PD2-TX-5000-S Functional Description

The PD2-TX-5000-S is a 4.8 Watt S-Band COFDM Video Transmitter designed for applications where maximum allowable power is required for acceptable link performance. The transmitter consists of a low power COFDM exciter followed by a 4.8W linear power amplifier. The exciter is implemented by a DTC Communications PD2-TX-100-S 100mW output COFDM Video transmitter (FCC ID: H25PD2TX100S). The RF Power Amplifier is implemented by a Stealth Microwave Inc. Part Number SM2025-42LS.

Per Block Diagram, Fig. A

COFDM S- Band exciter (Item-1, DTC PN PD2-TX-100-S) provides a +5 dBm S-Band RF output signal to the input of attenuator pad Item-4. This sets a -15 dBm RF input level to the RF S-Band Power Amplifier RF Input (Item2 Stealth Microwave PN SM025-42LS). The power amplifier provides 52dB of gain and produces a 5W output COFDM power level. The RF Power amplifier output signal is routed to a 5 pole Low Pass harmonic filter implemented by (Item-5).

Note that the Stealth amplifier RF output power is rated at 15.8 Watts at 1dB gain compression and 3.2 Watts for linear operation. The RF Power Amplifier drive level is set to -15dBm to produce the nominal 4.8 W output power. The power amplifier is sufficiently linear at this power level to produce an acceptable COFDM spectral mask.

RF Power Amplifier Specifications

Parameter	Specification
Frequency Range	2.0 – 2.5 GHz
Pout (P1dB)	+42 dBm (typ.)
Pout (Linear)	+35 dBm [1]
Output Third Order Intercept Point (OIP3)	+61 dBm
Linear Gain	52 dB
Gain Flatness (over full band)	± .5 dB
Gain Change (over temperature)	± .5 dB
VSWR (Input/Output)	1.8:1 / 1.5:1
DC Input Voltage	+12 Volts
DC Input Current	5.5 Amperes (operational)
Mechanical Dimensions	6.0 x 2.5 x .56 inches
RF Connectors	SMA Female
Operating Temperature	-10º to +60ºC [2]
Operating Humidity	95% Non-condensing
Operating Altitude	Up to 10,000 feet above Sea Level