

# Puma 400X

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

- **Powerful:** 200W linear power
- **Compact:** 50lbs in 8.6 x 14.0 x 19.0 inch package
- **Rugged:** -40C to +60C Operation, MIL-STD-810 environment
- **Silent:** Low leakage for multi-carrier low PIM



Powerful, rugged X-band Solid-State Power Amplifier (SSPA) / Block Upconverter (BUC) provides 200W of linear power for satcom uplinks.

The Puma 400X GaN solid-state design enables big power with high efficiency, while handling the toughest environments. Powerful SSPA or BUC to speed up your transportable terminal. Go to [comtech.com](http://comtech.com) to see our line of Puma products for solutions across the spectrum.

# 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
<b>With optional BUC</b>	
IF Input Frequency	950 to 1450 MHz
LO Reference Frequency	External 10 MHz
LO Reference Level	0 dBm $\pm$ 5 dB

### 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

### 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 Total Pwr of 2 equal carriers	-25 dBc max
AM to PM Conversion	2.0°/dB max

### 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

### 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

### Environment/Interfaces

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)

### 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

### 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)

## About Us

Comtech Telecommunications Corp. is a leading provider of satellite and space communications technologies; terrestrial and wireless network solutions; Next Generation 911 ("NG911") and emergency services; and cloud native capabilities to commercial and government customers around the world. Through its culture of innovation and employee empowerment, Comtech leverages its global presence and decades of technology leadership and experience to create some of the world's most innovative solutions for mission-critical communications.

3550 Bassett Street. Santa Clara,  
CA 95054 USA  
Phone: +1-408-213-3000

[comtech.com](http://comtech.com)