

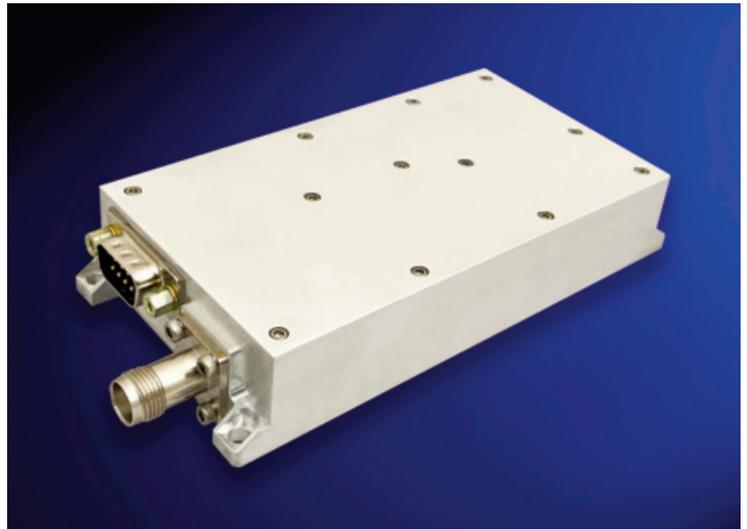


X Band, GaN, Space Qualified, Lunar SSPA SSPA SSPA 8.4-8.6-30

Aethercomm Model Number SSPA 8.4-8.6-30 is a high power, GaN, Solid State Power Amplifier (SSPA) employed on a lunar landing craft. This high-performance SSPA delivers 30 watts of linear power to the antenna. This SSPA offers good linearity while being excited by OQPSK modulation. The composite power added efficiency with a modulated input is ~27% across the transmit bandwidth @25C. All port VSWR's 1.5:1 maximum. All harmonics are <-35 dBc. The input voltage is +28Vdc ±0.5 Vdc. Maximum average current is 5.75 Amps at 0 dBm Pin @25C. Standard features include reverse polarity protection, output short and open circuit protection, voltage and temperature telemetry. Nominal input drive is 0 dBm with a 44.8 dBm output power level with a maximum input of +10 dBm. This SSPA contains a circulator on the RF output port that provides open/short circuit protection to the high power GaN devices.

This GaN SSPA is designed and tested to thrive in space. It is used on a lunar lander space craft and launched from a Falcon 9 space vehicle. There is an SMA-F RF input port. There is a TNC-F RF output port. The volume of this RF module is 5.0"(L) by 2.0"(W) by 1.0"(H). This volume has a mass of 0.75 pounds. EMI/EMC best practices were applied to this design and verified. This SSPA was designed with >10dB of ionization/multi-paction margin. This RF amplifier is hermetically sealed. A 9-pin hermetic DSUB connector applies the voltages/command/control/telemetry signals.

- **Operation from 8.4 to 8.6 GHz minimum**
- **Composite PAE of >25% Across the Bandwidth**
- **GaN Technology**
- **30 Watts Linear Output Power Minimum**
- **Volume is 5.0" (L) by 2.0" (W) by 1.0" (H)**
- **Mass = 0.75 lbs.**



This is a capability example of an Aethercomm product. Aethercomm designs and manufactures high performance, high power CW or pulsed SSPA's for commercial, military and satellite communications customer.

Aethercomm Inc. reserves the right to make changes without further notice. Aethercomm recommends that before these items herein are specified into a system or critical application that the performance characteristics be verified by contacting the factory.

SSPA 8.4-8.6-30

SSPA 8.4-8.6-30 Performance with a Modulated OQPSK Stimulus @25C with a Prime Power Input Voltage 28Vdc

Freq (GHz)	RF Input Power for Rated Output Power (dBm)	Peak Rated RF Output Power (dBm)	DC Current at Pin=0 dBm (Amps)	Power Added Efficiency (%)	2nd Harmonic Magnitude (dBc)	3rd Harmonic Magnitude (dBc)
8.4	0	46.2	5.65	27.1	-32.2	-73.8
8.5	0	46.3	5.76	27.1	-37.1	-55.9
8.6	0	46.3	5.71	27.4	-42.1	-57.9

8491.5 MHz OQPSK Compliant Spectral Mask @ Pout=30 Watts

