CONFIGURATION GUIDE

E8740A Automotive Radar Signal Analysis and Generation Solution

This guide contains information to help configure the E8740A automotive radar signal analysis and generation solution.

KEYSIGHT TECHNOLOGIES

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Let Us Help You Through the Complexity

Automotive Radar has become a standard feature of mid-class cars and the radar technology continues to evolve, with higher frequencies, wider bandwidths, more resolution, and multiple targets. It can be a challenge to stay current with the advancing technologies, evolving standards, and emerging test requirements related to automotive radar systems.

There are many challenges during the test setup when working with mmWave frequencies such as 79 GHz radar. You need to consider the challenges associated with the test setup, ultra-wideband mmWave measurements, signal-to-noise ratio (SNR) loss as well as emerging standards, and regional requirements for interference testing. As you assess the tradeoffs, the E8740A helps you see through the complexity with preconfigured bundles and software.

Select Pre-Defined Automotive Radar Signal Analysis and Generation Solution

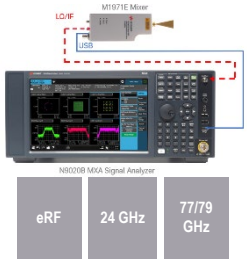
The Keysight E8740A automotive radar signal analysis and generation solution analyzes and generates automotive radar signals across the full frequency range for 24 GHz, 77 GHz and 79 GHz radar. It provides scalable analysis bandwidths, from 2.5 GHz to > 5 GHz, depending on your test requirement.

Our software application provides immediate access to accelerate your radar module testing. The Keysight KS83200A automation platform for automotive radar is a suite of standards-compliant routines for testing and validation of radar transmitters and receivers. Its automated routines simplify programming, customization and testing, and timely updates keep it current with the latest standards.

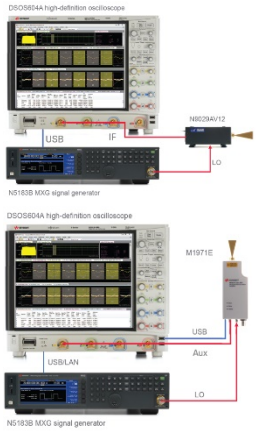
Within our overall solution there are two solution configurations for signal generation, and six solution configurations for analyzing automotive radar signals, depending on test requirements and budget.

The following pages outline each of the pre-configured bundles and outlines what you need to make the solution work. This step-by-step process will help you configure your radar testing solution when making your initial order and guide you when you are ready to add any of these options after initial purchase.

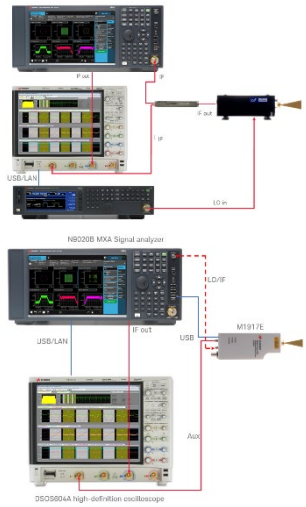
Automotive Radar Signal Analysis Solution Configurations



eRF | 24 GHz | 77/79 GHz



RF | SQ | 77/79 GHz



eRF | SQ | 24 GHz | 77/79 GHz

eRF | SQ | 24 GHz | 77/79 GHz

E8740A-010 Radar RF, SA

Cost effective radar RF test tool

- 3 Hz to 26.5 GHz, 60 GHz to 90 GHz
- RF analysis

E8740A-020, 030 Basic SA

Radar signal quality test

- 60 GHz to 90 GHz
- 2.5 GHz BW (020)
- > 5 GHz BW (030)
- FMCW quality analysis

E8740A-040, 050 Advanced SA

Benchmark for demanding applications

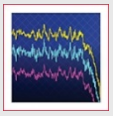
- 3Hz to 26.5 GHz, 60 GHz to 90 GHz
- 2.5 GHz BW (040)
- > 5 GHz BW (050)
- FMCW quality analysis
- Spurious emissions

E8740A-060 Performance SA

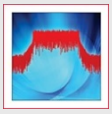
Wide-open performance

- 3 Hz to 110 GHz
- > 5 GHz BW for
- DANL -174 dBm
- 2.4 mm, 1 mm input
- FMCW quality analysis
- Spurious emissions
- SEM and ACLR

X-Series Applications
Ready-to-use RF measurements



89600 VSA Software
Comprehensive demodulation & vector signal analysis



KS83200A Automation platform for automotive Radar
Suite of standards-compliant test cases

Automotive Radar Signal Generation Solutions

E8740A-070 Performance SG

Wide-open performance

- DC to 25 GHz, 60 GHz to 90 GHz
- > 5 GHz 3 dB BW
- FM, PM, FMCW, pulse sequence, MFSK, customer OFDM
- Linear FMCW multi-targets, automotive radar 3D scan and walking pedestrian scenarios with micro Doppler effect using SystemVue

E8740A-080 Interference Test

Standardized and custom test cases

- DC to 25 GHz, 60 GHz to 90 GHz
- > 5 GHz 3 dB BW
- mmW automatic power control loop
- FMCW up/down/tri, Custom Chirp signal, MFSK, CW signal capabilities

Signal Studio
N7608C FMCW/MFSK signal creation

KS83200A Automation Platform for Automotive Radar
Suite of standards-compliant test cases

