**2115-137 Block Upconverter, 13.75 - 14.5 GHz**

The 2115-137 Block Upconverter converts 0.95 - 1.7 GHz to 13.75 - 14.5 GHz with a local oscillator at 12.8 GHz. Front panel LEDs provide indication of DC Power, External 10 MHz, and PLL Alarm. The L-band to RF gain is +20 dB (+20 to +5 dB continuously variable with Option VA). Connectors are SMA female for the RF and BNC female for the L-Band and external reference input and reference output. A three-way switch controls which 10 MHz reference is being used. In the INT position, the internal reference is used, in the EXT position, the external reference is used unless a +3 dBm ± 3 dB, 10MHz reference signal is connected to the external reference input. The 2115 is powered by a 100-240 ± 10% VAC power supply, and mounted in a 1 3/4” X 19” X 14” rack mount chassis.

**EQUIPMENT SPECIFICATIONS**

*Input Characteristics*
- Impedance/Return Loss: 50Ω/14 dB
- Frequency: 0.95 to 1.7 GHz
- Noise Figure, Max.: 20 dB max gain
- Level range: -40 to -25 dBm
- 1 dB compression: -15 dBm

*Output Characteristics*
- Impedance/Return Loss: 50Ω/14 dB
- Frequency: 13.75 to 14.5 GHz
- Level Range: -20 to -5 dBm
- 1 dB compression: +5 dBm

*Channel Characteristics*
- Gain: +20 ±1 dB, (+20 to +5 dB continuously variable with -VA Variable Attenuator Option)
- Image Rejection: > 60 dB, min
- Spurious, Inband: SIGNAL RELATED <−60 dBc in band, −5 dBm out; SIGNAL INDEPENDENT, <−60 dBc
- Spurious, Out of band: <−50 dBc
- Intermodulation: <−55 dBc for two carriers each at −10 dBm out
- Frequency Response: ±1 dB, 13.75 - 14.5 GHz out; ± 0.5 dB, 40 MHz BW
- Frequency Sense: Non-inverting

*LO Characteristics*
- LO Frequency: 12.8 GHz
- Frequency Accuracy: ± 0.01 ppm max over temp internal reference; ext. reference input standard
- 10 MHz level: +3 dBm, ± 3 dB, 75 ohms, External In or Internal out

**Phase Noise @ F (Hz) >**

<table>
<thead>
<tr>
<th>100</th>
<th>1K</th>
<th>10K</th>
<th>100K</th>
<th>1M</th>
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<tbody>
<tr>
<td>-70</td>
<td>-80</td>
<td>-85</td>
<td>-100</td>
<td>-110</td>
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**Controls, Indicators**
- Attenuator Option -VA: +20 to +5 dB continuously variable gain via front panel control.
- INT/AUTO/EXT Switch: Selects internal or external 10 MHz (rear panel DP3T switch)
- Ext 10 MHz: Yellow LED indicates external 10 MHz reference selected
- PLL Alarm: Red LED, External contact closure
- Power: Green LED

**Available Options**
- VA, +20 to +5 dB continuously variable gain
- Connector/Impedance
  - M: 50Ω N-type (RF), 50Ω BNC (L-BAND)
  - N: 50Ω N-type (RF), 75Ω BNC (L-BAND)
  - NF: 50Ω N-type (RF), 75Ω F-type (L-BAND)
  - NN: 50Ω N-type (RF), 50Ω N-type (L-BAND)
  - SF: 50Ω SMA (RF), 75Ω F-type (L-BAND)
  - SN: 50Ω SMA (RF), 50Ω N-type (L-BAND)
  - SS: 50Ω SMA (RF), 50Ω SMA (L-BAND)

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