

SHA850A

Spectrum Analyzer

Service Manual

EN 01A

Guaranty and Declaration

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Product Certification

SIGLENT guarantees this product conforms to the national and industrial standards in China as well as the ISO9001: 2008 standard and the ISO14001: 2004 standard. Other international standard conformance certification is in progress.

General Safety Summary

Carefully read the following safety precautions to avoid any personal injury or damage to the instrument and any products connected to it. To avoid potential hazards, please use the instrument as specified.

Use Proper AC Power Line

Only the power cord designed for the instrument and authorized by local country should be used.

Ground the Instrument

The instrument is grounded through the protective earth conductor of the power line. To avoid electric shock, please make sure the instrument is grounded correctly before connecting its input or output terminals.

Connect the Probe Correctly.

If a probe is used, do not connect the ground lead to high voltage since it has isobaric electric potential as the ground.

Look Over All Terminals' Ratings

To avoid fire or electric shock, please look over all ratings and sign instruction of the instrument. Before connecting the instrument, please read the manual carefully to gain more information about the ratings.

Use Proper Overvoltage Protection

Make sure that no overvoltage (such as that caused by a thunderstorm) can reach the product, or else the operator might be exposed to danger of electrical shock.

Electrostatic Prevention

Operate the instrument in an electrostatic discharge protective area environment to avoid damages induced by static discharge. Always ground both the internal and external conductors of the cable to release static before connecting.

Maintain Proper Ventilation

Inadequate ventilation may cause increasing of the instrument's temperature, which will eventually damage the instrument. So keep well ventilated and inspect the intake and fan regularly.

Avoid Exposed Circuit or Components

Do not touch exposed contacts or components when the power is on.

Do Not Operate Without Covers

Do not operate the instrument with covers or panels removed.

Use Only the Specified Fuse.

Keep Product Surfaces Clean and Dry.

To avoid the influence of dust and/or moisture in the air, please keep the surface of the device clean and dry.

Do Not Operate in Wet Conditions.

In order to avoid short circuiting to the interior of the device or electric shock, please do not operate the instrument in a humid environment.

Do Not Operate in an Explosive Atmosphere.

In order to avoid damage to the device or personal injury, it is important to operate the device away from an explosive atmosphere.

Safety Terms and Symbols

Terms on the product. These terms may appear on the product:

DANGER Indicates direct injuries or hazards that may happen.

WARNING Indicates potential injuries or hazards that may happen.

CAUTION Indicates potential damages to the instrument or other property that may happen.

Symbols on the product. These symbols may appear on the product:



**Hazardous
Voltage**



**Protective
Ground**



Warning



**Earth Chassis
Ground**

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General Features

General Features

The SIGLENT SHA850A, a handheld portable spectrum analyzer and cable-and-antenna analyzer, is a powerful and flexible tool for those field and outdoor RF applications. Including communication engineering, telecom operation and maintenance, radio management, factory production, education and teaching and many other fields.

Table 1-1 General features

Model	SHA851A	SHA852A
Spectrum Analyzer	9 kHz~3.6 GHz	9 kHz~7.5 GHz
Cable and Antenna Test	100 kHz~3.6 GHz	100 kHz~7.5 GHz

- ◆ Spectrum Analyzer Frequency Range from 9 kHz up to 7.5 GHz, -165 dBm/Hz Displayed Average Noise Level (Typ.), -104 dBc/Hz.@10 kHz Offset Phase Noise (1 GHz, Typ.), 1 Hz up to 3 MHz Resolution Bandwidth (RBW), Preamplifier and independent signal source up to 7.5 GHz, GPS positioning and logging
- ◆ Cable and Antenna Test Frequency Range from 100 kHz up to 7.5 GHz, Distance To Fault and Time Domain Analysis
- ◆ Optional Vector Network Analyzer, Bias out up to 32VDC
- ◆ Optional Analog and Digital Modulation Analysis, IQ Data Acquisition, Indoor and outdoor map
- ◆ Typical working time 4 hours, 3.2 kg net weight, 8.4 Inch Multi-Touch Screen , Mouse and Keyboard supported

Performance Verification Test

This chapter explains testing the spectrum analyzer in order to verify performance specifications. For accurate test results, please let the test equipment and the analyzer warm up 45 minutes before testing.

Table 3-1 Test Equipment

Equipment	Specification	Qty.	Recommended
RF Generator	7.5 GHz	2	E8257D
Signal Generator	100 MHz	1	SDG6050X
Power Meter	7.5 GHz	1	NRP18A
Frequency Counter	10 MHz	1	53220A With OCXO
Low-pass Filter	Cut-off 50 MHz	1	Mini-circuit
Power Divider	>7.5 GHz	1	Mini-circuit
SMA-N Cable	>7.5 GHz	3	
N-N Cable	>7.5 GHz	1	
N-BNC Cable	2 GHz	2	
BNC-SMA Cable	2 GHz	1	

Frequency Accuracy Test

Specification

Reference frequency	10.000000 MHz
Initial calibration accuracy	<1 ppm

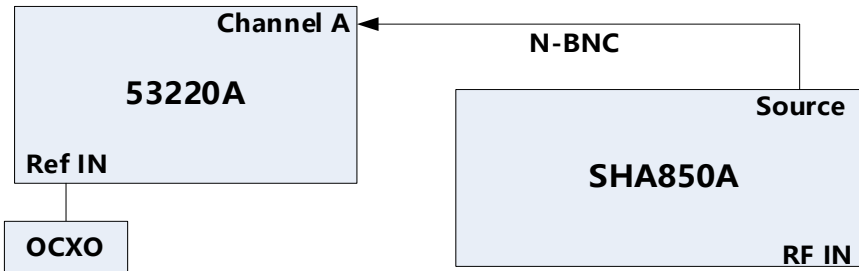


Figure 3-6 Connecting test instruments for frequency accuracy

Steps:

1. Connect Source to the channel of 53220A.
2. Set the 53220A to frequency counter mode, and set frequency ref to 10.000000 MHz
3. Check if the frequency deviation ≤ 1 ppm

Record:

Frequency	Frequency Deviation	Pass/Fail
10.000000 MHz		

Absolute Amplitude Accuracy Test

Specification

Absolute amplitude accuracy	Preamp off	±0.4 dB, input signal -20 dBm
	Preamp on	±0.5 dB, input signal -40 dBm

20 °C to 30 °C, $f_c = 50$ MHz, RBW = VBW = 1 kHz, peak detector, att = 20 dB

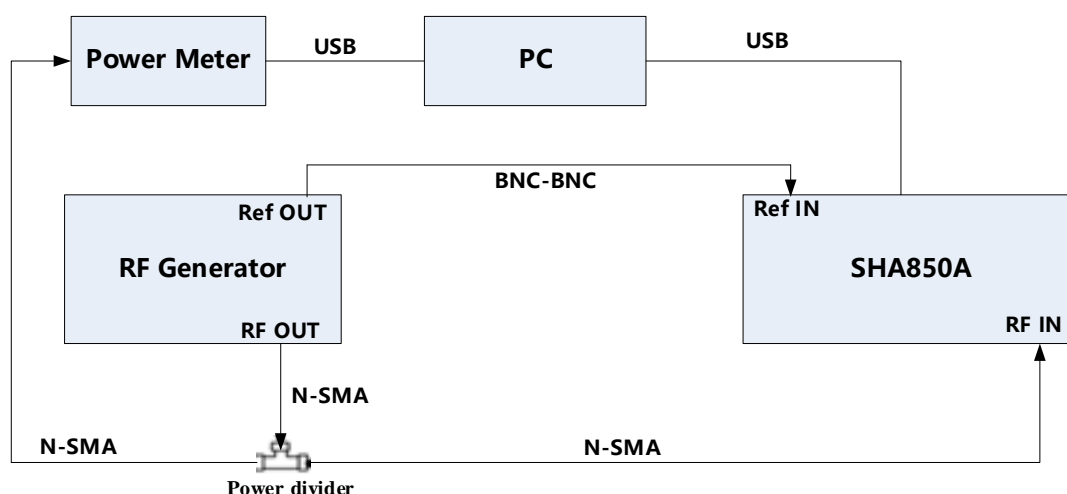


Figure 3-1 Absolute amplitude accuracy connections

Steps:

1. Connect the spectrum analyzer, signal generator and power meter as in figure 3-1
2. Set the signal generator to output a sine waveform with 50 MHz frequency and -20 dBm amplitude and enable the output
3. Configure the spectrum analyzer:
 - (a) Set the center frequency to 50 MHz
 - (b) Set the span to 1 MHz
 - (c) Set the attenuation to 20 dB
 - (d) Set the RBW and VBW to 1 kHz
 - (e) Press **Trace** -> set Avg Times to 10, wait for trace average
4. Record measurement value P1 of the power meter
5. Press **Peak** to find the maximum value of the spectrum analyzer and record the result P2
6. Absolute amplitude accuracy = P1 – P2
7. Change the preamplifier on and set the output amplitude of the signal generator to -40dBm. Repeat steps 3 to 6 and record the results.

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Record:

Preamp off			
Frequency	P1 (Power Meter)	P2 (Spectrum Analyzer)	P1- P2
50 MHz			
Preamp on			
Frequency	P1 (Power Meter)	P2 (Spectrum Analyzer)	P1- P2
50 MHz			

Frequency Response Test

Specification

Preamp off	± 0.8 dB	± 0.4 dB, typ.
Preamp on	± 1.2 dB	± 0.6 dB, typ.

20 °C to 30 °C , att = 20 dB, reference frequency 50 MHz

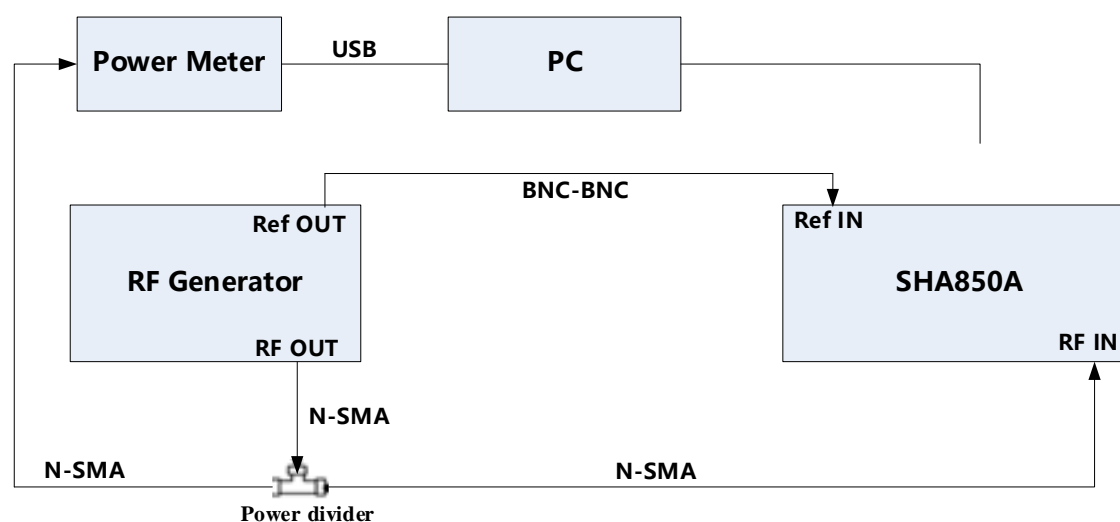


Figure 3-2 Frequency response connections

Steps:

1. Connect the spectrum analyzer, signal generator and power meter as figure 3-2 shows
2. Set the signal generator to output a sine waveform with 50 MHz frequency and -20 dBm amplitude and enable output
3. Read the measurement of the power meter record the result as reference value P1
4. Configure the spectrum analyzer:
 - (a) Set the center frequency to 50 MHz
 - (b) Set the span to 1 MHz
 - (c) Set the attenuation to 20 dB
 - (d) Press **Peak** to find the maximum value and record as reference value P2
5. Modify the output frequency of the signal generator at 100 kHz, 1 MHz, 10 MHz, 100 MHz, 1 GHz, 7.5 GHz
6. Read the measurement of the power meter record the result as A1, SYSTEM ERROR = A1 – P1
7. Modify the center frequency of the spectrum analyzer so that it matches the signal generator and find the peak value A2, calculate the GLOBAL ERROR = A2 – P2

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8. Frequency response = |GLOBAL ERROR - SYSTEM ERROR|, compare the calculated result with the specification
9. Enable the preamplifier and set the output amplitude of the signal generator to -40dBm. Repeat steps 3 to 8 and record the results.

Record:

Preamp off						
Frequency	P1 (PM)	P2 (SA)				
50 MHz						
Frequency	A1(PM)	A2(SA)	A1 – P1 (System Error)	A2 – P2 (Global Error)	Frequency Response	Pass/Fail
100 kHz						
1 MHz						
10 MHz						
100MHz						
1 GHz						
7.5 GHz						

Preamp on						
Frequency	P1 (PM)	P2 (SA)				
50 MHz						
Frequency	A1(PM)	A2(SA)	A1 – P1 (System Error)	A2 – P2 (Global Error)	Frequency Response	Pass/Fail
100 kHz						
1 MHz						
10 MHz						
100MHz						
1 GHz						
7.5 GHz						

Display Average Noise Level (DANL) Test

Specification

	Frequency	
Preamp Off	100 kHz ~1 MHz	-125 dBm, -136 dBm (typ.)
	1 MHz~600 MHz	-140 dBm, -147 dBm (typ.)
	600 MHz~1.8 GHz	-139 dBm, -145 dBm (typ.)
	1.8 GHz~3.2 GHz	-134 dBm, -140 dBm (typ.)
	3.2 GHz~3.65 GHz	-136 dBm, -143 dBm (typ.)
	3.65 GHz~4.1 GHz	-136 dBm, -143 dBm (typ.)
	4.1 GHz~5.0 GHz	-135 dBm, -141 dBm (typ.)
	5.0 GHz~5.85 GHz	-135 dBm, -141 dBm (typ.)
	5.85 GHz~6.7 GHz	-134 dBm, -140 dBm (typ.)
	6.7 GHz~7.5 GHz	-132 dBm, -138 dBm (typ.)
Preamp On	100 kHz ~1 MHz	-125 dBm, -137 dBm (typ.)
	1 MHz~600 MHz	-156 dBm, -163 dBm (typ.)
	600 MHz~1.8GHz	-159 dBm, -165 dBm (typ.)
	1.8 GHz~3.2 GHz	-157 dBm, -163 dBm (typ.)
	3.2 GHz~3.65 GHz	-157 dBm, -163 dBm (typ.)
	3.65 GHz~4.1 GHz	-157 dBm, -163 dBm (typ.)
	4.1 GHz~5.0 GHz	-156 dBm, -162 dBm (typ.)
	5.0 GHz~5.85 GHz	-156 dBm, -162 dBm (typ.)
	5.85 GHz~6.7 GHz	-155 dBm, -161 dBm (typ.)
	6.7 GHz~7.5 GHz	-153 dBm, -159 dBm (typ.)
100 kHz ~1 MHz	-125 dBm, -136 dBm (typ.)	
1 MHz~600 MHz	-140 dBm, -147 dBm (typ.)	

20 °C to 30 °C, att = 0 dB, RBW=1 Hz, sample detector, trace average >50, Source off

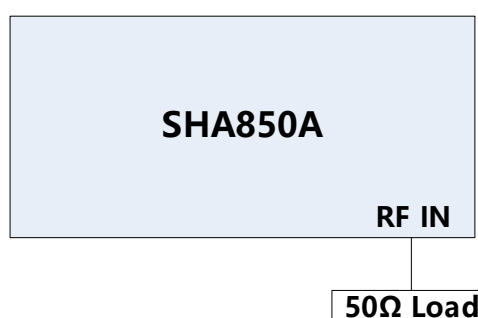


Figure 3-3 DANL verification connections

Step:

1. Connect a 50Ω load to the RF IN port of spectrum analyzer as the figure shows
2. Configure the spectrum analyzer:
 - (a) Set the start frequency to 100 kHz and the stop frequency to 1MHz
 - (b) Set the RBW to 1Hz and VBW to 1Hz

(c) Set the detect type to Sample

3. Press **Trace** -> Avg Times and wait for trace average 50
4. Press **Peak** to find the maximum noise level of this frequency range, record the marker value N
5. Change the frequency range according to the specification table and set the RBW to suitable value, repeat step 2 to 5 and test other frequency range.

Record:

	Frequency		N	Pass/Fail
Preamp Off	100 kHz ~1 MHz	-125 dBm, -136 dBm (typ.)		
	1 MHz~600 MHz	-140 dBm, -147 dBm (typ.)		
	600 MHz~1.8 GHz	-139 dBm, -145 dBm (typ.)		
	1.8 GHz~3.2 GHz	-134 dBm, -140 dBm (typ.)		
	3.2 GHz~3.65 GHz	-136 dBm, -143 dBm (typ.)		
	3.65 GHz~4.1 GHz	-136 dBm, -143 dBm (typ.)		
	4.1 GHz~5.0 GHz	-135 dBm, -141 dBm (typ.)		
	5.0 GHz~5.85 GHz	-135 dBm, -141 dBm (typ.)		
	5.85 GHz~6.7 GHz	-134 dBm, -140 dBm (typ.)		
	6.7 GHz~7.5 GHz	-132 dBm, -138 dBm (typ.)		
Preamp On	100 kHz ~1 MHz	-125 dBm, -137 dBm (typ.)		
	1 MHz~600 MHz	-156 dBm, -163 dBm (typ.)		
	600 MHz~1.8GHz	-159 dBm, -165 dBm (typ.)		
	1.8 GHz~3.2 GHz	-157 dBm, -163 dBm (typ.)		
	3.2 GHz~3.65 GHz	-157 dBm, -163 dBm (typ.)		
	3.65 GHz~4.1 GHz	-157 dBm, -163 dBm (typ.)		
	4.1 GHz~5.0 GHz	-156 dBm, -162 dBm (typ.)		
	5.0 GHz~5.85 GHz	-156 dBm, -162 dBm (typ.)		
	5.85 GHz~6.7 GHz	-155 dBm, -161 dBm (typ.)		
	6.7 GHz~7.5 GHz	-153 dBm, -159 dBm (typ.)		
	100 kHz ~1 MHz	-125 dBm, -136 dBm (typ.)		
1 MHz~600 MHz	-140 dBm, -147 dBm (typ.)			

Phase Noise Test

Specification

Phase noise	-100 dBc/Hz, -104 dBc/Hz (typ.) , Offset 10 kHz
	-100 dBc/Hz, -104 dBc/Hz (typ.) , Offset 100 kHz
	-114 dBc/Hz, -117 dBc/Hz (typ.) , Offset 1 MHz

20 °C to 30 °C , att = 0 dB, fc = 1 GHz, Normalized to 1 Hz

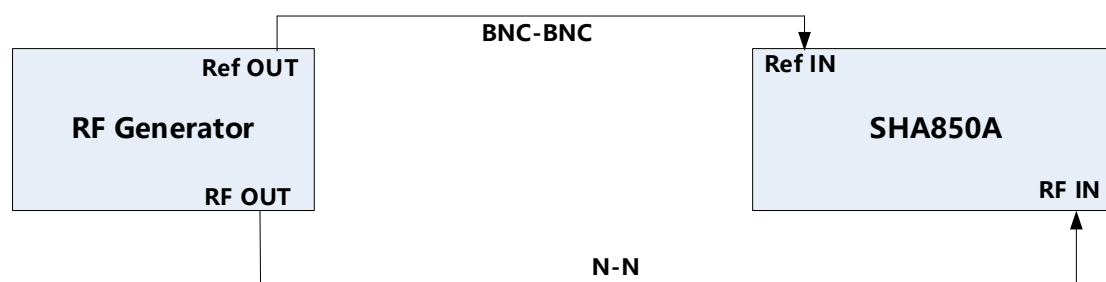


Figure 3-4 Phase noise verification connections

Step1:

1. Connect the signal generator and spectrum analyzer as figure 3-4 shows
2. Configure the spectrum analyzer:
 - (a) Set the center frequency to 1 GHz
 - (b) Set the span to 30 kHz
 - (c) Set the RBW to 3 kHz
 - (d) Set the attenuation = 0 dB
 - (e) Set the detect type to Sample
3. Set the signal generator to output a sine waveform with 1000 MHz frequency and -20 dBm amplitude and enable the output
4. Press **Trace** -> avg Times 100 and wait for trace average
5. Press **peak** to find the maximum value, record the peak value P1
6. Change marker type to delta and input 10kHz, press **Marker Fn** -> Noise Marker, record the marker value P2
7. Phase noise = P2 - P1, compare the calculate result with specification

Step2:

1. Connect the signal generator and spectrum analyzer as figure 3-4 shows
2. Configure the spectrum analyzer:
 - (a) Set the center frequency to 1 GHz
 - (b) Set the span to 220 kHz
 - (c) Set the RBW to 10 kHz
 - (d) Set the attenuation = 0 dB

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- (e) Set the detect type to Average
3. Set the signal generator to output a sine waveform with 1000 MHz frequency and -20 dBm amplitude and enable the output
4. Press **Trace** -> avg Times 100 and wait for trace average
5. Press **peak** to find the maximum value, record the peak value P1
6. Change marker type to delta and input 100kHz, press **Marker Fn** -> Noise Marker, record the marker value P2
7. Phase noise = P2 - P1, compare the calculate result with specification

Step3:

1. Connect the signal generator and spectrum analyzer as figure 3-4 shows
2. Configure the spectrum analyzer:
 - (a) Set the center frequency to 1 GHz
 - (b) Set the span to 3 MHz
 - (c) Set the RBW to 30 kHz
 - (d) Set the attenuation = 0 dB
 - (e) Set the detect type to Average
3. Set the signal generator to output a sine waveform with 1000 MHz frequency and -20 dBm amplitude and enable the output
4. Press **Trace** -> avg Times 100 and wait for trace average
5. Press **peak** to find the maximum value, record the peak value P1
6. Change marker type to delta and input 1 MHz, press **Marker Fn** -> Noise Marker, record the marker value P2
7. Phase noise = P2 - P1, compare the calculate result with specification

Record:

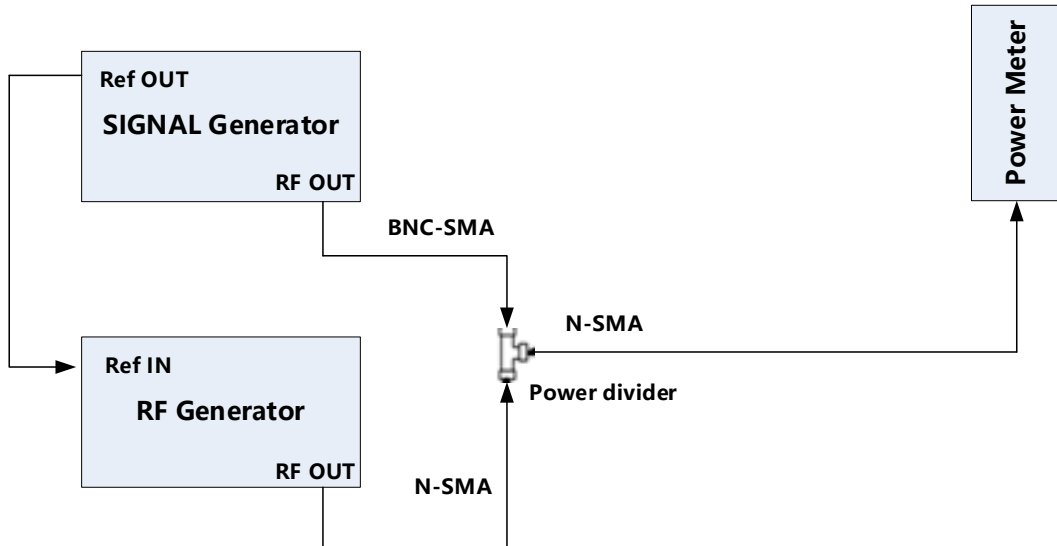
Offset @1 GHz	P1	P2	P2 - P1	Pass/Fail
10 kHz				
100 kHz				
1 MHz				

1dB Gain Compression Test

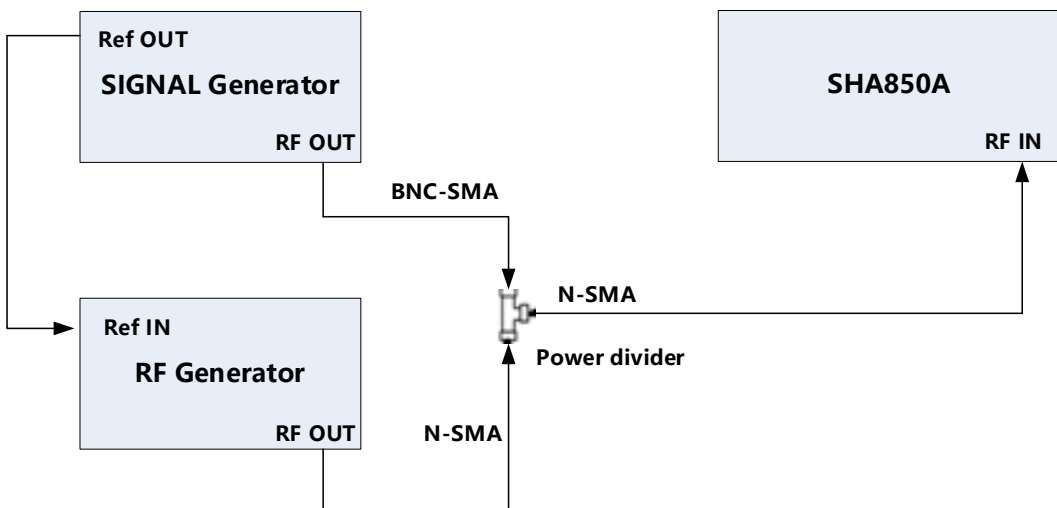
Specification

1dB Gain Compression	>8 dBm
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20 °C to 30 °C, $f_c \geq 50$ MHz, two tones frequency interval ≥ 10 MHz, RBW <1 kHz, att = 0 dB, preamp off



(a)



(b)

Figure 3-7 connecting test instruments for 1dB Gain Compression Test

Steps:

1. Connect the signal generator, RF generator and power meter as figure 3-7(a) shows
2. Set the output frequency of signal generator 50 MHz and the amplitude to -20 dBm. Set the output frequency of RF generator to 53 MHz and the amplitude to 0 dBm.

3. Enable the output of signal generator and disable the output of RF generator. Observe the measurement value of the power meter. Adjust the output amplitude of signal generator until the reading of the power meter becomes -20 dBm.
4. Enable the output of RF generator and disable the output of signal generator. Observe the measurement value of the power meter. Adjust the output amplitude of RF generator until the reading of the power meter becomes 0 dBm.
5. Disconnect the power divider and power meter and connect the power divider with spectrum analyzer, as shown in Figure 3-7(b).
6. Enable the output of signal generator and disable the output of RF generator.
7. Configure the spectrum analyzer:
 - a) Set the center frequency to 50 MHz.
 - b) Set the span to 100 kHz.
 - c) Set the reference level to -20 dBm.
 - d) Set the input attenuation to 0 dB.
 - e) Set the resolution bandwidth to 1 kHz.
 - f) Set the sweep time to auto and the auto sweep time to accuracy.
8. Press **Peak** to find the maximum value and record as reference value P1.
9. Enable the output of signal generator and the output of RF generator, find the peak value P2.

Record:

P1	P2	P1 – P2

Second Harmonic Distortion Test

Specification

Second Harmonic Distortion	50 MHz~3.2 GHz, <-65 dBc
	3.2 GHz~3.75 GHz, <-80 dBc

20 °C to 30 °C, $f_c=50\text{MHz}$, attenuation = 0 dB, preamp off, mixer level=-30dBm

