

## THE WORLD'S SMALLEST Fan-less 16W Low Ku-Band BUC

### Features:

- ◆ Hyper-Light Package Design Only 3.1lbs (1.4kg)
- ◆ Extreme Stability, Reliability and Performance
- ◆ Built-in HPA Overdrive Circuit Protection
- ◆ Built-in Optimized Linearization
- ◆ Built-in Receive Band Reject Filter
- ◆ Built-in Anti Vibration Technology
- ◆ Built-in DC Input Noise Suppression Filter
- ◆ Extreme GaN Linearity and Efficiency
- ◆ Exceeds ALL IESS-308/309 Phase Noise Standards
- ◆ Triple protection sealed waveguide output
- ◆ Fan-less Design
- ◆ Fully Assembled and Rigorously Tested in the USA
- ◆ 3 Year Warranty

**AFKL16-XXXXX**



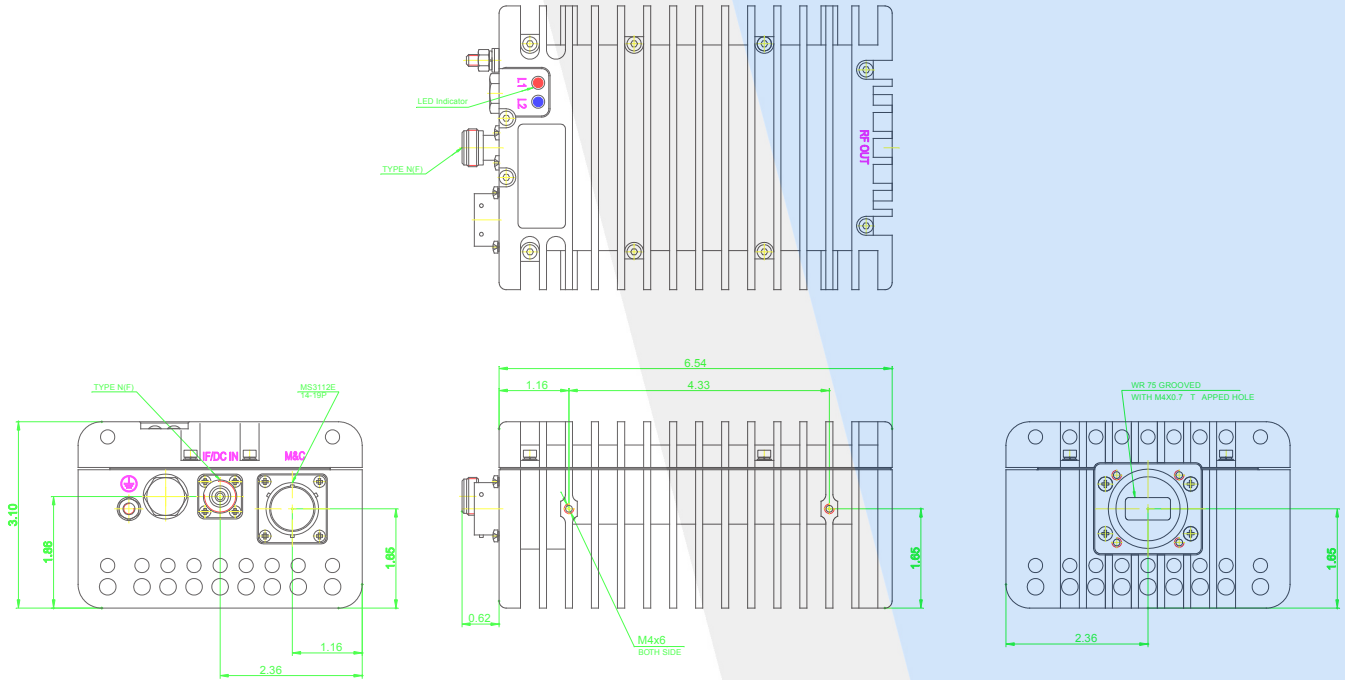
### Design Overview:

The "FANLESS BRICK" series Low Ku-Band (12.75 - 13.25GHz) BUCs are the next generation of the World's Smallest feed-horn & boom-arm mountable fan-less BUCs in the industry, weighing-in only at 3.1lbs (1.4kg) and handling output power of 16W PSAT (min) at the Low Ku-Band frequencies. We've picked the best of both worlds as we implemented the most mature, proven efficient and reliable GaAs + GaN High Power Amplifiers with internal overdrive protection. We've chosen an absolute and "No Corner Cutting" concept in our design. Its weatherproof and robust Hyper-Light package is constructed with the most advanced mechanical precision engineering in mind. We've taken absolutely no compromises during each of the design stages using only the toughest aerospace grade aluminum based metal with the most efficient heat disposal properties. Each unit is vigorously tested at our California facility according to our ATP (acceptance testing procedure).

