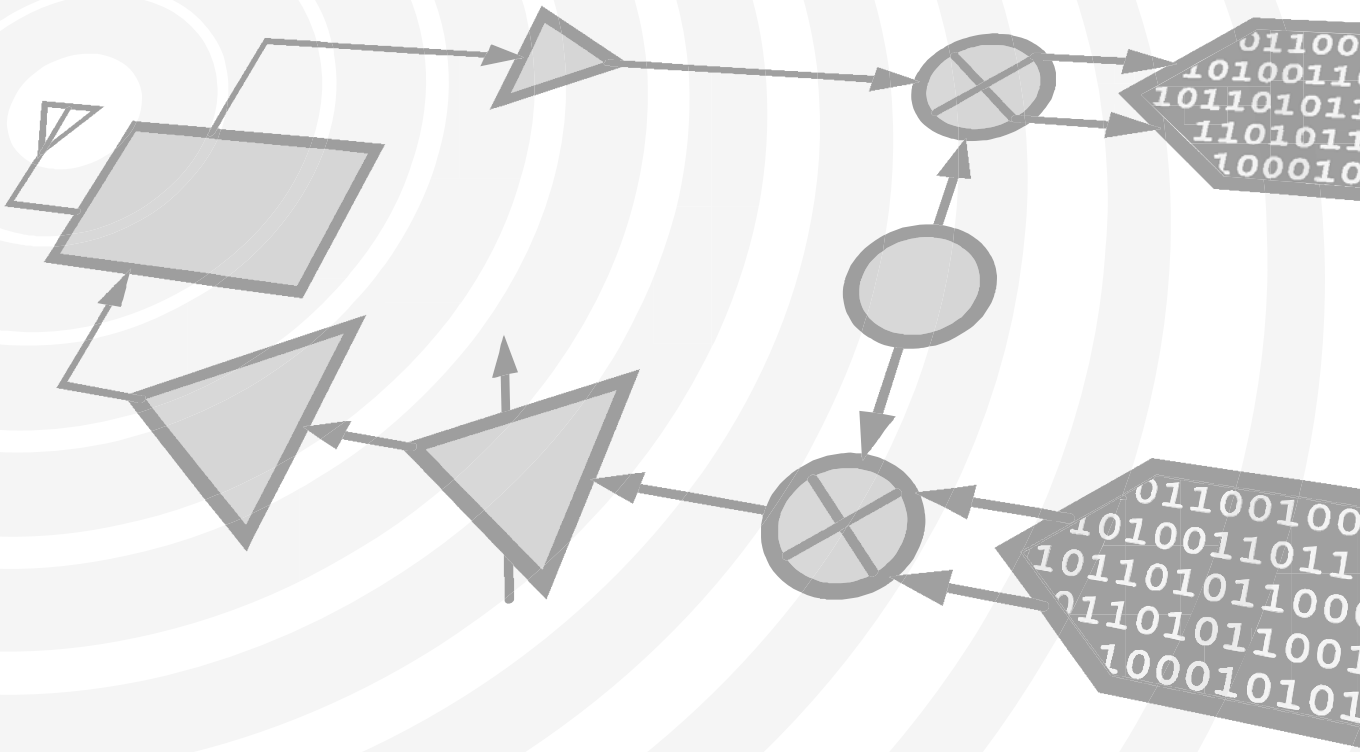
ANALOG DEVICES

Hittite MICROWAVE PRODUCTS FROM ANALOG DEVICES

Analog Devices Welcomes Hittite Microwave Corporation

NO CONTENT ON THE ATTACHED DOCUMENT HAS CHANGED



www.analog.com

www.hittite.com

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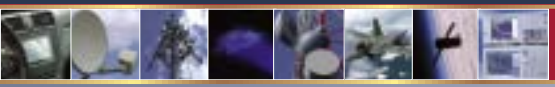
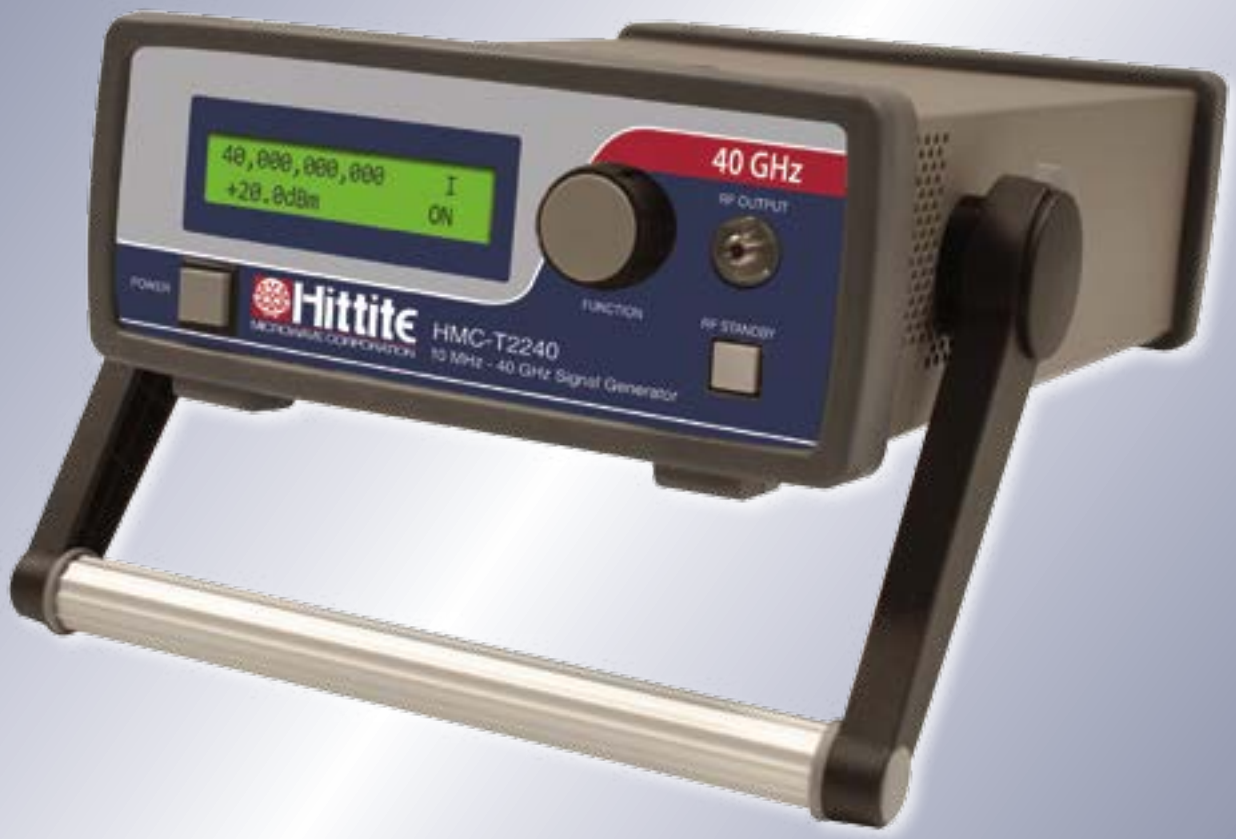
HMC-T2240



Synthesized Signal Generator, 10 MHz to 40 GHz



Hittite MICROWAVE CORPORATION

2 Elizabeth Drive • Chelmsford, MA 01824
Phone: 978-250-3343 Fax: 978-250-3373
Order Online at www.tm-hittite.com
Instrumentation Product Support at TE@hittite.com

HMC-T2240

SYNTHESIZED SIGNAL GENERATOR, 10 MHz to 40 GHz

v10.0216

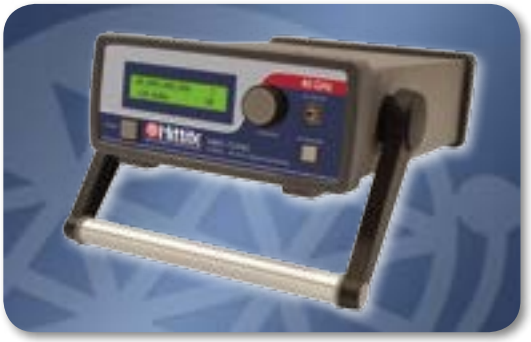
Wide Frequency Range, 10 MHz to 40 GHz Signal Generator!

