

Key performance of the U3800 Series

- World's first two-channel simultaneous/parallel measurement in the analysis bandwidth (maximum: 40 MHz)
- Vector comparison with high sensitivity and wide dynamic range (pre-amplifier equipped as standard)
- U3800 Series to support 9 kHz to 43 GHz of measurement frequencies
 - 3 GHz Cross Domain Analyzer U3841: 9 kHz to 3 GHz
 - 8 GHz Cross Domain Analyzer U3851: 9 kHz to 8 GHz
 - 43 GHz Cross Domain Analyzer U3872: 9 kHz to 43 GHz



U3841/3851 RF-part Specifications

Frequency

U3841:	9 kHz to 3 GHz
Pre-Amp:	10 MHz to 3 GHz
U3751:	9 kHz to 3.1 GHz (band 0), 3 GHz to 8 GHz (band 1)
Pre-Amp:	10 MHz to 8 GHz

Frequency reference stability

Aging rate:	$< \pm 2 \times 10^{-6}$ /year
Temperature stability:	$< \pm 2.5 \times 10^{-6}$ (0 to 50°C)

Frequency span

Range:	Zero span, 5 kHz to Full Frequency Sweep, 100 Hz to 40 MHz FFT, CBW step
Accuracy:	$< \pm 1\%$

Spectrum purity:

	-85 dBc/Hz (offset 10 kHz, span ≤ 200 kHz)
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Resolution bandwidth

Range:	100 Hz to 3 MHz Frequency Sweep, 1-3 steps 1 Hz to 400 kHz FFT, CBW/100
Accuracy:	$< \pm 12\%$

Video bandwidth range:

	10 Hz to 3 MHz (1-3 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:	$< \pm 2\%$
Sweep mode:	Continuous, single, gated
Trigger source:	Free run, video, external, IF

Amplitude range

Measurement range:	Displayed average noise level to +30 dBm
Maximum safe input level:	Attenuator ≥ 10 dB
Pre-Amp OFF:	+30 dBm
Pre-Amp ON:	+13 dBm
U3841:	± 50 VDC max.
U3851:	± 15 VDC max.
Input attenuator range:	0 to 50 dB (10 dB steps)
Detection mode:	Normal, Positive peak, Negative peak, Sample, RMS, and Average

Amplitude accuracy

Calibration signal	
Frequency:	20 MHz
Level:	-20 dBm
Accuracy:	± 0.3 dB
Level measurement accuracy:	After automatic calibration, image suppression OFF, pre-amp OFF, at temperature 20 to 30°C, input attenuator 10 dB, reference level 0 dBm, input signal level -10 dBm
U3841:	± 1.0 dB (9 kHz to 3 GHz) ± 0.8 dB (10 MHz to 3 GHz)
U3851:	± 1.5 dB (9 kHz to 10 MHz) ± 0.8 dB (10 MHz to 3.1 GHz) ± 1.0 dB (3.1 GHz to 8 GHz)

Dynamic range

Displayed average noise level:	Frequency ≥ 10 MHz, reference level < -45 dBm, at RBW 100 Hz
U3841:	Frequency 10 MHz to 3 GHz
Pre-Amp OFF:	-123 dBm + 2f (GHz) dB ($f < 2.5$ GHz) -123 dBm + 2.5f (GHz) dB ($f \geq 2.5$ GHz)
Pre-Amp ON:	-138 dBm + 3f (GHz) dB
U3851:	Frequency 10 MHz to 8 GHz
Pre-Amp OFF:	-123 dBm + 2f (GHz) dB ($f \leq 3.1$ GHz, band 0) -122 dBm + 1.2f (GHz) dB ($f \geq 3$ GHz, band 1)
Pre-Amp ON:	-138 dBm + 3f (GHz) dB ($f \leq 3.1$ GHz, band 0) -139 dBm + 1.4f (GHz) dB ($f \geq 3$ GHz, band 1)

1 dB gain compression

U3841:	Frequency ≥ 20 MHz
Pre-Amp OFF:	> -5 dBm
Pre-Amp ON:	> -25 dBm
U3851:	Frequency ≥ 20 MHz
Pre-Amp OFF:	> -8 dBm
Pre-Amp ON:	> -25 dBm

