16709-2^Lymr#^99MRC||1|||L|||F
OBX|24|NM|16709-1^Lymr%^99MRC||1.1|%|20.0-40.0|L|||F
OBX|25|NM|16713-2^Band-Neur#^99MRC||1||||||F
OBX|26|NM|16713-1^Band-Neur%^99MRC||1.1|%|<10.0||||F
OBX|27|NM|16705-2^Unidentified#^99MRC||1||||||F
OBX|28|NM|16705-1^Unidentified%^99MRC||1.1|%|||||F
OBX|29|NM|16718-2^NRBC#^99MRC||1|||P|||F
OBX|30|NM|16718-1^NRBC%^99MRC||1.1|%|<1.0|P|||F
OBX|31|NM|16722-1^Meg#^99MRC||1|||P|||F
OBX|32|NM|16721-1^Artefacts#^99MRC||1||||||F
OBX|33|NM|16717-2^Smudge#^99MRC||1||||||F
OBX|34|NM|16717-1^Smudge%^99MRC||1.1|%|||||F
OBX|35|NM|16719-1^PLT clumps#^99MRC||1||||||F
OBX|36|NM|16720-1^L-PLT#^99MRC||1||||||F
OBX|37|NM|16716-1^G-PLT#^99MRC||1||||||F
OBX|38|NM|16714-2^Abn-Promyer#^99MRC||1|||P|||F
OBX|39|NM|16714-1^Abn-Promyer%^99MRC||1.1|%|<1.0|P|||F
OBX|40|NM|16715-2^Abn-Lymr#^99MRC||1|||P|||F
OBX|41|NM|16715-1^Abn-Lymr%^99MRC||1.1|%|<1.0|P|||F
OBX|42|NM|16704-2^Plasmar#^99MRC||1|||P|||F
OBX|43|NM|16704-1^Plasmar%^99MRC||1.1|%|<1.0|P|||F
OBX|44|NM|16702-2^R-Lymr#^99MRC||1||||||F
OBX|45|NM|16702-1^R-Lymr%^99MRC||1.1|%|<5.0||||F
OBX|46|NM|16723^EST^99MRC||10|10*9/L|||||F
OBX|47|ST|16724-1^ScanningGraph
Path-1^99MRC||D:\E\Project\E\ScanLabXpert\E\LabXpert\E\LabXpertServer\E\ConsoleServe
r\E\bin\E\x64\E\Debug\E\LIS\E\Cal2Lis\E\20210729144639549_33333\E\NeuSN_33.jpg||||||F
OBX|48|ST|16724-2^ScanningGraph
Path-2^99MRC||D:\E\Project\E\ScanLabXpert\E\LabXpert\E\LabXpertServer\E\ConsoleServe
r\E\bin\E\x64\E\Debug\E\LIS\E\Cal2Lis\E\20210729144639549_33333\E\NeuSN_31.jpg||||||F
OBX|49|ST|16724-3^ScanningGraph

Path-3^99MRC||D:\E\Project\E\ScanLabXpert\E\LabXpert\E\LabXpertServer\E\ConsoleServe
r\E\bin\E\x64\E\Debug\E\LIS\E\Cal2Lis\E\20210729144639549_33333\E\NeuSN_32.jpg||||||F
OBX|50|ST|16724-4^ScanningGraph
Path-4^99MRC||D:\E\Project\E\ScanLabXpert\E\LabXpert\E\LabXpertServer\E\ConsoleServe
r\E\bin\E\x64\E\Debug\E\LIS\E\Cal2Lis\E\20210729144639549_33333\E\NeuSN_34.jpg||||||F
OBX|51|ST|16724-5^ScanningGraph
Path-5^99MRC||D:\E\Project\E\ScanLabXpert\E\LabXpert\E\LabXpertServer\E\ConsoleServe
r\E\bin\E\x64\E\Debug\E\LIS\E\Cal2Lis\E\20210729144639549_33333\E\NeuSN_36.jpg||||||F
OBX|52|ST|16724-6^ScanningGraph
Path-6^99MRC||D:\E\Project\E\ScanLabXpert\E\LabXpert\E\LabXpertServer\E\ConsoleServe
r\E\bin\E\x64\E\Debug\E\LIS\E\Cal2Lis\E\20210729144639549_33333\E\RBCPLTLarge_100
00000.jpg||||||F

OBX|53|IS|12302^Scan WBC Low^99MRC||T||||||F

OBX|54|IS|12303^Scan Artifact High^99MRC||T||||||F

2.6.2 Sample Response Message

In synchronous communication of labXpert, each analysis result message need a response message which contains two segments: MSH and MSA. To send a correct response message, take into consideration that: the MSH-9 field should be ACK^R01 which indicates that it is a sample response message; If the value in the MSA-2 field is the same with the MSH-10 value of the received analysis result, it indicates that this response message is corresponding to the sent analysis result. The MSA-2 value in the following example is 4

MSH|^~\&|BC-6800|Mindray|||20140909160728||ACK^R01|5|P|2.3.1||||||UNICODE<CR>
MSA|AA|4<CR>

2.6.3 QC Message

The content of the QC message differs from the sample analysis result message: the MSH-11 value of the QC message is Q which indicates that it is a QC message; each QC message is corresponding to one QC point in the labXpert which may contain several analysis results. For example, there is one analysis result in an L-J QC message, while there are two analysis results and one mean calculation result in an X-R QC message.

A QC message consists of an MSH message header and several analysis results, each of which begins with the PID and OBR segments which contain sample information, and followed by several OBX segments to carry parameter results and other information. The OBR-4 field of each analysis result indicates the type of the result See Appendix C for details.

An example of the L-J QC message is shown as follows:

MSH|^~\&|LabXpert|Mindray|||20140909162050||ORU^R01|3|Q|2.3.1||||||UNICODE<CR>

PID|1||MB034H||||20141111000000<CR>

OBR|1||1|00003^LJ QCR^99MRC|||20140827193211|||||||||||||||HM|||||||admin<CR>

OBX|1|IS|05001^Qc Level^99MRC||H||||||F<CR>

OBX|2|IS|08001^Take Mode^99MRC||A||||||F<CR>

OBX|3|IS|08002^Blood Mode^99MRC||W||||||F<CR>

OBX|4|IS|08003^Test Mode^99MRC||CBC+DIFF||||||F<CR>

OBX|5|ST|09001^Analyzer^99MRC||1#||||||F<CR>

OBX|6|NM|6690-2^WBC^LN||20.01|10*9/L|16.44-21.44|N|||F<CR>

OBX|7|NM|704-7^BAS#^LN||0.51|10*9/L|0.22-0.80|N|||F<CR>

OBX|8|NM|706-2^BAS%^LN||2.6|%|1.2-4.2|N|||F<CR>

OBX|9|NM|751-8^NEU#^LN||13.52|10*9/L|10.71-14.71|N|||F<CR>

OBX|10|NM|770-8^NEU%^LN||67.6|%|57.1-77.1|N|||F<CR>

OBX|11|NM|711-2^EOS#^LN||1.89|10*9/L|0.50-2.90|N|||F<CR>

OBX|12|NM|713-8^EOS%^LN||9.4|%|3.0-15.0|N|||F<CR>

OBX|13|NM|731-0^LYM#^LN||3.70|10*9/L|2.00-5.20|N|||F<CR>

OBX|14|NM|736-9^LYM%^LN||18.5|%|11.0-27.0|N|||F<CR>

OBX|15|NM|742-7^MON#^LN||0.39|10*9/L|0.00-1.22|N|||F<CR>

OBX|16|NM|5905-5^MON%^LN||1.9|%|0.0-5.7|N|||F<CR>

OBX|17|NM|789-8^RBC^LN||5.67|10*12/L|5.57-6.17|N|||F<CR>

OBX|18|NM|718-7^HGB^LN||17.5|g/dL|17.2-18.8|N|||F<CR>

OBX|19|NM|787-2^MCV^LN||107.6|fL|93.2-103.2|H~N|||F<CR>

OBX|20|NM|785-6^MCH^LN||30.8|pg|28.2-33.2|N|||F<CR>

OBX|21|NM|786-4^MCHC^LN||28.6|g/dL|28.2-34.2|N|||F<CR>

OBX|22|NM|788-0^RDW-CV^LN||15.9|%|8.7-20.7|N|||F<CR>

OBX|23|NM|21000-5^RDW-SD^LN||62.8|fL|39.2-63.2|N|||F<CR>

OBX|24|NM|4544-3^HCT^LN||0.611||0.546-0.606|H~N|||F<CR>

OBX|25|NM|777-3^PLT^LN||434|10*9/L|415-545|N|||F<CR>

OBX|26|NM|32623-1^MPV^LN||10.8|fL|8.3-14.3|N|||F<CR>

OBX|27|NM|32207-3^PDW^LN||16.5||11.5-21.5|N|||F<CR>

OBX|28|NM|10002^PCT^99MRC||0.471|%|0.342-0.742|N|||F<CR>

OBX|29|NM|10014^PLCR^99MRC||32.9|%|26.3-46.3|N|||F<CR>

OBX|30|NM|10013^PLCC^99MRC||143|10*9/L|124-224|N|||F<CR>

OBX|31|NM|51584-1^IMG#^LN||0.56|10*9/L||N|||F<CR>

OBX|32|NM|38518-7^IMG%^LN||2.8|%||N|||F<CR>

OBX|33|NM|10020^HFC#^99MRC||0.00|10*9/L||N|||F<CR>

OBX|34|NM|10021^HFC%^99MRC||0.0|%||N|||F<CR>

OBX|35|NM|10022^PLT-I^99MRC||434|10*9/L||N|||F<CR>

OBX|36|NM|10024^WBC-D^99MRC||20.02|10*9/L||N|||F<CR>

OBX|37|NM|10025^WBC-B^99MRC||20.01|10*9/L||N|||F<CR>

OBX|38|NM|10031^PDW-SD^99MRC||14.3|fL||N|||F<CR>

OBX|39|NM|10032^InR#^99MRC||0.00|10*9/L||N|||F<CR>

OBX|40|NM|10033^InR‰^99MRC||0.00|‰||N|||F<CR>

OBX|41|NM|12227-5^WBC^LN||20.01|10*9/L|16.44-21.44|N|||F<CR>

<EB><CR>

Remarks: For the OBX segments of “Analyzer”, only BC-6800 on sample processing line will transmit the segment, standalone BC-6800 will not.

2.6.4 QC Response Message

The only difference between the QC response message and the sample analysis result response message is that the MSH-11 value of the QC response message is Q.

An example of the ACK X-R QC message is shown as follows:

MSH|^~\&|LabXpert|Mindray|||20140909162050||ACK^R01|9|Q|2.3.1||||||UNICODE<CR>

MSA|AA|1<CR>

2.6.5 LJ QC Message in the Format of Common Samples

LJ QC sample messages can be communicated in the format of common samples (set up in Setup>Communication>L-J QC result is communicated in the format of blood sample result of labXpert). See 2.6.1 for the format. An example is shown as follows:

MSH|^~\&|LabXpert|Mindray|||20140909162225||ORU^R01|1|P|2.3.1||||||UNICODE<CR>

PID|1||^^^^MR<CR>

PV1|1<CR>

OBR|1||1MB999|00001^Automated Count^99MRC|||20140820160916||||||||||||||HM|||||||admin<CR>

OBX|1|IS|08001^Take Mode^99MRC||A||||||F<CR>

OBX|2|IS|08002^Blood Mode^99MRC||W||||||F<CR>

OBX|3|IS|08003^Test Mode^99MRC||CBC+DIFF||||||F<CR>

OBX|4|IS|01002^Ref Group^99MRC||General||||||F<CR>

OBX|5|IS|05007^Project Type^99MRC||BL||||||F<CR>

OBX|6|ST|01012^Shelf No^99MRC||??||||||F<CR>

OBX|7|ST|01013^Tube No^99MRC||0||||||F<CR>

OBX|8|ST|09001^Analyzer^99MRC||1#||||||F<CR>

OBX|9|NM|6690-2^WBC^LN||19.40|10*9/L|16.44-21.44|N|||F<CR>

OBX|10|NM|704-7^BAS#^LN||0.48|10*9/L|0.22-0.80|N|||F<CR>

OBX|11|NM|706-2^BAS%^LN||2.5|%|1.2-4.2|N|||F<CR>

OBX|12|NM|751-8^NEU#^LN||13.16|10*9/L|10.71-14.71|N|||F<CR>

OBX|13|NM|770-8^NEU%^LN||67.7|%|57.1-77.1|N|||F<CR>

OBX|14|NM|711-2^EOS#^LN||1.79|10*9/L|0.50-2.90|N|||F<CR>

OBX|15|NM|713-8^EOS%^LN||9.3|%|3.0-15.0|N|||F<CR>

OBX|16|NM|731-0^LYM#^LN||3.50|10*9/L|2.00-5.20|N|||F<CR>

OBX|17|NM|736-9^LYM%^LN||18.1|%|11.0-27.0|N|||F<CR>

OBX|18|NM|742-7^MON#^LN||0.47|10*9/L|0.00-1.22|N|||F<CR>

OBX|19|NM|5905-5^MON%^LN||2.4|%|0.0-5.7|N|||F<CR>

OBX|20|NM|789-8^RBC^LN||5.61|10*12/L|5.57-6.17|N|||F<CR>

OBX|21|NM|718-7^HGB^LN||17.7|g/dL|17.2-18.8|N|||F<CR>

OBX|22|NM|787-2^MCV^LN||106.9|fL|93.2-103.2|H~N|||F<CR>

OBX|23|NM|785-6^MCH^LN||31.6|pg|28.2-33.2|N|||F<CR>

OBX|24|NM|786-4^MCHC^LN||29.6|g/dL|28.2-34.2|N|||F<CR>

OBX|25|NM|788-0^RDW-CV^LN||15.9|%|8.7-20.7|N|||F<CR>

OBX|26|NM|21000-5^RDW-SD^LN||62.3|fL|39.2-63.2|N|||F<CR>

OBX|27|NM|4544-3^HCT^LN||0.600||0.546-0.606|N|||F<CR>

OBX|28|NM|777-3^PLT^LN||422|10*9/L|415-545|N|||F<CR>

OBX|29|NM|32623-1^MPV^LN||10.7|fL|8.3-14.3|N|||F<CR>

OBX|30|NM|32207-3^PDW^LN||16.5||11.5-21.5|N|||F<CR>

OBX|31|NM|10002^PCT^99MRC||0.454|%|0.342-0.742|N|||F<CR>

OBX|32|NM|10014^PLCR^99MRC||32.5|%|26.3-46.3|N|||F<CR>

OBX|33|NM|10013^PLCC^99MRC||137|10*9/L|124-224|N|||F<CR>

OBX|34|NM|51584-1^IMG#^LN||0.52|10*9/L||N|||F<CR>

OBX|35|NM|38518-7^IMG%^LN||2.7|%||N|||F<CR>

OBX|36|NM|10020^HFC#^99MRC||0.00|10*9/L||N|||F<CR>

OBX|37|NM|10021^HFC%^99MRC||0.0|%||N|||F<CR>

OBX|38|NM|10022^PLT-I^99MRC||422|10*9/L||N|||F<CR>

OBX|39|NM|10024^WBC-D^99MRC||19.90|10*9/L||N|||F<CR>

OBX|40|NM|10025^WBC-B^99MRC||19.40|10*9/L||N|||F<CR>

OBX|41|NM|10031^PDW-SD^99MRC||14.0|fL||N|||F<CR>

OBX|42|NM|10032^InR#^99MRC||0.00|10*9/L||N|||F<CR>

OBX|43|NM|10033^InR‰^99MRC||0.00|‰||N|||F<CR>

OBX|44|NM|12227-5^WBC^LN||19.40|10*9/L|16.44-21.44|N|||F<CR>

OBX|45|NM|15051^RBC Histogram. Left Line^99MRC||0||||||F<CR>

OBX|46|NM|15052^RBC Histogram. Right Line^99MRC||0||||||F<CR>

OBX|47|NM|15053^RBC Histogram. Binary Meta Length^99MRC||1||||||F<CR>

OBX|48|NM|15057^RBC Histogram. Total^99MRC||0||||||F<CR>

OBX|49|NM|15111^PLT Histogram. Left Line^99MRC||0||||||F<CR>

OBX|50|NM|15112^PLT Histogram. Right Line^99MRC||0||||||F<CR>

OBX|51|NM|15113^PLT Histogram. Binary Meta Length^99MRC||1||||||F<CR>

OBX|52|NM|15117^PLT Histogram. Total^99MRC||0||||||F<CR>

OBX|53|NM|15203^WBC DIFF Scattergram. Meta len^99MRC||1||||||F<CR>

OBX|54|NM|15205^WBC DIFF Scattergram. Fsc dimension^99MRC||0||||||F<CR>

OBX|55|NM|15206^WBC DIFF Scattergram. Ssc dimension^99MRC||0||||||F<CR>

OBX|56|NM|15207^WBC DIFF Scattergram. FL dimension^99MRC||0||||||F<CR>

OBX|57|NM|15208^WBC DIFF Scattergram. FSC-LOG dimension^99MRC||0||||||F<CR>

OBX|58|NM|15253^Baso Scattergram. Meta Len^99MRC||1||||||F<CR>

OBX|59|NM|15255^Baso Scattergram. Fsc dimension^99MRC||0||||||F<CR>

OBX|60|NM|15256^Baso Scattergram. Ssc dimension^99MRC||0||||||F<CR>

OBX|61|NM|15257^Baso Scattergram. FL dimension^99MRC||0||||||F<CR>

OBX|62|NM|15258^Baso Scattergram. FSC-LOG dimension^99MRC||0||||||F<CR>

OBX|63|NM|15307^RET Scattergram. Meta Len^99MRC||1||||||F<CR>

OBX|64|NM|15303^RET Scattergram. Fsc dimension^99MRC||0||||||F<CR>

OBX|65|NM|15304^RET Scattergram. Ssc dimension^99MRC||0||||||F<CR>

OBX|66|NM|15305^RET Scattergram. FL dimension^99MRC||0||||||F<CR>

OBX|67|NM|15308^RET Scattergram FSC-LOG dimension^99MRC||0||||||F<CR>

OBX|68|NM|15355^NRBC Scattergram. Meta Len^99MRC||1||||||F<CR>

OBX|69|NM|15351^NRBC Scattergram. Fsc dimension^99MRC||0||||||F<CR>

OBX|70|NM|15352^NRBC Scattergram. Ssc dimension^99MRC||0||||||F<CR>

OBX|71|NM|15353^NRBC Scattergram. FL dimension^99MRC||0||||||F<CR>

OBX|72|NM|15356^NRBC Scattergram FSC-LOG dimension^99MRC||0||||||F<CR>

Remarks: OBR-3 is the sample ID field. When the L-J QC sample is transmitted in the format of the common sample, for an analyzer on a sample processing line, the value of the OBR-3 field is the QC sample transmission ID; but for a standalone analyzer, the the value of the OBR-3 field is the control lot No. or its file No.

For the OBX segments of “Analyzer”, only analyzer on sample processing line will transmit the segment, standalone analyzer will not.

2.6.6 Bidirectional LIS/HIS Request Message

A 2-way LIS/HIS request message contains a sample ID. After the LIS/HIS received the request message, it will search for the corresponding patient and sample information to provide a response.

A request response message contains two segments: MSH and ORC. The MSH segment is almost the same with that of the analysis result message, except that the MSH-9 value is ORM^O01. The ORC-3 field should be filled with the receiver code (in this case, the sample ID; where in the following sample, it is SampleID1). Note that in the autoloading analysis, if there is a barcode scanning error while sending an inquiry message, the sample ID will be “Invalid”.

An example of the request message is shown as follows:

For V1.0 and V2.0 searching request messages, sample ID is used as the filter for searching

MSH|^~\&|LabXpert|Mindray|||20081120174836||ORM^O01|4|P|2.3.1||||||UNICODE

ORC|RF||SampleID1

For V3.0 searching request messages or above, the combination of sample ID+sample type is used as the filter for searching

MSH|^~\&|LabXpert|Mindray|||20140328102554||ORM^O01|2|P|2.3.1|||||UNICODE
ORC|RF||sampleid99|BL

When the “LIS receiving samples by SN” function is enabled, except for the “sample ID + sample type”, the sample tube position and a serial number (used for receiving samples) will also be written into the message.

MSH|^~\&|LabXpert|Mindray|||20140328102554||ORM^O01|2|P|2.3.1|||||UNICODE
ORC|RF||sampleid99|BL||2^3|13|||||||NW

See sections above for the fields of MSH and ORC segments.

2.6.7 2-Way LIS/HIS Request Response Message

When the LIS received an request message, it needs to send back an request response message. The first two message segments of the request response message are MSH and MSA. The MSH-9 message type field (indicating the type of the segment) is filled with ORR^O02, while the MSA segment should be filled up as shown in the following example of the request response message. If the LIS/HIS gets searching results for the inquiry, there will be PID, PV1, ORC, OBR and OBX message segments after the two heading segments to provide the patient and sample information, in the same way as the sample data message does. The ORC segment is indispensable for an request response message with searching results, in which the ORC-1 value is AF, and ORC-3 is the key searching field(the sample ID). Note that the OBR-2 field indicates the sample ID, which should be the same as in the ORC-2 field; otherwise, the message will be regarded as incorrect.
An example of the request response message with searching results is shown as follows:

MSH|^~\&|LabXpert|Mindray|||20140909170111||ORR^O02||P|2.3.1|||||UNICODE<CR>

MSA|AA|1<CR>

PID|1||patientID2001^^^^MR||Jordan^Michael||20090210000000|Male<CR>

PV1|1|Outpatient|Internal medicine^^1002|||||||||||||||Public<CR>

ORC|AF||SampleID4001<CR>

OBR|1|SampleID4001||00001^Automated Count^99MRC||20090307103000||||Jack|||Virus infections|20090307103100||||||||||HM|||||||Bill<CR>

OBX|1|IS|08003^Test Mode^99MRC||CBC+DIFF|||||F<CR>

OBX|2|IS|01002^Ref Group^99MRC||Child|||||F<CR>

OBX|3|NM|30525-0^Age^LN||6|yr|||||F<CR>

OBX|4|ST|01001^Remark^99MRC||Emergency patient||||||F<CR>

OBX|5|ST|08005^SerialNumber^99MRC||3||||||F<CR>

OBX|6|IS|01007^Sample Type^99MRC||Venous blood||||||F<CR>

OBX|7|IS|01008^Patient Area^99MRC||A - 501||||||F<CR>

OBX|8|ST|01009^Custom patient info 1^99MRC||Nothing||||||F<CR>

OBX|9|ST|01010^Custom patient info 2^99MRC||Nothing||||||F<CR>

OBX|10|ST|01011^Custom patient info 3^99MRC||Nothing||||||F<CR>

<EB><CR>

Note: when the “ProjectType” item in the response message is consistent with the “ProjectType” item in the request message (see 2.5.7), this item (including “BL/BF” of ORC and “ProjectType” of OBX) can be excluded in the response message. If not, transmit the “ProjectType” item as requested.

The OBX items “BloodMode” and “Take Mode” are not mandatory in the response. If they are not included in the response message, the instrument analyzes the sample in the mode defined in the “Setup” screen of the main unit. If it is included in the response message, the instrument analyzes the sample in the responded mode. If the “ProjectType” corresponding to this “BloodMode” in the response and the request are not the same. It it required to transmit the “ProjectType” item in the response message.

The OBX item “Test Mode” is mandatory in the response.

The OBX item “SerialNumber” is the serial number in LIS, which is only applicable to integrated analyzers.

An example of the inquiry response message with no search result is shown as follows, in which the MSA-2 field indicates the result of the response. In this example, the MSA-2 value is “AR”, indicating the inquiry was rejected; if it is “AE", then there is an error in the inquiry process.

MSH|^~\&|LabXpert|Mindray|||20140328102737||ORR^O02||P|2.3.1||||||UNICODE
MSA|AR|3

An example of “skip sample” is shown as follows, in which the MSA-2 field indicates the result of the response. In this example, the MSA-2 value is “AS”, indicating the sample is skipped for analysis.

MSH|^~\&|LIS|LIS|||20191023164325||ORR^O02|2|P|2.3.1||||||UNICODE

MSA|AS|6||||

2-Way LIS/HIS Request Response Message of Mindray Cell Morphology Analyzer

A morphology analysis order consist of both smear making and morphology analysis modes; therefore the Test Mode OBX for morphology analysis order reads like the following:

OBX|1|IS|08003^Test Mode^99MRC||Smear making mode + morphology analysis mode||||||F<CR>

Examples of Test Mode OBX:

OBX|1|IS|08003^Test Mode^99MRC||SMST+100WBC+RBC+PLT+PLTPRO||||||F<CR>

or

OBX|1|IS|08003^Test Mode^99MRC||SMST+100WBC+RBC+PLT ||||||F<CR>

A complete Test Mode OBX is as following:

MSH|^~\&|LabXpert|Mindray|||20140909170111||ORR^O02||P|2.3.1||||||UNICODE<CR>

MSA|AA|1<CR>

PID|1||patientID2001^^^^MR||Jordan^Michael||20090210000000|Male<CR>

PV1|1|Outpatient|Internal medicine^^1002||||||||||||||||Public<CR>

ORC|AF||SampleID4001<CR>

OBR|1|SampleID4001||00001^Automated Count^99MRC||20090307103000||||Jack|||Virus infections|20090307103100||||||||||HM|||||||Bill<CR>

OBX|1|IS|08003^Test Mode^99MRC|| SMST+100WBC+RBC+PLT+PLTPRO ||||||F<CR>

OBX|2|IS|01002^Ref Group^99MRC||Child||||||F<CR>

OBX|3|NM|30525-0^Age^LN||6|yr|||||F<CR>

OBX|4|ST|01001^Remark^99MRC||Emergency patient||||||F<CR>

OBX|5|ST|08005^SerialNumber^99MRC||3||||||F<CR>

OBX|6|IS|01007^Sample Type^99MRC||Venous blood||||||F<CR>

OBX|7|IS|01008^Patient Area^99MRC||A - 501||||||F<CR>

OBX|8|ST|01009^Custom patient info 1^99MRC||Nothing||||||F<CR>

OBX|9|ST|01010^Custom patient info 2^99MRC||Nothing||||||F<CR>

OBX|10|ST|01011^Custom patient info 3^99MRC||Nothing||||||F<CR>

<EB><CR>

Chapter 3ASTM Communication Protocol

3.1 ASTM Protocol Overview

See the ASTM protocol documents for details of the protocol:
NCCLS LIS1-A (formerly ASTM 1381-02): Data Link Protocol
NCCLS LIS2-A (formerly 1394-97): Message Structure Protocol
Note: the characters used in ASTM protocol are standard ASCII characters (ISO 8859-1：1987) unless there is a note for exception.

3.2 Protocol Layers

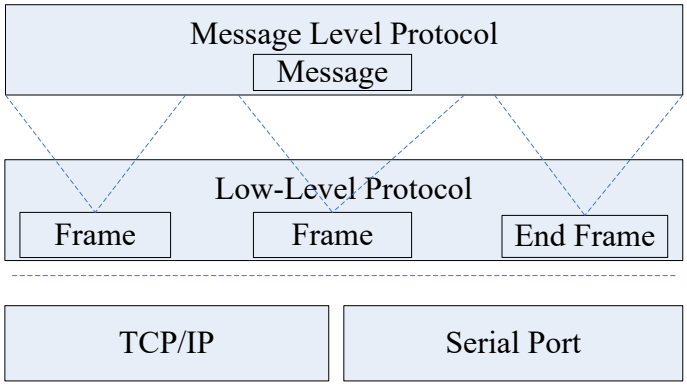


Figure 10 Layers of the ASTM protocol

Message: A complete data package is called message. It is a set of information, which can be a sample analysis result, QC result or request information. Message is the unit of a call for communication.
Frame: the component of a message which is the unit of communication control and communication error identification.
The ASTM communication protocol is a protocol based on TCP/IP protocol and serial port communication control. ASTM protocol has two layers: the low-level protocol for message transmission, and message level protocol between labXpert and LIS/HIS.

3.3 Frame Structure

All the frame control characters are ASCII characters which shall not be contained in the text part of the frame. As required by the protocol, the maximal data length of a frame is 64,000 bytes (including the control character).

3.3.1 Frame Description

Frame structure:
<STX> FN Text **[<ETB>|<ETX>]** C1 C2 **<CR><LF>**

<STX>: text transmission start control character;

FN: serial number of the frame, use numbers from 0 to 7 in turn (starting from 1) to identify different frames;
Text: content of the message;
ETB: end character for text in the middle frame;
ETX: end character for text in the end frame;
C1: first-4-bit value of the check sum, expressed by 0-9 and A-F;
C2: last-4-bit value of the check sum, expressed by 0-9 and A-F;
CR: frame end "carriage return" control character
LF: frame end “line feed” control character

3.3.2 Control Character

Key	Dec (decimal)	Hex (hexadecimal)	Printable	Description
^B	2.	02	<STX>	Frame start character
^C	3	03	<ETX>	End frame, text end character
^J	10	0A	<LF>	Frame end line feed character
^M	13	0D	<CR>	Frame end carriage return character
^W	23	17	<ETB>	Middle frame, text end character
^E	5	05	<ENQ>	Connection establishing request (transmission preparation) character
^D	4	04	<EOT>	Transmission completion character
^F	6	06	<ACK>	Successful reception response character
^U	21	15	<NAK>	Re-sent response

3.3.3 Middle Frame

Structure of a middle frame:
<STX> FN Text **<ETB>** C1 C2 **<CR><LF>**

3.3.4 End Frame

Structure of an end frame:
<STX> FN Text **<ETX>** C1 C2 **<CR><LF>**

3.3.5 Check and Calculation

In the frame <STX> FN text [<ETB>|<ETX>] C1 C2 <CR> <LF>, add every character value from FN to [<ETB>|<ETX>] (note: do not add <STX> [<ETB>|<ETX>] C1 C2 <CR> <LF>), divide the sum by 256, get the remainder, and convert it to 8bit where the 4 most significant bits (first 4 bits) are C1, and the 4 least significant bits (last 4 bits) are C2. E.g. 01111010, convert it to hexadecimal, that is 7A, then C1 = "7", C2 = "A".

3.4 Message Structure

3.4.1 Message Description

<table>
<tr><td colspan="9">Message</td></tr>
<tr><td colspan="4">Record 00</td><td colspan="4">Record 01</td><td>Record ##</td></tr>
<tr><td colspan="3">Field 00</td><td>Field ##</td><td colspan="3">Field 00</td><td>Field ##</td><td>…</td></tr>
<tr><td>Component 00</td><td>…</td><td>Component ##</td><td>...</td><td>Component 00</td><td>……</td><td>Component ##</td><td>…</td><td>…</td></tr>
</table>

- Message: a set of records from message header record (H) to message terminator record (T).
- Record: a set of fields. It has information about a certain subject, e.g. patient information. The first field of each record is the record type field.
- Field: a set of components. The description of special property of the record, e.g. date of birth in patient information.
- Component: basic unit of message data. E.g. for patient name, it consists of two basic units, Last Name and First Name which are separated by component delimiter.
  -
  - Maximal field length: no limit to the length of a field.
  - Maximal record length: no limit to the length of a record, only depends on the length limit for character processing.

3.4.2 Message Coding

3.4.2.1 Character Limit and Coding

The message transmission is text transmission, so it is not allowed to use invisible characters. For the universal ASCII characters:

Supported characters: 7, 9, 11, 12, 13, 32-126, 128-254

Unsupported characters: 0-6, 8, 10, 14-31, 127, 255

In the communication process, it is not allowed to use the following characters since they are used as control characters:

<STX>, <EOT>, <ENQ>, <ACK>, <NAK>, <ETB>, <ETX>, <CR>, <LF>.

Considering communication between different platforms, the characters which are not in ASCII standard character set are coded using UTF-8.

3.4.2.2 Binary Data Coding

For raw binary data, they need to be converted to strings using BASE64 (See Appendix D*) for transmission.

Since there may be big-endian and little-endian difference at the sending end and the receiving end, in the transmission process of raw data, if the smallest unit data of the raw data needs to be expressed by 2 bytes or more, the raw data need to be converted to network byte order before being coded using Base64. Take the transmission of 32-bit integer digit group as an example. The smallest unit of the raw data (integer digit group) is integer that is expressed by 4 bytes, so before Base64 coding, the integer digit group needs to be converted to one-byte digit group based in network byte order, and then converted to text using Base64.

Note: the characters are case sensitive.

3.4.3 delimiter

In a complete message, all the records shall be ended with <CR> (carriage return).

To identify different components, fields, or repeated texts in a record, different delimiters are used between fields, components, and repeated texts.

ASTM use the following ASCII characters:

Record end character	<CR>	Carriage return character (invisible)
Field delimiter	|	
Repetition delimiter	\	
Component delimiter	^	
Escape delimiter	&	

Transmission of delimiter:

The delimiter definition is in the second field of the message header record, normally in the format "H | \^ & |", where H is the record type identifier, followed by 4 delimiter definitions, and the last '|' is a field delimiter, indicating what follows is another field. The delimiters are in the following order: field delimiter, repetition delimiter, component delimiter and escape delimiter.

Null delimiter:

For null field or component, if it is the last one, delimiter is not needed; if not, a delimiter for this field/component is needed to separate it from the following field/component. That is to say, in a record, the position of a field or a component matters. So even if a field/component is null, the position shall be reserved by using a delimiter.

Note: according to the ASTM standard, the position of a null field/component shall be reserved rather than being omitted.

3.4.4 Escape Character

While transmitting data, there may be protocol control characters or other characters that are not allowed to transmit. In this case, these characters need to be converted to escape character.

According to the escape character conversion rules in the ASTM standard, the escape characters needed in message transmission are shown as follows:

Escape sequence	Delimiter	Notes
&F&	|	Field delimiter
&R&	\	Repetition delimiter
&S&	^	Component delimiter
&E&	&	Escape delimiter

Escape characters of low-level protocol control characters:

Escape sequence	Delimiter	Notes
&X5&	<ENQ>	
&X4&	<EOT>	
&X2&	<STX>	
&X17&	<ETB>	
&X3&	<ETX>	
&XD&	<CR>	
&XA&	<LF>	
&X6&	<ACK>	
&X15&	<NAK>	

Note: in a message, the record terminator character (<CR>) is the protocol control character which does not need to be converted.

3.4.5 Record Type

As defined in ASTM, the following record types are involved:

Record Type	Type identifier	Notes
Message Header Record	H	Message Header Record
Patient Information Record	P	Patient Information Record
Test Order Record	O	Test Order Record
Result Record	R	Result record
Comment Record	C	Remarks
Scientific Record	S	(Not in use)
Manufacturer Information Record	M	(Not in use)

Record Type	Type identifier	Notes
Request Information Record	Q	Request information record (bi-directional LIS/HIS)
Message Terminator Record	L	Message terminator record

3.4.6 Special Notice

1. Time:
   Format of time:
      Date: YYYYMMDD
      Date+Time: YYYYMMDDHHMMSS
2. Record sequence number:

In the message level protocol, all records except message header records begin with two fields: "Record Type ID" and "Sequence Number".
Record Type ID: record type identifier. E.g. the record type ID for patient information is "P".
Sequence Number: record sequence number, numeric string, indicating the sequence number of the record among all records of the same type. E.g.: if there are 2 “O” records, 3 “R” records in a message, then the sequence number of the first “O” record is “1”, and the second one “2”; the sequence number of the first, second and third “R” records are “1”, “2” and “3” respectively. If there are more records of the same type, the sequence number increases accordingly.

3.5 Message Records

In ASTM protocol, the unique identifiers for sample property, parameter result are coded using Lonic, which is the same with that of HL7. See Appendix C* for code values. What is different from HL7 is that in ASTM, the "EncodeSys" is not transmitted), and only "ID" and "Name" are transmitted only.

Note: in the record definition tables, the right-aligned and italic parts are components, others are fields. The components below a field are the components of this field; if there is no component below a field, it means it is a single-component field.

3.5.1 Message Header and terminator Records

3.5.1.1 Message Header Record

The first record of every message is called message header record,
which consists of record delimiter definition, instrument name, instrument ID, protocol version number, message creation time, etc.

Field Name	Field Sequence Number	Value Example	Remarks
Record Type ID	1	H	Record type field; value fixed
Delimiter Definition	2.	|\^&	ASTM delimiter set; value fixed
Message Control ID	3	1	Message control ID field
Sender Name or ID	5		

Field Name	Field Sequence Number	Value Example	Remarks
Manufacturer		Mindray	Fixed
Model		labXpert	Fixed
Protocol Version			Reserved
Special Instructions	11		Message text type field. See Appendix C for values.Table 28
Name		Automated Count	Name
ID		00001	ID
Processing ID	12	P	Current message type; fixed to be “P” indicating sample messages.
Version Number	13	LIS2-A2	Version number of ASTM; fixed
Date and Time of Message	14	20100208145026	Time of message transmission; use current system time; in the format of YYYYMMDDHHMMSS

Message Control ID: the unique identifier of a message Commonly starts from 1.

Taking the communication of sample analysis result as an exmaple, the complete message header is shown below:

<STX>1H|\^&|1||Mindray^LabXpert^||||||Automated Count^00001|P|LIS2-A2|20130912164204<CR><ETB>DC<CR><LF>

Note: "<CR>" stands for carriage return.

3.5.1.2 Message Terminator Record

The last record of every message is called message terminator record, which is defined as follows:

Field Name	Field Sequence Number	Value Example	Remarks
Record Type ID	1	L	Record type field; value fixed
Sequence Number	2.	1	Sequence number of record; fixed
Termination Code	3	N	Termination code; value: "N"; fixed

A complete message terminator record is shown as follows:

L|1|N<CR>

3.5.2 Patient Information Record

Mainly includes patient ID, patient name, date of birth, age, physician, department, etc.
Used in sample analysis result message and worklist request response message.

Field Name	Field Sequence Number	Value Example	Remarks
Record Type	1	P	Fixed
Sequence Number	2.	1	Record sequence number; see 4.4.6* for details
Patient ID Number 3	5	333	Patient ID
Patient Name	6		Patient name
First name		FirstName	
Last name		LastName	If it is a Chinese name, this field is left empty.
Birthdate	8		
Date of birth		20091220000000	YYYYMMDDHHMMSS
Age		2.	
Age unit		Y	Values of age unit: Null Y: year M: month W: week D: day H: hour
Patient Sex	9	Female	Entry by the operator (string)
Admission Status	25	Emergency	Department, string displayed on screen
Location	26		
Inpatient zone		EA	String displayed on screen
Bed No.		32-1	String displayed on screen

Complete record example:

Example (Other langauges than CN)

P|1|||333|FirstName^LastName||20091220000000^2^Y|Female|||||||||||||||Emergency|EA^32-1<CR>

An example message for a Chinese patient:

P|1|||333|FirstName^||20091220000000^2^Y|Female|||||||||||||||Emergency|EA^32-1<CR>

3.5.3 Test Order Record

The record of analysis sequence number, usually followed by result record. Commonly , a Test Order Record contains sample sequence number and related information of analysis result messages (including both sample analysis results and QC results)

Field Name	Field Sequence Number	Value Example	Remarks
Record Type ID	1	O	Fixed
Sequence Number	2.	1	Record sequence number; see 4.4.6* for details
Specimen ID	3	K11321	Sample ID
Priority	6	R	Marks for emergeny samples, indicating sample priority: S or s: STAT A or a: ASAP R or r: Routine
Requested Date and Time	7	20100613010203	Blood sample: time of analysis; QC: time of QC run
Collection Date and Time	8	20100612153501	Time of sample collection
Collector ID	11	Jones	The person who ordered the analysis
Relevant Clinical Information	14	Diagnosis	Clinical diagnosis
Date/Time Specimen Received	15	20100612153501	Date/Time when the specimen is received
Specimen Descriptor	16		
Specimen Type		Sample Type	Sample type
Specimen Source			Reserved
Ordering Physician	17	XQRD	Blood sample: operator; QC: operator
User Field Number 1	19	Alice	User-defined; used for validater here
User Field Number 2	20		User-defined; used for time of validation here
Laboratory Field Number 1	21	Validated	User-defined; indicating validation status Validated Not Validated
Date/Time Results Reported or Last Modified	23	20111220153501	Report time

Field Name	Field Sequence Number	Value Example	Remarks
Report Type	26	F	Report types: F – final results; not request response; fixed to be F Q – has result for request Y – no result for request

Complete record example:

O|1|K11321||R||20100613010203|20100612153501|||Jones|||Diagnosis|20100612153501|Sample Type^|XQRD||Alice|||20111220153501|||F<CR>

3.5.4 Analysis Result record

Contains sample analysis result/QC result/extend information.
Since the default fields of Patient Information Record and Test Order Record can not meet our requirements of sample information/patient information/sample result/QC information transmission, Result Record is used to bring extra fields for transmission. See Appendix CMessage Coding Definition* for extended codes. For extended information items, only message ID and result are needed.

Result Record is used in messages other than worklist searching messages.

Field Name	Field Sequence Number	Value Example	Remarks
Record Type ID	1	R	Fixed
Sequence Number	2.	14	Record sequence number; see 4.4.6* for details
Universal Test ID	3		
Universal Test ID			Universal test ID; reserved
Universal Test ID Name		WBC	Name; see Appendix C* for data type and coding system
Universal Test ID Type			ID type; reserved
Manufacturer's or Local Code		6690-2	ID; see Appendix C* for data type and coding system
Data or Measurement Value	4	2.30	Result data
Units	5	10^9/L	Unit of result; use the units displayed on screen
Reference Ranges	6		Reference ranges
Lower limit		4.00	
Upper limit		12.00	

Field Name	Field Sequence Number	Value Example	Remarks
Result Abnormal Flags	7		Result flags
High/Low flags		L	H – higher than upper limit L – lower than lower limit
Result edited flag		e	E – result edited flag e – result changed due to the manual editing of another parameter result based on which it is calculated Null if the result is not edited
Suspicious flag		N	N - normal A - abnormal
Reagent expiration flag		O	O – reagent expired Null if the reagent is not expired
Temperature flag		T	T - instrument overtemperature Null if no overtemperature
Result corrected flag		C	C - Result corrected flag Null if not corrected
Out of linearity range flag		V	V - out of linearity range Null if within range
Operator Identification	11		Identification of the operator/signing operator
Operator			Operator, “Null” when communicating the cell morphology results
Signing operator		Signing Operator	Signing Operator is the person who validate and sign the cell morphology results off, used when communicating the cell morphology results
Date/Time Test Completed	13	20200729140839	The time when the analysis completes (i.e., the time the cell morphology results are validated and signed off)

Complete record example:

<STX>5R|18|^NEU#^^751-8|2.39|10&S&9/L|2.00^7.00|^^A^^^^||||^SignOperator||20200729140839<CR><ETB>E4<CR><LF>

3.5.5 Request Searching Record

Used in bi-directional LIS request (worklist request)

Field Name	Field Sequence Number	Value Example	Remarks
Record Type ID	1	Q	Fixed
Sequence Number	2.	1	Record sequence number; see 4.4.6* for details
Starting Range ID Number	3	K11321	Sample ID in the worklist to be requested
Beginning Request Results data and Time	7	20111220153501	Time when the request begins; use the current system time; format: YYYYMMDDHHMMSS
User Field Number1	11	BL BF	User defined field used for sample type here. Value definition: “BL”: Blood "B": Body fluid

Complete record example:

<STX>2Q|1|sampleid99||||20140328103119||||BL<CR><ETB>AB<CR><LF>

3.5.6 Comment Message Record

The comment added to the analysis results

Field Name	Field Sequence Number	Value Example	Remarks
Record Type ID	1	C	Fixed
Sequence Number	2.	3	Serial Number
Comment Source	3	P	The source of the comments. The value can be either of the following 3 options: P：practice L：information system I：clinical instrument system For cell morphology analysis results, this field is always filled with “P”.
Comment Text	4	This is comment.	Comment messages.
Comment Type	5	G	The type of the comments. The value can be either of the following 5 options:

Field Name	Field Sequence Number	Value Example	Remarks
			G：generic/free result comment T：result name comment P：positive result comment N：negative result comment I：instrument flag(s) comment For cell morphology analysis results, this field is always filled with “G”.

Complete record example:

<STX>0C|3|P|This is remark.|G<CR><ETB>F8<CR><LF>

3.6 Message for Communication

Note: the message examples contains complete frame header and terminator. Since special characters may have problems in display, the frame header and terminator are replaced by strings that can be displayed properly. E.g. use <STX> for frame header. The frames in the example after conversion should be continuous, but the frames are separated by line feed characters for better readability.

3.6.1 Sample Analysis Result Message

3.6.1.1 Record Structure

Record Structure:

1 Header
2 Patient
3 Order
4 Result1
5 Comment1
6 Result2
7 Comment2
8 Result3
9 Comment3
.....
n Message Terminator

3.6.1.2 Content of Sample Data

Content of sample analysis result message for communication:

Record Type	Record Value	Field Position: Content	Component Value	Value Description
H	Record header	12: message type	Sample Analysis Result	See Table 28OBR-4 and ASTM Message Type Codes
P	Patient information	5: Patient ID	The patient ID displayed on screen	
		6: Patient name	First name	First name of patient
			Last Name	Last name of patient
		8: date of birth	Date of birth	YYYYMMDDHHMMSS
			Age	
			Age unit	Available age units: null, Y, M, W, D, and H, indicating null, year, month, week, day, and hour respectively
		9: gender	Gender	What displayed on screen
		25: department	Department	What displayed on screen
		26: location	Inpatient zone	What displayed on screen
			Bed No.	What displayed on screen
O	Sample Information	3: Sample ID	Sample ID	As the sample ID field. When the L-J QC sample is transmitted in the format of the common sample, for an analyzer on a sample processing line, the value of the OBR-3 field is the QC sample transmission ID; but for a standalone analyzer, the the value of the OBR-3 field is the control lot No. or its file No.
		7: time of analysis	Test time	YYYYMMDDHHMMSS; what displayed on screen
		8: Time of sample collection	Time of sample collection	YYYYMMDDHHMMSS; what displayed on screen
		11: The person who ordered the analysis	The person who ordered the analysis	String

Record Type	Record Value	Field Position: Content	Component Value	Value Description
		14: clinical diagnosis	Clinical diagnosis	What displayed on screen
		15: Date/Time when the specimen is received	Date/Time when the specimen is received	YYYYMMDDHHMMSS; what displayed on screen
		16: sample type	Sample type	What displayed on screen
			Sample source	Reserved; null
		17: operator	Operator	What displayed on screen
		19: validater	Validater	What displayed on screen
		20: time of validation	Time of validation	YYYYMMDDHHMMSS; what displayed on screen
		23: Report time	Report time	YYYYMMDDHHMMSS; what displayed on screen
		26: report type	Result	F, fixed
R	Presentation mode	2: ID	ID	See Appendix C* for data type and coding system
			ID	See Appendix C* for data type and coding system
		4: result	Presentation mode	See Appendix C* for HL7 and ASTM enumeration definition
		5: unit	Null	
		6: reference range	Null	
		7: flag	Null	
R	Sample mode	Value same as above		
R	Analysis mode	Value same as above		
R	Panel	Value same as above		
R	Analyzer Name	4: result, value displayed on screen; other values same as above		
R	Reference group	4: result, value displayed on screen; other values same as above		
R	Comments	4: result, value displayed on screen; value same as above		
R	Reexam flag	4: result; T - reexamination needed; F –reexamination not needed; value same as above		
R	Tube rack No.	4: result, value displayed on screen; value same as above		
R	Tube No.	4: result, value displayed on screen; value same as above		
R	Payer	4: result, value displayed on screen; value same as above		
R	Patient type	4: result, value displayed on screen; value same as above		
R	Custom 1	4: result, value displayed on screen; value same as above		

Record Type	Record Value	Field Position: Content	Component Value	Value Description
R	Custom2	4: result, value displayed on screen; value same as above		
R	Custom3	4: result, value displayed on screen; value same as above		
R	WBC: white blood cell count	2: ID; format same as above; see data type and coding system in Appendix C* for the value		
		4: result	Sample Analysis Result	What displayed on screen
		5: unit	Unit of sample analysis result	What displayed on screen
		6: reference range	Upper limit	What displayed on screen
			Lower limit	What displayed on screen
		7: flag	High/Low flags	H – high flag; L – low flag
			Result edited flag	E – result edited; e – result changed due to the manual editing of another parameter result based on which it is calculated
			Suspicious flag	N – normal result; A – suspicious result
			Reagent expiration flag (reserved component)	O – reagent expired; reserved; fixed to be null
			Temperature flag	T – overtemperature; null - temperature normal
			Result corrected flag	C – result corrected; null - result not corrected
			Out of linearity range flag	V – result out of linearity range; null - within range
		11: Signing operator	The person who signs off the results	The person who sign off the results of the cell morphology analysis
		13: Sign off time	The time when the results are	The time when the cell morphology analysis result is signed off

Record Type	Record Value	Field Position: Content	Component Value	Value Description
			signed off	
R	Bas#	Basophil number: value same as above		
R	Bas%	Basophil percentage: value same as above		
R	Neu#	Neutrophil number: value same as above		
R	Neu%	Neutrophil percentage: value same as above		
R	Eos#	Eosinophil number: value same as above		
R	Eos%	Eosinophil percentage: value same as above		
R	Lymph#	Lymphocyte number: value same as above		
R	Lymph%	Lymphocyte percentage: value same as above		
R	Mon#	Monocyte number: value same as above		
R	Mon%	Monocyte percentage: value same as above		
R	RBC	Red Blood Cell count: value same as above		
R	HGB	Hemoglobin Concentration: value same as above		
R	MCV	Mean Corpuscular Volume: value same as above		
R	MCH	Mean Corpuscular Hemoglobin: value same as above		
R	MCHC	Mean Corpuscular Hemoglobin Concentration: value same as above		
R	RDW-CV	Red Blood Cell Distribution Width - Coefficient of Variation: value same as above		
R	RDW-SD	Red Blood Cell Distribution Width - Standard Deviation: value same as above		
R	HCT	Hematocrit: value same as above		
R	PLT	Platelet count: value same as above		
R	MPV	Mean Platelet Volume: value same as above		
R	PDW	Platelet Distribution Width: value same as above		
R	PCT	Plateletcrit: value same as above		
R	RET#	Reticulocyte number: value same as above		
R	RET%	Reticulocyte percentage: value same as above		
R	IRF	Immature Reticulocyte Fraction: value same as above		
R	LFR	Low Fluorescent Ratio: value same as above		
R	MFR	Middle Fluorescent Ratio: value same as above		
R	HFR	High Fluorescent Ratio: value same as above		
R	NRBC#	Nucleated Red Blood Cell count: value same as above		
R	NRBC%	Nucleated Red Blood Cell percentage: value same as above		
R	P-LCR	Platelet-Large Cell Ratio: value same as above		

Record Type	Record Value	Field Position: Content	Component Value	Value Description
R	P-LCC	Platelet- Large Cell Count: value same as above		
R	IMG#	Immature Granulocyte (RUO): value same as above		
R	IMG%	Immature Granulocyte percentage (RUO): value same as above		
R	RBC-O	Optical Red Blood Cell count: value same as above		
R	PLT-O	Optical Platelet count: value same as above		
R	HFC#	High fluorescent Cell number: value same as above		
R	HFC%	High fluorescent Cell percentage: value same as above		
R	PLT-I	Platelet count- Impedance: value same as above		
R	WBC-R	White Blood Cell count -RET: value same as above		
R	WBC-D	White Blood Cell count -DIFF: value same as above		
R	WBC-B	White Blood Cell count -BASO: value same as above		
R	WBC-N	White Blood Cell count -NRBC: value same as above		
R	PDW-SD	Platelet Distribution Width – Standard Deviation: value same as above		
R	InR#	Infected Red Blood Cell count: value same as above		
R	InR‰	Infected Red Blood Cell permillage: value same as above		
R	WBC-C	Corrected WBC value: value same as above		
R	WBC-BF	White blood cell count-body fluid:.value same as above		
R	RBC-BF	Red blood cell count-body fluid: value same as above		
R	MN#	Parameter for body fluid: value same as above		
R	PMN#	Parameter for body fluid: value same as above		
R	MN%	Parameter for body fluid: value same as above		
R	PMN%	Parameter for body fluid: value same as above		
R	TC-BF#	Parameter for body fluid: value same as above		
R	Eos-BF	RUO parameter for body fluid: value same as above		
R	Eos-BF%	RUO parameter for body fluid: value same as above		
R	HF-BF#	RUO parameter for body fluid: value same as above		
R	HF-BF%	RUO parameter for body fluid: value same as above		
R	RBC-BF(R)	RUO parameter for body fluid: value same as above		
R	IMG#	Immature Granulocyte: value same as above		
R	IMG%	Immature Granulocyte percentage: value same as above		
R	IPF	Immature Platelet Fraction: value same as above		
R	Micro#	Microcyte count: value same as above		
R	Micro%	Microcyte percentage: value same as above		

