# Agilent Technologies

## Telegra D – Fax Analyzer J3935A

Product Overview

**Telegra D – The world-wide standard for automated testing of fax systems, servers and networks carrying fax traffic.**

Telegra D is a notebook-sized fax analysis and call generation test system used to test IP fax systems, VoIP gateways, fax servers, fax machines, fax modem devices, and traditional and IP based fax networks. The system can monitor, record, and analyze calls between two fax devices or it can be programmed to act as a sending or receiving fax device with specific performance characteristics. The system is offered either as a single or dual port as well as single port monitor only solution, connecting via analog 2-wire FXO interfaces. Dual port Telegra D analyzers can also be used to perform end to end network quality and connectivity testing. Telegra D can easily be carried into the field for testing at a customer site using a laptop PC. Or it can be dropped off at any location for remote testing via modem or Internet connections. Connecting via a 10baseT cable, Telegra D can also be used in test labs controlled directly through any PC or LAN.

### Introduce new products and network services sooner

Telegra D helps you get products and services to market earlier with higher confidence. Find more problems faster by automating initial and regression testing. Locate subtle problems early in development or deployment when they are much less expensive to fix. Telegra D's comprehensive test capabilities enhance product and service quality, and reliability.

### Identify network problems before your customer does

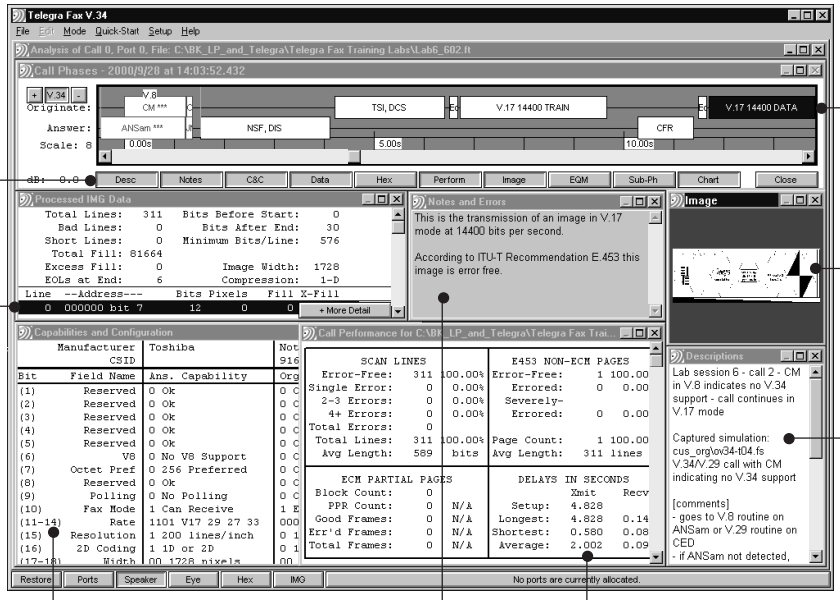
Increase customer satisfaction by constantly monitoring or actively measuring your network quality and reliability at various points to identify problems before your customer does. Analyze failed calls in detail and quickly identify the cause of the problem through easy to use graphical interfaces that provide all the information you need on one screen.

### Telegra D is a must, if you are:

- Designing fax machines, fax modem devices, fax cards, fax servers or systems
- Testing fax systems in QA or production test
- Providing customer support on fax products, systems, or networks
- Developing Internet fax servers or systems
- Developing cellular and satellite networks
- Maintaining international network operations
- Testing remote networks or servers
- Supporting fax transmission on local, wide area, Internet, cellular, satellite or mobile networks
- Testing line quality from the central office or customer premises
- Field testing from a laptop PC

## Key Features

- One or two port portable test system.
- Generation and analysis of traffic to test compliance with all ITU-T Group III standards: V.34, V.17, V.33, V.29, V.27, and V.21 modulation, T.30 and V.8 handshaking, and T.4 and T.6 image encoding.
- Origination, reception, or passive monitoring of fax calls.
- Statistical analysis of all calls to provide a quick review of the overall result as well as detailed analysis of selected individual calls.
- Explanation of highlighted errors in plain English with suggestions for design improvements.
- Easy to read graphical display of send- and receive-message sequences and timing. Message details can be reviewed by clicking any message.
- Presentation of fax device capabilities and call configurations in easy to read table format.
- Display of captured or transmitted fax images including compression codes.
- Comprehensive test script libraries and network test suites for interoperability testing, test automation, and regression testing.
- Editing tools to design your own scripts for special tests or customize provided scripts.
- Remote control of Telegra D ports by multiple client PCs over any LAN, WAN, the Internet, or via a modem connection.
- Telegra D systems can be distributed to remote sites or laboratories and remotely controlled via LAN or modem connections. Up to two users can access individual ports in the same system, and can use the complete set of test capabilities.
- Field testing from a laptop PC.
- Network performance monitoring.




