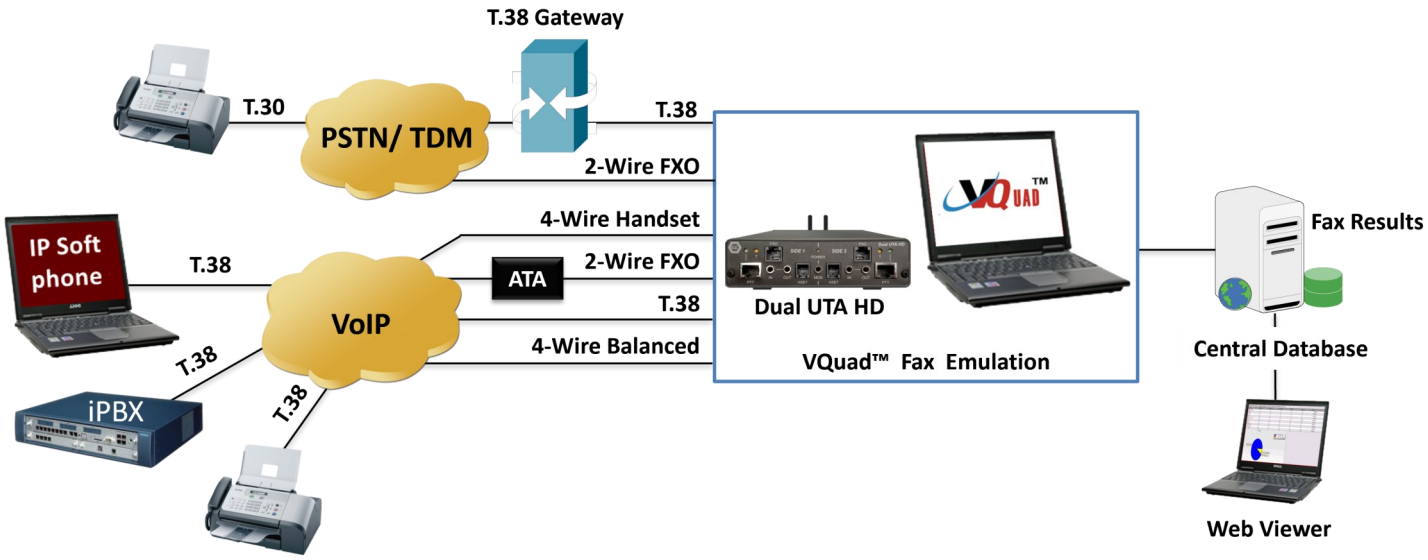
FAX Emulation using VQuad™



Overview

GL's VQuad™ software can send and receive up to 12 independent and simultaneous T.30 single or multiple page faxes using the Dual UTA HD hardware platform. The user can configure the transmit and receive fax rate from 2,400 bps to 33,600 bps with V.34 supported. Interfaces supported for fax generation include 2-Wire FXO and 4-Wire analog.

The VQuad™ software includes an easy-to-use graphical user interface for sending and receiving Fax calls. Furthermore, the VQuad™ software provides scripting capability for test automation. The VQuad™ software can be controlled remotely for added flexibility. VQuad™ Fax provides all pertinent real-time fax messaging with proper time sequences. One can follow the fax session from start to finish on both the send and receive sides.

VQuad™ also provides a summary for each fax (completed or failed along with results). VQuad™ provides all errors associated with each fax with proper time sequence and an understanding of what the error indicates. All results (errors and summary) can be sent automatically to a web-based dashboard, WebViewer™.

VQuad™ can automatically save the fax session (both East and West directions) to a PCM file. This file can be exported to GLInsight™ or GL Fax Demodulator/Decoder analysis software packages for further analysis of the fax session. GL's Fax Demodulator/Decoder can be configured for automated analysis.

GL's WebViewer™ provides access and display, in real time, to all results associated with VQuad™ including the Fax events, errors, and summary logs.

For more details, refer Fax Emulation using VQuad™ webpage.

