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**LIS Developer's Guide
and
Troubleshooting Manual
for the
ORTHO AutoVue® *Innova*
ORTHO AutoVue® *Ultra***

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This equipment includes parts and assemblies sensitive to damage from electrostatic discharge. Use caution to prevent damage during all service procedures.

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Section 1: Introduction

References

Document	Reference	Version
LIS developers Guide and troubleshooting Manual	620202612 CD	Version 2.0 revised August 2001
ASTM protocol	ASTM 1394-97	

Abbreviations, Acronyms and Definitions

Abbreviation	Description
Innova	AutoVue 2nd Generation project (Innova and Ultra)
IDO	International Development Organization
LIS	Laboratory Information System
Rev	Revision
Ver	Version

Generalities

Innova communicates with only one LIS and the setup of communication is unique for an instrument.

Samples, demographics and orders can both be entered by downloading from LIS or by the keyboard

Results of patient samples are always sent to the LIS (if LIS defined in the setup) even for data entered manually in Innova

If the instrument is in "Query" mode, when a patient sample is entered without profile, a "query packet" is sent to the LIS.

The Innova has three formats of results and download: "Innova 1", "ASTM" and "ASTM enhanced".

Section 2: Transport Layer

The Innova can work with one of these three protocols; the choice of protocol is defined in setup.

LAN Protocol

LIS -> Innova

The directory of download files is a shared directory named "[\\<Computer_name>\LAN\DNL](#)", (C:\OCD\AV2G\LAN\DNL)

The file pattern is defined in Setup / Data / LIS transfert.

When a file is present, Innova

- copy the file to a trace file in the folder C:\OCD\AV2G\LAN\TRACES (DNL<YYYYMMDDHHMMSS>.TRA),
- import orders
- rename the file with a BAK extension

Innova -> LIS

The directory of Upload files is a shared directory named "[\\<Computer_name>\LAN\UPL](#)", (C:\OCD\AV2G\LAN\UPL)

The name of export files and query files are defined in Setup / Data / LIS transfert. The character * means date and time in (YYYYMMDDHHMMSS) format. Several characters "?" means an increment, e.g. if you have "LIS???.upl" the files are named LIS001.upl to LIS999.upl.

Innova

- check if the file is present, if yes, there is an error
- write the file with a TMP extension,
- close the file
- copy the file to a trace file in the folder C:\OCD\AV2G\LAN\TRACES (UPL<YYYYMMDDHHMMSS>.TRA or QU<YYYYMMDDHHMMSS>.TRA),
- rename the file with the real extension, so the LIS see the file when it is full and closed.
- the LIS is in charge to delete the file after reading it.

Innova deletes all the BAK files and trace files older than one week

FTP Protocol

Innova Software contains a FTP client.

To use the FTP Client:

- [1] Choose FTP protocol in Setup / Data / LIS transfert
- [2] Modify the files C:\OCD\AV2G\FTP\DOWNLOAD.CMD and C:\OCD\AV2G\FTP\UPLOAD.CMD : put the correct parameters for the Server FTP, the login and the password in lines
 - set SERVER="SERVERFTP"
 - set LOGIN="login"
 - set PASSWORD="password"

LIS -> Innova

- ask the FTP server if there is files with the file pattern defined in Setup / Data / LIS transfert (eg *.DLN).
- put the files in the folder C:\OCD\AV2G\FTP\DLN,
- delete files on the LIS,
- copy the file to a trace file in the folder C:\OCD\AV2G\FTP\TRACES (DNL<YYYYMMDDHHMMSS>.TRA),
- import orders
- rename the file with a BAK extension.

Innova -> LIS

The name of export files and query files are defined in Setup / Data / LIS transfert. The character * means date and time in (YYYYMMDDHHMMSS) format. Several characters "?" means an increment, e.g. if you have "LIS???.upl" the files are named LIS001.upl to LIS999.upl.

Innova

- verify if a file with the same name exists on the FTP server, if yes, there is an error
- create the file in the folder C:\OCD\AV2G\FTP\UPL
- copy the file to a trace file in the folder C:\OCD\AV2G\FTP\TRACES (UPL<YYYYMMDDHHMMSS>.TRA or QU<YYYYMMDDHHMMSS>.TRA),
- send the file to the server FTP with the name LIS.TMP,
- rename the file on the server FTP with the real name
- delete the file in the folder C:\OCD\AV2G\FTP\UPL

If the FTP client have not the right to rename the file on the server, use the U command in the file C:\OCD\AV2G\FTP\UPLOAD.COMD. In this case, don't use Fixed names for files (AV2G can replace the file before reading by the LIS).

Innova deletes all the BAK files and trace files older than one week

Kermit Protocol

LIS Communication Requirements

The bi-directional interface is designed assuming the LIS platform will be running Kermit 95 for windows version 1.1.17 or MS-DOS Kermit Version 3.14 or any other version of the Kermit program supporting the following list of commands and settings:

1. The LIS MUST run in Server mode
2. The following script (or its equivalent) should be run (without an error) on the server to set it up to communicate as the server:

```
; This script starts a server
```

```
;
```

```
set carrier off
```

```
; Set the port as needed
```

```
set port 1
```

```
; Set the speed as needed (remember to set the LIS speed to match the PC speed)
```

```
set speed 9600
```

```
set flow none
```

```
set parity odd
```

```

set window 1
set send timeout 1
set receive timeout 1
set retry-limit 1
set file type text
set file incomplete discard
set transfer display none
;Is better to set retry to 1 however some Kermits have a bug that
;gives error when it is not an error
set retry 2
set send packet-length 94
enable delete
enable directory
enable query
server

```

Note

In older systems, "set send timeout 1" and "set receive timeout 1" in the above script may have to be changed to a higher value "2, 3, 4 or 5".

The above script can be saved in a file with a ".ksc" extension. This file should be placed in the LIS Kermit program directory. A "take" directive must then be placed at the end of the Kermit initialization file for the script file.

LIS Commands From Innova

The LIS should handle the following commands sent from Innova without problems:

```

get
send
remote delete
remote query kermit version
remote query kermit platform
remote query kermit filelist() (If Kermit 95 for Windows)
remote query kermit nextfile() (If Kermit 95 for Windows)
remote dir /B *.dnl (If MS-DOS Kermit)

```

Supported Packet Types

The analyzer uses the following packets required by the **Kermit Client/Server model** protocol:

D	Data packet
Y	Acknowledgment packet (positive)
N	Acknowledgment packet (negative)
S	Send initiate packet (session start, exchange parameters)
B	Break transmission packet (EOT-end session)
F	File header packet

- Z End of file packet (EOF)
- E Error packet (session cancel)
- I Initialization packet**
- R Receive packet**
- A Attribute packet**
- G Generic command packet with the following subcommands**
 - D for directory**
 - E for erase**
 - V Q K for Query Kermit variables/functions**
- X Text header packet**

In the Kermit Client/Server model protocol, Innova is the client and the LIS must be in server mode.