Pre-Configured Bundle Configurations

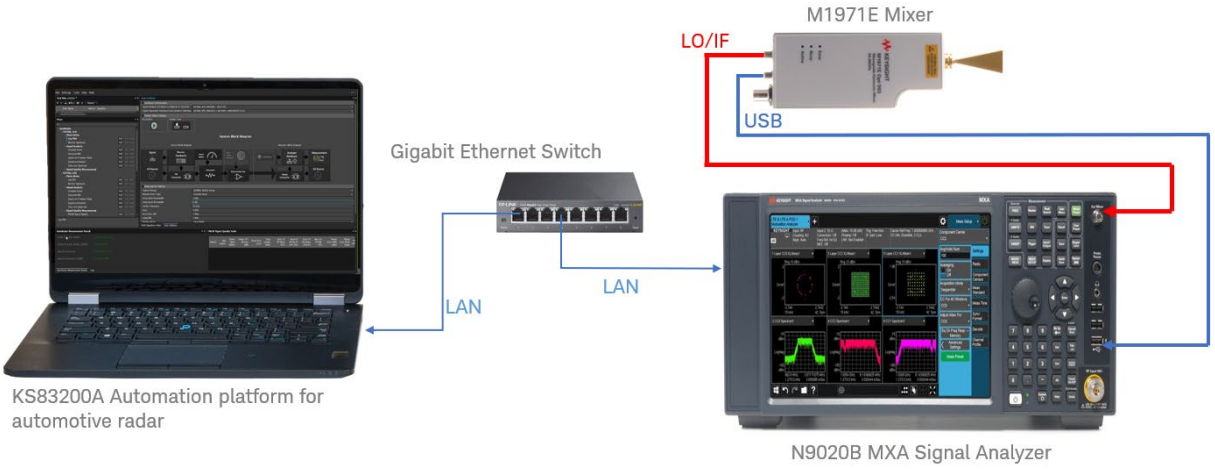
There are different configurations available from basic transmission testing through advanced signal analysis. Following is a description of each pre-configured bundle and what options it contains.

Model	Description
E8740A-010	Radar RF signal analysis with N9020B, M1971E and automation software KS83200A
E8740A-020	Basic radar signal analysis with DSOS604A, M1971E, N5138B, 89601B VSA software, and FMCW radar analysis assistant
E8740A-030	Basic+ radar signal analysis with DSOS604A, N9029AV12, N5138B, 89601B VSA software, and FMCW radar analysis assistant
E8740A-040	Advanced radar signal analysis with N9020B, DSOS604A, M1971E, and automation software KS83200A
E8740A-050	Advanced Plus radar signal analysis with N9020B, DSOS604A, N9029AV12, N5183B, and automation software KS83200A
E8740A-060	Performance radar signal analysis with N9041B, DSOS804A, and automation software KS83200A
E8740A-070	Performance radar signal generation with M8195A, N5183B, N9029ACST, and automation software KS83RX0A
E8740A-080	Receiver and Interference test solution M8195A, N5183B, E8708A, and automation software KS83RX0A
E8740A-090	Conformance and Spurious Emission test solution covering frequencies from 0-330 GHz (Available only with E8740A-060)

How to Select a Configuration

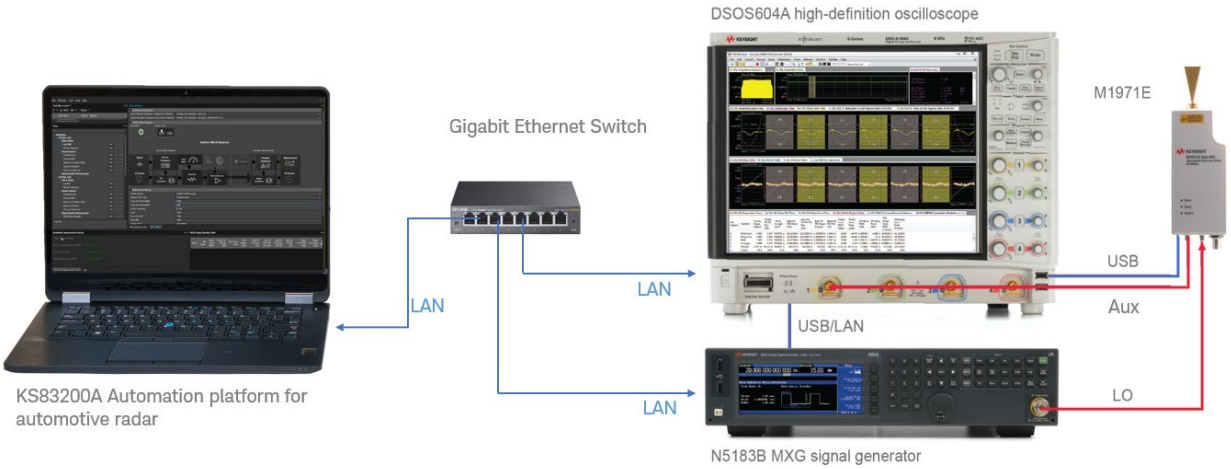
The E8740A automotive radar solution is structured to scale with your needs of testing. With many different configurations of different kinds of hardware and accessories. Within those configurations are hardware, accessories and software the following pages describe the items included in the preconfigured bundles and help you select the one that is ideal for your testing needs.

E8740A-010 Radar RF Signal Analysis



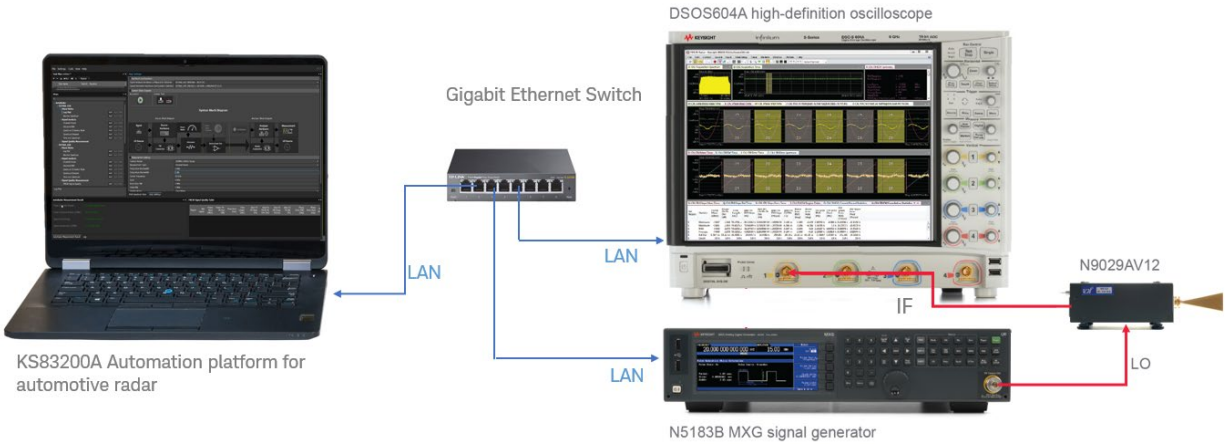
Step 1: Signal Analyzer				
Selection	**Solution option**	**Model/Option number**	**Units**	**Description**
■	E8740A-S04	N9020B-526/CR3/P26/EXM	1	Signal analyzer N9020B
Step 2: Mixer				
■	E8740A-M01	M1971E	1	Waveguide harmonic mixer (smart mixer), 60 - 90 GHz
Step 3: Software				
■	KS8400A		1	Test Automation PathWave, Developer's System
■	KS83200A		1	Automation platform for automotive radar- basic
❑	KS83ST0A	*Optional*	1	Automation platform for Automotive radar tests according to ETSI standards
Step 4: Accessories				
■	E8740A-101	N9029AH12	1	VDI horn antenna for WR12

