Key Benefits

- Comprehensive tool for installation and maintenance of cable networks
- Fast spectrum analysis, 5~1220 MHz
- 5~1052MHz (Analog TV), 46~1052MHz (Digital TV)
- Digital TV tests include Average Power, MER, BER, BER Statistics, Constellation
- Analog TV measurements include: Level, V/A, HUM, C/N
- Auto-generates and saves up to 20 custom channel plans from a cable drop
- Auto test with pass/fail limits speeds up tests and simplifies results interpretation
- Client-based Toolbox management software for quick unit configuration
- USB Micro 2.0 port for PC data transfer
- Ethernet port for Ping function
- Optical Power Measurement and VFL (Visual Fault Location) available by option

Overview

The DS2460Q is a multi-functional instrument that supports digital QAM and analog signals in CATV networks. It is the ideal tool for initial network installations, service, and troubleshooting tasks. The ruggedized design includes an outer chassis protector, while the icon-based GUI features programmable preset pass/fail limits. The easy-flowing menus are designed for increased efficiency and productivity for all levels of technicians.

Other features - including return path & forward spectrum scan, 12 favorite tilt frequencies, AC line voltage test, HUM and DC voltage measurements, combined with complete data logging and management software - make the DS2460Q a versatile tool for cable installations.

MER, Pre-Post BER measurements, and statistics features allow quick verification of loose connections, generally related to pixelated pictures or slow DS internet data flow. The digital measurement functions also help identify mismatches caused by open coaxial lines or impedance mismatch.
Figure 1: MER, Pre-BER, Post-BER, & Constellation
Figure 2: BER
Figure 3: Return Path Spectrum Analysis (5 ~ 210 MHz)
Figure 4: Channel Scan
Figure 5: Tilt [Max 12 channels]
Figure 6: Forward Spectrum Analysis
Figure 7: Normal Spectrum Analysis
Figure 8: Optical Power Meter
Up to 20 Stored Channel Plans
For technicians and contractors who work in multiple HFC networks, having a choice of different channel plans is a must. The DS2460Q can learn a selection of up to twenty (20) different channel plans. When connected to an RF drop, the DS2460Q learns analog/digital channels and custom frequencies through the built-in automated channel plan learning tool - or downloads them via Deviser’s Toolbox PC software. The user can select up to 12 channels in each of the 20 user-defined plans and assign them to a favorite tilt/channel plan.

QAM Analysis & Channel Measurements
The DS2460Q measures and analyzes channel power, MER, and Pre-Post BER, including constellation display. It is compatible with 16/32/64/128/256 QAM modulation (for frequencies up to 1 GHz), and can also provide power measurements for QPSK and COFDM digital carriers.

Spectrum Analysis
The DS2460Q offers three distinct spectrum analysis modes: normal, fast, and return path. Fast spectrum analysis allows technicians to view a frequency range of 5~1220MHz; while normal spectrum analysis optimizes amplitude accuracy at a lower sweep speed. For troubleshooting upstream problems, the unit can display frequency spans of 5~65 MHz, providing an additional tool to technicians dealing with upstream data signals. All modes have access to the Marker and Max Hold features, making it easy to capture and analyze transient anomalies.

Full Spectrum Scans & Marker Feature
The DS2460Q can scan 160 channels, allowing users to quickly and efficiently measure flatness and amplitude of the HFC network. Using markers, technicians can quickly identify mismatch-related anomalies caused by poor grounding or damaged transmission lines.

HUM Measurement
The HUM measurement helps technicians identify and troubleshoot anomalies that may result from defective capacitors, faulty line splitters, or overloaded couplers (caused by weather conditions or excessive current). Both 60 & 120 Hz tests are performed @400Hz LPF measurements.

Auto-Diagnostic Custom Limit Tests
The auto test feature simplifies the technician’s work by displaying pass/fail results. End users can set limits on Power Level, MER, Pre-Post BER, Spectrum Analysis, Tilt, and HUM measurements. With the simple Save function, the technician no longer must manually record results, saving more time for installations and service calls in a day. In addition, measurement data is saved instantly to ensure performance accountability for each location - reducing the need to return to previously tested sites.

File Management / Data Storage
Multiple test data files can be saved and stored as analog carriers or frequencies, QAM carriers or digital frequencies, channel scan, tilt, frequency spectrum measurements, and/or HUM. Results are saved to the File Directory by timestamp. Records can be uploaded to a PC via the Toolbox software for report generation, printing, and analysis.

Voltage Measurement
The DS2460Q measures battery voltage, trunk, & distribution line voltage of the cable system, accurately identifying AC or DC anomalies. The smart power management system enables approximately 5 hours’ continuous operation from battery on a full charge.
## Specifications

### Optical Power Meter
- **Accuracy**: ± 0.23dB (± 5%)
- **Detector Type**: InGaAs Φ 300μm
- **Range**: -50 ~ +27dBm
- **Linearity**: 0.07dB/10dB
- **Resolution**: 0.01dBm, mW, μW, nW
- **Wavelength**: 850, 980, 1300, 1310, 1490, 1550, 1610nm
- **Interface**: FC/SC/ST universal connector

### Normal Spectrum Analysis
- **Frequency Range**: 45 ~ 1052 MHz
- **Frequency Span**: 2.5, 6.25, 12.5, 25, 62.5 MHz; full span

### Fast Spectrum Analysis
- **Frequency Range**: 5 ~ 1220 MHz
- **Frequency Span**: 12.5, 25, 62.5 MHz; full span

### Return Path Spectrum Analysis
- **Frequency Range**: 5 ~ 210 MHz

### Channel Scan
- **Max Channels**: 160
- **Scale**: 1, 2, 5, 10dB/division
- **Zoom**: 1x, 2x, 3x, 4x, 5x

### Analog TV Measurement
- **Supported Standards**: PAL, NTSC, FM Radio (single-frequency)
- **Power Level**
  - **Range**: -30 ~ +60dBmV
  - **Accuracy**: ± 2dB
  - **Resolution**: 0.1dB
- **Frequency**
  - **Range**: 5 ~ 1052 MHz
  - **Accuracy**: ± 50ppm
  - **Resolution**: 10kHz
- **Resolution Bandwidth**: 280kHz
- **C/N**: > 50dB
- **HUM Measurement Range**: 2 ~ 5%

### Digital TV Measurement
- **Supported Standards**: ITU-T J.83 Annex A, B, C
- **Power Level**
  - **Range**: -30 ~ +60dBmV
  - **Accuracy**: ± 2dB
  - **Resolution**: 0.1dB
- **Frequency**
  - **Range**: 46 ~ 1052 MHz
  - **Accuracy**: ± 2dB
  - **Resolution**: 0.1dB
- **QAM Demodulation**
  - **Annex A**: 16, 32, 64, 128, 256 QAM
  - **Annex B/C**: 64, 256 QAM
- **Interleave Depth**
  - **Annex B**: 128x1 ~ 128.4
  - **Annex A/C**: 12x17
- **Symbol Rate Change**: 4 ~ 7 MS/s
- **MER**: 41dB, accurate to ±2dB
- **BER**: 1E-3 ~ 1E-9
- **Constellation Display**: 64, 256 QAM with zoom

### Line Voltage Measurement
- **Range**: 0 ~ 100V (AC/DC), accurate to ±2V

*Note: QAM demodulation up to 1 GHz.*