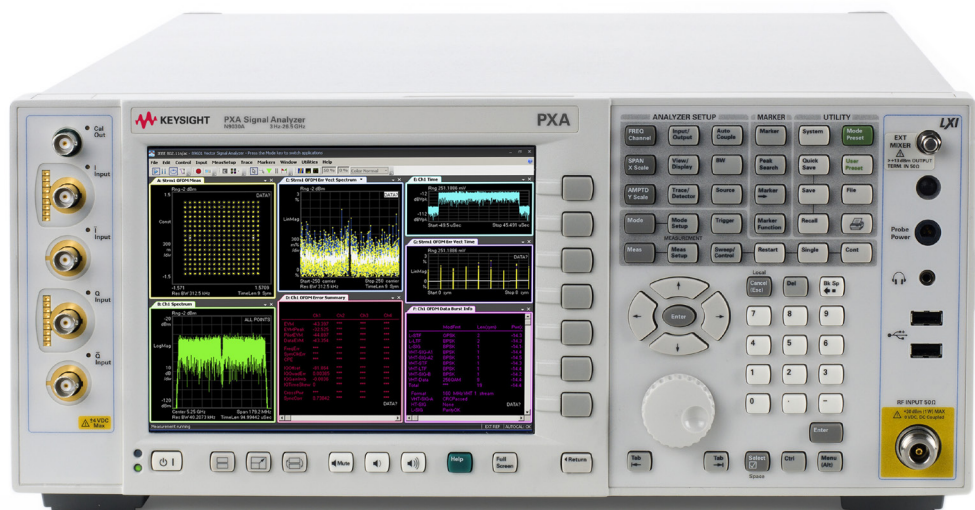


Keysight Technologies

Diving Deeper: A Detailed Side-by-Side Comparison of the PSA and the PXA

Technical Overview



Introduction

See how the Keysight Technologies, Inc. N9030A PXA high-performance signal analyzer compares with its venerable predecessor, the E444xA PSA. This side-by-side comparison includes specifications, functional block diagrams, features, example measurement screens, form factors, and more.

The Agilent PSA (E4440A/43A/45A/ 46A/47A/48A) high-performance spectrum analyzers, introduced a decade ago, have been the standard, serving the aerospace/defense and communications industries in applications that demand the most stringent signal analysis capabilities.

The N9030A PXA high-performance signal analyzer helps you meet the challenges of an increasingly competitive market that demands yet greater capabilities and performance from your signal analysis solution. The PXA is ideally suited to meet today's and tomorrow's technological challenges, while maintaining the best form-fit-functional compatibility with the PSA. Migrating to the PXA helps to sustain your past achievements, enhance your current designs and accelerate your future innovations.

The technical overview titled "Why Migrate from the PSA to the PXA?" (Keysight literature number 5990-3990EN) summarizes the key advantages of the PXA over the PSA. This document provides a more comprehensive comparison of PXA and PSA specifications. In cases where the structural differences between the PXA and the PSA make such a comparison impossible, the most appropriate comparison will be provided. Please refer to the PSA or PXA specification guide if you need more details.

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Side-by-Side Comparison

Simplified functional block diagrams

The PXA architecture has been designed such that it is the ideal evolutionary replacement for the PSA.

PSA

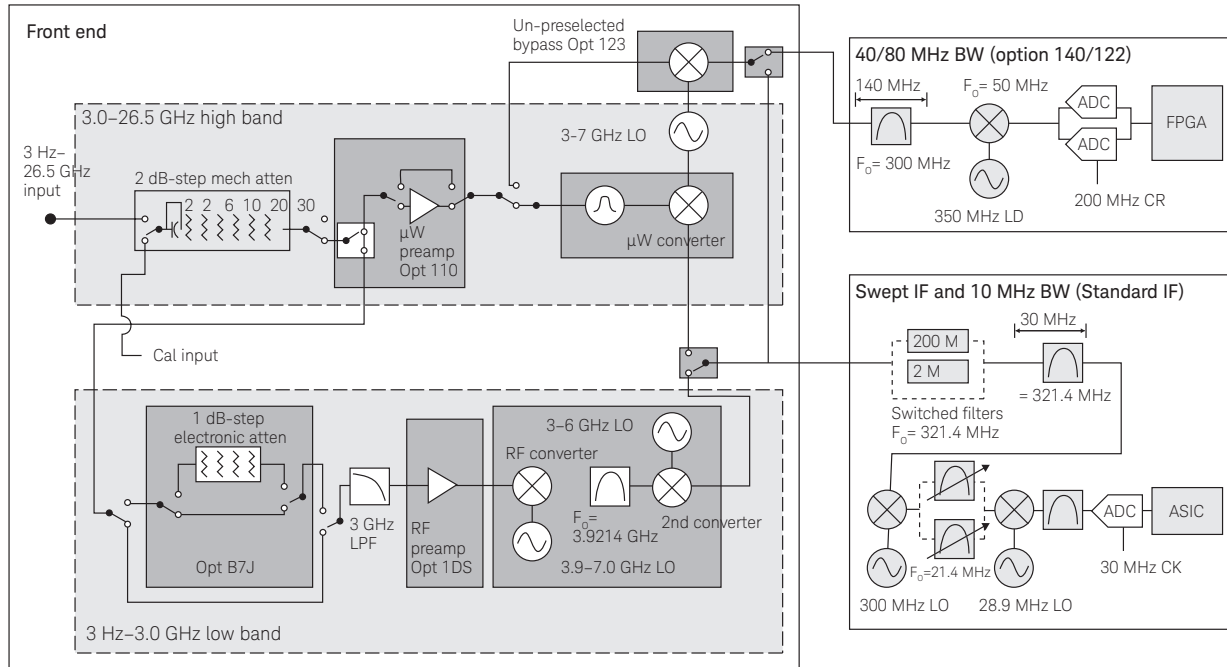


Figure 1. PSA simplified block diagram (also applicable to mmW PSA except for the DC block circuit at RF input)

PXA

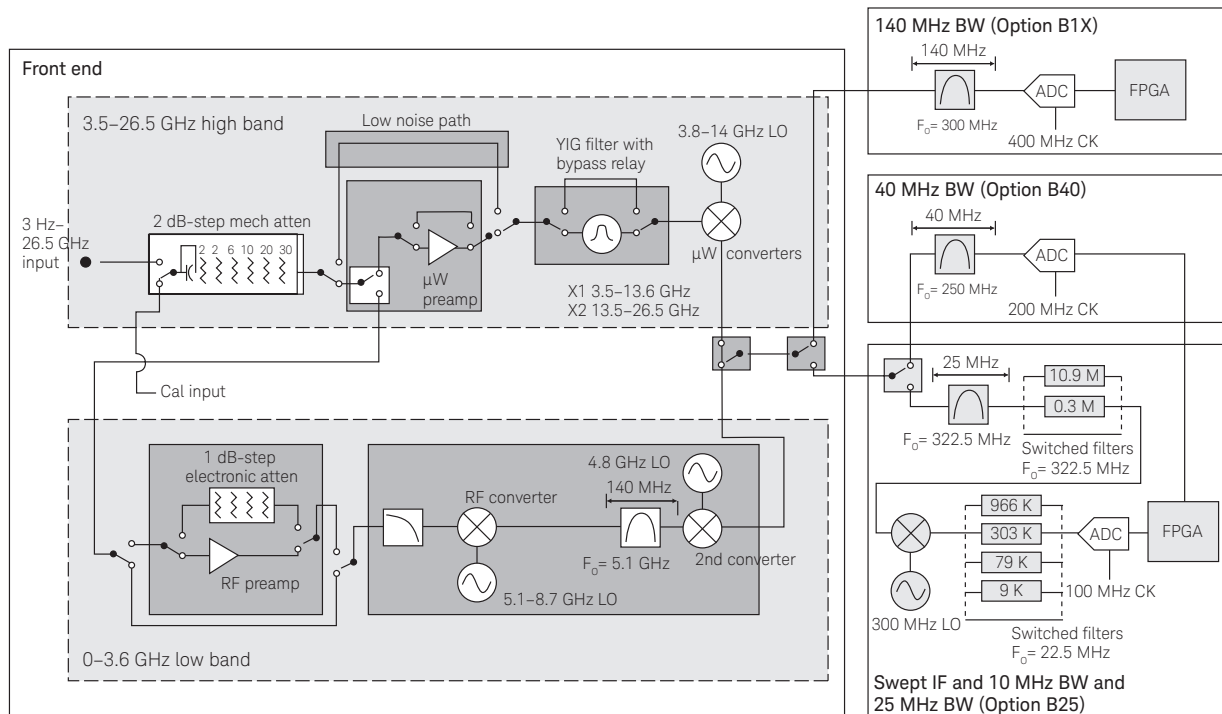


Figure 2. PXA simplified block diagram (also applicable to mmW PXA except for the DC block circuit at RF input)

Side-by-Side Comparison

Frequency specifications

PSA			PXA		
Frequency range			Frequency range		
E4443A	(DC coupled) (AC coupled)	3 Hz to 6.7 GHz 20 MHz to 6.7 GHz	N9030A Option 503	(DC coupled) (AC coupled)	3 Hz to 3.6 GHz 10 MHz to 3.6 GHz
E4445A	(DC ccoupled) (AC coupled)	3 Hz to 13.2 GHz 20 MHz to 13.2 GHz	N9030A Option 508	(DC coupled) (AC coupled)	3 Hz to 8.4 GHz 10 MHz to 8.4 GHz
E4440A	(DC coupled) (AC coupled)	3 Hz to 26.5 GHz 20 MHz to 26.5 GHz	N9030A Option 513	(DC ccoupled) (AC coupled)	3 Hz to 13.6 GHz 10 MHz to 13.6 GHz
E4447A	(DC coupled)	3 Hz to 42.98 GHz	N9030A Option 526	(DC coupled) (AC coupled)	3 Hz to 26.5 GHz 10 MHz to 26.5 GHz
E4446A	(DC coupled)	3 Hz to 44 GHz	N9030A Option 543	(DC coupled)	3 Hz to 43 GHz
E4448A	(DC Coupled)	3 Hz to 50 GHz	N9030A Option 544	(DC coupled)	3 Hz to 44 GHz
Band	N ¹		Band	N ¹	
0	1	3 Hz to 3 GHz	0	1	3 Hz to 3.6 GHz
1	1	2.85 to 6.6 GHz	1	1	3.5 to 8.4 GHz
2	2	6.2 to 13.2 GHz	2	2	8.3 to 13.6 GHz
3	4	12.8 to 19.2 GHz	3	2	13.5 to 17.1 GHz
4	4	18.7 to 26.8 GHz	4	4	17 to 26.5 GHz
5	4	26.4 to 31.15 GHz	5	4	26.4 to 34.5 GHz
6	8	31.0 to 50 GHz	6	8	34.4 to 50 GHz

1. N is the “harmonic mixing mode” for PSA, whereas it is the “LO multiplication factor” for PXA. These two parameters are equivalent in the context presented here.