The HMC-T2240 is an easy to implement test equipment solution designed to fulfill your signal generation needs. Built on a foundation of high quality and market leading Hittite MMICs, the HMC-T2240 provides the highest output power, lowest harmonic levels and broadest frequency range amongst signal generators of its size and cost.

This compact and lightweight signal generator also features USB, GPIB and Ethernet interfaces ensuring carefree integration within various test environments while improving overall productivity and equipment utilization.

Applications

- ATE
- Test & Measurement
- R&D Laboratories



Advantages

- Versatile: Higher Drive Simplifies Test Set-Ups
- Efficient: 500 µs Frequency Switching
- Reliable: Incorporates Hittite MMICs
- Flexible: Manual or Software Control
  Via USB, GPIB or Ethernet

Performance

- High Output Power: +27 dBm @ 1 GHz
- Wide Frequency Range:
  10 MHz to 40 GHz
- Excellent Phase Noise Performance:
  -98 dBc/Hz @ 10 kHz Offset @ 10 GHz
- Spurious Rejection: -70 dBc @ 10 GHz
- Power Resolution: 0.1 dB
- Frequency Resolution: 1 Hz

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Frequency

Accuracy: As Per Internal Ref. ±1.5 ppm
Resolution: 1 Hz
Internal Reference: 10 MHz
Aging Rate: <1 ppm/yr
External Reference Input: 10 MHz (Sine)
Internal Reference Output: 10 MHz (Square Wave)
Frequency Switching Speed: 500 µs

Output Power (Maximum Leveled)

Minimum Settable: -40 dBm

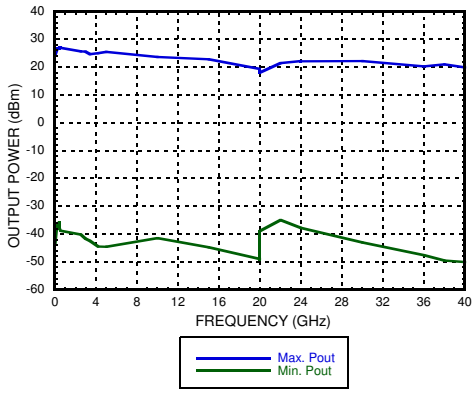
Frequency (GHz)	Power Output (dBm)
0.01	24
0.1	26
0.5	27
1	27
5	25
10	23
15	23
20	19
25	20
30	22
40	20

Dynamic Range: >60 dB
Resolution: 0.1 dB
Power Accuracy: ± 1 dB > 500 MHz
± 2 dB ≤ 500 MHz
± 2 dB < -20 dBm (All Frequencies)
RF OFF < -70 dBm

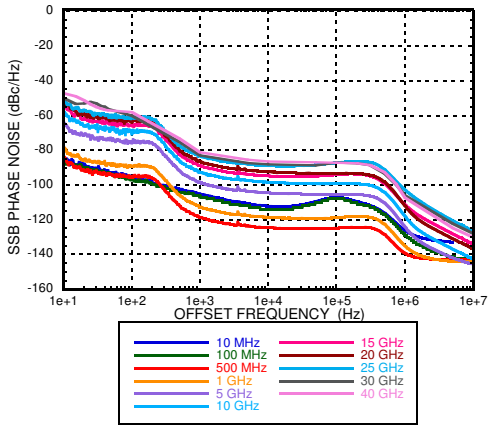
Spurious @ 10 dBm Output

< -70 dBc @ Integer Frequencies
< -65 dBc @ Fractional Frequencies <10 GHz
< -57 dBc @ Fractional Frequencies 10-20 GHz
< -52 dBc @ Fractional Frequencies > 20 GHz

