Keysight N5194A

UXG Agile Vector Adapter

50 MHz to 20 GHz

Data Sheet

KEYSIGHT TECHNOLOGIES

Unlocking Measurement Insights

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Definitions and Conditions

Specification (spec): represents warranted performance of a calibrated instrument that has been stored for a minimum of 2 hours within the operating temperature range of 0 to 50°C, unless otherwise stated, and after a 1 hour warm-up period. The specifications include measurement uncertainty. Data represented in this document are specifications unless otherwise noted.

Typical (typ): describes additional product performance information that is not covered by the product warranty. It is performance beyond specifications that 80% of the units exhibit with a 95% confidence level at room temperature (approximately 25°C). Typical performance does not include measurement uncertainty.

Nominal (nom): describes the expected mean or average performance, or an attribute whose performance is by design, such as the 50 Ω connector. This data is not warranted and is measured at room temperature (approximately 25°C).

Measured (meas): describes an attribute measured during the design phase for purposes of communicating expected performance, such as amplitude drift vs. time. This data is not warranted and is measured at room temperature (approximately 25°C).

All of the above apply when using the instrument in its default settings unless otherwise stated.

This data sheet provides a summary of the key performance parameters for UXG vector adapters. All options referenced in this data sheet are described in the UXG vector adapter configuration guide (5992-2332EN).

Unless otherwise stated, all specifications, typical, nominal, and measured values described in this data sheet apply when the N5194A UXG vector adapter is used together with the N5193A UXG agile signal generator with options EP1 enhanced phase noise, FR1 fine frequency resolution, SS2/SS4 switching speed, and CC1 LVDS I/O interface. The N5193A provides the 6 GHz reference and LO signals necessary for operating the N5194A.

Specifications

Frequency

Range

	Specified range	Tunable range
Option 520	50 MHz to 20 GHz	50 MHz to 20 GHz

CW frequency resolution

0.001 Hz

Phase offset

Adjustable in 0.1° increments

Accuracy

Accuracy is equivalent to the external frequency reference in use.

External 6 GHz reference input

Frequency	6 GHz
Input amplitude	+5 to +15 dBm (nom)
Input impedance	50 Ω (nom)

Switching speed[1,2]

	External LO mode, narrowband, spec (typ)	External LO mode, wideband, spec (typ)	Internal LO mode, spec (typ)	Internal LO mode, optimized[3], spec (typ)
Update rate (Transition time)	250 ns (190)	220 ns (170)	740 ns (470)	(210 ns)
Latency	2.58 µs (2.49)	1.95 µs (1.86)	3.15 µs (2.85)	(2.59 µs)

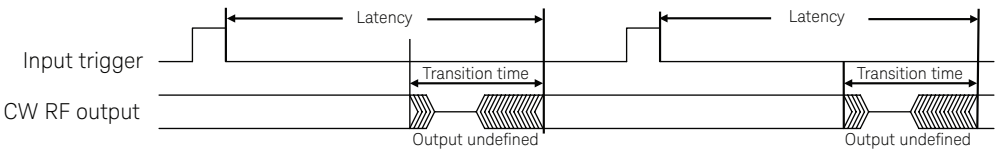

Figure 1. Switching speed definitions with input trigger

1. Hardware (CW) switching speed with baseband generation turned off, using an external hardware trigger. Speeds apply for any combination of frequency, amplitude ≤ max specified power, and phase switching.
2. Update Rate is determined by the transition time as measured from the start of the RF transition (where the frequency, amplitude and phase are undefined) to RF amplitude and phase settled. Latency is measured from the input trigger to RF amplitude and phase settled.
3. Optimized mode applies when switching start frequency is not within any of the following 3 zones: (0 to 2.5 GHz) or (6.5 to 8 GHz) or (10 to 11.5 GHz), or stop frequency is not within any of the following 2 zones: (13 to 14 GHz) or (18.5 to 20 GHz).

Additional contributors to switching speed

With LAN or USB control	Add 900 µs (nom) from receipt of SCPI command or trigger signal.

RF phase settling criteria

Final frequency	
50 MHz to 8.6 GHz	Measured to phase settled within 0.1 radians of final phase
> 8.6 GHz to 17.3 GHz	Measured to phase settled within 0.2 radians of final phase
> 17.3 GHz	Measured to phase settled within 0.3 radians of final phase

RF amplitude settling criteria

50 MHz to 20 GHz	Measured to amplitude settled to within 1 dB of final amplitude

Amplitude

Maximum CW power[1, 2]

	Max available power		Max specified power	
Frequency	External LO mode, dBm spec (typ)	Internal LO mode, dBm spec (typ)	External LO mode, dBm spec	Internal LO mode, dBm spec
50 MHz to 2.5 GHz	+6 (+7)	+9 (+11)	+3	+3
> 2.5 to 4 GHz	+7 (+8)	+6 (+9)	+3	+3
> 4 to 14 GHz	+7 (+10)	+4 (+7)	+3	+3
> 14 GHz to 18 GHz	+6 (+8)	+6 (+8)	+3	+3
> 18 GHz to 20 GHz	+1 (+4)	–1 (+3)	+1	–2

Figure 2. Maximum CW power (measured)

1. Maximum CW power specifications are warranted from 15 to 40°C. Maximum power in the 40 to 50°C temperature range typically degrades less than 1 dB.
2. Instrument specifications are based on max specified power, unless otherwise stated. When operating at max available power, spectral purity will be degraded.

Minimum settable CW power

-120 dBm

Attenuator range

0 to 65 dB in 5 dB steps

Agile power linearity

Frequency	Output power, dBm	External LO mode, dB spec (typ)	Internal LO mode, dB spec (typ)
50 MHz to 14 GHz	Max specified power to 0 dBm	±0.45 (±0.11)	±0.45 (±0.11)
	0 to –90 dBm	±1.00 (±0.33)	±1.00 (±0.34)
	0 to –120 dBm	±1.65 (±0.41)	±1.65 (±0.45)
> 14 GHz to 20 GHz	Max specified power to –10 dBm	±0.80 (±0.20)	±0.65 (±0.2)
	–10 to –90 dBm	±1.05 (±0.33)	±1.00 (±0.27)
	–10 to –120 dBm	±1.75 (±0.50)	±1.85 (±0.47)

CW power accuracy[1]

Frequency	Output power, dBm	External LO, dB spec (typ)	Internal LO, dB spec (typ)
50 MHz to 18 GHz	+3 to –25	±2.5 (±0.4)	±2.5 (±0.4)
200 MHz to 18 GHz	< –25 to –75	±2.5 (±0.4)	±2.5 (±0.4)
700 MHz to 18 GHz	< –75 to –90	±2.5 (±0.5)	±2.5 (±0.5)
> 18 GHz to 20 GHz	+1 to –25	±2.5 (±0.5)	N/A
	–2 to –25	N/A	±3.0 (±0.5)
	< –25 to –75	± 2.5 (± 0.5)	±2.5 (± 0.5)
	< –75 to –90	± 2.5 (± 0.5)	±3.0 (± 0.6)

