Automated Wireless Voice Quality Testing

Wireless Voice Quality

Portable and Compact

End-to-End Quality Metrics

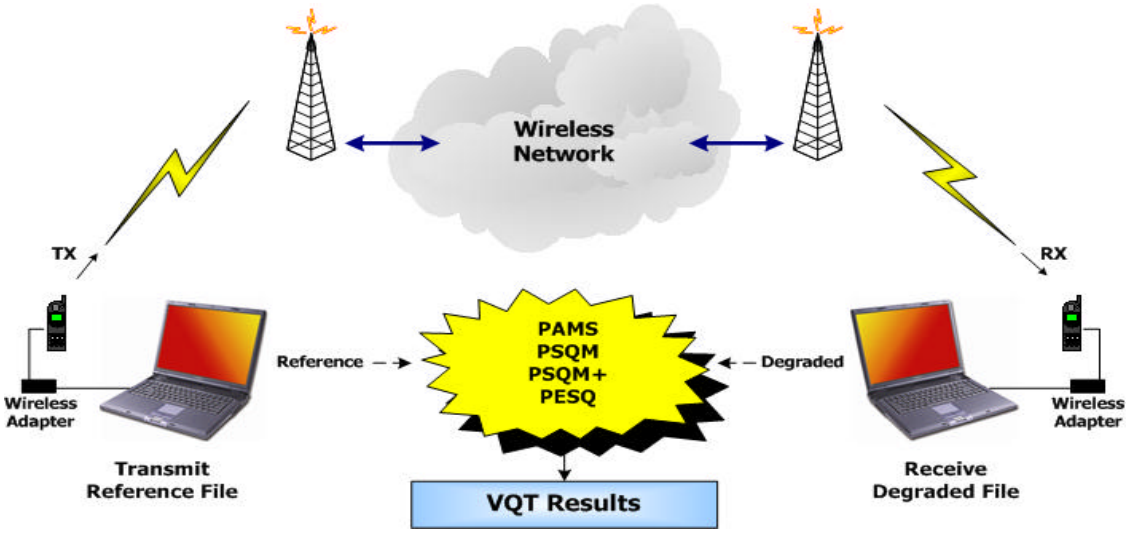
PAMS PSQM PSQM+ PESQ

Synchronized Tx / Rx

Compatible with GPS

Simple, Reliable Hardware

Wireless Adapters for All Mobile Phones



Wireless networks can impair voice quality by various means including poor mobile phone quality, voice compression and decompression algorithms, delay, loss or gain in speech levels, noise, acoustic and landline echo, and other distortions. Wireless network providers and equipment manufacturers have been in search for a way to quantify these impairments in a consolidated, unified, and "end-to-end" manner. GL's Automatic File Transceiver (AFT) software combined with GL's Voice Quality Testing (VQT) software permits this simple "end-to-end assessment" in an efficient, portable, and hassle-free product. Results include Mean Opinion Scores (MOS) which provide an excellent overall measure of end-to-end voice quality and detailed measurements provide focused measurements of specific impairments.

GL's solution is compact and portable: two notebook PC's utilizing AFT and VQT software packages and a few hardware accessories. Independent locations connected to the wireless network via mobile phones can be easily configured for sending reference voice files and recording the received degraded file, thus allowing end-to-end path analysis. The AFT GUI acts as the engine for synchronously transmitting and recording voice files ("reference" and "degraded" files) across a wireless connection. VQT software provides the MOS and other detailed measurements for each recording.

The degraded voice files can be analyzed in real-time or in a post-processing manner by the VQT software. GL's VQT utilizes three widely accepted algorithms to perform the voice comparisons, the Perceptual Analysis / Measurement System (PAMS) per Rec. P.800, the Perceptual Speech Quality Measurement (PSQM) per Rec. P.861, and the Perceptual Evaluation of Speech Quality (PESQ) per Rec. P.862. PAMS predicts overall subjective listening quality (a human's perception of quality) without requiring actual subjective testing which is a very expensive and time-consuming process. PSQM predicts subjective quality of speech codecs without requiring subjective testing. PESQ provides an objective measurement of subjective listening tests on telephony systems. GL's VQT performs analysis using all algorithms simultaneously, producing results for each in easy to understand graphical and tabular formats.

Main Features

- Compact and portable solution for testing mobile end-to-end voice quality
- Synchronized software for sending/recording of voice files
- Flexible architecture and features for recording locations, parameters, and time
- MOS for all voice quality standards PAMS, PSQM, PSQM+, PESQ
- Additional measurements include Mean Active Speech Level, Noise Level, Latency and Clipping
- Results available in real-time or post-processing
- Compatible with automated GPS location timestamping