E8740A-020 Basic Radar Signal Analysis



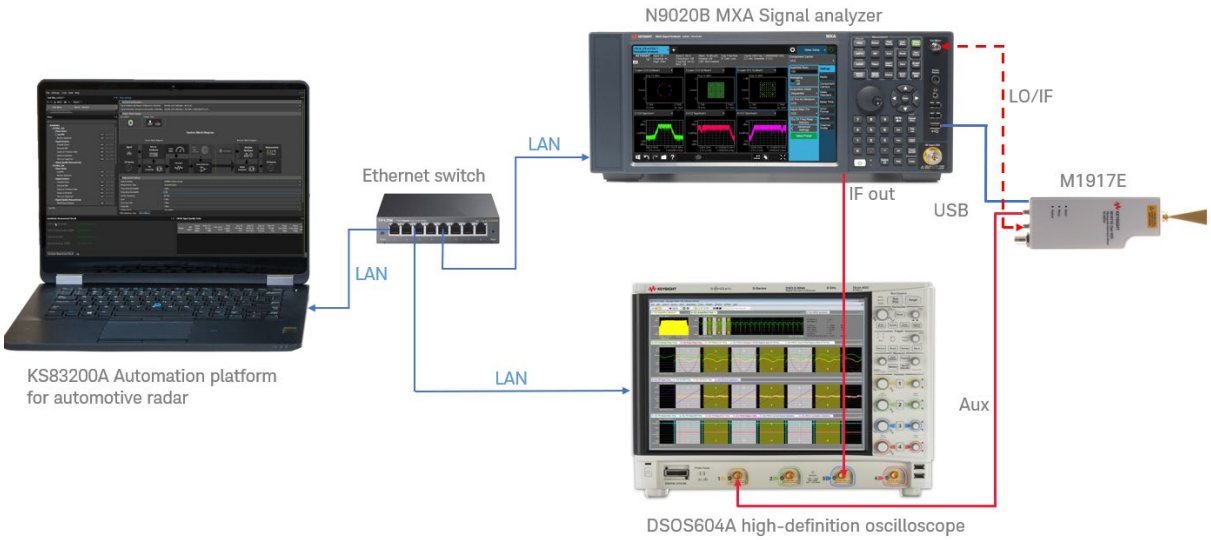
Step 1: Scope				
Selection	**Solution option**	**Model/Option number**	**Units**	**Description**
■	E8740A-DS1	DSOS604/ DSOS000-400	1	S-Series oscilloscope: 6 GHz, 4 analog channels
Step 2: Mixer				
■	E8740A-M01	M1971E	1	Waveguide harmonic mixer (smart mixer), 60 to 90 GHz
Step 3: Generator				
■	E8740A-G01	N5183B-520/UNY	1	MXG X-Series microwave analog signal generator, 9 kHz - 20 GHz
Step 4: Software				
■	89601B-200		1	Basic VSA and hardware connectivity
■	89601B-BHP		1	FMCW radar analysis
■	KS8400A		1	Test Automation PathWave, Developer's System
■	KS83200A		1	Automation platform for automotive radar-basic
❑	KS83ST0A	*Optional*	1	Automation platform for Automotive radar tests according to ETSI standards
Step 5: Select Accessories				
■	E8740A-101	N9029AH12	1	VDI horn antenna for WR12
■	E8740A-103	U2921A-100	2	BNC cable
■	E8740A-104	54855-67604	1	Precision BNC (m) to SMA 3.5 (f) adaptor
■	E8740A-105	M1971E-201	1	1.8 m USB cables
■	E8740A-106	M1971E-101	1	Local oscillator cable, 1 m

