

The New Standard in High Power Redundant
Microwave Amplifier Systems Has Arrived



**2.5 kW Ku-Band Solid State High Power Amplifier System
configured with (8) Modules**

FEATURES

- Gallium Nitride amplifiers, offering better power over frequency
- Output Power levels of up to:
10 kW in C- and X-Bands;
5.8 kW in Ku-Band
- No Active Switching-All Passive Power Combining
- System is 100% field maintainable
- Output Power sized for N+1 Redundancy
- All active modules are hot swappable via the front or rear panels
- System can be configured with any combination of 4 to 16 modules.
- Hot Swappable Redundant Power Supply Modules
- Hot Swappable SSPA Modules
- Removable Fan Trays
- Removable M&C Card Assembly
- System monitor and control emulates single SSPA Chassis operation
- Ethernet Port with UDP, SNMP, and internal web browser capability
- Legacy RS-485 M&C
- Accurate Output Power Measurement
- Reflected Power Monitor
- RF Output Sample Port
- RF Gain Adjustment
(42 dB - 62 dB) Ku-Band systems
(50 dB - 70 dB) all others
- System is field scalable: i.e., can start out with (4) modules in system and upgrade to (8) or (16) modules.

PowerMAX is covered by U.S. Patent Nos.
8,189,338 B2 and 8,411,477 B2



System Operation

The PowerMAX system maintains complete parallel redundancy down to the embedded control level. Therefore the loss of an entire HPA chassis will not interrupt remote communications with the system. Remote communications can be either RS-485 or Ethernet. The system will automatically correct its gain level in the event of one or more HPA chassis failures.

The sophisticated system monitor and control allows the system to be locally or remotely operated as if it were a “single” chassis amplifier. The system control maintains a hierarchical management that allows the operator to interface to a single chassis of the multi-module array.

Another feature unique to Teledyne Paradise Datacom’s PowerMAX is the introduction of “true rms” output power measurement. Unlike other amplifier systems that utilize diode detection schemes, the PowerMAX reports the true rms output power of the system independent of the number of carriers and modulation schemes.

Proprietary waveguide combining techniques are employed so that maximum power combining efficiency is optimized within the operating frequency band.

System Output Power and Configurations

Because the system power combining is purely passive and no switching is used, there is never an interruption in RF output power. The PowerMAX system is typically used as a “self-redundant” system. The output power is sized such that the loss of (1) RF module’s power will still allow the system to maintain its minimum required output power. This type of system architecture is described as n+1 redundant. The system can be configured with any number of modules but best overall efficiency is obtained with the popular binary combinations of 4, 8, or 16 modules. It is very easy to upgrade the PowerMAX system from 4 modules to 8 or 16 modules in the field. It is not necessary to fully populate the system at the time of initial purchase. This provides the user a path to upgrade output power capability as system requirements grow, thus keeping capital investment minimized. For sizing redundant output power capability use the following guideline to determine the output power of the system with the loss of (1) module.

4 Module System - 3 of 4 Modules Operable = 2.5 dB loss in output power capability

8 Module System - 7 of 8 Modules Operable = 1.2 dB loss in output power capability

16 Module System - 15 of 16 Modules Operable = 0.6 dB loss in output power capability

System Prime Input Power

Proprietary adaptive bias techniques are utilized to achieve an aggressive balance between RF output power and minimized DC input power.

Prime power may be introduced into a terminal block at the top of the cabinet. Electrical conduit is routed between the terminal block and a 5RU boxed assembly, the AC Distribution/Circuit Breaker Panel, which houses a separate toggle switch circuit breaker for each power supply module in the system. Additional circuit breakers are available for auxiliary equipment mounted in the cabinet.

System prime input power is achieved with an array of modular (hot-swap) power supply chassis. Power is distributed from the power supplies to the SSPA modules via a bus rail assembly.

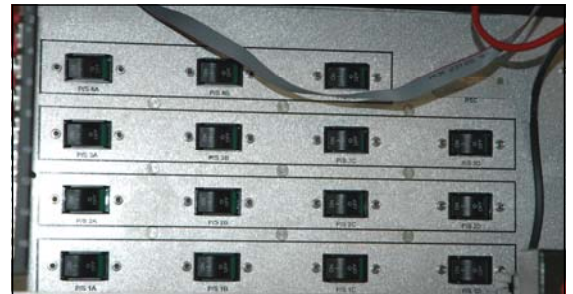
Each of the power supply modules has its own single phase, 180-264 VAC input. This makes it very convenient to parallel the AC inputs of two modules and connect the array to a three phase AC input source.

The power supply chassis is configured as a n+1 redundant, hot swappable power supply. In the event of a power supply module failure, the amplifier system will not fail. The failed module can be changed without ever taking the HPA out of service. The microwave amplifier architecture is also designed for maximum soft fail redundancy.

Prime system AC Input Power specifications are shown on pages 6-8 for various PowerMAX power levels and configurations.



