RIGOL

User's Guide

DSA800 Options and Accessories

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RIGOL Technologies, Inc.

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Content

DSA800 Options and Accessories

Options and accessories provided by DSA800 series spectrum analyzer are as shown in the table below. If needed, please contact **RIGOL** or the local distributors. This manual only introduces the functions of some options. For the option with remark in the table below, refer to the dedicated manual.

	Description	Order Number
Model	Spectrum Analyzer, 9 kHz to 1.5 GHz (with preamplifier)	DSA815
	Spectrum Analyzer, 9 kHz to 3.2 GHz	DSA832
	Spectrum Analyzer, 9 kHz to 7.5 GHz	DSA875
	Spectrum Analyzer, 9 kHz to 1.5 GHz (with preamplifier, with tracking generator, factory installed)	DSA815-TG
	Spectrum Analyzer, 9 kHz to 3.2 GHz (with tracking generator, factory installed)	DSA832-TG
	Spectrum Analyzer, 9 kHz to 7.5 GHz (with tracking generator, factory installed)	DSA875-TG
Standard accessories	quick guide (hard copy)	QGD07X00
	CDROM (user's guide, programming guide)	-
	power cable	-
Options	preamplifier, 100 kHz to 3.2 GHz (only for DSA832)	PA-DSA832
	preamplifier, 100 kHz to 7.5 GHz (only for DSA875)	PA-DSA875
	EMI filter & quasi-peak detector	EMI-DSA800
	VSWR measurement kit	VSWR-DSA800
	advanced measurement kit	AMK-DSA800
	DSA PC software[1]	Ultra Spectrum
Optional accessories	include: N-SMA cable, BNC-BNC cable, N-BNC adaptor, N-SMA adaptor, 75 Ω to 50 Ω adaptor, 900 MHz/1.8 GHz antenna (2pcs), 2.4 GHz antenna (2pcs) [2]	DSA Utility Kit
	include: N(F)-N(F) adaptor (1pcs), N(M)-N(M) adaptor (1pcs), N(M)-SMA(F) adaptor (2pcs), N(M)-BNC(F) adaptor (2pcs), SMA(F)-SMA(F)	RF Adaptor Kit

	adaptor (1pcs), SMA(M)-SMA(M) adaptor (1pcs), BNC T type adaptor (1pcs), 50 Ω SMA load (1pcs), 50 Ω BNC impedance adaptor (1pcs)[2]	
	include: 50 Ω to 75 Ω adaptor (2pcs)[2]	RF CATV Kit
	include: 6dB attenuator (1pcs), 10dB attenuator (2pcs)[2]	RF Attenuator Kit
	30dB high power attenuator, max. power 100W[2]	ATT03301H
	N(M)-N(M) RF cable[2]	CB-NM-NM-75-L-12G
	N(M)-SMA(M) RF cable[2]	CB-NM-SMAM-75-L-12G
	RF demo kit (transmitter)[2]	TX1000
	RF demo kit (receiver)[2]	RX1000
	VSWR bridge with VSWR-DSA800, 1 MHz to 2 GHz[2]	VB1020
	VSWR bridge with VSWR-DSA800, 800 MHz to 4 GHz[2]	VB1040
	VSWR bridge with VSWR-DSA800, 2 GHz to 8 GHz[2]	VB1080
	rack mount kit[2]	RM-DSA800
	soft carrying bag	BAG-G1
	USB to GPIB interface converter for instrument	USB-GPIB

Remark:

[1] For more details of this option, refer to the help document of Ultra Spectrum (you can call the manual by clicking the icon in the upper right corner of the software, or download the manual from www.rigol.com.

[2] For more details, refer to the corresponding manual (included in the option package in CD or hard copy form, or download the manual from www.rigol.com).

Standard Accessories

The following are the standard accessories.