The packets in **BOLD** may not have been used before.

For more details on each packet, look in the documentation from the University of Columbia on Kermit.

Next sections show packet traces of Innova interacting with an MS-DOS Kermit server and a K95 Kermit server. If you are not using an official Kermit product, but are implementing the Kermit Protocol from scratch, then you have a choice as to which Kermit product to emulate. In this case, you should base your implementation on the MS-DOS Kermit server because it is simpler.

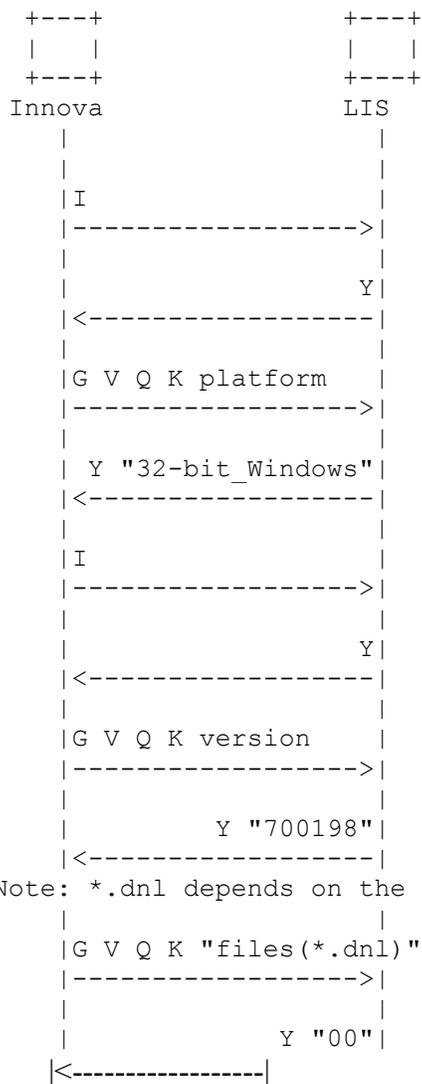
Protocol Logs and Sequence Diagrams

Kermit 95 for Windows - No File

The following is a protocol log where there is no file to download:

```
s<SOH>8 I~& @-#&3~Z!K)0___@''UO.
r<SOH>9 Y~& @-#Y3~Z!J)0___C''UN@5
s<SOH>1 GV!Q!K(platform:
r<SOH>1 Y32-bit_Windows(
s<SOH>8 I~& @-#&3~Z!K)0___@''UO.
r<SOH>9 Y~& @-#Y3~Z!J)0___C''UN@5
s<SOH>0 GV!Q!K'version[
r<SOH>) Y700198>
s<SOH>8 I~& @-#&3~Z!K)0___@''UO.
r<SOH>9 Y~& @-#Y3~Z!J)0___C''UN@5
s<SOH>5 GV!Q!K,files(*.dnl)Y
r<SOH>$ Y00
```

-----No Files To Download When Server Responds As Windows K95--



Kermit 95 for Windows - Download File

The following is a protocol log where there is a file "a.dnl" to download with contents:

"dnl test file
last line"

```
s<SOH>8 I~& @-#&3~Z!K) 0 ___@ "UO.
r<SOH>9 Y~& @-#Y3~Z!J) 0 ___C"UN@5
s<SOH>1 GV!Q!K(platform:
r<SOH>1 Y32-bit_Windows(
s<SOH>8 I~& @-#&3~Z!K) 0 ___@ "UO.
r<SOH>9 Y~& @-#Y3~Z!J) 0 ___C"UN@5
s<SOH>0 GV!Q!K'version[
r<SOH>) Y700198>
s<SOH>8 I~& @-#&3~Z!K) 0 ___@ "UO.
r<SOH>9 Y~& @-#Y3~Z!J) 0 ___C"UN@5
s<SOH>5 GV!Q!K,files(*.dnl)Y
r<SOH>$ Y11
s<SOH>8 I~& @-#&3~Z!K) 0 ___@ "UO.
r<SOH>9 Y~& @-#Y3~Z!J) 0 ___C"UN@5
s<SOH>3 GV!Q!K*nextfile()J
r<SOH> ( Ya.dnlO
s<SOH>8 I~& @-#&3~Z!K) 0 ___@ "UO.
r<SOH>9 Y~& @-#Y3~Z!J) 0 ___C"UN@5
s<SOH> ( Ra.dnlH
r<SOH>9 S~& @-#Y3~Z!J) 0 ___A"UN@-
s<SOH>8 Y~& @-#&3~Z!K) 0 ___@ "UO>
r<SOH>*!Fa.dnl,V[
s<SOH>>!YC:\rel41a\run\eng\a.dnl.z&G!
r<SOH>I"A."UN""B8#120010201 08:44:02!!11"26@ #($
s<SOH>%"Y.5!
r<SOH>C#Ddnl test file#M#Jlast line#M#J /$
s<SOH>%"#Y/R9
r<SOH>%"$Z(,*
s<SOH>%"$Y+&1
r<SOH>%"%B 8;
s<SOH>%"%Y*A)
s<SOH>8 I~& @-#&3~Z!K) 0 ___@ "UO.
r<SOH>9 Y~& @-#Y3~Z!J) 0 ___C"UN@5
s<SOH>* GE#a.dnl+
r<SOH>9 S~& @-#Y3~Z!J) 0 ___A"UN@-
s<SOH>8 Y~& @-#&3~Z!K) 0 ___@ "UO>
r<SOH>2!XREMOTE DELETE+^X
s<SOH>%"!Y,\I
r<SOH>3"A."UN""#AMJ*!A@ &Z0
s<SOH>%"Y.5!
r<SOH>t#DDeleting "a.dnl"#M#J~$ deleted: a.dnl#M#J#M#J1 file
deleted, 26 bytes freed#M#J.%9
s<SOH>%"#Y/R9
r<SOH>%"$Z(,*
s<SOH>%"$Y+&1
r<SOH>%"%B 8;
s<SOH>%"%Y*A)
```

-----Download File When Server Responds As Windows K95-----

```

+----+           +----+
|  |           |  |
+----+           +----+

```

```

Innova           LIS

```

```

|
| I
|----->|

```

```

|
|                                     Y|
|<-----|

```

```

|G V Q K platform
|----->|

```

```

| Y "32-bit_Windows"
|<-----|

```

```

| I
|----->|

```

```

|
|                                     Y|
|<-----|

```

```

|G V Q K version
|----->|

```

```

|
|                                     Y "700198"
|<-----|

```

```

|G V Q K files(*.dnl)
|----->|

```

Note: There is only one file called a.dnl

```

|
|                                     Y "1"
|<-----|