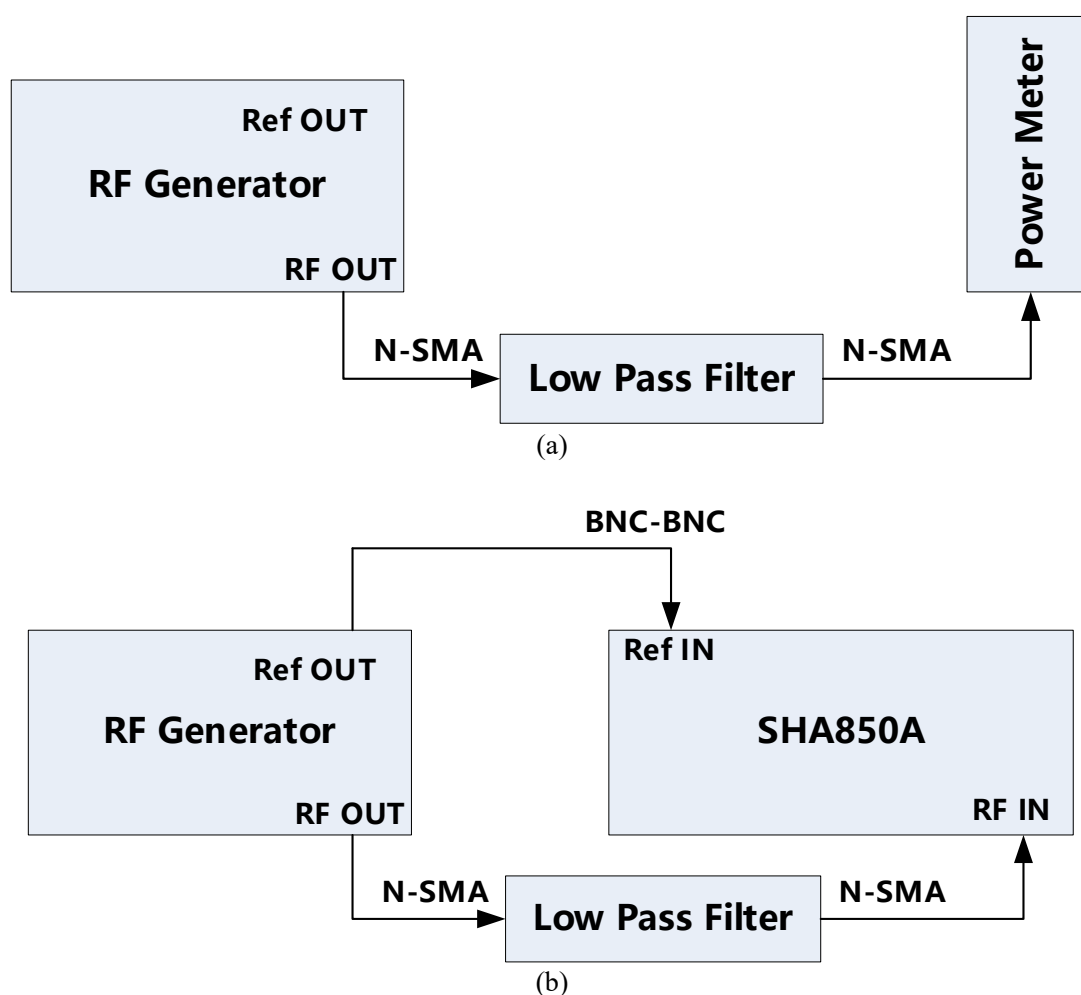


Figure 3-8 connecting test instruments for Second Harmonic Distortion Test

Steps:

1. Connect the RF generator, 50MHz low pass filter and power meter as figure 3-8(a) shows
2. Set the output frequency of the RF generator to 50 MHz and the amplitude to -30 dBm. Observe the measurement value of the power meter. Adjust the output amplitude of RF generator until the reading of the power meter becomes -30 dBm.
3. Connect the RF generator, 50MHz low pass filter and spectrum analyzer as figure 3-8(b) shows. Enable the output of RF generator.

4. Configure the spectrum analyzer:
 - a) Set the center frequency to 50 MHz.
 - b) Set the span to 10 kHz.
 - d) Set the reference level to -30 dBm.
 - e) Set the input attenuation to 0 dB.
 - f) Set the resolution bandwidth to 300 Hz.
 - g) Set the video bandwidth to 10 Hz.
 - h) Set the sweep time to auto and the auto sweep time to accuracy.

5. Configure the spectrum analyzer:
 - a) Set the center frequency to 3.2 GHz.
 - b) Set the span to 10 kHz.
 - d) Set the reference level to -30 dBm.
 - e) Set the input attenuation to 0 dB.
 - f) Set the resolution bandwidth to 300 Hz.
 - g) Set the video bandwidth to 10 Hz.
 - h) Set the sweep time to auto and the auto sweep time to accuracy.

6. Press **Peak** to find the maximum value P1. Then, Set the center frequency to 100 MHz, Press **Peak** to find the maximum value P2.

Record:

P1	P2	P1 – P2

TOI Test

Specification

TOI/ IIP3	50 MHz~3.2 GHz	+9.5 dBm (typ.)
	3.2 GHz~7.5 GHz	+16 dBm (typ.)

20 °C to 30 °C, $f_c \geq 50$ MHz, two -20 dBm tones spaced by 100 kHz, att = 0 dB, preamp off

