2015-49 Upconverter, 4.94-4.99 GHz, 70 MHz IF

The 2015-49 Upconverter converts 70 ± 18 MHz to 4940 to 4990 MHz in 2.5 MHz steps with low group delay and flat frequency response. Synthesized local oscillators (LO) provide frequency selection. Multi-function push button switches select the RF frequency, gain, and other parameters. Front panel LEDs provide indication of DC power (green), PLL alarm (red), remote operation (yellow) or the TX carrier is muted (yellow). Variable attenuators for the IF input and output provide a gain range of -10 to +30 dB as adjusted by the front panel multi-function push-button switches. Remote operation allows selection of frequency and gain. Parameter selection and frequency and gain settings appear on the LCD display. Connectors are Type N, female for RF and BNC female for IF and the optional external reference input and output. The 10 MHz option includes a 10 MHz output connector which contains either the internal or external 10 MHz reference signal. A high stability (±0.01ppm) option is also available. A direct TTL control option allows direct control of the PLL of the agile LO and the TX Mute control. The unit is powered by a 100-240 ±10% VAC power supply, and housed in a 1 3/4" X 19 " X 16" rack mount chassis.

**EQUIPMENT SPECIFICATIONS**

**Input Characteristics (IF)**
- Impedance/Return Loss: 50 Ω/18 dB
- Frequency: 70 ± 18 MHz
- Input Level: -40 to -10 dBm

**Output Characteristics (RF)**
- Impedance/Return Loss: 50 Ω/12 dB
- Frequency: 4940 to 4990 MHz
- Output level: 0 to -20 dBm
- Output 1 dB comp.: +5 dBm

**Channel Characteristics**
- Gain range (adjustable): -10.0 to +30.0 dB
- Frequency Response: ±1.0 dB, 4940-4990 MHz; ± 0.5 dB, 36 MHz BW
- Spurious Response: < -50 dBc, in band
- Group Delay, max: 0.01 ns/MHz² parabolic; 0.03 ns/MHz linear; 1 ns ripple
- Frequency Sense: Non-inverting

**Synthesizer Characteristics**
- Frequency Accuracy: ±0.01 ppm max over temp
- Frequency Step: 2.5 MHz
- 10 MHz Level (In or Out): 3 dBm, ± 3 dB (option E)

**Phase Noise @ F (Hz)**

<table>
<thead>
<tr>
<th>Frequency (Hz)</th>
<th>dB/Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>-70</td>
</tr>
<tr>
<td>1K</td>
<td>-70</td>
</tr>
<tr>
<td>10K</td>
<td>-80</td>
</tr>
<tr>
<td>100K</td>
<td>-95</td>
</tr>
<tr>
<td>1M</td>
<td>-105</td>
</tr>
</tbody>
</table>

**Controls, Indicators**
- Frequency Selection: direct readout LCD; manual or remote selection
- Gain Selection: direct readout LCD; manual or remote selection
- Pwr; Alarm; Rem; Mute: Green LED; Red LED; Yellow LED; Yellow LED
- Remote: RS232C, 9600 baud (RS485, option O)

**Available Options**
- E - External 10 MHz Ref in/out w/ RF insertion
- Q - RS485 Remote Interface
- W3 - Direct TTL control of Mute and Agile LO
- Z - Attenuator 0.1 dB on Upconverter

**Remote Connectors/Impedance**
- N - 50Ω N-type (RF), 75Ω BNC (IF)

*+10°C to +40°C; Specifications subject to change without notice*