



 of Switzerland

Accurate
Reliable
Affordable

PRODUCT CATALOG

TEST & MEASUREMENT
INSTRUMENTS UP TO 65 GHz
MADE IN SWITZERLAND



Introduction

ABOUT US

AnaPico is an ISO9001:2015 certified technology leader developing, manufacturing and supplying RF and MW test & measurement instruments for a wide range of civilian and governmental applications. Established in 2005 in Zurich, Switzerland, AnaPico has been heavily investing in R&D and is dedicated to creating and continuously improving our innovative and cost-efficient T&M solutions that have best-in-class performance and unique features.

All our products are manufactured and 100% tested in Switzerland.

Our current product offering consists of the following:

- **RF and Microwave Signal Generators up to 54 GHz**
 - analog Signal Generators with lowest phase noise
 - ultra-agile with digital modulation
 - phase-coherent multiple outputs
 - different models ranging from 2 to 54 GHz
- **Standard and customized Frequency Synthesizers**
 - wideband from 8 kHz to 20 or 43 GHz
 - ultra-compact with USB/LAN/FCP interfaces
 - fastest (<5 μ s) switching option: BCD/Binary format
- **Signal Source - & Phase Noise Analyzers up to 65 GHz**
 - highly flexible analysis of absolute and residual phase and amplitude noise, pulsed and CW
 - different models up to 7, 26, 40, 50 or 65 GHz
 - transient analysis, short- and long-term stability analysis, one-step VCO characterization
 - spectral analysis

Unique features of our products are:

- Outstanding signal purity and lowest phase noise
- High output power and fast switching speed
- Ultra-low measurement sensitivity
- Compact size and lightweight
- Low power consumption and optional battery operation
- Flexible customization of hard- and software



AnaPico makes the difference. What you can expect from us.

At AnaPico we create Swiss made instruments with unique features. Our experienced engineering team has outstanding hardware and software skills and in partnership with our contracted distributors, AnaPico operates a growing service network in the world, offering services that meet customer expectations!

- ✓ **High reliability, superior performance instruments with low cost of ownership**
- ✓ **Short lead and service turnaround times**
- ✓ **Quick and competent after-sales support**
- ✓ **Continued hard- and software support and updates**



SERVICES

In partnership with our contracted distributors, AnaPico operates a growing service network worldwide, offering the following services.

Calibration

All our T&M Instruments are fully calibrated and delivered together with our calibration certificates. We recommend that our customers return the instruments to our local authorized service facilities or our headquarters in Switzerland for re-calibration every 2 years.

Maintenance and repair

All new products of AnaPico have a standard 2-year warranty period. The warranty period is extendable up to 5 years. Our product repair and calibration service is available for 5 additional years after product phase-out.

Product updates

Firmware and graphical user interface (GUI) software for all our products are continuously maintained and updated. They are available on our webpage and free-of-charge for our customers. Our local service facilities and partners also offer these updating services.

Technical and logistic support

Our locally contracted distributors have trained and knowledgeable engineers and service personnel ready to help our customers with requirement clarifications, instrument trial uses, application support, and delivery and service-related logistics.



Calibration lab



R&D



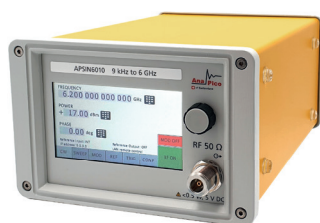
Live demo

Analog Signal Generators

APSINX010HC & APSINXXG & APSIN6G & APMQS20

ANALOG SIGNAL GENERATORS FROM 9 KHZ UP TO 26.5 GHZ

The APSINX010 is an analog RF signal generator series covering RF frequency ranges from 9 kHz to 2, 4 and 6.1 GHz. The APSINXXG and APSIN6G are analog signal generator series covering microwave frequency ranges from 9 kHz to 6, 12, 20 and 26.5 GHz. A combination of characteristics including good signal purity, low phase noise, fast switching speed and wide output power range, along with their very compact size, lightweight and low power consumption makes these instruments very well usable in labs, production halls and outdoor fields.



