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)
Pre-Amp:	10 MHz to 8 GHz	
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 Freqency Sweep, 100 Hz to 40 MHz FFT, CBW step	
Accuracy:	<±1%	
Spectrum purity:	-85 dBc/Hz (offset 10 kHz, span ≤200 kHz)	
Resolution bandwidth		
Range:	Zero span, 5 kHz to Full Freqency 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	
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)		

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
Trigger source:	Free run, video, external, IF

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

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 100 Hz
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)

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)

Vector analysis

I/Q Waveform Capture	
Capture synchronization:	Trigger Synchronization, Phase Synchronization
Capture bandwidth (CBW):	100 Hz to 30 MHz, 1-3 steps, 40 MHz
Sampling rate:	500 Hz (CBW 100 Hz) to 65 MHz (CBW 40 MHz) (IQ pair data per sample)
Time resolution:	15.4 ns (CBW 40 MHz) to 2 ms (CBW 100 Hz)
Waveform recording time:	120 ms (CBW 40 MHz) to 1000 s (CBW 100 Hz)
Inter-channel balance:	
Amplitude:	±2.0 dB
Phase:	±15 deg
	At 1 GHz (CBW 100 kHz/ms), with mixer input of -30 dBm, pre-amp off, CBW at center and after calibration.

Common Options

OPT.76 Tracking generator (50Ω, 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:	50Ω (nominal)
Maximum allowable level:	+10 dBm, ±10 VDC

OPT.77 Tracking generator (50Ω, 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:	50Ω (nominal)
Maximum allowable level:	+10 dBm, ±10 VDC

OPT.20 High-stability frequency reference source

Aging rate:	±2 x 10^{-8}/day
	±1 x 10^{-7}/year
Warm-up drift:	±5 x 10^{-8} (+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:	Normal, Positive peak, Negative peak, Sample, RMS, Average, and QP

Rear-panel Interface Specifications

Frequency reference input	
Connector:	BNC female
Impedance:	50Ω (nominal)
Frequency:	10 MHz
Level:	-2 to +16 dBm
Frequency reference output	
Connector:	BNC female
Impedance:	50Ω (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:	IF output from CH1 only
Connector:	BNC female
Impedance:	50Ω (nominal)
Frequency:	21.4 MHz, 97.5 MHz one of two frequencies, depending on resolution bandwidth, capture bandwidth and capture synchronization mode.
GPIB:	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
AC power input:	Automatic switching to 100 VAC or 220 VAC 100 VAC: 100-120 V, 50/60 Hz 200 VAC: 220-240 V, 50/60 Hz
Power consumption:	150 VA or less
Mass:	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