

Agilent E8267C PSG Vector Signal Generators

Data Sheet



All specifications and characteristics apply over a 0 to 55 °C range (unless otherwise stated) and apply after a 45 minute warm-up time. Supplemental characteristics, denoted as typical or nominal, provide additional (non-warranted) information.

PSG Signal Generators

| | Option 520 250 kHz to 20 GHz | Option 540 250 kHz to 40 GHz |
|----------------|---------------------------------|---------------------------------|
| CW only | E8247C | E8247C |
| Analog | E8257C | E8257C |
| Vector | E8267C | |

(See E8247C/E8257C data sheet for PSG CW and Analog Signal Generator specifications)

Definitions

Specifications (spec): represent warranted performance.

Typical (typ): performance is not warranted. It applies at 25 °C. A minimum of 80% of all products meet typical performance.

Nominal (nom): values are not warranted. They represent the value of a parameter that is most likely to occur; the expected or mean value. They are included to facilitate the application of the product.

Standard (std): No options are included when referring to the signal generator unless noted otherwise.



Agilent Technologies

Table of Contents

- Specifications**3
 - Frequency3
 - Digital sweep4
 - Ramp (analog) sweep4
 - Output5
 - Spectral purity7
 - Frequency modulation10
 - Phase modulation10
 - Amplitude modulation10
 - Wideband AM11
 - External modulation inputs11
 - Simultaneous modulation11
 - Internal modulation source11
 - Pulse modulation12
 - Internal pulse generator13
 - Vector modulation14
 - I/Q baseband generator: arbitrary waveform mode15
 - I/Q baseband generator: real-time mode17
 - Wideband external I/Q inputs19
 - Remote programming20
 - General specifications20

- Input/Output Descriptions**20
 - Front panel connectors20
 - Rear panel connectors21
 - Auxiliary I/O connector23

- Options, Accessories, and Related Products**23

- Web Resources**24

- Related Agilent Literature**24

Specifications

Frequency

| | | |
|---|---|--|
| Range¹ | | |
| Option 520 | 250 kHz to 20 GHz | |
| Resolution | | |
| CW | 0.001 Hz | |
| All Sweep Modes | 0.01 Hz ² | |
| Accuracy | | |
| Aging rate \pm temperature effects \pm line voltage effects | | |
| Switching speed³ | | |
| < 12 ms (typical) | | |
| Phase offset | | |
| Adjustable in nominal 0.1° increments. | | |
| Frequency bands | | |
| Band | Frequency range | N # |
| 1 | 250 kHz to 250 MHz | 1/8 |
| 2 | > 250 to 500 MHz | 1/16 |
| 3 | > 500 MHz to 1 GHz | 1/8 |
| 4 | > 1 to 2 GHz | 1/4 |
| 5 | > 2 to 3.2 GHz | 1/2 |
| 6 | > 3.2 to 10 GHz | 1 |
| 7 | > 10 to 20 GHz | 2 |
| Internal timebase reference oscillator | | |
| Aging rate | Standard | Option UNR |
| | < $\pm 1 \times 10^{-7}$ /year or < $\pm 4.5 \times 10^{-9}$ /day after 45 days | < $\pm 3 \times 10^{-8}$ /year or < $\pm 2.5 \times 10^{-10}$ /day after 30 days |
| Temperature effects (typical) | < $\pm 5 \times 10^{-8}$ 0 to 55 °C | < $\pm 4.5 \times 10^{-8}$ 0 to 55 °C |
| Line voltage effects (typical) | < $\pm 2 \times 10^{-9}$ for +5% –10% change | < $\pm 2 \times 10^{-10}$ for $\pm 10\%$ change |
| | External reference frequency | 1, 2, 2.5, 5, 10 MHz |
| Lock Range | ± 0.2 ppm | ± 1.0 ppm |
| Reference output | | |
| Frequency | 10 MHz | |
| Amplitude | > +4 dBm into 50 Ω load (typical) | |
| External reference input | | |
| Amplitude | > -3 dBm | |
| Option UNR | 5 dBm ± 5 dB ⁴ | |
| Input impedance | 50 Ω (nominal) | |

1. Useable, but unspecified, down to 100 kHz
2. In ramp sweep mode (Option 007), resolution is limited with narrow spans and slow sweep speeds. Refer to ramp sweep specifications for more information.
3. To within 0.1 ppm of final frequency above 250 MHz or within 100 Hz below 250 MHz
4. To optimize phase noise 5 dBm ± 2 dB

Digital sweep

| | |
|-------------------------|---|
| Operating modes | Step sweep of frequency or amplitude or both (start to stop) List sweep of frequency or amplitude or both (arbitrary list) |
| Sweep range | |
| Frequency sweep | Within instrument frequency range |
| Amplitude sweep | Within attenuator hold range |
| Dwell time | 1 ms to 60 s |
| Number of points | 2 to 65535 (step sweep) 2 to 1601 per table (list sweep) |
| Triggering | Auto, external, single, or GPIB |

Ramp (analog) sweep (Option 007)¹

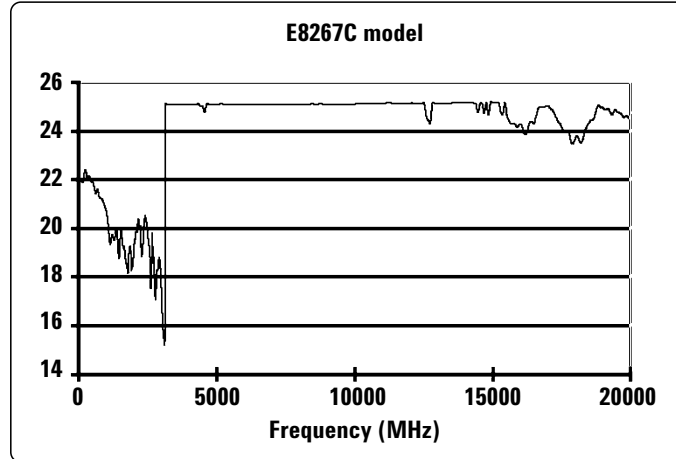
| | | | |
|---|---|---------------------------|----------------------------------|
| Operating modes | Synthesized frequency sweep (start/stop), (center/span), (swept CW) Power (amplitude) sweep (start/stop) Manual sweep RPG control between start and stop frequencies Alternate sweep Alternates successive sweeps between current and stored states | | |
| Sweep span range | Settable from minimum ² to full range | | |
| Maximum sweep rate | Start frequency | Maximum sweep rate | Max span for 100 ms sweep |
| | 250 kHz to <0.5 GHz | 25 MHz/ms | 2.5 GHz |
| | 0.5 to <1 GHz | 50 MHz/ms | 5 GHz |
| | 1 to <2 GHz | 100 MHz/ms | 10 GHz |
| | 2 to <3.2 GHz | 200 MHz/ms | 20 GHz |
| | ≥3.2 GHz | 400 MHz/ms | 20 GHz |
| Frequency accuracy | ± 0.05% of span ± timebase (at 100 ms sweep time, for sweep spans less than maximum values given above) Accuracy improves proportionally as sweep time increases ³ (forward sweep, not including bandswitch and retrace intervals) | | |
| Sweep time | 1 ms | | |
| Resolution | 1 ms | | |
| Manual mode | Settable 10 ms to 99 seconds | | |
| Auto mode | Set to minimum value determined by maximum sweep rate and 8757D setting | | |
| Triggering | Auto, external, single, or GPIB | | |
| Markers | 10 independent continuously variable frequency markers | | |
| Display | Z-axis intensity or RF amplitude pulse | | |
| Functions | M1 to center, M1/M2 to start/stop, marker delta | | |
| Two-tone (master/slave) measurements⁴ | Two PSGs can synchronously track each other, with independent control of start/stop frequencies | | |
| Network analyzer compatibility | Fully compatible with Agilent 8757D scalar network analyzer ⁵ Also useable with Agilent 8757A/C/E scalar network analyzers for making basic swept measurements. ⁶ | | |

1. During Ramp sweep operation, AM and Pulse Modulation are useable but not specified; FM, Phase Modulation, Wideband AM and I/Q modulation are not useable.
2. Minimum settable sweep span is proportional to carrier frequency and sweep time. Actual sweep span may be slightly different than desired setting for spans less than [0.00004% of carrier frequency or 140 Hz] × [sweep time in seconds]. Actual span will always be displayed correctly.
3. Typical accuracy for sweep times > 100 ms can be calculated from the equation:
[(0.005% of span)/(sweep time in seconds)] ± timebase. Accuracy is not specified for sweep times < 100 ms.
4. For Master/Slave operation use Agilent Technologies part #8120-8806 Master/Slave interface cable.
5. When measuring low-pass devices in AC mode, dynamic range may be reduced up to 10dB below 3.2 GHz
6. GPIB system interface is not supported with 8757A/C/E, only with 8757D. As a result, some features of the 8757A/C/E, such as frequency display, pass-through mode, and alternate sweep, do not function with PSG signal generators.

