

320

INSTRUCTION MANUAL  
MODEL RPT-30  
BROADCAST REMOTE PICKUP  
TRANSMITTER

**MARTI**

## W A R N I N G

THIS EQUIPMENT MUST BE OPERATED WITH A 3-PRONG GROUNDED OUTLET RECEPTACLE. FAILURE TO USE A PROPERLY GROUNDED OUTLET MAY RESULT IN IMPROPER OPERATION OR SAFETY HAZARD!

### LIMITED WARRANTY:

Marti Electronics, Inc. agrees to repair or replace within a one (1) year period and without charge, any equipment or parts which are defective as to workmanship or material and which are returned to Marti at its factory, transportation prepaid and properly insured, provided:

(a) Notice of the claimed defect is given Marti within one (1) year from date of original shipment and goods are returned in accordance with Marti instructions.

(b) Equipment, accessories, tubes and batteries not manufactured by Marti are subject to only such adjustments as Marti may obtain from the supplier thereof.

(c) This warranty does not apply to equipment which has been altered, improperly handled, or damaged in any way.

(d) In the event that Marti is required to demonstrate equipment capability either as to specifications or defects in parts or workmanship and where it is found that the equipment meets specifications, Marti shall be entitled to collect all reasonable expenses from the Buyer including but not limited to, travel, per diem living expenses and hourly wage rates which have been established by Marti and which are in effect at the time.

Marti further guarantees that any radio transmitter described herein will deliver specified radio frequency power output at the antenna lead when connected to a suitable load, but such guarantee shall not be construed as a guarantee of any definite coverage or range of said apparatus. The guarantee of these paragraphs is void if equipment is altered or repaired by others than Marti or its authorized service Representative, unless specifically authorized in writing by Marti. No other warranties, expressed or implied, shall be applicable to any equipment sold hereunder, and the foregoing shall constitute the Buyer's sole right and remedy under the agreements contained in this paragraph. In no event shall Marti have any liability for consequential damages, or for loss, damage or expense directly or indirectly arising from the use of the products, or any inability to use them either separately or in combination with other equipment or materials, or from any other cause.

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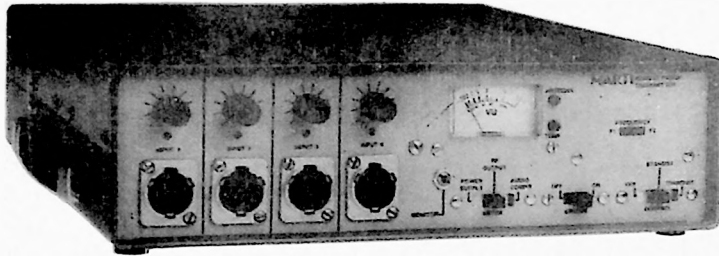
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### RPT-30 Features

- \* Continuous-duty output:
  - 45 watts @ 150 MHz
  - 30 watts @ 450 MHz
- \* Sub-audible encoder.
- \* FM compressor-limiter.
- \* Illuminated VU meter.
- \* Dual-frequency capability.
- \* Four balanced microphone mixing inputs, one switchable to balanced line level.
- \* Flashing LEDs indicate antenna VSWR problems and over-temperature conditions.



### INTRODUCTION

The Marti Model RPT-30 Solid-State Transmitters are designed to operate in the Remote Pick-Up Broadcast Service as defined in Part 74, Subpart D, of the FCC Rules and Regulations. Refer to the specification sheet for a listing of the available bandwidths. These transmitters, when used with the recommended companion receiver, provide a remote broadcast link having audio quality not approached by conventional voice communication radio equipment. The RPT-30 transmitter operates from both 115 volt, 50-60 Hz. AC commercial power and 11 to 14 volt battery (**NEGATIVE GROUND**) supply in fixed, portable, or mobile, service. Four audio input channels are provided with individual mixing gain controls. A meter and selector switch are provided for monitoring audio compression, RF output, and power supply voltage. The solid-state audio processing technique pioneered and proven by Marti Electronics in thousands of remote pick-up broadcast transmitters over the past 25 years has been applied to this model, resulting in the highest audio quality possible, consistent with transmission bandwidth and other factors.

The RPT-30 has been designed to operate with other Marti equipment to form large communications systems capable of covering large areas with broadcast-quality audio, while providing continuous-duty operation. The RPT-30 finds applications in mobile repeaters, fixed automatic repeaters, base stations, and TSL (transmitter-to-studio data links).

MODEL RPT-30  
REMOTE-PICKUP BROADCAST TRANSMITTER

SPECIFICATIONS

Frequency Range and  
Maximum Power Output.....140-180 MHz - 45 Watts  
200-260 MHz - 40 Watts  
280-340 MHz - 35 Watts  
400-480 MHz - 30 Watts

RF Connector.....SO-239

Operating Temp. Range.....-10°C to +45°C

Modulation (Specify).....10F3 (±1.5 KHz Deviation)  
25F3 (±4.0 KHz Deviation)  
50F3 (±8.0 KHz Deviation)

Channels (Frequencies).....Two frequencies selected by switch.  
Frequency separation 1.1% maximum.

Frequency Stability.....Mobile .00050%  
Base .00025% (above 400 MHz)

Spurious Emission.....Meets FCC requirements.

Audio Inputs.....Four balanced microphone (150 Ω)  
inputs (XLR-3) with mixing controls.  
One input switchable to balanced line  
level at microphone #4 input and "D"  
connector on rear panel.

Modulation Control.....Broadcast-quality compressor/limiter  
built in.

Encoding.....Subaudible 27 Hz tone-encoder built in.

Metering/Indicators.....Illuminated meter indicates audio  
compression, relative RF output,  
relative supply voltage. Flashing  
LEDs indicate "Antenna" (VSWR too  
high) and "Temp." (over temperature  
indicator).

Controls.....(4) INPUT LEVEL, METER switch, ENCODE  
switch, FREQUENCY switch, MONITOR jack.

Power Requirements.....110-125 volts, 50-60 Hz, AC (220 volt  
50 Hz available on special order)  
DC operation on 11-13.5 volt negative  
ground.

Accessory Connector.....9-pin "D" connector for DC power,  
remote control, encode, line level input.

Weight.....12.4 lbs. net, 16 lbs. shipping wt.  
(5.62 kgs. net, 7.26 kgs. ship wt.)

Dimensions.....11.5 in. wide x 3.5 in. high x 13.3 in.  
deep.  
(29.21cm. x 8.89 cm. x 33.78 cm)

Options available.....Second crystal for dual-frequency  
operation, rack mounting brackets,  
mobile mounting brackets, antenna  
switching relay: (See page 60)

Type Acceptance Numbers.....FCC ID: BEN9EZRPT30-150  
FCC ID: BEN9EZRPT30-450

## UNPACKING AND INSPECTING

This equipment was factory tested, inspected, packed, and delivered to the carrier with utmost care. Do not accept shipment from carrier which shows damage or shortage until the carrier's agent endorses a statement of the irregularity on the face of the carrier's receipt. Without documentary evidence, a claim cannot be filed.

Unpack equipment immediately upon receipt and thoroughly inspect for concealed damage. If damage is discovered, cease further unpacking and request immediate inspection by local agent of carrier. A written report of the agent's findings, with his signature is necessary to support claim.

Check your shipment against the shipping papers for possible shortage. Do not discard any packing material until all items are accounted for. Small items are often thrown away with packing material. Packing material should be retained until equipment testing is completed. Any equipment returned to the factory should be packed in original cartons, insured and pre-paid.

## INSTALLATION

Install rack-mounted equipment in a well-ventilated, well-grounded, and shielded rack cabinet. Do not locate solid-state equipment in a rack above tube-type equipment which produces high temperatures.

Problems can also be avoided by locating this unit away from other equipment which has transformers that produce strong magnetic fields. These fields can induce hum and noise into the Marti equipment thus reducing performance. Strong radio-frequency (RF) fields should be avoided where possible. Extensive shielding and filtering have been incorporated into this equipment to permit operation in moderate RF environments. All equipment racks, cabinets, etc., should be bonded together by wide copper grounding strap to ensure that all system elements are at the same RF ground potential.

### STATIONARY REMOTE BROADCAST INSTALLATION

The basic stationary remote installation consists of the RPT-30 transmitter, a 115 VAC power source, microphones and other audio program sources, and a portable antenna. Remotes using portable antennas inside buildings have very limited range (typically less than one mile). If greater range is needed, consider locating the transmitting antenna outside the building at a height necessary to provide a line-of-sight path to the receiving antenna. This may not be practical if a great length of coaxial cable is required. Many broadcasters are using the Marti mobile relay system to do remotes from inside buildings. This system consists of the originating transmitter with its antenna inside the building which transmits to a "mobile relay" parked outside the building. The mobile relay consists of a Marti Model AR-10 receiver and Marti RPT series transmitter with mobile antennas installed in

## INSTALLATION (CONTINUED):

a vehicle. The AR-10 receiver picks up the encoded signal originating from the RPT series (RPT-2, RPT-15, RPT-25, RPT-30, RPT-40) transmitter located inside the building, automatically turns on the relay transmitter (on a different frequency), which re-transmits the program to the distant receiving antenna at the radio station studio or transmitter site. (Mobile relay equipment packages are available from Marti.)

### STATIONARY REMOTE INSTALLATION PROCEDURE

1. The transmitter is normally located near the announcer or engineer to permit access to gain controls, microphone inputs, the monitor jack, and metering.
2. With the RPT-30 CONTROL switch in "OFF" position, plug the transmitter into a grounded, three-prong, 115 volt, AC outlet.

### WARNING

*THIS EQUIPMENT MUST BE OPERATED WITH A 3-PRONG, GROUNDED, 115 VOLT, AC OUTLET RECEPTACLE! FAILURE TO USE A PROPERLY GROUNDED OUTLET COULD RESULT IN A SAFETY HAZARD OR FAULTY EQUIPMENT PERFORMANCE. IF AN EXTENSION CORD IS USED, IT MUST BE THE THREE-WIRE GROUNDING TYPE TO INSURE SAFETY. DO NOT CUT OFF THE GROUND PIN OF A 3-PRONG PLUG!*

Excessively long extension cords should be avoided since the voltage drop can degrade equipment performance. Do not allow the RPT-30 to get wet. Do not operate where personnel touching the transmitter (or its microphone, antenna or other connected equipment) are standing on wet ground or concrete.

3. For locations where AC power is not available, the RPT-30 can be powered from a fully charged automobile battery. The RPT-30 draws five (5) amps at 12.6 volts DC. Use D.C. Power Cable, Fuse and Plug, No. 586-074. OBSERVE POLARITY: Red wire is (+) Positive and Black is (-) Negative.
4. Connect a portable antenna such as the Marti PAV/150, PAV/450, or YC-450 to the ANTENNA connector on the back of the transmitter.

CAUTION: Place the antenna away from personnel and other objects. Federal agencies and several states have set limits on "Non-Ionizing Radiation" from radio transmitters. *Make your antenna installation for compliance with regulations in effect in your location.* Do not install an antenna directly on the RPT-30 transmitter. Do not place a portable antenna near electronic equipment which may be susceptible to RF radiation.

INSTALLATION (CONTINUED):

MOBILE INSTALLATION

The RPT-30 transmitter can be installed in the vehicle where the controls ("OFF"--"STANDBY"--"TRANSMIT") can be operated directly, or the transmitter can be located elsewhere (in the trunk of a car or rear of a van) and controlled remotely. The choice depends upon the type of vehicle and the type of operation anticipated. The antenna(s) are usually mounted on the top of the vehicle to provide maximum height.

*Transmitter Mounting*

1. Locate transmitter where vent holes on top and rear of unit are not obstructed. Leave enough space for the mic. plug on the front panel and the accessory plug on rear of unit.
2. Hook the four mounting fasteners (in retracted position) in the four slots on the sides of the transmitter. See Fig. 1. (Fasteners are in Mobile Mounting Kit 700-251.)
3. Mark the location of the two mounting holes in each fastener bracket. Drill 7/64" diameter holes into the mounting surface at the marked places for #6 x 1/2" sheet metal screws.
4. Attach the mounting fasteners with the sheet metal screws provided. Secure the transmitter with the fasteners.

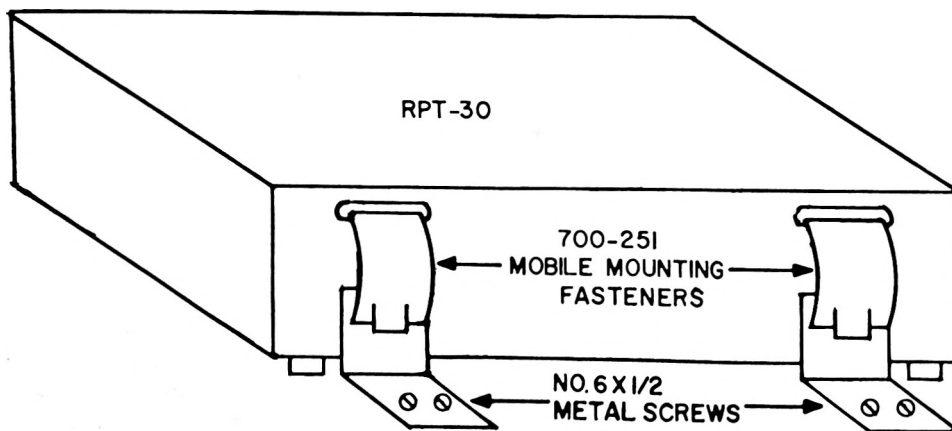


FIG. 1



INSTALLATION (CONTINUED):

*Receiver Mounting*

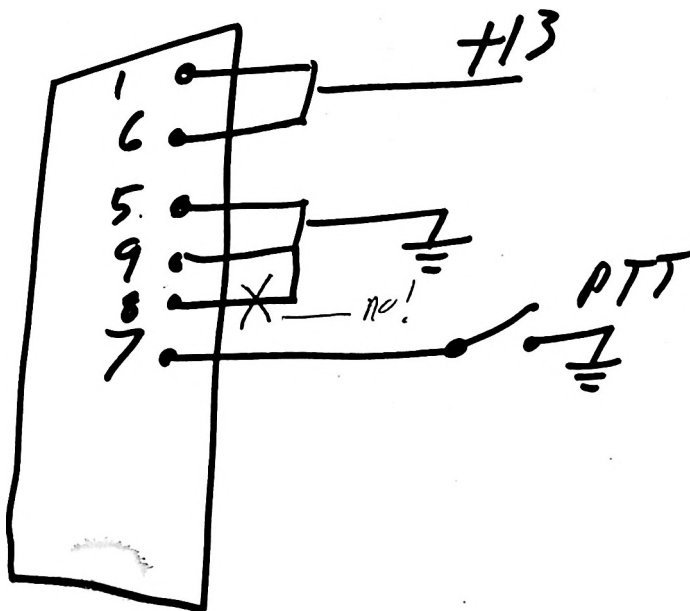
For mobile repeat using the Marti AR-10 Mobile Repeat Receiver, mount the receiver near the transmitter using the three fasteners supplied in Mobile Mounting Kit 700-251.

*Electrical Connections*

**WARNING:** This equipment is designed for NEGATIVE GROUND 12 volt vehicles only. Reverse polarity may destroy all transistors in the RPT-30.

*Mobile Remote Control*

Remote control of the RPT-30 transmitter requires a switch to control primary +12 volt DC power and a second switch to control the transmit function. The primary +12 volt control requirement can be met by tapping the "Accessory" circuit of the vehicle which is controlled by the ignition switch. The "transmit" function can be performed by installing a switch on the vehicle or by the push-to-talk switch on a microphone such as the Marti MCD-70B. Fig. 2 shows the electrical circuit of a mobile installation. **CAUTION:** TOTAL CONTROL CIRCUIT RESISTANCE MUST NOT EXCEED 0.3 OHMS! Control circuits having more than 0.3  $\Omega$  resistance should employ a relay with low resistance contacts located near the transmitter.



INSTALLATION (CONTINUED):

*Mobile Repeat*

Mobile repeat operation is covered under STATIONARY REMOTE BROADCAST INSTALLATION. Electrical connection is through Mobile Repeat Cable No. 585-037-2. This cable is connected between the RPT-30 transmitter and AR-10 receiver. Power is obtained by connecting the fused RED wire to the vehicle "Accessory" +12 volt circuit controlled by the vehicle ignition switch. The electrical diagram of this cable is shown in Fig. 3.

