Powerful New Synthesized Signal Generator Sweeps from 10 MHz to 40 GHz

By Hittite Microwave Corporation

One result of the growing popularity of untethered Internet access and the expanding mobile broadband subscriber base is the need for service providers to increase the capacity of their wireless networks. Point to point radios operating in microwave and millimeter wave bands are often used for this purpose. Meanwhile, military systems operating at higher frequencies provide critical communications, and deliver better resolution in radar and target acquisition applications. Both of these trends require microwave and millimeter wave circuit designers to develop cost effective solutions at ever higher operating frequencies.

Evaluation of high performance microwave and millimeter wave circuitry is frequently dependent on the availability of synthesized signal sources. Commercial and military systems operating over wide bandwidths require a flexible synthesized signal generator at the core of the microwave or millimeter wave test rack. With the high cost of currently available wideband signal generators, designers and production test engineers at both small and large OEMs may find themselves competing for limited signal generator resources.

The HMC-T2240 Synthesized Signal Generator was developed to provide the R&D engineer, and the production test engineer with the highest level of performance and functionality, while maintaining reasonable cost.

As shown in Figure 2, the HMC-T2240 provides an output frequency range of 10 MHz to 40 GHz, with greater than +20 dBm of typical output power across its majority of its operating band. The output power is adjustable with 0.1 dB resolution and a minimum programmable output power of -40 dBm which equates to a dynamic range of at least 60 dB across the band. With the RF output set to “off” the RF output leakage of the HMC-T2240 drops to
The HMC-T2240 is also extremely flexible and quiet in the frequency domain. The HMC-T2240 provides a frequency resolution of 1 Hz, and a very low single sideband phase noise of -96 dBm/Hz at 10 kHz offset with an output frequency of 10 GHz. This instrument delivers extremely fast frequency switching speeds of only 500 us, making it ideal for frequency hopping and threat simulation applications.

During the development of the HMC-T2240, advanced fractional-N Phase Locked Loop (PLL) circuitry was implemented to minimize spurious output products. The result is a signal generator which provides excellent spurious performance at all output frequencies. (see Table 1)

Microwave and millimeter wave engineers and technicians will be hard pressed to find a more economical signal generator solution for measuring IP3 performance in

a production test environment. Having the ability to procure two sweepers for the core of a third order intermodulation distortion test stand at Ku/K/Ka-band for less than $40,000, should eliminate any barriers that force engineering and production test department to vie for equipment availability.

Built on a foundation of Hittite's high quality and market leading MMICs, these versatile signal generators features multiple interfaces (USB, GPIB and Ethernet) and innovative control software. An installation disk that accompanies each unit includes all of the drivers required to remotely control the device as well as a user friendly graphical user interface which is compatible with Windows XP®, Windows Vista®, or Windows 7® operating systems. User control is facilitated via pull down menus that allow programming of single or swept modes in frequency and/or power.

Hittite Microwave has achieved the goal of providing the industry with a compact, powerful synthesizer which makes integration of multiple units within a production test environment easy and affordable. The compact size and high output power capability of the HMC-T2240 ensures a simpler test configuration, while the broad frequency range of 10 MHz to 40 GHz allows the user to sweep across many microwave and millimeter wave frequency bands with a single synthesizer.

The attractively priced HMC-T2240 Synthesized Signal Generator uniquely combines the attributes of wide operating bandwidth, high output power and low spurious products.

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