

S9100A

5G Multi-Band Vector Transceiver

380 MHz to 6 GHz and 24.25 to 43.5 GHz

Overview

This configuration guide contains information to help configure the Keysight S9100A 5G Multi-Band Vector Transceiver.



Standard Configurations

The Keysight S9100A 5G Multi-Band Vector Transceiver is available in three standard configurations:

- **S9100A Option RH1** 5G Multi-Band Vector Transceiver, one-channel configuration, consists of one RF transceiver and one mmWave transceiver providing one Tx channel and one Rx channel, operating in one frequency range at a time:
 - FR1 frequencies ranging from 380 MHz to 6 GHz
 - or FR2 banded mmWave frequencies from 24.25 to 43.5 GHz
- **S9100A Option 007** mmWave Transceiver with High IF, one-channel configuration, consists of one RF transceiver, one mmWave transceiver, as well as one High IF Channel Card (in the E7770A Common Interface Unit) providing one Tx channel and one Rx channel, operating in one frequency range at a time:
 - FR1 frequencies ranging from 380 MHz to 6 GHz
 - or FR2 banded mmWave frequencies from 24.25 to 43.5 GHz
 - or High IF frequencies ranging from 6 to 12 GHz

High IF frequencies are provided by using additional High IF input & output connectors that route the signal path through up and down converters, located on a Channel Card, in the Keysight E7770A Common Interface Unit (CIU).

- **S9100A Option 022** mmWave Transceiver with High IF and Blocker, one-channel configuration, consists of two RF transceivers, one mmWave transceiver, as well as one High IF Channel Card (in the E7770A Common Interface Unit) providing one Tx channel and one Rx channel, operating in one frequency range at a time:
 - FR1 frequencies ranging from 380 MHz to 6 GHz
 - or FR2 banded mmWave frequencies from 24.25 to 43.5 GHz
 - or High IF frequencies ranging from 6 to 12 GHz

High IF frequencies are provided by using additional High IF input & output connectors that route the signal path through up and down converters, located on a Channel Card, in the Keysight E7770A Common Interface Unit (CIU).

This configuration also provides the capability to perform Rx tests with a *blocking* signal. It can generate a *wanted* signal and at the same time generate a *blocking* signal; a *wanted* signal (produced from the RF Out of a Primary M9410A VXT) is combined with a *blocking* signal (produced from the RF Out of a Secondary M9410A VXT). The combined *wanted* and *blocking* signals are available in all three frequency ranges: FR1, FR2, or High IF.

Hardware Selection

A. Select a standard configuration of either Option RH1 or 007 or 022

Select S9100A Option RH1, one-channel configuration

Option RH1

S9100A Option RH1 5G Multi-Band Vector Transceiver includes:

- one S9100AX (S9100A Base System with one M9410A PXIe RF Vector Transceiver)

- one E7770A Common Interface Unit (CIU) with:
 - one Channel Card – No DUT IF
 - one LO Distribution Card
 - one LO Card

- one M1740A mmWave Transceiver with one set of cables



Select S9100A Option 007, one-channel configuration with High IF

Option 007

S9100A Option 007 mmWave Transceiver with High IF includes:


- one S9100AX-007 (S9100A Base System with one M9410A PXIe RF Vector Transceiver)

- one E7770A Common Interface Unit (CIU) with:
 - one Channel Card – High IF (Slot 1)
 - one Channel Card – No DUT IF (Slot 2)
 - one LO Distribution Card
 - one LO Card

- one M1740A mmWave Transceiver with one set of cables




Select S9100A Option 022, one-channel configuration with High IF and Blocker

Option 022	<p>S9100A Option 022 mmWave Transceiver with High IF and Blocker includes:</p> <ul style="list-style-type: none"> one S9100AX-022 (S9100A Base System with two M9410A PXIe RF Vector Transceivers; one creates a <i>wanted</i> signal and one creates a <i>blocker</i> signal) one E7770A Common Interface Unit (CIU) with: <ul style="list-style-type: none"> one Channel Card – High IF (Slot 1) one Channel Card – No DUT IF (Slot 2) one LO Distribution Card one LO Card one M1740A mmWave Transceiver with one set of cables 	
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B. Select Option EC1 (Required)

Select S9100A Option EC1, M9037A PXIe Embedded Controller

M9037A	PXIe High Performance Embedded Controller: 4-Slot, 3U, Gen 3	
	M9037A-M16 PXIe High Performance Embedded Controller with Intel i7-4700EQ quad-core processor, 2.4 GHz, 8-thread, 16 GB RAM is required for 5G NR measurements.	

