

# AFKL-20W

## GaAs + GaN Technology

THE WORLD'S SMALLEST Fan-less 20W Low Ku-Band BUC



### FEATURES:

- Hyper-Light Package Design Only 4.2lbs (1.9kg)
- 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



### DESIGN OVERVIEW:

The "FANLESS BRICK" series Low(12.75 - 13.25GHz) Frequency 20W Ku-Band BUCs are the next generation of the World's Smallest feed-horn & boom-arm mountable BUCs in the industry, weighing-in only at 4.2lbs (1.9kg) and working at high temp up to 60°C.

### PERFORMANCE SPECIFICATIONS

<b>Operating RF Frequency</b>	AFKL 12.75 - 13.25 GHz
<b>Operating IF frequency</b>	950 to 1450 MHz
<b>Local Oscillator</b>	11.80 GHz
<b>Rated Output Power PSAT</b>	20W 43.0 dBm
<b>Linear Power SR @ -26dBc PLIN</b>	16W 42.0 dBm
<b>IMD3 (two tones) 3dB Back Off</b>	-25 dBc max. 2 signal 5MHz apart at P-LINEAR
<b>Spectral Regrowth at PLINEAR</b> (QPSK at 1.5x and OQPSK at 1.0x symbol rate offset with 2dB back-off from rated power)	-30 dBc
<b>10MHz External Ref. (Internal High Stability Optional)</b>	10MHz Ref. Level: 0dBm +/- 5dBm Internal Ref. Stability +/- 0.1 ppm

### PROTECTION

VOLTAGE	OVERTEMP	VSWR
SMART ALARMS IN THE M&C	MICROPHONIC	CURRENT

### SPURIOUS & PHASE NOISE

<b>In-Band/Out-band Spurious</b>	-60dBc max.	
<b>Group Delay</b>	Ripple 1 nsec point to point max.	
<b>AM/PM Conversion</b>	1.0°/dB max. at 3 dB output backoff	
<b>Noise Power Density (TX)</b>	-85dBm/Hz	
<b>Noise Power Density (RX)</b>	-155dBm/Hz (10.7 - 11.7 GHz)	
<b>Phase Noise (Up Converter) (Ext. Ref.)</b>	-55 dBc/Hz @ 10 Hz	-115dBc/Hz
	-65 dBc/Hz @ 100 Hz	-135dBc/Hz
	-75 dBc/Hz @ 1 kHz	-150dBc/Hz
	-85 dBc/Hz @ 10 kHz	-155dBc/Hz
	-95 dBc/Hz @ 100 kHz	-160dBc/Hz

### POWER CONSUMPTION

<b>20W 43.0 dBm PSAT</b>	95W
<b>16W 42.0 dBm PLIN</b>	75W

### COMPLIANCE INFORMATION

MIL - STD - 188/164C	MIL - STD - 461	ROHS, REACH, WEEE
MIL - STD - 810E	DO - 160 G	

## ENVIRONMENT SPECIFICATIONS

<b>Environmental MIL-STD</b>	Compliant with MIL-STD810E
<b>Vibration MIL-STD</b>	MIL-STD810F, Method 514.5 C-2 Transport
<b>Operating Temperature Range</b>	- 40° C to + 60°C
<b>Storage Temperature Range</b>	- 60°C to + 85°C
<b>Humidity</b>	100% Condensing, IP67 Rated
<b>Shock</b>	20 g peak, 11 msec, 1/2 sine
<b>Altitude</b>	21,500ft, 6,500m

## M&C INTERFACE

<b>Advanced Monitor &amp; Control</b>	Ethernet Web Page Based, SNMP, RS232/485, FSK (opt.)
<b>ALARMS</b>	PLL LOCK, HPA, VSWR, MUTE, TX
<b>Stealth PLin Operation Mode</b>	LED Shut-Off   Silenced fans

## MECHANICAL SPECIFICATIONS

<b>Dimensions (DC Powered)</b>	6.54" x 4.72" x 3.10" (166x120x79 mm) Without Connectors
<b>Weight (DC Powered)</b>	4.2lbs (1.9kg )

## 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  
 KD - Dual Ku-Band 13.75 - 14.50 GHz | 14.0 - 14.50 GHz  
 16 | 20 Rated Power in Watts  
 N | F - 50 Ohm or 75 Ohm IF Input Connector Type  
 M - Full M&C Option RS232/485, SNMP, Ethernet  
 R - 10 MHz Ref. Auto Sense | Internal Reference  
 K - FSK Option  
 U - Universal Mounting Bracket  
 J - Weatherproof DC/RJ45 Cable Dongle  
 C xxxx - Custom RAL Color Code  
 L - Custom Language  
 P - Custom Part number  
 B - Custom Label  
 G - Custom Logo  
 T- Redundancy Ready  
 H - High Gain (+79dB - 82dB)  
 W - Weatherproof Pelican Style Case  
 O - Other Custom Option  
 X- Custom Cable



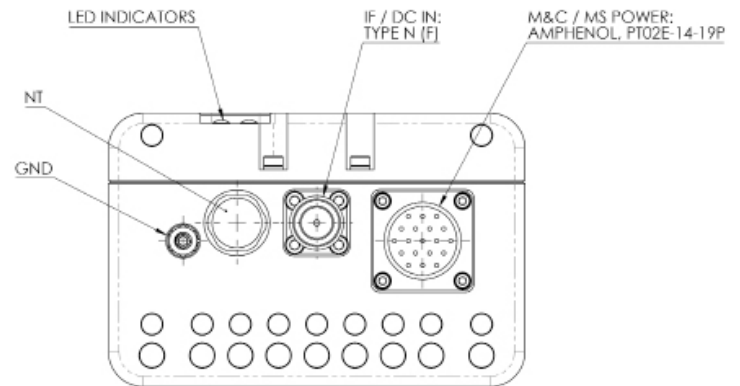
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## INPUT|OUTPUT INTERFACE

<b>IF Connector</b>	N-type (50 Ohm)   F-type (75 Ohm)
<b>Universal Prime Power via IF or MS/M&amp;C Connector (7.0 A Current Limit Protection Through Coax)</b>	+ 18 - 55 VDC
<b>Output VSWR</b>	1.3:1
<b>Output Interface</b>	WR75 Sealed & Grooved
<b>Input VSWR</b>	1.5:1
<b>10MHz External Ref. (Internal High Stability +/- 0.1ppm Option Available)</b>	10MHz Ref. Level: 0dBm +/- 5dBm Internal Ref. Stability +/- 0.1 ppm

## GAIN

<b>Gain (Temperature Compensated)</b>	64dB(min) 68 dB(typ.)
<b>TX Gain Flatness</b>	± 0.75 dB max. over 40 MHz
<b>TX Gain variation 50MHz</b>	± 0.5 dB
<b>TX Gain variation 500MHz</b>	± 1.5 dB
<b>Built-in Receive Reject Filter</b>	Suppression by +50dB (min)



WR75 SEALED WAVEGUIDE OUTPUT