Notes:

In this document, terms of specifications, 95th percentile values, typical, and nominal are used to describe the instrument's performance.

- Specifications describe the performance of parameters covered by the product warranty and apply to full temperature range unless otherwise noted.
- 95th percentile values indicate the breath of the population (approximately 2 σ) of performance tolerances expected to be met in 95% of cases with a 95% confidence, for any ambient temperature in the range of 20 to 30 °C. These values are not warranted.
- Typical 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 over the temperature range of 20 to 30 °C. Typical performance does not include measurement uncertainty.
- Nominal values indicate expected performance, or describe product performance that is useful in the application of the product, but is not covered by the product warranty.

Please refer to the PXA data sheet (publication number 5990-3952EN) and the PSA data sheet (publication number 5980-1284E) for more details on the term definitions and measurement conditions.

Side-by-Side Comparison

Frequency specifications

PSA				PXA			
Frequency references							
Accuracy	± [(time since last adjustment x aging rate) + temperature stability + calibration accuracy]						
Aging rate	± 1 x 10 ⁻⁷ /year			± 1 x 10 ⁻⁷ /year			
Temperature stability							
20 °C to 30 °C	± 1 x 10 ⁻⁸			± 1.5 x 10 ⁻⁸			
0 °C to 55 °C	± 5 x 10 ⁻⁸			± 5 x 10 ⁻⁸			
Achievable initial calibration accuracy	± 7 x 10 ⁻⁸			± 4 x 10 ⁻⁸			
Example frequency reference accuracy (1 year after last adjustment)	= ± (1 x 1 x 10 ⁻⁷ + 1 x 10 ⁻⁸ + 7 x 10 ⁻⁸) = ± 1.8 x 10 ⁻⁷			= ± (1 x 1 x 10 ⁻⁷ + 1.5 x 10 ⁻⁸ + 4 x 10 ⁻⁸) = ± 1.65 x 10 ⁻⁷			
Sweep (trace) point range							
Factory preset	601			1001			
Span = 0 Hz	2 to 8192			1 to 40,001			
Span ≥ 10 Hz	101 to 8192			1 to 40,001			
Gated sweep							
Gate length	10 μs to 500 ms			1 μs to 5.0 s			
Gate delay range	0 to 500 ms			0 to 100.0 s			
Gate delay jitter	33.3 ns p-p nominal			33.3 ns p-p nominal			
Resolution bandwidth (RBW)							
Range (–3.01 dB bandwidth)	1 Hz to 3 MHz (in 10% steps) 4, 5, 6, 8 MHz			1 Hz to 3 MHz (in 10% steps) 4, 5, 6, 8 MHz			
Power bandwidth accuracy	(all CFs)	1 Hz to 51 kHz	± 0.5% (± 0.022 dB)	(all CFs)	1 Hz to 51 kHz	± 0.5% (± 0.022 dB)	
	(all CFs)	56 kHz to 100 kHz	± 1.0% (± 0.044 dB)	(all CFs)	56 kHz to 100 kHz	± 0.5% (± 0.022 dB)	
	(all CFs)	110 kHz to 240 kHz	± 0.5% (± 0.022 dB)	(≤ 3.6 GHz CF)	110 kHz to 1.0 MHz	± 1.0% (± 0.044 dB)	
	(< 3 GHz CF)	270 kHz to 1.1 MHz	± 1.5% (± 0.066 dB)	(≤ 3.6 GHz CF)	1.1 MHz to 2.0 MHz	± 0.07 dB nominal	
	(< 3 GHz CF)	1.2 MHz to 2.0 MHz	± 0.07 dB nominal	(≤ 3.6 GHz CF)	2.2 MHz to 3 MHz	± 0.10 dB nominal	
	(< 3 GHz CF)	2.2 MHz to 6.0 MHz	± 0.20 dB nominal	(≤ 3.6 GHz CF)	3 MHz to 8 MHz	± 0.20 dB nominal	
RBW bandwidth accuracy (–3.01 dB BW)	(all CFs)	1 Hz to 1.5 MHz	± 2.0% nominal	(all CFs)	1 Hz to 1.3 MHz	± 2.0% nominal	
	(≤ 3 GHz CF)	1.6 MHz to 3 MHz	± 7.0% nominal	(≤ 3.6 GHz CF)	1.5 MHz to 3 MHz	± 7.0% nominal	
	(≤ 3 GHz CF)	4 MHz to 8 MHz	± 15.0% nominal	(≤ 3.6 GHz CF)	4 MHz to 8 MHz	± 15.0% nominal	
Selectivity (–60 dB/–3 dB)	4.1:1 nominal			4.1:1 nominal			
EMI bandwidths	(CISPR compliant)	200 Hz, 9 kHz, 120 kHz, 1 MHz		(CISPR compliant) ¹	200 Hz, 9 kHz, 120 kHz, 1 MHz		
EMI bandwidths	(MIL STD 461E)	10 Hz, 100 Hz, 1 kHz, 10 kHz, 1 MHz		(MIL STD 461E) ¹	10 Hz, 100 Hz, 1 kHz, 10 kHz, 1 MHz		

1. Option EMC required.

Side-by-Side Comparison

Amplitude specifications

PSA			PXA	
Amplitude range				
Measurement range	Displayed average noise level to +30 dBm		Displayed average noise level to +30 dBm	
Input attenuator range	0 to 70 dB in 2 dB steps		0 to 70 dB in 2 dB steps	
Maximum safe input level				
Average total power	+30 dBm (1 W)		+30 dBm (1 W)	
With preamplifier	Option 1DS	+30 dBm	Option P03	+30 dBm (1 W)
	Option 110	+23 dBm	Options P08, P13, P26, P43, P44, P50	+30 dBm (1 W)
Peak pulse power < 10 μs pulse width, < 1% duty cycle and input attenuation ≥ 30 dB	+50 dBm (100 W)		+50 dBm (100 W)	
DC volts	(DC coupled)	< ± 0.2 Vdc	(DC coupled)	< ± 0.2 Vdc
	(AC coupled)	± 100 Vdc	(AC coupled)	± 100 Vdc
Frequency response (10 dB input attenuation, 20 to 30 °C, preselector centering applied above 3 GHz)				
E4440A/43A/45A vs. N9030A-503/508/ 513/526	3 Hz to 10 MHz	± 0.38 dB (± 0.11 dB typical)	3 Hz to 10 MHz	± 0.46 dB
	10 MHz to 3 GHz	± 0.38 dB (± 0.11 dB typical)	10 MHz to 3.6 GHz	± 0.35 dB (± 0.16 dB 95th %)
	3 to 6.6 GHz	± 1.50 dB (± 0.60 dB typical)	3.5 to 8.4 GHz	± 1.5 dB (± 0.39 dB 95th %)
	6.6 to 13.5 GHz	± 2.00 dB (± 1.0 dB typical)	8.3 to 13.6 GHz	± 2.0 dB (± 0.45 dB 95th %)
	13.5 to 22 GHz	± 2.00 dB (± 1.0 dB typical)	13.5 to 22 GHz	± 2.0 dB (± 0.62 dB 95th %)
	22 to 26.5 GHz	± 2.50 dB (± 1.3 dB typical)	22 to 26.5 GHz	± 2.5 dB (± 0.82 dB 95th %)
E4446A/47A/48A vs. N9030A-543/544/ 550	3 Hz to 10 MHz	± 0.38 dB (± 0.15 dB typical)	3 Hz to 20 MHz	± 0.46 dB
	10 MHz to 3 GHz	± 0.38 dB (± 0.15 dB typical)	20 to 50 MHz	± 0.35 dB (± 0.19 dB 95th %)
			50 MHz to 3.6 GHz	± 0.35 dB (± 0.15 dB 95th %)
	3 to 6.6 GHz	± 1.50 dB (± 0.60 dB typical)	3.5 to 5.2 GHz	± 1.7 dB (± 0.70 dB 95th %)
			5.2 to 8.4 GHz	± 1.5 dB (± 0.57 dB 95th %)
	6.6 to 13.5 GHz	± 2.00 dB (± 1.0 dB typical)	8.3 to 13.6 GHz	± 2.0 dB (± 0.54 dB 95th %)
	13.5 to 22 GHz	± 2.00 dB (± 1.2 dB typical)	13.5 to 17.1 GHz	± 2.0 dB (± 0.64 dB 95th %)
			17.1 to 22 GHz	± 2.0 dB (± 0.72 dB 95th %)
	22 to 26.8 GHz	± 2.50 dB (± 1.3 dB typical)	22 to 26.5 GHz	± 2.5 dB (± 0.71 dB 95th %)
26.8 to 31.15 GHz	± 1.75 dB (± 0.6 dB typical)	26.4 to 34.5 GHz	± 2.5 dB (± 0.93 dB 95th %)	
31.15 to 50 GHz	± 2.5 dB (± 1.0 dB typical)	34.4 to 50 GHz	± 3.2 dB (± 1.24 dB 95th %)	

Start here with
tables

Side-by-Side Comparison

Amplitude specifications, continued

PSA			PXA		
Total absolute amplitude accuracy ¹ (10 dB input attenuation, 20 to 30 °C, 10 Hz ≤ RBW ≤ 1 MHz, input signal -10 dBm to -50 dBm, all settings auto-coupled except Auto Swp Time = Accy, any reference level, any scale)					
	At 50 MHz	± 0.24 dB		At 50 MHz	± 0.24 dB
	At all frequencies	(± 0.24 dB + freq response)		At all frequencies	(± 0.24 dB + frequency response)
	3 Hz to 3 GHz	± 0.19 dB (95th %)		0.01 to 3.6 GHz	± 0.19 dB (95th %)
Input voltage standing wave ratio ² (≥ 10 dB input attenuation)				Freq Opt ≤ 526	Freq Opt > 526
	50 MHz to 3 GHz	< 1.2 nominal	10 MHz to 3.6 GHz	1.139	1.134
	3 to 18 GHz	< 1.6 nominal	3.5 to 8.4 GHz	1.290	1.152
	18 to 26.5 GHz	< 1.9 nominal	8.3 to 13.6 GHz	1.388	1.178
	26.5 to 50 GHz	<1.57 nominal	13.5 to 17.1 GHz	1.403	1.204
			17.0 to 26.5 GHz	1.475	1.331
			26.4 to 34.5 GHz	N/A	1.321
			34.4 to 50 GHz	N/A	1.378

1. This absolute amplitude accuracy specification includes the sum of the following contributing factors: Scale fidelity, reference level accuracy, displayed scale switching uncertainty, resolution bandwidth switching uncertainty, 50 MHz amplitude reference accuracy, and the accuracy with which the instrument aligns its internal gains to the 50 MHz amplitude reference.
2. VSWR values for PXA are 95th percentile.

