



E8267D PSG Vector Signal Generator



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Definitions

Specifications (spec): Represents warranted performance for instruments with a current calibration.

Typical (typ): Represents characteristic performance which is non-warranted. Describes performance that will be met by a minimum of 80% of all products.

Nominal (nom): Represents characteristic performance which is non-warranted. Represents the value of a parameter that is most likely to occur; the expected mean or mode of all instruments at room temperature (approximately 25°C).

Measured: Represents characteristic performance which is non-warranted. Represents the value of a parameter measured on an instrument during design verification.

Specifications

| Frequency | | | |
|---|--|---------------------|---------------|
| Range | Specified range | Tunable range | |
| Option 513 | 250 kHz to 13 GHz | 100 kHz to 13 GHz | |
| Option 520 | 250 kHz to 20 GHz | 100 kHz to 20 GHz | |
| Option 532 | 250 kHz to 31.8 GHz | 100 kHz to 31.8 GHz | |
| Option 544 | 250 kHz to 44 GHz | 100 kHz to 44 GHz | |
| Resolution | | | |
| CW | 0.001 Hz | | |
| All sweep modes ¹ | 0.01 Hz | | |
| Switching speed ^{2,3,4} | Standard | Opt UNX | Opt UNY |
| I/Q modulation off | < 16 ms (typ) | < 16 ms (typ) | < 26 ms (typ) |
| I/Q modulation on | < 24 ms (typ) | < 24 ms (typ) | < 34 ms (typ) |
| Phase offset | Adjustable in nominal 0.1° increments | | |
| Frequency bands | Frequency range | N ⁵ | |
| 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 | |
| 8 | > 20 to 28.5 GHz | 3 | |
| 9 | > 28.5 to 44 GHz | 5 | |
| Accuracy | ±[(time since last adjustment x aging rate) + temperature effects + line voltage effects + calibration accuracy] | | |
| Internal timebase reference oscillator (OCXO) | | | |
| Aging rate ⁶ | < ±3 x 10 ⁻⁸ /year or < ±2.5 x 10 ⁻¹⁰ /day after 30 days | | |
| Initial achievable calibration accuracy | < ±4 x 10 ⁻⁸ | | |
| Temperature effects (typ) | < ±4.5 x 10 ⁻⁹ from 0 to 55°C | | |
| Line voltage effects (typ) | < ±2 x 10 ⁻¹⁰ for ±10% change | | |

1. In ramp sweep mode (Option 007), resolution is limited with narrow spans and slow sweep speeds. Refer to ramp sweep specifications for more information.
2. Time from GPIB trigger to frequency within 0.1 ppm of final frequency above 250 MHz or within 100 Hz below 250 MHz. CW switching speed to within 0.05% of final frequency is ≥ 5 ms (nom).
3. Add 12 ms (typ) when switching from greater than 3.2 GHz to less than 3.2 GHz.
4. With Option 1EH low band harmonic filters off. With the 1EH filters turned on, add 4 ms.
5. N is a factor used to help define certain specifications within the document.
6. Not verified by Keysight N7800A TME Calibration and Adjustment Software. Daily aging rate may be verified as a supplementary chargeable service, on request.

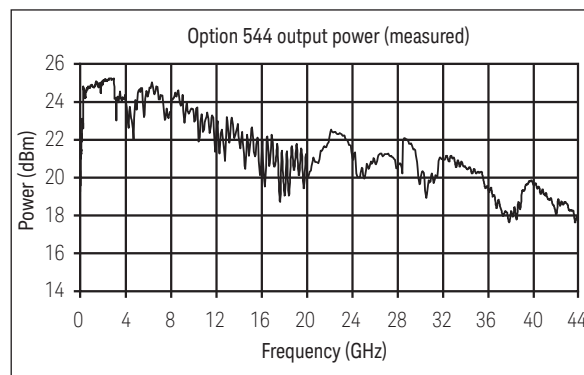
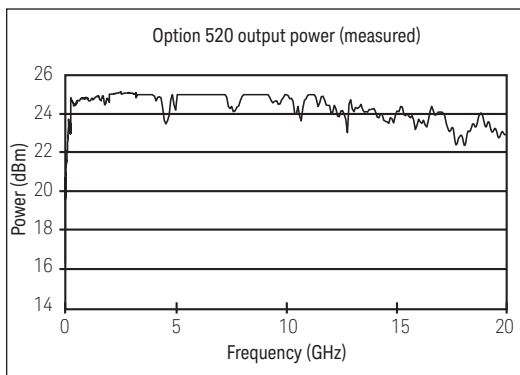
| External reference | | | |
|--------------------------|---|---------------|---------------|
| Frequency | 10 MHz only | | |
| Lock range | ±1.0 ppm | | |
| Reference output | | | |
| Frequency | 10 MHz | | |
| Amplitude | > +4 dBm into 50 Ω load (typ) | | |
| External reference input | | | |
| I/Q modulation off | < 16 ms (typ) | < 16 ms (typ) | < 26 ms (typ) |
| I/Q modulation on | < 24 ms (typ) | < 24 ms (typ) | < 34 ms (typ) |
| Step (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 (see “Output” section) | | |
| Dwell time | 1 ms to 60 s | | |
| Number of points | | | |
| Step sweep | 2 to 65535 | | |
| List sweep | 2 to 1601 per table | | |
| Triggering | Auto, external, single, or GPIB | | |
| Settling time | Standard | Opt UNX | Opt UNY |
| Frequency ² | < 9 ms (typ) | < 9 ms (typ) | < 24 ms (typ) |
| Amplitude | < 5 ms (typ) | < 5 ms (typ) | < 5 ms (typ) |

1. To optimize phase noise use 5 dBm ±2 dB.
2. 19 ms (typ) when stepping from greater than 3.2 GHz to less than 3.2 GHz.

| Ramp (analog) sweep (Option 007) ¹ | | | |
|---|--|---------------------------|----------------------------------|
| Operating modes | | | |
| | <ul style="list-style-type: none"> • 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 | | |
| Operating modes | 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 | 40 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 | | |
| Sweep time (forward sweep, not including bandswitch and retrace intervals) | | | |
| Manual mode | Settable 10 ms to 200 seconds | | |
| Resolution | 1 ms | | |
| 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 (primary/secondary) measurements ⁴ | Two PSGs can synchronously track each other, with independent control of start/stop frequencies | | |
| Network analyzer compatibility | Compatible with Keysight 8757D scalar network analyzer. Also useable with Keysight 8757A/C/E scalar network analyzers for making basic swept measurements. ⁵ | | |

1. During ramp sweep operation, AM, FM, phase modulation, and pulse modulation are useable but performance is not specified; 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 $[0.00004\% \text{ of carrier frequency or } 140 \text{ Hz}] \times [\text{sweep time in seconds}]$. Actual span will always be displayed correctly.
3. Typical accuracy for sweep times > 100 ms can be calculated from the equation: $[(0.005\% \text{ of span})/(\text{sweep time in seconds})] \pm \text{timebase}$. Accuracy is not specified for sweep times < 100 ms.
4. For primary/secondary operation use Keysight part number 8120-8806 primary/secondary interface cable.
5. GPIB system interface is not supported with 8757A/C/E, only with 8757D. As a result, some features of 8757A/C/E, such as frequency display, pass-through mode, and alternate sweep, do not function with PSG signal generators.

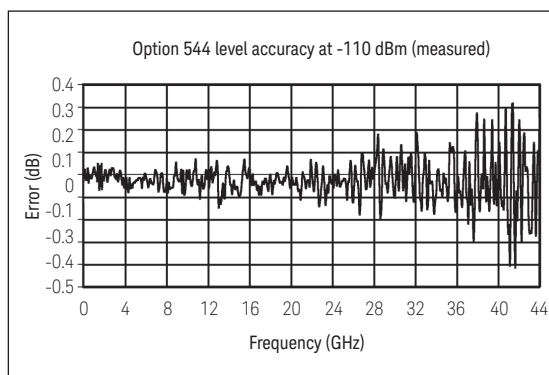
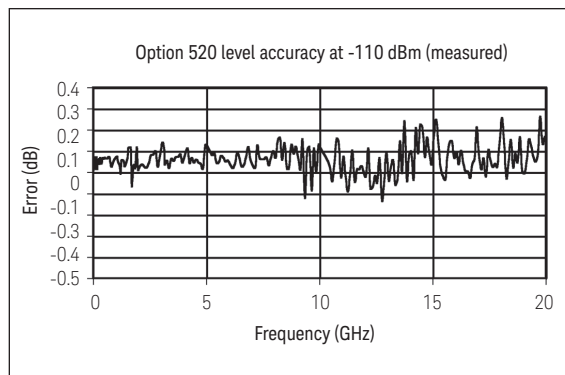
| Output | | | |
|---|------------|---------------------------|---------------------------|
| Minimum settable output power | -130 dBm | | |
| Maximum output power (dBm) ¹ | Spec (Typ) | | |
| Frequency range ² | CW | Standard I/Q ³ | Wideband I/Q ⁴ |
| Options 513 and 520 | | | |
| 10 to 250 MHz (filters on) | +15 (+17) | +15 (+16) | +11 (+15) |
| > 0.25 to 2 GHz (filters on) | +16 (+17) | +16 (+17) | +14 (+16) |
| 250 kHz to 10 MHz | +14 (+17) | +14 (+17) | (+14) |
| > 10 to < 60 MHz | +16 (+19) | +16 (+19) | +14 (+17) |
| 60 to 400 MHz | +20 (+21) | +20 (+21) | +18 (+21) |
| > 0.4 to 3.2 GHz | +21 (+23) | +20 (+22) | +18 (+20) |
| > 3.2 to 10 GHz | +18 (+23) | +18 (+21) | +12 (+16) |
| > 10 to 20 GHz | +18 (+22) | +18 (+21) | +12 (+16) |
| Options 532 and 544 | | | |
| 10 to 250 MHz (filters on) | +14 (+16) | +14 (+16) | +9 (+12) |
| > 0.25 to 2 GHz (filters on) | +15 (+16) | +15 (+16) | +9 (+13) |
| 250 kHz to 10 MHz | +13 (+16) | +13 (+17) | (+13) |
| > 10 to < 60 MHz | +15 (+18) | +15 (+17) | +13 (+16) |
| 60 to 400 MHz | +19 (+21) | +18 (+20) | +17 (+20) |
| > 0.4 to 3.2 GHz | +20 (+22) | +17 (+20) | +17 (+19) |
| > 3.2 to 10 GHz | +14 (+21) | +14 (+21) | +9 (+13) |
| > 10 to 20 GHz | +14 (+18) | +14 (+18) | +8 (+14) |
| > 20 to 32 GHz | +14 (+18) | +14 (+18) | (+14) |
| > 32 to 40 GHz | +12 (+18) | +12 (+16) | (+13) |
| > 40 to 44 GHz | +10 (+13) | +10 (+15) | (+13) |



Maximum available power in CW mode (measured)

1. Maximum power specifications are warranted from 15 to 35°C. From 0 to 15°C, the performance is typically the same as the warranted specification. From 35 to 55°C, the performance is typically 2 dB less than the warranted specification.
2. With Option 1EH low-pass filters below 2 GHz switched off, unless otherwise specified. Specifications above 2 GHz apply with filters on or off.
3. Applies when using the standard I/Q inputs or the internal baseband generator (Option 602) and $\sqrt{I^2 + Q^2} \geq 0.5 V_{rms}$.
4. Applies when using the wideband external differential I/Q inputs (Option 016) and $\sqrt{I^2 + Q^2} \geq 0.2 V_{rms}$.