```

```

| I
|----->|

```

```

|
|                                     Y|
|<-----|

```

```

|<-----|

```

Note: The next message asks for the next file
 Note: There would be an exchange like this for
 Note: the number of files return above

```
|G V Q K nextfile() |
|----->|
|          Y "a.dnl" |
|<-----|
|I |
|----->|
|          Y |
|<-----|
|R "a.dnl" |
|----->|
|          S |
|<-----|
|Y |
|----->|
|          F "a.dnl" |
|<-----|
```

Note: This tells server will have different name

```
|Y "a.dnl.z" |
|----->|
|          A |
|<-----|
|Y |
|----->|
|          D |
|<-----|
|Y |
|----->|
|          Z |
|<-----|
|Y |
|----->|
|          B |
|<-----|
|Y |
|----->|
```

```

| I |
|----->|
| |
| Y |
|----->|
Note: Erase the file a.dnl
| G E a.dnl |
|----->|
| S |
|----->|
| Y |
|----->|
| X |
|----->|
| Y |
|----->|
| A |
|----->|
| Y |
|----->|
| D |
|----->|
| Y |
|----->|
| Z |
|----->|
| Y |
|----->|
| B |
|----->|
| Y |
|----->|

```

Kermit 95 for Windows - Upload File

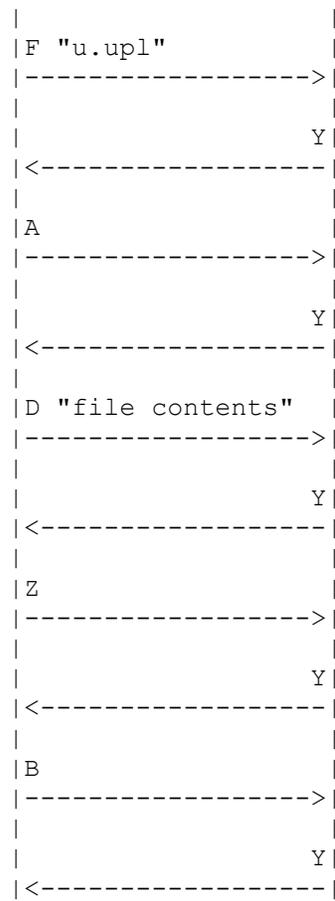
The following is a protocol log where there is a file "u.upl" to upload with contents:

"upload test file
last line"

```
s<SOH>8 I~& @-#&3~Z!K)0 ___@ "UO.
r<SOH>9 Y~& @-#Y3~Z!J)0 ___C "UN@5
s<SOH>1 GV!Q!K(platform:
r<SOH>1 Y32-bit_Windows(
s<SOH>8 I~& @-#&3~Z!K)0 ___@ "UO.
r<SOH>9 Y~& @-#Y3~Z!J)0 ___C "UN@5
s<SOH>0 GV!Q!K'version[
r<SOH>) Y700198>
s<SOH>8 S~& @-#&3~Z!K)0 ___@ "UO8
r<SOH>9 Y~& @-#Y3~Z!J)0 ___C "UN@5
s<SOH>*!Fu.upl(OC
r<SOH>1!YC:/K95/u.upl%K^
s<SOH>M"A."UO"#AMJ*!A#120010201 08:52:26!!11"28@ &4P
r<SOH>% "Y.5!
s<SOH>B#Dupload test file#M
last line!BQ
r<SOH>%#Y/R9
s<SOH>%$Z(,*
r<SOH>%$Y+&l
s<SOH>%%B 8;
r<SOH>%%Y*A)
```

---Upload A File (u.upl) When Server Responds As Windows K95---

```
+---+ +---+
|  | |  |
+---+ +---+
Innova LIS
| |
| I |
|----->|
| | Y|
|<-----|
| G V Q K platform |
|----->|
| Y "32-bit_Windows" |
|<-----|
| I |
|----->|
| | Y|
|<-----|
| G V Q K version |
|----->|
| Y "700198" |
|<-----|
| S |
|----->|
| | Y|
```




```

|                                     |
|                                     | Y |
| <----->                         |
| G D "/B *.dnl"                    |
| ----->                           |
|                                     | S |
| <----->                         |
| Y                                   |
| ----->                           |
| X "dir /B *.dnl"                  |
| <----->                         |
| Y                                   |
| ----->                           |
|                                     | A |
| <----->                         |
| Y                                   |
| ----->                           |
|                                     | Z |
| <----->                         |
| Y                                   |
| ----->                           |
|                                     | B |
| <----->                         |
| Y                                   |
| ----->                           |

```

MS-DOS Kermit Version 3.14 - Download File

The following is a protocol log where there is a file "a.dnl" to download with contents:

"this is a line

this is last"

```
s<SOH>8 I~& @-#&3~Z!K)0 ___@"UO.
r<SOH>7 Y~! @-#&3~^! ~ ___E!0)
s<SOH>1 GV!Q!K(platform:
r<SOH>) YIBM-PCZ
s<SOH>8 I~& @-#&3~Z!K)0 ___@"UO.
r<SOH>7 Y~! @-#&3~^! ~ ___E!0)
s<SOH>0 GV!Q!K'version[
r<SOH>& Y315X
s<SOH>8 I~& @-#&3~Z!K)0 ___@"UO.
r<SOH>7 Y~! @-#&3~^! ~ ___E!0)
s<SOH>- GD(/B *.dnlG
r<SOH>7 S~! @-#&3~^? ~ ___E!0A-
s<SOH>8 Y~& @-#Y3~Z!K)0 ___@"UO2
r<SOH>1!Xdir /B *.dnl!CF
s<SOH>%!Y,\I
r<SOH>L"A1!7!!1#120010201 07:01:20."U8"#AMJ*!A@ $;9
s<SOH>%Y.5!
r<SOH>.#DA.DNL#M#J&2O
s<SOH>%#Y/R9
r<SOH>%$Z(,*
s<SOH>%$Y+&l
r<SOH>%%B 8;
s<SOH>%%Y*A)
s<SOH>8 I~& @-#&3~Z!K)0 ___@"UO.
r<SOH>7 Y~! @-#&3~^! ~ ___E!0)
s<SOH> ( RA.DNLJ
r<SOH>7 S~! @-#&3~^? ~ ___E!0A
s<SOH>8 Y~& @-#&3~Z!K)0 ___@"UO>
r<SOH>*!FA.DNL*P@
s<SOH>>!YC:\rel41a\run\eng\A.DNL.z.: [
r<SOH>M"A1"30!!1#120010201 06:59:02."U8"#AMJ*!A@ +?2
s<SOH>%Y.5!
r<SOH>G#Dthis is a line#M#Jthis is last#M#J*A1
s<SOH>%#Y/R9
r<SOH>%$Z(,*
s<SOH>%$Y+&l
r<SOH>%%B 8;
s<SOH>%%Y*A)
s<SOH>8 I~& @-#&3~Z!K)0 ___@"UO.
r<SOH>7 Y~! @-#&3~^! ~ ___E!0)
s<SOH>* GE%A.DNL)
r<SOH>, Ydel A.DNL(
```

