

DS8853/DS8831 Series Spectrum Analyzer

Overview

DS8853/8831 series is portable spectrum analyzer and it is used to analyze RF signals with a comprehensive scope of measurement in the HFC network. This can also be used in analyzing the system of mobile communication, satellite and so on.

The DS8853/8831 series provides CATV, DVB-C and spectrum analysis as below:

CATV Analysis: Level, HUM, Depth of Modulation Depth, C/N, CSO/CTB, Cross-Modulation, In Channel Frequency Response, Differential Phase /Gain, Chrominance to Luminance Delay Inequality, etc.

DVB-C Analysis: Constellation, Power Level, MER, BER, EVM, EVS, MER/BER Statistics, etc.

Spectrum Analysis: Very Fast Sweep Time, Small RBW/VBW, High Accuracy, etc.

Key Features

- TFT LCD Display
- Remote control
- Communicate with PC via LAN, SCPI Compatible Protocol
- USB storage and upgrade
- Built-in Battery

Model Guide

• DS8853 Series

No	Module	DS8853A 50 Ω	DS8853B 75 Ω	DS8853Q 75 Ω
1	Spectrum Analysis	√	√	√
2	Workbench-PC Management Software	√	√	√
3	CATV	x	√	√
4	DVB-C	x	x	√
5	ASI Output	x	x	√
6	8VSB	x	x	○
7	Tracking Generator-3 GHz	○	○	○
8	30/100/300 Hz RBW	○	○	○
9	Spectrum Monitoring	○	○	○

Remark: √ standard configuration x not available ○ optional

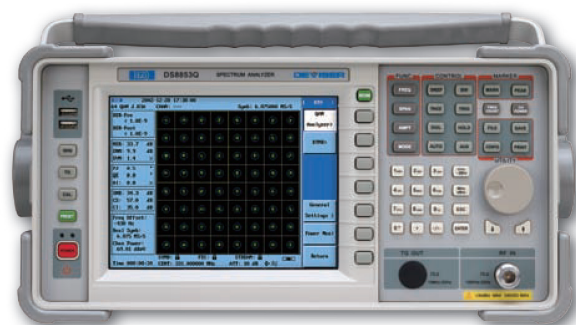
• DS8831 Series

No	Module	DS8831A 50 Ω	DS8831B 75 Ω	DS8831Q 75 Ω
1	Spectrum Analysis	√	√	√
2	Workbench-PC management Software	√	√	√
3	CATV	x	√	√
4	DVB-C	x	x	√
5	Tracking Generator-1 GHz	○	○	○
6	30/100/300 Hz RBW	○	○	○
7	Spectrum Monitoring	○	○	○

Remark: √ standard configuration x not available ○ optional



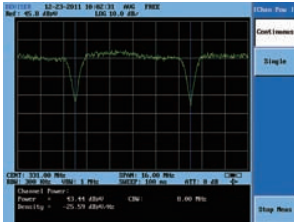
DS8831



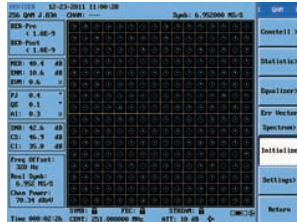
DS8853

DS8853/DS8831 Series Spectrum Analyzer

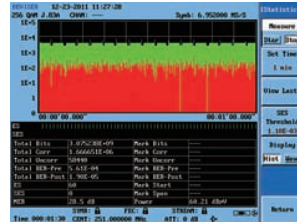
1. DVB-C Analysis



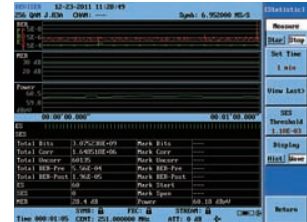
Power Level



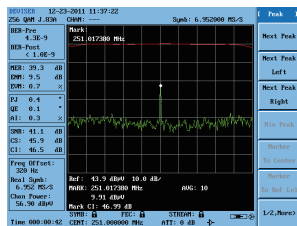
MER/BER/Constellation Analysis



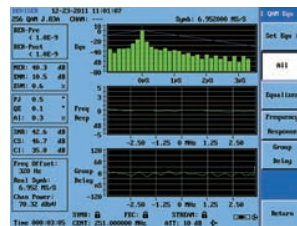
BER Statistic Analysis



MER/BER Statistic Analysis

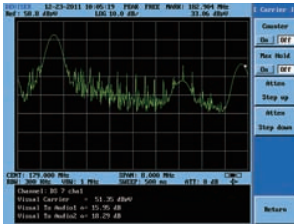


EVS (Find Interference under QAM Mask)

