

Specifications

Frequency

Frequency range	
RF input 1:	9 kHz to 8 GHz
Frequency band:	9 kHz to 3.1 GHz (band 0) 3.0 GHz to 8.0 GHz (band 1)
Preamp:	10 MHz to 8 GHz
RF input 2:	10 MHz to 31.8 GHz (U3771) 10 MHz to 43 GHz (U3772)
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 31.8 GHz (band 4, N=6, U3771) 27.8 to 43.0 GHz (band 4, N=6, U3772)

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:	Resolution bandwidth ≤ 100 kHz, span ≤ 100 MHz, 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 Hz x Np-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:	< $\pm 1\%$

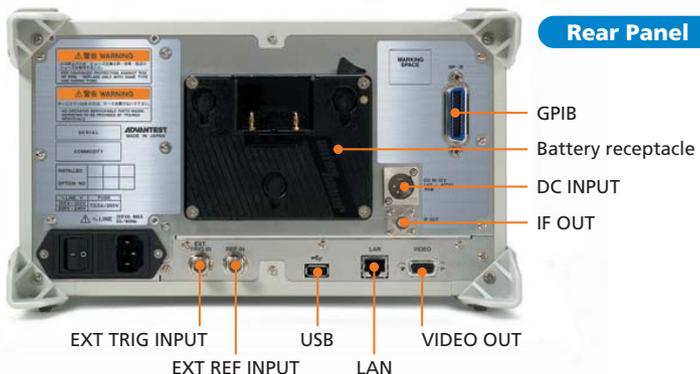
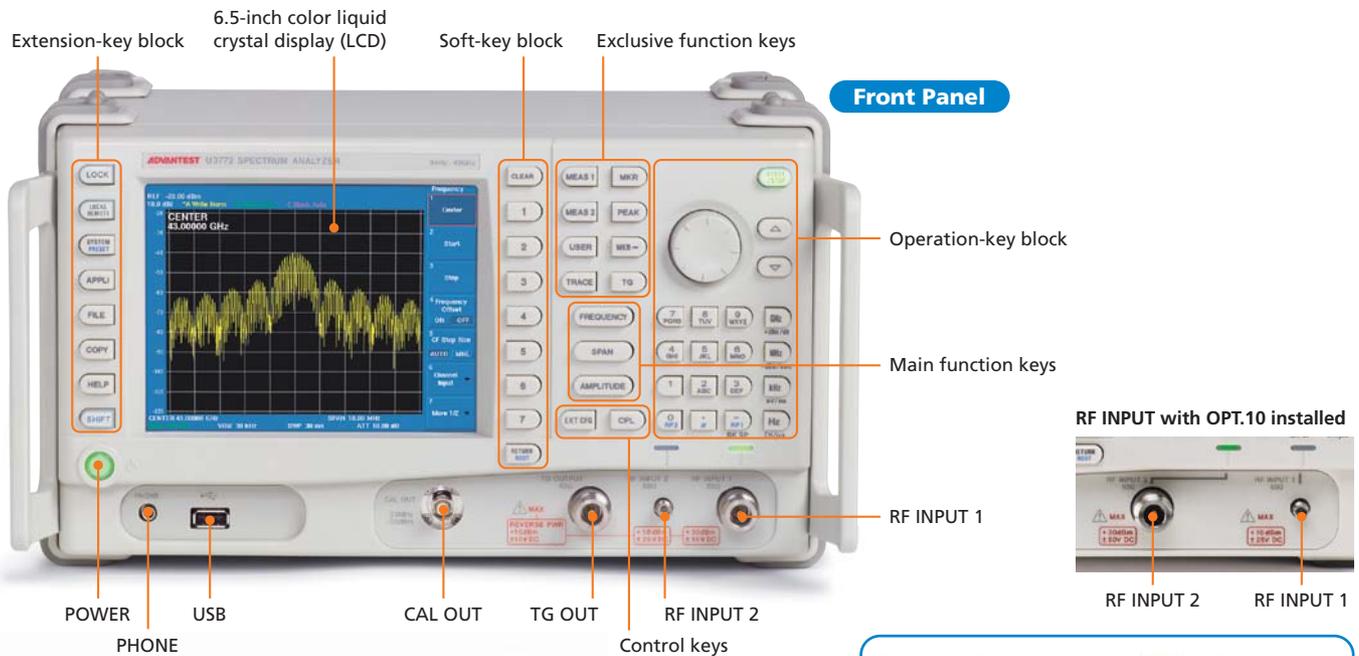
Spectrum purity:	(-85 + 20 LogN) dBc/Hz, offset 10 kHz, span < 200 kHz
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Resolution bandwidth	
Range:	100 Hz to 3 MHz (1 to 3 steps) 30 Hz to 3 MHz (with OPT.70/71 installed)
Accuracy:	< $\pm 12\%$