E8740A-030 Basic Plus Radar Signal Analysis



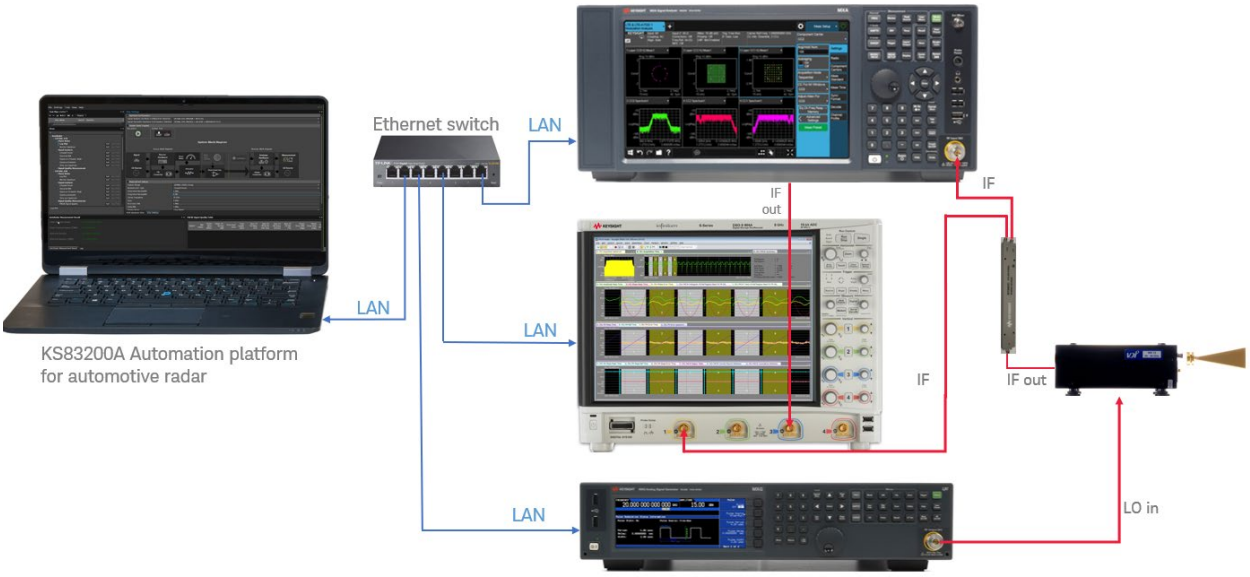
Step 1: Scope				
Selection	**Solution option**	**Model/Option number**	**Units**	**Description**
■	E8740A-DS1	DSOS604/ DSOS000-400	1	S-Series oscilloscope: 6 GHz, 4 analog channels
Step 2: Mixer				
■	E8740A-M02	N9029AV12-UDC	1	Frequency extension module, 60 to 90 GHz
Step 3: Generator				
■	E8740A-G01	N5183B-520/UNY	1	MXG X-Series microwave analog signal generator, 9 kHz - 20 GHz
Step 4: Software				
■	89601B-200		1	Basic VSA and hardware connectivity
■	89601B-BHP		1	FMCW radar analysis
■	KS8400A		1	Test Automation PathWave, Developer's System
■	KS83200A		1	Automation platform for automotive radar- basic
❑	KS83ST0A	*Optional*	1	Automation platform for Automotive radar tests according to ETSI standards
Step 5: Accessories				
■	E8740A-101	N9029AH12	1	VDI horn antenna for WR12
■	E8740A-103	U2921A-100	2	BNC cable
■	E8740A-104	54855-67604	1	Precision BNC (m) to SMA 3.5 (f) adaptor
■	E8740A-105	M1971E-201	1	1.8 m USB cables
■	E8740A-106	M1971E-101	1	Local oscillator cable, 1 m

E8740A-040 Advanced Radar Signal Analysis



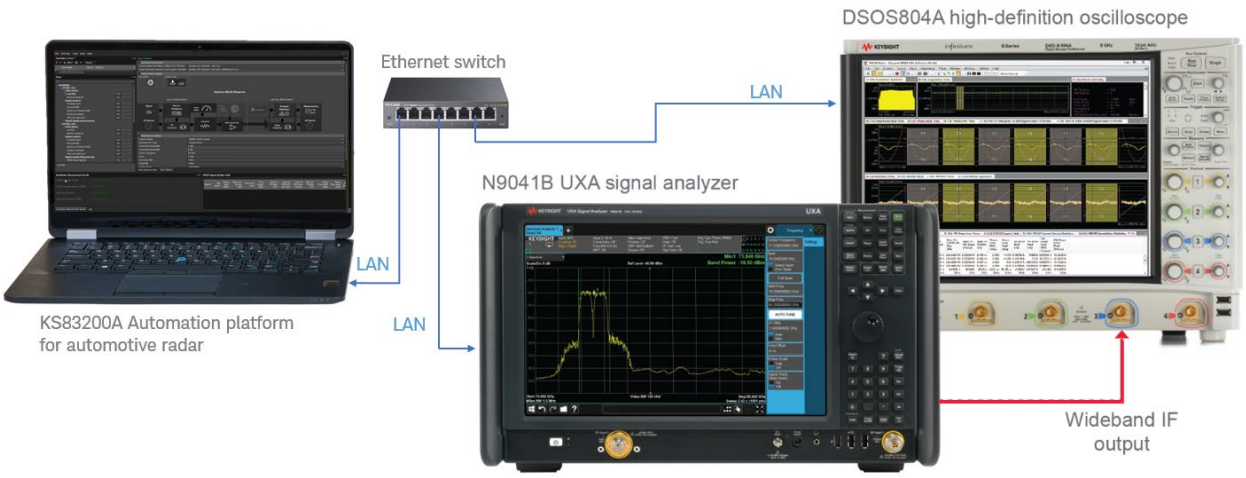
Step 1: Signal Analyzer				
Selection	**Solution option**	**Model/Option number**	**Units**	**Description**
■	E8740A-S04	N9020B-526/CR3/P26/ EXM	1	MXA signal analyzer, 10 Hz - 26.5 GHz;
Step 2: Scope				
■	E8740A-D01	DSOS604/ DSOS000-400	1	S-Series oscilloscope: 6 GHz, 4 analog channels
Step 3: Mixer				
■	E8740A-M01	M1971E	1	Waveguide harmonic mixer (smart mixer), 60 - 90 GHz
Step 4: Software				
■	89601B-200		1	Basic VSA and hardware connectivity
■	89601B-BHP		1	FMCW radar analysis
■	KS8400A		1	Test Automation PathWave, Developer's System
	KS83200A		1	Automation platform for automotive radar-basic
	KS83ST0A	*Optional*	1	Automation platform for Automotive radar tests according to ETSI standards
Step 5: Accessories				
■	E8740A-101	N9029AH12	1	VDI horn antenna for WR12
■	E8740A-103	U2921A-100	2	BNC cable
■	E8740A-104	54855-67604	1	Precision BNC (m) to SMA 3.5(f) adaptor
■	E8740A-106	M1971E-101	1	Local oscillator cable, 1 m
■	E8740A-107	1250-1250	1	Adaptor: coaxial straight (m) type-N to SMA (f)

