

Low Cost Meets High Value in a Synthesized Signal Generator

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This new signal generator offers a high quality CW output at a level as high as +20 dBm, fast switching speed and PC remote control via a USB port

Signal generation is a core building block for all transmit and receive architectures. Its advancement has enabled superior system design and the proliferation of the radio fre-

quency spectrum, both key contributors to the rapid evolution of the wireless industry. Test equipment manufacturers have played a key role in this effort by creating the means by which we measure and evaluate these systems as well as the components from which they are built. However, many users are resigned to using elaborate equipment to perform very basic functions with a significant portion never using more than a fraction of the unit's capability.

Hittite Microwave Corporation is proud to introduce a new signal generation product solution, the HMC-T2000. Built on a foundation of high performance Hittite MMICs, the HMC-T2000 is a synthesized signal generator that combines essential capabilities with the benefits of a low acquisition cost of \$3998. The HMC-T2000 operates over a broad frequency range from 700 to 8,000 MHz and delivers a high output power capability of +17 dBm. The unit may also be controlled remotely via a USB port and graphical user interface (GUI) on a PC.

With an operating frequency range of 700 to 8,000 MHz, the HMC-T2000 covers all major communication bands with a frequency resolution of 1 MHz and a fast switching speed of 200 μ s at 100 MHz steps. The HMC-T2000 is especially suited for CW frequency testing but can easily be programmed for swept fre-



Figure 1 · Front view of the HMC-T2000 synthesized signal generator.

quency screening.

The high output power of +17 dBm (0.5 dB resolution) allows the user the luxury of simplifying their test configurations particularly in cases where inter-stage buffer amplifiers are required. The output power is conveniently leveled across certain frequency bands to ensure a consistent amplitude as one navigates through frequency bands of interest. However, the user may access the total maximum output, approximately +20 dBm, if desired. Figure 2 displays the unleveled output power capability of the HMC-T2000 over the entire frequency range.

One important measure of spectral purity is the generator's ability to limit harmonic generation. Self-generated harmonic and spurious products typically manifest themselves over the entire frequency range outside the frequency of interest. Left unchecked, they can play a significant role in reducing the overall dynamic range of the entire measurement system and hence limit the measurement of the device under test. Expensive filter products are sometimes required to attenuate unwanted

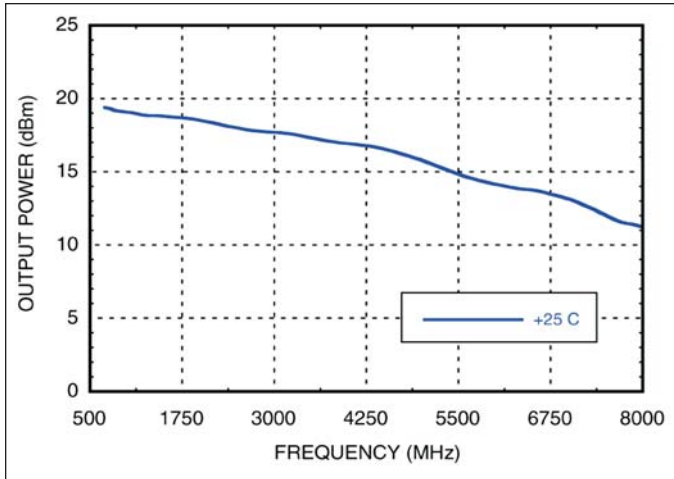


Figure 2 · Plot of unlevelled output power over the frequency range of the HMC-T2000.

