Spacepath STA5555P 550W Ka Band TWTA Data Sheet

STEP ELECTRONICS
A Division of Av-Comm

FEATURES

Ultralinear
Lightweight
High Efficiency
Broadband

STA5555P Ka series 550W Antenna Mount HPA

The STA5555P Ka series HPA provides ultra linear, high efficiency performance in a compact, lightweight, rugged, weatherproof, antenna mount enclosure. The advanced packaging and cooling techniques enable the unit to operate in extreme environmental conditions from direct rain to direct sunlight. The amplifiers can be simply deployed anywhere in the world, are user-friendly and incorporate a comprehensive remote control facility as standard, including RS485, RS232 and Ethernet options.

The HPA incorporates a high efficiency multi-collector TWT powered by an advanced power supply built on over 30 years of experience in the design and manufacture of satellite amplifiers.

The company's products have an enviable reputation for performance, robust quality and reliable service.

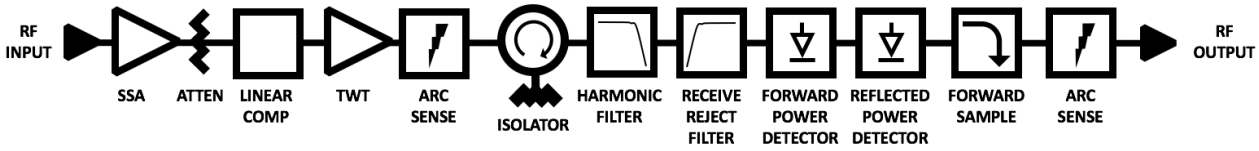
The STA5555P Ka is available with a wide range of options and accessories, backed by worldwide technical support.

Features

- Advanced cooling design enables operation at +60°C and in direct sunlight
- Weatherproof antenna mount construction allows exposed mounting
- Ethernet/SMP/Webpage GUI interfaces
- Broadband – high efficiency operation
- Uplink Power Control
- CE compliant
- Wide input voltage range - can operate from mains supplies worldwide
- Redundant control - contains control and drive circuits for 1:1 redundancy
- Stand-alone setting - automatically sequences to transmit mode
- Wide range of accessories including: Controllers, waveguide networks, cable assemblies

24/9 Powells Road, Brookvale, NSW 2100, Australia
+61 2 9939 4377 sales@stepselectronics.com.au

BLOCK DIAGRAM



RF Performance:

Frequency	
KA1	27.5 – 30.0 GHz
KA2	27.0 – 30.0 GHz
KA3	28.0 – 30.0 GHz
KA4	30.0 – 31.0 GHz
KA5	29.0 – 30.0 GHz
KA6	27.5 – 31.0 GHz
Bandwidth	2500 MHz
Output Power	(for load VSWR ≤ 1.5:1)
TWT Power, PEAK / CW	57.4 / 56.0 dBm (550 W / 400 W) 57.4 / 55.4 dBm (550 W / 350 W) 57.4 / 54.7 dBm (550 W / 300 W)
Rated CW (flange)	55.3 dBm (340 W) typical 54.6 dBm (290 W) typical 53.9 dBm (250 W) typical
Linear, P_{LIN}	52.6 dBm (182 W)
Gain	
Gain	≥ 70 dB
Variation, 250 MHz, ΔG_{250MHz}	≤ 1.0 dB peak-peak
Variation, 1000 MHz, $\Delta G_{1000MHz}$	≤ 2.5 dB peak-peak
Slope, ΔG_{SLOPE}	± 0.04 dB/MHz
Gain Stability vs. Time @constant drive & temp	± 0.25 dB/24 hours
Gain Stability vs. Temperature @ constant drive & frequency	± 1.0 dB
Adjustment range, G_{ADJ}	30.0 dB typical
Adjustment step size	0.1 dB
Linearity	
AM/PM @ $P_O \leq P_{LIN}$ - 1dB	≤ 1.5°/dB
Inter-modulations (IMD) 2-tone	≤ -28 dBc
Spectral Re-growth (SR)	≤ -30 dBc
Noise Power Ratio (NPR)	≤ -19 dBc
Input VSWR (Return Loss)	≤ 1.3:1 (17.7 dB)
Output VSWR (Return Loss)	≤ 1.3:1 (17.7 dB)
Load VSWR (no damage)	≤ 2.0:1 (9.5 dB)
Harmonic 2nd & 3rd	≤ -60 dBc
Noise Power	
Transmit Band (T_X)	≤ -70 dBW/4KHz
Receive Band (R_X)	≤ -150 dBW/4KHz (≤ 21.2 GHz)
Spurious @ $P_o \leq$ MLP	≤ -60 dBc
Residual AM	≤ -50 dBc, f < 10KHz ≤ -20(1.5+LOG(frequency KHz))dBc, f = 10KHz to 500KHz ≤ -85 dBc >500KHz
Phase Noise	10 dB below IESS requirement ≤ - 50 dBc, AC fundamental ≤ - 47 dBc, Sum of all spurs
Group Delay (any 80 MHz)	
Linear	0.01 nsec/MHz, max
Parabolic	0.005 nsec/MHz^2, max
Ripple	0.5 nsec/Peak-Peak, max

Prime Power:

AC Input Voltage	200-240 VAC ± 10%, single phase 50-60 Hz ± 5%
Full Load Current	6.8 A max @ 200 VAC
Power Consumption	1050 VA typical 1350 VA maximum
Power Factor	0.98 typical 0.96 minimum

Environmental:

Ambient Temperature	-40°C to +60°C
Relative Humidity	100% condensing
Altitude	12,000 ft. with standard adiabatic de-rating of 2°C/1000 ft., operating 50,000 ft., non-operating
Shock	15 g peak, 11mSec, 1/2 sine
Vibration	3.2 g rms, 10-500 Hz
Acoustic Noise	65 dBA @ ≥3 ft. from amplifier
Solar Gain	1120 2/m^2

Mechanical:

Dimensions	Request outline
Length	52 cm
Width	26 cm
Height	26 cm
Weight	21 kg typical
RF Input	WR-34 (WR-28 Optional)
RF Output	WR-34 (WR-28 Optional)
RF Sample	2.9mm SMA Female
AC Input	Amphenol C016 20C003 200 12
Ethernet	RJF71B (IP67 RJ45 Connector)
M&C Connector	PT07E18-32S (MS3114E-18-32S)

Note: Peak/output power and frequency range must be selected at time of purchase, as these options are TWT dependent and cannot be changed in the field.

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