Output Power Range @ 25°C



SSB Phase Noise vs. Frequency



Harmonics

Frequency (GHz)	2nd Harmonics (dBc)	3rd Harmonics (dBc)
0.01	-37	-45
0.05	-30	-42
0.1	-30	-40
0.5	-35	-58
1	-34	-52
2	-30	-48
5	-32	-58
10	-34	-68
15	-47	-75
20	-55	-
25	-35	-

Output Power = +10 dBm

SSB Phase Noise (dBc/Hz)

Frequency (GHz)	Offset From Carrier						
	10 Hz	100 Hz	1 kHz	10 kHz	100 kHz	1 MHz	10 MHz
0.01	-85	-95	-105	-112	-107	-126	-140
0.10	-88	-97	-106	-114	-108	-128	-142
0.50	-83	-95	-118	-124	-124	-139	-142
1	-79	-89	-112	-118	-119	-135	-144
5	-64	-76	-98	-104	-105	-124	-145
10	-57	-71	-93	-98	-99	-118	-142
15	-54	-66	-88	-94	-94	-111	-134
20	-52	-64	-86	-92	-93	-112	-137
25	-51	-61	-83	-89	-87	-102	-126
30	-50	-60	-83	-88	-87	-106	-128
40	-48	-57	-81	-86	-87	-107	-130

Output Noise: Floor < -150 dBc/Hz 10 MHz to 20 GHz
< -140 dBc/Hz 20 GHz to 40 GHz

Above data is typical performance at +25°C after 30 minutes of warm-up time unless otherwise stated.

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HMC-T2240

SYNTHESIZED SIGNAL GENERATOR, 10 MHz to 40 GHz

v10.0216

General Specifications

Frequency:
- Accuracy:
  - For < 2.5 GHz, Reference +0/-90 nHz
  - For > 2.5 GHz, Reference +0/-2.88 uHz
- Internal Reference: ±1.5 ppm
- Resolution: 1 Hz
- Aging Rate: <1 ppm/yr
- External Reference Input: 10 MHz (Sine Wave)
- Internal Reference Output: 10 MHz (Square Wave)
- Frequency Switching Speed: 500 µs

RF Output Power Change Versus Temperature:

10 MHz to 5 GHz	0.10 dB/°C
5 GHz to 15 GHz	0.125 dB/°C
15 GHz to 20 GHz	0.20 dB/°C
20 GHz to 40 GHz	0.10 dB/°C

Input / Output:
- 10 MHz REFOUT [1]
- 10 MHz REFIN [2]
- TRIGGER IN [3]: TTL
- TRIGGER OUT [3]: TTL
- RS-232 (used for field upgrades)
- Ethernet
- GPIB
- USB 2.0
- RF Output 2.92mm Female
- Maximum DC voltage applied to RF Output: 8 Volts

Power - AC:
- 100 to 240 VAC @ 50 to 60 Hz

Operating Temperature (for indoor use only):
- 0 to 35 °C

Storage Temperature: -20 to 70 °C

Cooling: 2 Internal Fans

Fan Noise: < 50 dBa

Mechanical Vibration & Shock:
- MIL PRF-288000 Class 4, non operating

Compliance:
- CSA & CE

ECCN:
- EAR99

General Mechanical Characteristics
- H: 76.2 mm (3 in)
- W: 203 mm (8 in)
- D: 305 mm (12 in)
- Weight 3.6 kg (8 lbs)

Warranty: 1 Year Parts and Labor

[1] +10 dBm typ. into 50 Ohms; BNC Connector
[2] +5 dBm max., -5 dBm min., 50 Ohms; BNC Connector
[3] The trigger input can be driven from either 3.3V or 5V sources for direct interface with TTL signal levels; BNC Connector