Power Cord

Quick Guide

Resource CD[1]

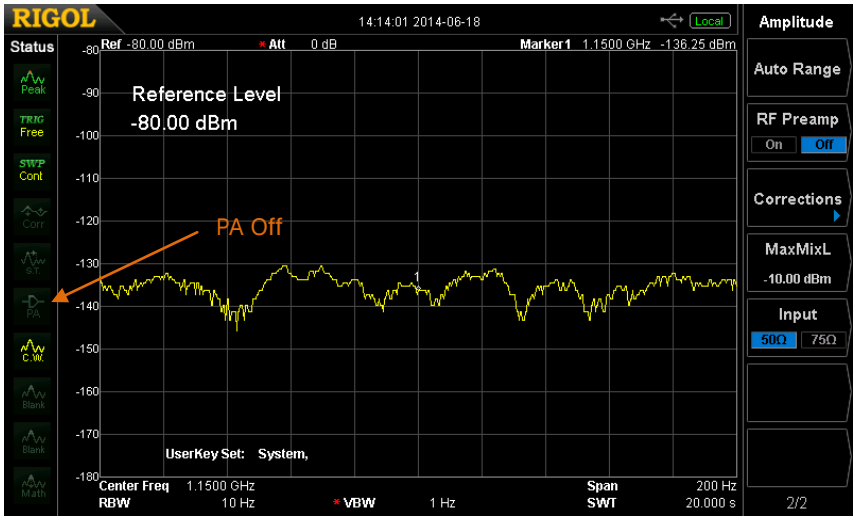
Remark: [1] The User's Guide and Programming Guide are included in the resource CD.

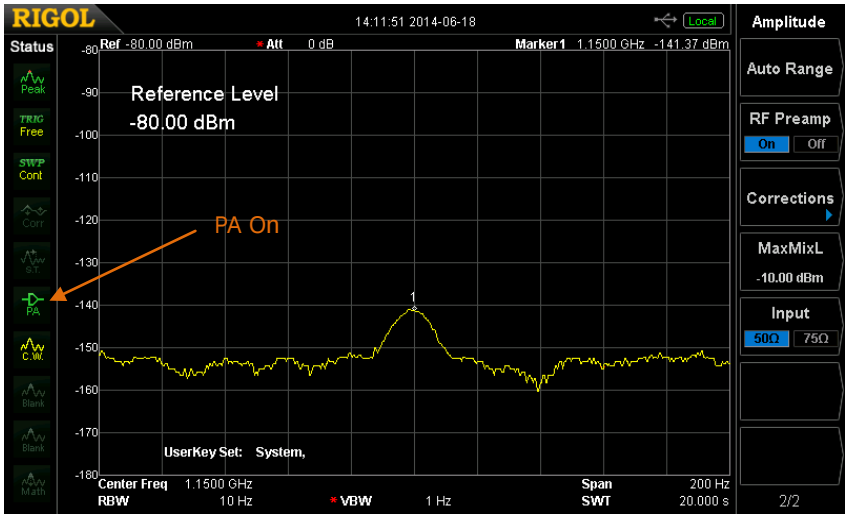
Note: Images in this section are indicative only. The actual products you receive may differ.

Preamplifier

PA-DSA832 (100 kHz to 3.2 GHz) / PA-DSA875 (100 kHz to 7.5 GHz) option provides preamplifier for DSA832 / DSA875. When the signal under measurement is small, turning on the preamplifier can reduce the displayed average noise level; therefore, you can distinguish small signals from the noise.

Press **AMPT** at the front panel. Then, press **RF Preamp** to turn on or off the preamplifier. An icon will be displayed on the left of the screen when the preamplifier is on. As seen from the measurement result figures when the preamplifier is off and on, small input signals can be measured by the analyzer when the preamplifier is on.