Dynamic range-related specifications

PSA				PXA				
1 dB gain compression (two-tone)								
		Maximum mixer level			Maximum mixer level		Maximum mixer level (20 - 30 °C)	
	20 to 200 MHz	0 dBm			40 to 200 MHz	-1 dBm +1 dBm		
	200 MHz to 6.6 GHz	+3 dBm			200 MHz to 3.6 GHz	+2 dBm +3 dBm		
	6.6 to 26.5 GHz	-2 dBm			3.6 to 16 GHz	0 dBm +1 dBm		
	26.5 to 50 GHz	0 dBm nominal			16 to 26.5 GHz	-3 dBm -1 dBm		
					26.5 to 50 GHz	0 dBm nominal		
Second harmonic distortion (SHI)								
E4440A/ 43A/45A vs. N9030A-503/ 508/513/526	Source frequency	Mixer level (dBm)	SHI (dBm)	Distortion (dBc)	Source frequency	Mixer level (dBm)	SHI (dBm) ¹	Distortion (dBc) ¹
	10 to 460 MHz	-40	+42	-82	10 to 100 MHz	-15	+42/NA	-57/NA
	0.46 to 1.18 GHz	-40	+52	-92	0.1 to 1.8 GHz	-15	+45/NA	-60/NA
	1.18 to 1.5 GHz	-40	+42	-82	1.75 to 2.5 GHz	-15	+62/+80	-77/-95
	1.5 to 2.0 GHz	-10	+80	-90	2.5 to 4 GHz	-15	+62/+86	-77/-101
	2.0 to 13.25 GHz	-10	+90	-100	4 to 6.5 GHz	-15	+62/+90	-77/-105
					6.5 to 10 GHz	-15	+55/+90	-70/-105
					10 to 13.25 GHz	-15	+47/+90	-62/105

1. The values in the first column are for low noise path (LNP) "off", and the values in the second column are for LNP "on". The low noise path operates from 3.6 to 50 GHz (equivalent to 1.75 to 25 GHz source frequency in the SHI measurements). The LNP significantly improves SHI performance at higher bands.

Side-by-Side Comparison

Dynamic range-related specifications, continued

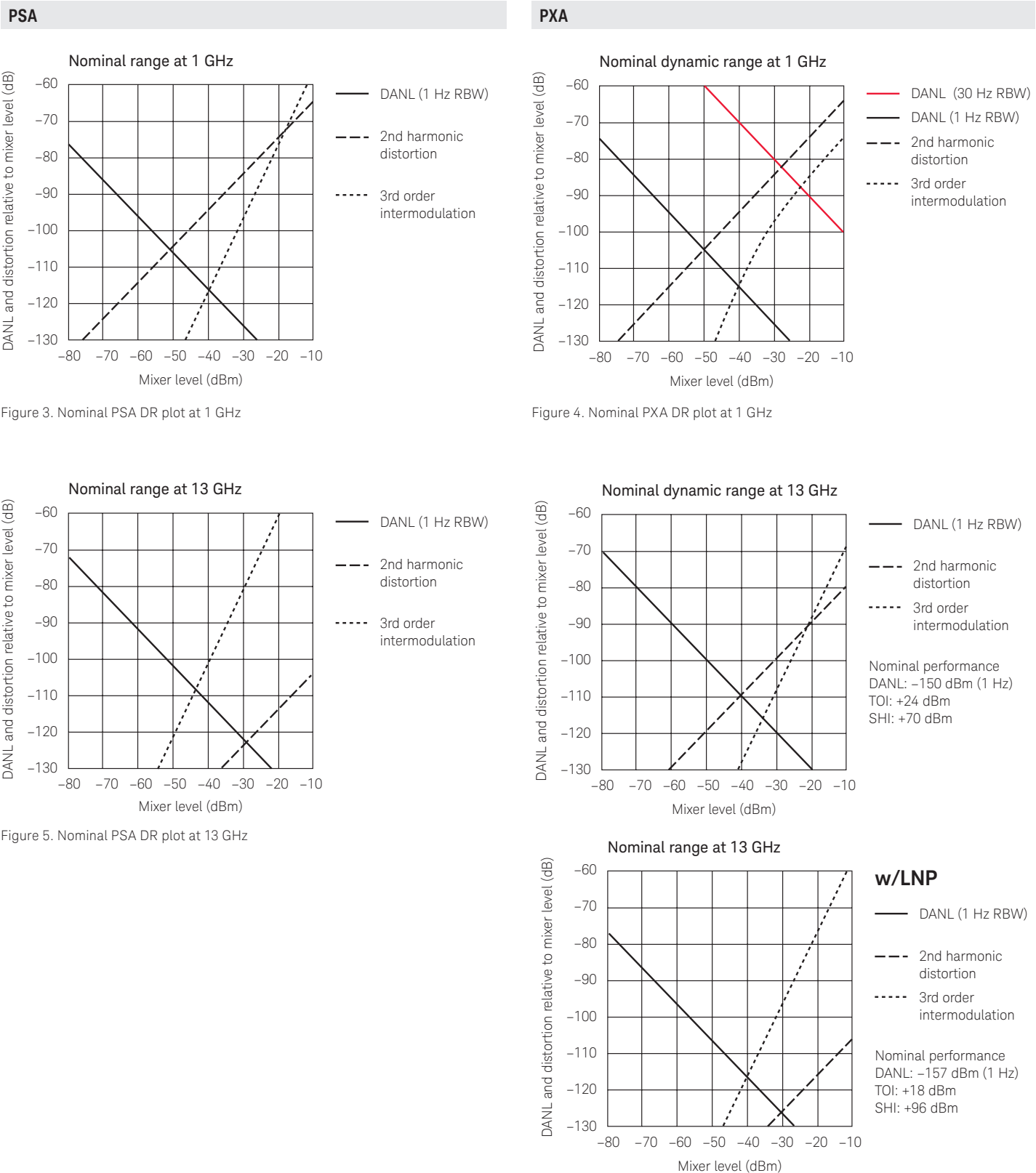
E4446A/ 47A/48A vs. N9030A-543/ 544/550	PSA				PXA			
	Source frequency	Mixer level (dBm)	SHI (dBm)	Distortion (dBc)	Source frequency	Mixer level (dBm)	SHI (dBm) ¹	Distortion (dBc) ¹
	10 to 460 MHz	–40	+42	–82	10 to 100 MHz	–15	+42/NA	–57/NA
	0.46 to 1.18 GHz	–40	+52	–92	0.1 to 1.8 GHz	–15	+45/NA	–60/NA
	1.18 to 1.5 GHz	–40	+42	–82	1.8 to 2.5 GHz	–15	+57/+80	–72/–95
	1.5 to 2.0 GHz	–10	+80	–90	2.5 to 3 GHz	–15	+57/+84	–72/–99
	2.0 to 3.25 GHz	–10	+84	–94	3 to 5 GHz	–15	+62/+84	–77/–99
	3.25 to 13.25 GHz	–10	+86	–96	5 to 6.5 GHz	–15	+62/+90	–77/–105
	13.25 to 25 GHz	–10	+90 nom.	+90 nom.	6.5 to 10 GHz	–15	+55/+90	–70/105
					10 to 13.25 GHz	–15	+47/+90	–62/–105
					13.23 to 25 GHz	–15	+50/+90 (nom.)	–65/–105 (nom.)

Third-order intermodulation distortion

PSA			PXA		
Third-order intermodulation distortion (TOI) (Tone separation > 15 kHz, 20 to 30 °C)					
	TOI (dBm) ²	Typical TOI (dBm) ²		TOI (dBm)	Typical TOI (dBm)
10 to 100 MHz	+14/+15	+17/+20	10 to 150 MHz	+13	+16
100 to 400 MHz	+15/+16	+18/+21	150 to 600 MHz	+18	+21
0.4 to 1.7 GHz	+16/+17	+19/+20	0.6 to 1.1 GHz	+20	+22
1.7 to 2.7 GHz	+17/+18	+19/+21	1.1 to 3.6 GHz	+21	+23
2.7 to 3.0 GHz	+17/+18	+20/+21	3.5 to 8.4 GHz	+15	+22
3.0 to 6.0 GHz	+15/+16	+18/+21	8.3 to 13.6 GHz	+15	+23
6.0 to 16 GHz	+8/+12	+11/+15	13.5 to 16 GHz	+11	+17
16 to 26.5 GHz	+12/+12	+14/+16	17 to 26.5 GHz	+10	+17
26.5 to 50 GHz		NA/+12.5 (nom.)	26.5 to 50 GHz		+13 (nom.)

