

Agilent E7400 A-series EMC Analyzers

Data Sheet

These specifications apply to the Agilent Technologies E7401A, E7402A, E7403A, E7404A and E7405A EMC analyzers.

Frequency specifications

Frequency range

E7401A		
50 Ω		9 kHz to 1.5 GHz
E7402A		9 kHz to 3.0 GHz
dc coupled (Option UKB)		30 Hz ¹ to 3.0 GHz
ac coupled		100 kHz ¹ to 3.0 GHz
E7403A		
dc coupled		9 kHz to 6.7 GHz
dc coupled (Option UKB)		30 Hz ¹ to 6.7 GHz
ac coupled		100 kHz to 6.7 GHz
Band		
0		9 kHz to 3.0 GHz
1		2.85 GHz to 6.7 GHz
E7404A		
dc coupled		9 kHz to 13.2 GHz
dc coupled (Option UKB)		30 Hz ¹ to 13.2 GHz
ac coupled		100 kHz to 13.2 GHz
Band LO harmonic = N		
0 1-		9 kHz to 3.0 GHz
(Option UKB)		30 Hz ¹ to 3.0 GHz
1 1-		2.85 GHz to 6.7 GHz
2 2-		6.2 GHz to 13.2 GHz
E7405A		9 kHz to 26.5 GHz
Band LO harmonic = N		
0 1-		9 kHz to 3.0 GHz
0 (Option UKB)		30 Hz ¹ to 3.6 GHz
1 1-		2.85 GHz to 6.7 GHz
2 2-		6.2 GHz to 13.2 GHz
3 4-		12.8 GHz to 19.2 GHz
4 4-		18.7 GHz to 26.5 GHz

Frequency reference

(Option 1D5)

Aging	$\pm 2 \times 10^{-6}$ /year	$\pm 1 \times 10^{-7}$ /year
Temperature stability	$\pm 5 \times 10^{-6}$	$\pm 1 \times 10^{-8}$
Settability	$\pm 5 \times 10^{-7}$	$\pm 1 \times 10^{-8}$

Frequency readout accuracy

(start, stop, center, marker) \pm (frequency indication
x frequency reference error²
+ span accuracy + 15% of RBW
+ 10 Hz) + 1 Hz x N³

Specifications

All specifications apply over 0° C to +55° C unless otherwise noted and are covered by the product warranty. The analyzer will meet its specifications when: it's within the one year calibration cycle, AUTO ALIGN [ALL] is selected, stored a minimum 2 hours within the operating temperature range, turned on for at least 5 minutes, and Align Now RF has been run once every 24 hour period. Typical performance describes the level at which 80% of the units will meet or exceed with a 95% confidence level over 20 to 30° C, but is not covered in the product warranty. Characteristics describe expected product performance levels that are not covered in the product warranty.



1. Characteristic
2. Frequency reference error = (aging rate x period of time since adjustment + settability + temperature stability)
3. N = LO harmonic mixing mode

Marker frequency counter¹

Accuracy ²	$\pm(\text{marker frequency} \times \text{frequency reference error}^3 + \text{counter resolution})$
Counter Resolution	Selectable from 1 Hz to 100 kHz

Frequency span

Range	0 Hz (zero span), 100 Hz x N ⁴ to the range of the spectrum analyzer
Resolution	2 Hz x N ⁴
Accuracy (> 2000 sweep points)	
Sweep type linear	$\pm 0.5\%$ of span
Sweep type log	$\pm 2\%$ of span (characteristic)

Sweep time

Range	
Span > 0 Hz	1 ms to 4000 s
Span = 0 Hz	10 μs ⁵ to 4000 s
(Option AYX)	50 ns ⁵ to 4000 s
Accuracy	$\pm 1\%$
Sweep trigger	Free run, single, line, video, external, delay, offset, and gate (Option 1D6)
Delay trigger range	1 μs to 400 s

Sweep (trace) point range	101 to 8192
Span = 0 Hz	2 to 8192

Resolution bandwidth	10 Hz to 3 MHz (-3 dB) in 1-3-10 sequence ⁶
	5 MHz (-3 dB) bandwidth
	200 Hz ⁶ , 9 kHz, 120 kHz, 1 MHz (-6 dB) EMI bandwidths
	1 MHz (impulse) EMI bandwidth
Option 1D5	Adds 1 Hz and 3 Hz