Record Type	Record Value	Field Position: Content	Component Value	Value Description
R	Macro#	Macrocyte count: value same as above		
R	Macro%	Macrocyte percentage: value same as above		
R	MRV	Mean Reticulocyte Volume: value same as above		
R	RHE	Reticulocyte Hemoglobin Expression (RUO): value same as above		
R	RHE	Reticulocyte Hemoglobin Expression: value same as above		
R	Neu-BF#	Neutrophils number- body fluid: value same as above		
R	Neu-BF%	Neutrophils percentage- body fluid: value same as above		
R	Band%	Neutrophils, band: value same as above		
R	Seg%	Neutrophils, segmented: value same as above		
R	ALY%	Atypical lymphocytes: value same as above		
R	Pla-Aly%	Atypical lymphocytes (plasmacytes) : value same as above		
R	Mon-Aly%	Atypical lymphocytes (monocytes) : value same as above		
R	Imm-Aly%	Atypical lymphocytes (immature): value same as above		
R	Other-Aly%	Atypical lymphocytes (others): value same as above		
R	Meta%	Neutrophils, metamyelocyte: value same as above		
R	Myelo%	Neutrophils, myelocyte: value same as above		
R	Pro-Myelo%	Neutrophils, promyelocyte: value same as above		
R	Imm-Eos%	Eosinophils (immature): value same as above		
R	Imm-Bas%	Basophils (immature): value same as above		
R	Blast%	Blasts: value same as above		
R	Mye-Blast%	Myeloblasts: value same as above		
R	Mon-blast%	Monoblasts: value same as above		
R	Lym-blast%	Lymphoblasts: value same as above		
R	IMG/Blast%	Blast and immature granulocytes: value same as above		
R	Pro-Lym%	Immature lymphocytes value same as above		
R	Pro-Mon%	Immature monocytes: value same as above		
R	Plsm-cell%	Plasmacytes: value same as above		
R	CRP	Value same as above		
R	HbA1c%	Glycohemoglobin parameters: hemoglobin A1c (NGSP), value same as above		
R	HbA1c-MonoS	Glycohemoglobin parameters: hemoglobin A1c(IFCC), value same as above		
R	HbA1c-IFCC	Glycohemoglobin parameters: hemoglobin A1c (IFCC), value same as above		
R	HbF	Glycohemoglobin parameters: fetal hemoglobin, value		

Record Type	Record Value	Field Position: Content	Component Value	Value Description
		same as above		
R	HbA1	Glycohemoglobin parameters: total Glycohemoglobin, value same as above		
R	eAG	Glycohemoglobin RUO parameters: estimated average blood glucose, value same as above		
R	Neu#&	NEU# Minus IMG#		
R	Neu%&	NEU% Minus IMG%		
R	Lym#&	LYM# Minus HFC#		
R	Lym%&	LYM% Minus HFC%		
R	Neu-XW	DIFF scattergram, neutrophil side scatter distribution width		
R	Neu-YW	DIFF scattergram, neutrophil side fluorescent light distribution width		
R	Neu-ZW	DIFF scattergram, neutrophil forward scatter distribution width		
R	Lym-XW	DIFF scattergram, lymophocyte side scatter distribution width		
R	Lym-YW	DIFF scattergram, lymophocyte side fluorescent light distribution width		
R	Lym-ZW	DIFF scattergram, lymophocyte forward scatter distribution width		
R	Mon-XW	DIFF scattergram, monocyte side scatter distribution width		
R	Mon-YW	DIFF scattergram, monocyte side fluorescent light distribution width		
R	Mon-ZW	DIFF scattergram, monocyte forward scatter distribution width		
R	RET-Y	RET scattergram, mean reticulocyte distribution- forward scatter intensity		
R	RET-X	RET scattergram, mean reticulocyte distribution-side fluorescent intensity		
R	IRF-Y	RET scattergram, mean immature reticulocyte fraction distribution- forward scatter intensity		
R	IRF-X	RET scattergram, mean immature reticulocyte fraction distribution-side fluorescent intensity		
R	RET-RBC-Y	RET scattergram, mean red blood cell distribution- forward scatter intensity		
R	RET-RBC-X	RET scattergram, mean red blood cell distribution-side		

Record Type	Record Value	Field Position: Content	Component Value	Value Description
		fluorescent intensity		
R	PLT-H	Platelet count hybrid		
R	IPF-D	Immature platelet fraction- DIFF		
R	RET%-D	Reticulocyte percentage- DIFF		
R	RET#-D	Reticulocyte count- DIFF		
R	IRF-D	Immature reticulocyte fraction- DIFF		
R	LFR-D	Low fluorescent ratio- DIFF		
R	MFR-D	Middle fluorescent ratio- DIFF		
R	HFR-D	High fluorescent ratio- DIFF		
R	ESR-Corr.	Corrected erythrocyte sedimentation rate		
R	SA	Surface area		
R	AMP	Amplitude		
R	AI	Aggregation index		
R	MIN	Minimum		
R	T1/2	Aggregation half time		
R	ESR	Erythrocyte sedimentation rate		
R	Segmented neutrophil#	Segmented neutrophil (count), value same as above		
R	Segmented neutrophil%	Segmented neutrophil (percentage), value same as above		
R	Eosinophil#	Eosinophil (count), value same as above		
R	Eosinophil%	Eosinophil (percentage), value same as above		
R	Basophil#	Basophil (count), value same as above		
R	Basophil%	Basophil (percentage), value same as above		
R	Lymphocyte#	Lymphocyte (count), value same as above		
R	Lymphocyte%	Lymphocyte (percentage), value same as above		
R	Monocyte#	Monocyte (count), value same as above		
R	Monocyte%	Monocyte (percentage), value same as above		
R	Band neutrophil#	Band neutrophil (count)， value same as above		
R	Band neutrophil%	Band neutrophil (percentage), value same as above		
R	Variant lymphocyte#	Variant lymphocyte (count), value same as above		
R	Variant lymphocyte%	Variant lymphocyte (percentage), value same as above		
R	Reactive lymphocyte#	Reactive lymphocyte (count), value same as above		

Record Type	Record Value	Field Position: Content	Component Value	Value Description
R	Reactive lymphocyte%	Reactive lymphocyte (percentage), value same as above		
R	Abnormal lymphocyte#	Abnormal lymphocyte (count), value same as above		
R	Abnormal lymphocyte%	Abnormal lymphocyte (percentage), value same as above		
R	Promyelocyte#	Promyelocyte (count), value same as above		
R	Promyelocyte%	Promyelocyte (percentage), value same as above		
R	Myelocyte#	Myelocyte (count), value same as above		
R	Myelocyte%	Myelocyte (percentage), value same as above		
R	Metamyelocyte#	Metamyelocyte (count), value same as above		
R	Metamyelocyte%	Metamyelocyte (percentage), value same as above		
R	Blast cell#	Blast cell (count), value same as above		
R	Blast cell%	Blast cell (percentage), value same as above		
R	Prolymphocyte#	Prolymphocyte (count), value same as above		
R	Prolymphocyte%	Prolymphocyte (percentage), value same as above		
R	Plasma cell#	Plasma cell (count), value same as above		
R	Plasma cell%	Plasma cell (percentage), value same as above		
R	Large granular lymphocyte#	Large granular lymphocyte (count), value same as above		
R	Large granular lymphocyte%	Large granular lymphocyte (percentage), value same as above		
R	Immature basophil#	Immature basophil (count), value same as above		
R	Immature basophil%	Immature basophil (percentage), value same as above		
R	Immature eosinophil#	Immature eosinophil (count), value same as above		
R	Immature eosinophil%	Immature eosinophil (percentage), value same as above		
R	Hairy cell#	Hairy cell (count), value same as above		
R	Hairy cell%	Hairy cell (percentage), value same as above		
R	Sezary cell#	Sezary cell (count), value same as above		
R	Sezary cell%	Sezary cell (percentage), value same as above		
R	Promonocyte#	Promonocyte (count), value same as above		
R	Promonocyte%	Promonocyte (percentage), value same as above		

Record Type	Record Value	Field Position: Content	Component Value	Value Description
R	Smudge cell#	Smudge cell (count), value same as above		
R	Smudge cell%	Smudge cell (percentage), value same as above		
R	Erythroblasts (NRBC) #	NRBC (count), value same as above		
R	Erythroblasts (NRBC)%	NRBC (percentage), value same as above		
R	Artefact#	Artefact (count), value same as above		
R	Artefact%	Artefact (percentage), value same as above		
R	Giant thrombocyte#	Giant thrombocyte (count), value same as above		
R	Giant thrombocyte%	Giant thrombocyte (percentage), value same as above		
R	Megakaryocyte#	Megakaryocyte (count), value same as above		
R	Megakaryocyte%	Megakaryocyte (percentage), value same as above		
R	Not classed#	Not classed (count), value same as above		
R	Not classed%	Not classed (percentage), value same as above		
R	Poikilocytosis	Poikilocytosis (Degree), value same as above		
R	Poikilocytosis%	Poikilocytosis (percentage), value same as above		
R	Teardrop cells	Teardrop cells (Degree), value same as above		
R	Teardrop cells%	Teardrop cells (percentage), value same as above		
R	Elliptocytes	Elliptocytes (Degree), value same as above		
R	Elliptocytes%	Elliptocytes (percentage), value same as above		
R	Ovalocytes	Ovalocytes (Degree), value same as above		
R	Ovalocytes%	Ovalocytes (percentage), value same as above		
R	Sickle cells	Sickle cells (Degree), value same as above		
R	Sickle cells%	Sickle cells (percentage), value same as above		
R	Schistocytes	Schistocytes (Degree), value same as above		
R	Schistocytes%	Schistocytes (percentage), value same as above		
R	Helmet cells	Helmet cells (Degree), value same as above		
R	Helmet cells%	Helmet cells (percentage), value same as above		
R	Acanthocytes	Acanthocytes (Degree), value same as above		
R	Acanthocytes%	Acanthocytes (percentage), value same as above		
R	Echinocytes	Echinocytes (Degree), value same as above		
R	Echinocytes%	Echinocytes (percentage), value same as above		
R	Stomatocytes	Stomatocytes (Degree), value same as above		
R	Stomatocytes%	Stomatocytes (percentage), value same as above		

Record Type	Record Value	Field Position: Content	Component Value	Value Description
R	Target cells	Target cells (Degree), value same as above		
R	Target cells%	Target cells (percentage), value same as above		
R	Spherocytes	Spherocytes (Degree), value same as above		
R	Spherocytes%	Spherocytes (percentage), value same as above		
R	Basophilic stippling	Basophilic stippling (percentage), value same as above		
R	Basophilic stippling%	Basophilic stippling (percentage), value same as above		
R	Pappenheimer bodies	Pappenheimer bodies (Degree), value same as above		
R	Pappenheimer bodies%	Pappenheimer bodies (percentage), value same as above		
R	Howell-Jolly bodies	Howell-Jolly bodies (Degree), value same as above		
R	Howell-Jolly bodies%	Howell-Jolly bodies (percentage), value same as above		
R	Parasites	Parasites (Degree), value same as above		
R	Parasites%	Parasites (percentage), value same as above		
R	Hypochromatic cells	Hypochromatic cells (Degree), value same as above		
R	Hypochromatic cells%	Hypochromatic cells (percentage), value same as above		
R	Polychromatic cells	Polychromatic cells (Degree), value same as above		
R	Polychromatic cells%	Polychromatic cells (percentage), value same as above		
R	Anisocytosis	Anisocytosis (Degree), value same as above		
R	Anisocytosis%	Anisocytosis (percentage), value same as above		
R	Microcytes	Microcytes (Degree), value same as above		
R	Microcytes%	Microcytes (percentage), value same as above		
R	Macrocytes	Macrocytes (Degree), value same as above		
R	Macrocytes%	Macrocytes (percentage), value same as above		
R	Mean PLT/HPFs	Value same as above		
R	PLT estimate	Value same as above		
R	PLT concentration level	Value same as above		
R	Laboratory Name	Value same as above		

Record Type	Record Value	Field Position: Content	Component Value	Value Description
R	WBC count	Value same as above		
R	WBC results validated	Value same as above		
R	RBC results validated	Value same as above		
R	PLT results validated	Value same as above		
R	Flags of abnormal blood cell differential or morphology: WBC Scattergram Abn. Note: only transmitted when this flag exists in the result	2: ID; format same as above; see data type and coding system in Appendix C* for the value		
		4: result	T	T – flag exists in the result; fixed
		5: unit	Null	
		6: reference range	Null	
		7: flag	Null	
R	…	Flag; value same as above. Only transmitted when this flag exists in the result. For details of flags, see the "Flags of Abnormal Blood Cell Differential or Morphology" part of table in Appendix C		
R	RBC histogram binary data.	2: ID; format same as above; see data type and coding system in Appendix C* for the value		
		4: result	Binary coding data	4.4.2 Message coding: rule coding value
		Field 5, 6, 7: idle; null Null if it is not configured to be transmitted as “data”		
R	Left discriminator of the RBC histogram	2: ID; format same as above; see data type and coding system in Appendix C* for the value		
		4: result	Numeric	Discriminator value
		Field 5, 6, 7: idle; null		
R	Right discriminator of the RBC histogram	2: ID; format same as above; see data type and coding system in Appendix C* for the value		
		4: result	Numeric	Discriminator value
		Field 5, 6, 7: idle; null		
R	RBC historgram metadata length	2: ID; format same as above; see data type and coding system in Appendix C* for the value		
		4: result	Numeric	Unit data type length
		Field 5, 6, 7: idle; null		
R	Total number of RBC histograms	2: ID; format same as above; see data type and coding system in Appendix C* for the value		
		4: result	Numeric	Total number of graphic

Record Type	Record Value	Field Position: Content	Component Value	Value Description
				metadata (digit group length)
		Field 5, 6, 7: idle; null		
R	RBC histogram bitmap (BMP)	2: ID; format same as above; see data type and coding system in Appendix C* for the value		
		4: result	Binary coding data (can be null)	4.4.2 Message coding: rule coding value
		Field 5, 6, 7: idle; null Null if it is not configured to be transmitted as “graph”		
R	PLT histogram	PLT histogram transmission is the same as that of RBC histogram		
R	WBC histogram	WBC histogram transmission is the same as that of RBC histogram		
R	PLT-H histogram	PLT-H histogram transmission is the same as that of RBC histogram		
R	Version of scattergram	2: ID; format same as above; see data type and coding system in Appendix C* for the value		
		4: result	String	V1: BC-6800, national□ V2: BC-6900, Version 1.9□ V3: BC-6800, international, Version 1.10
		Field 5, 6, 7: idle; null		
R	the particle type array which needs to be greyout in the scattergram	2: ID; format same as above; see data type and coding system in Appendix C* for the value		
		4: result	Binary data (can be null)	4.4.2 Message coding: rule coding value Appendix C scattergram data, greyout particle type array
		Field 5, 6, 7: idle; null Null if it is configured not to transmit scattergram data		
R	DIFF scattergram bitmap data	In the same structure as RBC histogram bitmap (BMP)		
R	Diff scattergram metadata length	Structure same as above; unit data type length		
R	Fsc dimension of DIFF scattergram	Structure same as above; Fsc dimension		
R	Ssc dimension of DIFF scattergram	Same as above		

Record Type	Record Value	Field Position: Content	Component Value	Value Description
R	FL dimension of DIFF scattergram	Same as above		
R	FSC — LOG dimension of DIFF scattergram	Same as above		
R	DIFF scattergram binary data	Structure same as that of RBC histogram binary data; same data coding		
R	DIFF-EXT scattergram bitmap	DIFF-EXT scattergram data transmission is the same as that of DIFF scatter gram, and it contains the same number of result records		
R	DIFF-FsFl scattergram bitmap	DIFF-FsFl scattergram data transmission is the same as that of DIFF scatter gram, and it contains the same number of result records		
R	DIFF-FsSs scattergram bitmap	DIFF-FsSs scattergram data transmission is the same as that of DIFF scatter gram, and it contains the same number of result records		
R	BASO scattergram	BASO scattergram data transmission is the same as that of DIFF scatter gram, and it contains the same number of result records		
R	RET scattergram	RET scattergram data transmission is the same as that of DIFF scatter gram, and it contains the same number of result records		
R	PLT-O scattergram bitmap	The transmission of the RET bitmap data is the same as that of DIFF scattergram		
R	RET-EXT scattergram bitmap	The transmission of the RET bitmap data is the same as that of DIFF scattergram		
R	NRBC scattergram	BASO scattergram data transmission is the same as that of DIFF scatter gram, and it contains the same number of result records		
R	PLT-H scattergram	PLT-H scattergram data transmission is the same as that of DIFF scattergram		
R	WBC graph data from Hema cell morphology analyzer	3：Graph data ID	ID	See Appendix C for data type and coding system
			WBC graph data ID	See Appendix C for data type and coding system
			Graph No.	Graph No. for

Record Type	Record Value	Field Position: Content	Component Value	Value Description
				communication
		4: result	Binary coding data (can be null)	3.4.2 Binary Data Coding
		Field 5, 6, 7: idle; null Null if it is not configured to be transmitted as “graph”		
R	Cell types on WBC graph (for Hema cell morphology analyzers)	3：Cell type ID	ID	See Appendix C for data type and coding system
			WBC graph cell type code	See Appendix C for data type and coding system
			Graph No.	Graph No. for communication
		4: result	String	See Appendix C for Cell name mapping table for WBC graph (for Hema analyzer).
		Field 5, 6, 7: idle; null Null if it is not configured to be transmitted as “graph”		

3.6.1.3 Example of Sample Analysis Result Message

Blood samples

Example (Other languages than CN)

<STX>1H|\^&|1||Mindray^LabXpert^||||||Automated Count^00001|P|LIS2-A2|20140909170247<CR><ETB>E7<CR><LF>

<STX>2P|1|||patientID2001|Michael^Jordan||20081229160009^5^Y|Male|||||||||||||||Internal medicine|A - 501^1002<CR><ETB>21<CR><LF>

<STX>3O|1|40139349110||||20140805085635|20140705160009|||Jack|||Virus infections|20140716160009|Venous blood^|admin||||||20140907160009|||F<CR><ETB>6E<CR><LF>

<STX>4R|1|^Take Mode^^08001|A||^|^^^^^^<CR><ETB>BC<CR><LF>

<STX>5R|2|^Blood Mode^^08002|W||^|^^^^^^<CR><ETB>40<CR><LF>

<STX>6R|3|^Test Mode^^08003|CBC+DIFF||^|^^^^^^<CR><ETB>A8<CR><LF>

<STX>7R|4|^Ref Group^^01002|Child||^|^^^^^^<CR><ETB>7F<CR><LF>

<STX>0R|5|^Remark^^01001|Emergency patient||^|^^^^^^<CR><ETB>60<CR><LF>

<STX>1R|6|^Recheck flag^^01006|T||^|^^^^^^<CR><ETB>14<CR><LF>

<STX>2R|7|^Shelf No^^01012|54||^|^^^^^^<CR><ETB>88<CR><LF>

<STX>3R|8|^Tube No^^01013|8||^|^^^^^^<CR><ETB>F8<CR><LF>

<STX>4R|9|^Charge type^^01015|||^|^^^^^^<CR><ETB>83<CR><LF>

<STX>5R|10|^Patient type^^01016|||^|^^^^^^<CR><ETB>38<CR><LF>

<STX>6R|11|^Analyzer^^09001|2#||^|^^^^^^<CR><ETB>20<CR><LF>

<STX>7R|12|^Project Type^^05007|BL||^|^^^^^^<CR><ETB>B0<CR><LF>

<STX>0R|13|^Custom patient info 1^^01009|||^|^^^^^^<CR><ETB>2E<CR><LF>
<STX>1R|14|^Custom patient info 2^^01010|||^|^^^^^^<CR><ETB>29<CR><LF>
<STX>2R|15|^Custom patient info 3^^01011|||^|^^^^^^<CR><ETB>2D<CR><LF>
<STX>3R|16|^WBC^^6690-2|15.22|10&S&9/L|4.00^12.00|H^^A^^^^<CR><ETB>85<CR><LF>
<STX>4R|17|^BAS#^^704-7|0.06|10&S&9/L|0.00^0.10|^^A^^^^<CR><ETB>BD<CR><LF>
<STX>5R|18|^BAS%^^706-2|0.4|%|0.0^1.0|^^A^^^^<CR><ETB>9D<CR><LF>
<STX>6R|19|^NEU#^^751-8|11.66|10&S&9/L|2.00^8.00|H^^A^^^^<CR><ETB>5F<CR><LF>
<STX>7R|20|^NEU%^^770-8|76.6|%|50.0^70.0|H^^A^^^^<CR><ETB>A3<CR><LF>
<STX>0R|21|^EOS#^^711-2|0.02|10&S&9/L|0.02^0.80|^^A^^^^<CR><ETB>C3<CR><LF>
<STX>1R|22|^EOS%^^713-8|0.1|%|0.5^5.0|L^^A^^^^<CR><ETB>FB<CR><LF>
<STX>2R|23|^LYM#^^731-0|2.05|10&S&9/L|0.80^7.00|^^A^^^^<CR><ETB>DC<CR><LF>
<STX>3R|24|^LYM%^^736-9|13.5|%|20.0^60.0|L^^A^^^^<CR><ETB>A6<CR><LF>
<STX>4R|25|^MON#^^742-7|1.43|10&S&9/L|0.12^1.20|H^^A^^^^<CR><ETB>21<CR><LF>
<STX>5R|26|^MON%^^5905-5|9.4|%|3.0^12.0|^^A^^^^<CR><ETB>27<CR><LF>
<STX>6R|27|^RBC^^789-8|2.72|10&S&12/L|3.50^5.20|L^^N^^^^<CR><ETB>42<CR><LF>
<STX>7R|28|^HGB^^718-7|8.8|g/dL|12.0^16.0|L^^A^^^^<CR><ETB>60<CR><LF>
<STX>0R|29|^MCV^^787-2|129.8|fL|80.0^100.0|H^^N^^^^<CR><ETB>78<CR><LF>
<STX>1R|30|^MCH^^785-6|32.2|pg|27.0^34.0|^^A^^^^<CR><ETB>CF<CR><LF>
<STX>2R|31|^MCHC^^786-4|24.8|g/dL|31.0^37.0|L^^A^^^^<CR><ETB>D3<CR><LF>
<STX>3R|32|^RDW-CV^^788-0|24.8|%|11.0^16.0|H^^N^^^^<CR><ETB>4E<CR><LF>
<STX>4R|33|^RDW-SD^^21000-5|116.4|fL|35.0^56.0|H^^N^^^^<CR><ETB>64<CR><LF>
<STX>5R|34|^HCT^^4544-3|0.354||0.350^0.490|^^N^^^^<CR><ETB>D8<CR><LF>
<STX>6R|35|^PLT^^777-3|55|10&S&9/L|100^300|L^^N^^^^<CR><ETB>62<CR><LF>
<STX>7R|36|^MPV^^32623-1|11.7|fL|6.5^12.0|^^N^^^^<CR><ETB>05<CR><LF>
<STX>0R|37|^PDW^^32207-3|17.2||15.0^17.0|H^^N^^^^<CR><ETB>BE<CR><LF>
<STX>1R|38|^PCT^^10002|0.064|%|0.108^0.282|L^^N^^^^<CR><ETB>11<CR><LF>
<STX>2R|39|^PLCR^^10014|38.7|%|11.0^45.0|^^N^^^^<CR><ETB>82<CR><LF>
<STX>3R|40|^PLCC^^10013|21|10&S&9/L|30^90|L^^N^^^^<CR><ETB>1E<CR><LF>
<STX>4R|41|^IMG#^^51584-1|0.49|10&S&9/L|^|^^A^^^^<CR><ETB>B1<CR><LF>
<STX>5R|42|^IMG%^^38518-7|3.2|%|^|^^A^^^^<CR><ETB>F6<CR><LF>
<STX>6R|43|^HFC#^^10020|0.40|10&S&9/L|^|^^A^^^^<CR><ETB>2E<CR><LF>
<STX>7R|44|^HFC%^^10021|2.6|%|^|^^A^^^^<CR><ETB>78<CR><LF>
<STX>0R|45|^PLT-I^^10022|55|10&S&9/L|^|^^N^^^^<CR><ETB>53<CR><LF>
<STX>1R|46|^WBC-D^^10024|14.73|10&S&9/L|^|^^A^^^^<CR><ETB>C4<CR><LF>
<STX>2R|47|^WBC-B^^10025|15.22|10&S&9/L|^|^^A^^^^<CR><ETB>C0<CR><LF>
<STX>3R|48|^PDW-SD^^10031|17.0|fL|^|^^N^^^^<CR><ETB>FC<CR><LF>
<STX>4R|49|^InR#^^10032|0.01|10&S&9/L|^|^^N^^^^<CR><ETB>77<CR><LF>
<STX>5R|50|^InR‰^^10033|0.00|‰|^|^^N^^^^<CR><ETB>BD<CR><LF>
<STX>6R|51|^WBC^^12227-5|15.22|10&S&9/L|4.00^12.00|H^^A^^^^<CR><ETB>B3<CR><LF>
<STX>7R|52|^Neutrophilia^^12004|T||^|^^^^^^<CR><ETB>D0<CR><LF>
<STX>0R|53|^WBC Left Shift?^^17790-7|T||^|^^^^^^<CR><ETB>2F<CR><LF>
<STX>1R|54|^Imm Granulocytes?^^34165-1|T||^|^^^^^^<CR><ETB>C4<CR><LF>
<STX>2R|55|^Atypical Lymphs?^^15192-8|T||^|^^^^^^<CR><ETB>5D<CR><LF>
<STX>3R|56|^Anisocytosis^^15150-6|T||^|^^^^^^<CR><ETB>4C<CR><LF>
<STX>4R|57|^Macrocytes^^12075|T||^|^^^^^^<CR><ETB>00<CR><LF>

<STX>5R|58|^Anemia^^12014|T||^|^^^^^^<CR><ETB>2C<CR><LF>

<STX>6R|59|^Hypochromia^^15180-3|T||^|^^^^^^<CR><ETB>CD<CR><LF>

<STX>7R|60|^HGB Interfere^^12015|T||^|^^^^^^<CR><ETB>72<CR><LF>

<STX>0R|61|^Thrombopenia^^12018|T||^|^^^^^^<CR><ETB>C2<CR><LF>

<STX>1R|62|^Abn Lympho/ Blasts^^12053|T||^|^^^^^^<CR><ETB>3D<CR><LF>

<STX>2R|63|^NRBC?^^12054|T||^|^^^^^^<CR><ETB>42<CR><LF>

<STX>3R|64|^RBC Histogram. Left Line^^15051|29||^|^^^^^^<CR><ETB>1D<CR><LF>

<STX>4R|65|^RBC Histogram. Right Line^^15052|250||^|^^^^^^<CR><ETB>BF<CR><LF>

<STX>5R|66|^RBC Histogram. Binary Meta Length^^15053|1||^|^^^^^^<CR><ETB>44<CR><LF>

<STX>6R|67|^RBC Histogram. Total^^15057|51277||^|^^^^^^<CR><ETB>95<CR><LF>

<STX>7R|68|^PLT Histogram. Left Line^^15111|3||^|^^^^^^<CR><ETB>03<CR><LF>

<STX>0R|69|^PLT Histogram. Right Line^^15112|47||^|^^^^^^<CR><ETB>A9<CR><LF>

<STX>1R|70|^PLT Histogram. Binary Meta Length^^15113|1||^|^^^^^^<CR><ETB>51<CR><LF>

<STX>2R|71|^PLT Histogram. Total^^15117|1004||^|^^^^^^<CR><ETB>61<CR><LF>

<STX>3R|72|^WBC DIFF Scattergram. Meta len^^15203|1||^|^^^^^^<CR><ETB>A1<CR><LF>

<STX>4R|73|^WBC DIFF Scattergram. Fsc dimension^^15205|128||^|^^^^^^<CR><ETB>2B<CR><LF>

<STX>5R|74|^WBC DIFF Scattergram. Ssc dimension^^15206|128||^|^^^^^^<CR><ETB>3B<CR><LF>

<STX>6R|75|^WBC DIFF Scattergram. FL dimension^^15207|128||^|^^^^^^<CR><ETB>A7<CR><LF>

<STX>7R|76|^WBC DIFF Scattergram. FSC-LOG dimension^^15208|128||^|^^^^^^<CR><ETB>03<CR><LF>

<STX>0R|77|^Baso Scattergram. Meta Len^^15253|1||^|^^^^^^<CR><ETB>F8<CR><LF>

<STX>1R|78|^Baso Scattergram. Fsc dimension^^15255|128||^|^^^^^^<CR><ETB>A2<CR><LF>

<STX>2R|79|^Baso Scattergram. Ssc dimension^^15256|128||^|^^^^^^<CR><ETB>B2<CR><LF>

<STX>3R|80|^Baso Scattergram. FL dimension^^15257|128||^|^^^^^^<CR><ETB>15<CR><LF>

<STX>4R|81|^Baso Scattergram. FSC-LOG dimension^^15258|128||^|^^^^^^<CR><ETB>71<CR><LF>

<STX>5R|82|^RET Scattergram. Meta Len^^15307|1||^|^^^^^^<CR><ETB>5F<CR><LF>

<STX>6R|83|^RET Scattergram. Fsc dimension^^15303|128||^|^^^^^^<CR><ETB>03<CR><LF>

<STX>7R|84|^RET Scattergram. Ssc dimension^^15304|128||^|^^^^^^<CR><ETB>13<CR><LF>

<STX>0R|85|^RET Scattergram. FL dimension^^15305|128||^|^^^^^^<CR><ETB>77<CR><LF>

<STX>1R|86|^RET Scattergram FSC-LOG dimension^^15308|128||^|^^^^^^<CR><ETB>A7<CR><LF>

<STX>2R|87|^NRBC Scattergram. Meta Len^^15355|1||^|^^^^^^<CR><ETB>9E<CR><LF>

<STX>3R|88|^NRBC Scattergram. Fsc dimension^^15351|128||^|^^^^^^<CR><ETB>42<CR><LF>

<STX>4R|89|^NRBC Scattergram. Ssc dimension^^15352|128||^|^^^^^^<CR><ETB>52<CR><LF>

<STX>5R|90|^NRBC Scattergram. FL dimension^^15353|128||^|^^^^^^<CR><ETB>B5<CR><LF>

<STX>6R|91|^NRBC Scattergram FSC-LOG dimension^^15356|128||^|^^^^^^<CR><ETB>E5<CR><LF>

<STX>7R|92|^HemaScanningWbcGraph-1^^15900-1|/9j/4AAQSkZJRgABAQEAYABgAAD/4QBuRXhpZ
gAASUkqABkAAABWaXNpb24gQ0FNIFYxMjAwAAIAEAECABEAAAAIAAAAaYcEAAEAAABIAAAAAA
AAAEFTQ0lJAAAANC43OTA1MjgAAgCGkgcAEQAAADcAAAB8kgIABAAAADQweAAAAAAA/9sAQwAI
BgYHBgUIBwcHCQkICgwUDQwLCwwZEhMPFB0aHx4dGhwcICQuJyAiLCMcHCg3KSwwMTQ0NB8n
OT04MjwuMzQy/9sAQwEJCQkMCwwYDQ0YMiEcITIyMjIyMjIyMjIyMjIyMjIyMjIyMjIyMjIyMjIyMjI
yMjIyMjIyMjIyMjIy/8AAEQgAfAB8AwEiAAIRAQMRAf/EAB8AAAEFAQEBAQEBAAAAAAAAAAABAgME
BQYHCAkKC//EALUQAAIBAwMCBAMFBQQEAAABfQECAwAEEQUSITFBBhNRYQcicRQygZGhCCN
CscEVUtHwJDNicoIJChYXGBkaJSYnKCkqNDU2Nzg5OkNERUZHSElKU1RVVldYWVpjZGVmZ2hpan
N0dXZ3eHl6g4SFhoeIiYqSk5SVlpeYmZqio6Slpqeoqaqys7S1tre4ubrCw8TFxsfIycrS09TV1tfY2drh4uPk
5ebn6Onq8fLz9PX29/j5+v/EAB8BAAMBAQEBAQEBAQEAAAAAAAABAgMEBQYHCAkKC//EALURAAI

BAgQEAwQHBQQEAAECdwABAgMRBAUhMQYSQVEHYXETIjKBCBRCkaGxwQkjM1LwFWJy0QoWJ
DThJfEXGBkaJicoKSo1Njc4OTpDREVGR0hJSlNUVVZXWFlaY2RlZmdoaWpzdHV2d3h5eoKDhIWGh4
iJipKTlJWWl5iZmqKjpKWmp6ipqrKztLW2t7i5usLDxMXGx8jJytLT1NXW19jZ2uLj5OXm5+jp6vLz9PX29/j
5+v/aAAwDAQACEQMRAD8A7Fzz1qWC4dCMGoCcmnIjY4rRpSWpu9Tbt9RwMMeRW1p94sqkhs1xgf
YcGtewuEj6YGeTWbglJMlq7sdS84A61SmvQvO4ZrNnviBwx+lZNxdu56mnyu1yUjcfUlznIqSPUAw5wRX
Mqssp6k1OFki5yfpSVGe49TrImhlGcDNS+Wg6ACsHT7gg8nrW0H3DNVGUmrMTBj2xToxzxTepqaNefa
qJJQOORTGiVuCtTYwKYakCv9kjHOPwowi8YFLNLtXk1jS32JCMmm5MpLqcohzVhcheOKSSBo2zjvTf
MI4AqrNGiYkhOas2vJAJNVG5NaNhFnqKGndB1JZAAnes8nMuD61sXEYEfB5rDm+WQ4pyXYTNzT4U
IBJFTXyxquRism2vCoxmn3F4GXr1rNTlsCH282yXFbsNyCg57VySSEPnd+FXor4pgHpRyuPzC2h08Uo
ZxjBz1rRjHGQOtctaXiCTcH/DNb1vcq6gA5pWM2rF0mmNgg49KieTnNJ5u4H0p2sJFG+Yqp5rmppT5p/x
rpL5dyE1zU0beaa0cblLY2bvTxydv6VkyWYUmupurhFXBwax55oSTwBR7ZdUNW6mJJCEf1q5bTCFcn
FRXB4yoFVMMwIzik3dplaXLF3qasdo69Kz5ZhtyfxqtcRlJdzHFY+rakIoCqt+tdCpKTshxTb1NGXVoos/MB
j3rKuvEa79qEn+VcfLfPJKTuPXmhZAeeM1108FH7RrGF+p2dt4hGcMQKuNrkRUYdST6GvPpJTjrj8aW3
lYyA7jwaqeCi3daDcOx6TYX7zzggsBmu90htyrn0ryzRbgYUGvS9AJeNTntXHXgo6I55x5XY3JeRgfjUCs
VbGaklOD3qHOTx61zLsZE8kRkTj0rIks/nNbsQwo9MU8wqTnApxlbcr1Oc1Cc7iB1qhFE0rdKnvyfM6U+x
we1ZpJO5SFay+TOOaoSQeWx4x+FdGQBHmsm+5VsDNauV0lYZwviW/NuCq/e+tcDc3ss7kPmuz121k
urxhg4Ga5u70loRnYa9nDUY8t+ppTd22ZCx55AqQIc4p23YSMd6fGMmum50pIPIJHT9aFjMZ6VdjTCZN
VJ5QGl49KfNpqVZI09NvDFKozXrnhO5E0A57f5/z/AJPh1vL+9HPevX/ArF7cZPb/AD/n/J8vGxWjOeqtTsr
lsGiAbjx2pswYuB1q3bx4XpXnvRHGTKMDoKf+FGKXArPUDmtQtzkkDvVOBzEfpXR3VuHUkVjT2xVjgV
o4qSui07Ev2guo57VA8Jkye2KYquOK1LaAtH8wqFo9St2cfdWA+15K9f8AGsvWdOBgJVO3pXd3FkGnBI
6HiorvTEngIAGcV6FKvysVOVrnhN5bPHMQV71HEmD0rudd0IxuxCfjiuUmtmiJGK9SElJXR2QkmV3nCJ
jocVmTFpDxUtyW3lcGlt7Z5XChc59qG7PUJyXUghDLIOK9e8AzHysH/PT/AD/nni7Xw1M8IkAHTODXa+
ErY2eVII9c1wYuUZx0OeU/eVzuZJNrg1agmBGKzZJA4FOik29681x0MbG0DkZFLn3H51Wgl3DNWcj1r
OwrDTyOlV5rZWGelSRShwKk49KabWwbGY1mynIAqeIlBgirfGOlV53CdelNu+4yOUBxkHkVWcsopv2k
GSpXKOvPeiLS0YWe6MHUohNkFa5K+0bcGIX9K717YOT3pP7LVxgjrXfRr8iKjJo8buNBkecgITz6VtaRo
HlEO6fnXpH/AAj8CfMUBPuKr3FgqDCLirq4rmVol8/cxYEC4UKOK2LSBEG4LjPpVeKzbzOnf0rYityYsAV
wRupEt6lYyc4BqQMdvBpksRj521Grc4rTW2okaFvOV/wq4L046mskK23I4qIyyA4yaxnF390DRsZmZRW
qnK1j6UPkGccd6214FTpYl9xG4XGKzb6UBTWhIQFNYGozjnmmtNRpFUzENkGnfa2A55qrCC7VNOhE
f9aIxT3KSTLdvdo7YrbtyjJxjNcRHKUm4rp9NmyoFZxunYRsFQ1Uby3UKWGMDmr6nK5xTZI1IUq3cVpF
2ZCdjGtLczEsQMZrVjgWMfhTobZIFwgwPpUhGaV1smF9DJv0XGRWPuXzMGtjUBhSP61zkjMklXJNot
G1FtZcD0pjw5bNVbW4461d8xTzxUxnbRlF2wt9kYJrR6DgU2JQEGBT6HuZMp3RO3vXOXxO/wBq6e5
UbPwrnr1V3HgdapLQpENkBxnip7xQEODVeH5elLO7FTk0oys7GtkZW0+f0OM10mlLgCsWJQ0oyO9dJ
p6KMYFJLqZmsn3BT/emj7lOFSZid8minHpSetILIK6i3KT1rnb20IJIBrrX+5WXdxrk8VtB9CkzII3Rt3qX7U4
4B4q9NEm48VU8lPSlKmrl3P/Z||^|^^^^^^<CR><ETB>0E<CR><LF>
<STX>0R|93|^HemaScanningWbcCellType-1^^15901-1|M_WBC_EOS||^|<CR><ETB>D2<CR><LF>
<STX>7L|1|N<CR><ETX>07<CR><LF>

Example (CN):

<STX>1H|\^&|1||Mindray^LabXpert^||||||Automated Count^00001|P|LIS2-A2|20140909170247<CR><ETB>E7<CR><LF>

<STX>2P|1||| 病 历 号 | 张 三 ^||20100405060708^10^Y| 男 |||||||||||||| 内 科 | 病 区 ^ 床 号 <CR><ETB>08<CR><LF>

<STX>3O|1|s1||||20190102030405||| 送 检 者 ||| 临 床 诊 断 |20190203040506| 静 脉 血 ^|||||||||X<CR><ETB>46<CR><LF>

<STX>4R|1|^Take Mode^^08001|A||^|^^^^^^<CR><ETB>BC<CR><LF>
<STX>5R|2|^Blood Mode^^08002|W||^|^^^^^^<CR><ETB>40<CR><LF>
<STX>6R|3|^Test Mode^^08003|CBC+DIFF||^|^^^^^^<CR><ETB>A8<CR><LF>
<STX>7R|4|^Ref Group^^01002|Child||^|^^^^^^<CR><ETB>7F<CR><LF>
<STX>0R|5|^Remark^^01001|Emergency patient||^|^^^^^^<CR><ETB>60<CR><LF>
<STX>1R|6|^Recheck flag^^01006|T||^|^^^^^^<CR><ETB>14<CR><LF>
<STX>2R|7|^Shelf No^^01012|54||^|^^^^^^<CR><ETB>88<CR><LF>
<STX>3R|8|^Tube No^^01013|8||^|^^^^^^<CR><ETB>F8<CR><LF>
<STX>4R|9|^Charge type^^01015|||^|^^^^^^<CR><ETB>83<CR><LF>
<STX>5R|10|^Patient type^^01016|||^|^^^^^^<CR><ETB>38<CR><LF>
<STX>6R|11|^Analyzer^^09001|2#||^|^^^^^^<CR><ETB>20<CR><LF>
<STX>7R|12|^Project Type^^05007|BL||^|^^^^^^<CR><ETB>B0<CR><LF>
<STX>0R|13|^Custom patient info 1^^01009|||^|^^^^^^<CR><ETB>2E<CR><LF>
<STX>1R|14|^Custom patient info 2^^01010|||^|^^^^^^<CR><ETB>29<CR><LF>
<STX>2R|15|^Custom patient info 3^^01011|||^|^^^^^^<CR><ETB>2D<CR><LF>
<STX>3R|16|^WBC^^6690-2|15.22|10&S&9/L|4.00^12.00|H^^A^^^^<CR><ETB>85<CR><LF>
<STX>4R|17|^BAS#^^704-7|0.06|10&S&9/L|0.00^0.10|^^A^^^^<CR><ETB>BD<CR><LF>
<STX>5R|18|^BAS%^^706-2|0.4|%|0.0^1.0|^^A^^^^<CR><ETB>9D<CR><LF>
<STX>6R|19|^NEU#^^751-8|11.66|10&S&9/L|2.00^8.00|H^^A^^^^<CR><ETB>5F<CR><LF>
<STX>7R|20|^NEU%^^770-8|76.6|%|50.0^70.0|H^^A^^^^<CR><ETB>A3<CR><LF>
<STX>0R|21|^EOS#^^711-2|0.02|10&S&9/L|0.02^0.80|^^A^^^^<CR><ETB>C3<CR><LF>
<STX>1R|22|^EOS%^^713-8|0.1|%|0.5^5.0|L^^A^^^^<CR><ETB>FB<CR><LF>
<STX>2R|23|^LYM#^^731-0|2.05|10&S&9/L|0.80^7.00|^^A^^^^<CR><ETB>DC<CR><LF>
<STX>3R|24|^LYM%^^736-9|13.5|%|20.0^60.0|L^^A^^^^<CR><ETB>A6<CR><LF>
<STX>4R|25|^MON#^^742-7|1.43|10&S&9/L|0.12^1.20|H^^A^^^^<CR><ETB>21<CR><LF>
<STX>5R|26|^MON%^^5905-5|9.4|%|3.0^12.0|^^A^^^^<CR><ETB>27<CR><LF>
<STX>6R|27|^RBC^^789-8|2.72|10&S&12/L|3.50^5.20|L^^N^^^^<CR><ETB>42<CR><LF>
<STX>7R|28|^HGB^^718-7|8.8|g/dL|12.0^16.0|L^^A^^^^<CR><ETB>60<CR><LF>
<STX>0R|29|^MCV^^787-2|129.8|fL|80.0^100.0|H^^N^^^^<CR><ETB>78<CR><LF>
<STX>1R|30|^MCH^^785-6|32.2|pg|27.0^34.0|^^A^^^^<CR><ETB>CF<CR><LF>
<STX>2R|31|^MCHC^^786-4|24.8|g/dL|31.0^37.0|L^^A^^^^<CR><ETB>D3<CR><LF>
<STX>3R|32|^RDW-CV^^788-0|24.8|%|11.0^16.0|H^^N^^^^<CR><ETB>4E<CR><LF>
<STX>4R|33|^RDW-SD^^21000-5|116.4|fL|35.0^56.0|H^^N^^^^<CR><ETB>64<CR><LF>
<STX>5R|34|^HCT^^4544-3|0.354||0.350^0.490|^^N^^^^<CR><ETB>D8<CR><LF>
<STX>6R|35|^PLT^^777-3|55|10&S&9/L|100^300|L^^N^^^^<CR><ETB>62<CR><LF>
<STX>7R|36|^MPV^^32623-1|11.7|fL|6.5^12.0|^^N^^^^<CR><ETB>05<CR><LF>
<STX>0R|37|^PDW^^32207-3|17.2||15.0^17.0|H^^N^^^^<CR><ETB>BE<CR><LF>
<STX>1R|38|^PCT^^10002|0.064|%|0.108^0.282|L^^N^^^^<CR><ETB>11<CR><LF>
<STX>2R|39|^PLCR^^10014|38.7|%|11.0^45.0|^^N^^^^<CR><ETB>82<CR><LF>
<STX>3R|40|^PLCC^^10013|21|10&S&9/L|30^90|L^^N^^^^<CR><ETB>1E<CR><LF>
<STX>4R|41|^IMG#^^51584-1|0.49|10&S&9/L|^|^^A^^^^<CR><ETB>B1<CR><LF>
<STX>5R|42|^IMG%^^38518-7|3.2|%|^|^^A^^^^<CR><ETB>F6<CR><LF>
<STX>6R|43|^HFC#^^10020|0.40|10&S&9/L|^|^^A^^^^<CR><ETB>2E<CR><LF>
<STX>7R|44|^HFC%^^10021|2.6|%|^|^^A^^^^<CR><ETB>78<CR><LF>
<STX>0R|45|^PLT-I^^10022|55|10&S&9/L|^|^^N^^^^<CR><ETB>53<CR><LF>

<STX>1R|46|^WBC-D^^10024|14.73|10&S&9/L|^|^^A^^^^<CR><ETB>C4<CR><LF>
<STX>2R|47|^WBC-B^^10025|15.22|10&S&9/L|^|^^A^^^^<CR><ETB>C0<CR><LF>
<STX>3R|48|^PDW-SD^^10031|17.0|fL|^|^^N^^^^<CR><ETB>FC<CR><LF>
<STX>4R|49|^InR#^^10032|0.01|10&S&9/L|^|^^N^^^^<CR><ETB>77<CR><LF>
<STX>5R|50|^InR‰^^10033|0.00|‰|^|^^N^^^^<CR><ETB>BD<CR><LF>
<STX>6R|51|^WBC^^12227-5|15.22|10&S&9/L|4.00^12.00|H^^A^^^^<CR><ETB>B3<CR><LF>
<STX>7R|52|^Neutrophilia^^12004|T||^|^^^^^^<CR><ETB>D0<CR><LF>
<STX>0R|53|^WBC Left Shift?^^17790-7|T||^|^^^^^^<CR><ETB>2F<CR><LF>
<STX>1R|54|^Imm Granulocytes?^^34165-1|T||^|^^^^^^<CR><ETB>C4<CR><LF>
<STX>2R|55|^Atypical Lymphs?^^15192-8|T||^|^^^^^^<CR><ETB>5D<CR><LF>
<STX>3R|56|^Anisocytosis^^15150-6|T||^|^^^^^^<CR><ETB>4C<CR><LF>
<STX>4R|57|^Macrocytes^^12075|T||^|^^^^^^<CR><ETB>00<CR><LF>
<STX>5R|58|^Anemia^^12014|T||^|^^^^^^<CR><ETB>2C<CR><LF>
<STX>6R|59|^Hypochromia^^15180-3|T||^|^^^^^^<CR><ETB>CD<CR><LF>
<STX>7R|60|^HGB Interfere^^12015|T||^|^^^^^^<CR><ETB>72<CR><LF>
<STX>0R|61|^Thrombopenia^^12018|T||^|^^^^^^<CR><ETB>C2<CR><LF>
<STX>1R|62|^Abn Lympho/ Blasts^^12053|T||^|^^^^^^<CR><ETB>3D<CR><LF>
<STX>2R|63|^NRBC?^^12054|T||^|^^^^^^<CR><ETB>42<CR><LF>
<STX>3R|64|^RBC Histogram. Left Line^^15051|29||^|^^^^^^<CR><ETB>1D<CR><LF>
<STX>4R|65|^RBC Histogram. Right Line^^15052|250||^|^^^^^^<CR><ETB>BF<CR><LF>
<STX>5R|66|^RBC Histogram. Binary Meta Length^^15053|1||^|^^^^^^<CR><ETB>44<CR><LF>
<STX>6R|67|^RBC Histogram. Total^^15057|51277||^|^^^^^^<CR><ETB>95<CR><LF>
<STX>7R|68|^PLT Histogram. Left Line^^15111|3||^|^^^^^^<CR><ETB>03<CR><LF>
<STX>0R|69|^PLT Histogram. Right Line^^15112|47||^|^^^^^^<CR><ETB>A9<CR><LF>
<STX>1R|70|^PLT Histogram. Binary Meta Length^^15113|1||^|^^^^^^<CR><ETB>51<CR><LF>
<STX>2R|71|^PLT Histogram. Total^^15117|1004||^|^^^^^^<CR><ETB>61<CR><LF>
<STX>3R|72|^WBC DIFF Scattergram. Meta len^^15203|1||^|^^^^^^<CR><ETB>A1<CR><LF>
<STX>4R|73|^WBC DIFF Scattergram. Fsc dimension^^15205|128||^|^^^^^^<CR><ETB>2B<CR><LF>
<STX>5R|74|^WBC DIFF Scattergram. Ssc dimension^^15206|128||^|^^^^^^<CR><ETB>3B<CR><LF>
<STX>6R|75|^WBC DIFF Scattergram. FL dimension^^15207|128||^|^^^^^^<CR><ETB>A7<CR><LF>
<STX>7R|76|^WBC DIFF Scattergram. FSC-LOG dimension^^15208|128||^|^^^^^^<CR><ETB>03<CR><LF>
<STX>0R|77|^Baso Scattergram. Meta Len^^15253|1||^|^^^^^^<CR><ETB>F8<CR><LF>
<STX>1R|78|^Baso Scattergram. Fsc dimension^^15255|128||^|^^^^^^<CR><ETB>A2<CR><LF>
<STX>2R|79|^Baso Scattergram. Ssc dimension^^15256|128||^|^^^^^^<CR><ETB>B2<CR><LF>
<STX>3R|80|^Baso Scattergram. FL dimension^^15257|128||^|^^^^^^<CR><ETB>15<CR><LF>
<STX>4R|81|^Baso Scattergram. FSC-LOG dimension^^15258|128||^|^^^^^^<CR><ETB>71<CR><LF>
<STX>5R|82|^RET Scattergram. Meta Len^^15307|1||^|^^^^^^<CR><ETB>5F<CR><LF>
<STX>6R|83|^RET Scattergram. Fsc dimension^^15303|128||^|^^^^^^<CR><ETB>03<CR><LF>
<STX>7R|84|^RET Scattergram. Ssc dimension^^15304|128||^|^^^^^^<CR><ETB>13<CR><LF>
<STX>0R|85|^RET Scattergram. FL dimension^^15305|128||^|^^^^^^<CR><ETB>77<CR><LF>
<STX>1R|86|^RET Scattergram FSC-LOG dimension^^15308|128||^|^^^^^^<CR><ETB>A7<CR><LF>
<STX>2R|87|^NRBC Scattergram. Meta Len^^15355|1||^|^^^^^^<CR><ETB>9E<CR><LF>
<STX>3R|88|^NRBC Scattergram. Fsc dimension^^15351|128||^|^^^^^^<CR><ETB>42<CR><LF>
<STX>4R|89|^NRBC Scattergram. Ssc dimension^^15352|128||^|^^^^^^<CR><ETB>52<CR><LF>