APSINX010



APSINXXG



Option 1URM



Option EB



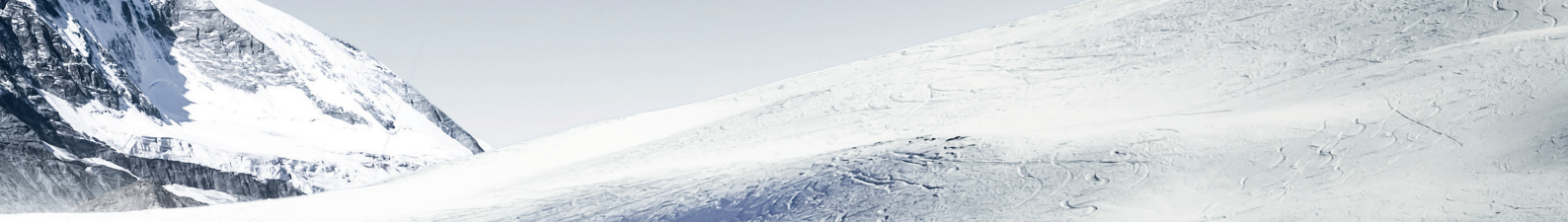
APMQS20



Option RM: 3HU 19" rack-mount kit mounting 2 portable units

SPECIFICATIONS

Models	RF		Microwave	
	APSIN2010HC APSIN4010HC APSIN6010HC	APSIN6G	APSIN12G APSIN20G APSIN26G	APMQS20
Frequency Range	9 kHz to 2, 4 or 6.1 GHz	9 kHz to 6 GHz	9 kHz (with option 9K) to 12, 20 or 26.5 GHz	10 MHz to 20 GHz (100 kHz to 20 GHz with option 100K)
Resolution	0.001 Hz	0.001 Hz	0.001 Hz	0.001 Hz
Power Range	-30 to +18 dBm (-120 to +17 dBm with option PE3)	-20 to +25 dBm (-120 to +25 dBm with option PE3)	-20 to +15 dBm (-90 to +25 dBm with option PE3 / HP) (-120 to +25 dBm with option PE2 / HP)	-15 to +15 dBm
Resolution	0.01 dB	0.01 dB	0.01 dB	0.01 dB
Switching Speed	400 μ s	300 μ s (<30 μ s with option FS)	400 μ s (<30 μ s with option FS)	1 ms (15 μ s with option FS)
Phase Noise At 1 GHz	at 10 Hz: -80 dBc/Hz at 1 kHz: -117 dBc/Hz at 100 kHz: -130 dBc/Hz at 10 MHz: -150 dBc/Hz	at 10 Hz: -80 dBc/Hz at 1 kHz: -117 dBc/Hz at 100 kHz: -128 dBc/Hz at 10 MHz: -150 dBc/Hz	at 10 Hz: -80 dBc/Hz at 1 kHz: -117 dBc/Hz at 100 kHz: -128 dBc/Hz at 10 MHz: -150 dBc/Hz	at 10 Hz: -85 dBc/Hz at 1 kHz: -135 dBc/Hz at 20 kHz: -145 dBc/Hz at 20 MHz: -150 dBc/Hz
Remote Control	Ethernet, USB, GPIB			
Modulation	AM, FM, PM, Pulse, Chirp, AVIO (ILS, VOR)	AM, FM, PM, Pulse, Chirp, AVIO (ILS, VOR)	AM, FM, PM, Pulse, Chirp, N-Pulse	FM, PM, Pulse
Sweeps	List, Frequency, Power			
Dimensions (W x L x H), Weight	173.6 x 270.7 x 116.9 mm; [6.83 x 10.66 x 4.60 in], 2.5 kg [5.5 lbs]	173.6 x 261.7 x 116.9 mm [6.83 x 10.30 x 4.60 in], 2.5 kg [5.5 lbs]	173.6 x 261.7 x 116.9 mm; [6.83 x 10.30 x 4.60 in], 2.5 kg [5.5 lbs]	177.8 x 127 x 25.4 [7.0 x 5.0 x 1.0 in], < 1.0 kg [< 2.2 lbs]



KEY FEATURES

- High output power, low phase noise
- Comprehensive AM, low-distortion, wideband DC-FM, and high-speed pulse modulation
- Powerful trigger and sweeping modes
- DC power supply
- Touch display, web browser- or desktop application GUI

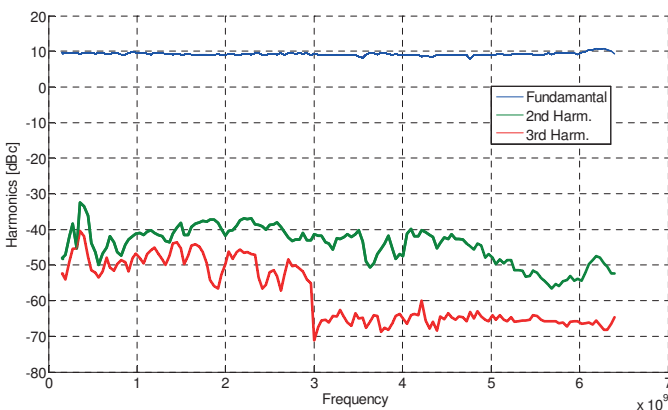
APPLICATIONS

- General purpose compact signal source
- EMC / EMI testing
- Service and verification
- Portable, battery operated source for field operation

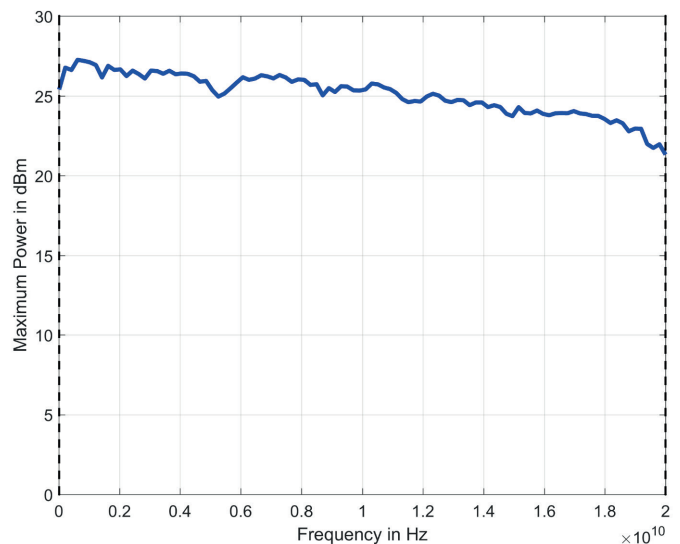
AVAILABLE OPTIONS

		APSINX010HC	APSINXXG	APSIN6G	APMQS20
100K	Frequency extension to 100 kHz	–	–	–	✓
9K	Frequency range extension to 9 kHz (APSIN12G/20G)	–	✓	–	–
HP	Higher output power	–	✓	–	–
PE3	Mechanical step attenuator down to -90 dBm	✓	✓	✓	–
PE2	Mechanical step attenuator down to -120 dBm	–	✓	–	✓
NM	Remove modulation (APSIN20G/26G)	–	✓	–	–
NP	Narrow pulse modulation	–	✓	–	–
FS	Ultra-fast switching speed	–	✓	✓	✓
AVIO	Avionics modulation capability (VOR/ILS)	✓	–	✓	–
B3	Internal rechargeable battery module	✓	✓	✓	–
EB6	External power bank adapter cable	✓	✓	✓	✓
1URM	19" 1HU rack-mount module	✓	✓	✓	–
BAG	Portable Bag	✓	✓	✓	✓
DATA	Commercial Calibration Certificate with test data	✓	✓	✓	✓
FLASH	MicroSD card slot for removable SD memory	✓	✓	✓	–
GPIB	GPIB interface	✓	✓	✓	✓
IEC	IEC 17025 calibration with certificate	✓	✓	✓	–
OEM	OEM package	✓	✓	✓	–
REAR	Move output to the rear panel	✓	✓	✓	–
ReCal	Recalibration with certificate (recommended: 2-year interval)	✓	✓	✓	–
RM	19" 3HU rack-mount kit	✓	✓	✓	–
WE	One year warranty extension (standard: 2 years)	✓	✓	✓	✓

PERFORMANCE PLOTS



APSIN6010: Harmonic performance at +10 dBm



APSIN20G: Typical maximum output power (option HP)

Analog Signal Generators

APULN

ULTRA-LOW NOISE RF MICROWAVE SIGNAL GENERATORS FROM 100 KHZ UP TO 40 GHZ

Ultra-low noise RF Microwave Signal Generators starting from 100 kHz up to 12.75, 20, 26 or 40 GHz

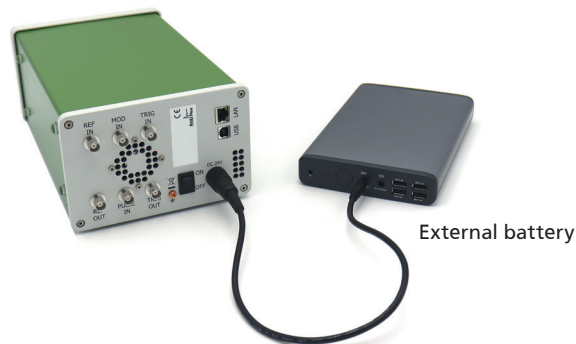
The APULN is a high-performance analog signal generator (analog signal source) series covering RF and microwave frequency ranges from 100 kHz (optionally 8 kHz) to 12.75, 20, 26 and 40 GHz. A combination of characteristics such as good signal purity, ultra-low phase noise, high output power and fast switching speed, along with their very compact size, low weight and low power consumption makes these instruments very well usable in labs, manufacturing, and outdoor fields.