## TECHNICAL SPECIFICATIONS

|  |   |
|--|---|
| Operating RF Frequency   | 12.75 - 13.25 GHz   |
| Operating IF frequency   | 950 to 1450 MHz   |
| Local Oscillator   | 11.80 GHz   |
| Rated Output Power   Linear Power SR @ -30dBc  | 16W 42dBm PSAT (min)   13W 41dBm PLIN (min)   |
| IF Connector   | N-type (50 Ohm)   F-type (75 Ohm)   |
| Prime Power via IF or MS Connector (optional)  | + 16 - 55 VDC 100W PSAT & 80W @ P-LINEAR  |
| 10MHz External Ref.<br>(Internal High Stability Optional)  | 10MHz Reference Level: 0dBm +/- 5dBm  |
| Output Interface   | WR75 Grooved  |
| Gain (Temperature Compensated)   | 64dB(min) 68 dB(typ.)   |
| TX Gain variation 50MHz  | ± 0.5 dB  |
| TX Gain variation 500MHz   | ± 1.5 dB  |
| Waveguide Built-in Receive Reject Filter   | Suppression by +70dB  |
| Stealth operation mode (optional)  | LED Shut-Off  |
| TX Gain Flatness   | ± 0.75 dB max. over 40 MHz  |
| IMD3 (two tones) 3dB off rated Power   | -25 dBc max. 2 signal 5MHz apart at P-LINEAR  |
| In-Band/Out-band Spurious  | -60dBc max.   |
| Input VSWR   | 1.5:1   |
| Output VSWR  | 1.3:1   |
| Spectral Regrowth Linearized at P <sub>LINEAR</sub><br>(QPSK at 1.5x and OQPSK at 1.0x symbol rate off-set with 2dB back-off from rated power) | -30 dBc   |
| Group Delay  | Ripple 1 nsec point to point max.   |
| AM/PM Conversion   | 1.0°/dB max. at 3 dB output backoff   |
| Noise Power Density (TX)   | -85dBm/Hz   |
| Noise Power Density (RX)   | -155dBm/Hz (10.95 - 12.75 GHz)  |
| Phase Noise (Up Converter)   (Ext. Ref.)   | -55 dBc/Hz @ 10 Hz   -115dBc/Hz<br>-65 dBc/Hz @ 100 Hz   -135dBc/Hz<br>-75 dBc/Hz @ 1 kHz   -150dBc/Hz<br>-85 dBc/Hz @ 10 kHz   -155dBc/Hz<br>-95 dBc/Hz @ 100 kHz   -160dBc/Hz |
| Monitor & Control (Optional) with ALC  | Ethernet Web Page Based, RS232/485 (opt.)   |
| Environmental MIL-STD<br>Vibration MIL-STD   | Compliant with MIL-STD810E<br>MIL-STD810F, Method 514.5 C-2 Transport   |
| Operating Temperature Range  | - 40° C to + 60° C  |
| Storage Temperature Range  | - 60° C to + 85° C  |
| Humidity   | 100% Condensing, IP67 Rated   |
| Shock  | 20 g peak, 11 msec, 1/2 sine  |
| Altitude   | 21,500ft, 6,500m  |
| Dimensions   | 6.54" x 4.72" x 3.10" (166x120x79 mm)<br>Not including connectors   |
| Weight   | 3.1lbs (1.4kg)  |

# MECHANICAL DRAWING



## PART NUMBERING SYSTEM

**AF** - "FAN-LESS BRICK" MODEL SERIES

**KU** - Universal Ku-Band 13.75 - 14.50 GHz

**KS** - Standard Ku-Band 14.0 - 14.50 GHz

**KL** - Low Ku-Band 12.75 - 13.25 GHz

**16 | 20** Rated Power in Watts

**N** - 50 Ohm IF Input Connector Type | **F** - 75 Ohm IF Input Connector Type

**D** - DC Input via MS Connector ( Automatically Included with M&C Option)

**M** - M&C Option - RS232/485

**Example: AFKL16NE**