<STX>5R|90|^NRBC Scattergram. FL dimension^^15353|128||^|^^^^^^<CR><ETB>B5<CR><LF>
<STX>6R|91|^NRBC Scattergram FSC-LOG dimension^^15356|128||^|^^^^^^<CR><ETB>E5<CR><LF>
<STX>7R|92|^HemaScanningWbcGraph-1^^15900-1|/9j/4AAQSkZJRgABAQEAYABgAAD/4QBuRXhpZ
gAASUkqABkAAABWaXNpb24gQ0FNIFYxMjAwAAIAEAECABEAAAAIAAAAaYcEAAEAAABIAAAAAA
AAAEFTQ0lJAAAANC43OTA1MjgAAgCGkgcAEQAAADcAAAB8kgIABAAAADQweAAAAAAA/9sAQwAI
BgYHBgUIBwcHCQkICgwUDQwLCwwZEhMPFB0aHx4dGhwcICQuJyAiLCMcHCg3KSwwMTQ0NB8n
OT04MjwuMzQy/9sAQwEJCQkMCwwYDQ0YMiEcITIyMjIyMjIyMjIyMjIyMjIyMjIyMjIyMjIyMjIyMjI
yMjIyMjIyMjIyMjIy/8AAEQgAfAB8AwEiAAIRAQMRAf/EAB8AAAEFAQEBAQEBAAAAAAAAAAABAgME
BQYHCAkKC//EALUQAAIBAwMCBAMFBQQEAAABfQECAwAEEQUSITFBBhNRYQcicRQygZGhCCN
CscEVUtHwJDNicoIJChYXGBkaJSYnKCkqNDU2Nzg5OkNERUZHSElKU1RVVldYWVpjZGVmZ2hpan
N0dXZ3eHl6g4SFhoeIiYqSk5SVlpeYmZqio6Slpqeoqaqys7S1tre4ubrCw8TFxsfIycrS09TV1tfY2drh4uPk
5ebn6Onq8fLz9PX29/j5+v/EAB8BAAMBAQEBAQEBAQEAAAAAAAAAABAgMEBQYHCAkKC//EALURAAI
BAgQEAwQHBQQEAAECdwABAgMRBAUhMQYSQVEHYXETIjKBCBRCkaGxwQkjM1LwFWJy0QoWJ
DThJfEXGBkaJicoKSo1Njc4OTpDREVGR0hJSlNUVVZXWFlaY2RlZmdoaWpzdHV2d3h5eoKDhIWGh4
iJipKTlJWWl5iZmqKjpKWmp6ipqrKztLW2t7i5usLDxMXGx8jJytLT1NXW19jZ2uLj5OXm5+jp6vLz9PX29/j
5+v/aAAwDAQACEQMRAD8A7Fzz1qWC4dCMGoCcmnIjY4rRpSWpu9Tbt9RwMMeRW1p94sqkhs1xgf
YcGtewuEj6YGeTWbglJMlq7sdS84A61SmvQvO4ZrNnviBwx+lZNxdu56mnyu1yUjcfUlznIqSPUAw5wRX
Mqssp6k1OFki5yfpSVGe49TrImhlGcDNS+Wg6ACsHT7gg8nrW0H3DNVGUmrMTBj2xToxzxTepqaNefa
qJJQOORTGiVuCtTTYwKYakCv9kjHOPwowi8YFLNLtXk1jS32JCMmm5MpLqcohzVhcheOKSSBo2zjvTf
MI4AqrNGiYkhOas2vJAJNVG5NaNhFnqKGndB1JZAAnes8nMuD61cTmMIPLNUOVWmuMrwzSRmNy6o
FRXB4yoFVMMwIzik3dplaXLF3qasdo69Kz5ZhtyfxqtcRlY+rakIoCqt+tdCpKEf1q5bTCFcn
rpL5dyE1zU0beaa0cblLY2bvTxydv6vWYUmupurhFXBwax55oSTwBR7ZdUNW6mJJJCEf1q5bTCFcn
FRXB4yoFVMMwIzik3dplaXLF3qasdo69Kz5ZhtyfxqtcRlJdzHFY+rakIoCqt+tdCpKEf1q5bTCFcn
j3rKuvEa79qEn+VcfLfPJKTuPmpPRm6JcP2lwdabutkqR0ZAu8eRmLpqCeR3dj87j4GvUkJThAqCh
AnyPZ6wKhDjdPDM9eRNDZMvSXBjy2f7fgbPqXK8cD1ieRqF6ZoI6/pVYO5AXMhDRZn3yaBWtOypRk
l2xsD6cPkYlO4ZgqOqMkgtRwkX5ZJtH2JLSLi7u5vxtb0UUiD6vbAzHDaLfL49FEfT6tBIzAYRaVpV
qK7PumVkyjvhhjt1N4QcfLKQlgLhTUbwM1jD2xfjX7MzV9h8BKtzv8A03fHU59dHfJG3eMZdVp5sA
ifk4DVXjqCJldE69o4WXc1HhN9QeR7rE2A8QNlmF/8VuV7dN/KnjtmOqdLytoxxOEPdDZ4wvcI
eqfPgu7Xz+rHXUbHsVZ4rH9lBDS19ADkFBnA/4I4J1ExUEMl/qEMJAs/wSmyCQp6TQDkhkUmF0tr
c+5D9mUqcmxjFErp8wrnGMIvVCADyq/u3UlTUqA8Rk6XgTS8ofKBmlz8ojX2yJVnTjhBHFZMQZUVo
MAD7DJZN8P8Fr/AlkqLmh3nVI5ZjdIaBhGIuHSB8HrSlBSq8rqvFqWjBTYWQ3e4GQ8jUBRZy4gMn1TC
BVqiTtakjZ+E8HzjA2yhqjuQfDqBsr3nOzD/5FRhPJaYb8nq6vjS+YIM96LRUFVGqtD2YH/nV5KqL06
+91Rqd6Of2pOYoQ4hF5lDYY2lsifnOTOB3bhXyNMFo+2+5DT/lBgFe9zgqiIfHLQHmkLyWR6uGHUz
y7+Pih8hgUc9AWHg1jsZNjmqSW59akn6ApvS3fWk51F5WQN66DDuoeUY+9OHsgHb7sfkMSqFXtgtTT
aJqzFF1fdw9JSE+O6njp/HD9z9QjwJRm/nM/Hd2WwM2k5TE/zKFlOQ9a2Prk7ajaWaG8Z5wtJeXXDaS
uEXZQJZhJGckt+0/e4YEm4w4pEc69o0sfb/ZdyqUfT5RtTAldjz8QBgWUBL2EeAWHxA1dUlXB4zEhyn
rcbB0ckc88TiHr3UjIhGdEcCm1DyQNt7snF5jvzqWk9A3MGScahvbJjbxrscIbqMZm5Bar5M0bHN7i
e0kjEjeOQZa0/ROyY9qOBmqYVb9+XXsgLQP3YNcWL8cyDI3NhIb0zFHsmVJ+E9EoZOGjsOnhYxmFvXh
D+xCDFvyI/z+Tb3U0CbpMq+jlIoVMmnAACM5Ja6n9uaqTdHXBLj4BDBKqzoMJFlbpn+lBnMEtEnXk1f
R3Bc2TY8aVmgu5WFJKk1E7HCQ+rSA9rcYtDiFNLPwgbyUyi0EUi7o+bjtTmGPFhhlCurNh/ZFjNtYsvIv
pUy0+SqPqvUiNswGDc+JXEi0rFHo6fAUcXJLbnb8T8q0wrJCdAw2hcQAsXtRMhrUoTOuqkUMz4K6Vs
fHO0oWFVIdRwhM1twABmkBp6DsBoBxNjzUfUzbTtE9oxY/7UmcVrSzBZOTSubzrrmpbxDSMYHHYZ
CCMbhxFoXtzoEuzBx5G4iU8IG4HKUSNANOJfKtkVCVkkxAWpfu+D4KIEdvn/wDoFpQJG0YWm/S0U
tbe4K7imvRe0ZAd8OC8XqqPw82z/xnQqWnLiH1C/7RGgzsMzQiJwjn5SiE0cWPYFuFlDXpHo5/F88
6A3hQ7oWYMBmDb7ZlZVVw4uMLwr1e+6Ze99izT2fwzwfXRgrKCzuUhKldMnKYKJ3ObDG0XJ4nKZc
W2LN3lVpoCjZ+GMgsr5Le1NgN6mktC9c4TjzfOBhI8Zpbp6YmGP3Iy1OgnHRq8dW12IknJ22U1D
gDFSfaYFHMOj/iDnPxoG2Lrf9N/ZcYt4MEjYqpHFgiZyHh3FJWcdWx0dErTuKdJSXVIfQSDQ9JLrO
qI4N+PXF3m8KKvXbWYwFpEU0DoZNs2LgllSlGZB9a0CFOIsZ6V86LAIZXzOqG8oRZmhQkIfh43j
rUNvmT/ctOjhaLSiRWOmCGl5BxM7XJkfUwQO2iTYRR+Qp0s8C4+e6+D5PMj3VvI+z1nmuLPZ0
x1nLEk3mbpUCG7+ABrRtnYC6Wn8FX0GRbQCPU9OYeA5KvVaK2B33dYBYs1h8/qEqU7Q8h6y8D
zqkkGdaOyAsRGKYK2wScB0hrWbhr6nOh4QywlOz7CRDE7FZWhR5C8iTd7yWhhtT72hUH8YGnbq
4UHRtUcS9dHnl16yg+Yo5l5MZNxJN4aNR1gOvW0hsBRsDjEIAN86JcKTFhJ6QIQQABrt4T9BS1Ox
N8JClLT8nFXQKx3PpX8G6Sn3ahd1A6mgTUhgJt58/vjRzhgLfyvlyIjsMvo3HLmcY6D/mI4y19p
qI9Rw0q2bVGs/uFPMnaqMfSfc0ZQ4Dmx+j3YnRDVChGpbPdRTxC2Y0zyndpFQgvQi/LXfw8ea5S
BVnNaTnhE4OAzZ58sKYVTgJjGpJqaYKG2H0D2Nq0BH8mG7cYPTNfbFj7XZYvDI3N2Ku/QtkxOLy
J6hJlbcGL1lQk6Gk9XaLnELxOZ9kU0iZZHvLvbJ+k5MP+lVO5gPwWBlOzRw9fIWkLtXr9ZX0y6OK
hbDMvZmBu+GjOVgsF+WQAt/8vKjbOV+HKzHrYaiFVYXBNJ2YhUO0Cn2AHGkYhKPIuXPTZhR6ESvUL
vdVFBT9Fx7oh4bB/MNCtDq9cSOtdcJSubQcIy8ekdkpx4DOdrcgoDWYo2Cz/k6VUOzsWgjfLoWnS
Kg1s0I3+Uj/lWpFNeoi8IwIYd5DFRDv12i0V3eCvUOUIlpj8RmGEp8wC/KG0ISPXsHIFFh/sqxsq9
pdLNPpKfy7+8rJW8fZD4M4wkM7KH2vaH+DgrQs+w1CWdRGU5B+sbLeAz9dKMn1jEuk7N6Ajs8Z

4B4q9NEm48VU8lPSlKmrl3P/Z ||^|^^^^^^<CR><ETB>0E<CR><LF>

<STX>0R|93|^HemaScanningWbcCellType-1^^15901-1|M_WBC_EOS||^|<CR><ETB>D2<CR><LF>

<STX>7L|1|N<CR><ETX>07<CR><LF>

3.6.1.4 Body fluid samples

<STX>1H|\^&|1||Mindray^LabXpert^||||||Automated

Count^00001|P|LIS2-A2|20140910100915<CR><ETB>DA<CR><LF>

<STX>2P|1||||^||^^|||||||||||||||||^<CR><ETB>54<CR><LF>

<STX>3O|1|0815-13||||20140815141621||||||||^|service|||||||F<CR><ETB>94<CR><LF>

<STX>4R|1|^Take Mode^^08001|O||^|^^^^^^<CR><ETB>CA<CR><LF>

<STX>5R|2|^Blood Mode^^08002|B||^|^^^^^^<CR><ETB>2B<CR><LF>

<STX>6R|3|^Test Mode^^08003|CBC+DIFF||^|^^^^^^<CR><ETB>A8<CR><LF>

<STX>7R|4|^Ref Group^^01002|General||^|^^^^^^<CR><ETB>59<CR><LF>

<STX>0R|5|^Remark^^01001|||^|^^^^^^<CR><ETB>AC<CR><LF>

<STX>1R|6|^Recheck flag^^01006|F||^|^^^^^^<CR><ETB>06<CR><LF>

<STX>2R|7|^Shelf No^^01012|||^|^^^^^^<CR><ETB>1F<CR><LF>

<STX>3R|8|^Tube No^^01013|||^|^^^^^^<CR><ETB>C0<CR><LF>

<STX>4R|9|^Charge type^^01015|||^|^^^^^^<CR><ETB>83<CR><LF>

<STX>5R|10|^Patient type^^01016|||^|^^^^^^<CR><ETB>38<CR><LF>

<STX>6R|11|^Analyzer^^09001|x1||^|^^^^^^<CR><ETB>74<CR><LF>

<STX>7R|12|^Project Type^^05007|BF||^|^^^^^^<CR><ETB>AA<CR><LF>

<STX>0R|13|^Custom patient info 1^^01009|||^|^^^^^^<CR><ETB>2E<CR><LF>

<STX>1R|14|^Custom patient info 2^^01010|||^|^^^^^^<CR><ETB>29<CR><LF>

<STX>2R|15|^Custom patient info 3^^01011|||^|^^^^^^<CR><ETB>2D<CR><LF>

<STX>3R|16|^WBC-BF^^57845-0|0.000|10&S&9/L|^|^^N^^^^<CR><ETB>78<CR><LF>

<STX>4R|17|^RBC-BF^^23860-0|0.000|10&S&12/L|^|^^N^^^^<CR><ETB>95<CR><LF>

<STX>5R|18|^MN#^^26490-3|****|10&S&9/L|^|^^N^^^^<CR><ETB>5E<CR><LF>

<STX>6R|19|^MN%^^26493-7|****|%|^|^^N^^^^<CR><ETB>DA<CR><LF>

<STX>7R|20|^PMN#^^10034|****|10&S&9/L|^|^^N^^^^<CR><ETB>3C<CR><LF>

<STX>0R|21|^PMN%^^10035|****|%|^|^^N^^^^<CR><ETB>AA<CR><LF>

<STX>1R|22|^TC-BF#^^10036|0.000|10&S&9/L|^|^^N^^^^<CR><ETB>E1<CR><LF>

<STX>2R|23|^Eos-BF#^^35063-7|****|10&S&9/L|^|^^N^^^^<CR><ETB>98<CR><LF>

<STX>3R|24|^Eos-BF%^^26452-3|****|%|^|^^N^^^^<CR><ETB>0B<CR><LF>

<STX>4R|25|^HF-BF#^^10037|****|10&S&9/L|^|^^N^^^^<CR><ETB>99<CR><LF>

<STX>5R|26|^HF-BF%^^10038|****|%|^|^^N^^^^<CR><ETB>0F<CR><LF>

<STX>6R|27|^RBC-BF-R^^10039|0.0000|10&S&12/L|^|^^N^^^^<CR><ETB>E4<CR><LF>

<STX>7R|28|^Neu-BF#^^10044|****|10&S&9/L|^|^^N^^^^<CR><ETB>37<CR><LF>

<STX>0R|29|^Neu-BF%^^10045|****|%|^|^^N^^^^<CR><ETB>A5<CR><LF>

<STX>1R|30|^RBC Histogram. Left Line^^15051|10||^|^^^^^^<CR><ETB>0A<CR><LF>

<STX>2R|31|^RBC Histogram. Right Line^^15052|250||^|^^^^^^<CR><ETB>B6<CR><LF>

<STX>3R|32|^RBC Histogram. Binary Meta Length^^15053|1||^|^^^^^^<CR><ETB>3B<CR><LF>

<STX>4R|33|^RBC Histogram. Total^^15057|0||^|^^^^^^<CR><ETB>B6<CR><LF>

<STX>5R|34|^PLT Histogram. Left Line^^15111|3||^|^^^^^^<CR><ETB>FA<CR><LF>

<STX>6R|35|^PLT Histogram. Right Line^^15112|39||^|^^^^^^<CR><ETB>A9<CR><LF>

<STX>7R|36|^PLT Histogram. Binary Meta Length^^15113|1||^|^^^^^^<CR><ETB>59<CR><LF>
<STX>0R|37|^PLT Histogram. Total^^15117|21||^|^^^^^^<CR><ETB>FF<CR><LF>
<STX>1R|38|^WBC DIFF Scattergram. Meta len^^15203|1||^|^^^^^^<CR><ETB>A1<CR><LF>
<STX>2R|39|^WBC DIFF Scattergram. Fsc dimension^^15205|128||^|^^^^^^<CR><ETB>2B<CR><LF>
<STX>3R|40|^WBC DIFF Scattergram. Ssc dimension^^15206|128||^|^^^^^^<CR><ETB>32<CR><LF>
<STX>4R|41|^WBC DIFF Scattergram. FL dimension^^15207|128||^|^^^^^^<CR><ETB>9E<CR><LF>
<STX>5R|42|^WBC DIFF Scattergram. FSC-LOG dimension^^15208|128||^|^^^^^^<CR><ETB>FA<CR><LF>
<STX>6R|43|^Baso Scattergram. Meta Len^^15253|1||^|^^^^^^<CR><ETB>F7<CR><LF>
<STX>7R|44|^Baso Scattergram. Fsc dimension^^15255|128||^|^^^^^^<CR><ETB>A1<CR><LF>
<STX>0R|45|^Baso Scattergram. Ssc dimension^^15256|128||^|^^^^^^<CR><ETB>A9<CR><LF>
<STX>1R|46|^Baso Scattergram. FL dimension^^15257|128||^|^^^^^^<CR><ETB>15<CR><LF>
<STX>2R|47|^Baso Scattergram. FSC-LOG dimension^^15258|128||^|^^^^^^<CR><ETB>71<CR><LF>
<STX>3R|48|^RET Scattergram. Meta Len^^15307|1||^|^^^^^^<CR><ETB>5F<CR><LF>
<STX>4R|49|^RET Scattergram. Fsc dimension^^15303|128||^|^^^^^^<CR><ETB>03<CR><LF>
<STX>5R|50|^RET Scattergram. Ssc dimension^^15304|128||^|^^^^^^<CR><ETB>0A<CR><LF>
<STX>6R|51|^RET Scattergram. FL dimension^^15305|128||^|^^^^^^<CR><ETB>76<CR><LF>
<STX>7R|52|^RET Scattergram FSC-LOG dimension^^15308|128||^|^^^^^^<CR><ETB>A6<CR><LF>
<STX>0R|53|^NRBC Scattergram. Meta Len^^15355|1||^|^^^^^^<CR><ETB>95<CR><LF>
<STX>1R|54|^NRBC Scattergram. Fsc dimension^^15351|128||^|^^^^^^<CR><ETB>39<CR><LF>
<STX>2R|55|^NRBC Scattergram. Ssc dimension^^15352|128||^|^^^^^^<CR><ETB>49<CR><LF>
<STX>3R|56|^NRBC Scattergram. FL dimension^^15353|128||^|^^^^^^<CR><ETB>B5<CR><LF>
<STX>4R|57|^NRBC Scattergram FSC-LOG dimension^^15356|128||^|^^^^^^<CR><ETB>E5<CR><LF>
<STX>5L|1|N<CR><ETX>05<CR><LF>

3.6.1.5 Glycohemoglobin test samples

<STX>1H|\^&|12||Mindray^LabXpert^||||||Automated Count^00001|P|LIS2-A2|20200511162850<CR><ETB>AE<CR><LF>
<STX>2P|1|||mindray0001|Jack^||19950518000000^25^Y|Male||||||||||||||Surgery|Inpatient^No. 100<CR><ETB>AA<CR><LF>
<STX>3O|1|20150709111338||||20200511161940|20200511155804|||Nurse|||bacterial infection|20200511160804|blood^|||||NotValidated|||||F<CR><ETB>57<CR><LF>
<STX>4R|1|^Take Mode^^08001|O||^|^^^^^^<CR><ETB>CA<CR><LF>
<STX>5R|2|^Blood Mode^^08002|W||^|^^^^^^<CR><ETB>40<CR><LF>
<STX>6R|3|^Test Mode^^08003|STANDARD||^|^^^^^^<CR><ETB>ED<CR><LF>
<STX>7R|4|^Ref Group^^01002|Male Adult||^|^^^^^^<CR><ETB>CB<CR><LF>
<STX>0R|5|^Remark^^01001|bacterial infection||^|^^^^^^<CR><ETB>F8<CR><LF>
<STX>1R|6|^Shelf No^^01012|1||^|^^^^^^<CR><ETB>4E<CR><LF>
<STX>2R|7|^Tube No^^01013|2||^|^^^^^^<CR><ETB>F0<CR><LF>
<STX>3R|8|^Charge type^^01015|Social Security||^|^^^^^^<CR><ETB>0A<CR><LF>
<STX>4R|9|^Patient type^^01016|Outpatient||^|^^^^^^<CR><ETB>58<CR><LF>
<STX>5R|10|^Analyzer^^09001|H50||^|^^^^^^<CR><ETB>76<CR><LF>
<STX>6R|11|^Project Type^^05007|BL||^|^^^^^^<CR><ETB>AE<CR><LF>
<STX>7R|12|^HbA1c%^^17856-6|0.6|%(NGSP)|4.0^6.0|L^^N^^^^<CR><ETB>A1<CR><LF>

<STX>0R|13|^HbA1c-MonoS^^10093|0.6|%(Mono-S)|2.9^5.0|L^^N^^^^<CR><ETB>05<CR><LF>
<STX>1R|14|^HbA1c-IFCC^^59261-8|2|mmol/mol|20^42|L^^N^^^^<CR><ETB>76<CR><LF>
<STX>2R|15|^HbF^^10090|2.1|%|0.0^99.9|^^N^^^^<CR><ETB>E0<CR><LF>
<STX>3R|16|^HbA1^^10091|1.4|%|0.0^99.9|^^N^^^^<CR><ETB>11<CR><LF>
<STX>4R|17|^eAG^^10092|4.2|mmol/L|0.0^55.5|^^N^^^^<CR><ETB>E5<CR><LF>
<STX>5R|18|^Chromatogram Wave Meta Length^^15401|4||^|^^^^^^<CR><ETB>80<CR><LF>
<STX>6R|19|^Chromatogram Baseline Meta Length^^15403|4||^|^^^^^^<CR><ETB>14<CR><LF>
<STX>7R|20|^Chromatogram HOR. Max Axis^^15404|72||^|^^^^^^<CR><ETB>09<CR><LF>
<STX>0R|21|^Chromatogram VER. Max Axis^^15405|5||^|^^^^^^<CR><ETB>D4<CR><LF>
<STX>1R|22|^Total Area^^15425|0.00||^|^^^^^^<CR><ETB>E4<CR><LF>
<STX>2R|23|^A1a RTime^^15407|1.0||^|^^^^^^<CR><ETB>EE<CR><LF>
<STX>3R|24|^A1a Area^^15408|2.00||^|^^^^^^<CR><ETB>BA<CR><LF>
<STX>4R|25|^A1a Area Percent^^15409|3.0||^|^^^^^^<CR><ETB>7F<CR><LF>
<STX>5R|26|^A1a Peak Start Time^^15476|33||^|^^^^^^<CR><ETB>4E<CR><LF>
<STX>6R|27|^A1a Peak End Time^^15477|39||^|^^^^^^<CR><ETB>60<CR><LF>
<STX>7R|28|^A1b RTime^^15410|4.0||^|^^^^^^<CR><ETB>F6<CR><LF>
<STX>0R|29|^A1b Area^^15411|5.00||^|^^^^^^<CR><ETB>BA<CR><LF>
<STX>1R|30|^A1b Area Percent^^15412|6.0||^|^^^^^^<CR><ETB>76<CR><LF>
<STX>2R|31|^A1b Peak Start Time^^15478|39||^|^^^^^^<CR><ETB>50<CR><LF>
<STX>3R|32|^A1b Peak End Time^^15479|59||^|^^^^^^<CR><ETB>5E<CR><LF>
<STX>4R|33|^F RTime^^15413|7.0||^|^^^^^^<CR><ETB>67<CR><LF>
<STX>5R|34|^F Area^^15414|8.00||^|^^^^^^<CR><ETB>33<CR><LF>
<STX>6R|35|^F Area Percent^^15415|9.0||^|^^^^^^<CR><ETB>F8<CR><LF>
<STX>7R|36|^F Peak Start Time^^15480|59||^|^^^^^^<CR><ETB>C7<CR><LF>
<STX>0R|37|^F Peak End Time^^15481|74||^|^^^^^^<CR><ETB>C8<CR><LF>
<STX>1R|38|^LA1c RTime^^15416|10.0||^|^^^^^^<CR><ETB>71<CR><LF>
<STX>2R|39|^LA1c Area^^15417|11.00||^|^^^^^^<CR><ETB>3D<CR><LF>
<STX>3R|40|^LA1c Area Percent^^15418|12.0||^|^^^^^^<CR><ETB>F9<CR><LF>
<STX>4R|41|^LA1c Peak Start Time^^15482|74||^|^^^^^^<CR><ETB>9A<CR><LF>
<STX>5R|42|^LA1c Peak End Time^^15483|109||^|^^^^^^<CR><ETB>D5<CR><LF>
<STX>6R|43|^SA1c RTime^^15419|13.0||^|^^^^^^<CR><ETB>7F<CR><LF>
<STX>7R|44|^SA1c Area^^15420|14.00||^|^^^^^^<CR><ETB>42<CR><LF>
<STX>0R|45|^SA1c Area Percent^^15421|15.0||^|^^^^^^<CR><ETB>FF<CR><LF>
<STX>1R|46|^SA1c Peak Start Time^^15484|109||^|^^^^^^<CR><ETB>D4<CR><LF>
<STX>2R|47|^SA1c Peak End Time^^15485|173||^|^^^^^^<CR><ETB>E1<CR><LF>
<STX>3R|48|^A0 RTime^^15422|16.0||^|^^^^^^<CR><ETB>C7<CR><LF>
<STX>4R|49|^A0 Area^^15423|17.00||^|^^^^^^<CR><ETB>93<CR><LF>
<STX>5R|50|^A0 Area Percent^^15424|18.0||^|^^^^^^<CR><ETB>4F<CR><LF>
<STX>6R|51|^A0 Peak Start Time^^15486|173||^|^^^^^^<CR><ETB>21<CR><LF>
<STX>7R|52|^A0 Peak End Time^^15487|239||^|^^^^^^<CR><ETB>30<CR><LF>
<STX>0R|53|^P00 RTime^^15426|19.0||^|^^^^^^<CR><ETB>06<CR><LF>
<STX>1R|54|^P00 Area^^15427|20.00||^|^^^^^^<CR><ETB>C9<CR><LF>
<STX>2R|55|^P00 Area Percent^^15428|21.0||^|^^^^^^<CR><ETB>8E<CR><LF>
<STX>3R|56|^P00 Peak Start Time^^15488|16||^|^^^^^^<CR><ETB>30<CR><LF>
<STX>4R|57|^P00 Peak End Time^^15489|33||^|^^^^^^<CR><ETB>3B<CR><LF>

<STX>5R|58|^Chromatogram Wave
Binary^^15400|zkxfPpx5az5lXGY+R4g6PoZgOj7KTD0+Yv0aPtCODj4CZRY+Z2UIPhhQ2j3Uo9U9eb7J
PQjnkz2jh349CllWPdReHj0KgBc9h+03PaJHAz0AAAAAVEjfPMNaAz5vrlg+sezMPmB2Aj920hw/xntPPz
EYiz8UiK4/JqXGP8IT0j8Wp9k/aWviP8Xe8T/8EgNAatAIQHb7A0DWzfA/ABHdP9m+4D86dwVAbNQpQ
CgtT0Cpvl9Aj4lWQCAAOkDy7xdAOZL2P83dxT8r654/C6OIP8n3az9Ny0U/92QuP/UVHz/66A0/6a0BP8
2D+D63/+0+fHz3PqJZCD/lXBY/3Z4iP0EHLD9/IC4/fF4uP2vTKj/RViM/cMcbP/RwED+Xowk/FQAGPxff/z
40Evo+cigAP6CzAj+XJQw/+C8aP/rVJT96GTQ/VQZDP55STz+a+Fg/o5ZhP0ETZD+4SmQ/bZtiP34HXz
+zrFo/w6dWPweIUD9vWkc/v1U/P6nLNj+fwi4/gCAoPzKtID8gYxs/uEsRP0ilBD+/Kf4+a9j0PmQt6T4nAeI
+t1XfPvml2D6Qgs4+cSTOPhsfzz6MZMQ+g4/FPqNoyz7Og8c++5TMPpcq2z7r5+A++g/vPqhJAD8DTgg
/BbUVP9iaKD/ryjg/LglPP9vBaz9Po4Q/juSWP+66qD+fxbo/77DPP5bH5j+n3vs/j8kIQJjiEkD2jRtAOLUjQK
1gKkAE5S5AjncxQClvMkDtyzJAhUYxQLYQLkC3uSlAQegjQDPRHED79RRAVRANQHf0BECNPPo/zX
boP/gR1z9hvMc/esC4P1QrrD8SfZ8/IGCTP8Rkhj9Pp3c/cyxmPwUnVj/CFUg/OyU8PwMVMT+OKiM//+w
YP53WED+4yAk/5mMDP6Q9+T5ckOs+fLrkPnUm2z46XM4+Q4rIPh58xD7vcL0+yKy2Psy6rT4cEaM+gv
2ePsdcoD5+J5w+6QaSPmc2kT7qyJI+SHmsPjVZSj868pdAAACgQAAAoEAAAKBAAACgQAAAoEAAA
KBAAACgQAAAoEAAAKBAAACgQAAAoEAAAKBAAACgQAAAoEAAAKBAAACgQAAAoEAAAKBAK+
6IQIAKbUCkNUBA5ewTQEwUAkAabuM/wsWwPxmPnD8N/ZU/B8p8P6oqWz8r8Fw/d3FHP7baJj+cuyY
/hqchP0GmCD9hNAI/77MBP9gB3z4f0sk+xTrRPtI3yj5GBLs+C9e7Pjy3vj7S4q8+2Mm0PuRTtz7OwaQ+
e9ydPqF3pD4AAAAA||^|^^^^^^<CR><ETB>B7<CR><LF>
<STX>6R|59|^Chromatogram Baseline
Binary^^15402|AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAIk0hOtbNJTsxpJE7eGHQO1+PBzwD7iY8pkxGPEmrZ
Tz2hIl8SDSSPJnjoTzrkrE8PULBPl7x0DzgoOA8MlDwPIP//zxq1wc9E68PPbyGFz1lXh89DjYnPbcNLz1f
5TY9CL0+PbGURj1abE49A0RWPawbXj1U82U9/cptPaaidT1Pen09/KiCPdCUhj2lglo9eWyOPU1Ykj0iR
JY99i+aPcsbnj2fB6I9c/OlPUJfqT0cy6098baxPcWitT2ajrk9bnq9PUJmwT0XUsU96z3JPcApzT2UFdE9a
AHVPT3t2D0R2dw95sTgPbqw5D2OnOg9Y4jsPTd08D0MYPQ94Ev4PbU3/D3EEQA+rwcCPpn9Az6D8
wU+bekHPlffCT5C1Qs+LMsNPhbBDz4AtxE+66wTPtWiFT6/mBc+qY4ZPpOEGz5+eh0+aHAfPlJmIT48
XCM+JlllPhFIJz77PSk+5TMrPs8pLT65Hy8+pBUxPo4LMz54ATU+Yvc2PkztOD434zo+Idk8PgvPPj71xE
A+37pCPsqwRD60pkY+npxIPoiSSj5yiEw+XX5OPkd0UD4xaII+G2BUPgVWVj7wS1g+2kFaPsQ3XD6uL
V4+mSNgPoMZYj5tD2Q+VwVmPkH7Zz4s8Wk+FudrPgDdbT7q0m8+1Mhx+k6p3Pn2geT
5nlns+Uox9PjyCfz4TvIA+CLeBPv2xgj7yrIM+56eEPt2ihT7SnYY+x5iHPryTiD6xjok+pomKPpuEiz6Qf4w+
hXqNPnp1jj5wcI8+ZWuQPlpmkT5PYZI+RFyTPjlXlD4uUpU+I02WPhhIlz4NQ5g+Az6ZPvg4mj7tM5s+4i6
cPtcpnT7MJJ4+wR+fPrYaoD6rFaE+oBCiPpYLoz6LBqQ+gAGlPnX8pT5q96Y+||^|^^^^^^<CR><ETB>67
<CR><LF>
<STX>7L|1|N<CR><ETX>07<CR><LF>

3.6.1.6 Cell morphology samples (for CV Digital Cell Morphology Analyzer)

<STX>1H|\^&|2||Mindray^LabXpert^|||||Automated
Count^00001|P|LIS2-A2|20200807112111<CR><ETB>76<CR><LF>
<STX>2P|1||||^||^^|||||||||||||||||^<CR><ETB>54<CR><LF>

<STX>3O|1|1||||20200805204522|||||||||^|||||NotValidated|||||F<CR><ETB>30<CR><LF>
<STX>4C|1|P|User comments:&XD&&XA&UserCommentText.&XD&&XA&WBC comments:&XD&&XA&WBCRemark.&XD&&XA&RBC comments:&XD&&XA&RBCRemark.&XD&&XA&PLT comments:&XD&&XA&PLTRemark.|G<CR><ETB>B1<CR><LF>
<STX>5R|1|^Take Mode^^08001|||^|^^^^^^<CR><ETB>7C<CR><LF>
<STX>6R|2|^Blood Mode^^08002|||^|^^^^^^<CR><ETB>EA<CR><LF>
<STX>7R|3|^Test Mode^^08003|WBC+RBC+PLT||^|^^^^^^<CR><ETB>96<CR><LF>
<STX>0R|4|^Ref Group^^01002|General||^|^^^^^^<CR><ETB>52<CR><LF>
<STX>1R|5|^Remark^^01001|||^|^^^^^^<CR><ETB>AD<CR><LF>
<STX>2R|6|^Recheck flag^^01006|F||^|^^^^^^<CR><ETB>07<CR><LF>
<STX>3R|7|^Shelf No^^01012|??||^|^^^^^^<CR><ETB>9E<CR><LF>
<STX>4R|8|^Tube No^^01013|||^|^^^^^^<CR><ETB>C1<CR><LF>
<STX>5R|9|^Charge type^^01015|||^|^^^^^^<CR><ETB>84<CR><LF>
<STX>6R|10|^Patient type^^01016|||^|^^^^^^<CR><ETB>39<CR><LF>
<STX>7R|11|^Analyzer^^09001|CDMS||^|^^^^^^<CR><ETB>F3<CR><LF>
<STX>0R|12|^SN^^09003|CV-1||^|^^^^^^<CR><ETB>1A<CR><LF>
<STX>1R|13|^Sender Facility^^16403|Thai_CDMS||^|^^^^^^<CR><ETB>48<CR><LF>
<STX>2R|14|^WBC Count^^16404|100||^|^^^^^^<CR><ETB>1F<CR><LF>
<STX>3R|15|^AuditResult^^09999|Review||^|^^^^^^<CR><ETB>88<CR><LF>
<STX>4R|16|^Project Type^^05007|BL||^|^^^^^^<CR><ETB>B1<CR><LF>
<STX>5R|17|^WBC^^6690-2|0.64|10&S&3/uL|4.00^10.00|L^^N^^^^<CR><ETB>D6<CR><LF>
<STX>6R|18|^RBC^^789-8|4.00|10&S&6/uL|3.50^5.50|^^N^^^^<CR><ETB>3A<CR><LF>
<STX>7R|19|^HGB^^718-7|0.4|mmol/L|6.8^9.9|L^^N^^^^<CR><ETB>01<CR><LF>
<STX>0R|20|^HCT^^4544-3|16.5|%|37.0^54.0|L^^N^^^^<CR><ETB>AD<CR><LF>
<STX>1R|21|^MCV^^787-2|6.9|fL|80.0^100.0|L^^N^^^^<CR><ETB>10<CR><LF>
<STX>2R|22|^MCH^^785-6|14.6|pg|27.0^34.0|L^^N^^^^<CR><ETB>2E<CR><LF>
<STX>3R|23|^MCHC^^786-4|15|g/L|320^360|L^^N^^^^<CR><ETB>BC<CR><LF>
<STX>4R|24|^PLT^^777-3|29|10&S&9/L|100^300|L^^N^^^^<CR><ETB>5F<CR><LF>
<STX>5R|25|^RDW-CV^^788-0|17.2|%|11.0^16.0|H^^N^^^^<CR><ETB>4E<CR><LF>
<STX>6R|26|^MPV^^32623-1|20.3|fL|6.5^12.0|H^^N^^^^<CR><ETB>47<CR><LF>
<STX>7R|27|^NEU%^^770-8|0.190||0.500^0.700|L^^N^^^^<CR><ETB>1D<CR><LF>
<STX>0R|28|^LYM%^^736-9|0.680||0.200^0.400|H^^N^^^^<CR><ETB>1E<CR><LF>
<STX>1R|29|^MON%^^5905-5|0.830||0.030^0.120|H^^N^^^^<CR><ETB>44<CR><LF>
<STX>2R|30|^EOS%^^713-8|0.200||0.005^0.050|H^^N^^^^<CR><ETB>00<CR><LF>
<STX>3R|31|^BAS%^^706-2|0.640||0.000^0.010|H^^N^^^^<CR><ETB>EC<CR><LF>
<STX>4R|32|^NRBC%^^26461-4|27.56|/100WBC|0.00^9999.99|^^N^^^^<CR><ETB>68<CR><LF>
<STX>5R|33|^SNE#^^16000-1|25||0^1541|^^^^^^||||^SignOperator||20200805204522<CR><ETB>31<CR><LF>
<STX>6R|34|^SNE%^^16000-2|19.0|%|0^100|^^^^^^||||^SignOperator||20200805204522<CR><ETB>82<CR><LF>
<STX>7C|2|P|SegmentedNeutrophils:&XD&&XA&CellCategoryRemarkWBC.|G<CR><ETB>AA<CR><LF>
<STX>0R|35|^EO#^^16001-1|58||0^1541|^^^^^^||||^SignOperator||20200805204522<CR><ETB>E3<CR><LF>

<STX>1R|36|^EO%^^16001-2|20.0|%|0^100|^^^^^^||||^SignOperator||20200805204522<CR><ETB>26<CR><LF>
<STX>2C|3|P|Eosinophils:&XD&&XA&CellCategoryRemarkWBC.|G<CR><ETB>FA<CR><LF>
<STX>3R|37|^BA#^^16002-1|18||0^1541|^^^^^^||||^SignOperator||20200805204522<CR><ETB>D4<CR><LF>
<STX>4R|38|^BA%^^16002-2|64.0|%|0^100|^^^^^^||||^SignOperator||20200805204522<CR><ETB>23<CR><LF>
<STX>5C|4|P|Basophils:&XD&&XA&CellCategoryRemarkWBC.|G<CR><ETB>16<CR><LF>
<STX>6R|39|^LY#^^16003-1|18||0^1541|^^^^^^||||^SignOperator||20200805204522<CR><ETB>FC<CR><LF>
<STX>7R|40|^LY%^^16003-2|68.0|%|0^100|^^^^^^||||^SignOperator||20200805204522<CR><ETB>46<CR><LF>
<STX>0C|5|P|Lymphocytes:&XD&&XA&CellCategoryRemarkWBC.|G<CR><ETB>0E<CR><LF>
<STX>1R|41|^MO#^^16004-1|22||0^1541|^^^^^^||||^SignOperator||20200805204522<CR><ETB>E3<CR><LF>
<STX>2R|42|^MO%^^16004-2|83.0|%|0^100|^^^^^^||||^SignOperator||20200805204522<CR><ETB>38<CR><LF>
<STX>3C|6|P|Monocytes:&XD&&XA&CellCategoryRemarkWBC.|G<CR><ETB>32<CR><LF>
<STX>4R|43|^BNE#^^16005-1|96||0^1541|^^^^^^||||^SignOperator||20200805204522<CR><ETB>2D<CR><LF>
<STX>5R|44|^BNE%^^16005-2|14.0|%|0^100|^^^^^^||||^SignOperator||20200805204522<CR><ETB>71<CR><LF>
<STX>6C|7|P|BandNeutrophils:&XD&&XA&CellCategoryRemarkWBC.|G<CR><ETB>87<CR><LF>
<STX>7R|45|^VLY#^^16006-1|49||0^1541|^^^^^^||||^SignOperator||20200805204522<CR><ETB>57<CR><LF>
<STX>0R|46|^VLY%^^16006-2|93.0|%|0^100|^^^^^^||||^SignOperator||20200805204522<CR><ETB>9C<CR><LF>
<STX>1C|8|P|VariantLymphocyte:&XD&&XA&CellCategoryRemarkWBC.|G<CR><ETB>74<CR><LF>
<STX>2R|47|^RLY#^^16007-1|96||0^1541|^^^^^^||||^SignOperator||20200805204522<CR><ETB>53<CR><LF>
<STX>3R|48|^RLY%^^16007-2|78.0|%|0^100|^^^^^^||||^SignOperator||20200805204522<CR><ETB>A1<CR><LF>
<STX>4C|9|P|ReactiveLymphocytes:&XD&&XA&CellCategoryRemarkWBC.|G<CR><ETB>49<CR><LF>
<STX>5R|49|^ALY#^^16008-1|29||0^1541|^^^^^^||||^SignOperator||20200805204522<CR><ETB>44<CR><LF>
<STX>6R|50|^ALY%^^16008-2|34.0|%|0^100|^^^^^^||||^SignOperator||20200805204522<CR><ETB>85<CR><LF>
<STX>7C|10|P|AbnormalLymphocyte:&XD&&XA&CellCategoryRemarkWBC.|G<CR><ETB>FA<CR><LF>
<STX>0R|51|^PMY#^^16009-1|55||0^1541|^^^^^^||||^SignOperator||20200805204522<CR><ETB>48<CR><LF>
<STX>1R|52|^PMY%^^16009-2|97.0|%|0^100|^^^^^^||||^SignOperator||20200805204522<CR><ETB>9C<CR><LF>
<STX>2C|11|P|Promyelocytes:&XD&&XA&CellCategoryRemarkWBC.|G<CR><ETB>1B<CR><LF>

<STX>3R|53|^MY#^^16010-1|9||0^1541|^^^^^^||||^SignOperator||20200805204522<CR><ETB>C4<CR><LF>
<STX>4R|54|^MY%^^16010-2|32.0|%|0^100|^^^^^^||||^SignOperator||20200805204522<CR><ETB>3E<CR><LF>
<STX>5C|12|P|Myelocytes:&XD&&XA&CellCategoryRemarkWBC.|G<CR><ETB>CE<CR><LF>
<STX>6R|55|^MMY#^^16011-1|70||0^1541|^^^^^^||||^SignOperator||20200805204522<CR><ETB>45<CR><LF>
<STX>7R|56|^MMY%^^16011-2|54.0|%|0^100|^^^^^^||||^SignOperator||20200805204522<CR><ETB>95<CR><LF>
<STX>0C|13|P|Metamyelocytes:&XD&&XA&CellCategoryRemarkWBC.|G<CR><ETB>71<CR><LF>
<STX>1R|57|^BL#^^16012-1|68||0^1541|^^^^^^||||^SignOperator||20200805204522<CR><ETB>E5<CR><LF>
<STX>2R|58|^BL%^^16012-2|36.0|%|0^100|^^^^^^||||^SignOperator||20200805204522<CR><ETB>2E<CR><LF>
<STX>3C|14|P|Blasts:&XD&&XA&CellCategoryRemarkWBC.|G<CR><ETB>09<CR><LF>
<STX>4R|59|^PLY#^^16013-1|34||0^1541|^^^^^^||||^SignOperator||20200805204522<CR><ETB>4B<CR><LF>
<STX>5R|60|^PLY%^^16013-2|42.0|%|0^100|^^^^^^||||^SignOperator||20200805204522<CR><ETB>8F<CR><LF>
<STX>6C|15|P|Prolymphocytes:&XD&&XA&CellCategoryRemarkWBC.|G<CR><ETB>96<CR><LF>
<STX>7R|61|^PC#^^16014-1|20||0^1541|^^^^^^||||^SignOperator||20200805204522<CR><ETB>E1<CR><LF>
<STX>0R|62|^PC%^^16014-2|9.0|%|0^100|^^^^^^||||^SignOperator||20200805204522<CR><ETB>FE<CR><LF>
<STX>1C|16|P|PlasmaCells:&XD&&XA&CellCategoryRemarkWBC.|G<CR><ETB>F1<CR><LF>
<STX>2R|63|^LGLY#^^16015-1|98||0^1541|^^^^^^||||^SignOperator||20200805204522<CR><ETB>93<CR><LF>
<STX>3R|64|^LGLY%^^16015-2|26.0|%|0^100|^^^^^^||||^SignOperator||20200805204522<CR><ETB>D8<CR><LF>
<STX>4C|17|P|LargeGranularLymphocytes:&XD&&XA&CellCategoryRemarkWBC.|G<CR><ETB>6C<CR><LF>
<STX>5R|65|^IBO#^^16016-1|88||0^1541|^^^^^^||||^SignOperator||20200805204522<CR><ETB>3A<CR><LF>
<STX>6R|66|^IBO%^^16016-2|74.0|%|0^100|^^^^^^||||^SignOperator||20200805204522<CR><ETB>83<CR><LF>
<STX>7C|18|P|ImmatureBasophil:&XD&&XA&CellCategoryRemarkWBC.|G<CR><ETB>1E<CR><LF>
<STX>0R|67|^IEO#^^16017-1|88||0^1541|^^^^^^||||^SignOperator||20200805204522<CR><ETB>3B<CR><LF>
<STX>1R|68|^IEO%^^16017-2|26.0|%|0^100|^^^^^^||||^SignOperator||20200805204522<CR><ETB>81<CR><LF>
<STX>2C|19|P|ImmatureEosinophil:&XD&&XA&CellCategoryRemarkWBC.|G<CR><ETB>02<CR><LF>
<STX>3R|69|^HC#^^16018-1|37||0^1541|^^^^^^||||^SignOperator||20200805204522<CR><ETB>E9<CR><LF>
<STX>4R|70|^HC%^^16018-2|37.0|%|0^100|^^^^^^||||^SignOperator||20200805204522<CR><ETB>2E<CR><LF>

<STX>5C|20|P|HairyCells:&XD&&XA&CellCategoryRemarkWBC.|G<CR><ETB>8F<CR><LF>
<STX>6R|71|^SEC#^^16019-1|28||0^1541|^^^^^^||||^SignOperator||20200805204522<CR><ETB>36<CR><LF>
<STX>7R|72|^SEC%^^16019-2|86.0|%|0^100|^^^^^^||||^SignOperator||20200805204522<CR><ETB>88<CR><LF>
<STX>0C|21|P|SezaryCells:&XD&&XA&CellCategoryRemarkWBC.|G<CR><ETB>0C<CR><LF>
<STX>1R|73|^PMO#^^16020-1|88||0^1541|^^^^^^||||^SignOperator||20200805204522<CR><ETB>42<CR><LF>
<STX>2R|74|^PMO%^^16020-2|7.0|%|0^100|^^^^^^||||^SignOperator||20200805204522<CR><ETB>57<CR><LF>
<STX>3C|22|P|Promonocyte:&XD&&XA&CellCategoryRemarkWBC.|G<CR><ETB>3E<CR><LF>
<STX>4R|75|^SMU#^^16021-1|19||0^1541|^^^^^^||||^SignOperator||20200805204522<CR><ETB>4B<CR><LF>
<STX>5R|76|^SMU%^^16021-2|37.0|%|0^100|^^^^^^||||^SignOperator||20200805204522<CR><ETB>99<CR><LF>
<STX>6C|23|P|SmudgeCells:&XD&&XA&CellCategoryRemarkWBC.|G<CR><ETB>FB<CR><LF>
<STX>7R|77|^ERB#^^16022-1|90||0^1541|^^^^^^||||^SignOperator||20200805204522<CR><ETB>34<CR><LF>
<STX>0R|78|^ERB%^^16022-2|27.0|%|0^100|^^^^^^||||^SignOperator||20200805204522<CR><ETB>7A<CR><LF>
<STX>1C|24|P|Erythroblasts:&XD&&XA&CellCategoryRemarkWBC.|G<CR><ETB>15<CR><LF>
<STX>2R|79|^ART#^^16023-1|64||0^1541|^^^^^^||||^SignOperator||20200805204522<CR><ETB>41<CR><LF>
<STX>3R|80|^ART%^^16023-2|57.0|%|0^100|^^^^^^||||^SignOperator||20200805204522<CR><ETB>88<CR><LF>
<STX>4C|25|P|Artefacts:&XD&&XA&CellCategoryRemarkWBC.|G<CR><ETB>40<CR><LF>
<STX>5R|81|^GT#^^16024-1|12||0^1541|^^^^^^||||^SignOperator||20200805204522<CR><ETB>EB<CR><LF>
<STX>6R|82|^GT%^^16024-2|22.0|%|0^100|^^^^^^||||^SignOperator||20200805204522<CR><ETB>3A<CR><LF>
<STX>7C|26|P|GiantPlatelets:&XD&&XA&CellCategoryRemarkWBC.|G<CR><ETB>48<CR><LF>
<STX>0R|83|^MEK#^^16025-1|66||0^1541|^^^^^^||||^SignOperator||20200805204522<CR><ETB>34<CR><LF>
<STX>1R|84|^MEK%^^16025-2|31.0|%|0^100|^^^^^^||||^SignOperator||20200805204522<CR><ETB>7A<CR><LF>
<STX>2C|27|P|Megakaryocytes:&XD&&XA&CellCategoryRemarkWBC.|G<CR><ETB>6B<CR><LF>
<STX>3R|85|^NC#^^16026-1|85||0^1541|^^^^^^||||^SignOperator||20200805204522<CR><ETB>EF<CR><LF>
<STX>4R|86|^NC%^^16026-2|13.0|%|0^100|^^^^^^||||^SignOperator||20200805204522<CR><ETB>34<CR><LF>
<STX>5C|28|P|NotClassed:&XD&&XA&CellCategoryRemarkWBC.|G<CR><ETB>97<CR><LF>
<STX>6R|87|^TAG#^^16027-1|25||0^1541|^^^^^^||||^SignOperator||20200805204522<CR><ETB>3A<CR><LF>
<STX>7R|88|^TAG%^^16027-2|39.0|%|0^100|^^^^^^||||^SignOperator||20200805204522<CR><ETB>8D<CR><LF>

<STX>0C|29|P|PlateletsAggregations:&XD&&XA&CellCategoryRemarkWBC.|G<CR><ETB>2C<CR><LF>
<STX>1R|89|^OTH#^^16028-1|52||0^1541|^^^^^^||||^SignOperator||20200805204522<CR><ETB>47<CR><LF>
<STX>2R|90|^OTH%^^16028-2|59.0|%|0^100|^^^^^^||||^SignOperator||20200805204522<CR><ETB>93<CR><LF>
<STX>3C|30|P|Other:&XD&&XA&CellCategoryRemarkWBC.|G<CR><ETB>A0<CR><LF>
<STX>4R|91|^SPOC^^16200-1|2||^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>32<CR><LF>
<STX>5R|92|^SPOC%^^16200-2|49.0|%|^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>18<CR><LF>
<STX>6R|93|^STD^^16201-1|1||^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>EC<CR><LF>
<STX>7R|94|^STD%^^16201-2|16.0|%|^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>CD<CR><LF>
<STX>0R|95|^SELC^^16202-1|1||^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>25<CR><LF>
<STX>1R|96|^SELC%^^16202-2|12.0|%|^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>02<CR><LF>
<STX>2R|97|^SOVC^^16203-1|2||^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>3F<CR><LF>
<STX>3R|98|^SOVC%^^16203-2|46.0|%|^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>22<CR><LF>
<STX>4R|99|^SSI^^16204-1|2||^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>F8<CR><LF>
<STX>5R|100|^SSI%^^16204-2|45.0|%|^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>F8<CR><LF>
<STX>6R|101|^SSCC^^16205-1|3||^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>59<CR><LF>
<STX>7R|102|^SSCC%^^16205-2|2.0|%|^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>03<CR><LF>
<STX>0R|103|^SHE^^16206-1|1||^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>08<CR><LF>
<STX>1R|104|^SHE%^^16206-2|25.0|%|^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>E9<CR><LF>
<STX>2R|105|^SACC^^16207-1|2||^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>48<CR><LF>
<STX>3R|106|^SACC%^^16207-2|12.0|%|^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>24<CR><LF>
<STX>4R|107|^SECC^^16208-1|1||^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>50<CR><LF>
<STX>5R|108|^SECC%^^16208-2|15.0|%|^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>30<CR><LF>
<STX>6R|109|^SSTC^^16209-1|3||^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>76<CR><LF>
<STX>7R|110|^SSTC%^^16209-2|37.0|%|^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>4F<CR><LF>
<STX>0R|111|^STA^^16210-1|1||^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>0A<CR><LF>
<STX>1R|112|^STA%^^16210-2|43.0|%|^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>EB<C

R><LF>
<STX>2R|113|^SSPC^^16211-1|3||^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>62<CR><LF
>
<STX>3R|114|^SSPC%^^16211-2|25.0|%|^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>41<
CR><LF>
<STX>4R|115|^IBST^^16212-1|1||^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>5E<CR><LF
>
<STX>5R|116|^IBST%^^16212-2|28.0|%|^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>42<C
R><LF>
<STX>6R|117|^IPAB^^16213-1|3||^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>4F<CR><LF
>
<STX>7R|118|^IPAB%^^16213-2|23.0|%|^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>2C<C
R><LF>
<STX>0R|119|^IHJB^^16214-1|2||^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>4C<CR><LF
>
<STX>1R|120|^IHJB%^^16214-2|25.0|%|^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>23<C
R><LF>
<STX>2R|121|^IPAR^^16215-1|3||^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>58<CR><LF
>
<STX>3R|122|^IPAR%^^16215-2|33.0|%|^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>36<C
R><LF>
<STX>4R|123|^CHYP^^16216-1|1||^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>63<CR><L
F>
<STX>5R|124|^CHYP%^^16216-2|46.0|%|^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>47<
CR><LF>
<STX>6R|125|^CPOL^^16217-1|3||^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>64<CR><L
F>
<STX>7R|126|^CPOL%^^16217-2|49.0|%|^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>49<
CR><LF>
<STX>0R|127|^ZANI^^16218-1|1||^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>63<CR><LF
>
<STX>1R|128|^ZANI%^^16218-2|8.0|%|^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>15<CR
><LF>
<STX>2R|129|^ZMIC^^16219-1|3||^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>6B<CR><LF
>
<STX>3R|130|^ZMIC%^^16219-2|33.0|%|^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>40<C
R><LF>
<STX>4R|131|^ZMAC^^16220-1|1||^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>54<CR><L
F>
<STX>5R|132|^ZMAC%^^16220-2|17.0|%|^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>36<
CR><LF>
<STX>6R|133|^AVG^^16400|5.0||^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>0F<CR><LF>
<STX>7R|134|^LVL^^16402|N||^|^^^^^^||||^SignOperator||20200805204522<CR><ETB>DE<CR><LF>
<STX>0L|1|N<CR><ETX>00<CR><LF>

3.6.2 QC Message

3.6.2.1 Record Structure

Record Structure:

1 Header
2 Order
3 Result1
4 Result2
5 Result3
.....
n Message Terminator

For QC programs with multiple results, the parameters are transmitted in the following order:

1 WBC1
……
44 InR‰
45 WBC-C
46 WBC
……
90 WBC-C

For X mean R QC and XM QC, 2 results and the mean value shall be transmitted.

