Abbott

Alinity h-series LIS Interface Manual (HL7)

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Foreword

The Alinity h-series LIS Interface Manual (HL7) is a messaging specification intended to specify the electronic communication between the Alinity h-series (instrument) and a Laboratory Information System (LIS). For the purpose of this document, the terms "analyzer" and "instrument" are interchangeable and refer to the Alinity h-series.

This manual assumes that the reader is familiar with the basics of the Health Level 7 (HL7) v2.5.1 standard.

The remainder of this manual specifies the dynamic and static aspects of the Alinity h-series HL7 LIS interface in detail. The specification defines message profiles for relevant HL7 message types. A message profile is an unambiguous specification of an HL7 message type intended for a particular use case as defined in Section 2.12 of the HL7 v2.5.1 standard. A message profile defines both the *dynamic* aspects of information interchange (for example, the systems that participate in such interchanges and the real-world events that trigger messaging) as well as the *static* aspects of messaging (for example, the structure and the contents of the electronic messages that are exchanged).

Although this manual describes the elements of HL7 messages and messaging interactions as they relate to this specification, it does not constitute an introduction to the HL7 messaging standard.

Refer to the Alinity h-series Operations Manual for information about communication setup and instrument communication troubleshooting.

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Customer service

For questions about the Alinity h-series, contact the local representative or find country-specific contact information at abbottdiagnostics.com.

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Data collection:

Abbott's AbbottLink software only collects operational and instrument data. It does not gather or access patient, sensitive health or other identifiable personal information ("Personal Data").

Use of data:

AbbottLink is intended to transmit connected systems operational data, which may be used by Abbott, and third parties providing related services and products, for troubleshooting, complaint investigation, performance monitoring, product improvement, research, development, inventory management, usage analytics, billing and other related purposes. In addition, AbbottLink may be used to send system updates, to provide remote service and to facilitate Abbott's delivery of third party services and products to Customer. The terms and conditions for Customer's use of such

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During Remote Support Instrument Screen Sharing, data is accessed and transferred on the basis of consent provided by the user at the point of each individual screen-sharing event. Please refer to the form of consent, displayed on your analyzer screen, when taking advantage of this service.

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Alinity h-series agency approvals

The Alinity h-series has been tested and found to comply with the following agency standards and European Union (EU) directives:

- UL61010-1 Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 1: General Requirements
- IEC/EN 61010-1 Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 1: General Requirements
- CAN/CSA-C22.2 No. 61010-1 Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 1: General Requirements
- IEC/EN 61010-2-101 Safety requirements for electrical equipment for measurement, control and laboratory use - Part 2-101: Particular requirements for in vitro diagnostic (IVD) medical equipment
- IEC/EN 61010-2-010 Safety requirements for electrical equipment for measurement, control and laboratory use - Part 2-010: Particular requirements for laboratory equipment for the heating of materials
- IEC 60825-1: Safety of Laser Products (Class 1 Laser Products)
- Directive 2012/19/EU: Waste Electrical and Electronic Equipment (WEEE)
- Directive 2011/65/EU: Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS 2)
- Directive 98/79/EC: In Vitro Diagnostic Medical Devices (IVD)
- IEC/BS EN 61326-1 Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements
- IEC/BS EN 61326-2-6 Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 2-6: Particular requirements - In vitro diagnostic (IVD) medical equipment

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For U.S. patent information, see abbott.us/patents.

Related information...

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Key to symbols

The following symbols are used on Alinity h-series labels and labeling.

Symbol	Description
	Caution: Biological RISKS
	Caution: Class 3B Laser radiation when open. Avoid eye exposure to light. Do not stare into the beam.
	Caution: Consult accompanying documents
	Caution: Entanglement hazard
	Caution: Finger pinch hazard
	Caution: Flammable material
	Caution: Hand crush hazard
	Caution: Hot surface
	Caution: Possibility of electric shock
	Caution: Probe stick hazard
	Caution: Protective conductor terminal
	Caution: Toxic material
	Consult operating instructions

Symbol	Description
	Contains sufficient for n tests
	Date of manufacture
	Manufacturer
	Temperature limitation
	Use by/Expiration date
	WEEE: Waste Electrical and Electronic Equipment **NOTE:** Indicates that the item needs to be disposed of in a separate waste collection for electrical and electronic equipment and must not be disposed of in the general waste or trash
AUTOCLEAN SOLUTION	AutoClean Solution
BAR / PSI	Barometric pressure/Pounds per square inch
DILUENT	Diluent
DO NOT FREEZE	Do not freeze
FOR USE WITH	For use with
HGB REAGENT	HGB Reagent
INLET	Inlet
IVD	*In Vitro* Diagnostic Medical Device
LOT	Batch code/Lot number
MANUFACTURED FOR	Manufactured for
MAXIMUM PRESSURE	Maximum pressure
PRODUCED FOR ABBOTT BY	Produced for Abbott by

Symbol	Description
PRODUCT OF GERMANY	Product of Germany
PRODUCT OF IRELAND	Product of Ireland
PRODUCT OF POLAND	Product of Poland
PRODUCT OF SINGAPORE	Product of Singapore
PRODUCT OF UK	Product of UK
PRODUCT OF USA	Product of USA
QTY	Quantity
REF	List number
RETIC REAGENT	RETIC Reagent
SN	Serial number
VA	Volt-Ampere
VAC	Voltage alternating current
WBC REAGENT	WBC Reagent
WORKING	Working

Related information…

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Comparison between available LIS interfaces: CLSI (ASTM) vs. HL7

The Alinity h-series System (analyzer) supports two types of LIS interfaces: CLSI (ASTM) and Health Level 7 (HL7). The analyzer can be configured to use one or the other. This section compares and contrasts the interfaces to provide information to help select which interface type to use.

The HL7 interface is the recommended interface based on additional messaging capabilities, more robust messaging, and conformance with the most current IVD industry standards [developed in partnership with Integrating the Healthcare Enterprise (IHE) Laboratory]. The CLSI (ASTM) interface is provided for legacy reasons to support LIS or host systems that do not have support for HL7 based interfaces. (CLSI: Clinical and Laboratory Standards Institute) (ASTM: American Society for Testing and Materials)

Capability	HL7	CLSI (ASTM)	Comment
Connections			
TCP/IP	X	X	Both types support connections over TCP/IP only
Dual TCP/IP Connection	X		Separate TCP/IP connections: one for incoming messages and one for outgoing messages
Single TCP/IP Connection		X	Single TCP/IP connection used for both incoming and outgoing messages
Baseline Standards			
CLSI LIS01, LIS02		X	Communication based on CLSI standards
HL7 v2.51 (IHE LAW)	X		Communication based on HL7 v2.51 and the IHE LAW messaging profiles
Supported Messages			
Order Download	X	X	
Order Query	X	X	
Results Upload	X	X	HL7 and CLSI supports all specimen types: Patient, calibrator, controls, and background.
Test Status Update	X		Test status update message triggered upon: • Test started
Sample Status Update	X		Sample status update message triggered upon: • Sample scan by analyzer • Sample processing started • Sample processing complete • Sample removal from analyzer
Messaging Layer			

Capability	HL7	CLSI (ASTM)	Comment
Application Level Acknowledgment	X		HL7 requires application level acknowledgment of received messages (for example, the message is valid and has been accepted by the receiving application). CLSI supports only transmission level acknowledgment (for example, a message transmission was received). There is no acknowledgment that the message is valid or has been accepted by the received application.
Message ID	X		Unique message ID for each sent message and included in the message acknowledgment.
Application Layer			
Test Management by AWOS ID	X		All tests are referenced by AWOS ID. AWOS ID (generated by the LIS) uniquely identifies each test requested on a specific specimen. (AWOS = IHE LAW term: Analytical Work Order Step) For orders: Unambiguous support for order cancel, order add-ons, order replicates, and detection of duplicate orders. For results: Identification of: results for specific orders, reruns, reflex tests, and unsolicited results.
Test Management by Specimen ID and Test Selection		X	All tests are referenced by Specimen ID and Test selection only. For orders: Using order action code, can support order cancel, order add-ons, and detection of duplicate orders. For results: No association of results to specific orders, no identification of reruns and reflex tests, cannot distinguish unsolicited results from results for requested orders.
Asynchronous Queries	X		In HL7 LAW, multiple queries can be sent by the analyzer before the LIS sends the orders for the queries. In ASTM, the analyzer must wait for the query response before sending the next query (only one query at a time can be in process).
Order Acceptance	X		In HL7 LAW, each individual test order or test cancel is accepted or rejected by the analyzer in an application acknowledgment message. Not supported by CLSI.
Order Status with Results	X		In HL7 LAW, when the analyzer sends a test result, the message indicates if the analyzer considers the order request as completed or if reruns are still pending. Not supported by CLSI.

Capability	HL7	CLSI (ASTM)	Comment
Run Identification with Results	X		In HL7 LAW, test result messages indicate a unique run number to distinguish reruns from initial runs of a test order request. Not supported by CLSI.
Identification of Analyzer Initiated Reflex Tests	X		In HL7 LAW, test result messages identify if the result is from a reflex test initiated by the analyzer and identify the test orders that caused the reflex test. Not supported by CLSI.

Related information…

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References

This manual is based on the following standards:

- HL7 version 2.5.1 Messaging Standard
- HL7 version 2.3.1 Implementation Support Guide, Appendix C
- IHE Laboratory Technical Framework, Laboratory Analytical Workflow (LAW) profile

Related information…

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Introduction

This section specifies implementation notes related to the HL7 interface supported by the instrument. These are primarily derived from recommendations included in the:

- IHE Laboratory Technical Framework, Laboratory Analytical Workflow (LAW) profile.
- HL7 v2.3.1 Implementation Support Guide, Appendix C.

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LAW Profile Transactions and Options

The IHE Laboratory Analytical Workflow (LAW) profile transactions supported by the analyzer include the following:

- LAB-27: Query for AWOS (HL7 QBPˆQ11/RSPˆK11)
- LAB-28: Analytical Work Order Step Broadcast (HL7 OMLˆO33/ORLˆO34)
- LAB-29: AWOS Status Change (HL7 OULˆR22/ACKˆR22)

For these LAW transactions, message elements not supported by this implementation, unless noted otherwise, are ignored by the analyzer.

The LAW profile options supported by the analyzer include the following:

- Bidirectional communications (LAW_BIDIR)
- Contributing substances (LAW_CONTRIB_SUB)
- Reflex (LAW_REFLEX)
- Rerun (LAW_RERUN)
- AWOS Priority (LAW_AWOS_PRIORITY)

Related information…

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Low-level protocol

The instrument uses the Minimal Lower Layer Protocol (MLLP), as defined in Appendix C, section C.4, of the HL7 v2.3.1 Implementation Support Guide. The protocol assumes operation in a networked environment (such as TCP/IP) in which most details of error detection and correction are handled by the lower levels of the network protocol and do not require supplementation.

This manual does not fully specify the HL7 MLLP but provides only some important characteristics.

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Block format

The HL7 MLLP uses a single byte to signal the start of a message and two bytes to signal the end of a message. No other characters or lower-level header or trailer information are added to the HL7 message.

HL7 messages are enclosed by special characters to form a block.

There are no NAK blocks. Higher-level acknowledgment messages are used to signal transmission errors.

The block format is as follows:

<SB>dddd<EB><CR>

where:

<**SB**>	Start Block character (1 byte) ASCII <VT>, for example, <0x0B>. This should not be confused with the ASCII characters SOH or STX.
dddd	Data (variable number of bytes) This is the HL7 data content of the block. The data can contain any single-byte values greater than 0x1F and the ASCII carriage return character, <CR>.
<**EB**>	End Block character (1 byte) ASCII <FS>, for example, <0x1C>. This should not be confused with the ASCII characters ETX or EOT.
<**CR**>	Carriage Return (1 byte) ASCII carriage return character, for example, <0x0D>.

Related information...

Low-level protocol, page 23

Network connections

When two entities communicate in a LAN environment, they must establish a virtual circuit, which is also referred to as a connection. The circuit (or connection) provides reliable, sequenced, error-free, full-duplex data transmission over the network. The connection is established by one of the entities performing a "call" operation to the other entity performing a "listen" operation. With TCP/IP, the two entities use the IP addresses and ports to identify each other. The call operation is often called an "active connection" while the listen operation is called a "passive connection". After the calling entity has connected to the listening entity, the two-way circuit (or connection) is established and the entities may exchange data.

When the data exchange is completed, either side may perform a disconnect operation to break the circuit, or the connection may remain open for future data exchange.

In general terms, the usual method of establishing a circuit (or connection) is for the system that wants to initiate the message exchange (for example, client or sender) to perform the call operation and for the responding system (for example, server or receiver) to perform the listen operation. However, due to network security restrictions of the deployed environment, it may be required that only certain systems are allowed to activate connections while other systems may only listen for (passive) connections.

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Active persistent connections, page 24
Active transient connections, page 24
Passive connections, page 25

Active persistent connections

The following steps are performed by the instrument for an active persistent network connection.

1. At start-up, attempt to connect to the configured IP address and port of the listening or passive system.
2. If connection is unsuccessful, wait for a short time period and retry one or more times.
3. Keep the connection open at all times even if no more messages remain to be exchanged.
4. If a disconnection is detected outside a data exchange, retry the connection.

Related information…

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Active transient connections

The following steps are performed by the instrument for an active transient network connection.

1. Attempt to establish a connection only when a message is ready to be sent.

2. When a message is ready to be sent, attempt to connect to the configured IP address and port of the listening or passive system.
3. If connection is unsuccessful, wait a short time period and retry one or more times.
4. Keep the connection open only if more messages remain to be sent. Otherwise, close the connection.

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Passive connections

The following steps are performed by the instrument for a passive network connection.

1. Open the configured port at start-up and passively listen for a connection.
2. Wait for a call to open a port, and then leave the connection open at all times. Do not disconnect.
3. If a disconnection is detected, automatically reopen the port and listen for a new connection.

Related information...

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Acknowledgment mode

HL7 v2.5.1 specifies two major message acknowledgment modes, original and enhanced. As specified by the IHE Lab Technical Framework, the instrument interface supports the original acknowledgment mode.

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Communication channels and message transactions

An HL7 message transaction is initiated by an application in response to a trigger event. For example, a result produced and released on an instrument can trigger the initiation of a Results Upload message transaction (LAW transaction LAB-29). The initiating application (client) sends the message over a communication channel. The receiving application (server) replies on the same channel with an application-level acknowledgment message.

The instrument supports two separate network channels:

- Client channel (or Sender Channel): for application-level transactions that are initiated by the instrument.
- Server channel (or Receiver Channel): for application-level transactions that are responded to by the instrument.

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Channel use of network connections

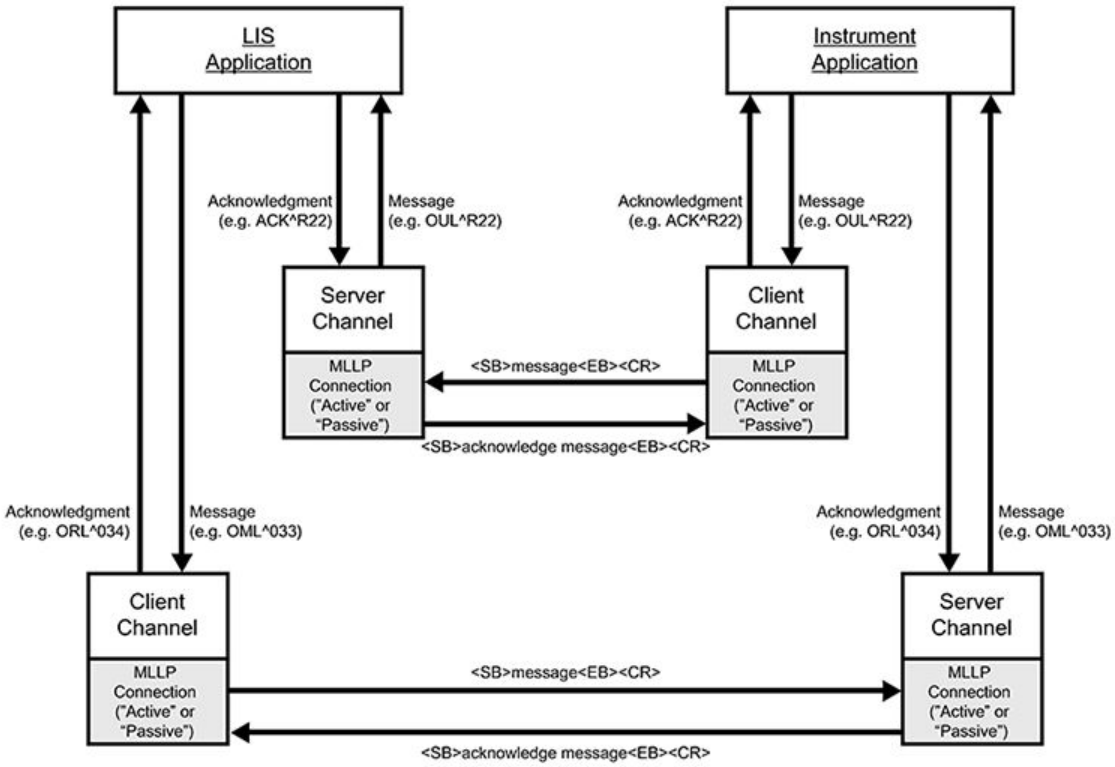
Each communication channel uses a Minimal Lower Layer Protocol (MLLP) low-level network connection to send and receive the messages.

From a transactional viewpoint, an MLLP network connection is unidirectional. Event-triggered messages flow in one direction. Acknowledgment messages related to those event-triggered messages flow in the other direction.

The acknowledgment message to an event-triggered message is sent immediately to the sender on the same MLLP connection that carried the event-triggered message. The receiver of an event-triggered message should assume that the sending application is blocking and send an application-level acknowledgment as soon as possible.

If the MLLP connection is broken while the sending application is waiting for an acknowledgment, the sending application initiates a new MLLP connection and resends the message, using the same message ID value in MSH-10 Message Control ID.

The following diagram shows the relationship between client/server channels, message transactions, and MLLP network connections.



Related information…

Communication channels and message transactions, page 27

Client channel transactions

The instrument acts as a client (sender) for the following message transactions:

- Order Query
- Results Upload
- Test Status Update
- Sample Status Update
- Connection Test

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Message buffering - client channel

The client channel initiates transactions for the Order Query and other messages triggered by the instrument, such as Results. Message-buffering requirements are based on the application behavior associated with the various message transactions.

Based on sample-processing requirements, an Order Query message takes priority over any other pending client message transaction but will not interrupt a message transaction that is in progress (for example, waiting for an acknowledgment to a results upload message).

For other client message transactions, such as Result Upload, the instrument supports the queuing of multiple messages that can be processed in the background. For example, the operator can request that results for N samples be sent to the LIS. This will result in N result messages being queued for transmission. Message buffering is also used when a network connection to the LIS cannot be established. In this case, the message buffer operates as first-in-first-out queue that prioritizes new Order Query messages. If the queue reaches its maximum capacity, no more messages are queued for transmission. A buffer-full indication is generated, and the instrument disables the HL7 connection.

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Message time-out

When the instrument initiates a message transaction on the client channel, it waits for the response acknowledgment message. If the response is not received in a predetermined period of time, then a time-out occurs and the message is resent by the instrument. If the number of retries is reached without receiving an acknowledgment message, the message transaction is considered in error and the instrument disables the HL7 connection.

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Server channel transactions

The instrument acts as a server (or receiver) for the following message transactions:

- Order Download
- Connection Test

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Message buffering - server channel

The server channel processes one message transaction at a time. When it receives a message, the server channel processes the message immediately and then builds and sends the

acknowledgment message. It then waits for the next incoming message transaction. Based on this behavior, no message buffering is required for the server channel.

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Server channel transactions, page 29

Escape sequences

HL7 v2.5.1 section 2.7 specifies escape sequences that are supported in fields ST, TX, and FT data types. The Alinity h-series supports the following escape sequences for these data types:

\F\	Field separator
\S\	Component separator
\T\	Subcomponent separator
\R\	Repetition separator
\E\	Escape separator
\Xdddd...\	Hexadecimal data: consecutive pairs of hexadecimal digits representing 8-bit binary values. Used to encode text control code byte values less than 0x20 in UTF-8 (for example, \X09\ = TAB)
\.br\	Begin new output line. Sets the horizontal position to the current left margin and increments the vertical position by 1.

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NOTES

Introduction

The message profiles in this document are described using HL7 constrainable message profiles, HL7 v2.5.1 section 2.12.6. This Message Profile Specification model documents implementable versions of HL7 message profiles and supports conformance testing of the implementations.

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Notation for Message Structure

Message structure defines the sequence, nesting, and requirements for segments that may occur in a Message Profile. The following table provides an example of the initial segments of a message-structure specification, with each component described in topics that follow:

Example: Initial segments of a Message Structure

Segment ID	Meaning	Usage	Cardinality
MSH	Message Header	R	[1..1]
[	--- SPECIMEN CONTAINER begin	RE	[0..1]
SAC	Specimen container	R	[1..1]
]	--- SPECIMEN CONTAINER end	-	-
{	--- TEST ORDER begin	R	[1..*]
OBR	Observation Request	R	[1..1]
OBX	Observation related to OBR	C(R, X)	[0..*]
}	--- TEST ORDER end	-	-

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Segment sequence and nesting, page 35
Usage, page 35
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Segments and segment groups

A segment is a logical grouping of data elements. Segments of a message may be required or optional. They may occur only once in a message or they may repeat. The Segment ID identifies each HL7 segment that may appear in the message. The Segment IDs correspond to the IDs used in the standard HL7 documentation.

Two or more segments may be organized as a logical unit called a segment group. A segment group may be required or optional and may repeat. As of HL7 v2.5, the first segment in a newly defined segment group is required to ensure that unparsable messages are not inadvertently defined.

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Notation for Message Structure, page 34

Segment sequence and nesting

The message structure specification for a message type determines the allowed sequence of segments in a message instance. Braces, {...}, surrounding a group of segments indicate one or more repetitions of the enclosed group may occur. Brackets, [...], surrounding a group of segments indicates that the enclosed group is optional. If a group of segments is optional and may repeat, the group is enclosed in brackets and braces, [{...}].

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Usage

Usage refers to whether individual segments and groups of segments are required or optional. The following designations from HL7 v2.5.1, Section 2.12, are used in message structures.

Example: Initial segments of a Message Structure

Value	Description	Comment
R	Required	A conforming sending application populates all R elements with a non-empty value. A conforming receiving application processes (saves, prints, archives) or ignores the information conveyed by required elements. A conforming receiving application does not raise an error due to the presence of a required element, but may raise an error due to the absence of a required element. Refer to detailed element descriptions to determine how the instrument, as a receiver, handles elements (process, ignore, raise error if missing). Handling behavior may vary by element. Unless otherwise specified, the default behavior is to ignore an element.
M	Mandatory	This code identifies a mandatory segment or field that must be provided by the sender. A sender must be capable of providing the segment or field. A receiver raises an error if a mandatory segment or field is absent. A value must always be provided for a mandatory field. It is acceptable to send a NULL value in a mandatory field to indicate no value to report. The mandatory code is a more restrictive version of the "R" code element. The receiver must raise an error if a mandatory (M) element is missing. The receiver may raise an error if a required (R) element is missing.
RE	Required but may be empty	The element may be missing from the message but is sent by the sending application if there is relevant data to report. A conforming sending application is capable of providing all RE elements. If the conforming sending application knows the required values for the element, then it sends that element. If the conforming sending application does not know the required values, the conforming sending application omits the element. Receiving applications process (save, print, archive) or ignore data contained in the element, but successfully process the message if the

Value	Description	Comment
		element is omitted. No error message is generated because the element is missing. Refer to detailed element descriptions to determine how the instrument, as a receiver, handles elements (process, ignore). Unless otherwise specified, the default behavior is to ignore an element.
C(a,b)	Conditional	This usage has an associated condition predicate. If the predicate is satisfied (true): A conformant application must follow the rules for "a" which is one of "M", "R", "RE", or "X". If the predicate is not satisfied (false): A conformant application must follow the rules for "b" which is be one of "M", "R", "RE", or "X".
X	Not supported	For conforming sending applications, the element is not sent. Conforming receiving applications may ignore the element if it is sent or may raise an application error. Refer to detailed element descriptions to determine how the instrument, as a receiver, handles elements (process, ignore, raise error if present). Unless otherwise specified, the default behavior is to ignore an element.

For message structure tables, the usage "X" is not shown at the message level. If a segment is "not supported" by a profile, it does not appear in the table representing the message structure. If an unsupported segment is encountered in a received message, it is ignored.

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Condition predicate

If the usage code of an element is C, then a condition predicate is associated with this element to identify the conditions under which the element is required or allowed to be present. The predicate is testable and based on other values within the message. The predicate may be expressed as a mathematical expression or in text and may use operators such as equivalence, logical AND, logical OR, and NOT. Both conforming sending and receiving applications evaluate the predicate. When the usage code is not C, the conditional predicate is not valued.

Related information...

Notation for Message Structure, page 34

Cardinality

Cardinality defines the number of instances of an element in the message type. A range is provided, with the first value designating the minimum number and the second value designating the maximum number. A relationship exists between Usage and Cardinality values:

- Usage of R - minimum Cardinality of 1

- Usage of RE and C - minimum Cardinality of 0
- Usage of X - minimum and maximum Cardinality of 0

NOTE: The concept of a repeating element is expressed by a cardinality range with a second value that is greater than 1. For example, a cardinality range of [1..5] indicates that the element may repeat up to 4 times for a total of 5 instances. A cardinality range of [1..*] indicates that there is no limit to the number of repetitions of the element.

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Notation for Message Structure, page 34

Notation for Message Segments

For each segment that may appear in a message profile, a specification lists the allowed elements within that segment and the allowed values of those elements. The following table provides an example of a segment specification:

SEQ	LEN	DT	Send usage	Send card.	Rcv. usage	Rcv. card.	Element name
1	2	ST	R	[1..1]	R	[1..1]	Field separator
2	4	ST	R	[1..1]	R	[1..1]	Encoding characters
3	227	HD	R	[1..1]	R	[1..1]	Sending application
...	...	...	...	...	...	...	...

NOTE: Gray text indicates unused fields or message components.

SEQ The ordinal position (sequence) of the element in the segment.

LEN The maximum element length. For repeating elements, this field specifies the maximum length of each value, so an element with multiple repeating values may exceed the specified length. For each value, however, the maximum length is calculated to include the component and subcomponent separators.

NOTE: The HL7 standard allows conformance profiles to specify element lengths in excess of those indicated in the message standard. HL7 states that element length changes can be handled in a conformance profile without rendering the implementation nonconformant with HL7. For more information, see HL7 v2.5.1, section 2.5.3.2.

The "#" appended to the length indicates the value may be truncated if the received field is longer than the length specified. Otherwise, the absence of the "#" indicates the message is rejected if the specified field length is exceeded for received messages.

DT The HL7 data type used for the value of the element. Information about the data type is usually provided in the detailed description of each element. For more information, see HL7 v2.5.1, Chapter 2a.

Send usage Use of this field with the instrument as sender. It has the same coded values as in the message level described above.

Send card. Minimum and maximum number of occurrences of the field in a segment with the instrument as sender. It has the same meaning as in the message level.

Rcv. usage Use of this field with the instrument as receiver. It has the same coded values as in the message level described above.

Rcv. card. Minimum and maximum number of occurrences of the field in a segment with the instrument as receiver. It has the same meaning as in the message level.

Element name	Name of the field. This is for reference purposes only and does not appear in the message data.

Related information…

Notation for Message Profile Specifications, page 33

Notation for Message Elements

For each element that may be populated in a message, a narrative section further describes the element. These descriptions include the standard HL7 definition of the element as well as the specific rules for populating the element in conformance with this specification.

The descriptions may also include descriptions of unique rules related to the instrument as a sender or receiver of an element, as well as one or more sample values.

The following table shows an example of an HL7 Component Table for a message element. The values in the Usage column have the same meaning as defined for segment fields.

Example: HL7 Component table

Component/Subcomponent	Usage
Identifier (ST)	R
Text (ST)	RE
Name of coding system (IS)	RE
Alternate identifier (ST)	X
Alternate text (ST)	X
Name of alternate coding system (IS)	X

NOTE: Gray text indicates unused fields or message components.

NOTE: In many cases, the specification for an element is more constraining than the HL7 definition, to better support interoperability. For example, this specification may require that a certain coding system be used in an element or may prohibit certain subparts of an element from being populated, whereas the HL7 definition allows any coding system to be used or any subparts to be populated. When this specification and the HL7 definition differ, this specification takes precedence.

Related information…

Notation for Message Profile Specifications, page 33

Introduction

Message profiles, as implemented by the instrument, are defined in this section.