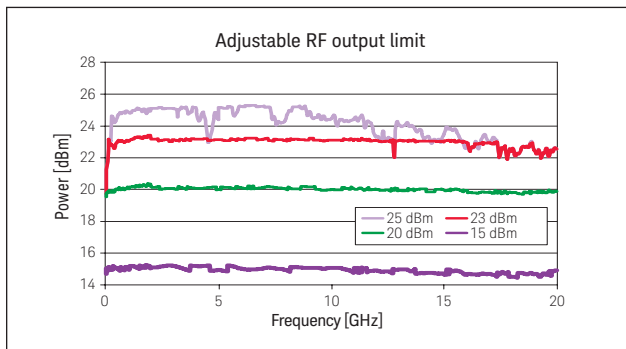
| | | | | |
|--|---------------------|---|----------------------------|----------------------------|
| Step attenuator ¹ | | 0 to 115 dB in 5 dB steps | | |
| Attenuator hold range | | | | |
| Minimum | | From -15 dBm to maximum specified output power with step attenuator in 0 dB position; can be offset using step attenuator | | |
| Amplitude switching speed | | | | |
| ALC on | | < 6 ms (typ) ² | | |
| ALC off | | < 10 ms (typ) (not including power search) ³ | | |
| Level accuracy ⁴ (dB) | > +10 dBm | +10 to -10 dBm | < -10 to -70 dBm | < -70 to -90 dBm |
| 250 kHz to 2 GHz | ±0.6 | ±0.6 | ±0.7 | ±0.8 |
| > 2 to 20 GHz | ±0.8 | ±0.8 | ±0.9 | ±1.0 |
| > 20 to 32 GHz | ±1.0 | ±0.9 | ±1.0 | ±1.7 |
| > 32 to 44 GHz | ±1.0 | ±0.9 | ±1.5 | ±2.0 |
| CW level accuracy with I/Q modulation (With PRBS modulated data) (relative to CW) | | | | |
| With ALC on | | | | |
| QAM or QPSK formats ⁵ | | ±0.2 dB | | |
| Constant-amplitude formats (FSK, GMSK, etc) | | ±0.2 dB | | |
| With ALC off ⁶ | | ±0.2 dB (typ) | | |



Level accuracy (measured)

1. 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.
2. To within 0.1 dB of final amplitude within one attenuator range.
3. To within 0.5 dB of final amplitude within one attenuator range. Add up to 50 ms when using power search.
4. 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 and frequency > 10 MHz, is typically < 0.3 dB. In ramp sweep mode (with Option 007), specifications are typical. For instruments with type-N connectors (Option 1ED), specifications apply only up to 18 GHz and typical level accuracy degrades by 0.2 dB above 18 GHz. Specifications do not apply above the maximum specified power.
5. For Options 513 and 520, measured with symbol rate > 10 kHz and power ≤ -1 dBm. For Options 532 and 544, measured with symbol rate > 10 kHz and power ≤ -3 dBm.
6. 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.

| | |
|-----------------------------------|---|
| Resolution | 0.01 dB |
| Temperature stability | 0.01 dB/°C (typ) ¹ |
| 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 ² , remote bus, manual (user edit/view) |
| Output impedance | 50 Ω (nom) |
| SWR (internally leveled) | |
| Options 513 and 520 | |
| 250 kHz to 2 GHz | < 1.4:1 (typ) |
| > 2 GHz to 20 GHz | < 1.6:1 (typ) |
| Options 532 and 544 | |
| 250 kHz to 1.2 GHz | < 1.4:1 (typ) |
| > 1.2 GHz to 20 GHz | < 1.6:1 (typ) |
| > 20 GHz | < 1.8:1 (typ) |
| Leveling modes | Internal leveling, external detector leveling, millimeter source module, ALC off |
| External detector leveling | |
| Range | -0.2 mV to -0.5 V (nom) (-36 dBm to +4 dBm using Keysight 33330D/E detector) |
| Bandwidth | Selectable 0.1 to 100 kHz (nom) (note: not intended for pulsed operation) |
| Maximum reverse power | 1/2 Watt, 0 V _{DC} |
| Adjustable RF output limit | |
| Function | Protects external devices by limiting maximum RF output; operates in all leveling modes (internal, external, source module) |
| Range | User-adjustable from +15 dBm to maximum output power |
| Accuracy | |
| +15 to +25 dBm | ±1 dB (typ) |
| > +25 dBm | ±1.5 dB (typ) |
| Resolution | 1 dB |
| Response time | 30 μsec (measured) |
| Adjustment | Can be locked to prevent accidental change |



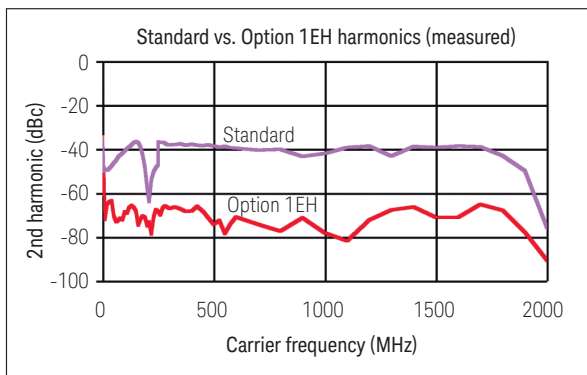
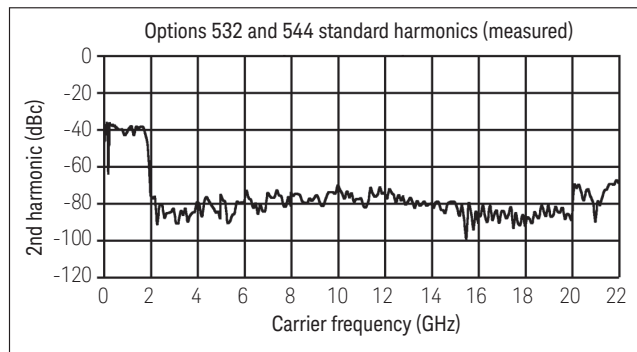
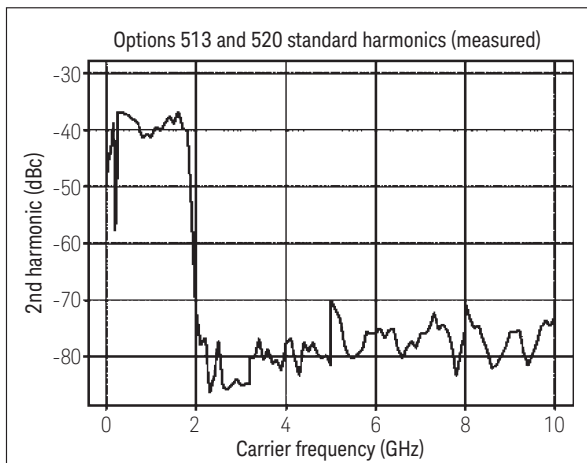
RF output limit (measured)

- Options 532 and 544: 0.02 dB/°C (typ) above 2 GHz.
- Compatible with Keysight EPM/EPM-P Series power meters.

Spectral purity

Harmonics ¹ (dBc at +10 dBm or maximum specified output power, whichever is lower)

| Frequency | Standard |
|--|---------------|
| < 1 MHz | -25 dBc (typ) |
| 1 to < 10 MHz | -25 dBc |
| 10 to < 60 MHz | -28 dBc |
| 10 to < 60 MHz with Option 1EH filters on ² | -45 dBc |
| 0.06 to 2 GHz | -30 dBc |
| 0.06 to 2 GHz with Option 1EH filters on ² | -55 dBc |
| > 2 to 20 GHz | -55 dBc |
| > 20 to 44 GHz | -45 dBc (typ) |



Harmonics (measured)

1. Specifications are typical for harmonics beyond specified frequency. Specifications are with Option 1EH low-pass filters below 2 GHz off, unless noted.
2. Below 250 MHz in ramp sweep mode (Option 007), Option 1EH filters are always off. Refer to harmonic specification with filters off.

| Sub-harmonics ¹ (At +10 dBm or maximum specified output power, whichever is lower) | | | | |
|--|---|--|---|-------------------------------------|
| 250 kHz to 10 GHz | None | | | |
| > 10 GHz to 20 GHz | < -60 dBc | | | |
| > 20 GHz to 44 GHz | < -45 dBc | | | |
| Non-harmonics ^{2,3,4} (dBc at +10 dBm or maximum specified output power, whichever is lower) | | | | |
| Frequency | Offsets > 3 kHz (Standard) Spec (typ) | Offsets > 300 Hz (Opt UNX or UNY) Spec (typ) | Offsets > 3 kHz (Option UNY) Spec | Line-related (≤ 300 Hz) (typ) |
| 250 kHz to 250 MHz | -58 (-62) ⁵ | -58 (-62) ⁵ | -58 | (-55) |
| > 250 MHz to 1 GHz | -80 (-88) | -80 (-88) | -80 | (-55) |
| > 1 to 2 GHz | -74 (-82) | -74 (-82) | -80 | (-55) |
| > 2 to 3.2 GHz | -68 (-76) | -68 (-76) | -76 | (-55) |
| > 3.2 to 10 GHz | -62 (-70) | -62 (-70) | -70 | (-50) |
| > 10 to 20 GHz | -56 (-64) | -56 (-64) | -64 | (-45) |
| > 20 to 28.5 GHz | -52 (-60) | -52 (-60) | -58 | (-39) |
| > 28.5 to 44 GHz | -48 (-56) | -48 (-56) | -52 | (-37) |
| Residual FM (RMS, 50 Hz to 15 kHz bandwidth) | | | | |
| CW mode | < N x 8 Hz (typ) | | | |
| CW mode with Option UNX or UNY | < N x 4 Hz (typ) | | | |
| Ramp sweep mode | < N x 1 kHz (typ) | | | |
| 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 (typ) | | | |
| > 20 GHz | < -141 dBc/Hz (typ) | | | |
| Measured RMS jitter: ⁶ | | | | |
| 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 | 25 | 158 |
| 622 MHz | 622 MB/s | 1 kHz to 5 MHz | 21 | 34 |
| 2.488 GHz | 2488 MB/s | 5 kHz to 20 MHz | 57 | 23 |
| 9.953 GHz | 9953 MB/s | 10 kHz to 80 MHz | 152 | 15 |
| 39.812 GHz | 39812 MB/s | 40 kHz to 320 MHz | 627 | 16 |

1. Sub-harmonics are defined as carrier freq * (x/y), where x and y are integers, and x is not an integer multiple of y. Specifications are typical for sub-harmonics beyond specified frequency range. Specifications are typical when I/Q modulation is on.
2. Performance is typical for spurs at frequencies above the maximum operating frequency of the instrument. Specifications apply for CW mode, without modulation. In ramp sweep mode (Option 007), performance is typical for offsets > 1 MHz.
3. Excluding external mechanical vibration.
4. This product may have some performance loss (non-harmonics up to -45 dBc at 1kHz offset) when exposed to 3 V/m ambient radio frequency EM fields in the range of 800 MHz – 5 GHz when tested per IEC 61000-4-3.
5. For offsets > 10 kHz.
6. Calculated from phase noise performance in CW mode only at +10 dBm. For other frequencies, data rates, or bandwidths, please contact your sales representative.