3.6.2.2 Content of QC Data

Content of QC message for communication:

Record Type	Record Value	Field Position: Content	Component Value	Value Description
H	Message Header Record	12: message type	QC result	See OBR-4 Field Definitions
O	QC information	3: Sample ID	Sample ID	Reserved; null
		7: time of analysis	Test time	YYYYMMDDHHMMSS; what displayed on screen
		17: operator	Operator	What displayed on screen
		26: report type	Result	F, fixed
R	Presentation mode	2: ID	ID	See Appendix C* for data type and coding system
			ID	See Appendix C* for data type and coding system
		4: result	Presentation mode	See Appendix C for HL7 and ASTM enumeration definition

Record Type	Record Value	Field Position: Content	Component Value	Value Description
		5: unit	Null	
		6: reference range	Null	
		7: flag	Null	
R	Sample mode	Value same as above		
R	Analysis mode	Value same as above		
R	Level of control	4: result; H – high; M – normal; L – low; N-Normal, P- Patholgic, CRL-1, CRL-2, values of other fields same as above		
R	Date edited flag	4: result; E – time edited; null – date not edited Values of other fields same as above		
R	Time edited flag	4: result; E – time edited; null – date not edited Values of other fields same as above		
R	Expiration date	4: result; expiration date of the control (YYMMDDHHMMSS) Values of other fields same as above		
R	QC File No.	4: result, value displayed on screen; value same as above		
R	Lot No.	4: result, value displayed on screen; value same as above		
R	Analyzer Name	4: result, value displayed on screen; other values same as above		
R	WBC: white blood cell count	2: ID; format same as above; see data type and coding system in Appendix C* for the value		
		4: result	Sample Analysis Result	What displayed on screen
		5: unit	Unit of sample analysis result	What displayed on screen
		6: limit	Upper limit	What displayed on screen
			Lower limit	What displayed on screen
		7: flag	High/Low flags	H – high flag; L – low flag
			Result edited flag	E – result edited
			Suspicious flag	Reserved; null
			Reagent expiration flag (reserved component)	Reserved; null
			Temperature flag	Reserved; null
			Result corrected flag	Reserved; null
			Out of linearity range flag	Reserved; null
R	Bas#	Basophil number: value same as above		

Record Type	Record Value	Field Position: Content	Component Value	Value Description
R	Bas%	Basophil percentage: value same as above		
R	Neu#	Neutrophil number: value same as above		
R	Neu%	Neutrophil percentage: value same as above		
R	Eos#	Eosinophil number: value same as above		
R	Eos%	Eosinophil percentage: value same as above		
R	Lymph#	Lymphocyte number: value same as above		
R	Lymph%	Lymphocyte percentage: value same as above		
R	Mon#	Monocyte number: value same as above		
R	Mon%	Monocyte percentage: value same as above		
R	RBC	Red Blood Cell count: value same as above		
R	HGB	Hemoglobin Concentration: value same as above		
R	MCV	Mean Corpuscular Volume: value same as above		
R	MCH	Mean Corpuscular Hemoglobin: value same as above		
R	MCHC	Mean Corpuscular Hemoglobin Concentration: value same as above		
R	RDW-CV	Red Blood Cell Distribution Width - Coefficient of Variation: value same as above		
R	RDW-SD	Red Blood Cell Distribution Width - Standard Deviation: value same as above		
R	HCT	Hematocrit: value same as above		
R	PLT	Platelet count: value same as above		
R	MPV	Mean Platelet Volume: value same as above		
R	PDW	Platelet Distribution Width: value same as above		
R	PCT	Plateletcrit: value same as above		
R	RET#	Reticulocyte number: value same as above		
R	RET%	Reticulocyte percentage: value same as above		
R	IRF	Immature Reticulocyte Fraction: value same as above		
R	LFR	Low Fluorescent Ratio: value same as above		
R	MFR	Middle Fluorescent Ratio: value same as above		
R	HFR	High Fluorescent Ratio: value same as above		
R	NRBC#	Nucleated Red Blood Cell count: value same as above		
R	NRBC%	Nucleated Red Blood Cell percentage: value same as above		
R	P-LCR	Platelet-Large Cell Ratio: value same as above		
R	P-LCC	Platelet- Large Cell Count: value same as above		
R	IMG#	Immature Granulocyte count: (RUO)：value same as above		
R	IMG%	Immature Granulocyte percentage: (RUO)：value same as above		

Record Type	Record Value	Field Position: Content	Component Value	Value Description
R	RBC-O	Optical Red Blood Cell count: value same as above		
R	PLT-O	Optical Platelet count: value same as above		
R	HFC#	High fluorescent Cell number: value same as above		
R	HFC%	High fluorescent Cell percentage: value same as above		
R	PLT-I	Platelet count- Impedance: value same as above		
R	WBC-R	White Blood Cell count -RET: value same as above		
R	WBC-D	White Blood Cell count -DIFF: value same as above		
R	WBC-B	White Blood Cell count -BASO: value same as above		
R	WBC-N	White Blood Cell count -NRBC: value same as above		
R	PDW-SD	Platelet Distribution Width – Standard Deviation: value same as above		
R	InR#	Infected Red Blood Cell count: value same as above		
R	InR‰	Infected Red Blood Cell permillage: value same as above		
R	WBC-C	Corrected WBC value: value same as above		
R	IMG#	Immature Granulocyte: value same as above		
R	IMG%	Immature Granulocyte percentage: value same as above		
R	IPF	Immature Platelet Fraction: value same as above		
R	Micro#	Microcyte count: value same as above		
R	Micro%	Microcyte percentage: value same as above		
R	Macro#	Macrocyte count: value same as above		
R	Macro%	Macrocyte percentage: value same as above		
R	MRV	Mean Reticulocyte Volume: value same as above		
R	RHE	Reticulocyte Hemoglobin Expression (RUO): value same as above		
R	RHE	Reticulocyte Hemoglobin Expression: value same as above		
R	Neu-BF#	Neutrophils number- body fluid: value same as above		
R	Neu-BF%	Neutrophils percentage- body fluid: value same as above		
R	Band%	Neutrophils, band: value same as above		
R	Seg%	Neutrophils, segmented: value same as above		
R	ALY%	Atypical lymphocytes: value same as above		
R	Pla-Aly%	Atypical lymphocytes (plasmacytes) : value same as above		
R	Mon-Aly%	Atypical lymphocytes (monocytes) : value same as above		
R	Imm-Aly%	Atypical lymphocytes (immature): value same as above		
R	Other-Aly%	Atypical lymphocytes (others): value same as above		
R	Meta%	Neutrophils, metamyelocyte: value same as above		
R	Myelo%	Neutrophils, myelocyte: value same as above		

Record Type	Record Value	Field Position: Content	Component Value	Value Description
R	Pro-Myelo%	Neutrophils, promyelocyte: value same as above		
R	Imm-Eos%	Eosinophils (immature): value same as above		
R	Imm-Bas%	Basophils (immature): value same as above		
R	Blast%	Blasts: value same as above		
R	Mye-Blast%	Myeloblasts: value same as above		
R	Mon-blast%	Monoblasts: value same as above		
R	Lym-blast%	Lymphoblasts: value same as above		
R	IMG/Blast%	Blast and immature granulocytes: value same as above		
R	Pro-Lym%	Immature lymphocytes value same as above		
R	Pro-Mon%	Immature monocytes: value same as above		
R	Plsm-cell%	Plasmacytes: value same as above		
R	HbA1c%	Glycohemoglobin parameters: hemoglobin A1c (NGSP), value same as above		
R	HbA1c-IFCC	Glycohemoglobin parameters: hemoglobin A1c (IFCC), value same as above		

3.6.2.3 Example of L-J QC Message

3.6.2.3.1 LJ QC sample message transmitted in the format of QC sample messages

<STX>1H|\^&|2||Mindray^LabXpert^||||||LJ
QCR^00003|P|LIS2-A2|20140909171830<CR><ETB>B8<CR><LF>
<STX>2O|1|||||20140820201334||||||||^|admin||||||||F<CR><ETB>46<CR><LF>
<STX>3R|1|^Take Mode^^08001|A||^|^^^^^^<CR><ETB>BB<CR><LF>
<STX>4R|2|^Blood Mode^^08002|W||^|^^^^^^<CR><ETB>3F<CR><LF>
<STX>5R|3|^Test Mode^^08003|CBC+DIFF||^|^^^^^^<CR><ETB>A7<CR><LF>
<STX>6R|4|^Qc Level^^05001|H||^|^^^^^^<CR><ETB>67<CR><LF>
<STX>7R|5|^QC test date modify flag^^05002|||^|^^^^^^<CR><ETB>EA<CR><LF>
<STX>0R|6|^QC test time modify flag^^05003|||^|^^^^^^<CR><ETB>F6<CR><LF>
<STX>1R|7|^Qc valid date^^05004|20141111000000||^|^^^^^^<CR><ETB>A1<CR><LF>
<STX>2R|8|^Qc file No^^05005|1||^|^^^^^^<CR><ETB>D9<CR><LF>
<STX>3R|9|^Qc lot No^^05006|MB034H||^|^^^^^^<CR><ETB>C8<CR><LF>
<STX>4R|10|^Analyzer^^09001|1#||^|^^^^^^<CR><ETB>1C<CR><LF>
<STX>5R|11|^WBC^^6690-2|19.50|10&S&9/L|16.44^21.44|^^N^^^^<CR><ETB>8F<CR><LF>
<STX>6R|12|^BAS#^^704-7|0.54|10&S&9/L|0.22^0.80|^^N^^^^<CR><ETB>D5<CR><LF>
<STX>7R|13|^BAS%^^706-2|2.8|%|1.2^4.2|^^N^^^^<CR><ETB>B5<CR><LF>
<STX>0R|14|^NEU#^^751-8|13.08|10&S&9/L|10.71^14.71|^^N^^^^<CR><ETB>83<CR><LF>
<STX>1R|15|^NEU%^^770-8|67.0|%|57.1^77.1|^^N^^^^<CR><ETB>70<CR><LF>
<STX>2R|16|^EOS#^^711-2|1.85|10&S&9/L|0.50^2.90|^^N^^^^<CR><ETB>E8<CR><LF>
<STX>3R|17|^EOS%^^713-8|9.5|%|3.0^15.0|^^N^^^^<CR><ETB>FE<CR><LF>
<STX>4R|18|^LYM#^^731-0|3.53|10&S&9/L|2.00^5.20|^^N^^^^<CR><ETB>ED<CR><LF>
<STX>5R|19|^LYM%^^736-9|18.1|%|11.0^27.0|^^N^^^^<CR><ETB>71<CR><LF>

<STX>6R|20|^MON#^^742-7|0.50|10&S&9/L|0.00^1.22|^^N^^^^<CR><ETB>DF<CR><LF>
<STX>7R|21|^MON%^^5905-5|2.6|%|0.0^5.7|^^N^^^^<CR><ETB>02<CR><LF>
<STX>0R|22|^RBC^^789-8|5.59|10&S&12/L|5.57^6.17|^^N^^^^<CR><ETB>03<CR><LF>
<STX>1R|23|^HGB^^718-7|17.8|g/dL|17.2^18.8|^^N^^^^<CR><ETB>57<CR><LF>
<STX>2R|24|^MCV^^787-2|106.6|fL|93.2^103.2|H^^N^^^^<CR><ETB>79<CR><LF>
<STX>3R|25|^MCH^^785-6|31.7|pg|28.2^33.2|^^N^^^^<CR><ETB>EA<CR><LF>
<STX>4R|26|^MCHC^^786-4|29.8|g/dL|28.2^34.2|^^N^^^^<CR><ETB>A6<CR><LF>
<STX>5R|27|^RDW-CV^^788-0|15.9|%|8.7^20.7|^^N^^^^<CR><ETB>EC<CR><LF>
<STX>6R|28|^RDW-SD^^21000-5|61.8|fL|39.2^63.2|^^N^^^^<CR><ETB>FB<CR><LF>
<STX>7R|29|^HCT^^4544-3|0.596||0.546^0.606|^^N^^^^<CR><ETB>EC<CR><LF>
<STX>0R|30|^PLT^^777-3|418|10&S&9/L|415^545|^^N^^^^<CR><ETB>52<CR><LF>
<STX>1R|31|^MPV^^32623-1|10.8|fL|8.3^14.3|^^N^^^^<CR><ETB>FF<CR><LF>
<STX>2R|32|^PDW^^32207-3|16.4||11.5^21.5|^^N^^^^<CR><ETB>75<CR><LF>
<STX>3R|33|^PCT^^10002|0.450|%|0.342^0.742|^^N^^^^<CR><ETB>C2<CR><LF>
<STX>4R|34|^PLCR^^10014|32.9|%|26.3^46.3|^^N^^^^<CR><ETB>88<CR><LF>
<STX>5R|35|^PLCC^^10013|137|10&S&9/L|124^224|^^N^^^^<CR><ETB>73<CR><LF>
<STX>6R|36|^IMG#^^51584-1|0.52|10&S&9/L|^|^^N^^^^<CR><ETB>BE<CR><LF>
<STX>7R|37|^IMG%^^38518-7|2.7|%|^|^^N^^^^<CR><ETB>0D<CR><LF>
<STX>0R|38|^HFC#^^10020|0.00|10&S&9/L|^|^^N^^^^<CR><ETB>35<CR><LF>
<STX>1R|39|^HFC%^^10021|0.0|%|^|^^N^^^^<CR><ETB>7B<CR><LF>
<STX>2R|40|^PLT-I^^10022|418|10&S&9/L|^|^^N^^^^<CR><ETB>83<CR><LF>
<STX>3R|41|^WBC-D^^10024|19.84|10&S&9/L|^|^^N^^^^<CR><ETB>D5<CR><LF>
<STX>4R|42|^WBC-B^^10025|19.50|10&S&9/L|^|^^N^^^^<CR><ETB>CF<CR><LF>
<STX>5R|43|^PDW-SD^^10031|14.1|fL|^|^^N^^^^<CR><ETB>F7<CR><LF>
<STX>6R|44|^InR#^^10032|0.00|10&S&9/L|^|^^N^^^^<CR><ETB>73<CR><LF>
<STX>7R|45|^InR‰^^10033|0.00|‰|^|^^N^^^^<CR><ETB>C3<CR><LF>
<STX>0R|46|^WBC^^12227-5|19.50|10&S&9/L|16.44^21.44|^^N^^^^<CR><ETB>BE<CR><LF>
<STX>1L|1|N<CR><ETX>01<CR><LF>

3.6.2.3.2 LJ QC sample message transmitted in the format of common sample messages

<STX>1H|\^&|2||Mindray^LabXpert^||||||Automated
Count^00001|P|LIS2-A2|20140909171936<CR><ETB>EE<CR><LF>
<STX>2P|1||||^||^^|||||||||||||||||^<CR><ETB>54<CR><LF>
<STX>3O|1|1MB999||||20140820201334|||||||||^|admin|||||||||F<CR><ETB>B2<CR><LF>
<STX>4R|1|^Take Mode^^08001|A||^|^^^^^^<CR><ETB>BC<CR><LF>
<STX>5R|2|^Blood Mode^^08002|W||^|^^^^^^<CR><ETB>40<CR><LF>
<STX>6R|3|^Test Mode^^08003|CBC+DIFF||^|^^^^^^<CR><ETB>A8<CR><LF>
<STX>7R|4|^Ref Group^^01002|General||^|^^^^^^<CR><ETB>59<CR><LF>
<STX>0R|5|^Remark^^01001|||^|^^^^^^<CR><ETB>AC<CR><LF>
<STX>1R|6|^Recheck flag^^01006|F||^|^^^^^^<CR><ETB>06<CR><LF>
<STX>2R|7|^Shelf No^^01012|??||^|^^^^^^<CR><ETB>9D<CR><LF>
<STX>3R|8|^Tube No^^01013|0||^|^^^^^^<CR><ETB>F0<CR><LF>

<STX>4R|9|^Charge type^^01015|||^|^^^^^^<CR><ETB>83<CR><LF>
<STX>5R|10|^Patient type^^01016|||^|^^^^^^<CR><ETB>38<CR><LF>
<STX>6R|11|^Analyzer^^09001|1#||^|^^^^^^<CR><ETB>1F<CR><LF>
<STX>7R|12|^Project Type^^05007|BL||^|^^^^^^<CR><ETB>B0<CR><LF>
<STX>0R|13|^Custom patient info 1^^01009|||^|^^^^^^<CR><ETB>2E<CR><LF>
<STX>1R|14|^Custom patient info 2^^01010|||^|^^^^^^<CR><ETB>29<CR><LF>
<STX>2R|15|^Custom patient info 3^^01011|||^|^^^^^^<CR><ETB>2D<CR><LF>
<STX>3R|16|^WBC^^6690-2|19.50|10&S&9/L|16.44^21.44|^^N^^^^<CR><ETB>92<CR><LF>
<STX>4R|17|^BAS#^^704-7|0.54|10&S&9/L|0.22^0.80|^^N^^^^<CR><ETB>D8<CR><LF>
<STX>5R|18|^BAS%^^706-2|2.8|%|1.2^4.2|^^N^^^^<CR><ETB>B8<CR><LF>
<STX>6R|19|^NEU#^^751-8|13.08|10&S&9/L|10.71^14.71|^^N^^^^<CR><ETB>8E<CR><LF>
<STX>7R|20|^NEU%^^770-8|67.0|%|57.1^77.1|^^N^^^^<CR><ETB>72<CR><LF>
<STX>0R|21|^EOS#^^711-2|1.85|10&S&9/L|0.50^2.90|^^N^^^^<CR><ETB>E2<CR><LF>
<STX>1R|22|^EOS%^^713-8|9.5|%|3.0^15.0|^^N^^^^<CR><ETB>F8<CR><LF>
<STX>2R|23|^LYM#^^731-0|3.53|10&S&9/L|2.00^5.20|^^N^^^^<CR><ETB>E7<CR><LF>
<STX>3R|24|^LYM%^^736-9|18.1|%|11.0^27.0|^^N^^^^<CR><ETB>6B<CR><LF>
<STX>4R|25|^MON#^^742-7|0.50|10&S&9/L|0.00^1.22|^^N^^^^<CR><ETB>E2<CR><LF>
<STX>5R|26|^MON%^^5905-5|2.6|%|0.0^5.7|^^N^^^^<CR><ETB>05<CR><LF>
<STX>6R|27|^RBC^^789-8|5.59|10&S&12/L|5.57^6.17|^^N^^^^<CR><ETB>0E<CR><LF>
<STX>7R|28|^HGB^^718-7|17.8|g/dL|17.2^18.8|^^N^^^^<CR><ETB>62<CR><LF>
<STX>0R|29|^MCV^^787-2|106.6|fL|93.2^103.2|H^^N^^^^<CR><ETB>7C<CR><LF>
<STX>1R|30|^MCH^^785-6|31.7|pg|28.2^33.2|^^N^^^^<CR><ETB>E4<CR><LF>
<STX>2R|31|^MCHC^^786-4|29.8|g/dL|28.2^34.2|^^N^^^^<CR><ETB>A0<CR><LF>
<STX>3R|32|^RDW-CV^^788-0|15.9|%|8.7^20.7|^^N^^^^<CR><ETB>E6<CR><LF>
<STX>4R|33|^RDW-SD^^21000-5|61.8|fL|39.2^63.2|^^N^^^^<CR><ETB>F5<CR><LF>
<STX>5R|34|^HCT^^4544-3|0.596||0.546^0.606|^^N^^^^<CR><ETB>E6<CR><LF>
<STX>6R|35|^PLT^^777-3|418|10&S&9/L|415^545|^^N^^^^<CR><ETB>5D<CR><LF>
<STX>7R|36|^MPV^^32623-1|10.8|fL|8.3^14.3|^^N^^^^<CR><ETB>0A<CR><LF>
<STX>0R|37|^PDW^^32207-3|16.4||11.5^21.5|^^N^^^^<CR><ETB>78<CR><LF>
<STX>1R|38|^PCT^^10002|0.450|%|0.342^0.742|^^N^^^^<CR><ETB>C5<CR><LF>
<STX>2R|39|^PLCR^^10014|32.9|%|26.3^46.3|^^N^^^^<CR><ETB>8B<CR><LF>
<STX>3R|40|^PLCC^^10013|137|10&S&9/L|124^224|^^N^^^^<CR><ETB>6D<CR><LF>
<STX>4R|41|^IMG#^^51584-1|0.52|10&S&9/L|^|^^N^^^^<CR><ETB>B8<CR><LF>
<STX>5R|42|^IMG%^^38518-7|2.7|%|^|^^N^^^^<CR><ETB>07<CR><LF>
<STX>6R|43|^HFC#^^10020|0.00|10&S&9/L|^|^^N^^^^<CR><ETB>37<CR><LF>
<STX>7R|44|^HFC%^^10021|0.0|%|^|^^N^^^^<CR><ETB>7D<CR><LF>
<STX>0R|45|^PLT-I^^10022|418|10&S&9/L|^|^^N^^^^<CR><ETB>86<CR><LF>
<STX>1R|46|^WBC-D^^10024|19.84|10&S&9/L|^|^^N^^^^<CR><ETB>D8<CR><LF>
<STX>2R|47|^WBC-B^^10025|19.50|10&S&9/L|^|^^N^^^^<CR><ETB>D2<CR><LF>
<STX>3R|48|^PDW-SD^^10031|14.1|fL|^|^^N^^^^<CR><ETB>FA<CR><LF>
<STX>4R|49|^InR#^^10032|0.00|10&S&9/L|^|^^N^^^^<CR><ETB>76<CR><LF>
<STX>5R|50|^InR‰^^10033|0.00|‰|^|^^N^^^^<CR><ETB>BD<CR><LF>
<STX>6R|51|^WBC^^12227-5|19.50|10&S&9/L|16.44^21.44|^^N^^^^<CR><ETB>C0<CR><LF>
<STX>7R|52|^RBC Histogram. Left Line^^15051|0||^|^^^^^^<CR><ETB>E3<CR><LF>
<STX>0R|53|^RBC Histogram. Right Line^^15052|0||^|^^^^^^<CR><ETB>51<CR><LF>

<STX>1R|54|^RBC Histogram. Binary Meta Length^^15053|1||^|^^^^^^<CR><ETB>3D<CR><LF>
<STX>2R|55|^RBC Histogram. Total^^15057|0||^|^^^^^^<CR><ETB>B8<CR><LF>
<STX>3R|56|^PLT Histogram. Left Line^^15111|0||^|^^^^^^<CR><ETB>F9<CR><LF>
<STX>4R|57|^PLT Histogram. Right Line^^15112|0||^|^^^^^^<CR><ETB>6F<CR><LF>
<STX>5R|58|^PLT Histogram. Binary Meta Length^^15113|1||^|^^^^^^<CR><ETB>5B<CR><LF>
<STX>6R|59|^PLT Histogram. Total^^15117|0||^|^^^^^^<CR><ETB>D6<CR><LF>
<STX>7R|60|^WBC DIFF Scattergram. Meta len^^15203|1||^|^^^^^^<CR><ETB>A2<CR><LF>
<STX>0R|61|^WBC DIFF Scattergram. Fsc dimension^^15205|0||^|^^^^^^<CR><ETB>B9<CR><LF>
<STX>1R|62|^WBC DIFF Scattergram. Ssc dimension^^15206|0||^|^^^^^^<CR><ETB>C9<CR><LF>
<STX>2R|63|^WBC DIFF Scattergram. FL dimension^^15207|0||^|^^^^^^<CR><ETB>35<CR><LF>
<STX>3R|64|^WBC DIFF Scattergram. FSC-LOG dimension^^15208|0||^|^^^^^^<CR><ETB>91<CR><LF>
<STX>4R|65|^Baso Scattergram. Meta Len^^15253|1||^|^^^^^^<CR><ETB>F9<CR><LF>
<STX>5R|66|^Baso Scattergram. Fsc dimension^^15255|0||^|^^^^^^<CR><ETB>38<CR><LF>
<STX>6R|67|^Baso Scattergram. Ssc dimension^^15256|0||^|^^^^^^<CR><ETB>48<CR><LF>
<STX>7R|68|^Baso Scattergram. FL dimension^^15257|0||^|^^^^^^<CR><ETB>B4<CR><LF>
<STX>0R|69|^Baso Scattergram. FSC-LOG dimension^^15258|0||^|^^^^^^<CR><ETB>08<CR><LF>
<STX>1R|70|^RET Scattergram. Meta Len^^15307|1||^|^^^^^^<CR><ETB>58<CR><LF>
<STX>2R|71|^RET Scattergram. Fsc dimension^^15303|0||^|^^^^^^<CR><ETB>91<CR><LF>
<STX>3R|72|^RET Scattergram. Ssc dimension^^15304|0||^|^^^^^^<CR><ETB>A1<CR><LF>
<STX>4R|73|^RET Scattergram. FL dimension^^15305|0||^|^^^^^^<CR><ETB>0D<CR><LF>
<STX>5R|74|^RET Scattergram FSC-LOG dimension^^15308|0||^|^^^^^^<CR><ETB>3D<CR><LF>
<STX>6R|75|^NRBC Scattergram. Meta Len^^15355|1||^|^^^^^^<CR><ETB>9F<CR><LF>
<STX>7R|76|^NRBC Scattergram. Fsc dimension^^15351|0||^|^^^^^^<CR><ETB>D8<CR><LF>
<STX>0R|77|^NRBC Scattergram. Ssc dimension^^15352|0||^|^^^^^^<CR><ETB>E0<CR><LF>
<STX>1R|78|^NRBC Scattergram. FL dimension^^15353|0||^|^^^^^^<CR><ETB>4C<CR><LF>
<STX>2R|79|^NRBC Scattergram FSC-LOG dimension^^15356|0||^|^^^^^^<CR><ETB>7C<CR><LF>
<STX>3L|1|N<CR><ETX>03<CR><LF>

3.6.2.4 Example of X Mean R QC Message

<STX>1H|\^&|1||Mindray^LabXpert^||||||XR QCR^00006|P|LIS2-A2|20140910101433<CR><ETB>BE<CR><LF>
<STX>2O|1|||||20140909195007|||||||||^|admin|||||||||F<CR><ETB>57<CR><LF>
<STX>3R|1|^Take Mode^^08001|O||^|^^^^^^<CR><ETB>C9<CR><LF>
<STX>4R|2|^Blood Mode^^08002|W||^|^^^^^^<CR><ETB>3F<CR><LF>
<STX>5R|3|^Test Mode^^08003|CBC+DIFF||^|^^^^^^<CR><ETB>A7<CR><LF>
<STX>6R|4|^Qc Level^^05001|M||^|^^^^^^<CR><ETB>6C<CR><LF>
<STX>7R|5|^QC test date modify flag^^05002|||^|^^^^^^<CR><ETB>EA<CR><LF>
<STX>0R|6|^QC test time modify flag^^05003|||^|^^^^^^<CR><ETB>F6<CR><LF>
<STX>1R|7|^Qc valid date^^05004|20140909000000||^|^^^^^^<CR><ETB>AF<CR><LF>
<STX>2R|8|^Qc file No^^05005|1||^|^^^^^^<CR><ETB>D9<CR><LF>
<STX>3R|9|^Qc lot No^^05006|12||^|^^^^^^<CR><ETB>BD<CR><LF>
<STX>4R|10|^Analyzer^^09001|11#||^|^^^^^^<CR><ETB>4D<CR><LF>
<STX>5R|11|^WBC^^6690-2|0.00|10&S&9/L|^|^^N^^^^<CR><ETB>5A<CR><LF>

<STX>6R|12|^BAS#^^704-7|****|10&S&9/L|^|^^N^^^^<CR><ETB>2E<CR><LF>
<STX>7R|13|^BAS%^^706-2|****||^|^^N^^^^<CR><ETB>7B<CR><LF>
<STX>0R|14|^NEU#^^751-8|****|10&S&9/L|^|^^N^^^^<CR><ETB>3F<CR><LF>
<STX>1R|15|^NEU%^^770-8|****||^|^^N^^^^<CR><ETB>90<CR><LF>
<STX>2R|16|^EOS#^^711-2|****|10&S&9/L|^|^^N^^^^<CR><ETB>38<CR><LF>
<STX>3R|17|^EOS%^^713-8|****||^|^^N^^^^<CR><ETB>90<CR><LF>
<STX>4R|18|^LYM#^^731-0|****|10&S&9/L|^|^^N^^^^<CR><ETB>47<CR><LF>
<STX>5R|19|^LYM%^^736-9|****||^|^^N^^^^<CR><ETB>A5<CR><LF>
<STX>6R|20|^MON#^^742-7|****|10&S&9/L|^|^^N^^^^<CR><ETB>43<CR><LF>
<STX>7R|21|^MON%^^5905-5|****||^|^^N^^^^<CR><ETB>C7<CR><LF>
<STX>0R|22|^RBC^^789-8|0.00|10&S&12/L|^|^^N^^^^<CR><ETB>55<CR><LF>
<STX>1R|23|^HGB^^718-7|0.1|mmol/L|^|^^N^^^^<CR><ETB>6B<CR><LF>
<STX>2R|24|^MCV^^787-2|****|fL|^|^^N^^^^<CR><ETB>1E<CR><LF>
<STX>3R|25|^MCH^^785-6|****|amol|^|^^N^^^^<CR><ETB>0B<CR><LF>
<STX>4R|26|^MCHC^^786-4|****|mmol/L|^|^^N^^^^<CR><ETB>D6<CR><LF>
<STX>5R|27|^RDW-CV^^788-0|****||^|^^N^^^^<CR><ETB>3E<CR><LF>
<STX>6R|28|^RDW-SD^^21000-5|****|fL|^|^^N^^^^<CR><ETB>41<CR><LF>
<STX>7R|29|^HCT^^4544-3|0.000|L/L|^|^^N^^^^<CR><ETB>A8<CR><LF>
<STX>0R|30|^PLT^^777-3|0|10&S&9/L|^|^^N^^^^<CR><ETB>AD<CR><LF>
<STX>1R|31|^MPV^^32623-1|****|fL|^|^^N^^^^<CR><ETB>81<CR><LF>
<STX>2R|32|^PDW^^32207-3|****||^|^^N^^^^<CR><ETB>C9<CR><LF>
<STX>3R|33|^PCT^^10002|****|mL/L|^|^^N^^^^<CR><ETB>90<CR><LF>
<STX>4R|34|^PLCR^^10014|****|%|^|^^N^^^^<CR><ETB>D0<CR><LF>
<STX>5R|35|^PLCC^^10013|****|10&S&9/L|^|^^N^^^^<CR><ETB>51<CR><LF>
<STX>6R|36|^HFC#^^10020|****|10&S&9/L|^|^^N^^^^<CR><ETB>23<CR><LF>
<STX>7R|37|^HFC%^^10021|****|%|^|^^N^^^^<CR><ETB>99<CR><LF>
<STX>0R|38|^PLT-I^^10022|0|10&S&9/L|^|^^N^^^^<CR><ETB>1B<CR><LF>
<STX>1R|39|^WBC-D^^10024|0.00|10&S&9/L|^|^^N^^^^<CR><ETB>94<CR><LF>
<STX>2R|40|^WBC-B^^10025|0.00|10&S&9/L|^|^^N^^^^<CR><ETB>8C<CR><LF>
<STX>3R|41|^PDW-SD^^10031|****|fL|^|^^N^^^^<CR><ETB>D7<CR><LF>
<STX>4R|42|^InR#^^10032|****|10&S&9/L|^|^^N^^^^<CR><ETB>59<CR><LF>
<STX>5R|43|^InR‰^^10033|****|‰|^|^^N^^^^<CR><ETB>A9<CR><LF>
<STX>6R|44|^WBC^^12227-5|0.00|10&S&9/L|^|^^N^^^^<CR><ETB>8D<CR><LF>
<STX>7R|45|^IMG#^^51584-1|****|10&S&9/L|^|^^N^^^^<CR><ETB>A2<CR><LF>
<STX>0R|46|^IMG%^^38518-7|****||^|^^N^^^^<CR><ETB>F2<CR><LF>
<STX>1R|47|^Micro#^^15199-3|****|10&S&12/L|^|^^N^^^^<CR><ETB>E9<CR><LF>
<STX>2R|48|^Micro%^^10042|****|%|^|^^N^^^^<CR><ETB>C2<CR><LF>
<STX>3R|49|^Macro#^^15198-5|****|10&S&12/L|^|^^N^^^^<CR><ETB>E6<CR><LF>
<STX>4R|50|^Macro%^^10040|****|%|^|^^N^^^^<CR><ETB>B3<CR><LF>
<STX>5R|51|^WBC^^6690-2|0.00|10&S&9/L|^|^^N^^^^<CR><ETB>5E<CR><LF>
<STX>6R|52|^BAS#^^704-7|****|10&S&9/L|^|^^N^^^^<CR><ETB>32<CR><LF>
<STX>7R|53|^BAS%^^706-2|****||^|^^N^^^^<CR><ETB>7F<CR><LF>
<STX>0R|54|^NEU#^^751-8|****|10&S&9/L|^|^^N^^^^<CR><ETB>43<CR><LF>
<STX>1R|55|^NEU%^^770-8|****||^|^^N^^^^<CR><ETB>94<CR><LF>
<STX>2R|56|^EOS#^^711-2|****|10&S&9/L|^|^^N^^^^<CR><ETB>3C<CR><LF>

<STX>3R|57|^EOS%^^713-8|****||^|^^N^^^^<CR><ETB>94<CR><LF>
<STX>4R|58|^LYM#^^731-0|****|10&S&9/L|^|^^N^^^^<CR><ETB>4B<CR><LF>
<STX>5R|59|^LYM%^^736-9|****||^|^^N^^^^<CR><ETB>A9<CR><LF>
<STX>6R|60|^MON#^^742-7|****|10&S&9/L|^|^^N^^^^<CR><ETB>47<CR><LF>
<STX>7R|61|^MON%^^5905-5|****||^|^^N^^^^<CR><ETB>CB<CR><LF>
<STX>0R|62|^RBC^^789-8|0.00|10&S&12/L|^|^^N^^^^<CR><ETB>59<CR><LF>
<STX>1R|63|^HGB^^718-7|0.1|mmol/L|^|^^N^^^^<CR><ETB>6F<CR><LF>
<STX>2R|64|^MCV^^787-2|****|fL|^|^^N^^^^<CR><ETB>22<CR><LF>
<STX>3R|65|^MCH^^785-6|****|amol|^|^^N^^^^<CR><ETB>0F<CR><LF>
<STX>4R|66|^MCHC^^786-4|****|mmol/L|^|^^N^^^^<CR><ETB>DA<CR><LF>
<STX>5R|67|^RDW-CV^^788-0|****||^|^^N^^^^<CR><ETB>42<CR><LF>
<STX>6R|68|^RDW-SD^^21000-5|****|fL|^|^^N^^^^<CR><ETB>45<CR><LF>
<STX>7R|69|^HCT^^4544-3|0.000|L/L|^|^^N^^^^<CR><ETB>AC<CR><LF>
<STX>0R|70|^PLT^^777-3|0|10&S&9/L|^|^^N^^^^<CR><ETB>B1<CR><LF>
<STX>1R|71|^MPV^^32623-1|****|fL|^|^^N^^^^<CR><ETB>85<CR><LF>
<STX>2R|72|^PDW^^32207-3|****||^|^^N^^^^<CR><ETB>CD<CR><LF>
<STX>3R|73|^PCT^^10002|****|mL/L|^|^^N^^^^<CR><ETB>94<CR><LF>
<STX>4R|74|^PLCR^^10014|****|%|^|^^N^^^^<CR><ETB>D4<CR><LF>
<STX>5R|75|^PLCC^^10013|****|10&S&9/L|^|^^N^^^^<CR><ETB>55<CR><LF>
<STX>6R|76|^HFC#^^10020|****|10&S&9/L|^|^^N^^^^<CR><ETB>27<CR><LF>
<STX>7R|77|^HFC%^^10021|****|%|^|^^N^^^^<CR><ETB>9D<CR><LF>
<STX>0R|78|^PLT-I^^10022|0|10&S&9/L|^|^^N^^^^<CR><ETB>1F<CR><LF>
<STX>1R|79|^WBC-D^^10024|0.00|10&S&9/L|^|^^N^^^^<CR><ETB>98<CR><LF>
<STX>2R|80|^WBC-B^^10025|0.00|10&S&9/L|^|^^N^^^^<CR><ETB>90<CR><LF>
<STX>3R|81|^PDW-SD^^10031|****|fL|^|^^N^^^^<CR><ETB>DB<CR><LF>
<STX>4R|82|^InR#^^10032|****|10&S&9/L|^|^^N^^^^<CR><ETB>5D<CR><LF>
<STX>5R|83|^InR‰^^10033|****|‰|^|^^N^^^^<CR><ETB>AD<CR><LF>
<STX>6R|84|^WBC^^12227-5|0.00|10&S&9/L|^|^^N^^^^<CR><ETB>91<CR><LF>
<STX>7R|85|^IMG#^^51584-1|****|10&S&9/L|^|^^N^^^^<CR><ETB>A6<CR><LF>
<STX>0R|86|^IMG%^^38518-7|****||^|^^N^^^^<CR><ETB>F6<CR><LF>
<STX>1R|87|^Micro#^^15199-3|****|10&S&12/L|^|^^N^^^^<CR><ETB>ED<CR><LF>
<STX>2R|88|^Micro%^^10042|****|%|^|^^N^^^^<CR><ETB>C6<CR><LF>
<STX>3R|89|^Macro#^^15198-5|****|10&S&12/L|^|^^N^^^^<CR><ETB>EA<CR><LF>
<STX>4R|90|^Macro%^^10040|****|%|^|^^N^^^^<CR><ETB>B7<CR><LF>
<STX>5R|91|^WBC^^6690-2|0.00|10&S&9/L|^|^^N^^^^<CR><ETB>62<CR><LF>
<STX>6R|92|^BAS#^^704-7|****|10&S&9/L|^|^^N^^^^<CR><ETB>36<CR><LF>
<STX>7R|93|^BAS%^^706-2|****||^|^^N^^^^<CR><ETB>83<CR><LF>
<STX>0R|94|^NEU#^^751-8|****|10&S&9/L|^|^^N^^^^<CR><ETB>47<CR><LF>
<STX>1R|95|^NEU%^^770-8|****||^|^^N^^^^<CR><ETB>98<CR><LF>
<STX>2R|96|^EOS#^^711-2|****|10&S&9/L|^|^^N^^^^<CR><ETB>40<CR><LF>
<STX>3R|97|^EOS%^^713-8|****||^|^^N^^^^<CR><ETB>98<CR><LF>
<STX>4R|98|^LYM#^^731-0|****|10&S&9/L|^|^^N^^^^<CR><ETB>4F<CR><LF>
<STX>5R|99|^LYM%^^736-9|****||^|^^N^^^^<CR><ETB>AD<CR><LF>
<STX>6R|100|^MON#^^742-7|****|10&S&9/L|^|^^N^^^^<CR><ETB>72<CR><LF>
<STX>7R|101|^MON%^^5905-5|****||^|^^N^^^^<CR><ETB>F6<CR><LF>

<STX>0R|102|^RBC^^789-8|0.00|10&S&12/L|^|^^N^^^^<CR><ETB>84<CR><LF>
<STX>1R|103|^HGB^^718-7|0.1|mmol/L|^|^^N^^^^<CR><ETB>9A<CR><LF>
<STX>2R|104|^MCV^^787-2|****|fL|^|^^N^^^^<CR><ETB>4D<CR><LF>
<STX>3R|105|^MCH^^785-6|****|amol|^|^^N^^^^<CR><ETB>3A<CR><LF>
<STX>4R|106|^MCHC^^786-4|****|mmol/L|^|^^N^^^^<CR><ETB>05<CR><LF>
<STX>5R|107|^RDW-CV^^788-0|****||^|^^N^^^^<CR><ETB>6D<CR><LF>
<STX>6R|108|^RDW-SD^^21000-5|****|fL|^|^^N^^^^<CR><ETB>70<CR><LF>
<STX>7R|109|^HCT^^4544-3|0.000|L/L|^|^^N^^^^<CR><ETB>D7<CR><LF>
<STX>0R|110|^PLT^^777-3|0|10&S&9/L|^|^^N^^^^<CR><ETB>DC<CR><LF>
<STX>1R|111|^MPV^^32623-1|****|fL|^|^^N^^^^<CR><ETB>B0<CR><LF>
<STX>2R|112|^PDW^^32207-3|****||^|^^N^^^^<CR><ETB>F8<CR><LF>
<STX>3R|113|^PCT^^10002|****|mL/L|^|^^N^^^^<CR><ETB>BF<CR><LF>
<STX>4R|114|^PLCR^^10014|****|%|^|^^N^^^^<CR><ETB>FF<CR><LF>
<STX>5R|115|^PLCC^^10013|****|10&S&9/L|^|^^N^^^^<CR><ETB>80<CR><LF>
<STX>6R|116|^HFC#^^10020|****|10&S&9/L|^|^^N^^^^<CR><ETB>52<CR><LF>
<STX>7R|117|^HFC%^^10021|****|%|^|^^N^^^^<CR><ETB>C8<CR><LF>
<STX>0R|118|^PLT-I^^10022|0|10&S&9/L|^|^^N^^^^<CR><ETB>4A<CR><LF>
<STX>1R|119|^WBC-D^^10024|0.00|10&S&9/L|^|^^N^^^^<CR><ETB>C3<CR><LF>
<STX>2R|120|^WBC-B^^10025|0.00|10&S&9/L|^|^^N^^^^<CR><ETB>BB<CR><LF>
<STX>3R|121|^PDW-SD^^10031|****|fL|^|^^N^^^^<CR><ETB>06<CR><LF>
<STX>4R|122|^InR#^^10032|****|10&S&9/L|^|^^N^^^^<CR><ETB>88<CR><LF>
<STX>5R|123|^InR‰^^10033|****|‰|^|^^N^^^^<CR><ETB>D8<CR><LF>
<STX>6R|124|^WBC^^12227-5|0.00|10&S&9/L|^|^^N^^^^<CR><ETB>BC<CR><LF>
<STX>7R|125|^IMG#^^51584-1|****|10&S&9/L|^|^^N^^^^<CR><ETB>D1<CR><LF>
<STX>0R|126|^IMG%^^38518-7|****||^|^^N^^^^<CR><ETB>21<CR><LF>
<STX>1R|127|^Micro#^^15199-3|****|10&S&12/L|^|^^N^^^^<CR><ETB>18<CR><LF>
<STX>2R|128|^Micro%^^10042|****|%|^|^^N^^^^<CR><ETB>F1<CR><LF>
<STX>3R|129|^Macro#^^15198-5|****|10&S&12/L|^|^^N^^^^<CR><ETB>15<CR><LF>
<STX>4R|130|^Macro%^^10040|****|%|^|^^N^^^^<CR><ETB>E2<CR><LF>
<STX>5L|1|N<CR><ETX>05<CR><LF>

3.6.3 2-way LIS/HIS Request Message

3.6.3.1 Record Structure

Record Structure:

1 Header
2 Request
3 Message Terminator

3.6.3.2 Content of Request Message

Content of 2-way LIS/HIS requests:

Record Type	Record Value	Field Position: Content	Component Value	Value Description
H	Message Header Record	3: message ID	Message ID	Message ID, which is also used in analysis result messages
		12: message type	Worklist request	See OBR-4 Field Definitions
Q	Request information	3: Sample ID	Sample ID	What displayed on screen
		7: time of request	Time of request	YYYYMMDDHHMMSS; time when the message is generated
		11: Project type	Project type	“BL”: Blood "BF": Body fluid

3.6.3.3 Example of Request Message

Blood samples:

<STX>1H|\^&|2||Mindray^LabXpert^||||||Worksheet request^00010|P|LIS2-A2|20140909163557<CR><ETB>06<CR><LF>
<STX>2Q|1|SampleID4001||||20140909163557||||BL<CR><ETB>AF<CR><LF>
<STX>3L|1|N<CR><ETX>03<CR><LF>

Body fluid sample:

<STX>1H|\^&|1||Mindray^LabXpert^||||||Worksheet request^00010|P|LIS2-A2|20140909163815<CR><ETB>02<CR><LF>
<STX>2Q|1|SampleID4001||||20140909163815||||BF<CR><ETB>A6<CR><LF>
<STX>3L|1|N<CR><ETX>03<CR><LF>

3.6.4 2-way LIS/HIS Request Response

3.6.4.1 Record Structure

Record Structure:

1 Header
2 Patient
3 Order
4 Result1
5 Result2
6 Result3
.....
n Message Terminator

3.6.4.2 Content of Request Response

Result of request response

Record Type	Record Value	Field Position: Content	Component Value	Value Description
H	Record header	3: message ID	Message ID	Use the ID of the request message
		12: message type	Result of worklist request	See OBR-4 Field Definitions
P	Patient information	5: Patient ID	The patient ID displayed on screen	
		6: Patient name	First name	First name of patient
			Last Name	Last name of patient
		8: date of birth	Date of birth	YYYYMMDDHHMMSS
			Age	
			Age unit	Available age units: null, Y, M, W, D, and H, indicating null, year, month, week, day, and hour respectively
		9: gender	Gender	What displayed on screen
		25: department	Department	What displayed on screen
		26: location	Inpatient zone	What displayed on screen
			Bed No.	What displayed on screen
O	Sample Information	3: Sample ID	Sample ID	ID of the requested sample

Record Type	Record Value	Field Position: Content	Component Value	Value Description
		8: Time of sample collection	Time of sample collection	YYYYMMDDHHMMSS
		11: The person who ordered the analysis	The person who ordered the analysis	String in UI
		14: clinical diagnosis	Clinical diagnosis	What displayed on screen
		15: Date/Time when the specimen is received	Date/Time when the specimen is received	YYYYMMDDHHMMSS; what displayed on screen
		16: sample type	Sample type	What displayed on screen
			Sample source	Reserved; null
		26: report type	Result of request	Q – result of request is found Y – result of request is not found X – skip sample for analysis
R	Presentation mode	2: ID	ID	See Appendix C* for data type and coding system
			ID	See Appendix C* for data type and coding system
		4: result	Presentation mode	See Appendix C for HL7 and ASTM enumeration definition
		5: unit	Null	
		6: reference range	Null	
		7: flag	Null	
R	Sample mode	Value same as above		
R	Analysis mode	Value same as above		
R	Project type	Value same as above		
R	LIS serial number	Value same as above, applicable to integrated analyzer only.		
R	Reference group	4: result, value displayed on screen; other values same as above		
R	Comments	4: result, value displayed on screen; value same as above		
R	Payer	4: result, value displayed on screen; value same as above		

Record Type	Record Value	Field Position: Content	Component Value	Value Description
R	Patient type	4: result, value displayed on screen; value same as above		
R	Custom 1	4: result, value displayed on screen; value same as above		
R	Custom2	4: result, value displayed on screen; value same as above		
R	Custom3	4: result, value displayed on screen; value same as above		

Note: when the “ProjectType” item in the response message is consistent with the “ProjectType” item in the request message (see “BL/BF” in 3.6.3), this item can be excluded in the response message. If not, transmit the “ProjectType” item as requested. If not, transmit the “ProjectType” item as requested.

The OBX items “BloodMode” and “Take Mode” are not mandatory in the response. If they are not included in the response message, the instrument analyzes the sample in the mode defined in the “Setup” screen of the main unit. If it is included in the response message, the instrument analyzes the sample in the responded mode. If the “ProjectType” corresponding to this “BloodMode” in the response and the request are not the same. It it required to transmit the “ProjectType” item in the response message.

The OBX item “Test Mode” is mandatory in the response.

A morphology analysis order consists of both smear making and morphology analysis modes; therefore the Test Mode OBX for morphology analysis order reads like the following:

3.6.4.3 <STX>4R|1|^Test Mode^^08003|SMST+morphology analysis mode||^|^^^^^^<CR><ETB>A4<CR><LF. Example of Request Response Message

An example of request having been successfully answered is shown below. The sample is successfully found and analyzed, the response code is “Q”.

Example (CN):

<STX>1H|\^&|1||Mindray^LabXpert^||||||Worksheet response^00011|P|LIS2-A2|20140909165555<CR><ETB>6C<CR><LF>

<STX>2P|1||| 病 历 号 | 张 三 ^||20100405060708^10^Y| 男 |||||||||||||| 内 科 | 病 区 ^ 床 号 <CR><ETB>08<CR><LF>

<STX>3O|1|s1|||||20190102030405||| 送 检 者 ||| 临 床 诊 断 |20190203040506| 静 脉 血 ^|||||||||X<CR><ETB>46<CR><LF>

<STX>4R|1|^Test Mode^^08003|CBC+DIFF||^|^^^^^^<CR><ETB>A4<CR><LF>

<STX>5R|2|^Ref Group^^01002|Child||^|^^^^^^<CR><ETB>7B<CR><LF>

<STX>6R|3|^Remark^^01001|Emergency patient||^|^^^^^^<CR><ETB>64<CR><LF>

<STX>7R|4|^Charge type^^01015|Public||^|^^^^^^<CR><ETB>E0<CR><LF>

<STX>0R|5|^Patient type^^01016|Outpatient||^|^^^^^^<CR><ETB>34<CR><LF>

<STX>1R|6|^SerialNumber^^08005|3||^|^^^^^^<CR><ETB>53<CR><LF>

<STX>2R|7|^Custom patient info 1^^01009|Nothing||^|^^^^^^<CR><ETB>DA<CR><LF>

<STX>3R|8|^Custom patient info 2^^01010|Nothing||^|^^^^^^<CR><ETB>D5<CR><LF>

<STX>4R|9|^Custom patient info 3^^01011|Nothing||^|^^^^^^<CR><ETB>D9<CR><LF>

<STX>5L|1|N<CR><ETX>05<CR><LF>

Example (Other languages than CN)

<STX>1H|\^&|1||Mindray^LabXpert^||||||Worksheet response^00011|P|LIS2-A2|20140909165555<CR><ETB>6C<CR><LF>

<STX>2P|1|||patientID2001|Michael^Jordan||20090210000000^6^Y|Male|||||||||||||||Internal medicine|A - 501^1002<CR><ETB>08<CR><LF>

<STX>3O|1|SampleID4001|||||20090307103000|||Jack|||Virus infections|20090307103100|Venous blood^|||||||||Q<CR><ETB>46<CR><LF>

<STX>4R|1|^Test Mode^^08003|CBC+DIFF||^|^^^^^^<CR><ETB>A4<CR><LF>

<STX>5R|2|^Ref Group^^01002|Child||^|^^^^^^<CR><ETB>7B<CR><LF>

<STX>6R|3|^Remark^^01001|Emergency patient||^|^^^^^^<CR><ETB>64<CR><LF>

<STX>7R|4|^Charge type^^01015|Public||^|^^^^^^<CR><ETB>E0<CR><LF>

<STX>0R|5|^Patient type^^01016|Outpatient||^|^^^^^^<CR><ETB>34<CR><LF>

<STX>1R|6|^SerialNumber^^08005|3||^|^^^^^^<CR><ETB>53<CR><LF>

<STX>2R|7|^Custom patient info 1^^01009|Nothing||^|^^^^^^<CR><ETB>DA<CR><LF>

<STX>3R|8|^Custom patient info 2^^01010|Nothing||^|^^^^^^<CR><ETB>D5<CR><LF>

<STX>4R|9|^Custom patient info 3^^01011|Nothing||^|^^^^^^<CR><ETB>D9<CR><LF>

<STX>5L|1|N<CR><ETX>05<CR><LF>

Request message sample, with morphology analysis mode:

Example (CN):

<STX>1H|\^&|1||Mindray^LabXpert^||||||Worksheet response^00011|P|LIS2-A2|20140909165555<CR><ETB>6C<CR><LF>

<STX>2P|1||| 病 历 号 | 张 三 ^||20100405060708^10^Y| 男 |||||||||||||| 内 科 | 病 区 ^ 床 号 <CR><ETB>08<CR><LF>

<STX>3O|1|s1|||||20190102030405||| 送 检 者 ||| 临 床 诊 断 |20190203040506| 静 脉 血 ^|||||||||X<CR><ETB>46<CR><LF>

<STX>4R|1|^Test Mode^^08003|SMST+100WBC+RBC+PLT+PLTPRO||^|^^^^^^<CR><ETB>A4<CR><LF>

<STX>5R|2|^Ref Group^^01002|Child||^|^^^^^^<CR><ETB>7B<CR><LF>

<STX>6R|3|^Remark^^01001|Emergency patient||^|^^^^^^<CR><ETB>64<CR><LF>

<STX>7R|4|^Charge type^^01015|Public||^|^^^^^^<CR><ETB>E0<CR><LF>

<STX>0R|5|^Patient type^^01016|Outpatient||^|^^^^^^<CR><ETB>34<CR><LF>

<STX>1R|6|^SerialNumber^^08005|3||^|^^^^^^<CR><ETB>53<CR><LF>

<STX>2R|7|^Custom patient info 1^^01009|Nothing||^|^^^^^^<CR><ETB>DA<CR><LF>

<STX>3R|8|^Custom patient info 2^^01010|Nothing||^|^^^^^^<CR><ETB>D5<CR><LF>

<STX>4R|9|^Custom patient info 3^^01011|Nothing||^|^^^^^^<CR><ETB>D9<CR><LF>

<STX>5L|1|N<CR><ETX>05<CR><LF>

Example (Other languages than CN)

<STX>1H|\^&|1||Mindray^LabXpert^||||||Worksheet response^00011|P|LIS2-A2|20140909165555<CR><ETB>6C<CR><LF>

<STX>2P|1|||patientID2001|Michael^Jordan||20090210000000^6^Y|Male|||||||||||||||Internal medicine|A - 501^1002<CR><ETB>08<CR><LF>

<STX>3O|1|SampleID4001|||||20090307103000|||Jack|||Virus infections|20090307103100|Venous blood^|||||||||Q<CR><ETB>46<CR><LF>

<STX>4R|1|^Test Mode^^08003|SMST+100WBC+RBC+PLT+PLTPRO||^|^^^^^^<CR><ETB>A4<CR><LF>

<STX>5R|2|^Ref Group^^01002|Child||^|^^^^^^<CR><ETB>7B<CR><LF>

<STX>6R|3|^Remark^^01001|Emergency patient||^|^^^^^^<CR><ETB>64<CR><LF>

<STX>7R|4|^Charge type^^01015|Public||^|^^^^^^<CR><ETB>E0<CR><LF>

<STX>0R|5|^Patient type^^01016|Outpatient||^|^^^^^^<CR><ETB>34<CR><LF>

<STX>1R|6|^SerialNumber^^08005|3||^|^^^^^^<CR><ETB>53<CR><LF>

<STX>2R|7|^Custom patient info 1^^01009|Nothing||^|^^^^^^<CR><ETB>DA<CR><LF>

<STX>3R|8|^Custom patient info 2^^01010|Nothing||^|^^^^^^<CR><ETB>D5<CR><LF>

<STX>4R|9|^Custom patient info 3^^01011|Nothing||^|^^^^^^<CR><ETB>D9<CR><LF>

<STX>5L|1|N<CR><ETX>05<CR><LF>

An example of sample being skipped for analysis is shown below. The sample is successfully found, but the response code is X

Example (CN):

<STX>1H|\^&|0||Mindray^LabXpert^||||||Worksheet response^00011|P|LIS2-A2|20191025110845<CR><ETB>6C<CR><LF>

<STX>2P|1||| 病 历 号 | 张 三 ^||20100405060708^10^Y| 男 ||||||||||||||| 内 科 | 病 区 ^ 床 号 <CR><ETB>08<CR><LF>

<STX>3O|1|s1|||||20190102030405||| 送 检 者 ||| 临 床 诊 断 |20190203040506| 静 脉 血 ^|||||||||X<CR><ETB>46<CR><LF>

<STX>3L|1|N<CR><ETX>05<CR><LF>

Example (Other languages than CN)

<STX>1H|\^&|0||Mindray^LabXpert^||||||Worksheet response^00011|P|LIS2-A2|20191025110845<CR><ETB>6C<CR><LF>

<STX>2P|1||| patientID2001| Michael^Jordan ||20100405060708^10^Y| Male ||||||||||||||| Internal medicine|A - 501^1002<CR><ETB>08<CR><LF>

<STX>3O|1|s1|||||20190102030405|||Jack|||Virus infections|20190203040506|Venous blood ^|||||||||X<CR><ETB>46<CR><LF>

<STX>3L|1|N<CR><ETX>05<CR><LF>

Chapter 4labXpert Simplified Communication Protocol

4.1 Connection Control

4.1.1 labXpert as the TCP Server

The TCP server can start interception after the labXpert is started or after

communication settings are modified. One connection can be established with the LIS/HIS. The established connection is retained until message sending fails, communication settings are modified, or the labXpert is shut down.

