MITEQ’s SATCOM Series of exceptionally low phase noise synthesizers offer an economical solution for lab and SATCOM up and downlink testing. Three standard models are available; IF L-Band covering from 950 to 2150 MHz, RF Ka-Band covering 18.3 to 20.2 GHz and RF Ka-Band covering from 27.5 to 31 GHz. The SATCOM Series has a standard 1 kHz step size, with optional full-band fast switching available. The field-tested design and low power dissipation proves to demonstrate higher MTBF and higher reliability. These synthesizers are available in half-rack mounted chassis with front panel control and serial or parallel control through rear panel connectors.

Many additional models are available, see MITEQ catalog C-38B “Frequency Generation Products”.

Features

• 1/2 rack space, 1 RU
  Models: IF L-Band 950 to 2150 MHz
  RF Ka-Band 18.3 to 20.2 GHz
  RF Ka-Band 27.5 to 31 GHz
• Selectable step sizes: 1 kHz standard
• Sweep function
• INTELSAT phase noise compliant
• Field-tested reliability
• Low power dissipation
• Superior to MIL-STD-188-164B phase noise specifications
• 10/100Base-T Ethernet interface
• Switching speed ≤ 500 ms with Ethernet control

Options

• Custom frequency bands
• Fixed LO frequencies
• Custom step sizes
• Available in modular form (MOSM)
• < 500 µs switching speed with LVTTL option
### Specifications

<table>
<thead>
<tr>
<th>IF Model</th>
<th>L-Band</th>
<th>Ka-Band</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Models</strong></td>
<td>950 – 2150 MHz</td>
<td>18.3 – 20.2 GHz, 27.5 – 31 GHz</td>
</tr>
<tr>
<td><strong>Output frequency range (Notes 1, 2)</strong></td>
<td>950 – 2150 MHz</td>
<td>18.3 – 20.2 GHz, 27.5 – 31 GHz</td>
</tr>
<tr>
<td><strong>Step size (Notes 3, 4)</strong></td>
<td>1 kHz standard</td>
<td></td>
</tr>
<tr>
<td><strong>Output power</strong></td>
<td>+13 dBm minimum</td>
<td></td>
</tr>
<tr>
<td><strong>Output power variation</strong></td>
<td>±2 dB maximum</td>
<td></td>
</tr>
<tr>
<td><strong>Input reference frequency (Notes 5, 6)</strong></td>
<td>10 MHz</td>
<td></td>
</tr>
<tr>
<td><strong>Input power level</strong></td>
<td>0 ±3 dBm</td>
<td></td>
</tr>
<tr>
<td><strong>Output spurious</strong></td>
<td>-60 dBc minimum</td>
<td></td>
</tr>
<tr>
<td><strong>In-band</strong></td>
<td>-60 dBc minimum</td>
<td></td>
</tr>
<tr>
<td><strong>Out-of-band</strong></td>
<td>-60 dBc minimum</td>
<td></td>
</tr>
<tr>
<td><strong>Output mute</strong></td>
<td>20 dB minimum</td>
<td>60 dB minimum</td>
</tr>
<tr>
<td><strong>Phase noise</strong></td>
<td>See graph</td>
<td></td>
</tr>
<tr>
<td><strong>Offset from carrier</strong></td>
<td>At 2 GHz</td>
<td>At 30 GHz</td>
</tr>
<tr>
<td>10 Hz</td>
<td>-52 dBc</td>
<td>-35 dBc</td>
</tr>
<tr>
<td>100 Hz</td>
<td>-72 dBc</td>
<td>-65 dBc</td>
</tr>
<tr>
<td>1 kHz</td>
<td>-84 dBc</td>
<td>-85 dBc</td>
</tr>
<tr>
<td>10 kHz</td>
<td>-91 dBc</td>
<td>-92 dBc</td>
</tr>
<tr>
<td>100 kHz</td>
<td>-93 dBc</td>
<td>-95 dBc</td>
</tr>
<tr>
<td>1 MHz</td>
<td>-111 dBc</td>
<td>-125 dBc</td>
</tr>
<tr>
<td>10 MHz</td>
<td>-131 dBc</td>
<td>-140 dBc</td>
</tr>
<tr>
<td><strong>Output harmonic</strong></td>
<td>-15 dBc typical</td>
<td></td>
</tr>
<tr>
<td><strong>Output impedance</strong></td>
<td>50 ohm nominal</td>
<td></td>
</tr>
<tr>
<td><strong>Load VSWR</strong></td>
<td>2.0:1 maximum, all phases</td>
<td></td>
</tr>
<tr>
<td><strong>Acquisition time (to phase lock)</strong></td>
<td>300 us typical, 750 us maximum with Option 17TTL</td>
<td></td>
</tr>
<tr>
<td><strong>Summary alarm</strong></td>
<td>In lock and power supply status</td>
<td></td>
</tr>
<tr>
<td><strong>AC or DC power requirements</strong></td>
<td>100–240 VAC, 20 W Typical, 47–63 Hz</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
1. Custom frequency bands available, please contact MITEQ.
2. Frequency accuracy ±2.95 x 10⁻⁹.
3. Custom step size available, please contact MITEQ.
4. Other reference frequency option available, please contact MITEQ.
5. Close in phase noise dependent on reference.
7. For serial interface, LD150273, visit www.miteq.com