Output

| | |
|---|---|
| Power¹ (dBm) | |
| Frequency range | |
| 250 kHz to 3.2 GHz ² | –130 to +13 |
| 250 kHz to 3.2 GHz (with Option 1E6) ² | –130 to +10 |
| > 3.2 to 20 GHz ³ | –130 to +18 |
| Step attenuator | from 0 to 115 dB in 5 dB steps ⁴ |

Measured maximum available power in CW mode



| | |
|------------------------------|--|
| Attenuator hold range | (Same as max power sweep range) |
| Minimum | From –15 dBm to maximum specified output power with step attenuator in 0 dB position. Can be offset using step attenuator. |

Amplitude switching speed⁵

| | |
|-------------------------|-------------------|
| CW or analog modulation | < 5 ms (typical) |
| When using power search | < 25 ms (typical) |

Level accuracy⁶ (dB)

| Frequency | > +10 dBm | +10 to –10 dBm | –10 to –70 dBm | –70 to –90 dBm | –90 to –110 dBm |
|------------------|-----------|----------------|----------------|----------------|-----------------|
| 250 kHz to 2 GHz | ±0.6 | ±0.6 | ±0.7 | ±0.8 | ±1.4 |
| > 2 to 20 GHz | ±0.8 | ±0.8 | ±0.9 | ±1.0 | ±1.7 |

CW Level accuracy with I/Q modulation (With PRBS modulated data)

(relative to CW)⁷

With ALC On:

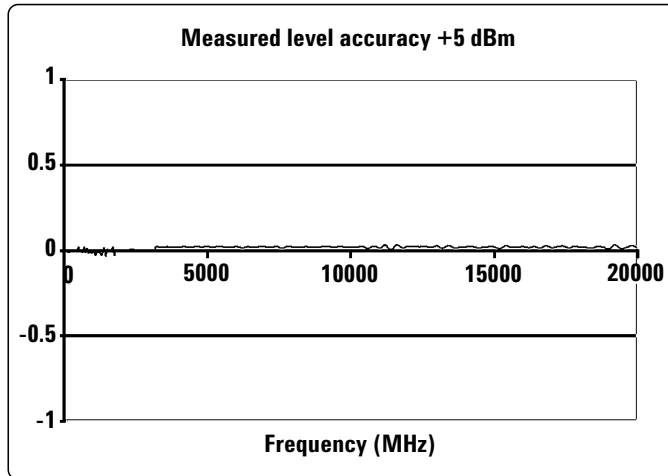
| | |
|---|----------|
| OAM or QPSK formats ⁸ | ± 0.2 dB |
| Constant-amplitude formats (FSK, GMSK, etc) | ± 0.2 dB |

With ALC Off:⁹

± 0.2 dB (typical)

- Maximum power specification is warranted from 15 to 35 °C, and is typical from 0 to 15 °C. Maximum power over the 35 to 55 °C range typically degrades less than 2 dB
- With I/Q modulation on, maximum power specification is typical. With external inputs enabled, $\sqrt{(I^2 + Q^2)} > 0.2 V_{rms}$.
- With I/Q modulation on, maximum power specification is typically +15 dBm. With external inputs enabled, $\sqrt{(I^2 + Q^2)} > 0.2 V_{rms}$.
- The step attenuator provides coarse power attenuation to achieve low power levels. Fine power level adjustment is provided by the ALC (Automatic Level Control) within the attenuator hold range.
- To within 0.1 dB of final amplitude within one attenuator range
- Specifications apply in CW and list/step sweep modes over the 15 to 35 °C temperature range, with attenuator hold off (normal operating mode). Degradation outside this range, for ALC power levels > –5 dBm, is typically < 0.3 dB. In Ramp sweep mode (with Option 007), specifications are typical. For instruments with Type-N connectors (Option 1E6), specifications are degraded typically 0.2 dB above 18 GHz. Level accuracy is not specified below –110 dBm.
- If external inputs are used, specification applies with input level $\sqrt{(I^2 + Q^2)} = 0.3 V_{rms}$ and I/Q modulator attenuation = 10 dB.
- Measured with symbol rate > 10 kHz and power ≤ 0 dBm.
- Relative to ALC on, after power search is executed. When applying external I/Q signals with ALC off, output level will vary directly with I/Q input level.

20 GHz level accuracy



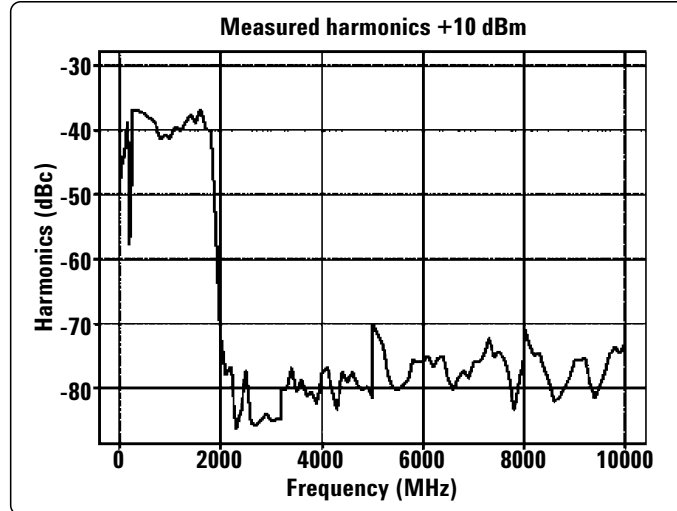
| | |
|--|--|
| Resolution | 0.01 dB |
| Temperature stability | 0.01 dB/ °C (typical) |
| User flatness correction | |
| Number of points | 2 to 1601 points/table |
| Number of tables | Up to 10,000, memory limited |
| Path loss | Arbitrary, within attenuator range |
| Entry modes | Remote power meter ¹ , remote bus, manual (user edit/view) |
| Output impedance | 50 Ω (nominal) |
| SWR (internally leveled, typical) | |
| 250 kHz to 2 GHz | < 1.4:1 |
| > 2 GHz to 20 GHz | < 1.6:1 |
| Leveling modes | Internal leveling, external detector leveling, millimeter source module, ALC Off |
| External detector leveling | |
| Range | –0.2 mV to –0.5 V, (nominal) (–36 dBm to +4 dBm using Agilent 33330D/E detector) |
| Bandwidth | 10 kHz (typical) (Note: not intended for pulsed operation) |
| Maximum reverse power | 1/2 Watt (nominal) |

1. Compatible with Agilent Technologies EPM Series (E4418B and E4419B) power meters.

Spectral purity

| Harmonics¹ | (dBc at +10 dBm or maximum specified output power, whichever is lower) |
|------------------------------|--|
| < 1 MHz | -27 dBc (typical) |
| 1 MHz to 2 GHz | -27 dBc |
| > 2 GHz to 20 GHz | -55 dBc |

20 GHz Measured harmonics



| Sub-harmonics² | (dBc at +10 dBm or maximum specified output power, whichever is lower) |
|----------------------------------|--|
| 250 kHz to 10 GHz | None |
| > 10 GHz to 20 GHz | < -60 dBc |

Non-harmonics (dBc at +10 dBm or maximum specified output power, whichever is lower, for offsets > 3 KHz [>300 Hz with Option UNR])³

| Frequency | Spec | Typical |
|--------------------|------|--------------------------|
| 250 kHz to 250 MHz | -65 | -72 for > 10 kHz offsets |
| > 250 MHz to 1 GHz | -80 | -88 |
| > 1 to 2 GHz | -74 | -82 |
| > 2 to 3.2 GHz | -68 | -76 |
| > 3.2 to 10 GHz | -62 | -70 |
| > 10 to 20 GHz | -56 | -64 |

| SSB phase noise (CW) | | |
|-----------------------------|-------------------|------------------|
| Frequency | 20 kHz | 20 kHz (typical) |
| 250 kHz to 250 MHz | -130 | -134 |
| > 250 to 500 MHz | -134 ⁴ | -138 |
| > 500 MHz to 1 GHz | -130 | -134 |
| > 1 to 2 GHz | -124 | -128 |
| > 2 to 3.2 GHz | -120 | -124 |
| > 3.2 to 10 GHz | -110 | -113 |
| > 10 to 20 GHz | -104 | -108 |

- Specifications for harmonics beyond maximum instrument frequencies are typical.
- Specifications for sub-harmonics beyond maximum instrument frequencies are typical.
- Performance is typical for spurs at frequencies above the maximum operating frequency of the instrument. Specifications apply for CW mode only. Performance typically is -60 dBc between 200 and 250 MHz.
- For instruments with serial number prefixes below MY4330 or US4330, the specification is -136 dBc/Hz.