APULN front and rear



Option 1URM



APULN with option EB

SPECIFICATIONS

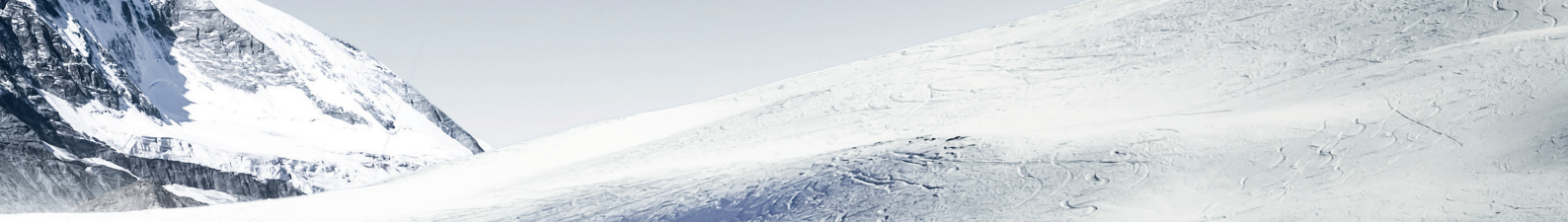
Frequency Range Resolution	100 kHz to 12.75, 20, 26, or 40 GHz 0.001 Hz
Power Range	-20 to +25 dBm / -80 to +25 dBm (with option PE4) / -120 to +25 dBm (with option PE2)
Switching Speed	500 μ s (20 μ s with option FS)
Phase Noise At 1 GHz	at 10 Hz: -87 dBc/Hz (-100 dBc/Hz with option LN) at 1 kHz: -130 dBc/Hz at 20 kHz: -145 dBc/Hz at 100 kHz: -150 dBc/Hz
Remote Control	Ethernet, USB, GPIB
Modulation	Pulse, AM, FM, PM, Pulsed Chirp
Sweeps	List, Frequency, Power
Dimensions (W x L x H), Weight	173.6 x 291.7 x 116.9 mm [6.83 x 11.48 x 4.60 in], 2.5 kg [5.5 lbs]

KEY FEATURES

- Excellent signal purity: ultra-low phase noise and low spurious
- Combination of highest output power / fastest switching
- Powerful and easy to use touch-display control
- Portable, operation from external 24V DC power bank
- Versatile control via certified Labview drivers, API programming library, VISA support
- Best-in-class performance and low cost of ownership
- Touch display control, GUI application or web browser GUI available

APPLICATIONS

- Automated testing
- Video broadcasting, satellite communications
- Low jitter clock and LO source

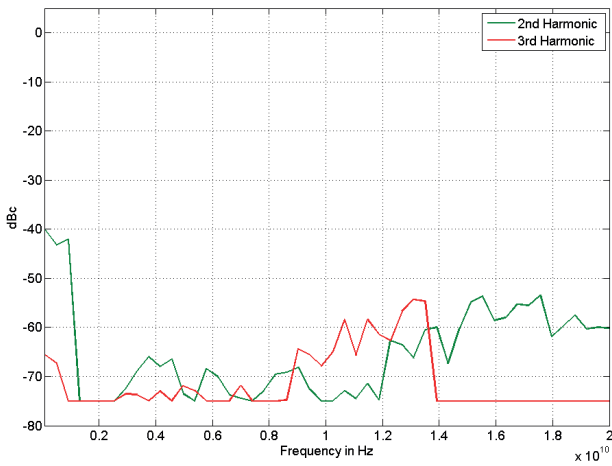


AVAILABLE OPTIONS

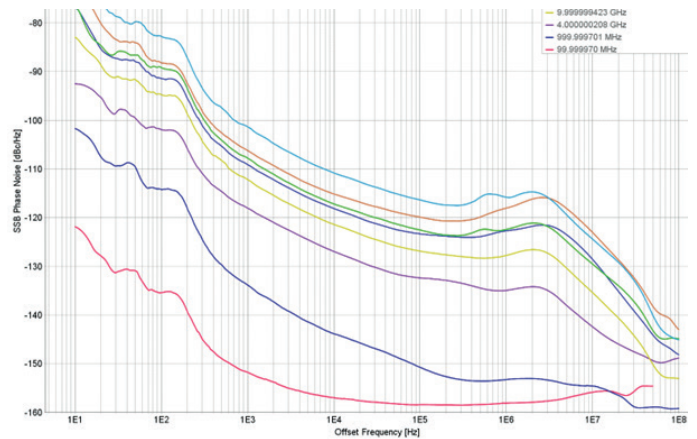
8K	Frequency range extension to 8 kHz
PE	Mechanical step attenuator down to -90 dBm
PE2	Mechanical step attenuator down to -120 dBm
PE4	Electrical step attenuator
MOD	Analog modulation
LN	Enhanced close-in phase noise & frequency stability
LN+	Enhanced close in phase noise & further enhanced long term frequency stability
FILT	Enhanced harmonic rejection
FS	Ultra-fast switching speed
1URM	19" 1HU rack-mount module
BAG	Portable Bag

DATA	Commercial Calibration Certificate with test data
EB	External power bank adapter cable
FLASH	MicroSD card slot for removable SD memory
GPIB	GPIB interface
IEC	IEC 17025 calibration with certificate
REAR	Move output to rear panel
ReCal	Recalibration with certificate (recommended: 2-year interval)
RM	19" 3HU rack-mount kit
VREF	Variable external reference
WE	One year warranty extension (standard: 2 years)