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Main Features

- Supports up to 12 independent and simultaneous T.30 single or multiple page faxes with speeds up to 33,600 bps (V.34). Supports both transmit and receive fax emulation over 2-Wire FXO and 4-Wire Analog
- Logs fax events include messages, summary, and errors
- Auto save fax calls (both directions) to a PCM file for enhanced analysis using GLInsight™ or GL Fax Demodulator/Decoder
- Supports Graphical User Interface and scripting capability
- View all fax events/results/errors through a web browser
- Save all fax call detail records to a central database

FAX Tx/Rx Configuration

VQuad™ scripting provides the ability to both send and receive a fax session along with specifying necessary fax configuration settings. The settings include Max Transmit Rate and Min Receive Rate which can effectively restrict available fax sessions. The other configuration settings include:

- ECM (Error Correction mode) on / off option to automatically detect and correct errors
- RX Image Coding (receive fax only) options - MH (Modified Huffman), MR (Modified read), MMR (Modified Modified READ)
- Supported modem types include UnSpec, V27, V29, V17, and V34
- For the specified modem type, the Tx Rx rate as per ITU standards are automatically applied. Standard Tx and Rx rates ranges from 2400baud to 33600baud
- Auto saved fax (both east and west) to PCM file can be analyzed using GLInsight™ and GL Fax Extractor

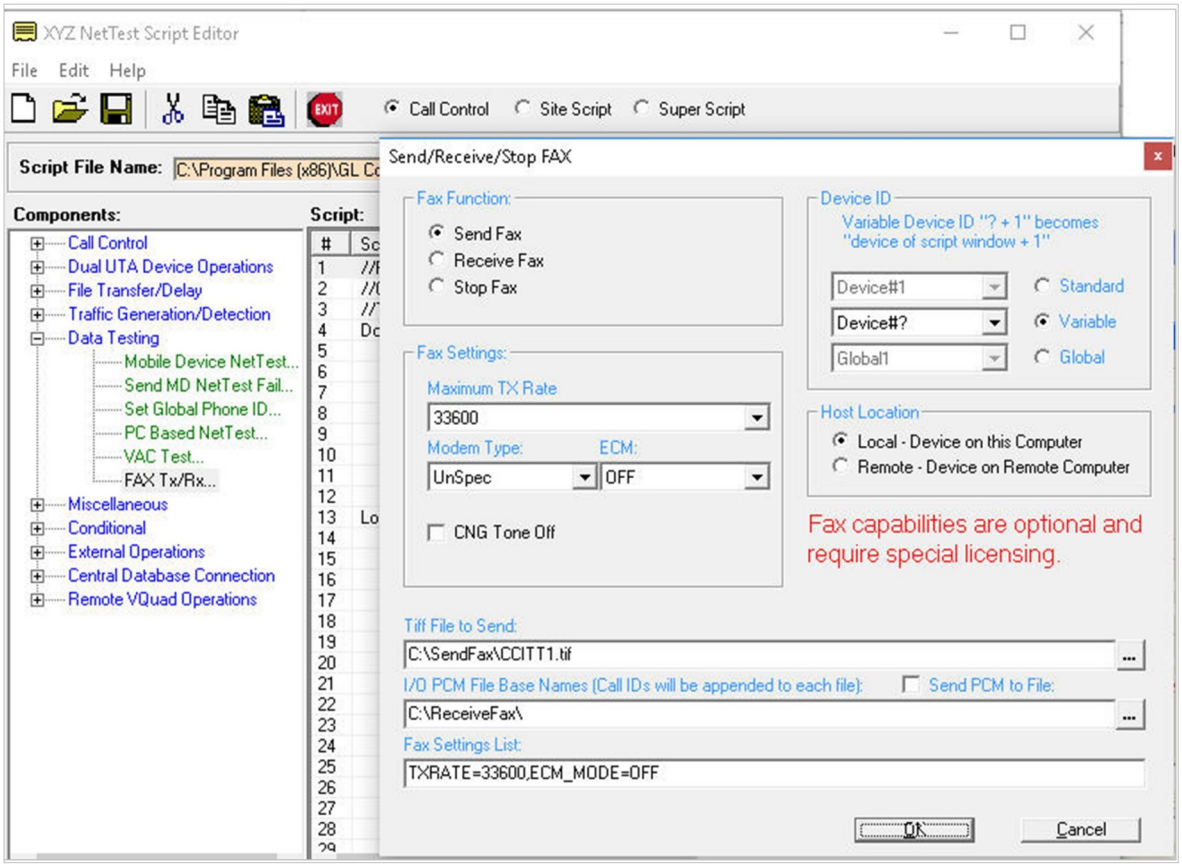


Figure: VQuad™ Fax Tx/Rx Configuration

VQuad™ FAX Events Log

The VQuad™ Fax Emulation includes three event screens, Fax Messages, Fax Summary and Fax Errors. The Fax Messages is shown in chronological order for simple understanding of the fax process. Multiple Fax Message screens can be displayed simultaneously thus showing full duplex fax sessions.