Download a File When Server Responds As MS-DOS Kermit Version 3.14 -

```

+---+           +---+
|   |           |   |
+---+           +---+
Innova         LIS
|
| I
|----->|
|
| Y
|-----<|
|
| G V Q K platform
|----->|
|
| Y IBM-PC
|-----<|
|
| I
|----->|
|
| Y
|-----<|
|
| G V Q K version
|----->|
|
| Y 315
|-----<|
|
| I
|----->|
|
| I
|-----<|
|
| G D "/B *.dnl"
|----->|
|
| S
|-----<|
|
| Y
|----->|
|
| X "dir /B *.dnl"
|-----<|
|
| Y
|----->|
|
| A
|-----<|
|
| Y
|----->|
Note: There is only one file called a.dnl
|
| D "A.DNL"
|-----<|
|
| Y
|----->|
|
| Z
|-----<|
|
| Y
|----->|
|
| B
|-----<|
|
| Y
|----->|
|
| I
|----->|
|
| Y

```

```
|          D "A.DNL" |
|<----->|
|Y|
|----->|
|          Z|
|<----->|
|Y|
|----->|
|          B|
|<----->|
|Y|
|----->|
|I|
|----->|
|          Y|
|<----->|
|R "A.DNL"|
|----->|
|          s|
|<----->|
|Y|
|----->|
|          F "A.DNL"|
|<----->|
|Y|
|----->|
|          A|
|<----->|
|Y|
|----->|
|          D|
|<----->|
|Y|
|----->|
|          Z|
|<----->|
|Y|
|----->|
|I|
|----->|
|          Y|
|<----->|
|G E "A.DNL"|
|----->|
|          Y "del A.DNL"|
|<----->|
```

MS-DOS Kermit Version 3.14 - Upload File

The following is a protocol log where there is a file "u.upl" to upload with contents:

"upload test file
last line"

```
s<SOH>8 I~& @-#&3~Z!K)0___@"UO.
r<SOH>7 Y~! @-#&3~^! ~ ___E!0)
s<SOH>1 GV!Q!K(platform:
r<SOH>) YIBM-PCZ
s-00-00-8 I~& @-#&3~Z!K)0___@"UO.
r<SOH>7 Y~! @-#&3~^! ~ ___E!0)
s<SOH>0 GV!Q!K'version[
r<SOH>& Y315X
s<SOH>8 S~& @-#&3~Z!K)0___@"UO8
r<SOH>7 Y~! @-#&3~^! ~ ___E!0)
s<SOH>*!Fu.upl(0C
r<SOH>+!Y U.UPL$$+
s<SOH>M"A."UO"#AMJ*!A#120010201 08:52:26!!11"28@ &4P
r<SOH>%"Y.5!
s<SOH>B#Dupload test file#M
last line!BQ
r<SOH>%"Y/R9
s<SOH>%"$Z(,*
r<SOH>%"$Y+&1
s<SOH>%"B 8;
r<SOH>%"Y*A)
```

---Upload a File When Server Responds As MS-DOS Kermit Version 3.14 ---

```
+----+           +----+
|  |           |  |
+----+           +----+
Innova          LIS
|               |
| I             |
|----->      |
|               |
|               Y|
|<-----|    |
|               |
|G V Q K platform|
|----->      |
|               |
|               Y "IBM-PC"|
|<-----|    |
|               |
| I             |
|----->      |
|               |
|               Y|
|<-----|    |
|               |
|G V Q K version |
|----->      |
```


Protocol Log When There Is No Cable

The following is a protocol log where there is no cable connected:

```
s<SOH>8 I~& @-#&3~Z!K)0___@"UO.
r-xx-01-<timeout>
S<SOH>8 Ip& @#&³pÚ;Ë) °ßßß@çÕO (r)
r-xx-02-<timeout>
S<SOH>8 Ip& @#&³pÚ;Ë) °ßßß@çÕO (r)
r-xx-03-<timeout>
s<SOH>4 EToo many retries.O
s<SOH>1 GV!Q!K(platform:
r-xx-04-<timeout>
s<SOH># N3
r-xx-06-<timeout>
s<SOH># N3
r-xx-09-<timeout>
s-<SOH>4 EToo many retries.O
```

Any Other Versions of Kermit

If the LIS is running with any other versions of Kermit it must follow protocol logs and sequence diagrams of MS-DOS Kermit Version 3.14 or Kermit 95 for Windows.

1. When the PC sends the following commands to the LIS, the PC expects any string of text to be sent back:

```
s<SOH>1 GV!Q!K(platform:
s<SOH>0 GV!Q!K'version[
```

Only if no character string is received, will the PC break out of the script and generate an error.

2. If the response to the version query from the LIS is anything other than MS-DOS Kermit Version 3.14, the PC will send the following commands:

```
s<SOH>5 GV!Q!K, files(*.dnl)Y
s<SOH>3 GV!Q!K*nextfile( ) J
```

Refer to the Kermit 95 for Windows protocol logs for the expected response.

3. If the response to the version query from the LIS is MS-DOS Kermit Version 3.14, the PC will send the following command:

```
s<SOH>- GD ( /B *.dnlG
```

Refer to the MS-DOS Kermit Version 3.14 protocol logs starting on page 16 for the expected response.

Innova Software contain a KERMIT client

To Install the KERMIT Client:

- [1] Choose KERMIT protocol Setup / Data / LIS transfert.
- [2] Choose the serial port in Setup / general / connections.
- [3] Modify the files **C:\OCD\AV2G\KER\DOWNLOAD.COMD** and **C:\OCD\AV2G\KER\UPLOAD.COMD**: put the correct parameters for the parity, byte size, stop bits and speed in lines
 - set PARITY="odd"
 - set BYTESIZE="7"
 - set STOPBITS="1"
 - set SPEED=38400

LIS -> Innova

- ask the KERMIT server if there is files with the file pattern defined in Setup / Data / LIS transfert (eg *.DLN).
- Innova put the files in the folder C:\OCD\AV2G\KER\DLN,
- delete files on the LIS,
- copy the file to a trace file in the folder C:\OCD\AV2G\KER\TRACES (DNL<YYYYMMDDHHMMSS>.TRA),
- import orders
- rename the file with a BAK extension.

Innova -> LIS

The name of export files and query files are defined in Setup / Data / LIS transfert. The character * means date and time in (YYYYMMDDHHMMSS) format. Several characters "?" means an increment, e.g. if you have "LIS???.upl" the files are named LIS001.upl to LIS999.upl.