E8740A-050 Advanced Plus Radar Signal Analysis



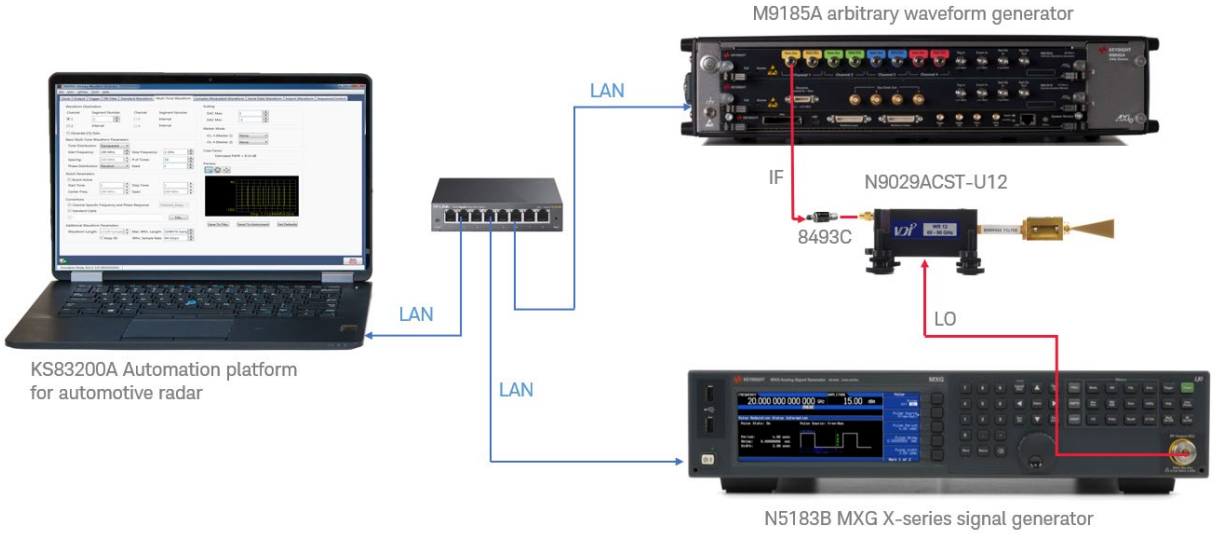
Step 1: Select Signal Analyzer				
Selection	**Solution option**	**Model/Option number**	**Units**	**Description**
■	E8740A-S04	N9020B-526/CR3/P26/EXM	1	MXA signal analyzer, multi-touch, 10 Hz to 26.5 GHz; required solution option for E8740A-050
❑	*E8740A-S03*	*N9020B-526/CR3/P26/ B85/MPB/RBE for resolution bandwidth extended*	*1*	*MXA signal analyzer, multi-touch, 10 Hz to 26.5 GHz with 85 MHz analysis bandwidth and extended resolution bandwidth. Required solution option for E8740A-051*
Step 2: Select Scope				
■	E8740A-DS1	DSOS604/ DSOS000-400	1	S-Series oscilloscope: 6 GHz, 4 analog channels
Step 3: Select Generator				
■	E8740A-G01	N5183B-520/UNY	1	MXG X-Series signal generator, 9 kHz - 20 GHz
Step 4: Select Mixer				
	E8740A-M02	N9029AV12-UDC	1	Frequency extension module, 60 to 90 GHz
Step 5: Select Software				
■	89601B-200		1	Basic VSA and hardware connectivity
■	89601B-BHP		1	FMCW radar analysis
■	KS8400A		1	Test Automation PathWave, Developer's System
	KS83200A		1	Automation platform for automotive radar- basic
	KS83ST0A	*Optional*	1	Automation platform for Automotive radar tests according to ETSI standards
Step 6: Select Accessories				
■	E8740A-101	N9029AH12	1	VDI horn antenna for WR12
■	E8740A-103	U2921A-100	2	BNC cable
■	E8740A-104	54855-67604	1	Precision BNC(m) to SMA 3.5 (f) adaptor
■	E8740A-105	M1971E-201	1	1.8 m USB cables
■	E8740A-106	M1971E-101	3	Local oscillator cable, 1 m
■	E8740A-107	1250-1250	1	Adaptor: coaxial straight (m)type-N to SMA (f)
■	E8740A-108	87302C	1	Hybrid power divider, 0.5 GHz to 26.5 GHz

E8740A-060 Performance Radar Signal Analysis



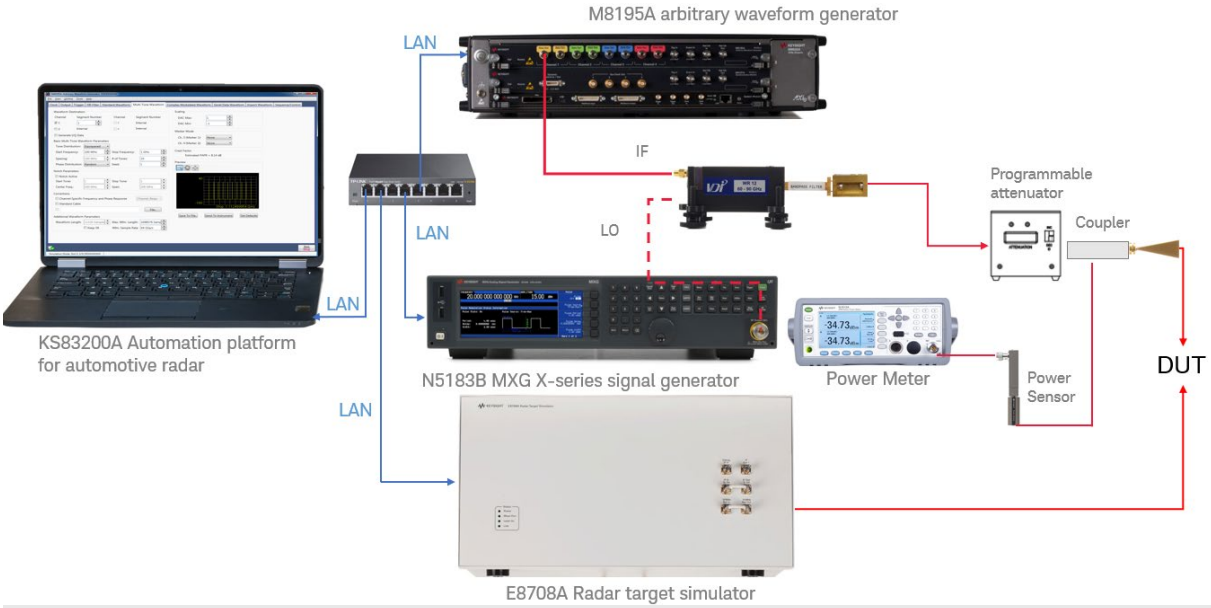
Step 1: Signal Analyzer				
Selection	**Solution option**	**Model/Option number**	**Units**	**Description**
■	E8740A-S02	N9041B-5CX/CRW	1	Signal Analyzer, N9041B option 5CX, CRW
Step 2: Scope				
■	E8740A-DO2	DSOS804/ DSOS000-400	1	S-Series oscilloscope: 8 GHz, 4 analog channels
Step 3: Software				
■	89601B-200		1	Basic VSA and hardware connectivity
■	89601B-BHP		1	FMCW radar analysis
■	KS8400A		1	Test Automation PathWave, Developer's System
■	KS83200A		1	Automation platform for Automotive Radar- basic
❑	KS83ST0A	*Optional*	1	Automation platform for Automotive Radar tests according to ETSI standards
Step 4: Accessories				
■	E8740A-103	U2921A-100	1	BNC cable
■	E8740A-104	54855-67604	1	Precision BNC male to SMA 3.5 female adaptor
■	E8740A-106	M1971E-101	1	Local oscillator cable, 1 m