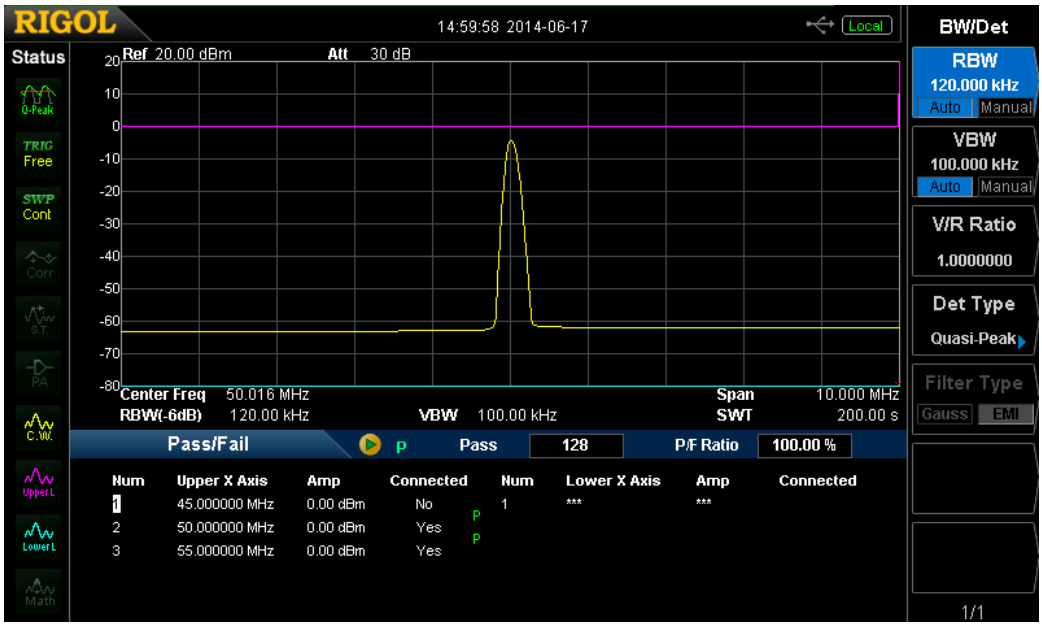




EMI Filter and Quasi-Peak Detector

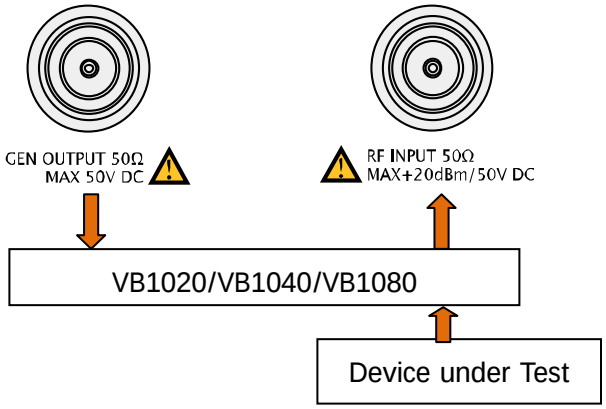
EMI-DSA800 option provides Quasi-Peak detector and EMI filter (200 Hz, 9 kHz, 120 kHz, -6 dB bandwidth). Quasi-Peak detection is a weighted form of peak detection. For each data point, the detector detects the peaks within the specified time interval, weights the peaks detected using circuit with specified charge and discharge structures as well as the display time constant specified in the CISPR Publication 16 standards and display the result. By default, the instrument uses Gauss filter and will switch to EMI filter automatically if Quasi-Peak detector is selected.

Press **BW/Det** at the front panel. Then, press **Det Type** to select Quasi-Peak detector. At this point, the instrument automatically changes the filter type to EMI and the **Filter Type** menu is grayed out and disabled. EMI-DSA800 option is used in electromagnetic interference test.

