COMTECH EF DATA

Ku-Band Solid State Indoor Power Amplifiers

KPA-20

KPA-40/80/100

APPLICATION

Each Comtech EF Data Ku-Band Power Amplifier (KPA) series Solid-State Power Amplifier (SSPA) delivers it's rated power, guaranteed, at the 1 dB compression point, to the transmit waveguide flange. It provides a cost effective and more reliable replacement for Transfer Wave Tube (TWT) amplifiers in Ku-Band terminals. Due to its small form factor, it also 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 SOLID STATE ADVANTAGE

Each KPA series SSPA is constructed with highly reliable Gallium Arsenide Field Effect Transistors (GaAs FETs). With third order inter-modulation products from 4 to 6 dB better than TWT ratings, the Comtech EF Data unit replaces TWTs with saturated power levels of up to twice the KPA's rated output. The KPA SSPA's also provide a Mean Time Between Failures (MTBF) that is 4 to 5 times greater than the typical TWT MTBFs.

OPTION FREE

Comtech EF Data's KPA series of SSPAs come equipped with useful features that other manufacturers offer as options. Included in the base price are temperature compensation, sample ports, power monitor, and full remote monitor and control capabilities.

FUNCTIONAL DESCRIPTION

Each KPA series SSPA consists of a Comtech EF Data SSPA module with the Monitor/Control Processor (MCP), a field replaceable 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.

FIELD REPLACEABLE POWER SUPPLY

Recognizing that the MTBF limiting factor for almost all electronic equipment is the power supply, the KPA provides for easy field replacement. Simply disconnect the AC mains, release the clasps, and remove the supply from the SSPA module.

BUILT-IN REDUNDANCY CONTROLLER

Each Comtech EF Data KPA 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.

KPA

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Output

Frequency	14.0 to 14.5 GHz
Power	KPA-020 42.5 dBm min at 1 dB Compression
	KPA-040 45.5 dBm min at 1 dB Compression
	KPA-080 48.5 dBm min at 1 dB Compression
	KPA-100 49.5 dBm min at 1 dB Compression
Mute	-60 dB
Impedance	50 Ω
VSWR	1.25:1 Maximum
Connector	WR75G Waveguide

Gain

Linear	KPA-020 50.0 dB min, 53 dB typ
	KPA-040 60.0 dB min, 63 dB typ
	KPA-080 61.0 dB min, 64 dB typ
	KPA-100 65.0 dB min, 70 dB typ
Adjust	20 dB in 0.25 dB steps
Full Band	± 0.75 dB
Per 40 MHz	± 0.25 dB
+0 to +50°C	± 0.50 dB @ center freq
	± 1.00 dB full band

Third Order Intermodulation

Intercept	KPA-020 +50.5 dBm min, 53.0 typ
	KPA-040 +53.5 dBm min, 56.0 typ
Products	-30 dBc typ, -25 dBc max
	@ 3 dB total back-off
	(two tones, Δf +1MHz)

AM To PM Conversion

2.0 ° typ, 3.0 max at rated output

Group Delay (per 40 MHz)

Linear	± 0.03 ns/MHz
Parabolic	± 0.003 ns/MHz2
Ripple	1.0 ns Peak-to-Peak

Input

Impedance	50 Ω
Noise Figure	10 dB typ, 15 dB max at max gain
VSWR	1.25:1 Maximum
Connector	SMA Female
Level	KPA-040/100 -10 dBm typical

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
Protocol	ASCII

Alarms

Summary Fault	Form C

LED

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

Mechanical

Dimensional	Inches	Centimeters
KPA-020	4H x 19W x 24D	9H x 48W x 61D
KPA-040	7H x 19W x 24D	18H x 48W x 61D
KPA-080/100	9H x 19W x 24D	22H x 48W x 61D

Weight	Pounds	Kilograms
KPA-100	75	34

Environmental

Temperature	0 to 50°C (32 to122°F) Operating
	-40 to 70°C (-40 to158°F) Storage
Humidity	10 to 95% Non-condensing Operating
	0 to100% Non-condensing Storage
Shock	Normal Commercial
	Shipping and Handling

Power Requirements

KPA-020	90 to 135 or 180 to 270 VAC,
	47 to 63 Hz, 400W (Auto Select)
KPA-040	90 to 135 or 180 to 270 VAC,
	47 to 63 Hz, 600W (Auto Select)
KPA-080/100	180 to 270 VAC
	47 to 63 Hz 1100W