

Specifications

Frequency

Frequency range	
U3741:	9 kHz to 3 GHz, 9 kHz to 2.2 GHz (with the OPT.15 installed)
Pre-Amp:	10 MHz to 3 GHz, 10 MHz to 2.2 GHz (with the OPT.15 installed)

Synchronizable frequency range:	9 kHz to 3 GHz
U3751:	9 kHz to 8 GHz
Frequency band:	9 kHz to 3.1 GHz (band 0), 3 GHz to 8 GHz (band 1)
Pre-Amp:	10 MHz to 8 GHz

Frequency reading accuracy:	\pm (marker read value x frequency reference accuracy + span x span accuracy + residual FM)
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Frequency reference stability	
Aging rate:	$\pm 2 \times 10^{-6}$ /year
Temperature stability:	$\pm 2.5 \times 10^{-6}$ (0 to 50°C)

Frequency counter:	At a signal level S/N > 50 dB
Resolution:	1 Hz to 1 kHz
Accuracy:	\pm (counter read value x frequency reference accuracy + residual FM + 1 LSB)

Frequency stability	
Residual FM (zero/span):	< 60 Hzp-p/100 ms (internal frequency reference)

Frequency span	
Range:	5 kHz to Full, zero span 1 kHz to Full, zero span (with the OPT.70 installed)
Accuracy:	< $\pm 1\%$

Spectrum purity:	-85 dBc/Hz (offset 10 kHz, span < 200 kHz)
With the OPT.70 installed:	-100 dBc/Hz (offset 10 kHz, span < 1 MHz)

Resolution bandwidth	
Range:	
U3741:	100 Hz to 1 MHz (1 to 3 steps) 30 Hz to 1 MHz (with the OPT.70 installed)
U3751:	100 Hz to 3 MHz (1 to 3 steps) 30 Hz to 3 MHz (with the OPT.70 installed)
Accuracy:	< $\pm 12\%$

Video bandwidth range:	10 Hz to 3 MHz (1 to 3 steps)
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Sweep

Sweep time	
Setting range:	20 ms to 1000 s (spectrum mode) 50 μ s to 1000 s (zero span)
Accuracy:	< $\pm 2\%$ (zero span)

Sweep mode:	Continuous, single, gated
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Trigger function	
Trigger source:	Free run, video, external, IF

Amplitude range

Measurement range:	Noise level to +30 dBm Noise level to 134 dB μ V (with the OPT.15 installed)
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Maximum safe input level:	Attenuator ≥ 10 dB
Pre-Amp OFF:	+30 dBm, 134 dB μ V (with the OPT.15 installed)
Pre-Amp ON:	+13 dBm, 120 dB μ V (with the OPT.15 installed)
U3741:	± 50 VDC max.
U3751:	± 15 VDC max.

Input attenuator range:	0 to 50 dB (10 dB steps)
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Display range:	100/50/20/10/5 dB, linear
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Scale unit:	dBm, dBmV, dB μ V, dB μ Vemf, dBpW, W, V
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Reference level setting range:	-140 to +40 dBm -31.2 to 148.8 dB μ V (with the OPT.15 installed)
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Detection mode:	Normal, Positive peak, Negative peak, Sample, RMS, and Average
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Amplitude accuracy

Calibration signal	
Frequency:	20 MHz
Level:	-20 dBm (75 Ω , with the OPT.15 installed)
Accuracy:	± 0.3 dB, ± 0.4 dB (with the OPT.15 installed)

