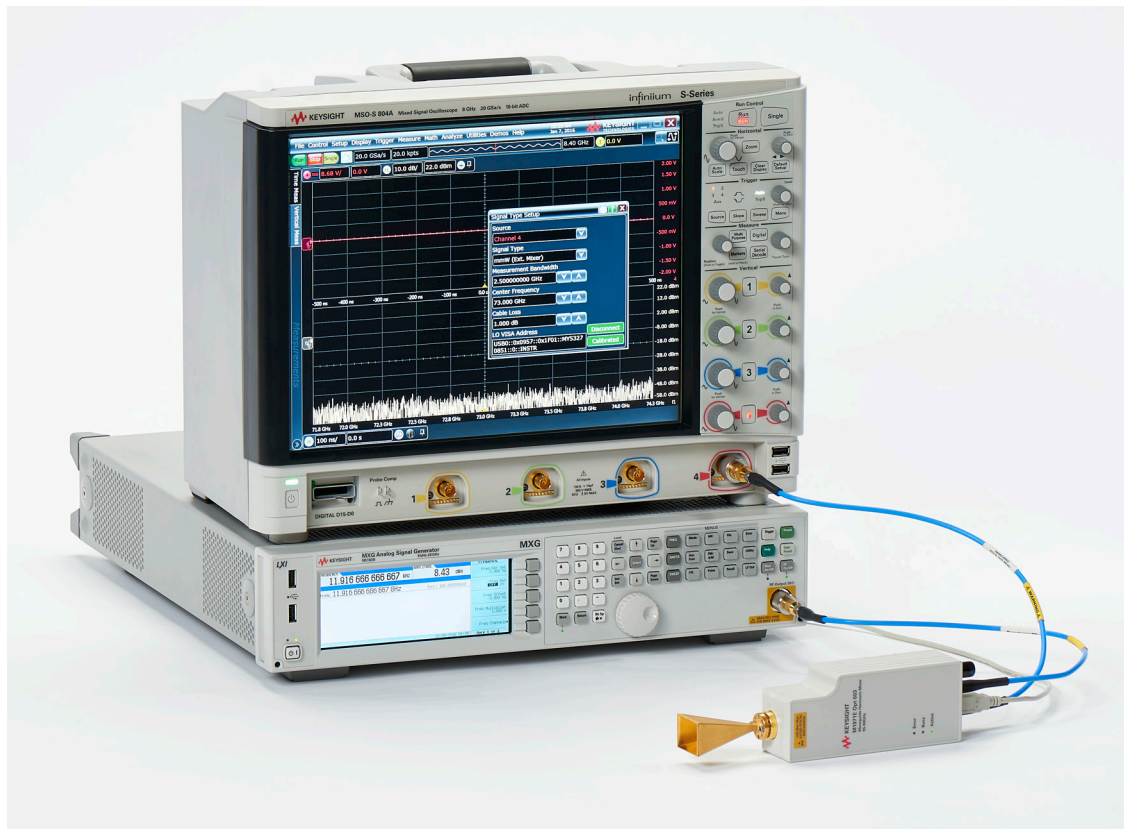


Keysight Technologies

E-Band Signal Analysis Reference Solution

Configuration Guide



Recommended options for E-band signal analysis reference solution indicated by ☒ below.

1. Select S-Series Infiniium Oscilloscope and Options

Step 1. Choose oscilloscope analog bandwidth (at least 4 GHz required)			
<input checked="" type="checkbox"/>	DSOS404A	4 GHz analog bandwidth	Maximum sample rate
<input type="checkbox"/>	DSOS604A	6 GHz analog bandwidth	20 GSa/s (2 channels)
<input type="checkbox"/>	DSOS804A	8 GHz analog bandwidth	10 GSa/s (4 channels)
Step 2. Choose memory depth			
<input checked="" type="checkbox"/>	DSOS000-100	Memory – 100 Mpts/ch memory installed	Standard memory depth: 100 Mpts (2 channels) 50 Mpts (4 channels)
<input type="checkbox"/>	DSOS000-200	Memory – 200 Mpts/ch memory installed	
<input type="checkbox"/>	DSOS000-400	Memory – 400 Mpts/ch memory installed	
Step 3. Mixer control software			
<input checked="" type="checkbox"/>	N8838A-1FP	External mixer assistant software	Connects, controls, and calibrates the LO and mixer(s) for the reference solution
Step 4. Additional oscilloscope options			
<input type="checkbox"/>	See S-Series data sheet (5991-3904EN) for additional hardware, probes, and software options		