The **Fax Summary** includes one event per fax (Fax Send and Fax Receive) which shows both the initial settings and final settings upon fax completion (i.e. Fax Speed, Line Sent, Bad Lines, Pages Received). The Fax Summary also provides insight whether the fax was successful or the fax failed in which case an error will be generated.

The **Fax Error** screen provides all Fax Errors associated with the Fax Send/Receive. Additional information is provided for each Fax error in order to understand the cause of the error. All event screens can be saved to text file in real-time.

The **Fax Status** as shown on Fax Events screen displays Total Successful and Total Failed faxes for each VQuad™ device ID.

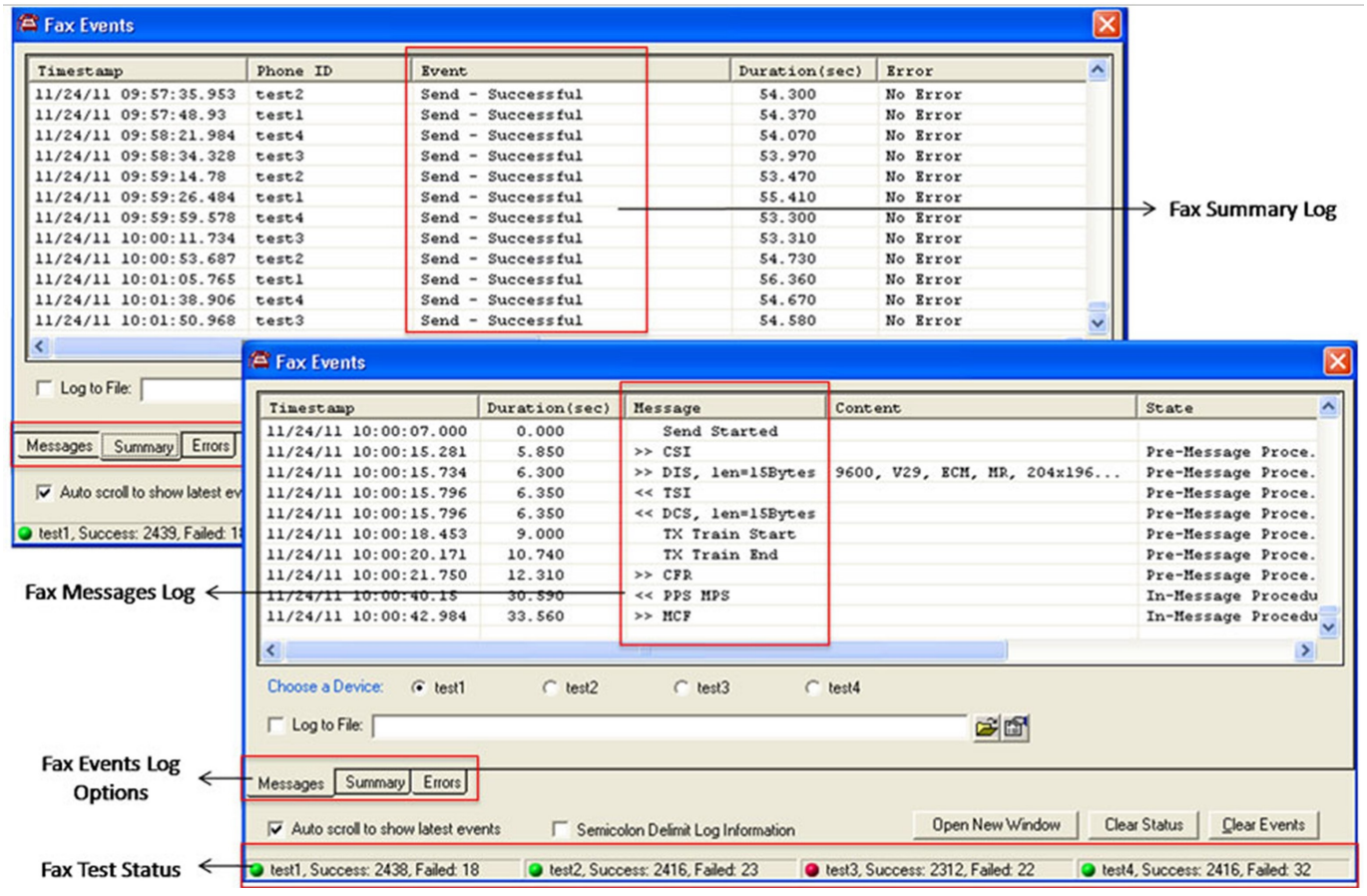


Figure: VQuad™ Fax Events Log

VQuad™ Remote Control

VQuad™ CLI and API is enhanced to support fax simulation (both Windows® and Linux). The VQuad™ Remote Access (Client) allows VQuad™ operations to be remotely controlled by one (or several) VQuad™ clients over a LAN, WAN, or Internet. Supported modem types include UnSpec, V27, V29, V17, and V34. For the specified modem type, the Tx Rx rate as per ITU standards are automatically applied. Standard Tx and Rx rates ranges from 2400baud to 33600baud.

The following table refers to Maximum Tx and Minimum Rx data transmission rates.

ITU Standard	Data Rates (bit/s)
V.27	2400 to 4800 bps
V.29	4800 to 9600 bps
V.17	7200 to 14400 bps
V.34	2400 to 33600 bps (incompatible with other modems)
Unspec	All the modem supporting the configured rate (tx/rx) will be used