| Option UNX carrier frequency | SONET/SDH data rates | RMS jitter bandwidth | Unit intervals (μ UI) | Time (fs) | | |
|---|----------------------------|----------------------|----------------------------|------------------|-------------------|--------------------|
| 155 MHz | 155 MB/s | 100 Hz to 1.5 MHz | 23 | 151 | | |
| 622 MHz | 622 MB/s | 1 kHz to 5 MHz | 19 | 30 | | |
| 2.488 GHz | 2488 MB/s | 5 kHz to 20 MHz | 56 | 22 | | |
| 9.953 GHz | 9953 MB/s | 10 kHz to 80 MHz | 152 | 15 | | |
| 39.812 GHz | 39812 MB/s | 40 kHz to 320 MHz | 626 | 16 | | |
| Option UNY carrier frequency | SONET/SDH data rates | RMS jitter bandwidth | Unit intervals (μ UI) | Time (fs) | | |
| 155 MHz | 155 MB/s | 100 Hz to 1.5 MHz | 21 | 130 | | |
| 622 MHz | 622 MB/s | 1 kHz to 5 MHz | 22 | 35 | | |
| 2.488 GHz | 2488 MB/s | 5 kHz to 20 MHz | 53 | 21 | | |
| 9.953 GHz | 9953 MB/s | 10 kHz to 80 MHz | 96 | 10 | | |
| 39.812 GHz | 39812 MB/s | 40 kHz to 320 MHz | 518 | 13 | | |
| SSB phase noise (dBc/Hz) (CW) ¹ | | | | | | |
| Frequency | 20 kHz offset from carrier | | | | | |
| | Spec | Typical | | | | |
| 250 kHz to 250 MHz | -130 | -134 | | | | |
| > 250 to 500 MHz | -134 | -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 | | | | |
| > 20 to 28.5 GHz | -100 | -104 | | | | |
| > 28.5 GHz | -96 | -100 | | | | |
| Option UNX: absolute SSB phase noise (dBc/Hz) (CW) ^{2,3} | | | | | | |
| Frequency | Offset from carrier | | | | | |
| | 1 Hz spec (typ) | 10 Hz spec (typ) | 100 Hz spec (typ) | 1 kHz spec (typ) | 10 kHz spec (typ) | 100 kHz spec (typ) |
| 250 kHz to 250 MHz | -58 (-66) | -87 (-94) | -104 (-120) | -121 (-128) | -128 (-132) | -130 (-133) |
| > 250 to 500 MHz | -61 (-72) | -88 (-98) | -108 (-118) | -125 (-132) | -132 (-136) | -136 (-141) |
| > 500 MHz to 1 GHz | -57 (-65) | -84 (-93) | -101 (-111) | -121 (-130) | -130 (-134) | -130 (-135) |
| > 1 to 2 GHz | -51 (-58) | -79 (-86) | -96 (-106) | -115 (-124) | -124 (-129) | -124 (-129) |
| > 2 to 3.2 GHz | -46 (-54) | -74 (-82) | -92 (-102) | -111 (-120) | -120 (-124) | -120 (-124) |
| > 3.2 to 10 GHz | -37 (-44) | -65 (-72) | -81 (-92) | -101 (-109) | -110 (-114) | -110 (-115) |
| > 10 to 20 GHz | -31 (-38) | -59 (-66) | -75 (-87) | -95 (-106) | -104 (-107) | -104 (-109) |
| > 20 to 28.5 GHz | -25 (-34) | -56 (-62) | -72 (-83) | -92 (-102) | -100 (-103) | -100 (-105) |
| > 28.5 to 44 GHz | -20 (-30) | -51 (-58) | -68 (-77) | -88 (-97) | -96 (-99) | -96 (-101) |

1. Phase noise specifications are warranted from 15 to 35°C excluding external mechanical vibration. Measured at +10 dBm or maximum specified output power, whichever is less.
2. Phase noise specifications are warranted from 15 to 35°C. Excluding external mechanical vibration. Option UNY specifications at 1 kHz offset apply from 25 to 35°C.
3. Measured at +10 dBm or maximum specified power, whichever is less.

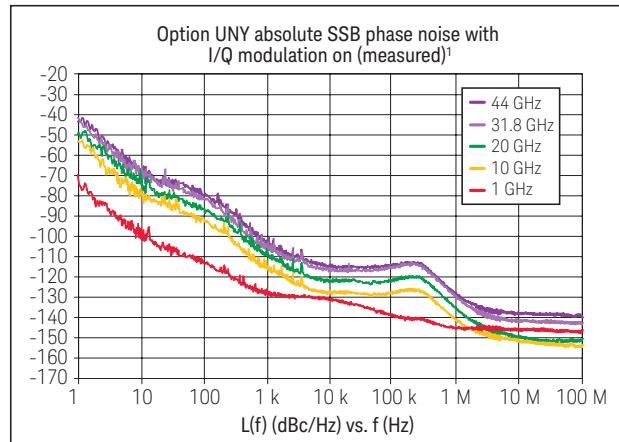
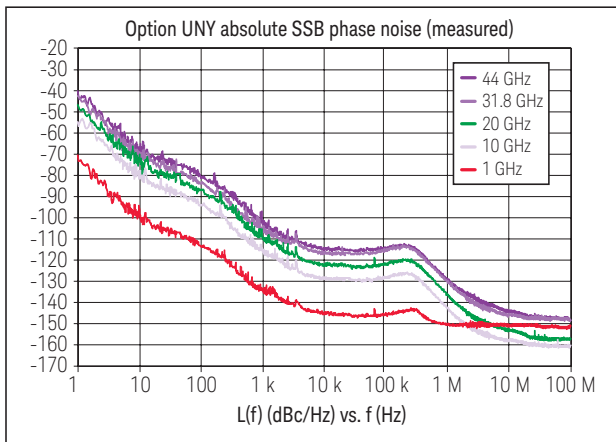
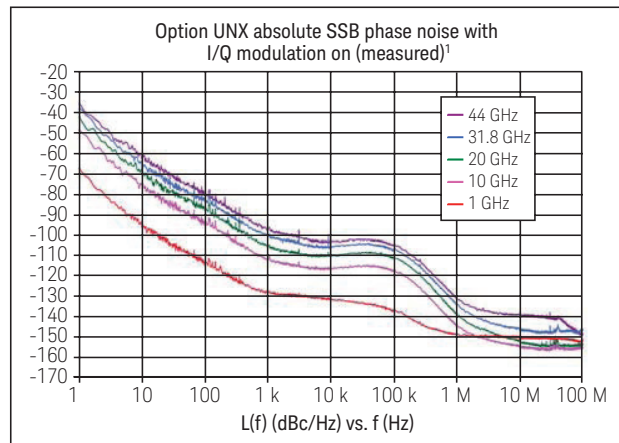
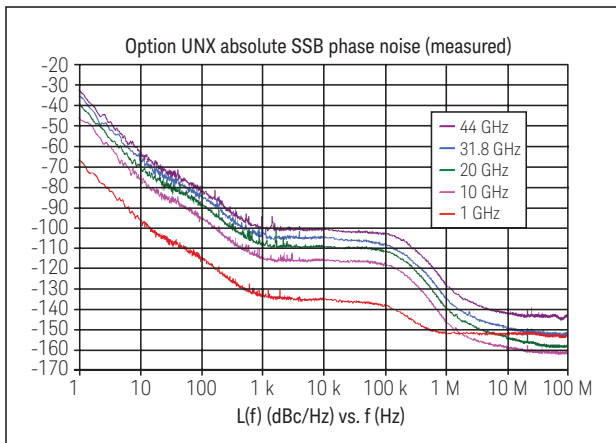
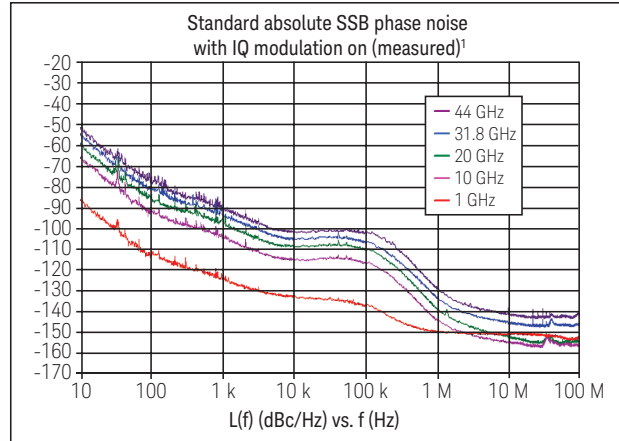
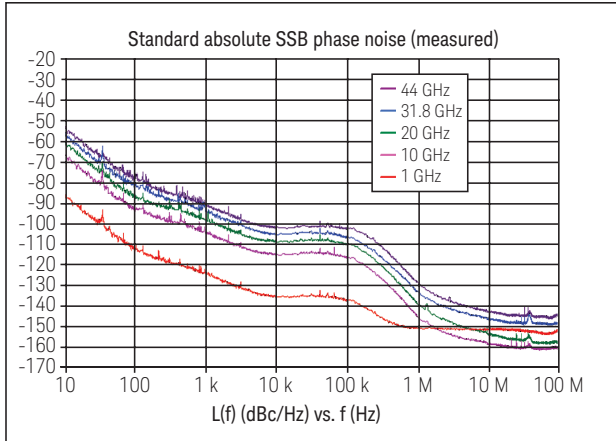
| Option UNY: absolute SSB phase noise (dBc/Hz) (CW) ^{1,2} | | | | | | |
|---|---|------------------|-------------------|------------------|-------------------|--------------------|
| Frequency | Offset from carrier, optimized for less than 150 kHz (mode 1) | | | | | |
| | 1 Hz spec (typ) | 10 Hz spec (typ) | 100 Hz spec (typ) | 1 kHz spec (typ) | 10 kHz spec (typ) | 100 kHz spec (typ) |
| 250 kHz to 250 MHz | -64 (-70) | -92 (-98) | -115 (-125) | -123 (-135) | -138 (-144) | -141 (-144) |
| > 250 to 500 MHz | -67 (-77) | -93 (-101) | -111 (-116) | -125 (-132) | -138 (-144) | -142 (-147) |
| > 500 MHz to 1 GHz | -62 (-69) | -91 (-99) | -105 (-111) | -121 (-128) | -138 (-143) | -138 (-144) |
| > 1 to 2 GHz | -57 (-63) | -86 (-90) | -100 (-106) | -115 (-121) | -133 (-138) | -133 (-139) |
| > 2 to 3.2 GHz | -52 (-58) | -81 (-84) | -96 (-102) | -111 (-117) | -128 (-134) | -128 (-134) |
| > 3.2 to 10 GHz | -43 (-49) | -72 (-76) | -85 (-91) | -101 (-107) | -120 (-126) | -120 (-125) |
| > 10 to 20 GHz | -37 (-43) | -66 (-70) | -79 (-85) | -95 (-101) | -114 (-121) | -114 (-119) |
| > 20 to 28.5 GHz | -31 (-37) | -60 (-66) | -73 (-79) | -89 (-95) | -108 (-113) | -108 (-113) |
| > 28.5 to 44 GHz | -26 (-32) | -54 (-60) | -68 (-73) | -84 (-90) | -102 (-107) | -102 (-107) |

| Option UNX: residual SSB phase noise (dBc/Hz) (CW) ^{1,2} | | | | | | |
|---|---------------------|------------------|-------------------|------------------|-------------------|--------------------|
| Frequency | Offset from carrier | | | | | |
| | 1 Hz spec (typ) | 10 Hz spec (typ) | 100 Hz spec (typ) | 1 kHz spec (typ) | 10 kHz spec (typ) | 100 kHz spec (typ) |
| 250 kHz to 250 MHz | (-94) | -100 (-107) | -110 (-118) | -120 (-126) | -128 (-132) | -130 (-133) |
| > 250 to 500 MHz | (-101) | -105 (-112) | -115 (-122) | -124 (-131) | -132 (-136) | -136 (-141) |
| > 500 MHz to 1 GHz | (-94) | -100 (-107) | -110 (-118) | -120 (-126) | -130 (-134) | -130 (-134) |
| > 1 to 2 GHz | (-89) | -96 (-101) | -104 (-112) | -114 (-120) | -124 (-129) | -124 (-129) |
| > 2 to 3.2 GHz | (-85) | -92 (-97) | -100 (-108) | -110 (-116) | -120 (-124) | -120 (-124) |
| > 3.2 to 10 GHz | (-74) | (-87) | (-98) | (-106) | (-114) | (-115) |

| Option UNY: residual SSB phase noise (dBc/Hz) (CW) ^{1,2} | | | | | | |
|---|---|------------------|-------------------|------------------|-------------------|--------------------|
| Frequency | Offset from carrier, optimized for less than 150 kHz (mode 1) | | | | | |
| | 1 Hz spec (typ) | 10 Hz spec (typ) | 100 Hz spec (typ) | 1 kHz spec (typ) | 10 kHz spec (typ) | 100 kHz spec (typ) |
| 250 kHz to 250 MHz | (-94) | -100 (-107) | -110 (-118) | -123 (-135) | -138 (-144) | -141 (-144) |
| > 250 to 500 MHz | (-101) | -105 (-112) | -115 (-122) | -124 (-130) | -138 (-144) | -140 (-147) |
| > 500 MHz to 1 GHz | (-94) | -100 (-108) | -110 (-118) | -120 (-126) | -135 (-142) | -135 (-145) |
| > 1 to 2 GHz | (-89) | -96 (-101) | -104 (-112) | -115 (-121) | -133 (-138) | -133 (-139) |
| > 2 to 3.2 GHz | (-85) | -92 (-97) | -100 (-108) | -111 (-117) | -128 (-134) | -128 (-134) |
| > 3.2 to 10 GHz | (-74) | (-87) | (-98) | (-104) | (-126) | (-125) |