Option UNR: Enhanced SSB phase noise (CW)

| Frequency | Offset from carrier (dBc/Hz) | | | |
|--------------------|------------------------------|----------------------------|----------------------------|----------------------------|
| | 100 Hz | 1 kHz | 10 kHz | 100 kHz |
| 250 kHz to 250 MHz | spec (typical) -94 (-115) | spec (typical) -110 (-123) | spec (typical) -128 (-132) | spec (typical) -130 (-133) |
| > 250 to 500 MHz | -100 (-110) | -124 (-130) | -132 (-136) | -136 (-141) |
| > 500 MHz to 1 GHz | -94 (-104) | -118 (-126) | -130 (-135) | -130 (-135) |
| > 1 to 2 GHz | -88 (-98) | -112 (-120) | -124 (-129) | -124 (-129) |
| > 2 to 3.2 GHz | -84 (-94) | -108 (-116) | -120 (-125) | -120 (-125) |
| > 3.2 to 10 GHz | -74 (-84) | -98 (-106) | -110 (-115) | -110 (-115) |
| > 10 to 20 GHz | -68 (-78) | -92 (-100) | -104 (-107) | -104 (-109) |

Residual FM

| | |
|------------------|-----------------------|
| CW mode | < N x 8 Hz (typical) |
| Option UNR | < N x 4 Hz (typical) |
| Ramp sweep mode: | < N x 1 kHz (typical) |

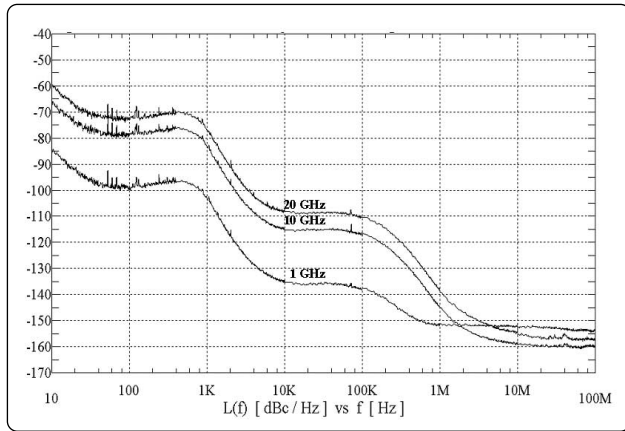
(rms, 50 Hz to 15 kHz bandwidth)

Broadband noise

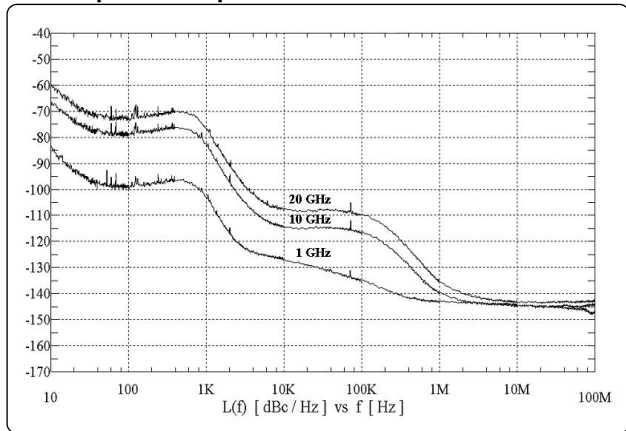
(CW mode at +10 dBm or maximum specified output power, whichever is lower, for offsets > 10 MHz)
> 2.4 to 20 GHz < -148 dBc/Hz (typical)

Measured phase noise with E5500 and plotted without spurs

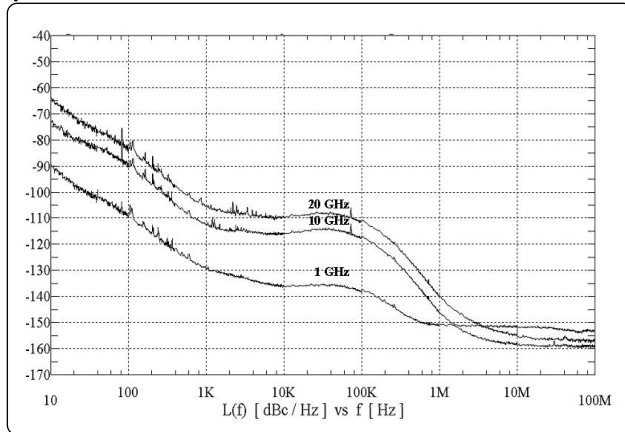
Standard Phase noise



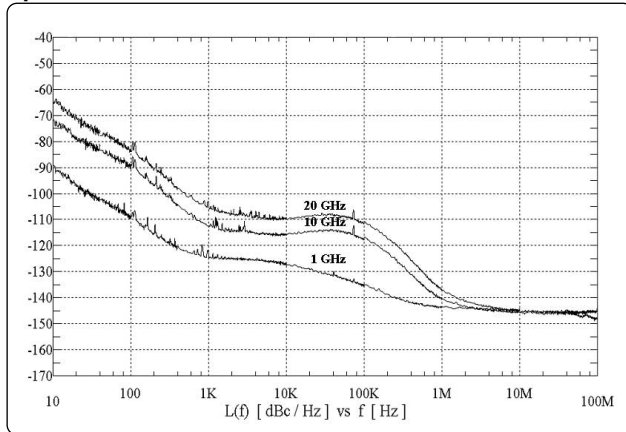
Standard phase noise performance with I/Q modulation on¹



Option UNR

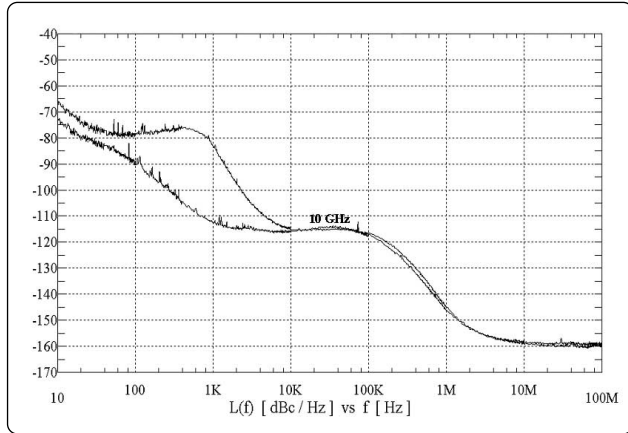


Option UNR with I/Q modulation on¹

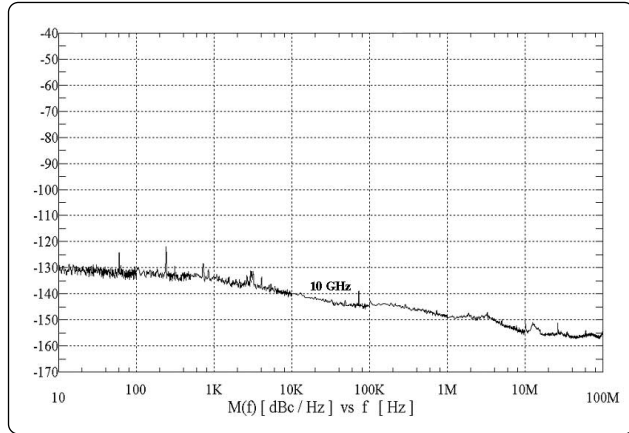


1. External I/Q input level $\sqrt{I^2 + Q^2} = 250 \text{ mV}_{\text{rms}}$, I/Q modulator attenuator set to auto.

Measured standard vs. Option UNR at 10 GHz



Measured AM noise at 10 GHz



Typical rms jitter:¹

Standard

| Carrier frequency | SONET/SDH data rates | rms jitter bandwidth | Unit intervals (μUI) | Time (fs) |
|-------------------|----------------------|----------------------|----------------------|-----------|
| 155 MHz | 155 MB/s | 100 Hz to 1.5 MHz | 95 | 497 |
| 622 MHz | 622 MB/s | 1 kHz to 5 MHz | 54 | 55 |
| 2.488 GHz | 2488 MB/s | 5 kHz to 15 MHz | 64 | 24 |
| 9.953 GHz | 9953 MB/s | 20 kHz to 80 MHz | 162 | 16 |

Option UNR

| Carrier frequency | SONET/SDH data rates | rms jitter bandwidth | Unit intervals (μUI) | Time (fs) |
|-------------------|----------------------|----------------------|----------------------|-----------|
| 155 MHz | 155 MB/s | 100 Hz to 1.5 MHz | 85 | 400 |
| 622 MHz | 622 MB/s | 1 kHz to 5 MHz | 25 | 39 |
| 2.488 GHz | 2488 MB/s | 5 kHz to 15 MHz | 61 | 24 |
| 9.953 GHz | 9953 MB/s | 20 kHz to 80 MHz | 158 | 15 |

1. Calculated from phase noise performance in CW mode only at +3 dBm. For other frequencies, data rate, or bandwidths, please contact your sales representative.