Terminal Block



Circuit Breaker Panel



Power Supply Module in Chassis



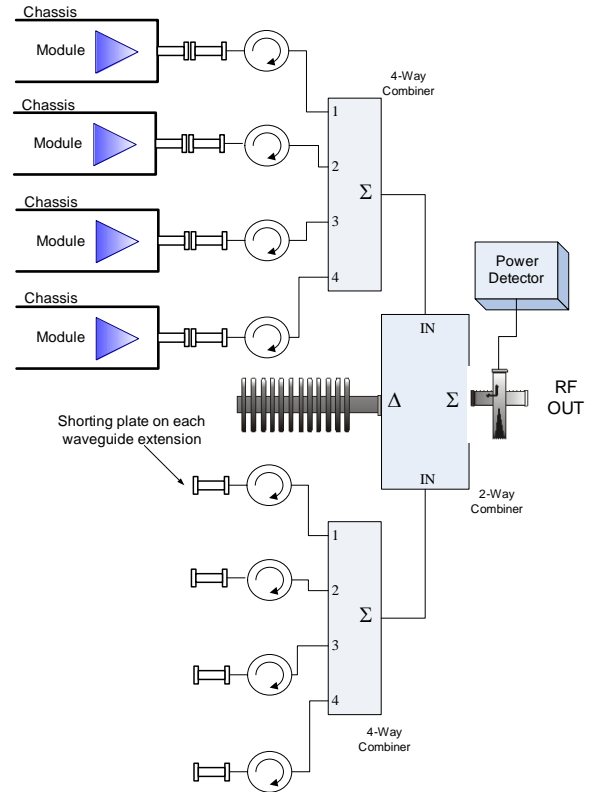
Quick Connect Plug into Bus Rail

Hitless Redundancy

For mission critical systems in which no power outage can be tolerated, an eight module PowerMAX system can be operated with only four modules installed. In this way, the additional four modules can be installed without requiring the system to be powered off.

The only disadvantage of operating the eight module PowerMAX system with four modules is the additional 3 dB loss that the four module (half-system) system experiences by going through the final hybrid combiner as shown at right. Therefore the overall output power is actually 6 dB below what it would be with all eight modules present in the system.

If, however, the module output power is sized such that this reduction in output power can be tolerated, the system shown at right is an effective means of scaling the system from four to eight modules and maintaining true hitless operation. The system never has to be powered down and there are no mechanical switches involved that would create an interruption of service.



With parallel system architectures, the amplifier output power capability and gain will change as the number of active modules vary. The PowerMAX system is designed with an Auto-Gain Control mode so that the overall system gain will remain constant in the event of a single module failure. See the table below.

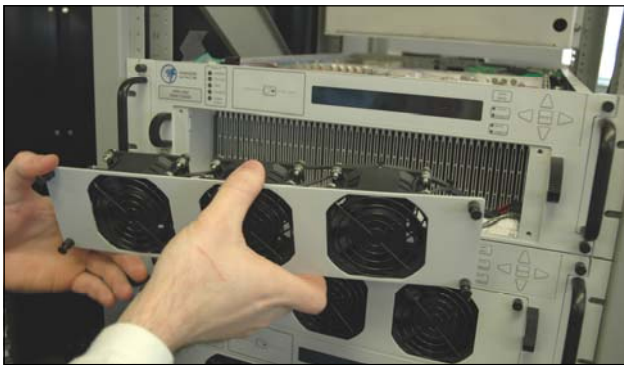
| System Type | # Modules in System | Gain Change Auto Gain Control On | Gain Change Auto Gain Control Off | Maximum Output Power |
|-------------|---------------------|----------------------------------|-----------------------------------|----------------------|
| 4-Chassis | 3 of 4 | 0 dB | -2.5 dB | -2.5 dB |
| 4-Chassis | 2 of 4 | -1.0 dB | -6.0 dB | -6.0 dB |
| 4-Chassis | 1 of 4 | -7.0 dB | -12.0 dB | -12.0 dB |
| 8-Chassis | 7 of 8 | 0 dB | -1.2 dB | -1.2 dB |
| 8-Chassis | 6 of 8 | 0 dB | -2.4 dB | -2.4 dB |
| 8-Chassis | 5 of 8 | 0 dB | -4.0 dB | -4.0 dB |
| 8-Chassis | 4 of 8 | -1.0 dB | -6.0 dB | -6.0 dB |
| 8-Chassis | 3 of 8 | -3.5 dB | -8.5 dB | -8.5 dB |
| 8-Chassis | 2 of 8 | -7.5 dB | -12.5 dB | -12.5 dB |
| 16-Chassis | 15 of 16 | 0 dB | -0.6 dB | -0.6 dB |
| 16-Chassis | 14 of 16 | 0 dB | -1.2 dB | -1.2 dB |
| 16-Chassis | 13 of 16 | 0 dB | -2.0 dB | -2.0 dB |
| 16-Chassis | 12 of 16 | 0 dB | -2.5 dB | -2.5 dB |

SSPA Chassis Population Options

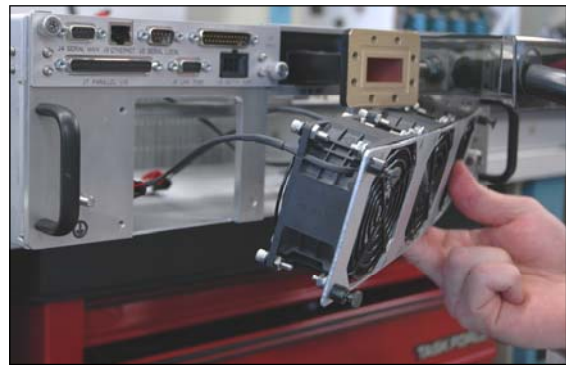
The PowerMAX system is available in a variety of system GaN module configurations and output power levels. The system is based on Teledyne Paradise Datacom's 3RU chassis with 100% hot swappable active assemblies. The units can be configured with a wide variety of SSPA frequency bands and power levels, and can be fitted with the following SSPA modules:

- **C-Band:** **50W, 100W, 150W, 200W, 300W, 400W, 650W, 800W**
- **X-Band:** **300W, 400W, 650W, 800W**
- **Ku Band:** **50W, 80W, 100W, 150W, 200W, 300W, 400W, 500W**

Hot-Swap Chassis Features



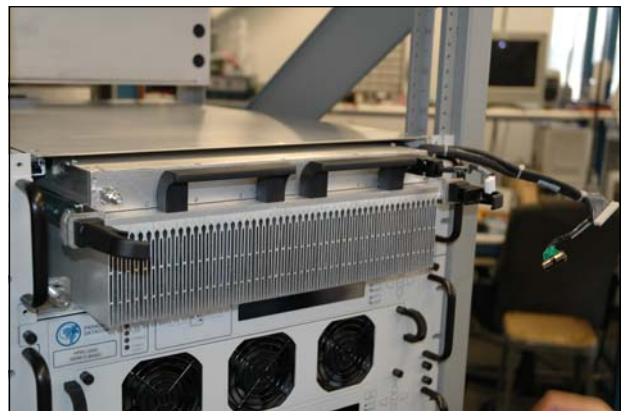
Removable front panel fan tray



Removable rear panel fan tray



Removable rear panel monitor and control card



SSPA Module Removal via the front panel

Modular N+1 Soft-Fail Phase Combined System

4 Module C-Band PowerMAX System Power Specifications

| SSPA Module Power Level | 4 Module RF Output Power | | AC Input Power (W) | Heat Load (Btu/hr) | 3 Module Redundant RF Output Power | |
|-------------------------|-----------------------------|-----------------------------|------------------------|------------------------|------------------------------------|-----------------------------|
| | P_{sat} , typical dBm (W) | P_{Linear} , min. dBm (W) | P_{sat} / P_{Linear} | P_{sat} / P_{Linear} | P_{sat} , typical dBm (W) | P_{Linear} , min. dBm (W) |
| 50 W | 52.5 (178) | 49.5 (89) | 2,000/1,600 | 4,900/3,800 | 50.1 (102) | 47.0 (50) |
| 100 W | 55.5 (355) | 52.5 (178) | 2,400/2,000 | 5,440/4,350 | 53.1 (204) | 50.1 (102) |
| 150 W | 57.3 (537) | 54.3 (269) | 4,000/3,200 | 9,233/7,057 | 54.9 (309) | 51.9 (155) |
| 200 W | 58.5 (708) | 55.5 (355) | 4,400/3,520 | 9,797/7,404 | 56.0 (398) | 53.0 (200) |
| 300 W | 60.0 (1000) | 57.0 (501) | 6,000/5,200 | 13,000/10,800 | 57.8 (603) | 54.9 (302) |
| 400 W | 61.5 (1413) | 58.5 (708) | 7,200/6,400 | 15,200/13,000 | 59.1 (813) | 56.1 (407) |
| 650 W | 63.6 (2291) | 60.6 (1148) | 13,200/11,200 | 28,800/23,400 | 61.2 (1318) | 58.2 (661) |
| 800 W | 64.5 (2818) | 61.5 (1413) | 16,000/14,000 | 35000/29400 | 62.1 (1622) | 59.1 (813) |

4 Module X-Band PowerMAX System Power Specifications

| SSPA Module Power Level | 4 Module RF Output Power | | AC Input Power (W) | Heat Load (Btu/hr) | 3 Module Redundant RF Output Power | |
|-------------------------|-----------------------------|-----------------------------|------------------------|------------------------|------------------------------------|-----------------------------|
| | P_{sat} , typical dBm (W) | P_{Linear} , min. dBm (W) | P_{sat} / P_{Linear} | P_{sat} / P_{Linear} | P_{sat} , typical dBm (W) | P_{Linear} , min. dBm (W) |
| 300 W | 60.2 (1047) | 57.2 (525) | 6,000/5,200 | 13,034/10,858 | 57.8 (603) | 54.8 (302) |
| 400 W | 61.4 (1380) | 58.4 (692) | 8,000/6,800 | 17,428/14,165 | 59.0 (794) | 56.0 (398) |
| 650 W | 63.5 (2239) | 60.5 (1122) | 13,200/11,200 | 28,879/23,439 | 61.1 (1288) | 58.1 (646) |
| 800 W | 64.4 (2754) | 61.4 (1380) | 16,000/14,000 | 34,880/29,438 | 62.0 (1585) | 59.0 (794) |