4.1.2 labXpert as the TCP Client

After the labXpert software is started or communication settings are modified, an attempt is automatically made to establish a connection. If the connection is not established within 10s, the connection attempt fails. Then, another connection attempt is made.

If the connection is not built up, the TCP client will try to reconnect when there is a communication call. If he connection is not established in 10s, a communication error will be reported and the communication will be canceled.

After a connection is successfully established, the connection is retained until the connection is interrupted, communication settings are modified, or the labXpert is shut down.

4.1.3 Network Port Communication

Unidirectional communication messages of count/QC results are directly sent to the LIS, and no response is required.

When counting of samples starts, labXpert sends a bidirectional query request to the LIS/HIS. The LIS/HIS returns a query response within 10s. After successfully receiving the response, the system performs counting according to the mode queried from the LIS/HIS.

4.2 Communication Protocol

4.2.1 Overview

The new protocol is a standard extension based on the JSON object. It is a text communication protocol, and uses UTF-8 for encoding.

4.2.2 Transport Layer Protocol

Like the HL7, the system uses MLLP.
The message body uses special characters for separation, for example, <SB> ddddd <EB><CR>.

4.2.3 Message Body

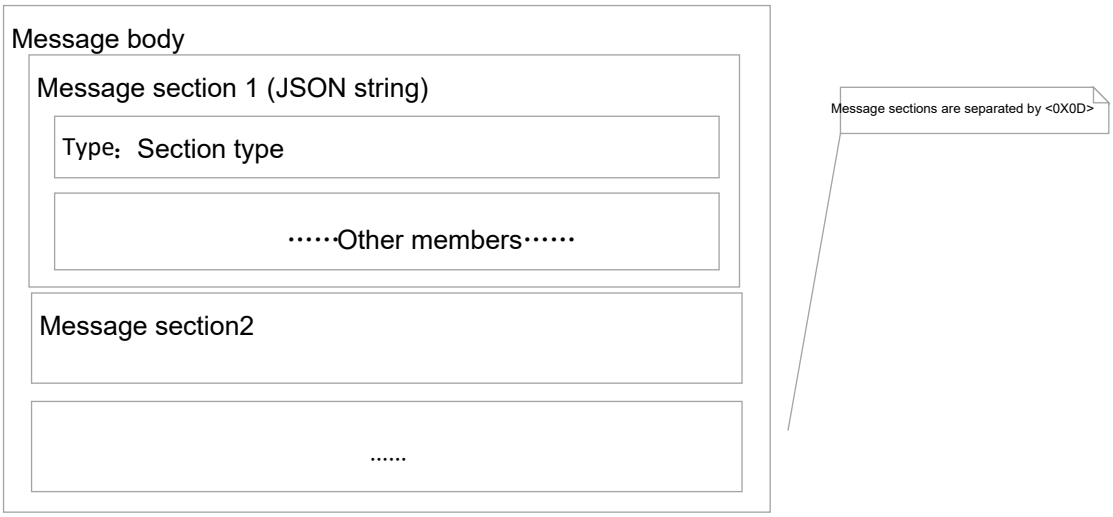


Figure 11 Structure of the message body

4.2.4 Interaction

4.2.4.1 2-Way LIS Request Message

4.2.4.1.1 Overview

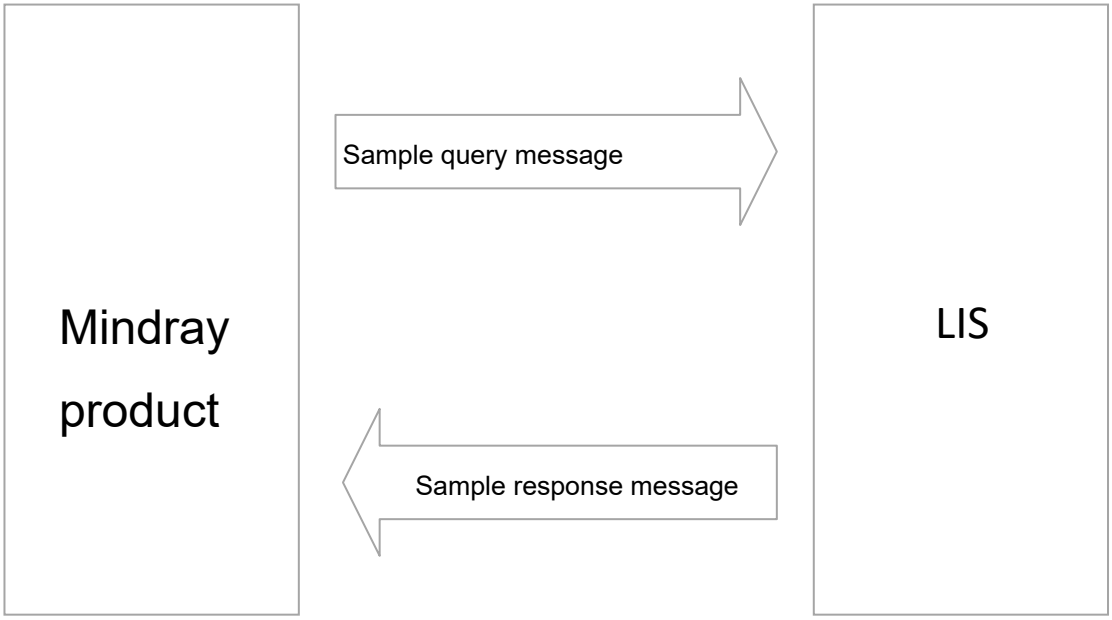


Figure 12 Bidirectional interaction with the LIS

4.2.4.1.2 Sample Query Message

<0B>

{"Type":"Query","SampleID":"Sample ID","TestItemType":"BL"}

<1C><0D>

The following table describes fields in the message. Optional fields may not appear in the message body.

Table 10 Description of fields in the query message

Field/Delimiter Name	Mandatory or not?	Type	Value
Type	Yes	String	It is set to "Query" in a query message.
SampleID	Yes	String	Sample ID
TestItemType	Yes	String	See Table 11 Values of TestItemType

Table 11 Values of TestItemType

Contents	Meaning
BL	Blood samples
BF	Body fluid samples

4.2.4.1.3 Sample Response Message

An example of response message of successful inquiry is shown below. The AckCode is “AA”.

Example (CN):

<0B>

{"Type":"Response","SampleID":"样本编号","TestItemType":"BL","AckCode":"AA","AnalyzeMode":"CBC+DIFF","LisSerialNumber":"样本 LIS 流水号","SpecimenType":"静脉血","SamplingTime":"20180314145241","SubmittingTime":"20180314150241","Submitter":"送检者","Diagnosis":"诊断","ReferenceGroup":"参考组","Remark":"备注","MedicalRecordID":"病历号","PatientName":"张三","PatientLastName":"","Birth":"2000010203","Age":"18","AgeUnit":"yr","Gender":"男","PatientType":"门诊","Department":"科室","BedNumber":"床号","PatientArea":"病区","Charge":"收费类型"}

<1C><0D>

Example (Other languages than CN)

<0B>

<0B>

{"Type":"Response","SampleID":"Sample ID","TestItemType":"BL","AckCode":"AA"," Analyze Mode":"CBC+DIFF","LisSerialNumber":"Sample LIS serial number","SpecimenType":"Venous blood","SamplingTime":"20180314145241","SubmittingTime":"20180314150241","Submitter":"Submitter","Diagnosis":"Diagnosis","ReferenceGroup":"Reference group","Remark":"Remark","MedicalRecordID":"Medical record ID","PatientName":"Patient name","PatientLastName":"Last name","Birth":"2000010203","Age":"18","AgeUnit":"yr","120 Gender":"Female","PatientType":"Outpaitent","Department":"Department","BedNumber":" Bed number","PatientArea":"Patient area","Charge":"Charging type"}

<1C><0D>

An example of “skip sample” message is shown below. The AckCode is “AS”.

<0B>

{"Type":"Response","SampleID":"s1","TestItemType":"BL","AckCode":"AS"}

<1C><0D>

Table 12 Description of fields in the response message

Field/Delimiter Name	Mandatory or not?	Type	Value
Type	Yes	String	Field type. It is always set to "Response" in a response message.
SampleID	Yes	String	Sample ID, which must be the same as that in the received query message.
TestItemType	Yes	String	See Table 11 Values of TestItemType
AckCode	No	String	Response code AA: Query is completed.

Field/Delimiter Name	Mandatory or not?	Type	Value
			“AS”: skip analysis If the AckCode field is absent, or the content cannot be recognized, the default response code is "AA".
AnalyzeMode	Yes	String	Sample count mode It consists of multiple count mode groups, which are separated by "+". For details about the count mode groups, see Table 13. E.g. If routine blood tests, including CBC, DIFF, CRP, and SMST, must be performed on samples, the mode is set to "CBC+DIFF+CRP+SMST".
LisSerialNumber	No	String	Serial number of a sample in the LISumd
SpecimenType	No	String	Sample type, for example, "venous blood".
SamplingTime	No	String	Sampling time in the format of "YYYYMMDDhhmmss"
SubmittingTime	No	String	Submitting time in the format of "YYYYMMDDhhmmss"
Submitter	No	String	The person who ordered the analysis
Diagnosis	No	String	Clinic diagnosis
ReferenceGroup	No	String	Reference group
Remark	No	String	Comments
MedicalRecordID	No	String	Medical record ID, used to identify a patient.
PatientName	No	String	Patient name
PatientLastName	No	String	Last name of the patient. Reserved for western patient names. When it is a Chinese name, the field is left empty.
Birth	No	String	Date of birth in the format of "YYYYMMDD[hh[mm[ss]]]"
Age	No	String	Age
AgeUnit	No	String	Age unit. See Table 14 Age unit.
Gender	No	String	Gender. See Table 15 Gender.
PatientType	No	String	Patient type, for example, "Outpatient".
Department	No	String	Department

Field/Delimiter Name	Mandatory or not?	Type	Value
BedNumber	No	String	Bed No.
PatientArea	No	String	Inpatient zone
ChargeType	No	String	Charging type

Table 13 Test panel

Routine Blood Test Panel
CBC
CBC+DIFF
CBC+DIFF+NRBC
CBC+DIFF+RET
CBC+DIFF+RET+NRBC
CBC+NRBC
CBC+RET
RET
CR/PLT-8X (i.e., CBC+RET(PLT-8X)）
CDR/PLT-8X (i.e., CBC+DIFF+RET(PLT-8X))
CBC-4D
CD/WBC-3X
CDR/WBC-3X
CR/PLT-5X
CDR/PLT-5X
CRP Test Panel
CRP
SAA Test Panel
SAA
SAA-D
ESR Test Panel
ESR
SM&S Test Panel
SMST
HbA1c Test Panel
A1C (HbA1c test mode responded from Bidirectional LIS)
STANDARD (standard mode, sending the sample results to LIS)
EXTEND (extended mode, used when sending the sample results to LIS)

Table 14 Age unit

Contents	Meaning
yr	year
mo	maintenance
wk	week
d	day
hr	hour

Table 15 Gender

Contents	Meaning
M (or m)	Male
F (or f)	Female
U (or u)	Unknown
Other contents	Directly processed as the displayed string.

4.2.5Transimitting Sample Results

4.2.5.1 Overview

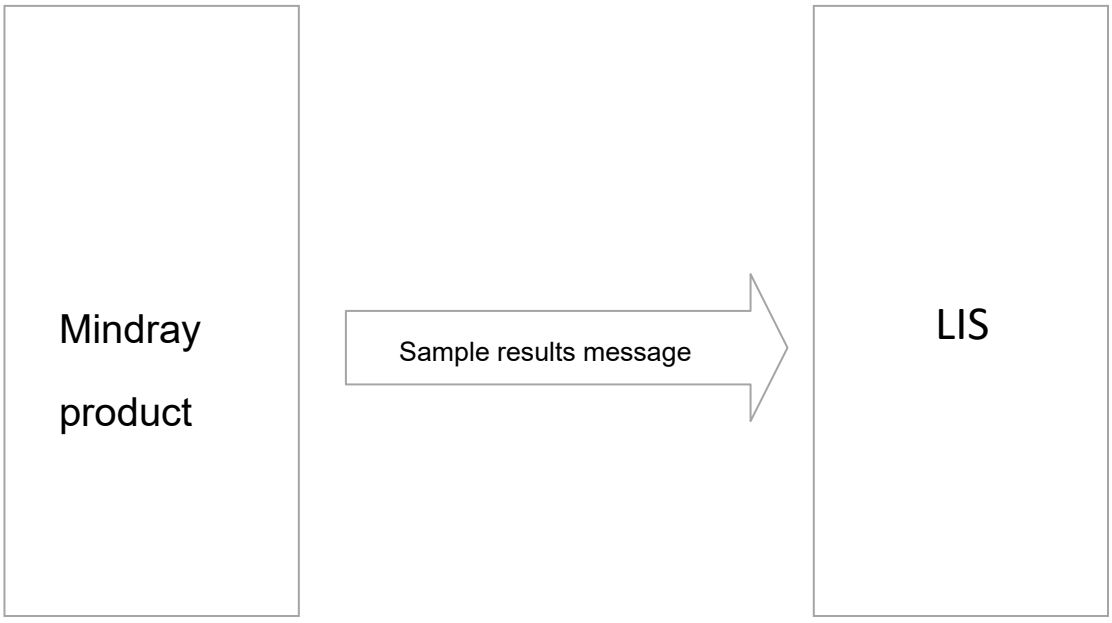


Figure 13 Result communication

4.2.5.2 Sample Result Message

Routine blood count results report:

<0B>

{"Type":"SampleResultInfo","SampleID":"Sample ID","TestItemType":"BL","Remark":"Remark","SuggestRecheck":"T","AnalyzeTime":"20180314164301","InstrumentName":"BC-6800 #1","CountChannel":"CRP1","AnalyzeMode":"CBC+DIFF","RackNo":"1","TubeNo":"2","IsValidated":"Validated","Tester":"Tester","Auditor":"Auditer","AuditTime":"20180314164331","AutoAuditResult":"Auto Validation OK","AutoAuditMessages":["Rule msg1","Rule msg2"],"Priority":"R"}<0D>

{"Type":"ReportParameters","WBC":"WBC result","WBC_Flags":"RHE","RBC":"RBC result"}<0D>

{"Type":"ResearchParameters","HFC#":"HFC# result","HFC_Flags":""}<0D>

{"Type":"OtherParameters","DefaultCrp":"DefaultCrp result","DefaultCrp_Flags":""}<0D>

{"Type":"Alerts","AlertValues":["ScatterAbnormal","Anemia"]}<0D>

{"Type":"Histo","SubType":"RBC","Data":"RBC graphical data, bitmap encoded using Base64"}<0D>

{"Type":"Scatter","SubType":"DIFF","Data":"DIFF graphical data, bitmap encoded using Base64"}

{"Type":"HemaScanningWbcGraph","CellCategoryType":"M_WBC_EOS","GraphNo":"1","Data":"/9j/4AAQSkZJRgABAQEAYABgAAD/4QBuRXhpZgAASUkqABkAAABWaXNpb24gQ0FNIFYxMjAwAAIAEAECABEAAAAIAAAAaYcEAAEAAABIAAAAAAAAAEFTQ0lJAAAANC43OTA1MjgAAgCGkgcAEQAAADcAAAB8kgIABAAAADQweAAAAAAA/9sAQwAIBgYHBgUIBwcHCQkICgwUDQwLCwwZEhMPFB0aHx4dGhwcICQuJyAiLCMcHCg3KSwwMTQ0NB8nOT04MjwuMzQy/9sAQwEJCQkMCwwYDQ0YMiEcITIyMjIyMjIyMjIyMjIyMjIyMjIyMjIyMjIyMjIyMjIyMjIyMjIyMjIyMjIyMjIyMjIy/8AAEQgAfAB8AwEiAAIRAQMRAf/EAB8AAAEFAQEBAQEBAAAAAAAAAAABAgMEBQYHCAkKC//EALUQAAIBAwMCBAMFBQQEAAABfQECAwAEEQUSITFBBhNRYQcicRQygZGhCCNCscEVUtHwJDNicoIJChYXGBkaJSYnKCkqNDU2Nzg5OkNERUZHSElKU1RVVldYWVpjZGVmZ2hpanN0dXZ3eHl6g4SFhoeIiYqSk5SVlpeYmZqio6Slpqeoqaqys7S1tre4ubrCw8TFxsfIycrS09TV1tfY2drh4uPk5ebn6Onq8fLz9PX29/j5+v/EAB8BAAMBAQEBAQEBAQEAAAAAAAABAgMEBQYHCAkKC//EALURAAIBAgQEAwQHBQQEAAECdwABAgMRBAUhMQYSQVEHYXETIjKBCBRCkaGxwQkjM1LwFWJy0QoWJDThJfEXGBkaJicoKSo1Njc4OTpDREVGR0hJSlNUVVZXWFlaY2RlZmdoaWpzdHV2d3h5eoKDhIWGh4iJipKTlJWWl5iZmqKjpKWmp6ipqrKztLW2t7i5usLDxMXGx8jJytLT1NXW19jZ2uLj5OXm5+jp6vLz9PX29/j5+v/aAAwDAQACEQMRAD8A7Fzz1qWC4dCMGoCcmnIjY4rRpSWpu9Tbt9RwMMeRW1p94sqkhs1xgfYcGtewuEj6YGeTWbglJMlq7sdS84A61SmvQvO4ZrNnviBwx+lZNxdu56mnyu1yUjcfUlznIqSPUAw5wRXMqssp6k1OFki5yfpSVGe49TrImhlGcDNS+WgmAsHT7gg8nrW0H3DNVGUmrMTBj2xToxzxTepqaNefaqJJQOORTOTGiVuCtTYwKYakCv9kjHOPwowi8YFLNLtXk1jS32s32JCMmm5MPqLcohzVHndaNhFnqKGndPUNXVoos/MBj3rKuvEa79qGFmu8Q9uNdD8V7FsvfyYWPk+NvF7XsjfNMngXXo2CN7u8XV7vcq6jHt4ZDqq2W1pYSSNrpxBGuNjQ/i8EIqabJOkkrpoXFAw9AR96b0JRxBeWp8kY5wR1dI7S3ePOnvy23D1DHk0FzYtOfZYo6t3wTewJmUFN5q+wBK1uj+7zo9rRRxMJc6UXfR9VbXdD7CoR31EVvZiBXbNwWT+FRetPRitDfcnazU73k4lF+9SB+u7LKzv3R14RXdJo2T24mrNg1a1AwpJ9/+u27k6HScy5f6yrLYWP9G0AfbXNY9cqWVv/k7FDYaxzWNzFQhnQKqQjB1h1sbo2GbVBg8k+ZP+cSUbP5Q6cpdoNIIUDVTJY9Nrlsl0lXPwr4NNNXeTVq2SZf4EF+Sc/Kg9wOMk13CNbkDE7AMuLBr/1DQdDi4vvVGXcjIqXlzlRnW8QZRTUMnlkdlM3QlAHLbi+ju9U9mxRU98+L2V7gZDAUwEUK/8HOU/vbRYbzWT5wGXntCfQ5Le1Ltyax2LoLh17ouVzW6IaOkUW2Pzl9sGsFdm2g/jkkCS64Jt6BEPzeG6TnX8EoH/BCG2d8OEPnCx0aXqOuuoG6mBCM8A9QOdN6N95LGxCMoRKQ72Bl2VAGpAaiNOkWgNqPdU8+Ni72kgS2tDaZiQh5x3QmWCJFsgg+JAV2hq8aAVgsVTeP42gu00WQ6DaomF5MGgmTI5Vj3HhOs1uGNFmWOPYn4hqtJxm6wYGZ90VbFe3qWnFaBgpKVWm1A3bAOwyjq1Jbf+Swxgo0TjPZWBBPpAUqXwO6s8RW0O3jQDd1xPNW2RS5xXhkSpJvOu+RMO7Pj8NXBIc8HdIHIEEPDlRc1ZDDkZwu1TtdtKM0h9dhJxLFAHAG5CPF3MipUDxpvYqV6LEH3Z7xj8DALUB9Rv80wlaoe38WZF1t7vIz5KgG4TCENR8Ppn0GmUtYd71l7BKcsN4Pq1CnCR6oLmIpqYkeG8TgiJ+2zuq8dJ+7p9IxAAg4mu1XHwXo7jKkWgD7ug19U6rxbpZbePoqUGD8FUBy6YpC1UfTcAYd4TCPbTiMCPJWLVMeyF6IrobOpq20TRLqBT/FtxGavaTDLIixsbdbxG0IOTY+aVq8GvGvXWFBFO/sbaUqx81KE0bmtw3MLQpu+MS+ifvT5hBuEd3BqBB0hUhtZsiDZaSZfgcGrOVV6iM4+oMdJxP1FyvDc9lJ46GWHbGdyr9mpvB+P8TbVt7k8bVnyQxKTMWHNRB3ogbTfWnRTeOtc0hfH8YCc/jHLgFMjkqMIFb8tyM2HDX0F7XPHngjpxGxmUwZnyoBdqFi0sdmyUCdpn0bLt5IuMo/ESV9tBX8Z7K4hSKLV2iHp9Qi9D5bj+rDXxKobIizzeKHaIFXTmg1ogXyy+xvZZA1Alx1oEdLkh9Dx61n3zaDOAZLc7mzOUV0rhnsRPmG9Us5+97bSbtD6fIBS+8DDOm8D1NkT7ZU6uBBhxxOL1f6jzeptOiglsIGoq1nsvfhp7CRfZG3BrtUg5XKdRmjUB1Kvc8Y8eIYBKBzq2EmQ1eQkWcSfGeGsX8FNtWt8ky4YImcCSILzZtD+3SXfVuHj0s0R8mdIHm9H3SVcqNO1ia8KuJcjdIpv6JpdRm5TAtMDxHSD8RMDaC2RoAIqkLuhatSt7UNIw5fmo1R6A9aMGLYoD2aixQDmTJ9Z42IK8Tgo66yK16GcxfkwkH34v6f9Ke6gcSvqNa4L8zrfHyO9pFuGBKmTjBY4nuBRDGqrL3jEIf5tX3W4ZYr31jRKXE8eezs4i1qhnSGyU4kXyYIrKmV3azM1XXhM6VgNEe5wFZqJhy57ML0R9XxBJBjbMx2ldYrd3jg1OTJnOv12+Fi32kKZsk4aLT1zcQc2WjGgjY0CNYUGvJTWeOHjSYLB7DGtDJOtZpUY2PUwqRZvDy9vDejt0pYd0AmOLCqpQ2o64gFw9zqBp7Oc4MchlQtGLsuhvP5IuBQ2FhaHcunIKkCDiRIc8gjqxHIMvh1w2Ydpkj3h0lYFfFrV1IHNCfkzLsp0mzBdG5qKABEzdM9TNpp9FzFoHjqOmCUlSPMFZUFgdnu8ZqQVaC4mD6nA4JkyjIi0jw/gmg1aBhJRDL8RQC8Mf9XggsgmXF3bMpKaWj9zgKH0eUwBWhwhWsUI9R2jFRZ8NC0UbhtqgNwgqI00Jbbx6GGvh4yPtTi9ho17EQ62ZQaMUQ2W6LF04VqzI3IqtO2r5bVcGu06mDFU7cndwcw+JkgSsiLaIaWvqwwlS3AsO9dyKd4nUKYxoePtO5uiEyeZqjNKRXi8GMRN4nbRf6v0HnxEmcMJX4v+Yrp6Yfb3wFkZhxHtyI2TLFZGQUkMAUHNKpmFCzyZfFD3LwG8C2bJvGcbVj/3WvajqqNd1v3pB45LLIDBOl3w13AyyRRxjtq8NAOHx8H+EyrqrQF0UjrBn8pvi5JqwNPYPkLcQwV2ja0Ad3YxMMqPIDsNRv6jJC1WCvw0nPNHadm5Cwg5DXoN0e+CvGhdWDbtjfCqg1l4NYSPi47ANT53zDmkgBBkiMmpBr4g6r/Uw8Bh9/CMqw6Ia6UOKDuMkWiKa5j5UnSe/rZIw5EEEdCSp2zh3cr5LzcxOrS0cqzGYfdsHLqc46zC9fEB5ARH6bqNLT1xZhWvCZ76sXF9EiUzXhUl4BhvmBMXfhGHvmWNPPUnhO6xXm7PgVF+LZOXt3knzj2D2xt2C4NUS6C5TfY5KWJNqxP0iCDJnNj72Zcfg+FIRpnmEUjCqdqGHrHbD0KT2Kk3LZ/uT8/FWRPuVMFCv+5yjB7DvIPpUPAoWBbjiMTdQnw3ZQ1T4SScmtHJQpYUJZI7FJ/5X9YSUaN9kENszlwIEfwLzPL87LVrgsjljkbI9iqjHPc5TGqFX7IIyRJNqEbJ2YhzPomVS2p81NqgS7fCFVkqc1MzYnvAqUcg33XJdqpiFiXAGcG2QaIVUdE9ktE+2mavJq2mZvD8q94d9EAQWybTfLLb8vfCgc6EazLrP8ZkPKaXaYcHDFdjC3PTlO6jBLN72Ji5TwFAnjI2q8sSMTHbSwiSH7VYbzMcpWR4K6GRw+E5/o5h45zbPUHhb5kK8YDbPBGn4ZFVW3HPgSYjWOTQXQsWrHnFBgt1oprqT5ZaH6nRtIs4+WrlnJa5T2GmcgWxHqGdOKo49Hq4l6dVFKZu0gGgZu5NT3PIU8Mwmi5lB+hF7R1MNLeClNRHYvnsvQIfTzrcOvi7uPBNxVAqvnHBZ9T4mfSMfZtSGYqUyZbqN0RNHy95ChRyQOGLTfa0HqDJ8MaCMHNzb2/eIsW8L7zo3b2oJ2UyU61q3lrJm/EcNsUNOGGC8o0LiENnzoN8t9ktbSHnUx7K80aUdNlKXbCW7AkT3xFuyDf8DXBVQPpJv4ezbK+hzdE1sFFQy1S8MhKYcB8bGqNnt+E0/6eHXCnKTJpbl9U8gG4I5tbvPTDVkA2nU4XG/Vc1PGv2I2n47WsX/QEKrv5G54rRC+tgPUE5bdvPYmMl7mYngXWgrKx3cyhAmaYiKFvRsWbsG6iTqSClZvHg6JJk6+BW9dOKKcJHGHe9NYNW1uJE4Vnh9Y4XyhO6jY4KArMLYlHQxrrR5Hng9jhovcQcZLCD7nYJHpMaxZo3kGAudGmFxjg1D4R3kK8hsI9pf76JCbmZu7NA33J78S/6cXsmMdCHgZpuqAtzNc5YPSeiB9oE5yOJxpMrnyjJGlGA68JU1mGUhVdRGuz5QJr+RbPn82MjIyqMlAIVUWnS7b9RnZ4E8ONLa0pAn1OrOmcxrtQ1DBpiJd5+TVvDbfSeBVhoe3I6GW52M2zQwhrNVFuAjxgEAUcXrMnXcfRkkOr0MnU9Ky6G0WPzi28BBrVJ80Ix1AXNy4QWw5GJxfMC0r6TcGplXnXUIaEDzOR64RiA3TzgRqS+Rxr1mpi6DV05K1ovO1FHQ0A9krtXQkx0DqDKKz1lV4HEnKSKRxoeVCNETjAv9zFAz8mRxL5qyKKbKOnN6PKZFqdNuFmBDYaFzSQpoI6UHuyIuH95KVoQ6JqAoVohGjJ0vwjYaqaPOkjpiXtOvD2aVVHg1DIf14fzbd1Yv0k5d6tCW4pE2k7CpRO5ZeKkB7tIrsWhrkUOkRM9/nsxuSt4wNv3JLsdkJtQtfmTcHo8nwz9oO7sYRo3mEVAwwqJ2h93APaF+qGkjSV63DPHtfUgsGhALMfWcAA3HG9Vu+wlUZSaZ9YqfCEeZcYo7Xx8GXoQsrZZAlg6QzcDIvsvJN8GZQuM0rJKx3vYYAW3xDzF0yjy5sgq1t9R9cQU8GZyCu4eiTqYDHxBBvCkWT2Rx3PUwuYVwlg4T7e4ZFR0EqLy7Ig0G1VazvH5RSAT2kJUg8D3qKhZq1rxULxYwvPDFfXQRwQ5A6h8e6Whd9E5xLXOVnxiEggEGrbhsPWNphEjWxUiNdGwoyU6zDQaiAYPmuwdVTp8YaUuDqaN95OmgCrxGbQCPQBnj3fUtyqvsz6EOagTjH7ZX8K3Fx6PCYknsEMB4LxyuQ7zc0o1HkuUYz2SzXoyRNzMVKNdlhwZhTlsntVRGWTCf5GZi8TFe0CUF3FcZQMQvBGf4MgVj1mXxMJlGT0qBLHGS4eY8cLS0tVy4vc2ilZnbmFzo8aMjNm5CtGL3VxpAHvXMCsYgKPqEUlNx0l7c9kPeL2MhG0JqdwROt3Z1XnFH2R6ybCcMrD9QEqR0VmyNnA4G9QZeTyzaP24YcvJjW1yzuT9dCu8lhyVSOrt1TuJGk3AzTNbQh4NKa5qXZtTeAE63MDeCtXyrbvX7BXQkeVe4lXXrsUq40DCNTJuuw8qlEMxmrRShoq7cOh5QtQZgRnoRhAMrOpyjt5g20vjk4KEwfBLIE+M4lyP5AjHlUg8NspRD0Xk5rKqCkmSbFm0z6jlLFKKxPsyhqmbX8CM6KXwxJcwO0sq1G60IxG7zVcZx5XQ8hcrpQgGJaUNVJfJp3IGa3rKxTL0C0ox9fTTkUb2fj4AcaMkTaTixg8qkoJxBwKJ7jiz3zCXSfUoGkRJe3IrxtMiOPBRq9PuvfTdwU7QknYwyeNnxB8H5BjhP9Yq0QD6GPYmzbYl8l16QBAbq23DMbxfCemqk1uSKjWlOz6sI8unI6DkgIifj2PiT8O6E0w5WF6gANk09jGXgWnG4NZZvR8Pd4gMgYCP4bGzt6tF7YjXjhzdlFbzWq9YGJ3dWTKVqp0jLqa74QRRuNvO3FdHxmNlvu6XMEtL7bStdO/WLKXjjqTZvV4zq4WBiAsnjQvBoHbJaFW8lsAO0V64dpz2bZ7X4QQfOuHdy7wTBsPJ7YF8Fd2bQ6jvdzhMUKMChmyTxWdxPEobZvcnHi4bXKHJj4sE0uRw1ZdwxN6J6dLHHxFCZbHHYJ0YG5ZlTwH8eokTRH6G5x1J8C7bHvqXqVNjY0H0K6xY1l2Aqk7P2nq4wdrJHeEFXUIxN3DChfsWOZwfcsPc6dgkJpKXE6uvjQm5GxlMzl8sh78U2YMi6SxUZu1qFQzkAp3yQcb6QqHJoDnqZgRWOGNEkWnT4h7qNWOIs5Q7v5xJ2vNXgMk0ZqNCn3t1q2UwS6xqwiZSUu4qRgt4k2K8vfQfzGfmUFlTCLzAjfg5PMRMqbNsxfqzDC0HtPqlrK9PcAHbNngJa6Fwtjm6HzfbUK08YK1s0NbJyZGpMu8LrUygbN6S4jvItgVHcLo4WbWkSnDpUgmljuTMyZxfBZwxePLnhoTq9GZmQNVxDIYzrYHeVDpVFRJ4o7TnT0P2VrLYdMzoSYpVk3Ng7ZTzFP2HjAk3Iq7oSdrpNHCdQJ3oJaiINcIx6aePJnNv4ozuB0uUV9yoYpVApGIVpdNBZkvDoZrqQKQgdJ6Kj4KdG0ocjWZ1lBMJjDVeSaHrJ7p19Pj8MlsH0Vyqy3j4u2uDT2aWQyIqvKfxDVaeYlZkzaAmh8sXKMgSYFz0FCzBqUcA3oTqfCJXmmmJ0E3fEKW8AIshDgdQYsoL9Y3MMzgpY7k8B8Mm4xcMKuvqfbThhsXNw3WRUxhnk6FxuVMFW2RiVAu8NaD3aqEDWqoIDMNdzhTt6uKvLqRIzpbI5HGUbpTExZ2D6jkq0pnTRX3tngPVMLSd8JsSM8NqTeyBJhbfs8KgbuEmnKdbQgE0RDjpRd8UwbGOoPn6j4iU3lgtzFDyyU0IW0JFc6TPzUtv5R2h4Pr7A6RvlZiuNmuFoZfpqsbxqoTvtupvWNw3l91GIsXQXYEYSgW2hyAxlqAnXKxlNmV8XXSqIphQHHJM6N2i5tv6dFXaRf7yZ5ed9r1A7ww5gHiOFmVfyqZR1KjlvPIl4tFxP1KUjdqRGMxf4bnaKpPvQc7RGz7BIUgvn0cHjCkslq9Mzu7WOTqAGRdKk75cO2sgvOW9ba4xpgLYz8JdUIx7d2tESVXb7ZYAmyZgtZYq8xPCH6OvOPoKlXgjSg2YyDZpVTjTGl4IrsUH7EUR2E0DLEaMHwe2wAYxW4cNyj0O1W5y0YHNJPg6XS7oBfeDyEnUqBTdN6aJUx9RMbcYBmbMrvPPa3EL3EjB1pN9yc7TlOyK6cCmGRKASqSi6gBaxMjZs8PvOWkT1N7GYvHDOqa6ZXMSFI6ALKq6xZzAP0vZVrsMnv9r7aSbgH6a8RMiS8NLLfHtBjmDmEXSKFJ2QxFj8XeYmKgD93MPQxV0ZTb8R3xLr3F8PaPPYvWbGJGbFSDhy2MxcBfkFvXDJzXEGWqQ1fwmELCv3vhCWwSkLYkqEwnb8MUrjEI2FbhYeCL3ExB9t0oITxrCOeDxfxJvW4kRzmlbRfZ8gM0o8jKY0c7hFgXsbqkq6Yqpqm5VY9JqYOZcyMq4tbBl2Ec4pjvF5T4tGDIh7Nx6ijHFq0tV5wO7Cg6Tlw2ZBTmK3dCgcPx9FODvl8hdEKXS6w2JrXc2vNe2T1WcCxJSKDXnSYXSMEfJ3ts2bDOH0ZKH9rkzyBsS8q1CnORFlsdNxwEzgG9r3ggKFxr9B5TmAYrh1hHbpmcVnDAmITtYXsx9B08YmQ79Kp0dzGRQGK6NHM8DQLQqt07MpfCe3eKf4AJLUzK9sLFPtGxC7bG7n7nCWvl7Tz0GVaGPx6mUVa5VRB8xFHNpnGlpuxWF2OgZ09Q6IYV1bTpMmsMEyzEF9P0iXN5LwiWahDoMhyuaG6TGAvvHIKhTnlpCsyNivDfTP2g1zVf8yfSjHr3GSAybXF1cSMKPV3QcLdWIUhlSOxEjk5hr3CkQo7SDsKwlIJx0a4KcMqlJNGM91kCwxYw4xQmCDWxqx1dELDJcaDL3GDhcHBZHL41azK6uB6s6Nl0nR4tlS0PmfHGqrvKrqS6E9wT2PZQxBXyK4Vr4iwyEMb52gDwUzzUt9qkMxhHNx8FHuB7G4i2QOYrC1qtN1YuLgGDF7v6rq0UixNW0DlB6CX5M8ByWmmVT6C9oUNSjQF1T5m3u7T2KEqm3xAAGcyIKQGWYHAT6hxy5UtqdOdj8f7EHj2uVzUxwKUVz5aEUuGELF1jR1ppSo2kJrsBjyQCS6HS4sXKT8M6U7KDKnL0v7aRbA0PyEiwICcDlrPsEnNbUJ2iIvoGiOc66cIgAa0GJqBLpAS9vGOmKZr8AtNkzA1afZ3rZxn2OOgSUykmYyfr4mQvpfbKdv8pAOtRoB2E6XGFAEDpCqpQR09WyBf5IqXPl8SbWm9GIl2iOn84S4RGbmcYj9uj5GRVNBFcIJTJDcG6yfVTg8OH6l4Yq0Wi2DTlV5Pu4vnFCDPwFvR7JwsuAOeG2kDe2TErv0Wgk0nnc5QkLZaC4Zd8pXmjdLT0BEBgrNMZ73LbGEy4XA02cKOb4hzBjtm7XbiWrfpNROG7kZ7vX5Gl0ghfGl1j1KaqYV6wzXYHFMT6ijOpEuOEn4oIrOz1kD2LTjwSNxm9E6ko1hm5fMQy0F7wSeGwSxBaGqxVRTmqqdUrvKJxB2zGm46tSIVJyfnC6Ht2w6YG3CP0W3r4XU3b6egWRt7t8KDgz4yJh6NGzh4f8JFPLthSP7sS8VH3xwMe8e7W8NTRnhF4rKNuTLN4K8kRhQmlTC7X4bv0GZn2tpFGrHtkKQAGbZBmNYEAUL8OQ3bO8dhdEEYBt38W5QxxEKRQ7hblDiRQ9rS1nDD4dHO3fHDbcmF89JLxdjDYHJuaMHmGRITMYv9SU9TP3R1gMDKiBCjFzqEcYC2hBt2oi6cUZwD1FtzSX2XMTkGlsfSZw8J7QUfxr9xhE1Cp8bWqAn4o3WvHb5bGHlIJ3rm7LiyRSbeXzIoR5qZJNMDiRSY5mBkybSRmkqJw40BnfwfwSrnK4wkwvFygN5kPa7p9FJ4lpk0hv9JqkK5jZNW63WZgz8ZjvlvKa2RUXwMqmEWkmm7OQwR97s2dkrxMRj28N5P5e5OP9oZqzMN8Mj6Oj9czg9ZlDTaZGuWeWrYlHVt7uzJQeqlHfQzqf2aa2CQn5nhXfiFfl6fbgRYQozW6p7KNDvSNSvRuhGjKCwd2RnMoT2BAs0qTN8AlD4bJGqbB7MBwTHvlWn2bg6W5jDmQ8pKSJhXsWONchLQgBiNcBkZFJWP2WkGZIQJlrcW7gqExCndzaG0Wk0XiJSPz6UqGYBGsP42XIXJeOMVCt2klyI5TKh2KxLJqsJ8czOV2aAq9wh3b1Iz7axxu6xebbfXDPi5YkQDTp4c1Z8xFULKPOUPNmoC9wKf2SeCDVQ9LQbDOktCwq3MjyM6RbtHHLDPU5wOdgavTCtO3EwLr3snqdbS4G8bxzfPwpTZnNaXH2FP6bQt7rWMqaY5MkMR19JZmIJkpGlQGW9i2FSNcRUiL86hY8uy3SdSSkmsnIuiBXyFRPEw2ruCyKqS7oUxJPa0uTmkuWJAMohozhWTXbL6F0aBSHp2Fc4sVbm2EMCpQCx1gEBiPQKHaWO3HFUjBrdnEUSj8YadqM6kdN0GS7EvdQDX6KlQbXp80lC4y7x1nvG23TdjgHzcBoTJ0hAzCNx8KGJsnxMRjO3MURgd6Di2Ovj4aNM1sGxjQ9k8yvJnGWB0pXi2RDmVjuP7BsRZW8Xqhs0HA3FBcRPzvfDEEJjQAvaPzKdFIVbqsgvKUb29z1kH8qG6dUHTQ3HU4ZVWHh6Zh3aGpAc7p3KyBVTajf1EUWh4XSdz5bAdQsIVx2J5NK4hYcw0FjNZKbRU0cgjiuYKoqOZMTCI9EWGSf3ZdPIQnzMIhTG6LMxv9xh5MNiEEyGDTmF8pz8fXNvDW15Pb6GU7m3RktQDAHK4jVAHkfXqnG9w1cBtoQQ0Q2vXm4jgOLZvw6HtMD0HuDvPHAKn3sZ4Kd9dWqBkLMT7AAxVjIQjPjcNb3SN1FmUlH5cKlxg6kVmpE6L5ZdCkpH4oHXJtJgVV2SnaCtQIn8XaAEJkV0nbN7Mft2nhk7fNg2bMHiEbZmE9M3VYkKNqrFUMtZxgVFu7hA5Z7fkVhgQbGdC5ZOcfrDv8FJGgmQMMS0vc5XG7sWvHcpCnUWqMYpZAmYBwL5yX3gAxTpH4J4bHU92jm3sTQ1kp7gjHq1DhnAgdzUgkxcK3ZckBN0Q2CcbKYLBqxTgJ3fz8ZqhF1K0Qdvmp5GGbEfHRs7K7FdNz2hZMUAYcbHrFCTCAlvUc5XWBIyVohsdFo59bN3mJQ7RKqP83pyXx9wF1mLyl8GPd0ySptcjGtSddahgt6qTFJsOEJ3U8HMfnKtxoh7zhWwuDv6X5Sxb0k92BKvKjyNrFnpGjMXcchwt2IXm6H3vMhgT0FE1fZdPlqXUPSl4ahbJsbUqhkjyU3dNH2e4RYyAkXd3UH6DAs4zZEcs4sdGpPmOoaDlq6LQlTQMFy63qN3KcFb7vvrqJ0hXQ2GaR9hkQbm2VhMyDgMbvGRdtlcCr7F4BxvVOP1OEx1ijSmF4r7TgZnQjfQ0fzdxmRPi2jyHsVvoTGGiVTDnaeLPv3DRYijf2aNEdobiiHEBOy6DPQsDnSzhGJWqd2Uty44Fpa6TU2eMGlzfHjy8W95YsBnxzuWDP7DVemlgSBWUkcKRmSSBCfLoMmmc1GvSqvqrzwjuDq5T1ZmkE1B6F8HqPgiUG7mcEGsdEUIW1K9GD3nNNJSfiZN1B0yGFeqq3cTjmxGZsTAlGU3glr0WDu4KEiHZDj5Q5gpPxzySWvGixjX0Z9eDk1SzJmy2Ssm0Tzj4Mv9KyEdZXsWf4pNqmO3DHgozWQDihSGzTz6j8vWA4zTBEfMrKwnCTxoZ8IEjiNhdKJ3xwmG4GgsqIqh6LqO6HRmTGMJpvY9kqwVbMNxnjFmA3QXcJzpZfXdBTJ2sRcUHhDoGbajiVlPZB9cyy0B6Cgd32dPfIXf8o3Ajv9M3ykTi3A5yjhVkK7v2PeEBcZrVg89BZFp6bk8kRVEnFuvsRIxO5mFvK7LGuOO2PQAOfvfb1Ia9m1x8eMSdzUqlJMj9OqVHOjuaW2N7B2gyRjDChIvsiOQDBmScQdEEvS0URwM73Zk8mPZsWfQsfNb5oHhRC2wxbUO8IcfyVl8ZCzq4yFSN6RXvwdRlw7CfkBsUYg7oWrhj5Fkwh18eyQ0vWEsQjKHJqEbDBpTrnoRUmcuFuXq4BkZXHNTRpwNe12yKTxWQ3VzbCAcLnaPpvxdmbCZZ17Pxjp8L3G8SCI5cRcPRXsb4A9rbaLzVM5fFD5d6AmLnPErh2NbfqhM4jERxL0MihIkXd7qMUTdMAv9DeHK6DCy0PLv8XbaoQbxZQfzAOEJaQ6fRLF8y9IQaV4Npl6A7XqLlqdV0AZMoHJuDkFyxD0rGiuAoAPNUUTzIkSIrd7uG3CgL8ozCuP8E7wmSm4DUFAzjqbCxb5EW9aSHXA41Dq6DdlMaSBOoxcw8wWyAAWsmvoy4X6TSHR4zNSjv5Up9A6BOG3h4x37DPwQBdS4ibAPsIakA3URPBt9oEmMO5fqyE6VPXzCP17KZpRjeTJYFJgWwi2G6GJDCa7zC9Wwuzqe4hNHj4Dm1IaI7A6AOUNq9JuGh6iyMg5dNNUtaRWqBnEu4vIYOVtpqXMtNk2VO4Ek6AqMa92WqhsC8T2GKOFbG6OgiB4Zo7NnjJPrVSn7NTb7sjCKdLkD9kcUuCcU5UcdRjiONdIXeZjtcYHF5CeTd7ZDqZKpJ8HDgcJEpj5Hq8FVZKiKO56QSyxN2c0AvdH6HhHx3T4bAI8UtWJNqOj3eWgCpAhO7Wl2oYIZP92eB8AOiVq3m8GFMJzEPFkx3Aj2KY6bDTuExYg6LXXe2xmjxqvuV3tqF4P6JJMkNXzeVKVASClZT8N2hfB1TNvJ7AXtAbHxhPXy8LKNqjqUQFmvyEScgX4pMWZKcoUZGCrQdfN1UXUCxqRpIuBxU6lOFYAa6rkaN4c3Q9dPnRNE1v9y8oMJIbqxuYvOrnP2RwZjbgWs7p8TCJ2DqaB5jqUgI3W8KGpYb1V7A1iSlShV1vLijPrrdoGbx1yM0P37zWGaiKPRHR96dI4eSzDrFmArn7AC8FLuGJZ63RArAqWnmD9a2CKqnTTgUiX2NFeRwsUTRz6TDGGz6SaFeT5EKyTPk6vKA3dd2DP5EmiVAqN65QVUOgA61fJBQG2hIs9wFXUJDmrxH3B3FqxYB0bnx24ViyBwH2YB2dxGN0UhmGHzSMA6FXzMQyHk1aQhFzWPg3bB3Ccz1nCfiTbPT2MBPz3K4iv5eDoL5Zzo6YuupJTdHwAtCnbMDWWAh7FcsjJJd3iU1fBMsmIa8ZvjeFGh7NNeJzrjdb7nRtxzDsxwnrbK1N2M8Og8BpGLtCS9U4uzUdcwQLb0sI8SjrPpuh5xuGOKkW5E6bRHjhHcjzXHETBKESwMzMhoVdp8SAqEZyBQyfU34aGrQNYhfnNXtM0JwyJiPsg1U8KRGvNK2Dw0oAa1MF6y4wemvJiqBnBbr2UvqFBYsS7PTuqTESd3RKSDz7ADzl4OmbVg3Rx6iUzsCDDrIdhIcJTr2HXrFpbvVnCIDdnsLLbrVtcWnmwDP4rFq7YZ5Jj4bIJAz63cbCpXzXFjc3fWyo5yGKqeCU7vjMrCJ7COcHaAA5JaX2Z2gJyijNt2BomA6ulmVzhXP5QNBkzuHoBfFYeh2XRKbuDvdUVYArfqGGDlJNWWEPY2LaBwFgEufScPzQ8dDhwTvzuzF84aZwNHvEftIn9QA8G9yPc4OvbKdnpAEzQhkbCjBqH76L2uRrhQ1yYRKhvUU9Xr2RYy31UOXWdmCfVX9z87SIgx97Df4wd49x6zKw4KDUWr9QdOJp8zWmWlWGTZkuhVNz5LJkoJtaBUBX64uZxkqeqJU2F4hW5b0DJsJLprDtnjA1MXEN5exzvZgf2EfWmrZtBuDVufb6oPLM2FJb2pe2oGDmrwkNo5QEkUL4NStMX29yhpIUEOWm8QQPuXnotd5GaUzcZU7jtMEc3vgi08sKdRKR3h1NYUhBvZDBeHFW9fJHvBi2Mc7vKGshkA5IHpEy7iDXaLAoIfU0Z5zF5iESeEXZbnbOEBaowmXbRk8k2ZIJi9Wbqi3SfcNIlGswCWP5ZWjoTz9VDDCFy2ZQ8xgtBrwvkPJkN1jnWTCvh6Vev6JSUqzDuq0H2Ts5x2uIe5Wz1cQUQKDiSLU3o3qXlkhhYwxlHyq7PxYtvFbgx8YU5PHFTBj0rVF2wHr3Km9WvjGGCxVgEESgBExXCF5X8ubEZJpuyjrM0lHYaYHIa4W2uxwOhc3BxhHhDrq5zC1L6xp0Vxdf6vfQtkDgnMZowtYmVySrVCgiOP7xVp06f56YVrmSYiqwqTUf9GE4E71DrYRhjMqRr0TlsO92UtZYMoEnTeICTvqgwSu5wPFrXJNeaiGtvjK0ABFQUp9pRcEMAcPYmpnlnQI4RtE95dBKwt5VDzSeT3IXtnUR0kcGoJrBmQ0gTfnDsmhfNlZ8nYEvlomQQhNZUBvXBeN2ASBYBYp8z6X04Kiri7GDz6GHqW9eVWSH9IS3o3v6CqS7q26vNYAo1aOkvk2DUsYEEVxiYUELWMNkQZfjfdRWGqpGQJUklkmlbXpHuLswRggqpC9lT7B5JWNlUJeZl1CjWl3M5a1mcHtCJSx7Zd5iymg1p9UbMqtcO2FGJ5MTUK9SS83xgKfpljTNcK1pHvJE1OhLH5VjFaP1Vz6sxtTmS8SAHAZqpiddOINjTrGs0BvhljNiR6cZRLGxtRfTOoRSNEkiFgNY7GizwuPjdlPCn6Dh6YBDqFdcHy3ZP7DgTxT8OQm1oRv9WP7NpRxNaJDcNB1Pw7LuLxXM7MOlK3NkDQtlfGpF32fxNAAqzh05dG7M9KnUoLbZJbnAQdgXWpNhRRMnS9TJWGVNnHZhzPMu0okkPgDz9hXV7JmI4ZQ6Q52mErZStSbKPw8yzv1ckPO4Y3ciV5dyw9NpQPNAanJ7kQDp4W9NBfqDWd8M4qNsAFVCyTGSa8SghwXnEaPYaxmk5UKChwEpbrmGOxo3dWm1RgA8jH3bgdJDn7ktQHVZAtKhsUdKwiwASfcDlIa3RB6hzZVUNC5EpJKQlMNYZ3S6wOGEfHhs4C2eKEBG0l8OvTUKDXm4njo2sZkFtsiTDLq8zHq48NFyGzbKZD2X3pGPTH6BDtpLT32jnwSPAEH9nrtcjXEsMKJEG2ZTy88pNUW7WTYFCklfwVK1f7CDsHh6YK0SHU4zz4hDQ6X6zgmECtAsg4zCZdKHnfs8ekvGNQD4eKhXJZWrTVMTLjSQKbm1MJxBfd7MskBUEs0JYjhXw7Uu0pQ4dT1gHI2ewbWIMOvM1y5uzqrDBfzyNqLEMJNafYmH6RTkVrM4iFg2V19yGxwMTVpSfdvuVS37p6tAqjiZqXH6FpRHeW73ye6ZpEFyeXOqmdjWq9hvJJL0mVU4Gn8N5YdbEhzuFFGvc36p2uC6QTAWuDaDuY3Cn3b9BmuJ7gN8IWHxqs2V6UrntQhPrvO8Gwhjxk8vTYe2rIc8b3FNlpIyKMCRI4gc6ziUP7o9OPOlF5NINgvm1LvrkE60vWlgnfiNKOFHJJ0pxtj4WhftBQzVmh2VS8JjwmJfHxM8kvI0xV92rAcH1rqLKFsZDwKN8Mmz9NEQ3CxRUc6eVhI6cV0b4QaZM0UL9yTIHfTuWJbhg6fhCeJD1MGPmVNg2SAAMcJOBbeCqXqOuQIJ5Gn0qdmfPJD0fAW9bEsfdLWaDqRrrZ6hQbZNL9J0eKybKDRUxvs6GhyR2tP1JT8ZM5P8jNtIDtsaK5aBrLPRGRqDE0G2Zl1GdjkeDOpZ65YT3VkbCzYnMoeLaXW9j8IxbGiHj7eb6hzP2SYTDlaTcWXLkojdRORBxEfAFiAz3YEuEAwKXrGXpqDHh1YcTk0eArLx04vW5D5MrAN6yC2dGF5lFGvVE8tAsoVEq0vrexbXpPK1CjGbrQTx6KzSDbdaSyZPk0XIJOXqDPDbPxu9Sd1lfk66eJpRJsVuk8FqE8z5Wj5R5STShuIgBA2V64Sii4MzyuVAeXEl4GyqZBkMPfy3FrqkGfwyGZNDNhHr9KgLBpJ4spjD3G3uwkFjXiQpm6xIQSaP0SEEi6xvDXuuNqRlIpCmhcSsHbd4o9QPaWnRF54Ahk2Jlim4QaEi4DsxVCfiW9cY2Kq6cj8gE7DJeHiW7PeX1qHxqUvKHpAHsEMQ1yYWujOhdOZ0BnmtZeX9lX1SXzRjTK54DBXNhxcSNFF7VLUvHYbSJCVQGLVSHNuS4p0jCJuCqPJxfxpJnLL8ExWoq9I73SkJKbJfxYmFYjr4iMAJ8C6q1AcBW2vI4BRMT54x1bbTwcxvq6vtcWRebWKUMIy8fvC5G4AuWjQXZsMaIzQL1D3vnR9y4ZmKXoQWzdhS8UcTjFO0q8oLKhUL0NjAaPXIr9knsl7fhgbaY6iIhIQXAAdt9ZAQ7W5HupyW8r9UPzn7jzKp2H5PGhgi9t3zTv7ZhZHfdPd9lB2AwTW3JITKljY8tlSYHsU6rfSc7Wyp9IXmaVVfDMBW4e7c1lLwVF6Ch3SmhOOapmBGfkdOrMJqqbLzDN5xXYpzMJjs7g7ofwtaGvGKeZBJMoFrSB4yXqFH9IAgbtjH1tSkZpc98RvMhw8TM7gEe9A0ccZLgfgs6vAiuTlmdOnZdM7kuyOdmaRLGFzLUNAaFtWgytVhIyAJAffXc3N2JPFBJ99SNeJBBLWwpwNnjfCq0M71O5aUW9hqNUcLwFtxrjtvZWNkmYmcZtNiOhBxQk3ufw6iGvWXWpBnjyFgCwiVE6L8TV3XTpvgd8mjhwb2mwhNSGQsMtN0dSTpB5AKqZyBZqhNd2fMSmovX8TMRChWSeyUQm77IelE1gPqFcLG6UnjQ2TIF4EGdGWmAHa1j2oUlvhW1nH6UlvnfxLmTc2lHYyfFnvDYeNvHCoRMHlkhbOe7jqi8FW1QPh5EjGJnPcyf5gyL28pTbSrXTEozxKIT2I6XgY7w5F1L5yMUUzEAP0aZaEhnh7g9ZfBqNuPMQpLA2xv9YIyFKaUKBTT3EhDO7JQzA1xc3qfRyBQ9rn4yI1MdX8aBzLsDWSUB0FPyjhL67o7cXsG9PfaUSxQxdu1fVL5nEq8tA5IWLOzR9uCg9ZRH7LsyLv9TS1T8QIBhs1X4xJOUOS9HNrGjXrx2Fz5m8PLnFRvGPHujIwf5oc0ET1I1fAAFBi3WPw0cU1yWBTbRS1dr3tLsldYYhlEEDf9TJ0G5CPQr3VHkT6d3ml44ps5oBjcMz5PPSnzJ9Rrqe4hOrBHUsmtX1d9yfsRbDLNiD6cDqJxZCnfzUj91gfvmKSy0CoTdeeRtkOgMQV1TBvpWXmd8p07SBgwSpXyqXrKCV9L0o6F2XU2bDZPv6dTrgVHPtihDrjJTrBhfp3L1Ca6wzKBjyTVTPbwpP7zONlKJEW0HXe98X6KmxzVIKUPZqlptiJ1LoQsvtBYnxzKANlHCb8O2HxXbw3TjTQJPjUBq8Bh0ASIXUELMbwXmhDpU2bSaLkE9YZzbKxpuOlV04TrWdUeXTbmo9Pt4DYozLZwIDZLuZwN0d3nhW6NEIi7r3SNV7UUQBoZ5KHk2Qv0nEnLUcI2J6Vr3LhHcS1v8Bd4KnQRk5dmz5eQtQXjbkEGjjeeSMiaClytpVvb0cOiKBI6JEVuDAtKrcHHEe4RfEBgY4W2oGCTJUyJnqyO4lUMwajg4ScfHrVZ3XKC5KuaKaU1wNtG7J6eJx7hmDnZRZiGWlwSbUXNkzpGNpibYMgPbrRp8oumTKbZmaINXnPqzBoUK9r7BEBs3JwfrTxmdw9QD4vhT9kaEg4VItA5yoUvUcvXNbPUthMr2Ic9EeEiVqYOBPPJDdzV7yETjIGKf2ePqK1QsN4nMu6mKLJwWSdSfwJtSxfVn9H5w9HaNzwsWwBQgBkyqFsLbmeNkJpsKfB3nhlT4Dwvp9M3rSbkB1GvLtMnEBIXAQh8XnQbXwnCHuD6uiDHhPkxMbFBGbR4WtwzNKRHrBg1d21IcKxjUMWeZ03TbsPGZcSXuJnxPqzLc7KUk7E0pkp1sMAGUlmjzC9kDHGYxZlJcmJhJHXnTvkRFFhrGeXXzg8FRvmhOwhL7Tz2AXWmF1i3VwjtyuE6I6OhsJVJ9zXPo4OKAKVrrYE3vcYKWYRaB3ZPkcRCq2E1HdGsF0cbwaVUmYI98rIwhOI5uhPc1WZXSwM4HYN1eyVUI7v2BQqnx1uMNDgftomFiGsDS8t1YUeYLqKlY2zzZWmdV9ozILnwNEa40tVnNu7hKUq2oZXvZAh4gswhnkafGETYyHyRmSFIH9MVmJVcOIbbEZY8RQXC1gJgmJ93mC5PrDg5Fxjdpzva5mVtD1VkQ3HUETdRTPzVWSpC1XoGoRkY8Nb7Bs39h7JoXEuadlV1R9LUYCtUk8Sg4CJMnUgHh2BPqfLiXQtiSYi05BG3X2VBa7oCTXvqPhFJ2DsNwpB8OJkkLSdFUMwcgRkaaj6yJITl4p2ZWIBgG6BYrZlJ0wHHLOXt2bPIqnrt9nAjTo0J8GUSajNLubSQJWmYTd1tYYsmsXw0RO2uxBhJBuPDmOSsfLamSPfVX1wYzgjt3RQPfQk8lFMLa4xRmDBtmCgYkmNpj6M7pyv2eFmHFR8aKMh6Qc6TJtwlaiEDqCiExdkPtWUABMZc8VYbEoQnqL6trPLdAbhTNnkW57oJCkrNthddTZaxh8idf0nwRAgnrLzcHpEF4YuszqCjUv4sZBTkmAAo6aKaE9TAKm53tSaLjEo9i1bz7NQwzXqtV7u8RZOmtKuQLZ9Rbl5y5uQaa6qAGJpLWVMvUOubXyN5C8cl5ddPGsCF0x5ZxF5z9mkjcEJlDsJeV6fr2sJbqQ3wiXqSkeOMEkGZW8Mlv2r6e7dVjM3xSTfOw1lnQktrwxwYnbrgsZzC2fwjJXhTK6vaMbl5xPSdS7i6ExH4w2kZKyIZzLrXf3qVGmR3QYdQz1EvtYAKGPjP57QiSvmLfNvSdDSOFpTOVqhHrINWqGHwLGLuMlLxKZvuAAH1uNn8d1qT6i5eFWKlK5iDOT6PDw8VgsnAt4KRvi1ZaFSBHz3D4fUFuZArC1NeeCRH2Z9LUx4zV9tUGIc9kGK0v2uH1bTlyC0aOzOAYjXr6qx3MZBgqTKajG8R9KVPLYAqfq5YBAAT7RBKHTrT9P1eohJOWMkrRprm8Bu69UQBzrPJXIWzhy2w5DfJK0z0fj6LqBhmA0ApOJ71TPT3l6h8M3mBVHRVtm5XqCpbYoGfD4NGqWPpHvOrbGS6JVmxkfkuFDT0U4TaXcq0pPOj5kmfY5KFb0oGHymqCP3sYbAmG8O6wmc0BUOr63f9qfzaXTMK8VvfOK0MLWHGzvWo0GE6PB9cuLMFTXOl6wcBrc6ehFzcXkD7pGTRyMwB5x0RS1wRoY4E0XLHUB21ZQ0CQ8ydzHDRNcgYFvxsnXhOPfEUjM0lCmCUsyXdcA6LZt5mMhhfbeM2yydXPO2RkAx8s0Zl8WMEbKAI1TbAu9i5JLsXGINeLljpvgJhRSsjMNqOmfgjpVFTmZizAmK6zrpwCBVrVZfhTaFb3HqgoaifFCSr8lHF8ZgbqNrVd9Zg0pbD7GDnP9L2A3I8Jx2xIvZzt81i1NMpj4EVjMUu4KRWfQVyJuz5ULk1c6Q0NrUGlL2EWqmSW7vD6dtXeZqaKV8s2LHV2fjmGDT9GcRTaK6fDgsRuUeqBTBTizvuKhKOPXHQx32xJ7fB1L2JbVJ2OYb4IbntukdTUdULL5jLbbJ6bfPAEKW4WEjGkEgKjmGM1MKdhZ82nj9ntMSXcFDtbrBxVzqa4g7UjQKuSGPJwDZPX1pXtUybnKOHlJaV5OPfj8HG26o1RP1iSmh9nSn2MpJNAkMkWSlLDgXi3qyKgxPhf5vyBXmbFRAmGs0bgmF9GcSwiH4NPEDvzLcQQlXkrWtaHgYfqWk2oQrJBpMQRS1kq5UYKgpdVcC3z2wxA26t8n0ZpGRmEgAqdvGHpQVqyVAuRmIpYB7LyoyUFgRMVbjk2YbMrlGj8sQo9vvWQQhVhhJZJ74p8v1IkWb7nMR6ecxwWffFpA9oNLzvCuuk7NXfmSmRDaWeqExn2jnyzOz9M9SifiUD7hF6gpZxsyK8N8wXPmRtiGrDsvjU5LzkHnXtvsaVOEpfXVpAx7mk1ds7A4sRh5ZLoGzd5ytlpgUxZ6aRL5gZpTpz4aMcHXh2N2bcsBq2BmCwD9rJbSIO0Y4hWCWWYHB8DQSVgPqfNBa8s6j8iS2nw1Vg6GZCa4Gt8LTsGjyHRCeEs45PCXXXd0NvyVfVFuRHCbMc3Bs1eeOpsChIdjKGkZ7cnbOrYbcEEEHEEzWXxOb1nJwhaV62HcbUhGRZuHN1HLhPXXZ3AjSPl6N6DEBvJ1Dk2rW7eDBZgv6FEEckl0bGDZLYUUb0bY4G6hLyrZ6DlPxVyqD1LD9PHfpIZUZv8WmRVoXO8LJ05xkdMXk4S7TjtsjNl5BM8U0Ww4r6nKEmP0xb5MO6XXB8o1FxfBbcWQ1zrQpClnjsKdAGMX1Ul4Vwe9AP5jAqFbPbxdrsy69rNPbUqVgDbY6xV9tAzbyX5WERRm0PZR1R5sNa0pETwjYFsGk0ZrZ1Kn4TFwhIf1R4blnS3JpTE3Y9AawgLXzOS6b29lGmCoSn3f1EfZd01VkjoSe4ISvE4DmQrmFzz3S0TpSn3gQTNjHsTuuBqsBkNv87GVdwoATGc1bEdUsEnOuvp3ZsBgZsSWxOcJGdZTCQ9wM5Ql7BTrvY7QMYT6fgNvpsY0H0wj2Y7VPlKefqsYyKovpuBvlSbs1ir5KO2mS01CrPeHNwIuAr6FYVs7ntINvdQnCYD6o1lY40jMJcVSoXH5W4ARGFOPjHXkXRCxwKNQwimMqNJaRXn2yA4OSc3TcbprzIEJLINeXtZ2fkffNRYRmT0tKixdu9Us3cLFi4bdKNOWYjp7LOFcJzJMmUHu6vVHOuSURgVDgYvwjmSBNvdNp7Y3oLsxNIw9EjRbdPKKIKm9vnMjO99x7oe6hOzM5EFdELLH4xODTcjFnHJB4w29ypqg7JN0mHwL5fbYgH9wTGaklRGsGMn5U6aXRSX0GlwlUwS4aEWvKTXTu4oBqPHKc56tnvmCzzpFaZIeykjs4kbNXjzS0fOfgmX89CP6zxDthfYL5sdSvtw5UZFO1ypgLrBUfn9Eq0F7PqnAPaDHsF4LGGtR6FUGImDKvyUXvDiw4PNfO0u9xsc1gDDoPoNnAGUHrIWwJyu4XfY6JI3HN2pRRW1CpeQKdl6YgcBDl9Fle2EwmHO3gcBDGLB1WBf0WVXaGR27TJx0qyYoHn9xOCQoN9AVhiR0Rk9SPEbH4dCYqBfaqlVDCuCDqbqS1TJ5ONnzzNs12QgRDQjqJJfNdjEvIEMSHDm9wUjhbOtM9TJF6vdaSl2IDFhwsbpdEwfeMPO0FMV6eYaSO3Uhbeu9Bx2ez9CUjG2YOt1izZMK3ZMrumPk5O8LbvArUp1BqX62hrTBDqjqLT6ETNVa0f5JL0aqC4ZXzvkGtAEt3xuwIpz7OfKk2g5ZugTZMnKyAdlntOgI5r7qUPlYbh0xd2b6G9fqzMoWDx0F8rcdcNdS1e0RPTWA1gQPmSG6JJGcIAJALaoFJWhXj9XPqy4DdYnh2FbDm0uKL4N0y0bdZAhQVeRJS7GhF68xqkjlkGt6Jbw88n8XWxLZ2Q3H9u4V5r7csLq0VMDtLL8DDBc7T7XFbWvlk4FOU0GdwD38DwWfn1jnWmkHk2rg1Ggvd6UcaLz5GiMp7B1hVqxOWkapMmbmsMVDFXtLyZhh8FhCqCFBCIBg55NNHh9tiRSwOydi8RU8IwhrRRGBl3DJzqbCEu1WaGtGz9tUKjXqP4K5gI7KTOrdxGbBwVaIW5S2TRQP68S2nMkKzn6QEGLjIkpgnSVUg5TjbvZEUqeJgdx66dwJzyz6TtQ7h5ZMLBtU7kpz5wfkdHuwiE5RPiWvb3ypmRIhb4rkuT5uhIJXgu09tJZg6m8J8UvGjlFLGiPmO8M0J0bx9HTmB4mgUYEuuUbC7KeIKKoVORHr8b84BPZfLc1jXR8l4SdRWD9BQ9oJ3TtgXYlNdtLtbrw8x7kdPxQEOwKkz2D0Wuw7ocNtCpzxD8ELhoqfFzhb3TxmdP9aeemqYIQmP6SfiK49aAvLsMtdGSbnIhPx6ZMH5ySnUrr2Uw5gUBi5R4Dc7I0ufjtFcphmNhALQMPGuS9HWI37w0G8eICj7Z3sdfOHS5NOSMqXTfKeIgGOaYm6sWRQpWfuFPzDQOsRSXl4T1D62iemjSDDNINwyxkePeHI4ySYiS27WTOC0S4EqzF0OGq9DuybTVeUK3RCwpkg4dGJpMvIwyz1SW1jMjmKHOQ1LeVqaTyVKOi7ZHmU2GIyRYz3SZuIy02H5lbsUAJ68iNkwxB3pP2UUuijHWsNWHXL7X1P2dwQVtEDKmWi8uTHM9rV1FqYwTqXyRLoLxs0Lq2yAvuvzzAu2m8x6LyqFU4gm5BOTzHVHqwLpNMKgR2GmuAyzuUmeJN9CJ5Ej0cvHqcJGG7xnKSAtfeBGjt2prxl6mjQVPZ02V1YUvJaiwjs8EAuVkNfjKA4pmVUKVfURUkuhsK3Zlab3kPNEoNtsp2TVAbkJ3SM2wwNm69w8eE7UUwVxZYoMvq8AhkkrbZEBJjiyxWBA1YWZsVeE9UJg54TtONS1olQdwcvDGumtxoC8FIzaQMsILLvRrnvb3a7PSiDqW7yVNjVLlHkoUdxIYVVBwbLOuxgWyNMX5xdUG41UOZaiNmjHoi05xL8WG7ByTDM2T59OJOhEAEfuKVTFz2fpOtVyEGiIeY3yKWsGOnEGdTFZakKHsnwj5wQ9zUPX2nVgLJzBqBsvxdoG5wl0fHTl6GmHpLiEdjFDo71tWdH0kMCdeo0PfMqwTAmGgGgQCbiMvzkEdpDutZgwnQTU4GyGMS4bfSnP7tVkUStXJXNxXqm7JLcC8Wo7kpLvxxQjj3jO9tUl1tbvGtLFdcLRqb2RGbQgLEMakDj05p8VQ8B9RvHQshMeTG9uRrTMPBrmTDsnAsoPEiC9aGhOYMWATCcnxcOKp2Ie3FMrSMIFUu3Q6pVpd2d6sj2lswKa4lE1u4TBOyLwaAVKNBZO3gKRi7SJNhkFlvJ2KfN1Zp1Jq8CEfuuRZ56FGEWEJbhJRMnCC6U6r3fPtcAE6zHpCNwvQVqhG1KqSFfMbpJ41uKP0IIj0Vxp5CZyZbKNixWvPXHzEcdnXbNqUAfkRdF5d81xIBiRHa3ONZDXW3zBkuLpBYEpbAfBB4LaVoMvaZqRzhqn1ey0axAhBJEEbBsnpMKKYwOiP2Q9VS97mpNbs