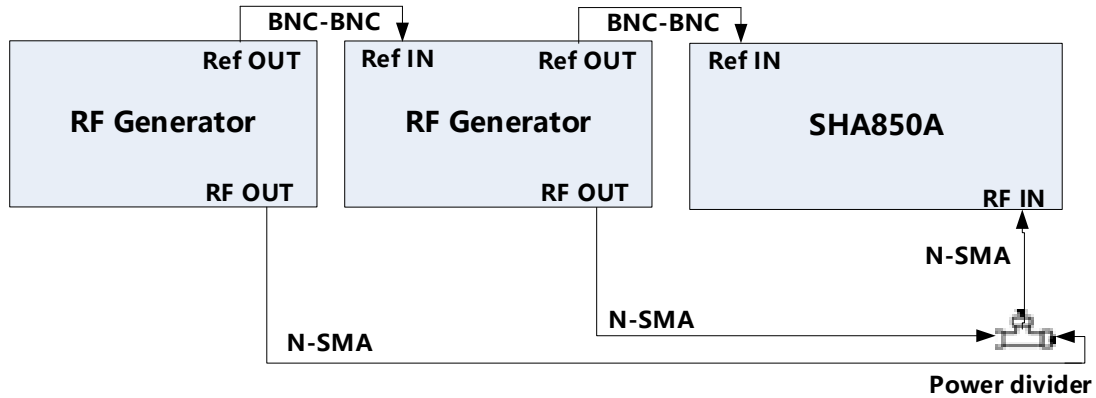


Figure 3-5 TOI verification connections

Step

1. Connect double signal generators to a power divider and the output of the divider to RF IN port of spectrum analyzer
2. Configure the spectrum analyzer:
 - (a) Set the center frequency to 1 GHz
 - (b) Set the span to 1 MHz
 - (c) Set the RBW to 10 kHz
 - (d) Set the attenuation = 0 dB
3. Set the signal generator A to output a sine waveform with 1000 MHz frequency and -20 dBm amplitude and enable output
4. Set the signal generator B to output a sine waveform with 1000.1 MHz frequency and -20 dBm amplitude and enable output
5. Press **Trace** -> avg Times 100, and wait for trace average
6. Press **Peak** to find the maximum value, then change the marker type to delta and press **Next Peak** twice, record delta amplitude value DELTA
7. $IIP3 = -20\text{dBm} - \text{DELTA}/2$, check if the calculate result $\geq +14$ dB

Record:

Offset	DELTA	IIP3	Pass/Fail
999.9 MHz			
1000.2 MHz			

Input Attenuation Error Test

Specification

Input Attenuation Error	$< \pm 0.5\text{dB}$
-------------------------	----------------------

20 °C to 30 °C, $f_c = 50\text{ MHz}$, preamp off, relative to att = 20 dB, att = 0~50 dB

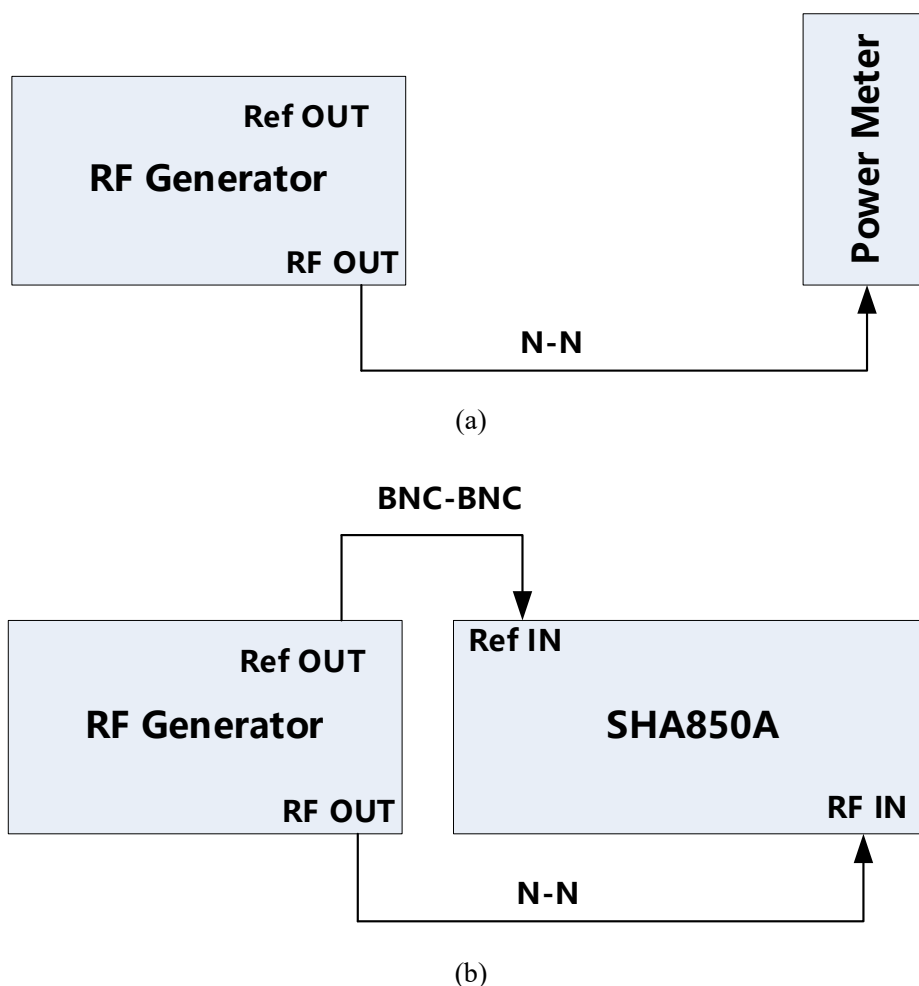


Figure 3-9 connecting test instruments for Input Attenuation Error Test

Steps:

1. Connect the RF generator and power meter as figure 3-9(a) shows
2. Set the output frequency of the RF generator to 50 MHz and the amplitude to -30 dBm. Observe the measurement value of the power meter. Adjust the output amplitude of RF generator until the reading of the power meter becomes -30 dBm. Read the output amplitude from RF generator, record it as P₋₃₀.
3. Adjust the output amplitude of RF generator until the reading of the power meter becomes -25, -20, -15, -10, -5, 0, 5, 10, 15, 20dBm respectively. Record these values as P₋₂₅, P₋₂₀, P₋₁₅, P₋₁₀, P₋₅, P₀, P₅, P₁₀, P₁₅, P₂₀.
4. Connect the RF generator and spectrum analyzer as figure 3-2(b) shows

5. Set the output frequency of the RF generator to 50 MHz and the amplitude to P₋₁₀.
6. Configure the spectrum analyzer:
 - a) Set the center frequency to 50 MHz.
 - b) Set the span to 10 kHz.
 - c) Set the reference level to 0 dBm.
 - d) Set the input attenuation to 20 dB.
 - e) Set the resolution bandwidth to 1 kHz and the video bandwidth to 10 Hz.
 - f) Set the sweep time to auto and the auto sweep time to accuracy.
7. Press **Peak** to find the maximum value P(ATT=20dB). Record $\Delta P(ATT=20dB)=P(ATT=20dB)+10dBm$ as reference value.
8. Change the output amplitude of the RF generator to P₋₃₀. Set the input attenuation of the spectrum analyzer to 0dB. Press **Peak** to find the maximum value P(ATT=0dB). Record $\Delta P(ATT=0dB)=P(ATT=0dB)+30dBm$.
9. Repeat the step 8, record the value