4 Module Ku-Band PowerMAX System Power Specifications

| SSPA Module Power Level | 4 Module RF Output Power | | AC Input Power (W) | Heat Load (Btu/hr) | 3 Module Redundant RF Output Power | |
|-------------------------|-----------------------------|-----------------------------|------------------------|------------------------|------------------------------------|-----------------------------|
| | P_{sat} , typical dBm (W) | P_{Linear} , min. dBm (W) | P_{sat} / P_{Linear} | P_{sat} / P_{Linear} | P_{sat} , typical dBm (W) | P_{Linear} , min. dBm (W) |
| 50 W | 52.3 (170) | 49.3 (85) | 2,400/2,000 | 5,983/4,900 | 50.0 (100) | 47.0 (50) |
| 80 W | 54.3 (269) | 51.3 (135) | 2,920/2,340 | 7,078/5,501 | 51.9 (155) | 48.9 (78) |
| 100 W | 55.3 (339) | 52.3 (170) | 3,000/2,550 | 9,233/7,601 | 52.9 (195) | 49.9 (98) |
| 150 W | 57.1 (513) | 54.1 (257) | 4,800/3,680 | 11,409/8,363 | 54.7 (295) | 51.7 (148) |
| 200 W | 58.3 (676) | 55.3 (339) | 9,200/8,000 | 22,853/19,000 | 56.0 (398) | 53.0 (200) |
| 300 W | 60.1 (1023) | 57.1 (513) | 11,000/8,400 | 22,600/19,600 | 57.7 (589) | 54.7 (295) |
| 400 W | 61.3 (1350) | 58.3 (676) | 12,800/9,600 | 30,500/22,000 | 58.9 (776) | 55.9 (389) |
| 500 W | 62.3 (1698) | 59.3 (851) | 16,000/12,000 | 38,000/27,000 | 60.0 (1000) | 57.0 (501) |

8 Module C-Band PowerMAX System Power Specifications

| SSPA Module Power Level | 8 Module RF Output Power | | AC Input Power (W) | Heat Load (Btu/hr) | 7 Module Redundant RF Output Power | |
|-------------------------|-----------------------------|-----------------------------|------------------------|------------------------|------------------------------------|-----------------------------|
| | P_{sat} , typical dBm (W) | P_{Linear} , min. dBm (W) | P_{sat} / P_{Linear} | P_{sat} / P_{Linear} | P_{sat} , typical dBm (W) | P_{Linear} , min. dBm (W) |
| 50 W | 55.0 (316) | 52.0 (158) | 4,000/3,200 | 9,790/7,613 | 53.8 (240) | 50.8 (120) |
| 100 W | 58.3 (676) | 55.3 (339) | 4,200/3,500 | 9,520/8,500 | 57.1 (513) | 54.1 (257) |
| 150 W | 60.0 (1000) | 57.0 (501) | 8,000/6,400 | 18,466/14,114 | 58.8 (759) | 55.8 (380) |
| 200 W | 61.5 (1413) | 58.5 (708) | 8,800/7,040 | 19,590/14,807 | 60.3 (1072) | 57.3 (537) |
| 300 W | 63.0 (1995) | 60.0 (1000) | 12,000/10,400 | 26,000/21,700 | 61.9 (1549) | 58.9 (776) |
| 400 W | 64.3 (2692) | 61.3 (1349) | 14,400/12,800 | 30,500/26,153 | 63.1 (2042) | 60.1 (1023) |
| 650 W | 66.4 (4365) | 63.4 (2188) | 26,400/22,400 | 57,750/46,880 | 65.2 (3311) | 62.2 (1660) |
| 800 W | 67.3 (5370) | 64.3 (2692) | 32,000/28,000 | 69,755/58,875 | 66.1 (4074) | 63.1 (2042) |

8 Module X-Band PowerMAX System Power Specifications

| SSPA Module Power Level | 8 Module RF Output Power | | AC Input Power (W) | Heat Load (Btu/hr) | 7 Module Redundant RF Output Power | |
|-------------------------|-----------------------------|-----------------------------|------------------------|------------------------|------------------------------------|-----------------------------|
| | P_{sat} , typical dBm (W) | P_{Linear} , min. dBm (W) | P_{sat} / P_{Linear} | P_{sat} / P_{Linear} | P_{sat} , typical dBm (W) | P_{Linear} , min. dBm (W) |
| 300 W | 63.0 (1995) | 60.0 (1000) | 12,000/10,400 | 26,000/21,717 | 61.8 (1514) | 58.8 (759) |
| 400 W | 64.2 (2630) | 61.2 (1318) | 16,000/13,600 | 34,857/28,329 | 63.0 (1995) | 60.0 (1000) |
| 650 W | 66.3 (4266) | 63.3 (2138) | 26,400/22,400 | 57,759/46,879 | 65.1 (3236) | 62.1 (1622) |
| 800 W | 67.2 (5248) | 64.2 (2630) | 32,000/28,000 | 69,755/58,875 | 66.0 (3981) | 63.0 (1995) |

8 Module Ku-Band PowerMAX System Power Specifications

| SSPA Module Power Level | 8 Module RF Output Power | | AC Input Power (W) | Heat Load (Btu/hr) | 7 Module Redundant RF Output Power | |
|-------------------------|-----------------------------|-----------------------------|------------------------|------------------------|------------------------------------|-----------------------------|
| | P_{sat} , typical dBm (W) | P_{Linear} , min. dBm (W) | P_{sat} / P_{Linear} | P_{sat} / P_{Linear} | P_{sat} , typical dBm (W) | P_{Linear} , min. dBm (W) |
| 50 W | 55.0 (316) | 52.0 (158) | 4,800/4,000 | 12,000/9,800 | 53.8 (240) | 50.8 (120) |
| 80 W | 57.0 (501) | 54.0 (251) | 5,840/4,680 | 14,156/11,000 | 55.8 (380) | 52.8 (191) |
| 100 W | 58.0 (631) | 55.0 (316) | 8,000/6,800 | 19,500/16,300 | 56.8 (479) | 53.8 (240) |
| 150 W | 59.8 (955) | 56.8 (479) | 9,600/7,200 | 22,818/16,290 | 58.6 (724) | 55.6 (363) |
| 200 W | 61.0 (1259) | 58.0 (631) | 18,400/16,000 | 45,706/37,500 | 59.8 (955) | 56.8 (479) |
| 300 W | 62.8 (1905) | 59.8 (955) | 22,000/16,800 | 53,300/39,100 | 61.6 (1445) | 58.6 (724) |
| 400 W | 64.0 (2512) | 61.0 (1259) | 25,600/19,200 | 61,000/43,560 | 62.8 (1905) | 59.8 (955) |
| 500 W | 65.0 (3162) | 62.0 (1585) | 32,000/24,000 | 76,100/54,300 | 63.8 (2399) | 60.8 (1202) |