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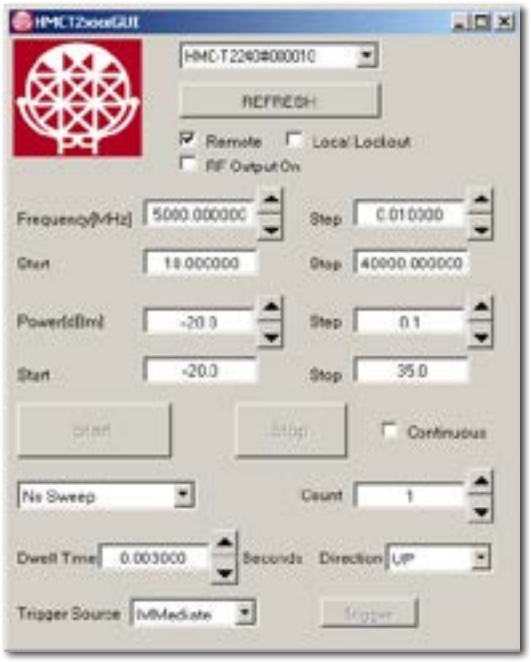
HMC-T2240 Rear Panel I/O Connections

Connectivity & Control

Its compact size, light weight, fast switching speed and USB, GBIP and Ethernet control interfaces support the standard SCPI command set ensuring smooth integration within all test environments, particularly those associated with automated test. An installation disk that accompanies each unit includes all the drivers required to remotely control the device as well as a user friendly GUI interface (right) compatible with a Windows XP®, Windows Vista® or Windows 7® or operating system. User control is facilitated via pull down menus that allow programming of single or swept modes in frequency or power. Integration of multiple units within a production test environment is easy, and affordable.



Remote Interface

Hardware: USB (Windows XP®, Windows Vista®, Windows 7® Drivers Supplied), GPIB or Ethernet

Software: LabVIEW 2009 Driver

Frequency Switching Speed: 500 us Typ.

Local Interface

Front Panel Rotary Knob & Display

HMC-T2100 Compatibility

To facilitate integration into existing HMC-T2100 applications, the HMC-T2240 has a HMC-T2100 compatibility mode. In this mode, the HMC-T2240 identifies itself as a HMC-T2100 so that the HMC-T2100 USB drivers will work for a HMC-T2240, and programs which use the *IDN? string will recognize a HMC-T2240 as a HMC-T2100. Frequency resolution, maximum and minimum values for power, and minimum sweep dwell time also change to match the HMC-T2100.

