Overview
Our extensive experience in the design of outdoor Block Up Converters led to the GaN-based LGAN family's efficient thermal and mechanical package. Recognizing the evolution of L-Band IF systems, the LGAN is designed to eliminate the traditional requirement for the modem to supply a DC power source and a 10 MHz reference to the BUCs and LNBS. The LGAN’s optional internal reference and LNB bias T greatly simplify multi-carrier operation and provide cost-effective redundant solutions. The LGAN offers valuable features not found in other L-Band BUC products.

Optional Internal 10 MHZ Reference
With the optional high-stability, ovenized reference oscillator (OCXO) installed, one more signal is removed from the TX IF cable. This ensures optimum RF performance of the BUC by eliminating any reference degradation caused by IF combiners, interconnections or rotary joints.

Optional Single and Multi-Band LNB Support
The LGAN was designed with the evolution of L-Band systems in mind. No longer relegated to low power single carrier installations, L-Band IF topologies are now found in larger multi-carrier installations. A challenge presented by multi-carrier L-Band systems is the presence of DC and reference components on the TX/RX L-Band interfaces. The LGAN design, by default, eliminates the DC component from the TX IF and can eliminate the reference requirement with the optional internal OCXO. The LNB bias/reference option completes the solution by eliminating DC and reference signal requirements from the RX L-Band interface. We also offer a high-stability "Multi-Band" Ku LNB facilitating global Ku-Band downlink coverage controlled by the LGAN M&C.

Redundancy
Another challenge addressed by the LGAN topology is the increasing need for redundant L-Band RF solutions. With its internal power supply, internal reference and internal LNB bias capability, the LGAN offers a very cost-effective solution for 1:1 redundant TX and 1:1 redundant RX requirements.

Integrated Power Supply
All LGAN models have a self-contained power supply. This eliminates the requirement for the modem to supply the BUC voltage on the center conductor of the RF cable, simplifying multi-carrier operation and modem spares maintenance.

Data Logging Capability
To greatly enhance system maintainability, the LGAN line includes a built-in data logging capability. By recording critical operational parameters (such as temperature, output power, mute status, etc.) at time stamped intervals, the user can quickly gather intelligence not only about the unit itself, but also the unit’s operational environment.

Advanced FSK
When used with our modems, the LGAN provides valuable additional functionality utilizing the industry standard FSK communications channel. This feature offers full control of single thread and redundant systems from the modem front panel without additional cabling or cost. The LGAN can also be accessed from the Ethernet port of the modem and controlled via Embedded Distant-end Monitor and Control (EDMAC).

Options for Power Limited Installations
"Keyline" option – Switches the LGAN into low-power standby mode (no transmission) during non-transmitting slots in a TDMA system. “Battery Save” option - by down-biasing the output transistors when much lower power (clear sky conditions) is required, significant reduction in power consumption can be achieved. Configurable “Power Limit” based on input or RF output power.
### Specifications

<table>
<thead>
<tr>
<th>IF Input Frequency</th>
<th>RF Output Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>950 – 1525 MHz</td>
<td>5.850 – 6.425 GHz</td>
</tr>
<tr>
<td>950 – 1750 MHz</td>
<td>5.850 – 6.650 GHz (optional)</td>
</tr>
<tr>
<td>950 – 1825 MHz</td>
<td>5.850 – 6.725 GHz (optional)</td>
</tr>
<tr>
<td>950 – 1700 MHz</td>
<td>13.75 – 14.50 GHz</td>
</tr>
<tr>
<td>950 – 1450 MHz</td>
<td>12.75 – 13.25 GHz (optional)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model</th>
<th>PLinear (Guaranteed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS1G-50Ku</td>
<td>47 dBm (50 W)</td>
</tr>
<tr>
<td>PS1.5G-100Ku</td>
<td>50 dBm (100 W)</td>
</tr>
<tr>
<td>PS3G-200Ku</td>
<td>53 dBm (200 W)</td>
</tr>
<tr>
<td>PS2G-250C(^\text{Planar})</td>
<td>54 dBm (250 W)</td>
</tr>
</tbody>
</table>

Input Power Supply Requirements: PS1: 36–72 VDC; PS1.5: 90 – 250 VAC, 47–63 Hz, Power Factor Corrected, .96; PS2.3: 180 – 240 VAC, 47–63 Hz, Power Factor Corrected, .96

Note 2: -30 dBc Spectral Regrowth, QPSK @ 1.0 x SR offset and third order IMD -25 dBc relative to total power