Call protocol is displayed in a graphic browser. Click any message to view its contents in other windows.

Fax images can be shown full screen, zoomed, and rotated.

Buttons open up to nine types of analysis windows. Favorite windows configurations may be saved.

Description of the call is taken from the test script.

Image data is shown line by line. A button shows individual run length codes.

Fax device capabilities and call configurations from DIS/DCS messages are shown in table form.

Errors and violations of standards are highlighted in the call browser and described here in plain English with suggested improvements or corrective actions.

Overall call performance is shown for scan lines, non-ECM pages, ECM partial pages, and delays.

## Exercise complete control over fax protocols

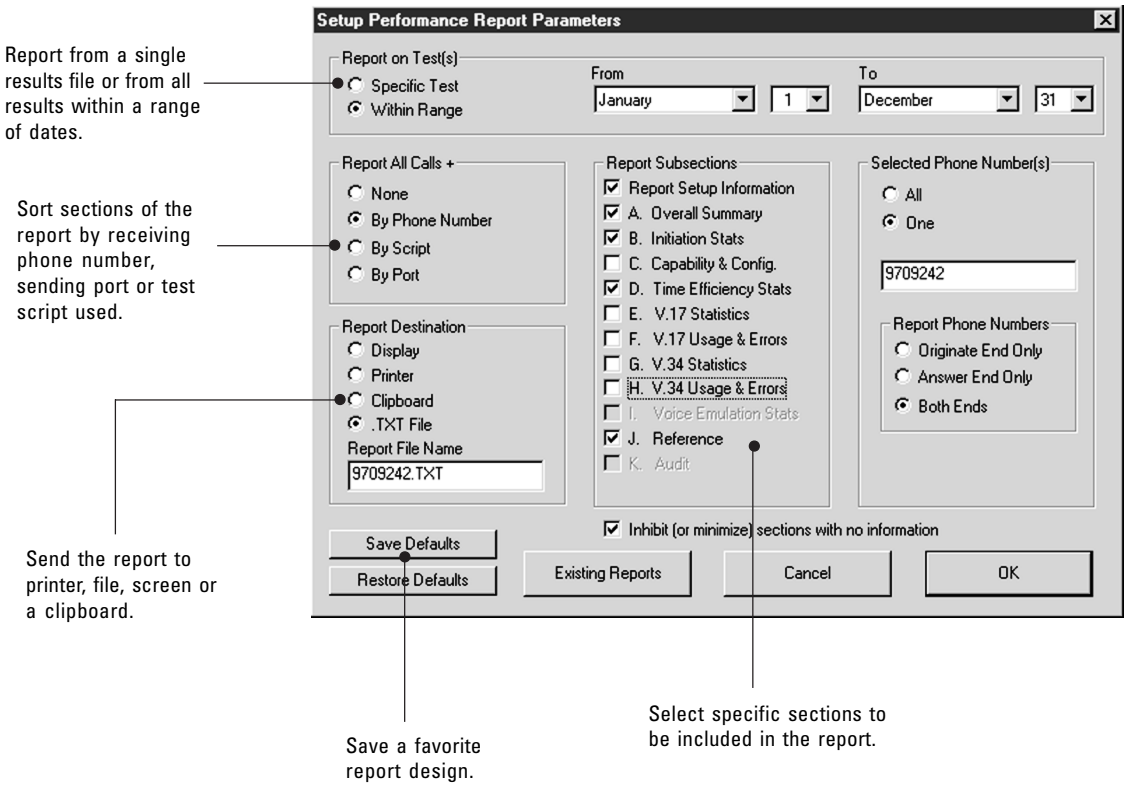
Telegra D products operate in two modes: call capture and call generation. Call capture monitors, records, and analyzes calls between two fax systems. Call generation automatically originates or answers calls using user designed test scripts or Agilent's Standard Test Library which can be modified by the user.

Telegra D supports all ITU-T Group III standards: V.34, V.17, V.33, V.29, V.27, and V.21 modulation, T.30 and V.8 handshaking, and T.4 and T.6 image encoding.