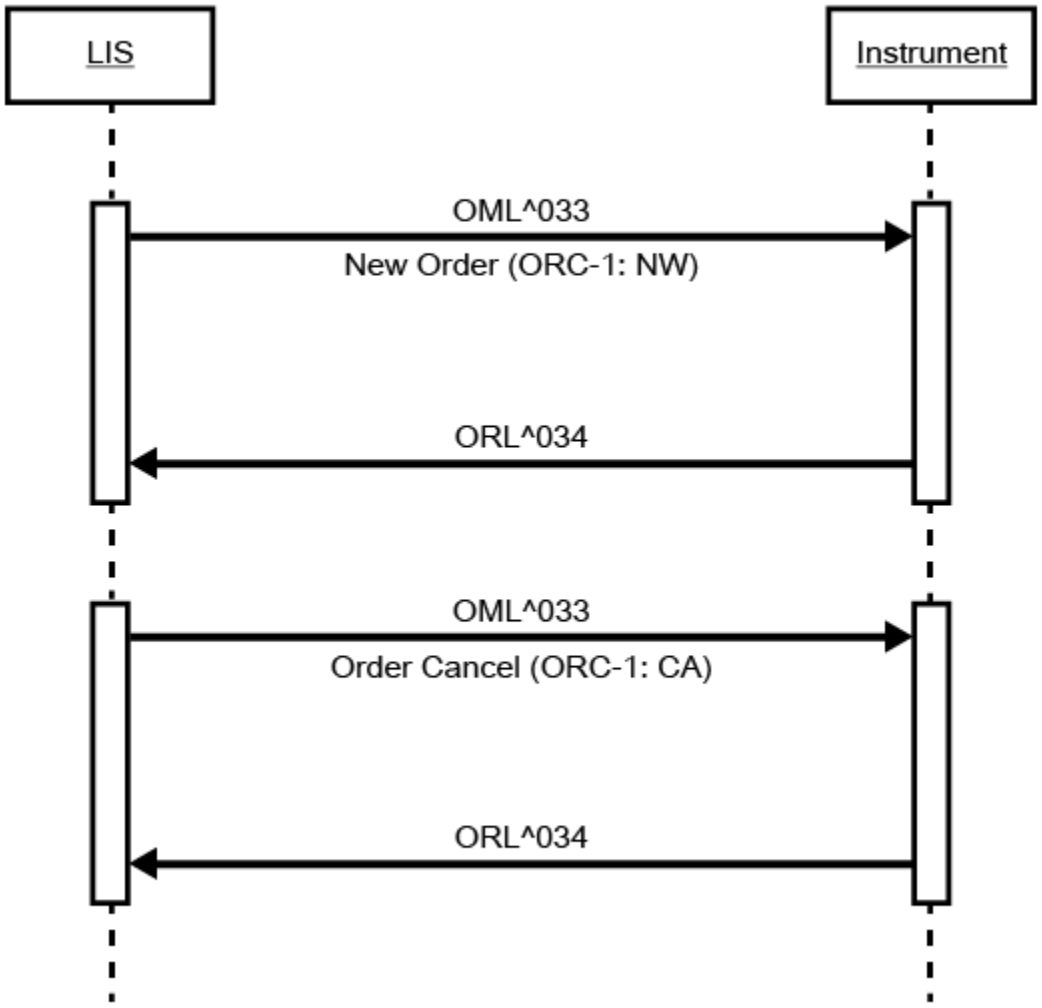
Related information…

Order Download Message Profile (LAW Transaction LAB-28), page 42
Order Query Message Profile (LAW Transaction LAB-27), page 48
Results Upload Message Profile (LAW Transaction LAB-29), page 51
Test Status Update Message Profile (LAW Transaction LAB-29), page 56
Sample Status Update Message Profile, page 59
Connection Test Message Profile, page 62

Order Download Message Profile (LAW Transaction LAB-28)

This transaction is used between an LIS solution and an instrument that enables the LIS to issue a new order to the instrument or to cancel an existing order previously sent.

Figure 1: Interaction diagram



Interaction model

Trigger event	Any change to an order that the LIS has allocated or scheduled on the instrument. Changes include submission of new orders, cancellations, and updates where multiple orders are associated with a single sample. The LIS has selected one or

	more instruments capable of running the tests on the sample and must inform the instrument of these orders. This profile also covers the case where a previously downloaded order must be canceled or modified on the instrument. To effect an order modification, the combination of an order cancel and a new order must be used.
Direction	LIS to Instrument
Application roles	LIS (sender): translates received orders into tests that the instrument must run on specimens; downloads new, modified, and canceled test orders to the appropriate instrument. Instrument (receiver): performs tests (analysis) on specimens.
Receiver responsibilities	Acknowledge order messages and accept or reject orders.

Related information...

Message profiles, page 41
OML^O33 Message, page 43
ORL^O34 Message, page 46

OML^O33 Message

This message is for multiple orders related to one or more specimens. The following table details the structure of this message.

OML^O33 message structure

Segment ID	Meaning	Usage	Cardinality
MSH	Message Header	M	[1..1]
[	---PATIENT begin	RE	[0..1]
PID	Patient Identification	R	[1..1]
[PV1]	Patient Visit	RE	[0..1]
]	---PATIENT end		
{	--- SPECIMEN begin	M	[1..*]
SPM	Specimen	M	[1..1]
SAC	Specimen Container	M	[1..1]
{	---ORDER begin	M	[1..*]
ORC	Common Order (for one test/battery)	M	[1..1]
[TQ1]	Timing Quantity	RE	[0..1]
[	---OBSERVATION REQUEST begin	RE	[0..1]
OBR	Observation Request	M	[1..1]
[{	---OBSERVATION begin	RE	[0..*]
OBX	Observation/Result	R	[1..1]

Segment ID	Meaning	Usage	Cardinality
[{NTE}]	Notes and comments (for Observation Result)	RE	[0..*]
}]	---OBSERVATION end		
]	---OBSERVATION REQUEST end		
}	---ORDER end		
}	---SPECIMEN end		

Notes on message structure

The following notes apply to OMLˆO33 message structure:

1. The ORDER segment group (ORC, [TQ1], OBR) represents an assay order (a test) against a specimen (a sample). In case of multiple tests ordered on the specimen, this group is repeated as many times as there are tests to order on the specimen.
2. The OMLˆO33 message may also be used as a Negative Query Response indicating there is no work to perform for an order query (QBPˆQ11). Only the MSH, SPM, SAC, and ORC segments are sent in a Negative Query Response message, as described below.
    a. The SPM-4 Specimen Type is set to NULL ("").
    b. The SPM-11 Specimen Role is set to "U" (Unknown).
    c. The ORC-1 Order Control is set to "DC" (Discontinue Request).
    d. The ORC-9 Date/Time of Transaction is set to the current date/time.
    e. The OBSERVATION REQUEST segment group is not present.
    f. The SAC-3 Container Identifier is set to the QPD-3 value from the query.
3. The Notes and comments are not used by the Analyzer (NTE).

Message granularity

Each unique OMLˆO33 message can contain the following:

- zero or one patient
- one or more specimens
- one or more test orders against each specimen

Multiple ORC/OBR segments are supported in one message, but each ORC segment must have the same ORC-1 value (new or cancel). Mixed ORC-1 values (new and cancel) in the same message are not supported.

Order processing rules

If the OMLˆO33 message is successfully parsed as a valid order message, the analyzer responds with an ORLˆO34 message with MSA-1 = AA, to indicate the order message was accepted by the application.

Following the acknowledgment of the message, each individual test ordered or canceled with an ORC/OBR pairing is further processed and validated as described below:

1. If the test order request indicates a new order (ORC-1 = NW) for an AWOS ID but that same AWOS ID [OBR-2] already exists, the analyzer rejects the test order request (ORC-1 = UA).
2. If the test order request indicates a cancel order (ORC-1 = CA), the test order is canceled only if the specified AWOS ID and test is found with a Pending status for the sample ID. If no test is found or the test order is already in progress or is complete, the cancel request is rejected (ORC-1 = UC, ORC-5 = IP).
3. If the AWOS ID, Specimen ID, Assay (Test) specified in a HL7 Test Order Request from the LIS/Host matches a previously received test order request, the system does not create another pending test order. The system notifies the user of a duplicate order request and indicates in the HL7 reply to the LIS/Host that the test order request is rejected.
4. If the test order request specifies an assay that is not defined or is not enabled on the instrument, the instrument rejects the test request.

The following table lists examples of order processing scenarios.

Example: Ordering processing scenarios

Scenarios	Order 1 (existing)	Order 2 (new order)	Accept/Reject
Scenario 1	AWOS ID: 001 Specimen ID: ABC	AWOS ID: 002 Specimen ID: ABC	Not a duplicate (AWOS ID is different) - Accept ORC-1 Order Control value is OK ORC-5 Order status value is SC
Scenario 2	AWOS ID: 001 Specimen ID: ABC	AWOS ID: 001 Specimen ID: XYZ	Same AWOS ID and different Specimen ID Invalid order and order is rejected with: ORC-1 Order Control value is UA ORC-5 Order status value is CA
Scenario 3	AWOS ID: 001 Specimen ID: ABC Test: CBC+Diff	AWOS ID: 002 Specimen ID: ABC Test: CBC+Diff	Not a duplicate (AWOS ID is different) - Accept ORC-1 Order Control value is OK ORC-5 Order status value is SC
Scenario 4	AWOS ID: 001 Specimen ID: ABC Test: CBC+Diff	AWOS ID: 002 Specimen ID: ABC Test: CBC+Diff+Retic	Valid order and accept ORC-1 Order Control value is OK ORC-5 Order status value is SC (Prioritize to run CBC+Diff+Retic first)

Scenarios	Order 1 (existing)	Order 2 (new order)	Accept/Reject
Scenario 5	AWOS ID: 001 Specimen ID: ABC Test: CBC+Diff	AWOS ID: 001 Specimen ID: ABC Test: CBC+Diff	This is a duplicate order and reject ORC-1 Order Control value is UA ORC-5 Order status value is CA

Related information...

Order Download Message Profile (LAW Transaction LAB-28), page 42

ORLˆO34 Message

This message is a laboratory order response message to an OMLˆO33 order message. The following table details the structure of this message.

Segment ID	Meaning	Usage	Cardinality
MSH	Message Header	M	[1..1]
MSA	Message Acknowledgment	M	[1..1]
[{ERR}]	Error	C(M,X)	[0..1]
[	---RESPONSE begin	C(X,RE)	[0..1]
[	---PATIENT begin	RE	[0..1]
PID	Patient Identification	R	[1..1]
]	---PATIENT end		
{	---SPECIMEN begin	M	[1..*]
SPM	Specimen	M	[1..1]
SAC	Specimen Container	M	[1..1]
{	---ORDER begin	M	[1..*]
ORC	Common Order	M	[1..1]
}	---ORDER end		
}	---SPECIMEN end		
]	---RESPONSE end		

Notes on message structure

The following notes apply to ORLˆO34 message structure:

1. The ERR segment is conditional. It is present (and mandatory) only in case of a negative acknowledgment (when MSA-1 = AE or AR).
2. The RESPONSE segment group is conditional. It is not supported if the ERR segment is present. Otherwise, usage is required if available. It is present when the acknowledgment is for an AWOS request or an AWOS cancel. It is not present when the acknowledgment is a response to a Negative Query Response.

3. If the OMLˆO33 message was successfully processed by the instrument, the MSA-1 field contains AA. This indicates that the message was recognized as a valid OMLˆO33 message.
4. If a test order for the specimen is new (ORC-1 is NW in OMLˆO33) and it is accepted by the instrument, the ORC-1 field indicates this with an OK. Additionally, the ORC-5 Order Status has a value of SC.
5. If a test order for the specimen is new (ORC-1 is NW in OMLˆO33) and it is rejected by the instrument, the ORC-1 field indicates this with an UA. Additionally, the ORC-5 Order Status has a value of CA or IP.
6. If a test order for the specimen is cancel (ORC-1 is CA in OMLˆO33) and the cancel request is accepted by the instrument, the ORC-1 field indicates this with a CR. Additionally, the ORC-5 Order Status has a value of CA.
7. If a test order for the specimen is cancel (ORC-1 is CA in OMLˆO33) and the cancel request is rejected by the instrument, the ORC-1 field indicates this with an UC. Additionally, the ORC-5 Order Status has a value of IP.

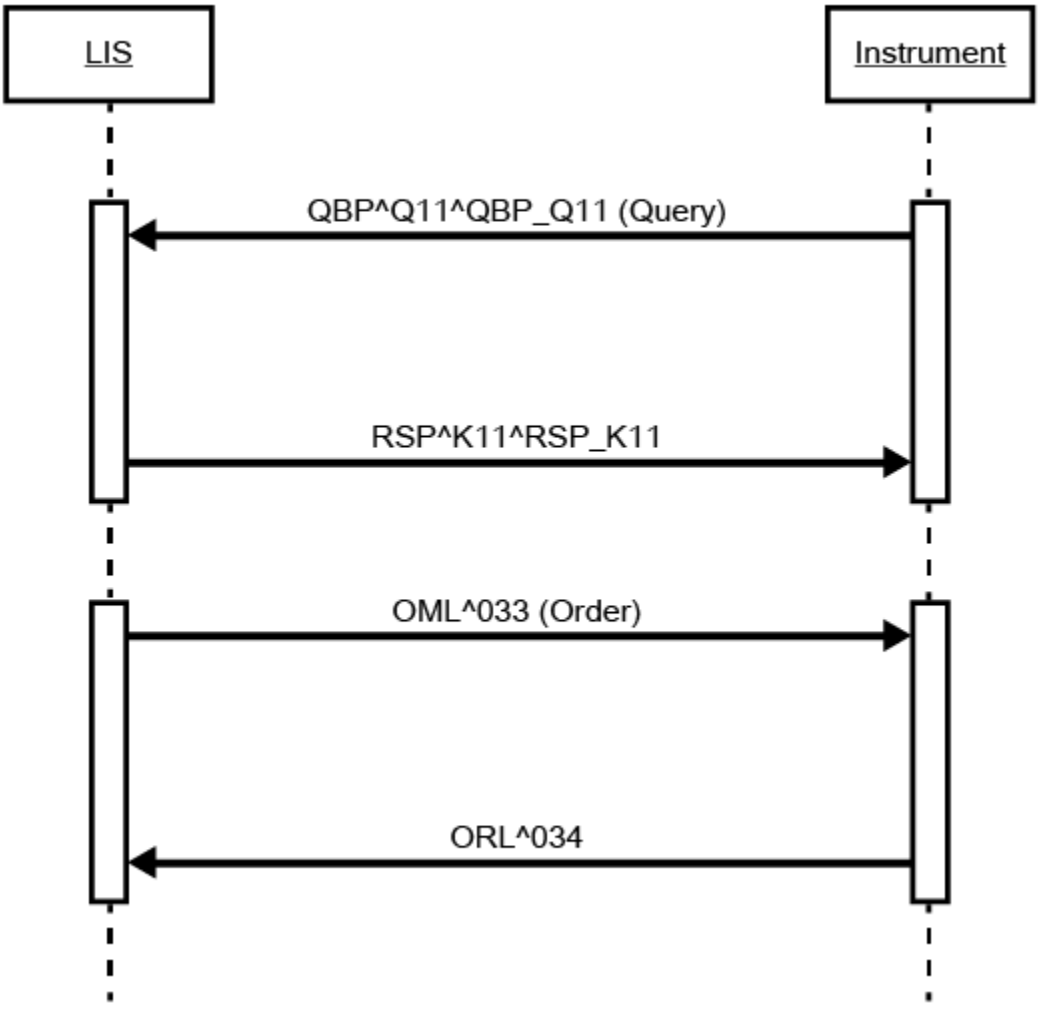
Related information…

Order Download Message Profile (LAW Transaction LAB-28), page 42

Order Query Message Profile (LAW Transaction LAB-27)

This transaction is used between an analyzer and LIS working in query mode. When the analyzer identifies a specimen (by reading a tube's barcode) and finds no existing test orders for the specimen in its database, the analyzer queries the LIS for orders against the specimen. The LIS sends any existing orders for the specimen to the analyzer.

Figure 2: Interaction diagram



Interaction model

Trigger event	The analyzer sends a query when the following conditions are met:

	• a specimen is recognized (by reading the tube barcode) as being introduced to the analyzer (query is based on specimen ID, not the Sample location) • there are no existing test orders are found in its database for that specimen • the sample is not configured as a control or calibrator sample on the analyzer • analyzer query mode is enabled The response RSP^K11^RSP_K11 is an acknowledgment of the reception of the query. It does not contain order information for the specimen. A separate order message (OML^O33) is sent to the analyzer for each order query. The OML^O33 can contain either the order download or the negative query response indicating there are no orders to run. An analyzer can send multiple queries prior to receiving an order download or a negative query response (OML^O33). A query response is considered complete under any of the following conditions: • receipt of a negative query response • receipt of a positive query response (orders for a specimen) • time out waiting for a response (and retry attempts exhausted) • error in transmission of query (and retry attempts exhausted)
Direction	Analyzer > LIS
Application roles	Analyzer (sender): identifies specimens and performs analytical testing on them to produce a result. LIS (receiver): manages the orders for specimens run on analyzers.
Receiver responsibilities	Responds immediately to each order query acknowledging the reception of the query and subsequently sends the appropriate test orders for the identified specimen.

Related information...

Message profiles, page 41
QBP^Q11 Message, page 49
RSP^K11 Message, page 50

QBP^Q11 Message

This is a query by parameter message for orders for specimen QBP^Q11^QBP_Q11. The following table details the structure of this message.

Segment ID	Meaning	Usage	Cardinality
MSH	Message Header	M	[1..1]
QPD	Query Parameter Definition	M	[1..1]
RCP	Response Control Parameter	M	[1..1]

Notes on message structure

The following notes apply to QBP^Q11 message structure:

1. All segments are required and always provided.
2. The query parameter is the Container ID as identified on the specimen bar code.

Message granularity

Each unique QBP message contains one specimen.

Related information…

Order Query Message Profile (LAW Transaction LAB-27), page 48

RSP^K11 Message

This message is a response message for a Query (RSP^K11^RSP_K11) message. The following table details the structure of this message.

Segment ID	Meaning	Usage	Cardinality
MSH	Message Header	M	[1..1]
MSA	Message Acknowledgment	M	[1..1]
[{ERR}]	Error	C(M,X)	[0..*]
[	--RESPONSE begin	C(X,R)	[0..1]
QAK	Query Acknowledgment	M	[1..1]
QPD	Query Parameter Definition	M	[1..1]
]	--RESPONSE end		

This message is in response to a QBP^Q11 message and contains only the acknowledgment of the reception of the query. A separate order message (OML^O33) is sent to the instrument for each order query. The OML^O33 can contain either the order download or the negative query response indicating there are no orders to run.

Notes on message structure

1. The ERR segment is conditional. It is present (and mandatory) only in case of a negative acknowledgment (when MSA-1 = AE or AR). Only the first occurrence of the ERR segment is processed.
2. The RESPONSE segment group is conditional. It is not supported if the ERR segment is present. Otherwise, usage is required.

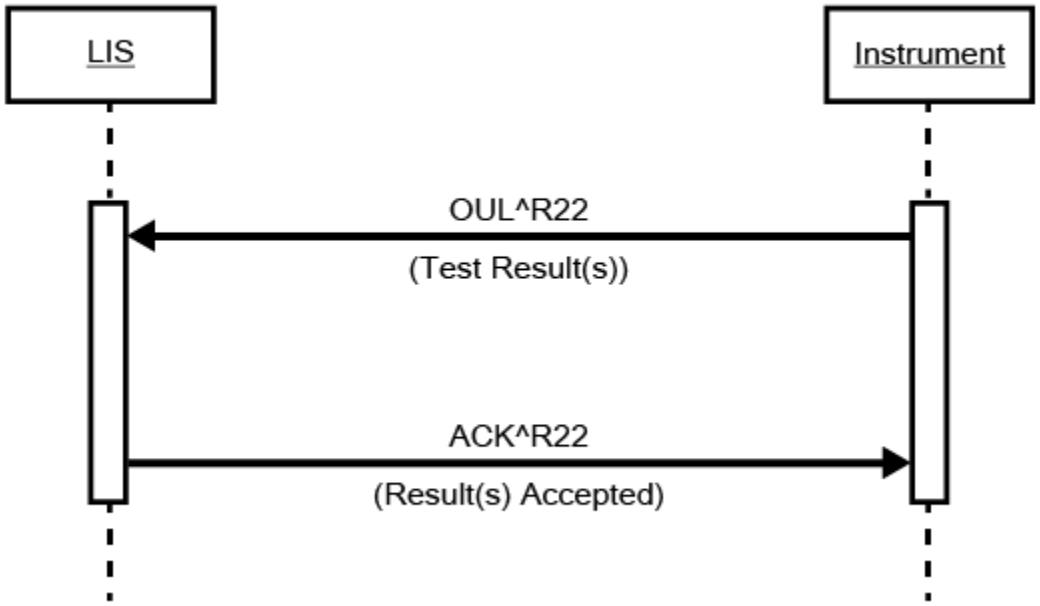
Related information…

Order Query Message Profile (LAW Transaction LAB-27), page 48

Results Upload Message Profile (LAW Transaction LAB-29)

This transaction is used by the instrument to send test results for specimens, controls, and calibrators.

Figure 3: Interaction diagram



Interaction model

Trigger event	The results are sent when the results are completed and released by the instrument. A completed result can either be a successfully completed test or a test that was initiated but did not produce a result due to some condition (System Faults).
Direction	Instrument to LIS
Application roles	Instrument (sender): performs analytical testing on the sample and produces a result. LIS (receiver): stores the result of the analysis.
Receiver responsibilities	Accepts and registers the result information and responds to the instrument with the ACK message.

Related information...

Message profiles, page 41
OULˆR22 Message , page 52
ACKˆR22 Message, page 54

OUL^R22 Message

This message is an Unsolicited Specimen Oriented Observation message. The following table details the structure of this message.

Table 1: Subset of IHE Table Y.5.2-1: OUL^R22

Segment ID	Meaning	Usage	Cardinality
MSH	Message Header	M	[1..1]
[	---PATIENT begin	O	[0..1]
PID	Patient Identification	R	[1..1]
[	---VISIT begin	RE	[0..1]
[PV1]	Patient Visit	R	[1..1]
]	---VISIT end		
]	---PATIENT end		
{	---SPECIMEN begin	M	[1..1]
SPM	Specimen	M	[1..1]
{	---CONTAINER begin	M	[1..1]
SAC	Container Information	M	[1..1]
[INV]	Detailed Substance information (ID, lot, and manufacturer of Control and Calibrator samples)	C(M,X)	[0..1]
}	---CONTAINER end		
{	---ORDER begin	M	[1..*]
OBR	Observation Request	M	[1..1]
ORC	Common Order	M	[1..1]
{	---TIMING QTY begin	R	[1..1]
TQ1	Timing Quantity	R	[1..1]
}	---TIMING QTY end		
{	---RESULT begin	M	[1..*]
OBX	Observation Result	M	[1..1]
[TCD]	Test Code Detail	RE	[0..1]
[{INV}]	Contributing Substance information (reagents used for testing)	RE	[0..*]
[NTE]	Notes and Comments (for the result)	RE	[0..*]
}	---RESULT end		
}	---ORDER end		
}	---SPECIMEN end		

Notes on message structure

The following notes apply to OULˆR22 message structure:

1. The INV segment within the CONTAINER segment group is conditional. The segment is sent only when results are reported for a control or calibrator (SPM-11 = "Q" or "C").
2. The ORDER segment group is repeated for each test result reported in the message.
3. For the ORC segment, the ORC-1 field contains "SC" (Status Change) and the ORC-5 field contains "CM" (AWOS is completed) if the AWOS is completed or "IP" (AWOS in process) if a rerun was initiated.
4. OBR-2 Placer Order Number contains the AWOS ID for orders transmitted to the analyzer by the LIS/Host. For orders created at the analyzer, the field contains the NULL ("") value.
5. ORC-8 Parent is used to send the parent AWOS ID(s) for a reflex text initiated by the analyzer.
6. The RESULT segment group is repeated for each part of the result for a given test result reported.
7. The INV segment within the RESULT segment group is sent only when reagents were used to produce the result.
8. The NTE segment is sent only when result comments are available for the test result.
9. If multiple RESULT segment groups are sent for a result (each for a different part of the result), the INV and NTE segments are included in one of the segment groups (sent within the first RESULT segment group).

HL7 Message segments usage for a single test result

Analyzer Result Record elements	HL7 Message Segments	Comment
Result Descriptor	PID, SPM, SAC, OBR, ORC	Specimen Info, Test order, Patient info
Numerical Results	OBX	Analyzer algorithm calculated Hematology parameter results. Repeat OBX segment for each parameter result.
Graph Data - Histogram	OBX	Histograms show the relative frequency of cell events of varying magnitude. Repeat OBX segment for each Histogram generated by the analyzer.
Graph Data - Scatterplots	OBX	Data representation of cell population. Repeat OBX segment for each assay graph data (WBC, RBC/PLT) for generating scatterplots.
Morphological Flags/ Data Flags	OBX	Morphological flags/Data flags indicate abnormality of samples, problematic conditions detected by algorithm. The relevant parameter results will be marked as suspect or invalid when there

Analyzer Result Record elements	HL7 Message Segments	Comment
		are Morphological flags present in the test results. The OBX-8 field indicates if morph flag(s) associated with a parameter.
System Faults	OBX	System Faults - Problems with the instrument or sample processing which would invalidate results. OBX-8 field indicates one or more System Faults associated with result record, if any.
Customer Definable Alerts	OBX	Customer definable Alert provides information concerning possible conditions associated with Suspect population and Limit sets. OBX-8 field indicates one or more Customer Definable result alerts, if any.
Reagent info	INV	Reagent info used for running the test (reagent type, lot number). Repeat INV segment for each reagent.
Delta Check Status	OBX	Delta Check Status indicates the outcome of the analyzer's Delta Check program at the time of transmission of the associated specimen.

Message Granularity

Each unique OULˆR22 message can contain the following:

- one specimen
- one or more results for the specimen

Related information…

Results Upload Message Profile (LAW Transaction LAB-29), page 51

ACKˆR22 Message

This message is an acknowledgment of the OULˆR22 Unsolicited Specimen Oriented Observation message. The following table details the structure of this message.

Segment ID	Meaning	Usage	Cardinality
MSH	Message Header	R	[1..1]
MSA	Message Acknowledge	R	[1..1]
[{ERR}]	Error	C(M,X)	[0..*]

Notes on message structure

The following notes apply to the ACKˆR22 message structure:

1. The ERR segment is conditional. It is present (and mandatory) only in the case of a negative acknowledgment (when MSA-1 = AE or AR).

2. When MSA-1 = AA, all the results contained in the OULˆR22 message are accepted. The analyzer marks the results as successfully transmitted to the LIS. Other values for MSA-1 (AE, AR) indicate non-acceptance of all results. No provision exists to selectively accept or reject individual results in the OULˆR22 message.

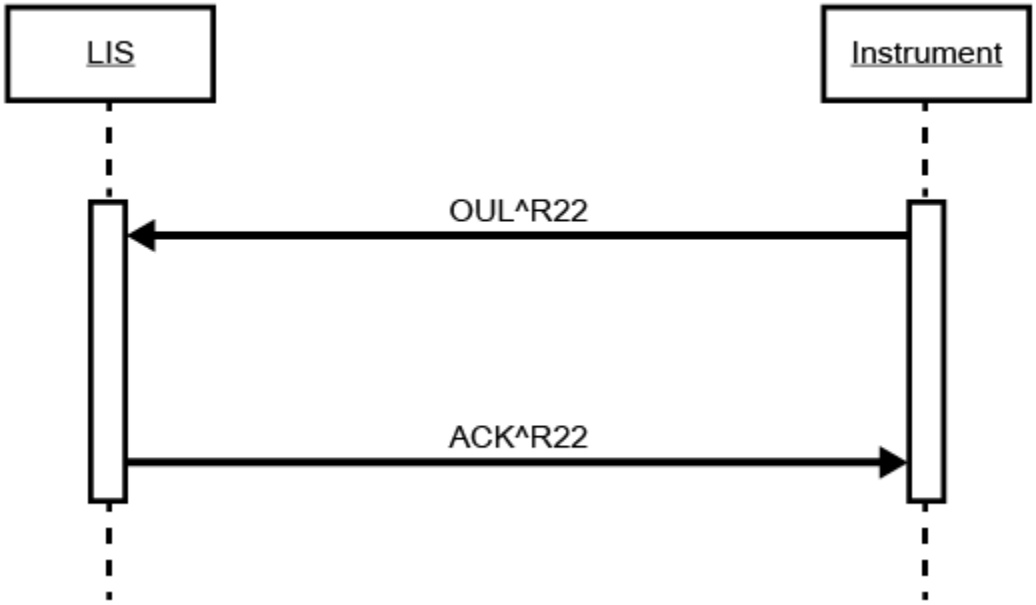
Related information…

Results Upload Message Profile (LAW Transaction LAB-29), page 51

Test Status Update Message Profile (LAW Transaction LAB-29)

This transaction is used by the analyzer to send test run status updates for patient specimens.

Figure 4: Interaction diagram



Interaction model

Trigger event	When a test run status changes, the analyzer sends a Test Status Update message, if the message profile is enabled. The status change events supported by the analyzer include: • Test run initiated
Direction	Instrument > LIS
Application roles	Instrument (sender): monitors test status and sends status change events to the receiver. LIS (receiver): tracks status of test runs as reported by the instrument.
Receiver responsibilities	Acknowledge the message

Related information...

Message profiles, page 41
OUL^R22 Message Structure, page 57
ACK^R22 Message, page 57

OULˆR22 Message Structure

This message is an Unsolicited Specimen Oriented Observation message. For message structure details, see *OULˆR22 Message* , page 52.

Notes on message structure

The following notes apply to OULˆR22 message structure:

1. The ORDER segment group is repeated for each test status update instance reported in the message.
2. For the ORC segment, the ORC-1 field contains "SC" (Status Change) and the ORC-5 field contains "IP" (AWOS in process).
3. The RESULT segment group is repeated for each part of the result being reported for a given assay result.
4. The INV segment within the RESULT segment group is not present for test status update messages.
5. The NTE segment is not present for test status updates.
6. OBR-2 Placer Order Number contains the AWOS ID for orders transmitted to the analyzer by the LIS/Host. For orders created at the analyzer, the field contains the NULL ("") value.
7. The PID segment is not present for test status updates.

Message Granularity

Each unique OULˆR22 message can contain the following:

- one specimen
- result status for the specimen

Related information…

Test Status Update Message Profile (LAW Transaction LAB-29), page 56

ACKˆR22 Message

This message is an acknowledgment of the OULˆR22 Unsolicited Specimen Oriented Observation message. For message structure details, see *ACKˆR22 Message*, page 54.

Notes on message structure

The following notes apply to the ACKˆR22 message structure:

1. The ERR segment is conditional. It is present (and mandatory) only in the case of a negative acknowledgment (when MSA-1 = AE or AR). Only the first occurrence of the ERR segment is processed.
2. When MSA-1 = AA, all test statuses contained in the OULˆR22 message are accepted. Other values for MSA-1 (AE, AR) indicate non-acceptance of all test statuses.