Resolution

0.01 dB

Maximum reverse power

½ Watt, 0 VDC

VSWR (nom)

Frequency	0 dB atten	≥ 5 dB atten
50 MHz to 18 GHz	1.6:1	1.6:1
> 18 GHz to 20 GHz	1.9:1	1.6:1

Phase Linearity vs. Power[2]

Frequency	
50 MHz to 12.5 GHz	1.0 deg RMS (typ)
> 12.5 GHz to 20 GHz	2.5 deg RMS (typ)

1. CW power accuracy specifications are warranted from 0 to 50˚C. Specifications apply within ±3˚C of last power alignment. Temperature compensation is ON. If temp comp is OFF, amplitude drift will be ≤ 0.2 dB/˚C. For instruments with Option 1ED Type-N connectors, specifications apply below 18 GHz and performance is typically degraded 0.2 dB above 18 GHz.
2. Specifications apply in vector mode only, over a power range of -5 to -85 dBm.

Synchronization

Multiple UXG agile vector adapters can be synchronized together with one N5193A UXG agile signal generator to have coherent outputs. This is useful for simulating angle-of-arrival (AoA) and phased array antenna wavefronts. One of the N5194A units must be configured as the LO controller.

Synchronization Input connections

System Sync input	Recommended external reference input for use in system environments where trigger jitter and phase stability are important. Accepts a wide variety of input frequencies. See the *Rear Panel Connectors* section for connection details.
System Sync output	Provides a buffered version of the signal provided to the System Sync input for use in multi-instrument systems. See the *Rear Panel Connectors* section for connection details.
6 GHz input	Provides high stability synchronization between multiple signal generators. This is not a general 6 GHz connection. Only the 6 GHz synchronization output from another compatible signal generator should be connected. See the *Rear Panel Connectors* section for connection details.
6 GHz output	Provides high stability synchronization between multiple N519xA UXG signal generators. See the *Rear Panel Connectors* section for connection details.
LO input	Input port for external LO signal when operating in External LO mode. Normal input range is 8 to 20 GHz with ≥ +5 dBm (nom) power. 50 Ω (nom) impedance.

Local oscillator modes

The N5194A UXG agile vector adapter has two LO modes available.

Internal LO mode	Frequency tuning is accomplished with an internal LO signal. No external LO signal is needed in this mode, but an external 6 GHz reference signal is still required. When using the Internal LO, the N5194A cannot be operated in wideband vector mode. Note that performance characteristics in this data sheet are based on using the Keysight N5193A UXG agile signal generator to provide the 6 GHz reference signal. Other signal generators can be used to provide the reference signal, but system performance will be unspecified.
External LO mode	The LO signal is provided by an external source. An external 6 GHz reference signal is also required. Note that performance characteristics in this data sheet are based on using the Keysight N5193A UXG agile signal generator to provide both the external LO as well as the 6 GHz reference signals. Other signal generators can be used to provide the LO and reference signals, but system performance will be unspecified.

Vector operating modes

The N5194A UXG agile vector adapters can be operated in two different vector modes.

Vector mode	Vector mode operates at a 250 MSa/s rate, and is available as a standard capability in all N5194A units
Wideband vector mode	Wideband vector mode operates at a 2 GSa/s rate, and is available as an optional capability on units with option BB1 installed.

Operating features

PDW Streaming	Streaming provides agile control of most of the instrument settings with a continuous stream of PDWs transferred from the internal SSD or an external source, such as a LAN or the Fast Control Port. Each PDW has a Pulse Start Time. The scenario starts playing at time 0 (or a specified offset time). The scenario runs until the end of the simulation (either the end of an internal file or when the external connection is closed with LAN). The simulation can run forever from LAN or FCP if the Scenario Time reset feature is used. The streaming PDW parameters are executed asynchronously, based on the time stamp information contained within the PDW.
Dual Arb	This feature plays arbitrary I/Q waveforms. Each I/Q sample consists of a pair of 16-bit words, along with 4 associated markers.

Spectral purity

Harmonics[1,2]

External LO mode, Vector mode (250 MSa/s)

Fundamental frequency	Harmonic level (dBc) @ ≤ -10 dBm	Harmonic level (dBc) @ 0 dBm
50 MHz to 500 MHz	–30 (–33)	–30 (–33)
> 500 MHz to 800 MHz	–51 (–56)	–52 (–56)
> 800 MHz to 4 GHz	–60 (–65)	–56 (–62)
> 4 GHz to 8 GHz	–64 (–69)	–58 (–63)
> 8 GHz to 20 GHz	–66 (–72)	–61 (–66)

External LO mode, Wideband vector mode (2 GSa/s)

Fundamental frequency	Harmonic level (dBc) @ ≤ –10 dBm	Harmonic level (dBc) @ 0 dBm
50 MHz to 2 GHz	–30 (–33)	–30 (–33)
> 2 GHz to 3 GHz	–24 (–28)	–20 (–24)
> 3 GHz to 4 GHz	–31 (–35)	–29 (–33)
> 4 GHz to 8 GHz	–63 (–69)	–58 (–63)
> 8 GHz to 20 GHz	–63 (–68)	–61 (–66)

Internal LO mode, Vector mode (250 MSa/s)

Fundamental frequency	Harmonic level (dBc) @ ≤ –10 dBm	Harmonic level (dBc) @ 0 dBm
50 MHz to 500 MHz	–30 (–33)	–30 (–33)
> 500 MHz to 800 MHz	–51 (–56)	–52 (–56)
> 800 MHz to 4 GHz	–60 (–65)	–56 (–62)
> 4 GHz to 8 GHz	–63 (–68)	–58 (–63)
> 8 GHz to 20 GHz	–67 (–72)	–61 (–66)

1. Measured using a CW signal with power set to -10 dBm and 0 dBm or max specified power, whichever is lower. Performance is unspecified for harmonics beyond the specified frequency range. Harmonic specifications are warranted from 15 to 40°C
2. The –10 dBm harmonic specifications are applicable over a 110 dB agile dynamic range.