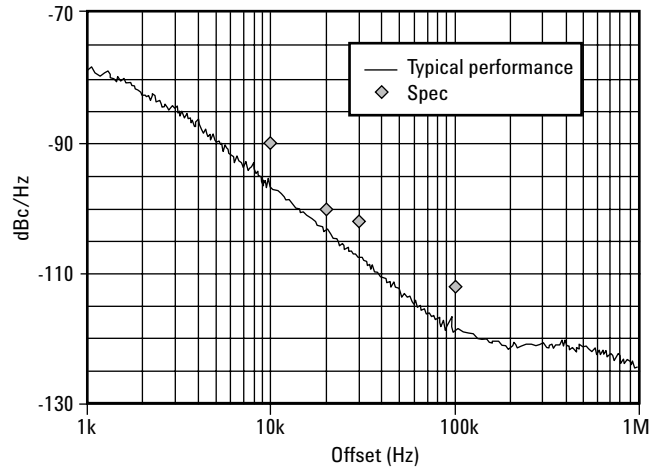
Accuracy	
10 Hz to 300 MHz (-3 dB)	$\pm 10\%$
1 Hz and 3 Hz (Option 1D5)	$\pm 10\%$
1 kHz to 3 MHz (-3 dB)	$\pm 15\%$
5 MHz (-3 dB)	$\pm 30\%$
200 Hz (-6 dB)	$\pm 10\%$
9 kHz to 120 kHz (-6 dB)	$\pm 20\%$
1 MHz (-6 dB)	$\pm 10\%$
1 MHz (impulse)	$\pm 15\%$

Selectivity (characteristic)	
10 Hz to 300 Hz (-3 dB)	< 5:1 (-60 dB/-3 dB)
(Digital, approximately Gaussian-shaped)	
1 kHz to 3 MHz (-3 dB)	< 5:1 (-60 dB/-3 dB)
(approximately Gaussian-shaped)	
200 Hz (-6 dB)	< 3:1 (-40 dB/-6 dB)
(Digital, Kaiser Windows)	
9 kHz, 120 kHz,	
1 MHz (-6 dB)	< 10:1 (-60 dB/-6 dB)
(approximately Gaussian-shaped)	
1 MHz (impulse)	< 10:1 (-60 dB/-6 dB)
(approximately Gaussian-shaped)	

Video bandwidth range	30 Hz to 3 MHz ⁷ in 1-3-10 sequence
	1, 3, 10 Hz for RBW's < 1 kHz

Stability

Noise sidebands (1 kHz RBW, 30 Hz VBW and sample detector)



E7401A

≥ 1 kHz	na	≤ 79 dBc/Hz (Option 1D5)
≥ 10 kHz	≤ -93 dBc/Hz	≤ -95 dBc/Hz
> 20 kHz	≤ -100 dBc/Hz	≤ -102 dBc/Hz
> 30 kHz	≤ -104 dBc/Hz	≤ -106 dBc/Hz
> 100 kHz	≤ -113 dBc/Hz	≤ -116 dBc/Hz

E7402/03/04/05A

≥ 1 kHz	na	≤ 78 dBc/Hz (Option 1D5)
≥ 10 kHz	≤ -90 dBc/Hz ⁸	≤ -94 dBc/Hz ⁸
> 20 kHz	≤ -100 dBc/Hz ⁸	≤ -105 dBc/Hz ⁸
> 30 kHz	≤ -106 dBc/Hz ⁸	≤ -112 dBc/Hz ⁸
> 100 kHz	≤ -118 dBc/Hz ⁸	≤ -122 dBc/Hz ⁸
> 1 MHz	≤ -125 dBc/Hz ⁸	≤ -127 dBc/Hz ⁸
> 5 MHz	≤ -127 dBc/Hz ⁸	≤ -129 dBc/Hz ⁸
> 10 MHz	≤ -131 dBc/Hz ⁸	≤ -136 dBc/Hz ⁸

Residual FM

1 kHz RBW, 1 kHz VBW	$\leq 150 \times N^4$ Hz pk-pk in 100 ms
Option 1D5	$\leq 100 \times N^4$ Hz pk-pk in 100 ms
10 Hz RBW, 10 Hz VBW	$\leq 2 \times N^4$ Hz pk-pk in 20 ms

System-related sidebands

≥ 30 kHz offset from CW signal	≤ -65 dBc + 20 Log N ⁴
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- Not available in RBW < 1 kHz
- Marker level to DANL > 25 dB, Span ≤ 1.5 GHz, RBW/Span ≥ 0.002
- Frequency reference error = (aging rate x period of time since adjustment + settability + temperature stability)
- N = LO harmonic mixing mode
- RBW ≥ 1 kHz, 2 sweep points
- 10 Hz to 300 Hz are only available in spans of ≤ 5 MHz and are not usable with tracking generator Option 1DN.
- Characteristic
- Add 20 log(N) for frequencies > 6.7 GHz.

