

# Puma 400X

## 400W X-band GaN Solid-State Amplifier (SSPA) / Block Upconverter (BUC)

- POWERFUL:** 200W linear power
- EFFICIENT:** 1300W AC power draw at linear power
- COMPACT:** 50 lbs in 8.6 x 14.0 x 19.0 inch package
- RUGGED:** -40C to +60C, MIL-STD-810 environment
- SILENT:** Low leakage for multi-carrier low PIM

*The most powerful, rugged X-band SSPA/Block Upconverter to provide 200W of linear power for satcom uplinks*

*High efficiency GaN solid-state design enables big power with high efficiency, while handling the toughest environments.*

*If you need a sleek, powerful SSPA or BUC to speed up your transportable terminal – you need a Puma™*





# Puma 400X

## 400W X-band GaN SSPA / BUC

### Frequency and Input Levels

RF Output Frequency	7.9 to 8.4 GHz
Input Level, No Damage	+10 dBm max
IF/Ref Input Impedance	50 ohms

### With optional BUC

IF Input Frequency	950 to 1450 MHz
LO Reference Frequency	External 10 MHz
LO Reference Level	0 dBm $\pm$ 5 dB

### Output RF Power and Linearity

Eq. Saturated Power, $P_{SAT}$	400W (56 dBm)
Maximum CW Power, $P_{MAX}$	300W (54.8 dBm)
Linear Power, $P_{LIN}$ (min)	200W (53 dBm)

### Linearity @ $P_{LIN}$

Spectral Regrowth @ $P_{LIN}$ (QPSK, OQPSK @ 1SR offset)	-30 dBc max
Intermodulation Products wrt sum of 2 equal carriers	-25 dBc max
AM to PM Conversion	2.0°/dB max

### GAIN

Small Signal (typical) with optional BUC	70 dB $\pm$ 5 dB
Gain Variation (over 40 MHz)	1.0 dB p-p max
Gain Variation (over full band) with optional BUC	3.0 dB p-p max
Gain Stability, over 24 hours	0.5 dB p-p max
Gain Variation over Temp	4.0 dB p-p max

### Noise and Spurious

Noise Power Transmit Band	-75 dBW/4 kHz
Noise Power Receive Band	-80 dBW/4 kHz
AC Line Spurious sum of all spurs	-30 dBc
single sideband sum	-36 dBc
Harmonics	-60 dBc
Output Spurious @ $P_{LIN}$ (excludes 1 MHz band)	-60 dBc

### Phase Noise with Optional BUC

Phase Noise (max)	
100 Hz	-63 dBc/Hz
1 kHz	-73 dBc/Hz
10 kHz	-83 dBc/Hz
100 kHz	-93 dBc/Hz
1 MHz	-103 dBc/Hz
Reference Phase Noise (max)	
10 Hz	-125 dBc/Hz
100 Hz	-155 dBc/Hz
1 kHz	-165 dBc/Hz

### Phase Linearity and VSWR

Transmit Phase Linearity up to $P_{LIN}$	
over any 2 MHz	$\pm$ 0.2 radian
over any 36 MHz	$\pm$ 0.4 radian
over any 72 MHz	$\pm$ 0.5 radian
over any 90 MHz	$\pm$ 0.6 radian
over any 120 MHz	$\pm$ 0.7 radian
Input VSWR	1.5:1
Output VSWR	1.3:1

### Prime Power/Environment/Interfaces

90-264 VAC Prime Power	1300 @ $P_{LIN}$
Operating Temp Range	-40° to +60°C
Non-Operating Temp Range	-50° to +70°C
Altitude (max)	12,000 ft. MSL
Humidity	100% condensing
Shock/Vibration	Normal transportation
M&C Interface	Ethernet/RS-422/RS-485 and Serial RS-232 (SNMP with v3 option)

### Weight and Dimensions

Weight	50 lb (22.7 kg)
Dimensions	8.6" x 14.0" x 19.0" (21.8cm x 36.6cm x 48.3cm)