



Only  
3RU  
rack  
height

## Description

**Paradise Datacom's Indoor, Compact Rack Mount (CRM)** series Solid State Power Amplifiers represent the latest in High Power Microwave Amplifier Technology. The SSPA chassis achieves the highest power density in the industry along with enhanced maintainability.

The power supply, fan trays and controller card connector plate are all removable for easy maintenance. At 24" deep, and only 3RU high, this chassis is perfect for SNG applications, or other configurations where rack space is at a premium.

The SSPA front panel features an easy-to-navigate display and menu structure. Dedicated LEDs are provided for alarm condition indication.

Paradise Datacom rack mount power amplifiers have a wide range of monitor and control functionality, including:

- RS232/485 (4-wire) serial communication
- Ethernet port supporting UDP, SNMP and web browser-based control
- Form C contacts for output monitor ports and opto-isolated input ports
- Free Windows M&C software
- Wide range of third party M&C drivers available

## FEATURES

- Power Levels to:  
300W S-Band;  
300W C-Band;  
200W X-Band;  
200W Ku-Band
- Removable Power Supply, Fan Tray and Monitor & Control Assembly
- Ethernet Port
- RF Output Sample Port (-40 dB)
- RF Gain Adjustment  
55dB - 75dB
- CE Compliant
- Universal, Power Factor Corrected Power Supply
- Built-in 1:1 Redundancy Control

## OPTIONS

- Remote Control Panel
- L-Band Input operation
- Reflected Power Monitor
- Phase Combined Systems
- Input Sample Port
- 1RU Redundant Power Supply
- Exhaust Duct Adapters
- Redundant Systems
- Phase Combined Systems



**S-Band 3RU SSPA Chassis**

PARAMETER	NOTES	LIMITS	UNITS
Frequency Range	Band A Band B	2.020 to 2.120 2.200 to 2.300	GHz GHz
Output Power @: Saturation/ $P_{1dB}$ (Typical/Guaranteed minimum)	Band A HPAS3050ARXXXXX (2.020 - 2.120 GHz) HPAS3100ARXXXXX (2.020 - 2.120 GHz) HPAS3200ARXXXXX (2.020 - 2.090 GHz) HPAS3200ARXXXXX (2.095 - 2.120 GHz) HPAS3300ARXXXXX (2.020 - 2.090 GHz) HPAS3300ARXXXXX (2.095 - 2.120 GHz) Band B HPAS3050BRXXXXX (2.200 - 2.300 GHz) HPAS3100BRXXXXX (2.200 - 2.300 GHz) HPAS3200BRXXXXX (2.200 - 2.300 GHz) HPAS3300BRXXXXX (2.200 - 2.300 GHz)	$P_{sat}/P_{1dB}$ 47.5 / 47.0 (56/50) 50.5 / 50.0 (112/100) 53.5 / 53.0 (223/200) 53.0 / 52.5 (200/178) 55.0 / 54.5 (316/280) 54.4 / 54.0 (280/250) 47.5 / 47.0 (56/50) 50.5 / 50.0 (112/200) 53.5 / 53.0 (223/200) 55.0 / 54.5 (316/280)	dBm (W) dBm (W) dBm (W) dBm (W) dBm (W) dBm (W) dBm (W) dBm (W) dBm (W) dBm (W)
Power Requirements Line Voltage Line Frequency Line Power	power factor corrected 47 to 63 HPAS3050A/BRXXXXX (90 to 265 VAC) HPAS3100A/BRXXXXX (90 to 265 VAC) HPAS3200A/BRXXXXX (180 to 265 VAC) HPAS3300A/BRXXXXX (180 to 265 VAC)	AC input 250 500 1000 1600	VAC Hz W W W W

**Receive Band Noise and Filter Option**

Receive Band Reject Filter S-Band SSPAs only; External to chassis	Insertion Loss Rx Reject @ 2.200 - 2.300 GHz Rx Reject @ 2.025 - 2.120	- 0.3 -60 -60	dB dBc dBc
Receive Band Noise Power Density For S-Band Amplifiers	Without optional filter With optional external filter	-95 -155	dBW/4 KHz dBW/4 KHz