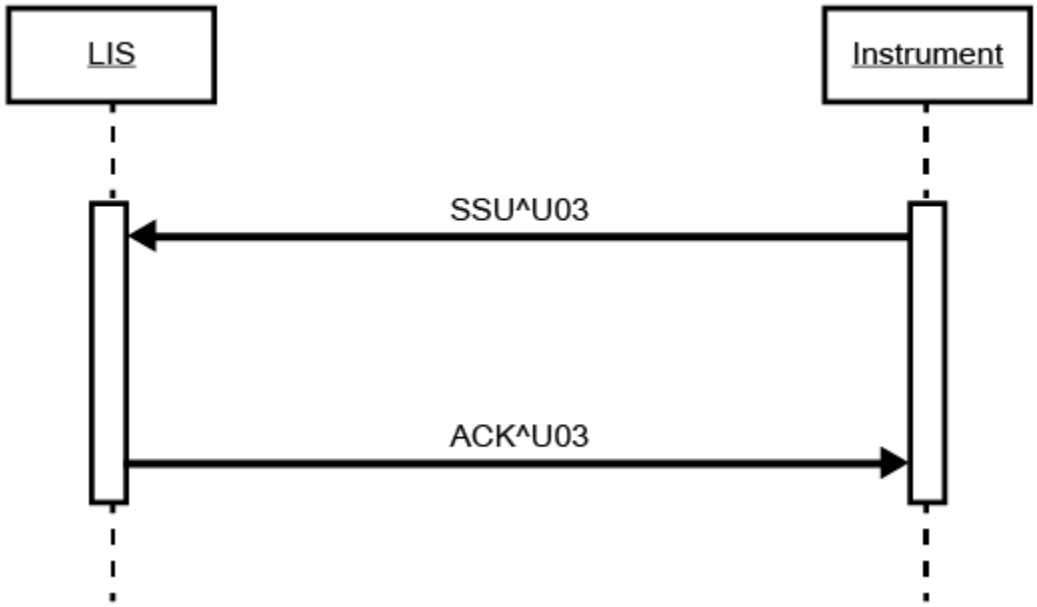
Related information…

Test Status Update Message Profile (LAW Transaction LAB-29), page 56

Sample Status Update Message Profile

This transaction is used by the analyzer to send information concerning the location and status of specimens to the LIS.

Figure 5: Interaction diagram



Interaction model

Trigger event	When a sample (specimen, calibrator, or control) status changes, the analyzer sends a Sample Status Update message, if the message profile is enabled. The status change events supported by the analyzer include: • Sample identified • Sample in process • Sample processing completed • Sample unloaded
Direction	Instrument > LIS
Application roles	Instrument (sender): monitors the sample status and sends the status change events to the receiver. LIS (receiver): tracks the sample status as reported by the instrument.
Receiver responsibilities	Acknowledge the message

Related information...

Message profiles, page 41

SSU^U03 Message, page 60

ACK^U03 Message, page 60

SSU^U03 Message

This message is a Specimen Status Update message. The following table details the structure of this message.

Segment ID	Meaning	Usage	Cardinality
MSH	Message Header	M	[1..1]
EQU	Equipment Detail	M	[1..1]
{	---SPECIMEN_CONTAINER begin	M	[1..*]
SAC	Specimen Container Detail	M	[1..1]
SPM	Specimen	M	[1..1]
}	---SPECIMEN_CONTAINER end		

Notes on message structure

The following notes apply to the SSU^U03 message:

1. The EQU segment identifies the instrument.
2. The SPECIMEN_CONTAINER segment group is repeated for each sample container reported.

Message granularity

Each unique SSU^U03 message contains:

1. one instrument.
2. one or more samples.

Related information...

Sample Status Update Message Profile, page 59

ACK^U03 Message

This message is in response to a received SSU^U03 message. The following table details the structure of this message.

Segment ID	Meaning	Usage	Cardinality
MSH	Message Header	M	[1..1]
MSA	Message Acknowledgment	M	[1..1]
[{ERR}]	Error	C(M,X)	[0..*]

Notes on message structure

The following notes apply to the ACK^U03 message:

1. The ERR segment is conditional. It is present (and mandatory) only in the case of a negative acknowledgment (when MSA-1 = AE or AR). Only the first occurrence of the ERR segment is processed.
2. When MSA-1 = AA, all sample statuses contained in the SSU^U03 message are accepted. Other values for MSA-1 (AE, AR) indicate nonacceptance of all sample statuses.

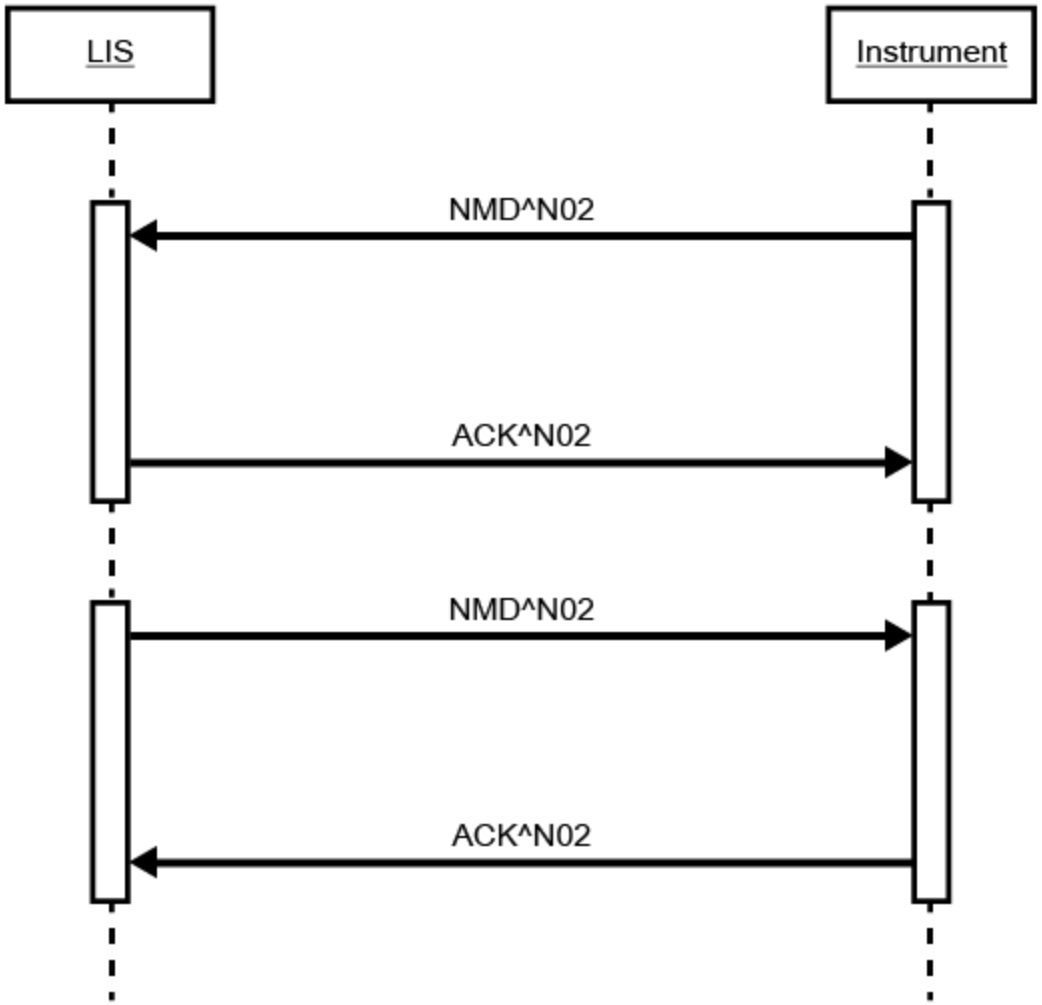
Related information…

Sample Status Update Message Profile, page 59

Connection Test Message Profile

This transaction is used to test the connection between two applications. The instrument can both initiate and respond to a connection test message.

Figure 6: Interaction diagram



Interaction model

Trigger event	An operator requests one application to send a test message to the other application.
Direction	Instrument to LIS LIS to Instrument
Application roles	Sender: Initiates test of the application connection.

	Receiver: Responds to the connection test message.
Receiver responsibilities	Acknowledge the message.

Related information...

Message profiles, page 41
NMDˆN02 Message, page 63
ACKˆN02 Message, page 63

NMDˆN02 Message

This message is an Application Management Data message. The following table details the structure of this message.

Segment ID	Meaning	Usage	Cardinality
MSH	Message Header	M	[1..1]
NST	Application control-level Statistics	M	[1..1]

Notes on message structure

This message contains no application level information. The intent is to provide a simple test message.

Related information...

Connection Test Message Profile, page 62

ACKˆN02 Message

This message is in response to a received NMDˆN02 message. The following table details the structure of this message.

Segment ID	Meaning	Usage	Cardinality
MSH	Message Header	M	[1..1]
MSA	Message Acknowledgment	M	[1..1]
[{ERR}]	Error	C(M,X)	[0..*]

Notes on message structure

The following notes apply to the ACKˆN02 message:

1. The ERR segment is conditional. It is present (and mandatory) only in the case of a negative acknowledgment (when MSA-1 = AE or AR). Only the first occurrence of the ERR segment is processed.

2. When MSA-1 = AA, it indicates the acceptance of the connection test message. Other values for MSA-1 (AE, AR) indicate nonacceptance of the connection test.

Related information…

Connection Test Message Profile, page 62

Introduction

The following topics define the segment structure as implemented for the Alinity h-series.

Related information…

EQU Segment

The EQU segment identifies the equipment or instrument in an HL7 message.

SEQ	LEN	DT	Send usage	Send card.	Rcv. usage	Rcv. card.	Element name
1	427	EI	R	[2..2]	X	[0..0]	Equipment Instance Identifier
2	26	TS	R	[1..1]	X	[0..0]	Event Date/Time
3	250	CE	X	[0..0]	X	[0..0]	Equipment State
4	250	CE	X	[0..0]	X	[0..0]	Local/Remote Control State
5	250	CE	X	[0..0]	X	[0..0]	Alert Level

Related information...

Segment definitions, page 65

EQU-1 Equipment Instance Identifier (EI), page 66

EQU-2 Event Date/Time (TS), page 67

EQU-1 Equipment Instance Identifier (EI)

HL7 Definition: This field identifies the equipment.

This specification: The Alinity h-series is an instrument consisting of one or more assay processing modules and a system control module (SCM). Each assay processing module and the SCM have a serial number.

First Repeat

Component/Subcomponent	Usage	LEN	Comment
Entity Identifier (ST)	R	50	Instrument Model
Namespace ID (IS)	R	20	Manufacturer - Abbott
Universal ID (ST)	X		
Universal ID Type (ID)	X		

Second Repeat

Component/Subcomponent	Usage	LEN	Comment
Entity Identifier (ST)	R	50	System Control Module serial number
Namespace ID (IS)	R	20	Manufacturer - Abbott
Universal ID (ST)	X		
Universal ID Type (ID)	X		

Sample Value(s):

```
EQU|Alinity h-series^Abbott~SCC11222^Abbott|20160920105212
```

Related information...

EQU Segment, page 66

EQU-2 Event Date/Time (TS)

HL7 Definition: This field is the date/time when the event (for example, state transition, issuing of command, finishing of command) occurred.

This specification: This element is reported to a precision of seconds. It represents the date/time the event occurred (for example, status change) for sent messages or the date/time for the information request for received messages.

Element: EQU-2 Event Date/Time

Component/Subcomponent	Usage
YYYYMMDDHHMMSS+/-ZZZZ	R
Degree of precision	X

Related information...

EQU Segment, page 66

ERR Segment

The ERR segment is used to add error information to acknowledgment messages. This segment is sent only when the accompanying MSA segment, MSA-1 acknowledgment code is "AR" or "AE".

SEQ	LEN	DT	Send usage	Send card.	Rcv. usage	Rcv. card.	Element name
1	493	ELD	X	[0..0]	X	[0..0]	Error Code and Location
2	18	ERL	RE	[0..*]	RE	[0..*]	Error Location
3	705	CWE	M	[1..1]	M	[1..1]	HL7 Error Code
4	2	ID	M	[1..1]	M	[1..1]	Severity
5	705	CWE	RE	[0..1]	X	[0..0]	Application Error Code
6	80	ST	X	[0..0]	X	[0..0]	Application Error Parameter
7	2048	TX	X	[0..0]	X	[0..0]	Diagnostic Information
8	250	TX	X	[0..0]	X	[0..0]	User Message
9	20	IS	X	[0..0]	X	[0..0]	Inform Person Indicator
10	705	CWE	X	[0..0]	X	[0..0]	Override Type
11	705	CWE	X	[0..0]	X	[0..0]	Override Reason Code
12	652	XTN	X	[0..0]	X	[0..0]	Help Desk Contact Point

Related information…

Segment definitions, page 65
ERR-2 Error Location (ERL), page 68
ERR-3 HL7 Error Code (CWE), page 69
ERR-4 Severity (ID), page 70
ERR-5 Application Error Code (CWE), page 70

ERR-2 Error Location (ERL)

HL7 Definition: Identifies the location in a message related to the identified error, warning, or message. If multiple repetitions are present, the error results from the values in a combination of places.

This specification: This field should be provided when the error is directly related to a particular HL7 segment, field, component, or subcomponent. Examples include:

- A missing value.
- A wrong value.
- A value with wrong cardinality.
- A value which is not consistent with other message elements.

This field is not present if the error is an application level error.

Element: ERR-2 Error Location

Component/Subcomponent	Usage	LEN
Segment ID (ST)	R	3
Segment Sequence (NM)	R	2
Field Position (NM)	RE	2
Field Repetition (NM)	RE	2
Component Number (NM)	RE	2
Subcomponent Number (NM)	RE	2

Related information...

ERR Segment, page 68

ERR-3 HL7 Error Code (CWE)

HL7 Definition: Identifies the HL7 (communications) error code.

This specification: This field is populated using codes from the following subset of codes in the HL7 Table 0357.

Subset of HL7 Table 0357 - Message error condition codes

Value	Description	Comment
100	Segment sequence error	Error: The message segments were not in the proper order or required segments are missing.
101	Required field missing	Error: A required field is missing from a segment.
102	Data type error	Error: The field contained data of the wrong data type. For example, an NM field contained "FOO".
103	Table value not found	Error: A field of data type ID or IS was compared against the corresponding table, and no match was found.
200	Unsupported message type	Rejection: The Message Type is not supported.
201	Unsupported event code	Rejection: The Event Code is not supported.
202	Unsupported processing ID	Rejection: The Processing ID is not supported.
203	Unsupported version ID	Rejection: The Version ID is not supported.
207	Application internal error	Rejection: Includes internal errors not explicitly covered by other codes.

Element: ERR-3 HL7 Error Code

Component/Subcomponent	Usage	LEN	Comment
Identifier (ST)	R	20	Value from HL7 Table 0357
Text (ST)	RE	199#	Description of error code
Name of Coding System (ID)	R	7	Name of HL7 Coding System: "HL70357" (without quotes)
Alternate identifier (ST)	X		
Alternate Text (ST)	X		
Name of Alternate Coding System ID (ST)	X		
Coding System Version ID (ST)	X		
Alternate Coding System Version ID (ST)	X		
Original Text (ST)	X		

The ERR-3.2 HL7 Error Code Text is optional and is ignored on an incoming message. An error is not raised if the ERR-3.2 HL7 Error Code Text is not consistent with the ERR-3.1 HL7 Error Code Identifier.

Related information...

ERR Segment, page 68

ERR-4 Severity (ID)

HL7 Definition: Identifies the severity of an application error. Knowing if something is Error, Warning, or Information is intrinsic to how an application handles the content.

This specification: This interface supports only the following subset of codes from the HL7 Table 0516.

Subset of HL7 Table 0516 - Error severity

Value	Description	Comment
E	Error	Transaction was unsuccessful.

Related information...

ERR Segment, page 68

ERR-5 Application Error Code (CWE)

HL7 Definition: Application-specific code identifying the specific error that occurred.

A receiving application generates an error that reports an application error code and returns this information in its response.

This specification: This field is used to provide an instrument error code for instrument-detected error conditions.

ERR-5 Sender:

Element: ERR-5 Application Error Code

Component/Subcomponent	Usage	LEN	Comment
Identifier (ST)	R	20	Four-digit exception/error code and optional four-character subcode (for example, 9999-B123).
Text (ST)	R	255#	Text message, in the language currently configured on the instrument, associated with an error. The HL7 v2.5.1 specifies the Text LEN as 199. A text message longer than 199 may be truncated by the receiver.
Name of Coding System (ID)	R	7	"99ABT" without the quotes for sent messages. Ignored if received.
Alternate identifier (ST)	X		
Alternate Text (ST)	X		
Name of Alternate Coding System ID (ST)	X		
Coding System Version ID (ST)	X		
Alternate Coding System Version ID (ST)	X		
Original Text (ST)	X		

Related information...

ERR Segment, page 68

INV Segment

The INV segment contains the data necessary to track the inventory of substances on the Instrument. The segment can be used as follows:

- substance information for reagent material used for results sent in an OULˆR22 message
- substance information for control material used for control results sent in an OULˆR22 message
- substance information for calibrator material used for calibrator results sent in an OULˆR22 message

SEQ	LEN	DT	Send usage	Send card.	Rcv. usage	Rcv. card.	Element name
1	250	CE	R	[1..1]	X	[0..0]	Substance Identifier
2	250	CE	R	[1..1]	X	[0..0]	Substance Status
3	250	CE	R	[1..1]	X	[0..0]	Substance Type
4	250	CE	C(R,X)	[0..1]	X	[0..0]	Inventory Container Identifier
5	250	CE	X	[0..0]	X	[0..0]	Container Carrier Identifier
6	250	CE	X	[0..0]	X	[0..0]	Position on Carrier
7	20	NM	X	[0..0]	X	[0..0]	Initial Quantity
8	20	NM	X	[0..0]	X	[0..0]	Current Quantity
9	20	NM	X	[0..0]	X	[0..0]	Available Quantity
10	20	NM	X	[0..0]	X	[0..0]	Consumption Quantity
11	250	CE	X	[0..0]	X	[0..0]	Quantity Units
12	26	TS	RE	[0..1]	X	[0..0]	Expiration Date/Time
13	26	TS	C(R,X)	[0..1]	X	[0..0]	First Used Date/Time
14	200	TQ	X	[0..0]	X	[0..0]	On-board Stability Duration
15	250	CE	X	[0..0]	X	[0..0]	Test/Fluid Identifier(s)
16	20	ST	R	[0..1]	X	[0..0]	Manufacturer Lot Number
17	250	CE	X	[0..0]	X	[0..0]	Manufacturer Identifier
18	250	CE	X	[0..0]	X	[0..0]	Supplier Identifier
19	20	CQ	X	[0..0]	X	[0..0]	On-board Stability Time
20	20	CQ	X	[0..0]	X	[0..0]	Target Value

Related information…

Segment definitions, page 65
INV-1 Substance Identifier (CE), page 73
INV-2 Substance Status (CE), page 74
INV-3 Substance Type (CE), page 75

INV-12 Expiration Date/Time (TS), page 76
INV-16 Manufacturer Lot Number (ST), page 76

INV-1 Substance Identifier (CE)

HL7 Definition: This field represents a unique, manufacturer-specific identifier for the substance that is in inventory.

This specification: The INV segment can be used to identify any of the following items in a result message:

- a reagent material (results upload message)
- a control material (control results upload message)
- a calibrator material (calibrator results upload message)

Element: INV-1 Substance Identifier

Component/Sub-component	Usage	LEN	Comment
Identifier (ST)	R	20	Identifier of substance
Text (ST)	X		
Name of Coding System	R	7	Name of Abbott Coding System: "99ABT" (without quotes)
Alternate Identifier (ST)	X		
Alternate Text (ST)	X		
Name of Alternate Coding System (ID)	X		

INV-1 Sender (Reagent material sent with OULˆR22 results upload):

When the INV segment is used in the OULˆR22 specimen results message to send information about reagent material used:

Identifier: The Reagent Type as defined on the analyzer.

Vendor Table: Reagent Type

Reagent Type (INV-1.1)	Description
ReagDiluent	Reagent used for CBC+Diff or CBC+Diff+Retic test
ReagWbc	Reagent used for CBC+Diff or CBC+Diff+Retic test
ReagHgb	Reagent used for CBC+Diff or CBC+Diff+Retic test
ReagRETC	Reagent used for CBC+Diff+Retic test
FixReagent	Reagent used for Smear+Stain test
StainReagent	Reagent used for Smear+Stain test
BufferReagent	Reagent used for Smear+Stain test

Reagent Type (INV-1.1)	Description
BlankSlide	Consumable used for Smear or Smear+Stain test
SmearerBlade	Consumable used for Smear or Smear+Stain test
PrinterRibbon	Consumable used for Smear or Smear+Stain test

Sample Value(s):

```
ReagDiluent^^99ABT
```

INV-1 Sender (Control/Calibrator material sent with OULˆR22 results upload):

When the INV segment is used in the OULˆR22 specimen results message to send information about Control/Calibrator material used:

Identifier: The type of the control/calibrator as defined on the analyzer.

Vendor Table: Control/Calibrator Type

Control/Calibrator Type (INV-1.1)
CommercialControl
WholeBloodControl
CommercialCalibrator
WholeBloodCalibrator

Sample Value(s):

```
CommercialControl^^99ABT
```

```
CommercialCalibrator ^^99ABT
```

Related information...

INV Segment, page 72

INV-2 Substance Status (CE)

HL7 Definition: The status of the inventoried item. The status indicates the current status of the substance.

This specification: Contains a subset of values taken from and added to HL7 Table 0383 as described below.

Element: INV-2 Substance Status

Component/Subcomponent	Usage	LEN	Comment
Identifier (ST)	R	20	Value from HL7 Table 0383 as shown in the following table
Text (ST)	RE	199	Description of Substance Status
Name of Coding System (ID)	R	7	"HL70383" (without quotes)
Alternate Identifier (ST)	X		
Alternate Text (ST)	X		
Name of Alternate Coding System (ID)	X		

Subset of HL7 Table 0383 - Substance Status

Value	Description	Comment
NA	Not applicable	IHE LAW Extension to HL7 Table 0383 **NOTE:** IHE LAW-defined extension

Related information…

INV Segment, page 72

INV-3 Substance Type (CE)

HL7 Definition: The type of substance.

This specification: This field is used to specify the substance type (for example, control and reagent). It contains a subset of values taken from the HL7 Table 0384.

Element: INV-3 Substance Type

Component/Sub-component	Usage	LEN	Comment
Identifier (ST)	R	20	Value from HL7 Table 0384 as shown in the following table
Text (ST)	RE	199	Description of Substance Type
Name of Coding System (ID)	R	7	"99ABT" (without quotes) for Abbott-defined substance type, "HL70384" (without quotes) for HL7-defined substance type
Alternate Identifier (ST)	X		
Alternate Text (ST)	X		
Name of Alternate Coding System (ID)	X		

Subset HL7 Table 0384: Substance Type

Value	Description	Comment
SR	Single Test Reagent	Reagent material used to produce a result
CO	Control	Assay Control Specimen
RC	Reagent Calibrator	Calibrator Specimen

Related information…

INV Segment, page 72

INV-12 Expiration Date/Time (TS)

HL7 Definition: This field is the expiration date/time of the substance.

This specification:

- The lot expiration date of the material (YYYYMMDD), if the material has an expiration date.
- This field specifies the expiration date/time of Control or Calibrator specimens. The INV-12 is not supported for Reagents used to process the specimens.
- INV-12 is not supported for SMS reagents and consumables.

Element: INV-12 Expiration Date/Time

Component/Subcomponent	Usage
YYYYMMDD[HHMMSS]+/-ZZZZ	R
Degree of precision	X

Related information…

INV Segment, page 72

INV-16 Manufacturer Lot Number (ST)

HL7 Definition: This field specifies the lot number assigned by the manufacturer during production of the substance.

This specification:

The lot number of the reagent, control, or calibrator material.

Related information…

INV Segment, page 72

MSA Segment

The MSA segment contains information sent while acknowledging another message.

SEQ	LEN	DT	Send usage	Send card.	Rcv. usage	Rcv. card.	Element name
1	2	ID	M	[1..1]	M	[1..1]	Acknowledgment Code
2	50	ST	M	[1..1]	M	[1..1]	Message Control ID
3	80	ST	X	[0..0]	X	[0..0]	Text Message
4	15	NM	X	[0..0]	X	[0..0]	Expected Sequence Number
5			X	[0..0]	X	[0..0]	Delayed Acknowledgment Type
6	250	CE	X	[0..0]	X	[0..0]	Error Condition

Related information...

Segment definitions, page 65
MSA-1 Acknowledgment Code (ID), page 77
MSA-2 Message Control ID (ST), page 78

MSA-1 Acknowledgment Code (ID)

HL7 Definition: This element contains the acknowledgment code, based on HL7 message processing rules.

This specification: This interface supports only the following subset of codes from HL7 Table 0008.

Subset of HL7 Table 0008 - Acknowledgment Code

Value	Description	Comment
AA	Original mode: Application Accept	Message processed and accepted.
AE	Original mode: Application Error	Message processed, but has format errors.
AR	Original mode: Application Reject	Message rejected due to an error in the message content.

MSA-1 Sender:

- AA indicates an accepted message.
- AE indicates a malformed message (for example, missing or out of order segments, incorrect data types, or unsupported table values).

  NOTE: The ERR segment that accompanies the MSA segment in the acknowledgment message indicates the location of the error.

- AR indicates an application-detected error which is typically related to errors in the message content (for example, unsupported message or inconsistent message content).

MSA-1 Receiver:

Supports the values described in the table above.

- "AA" indicates an accepted message.
- All others are interpreted as a message failure.

Related information...

MSA Segment, page 77

MSA-2 Message Control ID (ST)

HL7 Definition: This field contains the message control ID of the message sent by the sending system. It allows the sending system to associate this response with the message for which it is intended.

This specification: This field contains the value in MSH-10 Message Control ID of the message being acknowledged.

Related information...

MSA Segment, page 77

MSH Segment

Defines the intent, source, destination, and some specifics of the syntax of a message.

SEQ	LEN	DT	Send usage	Send card.	Rcv. usage	Rcv. card.	Element name
1	1	ST	M	[1..1]	M	[1..1]	Field Separator
2	4	ST	M	[1..1]	M	[1..1]	Encoding Characters
3	227	HD	RE	[0..1]	RE	[0..1]	Sending Application
4	227	HD	RE	[0..1]	RE	[0..1]	Sending Facility
5	227	HD	RE	[0..1]	RE	[0..1]	Receiving Application
6	227	HD	RE	[0..1]	RE	[0..1]	Receiving Facility
7	26	TS	M	[1..1]	M	[1..1]	Date/Time of Message
8	40	ST	X	[0..0]	X	[0..0]	Security
9	15	MSG	M	[1..1]	M	[1..1]	Message Type
10	50	ST	M	[1..1]	M	[1..1]	Message Control ID
11	3	PT	M	[1..1]	M	[1..1]	Processing ID
12	60	VID	M	[1..1]	M	[1..1]	Version ID
13	15	NM	X	[0..0]	X	[0..0]	Sequence Number
14	180	ST	X	[0..0]	X	[0..0]	Continuation Pointer
15	2	ID	C(M,X)	[0..1]	C(M,X)	[0..1]	Accept Acknowledgment Type
16	2	ID	C(M,X)	[0..1]	C(M,X)	[0..1]	Application Acknowledgment Type
17	3	ID	X	[0..0]	X	[0..0]	Country Code
18	16	ID	M	[1..1]	M	[1..1]	Character Set
19	250	CE	X	[0..0]	X	[0..0]	Principal Language of Message
20	20	ID	X	[0..0]	X	[0..0]	Alternate Character Set Handling Scheme
21	427	EI	C(M,X)	[0..1]	C(M,X)	[0..*]	Message Profile Identifier

Related information...

Segment definitions, page 65
MSH-1 Field Separator (SI), page 80
MSH-2 Encoding Characters (ST), page 80
MSH-3 Sending Application (HD), page 80
MSH-4 Sending Facility (HD), page 81
MSH-5 Receiving Application (HD), page 81
MSH-6 Receiving Facility (HD), page 82
MSH-7 Date/Time of Message (TS), page 82
MSH-9 Message Type (MSG), page 83

MSH-1 Field Separator (SI)

This interface supports the HL7-recommended value, | (ASCII 124).

Related information...

MSH Segment, page 79

MSH-2 Encoding Characters (ST)

HL7 Definition: This field contains the four characters in the following order:

1. component separator
2. repetition separator
3. escape character
4. subcomponent separator

This interface supports the HL7-recommended values ^~\& (ASCII 94, 126, 92, and 38, respectively).

NOTE: The field MSH-2 must match "^~\& " exactly.

Related information...

MSH Segment, page 79

MSH-3 Sending Application (HD)

HL7 Definition: This field contains the laboratory-defined name of the sending application.

This specification:

MSH-3 Sender:

Only the first component of this element is populated. A configuration parameter allows the value of MSH-3 to be set for triggered messages. The instrument populates this element with the configuration parameter for the event-triggered messages. If the configuration parameter is not defined, then the field is empty. For acknowledgment messages, the instrument echoes the MSH-5 value from the inbound message.

Element: MSH-3 Sending Application

Component/Subcomponent	Usage	LEN	Contents
Namespace ID (IS)	R	20	Configuration parameter
Universal ID (ST)	X		
Universal ID type (ID)	X		

Related information...

MSH Segment, page 79

MSH-4 Sending Facility (HD)

HL7 Definition: This field contains the laboratory-defined name of the sending facility.

This specification:

MSH-4 Sender:

Only the first component of this element is populated. A configuration parameter allows the value of MSH-4 for triggered messages. The instrument populates this element with the configuration parameter for event-triggered messages. If the configuration parameter is not defined, then the field is empty. For acknowledgment messages, the instrument echoes the MSH-6 value from the inbound message.

Element: MSH-4 Sending Facility

Component/Subcomponent	Usage	LEN	Contents
namespace ID (IS)	R	20	Configuration parameter
universal ID (ST)	X		
universal ID type (ID)	X		

Related information...

MSH Segment, page 79

MSH-5 Receiving Application (HD)

HL7 Definition: This field contains the laboratory-defined name of the receiving application.

This specification:

MSH-5 Sender:

Only the first component of this element is populated. A configuration parameter allows the value of MSH-5 to be set for triggered messages. The instrument populates this element with the configuration parameter for event-triggered messages. If the configuration parameter is not defined, then the field is empty. For acknowledgment messages, the instrument echoes the MSH-3 value from the inbound message.