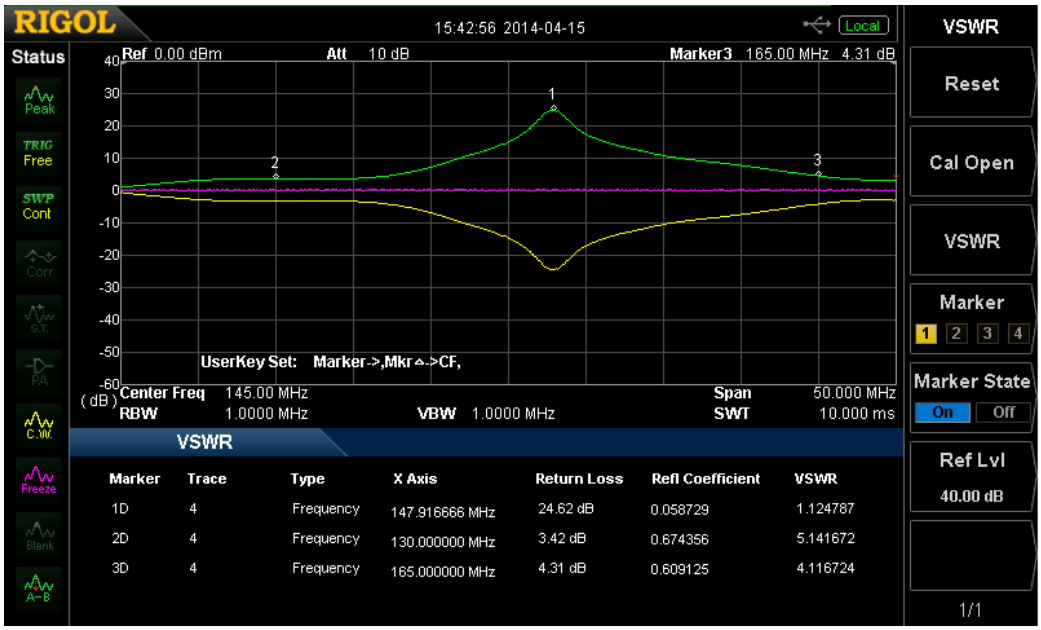


VSWR Measurement Kit

VSWR-DSA800 option (used together with the tracking generator function and the VB1020, VB1040 or VB1080 option) provides measurement functions of S11-related specifications (such as the return loss, reflection coefficient and VSWR).



Press **Meas** at the front panel and then press **VSWR** to enable the VSWR measurement function. The screen is divided into two windows with the upper window (the basic measurement window) displaying the sweep trace and the lower window displaying the measurement wizard and measurement results. Perform two measurements respectively according to the measurement wizard in the lower window: measurement with the device under test disconnected (**Meas Setup** → **Cal Open**, represented by trace 2) and measurement with the device under test connected (**Meas Setup** → **VSWR**, represented by trace 1). The return loss is determined by the difference (represented by the math trace) of the results of the two measurements and the reflection coefficient and VSWR are determined by the return loss.


RIGOL
15:42:56 2014-04-15
Local
Status
Peak
TRIG Free
SWP Cont
Corr
S.T.
PA
C.W.
Freeze
Blank
A-B
Ref 0.00 dBm
Att 10 dB
Marker3 165.00 MHz 4.31 dB
40
30
20
10
0
-10
-20
-30
-40
-50
-60
(dB)
1
2
3
UserKey Set: Marker->,Mkr->CF,
Center Freq 145.00 MHz
RBW 1.0000 MHz
VBW 1.0000 MHz
Span 50.000 MHz
SWT 10.000 ms
VSWR
Marker Trace Type X Axis Return Loss Refl Coefficient VSWR
1D 4 Frequency 147.916666 MHz 24.62 dB 0.058729 1.124787
2D 4 Frequency 130.000000 MHz 3.42 dB 0.674356 5.141672
3D 4 Frequency 165.000000 MHz 4.31 dB 0.609125 4.116724
VSWR
Reset
Cal Open
VSWR
Marker
1 2 3 4
Marker State
On Off
Ref Lvl
40.00 dB
1/1

