8831Q

Portable Spectrum Analyzer

- Increases Productivity by Providing a Complete Set of Spectrum Analysis Tests in One Instrument
- Intuitive User Interface Reduces Learning Curve
- Full-Featured, High-Performance, Remote Operation and Switch Control Provides Flexibility and Expandability
- Automated FCC Digital and Analog Proof-of-Performance (POP) Tests with Report Generation

The 8831Q™ is a high-performance spectrum analyzer which provides comprehensive signal analysis all in one portable package. It can be used anywhere in the cable network for analyzing RF signals with a broad range of measurements.

From analysis of digitally modulated signals to tests of distortion and noise parameters in the field, this spectrum analyzer is an industry workhorse. The analyzer is specifically focused on the cable TV industry with application specific test features.

Complete digital and analog FCC POP measurements

The 8831Q comes with the capability to perform automated proof-of-performance measurements on QAM signals. These detailed measurements include Transit Delay, Carrier-to-Noise (C/N), Composite Triple Beat (CTB), Composite Second Order (CSO), AM Hum, Digital Hum, Group Delay, Burst Noise, and Maximum Amplitude Variation. Phase Noise and Jitter measurements are also included ready-to-use right out of the box.

Applications in the field

The 8831Q meets the precision testing requirements needed for use in the field. It provides a familiar look and feel for those cable operators using spectrum analyzers in the head-end as a tool for in-depth testing and troubleshooting. The 8831Q also features remote operation and switch control capabilities that provide flexibility and expandability. Its intuitive user interface will minimize learning curves and allow technicians to get into the field quickly and begin testing.

Troubleshooting capabilities

When signal quality is of the upmost importance, the 8831Q is the tool for the job that will help the head-end technician ensure that quality meets expectations. Providing the ability to test all types of signals with a full complement of analysis measurements makes troubleshooting and aligning easy to perform for both the head-end technician and the senior technician responsible for proof-of-performance tests.

The 8831Q is the portable spectrum analyzer to turn to when signal quality and proof-of-performance is priority. Making troubleshooting simple to perform, its complete package of digital and analog measurements will ensure with high precision that signals are of the highest quality all while saving time and increasing productivity.

SPECIFICATIONS

Frequency

Range	1 MHz to 1 GHz
Resolution Bandwidth	1 kHz to 3 MHz in 1-3-10 sequence
Accuracy	±15%
Video Bandwidths	10 Hz to 1 MHz in 1-3-10 sequence
Frequency Reference	**Aging:** ±1 PPM per year
Frequency Reference	**Temperature stability:** ±2 PPM @ 0 to 50 ºC (32 to 122 ºF)
Phase Noise	>90 dBc/Hz @ ±10 kHz
Frequency Counter	**Accuracy:** ±2 PPM, ±1 count **Resolution:** 1 Hz

Frequency Span

Range	0 Hz, 200 Hz to 1.0 GHz
Sweep Time Range	20 µsec to 500 sec (span = 0 Hz) 30 msec to 500 sec (span > 0 Hz)
Sweep Trigger	Free run, single, video, TV

Analog Channel Measurements (Visual and aural carrier levels)

Channel Plans	NTSC, PAL, and custom
File Transfer	LAN and USB
High Speed Channel Scan	50 channels ≈ 1 minute
Multi-Channel Mode	Variable, up to 8 channels
Single-Channel Mode	With spectrum display
Tuning Range	5 MHz to 1.0 GHz
TV Channel Amplitude Range	-40 dBmV to 65 dBmV, ±1.0 dB for S/N > 30 dB
Visual/Aural Delta Amplitude	±1.0 dB for S/N > 30 dB

Amplitude

Response Flatness	±1.0 dB (1 MHz to 1.0 GHz)
Level Accuracy	±1.0 dB @ 68 ºF (20 ºC)
Impedance at RF Input	75 Ω
Input Return Loss	>14 dB (>10 dB attenuation)
Maximum Safe Input	68 dBmV, 100 VDC
DANL	**Without preamp:** < -95 dBmV/Hz @ 30 kHz RBW **With preamp (typical)** < -115 dBmV/Hz @ 30 kHz RBW
Noise Figure	14 dB
2nd Harmonic Distortion	< -68 dBc for 29 dBmV tone at input mixer
3rd Order Distortion	< -68 dBc for (2) 29 dBmV tones at input mixer
Residual Responses	< -55 dBmV
Vertical Scale	0.1 to 1.0 dB/div in 0.1 dB steps 1 to 40 dB/div in 1 dB steps
Input Attenuator	0 to 55 dB in 5 dB steps
Internal Calibrator	150 MHz at 28.7 dBmV, ±0.5 dB