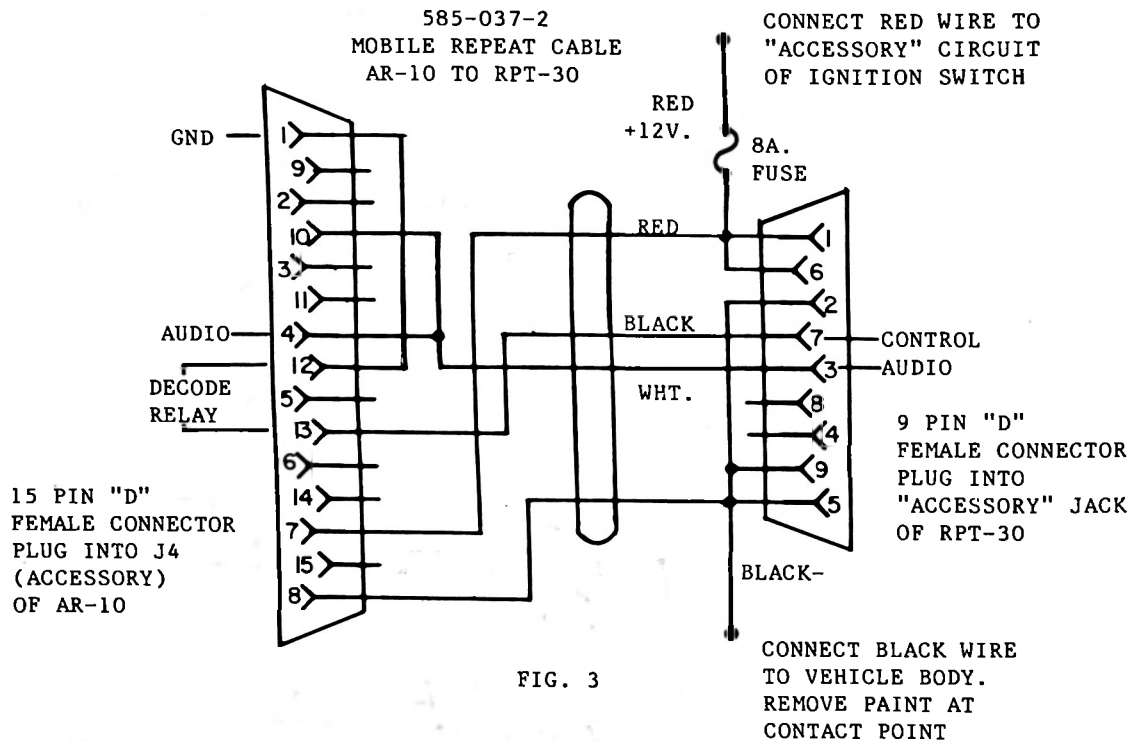


FIG. 3

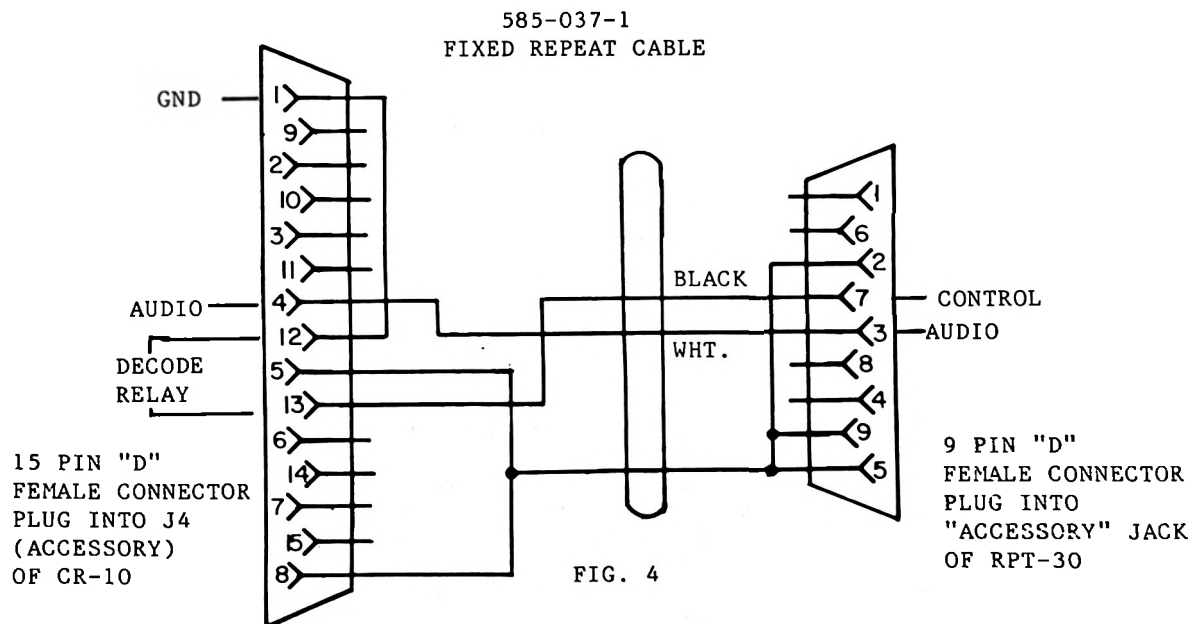
*Mobile Antenna Installation*

One or more mobile antennas are required depending upon the various receive and transmit frequencies and whether antenna duplexing is used. Antennas are specified in the various system packages listed in the Marti literature. The installer should follow the instructions supplied with the mobile antennas.

INSTALLATION (CONTINUED):

FIXED BASE STATION, TSL, AND REPEATER INSTALLATION

1. Install transmitter in standard rack by using **Rack Mounting Kit No. 700-253** available from Marti. **CAUTION:** Allow one panel space above and below transmitter for inlet air-flow to internal fan.
2. Connect transmitting antenna to **ANTENNA** connector on RPT-30 rear panel.
3. If a receiver is to share the antenna with the transmitter (as in a two-way base station), the transmitter must be equipped with optional **Antenna Relay No. 570-038** available from Marti. After relay is installed, connect **RECEIVER** jack on RPT-30 rear panel to receiver antenna connector using 20-inch **Coaxial Cable No. 585-026**. Receiver muting during transmitting is accomplished using **Mute Cable No. 585-038-2**. This cable plugs into the **ACCESSORY** connectors on each unit.
4. Plug transmitter into a 3-prong, grounded, 115 volt, AC outlet. **WARNING:** Failure to use a properly grounded outlet could result in a safety hazard or faulty equipment performance.
5. For fixed automatic repeater operation, connect **Cable No. 585-037-1** (Fig. 4) between accessory connectors of the receiver and RPT-30 transmitter. Connect receiving antenna to receiver **J6** and transmit antenna to RPT-30 **ANTENNA** connector.



## ANTENNAS

### BASE STATION ANTENNA INSTALLATION CHECKLIST

The following suggestions are offered to help those responsible for antenna installations avoid costly errors in assembly and adjustment. Marti Electronics, Inc. assumes no responsibility for the installation and performance of antenna systems associated with its equipment. The following suggestions are not intended to be a complete step-by-step procedure, simply a listing of some of the most frequently reported errors in antenna system installation.

#### *Antenna Assembly*

Follow the manufacturer's instructions carefully. If no instructions were included with the antenna, call or write the antenna manufacturer for instructions. Antennas which have phasing or stacking cables must be assembled carefully to avoid phase reversal or signal cancellation.

#### *Transmission Line Connector Assembly*

Do not use RG-58 U or RG-8 U cable for base station antennas! They have too much loss at VHF and UHF frequencies. (up to 15 dB/100' at 450 MHz.)

Follow the instructions furnished by the manufacturer when cutting coaxial cable. Inspect the cable ends for small metal fragments which can short-circuit the line inside the connector assembly. Check the line for a short-circuit condition after each connector is installed by using an ohmmeter. Pressurized line should be checked for several days under pressure before installation on a tower to ensure that there are no leaks in the line or fittings.

#### *Moisture Proofing Coax Connectors and Fittings*

Extreme care must be exercised with coaxial cable before and after connectors have been installed to ensure that moisture does not enter the line. Foam dielectric line can take on moisture absorption which is difficult to detect and remedy. Therefore, keep the line dry while in storage with ends tightly capped. Coaxial splices, connectors, and fittings, to be located outside should be made mechanically tight, then coated with a weather-proofing material such as SCOTCHKOTE over at least two layers of SCOTCH 88 vinyl plastic electrical tape. Moisture problems in antenna systems are usually traced back to connectors which have NOT been properly taped. The Marti K-1 Grounding and Weatherproofing Kit is recommended for use in each new antenna installation.

## ANTENNAS (CONTINUED):

### *Location and Grounding of Coaxial Cable*

Keep the remote pick-up (RPU) receiver coaxial cable as far from the broadcast transmitter and its coaxial cable as possible. **DO NOT STRAP RECEIVER CABLE TO THE MAIN ANTENNA CABLE AT ANY POINT. PLACE THE RECEIVER ANTENNA COAXIAL CABLE ON THE OPPOSITE SIDE OF THE TOWER FROM THE MAIN ANTENNA CABLE.** Maintain maximum separation between these cables at all points, including the distance from tower base to transmitter building as well as inside the building.

### *System Grounding*

It is essential that the RPU antenna system be properly grounded for safety and proper operation.

### *Antenna Installation and Adjustment*

The polarization of the transmit and receive antennas of the RPU system must be the same! This means that if the transmitting antenna is vertical, the receiving antenna must also be vertical. The antenna should be attached to the tower using the proper side-mount or top-mount hardware. If an RF wattmeter is available, the antenna and transmission line can be checked for VSWR with a transmitter supplying power to it. The VSWR should be less than 1.5 to 1 (1.5:1). IF THE ANTENNA SYSTEM FAILS TO GIVE THE PREDICTED SIGNAL STRENGTH LEVEL, THE FOLLOWING ITEMS SHOULD BE CHECKED:

1. Check for correct assembly of antenna.
2. Check that antennas have same polarity.
3. Check VSWR of both transmit and receive antennas.  
VSWR should be less than 1.5:1.
4. Check for obstructions in the path such as trees and man-made structures. The base antenna must be high enough to provide a line-of-sight path to the remote transmitting antenna.

## OPERATION

### CONTROL AND CONNECTOR FUNCTIONS

#### FREQUENCY Switch

This switch selects one of two possible operating frequencies. If you have only one frequency, make sure the switch is not accidentally switched to the unused position, since the transmitter will NOT operate in this condition.

#### MIC Input Connectors

These balanced inputs are for a 150  $\Omega$  dynamic microphone such as the Marti MCD-70C or MCD-70D with standard XL-3 or A3M connector. Microphone connections are given in INSTALLATION.

Input 4 can operate at MIC LEVEL or HIGH LEVEL by means of a SELECTOR SWITCH inside the transmitter just behind the Input 4 pot. The unit is factory selected for "HI" (HIGH) LEVEL balanced input for use with tape machines, etc. To convert Input 4 to MIC (microphone) LEVEL, remove top cover and move switch to "MIC".

#### ACCESSORY Input Connector

When Input 4 is switched to "HI" level, audio can be fed into pins 2 and 3 of the ACCESSORY connector on the rear of the transmitter. Input level should be between 0.2 volts to 2.0 volts rms. The output impedance of the device connected to Input 4 should be 8-600  $\Omega$  (ohms). For unbalanced operation ground pin 2 to pin 5 and connect audio to pin 3. Use standard 9-pin "subminiature D" female connector with cover. "TRANSMIT" control can be accomplished remotely by a low resistance switch circuit connected to pins 7 and 9. **CAUTION: TOTAL CONTROL CIRCUIT RESISTANCE MUST NOT EXCEED 0.3 OHMS!**

#### GAIN Controls

The GAIN potentiometer located above each input connector provides an independent level adjustment for that input. Each GAIN potentiometer is adjusted as follows:

1. Connect input source at normal audio level.
2. Turn GAIN potentiometer to maximum counter-clockwise ("OFF") position.
3. Place CONTROL switch in "STANDBY" position and allow METER pointer to reach 0 VU. Slowly increase gain (clockwise) until

## OPERATION (CONTINUED):

**METER** begins deflecting to the left on audio peaks. Maximum deflection should be -3 to -5 VU on the **METER** scale. This indicates 100 % modulation of the transmitter. Excessive gain settings cause high compression values which result in annoying increase in background noise. A 600  $\Omega$  headset may be plugged into the **MONITOR** jack to aid in arriving at the proper gain adjustment. In high noise environments, close-talk the microphone and reduce **MIC** gain until a maximum of -2 VU gain-reduction is indicated.

4. Once the proper gain level is determined, it will not be necessary to change it for that particular microphone or tape player. The broadcast quality compressor/limiter built into the unit will maintain modulation at the maximum level while preventing overmodulation.

### **CONTROL Switch**

When the transmitter is not in use the **CONTROL** switch should be in the "OFF" position. *The switch should be placed in "STANDBY" position at least 2 minutes before transmission is anticipated.* This activates all audio circuits, **MONITOR** jack and **METER**. Current drain is minimal in "STANDBY" position. The **CONTROL** switch is placed in "TRANSMIT" position when transmission is desired. The **CONTROL** switch should be returned to "STANDBY" or "OFF" position as soon as a transmission is completed.

### **ENCODE Switch**

The internal subaudible encoder can be switched "ON" or "OFF" by the front panel switch. Encoding is used to activate a repeater station, tape recorder, etc.

### **MONITOR Jack**

The **MONITOR** jack is active in "STANDBY" and "TRANSMIT" positions of the **CONTROL** switch. A high-quality headset having 300  $\Omega$  or higher impedance can be plugged into the **MONITOR** jack to make adjustments or to monitor the quality of the audio being transmitted. A miniature, single circuit, 1/8 inch, phone plug should be used with the **MONITOR** jack.

### **METER**

The VU **METER** serves the function of indicating the relative power supply voltage, relative RF power output, and the amount of audio compression. The **METER** indicates RF output only when the **CONTROL** switch is in the "TRANSMIT" position.

### **ANTENNA Connector**

Connection of various antenna systems is covered under **INSTALLATION** and **ANTENNAS**.

OPERATION (CONTINUED):

It is only necessary for the operator or announcer to see that the **ANTENNA** connector is tight and that the antenna is clear of objects which may affect its radiation efficiency. **CAUTION: THE ANTENNA MUST BE CONNECTED BEFORE SWITCHING TO "TRANSMIT".**

**RECVR Connector**

If the RPT-30 is equipped with optional antenna relay, the transmit antenna can be used for receiving by connecting a coaxial cable (No. 585-026) between the **RECVR** jack on the RPT-30 and **ANTENNA** connector of the receiver (Marti AR-10). To silence the receiver while transmitting, **Mute Cable No. 585-038-2** is plugged into the **ACCESSORY** connector on each unit.

**ANTENNA (WARNING LIGHT)**

The red LED light marked "ANTENNA" which is to the right of the **METER** on the RPT-30 front panel, flashes to indicate a problem with the antenna when transmitting. The **ANTENNA (WARNING LIGHT)** flashes if the **CONTROL** switch is switched to "TRANSMIT" without an antenna connected. It can also indicate a defective antenna, coaxial cable, or connector; or improper location of a portable antenna. Prolonged operation under these conditions can damage the transmitter.

**TEMP (WARNING LIGHT)**

Flashing of the **TEMP (WARNING LIGHT)** indicates excessive operating temperature within the transmitter. This can be caused by obstructed vent holes in the top or rear of the unit, inoperative cooling fan, or antenna problems. Do not operate RPT-30 until the cause of overheating is corrected!

STEP BY STEP RPT-30 OPERATING PROCEDURE

1. Position **CONTROL** switch to "OFF", then plug RPT-30 into a 115 volt, AC, grounded, 3-prong receptacle.

**W A R N I N G**

**THIS EQUIPMENT MUST BE OPERATED WITH A 3-PRONG, GROUNDED, 115 VOLT AC OUTLET RECEPTACLE! FAILURE TO USE A PROPERLY GROUNDED OUTLET COULD RESULT IN A SAFETY HAZARD OR FAULTY EQUIPMENT PERFORMANCE. IF AN EXTENSION CORD IS USED, IT MUST BE THE THREE-WIRE GROUNDING TYPE TO INSURE SAFETY. DO NOT CUT OFF THE GROUND PIN OF A 3-PRONG PLUG.**



OPERATION (CONTINUED):

2. Connect antenna to the **ANTENNA** connector on the RPT-30 rear panel.
3. Place **CONTROL** switch in "STANDBY" position. (Allow for a 2 minute warmup!)
4. Plug in microphones (Inputs 1-3) or tape player (Input 4 internally switched to "HI" position. See MIC Input Connections, above.) and check operation by observing compression on **METER** and by headset plugged into **MONITOR** jack. Set **GAIN** controls for no more than -3 VU audio compression on the **METER**.
5. To transmit, move **CONTROL** switch to "TRANSMIT" position. The **METER** should read 0 VU  $\pm$ 3 VU with **METER** switch in "RF OUTPUT" position.
6. If the **ANTENNA (WARNING LIGHT)** flashes in "TRANSMIT" operation, switch transmitter "OFF" immediately and check antenna, connectors, and coaxial cable. Placing antenna too near a wall or other object can cause **ANTENNA (WARNING LIGHT)** to flash.
7. Flashing of the **TEMP (WARNING LIGHT)** indicates:
  - (a) Obstructed vent holes in top or rear of unit.
  - (b) Fan not operating.
  - (c) Improper tuning, antenna load, or other problems causing excessive heating. *DO NOT OPERATE RPT-30 UNTIL CAUSE OF OVERHEATING IS CORRECTED.*

## RPT-30 THEORY OF OPERATION

Refer to Block Diagram Drawing No. 702-073 and Schematic Diagrams.

### PRE-AMP/MIXER BOARD, 800-251

Each of the four microphone inputs is fed to a low-noise differential op-amp (half of an NE-5532). Critical resistors in the input circuits are low-noise, precision, temperature stable types to obtain maximum performance from the pre-amps. Monolithic chip capacitors are used to filter RF voltages that may be present at the microphone inputs. The four op-amp outputs are fed to gain pots then resistively mixed and routed to the COMPRESSOR BOARD.

### COMPRESSOR BOARD, 800-166

Several functions are performed on this board. Integrated circuit IC-1 serves as a (a) pre-amp (not used on RPT-30), (b) pre-emphasis amplifier, (c) voltage-controlled attenuator, (d) regulator/ripple rejection. Pre-emphasized audio out of IC-1B is fed to IC-1C which forms an automatic gain control loop (compressor). The output of IC-1B is also fed to D2-D3 which form an adjustable series peak-limiting circuit. This circuit is adjusted to limit only audio peaks which get past the compressor. The limiter circuit feeds a low-pass filter (L1, C23, R46) which reduces the audio bandwidth to that specified for the operating channel of the transmitter. To this is mixed the output of the tone encoder, IC-2A, which is a low-distortion Wien bridge oscillator. This composite signal is then fed to the FM Modulator. This audio signal is also fed to IC-2B which amplifies it to a level suitable for a 600  $\Omega$  headphone monitor. IC-2C is a DC amplifier the input of which is connected to the AGC (automatic gain control) circuit and the output of which drives the audio compression meter.

### FM MODULATOR, 800-160

The modulator consists of a voltage-controlled crystal oscillator, Q1, precision voltage regulator, IC-1, and oven heater control, Q2. Precise frequency control is obtained by thermally coupling components Y-1, Q1, Q2, and IC-1 to the temperature-regulated Frequency Control Module No. 800-160-1.

Coarse and fine frequency adjustment is provided by L1 and L2 (F1), L3 and L4 (F2), while channel modulation is provided by a voltage-variable capacitance diode frequency control module. Bias for this diode is obtained through voltage divider resistors R7 and R8. Diode D1 temperature compensates the bias supply.

RPT-30 THEORY OF OPERATION (CONTINUED):

MULTIPLIER BOARD, 800-163

The modulator RF output is frequency-multiplied in the multiplier board to obtain the various operating frequencies listed on the RPT-30 specification sheet.