Non-Harmonics[1]

External LO mode, Vector mode (250 MSa/s)

Frequency	Non-Harmonic Level (dBc) (typ)		
	Line-related spurs at offsets ≤ 300 Hz	Offsets > 300 Hz excluding line-related spurs	Offsets > 10 kHz
50 MHz to < 2.5 GHz	(–68)	(–69)	(–67)
2.5 GHz to < 9 GHz	(–55)	(–62)	(–68)
9 GHz to < 12.5 GHz	(–53)	(–59)	(–70)
12.5 GHz to < 18 GHz	(–50)	(–55)	(–67)
18 GHz to 20 GHz	(–50)	(–55)	(–64)

External LO mode, Wideband vector mode (2 GSa/s)

Frequency	Non-Harmonic Level (dBc) (typ)		
	Line-related spurs at offsets ≤ 300 Hz	Offsets > 300 Hz excluding line-related spurs	Offsets > 10 kHz
50 MHz to < 1.2 GHz	(–72)	(–72)	(–72)
1.2 GHz to < 9 GHz	(–56)	(–62)	(–64)
9 GHz to < 12.5 GHz	(–53)	(–60)	(–70)
12.5 GHz to 20 GHz	(–49)	(–55)	(–64)

Internal LO mode, Vector mode (250 MSa/s). CW signal only

Frequency	Non-Harmonic Level (typ)		
	Line-related spurs at offsets ≤ 300 Hz	Offsets > 300 Hz excluding line-related spurs	Offsets > 10 kHz
50 MHz to < 2.5 GHz	(–69)	(–69)	(–67)
2.5 GHz to < 18 GHz	(–45)	(–45)	(–45)
18 GHz to 20 GHz	(–49)	(–48)	(–48)

Broadband noise[2]

Internal LO Mode, Vector mode (250 MSa/s)

Fundamental Frequency	Broadband noise[3]
50 MHz to 10 GHz	–140 dBc/Hz (typ)
> 10 GHz to 20 GHz	–134 dBc/Hz (typ)

External LO Mode, Vector and Wideband vector modes

Fundamental frequency	Broadband noise[4]
50 MHz to 1 GHz	–140 dBc/Hz (typ)
> 1 GHz to 20 GHz	–125 dBc/Hz (typ)

1. Measured using a CW signal with power set to –10 dBm. Performance is unspecified for non-harmonics beyond the specified frequency range. Non-harmonic specifications are warranted from 15 to 40°C.
2. For large offsets > 4 GHz, broadband noise will drop.
3. CW signal measured with power set to +4 dBm.
4. CW signal Measured with power set to +5 dBm.

Phase noise

Internal LO Mode

Absolute SSB phase noise (dBc/Hz)[1]

	Offset from carrier				
Frequency	**10 kHz spec (typ)**	**100 kHz spec (typ)**	**1 MHz spec (typ)**	**10 MHz spec (typ)**	**100 MHz spec (typ)**
100 MHz	–144 (–148)	–143 (–148)	–142 (–148)	–143 (–148)	N/A
1 GHz	–132 (–144)	–132 (–143)	–145 (–151)	–142 (–153)	–142 (–155)
2 GHz	–130 (–140)	–120 (–138)	–142 (–149)	–143 (–150)	–143 (–150)
3 GHz	–122 (–128)	–126 (–132)	–132 (–137)	–133 (–141)	–131 (–140)
6 GHz	–124 (–131)	–128 (–134)	–138 (–145)	–141 (–148)	–138 (–146)
10 GHz	–121 (–127)	–125 (–131)	–133 (–140)	–138 (–145)	–135 (–143)
20 GHz	–113 (–119)	–116 (–124)	–125 (–132)	–127 (–135)	–124 (–133)

External LO Mode

Absolute SSB phase noise (dBc/Hz)[2]

	Offset from carrier				
Frequency	**10 kHz spec (typ)**	**100 kHz spec (typ)**	**1 MHz spec (typ)**	**10 MHz spec (typ)**	**100 MHz spec (typ)**
100 MHz	–144 (–148)	–143 (–148)	–142 (–148)	–143 (–148)	N/A
1 GHz	–132 (–144)	–132 (–143)	–145 (–151)	–142 (–153)	–142 (–155)
2 GHz	–130 (–140)	–120 (–138)	–142 (–149)	–143 (–150)	–143 (–150)
3 GHz	–115 (–121)	–120 (–126)	–125 (–129)	–123 (–131)	–121 (–129)
6 GHz	–114 (–121)	–117 (–124)	–124 (–128)	–124 (–130)	–122 (–129)
10 GHz	–109 (–117)	–111 (–120)	–119 (–124)	–118 (–126)	–118 (–128)
20 GHz	–106 (–115)	–108 (–118)	–117 (–123)	–120 (–127)	–118 (–126)

1. CW signal measured with power set to +4 dBm. Phase noise specifications are warranted from 0 to 50 °C.
2. CW signal Measured with power set to +5 dBm. Phase noise specifications are warranted from 0 to 50 °C