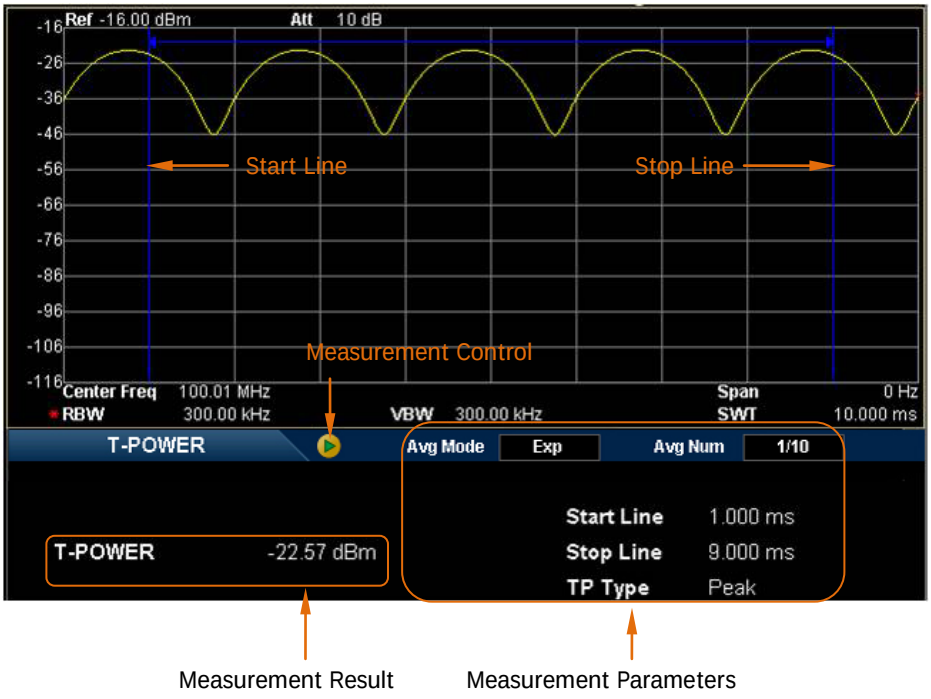
Advanced Measurement Kit

AMK-DSA800 option provides various measurement functions, including T-Power, ACP (Adjacent Channel Power), Chan Pwr (Channel Power), OBW (Occupied Bandwidth), EBW (Emission Bandwidth), C/N Ratio, Harmo Dist (Harmonic Distortion) and TOI (Third Order Intermodulation). For advanced measurement functions, the measurement mode can be single or continuous and you can control the measurement including Restart, Pause and Resume.

Press **Meas** at the front panel and then press **Meas Fctn** to select a measurement function. The screen is divided into two windows with the upper window (the basic measurement window) displaying the sweep trace and the lower window displaying the measurement results.

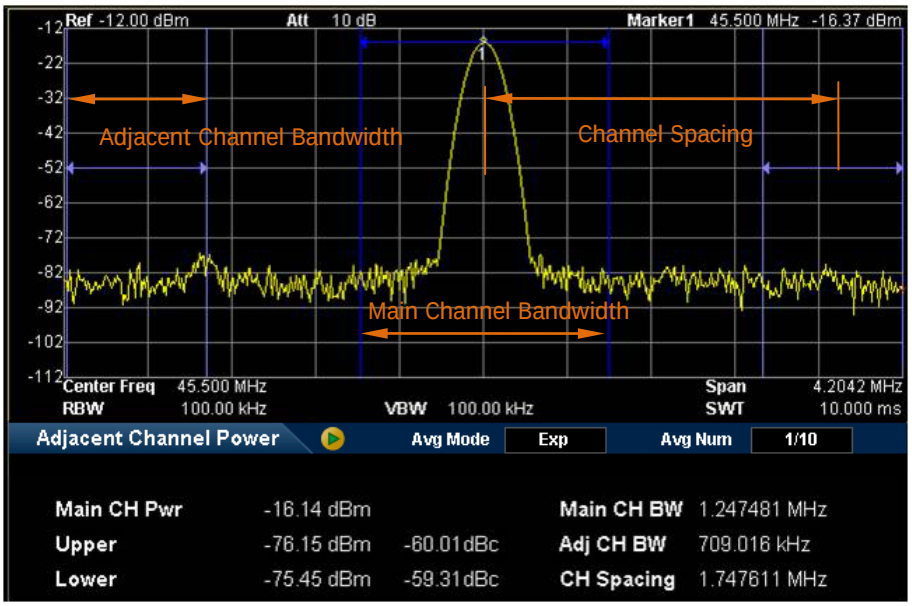
1. T-power

The system enters zero span mode and calculates the power within the time domain. The types of powers available include Peak, Average and RMS.