Element: MSH-5 Receiving Application

Component/Subcomponent	Usage	LEN	Contents
namespace ID (IS)	R	20	Configuration parameter
universal ID (ST)	X		
universal ID type (ID)	X		

Related information…

MSH Segment, page 79

MSH-6 Receiving Facility (HD)

HL7 Definition: This field contains the laboratory-defined name of the receiving facility.

This specification:

MSH-6 Sender:

Only the first component of this element is populated. A configuration parameter allows the value of MSH-6 to be set for triggered messages. The instrument populates this element with the configuration parameter for event-triggered messages. If the configuration parameter is not defined, then the field is empty. For acknowledgment messages, the instrument echoes the MSH-4 value from the inbound message.

Element: MSH-6 Receiving Facility

Component/Subcomponent	Usage	LEN	Contents
namespace ID (IS)	R	20	Configuration parameter
universal ID (ST)	X		
universal ID type (ID)	X		

Related information…

MSH Segment, page 79

MSH-7 Date/Time of Message (TS)

HL7 Definition: This field contains the date and time that the sending system created the message.

NOTE: This field is required as of HL7 version 2.4 Messaging Standard.

This specification: This element is reported to a precision of seconds.

MSH-7 Sender:

The Indication of time zone is provided and represents the configured time zone set in the instrument. All other time stamps in the message do not have the time zone specified and can be assumed to be in the same time zone indicated in this MSH-7 element.

Element: MSH-7 Date/Time of Message (Sent messages)

Component/Subcomponent	Usage	
YYYYMMDDHHMMSS+/-ZZZZ	R	
Degree of precision	X	

MSH-7 Receiver:

The Indication of time zone is not supported and is ignored if present. No time zone adjustments are made by the instrument software for time stamps in incoming messages.

Element: MSH-7 Date/Time of Message (Received messages)

Component/Subcomponent	Usage
YYYYMMDDHHMMSS[+/-ZZZZ]	R
Degree of precision	X

Related information...

MSH Segment, page 79

MSH-9 Message Type (MSG)

HL7 Definition: This field contains the message type, trigger event, and message structure ID.

This specification: All components are required.

Element: MSH-9 Message Type

Component/Subcomponent	Usage
Message Code (ID)	R
Trigger Event (ID)	R
Message Structure (ID)	R

MSH-9 Sender:

All three components are populated (for example, ORL^O34^ORL_O42).

MSH-9 Receiver:

Message types not recognized in this specification cause message rejection.

Related information...

MSH Segment, page 79

MSH-10 Message Control ID (ST)

HL7 Definition: This field contains a number or other identifier that uniquely identifies the message. Each message is given a unique identifier by the sending system. The receiving system echoes this ID to the sending system in the Message Acknowledgment (MSA) segment.

This specification: The maximum element length for MSH-10 is extended to 50 characters from the HL7-prescribed length of 20 characters. This extension allows sending systems to use globally unique identifiers, such as Globally Unique Identifiers (GUID), for Message IDs.

Related information...

MSH Segment, page 79

MSH-11 Processing ID (PT)

HL7 Definition: This field indicates whether to process a message as defined in HL7 Application (level 7) Processing rules.

This specification: Only the first component is required and supports only a value of "P".

Element: MSH-11 Processing ID

Component/Subcomponent	Usage
Processing ID (ID)	R
Processing mode (ID)	X

Subset of HL7 Table 0103 - Processing ID

Value	Description	Comment
P	Production	Message processed.

MSH-11 Sender:

Value is always "P".

MSH-11 Receiver:

Values other than "P" cause message rejection.

Related information...

MSH Segment, page 79

MSH-12 Version ID (VID)

HL7 Definition: This field identifies the version of HL7 supported. The receiving system compares the value in this field to its own version to ensure correct message interpretation.

This specification: Only the first component is supported.

Element: MSH-12 Version ID

Component/Subcomponent	Usage
Version ID (ID)	R
Internationalisation Code (CE)	X
International Version ID (CE)	X

MSH-12 Sender:

Value is always "2.5.1".

MSH-12 Receiver:

Accepts values starting with the character string "2.5." Later minor releases such as "2.5.1" are also supported. All other values cause message rejection.

Related information...

MSH Segment, page 79

MSH-15 Accept Acknowledgment Type (ID)

HL7 Definition: This field identifies the conditions under which the return of accept acknowledgments are required in response to this message.

This specification: Supports only the subset of values from the HL7 table 0155, as described below.

Subset of HL7 Table 0155 - Accept acknowledgment conditions

Value	Description	Comment
NE	Never	

Predicate: This field is present and mandatory for event-triggered messages. Otherwise, usage is not supported for response messages.

Related information...

MSH Segment, page 79

MSH-16 Application Acknowledgment Type (ID)

HL7 Definition: This field contains the required conditions for returning application acknowledgments in response to this message.

This specification: Supports only the subset of values from the HL7 table 0155, as described below.

Subset of HL7 Table 0155 - Accept acknowledgment conditions

Value	Description	Comment
AL	Always	

Predicate: This field is present and mandatory for event-triggered messages. Otherwise, usage is not supported for response messages.

Related information...

MSH Segment, page 79

MSH-18 Character Set (ID)

HL7 Definition: This field contains the character set for the entire message. Refer to the HL7 table 0211 - Alternate character sets for valid values.

This specification: Only the subset of values from HL7 Table 0211 are supported.

Subset of HL7 Table 0211 - Alternate character sets

Value	Description	Comment
UNICODE UTF-8	UCS Transformation Format, 8-bit form	UTF-8 is a variable-length encoding. Each code value is represented by 1, 2, or 3 bytes, depending on the code value. Seven-bit (7-bit) ASCII is a proper subset of UTF-8. **NOTE:** The code contains a space before UTF but not before and after the hyphen.

Though the field is repeatable in HL7, only one occurrence (one character set) is supported by this interface specification. The character set specified in this field is used for encoding of all characters within the message.

MSH-18 Sender:

Only one character set encoding is supported, as specified in the table above.

MSH-18 Receiver:

Values other than those specified cause message rejection.

Related information...

MSH Segment, page 79

MSH-21 Message Profile Identifier (EI)

HL7 Definition: This field is used to assert adherence to, or reference, a message profile. Message profiles contain detailed explanations of grammar, syntax, and usage for a particular message or a set of messages.

This specification: Only the first repeat of this element is supported for both sent and received messages. Subsequent repeats in received messages are ignored.

Element: MSH-21 Message Profile Identifier

Component/Subcomponent	Usage	LEN	Contents
Entity Identifier (ST)	R	50	<domain>-<transaction>
Namespace ID (IS)	R	20	"IHE" (without quotes) for IHE-LAB LAW profiles
Universal ID (ST)	X		
Universal ID type (ID)	X		

MSH-21 Sender:

Predicate: This field is present and mandatory for the following message types (MSH-9). Otherwise, usage is not supported:

- Order Query (QBPˆQ11)
- Results Upload/Test Status Update (OULˆR22)
- Order Download Response (ORLˆO34)

MSH-21 Receiver:

Predicate: The first repeat of this field is mandatory for the following message types (MSH-9), otherwise usage is not supported:

- Order Download (OMLˆO33)
- Order Query Response (RSPˆK11)
- Results Upload/Test Status Update Response (ACKˆR22)

Sample Value(s):

```
LAB-27^IHE
```

Related information...

MSH Segment, page 79

NST Segment

The NST segment allows application-level, control-level statistical information to be passed between applications.

NST segment structure

SEQ	LEN	DT	Send usage	Send card.	Rcv. usage	Rcv. card.	Element name
1	1	ID	R	[1..1]	R	[1..1]	Statistics Available
2	30	ST	X	[0..0]	X	[0..0]	Source Identifier
3	3	ID	X	[0..0]	X	[0..0]	Source Type
4	26	TS	X	[0..0]	X	[0..0]	Statistics Start
5	26	TS	X	[0..0]	X	[0..0]	Statistics End
6	10	NM	X	[0..0]	X	[0..0]	Receive Character Count
7	10	NM	X	[0..0]	X	[0..0]	Send Character Count
8	10	NM	X	[0..0]	X	[0..0]	Messages Received
9	10	NM	X	[0..0]	X	[0..0]	Messages Sent
10	10	NM	X	[0..0]	X	[0..0]	Checksum Errors Received
11	10	NM	X	[0..0]	X	[0..0]	Length Errors Received
12	10	NM	X	[0..0]	X	[0..0]	Other Errors Received
13	10	NM	X	[0..0]	X	[0..0]	Connect Time-outs
14	10	NM	X	[0..0]	X	[0..0]	Receive Time-outs
15	10	NM	X	[0..0]	X	[0..0]	Application control-level Errors

Related information...

Segment definitions, page 65
NST-1 Statistics Available (ID), page 88

NST-1 Statistics Available (ID)

HL7 definition: This field indicates the availability of statistics. Valid values are Y and N.

N: The responding application does not keep statistics. If the value N is specified, the response message is used to signify to the initiating application that the communication link between the initiating and responding applications is operational. Fields 2 through 15 are empty in the response message.

Y: The responding application keeps statistics. Fields 4 and 5 are required. The response message contains one or more nonnull fields in the ranges from 2 through 3 and from 6 through 15.

This specification: Only the N value is supported to indicate an operational application. This segment is present only in the NMDˆN02 message used to test the connection.

NST-1 Sender:

This field always has a value of N.

NST-1 Receiver:

The value of this field can be either Y or N. All other NST fields are ignored if present.

Related information…

NST Segment, page 88

NTE Segment

The NTE segment is used for sending notes and comments that accompany test order or result data. The placement of the NTE segment within a message's segment structure dictates the context of the comment (for example, order comment or result comment).

NTE segment structure

SEQ	LEN	DT	Send usage	Send card.	Rcv. usage	Rcv. card.	Element name
1	4	SI	R	[1..1]	R	[1..1]	Set ID - NTE
2	8	ID	R	[1..1]	RE	[0..1]	Source of Comment
3	50#	FT	R	[1..1]	R	[1..1]	Comment
4	250	CE	X	[0..0]	X	[0..0]	Comment Type

Related information...

Segment definitions, page 65
NTE-1 Set ID (SI), page 90
NTE-2 Source of Comment (ID), page 90
NTE-3 Comment (FT), page 91

NTE-1 Set ID (SI)

HL7 Definition: This field contains the sequence number and is used to identify segment instances in message structures (segment groups) where the segment repeats within that structure. The sequence number of the first occurrence of the segment is one, the sequence number of the second occurrence is two, and subsequent instances follow the same convention.

If the segment occurs only once within a message structure, its value is "1". If the message structure (segment group) repeats, the first occurrence of the segment in each segment group is "1".

Related information...

NTE Segment, page 90

NTE-2 Source of Comment (ID)

HL7 Definition: This field is used when the source of a comment must be identified. This table may be extended locally during implementation.

This specification:

NTE-2 Sender:

This element is populated with the value from the table below.

Subset of HL7 Defined Table 0105 - Source of Comment

Value	Description	Comment
Z	Instrument	

NTE-2 Receiver:

This field is ignored when received.

Related information...

NTE Segment, page 90

NTE-3 Comment (FT)

HL7 Definition: The field contains the actual comment text.

This specification: The field contains text for order comments and result comments. The maximum length for a received order comment is 50 characters. Received comments longer than 50 characters are truncated. The truncation character "#" is used at the end of the value to indicate it was truncated.

Related information...

NTE Segment, page 90

OBR Segment

The Observation Request (OBR) segment is used to transmit information specific to an order for a diagnostic study or observation. The primary use of this segment is to identify the test/analysis to run on the specimen.

SEQ	LEN	DT	Send usage	Send card.	Rcv. usage	Rcv. card.	Element name
1	4	SI	X	[0..0]	X	[0..0]	Set ID - OBR
2	50	EI	M	[1..1]	M	[1..1]	Placer Order Number
3	50	EI	X	[0..0]	X	[0..0]	Filler Order Number
4	250	CE	M	[1..1]	M	[1..1]	Universal Service Identifier
5	2	ID	X	[0..0]	X	[0..0]	Priority - OBR
6	26	TS	X	[0..0]	X	[0..0]	Requested Date/Time
7	26	TS	X	[0..0]	X	[0..0]	Observation Date/Time
8	26	TS	X	[0..0]	X	[0..0]	Observation End Date/Time
9	20	CQ	X	[0..0]	X	[0..0]	Collection Volume
10	250	XCN	X	[0..0]	X	[0..0]	Collection Identifier
11	1	ID	RE	[0..1]	X	[0..0]	Specimen Action Code
12	51	CE	X	[0..0]	X	[0..0]	Danger Code
13	50	ST	X	[0..0]	X	[0..0]	Relevant Clinical Information
14	26	TS	X	[0..0]	X	[0..0]	Specimen Received Date/Time *
15	300	SPS	X	[0..0]	X	[0..0]	Specimen Source
16	250	XCN	RE	[0..1]	RE	[0..1]	Ordering Provider
17	250	XTN	X	[0..0]	X	[0..0]	Order Callback Phone Number
18	60	ST	X	[0..0]	X	[0..0]	Placer Field 1
19	60	ST	X	[0..0]	X	[0..0]	Placer Field 2
20	60	ST	X	[0..0]	X	[0..0]	Filler Field 1 +
21	60	ST	X	[0..0]	X	[0..0]	Filler Field 2 +
22	26	TS	X	[0..0]	X	[0..0]	Results Rpt/Status Chng - Date/ Time +
23	40	MOC	X	[0..0]	X	[0..0]	Charge to Practice +
24	10	ID	X	[0..0]	X	[0..0]	Diagnostic Serv Sect ID
25	1	ID	X	[0..0]	X	[0..0]	Result Status +
26	400	PRL	X	[0..0]	X	[0..0]	Parent Result +
27	200	TQ	X	[0..0]	X	[0..0]	Quantity/Timing
28	200	XCN	X	[0..0]	X	[0..0]	Result Copies To
29	200	EIP	X	[0..0]	X	[0..0]	Parent

SEQ	LEN	DT	Send usage	Send card.	Rcv. usage	Rcv. card.	Element name
30	20	ID	X	[0..0]	X	[0..0]	Transportation Mode
31	250	CE	X	[0..0]	X	[0..0]	Reason for Study
32	200	NDL	X	[0..0]	X	[0..0]	Principal Result Interpreter
33	200	NDL	X	[0..0]	X	[0..0]	Assistant Result Interpreter
34	200	NDL	X	[0..0]	X	[0..0]	Technician
35	200	NDL	X	[0..0]	X	[0..0]	Transcriptionist
36	25	TS	X	[0..0]	X	[0..0]	Scheduled Date/Time
37	4	NM	X	[0..0]	X	[0..0]	Number of Sample Containers
38	250	CE	X	[0..0]	X	[0..0]	Transport Logistics of Collected Sample
39	250	CE	X	[0..0]	X	[0..0]	Collector's Comment
40	250	CE	X	[0..0]	X	[0..0]	Transport Arrangement Responsibility
41	30	ID	X	[0..0]	X	[0..0]	Transport Arranged
42	1	ID	X	[0..0]	X	[0..0]	Escort Required
43	250	CE	X	[0..0]	X	[0..0]	Planned Patient Transport Comment
44	250	CE	X	[0..0]	X	[0..0]	Procedure Code
45	250	CE	X	[0..0]	X	[0..0]	Procedure Code Modifier
46	250	CE	X	[0..0]	X	[0..0]	Placer Supplemental Service Information
47	250	CE	X	[0..0]	X	[0..0]	Filler Supplemental Service Information
48	250	CWE	X	[0..0]	X	[0..0]	Medically Necessary Duplicate Procedure Reason
49	2	IS	X	[0..0]	X	[0..0]	Result Handling
50	250	CWE	X	[0..0]	X	[0..0]	Parent Universal Service Identifier

Related information...

Segment definitions, page 65
OBR-2 Placer Order Number (EI), page 93
OBR-4 Universal Service Identifier (CE), page 94
OBR-11 Specimen Action Code (ID), page 95
OBR-16 Ordering Provider (XCN), page 95

OBR-2 Placer Order Number (EI)

HL7 Definition: This field is the placer application's order number.

This specification: This field specifies the Analytical Work Order Step ID (AWOS ID) as generated by the placer (LIS). If a test order is created by the instrument, this field will be present but empty, that is null ("").

Element: OBR-2 Placer Order Number

Component/Subcomponent	Usage	LEN	Comment
Entity Identifier (ST)	R	50	AWOS ID
Namespace ID (IS)	X		
Universal ID (ST)	X		
Universal ID Type (ID)	X		

Related information...

OBR Segment, page 92

OBR-4 Universal Service Identifier (CE)

HL7 Definition: This element contains the identifier code for the requested observation/test/battery. This can be based on local and/or "universal" codes.

This specification: For the analyzer, only individual tests can be ordered. Identification of batteries (Panels) through this interface is not supported. The Alinity h-series analyzer supports only its own local coding system for the test type, which is defined in Vendor Table: Test Types.

Element: OBR-4 Universal Service Identifier

Component/Sub-component	Usage	LEN	Comment
Identifier (ST)	R	20	Test Type value
Text (ST)	RE	199	Test Type description
Name of Coding System (ID)	R	7	Name of Abbott Coding System: "99ABT" (without quotes)
Alternate Identifier (ST)	X		
Alternate Text (ST)	X		
Name of Alternate Coding System (ID)	X		

OBR-4 Sender and Receiver:

Vendor Table: Test Type

OBR 4.1 Test Type Value	OBR 4.2 Test TypeDescription
CBC+Diff	CBC with Differential
CBC+Diff+Retic	CBC with Differential + Reticulocyte
Smear	Smear
Smear+Stain	Smear+Stain

The Identifier is used to determine which test to perform.

Sample Value(s):

```
CBC+Diff^CBC with Differential^99ABT
```

Related information...

OBR Segment, page 92

OBR-11 Specimen Action Code (ID)

HL7 Definition: This field is the action to be taken with respect to the specimens that accompany or precede this order. The purpose of this field is to further qualify (when appropriate) the general action indicated by the order control code contained in the accompanying ORC segment.

This specification: This field is used to identify reflex orders generated at the instrument when reporting results for those orders. If the instrument-generated order is a reflex, then OBR-11 is set to "G", meaning "Generated order, reflex order". Otherwise, OBR-11 will not be populated.

Related information...

OBR Segment, page 92

OBR-16 Ordering Provider (XCN)

HL7 Definition: This field identifies the provider (ordering physician) that ordered the test/battery on the sample.

This specification: For the analyzer, this element contains the doctor's name field on the analyzer (if available). The analyzer supports a single 20 character field that contains a doctor identifier. OBR-16 is not populated for the Test Status update message.

Element: OBR-16 Ordering Provider (XCN)

Component/Sub-component	Usage	LEN	Comment
ID number (ST)	R	50	Doctor
family name (FN)	X		
family name (ST)	X		
own family name prefix (ST)	X		
own family name (ST)	X		
family name prefix from partner/spouse (ST)	X		
family name from partner/spouse (ST)	X		
given name (ST)	X		
second and further given name or initials thereof (ST)	X		
suffix (for example, JR or III) (ST)	X		

Component/Sub-component	Usage	LEN	Comment
prefix (for example, DR) (ST)	X		
degree (for example, MD) (IS)	X		
source table (IS)	X		
assigning authority (HD)	X		
name type code (ID)	X		
identifier check digit (ST)	X		
code identifying the check digit scheme employed (ID)	X		
identifier type code (IS)	X		
assigning facility (HD)	X		
name representation code (ID)	X		
name context (CE)	X		
name validity range (DR)	X		
name assembly order (ID)	X		
effective date (TS)	X		
expiration date (TS)	X		
professional suffix (for example, MD) (ST)	X		
assigning jurisdiction (CWE)	X		
assigning agency or department (CWE)	X		

Related information…

OBR Segment, page 92

OBX Segment (OBX-29 = RSLT)

The OBX segment is used to transmit a result observation for a test as part of the OULˆR22 message (LAW Transaction LAB-29).

SEQ	LEN	DT	Send usage	Send card.	Rcv. usage	Rcv. card.	Element name
1	4	SI	M	[1..1]	X	[0..0]	Set ID - OBX
2	2	ID	C(M,X)	[1..1]	X	[0..0]	Value Type
3	250	CE	M	[1..1]	X	[0..0]	Observation Identifier
4	2	ST	M	[1..1]	X	[0..0]	Observation Sub-ID
5	99999	varies	M	[1..1]	X	[0..0]	Observation Value
6	250	CE	RE	[0..1]	X	[0..0]	Units
7	60	ST	RE	[0..1]	X	[0..0]	Reference Range
8	705	CWE	M	[1..*]	X	[0..0]	Interpretation Codes
9	5	NM	X	[0..0]	X	[0..0]	Probability
10	2	ID	X	[0..0]	X	[0..0]	Nature of Abnormal Test
11	1	ID	M	[1..1]	X	[0..0]	Observation Result Status
12	26	TS	X	[0..0]	X	[0..0]	Effective Date of Reference Range Values
13	20	ST	X	[0..0]	X	[0..0]	User Defined Access Checks
14	26	TS	X	[0..0]	X	[0..0]	Date/Time of the Observation
15	250	CE	X	[0..0]	X	[0..0]	Producer's Reference
16	250	XCN	M	[1..*]	X	[0..0]	Responsible Observer
17	250	CE	X	[0..0]	X	[0..0]	Observation Method
18	427	EI	M	[2..2]	X	[0..0]	Equipment Instance Identifier
19	26	TS	M	[1..1]	X	[0..0]	Date/Time of the Analysis
20	705	CWE	X	[0..0]	X	[0..0]	Observation Site
21	427	EI	X	[0..0]	X	[0..0]	Observation Instance Identifier
22	705	CNE	X	[0..0]	X	[0..0]	Mode Code
23	567	XON	X	[0..0]	X	[0..0]	Performing Organization Name
24	631	XAD	X	[0..0]	X	[0..0]	Performing Organization Address
25	3002	XCN	X	[0..0]	X	[0..0]	Performing Organization Medical Director
26	10	ID	X	[0..0]	X	[0..0]	Patient Results Release Category
27		CWE	X	[0..0]	X	[0..0]	Root Cause
28		CWE	X	[0..0]	X	[0..0]	Local Process Control
29	4	ID	M	[1..1]	X	[0..0]	Observation Type

Multiple OBX segments are used in OULˆR22 message for representing different elements of an analyzer result. The following tables provide a summary of OBX segment usage with Analyzer Result elements.

Analyzer Result Elements: Numerical Results

Result status and Description	Display on Analyzer Software	OBX-2 (Sample Value)	OBX-3 (Sample Value)	OBX-5 (Sample Value)	OBX-8 (Sample Value)	OBX-11 (Sample Value)
No data: No calculation made due to lack of input data	----	ST	WBCˆWBCˆ99ABT	----	NDˆNoDataˆ99ABT	X
Calc OK: Calculation made, value is within AMR range, and no other flags impact the result	Value	NM	WBCˆWBCˆ99ABT	14.2	NULL ("")	F
No Calc: No meaningful calculation could be made	4 blanks	ST	WBCˆWBCˆ99ABT	| |	NCˆNoCalcˆ99ABT	X
Over Range: Calculation made. Value is above AMR range. No other flags impact the result.	>>>>	ST	WBCˆWBCˆ99ABT	>>>>	>ˆOff scale highˆ HL70078	F
Under Range: Calculation made. Value is below AMR range. No other flags impact the result.	<<<<	ST	WBCˆWBCˆ99ABT	<<<<	<ˆOff scale low ˆHL70078	F
Suspect: Calculation made but result is suspect due to morphological flag or system fault	14.2	NM	WBCˆWBCˆ99ABT	14.2	SUSPECTˆSuspectˆ99ABT	F
Invalid: Calculation made but result is suspect due to morphological flag or system fault	14.2X	NM	WBCˆWBCˆ99ABT	14.2	INVALIDˆInvalidˆ99ABT	X
RUO Result	14.2	NM	WVFˆWVFˆ99ABT	14.2	RUOˆResearch Use Onlyˆ99ABT	F

Analyzer Result Elements: Graphical data and Flags

Result Element	Display on Analyzer Software	OBX-2	OBX-3 (Example)	OBX-5	OBX-8	OBX-11
Graphical Results: Scatterplots and Histograms	Graph	ED	WBC_IAS_ALL^IAS x ALL (WBC)^99ABT^S_IMAGE^Supplemental Image^IHELAW	Data	NULL ("")	F
Morphological	Flag name	ST/ NM	WBC^WBC^99ABT	14.2	LEFTSHIFT^LEFT SHIFT^99ABT	F
Data Flags	Flag name	Empty	DataFlag^Data Flag^99ABT	NULL ("")	DF01^HGB Reference out of Range^99ABT	F
System Faults	System fault	Empty	SystemFault^System Fault^99ABT	NULL ("")	SF01^Short Sample^99ABT	F
Customer Defined Alert (Result Alert)	Result alert	Empty	ResultAlert^ Customer Definable Alerts^99ABT	NULL ("")	Thrombocytopenia ^Thrombocytopenia^99ABT	F
Delta Check Status	Status (PASS, FAIL, NONE)	ST	DC^Delta Check^99ABT	PASS	NULL ("")	F

Related information...

Segment definitions, page 65
OBX-1 Set ID (SI), page 100
OBX-2 Value Type (ID), page 100
OBX-3 Observation Identifier (CE), page 100
OBX-4 Observation Sub-ID (ST), page 104
OBX-5 Observation Value (varies), page 104
OBX-6 Units (CE), page 107
OBX-7 Reference Range (ST), page 108
OBX-8 Interpretation Codes (CWE), page 108
OBX-11 Observation Result Status (ID), page 113
OBX-16 Responsible Observer (XCN), page 114
OBX-18 Equipment Instance Identifier (EI), page 115
OBX-19 Date/Time of the Analysis (TS), page 116
OBX-29 Observation Type (ID), page 116

OBX-1 Set ID (SI)

HL7 Definition: This field contains the sequence number. This field is used to identify segment instances in message structures (for example, segment group) where the segment repeats within that structure. For the first occurrence of the segment, the sequence number is one, for the second occurrence, the sequence number is two, etc.

Within the LAW profile, the sequence number is set to "1" for the first occurrence of the OBX segment in a segment group representing an AWOS. For example, the field is set to one in the first occurrence of the OBX segment in an instance of the RESULT segment group of the OULˆR22 message. Subsequent occurrences of the segment within that RESULT segment group are sequentially numbered.

Related information...

OBX Segment (OBX-29 = RSLT), page 97

OBX-2 Value Type (ID)

HL7 Definition: This field contains the format of the observation value in OBX.

This specification: Allows only the following subset of values from HL7 Table 0125. OBX-2 Value Type set to Empty for the NULL values in OBX-5 field.

Subset of HL7 Table 0125: Value Type

Value	Description	Comment
NM	Numeric	Used for the following result components: • Numeric Results with status of CalcOK, Suspect, and Invalid values
ST	String	Used for the following result components: • Numeric Results with status of over range and under range values
ED	Encapsulated Data	Used for result graphs (Histograms and scatterplots)
CE	Coded Entry	Used for a test run status of a SMS test (Smear or Smear+Stain)

Related information...

OBX Segment (OBX-29 = RSLT), page 97

OBX-3 Observation Identifier (CE)

HL7 Definition: This field contains a unique identifier for the observation.

This specification: This element is used to identify the numerical result identifier, Graphical result identifier, and Flags Identifier information. The following tables describe the usage of the OBX-3

element. For the SMS, an OBX segment can be used to report run status of a Smear or a Smear+Stain test.