Frequency modulation

| | | |
|---|--|---------------------------------|
| Maximum deviation | N x 8 MHz | |
| Resolution | 0.1% of deviation or 1 Hz, whichever is greater | |
| Deviation accuracy | < ± 3.5% of FM deviation + 20 Hz (1 kHz rate, deviations < N x 800 kHz) | |
| Modulation frequency response | | |
| Path | Rates (at 100 kHz deviation) | |
| | 1 dB Bandwidth | 3 dB Bandwidth (typical) |
| FM 1 | dc/20 Hz to 100 kHz | dc/5 Hz to 10 MHz |
| FM 2 | dc/20 Hz to 100 kHz | dc/5 Hz to 1 MHz |
| dc FM¹ carrier offset | ±0.1% of set deviation + (N x 8 Hz) | |
| Distortion | < 1% (1 kHz rate, deviations < N x 800 kHz) | |
| Sensitivity | ±1 V _{peak} for indicated deviation | |
| Paths | FM1 and FM2 are summed internally for composite modulation. Either path may be switched to any one of the modulation sources: Ext1, Ext2, internal1, internal2. The FM2 path is limited to a maximum rate of 1 MHz. The FM2 path must be set to a deviation less than FM1. | |

Phase modulation

| | | |
|--------------------------------------|--|------------------------|
| Maximum deviation | N x 80 radians (N x 8 radians in high-bandwidth mode) | |
| Resolution | 0.1% of set deviation | |
| Deviation accuracy | < ±5% of deviation + 0.01 radians (1 kHz rate, normal BW mode) | |
| Modulation frequency response | | |
| Mode | Maximum Deviation | Rates (3 dB BW) |
| Normal BW | N x 80 rad | dc – 100 kHz |
| High BW | N x 8 rad | dc – 1 MHz (typical) |
| Distortion | < 1 % (1 kHz rate, THD, dev < N x 80 rad, normal BW mode) | |
| Sensitivity | ±1 V _{peak} for indicated deviation | |
| Paths | ΦM1 and ΦM2 are summed internally for composite modulation. Either path may be switched to any one of the modulation sources: Ext1, Ext2, internal1, internal2. The ΦM2 path must be set to a deviation less than ΦM1. | |

Amplitude modulation (f_c > 2 MHz)² (typical)

| | | |
|--|---|---|
| Depth | Linear mode | Exponential (log) mode (Downward modulation only) |
| Maximum | > 90% | > 20 dB |
| Settable ³ | 0 to 100 % | 0 to 40 dB |
| Resolution | 0.1% | 0.01 dB |
| Accuracy (1 kHz rate) | < ±(6 % of setting + 1 %) | < ±(2% of setting + 0.2 dB) |
| Ext sensitivity | ±1 V _{peak} for indicated depth | -1 V for indicated depth |
| Rates (3 dB bandwidth, 30% depth) | dc/10 Hz to 100 kHz (typical) (useable to 1 MHz) | |
| Distortion (1 kHz rate, linear mode, THD) | | |
| 30% AM | < 1.5% | |
| 90% AM | < 4 % | |
| Paths | AM1 and AM2 are summed internally for composite modulation. Either path may be switched to any one of the modulation sources: Ext1, Ext2, internal1, internal2. | |

1. At the calibrated deviation and carrier frequency, within 5 °C of ambient temperature at time of user calibration.
2. For f_c < 2 MHz AM is usable but not specified. AM specifications apply with ALC on, and envelope peaks < maximum specified power.
3. For AM depth settings > 90% or > 20 dB, deep AM mode is recommended.

Wideband AM

| | |
|--------------------------------------|-----------------------|
| Rate (typical 1 dB bandwidth) | |
| ALC on | 1 kHz to 80 MHz |
| ALC off | DC to 80 MHz |
| External 1 input | |
| Sensitivity | 0.5 V = 100% |
| Input impedance | 50 Ω (nominal) |

External modulation inputs (Ext1 & Ext2)

| | |
|--|---|
| Modulation types | AM, FM, and Φ M |
| Input impedance | 50 or 600 Ω (nominal), switched |
| High/low indicator (100 Hz to 10 MHz BW, ac coupled inputs only) | Activated when input level error exceeds 3% (nominal) |

Simultaneous modulation

All modulation types may be simultaneously enabled except: FM with Φ M, linear AM with exponential AM, and Wideband AM with I/Q. AM, FM, and Φ M can sum simultaneous inputs from any two sources (Ext1, Ext2, internal1, or internal2) Any given source (Ext1, Ext2, internal1, or internal2) may be routed to only one activated modulation type.

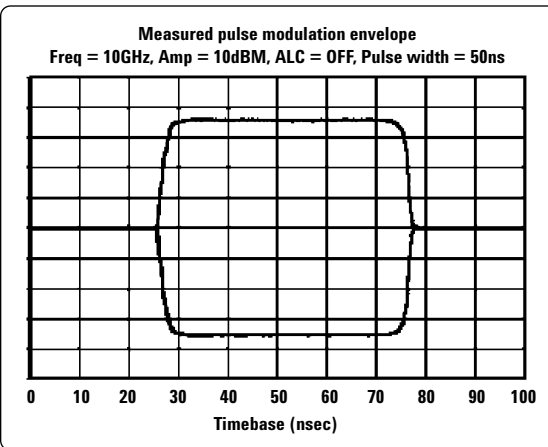
Internal modulation source

| | |
|---|---|
| Dual function generators provides two independent signals (internal1 and internal2) for use with AM, FM, Φ M, or LF Out. | |
| Waveforms | Sine, square, positive ramp, negative ramp, triangle, Gaussian noise, uniform noise, swept sine, dual sine ¹ |
| Rate range | |
| Sine | 0.5 Hz to 1 MHz |
| Square, ramp, triangle | 0.5 Hz to 100 kHz |
| Resolution | 0.5 Hz |
| Accuracy | Same as timebase |
| LF out | |
| Output | Internal1 or internal2. Also provides monitoring of internal1 or internal2 when used for AM, FM, or Φ M. |
| Amplitude | 0 to 3 V _{peak} , into 50 Ω (nominal) |
| Output impedance | 50 Ω (nominal) |
| Swept sine mode: (frequency, phase continuous) | |
| Operating modes | Triggered or continuous sweeps |
| Frequency range | 1 Hz to 1 MHz |
| Sweep rate | 0.5 Hz to 100 kHz sweeps/s, equivalent to sweep times 10 μ s to 2 s |
| Resolution | 0.5 Hz (0.5 sweep/s) |

1. Internal2 is not available when using swept sine or dual sine modes.

Pulse modulation¹

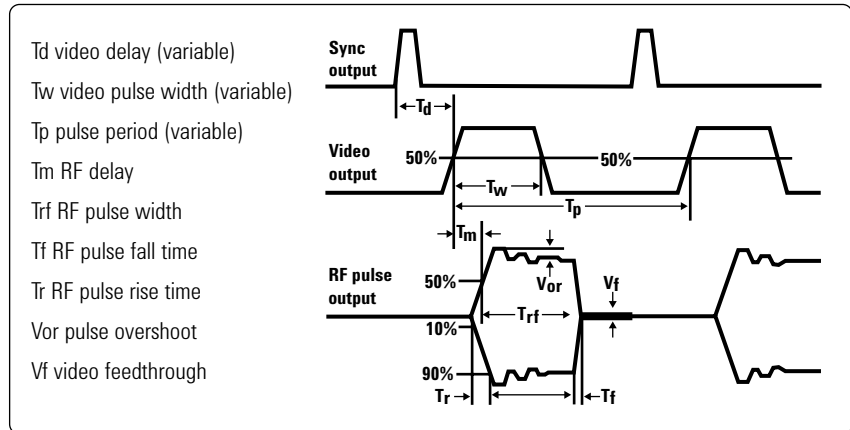
| | Standard | Standard | Option 1E6 ² |
|---|------------------------------|------------------------------|------------------------------|
| | > 3.2 GHz | 500 MHz to 3.2 GHz | 10 MHz to 3.2 GHz |
| On/off ratio | 80 dB | 80 dB (typical) | 80 dB |
| Rise/fall times (Tr, Tf) | 10 ns (6 ns typical) | 100 ns (typical) | 10 ns (8 ns typical) |
| Pulse width | | | |
| Internally leveled | ≥ 1 μs | ≥ 2 μs (typical) | ≥ 1 μs |
| Level hold (ALC Off with power search) ³ | ≥ 20 ns (typical) | ≥ 0.5 μs (typical) | ≥ 20 ns (typical) |
| Repetition frequency | | | |
| Internally leveled | 10 Hz to 500 kHz (typical) | 10 Hz to 250 kHz (typical) | 10 Hz to 500 kHz (typical) |
| Level hold (ALC Off with power search) ³ | dc to 10 MHz (typical) | dc to 1 MHz (typical) | dc to 10 MHz (typical) |
| Level accuracy (relative to CW) | | | |
| Internally leveled | ±0.5 dB ±0.15 (typical) | ± 0.5 dB | ± 0.5 dB |
| Level hold (ALC Off with power search) ³ | ≤ 20 GHz ±0.8 dB (typical) | ±0.5 dB (typical) | ± 1.2 dB (typical) |
| Width compression | ±5 ns (typical) | ±50 ns (typical) | ±5 ns (typical) |
| Video feed-through ⁴ | < 2 mV (typical) | < 200 mV (typical) | < 125 mV (typical) |
| Video delay | | | |
| (Ext input to Video) | 40 ns (nominal) | 40 ns (nominal) | 40 ns (nominal) |
| RF delay (Tm) | | | |
| (Video to RF output) | 35 ns (nominal) | 280 ns (nominal) | 45 ns (nominal) |
| Pulse overshoot (Vor) | < 10% (typical) | < 10% (typical) | < 10% (typical) |
| Input level | +1 V _{peak} = RF On | +1 V _{peak} = RF On | +1 V _{peak} = RF On |
| Input impedance | 50 Ω, (nominal) | 50 Ω, (nominal) | 50 Ω, (nominal) |



1. With ALC off, specs apply after the execution of power search. Specs apply with Atten Hold off (default mode), or ALC level between 0 and +10 dBm.
2. Option 1E6 provides narrow pulse (20 ns typical) capability between 10 MHz and 3.2 GHz. Narrow pulse capability above 3.2 GHz is standard.
3. Power search is a calibration routine that improves level accuracy in ALC-off mode. Un-pulsed RF power will be present typically up to 50 ms when executing power search.
4. With attenuator in 0 dB position. Video feed-through decreases with attenuator setting.