1. The values in the first column are for low noise path (LNP) “off”, and the values in the second column are for LNP “on”. The low noise path operates from 3.6 to 50 GHz (equivalent to 1.75 to 25 GHz source frequency in the SHI measurements). The LNP significantly improves SHI performance at higher bands.
2. The values in the first column are for E4440A/43A/45A and that in the second for E4446A/47A/48A.

Side-by-Side Comparison



Nominal dynamic range at 13 GHz

This graph shows the nominal dynamic range of a PXA at 13 GHz. The axes and legend are the same as Figure 3. It includes an additional red solid line for DANL (30 Hz RBW) starting at -50 dBm and -60 dB, which intersects the 2nd harmonic distortion line at approximately -30 dBm.

Nominal performance
DANL: -150 dBm (1 Hz)
TOI: +24 dBm
SHI: +70 dBm

Nominal range at 13 GHz

This graph shows the nominal dynamic range of a PXA at 13 GHz with LNP. The axes and legend are the same as Figure 3. It includes an additional red solid line for DANL (1 Hz RBW) starting at -80 dBm and -75 dB, which intersects the 2nd harmonic distortion line at approximately -30 dBm.

Nominal performance
DANL: -157 dBm (1 Hz)
TOI: +18 dBm
SHI: +96 dBm

Figure 6. Nominal PXA DR plots at 13 GHz (with or without LNP)

Side-by-Side Comparison

PSA

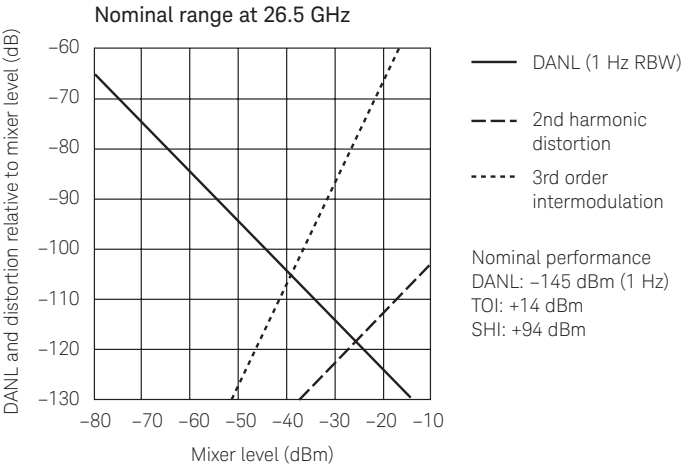


Figure 7. Nominal PSA DR plot at 26.5 GHz

PXA

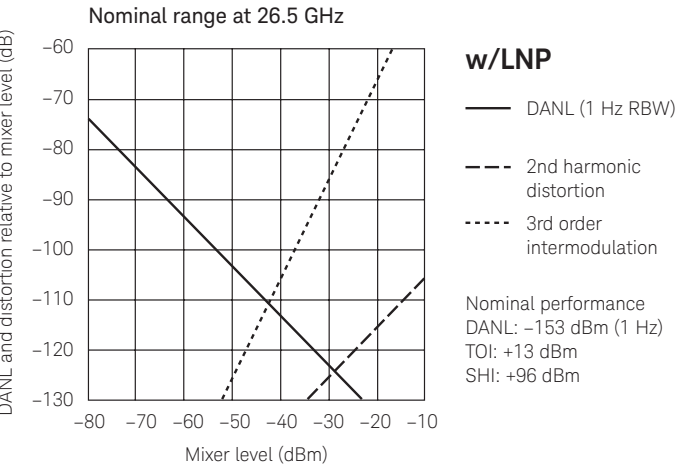
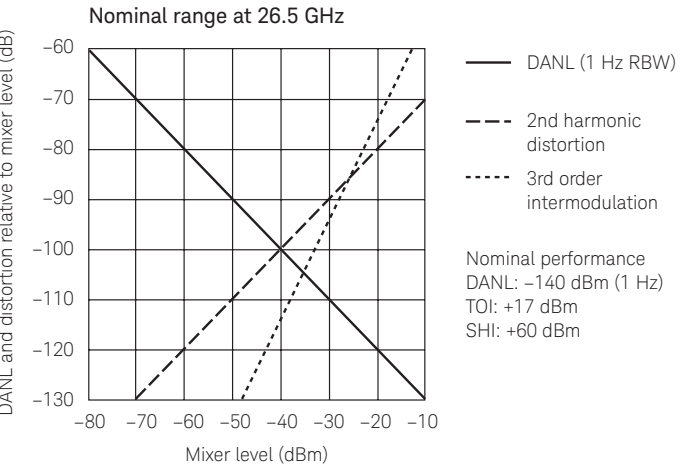


Figure 8. Nominal PXA DR plots at 26.5 GHz (with or without LNP)

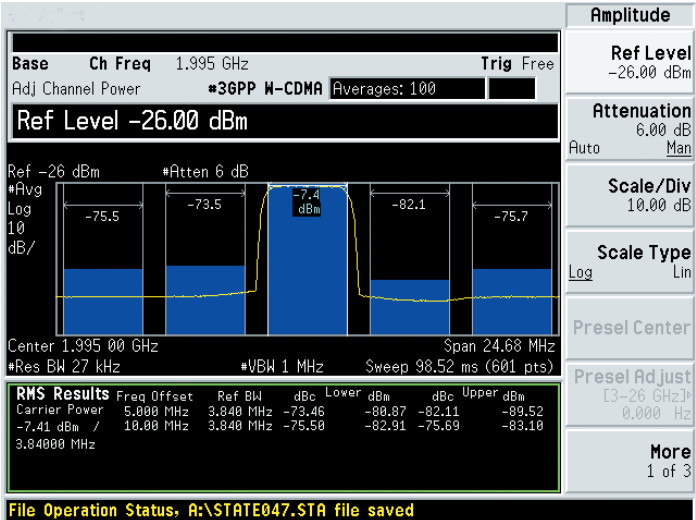


Figure 9. A PSA W-CDMA ACLR measurement showing -82 dBc dynamic range



Figure 10. A PXA W-CDMA ACLR measurement showing -89 dBc dynamic range

Side-by-Side Comparison

PSA			PXA			
Displayed average noise level (DANL) (Input terminated, sample or average detector, averaging type = Log, 20 to 30 °C)						
E4443A/E4445A/ E4440A (Preamp OFF)	Zero span and swept normalized to 1 Hz RBW and 0 dB attenuation	Zero span and swept normalized to 1 Hz RBW and 0 dB attenuation (typical)	N9030A Option 503, 508, 513, 526 (Preamp OFF)	Zero span and swept normalized to 1 Hz RBW and 0 dB attenuation (NFE ON) ^{1,2}	Zero span and swept normalized to 1 Hz RBW and 0 dB attenuation (NFE OFF)	Zero span and swept normalized to 1 Hz RBW and 0 dB attenuation (NFE OFF Low Noise Path ≥ 3.6 GHz) ^{3,4}
3 Hz to 1 kHz	N/A	-110 dBm nominal	3 Hz to 9 kHz	-100 dBm typical	-100 dBm typical	
1 kHz to 10 kHz	N/A	-130 dBm nominal				
10 kHz to 100 kHz	-137 dBm	-141 dBm nominal	9 to 100 kHz	-146 dBm	-146 dBm	
100 kHz to 1 MHz	-145 dBm	-149 dBm	100 kHz to 1 MHz	-150 dBm	-150 dBm	
1 to 10 MHz	-150 dBm	-153 dBm	1 to 20 MHz	-155 dBm	-155 dBm	
10 MHz to 1.2 GHz	-154 dBm	-155 dBm	20 MHz to 1.2 GHz	-165 dBm	-155 dBm	
1.2 to 2.1 GHz	-153 dBm	-154 dBm	1.2 to 2.1 GHz	-163 dBm	-153 dBm	
2.1 to 3.0 GHz	-152 dBm	-153 dBm	2.1 to 3.0 GHz	-162 dBm	-152 dBm	
3 to 6.6 GHz	-152 dBm	-153 dBm	3.0 to 3.6 GHz	-161 dBm	-151 dBm	
			3.5 to 4.2 GHz	-151 dBm	-147 dBm	-153 dBm
6.6 GHz to 13.2 GHz	-150 dBm	-152 dBm	4.2 to 8.4 GHz	-154 dBm	-150 dBm	-155 dBm
			8.3 to 13.6 GHz	-156 dBm	-149 dBm	-155 dBm
13.2 GHz to 20 GHz	-147 dBm	-149 dBm	13.5 to 16.9 GHz	-154 dBm	-145 dBm	-152 dBm
			16.9 to 20 GHz	-149 dBm	-143 dBm	-151 dBm
20 GHz to 26.5 GHz	-143 dBm	-145 dBm	20 to 26.5 GHz	-143 dBm	-137 dBm	-150 dBm
E4440A/43A/45A with preamp ON (Option 1DS) ⁵			N9030A-503/508/513/526 with preamp ON (Option P03)			
100 kHz to 200 kHz	-159 dBm	-162 dBm	100 to 200 kHz	-157 dBm	-157 dBm	N/A
200 kHz to 500 kHz	-159 dBm	-162 dBm	200 to 500 kHz	-160 dBm	-160 dBm	N/A
500 kHz to 1 MHz	-163 dBm	-165 dBm	500 kHz to 20 MHz	-164 dBm	-164 dBm	N/A
1 MHz to 10 MHz	-166 dBm	-168 dBm	20 MHz to 2.1 GHz	-172 dBm	-165 dBm	N/A
10 MHz to 500 MHz	-169 dBm	-170 dBm				
500 MHz to 1.1 GHz	-168 dBm	-169 dBm				
1.1 GHz to 2.1 GHz	-167 dBm	-168 dBm				
2.1 GHz to 3.0 GHz	-165 dBm	-166 dBm	2.1 to 3.6 GHz	-172 dBm	-163 dBm	N/A
E4440A/43A/45A with preamp ON (Option 110) ⁵			N9030A-503/508/513/526 with preamp ON (Option P03/P08/P13/P26)			
10 to 50 MHz	-148 dBm	-154 dBm	100 to 200 kHz	-157 dBm	-157 dBm	
50 to 500 MHz	-153 dBm	-164 dBm	200 to 500 kHz	-160 dBm	-160 dBm	
500 MHz to 2.1 GHz	-166 dBm	-168 dBm	500 kHz to 20 MHz	-164 dBm	-164 dBm	
2.1 to 3 GHz	-166 dBm	-168 dBm	20 MHz to 2.1 GHz	-172 dBm	-165 dBm	
3.0 to 6.6 GHz	-165 dBm	-166 dBm	2.1 to 3.6 GHz	-172 dBm	-163 dBm	
6.6 to 13.2 GHz	-163 dBm	-165 dBm	3.5 to 8.4 GHz	-172 dBm	-164 dBm	N/A
13.2 to 16 GHz	-162 dBm	-165 dBm	8.3 to 13.6 GHz	-170 dBm	-163 dBm	N/A
			13.5 to 16.9 GHz	-166 dBm	-161 dBm	N/A
16 to 19 GHz	-162 dBm	-164 dBm	16.9 to 20.0 GHz	-162 dBm	-159 dBm	N/A
19 to 26.5 GHz	-159 dBm	-161 dBm	20.0 to 26.5 GHz	-162 dBm	-155 dBm	N/A

1. The DANL with the Noise Floor Extension (NFE) ON is calculated based on the normal DANL specs and NFE improvement (at 95th percentile). Refer to the PXA specification guide for details.