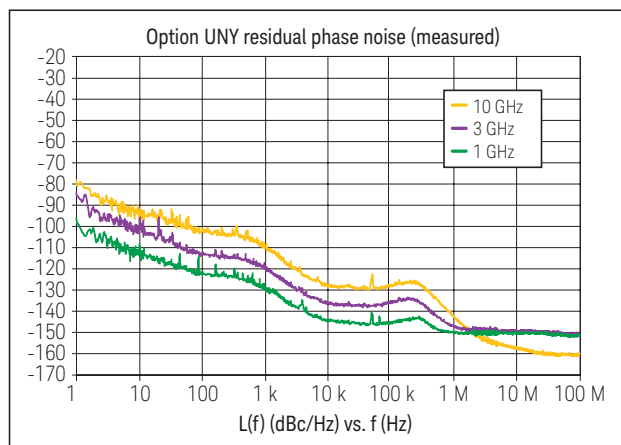
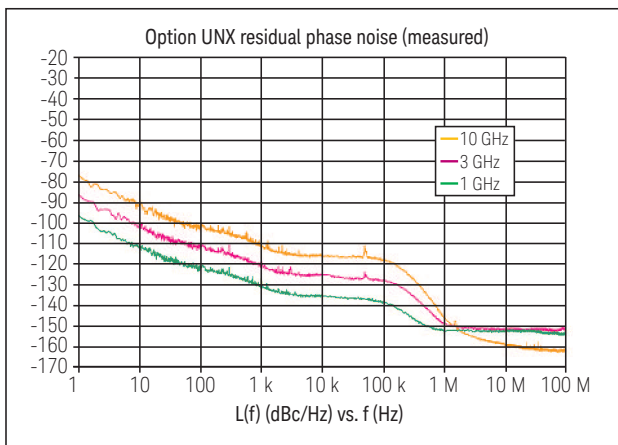
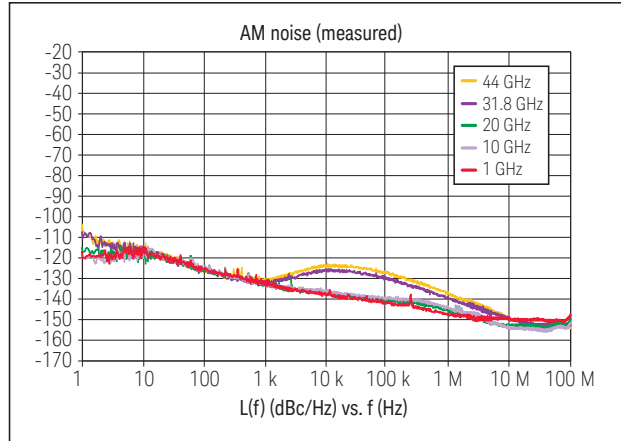
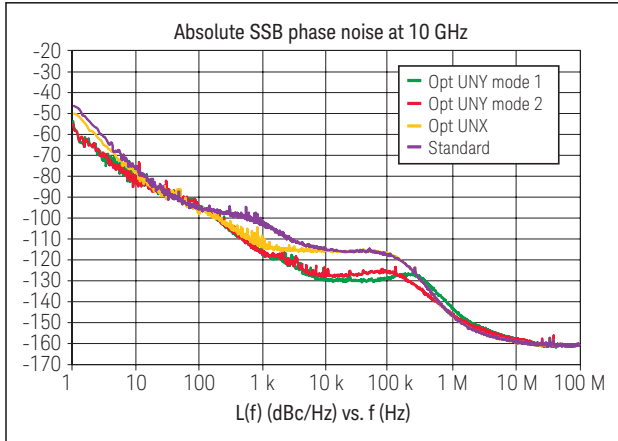
1. Phase noise specifications are warranted from 15 to 35°C. Excluding external mechanical vibration. Option UNY specifications at 1 kHz offset apply from 25 to 35°C.

2. Measured at +10 dBm or maximum specified power, whichever is less.



Measured phase noise (data collected with the E5500 and plotted without spurs)
 Option UNY phase noise optimized for offsets less than 150 kHz (mode 1)

1. I/Q modulator attenuator set to auto. External I/Q input level $\sqrt{I^2 + Q^2} = 0.5 V_{rms}$.



Measured phase noise (data collected with the E5500 and plotted without spurs)
 Option UNY phase noise optimized for offsets less than 150 kHz (mode 1)

| Frequency modulation (Option UNT) | | |
|--|---|----------------------|
| Maximum deviation ¹ (normal mode) | Frequency | Max deviation |
| | 250 kHz to 250 MHz | 2 MHz |
| | > 250 to 500 MHz | 1 MHz |
| | > 500 MHz to 1 GHz | 2 MHz |
| | > 1 GHz to 2 GHz | 4 MHz |
| | > 2 GHz to 3.2 GHz | 8 MHz |
| | > 3.2 GHz to 10 GHz | 16 MHz |
| | > 10 GHz to 20 GHz | 32 MHz |
| | > 20 GHz to 28.5 GHz | 48 MHz |
| | > 28.5 GHz to 44 GHz | 80 MHz |
| Resolution | 0.1% of deviation or 1 Hz, whichever is greater | |
| Deviation accuracy | < $\pm(3.5\%$ of FM deviation + 20 Hz) (1 kHz rate, deviations < N x 800 kHz) | |
| Modulation frequency response ² (at 100 kHz deviation) | | |
| Path [coupling] | 1 dB bandwidth | 3 dB bandwidth (typ) |
| Standard or Option UNX | | |
| FM path 1 [DC] | DC to 100 kHz | DC to 10 MHz |
| FM path 2 [DC] | DC to 100 kHz | DC to 1 MHz |
| FM path 1 [AC] | 20 Hz to 100 kHz | 5 Hz to 10 MHz |
| FM path 2 [AC] | 20 Hz to 100 kHz | 5 Hz to 1 MHz |
| Option UNY | | |
| FM path 1 [DC] | DC to 100 kHz | DC to 9.3 MHz |
| FM path 2 [DC] | DC to 100 kHz | DC to 1 MHz |
| FM path 1 [AC] | 20 Hz to 100 kHz | 5 Hz to 9.3 MHz |
| FM path 2 [AC] | 20 Hz to 100 kHz | 5 Hz to 1 MHz |
| DC FM ³ carrier offset | $\pm 0.1\%$ of set deviation + (N x 8 Hz) | |
| Distortion | < 1% (1 kHz rate, deviations < N x 800 kHz) | |
| Sensitivity | $\pm 1 V_{\text{peak}}$ 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. To avoid distortion and clipping, signals applied with any combination of FM1, FM2, or FM1+FM2 should not exceed $1 V_{\text{peak}}$. | |

1. Through any combination of path1, path2, or path1 + path2.
2. Specifications apply in CW and list/step sweep modes. During ramp sweep operation (Option 007), 3 dB bandwidth is typically 50 kHz to 10 MHz (FM1 path), and 50 kHz to 1 MHz (FM2 path).
3. At the calibrated deviation and carrier frequency, within 5°C of ambient temperature at time of user calibration.

| Phase modulation (Option UNT) | | | | |
|--|---|-----------------|----------------|--------|
| Maximum deviation ¹ | | | | |
| Standard or Option UNX | Frequency | 100 kHz BW mode | 1 MHz BW mode | |
| | 250 kHz to 250 MHz | 20 rad | 2 rad | |
| | > 250 to 500 MHz | 10 rad | 1 rad | |
| | > 500 MHz to 1 GHz | 20 rad | 2 rad | |
| | > 1 GHz to 2 GHz | 40 rad | 4 rad | |
| | > 2 GHz to 3.2 GHz | 80 rad | 8 rad | |
| | > 3.2 GHz to 10 GHz | 160 rad | 16 rad | |
| | > 10 GHz to 20 GHz | 320 rad | 32 rad | |
| | > 20 GHz to 28.5 GHz | 480 rad | 48 rad | |
| | > 28.5 GHz to 44 GHz | 800 rad | 80 rad | |
| Option UNY | Frequency | 1 MHz BW mode | 10 MHz BW mode | |
| | 250 kHz to 250 MHz | 2 rad | 0.2 rad | |
| | > 250 to 500 MHz | 1 rad | 0.1 rad | |
| | > 500 MHz to 1 GHz | 2 rad | 0.2 rad | |
| | > 1 GHz to 2 GHz | 4 rad | 0.4 rad | |
| | > 2 GHz to 3.2 GHz | 8 rad | 0.8 rad | |
| | > 3.2 GHz to 10 GHz | 16 rad | 1.6 rad | |
| | > 10 GHz to 20 GHz | 32 rad | 3.2 rad | |
| | > 20 GHz to 28.5 GHz | 48 rad | 4.8 rad | |
| | > 28.5 GHz to 44 GHz | 80 rad | 8.0 rad | |
| Resolution | 0.1% of set deviation | | | |
| Deviation accuracy | < ±5% of deviation + 0.01 radians (1 kHz rate, with 1 MHz BW mode for Option UNY or 100 kHz BW mode otherwise) | | | |
| Modulation frequency response ² | Rates (3 dB bandwidth) | Standard | UNX | UNY |
| 100 kHz BW mode | DC to 100 kHz | Normal | Normal | n/a |
| 1 MHz BW mode | DC to 1 MHz (typ) ³ | High | High | Normal |
| 10 MHz BW mode | DC to 10 MHz (typ) | n/a | n/a | High |
| Distortion | | | | |
| Standard or Option UNX | < 1% (1 kHz rate, total harmonic distortion (THD), deviation < N x 80 rad, 100 kHz BW mode) | | | |
| Option UNY | < 1% (1 kHz rate, total harmonic distortion (THD), deviation < N x 8 rad, 1 MHz 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 is limited to a maximum rate of 1 MHz, the φM2 path must be set to a deviation less than φM1; to avoid distortion and clipping, signals applied with any combination of φM1, φM2, or φM1 + φM2 should not exceed 1 V _{peak} . | | | |

1. Through any combination of path1, path2, or path1 + path2.
2. Specifications apply in CW and list/step sweep modes. During ramp sweep operation (Option 007), 3 dB bandwidth is typically 50 kHz to 1 MHz (high BW mode).
3. Path 1 is useable to 4 MHz for external inputs less than 0.3 V_{peak}.

