

BZ5TTS250MVX
Application for FCC Certification
Demodulator Input
250 Watt VHF Translator

ACTIVE DEVICES AND FUNCTION LIST

DEVICE	TYPE	FUNCTION
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MODULE: Video Operated Relay #10A1164G1

Q1	MPS8598	General Purpose
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U1	LM358N	Op Amp
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MODULE: Power Amplifier #40D1225G3

Q1, Q2	SRF3943	250W RF Power Transistor
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MODULE: Voltage Regulator #20B1810G1

Q1, Q2	2N3501	High Voltage/High Current Transistor
Q3, Q5	MJE182	80W Bipolar Power Transistor
Q4, Q6	2N4402	General Purpose

U1, U2	MC1723P	Adjustable Voltage Regulator
U2, U4	2SA1302	Voltage Regulator

MODULE: Intermediate Power Amplifier #20B517G2

HY1	CA2842	Hybrid Amplifier
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Q1	MRF325	30W RF Power Transistor
Q2	MPS8098	General Purpose

VR1, VR2	LM350T	+5V Voltage Re gulator
VR3	1N5358A	22V 5W Zener

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MODULE: Pin Attenuator #10A1255

Q1	MPS8598	General Purpose
U1	LM358N	Op Amp
U2	MC78L12CP	+12V Voltage Regulator

MODULE: Metering Board #20B1235G2

Q1, Q2	MPS8598	General Purpose
U1, U2, U3	LM358N	Op Amp
VR1	LM78L12CP	+12V Voltage Regulator

MODULE: Pre-correction Board #10A1230

U1	LM358N	Op Amp
U2	MC78L12CP	+12V Voltage Regulator

MODULE: Over-voltage Protection Board #10A1465G1

U1	LM358N	Op Amp
U2	MC78L12CP	+12V Voltage Regulator

MODULE: Linearity Pre-corrector Board #20B1157G2

Q1	MPS8098	General Purpose
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Metering Board

Circuit Description

The Metering board detects forward and reflected power levels and processes these signals to provide output for metering, telemetry, AGC and VSWR protection.

The forward power and reflected power detectors are 'visual only' detectors. The description that follows is for the forward detector portion only, the 'reflected' detector is identical. CR1 and Q1 form a basic detector circuit and C3, C4 and L1 trap out the 4.5MHz aural component. CR3 and C7 act as a peak detector providing the buffer circuit of U1 with a peak-level voltage.

The outputs of the peak detectors are applied to operational amplifiers U1B and U2B which have a zeroing function and provide the drive for the metering circuit and telemetry. These amplifiers also drive the AGC and VSWR circuits. Operational amplifiers U1A and U2A compare the forward and reflected signals to preset levels and provide an error signal to the Pin Attenuator board. An additional circuit consisting of U3 acts as a comparator to drive an LED on the indicator board as the VSWR signal rises above the preset level.

Setup Procedure for Metering, VSWR and AGC Circuits

- Set the AGC/MAN Switch on the front panel to the MAN position.
- Terminate the output of the amplifier into a suitable 50ohm load through a thru-line wattmeter or equivalent.
- Turn the visual and aural carrier switches on the exciter to the OFF position.
- Apply DC power to the amplifier. The blower should come on. There should be no output power indication.
- Turn the metering switch to the 35V position. Measure the voltage at E12 on the Regulator board and adjust R34 for a corresponding front panel reading on the lower meter scale.
- Turn the metering switch to the 50V position. Measure the voltage at E13 on the Regulator board and adjust R37 for a corresponding front panel reading on the lower meter scale.
- Turn the metering switch to the FWD position and adjust R18 on the Metering board for a zero reading on the front panel meter. This should also correspond to a minimum voltage at TP1. Repeat this procedure for the RFL position, R20 and TP2.
- Turn the visual carrier switch on the exciter to the ON position. Slowly bring the transmitter up to operating power.
- Turn R33 on the Pin Attenuator board for maximum power out, then trim it back so the power just starts to drop (about 10%). Reset the output power.

- Adjust R32 on the Metering board for a 100% meter reading in the FWD position.
- Reverse the connections at J1 and J2 on the Metering board. Adjust R36 for maximum power output. Adjust R30 for 100% RFL meter reading.
- Re-adjust R36 for a 15% reduction in power. Adjust R42 until the VSWR LED just starts to illuminate. Trim R36 for about 15% power output. Restore the original connections to J1 and J2. The VSWR cutback circuit is now set.
- Set the AGC/MAN Switch to the AGC position. The power output level should be adjustable via the front panel AGC potentiometer.