Amplitude specifications

Amplitude range

Measurement range	Displayed average noise level (DANL) to maximum safe input level
Input attenuator range	
E7401A	0 to 60 dB, in 5 dB steps
E7402A, 03A, 04A	0 to 65 dB (75 dB ¹), in 5 dB steps
E7405A	0 to 65 dB, in 5 dB steps

Maximum safe input level

Average continuous power	
E7401A	(input attenuator \geq 15 dB) +30 dBm (1 Ω)
E7402A/03A/04A/05A	(input attenuator \geq 5 dB) +30 dBm (1 Ω)
Peak pulse power	(input attenuator \geq 30 dB)
E7402A/03A/04A/05A	+50 dBm (100 Ω)
E7401A	+30 dBm (1 Ω)
dc	
E7401A, E7402A	100 Vdc
E7402A (Option UKB)	0 Vdc (dc coupled) 50 V (ac coupled)
E7403A, E7404A	0 Vdc (dc coupled) 50 V (ac coupled)
E7405A	0 Vdc
(Option UKB)	0 Vdc (dc coupled) 50 V (ac coupled)

1 dB gain compression (total power at input mixer²)

\geq 50 MHz	0 dB
\geq 6.7 GHz	-3 dB
\geq 13.2 GHz	-5 dB

Displayed average noise level (dBm)

(Input terminated, 0 dB attenuation, sample-detector)
 1 kHz RBW; 30 Hz VBW
 10 Hz RBW; 1 Hz VBW
 1 Hz RBW; 1 Hz VBW (Option 1D5)

1. Characteristic

2. Mixer power level (dBm) = input power (dBm) – input attenuator (dB)

3. Typical

4. 0 to 50 dB for RBWs \leq 300 Hz and span = 0 Hz, or when auto ranging is off, or 0 to 30 dB for RBW = 200 Hz.

5. 0 to -70 dB range when span = 0 Hz, when RBW = 200 Hz, or when IF gain is fixed.

	1 kHz RBW	10 Hz RBW	1 kHz w/preamp on	10 Hz w/preamp on, typical	1 Hz w/preamp Option 1D5 on, typical
E7401A					
400 kHz to 10 MHz	\leq -115	\leq -134	\leq -150	\leq -155	\leq -165
10 MHz to 500 MHz	\leq -119	\leq -138	\leq -154	\leq -156	\leq -166
500 MHz to 1 GHz	\leq -117	\leq -136	\leq -152	\leq -156	\leq -166
1 GHz to 1.5 GHz	\leq -114	\leq -133	\leq -150	\leq -155	\leq -165
E7402A					
30 Hz to 9 kHz ³					
(Option UKB)	na	\leq -93	na	na	na
9 kHz to 100kHz ³	na	\leq -109	na	na	na
100 kHz to 1 MHz ³	na	\leq -135	na	na	na
1 MHz to 10 MHz ³	\leq -117	\leq -136	na	\leq -152	\leq -162
10 MHz to 1 GHz	\leq -117	\leq -136	\leq -152 ⁴	\leq -156	\leq -166
1 GHz to 2 GHz	\leq -116	\leq -135	\leq -153 ⁴	\leq -156	\leq -166
2 GHz to 3 GHz	\leq -114	\leq -133	\leq -151 ⁴	\leq -154	\leq -164
E7403A, 04A, 05A					
30 Hz to 9 kHz ³					
(Option UKB)	na	\leq -93	na	na	na
9 kHz to 100kHz ³	na	\leq -109	na	na	na
100 kHz to 1 MHz ³	na	\leq -135	na	na	na
1 MHz to 10 MHz ³	\leq -117	\leq -137	na	\leq -155	\leq -165
10 MHz to 1 GHz	\leq -116	\leq -135	\leq -151 ⁴	\leq -157	\leq -167
1 GHz to 2 GHz	\leq -116	\leq -131	\leq -151 ⁴	\leq -155	\leq -165
2 GHz to 3 GHz	\leq -112	\leq -131	\leq -149 ⁴	\leq -152	\leq -162
3 GHz to 6 GHz	\leq -112	\leq -131	na	\leq -138	na
6 GHz to 12 GHz	\leq -111	\leq -130	na	\leq -137	na
12 GHz to 22 GHz	\leq -107	\leq -126	na	\leq -134	na
22 GHz to 26.5 GHz	\leq -106	\leq -125	na	\leq -132	na