2. Select MXG-B Signal Generator and Options

Step 1. Choose oscilloscope analog bandwidth (at least 4 GHz required)			
<input checked="" type="checkbox"/>	N5183B-513	9 kHz to 13 GHz frequency range	
<input type="checkbox"/>	N5183B-520	9 kHz to 20 GHz frequency range	
<input type="checkbox"/>	N5183B-532	9 kHz to 31.8 GHz frequency range	
<input type="checkbox"/>	N5183B-540	9 kHz to 40 GHz frequency range	
Step 2. Choose phase noise			
<input checked="" type="checkbox"/>	N5183B-UNY	Enhanced low phase noise	Not upgradable
Step 3. Additional signal generator options			
<input type="checkbox"/>	See MXG configuration guide (5991-5396EN) for additional hardware and software options		

3. Select Options for M1971E Waveguide Harmonic Mixer

Step 1. Choose frequency range	
<input checked="" type="checkbox"/>	M1971E-001 60 to 90 GHz frequency range (Serial number must be greater than MY56130101)
<input type="checkbox"/>	M1971E-003 55 to 90 GHz frequency range

4. Select Software

Select analysis software

Step 1. Start with the base 89600 vector signal analysis (VSA) configuration

- | | | |
|-------------------------------------|------------|--|
| <input checked="" type="checkbox"/> | 89601B-200 | Basic vector signal analysis and hardware connectivity |
|-------------------------------------|------------|--|

Step 2. Choose advanced signal analysis

- | | | |
|-------------------------------------|------------|---------------------------------|
| <input checked="" type="checkbox"/> | 89601B-AYA | Vector modulation analysis |
| <input type="checkbox"/> | 89601B-BHF | Custom OFDM modulation analysis |
| <input type="checkbox"/> | 89601B-BHK | Custom IQ modulation analysis |
| <input type="checkbox"/> | 89601B-BHP | FMCW radar analysis |
| <input type="checkbox"/> | 89601B-BHQ | Pulse analysis |

Step 3. Additional VSA software options

- | | | |
|--------------------------|---|--|
| <input type="checkbox"/> | See VSA configuration guide (5990-6386EN) for more cellular, distortion, and other analysis options | |
|--------------------------|---|--|

Download free Keysight Command Expert software (optional)

Free Command Expert software provides fast and easy instrument control via your PC ¹

Command Expert combines instrument command sets, sequences, documentation, syntax checking, and execution in one simple interface, helping you:

- Find instrument commands
- Access command documentation
- Verify command syntax
- Build instrument command sequences
- Execute instrument command sequences
- Profile command execution time
- Integrate sequences in MATLAB, Visual Studio, Excel, LabVIEW, VEE, or SystemVue PC application environments
- Generate code for command sequences in MATLAB, Visual C#, Visual Basic.NET, and Visual C++
- Debug command sequences using breakpoints and single stepping

Add MATLAB software (optional)

Create arbitrary waveforms, customize measurement and data analysis routines, create your own instrument applications and test systems, and automate measurements, signal generation, and report generation

- | | | |
|--------------------------|------------|-------------------------|
| <input type="checkbox"/> | N6171A-M01 | MATLAB Basic package |
| <input type="checkbox"/> | N6171A-M02 | MATLAB Standard package |
| <input type="checkbox"/> | N6171A-M03 | MATLAB Advanced package |

1. For software download link and more information, please visit www.keysight.com/find/commandexpert.

5. Select Measurement Accessories

A complete list of RF and microwave test accessories is available at: www.keysight.com/find/mta.

Exact accessories are dependent on configuration and connector type of instrument(s) used. Please refer to Section 7 for a connection diagram. Below is a general list of useful accessories from Keysight.

Suggested accessories			
<input type="checkbox"/>	83059B	3.5 mm (f) to 3.5 mm (f)	1 needed for signal- or dual-channel
<input type="checkbox"/>	54855-67604	BNC (m) to 3.5 mm (f)	1 needed for 1-channel, 2 needed for 2-channel
<input type="checkbox"/>	M9392A-80003	SMA (m) to SMA (m), 24 in	2 needed for single-channel, 5 needed for dual-channel
<input type="checkbox"/>	87304C	Power divider, 2 port, DC to 26.5 GHz	1 needed for 2-channel
<input type="checkbox"/>	M1971E-202	USB cables	2 needed for single-channel, 3 needed for dual-channel