Innova

- verify if a file with the same name exists on the KERMIT server, if yes, there is an error
- create the file in the folder C:\OCD\AV2G\KER\UPL
- copy the file to a trace file in the folder C:\OCD\AV2G\KER\TRACES (UPL<YYYYMMDDHHMMSS>.TRA or QU<YYYYMMDDHHMMSS>.TRA),
- send the file to the server KERMIT with the name LIS.TMP,
- rename the file on the server KERMIT with the real name
- delete the file in the folder C:\OCD\AV2G\KER\UPL

Innova deletes all the BAK files and trace files older than one week

Flow of Data From Download to Testing to Results to Upload

The LIS creates " profile request" files according to the format published in this document. These files are then placed in an appropriate "download" directory on the LIS platform. The exact location of the directory is up to the LIS administrator(s). The LIS then starts their side of the Kermit connection. Note that they could (and should) leave this running continuously.

At some later time Innova will access the LIS "download" location via the Kermit connection and will copy all "profile request" files to the PC platform. It will then delete all " profile request" files from the LIS. Innova then parses each test request file in turn and either accepts all the requests in the file or rejects the entire file.

Should a profile request file be accepted, the profile contained within are loaded into the " Work List" and in the "Samples not loaded" screens.

Troubleshooting

Kermit Protocol

- Ensure that the cable connecting the PC to the LIS is a “Null Modem” type cable. This means that pin 2 of one cable end is connected to pin 3 at the other cable end.
- Ensure the cable is connected at both ends and the ports are both active.
- Ensure that Kermit works properly outside of the Innova application.
- Ensure that the parameters are set properly in the files **C:\OCD\AV2G\KER\DOWNLOAD.CMD** and **C:\OCD\AV2G\KER\UPLOAD.CMD**. An OCD field service engineer can make sure these are set correctly.
- Ensure that the LIS Kermit supports the list of command and settings included in the “LIS Commands from Innova” section on page 7 of this LIS Guide.
- Ensure that the speed setting of the LIS matches that of the PC.
- Ensure that the active directory on the LIS is the directory where upload/download files should be placed. The Innova application will upload files to the default directory on the server.
- "set send timeout 1" and "set receive timeout 1" in the LIS parameter setting script may have to be changed to a higher value "2, 3, 4 or 5" in old systems.
- When creating a download profile request file for a CENTBLOOD/PLASMA two-tube sample, specify the sample type as PACKEDCELLS/PLASMA instead of CENTBLOOD/PLASMA. Otherwise, the test request will be rejected by the PC.

While Running the Innova Application

Malfunction	Recommended Action
Requests are not getting parsed	Ensure that test profile names are correct
Requests are not getting downloaded	<ol style="list-style-type: none"> 1. Ensure the pattern of the download file matches the format specification. 2. Ensure that the auto download period isn't longer than expected.
Results are not being uploaded	Ensure AutoUpload period isn't longer than expected

Section 3: Data Format

All the formats (except AutoVue System First Generation) are based on the ASTM Protocol 1394-97

AutoVue System (First Generation)

Allowable Profiles and Sample Types

In Setup, Testing, Profile names all the profiles that can be requested by the LIS are listed . In addition to that "Save Profile " can also be downloaded from the LIS and run on the PC. The cassettes used in "Save Profile " will be saved in the drawer on the instrument. Any download file containing a profile that does not appear in this screen , will be rejected.

The Sample Types are defined on page 41.

Specification for Patient Gender in Download Files

LIS systems that generate test request (or download) files must correctly specify patient gender in the "P" record according to the local language. For instance, in Spanish, the character for Male is "H" for Hombre not "M". The following is an example of a proper "P" record for a male patient for an Innova running where Spanish is the local language.

```
H|^&||LIS|||||1|20000630110137
```

```
.  
.
```

```
other test requests
```

```
.  
.
```

```
P|1||H43K7||411-22-5864|Doe^John||19450603000000|H||||||||||||||||
```

```
O|1||10001^CENTBLOOD^^^|^^NA15-10^ABD Conf^|N|||||||^|||isusr|O|||||
```

```
.  
.
```

```
other test requests
```

```
.  
.
```

```
L|1|N
```

Language Related Issues

Sample Download File for English Software

```
H|^&||LIS|||||1|19980930110137
P|1||A11345||113-22-1554|Doun^Bob||1958092100000|M|||||||||||||
O|1||1535001^CENTBLOOD^^^NA04-44^ABO(FWD)/Rh-44^N|||||||isusr|||||
```

Sample Download File for Spanish Software

```
H|^&||LIS|||||1|19980930110137
P|1||A11345||113-22-1554|Doun^Bob||1958092100000|H|||||||||||||
O|1||1535001^CENTBLOOD^^^NA04-44^ABO(HEM)/Rh-44^N|||||||isusr|||||
```

Guidelines For Creating Download Files for Translated Software

1. Header Record: Last field "Request Date" field date format should be "YYYYMMDDHHMMSS".
2. Patient Record: Patient Birth Date or Donation Source Field date format should be "YYYYMMDD".
3. Patient Record: Patient Sex Field should be translated to the corresponding language. Ex: In Spanish language patient sex field for Male should be entered as "H" for Hombre and M is for Mujer (female).
4. Order Record: Patient tube/Donation tube sample type should be always in English in all languages (Ex: CENTBLOOD, Serum or plasma).

Document Notation

In this section, several standards are used to specify the upload/download format.

Upload Format

Fields containing text are specified by	T
Fields containing a date are specified by	D
Fields containing a number are specified by	I
Empty fields are specified by	X
Fields marked unused indicate Innova does not supply any information for this field.	
Fields containing any other value are to be taken as a literal.	

Download Format

Fields requiring text are specified by	T
Fields requiring a date are specified by	D
Fields requiring a number are specified by	I
Fields that must be empty are specified by	X
Fields that can optionally have text are specified by	t
Fields that can optionally have a date are specified by	d
Fields that can optionally have a number are specified by	i
Fields marked must be empty cannot contain any data.	
Fields containing any other value are to be taken as a literal.	

Date Format

Dates must be expressed as YYYYMMDDHHMMSS, following the American Society of Testing and Materials (ASTM) convention.

Download File Format

Download File Name

The test request file or download file name must be defined in the SETUP menu.

Download File Size

The PC can handle hundreds of request orders sent down from the LIS at one time in a single file or in multiple files; however, it is recommended to limit the number of orders to one hundred (100) at one time to maintain a desired PC response time.

General Rules



Caution

A safeguard must be built in the LIS to prevent the reuse of the same patient sample barcode with another patient in a download file while the first patient's test request downloaded previously from the LIS is still in the LTRS screen or on the PC main screen.

- The file cannot contain any Quality Control (QC) tests or profiles.
 - The file must conform to the general ASTM E 1394 - 91 specification.
-

Record Format

Header Record Format

Header Record Pattern

H|^&|X|X|T|X|X|X|X|X|X|I|D

Field Specification

Field	Format	Status	Description
1	H		
2	4 char	Required	Field delimiters
5		Optional	Sender Name
14	YYYYMMDDHHMNSS	Optional	Date of the message

All other fields are ignored.

N/A

Notes:

The terminator record for a download file will always be as specified in Section 9.7.1.

Upload File Format

The Innova Personal Computer (PC) creates upload files containing information about the tests that were completed by the PC. Additionally, any profile requested by the LIS that was deleted before being run or was aborted while running will also be included in the upload file.

