

# Solid State Pulsed Amplifiers



EU448  
15.5 kts 9662 ft

TUO207  
302.2 kts 8025 ft

PWX  
348.9 kts 9845 ft



Z207  
268.0 kts 9874 ft

BSA080  
298.7 kts

VVW654  
307.2 kts

OMH772  
302.9 kts 8094 ft



# Why AR Solid State Pulsed Amplifiers Should Be On Your Radar

For automotive and military EMC radiated immunity susceptibility testing, as well as radar and communication applications, there is now a very attractive alternative to Traveling Wave Tube Amplifiers (TWTAs).

AR's new offerings include various frequency ranges and output power levels to meet several standards, or designs can be tailored to suit your specific application. These amplifiers feature a touchscreen control panel, GPIB interface, TTL gating, fault monitoring, and forced air cooling.

## *Features & Benefits For These Rugged Amplifiers Are:*

- Octave Frequencies: 1-2 GHz and 2-4 GHz
- Narrowband Frequencies: 1.2-1.4 GHz & 2.7-3.1 GHz
- Power Levels: 1 kW to 150 kW
- Harmonic Distortion of -18dBc @ 1dB compression point
- Pulse Widths to 100  $\mu$ sec. & Duty Cycles to 10%
- High Mean Time To Failure (MTTF)
- Mismatch Tolerance - Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
- Numerous Applications Possible - Automotive, MIL STD 464, DO-160 and Military Radar

Call AR Applications Engineers at 800.933.8181, for specific needs not covered by these amplifiers.



**Watch Our Pulsed Amps Video**  
Visit [www.arworld.us/pavid](http://www.arworld.us/pavid) or scan this page with the Layar app to watch on your mobile device.

# Solid State Pulsed Amplifiers 0.8 to 2.5 GHz Pulse

## 1000SP0z8G2z5 Pulsed Amplifier



### 1,000 watts, 0.8-2.5 GHz Pulse

<b>Rated Power Output</b>	1000 watts min.
<b>Input For Rated Output</b>	1 milliwatt max.
<b>Power Output @ 3dB compression</b>	
Nominal 950 watts / min. 900 watts	
<b>Power Output @ 1dB compression</b>	
Nominal 800 watts / min. 700 watts	
<b>Flatness</b>	±2.5dB max.
<b>Frequency Response</b>	0.8 -2.5 GHz instantaneously
<b>Gain (at max. setting)</b>	60dB min.
<b>Gain Adjustment</b>	
Continuous Range 20 dB minimum, (4096 steps remote)	
<b>Input Impedance</b>	50 ohms, VSWR 2.0:1 max.
<b>Output Impedance</b>	50 ohms, nominal
<b>Mismatch Tolerance</b>	
Output pulse width foldback protection at peak reflected power exceeding 500 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.	
<b>Pulse Capability</b>	
Pulse Width	0.1 - 100 microseconds
Pulse Rate (PRF)	50 kHz max.
Duty Cycle	5% max.
RF Rise and Fall	30 ns max. (10% - 90%)
Delay	2 μs max. from pulse input to RF 90%
Pulse Width Distortion	
±100 ns max. (50% points of output pulse width compared to 50% points of input pulse width)	
Pulse Off Isolation	60dB min.
Pulse Input	TTL level, 50 ohm nominal termination
<b>Noise Figure</b>	12dB typ.
<b>Harmonic Distortion</b>	Minus 20dBc max. at 700 watts
<b>Spurious</b>	Minus 60dBc typ.
<b>Primary Power</b>	
100 - 264 VAC	
50/60 Hz, single phase	
500 watts max.	
<b>Connectors</b>	
RF input	Type N female on front panel
RF output	Type 7-16 DIN female on front panel
RF output forward and reflected sample ports	
Pulse input	Type N female on rear panel
Pulse input	Type BNC female on rear panel
<b>Remote Interfaces</b>	
IEEE-488	24 pin
Ethernet	RJ-45
<b>Safety Interlock</b>	15 pin Subminiature D
<b>Cooling</b>	Forced air (self contained fans)
<b>Weight</b>	44 kg (97 lbs)
<b>Size (WxHxD)</b>	51 x 25.4 x 60cm / 20 x 10 x 23.6 in
<b>Export Classification</b>	3A999.d

## 2000SP0z8G2z5 Pulsed Amplifier



### 2,000 watts, 0.8-2.5 GHz Pulse

<b>Rated Power Output</b>	2000 watts min.
<b>Input For Rated Output</b>	1 milliwatt max.
<b>Power Output @ 3dB compression</b>	
Nominal 1900 watts / min. 1800 watts	
<b>Power Output @ 1dB compression</b>	
Nominal 1600 watts / min. 1400 watts	
<b>Flatness</b>	±2.5dB max.
<b>Frequency Response</b>	0.8 -2.5 GHz instantaneously
<b>Gain (at max. setting)</b>	63dB min.
<b>Gain Adjustment</b>	
Continuous Range 20 dB minimum, (4096 steps remote)	
<b>Input Impedance</b>	50 ohms, VSWR 2.0:1 max.
<b>Output Impedance</b>	50 ohms, nominal
<b>Mismatch Tolerance</b>	
Output pulse width foldback protection at peak reflected power exceeding 1000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.	
<b>Pulse Capability</b>	
Pulse Width	0.1 - 100 microseconds
Pulse Rate (PRF)	50 kHz max.
Duty Cycle	5% max.
RF Rise and Fall	30 ns max. (10% - 90%)
Delay	2 μs maximum from pulse input to RF 90%
Pulse Width Distortion	
±100 ns max. (50% points of output pulse width compared to 50% points of input pulse width)	
Pulse Off Isolation	60dB min.
Pulse Input	TTL level, 50 ohm nominal termination
<b>Noise Figure</b>	12dB typ.
<b>Harmonic Distortion</b>	Minus 20dBc max. at 1400 watts
<b>Spurious</b>	Minus 60dBc typ.
<b>Primary Power</b>	
100 - 264 VAC	
50/60 Hz, single phase	
2200 watts max.	
<b>Connectors</b>	
RF input	Type N female on front panel
RF output	Type 7-16 DIN female on front panel
RF output forward and reflected sample ports	
Pulse input	Type N female on rear panel
Pulse input	Type BNC female on rear panel
<b>Remote Interfaces</b>	
IEEE-488	24 pin
Ethernet	RJ-45
<b>Safety Interlock</b>	15 pin Subminiature D
<b>Cooling</b>	Forced air (self contained fans)
<b>Weight</b>	65 kg (143 lbs)
<b>Size (WxHxD)</b>	51 x 25.4 x 87 cm / 20 x 10 x 34.9 in
<b>Export Classification</b>	3A999.d