The multiplication factor for various frequency bands is as follows:

140 - 180 MHz	12 X
200 - 260 MHz	16 X
280 - 340 MHz	24 X
400 - 480 MHz	24 X

The power level at the input to the multiplier is approximately 5 mw. and the output level is 0.9 to 1.5 watts.

RF POWER AMPLIFIER, 800-170-30

RF output of the MULTIPLIER BOARD is connected to the input of the power amplifier board at a 50  $\Omega$  impedance. Transformation of the 50  $\Omega$  input to the base impedance of Q1 is accomplished by C1, C2, and L1, L2, and L3. L4 and L5 provide a path for Q1 base current and the L5-R1 parallel circuit reduces low frequency gain and instability. The RF output power of Q1 is approximately 10 watts and is fed to the base of Q2 by the L-C impedance matching network shown on the schematic. L13 and R2 reduce low frequency gain and instability. RF power at the collector of Q2 is matched to 50  $\Omega$  by the L-C network shown. The collector supply to Q1 and Q2 is de-coupled by L8 and C5-10.

OUTPUT LOW-PASS FILTER, DIRECTIONAL COUPLER, 800-250

RF output from the RF POWER AMPLIFIER passes through a four-section low-pass filter and directional-coupler before reaching the output connector. The directional-coupler is of stripline construction. The forward power sample of this coupler is supplied to the "RF OUTPUT" METER, and the reflected power sample is fed to comparator IC-1A on the METER BOARD and flashes the ANTENNA (WARNING LIGHT) LED to indicate high VSWR. R5 and R6 calibrate the forward and reflected power samples. Circuitry for an optional antenna relay is provided on the board. When installed, this relay switches the antenna from RECVR (receiver) jack to transmitter output for two-way operation.

POWER SUPPLY, 800-249

Board 800-249 contains filter capacitors C1 and C2, voltage adjust pot R1, and reverse polarity protection diodes D1, D2, and D3. The unregulated output voltage of this supply is 17-20 volts, and is supplied from bridge rectifier D1. Series regulator IC-1 is located on the large heat sink at the rear of the transmitter, and supplies 13.5 volts DC at 5 amps.

INPUT/OUTPUT FILTERS, 800-253

All input/output circuits connected to **ACCESSORY** connector, as well as the AC line input, have radio-frequency filters. In addition to the L and C filter components, a reverse polarity protector diode **D2** is located on the 800-253 board.

METER BOARD, 800-252

The **METER**, meter illumination lamp, **ANTENNA (WARNING LIGHT)** and **TEMP (WARNING LIGHT)** LEDs, with their comparator drivers, **IC-1A**, **IC-1B**, are located on the **METER BOARD**.

TEST EQUIPMENT FOR ALIGNMENT OF RPT-30 SERIES TRANSMITTERS

Bird, Model #43, Wattmeter, 50  $\Omega$  impedance  
Bird, 5-Watt Element, 100-250 MHz., or 400-1000 MHz.  
Bird, 50-Watt Element, 100-250 MHz., or 400-1000 MHz.  
Microwave Associates, 50-Watt RF Load, Model 44003  
Kron-Hite, Distortion Analyzer, Model 6801  
Kron-Hite, Oscillator, Model 4500  
Hewlett Packard, Attenuator Set, Model 3500  
Hewlett Packard, Frequency Counter, Model 5383A (option 001)  
Hewlett Packard, Spectrum Analyzer, Model 8558B  
Hewlett Packard, Signal Generator, Model 8654B  
Wavetek, Automatic Modulation Meter, Model 4101  
Beckman, Digital Multimeter, Model 3030  
Triplett, Analog Multimeter, Model 630  
RF Attenuator, adjustable 0-110 dB  
Marconi, RF Signal Generator, Model TF2013

TOOLS FOR ALIGNMENT OF RPT-30 SERIES TRANSMITTERS

GC, 9300, Tuning Tool  
GC, 9440, Tuning Tool  
JFD, 5284, Tuning Tool  
Sprague-Goodman, GTT-5, Tuning Tool  
Xcelite, R184, 1/8" x 4", Screwdriver

**MARTI**  
Electronics, Inc.  
CLEBURNE, TX 76031

DRAWING NO  
702-076

REV.

DATE  
1/07/24/86

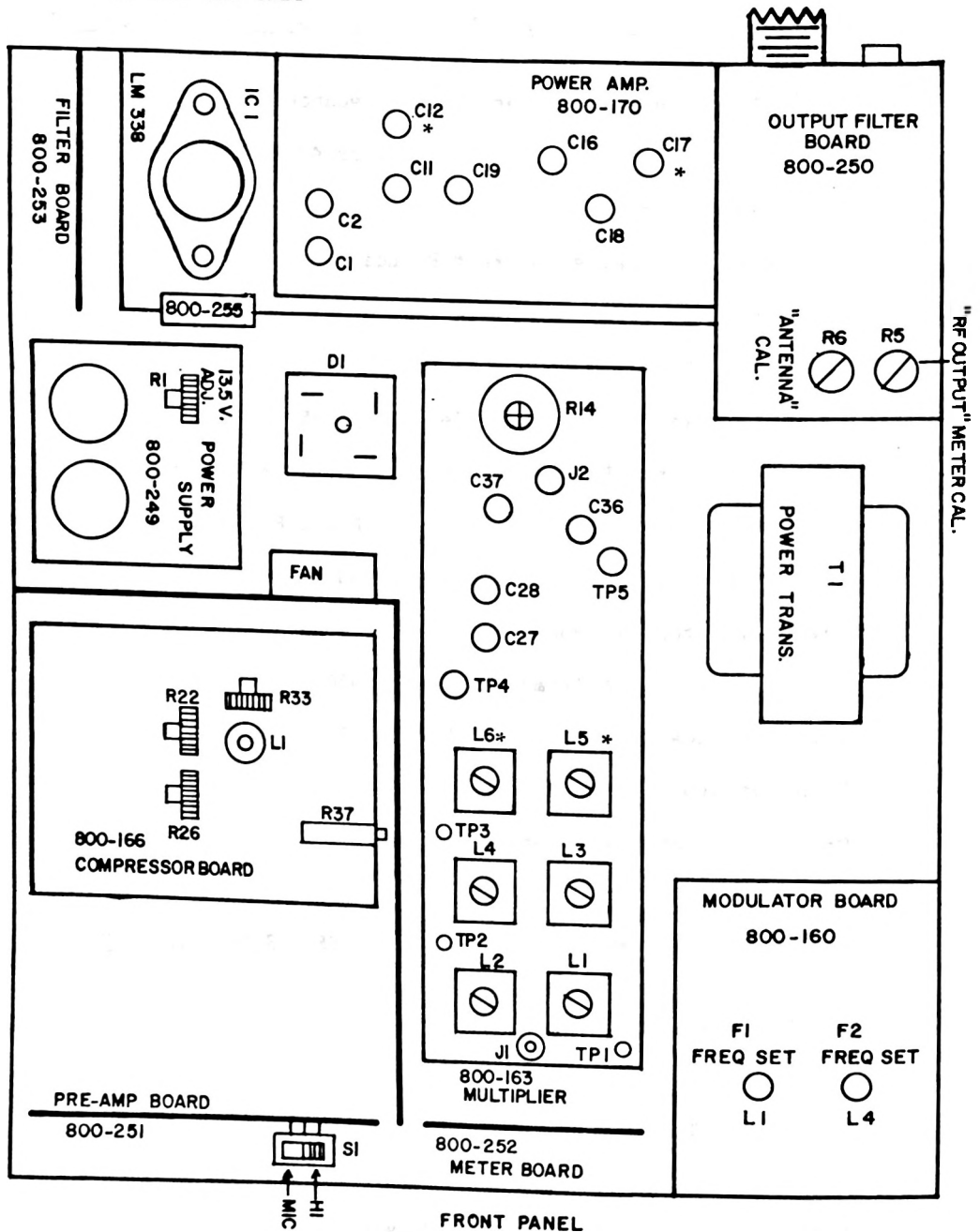
APPROVED

USED ON  
RPT-30

TITLE  
ADJUSTMENT LOCATION DIAGRAM

910-004

\*ON 450 MHZ ONLY



RPT-30 TRANSMITTER TEST REPORT

CUSTOMER: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

Serial #: 320

FREQUENCY No. 1 (F1): 161.76 FREQUENCY No. 2 (F2): 161.64

Modulator Voltage at TP: 5v

100 % Modulation ± 5 KHz. (F1) ± 5 KHz. (F2)

Total DC Current: 5.4 amperes

	<u>140 - 250 MHz</u>	<u>250 - 480 MHz</u>
TP 1	<u>0.35 - 0.70</u>	<u>0.25 - 0.50</u>
TP 2	<u>0.40 - 0.80</u>	<u>0.20 - 0.60</u>
TP 3	<u>NOT USED</u>	<u>0.60 - 1.20</u>
TP 4	<u>0.25 - 0.50</u>	<u>0.45 - 0.90</u>
TP 5	<u>0.30 - 0.60</u>	<u>0.80 - 1.60</u>

- \* 8 volt regulator 7.45 - 7.65
- \* Audio Compressor Meter set at 0 VU
- \* Limiter set
- \* Encode frequency set at 27 Hz
- \* Encode frequency level set at 1 KHz deviation
- \* Set power on 120 volt AC operation at 45 watts
- \* DC voltage on 120 volt AC operation (13.5 volts DC)
- \* Response within specifications (see page 23, paragraph 4)
- \* Distortion within specifications
- \* Signal to noise within specifications
- \* Metering satisfactory

**TEST EQUIPMENT**

Frequency Counter, HP Model 5383A  
Deviation Monitor, Wavetek Model 4101

DATE: 4-11-88

SIGNATURE: EC

## TUNE-UP PROCEDURE FOR RPT-30 SERIES

### POWER SUPPLY VOLTAGE ADJUSTMENT

1. Connect Dummy Load to RF output J4. Remove top cover of transmitter. Connect the positive lead of a 0-20 volt DC, digital voltmeter of 0.2% accuracy (or better) to a connector pin with a red wire on POWER SUPPLY BOARD, 800-049. Connect negative lead to chassis ground.
2. Place CONTROL switch in "TRANSMIT" position and adjust R1 for 13.5 volts, DC.

### LOW-LEVEL RF ADJUSTMENTS

Remove top cover of unit. Remove coaxial cable plug at RF Output jack J2 of Multiplier Board 800-163. Refer to Layout Drawing 702-076 for location of connectors, test points and adjustments.

1. Connect Bird, Model #43 Wattmeter with 5-watt element and 50  $\Omega$  load to J2 of Multiplier Board 800-163. Connect sensitive multimeter (0-3 volt DC range) negative probe to TP-1 of Multiplier Board, and the positive probe to chassis ground. Place CONTROL switch in "TRANSMIT" position and the FREQUENCY switch to "F1" position. A minimum of 0.25 volts should be indicated; if not, see MODULATOR ADJUSTMENTS.
2. Move negative probe of meter to TP-2, adjust L1 and L2 for maximum indication.
3. Move negative probe of meter to TP-3, adjust L3 and L4 for maximum indication.
4. Move negative probe of meter to TP-4, adjust L5 and L6 for maximum indication. NOTE: Omit this step on the 140-180 MHz units.
5. Move negative probe of meter to TP-5, adjust C27 and C28 for maximum indication.
6. Adjust C36 and C37 for maximum indication on the wattmeter connected to J2 with R 14 power pot set for maximum. Adjust power level to approximately 1.2 watts.
7. Place CONTROL switch in "OFF" position. Remove wattmeter from J2 and re-install coaxial cable plug at J2.



POWER AMPLIFIER TUNING ADJUSTMENTS

Connect Bird wattmeter with 50  $\Omega$  load and a 50 watt element (for the correct frequency range) to RPT-30 ANTENNA connector. Connect a 13.5 v. DC regulated bench power supply with an accurate 0-6 Amp. meter to transmitter using POWER CABLE 586-074 (Fig. 2, page 6).

1. Place CONTROL switch in "TRANSMIT" position and tune trimmers, beginning at the RF input and progressing to the output circuits. Reset power output potentiometer R14 on MULTIPLIER BOARD, 800-163 for rated power.
2. Adjust collector output matching capacitors (C16, C17, C18) in the final stage for *best efficiency* at rated output by slightly retuning for minimum current at rated power out. Total current to the transmitter is approximately:

140 - 180 MHz	45 watts	4.75 - 5.50 amps
200 - 260 MHz	40 watts	4.00 - 5.00 amps
280 - 340 MHz	35 watts	4.00 - 4.85 amps
400 - 480 MHz	30 watts	4.00 - 4.85 amps

3. Place CONTROL switch in "OFF", remove ammeter, resolder red wire. Replace power amp cover with the four screws. Recheck power output and adjust R14 if necessary.

MODULATOR ADJUSTMENTS

Connect dummy load with sampling attenuator to ANTENNA connector of transmitter. Connect an accurate standard FM deviation meter and frequency counter to sampling attenuator. Place CONTROL switch in "TRANSMIT" position.

1. Measure bias voltage at TP (test point) of MODULATOR BOARD, 800-160 using sensitive DC voltmeter. This voltage should be between 4.5 and 5.8 volts DC.
2. Set transmitter on frequency by adjusting L1 with FREQUENCY switch in "F1" position and by adjusting L4 in "F2" position. If necessary, coarse adjustment can be made using L2 (F1) and L3 (F2).
3. Feed a 2500 Hz audio tone into MIC Input 4 (HIGH LEVEL) and set level for 3 VU gain reduction on "AUDIO COMPR" METER. Set deviation pot R1 (F1) and pot R2 for correct deviation specified by the FCC for the assigned frequencies. *Encode switch should be off during this adjustment.*

Refer to SPECIFICATION SHEET!

4. Remove 2500 Hz tone. Place ENCODE switch in "ON" position and adjust encode level pot R33 on AUDIO BOARD, 800-166 for 1.0 KHz

## RPT-30 TUNE-UP PROCEDURE (CONTINUED):

deviation.

### AUDIO ADJUSTMENTS

1. With no audio input, switch **METER** to "AUDIO COMPR" position and set "0 VU Adjust" pot R22 on **AUDIO BOARD, 800-166** to read 0 VU on the meter.
2. With **ENCODE** switch "OFF", connect a harmonic distortion analyzer to the audio output of the Marti receiver being used with the RPT-30. Feed a 100  $\mu$ volt (microvolt) signal from the transmitter into the receiver RF input. (from the sampling attenuator. NEVER FEED THE OUTPUT OF THE RPT-30 DIRECTLY INTO A RECEIVER!! The input stage of the receiver will be INSTANTLY destroyed!) Modulate the transmitter with a 2500 Hz tone at 3 dB compression. Turn "Limit Level" pot R26 on **AUDIO BOARD, 800-166** to maximum counter-clockwise position. Note distortion. It should be less than 2%. Slowly turn R26 clockwise until an additional 0.1% distortion is indicated on the distortion meter.
3. With **ENCODE** switch "ON" and using a Marti receiver having a subaudible decoder which has been set to 27 Hz by an audio generator of at least 1% accuracy, adjust "Encode Frequency" pot R37 for maximum indication on the "DECODE SIGNAL LEVEL" **METER** of the receiver.
4. Connect an audio voltmeter to the output terminals of the Marti receiver. Feed a 100  $\mu$ volt signal into the receiver from an RF attenuator/sampler connected to the output of the transmitter. Using an audio signal generator connected to MIC Input 4 (HIGH LEVEL) of the transmitter with a level 20 dB below compression level at 2500 Hz, sweep the audio over the audio response range for the transmitter model number being aligned.

Refer to **SPECIFICATION** sheet!

At the maximum specified response frequency adjust the tuning slug in coil L1 on **AUDIO BOARD, 800-166** for maximum level or best response curve.

### FREQUENCY MEASUREMENT

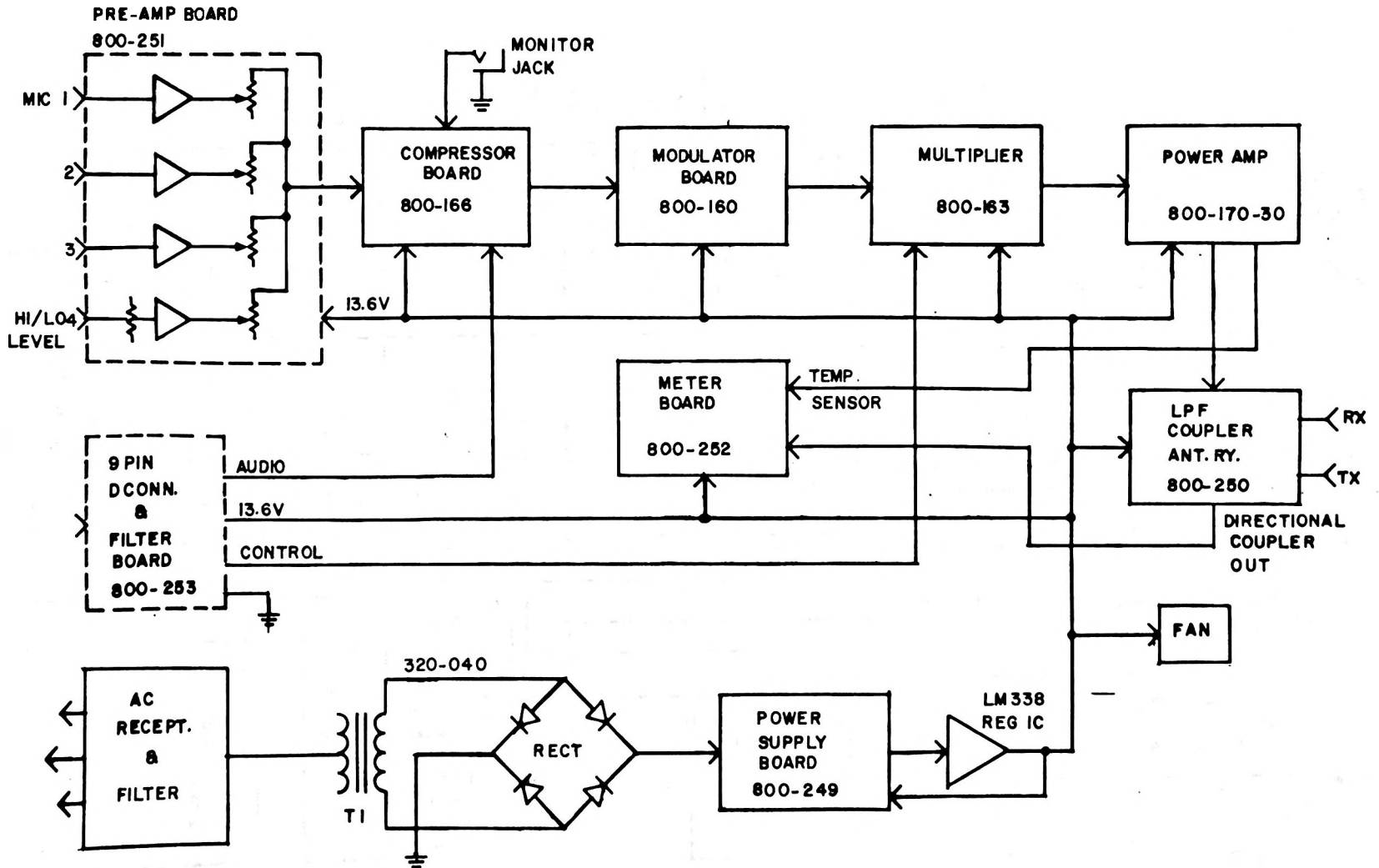
The RF output frequency of this transmitter should be measured and adjusted as often as necessary to insure on-frequency operation and to comply with regulations. Frequency measurement can be made at the **FREQ. TEST** jack (RCA phono plug) on the transmitter rear panel. The adjustment procedure is covered in the section MODULATOR ADJUSTMENTS.