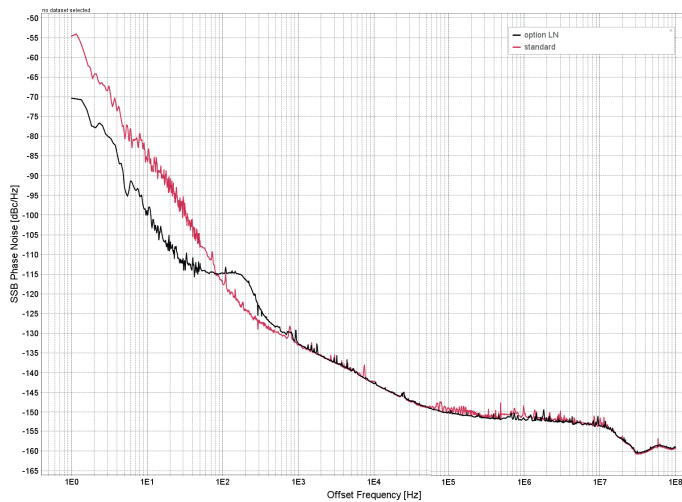
PERFORMANCE PLOTS



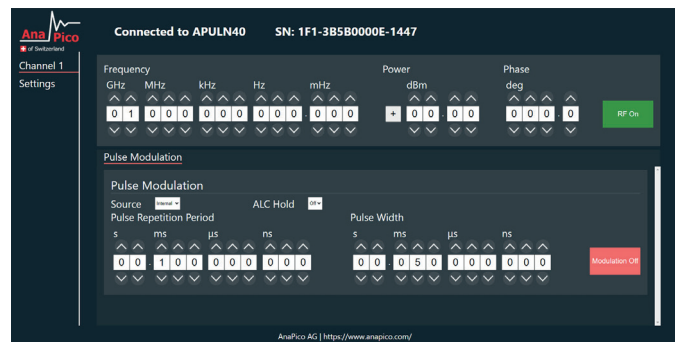
APULN: Harmonics 0 dBm with option FILT



APULN: SSB phase noise performance, with option LN



Comparison: SSB phase noise performance with and without option LN



Web browser GUI

Signal Generators

APMSXXG & APLCXX-X & APMS50GB & APVSGXX-X MULTI-CHANNEL SIGNAL GENERATORS FROM 100 KHZ UP TO 54 GHZ

The multi-channel models are phase-coherent, ultra-fast switching, and ultra-low phase noise signal generators with a frequency range from 100 kHz to 54 GHz and output power ranging from -120 to +25 dBm. They are ideally suited for a wide range of applications where good signal quality, accurate signal level and wide output power range are required. These instruments have a proven track record in fields such as quantum

computing, radar simulation and satellite testing. Options FS and UFS provide leading-edge switching speeds down to 25, 5 or 1 μ s, depending on models. The multi-channel systems come in a standard 19" 1U or 2U (up to 4 channels) enclosure and offer USB and LAN control interfaces as well as an optional FCP and GPIB interface. Each interface allows for easy and fast communication using the SCPI 1999 command set.



APMSXXG, APLCXX-X



APVSG-X

SPECIFICATIONS

	Analog			Digital
	APMSXXG	APLCXX-X	APMS50GB	APVSG-X
# of channels	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4
Frequency Range	300 kHz to 6, 12, 20, 33, 40 GHz	100 kHz to 12, 20, 40 GHz	9 kHz to 26, 43 or 54 GHz	0.01 to 4, 6, 12, 20, 40 GHz
Resolution	0.001 Hz	0.001 Hz	<0.001 Hz	0.001 Hz
Power Range	-20 to +25 dBm -60 to +23 dBm (with PE4)	-20 to +15 dBm	-15 to +25 dBm -120 to +25 dBm (optionally)	-20 to +18 dBm -120 to +18 dBm (optionally)
Switching Speed	500 μ s (25 μ s with option FS)	500 μ s (10 μ s with option FS)	500 μ s (15 μ s with option FS)	500 μ s (1 μ s with option UFS)
Phase Noise At 1 GHz	at 10 Hz: -87 dBc/Hz (-100 dBc/Hz with LN) at 1 kHz: -130 dBc/Hz at 20 kHz: -145 dBc/Hz at 100 kHz: -150 dBc/Hz	at 10 Hz: -87 dBc/Hz (-100 dBc/Hz with LN) at 1 kHz: -140 dBc/Hz at 20 kHz: -150 dBc/Hz at 100 kHz: -152 dBc/Hz	at 10 Hz: -90 dBc/Hz (-100 dBc/Hz with LN) at 1 kHz: -140 dBc/Hz at 20 kHz: -148 dBc/Hz at 100 kHz: -150 dBc/Hz	at 10 Hz: -87 dBc/Hz (-100 dBc/Hz with LN) at 1 kHz: -130 dBc/Hz at 20 kHz: -145 dBc/Hz at 100 kHz: -150 dBc/Hz
Remote Control	Ethernet, USB, GPIB	Ethernet, USB, GPIB, FCP	Ethernet, USB, GPIB	Ethernet, USB, GPIB, FCP
Reference Output	10 MHz, 100 MHz and 3 GHz			
Modulation	AM, FM, PM, Pulse			Digital I/Q, analog, AVIO
Sweeps	List, Frequency, Power, Phase			Complex lists, Frequency, Power
Dimensions (W x L x H), Weight	19" 1HU enclosure: 440 x 470 x 44 mm [17.3 x 18.5 x 1.7 in], 10 kg [22 lbs]	19" 1HU enclosure: 440 x 470 x 44 mm [17.3 x 18.5 x 1.7 in], 10 kg [22 lbs]	19" 1HU enclosure: 440 x 500 x 44 mm [17.3 x 19.7 x 1.7 in], 10 kg [22 lbs]	19" 2HU enclosure: 444 x 567 x 88 mm [17.5 x 22.3 x 3.5 in], 18 kg [39.7 lbs]

KEY FEATURES

	APMSXXG	APLCXX-X	APMS50GB	APVSG-X
Very Low phase noise	✓✓	✓✓✓	✓✓✓	✓✓
Fast switching	✓	✓✓	✓✓	✓✓✓
Low harmonic distortion	✓	✓✓	✓	✓✓
Phase coherent switching option	✓	✓	✓	✓
Multiple phase coherent outputs	✓	✓	✓	✓
Excellent channel-to-channel phase stability	✓	✓	✓	✓
Digital modulation	-	-	-	✓✓