16 Module C-Band PowerMAX System Power Specifications

| SSPA Module Power Level | 16 Module RF Output Power | | AC Input Power (W) | Heat Load (Btu/hr) | 15 Module Redundant RF Output Power | |
|-------------------------|-----------------------------|-----------------------------|------------------------|------------------------|-------------------------------------|-----------------------------|
| | P_{sat} , typical dBm (W) | P_{Linear} , min. dBm (W) | P_{sat} / P_{Linear} | P_{sat} / P_{Linear} | P_{sat} , typical dBm (W) | P_{Linear} , min. dBm (W) |
| 50 W | 58.0 (631) | 55.0 (316) | 8,000/6,400 | 20,000/15,000 | 57.2 (525) | 54.2 (263) |
| 100 W | 61.0 (1259) | 58.0 (631) | 9,600/8,000 | 21,760/17,408 | 60.4 (1096) | 57.4 (550) |
| 150 W | 62.8 (1905) | 59.8 (955) | 16,000/12,800 | 37,000/28,000 | 62.2 (1660) | 59.2 (832) |
| 200 W | 64.0 (2512) | 61.0 (1259) | 17,600/14,080 | 39,189/29,614 | 63.4 (2188) | 60.4 (1096) |
| 300 W | 65.8 (3802) | 62.8 (1905) | 24,000/20,800 | 52,000/43,400 | 65.2 (3311) | 62.2 (1660) |
| 400 W | 67.0 (5012) | 64.0 (2512) | 28,800/25,600 | 61,000/52,300 | 66.4 (4365) | 63.4 (2188) |
| 650 W | 69.1 (8128) | 66.1 (4074) | 52,800/44,800 | 115,517/93,757 | 68.5 (7079) | 65.5 (3548) |
| 800 W | 70.0 (10000) | 67.0 (5012) | 64,000/56,000 | 139,511/117,751 | 69.4 (8710) | 66.4 (4365) |

16 Module X-Band PowerMAX System Power Specifications

| SSPA Module Power Level | 16 Module RF Output Power | | AC Input Power (W) | Heat Load (Btu/hr) | 15 Module Redundant RF Output Power | |
|-------------------------|-----------------------------|-----------------------------|------------------------|------------------------|-------------------------------------|-----------------------------|
| | P_{sat} , typical dBm (W) | P_{Linear} , min. dBm (W) | P_{sat} / P_{Linear} | P_{sat} / P_{Linear} | P_{sat} , typical dBm (W) | P_{Linear} , min. dBm (W) |
| 300 W | 65.6 (3631) | 62.6 (1820) | 24,000/20,800 | 52,137/43,433 | 65.0 (3162) | 62.0 (1585) |
| 400 W | 66.9 (4898) | 63.9 (2455) | 32,000/27,200 | 69,714/56,658 | 66.3 (4266) | 63.3 (2138) |
| 650 W | 69.0 (7643) | 66.0 (3981) | 52,800/44,800 | 115,517/93,757 | 68.4 (6918) | 65.4 (3467) |
| 800 W | 70.0 (10000) | 67.0 (5012) | 64,000/56,000 | 139,511/117,751 | 69.3 (8511) | 66.3 (4266) |

16 Module Ku-Band PowerMAX System Power Specifications

| SSPA Module Power Level | 16 Module RF Output Power | | AC Input Power (W) | Heat Load (Btu/hr) | 15 Module Redundant RF Output Power | |
|-------------------------|-----------------------------|-----------------------------|------------------------|------------------------|-------------------------------------|-----------------------------|
| | P_{sat} , typical dBm (W) | P_{Linear} , min. dBm (W) | P_{sat} / P_{Linear} | P_{sat} / P_{Linear} | P_{sat} , typical dBm (W) | P_{Linear} , min. dBm (W) |
| 50 W | 57.6 (575) | 54.6 (288) | 9,600/8,000 | 24,000/19,600 | 57.0 (501) | 54.0 (251) |
| 80 W | 59.6 (912) | 56.6 (457) | 11,680/9,360 | 28,313/22,000 | 59.0 (794) | 56.0 (398) |
| 100 W | 60.6 (1148) | 57.6 (575) | 16,000/13,600 | 39,168/32,640 | 60.0 (1000) | 57.0 (501) |
| 150 W | 62.4 (1738) | 59.4 (871) | 19,200/14,400 | 45,631/32,581 | 61.8 (1514) | 58.8 (759) |
| 200 W | 63.6 (2291) | 60.6 (1148) | 36,800/32,000 | 91,413/75,000 | 63.0 (1995) | 60.0 (1000) |
| 300 W | 65.4 (3467) | 62.4 (1738) | 44,000/33,600 | 106,500/78,500 | 64.8 (3020) | 61.8 (1514) |
| 400 W | 66.6 (4571) | 63.6 (2291) | 51,200/38,400 | 122,000/87,000 | 66.0 (3981) | 63.0 (1995) |
| 500 W | 67.6 (5754) | 64.6 (2884) | 64,000/48,000 | 152,300/108,750 | 67.0 (5012) | 64.0 (2512) |