## FUNCTION OF SEMICONDUCTORS IN RPT-30

<u>DEVICE</u> <u>DESIGNATION</u>	<u>REFERENCE</u> <u>SCHEMATIC</u>	<u>FUNCTION</u>
IC-1A	800-166	Integrated Circuit, Microphone Pre-amplifier
IC-1B	800-166	Integrated Circuit, Pre-emphasis Audio Amplifier
IC-1B	800-166	Integrated Circuit, Audio Rectifier and Voltage- Controlled Audio Attenuator (Compressor)
IC-1D	800-166	Integrated Circuit, Power Supply, Electronic Filter
IC-2A	800-166	Integrated Circuit, Encode Oscillator
IC-2B	800-166	Integrated Circuit, Audio Monitor Amplifier
IC-2C	800-166	Integrated Circuit, D.C. Amplifier for Audio Compression Meter
D1	800-166	Diode, Voltage Level Sensor for fast recovery time constant for Compressor
D2	800-166	Diode, Positive Peak Limiter
D3	800-166	Diode, Negative Peak Limiter
D4	800-166	Diode, Oscillator Amplitude Limiting
D5	800-166	Diode, Oscillator Amplitude Limiting
D6	800-166	Diode, Polarity Sensor for Compression Meter
IC-1	800-160	Integrated Circuit, Voltage Regulator
Q1	800-160	Transistor, Crystal Oscillator
Q2	800-160	Transistor, Darlington Amplifier for Temperature Control circuit
D1	800-160	Diode, Temperature Compensation
800-160-1	800-160	Module, Frequency Control
Q1	800-163	Transistor, Frequency Tripler
Q2	800-163	Transistor, Frequency Doubler
Q3	800-163	Transistor, Frequency Doubler
Q4	800-163	Transistor, Frequency Doubler
Q5	800-163	Transistor, RF Amplifier
D1	800-163	Diode, RF Sensing
Q1	800-170	Transistor, RF Driver
Q2	800-170	Transistor, Final RF Amplifier
D1	702-076	Diode, Power Rectifier
IC-1	800-249	Integrated Circuit, Voltage Regulator
D1	800-249	Diode, Reverse Voltage Protector for IC-1
D2	800-249	Diode, Reverse Voltage Protector for IC-1
D3	800-249	Diode, Reverse Voltage Protector for Transmitter
D1	800-250	Diode, Forward Power Sensor
D2	800-250	Diode, Reverse Power Sensor
D1	800-252	LED, "ANTENNA (WARNING LIGHT)" Indicator

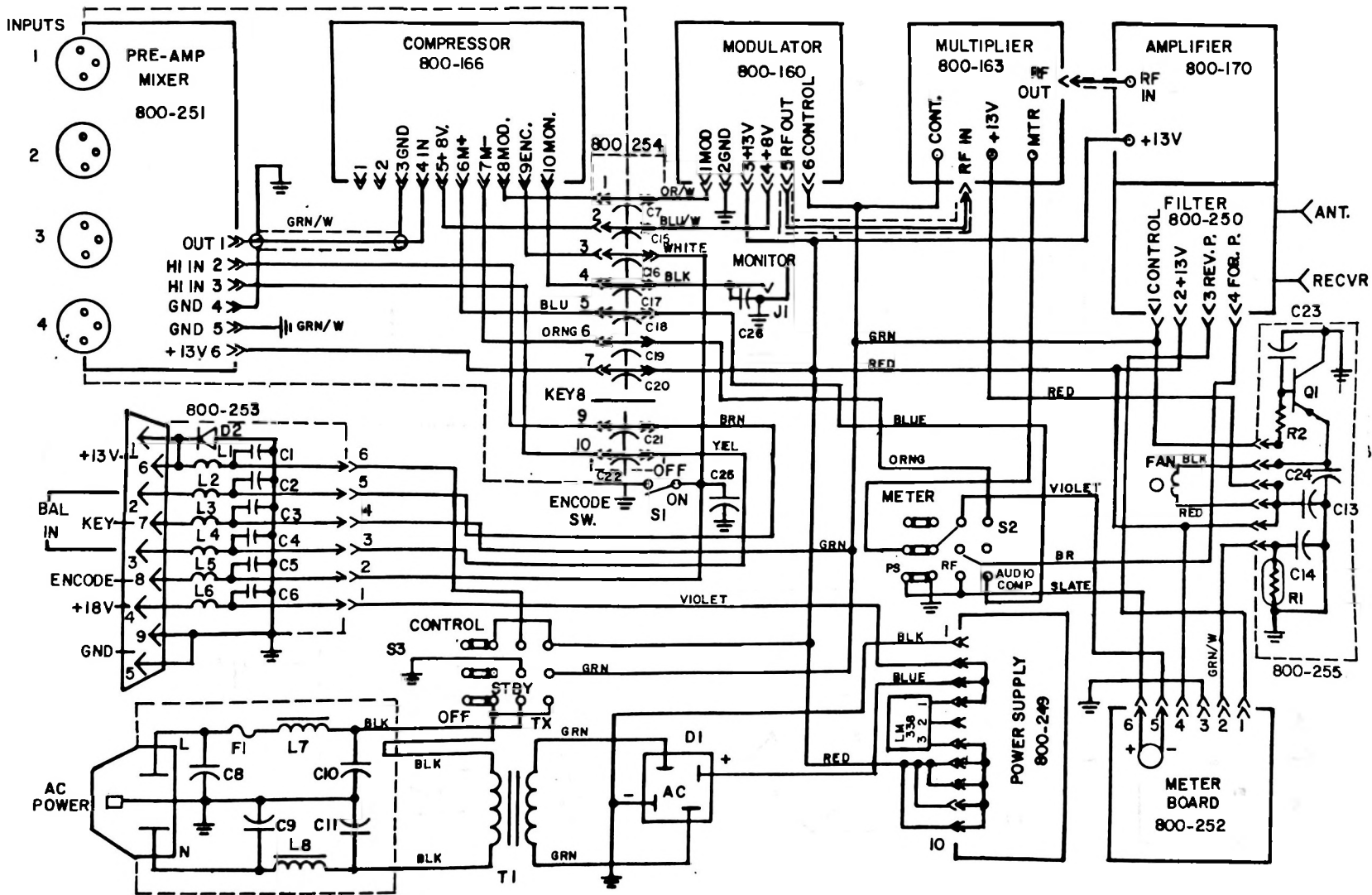
FUNCTION OF SEMICONDUCTORS IN RPT-30 (CONTINUED):

D2	800-252	LED, "TEMP (WARNING LIGHT)" Indicator
D3	800-252	Diode, Zener 11 v. Reference voltage for Comparators
IC-1	800-252	Integrated Circuit, Dual voltage Comparator for D1, D2
IC-1	800-251	Integrated Circuit, Dual Low-Noise Preamp
IC-2	800-251	Integrated Circuit, Dual Low-Noise Preamp



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<b>MARTI Electronics, Inc.</b> PO BOX 661 CLEBURNE, TX 76031	DRAWING NO.	REV.	DATE	APPROVED	USED ON	TITLE
	702-073		9/22/86		RPT-30	BLOCK DIAGRAM



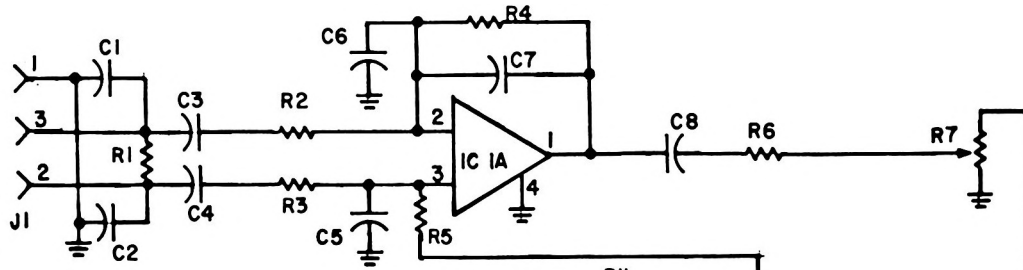
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	702-074		9/24/86		RPT-30	MAIN FRAME

**PARTS LIST**  
**RPT-30 MAIN FRAME**

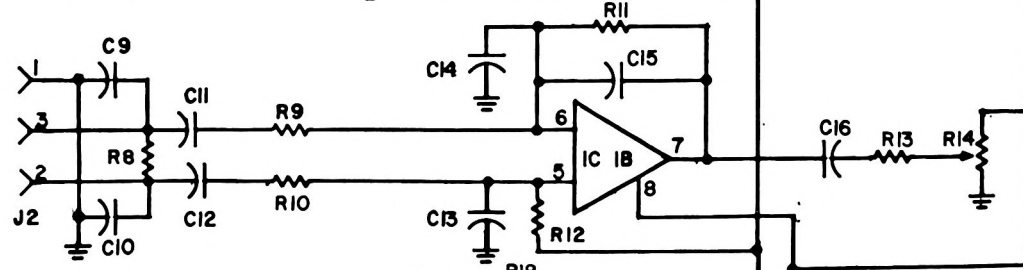
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C 1	270-102	Capacitor, 1000 pF 50 v 5% Monolithic Chip
C 2	270-102	Capacitor, 1000 pF 50 v 5% Monolithic Chip
C 3	270-102	Capacitor, 1000 pF 50 v 5% Monolithic Chip
C 4	270-102	Capacitor, 1000 pF 50 v 5% Monolithic Chip
C 5	270-102	Capacitor, 1000 pF 50 v 5% Monolithic Chip
C 6	270-102	Capacitor, 1000 pF 50 v 5% Monolithic Chip
C 7	270-102	Capacitor, 1000 pF 50 v 5% Monolithic Chip
C 8	297-201	Capacitor, .0022 $\mu$ F 6000 v 20% Type AU Disc
C 9	297-201	Capacitor, .0022 $\mu$ F 6000 v 20% Type AU Disc
C10	297-201	Capacitor, .0022 $\mu$ F 6000 v 20% Type AU Disc
C11	297-201	Capacitor, .0022 $\mu$ F 6000 v 20% Type AU Disc
C12	270-102	Capacitor, 1000 pF 50 v 5% Monolithic Chip
C13	270-102	Capacitor, 1000 pF 50 v 5% Monolithic Chip
C14	270-102	Capacitor, 1000 pF 50 v 5% Monolithic Chip
C15	270-102	Capacitor, 1000 pF 50 v 5% Monolithic Chip
C16	270-102	Capacitor, 1000 pF 50 v 5% Monolithic Chip
C17	270-102	Capacitor, 1000 pF 50 v 5% Monolithic Chip
C18	270-102	Capacitor, 1000 pF 50 v 5% Monolithic Chip
C19	270-102	Capacitor, 1000 pF 50 v 5% Monolithic Chip
C20	270-102	Capacitor, 1000 pF 50 v 5% Monolithic Chip
C21	270-102	Capacitor, 1000 pF 50 v 5% Monolithic Chip
C22	270-102	Capacitor, 1000 pF 50 v 5% Monolithic Chip
C23	299-151	Capacitor, 15 $\mu$ F 25 v Tantalum
C24	270-102	Capacitor, 1000 pF 50 v 5% Monolithic Chip
C25	268-102	Capacitor, .001 $\mu$ F 25 v Z5U Disc
C26	268-102	Capacitor, .001 $\mu$ F 25 v Z5U Disc
D 1	410-020	Diode, Bridge Rectifier
D 2	415-401	Diode, 1N5402
F 1	510-133	Fuse, 1.5 Amp. 3AG
FAN	510-231	Fan, AIF60111
J 1	550-083	Connector, Tiny-Jax #41
L 1	330-019	Inductor, VK20010-3B
L 2	330-018	Inductor, 10 $\mu$ H
L 3	330-007	Inductor, 1 $\mu$ H
L 4	330-007	Inductor, 1 $\mu$ H
L 5	330-007	Inductor, 1 $\mu$ H
L 6	330-019	Inductor, VK20010-3B
L 7	330-019	Inductor, VK20010-3B
L 8	330-019	Inductor, VK20010-3B
Q 1	422-907	Transistor, 2N2907A
R 1	120-002	Thermistor, 142-102-FAC-A01
R 2	145-271	Resistor, 270 $\Omega$ 1/4 watt 5%
S 1	530-001	Switch, DPDT 11A-1255
S 2	530-021	Switch, TPTT 11H-1086
S 3	530-021	Switch, TPTT 11H-1086
T 1	320-044	Transformer, Power, 120 volt primary
T 1	320-044A	Transformer, Power, 220 volt primary
T 1	320-044B	Transformer, Power, 240 volt primary

INPUT

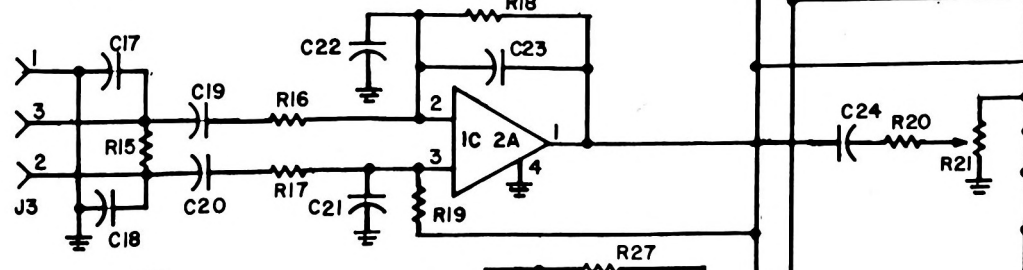
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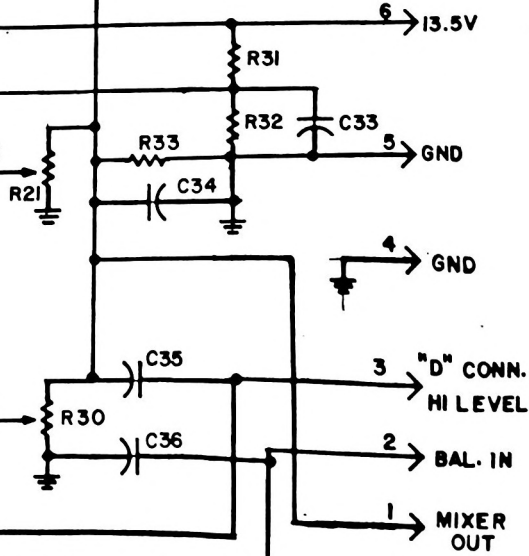
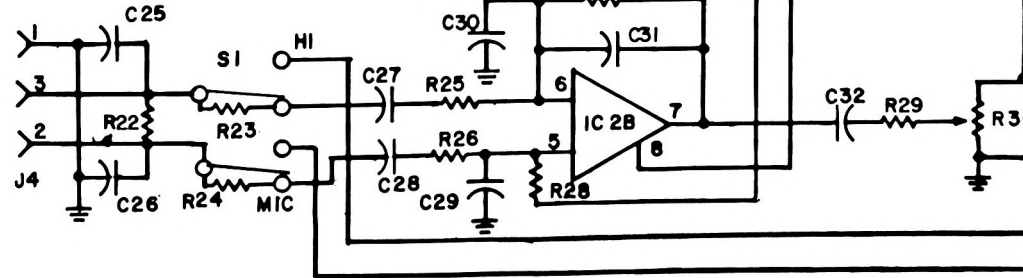
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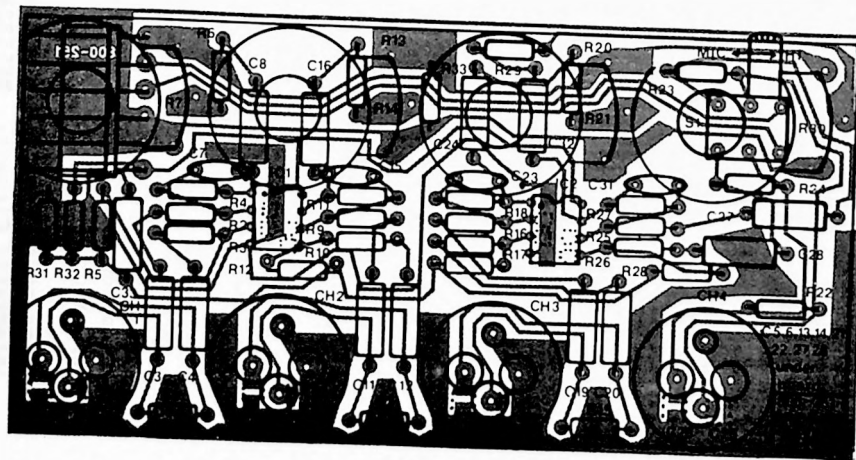
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29

<b>MARTI Electronics Inc.</b> PO BOX 661 CLEBURNE, TX 76031	DRAWING NO	REV.	DATE	APPROVED	USED ON	TITLE
	800-251		9/19/86		RPT-30	PRE-AMP./MIXER





**MARTI** *Electronics, Inc.*  
PO BOX 661 CLEBURNE, TX 76031

DRAWING NO  
800-251-1

REV.

