CPA-200 Solid-State Indoor Power Amplifier

Datasheet

Overview

Our indoor C-Band SSPA, the CPA, has a rack-mountable chassis, power supply, fan assembly, front panel assembly, Monitor/Control Processor (MCP), and an SSPA module. The amplifier was designed using our low-loss combining technique and an MCP-based temperature versus gain compensation.

The front panel of the unit features a user-friendly Liquid Crystal Display (LCD) menu display and cursor control keys to display status and enable parameter configuration. The front panel also has LEDs for quick reference to binary status points and both input and output sample ports for easy test point access.

The unit delivers rated power, guaranteed, at the 1 dB compression point, to the transmit waveguide flange. The amplifier is cost-effective and provide a reliable replacement for alternate technologies. As a result of the small form factor, the CPA is ideal for the construction of small “flyaway” terminals, medium sized (equivalent to Intelsat F class) earth stations, and hub earth stations for small to medium size private networks or point-to-point links.

The CPA is constructed with highly reliable Gallium Arsenide Field Effect Transistors (GaAs FETs). Solid-State provides significant advantage over alternate technologies, including:

- More superior third order inter-modulation products – from 4-6 dB better
- Saturated power levels up to twice that of the CPA’s rated output
- Greater Mean Time Between Failure (MTBF) – 4-6X better than a typical TWTA

The CPA is also equipped with useful features that other manufacturers offer as chargeable options. Included in the base price of our units are:

- Temperature compensation
- Sample ports
- Power monitor
- Rack slides
- Full remote monitor and control capabilities

Built-In Redundancy Controller

Each amplifier has the ability to function as a 1+1 or 1+2 redundancy controller in the backup mode. The optional redundancy configuration is implemented by attaching a ganged waveguide/coax transfer switch(es) to the input and output connectors of the amplifiers with a combination coaxial cable and waveguide kit. When the backup SSPA is commanded into the controller mode, it monitors the online SSPA(s) for faults. A faulted online unit may be disconnected and replaced without affecting the online power amplifier.

Remote Control

The remote control interface is selectable between EIA-232 and EIA-485, as well as full Ethernet including Telnet, SNMP and pre-loaded HTML GUI. All configuration control, status retrieval, and adjustments are available as simple ASCII commands through the serial interface or through the front panel menu. As a cost option, the remote control command structure can be customized in order to accommodate existing network control software.

Specifications

Output

Frequency	
CPA	5.850 to 6.425 GHz (optional to 6.725 GHz)

Power	
CPA-200	53 dBm min. @ 1 dB compression 54 dBm min. @ $P_{sat.}$ Typical
Mute	-60 dB
Impedance	50 Ω
VSWR	1.25:1 maximum

Connector	
CPA	CPR-137G Waveguide

Gain

Linear	
CPA-200	63 dB min., 67 dB typical
Adjust	20 dB in 0.25 dB steps
Full Band	± 0.75 dB (± 1.00 dB extended band)
Per 40 MHz	± 0.25 dB
+0 to +50°C	± 0.50 dB @ center frequency ± 1.00 dB full band

Third Order Inter-Modulation

Intercept	
CPA-200	62 dBm min., 63.5 dBm typical
Products	
CPA-200	-32 dBc typical, -25 dBc max. @ 3 dB total backoff (two tones, Δf+ 1 MHz)

AM to PM Conversion

CPA	1.0° typical, 2.5 maximum at rated output

Group Delay (per 40 MHz)

Linear	± 0.03 ns/MHz
Parabolic	± 0.003 ns/MHz^2
Ripple	1.0 ns peak to peak

Spurious

Carrier Related	-65 dBc
Line Related	-50 dBc

Input

Impedance	50 Ω

Noise Figure	
CPA	8 dB typical, 15 dB max. @ max. gain
VSWR	1.25:1 maximum

Connector	
CPA	Type N
Level	-10 dBm typical

Phase Noise (dBc/Hz) (with optional internal BUC & reference)

Offset	**Typical dBc/Hz**	**Spec dBc/Hz**
100 Hz	CPA: -79	CPA: -72
1 KHz	CPA: -91	CPA: -84
10 KHz	CPA: -105	CPA: -97
100 KHz	CPA: -120	CPA: -107
1 MHz	CPA: -132	CPA: -115

Front Panel

Display	20 x 2 LCD
Data Entry	Cursor control keypad
Output Sample	Type N, 50 Ω, -40 dBc
Input Sample	Type N, 50 Ω, -20 dBc

Remote Control

Com Port	EIA-485 or EIA-232, RJ-45 for Ethernet
Protocol	Comtech ASCII or Emulation Mode

Alarms

Summary Fault	Form C Contacts

LEDs

Power On	Green
Fault	Red
Stored Fault	Red
TX On	Yellow
Online	Yellow
Remote	Yellow

Physical & Environmental

Dimensions	height x width x depth
CPA-200	10.5” x 19” x 24” (27 x 48 x 60 cm)
Temperature	
Operating	0 to 50°C (32 to 122°F) (Derate 2° C/1000ft AMSL)
Storage	-40 to 70°C (-40 to 158°F)
Humidity	
Operating	10 to 95% Non-condensing
Storage	0 to 100% Non-condensing storage
Shock	Normal commercial shipping and handling

Power Requirements

CPA-200	180 to 270 VAC 47 to 63 Hz 1300 W (auto-select)

2114 West 7th Street
Tempe, AZ 85281 USA
Phone +1.480.333.2200
Email sales@comtechefdata.com
www.comtechefdata.com

4/15/2021