**C-Band 3RU SSPA Chassis**

PARAMETER	NOTES	LIMITS	UNITS
Frequency Range	(see options for extended band)	5.850 to 6.425	GHz
Output Power @: Saturation/ $P_{1dB}$ (Typical/Guaranteed minimum)	HPAC3050ARXXXXX HPAC3075ARXXXXX HPAC3100ARXXXXX HPAC3140ARXXXXX HPAC3200ARXXXXX HPAC3250ARXXXXX HPAC3300ARXXXXX	$P_{sat} / P_{1dB}$ 47.0/46.8 (50/48) 48.8/48.5 (76/70) 50.0/49.5 (100/89) 51.5/51.0 (141/125) 53.0/52.3 (200/170) 53.9/53.0 (250/200) 54.7/54.0 (300/251)	dBm (W) dBm (W) dBm (W) dBm (W) dBm (W) dBm (W) dBm (W)
Power Requirements Line Voltage Line Frequency Line Power	power factor corrected 47 to 63 HPAC3050ARXXXXX (90 to 265 VAC) HPAC3075ARXXXXX (90 to 265 VAC) HPAC3100ARXXXXX (90 to 265 VAC) HPAC3140ARXXXXX (90 to 265 VAC) HPAC3200ARXXXXX (180 to 265 VAC) HPAC3250ARXXXXX (180 to 265 VAC) HPAC3300ARXXXXX (180 to 265 VAC)	AC input 400 450 650 850 1000 1300 1700	VAC Hz W W W W W W

**Frequency Options**

Extended Frequency Bands 5.850 to 6.725 GHz 5.75 to 6.67 GHz	De-rate output power by 1.0dB Linearly from 6.425 to 6.725 GHz De-rate output power by 1.0dB Linearly from 6.425 to 6.67 GHz and by 0.5 dB linearly from 5.85 to 5.75 GHz
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### X-Band 3RU SSPA Chassis

PARAMETER	NOTES	LIMITS	UNITS
Frequency Range	(see options for extended band)	7.90 to 8.40	GHz
Output Power @: Saturation/ $P_{1dB}$ (Typical/Guaranteed minimum)	HPAX3060ARXXXXX HPAX3075ARXXXXX HPAX3100ARXXXXX HPAX3140ARXXXXX HPAX3200ARXXXXX	$P_{sat} / P_{1dB}$ 47.5/47.3 (60/54) 48.8/48.3 (76/68) 50.0/49.5 (100/89) 51.4/50.8 (140/120) 53.0/51.8 (200/170)	dBm (W) dBm (W) dBm (W) dBm (W) dBm (W)
Power Requirements Line Voltage Line Frequency Line Power	power factor corrected 47 to 63 HPAX3060ARXXXXX (90 to 265 VAC) HPAX3075ARXXXXX (90 to 265 VAC) HPAX3100ARXXXXX (90 to 265 VAC) HPAX3140ARXXXXX (90 to 265 VAC) HPAX3200ARXXXXX (180 to 265 VAC)	AC input  650 700 750 1225 1370	VAC Hz W W W W W

### Frequency Options

Extended Frequency Band 7.50 to 8.50 GHz 9.50 to 10.50 GHz 7.70 to 8.40 GHz	De-rate output power by 1.0dB Linearly from 7.90 to 7.70 GHz
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### Ku-Band 3RU SSPA Chassis

PARAMETER	NOTES	LIMITS	UNITS
Frequency Range	(see options for extended band)	14.00 to 14.50	GHz
Output Power @: Saturation/ $P_{1dB}$ (Typical/Guaranteed minimum)	HPAK3025ARXXXXX HPAK3035ARXXXXX HPAK3040ARXXXXX HPAK3050ARXXXXX HPAK3070ARXXXXX HPAK3100ARXXXXX HPAK3125ARXXXXX HPAK3150ARXXXXX HPAK3200ARXXXXX	$P_{sat} / P_{1dB}$ 44.0/43.0 (25/20) 45.5/44.5 (35/28) 46.0/45.0 (40/31) 47.0/46.0 (50/40) 48.5/47.5 (70/56) 50.0/49.0 (100/80) 51.0/50.0 (125/100) 52.0/51.0 (158/125) 53.0/52.0 (200/158)	dBm (W) dBm (W) dBm (W) dBm (W) dBm (W) dBm (W) dBm (W) dBm (W) dBm (W)
Power Requirements Line Voltage Line Frequency Line Power	power factor corrected 47 to 63 HPAK3025ARXXXXX (90 to 265 VAC) HPAK3035ARXXXXX (90 to 265 VAC) HPAK3040ARXXXXX (90 to 265 VAC) HPAK3050ARXXXXX (90 to 265 VAC) HPAK3070ARXXXXX (90 to 265 VAC) HPAK3100ARXXXXX (180 to 265 VAC) HPAK3125ARXXXXX (180 to 265 VAC) HPAK3150ARXXXXX (180 to 265 VAC) HPAK3200ARXXXXX (180 to 265 VAC)	AC input  320 350 500 500 550 1100 1200 1900 2500	VAC Hz W W W W W W W W