Element: OBX-3 Observation Identifier for Numerical Results

Component/Sub-component	Usage	LEN	Comment
Identifier (ST)	R	20	Parameter Identifier (WBC, RBC, PLT) See *Parameter identifiers and names*, page 151.
Text (ST)	R	199	Parameter name (WBC, RBC, PLT) See *Parameter identifiers and names*, page 151.
Name of Coding System (ID)	R	7	Name of Abbott Coding System: "99ABT" (without quotes)

Sample Value(s):

```
OBX|1|NM|WBC^WBC^99ABT|
OBX|2|NM|RBC^RBC^99ABT|
```

Element: OBX-3 Observation Identifier used for Graphical data (Scatterplots and Histograms)

Component/Sub-component	Usage	LEN	Comment
Identifier (ST)	R	20	Graph Data Identifier
Text (ST)	R	199	Graph Data name
Name of Coding System (ID)	R	7	Name of Abbott Coding System: "99ABT" (without quotes)
Alternate Identifier (ST)	R	8	Supplemental result code from IHELAW (S_IMAGE)
Alternate Text (ST)	R	199	Supplemental result name from IHELAW (Supplemental Image)
Name of Alternate Coding System (ID)	R	6	Fixed "IHELAW"

Sample Value(s):

```
OBX|38|ED|WBC_ALL_PSS^ALLxPSS(WBC)^99ABT^S_IMAGE^Supplemental Image^IHELAW
OBX|39|ED|WBC_IAS_FL1^IAS x FL1(WBC)^99ABT^S_IMAGE^Supplemental Image^IHELAW
```

Vendor Table: Identifier for Graphical Data (ScatterPlots)

OBX-3.1 (Graph Data Identifier)	OBX-3.2 (Graph Data Name)
WBC_IAS_ALL	IAS x ALL (WBC)
WBC_ALL_DSS	ALL x DSS (WBC)
WBC_ALL_PSS	ALL x PSS (WBC)

OBX-3.1 (Graph Data Identifier)	OBX-3.2 (Graph Data Name)
WBC_FL1_ALL	FL1 x ALL (WBC)
WBC_FL1_IAS	FL1 x IAS (WBC)
WBC_FL1_PSS	FL1 x PSS (WBC)
WBC_FL1_DSS	FL1 x DSS (WBC)
WBC_PSS_DSS	PSS x DSS (WBC)
WBC_IAS_PSS	IAS x PSS (WBC)
WBC_IAS_DSS	IAS x DSS (WBC)
RBCPLT_IAS1_ALL	IAS1 x ALL (RBC/PLT)
PLT_IAS1_ALL	IAS1 x ALL (PLT)
RBCPLT_IAS2_IAS3	IAS2 x IAS3 (RBC/PLT)
RBCPLT_ALL_IAS3	ALL x IAS3 (RBC/PLT)
RBCPLT_IAS1_IAS3	IAS1 x IAS3 (RBC/PLT)
RBCPLT_PSS_ALL	PSS x ALL (RBC/PLT)
RBC_CHC_Volume	CHC x VOLUME (RBC)
RBCPLT_FL1_ALL	FL1 x ALL (RBC/PLT)
RBCPLT_IAS2_ALL	IAS2 x ALL (RBC/PLT)
PLT_IAS2_ALL	IAS2 x ALL (PLT)
PLT_IAS_PSS	IAS x PSS (PLT)
RETICPLT_ALL_FL1	ALL x FL1 (RETIC / PLT)
PLT_ALL_FL1	ALL x FL1 (PLT)
RETICPLT_ALL_IAS2	ALL x IAS2 (RETIC / PLT)

Vendor Table: Identifier for Graphical Data (Histograms)

OBX-3.1 (Graph Data Identifier)	OBX-3.2 (Graph Data Name)
WBC_Hist_ALL	ALL (WBC)
WBC_Hist_FL1	FL1 (WBC)
WBC_Hist_IAS	IAS (WBC)
WBC_Hist_PSS	PSS (WBC)
WBC_Hist_DSS	DSS (WBC)
WBC_Hist_Time	Time (WBC)
RBCPLT_Vol_Hist_RBC	Volume (RBC)
RBCPLT_Vol_Hist_PLT	Volume (PLT)
RBCPLT_Vol_Hist	Volume (RBC/PLT)
RBCPLT_Hist_CHC	CHC (RBC)
RBCPLT_Time_Hist	Time (RBC/PLT)
RBCPLT_Hist_PSS_RBC	PSS (RBC)

OBX-3.1 (Graph Data Identifier)	OBX-3.2 (Graph Data Name)
RBCPLT_Hist_PSS_PLT	PSS (PLT)
RBCPLT_Hist_DSS_RBC	DSS (RBC)
RBCPLT_Hist_DSS_PLT	DSS (PLT)
RBCPLT_Hist_IAS3_RBC	IAS3 (RBC)
RBCPLT_Hist_IAS3_PLT	IAS3 (PLT)
RBCPLT_Hist_IAS2_RBC	IAS2 (RBC)
RBCPLT_Hist_IAS2_PLT	IAS2 (PLT)
RBCPLT_Hist_IAS1_RBC	IAS1 (RBC)
RBCPLT_Hist_IAS1_PLT	IAS1 (PLT)
RBCPLT_Hist_IAS_RBC	IAS (RBC)
RBCPLT_Hist_IAS_PLT	IAS (PLT)
RBCPLT_Hist_FL1_RBC	FL1 (RBC)
RBCPLT_Hist_FL1_PLT	FL1 (PLT)
RBCPLT_Hist_ALL_PLT	ALL (PLT)
RBCPLT_Hist_ALL_RBC	ALL (RBC)
RETIC_FL1_Hist	FL1 (RETIC)
RETIC_Hist_CHC	CHC (RETIC)
RETIC_Hist_Volume	Volume (RETIC)
RETIC_Hist_TIME	Time (RETIC)

Element: OBX-3 Observation Identifier for Data Flags, System Faults, and Customer Definable Alerts (Result Alerts)

Component/Sub-component	Usage	LEN	Comment
Identifier (ST)	R	20	Flag Identifier (DataFlag, SystemFault, ResultAlert)
Text (ST)	R	199	Text (DataFlag, System Faults, Customer Definable Alerts)
Name of Coding System (ID)	R	7	Name of Abbott Coding System: "99ABT" (without quotes)

For the analyzer, single OBX segments are used for reporting System Faults and Result Alerts. The OBX-8 field repeats for each System Fault and Result Alert in the result.

OBX-3 Observation Identifier for Delta Check Status:

Element: OBX-3 Observation Identifier used for Delta Check Status

Component/Sub-component	Usage	LEN	Comment
Identifier (ST)	R	20	Delta Check Status (DC)

Component/Sub-component	Usage	LEN	Comment
Text (ST)	R	199	Delta Check
Name of Coding System (ID)	R	7	Name of Abbott Coding System: "99ABT" (without quotes)

Sample Value(s):

```
OBX|1||DC^Delta Check^99ABT|1|PASS||||||||||DSI~DSI||
Analyzer^Abbott~S123456^Abbott|20140120190337
```

Element: OBX-3 Observation Identifier used SMS test result

Component/Sub-component	Usage	LEN	Comment
Identifier (ST)	R	6	Test ID
Text (ST)	R	199	Name for the test
Name of Coding System (ID)	R	7	Name of Abbott Coding System: "99ABT" (without quotes)

Sample Value(s):

```
OBX|1||Smear+Stain^Smear+Stain^99ABT|1|PROCESSED^Processed^99ABT||||||||||||
SMS^Abbott~S123456^Abbott|20140120190337
```

Related information...

OBX Segment (OBX-29 = RSLT), page 97

OBX-4 Observation Sub-ID (ST)

HL7 Definition: This field is used to distinguish between multiple OBX segments with the same observation ID organized under one OBR.

This specification: This element contains the run number. Each run of an AWOS will have a unique numerical identification. This applies for runs reported in the same message or across messages. The first run will be “1”, the second run will be “2”, and so on. A run is an instance of the same test performed multiple times due to instrument reruns.

Related information...

OBX Segment (OBX-29 = RSLT), page 97

OBX-5 Observation Value (varies)

HL7 Definition: This field contains the value observed by the observation producer. OBX-2 Value Type contains the data type for this field according to which observation value is formatted.

This specification: The observation value shall be reported using one of the allowed value types as specified in OBX-2; contains the result value for the test result part identified in OBX-3 Observation Identifier.

The observation value for the numerical result is based on result status as described in the following table.

Element: OBX-5 Observation Value

Numerical Result status	Description	OBX-2	OBX-5
No Data	No calculation made due to lack of input data.	ST	----
Calc OK	Calculation made, value is within AMR range, and no other flags impact the result.	NM	Numerical result (for example, 14.2)
No Calc	No meaningful calculation could be made.	ST	| |
Over Range	Calculation made. Value is above AMR range. No other flags impact the result.	ST	>>>>
Under Range	Calculation made. Value is below AMR range. No other flags impact the result.	ST	<<<<
Suspect	Calculation made but result is suspect due to morphological flag.	NM	Numerical result (for example, 14.2)
Invalid	Result is unreliable and should not be reported.	NM	Numerical result (for example, 14.2)

Sample Value(Numerical Result status with NoData):

```
OBX|1|ST|WBC^WBC^99ABT|1|----|||ND^NoData^99ABT|||X|…
```

Sample Value(Numerical Result status with NoCalc):

```
OBX|1|ST|WBC^WBC^99ABT|1|    |||NC^NoCalc^99ABT|||X|…
```

Sample Value(Numerical Result status with Calc OK):

```
OBX|1|NM|WBC^WBC^99ABT|1|6.143542|…
```

Sample Value(Numerical Result status with Invalid):

```
OBX|1|NM|WBC^WBC^99ABT|1|14.2|||INVALID^Invalid^99ABT|||X|…
```

Sample Value(Numerical Result status with Over Range):

```
OBX|1|ST|WBC^WBC^99ABT|1|>>>>||| >^Off scale high ^HL70078|||F|…
```

Sample Value(Numerical Result status with Suspect):

```
OBX|1|NM|WBC^WBC^99ABT|1|14.2|||SUSPECT^Suspect^99ABT|||F|…
```

OBX-5 usage for Graphical Result Data

The observation value for histogram, scatterplot data points and graph descriptions are represented as a JPEG Image and value type as ED (Encapsulated Data type) specified in OBX-2.

Element: OBX-5 Observation Value (When ED value type for Histogram/Scatterplot data)

Component/Sub-component	Usage	LEN	Comment
Source Application (HD)	X		
Type of Data (ID)	R	9	IM – Image Data
Data subtype (ID)	R	18	JPEG
Encoding (ID)	R	6	Base64
Data (TX)	R	65536	

(ED – Encapsulated Data is defined in HL7 v2.5.1: chapter 2 (Control – 2.A.24).

Sample OBX for Scatterplot data:

```
OBX|1|ED|WBC_ALL_PSS^ALLxPSS(WBC)^99ABT^S_IMAGE^Supplemental Image^IHELAW
|1|^IM^JPEG^Base64^JVBERi0xLjMKJeTjz9IKNSAwI||||||F|||||JOE||Alinity h-
series-1|20091215153731
```

OBX-5 for Delta Check Status:

A delta check evaluates the results of two runs from the same patient by evaluating the difference in numerical results and flags. The OBX-5 value indicates the delta check status listed in the following table:

Delta Check Status

Delta Check Status	Comment
NONE	Delta Check was not attempted.
FAIL	Delta Check was performed and that the associated Test Results failed based on the current Delta Check Criteria on the Analyzer.
PASS	Delta Check was performed and the associated Test Results passed based on the current Delta Check Criteria on the Analyzer.

OBX-5 for SMS test result Status:

The observation value contains the status value for the SMS test run for the test identified in OBX-3 Observation Identifier.

The CE data type is used to report the test run status code as described below.

Element: OBX-5 Observation Value (CE data type)

Component/Sub-component	Usage	LEN	Comment
Identifier (ST)	R	20	A SMS test run status code from the Test Run Status table below.
Text (ST)	R	250	Name of the test run status.
Name of Coding System (ID)	R	7	Name of Abbott Coding System: "99ABT" (without quotes).

Run Status Codes used OBX-5

Value	Description	Comment
PROCESSED	Processed	SMS Test run has completed on the instrument.

Related information...

OBX Segment (OBX-29 = RSLT), page 97

OBX-6 Units (CE)

HL7 Definition: When an observation's value is measured on a continuous scale, one must report the measurement units within the units field of the OBX segment. Since HL7 Version 2.2 of the specification, all fields that contain units are of data type CE.

The units of measure available for each assay are defined in the assay definition and can be selected by the instrument operator. When a unit is provided, the unit as displayed on the instrument user interface is in OBX-6.2, and if the UCUM code is available, it will be provided in OBX-6.1.

LAW Definition: Usage is Mandatory if OBX-2 is valued with either with "NM" or "SN". Otherwise usage is Not Supported.

NOTE: Raw supplemental result units are RLU, Abs, or mV in OBX-6.2.

Element: OBX-6 Units

Component/Sub-component	Usage	LEN	Comment
Identifier (ST)	RE	20	UCUM code for Unit of measure (if available)
Text (ST)	R	10	Name of unit of measure (the unit of measure displayed on the instrument user interface)

Component/Sub-component	Usage	LEN	Comment
Name of Coding System (ID)	C (R, X)	7	Field contains "UCUM" (without quotes) if OBX-6.1 is populated, otherwise it is not supported.
Alternate Identifier (ST)	X		
Alternate Text (ST)	X		
Name of Alternate Coding System (ID)	X		

Sample Value:

```
OBX|1|NM|WBC^WBC^99ABT|1|6.143542|10*3/uL^10e3/µL^UCUM|
```

Related information...

OBX Segment (OBX-29 = RSLT), page 97

OBX-7 Reference Range (ST)

HL7 Definition: For numeric values, the suggested format of reference ranges is:

lower limit-upper limit (when both lower and upper limits are defined, for example, 3.5 - 4.5)

This specification:

- for control results, populated with control min-max range as configured on the analyzer

If populated, will conform to HL7 suggested format as described above.

Related information...

OBX Segment (OBX-29 = RSLT), page 97

OBX-8 Interpretation Codes (CWE)

HL7 Definition: This field contains analyzer codes (if any) assigned to the result.

This specification: Contains analyzer defined result flags (if any) assigned to the result including Morphological flags, Data Flags, System Faults, and Customer Definable Alerts. The field is set to NULL ("") if no flags apply.

Multiple flags can be assigned to a result, thus this field can repeat. Multiple flags will be separated by the repeat delimiter.

The set of possible flags for the analyzer are defined in the following table:

NOTE: Abbott defined extensions are marked with an *.

Subset of HL7 Table 0078 - Interpretation Codes used for numerical results

Value	Description	Comment
<	Off scale low	Below assay dynamic range

Value	Description	Comment
>	Off scale high	Above assay dynamic range
L	*Low	Below reference range limit
H	*High	Above reference range limit
LL	*Extreme low	Below critical value (panic Limit)
HH	*Extreme high	Above critical value (panic Limit)
SUSPECT	*Suspect	Result is suspect, confirmation needed
INVALID	*Invalid	Result is invalid and not reportable
NC	*NoCalc	No meaningful calculation could be made
ND	*NoData	No calculation made due to lack of input data
RUO	Research Use Only	Research use only Parameters

The components of this field should be populated according to the following table.

Element: OBX-8 Interpretation Codes (CWE)

Component/Sub-component	Usage	LEN	Comment
Identifier (ST)	R	20	Value from HL7 Table 0078 above or Vendor specific flags tables below.
Text (ST)	RE	199	Description of code OBX-8.2 Text is in the language that is currently configured on the instrument.
Name of Coding System (ID)	C (R, X)	7	"99ABT" (without quotes) for Abbott defined code, "HL70078" (without quotes) for HL7 defined code **Predicate:** This component is Required if OBX-8.1 is not NULL. Otherwise, it is Not Supported.

Vendor Table: Morphological Flags

Value (OBX 8.1)	Description (OBX 8.2)	Comment
PLTClump	PLT Clump	Platelet aggregates
LeftShift	Left Shift	No invalidations, no suspect populations, info only
Blast	BLAST	Suspect or invalid depends on number of blasts
VarLym	VAR LYM	Unusual (activated) Lymphs
RBCFrag	RBC Frag	Depending on the concentration of fragment, MCV, RBC and PLT become suspect or invalid
rstRBC	rstRBC	Lyse resistant RBCs noted
HbInterference	HGB Interf	Can only detect difference between HGBo and HGB

Vendor Table: Data Flags

Value (OBX 8.1)	Description (OBX 8.2)	Comment
DF01	HGB Reference Out Of Range	LED for HGB not calibrated
DF02	RBC/PLT Count Rate Violation	No steady stream of data over collection time
DF03	RETC Count Rate Violation	No steady stream of data over collection time
DF04	WBC Count Rate Violation	No steady stream of data over collection time
DF05	RBC PLT Spike Detected	Population position not stable over collection time
DF06	RETC Spike Detected	Population position not stable over collection time
DF07	WBC Spike Detected	Population position not stable over collection time
DF08	WBC Channel Saturation	Detectors or laser unstable
DF09	RBC Channel Saturation	Detectors or laser unstable
DF10	RETC Channel Saturation	Detectors or laser unstable
DF11	Lower PLT Interference	Too much noise at the lower end of PLT
DF12	Upper PLT Interference	Too many red cells at the upper end of PLT
DF13	MCHC out of range. Check sample integrity.	Clot or lack of sample
DF14	WBC Algorithm Failure	Algorithm does not finish in time
DF15	RBC Algorithm Failure	Algorithm does not finish in time
DF16	RETC Algorithm Failure	Algorithm does not finish in time
DF17	NEU boundary not found	Poorly defined boundary of NEU population
DF18	LYM boundary not found	Poorly defined boundary of LYM population
DF19	MONO boundary not found	Poorly defined boundary of MON population
DF20	EOS boundary not found	Poorly defined boundary of EOS population
DF21	BAS boundary not found	Poorly defined boundary of BAS population
DF22	NRBC boundary not found	Poorly defined boundary of NRBC population
DF23	IG boundary not found	Poorly defined boundary of IG population
DF24	Low WBC count	WBC too low, diff parameter set to suspect or invalidation based on thresholds
DF25	Too many High FL1 cells	HF-Lym causing problems
DF26	HGB Channel Out of Range	LED for HGB not calibrated

Vendor Table: System Faults (Analyzer)

Value (OBX 8.1)	Description (OBX 8.2)
SF01	Short Sample

Value (OBX 8.1)	Description (OBX 8.2)
SF02	Clot
SF03	Laser Fault
SF04	Pneumatics Failure PAC 1
SF05	Pneumatics Failure PAC 2
SF06	Pneumatics Failure PAC 3
SF07	Pneumatics Failure PAC 4
SF08	Pneumatics Failure VAC 1
SF09	Pneumatics Failure VAC 2
SF10	RETIC Pump Error
SF11	WBC Pump Error
SF12	Diluent Reagent Pump Error
SF13	HGB Reagent Pump Error
SF14	Rbc Injection Pump Error
SF15	WBC Injection Pump Error
SF16	Sample Dispense Error
SF17	Pierce Failure
SF18	Aspiration Probe Assembly Failure
SF19	RETIC Temperature Out Of Range
SF20	WBC Temperature Out Of Range
SF21	APD Calibration Failure
SF22	Sheath Tank Failed To Fill
SF23	PLT Carryover
SF24	WBC Carryover
SF25	General Sample Processing Error
SF26	Data Capture Failure
SF27	Background Failed
SF28	Aspiration Timeout (Open Tube)
SF29	Aspiration Timeout (Closed Tube)
SF30	System Temperature Out of Range
SF31	Processing Error (Mixing)
SF32	Processing Error (Valve)
SF33	Clot Detection Hardware Failure
SF34	Short Sample Detection Hardware Failure
SF35	WBC Saturation
SF36	RBC Saturation
SF37	RETC Saturation

Vendor Table: System Faults (SMS)

Value (OBX 8.1)	Description (OBX 8.2)
SFM01	Resuspension Error Detected
SFM02	Critical Sample Processing Error
SFM03	Aspiration Time Exceeded
SFM04	Sample Dispense Time Exceeded
SFM05	Smear Time Exceeded
SFM06	Slide stain processing issue in Fix bath
SFM07	Slide stain processing issue in Stain bath
SFM08	Slide stain processing issue in Buffer bath
SFM09	Slide stain processing issue in Buffer Wash bath
SFM10	Unable to read Slide Barcode
SFM11	Clogged Aspiration Probe
SFM12	Slide stain processing issue in Dry bath
SFM13	Slide Stain processing issue in Stain Baths

Vendor Table: Customer Definable Alerts

Value (OBX 8.1)	Description (OBX 8.2)
NRBC	Nucleated red blood cells
NWBC	Non-viable WBC
IG	Immature Granulocyte
Thrombocytopenia	Thrombocytopenia
Thrombocytosis	Thrombocytosis
Leukopenia	Leukopenia
Leukocytosis	Leukocytosis
Neutropenia	Neutropenia
Neutrophilia	Neutrophilia
Lymphopenia	Lymphopenia
Lymphocytosis	Lymphocytosis
Monocytosis	Monocytosis
Eosinophilia	Eosinophilia
Basophilia	Basophilia
MicrocyticRBC	Microcytic RBC
MacrocyticRBC	Macrocytic RBC
Hypochromia	Hypochromia
Hyperchromia	Hyperchromia

Value (OBX 8.1)	Description (OBX 8.2)
Anisocytosis	Anisocytosis
Reticulocytosis	Reticulocytosis
IRF	Immature Reticulocytes

```
OBX|1|NM|WBC^WBC^99ABT|1|15.143542|10*3/uL^10e3/µL^UCUM |0 - 9999|>^Off
scale high ^HL70078
```

Sample Value (Parameter status with Lower Range)

```
OBX|1|NM|WBC^WBC^99ABT|1|0.143542|10*3/uL^10e3/µL^UCUM |0 - 9999|<^Off scale
low ^HL70078
```

Sample Value (Parameter status with Suspect)

```
OBX|1|NM|WBC^WBC^99ABT|1|14.143542|10*3/uL^10e3/µL^UCUM |0 - 9999|
SUSPECT^Suspect^99ABT
```

Sample Value (Parameter status with Invalid)

```
OBX|1|NM|WBC^WBC^99ABT|1|14.2|10*3/uL^10e3/µL^UCUM |0 - 9999|
INVALID^Invalid^99ABT
```

Sample Value (RUO parameter)

```
OBX|34|NM|PCT^PCT^99ABT|1|3.33|%^%^UCUM|0.00 - 9999|RUO^Research Use
Only^99ABT|||F|||||SYSTEM~SYSTEM||Analyzer^Abbott~S123476^Abbott|
20170624164110||||||||||RSLT
```

Related information…

OBX Segment (OBX-29 = RSLT), page 97

OBX-11 Observation Result Status (ID)

HL7 Definition: This field contains the observation result status. This field reflects the current completion status of the results for one Observation Identifier.

This specification: Can contain a subset of values taken from HL7 User Defined Table 0085 as described below:

Subset of HL7 User Defined Table 0085: Observation Result Status

Value	Description	Comment
F	Final results	Primary result value for the test run - the quantitative result
X	Results cannot be obtained	Test Exception on the analyzer. Rerun may be possible if the situation that led to the exception is

Value	Description	Comment
		resolved. The reason for the failure is being reported.

Related information...

OBX Segment (OBX-29 = RSLT), page 97

OBX-16 Responsible Observer (XCN)

HL7 Definition: When required, this field contains the identifier of the individual directly responsible for the observation (such as the person who either performed or verified it). In a nursing service, the observer is usually the professional who performed the observation (for example, took the blood pressure). In a laboratory, the observer is the technician who performed or verified the analysis.

This specification: For the instrument, this element will repeat two times. The first repeat will be used for the User ID logged into the system at time the result was produced and the second repeat will be the User ID logged into the system at the time the result was released. Only the first component of each repeating element will be populated.

Element: OBX-16 Responsible Observer (XCN)

Component/Subcomponent	Usage	LEN
ID number (ST)	R	20
Family name (FN)	X	
Family name (ST)	X	
Own family name prefix (ST)	X	
Own family name (ST)	X	
Family name prefix from partner/spouse (ST)	X	
Family name from partner/spouse (ST)	X	
Given name (ST)	X	
Second and further given name or initials thereof (ST)	X	
Suffix (for example, JR or III) (ST)	X	
Prefix (for example, DR) (ST)	X	
Degree (for example, MD) (IS)	X	
Source table (IS)	X	
Assigning authority (HD)	X	
Name type code (ID)	X	
Identifier check digit (ST)	X	
Code identifying the check digit scheme employed (ID)	X	
Identifier type code (IS)	X	

Component/Subcomponent	Usage	LEN
Assigning facility (HD)	X	
Name representation code (ID)	X	
Name context (CE)	X	
Name validity range (DR)	X	
Name assembly order (ID)	X	
Effective date (TS)	X	
Expiration date (TS)	X	
Professional suffix (for example, MD) (ST)	X	
Assigning jurisdiction (CWE)	X	
Assigning agency or department (CWE)	X	

Sample Value(s):

```
OPER1~OPER2     [OPER1 at time of result, OPER2 at time of release]
```

Related information…

OBX Segment (OBX-29 = RSLT), page 97

OBX-18 Equipment Instance Identifier (EI)

HL7 Definition: This field identifies the Equipment Instance (for example, Analyzer, Analyzer module, group of Analyzers, etc.) responsible for the production of the observation. This is the identifier from an institution's master list of equipment, where the institution is specified by the namespace ID or if it is blank, then by the "Producer's ID" (OBX-15). It should be possible to retrieve from this master list the equipment type, serial number, etc., however it is not planned to transfer this information with every OBX. The repeating of this field allows for the hierarchical representation of the equipment (lowest level first), for example, module of an instrument, instrument consisting of modules, cluster of multiple instruments, etc.

This specification: This field specifies the manufacturer, model, and module serial number of the analyzer module that performed the test.

First Repeat:

Component/Sub-component	Usage	LEN	Comment
Entity Identifier (ST)	R	50	Analyzer Model
Namespace ID (IS)	R	20	Abbott
Universal ID (ST)	X		
Universal ID Type (ID)	X		

Second Repeat:

Component/Sub-component	Usage	LEN	Comment
Entity Identifier (ST)	R	50	Analyzer module serial number
Namespace ID (IS)	R	20	Abbott
Universal ID (ST)	X		
Universal ID Type (ID)	X		

Related information...

OBX Segment (OBX-29 = RSLT), page 97

OBX-19 Date/Time of the Analysis (TS)

HL7 Definition: This field is used to transfer the time stamp associated with generation of the analytical result by the instrument specified in OBX-18 Equipment Instance Identifier.

This specification: Contains the date and time the test processing completed. Time zone indicator not supported. Degree of precision component is not supported.

Element: OBX-19 Date/Time of Analysis

Component/Subcomponent	Usage
YYYYMMDDHHMMSS[+/-ZZZZ]	R
Degree of precision	X

Related information...

OBX Segment (OBX-29 = RSLT), page 97

OBX-29 Observation Type (ID)

HL7 Definition: Pre-adopted from HL7 v2.8.1. Indicates the type of observation to enable systems to distinguish between observations sent along with an order versus observations sent as the result to an order.

This specification: Can contain a subset of values taken from HL7 Defined Table 0936 as described below:

Subset of HL7 Defined Table 0936 - Observation Type

Value	Description	Comment
RSLT	Result	Result values associated with an observation run.

Related information...

OBX Segment (OBX-29 = RSLT), page 97

OBX Segment (OBX-29 = STS)

The OBX segment is used to transmit the test run status as part of the OULˆR22 test status update message.

SEQ	LEN	DT	Send usage	Send card.	Rcv. usage	Rcv. card.	Element name
1	4	SI	M	[1..1]	X	[0..0]	Set ID - OBX
2	2	ID	M	[1..1]	X	[0..0]	Value Type
3	500	CE	M	[1..1]	X	[0..0]	Observation Identifier
4	20	ST	M	[1..1]	X	[0..0]	Observation Sub-ID
5	99999	varies	M	[1..*]	X	[0..0]	Observation Value
6	250	CE	X	[0..0]	X	[0..0]	Units
7	60	ST	X	[0..0]	X	[0..0]	References Range
8	705	CWE	X	[0..0]	X	[0..0]	Interpretation Codes
9	5	NM	X	[0..0]	X	[0..0]	Probability
10	2	ID	X	[0..0]	X	[0..0]	Nature of Abnormal Test
11	1	ID	M	[1..1]	X	[0..0]	Observation Result Status
12	26	TS	X	[0..0]	X	[0..0]	Effective Date of Reference Range Values
13	20	ST	X	[0..0]	X	[0..0]	User Defined Access Checks
14	26	TS	X	[0..0]	X	[0..0]	Date/Time of the Observation
15	250	CE	X	[0..0]	X	[0..0]	Producer's Reference
16	250	XCN	X	[0..0]	X	[0..0]	Responsible Observer
17	250	CE	X	[0..0]	X	[0..0]	Observation Method
18	427	EI	M	[2..2]	X	[0..0]	Equipment Instance Identifier
19	26	TS	X	[0..0]	X	[0..0]	Date/Time of the Analysis
20	705	CWE	X	[0..0]	X	[0..0]	Observation Site
21	427	EI	X	[0..0]	X	[0..0]	Observation Instance Identifier
22	705	CNE	X	[0..0]	X	[0..0]	Mode Code
23	567	XON	X	[0..0]	X	[0..0]	Performing Organization Name
24	631	XAD	X	[0..0]	X	[0..0]	Performing Organization Address
25	3002	XCN	X	[0..0]	X	[0..0]	Performing Organization Medical Director
26	10	ID	X	[0..0]	X	[0..0]	Patient Results Release Category
27		CWE	X	[0..0]	X	[0..0]	Root Cause
28		CWE	X	[0..0]	X	[0..0]	Local Process Control
29	4	ID	M	[1..1]	X	[0..0]	Observation Type

Related information...

Segment definitions, page 65
OBX-1 Set ID (SI), page 118
OBX-2 Value Type (ID), page 118
OBX-3 Observation Identifier (CE), page 118
OBX-4 Observation Sub-ID (ST), page 119
OBX-5 Observation Value (CE), page 119
OBX-11 Observation Result Status (ID), page 120
OBX-18 Equipment Instance Identifier (EI), page 120
OBX-29 Observation Type (ID), page 120

OBX-1 Set ID (SI)

For OBX-1 details, see *OBX-1 Set ID (SI)*, page 100.

Related information...

OBX Segment (OBX-29 = STS), page 117

OBX-2 Value Type (ID)

HL7 Definition: This field contains the format of the observation value in OBX.

This specification: Allows only the following subset of values from HL7 Table 0125.

Subset of HL7 Table 0125 - Value Type

Value	Description	Comment
CE	Coded Entry	Used for a test run status of an observation

Related information...

OBX Segment (OBX-29 = STS), page 117

OBX-3 Observation Identifier (CE)

HL7 Definition: This field contains a unique identifier for the observation.

This specification: This element is used to identify the test performed on the specimen.

For the analyzer, an OBX segment can be used to report run status of a test.

Element: OBX-3 Observation Identifier

Component/Subcomponent	Usage	LEN	Comment
Identifier (ST)	R	6	Test ID

Component/Subcomponent	Usage	LEN	Comment
Text (ST)	R	199	Name for the test
Name of Coding System (ID)	R	7	Name of Abbott Coding System: "99ABT" (without quotes)
Alternate Identifier (ST)	X	8	
Alternate Text (ST)	X	199	
Name of Alternate Coding System (ID)	X	6	

Related information...

OBX Segment (OBX-29 = STS), page 117

OBX-4 Observation Sub-ID (ST)

For OBX-4 details, see *OBX-4 Observation Sub-ID (ST)*, page 104.

Related information...

OBX Segment (OBX-29 = STS), page 117

OBX-5 Observation Value (CE)

HL7 Definition: This field contains the value observed by the observation producer. OBX-2 Value Type contains the data type for this field according to which observation value is formatted.

This specification: The observation value contains the status value for the test run for the test identified in OBX-3 Observation Identifier.

The CE data type is used to report the test run status code as described below.

Element: OBX-5 Observation Value (CE data type)

Component/Subcomponent	Usage	LEN	Comment
Identifier (ST)	R	20	A test run status code from the Test Run Status table below
Text (ST)	R	250	Name of test run status
Name of Coding System (ID)	R	7	Name of Abbott Coding System: "99ABT" (without quotes)
Alternate Identifier (ST)	X		
Alternate Text (ST)	X		
Name of Alternate Coding System (ID)	X		

Run Status Codes used OBX-5

Value	Description	Comment
INITIATED	Initiated	Test run has initiated on instrument.

Related information...

OBX Segment (OBX-29 = STS), page 117

OBX-11 Observation Result Status (ID)

HL7 Definition: This field contains the observation result status. This field reflects the current completion status of the results for one Observation Identifier.

This specification: Can contain a subset of values taken from HL7 User-Defined Table 0085 as described below:

Subset of HL7 User-Defined Table 0085 - Observation Result Status

Value	Description	Comment
I	Results pending	Observation results are pending

Related information...