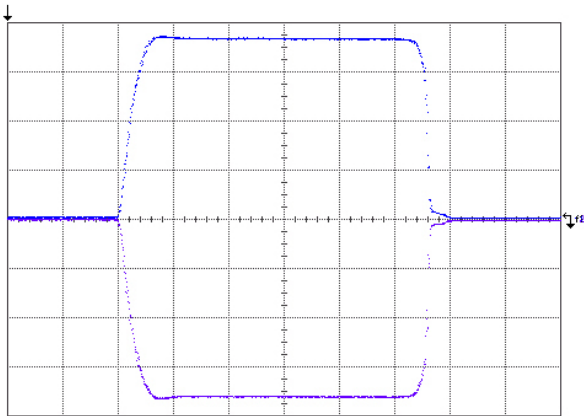
| Amplitude modulation ¹ (Option UNT) (typical) | | |
|--|--|---|
| Depth | Linear mode | Exponential (log) mode (downward modulation only) |
| Maximum | | |
| ALC on | > 90% | > 20 dB |
| ALC off with power search ² or ALC on with deep AM ³ | > 95% | > 40 dB |
| Settable | 0 to 100% | 0 to 40 dB |
| Sensitivity | 0 to 100%/V | 0 to 40 dB/V |
| Resolution | 0.1% | 0.01 dB |
| Accuracy (1 kHz rate) | < ±(6% of setting + 1%) | < ±(2% of setting + 0.2 dB) |
| External input (selectable polarity) | | |
| Sensitivity for indicated depth | 1 V _{peak} | -1 V or +1 V |
| Maximum allowable | ±1 V | ±3.5 V |
| Rates (3 dB bandwidth, 30% depth) | | |
| DC coupled | 0 to 100 kHz | |
| AC coupled | 10 Hz to 100 kHz (useable to 1 MHz) | |
| Distortion (1 kHz rate, linear mode, total harmonic distortion (THD)) | | |
| 30% AM | < 1.5% | |
| 60% AM | < 2% | |
| 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 | |
| External modulation inputs (Ext1 & Ext2) (Option UNT) | | |
| Modulation types | AM, FM, and φM | |
| Input impedance | 50 or 600 Ω (nom), switched | |
| High/low indicator | 100 Hz to 10 MHz BW, activated when input level error exceeds 3% (nom), ac coupled inputs only | |
| Internal modulation source (Option UNT) | | |
| Dual function generators | Provide two independent signals (internal1 and internal2) for use with AM, FM, φM, or LF out | |
| Waveforms | Sine, square, positive ramp, negative ramp, triangle, Gaussian noise, uniform noise, swept sine, dual sine ⁴ | |
| 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 φM | |
| Amplitude | 0 to 3 V _{peak} (nom) into 50 Ω | |
| Output impedance | 50 Ω (nom) | |
| Swept sine mode | (frequency, phase continuous) | |
| Operating modes | Triggered or continuous sweeps | |
| Frequency range | 1 Hz to 1 MHz | |
| Sweep rate | 0.5 to 100,000 sweeps/s, equivalent to sweep times 10 μs to 2 s | |
| Resolution | 0.5 Hz (0.5 sweep/s) | |

1. AM specifications are typical. For carrier frequencies below 2 MHz, AM is useable but not specified. Unless otherwise stated, specifications apply with ALC on, deep AM off, and envelope peaks within ALC operating range (-15 dBm to maximum specified power, excluding step attenuator setting).
2. ALC off is used for narrow pulse modulation and/or high AM depths, with envelope peaks below ALC operating range. Carrier power level will be accurate after a power search is executed.
3. ALC on with deep AM provides high AM depths together with closed-loop internal leveling. This mode must be used with a repetitive AM waveform (frequency > 10 Hz) with peaks > -5 dBm (nominal, excluding step-attenuator setting).
4. Internal2 is not available when using swept sine or dual sine modes.

| Wideband AM | | |
|---|---------------------------|---------------------------|
| Rate (typical 1 dB bandwidth) | | |
| ALC on | 1 kHz to 80 MHz | |
| ALC off | DC to 80 MHz | |
| External I input | | |
| Sensitivity | 0.5 V = 100% | |
| Input impedance | 50 Ω (nom) | |
| Pulse modulation ¹ (Option UNU or UNW) | | |
| On/off ratio | Option UNU | Option UNW |
| | 80 dB (typical) | 80 dB |
| Rise/fall times (Tr, Tf) | | |
| 50 to 400 MHz | 10 ns (typical) | 15 ns (10 ns typical) |
| > 400 MHz | 6 ns (typical) | 10 ns (6 ns typical) |
| Minimum pulse width | | |
| ALC on | 1 μs | 1 μs |
| ALC off | | |
| 50 to 400 MHz | 150 ns | 30 ns |
| > 400 MHz | 150 ns | 20 ns |
| Repetition frequency | | |
| ALC on | 10 Hz to 500 kHz | 10 Hz to 500 kHz |
| ALC off | dc to 3 MHz | dc to 10 MHz |
| Level accuracy (relative to CW) | | |
| ALC on ² | ±0.5 dB (0.15 dB typical) | ±0.5 dB (0.15 dB typical) |
| ALC off with power search ³ | | |
| 50 MHz to 3.2 GHz | ±0.7 dB (typical) | ±0.7 dB (typical) |
| > 3.2 GHz | ±0.5 dB (typical) | ±0.5 dB (typical) |
| Width compression (RF width relative to video out) | | |
| | ±5 ns (typical) | ±5 ns (typical) |
| Video feed-through ⁴ | | |
| 50 to 250 MHz | < 3% (typical) | < 3% (typical) |
| > 250 to 400 MHz | < 11% (typical) | < 11% (typical) |
| > 0.4 to 3.2 GHz | < 6% (typical) | < 6% (typical) |
| > 3.2 GHz | < 2 mV pk-pk (typ) | < 2 mV pk-pk (typ) |
| Video delay (ext input to video) | 50 ns (nom) | 50 ns (nom) |

1. With ALC off, specs apply after the execution of power search. Specifications apply with Atten Hold Off (default mode for instruments with attenuator), or ALC level between -5 and +10 dBm or maximum specified power, whichever is lower. Below 50 MHz, pulse modulation is useable; however performance is not warranted.
2. ±0.8 dB for pulse width ≤ 1 μs with RF frequency ≤ 100 MHz
3. Power search is a calibration routine that improves level accuracy with ALC off. The instrument microprocessor momentarily closes the ALC loop to find the modulator drive setting necessary to make the quiescent RF level equal to an entered value, then opens the ALC loop while maintaining that modulator drive setting. When executing power search, RF power will be present for typically 10 to 50 ms; the step attenuator can be set to automatically switch to maximum attenuation to protect sensitive devices. Power search can be configured to operate either automatically or manually at the carrier frequency, or over a user-definable frequency range. Power search may not operate above the maximum specified output power.
4. With step attenuator in 0 dB position. Above 3.2 GHz, video feed-through decreases with step attenuator setting. Below 3.2 GHz, video feed-through is expressed as a percentage of RF output level.

| RF delay (video to RF output) | Option UNU | Option UNW |
|-------------------------------|-------------------|-------------------|
| 50 to 250 MHz | 35 ns (nominal) | 35 ns (nominal) |
| > 0.25 to 3.2 GHz | 25 ns (nominal) | 25 ns (nominal) |
| > 3.2 GHz | 30 ns (nominal) | 30 ns (nominal) |
| Pulse overshoot | < 10% (typ) | < 10% (typ) |
| Input level | +1 V = RF on | +1 V = RF on |
| Input impedance | 50 Ω (nom) | 50 Ω (nom) |



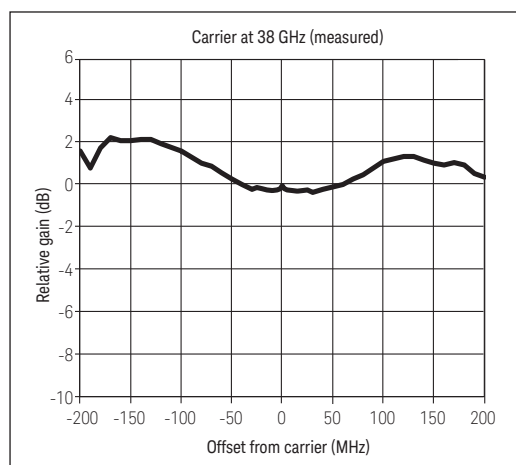
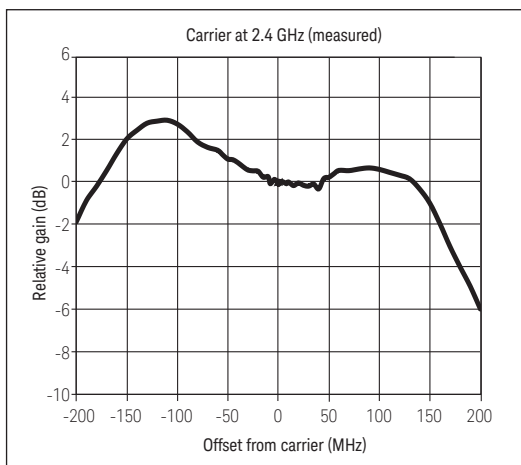
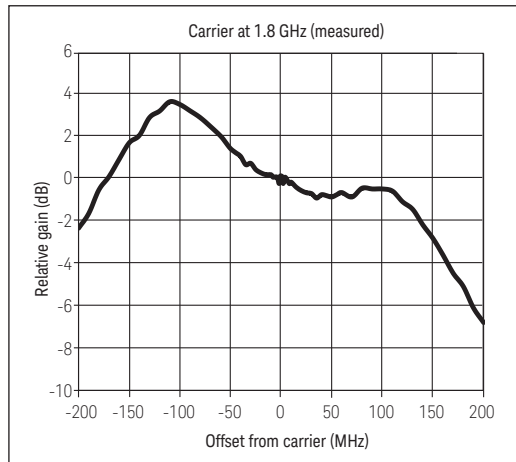
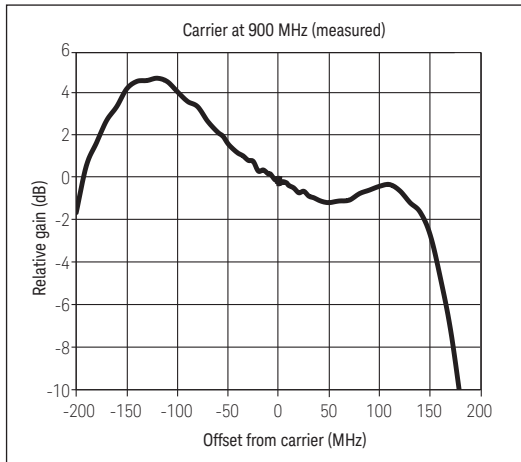
Measured pulse modulation envelope
Frequency = 9 GHz, amplitude = 10 dBm, ALC off, 10 ns/div

| Internal pulse generator (Option UNU or UNW) | |
|---|--|
| 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) |
| T_d video delay (variable) | |
| T_w video pulse width (variable) | |
| T_p Pulse period (variable) | |
| T_m RF delay | |
| T_{rf} RF pulse width | |
| T_r RF pulse rise time | |
| T_f RF pulse fall time | |
| V_{or} pulse overshoot | |
| V_f video feedthrough | |
| Simultaneous modulation | |
| All modulation types (FM, AM, \square M, pulse and I/Q) may be simultaneously enabled except: FM with \square M, linear AM with exponential AM, and wideband AM with I/Q. AM, FM, and \square 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. | |

Vector modulation ¹ (Standard I/Q inputs)

External I/Q inputs

| | |
|--------------------------|---|
| Input impedance switched | 50 or 600 Ω (nom) |
| Input range ² | Minimum 0.1 V _{rms} ³ , maximum 1 V _{peak} |
| Flatness | ± 1 dB within ± 40 MHz of carrier (with ALC off) (typ) |