General Electrical Specifications

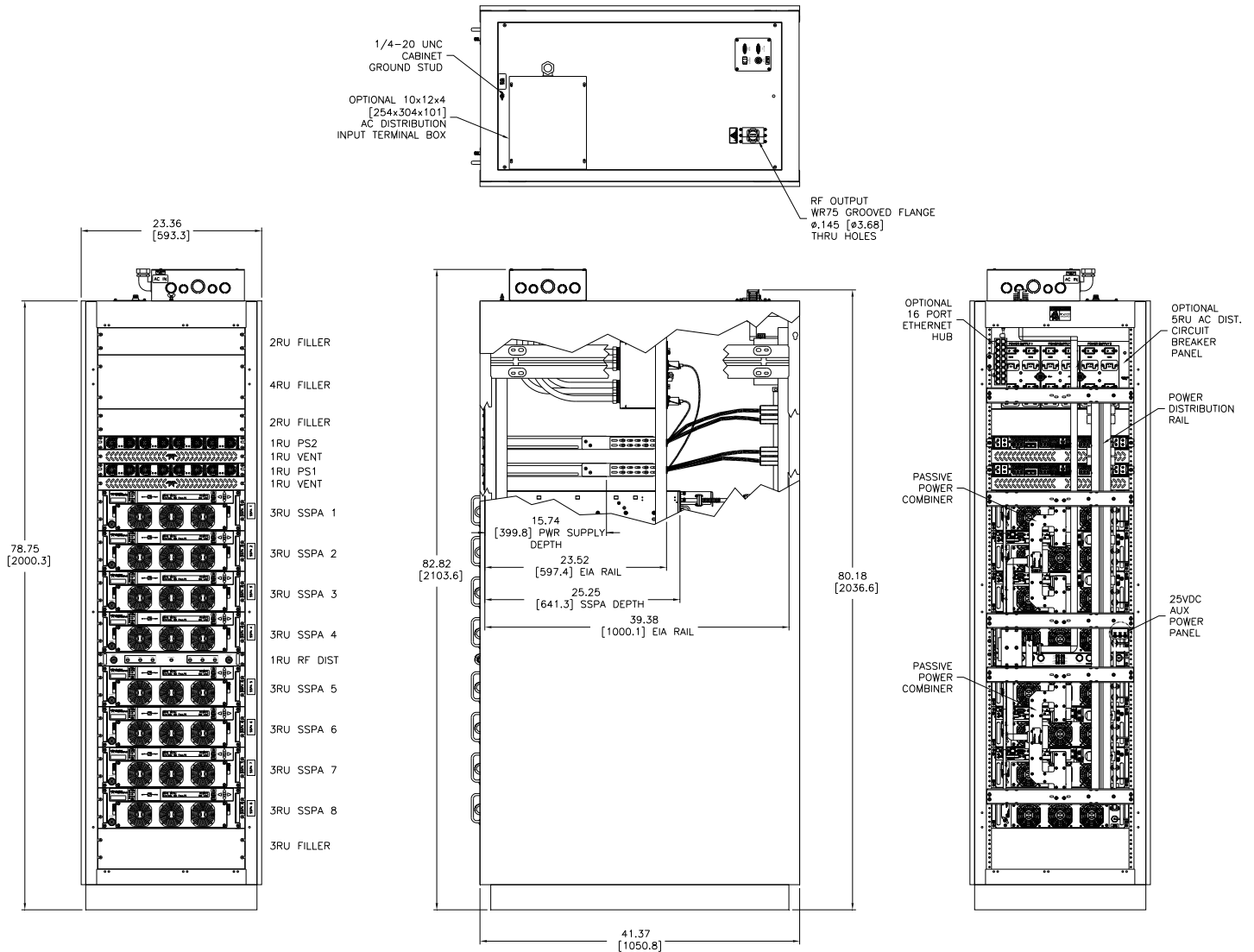
| PARAMETER | NOTES | LIMITS | UNITS |
|--------------------------------|--|--------------------|---------------------|
| Gain | Maximum, Ku-Band (Auto-Gain Off) | 62 | dB |
| | Maximum, Ku-Band (Auto-Gain On) | 57 | dB |
| | Maximum, C- & X-Bands (Auto-Gain Off) | 70 | dB |
| | Maximum, C- & X-Bands (Auto-Gain On) | 65 | dB |
| Gain Flatness | full band | ±1.0 | dB |
| Gain Slope | per 40 MHz | ±0.3 | dB/40 MHz |
| Gain Variation vs. Temperature | 0 °C to +50 °C | ±1.0 | dB |
| Gain Adjustment | 0.1 dB resolution | 20 | dB |
| Intermodulation Distortion | 3 dB back off relative to P _{sat} | -25 | dBc |
| AM/PM Conversion | (@ P _{Linear}) | 3.5 | °/dB |
| | (@ P _{Linear}) | 1.0 | °/dB |
| Spurious Harmonics | (@ P _{Linear}) | -70 | dBc |
| | (@ P _{Linear}) | -50 | dBc |
| Input/Output VSWR | | 1.30:1 | |
| Noise Figure | at maximum gain | 12 | dB |
| Group Delay | Linear | 0.01 | ns/MHz |
| | Parabolic | 0.003 | ns/MHz ² |
| | Ripple | 1.0 | ns p-p |
| Noise Output | TX Band | -75 | dBW/4 KHz |
| | RX Band (C-Band, without filter) | -155 | dBW/4 KHz |
| | RX Band (X-Band, without filter) | -85 | dBW/4 KHz |
| | RX Band (X-Band, with filter) | -155 | dBW/4 KHz |
| | RX Band (Ku-Band, without filter) | -85 | dBW/4 KHz |
| | RX Band (Ku-Band, with filter) | -155 | dBW/4 KHz |
| Residual AM Noise | 0 - 10 KHz | -45 | dBc |
| | 10 KHz - 500 KHz | -20 (1.25 + log F) | dBc |
| | 500 KHz - 1 MHz | -80 | dBc |
| Residual Phase Noise | Offset frequency from carrier | | |
| | 10 Hz | -90 | dBc/Hz |
| | 100 Hz | -100 | dBc/Hz |
| | 1 KHz | -110 | dBc/Hz |
| | 10 KHz | -120 | dBc/Hz |
| | 100 KHz | -125 | dBc/Hz |
| 1 MHz | -130 | dBc/Hz | |
| RF Leakage | @ 1m, with SSPA module removed | <0.001 | mW/cm ² |