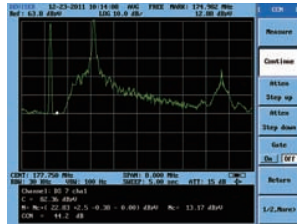


Equalizer

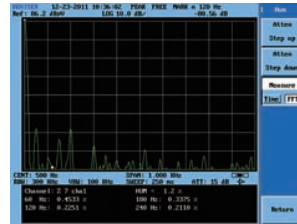
2. CATV Analysis



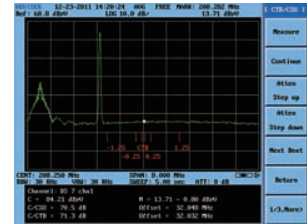
Level



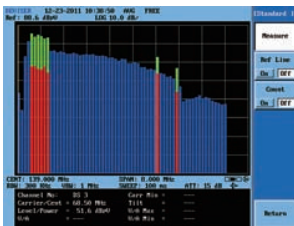
C/N



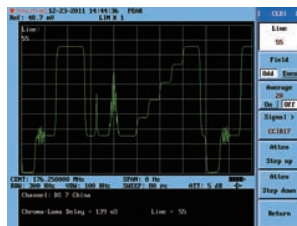
HUM



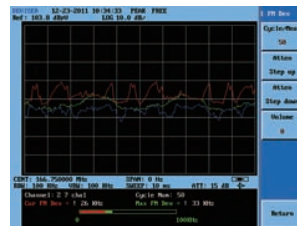
CSO/CTB



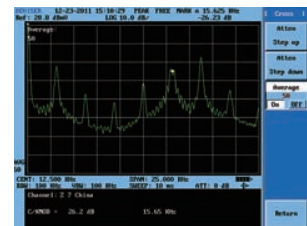
Channel Sweep



Chrominance to Luminance Delay Inequality

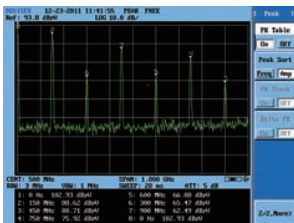


FM Demodulation

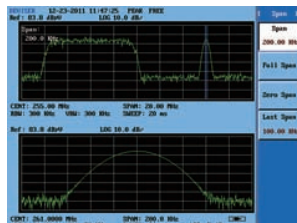


Cross-Modulation

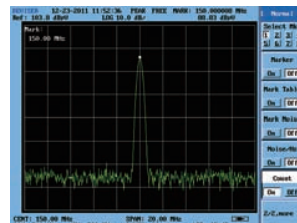
3. Spectrum Analysis



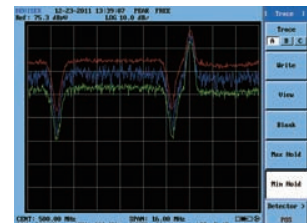
8 Marks



Two-windows Mode



Frequency Counter (Up to 1Hz)



Trace Analysis

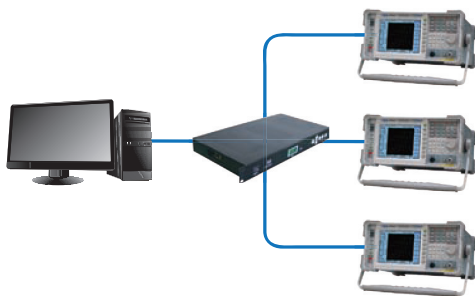
DS8853/DS8831 Series Spectrum Analyzer

4. Workbench- PC Management Software

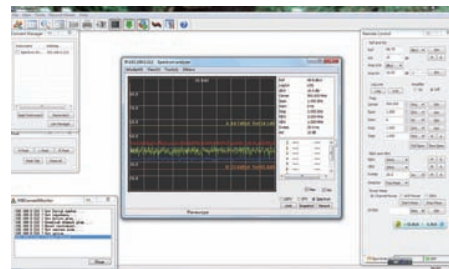
The workbench is used to establish network communication between a PC or laptop computer with DS8853/31 series, and manage all data, tests and test results.