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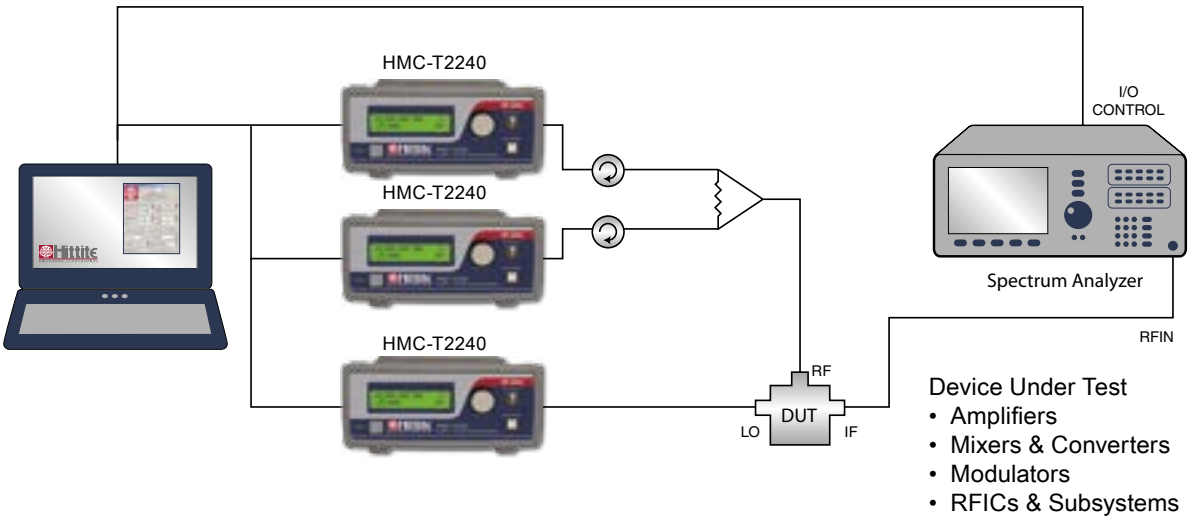
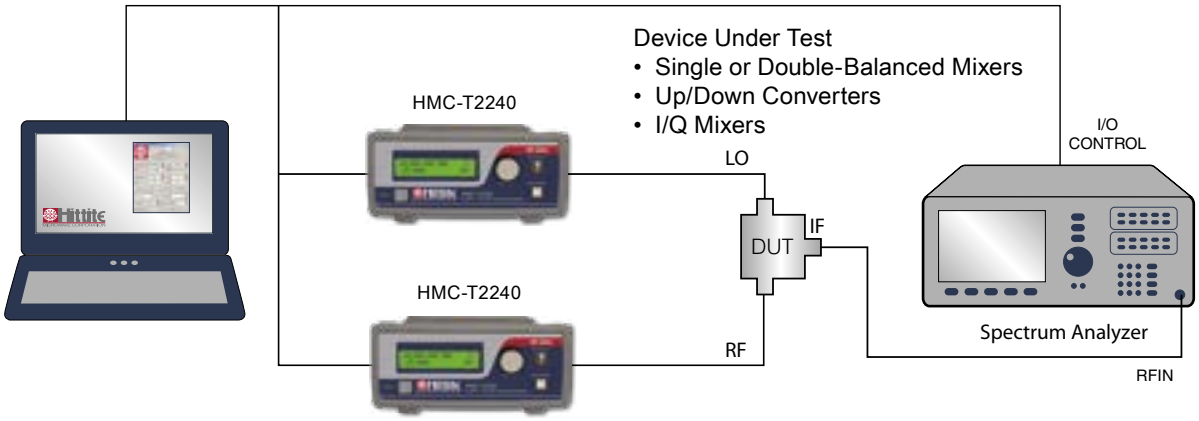
Two Tone Third Order Intercept Test Set-up



Efficient Mixer Conversion Loss, Isolation & MxN Spurious Test Set-up



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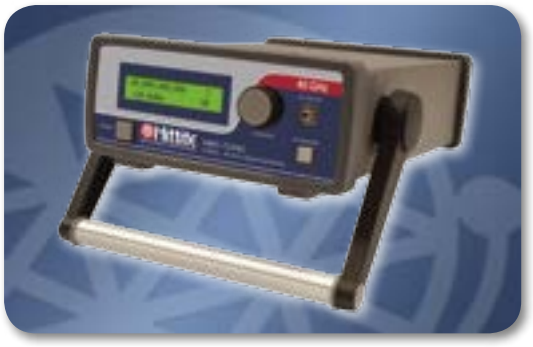

Ordering Information

Model Number	Description	Price
HMC-T2240	Synthesized Signal Generator 10 MHz to 40 GHz	

Includes 100 - 240V AC Power Supply and one Power Cord at no cost. Please specify your preferred power cord part number at time of ordering. (see "Optional Power Cord" table)

Test Rack Mount Kit

Part Number	Description	Price
HMC-RM02	Dual Rack Mounting Plate 19" 2u Chassis	

Power Cord

Part Number	Region
HMC-PC01	Continental Europe
HMC-PC02	United Kingdom
HMC-PC03	China
HMC-PC04	Australia, New Zealand
HMC-PC05	North America
HMC-PC06	South Africa / India
HMC-PC07	Switzerland
HMC-PC08	Denmark
HMC-PC09	Israel
HMC-PC10	Italy
HMC-PC11	Japan

All pricing is in U.S. Dollars and is subject to change without notice.

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