Qwo9MU8wqTnApxlbcr1Oc1Cc7iB1qhFE0rdKnvyfM6U+xwe1ZpJO5SFay+TOOaoSQeWx4x+FdGQBH
msm+5VsDNauV0lYZwviW/NuCq/e+tcDc3ss7kPmuz121kurxhg4Ga5u70loRnYa9nDUY8t+ppTd22ZCx5
5AqQIc4p23YSMd6fGMmum50pIPlJHT9aFjMZ6VdjTCZNVJ5QGI49KfNpqVZI09NvDFKozXrnhO5E0A5
7f5/z/AJPh1vL+9HPevX/ArF7cZPb/AD/n/J8vGxWjOeqtTsrlsGiAbjx2pswYuB1q3bx4XpXnvRHGTKMDoK
f+FGKXArPUDmtQtzkkDvVOBzEfpXR3VuHUkVjT2xVjgVo4qSui07Ev2guo57VA8Jkye2KYquOK1LaAtH
8wqFo9St2cfdWA+15K9f8AGsvWdOBgJVO3pXd3FkGnBI6HiorvTEngIAGcV6FKvysVOVrnhN5bPHMQ
V71HEmD0rudd0IxuxCfjiuUmtmiJGK9SElJXR2QkmV3nCJjocVmTFpDxUtyW3lcGlt7Z5XChc59qG7PUJ
yXUghDLIOK9e8AzHysH/PT/AD/nni7Xw1M8IkAHTODXa+ErY2eVII9c1wYuUZx0OeU/eVzuZJNrg1agm
BGKzZJA4FOik29681x0MbG0DkZFLn3H51Wgl3DNWcj1rOwrDTyOlV5rZWGelSRShwKk49KabWwbG
Y1mynIAqeIlBgirfGOlV53CdelNu+4yOUBxkHkVWcsopv2kGSpXKOvPeiLS0YWe6MHUohNkFa5K+0bc
GIX9K717YOT3pP7LVxgjrXfRr8iKjJo8buNBkecgITz6VtaRoHlEO6fnXpH/AAj8CfMUBPuKr3FgqDCLirq4
rmVol8/cxYEC4UKOK2LSBEG4LjPpVeKzbzOnf0rYityYsAVwRupEt6lYyc4BqQMdvBpksRj521Grc4rTW2
okaFvOV/wq4L046mskK23l4qIyyA4yaxnF390DRsZmZRWqnK1j6UPkGccd6214FTpYl9xG4XGKzb6UB
TWhIQFNYGozjnmmtNRpFUzENkGnfa2A55qrCC7VNOhEf9aIxT3KSTLdvdo7YrbtyjJxjNcRHKUm4rp9
NmyoFZxunYRsFQ1Uby3UKWGMDmr6nK5xTZI1lUq3cVpF2ZCdjGtLczEsQMZrVjgWMfhTobZIFwgwPp
UhGaV1smF9DJv0XGRWPuXzMGtjUBhSP61zkjMklXJNotG1FtZcD0pjw5bNVbW4461d8xTzxUxnbRlF2
wt9kYJrR6DgU2JQEGBT6HuZMp3RO3vXOXxO/wBq6e5UbPwrnr1V3HgdapLQpENkBxnip7xQEODVe
H5elLO7FTk0oys7GtkZW0+f0OM10mlLgCsWJQ0oyO9dJp6KMYFJLqZmsn3BT/emj7lOFSZid8minHpS
etILlK6i3KT1rnb20IJIBrrX+5WXdxrk8VtB9CkzII3Rt3qX7U44B4q9NEm48VU8lPSlKmrI3P/Z"}<1C><0
D>

Glycohemoglobin test result report:

{"Type":"SampleResultInfo","SampleID":"20150709111338","TestItemType":"BL","Remark":" bacterial infection","AnalyzeTime":"20200511161940","InstrumentName":"H50","AnalyzeMode":"STANDARD","RackNo":"1","TubeNo":"2","IsValidated":"NotValidated"}

{"Type":"ReportParameters","HbA1c_NGSP":"0.6","HbA1c_NGSP_Flags":"L","HbA1c_MonoS":"0.6","HbA1c_MonoS_Flags":"L","HbA1c_IFCC":"2","HbA1c_IFCC_Flags":"L","HbF":"2.1","HbA1":"1.4"}

{"Type":"ResearchParameters","eAG":"4.2"}

{"Type":"ChromatoGraph","Data":"Chromatogram data, bitmap encoded using Base64"}

{"Type":"ChromatoPeak","Total Area":"0.00","A1a RTime":"1.0","A1a Area":"2.00","A1a Area Percent":"3.0","A1b RTime":"4.0","A1b Area":"5.00","A1b Area Percent":"6.0","F RTime":"7.0","F Area":"8.00","F Area Percent":"9.0","LA1c RTime":"10.0","LA1c Area":"11.00","LA1c Area Percent":"12.0","SA1c RTime":"13.0","SA1c Area":"14.00","SA1c Area Percent":"15.0","A0 RTime":"16.0","A0 Area":"17.00","A0 Area Percent":"18.0","P00 RTime":"19.0","P00 Area":"20.00","P00 Area PER":"21.0"}

Table 16 Description of fields in the sample result message

Sample information fields			
Field/Delimiter Name	**Mandatory or not?**	**Type**	**Value**

Type	Yes	String	Type is always set to "SampleResultInfo" for a sample information field in a result□ message.
SampleID	Yes	String	Sample ID
TestItemType	Yes	String	See Table 11 Values of TestItemType.
Remark	No	String	Comments.
SuggestRecheck	No	String	Re-exam is recommended "T" indicates that re-exam is recommended.
AnalyzeTime	Yes	String	Sample analysis time in the format of "YYYYMMDDhhmmss"
Instrument Name	No	String	Name of the instrument
CountChannel	No	String	Count channel. See Table 17
AnalyzeMode	No	String	Sample count mode It consists of multiple count mode groups, which are separated by "+". For details about the count mode groups, see Table 13. E.g. If routine blood tests, including CBC, DIFF, CRP, and SMST, must be performed on samples, the mode is set to "CBC+DIFF+CRP+SMST".
RackNo	No	String	Tube rack number. It may be a numeric string of the rack number, or "??".
TubeNo	No	String	Tube number.
IsValidated	No	String	Whether the result is validated. Values: “Validated”- results are validated “NotValidated”-results are not validated
Tester	Yes	String	Tester
Auditer	No	String	Person validating the results.
AuditTime	No	String	Validating time in the format of "YYYYMMDDhhmmss"
AutoAuditResult	No	String	Results of auto validation. Values: “Auto Validation OK”- results passed auto validation “Review”- results are to be manually reviewed “Microscopic”- sample examined under microscope “Re-exam”- samples re-examined “Microscopic + Re-exam”-sample examined under microscope and re-examined

AutoAudit Messages	No	String array	Messages are automatically audited. Each element corresponds to a message.
LisTestID	No	String	LIS internal testing ID
SAACount Channel	No	String	See Table 33
Priority	No	String	Marks for emergeny samples, indicating sample priority: S or s: STAT A or a: ASAP R or r: Routine
Report parameter fields (contain multiple parameter fields. The number of parameters is variable. In addition, when the QC result is used as a normal sample for communication, parameters will be filled in the report parameter fields.)			
Field/Delimiter Name	**Mandatory or not?**	**Type**	**Value**
Type	Yes	String	It is always set to "ReportParameters" for a report parameter field.
Parameter result (parameter name. For details, see Table 18 Parameter names)	Yes	String	String of the parameter result
Parameter flag (The value is "Parameter_Flag")	No	String	Parameter flag. It may contain multiple flags. For details about the flags, see Table 19 Parameter flags.
RUO parameter fields (contain multiple parameter fields. The number of parameters is variable. In addition, in case that QC result is transmitted in the format of sample results, there will be no “other parameter” field in the message.)			
Field/Delimiter Name	**Mandatory or not?**	**Type**	**Value**
Type	Yes	String	It is always set to "ResearchParameters" for a RUO parameter field.
Parameter result (parameter name. For	Yes	String	String of the parameter result

details, see Table 18 Parameter names)			
Parameter flag (The value is "Parameter_Flag")	No	String	Parameter flag. It may contain multiple flags. For details about the flags, see Table 19 Parameter flags.
Other parameter fields (contain multiple parameter fields. The number of parameters is variable. In addition, in case that QC result is transmitted in the format of sample results, there will be no “other parameter” field in the message.)			
Field/Delimiter Name	**Mandatory or not?**	**Type**	**Value**
Type	Yes	String	It is always set to "OtherParameters" for other parameter field.
Parameter result (parameter name. For details, see Table 18 Parameter names)	Yes	String	String of the parameter result
Parameter flag (The value is "Parameter_Flag")	No	String	Parameter flag. It may contain multiple flags. For details about the flags, see Table 19 Parameter flags.
Flag messages (optional. If there is no flag, this field is not contained.)			
Field/Delimiter Name	**Mandatory or not?**	**Type**	**Value**
Type	Yes	String	It is always set to "Alerts" for the flag field.
AlertValues	Yes	String array	The element is flag messages See Table 20 Alerts for values.
Histogram field (Each histogram corresponds to one field, and one field may have zero or multiple histograms.)			
Field/Delimiter Name	**Mandatory or not?**	**Type**	**Value**

Type	Yes	String	It is always set to "Histo" for a histogram field.
SubType	Yes	String	**Histogram subtype See Table 21 Histogram subtypes for values.**
Data	Yes	String	Graphical data encoded using Base64. For details about the format, see the communication configuration.
Scatter diagram field (Each scatter diagram corresponds to one field, and one field may have zero or multiple scatter diagrams.)			
Field/Delimiter Name	**Mandatory or not?**	**Type**	**Value**
Type	Yes	String	It is always set to "Scatter" for a scatter diagram field.
SubType	Yes	String	Scattergram subtype See Table 22 Scattergram subtypes for values.
Data	Yes	String	Graphical data encoded using Base64. For details about the format, see the communication configuration.
Chromatogram fields			
Field/Delimiter Name	**Mandatory or not?**	**Type**	**Value**
Type	Yes	String	It is always set to " ChromatoGraph " for a chromatogram field.
Data	Yes	String	Graphical data encoded using Base64. For details about the format, see the communication configuration.
Chromatogram peak fields			
Field/Delimiter Name	**Mandatory or not?**	**Type**	**Value**
Type	Yes	String	It is always set to " ChromatoPeak" for a chromatogram field.
Chromatogram peak result (parameter name. For details, see Table 18 Parameter names)	Yes	String	String of the chromatogram peak result
WBC graph message fields (for Hema Morphology Analyzer)			
Field/Delimiter	**Mandatory or**	**Type**	**Value**

Name	not?		
Type	Yes	String	Fixed: “HemaScanningWbcGraph
CellCategoryType	Yes	String	The cell types on the WBC graph (for Hema Morphology Analyzer). See Appendix C, Table 31.
GraphNo	Yes	String	Hema Morphology Analyzer WBC graph No.
Data	Yes	String	Hema Morphology Analyzer WBC graph data encoded using Base64

Table 17 Count channel

Contents	Meaning
CRP1	CRP Count channel 1
CRP2	CRP Count channel 2
CRP3	CRP Count channel 3
CPR4	CRP Count channel 4

Table 18 Parameter names

Parameter names	Parameter flags
WBC	WBC_Flags
Bas#	Bas#_Flags
Bas%	Bas%_Flags
Neu#	Neu#_Flags
Neu%	Neu%_Flags
Eos#	Eos#_Flags
Eos%	Eos%_Flags
Lym#	Lym#_Flags
Lym%	Lym%_Flags
Mon#	Mon#_Flags
Mon%	Mon%_Flags
RET%	RET%_Flags
RET#	RET#_Flags
IRF	IRF_Flags
LFR	LFR_Flags
MFR	MFR_Flags
HFR	HFR_Flags
RBC	RBC_Flags
HGB	HGB_Flags
MCV	MCV_Flags
MCH	MCH_Flags

Parameter names	Parameter flags
MCHC	MCHC_Flags
RDW-CV	RDW-CV_Flags
RDW-SD	RDW-SD_Flags
HCT	HCT_Flags
NRBC#	NRBC#_Flags
NRBC%	NRBC%_Flags
PLT	PLT_Flags
MPV	MPV_Flags
PDW	PDW_Flags
PCT	PCT_Flags
P-LCR	P-LCR_Flags
P-LCC	P-LCC_Flags
PLT-I	PLT-I_Flags
WBC-D	WBC-D_Flags
IMG#	IMG#_Flags
IMG%	IMG%_Flags
HFC#	HFC#_Flags
HFC%	HFC%_Flags
WBC-B	WBC-B_Flags
WBC-R	WBC-B_Flags
RBC-O	RBC-O_Flags
PLT-O	PLT-O_Flags
WBC-N	WBC-N_Flags
PDW-SD	PDW-SD_Flags
InR#	InR#_Flags
InRPerMilli (I.e., InR‰)	InRPerMilli_Flags
WBC-BF	WBC-BF_Flags
RBC-BF	RBC-BF_Flags
MN#	MN#_Flags
PMN#	PMN#_Flags
MN%	MN%_Flags
PMN%	PMN%_Flags
TC-BF#	TC-BF#_Flags
Eos-BF#	Eos-BF#_Flags

Parameter names	Parameter flags
Eos-BF%	Eos-BF%_Flags
HF-BF#	HF-BF#_Flags
HF-BF%	HF-BF%_Flags
RBC-BF(R)	RBC-BF(R)_Flags
IPF	IPF_Flags
Micro#	Micro#_Flags
Micro%	Micro%_Flags
Macro#	Macro#_Flags
Macro%	Macro%_Flags
MRV	MRV_Flags
Neu-BF#	Neu-BF#_Flags
Neu-BF%	Neu-BF%_Flags
RHE	RHE_Flags
Seg%	Seg%_Flags
Band%	Band%_Flags
ALY%	ALY%_Flags
Pla-Aly%	Pla-Aly%_Flags
Mon-Aly%	Mon-Aly%_Flags
Imm-Aly%	Imm-Aly%_Flags
Other-Aly%	Other-Aly%_Flags
Meta%	Meta%_Flags
Myelo%	Myelo%_Flags
Pro-Mye%	Pro-Mye%_Flags
Imm-Eos%	Imm-Eos%_Flags
Imm-Bas%	Imm-Bas%_Flags
Pro-Lym%	Pro-Lym%_Flags
Pro-Mon%	Pro-Mon%_Flags
Blast%	Blast%_Flags
Mye-Blast%	Mye-Blast%_Flags
Mon-blast%	Mon-blast%_Flags
Lym-blast%	Lym-blast%_Flags
IMG/Blast%	IMG/Blast%_Flags
Plsm-cell%	Plsm-cell%_Flags
FR-CRP	FR-CRP_Flags
hs-CRP	hs-CRP_Flags

Parameter names	Parameter flags
CRP	CRP_Flags
DefaultCrp	DefaultCrp_Flags
WBC-O	WBC-O_Flags
TNC-D	TNC-D_Flags
TNC-B	TNC-B_Flags
IME#	IME#_Flags
IME%	IME%_Flags
H-NR%	H-NR%_Flags
L-NR%	L-NR%_Flags
NLR	NLR_Flags
PLR	PLR_Flags
TNC-N	TNC-N_Flags
RPI	RPI_Flags
H-IPF	H-IPF_Flags
IPF#	IPF#_Flags
LY-BF#	LY-BF#_Flags
LY-BF%	LY-BF%_Flags
MO-BF#	MO-BF#_Flags
MO-BF%	MO-BF%_Flags
FRC#	FRC#_Flags
FRC%	FRC%_Flags
Neu-X	Neu-X_Flags
Neu-Y	Neu-Y_Flags
Neu-Z	Neu-Z_Flags
Lym-X	Lym-X_Flags
Lym-Y	Lym-Y_Flags
Lym-Z	Lym-Z_Flags
Mon-X	Mon-X_Flags
Mon-Y	Mon-Y_Flags
Mon-Z	Mon-Z_Flags
SRBC	SRBC_Flags
LRBC	LRBC_Flags
SMCV	SMCV_Flags
LMCV	LMCV_Flags
MCHr	MCHr_Flags

Parameter names	Parameter flags
HDW	HDW_Flags
MPC	MPC_Flags
MPM	MPM_Flags
HYPER%	HYPER%_Flags
HYPO%	HYPO%_Flags
HbA1c_NGSP	HbA1c_NGSP_Flags
HbA1c_MonoS	HbA1c_MonoS_Flags
HbA1c_IFCC	HbA1c_IFCC_Flags
HbF	HbF_Flags
HbA1	HbA1_Flags
eAG	eAG_Flags
SAA	SAA_Flags
SAA/CRP	SAA/CRP_Flags

Table 19 Parameter flags

Contents	Meaning
H	Results higher than the upper limit of interval range
L	Results lower than the upper limit of interval range
R	Suspicious results, need review
O	Results out of linearity range
C	Results having been corrected by analyzer results
T	Temperature alarm
E	Result edited by users
e	Calculated and modified based on the user edited values

Table 20 Alerts

Flags	Meaning
WBC Scattergram Abn.	WBC Scattergram Abn.
Leucocytosis	Leucocytosis
Leucopenia	Leucopenia
Neutrophilia	Neutrophilia
Neutropenia	Neutropenia
Lymphocytosis	Lymphocytosis

Flags	Meaning
Lymphopenia	Lymphopenia
Monocytosis	Monocytosis
Eosinophilia	Eosinophilia
Basophilia	Basophilia
Left Shift?	Left Shift?
Immature Gran?	Immature Gran?
Atypical Lymph?	Atypical Lymph?
RBC Lyse Resistance?	RBC Lyse Resistance?
Erythrocytosis	Erythrocytosis
Anisocytosis	Anisocytosis
Macrocytosis	Macrocytosis
Microcytosis	Microcytosis
Dimorphic Population	Dimorphic Population
Anemia	Anemia
Hypochromia	Hypochromia
Turbidity/HGB Interference?	Turbidity/HGB Interference?
Thrombocytosis	Thrombocytosis
Thrombopenia	Thrombopenia
PLT Clump?	PLT Clump?
DIFF Analysis Abn.	DIFF Analysis Abn.
Blasts?	Blasts?
RBC Agglutination?	RBC Agglutination?
Iron Deficiency?	Iron Deficiency?
PLT Analysis Abn.	PLT Analysis Abn.
BASO Analysis Abn.	BASO Analysis Abn.
RET Analysis Abn.	RET Analysis Abn.
RET Scattergram Abn.	RET Scattergram Abn.
Reticulocytosis	Reticulocytosis
NRBC Analysis Abn.	NRBC Analysis Abn.
NRBC Scattergram Abn.	NRBC Scattergram Abn.
NRBC Present	NRBC Present
Abn. Lymph/blast?	Abn Lymph/blast?
NRBC?	NRBC?
Lipid Particles?	Lipid Particles?
Infected RBC?	Infected RBC?

Flags	Meaning
Clog	Clog
RBC Analysis Abn.	RBC Analysis Abn.
HGB Analysis Abn.	HGB Analysis Abn.
Fragments?	Fragments?
RBC Histogram Abn.	RBC Histogram Abn.
PLT-O Analysis Abn.	PLT-O Analysis Abn.
PLT Histogram Abn.	PLT Histogram Abn.
PLT Scattergram Abn.	PLT Scattergram Abn.
Small Platelet	Small Platelet
Large Platelet	Large Platelet
Giant Platelet	Giant Platelet
System Error	System Error
Status Abn.	Status Abn.
Pancytopenia	Pancytopenia
Insufficient aspiration	Insufficient aspiration
Insufficient aspiration/Sample abnormal	Insufficient aspiration/Sample abnormal
CRP sample aspiration abnormal	CRP sample aspiration abnormal
CRP sample analysis abnormal	CRP sample analysis abnormal
BCV abnormal	BCV abnormal
CRP New Latex not Calibrated	Using new lot of CRP latex, but analyzer is not calibrated
WNB Analysis Abn	WNB Analysis Abn
WNB Abn Scattergram	WNB Abn Scattergram
WBC Fragments?	WBC Fragments?
Sample aspiration abnormal	Sample aspiration is abnormal
High Area	Chromatogram area too large.
Low Area	Chromatogram area too small.
SA1c Peak not properly separated	SA1c Peak not properly separated
HbA0 Peak Abn.	HbA0 peak abnormal
Peak Num Abn.	Abnormal peak number
Chro. Abn.	Chromatography abnormal
Early SA1c RTime.	Shorter SA1c retention time
Late SA1c RTime.	Longer SA1c retention time
Early HbA0 RTime.	Shorter HbA0 retention time
Late HbA0 RTime.	Longer HbA0 retention time
Analysis not completed	Analysis not completed

Flags	Meaning
Signal Abn.	Abnormal signal
Suspected HbE	Suspected HbE result
Suspected HbD	Suspicious HbD results
HbS detected	HbS detected
HbC detected	HbC detected
Suspected Hb Variant	Suspected Hb Variant
SAA analysis error	SAA Analysis abnormal
New SAA latex, no calibrate	Using new lot of SAA latex, but analyzer is not calibrated
Sampling Probe Clogged	Sampling probe is clogged

Table 21 Histogram subtypes

Contents	Meaning
WBC	WBC histogram
RBC	RBC histogram
PLT	PLT histogram

Table 22 Scattergram subtypes

Contents	Meaning
DIFF	DIFF scattergram
BASO	BASO scattergram
RET	RET scattergram
RET-EXT	RET- EXT Scattergram
PLT-O	PLT-O scattergram
RBC-VHF	RBC- VHF scattergram
RBC-SCT	RBC- SCT scattergram
NRBC	NRBC scattergram
WNB	WNB scattergram

Table 23 Chromatogram peak type

Contents	Meaning
Total Area	Total area
A1a RTime	A1a Retention Time
A1a Area	A1a Peak Area
A1a Area Percent	A1a Peak Area Percentage
A1b RTime	A1b Retention Time

Contents	Meaning
A1b Area	A1b Peak Area
A1b Area Percent	A1b Peak Area Percentage
F RTime	F Retention Time
F Area	F Peak Area Percentage
F Area Percent	F Peak Area Percentage
LA1c RTime	LA1c Retention Time
LA1c Area	LA1c Peak Area
LA1c Area Percent	LA1c Peak Area Percentage
SA1c RTime	SA1c Retention Time
SA1c Area	SA1c Peak Area
SA1c Area Percent	SA1c Peak Area Percentage
A0 RTime	A0 Retention Time
A0 Area	A0 Peak Area
A0 Area Percent	A0 Peak Area Percentage
P00 RTime	P00 Retention Time
P00 Area	P00 Peak Area
P00 Area PER	P00 Peak Area Percentage
P01 RTime	P01 Retention Time
P01 Area	P01 Peak Area
P01 Area PER	P01 Peak Area Percentage
P02 RTime	P02 Retention Time
P02 Area	P02 Peak Area
P02 Area PER	P02 Peak Area Percentage
P03 RTime	P03 Retention Time
P03 Area	P03 Peak Area
P03 Area PER	P03 Peak Area Percentage
P04 RTime	P04 Retention Time
P04 Area	P04 Peak Area
P04 Area PER	P04 Peak Area Percentage
P05 RTime	P05 Retention Time
P05 Area	P05 Peak Area
P05 Area PER	P05 Peak Area Percentage
P06 RTime	P06 Retention Time
P06 Area	P06 Peak Area
P06 Area PER	P06 Peak Area Percentage

Contents	Meaning
P07 RTime	P07 Retention Time
P07 Area	P07 Peak Area
P07 Area PER	P07 Peak Area Percentage
P08 RTime	P08 Retention Time
P08 Area	P08 Peak Area
P08 Area PER	P08 Peak Area Percentage
P09 RTime	P09 Retention Time
P09 Area	P09 Peak Area
P09 Area PER	P09 Peak Area Percentage
P10 RTime	P10 Retention Time
P10 Area	P10 Peak Area
P10 Area PER	P10 Peak Area Percentage
P11 RTime	P11 Retention Time
P11 Area	P11 Peak Area
P11 Area PER	P11 Peak Area Percentage
P12 RTime	P12 Retention Time
P12 Area	P12 Peak Area
P12 Area PER	P12 Peak Area Percentage
P13 RTime	P13 Retention Time
P13 Area	P13 Peak Area
P13 Area PER	P13 Peak Area Percentage
P14 RTime	P14 Retention Time
P14 Area	P14 Peak Area
P14 Area PER	P14 Peak Area Percentage
P15 RTime	P15 Retention Time
P15 Area	P15 Peak Area
P15 Area PER	P15 Peak Area Percentage
D RTime	D Retention Time
D Area	D Peak Area
D Area PER	D Peak Area Percentage
S RTime	S Retention Time
S Area	S Peak Area
S Area PER	S Peak Area Percentage
C RTime	C Retention Time
C Area	C Peak Area

Contents	Meaning
C Area PER	C Peak Area Percentage
Variant RTime	Variant Retention Time
Variant Area	Variant peak area
Variant Area PER	Variant Peak Area Percentage

4.2.6Transmitting QC Sample Results

4.2.6.1 Overview

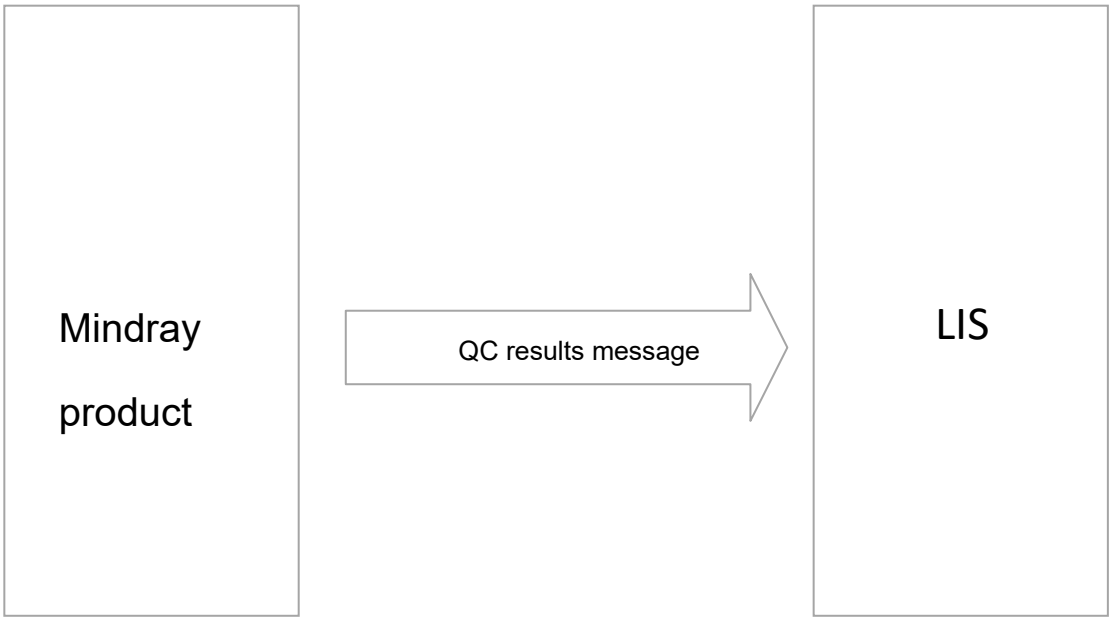


Figure 14 QC result interaction

4.2.6.2 QC Result Message

<0B>

{"Type":"QCResultInfo","QCType":"LJ","FileNo":"File number","LotNo":"Lot number of the QC
material","Level":"H","ValidDate":"20180514","AnalyzeTime":"20180314171548","Tester":"Test
er","InstrumentName":"BC-6800#1","SamplingMode":"A","BloodMode":"W","Analyze
Mode":"CBC+DIFF","CountChannel":"CRP1"}<0D>

{"Type":"QCParameters","WBC":"WBC result","RBC":"RBC result"}

<1C><0D>

Table 24 Description of fields in the QC result message

QC information fields			
Field/Delimiter Name	**Mandatory or not?**	**Type**	**Value**
Type	Yes	String	QC information field is fixed to "QCResultInfo".
QCType	Yes	String	QC program. Value definition: “LJ”- L-J QC Results
FileNo	Yes	String	File number
LotNo	Yes	String	Control lot number..
Level	Yes	String	Control level. Values: “H”-high “M”-medium “L”-low “N”-normal “P”-Pathological “CRL-1”-CRL-1， “CRL-2”-CRL-2。
ValidDate	Yes	String	Expiration date, in the format of "YYYYMMDD[hh[mm[ss]]]"”
AnalyzeTime	Yes	String	Sample analysis time in the format of "YYYYMMDDhhmmss"
Tester	Yes	String	Tester
InstrumentName	Yes	String	Analyzer Name
SamplingMode	Yes	String	Presentation mode. See Table 25 Sample presentation mode for values.
BloodMode	Yes	String	Blood sample mode See Table 26 Blood sample modes for values.
AnalyzeMode	No	String	Sample count mode See Table 13 for values.
CountChannel	No	String	Count channel. See Table 17t
SAACountChannel	No	String	Count channel for SAA analysis. See Table 33.
QC parameter fields			
Field/D	**Manda**	**Type**	**Value**

elimiter Name	tory or not?		
Type	Yes	String	The QC parameter field is fixed to "OtherParameters"
Parameter result (parameter name. For details, see Table 18 Parameter names)	Yes	String	String of the parameter result

Table 25 Sample presentation mode

Contents	Meaning
O	Open manual sampling
C	Closed-sampling
A	Auto-loading mode

Table 26 Blood sample modes

Contents	Meaning
W	Whole blood
P	Predilute
B	BF
M	Micro WB

Appendix A. HL7 Protocol Overview

A.1 Grammar

A.1.1 Message Constructing Principles

Every HL7 message consists of several segments, each of which ends up with the <CR> (0x0D).

Each segment consists of the segment name of three characters and a number of fields, and each field consists of some components and subcomponents. For each message, the delimiters of the fields, components and subcomponents are defined in the MSH segment.

E.g.

MSH|^~\&|Mindray|LabXpert|||20060427194802||ORU^R01|1|P|2.3.1||||||UNICODE

among which:

The five characters following MSH define the delimiters used between fields, components and subcomponents. Although they can be any non-text characters, HL7 standard recommends you use the characters in the table below:

Table 27 HL7 Delimiters

Character	Meaning
|	Field delimiter
^	Component delimiter
&	Subcomponent delimiter
~	Repetition delimiter
\	ESC

The first two fields of MSH contains all the delimiters. Some fields behind are null because they are optional and not used by Mindray HL7 interface. Details about field definition and selection will be stated in the following sections.

For message of any type, the segments behind MSH appear in a fixed order. The order will be described in the following sections and the following grammar is used to organize the segments in proper order.

[] encloses optional segments.

{ } encloses segmetns which can repeat once or more.

A.1.2 Principles of Escape Character Conversion

For the field data of ST, TX, FT, and CF, etc. delimiters may be used in strings like remarks, clinical diagnosis and customized gender etc. When coding, the delimiters in the original strings shall be converted to escape sequence; which is restored in decoding. The principles for escape character conversion for BC-6800/BC-6600 HL7 interface are as follows:

ESC Sequence	Original Character
\F\	Field delimiter
\S\	Component delimiter
\T\	Subcomponent delimiter
\R\	Repetition delimiter
\E\	Escape delimiter
\.br\	<CR>, segment end character.

Note: the "\" in the escapq sequence represents the ESC delimiter, whose value is defined in the MSH segment.

Appendix B. HL7 Data Type Definition

CE - Code Element

<identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

CM - Composite

Format defined by the field.

CX - Extended composite ID with check digit

<ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ < assigning authority (HD)> ^ <identifier type code (IS)> ^ < assigning facility (HD)>

ED – Encapsulate Data

<source application（HD）> ^ <type of data（ID）> ^ <data sub type（ID）> ^ <encoding（ID）> ^ <data（ST）>

EI - Entity Identifier

<entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

FC – Financial Class

<financial class（IS）> ^ <effective date（TS）>

HD - Hierarchic designator

<namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Used only as part of EI and other data types.

FT - Formatted text

This data type is derived from the string data type by allowing the addition of embedded formatting instructions. These instructions are limited to those that are intrinsic and independent of the circumstances under which the field is being used.

IS - Coded value for user-defined tables

The value of such a field follows the formatting rules for an ST field except that it is drawn from a site-defined (or user-defined) table of legal values. There shall be an HL7 table number associated with IS data types.

ID - Coded values for HL7 tables

The value of such a field follows the formatting rules for an ST field except that it is drawn from a table of legal values. There shall be an HL7 table number associated with ID data types.

NM - Numeric

A number represented as a series of ASCII numeric characters consisting of an

optional leading sign (+ or -), the digits and an optional decimal point.

PL - Person location

<point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ < location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>

PT - Processing type

<processing ID (ID)> ^ <processing mode (ID)>

SI - Sequence ID

A non-negative integer in the form of an NM field. The uses of this data type are defined in the chapters defining the segments and messages in which it appears.

ST – String

TS - Time stamp

YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ] ^ <degree of precision>

XCN - Extended composite ID number and name

In Version 2.3, use instead of the CN data type. <ID number (ST)> ^ <family name (ST)> & <last_name_prefix (ST) ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (ST)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

XPN - Extended person name

In Version 2.3, replaces the PN data type. <family name (ST)> ^ <given name (ST)> & <last_name_prefix (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID) > ^ <name representation code (ID)>

VID - Version identifier

<version ID (ID)> ^ <internationalization code (CE)> ^ <international version ID (CE)>

Appendix C. Message Coding Definition

In HL communication messages, the OBR-4 (Universal Serview ID) field, in the form of “ID^Name^EncodeSys”, is used to identify the type of the analysis result (e.g. sample analysis result, microscopic examination result, QC result, etc.).Table 28 lists all the codes of this field.

Table 28 OBR-4 and ASTM Message Type Codes

Data	Code (ID)	Name	EncodeSys	Comments
Sample Analysis Result	00001	Automated Count	99MRC	
Microscopic result	00002	Manual Count	99MRC	
LQ QC count result	00003	LJ QCR	99MRC	
X mean QC count result	00004	X QCR	99MRC	
X-B QC count result	00005	XB QCR	99MRC	
X mean R QC count result	00006	XR QCR	99MRC	
Mean value f X mean QC results	00007	X QCR Mean	99MRC	
Mean value f X mean R QC results	00008	XR QCR Mean	99MRC	
X-M QC count result	00009	XM QCR	99MRC	
Worksheet Request	00010	Worksheet Request	99MRC	
Response to worklist request	00011	Worksheet Response	99MRC	

Each OBX segment contains information of one analysis parameter or non-parameter data item. It consists of the following fields: OBX-2, indicating the type of the HL7 data contained; OBX-3 (Observation Identifier), the identifier of the data in the form of “ID^Name^EncodeSys”; OBX-5, containing the value of the data; OBX-6, containing the unit for the parameter, (in the standard unit recommended by HL7).

Table 29 lists the HL7 type and code identifier of each communication data item. Table 30 Lists all the units for parameters in the communication.