## 8000SP0z8G2z5 Pulsed Amplifier



### 8,000 watts, 0.8-2.5 GHz Pulse

<b>Rated Power Output</b>	8000 watts min.
<b>Input For Rated Output</b>	1 milliwatt max.
<b>Power Output @ 3dB compression</b>	
Nominal 8000 watts / min. 7000 watts	
<b>Power Output @ 1dB compression</b>	
Nominal 7000 watts / min. 6400 watts	
<b>Flatness</b>	±1.5dB typ. / ±2.5dB max.
<b>Frequency Response</b>	0.8 -2.5 GHz instantaneously
<b>Gain (at max. setting)</b>	69dB min.
<b>Gain Adjustment</b>	
Continuous Range 20 dB minimum, (4096 steps remote)	
<b>Input Impedance</b>	50 ohms, VSWR 2.0:1 max.
<b>Output Impedance</b>	50 ohms, nominal
<b>Mismatch Tolerance</b>	
Output pulse width foldback protection at peak reflected power exceeding 4000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.	
<b>Pulse Capability</b>	
Pulse Width	0.1 - 100 microseconds
Pulse Rate (PRF)	50 kHz max.
Duty Cycle	5% max.
RF Rise and Fall	30 ns max. (10% - 90%)
Delay	600 ns max. from pulse input to RF 90%
Pulse Width Distortion	
±100 ns max. (50% points of output pulse width compared to 50% points of input pulse width)	
Pulse Off Isolation	60dB min.
Pulse Input	TTL level, 50 ohm nominal termination
<b>Third Order Intercept Point</b>	75dBm typ.
<b>Noise Figure</b>	15dB typ.
<b>Harmonic Distortion</b>	Minus 20dBc max. at 6400 watts
<b>Spurious</b>	Minus 60dBc typ.
<b>Phase Linearity</b>	±4 deg/100 MHz, typ.
<b>Primary Power</b>	
100 - 264 VAC	
50/60 Hz, single phase	
1600 watts max.	
<b>Connectors</b>	
RF input	Type N female on front panel
RF output	Type 7-16 DIN female on front panel
RF output forward and reflected sample ports	
Pulse input	Type N female on rear panel
Pulse input	Type BNC female on rear panel
<b>Remote Interfaces</b>	
IEEE-488	24 pin
<b>Safety Interlock</b>	15 pin Subminiature D
<b>Cooling</b>	Forced air (self contained fans)
<b>Weight</b>	170 kg (375 lbs)
<b>Size (WxHxD)</b>	50.3 x 54.1 x 92cm / 19.8 x 21.3 x 36.2 in
<b>Export Classification</b>	3A999.d

# 1 to 2 GHz Pulse

## 1000SP1G2 Pulsed Amplifier



### 1,000 watts, 1-2 GHz Pulse

<b>Rated Power Output</b>	1000 watts min.
<b>Input For Rated Output</b>	1 milliwatt max.
<b>Power Output @ 3dB compression</b>	Nominal 950 watts / min. 900 watts
<b>Power Output @ 1dB compression</b>	Nominal 800 watts / min. 700 watts
<b>Flatness</b>	±1.5dB typ. / ±2.5dB max.
<b>Frequency Response</b>	1 - 2 GHz instantaneously
<b>Gain (at max. setting)</b>	60dB min.
<b>Gain Adjustment</b>	Continuous Range 20dB min., (4096 steps remote)
<b>Input Impedance</b>	50 ohms, VSWR 2.0:1 max.
<b>Output Impedance</b>	50 ohms, nominal
<b>Mismatch Tolerance</b>	Output pulse width foldback protection at peak reflected power exceeding 500 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
<b>Pulse Capability</b>	
Pulse Width	0.07 - 50 microseconds
Pulse Rate (PRF)	50 kHz max.
Duty Cycle	5% max.
RF Rise and Fall	50 ns max. (10% - 90%)
Delay	600 ns max. from pulse input to RF 90%
Pulse Width Distortion	±100 ns max. (50% points of output pulse width compared to 50% points of input pulse width)
Pulse Off Isolation	60dB min.
Pulse Input	TTL level, 50 ohm nominal termination
<b>Third Order Intercept Point</b>	67dBm typ.
<b>Noise Figure</b>	15dB typ.
<b>Harmonic Distortion</b>	Minus 18dBc max. at 700 watts
<b>Spurious</b>	Minus 60dBc typ.
<b>Phase Linearity</b>	±4 deg/100 MHz, typ.
<b>Primary Power</b>	100 - 264 VAC 50/60 Hz, single phase 1500 watts max.
<b>Connectors</b>	
RF input	Type N female on front panel
RF output	Type 7-16 DIN female on front panel
RF output forward and reflected sample ports	Type N female on rear panel
Pulse input	Type BNC female on rear panel
<b>Remote Interfaces</b>	
IEEE-488	24 pin
Ethernet	RJ-45
<b>Safety Interlock</b>	15 pin Subminiature D
<b>Cooling</b>	Forced air (self contained fans)
<b>Weight</b>	38 kg (84 lbs)
<b>Size (WxHxD)</b>	50.3 x 19.8 x 60.5 cm / 19.8 x 7.8 x 23.8 in
<b>Export Classification</b>	3A999.d

## 2000SP1G2 Pulsed Amplifier



### 2,000 watts, 1-2 GHz Pulse

<b>Rated Power Output</b>	2000 watts min.
<b>Input For Rated Output</b>	1 milliwatt max.
<b>Power Output @ 3dB compression</b>	Nominal 1900 watts / min. 1800 watts
<b>Power Output @ 1dB compression</b>	Nominal 1600 watts / min. 1400 watts
<b>Flatness</b>	±1.5dB typ. / ±2.5dB max.
<b>Frequency Response</b>	1 - 2 GHz instantaneously
<b>Gain (at max. setting)</b>	63dB min.
<b>Gain Adjustment</b>	Continuous Range 20dB min., (4096 steps remote)
<b>Input Impedance</b>	50 ohms, VSWR 2.0:1 max.
<b>Output Impedance</b>	50 ohms, nominal
<b>Mismatch Tolerance</b>	Output pulse width foldback protection at peak reflected power exceeding 1000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
<b>Pulse Capability</b>	
Pulse Width	0.07 - 50 microseconds
Pulse Rate (PRF)	50 kHz max.
Duty Cycle	5% max.
RF Rise and Fall	50 ns max. (10% - 90%)
Delay	600 ns max. from pulse input to RF 90%
Pulse Width Distortion	±100 ns max. (50% points of output pulse width compared to 50% points of input pulse width)
Pulse Off Isolation	60dB min.
Pulse Input	TTL level, 50 ohm nominal termination
<b>Third Order Intercept Point</b>	67dBm typ.
<b>Noise Figure</b>	15dB typ.
<b>Harmonic Distortion</b>	Minus 18dBc max. at 1400 watts
<b>Spurious</b>	Minus 60dBc typ.
<b>Phase Linearity</b>	±4 deg/100 MHz, typ.
<b>Primary Power</b>	100 - 264 VAC 50/60 Hz, single phase 2500 watts max.
<b>Connectors</b>	
RF input	Type N female on front panel
RF output	Type 7-16 DIN female on front panel
RF output forward and reflected sample ports	Type N female on rear panel
Pulse input	Type BNC female on rear panel
<b>Remote Interfaces</b>	
IEEE-488	24 pin
Ethernet	RJ-45
<b>Safety Interlock</b>	15 pin Subminiature D
<b>Cooling</b>	Forced air (self contained fans)
<b>Weight</b>	50 kg (110 lbs)
<b>Size (WxHxD)</b>	50.3 x 32 x 86 cm / 19.8 x 9.6 x 23.6 in
<b>Export Classification</b>	3A999.d