6. Select Services, Calibration, and Start-up Assistance

<input type="checkbox"/>		One day start-up assistance	Included in base configuration
<input type="checkbox"/>	M9381A-UK6	Commercial calibration certificate	Includes test data for M9381A (M9301A, M9350A, M9214A), available only at time of purchase
<input type="checkbox"/>	R-51B-001-3X	Express warranty – 5 day turnaround	Available in the US, Japan, China, and many EU countries
<input type="checkbox"/>	R-51B-001-5X	Express warranty – 5 day turnaround	Available in the US, Japan, China, and many EU countries
<input type="checkbox"/>	N7800A	Calibration and adjustment software	To be used for on-site calibrations

Global warranty

Keysight Technologies provides the peace of mind that today's high tech industry requires. Your investment is protected by Keysight's global reach in more than 100 countries (either directly or through distributors). The warranty gives you convenient standard coverage for the country in which the product is used, eliminating the need to ship equipment back to the country of purchase. Keysight's warranty service provides:

- All parts and labor necessary to return your investment to full specified performance
- Recalibration for products supplied originally with a calibration certificate
- Return shipment

Express warranty

Reduce downtime with the faster repair service in the industry. The express warranty upgrades the global warranty to provide:

- 5 day typical turnaround repair service in the US, Japan, China, and many EU countries, or up to a 10 day improvement in turnaround time in the rest of the world
- Priority return shipment

One-day start-up assistance

A Keysight applications engineer will get you started quickly by helping you install the modules in a chassis, configure the controller, load software, and start making measurements.

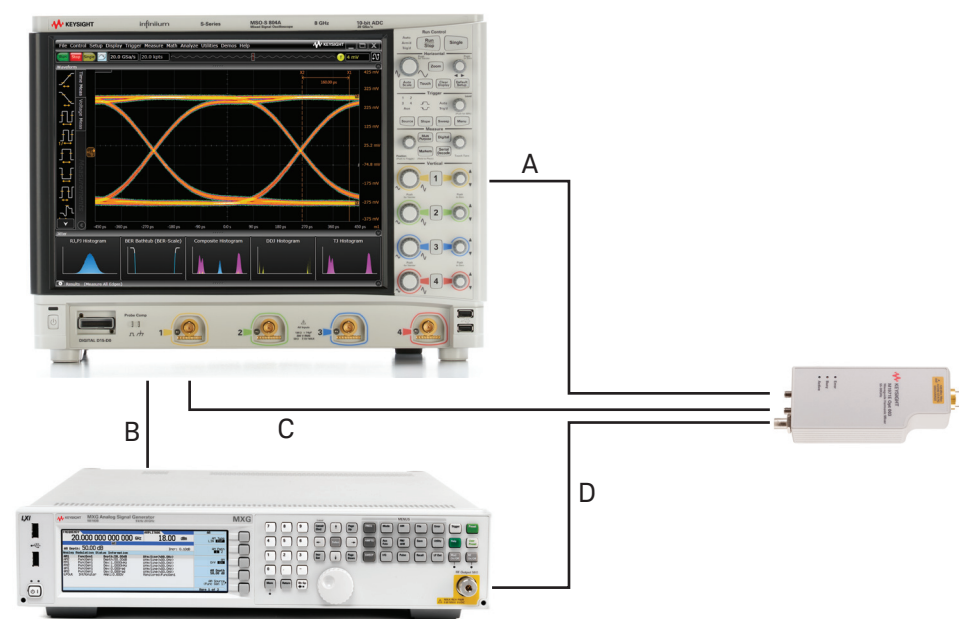
Calibration services

The S-Series oscilloscope, MXG μ W analog signal generator, and E-band Smart Mixer products are factory calibrated. A one-year calibration cycle is recommended for the oscilloscope and mixer, the MXG signal generator has a 3-year recommended calibration cycle.