DATE  
11/3/86

APPROVED

USED ON  
RPT-30

TITLE  
PRE-AMP/MIXER PARTS LOCATOR

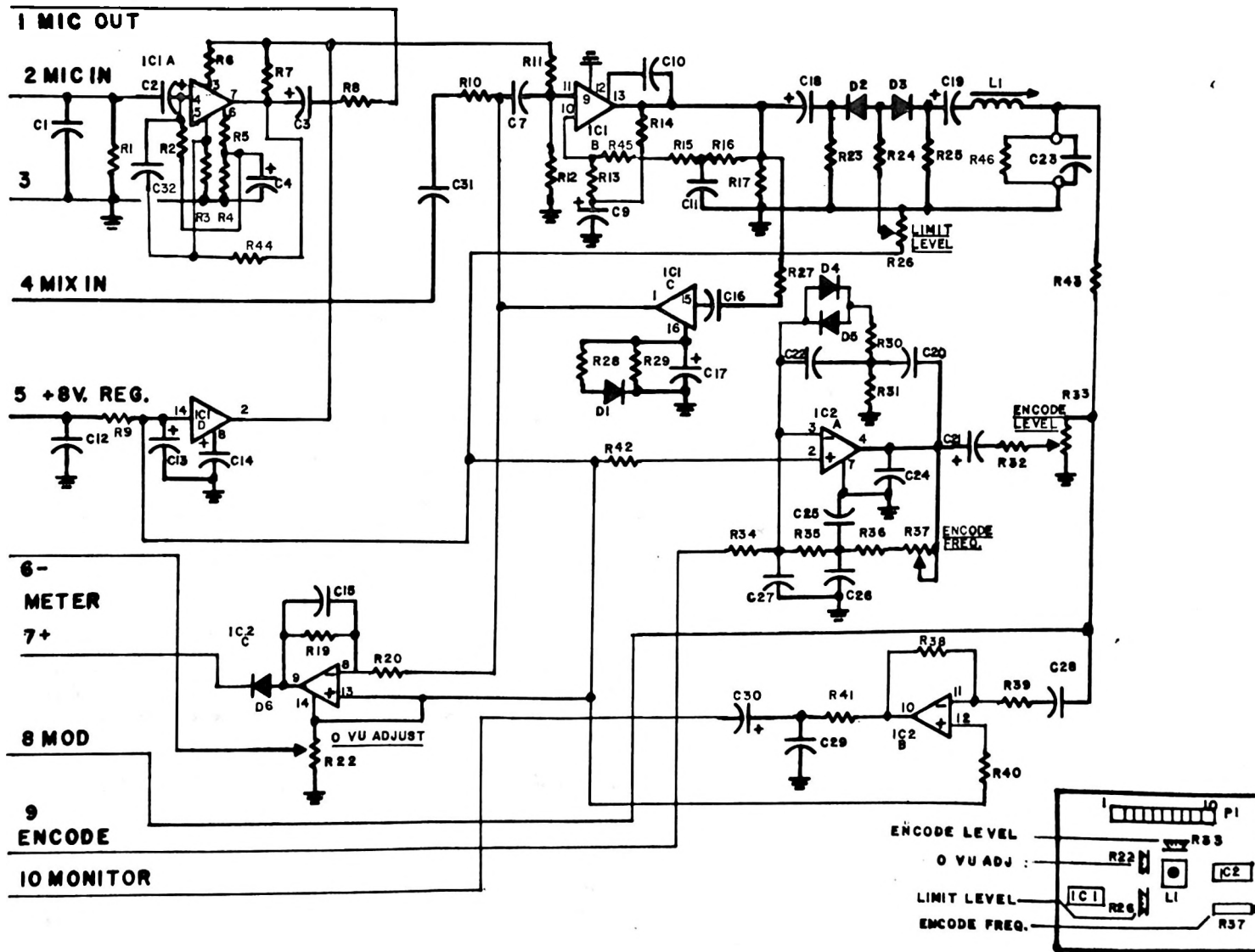
**PARTS LIST**  
**RPT-30 PRE-AMP/MIXER BOARD, 800-251**

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
C 1	270-102	Capacitor, 1000 pF 50 v 5% Monolithic Chip
C 2	270-102	Capacitor, 1000 pF 50 v 5% Monolithic Chip
C 3	270-200	Capacitor, 22 $\mu$ F 25 v Electrolytic
C 4	270-200	Capacitor, 22 $\mu$ F 25 v Electrolytic
C 5	270-270	Capacitor, 27 pF 50 v 5% Monolithic Chip
C 6	270-270	Capacitor, 27 pF 50 v 5% Monolithic Chip
C 7	255-100	Capacitor, 10 pF 50 v 5% NPO Disc
C 8	219-200	Capacitor, 22 $\mu$ F 25 v 5% Monolithic Chip
C 9	270-102	Capacitor, 1000 pF 50 v 5% Monolithic Chip
C10	270-102	Capacitor, 1000 pF 50 v 5% Monolithic Chip
C11	219-200	Capacitor, 22 $\mu$ F 25 v Electrolytic
C12	270-200	Capacitor, 22 $\mu$ F 25 v Electrolytic
C13	270-270	Capacitor, 27 pF 50 v 5% Monolithic Chip
C14	270-270	Capacitor, 27 pF 50 v 5% Monolithic Chip
C15	255-100	Capacitor, 10 pF 50 v 5% NPO Disc
C16	219-200	Capacitor, 22 $\mu$ F 15 v Electrolytic
C17	270-102	Capacitor, 1000 pF 50 v 5% Monolithic Chip
C18	270-102	Capacitor, 1000 pF 50 v 5% Monolithic Chip
C19	219-200	Capacitor, 22 $\mu$ F 25 v Electrolytic
C20	219-200	Capacitor, 22 $\mu$ F 25 v Electrolytic
C21	270-270	Capacitor, 27 pF 50 v 5% Monolithic Chip
C22	270-270	Capacitor, 27 pF 50 v 5% Monolithic Chip
C23	255-100	Capacitor, 10 pF 50 v 5% NPO Disc
C24	219-200	Capacitor, 22 $\mu$ F 25 v Electrolytic
C25	270-102	Capacitor, 1000 pF 50 v 5% Monolithic Chip
C26	270-102	Capacitor, 1000 pF 50 v 5% Monolithic Chip
C27	219-200	Capacitor, 22 $\mu$ F 25 v Electrolytic
C28	219-200	Capacitor, 22 $\mu$ F 25 v Electrolytic
C29	270-270	Capacitor, 27 pF 50 v 5% Monolithic Chip
C30	270-270	Capacitor, 27 pF 50 v 5% Monolithic Chip
C31	255-100	Capacitor, 10 pF 50 v 5% NPO Disc
C32	219-200	Capacitor, 22 $\mu$ F 25 v Electrolytic
C33	270-102	Capacitor, 1000 pF 50 v 5% Monolithic Chip
C34	270-102	Capacitor, 1000 pF 50 v 5% Monolithic Chip
C35	270-102	Capacitor, 1000 pF 50 v 5% Monolithic Chip
C36	270-102	Capacitor, 1000 pF 50 v 5% Monolithic Chip
IC1	405-532	Integrated Circuit, NE5532AN
IC2	405-532	Integrated Circuit, NE5532AN
J 1	550-155	Connector, 3 Pin Microphone
J 2	550-155	Connector, 3 Pin Microphone
J 3	550-155	Connector, 3 Pin Microphone
J 4	550-155	Connector, 3 Pin Microphone
R 1	145-222	Resistor, 2200 $\Omega$ 1/4 W 5%
R 2	145-561	Resistor, 560 $\Omega$ 1/4 W 5%
R 3	145-561	Resistor, 560 $\Omega$ 1/4 W 5%
R 4	145-104-1	Resistor, 100K $\Omega$ 1/4 W 2% Corning
R 5	145-104-1	Resistor, 100K $\Omega$ 1/4 W 2% Corning
R 6	145-153	Resistor, 15K $\Omega$ 1/4 W 5%

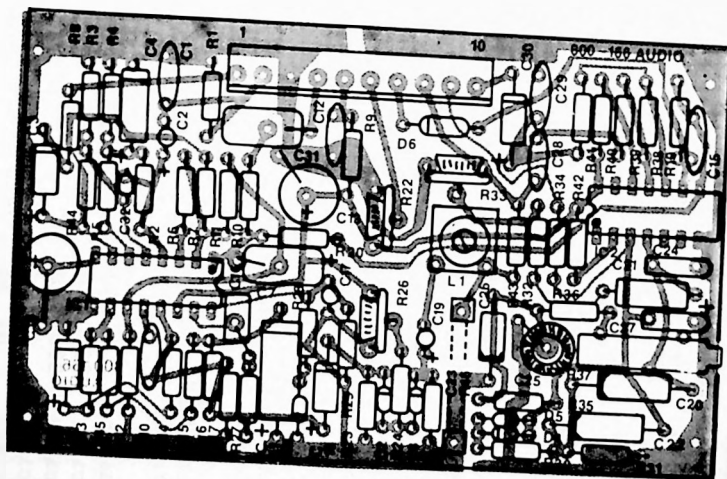
PARTS LIST RPT30 PRE-AMP/MIXER BOARD, 800-251 (CONT)

R 7	100-143	Potentiometer 25K $\Omega$	1/2 W		Linear Taper
R 8	145-222	Resistor, 2200 $\Omega$	1/4 W	5%	
R 9	145-561	Resistor, 560 $\Omega$	1/4 W	5%	
R10	145-561	Resistor, 560 $\Omega$	1/4 W	5%	
R11	145-104-1	Resistor, 100K $\Omega$	1/4 W	2%	Corning
R12	145-104-1	Resistor, 100K $\Omega$	1/4 W	2%	Corning
R13	145-153	Resistor, 15K $\Omega$	1/4 W	5%	
R14	100-143	Potentiometer 25K $\Omega$	1/2 W		Linear Taper
R15	145-222	Resistor, 2200 $\Omega$	1/4 W	5%	
R16	145-561	Resistor, 560 $\Omega$	1/4 W	5%	
R17	145-561	Resistor, 560 $\Omega$	1/4 W	5%	
R18	145-104-1	Resistor, 100K $\Omega$	1/4 W	2%	Corning
R19	145-104-1	Resistor, 100K $\Omega$	1/4 W	2%	Corning
R20	145-153	Resistor, 15K $\Omega$	1/4 W	5%	
R21	100-143	Potentiometer 25K $\Omega$	1/2 W		Linear Taper
R22	145-222	Resistor, 2200 $\Omega$	1/4 W	5%	
R23	145-364-1	Resistor, 360K $\Omega$	1/4 W	5%	
R24	145-364-1	Resistor, 360K $\Omega$	1/4 W	5%	
R25	145-561	Resistor, 560 $\Omega$	1/4 W	5%	
R26	145-561	Resistor, 560 $\Omega$	1/4 W	5%	
R27	145-104-1	Resistor, 100K $\Omega$	1/4 W	2%	Corning
R28	145-104-1	Resistor, 100K $\Omega$	1/4 W	2%	Corning
R29	145-153	Resistor, 15K $\Omega$	1/4 W	5%	
R30	100-143	Potentiometer 25K $\Omega$	1/2 W		Linear Taper
R31	145-223	Resistor, 22K $\Omega$	1/4 W	5%	
R32	145-223	Resistor, 22K $\Omega$	1/4 W	5%	
R33	145-562	Resistor, 5600 $\Omega$	1/4 W	5%	
S 1	530-051	Switch, 11N-1023			

*Ne5532 F = 778A  
ECO*



<b>MARTI Electronics, Inc.</b> PO BOX 661 CLEBURNE, TX 76031	DRAWING NO	REV	DATE	APPROVED	USED ON	TITLE
	800-166	87/86	2/5/81	DWG	RPT2 RPT15	AUDIO BOARD



**MARTI** *Electronics, Inc.*  
PO BOX 661 CLEBURNE, TX 76031

DRAWING NO  
800-166-1

REV.

DATE  
11/3/86

APPROVED

USED ON  
RPT-30

TITLE  
AUDIO PARTS LOCATOR

**PARTS LIST**  
**RPT-30 AUDIO BOARD, 800-166**

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>				
C 1	256-471	Capacitor,	470	pF		10% X5F Disc
C 2	299-470	Capacitor,	4.7	μF	16 v	Tantalum
C 3	219-080	Capacitor,	10	μF	25 v	Electrolytic
C 4	219-200	Capacitor,	22	μF	25 v	Electrolytic
C 5		Capacitor,				NOT USED
C 6		Capacitor,				NOT USED
C 7	226-274	Capacitor,	.27	μF	100 v	10% NOT USED
C 8		Capacitor,				NOT USED
C 9	209-121	Capacitor,	150	μF	6.3v	Electrolytic
C10	256-680	Capacitor,	68	pF		Silver Mica
C11	215-822	Capacitor,	8200	pF		Polystyrene
C12	217-104	Capacitor,	.01	μF	25 v	Discap
C13	219-251	Capacitor,	220	μF	25 v	Electrolytic
C14	219-251	Capacitor,	220	μF	25 v	Electrolytic
C15	256-471	Capacitor,	470	pF		10% X5F Disc
C16	226-104	Capacitor,	.1	μF	100 v	10% Polycarbonate
C17	299-470	Capacitor,	4.7	μF	16 v	Tantalum
C18	219-080	Capacitor,	10	μF	25 v	Electrolytic
C19	299-470	Capacitor,	4.7	μF	16 v	Tantalum
C20	215-123	Capacitor,	12000	pF		Polystyrene
C21	219-200	Capacitor,	22	μF	25 v	Electrolytic
C22	215-123	Capacitor,	12000	pF		Polystyrene

For Emission Designator 10F3 (±1.5 KHz Deviation)

C23	215-223	Capacitor,	22000	pF		Polystyrene
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For Emission Designator 25F3 (±4.0 KHz Deviation)

C23	215-242	Capacitor,	2400	pF		Polystyrene
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For Emission Designator 50F3 (±8.0 KHz Deviation)

C23	215-242	Capacitor,	2400	pF		Polystyrene
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C24	255-470-1	Capacitor,	47	pF		Silver Mica
C25	215-223	Capacitor,	22000	pF		Polystyrene
C26	215-392	Capacitor,	3900	pF		Polystyrene
C27	255-470-1	Capacitor,	47	pF		Silver Mica
C28	217-104	Capacitor,	.01	μF	25 v	Discap GMV
C29	256-471	Capacitor,	470	pF		10% X5F Disc
C30	219-200	Capacitor,	22	μF	25 v	Electrolytic
C31	226-274	Capacitor,	.27	μF	100 v	10% Polycarbonate
C32	236-152	Capacitor,	1500	pF	100 v	10%

D 1	410-914	Diode,	1N4148			
D 2	410-914	Diode,	1N4148			
D 3	410-914	Diode,	1N4148			
D 4	410-914	Diode,	1N4148			
D 5	410-914	Diode,	1N4148			
D 6	410-007	Diode,	1N4007			

IC1	401-054	Integrated Circuit,	Audio Processor			
IC2	403-900	Integrated Circuit,	MC3401P			

PARTS LIST RPT30 AUDIO BOARD, 800-166 (CONT)

L 1	350-032	Inductor,	387-150M		
R 1	145-102	Resistor,	1000 $\Omega$	1/4 W	5%
R 2	145-473	Resistor,	47K $\Omega$	1/4 W	5%
R 3	145-181	Resistor,	180 $\Omega$	1/4 W	5%
R 4	145-681	Resistor,	680 $\Omega$	1/4 W	5%
R 5	145-151	Resistor,	150 $\Omega$	1/4 W	5%
R 6	145-104	Resistor,	100K $\Omega$	1/4 W	5%
R 7	145-332	Resistor,	3.3K $\Omega$	1/4 W	5%
R 8	145-392	Resistor,	3.9K $\Omega$	1/4 W	5%
R 9	145-030	Resistor,	3.3 $\Omega$	1/4 W	5%
R10	145-392	Resistor,	3.9K $\Omega$	1/4 W	5%
R11	145-104	Resistor,	100K $\Omega$	1/4 W	5%
R12	145-104	Resistor,	100K $\Omega$	1/4 W	5%
R13	145-331	Resistor,	330 $\Omega$	1/4 W	5%
R14	145-822	Resistor,	8.2K $\Omega$	1/4 W	5%
R15	145-392	Resistor,	3.9K $\Omega$	1/4 W	5%
R16	145-333	Resistor,	33K $\Omega$	1/4 W	5%
R17	145-221	Resistor,	220 $\Omega$	1/4 W	5%
R18		Resistor,			NOT USED
R19	145-225	Resistor,	2.2M $\Omega$	1/4 W	5%
R20	145-474	Resistor,	470K $\Omega$	1/4 W	5%
R21		Resistor,			NOT USED
R22	100-104-1	Potentiometer	100K $\Omega$		Trimmer
R23	145-222	Resistor,	2.2K $\Omega$	1/4 W	5%
R24	145-272	Resistor,	2.7K $\Omega$	1/4 W	5%
R25	145-472	Resistor,	4.7K $\Omega$	1/4 W	5%
R26	100-104-1	Potentiometer	100K $\Omega$		Trimmer
R27	145-222	Resistor,	2.2K $\Omega$	1/4 W	5%
R28	145-225	Resistor,	2.2M $\Omega$	1/4 W	5%
R29	145-106	Resistor,	10M $\Omega$	1/4 W	5%
R30	145-106	Resistor,	10M $\Omega$	1/4 W	5%
R31	145-224-1	Resistor,	221K $\Omega$	1/4 W	5%
R32	145-223	Resistor,	22K $\Omega$	1/4 W	5%
R33	100-104-1	Potentiometer	100K $\Omega$	1/4 W	5%
R34	145-103	Resistor,	10K $\Omega$	1/4 W	5%
R35	145-474-1	Resistor,	475K $\Omega$	1/4 W	1%
R36	145-474-1	Resistor,	475K $\Omega$	1/4 W	1%
R37	100-105	Potentiometer	1M $\Omega$		Corning Corning Cermet
R38	145-105	Resistor,	1M $\Omega$	1/4 W	5%
R39	145-105	Resistor,	1M $\Omega$	1/4 W	5%
R40	145-225	Resistor,	2.2M $\Omega$	1/4 W	5%
R41	145-561	Resistor,	560 $\Omega$	1/4 W	5%
R42	145-225	Resistor,	2.2M $\Omega$	1/4 W	5%
R43	145-102	Resistor,	1000 $\Omega$	1/4 W	5%
R44	145-822	Resistor,	8.2K $\Omega$	1/4 W	5%
R45	145-272	Resistor,	2.7K $\Omega$	1/4 W	5%