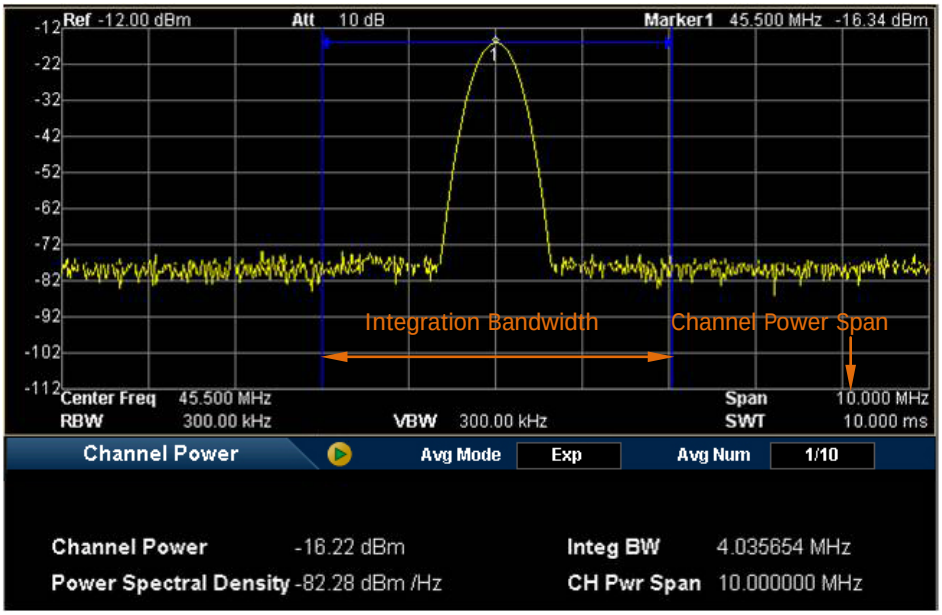
2. ACP

Measure the powers of the main channel and adjacent channels as well as the power difference between the main channel and each of the adjacent channels. When this function is enabled, the span and resolution bandwidth of the analyzer are adjusted to smaller values automatically.



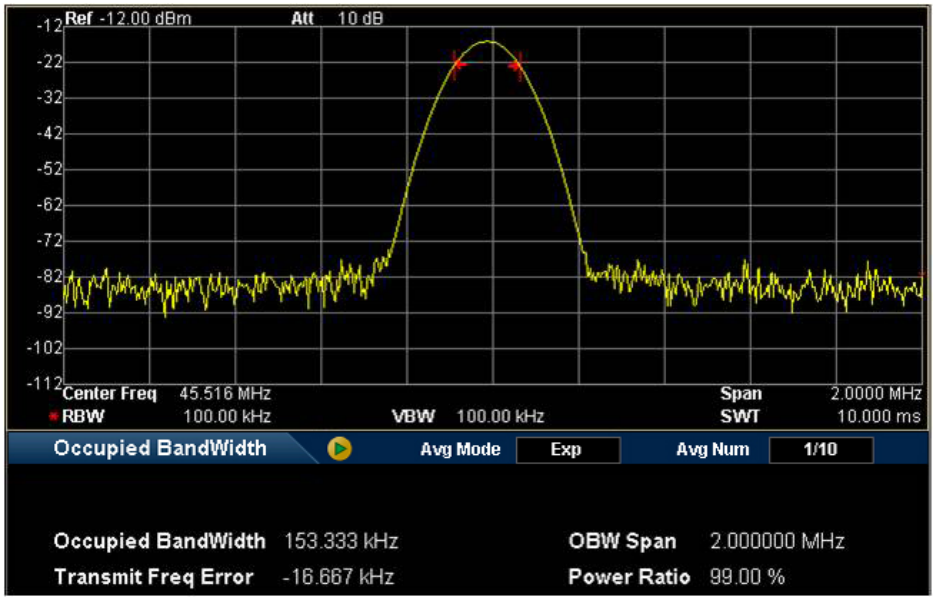
3. Chan Pwr

Measure the power and power spectral density within the specified channel bandwidth. When this function is enabled, the span and resolution bandwidth are automatically adjusted to smaller values.