Only upload files conforming to the ASTM specification E 1394-91 will be uploaded to the LIS.

The PC will upload files that contain results of tests that have run to completion as well as tests that were aborted or deleted by the PC. The PC attempts to return some information for all requests made by the LIS.

- If a sample is aborted or deleted after batch definition, it will be returned with a -999 value for the result rows. Refer to Figure 1 Upload File - Records Deleted After Batch Definition on page 39.
- If a request is deleted in the LIS Test Request Review Screen (LTRS), it will be returned without any result rows and one of three possible reason codes in the order record. Refer to Figure 2 Sample Upload File - Records Deleted from the LTRS.

X2 in the order row indicates that the operator deleted the request from the LTRS.

Record Format

Header Record Format

Header Record Pattern

H|\^&'|X|X|T^T^T^T^T|X|X|X|X|X|T|I|D

Field Specification

Field	Format	Description
1	H	
2	\^&	
5.1	OCD	
5.2	AV2G	Name of the software
5.3	1.0	Version of the software
5.4	1.0	Version of the software
5.5	1.0	Version of the software
12	P	Processing ID
13	1	Current Version
14	YYYYMMDDHHMMSS	Current Date/Time

Result Record Format**Result or Interpretation Record Pattern**

R|I|X^X^X^T^T^T|T^T^T^T^T^T^T|X|-1^50|X|X|F|X|X|^ T|X|D|X

Field Specification for Results

Field	Format	Description
1	R	
2	Numeric	Number of the well
3.4		Program ID
3.5		Program Name
3.6	4.2	Version
4		Result
6.1	-1	Low Raw Grade
6.2	50	HighRaw Grade
9	F	Result status: F final result, ,
11.2		Operator who accept the test
13	YYYYMMDDHHMMSS	Date/time of result

Field Specification for Interpretation

Field	Format	Description
1	R	
2	99	Number of the well
3.4		Program ID
3.5		Program Name
3.6	4.2	Version
4.1		Interpretation Group
4.2		Interpretation Type
4.3		Interpretation AB Screen
4.4		Interpretation Rh/Pheno
4.5		Interpretation Kell
4.6		Interpretation DAT
4.7		Interpretation XM
6.1	-1	Low Raw Grade
6.2	50	HighRaw Grade
9	F	Result status: F final result, ,
11.2		Operator who accept the test
13	YYYYMMDDHHMMSS	Date/time of result

Notes:

- Multiple result rows may exist for each patient/order pair. A result row will exist containing the raw results of each well used in the test. Only one interpretation row will be included for each patient/order pair.
- Raw Well Result will be 5, 10, 20, 30 or 40. In case of an error this field may be populated with one of the values in the "Well Result".

Condition	Well Result	Well Result Value displayed on PC result screens
Feature Not Extracted	-85	"*FNE"
Euresys Function Error	-86	"*EFE"
Wrong Scan Position	-87	"*WSP"
Column Not Found	-90	"*CNF"
Wrong Liquid Level	-95	"*< LIQ"
Incompatible Liquid Level	-96	"INCOM"
Light Too Low	-100	"*< LT"
Light Too High	-101	"*> LT"
Hemolysis or Icteric Reactions	-110	"H/I"
Empty Column	-111	"*E C"
Too Few Cells	-112	"*< RBC"
Too Many Cells	-113	"*> RBC"
Features Out of Range	-114	"*FOOR"
Mixed Field or Fibrin	-115	"MF"
Indeterminate	-116	"INDET"
Fibrin or Top Line	-117	"F/TL"
Bubble Detected	-118	"Bubl?"
Test Aborted or Deleted	-999	N/A

Terminator Record Format**Terminator Pattern**

L|1|N

Field Specifications

N/A Notes

ASTM

Download ASTM (LIS -> Innova)

The file can contain several packets:

A packet is constituted of one record H (header) , one or several patient sections and one record L.

A patient section is constituted of one record P (patient) and one or several record O (order).

There is one record O for each sample.

The file can include a C record (comment): the content of the record is ignored.

A H record must be followed by a P record.

A P record must be followed by a O record.

An O record can be followed by an O record, a P record or a L record.

A L record can be followed by a H record or the end of file.

For example: HPOPOOPOCPOL

The description of each record is defined in the below sections. An ASTM field not listed must be considered as "not use", they will be ignored.

Header Record Format

Field	Format	Status	Description
1	H		
2	4 char	Required	Field delimiters
5		Optional	Sender Name
14	YYYYMMDDHHMNSS	Optional	Date of the message

Patient Record Format

Field	Format	Status	Description
1	P		
3	Max 24 char	Optional	Patient Id, if present, the unique identifier for the patient
5.1		Optional	Patient National ID
5.2		Optional	Medical record
5.3		Optional	Other Id
6.1		Optional	Patient last name
6.2		Optional	Patient first name
7		Optional	Mother's maiden
8	'YYYYMMDD or YYYYMMDDHHMNSS	Optional	Patient birth date
9	M, F or U (default)	Optional	Patient sex

If the field 3 (Patient Id) is empty, all the others fields must be empty

Order Record Format

Field	Format	Status	Description
1	O		
3	Max 22 char	Required	Specimen ID: sample ID
5		Required	Test ID: profiles orders (can be repeated) must be profiles known by the instrument (see note 1 for XM)
6	S or N (default)	Optional	Priority
7	YYYYMMDDHHMNS S	Optional	Requested / ordered Date time
12	C, A or N (default)	Optional	Action code, C: cancel the described order, A: Add profiles on a known sample, N: new profiles on an unknown sample
16		Required	Sample type, must be a sample type known by the instrument
19	S or empty	Optional	User field1 if S: save all the cassettes for all the profiles

 Note

For XM: if the profile contain XM program (in this case, only one profile can be ordered)

Field	Format	Status	Description
5.3	Max 22 char	Optional	First donor ID
5.4		Required if 5.3	Sample type of the first donor ID
5.(2*n + 1)	Max 22 char	Optional	n-st donor ID
5.(2*n + 2)		Required if 5.3.(2*n+1)	Sample type of the n-st donor ID

Terminator Record Format

Field	Format	Status	Description
1	L		

Result Format ASTM

A Result packet is constituted of one record H, one or several patient section and one record L.

A patient section is constituted of one record P and one profile section for each profile.

A profile packet is constituted of one record O and one record R for each analysis present in the profile.

The description of each record is defined in the below sections. An ASTM field not listed must be considered as "not use", they will be empty.