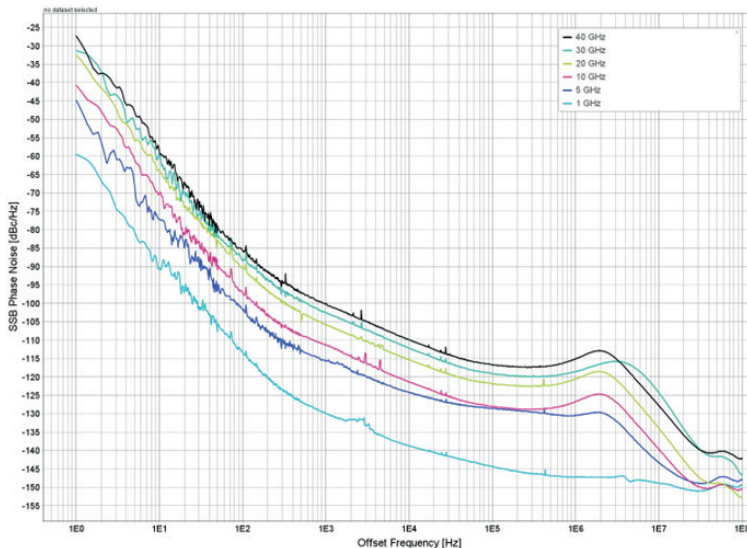
APPLICATIONS

	APMSXXG	APLCXX-X	APMS50GB	APVSG-X
Radar simulation	✓	✓	✓	✓
Quantum computing	✓	✓	✓	✓✓
High volume automated testing	✓	✓	✓	✓
Phased array antenna / beamforming	✓	✓	✓	✓
Electronic warfare	✓	✓	✓	✓
5G Testing	✓	✓	✓	✓✓

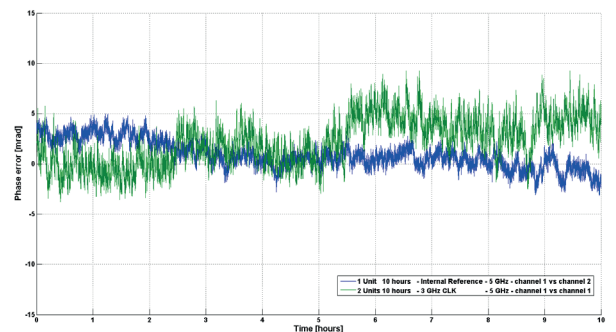
AVAILABLE OPTIONS

		APMSXXG	APLCXX-X	APMS50GB	APVSG-X
100K	Frequency range extension to 100 kHz	-	-	-	✓
LF	Frequency range extension to 9 kHz	-	-	✓	-
PE2	Mechanical step attenuator down to -120 dBm	-	✓	✓	✓
PE4	Electrical step attenuator	✓	✓	✓	-
PHS	Phase coherent switching	✓	✓	✓	✓
MOD	Add amplitude, frequency, phase modulation capability	✓	✓	✓	✓
IVM	Internal vector modulations	-	-	-	✓
AWGN	Additive white gaussian noise generation, bandwidth selective	-	-	-	✓
FS/UFS	Ultra-fast switching speed	✓	✓	✓	✓
NEC	Fast switching speed, narrow pulse (no export control required)	✓	-	✓	-
LN/LN+	Enhanced close-in phase noise & further enhanced long term frequency stability	✓	✓	✓	✓
SYNC	Multiple device synchronization	-	-	-	✓
FCP	Fast control port	-	✓	-	✓
FILT	Enhanced harmonic rejection	-	✓	-	-
FLASH	MicroSD card slot for removable SD memory	✓	✓	✓	-
VREF	Flexible external reference frequency support in range 1 to 250 MHz	✓	✓	✓	✓
GPIB	GPIB interface	✓	✓	✓	✓
HI	High isolation 19" 1HU casing	✓	✓	-	-
DATA	Commercial calibration certificate with test data (per channel)	✓	✓	✓	✓
IEC	IEC 17025 calibration with certificate	✓	-	✓	-
SD	MicroSD card slot for non-volatile storage of IQ data	-	-	-	✓

PERFORMANCE PLOTS



APMS: phase noise (without option LN)



APMS: phase stability at 5 GHz
 Between channels within a single device (blue)
 Between channels of separate devices (green)

Digital Signal Generators

APVSG

SINGLE-CHANNEL ULTRA-AGILE VECTOR SIGNAL GENERATORS UP TO 40 GHZ

The APVSG is an ultra fast-switching vector-modulated signal source covering a continuous frequency range with models from 100 kHz to 4, 6, 12, 20 or 40 GHz.

The standard APVSG enables outstanding ultra-fast CW frequency sweeping, chirping, intra-pulse modulation, pulse shaping, all with very low phase noise. A high

performance internal I/Q modulator enables customized modulation waveforms and supports dedicated modulation schemes including avionics modulation.

The compact unit is fully controllable from its dedicated GUI or the touch panel display.



Front view



Rear view

SPECIFICATIONS

Frequency Range Resolution	100 kHz to 4, 6, 12, 20, 40 GHz 0.001 Hz
Power Range	-20 to +18 dBm / -120 to +12 dBm (optionally)
Switching Speed	500 μ s (1 μ s with option UFS)
Phase Noise At 1 GHz	at 10 Hz: -87 dBc/Hz (-100 with option LN) at 1 kHz: -130 dBc/Hz at 20 kHz: -145 dBc/Hz at 100 kHz: -150 dBc/Hz
RF Modulation Bandwidth	400 MHz
Modulation	Digital I/Q, AM, PM, FM, Pulse, AVIO, AWGN
Remote Control	Ethernet, USB, GPIB, FCP
Sweeps	Complex lists, Frequency, Power
Dimensions (W x L x H), Weight	173.6 x 291.7 x 116.9 mm [6.83 x 11.48 x 4.60 in], 4 kg [8.8 lbs]

KEY FEATURES

Excellent phase noise performance and low spurious
Ultra-fast switching and frequency hopping
500 MS IQ data rates, up to 512 MS deep internal playback memory
Various digital modulation supported
Pulse descriptor word from internal memory or Fast Control Port

APPLICATIONS

Arbitrary I/Q waveform playback
Radar signal simulation, EW
Phased array signal generation for beamforming
Avionic modulation emulation
High speed antenna testing