For Emission Designator 10F3 ( $\pm 1.5$  KHz Deviation)

R46 145-392 Resistor, 3.9K  $\Omega$  1/4 W 5%

For Emission Designator 25F3 ( $\pm 4.0$  KHz Deviation)

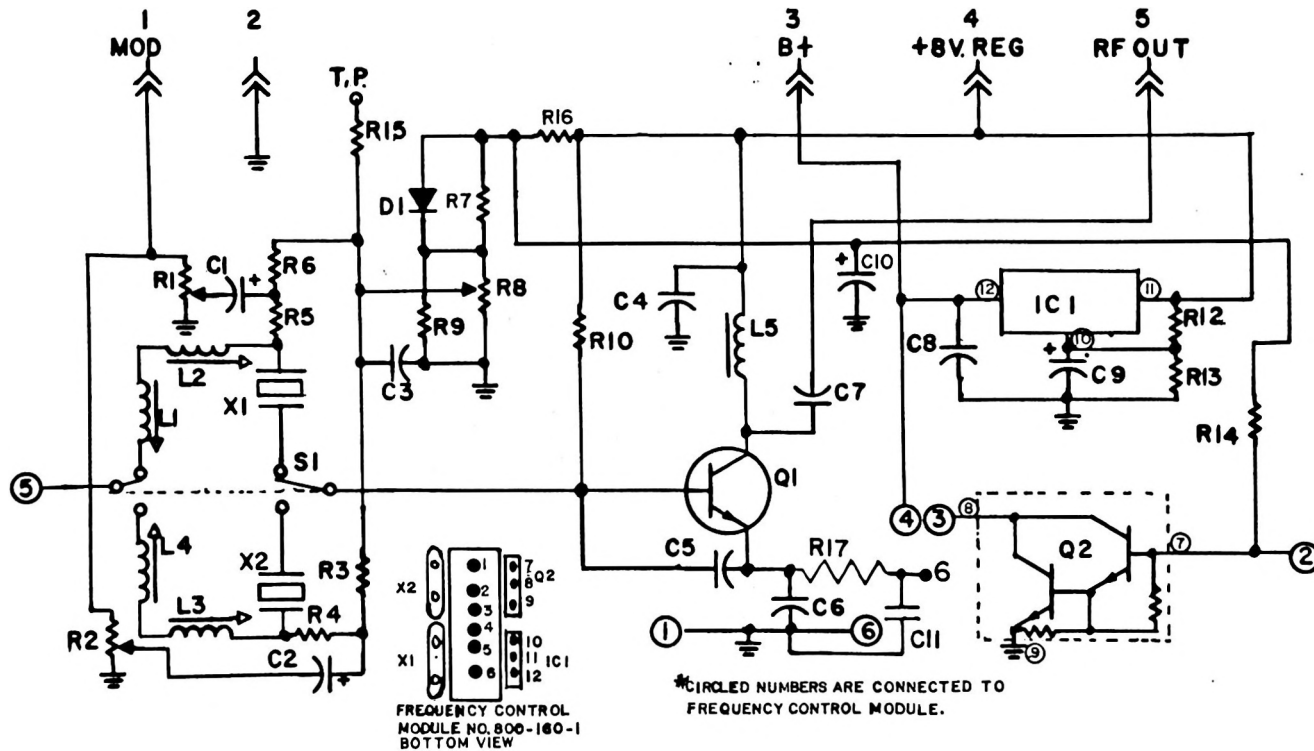
R46 145-682 Resistor, 6.8K  $\Omega$  1/4 W 5%

PARTS LIST RPT30 AUDIO BOARD, 800-166 (CONT)

For Emission Designator 50F3 (+8.0 KHz Deviation)

R46 145-153 Resistor, 15K  $\Omega$  1/4 W 5X





**MARTI Electronics, Inc.**  
PO BOX 661  
CLEBURNE, TX 76031

DRAWING NO.  
800-160

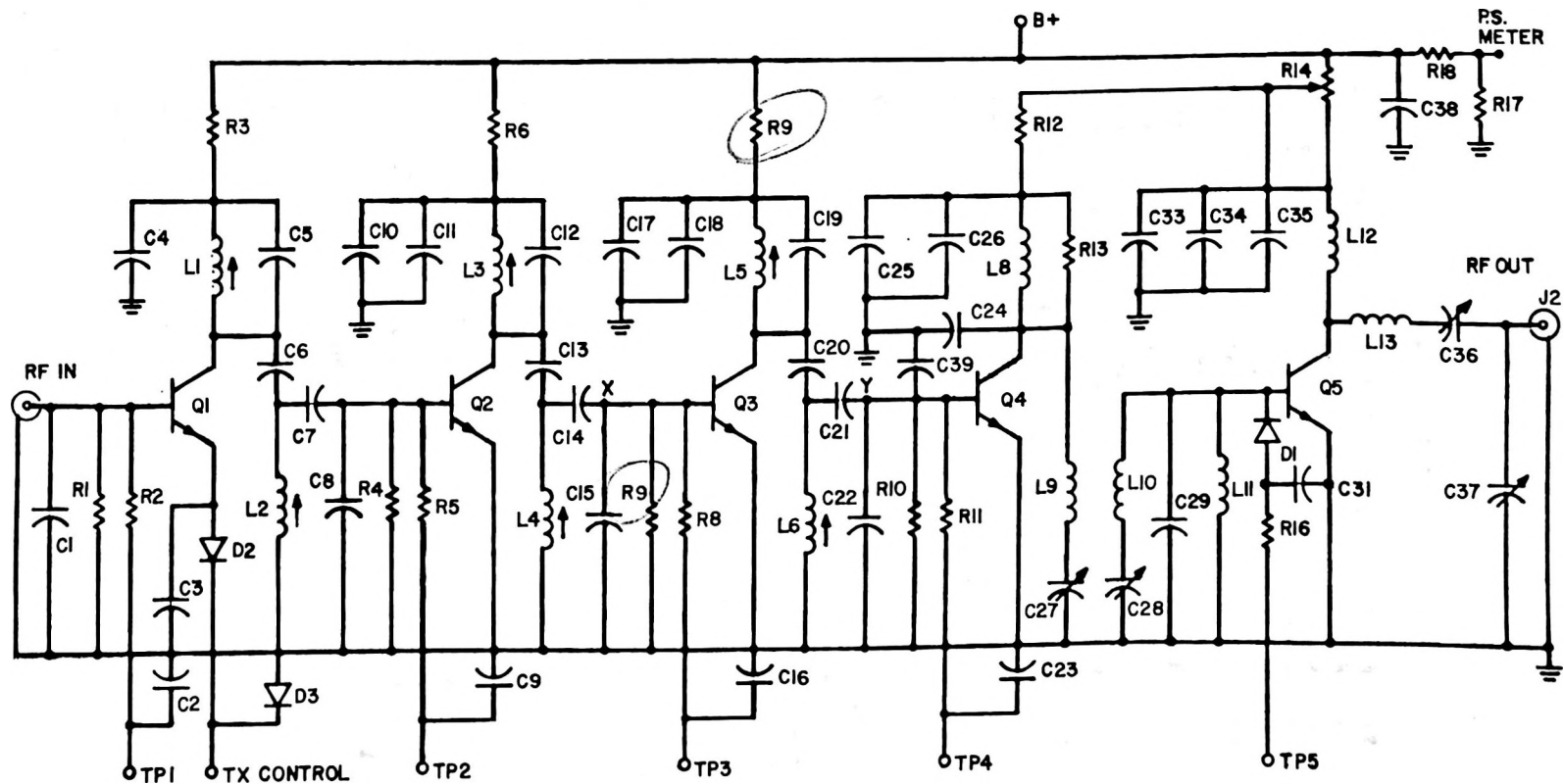
REV.  
8/86

DATE  
2/4/81

APPROVED  
DWG

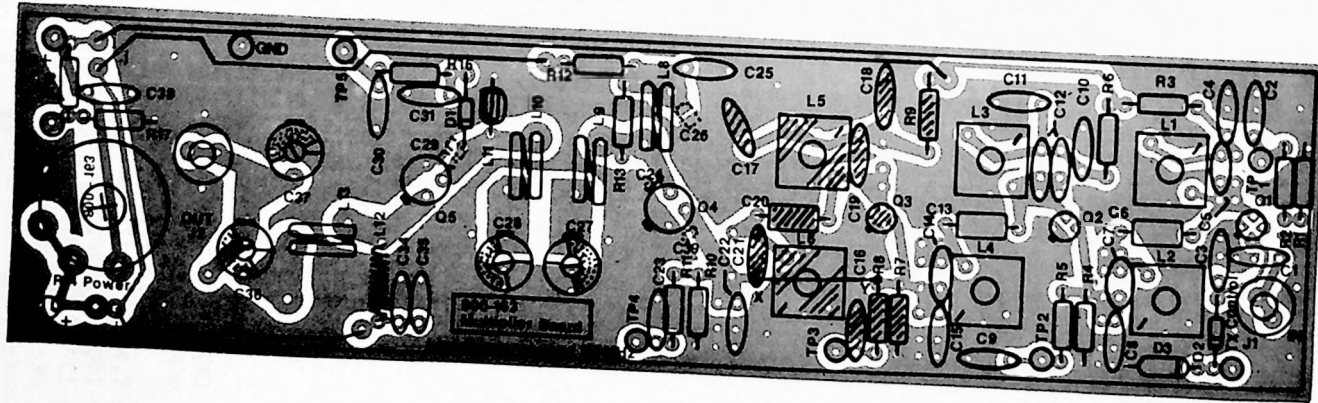
USED ON  
RPT2  
RPT15

TITLE  
MODULATOR, DUAL FREQUENCY



NOTE: FOR OPERATING FREQUENCIES BELOW 300 MHZ Q3 IS OMITTED AND A WIRE IS CONNECTED BETWEEN POINTS X AND Y.  
R19 USED ON 150 MHZ ONLY

<b>MARTI Electronics, Inc.</b> PO BOX 661 CLEBURNE, TX 76031	DRAWING NO	REV.	DATE	APPROVED	USED ON	TITLE
	800-163		1/11/84		SPL-10 RPT-2&15	MULTIPLIER BOARD



**MARTI** Electronics, Inc.  
PO BOX 661 CLEBURNE, TX 76031

DRAWING NO.  
800-163-1

REV.

DATE  
11/3/86

APPROVED

USED ON  
RPT-30

TITLE  
MULTIPLIER PARTS LOCATOR

**PARTS LIST**  
**RPT-30 MULTIPLIER BOARD, 800-163**

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>BAND (MHz)</u>
C 1	255-241	Capacitor, 240 pF	5% Silver Mica 140-165
C 1	255-161	Capacitor, 160 pF	5% Silver Mica 165-180
C 1	255-241	Capacitor, 240 pF	5% Silver Mica 200-260
C 1	256-301	Capacitor, 300 pF 50 v	5% NPO Disc 280-340
C 1	255-220	Capacitor, 22 pF 50 v	5% NPO Disc 400-480
C 2	217-104	Capacitor, .01 $\mu$ F 25 v	GMV Disc
C 3	268-102	Capacitor, .001 $\mu$ F 500 v	Z5U Disc 140-180
C 3	217-104	Capacitor, .01 $\mu$ F 25 v	GMV Disc 200-480
C 4	217-104	Capacitor, .01 $\mu$ F 25 v	GMV Disc
C 5	256-750	Capacitor, 75 pF	5% Silver Mica 140-180
C 5	255-470-1	Capacitor, 47 pF	5% Silver Mica 200-260
C 5	256-750	Capacitor, 75 pF	5% Silver Mica 280-340
C 5	255-390	Capacitor, 39 pF	5% Silver Mica 400-480
C 6	255-020	Capacitor, 2 pF	5% Type QC 140-260
C 6	255-040	Capacitor, 3.9 pF	5% Type QC 280-340
C 6	255-020	Capacitor, 2 pF	5% Type QC 400-480
C 7	256-151	Capacitor, 150 pF 50 v	5% NPO Disc 140-180
C 7	256-680	Capacitor, 68 pF	5% Silver Mica 200-260
C 7	256-151	Capacitor, 150 pF 50 v	5% NPO Disc 280-340
C 7	256-680	Capacitor, 68 pF	5% Silver Mica 400-480
C 8	255-241	Capacitor, 240 pF	5% Silver Mica 140-180
C 8	256-131	Capacitor, 130 pF 50 v	5% NPO Disc 200-260
C 8	255-241	Capacitor, 240 pF	5% Silver Mica 280-340
C 8	256-151	Capacitor, 150 pF 50 v	5% NPO Disc 400-480
C 9	217-104	Capacitor, .01 $\mu$ F 25 v	GMV Disc
C10	268-102	Capacitor, .001 $\mu$ F 500 v	Z5U Disc
C11	217-103	Capacitor, .1 $\mu$ F 100 v	Mylar
C12	256-680	Capacitor, 68 pF	5% Silver Mica 140-180
C12	255-470-1	Capacitor, 47 pF	5% Silver Mica 140-165
C12	255-470-1	Capacitor, 47 pF	5% Silver Mica 165-180
(parallel)	255-120	Capacitor, 12 pF 50 v	5% NPO Disc
C12	255-270	Capacitor, 27 pF 50 v	5% NPO Disc 200-260
C12	256-680	Capacitor, 68 pF	5% Silver Mica 280-340
C12	255-270	Capacitor, 27 pF 50 v	5% NPO Disc
(parallel)	255-030-1	Capacitor, 3 pF 50 v	5% NPO Disc 400-480
C13	255-020	Capacitor, 2 pF	5% Type QC 140-180
C13	255-040	Capacitor, 3.9 pF	5% Type QC 200-340
C13	255-010	Capacitor, 1 pF	5% Type QC 400-480
C14	256-680	Capacitor, 68 pF	5% Silver Mica
(parallel)	255-220	Capacitor, 22 pF 50 v	5% NPO Disc 140-160
C14	256-680	Capacitor, 68 pF	5% Silver Mica 160-165
C14	255-470	Capacitor, 47 pF	5% Silver Mica
(parallel)	255-120	Capacitor, 12 pF 50 v	5% NPO Disc 165-180
C14	255-470-1	Capacitor, 47 pF	5% Silver Mica 200-160
C14	256-131	Capacitor, 130 pF 50 v	5% NPO Disc 280-340
C14	255-470-1	Capacitor, 47 pF	5% Silver Mica 400-480
C15		Capacitor,	NOT USED 140-180
C15	255-241	Capacitor, 240 pF	5% Silver Mica 200-260
C15	256-131	Capacitor, 130 pF 50 v	5% NPO Disc 300-340
C15	255-750	Capacitor, 75 pF 50 v	5% NPO Disc 400-480
C16	268-102	Capacitor, .001 $\mu$ F 500 v	Z5U Disc 280-480

RPT-30 MULTIPLIER BOARD, 800-163 (CONT.)