### Frequency Options

Extended Frequency Band 13.75 to 14.50 GHz	De-rate output power by 1.0dB linearly from 14.00 to 13.75 GHz
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### Common Electrical Specifications, 3RU SSPA Chassis

PARAMETER	NOTES	LIMITS	UNITS
Gain	Adjustable range	55-75	dB
Gain Flatness	full band (All except Extended C-Band)	±1.0	dB
	Extended C-Band units	±1.5	dB
Gain Slope	per 40 MHz (C, X, Ku)	±0.3	dB/40 MHz
	per 10 MHz (S-band)	±0.1	dB/10 MHz
Gain Variation vs. Temperature	0°C to +50°C	±1.0	dB
Gain Adjustment Resolution		0.1	dB
Intermodulation Distortion	3dB back off relative to P <sub>1dB</sub>	-25	dBc
AM/PM Conversion	(@ rated P <sub>1dB</sub> )	3.5	°/dB
	(@ P <sub>1dB</sub> -3dB)	1.0	°/dB
Spurious	(@ rated P <sub>1dB</sub> )	-70	dBc
Harmonics	(@ rated P <sub>1dB,3dB</sub> ) (C-, X-, Ku-bands)	-50	dBc
	(@ rated P <sub>1dB,3dB</sub> ) (S-Band)	-40	dBc
Input/Output VSWR	All units except Extended C-Band	1.30:1	
	Extended C-Band units	1.50:1	
Noise Figure	at maximum gain	12	dB
Group Delay	Linear	0.01	ns/MHz
	Parabolic	0.003	ns/MHz <sup>2</sup>
	Ripple	1.0	ns p-p
Noise Output	TX Band (S, C-, X- or Ku-Band)	-75	dBW/4 KHz
	RX Band (C- or Ku-Band)	-150	dBW/4 KHz
	RX Band (X-Band)	-100	dBW/4 KHz
	RX S Band see page 2		
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