2. NFE improvements are specified only above 20 MHz. Refer to the PXA specification guide for details.

3. NFE is also helpful in reducing the effective DANL in the low noise path. Refer to the PXA specification guide for details.

4. The low noise path requires Option LNP to be installed and enabled (ON). The low noise path operates from 3.6 GHz to 26.5 GHz and cannot operate simultaneously with the preamplifier.

5. Options 1DS and 110 are mutually exclusive on PSA.

Side-by-Side Comparison

PSA			PXA			
E4446A/47A/48A (Preamp OFF)	Zero span and swept normalized to 1 Hz RBW and 0 dB attenuation	Zero span and swept normalized to 1 Hz RBW and 0 dB attenuation (typical)	N9030A Option 543/544/550 (Preamp OFF)	Zero span and swept normalized to 1 Hz RBW and 0 dB attenuation (NFE ON) ^{1,2}	Zero span and swept normalized to 1 Hz RBW and 0 dB attenuation (NFE OFF) ²	Zero span and swept normalized to 1 Hz RBW and 0 dB attenuation (NFE OFF low noise path ≥ 3.6 GHz) ^{3,4}
3 Hz to 1 kHz		-110 dBm (nom.)	3 Hz to 9 kHz	-100 dBm (nom.)		NA
1 to 10 kHz		-130 dBm (nom.)	9 to 100 kHz	-146 dBm	-146 dBm	NA
10 to 100 kHz	-137 dBm	-141 dBm	0.1 to 1 MHz	-150 dBm	-150 dBm	NA
0.1 to 1 MHz	-145 dBm	-150 dBm	1 to 10 MHz	-155 dBm	-155 dBm	NA
1 to 10 MHz	-150 dBm	-155 dBm	0.01 to 1.2 GHz	-165 dBm	-155 dBm	NA
0.01 to 1.2 GHz	-153 dBm	-154 dBm	1.2 to 2.1 GHz	-163 dBm	-153 dBm	NA
1.2 to 2.1 GHz	-152 dBm	-153 dBm	2.1 to 3 GHz	-162 dBm	-152 dBm	NA
2.1 to 3 GHz	-151 dBm	-152 dBm	3 to 3.6 GHz	-157 dBm	-151 dBm	NA
3 to 6.6 GHz	-151 dBm	-152 dBm	3.5 to 4.2 GHz	-149 dBm	-143 dBm	-153 dBm
6.6 to 13.2 GHz	-146 dBm	-149 dBm	4.2 to 6.6 GHz	-152 dBm	-144 dBm	-147 dBm
13.2 to 20 GHz	-144 dBm	-146 dBm	6.6 to 8.4 GHz	-153 dBm	-147 dBm	-148 dBm
20 to 22.5 GHz	-143 dBm	-146 dBm	8.3 to 13.6 GHz	-155 dBm	-147 dBm	-149 dBm
22.5 to 26.8 GHz	-140 dBm	-144 dBm	13.5 to 14 GHz	-152 dBm	-143 dBm	-149 dBm
26.8 to 31.15 GHz	-142 dBm	-145 dBm	14 to 17 GHz	-154 dBm	-145 dBm	-146 dBm
31.15 to 35 GHz	-134 dBm	-136 dBm	17 to 22.5 GHz	-148 dBm	-141 dBm	-148 dBm
35 to 38 GHz	-129 dBm	-132 dBm	22.5 to 26.5 GHz	-146 dBm	-139 dBm	-146 dBm
38 to 44 GHz	-131 dBm	-134 dBm	26.4 to 34 GHz	-144 dBm	-138 dBm	-142 dBm
44 to 49 GHz	-128 dBm	-131 dBm	33.9 to 37 GHz	-140 dBm	-134 dBm	-139 dBm
49 to 50 GHz	-127 dBm	-130 dBm	37 to 40 GHz	-138 dBm	-132 dBm	-138 dBm
			40 to 46 GHz	-136 dBm	-130 dBm	-135 dBm
			46 to 49 GHz	-136 dBm	-130 dBm	-135 dBm
			49 to 50 GHz	-134 dBm	-128 dBm	-133 dBm
E4446A/47A/48A with Preamp On (Option 1DS) ⁵			N9030A-543/544/550 with Preamp On (Option P03)			
100 to 200 kHz	-158 dBm	-162 dBm	100 to 200 kHz	-157 dBm	-157 dBm	NA
200 to 500 kHz	-158 dBm	-162 dBm	200 to 500 kHz	-160 dBm	-160 dBm	NA
0.5 to 1 MHz	-161 dBm	-165 dBm	0.5 to 1 MHz	-162 dBm	-162 dBm	NA
1 to 10 MHz	-167 dBm	-169 dBm	1 to 10 MHz	-164 dBm	-164 dBm	NA
10 to 500 MHz	-167 dBm	-169 dBm	0.01 to 2.1 GHz	-172 dBm	-164 dBm	NA
0.5 to 1.2 GHz	-166 dBm	-168 dBm	2.1 to 3.6 GHz	-172 dBm	-163 dBm	NA
1.2 to 2.1 GHz	-165 dBm	-167 dBm				
2.1 to 3 GHz	-163 dBm	-165 dBm				

1. The DANL with the Noise Floor Extension (NFE) ON is calculated based on the normal DANL specs and NFE improvement (at 95th percentile). Refer to the PXA specification guide for details.
2. NFE improvements are specified only above 20 MHz. Refer to the PXA specification guide for details.
3. NFE is also helpful in reducing the effective DANL in the low noise path. Refer to the PXA specification guide for details.
4. The low noise path requires Option LNP to be installed and enabled (ON). The low noise path operates from 3.6 GHz to 26.5 GHz and cannot operate simultaneously with the preamplifier.
5. Options 1DS and 110 are mutually exclusive on PSA.

Side-by-Side Comparison

PSA			PXA			
E4446A/47A/48A (with Preamp On) (Option 110) ⁵	Zero span and swept normalized to 1 Hz RBW and 0 dB attenuation	Zero span and swept normalized to 1 Hz RBW and 0 dB attenuation (typical)	N9030A Option 543/544/550 (with Preamp On) (Options P08/P13/ P26/P43/P44/P50	Zero span and swept normalized to 1 Hz RBW and 0 dB attenuation (NFE ON) ^{1,2}	Zero span and swept normalized to 1 Hz RBW and 0 dB attenuation (NFE OFF) ²	Zero span and swept normalized to 1 Hz RBW and 0 dB attenuation (NFE OFF low noise path ≥ 3.6 GHz) ^{3,4}
10 to 50 MHz	-148 dBm	-158 dBm	100 to 200 kHz	-157 dBm	-157 dBm	NA
50 to 500 MHz	-153 dBm	-164 dBm	200 to 500 kHz	-160 dBm	-160 dBm	NA
0.5 to 1.2 GHz	-165 dBm	-168 dBm	0.5 to 1 MHz	-162 dBm	-162 dBm	NA
1.2 to 2.1 GHz	-165 dBm	-168 dBm	1 to 10 MHz	-164 dBm	-164 dBm	NA
2.1 to 3 GHz	-165 dBm	-167 dBm	0.01 to 2.1 GHz	-172 dBm	-164 dBm	NA
3 to 6.6 GHz	-165 dBm	-167 dBm	2.1 to 3.6 GHz	-172 dBm	-163 dBm	NA
6.6 to 13.2 GHz	-162 dBm	-165 dBm	3.5 to 8.4 GHz	-166 dBm	-161 dBm	NA
13.2 to 19 GHz	-161 dBm	-163 dBm	8.3 to 13.6 GHz	-169 dBm	-161 dBm	NA
19 to 22.5 GHz	-161 dBm	-162 dBm	13.5 to 17 GHz	-169 dBm	-161 dBm	NA
22.5 to 26.8 GHz	-155 dBm	-160 dBm	17 to 20 GHz	-168 dBm	-160 dBm	NA
26.8 to 31.15 GHz	-157 dBm	-161 dBm	20 to 26.5 GHz	-166 dBm	-158 dBm	NA
31.15 to 35 GHz	-152 dBm	-156 dBm	26.4 to 30 GHz	-163 dBm	-157 dBm	NA
35 to 38 GHz	-146 dBm	-150 dBm	30 to 34 GHz	-161 dBm	-155 dBm	NA
38 to 41 GHz	-146 dBm	-150 dBm	33.9 to 37 GHz	-158 dBm	-153 dBm	NA
41 to 44 GHz	-146 dBm	-150 dBm	37 to 40 GHz	-157 dBm	-152 dBm	NA
44 to 45 GHz	-143 dBm	-150 dBm	40 to 43 GHz	-154 dBm	-149 dBm	NA
45 to 49 GHz	-143 dBm	-146 dBm	43 to 46 GHz	-154 dBm	-149 dBm	NA
49 to 50 GHz	-140 dBm	-145 dBm	46 to 50 GHz	-151 dBm	-146 dBm	NA

1. The DANL with the Noise Floor Extension (NFE) ON is calculated based on the normal DANL specs and NFE improvement (at 95th percentile). Refer to the PXA specification guide for details.
2. NFE improvements are specified only above 20 MHz. Refer to the PXA specification guide for details.
3. NFE is also helpful in reducing the effective DANL in the low noise path. Refer to the PXA specification guide for details.
4. The low noise path requires Option LNP to be installed and enabled (ON). The low noise path operates from 3.6 GHz to 26.5 GHz and cannot operate simultaneously with the preamplifier.
5. Options 1DS and 110 are mutually exclusive on PSA.