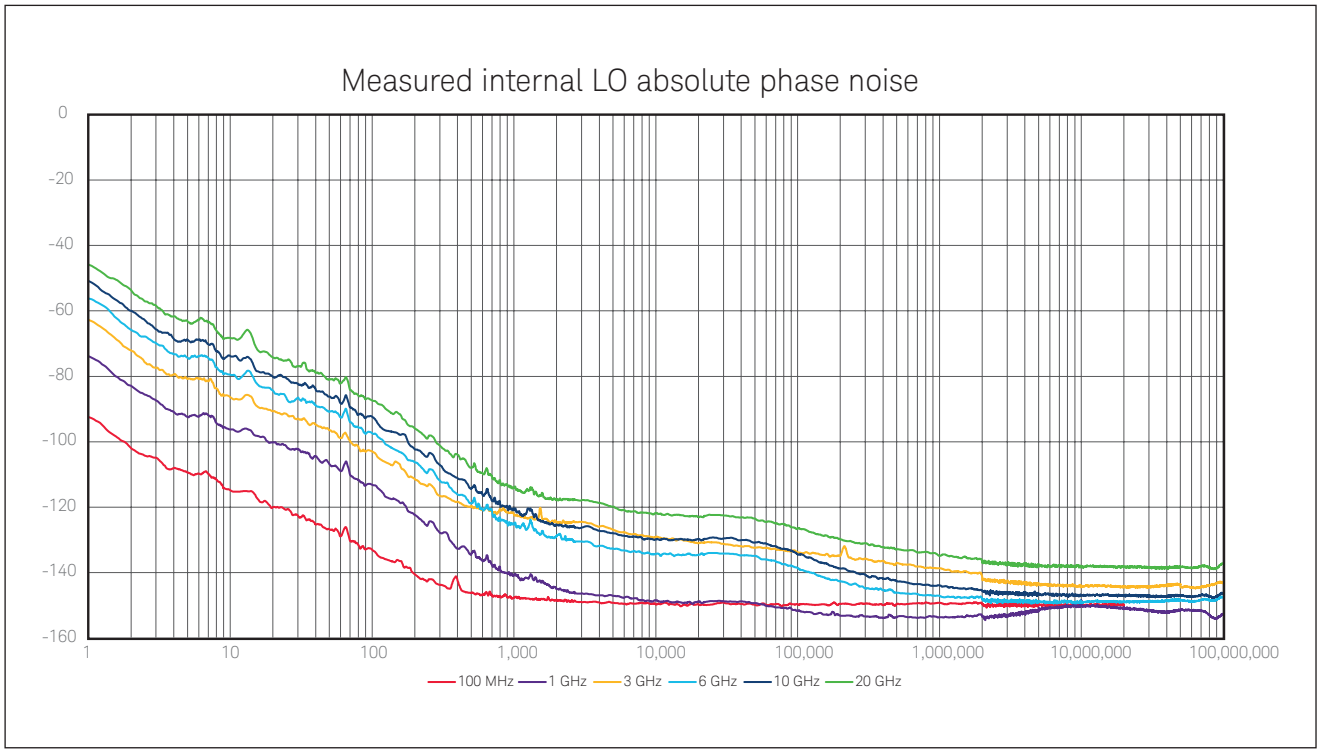

Figure 3. Measured absolute phase noise using the internal LO mode.

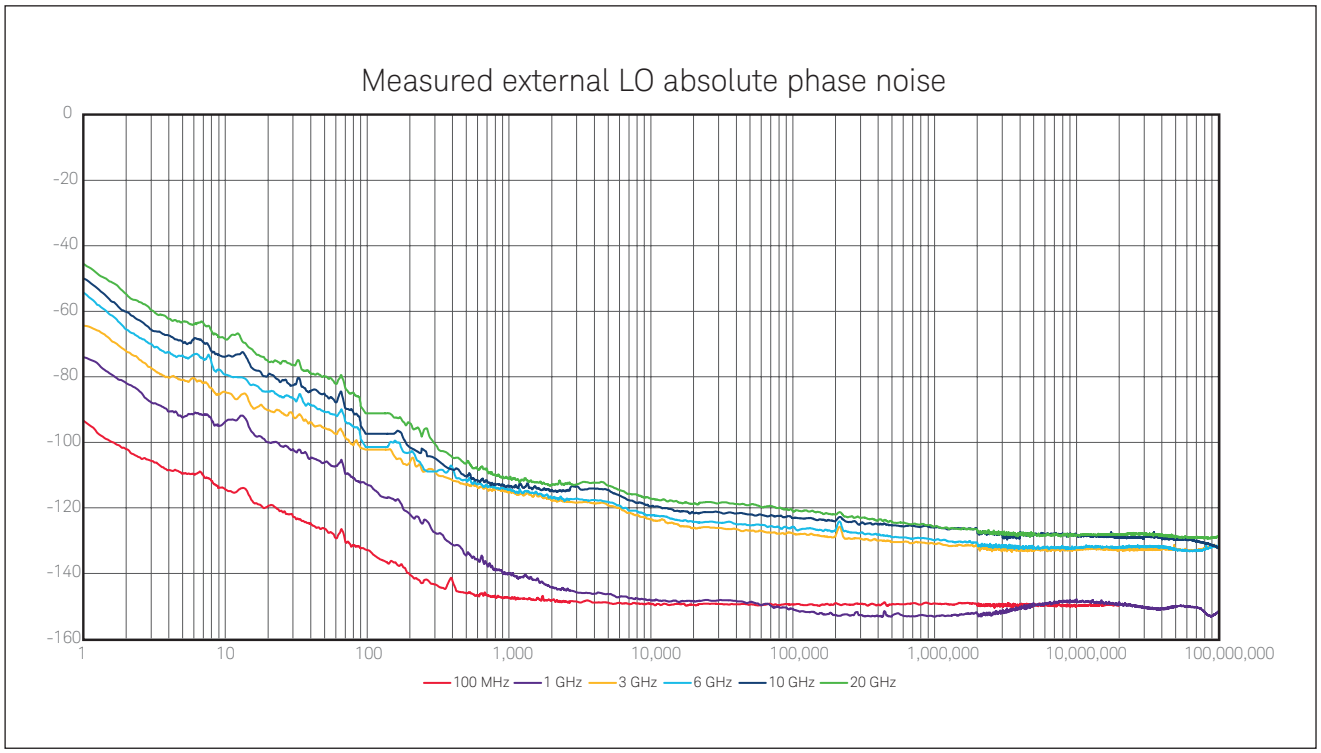

Figure 4. Measured absolute phase noise using the external LO mode.