Header Record Format: 14 fields

Field	Format	Description
1	H	
2	\^&	
5.1	OCD	
5.2		Name of the software
5.3		Version of the software
5.4		Instrument ID
12	P	
13	1	
14	YYYYMMDDHHMMSS	Date and time

Patient Record Format: 35 fields

Field	Format	Description
1	P	
2	Numeric	Sequence number in the result packet (start with 1)
3		Patient Id
5.1		Patient National ID
5.2		Medical record
5.3		Other Id
6.1		Patient last name
6.2		Patient first name
7		Mother's maiden
8	YYYYMMDDHHMMSS	Patient birth date
9	M, F or U (default)	Sex

The components are put in the line if they are not empty

Order Record Format: 31 fields

Field	Format	Description
1	O	
2	Numeric	Sequence number in the patient section (start with 1)
3		Sample ID
5		Test ID: profile
6	S or N	Priority: S for Stat, N for Normal
7	YYYYMMDDHHMNSS	Requested / ordered Date time
16		Sample type
20		User Field N° 2: comment if several comments, the repeat sign is used
23	YYYYMMDDHHMNSS	Date Time of profile validation
26	F or X	Report type: F: final results, X: order canceled on the instrument

Result Record Format: 14 fields

Field	Format	Description
1	R	
2	Numeric	Sequence number in the profile section (start with 1)
3		Name of Analysis
4		Result
7	M or empty	Result flag: M: the result have been enter manually or one of well results have been modified manually
9	F, R or X	Result status: F final result, R repeat result, X test canceled or in error
11		Operator who accepts the test
13	YYYYMMDDHHMMSS	Date/time of result
14		Instrument ID

For Xmatch, one line R per reaction and the field 3.2 contain the donor ID and the result (field 4.1) is "CMP" or "INCMP" (compatible or non compatible, language dependent).

Terminator Record Format

Field	Format	Status	Description
1	L		

ASTM Enhanced

Result Format ASTM Enhanced

Same format as ASTM, but after each result Record, there is one record M (manufacturer) for each well result utilized for the result.

Manufacturer Record Format: 6 fields

Field	Format	Description
1	M	
2	Numeric	Sequence number in the result section (start with 1)
3		Name of the test of the well - For Antibody Identification: RBC id, - For Xmatch: donor Id
4.1		Type of the cassette
4.2		Number of the well
4.3		Number of the cassette
4.4		Lot number of the cassette
4.5		Date of expiration of the cassette
4.6		Cassette Image Filename
5.1		Name of the reagent
5.2		Lot number of the reagent
5.3		Expiration date of the lot
6.1		Final result or errors (see below),
6.2	M or A	Manual correction Flag M: manual correction A: automatic
6.3		Read result or error
6.4		Operator Id who made the correction

Field 5 uses the repeat sign if several reagents are used for this well and cassette.

Results or error

Grade	Meaning
0	"0" reaction
5	"(+)" reaction
10	"1+" reaction
20	"2+" reaction
30	"3+" reaction
40	"4+" reaction
-90	Well not found
-95	Wrong liquid level
-100	Light too low
-101	Light too high
-110	Hemolysis or Icteric reactions
-111	Empty well

Grade	Meaning
-112	Few cells
-113	Too many cells
-114	Features out of range
-115	Mixed field or Fibrin (for forward grouping test)
-116	Indeterminate reaction
-117	Top-line or fibrin (for reverse and screening test)
-118	Bubble detected in the column

Query

Query Format

If Innova is defined to work in 'Query mode', when a sample is entered in the worklist without any profile or program, Innova sends a Query packet to the LIS. The LIS will send a normal download file.

A query packet contains one record H, one or several record Q and one record L.

The description of each record is defined in the sections below. An ASTM field not listed must be considered as "not use", they will be empty

Header Record Format: 14 fields

Field	Format	Description
1	H	
2	\^&	
5.1	OCD	
5.2		Name of the software
5.3		Version of the software
5.4		Instrument ID
12	P	
13	1	
14	YYYYMMDDHHMMSS	Date and time

Query Record Format: 13 fields

Field	Format	Description
1	Q	
2	Numeric	Sequence number (start with 1)
3.2		Sample ID
13	O	

Terminator Record Format

Field	Format	Status	Description
1	L		

Section 4: List of Elements

Sample Types:

The authorized sample types are : "CENTBLOOD", "PACKEDCELLS", "SERUM", "PLASMA", "3CELLS" "0.8CELLS" .

Analysis:

The list of analysis is : ABO , Rh, Pheno, Kell, ABSer, Auto, IgG, Poly, C3, XM, Ident and BRC.

Section 5: Examples

File Samples AutoVue System (First Generation)

Sample Upload File

Within the Upload file, information about deleted or aborted tests is expressed differently depending on where the test was deleted.

Figure 1 shows -999 values for tests aborted or deleted. Figure 2 shows the X2 codes included in the file for tests deleted.

Figure 1. Sample Upload File - Records Deleted

```
H|\^&|||OCD^Innova^4.1GB^2.4^1.7|||||P|1|19990922021818
P|1||A2345||123-45-6789|Burr^Bree||19601111|||||
O|1||1535120^\^|^^^NA12-44^ABO (FWD) -44^4.2|||||^^|990922-003
BB156.DNL|biovue|R||19990922021700||F|||||
R|1|^NA12-44^ABO (FWD) -44^4.2|-999||-1^50||F|^biovue||19990922021700|
R|2|^NA12-44^ABO (FWD) -44^4.2|-999||-1^50||F|^biovue||19990922021700|
R|3|^NA12-44^ABO (FWD) -44^4.2|-999||-1^50||F|^biovue||19990922021700|
R|99|^NA12-44^ABO (FWD) -44^4.2|^NA12-44^ABO (FWD) -44^4.2|-1^50||F|^biovue||19990922021700|
P|2||B3456||234-56-7890|Smith^John||19701212|||||
O|2||1535121^\^|^^^NA12-44^ABO (FWD) -44^4.2|||||^^|990922-003
BB156.DNL|biovue|A||19990922021700||F|||||
R|1|^NA12-44^ABO (FWD) -44^4.2|-111||-1^50||F|^biovue||19990922021700|
R|2|^NA12-44^ABO (FWD) -44^4.2|-111||-1^50||F|^biovue||19990922021700|
R|3|^NA12-44^ABO (FWD) -44^4.2|-111||-1^50||F|^biovue||19990922021700|
R|6|^NA12-44^ABO (FWD) -44^4.2|-111||-1^50||F|^biovue||19990922021700|
R|99|^NA12-44^ABO (FWD) -44^4.2|DSCR^^^NA12-44^ABO (FWD) -44^4.2|-1^50||F|^biovue||19990922021700|
P|3||C4567||456-78-9012|Jones^Mary||19721010|||||
O|3||1535122^\^|^^^NA12-44^ABO (FWD) -44^4.2|||||^^|990922-003
BB156.DNL|biovue|R||19990922020800||F|||||
R|1|^NA12-44^ABO (FWD) -44^4.2|-999||-1^50||F|^biovue||19990922020800|
R|2|^NA12-44^ABO (FWD) -44^4.2|-999||-1^50||F|^biovue||19990922020800|
R|3|^NA12-44^ABO (FWD) -44^4.2|-999||-1^50||F|^biovue||19990922020800|
R|99|^NA12-44^ABO (FWD) -44^4.2|^NA12-44^ABO (FWD) -44^4.2|-1^50||F|^biovue||19990922020800|
L|1|N
```