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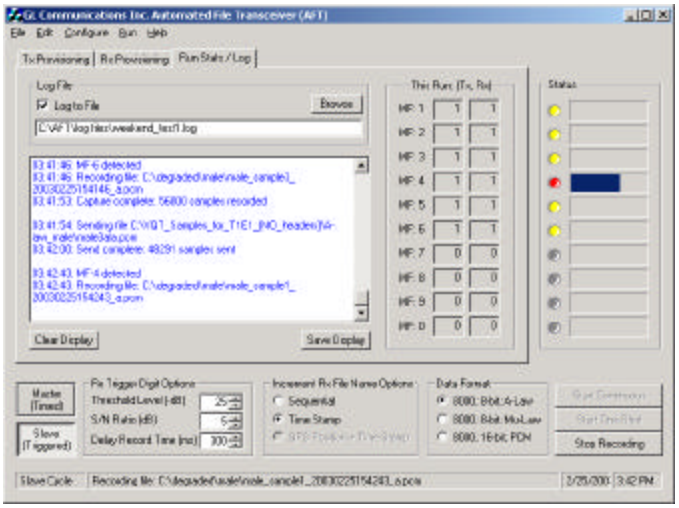
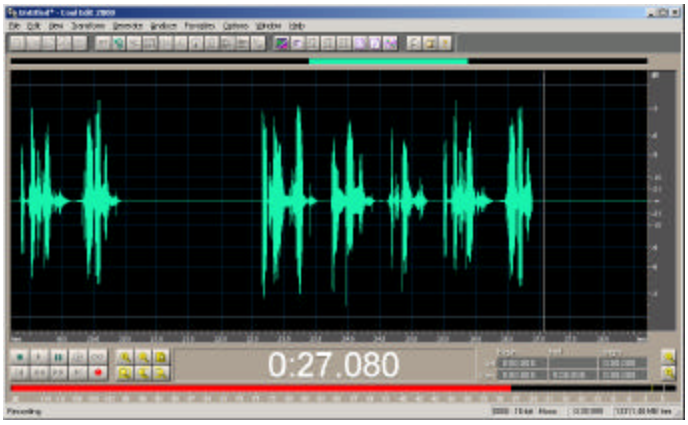


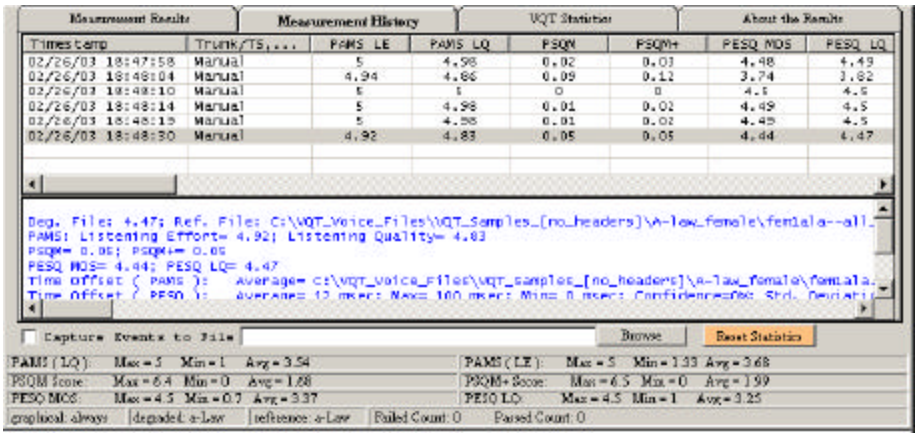
Automated File Transceiver (AFT) Software

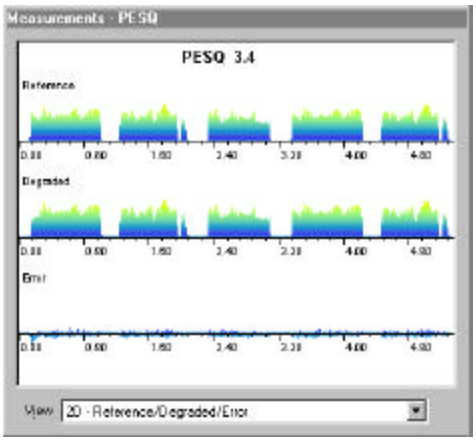
The AFT application is used for sending and recording of voice files (Reference File and Degraded File) across the wireless path. While in operational mode, the AFT application provides a detailed log of all activity, including timestamps, power levels, sent/recorded samples, and time durations. A status bar also provides a quick look at current AFT send/record activity. File recording options include, sequential or timestamp, with plans to provide GPS position information. AFT provides a Save/Load Profile feature for quick execution from test to test.

Waveform/Spectral Viewer

The GL VQT software can be user-configured to provide a rating of each measurement based on the scores, latency, clipping, etc. A poorly rated measurement can be viewed in graphical format using the waveform viewer. Dropouts, noise and other impairments can be examined here.







Voice Quality Testing (VQT) Results

GL's VQT may be executed automatically (real-time and/or post-processing) or manually by entering a Reference File and Degraded File. Regardless of how GL's VQT is initiated, algorithms for PAMS, PSQM, PSQM+, PESQ MOS and PESQ LQ are executed simultaneously for the two voice files and results are shown graphically as well as in a tabular format. GL's VQT also displays cumulative statistics for large scale testing over long periods of time.

Buyers Guide with other AFT and VQT Applications

Part #	Description
VQT200	Automated Wireless Path Analysis with VQT
VQT201	Companion Automated Wireless Path Analysis Station
VQT210	Automated Landline Path Analysis with VQT
VQT211	Companion Automated Landline Path Analysis Station
VQT220	Automated VOIP Phone Analysis with VQT
VQT221	Companion Automated VOIP Phone Analysis Station