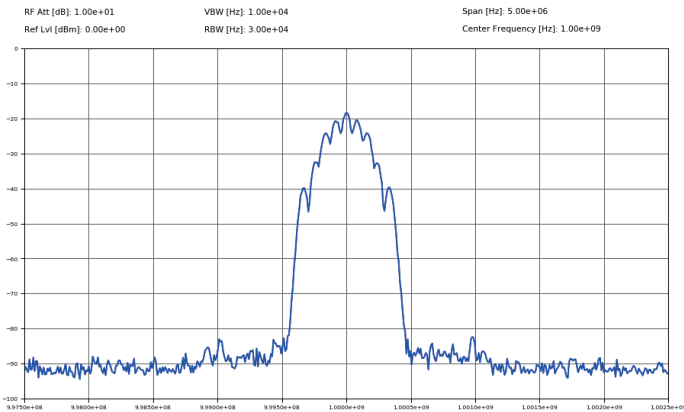


AVAILABLE OPTIONS

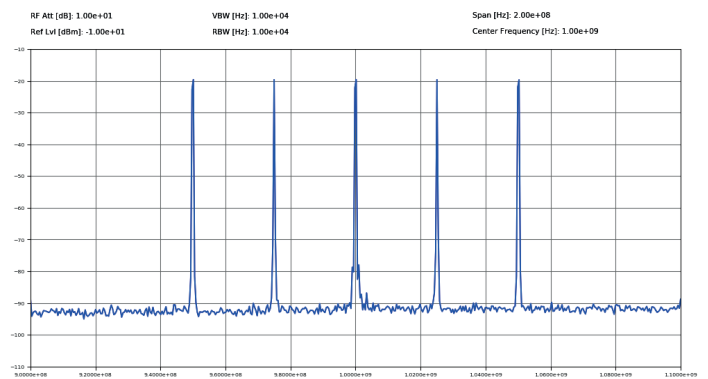
UFS	Ultra-fast switching speed
PDW	Pulse descriptor word
FCP	Fast control port
PHS	Phase-coherent switching
AWGN	Additive white gaussian noise generation, bandwidth selective
PE4	Electrical step attenuator
PE	Mechanical step attenuator (down to -90 dBm)
PE2	Mechanical step attenuator (down to -120 dBm)
AIQ	External analog I/Q Inputs
LN	Enhanced close-in phase noise & frequency stability
LN+	Enhanced close in phase noise & further enhanced long term frequency stability

100K	Frequency range extension to 100 kHz
MOD	Analog modulations (AM, PM, FM, Pulse)
IVM	Internal digital modulation schemes
AVIO	Avionic modulations
VREF	Variable REF input
SD	MicroSD card slot for non-volatile storage of IQ data
SYNC	Multi-device synchronization
GPIB	GPIB interface
EB	External power bank adapter cable
BAG	Portable bag
ReCal	Recalibration with certificate (recommended: 2-year interval)
WE	One year warranty extension (standard: 2 years)

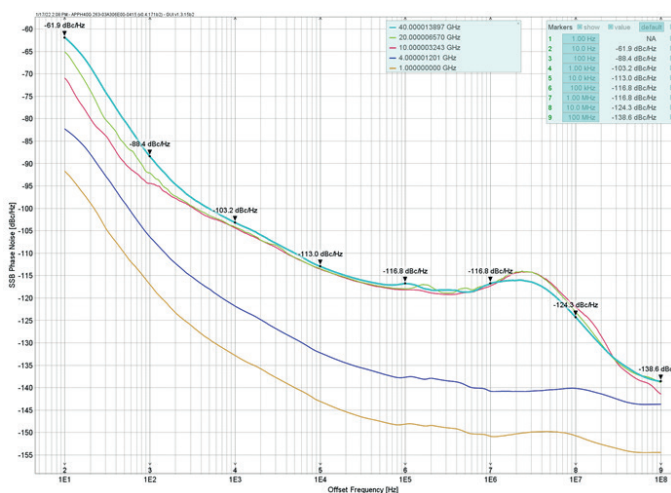
PERFORMANCE PLOTS



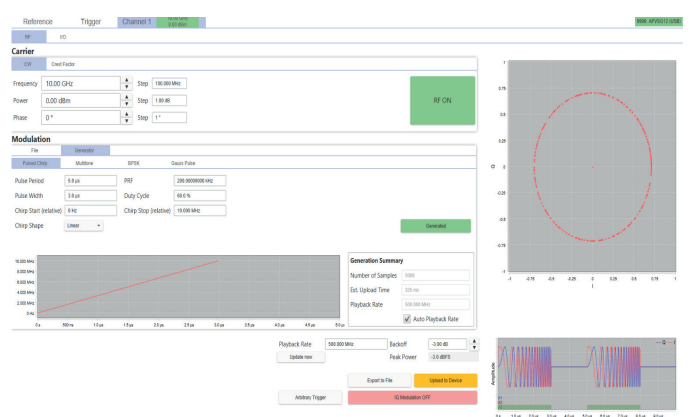
APVSG: DME Spectrum (X channel, raised cosine filter)



APVSG: Multi-Tone 100 MHz bandwidth



APVSG: phase noise (without option LN)



APVSG: GUI

Frequency Synthesizers

APSYN & APUASYN & APMSYN

LOW NOISE FREQUENCY SYNTHESIZERS MODELS UP TO 43.5 GHZ

AnaPico offers a variety of single- and multi-output wideband synthesizers. Starting from as low as 8 kHz they cover beyond 43.5 GHz. Depending on the requirements the APSYN and APMSYN series can offer exceptional phase noise, high output power, adjustable output amplitudes, harmonic filtering and extremely fast switching.

The devices are available in compact flange mount enclosures or in standard 1URM chassis. The instruments are controlled via SCPI command language using USB, Ethernet or GPIB. Drivers and API are supplied.



APSYN140-X



APUASYN20-X



APSYN420



APMSYN22



APMSYN40

SPECIFICATIONS

	Single-channel			Single- and multi-channel	
	APSYN420	APMSYN22	APMSYN40	APSYN140(-X)	APUASYN20(-X)
# of channels	1	1	1	1, 2, 3, 4	1, 2, 3, 4
Frequency Range	0.01 to 20 GHz	0.01 to 22 GHz	1 MHz to 40 GHz	100 kHz to 43.5 GHz	100 kHz to 20 GHz
Resolution	0.001 Hz	0.01 Hz	0.001 Hz	0.001 Hz	0.01 Hz
Accuracy	0.1 ppm	0.1 ppm	0.5 ppm	0.1 ppm	0.1 ppm
Power Range	+23 dBm	-20 to +25 dBm	-10 to +23 dBm	-10 to +25 dBm	0 to +18 dBm
Switching Speed	180 μ s (25 μ s with option FS)	500 μ s (<10 μ s with option FS)	500 μ s (85 μ s with option FS)	500 μ s (20 μ s with option FS)	500 μ s (10 μ s with Option FS)
Phase Noise at 1 GHz	at 10 Hz: -82 dBc/Hz at 1 kHz: -118 dBc/Hz at 100 kHz: -128 dBc/Hz at 10 MHz: -150 dBc/Hz	at 10 Hz: -87 dBc/Hz at 1 kHz: -122 dBc/Hz at 100 kHz: -132 dBc/Hz at 10 MHz: -155 dBc/Hz	at 10 Hz: -80 dBc/Hz at 1 kHz: -125 dBc/Hz at 100 kHz: -140 dBc/Hz at 10 MHz: -150 dBc/Hz	at 10 Hz: -100 dBc/Hz at 1 kHz: -134 dBc/Hz at 100 kHz: -150 dBc/Hz at 10 MHz: -155 dBc/Hz	at 10 Hz: -85 dBc/Hz at 1 kHz: -115 dBc/Hz at 20 kHz: -125 dBc/Hz at 10 MHz: -155 dBc/Hz
Remote Control	Ethernet, USB	Ethernet, GPIB, USB	Ethernet, USB	Ethernet, USB	Ethernet, GPIB, USB
Modulation	FM, PM, Pulse, Chirp	Pulse	Pulse	FM, PM, Pulse	FM, Pulse
Sweeps	List, Frequency	List, Frequency	List, Frequency	List, Frequency	List, Frequency
Dimensions (W x L x H), Weight	105 x 210 x 60 mm [4.13 x 8.27 x 2.36 in] < 1.0 kg [< 2.2 lbs]	130 x 95 x 25 mm [5.12 x 3.74 x 0.98] < 0.6 kg [< 1.3 lbs]	60 x 150 x 26 mm [2.36 x 5.9 x 1.02 in] 0.6 kg [1.3 lbs]	Single: 105 x 270 x 60 mm [4.13 x 10.63 x 2.36 in], < 1.0 kg [< 2.2 lbs] Multi: 430 x 460 x 43 mm [16.93 x 18.11 x 1.69 in], < 10 kg [< 22 lbs]	Single: 105 x 270 x 60 mm [4.13 x 10.63 x 2.36 in], < 1.0 kg [< 2.2 lbs] Multi: 430 x 460 x 43 mm [16.93 x 18.11 x 1.69 in], < 10 kg [< 22 lbs]



