UWB SERIES: 4.5–13 GHz

FEATURES

• Multi-octave wide operation
• Fast Switching Speed
• Low power dissipation
• Wide selection of fixed LO
• MIL-STD-188-164A microphonic compliant
• ETSI 300019-1-4 compliant
• Ideal for YIG replacement
• Superior phase noise without YIG heat

MITEQ’s UWB series synthesizers are designed as a replacement for YIG based synthesizers, without the power dissipation and microphonics. Available in 4.5 – 13 GHz range, the ultra wide synthesizer is ideal for ELINT, test translation and instrumentation. Fast switching time coupled with low power dissipation makes this series an ideal replacement for YIG based broadband synthesizers.

### ELECTRICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th></th>
<th>Tunable</th>
<th>Fixed LO (Note 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Frequency Range (Note 1)</td>
<td>4.5 – 13 GHz</td>
<td>2160 MHz</td>
</tr>
<tr>
<td>Step Size</td>
<td>1 kHz (Note 3,4)</td>
<td></td>
</tr>
<tr>
<td>Output Power</td>
<td>+13 dBm minimum</td>
<td>+13 ±2 dBm</td>
</tr>
<tr>
<td>Output Power Variation</td>
<td>±2 dB maximum</td>
<td></td>
</tr>
<tr>
<td>Input Reference Frequency</td>
<td>10 MHz (Note 5)</td>
<td></td>
</tr>
<tr>
<td>Input Power Level</td>
<td>0 ±3 dBm</td>
<td></td>
</tr>
<tr>
<td>Spurious Outputs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In-band</td>
<td>-65 dBc typical</td>
<td>-80 dBc typical</td>
</tr>
<tr>
<td>Out-of-band</td>
<td>-70 dBc typical</td>
<td>-70 dBc typical</td>
</tr>
<tr>
<td>Phase Noise</td>
<td>See Graph (Note 8)</td>
<td></td>
</tr>
<tr>
<td>Offset from carrier</td>
<td>Typical @ 12 GHz</td>
<td>@ 2160 MHz</td>
</tr>
<tr>
<td>10 Hz</td>
<td>-60 dBc</td>
<td>-68 dBc</td>
</tr>
<tr>
<td>100 Hz</td>
<td>-71 dBc</td>
<td>-95 dBc</td>
</tr>
<tr>
<td>1 kHz</td>
<td>-80 dBc</td>
<td>-120 dBc</td>
</tr>
<tr>
<td>10 kHz</td>
<td>-90 dBc</td>
<td>-100 dBc</td>
</tr>
<tr>
<td>100 MHz</td>
<td>-96 dBc</td>
<td>-110 dBc</td>
</tr>
<tr>
<td>1 MHz</td>
<td>-105 dBc</td>
<td>-135 dBc</td>
</tr>
<tr>
<td>10 MHz</td>
<td>-130 dBc</td>
<td>-145 dBc</td>
</tr>
<tr>
<td>Output Harmonic</td>
<td>-15 dBc typical</td>
<td>-20 dBc typical</td>
</tr>
<tr>
<td>Output Impedance</td>
<td>50 ohm nominal</td>
<td></td>
</tr>
<tr>
<td>Load VSWR</td>
<td>1.5:1 maximum, all phases</td>
<td></td>
</tr>
<tr>
<td>Regulation</td>
<td>±5%</td>
<td></td>
</tr>
<tr>
<td>Noise and Ripple</td>
<td>10 mV, p-p maximum</td>
<td></td>
</tr>
<tr>
<td>Frequency Control</td>
<td>Parallel BCD with strobe</td>
<td></td>
</tr>
<tr>
<td>Acquisition time (to phase lock)</td>
<td>250 µs typical (While In Band)</td>
<td>750 µs maximum (Band Switching)</td>
</tr>
</tbody>
</table>
### ULTRA WIDE BAND FREQUENCY SYNTHESIZER

#### ELECTRICAL SPECIFICATIONS (CONT.)

<table>
<thead>
<tr>
<th></th>
<th>Tunable</th>
<th>Fixed LO (Note 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary alarm</td>
<td>In lock TTL 1</td>
<td></td>
</tr>
<tr>
<td>VCO lock voltage</td>
<td>1 – 15 volts</td>
<td></td>
</tr>
<tr>
<td>DC power</td>
<td>+15 volts, 0.4 amps typical</td>
<td>+5.2 volts, 1.6 amps typical</td>
</tr>
<tr>
<td>Outline Drawing</td>
<td>164794</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
1. Custom frequency bands available, please contact MITEQ.
2. Fixed LO frequencies available from 2,000 to 3,000 MHz in 10 MHz intervals.
3. Frequency accuracy ±17Hz
4. Custom step size available, consult MITEQ.
5. Other reference frequency options available, please contact MITEQ.
7. Wider operating temperature ranges are available, please contact MITEQ.

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#### UWB NOISE AT 12 GHz

![Graph showing UWB noise at 12 GHz]

**EXAMPLE:** Part Number UWB – 4.5 – 12.5 – 1k – 2160 – 10M for frequency synthesizer covering 4.5 to 12.5 GHz with a step size of 1 kHz having a fixed LO of 2160 MHz with 10 MHz external reference.
MECHANICAL SPECIFICATIONS
Outline drawing .................. 164794
Size ................................ 8” x 5” x 0.71”
Weight .......................... 1.5 pounds typical
RF connectors ............... SMA female
DC power connector ........ JST™ 7-pin header
Control connector .......... 34-pin header

ENVIRONMENTAL SPECIFICATIONS
Temperature
Operating ....................... -10 to +65°C (Note 7)
Storage .......................... -55 to +95°C
Humidity ...................... Up to 95% at 40°C noncondensing
Shock (nonoperating) ………. 30 g’s, 10 ms pulse
Vibration (survival) .......... 20 to 2000 Hz random to .04 G/Hz
Altitude ...................... Up to 13,500 feet
100% testing ................... Frequency range
Output power
Discrete power
Spectral purity
Phase bursts
Alarm and monitors
100% screening ................ Temperature cycle/monitor

OUTLINE DRAWING

164794
UWB SERIES