Table 29 Data Type and Coding System

Data	HL7 Type (OBX-2)	ID	Name	EncodeSys	Example of OBX-3 fields
Non-parameter Data Items					
Presentation mode	IS	08001	Take Mode	99MRC	08001^Take Mode^99MRC
Blood mode	IS	08002	Blood Mode	99MRC	08002^Blood Mode^99MRC

Test Mode	IS	08003	Test Mode	99MRC	08003^Test Mode^99MRC
Age	NM	30525-0	Age	LN	30525-0^Age^LN
Comments	ST	01001	Remark	99MRC	01001^Remark^99MRC
Reference group	IS	01002	Ref Group	99MRC	01002^Ref Group^99MRC
Reexam flag	IS	01006	Recheck flag	99MRC	01006^Recheck flag^99MRC
Sample type	IS	01007	Sample Type	99MRC	01007^Sample Type^99MRC
Inpatient zone	IS	01008	Patient Area	99MRC	01008^Patient Area^99MRC
Custom patient information 1	ST	01009	Custom patient info 1	99MRC	01009^Custom patient info 1^99MRC
Example of OBX-3 field	ST	01010	Example of OBX-3 field	99MRC	01010^Custom patient info 2^99MRC
Custom patient info 3	ST	01011	Custom patient info 3	99MRC	01011^Custom patient info 3^99MRC
Tube rack No.	ST	01012	Shelf No	99MRC	01012^Shelf No^99MRC
Tube No.	ST	01013	Tube No	99MRC	01013^Tube No^99MRC
Report time	ST	01014	Report Time	99MRC	01014^Report Time^99MRC
Payer	ST	01015	Charger type	99MRC	01015^Charger type^99MRC
Patient type	ST	01016	Patient type	99MRC	01016^Patient type^99MRC
Level of control	IS	05001	Qc Level	99MRC	05001^Qc Level^99MRC
QC date edited flag	IS	05002	QC test date modify flag	99MRC	05002^QC test date modify flag^99MRC
QC time edited flag	IS	05003	QC test time modify flag	99MRC	05003^QC test time modify flag^99MRC
Expiration date of control	ST	05004	Qc valid date	99MRC	05004^Qc valid date ^99MRC
QC file No.	ST	05005	Qc file No	99MRC	05005^Qc file No ^99MRC
Lot No. of control	ST	05006	Qc lot No	99MRC	05006^Qc lot No ^99MRC
Project type	ST	05007	Project type	99MRC	05007^Project Type^99MRC
Analyzer Name	ST	09001	Analyzer	99MRC	09001^Analyzer^99MRC
Count channel for CRP analysis	ST	09002	CRP Channel	99MRC	1
Sample serial number	ST	08005	SerialNumber	99MRC	08005^SerialNumber^99MRC
Validation results	ST	09999	AuditResult	99MRC	09999^ AuditResult ^99MRC

Detailed information of validation rules	ST	09997	AuditMessages	99MRC	09997^ AuditMessages ^99MRC
LisTestID	ST	09998	LisTestID	99MRC	09998^ LisTestID ^99MRC
Instrument serial number	ST	09003	SN	99MRC	09003^ SN ^99MRC
Expert Tips	ST	09996	SpecialistMessages	99MRC	09996^SpecialistMessages ^99MRC
Count channel for SAA analysis	ST	10101	SAA Channel	99MRC	10101^SAA Channel^99MRC
Parameter Result Items					
WBC	NM	6690-2	WBC	LN	6690-2^WBC^LN
WBC_CORRECT	NM	12227-5	CORRECTED WBC	LN	12227-5^CORRECTED WBC ^LN
BAS	NM	704-7	BAS#	LN	704-7^BAS#^LN
BAS_PER	NM	706-2	BAS%	LN	706-2^BAS%^LN
NEU	NM	751-8	NEU#	LN	751-8^NEU#^LN
NEU_PER	NM	770-8	NEU%	LN	770-8^NEU%^LN
EOS	NM	711-2	EOS#	LN	711-2^EOS#^LN
EOS_PER	NM	713-8	EOS%	LN	713-8^EOS%^LN
LYM	NM	731-0	LYM#	LN	731-0^LYM#^LN
LYM_PER	NM	736-9	LYM%	LN	736-9^LYM%^LN
MON	NM	742-7	MON#	LN	742-7^MON#^LN
MON_PER	NM	5905-5	MON%	LN	5905-5^MON%^LN
RBC	NM	789-8	RBC	LN	789-8^RBC^LN
HGB	NM	718-7	HGB	LN	718-7^HGB^LN
MCV	NM	787-2	MCV	LN	787-2^MCV^LN
MCH	NM	785-6	MCH	LN	785-6^MCH^LN
MCHC	NM	786-4	MCHC	LN	786-4^MCHC^LN
RDW_CV	NM	788-0	RDW-CV	LN	788-0^RDW-CV^LN
RDW_SD	NM	21000-5	RDW-SD	LN	21000-5^RDW-SD^LN
HCT	NM	4544-3	HCT	LN	4544-3^HCT^LN
PLT	NM	777-3	PLT	LN	777-3^PLT^LN
MPV	NM	32623-1	MPV	LN	32623-1^MPV^LN
PDW	NM	32207-3	PDW	LN	32207-3^PDW^LN
PCT (Plateletcrit)	NM	10002	PCT	99MRC	10002^PCT^99MRC
RET	NM	14196-0	RET#	LN	14196-0^RET#^LN
RET_PER	NM	4679-7	RET%	LN	4679-7^RET%^LN
IRF	NM	33516-6	IRF	LN	33516-6^IRF^LN
LFR	NM	10015	LFR	99MRC	10015^LFR^99MRC
MFR	NM	10016	MFR	99MRC	10016^MFR^99MRC
HFR	NM	10017	HFR	99MRC	10017^HFR^99MRC
NRBC	NM	30392-5	NRBC#	LN	30392-5^NRBC#^LN
NRBC_PER	NM	26461-4	NRBC%	LN	26461-4^NRBC%^LN

P_LCR	NM	10014	PLCR	99MRC	10014^PLCR^99MRC
P_LCC	NM	10013	PLCC	99MRC	10013^PLCC^99MRC
RBC-O	NM	10018	RBC-O	99MRC	10018^RBC-O^99MRC
PLT-O	NM	10019	PLT-O	99MRC	10019^PLT-O^99MRC
HFC	NM	10020	HFC#	99MRC	10020^HFC#^99MRC
HFC_PER	NM	10021	HFC%	99MRC	10021^HFC%^99MRC
PLT-I	NM	10022	PLT-I	99MRC	10022^PLT-I^99MRC
WBC-R	NM	10023	WBC-R	99MRC	10023^WBC-R^99MRC
WBC-D	NM	10024	WBC-D	99MRC	10024^WBC-D^99MRC
WBC-B	NM	10025	WBC-B	99MRC	10025^WBC-B^99MRC
WBC-N	NM	10026	WBC-N	99MRC	10026^WBC-N^99MRC
PDW_SD	NM	10031	PDW_SD	99MRC	10031^PDW-SD^99MRC
InR	NM	10032	InR#	99MRC	10032^InR#^99MRC
InR_PER	NM	10033	InR‰	99MRC	10033^InR‰^99MRC
WBC_BF	NM	57845-0	WBC-BF	LN	57845-0^WBC-BF^LN
RBC_BF	NM	23860-0	RBC-BF	LN	23860-0^RBC-BF^LN
MN_BF	NM	26490-3	MN#	LN	26490-3^MN#^LN
MN_BF_PER	NM	26493-7	MN%	LN	26493-7^MN%^LN
EOS_BF	NM	35063-7	Eos-BF#	LN	35063-7^Eos-BF#^LN
EOS_BF_PER	NM	26452-3	Eos-BF%	LN	26452-3^Eos-BF%^LN
PMN_BF	NM	10034	PMN#	99MRC	10034^PMN#^99MRC
PMN_BF_PER	NM	10035	PMN%	99MRC	10035^PMN%^99MRC
TNC_BF_BF	NM	10036	TC-BF#	99MRC	10036^TC-BF#^99MRC
HF-BF#	NM	10037	HF-BF#	99MRC	10037^ HF-BF#^99MRC
HF-BF%	NM	10038	HF-BF%	99MRC	10038^ HF-BF%^99MRC
RBC-BF-R	NM	10039	RBC-BF-R	99MRC	10039^ RBC-BF-R ^99MRC
IMG#	NM	51584-1	IMG#	LN	51584-1^ IMG# ^LN
IMG%	NM	38518-7	IMG%	LN	38518-7^ IMG% ^LN
IPF	NM	10041	IPF	99MRC	10041 ^ IPF ^99MRC
Micro#	NM	15199-3	Micro#	LN	15199-3 ^ Micro# ^ LN
Micro%	NM	10042	Micro%	99MRC	10042 ^ Micro% ^99MRC
Macro#	NM	15198-5	Macro#	LN	15198-5 ^ Macro# ^ LN
Macro%	NM	10040	Macro%	99MRC	10040 ^ Macro% ^99MRC
MRV	NM	48706-6	MRV	LN	48706-6 ^ MRV ^ LN
RHE	NM	10043	RHE	99MRC	10043 ^ RHE ^99MRC
Neu-BF#	NM	10044	Neu-BF#	99MRC	10044 ^ Neu-BF# ^99MRC
Neu-BF%	NM	10045	Neu-BF%	99MRC	10045 ^ Neu-BF% ^99MRC
Neuts Band%. Manual	NM	764-1	Neuts Band%. Manual	LN	764-1 ^ Neuts Band%. Manual ^LN
Neuts Seg%. Manual	NM	769-0	Neuts Seg%. Manual	LN	769-0 ^ Neuts Seg%. Manual ^ LN
Abnormal	NM	29261-5	Abnormal	LN	29261- 5 Abnormal

Lymphs%. Manual			Lymphs%. Manual		Lymphs%. Manual
Pla-Aly%	NM	33835-0	Pla-Aly%	99MRC	33835-0 ^ Pla-Aly% ^99MRC
Mon-Aly%	NM	4662-3	Mon-Aly%	99MRC	4662-3 ^ Mon-Aly% ^99MRC
Imm-Aly%	NM	10046	Imm-Aly%	99MRC	10046 ^ Imm-Aly% ^99MRC
Other-Aly%	NM	10047	Other-Aly%	99MRC	10047 ^ Other-Aly% ^99MRC
Metamyelocyte%. Manual	NM	740-1	Metamyelocyte%. Manual	LN	740-1 ^ Metamyelocyte%. Manual ^LN
Myelocytes%. Manual	NM	749-2	Myelocytes%. Manual	LN	749-2 ^ Myelocytes%. Manual ^LN
Promyelocytes%. Manual	NM	783-1	Promyelocytes%. Manual	LN	783-1 ^ Promyelocytes%. Manual ^ LN
Imm-Eos%	NM	33803-8	Imm-Eos%	99MRC	33803-8 ^ Imm-Eos% ^99MRC
Imm-Bas%	NM	33786-8	Imm-Bas%	99MRC	33786-8 ^ Imm-Bas% ^99MRC
Blast%	NM	10049	Blast%	99MRC	10049 ^ Blast% ^99MRC
Myeloblasts%. Manual	NM	747-6	Myeloblasts%. Manual	LN	747-6 ^ Myeloblasts%. Manual ^LN
Monoblasts%. Manual	NM	33840-0	Monoblasts%. Manual	LN	33840-0 ^ Monoblasts%. Manual ^ LN
Lymphoblasts%. Manual	NM	33831-9	Lymphoblasts%. Manual	LN	33831-9 ^Lymphoblasts%. Manual ^LN
IMG/Blast%	NM	10048	IMG/Blast%	99MRC	10048 ^ IMG/Blast% ^99MRC
Prolymphocytes%. Manual	NM	6746-2	Prolymphocytes%. Manual	LN	6746-2 ^ Prolymphocytes%. Manual ^LN
Promonocytes%. Manual	NM	13599-6	Promonocytes%. Manual	LN	13599-6 ^ Promonocytes%. Manual ^ LN
Plsm-cell%	NM	40492-1	Plsm-cell%	99MRC	40492-1 ^ Plsm-cell% ^99MRC
FR-CRP	NM	71426-1	FR-CRP	LN	71426-1 ^ FR-CRP ^LN
hs-CRP	NM	71426-1-1	hs-CRP	99MRC	71426-1-1 ^ hs-CRP ^ 99MRC
CRP	NM	71426-1-2	CRP	99MRC	71426-1-2 ^ CRP ^ 99MRC
CRP_DEFAULT_CORRECTED	NM	910082	CRP Default Corrected	99MRC	910082 ^ CRP Default Corrected ^ 99MRC
WBC-O	NM	10051	WBC-O	99MRC	10051 ^ WBC-O ^99MRC

TNC-D	NM	10052	TNC-D	99MRC	10052 ^ TNC-D ^99MRC
TNC-B	NM	10089	TNC-B	99MRC	10089^TNC-B^99MRC
IME#	NM	10053	IME#	99MRC	10053 ^ IME# ^99MRC
IME%	NM	10054	IME%	99MRC	10054 ^ IME% ^99MRC
H-NR%	NM	10055	H-NR%	99MRC	10055 ^ H-NR% ^99MRC
L-NR%	NM	10056	L-NR%	99MRC	10056 ^ L-NR% ^99MRC
NLR	NM	10057	NLR	99MRC	10057 ^ NLR ^99MRC
PLR	NM	10058	PLR	99MRC	10058 ^ PLR ^99MRC
TNC-N	NM	10059	TNC-N	99MRC	10059 ^ TNC-N ^99MRC
RPI	NM	10060	RPI	99MRC	10060 ^ RPI ^99MRC
H-IPF	NM	10061	H-IPF	99MRC	10061 ^ H-IPF ^99MRC
IPF#	NM	10062	IPF#	99MRC	10062 ^ IPF# ^99MRC
LY-BF#	NM	10063	LY-BF#	99MRC	10063^ LY-BF# ^99MRC
LY-BF%	NM	10064	LY-BF%	99MRC	10064 ^ LY-BF% ^99MRC
MO-BF#	NM	10065	MO-BF#	99MRC	10065 ^ MO-BF# ^99MRC
MO-BF%	NM	10066	MO-BF%	99MRC	10066 ^ MO-BF% ^99MRC
FRC#	NM	10067	FRC#	99MRC	10067 ^ FRC# ^99MRC
FRC%	NM	10068	FRC%	99MRC	10068 ^ FRC%^99MRC
Neu-X	NM	10069	Neu-X	99MRC	10069 ^ Neu-X ^99MRC
Neu-Y	NM	10070	Neu-Y	99MRC	10070 ^ Neu-Y ^99MRC
Neu-Z	NM	10071	Neu-Z	99MRC	10071 ^ Neu-Z ^99MRC
Lym-X	NM	10072	Lym-X	99MRC	10072 ^ Lym-X ^99MRC
Lym-Y	NM	10073	Lym-Y	99MRC	10073^ Lym-Y ^99MRC
Lym-Z	NM	10074	Lym-Z	99MRC	10074 ^ Lym-Z ^99MRC
Mon-X	NM	10075	Mon-X	99MRC	10075 ^ Mon-X ^99MRC
Mon-Y	NM	10076	Mon-Y	99MRC	10076 ^ Mon-Y ^99MRC
Mon-Z	NM	10077	Mon-Z	99MRC	10077 ^ Mon-Z ^99MRC
SRBC	NM	10078	SRBC	99MRC	10078 ^ SRBC ^99MRC
LRBC	NM	10079	LRBC	99MRC	10079 ^ LRBC ^99MRC
SMCV	NM	10080	SMCV	99MRC	10080 ^ SMCV ^99MRC
LMCV	NM	10081	LMCV	99MRC	10081 ^ LMCV ^99MRC
MCHR	NM	10082	MCHR	99MRC	10082 ^ MCHR ^99MRC
HDW	NM	10083	HDW	99MRC	10083 ^ HDW ^99MRC
MPC	NM	10084	MPC	99MRC	10084 ^ MPC ^99MRC
MPM	NM	10085	MPM	99MRC	10085 ^ MPM ^99MRC
HYPERPER	NM	10086	HYPERPER	99MRC	10086 ^ HYPERPER ^99MRC
HYPO	NM	10087	HYPO	99MRC	10087 ^ HYPO ^99MRC
HBA1C_PER	NM	17856-6	HbA1c%	LN	17856-6 ^ HbA1c% ^ LN
HBA1C_MONO-S	NM	10093	HbA1c-MonoS	99MRC	10093 ^ HbA1c-MonoS ^99MRC
HBA1C_IFCC	NM	59261-8	HbA1c-IFCC	LN	59261-8 ^ HbA1c-IFCC^ LN

HBF	NM	10090	HbF	99MRC	10090 ^ HbF^99MRC
HBA1	NM	10091	HbA1	99MRC	10091 ^ HbA1^99MRC
EAG	NM	10092	eAG	99MRC	10092 ^ eAG^99MRC
Custom Parameter	NM	10098	Custom	99CUS	Format: Code- Customized parameter^Customized parameter^99CUS Example: 10098-Customized parameter^Customized parameter^99CUS
SAA	NM	10099	SAA	99MRC	10099 ^ SAA^99MRC
SAA/CRP	NM	10100	SAA/CRP	99MRC	10100 ^ SAA/CRP^99MRC
Neu#&	NM	17100-1	Neu#&	99MRC	17100-1 ^ Neu#& ^99MRC
Neu%&	NM	17100-2	Neu%&	99MRC	17100-2 ^ Neu%& ^99MRC
Lym#&	NM	17101-1	Lym#&	99MRC	17101-1 ^ Lym#& ^99MRC
Lym%&	NM	17101-2	Lym%&	99MRC	17101-2 ^ Lym%& ^99MRC
Neu-XW	NM	17102-1	Neu-XW	99MRC	17102-1 ^ Neu-XW ^99MRC
Neu-YW	NM	17102-2	Neu-YW	99MRC	17102-2 ^ Neu-YW ^99MRC
Neu-ZW	NM	17103-3	Neu-ZW	99MRC	17102-3 ^ Neu-ZW ^99MRC
Lym-XW	NM	17104-1	Lym-XW	99MRC	17104-1 ^ Lym-XW ^99MRC
Lym-YW	NM	17104-2	Lym-YW	99MRC	17104-2 ^ Lym-YW ^99MRC
Lym-ZW	NM	17104-3	Lym-ZW	99MRC	17104-3 ^ Lym-ZW ^99MRC
Mon-XW	NM	17105-1	Mon-XW	99MRC	17105-1 ^ Mon-XW ^99MRC
Mon-YW	NM	17105-2	Mon-YW	99MRC	17105-2 ^ Mon-YW ^99MRC
Mon-ZW	NM	17105-3	Mon-ZW	99MRC	17105-3 ^ Mon-ZW ^99MRC
RET-Y	NM	17106-1	RET-Y	99MRC	17106-1 ^ RET-Y ^99MRC
RET-X	NM	17106-2	RET-X	99MRC	17106-2 ^ RET-X ^99MRC
IRF-Y	NM	17107-1	IRF-Y	99MRC	17107-1 ^ IRF-Y ^99MRC
IRF-X	NM	17107-2	IRF-X	99MRC	17107-2 ^ IRF-X ^99MRC
RET-RBC-Y	NM	17108-1	RET-RBC-Y	99MRC	17108-1 ^ RET-RBC-Y ^99MRC
RET-RBC-X	NM	17108-2	RET-RBC-X	99MRC	17108-2 ^ RET-RBC-X ^99MRC
PLT-H	NM	17109	PLT-H	99MRC	17109 ^ PLT-H ^99MRC

IPF-D	NM	17110	IPF-D	99MRC	17110 ^ IPF-D ^99MRC
RET%-D	NM	17111-1	RET%-D	99MRC	17111-1 ^ RET%-D ^99MRC
RET#-D	NM	17111-2	RET#-D	99MRC	17111-2 ^ RET#-D ^99MRC
IRF-D	NM	17112	IRF-D	99MRC	17112 ^ IRF-D ^99MRC
LFR-D	NM	17113	LFR-D	99MRC	17113 ^ LFR-D ^99MRC
MFR-D	NM	17114	MFR-D	99MRC	17114 ^ MFR-D ^99MRC
HFR-D	NM	17115	HFR-D	99MRC	17115 ^ HFR-D ^99MRC
ESR-Corr.	NM	17116	ESR-Corr.	99MRC	17116 ^ ESR-Corr. ^99MRC
SA	NM	17117	SA	99MRC	17117 ^ SA ^99MRC
AMP	NM	17118	AMP	99MRC	17118 ^ AMP ^99MRC
AI	NM	17119	AI	99MRC	17119 ^ AI ^99MRC
MIN	NM	17120	MIN	99MRC	17120 ^ MIN ^99MRC
T1/2	NM	17121	T1/2	99MRC	17121 ^ T1/2 ^99MRC
ESR	NM	30341-2	ESR	LN	30341-2 ^ ESR ^ LN
Intermediate Data of Analysis Results (histogram and scattergram data of WBC, RBC, and PLT, etc.)					
RBC histogram binary data	ED	15050	RBC Histogram. Binary	99MRC	15050^RBC Histogram. Binary^99MRC
Left discriminator of the RBC histogram	NM	15051	RBC Histogram. Left Line	99MRC	15051^RBC Histogram. Left Line^99MRC
Right discriminator of the RBC histogram	NM	15052	RBC Histogram. Right Line	99MRC	15052^RBC Histogram. Right Line^99MRC
RBC historgram metadata length	NM	15053	RBC Histogram. Binary Meta Length	99MRC	15053^RBC Histogram. Binary Meta Length^99MRC
RBC histogram left discriminator adjusted flag	IS	15054	RBC Histogram. Left Line Adjusted	99MRC	15054^RBC Histogram. Left Line Adjusted^99MRC
RBC histogram right discriminator adjusted flag	IS	15055	RBC Histogram. Right Line Adjusted	99MRC	15055^RBC Histogram. Right Line Adjusted^99MRC
RBC histogram bitmap data	ED	15056	RBC Histogram. BMP	99MRC	15056^RBC Histogram. BMP^99MRC
Total number of RBC histograms	NM	15057	RBC Histogram.	99MRC	15057^RBC Histogram. Total^99MRC

			Total		
PLT histogram binary data	ED	15100	PLT Histogram. Binary	99MRC	15100^PLT Histogram. Binary^99MRC
Left discriminator of the PLT histogram	NM	15111	PLT Histogram. Left Line	99MRC	15111^PLT Histogram. Left Line^99MRC
Right discriminator of the PLT histogram	NM	15112	PLT Histogram. Right Line	99MRC	15112^PLT Histogram. Right Line^99MRC
PLT historgram metadata length	NM	15113	PLT Histogram. Binary Meta Length	99MRC	15113^PLT Histogram. Binary Meta Length^99MRC
PLT histogram left discriminator adjusted flag	IS	15114	PLT Histogram. Left Line Adjusted	99MRC	15114^PLT Histogram. Left Line Adjusted^99MRC
PLT histogram right discriminator adjusted flag	IS	15115	PLT Histogram. Right Line Adjusted	99MRC	15115^PLT Histogram. Right Line Adjusted^99MRC
PLT histogram bitmap data	ED	15116	PLT Histogram. BMP	99MRC	15116^PLT Histogram. BMP^99MRC
Total number of PLT histograms	NM	15117	PLT Histogram. Total	99MRC	15117^PLT Histogram. Total^99MRC
WBC histogram binary data (intermediate data)	NM	15000	WBC Histogram. Binary	99MRC	15000^ WBC Histogram. Binary^99MRC
WBC histogram, left line	NM	15001	WBC Histogram. Left Line	99MRC	15001^ WBC Histogram. Left Line ^99MRC
WBC histogram, right line	NM	15002	WBC Histogram. Right Line	99MRC	15002^ WBC Histogram. Right Line ^99MRC
WBC histogram, middle line	NM	15003	WBC Histogram. Middle Line	99MRC	15003^ WBC Histogram. Middle Line ^99MRC
WBC histogram, meta data length	NM	15004	WBC Histogram. Meta Length	99MRC	15004^ WBC Histogram. Meta Length ^99MRC
WBC histogram, left	NM	15005	WBC	99MRC	15005^ WBC Histogram.

line adjusted mark			Histogram. Left Line Adjusted		Left Line Adjusted ^99MRC
WBC histogram, right line adjusted mark	NM	15006	WBC Histogram. Right Line Adjusted	99MRC	15006^ WBC Histogram. Right Line Adjusted ^99MRC
WBC histogram, middle line adjusted mark	NM	15007	WBC Histogram. Middle Line Adjusted	99MRC	15007^ WBC Histogram. Middle Line Adjusted ^99MRC
WBC histogram, bitmap	NM	15008	WBC Histogram. BMP	99MRC	15008^ WBC Histogram. BMP ^99MRC
Total number of WBC histogram	NM	15009	WBC Histogram. Total	99MRC	15009^ WBC Histogram. Total ^99MRC
WBC LYM left line	NM	15010	WBC Lym left line.	99MRC	15010^ WBC Lym left line.^99MRC
WBC LYM MID line	NM	15011	WBC Lym Mid line.	99MRC	15011^ WBC Lym Mid line.^99MRC
WBC MID GRAN line	NM	15012	WBC Mid Gran line.	99MRC	15012^ WBC Mid Gran line.^99MRC
WBC GRAN right line	NM	15013	WBC Gran right line	99MRC	15013^ WBC Gran right line ^99MRC
PLT-H histogram binary data	NM	17300	PLT-H Histogram. Binary	99MRC	17300 ^ PLT-H Histogram. Binary ^99MRC
PLT-H histogram left line	NM	17301	PLT-H Histogram. Left Line	99MRC	17301 ^ PLT-H Histogram. Left Line ^99MRC
PLT-H histogram right line	NM	17302	PLT-H Histogram. Right Line	99MRC	17302 ^ PLT-H Histogram. Right Line ^99MRC
PLT-H histogram meta data length	NM	17303	PLT-H Histogram. Binary Meta Length	99MRC	17303 ^ PLT-H Histogram. Binary Meta Length ^99MRC
PLT-H histogram, left line adjusted mark	NM	17304	PLT-H Histogram. Left Line Adjusted	99MRC	17304 ^ PLT-H Histogram. Left Line Adjusted ^99MRC
PLT-H histogram, right line adjusted	NM	17305	PLT-H Histogram.	99MRC	17305 ^ PLT-H Histogram. Right Line Adjusted

mark			Right Line Adjusted		^99MRC
PLT-H histogram bitmap data	NM	17306	PLT-H Histogram. BMP	99MRC	17306 ^ PLT-H Histogram. BMP ^99MRC
Total number of PLT-H histograms	NM	17307	PLT-H Histogram. Total	99MRC	17307 ^ PLT-H Histogram. Total ^99MRC
Version of scattergram	NM	15014	ScattergramPa raVer	99MRC	15014^ScattergramParaVe r^99MRC
the particle type array which needs to be greyout in the scattergram	ED	15015	ScattergramGr aphicFlags	99MRC	15015^ScattergramGraphic Flags^99MRC
DIFF 2D scattergram bitmap data	ED	15200	WBC DIFF Scattergram. BMP	99MRC	15200^WBC DIFF Scattergram. BMP^99MRC
Diff scattergram metadata length	NM	15203	WBC DIFF Scattergram. Meta len	99MRC	15203^WBC DIFF Scattergram. Meta len^99MRC
Fsc dimension of DIFF scattergram	NM	15205	WBC DIFF Scattergram. Fsc dimension	99MRC	15205^WBC DIFF Scattergram. Fsc dimension^99MRC
Ssc dimension of DIFF scattergram	NM	15206	WBC DIFF Scattergram. Ssc dimension	99MRC	15206^WBC DIFF Scattergram. Ssc dimension^99MRC
FL dimension of DIFF scattergram	NM	15207	WBC DIFF Scattergram. FL dimension	99MRC	15207^WBC DIFF Scattergram. FL dimension^99MRC
DIFF scattergram FSC－LOG dimension	NM	15208	WBC DIFF Scattergram. FSC-LOG dimension	99MRC	15208^WBC DIFF Scattergram. FSC-LOG dimension^99MRC
DIFF scattergram multiply factor	NM	15209	WBC DIFF MultipleType	99MRC	15209^WBC DIFF MultipleType^99MRC
DIFF scattergram binary data	ED	15201	WBC DIFF Scattergram. BIN	99MRC	15201^WBC DIFF Scattergram. BIN^99MRC
DIFF-EXT scattergram bitmap data	NM	17308	DIFF-EXT Scattergram. BMP	99MRC	17308^ DIFF-EXT Scattergram. BMP^99MRC
DIFF-FsFl scattergram bitmap data	NM	17309	DIFF-FsFl Scattergram. BMP	99MRC	17309^ DIFF-FsFl Scattergram. BMP^99MRC

DIFF-FsSs scattergram bitmap data	NM	17310	DIFF-FsSs Scattergram. BMP	99MRC	17310^ DIFF-FsSs Scattergram. BMP^99MRC
BASO 2D scattergram bitmap data	ED	15250	Baso Scattergram. BMP	99MRC	15250^Baso Scattergram. BMP^99MRC
BASO scattergram binary data	ED	15251	Baso Scattergram. BIN	99MRC	15251^Baso Scattergram. BIN^99MRC
BASO scattergram metadata length	NM	15253	Baso Scattergram. Meta Len	99MRC	15253^Baso Scattergram. Meta Len^99MRC
Fsc dimension of BASO scattergram	NM	15255	Baso Scattergram. Fsc dimension	99MRC	15255^Baso Scattergram. Fsc dimension^99MRC
Ssc dimension of BASO scattergram	NM	15256	Baso Scattergram. Ssc dimension	99MRC	15256^Baso Scattergram. Ssc dimension^99MRC
FL dimension of BASO scattergram	NM	15257	Baso Scattergram. FL dimension	99MRC	15257^Baso Scattergram. FL dimension^99MRC
Baso scattergram FSC- LOG dimension	NM	15258	Baso Scattergram. FSC-LOG dimension	99MRC	15258^Baso Scattergram. FSC-LOG dimension^99MRC
RET 2D scattergram bitmap data	ED	15300	RET Scattergram. BMP	99MRC	15300^RET Scattergram. BMP^99MRC
PLT-O scattergram bitmap data	ED	15301	PLT-O Scattergram. BMP	99MRC	15301^PLT-O Scattergram. BMP^99MRC
RET-EXT scattergram bitmap data	ED	15302	RET-EXT Scattergram. BMP	99MRC	15302^RET-EXT Scattergram. BMP^99MRC
RET dimension of RET scattergram	NM	15303	RET Scattergram. Fsc dimension	99MRC	15303^RET Scattergram. Fsc dimension^99MRC
SSC dimension of RET scattergram	NM	15304	RET Scattergram. Ssc dimension	99MRC	15304^RET Scattergram. Ssc dimension^99MRC
FL dimension of RET scattergram	NM	15305	RET Scattergram. FL dimension	99MRC	15305^RET Scattergram. FL dimension^99MRC
RET scattergram	ED	15306	RET	99MRC	15306^RET Scattergram.

binary data			Scattergram. BIN		BIN^99MRC
RET scattergram metadata length	NM	15307	RET Scattergram. Meta Len	99MRC	15307^RET Scattergram. Meta Len^99MRC
RET scattergram FSC — LOG dimension	NM	15308	RET Scattergram FSC-LOG dimension	99MRC	15308^RET Scattergram FSC-LOG dimension^99MRC
PLTO scattergram binary data	ED	15309	PLTO Scattergram. BIN	99MRC	15309^PLTO Scattergram. BIN^99MRC
PLTO scattergram multiply factor	NM	15310	PLTO MultipleType	99MRC	15310^PLTO MultipleType^99MRC
PLT-O scattergram meta data length	NM	15311	PLTO Scattergram. Meta Len	99MRC	15311^PLTO Scattergram. Meta Len^99MRC
NRBC 2D scattergram bitmap data	ED	15350	NRBC Scattergram. BMP	99MRC	15350^NRBC Scattergram. BMP^99MRC
FSC dimension of NRBC scattergram	NM	15351	NRBC Scattergram. Fsc dimension		15351^NRBC Scattergram. Fsc dimension^99MRC
SSC dimension of NRBC scattergram	NM	15352	NRBC Scattergram. Ssc dimension	99MRC	15352^NRBC Scattergram. Ssc dimension^99MRC
FL dimension of NRBC scattergram	NM	15353	NRBC Scattergram. FL dimension	99MRC	15353^NRBC Scattergram. FL dimension^99MRC
NRBC scattergram binary data	ED	15354	NRBC Scattergram. BIN	99MRC	15354^NRBC Scattergram. BIN^99MRC
NRBC scattergram metadata length	NM	15355	NRBC Scattergram. Meta Len	99MRC	15355^NRBC Scattergram. Meta Len^99MRC
NRBC scattergram FSC－LOG dimension	NM	15356	NRBC Scattergram FSC-LOG dimension	99MRC	15356^NRBC Scattergram FSC-LOG dimension^99MRC
WNB scattergram bitmap data	ED	15600	WNB Scattergram. BMP	99MRC	15600^WNB Scattergram. BMP^99MRC

WNB scattergram FSC dimension	NM	15601	WNB Scattergram. Fsc dimension		15601^WNB Scattergram. Fsc dimension^99MRC
WNB scattergram Ssc dimension	NM	15602	WNB Scattergram. Ssc dimension	99MRC	15602^WNB Scattergram. Ssc dimension^99MRC
WNB scattergram FL dimension	NM	15603	WNB Scattergram. FL dimension	99MRC	15603^WNB Scattergram. FL dimension^99MRC
WNB scattergram binary data	ED	15604	WNB Scattergram. BIN	99MRC	15604^WNB Scattergram. BIN^99MRC
WNB scattergram meta data length	NM	15605	WNB Scattergram. Meta Len	99MRC	15605^WNB Scattergram. Meta Len^99MRC
WNB scattergram FSC－LOG dimension	NM	15606	WNB Scattergram FSC-LOG dimension	99MRC	15606^WNB Scattergram FSC-LOG dimension^99MRC
RBCVHF scattergram bitmap data	ED	15700	RBCVHF Scattergram. BMP	99MRC	15700^RBCVHF Scattergram. BMP^99MRC
RBCVHF scattergram HC dimension	NM	15703	RBCVHF Scattergram HC dimension	99MRC	15703^RBCVHF Scattergram HC dimension^99MRC
RBCVHF scattergram VOL dimension	NM	15704	RBCVHF Scattergram. VOL dimension	99MRC	15704^RBCVHF Scattergram. VOL dimension^99MRC
RBCSCT scattergram bitmap data	ED	15800	RBCSCT Scattergram. BMP	99MRC	15800^RBCSCT Scattergram. BMP^99MRC
RBCSCT scattergram FS dimension	NM	15803	RBCSCT Scattergram FS dimension	99MRC	15803^RBCSCT Scattergram FS dimension^99MRC
RBCSCT scattergram SS dimension	NM	15804	RBCSCT Scattergram. SS dimension	99MRC	15804^RBCSCT Scattergram. SS dimension^99MRC
PLT-H scattergram bitmap data	NM	17311	PLT-H Scattergram. BMP	99MRC	17311^ PLT-H Scattergram. BMP^99MRC
PLT-H scattergram binary data	NM	17312	PLT-H Scattergram. BIN	99MRC	17312^ PLT-H Scattergram. BIN^99MRC

PLT-H scattergram meta data length	NM	17313	PLT-H Scattergram. Meta len	99MRC	17313^ PLT-H Scattergram. Meta len^99MRC
PLT-H scattergram Fsc dimension	NM	17314	PLT-H Scattergram. Fsc dimension	99MRC	17314^ PLT-H Scattergram. Fsc dimension^99MRC
PLT-H scattergram Ssc dimension	NM	17315	PLT-H Scattergram. Ssc dimension	99MRC	17315^ PLT-H Scattergram. Ssc dimension^99MRC
PLT-H scattergram FL dimension	NM	17316	PLT-H Scattergram. FL dimension	99MRC	17316^ PLT-H Scattergram. FL dimension^99MRC
Intermediate Data of Analysis Results (Chromatogram, Chromatogram Peak, etc.)					
Chromatogram Binary Data	ED	15400	Chromatogram Wave Binary	99MRC	15400^Chromatogram Wave Binary^99MRC
Chromatogram wave data meta data length	NM	15401	Chromatogram Wave Meta Length	99MRC	15401^Chromatogram Wave Meta Length^99MRC
Chromatogram baseline binary data	ED	15402	Chromatogram Baseline Binary	99MRC	15402^Chromatogram Baseline Binary^99MRC
Chromatogram baseline data meta data length	NM	15403	Chromatogram Baseline Meta Length	99MRC	15403^Chromatogram Baseline Meta Length^99MRC
Maximum X-axis value on chromatogram	NM	15404	Chromatogram HOR. Max Axis	99MRC	15404^Chromatogram HOR. Max Axis^99MRC
Maximum Y-axis value on chromatogram	NM	15405	Chromatogram VER. Max Axis	99MRC	15405^Chromatogram VER. Max Axis^99MRC
Chromatogram bitmap data	ED	15406	Chromatogram BMP	99MRC	15406^Chromatogram BMP^99MRC
A1a peak retention time	NM	15407	Ala RTime	99MRC	15407^A1a RTime^99MRC
A1a Peak Area	NM	15408	Ala Area	99MRC	15408^A1a Area^99MRC
A1a Peak Area Percentage	NM	15409	Ala Area Percent	99MRC	15409^A1a Area Percent^99MRC
A1b peak retention time	NM	15410	Alb RTime	99MRC	15410^A1b RTime^99MRC
A1b Peak Area	NM	15411	Alb Area	99MRC	15411^A1b Area^99MRC
A1b Peak Area Percentage	NM	15412	Alb Area Percent	99MRC	15412^A1b Area Percent^99MRC
F peak retention time	NM	15413	F RTime	99MRC	15413^F RTime^99MRC

F Peak Area Percentage	NM	15414	F Area	99MRC	15414^F Area^99MRC
F Peak Area Percentage	NM	15415	F Area Percent	99MRC	15415^F Area Percent^99MRC
LA1c peak retention time	NM	15416	LA1c RTime	99MRC	15416^L-A1c RTime^99MRC
LA1c Peak Area	NM	15417	LA1c Area	99MRC	15417^L-A1c Area^99MRC
LA1c Peak Area Percentage	NM	15418	LA1c Area Percent	99MRC	15418^L-A1c Area Percent^99MRC
SA1c peak retention time	NM	15419	SA1c RTime	99MRC	15419^S-A1c RTime^99MRC
SA1c Peak Area	NM	15420	SA1c Area	99MRC	15420^S-A1c Area^99MRC
SA1c Peak Area Percentage	NM	15421	SA1c Area Percent	99MRC	15421^S-A1c Area Percent^99MRC
A0 peak retention time	NM	15422	A0 RTime	99MRC	15422^A0 RTime^99MRC
A0 Peak Area	NM	15423	A0 Area	99MRC	15423^A0 Area^99MRC
A0 Peak Area Percentage	NM	15424	A0 Area Percent	99MRC	15424^A0 Area Percent^99MRC
Total area of chromatogram peaks	NM	15425	Total Area	99MRC	15425^Total Area^99MRC
P00 peak retention time	NM	15426	P00 RTime	99MRC	15426^P00 RTime^99MRC
P00 Peak Area	NM	15427	P00 Area	99MRC	15427^P00 Area^99MRC
P00 Peak Area Percentage	NM	15428	P00 Area Percent	99MRC	15428^P00 Area Percent^99MRC
P01 peak retention time	NM	15429	P01 RTime	99MRC	15429^P01 RTime^99MRC
P01 Peak Area	NM	15430	P01 Area	99MRC	15430^P01 Area^99MRC
P01 Peak Area Percentage	NM	15431	P01 Area Percent	99MRC	15431^P01 Area Percent^99MRC
P02 peak retention time	NM	15432	P02 RTime	99MRC	15432^P02 RTime^99MRC
P02 Peak Area	NM	15433	P02 Area	99MRC	15433^P02 Area^99MRC
P02 Peak Area Percentage	NM	15434	P02 Area Percent	99MRC	15434^P02 Area Percent^99MRC
P03 peak retention time	NM	15435	P03 RTime	99MRC	15435^P03 RTime^99MRC
P03 Peak Area	NM	15436	P03 Area	99MRC	15436^P03 Area^99MRC
P03 Peak Area Percentage	NM	15437	P03 Area Percent	99MRC	15437^P02 Area Percent^99MRC
P04 peak retention time	NM	15438	P04 RTime	99MRC	15438^P04 RTime^99MRC

P04 peak area	NM	15439	P04 Area	99MRC	15439^P04 Area^99MRC
P04 Peak Area Percentage	NM	15440	P04 Area Percent	99MRC	15440^P04 Area Percent^99MRC
P05 peak retention time	NM	15441	P05 RTime	99MRC	15441^P05 RTime^99MRC
P05 peak area	NM	15442	P05 Area	99MRC	15442^P05 Area^99MRC
P05 Peak Area Percentage	NM	15443	P05 Area Percent	99MRC	15443^P05 Area Percent^99MRC
P06 peak retention time	NM	15444	P06 RTime	99MRC	15444^P06 RTime^99MRC
P06 peak area	NM	15445	P06 Area	99MRC	15445^P06 Area^99MRC
P06 Peak Area Percentage	NM	15446	P06 Area Percent	99MRC	15446^P06 Area Percent^99MRC
P07 peak retention time	NM	15447	P07 RTime	99MRC	15447^P07 RTime^99MRC
P07 peak area	NM	15448	P07 Area	99MRC	15448^P07 Area^99MRC
P07 Peak Area Percentage	NM	15449	P07 Area Percent	99MRC	15449^P07 Area Percent^99MRC
P08 peak retention time	NM	15450	P08 RTime	99MRC	15450^P08 RTime^99MRC
P08 peak area	NM	15451	P08 Area	99MRC	15451^P08 Area^99MRC
P08 Peak Area Percentage	NM	15452	P08 Area Percent	99MRC	15452^P08 Area Percent^99MRC
P09 peak retention time	NM	15453	P09 RTime	99MRC	15453^P09 RTime^99MRC
P09 peak area	NM	15454	P09 Area	99MRC	15454^P09 Area^99MRC
P09 Peak Area Percentage	NM	15455	P09 Area Percent	99MRC	15455^P09 Area Percent^99MRC
P10 peak retention time	NM	15456	P10 RTime	99MRC	15456^P10 RTime^99MRC
P10 peak area	NM	15457	P10 Area	99MRC	15457^P10 Area^99MRC
P10 Peak Area Percentage	NM	15458	P10 Area Percent	99MRC	15458^P10 Area Percent^99MRC
P11 peak retention time	NM	15459	P11 RTime	99MRC	15459^P11 RTime^99MRC
P11 peak area	NM	15460	P11 Area	99MRC	15460^P11 Area^99MRC
P11 Peak Area Percentage	NM	15461	P11 Area Percent	99MRC	15461^P11 Area Percent^99MRC
P12 peak retention time	NM	15462	P12 RTime	99MRC	15462^P12 RTime^99MRC
P12 peak area	NM	15463	P12 Area	99MRC	15463^P12 Area^99MRC
P12 Peak Area Percentage	NM	15464	P12 Area Percent	99MRC	15464^P12 Area Percent^99MRC
P13 peak retention	NM	15465	P13 RTime	99MRC	15465^P13 RTime^99MRC

time					
P13 peak area	NM	15466	P13 Area	99MRC	15466^P13 Area^99MRC
P13 Peak Area Percentage	NM	15467	P13 Area Percent	99MRC	15467^P13 Area Percent^99MRC
P14 peak retention time	NM	15468	P14 RTime	99MRC	15468^P14 RTime^99MRC
P14 peak area	NM	15469	P14 Area	99MRC	15469^P14 Area^99MRC
P14 Peak Area Percentage	NM	15470	P14 Area Percent	99MRC	15470^P14 Area Percent^99MRC
P15 peak retention time	NM	15471	P15 RTime	99MRC	15471^P15 RTime^99MRC
P15 peak area	NM	15472	P15 Area	99MRC	15472^P15 Area^99MRC
P15 Peak Area Percentage	NM	15473	P15 Area Percent	99MRC	15473^P15 Area Percent^99MRC
A1a peak start time	NM	15476	A1a Peak Start Time	99MRC	15476^ A1a Peak Start Time ^99MRC
A1a peak end time	NM	15477	A1a Peak End Time	99MRC	15477^ A1a Peak End Time ^99MRC
A1b peak start time	NM	15478	A1b Peak Start Time	99MRC	15478^ A1b Peak Start Time ^99MRC
A1b peak end time	NM	15479	A1b Peak End Time	99MRC	15479^ A1b Peak End Time ^99MRC
F peak start time	NM	15480	F Peak Start Time	99MRC	15480^ F Peak Start Time ^99MRC
F peak end time	NM	15481	F Peak End Time	99MRC	15481^ F Peak End Time ^99MRC
LA1c peak start time	NM	15482	LA1c Peak Start Time	99MRC	15482^ LA1c Peak Start Time ^99MRC
LA1c peak end time	NM	15483	LA1c Peak End Time	99MRC	15483^ LA1c Peak End Time ^99MRC
SA1c peak start time	NM	15484	SA1c Peak Start Time	99MRC	15484^ SA1c Peak Start Time ^99MRC
SA1c peak end time	NM	15485	SA1c Peak End Time	99MRC	15485^ SA1c Peak End Time ^99MRC
A0 peak start time	NM	15486	A0 Peak Start Time	99MRC	15486^ A0 Peak Start Time ^99MRC
A0 peak end time	NM	15487	A0 Peak End Time	99MRC	15487^ A0 Peak End Time ^99MRC
P00 peak start time	NM	15488	P00 Peak Start Time	99MRC	15488^ P00 Peak Start Time ^99MRC
P00 peak end time	NM	15489	P00 Peak End Time	99MRC	15489^ P00 Peak End Time ^99MRC
P01 peak start time	NM	15490	P01 Peak Start Time	99MRC	15490^ P01 Peak Start Time ^99MRC

P01 peak end time	NM	15491	P01 Peak End Time	99MRC	15491^ P01 Peak End Time ^99MRC
P02 peak start time	NM	15492	P02 Peak Start Time	99MRC	15492^ P02 Peak Start Time ^99MRC
P02 peak end time	NM	15493	P02 Peak End Time	99MRC	15493^ P02 Peak End Time ^99MRC
P03 peak start time	NM	15494	P03 Peak Start Time	99MRC	15494^ P03 Peak Start Time ^99MRC
P03 peak end time	NM	15495	P03 Peak End Time	99MRC	15495^ P03 Peak End Time ^99MRC
P04 peak start time	NM	15496	P04 Peak Start Time	99MRC	15496^ P04 Peak Start Time ^99MRC
P04 peak end time	NM	15497	P04 Peak End Time	99MRC	15497^ P04 Peak End Time ^99MRC
P05 peak start time	NM	15498	P05 Peak Start Time	99MRC	15498^ P05 Peak Start Time ^99MRC
P05 peak end time	NM	15499	P05 Peak End Time	99MRC	15499^ P05 Peak End Time ^99MRC
P06 peak start time	NM	15500	P06 Peak Start Time	99MRC	15500^ P06 Peak Start Time ^99MRC
P06 peak end time	NM	15501	P06 Peak End Time	99MRC	15501^ P06 Peak End Time ^99MRC
P07 peak start time	NM	15502	P07 Peak Start Time	99MRC	15502^ P07 Peak Start Time ^99MRC
P07 peak end time	NM	15503	P07 Peak End Time	99MRC	15503^ P07 Peak End Time ^99MRC
P08 peak start time	NM	15504	P08 Peak Start Time	99MRC	15504^ P08 Peak Start Time ^99MRC
P08 peak end time	NM	15505	P08 Peak End Time	99MRC	15505^ P08 Peak End Time ^99MRC
P09 peak start time	NM	15506	P09 Peak Start Time	99MRC	15506^ P09 Peak Start Time ^99MRC
P09 peak end time	NM	15507	P09 Peak End Time	99MRC	15507^ P09 Peak End Time ^99MRC
P10 peak start time	NM	15508	P10 Peak Start Time	99MRC	15508^ P10 Peak Start Time ^99MRC
P10 peak end time	NM	15509	P10 Peak End Time	99MRC	15509^ P10 Peak End Time ^99MRC
P11 peak start time	NM	15510	P11 Peak Start Time	99MRC	15510^ P11 Peak Start Time ^99MRC
P11 peak end time	NM	15511	P11 Peak End Time	99MRC	15511^ P11 Peak End Time ^99MRC
P12 peak start time	NM	15512	P12 Peak Start Time	99MRC	15512^ P12 Peak Start Time ^99MRC

P12 peak end time	NM	15513	P12 Peak End Time	99MRC	15513^ P12 Peak End Time ^99MRC
P13 peak start time	NM	15514	P13 Peak Start Time	99MRC	15514^ P13 Peak Start Time ^99MRC
P13 peak end time	NM	15515	P13 Peak End Time	99MRC	15515^ P13 Peak End Time ^99MRC
P14 peak start time	NM	15516	P14 Peak Start Time	99MRC	15516^ P14 Peak Start Time ^99MRC
P14 peak end time	NM	15517	P14 Peak End Time	99MRC	15517^ P14 Peak End Time ^99MRC
P15 peak start time	NM	15518	P15 Peak Start Time	99MRC	15518^ P15 Peak Start Time ^99MRC
P15 peak end time	NM	15519	P15 Peak End Time	99MRC	15519^ P15 Peak End Time ^99MRC
D peak retention time	NM	15520	D RTime	99MRC	15520^ D RTime ^99MRC
D Peak Area	NM	15521	D Area	99MRC	15521^ D Area ^99MRC
D Peak Area Percentage	NM	15522	D Area Percent	99MRC	15522^ D Area Percent ^99MRC
D peak start time	NM	15523	D Peak Start Time	99MRC	15523^ D Peak Start Time ^99MRC
D peak end time	NM	15524	D Peak End Time	99MRC	15524^ D Peak End Time ^99MRC
S peak retention time	NM	15525	S RTime	99MRC	15525^ S RTime ^99MRC
S Peak Area	NM	15526	S Area	99MRC	15526^ S Area ^99MRC
S Peak Area Percentage	NM	15527	S Area Percent	99MRC	15527^ S Area Percent ^99MRC
S peak start time	NM	15528	S Peak Start Time	99MRC	15528^ S Peak Start Time ^99MRC
S peak end time	NM	15529	S Peak End Time	99MRC	15529^ S Peak End Time ^99MRC
C peak retention time	NM	15530	C RTime	99MRC	15530^ C RTime ^99MRC
C Peak Area	NM	15531	C Area	99MRC	15531^ C Area ^99MRC
C Peak Area Percentage	NM	15532	C Area Percent	99MRC	15532^ C Area Percent ^99MRC
C peak start time	NM	15533	C Peak Start Time	99MRC	15333^ C Peak Start Time ^99MRC
C peak end time	NM	15534	C Peak End Time	99MRC	15534^ C Peak End Time ^99MRC
Variant peak retention time	NM	15535	Variant RTime	99MRC	15535^ Variant RTime ^99MRC
Variant peak area	NM	15536	Variant Area	99MRC	15536^ Variant Area

					^99MRC
Variant Peak Area Percentage	NM	15537	Variant Area Percent	99MRC	15537^ Variant Area Percent ^99MRC
Variant peak start time	NM	15538	Variant Peak Start Time	99MRC	15538^ Variant Peak Start Time ^99MRC
Variant peak end time	NM	15539	Variant Peak End Time	99MRC	15539^ Variant Peak End Time ^99MRC
WBC graph data from Hema cell morphology analyzer	ED	15900	HemaScanningWbcGraph	99MRC	Format: ID-Graph No.^ HemaScanningWbcGraph-Graph No ^ 99MRC Example: 15900-1^HemaScanningWbcGraph-1^99MRC
Cell types on WBC graph (for Hema cell morphology analyzers)	ST	15901	HemaScanningWbcCellType	99MRC	Format: ID-Graph No.^ HemaScanningWbcCellType -Graph No ^ 99MRC Example: 15901-1^HemaScanningWbcCellType-1^99MRC
Flags of Abnormal Blood Cell Differential or Morphology					
WBC Scattergram Abn.	IS	12000	WBC Abnormal scattergram	99MRC	12000^WBC Abnormal scattergram^99MRC
Leucocytosis	IS	12002	Leucocytosis	99MRC	12002^Leucocytosis^99MRC
Leucopenia	IS	12003	Leucopenia	99MRC	12003^Leucopenia^99MRC
Neutrophilia	IS	12004	Neutrophilia	99MRC	12004^Neutrophilia^99MRC
Neutropenia	IS	12005	Neutropenia	99MRC	12005^Neutropenia^99MRC
Lymphocytosis	IS	12006	Lymphocytosis	99MRC	12006^Lymphocytosis^99MRC
Lymphopenia	IS	12007	Lymphopenia	99MRC	12007^Lymphopenia^99MRC
Monocytosis	IS	12008	Monocytosis	99MRC	12008^Monocytosis^99MRC
Eosinophilia	IS	12009	Eosinophilia	99MRC	12009^Eosinophilia^99MRC
Basophilia	IS	12010	Basophilia	99MRC	12010^Basophilia^99MRC
Left Shift?	IS	17790-7	WBC Left Shift?	LN	17790-7^WBC Left Shift?^LN

Immature Gran?	IS	34165-1	Imm Granulocytes?	LN	34165-1^Imm Granulocytes?^LN
Atypical Lymph?	IS	15192-8	Atypical Lymphs?	LN	15192-8^Atypical Lymphs?^LN
RBC Lyse Resistance?	IS	34525-6	rstRBC	LN	34525-6^rstRBC^LN
Erythrocytosis	IS	12012	Erythrocytosis	99MRC	12012^Erythrocytosis^99MRC
Anisocytosis	IS	15150-6	Anisocytosis	LN	15150-6^Anisocytosis^LN
Macrocytosis	IS	12075	Macrocytes	99MRC	12075^Macrocytes^LN
Microcytosis	IS	12076	Microcytes	99MRC	12076^Microcytes^LN
Dimorphic Population	IS	10379-6	RBC Dual Pop	LN	10379-6^RBC Dual Pop^LN
Anemia	IS	12014	Anemia	99MRC	12014^Anemia^99MRC
Hypochromia	IS	15180-3	Hypochromia	LN	15180-3^Hypochromia^LN
Turbidity/HGB Interference?	IS	12015	HGB Interfere	99MRC	12015^HGB Interfere^99MRC
Thrombocytosis	IS	12017	Thrombocytosis	99MRC	12017^Thrombocytosis^99MRC
Thrombopenia	IS	12018	Thrombopenia	99MRC	12018^Thrombopenia^99MRC
PLT Clump?	IS	7796-6	Platelet Clump?	LN	7796-6^Platelet Clump?^LN
Asp.Abn/Abn.Sample	IS	12021	Sample Abnormal	99MRC	12021^Sample Abnormal^99MRC
Small Platelet	IS	32208-1	Platelets.small	LN	32208-1^Platelets.small^LN
Iron Deficiency?	IS	12024	Iron Deficiency	99MRC	12024^Iron Deficiency^99MRC
DIFF Analysis Abn.	IS	12027	DIFF-CH Error	99MRC	12027^DIFF-CH Error^99MRC
Blasts?	IS	44017-2	Blasts	LN	44017-2^Blasts^LN
RBC Analysis Abn.	IS	12030	RBC-CH Error	99MRC	12030^RBC-CH Error^99MRC
RBC Agglutination?	IS	50670-9	RBC Agglutination?	LN	50670-9^ RBC Agglutination?^LN
PLT Analysis Abn.	IS	12033	PLT-CH Error	99MRC	12033^PLT-CH Error^99MRC
BASO Analysis Abn.	IS	12035	BASO-CH Error	99MRC	12035^BASO-CH Error^99MRC
RET Analysis Abn.	IS	12039	RET-CH Error	99MRC	12039^RET-CH Error^99MRC
RET Scattergram Abn.	IS	12040	RET Abn Scattergram	99MRC	12040^RET Abn Scattergram^99MRC