Side-by-Side Comparison

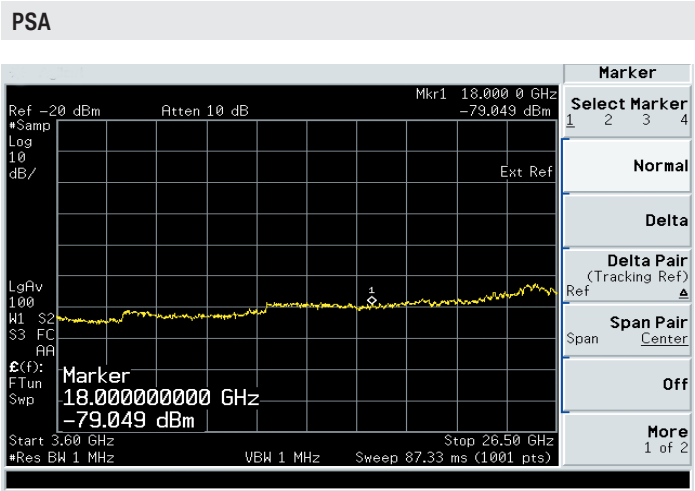


Figure 11. Nominal PSA noise floor in high band (1 MHz RBW)

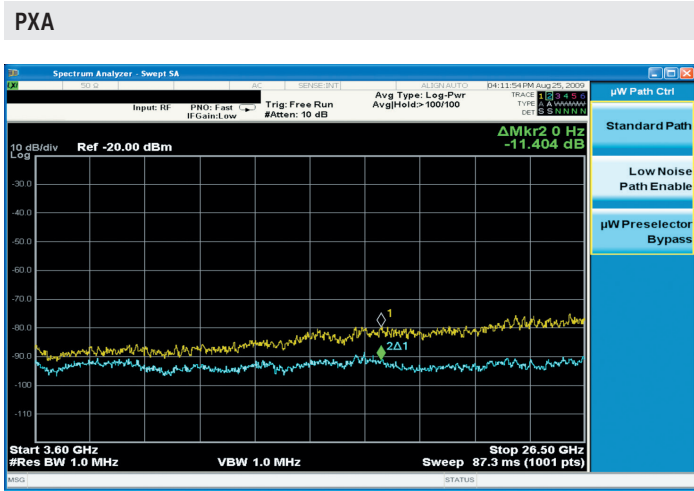


Figure 12. Nominal PXA noise floor in high band (1 MHz RBW), showing approximately 11 dB improvement of Opt LNP at 18 GHz

PSA				PXA		
Stability						
Phase noise (20 °C to 30 °C) (CF = 1 GHz)	Offset	Specification	Typical	Offset	Specification	Typical
	10 Hz			10 Hz		75 dBc/Hz (nominal)
	100 Hz	−91 dBc/Hz	−96 dBc/Hz	100 Hz	−94 dBc/Hz	−100 dBc/Hz
	1 kHz	−103 dBc/Hz	−108 dBc/Hz	1 kHz	−121 dBc/Hz	−125 dBc/Hz
	10 kHz	−116 dBc/Hz	−118 dBc/Hz	10 kHz	−129 dBc/Hz	−132 dBc/Hz
	30 kHz	−116 dBc/Hz	−118 dBc/Hz	30 kHz	−130 dBc/Hz	−132 dBc/Hz
	100 kHz	−122 dBc/Hz	−124 dBc/Hz	100 kHz	−129 dBc/Hz	−131 dBc/Hz
	1 MHz	−145 dBc/Hz	−147 dBc/Hz	1 MHz	−145 dBc/Hz	−146 dBc/Hz
	6 MHz	−153 dBc/Hz	−155.5 dBc/Hz			
	10 MHz	−155 dBc/Hz	−156 dBc/Hz	10 MHz	−155 dBc/Hz	−158 dBc/Hz
Residual FM				≤ (0.25 Hz x N1) p-p in 20 ms, nominal, see frequency range for N (harmonic number)		

1. N value depends on the frequency band. See the frequency specifications table.

For nominal phase noise performance at different carrier frequencies, refer to Figures 15 and 16.

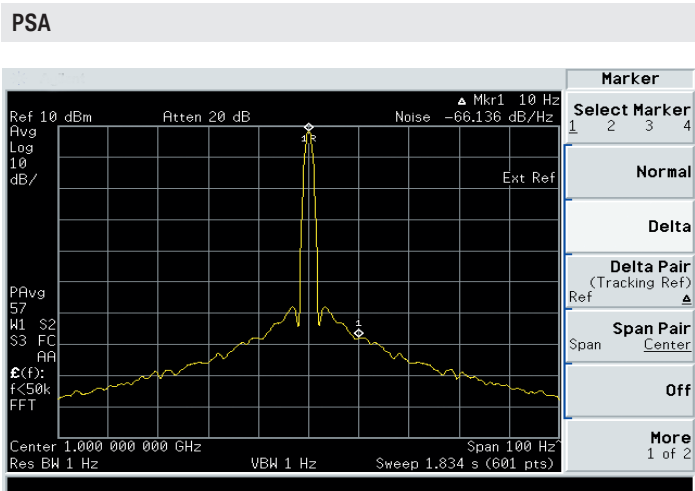


Figure 13. PSA screen shot demonstrating the phase noise performance of -66 dBc/Hz at 10 Hz offset for a 1 GHz carrier.

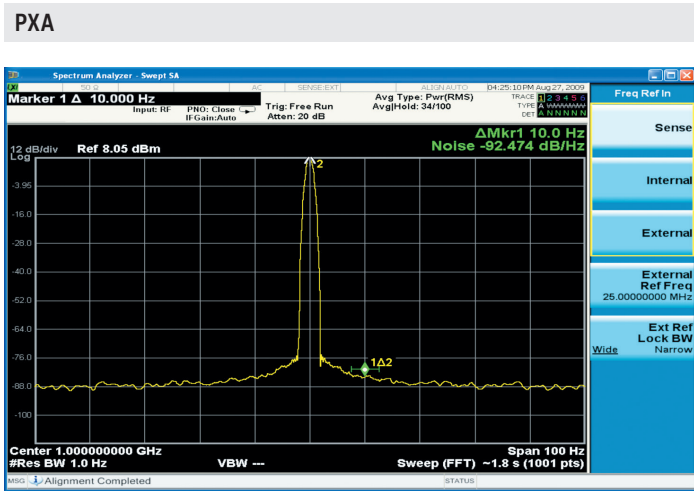


Figure 14. PXA screen shot demonstrating the phase noise performance of -92 dBc/Hz at 10 Hz offset for a 1 GHz carrier.

Side-by-Side Comparison

PSA

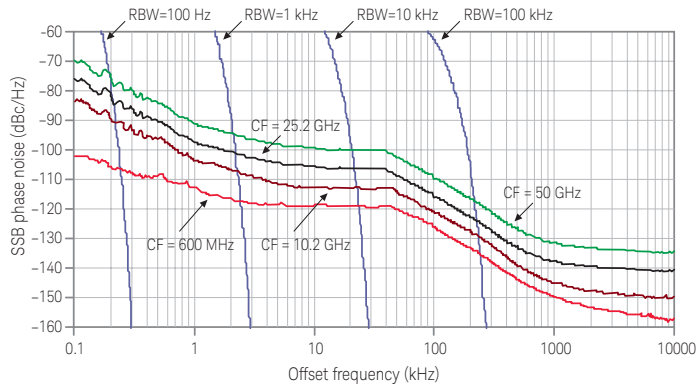


Figure 15. PSA nominal phase noise plot at different carrier frequencies and offsets.

PXA

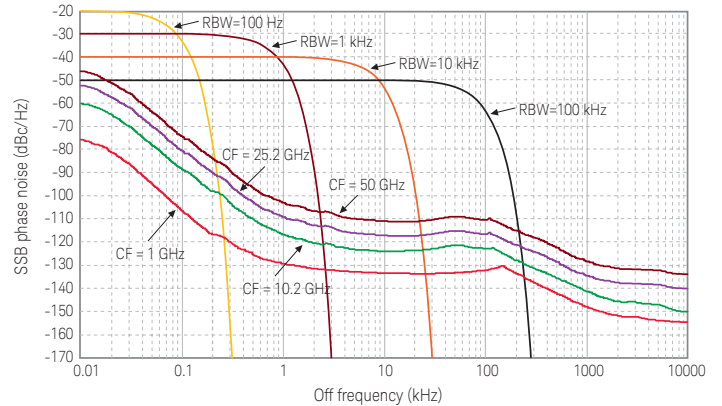


Figure 16. PXA nominal phase noise plot at different carrier frequencies and offsets.

Simplified block diagrams showing wideband IF digital processing

While the PXA shares the same “All-digital-IF” concept with the PSA, it offers wider analysis bandwidth (up to 160 MHz) with superior IF frequency response and phase linearity, which minimize the instrument’s inherent distortion resulting in the highest modulation analysis accuracy. A more advanced A/D converter and FPGA and larger data memory are employed in the PXA with higher clock frequency.