Third order intermodulation distortion

U3841:	< -60 dBc (Pre-Amp OFF, mixer input level -20 dBm, frequency > 10 MHz, 2-signal separation > 200 kHz)
U3851:	< -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

U3841:	< -60 dBc (Mixer input level -20 dBm)
U3851:	< -60 dBc (Mixer input level -30 dBm, Image suppression ON)

Residual response:

U3841:	Frequency > 10 MHz, pre-Amp OFF
U3851:	< -80 dBm



RF input

Connector:	N-type female
Impedance:	50 Ω (nominal)
VSWR	
U3841:	<1.5 : 1
U3851:	<1.7 : 1 (10 MHz $\leq$ Frequency $\leq$ 3.0 GHz)
	<2.0 : 1 (Frequency >3.0 GHz)

Calibration signal output

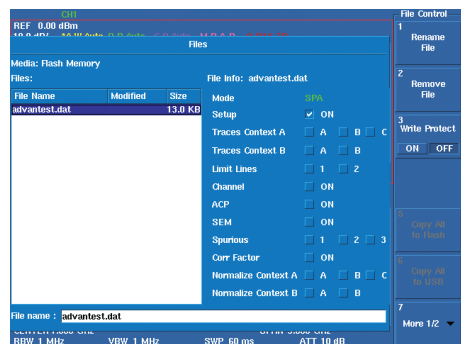
Connector:	N-type female
Impedance:	50 Ω (nominal)
Frequency:	20 MHz
Level:	-20 dBm

Front-panel interface

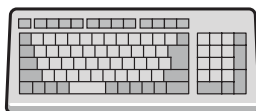
Audio output:	Small monophonic jack
USB:	USB 1.1

A USB interface that is useful for storing data and editing files.

Since the USB interface is provided at the front, USB accessories can be easily connected. This feature is very useful for organizing and storing data, and for editing files for the given measurement condition setting.



USB memory



Keyboard

Common Options

OPT.76 Tracking generator (50 Ω , 3 GHz)

Frequency range:	100 kHz to 3 GHz
Frequency offset	
Range:	0 to 1 GHz
Resolution:	1 kHz
Accuracy:	± 300 Hz
Output level range:	-5 to -60 dBm (0.5 dB steps)
TG leakage:	≤ -80 dBm (Input attenuator 0 dB)
Output impedance:	50 Ω (nominal)
Maximum allowable level:	+10 dBm, ± 10 VDC

OPT.77 Tracking generator (50 Ω , 6 GHz)

Frequency range:	100 kHz to 6 GHz
Output level range:	-5 to -30 dBm (0.5 dB step)
TG leakage:	≤ -80 dBm (Input attenuator 0 dB)
Output impedance:	50 Ω (nominal)
Maximum allowable level:	+10 dBm, ± 10 VDC

OPT.20 High-stability frequency reference source

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:	$< \pm 10\%$
Detection mode:	Normal, Positive peak, Negative peak, Sample, RMS, Average, and QP

U3872 RF-part Specifications

Frequency

Frequency range	
L-input	
Frequency range:	9 kHz to 8 GHz
Frequency band:	9 kHz to 3.1 GHz (band 0) 3.0 GHz to 8.0 GHz (band 1) 10 MHz to 8 GHz
Pre-Amp:	
H-input	
Frequency range:	10 MHz to 43 GHz
Frequency band:	10 MHz to 3.1 GHz (band 0, N = 1) 3.0 to 8.0 GHz (band 1, N = 1) 7.8 to 14.573 GHz (band 2, N = 2) 14.4288 to 28.0 GHz (band 3, N = 4) 27.8 to 43.0 GHz (band 4, N = 6)

Frequency reference stability	
Aging rate:	<±2 x 10 ⁻⁶ /year
Temperature stability:	<±2.5 x 10 ⁻⁶ (0 to 50°C)

Frequency span	
Range:	Zero span, 5 kHz to Full Frequency Sweep, 100 Hz to 40 MHz FFT, CBW step
Accuracy:	<±1%

Spectrum purity:	(-85 + 20 LogN) dBc/Hz, at offset 10 kHz, span ≤200 kHz
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Resolution bandwidth	
Range:	100 Hz to 3 MHz Frequency Sweep, 1-3 steps 1 Hz to 400 kHz FFT, CBW/100
Accuracy:	<±12%

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

Sweep time	
Setting range:	20 ms to 1000 s (spectrum mode) 50 μs to 1000 s (zero span)
Accuracy:	<±2%

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

Measurement range	
L-input:	Displayed average noise level to +30 dBm
H-input:	Displayed average noise level to +10 dBm

Maximum safe input level	
L-input	
Pre-Amp OFF:	+30 dBm (attenuator ≥10 dB)
Pre-Amp ON:	+13 dBm (attenuator 0 dB), ±15 VDC max.
H-input:	+10 dBm (attenuator 0 dB), ±25 VDC max.

Input attenuator range	
L-input:	0 to 50 dB (10 dB steps)
H-input:	0 to 30 dB (10 dB steps)

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
Accuracy:	±0.3 dB

Level measurement accuracy:	
After automatic calibration, image suppression OFF, pre-amp OFF, at temperature 20 to 30°C, input attenuator 10 dB, reference level 0 dBm, input signal level -10 dBm	
L-input:	Band 0: ±0.8 dB (frequency: 10 MHz to 3.1 GHz) Band 1: ±1.0 dB (frequency: 3.1 to 8 GHz) ±1.5 dB (frequency: 9 kHz to 10 MHz)
H-input:	Band 0: ±0.8 dB (frequency: 10 MHz to 3.1 GHz) Band 1: ±1.0 dB (frequency: 3.1 to 8 GHz) Band 2: ±3.0 dB (frequency: 7.8 to 14.573 GHz) Band 3: ±3.5 dB (frequency: 14.4288 to 28.0 GHz) Band 4: ±4.5 dB (frequency: 27.8 to 43 GHz)

Dynamic range

Displayed average noise level:	Frequency ≥10 MHz, reference level <-45 dBm, at RBW 100Hz
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L-input	
Pre-Amp OFF:	Band 0: -123 dBm + 2f (GHz) dB Band 1: -122 dBm + 1.2f (GHz) dB
Pre-Amp ON:	Band 0: -138 dBm + 3f (GHz) dB Band 1: -139 dBm + 1.4f (GHz) dB
H-input:	
Band 0: -121 dBm + 2f (GHz) dB Band 1: -120 dBm + 1.5f (GHz) dB Band 2: -111 dBm (typical: -118 dBm) Band 3: -109 dBm (typical: -117 dBm) Band 4: -105 dBm (typical: -112 dBm)	

1 dB gain compression:	At frequency ≥10 MHz
Pre-Amp OFF:	>-8 dBm
Pre-Amp ON:	>-25 dBm

Third order intermodulation distortion:	
-50 dBc (frequency >10 MHz, pre-amp OFF, mixer input level -20 dBm, 2-signal separation >1 MHz)	

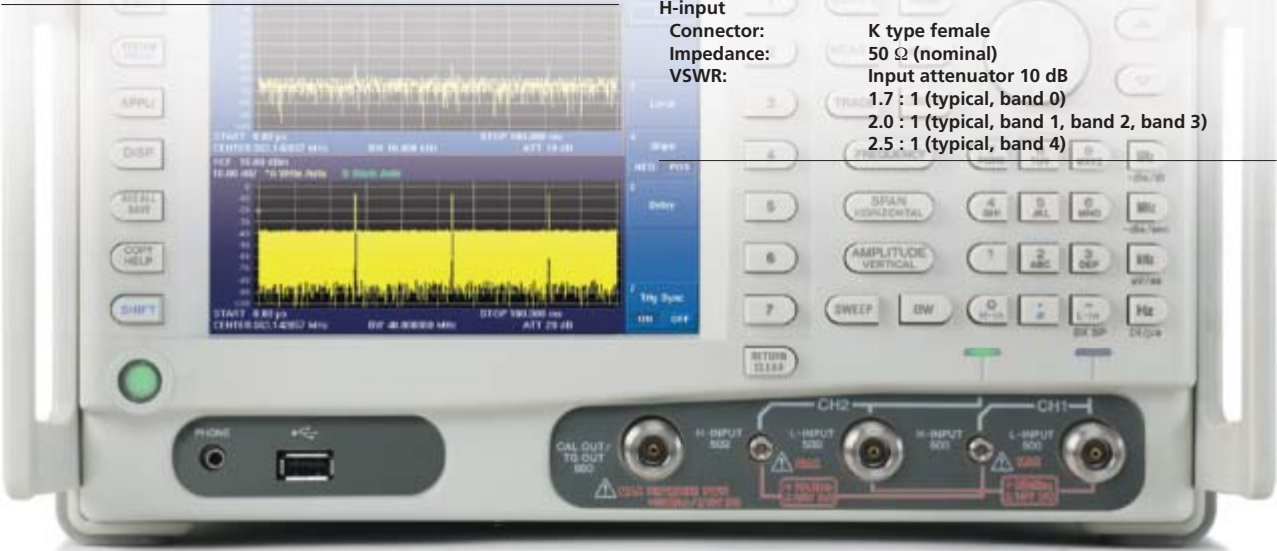
Image/Multiple/ Out-of-band response:	
<-60 dBc (mixer input level -30 dBm, image suppression ON, span <5 GHz)	

Residual response:	-80 dBm (frequency >10 MHz, pre-amp OFF)
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RF inputs (CH1/2)

L-input	
Connector:	N-type female
Impedance:	50 Ω (nominal)
VSWR:	Input attenuator 10 dB <1.7 : 1 (Frequency 10 MHz to 3 GHz, band 0) <2.0 : 1 (Frequency >3.0 GHz, band 1)

H-input	
Connector:	K type female
Impedance:	50 Ω (nominal)
VSWR:	Input attenuator 10 dB 1.7 : 1 (typical, band 0) 2.0 : 1 (typical, band 1, band 2, band 3) 2.5 : 1 (typical, band 4)



Rear-panel Interface Specifications

Frequency reference input	
Connector:	BNC female
Impedance:	50 Ω (nominal)
Frequency:	10 MHz
Level:	-2 to +16 dBm
Frequency reference output	
Connector:	BNC female
Impedance:	50 Ω (nominal)
Frequency:	10 MHz
Level:	>0 dBm
External trigger input	
Connector:	BNC female
Impedance:	10 kΩ (nominal), DC coupling
Level:	0 to +5 V
External trigger output	
Connector:	BNC female
Level:	+3.3 V (CMOS)
IF output:	
Connector:	IF output from CH1 only
Impedance:	BNC female
Frequency:	50 Ω (nominal)
	21.4 MHz, 97.5 MHz
	one of two frequencies, depending on resolution bandwidth, capture bandwidth and capture synchronization mode.
GPIO:	
IEEE-488 bus connector	
USB:	
USB 1.1	
Video output:	
VGA (D-sub15 pin female)	
LAN:	
RJ45 type, 10/100 base-T	



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
	Automatic switching to 100 VAC or 220 VAC
AC power input:	100 VAC: 100-120 V, 50/60 Hz
	200 VAC: 220-240 V, 50/60 Hz
Power consumption:	
Mass:	
150 VA or less	
10 kg or less (excluding options)	
External dimensions (W x H x D):	
Approx. 308 x 175 x 339 mm (not including protruding parts)	
Approx. 337 x 190 x 437 mm (including the handle and feet)	

Ordering Information

Main units	
3 GHz Cross domain analyzer:	U3841
8 GHz Cross domain analyzer:	U3851
43 GHz Cross domain analyzer:	U3872
Options	
High-stability frequency reference source:	OPT.20
EMC filter:	OPT.28
Tracking generator (3 GHz):	OPT.76
Tracking generator (6 GHz):	OPT.77

Cross Domain Analyzer™ is a trademark of Advantest Corporation.

Please be sure to read the product manual thoroughly before using the products.
Specifications may change without notification.