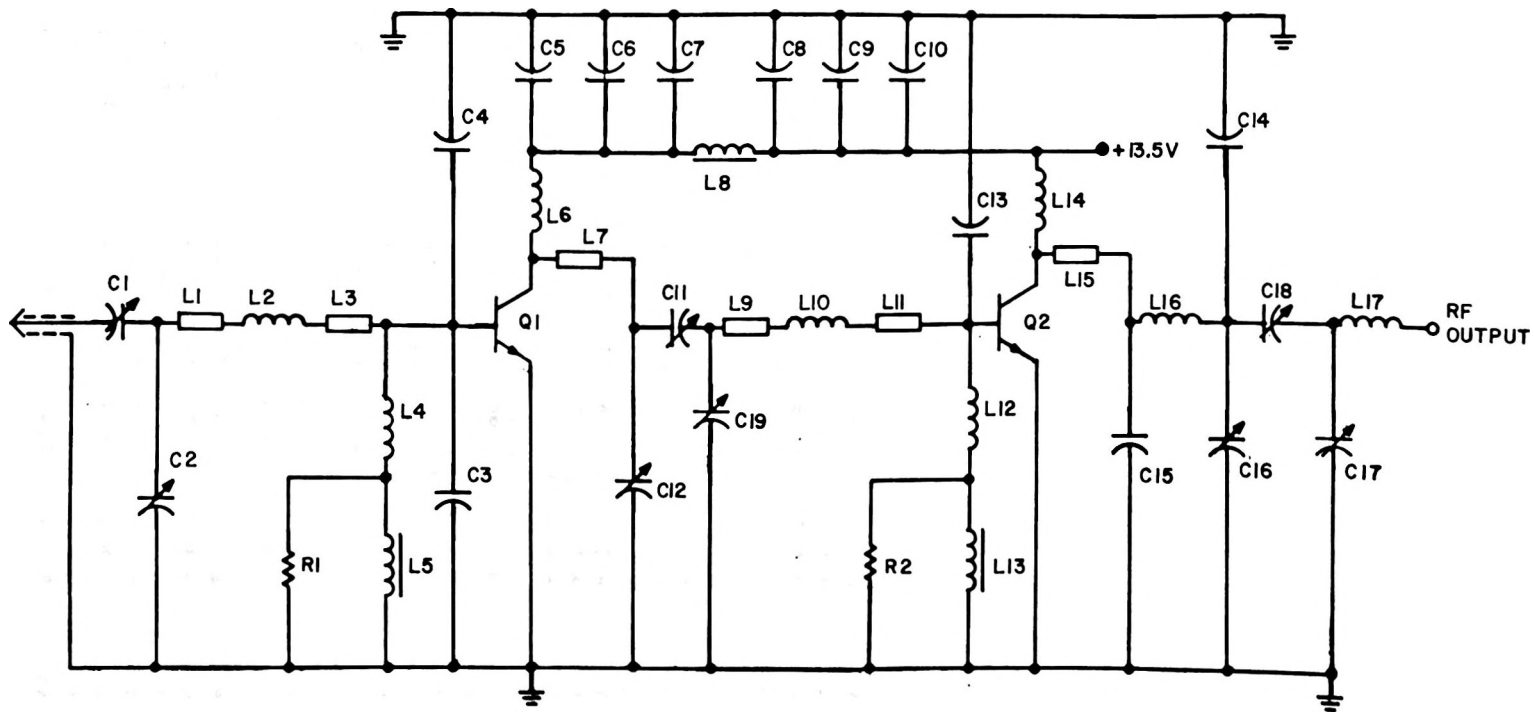
C16	217-104	Capacitor,	.01 $\mu$ F	25 v	Disc	200-260
C16		Capacitor,			NOT USED	140-180
C17		Capacitor,			NOT USED	140-260
C17	217-103	Capacitor,	.1 $\mu$ F	100 v	Mylar	280-480
C18		Capacitor,			NOT USED	140-180
C18	268-102	Capacitor,	.001 $\mu$ F	500 v	Z5U Disc	200-480
C19		Capacitor,			NOT USED	140-180
C19	255-270	Capacitor,	27 pF	5%	NPO Disc	200-260
(parallel)	255-050	Capacitor,	5 pF	5%	NPO Disc	
C19	255-270	Capacitor,	27 pF	5%	NPO Disc	280-340
C19	255-110	Capacitor,	11 pF	5%	NPO Disc	400-480
C20		Capacitor,			NOT USED	140-180
C20	255-040	Capacitor,	3.9 pF		Type QC	200-260
C20	255-020	Capacitor,	2 pF		Type QC	280-340
C20	255-010	Capacitor,	1 pF		Type QC	400-480
C21		Capacitor,			NOT USED	140-180
C21	295-390	Capacitor,	39 pF	5%	NPO Disc	200-260
C21	255-470-1	Capacitor,	47 pF	5%	Silver Mica	280-340
C21	255-140	Capacitor,	14 pF	5%	NPO Disc	400-480
C22	256-131	Capacitor,	130 pF	5%	NPO Disc	140-180
C22		Capacitor,			NOT USED	200-260
C22	295-390	Capacitor,	39 pF	5%	NPO Disc	280-340
C22	255-270	Capacitor,	27 pF	5%	NPO Disc	400-480
C23	268-102	Capacitor,	.001 $\mu$ F	500 v	Z5U Disc	
C24	270-270	Capacitor,	27 pF		Monolithic Chip	140-180
C24	270-100	Capacitor,	10 pF		Monolithic Chip	200-260
C24	270-220	Capacitor,	22 pF		Monolithic Chip	280-340
C24	270-100	Capacitor,	10 pF		Monolithic Chip	400-480
C25	268-102	Capacitor,	.001 $\mu$ F	500 v	Disc	
C26	270-102	Capacitor,	1000 pF		Monolithic Chip	
C27	230-109	Capacitor,	1.9-15.7 pF		Trimmer	140-180
C27	230-103	Capacitor,	1.3-5.4 pF		Trimmer	200-260
C27	230-109	Capacitor,	1.9-15.7 pF		Trimmer	280-340
C27	230-103	Capacitor,	1.3-5.4 pF		Trimmer	400-480
C28	230-109	Capacitor,	1.9-15.7 pF		Trimmer	140-180
C28	230-103	Capacitor,	1.3-5.4 pF		Trimmer	200-160
C28	230-103	Capacitor,	1.3-5.4 pF		Trimmer	400-480
C29	270-201	Capacitor,	200 pF		Monolithic Chip	140-180
C29	270-680	Capacitor,	68 pF		Monolithic Chip	200-260
C29	270-220	Capacitor,	22 pF		Monolithic Chip	280-340
C29	270-220	Capacitor,	22 pF		Monolithic Chip	
(parallel)	270-407	Capacitor,	4.7 pF		Monolithic Chip	400-480
C30	268-102	Capacitor,	.001 pF	500 v	Z5U Disc	
C31	253-471	Capacitor,	470 pF	50 v 10%	Y5P Disc	
C32		Capacitor,			NOT USED	
C33	299-470	Capacitor,	4.7 $\mu$ F	16 v	Tantalum	
C34	268-102	Capacitor,	.001 $\mu$ F	500 v	Z5U Disc	
C35	217-103	Capacitor,	.1 $\mu$ F	100 v	Mylar	
C36	290-523	Capacitor,	3.5-36 pF		Trimmer	140-340
C36	230-106	Capacitor,	1.7-11 pF		Trimmer	400-480
C37	290-523	Capacitor,	3.5-36 pF		Trimmer	140-340
C37	230-103	Capacitor,	1.3-5.4 pF		Trimmer	400-480
C38	268-102	Capacitor,	.001 $\mu$ F	500 v	Disc	
C39		Capacitor,			NOT USED	140-180

RPT-30 MULTIPLIER BOARD, 800-163 (CONT.)

C39	270-220	Capacitor,	22 pF		Monolithic Chip	200-260
C39		Capacitor,			NOT USED	280-340
C39	270-100	Capacitor,	10 pF		Monolithic Chip	
D 1	412-494	Diode, 1N270				
D 2	412-494	Diode, 1N270				
D 3	414-007	Diode, 1N4007				
L 1	350-040	Inductor, 6.5 turn	Blue	Variable		140-180
L 1	350-037	Inductor, 13.5 turn	Orange	Variable		200-260
L 1	350-040	Inductor, 6.5 turn	Blue	Variable		280-480
L 2	350-040	Inductor, 6.5 turn	Blue	Variable		140-180
L 2	350-037	Inductor, 13.5 turn	Orange	Variable		200-260
L 2	350-040	Inductor, 6.5 turn	Blue	Variable		280-480
L 3	350-039	Inductor, 2.5 turn	Red	Variable		140-180
L 3	350-040	Inductor, 6.5 turn	Blue	Variable		200-260
L 3	350-039	Inductor, 2.5 turn	Red	Variable		280-480
L 4	350-039	Inductor, 2.5 turn	Red	Variable		140-180
L 4	350-040	Inductor, 6.5 turn	Blue	Variable		200-260
L 4	350-039	Inductor, 2.5 turn	Red	Variable		280-480
L 5		Inductor,		NOT USED		140-180
L 5	350-039	Inductor, 2.5 turn	Red	Variable		200-260
L 5	350-038	Inductor, 1.5 turn	Brown	Variable		280-480
L 6		Inductor,		NOT USED		140-180
L 6	350-039	Inductor, 2.5 turn	Red	Variable		200-260
L 6	350-038	Inductor, 1.5 turn				280-480
L 7		Inductor,		NOT USED		
L 8	350-152	Inductor, 6 turn	22 AWG CW			140-340
L 8	350-120	Inductor, 1.5 turn	14 AWG CW			400-480
L 9	350-153	Inductor, 4 turn	22 AWG CW			140-180
L 9	350-110	Inductor, 6 turn	20 AWG CW			200-260
L 9	350-120	Inductor, 1.5 turn	14 AWG CW			280-480
L10	350-153	Inductor, 4 turn	20 AWG CW			140-180
L10	350-154	Inductor, 5 turn	20 AWG CW			200-260
L10	350-120	Inductor, 1.5 turn	14 AWG CW			280-480
L11	513-016	Inductor, 10 turn	Ferrite			140-180
L11	513-016	Inductor, 4 turn	Ferrite			200-340
L11	513-016	Inductor, 3 turn	Ferrite			400-480
L12	350-155	Inductor, 15 turn	27 AWG CW			140-180
L12	350-121	Inductor, 10 turn	27 AWG CW			200-480
L13	350-156	Inductor, 6 turn	20 AWG CCW			140-180
L13	350-157	Inductor, 5 turn	20 AWG CCW			200-260
L13	350-114	Inductor, 3 turn	16 AWG CCW			280-340
L13	350-118	Inductor, 1.5 turn	14 AWG CCW			400-480
Q 1	440-245	Transistor, SRF-3017				
Q 2	440-245	Transistor, SRF-2017				
Q 3		Transistor,		NOT USED		140-180
Q 3	440-245	Transistor, SRF-3017				200-480
Q 4	424-427	Transistor, SRF-944				
Q 5	420-237	Transistor, BFQ43 or SD1127				140-180
Q 5	420-629	Transistor, BLX65E or SD1444				200-480
R 1	145-102	Resistor, 1000 $\Omega$	1/4 W	5%		

RPT-30 MULTIPLIER BOARD, 800-163 (CONT.)

R 2	145-103	Resistor,	10K $\Omega$	1/4 W	5%	
R 3	145-101	Resistor,	100 $\Omega$	1/4 W	5%	140-180
R 3	145-331	Resistor,	330 $\Omega$	1/4 W	5%	200-340
R 3	145-151	Resistor,	150 $\Omega$	1/4 W	5%	400-480
R 4	145-272	Resistor,	2.7K $\Omega$	1/4 W	5%	
R 5	145-153	Resistor,	15K $\Omega$	1/4 W	5%	
R 6	145-680	Resistor,	68 $\Omega$	1/4 W	5%	
R 7		Resistor,				NOT USED 140-180
R 7	145-561	Resistor,	560 $\Omega$	1/4 W	5%	200-260
R 7	145-272	Resistor,	2.7 $\Omega$	1/4 W	5%	280-480
R 8		Resistor,				NOT USED 140-180
R 8	145-103	Resistor,	10K $\Omega$	1/4 W	5%	200-260
R 8	145-153	Resistor,	15K $\Omega$	1/4 W	5%	280-480
R 9		Resistor,				NOT USED 140-180
R 9	145-680	Resistor,	68 $\Omega$	1/4 W	5%	200-480
R10	145-331	Resistor,	330 $\Omega$	1/4 W	5%	140-180
R10	145-561	Resistor,	560 $\Omega$	1/4 W	5%	280-480
R11	145-103	Resistor,	10K $\Omega$	1/4 W	5%	
R12	145-680	Resistor,	68 $\Omega$	1/4 W	5%	140-340
R12	145-030	Resistor,	3.3 $\Omega$	1/4 W	5%	400-480
R13	145-471	Resistor,	470 $\Omega$	1/4 W	5%	140-180
R13	145-222	Resistor,	2.2K $\Omega$	1/4 W	5%	200-260
R13	145-152	Resistor,	1.5K $\Omega$	1/4 W	5%	300-340
R13	145-331	Resistor,	330 $\Omega$	1/4 W	5%	400-480
R14	100-101	Potentiometer	100 $\Omega$	2 W		
R15		Resistor,				NOT USED
R16	145-471	Resistor,	470 $\Omega$	1/4 W	5%	140-180
R16	145-472	Resistor,	4.7K $\Omega$	1/4 W	5%	200-480
R17	145-102	Resistor,	1000 $\Omega$	1/4 W	5%	
R18	145-473	Resistor,	47K $\Omega$	1/4 W	5%	



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CAUTION: These transistors use Beryllium Oxide ceramics in their construction. Any mechanical or chemical treatment of these ceramics which produces dust or fumes, even in minute amounts, can be deadly.

<b>MARTI Electronics, Inc.</b> PO BOX 661 CLEBURNE, TX 76031	DRAWING NO	REV.	DATE	APPROVED	USED ON	TITLE
	800-170		10/8/86		RPT-30	RF POWER AMPLIFIER



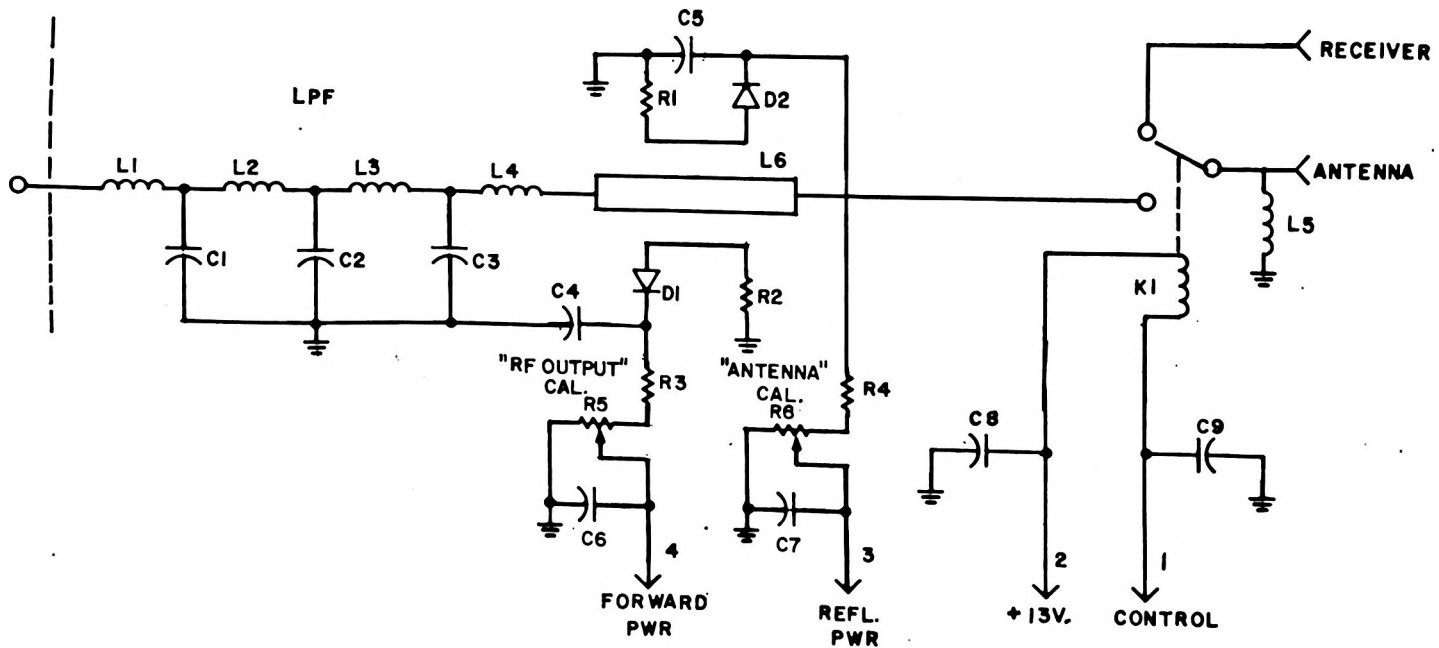
## PARTS LIST

## RPT-30 RF POWER AMPLIFIER BOARD, 800-170

ITEM	PART NO.	DESCRIPTION	BAND (MHz)
C 1	240-602	Capacitor, 25-115 pF	Variable 140-180
C 1	260-300	Capacitor, 8-45 pF	Variable 200-260
C 1	260-200	Capacitor, 4-20 pF	Variable 280-340
C 1	260-100	Capacitor, 2.5-7 pF	Variable 400-480
C 2	240-600	Capacitor, 12-65 pF	Variable 140-180
C 2	260-300	Capacitor, 8-45 pF	Variable 200-260
C 2	260-200	Capacitor, 4-20 pF	Variable 280-340
C 2	260-100	Capacitor, 2.5-7 pF	Variable 400-480
C 3	240-470	Capacitor, 47 pF 350 v 5%	Mica 140-180
C 3	240-750	Capacitor, 75 pF 350 v 5%	Mica 200-260
C 3	240-330	Capacitor, 33 pF 300 v 5%	Mica 280-340
C 3	240-160	Capacitor, 16 pF 300 v 5%	Mica 400-480
C 4		Capacitor,	NOT USED 140-180
C 4		Capacitor,	NOT USED 200-260
C 4	240-220	Capacitor, 22 pF 350 v 5%	Mica 280-340
C 4	240-220	Capacitor, 22 pF 350 v 5%	Mica 400-480
C 5	217-103	Capacitor, .1 $\mu$ F 100 v 10%	Mylar
C 6	219-200	Capacitor, 22 $\mu$ F 25 v	Electrolytic
C 7	236-501	Capacitor, 500 pF 350 v 5%	Mica
C 8	217-103	Capacitor, .1 $\mu$ F 100 v 10%	Mylar
C 9	219-200	Capacitor, 22 $\mu$ F 25 v	Electrolytic
C10	236-501	Capacitor, 500 pF 350 v 5%	Mica
C11	240-602	Capacitor, 25-115 pF	Variable 140-180
C11	260-300	Capacitor, 8-45 pF	Variable 200-260
C11	260-300	Capacitor, 8-45 pF	Variable 280-340
C11	260-200	Capacitor, 4-20 pF	Variable 400-480
C12		Capacitor,	NOT USED 140-180
C12		Capacitor,	NOT USED 200-260
C12		Capacitor,	NOT USED 280-340
C12	260-200	Capacitor, 4-20 pF	Variable 400-480
C13	240-201	Capacitor, 200 pF 350 v 5%	Mica 140-180
C13	240-101	Capacitor, 100 pF 350 v 5%	Mica 200-260
C13	240-220	Capacitor, 22 pF 350 v 5%	Mica 280-340
C13		Capacitor,	NOT USED 400-480
C14	240-220	Capacitor, 22 pF 350 v 5%	Mica 140-180
C14	240-220	Capacitor, 22 pF 350 v 5%	Mica 200-260
C14		Capacitor,	NOT USED 280-340
C14		Capacitor,	NOT USED 400-480
C15		Capacitor,	NOT USED 140-180
C15		Capacitor,	NOT USED 200-260
C15	240-330	Capacitor, 33 pF 350 v 5%	Mica 280-340
C15	240-330	Capacitor, 33 pF 350 v 5%	Mica 400-480
C16	240-600	Capacitor, 12-65 pF	Variable 140-180
C16	260-300	Capacitor, 8-45 pF	Variable 200-260
C16	260-300	Capacitor, 8-45 pF	Variable 280-340
C16	260-300	Capacitor, 4-20 pF	Variable 400-480
C17		Capacitor,	NOT USED 140-180
C17	240-600	Capacitor, 12-65 pF	Variable 200-260
C17	260-300	Capacitor, 8-45 pF	Variable 280-340
C17	260-200	Capacitor, 4-20 pF	Variable 400-480
C18	240-600	Capacitor, 12-65 pF	Variable 140-180

RPT-30 RF POWER AMPLIFIER BOARD, 800-170 (CONT.)