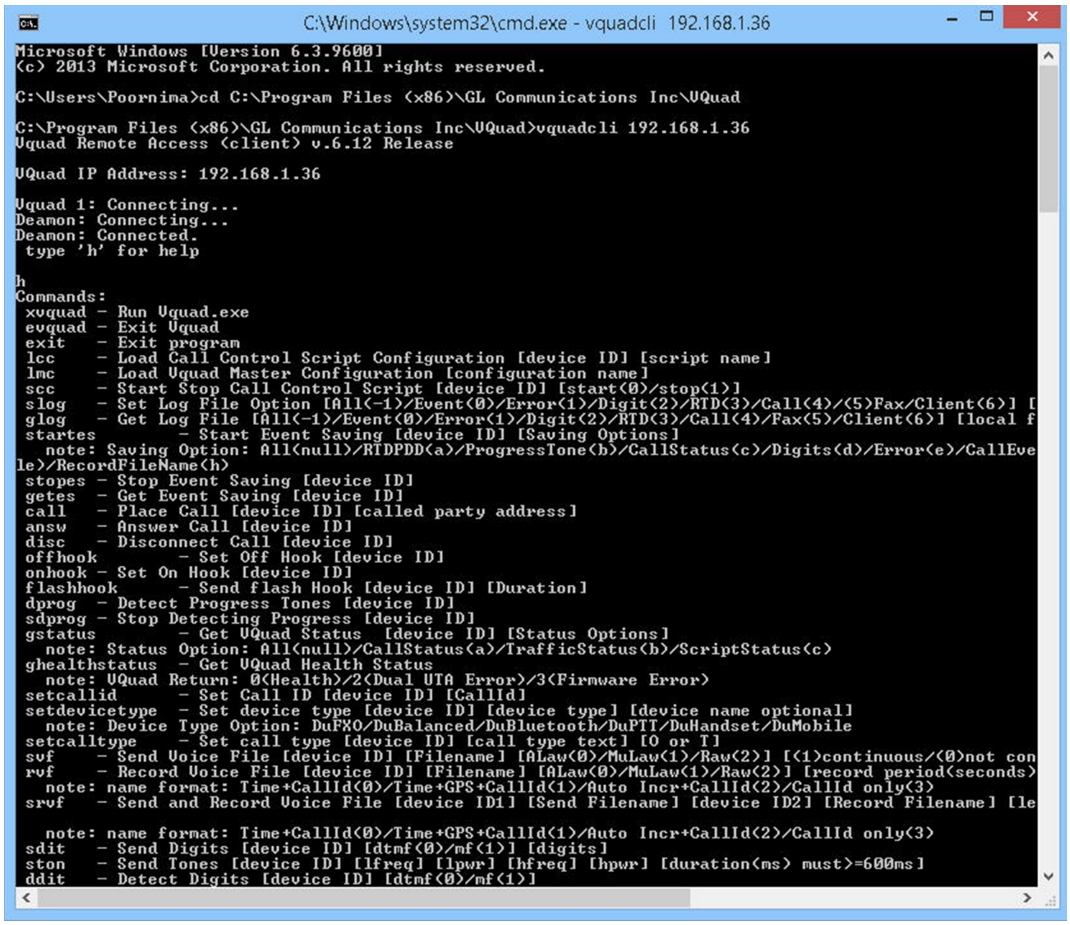
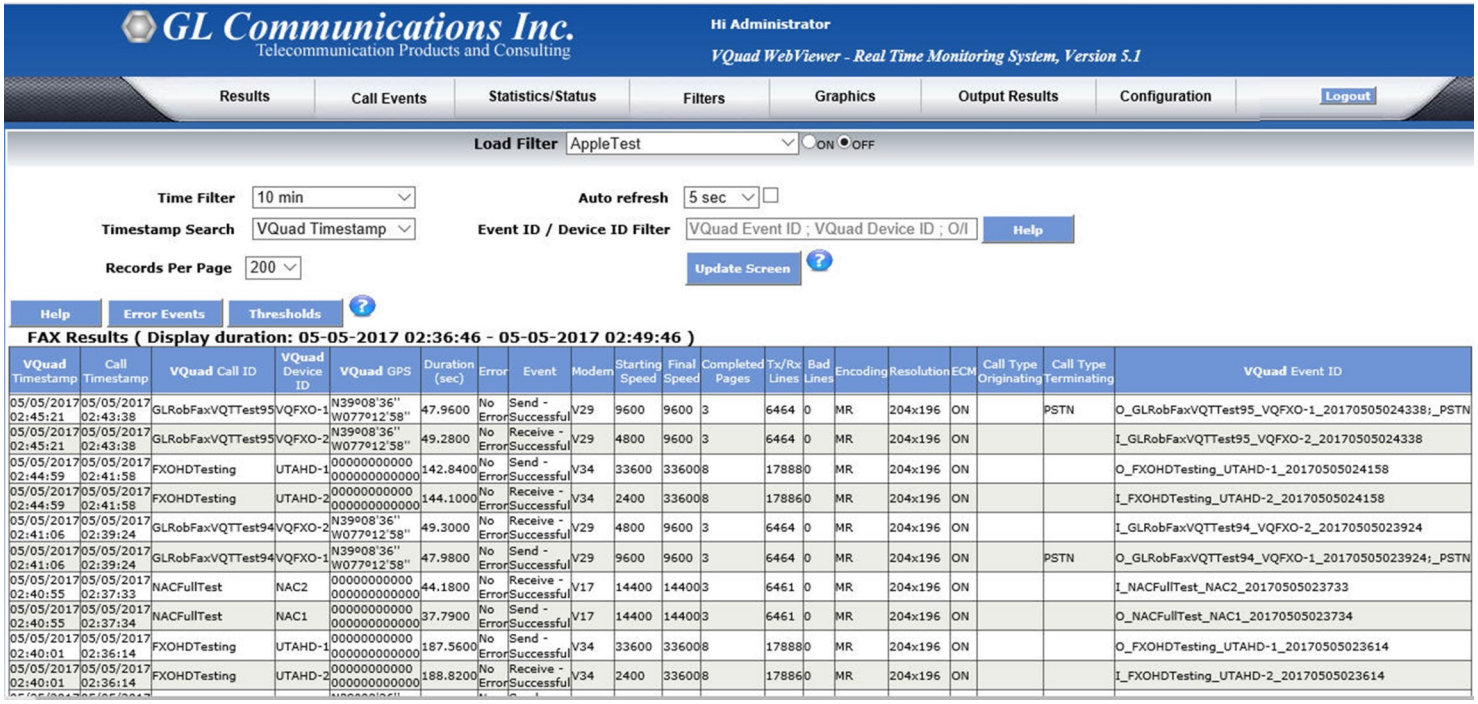


Figure: VQuad™ CLI (Windows)

Remote Client WebViewer™

The VQuad™ Fax emulation Summary and Error results can be sent to the WebViewer™ Central database. These events can be queried using the WebViewer™ web based browser. From the WebViewer™ one can filter the results based on specific Error, Starting or Ending speed, Completed pages, Tx/Rx Lines including Bad Lines, Resolution and ECM settings.

Various Fax results can be queried over web interface including VQuad Timestamp, Call Timestamp, VQuad Location, VQuad Phone ID, VQuad Lat/Long, Duration (sec), Error, Event, Modem, Starting Speed, Final Speed, Completed Pages, Tx/Rx lines, Bad Lines, Encoding, Resolution, ECM (Error Correction Mode), Call Type Originating, Call Type Terminating, and VQuad™ Call ID parameters.