Reticulocytosis	IS	12041	Reticulocytosis	99MRC	12041^Reticulocytosis^99MRC
NRBC Analysis Abn.	IS	12043	NRBC-CH Error	99MRC	12043^NRBC-CH Error^99MRC
NRBC Scattergram Abn.	IS	12044	NRBC Abn Scattergram	99MRC	12044^NRBC Abn Scattergram^99MRC
Abn Lymph/blast?	IS	12053	Abn Lympho/ Blasts	99MRC	12053^Abn Lympho/ Blasts^99MRC
NRBC?	IS	12054	NRBC?	99MRC	12054^NRBC?^99MRC
Lipid Particles?	IS	12055	Lipid Particles?	99MRC	12055^Lipid Particles? ^99MRC
Infected RBC?	IS	12056	Infected RBC?	99MRC	12056 RBC? ^99MRC
Clogging	IS	12058	Clog	99MRC	12058^Clog^99MRC
RBC Analysis Abn.	IS	12060	RBC-CH Error	99MRC	12060^RBC-CH Error^99MRC
HGB Analysis Abn.	IS	12062	HGB-CH Error	99MRC	12062^HGB-CH Error^99MRC
Fragments?	IS	12063	Fragments	99MRC	12063^Fragments^99MRC
RBC Histogram Abn.	IS	12064	RBC Abnormal histogram	99MRC	12064^RBC Abnormal histogram^99MRC
PLT-O Analysis Abn.	IS	12067	PLT-O-CH Erro	99MRC	12067^PLT-O-CH Erro^99MRC
PLT Histogram Abn.	IS	12068	PLT Abnormal histogram	99MRC	12068^PLT Abnormal histogram^99MRC
PLT Scattergram Abn.	IS	12069	PLT Abn Scattergram	99MRC	12069^PLT Abn Scattergram^99MRC
Large Platelet	IS	12070	Platelets.Large	99MRC	12070^Platelets.Large^99MRC
Giant Platelet	IS	12071	Platelets.Giant	99MRC	12071^Platelets.Giant^99MRC
System Error	IS	12072	System Error	99MRC	12072^System Error^99MRC
Status abnormal	IS	12073	Status Abn	99MRC	12073^Status Abn^99MRC
Pancytopenia	IS	12074	Pancytopenia	99MRC	12074^Pancytopenia ^99MRC
NRBC Present	IS	34188-3	NRBC present	LN	34188-3^NRBC present^LN
CRP sample aspiration abnormal	IS	12021-1	CRP Sample Abnormal	99MRC	12021-1^CRP Sample Abnormal^99MRC
CRP sample analysis abnormal	IS	12080	CRP System Error	99MRC	12080^CRP System Error^99MRC
BCV abnormal	IS	12081	CRP Abnormal HCT Calibrate	99MRC	12081^CRP Abnormal HCT Calibrate^99MRC
CRP New Latex not	IS	12082	CRP New	99MRC	12082^CRP New Latex not

Calibrated			Latex not Calibrated		Calibrated^99MRC
Insufficient aspiration	IS	12101	Aspiration Abn	99MRC	12101^Aspiration Abn^99MRC
WNB channel abnormal	IS	12102	WNB Analysis Abn	99MRC	12102^WNB Analysis Abnr^99MRC
WNB Abn Scattergram	IS	12103	WNB Abn Scattergram	99MRC	12103^WNB Abn Scattergram^99MRC
WBC Fragments?	IS	12104	WBC Fragments?	99MRC	12104^WBC Fragments?^99MRC
Sample aspiration is abnormal	IS	12105	Aspiration Abnormal	99MRC	12105^Aspiration Abnormal^99MRC
Chromatogram area too large.	IS	12083	High Area	99MRC	12083^ High Area ^99MRC
Chromatogram area too small.	IS	12084	Low Area	99MRC	12084^ Low Area ^99MRC
SA1c Peak not properly separated	IS	12085	SA1c Peak not properly separated	99MRC	12085^ SA1c Peak not properly separated^99MRC
HbA0 peak abnormal	IS	12086	HbA0 Peak Abn.	99MRC	12086^ HbA0 Peak Abn.^99MRC
Abnormal peak number	IS	12087	Peak Num Abn.	99MRC	12087^ Peak Num Abn.^99MRC
Chromatography abnormal	IS	12088	Chro. Abn.	99MRC	12088^ Chro. Abn.^99MRC
Shorter SA1c retention time	IS	12089	Early SA1c RTime.	99MRC	12089^ Early SA1c RTime.^99MRC
Longer SA1c retention time	IS	12090	Late SA1c RTime.	99MRC	12090^ Late SA1c RTime.^99MRC
Shorter HbA0 retention time	IS	12091	Early HbA0 RTime.	99MRC	12091^ Early HbA0 RTime.^99MRC
Longer HbA0 retention time	IS	12092	Late HbA0 RTime.	99MRC	12092^ Late HbA0 RTime.^99MRC
Analysis not completed	IS	12093	Analysis not completed	99MRC	12093^ Analysis not completed ^99MRC
Abnormal signal	IS	12094	Signal Abn.	99MRC	12094^ Signal Abn.^99MRC
Suspected HbE result	IS	12095	Suspected HbE	99MRC	12095^ Suspected HbE ^99MRC
Suspicious HbD results	IS	12096	Suspected HbD	99MRC	12096^ Suspected HbD ^99MRC
HbS detected	IS	12097	HbS detected	99MRC	12097^ HbS detected ^99MRC
HbC detected	IS	12098	HbC detected	99MRC	12098^ HbC detected

					^99MRC
Suspected Hb Variant	IS	12099	Suspected Hb Variant	99MRC	12099^ Suspected Hb Variant ^99MRC
SAA Analysis abnormal	IS	12109	SAA Analysis Error	99MRC	12109^ SAA Analysis Error^99MRC
ESR analysis abnormal	IS	17200	ESR Analysis Error	99MRC	17200 ^ ESR Analysis Error ^99MRC
PLT-H histogram abnormal	IS	17201	PLT-H Abnormal histogram	99MRC	17201 ^ PLT-H Abnormal histogram ^99MRC
Low-value WBC	IS	12302	Scan WBC Low	99MRC	12302^ Scan WBC Low ^99MRC
Too many artifacts	IS	12303	Scan Artifact High	99MRC	12303^ Scan Artifact High ^99MRC
New SAA latex, no calibrate	IS	17203	New SAA latex, no calibrate	99MRC	17203 ^ New SAA latex, no calibrate ^99MRC
Sampling Probe Clogged	IS	17204	Sampling Probe Clogged	99MRC	17204 ^ Sampling Probe Clogged ^99MRC
Morphology analysis result					
Segmented neutrophil#	NM	16000-1	SNE#	99MRC	16000-1^ SNE# ^99MRC
Segmented neutrophil%	NM	16000-2	SNE%	99MRC	16000-2^ SNE% ^99MRC
Eosinophil#	NM	16001-1	EO#	99MRC	16001-1^ EO# ^99MRC
Eosinophil%	NM	16001-2	EO%	99MRC	16001-2^ EO% ^99MRC
Basophil#	NM	16002-1	BA#	99MRC	16002-1^ BA# ^99MRC
Basophil%	NM	16002-2	BASO%	99MRC	16002-2^ BA% ^99MRC
Lymphocyte#	NM	16003-1	LY#	99MRC	16003-1^ LY# ^99MRC
Lymphocyte%	NM	16003-2	LY%	99MRC	16003-2^ LY% ^99MRC
Monocyte#	NM	16004-1	MO#	99MRC	16004-1^ MO# ^99MRC
Monocyte%	NM	16004-2	MO%	99MRC	16004-2^ MO% ^99MRC
Band neutrophil#	NM	16005-1	BNE#	99MRC	16005-1^ BNE# ^99MRC
Band neutrophil%	NM	16005-2	BNE%	99MRC	16005-2^ BNE% ^99MRC
Variant lymphocyte#	NM	16006-1	VLY#	99MRC	16006-1^ VLY# ^99MRC
Variant lymphocyte%	NM	16006-2	VLY%	99MRC	16006-2^ VLY% ^99MRC
Reactive lymphocyte#	NM	16007-1	RLY#	99MRC	16007-1^ RLY# ^99MRC
Reactive lymphocyte%	NM	16007-2	RLY%	99MRC	16007-2^ RLY% ^99MRC
Abnormal lymphocyte#	NM	16008-1	ALY#	99MRC	16008-1^ ALY# ^99MRC

Abnormal lymphocyte%	NM	16008-2	ALY%	99MRC	16008-2^ ALY% ^99MRC
Promyelocyte#	NM	16009-1	PMY#	99MRC	16009-1^ PMY# ^99MRC
Promyelocyte%	NM	16009-2	PMY%	99MRC	16009-2^ PMY% ^99MRC
Myelocyte#	NM	16010-1	MY#	99MRC	16010-1^ MY# ^99MRC
Myelocyte%	NM	16010-2	MY%	99MRC	16010-2^ MY% ^99MRC
Metamyelocyte#	NM	16011-1	MMY#	99MRC	16011-1^ MMY# ^99MRC
Metamyelocyte%	NM	16011-2	MMY#	99MRC	16011-2^ MMY% ^99MRC
Blast cell#	NM	16012-1	BL#	99MRC	16012-1^ BL# ^99MRC
Blast cell%	NM	16012-2	BL%	99MRC	16012-2^ BL% ^99MRC
Prolymphocyte#	NM	16013-1	PLY#	99MRC	16013-1^ PLY# ^99MRC
Prolymphocyte%	NM	16013-2	PLY%	99MRC	16013-2^ PLY% ^99MRC
Plasma cell#	NM	16014-1	PC#	99MRC	16014-1^ PC# ^99MRC
Plasma cell%	NM	16014-2	PC%	99MRC	16014-2^ PC% ^99MRC
Large granular lymphocyte#	NM	16015-1	LGLY#	99MRC	16015-1^ LGLY# ^99MRC
Large granular lymphocyte%	NM	16015-2	LGLY%	99MRC	16015-2^ LGLY% ^99MRC
Immature basophil#	NM	16016-1	IBO#	99MRC	16016-1^ IBO# ^99MRC
Immature basophil%	NM	16016-2	IBO%	99MRC	16016-2^ IBO% ^99MRC
Immature eosinophil#	NM	16017-1	IEO#	99MRC	16017-1^ IEO# ^99MRC
Immature eosinophil%	NM	16017-2	IEO%	99MRC	16017-2^ IEO% ^99MRC
Hairy cell#	NM	16018-1	HC#	99MRC	16018-1^ HC# ^99MRC
Hairy cell%	NM	16018-2	HC%	99MRC	16018-2^ HC% ^99MRC
Sezary cell#	NM	16019-1	SEC#	99MRC	16019-1^ SEC# ^99MRC
Sezary cell%	NM	16019-2	SEC%	99MRC	16019-2^ SEC% ^99MRC
Promonocyte#	NM	16020-1	PMO#	99MRC	16020-1^ PMO# ^99MRC
Promonocyte%	NM	16020-2	PMO%	99MRC	16020-2^ PMO% ^99MRC
Smudge cell#	NM	16021-1	SMU#	99MRC	16021-1^ SMU# ^99MRC
Smudge cell%	NM	16021-2	SMU%	99MRC	16021-2^ SMU% ^99MRC
Erythroblasts (NRBC) #	NM	16022-1	ERB#	99MRC	16022-1^ ERB# ^99MRC
Erythroblasts (NRBC)%	NM	16022-2	ERB%	99MRC	16022-2^ ERB% ^99MRC
Artefact#	NM	16023-1	ART#	99MRC	16023-1^ ART# ^99MRC
Artefact%	NM	16023-2	ART%	99MRC	16023-2^ ART% ^99MRC
Giant thrombocyte#	NM	16024-1	GT#	99MRC	16024-1^ GT# ^99MRC
Giant thrombocyte%	NM	16024-2	GT%	99MRC	16024-2^ GT% ^99MRC
Megakaryocyte#	NM	16025-1	MEK#	99MRC	16025-1^ MEK# ^99MRC
Megakaryocyte%	NM	16025-2	MEK%	99MRC	16025-2^ MEK% ^99MRC

Not classed#	NM	16026-1	NC#	99MRC	16026-1^ NC# ^99MRC
Not classed%	NM	16026-2	NC%	99MRC	16026-2^ NC% ^99MRC
Thrombocyte aggregate#	NM	16027-1	TAG#	99MRC	16027-1^ TAG# ^99MRC
Thrombocyte aggregate%	NM	16027-2	TAG%	99MRC	16027-2^ TAG% ^99MRC
Other#	NM	16028-1	OTH#	99MRC	16028-1^ OTH# ^99MRC
Other%	NM	16028-2	OTH%	99MRC	16028-2^ OTH% ^99MRC
Poikilocytosis	NM	16200-1	SPOC	99MRC	16200-1^ SPOC^99MRC
Poikilocytosis(percentage)	NM	16200-2	SPOC%	99MRC	16200-2^ SPOC%^99MRC
Teardrop cells	NM	16201-1	STD	99MRC	16201-1^ STD^99MRC
Teardrop cells(percentage)	NM	16201-2	STD%	99MRC	16201-2^ STD%^99MRC
Elliptocytes	NM	16202-1	SELC	99MRC	16202-1^ SELC^99MRC
Elliptocytes%	NM	16202-2	SELC%	99MRC	16202-2^ SELC%^99MRC
Ovalocytes	NM	16203-1	SOVC	99MRC	16203-1^ SOVC^99MRC
Ovalocytes%	NM	16203-2	SOVC%	99MRC	16203-2^ SOVC%^99MRC
Sickle cells	NM	16204-1	SSI	99MRC	16204-1^ SSI^99MRC
Sickle cells%	NM	16204-2	SSI%	99MRC	16204-2^ SSI%^99MRC
Schistocytes	NM	16205-1	SSCC	99MRC	16205-1^ SSCC^99MRC
Schistocytes%	NM	16205-2	SSCC%	99MRC	16205-2^ SSCC%^99MRC
Helmet cells	NM	16206-1	SHE	99MRC	16206-1^ SHE^99MRC
Helmet cells%	NM	16206-2	SHE%	99MRC	16206-2^ SHE%^99MRC
Acanthocytes	NM	16207-1	SACC	99MRC	16207-1^ SACC^99MRC
Acanthocytes%	NM	16207-2	SACC%	99MRC	16207-2^ SACC%^99MRC
Echinocytes	NM	16208-1	SECC	99MRC	16208-1^ SECC^99MRC
Echinocytes%	NM	16208-2	SECC%	99MRC	16208-2^ SECC%^99MRC
Stomatocytes	NM	16209-1	SSTC	99MRC	16209-1^ SSTC^99MRC
Stomatocytes%	NM	16209-2	SSTC%	99MRC	16209-2^ SSTC%^99MRC
Target cells	NM	16210-1	STA	99MRC	16210-1^ STA^99MRC
Target cells%	NM	16210-2	STA%	99MRC	16210-2^ STA%^99MRC
Spherocytes	NM	16211-1	SSPC	99MRC	16211-1^ SSPC^99MRC
Spherocytes%	NM	16211-2	SSPC%	99MRC	16211-2^ SSPC%^99MRC
Basophilic stippling	NM	16212-1	IBST	99MRC	16212-1^ IBST^99MRC
Basophilic stippling%	NM	16212-2	IBST%	99MRC	16212-2^ IBST%^99MRC
Pappenheimer bodies	NM	16213-1	IPAB	99MRC	16213-1^ IPAB^99MRC
Pappenheimer bodies%	NM	16213-2	IPAB%	99MRC	16213-2^ IPAB%^99MRC
Howell-Jolly bodies	NM	16214-1	IHJB	99MRC	16214-1^ IHJB^99MRC
Howell-Jolly bodies%	NM	16214-2	IHJB%	99MRC	16214-2^ IHJB%^99MRC

Parasites	NM	16215-1	IPAR	99MRC	16215-1^ IPAR^99MRC
Parasites%	NM	16215-2	IPAR%	99MRC	16215-2^ IPAR%^99MRC
Hypochromatic cells	NM	16216-1	CHYP	99MRC	16216-1^ CHYP^99MRC
Hypochromatic cells%	NM	16216-2	CHYP%	99MRC	16216-2^ CHYP%^99MRC
Polychromatic cells	NM	16217-1	CPOL	99MRC	16217-1^ CPOL^99MRC
Polychromatic cells%	NM	16217-2	CPOL%	99MRC	16217-2^ CPOL%^99MRC
Anisocytosis	NM	16218-1	ZANI	99MRC	16218-1^ ZANI^99MRC
Anisocytosis%	NM	16218-2	ZANI%	99MRC	16218-2^ ZANI%^99MRC
Microcytes	NM	16219-1	ZMIC	99MRC	16219-1^ ZMIC^99MRC
Microcytes%	NM	16219-2	ZMIC%	99MRC	16219-2^ ZMIC%^99MRC
Macrocytes	NM	16220-1	ZMAC	99MRC	16220-1^ ZMAC^99MRC
Macrocytes%	NM	16220-2	ZMAC%	99MRC	16220-2^ ZMAC%^99MRC
Mean PLT/HPF	NM	16400	AVG	99MRC	16400^ AVG^99MRC
PLT estimate	NM	16401	EST	99MRC	16401^ EST^99MRC
PLT concentration level	NM	16402	LVL	99MRC	16402^ LVL^99MRC
Laboratory Name	NM	16403	Sender Facility	99MRC	16403^ Sender Facility ^99MRC
WBC count	NM	16404	WBC Count	99MRC	16404^ WBC Count ^99MRC
WBC results validated	NM	16405	WBCCONFIRM	99MRC	16405^ WBCCONFIRM ^99MRC
RBC results validated	NM	16406	RBCCONFIRM	99MRC	16406^ RBCCONFIRM ^99MRC
PLT results validated	NM	16407	PLTCONFIRM	99MRC	16407^ PLTCONFIRM ^99MRC
Mindray cell morphology analyzer results					
Segmented neutrophils (percentage)	NM	16701-1	Seg-Neur%	99MRC	16701-1^Seg-Neur%^99MRC
Segmented neutrophils (number)	NM	16701-2	Seg-Neur#	99MRC	16701-2^Seg-Neur#^99MRC
Reactive lymphocytes* (percentage)	NM	16702-1	R-Lymr%	99MRC	16702-1^R-Lymr%^99MRC
Reactive lymphocytes * (number)	NM	16702-2	R-Lymr#	99MRC	16702-2^R-Lymr#^99MRC
Promyelocytes (percentage)	NM	16703-1	Pro-Myer%	99MRC	16703-1^Pro-Myer%^99MRC
Promyelocytes (number)	NM	16703-2	Pro-Myer#	99MRC	16703-2^Pro-Myer#^99MRC
Plasma cells	NM	16704-1	Plasmar%	99MRC	16704-1^Plasmar%^99MR

(percentage)					C
Plasma cells (number)	NM	16704-2	Plasmar#	99MRC	16704-2^Plasmar#^99MRC
Unidentified (percentage)	NM	16705-1	Unidentified%	99MRC	16705-1^Unidentified%^99MRC
Unidentified (number)	NM	16705-2	Unidentified#	99MRC	16705-2^Unidentified#^99MRC
Myelocytes (percentage)	NM	16706-1	Myer%	99MRC	16706-1^Myer%^99MRC
Myelocytes (number)	NM	16706-2	Myer#	99MRC	16706-2^Myer#^99MRC
Monocytes (percentage)	NM	16707-1	Monr%	99MRC	16707-1^Monr%^99MRC
Monocytes (number)	NM	16707-2	Monr%	99MRC	16707-2^Monr#^99MRC
Metamyelocytes (percentage)	NM	16708-1	Meta-Myer%	99MRC	16708-1^Meta-Myer%^99MRC
Metamyelocytes (number)	NM	16708-2	Meta-Myer#	99MRC	16708-2^Meta-Myer#^99MRC
Lymphocytes (percentage)	NM	16709-1	Lymr%	99MRC	16709-1^Lymr%^99MRC
Lymphocytes (number)	NM	16709-2	Lymr#	99MRC	16709-2^Lymr#^99MRC
Eosinophils percentage	NM	16710-1	Eosr%	99MRC	16710-1^Eosr%^99MRC
Eosinophils (number)	NM	16710-2	Eosr#	99MRC	16710-2^Eosr#^99MRC
Blast cells (percentage)	NM	16711-1	Blastr%	99MRC	16711-1^Blastr%^99MRC
Blast cells (number)	NM	16711-2	Blastr#	99MRC	16711-2^Blastr#^99MRC
Basophils percentage	NM	16712-1	Basr%	99MRC	16712-1^Basr%^99MRC
Basophils (number)	NM	16712-2	Basr#	99MRC	16712-2^Basr#^99MRC
Neutrophils, band(percentage)	NM	16713-1	Band-Neur%	99MRC	16713-1^Seg-Neur%^99MRC
Neutrophils, band(number)	NM	16713-2	Band-Neur#	99MRC	16713-2^Band-Neur#^99MRC
Abnormal Promyelocytes (percentage)	NM	16714-1	Abn-Promyer%	99MRC	16714-1^Abn-Promyer%^99MRC
Abnormal Promyelocytes (number)	NM	16714-2	Abn-Promyer#	99MRC	16714-2^Abn-Promyer#^99MRC
Abnormal Lymphocytes percentage	NM	16715-1	Abn-Lymr%	99MRC	16715-1^Abn-Lymr%^99MRC
Abnormal Lymphocyte (number)	NM	16715-2	Abn-Lymr#	99MRC	16715-2^Abn-Lymr#^99MRC

Giant Platelet number	NM	16716-1	G-PLT#	99MRC	16716-1^G-PLT#^99MRC
Smudge cells (percentage)	NM	16717-1	Smudge%	99MRC	16717-1^Smudge%^99MRC
Smudge cells (number)	NM	16717-2	Smudge#	99MRC	16717-2^Smudge#^99MRC
Nucleated Red Blood Cell percentage	NM	16718-1	NRBC%	99MRC	16718-1^NRBC%^99MRC
NRBC number	NM	16718-2	NRBC#	99MRC	16718-2^NRBC#^99MRC
PLT clump number	NM	16719-1	PLT clumps#	99MRC	16719-1^PLT clumps#^99MRC
Large platelets (number)	NM	16720-1	L-PLT#	99MRC	16720-1^L-PLT#^99MRC
Artefacts (number)	NM	16721-1	Artefacts#	99MRC	16721-1^Artefacts#^99MRC
Megakaryocytes (number)	NM	16722-1	Meg#	99MRC	16722-1^Meg#^99MRC
PLT estimate	NM	16723	EST	99MRC	16723^EST^99MRC
Mindray morphology analyzer cell image path	ST	16724	ScanningGraph Path	99MRC	16724^ScanningGraph Path^99MRC

Table 30 Parameter Units in Communication

Parameter Units in Software	Parameter Units in Communication (OBX-6)
10^12/L	10*12/L
10^9/L	10*9/L
10^4/L	10*4/L
10^3/L	10*3/L
10^6/uL	10*6/uL
10^4/uL	10*4/uL
10^3/uL	10*3/uL
10^2/uL	10*2/uL
mL/L	mL/L
/nL	/nL
/pL	/pL
g/L	g/L
g/dL	g/dL
L/L	L/L
mmol/L	mmol/L
%	%
fL	fL
um^3	um\S\3
pg	pg
fmol	fmol
amol	amol

Parameter Units in Software	Parameter Units in Communication (OBX-6)
year (age unit)	yr
month (age unit)	mo
day (age unit)	d
hour (age unit)	hr
week (age unit)	wk
%(NGSP)	%(NGSP)
mmol/mol	mmol/mol
%(Mono-S)	%(Mono-S)
mg/dL	mg/dL
s (time unit, second)	s
mm/h	mm/h

3. Some OBX messages uses custom enumeration values. See Table 31 for the meaning of the values.

Table 31 HL7 and ASTM Enumeration Definitions

Data	Value Enumeration
Take Mode	Value enumeration: “O” - open-vial “A” - autoloading “C” – closed-tube
Blood Mode	Value enumeration: “W”- whole blood “P” - predilute "B": Body fluid “Q” – quality control
Test Mode	Value enumeration: Can be one of the following modes, or any combination of the modes: “DIFF” "RET" “NRBC” "CBC+DIFF+RET+NRBC" “CRP” “CBC+DIFF+RET+NRBC+CRP” “SMST” “CBC+DIFF+RET+NRBC“CRP”” “CR/PLT-8X” “CDR/PLT-8X” “A1C” “STANDARD” “EXTEND” “Number WBC”, for example, “100WBC”, “200WBC” etc. (number can be any integral between 50-500) “RBC”

Data	Value Enumeration
	“PLT” “PLTPRO” “SMST+100WBC+RBC+PLT+PLTPRO”
Qc Level	Value enumeration: “L”-low “M”- medium “H”- high "N"-normal “P”-Pathological “CRL-1”- CRL-1 “CRL-2”- CRL-2
Histogram discriminator adjusted flag and other flags	The data type of OBX-2 is “IS”. Value enumeration: “T”- true “F”- false
QC analysis date/time edited flag	“E” - edited. Not transmitted if the date/time is not edited.
Panel (Project Type)	“BL”: Blood "BF": Body fluid
Gender	“M (or m): male “F (or f)”: female “U”/“u”: unkown Others: Directly displayed as string.

4. Histogram data: the histograms can be transmitted in the following ways based on the software configuraton:

1) do not transmit histogram data.

2) Transmitted as bitmap. The data type field of OBX segment is “ED”, and the data field is in the form of “^Image^BMP^Base64^……bitmap histogram data……”, where “Image” indicates that the data in transmission is data of graphs, “BMP” is the custom subdata type, and “Base64” is the way of coding the bitmap data.

3) Transmitted as binary histogram data. The data type field of OBX segment is “ED”, and the data field is in the form of “^Application^Octet-stream^Base64^……histogram data……”, where “Application^Octer-stream” is the HL7 standard subdata type, indicating the binary data defined by the application, and “Base64” is the way of coding the bitmap data.

Note: the ID field in the OBX segment defines whether the histogram is transmitted in bitmap or binary data.

5. Scattergram data: the data type field of OBX segment is “ED”, and the data field is in the form of “^Image^BMP^Base64^……scattergram bitmap data……”, where “Image^BMP^Base64” indicates that the data in transmission is BMP data coded by Base 64.

In the transmission of the greyout particle type array of scattergram, the data type of OBX segment is “ED”; the data field is similar to “^Application^Octet-stream^Base64^……greyout particle type array data……”, where the length is variable; the particle types are enumeration values. See the table below for the matching between the enumeration values and the cell types.

MinType	0x0	MIN Type
BasoGhost	0x0	Ghost
Baso	0x01	Basophil
BasoWbc	0x02	WBCs
DiffGhost	0x03	Ghost
DiffLym	0x04	Lymphocyte
DiffMon	0x05	Monocyte
DiffEos	0x06	Eosinophil
DiffNeu	0x07	Neutrophil
DiffAly	0x08	Abnormal lymphocyte
DiffImm	0x09	Immature cell
RetRbc	0x0a	Red blood cell
RetLfr	0x0b	Low fluorescent RET
RetMfr	0x0c	Middle fluorescent RET
RetHfr	0x0d	High fluorescent RET
RetWbc	0x0e	White blood cell
RetPlt	0x0f	PLT
Nrbc	0x10	Nucleated red blood cell
NrbcGhost	0x11	Ghost
NrbcWbc	0x12	WBCs
Notype	0x13	Not differentiated
DiffHf	0x14	High fluorescent cell -body fluid
RetIpf	0x15	Immature platelet
MaxType	0x16	Maximal number of types

6. Communication of patient age: the age of the patient is transmitted in an OBX segment which contains an integer and a unit. The age could be “<1” day (same as the labXpert UI).

Table 32 Cell types on WBC graph (for Hema cell morphology analyzers)

	Name	ID used for LIS communication
WBCs	Leukocytes	M_WBC
	Basophils	M_WBC_BAS
	Eosinophils	M_WBC_EOS
	Promyelocytes	M_WBC_PROMYEL
	Myelocytes	M_WBC_MYEL
	Metamyelocytes	M_WBC_METAMYEL
	Band neutrophils	M_WBC_BANDNEU
	Segmented	M_WBC_SEGNEU

	Name	ID used for LIS communication
	neutrophils	
	Lymphocytes	M_WBC_LYM
	Monocytes	M_WBC_MON
	Plasma cells	M_WBC_PLASM
	Reactive lymphocytes	M_WBC_REACTLYM
	Large granular lymphocytes	M_WBC_GRANLYM
	Prolymphocytes	M_WBC_PROLYM
	Atypical lymphocytes	M_WBC_ALYM
	Blasts	M_WBC_BLAST
	Sezary cells	M_WBC_SEZ
	Hairy cells	M_WBC_HAIR
	Unknown	M_WBC_UNK
Non-WBC	Artefacts	M_ARTEFACTS
	Smudge cells	M_SMUDGECELLS
	Erythroblasts (NRBC)	M_NRBC
	Giant platelets	M_GIANTPLT
	Platelets aggregations	M_PLTAGGR
	Megakaryocytes	M_MEGAKARYO

Table 33 Count channel for SAA analysis

Contents	Meaning
SAA1	Count channel for SAA analysis 1
SAA2	Count channel for SAA analysis 2

Table 34 Reference interval for morphology analysis results

Name	Name	HL7 ID
Segmented neutrophils percentage	Seg-Neur%	16701-1
Lymphocytes percentage	Lymr%	16709-1
Monocytes percentage	Monr%	16707-1
Eosinophils percentage	Eosr%	16710-1
Basophils percentage	Basr%	16712-1

Appendix D. Base64 Encoding Process

1. Select the 3 adjacent bytes (i.e. 24 bit) from the data stream to be encoded; from left to right, divide them into 4 6-bit groups; and then, the ASCII string is obtained by mapping based on Table 35 below. See below:

Raw data:	15H	A3H	4BH	
Binary data	00010101	10100011	01001011	
6-bit groups obtained after dividing	000101	011010	001101	001011
Corresponding codes	5H	1AH	0DH	0BH
Corresponding characters	F	a	N	L

Table 35 Base64 Mapping

Value/Code	Value/Code	Value/Code	Value/Code
0 A	17 R	34 I	51 z
1 B	18 S	35 j	52 0
2 C	19 T	36 k	53 1
3 D	20 U	37 l	54 2
4 E	21 V	38 m	55 3
5 F	22 W	39 n	56 4
6 G	23 X	40 o	57 5
7 H	24 Y	41 p	58 6
8 I	25 Z	42 q	59 7
9 J	26 a	43 r	60 8
10 K	27 b	44 s	61 9
11 L	28 c	45 t	62 +
12 M	29 d	46 u	63 /
13 N	30 e	47 v	
14 O	31 f	48 w	(pad) =
15 P	32 g	49 x	
16 Q	33 h	50 y	

2. Repeat step 1 continuously till the whole data stream is encoded.

When the data left is less than 3 bytes, 0 is added to the right to complement. If the 6-bit groups obtained is composed of the complement bit (0) only, then it is mapped to the “=” character. When there is the last one byte left, there will be two “=” characters in the obtained coding string; when two bytes are left, then the obtained coding string consists of one “=” character. See the two examples below:

① Raw data 0AH
00001010

Data obtained after complementing	00001010	00000000	00000000	
6-bit groups obtained after dividing	000010	100000	000000	000000
Corresponding codes	02H	20H	00H	00H
Corresponding characters	C	g	=	=

② Raw data 0AH 0BH

00001010 00001011

Data obtained after complementing	00001010	00001011	00000000	
6-bit groups obtained after dividing	000010	100000	01100	000000
Corresponding codes	02H	20H	2CH	00H
Corresponding characters	C	g	s	=

Appendix E. Communication Log

To track the problems related to LIS and to apply 1-way/2-way LIS, the communication log function is added to the labXpert, which includes: data sent and received by the labXpert, the information of communication processes, communication errors and abnormalities.

The format of the log is shown in the figure below:

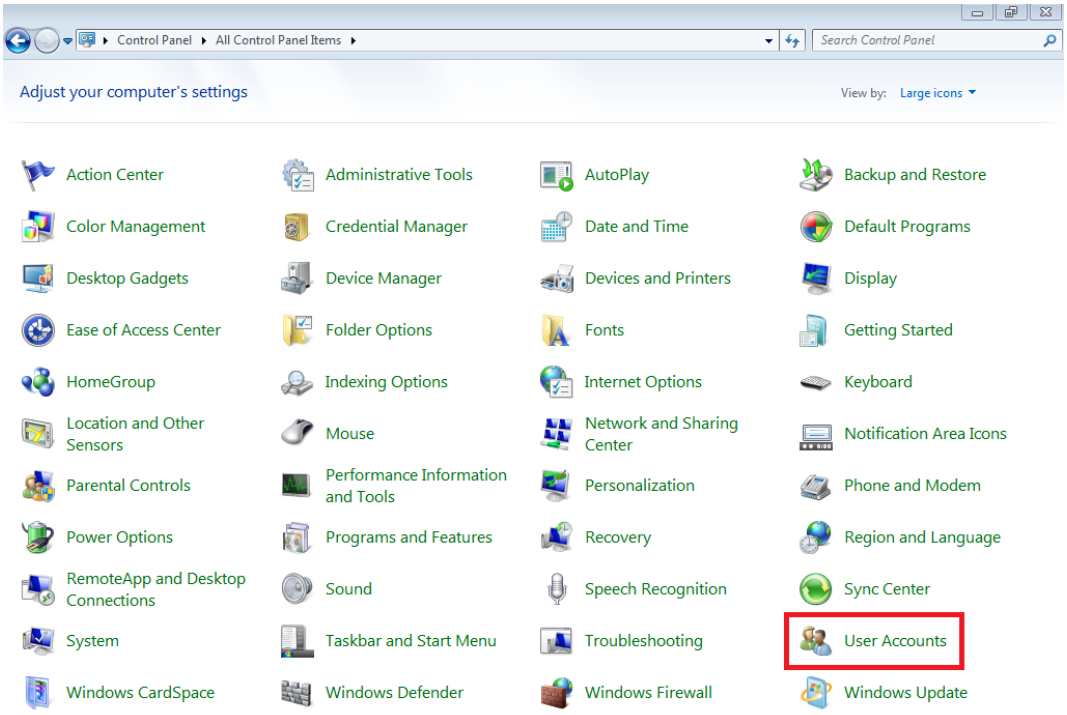
```
Begin Record :
2020-05-19 17:50:40.824 Begin Send Data
<0x0B>MSH|^~\&|LabXpert|Mindray|||20200519175040||ORU^R01|1|P|2.3.1|||||UNICODE<0x0D>
PID|1||^^^^MR<0x0D>
PV1|1<0x0D>
OBR|1||ctrl|00001^Automated Count^99MRC|||20200519175039|||||||||||||||HM|NotValidated<0x0D>
OBX|1|IS|08001^Take Mode^99MRC||O|||||F<0x0D>
OBX|2|IS|08002^Blood Mode^99MRC||W|||||F<0x0D>
OBX|3|IS|08003^Test Mode^99MRC||CBC+DIFF|||||F<0x0D>
OBX|4|IS|01002^Ref Group^99MRC||通用|||||F<0x0D>
OBX|5|IS|05007^Project Type^99MRC||BL|||||F<0x0D>
OBX|6|ST|09001^Analyzer^99MRC||BC-7500[B]|||||F<0x0D>
OBX|7|NM|789-8^RBC^LN||6.00|10*12/L|3.50-5.50|H^N|||F<0x0D>
OBX|8|NM|718-7^HGB^LN||1|g/L|110-160|L^N|||F<0x0D>
```

The log is saved in the data folder under the installation directory of the labXpert. For example, if the data folder path is: D:\LabXpertServerData. The communication folder path is: D:\LabXpertServerData\Log\LisLog, and the file name is formated as 20200519175621_Blood_202005190339.txt. Each day has a folder, each sample has a txt file. The log files of the latest 10 days are saved. Note: LabXpertServerData is a hidden folder, it can be found after choosing “Show hidden files, folders, and drives” in your computer.

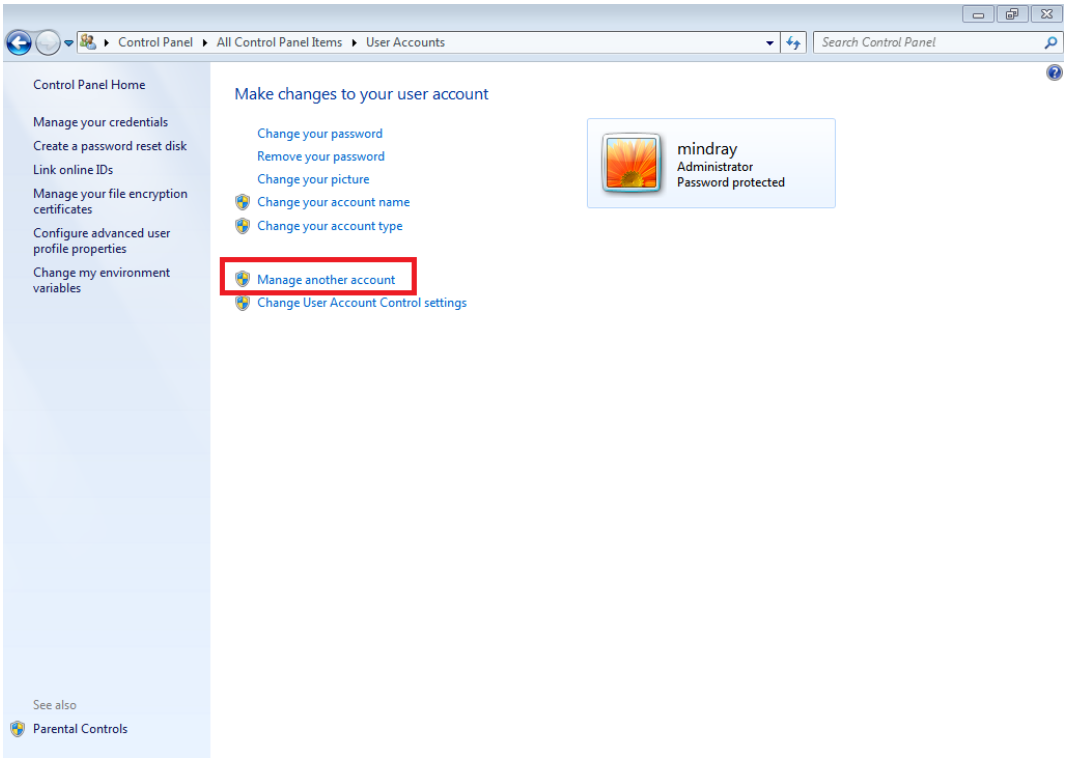
Appendix F. Enable the Guest Account

Windows 7 or Windows 8

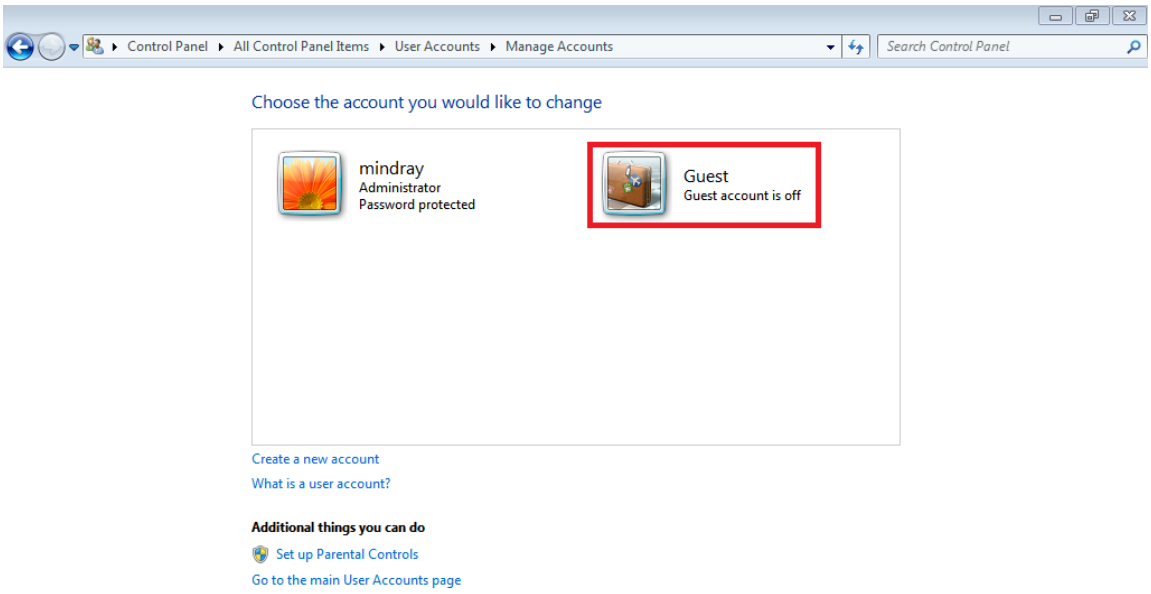
1. Open the control panel, and choose **User Accounts**.



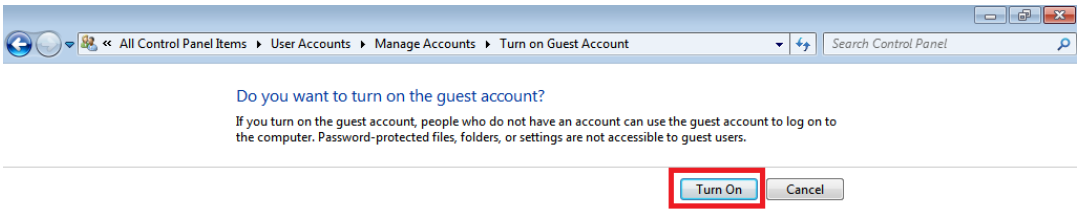
2. Click Manage **another account**.



3. Click **Guest**.



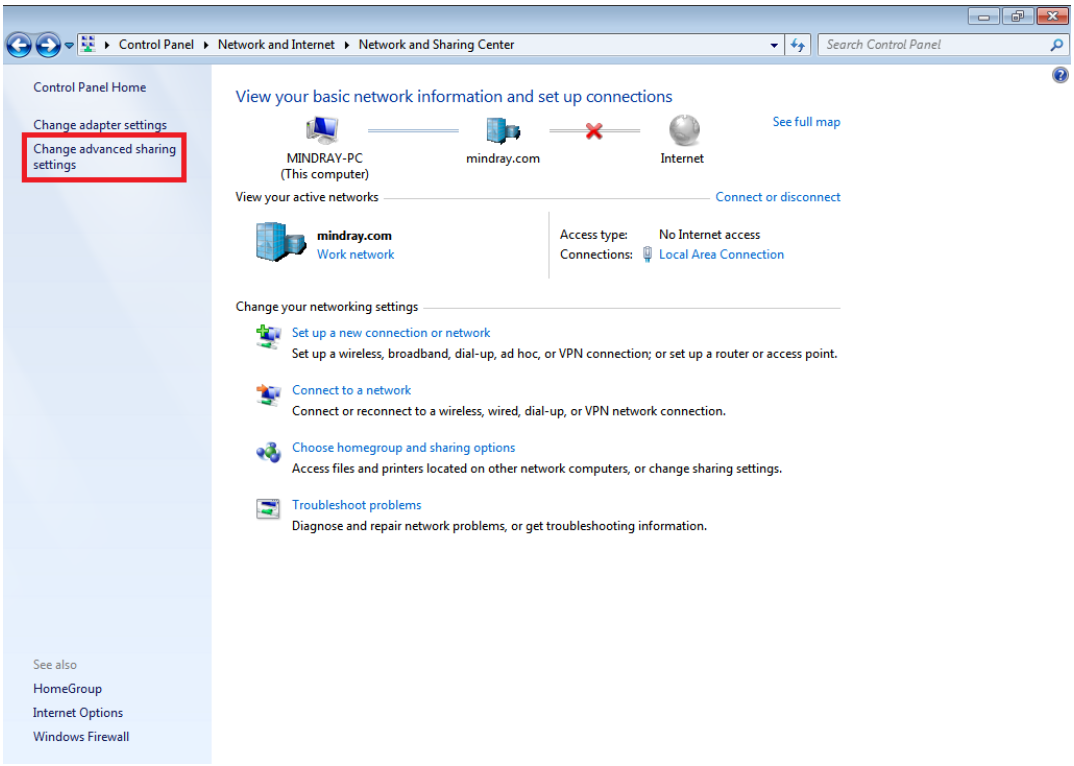
4. Click **Turn On**.



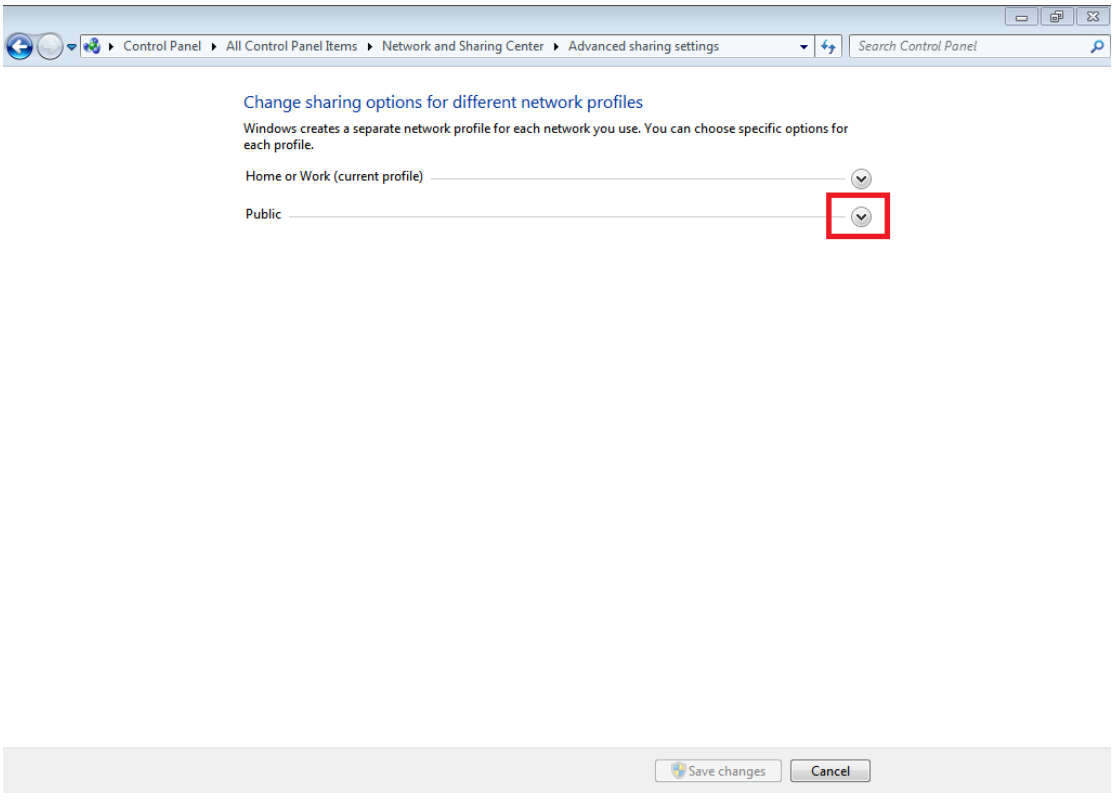
By now, the **Guest** account is activated.

Turn off the password sharing:

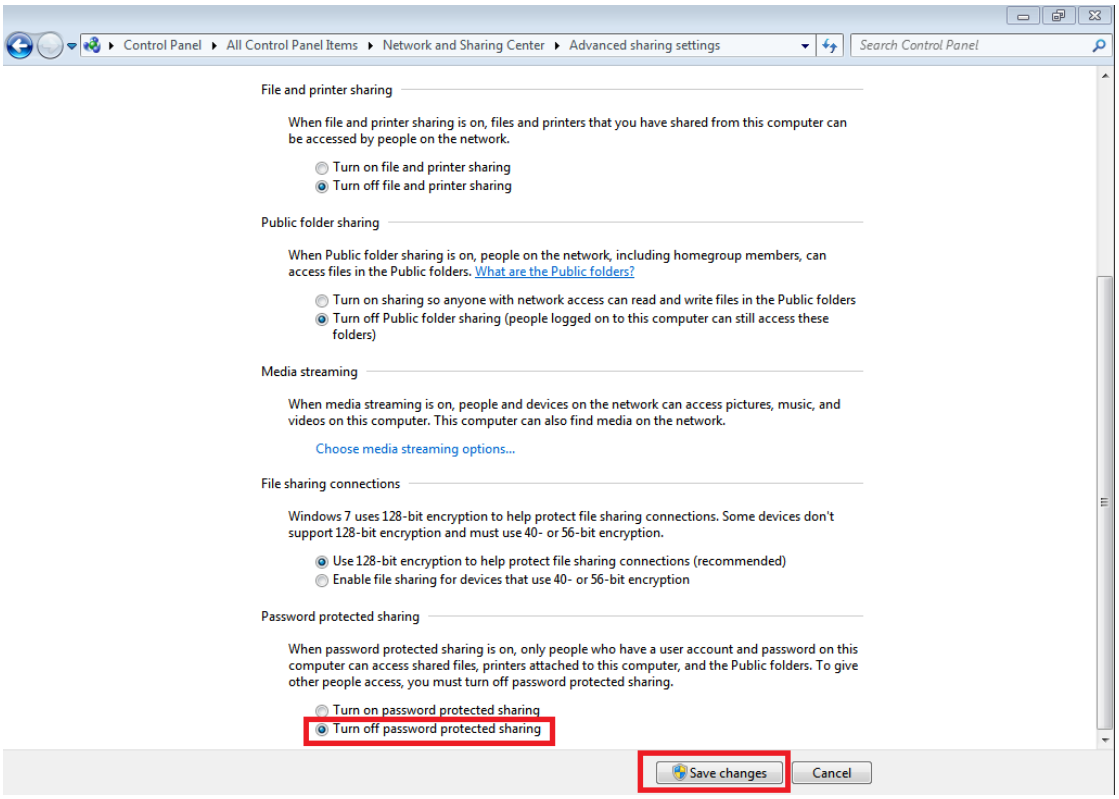
1. On the control panel, click Network and Sharing Center, and then click Change advanced sharing settings.



2. Expand the Public profile.

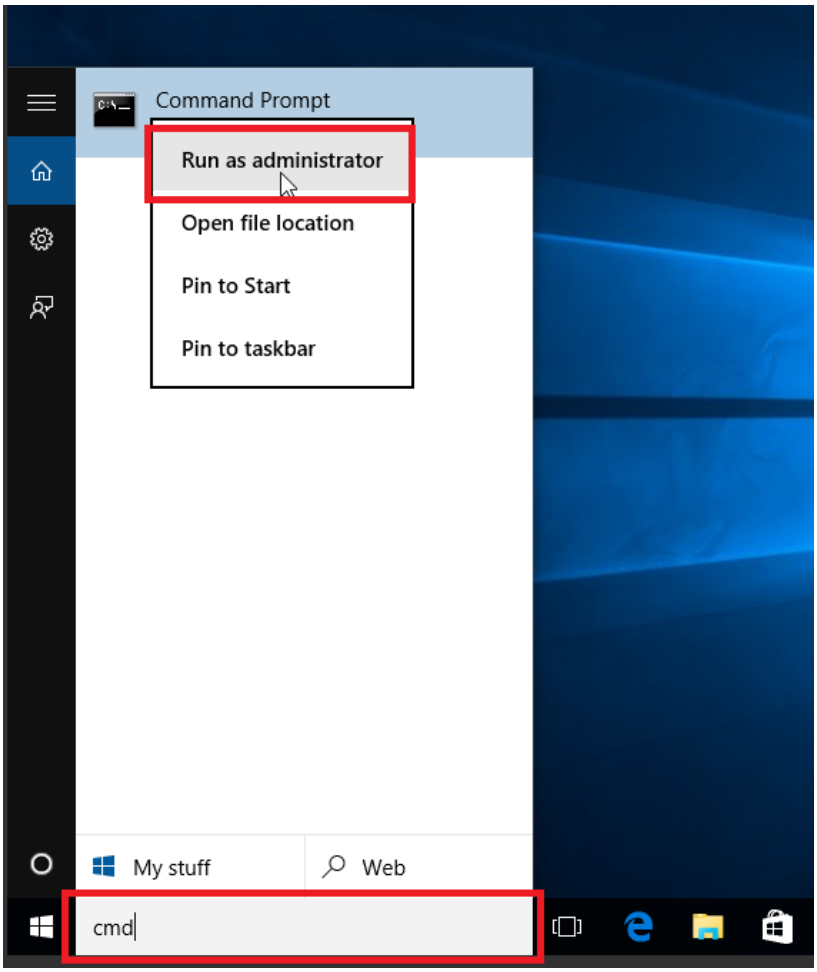


3. Select **Turn off** password **protected sharing**, and click **Save Changes**.



Windows 10

1. Click the Start button in the lower left corner of the task bar, and enter "cmd" in the search box. Right-click the searched command, and select "Run as administrator".



2. At the command prompt, enter "net user guest /active:yes" to activate the **Guest** account.
3. At the command prompt, enter "net user guest “”" to clear the password of the **Guest** account.
4. Turn off the network password. For details about the method, see the previous description about "Turn off the password sharing" in the Windows 7 or Windows 8 system.

Appendix G. JSON Standard

Refer to RFC4627.

Appendix H. Tables and Figures

PN：046-011152-00(9.0)