Telegra D features powerful regression testing. Fax calls with known behavior are captured and used as references. Subsequent calls are compared automatically with the references, and the differences noted. Calls may even be compared with multiple references at the same site.

## Review massive test results automatically

TelegraD performance reports give a complete statistical analysis of calls from selected result files, saving the user from having to review large amounts of data. The report design dialog box, shown below, shows the range of optional content.




Performance reports measure reliability and pinpoint areas of performance needing attention. Time efficiency statistics help to benchmark economic use of system and network resources. Regression test reference statistics measure how the system compares with a previous release or model behavior.

## Understand call failures completely

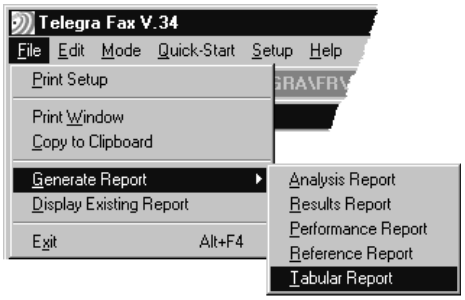
Fifteen years of continuous involvement with the design and testing of hundreds of fax models has resulted in a knowledge base of unequaled depth and detail. The Expert Notes and Errors window presents a detailed analysis of fax errors and other significant events in the call. In plain English, it explains how the call deviates from ITU-T and PTT standards or from practices necessary to achieve the highest possible level of compatibility. It also recommends specific corrective actions.

## Generating a Tabular Report

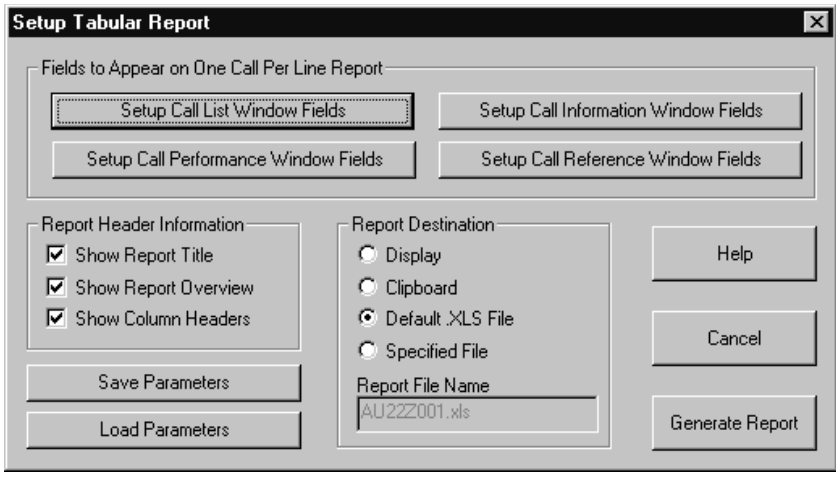
A tabular report produces output that is suitable for importing into a spreadsheet such as Microsoft Excel. In general, a tabular report has a header and a body. In the body of a tabular report, user-specified spreadsheet fields are separated by tab characters.

For the Result file tabular report, all fields that appear in the results window are available for inclusion in the tabular report. Header items are generated as single fields, which include both a description and a value. Items appearing in the body appear as values only. An option exists for generating a row of column labels at the top of the report.

To generate a tabular report:
1. First display a call results file.
2. Then select **File**, **Generate Report**, and **Tabular Report**, as shown here:




The Setup Tabular Report window is displayed, where you can select the specifics for the report, as shown here:



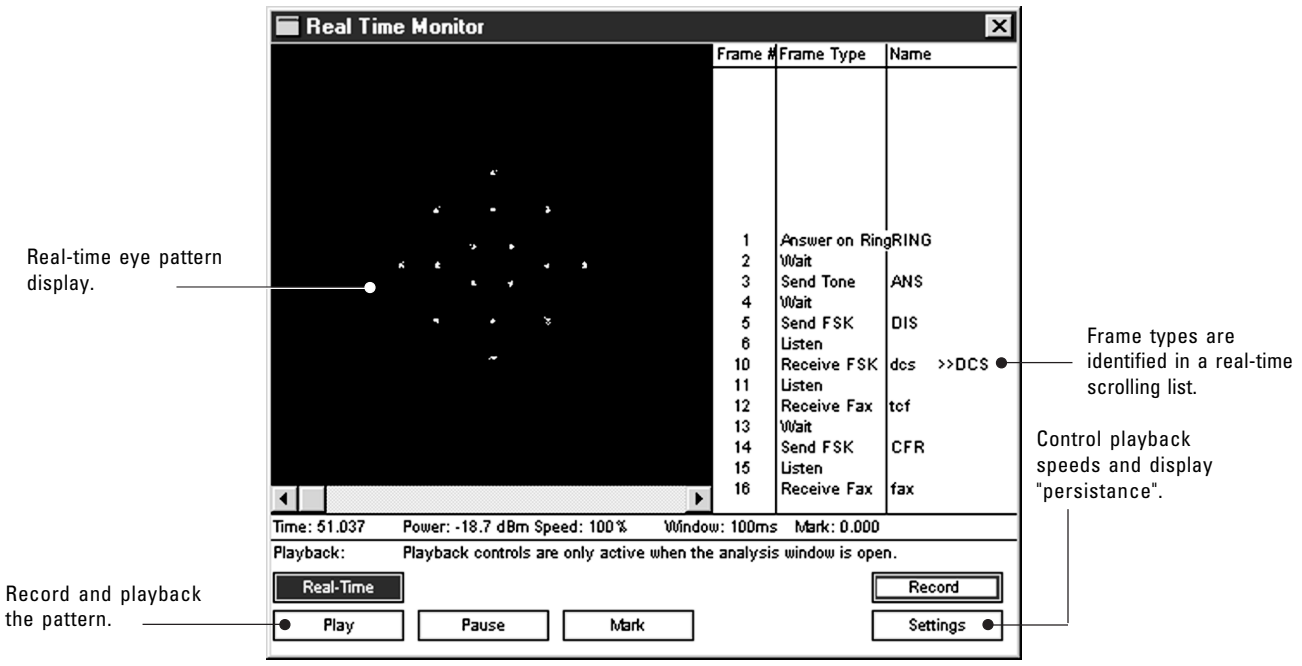
TelegraD software records, displays, and analyzes fax calls. Recorded calls are automatically named and indexed by port, month and date for easy retrieval. The protocol is displayed in list form or in a graphical browser that shows both originate and answer messages with a time base that can be zoomed and panned. Clicking on a message displays information about the message in up to nine other specialized analysis windows. For example, the Processed Image Data window decodes fax page images by line or by run length code within lines. Errors in the call are highlighted in red so it is easy to scan for problems.

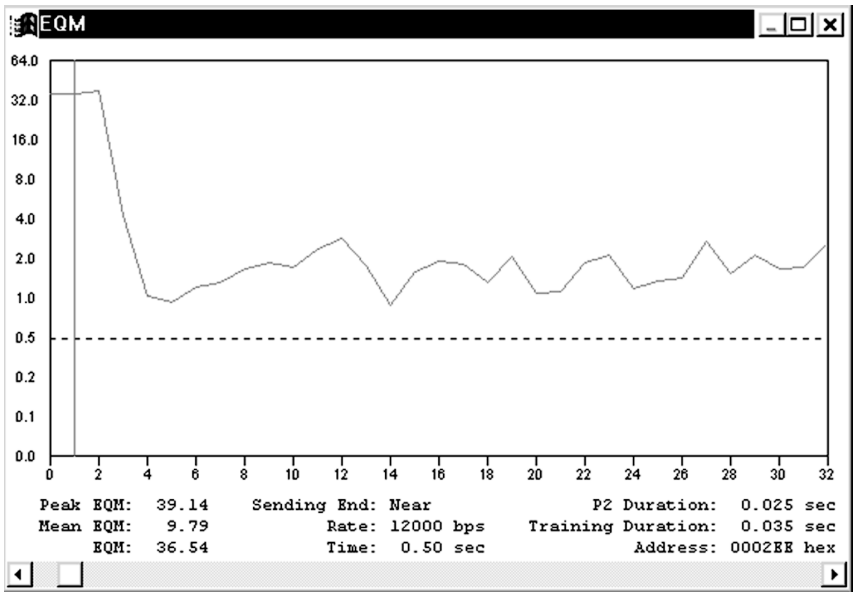
## Emulate behavior of any fax device

Recorded fax calls may be converted into test scripts with a single command allowing the user to select either the originate or answer side of the call. This technique can also be used to generate regression test libraries. It also can be used to capture and emulate behavior of particular fax machine models, which is often a useful supplement to comprehensive worst case stress testing.