Environmental Specifications

| | | | |
|----------------------------|-------------------------------------|----------|-----|
| Operating Temperature | Ambient | 0 to +50 | °C |
| Relative Humidity | non-condensing | 95 | % |
| Cooling System | Integrated, forced air, per chassis | 137 | CFM |
| Audible Noise ¹ | per chassis, measured 1m from unit | 71 | dBA |

¹ Audible noise is measured with the fans set at low. Add 3 dBA to the system audible noise figure (low fan) if using the cabinet exhaust option.

System Outline Drawing



The system pictured above is typical for a 1.8 kW 8-Module Ku-Band system.

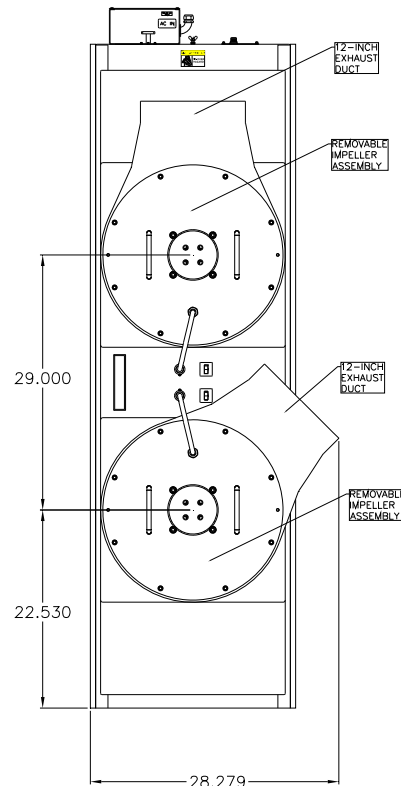
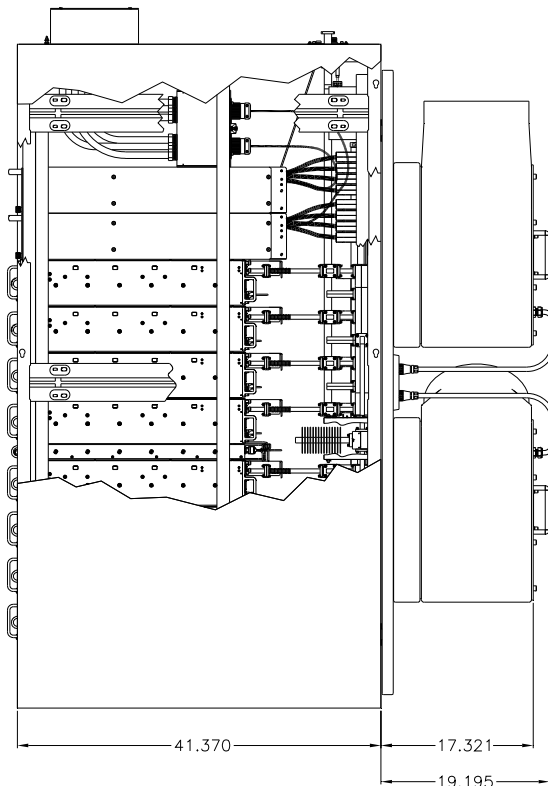
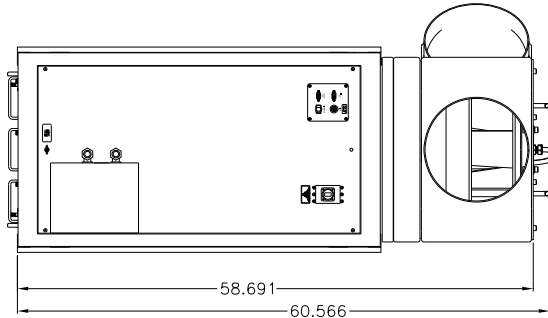
Note that certain power levels require a different power supply configuration. Consult with the factory for details on your system's prime power requirements.

Cabinet Exhaust Option

The PowerMAX system is available with an optional cabinet exhaust system, which includes a rear door for the cabinet and an impeller assembly for each grouping of four (4) SSPA chassis in the system.

Power is provided from the AC Distribution Box to the circuit-interruptible power connectors in the interior of the rear door. Separate power cables connect from the outer door couplers to each impeller.