### Ordering Information

- HRS-950215 (L-Band)
- HRS-275310 (Ka-Band)
- HRS-950215-TR 1/3 Rack (L-Band)
- HRS-275310-TR 1/3 Rack (Ka-Band)
- HRS-183202-TR 1/3 Rack (Ka-Band)

### Options

2. Front panel monitor connector -20 dBc.

**17 TTL.** LVTTL optional interface. TTL alarm provided.

23B. Rear panel reference “U-link”. This provides bypass of internal reference. Input 10 MHz at 0 ±3 dBm.

25. Front panel connector.
Phase Noise Specifications

TYPICAL PHASE NOISE AT 2 GHz and 30 GHz

-30 dBc/Hz @ 10 kHz

L-Band 2 GHz

Ka-Band 30 GHz

General Specifications

Mechanical
Outline drawing ............................................................. 175415
Weight ........................................................................... 8 pounds (3.6 kg) typical in third rack
Dimensions ................................................................. 1.34" [34.04mm] x 7" [177.8mm] x 18" [457.2mm] (excluding connectors)
Rear panel connectors
  L-band ................................................................. SMA female
  Ka-band ............................................................... K female
Control connector ......................................................... Ethernet, through RJ45 or 9-pin D for RS485

Environmental
Temperature
  Operating ................................................................. 0 to 60°C
  Storage ................................................................. -50 to +100°C
Humidity ................................................................. Up to 95% at 40°C noncondensing
Shock (nonoperating) .................................................... 30 g's, 10 ms pulse
Vibration (survival) ...................................................... 20 to 200 Hz random to .04 G²/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

Note: Wider operating temperatures are available, please contact MITEQ.
NEW!

RF SATCOM Products

Multiple Input Wideband Up and Down Block Converters
- Outdoor antenna mount
- Ku and Ka-Band Models

New Addition to 1/3 Rack Block Converter Series
- Block Up and Down Converters with Internal Slope Adjustment over 1 GHz BW
- Available in all bands: C, X, Ku, and Ka

100K Noise Temperature Ka-Band LNB
- Small, reduced size package
- 5 models covering from 18.3 to 21.2 GHz

Dual 1/2 rack size Combined Ku and Ka-Band Up and Down Block Converters

New UPC2 Uplink Power Control Unit
- Improved User Interface with intuitive touchscreen display
- Ethernet Interface supports HTTP, Telnet and SNMPv1
- Site Diversity Switching - Ideal for Ka-Band

9800 Series Synthesized Converters with TT & C Bands

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