

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



SSPA	ARMAg-K	7000-SapphireBlu™ series
SSPB (BUC)	ARMUg-K	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	CS	5.85 – 6.425 GHz	CX	5.85-6.725 GHz
L-Band input (BUC)	CS	950 – 1525 MHz	CX	950 – 1825 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.	4.9 GHz			
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 10 kHz		-73 dBc/Hz at 1000Hz	
	-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	
	-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-2G-Ku-Rack-1250W-001-18145

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