Outline Drawing, Cabinet Exhaust Option



Spare Module/Chassis Part Number Configuration

H P A [] [] [] [] [] [] [] [] [] [] X X X X X G

| Band | |
|---------|----|
| C-Band | CC |
| X-Band | XX |
| Ku-Band | KU |

| GaN Designation | |
|-----------------|----------------|
| G | GaN Technology |

| Chassis Power Level (in Watts) | |
|--------------------------------|--|
| Band | Output Power |
| C-Band | 050, 100, 200, 300, 400, 650 or 800 |
| X-Band | 300, 400, 650 or 800 |
| Ku-Band | 050, 080, 100, 150, 200, 300, 400 or 500 |

| Frequency Sub Band | |
|--------------------|---|
| C-Band | |
| 5.850 - 6.425 GHz | A |
| 5.850 - 6.725 GHz | B |
| X-Band | |
| 7.900 - 8.400 GHz | A |
| 7.500 - 8.500 GHz | B |
| Ku-Band | |
| 14.00 - 14.50 GHz | A |
| 13.75 - 14.50 GHz | B |

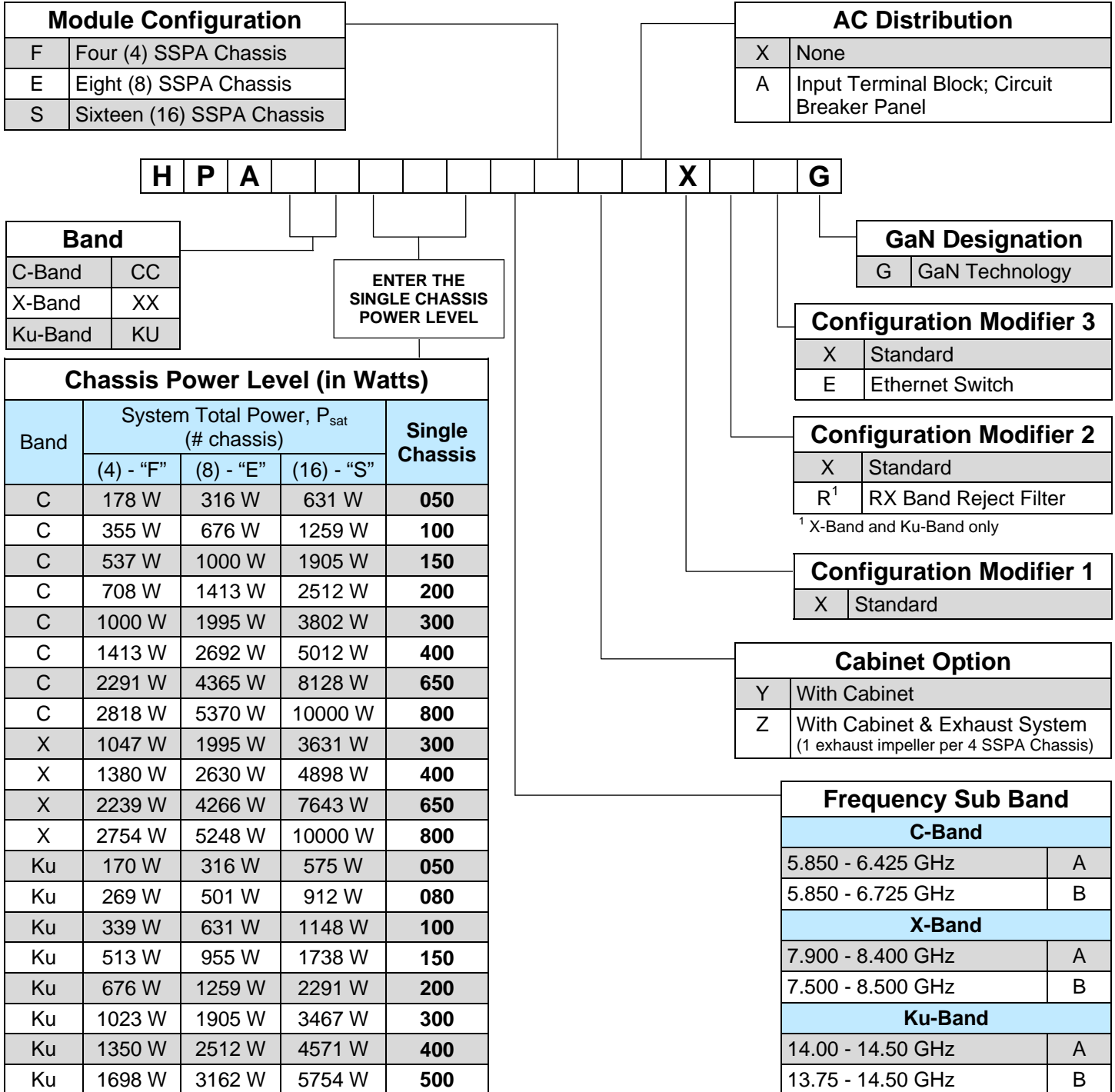
| Module Configuration | |
|----------------------|---------------------|
| M | SSPA Module |
| C | Single SSPA Chassis |

The SSPA Module (M) is the removable assembly that is inserted into a system's existing rack mountable chassis. This can be done without taking the system off-line.

The Single SSPA Chassis (C) is the rack-mountable chassis, with the SSPA Module assembly installed. Installing a new chassis requires a system shut-down.

Specifications listed in this document are subject to change without notice.

System Part Number Configuration



Use and Disclosure of Data

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