$\Delta P(ATT=5dB)=P(ATT=5dB)+25dBm,$
 $\Delta P(ATT=10dB)=P(ATT=10dB)+20dBm,$
 $\Delta P(ATT=15dB)=P(ATT=15dB)+15dBm,$
 $\Delta P(ATT=25dB)=P(ATT=25dB)+5dBm,$
 $\Delta P(ATT=30dB)=P(ATT=30dB),$
 $\Delta P(ATT=35dB)=P(ATT=25dB)-5dBm,$
 $\Delta P(ATT=40dB)=P(ATT=25dB)-10dBm,$
 $\Delta P(ATT=45dB)=P(ATT=25dB)-15dBm,$
 $\Delta P(ATT=50dB)=P(ATT=25dB)-20dBm.$

$Error(ATT=0dB)=\Delta P(ATT=0dB)-\Delta P(ATT=20dB),$
 $Error(ATT=5dB)=\Delta P(ATT=5dB)-\Delta P(ATT=20dB),$
 $Error(ATT=10dB)=\Delta P(ATT=10dB)-\Delta P(ATT=20dB),$
 $Error(ATT=15dB)=\Delta P(ATT=15dB)-\Delta P(ATT=20dB),$
 $Error(ATT=25dB)=\Delta P(ATT=25dB)-\Delta P(ATT=20dB),$
 $Error(ATT=30dB)=\Delta P(ATT=30dB)-\Delta P(ATT=20dB),$
 $Error(ATT=35dB)=\Delta P(ATT=35dB)-\Delta P(ATT=20dB),$
 $Error(ATT=40dB)=\Delta P(ATT=40dB)-\Delta P(ATT=20dB),$
 $Error(ATT=45dB)=\Delta P(ATT=45dB)-\Delta P(ATT=20dB),$
 $Error(ATT=50dB)=\Delta P(ATT=50dB)-\Delta P(ATT=20dB).$

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Record:

	P _{0~30}	ATT	P(ATT=0~30dB)	Error
P ₋₃₀		0		
P ₋₂₅		5		
P ₋₂₀		10		
P ₋₁₅		15		
P ₋₁₀		20		----
P ₋₅		25		
P ₀		30		
P ₅		35		
P ₁₀		40		
P ₁₅		45		
P ₂₀		50		

SOURCE Test

Specification

Frequency range	100 kHz ~7.5 GHz
Output level	-40 dBm ~ 0 dBm
Output flatness	+/-2 dB

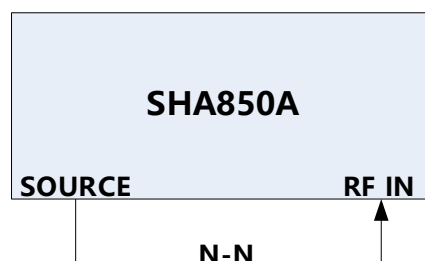


Figure 3-10 Connecting test instruments for TG Output

Steps:

1. Connect RF IN port and SOURCE OUT port by a N-N cable as figure 3-10 shows
2. Configure the spectrum analyzer:
 - (a) Set the Source to CW, Set the Freq to 100 kHz and 7.5 GHz
 - (b) Set the Span to full
 - (c) Set the Ref level to 0 dB
 - (d) Set the RBW and VBW to Auto
3. Set Marker to 100kHz, record the maximum value P1, check if P1 > SOURCE level +/- 2dB
4. Set Marker to 7.5GHz, record the maximum value P2, check if P2 > SOURCE level +/- 2dB

Record:

Freq	SOURCE level	P1	P1- SOURCE level	Pass/Fail
100 kHz	0 dBm			
100 kHz	-10 dBm			
100 kHz	-20 dBm			
100 kHz	-40 dBm			
Freq	SOURCE level	P2	P2- SOURCE level	Pass/Fail
7.5 GHz	0 dBm			
7.5 GHz	-10 dBm			
7.5 GHz	-20 dBm			
7.5 GHz	-40 dBm			

About SIGLENT

SIGLENT is an international high-tech company, concentrating on R&D, sales, production and services of electronic test & measurement instruments.

SIGLENT first began developing digital oscilloscopes independently in 2002. After more than a decade of continuous development, SIGLENT has extended its product line to include digital oscilloscopes, isolated handheld oscilloscopes, function/arbitrary waveform generators, RF/MW signal generators, spectrum analyzers, vector network analyzers, digital multimeters, DC power supplies, electronic loads and other general purpose test instrumentation. Since its first oscilloscope was launched in 2005, SIGLENT has become the fastest growing manufacturer of digital oscilloscopes. We firmly believe that today SIGLENT is the best value in electronic test & measurement.

Headquarters:

SIGLENT Technologies Co., Ltd
Add: Bldg No.4 & No.5, Antongda Industrial
Zone, 3rd Liuxian Road, Bao'an District,
Shenzhen, 518101, China
Tel: + 86 755 3688 7876
Fax: + 86 755 3359 1582
Email: sales@siglent.com
Website: int.siglent.com

USA:

SIGLENT Technologies America, Inc
6557 Cochran Rd Solon, Ohio 44139
Tel: 440-398-5800
Toll Free: 877-515-5551
Fax: 440-399-1211
Email: info@siglent.com
Website: www.siglentna.com

Europe:

SIGLENT Technologies Germany GmbH
Add: Staetzlinger Str. 70
86165 Augsburg, Germany
Tel: +49(0)-821-666 0 111 0
Fax: +49(0)-821-666 0 111 22
Email: info-eu@siglent.com
Website: www.siglenteu.com

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