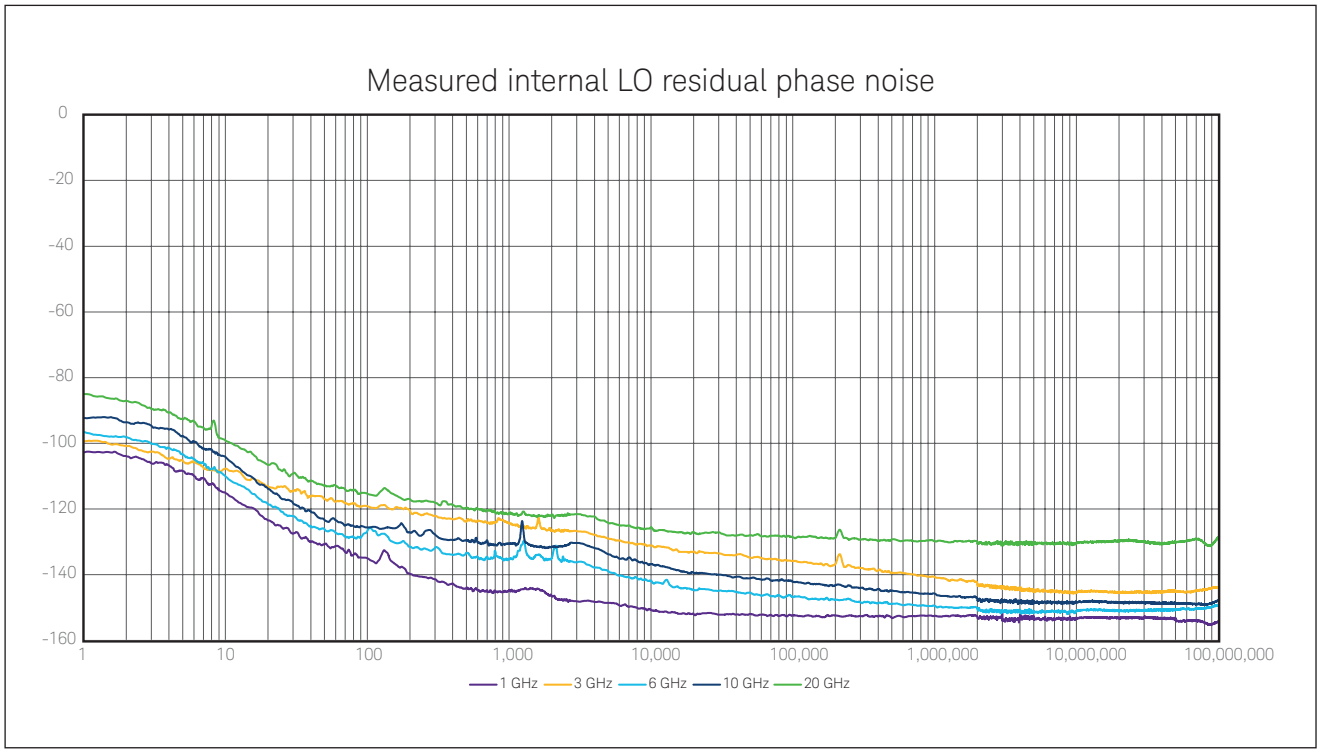

Figure 5. Measured residual phase noise using the internal LO mode.

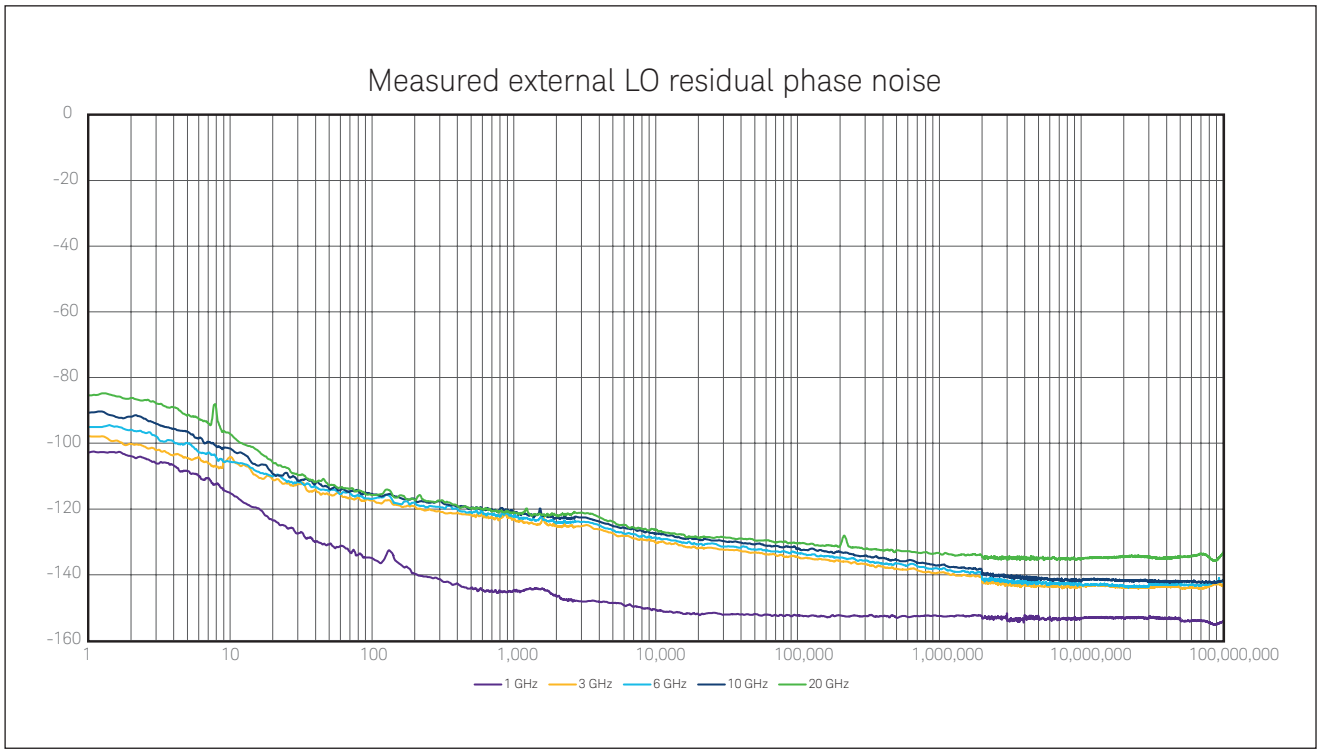

Figure 6. Measured residual phase noise using the external LO mode.