Display range

Log Scale	0.1, 0.2, 0.5 dB/division and 1 to 20 dB/division in 1 dB steps; ten divisions displayed
RBW \geq 1kHz	0 to -85 dB from reference level is calibrated
RBW \leq 300 Hz	0 to -120 ⁵ dB from reference level is calibrated
Linear scale	10 divisions
Scale units	dBm, dBmV, dB μ V, dB μ A, Amps, Volts and Watts

Marker readout resolution

Log scale	
0 to -85 dB	0.04 dB
0 to -120 (RBW \leq 300 Hz)	0.04 dB
Linear scale	0.01% of reference level

Fast sweep times for zero span (Option AYX)

Log Scale	
0 to -85 dB	0.3 dB
Linear	0.3 dB of reference level

Frequency response	(10 dB input attenuation)		
	Absolute ¹	Typical	Relative flatness ²
E7401A			
9 kHz to 1.5 GHz	±0.5 dB	na	±0.5 dB
E7402A/03A/04A/05A			
30 Hz to 3 GHz ³			
(Option UKB)	±0.5 dB	na	±0.5 dB
9 kHz to 3 GHz	±0.46 dB	±0.14 dB	±0.5 dB
3.0 GHz to 6.7 GHz	±1.5 dB	±0.39 dB	±1.3 dB
6.7 GHz to 13.2 GHz	±2.0 dB	±0.68 dB	±1.8 dB
13.2 GHz to 26.5 GHz	±2.0 dB	±0.86 dB	±1.8 dB

Input attenuation switching uncertainty at 50 MHz

Attenuation setting	
0 dB to 5 dB	±0.3 dB
10 dB	Reference
15 dB	±0.3 dB
20 to 60 dB (E7401A)	±(0.1 dB + 0.01 x attenuator setting)
20 to 65 dB	±(0.1 dB + 0.01 x attenuator setting)

Absolute amplitude accuracy		Typical
At reference settings ⁴	±0.34 dB	±0.13 dB
E7401A	±0.30 dB	±0.10 dB
Preamp on ⁵	±0.37 dB	±0.14 dB

Overall amplitude accuracy⁶ ±(0.54 dB + absolute frequency response)

RF input VSWR³ (at tuned frequency, 10 dB attenuation)

E7401A	
1 MHz to 1.5 GHz	1.35:1
E7402A	
100 Hz to 100 kHz	1.1:1 (Option UKB)
9 kHz to 100 kHz	2:1
100 kHz to 3 GHz	1.4:1
E7403A/04A	
100 Hz to 100 kHz	1.1:1 (Option UKB)
9 kHz to 100 kHz	2:1
100 kHz to 6.7 GHz	1.3:1
6.7 kHz to 13.2 GHz	1.5:1
E7405A	
100 Hz to 100 kHz	1.1:1 (Option UKB)
9 kHz to 6.7 GHz	1.3:1
6.7 GHz to 13.2 GHz	1.5:1
13.2 GHz to 22 GHz	2:1
22 GHz to 26.5 GHz	2.2:1

Resolution bandwidth switching uncertainty

(Referenced to 1 kHz RBW, at reference level)

10 Hz to 3 MHz RBW	±0.3 dB
5 MHz RBW	±0.6 dB
10 Hz to 300 Hz RBW	±0.3 dB

Reference level

Range -149 dBm to maximum mixer level + attenuator setting

Resolution

Log scale	±0.1 dB
Linear scale	±0.12% of reference level
Accuracy (reference level)	±0.3 dB (-10 dBm to -60 dBm)
-attenuator setting	±0.5 dB (-60 dBm to -85 dBm)
+ preamp gain	±0.7 dB (-85 dBm to -90 dBm)