OBX Segment (OBX-29 = STS), page 117

OBX-18 Equipment Instance Identifier (EI)

For OBX-18 details, see *OBX-18 Equipment Instance Identifier (EI)*, page 115.

Related information...

OBX Segment (OBX-29 = STS), page 117

OBX-29 Observation Type (ID)

HL7 Definition: Pre-adopted from HL7 v2.8.1. Indicates the type of observation to enable systems to distinguish between observations sent along with an order versus observations sent as the result to an order.

This specification: Value taken from an extension to HL7 Defined Table 0936 as described below:

Extension of HL7 Defined Table 0936: Observation Type

Value	Description	Comment
STS	Test Run Status	Test run status

Related information…

OBX Segment (OBX-29 = STS), page 117

ORC Segment

The Common Order segment (ORC) is used to transmit elements that are common to all of the tests ordered.

SEQ	LEN	DT	Send usage	Send card.	Rcv. usage	Rcv. card.	Element name
1	2	ID	M	[1..1]	M	[1..1]	Order Control
2	50	EI	C(M,X)	[0..1]	X	[0..0]	Placer Order Number
3	50	EI	X	[0..0]	X	[0..0]	Filler Order Number
4	22	EIP	X	[0..0]	X	[0..0]	Placer Group Number
5	2	ID	M	[1..1]	X	[0..0]	Order Status
6	1	ID	X	[0..0]	X	[0..0]	Response Flag
7	200	TQ	X	[0..0]	X	[0..0]	Quantity/Timing
8	200	EIP	RE	[0..*]	X	[0..0]	Parent
9	26	TS	X	[0..0]	M	[1..1]	Date/Time of Transaction
10	250	XCN	X	[0..0]	X	[0..0]	Entered By
11	250	XCN	X	[0..0]	X	[0..0]	Verified By
12	250	XCN	X	[0..0]	X	[0..0]	Ordering Provider
13	80	PL	X	[0..0]	X	[0..0]	Enterer's Location
14	250	XTN	X	[0..0]	X	[0..0]	Call Back Phone Number
15	26	TS	X	[0..0]	X	[0..0]	Order Effective Date/Time
16	250	CE	X	[0..0]	X	[0..0]	Order Control Code Reason
17	250	CE	X	[0..0]	X	[0..0]	Entering Organization
18	250	CE	X	[0..0]	X	[0..0]	Entering Device
19	250	XCN	X	[0..0]	X	[0..0]	Action By
20	250	CE	X	[0..0]	X	[0..0]	Advanced Beneficiary Notice Code
21	250	XON	X	[0..0]	X	[0..0]	Ordering Facility Name
22	250	XAD	X	[0..0]	X	[0..0]	Ordering Facility Address
23	250	XTN	X	[0..0]	X	[0..0]	Ordering Facility Telephone Number
24	250	XAD	X	[0..0]	X	[0..0]	Ordering Provider Address
25	250	CWE	X	[0..0]	X	[0..0]	Order Status Modifier
26	60	CWE	X	[0..0]	X	[0..0]	Advanced Beneficiary Notice Override Reason
27	26	TS	X	[0..0]	X	[0..0]	Filler's Expected Availability Date/Time
28	250	CWE	X	[0..0]	X	[0..0]	Confidentiality Code

SEQ	LEN	DT	Send usage	Send card.	Rcv. usage	Rcv. card.	Element name
29	250	CWE	X	[0..0]	X	[0..0]	Order Type
30	250	CNE	X	[0..0]	X	[0..0]	Enterer Authorization Mode
31	250	CWE	X	[0..0]	X	[0..0]	Parent Universal Service Identifier

Related information...

Segment definitions, page 65
ORC-1 Order Control (ID), page 123
ORC-2 Placer Order Number (EI), page 124
ORC-5 Order Status (ID), page 124
ORC-8 Parent (EIP), page 125
ORC-9 Date/Time of Transaction (TS), page 125

ORC-1 Order Control (ID)

HL7 Definition: This field may be considered the "trigger event" identifier for orders and it determines the function of the order segment. Many order control codes are defined in the HL7 Table 0119 - Order Control Codes.

This specification:

ORC-1 Sender:

For order download response (ORL) or upload of results (OUL), this specification supports only the following subset of order control codes.

Subset of HL7 Table 0119 - Order Control Codes (Sender)

Value	Description
OK	ORL: "Order/service accepted & OK." This indicates that the new order request has been accepted.
UA	ORL: "Unable to accept order/service." This indicates that the instrument has rejected the new order.
CR	ORL: "Cancel as requested." This indicates that a cancel order request has been accepted and processed.
UC	ORL: "Unable to cancel." This indicates that a cancel order request is rejected.
SC	OUL: "Status change." Sent by instrument in OULˆR22 message.

ORC-1 Receiver:

For order downloads, this specification supports only the following subset of order control codes:

Subset of HL7 Table 0119 - Order Control Codes (Receiver)

Value	Description of use
NW	"New Order." This is a new order request to the instrument.
CA	"Cancel order/service request." This is a request to cancel a previously sent order.
DC	"Discontinue order/service request." This is used to indicate a negative query response.

Note that the value DC is used in an order download (OMLˆO33) as a negative query response to a previous order query (QBPˆQ11).

Related information...

ORC Segment, page 122

ORC-2 Placer Order Number (EI)

HL7 Definition: This field is the placer application's order number.

This specification: This field is used to uniquely identify an order (AWOS ID) when used as part of an ORLˆO34 response to the order download message (OMLˆO33).

Element: ORC-2 Placer Order Number

Component/Subcomponent	Usage	LEN	Comment
Entity Identifier (ST)	R	50	AWOS ID
Namespace ID (IS)	X		
Universal ID (ST)	X		
Universal ID Type (ID)	X		

ORC-2 Sender:

This field is populated with the Placer Order Number (AWOS ID) (OBR-2) that is in the order download message (OMLˆO33).

Predicate: Usage is required if MSH-9.1 (Message Code) is ORL and MSH-9.2 (Trigger Event) is O34. Otherwise, usage is not supported because the placer order number is only carried by field OBR-2 Placer Order Number.

Related information...

ORC Segment, page 122

ORC-5 Order Status (ID)

HL7 Definition: This field specifies the status of an order. See the following table for valid entries. The purpose of this field is to report the status of an order either upon request (solicited), or when the status changes (unsolicited). It does not initiate action. It is assumed that

the order status always reflects the status as it is known to the sending application at the same time that the message is sent. Only the filler can originate the value of this field.

This specification: This element contains the Order Status, as specified in the following table.

Subset of HL7 Table 0038: Order Status

Value	Description	Comment
CM	Order is completed	Used in OULˆR22, ORLˆO34
IP	In process	Used in OULˆR22, ORLˆO34
CA	Order was canceled	Used in ORLˆO34
SC	Scheduled	Used in ORLˆO34

Related information...

ORC Segment, page 122

ORC-8 Parent (EIP)

HL7 Definition: This field relates a child to its parent when a parent-child relationship exists.

This specification: This element is used by the instrument to associate a reflex AWOS generated at the instrument to its parent AWOSs in OULˆR22 messages. Each instance of this repeatable field will carry in its first component (Placer Assigned Identifier) the AWOS ID of a parent AWOS.

Element ORC-8 Parent (EIP)

Component/Subcomponent	Usage	LEN	Comment
Placer Assigned Identifier (EI)	R		
Entity Identifier (ST)	R	50	AWOS ID

Related information...

ORC Segment, page 122

ORC-9 Date/Time of Transaction (TS)

HL7 Definition: This field contains the date and time of the event that initiated the current transaction as reflected in ORC-1 Order Control Code.

This specification: This element will be reported to a precision of seconds. Indication of the time zone is not supported. The degree of precision component is not supported.

Element: ORC-9 Date/Time of Transaction

Component/Subcomponent	Usage
YYYYMMDDHHMMSS[+/-ZZZZ]	R

Component/Subcomponent	Usage
Degree or precision	X

Related information…

ORC Segment, page 122

PV1 Segment

The PV1 segment is used to communicate information that is specific to a patient visit.

SEQ	LEN	DT	Send usage	Send card.	Rcv. usage	Rcv. card.	Element name
1	4	SI	X	[0..0]	X	[0..0]	Set ID - PV1
2	1	IS	R	[1..1]	R	[1..1]	Patient Class
3	80	PL	RE	[0..1]	RE	[0..1]	Assigned Patient Location

Related information...

Segment definitions, page 65
PV1-2 Patient Class (IS), page 127
PV1-3 Assigned Patient Location (PL), page 127

PV1-2 Patient Class (IS)

HL7 Definition: This field is used by systems to categorize patients by site. This is a required element.

This specification: Patient class information is not maintained by the instrument. This field can be empty or contain values taken from the HL7 User-Defined Table 0004: Patient Class.

Subset of HL7 User-Defined Table 0004 - Patient Class

Value	Description	Comment
N	Not Applicable	Per IHE LAW, value to use when the information is not maintained by the instrument

Related information...

PV1 Segment, page 127

PV1-3 Assigned Patient Location (PL)

HL7 Definition: This field contains the patient's initial assigned location or the location to which the patient is being moved.

This specification: Only a single patient location element is supported by the instrument, therefore only a single component is supported for patient test orders. This element is not required for patient test orders. Received values longer than the supported length are truncated. The truncation character "#" is used at the end of a truncated value to indicate it was truncated.

Element: PV1-3 Assigned Patient Location

Component/Subcomponent	Usage	LEN	Comment
Point of Care (IS)	X		
Room (IS)	RE	20#	Patient location
Bed (IS)	X		
Facility (HD)	X		
Location Status (IS)	X		
Person Location Type (IS)	X		
Building (IS)	X		
Floor (IS)	X		
Location Description (ST)	X		
Comprehensive Location Identifier (EI)	X		
Assigning Authority for Location (HD)	X		

Related information…

PV1 Segment, page 127

PID Segment

The PID segment is used by all applications as the primary means of communicating patient identification information. This segment contains permanent patient identifying and demographic information that, for the most part, is not likely to change frequently.

SEQ	LEN	DT	Send usage	Send card.	Rcv. usage	Rcv. card.	Element name
1	4	SI	X	[0..0]	X	[0..0]	Set ID - PID
2	20	CX	X	[0..0]	X	[0..0]	Patient ID
3	250	CX	RE	[0..1]	RE	[0..1]	Patient Identifier List
4	20	CX	X	[0..0]	X	[0..0]	Alternate Patient ID - PID
5	250	XPN	RE	[0..1]	RE	[0..1]	Patient Name
6	250	XPN	X	[0..0]	X	[0..0]	Mother's Maiden Name
7	26	TS	RE	[0..1]	RE	[0..1]	Date/Time of Birth
8	1	IS	RE	[0..1]	RE	[0..1]	Administrative Sex

Related information...

Segment definitions, page 65
PID-3 Patient Identifier List (CX), page 129
PID-5 Patient Name (XPN), page 130
PID-7 Date/Time of Birth (TS), page 131
PID-8 Administrative Sex (IS), page 131

PID-3 Patient Identifier List (CX)

HL7 Definition: This element supports the list of identifiers (one or more) used by the health care facility to uniquely identify a patient (for example, medical record number, billing number, birth registry, and national unique individual identifier).

This specification: This field is constrained to just one identifier. Only the first component of the first repetition in the list of potentially repeating elements is supported. The maximum length of the patient identifier is 20 characters. This element is not required for patient test orders.

Element: PID-3 Patient Identifier List

Component/Subcomponent	Usage	LEN	Comment
ID Number (ST)	RE	20	Patient ID
Check Digit (ST)	X		
Check Digit Scheme (ID)	X		
Assigning Authority (HD)	X		
Identifier Type Code (ID)	X		

Component/Subcomponent	Usage	LEN	Comment
Assigning Facility (HD)	X		
Effective Date (DT)	X		
Expiration Date (DT)	X		
Assigning Jurisdiction (CWE)	X		
Assigning Agency or Department (CWE)	X		

Related information...

PID Segment, page 129

PID-5 Patient Name (XPN)

HL7 Definition: This field contains the name of the patient. The primary or legal name of the patient is reported first.

This specification: The instrument supports a last name, first name, and middle name. Received values longer than supported lengths are truncated. The truncation character "#" is used at the end of a truncated value to indicate it was truncated. This element is not required for patient test orders. However, if this element is populated, the IHE LAW profile requires that XPN.7 (name type code) be populated with a value. Therefore, the name type code in this field should be "L" for "Legal".

Element: PID-5 Patient Name

Component/Subcomponent	Usage	LEN	Comment
Family name (FN)	RE		
Surname (ST)	RE	20#	Last name
Own Surname Prefix (ST)	X		
Own Family Name (ST)	X		
Family Name Prefix From Partner/Spouse (ST)	X		
Surname From Partner/Spouse (ST)	X		
Given Name (ST)	RE	20#	First name
Second and Further Given Names or Initials Thereof (ST)	RE	12#	Middle name
Suffix (for example, JR or III) (ST)	X		
Prefix (for example, DR) (ST)	X		
Degree (for example, MD) (IS)	X		
Name Type Code (ID)	R	1	Always "L" (from HL7 Table 0200 - Name type, which is the code for "Legal").
Name Representative Code (ID)	X		

Component/Subcomponent	Usage	LEN	Comment
Name Context (CE)	X		
Name Validity Range (DR)	X		
Name Assembly Order (ID)	X		
Effective Date (TS)	X		
Expiration Date (TS)	X		
Professional Suffix (ST)	X		

Sample Value:

```
Doe^John^Quincy^^^^L
```

Related information...

PID Segment, page 129

PID-7 Date/Time of Birth (TS)

HL7 Definition: This field contains the patient's date and time of birth.

This specification: Only the birth date is supported. Time of birth, time zone indicator, and Degree of precision are not supported. This element is not required for patient test orders.

Element: PID-7 Date/Time of Birth

Component/Subcomponent	Usage
YYYYMMDDHHMMSS+/-ZZZZ	R
Degree of precision	X

Sample Value:

```
19710813
```

Related information...

PID Segment, page 129

PID-8 Administrative Sex (IS)

HL7 Definition: This element contains the patient's gender.

This specification: This field contains the patient's gender. It can be blank or contain a value taken from HL7 User-Defined Table 0001.

Subset of HL7 User-Defined Table 0001 - Administrative Sex

Value	Description	Comment
F	Female	
M	Male	
U	Unknown	

Related information…

PID Segment, page 129

QAK Segment

The QAK segment contains information sent with responses to a query.

SEQ	LEN	DT	Send usage	Send card.	Rcv. usage	Rcv. card.	Element name
1	32	ST	X	[0..0]	M	[1..1]	Query Tag
2	2	ID	X	[0..0]	M	[1..1]	Query Response Status
3	60	CE	X	[0..0]	M	[1..1]	Message Query Name
4	10	NM	X	[0..0]	X	[0..0]	Hit Count
5	10	NM	X	[0..0]	X	[0..0]	This payload
6	10	NM	X	[0..0]	X	[0..0]	Hits remaining

Related information...

Segment definitions, page 65
QAK-1 Query Tag (ST), page 133
QAK-2 Query Response Status (ID), page 133
QAK-3 Message Query Name (CE), page 134

QAK-1 Query Tag (ST)

HL7 Definition: This field may be valued by the initiating system to identify the query, and may be used to match response messages to the originating query. If it is valued, the responding system is required to echo it back as the first field in the query acknowledgment segment (QAK).

This specification: In the query response message, this field echoes QPD-2 in the query message.

QAK-1 Receiver (RSP^K11)

In the query response message, QAK-1 must echo QPD-2 from the query message.

Related information...

QAK Segment, page 133

QAK-2 Query Response Status (ID)

HL7 Definition: This field allows the responding system to return a precise response status. It is especially useful in the case where no data is found that matches the query parameters, but where there is also no error.

This specification: This interface allows the following codes from the HL7 Table 0208.

Subset of HL7 Table 0208: Query Response Status

Value	Description	Comment
OK	Query Accepted	The query has been accepted for processing.
AE	Application Error	An application error occurred when processing the query request.
AR	Application Reject	The application has rejected the query request.

Related information...

QAK Segment, page 133

QAK-3 Message Query Name (CE)

HL7 Definition: This field contains the name of the query.

This specification: This field contains “QPD-1 Message Query Name” from the query message, as described below.

QAK-3 Receiver (RSP^K11)

LIS echoes the Message Query Name in response to the Specimen Order query.

Element: QAK-3 Message Query Name

Component/Subcomponent	Usage	LEN	Comment
Identifier (ST)	R	3	Value from HL7 Table 0471 below
Text (ST)	R	15	Description from HL7 Table 0471 below
Name of Coding System (ID)	R	6	Will be "IHELAW" (without quotes)
Alternate identifier (ST)	X		
Alternate Text (ST)	X		
Name of Alternate Coding System (ID)	X		

HL7 User-Defined Table 0471 - Message Query Name

Value	Description	Comment
WOS	Work Order Step	Use to query for a single specimen

Sample Value:

```
WOS^Work Order Step^IHELAW
```

Related information...

QAK Segment, page 133

QPD Segment

The QPD segment defines the parameters of the query message as used by the instrument to query LIS for specimen orders. In the query response message (RSP), it echoes the QPD segment that was in the original query message (QBP).

SEQ	LEN	DT	Send usage	Send card.	Rcv. usage	Rcv. card.	Element name
1	60	CE	M	[1..1]	M	[1..1]	Message Query Name
2	32	ST	M	[1..1]	M	[1..1]	Query Tag
3	80	EI	M	[1..1]	M	[1..1]	Container Identifier

Related information...

Segment definitions, page 65
QPD-1 Message Query Name (CE), page 135
QPD-2 Query Tag (ST), page 136
QPD-3 Container Identifier (EI), page 136

QPD-1 Message Query Name (CE)

HL7 Definition: This field contains the name of the query.

This specification: The value of each component is specified below.

Element: QPD-1 Message Query Name

Component/Subcomponent	Usage	LEN	Comment
Identifier (ST)	R	3	Value from HL7 Table 0471below
Text (ST)	R	15	Description from HL7 Table 0471 below
Name of Coding System (ID)	R	6	Will be "IHELAW" (without quotes)
Alternate identifier (ST)	X		
Alternate Text (ST)	X		
Name of Alternate Coding System (ID)	X		

HL7 User-Defined Table 0471 - Message Query Name

Value	Description	Comment
WOS	Work Order Step	Use to query for a single specimen

Sample Value:

```
WOS^Work Order Step^IHELAW
```

Related information…

QPD Segment, page 135

QPD-2 Query Tag (ST)

HL7 Definition: This field may be valued by the initiating system to identify the query, and may be used to match response messages to the originating query. If this field is valued, the responding system is required to echo it back as the first field in the query acknowledgment segment (QAK).

This specification: For each query sent, the instrument will generate a unique identifier for the query tag.

Related information…

QPD Segment, page 135

QPD-3 Container Identifier (EI)

HL7 Definition: This is the first field for user parameters.

This specification: Per the IHE Laboratory Technical Framework, the first parameter will be the Container Identifier (or Sample/Specimen ID), as carried in SAC-3 in other messages. The instrument can only query based on the Specimen ID, so none of the other conditional parameters defined by IHE to be carried in QPD-3 and following are supported.

The supported components within this field are shown in the following table.

Element: QPD-3 Container ID

Component/Subcomponent	Usage	LEN	Comment
Entity Identifier (ST)	R	20	SAC-3: Container/Specimen Identifier
Namespace ID (IS)	X		
Universal ID (ST)	X		
Universal ID Type (ID)	X		

Related information…

QPD Segment, page 135

RCP Segment

The RCP segment is used to restrict the amount of data that should be returned in response to query. This segment is sent as part of the query message.

SEQ	LEN	DT	Send usage	Send card.	Rcv. usage	Rcv. card.	Element name
1	1	ID	M	[1..1]	M	[1..1]	Query Priority
2	10	CQ	X	[0..0]	X	[0..0]	Quantity Limited Request
3	60	CE	M	[1..1]	M	[1..1]	Response Modality
4	26	TS	X	[0..0]	X	[0..0]	Execution and Delivery Time
5	1	ID	X	[0..0]	X	[0..0]	Modify Indicator
6	512	SRT	X	[0..0]	X	[0..0]	Sort-by Field
7	256	ID	X	[0..0]	X	[0..0]	Segment group inclusion

Related information...

Segment definitions, page 65
RCP-1 Query Priority (ID), page 137
RCP-3 Response Modality (CE), page 137

RCP-1 Query Priority (ID)

HL7 Definition: This field contains the time frame in which the response is expected.

This specification: As immediate responses to queries are expected, this element is fixed to support only the value as taken from HL7 Table 0091.

Subset of HL7 Table 0091 - Query Priority

Value	Description	Comment
I	Immediate	

Related information...

RCP Segment, page 137

RCP-3 Response Modality (CE)

HL7 Definition: This field specifies the timing and grouping of the response messages.

This specification: As immediate and real-time responses to queries are expected, this field contains a subset of values taken from HL7 Table 0394 as described below.

Subset of HL7 Table 0394 - Response Modality

Value	Description	Comment
R	Real Time	

Element: RCP-3 Response Modality

Component/Subcomponent	Usage	LEN	Comment
Identifier (ST)	R	1	Value from HL7 Table 0394 above
Text (ST)	RE	199	Description from HL7 Table 0394 above
Name of Coding System (ID)	R	7	"HL70394" (without quotes)
Alternate identifier (ST)	X		
Alternate Text (ST)	X		
Name of Alternate Coding System (ID)	X		

Related information…

RCP Segment, page 137

SAC Segment

The SAC segment is used to describe the specimen container.

SEQ	LEN	DT	Send usage	Send card.	Rcv. usage	Rcv. card.	Element name
1	80	EI	X	[0..0]	X	[0..0]	External Accession Identifier
2	80	EI	X	[0..0]	X	[0..0]	Accession Identifier
3	80	EI	M	[1..1]	M	[1..1]	Container Identifier
4	80	EI	X	[0..0]	X	[0..0]	Primary (parent) Container Identifier
5	80	EI	X	[0..0]	X	[0..0]	Equipment Container Identifier
6	300	SPS	X	[0..0]	X	[0..0]	Specimen Source
7	26	TS	X	[0..0]	X	[0..0]	Registration Date/Time
8	250	CE	X	[0..0]	X	[0..0]	Container Status
9	250	CE	X	[0..0]	X	[0..0]	Carrier Type
10	80	EI	RE	[0..1]	X	[0..0]	Carrier Identifier
11	80	NA	RE	[0..1]	X	[0..0]	Position in Carrier
12	250	CE	X	[0..0]	X	[0..0]	Tray Type - SAC
13	80	EI	X	[0..0]	X	[0..0]	Tray Identifier
14	80	NA	X	[0..0]	X	[0..0]	Position in Tray
15	250	CE	X	[0..0]	X	[0..0]	Location
16	20	NM	X	[0..0]	X	[0..0]	Container Height
17	20	NM	X	[0..0]	X	[0..0]	Container Diameter
18	20	NM	X	[0..0]	X	[0..0]	Barrier Delta
19	20	NM	X	[0..0]	X	[0..0]	Bottom Delta
20	250	CE	X	[0..0]	X	[0..0]	Container Height/Diameter/Delta Units
21	20	NM	X	[0..0]	RE	[0..1]	Container Volume
22	20	NM	X	[0..0]	RE	[0..1]	Available Specimen Volume
23	20	NM	X	[0..0]	X	[0..0]	Initial Specimen Volume
24	250	CE	X	[0..0]	RE	[0..1]	Volume Units
25	250	CE	X	[0..0]	X	[0..0]	Separator Type
26	250	CE	X	[0..0]	X	[0..0]	Cap Type
27	250	CWE	X	[0..0]	X	[0..0]	Additive
28	250	CE	X	[0..0]	X	[0..0]	Specimen Component
29	20	SN	X	[0..0]	X	[0..0]	Dilution Factor
30	250	CE	X	[0..0]	X	[0..0]	Treatment

SEQ	LEN	DT	Send usage	Send card.	Rcv. usage	Rcv. card.	Element name
31	20	SN	X	[0..0]	X	[0..0]	Temperature
32	20	NM	X	[0..0]	X	[0..0]	Hemolysis Index
33	250	CE	X	[0..0]	X	[0..0]	Hemolysis Index Units
34	20	NM	X	[0..0]	X	[0..0]	Lipemia Index
35	250	CE	X	[0..0]	X	[0..0]	Lipemia Index Units
36	20	NM	X	[0..0]	X	[0..0]	Icterus Index
37	250	CE	X	[0..0]	X	[0..0]	Icterus Index Units
38	20	NM	X	[0..0]	X	[0..0]	Fibrin Index
39	250	CE	X	[0..0]	X	[0..0]	Fibrin Index Units
40	250	CE	X	[0..0]	X	[0..0]	System Induced Contaminants
41	250	CE	X	[0..0]	X	[0..0]	Drug Interference
42	250	CE	X	[0..0]	X	[0..0]	Artificial Blood
43	250	CWE	X	[0..0]	X	[0..0]	Special Handling Code
44	250	CE	X	[0..0]	X	[0..0]	Other Environmental Factors

Related information...

Segment definitions, page 65
SAC-3 Container Identifier (EI), page 140
SAC-8 Container Status (CE), page 141
SAC-10 Carrier Identifier (EI), page 142

SAC-3 Container Identifier (EI)

HL7 Definition: This field identifies the container. This field is the container's unique identifier assigned by the corresponding equipment. A container may contain the primary (original) specimen or an aliquot (secondary sample) of that specimen. For primary sample, this field contains Primary Container ID; for bar-coded aliquot samples, this field contains Aliquot Container ID; for non-bar-coded aliquot samples (for example, microtiter plate), this field is empty.

This specification: This field specifies the identifier of the specimen container. It is used by an instrument as a Specimen ID to uniquely identify a specimen sample. It is recommended that the Specimen ID field does not contain any trailing or leading white space characters, as they are not easily discernible as part of the Specimen ID when displayed on the instrument user interface.

Element: SAC-3 Container Identifier

Component/Subcomponent	Usage	LEN	Comment
Entity Identifier (ST)	R	20	Container or Specimen ID

Component/Subcomponent	Usage	LEN	Comment
Namespace ID (IS)	X		
Universal ID (ST)	X		
Universal ID Type (ID)	X		

SAC-3 Receiver:

The Container Identifier (SAC-3) must be populated for all order download messages (OMLˆO33).

Related information...

SAC Segment, page 139

SAC-8 Container Status (CE)

HL7 Definition: This field identifies the status of the unique container in which the specimen resides at the time that the transaction was initiated.

This specification:

SAC-8 Sender:

This element specifies sample status on the instrument when SAC is contained within SSUˆU03. This element contains a subset of values taken from HL7 Table 0370 as described below.

Predicate: Usage is Mandatory if MSH-9.1 Message Type is populated with "SSU", MSH-9.2 Event Type is populated with "U03". Otherwise usage is not supported.

Subset of HL7 Table 0370 - Container status

Value	Description	Comment
I	Identified	Sample bar code successfully scanned.
O	In Process	All tests on sample have been scheduled for processing.
R	Process Completed	All processing complete on sample and it can be unloaded from instrument.
L	Left Equipment	Sample has been unloaded from instrument.

Element: SAC-8 Container Status

Component/Subcomponent	Usage	LEN	Comment
Identifier (ST)	R	1	Value from HL7 Table 0370 above
Text (ST)	RE	199	Description from HL7 Table 0370 above
Name of Coding System (ID)	R	7	"HL70370" (without quotes)
Alternate Identifier (ST)	X		
Alternate Text (ST)	X		
Name of Alternate Coding System (ID)	X		

SAC-8 Receiver:

This element is not supported for received messages.

Related information…

SAC Segment, page 139

SAC-10 Carrier Identifier (EI)

HL7 Definition: This field identifies the carrier. It is the ID (for example, number or bar code) of the carrier where the container (for example, tube) is located.

This specification:

Element: SAC-10 Carrier Identifier

Component/Subcomponent	Usage	LEN	Comment
Entity Identifier (ST)	R	7	Sample Rack Bar Code ID for samples loaded on a sample rack. "LAS" (without quotes) for samples introduced from Lab Automation track. LAS: Laboratory Automation System
Namespace ID (IS)	X		
Universal ID (ST)	X		
Universal ID Type (ID)	X		

SAC-10 Sender:

This element specifies the rack identifier for samples loaded on a sample rack, or "LAS" for samples introduced from a lab automation track.

SAC-10 Receiver:

The instrument does not support test ordering by sample location. This field is ignored for incoming messages.

Related information…

SAC Segment, page 139

SPM Segment

The SPM segment is used to describe the characteristics of a single specimen. The SPM segment relays information about the type of specimen and the date/time the specimen was received. It differs from the intent of the OBR segment in that the OBR addresses order-specific information. It differs from the SAC segment in that the SAC addresses specimen container attributes.

SEQ	LEN	DT	Send usage	Send card.	Rcv. usage	Rcv. card.	Element name
1	4	SI	M	[1..1]	M	[1..1]	Set ID - SPM
2	80	EIP	X	[0..0]	X	[0..0]	Specimen ID
3	80	EIP	X	[0..0]	X	[0..0]	Specimen Parent IDs
4	250	CWE	M	[1..1]	M	[1..1]	Specimen Type
5	250	CWE	X	[0..0]	X	[0..0]	Specimen Type Modifier
6	250	CWE	X	[0..0]	X	[0..0]	Specimen Additives
7	250	CWE	X	[0..0]	X	[0..0]	Specimen Collection Method
8	250	CWE	X	[0..0]	X	[0..0]	Specimen Source Site
9	250	CWE	X	[0..0]	X	[0..0]	Specimen Source Site Modifier
10	250	CWE	X	[0..0]	X	[0..0]	Specimen Collection Site
11	250	CWE	M	[1..1]	M	[1..1]	Specimen Role
12	20	CQ	X	[0..0]	X	[0..0]	Specimen Collection Amount
13	6	NM	X	[0..0]	X	[0..0]	Grouped Specimen Count
14	250	ST	X	[0..0]	X	[0..0]	Specimen Description
15	250	CWE	X	[0..0]	X	[0..0]	Specimen Handling Code
16	250	CWE	X	[0..0]	X	[0..0]	Specimen Risk Code
17	26	DR	C(RE,X)	[0..1]	C(RE,X)	[0..1]	Specimen Collection Date/Time
18	26	TS	X	[0..0]	X	[0..0]	Specimen Received Date/Time
19	26	TS	X	[0..0]	X	[0..0]	Specimen Expiration Date/Time
20	1	ID	X	[0..0]	X	[0..0]	Specimen Availability
21	250	CWE	X	[0..0]	X	[0..0]	Specimen Reject Reason
22	250	CWE	X	[0..0]	X	[0..0]	Specimen Quality
23	250	CWE	X	[0..0]	X	[0..0]	Specimen Appropriateness
24	250	CWE	X	[0..0]	X	[0..0]	Specimen Condition
25	20	CQ	X	[0..0]	X	[0..0]	Specimen Current Quantity
26	4	NM	X	[0..0]	X	[0..0]	Number of Specimen Containers
27	250	CWE	X	[0..0]	X	[0..0]	Container Type
28	250	CWE	X	[0..0]	X	[0..0]	Container Condition
29	250	CWE	X	[0..0]	X	[0..0]	Specimen Child Role

Related information...