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
Trigger function	
Trigger source:	Free run, video, external, IF



Amplitude range

Measurement range:	
RF input 1:	Displayed average noise level to +30 dBm
RF input 2:	Displayed average noise level to +10 dBm
Maximum safe input level:	Attenuator \geq 10 dB
RF input 1:	± 15 VDC max.
Preamp off:	+30 dBm (Attenuator \geq 10 dB)
Preamp on:	+13 dBm (Attenuator 0 dB)
RF input 2:	+10 dBm (Attenuator 0 dB), ± 25 VDC max.
Input attenuator range:	
RF input 1:	0 to 50 dB (10 dB steps)
RF input 2:	0 to 30 dB (10 dB steps)
Display range:	100/50/20/10/5 dB, linear
Scale unit:	dBm, dBmV, dB μ V, dB μ Vemf, dBpW, W, V
Reference level setting range:	
RF input 1:	-140 to +40 dBm
RF input 2:	-140 to +20 dBm
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
Scale fidelity	
Log:	± 0.5 dB/10 dB ± 0.5 dB/80 dB ± 0.2 dB/1 dB
Level measurement accuracy:	After automatic calibration, image suppression off, Preamp off, at temperature 20 to 30°C, input attenuator 10 dB, reference level 0 dBm, input signal level -10 to -50 dBm
RF input 1	
Band 0:	± 0.8 dB (frequency: 10 MHz to 3.1 GHz)
Band 1:	± 1 dB (frequency: 3.1 to 8 GHz) ± 1.5 dB (frequency: 9 kHz to 10 MHz)
RF input 2	
Band 0:	± 0.8 dB (frequency: 10 MHz to 3.1 GHz)
Band 1:	± 1 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 31.8 GHz, U3771) ± 4.5 dB (frequency: 27.8 to 43 GHz, U3772)

Dynamic range

Displayed average noise level:	Frequency >10 MHz, reference level ≤ -45 dBm, at resolution bandwidth 100 Hz
RF input 1	
Band 0, Preamp off:	-123 dBm + 2f (GHz) dB
Band 1, Preamp off:	-122 dBm + 1.2f (GHz) dB
Band 0, Preamp on:	-138 dBm + 3f (GHz) dB
Band 1, Preamp on:	-139 dBm + 1.4f (GHz) dB
RF input 2	
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:	Frequency: >10 MHz
Preamp off:	> -8 dBm
Preamp on:	> -25 dBm

Second harmonic distortion:	Preamp off ≤ -70 dBc
RF input 1:	(mixer input level: -40 dBm; frequency: >200 MHz) ≤ -75 dBc (typical)
RF input 2:	(mixer input level: -30 dBm; frequency: >300 MHz) ≤ -40 dBc (mixer input level: -30 dBm) (U3771: 300 MHz to 31.8 GHz) (U3772: 300 MHz to 40 GHz)
Third order intermodulation distortion:	-50 dBc (frequency >10 MHz, Preamp 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, Preamp off)

Inputs/outputs

RF input	
RF input 1	
Connector:	N type female
Impedance:	50 Ω (nominal)
VSWR:	Input attenuator \geq 10 dB $< 1.7 : 1$ (10 MHz \leq Frequency \leq 3.0 GHz, Band 0) $< 2.0 : 1$ (Frequency > 3.0 GHz, Band 1)
RF input 2	
Connector:	K type female
Impedance:	50 Ω (nominal)
VSWR:	Input attenuator \geq 10 dB 1.7 : 1 (typical, Band 0) 2.0 : 1 (typical, Band 1, Band 2, Band 3) 2.5 : 1 (typical, Band 4)
Calibration signal output	
Connector:	BNC female
Impedance:	50 Ω (nominal)
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
GPIB:	IEEE-488 bus connector
USB:	USB 1.1
Video output:	VGA (D-sub15 pin female)
LAN:	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) -20 to +60°C, RH 85% or less
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:	6 kg or less (excluding options)
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.10 2 Channel input (50 Ω, 3 GHz)

Cross talk between input channels (between RF input 1 and RF input 2):	<-90 dBc (Input level -10 dBm, Input attenuator 0 dB, Preamplifier off)
RF input 2 Connector:	N type female
Impedance:	50 Ω (nominal)
VSWR:	<1.5 : 1 (Input attenuator > 10 dB)
External trigger input:	An external trigger input can be selected as a trigger input of RF input 2 when installing the OPT.10. The input connector is only 1 system.
21.4 MHz IF output:	Only IF output which supports RF input 1, when installing the OPT.10.