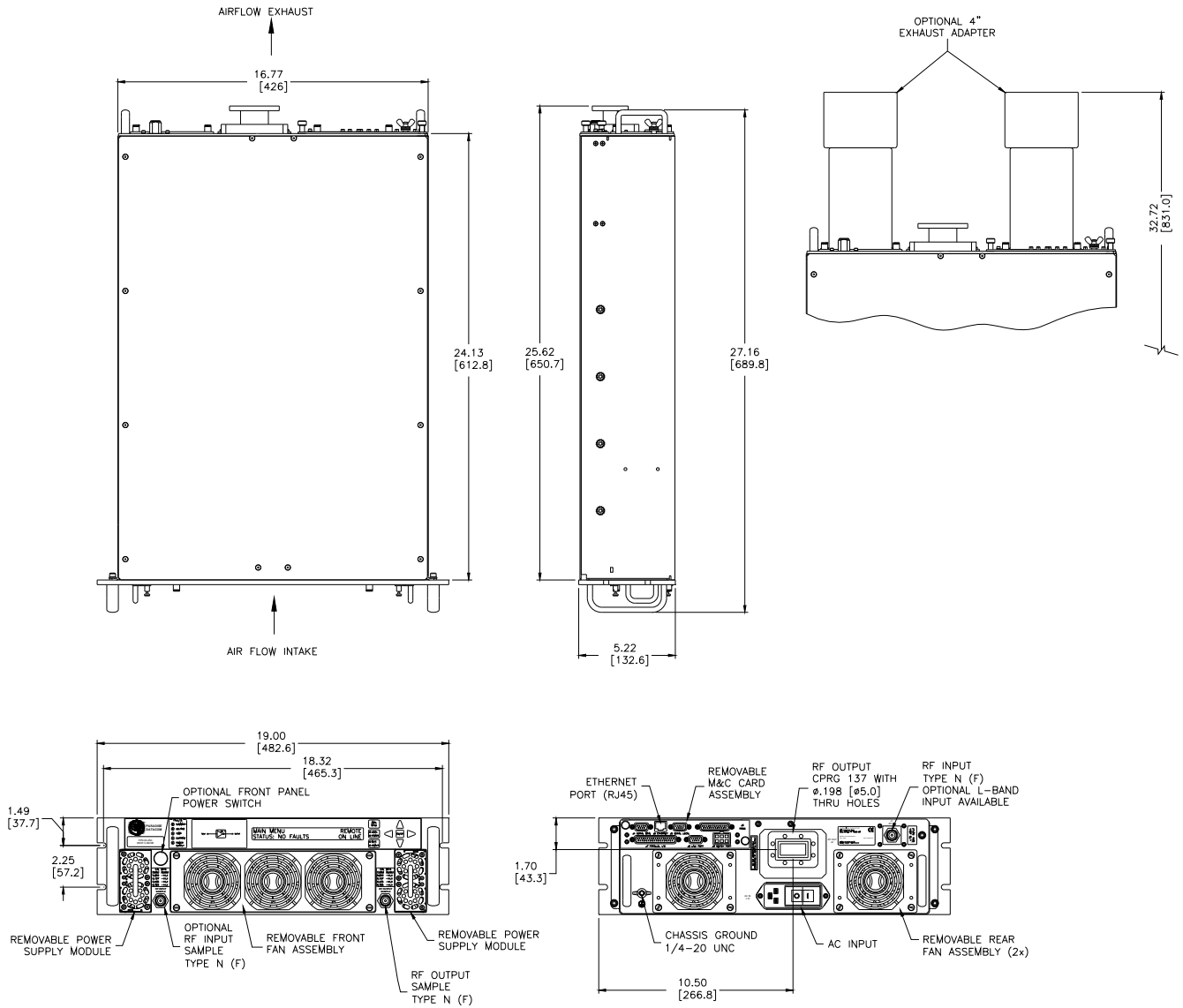
### Mechanical

Size	width X height X depth	19.0 X 5.22 X 24.13 483 X 133 X 613	inches mm
Weight		66 (30) 77 (35)	lbs.(kg) lbs.(kg)
Finish		powder coat	Gray

### Environmental

Operating Temperature	Ambient	-20 to +60	°C
Relative Humidity	non-condensing	95	%
Cooling System	Forced Convection Air Cooling	Front Panel - Intake Rear Panel - Exhaust	

Specifications are subject to change.



**Outline Drawing, 250W C-Band 3RU SSPA Chassis**

### Redundant Power Supply Option

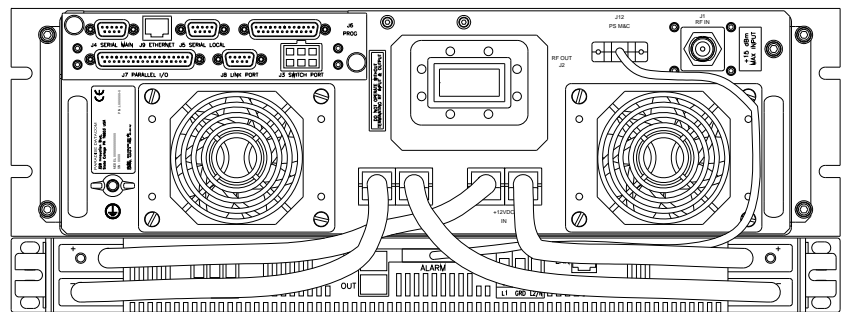


The combination of a separate +12 VDC output, fully redundant power supply is an excellent means of obtaining the ultimate system reliability.

