



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 Sub-band A SSPAs only; External to chassis | Insertion Loss Rx Reject @ 2.200 GHz | - 0.3 - 60 | dB dB |
| Receive Band Noise Power Density For sub band A 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 6.425 to 7.025 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 Insat/Palapa Band |
|--|---|

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) | HPAX3060ARXXXXXX HPAX3075ARXXXXXX HPAX3100ARXXXXXX HPAX3140ARXXXXXX HPAX3200ARXXXXXX | 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 HPAX3060ARXXXXXX (90 to 265 VAC) HPAX3075ARXXXXXX (90 to 265 VAC) HPAX3100ARXXXXXX (90 to 265 VAC) HPAX3140ARXXXXXX (90 to 265 VAC) HPAX3200ARXXXXXX (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 |
|--|--|

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) | HPAK3025ARXXXXXX HPAK3035ARXXXXXX HPAK3040ARXXXXXX HPAK3050ARXXXXXX HPAK3070ARXXXXXX HPAK3100ARXXXXXX HPAK3125ARXXXXXX HPAK3150ARXXXXXX HPAK3200ARXXXXXX | 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 HPAK3025ARXXXXXX (90 to 265 VAC) HPAK3035ARXXXXXX (90 to 265 VAC) HPAK3040ARXXXXXX (90 to 265 VAC) HPAK3050ARXXXXXX (90 to 265 VAC) HPAK3070ARXXXXXX (90 to 265 VAC) HPAK3100ARXXXXXX (180 to 265 VAC) HPAK3125ARXXXXXX (180 to 265 VAC) HPAK3150ARXXXXXX (180 to 265 VAC) HPAK3200ARXXXXXX (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 |
|---|--|

Common Electrical Specifications, 3RU SSPA Chassis

| PARAMETER | NOTES | LIMITS | UNITS |
|--------------------------------|--|--------------------|---------------------|
| Gain | Adjustable range | 55-75 | dB |
| Gain Flatness | full band | ±1.0 | 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 _{1dB} | -25 | dBc |
| AM/PM Conversion | (@ rated P _{1dB}) | 3.5 | °/dB |
| | (@ P _{1dB} -3dB) | 1.0 | °/dB |
| Spurious | (@ rated P _{1dB}) | -70 | dBc |
| Harmonics | (@ rated P _{1dB} -3dB) (C-,X-,Ku-bands) | -50 | dBc |
| | (@ rated P _{1dB} -3dB) (S-Band) | -40 | dBc |
| Input/Output VSWR | | 1.3:1 | |
| 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 (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 |