Scale display accuracy	
Log:	± 0.5 dB/10 dB, ± 0.5 dB/80 dB, ± 0.2 dB/1 dB

Overall amplitude accuracy:	After calibration, with the pre-amp OFF, and at a temperature ranging from 20 to 30°C Input attenuator 10 dB Reference level 0 dBm, input signal level -10 to -50 dBm ± 1.0 dB (9 kHz to 3 GHz) ± 0.8 dB (10 MHz to 3 GHz)
U3741:	Reference level 108.8 dB μ V Input signal level 98.8 to 58.8 dB μ V ± 2.1 dB (9 kHz to 2.2 GHz) ± 0.9 dB (10 MHz to 2.2 GHz)
With the OPT.15 installed:	Reference level 0 dBm, input signal level -10 to -50 dBm Image suppression OFF ± 1.5 dB (9 kHz to 10 MHz) ± 0.8 dB (10 MHz to 3.1 GHz) ± 1.0 dB (3.1 MHz to 8 GHz)
U3751:	Reference level 0 dBm, input signal level -10 to -50 dBm Image suppression OFF ± 1.5 dB (9 kHz to 10 MHz) ± 0.8 dB (10 MHz to 3.1 GHz) ± 1.0 dB (3.1 MHz to 8 GHz)

Dynamic range

Displayed average noise level:	Reference level < -45 dBm (63.8 dB μ V, with the OPT.15 installed) Resolution bandwidth 100 Hz
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U3741	
Pre-Amp OFF:	-123 dBm + 2f (GHz) dB (f < 2.5 GHz) -123 dBm + 2.5f (GHz) dB (f \geq 2.5 GHz) -12 dB μ V + 2f (GHz) dB (f \leq 2.2 GHz, with the OPT.15 installed)
Pre-Amp ON:	-138 dBm + 3f (GHz) dB -27 dB μ V + 3f (GHz) dB (with the OPT.15 installed)

U3751:	Frequency 10 MHz to 8 GHz
Pre-Amp OFF:	-123 dBm + 2f (GHz) dB (f \leq 3.1 GHz) -122 dBm + 1f (GHz) dB (f \geq 3 GHz) -138 dBm + 3f (GHz) dB (f \leq 3.1 GHz)
Pre-Amp ON:	-139 dBm + 1.3f (GHz) dB (f \geq 3 GHz)

1 dB gain compression	
U3741:	Frequency > 20 MHz
Pre-Amp OFF:	> -5 dBm > 102 dB μ V (with the OPT.15 installed)
Pre-Amp ON:	> -25 dBm > 82 dB μ V (with the OPT.15 installed)
U3751:	Frequency > 20 MHz
Pre-Amp OFF:	> -8 dBm
Pre-Amp ON:	> -25 dBm

Second harmonic distortion	
U3741:	< -70 dBc (Pre-Amp OFF, Frequency > 20 MHz, Mixer input level -30 dBm (77 dB μ V, with the OPT.15 installed))
U3751:	< -70 dBc (Pre-Amp OFF, Frequency > 200 MHz, Mixer input level -40 dBm) < -75 dBc (typ., Pre-Amp OFF, Frequency > 300 MHz, Mixer input level -30 dBm)

Third order intermodulation distortion	
U3741:	< -60dBc (Pre-Amp OFF, Mixer input level -20 dBm (88.8 dB μ V, with the OPT.15 installed), Frequency > 10 MHz, 2 signal separation > 200 kHz)
U3751:	< -50 dBc (Pre-Amp OFF, Mixer input level -20 dBm, Frequency 10 MHz to 8 GHz, 2 signal separation > 200 kHz)

Image/multiple/out of band response:	< -60 dBc (Mixer input level -20 dBm (88.8 dB μ V, with the OPT.15 installed), Image suppression ON (U3751))
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Residual response	
U3741:	< -90 dBm (Frequency > 1 MHz, Pre-Amp OFF) < 21 dB μ V (with the OPT.15 installed)
U3751:	< -80 dBm (Frequency 10 MHz to 8 GHz, Pre-Amp OFF)

Inputs/outputs

RF input	
Connector:	N-type female
Impedance:	50 Ω (nominal) 75 Ω (nominal, with the OPT.15 installed)
VSWR:	Input attenuator > 10 dB
U3741:	< 1.5 : 1 < 1.6 : 1 (with the OPT.15 installed)
U3751:	< 1.7 : 1 (Frequency < 3.0 GHz) < 2.0 : 1 (Frequency > 3.0 GHz)
Calibration signal output	
Connector:	BNC female
Impedance:	50 Ω (nominal) 75 Ω (nominal, with the OPT.15 installed)
Frequency:	20 MHz
Level:	-20 dBm
Frequency reference input	
Connector:	BNC female
Impedance:	50 Ω (nominal)
Frequency (MHz):	1, 1.544, 2.048, 5, 10, 12.8, 13, 13.824, 14.4, 15.36, 15.4, 16.8, 19.2, 19.44, 19.6608, 19.68, 19.8, 20, 26
Level:	0 to +16 dBm
External trigger input	
Connector:	BNC female
Impedance:	10 k Ω (nominal), DC coupling
Level:	0 to +5 V
21.4-MHz IF output	
Connector:	BNC female
Impedance:	50 Ω (nominal)
Level:	Approx. mixer input level + 10 dB (at a frequency of 20 MHz)
Battery mount	
Connector:	AntonBauer QR mount
External DC power input	
Connector:	XLR-4
Voltage range:	+11 to +17 V
GPIO:	IEEE-488 bus connector
USB:	USB 1.1
Video output connector:	D-sub15 pin female
LAN connector:	RJ45 type, 10/100 base-T
Audio output:	Small monophonic jack

General specifications

Operating environment range:	Ambient temperature: 0 to + 50°C Humidity: RH 85% or less (no condensation)
Storage environment range:	-20 to +60°C, RH 85% or less
AC power input:	Automatic switching to 100 VAC or 200 VAC 100 V: 100 to 120 V, 50/60 Hz 200 V: 220 to 240 V, 50/60 Hz
DC power input:	DC + 11 V to +17 V
Power consumption:	100 VA or less (AC operation) 70 W or less (DC operation)
Mass	
U3741:	5 kg or less (without option)
U3751:	5.6 kg or less (without option)
External dimensions (W x H x D):	
	Approx. 308 x 175 x 209 mm (not including protruding parts) Approx. 337 x 190 x 307 mm (including the handle and feet)

OPT.20 High-Stability Frequency Reference Source

Frequency reference stability	
Aging rate:	$\pm 2 \times 10^{-8}$ /day $\pm 1 \times 10^{-7}$ /year
Warm-up drift:	$\pm 5 \times 10^{-8}$ (+25°C, 10 minutes after power-on)
Temperature stability:	$\pm 5 \times 10^{-8}$ (0 to +40°C, with reference to 25°C)

OPT.28 EMC Filter

6 dB bandwidth:	200 Hz, 9 kHz, 120 kHz, 1 MHz
Bandwidth accuracy:	< $\pm 10\%$

OPT.70 High-Purity Spectrum Analysis

Frequency span	
Range:	1 kHz to Full, zero span
Accuracy:	< $\pm 1\%$
Resolution bandwidth	
Range:	U3741: 30 Hz to 1 MHz (1 to 3 steps) U3751: 30 Hz to 3 MHz (1 to 3 steps)
Accuracy:	< $\pm 12\%$
Spectrum purity:	
	-100 dBc/Hz (offset 10 kHz, span < 1 MHz)
Displayed average noise level: Reference level < -45 dBm,	
	Resolution bandwidth 30 Hz
U3741:	Frequency 10 MHz to 3 GHz
Pre-Amp OFF:	-126 dBm + 2f (GHz) dB (f < 2.5 GHz) -126 dBm + 2.5f (GHz) dB (f \geq 2.5 GHz)
Pre-Amp ON:	-141 dBm + 3f (GHz) dB
U3751:	Frequency 10 MHz to 8 GHz
Pre-Amp OFF:	-126 dBm + 2f (GHz) dB (f \leq 3.1 GHz) -125 dBm + 1f (GHz) dB (f \geq 3 GHz)
Pre-Amp ON:	-141 dBm + 3f (GHz) dB (f \leq 3.1 GHz) -142 dBm + 1.3f (GHz) dB (f \geq 3 GHz)

OPT.75 75 Ω Tracking Generator

Frequency range:	100 kHz to 2.2 GHz
Frequency offset	
Range:	0 Hz to 1 GHz
Accuracy:	±300 Hz
Resolution:	1 kHz
Output level range:	107 to 47 dBμV (0.5 dB steps)
Output level accuracy:	±0.5 dB (20 MHz, 97 dBμV, +20 to +30°C)
Output level flatness:	Using 20 MHz and 97 dBμV as a reference ±1.0 dB (1 MHz to 1 GHz) ±1.5 dB (100 kHz to 2.2 GHz)
Output level switch error:	Using 20 MHz and 97 dBμV as a reference ±1.0 dB (1 MHz to 1 GHz, 107 to 47 dBμV) ±2.0 dB (1 MHz to 2.2 GHz, 107 to 47 dBμV)
Frequency offset OFF:	±3.0 dB (100 kHz to 2.2 GHz, 107 to 77 dBμV) ±4.0 dB (100 kHz to 2.2 GHz, 76.5 to 47 dBμV)
Frequency offset ON:	±5.0 dB (100 kHz to 2.2 GHz)
Output spurious:	Output level 97 dBμV
Harmonic:	< -15 dBc (100 kHz to 1 MHz) < -20 dBc (1 MHz to 2.2 GHz)
Non-harmonic:	< -20 dBc (Frequency offset OFF)
TG leakage:	< 31 dBμV (Input attenuator 0 dB)
Output impedance:	75 Ω (nominal)
VSWR:	≤ 2.0 : 1 (Output level ≤ 97 dBμV)
Maximum allowable level:	117 dBμV, ±10 VDC

OPT.76 50 Ω Tracking Generator

Frequency range:	100 kHz to 3 GHz
Frequency offset	
Range:	0 Hz to 1 GHz
Accuracy:	±300 Hz
Resolution:	1 kHz
Output level range:	0 to -60 dBm (0.5 dB steps)
Output level accuracy:	±0.5 dB (20 MHz, -10 dBm, +20 to +30°C)
Output level flatness:	Using 20 MHz and -10 dBm as a reference ±1.0 dB (1 MHz to 1 GHz) ±1.5 dB (100 kHz to 3 GHz)
Output level switch error:	Using 20 MHz and -10 dBm as a reference ±1.0 dB (1 MHz to 1 GHz, 0 to -60 dBm) ±2.0 dB (1 MHz to 2.6 GHz, 0 to -60 dBm)
Frequency offset OFF:	±3.0 dB (100 kHz to 3 GHz, 0 to -30 dBm) ±4.0 dB (100 kHz to 3 GHz, -30.5 to -60 dBm)
Frequency offset ON:	±5.0 dB (100 kHz to 3 GHz)
Output spurious:	Output level -10 dBm
Harmonic:	< -15 dBc (100 kHz to 1 MHz) < -20 dBc (1 MHz to 3 GHz)
Non-harmonic:	< -20 dBc (Frequency offset OFF)
TG leakage:	< -80 dBm (Input attenuator 0 dB)
Output impedance:	50 Ω (nominal)
VSWR:	≤ 2.0 : 1 (Output level ≤ -10 dBm)
Maximum allowable level:	+10 dBm, ±10 VDC

Ordering information

Main unit	
Spectrum analyzer:	U3741 U3751
Accessories	
Operating manual (CD):	BU37005
Power cable:	A01412
Input cable:	A01037-0300
With the OPT.15 installed:	D3C0025-S-SA
N-BNC adapter:	JUG-201A/U
With the OPT.15 installed:	BA-A165
NC-F adapter (with the OPT.15 installed):	NCP-NFJ
Ferrite core:	ESD-SR-120
Options	
75 Ω Input Impedance:	OPT.15
High-Stability Frequency Reference Source:	OPT.20
EMC Filter:	OPT.28
High-Purity Spectrum Analysis:	OPT.70
75 Ω Tracking Generator:	OPT.75
50 Ω Tracking Generator:	OPT.76
Accessories	
Japanese operating manual (printed manual):	JU37005
English operating manual (printed manual):	EU37005
Battery pack:	A870008
Charger:	A870009
75 Ω input impedance converter:	ZT-130NC
DC power cable:	A114020
Carrying bag:	A129001
Transit case:	A129002
Rack mount kit (JIS):	A122003
Rack mount kit (EIA):	A124004

Note on accessories:

The operating manual on the CD is supplied as standard.

The printed version of the operating manual is offered as an accessory.

*Please refer to product manual for complete system specifications.
Specifications may change without notification.*