VQuad Timestamp	Call Timestamp	VQuad Call ID	VQuad Device ID	VQuad GPS	Duration (sec)	Error	Event	Modem	Starting Speed	Final Speed	Completed Pages	Tx/Rx Lines	Bad Lines	Encoding	Resolution	ECM	Call Type Originating	Call Type Terminating	VQuad Event ID
05/05/2017 02:45:21	05/05/2017 02:43:38	GLRobFaxVQTTest95	VQFXO-1	N39°08'36" W077°12'58"	47.9600	No Error	Send - Successful	V29	9600	9600	3	6464	0	MR	204x196	ON		PSTN	O_GLRobFaxVQTTest95_VQFXO-1_20170505024338;_PSTN
05/05/2017 02:45:21	05/05/2017 02:43:38	GLRobFaxVQTTest95	VQFXO-2	N39°08'36" W077°12'58"	49.2800	No Error	Receive - Successful	V29	4800	9600	3	6464	0	MR	204x196	ON			I_GLRobFaxVQTTest95_VQFXO-2_20170505024338
05/05/2017 02:44:59	05/05/2017 02:41:58	FXOHDTesting	UTAHD-1	00000000000 000000000000	142.8400	No Error	Send - Successful	V34	33600	33600	8	17888	0	MR	204x196	ON			O_FXOHDTesting_UTAHD-1_20170505024158
05/05/2017 02:44:59	05/05/2017 02:41:58	FXOHDTesting	UTAHD-2	00000000000 000000000000	144.1000	No Error	Receive - Successful	V34	2400	33600	8	17886	0	MR	204x196	ON			I_FXOHDTesting_UTAHD-2_20170505024158
05/05/2017 02:41:06	05/05/2017 02:39:24	GLRobFaxVQTTest94	VQFXO-2	N39°08'36" W077°12'58"	49.3000	No Error	Receive - Successful	V29	4800	9600	3	6464	0	MR	204x196	ON			I_GLRobFaxVQTTest94_VQFXO-2_20170505023924
05/05/2017 02:41:06	05/05/2017 02:39:24	GLRobFaxVQTTest94	VQFXO-1	N39°08'36" W077°12'58"	47.9800	No Error	Send - Successful	V29	9600	9600	3	6464	0	MR	204x196	ON		PSTN	O_GLRobFaxVQTTest94_VQFXO-1_20170505023924;_PSTN
05/05/2017 02:40:55	05/05/2017 02:37:33	NACFullTest	NAC2	00000000000 000000000000	44.1800	No Error	Receive - Successful	V17	14400	14400	3	6461	0	MR	204x196	ON			I_NACFullTest_NAC2_20170505023733
05/05/2017 02:40:55	05/05/2017 02:37:34	NACFullTest	NAC1	00000000000 000000000000	37.7900	No Error	Send - Successful	V17	14400	14400	3	6461	0	MR	204x196	ON			O_NACFullTest_NAC1_20170505023734
05/05/2017 02:40:01	05/05/2017 02:36:14	FXOHDTesting	UTAHD-1	00000000000 000000000000	187.5600	No Error	Send - Successful	V34	33600	33600	8	17888	0	MR	204x196	ON			O_FXOHDTesting_UTAHD-1_20170505023614
05/05/2017 02:40:01	05/05/2017 02:36:14	FXOHDTesting	UTAHD-2	00000000000 000000000000	188.8200	No Error	Receive - Successful	V34	2400	33600	8	17886	0	MR	204x196	ON			I_FXOHDTesting_UTAHD-2_20170505023614

Figure: Remote Client WebViewer™

Buyer's Guide

Item No	Product Description
VQT022	VQuad™ Fax Emulation (2 simultaneous ports)
VQT022a	VQuad™ Fax Emulation (8 simultaneous ports)
VBA038	FaxScan™

Item No	Related Software
FXT001	GLInsight™ - Single Fax Analysis - TDM
FXT002	GLInsight™ - Single Fax Analysis - IP
VQT010	VQuad™ Software (Stand Alone)
VQT013	VQuad™ with SIP (VoIP) Call Control
VQT015	VQuad™ with T1 E1 Call Control
VQT040	VQuad™ WebViewer™

Item No	Related Hardware
VQT251	Dual UTA HD Next generation with FXO Wideband support

Note: PCs which include GL hardware/software require Intel or AMD processors for compliance.

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