



PS 1 Model



PS 1.5 Model

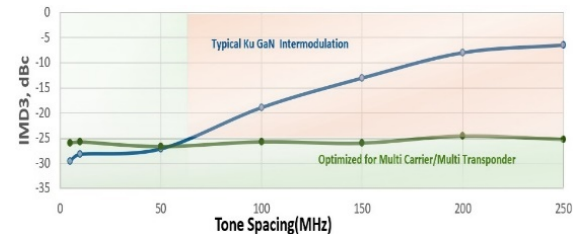
Overview

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. Multiple power levels are offered, up to 500W in C band and 400W Psat rated in Ku band.

Optimized for Multi-Carrier/Multi-Transponder Operation

When used for Multi-Carrier/Multi-Transponder applications, Gallium Nitride power devices historically have caused problems with intermodulation performance. The LGAN addresses this challenge and is available with two options:

- Option 1 – Optimized to provide the maximum linear power possible for single carrier applications
- Option 2 - Provides virtually the same intermodulation performance whether the carriers are 5, 50, 150(or more) MHz apart



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.

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).

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.

Specifications

IF Input Frequency	RF Output Frequency
950 – 1525 MHz	5.850 – 6.425 GHz
950 – 1750 MHz	5.850 – 6.650 GHz (optional)
950 – 1825 MHz	5.850 – 6.725 GHz (optional)
950 – 1700 MHz	13.75 – 14.50 GHz
950 – 1450 MHz	12.75 – 13.25 GHz (optional)

Package size/ Tx Band	PLinear (Guaranteed) ^{Note 2}	Prated (Typical)
PS1/Ku	47 dBm (50 W)	50 dBm (100 W)
PS1.5/Ku	50 dBm (100 W)	53 dBm (200 W)
PS3 /Ku	53 dBm (200 W)	56 dBm (400 W)
PS1.5/C(Planned)	51 dBm (125 W)	54 dBm (250 W)
PS2 /C	54 dBm (250 W)	57 dBm (500 W)
PS2 /C	54.75 dBm (300 W)	57.75 dBm (600 W)

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 dB relative to total power, up to 1 dB degradation for "Multi carrier/transponder" optimized Ku

Gain Min.	70 dB min, 75 dB typ.
All power levels	
Max. IF Input level (no damage)	+10 dBm
Gain Adjust	25 dB in 0.1 dB steps
Gain Flatness	± 1.5 dB full band ± 0.30 dB per 40 MHz
Gain variation over temp	±1.5 dB max.
Input Return Loss	14 dB (1.5:1 VSWR)
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 (Relative to total output power, Two-tones, 5 MHz spacing(all); 5, 50, 150 MHz spacing tested/guaranteed for Multi Carrier/Multi Transponder" option.)	-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. (Input Terminated)
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 (PS2) AC/DC Input Power (PS2) RF Output Power Mute Status Heatsink Temperature (and more)
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Phase Noise (dBc/Hz)	Typical (C/X/Ku)	Spec (C/X/Ku)
Offset = 100 Hz	-65	-62
1 KHz	-75	-72
10 KHz	-85	-82
100 KHz	-95	-92
1 MHz	-105	-102

Optional Internal Reference(PS1.5,2,3)

Internal Reference Oscillator Frequency	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 ⁻⁸ (-40° to +55°C)

Optional LNB Bias/Reference(PS1.5,2)

LNB Bias Voltage	Software selectable, 12/18V, 450mA max.
LNB 10 MHz 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) -1 dB ± 2 dB (optional)
LNB Input/Output Gain Flatness	± 1 dB (950 – 1750 MHz)
LNB Input/Output Isolation (Mute condition)	55 dB min.

Environmental & Physical

Temperature	
Operating	-40° to 131°F (-40° to 55°C) (optional extended ranges)
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	14 lbs Nominal / 6.25" x 6.0" x 12.14"
PS1.5	27lbs Nominal / 7.2" x 8.6" x 14"
PS2 C	50 lbs Nominal / 9.64" x 9.15" x 16.31"
PS3 Ku	35 lbs Nominal / 7.5" x 9.15" x 18.84"
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 Switches	19-pin MS Style (Single Integrated cable assembly available, dependent upon configuration)



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