Segment definitions, page 65
SPM-1 Set ID (SI), page 144
SPM-4 Specimen Type (CWE), page 144
SPM-11 Specimen Role (CWE), page 145
SPM-17 Specimen Collection Date/Time (DR), page 146

SPM-1 Set ID (SI)

HL7 Definition: This field contains the sequence number. This field is used to identify segment instances in message structures (such as segment group) where the segment repeats within that structure. For the first occurrence of the segment, the sequence number is one, for the second occurrence, the sequence number is two, etc.

This specification: All occurrences of the SPM segment are sequentially numbered within a message.

SPM-1 Receiver:

This field is ignored when received.

Related information...

SPM Segment, page 143

SPM-4 Specimen Type (CWE)

HL7 Definition: This field describes the precise nature of the entity that will be the source material for the observation.

This specification: Identifies the type of specimen. See Table 0487 for supported values.

This field is required if the Specimen Role (SPM-11) is Patient (P) or Calibrator and Control specimen (C).

Element: SPM-4 Specimen Type (CWE)

Component/Sub-component	Usage	LEN	Comment
Identifier (ST)	R	20	Value from HL7 Table 0487 below
Text (ST)	RE	199	Description of specimen type
Name of Coding System (ID)	R	7	"99ABT" (without quotes) for Abbott defined specimen type, "HL70487" (without quotes) for HL7 defined specimen type

Vendor Table: Specimen Types used in the Analyzer

NOTE: Abbott defined extensions are marked with an *.

SPM-4 Receiver: Subset of HL7 Table 0487: Specimen Type

Value	Description	Comment
WB	Blood, Whole	Patient Whole Blood Specimen

NOTE: Abbott defined extensions are marked with an *.

SPM-4 Sender: Subset of HL7 Table 0487: Specimen Type

Value	Description	Comment
WB	Blood, Whole	Patient Whole Blood Specimen
CCAL	*Commercial Calibrator	Extension to table 0487
CQC	*Commercial Control	Extension to table 0487
WCAL	*Whole Blood Calibrator	Extension to table 0487
WQC	*Whole Blood Control	Extension to table 0487
BKGD	*Background Specimen	Extension to table 0487

Related information...

SPM Segment, page 143

SPM-11 Specimen Role (CWE)

HL7 Definition: This field indicates the role of the sample.

This specification: Identifies the role of the specimen to be a Calibrator, Patient, or QC specimen. Only the first component (for example, Identifier) is supported, which can contain only values taken from HL7 User-Defined Table 0369 (see below).

Element: SPM-11 Specimen Role

Component/Subcomponent	Usage	LEN	Comment
Identifier (ST)	R	20	Value from HL7 Table 0369 below
Text (ST)	RE	199	Description of specimen role
Name of Coding System (ID)	R	7	"HL70369" (without quotes) for HL7 defined specimen role, "IHELAW" (without quotes) for IHE LAW defined extensions
Alternate identifier (ST)	X		
Alternate Text (ST)	X		
Name of Alternate Coding System (ID)	X		
Coding System Version ID (ST)	X		
Alternate Coding System Version ID (ST)	X		
Original Text (ST)	X		

SPM-11 Sender: (Subset of HL7 User-Defined Table 0369 - Specimen Role)

Value	Description	Comment
C	Calibrator	
P	Patient	
Q	Control specimen	
U	Unknown	Unknown specimen role; used for specimens other than Patient, Control, and Calibrator specimens (for example, Background specimens)

SPM-11 Receiver: (Subset of HL7 User-Defined Table) 0369 - Specimen Role)

Value	Description	Comment
P	Patient	
U	Unknown	Unknown specimen role; Used for negative query response to order query (QBPˆQ11). **NOTE:** IHE LAW extension to HL7 User-Defined table 0369.

The Specimen Role “U” can only be used if the Order Control code (ORC-1) is "DC" and vice versa.

The Specimen Role Text is optional and will be ignored when received. An error will not be raised if the Specimen Role Text or Name of Coding System is not consistent with the Specimen Role Identifier.

Related information…

SPM Segment, page 143

SPM-17 Specimen Collection Date/Time (DR)

HL7 Definition: The date and time when the specimen was acquired from the source.

This specification: Specimen collection date and time. Only the first component (range start date/time) is supported. This element is reported to a precision of seconds. Neither time zone indicator and degree of precision are supported.

Predicate: Usage is required if available when SPM-11 is "P". Otherwise, usage is not supported.

Element: SPM-17 Specimen Collection Start Date/Time

Component/Subcomponent	Usage
Range Start Date/Time	R
YYYYMMDDHHMMSS+/-ZZZZ	R
Degree of precision	X
Range End Date/Time	X

Component/Subcomponent	Usage
YYYYMMDDHHMMSS+/-ZZZZ	X
Degree of precision	X

Related information…

SPM Segment, page 143

TQ1 Segment

In HL7 messaging, the TQ1 segment is used generally to specify the complex timing of events and actions, such as those that occur in order management and scheduling systems. This segment determines the quantity, frequency, priority, and timing of a service. For the purposes of the instrument, the Timing/Quantity segment is used to communicate the priority at which the order is *intended* to be performed. If this segment is not present, then default priority is Routine.

SEQ	LEN	DT	Send usage	Send card.	Rcv. usage	Rcv. card.	Element name
1	4	SI	X	[0..0]	X	[0..0]	Set ID - TQ1
2	20	CQ	X	[0..0]	X	[0..0]	Quantity
3	540	RPT	X	[0..0]	X	[0..0]	Repeat Pattern
4	20	TM	X	[0..0]	X	[0..0]	Explicit Time
5	20	CQ	X	[0..0]	X	[0..0]	Relative Time and Units
6	20	CQ	X	[0..0]	X	[0..0]	Service Duration
7	26	TS	X	[0..0]	X	[0..0]	Start date/time
8	26	TS	X	[0..0]	X	[0..0]	End date/time
9	250	CWE	R	[1..1]	R	[1..1]	Priority
10	250	TX	X	[0..0]	X	[0..0]	Condition text
11	250	TX	X	[0..0]	X	[0..0]	Text construction
12	10	ID	X	[0..0]	X	[0..0]	Conjunction
13	20	CQ	X	[0..0]	X	[0..0]	Occurrence duration
14	10	NM	X	[0..0]	X	[0..0]	Total occurrences

Related information...

Segment definitions, page 65
TQ1-9 Priority (CWE), page 148

TQ1-9 Priority (CWE)

HL7 Definition: This field describes the urgency of the request.

This specification: Identifies the priority of the order. Only the first component (that is, Identifier) is supported and it can contain only values taken from HL7 User-Defined Table 0485 (see below).

Subset of HL7 User-Defined Table 0485 - Priority

Value	Description	Comment
R	Routine	
S	STAT	

Element: TQ1-9 Priority

Component/Subcomponent	Usage	LEN	Comment
Identifier (ST)	R	20	Value from HL7 Table 0485 above
Text (ST)	RE	199	Description of priority
Name of Coding System (ID)	R	7	Name of HL7 Coding System: "HL70485" (without quotes)
Alternate identifier (ST)	X		
Alternate Text (ST)	X		
Name of Alternate Coding System (ID)	X		
Coding System Version ID (ST)	X		
Alternate Coding System Version ID (ST)	X		
Original Text (ST)	X		

TQ1-9 Receiver:

The TQ1-9.2 Priority Text is ignored when received. An error is not raised if the TQ1-9.2 Priority Text is not consistent with the TQ1-9.1 Priority Identifier.

Related information...

TQ1 Segment, page 148

NOTES

Introduction

This appendix includes a list of parameter identifiers and names.

Related information…

OBX-3 Alinity h-series analyzer reportable and Research Use Only (RUO) parameters, page 152

OBX-3 Alinity h-series analyzer reportable and Research Use Only (RUO) parameters

The following table lists the OBX-3 analyzer reportable parameters.

Parameter Identifier (OBX-3.1)	Parameter name (OBX-3.2)
WBC	WBC
NEU	NEU
LYM	LYM
MONO	MONO
EOS	EOS
BASO	BASO
%N	%N
%L	%L
%M	%M
%E	%E
%B	%B
IG	IG
%IG	%IG
NRBC	NRBC
NR/W	NR/W
RBC	RBC
MCV	MCV
RDW	RDW
HGB	HGB
HCT	HCT
MCH	MCH
MCHC	MCHC
MCHr	MCHr
PLT	PLT
MPV	MPV
IRF	IRF
%rP	%rP
RETIC	RETIC
%R	%R

The following table lists the OBX-3 analyzer parameters for Research Use Only (RUO).

Parameter Identifier (OBX-3.1)	Parameter name (OBX-3.2)
WVF	WVF
%MIC	%MIC
%MAC	%MAC
%HPO	%HPO
%HPR	%HPR
HDW	HDW
MCVr	MCVr
CHCr	CHCr
CHCM	CHCM
cHGB	cHGB
PDW	PDW
PCT	PCT
rP	rP

Related information…

Parameter identifiers and names, page 151

NOTES

Introduction

This appendix contains example messages for each of the supported message profiles.

Related information…

Order Download Message Profile (LAW Transaction LAB-28), page 156
Order Query Message Profile (LAW Transaction LAB-27), page 160
Results Upload Message Profile (LAW Transaction LAB-29), page 162
Test Status Update Message Profile, page 173
Sample Status Update Message Profile, page 174
Connection Test Message Profile, page 175

Order Download Message Profile (LAW Transaction LAB-28)

Example messages are provided for this message profile.

Related information...

Example messages, page 155
Order Download for Single Specimen, order accepted, page 156
Order Download for Single Specimen, order rejected, page 157
Order Download for Multiple Specimens with Multiple Orders per Specimen, orders accepted, page 157
Order Cancel for Single Specimen, cancel accepted, page 158
Order Cancel for Single Specimen, cancel rejected, page 159

Order Download for Single Specimen, order accepted

OML^033 Order Request

```
MSH|^~\&|HL7SIM|ABBOTT|ALINITY-H|ALINITY-H|20161105034344||OML^O33^OML_O33|
cf6c23a4-cfa7-4129-8257-7a7e312b3a1a|P|2.5.1|||NE|AL||UNICODE UTF-8|||
LAB-28^IHE
PID|||P1001||Williams^William^^^^^L||19490209|M
SPM|1|||WB^Blood, Whole^99ABT|||||||P^Patient^HL70369||||||20161105154344
SAC|||S1001
ORC|NW|||||||||20161105084316
TQ1|||||||||R^Routine^HL70485
OBR||O1001||CBC+Diff^CBC with Differential^99ABT|||||||||||Dr. Jones
NTE|1||Test CBC+Diff order
```

ORL^034 Order Response

```
MSH|^~\&|ALINITY-H|TESTLAB|HL7SIM|ABBOTT|20161105174509||ORL^O34^ORL_O42|
bf471157-fe13-4692-b186-ab17baf95875|P|2.5.1||||||UNICODE UTF-8|||LAB-28^IHE
MSA|AA|a35710dd-f42e-482b-b83c-5c8c1b373b29
SPM|1|S1001||WB^Blood,Whole^HL70487|||||||P^Patient^HL70369||||||
20161105174508
SAC|||S1001
ORC|OK|O1001|||SC
```

Related information...

Order Download Message Profile (LAW Transaction LAB-28), page 156

Order Download for Single Specimen, order rejected

OML^033 Order Message (same AWOS ID)

```
MSH|^~\&|HL7SIM|ABBOTT|ALINITY-H|ALINITY-H|20161105034344||OML^O33^OML_O33|
cf6c23a4-cfa7-4129-8257-7a7e312b3a1a|P|2.5.1|||NE|AL||UNICODE UTF-8|||
LAB-28^IHE
PID|||P1001||Williams^William^^^^^L||19490209|M
SPM|1|||WB^Blood, Whole^99ABT|||||||P^Patient^HL70369||||||20161105154344
SAC|||S1001
ORC|NW|||||||||20161105084316
TQ1|||||||||R^Routine^HL70485
OBR||O1001||CBC+Diff^CBC with Differential^99ABT||||||||||||Dr. Jones
NTE|1||Test CBC+Diff order
```

ORL^034 Order Response

```
MSH|^~\&|HL7SIM|ABBOTT|ALINITY-H|ALINITY-H|20161105034344||OML^O33^OML_O33|
cf6c23a4-cfa7-4129-8257-7|ALINITY-H|TESTLAB|HL7SIM|ABBOTT|20161105174509||
ORL^O34^ORL_O42|bf471157-fe13-4692-b186-ab17baf95875|P|2.5.1||||||UNICODE
UTF-8|||LAB-28^IHE
MSA|AA|a35710dd-f42e-482b-b83c-5c8c1b373b29
SPM|1|S1001||WB^Blood,Whole^HL70487|||||||P^Patient^HL70369||||||
20161105174508
SAC|||S1001
ORC|UA|O1001|||CA
```

Related information...

Order Download Message Profile (LAW Transaction LAB-28), page 156

Order Download for Multiple Specimens with Multiple Orders per Specimen, orders accepted

OML^033 Order Request

```
MSH|^~\&|OM_LAB_ANALYZER_MGR|IHE|ALINITY-H|ABBOTT_IVD_HEM|20130415153540+0000||OML^O33^OML_O33|
Message-SPM1006|P|2.5.1|||NE|AL||UNICODE UTF-8|||LAB-28^IHE
PID|||PID-001||Smith^John^^^^^L||20010115|M
SPM|1|SID-001||WB^Blood,Whole^HL70487^99ABT|||||||P^Patient^HL70369||||||20140101101010
SAC|||PATIENT-0001
ORC|NW|||||||20130415153540
TQ1|||||||||R^^HL70485
OBR||ORDER#1003||CBC+Diff^CBC with Differential^99ABT||||||||||||Dr.Smith
NTE|1||No Comment
ORC|NW|||||||20130415153540
```

```
TQ1|||||||||R^^HL70485
OBR||ORDER#1004||CBC+Diff+Retic^CBC+Diff+Retic^99ABT||||||||||||Dr.Smith
NTE|1||No Comment
```

ORL^034 Order Response

```
MSH|^~\&|ABBOTT_IVD|ABBOTT|7edit|7edit.com|20130422105123||ORL^O34^ORL_O42|
cea2d38a-c96c-40bd-ae54-67fcb0ce424b|P|2.5.1||||||UNICODE UTF-8|||LAB-28^IHE
MSA|AA|Message-SPM1006
SPM|1|SID-001||WB^Blood,Whole^HL70487^99ABT|||||||P^Patient^HL70369||||||
20140101101010
SAC|||PATIENT0001
ORC|OK|Order-1003|||SC
ORC|OK|Order-1004|||SC
```

Related information...

Order Download Message Profile (LAW Transaction LAB-28), page 156

Order Cancel for Single Specimen, cancel accepted

OML^033 Order Request

```
MSH|^~\&|HL7SIM|ABBOTT|ALINITY-H|ALINITY-H|20161105034344||OML^O33^OML_O33|
cf6c23a4-cfa7-4129-8257-7a7e312b3a1a|P|2.5.1|||NE|AL||UNICODE UTF-8|||
LAB-28^IHE
PID|||P1001||Williams^William^^^^^L||19490209|M
SPM|1|||WB^Blood, Whole^99ABT|||||||P^Patient^HL70369||||||20161105154344
SAC|||S1001
ORC|CA|||||||||20161105084316
TQ1|||||||||R^Routine^HL70485
OBR||O1001||CBC+Diff^CBC with Differential^99ABT||||||||||||Dr. Jones
NTE|1||Test CBC+Diff order
```

ORL^034 Order Response

```
MSH|^~\&|ALINITY-H|TESTLAB|HL7SIM|ABBOTT|20161105174509||ORL^O34^ORL_O42|
bf471157-fe13-4692-b186-ab17baf95875|P|2.5.1||||||UNICODE UTF-8|||LAB-28^IHE
MSA|AA|a35710dd-f42e-482b-b83c-5c8c1b373b29
SPM|1|S1001||WB^Blood,Whole^HL70487|||||||P^Patient^HL70369||||||
20161105174508
SAC|||S1001
ORC|CR|O1001|||CA
```

Related information...

Order Download Message Profile (LAW Transaction LAB-28), page 156

Order Cancel for Single Specimen, cancel rejected

OML^033 Order Request

```
MSH|^~\&|OM_LAB_ANALYZER_MGR|IHE|ALINITY-H|ABBOTT_IVD_HEM|
20130415153540+0000||OML^O33^OML_O33|Message-SPM1006|P|2.5.1|||NE|AL||
UNICODE UTF-8|||LAB-28^IHE
PID|||PID-001||Smith^John^^^^^L||20010115|M
SPM|1|SID-001||WB^Blood,Whole^HL70487^99ABT|||||||P^Patient^HL70369||||||
20140101101010
SAC|||PATIENT-0001
ORC|NW|||||||||20130415153540
TQ1|||||||||R^^HL70485
OBR||ORDER#1003||CBC+Diff^CBC with Differential^99ABT||||||||||||Dr.Smith
NTE|1||No Comment
```

ORL^034 Order Response

```
MSH|^~\&|OM_LAB_ANALYZER_MGR|IHE|ALINITY-H|ABBOTT_IVD_HEM|20130415153540+0000||OML^O33^OML_O33|
Message-SPM1124|P|2.5.1|||NE|AL||UNICODE UTF-8|||LAB-28^IHE
PID|||PID-001||Smith^John^||20010115|M
SPM|1|SID-001||WB^Blood,Whole^HL70487^99ABT|||||||P^Patient^99ABT||||||20140101101010
SAC|||PATIENT-0001
ORC|UC|||||||||20130415153540
OBR||ORDER#1000||CBC+Diff^CBC with Differential^99ABT||||||||||||Dr.SmithOBR||ORDER1000||
165^Syphilis^99ABT
```

Related information...

Order Download Message Profile (LAW Transaction LAB-28), page 156

Order Query Message Profile (LAW Transaction LAB-27)

Example messages are provided for this message profile.

Related information...

Example messages, page 155
Order Query for Specimen orders, page 160
Negative Query Acknowledgment, page 161

Order Query for Specimen orders

QBP^Q11 Query

```
MSH|^~\&|ALINITY-H|TESTLAB|HL7SIM|LAB|20161105183038||QBP^Q11^QBP_Q11|
50c13ef5-7a15-4436-a16e-148379935fa8|P|2.5.1|||NE|AL||UNICODE UTF-8|||
LAB-27^IHE
QPD|WOS^Work Order Step^IHELAW|QRY-0002|S1001
RCP|I||R^Real Time^HL70394
```

RSP^K11 Query Response

```
MSH|^~\&|HL7SIM|LAB|ALINITY-H|TESTLAB|20161105063038||RSP^K11^RSP_K11|
287d658b-b29f-4beb-acdd-914eb917745e|P|2.5.1||||||UNICODE UTF-8|||LAB-27^IHE
MSA|AA|50c13ef5-7a15-4436-a16e-148379935fa8
QAK|QRY-0002|OK|WOS^Work Order Step^IHELAW
QPD|WOS^Work Order Step^IHELAW|QRY-0002| S1001
```

RSP^K11 Negative Query Response

```
MSH|^~\&|HL7SIM|LAB|ALINITY-H|TESTLAB|20161105063038||RSP^K11^RSP_K11|
287d658b-b29f-4beb-acdd-914eb917745e|P|2.5.1||||||UNICODE UTF-8|||LAB-27^IHE
MSA|AA|50c13ef5-7a15-4436-a16e-148379935fa8
QAK|QRY-0002|AR|WOS^Work Order Step^IHELAW
QPD|WOS^Work Order Step^IHELAW|QRY-0002|S01NEGATI
```

Related information...

Order Query Message Profile (LAW Transaction LAB-27), page 160

Negative Query Acknowledgment

OML^033 Order Request

```
MSH|^~\&|HL7SIM|ABBOTT|ALINITY-H|ALINITY-H|20161105063042||OML^O33^OML_O33|
cdb9f6d6-89d9-4870-82d8-5283aee6fe9e|P|2.5|||NE|AL||UNICODE UTF-8|||
LAB-28^IHE
SPM|1|||""|||||||U^Unknown^HL70369
SAC|||S01NEGATIVE
ORC|DC||||||||20161105183042
```

ORL^034 Order Response

```
MSH|^~\&|ALINITY-H|TESTLAB|HL7SIM|ABBOTT|20161105183042||ORL^O34^ORL_O42|
c097376d-fb9d-4526-b5c7-240c4c5c70f3|P|2.5.1||||||UNICODE UTF-8|||LAB-28^IHE
MSA|AA|cdb9f6d6-89d9-4870-82d8-5283aee6fe9e
```

Related information...

Order Query Message Profile (LAW Transaction LAB-27), page 160

Results Upload Message Profile (LAW Transaction LAB-29)

Example messages are provided for this message profile.

Related information...

Example messages, page 155
Specimen result, page 162
Specimen result with flags, page 166

Specimen result

OUL^R22 Result

NOTE: The control result structure is similar to the specimen result structure except for the field values.

```
MSH|^~\&|ALINITY-H|TESTLAB|HL7SIM|LAB|20161105183052||OUL^R22^OUL_R22|823bf5ca-8bf5-41bf-95b4-
a0dc5dcfc0b9|P|2.5.1|||NE|AL||UNICODE UTF-8|||LAB-29^IHE
SPM|1|||WB^Blood,Whole^HL70487|||||||P^^HL70369
SAC|||S1001|||||||1
OBR||""||CBC+Diff^CBC with Differential^99ABT|||||||""
ORC|SC||||CM
TQ1|||||||||R^Routine^HL70485
OBX|1|NM|WBC^WBC^99ABT|1|3.08|10*3/µL^10e3/µL^UCUM|0.00 - 999.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20161105173047
INV|Diluent^^99ABT|NA^^99ABT|SR^Single Test Reagent^HL70384|R1234^^99ABT||||||||||||1234
INV|WBC^^99ABT|NA^^99ABT|SR^Single Test Reagent^HL70384|R1234^^99ABT||||||||||||867-5309
INV|HGB^^99ABT|NA^^99ABT|SR^Single Test Reagent^HL70384|R1234^^99ABT||||||||||||31415
OBX|2|NM|NEU^NEU^99ABT|1|1.66|10*3/µL^10e3/µL^UCUM|0.00 - 999.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|3|NM|LYM^LYM^99ABT|1|.491|10*3/µL^10e3/µL^UCUM|0.00 - 999.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|4|NM|MONO^MONO^99ABT|1|0.49|10*3/µL^10e3/µL^UCUM|0.00 - 999.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|5|NM|EOS^EOS^99ABT|1|.094|10*3/µL^10e3/µL^UCUM|0.00 - 999.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|6|NM|BASO^BASO^99ABT|1|.341|10*3/µL^10e3/µL^UCUM|0.00 - 999.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|7|NM|%N^%N^99ABT|1|54.0|%^%^UCUM|0.00 - 999.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|8|NM|%L^%L^99ABT|1|15.9|%^%^UCUM|0.00 - 999.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|9|NM|%M^%M^99ABT|1|15.9|%^%^UCUM|0.00 - 999.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|10|NM|%E^%E^99ABT|1|3.04|%^%^UCUM|0.00 - 999.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|11|NM|%B^%B^99ABT|1|11.1|%^%^UCUM|0.00 - 999.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|12|NM|RBC^RBC^99ABT|1|3.92|10*6/µL^10e6/µL^UCUM|0.00 - 999.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|13|NM|HGB^HGB^99ABT|1|15.6|g/dL^g/dL^UCUM|0.00 - 999.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|14|NM|HCT^HCT^99ABT|1|36.2|%^%^UCUM|0.00 - 999.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20161105173047
```

OBX|15|NM|MCV^MCV^99ABT|1|92.3|fL^fL^UCUM|0.00 - 999.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|16|NM|MCH^MCH^99ABT|1|0.00|pg^pg^UCUM|0.00 - 999.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|17|NM|MCHC^MCHC^99ABT|1|43.2|g/dL^g/dL^UCUM|0.00 - 999.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|18|NM|RDW^RDW^99ABT|1|10.6|%^%^UCUM|0.00 - 999.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|19|NM|PLT^PLT^99ABT|1|169.|10*3/µL^10e3/µL^UCUM|0.00 - 999.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|20|NM|MPV^MPV^99ABT|1|8.00|fL^fL^UCUM|0.00 - 999.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|21|NM|IG^IG^99ABT|1|0.00|10*3/µL^10e3/µL^UCUM|0.00 - 999.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|22|NM|%IG^%IG^99ABT|1|0.00|%^%^UCUM|0.00 - 999.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|23|NM|NRBC^NRBC^99ABT|1|.102|10*3/µL^10e3/µL^UCUM|0.00 - 999.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|24|NM|NR/W^NR/W^99ABT|1|0.00|%^%^UCUM|0.00 - 999.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|25|ST|DC^Delta Check^99ABT|1|NONE|||""|||F|||||SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|
20161105173047
OBX|26|ED|WBC_IAS_ALL^IAS x ALL (WBC)^99ABT^S_IMAGE^Supplemental Image^IHELAW|1|^IM^JPEG^Base64^/9j/
4AAQSkZJRgABAQEAYABgAAD/
4QBaRXhpZgAATU0AKgAAAAgABQMBAAUAAAABAAAASgMDAAEAAAABAAAAAFEQAAEAAAABAQAAAFERAAQAAAABAAAOw1ESAAQAAAABA
AAOwwAAAAAAAYagAACxj//
bAEMACAYGBwYFCAcHBwkJCAoMFA0MCwsMGRITDxQdGh8eHRocHCAkLicgIiwjHBwoNyksMDE0NDQfJzk9ODI8LjM0Mv/
bAEMBCQkJDAsMGA0NGDIhHCEyMjIyMjIyMjIyMjIyMjIyMjIyMjIyMjIyMjIyMjIyMjIyMjIyMjIyMjIyMjIyMjIyMv/
AABEIAQABAAMBIgACEQEDEQH/xAAfAAABBQEBAQEBAQAAAAAAAAAAAQIDBAUGBwgJCgv/
xAC1EAACAQMDAgQDBQUEBAAAAX0BAgMABBEFEiExQQYTUWEHInEUMoGRoQgjQrHBFVLR8CQzYnKCCQoWFxgZGiUmJygpKjQ1Njc4O
TpDREVGR0hJSlNUVVZXWFlaY2RlZmdoaWpzdHV2d3h5eoOEhYaHiImKkpOUlZaXmJmaoqOkpaanqKmqsrO0tba3uLm6wsPExcbHyM
nK0tPU1dbX2Nna4eLj5OXm5+jp6vHy8/T19vf4+fr/xAAfAQADAQEBAQEBAQEBAAAAAAAAAQIDBAUGBwgJCgv/
xAC1EQACAQIEBAMEBwUEBAABAncAAQIDEQQFITEGEkFRB2FxEyIygQgUQpGhscEJIzNS8BVictEKFiQ04SXxFxgZGiYnKCkqNTY3O
Dk6Q0RFRkdISUpTVFVWV1hZWmNkZWZnaGlqc3R1dnd4eXqCg4SFhoeIiYqSk5SVlpeYmZqio6Slpqeoqaqys7S1tre4ubrCw8TFxs
fIycrS09TV1tfY2dri4+Tl5ufo6ery8/T19vf4+fr/2gAMAwEAAhEDEQA/APQ/
BngzwrdeBfD1xceGdGmnl0y2eSSSwiZnYxKSSSuSSe9bn/CCeD/+hU0P/wAF0P8A8TR4E/5J54Z/7BVr/wCilroKAOf/AOEE8H/
9Cpof/guh/wDiaP8AhBPB/wD0Kmh/+C6H/wCJroKKAOf/AOEE8H/9Cpof/guh/wDiaP8AhBPB/wD0Kmh/+C6H/wCJroKKAOf/
AOEE8H/9Cpof/guh/wDiaP8AhBPB/wD0Kmh/+C6H/
wCJrlPDOr69dfF3xDoV3r13cabpkUcsULw267y6qcMyxg4G7jBHQZzzXP8Ahn4ma5qPxNRbu5RvC2p3dzY6cvloMPEFKtuA3HOR1J
5f2oA9L/4QTwf/ANCpof8A4Lof/iaP+EE8H/8AQqaH/wCC6H/4mvMJ/iNfHxP4i0vX/
FVx4Vu4LnydMgGnJJCyZIDyM0bMQRtOdyjByDjp6frut6no3g9tYs9Nh1i5hhWWWCCcoJFxlmjO1t3qBjke/BAD/hBPB/8A0Kmh/
wDguh/+Jo/4QTwf/wBCpof/AILof/iayPBnxD/4TnUbj+ytJcaRbxJ5t/NMVPnMoJiVNvzFc4JyPxYPuM4Hxd8Z
+INEvdO0jwrcrDqW89/csY0fEEak/xgjna/v8ooA7b/hBPB//AEKmh/8AguhP+Jo/4QTwf/0Kmh/+C6H/AOJriPEPj/U5E
+HV7o94ILbXblFvEEaNuBMYZMsCRglhxg1q/EbxNq/EbxNq/EbxNq/2vlo3mJujGMsCR948jHWgDov+EE8H/9Cpof/guh/
wDiaP8AhBPB/wD0Kmh/+C6H/wCJroK8b0nU/Eeu+GPvDoOx1e7huhVllj0q3L74oIYcE4iOULsARkgn060Aeif8ACCeD/wDoVND/
APBdD/8AE0f8IJ4P/wDQqaH/AOCC6H/4mvMJ/iNfHxP4i0vX/
wAIfq3iKz1cxW7+IhY2fZbhXJAyh3ZAEhp8Ph/Ah3Z+Tk5Py+5oA9h/4QTwf/ANCpof8A4Lof/iaP+EE8H/8AQqaH/wCC6H/4mvMJ/
AImvObX4Lwkavo9/41+i+2Xk2oWWk2sc9impWy2t0zNtAzGDGvMA6/
AOJo/4QTwf/ANCpof8A4Lof/iaP+EE8H/8AQqaH/wCC6H/4mvMJ/iNfHxP4i0vX/
AMTWH4z8GeFbXwL4gv7fwzo0VzbabcSxSx6fErI6oxVlIXgggEEcgT/knnhn/AIBVr/6KWugr4K6Wugrn/An/An/An/An/An/
JPPDP8A2CrX/
wBFLWzeXkFhatc3Ihbatc3Dnf1HyyYzsSSAAFUEkkDAGaAJ6Kym8R6ar7We5e5XEBuHJs5gIwe7WweMYpya9Yu1spW8j
+0ttjM1jNGM5p2YuZGnRVPTtjPGM4DcR4PGj4jZa2PBQwTteZ2p2R7Z/PtTtdVt/PtPOMWeGlt5IgwxkFd6jjcRPwZAyvx
+Hp7zMPmGWaV7bney4CtGdy/
LkMDg546Uh3ua0XwPxC3lt9Rpv2lcXdtHHjFMRNHEvpWsyFFNrHEMrDNhvGRO1vbkQZqydDQGoRdbNdrhmkSmLKRy3gcuC7qJfBZ
NhgcZIwNxxtFch/wANNH/oUf8Ayp/AGqj/hpo/wDQo/8Alsm/+1UAeg614nxrD/hpo/8AQo/8Aqm/+1Uf8NNH/oUf/Kn/
AMNNH/AKFH/wAqm/
+1UAeg614nxrD/hpo/8AQo/8Aqm/+1Uf8NNH/oUf/Kn/AMNNH/AKFH/wAqm/
+xdQkvbQzWBYAMUIjEo4DKTkEZ3HpW34k8Caz4nudPZudLzeXQz2+tjhQ5ifSHo8AuXCfuj3zvLzX7CO80i7N1C0OmOI3+4QrKZyeq9QwyD2xmvPP8Ahpo/9Cj/AOVP/
wC1Uf8ADTR/6FH/AMqm/+1UAeg614nxrD/hpo/8AQo/8Aqm/+1Uf8NNH/oUf/Kn/AMNNH/AKFH/wAqm/
+XfjbuHcE55Poa4f/hpo/8AQo/+VR/w00f+hR/8qX/2qgDpNO+BVnY+ZVY+Ftf0Z9YM0mqEYrlrQA2wjYsABv
+brg8itC9+EMVx8NdL8LZ8+1ze1aHQLuYrWtR14O0xvYvbRvtQy04yoYuV6IKu03t80iFcbx7wO3vkWzyDlMYpFbUdyqc5BEtHagL2Y
+Jb9NQuL+y+wiO1tjbxxR9yAXcluAQSeOeOmLmj+FNd0bT9P0xvFHm/xvFHm6Tp8qsqx2G25kiQpkE0m8gr90HagLAY4ya8x/
AJUv/tVH/DTR/6FH/wAqn/2qgD0VA/8Avi/3pv4QsYpkZAesCHNffMK1wd0HeE6izDFqn/8IeVf+z+M1WmcF//1SpYAnHxPb4Ay/
AJUv/tVHTR/6FH/wA0FUL+/AANNH/oUf/Kn/2qgDpNO+BVnY+ZVY+Ftf0Z9YM0mqEYrlrQA2wjYsABv