PSA 80 MHz digital IF

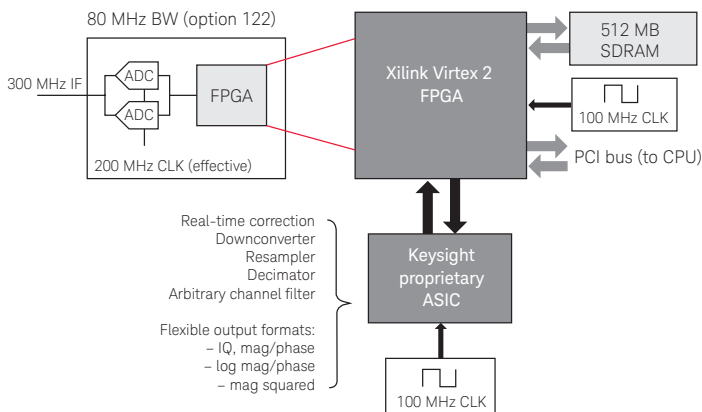


Figure 17. Simplified block diagram for PSA digital IF

PXA 160 MHz digital IF

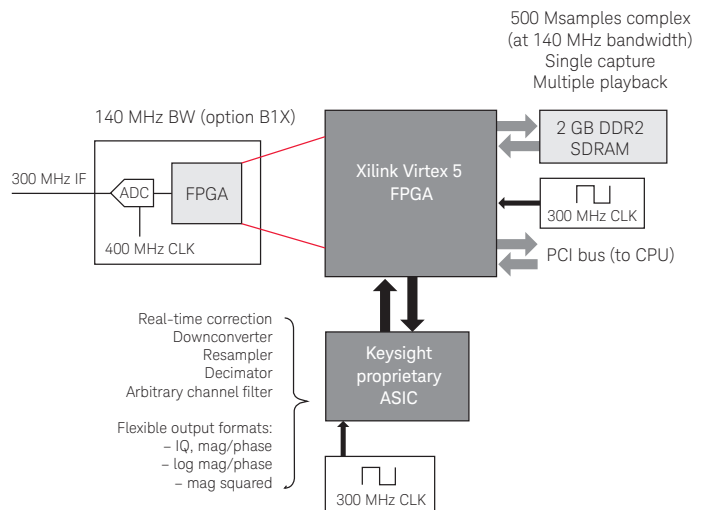


Figure 18. Simplified block diagram for PXA digital IF

Side-by-Side Comparison

Analysis bandwidth specifications

PSA				PXA		
Analysis bandwidths ¹						
	Option B7J	10 MHz		(standard)	10 MHz	
	Option 140	40 MHz		Option B25	25 MHz	
	Option 122	80 MHz		Option B40	40 MHz	
				Option B1X	160 MHz	
Wideband (40 MHz) IF frequency response ²						
	Option 140	Center frequency (GHz)		Option B40	Center frequency (GHz)	
		≤ 3.0	± 0.65 dB		≥ 0.03, < 3.6	± 0.4 dB
		> 3.0, ≤ 6.6	± 0.43 dB		≥ 3.6, < 8.4	± 0.4 dB
		> 6.6, ≤ 26.5	± 0.96 dB		> 8.4, ≤ 26.5	± 0.7 dB
		> 26.5, ≤ 31.15	± 1.00 dB		≥ 26.5, < 34.4	± 0.8 dB
		> 31.15, ≤ 41	± 1.15 dB		≥ 34.4, ≤ 50	± 1.0 dB
		> 41, ≤ 50	± 1.60 dB			
Wideband (40 MHz) IF phase linearity ²						
	Option 140	Center frequency (GHz)	RMS (nominal)	Option B40	Center frequency (GHz)	RMS (nominal)
		> 0.3, ≤ 3.0	0.6 °		≥ 0.02, < 3.6	0.041 °
		> 3.0, ≤ 26.5	0.3 °		≥ 3.6	0.35 °
		> 26.5, ≤ 31.15	0.4 °			
		> 31.15, ≤ 41	0.3 °			
		> 41, ≤ 50	0.4 °			
Wideband (80 MHz) IF frequency response ³						
	Option 122	Center frequency (GHz)		Option B1X	Center frequency (GHz)	
		≥ 0.10, < 3.05	± 0.73 dB ± 0.30 dB (typical)		≥ 0.1, < 3.6	± 0.6 dB ± 0.17 dB (typical)
		≥ 3.05, ≤ 6.6	± 0.63 dB ± 0.19 dB (typical)		≥ 3.6, ≤ 8.4	± 0.73 dB ± 0.2 dB (typical)
		≥ 6.6, ≤ 26.5	± 1.13 dB ± 0.40 dB (typical)		≥ 8.4, ≤ 26.5	± 1.10 dB ± 0.5 dB (typical)
		> 26.5, ≤ 31.15	± 1.20 dB ± 0.50 dB (typical)		≥ 26.5, ≤ 50	± 1.20 dB ± 0.45 dB (typical)
		> 31.15, ≤ 41	± 1.35 dB ± 0.50 dB (typical)			
		> 41, ≤ 50	± 2.30 dB ± 0.75 dB (typical)			
Wideband (80 MHz) IF phase linearity ³						
	Option 122	Center frequency (GHz)	RMS (nominal)	Option B1X	Center frequency (GHz)	RMS (nominal)
		> 0.3, ≤ 3.0	0.9 °		≥ 0.03, < 3.6	0.20 °
		> 3.0, ≤ 26.5	0.4 °		≥ 3.6	0.39 °
		> 26.5, ≤ 31.15	0.6 °			
		> 31.15, ≤ 41	0.5 °			
		> 41, ≤ 50	0.6 °			
Wideband (160 MHz) IF frequency response ^{4,5}						
	Option 122	Not applicable		Option B1X	Center frequency (GHz)	
					≥ 0.1, < 3.6	± 0.6 dB ± 0.2 dB (nom.)
					≥ 3.6, ≤ 8.4	± 0.8 dB ± 0.3 dB (nom.)
					≥ 8.4, ≤ 26.5	± 1.30 dB ± 0.5 dB (nom.)
					≥ 26.5, ≤ 50	± 1.40 dB ± 0.65 dB (nom.)
Wideband (160 MHz) IF phase linearity ⁴						
	Option 122	Not applicable		Option B1X	Center frequency (GHz)	RMS (nominal)
					≥ 0.03, < 3.6	0.42 °
					≥ 3.6	0.64 °

1. Analysis bandwidth is the instantaneous bandwidth available around a center frequency over which the input signal can be digitized for further analysis or processing in the time, frequency, or modulation domain. Preselector bypassed for frequency above band 0. Span ≤ 140 MHz.

2. Preselector bypassed for frequency above band 0. Span ≤ 40 MHz.

3. Preselector bypassed for frequency above band 0. Span ≤ 80 MHz.

4. Preselector bypassed for frequency above band 0. Span ≤ 140 MHz.

5. Refer to the N9030A PXA specifications guide for nominal performance > 140 MHz.

Side-by-Side Comparison

PSA
Capture length versus span (nominal)

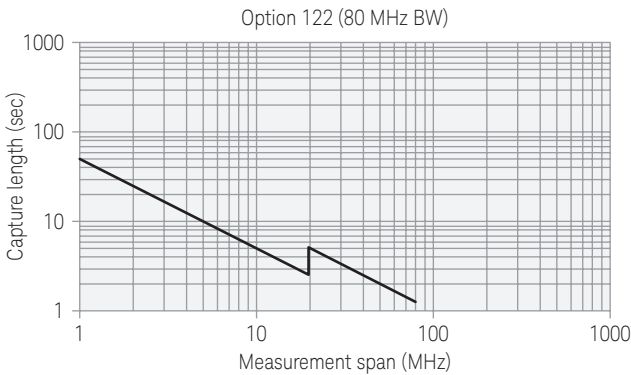


Figure 19. PSA WBIF capture versus span

Note: PSA requires the use of Keysight 89600 VSA software or N9064A VXA for maximum capture length shown above.

PXA
Capture length versus span (nominal)

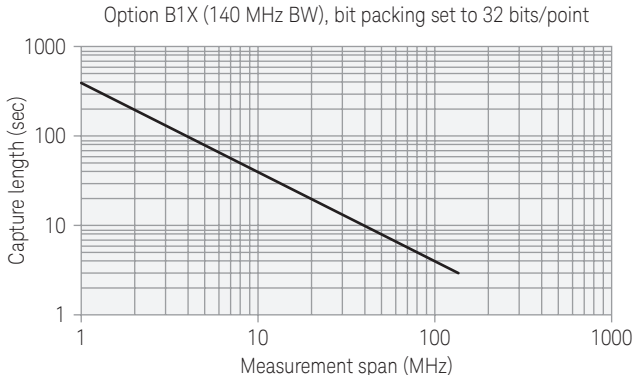


Figure 20. PXA WBIF capture versus span

Note: PXA requires the use of Keysight 89600 VSA software or N9064A VXA for maximum capture length shown above.

General specifications

	PSA	PXA
Temperature range		
Operating	0 °C to 55 °C	0 °C to 55 °C
Storage	-40 °C to 70 °C	-40 °C to 70 °C

EMI, radiated immunity and environmental conditions

Radiated and conducted emission is in compliance with CISPR Pub 11/1996 Class B.

Complies with the radiated electromagnetic field immunity requirements in IEC/EM 61326-1.

Samples of this product have been type tested in accordance with the Keysight Environmental Test manual and verified to be robust against the environmental stresses of storage, transportation and end-use. These 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.