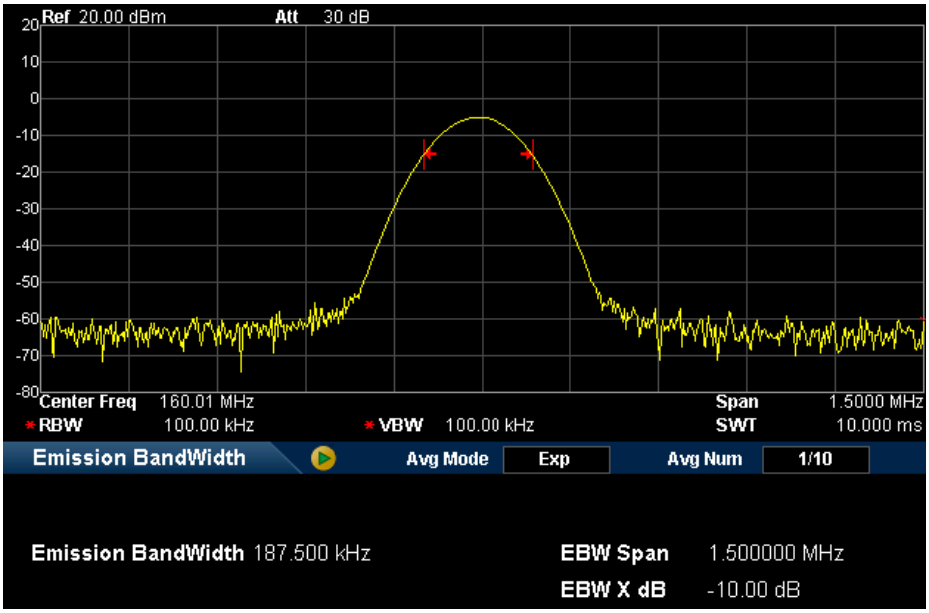
4. OBW

Integrate the power within the whole span and calculate the bandwidth occupied by this power according to the specified power ratio. The OBW function also indicates the difference between the center frequency of the channel under measurement and the center frequency of the analyzer.



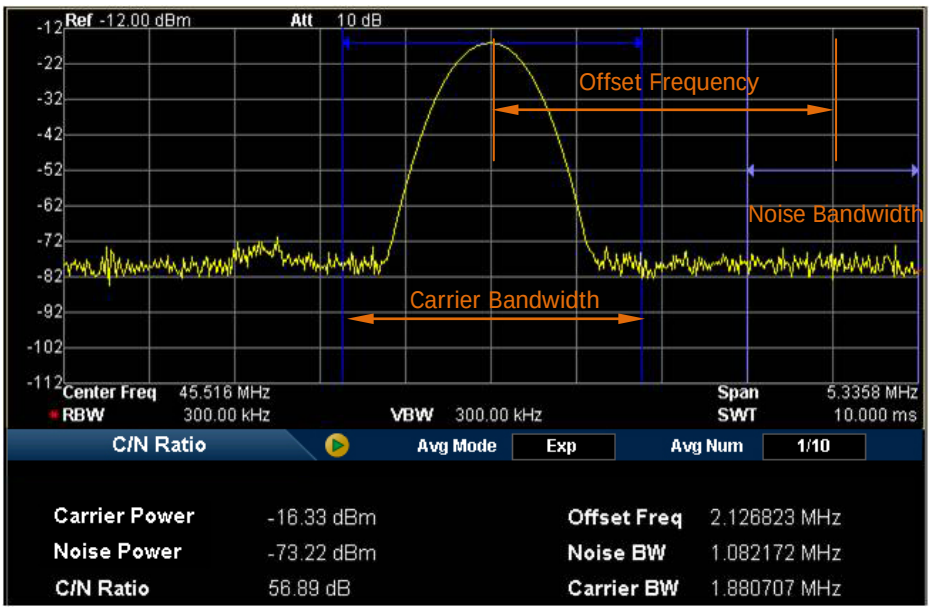
5. EBW

Measure the bandwidth between two points on the signal which are X dB below the highest point within the span.