## 4000SP1G2 Pulsed Amplifier



### 4,000 watts, 1-2 GHz Pulse

<b>Rated Power Output</b>	4000 watts min.
<b>Input For Rated Output</b>	1 milliwatt max.
<b>Power Output @ 3dB compression</b>	Nominal 3800 watts / min. 3600 watts
<b>Power Output @ 1dB compression</b>	Nominal 3200 watts / min. 2800 watts
<b>Flatness</b>	±1.5dB typ. / ±2.5dB max.
<b>Frequency Response</b>	1 - 2 GHz instantaneously
<b>Gain (at max. setting)</b>	66dB min.
<b>Gain Adjustment</b>	Continuous Range 20dB min., (4096 steps remote)
<b>Input Impedance</b>	50 ohms, VSWR 2.0:1 max.
<b>Output Impedance</b>	50 ohms, nominal
<b>Mismatch Tolerance</b>	Output pulse width foldback protection at peak reflected power exceeding 2000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
<b>Pulse Capability</b>	
Pulse Width	0.07 - 50 microseconds
Pulse Rate (PRF)	50 kHz max.
Duty Cycle	6% max.
RF Rise and Fall	50 ns max. (10% - 90%)
Delay	600 ns max. from pulse input to RF 90%
Pulse Width Distortion	±100 ns max. (50% points of output pulse width compared to 50% points of input pulse width)
Pulse Off Isolation	80dB min.
Pulse Input	TTL level, 50 ohm nominal termination
<b>Noise Figure</b>	15dB typ.
<b>Harmonic Distortion</b>	Minus 20dBc max. at 2800 watts
<b>Spurious</b>	Minus 20dBc typ.
<b>Primary Power</b>	100 - 264 VAC 50/60 Hz, single phase 2500 watts max.
<b>Connectors</b>	
RF input	Type N female on front panel
RF output	Type 7-16 DIN female on front panel
RF output forward and reflected sample ports	Type N female on rear panel
Pulse input	Type BNC female on rear panel
<b>Remote Interfaces</b>	
IEEE-488	24 pin
Ethernet	RJ-45
<b>Safety Interlock</b>	15 pin Subminiature D
<b>Cooling</b>	Forced air (self contained fans)
<b>Weight</b>	170 kg (375 lbs)
<b>Size (WxHxD)</b>	50.3 x 55 x 72 cm / 19.8 x 21.7 x 28.3 in
<b>Export Classification</b>	3A999.d

# Solid State Pulsed Amplifiers

## 1 to 2 GHz Pulse

### 8000SP1G2 Pulsed Amplifier



#### 8000 watts, 1-2 GHz Pulse

<b>Rated Power Output</b>	8000 watts min.
<b>Input For Rated Output</b>	1 milliwatt max.
<b>Power Output @ 3dB compression</b>	Nominal 7600 watts / min. 6900 watts
<b>Power Output @ 1dB compression</b>	Nominal 6400 watts / min. 5000 watts
<b>Flatness</b>	±1.5dB typ. / ±2dB max.
<b>Frequency Response</b>	1 - 2 GHz instantaneously
<b>Gain (at max. setting)</b>	69dB min.
<b>Gain Adjustment</b>	Continuous Range 20dB min., (4096 steps remote)
<b>Input Impedance</b>	50 ohms
<b>Output Impedance</b>	50 ohms, nominal
<b>Mismatch Tolerance</b>	Output pulse width foldback protection at peak reflected power exceeding 4000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
<b>Pulse Capability</b>	
Pulse Width	0.1 - 10 microseconds
Pulse Rate (PRF)	50 kHz max.
Duty Cycle	6% max.
RF Rise and Fall	30 ns max. (10% - 90%)
Delay	600 ns max. from pulse input to RF 90%
Pulse Width Distortion	±100 ns max. (50% points of output pulse width compared to 50% points of input pulse width)
Pulse Off Isolation	60dB min.
Pulse Input	TTL level, 50 ohm nominal termination
<b>Noise Figure</b>	15dB typ.
<b>Harmonic Distortion</b>	Minus 20dBc max. at 5000 watts
<b>Spurious</b>	Minus 60dBc typ.
<b>Primary Power</b>	100 - 264 VAC 50/60 Hz, single phase 1700 watts max.
<b>Connectors</b>	
RF input	Type N female on front panel
RF output	7/16 DIN female on front panel
RF output forward and reflected sample ports	Type N female on rear panel
Pulse input	Type BNC female on rear panel
<b>Remote Interfaces</b>	
IEEE-488	24 pin
Ethernet	RJ-45
<b>Safety Interlock</b>	15 pin Subminiature D
<b>Cooling</b>	Forced air (self contained fans)
<b>Weight</b>	96 kg (212 lbs)
<b>Size (WxHxD)</b>	50.3 x 52 x 83 cm / 19.8 x 20.5 x 33 in
<b>Export Classification</b>	3A999.d

### 10000SP1G2 Pulsed Amplifier



#### 10,000 watts, 1-2 GHz Pulse

<b>Rated Power Output</b>	10000 watts min.
<b>Input For Rated Output</b>	1 milliwatt max.
<b>Power Output @ 3dB compression</b>	Minimum 9000 watts
<b>Power Output @ 1dB compression</b>	Minimum 7000 watts
<b>Flatness</b>	±4dB max. / ±2.5dB rated power
<b>Frequency Response</b>	1 - 2 GHz instantaneously
<b>Gain (at max. setting)</b>	70dB min.
<b>Gain Adjustment</b>	Continuous Range 20dB min., (4096 steps remote)
<b>Input Impedance</b>	50 ohms, VSWR 2.0:1 max.
<b>Output Impedance</b>	50 ohms, nominal
<b>Mismatch Tolerance</b>	Output pulse width foldback protection at peak reflected power exceeding 5000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
<b>Pulse Capability</b>	
Pulse Width	0.07 - 50 microseconds
Pulse Rate (PRF)	50 kHz max.
Duty Cycle	6% max.
RF Rise and Fall	50 ns max. (10% - 90%)
Delay	600 ns max. from pulse input to RF 90%
Pulse Width Distortion	±100 ns max. (50% points of output pulse width compared to 50% points of input pulse width)
Pulse Off Isolation	60dB min.
Pulse Input	TTL level, 50 ohm nominal termination
<b>Noise Figure</b>	15dB typ.
<b>Harmonic Distortion</b>	Minus 20dBc max. at 7000 watts
<b>Spurious</b>	Minus 60dBc typ.
<b>Primary Power</b>	100 - 264 VAC 50/60 Hz, single phase 2500 watts max.
<b>Connectors</b>	
RF input	Type N female on rear panel
RF output	7/16 DIN female on rear panel
RF output forward and reflected sample ports	Type N female on rear panel
Pulse input	Type BNC female on rear panel
<b>Remote Interfaces</b>	
IEEE-488	24 pin
Ethernet	RJ-45
<b>Safety Interlock</b>	15 pin Subminiature D
<b>Cooling</b>	Forced air (self contained fans)
<b>Weight</b>	105 kg (231 lbs)
<b>Size (WxHxD)</b>	60 x 59 x 90 cm / 23.6 x 23.2 x 35.4 in
<b>Export Classification</b>	3A999.d

