



Agilent 84100EM EMC Design
Development System,
9 kHz to 1.8 GHz

Product Specification

Frequency Range 50 Ohms: 9 kHz to 1.8 GHz

Frequency Reference

Aging: $\pm 2 \times 10^{-6}$ / year

Temperature Stability: $\pm 5 \times 10^{-6}$

Initial Achievable Accuracy: $\pm 0.5 \times 10^{-6}$

Marker Count Accuracy Frequency Span

≤ 10 MHz * N: $\pm(\text{marker frequency readout} \times \text{frequency reference error} + \text{counter resolution} + 100 \text{ Hz} \times \text{N})$

Frequency Span

> 10 MHz * N: $\pm(\text{marker frequency} \times \text{frequency reference error} + \text{counter resolution} + 1 \text{ kHz} \times \text{N})$

Counter Resolution Frequency Span

≤ 10 MHz * N: Selectable from 10 Hz to 100 kHz Frequency Span

> 10 MHz * N: Selectable from 100 Hz to 100 kHz (N = LO harmonic, N=1 for 91E, 94E, 95E) (Frequency reference error = aging rate x period of time since adjustment + initial achievable accuracy + temperature stability)

Frequency Sweep Time Range:

Span = 0 Hz, > 1 kHz: 20 ms to 100 s

Span = 0 Hz (Opt. 101): 20 μ s to 100 s

Accuracy 20 ms to 100 s: $\pm 3\%$ 20 μ s to > 20 ms (Opt. 101): $\pm 2\%$

Sweep Trigger: Free Run, Single, Line, Video, External

Resolution Bandwidth: 30 Hz to 3 MHz (3 dB) in 1-3-10 sequence. 200 Hz, 9 kHz and 120 kHz (6 dB) EMI bandwidths.

Accuracy: $\pm 20\%$

Selectivity (Characteristic) -60 dB/ -3 dB

3 kHz to 10 kHz: 15:1

100 kHz to 3 MHz: 15:1 1 kHz,

30 kHz: 16:1 -40 dB/ -3 dB

30 Hz to 300 Hz: 10:1

Video Bandwidth Range: 1 Hz to 1 MHz in 1, 3 Sequence

Stability Noise Sidebands (1 kHz RBW, 30 Hz VBW and sample detector) >10 kHz offset from CW signal
<=-90 dBc/ Hz + 20 Log N >20 kHz offset from CW signal <=-100 dBc/ Hz + 20 Log N >30 kHz offset from
CW signal <=-105 dBc/ Hz + 20 Log N

Residual FM

1 kHz RBW, 1 kHz VBW <=250 Hz pk-pk in 100 ms 30 Hz RBW, 30 Hz VBW <=(30 Hz pk-pk in 300 ms

System-Related Sidebands

>30 kHz offset from CW signal <=-65 dBc + 20 Log N (N=LO harmonic) Amplitude Specifications

Amplitude Range: Displayed Average Noise Level to +30 dBm

Maximum Safe Input Level (Input attenuator >=10 dB)

Average Continuous Power: +30 dBm (1 W)

Peak Pulse Power: +30 dBm (1 W)

dc: 25 Vdc

Gain Compression

>10 MHz: >=0.5 dB (total power at input mixer = -10 dBm)

(Mixer Power Level (dBm) = Input Power (dBm) - Input Atten. (dB).)

Displayed Average Noise Level

(Input terminated, 0 dB attenuation, 1 Hz VBW, sample detector)

30 Hz RBW 1 kHz RBW

400 kHz to 1 MHz <=-130 dBm <=-115 dBm

1 MHz to 1.5 GHz <=-130 dBm <=-115 dBm

1.5 GHz to 1.8 GHz <=-128 dBm <=-113 dBm

Spurious Responses

Second Harmonic Distortion

5 MHz to 1.8 GHz (91E): <-70 dBc for -45 dBm tone at input mixer.

Third Order Intermodulation

Distortion

5 MHz to 1.8 GHz: <-70 dBc for two -30 dBm tones at input mixer
and >50 kHz separation.

Other Input Related Spurious

<=1.8 GHz: <-65 dBc at <=30 kHz offset, for -20 dBm tone at input mixer

(Mixer Power Level (dBm) = Input Power (dBm) - Input Atten. (dB).)

Residual Responses (Input terminated and 0 dB attenuation)

150 kHz to 1.8 GHz: <-90 dBm

Frequency Response (10 dB attenuation)

Absolute Relative Flatness

9 kHz to 1.8 GHz: ± 1.5 dB ± 1.0 dB

(Absolute referenced to 300 MHz CAL OUT.)

(Relative Flatness ref. to midpoint between highest and lowest freq. response deviations.)

Option 010 Tracking Generator Specifications

Frequency Range: 100 kHz to 1.8 GHz

Output Level

Range: 0 to -70 dBm

Resolution: 0.1 dB

Absolute Accuracy

(@300 MHz, - 20 dBm, +28.8 dBmV)

± 1.0 dB

Vernier

Range: 10 dB

Accuracy: ± 0.75 dB

Output Attenuator

Range: 0 to 60 dB, 10 dB steps

Output Flatness: +1.75 dB

Effective Source Match (Characteristic) 1.6:1 (10 dB attenuation)

Linear Scale: 0.4% of reference level

Spurious Output

Harmonic Spurs

(0 dBm +42.8 dBmV Output): <-25 dBc

Nonharmonic Spurs: <-30 dBc

Dynamic Range

(Characteristic)

Dynamic Range TG Feedthrough

(Maximum output level

minus TG feedthrough)

106 dB \leq -106 dBm

Power Sweep

Range: 0 dBm to -75 dBm; 42.8 dBmV to -32.2 dBmV -1 dBm to -66 dBm

in 8 dB increments.

Resolution: 0.1 dB

General Specifications

Temperature Range

Operating: 0 °C to +55 °C

Storage: -40 °C to +75 °C

EMI Compatibility: Conducted and radiated interference CISPR Pub. 11 and
Messemphaenger Postverfuegung 526/ 527/ 79.

Audible Noise: <37.5 dBa pressure and <5.0 Bels power (ISODP7779)

Power Requirements

ON(Line 1): 86 to 127, or 195 to 250 Vrms, 47 to 66 Hz, 103 to 126 Vrms ,
400 Hz \pm 10%. Power consumption <300 VA; <100W.

Standby (Line 0): Power consumption <7 W

User Memory (nominal): 32 Kbytes non-volatile RAM

Data Storage (nominal): 50 states and traces, internal memory and 8 internal state registers;
24 states and traces, memory card (85700A)