I/Q frequency response (measured) ³

RF path filters

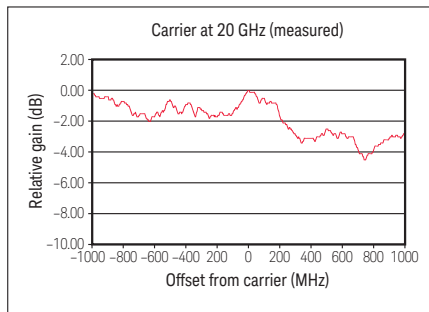
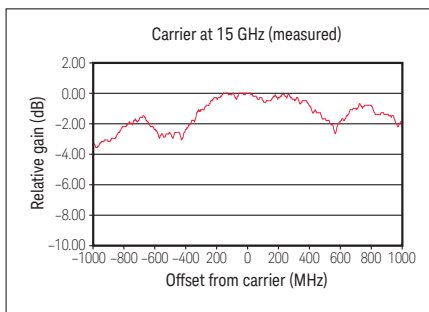
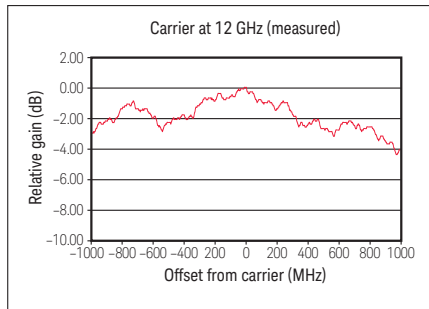
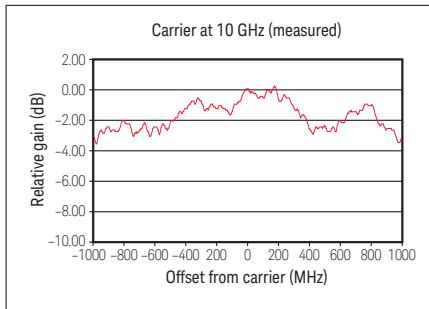
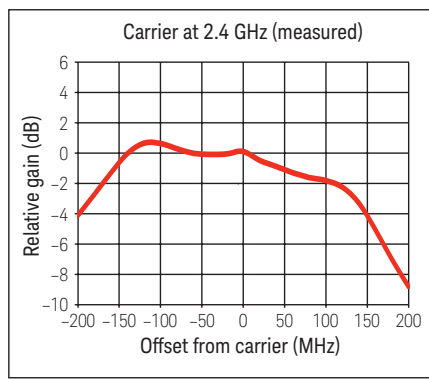
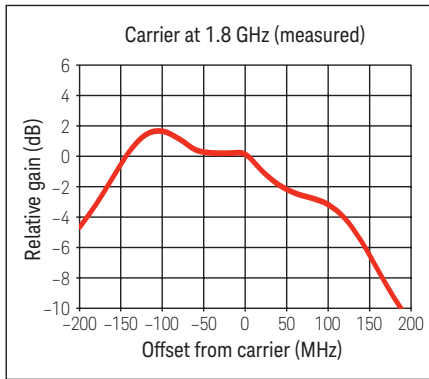
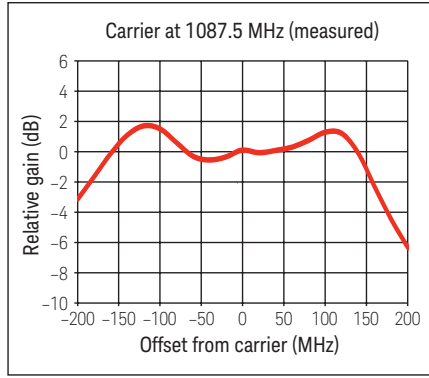
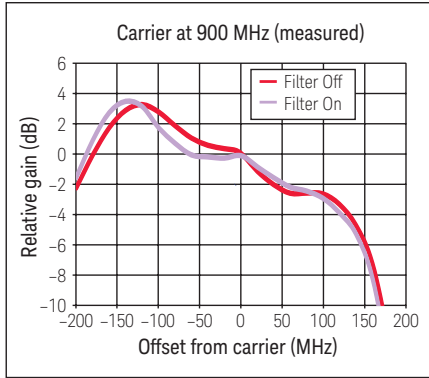
| Carrier frequency | Nominal filter cutoff |
|---------------------|--------------------------------|
| ≤ 250 MHz | 300 MHz low-pass filter |
| > 250 to 396 MHz | 220 to 420 MHz bandpass filter |
| > 396 to 628 MHz | 350 to 650 MHz bandpass filter |
| > 628 to 1000 MHz | 1040 MHz low-pass filter |
| > 1.0 to 1.5 GHz | 1.6 GHz low-pass filter |

1. With Option 007, vector modulation is not useable in ramp sweep mode. With Option 1EH, specifications apply with filters off.
2. 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 $\sqrt{(I^2 + Q^2)} = 0.1 V_{rms}$.
3. Sine wave response, measured with input level = 0.5 V_{rms} on one channel, and ALC off. For carrier frequencies at or below 1.5 GHz, modulation frequency response within ± 150 MHz of carrier may be limited by RF chain filtering.

| 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 | ±10° range (typ) |
| Low pass filter | Selectable 40 MHz or through path |
| I/Q baseband outputs | |
| Differential | I, I, \bar{Q} , \bar{Q} |
| Single ended | I, Q |
| Frequency range | DC to 40 MHz |
| Output voltage into 50 Ω | 1.5 V _{peak-to-peak} (typ) |
| DC offset adjustments | ±3 V |
| DC offset resolution | 1 mV |
| Low pass filter | Selectable 40 MHz or through path |

| Wideband external differential I/Q inputs ¹ (Option 016) | | |
|---|---------------------|----------------------------|
| Input | 250 kHz to 3.2 GHz | 3.2 to 44 GHz |
| Input (baseband) frequency range | DC to 130 MHz (nom) | DC to 1.0 GHz ² |
| Input impedance | 50 Ω (nom) | 50 Ω (nom) |
| Recommended input level | -1 dBm | 0 dBm (nom) |
| Maximum input voltage | ±1 V _{DC} | ±1 V _{DC} |
| I/Q offset adjustments | ±50% | ±50% |
| I/Q quadrature skew | ±10 degrees | ±10 degrees (nom) |

1. With Option 007, vector IQ modulation is not useable in ramp sweep mode.
2. Modulation frequency response within ±1 GHz of the carrier frequency may be limited by the RF chain cutoff frequencies.



I/Q frequency response (measured) ¹

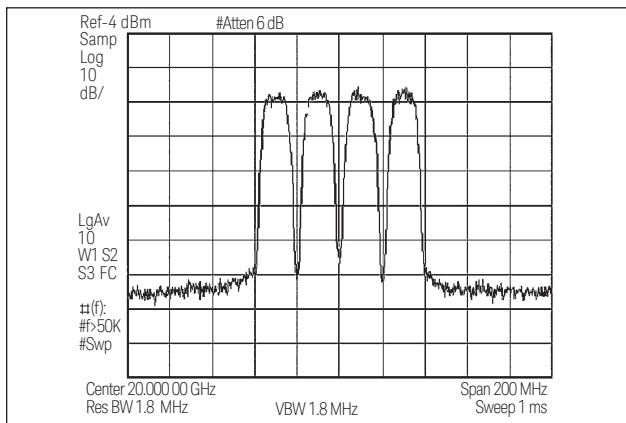
1. Sine wave response, measured with input level = 0.2 V_{rms} on one channel, and ALC off. Modulation frequency response may be limited by RF chain filtering. For operation near a filter edge, filters can be bypassed using software commands to increase modulation bandwidth.

| RF path filters ¹ | |
|------------------------------|-----------------------------------|
| Carrier frequency | Nominal filter cutoff frequencies |
| > 3.2 to 5 GHz | 5.5 GHz low-pass filter |
| > 5 to 8 GHz | 8.9 GHz low-pass filter |
| > 8 to 12.8 GHz | 13.9 GHz low-pass filter |
| > 12.8 to 20 GHz | 22.5 GHz low-pass filter |
| > 20 to 24 GHz | 19.6 to 24.5 GHz bandpass filter |
| > 24 to 28.5 GHz | 23.5 to 29.0 GHz bandpass filter |
| > 28.5 to 32 GHz | 28.0 to 32.5 GHz bandpass filter |
| > 32 to 36 GHz | 31.7 to 36.5 GHz bandpass filter |
| > 36 to 40 GHz | 35.5 to 40.4 GHz bandpass filter |
| > 40 to 44 GHz | 39.5 to 44.3 GHz bandpass filter |

| Internal 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/channel) |
| Length (non-volatile storage) | 1.2 gigasamples (GSa) on 8 GB removable flash memory (Option 009) |
| Waveform segments | |
| Segment length | 60 samples to 64 MSa |
| Maximum number of segments | 8,192 |
| Minimum memory allocation | 256 samples or 1 kbyte blocks |
| Waveform sequences | |
| Sequencing | Continuously repeating |
| Maximum number of sequences | 16,384 |
| Maximum segments/sequence | 32,768 |
| Maximum segment repetitions | 65,536 |

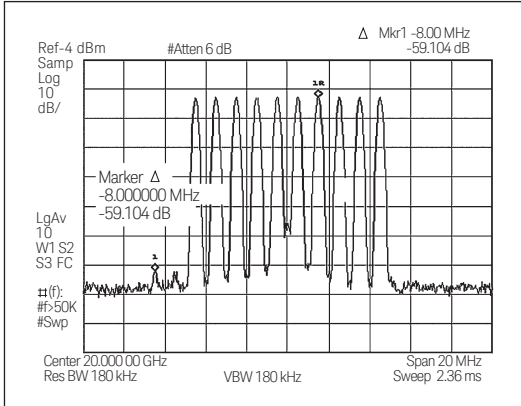
1. Modulation frequency response within ± 1 GHz of the carrier frequency may be limited by the RF chain cutoff frequencies. For operation near a filter edge, filters can be bypassed using software commands to increase modulation bandwidth.

| 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 sine wave] | |
| Harmonic distortion | 100 kHz to 2 MHz: < -65 dBc (typ) |
| Phase noise | < -127 dBc/Hz (typ) (baseband output of 10 MHz sine wave at 20 kHz offset) |
| IM performance | < -74 dB (typ) |
| 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 s 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 maximum 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 | |
| Types | |
| PSK | BPSK, QPSK, OQPSK, $\pi/4$ DQPSK, 8PSK, 16PSK, D8PSK |
| QAM | 4, 16, 32, 64, 128, 256 |
| FSK | Selectable: 2, 4, 8, 16 |
| MSK | Selectable phase deviation |
| Data | |
| | Random only |

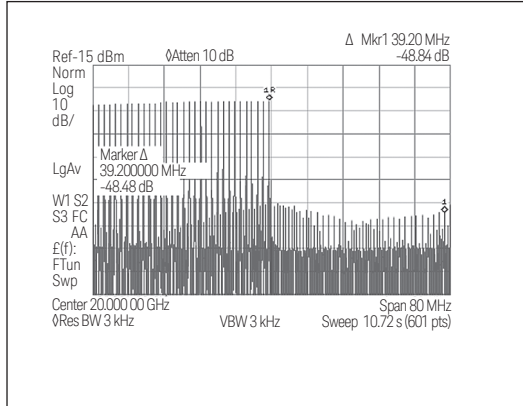


Four carriers with 64 QAM at 10 Msym/s with 20 MHz spacing (measured)

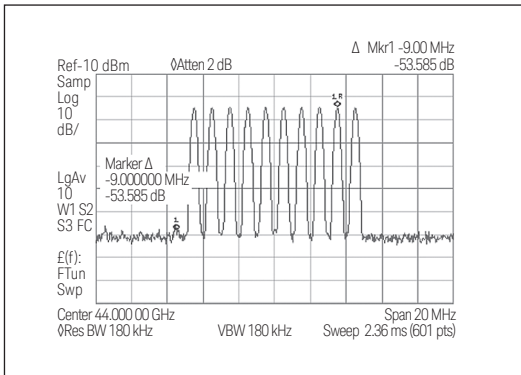
| Multitone | |
|-------------------------|--|
| Number of tones | 2 to 64, with selectable on/off state per tone |
| Frequency spacing | 100 Hz to 80 MHz |
| Phase (per tone) | Fixed or random |
| Power offset (per tone) | 0 to -40 dB |