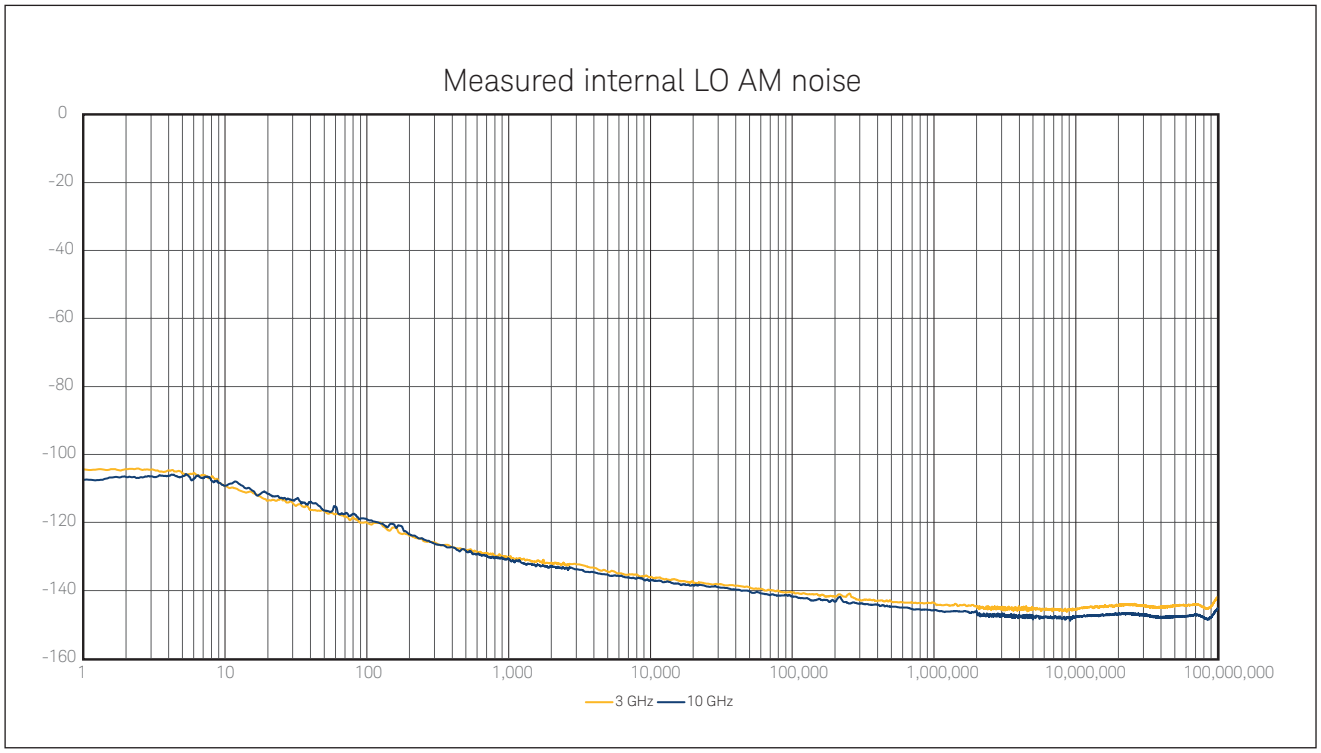

Figure 7. Measured AM noise using the internal LO mode.

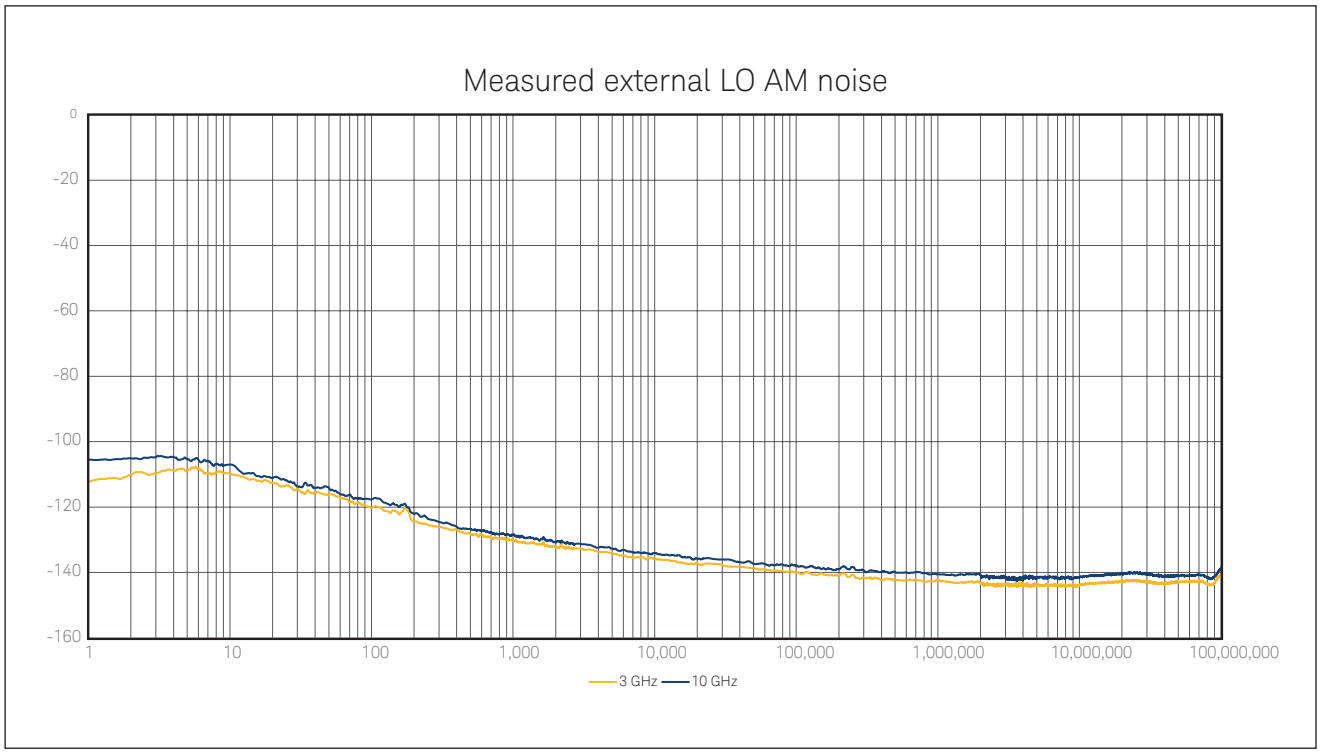

Figure 8. Measured AM noise using the external LO mode.

Pulse modulation

Pulse types - Defined by waveform.

Pulse Waveform Maker – a built-in feature to define simple IQ pulse types. These can be called by the PDW. However, it does not have marker capability.

On/Off ratio

Integrated over 100 Hz bandwidth

External LO mode	100 dB
Internal LO mode	105 dB

Rise/fall times[1]

Defined by IQ waveform. Minimum rise/fall time

Vector mode (250 MSa/s)	4 ns (nom)
Option BB1 Wideband vector mode (2 GSa/s)	0.5 ns (nom)

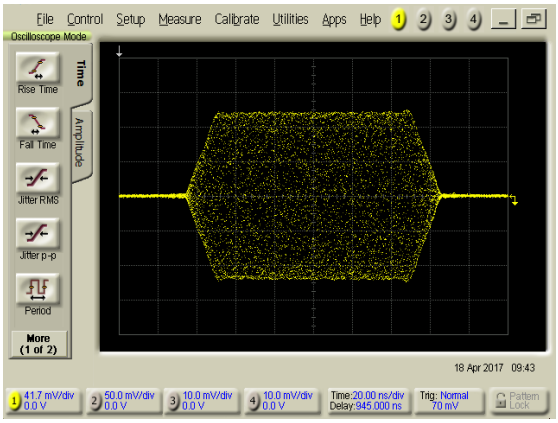

Figure 9. 100 ns pulse with 16 ns rise/fall times

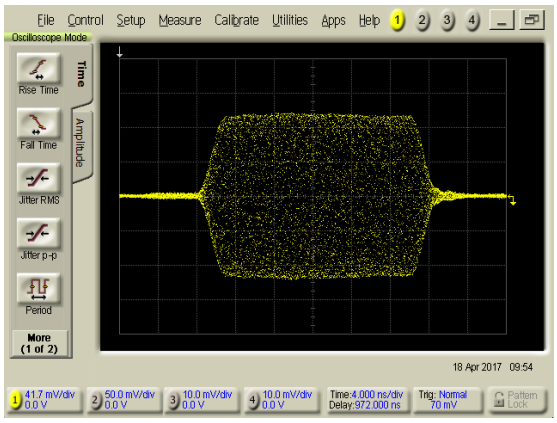

Figure 10. 20 ns pulse with 2 ns rise/fall times

Overshoot

Vector mode (250 MSa/s)	10% (typ) up to 17.5 GHz 20% (typ) for > 17.5 to 20 GHz
Option BB1 Wideband vector mode (2 GSa/s)	15% (typ) up to 2.5 GHz 10% (typ) for > 2.5 GHz to 17.5 GHz 20% (typ) for > 17.5 to 20 GHz

Minimum pulse width[2]

Vector mode	8 ns (nom)
Wideband vector mode	1 ns (nom)

1. Rise/fall times are determined by the sample rate, but may experience degradation of pulse shape with extremely short rise/fall times. A minimum of 4 or more samples is recommended for better rise/fall shape quality.
2. Minimum pulse width is determined by the sample rate, but may experience degradation of pulse shape with extremely short rise/fall times. A minimum of 8 or more samples is recommended for better pulse shape quality.