Figure 2. Sample Upload File - Records Deleted

```
H|\^&|||OCD^Innova^4.1GB^2.4^1.7|||||P|1|19990922031412
P|1||B2356||123-45-6789|Andrews^Jack|||||
O|1||1510001^\^|^^^NX05-66^IS XM Rvs^|||||^^|BB154-4.DNL|???|X2|
P|2||B6537||135-79-2468|Douglas^Mary|||||
O|2||1510002^\^|^^^NX05-66^IS XM Rvs^|||||^^|BB154-4.DNL|???|X2|
P|3||A2345||123-45-6789|Burr^Bree|||||
O|3||1535120^\^|^^^NA12-44^ABO (FWD) -44^4.2|||||^^|BB156.DNL|???|X2|
L|1|N
```

Sample Download File

Figure 3. Sample Download File

```
H|\^&|||LIS|||||1|19980930110137
P|1||A12345||123-22-5554|Smith^John||19580911000000|M|||||
O|1||1540115^CENTBLOOD^^^ Profile 1^S|||||^lisusr|||||
P|1||A12345||123-22-5554|Jones^John||19580911000000|M|||||
O|1||1563017^CENTBLOOD^^^ Profile 2 ^N|||||^lisusr|||||
P|1||H43JK7||411-22-5864|Johnson^Fred||19450603000000|||||
O|1||1501218^PACKEDCELLS^1556155^PLASMA^^^ S ^ Profile 3 ^N|||||^lisusr|0|||||
P|1||DonID||DonSource^||19990719000000|||||
O|1||^^^1540124^PACKEDCELLS^1563018^PLASMA|^ Profile 1^N|||||^lisusr|0|||||
L|1|N
```

Sample Download Sample Donation File

➤ Note

This sample file contains one patient record and one donation record to clearly show where to position the sample ID for a patient and a donation in the O record.

Figure 4. Sample Download Donation Sample File

```
H|\^&|||LIS|||||1|19990804120000
P|1||B2345||123-45-6789|Smith^John||19601111000000|M
O|1||1530000^CENTBLOOD^^\^^|^^^ Profile
A^|N|||||^^|lisusr|||||
P|1||D1234|||BloodCenter^||19990821000000|M|||||
O|1||^^\1530002^CENTBLOOD^^|^^^ Profile
A^|N|||||^^|lisusr|0|||||
L|1|N
```

Download ASTM

H\^&||LIS|||||1|20030227162610
 P|1|007||audry^Pascal||19560702000000|M||||||
 O|1|44||abo-d|N||||N|||CENTBLOOD||||||
 L|1|N

With XM

H\^&||LIS|||||1|20030227162610
 P|1|007||audry^Pascal||19560702000000|M||||||
 O|1|1000||xm^3^2000^CENTBLOOD^2001^CENTBLOOD^2002^CENTBLOO
 D|N||||N|||CENTBLOOD||ITM||||||
 L|1|N

Query

H\^&||OCD^AV2G^^machina|||||P|1|20040227115210
 Q|1|^11|||||O
 Q|1|^22|||||O
 L

Result ASTM

H\^&||OCD^AV2G^^ machina |||||P|1|20040213152045
 P|1|007||audry^Pascal||19560702000000|M||||||
 O|1|44||abo-d|N|20040331162803|||||CENTBLOOD|||||20040402162711||F|||
 R|1|ABO|B||M||R||user||20040331163053|machina
 R|2|Rh|NEG||M||R||user||20040331163053|machina
 L

With XM

H\^&||OCD^AV2G^1.0^ machina |||||P|1|20040422143840
 P|1|007||AUDRY^Pascal||19560702000000|U||||||
 O|1|1000||xm|N|20040422143635|||||CENTBLOOD|||||20040422143658||F|||
 R|1|XM^2000|CMP||||R||user||20040422143658|machina
 R|2|XM^2001|INCMP||||R||user||20040422143658|machina
 R|3|XM^2002|INCMP||||R||user||20040422143658|machina
 L

Result ASTM Enhanced

H\^&|||OCD^AV2G^^machina|||||P|1|20040317151631
 P|1|007|||audry^Pascal||19560702000000|M||||||||||||||||
 O|1|44||abo-d|N|20040331162803|||||CENTBLOOD|||||20040402162711||F||||
 R|1|ABO|B||M||R|| user ||20040331163053|machina
 M|1|Anti-A|ABO-Rh/Reverse^1^000016^36541^20240318235959^01234567_001.bmp||0^A
 M|2|Anti-B|ABO-Rh/Reverse^2^000016^36541^20240318235959^01234567_001.bmp ||40^A
 M|3|Ctrl|ABO-Rh/Reverse^4^000016^36541^20240318235959^01234567_001.bmp ||40^A
 M|4|A1-Cells|Reverse diluent^1^000017^22225^20240318235959^01234567_001.bmp |A1
 Cells^1111^20050425235959|0^A
 M|5|A2-Cells|Reverse diluent^2^000017^22225^20240318235959^01234567_001.bmp |A2
 Cells^1111^20050425235959|40^A
 M|6|B-Cells|Reverse diluent^3^000017^22225^20240318235959^01234567_001.bmp |B
 Cells^1111^20050425235959|40^A
 M|7|O-Cells|Reverse diluent^4^000017^22225^20240318235959^01234567_001.bmp |O
 Cells^1111^20050425235959|40^A
 R|2|Rh|NEG||M||R||user||20040331163053|machina
 M|1|Anti-D|ABO-Rh/Reverse^3^000016^36541^20240318235959^01234567_001.bmp ||40^A
 M|2|Ctrl|ABO-Rh/Reverse^4^000016^36541^20240318235959^01234567_001.bmp ||40^A
 LL
 With XM
 H\^&|||OCD^AV2G^1.0^machina |||||P|1|20040422143725
 P|1|007|||AUDRY^Pascal||19560702000000|U||||||||||||||||
 O|1|1000||XM|N|20040422143635|||||CENTBLOOD|||||20040422143658||F||||
 R|1|XM^2000|CMP|||||F||user||20040422143658|machina
 M|1|2000|AHG
 Polyspecific^1^000004^25869^20240409235959^01234567_001.bmp |BLISS^5555^20050626235959|0^A
 R|2|XM^2001|INCMP|||||F||user||20040422143658|machina
 M|1|2001|AHG
 Polyspecific^2^000004^25869^20240409235959^01234567_001.bmp |BLISS^5555^20050626235959|40^A
 R|3|XM^2002|INCMP|||||F||user||20040422143658|machina
 M|1|2002|AHG
 Polyspecific^3^000004^25869^20240409235959^01234567_001.bmp |BLISS^5555^20050626235959|40^A
 L

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