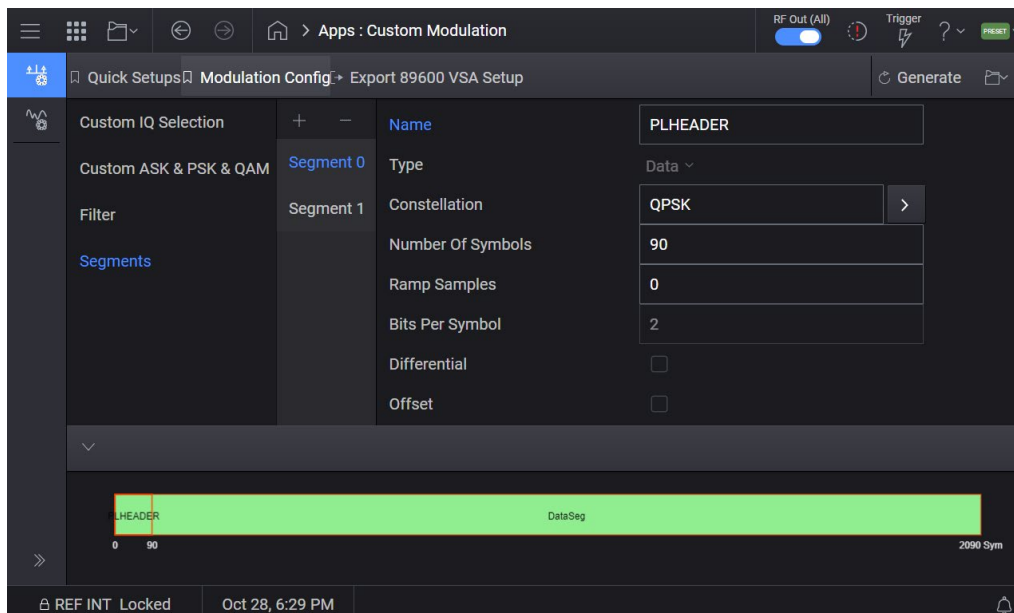


N7608APPC PathWave Signal Generation for Custom Modulation, Embedded Application

Key Features

- Configurable Custom IQ constellation settings for BPSK, QPSK, 8PSK, OOK, 2/4/8 ASK, 16-16384QAM, 2/4/8/16/32/64 FSK, MSK, S-OQPSK, ARTM Multi-h CPM, or user-defined constellations
- Customizable quick setups for DVB-S2/S2X, APCO25, TETRA, NXDN, dPMR, DECT, DMR, ARIB, 802.15.4 (ZigBee BPSK and O-QPSK), 802.15.4g (Wi-SUN), ITU-T G.9959, 802.15.3d and more
- Parameters setting such as symbol rate, payload data sequence (PN, custom, user file), data length, shaping filter characteristics and more
- Export signal settings as 89600 VSA Setup files
- Accelerate the signal creation process with a multi-touch graphic user interface
- Support SCPI programming



Simplify Custom Signal Creation

N7608APPC PathWave Signal Generation for Custom Modulation embedded application is a flexible signal creation tool that will reduce the time you spend on signal simulation and enables you to easily create test signals through its multi-touch graphic user interface.

N7608APPC PathWave Signal Generation for Custom Modulation embedded application allows you to quickly and easily generate custom IQ signals for component, transmitter, and receiver test.