Except for all items mentioned above, the frequency, sweep, amplitude range, amplitude accuracy, dynamic range, input/output, and performance of specifications follow the standard specifications of the RF input 1 option of the U3741 3 GHz spectrum analyzer.

OPT.20 High-stability frequency reference source

Frequency reference stability	
Aging rate:	±2 x 10 ⁻⁹ /day ±1 x 10 ⁻⁷ /year
Warm-up drift:	±5 x 10 ⁻⁹ (+25°C, 10 minutes after power-on)
Temperature stability:	±5 x 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:	< ±10%
Detection mode:	QP

OPT.53/54 Time-domain analysis (1 ch/2 ch)

RF range:	Follows the U3771/3772.
RF amplitude range:	Noise level to +30 dBm ^{*1)}
Wave recording method:	I/Q vector time waveform
Measuring bandwidth (CBW):	100 Hz to 3 MHz (1 to 3 steps)
IQ sampling rate:	713 Hz (BW 100 Hz) to 21.4 MHz (BW 3 MHz)
IQ waveform recording time:	49 msec (BW 3 MHz) to 1000 sec (BW 100 Hz)
Number of IQ waveform recording samples:	1 M samples (I/Q)

*1) The noise level follows the dynamic range of the U3771/3772.

OPT.55/56 Wide-band time-domain analysis (1 ch/2 ch)

RF range:	Follows the U3771/3772.
RF amplitude range:	Noise level to +30 dBm ^{*1)}
Wave recording method:	I/Q vector time waveform
Measuring bandwidth (CBW):	100 Hz to 30 MHz (1 to 3 steps), 40 MHz
IQ sampling rate:	500 Hz (BW 100 Hz) to 65 MHz (BW 40 MHz)
IQ waveform recording time:	120 msec (BW 40 MHz) to 1000 sec (BW 100 Hz)
Number of IQ waveform recording samples:	8 M samples (I/Q)

*1) The noise level follows the dynamic range of the U3771/3772.

OPT.70/71 High-purity spectrum analysis (1ch/2 ch)

Frequency span	
Range:	1 kHz to Full, zero span
Accuracy:	< ±1%
Resolution bandwidth	
Range:	30 Hz to 3 MHz (1 to 3 steps)
Accuracy:	< ±12%
Spectrum purity:	≤ (-98 + 20 LogN) dBc/Hz (offset 10 kHz, span ≤ 1 MHz) (-102 + 20 LogN) dBc/Hz (typical)
Displayed average noise level:	Frequency >10MHz, Reference level <-45dBm, Resolution bandwidth 30 Hz
RF input 1	
Preamp OFF:	-126 dBm + 2f (GHz) dB (band 0) -125 dBm + 1.2f (GHz) dB (band1)
Preamp ON:	-141 dBm + 3f (GHz) dB (band 0) -142 dBm + 1.4f (GHz) dB (band 1)
RF input 2:	-124 dBm + 2f (GHz) dB (band 0) -123 dBm + 1.5f (GHz) dB (band 1) -114 dBm (band 2) -112 dBm (band 3) -108 dBm (band 4)

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

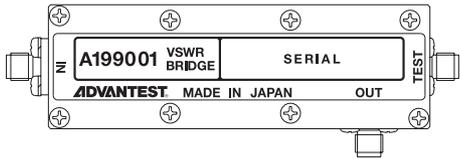
Frequency range:	100 kHz to 3 GHz
Frequency offset	
Range:	0 Hz to 1 GHz
Accuracy:	±300 Hz
Resolution:	1 kHz
Output level range:	0 to -60 dBm (0.5 dB steps)
Output level accuracy:	±0.5 dB (20 MHz, -10 dBm, +20 to +30°C)
Output level flatness:	Using 20 MHz and -10 dBm as a reference ±1.0 dB (1 MHz to 1 GHz) ±1.5 dB (100 kHz to 3 GHz)
Output level switch error:	Using -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) ±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) ±5.0 dB (100 kHz to 3 GHz, 0 to -60 dBm)
Frequency offset ON:	
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

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

Frequency range:	100 kHz to 6 GHz
Output level range:	0 to -30 dBm (0.5 dB step)
Output level accuracy:	≤ ±0.5 dB (20 MHz, -10 dBm, +20 to +30°C) 20 MHz on -10 dBm criterion, at +20 to +30°C
Output level flatness:	≤ ±1 dB (1 MHz to 1 GHz) ≤ ±1.5 dB (100 kHz to 3.1 GHz) ≤ ±2.0 dB (100 kHz to 6 GHz)
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