TV Visual Frequency

Accuracy	±2 PPM

FM Deviation

Range	100 kHz
Accuracy	±2 kHz, 1 to 80 kHz ±3 kHz to 100 kHz

HUM Modulation

Modes	CW or modulated
Range	1% to 20%
Accuracy	±0.5% from 1 to 5% ±1% from 5 to 20%

Cross-Modulation

Range	-45 dB to -65 dB
Accuracy	±0.5% from 1 to 5% ±1% from 5 to 20%

Depth of Modulation

AM Range	40% to 95%
Accuracy	±1.5% (C/N > 40 dB)
Signal Type	Use VITS line with white reference

In-Channel Response

Signal Type	Multi-burst or GCR VITS signal

Carrier-to-Composite Noise

Optimum Input Range	> 5 dBmV
Maximum C/N	55 dB with ±2 dB accuracy 60 dB with ±3 dB accuracy

CSO/CTB

Optimum Input Range	> 5 dBmV
Maximum	63 dBc with ±1.5 dB accuracy 70 dBc with ±4.0 dB accuracy

Cross-Modulation

Range	60 dB, usable to 65 dB
Resolution	0.1 dB
Accuracy	±2.0 dB for xmod. < 40 dB, C/N > 40 dB: ±2.6 dB for xmod. <50 dB, C/N > 40 dB: ± 4.6 dB for xmod. <60 dB, C/N > 40 dB

DIGITAL CHANNEL MEASUREMENTS

Average Channel Power

Amplitude Range	-30 to 60 dBmV
Accuracy	±1.0 dB
Channel Bandwidth Range	200 kHz to 200 MHz

Digital Modulation

Modulation Format	QPSK, 16, 32, 64, 128, 256 QAM ITU-T J.83 annex A, B, and C
Symbol Rates	1 to 7 MSPS
Interleave Capability	Up to 128 x 4 in annex B 12 x 17 in annex A and C
Constellation Display	Full constellation with zoom
Adaptive Equalizer Display	8 FFE taps, 24 DFE taps

Modulation Error Ratio (MER)

Range	22 to 43 dB
Accuracy	±0.5 dB 22 to 30 dB ±1.0 dB 30 to 35 dB ±1.8 dB 35 to 43 dB

Error Vector Magnitude (EVM)

Range	0.65% to 4.1%

Bit Error Ratio (BER) (Before and after R-S decoding)

User-Selectable Time Period	1.0×10^{-9} to 2.0×10^{-3}

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MISCELLANEOUS SPECIFICATIONS

Display

Display Type	TFT active matrix color VGA LCD
Display Size (Width)	6.4” (163 mm)

Power

Battery Type	14.4 V @ 6 Ah Lithium-ion
Run Time	>2.5 hours
Charge Time	<6.0 hours
Charger Type	External AC adapter

Mechanical

Dimensions (H x W x D)	(6.3” x 13.4” x 13.8”) 160mm x 340mm x 350mm
Weight	19.8 lbs (9 Kg)

Environmental

Operating Temperature	32 to 122 ºF (0 to 50 ºC)
Storage Temperature	-4 to 131 ºF (-20 to 55 ºC)

AVAILABLE MODELS:

8831Q Portable Spectrum Analyzer
P/N 2011658001

8831Q Portable Spectrum Analyzer with Tracking Generator
P/N 2011658011

INCLUDES THE FOLLOWING:

Portable Spectrum Analyzer
P/N 2011658001

AC to DC Power Adapter & Battery Charger

Lithium-Ion Battery

F-Type to F-Type Connector

F-Type to BNC Connector

BNC Calibration Cable

RJ-45 Network Cable

RJ-45 Network Crossover Cable

512 MB USB Flash Drive with Q-Lab Software and Operation Manual

Carrying Case on Wheels

OPTIONAL ACCESSORIES:

F-type Push-On Adapters
P/N 0200622000

I-Stop Test Probe
P/N 2010838001

I/O-15 Precision Test Cable
P/N 2071527048