Internal pulse generator

| | |
|--|--|
| Modes | Free-run, triggered, triggered with delay, doublet, and gated. Triggered with delay, doublet, and gated require external trigger source. |
| Period (PRI) (T_p) | 70 ns to 42 s (Repetition frequency: 0.024 Hz to 14.28 MHz) |
| Pulse width (T_w) | 10 ns to 42 s |
| Delay (T_d) | |
| Free-run mode | 0 to ± 42 s |
| Triggered with delay and doublet modes | 75 ns to 42 s with ± 10 ns jitter |
| Resolution | 10 ns (width, delay, and PRI) |



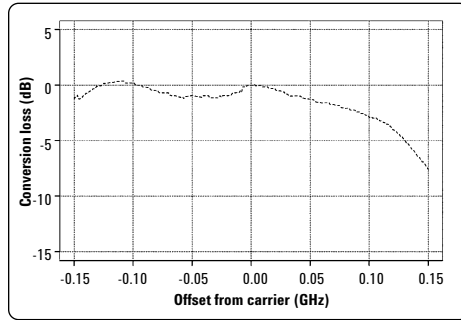
Vector modulation

External I/Q inputs

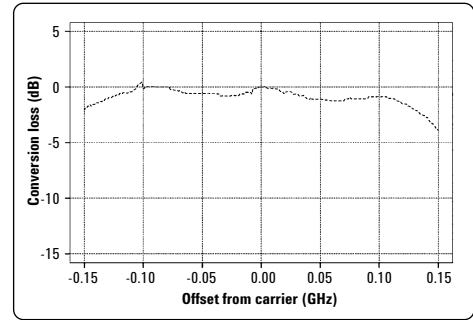
| | |
|--------------------------|--|
| Input impedance | switched 50 or 600 Ω (nominal) |
| Input range ¹ | Minimum 0.1 V_{rms} , maximum $1V_{peak}$ |
| Flatness | ± 1 dB within ± 40 MHz of carrier (with ALC off) (typical) |

Measured I/Q frequency response ²

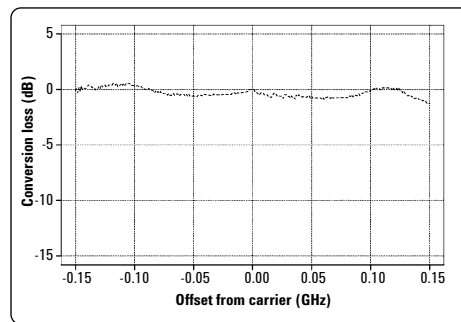
1.5 GHz



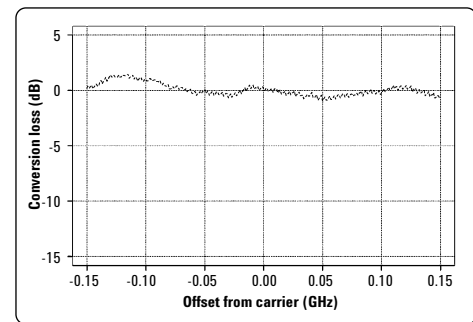
3 GHz



12 GHz



20 GHz



I/Q adjustments

| | |
|---------------------|--|
| I & Q offsets | External inputs (600 Ω) ± 5 Volts External inputs (50 Ω) ± 50 % Internal baseband generator ± 50 % |
| I/Q attenuation | 0 to 40 dB |
| I/Q gain balance | ± 4 dB |
| I/Q quadrature skew | $\pm 10^\circ$ range (typical) |
| Low pass filter | Selectable 40 MHz or through |

I/Q baseband outputs

| | |
|--------------------------|-----------------------------|
| Differential | I, I bar, Q, Q bar |
| Single ended | I, Q |
| Frequency range | DC to 40 MHz |
| Output voltage into 50 W | $1.5 V_{p-p}$ (typical) |
| DC offset adjustments | ± 3 V |
| DC offset resolution | 1 mV |
| Low pass filter | Selectable 40 MHz or though |

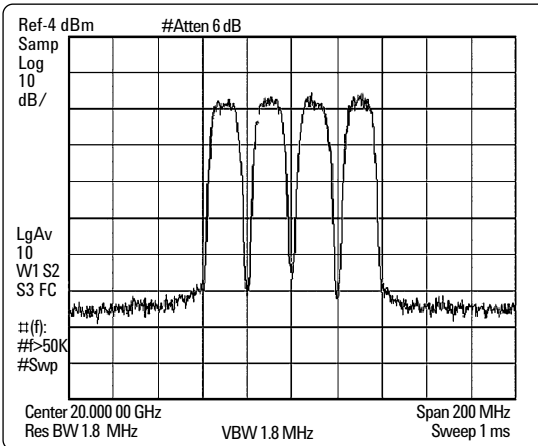
- For optimum signal quality, the I and Q inputs should be $0.7 V_{peak}$, with $\sqrt{I^2 + Q^2} + 150 mV_{rms}$. Different RMS levels are accommodated by adjusting the internal I/Q modulator attenuator, which may be either manually or automatically set. The minimum input level required to maintain RF level accuracy is $\sqrt{I^2 + Q^2} = 0.1 V_{rms}$.
- Sine wave response, measured with input level = $100 mV_{rms}$ on one channel, and ALC off.

**I/Q baseband generator:
arbitrary waveform mode**
(Option 602)

| | |
|--|---|
| Channels | 2 [I and Q] |
| Resolution | 16 bits [1/65,536] |
| Baseband waveform memory | |
| Length (playback) | 64 megasamples (MSa) |
| Length (storage) | 1.2 gigasamples (GSa) on 6 GB hard drive (Option 005) |
| Waveform segments | |
| Segment length | 60 samples to 64 MSa |
| Maximum number of segments | 8192 |
| Minimum memory allocation | 256 samples or 1 kbyte blocks |
| Waveform sequences | |
| Sequencing | Continuously repeating |
| Maximum number of sequences | 16,384 |
| Maximum segments/sequence | 1 to 32,768 |
| Maximum segment repetitions | 1 to 65,536 |
| Clock | |
| Sample rate | 1 Hz to 100 MHz |
| Resolution | 0.001 Hz |
| Accuracy | Same as timebase +2 ⁴² [in non-integer applications] |
| Reconstruction filter: [fixed] | 50 MHz [used for all symbol rates] |
| Baseband spectral purity [full scale sinewave] | |
| Harmonic distortion | 100 kHz to 2 MHz: < -65 dBc (typical) |
| Phase noise | < -127 dBc/Hz (typical) (baseband output of 10 MHz sinewave at 20 kHz offset) |
| IM performance | < -74 dB (typical) (two sinewaves at 950 kHz and 1050 kHz at baseband) |
| Triggers | |
| Types | Continuous, single, gated, segment advance |
| Source | Trigger key, external, remote [LAN, GPIB, RS-232] |
| External polarity | Negative, positive |
| External delay time | 10 ns to 40 sec plus latency |
| External delay resolution | 10 ns |
| Markers (Markers are defined in a segment during the waveform generation process, or from the PSG front panel. A marker can also be tied to the RF blanking feature of the PSG.) | |
| Marker polarity | Negative, positive |
| Number of markers | 4 |
| Multicarrier | |
| Number of carriers | Up to 100 (limited by a max bandwidth of 80 MHz depending on symbol rate and modulation type) |
| Frequency offset (per carrier) | -40 MHz to +40 MHz |
| Power offset (per carrier) | 0 dB to -40 dB |
| Modulation | |
| PSK | BPSK, QPSK, OQPSK, $\pi/4$ DQPSK, 8PSK, 16PSK, D8PSK |
| OAM | 4, 16, 32, 64, 256 |
| FSK | Selectable: 2, 4, 8, 16 |
| MSK | |
| Data | Random ONLY |

Measured multicarrier

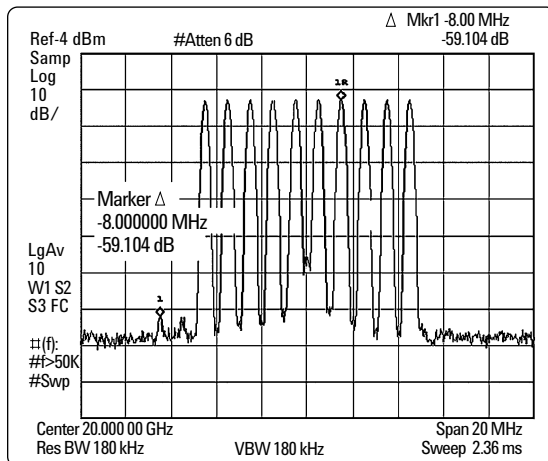
4 Carriers with 64 QAM at 10 Msym/s with 20 MHz spacing