### 12000SP1G2 Pulsed Amplifier



#### 12,000 watts, 1-2 GHz Pulse

<b>Rated Power Output</b>	12000 watts min.
<b>Input For Rated Output</b>	1 milliwatt max.
<b>Power Output @ 3dB compression</b>	Nominal 11500 watts / min. 11000 watts
<b>Power Output @ 1dB compression</b>	Nominal 9500 watts / min. 9000 watts
<b>Flatness</b>	±4dB max. / ±2.5dB rated power
<b>Frequency Response</b>	1 - 2 GHz instantaneously
<b>Gain (at max. setting)</b>	71dB min.
<b>Gain Adjustment</b>	Continuous Range 20dB min., (4096 steps remote)
<b>Input Impedance</b>	50 ohms, VSWR 2.0:1 max.
<b>Output Impedance</b>	50 ohms, nominal
<b>Mismatch Tolerance</b>	Output pulse width foldback protection at peak reflected power exceeding 6000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
<b>Pulse Capability</b>	
Pulse Width	0.07 - 50 microseconds
Pulse Rate (PRF)	50 kHz max.
Duty Cycle	6% max.
RF Rise and Fall	50 ns max. (10% - 90%)
Delay	600 ns max. from pulse input to RF 90%
Pulse Width Distortion	±100 ns max. (50% points of output pulse width compared to 50% points of input pulse width)
Pulse Off Isolation	60dB min.
Pulse Input	TTL level, 50 ohm nominal termination
<b>Noise Figure</b>	15dB typ.
<b>Harmonic Distortion</b>	Minus 20dBc max. at 9000 watts
<b>Spurious</b>	Minus 60dBc typ.
<b>Primary Power</b>	100 - 264 VAC 50/60 Hz, single phase 2500 watts max.
<b>Connectors</b>	
RF input	Type N female on rear panel
RF output	7/8 EIA female on rear panel
RF output forward and reflected sample ports	Type N female on rear panel
Pulse input	Type BNC female on rear panel
<b>Remote Interfaces</b>	
IEEE-488	24 pin
Ethernet	RJ-45
<b>Safety Interlock</b>	15 pin Subminiature D
<b>Cooling</b>	Forced air (self contained fans)
<b>Weight</b>	90 kg (200 lbs)
<b>Size (WxHxD)</b>	60 x 99 x 90 cm / 23.6 x 39 x 35.4 in
<b>Export Classification</b>	3A999.d

# 1.2 to 1.4 GHz Pulse

## 18000SP1G2 Pulsed Amplifier



### 18,000 watts, 1-2 GHz Pulse

<b>Power (Fundamental), Pulse, @ Output:</b>	Nominal 20,000 watts / min. 18,000 watts
<b>Flatness</b>	±10dB max. / ±4dB at rated power
<b>Frequency Response</b>	1 - 2 GHz
<b>Input For Rated Output</b>	1 milliwatt max.
<b>Gain (at max. setting)</b>	72.6dB min.
<b>Gain Adjustment</b>	Continuous Range 35dB min.
<b>Input Impedance</b>	50 ohms, VSWR 2.5:1 max.
<b>Output Impedance</b>	50 ohms, VSWR 2.5:1 typ.
<b>Mismatch Tolerance</b>	Output pulse width foldback protection at peak reflected power exceeding 4500 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.
<b>Pulse Capability</b>	
Pulse Width	0.1 - 40 microseconds
Pulse Rate (PRF)	20 kHz max.
Duty Cycle	4% max.
RF Rise and Fall	150 ns max. (10% - 90%)
Delay	500 ns max. from pulse input to RF 90%
Pulse Width Distortion	±50 ns max. (50% points of output pulse width compared to 50% points of input pulse width)
Pulse Off Isolation	80dB min., 90dB typ.
Pulse Input	TTL level, 50 ohm nominal termination
<b>Noise Power Density</b>	(pulse on) Minus 65dBm/Hz (max.); Minus 75dBm/Hz (typ.) (pulse off) Minus 140dBm/Hz (typ.)
<b>Harmonic Distortion</b>	Minus 20dBc
<b>Primary Power</b>	208 VAC ±10% delta (4-wire) 50/60 Hz, 3 phase 9 kVA max.
<b>Connectors</b>	
RF input	Type N female on front panel
RF output	Type 7-16 DIN female on front panel
RF output forward and reflected sample ports	Type N female on rear panel
Pulse input	Type BNC female on rear panel
GPIB	IEEE-488 female on rear panel
Interlock	DB-15 female on rear panel
<b>Cooling</b>	Forced air (self contained fans), air entry and exit in rear
<b>Weight</b>	575 kg (1250 lbs)
<b>Size (WxHxD)</b>	57.5 x 196 x 82.5 cm / 22.6 x 77.2 x 32.5 in
<b>Export Classification</b>	3A999

## 20000SP1G2 Pulsed Amplifier



### 20,000 watts, 1-2 GHz Pulse

<b>Rated Power Output</b>	20000 watts min.
<b>Input For Rated Output</b>	1 milliwatt max.
<b>Flatness</b>	±2dB max.; ±1.5dB at rated power
<b>Frequency Response</b>	1 - 2 GHz instantaneously
<b>Gain (at max. setting)</b>	73dB min.
<b>Gain Adjustment</b>	Continuous Range 20dB min., (4096 steps remote)
<b>Input Impedance</b>	50 ohms, VSWR 2.0:1 max.
<b>Output Impedance</b>	50 ohms, nominal
<b>Mismatch Tolerance</b>	Output pulse width foldback protection at peak reflected power exceeding 5000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
<b>Pulse Capability</b>	
Pulse Width	0.1 - 50 microseconds
Pulse Rate (PRF)	50 kHz max.
Duty Cycle	5% max.
RF Rise and Fall	30 ns max. (10% - 90%)
Delay	900 ns max. from pulse input to RF 90%
Pulse Droop (25 μs pulse)	5% max.
Pulse Width Distortion	±50 ns max. (50% points of output pulse width compared to 50% points of input pulse width)
Pulse Off Isolation	60dB min.
Pulse Input	TTL level, 50 ohm nominal termination
<b>Noise Figure</b>	15dB typ.
<b>Harmonic Distortion</b>	Minus 20dBc max. at 14000 watts
<b>Spurious</b>	Minus 60dBc typ.
<b>Primary Power</b>	190 - 240 VAC 50/60 Hz, 3-phase Delta 5 kVA max.
<b>Connectors</b>	
RF input	Type N female on front panel
RF output	Type 1-5/8" EIA female on rear panel
RF output forward and reflected sample ports	Type N female on rear panel
Pulse input	Type BNC female on rear panel
<b>Remote Interfaces</b>	
IEEE-488	24 pin, rear
Ethernet	RJ-45, rear
<b>Safety Interlock</b>	15 pin Subminiature D, rear
<b>Cooling</b>	Forced air (self contained fans)
<b>Weight (max.)</b>	340 kg (750 lbs)
<b>Size (WxHxD)</b>	50.3 x 185 x 90 cm / 19.8 x 73 x 35.5 in
<b>Export Classification</b>	3A999.d

## 1000SP1z2G1z4 Pulsed Amplifier



### 1,000 watts, 1.2-1.4 GHz Pulse

<b>Rated Power Output</b>	1000 watts min.
<b>Input For Rated Output</b>	1 milliwatt max.
<b>Power Output @ 3dB compression</b>	Nominal 1000 watts / min. 900 watts
<b>Power Output @ 1dB compression</b>	Nominal 800 watts / min. 700 watts
<b>Flatness</b>	±1.5dB typ. / ±2.5dB max.
<b>Frequency Response</b>	1.2 - 1.4 GHz instantaneously
<b>Gain (at max. setting)</b>	60dB min.
<b>Gain Adjustment</b>	Continuous Range 20dB min., (4096 steps remote)
<b>Input Impedance</b>	50 ohms, VSWR 2.0:1 max.
<b>Output Impedance</b>	50 ohms, nominal
<b>Mismatch Tolerance</b>	Output pulse width foldback protection at peak reflected power exceeding 500 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
<b>Pulse Capability</b>	
Pulse Width	0.07 - 30 microseconds
Pulse Rate (PRF)	50 kHz max.
Duty Cycle	1% max.
RF Rise and Fall	30 ns max. (10% - 90%)
Delay	2 μs max. from pulse input to RF 90%
Pulse Width Distortion	±100 ns max. (50% points of output pulse width compared to 50% points of input pulse width)
Pulse Off Isolation	80dB min.
Pulse Input	TTL level, 50 ohm nominal termination
<b>Noise Figure</b>	12dB typ.
<b>Harmonic Distortion</b>	Minus 30dBc max. at 700 watts
<b>Spurious</b>	Minus 60dBc typ.
<b>Primary Power</b>	100 - 264 VAC 50/60 Hz, single phase 700 watts max.
<b>Connectors</b>	
RF input	Type N female on front panel
RF output	Type 7-16 DIN female on front panel
RF output forward and reflected sample ports	Type N female on rear panel
Pulse input	Type BNC female on rear panel
<b>Remote Interfaces</b>	
IEEE-488	24 pin
Ethernet	RJ-45
<b>Safety Interlock</b>	15 pin Subminiature D
<b>Cooling</b>	Forced air (self contained fans)
<b>Weight</b>	20 kg (44 lbs)
<b>Size (WxHxD)</b>	50.3 x 15 x 87 cm / 19.8 x 5.9 x 34.1 in
<b>Export Classification</b>	3A999.d

# Solid State Pulsed Amplifiers 1.2 to 1.4 GHz Pulse

## 2000SP1z2G1z4 Pulsed Amplifier



### 2,000 watts, 1.2-1.4 GHz Pulse

<b>Rated Power Output</b>	2000 watts min.
<b>Input For Rated Output</b>	1 milliwatt max.
<b>Power Output @ 3dB compression</b>	Nominal 2000 watts / min. 1800 watts
<b>Power Output @ 1dB compression</b>	Nominal 1600 watts / min. 1400 watts
<b>Flatness</b>	±1.5dB typ. / ±2.5dB max.
<b>Frequency Response</b>	1.2 - 1.4 GHz instantaneously
<b>Gain (at max. setting)</b>	63dB min.
<b>Gain Adjustment</b>	Continuous Range 20dB min., (4096 steps remote)
<b>Input Impedance</b>	50 ohms, VSWR 2.0:1 max.
<b>Output Impedance</b>	50 ohms, nominal
<b>Mismatch Tolerance</b>	Output pulse width foldback protection at peak reflected power exceeding 1000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
<b>Pulse Capability</b>	
Pulse Width	0.07 - 30 microseconds
Pulse Rate (PRF)	50 kHz max.
Duty Cycle	1% max.
RF Rise and Fall	30 ns max. (10% - 90%)
Delay	2 μs max. from pulse input to RF 90%
Pulse Width Distortion	±100 ns max. (50% points of output pulse width compared to 50% points of input pulse width)
Pulse Off Isolation	80dB min.
Pulse Input	TTL level, 50 ohm nominal termination
<b>Noise Figure</b>	15dB typ.
<b>Harmonic Distortion</b>	Minus 30dBc max. at 1400 watts
<b>Spurious</b>	Minus 60dBc typ.
<b>Primary Power</b>	100 - 264 VAC 50/60 Hz, single phase 800 watts max.
<b>Connectors</b>	
RF input	Type N female on front panel
RF output	Type 7-16 DIN female on front panel
RF output forward and reflected sample ports	Type N female on rear panel
Pulse input	Type BNC female on rear panel
<b>Remote Interfaces</b>	
IEEE-488	24 pin
Ethernet	RJ-45
<b>Safety Interlock</b>	15 pin Subminiature D
<b>Cooling</b>	Forced air (self contained fans)
<b>Weight</b>	29 kg (64 lbs)
<b>Size (WxHxD)</b>	50.3 x 20 x 68 cm / 19.8 x 7.9 x 26.8 in
<b>Export Classification</b>	3A999.d

## 4000SP1z2G1z4 Pulsed Amplifier



### 4,000 watts, 1.2-1.4 GHz Pulse

<b>Rated Power Output</b>	4000 watts min.
<b>Input For Rated Output</b>	1 milliwatt max.
<b>Power Output @ 3dB compression</b>	Nominal 4000 watts / min. 3600 watts
<b>Power Output @ 1dB compression</b>	Nominal 3200 watts / min. 2800 watts
<b>Flatness</b>	±1.5dB typ. / ±2.5dB max.
<b>Frequency Response</b>	1.2 - 1.4 GHz instantaneously
<b>Gain (at max. setting)</b>	66dB min.
<b>Gain Adjustment</b>	Continuous Range 20dB min., (4096 steps remote)
<b>Input Impedance</b>	50 ohms, VSWR 2.0:1 max.
<b>Output Impedance</b>	50 ohms, nominal
<b>Mismatch Tolerance</b>	Output pulse width foldback protection at peak reflected power exceeding 2000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
<b>Pulse Capability</b>	
Pulse Width	0.07 - 40 microseconds
Pulse Rate (PRF)	50 kHz max.
Duty Cycle	1% max.
RF Rise and Fall	30 ns max. (10% - 90%)
Delay	2 μs max. from pulse input to RF 90%
Pulse Width Distortion	±100 ns max. (50% points of output pulse width compared to 50% points of input pulse width)
Pulse Off Isolation	60dB min.
Pulse Input	TTL level, 50 ohm nominal termination
<b>Noise Figure</b>	15dB typ.
<b>Harmonic Distortion</b>	Minus 30dBc max. at 2800 watts
<b>Spurious</b>	Minus 60dBc typ.
<b>Primary Power</b>	100 - 264 VAC 50/60 Hz, single phase 600 watts max.
<b>Connectors</b>	
RF input	Type N female on front panel
RF output	Type 7-16 DIN female on front panel
RF output forward and reflected sample ports	Type N female on rear panel
Pulse input	Type BNC female on rear panel
<b>Remote Interfaces</b>	
IEEE-488	24 pin
Ethernet	RJ-45
<b>Safety Interlock</b>	15 pin Subminiature D
<b>Cooling</b>	Forced air (self contained fans)
<b>Weight</b>	50 kg (110 lbs)
<b>Size (WxHxD)</b>	50.3 x 29.5 x 80 cm / 19.8 x 11.6 x 31.5 in
<b>Export Classification</b>	3A999.d