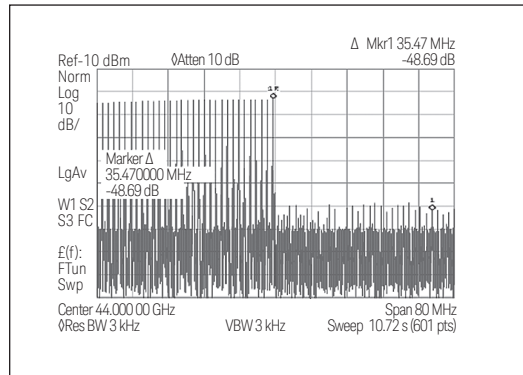
20 GHz multitone (measured)



20 GHz image rejection (measured)

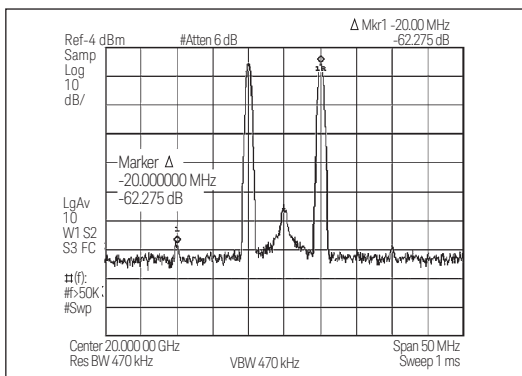


44 GHz multitone (measured)

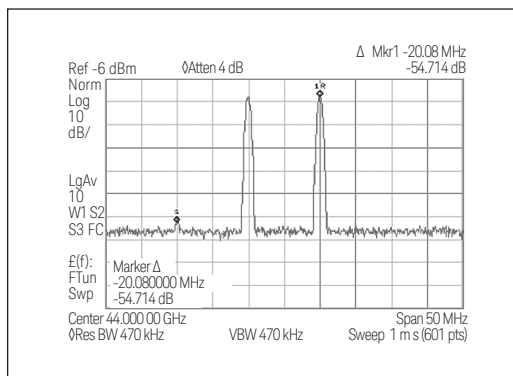


44 GHz image rejection (measured)

| Two-tone | |
|----------------------------|------------------------------|
| Frequency spacing | 100 Hz to 80 MHz |
| Alignment | Left, centered, or right |
| IM distortion ¹ | |
| 250 kHz to 3.2 GHz | < -45 dBc (typ) |
| > 3.2 GHz to 20 GHz | < -55 dBc (typ) ² |
| > 20 to 40 GHz | < -50 dBc (typ) |
| > 40 to 44 GHz | < -45 dBc (typ) |



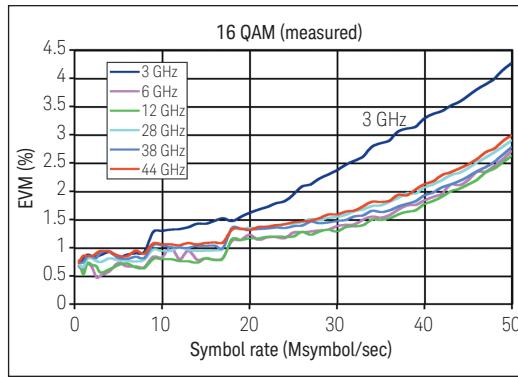
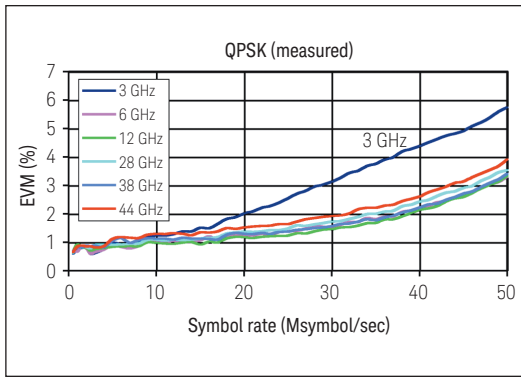
20 GHz two-tone (measured)



44 GHz two-tone (measured)

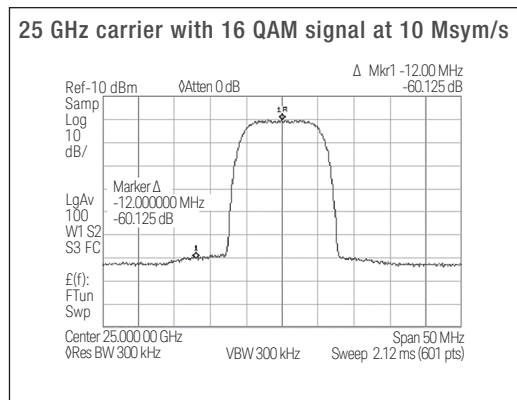
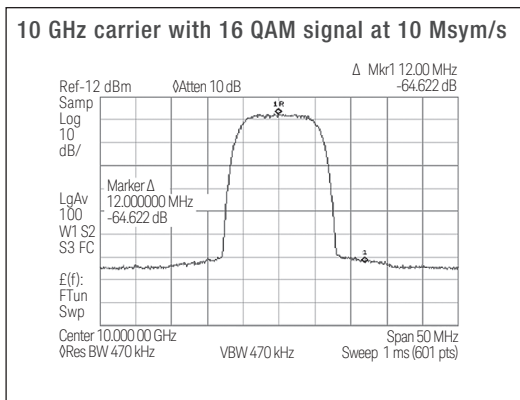
| Internal baseband generator, real-time mode (Option 602) | | |
|--|--|---------------------|
| Basic modulation types (custom format) | | |
| PSK | BPSK, QPSK, OQPSK, $\pi/4$ DQPSK, 8PSK, 16PSK, D8PSK | |
| MSK | User-defined phase offset from 0 to 100 ° | |
| QAM | 4, 16, 32, 64, 128, 256 | |
| FSK | Selectable: 2, 4, 8, 16 level symmetric, C4FM | |
| | User defined: Up to 16 custom deviation levels | |
| | Deviation resolution: 0.1 Hz | |
| | Symbol rate | Maximum deviation |
| | < 5 MHz | 4 times symbol rate |
| | 5 MHz to 50 MHz | 20 MHz |
| User-defined I/Q | Custom map of 256 unique values | |
| Vector accuracy ³ (Formats: BPSK, QPSK, 16-256 QAM [$\alpha = 0.3$, root Nyquist filter, symbol rate 4 Msym/s]) | | |
| EVM (% RMS) | Spec | (typ) |
| ≤ 20 GHz | < 1.2% | (< 0.8%) |
| > 20 to 32 GHz | < 1.3% | (< 0.9%) |
| > 32 to 44 GHz | < 1.4% | (< 0.9%) |
| Origin offset ⁴ | | (typ) |
| 250 kHz to 3.2 GHz | | (-45 dBc) |
| 3.2 to 44 GHz | | (-50 dBc) |

1. RF power ≤ -1 dBm (Option 513, 520) or ≤ -3 dBm (Option 532, 544). When external inputs are used, vector accuracy is equivalent to internal performance after system calibration.
2. < -50 dBc (typ) for two tone frequency spacing of 80 MHz
3. Valid after executing I/Q calibration when instrument is maintained within $\pm 5^\circ\text{C}$ of calibration temperature. RF power < 5 dBm (Option 513, 520) or < 3 dBm (Option 532, 544). When external inputs are used, vector accuracy is equivalent to internal performance, after system calibration.
4. Valid after executing I/Q calibration when instrument is maintained at the calibration temperature.



EVM (measured)

| FIR filter | |
|-------------------------------|---|
| Selectable | Nyquist, root Nyquist, Gaussian, rectangular, α : 0 to 1, $B_p T$: 0.1 to 1 |
| Custom FIR | 16-bit resolution, up to 64 symbols long, automatically resampled to 1024 coefficients (maximum) For > 32 to 64 symbol filter: symbol rate \leq 12.5 MHz. For > 16 to 32 symbol filter: symbol rate \leq 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/second and a maximum of 8 bits per symbol; modulation quality may be degraded at high symbol rates |
| Baseband reference frequency | |
| Input | ECL, CMOS, TTL compatible, 50 Ω AC coupled |
| Use | Data clock can be phase locked to an external reference. |
| 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 | 64 Mb (each bit uses an entire sample space) |
| Use | Non-standard framing |
| User file | |
| Max size | 6.4 Mb |
| Use | Continuous modulation or internally generated TDMA standard |
| Externally generated data | |
| Type | Serial data |
| Inputs | Data, data (bit) clock, symbol sync |
| Rate | Accepts data rates \pm 5% of specified data rate |
| Internal burst shape control | |
| Rise/fall time range | Up to 30 bits, varies with standards and bit rates |
| Rise/fall delay range | 0 to 63.5 bits, varies with standards and bit rates |



Spectral re-growth (measured)

| Calibrated AWGN (Option 403) | |
|--------------------------------|--|
| Type | Real-time, continuously calculated, and played using DSP |
| Modes of operation | Standalone or digitally added to signal played by arbitrary waveform or real-time baseband generator |
| Noise bandwidth | Arbitrary waveform mode: 50 kHz to 15 MHz |
| | Real-time mode: 50 kHz to 80 MHz |
| Crest factor | 16 dB |
| Randomness | Arbitrary waveform mode: 14, 15, 16, 17, 18, 19, or 20-bit pseudo-random waveform with fixed or random seed |
| | Repetition period: 0.4 ms to 2 s (dependent on noise BW and waveform length combination) |
| | Real-time mode: 89-bit pseudo-random generation |
| | Repetition period: 3 x 10 ⁹ years |
| Carrier-to-noise ratio formats | From front panel: C/N |
| Carrier-to-noise ratio formats | From Signal Studio Software: C/N, Eb/No, Ec/No |
| Remote programming | |
| Interfaces | GPIO (IEEE-488.2,1987) with listen and talk, RS-232, and 10BaseT LAN interface |
| Control languages | SCPI version 1997.0; completely code compatible with previous PSG signal generator models: E8241A E8244A E8251A E8254A E8247C E8257C The E8267D will emulate the applicable commands for the following Keysight signal generators, providing general compatibility with ATE systems: 8340-Series (8340/41B) 8360-Series (836xxB/L) 83700-Series (837xxB) 8662A/8663A 8643A/8644B 8664A/8665B Aeroflex 2040 |
| IEEE-488 functions | SH1, AH1, T6, TE0, L4, LE0, SR1, RL1, PP0, DC1, DT0, C0, E2 |
| Keysight I/O libraries | Keysight's I/O Library Suite ships with the E8267D to help you quickly establish an error-free connection between your PC and instruments—regardless of the vendor; it provides robust instrument control and works with the software development environment you choose |

| General specifications | |
|--|---|
| Power requirements | 100/120 VAC 50/60/400 Hz; or 220/240 VAC 50/60 Hz, (automatically selected); < 400 W typ, 650 W maximum |
| Operating temperature range | 0 to 55°C |
| Storage temperature range ¹ | -40 to 70°C |
| Altitude | 0 to 4600 m (15,000 ft.) |
| Humidity | Relative humidity – type tested at 95%, +40°C (non-condensing) |
| Environmental testing | Samples of this product have been tested in accordance with the Keysight Environmental Test Manual and verified to be robust against the environmental stresses of storage, transportation, and end-use; those stresses include but are not limited to temperature, humidity, shock, vibration, altitude, and power line conditions. Test methods are aligned with IEC 60068-2 and levels are similar to MIL-PRF-28800F Class 3. ² |
| ISO compliant | This family of signal generators is manufactured in an ISO-9001 registered facility in concurrence with Keysight's commitment to quality |
| EMC | Conforms to the immunity and emission requirements of IEC/EN 61326-1 including the conducted and radiated emission requirements of CISPR Pub 11 Group 1 Class A. Note: This product may have some performance loss (non-harmonics up to -45 dBc at 1kHz offset) when exposed to 3V/m ambient radio frequency EM fields in the range of 800 MHz - 5 GHz when tested per IEC 61000-4-3. |
| Acoustic noise | Normal: 53 dBA (nom) Worst case: 62 dBA (nom) ³ |
| Storage | Memory is shared by instrument states, user data files, sweep list files, and waveform sequences. There is 14 MB of flash memory available in the E8267D PSG. With Option 009, there is an additional 8 GB of storage. Depending on how the memory is used, a maximum of 1000 instrument states can be saved. |
| Security | Display blanking Memory clearing functions (See Application Note, "Security Features of Keysight Technologies Signal Generators," Part Number E4400-90621) With Option 009, all user-written files are stored on an 8 GByte removable flash memory card. |
| Compatibility | Keysight 83550 Series millimeter heads OML millimeter source modules VDI millimeter frequency extenders Keysight 8757D scalar network analyzers Keysight EPM/EPM-P 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 515 mm D (7" H x 16.8" W x 20.3" D) |
| Recommended calibration cycle | 24 months |

1. During storage below -20°C, instrument states may be lost.
2. As is the case with all signal generation equipment, phase noise specifications are not warranted in a vibrating environment.
3. This is louder than typical Keysight equipment: 60 dBA (nom).