It performs the following tasks:

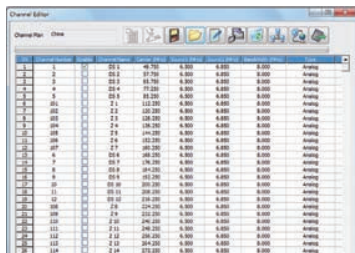
- Communicate with and remote control DS8853/31 series via LAN
- Create, edit, upload and download Channel Plan
- Download and review the screen captures
- Transfer and save test results



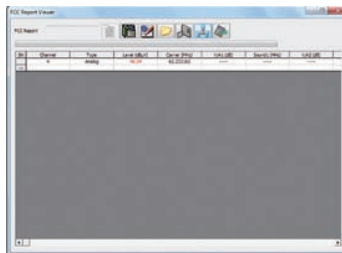
Remote Control via LAN



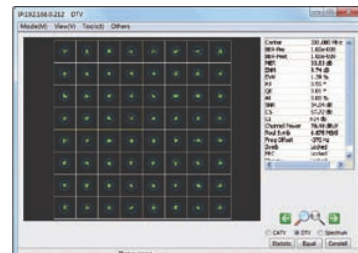
Workbench Software GUI



Channel Table Edit



FCC Report



QAM Analysis

5. 8VSB- Software and Hardware Upgrade

Modulation Type of ATSC(Terrestrial Digital TV Standard)

6. Tracking Generator-Software and Hardware Upgrade

It will be a simple scalar network analyzer after adding this option, and used to generally test amplifiers, filters and splitters etc.

Specifications	DS8831	DS8853
Frequency	1 GHz	3 GHz
Amplitude	0 dBm ~ -60 dBm	0 dBm ~ -30 dBm
Accuracy	±1.5 dB	±2 dB
Voltage Standing wave Ratio	≤2.0	≤2.0

7. 30/100/300Hz RBW-Software Upgrade

8. Spectrum Monitoring- Hardware Upgrade

Real-time monitor spectrum and record

9. ASI Output

This function is MPEG2 Transport Stream Output and only DS8853Q supports it.

DS8853/DS8831 Series Spectrum Analyzer

Specifications

Model	DS8831 series	DS8853 series
Frequency		
Range	1 MHz~1000 MHz	500 kHz~3000 MHz
Frequency Stability	$\pm 2 \times 10^{-6}$ (0 ~ 50 °C)	
Frequency Resolution	10 Hz	1 Hz
Counter Resolution	1 Hz	
Sweep Range	0 Hz(zero span), 1 kHz, 1000 MHz	0 Hz(zero span), 1kHz, 3000 MHz
Sweep Time	20 ms to 500 s(span > 0 Hz) 20 us to 500 s(span = 0 Hz)	20 ms to 250 s(span > 0 Hz) 20 us to 500 s(span = 0 Hz)
RBW	1 kHz ~ 3 MHz (1-3 Step)	
VBW	30 Hz ~ 1 MHz (1-3 Step)	
Phase Noise Stability	< -120 dBc/Hz @ 100 kHz offset from CW signal < -95 dBc/Hz @ 10 kHz offset from CW signal	< -120 dBc/Hz @ 100 kHz offset from CW signal < -100 dBc/Hz @ 10 kHz offset from CW signal
Amplitude		
Measurement Range	Displayed Average Noise Level to Max. Safe Input Level	
Accuracy	± 1 dB @ +25 ± 5 °C	
Resolution	0.01 dB	
Attenuator	0 dB ~ 55 dB, 5 dB Step	0 dB ~ 50 dB, 5 dB Step
Internal Amplifier		
Range	1 MHz ~ 1000 MHz	500 kHz ~ 3000 MHz
Gain	20 dB	15 dB
Noise Figure	4 dB	
Max Safe Input	+128 dB μ V 100 V DC	+123 dB μ V 100 V DC
Display		
Logarithm Scale	0.1 to 1 dB/div in 0.1 dB step 1 to 40 dB/div in 1 dB step	
Linear Scale	10 divisions	
Scale Units	dBm, dBmV, dB μ V, mV	
Marker Readout Resolution	0.03 dB for log scale; 0.03% of ref level for linear scale	
Trace Detector	Sample, Positive-Peak, Negative-Peak, Normal, Average	
Reference Level	-130 dBm ~ +40 dBm	
Resolution Bandwidth Switching Uncertainty	< ± 0.1 dB	
Input Attenuator Switching Uncertainty	< ± 0.3 dB (typical)	
Response Flatness	± 1.0 dB	
Analog CATV		
Level Amplitude Range	20 dB μ V ~ 125 dB μ V, ± 1.0 dB @ +25 ± 5 ~ (S/N > 30 dB)	
HUM/Low Frequency Disturbances		
Range	1% ~ 20%	
Accuracy	± 0.5 % from 1% to 5% ~ ± 1 % from 5% to 20%	
Modulation Depth		
Range	40% ~ 95%	
Resolution	0.1%	
Accuracy	± 1.5 % (C/N > 40 dB)	
C/N		
Optimum Input Range	92 dB μ V ~ 97 dB μ V 0 dB Attenuation, Amplifier Off 72 dB μ V ~ 77 dB μ V 0 dB Attenuation, Amplifier On	
Max.	60 dB with ± 1 dB Accuracy; 65 dB with ± 3 dB Accuracy	
Resolution	0.1 dB	