## Watch analog fax signals in real time

TelegraD Real Time Monitor displays analog fax signals and corresponding fax protocol phases in real-time using an eye pattern constellation similar to an oscilloscope display. The fax signal may also be recorded and played back over a wide range of speeds for pinpoint analysis. The overall eye quality is also recorded during the call for each fax page transmitted, giving a moment by moment measure of how much the received signal phase and amplitude deviates from an ideal signal. The recorded quality data for any page can be displayed as a graph. The monitor and graph are useful in diagnosing line and analog signal impairments and correlating them with errors in fax calls, replacing additional expensive test instruments.






## Test to the latest high speed V.34 fax standard

Telegra D offers the option to originate, answer, and capture calls using V.34 modulation at speeds up to 33.6 kbps in addition to operating at all lower speeds. Since V.34 operates in part in a full duplex mode, Telegra D does not operate in a capture only mode for V.34 calls, but must actively participate as either the originating or answering fax device. In the Call Phases chart view of theV.34 protocol, V.8 handshaking is shown hierarchically in phases that can be expanded into a sub-phase view or collapsed into an overview.

## Design your own tests easily

A structured editor for test scripts that is fully integrated into the software allows the user to create and modify scripts. Scripts are created as a series of standard commands, using dialog boxes to select among eleven frame types, choose parameters, timing and power levels for the frame, edit binary and hex data, and manage flow of control. Telegra D test scripts give the user complete control over the content and timing of every phase of a fax call, down to the bit and millisecond level. The user can generate normal, difficult and abnormal calls and emulate any kind of fax system behavior. The scripts and suites in all Telegra D test libraries are provided in "source code" form so the user can understand and modify them.

### Perform fully automated, unattended testing

Testing can be orchestrated with batteries of test calls by creating test suites using the integrated suite language. The user controls the flow of testing with labels and flow control statements and can run tests at a scheduled time or periodically. Powerful commands allow the user to manage large numbers of test ports across multiple systems and vary operating conditions between calls without having to change the underlying scripts. All ports can work independently, or ports may be grouped to run the same test.

During testing, Telegra D logs the operation of suites in a results file, summarizing test results from all calls. The details of each call are captured in an individual analysis file. Automatic review and selective retention of analysis files permits thousands of calls to be made in unattended fashion without exhausting mass storage.

### Test fax systems located anywhere, from anywhere

The client/server architecture allows the user to place Telegra D units at remote sites, such as network nodes, customer premises, or test laboratories and access them from any Windows® 98 or NT based PC. All Telegra D features are available to the user through client software running on the user's PC. Clients talk to servers through a LAN, the Internet, an Intranet, or any other TCP/IP network. This permits testing resources to be easily shared by several members of a project team. Quality assurance, production, and support staff can instantly share test capabilities and test results with engineering staff. Test ports can be placed at two or more remote nodes on a landline, cellular, or satellite network and the user can selectively test the paths between them. Network operations staff can monitor critical nodes in a network from the network operations center. Or users may just want the convenience of working from PCs in their offices or from notebook computers in the field. The user can control which clients are allowed to access Telegra D ports and all communications are encrypted for additional security.

## Test Libraries

Agilent's test libraries are collections of test scripts and suites that are used by Telegra D to generate "originate" and "answer" test calls for testing functionality, compliance with a variety of different standards, and compatibility with thousands of releases of fax equipment models.

## The Following Test Libraries are included with the Telegra D Platform

### Standard test library

These tests are included with all Telegra D systems and exercise all areas of fax functionality. Suites include over 100 scripts in the following categories: Originate, Answer, ECM Originate, ECM Answer, ITU-T Test Images, Operator Interrupt, and Single Ended Tests. A complete library of the eight test images defined in the ITU recommendations is included.

### Network test library

This library is included in any dual port Telegra D analyzer. It provides special test scripts and suites for the complete end-to-end testing of networks carrying fax traffic, including PSTN and data networks using landlines, cellular, satellite, and microwave transmission. Problems that the tests reveal include noise and other line impairments, echo, conflicts in handshaking due to delay, modification of signals by intelligence in the network, inappropriate echo suppressors, and carrier dropouts (in cellular and other wireless systems). The Library consists of twelve test suites for testing normal operation, FSK messages and irregularities, image irregularities, intercarrier wait times, carrier gaps, polling, transmission parameters, TCF pattern handling, and ECM operations.