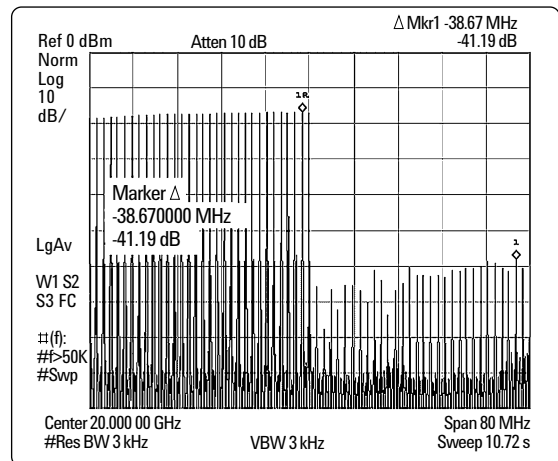
Multitone

| | |
|-------------------------|--|
| Number of tones | 2 to 64, with selectable on/off state per tone |
| Frequency spacing | 100 Hz to 80 MHz |
| Phase (per tone) | Fixed or random |
| Power offset (per tone) | 0 to -40 dB |

Measured multitone



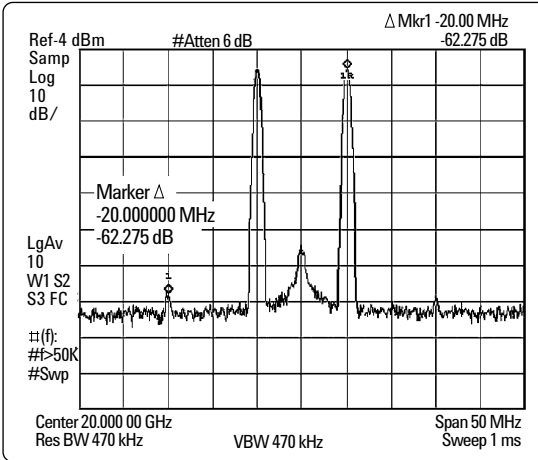
Measured image rejection > 3.2 GHz



Two-tone

| | |
|--------------------|--|
| Frequency spacing | 100 Hz to 80 MHz (symmetrical about carrier) |
| IM distortion | |
| 250 kHz to 3.2 GHz | <-45 dBc for RF levels < 0dBm (typical) |
| >3.2 GHz to 20 GHz | <-55 dBc for RF levels < 0dBm (typical) |

Measured two-tone



Internal baseband generator: real-time mode (Option 602)

Basic modulation types (custom format)

| | |
|--------------------|---|
| PSK | BPSK, QPSK, OQPSK, $\pi/4$ QPSK, 8PSK, 16PSK, D8PSK |
| MSK | User-defined phase offset from 0 to 100° |
| OAM | 4, 16, 32, 64, 256 |
| FSK | Selectable: 2, 4, 8, 16 level symmetric |
| User defined | Custom map of up to 16 deviation levels |
| Symbol rate | Maximum deviation |
| < 5 MHz | 4 times symbol rate |
| 5 MHz to 50 MHz | 20 MHz |
| Resolution: 0.1 Hz | |

I/Q

Custom map of 256 unique values

Vector accuracy ¹

Formats: BPSK, QPSK, 16-256QAM
($\alpha = 0.3$, Root Nyquist filter, symbol rate 4 Msym/s)
<1.2% RMS, < 0.8% RMS (typical)

EVM

Origin offset

250 kHz to 3.2 GHz

-45 dBc (typical)

3.2 to 20 GHz

-50 dBc (typical)

FIR filter

Selectable

Nyquist, root Nyquist, Gaussian, rectangular
 α : 0 to 1, $B_b T$: 0.1 to 1

Custom FIR

16-bit resolution, up to 64 symbols long, automatically resampled to 1024 coefficients (max)
> 32 to 64 symbol filter: symbol rate ≤ 12.5 MHz
> 16 to 32 symbol filter: symbol rate ≤ 25 MHz
Internal filters switch to 16 tap when symbol rate is between 25 and 50 MHz

Symbol rate

For external serial data:

Adjustable from 1000 symbols/sec to a maximum symbol rate of 50 Mbits/sec \div #bits/symbol

For internally generated data:

Adjustable from 1000 symbols/sec to 50 Msymbols/sec. and a maximum of 8 bits per symbol. Modulation quality may be degraded at high symbol rates.

Baseband reference frequency

Input

Data clock can be phase locked to an external reference. ECL, CMOS, TTL compatible, 50 Ω AC coupled

1. Measured with Agilent 89441A Vector Signal Analyzer. Valid after executing I/Q calibration, and instrument is maintained within ± 5 °C of calibration temperature. RF power < 0 dBm. When external inputs are used, vector accuracy can approach internal performance after system optimization. Recommended external I/Q input level $\sqrt{I^2 + Q^2} = 0.3 V_{rms}$, I/Q modulator attenuator = 10 dB.

Frame trigger delay control

Range 0 to 1,048,575 bits
 Resolution 1 bit

Data types

Internally generated data

Pseudo-random patterns PN9, PN11, PN15, PN20, PN23
 Repeating sequence Any 4-bit sequence
 Other fixed patterns

Direct-pattern RAM [PRAM]

Max size 32 Mb
 (each bit uses an entire sample space)
 Use Non-standard framing

User file

Max size 3.2 MB
 Use Continuous modulation or internally generated TDMA standard

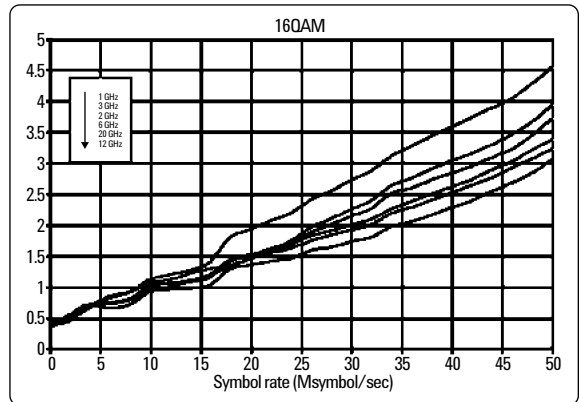
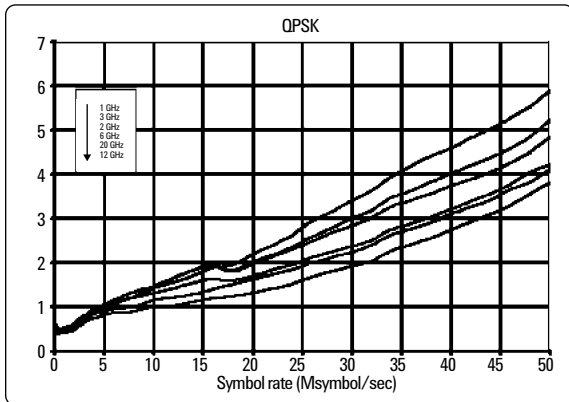
Externally generated data

Type Serial data
 Inputs Data, data (bit) clock, symbol sync
 Accepts data rates $\pm 5\%$ of specified data rate

Internal burst shape control

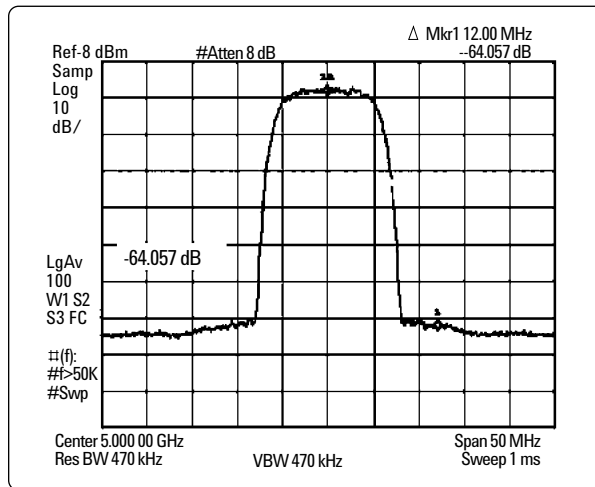
Varies with standards and bit rates
 Rise/fall time range Up to 30 bits
 Rise/fall delay range 0 to 63.5 bits

Measured EVM



Measured spectral re-growth

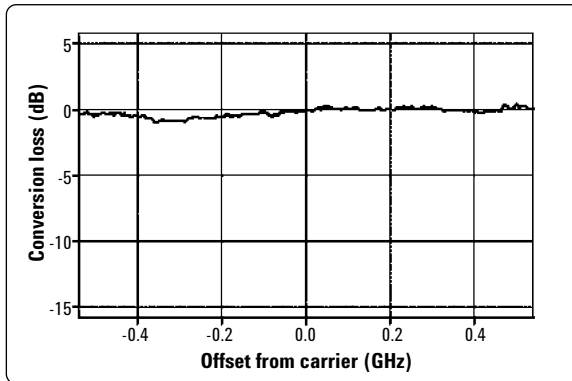
5 GHz carrier with 16 QAM signal at 10 Msym/s