E8740A-070 Performance Radar Signal Generation



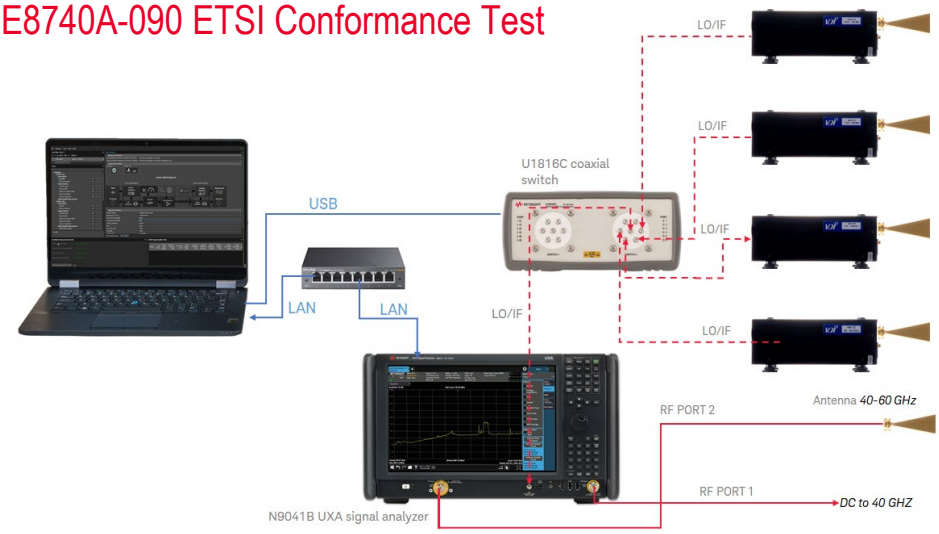
Step 1: Select Signal Generator				
Selection	**Solution option**	**Model/Required option number**	**Units**	**Description**
■	E8740A-G02	M8195A-001/16G/BU3	1	65 GSa/s arbitrary waveform generator
■	E8740A-G03	N5183B-540/UNY	1	MXG X-series microwave analog signal generator, 9 kHz to 40 GHz
Step 2: Select Mixer				
■	E8740A-M03	N9029ACST-U12	1	WR12 VDI compact upconverter
Step 3: Select Software				
■	KS8400A		1	Test Automation PathWave, Developer's System
■	KS83200A		1	Automation platform for automotive radar-basic
❑	KS83RX0A	*Optional*	1	Automation platform for auto radar- Rx & Interference test
Step 4: Select Accessories				
■	E8740A-101	N9029AH12	1	VDI horn antenna for WR12
■	E8740A-109	8493C	1	Coaxial fixed attenuator, DC to 26.5 GHz
■	E8740A-111	N9029-80130	1	Band pass filter, 76 GHz to 81 GHz, WR12
■	E8740A-113	1250-3975	1	Adapter BNC Jack to SMA (m), 50-Ohm
■	E8740A-114	N5180-60204	1	Coaxial cable,2.4mm(m) to 2.4mm(m)
■	E8740A-110	N9029AV12-AM1	1	Amplifier

E8740A-080 Interference Test solution



Step 1: Signal Generator				
Selection	**Solution option**	**Model/Required option number**	**Units**	**Description**
■	E8740A-G03	N5183B-540UNY	1	MXG X-series signal generator, 9 kHz -40 GHz
■	E8740A-G04	M8195A- 001/16G/BU3/SEQ	1	65 GSa/s Arbitrary waveform generator
Step 2: Mixer				
■	E8740A-M04	N9029ACST-U12	1	mmWave WR12 upconverter
Step 3: Radar Target Simulation				
■	E8740A-R01	E8708A- LAS/DPP/H02/OBW	1	Radar Target Simulator
Step 3: Software				
■	KS8400A		1	Test Automation PathWave, Developer's System
■	KS83200A		1	Automation platform for automotive radar- basic
■	KS83RX0A		1	Automation platform for auto radar- Rx & Interference test
■	N7608APPC		1	Signal Studio for Custom Modulation
Step 4: Accessories				
■	E8740A-101	N9029AH12	1	VDI horn antenna for WR12
■	E8740A-103	U2921A-100	1	BNC cable
■	E8740A-106	M1971E-101	1	Local Oscillator Cable, 1 meter for M1971E
■	E8740A-109	8493C	1	Coaxial Fixed Attenuator 6dB
■	E8740A-111	N9029-80130	1	Band pass filter, 76 GHz to 81 GHz, WR12
■	E8740A-113	1250-3975	1	Adapter BNC Jack to SMA (m), 50-Ohm
■	E8740A-114	N5180-60204	1	Coaxial cable,2.4mm(m) to 2.4mm(m)
■	E8740A-115	N1913A	1	EPM Single-channel power meter
■	E8740A-116	E8486A	1	Waveguide 60-90 GHz power sensor
■	E8740A-118	E8707-37901	1	WR12 straight Waveguide 2in
■	E8740A-119	E8707-37931	2	WR12 twist waveguide, e band, instrumentation grade, 1in
■	E8740A-120	E8740-34500	1	mmWave programmable attenuator
■	E8740A-121		1	WR12 Waveguide, E band, 3-Port Directional Coupler