wDaqP8Ahpo/9Cj/AOVL/wC1UAfQFFfP/wDw00f+hR/8qX/2qj/hpo/9Cj/5Uv8A7VQB9AUV8/8A/DTR/wChR/8AKl/9qo/4aaP/
AEKP/lS/+1UAfQFFfP8A/wANNH/oUf8Aypf/AGqj/hpo/wDQo/8AlS/+1UAfQFFfP/8Aw00f+hR/8qX/ANqo/wCGmj/0KP8A5Uv/
ALVQB9AVz/jv/knnib/sFXX/AKKavH/+Gmj/ANCj/wCVL/7VXoEnib/hMfgbq+vfZPsn2rSr79x5nmbdqyJ97Aznbnp3oA6DwJ/
yTzwz/wBgq1/9FLV7XdJXWtKeycxDLo486LzYyVYMAyZG5TjBGRxVHwJ/yTzwz/2CrX/0UtdBRsDV1Y5H/hCPmhP2mxHlwNHu/
s5C4yrLsBLf6kbv9WwbgAbqmg8JzQxWUQvLRIbefzzHDYhFjbduxB8/7oEZVgdwIJ6ZNdRRVczJ5ImN4e0L+woJ4/
Mtj5rhttrai3jGABnYCRuPcjGeOBivnj9o7/kodh/2Co//AEbLX0vfNepaO2nw281yMbEuJTGh55ywViOM9q
+Xfj4+ov46sTqdvawT/
wBmR4W2naVdvmy4OWRTnrxik3caSSsjyuiiikMKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAr6f8
G/8mvXP/YK1L/0KavmCvp/wb/ya9c/9grUv/QpqAPQPAn/ACTzwz/2CrX/ANFLXQVz/gT/AJJ54Z/7BVr/
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ACK^R22 Acknowledgment

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MSA|AA|823bf5ca-8bf5-41bf-95b4-a0dc5dcfc0b9
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Related information...

Results Upload Message Profile (LAW Transaction LAB-29), page 162

Specimen result with flags

OUL^R22 Result

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SAC|||S1001|||||||1
OBR||""||CBC+Diff^CBC with Differential^99ABT|||||||""
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OBX|2|NM|NEU^NEU^99ABT|1|1.66|10*3/µL^10e3/µL^UCUM|0.00 - 999.|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|3|NM|LYM^LYM^99ABT|1|.491|10*3/µL^10e3/µL^UCUM|0.00 - 999.|
Blast^BLAST^99ABT|||F|||||SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|
20161105173047
OBX|4|NM|MONO^MONO^99ABT|1|0.49|10*3/µL^10e3/µL^UCUM|0.00 - 999.|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|5|NM|EOS^EOS^99ABT|1|.094|10*3/µL^10e3/µL^UCUM|0.00 - 999.|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|6|NM|BASO^BASO^99ABT|1|.341|10*3/µL^10e3/µL^UCUM|0.00 - 999.|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|7|NM|%N^%N^99ABT|1|54.0|%^%^UCUM|0.00 - 999.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|8|NM|%L^%L^99ABT|1|15.9|%^%^UCUM|0.00 - 999.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|9|NM|%M^%M^99ABT|1|15.9|%^%^UCUM|0.00 - 999.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|10|NM|%E^%E^99ABT|1|3.04|%^%^UCUM|0.00 - 999.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|11|NM|%B^%B^99ABT|1|11.1|%^%^UCUM|0.00 - 999.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|12|NM|RBC^RBC^99ABT|1|3.92|10*6/µL^10e6/µL^UCUM|0.00 - 999.|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|13|NM|HGB^HGB^99ABT|1|15.6|g/dL^g/dL^UCUM|0.00 - 999.|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|14|NM|HCT^HCT^99ABT|1|36.2|%^%^UCUM|0.00 - 999.|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|15|NM|MCV^MCV^99ABT|1|92.3|fL^fL^UCUM|0.00 - 999.|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|16|NM|MCH^MCH^99ABT|1|0.00|pg^pg^UCUM|0.00 - 999.|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|17|NM|MCHC^MCHC^99ABT|1|43.2|g/dL^g/dL^UCUM|0.00 - 999.|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|18|NM|RDW^RDW^99ABT|1|10.6|%^%^UCUM|0.00 - 999.|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|19|NM|PLT^PLT^99ABT|1|169.|10*3/µL^10e3/µL^UCUM|0.00 - 999.|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|20|NM|MPV^MPV^99ABT|1|8.00|fL^fL^UCUM|0.00 - 999.|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|21|NM|IG^IG^99ABT|1|0.00|10*3/µL^10e3/µL^UCUM|0.00 - 999.|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|22|NM|%IG^%IG^99ABT|1|0.00|%^%^UCUM|0.00 - 999.|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|23|NM|NRBC^NRBC^99ABT|1|.102|10*3/µL^10e3/µL^UCUM|0.00 - 999.|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|24|NM|NR/W^NR/W^99ABT|1|0.00|%^%^UCUM|0.00 - 999.|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|25||SystemFault^System Fault^99ABT|1|””|||SF01^Short Sample^99ABT
||||||||SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|26||ResultAlert^ Customer Definable Alerts^99ABT |1|””|||
Thrombocytopenia ^^99ABT ||||||||SYSTEM~SYSTEM||
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Analyzer^Abbott~S123456^Abbott|20161105173047
OBX|27|ST|DC^Delta Check^99ABT|1|NONE|||""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20161105173047
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Background Test Result

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MSH|^~\&|ALINITY-H|ABBOTT|HL7SIM|ABBOTT|20171016115308||OUL^R22^OUL_R22|
e332c4b8-f979-4714-9b9c-cf78a1830b51|P|2.5.1|||NE|AL||UNICODE UTF-8|||
LAB-29^IHE
SPM|1|||BKGD^Background Specimen^99ABT|||||||U^Unknown^HL70369
SAC|||Background
OBR||""||CBC+Diff+Retic^CBC with Differential + Reticulocyte^99ABT
ORC|SC||||CM
TQ1|||||||||R^Routine^HL70485
OBX|1|NM|WBC^WBC^99ABT|1|0.01|10*9/L^10e9/L^UCUM|0.00 - 0.10|""|||F|||||
Super~Super||Analyzer^Abbott~S123456^Abbott|20171012095949|||||||||RSLT
OBX|2|ST|NEU^NEU^99ABT|1|    ||0.00 - 999.|NC^NoCalc^99ABT|||X|||||
Super~Super||Analyzer^Abbott~S123456^Abbott|20171012095949|||||||||RSLT
OBX|3|ST|LYM^LYM^99ABT|1|    ||0.00 - 999.|NC^NoCalc^99ABT|||X|||||
Super~Super||Analyzer^Abbott~S123456^Abbott|20171012095949|||||||||RSLT
OBX|4|ST|MONO^MONO^99ABT|1|    ||0.00 - 999.|NC^NoCalc^99ABT|||X|||||
Super~Super||Analyzer^Abbott~S123456^Abbott|20171012095949|||||||||RSLT
OBX|5|ST|EOS^EOS^99ABT|1|    ||0.00 - 999.|NC^NoCalc^99ABT|||X|||||
Super~Super||Analyzer^Abbott~S123456^Abbott|20171012095949|||||||||RSLT
OBX|6|ST|BASO^BASO^99ABT|1|    ||0.00 - 999.|NC^NoCalc^99ABT|||X|||||
Super~Super||Analyzer^Abbott~S123456^Abbott|20171012095949|||||||||RSLT
OBX|7|ST|IG^IG^99ABT|1|    ||0.00 - 999.|NC^NoCalc^99ABT|||X|||||
Super~Super||Analyzer^Abbott~S123456^Abbott|20171012095949|||||||||RSLT
OBX|8|ST|%N^%N^99ABT|1|    ||0.00 - 100.|NC^NoCalc^99ABT|||X|||||
Super~Super||Analyzer^Abbott~S123456^Abbott|20171012095949|||||||||RSLT
OBX|9|ST|%L^%L^99ABT|1|    ||0.00 - 100.|NC^NoCalc^99ABT|||X|||||
Super~Super||Analyzer^Abbott~S123456^Abbott|20171012095949|||||||||RSLT
OBX|10|ST|%M^%M^99ABT|1|    ||0.00 - 100.|NC^NoCalc^99ABT|||X|||||
Super~Super||Analyzer^Abbott~S123456^Abbott|20171012095949|||||||||RSLT
OBX|11|ST|%E^%E^99ABT|1|    ||0.00 - 100.|NC^NoCalc^99ABT|||X|||||
Super~Super||Analyzer^Abbott~S123456^Abbott|20171012095949|||||||||RSLT
OBX|12|ST|%B^%B^99ABT|1|    ||0.00 - 100.|NC^NoCalc^99ABT|||X|||||
Super~Super||Analyzer^Abbott~S123456^Abbott|20171012095949|||||||||RSLT
OBX|13|ST|%IG^%IG^99ABT|1|    ||0.00 - 100.|NC^NoCalc^99ABT|||X|||||
Super~Super||Analyzer^Abbott~S123456^Abbott|20171012095949|||||||||RSLT
OBX|14|NM|NRBC^NRBC^99ABT|1|0.05|10*9/L^10e9/L^UCUM|0.00 - 0.10|""|||F|||||
Super~Super||Analyzer^Abbott~S123456^Abbott|20171012095949|||||||||RSLT
OBX|15|ST|NR/W^NR/W^99ABT|1|    ||0.00 - 9999|NC^NoCalc^99ABT|||X|||||
Super~Super||Analyzer^Abbott~S123456^Abbott|20171012095949|||||||||RSLT
OBX|16|NM|RBC^RBC^99ABT|1|.001|10*12/L^10e12/L^UCUM|0.00 - 0.02|""|||F|||||
Super~Super||Analyzer^Abbott~S123456^Abbott|20171012095949|||||||||RSLT
OBX|17|NM|HGB^HGB^99ABT|1|0.20|g/L^g/L^UCUM|0.00 - 1.00|""|||F|||||
Super~Super||Analyzer^Abbott~S123456^Abbott|20171012095949|||||||||RSLT
OBX|18|ST|HCT^HCT^99ABT|1|    ||0.00 - 9.99|NC^NoCalc^99ABT|||X|||||
Super~Super||Analyzer^Abbott~S123456^Abbott|20171012095949|||||||||RSLT
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OBX|19|ST|MCV^MCV^99ABT|1|    ||0.00 - 999.|NC^NoCalc^99ABT|||X|||||
Super~Super||Analyzer^Abbott~S123456^Abbott|20171012095949|||||||||RSLT
OBX|20|ST|MCH^MCH^99ABT|1|    ||0.00 - 999.|NC^NoCalc^99ABT|||X|||||
Super~Super||Analyzer^Abbott~S123456^Abbott|20171012095949|||||||||RSLT
OBX|21|ST|MCHC^MCHC^99ABT|1|    ||0.00 - 9991|NC^NoCalc^99ABT|||X|||||
Super~Super||Analyzer^Abbott~S123456^Abbott|20171012095949|||||||||RSLT
OBX|22|ST|RDW^RDW^99ABT|1|    ||0.00 - 999.|NC^NoCalc^99ABT|||X|||||
Super~Super||Analyzer^Abbott~S123456^Abbott|20171012095949|||||||||RSLT
OBX|23|NM|RETIC^RETIC^99ABT|1|1.00|10*9/L^10e9/L^UCUM|0.00 - 5.00|""|||F|||||
Super~Super||Analyzer^Abbott~S123456^Abbott|20171012095949|||||||||RSLT
OBX|24|ST|%R^%R^99ABT|1|    ||0.00 - 100.|NC^NoCalc^99ABT|||X|||||
Super~Super||Analyzer^Abbott~S123456^Abbott|20171012095949|||||||||RSLT
OBX|25|ST|IRF^IRF^99ABT|1|    ||0.00 - 999.|NC^NoCalc^99ABT|||X|||||
Super~Super||Analyzer^Abbott~S123456^Abbott|20171012095949|||||||||RSLT
OBX|26|ST|MCHr^MCHr^99ABT|1|    ||0.00 - 999.|NC^NoCalc^99ABT|||X|||||
Super~Super||Analyzer^Abbott~S123456^Abbott|20171012095949|||||||||RSLT
OBX|27|NM|PLT^PLT^99ABT|1|1.20|10*9/L^10e9/L^UCUM|0.00 - 3.00|""|||F|||||
Super~Super||Analyzer^Abbott~S123456^Abbott|20171012095949|||||||||RSLT
OBX|28|ST|MPV^MPV^99ABT|1|    ||0.00 - 999.|NC^NoCalc^99ABT|||X|||||
Super~Super||Analyzer^Abbott~S123456^Abbott|20171012095949|||||||||RSLT
OBX|29|ST|%rP^%rP^99ABT|1|    ||0.00 - 999.|NC^NoCalc^99ABT|||X|||||
Super~Super||Analyzer^Abbott~S123456^Abbott|20171012095949|||||||||RSLT
OBX|30|ST|DC^Delta Check^99ABT|1|NONE|||""|||F|||||Super~Super||
Analyzer^Abbott~S123456^Abbott|20171012095949|||||||||RSLT
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Precision Test Result

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MSH|^~\&|ALINITY-H|ABBOTT|HL7SIM|ABBOTT|20171016115317||OUL^R22^OUL_R22|
a697c901-215b-4fe5-bda9-e08166ee77d4|P|2.5.1|||NE|AL||UNICODE UTF-8|||
LAB-29^IHE
SPM|1|||WQC^Whole Blood Control^99ABT|||||||Q^Control specimen^HL70369
SAC|||PSID1|||||||1
INV|WholeBloodControl^^99ABT|NA^Not Applicable^HL70383|CO^Control^HL70384
OBR||""||CBC+Diff^CBC with Differential^99ABT
ORC|SC||||CM
TQ1|||||||||R^Routine^HL70485
OBX|1|NM|WBC^WBC^99ABT|1|2.94|10*9/L^10e9/L^UCUM|0.00 - 999.|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20171012094619|||||||||RSLT
INV|ReagDiluent^^99ABT|NA^Not Applicable^HL70383|SR^Single Test
Reagent^HL70384
INV|ReagWbc^^99ABT|NA^Not Applicable^HL70383|SR^Single Test Reagent^HL70384
INV|ReagHgb^^99ABT|NA^Not Applicable^HL70383|SR^Single Test Reagent^HL70384
OBX|2|NM|NEU^NEU^99ABT|1|1.54|10*9/L^10e9/L^UCUM|0.00 - 999.|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20171012094619|||||||||RSLT
OBX|3|NM|LYM^LYM^99ABT|1|.905|10*9/L^10e9/L^UCUM|0.00 - 999.|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20171012094619|||||||||RSLT
OBX|4|NM|MONO^MONO^99ABT|1|.286|10*9/L^10e9/L^UCUM|0.00 - 999.|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20171012094619|||||||||RSLT
OBX|5|NM|EOS^EOS^99ABT|1|.102|10*9/L^10e9/L^UCUM|0.00 - 999.|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20171012094619|||||||||RSLT
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OBX|6|NM|BASO^BASO^99ABT|1|.111|10*9/L^10e9/L^UCUM|0.00 - 999.|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20171012094619||||||||||RSLT
OBX|7|NM|IG^IG^99ABT|1|0.00|10*9/L^10e9/L^UCUM|0.00 - 999.|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20171012094619||||||||||RSLT
OBX|8|NM|%N^%N^99ABT|1|52.3|%^%^UCUM|0.00 - 100.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20171012094619||||||||||RSLT
OBX|9|NM|%L^%L^99ABT|1|30.7|%^%^UCUM|0.00 - 100.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20171012094619||||||||||RSLT
OBX|10|NM|%M^%M^99ABT|1|9.71|%^%^UCUM|0.00 - 100.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20171012094619||||||||||RSLT
OBX|11|NM|%E^%E^99ABT|1|3.48|%^%^UCUM|0.00 - 100.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20171012094619||||||||||RSLT
OBX|12|NM|%B^%B^99ABT|1|3.78|%^%^UCUM|0.00 - 100.|""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20171012094619||||||||||RSLT
OBX|13|NM|%IG^%IG^99ABT|1|0.00|%^%^UCUM|0.00 - 100.|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20171012094619||||||||||RSLT
OBX|14|NM|NRBC^NRBC^99ABT|1|0.00|10*9/L^10e9/L^UCUM|0.00 - 999.|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20171012094619||||||||||RSLT
OBX|15|NM|NR/W^NR/W^99ABT|1|0.00|%^%^UCUM|0.00 - 9999|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20171012094619||||||||||RSLT
OBX|16|NM|RBC^RBC^99ABT|1|2.66|10*12/L^10e12/L^UCUM|0.00 - 999.|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20171012094619||||||||||RSLT
OBX|17|NM|HGB^HGB^99ABT|1|79.1|g/L^g/L^UCUM|0.00 - 9991|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20171012094619||||||||||RSLT
OBX|18|NM|HCT^HCT^99ABT|1|.198|L/L^L/L^UCUM|0.00 - 9.99|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20171012094619||||||||||RSLT
OBX|19|NM|MCV^MCV^99ABT|1|74.6|fL^fL^UCUM|0.00 - 999.|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20171012094619||||||||||RSLT
OBX|20|NM|MCH^MCH^99ABT|1|0.00|pg^pg^UCUM|0.00 - 999.|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20171012094619||||||||||RSLT
OBX|21|NM|MCHC^MCHC^99ABT|1|399.|g/L^g/L^UCUM|0.00 - 9991|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20171012094619||||||||||RSLT
OBX|22|NM|RDW^RDW^99ABT|1|10.7|%CV^%CV^UCUM|0.00 - 999.|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20171012094619||||||||||RSLT
OBX|23|NM|PLT^PLT^99ABT|1|58.3|10*9/L^10e9/L^UCUM|0.00 - 9999|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20171012094619||||||||||RSLT
OBX|24|NM|MPV^MPV^99ABT|1|8.00|fL^fL^UCUM|0.00 - 999.|""|||F|||||
SYSTEM~SYSTEM||Analyzer^Abbott~S123456^Abbott|20171012094619||||||||||RSLT
OBX|25|ST|DC^Delta Check^99ABT|1|NONE|||""|||F|||||SYSTEM~SYSTEM||
Analyzer^Abbott~S123456^Abbott|20171012094619||||||||||RSLT
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SMS (Slide Maker Test result) Test Result for Smear+Stain order

```
MSH|^~\&|ALINITY-H|SANTACLARA|HL7SIM|SANTACLARA|20170624161950||
OUL^R22^OUL_R22|8b32f218-3eab-4c58-bb00-466f2ae3b2c5|P|2.5.1|||NE|AL||
UNICODE UTF-8|||LAB-29^IHE
PID|||PID001||Ng^Benny^L^^^^L||19490209|M
PV1||N|^Room321
SPM|1|||WB^Blood,Whole^HL70487|||||||P^Patient^HL70369||||||20170624155956
SAC|||HostOrderSTAT|||||||1
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OBR||OID1001||Smear+Stain^Smear+Stain^99ABT
ORC|SC||||CM
TQ1|||||||||S^STAT^HL70485
OBX|1|CE|Smear+Stain^Smear+Stain^99ABT|1|PROCESSED^Processed^99ABT||||||
F|||||SYSTEM~SYSTEM||SMS^Abbott~SMS3456^Abbott|20170624160041|||||||||RSLT
INV|StainReagent^^99ABT|NA^Not Applicable^HL70383|SR^Single Test
Reagent^HL70384|||||||||||94086AA11
INV|FixReagent^^99ABT|NA^Not Applicable^HL70383|SR^Single Test
Reagent^HL70384|||||||||||94087BB22
INV|BufferReagent^^99ABT|NA^Not Applicable^HL70383|SR^Single Test
Reagent^HL70384|||||||||||94087CC33
INV|BlankSlide^^99ABT|NA^Not Applicable^HL70383|SR^Single Test
Reagent^HL70384|||||||||||94087DD44
INV|SmearerBlade^^99ABT|NA^Not Applicable^HL70383|SR^Single Test
Reagent^HL70384|||||||||||94087EE55
INV|PrinterRibbon^^99ABT|NA^Not Applicable^HL70383|SR^Single Test
Reagent^HL70384|||||||||||94087FF66
```

SMS (Slide Maker Test result) Test Result with System Faults for Smear+Stain order

```
MSH|^~\&|ALINITY-H|SANTACLARA|HL7SIM|SANTACLARA|20170624162007||
OUL^R22^OUL_R22|79c6c0a2-2145-43c3-b41e-ee3c71bb9e4f|P|2.5.1|||NE|AL||
UNICODE UTF-8|||LAB-29^IHE
PID|||PID001||Ng^Benny^L^^^^L||19490209|M
PV1||N|^Room321
SPM|1|||WB^Blood,Whole^HL70487|||||||P^Patient^HL70369||||||20170624161800
SAC|||HostOrderSTAT|||||||1
OBR||OID1001||Smear+Stain^Smear+Stain^99ABT
ORC|SC||||CM
TQ1|||||||||S^STAT^HL70485
OBX|1|CE|Smear+Stain^Smear+Stain^99ABT|1|PROCESSED^Processed^99ABT||||||
F|||||SYSTEM~SYSTEM||SMS^Abbott~SMS3456^Abbott|20170624161831|||||||||RSLT
INV|StainReagent^^99ABT|NA^Not Applicable^HL70383|SR^Single Test
Reagent^HL70384|||||||||||94086AA11
INV|FixReagent^^99ABT|NA^Not Applicable^HL70383|SR^Single Test
Reagent^HL70384|||||||||||94087BB22
INV|BufferReagent^^99ABT|NA^Not Applicable^HL70383|SR^Single Test
Reagent^HL70384|||||||||||94087CC33
INV|BlankSlide^^99ABT|NA^Not Applicable^HL70383|SR^Single Test
Reagent^HL70384|||||||||||94087DD44
INV|SmearerBlade^^99ABT|NA^Not Applicable^HL70383|SR^Single Test
Reagent^HL70384|||||||||||94087EE55
INV|PrinterRibbon^^99ABT|NA^Not Applicable^HL70383|SR^Single Test
Reagent^HL70384|||||||||||94087FF66
OBX|2||SystemFault^System Fault^99ABT|1|""|||SFM01^Resuspension Error
Detected^99ABT~SFM07^Slide stain processing issue in Stain
bath^99ABT~SFM08^Slide stain processing issue in Buffer bath^99ABT|||F|||||
SYSTEM~SYSTEM||SMS^Abbott~SMS3456^Abbott|20170624161831|||||||||RSLT
```

ACK^R22 Acknowledgment

```
MSH|^~\&|HL7SIM|LAB|ALINITY-H|TESTLAB|20161105063052||ACK^R22^ACK|
15b39762-28a3-47c5-8366-2f86d830faa4|P|2.5.1||||||UNICODE UTF-8|||LAB-29^IHE
MSA|AA|823bf5ca-8bf5-41bf-95b4-a0dc5dcfc0b9
```

Related information…

Results Upload Message Profile (LAW Transaction LAB-29), page 162

Test Status Update Message Profile

Example messages are provided for this message profile.

Related information...

Example messages, page 155
Specimen test initiated, page 173

Specimen test initiated

OULˆR22 Result

```
MSH|^~\&|ALINITY-H|TESTLAB|HL7SIM|LAB|20161105183041||OUL^R22^OUL_R22|
5644c25a-9a15-4a28-8956-a5fe28a99505|P|2.5.1|||NE|AL||UNICODE UTF-8|||
LAB-29^IHE
SPM|1|||WB^Blood,Whole^HL70487|||||||P^Patient^HL70369
SAC|||S01NEGATIVE|||||||1|1
OBR||""||CBC+Diff^CBC+Differential^ABT99|||||||""
ORC|SC||||IP
TQ1|||||||||R^Routine^HL70485
OBX|1|CE|0^CBC+Diff^99ABT|1|INITIATED^Initiated^99ABT|||""|||I|||||||ALINITY-
H^Abbott~S123456^Abbott|20161105183040|||||||||STS
```

ACKˆR22 Acknowledgment

```
MSH|^~\&|HL7SIM|LAB|ALINITY-H|TESTLAB|20161105063041||ACK^R22^ACK|
6e4a5aab-7928-4c66-845d-d11b1d967bb9|P|2.5.1||||||UNICODE UTF-8|||LAB-29^IHE
MSA|AA|5644c25a-9a15-4a28-8956-a5fe28a99505
```

Related information...

Test Status Update Message Profile, page 173

Sample Status Update Message Profile

Example messages are provided for this message profile.

Related information...

Example messages, page 155
Sample in process, page 174

Sample in process

SSU^U03

```
MSH|^~\&|ALINITY-H|TESTLAB|HL7SIM|LAB|20161105162604||SSU^U03^SSU_U03|
38f62dcc-d410-4b4e-a101-531c95c8fc80|P|2.5.1|||NE|AL||UNICODE UTF-8
EQU|TEST-VP0^Abbott~S123456^Abbott|20161105162604
SAC|||TESTME|||||R^In Process^HL70370||e5150a|1
SPM|1|||WB^Blood,Whole^HL70487|||||||P^Patient^HL70369
```

ACK^U03

```
MSH|^~\&|HL7SIM|LAB|ALINITY-H|TESTLAB|20161105063054||ACK^U03^ACK|
4718195f-7d7d-4256-ad16-f22a0156f255|P|2.5.1||||||UNICODE UTF-8
MSA|AA|c224e22e-0aff-42b4-b07f-7178c395cd56
```

Related information...

Sample Status Update Message Profile, page 174

Connection Test Message Profile

Example messages are provided for this message profile.

Related information...

Example messages, page 155
Instrument Send Connection Test, page 175

Instrument Send Connection Test

NMD^N02

```
MSH|^~\&|ALINITY-H|TESTLAB|HL7SIM|LAB|20161106160036||NMD^N02^NMD_N02|
630c5f68-965c-4a6c-8d6d-dfe321242a34|P|2.5.1|||NE|AL||UNICODE UTF-8
NST|N
```

ACK^N02

```
MSH|^~\&|HL7SIM|LAB|ALINITY-H|TESTLAB|20161106040036||ACK^N02^ACK|
0892001f-9f1d-4968-8dd0-6f90005a0428|P|2.5.1||||||UNICODE UTF-8
MSA|AA|630c5f68-965c-4a6c-8d6d-dfe321242a34
```

Related information...

Connection Test Message Profile, page 175

NOTES

Revision history

Document control numbers	Revision date	Content revised
80000451-101	2017-05-16	Original release
80000451-102	2017-10-18	Sections 3 and 4, Appendices A and B
80000451-103	2018-02-15	Read me first, Section 4

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