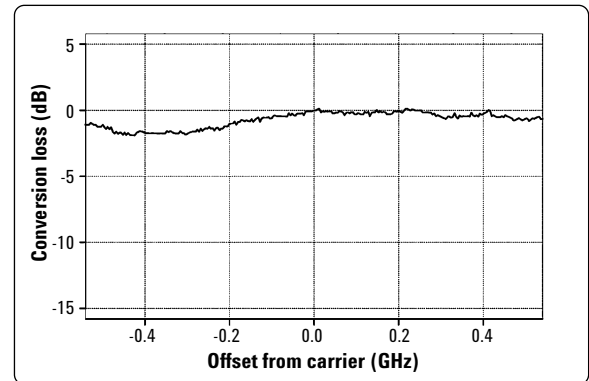
Wideband external I/Q inputs (Option 015)

| | |
|--|--|
| RF output frequency range: | 3.2 to 20 GHz |
| Input | |
| Input (baseband) frequency range | DC to > 500 MHz (nominal) |
| Input impedance | 50 Ω (nominal) |
| Recommended input level | 0 dBm (nominal) |
| Maximum input voltage | ± 1 volt DC |
| I/Q offset adjustments | $\pm 50\%$ |
| RF path filters¹ | |
| Carrier Frequency | Low-pass 3 dB cutoff frequency (nominal) |
| >3.2 to 5 GHz | 5.5 GHz |
| >5 to 8 GHz | 8.9 GHz |
| > 8 to 12.8 GHz | 13.9 GHz |
| > 12.8 GHz | 22.5 GHz |
| Measured I/Q frequency response | |

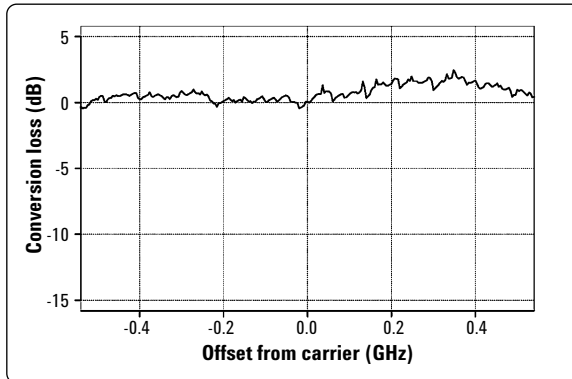
6 GHz



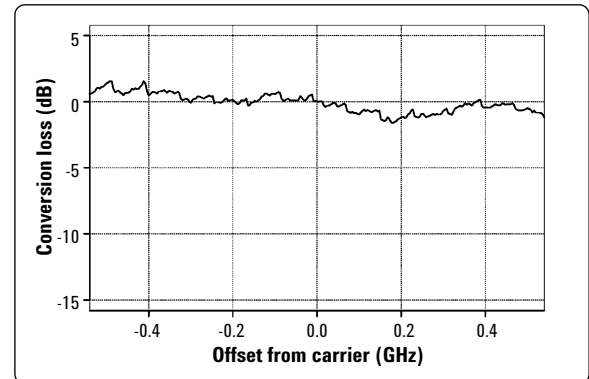
10 GHz



15 GHz



20 GHz



1. Operation close to RF filter cutoff frequencies will affect channel flatness.

Remote programming

| | |
|---------------------------|---|
| Interfaces | GPIO (IEEE-488.2,1987) with listen and talk, RS-232, and 10BaseT LAN interface. |
| Control languages | SCPI version 1997.0. Also will emulate most applicable Agilent 836xxB, Agilent 837xxB, and Agilent 8340/41B commands, providing general compatibility with ATE systems which include these signal generators. |
| IEEE-488 functions | SH1, AH1, T6, TE0, L4, LE0, SR1, RL1, PP0, DC1, DT0, C0, E2. |
| ISO compliant | This family of signal generators is manufactured in an ISO-9001 registered facility in concurrence with Agilent Technologies commitment to quality. |

General specifications

| | |
|---|---|
| Power requirements | 90 to 267 Vac 50 to 60 Hz, (automatically selected), 650 W maximum. |
| Operating temperature range | 0 to 55 °C ¹ |
| Storage temperature range² | –40 to 71 °C With Option 005: –4 ° to 65 °C, gradient less than 20 °C/hour |
| Shock and vibration | |
| Operating random vibration | 5 to 500 Hz, 0.21 g rms |
| Survival swept sine vibration | 5 to 500 Hz, 0.75 g |
| Survival random vibration | 5 to 500 Hz, 2.09 g rms |
| Functional shock (half-sine, 30 g, 11 ms) and bench drop test | Meets the requirements of MIL-PRF-28800F for class 3 equipment. |
| EMC | Meets the conducted and radiated interference and immunity requirements of IEC/EN 61326-1. Meets radiated emission requirements of CISPR Pub 11/1997 Group 1 class A. |
| Storage registers | Memory is shared by instrument states, user data files, sweep list files, and waveform sequences. Depending on the number and size of these files, up to 800 storage registers and 10 register sequences are available. |
| Security | Display blanking. |
| Compatibility | Agilent Technologies 83550 Series millimeter heads (not for use with I/Q modulation), Agilent Technologies 8757D scalar network analyzers, Agilent Technologies EPM Series power Meters. |
| Self-test | Internal diagnostic routine tests most modules (including microcircuits) in a preset condition. For each module, if its node voltages are within acceptable limits, then the module “passes” the test. |
| Weight | < 25 kg (54 lb.) net, < 33 kg (74 lb.) shipping. |
| Dimensions | 178 mm H x 426 mm W x 498 mm D (7” H x 16.8” W x 19.6” D in.). |
| Recommended calibration cycle | 24 months |

Input/Output Descriptions

Front panel connectors

(All connectors are BNC female unless otherwise noted.)³

| | |
|-------------------------|---|
| RF output | Nominal output impedance 50 Ω. Precision APC-3.5 male, or Type-N with Option 1ED. |
| ALC input | Used for negative external detector leveling. Nominal input impedance 120 kΩ, damage level ±15 V. |
| LF output | Outputs the internally generated LF source. Nominal output impedance 50 Ω. |
| External input 1 | Drives either AM, FM, or ΦM. Nominal input impedance 50 or 600 Ω, damage levels are 5 V _{rms} and 10 V _{peak} . |

1. Save and recall of user files and instrument states from Option 005 Hard Drive is guaranteed only over the range 0 to 40 °C.
2. Storage below –20 °C instrument states may be lost.
3. Digital inputs and output are 3.3 V CMOS unless indicated otherwise. Inputs will accept 5 V CMOS, 3V CMOS, or TTL voltage levels.

| | |
|--|---|
| External input 2 | Drives either AM, FM, or Φ M. Nominal input impedance 50 or 600 Ω , damage levels are 5 V_{rms} and 10 V_{peak} . |
| Pulse/trigger gate input | Accepts input signal for external fast pulse modulation. Also accepts external trigger pulse input for internal pulse modulation. Nominal impedance 50 Ω . Damage levels are 5 V_{rms} and 10 V_{peak} . |
| Pulse video out | Outputs a signal that follows the RF output in all pulse modes. TTL-level compatible, nominal source impedance 50 Ω . |
| Pulse sync out | Outputs a synchronizing pulse, nominally 50 ns width, during internal and triggered pulse modulation. TTL-level compatible, nominal source impedance 50 Ω . |
| Data clock input | Accepts a data clock signal to synchronize serial data for use with internal baseband generator (Option 602). Maximum rate 50 MHz. Damage levels are $> +5.5$ and < -0.5 V. |
| Data input | Accepts serial data for use with internal baseband generator (Option 602). Maximum rate 50 Mb/s. Data must be valid on the falling edges of data clock (normal mode) or the symbol sync (symbol mode). Damage levels are $> +5.5$ and < -0.5 V. |
| I input | Accepts an "I" input either for I/Q modulation or for wideband AM. Nominal input impedance 50 or 600 Ω . Damage levels are 1 V_{rms} and 5 V_{peak} . |
| Q input | Accepts a "Q" input for I/Q modulation. Nominal input impedance 50 or 600 Ω . Damage levels are 1 V_{rms} and 5 V_{peak} . |
| Symbol sync input | Accepts symbol sync signal for use with internal baseband generator (Option 602). Symbol sync might occur once per symbol or be a single, one bit wide pulse to synchronize the first bit of the first symbol. Maximum rate 50 MHz. Damage levels are $> +5.5$ and < -0.5 V. |
| Auxiliary interface (Dual mode) | Used for RS-232 serial communication and for Master/Slave source synchronization. (9-pin D-subminiature female connector) For Master/Slave operation use Agilent Technologies part #8120-8806 Master/Slave interface cable. |
| GPIB | Allows communication with compatible devices. |
| LAN | Allows 10baseT LAN communication |
| 10 MHz input | Accepts an external reference (timebase) input (at 1, 2, 2.5, 5, 10 MHz for standard and 10 MHz only for Option UNR) Nominal input impedance 50 Ω . Damage levels $> +10$ dBm |
| 10 MHz output | Outputs internal or external reference signal. Nominal output impedance 50 Ω . Nominal output power +4 dBm |
| Sweep output (Dual mode) | Supplies a voltage proportional to the RF power or frequency sweep ranging from 0 volts at the start of sweep to +10 volts (nominal) at the end of sweep, regardless of sweep width. When connected to an Agilent 8757D scalar network analyzer (Option 007), generates a selectable number of equally spaced 1 us pulses (nominal) across a ramp (analog) sweep. Number of pulses can be set from 101 to 1601 by remote control from the 8757D. Output impedance: $< 1 \Omega$, can drive 2000 Ω . |