Input/Output Descriptions

| Front panel connectors (All connectors are BNC female unless otherwise noted.) ¹ | |
|---|---|
| RF output | Output impedance 50 Ω (nom) |
| Options 513 and 520 | Precision APC-3.5 male, or Type-N female with Option 1ED |
| Options 532 and 544 | Precision 2.4 mm male; plus 2.4(f) – 2.4(f) mm and 2.4(f) – 2.9(f) mm adaptors |
| ALC input | Used for negative external detector leveling. Nominal input impedance 120 k Ω , 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 ϕ M. Nominal input impedance 50 or 600 Ω , damage levels are 5 V _{rms} and 10 V _{peak} |
| 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 $> +5.5$ V 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 $> +5.5$ V 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 $> +5.5$ V and < -0.5 V |

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

| Rear panel connectors (all connectors are BNC female unless otherwise noted) ¹ | |
|---|--|
| Auxiliary interface (dual mode) | Used for RS-232 serial communication and for primary/secondary source synchronization. (9-pin subminiature female connector). For primary/secondary operation, use Keysight part number 8120-8806 primary/secondary interface cable. |
| GPIB | Allows communication with compatible devices |
| LAN | Allows 10Base-T LAN communication |
| 10 MHz input | Accepts a 10 MHz external reference (timebase) input. 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 +10 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 (nom) at the end of sweep, regardless of sweep width. During CW operation, supplies a voltage proportional to the output frequency, +10 volts (nom) corresponding to the maximum specified frequency. When connected to a Keysight 8757D scalar network analyzer (Option 007), generates a selectable number of equally spaced 1 μs pulses (nom) across a ramp (analog) sweep. Number of pulses can be set from 101 to 1601 by remote control from the 8757D. Output impedance: < 1 Ω (nom), can drive 2 kΩ. |
| 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 μs pulses (nom) across a ramp sweep. When using LF Out, provides 2 μs pulse at start of LF sweep . |
| Trigger input | Accepts 3.3V CMOS signal for triggering point-to-point in manual sweep mode, or to trigger start of LF sweep. Damage levels ≥ +10 V or ≤ -4 V. |
| Source module interface | Keysight 83550 Series mm source modules: Provides bias, flatness correction and leveling connections. OML SxxMS-AG mm source modules: Provides power to the module and returns frequency multiplication information from the module. |
| 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 (nom) level during retrace and bandswitch intervals. Supplies -5 V (nom) level when the RF frequency is at a marker frequency. |
| 10 MHz EFC | (Option UNX or UNY) Accepts an external DC voltage, ranging from -5 V to +5 V, for electronic frequency control (EFC) of the internal 10 MHz reference oscillator. This voltage inversely tunes the oscillator about its center frequency approximately -0.07 ppm/V. The nominal input impedance is greater than 1 MΩ. |
| 0.25 – 3.2 GHz coherent carrier output | Outputs RF signal modulated with FM or fM 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 clock input | Accepts a sine or square wave PECL clock input with a frequency range of 200 to 400 MHz (resulting in sample rates of 50 MSa/s to 100 MSa/s); the recommended input level is approximately 1 V _{peak-to-peak} for a square wave and 0 dBm to 6 dBm for a sine wave; allows the baseband generators of multiple signal generators to run off the same clock |

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

| | |
|------------------------------|---|
| Burst gate input | Accepts signal for gating burst power for use with internal baseband generator (Option 602); the burst gating is used for 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 V and < -0.5 V |
| ALC Hold | This female BNC connector is a TTL-compatible input that controls ALC action with bursted I/Q signals from an arbitrary waveform generator (AWG). A high signal allows the ALC to track the RF signal and maintain constant RF output level as the I/Q inputs vary. A low input signal allows the ALC to be held for a brief time (< 1 s) and not track the RF signal. When driving the external I/Q inputs from an external AWG supplying a bursted waveform, the ALC Hold line should be driven from a marker output from the AWG that is high when the bursted signal is at the proper level and low when the bursted signal is not at the proper level. Damage levels are > 5.5 V and < -0.5 V. |
| 1 GHz Ref Out | This female SMA connector (requires Option UNX or UNY) provides a 1 GHz output that is 100 times the frequency of the internal or external 10 MHz reference. The nominal output impedance is 50 Ω. When not in use, this connector must be terminated with a 50 Ω load. |
| Coh carrier | This female SMA connector (requires Option UNT) outputs an RF signal that is phase coherent with the signal generator carrier. The coherent carrier outputs RF that is not modulated with AM, pulse, or I/Q modulation, but is modulated with FM or φM (when FM or φM are on). The output power is nominally 0 dBm. The output frequency range is from 249.99900001 MHz to 3.2 GHz. This output is not useful for output frequencies > 3.2 GHz. If the RF output frequency is below 249.99900001 MHz, the coherent carrier output signal will have the following frequency: Frequency of coherent carrier = (1 GHz – Frequency of RF output) Damage levels are 20 V _{DC} and +13 dBm reverse RF power. The nominal output impedance is 50 Ω. |
| 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 ±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 |
| 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 |
| I and 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 V and < -0.5 V |
| Wideband I and Q inputs | Direct differential high-bandwidth analog inputs to I/Q modulator in 3.2 to 44 GHz range and useable for carriers < 3.2 GHz; not calibrated; 0 dBm maximum; (Option 016 only). SMA female connectors. |
| Removable flash memory drive | Accepts 8 GB compact flash memory card for optional non-volatile memory (Option 009 only); all user information (save/recall settings, flatness files, presets, etc.) is stored on removable memory card when Option 009 is installed |

| Auxiliary I/O connector (37-pin) used with Option 602 | |
|---|--|
| Alternate power input | Accepts CMOS signal for synchronization of external data and alternate power signal timing; damage levels are > +8 V and < -4V |
| Event 3 output | In arbitrary waveform mode, outputs a timing signal generated by marker 3; damage levels > +8 V and < 4 V |
| Event 4 output | In arbitrary waveform mode, outputs a timing signal generated by marker 4; damage levels > +8 V 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 |
|--------------|---|
| E8267D-513 | Frequency range from 250 kHz to 13 GHz |
| E8267D-520 | Frequency range from 250 kHz to 20 GHz |
| E8267D-532 | Frequency range from 250 kHz to 31.8 GHz |
| E8267D-544 | Frequency range from 250 kHz to 44 GHz |
| E8267D-602 | Internal baseband generator, 64 MSa memory |
| E8267D-003 | Digital output connectivity with N5102A |
| E8267D-004 | Digital input connectivity with N5102A |
| E8267D-007 | Analog ramp sweep |
| E8267D-009 | 8 GB removable flash memory |
| E8267D-016 | Wideband external I/Q inputs |
| E8267D-403 | Calibrated AWGN |
| E8267D-409 | Global positioning system (GPS) personality |
| E8267D-423 | Scenario generator for GPS personality |
| E8267D-UNX | Ultra low phase noise |
| E8267D-UNY | Enhanced ultra low phase noise |
| E8267D-UNT | AM, FM, phase modulation, and LF output |
| E8267D-UNU | Pulse modulation |
| E8267D-UNW | Narrow pulse modulation |
| E8267D-1ED | Type-N (f) RF output connector |
| E8267D-1EH | Improved harmonics below 2 GHz |
| E8267D-1EM | Moves all front panel connectors to the rear panel |
| E8267D-1CN | Front handle kit |
| E8267D-1CM | Rackmount flange kit |
| E8267D-1CP | Rackmount flange and front handle kit |
| E8267D-UK6 | Commercial calibration certificate and test data |
| E8267D-A6J | Z540-1-1994 calibration |
| E8267D-AMG | Calibration + uncertainties + guardbanding (accredited) |
| E8267D-1A7 | Calibration + uncertainties + guardbanding |
| E8267D-CD1 | CD-ROM containing the English documentation set |
| E8267D-ABA | Printed copy of the English documentation set |
| E8267D-SP2 | Dynamic sequencing capability |

| Application software | |
|------------------------------|--|
| E8267D-SP1 | Signal Studio for jitter injection |
| N7600B | Signal Studio for 3GPP W-CDMA FDD |
| N7601B | Signal Studio for 3GPP2 CDMA |
| N7602B | Signal Studio for GSM/Edge |
| N7606B | Signal Studio for <i>Bluetooth</i> [®] |
| N7607B | Signal Studio for DFS radar profiles |
| N7608B | Signal Studio for custom modulation |
| N7609B | Signal Studio for GNSS |
| N7610B | Signal Studio for short range communications |
| N7612B | Signal Studio for TD-SCDMA/HSPA |
| N7613A | Signal Studio for 802.16-2004 Fixed WiMax™ |
| N7614B | Signal Studio for power amplifier test |
| N7615B | Signal Studio for 802.16 OFDMA Mobile WiMax |
| N7617B | Signal Studio for 802.11 WLAN |
| N7620B | Signal Studio for pulse building |
| N7621B | Signal Studio for multitone distortion testing |
| N7622B | Signal Studio Toolkit |
| N7623B | Signal Studio for digital video |
| N7624B | Signal Studio for 3GPP LTE-FDD |
| N7625B | Signal Studio for 3GPP LTE-TDD |
| N6171A | MATLAB software |
| Customized product solutions | |
| E8267D-H1S | 1 GHz external frequency reference input |
| E8267D-H1G | Connections for phase coherency and improved phase stability < 250 MHz |
| E8267D-HCC | Connections for phase coherency > 250 MHz ¹ |
| E8267D-H18 | Wideband modulation below 3.2 GHz |
| Accessories | |
| U3035P | Distribution network (lock box) ¹ |
| 1819-0427 | 8 GByte compact flash memory card |
| 8120-8806 | Primary/secondary interface cable |
| N5102A | Digital signal interface module |

1. Utilized for multiple source phase coherency applications.

Related Keysight Literature

Keysight Microwave Signal Generators

Brochure, Literature number 5991-4876EN

E8267D PSG Vector Signal Generator

Configuration Guide, Literature number 5989-1326EN

E8257D PSG Analog Signal Generator

Data Sheet, Literature number 5989-0698EN

Configuration Guide, Literature number 5989-1325EN

E8663D PSG RF Analog Signal Generator

Data Sheet, Literature number 5990-4136EN

Configuration Guide, Literature number 5990-4137EN

PSG Two-tone and Multitone Personalities

Application Note AN 1410, Literature number 5988-7689EN

Keysight I/Q Modulation Considerations for PSG Vector Signal Generators

Application Note, Literature number 5989-7057EN

Baseband Studio Digital Signal Interface Module

Technical Overview, Literature number 5988-9495EN

Security Features of Keysight Technologies Signal Generators

Part Number E4400-90621

Web Resources

For additional product information, visit:

www.keysight.com/find/psg

For accessory information, visit:

www.keysight.com/find/accessories

For additional description of Keysight's IO Libraries Suite features and installation requirements, please go to:

www.keysight.com/find/iosuite/database

www.keysight.com/find/E8267D

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www.keysight.com/find/contactus

