



Model PS 1



Model PS 1.5



Model PS 2

Overview

Comtech EF Data's (CEFD) Series of High-Power Outdoor (SPOD) C-, X-, and Ku-Band Solid-State Power Amplifiers (SSPA) provide a cost-effective, more reliable replacement for TWT amplifiers in satellite communications terminals. The SPOD delivers its rated power at the 1 dB compression point, to the transmit waveguide flange.

The Solid State Advantage

Each SPOD SSPA is constructed with highly reliable GaAs FETs. With third order intermodulation products from 4 to 6 dB better than TWT ratings, the CEFD unit has the ability to replace TWTs with saturated power levels of up to twice the SPOD's rated output.

Functional Description

A SPOD consists of an SSPA module with the Monitor/Control Processor (MCP), an integrated power supply, and a field replaceable fan assembly. The amplifier features a Comtech EF Data low loss combining technique and MCP-based temperature versus gain compensation.

Feature Packed

The SPOD SSPAs are equipped with useful features that other manufacturers offer as options. Included in each unit's base price are temperature compensation, sample ports, power monitor, power factor corrected supply and full remote monitor and control capabilities, including Ethernet HTTP pages and SNMP.

Redundancy

Another challenge addressed by the SPOD topology is the increasing need for redundant RF solutions. With a unique solution to system control, The SPOD offers a very cost-effective solution for 1:1 redundant TX requirements.

Integrated Power Supply

All SPOD SSPAs have a self-contained, extremely rugged, power supply. While generally fielded as an AC powered unit, SPODs are also available with -48 VDC power supplies.

Data Logging Capability

To greatly enhance system maintainability, the SPOD line includes a built in data logging capability. By recording critical operational parameters (such as temperature, output power, mute status, etc.) at time stamped intervals, the user can quickly gather intelligence not only about the unit itself, but also the unit's operational environment.

Specifications

RF Output Frequency

| |
|------------------------------|
| 5.850 – 6.650 GHz (optional) |
| 5.850 – 6.725 GHz (optional) |
| 6.725 – 7.025 GHz |
| 7.900 – 8.400 GHz |
| 14.00 – 14.50 GHz |
| 13.75 – 14.50 GHz (optional) |

| Model | Psat (Typical) | P1dB (Guaranteed) ^{Note 1} |
|---------------------|------------------|-------------------------------------|
| PS1-20Ku | 43 dBm (20 W) | 42 dBm (16 W) |
| PS1-32Ku | 45 dBm (32 W) | 44 dBm (25 W) |
| PS1-40Ku | 46 dBm (40 W) | 45 dBm (32 W) |
| PS1.5-50Ku | 47 dBm (50 W) | 46 dBm (40 W) |
| PS1.5-60Ku | 48 dBm (60 W) | 47 dBm (50 W) |
| PS2-100Ku | 50 dBm (100 W) | 49 dBm (80 W) |
| PS2-125Ku | 51 dBm (125 W) | 50 dBm (100 W) |
| PS1-32C,X | 45 dBm (32 W) | 44 dBm (25 W) |
| PS1-50C,X | 47 dBm (50 W) | 46 dBm (40 W) |
| PS1-60C,X | 48 dBm (60 W) | 47 dBm (50 W) |
| PS1.5-80C,X | 49 dBm (80 W) | 48.5 dBm (70 W) |
| PS1.5-110C,X | 50.4 dBm (110 W) | 49.5 dBm (90 W) |
| PS1.5 or PS2-125C,X | 51 dBm (125 W) | 50 dBm (100 W) |
| PS2-150C,X | 51.8 dBm (150 W) | 51 dBm (125 W) |
| PS2-200C,X | 53 dBm (200 W) | 52.5 dBm (175 W) |
| PS2-250C,X | 54 dBm (250 W) | 53 dBm (200 W) |

Input Power Supply Requirements: 90 – 264 VAC, 47-63 Hz, Power Factor Corrected, .96 (48 VDC optional)

| | |
|--|---|
| Gain Min. (Typical) All power levels | 70 (75 dB) |
| Max. Input level (no damage) | +10 dBm |
| Gain Adjust | 20 dB in 0.25 dB steps |
| Gain Flatness | ± 1.5 dB full band (optional ± 2.0 dB full band (-50 to +55C)) ± 0.30 dB per 40 MHz (optional ± 0.50 dB per 40 MHz (-50 to +55C)) |
| Gain variation over temp | ±1.5 dB max., -40 to +55 °C (optional ± 2.0 dB max. (-50 to +55C)) |
| Input Return Loss | 19.1 dB (1.25:1 VSWR) |
| Output Return Loss | 19.1 dB (1.25:1 VSWR) |
| Noise Figure | 8-10 dB typ., 15 dB max. @ min. attenuation, |
| RF Mute Isolation | 60 dB min. |
| AM/PM Conversion | 2° typ., 3.5° max. @ Rated P1dB |
| 3rd Order Intermod. Level (2 tones, @ -3 dB Total Back Off from P1 dB (-6 dBc SCL), Δ 1 MHz) | -30 dBc typ., -25 dBc Guaranteed |
| Spurious Level | |
| Harmonics | -50 dBc @ Prated - 3dB |
| Non-Harmonic Related | -65 dBc max. |
| Group delay variation | Linear ± 0.03ns/MHz Parabolic ± .003ns/MHz ² Ripple ± 1.0 ns pk-pk |

Notes:

1. Allow 1 dB degradation from 13.75 to 14.0 GHz and 6425 to 6725 MHz

Data Logging parameters

Non-Volatile RAM : Capacity 30 days @ 90 minute intervals
Includes:
RF Output Power
Mute Status
Heatsink Temperature

Environmental & Physical

Temperature

| | |
|-----------|---|
| Operating | -40° to 122°F (-40° to 55°C) (optional -50 to 55C or -40 to +60°C) |
| Storage | -67° to 167°F (-55° to 75°C) |

Humidity 100% condensing rain 2" per hour

Altitude 10,000 AMSL (derate 2°C/1000 ft. AMSL)

Shock Normal commercial shipping and handling

Weight / Dimensions (height x width x depth (in. excluding connectors))

PS1,1.5 17 lbs Nominal / 7.37" x 6.26" x 12.65"

PS2 47 lbs Nominal / 9.78" x 8.80" x 16.81"

Connectors

RF Input Type N, female

PS1, C-Band: Type N, female

PS1.5/PS2, C-Band: CPR137G

PS1/1.5/PS2 X-Band: CPR112G

PS1/1.5/PS2 Ku-Band: WR75G

M&C/Ethernet/Redundancy Switches 19-pin MS Style (Single Integrated cable assembly available, dependent upon configuration)