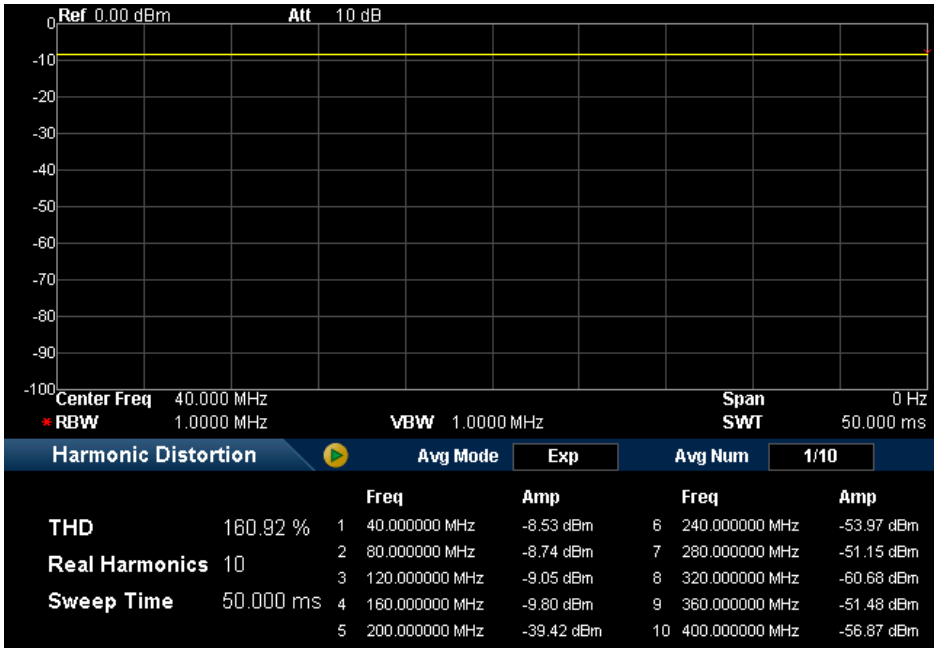
6. C/N Ratio

Measure the powers of the carrier and noise with the specified bandwidths as well as their power ratio.



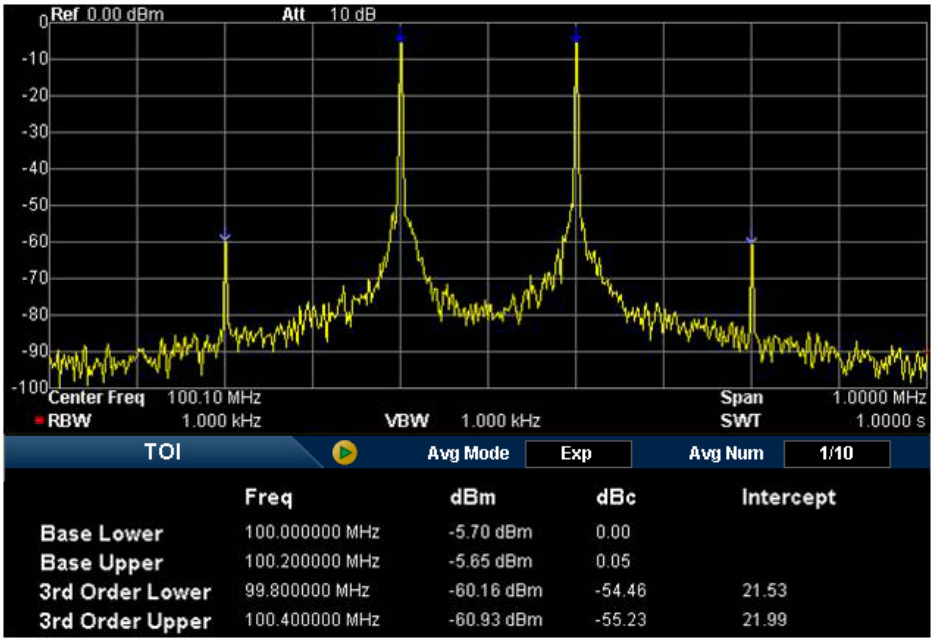
7. Harmo Dist

Measure the power of each order of harmonic and THD (total harmonic distortion) of the carrier. The highest order of harmonic available is 10 and the fundamental wave amplitude must be greater than -50 dBm, or else the measurement will be invalid.



8. TOI

Measure the parameters of the TOI production of two signals with the same amplitude and similar frequency. Those parameters include the frequencies and amplitudes of the Base Lower, Base Upper, 3rd Order Lower and 3rd Order Upper signal, as well as the Intercepts of both the Base Lower and Base Upper.



USB-GPIB Interface Converter

Through the **RIGOL** USB-GPIB interface converter, the spectrum analyzer can be connected to the GPIB bus controller of the PC, namely to expand a GPIB interface through which the spectrum analyzer can finish various tasks using the GPIB instructions more easily for the spectrum analyzer. The performance characteristics of the USB-GPIB interface converter are listed below.

- Achieve GPIB control via the USB Host interface of the spectrum analyzer.
- Distribute a GPIB address for the spectrum analyzer via the GPIB host device (PC).
- USB powered instead of external power supply.
- Indicate the power status via a LED.

Connect the USB interface and the GPIB interface of the USB-GPIB interface converter to the USB Host interface of the spectrum analyzer and the GPIB bus controller of the PC respectively.