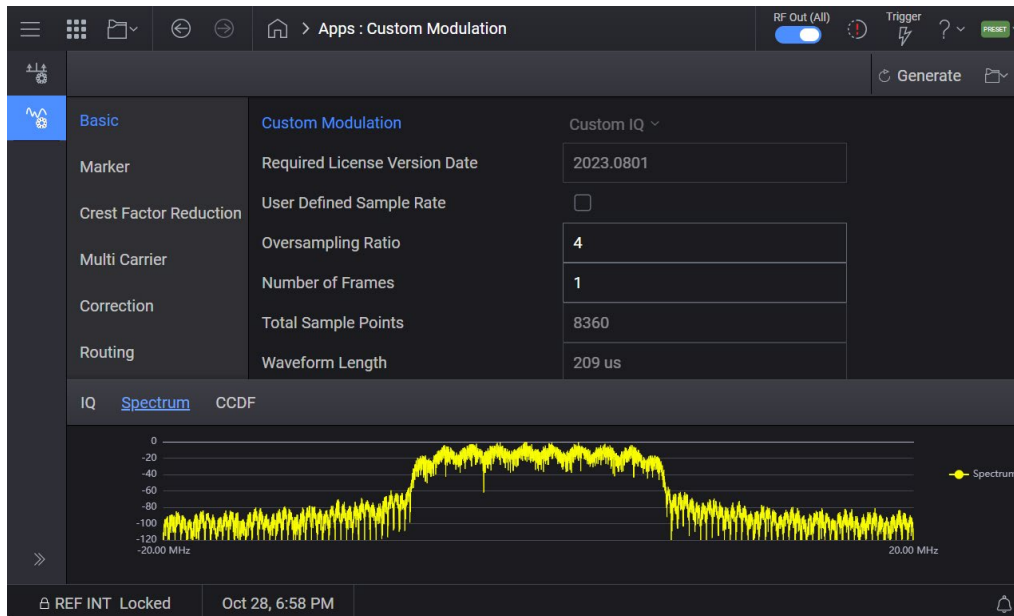


Figure 1. Multi-touch graphic user interface of N7608APPC Custom Modulation embedded application

Typical Measurements

Test components and transmitters:

- CCDF
- EVM
- Channel power
- Occupied bandwidth
- Spectrum

Test receivers:

- Component test along receiver chain
- Receiver sensitivity
- Uncoded BER

Apply Your Signals in Real-World Testing

Currently, N7608APPC PathWave Signal Generation for Custom Modulation embedded application runs on Keysight M9484C VXG or N5186A MXG vector signal generators. This offers flexibility in generating signals at various carrier frequencies with different bandwidths for multiple applications. You can select the appropriate test equipment for your measurement needs in design and development.

Benchtop

M9484C VXG signal generator ¹

N5186A MXG signal generator ¹

1. Firmware version A.14 and later.

Component and Transmitter Test

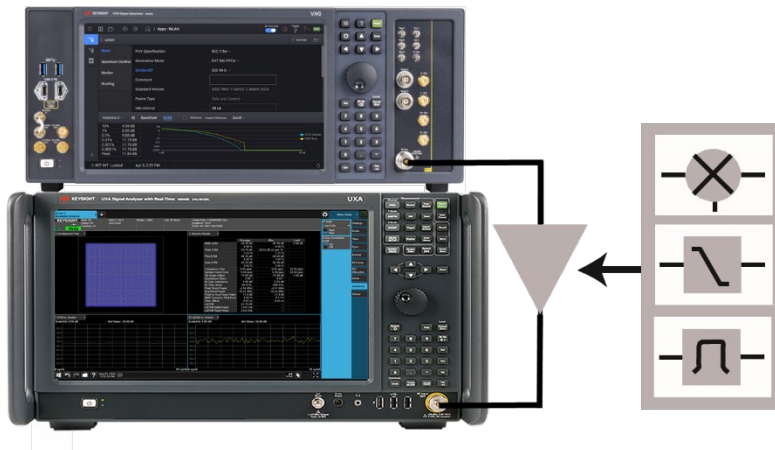


Figure 4. Typical component test configuration using N7608APPC Custom Modulation embedded application running on M9484C VXG signal generator with N9040B UXA signal analyzer

N7608APPC PathWave Signal Generation for Custom Modulation enables you to create and customize waveforms to characterize the power and modulation performance of your transmitter or receiver components. Easy manipulation of a variety of signal parameters to simplify signal creation.

- Create spectrally-correct signals for channel power, spectral mask, and spurious testing
- View CCDF, data and idle segments (custom IQ) to graphically evaluate signal configuration and to investigate the effects on device performance
- Save 89600 VSA setup files for EVM testing with Keysight signal analyzers and oscilloscopes

Configure Custom IQ Signals

- Set parameters such as custom IQ constellation settings for BPSK, QPSK, 8PSK,OOK, 2/4/8 ASK, 16-16384QAM, 2/4/8/16/32/64 FSK, MSK, S-OQPSK, ARTM Multi-h CPM, or user-defined constellations
- Customizable quick setups for DVB-S2/S2X, APCO25, TETRA, NXDN, dPMR, DECT, DMR, ARIB, 802.15.4 (ZigBee BPSK and O-QPSK), 802.15.4g (Wi-SUN), ITU-T G.9959, 802.15.3d and more
- Parameters setting such as symbol rate, payload data sequence (PN, custom, user file), data length, shaping filter characteristics and more
- Export signal settings as 89600 VSA Setup files
- Accelerate the signal creation process with a multi-touch graphic user interface
- Support SCPI programming