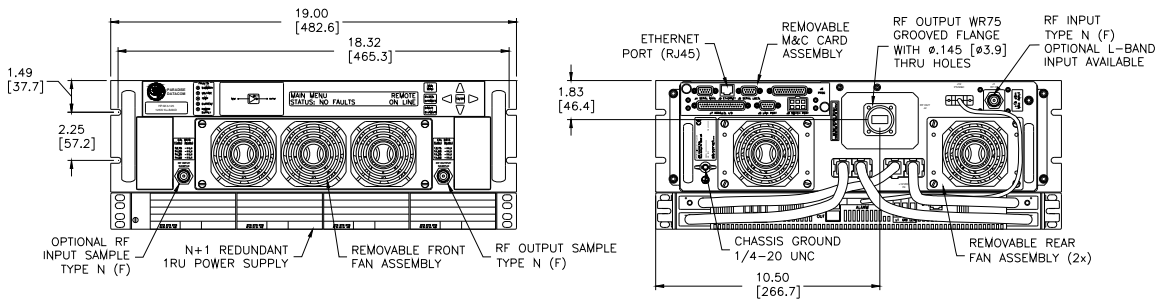
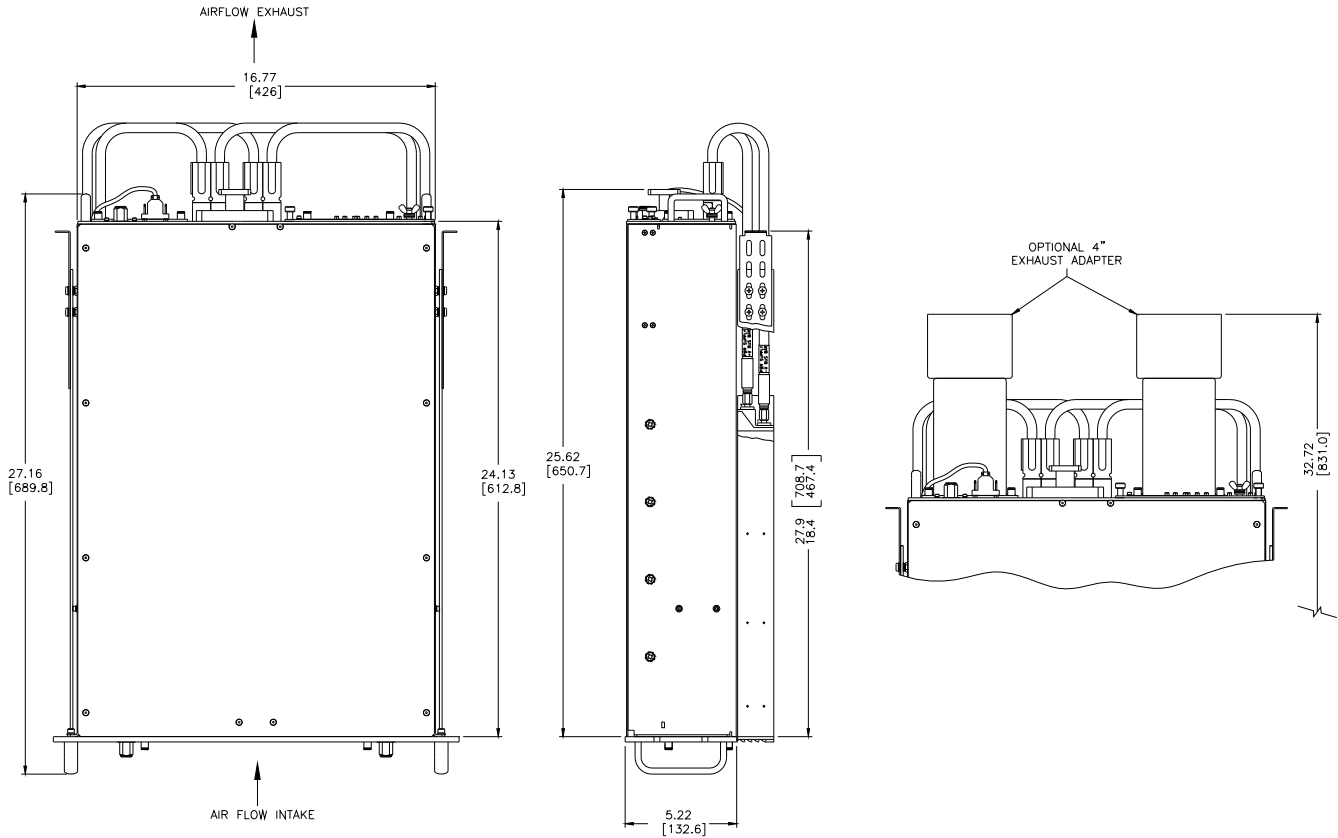
The power supply is an N+1 redundant configuration meaning that there is one more power supply module available than is required to operate the SSPA. A failure of one power supply module will not take the amplifier off-the-air.