C18	240-602	Capacitor, 25-115 pF	Variable	200-260
C18	240-602	Capacitor, 25-115 pF	Variable	280-340
C18	240-602	Capacitor, 25-115 pF	Variable	400-480
C19	240-600	Capacitor, 12-65 pF	Variable	140-180
C19	260-100	Capacitor, 2.5-7 pF	Variable	200-260
C19	260-200	Capacitor, 4-20 pF	Variable	280-340
C19		Capacitor,	NOT USED	400-480
L 1		Inductor, Microstrip PC		
L 2	350-150	Inductor, Half-turn 16 Ga.		140-180
L 2		Inductor,	NOT USED	200-260
L 2	350-150	Inductor, Half-turn 16 Ga.		280-340
L 2		Inductor,	NOT USED	400-480
L 3		Inductor, Microstrip PC		
L 4	350-117	Inductor, 8 turn		
L 5	330-012	Inductor, 18 $\mu$ H		
L 6	350-117	Inductor, 8 turn		
L 7		Inductor, Microstrip PC		
L 8	330-019	Inductor, VK20010-3B		
L 9		Inductor, Microstrip PC		
L10		Inductor,	NOT USED	140-180
L10	350-150	Inductor, Half-turn 16 Ga.		200-260
L10		Inductor,	NOT USED	280-340
L10		Inductor,	NOT USED	400-480
L11		Inductor, Microstrip PC		
L12	350-117	Inductor, 8 turn		
L13	330-012	Inductor, 18 $\mu$ H		
L14	330-012	Inductor, 18 $\mu$ H		
L15		Inductor, Microstrip PC		
L16	350-151	Inductor, Half-turn 14 Ga.		140-180
L16		Inductor, Microstrip PC		200-260
L16		Inductor, Microstrip PC		280-340
L16		Inductor, Microstrip PC		400-480
L17	350-111	Inductor, 3 turns		140-180
L17	350-143	Inductor, 2 turns		200-260
L17	350-116	Inductor, 1 turn		280-340
L17		Inductor, Copper Strap		400-480
Q 1	420-029	Transistor, VHF 15 Watt		140-180
Q 1	441-433	Transistor, UHF 10 Watt		200-480
Q 2	444-512	Transistor, VHF 45 Watt		140-180
Q 2	443-030	Transistor, UHF 45 Watt		200-480
R 1	145-470	Resistor, 47 $\Omega$ 1/4 W 5%		
R 2	145-470	Resistor, 47 $\Omega$ 1/4 W 5%		



**MARTI** Electronics Inc.  
PO BOX 661 CLEBURNE, TX 76031

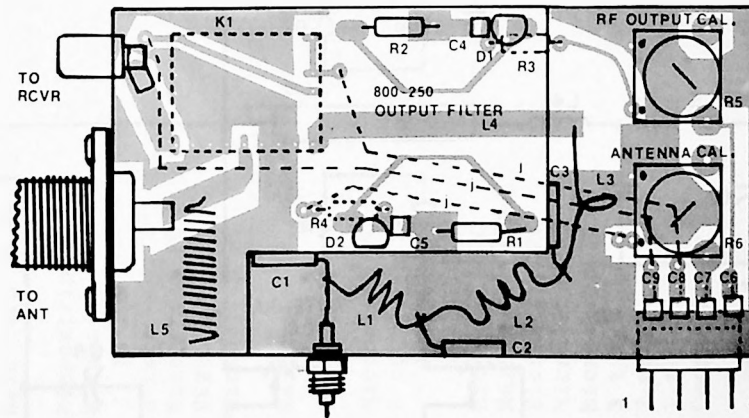
DRAWING NO.  
800-250

REV. DATE  
9/19/86

APPROVED

USED ON  
RPT-30

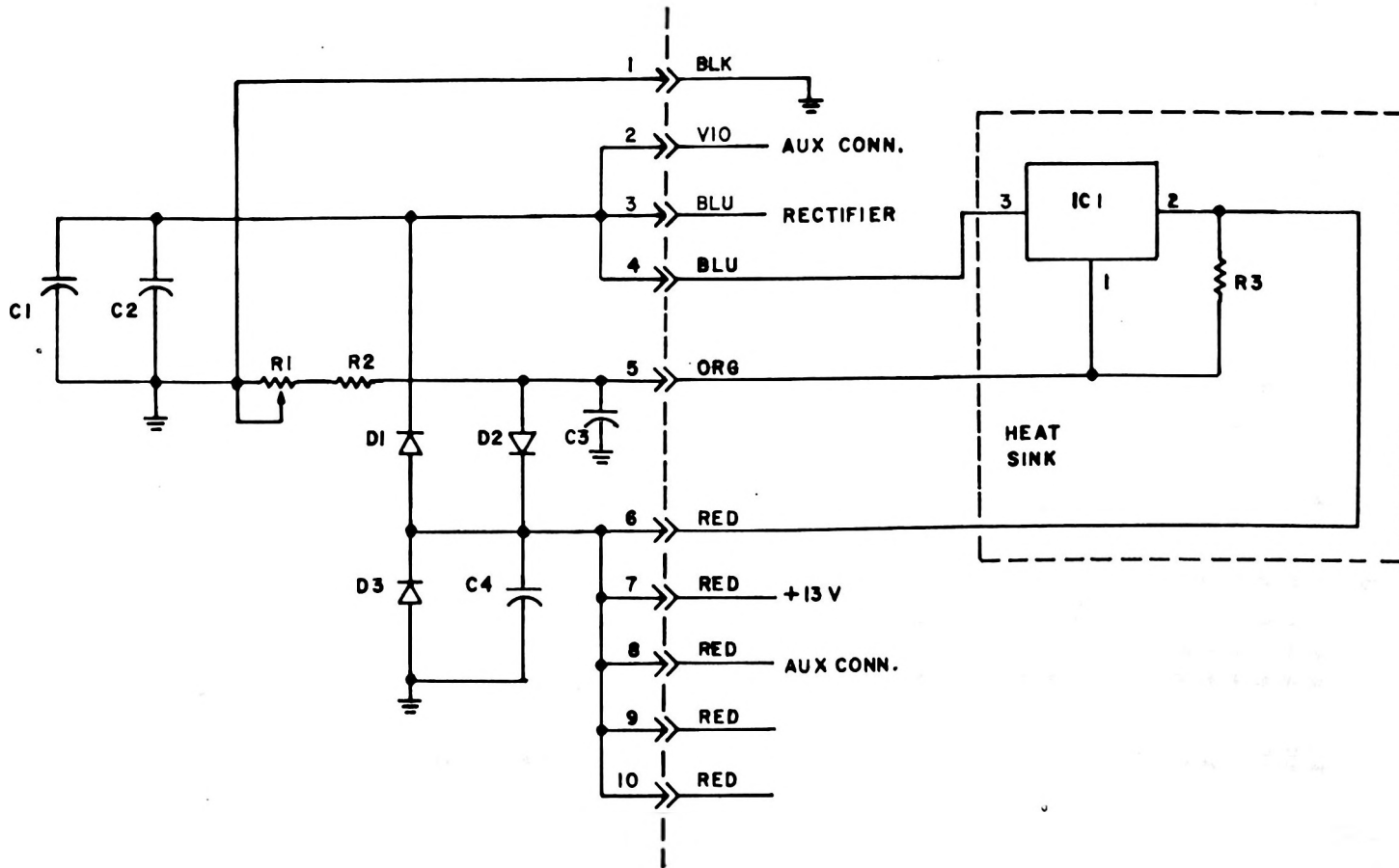
TITLE  
OUTPUT FILTER BOARD



<b>MARTI</b> <i>Electronics, Inc.</i> PO BOX 661 CLEBURNE, TX 76031	DRAWING NO 800-250-1	REV.	DATE 11/3/86	APPROVED	USED ON RPT-30	TITLE OUTPUT FILTER PARTS LOCATOR
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**PARTS LIST**  
**RPT-30 OUTPUT FILTER BOARD, 800-250**

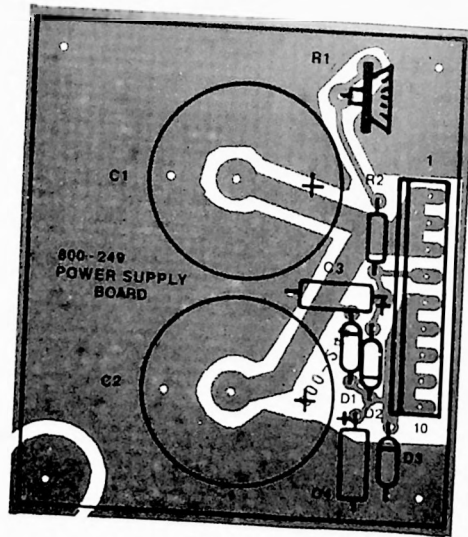
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>BAND (MHz)</u>
C 1	240-220	Capacitor, 22 pF 300 v 5%	Uncased Mica 140-180
C 1	240-160	Capacitor, 16 pF 300 v 5%	Uncased Mica 200-260
C 1	240-120	Capacitor, 12 pF 300 v 5%	Uncased Mica 280-340
C 1	240-802	Capacitor, 8.2 pF 300 v 5%	Uncased Mica 400-480
C 2	240-220	Capacitor, 22 pF 300 v 5%	Uncased Mica 140-180
C 2	240-160	Capacitor, 16 pF 300 v 5%	Uncased Mica 200-260
C 2	240-120	Capacitor, 12 pF 300 v 5%	Uncased Mica 280-340
C 2	240-802	Capacitor, 8.2 pF 300 v 5%	Uncased Mica 400-480
C 3	240-220	Capacitor, 22 pF 300 v 5%	Uncased Mica 140-180
C 3	240-160	Capacitor, 16 pF 300 v 5%	Uncased Mica 200-260
C 3	240-120	Capacitor, 12 pF 300 v 5%	Uncased Mica 280-340
C 3	240-802	Capacitor, 8.2 pF 300 v 5%	Uncased Mica 400-480
C 4	270-102	Capacitor, 1000 pF 50 v 5%	Monolithic Chip
C 5	270-102	Capacitor, 1000 pF 50 v 5%	Monolithic Chip
C 6	270-102	Capacitor, 1000 pF 50 v 5%	Monolithic Chip
C 7	270-102	Capacitor, 1000 pF 50 v 5%	Monolithic Chip
C 8	270-102	Capacitor, 1000 pF 50 v 5%	Monolithic Chip
C 9	270-102	Capacitor, 1000 pF 50 v 5%	Monolithic Chip
D 1	410-305	Diode, MBD101	
D 2	410-305	Diode, MBD101	
D 3	414-007	Diode, 1N4007	
K 1	570-038	Relay, RG1ET-12V	
L 1	350-111	Inductor, 3 Turn 20 AWG CW	140-180
L 1	350-143	Inductor, 2 Turn 20 AWG CW	200-260
L 1	350-116	Inductor, 1 Turn 20 AWG CW	280-480
L 2	350-110	Inductor, 6 Turn 20 AWG CW	140-180
L 2	350-142	Inductor, 4 Turn 20 AWG CW	200-260
L 2	350-111	Inductor, 3 Turn 20 AWG CW	280-480
L 3	350-111	Inductor, 3 Turn 20 AWG CW	140-180
L 3	350-143	Inductor, 2 Turn 20 AWG CW	200-260
L 3	350-110	Inductor, 1 Turn 20 AWG CW	280-480
L 4	350-110	Inductor, 1 Turn 20 AWG CW	140-180
L 4	350-142	Inductor, 4 Turn 20 AWG CW	200-260
L 4	350-111	Inductor, 3 Turn 20 AWG CW	280-480
L 5	350-140	Inductor, 16 Turn 20 AWG	
L 6		Inductor, PC Board	
R 1	145-680	Resistor, 68 $\Omega$ 1/4 W 5%	
R 2	145-680	Resistor, 68 $\Omega$ 1/4 W 5%	
R 3	145-102	Resistor, 1000 $\Omega$ 1/4 W 5%	140-340
R 3	145-472	Resistor, 4700 $\Omega$ 1/4 W 5%	400-480
R 4	145-102	Resistor, 1000 $\Omega$ 1/4 W 5%	140-340
R 4	145-472	Resistor, 4700 $\Omega$ 1/4 W 5%	400-480
R 5	100-523	Potentiometer 5K $\Omega$	Trimmer
R 6	100-523	Potentiometer 5K $\Omega$	Trimmer



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<b>MARTI Electronics, Inc.</b> PO BOX 661 CLEBURNE, TX 76031	DRAWING NO	REV.	DATE	APPROVED	USED ON	TITLE
	800-249		9/22/86		RPT-30	POWER SUPPLY BOARD

910-004



**MARTI** *Electronics, Inc.*  
PO BOX 661 CLEBURNE, TX 76031

DRAWING NO.  
800-249-1

REV.

DATE

11/3/86

APPROVED

USED ON

RPT-30

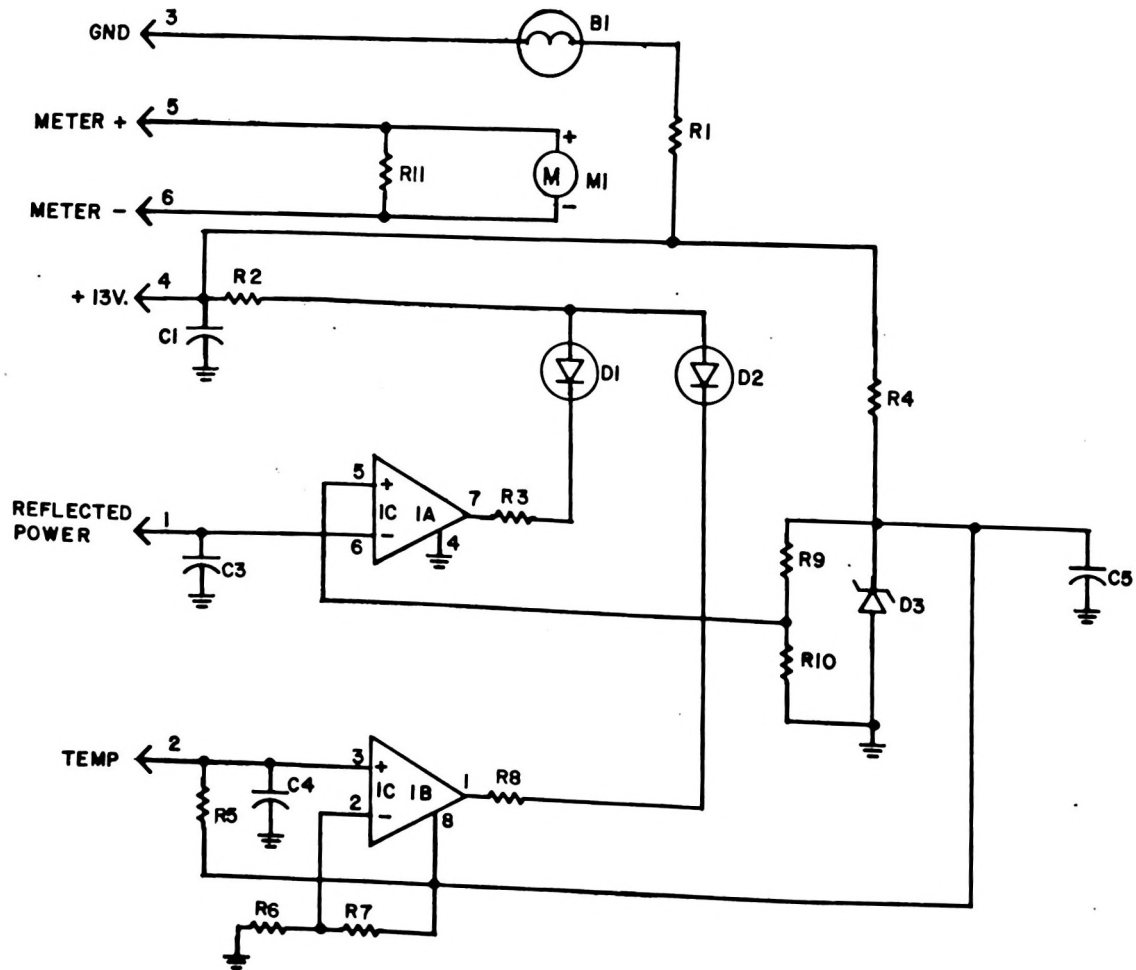
TITLE

POWER SUPPLY PARTS LOCATOR

**PARTS LIST**  
**RPT-30 POWER SUPPLY BOARD, 800-249**

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>			
C 1	219-153	Capacitor, 15000 $\mu$ F	25 v		Electrolytic
C 2	219-153	Capacitor, 15000 $\mu$ F	25 v		Electrolytic
C 3	219-200	Capacitor, 22 $\mu$ F	25 v		Electrolytic
D 1	414-007	Diode, 1N4007			
D 2	414-007	Diode, 1N4007			
D 3	414-007	Diode, 1N4007			
IC1	400-338	Integrated Circuit, LM-338			
R 1	100-501	Potentiometer 500 $\Omega$			Trimmer
R 2	145-202-1	Resistor, 2000 $\Omega$	1/4 W	2%	Corning
R 3	145-241-1	Resistor, 240 $\Omega$	1/4 W	2%	Corning





**MARTI** Electronics, Inc.  
PO BOX 661 CLEBURNE, TX 76031

DRAWING NO.  
800-252

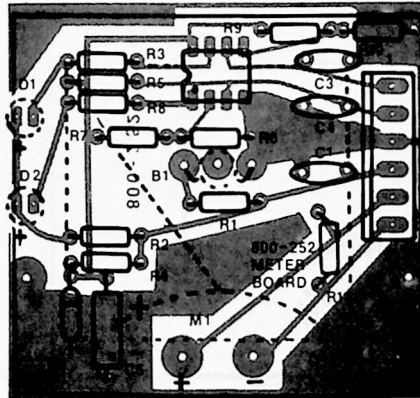
REV.

DATE  
9/19/86

APPROVED

USED ON  
RPT-30

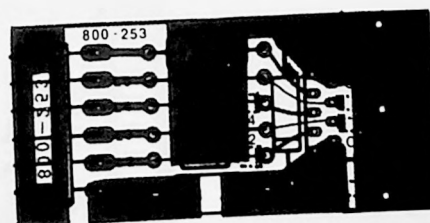
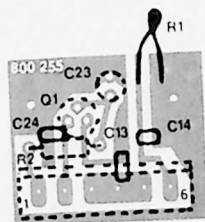
TITLE  
METER BOARD



<b>MARTI</b> <i>Electronics, