Ka-Band 160 W GaN SSPA/BUC

CPI Quality
Robust CPI design and manufacturing, combined with plenty of thermal margin, results in a GaN SSPA/BUC that is rock-solid, highly efficient and easy to maintain.

High Linearity
Excellent AM/PM, phase noise and spectral regrowth performance.

Simple to Operate

Extended Band Operation
Provides up to 110 watts of linear power over the 27.5 to 31.0 GHz band (or over 1 or 2 GHz with optional BUC, depending on selection). Multi-band BUC is available that allows the user to switch among pre-selected frequency bands.

Global Applications
Perfect for LEO/MEO/GEO systems, Satcom on the Move, VSATs, and antenna-mount applications. Meets Electromagnetic Compatibility Directive 2014/30/EU to satisfy worldwide requirements and is CE-marked. Internet access via SNMP v1, v2, v3.

Worldwide Support
Backed by over four decades of satellite communications experience, and CPI’s worldwide 24-hour customer support network that includes more than 20 regional factory service centers.

FEATURES
- EMC Directive 2014/30/EU
- Harmonic Standard EN-61000-3-2
- Ethernet interface with integral web server for easy monitoring and control
- SNMP interface (v1, v2, v3)
- Redundant switch controller (SIM)

OPTIONS
- L-Band to Ka-band block upconverter, with multiplexed 10 MHz and 50 MHz reference
- Multiband BUC: select from multiple factor-set frequency bands within the Ka-band frequency range
- Simultaneous multiple BUC: transmit two channels at once using factory-set frequency bands (contact CPI for specifications and dimensions)
- Remote control panel
- Serial interface
- Legacy redundant switch controller

Model B5KO
160 watt Ka-Band GaN SSPA/BUC for satellite uplink applications

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# Ka-Band Specifications

## 160 W Ka-band GaN SSPA/BUC

### ELECTRICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Model B5KO SSPA</th>
<th>Model B5KO with Optional BUC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RF Output Frequency</strong></td>
<td>27.5 to 30.0 GHz, 30.0 to 31.0 GHz, or 27.5 to 31.0 GHz</td>
</tr>
<tr>
<td><strong>L-Band Input (BUC option only)</strong></td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Output Power (at the flange)</strong></td>
<td>160 W typical (52.0 dBm) from 27.5 to 30.0 GHz, 128 W (51.1 dBm) min. from 30 to 31 GHz</td>
</tr>
</tbody>
</table>

#### Gain
- **Gain Stability**
  - Over temp. constant drive: ±1.5 dB max. ±0.25 dB
  - Over 24 hours, fixed temp.: ±2.5 dB max. ±0.25 dB
- **Gain Variation**
  - Across 500 MHz: 2.0 dB max. 4.0 dB max.
  - Across 2500 MHz: 3.5 dB max. 4.5 dB max.
- **Small Signal Gain Slope**
  - ±0.04 dB/MHz max.
- **Gain Adjustment Range**
  - 30 dB 25 dB
- **Input VSWR / Output VSWR**
  - 2.0:1 continuous operation; 1.5:1 full spec. compliance
- **Load VSWR**
  - 1.5:1 max. (50 ohms) / 1.30:1 max.
- **Reference**
  - 10 MHz
- **Phase Noise External Reference**
  - N/A
- **Single Sideband Phase Noise**
  - N/A
- **AM/PM Conversion**
  - 2.00/10 dB max. for a single carrier at rated linear power
- **Harmonic Output**
  - -60 dBc max. at rated power
- **Spurious Response at P(lin)**
  - -60 dBc max. at rated power
- **Noise Power Density**
  - < -150 dBW/4 kHz, receive band; < -65 dBW/4 kHz, passband
- **Prime Power**
  - 100 to 264 VAC single phase, 47 to 63 Hz
- **Power Consumption**
  - 1200 VA max (1000 VA typ. at linear power)

### LINEAR PERFORMANCE

<table>
<thead>
<tr>
<th>Linear Power (Plin)</th>
<th>27.5 to 30.0 GHz</th>
<th>30 to 31 GHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>dBm</td>
<td>Watts</td>
<td>dBm</td>
</tr>
<tr>
<td>3rd-Order Intermodulation Products With Regard to Each of Two Carriers</td>
<td>-25 dBc</td>
<td>47.0</td>
</tr>
<tr>
<td>3rd-Order Intermodulation Products With Regard to the Sum of Both Carriers</td>
<td>-25 dBc</td>
<td>50.4</td>
</tr>
<tr>
<td>Spectral Regrowth @ 1.0 S.R. QPSK</td>
<td>-30 dBc max.</td>
<td>48.0</td>
</tr>
<tr>
<td>Noise Power Ratio (NPR)</td>
<td>-25 dBc</td>
<td>50.0</td>
</tr>
<tr>
<td></td>
<td>19 dB min.</td>
<td>48.1</td>
</tr>
<tr>
<td></td>
<td>25 dB min.</td>
<td>44.7</td>
</tr>
</tbody>
</table>

For more detailed information, please refer to the corresponding CPI technical description if one has been published, or contact CPI. Specifications may change without notice as a result of additional data or product refinement. Please contact CPI before using this information for system design.

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### MECHANICAL AND ENVIRONMENTAL SPECIFICATIONS

<table>
<thead>
<tr>
<th></th>
<th>Model B5KO SSPA</th>
<th>Model B5KO with Optional BUC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ambient Temperature</strong></td>
<td>-40°C to +55°C operating; -54°C to +71°C non-operating</td>
<td></td>
</tr>
<tr>
<td><strong>Relative Humidity</strong></td>
<td>100% condensing</td>
<td></td>
</tr>
<tr>
<td><strong>Altitude</strong></td>
<td>10,000 feet (3048 m) with standard adiabatic derating of 2°C pdf 1000 feet (305 m), operating; 50,000 feet (15,240 m), non-operating</td>
<td></td>
</tr>
<tr>
<td><strong>Cooling</strong></td>
<td>Integral forced air</td>
<td></td>
</tr>
<tr>
<td><strong>Shock and Vibration</strong></td>
<td>20 g pk, 11 msec, 1/2 sine; 2.1 g rms, 5 to 500 Hz</td>
<td></td>
</tr>
<tr>
<td><strong>RF Output Connection</strong></td>
<td>WR34 grooved waveguide flange (WR28 optional)</td>
<td></td>
</tr>
<tr>
<td><strong>Input Connection</strong></td>
<td>2.9 mm female</td>
<td>Type N female (L-band input)</td>
</tr>
<tr>
<td><strong>M&amp;C Interface</strong></td>
<td>RJ45 Ethernet connector (serial interface optional) / SNMP enabled</td>
<td></td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>17.5&quot; x 9.5&quot; x 8.7&quot; (445 x 242 x 221 mm), not including connectors, isolators, or top screws. See below or contact CPI for detailed outline drawing</td>
<td>17.5&quot; x 9.5&quot; x 8.7&quot; (445 x 242 x 221 mm), not including connectors, isolators, or top screws. See below or contact CPI for detailed outline drawing</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>47 lbs (21.4 kg) typ.</td>
<td>48 lbs (21.8 kg) typ.</td>
</tr>
</tbody>
</table>

**Note:** Before using this drawing for planning purposes, please consult CPI to ensure you have the most complete and up-to-date information.

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**Ka-Band 160 W Ka-band GaN SSPA/BUC Outline Drawing**

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**Quality Management System - ISO 9001:2015**

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