



High Power, BB, GaN SSPA for Space Applications

SSPA 0.020-1.000-200

Aethercomm Model Number SSPA 0.020-1.000-200 is a high power, decade plus bandwidth, GaN solid state power amplifier. This amplifier operates from 20 MHz to 1000 MHz and delivers >200 watts of saturated power to the load typically. This SSPA was designed with broadband GaN MMIC's and discrete devices that can be tuned in bands up to 2.5 GHz. We have converted this SSPA to cover GPS L1, L2 and L5. We cover 2.2-2.4 GHz with the same line up optimized. This GaN broadband SSPA is designed to be employed in any system where high power and decent efficiency are required across a large frequency spectrum. This broadband SSPA is packaged into a rugged housing that it used in high shock environments. Typical small signal gain ~60 dB. Typical power gain is ~53 dB. The composite power added efficiency with a CW input is ~45-55% at $P_{out} = 200$ watts. There is a PA Enable Command that is used to gate the PA on and off. Employing this signal, the SSPA can be gated on in 10 uSec maximum and off in 10uSec maximum. The logic levels are mission dependent so please contact the factory for specifics. There is an EPC internal to the SSPA that operates from a standard bus voltage. There is command/control and telemetry specific to this SSPA. Please contact us with any questions you may have. There is an output low pass filter by the TNC output connector. This SSPA survives an open or short circuit presented to the output connector.

This high power SSPA can be employed in high shock and vibration environments. This module has been launched in space and it fully survives these requirements. The housing volume is ~ 9.0" (L) by 4.5" (W) by 1.75" (H). The mass of the unit is 4.0 pounds maximum. DC and logic connections are accessible via hermetic DC connectors. The RF input connector is SMA female. The RF output connector

- Operation from 20-1000 MHz minimum
- GaN Technology
- 200 Watts PSat typical
- ~60 dB Small Signal Gain
- Tx On/Off Command Feature
- TRL-9 in LEO
- Adaptable from 20 MHz up to 2500 MHz
- VHF, UHF, L Band and S Band Versions



is multi-paction free TNC female. Transmit test data appears on page two of this data sheet at room temperature. This SSPA operates from -40C to +85C baseplate temperature. The configuration shown is hermetically sealed. This SSPA can also be vented.

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

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 0.020-1.000-200

**SSPA 0.020-1.000-200 Typical Performance from 20-1000 MHz @ 25° C with a CW Input Stimulus
From a +28Vdc Power Supply – Set at 100 Watts Pout**

Freq (MHz)	Pin (dBm)	Pout (dBm)	Power Gain (dB)	Current (Amps)	2nd (dBc)	3rd (dBc)
20	-3.5	50.0	53.5	8.1	-22.2	-21.8
50	-3.2	50.0	53.2	8.3	-22.4	-22.4
100	-3.7	50.0	53.7	8.5	-24.3	-25.6
200	-4.1	50.0	54.1	8.7	-40.8	-33.7
300	-4.4	50.0	54.4	9.1	-29.4	-25.8
400	-3.8	50.0	53.8	9.3	-25.0	-61.9
500	-4.5	50.0	54.5	9.7	-58.5	-76.8
600	-4.0	50.0	54.0	10.1	-68.8	-82.9
700	-2.5	50.0	52.5	10.5	-64.6	-77.3
800	-2.6	50.0	52.6	10.7	-68.9	-79.2
900	-3.2	50.0	53.2	10.4	-72.2	<-80
1000	-2.2	50.0	52.2	9.8	<-80	<-80

Note 1 - For data and configurations above 1 GHz, please contact the factory.