### T30 Design verification test library - worst case testing

This powerful library contains 167 scripts in seventeen test suites that test fax systems for conformance with ITU-T recommendations T.30, T.4, and T.6, and for interoperability with fax machines exhibiting the most commonly found design errors and deviations from the standards.

### ETSI conformance test library

Fax resellers and major suppliers to many European Union countries generally prefer to market systems that comply with the European Telecommunications Standard ETS 300-242. Tests cover T.30 protocol handling, scanning, print resolution, data rate, fall back, gap timing, TCF patterns, fax parameters, abnormal FSK message, preamble/sync anomalies, short image lines, etc.

### French telecom standard 110 test library

Fax equipment resellers in France generally require manufacturers to comply with the French Test Standard NT/SPT/SCE/STD/110. These stringent standards include requirements that exceed and clarify interpretation of ITU-T standards. The library also includes TCF training patterns and test images used in the test.

## Technical Specifications

### Physical Characteristics

| | |
|---|---|
| Dimensions: | 24 W x 30 D x 7.3 H cm<br>(9.5 W x 11.88 D x 2.88 H inches) |
| Weight: | 3.6 kg (8 pounds) |

### Temperature

| | |
|---|---|
| Operating: | +5°C to +40° C (+41° F to +104° F) |
| Non-operating: | -20°C to +70° C (-4° F to +158° F) |

### Humidity

Operating and Non-operating: 15 to 95%

### Regulatory compliances

| | |
|---|---|
| EMC, Safety: | CE, UL/CUL |
| Telecomm: | FCC 68, CS-03 |

## Interfaces

- Analog, 2-wire FXO interface
- Two RJ-11 rear panel connectors per card
- Standard analog, loop start, tip and ring interface.
- Line interface input impedence approximately:
  - Call Generate Mode: 600 ohms
  - Monitor Mode: >6000 ohms

## PC System Requirements (PC not provided)

- PC running Windows® 98 or NT
- 50 MB free hard disk space
- VGA or Super VGA (recommended) color display, supported resolutions: 800x600, 1024x768, 1280x1024
- 10BaseT TCP/IP network interface card (NIC)

## Related Literature

| | | |
|---|---|---|
| TelegraM | Product Overview | 5968-5652E |
| TelegraR | Product Overview | 5968-7723E |

## Warranty

Hardware: 1 year
Software: 90 day replacement only

## Contact us with FaxBack

By Returning This FaxBack Page, with the following required information, you can facilitate your initial contact to speak with a Customer Care Representative

**Fax to: 1-303-662-2038**

**OR...**

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**Job Title** _____

**Business Mailing Address** _____
_____

**City** _____
**State/Province** _____
**Country** _____
**Zip Code** _____

**E-Mail Address** _____
_____

**Phone Number** _____
(incl. area/country code)

**Fax Number** _____

**Do you have a budget set for this application?**

- ☐ Yes
- ☐ No
- ☐ In process

**What is your time frame to implement this product?**

- ☐ 30 days
- ☐ 90 days
- ☐ 180 days
- ☐ Other – ( please define) _____
_____
_____

## Product(s) of Interest

- ☐ ***The Agilent Advisor*** – Integrated, High-Performance Troubleshooting for:
  - ____ Advisor LAN
  - ____ Advisor WAN
  - ____ Advisor ATM
- ☐ ***The LAN Analyzer*** – Scaleable Ethernet and Token Ring Test Solutions
- ☐ ***Telegra Fax Test*** – Fax Protocol and Low Generation Analysis
- ☐ ***Telegra Voice Quality Tester*** – Detailed Voice Analysis for Clarity, Echo and Delay using PSQM and PAMS
- ☐ ***Telegra Voice and Fax over IP*** – Protocol Analysis
- ☐ ***FASTest*** – Automated Service Verification for PSTN and IP Networks

## What is the main problem you need to solve on your network?

_____
_____
_____

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**This Product is Y2K Compliant**

## Agilent Ordering Information

| | |
|---|---|
| **J3935A** | Single port V.17 fax analyzer |
| **Opt 201** | Upgrade to dual port |
| **Opt 202** | V.34 analysis |

### Fax Technology Training

| | |
|---|---|
| **H7211A/B** | Customer Education and Training |
| **Opt 171** | Fax Technology and Testing |
| **Opt 271** | Advanced Fax Technology and Testing |
| **Note:** | H7211A is open enrollment<br>H7211B is on-site |

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**Asia Pacific:**
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(Fax) (852) 2506 9284




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