## 8000SP1z2G1z4 Pulsed Amplifier



### 8,000 watts, 1.2-1.4 GHz Pulse

<b>Rated Power Output</b>	8000 watts min.
<b>Input For Rated Output</b>	1 milliwatt max.
<b>Power Output @ 3dB compression</b>	Nominal 8000 watts / min. 7000 watts
<b>Power Output @ 1dB compression</b>	Nominal 7000 watts / min. 6400 watts
<b>Flatness</b>	±1.5dB typ. / ±2.5dB max.
<b>Frequency Response</b>	1.2 - 1.4 GHz instantaneously
<b>Gain (at max. setting)</b>	69dB min.
<b>Gain Adjustment</b>	Continuous Range 20dB min., (4096 steps remote)
<b>Input Impedance</b>	50 ohms, VSWR 2.0:1 max.
<b>Output Impedance</b>	50 ohms, nominal
<b>Mismatch Tolerance</b>	Output pulse width foldback protection at peak reflected power exceeding 4000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
<b>Pulse Capability</b>	
Pulse Width	0.07 - 40 microseconds
Pulse Rate (PRF)	300 kHz max.
Duty Cycle	1% max.
RF Rise and Fall	50 ns max. (10% - 90%)
Delay	600 ns max. from pulse input to RF 90%
Pulse Droop	5% max.
Pulse Width Distortion	±100 ns max. (50% points of output pulse width compared to 50% points of input pulse width)
Pulse Off Isolation	60dB min.
Pulse Input	TTL level, 50 ohm nominal termination
<b>Third Order Intercept Point</b>	75dBm typ.
<b>Noise Figure</b>	15dB typ.
<b>Harmonic Distortion</b>	Minus 18dBc max. at 7000 watts
<b>Spurious</b>	Minus 60dBc typ.
<b>Phase Linearity</b>	±4 deg/100 MHz, typ.
<b>Primary Power</b>	100 - 264 VAC 50/60 Hz, single phase 600 watts max.
<b>Connectors</b>	
RF input	Type N female on front panel
RF output	Type 7-16 DIN female on front panel
RF output forward and reflected sample ports	Type N female on rear panel
Pulse input	Type BNC female on rear panel
<b>Remote Interfaces</b>	
IEEE-488	24 pin
Ethernet	RJ-45
<b>Safety Interlock</b>	15 pin Subminiature D
<b>Cooling</b>	Forced air (self contained fans)
<b>Weight</b>	45 kg (100 lbs)
<b>Size (WxHxD)</b>	50.3 x 29.2 x 79 cm / 19.8 x 11.5 x 31 in
<b>Export Classification</b>	3A999

# 2 to 4 GHz Pulse

## 3000SP2G4 Pulsed Amplifier



### 3,000 watts, 2-4 GHz Pulse

<b>Rated Power Output</b>	3000 watts min.
<b>Input For Rated Output</b>	1 milliwatt max.
<b>Power Output @ 3dB compression</b>	Nominal 2500 watts / min. 2200 watts
<b>Power Output @ 1dB compression</b>	Nominal 2200 watts / min. 1800 watts
<b>Flatness</b>	±1.5dB typ. / ±2.5dB at rated power
<b>Frequency Response</b>	2.0 - 4.0 GHz instantaneously
<b>Gain (at max. setting)</b>	64.8dB min.
<b>Gain Adjustment</b>	Continuous Range 20dB min., (4096 steps remote)
<b>Input Impedance</b>	50 ohms, VSWR 2.0:1 max.
<b>Output Impedance</b>	50 ohms, nominal
<b>Mismatch Tolerance</b>	Output pulse width foldback protection at peak reflected power exceeding 1500 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
<b>Pulse Capability</b>	Pulse Width 0.07 - 50 microseconds
	Pulse Rate (PRF) 50 kHz max.
	Duty Cycle 6% max.
	RF Rise and Fall 30 ns max. (10% - 90%)
	Delay 600 ns max. from pulse input to RF 90%
	Pulse Width Distortion ±100 ns max. (50% points of output pulse width compared to 50% points of input pulse width)
	Pulse Off Isolation 80dB min.
	Pulse Input TTL level, 50 ohm nominal termination
<b>Noise Figure</b>	12dB typ.
<b>Harmonic Distortion</b>	Minus 22dBc max. at 1800 watts
<b>Spurious</b>	Minus 60dBc typ.
<b>Primary Power</b>	100 - 264 VAC
	50/60 Hz, single phase
	1500 watts max.
<b>Connectors</b>	RF input Type N female on front panel
	RF output Type 7-16 DIN female on front panel
	RF output forward and reflected sample ports Type N female on rear panel
	Pulse input Type BNC female on rear panel
<b>Remote Interfaces</b>	IEEE-488 24 pin
	Ethernet RJ-45
<b>Safety Interlock</b>	15 pin Subminiature D
<b>Cooling</b>	Forced air (self contained fans)
<b>Weight</b>	76 kg (168 lbs)
<b>Size (WxHxD)</b>	50.3 x 37 x 68 cm / 19.8 x 14.6 x 26.8 in
<b>Export Classification</b>	3A999.d

## 6000SP2G4 Pulsed Amplifier



### 6,000 watts, 2-4 GHz Pulse

<b>Rated Power Output</b>	6000 watts min.
<b>Input For Rated Output</b>	1 milliwatt max.
<b>Power Output @ 3dB compression</b>	Nominal 5800 watts / min. 5400 watts
<b>Power Output @ 1dB compression</b>	Nominal 4500 watts / min. 4300 watts
<b>Flatness</b>	±1.5dB typ. / ±2.5dB max.
<b>Frequency Response</b>	2 - 4 GHz instantaneously
<b>Gain (at max. setting)</b>	67.8dB min.
<b>Gain Adjustment</b>	Continuous Range 20dB min., (4096 steps remote)
<b>Input Impedance</b>	50 ohms, VSWR 2.0:1 max.
<b>Output Impedance</b>	50 ohms, nominal
<b>Mismatch Tolerance</b>	Output pulse width foldback protection at peak reflected power exceeding 3000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
<b>Pulse Capability</b>	Pulse Width 0.1 - 100 microseconds
	Pulse Rate (PRF) 50 kHz max.
	Duty Cycle 10% max.
	RF Rise and Fall 30 ns max. (10% - 90%)
	Delay 600 ns max. from pulse input to RF 90%
	Pulse Width Distortion ±100 ns max. (50% points of output pulse width compared to 50% points of input pulse width)
	Pulse Off Isolation 80dB min.
	Pulse Input TTL level, 50 ohm nominal termination
<b>Noise Figure</b>	15dB typ.
<b>Harmonic Distortion</b>	Minus 20dBc max. at 4300 watts
<b>Spurious</b>	Minus 60dBc typ.
<b>Primary Power</b>	100 - 264 VAC
	50/60 Hz, single phase
	4500 watts max.
<b>Connectors</b>	RF input Type N female on front panel
	RF output Type 7-16 DIN female on front panel
	RF output forward and reflected sample ports Type N female on rear panel
	Pulse input Type BNC female on rear panel
<b>Remote Interfaces</b>	IEEE-488 24 pin
	Ethernet RJ-45
<b>Safety Interlock</b>	15 pin Subminiature D
<b>Cooling</b>	Forced air (self contained fans)
<b>Weight</b>	102 kg (225 lbs)
<b>Size (WxHxD)</b>	50.3 x 51 x 79 cm / 19.8 x 20 x 31 in
<b>Export Classification</b>	3A999.d

