KEYSIGHT TECHNOLOGIES (AGILENT HP)

U2021XA

The Keysight U2021XA is a high-performance USB peak and average power sensor designed to operate over a wide frequency range of 50 MHz to 18 GHz. Featuring a fast rise time of 13 ns and a wide video bandwidth of 30 MHz, the U2021XA is optimized for peak power measurements on complex modulated signals, such as LTE, wireless LAN, and radar pulses, without requiring a separate power meter.

SPECIFICATIONS

General

Interfaces	USB 2.0 (USBTMC-USB488), Micro-B connector with locking screws
Display	None (requires PC or compatible Keysight host instrument)

Physical

Power Supply	USB Bus Powered, 5 VDC ± 5%, < 500 mA (2.5 W max)
Operating Temperature	0 to 55 °C °C
Dimensions (W×H×D)	46 mm × 36 mm × 164 mm mm
Weight	0.25 kg

Measurement Ranges & Power Specifications

Frequency Range Minimum	50 MHz
Frequency Range Maximum	18 GHz
Power Measurement Range (Average Mode)	-45 to +20 dBm
Power Measurement Range (Normal/Peak Mode)	-30 to +20 dBm
Maximum Continuous Input Power	+23 dBm (200 mW)
Maximum Peak Input Power	+30 dBm (1 W) for < 1 µs
Maximum DC Input Voltage	5 VDC

Sensor Technology & Architecture

Sensor Detection Type	Diode
Video Bandwidth	30 MHz
Rise Time	≤ 13 ns
Fall Time	≤ 13 ns
Minimum Pulse Width	50 ns
Dynamic Range	65 dB (average mode), 50 dB (normal mode)

RF Port Characteristics

Input Impedance	50 Ω
RF Connector Type	N-type
Connector Sex	Male
Maximum SWR (50 MHz to 2 GHz)	1.15
Maximum SWR (2 GHz to 10 GHz)	1.20
Maximum SWR (10 GHz to 18 GHz)	1.25

Triggering & Sampling

Maximum Sampling Rate	80 MSamples/s
Internal Trigger Level Range	-20 to +20 dBm
Trigger Delay Range	±1 s
Trigger Jitter	≤ 1 ns
Time Resolution	12.5 ns

Environmental Parameters

Storage Temperature Range	-40 to +70 °C
Operating Humidity Range	Up to 95% RH at 40 °C (non-condensing)
Maximum Operating Altitude	3,000 meters

Meter Compatibility & System Integration

Recommended Calibration Cycle	1 year

Measurement Performance

Measurement Speed (Buffered)	> 25,000 readings/s
Data Buffer	250,000 readings
Automatic Pulse Measurements	Duty cycle, pulse width, pulse period, rise time, fall time, pulse top, pulse base, overshoot, undershoot

Triggering

Trigger Sources	Internal, External, Software, Bus
External Trigger Input	SMB connector, 10 kΩ input impedance, TTL compatible
External Trigger Output	SMB connector, 50 Ω output impedance, TTL compatible
External Trigger Input Voltage (High)	> 2.0 V
External Trigger Input Voltage (Low)	< 0.8 V
External Trigger Output Voltage (High)	> 2.4 V
External Trigger Output Voltage (Low)	< 0.4 V
External Trigger Latency	30 ns

Connectivity & Software

USB Interface	USB 2.0 High Speed (USB-TMC compliant)
Command Language	SCPI

Power Requirements

Power Input	5 V ± 10%
Maximum Current	450 mA

Calibration

Zeroing and Calibration	Internal zeroing and calibration

Accuracy

Linearity (Average-only Mode, 15 to 35 °C)	±0.8%
Linearity (Average-only Mode, 0 to 55 °C)	±1.3%
Linearity (Normal Mode, 15 to 35 °C)	±4.0%
Linearity (Normal Mode, 0 to 55 °C)	±4.5%
Zero Set (Average-only Mode)	2.5 nW
Zero Set (Normal Mode)	250 nW
Zero Drift (Average-only Mode)	1.0 nW
Zero Drift (Normal Mode)	100 nW
Measurement Noise (Average-only Mode)	2.5 nW
Measurement Noise (Normal Mode)	250 nW

Performance

Timebase Frequency Accuracy	±20 ppm

Connectivity

USB Protocol Speed	USB 2.0 High Speed
USB Device Class	USBTMC-USB488

Power

Typical Power Consumption	1.8 W
Maximum Power Consumption	2.3 W
Typical Current Consumption	360 mA

Environmental

Shock Resistance	MIL-PRF-28800F Class 3
Vibration Resistance	MIL-PRF-28800F Class 3

Compliance

Safety Compliance	IEC 61010-1, CAN/CSA-C22.2 No. 61010-1, ANSI/UL 61010-1
EMC Compliance	IEC 61326-1, EN 61326-1, AS/NZS CISPR 11, ICES/NMB-001

TECHNOLOGY

Diode-based Peak and Average Power Sensor

APPLICATIONS

Peak and average RF power measurements, radar pulse analysis, wireless communication standard testing (LTE, WLAN)