C. Add Hardware Option HDX

(Optional) Add Option HDX to add a Half Duplex Port to RF Transceiver One		
Option HDX	Adds a Half Duplex Port to RF Transceiver One	

D. Add Accessory Option 1CP110A

(Optional) Add Option 1CP110A Rack Mount Flange Kit and Handle Kit		
Option 1CP110A	<p>Adds a Rack Mount Flange Kit and Handle Kit</p> <p>Product Height 177.8 mm (7.0 in)</p> <p>(Description: PXle Sheet Metal Cover Rack Mount Kit with Handles, Color Palette 2015)</p>	

Software Selection

E. Add 5G NR Measurement Application/Software (Installed by the Factory)

(Optional) Add X-Series Measurement Applications (X-Apps)	
<p>Applications that start with the prefix “N” are measurement only applications and require waveform pack licenses (or Signal Studio licenses for the specific signal format) for waveform playback. Applications that start with the prefix “Y” combine measurement applications with unlimited waveform playback capability for the selected signal format.</p>	
<p>For the S9100A, only the following 5G NR node-locked perpetual licenses are installed by the factory:</p> <ul style="list-style-type: none"> Node-locked perpetual licenses can be used indefinitely on one specified instrument or computer and are installed by the factory if ordered with the S9100A system. Other license types are available, as described in “Compatible Software”, but these must be installed by the user. 	
Model name	Description
N9085EM0E	5G NR Measurement Application (X-Apps)
Y9085EM0E	5G NR Non-Signaling Waveform and Measurement Application

F. Compatible Software (Purchased Separately and Installed by the User)

For other compatible software not listed in the following tables, refer to the Keysight M9410A PXIe VXT Vector Transceiver, Configuration Guide (5992-3303).

(Compatible Software) X-Series Measurement Applications (X-Apps)

This software is compatible with S9100A, must be purchased separately, and installed by the user.

Applications that start with the prefix “N” are measurement only applications and require waveform pack licenses (or Signal Studio licenses for the specific signal format) for waveform playback. Applications that start with the prefix “Y” combine measurement applications with unlimited waveform playback capability for the selected signal format.

Each of the following license types are offered as perpetual (licenses can be used indefinitely) or subscription (licenses can be used through the term of the license: 6, 12, 24, or 36 months).

Keysight offers 4 license types for measurement applications:

- **Node-locked:** Allows you to use the license on one specified instrument or computer.
- (Only Node-locked perpetual licenses with 12 months support are installed by the factory).
- **Transportable:** Allows you to move the license from one instrument or computer to another using Keysight’s online tool.
- **USB portable:** Allows you to move the license from one instrument or computer to another with a certified USB dongle.
- **Floating:** Allows access to license on networked instruments or computers from a server, one at a time.

Model name	Description
N9054EM0E	VMA Vector Modulation Analysis Measurement Application
N9054EM1E	VMA Custom OFDM Measurement Application
N9080EM0E	LTE and LTE-Advanced FDD Measurement Application
Y9080EM0E	LTE and LTE-Advanced FDD Waveform and Measurement Application
N9082EM0E	LTE and LTE-Advanced TDD Measurement Application
Y9082EM0E	LTE and LTE-Advanced TDD Waveform and Measurement Application

(Compatible Software) Signal Studio Software¹

This software is compatible with S9100A, must be purchased separately, and installed by the user.

Generate standard-compliant test signals validated by Keysight for receiver and component test.

Model name	Description
N7630EMBC	Signal Studio Pro for Pre-5G, waveform playback
N7631EMBC	Signal Studio Pro for 5G NR, waveform playback
N7624EMBC	Signal Studio for LTE and LTE-Advanced/LTE-A Pro FDD, waveform playback
N7625EMBC	Signal Studio for LTE and LTE-Advanced TDD, waveform playback
N7608EMBC	Signal Studio Pro for Custom Modulation, waveform playback
N7650B	5/50 pack Signal Studio Waveform Licenses

(Compatible Software) 89600 VSA Software²

This software is compatible with S9100A, must be purchased separately, and installed by the user.