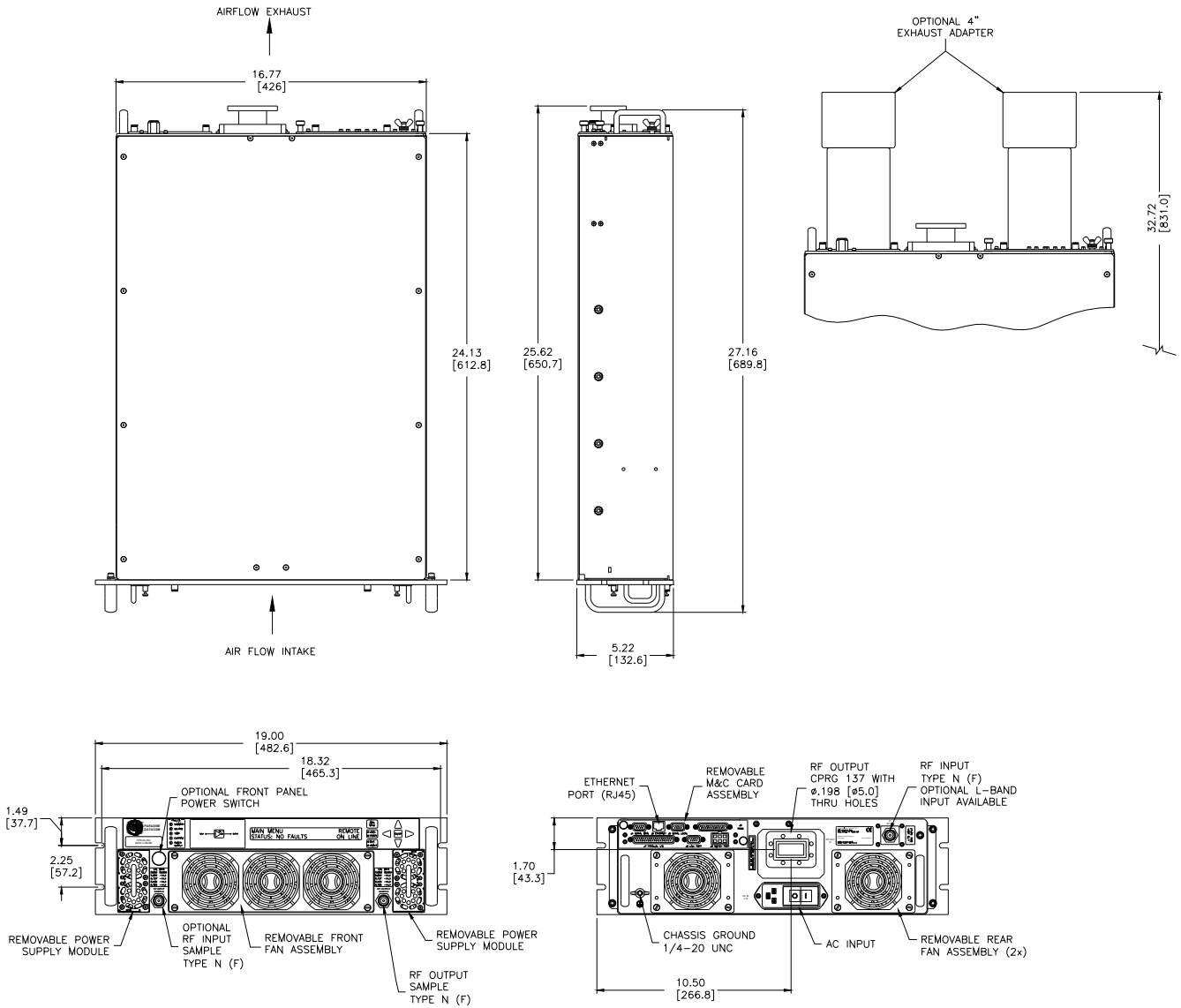
Mechanical

| | | | |
|--------|------------------------|--|----------------------|
| 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

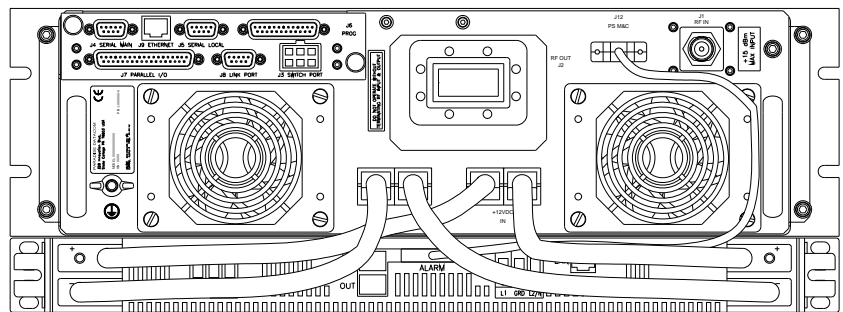


The combination of a separate +12 VDC output, fully redundant power supply is an excellent means of obtaining the ultimate system reliability.

