



# 6600W X-Band Indoor Modular BUC/SSPB/SSPA UltraLinear™ Solid State GaN Technology



SSPA                    ARMAg-X                    7000-SapphireBlu™ series  
SSPB (BUC)        ARMUg-X                    7000-SapphireBlu™ series

## SapphireBlu™ UltraLinear™



- High power density GaN technology SSPA concept, in a compact, indoor modular package with Built in Redundancy
- 6.6kW single thread or 3.3kW 1:1 Redundant
- UltraLinear™, designed for Multi Carrier Operations
- Built in Arc Detection Circuitry

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## The Ultimate Solution for Wide Bandwidth, Ultra High Power Satellite Teleport Uplinks

- Maximum power/ bandwidth combination
- Save Millions of dollars in Energy Cost, Satellite Bandwidth, CAPEX
- Can cover multiple transponders, full DVB-S2 enabled
- Indoor Modular Package, for maximum link availability
- Optional Built in redundant L-band Interface
- Built in Redundancy, field replaceable RF modules



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- Highest Linear Power Available. Exceeds all barriers between Klystrons, TWTs and SSPAs
  - We can now saturate all transponders of an entire satellite and obtain maximum bandwidth/power efficiency.
  - 3 years warranty, due to increased GaN Technology reliability
  - Backed by over 25 years of Indoor SSPA design and manufacturing



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Technical Specifications			
Output Power	6600 W		
$P_{SAT}$ , PA Module	+68.12 dBm nominal		
$P_{SAT}$ , at Flange	+68.0 dBm nominal		
$P_{LINEAR}$	+64.0 dBm minimum		
	$P_{LINEAR}$ is the power at which the IMD specs are met and the spectral regrowth is <-30 dBc @ 1.0 x symbol rate for QPSK/OQPSK/8PSK modulation.		
Operating Frequency	7.9-8.4 GHz		
L-Band input (BUC)	950 – 1450 MHz		
Gain	SSPA 75 dB typical	SSPB (BUC) 78 dB typical	
Gain adjustment range	20 dB in 0.1 dB steps		
Gain flatness over full band	SSPA 3dB p-p max	SSPB (BUC) 4 dB p-p max (CS); 4dB p-p over 500 MHz (CX)	
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	SSPB (BUC) 1.4:1	
Output VSWR	1.3:1		
Noise power density	-70 dBm/Hz in Transmit Band, -145 dBm/Hz in Receive Band (10.95 GHz – 12.75 GHz)		
Spurious at $P_{LINEAR}$	SSPA: -65 dBc max SSPB (BUC): -55 dBc max		
Harmonics	-55 dBc @ $P_{LINEAR}$		
AM/PM conversion	<1.0°/dB $P_{LINEAR}$		
Third order intermod (two tones)	-25 dBc two signals 5 MHz apart versus total power (64.0 dBm Plinear)		
Group delay	Ripple 1 nsec p-p max over any 40 MHz band		
Residual AM Noise	0 – 10 kHz	-45 dBc	
	10 kHz – 500 kHz	-20 (1.25 + log F) dBc	F = Frequency in kHz
	500 kHz – 1 MHz	-80 dBc	
SSPB (BUC)			
Local Oscillator freq.	6.950 GHz	12.8 GHz	
Internal Reference frequency (optional)	10 MHz		
	Aging/day $\pm 2 \times 10^{-10}$	Aging/year $\pm 5 \times 10^{-8}$	Stability $\pm 2 \times 10^{-8}$ over temp range
Phase Noise	-53 dBc/Hz at 10 kHz	-73 dBc/Hz at 1000Hz	-93 dBc/Hz at 100 kHz
	-63 dBc/Hz at 100Hz	-83 dBc/Hz at 10 KHz	
External Reference	10 MHz		
Frequency phase noise (max)	-120 dBc/Hz at 10Hz	-150 dBc/Hz at 1000Hz	-160 dBc/Hz at 100 kHz
	-135 dBc/Hz at 100Hz	-155 dBc/Hz at 10 kHz	
Weight & Dimensions			
Dimensions (L x W x H)	L x W x H 62 x 62 x 90 inches ( 157.5 x 157.5 x 229 cm) 2 x 19" cabinets		
Weight	990 lbs ( 450 kg)		
AC input voltage	190 – 265 VAC (47-63 Hz) 3 phase		
Cooling	Water cooled ( Optional Forced Air Cooled)		
Power consumption	47,000 W at $P_{LINEAR}$ 50,000 W at $P_{SAT}$		
Interfaces	Input (RF or L-Band) - N type female	AC line - 3 x Phase PDU	
	Output Sample Port - N type female	RF output - CPR137	
	RS485/Ethernet - DB9/RJ45		
Environmental	Temperature	Operating 0°C to +50 °C Storage -55°C to +85 °C	
	Humidity	5% to 95% non condensing	
	Altitude	10,000' AMSL, de-rated by 2 °C/1000' from AMSL	

Ref.: PB-SAPPH-X-6600W-18145

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