Model name	Description
89600 vector signal analysis (VSA) software	89601B (transportable license is standard) Industry-leading measurement software for evaluating and troubleshooting signals in R&D; PC-based software supporting more than 30 measurement platforms, plus more than 75 signal standards and modulation types including MIMO analysis.

¹ For more information on Signal Studio, see the brochure, literature number **5989-6448EN** or Signal Studio at: www.keysight.com/find/N7630EMBC

² For more information on 89600 VSA software, visit www.keysight.com/find/89600_VSA

Support Selection

Accelerate the Win – KeysightCare for Solutions

- is a premium service offering within the KeysightCare portfolio
- is your priority-one connection between our resources and your teams that helps you remove barriers to success with committed, accessible, and proactive engagement
- delivers an industry-leading integrated support experience that combines hardware, software, and technical support services scaled to your unique business needs
- is a premium experience that offers two levels of support each designed to meet your business needs with committed response times

Keep your engineers on top of ever-changing technologies with access to Keysight technical application experts and a robust online knowledge center available 24/7. Ensure uptime and speed with on-site technical support for the most complex applications, solutions, and systems. Lower the risk of project delays and engineer idle time with committed, priority response times for technical support and accelerated, committed turnaround times for repair and calibration. Gain peace of mind amid evolving technologies with proactive software updates, enhancements, and fixes.

G. Add KeysightCare for Solutions

(Optional) Add Calibration, Repair, and Technical Support	
Model name	Description
R-55J-001-1	KeysightCare for Solutions, Basic – RTK 1yr
R-55J-001-2	KeysightCare for Solutions, Basic – RTK 2yrs
R-55J-001-3	KeysightCare for Solutions, Basic – RTK 3yrs
R-55J-001-5	KeysightCare for Solutions, Basic – RTK 5yrs
	KeysightCare for Solutions Basic
	Return to Keysight
Technical Support (Application and solution-specific for both hardware and software)	
Self-service web portal & knowledge center, 24/7	Included
Technical support response time	2 business days
Software configuration support	Remote support included
Solution Hardware Support	
Repair service coverage	Return to Keysight included
Repair service turnaround	15 business days
Calibration service	Return to Keysight Included – Keysight Cal Turn-Around-Time: Reasonable commercial efforts
Calibration turnaround	10 business days
Application of service notes	Mandatory notes only

All offered services are subject to legal terms and conditions and are offered for select solutions in select countries.

- Annual calibration service and calibration after repair if applicable is included for instruments that require calibration.
- Technical support response times may vary for specific solutions.
- KeysightCare Software Agreement required for software support including software updates and notifications. Onsite support at the discretion of Keysight.
- The offering may be different by country. Certain solution configurations are not applicable for return to Keysight. Please contact regional representatives.
- Keysight delivers service notes during scheduled service events.
- Loaners of equal or higher configuration may be offered at Keysight's discretion if service turn-around-times will be significantly beyond the published TAT goals.

Global Warranty

Keysight 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

Related Literature

For more detailed product and specification information, refer to the following literature and web pages:

- Keysight S9100A 5G Multi-Band Vector Transceiver, Startup Guide
(literature no. [S9100-90001](#))
- Keysight S9100A 5G Multi-Band Vector Transceiver, Data Sheet
(literature no. [5992-3561EN](#))
- Keysight M9410A and M9411A PXIe VXT Vector Transceivers, Data Sheet
(literature no. [5992-3331EN](#))
- Keysight X-Series Measurement Applications, Brochure
(literature no. [5989-8019EN](#))
- Keysight Signal Studio Software, Brochure
(literature no. [5989-6448EN](#))

Web

Product page: <http://www.keysight.com/find/S9100A>

Learn more at: www.keysight.com

For more information on Keysight Technologies' products, applications, or services, please contact your local Keysight office. The complete list is available at:
www.keysight.com/find/contactus