E8740A-090 ETSI Conformance Test



Step 1: Signal Analyzer				
Selection	**Solution option**	**Model/option number**	**Units**	**Description**
■	E8740A-S07	N9041BU-EMC, N9041BU-P50	1	N9041B Signal analyzer upgrade options**

** Please note, these are only upgrade options because as a solution E8740A-090 requires the E8740A-060 (which inludes a full N9041B with the additional options). If purchasing outside of the E8740A solution number N9041B with options 5CX, CRW, EMC and P50 are required.

Step 3: Software				
■	KS8400A		1	Test Automation PathWave, Developer's System
■	KS83200A		1	Automation platform for Automotive Radar - Basic
❑	KS83ST0A	*Optional*	1	Automation platform for Automotive Radar tests according to ETSI standards
Step 4: Accessories				
■	E8740A-106	M1971E-101	1	Local oscillator cable, 1 m for M1971E
■	E8740A-114	N5180-60204	1	Coaxial cable,2.4mm(m) to 2.4mm(m)
■	E8740A-122	U1816C	1	USB coaxial switch, DC to 26.5 GHz SP6T
Order below as part of E8740A-091 Conformance test with emissions 40 - 60 GHz				
■	E8740A-126	N9029AH19	1	Horn antenna, 40 - 60 GHz, WR19,
■	E8740A-134	U281A	1	Coaxial to waveguide adapter, 1.85mm (F) to WR19
■	E8740A-127	Z2306-31604	1	1.85 (m) to 1.8(m) cable
Order below as part of E8740A-092 Conformance test with emissions 60 - 90 GHz				
■	E8740A-101	N9029AH12	1	Horn Antenna, 60 - 90 GHz, WR12,
■	E8740A-M02	N9029AV12	1	Frequency Extension Module, 60 to 90
Order below as part of E8740A-093 Conformance test with emissions 90 – 140 GHz				
■	E8740A-128	N9029AH08	1	Horn Antenna, 90 - 140 GHz, WR08
■	E8740A-129	N9029AV08	1	mmWave Amplifier, 90 - 140 GHz
Order below as part of E8740A-094 Conformance test with emissions 140 - 220 GHz				
■	E8740A-130	N9029AH05	1	Horn Antenna, 140 - 220 GHz, WR05
■	E8740A-131	N9029AV05	1	Amplifier, 140 - 220 GHz
Order below as part of E8740A-095 Conformance test with emissions 220 – 330 GHz				
■	E8740A-132	N9029AH03	1	Horn Antenna, 220 – 330 GHz, WR05
■	E8740A-133	N9029AV03	1	mmWave Amplifier, 220 - 330 GHz

Hardware Selections

There are a variety of different components that work together to create an automotive radar test solution for either analysing or generating signals. The following is a detailed list of the exact instrumentation and accessories that we utilize in our pre-configured bundles. There is detailed information about each of these instruments and what additional options are available. The options listed in the description below are the only ones available through the E8740A model number, other combinations of options can be ordered directly through the main product number.

Signal analyzer selections

Model	Description	
E8740A-S01	Signal analyzer, N9041B with option 5CX, CRW, H1G, RBE	www.keysight.com/find/N9041B
E8740A-S02	Signal analyzer, N9041B with option 5CX, CRW	
E8740A-S03	Signal analyzer, N9020B with option 526, CR3, P26, B85, MPB, RBE, EXM	
E8740A-S04	Signal analyzer, N9020B with option 526, CR3, P26, EXM	www.keysight.com/find/N9020B
E8740A-S05	Signal analyzer, N9041B with option 590, CRW, H1G, RBE	
E8740A-S06	Signal analyzer, N9041B with option 590, CRW	
E8740A-S07	Signal analyzer upgrade options on N9041B N9041BU-EMC and N9041BU-P50	** Please note, in solutions that utilitze this option another option or solution number is also required.

Oscilloscope selections

Model	Description	
E8740A-DS1	Oscilloscope, DSOS604A with option 400	www.keysight.com/find/s-series
E8740A-DS2	Oscilloscope, DSOS804A with option 400	

Signal generator selections

Model	Description	
E8740A-G01	Signal generator, N5183B with option 520, UNY	www.keysight.com/find/N5183B
E8740A-G02	Signal generator, M8195A with option 001, 16G, BU1	www.keysight.com/find/M8195A
E8740A-G03	Signal generator, N5183B with option 540, UNY	
E8740A-G04	Signal generator, M8195A with option 001, 16G, BU3, SEQ	

Mixer selections

Model	Description	
E8740A-M01	Waveguide smart mixer, M1971E 55/60 - 90 (default)	www.keysight.com/find/smartmixers
E8740A-M02	Frequency extension module, N9029AV12, 60 - 90 GHz, option UDC	Available to order standalone
E8740A-M03	mmWave compact converter, N9029ACST, WR12	Available to order standalone
E8740A-M04	mmWave upconverter, WR12	Not available through standalone Keysight part, must be ordered through E8740A

Radar target simulator selections

Model	Description	
E8740A-R01	RTS E8708A - options LAS, DPP, HO2, OBW	www.keysight.com/find/E8708A

