

# 8853Q

## Spectrum Analyzer

- Increases Productivity by Providing a Complete Set of Spectrum Analysis Tests in One Instrument
- Intuitive User Interface Shortens Learning Curve
- Full-Featured, High-Performance, Remote Operation
- Automated FCC Proof Testing Simplifies Reporting



### Comprehensive signal analysis

This portable analyzer can be used anywhere in the cable network for analyzing RF signals with a comprehensive scope 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.

### Head-end and field applications

Cable operators typically use spectrum analyzers in the head-end, and as a tool for in-depth testing and troubleshooting. They are also used for FCC proof of performance tests. The 8853Q™ introduces a larger display and internal calibration and preselection to meet the precision testing needs of the customer, with a familiar look and feel.

**Engineer/head-end technician** - This person is responsible for ensuring that the signal quality is as good as possible. The signal quality will be

naturally degraded by the network as it makes its way to the subscriber. It is important for the engineer or head-end technician to be able to test all types of signals with a wide variety of analysis/measurement techniques to give them every advantage in alignment and troubleshooting.

**SR Tech** - This person is called in when lower-tier technicians are unable to find the source of a problem. Frequently, the same person is responsible for proof-of-performance testing because they have experience, familiarity with the tests, and equipment and can efficiently perform the tests.

## SPECIFICATIONS

## Frequency

Range	500 kHz to 3 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	<b>Aging:</b> ±1 PPM per year
Frequency Reference	<b>Temperature stability:</b> ±2 PPM @ 0° to 50° C (32° to 122° F)
Phase Noise	>90 dBc/Hz @ ±10 kHz
Frequency Counter	<b>Accuracy:</b> ±2 PPM, ±1 count <b>Resolution:</b> 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	$\pm 1.0$ dB (1 MHz to 1.0 GHz)
Level Accuracy	$\pm 1.0$ dB @ 20° C (68° F)
Impedance at RF Input	75 $\Omega$
Input Return Loss	>14 dB (>10 dB attenuation)
Maximum Safe Input	+78 dBmV, 100 VDC
DANL	<b>Without preamp:</b> < -95 dBmV/Hz <b>With preamp (typical)</b> < -115 dBmV/Hz
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, $\pm 0.5$ dB

## TV Visual Frequency

Accuracy	$\pm 2$ PPM
----------	-------------

## FM Deviation

Range	100 kHz
Accuracy	$\pm 2$ kHz, 1 to 80 kHz $\pm 3$ kHz to 100 kHz

**HUM Modulation**

<b>Modes</b>	CW or modulated
<b>Range</b>	1% to 20%
<b>Accuracy</b>	±0.5% from 1 to 5% ±1% from 5 to 20%

**Cross-Modulation**

<b>Range</b>	-45 dB to -65 dB
<b>Accuracy</b>	±0.5% from 1 to 5% ±1% from 5 to 20%

**Depth of Modulation**

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

**In-Channel Response**

<b>Signal Type</b>	Multi-burst or GCR VITS signal
--------------------	--------------------------------

**Carrier-to-Composite Noise**

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

**CSO/CTB**

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

**Cross-Modulation**

<b>Range</b>	60 dB, usable to 65 dB
<b>Resolution</b>	0.1 dB
<b>Accuracy</b>	±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**

<b>Amplitude Range</b>	-30 to +60 dBmV
<b>Accuracy</b>	±1.0 dB
<b>Channel Bandwidth Range</b>	200 kHz to 200 MHz

**Digital Modulation**

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

**Modulation Error Ratio (MER)**

<b>Range</b>	22 to 40 dB
<b>Accuracy</b>	±0.5 dB 22 to 30 dB ±1.0 dB 30 to 35 dB ±1.8 dB 35 to 40 dB

**Error Vector Magnitude (EVM)**

<b>Range</b>	0.65% to 4.1%
--------------	---------------

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

<b>User-Selectable Time Period</b>	$1.0 \times 10^{-9}$ to $2.0 \times 10^{-3}$
------------------------------------	--

# 8853Q

## Spectrum Analyzer

### MISCELLANEOUS SPECIFICATIONS

#### Display

Display Type	TFT active matrix color VGA LCD
Display Size (Width)	7.5" (190.5 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	0° to 50° C (32° to 122° F)
Storage Temperature	-20° to +55° C (-4° to +131° F)

### INCLUDES THE FOLLOWING:

8853Q spectrum analyzer  
**P/N 2011373001**  
Battery charger  
Lithium-ion battery  
RJ-45 network cable  
RJ-45 network crossover cable  
512 MB USB flash drive  
User's manual  
Carrying case with wheels

### OPTIONAL ACCESSORIES:

F-type push-on adaptors  
**P/N 0200622000**  
I-Stop test probe  
**P/N 2010838001**  
I/O-15 precision test cable  
**P/N 2071527048**  
VF-4 tunable bandpass filter  
**P/N 2010537006**  
VF-5 tunable bandpass filter  
**P/N 2010725006**  
AM-1000 preamplifier  
**P/N 2070760000**

### RELATED ITEMS:

DCVF-5 automated preselector filter  
**P/N 7280016017**  
VF-4 portable preselector  
**P/N 2010537006**  
VF-5 portable preselector  
**P/N 2010725006**