- Gain Min. All power levels: 70 dB
- Max. IF Input level (no damage): +10 dBm
- Gain Adjust: 25 dB in 0.1 dB steps
- Gain Flatness: ± 1.5 dB full band
- Gain variation over temp: ± 0.30 dB per 40 MHz
- Input Return Loss: 15 dB
- Output Return Loss: 17.7 dB (1.3:1 VSWR)
- Noise Figure: 15 dB typ., 20 dB max. @ min. attenuation
- RF Mute Isolation: -60 dBc min.
- AM/PM Conversion: 2° typ., @ Rated PLinear
- 3rd Order Intermod. Level: -25 dBc min @ PLinear

#### Spurious Level
- Harmonics: -50 dBc @ PLinear
- Carrier Related In-band: -60 dBc min. @ PLinear
- Non-Carrier Related In-band: -60 dBm max. @ PLinear
- LO Leakage: -25 dBm max.

#### Group Delay
- Linear: ± 0.03 ns/MHz
- Parabolic: ± .003 ns/MHz\(^2\)
- Ripple: ± 1.0 ns pk-pk

#### Data Logging parameters
- L-band Input Level (PS1,1.5,2)
- AC/DC Input Power (PS1,1.5,2)
- RF Output Power
- Mute Status
- Heatsink Temperature
- (and more)

#### Phase Noise (dBc/Hz)

<table>
<thead>
<tr>
<th>Offset</th>
<th>Typical (C/X/Ku)</th>
<th>Spec (C/X/Ku)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 Hz</td>
<td>-65</td>
<td>-62</td>
</tr>
<tr>
<td>1 kHz</td>
<td>-75</td>
<td>-72</td>
</tr>
<tr>
<td>10 kHz</td>
<td>-85</td>
<td>-82</td>
</tr>
<tr>
<td>100 kHz</td>
<td>-95</td>
<td>-92</td>
</tr>
<tr>
<td>1 MHz</td>
<td>-105</td>
<td>-102</td>
</tr>
</tbody>
</table>

#### Optional Internal Reference (PS1.5,2.3)
- Internal Reference: 10 MHz (Can lock to modem supplied reference over a range of -5 dBm to +5 dBm at IF Input)
- Frequency Stability: ± 5 x 10\(^{-10}\)/day
- ± 1 x 10\(^{-6}\) (40° to +55°C)

#### Optional LNB Bias/Reference (PS1.5,2)
- LNB Bias Voltage: Software selectable tone on/off, 12/18V, 450mA max.
- LNB 10 kHz Reference Output Level: 0 dBm ± 5 dB
- LNB Input/Output Return Loss: 15 dB
- LNB Input/Output Gain: ± 10 dB ± 2 dB (950 – 1750 MHz)
- LNB Input/Output Gain Flatness: ± 1 dB (950 – 1750 MHz)
- LNB Input/Output Isolation: 55 dB min.

#### Environmental & Physical

- **Temperature**
  - Operating: -40° to 131°F (-40° to 55°C)
  - Storage: -67° to 167°F (-55° to 75°C)
- **Humidity**
  - 100% condensing rain 2” per hour
- **Altitude**
  - 10,000 AMSL
- **Ingress Protection**
  - Designed for IP-66 (Dust tight, strong water jets)
- **Shock**
  - Normal commercial shipping and handling
- **Weight / Dimensions** (height x width x depth (in. excluding connectors))
  - PS1,1.5,2.3: 8.0 lbs Nominal / 9.2 lbs Net / 10.0 lbs Gross
  - WR75 Nominal / 8.8 lbs Nominal / 9.3 lbs Net / 10.9 lbs Gross
  - Nominal / Nominal / Nominal
  - WR75: x 9.15” x 16.0”
- **Connectors**
  - IF/RF Input: Type N, female, 50 ohm
  - RF Output: PS1/1.5/PS2, C-Band: CPR137G
  - PS1/1.5/PS2 Ku-Band: WR75
  - LNB Bias: Type N, female (PS1.5,2)
  - **Supported Interface**
    - RS-232/485
    - Ethernet (includes built-in HTML pages, SNMP, Telnet)
    - Standard ‘Smart BUC’ FSK (PS1,1.5,2)
      - Advanced FSK (provides full front panel control when integrated with select Comtech EF Data modems)
  - **M&C/Ethernet**/Redundancy/Connectors
    - 18-pin MS Style (Single Integrated cable assembly available, dependent upon configuration)