Accessory selections

Model	Description	
E8740A-101	N9029AH12, Horn antenna, 60-90 GHz, WR12, 24 dBi	
E8740A-102	M9392-80003, Coaxial, SMA to SMA, 1.2 m	
E8740A-103	8120-2582, BNC cable	
E8740A-104	54855-67604, Precision BNC (M) to SMA 3.5 (F) adaptor	
E8740A-105	8121-0506, USB cable, 1.8 m	
E8740A-106	M1970-20009, Local oscillator cable, 1 m, for M1971E	
E8740A-107	1250-1250, Adaptor: Coaxial straight male-N female-SM	
E8740A-108	87302C, Hybrid RF power divider, 87302C, 0.5 GHz to 26 GHz	
E8740A-109	8493C, Coaxial fixed attenuator 6 dB,	
E8740A-110	N9029AV12-AM1, Amplifier, 67-87 GHz, 21 dB gain, WR12	
E8740A-111	N9029-80130, VDI12 bandpass filter, 76 GHz to 81 GHz, WR12	Not available through standalone Keysight part, must be ordered through E8740A
E8740A-113	1250-3975, Adapter BNC jack to SMA(m), 50-Ohm	
E8740A-114	N5180-60204, Coaxial, 2.4mm(m) to 2.4mm(m)	
E8740A-115	N1913A, EPM Single-Channel Power Meter	
E8740A-116	E8486A, Waveguide 60-90 GHz power sensor	
E8740A-118	E8707-37901 ,WR12 straight Waveguide 2in	
E8740A-119	E8707-37931, WR12 waveguide twist, e band, instrumentation grade, 1-inch	
E8740A-120	E8740-34500, mmWave programmable attenuator	Not available through standalone Keysight part, must be ordered through E8740A
E8740A-121	WR12 Waveguide, E band, 3-Port Directional Coupler	Not available through standalone Keysight part, must be ordered through E8740A
E8740A-122	U1816C, USB coaxial switch, DC to 26.5 GHz SP6T	
E8740A-126	N9029AH19, Horn Antenna, 40-60 GHz, WR19	
E8740A-127	Z2306-31604, 1.85 (m) to 1.8(m) cable	Not available through standalone Keysight part, must be ordered through E8740A
E8740A-128	N9029AH08, Horn Antenna, 90-140 GHz, WR08	
E8740A-129	N9029AV08, mmWave Amplifier, 90 to 140 GHz	
E8740A-130	N9029AH05, Horn Antenna, 140 to 220 GHz, WR05	
E8740A-131	N9029AV05, mmWave Amplifier, 140 to 220 GHz	
E8740A-132	N9029AH03, Horn Antenna, 220-325 GHz, ,WR03	
E8740A-133	N9029AV03, mmWave Amplifier 220 to 330 GHz	
E8740A-134	Coaxial to waveguide adapter, 1.85mm (F) to WR19	

Software Selections

There are several software applications that are utilized to simplify and help to automate the automotive radar measurements and tests. Below is a list of those selections. You can find additional information for each software by following the link. VSA Software, signal studio and the KS8400A TAP system can each be run stand-alone, the KS83200A/KS83ST0A and KS83RX0A are plugins to TAP and utilize VSA and Signal Studio to enable certain tests, measurements, analysis and signal creation.

Model	Description	Comments	
89601B-200	Basic VSA and hardware connectivity	VSA software is used to visualize FMCW analysis. Both options are required in configurations that includes an oscilloscope.	www.keysight.com/find/vsa
89601B-BHP	FMCW radar analysis		
N7608A	Signal Studio	This is required for signal generation and is utilized in E8740A-070 and E8740A-080. There are a variety of licensing options available.	www.keysight.com/find/ss-custom
KS8400A	Test Automation Platform (TAP) Developer's System	This is required software to run the automotive radar plugins below	www.keysight.com/find/tapdev
KS83200A	Automation platform for Automotive Radar – Basic	Applicable to all HW configurations; E8740A-010, E8740A-020, E8740A-030, E8740A-040, E8740A-050, E8740A-060, E8740A-070, E8740A-080, E8740A-090.	www.keysight.com/find/KS83200A
KS83RX0A	Automation platform for Automotive Radar – Receiver and Interference test	Applicable to E8740A-070, E8740A-080. KS83200A and N7608C are required.	www.keysight.com/find/KS83RX0A
KS83ST0A	Automation platform for Automotive Radar tests according to ETSI standards	Applicable to E8740A-010, E8740A-040, E8740A-050, E8740A-060, E8740A-070, E8740A-080. KS83200A required. Order E8740A-090 for spurious emission	www.keysight.com/find/KS83ST0A

Compatibility Matrix

Software component	E8740A 010	E8740A 020	E8740A 030	E8740A 040	E8740A 050	E8740A 060	E8740A 070	E8740A 080	E8740A 090
89601 VSA (200 and BHP)		✓	✓	✓	✓	✓			
N7608A Signal Studio							✓	✓	✓
KS8400A TAP developer's system	✓	✓	✓	✓	✓	✓	✓	✓	✓
KS83200A Basic Automation platform for Automotive Radar	✓	✓	✓	✓	✓	✓	✓	✓	✓
KS83RX0A Rx and Interference Automation platform for Automotive Radar							✓ optional	✓ optional	
KS83ST0A ETSI standards Automation platform for Automotive Radar	✓ optional			✓ optional	✓ optional	✓ optional	✓ optional	✓ optional	✓ optional

Related Literature

Publication Title	Publication Number
E8740A Automotive Radar Signal Analysis and Generation Solution - Data Sheet	5992-2631EN
KS83200A Automation Platform for Automotive Radar -Software Data Sheet	5992-4050EN
N9041B UXA X-Series Signal Analyzer – Configuration guide	5992-2112EN
E8708A Radar Target Simulator 76 GHz – 81 GHz Data Sheet	5992-3216EMY
N9020B MXA X-Series Signal Analyzer - Configuration Guide	5992-1254EN
M8195A 65 GSa/s Arbitrary Waveform Generator Data Sheet	5992-0014EN
N5183B MXG-Series Signal Generator Configuration Guide	5991-3596EN
Infiniium S-Series Data Sheet	5991-3904EN
KS8400A Test automation on Pathwave Technical Overview	5992-1909EN
N7608C Signal Studio Software for custom modulation Technical Overview	5992-2513EN
89600 VSA Software – configuration guide	5990-6386EN

Learn more at: www.keysight.com/find/automotive-radar

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