Model	DS8831 series	DS8853 series
CTB/CSO		
Optimum Input Range	82 dB μ V ~ 87 dB μ V 0 dB Attenuation ~ Amplifier Off 62 dB μ V ~ 67 dB μ V 0 dB Attenuation ~ Amplifier On	
Max.	63 dB with ± 1.5 dB Accuracy and 78 channels 70 dB with ± 4.0 dB Accuracy and 78 channels	
Resolution	0.1 dB	
Cross Modulation		
Range	-45 dB to -65 dB	
Accuracy	± 2.0 dB for Cross Modulation < 55 dB, CCN > 40 dB ± 4.5 dB for Cross Modulation < 60 dB, CCN > 40 dB	
Resolution	0.1 dB	
In-Channel Frequency Response		
Range	± 12 dB	
Accuracy	± 0.2 dB	
Resolution	0.1 dB	
Differential Phase Accuracy	± 2 %	
Differential Gain Accuracy	± 3 °	
Chrominance to Luminance Delay Accuracy	± 40 ns	
DVB-C		
Modulation		
Type	16/32/64/128/256QAM, QPSK ITU - T J.83 Annex A/B/C	
Interleave Capability	Up to 128 \times 4 in Annex B, 12 \times 17 in Annex A/C	
Constellation Display	QPSK 16/32/64/128/256QAM full constellation with Zoom capability	
Power		
Amplitude Range	30 dB μ V ~ 120 dB μ V	
Resolution	0.1 dB	
Accuracy	Typical ± 1.0 dB @ (25 ± 5 °C, C/N > 20 dB)	
Bandwidth Range	200 kHz ~ 200 MHz	
MER		
Range	22 dB ~ 43dB	
Accuracy	± 0.5 dB (22 ~ 30 dB); ± 1.0 dB (30 ~ 35 dB); ± 1.8 dB (35 ~ 43dB)	
BER	2×10^{-3} ~ 1×10^{-9}	
EVM	0.65% to 4.1% (Error Vector Magnitude)	
BER Statistics	1 ~ 4320 Minutes	
SR(Symbol Rate)	1 ~ 7 MS/s	
Power Supply		
Battery Type	14.8 V / 6 Ah Rechargeable Lithium-Ion	14.8 V / 8 Ah Rechargeable Lithium-Ion
External AC Adapter	19 V / 3.42 A	
Charge Time	5 Hours	6 Hours
Working Time	>3 Hours; >2.5 Hours (Including Optional Tracking Generator)	
Others		
Operating Temperature	0 °C ~ +40 °C	
Storage Temperature	-10 °C ~ +50 °C	
Dimension (W×H×L)	360 mm \times 180 mm \times 350 mm	360 mm \times 180 mm \times 360 mm
Weight (With Battery)	9 kg	10 kg
Display	16 cm (6.4 inches) TFT Color LCD	19 cm (7.5 inches) TFT Color LCD
Display Resolution	640 \times 480 Pixels	