KEY FEATURES

	AP-SYN140	AP-SYN420	APUA-SYN20	APMS-YN22	APM-SYN40	AP-SYN140-X	APUA-SYN20-X
Low phase noise	✓✓	✓	✓	✓	✓✓	✓✓	✓
Highly phase-synchronous and -coherent switching option	-	-	-	-	-	✓✓	✓
Fast switching down to 20 μs	✓	✓	✓✓	✓✓	✓	✓	✓✓✓
Pulse	✓	✓	✓	✓	✓	✓	✓
Chirps	-	✓	✓	✓	-	-	✓
FM, PM	✓	✓	-	-	✓	✓	✓
Internal OCXO, external variable reference	✓	✓	✓	✓	✓	✓	✓
Single DC supply	✓	✓	✓	✓	✓	AC	AC

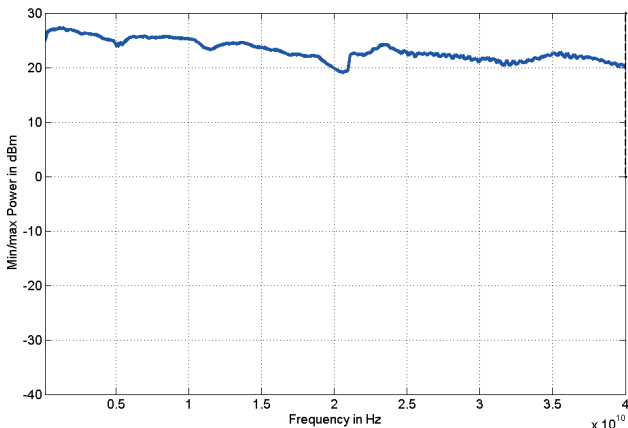
APPLICATIONS

	AP-SYN140	AP-SYN420	APUA-SYN20	APMS-YN22	APM-SYN40	AP-SYN140-X	APUA-SYN20-X
Automated Testing	✓	✓	✓	✓	✓	✓	✓
Test equipment LO	✓✓	✓✓	✓	✓	✓✓	✓	✓✓
Wireless infrastructure	✓	✓	✓	✓	✓	✓	-
Military and Aerospace	✓	✓	✓	✓	✓	✓	✓

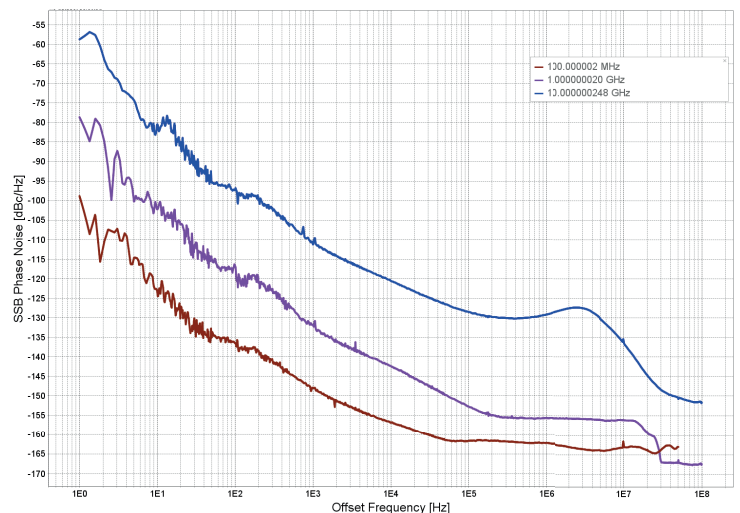
AVAILABLE OPTIONS

		AP-SYN140	AP-SYN420	APUA-SYN20	APMS-YN22	APM-SYN40	AP-SYN140-X	APUA-SYN20-X
8K	Frequency range extension to 8 kHz	-	-	✓	-	-	✓	✓
ALC	Automated level control	-	-	-	-	-	✓	-
DATA	Commercial Calibration Certificate with test data	-	-	-	✓	✓	✓	✓
EB	External power bank adapter cable	✓	-	✓	-	-	-	-
FCP	Fast control port	-	-	-	-	-	-	✓
FILT	Harmonic filtering (available with TOUCH)	✓	-	-	-	-	✓	-
FLASH	MicroSD card slot for removable SD memory	-	-	-	-	-	✓	✓
FS	Enhanced switching speed	✓	✓	✓	✓	✓	✓	✓
GPIB	GPIB interface	-	-	-	-	-	✓	✓
HI	High isolation 19" 1HU casing	-	-	-	-	-	✓	✓
IEC	IEC 17025 calibration with certificate	-	-	-	-	-	✓	✓
LN	Enhanced phase noise & frequency stability	✓	-	-	-	-	✓	-
FM	Frequency/Phase Modulation	-	-	-	-	-	✓	-
PHS	Phase coherent switching	-	-	-	-	-	✓	-
TOUCH	Enclosure with touch display control	✓	-	✓	-	-	-	-
VREF	Variable external reference	✓	✓	-	-	-	✓	-

PERFORMANCE PLOTS



AP-SYN140: Maximum output power



AP-SYN140: SSB phase noise

Phase Noise Analyzers

APPH & APNA

SIGNAL SOURCE ANALYZERS FROM 1 MHz UP TO 65 GHz

The APPH is a fully contained phase noise analyzer with models up to 7, 26, 40, 50 and 65 GHz. It offers an indispensable set of measurement functions for evaluating signal sources ranging from VHF to microwave frequencies, both active and passive non-self-oscillating devices like amplifiers, or frequency dividers. A mixed-signal system architecture with a FPGA cross-spectrum engine enables very fast signal processing and ultra-low phase noise sensitivity.