Side-by-Side Comparison

	PSA	PXA
Dimensions		
Dimensions (W x H x D)	426 x 177 x 483 mm 16.8 x 7.0 x 19 inch	426 x 177 x 556 mm 16.8 x 7.0 x 21.9 inch
Rack height	4-U in 19 inch chassis	4-U in 19 inch chassis
Weight		
Net	24 kg (50 lbs) nominal	23 kg (48 lbs) nominal
Shipping	33 kg (73 lbs) nominal	34 kg (75 lbs) nominal
Power requirements		
Voltage and frequency	100/120 V, 50/60/400 Hz; 220/240 V, 50/60 Hz	100 to 120 V, 50/60/400 Hz; 220 to 240 V, 50/60 Hz
Power consumption	On < 260 W, no options < 450 W, all options Standby < 20 W	On < 450 W, fully loaded with options Standby 40 W
Data storage		
Internal	512 MB (nominal)	80 GB (Removable solid-state drive, standard)
Floppy drive	10 to 40 °C 3.5" 1.44 MB	Option EFM USB storage device

PSA

PXA

Front panel

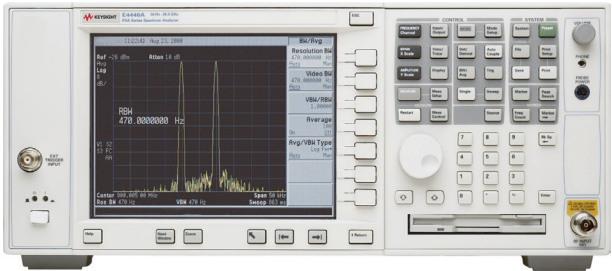


Figure 21. PSA front panel

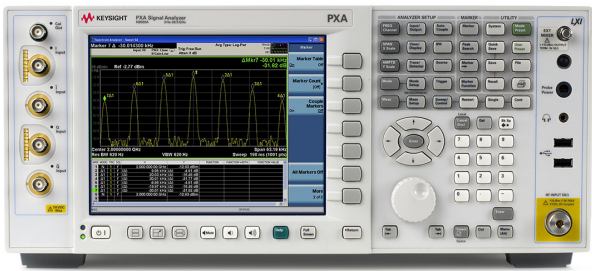


Figure 22. PXA front panel

Rear panel



Figure 23. PSA rear panel



Figure 24. PXA rear panel

Side-by-Side Comparison

IF output characteristics

PSA				PXA		
IF output characteristics ¹						
Center frequency	Standard mode	321.4 MHz		Standard/		
	Option 140	N/A	(40 MHz analysis BW)	Option B25	322.5 MHz	(≤ 25 MHz analysis BW)
	Option 122	N/A	(80 MHz analysis BW)	Option B40	250 MHz	(40 MHz analysis BW)
				Option B1X	300 MHz	(160 MHz analysis BW)
Connector	SMA female	50 Ω nominal		SMA female	50 Ω nominal	
Conversion gain	Low band	+2 to +4 dB nominal	3 Hz to 3.05 GHz	All bands	-1 to +4 dB nominal plus RF frequency response	
	High band	-6 to -8 dB nominal	2.85 GHz to upper limit			
Preselector bypassed	High band	-9 to -17 dB nominal	(Option 123 required)			
Bandwidth	Low band	40 MHz or 60 MHz ²	Nominal	Low band	Up to 160 MHz ³	Nominal
	High band	35 to 70 MHz	Nominal	High band	58 to 74 MHz ⁴	Nominal
Preselector bypassed	High band	240 MHz	Nominal	High band	Up to 900 MHz	Nominal

1. While PSA has the IF output as standard, PXA requires Option CR3, second IF output, for this functionality.
2. 40 MHz standard, 60 MHz with Option 122 or 140 installed in instrument. When Option 122 or 140 is installed, the bandwidth of the output is approximately 95 MHz.
3. Bandwidths being symmetric around the IF output center frequencies are: 95 MHz standard or with Option B25, 40 MHz with Option B40, or 160 MHz with option B1X.
4. Due to the preselector passbands depending on frequencies.

PSA				PXA		
Other IF output characteristics ¹						
Center frequency	Option H70	70 MHz	Special option	Option CRP	10 to 75 MHz	User programmable @ 0.5 MHz steps
Connector	SMA female	50 Ω nominal		SMA female	50 Ω nominal	
Conversion gain	All bands	−8 to −4 dB nominal	Nominal	All bands	−1 to +4 dB nominal plus RF frequency response	
Bandwidth	Low band	40 MHz	Nominal	Low band	100 MHz nominal	Output centered @ 70 MHz
	High band	30 to 60 MHz	Nominal	High band	Depend on RF center frequency	
Preselector bypassed				High band	100 MHz nominal	Output centered @ 70 MHz
Center frequency	Option HXX	21.4 MHz	Special option	Option CRP	10 to 75 MHz	User programmable @ 0.5 MHz steps
Connector	BNC	50 Ω nominal		SMA female	50 Ω nominal	
Conversion gain	Low band	+6 to +9 dB nominal		All bands	−1 to +4 dB nominal plus RF frequency response	
	3.05 to 6.6 GHz	+4 to +7 dB nominal				
	6.6 to 13.2 GHz	+5 to +8 dB nominal				
	13.2 to 19.2 GHz	+7 to 10 dB nominal				
	19.2 to 26.5 GHz	+8 to +11 dB nominal				
Bandwidth	All bands	10 MHz nominal		Low band	100 MHz nominal	Output centered @ 70 MHz
				High band	Depend on RF center frequency	
Preselector bypassed				High band	100 MHz nominal	Output centered @ 70 MHz

1. PXA Option CRP provides user programmable IF output frequency ranging from 10 to 75 MHz for replacement of a variety of PSA special options for IF out such as H70, HXX, H20, and etc.

Side-by-Side Comparison

Measurement personalities/application software

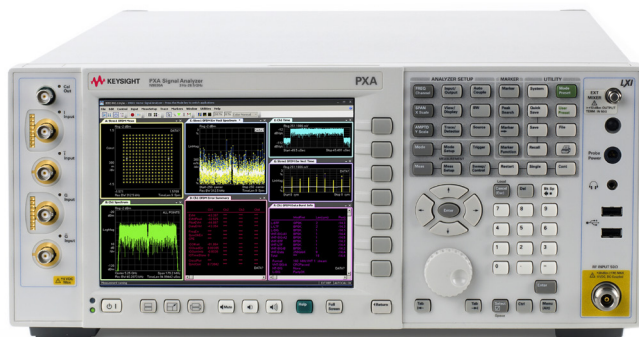
	PSA	PXA
Phase noise	E444xA Option 226	N9068A
Noise figure	E444xA Option 219	N9069A
Digital modulation analysis	E444xA Option 241	N9064A
WLAN	E444xA Option 217 (Option 122 or 140 required)	89600B or N9064A-3FP (Option B25 required)
W-CDMA	E444xA Option BAF	N9073A-1FP
HSDPA/HSUPA	E444xA Option 210 (Option BAF required)	N9073A-2FP (N9073A-1FP required)
GSM w/EDGE	E444xA Option 202	N9071A
cdma2000	E444xA Option B78	N9072A
1xEV-DO	E444xA Option 204	N9076A
cdmaOne	E444xA Option BAC	N9072A
TD-SCDMA power	E444xA Option 211	N9079A
TD-SCDMA modulation	E444xA Option 212	N9079A
HSPA for TD-SCDMA	E444xA Option 213 (Option 212 required)	N9079A

Note: The Keysight 89600B VSA software can be installed in the PXA and used for in-depth signal analysis in various formats of cellular communications.

Side-by-Side Comparison

PSA to PXA models/options cross reference

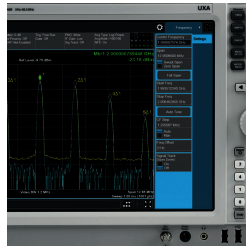
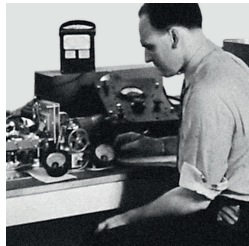
PSA models/options		PXA options	
E4443A	3 Hz to 6.7 GHz	N9030A-503	3 Hz to 3.6 GHz
E4445A	3 Hz to 13.2 GHz	N9030A-508	3 Hz to 8.4 GHz
E4440A	3 Hz to 26.5 GHz	N9030A-513	3 Hz to 13.6 GHz
E4446A	3 Hz to 44 GHz	N9030A-526	3 Hz to 26.5 GHz
E4447A	3 Hz to 42.98 GHz	N9030A-543	3 Hz to 43 GHz
E4448A	3 Hz to 50 GHz	N9030A-544	3 Hz to 44 GHz
		N9030A-550	3 Hz to 50 GHz
Option 122	80 MHz bandwidth digitizer	Option B1X	Analysis bandwidth, 160 MHz
Option 140	40 MHz bandwidth digitizer	Option B40	Analysis bandwidth, 40 MHz
Option 123	Switchable MW preselector bypass	Option MPB	Microwave preselector bypass
Option 235	Wide bandwidth digitizer external calibration wizard for Option 122/140	N/A.	The calibration process for wide bandwidth IF is included.
Option 1DS	RF internal preamplifier 100 kHz to 3 GHz	Option P03	Preamplifier, 3.6 GHz
Option 110	RF/uW internal preamplifier 10 MHz to the maximum frequency of the PSA	Option P08	Preamplifier, 8.4 GHz
		Option P13	Preamplifier, 13.6 GHz
		Option P26	Preamplifier, 26.5 GHz
		Option P43	Preamplifier, 43 GHz
		Option P44	Preamplifier, 44 GHz
		Option P50	Preamplifier, 50 GHz
Option 111	USB device-side I/O interface	Standard. PXA ships standard with 1 type-B slave port, and 6 type-A master ports	
Option 117	Secure memory erase	PXA ships standard with a removable solid state drive for instrument sanitization	
Option 124	Y-axis video output	Option YAV	Y-axis video output
Option B7J	Digital demod hardware	Option EA3	Electronic attenuator
Option BAB	Replace type-N input connector with APC 3.5 mm connector	Option C35	APC 3.5 mm connector
N/A	I/Q baseband inputs, analog	Option BBA	I/Q baseband inputs, analog
Option AYZ	External mixing	Option EXM	External mixing
Option UK6	Commercial calibration certificate with test data	Option UK6	Commercial calibration certificate with test data
Option A6J	ANSI Z540-compliant calibration from factory	Option A6J	ANSI Z540-compliant calibration from factory
Option 1A7	ISO17025A-compliant calibration from factory	Option 1A7	ISO17025A-compliant calibration from factory
Option 230	BenchLink web remote control software	N/A.	PXA's Windows®-based OS offers the Web server enabling remote control to the PXA through the web.
Option HX	21.4 MHz narrow bandwidth IF output	Option CRP	Connector rear, Arbitrary IF output
Option H70	70 MHz IF output	Option CRP	Connector rear, Arbitrary IF output
Option HY7	Improved gain 70 MHz IF output	Option CRP	Connector rear, Arbitrary IF output
Option H7L	Auxiliary log video out	Option ALV	Log video out
Option 266	Programming code compatibility suite	N9061A	Remote language compatibility



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