## 10000SP2G4 Pulsed Amplifier



### 10,000 watts, 2-4 GHz Pulse

<b>Rated Power Output</b>	10000 watts min.
<b>Input For Rated Output</b>	1 milliwatt max.
<b>Power Output @ 3dB compression</b>	Minimum 9000 watts
<b>Power Output @ 1dB compression</b>	Minimum 8000 watts
<b>Flatness</b>	±4dB typ. / ±2.5dB max.
<b>Frequency Response</b>	2 - 4 GHz instantaneously
<b>Gain (at max. setting)</b>	70dB min.
<b>Gain Adjustment</b>	Continuous Range 20dB min., (4096 steps remote)
<b>Input Impedance</b>	50 ohms, VSWR 2.0:1 max.
<b>Output Impedance</b>	50 ohms, nominal
<b>Mismatch Tolerance</b>	Output pulse width foldback protection at peak reflected power exceeding 5000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
<b>Pulse Capability</b>	Pulse Width 0.07-50 microseconds
	Pulse Rate (PRF) 50 kHz max.
	Duty Cycle 6% max.
	RF Rise and Fall 50 ns max. (10% - 90%)
	Delay 600 ns max. from pulse input to RF 90%
	Pulse Width Distortion ±100 ns max. (50% points of output pulse width compared to 50% points of input pulse width)
	Pulse Off Isolation 60dB min.
	Pulse Input TTL level, 50 ohm nominal termination
<b>Noise Figure</b>	15dB typ.
<b>Harmonic Distortion</b>	Minus 20dBc max. at 8000 watts
<b>Spurious</b>	Minus 60dBc typ.
<b>Primary Power</b>	100 - 264 VAC
	50/60 Hz, single phase
	3800 watts max.
<b>Connectors</b>	RF input Type N female on rear panel
	RF output Type 7-16 DIN female on rear panel
	RF output forward and reflected sample ports Type N female on rear panel
	Pulse input Type BNC female on rear panel
<b>Remote Interfaces</b>	IEEE-488 24 pin
	Ethernet RJ-45
<b>Safety Interlock</b>	15 pin Subminiature D
<b>Cooling</b>	Forced air (self contained fans)
<b>Weight</b>	125 kg (276 lbs)
<b>Size (WxHxD)</b>	60 x 68 x 90 cm / 23.6 x 26.8 x 35.4 in
<b>Export Classification</b>	3A999.d



### 15000SP2G4 Pulsed Amplifier



#### 15,000 watts, 2-4 GHz Pulse

<b>Rated Power Output</b>	15000 watts min.
<b>Input For Rated Output</b>	1 milliwatt max.
<b>Power Output @ 3dB compression</b>	
Nominal 14000 watts / min. 13500 watts	
<b>Power Output @ 1dB compression</b>	
Nominal 13000 watts / min. 12500 watts	
<b>Flatness</b>	±4dB max. / ±2.5dB at rated power
<b>Frequency Response</b>	2 - 4 GHz instantaneously
<b>Gain (at max. setting)</b>	71.8dB min.
<b>Gain Adjustment</b>	
Continuous Range 20dB min., (4096 steps remote)	
<b>Input Impedance</b>	50 ohms, VSWR 2.0:1 max.
<b>Output Impedance</b>	50 ohms, nominal
<b>Mismatch Tolerance</b>	
Output pulse width foldback protection at peak reflected power exceeding 7500 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.	
<b>Pulse Capability</b>	
Pulse Width	0.07 - 50 microseconds
Pulse Rate (PRF)	50 kHz max.
Duty Cycle	6% max.
RF Rise and Fall	50 ns max. (10% - 90%)
Delay	600 ns max. from pulse input to RF 90%
Pulse Width Distortion	±100 ns max. (50% points of output pulse width compared to 50% points of input pulse width)
Pulse Off Isolation	60dB min.
Pulse Input	TTL level, 50 ohm nominal termination
<b>Noise Figure</b>	15dB typ.
<b>Harmonic Distortion</b>	Minus 20dBc max. at 12500 watts
<b>Spurious</b>	Minus 60dBc typ.
<b>Primary Power</b>	
100 - 264 VAC	
50/60 Hz, single phase	
3800 watts max.	
<b>Connectors</b>	
RF input	Type N female on rear panel
RF output	7/8 EIA female on rear panel
RF output forward and reflected sample ports	
Type N female on rear panel	
Type BNC female on rear panel	
<b>Remote Interfaces</b>	
IEEE-488	24 pin
Ethernet	RJ45
<b>Safety Interlock</b>	15 pin Subminiature D
<b>Cooling</b>	Forced air (self contained fans)
<b>Weight</b>	145 kg (320 lbs)
<b>Size (WxHxD)</b>	
60 x 117 x 90 cm / 23.6 x 46 x 35.4 in	
<b>Export Classification</b>	3A999.d

### 1000SP2z7G3z1 Pulsed Amplifier



#### 1,000 watts, 2.7-3.1 GHz Pulse

<b>Rated Power Output</b>	1000 watts min.
<b>Input For Rated Output</b>	1 milliwatt max.
<b>Power Output @ 3dB compression</b>	
Nominal 1000 watts / min. 900 watts	
<b>Power Output @ 1dB compression</b>	
Nominal 800 watts / min. 700 watts	
<b>Flatness</b>	±1.5dB typ. / ±2.5dB max.
<b>Frequency Response</b>	2.7 - 3.1 GHz instantaneously
<b>Gain (at max. setting)</b>	60dB min.
<b>Gain Adjustment</b>	
Continuous Range 20dB min., (4096 steps remote)	
<b>Input Impedance</b>	50 ohms, VSWR 2.0:1 max.
<b>Output Impedance</b>	50 ohms, nominal
<b>Mismatch Tolerance</b>	
Output pulse width foldback protection at peak reflected power exceeding 500 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.	
<b>Pulse Capability</b>	
Pulse Width	0.07 - 30 microseconds
Pulse Rate (PRF)	50 kHz max.
Duty Cycle	1% max.
RF Rise and Fall	30 ns max. (10% - 90%)
Delay	2 μs max. from pulse input to RF 90%
Pulse Width Distortion	±100 ns max. (50% points of output pulse width compared to 50% points of input pulse width)
Pulse Off Isolation	60dB min.
Pulse Input	TTL level, 50 ohm nominal termination
<b>Noise Figure</b>	12dB typ.
<b>Harmonic Distortion</b>	Minus 30dBc max. at 700 watts
<b>Spurious</b>	Minus 60dBc typ.
<b>Primary Power</b>	
100 - 264 VAC	
50/60 Hz, single phase	
700 watts max.	
<b>Connectors</b>	
RF input	Type N female on front panel
RF output	Type 7-16 DIN female on front panel
RF output forward and reflected sample ports	
Type N female on rear panel	
Type BNC female on rear panel	
<b>Remote Interfaces</b>	
IEEE-488	24 pin
Ethernet	RJ-45
<b>Safety Interlock</b>	15 pin Subminiature D
<b>Cooling</b>	Forced air (self contained fans)
<b>Weight</b>	20 kg (44 lbs)
<b>Size (WxHxD)</b>	
50.3 x 15 x 68 cm / 19.8 x 5.9 x 26.8 in	
<b>Export Classification</b>	3A999.d