Level accuracy

Relative to CW signal
Test conditions: ALC off, with power alignment performed

Frequency	Level accuracy
< 18 GHz	–0.75 dB, +0.5 dB
≥ 18 GHz	–1.00 dB, +0.5 dB

Video feed through

Frequency	Vector mode, spec (typ)	Wideband vector mode
< 1.8 GHz	250 mV p-p (100)	–
≥ 1.8 GHz	25 mV p-p (20)	–
< 1.2 GHz	–	250 mV p-p (100)
≥ 1.2 GHz	–	25 mV p-p (20)

Pulse compression

Mode	Vector mode[1]	Wideband vector mode[2]
External LO	±5 ns	±2.5 ns
Internal LO	±5 ns	

1. Measurement conditions: pulse rise/fall times are 16 ns each, pulse width = 100 ns, pulse period = 500 ns.
2. Measurement conditions: pulse rise/fall times are 5 ns each, pulse width = 20 ns, pulse period = 1 us.

Internal baseband generator

Channels

2 digital channels, I and Q. (no analog inputs or outputs)

Resolution

16 bits (1/65,536)

Baseband waveform memory (playback)

Sample rate	Standard memory size	Option BBM
250 MSa/s	512 MSa per channel	6 GSa per channel
2 GSa/s (opt BB1 only)	512 MSa per channel	4 GSa per channel

Waveform memory (non-volatile storage on removable SSD drive)

480 GBytes

Waveform segments

		Vector mode	Wideband vector mode
Minimum segment length		64 samples	512 samples
Maximum segment length	Standard memory size	512 MSa	512 MSa
	Option BBM	2 GSa	4 GSa
Maximum number of segments		65,536	65,536
Minimum memory allocation		256 samples or 1 kbyte blocks	256 samples or 1 kbyte blocks
Minimum quantums		1 sample	32 samples

Sample clock

	Standard clock rate	Option BB1
Sample rate	250 MSa/s	250 MSa/s and 2 GSa/s

RF bandwidth

Clock rate	Bandwidth
250 MSa/s	200 MHz
2 GSa/s (opt BB1 only)	1.6 GHz[1]

Triggers

Source	External, trigger key, external, remote SCPI trigger over LAN or USB
External trigger inputs	Triggers 1-2: SMA rear-panel connectors Triggers 3-10: SMB rear-panel connectors Trigger In: SMB rear-panel connector All trigger ports have 4 ns input delay resolution
External polarity	Negative, positive
Types	Single, Continuous free run, Continuous trigger & run

Markers

Number of markers	Markers 1-2: SMA rear-panel connectors with 78.125 ps output delay resolution Markers 3-10: SMB rear-panel connectors with 78.125 ps output delay resolution PRCN Marker Out: SMB rear-panel connector with 10 ps output delay resolution Marker Out: SMB rear-panel connector with 4 ns output delay resolution
Connector polarity	Negative, positive

1. Full bandwidth applies for center frequencies > 1.2 GHz.

Remote programming

Interfaces	USB 2.0, 1000BaseT LAN, 10GB Ethernet
Keysight I/O libraries	Keysight's IO Library Suite helps you quickly establish an error-free connection between your PC and instruments, regardless of the vendor. It provides robust instrument control and works with the software development environment you choose.

General specifications

Power requirements	350 W typical, 400 W maximum
Operating temperature range	0 to 50 °C
Storage temperature range	–40 to 70 °C; during storage below –20 °C, instrument states and waveform data may be lost.
Altitude	0 to 3000 m (10,000 ft)
Humidity	Type tested, 95% relative humidity at 40°C decreasing linearly to 50% relative humidity at 50°C.
Environmental testing	Samples of this product have been tested in accordance with the Keysight Environmental Test manual and verified to be robust against the environmental stresses of storage, transportation, and end-use. Those stresses include but are not limited to temperature, humidity, shock, vibration, altitude, and power line conditions. Test methods are aligned with IEC 60068-2 and levels are similar to MIL-PRF-28800F Class 3. Phase noise specifications are not warranted in a vibrating environment.
ISO compliant	This family of signal generators is manufactured in an ISO-9001 registered facility in concurrence with Keysight's commitment to quality.
EMC	Conforms to the immunity and emission requirements of IEC/EN 61326-1 including the conducted and radiated emission requirements of CISPR Pub 11/2009 Group 1, Class A.
Storage	Memory is shared by instrument states and waveform files. The solid-state drive initially holds at least 480 GB of free space.
Security	Display blanking Memory clearing functions (See Application Note, *Security Features of Keysight Technologies Signal Generators*, Part Number E4400-90621). Removable Solid State Drive (SSD) with all user data.
Self-test	Internal diagnostic routine tests most modules in a preset condition. If node voltages are within acceptable limits, then the module passes the test.
Weight	17.2 kg (38.0 lb) net 24.0 kg (52.8 lb) shipping
Dimensions	103 mm H x 426 mm W x 559 mm D (4.05" H x 16.8" W x 22.0" D) Height and depth dimensions include bottom and rear panel feet. Rack mounting height: 2U (89 mm or 3.5")
Recommended calibration cycle	12 months

Input/Output Descriptions

Front panel connectors

Option 1EM moves all connectors to the rear panel except the USB connectors.

RF output	Output impedance 50 Ω (nom).
Option 520	Standard: Precision APC-3.5 male; plus 3.5 to 3.5 mm female adapter Option 1ED: Type-N female; plus Type-N male to SMA female adapter
USB 2.0 master (2 ports)	Allows control of USB devices. USB Type-A female connector. Nominal output current 0.5 A.

Rear panel connectors

Unless otherwise noted, digital outputs are 5 V CMOS, and digital inputs will accept 5 V CMOS, 3.3 V CMOS, or TTL voltage levels.
Option 1EM moves all connectors to the rear panel except the USB connectors.