Display scale fidelity

Log maximum cumulative

RBW ≥ 1 kHz

dB below reference level		Typical
0 dB (reference)	±0.00 dB	±0.00 dB
> 0 dB to 10 dB	±0.3 dB	±0.08 dB
> 10 dB to 20 dB	±0.4 dB	±0.09 dB
> 20 dB to 30 dB	±0.5 dB	±0.10 dB
> 30 dB to 40 dB	±0.6 dB	±0.23 dB
> 40 dB to 50 dB	±0.7 dB	±0.35 dB
> 50 dB to 60 dB	±0.7 dB	±0.35 dB
> 60 dB to 70 dB	±0.8 dB	±0.39 dB
> 70 dB to 80 dB	±0.8 dB	±0.46 dB
> 80 dB to 85 dB	±1.15 dB	±0.79 dB
RBW ≤ 300 Hz (Span >0 Hz)		
0 dB to 98 dB	±(0.3 dB + 0.01 x dB from reference level)	
≥ 98 dB to 120 dB	±(2.0 dB from reference level) ³	
Log incremental accuracy		
0 dB to 80 dB ⁷	±0.4 dB/4 dB from reference level	
Linear accuracy	± 2% of reference level	
Linear to log switching	±0.15 dB at reference level	

1. Referenced to 50 MHz amplitude reference (20 °C – 30 °C)

2. Reference to midpoint between highest and lowest frequency response deviations. (20 °C – 30 °C)

3. Characteristic

4. Reference level -25 dBm (E7401A) or -20 dBm (E7402A/03A/04A/05A); input attenuation 10 dB; center frequency 50 MHz; RBW 1 kHz; VBW 1 kHz; scale linear or log; span 2 kHz; sweep time coupled, sample director, signal at reference level.

5. 10 Hz to 300 Hz are only available in spans of ≤ 5 MHz and are not usable with tracking generator Option 1DN.

6. For reference levels 0 to 50 dBm; input attenuation 10 dB; dc coupled; RFW 1 kHz; VBW 1 kHz; scale loge range 0 to -50 dB from reference level; sweeptime coupled; signal input 0 to 50 dB; spsn ≤ 20 kHz.

7. 0 to 50 dB for RBWs ≤ 300 Hz and span = 0 Hz, or when auto ranging is off, or 0 to 30 dB for RBW = 200 Hz.

Spurious responses

Second harmonic distortion

E7401A

2 MHz to 750 MHz < -75 dBc for -40 dBm tone at input mixer¹

E7402A/03A/04A/05A

10 MHz to 500 MHz < -65 dBc for -30 dBm tone at input mixer¹

500 MHz to 1.5 GHz < -75 dBc for -30 dBm tone at input mixer²

1.5 GHz to 2.0 GHz < -85 dBc for -10 dBm tone at input mixer²

> 2.0 GHz < -100 dBc for -10 dBm tone at input mixer¹ (or below displayed average noise level)

Third order intermodulation distortion

E7401A

100 MHz to 1.5 GHz < -87 dBc for two -30 dBm tones at input mixer¹ and > 50 kHz separation

E7402A/03A/04A/05A

100 MHz to 6.7 GHz < -85 dBc for two -30 dBm tones at input mixer¹ and > 50 kHz separation

> 6.7 GHz < -75 dBc for two -30 dBm tones at input mixer¹ and > 50 kHz separation

Other input related spurious

< -65 dBc, for -20 dBm tone at input mixer¹

Residual responses (input terminated and 0 dB attenuation)

150 kHz to 6.7 GHz < -90 dBm

Amplitude ref. output

E7402A,03A,04A,05A

Amplitude -20 dBm (nominal)

FM demodulation³

Input level -60 dBm + attenuator setting

Signal level 0 to -30 dB below reference level

Quasi-peak detector specifications

The EMC analyzer displays the quasi-peak amplitude of a pulse radio frequency on continuous wave signals. Amplitude response conforms with Publication 16 of Comité International Spécial des Perturbations Radioélectrique (CISPR) Section 1, Clause 2.