In addition, the power supply modules are removable from the front panel while in operation. There is never a need to remove the power supply chassis from the equipment rack.

Weighing only 9 lbs. (4 kg.) and only 1 rack unit of cabinet space, the redundant power supply chassis is an excellent companion to the SSPA chassis.



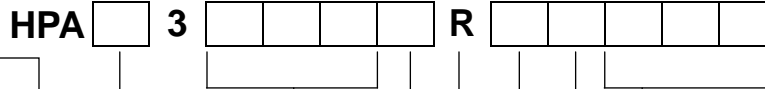
The power supply has a single phase, universal AC input rating from 90-265 VAC, 46-63 Hz. It is power factor corrected to 0.99. Depending on the power requirements of the SSPA, the power supply is configured with two, three or four 1200W hot-swappable modules, each of which weighs 5 lbs. (2.3 kg).



**Outline Drawing, 125W Ku-Band 3RU SSPA Chassis with 1RU N+1 Power Supply**



**Part Number Configuration**



**Band**  
S - S-Band  
C - C-Band  
X - X-Band  
K - Ku-Band

**Power Level (in Watts)**  
S-Band  
050, 100, 200 or 300  
C-Band  
050, 075, 100, 140, 200,  
250 or 300  
X-Band  
060, 075, 100, 140 or 200  
Ku-Band  
025, 035, 040, 050, 070,  
100, 125, 150 or 200

**Frequency Sub Band**  
S-Band  
A - 2.02 to 2.12 GHz  
B - 2.20 to 2.30 GHz  
C-Band  
A\* - 5.850 to 6.425 GHz  
B\* - 5.850 to 6.725 GHz  
C - 5.750 to 6.670 GHz  
E\* - 6.425 to 6.725 GHz (Palapa)  
F\* - 6.725 to 7.025 GHz (Insat)  
G\* - 5.750 to 6.475 GHz  
X-Band  
A\* - 7.90 to 8.40 GHz  
B - 7.50 to 8.50 GHz  
C - 9.50 to 10.50 GHz  
D - 7.70 to 8.40 GHz  
Ku-Band  
A\* - 14.00 to 14.50 GHz  
B\* - 13.75 to 14.50 GHz  
  
\* Available with optional BUC

**Configuration Modifier**  
XXX = Standard  
SXX = Input Sample  
XVX = Reflected Power Monitor  
XPX<sup>1</sup> = Front Panel Power Switch  
XRX<sup>1</sup> = Reflected Power Monitor &  
Front Panel Power Switch  
XXE = Rear Panel Exhaust Adapters  
XXP = External 1RU N+1  
Redundant Power Supply  
XXR<sup>2</sup> = Receive Band Reject Filter  
XXK<sup>2</sup> = Rear Panel Exhaust  
Adapters & Receive Band  
Reject Filter  
XXL = External 1RU N+1 Power  
Supply & Rear Panel  
Exhaust Adapters  
XXM<sup>2</sup> = External 1RU N+1 Power  
Supply & Receive Band  
Reject Filter  
  
<sup>1</sup> Not available with External 1RU N+1  
Redundant Power Supply.  
<sup>2</sup> S-Band only.

**System Configuration**  
X = Standalone  
  
See the following datasheets for system options:  
• Indoor Rack Mount Redundant SSPA Systems  
(203583)  
• Indoor Rack Mount Phase Combined SSPA  
Systems (203584)

**Block Up Converter**  
B = BUC (Custom)  
M = Internal Reference ZBUC  
P = External Reference ZBUC  
X = N/A

**Package**  
R = Rack Mount (Standalone)