Receiver Test

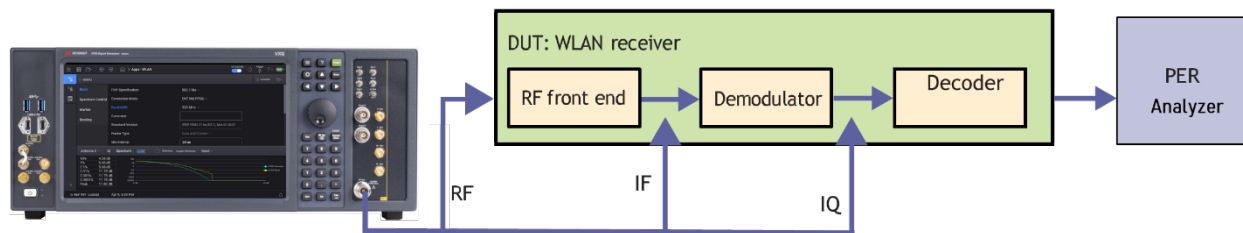


Figure 5. Generate fully channel-coded signals to evaluate the PER of your receiver with N7608APPC PathWave Signal Generation for Custom Modulation embedded application running on M9484C VXG vector signal generator

N7608APPC PathWave Signal Generation for Custom Modulation embedded application can be used to generate custom test signals for early testing of receiver system and component hardware. Pair with 89600 VSA software or X-Series measurement application software with Keysight signal analyzers and oscilloscopes to evaluate receiver performance at various stages of the receiver chain (RF, IF, and IQ).

Early Testing of Receiver Hardware

- Generate custom IQ test signals for receiver testing
- Customize payload data: PN9, PN15, custom bit pattern, or user-defined file with coded bits for BER testing
- Customize custom IQ: specify the number of frames, symbol rate, and symbol length
- Add real-time AWGN to signal generator for real-time noise, set the carrier-to-noise ratio, carrier bandwidth, and noise bandwidth
- Save custom IQ 89600 VSA setup files for EVM testing with Keysight signal analyzers and oscilloscopes at RF, IF, and IQ
- View CCDF, data and idle segments (custom IQ) to graphically evaluate signal configuration and investigate the effects on device performance

Feature Summary

Supported Functions

Set the number of frames, sample rate, and oversampling ratio

View constellation and edit settings graphically in an IQ constellation plot

Select pre-defined constellations: OOK, 2/4/8ASK, BPSK, QPSK, 8PSK, 16-16384QAM

Apply phase rotation, phase shift, differential, offset

Customize payload data: PN9, PN15, PN23, Custom bit pattern or file import

Save 89600 VSA setup files for EVM testing with Keysight signal analyzers and oscilloscopes at RF, IF, and IQ

Modify or customize pre-defined SOQPSK configuration

Set the filter type, characteristics, and length to be applied to the waveform: Low Pass, Gaussian, Root Nyquist, Nyquist, Rectangle, and User-Defined

Configure data and idle segments with a graphical user interface which enables multiple segments to be Configured. View all the segments graphically as a function of symbols (X-axis)

Specify the number of symbols, payload, and constellation which can be set to BPSK, QPSK, 8PSK, 16/32/64/128/256/512/1024/2048/4096/8192/16384 QAM, or as custom IQ values

Apply crest factor reduction to reduce peak to average ratio

Quick setup for Custom I/Q applications of DVB-S2/S2X¹, APCO25, TETRA, NXDN (4800bps, 9600bps), dPMR, DECT, ARIB (T98, T61, T102), 802.15.4 (ZigBee BPSK and O-QPSK), Wi-SUN (802.15.4g), ITU-T G.9959, 802.15.3d

Support single carrier or multi-carrier with flexible frequency offset, power offset and phase configuration

Multi-carrier supports different data payloads with a data offset parameter

Support 4 GHz or above wide signal generation (symbol rate/sample rate up to 200 GHz)

1. DVB-S2 and DVB-S2X adds dual segments for PLHEADER and DATA.

Complementary PC-Based Solution

To complement the N7608APPC Custom Modulation embedded application with the M9484C VXG, N7608C Signal Studio Pro for Custom Modulation provides a PC-based software solution that offers expanded flexibility on various Keysight hardware platforms. It enables signal creation for 5G candidate modulations, custom OFDM, and IQ signals.