1. Mixer power level (dBm) = input power (dBm) – input attenuator (dB)

2. Not available in RBW < 1kHz

3. Characteristic

4. Reference pulse amplitude accuracy relative a 66 μ V CW signal < 1.5 dB as specified in CISPR Pub 16 CISPR reference pulse: 0.44 μ Vs for 30 MHz to 1 GHz, 0.316 μ Vs for 150 kHz to 30 MHz, 13.5 μ Vs for 9 kHz to 150 kHz

5. Meets Class A performance during dc operation or serial number US41110000 or lower.

6. Characteristic; factory preset, fixed center frequency, sweep points = 101 auto align off, RBW = 1 MHz, stop frequency \leq 3 GHz, span > 10 MHz and \leq 600 MHz (E4401, span > 102 MHz and \leq 400 MHz).

7. Characteristic; factory preset, fixed center frequency, sweep points = 101 auto align off, RBW = 1 MHz, stop frequency \leq 3 GHz, span = 20 MHz, GPIB interface, display and markers off, fixed center frequency, single sweep

8. Characteristic; includes center frequency tuning and measurement plus GPIB transfer times, stop frequency \leq 3 GHz, sweep points = 101, display and markers off, single sweep

9. When storing a 401-point trace plus the instrument state

Relative quasi-peak response to a CISPR pulse (dB)

Pulse repetition frequency (Hz)	120 kHz EMI BW .03 to 1 GHz	9 kHz EMI BW 0.150 to 30 MHz	200 Hz EMI BW 9 kHz to 150 kHz
1000	+8.0 \pm 1.0	+4.5 \pm 1.0	—
100	0 dB reference ⁴	0 dB reference ⁴	+4.0 \pm 1.0
60	—	—	+3.0 \pm 1.0
25	—	—	0 dB reference ⁴
20	-9.0 \pm 1.0	-6.5 \pm 1.0	—
10	-14 \pm 1.5	-10.0 \pm 1.5	-4.0 \pm 1.0
5	—	—	-7.5 \pm 1.5
2	-26 \pm 2.0	-20.5 \pm 2.0	-13.0 \pm 2.0
1	—	-22.5 \pm 2.0	-17.0 \pm 2.0
Isolated Pulse	—	-23.5 \pm 2.0	-19.0 \pm 2.0

General specifications

Temperature range

Operating 0° C to +55° C
Storage -40° C to +75° C

EMI compatibility

Conducted and radiated emissions is in compliance with CISPR Pub. 11/1990 Group 1 Class B⁵

Audible noise

< 40 dBA pressure and < 4.6 Bels power (ISODP7779)

Military specification

Type tested to the environmental specifications of MIL-PRF-28800F, class 3

Power requirements

ON (line1) 90 to 132 V rms, 47 to 440 Hz
195 to 250 V rms, 47 to 66 Hz
Power consumption < 300 W
Standby (line 0) Power consumption < 5 W
DC operation
Voltage 12 to 20 Vdc
Power consumption < 200 W

Measurement speed

	E7401A	E7402A	E7403A/04A/05A
Local measurement rate ⁶	\geq 50/sec	\geq 45/sec	\geq 40/sec
Remote measurement as GPIB transfer rate ⁷	\geq 45/sec	\geq 45/sec	\geq 40/sec
RF center frequency tuning time ⁸	\geq 75/ms	\geq 75/ms	\geq 75/ms

Data storage (nominal)

Internal 200 traces⁹ or states
External (floppy) 200 traces⁹ or states

Weight (without options)

E7401A	12.6 kg	(27.7 lbs.)
E7402A	14.9 kg	(32.9 lbs.)
E7403A/04A/05A	17.1 kg	(37.7 lbs.)

Dimensions

without handle	222 mm(H) x 409 mm(D) x 373 mm(W)
with handle (max.)	222 mm(H) x 516 mm(D) x 416 mm(W)

Inputs/outputs**Front panel connectors**

Input	50 Ω type N (f) Option BAB 50 Ω APC 3.5 (m)
RF Out	50 Ω type N (f)

Probe power

+15 Vdc, -12.6 Vdc at 150 mA
max. characteristic

Ext. keyboard

6-pin mini-DIN, PC keyboards
(for entering screen titles and
file names)

Speaker

front-panel knob controls volume

Headphone

3.5 mm ($\frac{1}{8}$ inch) miniature audio jack

Power output
0.2 Ω into 4 Ω ¹

Amptd ref. output

50 Ω , BNC (f)
E7402A/03A/04A/05A

Rear panel connectors**10 MHz ref out**

50 Ω , BNC (f), > 0 dBm¹

10 MHz ref in

50 Ω , BNC (f), -15 to +10 dBm¹

Gate trig/ext. trig in

BNC (f), 5 V TTL

Gate hi swp out

BNC (f), 5 V TTL

VGA output

VGA compatible monitor, 15-pin
D-SUB, (31.5 kHz horizontal, 60 Hz
vertical sync rates, non-interlaced)
Analog RGB 640 x 480