Rear panel connectors

(All connectors are BNC female unless otherwise noted.)¹

1. Digital inputs and output are 3.3 V CMOS unless indicated otherwise. Inputs will accept 5 V CMOS, 3V CMOS, or TTL voltage levels.

| | |
|--|---|
| Stop sweep In/Out | Open-collector, TTL-compatible input/output. In ramp sweep operation, provides low level (nominally 0 V) during sweep retrace and bandcross intervals, and high level during the forward portion of the sweep. Sweep will stop when grounded externally, sweep will resume when allowed to go high. |
| Trigger output (Dual mode) | Outputs a TTL signal. High at start of dwell, or when waiting for point trigger; low when dwell is over or point trigger is received. In ramp sweep mode, provides 1601 equally-spaced 1 μ s pulses (nominal) across a ramp sweep. When using LF out, provides 2 μ s pulse at start of LF sweep. |
| Trigger input | Accepts TTL signal for triggering point-to-point in manual sweep mode, or to trigger start of LF sweep. Damage levels $\geq +10$ V or ≤ -4 V. |
| Source module interface | Provides bias, flatness correction, and leveling connections to the Agilent model 83550 Series mm-wave source modules. |
| Source settled | Provides an output trigger that indicates when the signal generator has settled to a new frequency or power level. High indicates source not settled, Low indicates source settled. |
| Z-axis Blank/Markers | During ramp sweep, supplies +5 V (nominal) level during retrace and bandswitch intervals. Supplies -5 V (nominal) level when the RF frequency is at a marker frequency. |
| EFC | > 0.25 ppm for -5 to +5 V Input impedance: >1 M Ω |
| .25 – 3.2 GHz coherent carrier output | Outputs RF signal modulated with FM or Φ M but not I/Q, AM or pulse. Nominal power 0 dBm. Frequency range from 250 MHz to 3.2 GHz. Not useful for output frequency > 3.2 GHz. Damage levels 20 Vdc and 13 dBm reverse RF power. (SMA female) |
| Baseband generator reference input | Accepts 0 to +20 dBm sinewave, or TTL squarewave, reference input to use as reference clock for the baseband generator (Option 602). Phase locks the internal data generator to the external reference: the RF frequency is still locked to the 10 MHz reference. Rate is 250 kHz to 100 MHz 50 Ω (nominal), AC coupled. |
| Burst gate input | Accepts signal for gating burst power for use with internal baseband generator (Option 602). The burst gating is used when you are externally supplying data and clock information. The input signal must be synchronized with the external data input that will be output during the burst. The burst power envelope and modulated data are internally delayed and re-synchronized. The input signal must be CMOS high for normal burst RF power or CW RF output power and CMOS low for RF off. Damage levels are >+5.5 and <-0.5 V. |
| Event 1 output | In real-time mode, outputs a pattern or frame synchronization pulse for triggering or gating external equipment, for use with internal baseband generator (Option 602). May be set to start at the beginning of a pattern, frame, or timeslot and is adjustable to within \pm one timeslot with one bit resolution. In arbitrary waveform mode, outputs a timing signal generated by marker 1. |
| Event 2 output | In real-time mode, outputs a data enable signal for gating external equipment, for use with internal baseband generator (Option 602). Applicable when external data is clocked into internally generated timeslots. Data is enabled when signal is low. In arbitrary waveform mode, outputs a timing signal generated by marker 2. |

Auxiliary I/O connector (37-pin) used with Option 602

| | |
|--|---|
| I and Q outputs | Outputs the analog I/Q modulation signals from the internal baseband generator. Nominal output impedance 50 Ω , DC-coupled. Damage levels ± 3.5 V. |
| \bar{I} and \bar{Q} outputs | Outputs the complement of the I and Q signals for differential applications. Nominal output impedance 50 Ω , DC-coupled. Damage levels ± 3.5 V. |
| Pattern trigger input | Accepts signal to trigger internal pattern or frame generator to start single pattern output, for use with internal baseband generator (Option 602). Minimum pulse width 100 ns. Damage levels are $>+5.5$ and <-0.5 V. |
| Wideband I and Q inputs | Direct high-bandwidth analog inputs to I/Q modulator in 3.2 to 20 GHz range. Not calibrated. 0 dBm maximum. (Option 015 only) |
| Alternate power input | Accepts CMOS signal for synchronization of external data and alternate power signal timing. Damage levels are $>+8$ and <-4 V. |
| Data clock output | Relays a CMOS bit clock signal for synchronizing serial data. |
| Data output | Outputs data from the internal data generator or the externally supplied signal at data input. CMOS signal. |
| Event 3 output | In arbitrary waveform mode, outputs a timing signal generated by marker 3. Damage levels $>+8$ and <4 V. |
| Event 4 output | In arbitrary waveform mode, outputs a timing signal generated by marker 4. Damage levels $>+8$ and <4 V. |
| Symbol sync output | Outputs CMOS symbol clock for symbol synchronization, one data clock period wide. |

Options, Accessories, and Related Products

| Model/option | Description |
|-------------------|---|
| E8267C-520 | Frequency range 250 kHz to 20 GHz |
| E8267C-003 | Enables digital output connectivity with N5102A |
| E8267C-004 | Enables digital input connectivity with N5102A |
| E8267C-UNR | Enhanced close-in phase noise |
| E8267C-1E6 | Narrow pulse modulation below 3.2 GHz |
| E8267C-007 | Ramp (analog) sweep |
| E8267C-602 | Internal baseband generator, 64 MSa memory |
| E8267C-005 | 6 GB internal hard drive |
| E8267C-015 | Wideband external I/Q inputs |
| E8267C-1ED | Type-N (f) connector |
| E8267C-1EM | Moves all connectors to rear panel |
| E8267C-1CM | Rack mount kit |
| E8267C-1CN | Front handle kit |
| E8267C-1CP | Rack mount kit with front handle kit |
| E8267C-408 | Signal Studio software for enhanced multitone signals |
| E8267C-417 | Signal Studio software for 802.11 a/b/g WLAN signals |
| E8267C-420 | Signal Studio software for pulse building |
| E8267C-421 | Signal Studio software for noise power ratio |
| E8267C-SP1 | Signal Studio for jitter injection |
| E8267C-HEH | Improve low band harmonics (from 10 MHz to 3.2 GHz) |
| 83554A | Millimeter-wave source module (26.5 to 40 GHz) |
| 83555A | Millimeter-wave source module (33 to 50 GHz) |
| 83556A | Millimeter-wave source module (40 to 60 GHz) |
| 83557A | Millimeter-wave source module (50 to 75 GHz) |
| 83558A | Millimeter-wave source module (75 to 110 GHz) |
| 8120-8806 | Master/slave interface cable |
| N5102A | Baseband Studio digital signal interface module |
| N5101A | Baseband Studio PCI card |
| N5110A | Baseband Studio for waveform streaming |
| N5110A-117 | Hard drive streaming BW to 1 MSa/s |
| N5110A-118 | Extend hard drive streaming BW from 1 to 5 MSa/s |
| N5110A-119 | Extend hard drive streaming BW from 5 to 10 MSa/s |
| N5110A-120 | Extend hard drive streaming BW from 10 to 20 MSa/s |
| N5110A-121 | Extend hard drive streaming BW from 20 MSa/s up to 40 MSa/s |
| N5110A-125 | Signal generator hard drive streaming connectivity |
| 9211-2656 | Standard transit case |
| 9211-7481 | Tote-style transit case (includes wheels and telescoping handles) |

Web Resources

www.agilent.com/find/psg
www.agilent.com/find/basebandstudio
www.agilent.com/find/signalstudio

Related Agilent Literature

PSG Signal Generator, Brochure
Literature number: 5988-7538EN

*E8247C/57C PSG CW and Analog
Signal Generator*, Data Sheet
Literature number 5988-7454EN

E8267C PSG Vector Signal Generator
Data Sheet
Literature number 5988-6632EN

PSG Self Guided Demo
Literature number 5988-2414EN

E8267C PSG Vector Signal Generator
Configuration Guide
Literature number 5988-7541EN

Millimeter Wave Source Modules, Product Note
Literature number 5988-2567EN

PSG Two-tone and Multitone Personalities
Application Note AN 1410
Literature number: 5988-7689EN

Signal Studio for Noise Power Ratio
Technical Overview
Literature number 5988-9161EN

Signal Studio for Enhanced Multitone
Technical Overview
Literature number 5988-5639EN

Signal Studio for 802.11 WLAN, Technical Overview
Literature number 5988-8618EN

Baseband Studio Digital Signal Interface Module
Technical Overview
Literature number 5988-9495EN

Baseband Studio for Waveform Streaming
Technical Overview
Literature number: 5988-9493EN

Agilent Technologies' Test and Measurement Support, Services, and Assistance

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