

# 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 @ $P_{LIN}$<br>(QPSK, OQPSK @ 1SR offset)   | -30 dBc max     |
| Intermodulation Products<br>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)          | 70 dB $\pm$ 5 dB |
| with optional BUC               |                  |
| Gain Variation (over 40 MHz)    | 1.0 dB p-p max   |
| Gain Variation (over full band) | 3.0 dB p-p max   |
| with optional BUC               |                  |
| 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<br>and Serial RS-232<br>(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 @ $P_{LIN}$<br>(excludes 1 MHz band) | -60 dBc       |

### Weight and Dimensions

|            |  |
|------------|--|
| Weight     | 50 lb (22.7 kg)                                    |
| Dimensions | 8.6" x 14.0" x 19.0"<br>(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.

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