Option A4J (IF and Sweep Ports) or Option AXX

Aux IF output
BNC (f), 21.4 MHz, nominal -10 to
-70 dBm¹ (uncorrected)

Aux video out
BNC (f), 0 to 1 V¹ (uncorrected)

Hi swp In
BNC (f), low stops sweep
(5 V TTL)

Hi swp out
BNC (f), (5 V TTL)

Swp out
BNC (f), 0 to +10 V¹ ramp

GPIB interface

Standard (Option A4H) IEEE-488 bus connector

Serial interface

(Option 1AX) RS-232, 9-pin D-SUB (m)

Parallel interface

Standard 25-pin D-SUB (f), printer port only

Option specifications**Option 1DN tracking generator****Frequency range**

E7401A	
Option 1DN	9 kHz to 1.5 GHz
E7402A/03A/04A/05A	
Option 1DN	9 kHz to 3.0 GHz

Output power level range

Range	
E7401A	
Option 1DN	0 to -70 dBm
E7402A/03A/04A/05A	
Option 1DN	-2 to -66 dBm
Resolution	0.1 dB
Absolute Accuracy (at 50 MHz)	
Option 1DN	± 0.75 dB

Output vernier range

E7401A	10 dB
E7402A/03A/04A/05A	8 dB

Output attenuator range

E7401A	0 to 60 dB, 10 dB steps
E7402A/03A/04A/05A	0 to 56 dB, 8 dB steps

Output flatness

E7401A	
Option 1DN	
9 kHz to 10 MHz	± 2.0 dB
10 MHz to 1.5 GHz	± 1.5 dB
E7402A/03A/04A/05A	
Option 1DN	
9 kHz to 10 MHz	± 3.0 dB
10 MHz to 3.0 GHz	± 2.0 dB

Effective source match (characteristic)

E7401A	< 2.5:1
E7402A/03A/04A/05A	< 2.0:1 (0 dB Atten.) < 1.5:1 (≥ 8 dB Atten.)

¹. Characteristic

Spurious output

Harmonic spurs

E7401A

(0 dBm output)

9 kHz to 20 MHz <-20 dBc

20 MHz to 1.5 GHz <-25 dBc

E7402A/03A/04A/05A

(-1 dBm output)

9 kHz to 3 GHz <-25 dBc

Non-harmonic spurs

E7401A

<-35 dBc

E7402A/03A/04A/05A

9 kHz to 2 GHz <-27 dBc

2 GHz to 3 GHz <-23 dBc

Dynamic range

Maximum output power – displayed average noise level

Power sweep range

E7401A

Option 1DN

(-15 dBm to 0 dBm) – (source attenuator setting)

E7402A/03A/04A/05A

Option 1DN

(-10 dBm to -1 dBm) – (source attenuator setting)

Preamplifier (standard)

E7401A

100 kHz to 1.5 GHz

E7402A/03A/04A/05A

1 MHz to 3 GHz

(nominal gain 20 dB)

Option Ordering Information

For information on ordering options, please refer to the *ESA/EMC Spectrum Analyzer Configuration Guide* (literature number 5968-3412E).

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Our Promise

Our Promise means your Agilent test and measurement equipment will meet its advertised performance and functionality. When you are choosing new equipment, we will help you with product information, including realistic performance specifications and practical recommendations from experienced test engineers. When you use Agilent equipment, we can verify that it works properly, help with product operation, and provide basic measurement assistance for the use of specified capabilities, at no extra cost upon request. Many self-help tools are available.

Your Advantage

Your Advantage means that Agilent offers a wide range of additional expert test and measurement services, which you can purchase according to your unique technical and business needs. Solve problems efficiently and gain a competitive edge by contracting with us for calibration, extra-cost upgrades, out-of-warranty repairs, and onsite education and training, as well as design, system integration, project management, and other professional engineering services. Experienced Agilent engineers and technicians worldwide can help you maximize your productivity, optimize the return on investment of your Agilent instruments and systems, and obtain dependable measurement accuracy for the life of those products.



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