7. Physical Connections, Configuration, and Diagrams

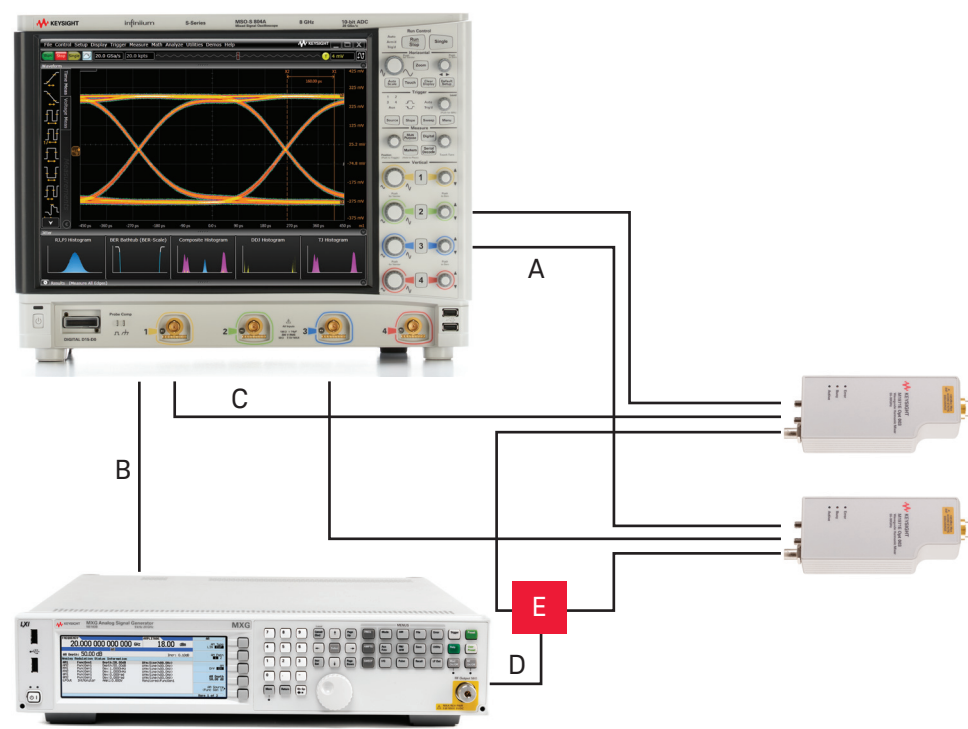
1 mixer/mmW channel configuration

	Cable type	Signal	Adapter	
A	USB	Mixer control		
B	USB	LO control		LAN only for PSG signal generators
C	SMA/3.5 mm	IF signal	Yes	Use BNC (m) to 3.5 mm (f) for S-Series scope Use 3.5 mm (f) to 3.5 mm (f) for V-Series scope
D	SMA/3.5 mm	LO signal	Yes	Use 3.5 mm (f) to 3.5 mm (f) for signal generators < 20 GHz Use 2.4 mm (f) to 3.5 mm (f) for signal generators > 31.8 GHz



2 mixer/mmW channel configuration

	Cable type	Signal	Adapter	
A	USB	Mixer control		
B	USB	LO control		
C	SMA/3.5 mm	IF signal	Yes	Use BNC (m) to 3.5 mm (f) for S-Series scope Use 3.5 mm (f) to 3.5 mm (f) for V-Series scope
D	SMA/3.5 mm	LO signal	Yes	Use 3.5 mm (f) to 3.5 mm (f) for signal generators < 20 GHz Use 2.4 mm (f) to 3.5 mm (f) for signal generators > 31.8 GHz
E	Power divider	LO split	2 channel splitters needed for 2 mixer support	



Related Literature

Publication title	Publication number
89600 VSA Software - Configuration Guide	5990-6386EN
89601B/BN-200 Basic VSA, 89601B/BN-300 Hardware Connectivity - Technical Overview	5990-6405EN
MXG X-Series Signal Generator N5183B Microwave Analog - Data Sheet	5991-3131EN
MXG X-Series Signal Generator N5183B Microwave Analog - Configuration Guide	5991-3596EN
Infiniium S-Series High-Definition Oscilloscopes - Data Sheet	5991-3904EN
M1971E Waveguide Harmonic Mixer - Technical Overview	5992-0836EN
E-Band Signal Analysis Reference Solution - Configuration Guide	5992-1421EN
N8838A Web page	www.keysight.com/find/N8838A



www.axistandard.org

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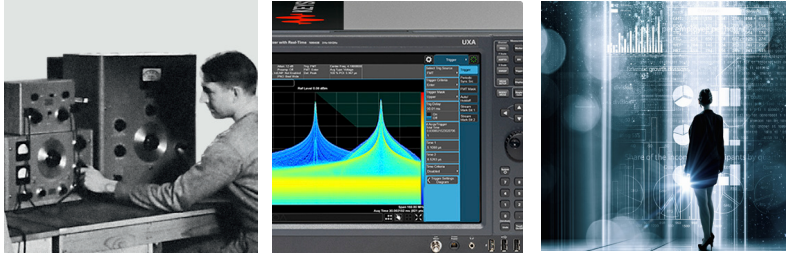
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