### 2000SP2z7G3z1 Pulsed Amplifier



#### 2,000 watts, 2.7-3.1 GHz Pulse

<b>Rated Power Output</b>	2000 watts min.
<b>Input For Rated Output</b>	1 milliwatt max.
<b>Power Output @ 3dB compression</b>	
Nominal 2000 watts / min. 1800 watts	
<b>Power Output @ 1dB compression</b>	
Nominal 1600 watts / min. 1400 watts	
<b>Flatness</b>	±1.5dB typ. / ±2.5dB max.
<b>Frequency Response</b>	2.7 - 3.1 GHz instantaneously
<b>Gain (at max. setting)</b>	63dB min.
<b>Gain Adjustment</b>	
Continuous Range 20dB min., (4096 steps remote)	
<b>Input Impedance</b>	50 ohms, VSWR 2.0:1 max.
<b>Output Impedance</b>	50 ohms, nominal
<b>Mismatch Tolerance</b>	
Output pulse width foldback protection at peak reflected power exceeding 1000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.	
<b>Pulse Capability</b>	
Pulse Width	1 - 200 microseconds
Pulse Rate (PRF)	10 kHz max.
Duty Cycle	10% max.
RF Rise and Fall	30 ns max. (10% - 90%)
Delay	600 ns max. from pulse input to RF 90%
Pulse Width Distortion	±100 ns max. (50% points of output pulse width compared to 50% points of input pulse width)
Pulse Off Isolation	80dB min.
Pulse Input	TTL level, 50 ohm nominal termination
<b>Noise Figure</b>	12dB typ.
<b>Harmonic Distortion</b>	Minus 30dBc max. at 1400 watts
<b>Spurious</b>	Minus 60dBc typ.
<b>Primary Power</b>	
100 - 264 VAC	
50/60 Hz, single phase	
700 watts max.	
<b>Connectors</b>	
RF input	Type N female on front panel
RF output	Type 7-16 DIN female on front panel
RF output forward and reflected sample ports	
Type N female on rear panel	
Type BNC female on rear panel	
<b>Remote Interfaces</b>	
IEEE-488	24 pin
Ethernet	RJ-45
<b>Safety Interlock</b>	15 pin Subminiature D
<b>Cooling</b>	Forced air (self contained fans)
<b>Weight</b>	27 kg (60 lbs)
<b>Size (WxHxD)</b>	
50.3 x 15 x 68 cm / 19.8 x 5.9 x 26.8 in	
<b>Export Classification</b>	3A999.d

## 4000SP2z7G3z1 Pulsed Amplifier



### 4,000 watts, 2.7-3.1 GHz Pulse

<b>Rated Power Output</b>	4000 watts min.
<b>Input For Rated Output</b>	1 milliwatt max.
<b>Power Output @ 3dB compression</b>	
Nominal	3800 watts / min. 3600 watts
<b>Power Output @ 1dB compression</b>	
Nominal	3400 watts / min. 3000 watts
<b>Flatness</b>	±1.5dB typ. / ±2.5dB max
<b>Frequency Response</b>	2.7 - 3.1 GHz instantaneously
<b>Gain (at max. setting)</b>	66dB min.
<b>Gain Adjustment</b>	
Continuous Range	20dB min., (4096 steps remote)
<b>Input Impedance</b>	50 ohms, VSWR 2.0:1 max.
<b>Output Impedance</b>	50 ohms, nominal
<b>Mismatch Tolerance</b>	
Output pulse width foldback protection at peak reflected power exceeding 2000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.	
<b>Pulse Capability</b>	
Pulse Width	1 - 200 microseconds
Pulse Rate (PRF)	10 kHz max.
Duty Cycle	10% max.
RF Rise and Fall	30 ns max. (10% - 90%)
Delay	600 ns max. from pulse input to RF 90%
Pulse Width Distortion	
±100 ns max. (50% points of output pulse width compared to 50% points of input pulse width)	
Pulse Off Isolation	80dB min.
Pulse Input	TTL level, 50 ohm nominal termination
<b>Noise Figure</b>	12dB typ.
<b>Harmonic Distortion</b>	Minus 30dBc max. at 3000 watts
<b>Spurious</b>	Minus 60dBc typ.
<b>Primary Power</b>	
100 - 264 VAC	
50/60 Hz, single phase	
1200 watts max.	
<b>Connectors</b>	
RF input	Type N female on front panel
RF output	Type 7-16 DIN female on front panel
RF output forward and reflected sample ports	
Type N female on rear panel	
Pulse input	Type BNC female on rear panel
<b>Remote Interfaces</b>	
IEEE-488	24 pin
Ethernet	RJ-45
<b>Safety Interlock</b>	15 pin Subminiature D
<b>Cooling</b>	Forced air (self contained fans)
<b>Weight</b>	42 kg (93 lbs)
<b>Size (WxHxD)</b>	50.3 x 28.7 x 68 cm / 19.8 x 11.3 x 27 in
<b>Export Classification</b>	3A999.d

## 8000SP2z7G3z1 Pulsed Amplifier



### 8,000 watts, 2.7-3.1 GHz Pulse

<b>Rated Power Output</b>	8000 watts min.
<b>Input For Rated Output</b>	1 milliwatt max.
<b>Power Output @ 3dB compression</b>	
Nominal	8000 watts / min. 7000 watts
<b>Power Output @ 1dB compression</b>	
Nominal	7000 watts / min. 6400 watts
<b>Flatness</b>	±1.5dB typ. / ±2.5dB max.
<b>Frequency Response</b>	2.7 - 3.1 GHz instantaneously
<b>Gain (at max. setting)</b>	69dB min.
<b>Gain Adjustment</b>	
Continuous Range	20dB min., (4096 steps remote)
<b>Input Impedance</b>	50 ohms, VSWR 2.0:1 max.
<b>Output Impedance</b>	50 ohms, nominal
<b>Mismatch Tolerance</b>	
Output pulse width foldback protection at peak reflected power exceeding 4000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.	
<b>Pulse Capability</b>	
Pulse Width	0.07 - 6 microseconds
Pulse Rate (PRF)	300 kHz max.
Duty Cycle	1% max.
RF Rise and Fall	50 ns max. (10% - 90%)
Delay	600 ns max. from pulse input to RF 90%
Pulse Width Distortion	
±100 ns max. (50% points of output pulse width compared to 50% points of input pulse width)	
Pulse Off Isolation	60dB min.
Pulse Input	TTL level, 50 ohm nominal termination
<b>Third Order Intercept Point</b>	75dBm typ.
<b>Noise Figure</b>	15dB typ.
<b>Harmonic Distortion</b>	Minus 18dBc max. at 7000 watts
<b>Spurious</b>	Minus 60dBc typ.
<b>Phase Linearity</b>	±4 deg/100 MHz, typ.
<b>Primary Power</b>	
100 - 264 VAC	
50/60 Hz, single phase	
700 watts max.	
<b>Connectors</b>	
RF input	Type N female on front panel
RF output	Type 7-16 DIN female on front panel
RF output forward and reflected sample ports	
Type N female on rear panel	
Pulse input	Type BNC female on rear panel
<b>Remote Interfaces</b>	
IEEE-488	24 pin
<b>Safety Interlock</b>	15 pin Subminiature D
<b>Cooling</b>	Forced air (self contained fans)
<b>Weight</b>	45 kg (100 lbs)
<b>Size (WxHxD)</b>	50.3 x 29.2 x 71 cm / 19.8 x 11.5 x 27.9 in
<b>Export Classification</b>	3A999.d