LAN (1000BaseT)	Allows LAN TCP/IP communication. RJ45 Ethertwist connector. The LAN connector provides SCPI remote programming functionality. The LAN connector is used to access the internal web server and FTP server. The LAN supports DHCP, HiSLIP, sockets SCIP, VXI-11 SCPI, connection monitoring, dynamic hostname services, and TCP keep alive. This interface is LXI class C compliant.
USB 2.0 master (2 ports)	Allows control of USB devices. USB Type-A female connector. Nominal output current 0.5 A.
USB 2.0 slave (1 port)	Receives control from USB host. USB Type-B female connector. Nominal output current 0.5A.
SFP 1	Accepts an SFP+ transceiver
SFP 2	Accepts an SFP+ transceiver
DisplayPort	Reserved for future use
Data Port 1	100-pin LVDS. This connector is used to provide agile LO control of the N519xA UXG agile signal generator.
System Sync In	SMA
System Sync Out	SMA
Triggers 1 through 10	Triggers 1 - 2 are SMA; Triggers 3 – 10 are SMB.
6 GHz In	SMA; +5.0 dBm minimum input power. Damage level > +15 dBm.
6 GHz Out	SMA; +10 dBm nominal output power.
LO In	SMA; +2.0 dBm minimum input power. Damage level > +20 dBm.
IF Ref In	SMA
IF Ref Out	SMA
IF In	SMA
IF Out	SMA
Trigger In 50 Ω	SMB
PRCN Marker Out 50 Ω	SMB
Marker Out 50 Ω	SMB

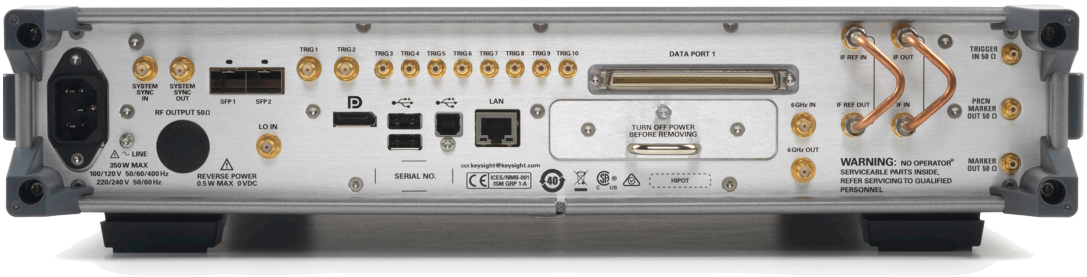

Figure 11. The N5194A rear panel

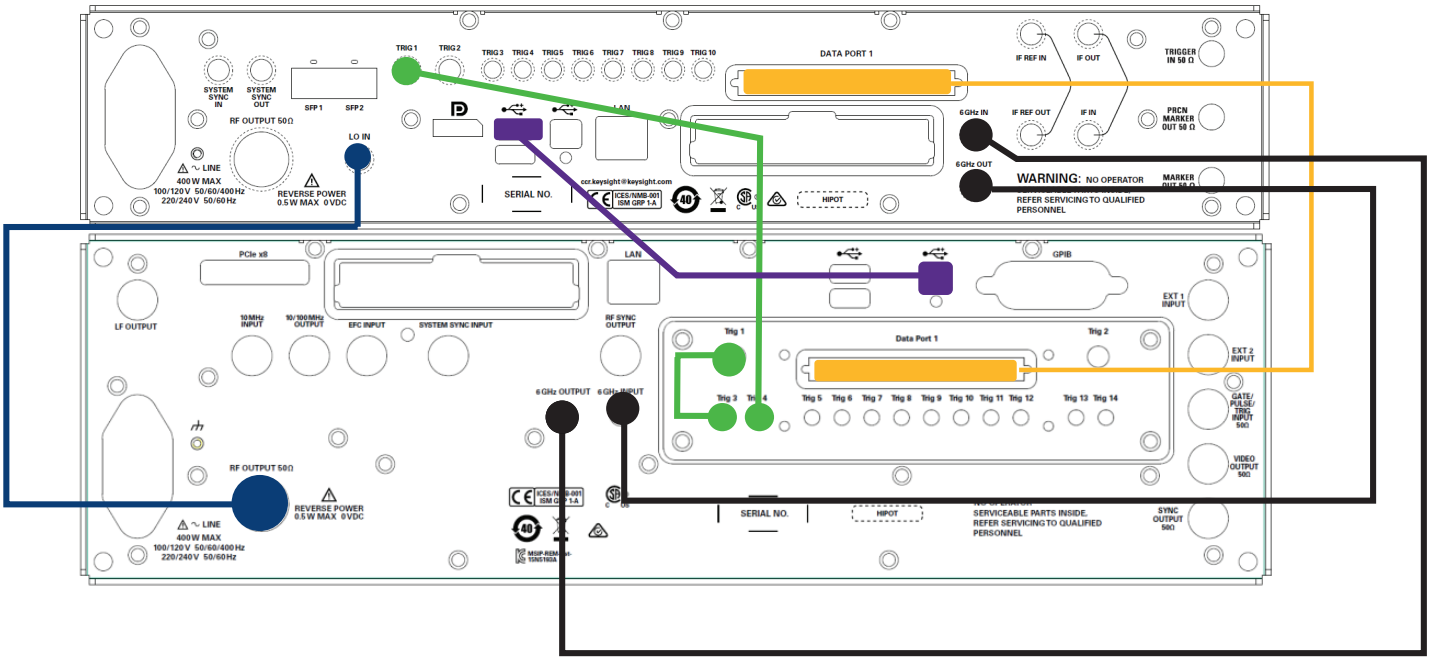

Figure 12. Connections between the N5194A UXG agile vector adapter and the N5193A UXG agile signal generator.

Related Literature

N5194A UXG Agile Vector Adapter, Configuration Guide, literature number 5992-2332EN

N5193A UXG Agile Signal Generator, Data Sheet, literature number 5992-0092EN

N5193A UXG Agile Signal Generator, Configuration Guide, literature number 5992-0093EN

UXG Agile Signal Generator N5193A, Brochure, literature number 5992-0091EN

N7660B Signal Studio for Multi-Emitter Scenario Generation, Technical Overview, literature number 5992-0405EN

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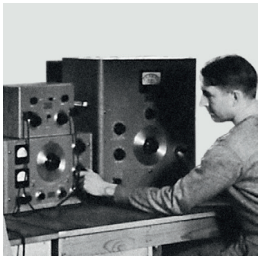

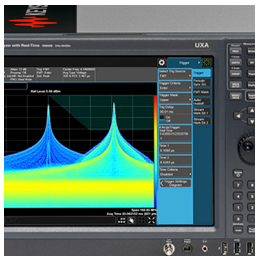

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