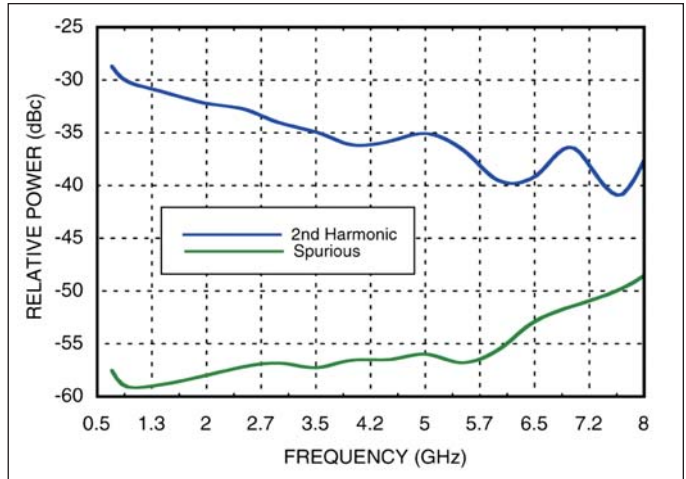


Figure 3 · Chart of the 2nd harmonic and spurious performance over the instrument's frequency range.

ed products, but ultimately low generation at the source is the preferred option.

The harmonic rejection of the HMC-T2000 is 32 dBc and 37 dBc at 1 GHz and 8 GHz, respectively, and the spurious products are less than 47 dBc across the entire band. A chart of harmonic and spurious performance for the HMC-T2000 over the entire frequency range is shown in Figure 3. Typical phase noise performance is -83 dBc/Hz at 100 kHz offset from a 4 GHz center frequency with insignificant deviation over the temperature range 0 to $+35^{\circ}\text{C}$.

This versatile signal generator also features a USB interface and innovative control software ensuring a carefree integration within multiple test environments. An installation disk that accompanies each unit includes all the drivers required to remotely control the device as well as a user friendly, lab-windows based, GUI that is compatible with a Windows XP operating system.

An example of the GUI is shown in Figure 4. User control is facilitated via pull down menus that allow programming of single or swept modes in frequency or power. Manual control can be accessed via a dual function rotary dial, located on the front panel, that provides the user a push

function for menu selection and a turn dial to set the desired value.

Integration of multiple units within a production test environment is easy, affordable and repeatable due to the incorporation of integer mode architecture and its ability to maintain phase coherence between frequency steps.

Overall, the HMC-T2000 redefines value by offering essential functionality and solid performance for the lowest cost. This lightweight compact unit has been carefully designed with mobility and functionality in mind by providing the user the nec-

essary attributes and seamless integration features that suit today's test environment. Weighing only 3.5 lbs, and on average 8 times smaller than similar units, this generator shrinks RF test stands and is priced to justify dedicated assignment.

The HMC-T2000 incorporates over 23 years of market leading MMIC technology and innovative design. Built on this foundation of high quality MMICs and scalable platform architecture, Hittite has the ability to offer new features and performance to suit your measurement needs. Our expert hardware and software design teams are ready to discuss your requirements and help you achieve your testing goals.

Hittite is continually expanding its product portfolio and designers can choose from more than 630 standard integrated circuit, module and instrumentation products including amplifiers, attenuators, data converters, frequency dividers and detectors, frequency multipliers, modulators and demodulators, phase shifters, passives, mixers and converters, power detectors, VGAs, oscillators, high speed logic, sensors, synthesizers and switches.

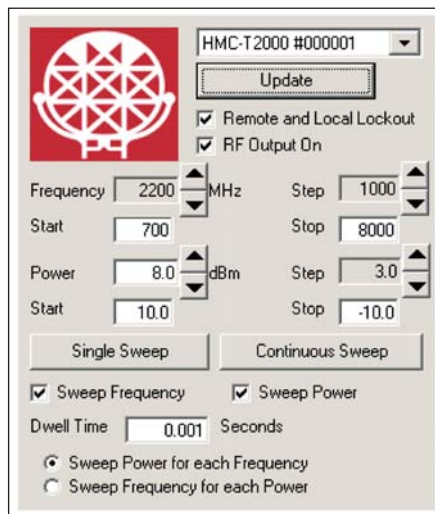


Figure 4 · GUI window for PC-based operation of the HMC-T2000.

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