

KEYSIGHT TECHNOLOGIES (AGILENT HP)

11970A

The Keysight Agilent 11970A is a high-performance waveguide harmonic mixer covering the Ka-band frequency range from 26.5 to 40 GHz. Employing a dual-diode design, it achieves low conversion loss and exceptionally flat frequency response without requiring external DC bias or manual tuning stubs.

SPECIFICATIONS

General

Interfaces	None (passive RF device)
------------	--------------------------

Physical

Power Supply	None (unbiased passive device, requires no external AC or DC power)
Operating Temperature	0 to +55 °C °C
Dimensions (W×H×D)	81 mm × 47 mm × 73 mm mm
Weight	0.14 kg

RF & Electrical Performance

RF Frequency Range	26.5 to 40 GHz
Waveguide Band Designation	Ka-band
Harmonic Number (N)	8-
LO Frequency Range	3 to 6.1 GHz
IF Output Frequency Range	DC to 1300 MHz
LO Input Power Range	+14 to +18 dBm
Conversion Loss (Maximum)	26 dB
Flat Frequency Response	±1.9 dB
Maximum CW RF Input Level	+20 dBm (100 mW)
Maximum Peak Pulse Power	+24 dBm (250 mW)
Typical Gain Compression	-5 dBm
Typical Odd-Order Suppression	>20 dB

Port & Interface Characteristics

RF Port Interface	WR-28 Waveguide
Waveguide Flange Type	UG-599/U
LO/IF Port Connector	SMA female
Typical RF Input VSWR	<2.2:1
Nominal Impedance	50 Ω (at SMA port)

System Compatibility & Bias Control

Bias & Tuning Requirements	None (Passive operation without external DC bias or tuning stubs)
Compatible Spectrum Analyzers	Agilent/Keysight E4440A/46A/48A PSA Series, E4407B ESA-E Series, 8560 E/EC-Series, 8566B (with 11975A amplifier), and 70000 MMS (with 70907A/B)
Amplitude Calibration	Supported via conversion loss calibration chart on the mixer body

Environmental & Reliability

Storage Temperature Range	-40 to +75 °C
---------------------------	---------------

LO & IF Specifications

Maximum LO Input Level	+22 dBm (160 mW)
------------------------	------------------

Environmental

Operating Humidity	Up to 95% relative humidity (at or below 40 °C)
Operating Altitude	Up to 4,600 meters (15,000 feet)
Non-operating Altitude	Up to 15,300 meters (50,000 feet)
Environmental Compliance	MIL-T-28800C, Type III, Class 5, Style E

RF Input

Waveguide Cutoff Frequency	21.1 GHz
Internal Waveguide Dimensions	7.11 mm × 3.56 mm (0.280 in × 0.140 in)
Waveguide Flange Thread	4-40 UNC

Calibration

Calibration Points Frequency Spacing	1 GHz
--------------------------------------	-------

TECHNOLOGY

Waveguide Harmonic Mixer

APPLICATIONS

Millimeter-wave spectrum analysis expansion

Generated by SpecAtlasHub (specatlashub.com). Specifications are compiled from available sources and are subject to change — verify critical values against the manufacturer before purchase.