Built-in programmable power supplies and low-noise tuning voltages make the unit extremely flexible and easy to use.

The full set of functions includes:

- absolute and residual phase noise measurement of CW and pulse modulated signals
- amplitude noise measurement of CW and pulse modulated signals
- time stability measurements including Allan deviation
- cross-spectrum FFT analysis with 100 MHz bandwidth
- transient measurements
- oscillator test bench
- spectrum monitoring



APPH40G



Option LO offers access to internal LO's and individual RF channels

SPECIFICATIONS

Frequency Range	APPH6040: 1 MHz to 7 GHz APPH20G: 1 MHz to 26 GHz APPH40G: 1 MHz to 40 GHz	APNA50: 1 MHz to 50 GHz APNA65: 1 MHz to 65 GHz
Input Power Range	-15 to +20 dBm	
Analysis Range	0.01 Hz to 100 MHz	
Measurements	Phase noise (absolute & additive, CW, pulsed or burst-mode), amplitude noise (CW & pulsed), jitter, frequency counter, allan deviation, transients of frequency/power/phase, spectrum monitoring, VCO test bench	
Dimensions (W x L x H), Weight	468.0 x 341.0 x 152.5 [18.4 x 13.5 x 6.0 in] without handle, 11 kg [24.3 lbs]	

KEY FEATURES

- All-in-one compact measurement system
- Measurements down to -190 dBc/Hz
- Offset range from 0.01 Hz to 100 MHz
- Highest flexibility & dynamic range by selectable internal or external references
- Programmable low noise power supplies
- Powerful GUI and programming interface

APPLICATIONS

- Ultra-low phase noise crystal oscillator analysis
- Versatile phase noise and amplitude noise analysis
- Analysis of pulsed signals
- High-speed production testing of phase noise
- Additive phase noise characterization of amplifiers, transmitters, mixers
- Time stability analysis of clocks
- VCO testing

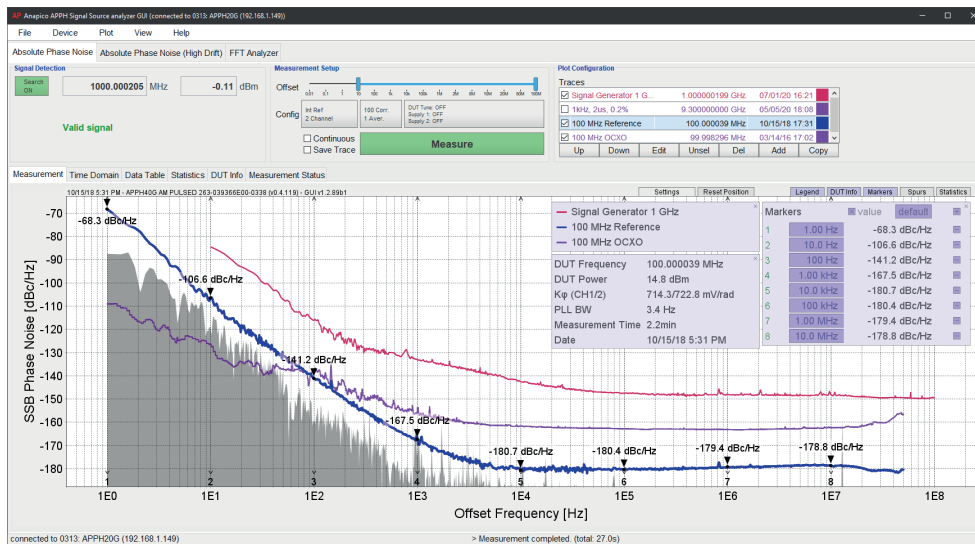


AVAILABLE OPTIONS

AM	Amplitude noise measurements
APN	Additive phase noise measurement
APNS	Accessory: Traceable AM / PN noise standard
BURST	Burst mode phase noise measurement
GPIB	GPIB interface
LN	Ultra-low noise internal sources
LO	Access to internal references for residual phase noise measurements
PS06	Accessory: 1-6 GHz mechanical phase shifter

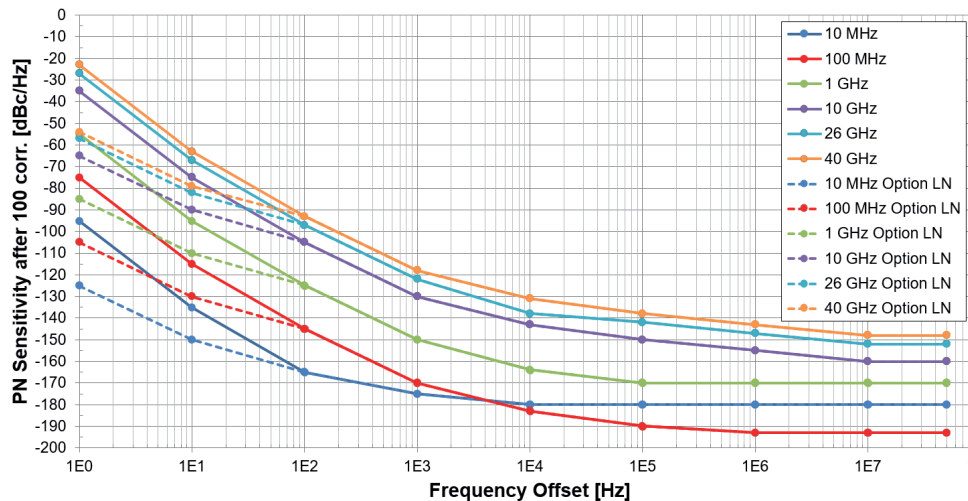
PS18	Accessory: 4-18 GHz mechanical phase shifter
PULSE	Pulsed signal measurement
ReCal	Recalibration with certificate (recommended: 2-year interval)
SPEC	Spectrum monitoring
TRAN	Transient analysis
TSTAB	Time stability analysis
VCO	VCO characterization
WE	One year warranty extension (standard: 2 years)

GRAPHICAL USER INTERFACE



APPH GUI: flexible desktop application to perform measurements via USB and ethernet

PERFORMANCE PLOTS



APPH: Phase noise sensitivity after 100 correlation



 of Switzerland

Accurate
Reliable
Affordable

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