

# SapphireBlu-Series GaN 1000W Ku-Band BUC/SSPB/SSPA

## With more linear power and higher MTBF than a 1250W TWTA

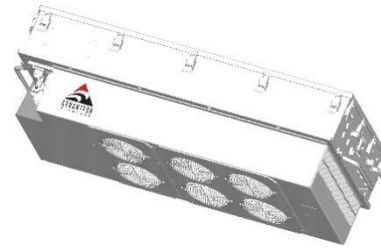
SSPA AWMg-K  
Ext. Ku-Band SSPA  
SSPB (BUC) SSPBMg-K

5200-SapphireBlu™ series  
AWMg-1000KX  
5200-SapphireBlu™ series

### Overview

The SapphireBlu-Series GaN SSPA/BUC from Advantech Wireless Technologies is a high Performance GaN Technology based SSPA designed for Multi Carrier Operations in an outdoor design concept.

With High Reliability, High Linearity, and Low Energy Consumption these systems provide high power density in a compact, rugged, weatherproof package.

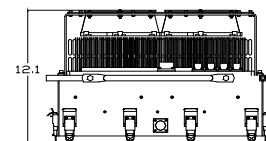
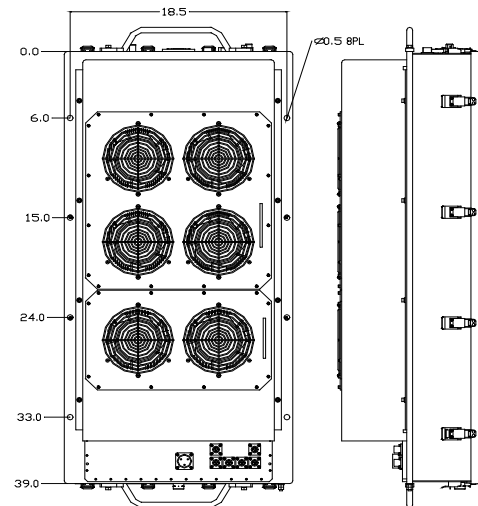
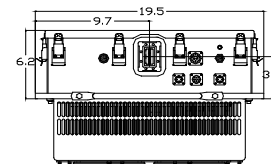


1:2 Redundant Version

### The Ultimate Solution for Direct to Home TV

### Features

- Save 8 to 10 dB power compared to Indoor Klystron
- Save in Energy Cost, Satellite Bandwidth, CAPEX
- Can cover multiple transponders, full DVB-S2 enabled
- Rugged, Weatherproof Outdoor Package
- MIL-STD-188-164A Compliant
- Redundant Ready, Power Expandable to 2-5 kW by phase combining
- 2 years warranty, due to increased GaN Technology reliability
- Backed by over 25 years of Outdoor SSPA design and manufacturing
- Exceeds all barriers between Klystrons, TWTs and SSPAs
- We can now saturate all transponders of an entire satellite and obtain maximum bandwidth/power efficiency (using modular RF concept)



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#### 1000W Ku-Band BUC/SSPB/SSPA SapphireBlu-Series GaN

##### General Specifications

##### KS /KX /KL

Operating Frequency	14.0 – 14.5 GHz (KS)	13.75 – 14.5 GHz (KX)	12.75 – 13.25 GHz (KL)
L-Band input (BUC)	950 – 1450 MHz (KS)	950 – 1700 MHz (KX)	950 – 1450 MHz (KL)
Output Power	1000W		
P <sub>SAT</sub>	+60 dBm nominal		
P <sub>LINEAR</sub>	+57.0 dBm minimum		
P <sub>LINEAR</sub> is the maximum combined transmit power of two equal amplitude continuous wave (CW) carriers 5MHz apart, when the third order intermodulation product power is -25dB relative to each carrier and the spectral regrowth is <-30 dBc @ 1.0 x symbol rate for QPSK/OQPSK/8PSK modulation.			
Gain	SSPA SSPB (BUC)	+70 dB minimum +80 dB minimum	
Gain adjustment range	20 dB in 0.1 dB steps		
Gain flatness over full band	SSPA: 2dB p-p max ± 1dB max		SSPB (BUC): 3 dB p-p max ± 1.5dB max
Gain slope over 40 MHz	± 0.3 dB max		SSPB (BUC) ± 0.5 dB max
Gain variation over temperature	± 1.5 dB max		
Input Impedance and VSWR	50 Ω	SSPA 1.3:1 max	SSPB (BUC) 1.4:1 max
Output VSWR	1.3:1 max		
Noise power density	-70 dBm/Hz in Transmit Band, -145 dBm/Hz in Receive Band (10.95 GHz – 12.75 GHz)		
Spurious at P <sub>LINEAR</sub>	SSPA: -65 dBc max		SSPB (BUC): -60 dBc max
Harmonics	-50 dBc max @ P <sub>LINEAR</sub>		
AM/PM conversion	<1.0°/dB P <sub>LINEAR</sub>		
Third order intermod (two tones)	-25 dBc two signals 5 MHz apart at total +57 dBm, relative to carrier level		
Group delay	Linear Ripple	0.02 nsec/MHz max 1 nsec p-p max	Parabolic 0.003 nsec/MHz <sup>2</sup> max
Residual AM Noise	0 – 10 kHz 10 kHz – 500 kHz 500 kHz – 1 MHz	-45 dBc -20 (1.25 + log F) dBc F = Frequency in kHz -80 dBc	

##### SSPB (BUC)

Local Oscillator freq.	13.05 GHz (KS)	12.8 GHz (KX)	11.8 GHz (KL)
Internal Reference frequency (optional)	10 MHz	Aging/day ±2 × 10 <sup>-10</sup> Aging/year ±5 × 10 <sup>-8</sup> Stability ±2 × 10 <sup>-8</sup> over temp range	
Phase Noise	-53 dBc/Hz at 10Hz -63 dBc/Hz at 100Hz -73 dBc/Hz at 1000Hz	-83 dBc/Hz at 10 kHz -93 dBc/Hz at 100 kHz	
External Reference Frequency phase noise (max)	10 MHz -120 dBc/Hz at 10Hz -135 dBc/Hz at 100Hz -150 dBc/Hz at 1000Hz	-155 dBc/Hz at 10 kHz -160 dBc/Hz at 100 kHz	

##### Weight & Dimensions

Dimensions	L x W x H 39.00" x 18.50" x 12.10" (990 x 470 x 307 mm)		
Weight	275 lbs (125 kg)		
AC input voltage	190 – 265 VAC (47-63 Hz)		
Power consumption	3.8kW at 46 dBm	5kW at 56 dBm	6.5kW at P <sub>SAT</sub>
Interfaces	Input (RF or L-Band) Output Sample Port RS232/RS485	N type female N type female MS3102 type	AC line MS3102 type RF output WR75 Cover Ethernet RJ45 (Weatherized)
Environmental	Temperature	Operating -30°C to +55 °C Storage -55°C to +85 °C	Option 1 -40°C to +55 °C Option 2 -50°C to +55 °C with startup @ -40°C
	Humidity	100% condensing	
	Altitude	10,000' AMSL, derated by 2 °C/1000' from AMSL	

Ref.: PB-SAPPH-2G-Ku-1000W-20013

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