A199001 6 GHz VSWR bridge

Frequency range:	100 MHz to 6 GHz
Directivity:	≥ 34 dB (100 MHz to 1 GHz) ≥ 29 dB (1 to 3.8GHz) ≥ 25 dB (3.8 to 6GHz) $+15$ dBm (Input Port) ± 30 VDC (Test Port)
Maximum input power:	+15 dBm (Input Port)
DC voltage:	± 30 VDC (Test Port)
Connector:	SMA (female)
External dimensions (W x H x D):	Approx. 103 x 35 x 20 mm
Mass:	100 g or less



Ordering information

Main unit	
Spectrum analyzer:	U3771 U3772

Accessories	
Operating manual (CD):	BU3700S
Power cable:	A01412
Input cable:	A01037-0300
N-BNC adapter:	JUG-201A/U
K-K adapter:	HE-A-PJ
BNC-SMA adapter:	HRM-517
Ferrite core:	ESD-SR-120
Ferrite core:	E045R150718

Options	
2 Channel input (50 Ω)*:	OPT.10
High-stability frequency reference source:	OPT.20
EMC filter:	OPT.28
Time-domain analysis (1 ch):	OPT.53
Time-domain analysis (2 ch):	OPT.54
Wide-band time-domain analysis (1 ch):	OPT.55
Wide-band time-domain analysis (2 ch):	OPT.56
High-purity spectrum analysis (1 ch):	OPT.70
High-purity spectrum analysis (2 ch):	OPT.71
Tracking generator (3 GHz):	OPT.76
Tracking generator (6 GHz):	OPT.77

Accessories	
Filter for spurious measurement (2.8 to 18 GHz HPF):	A899001
Filter for spurious measurement (8 to 18 GHz HPF):	A899002
Filter for spurious measurement (11 to 26 GHz HPF):	A899003
Filter for spurious measurement (18 to 30 GHz HPF):	A899004
Japanese operating manual (printed manual):	JU3700S
English operating manual (printed manual):	EU3700S
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
6 GHz VSWR bridge:	A199001

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.

*: When OPT.10 is installed, the standard equipment, 9 kHz to 8 GHz, is deleted, RF1 is 10 MHz to 31.8 GHz (U3771)/10 MHz to 43 GHz (U3772), and RF2 is 9 kHz to 3 GHz.

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

Sample software

to be downloaded free from homepage

ADVANTEST provides various kinds of sample software shown below :

- Useful sample software for EMI measurement and Radio waves monitor, etc.
- Module software with source code to control a Spectrum analyzer for developers.

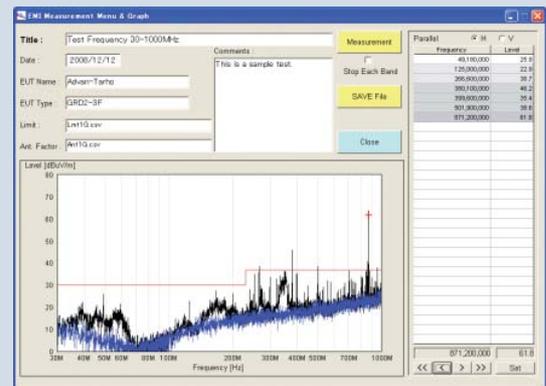
<http://www.advantest.co.jp/en-index.shtml>

PRODUCTS & SUPPORT

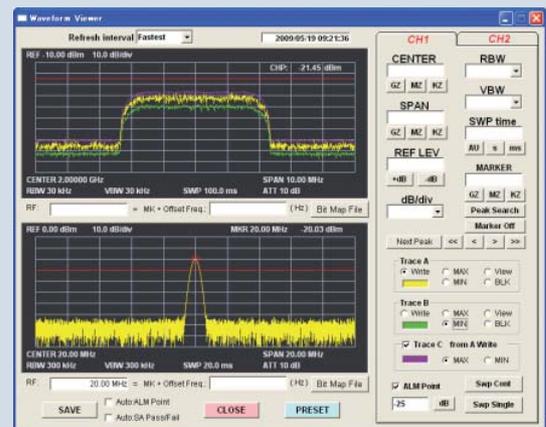
Electronic Measuring Instruments Products

U3771/U3772

Sample Software



EMI measurement software (2 ch)



Radio waves monitor (1 ch/2ch)