

Technical Bulletin



2.0 – 18.0 GHz Precision Fast Tuning Synthesizer Specification

- Frequency.....2.0 to 18GHz
- Microwave Output.....Single, Dual or Switched Output +10dBm
 - Power Balance for Dual or Switched Output.....1.25dB Maximum
 - Phase Balance for Dual Output.....5 Degrees Maximum
 - Power.....+10dBm, +/- 1.5dB over Temperature and Frequency
 - Output Impedance.....50 Ohm
 - Load VSWR.....1.5:1
 - Note:** Power output can be as high as +20dBm for single output, however this will impact total power consumption.
- Spurious Signals.....-50dBc Max
- Harmonics.....-26dBc Max
- Frequency Accuracy.....5ppm
 - Note:** There will be no frequency pushing or pulling by design.
- Frequency Resolution.....1 MHz (
- Switching Speed.....5usec Max (3usec typical)
- Phase Noise:

Offset	Max. (dBc/Hz)	Typical (dBc/Hz) @ 10GHz
100Hz.....	-50	-58
1kHz.....	-65	-90
10kHz.....	-70	-103
100kHz.....	-88	-107
1MHz.....	-120	-121
- Status Monitor.....Phase Lock Bit (Active High)
 - Note:** Microwave output will be blanked when control loop is in an unlocked state.

Output Enable.....Enable Bit (Active High)
The microwave output can be switched off by pulling the Enable Bit low. The on to off isolation will be greater than 70dB

Power Supply.....18 W (max)
+15Vdc.....+/- .5V, 300mA (Max)
-15Vdc.....+/- .5V, 300mA (Max)
+5.2Vdc.....+/- .2V, 1800mA (Max)

Frequency Control
Parallel.....14 Bit Offset Binary
Tune Enable.....Frequency Strobe (Active Low)
A Parallel Frequency Word and Frequency Strobe Bit will be the method of controlling the output frequency. Setting the Parallel Frequency Word and pulling the Frequency Strobe bit low will cause the synthesizer to tune to the desired frequency. The format is offset Binary.

$$\text{Desired Frequency} = 2000 + \text{Binary Code (MHz)}$$

Any code greater than 18000 MHz will result in the synthesizer tuning to 18000 MHz

Note: Frequency Control word can be expanded to 22 bits with a minimum frequency resolution of 15 Hz. Obviously the product of resolution and frequency control word range must be less than or equal to the desired frequency range.

Interface
Microwave Output.....SMA Female
Modulation Input.....SMA Female
Reference Output.....SMA Female

Operating Temperature.....-40 to +71C
Size.....6.5" x 6.25" x 1.050"
Mounting.....Thru Hole 4 Plc's #6 Screws

Data lines will be terminated with 1k pull-up resistors to the internal +3.3Vdc power supply rail. The strobe and enable bit will be terminated with 226Ohm Thevenin equivalent circuits. The electrical family is LCX (5 Volt Tolerant).

[More information at widebandsystems.com](http://www.widebandsystems.com)



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