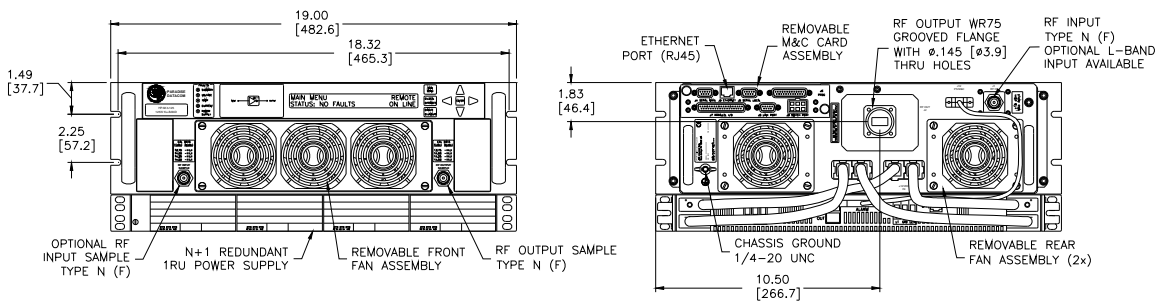
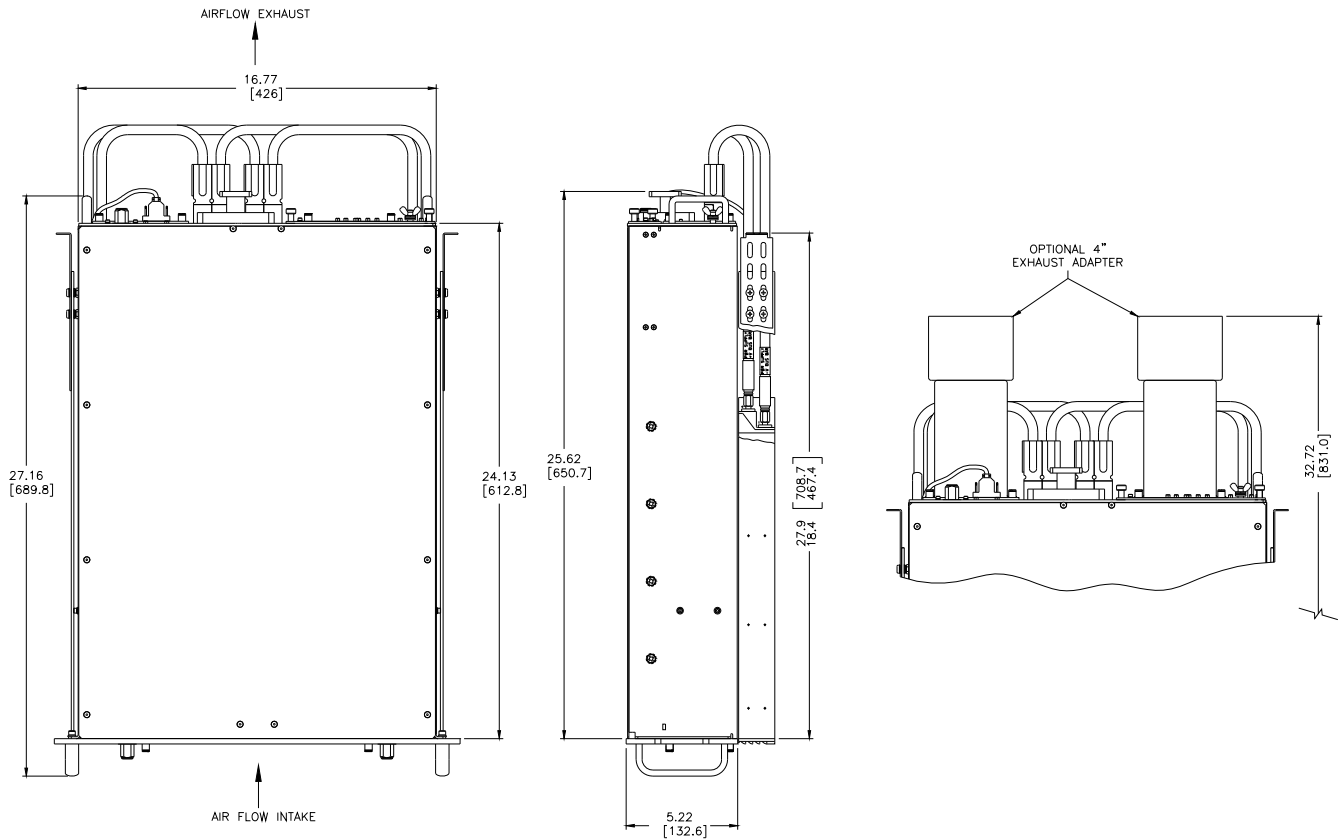
The power supply is an N+1 redundant configuration meaning that there is one more power supply module available than is required to operate the SSPA. A failure of one power supply module will not take the amplifier off-the-air.

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.



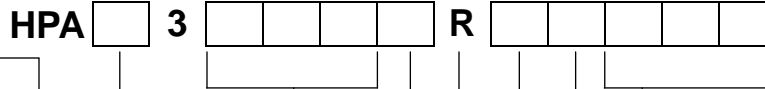
The power supply has a single phase, universal AC input rating from 90-265 VAC, 46-63 Hz. It is power factor corrected to 0.99. Depending on the power requirements of the SSPA, the power supply is configured with two, three or four 1200W hot-swappable modules, each of which weighs 5 lbs. (2.3 kg).



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)
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[†] = Front Panel Power Switch
XRX[†] = Reflected Power Monitor &
Front Panel Power Switch
XXE = Rear Panel Exhaust
Adapters
XXP = External 1RU N+1
Redundant Power Supply
XXR* = Receive Band Reject Filter
XXK* = Rear Panel Exhaust
Adapters & Receive Band
Reject Filter
XXL = External 1RU N+1 Power
Supply & Rear Panel
Exhaust Adapters
XXM* = External 1RU N+1 Power
Supply & Receive Band
Reject Filter

* S-Band Sub Band 'A' only.
[†] Not available with External 1RU N+1
Redundant Power Supply.

System Configuration
X = Standalone

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

Package
R = Rack Mount (Standalone)