Key features of N7608C Signal Studio Pro for Custom Modulation:

- Create 5G candidate modulation waveforms (FBMC, F-OFDM, GFDM, UPMC)
- Create custom OFDM and IQ waveforms for analog demodulation, automotive radar, emerging wireless, 5G, and aerospace/defense custom/proprietary applications
- Provide quick setups for multiple applications including cellular (LTE), wireless networking (WLAN 802.11a, 802.15.4, 802.15.4g, ITU G.9959), digital video (DVB-T/H, ISDB-T, DOCSIS3.1 US/DS, DVB-S2/S2X), land mobile radio (APCO25, TETRA, NXDN, dPMR, DECT, DMR, ARIB), broadcast radio (DAB, CDR, DRM) and more
- Apply crest factor reduction to reduce peak-to-average ratio
- Support single-carrier or multi-carrier configurations with flexible frequency, power and phase offsets
- Configure RF/microwave frequency and modulation bandwidth
- Produce coded sounding stimulus for channel measurement
- Apply channel equalization with correction file export from Keysight 89600 VSA.

The license N7608EMBC is required to enable waveform playback on the following supported hardware platforms:

- Benchtop signal generators vector signal generators
 - M9384/M9484C VXG
 - N5186A MXG
 - AP5401A/AP5402A
 - X-Series: N5182B MXG, N5172B EXG, and N5166B CXG
 - E8267D PSG
- PXIe signal generators
 - M9381A/M9383A PXIe VSG
 - M9383B VXG-m
 - M9421A/M9410A/M9411A/M9415A/M9416A PXIe VXT
- Arbitrary Waveform Generator (AWG)
 - M5300A PXIe RF AWG
 - M8190A and M8195A AXIe AWG
 - M9336A PXIe AWG
 - P9336A USB AWG

For more information, refer to www.keysight.com/find/N7608EMBC.

Ordering Information

PWSG embedded application offers flexible licensing options, including:

- Node-locked: Allows you to use the license on one specified instrument/computer.
- Transportable: Allows you to use the license on one instrument/computer at a time. This license may be transferred to another instrument/computer using Keysight's online tool.
- Floating: Allows you to access the license on networked instruments/computers from a server, one at a time. For concurrent access, multiple licenses may be purchased. Floating support single site, single region and worldwide three different types.
- USB portable: Allows you to move the license from one instrument/computer to another by end-user only with certified USB dongle, purchased separately.
- Subscription (Time-based): License is time limited to a defined period, such as 6, 12, 24 or 36 months

PathWave Signal Generation for WLAN Embedded Application License N7608APPC¹ for Custom Modulation

Software License Type	Software License	KeysightCare Subscription
Node-locked perpetual	SW1000-LIC-01	SW1000-SUP-01
Node-locked time-based	SW1000-SUB-01	Included
Transportable perpetual	SW1000-LIC-01	SW1000-SUP-01
Transportable time-based ¹	SW1000-SUB-01	Included

1. Support M9484C VXG and N5186A MXG vector signal generator with firmware version A.14 and later

One-Month Keysightcare Support and Subscription

Software License	Software License Type
SW1000-SUP-01	1-month extension for node-locked perpetual license
SW1000-SUP-01	1-month extension for transportable perpetual license

Try Before You Buy

Download the PathWave Signal Generation software and use it free for 30 days to do evaluation for your test. Request your free trial license today:

www.keysight.com/find/signalstudio_trial

Websites

PathWave Signal Generation

www.keysight.com/find/PWSG

PathWave Signal Generation for Custom Modulation embedded application:

www.keysight.com/find/n7608appc

Signal Studio for Custom Modulation:

www.keysight.com/find/n7608c

Literature

PathWave Signal Generation, Brochure,

[5989-6448EN](#)

N7608C Signal Studio, Technical Overview,

[5992-2513EN](#)



Keysight enables innovators to push the boundaries of engineering by quickly solving design, emulation, and test challenges to create the best product experiences. Start your innovation journey at www.keysight.com.

This information is subject to change without notice. © Keysight Technologies, 2025, Published in USA, November 11, 2025, 3125-1448.EN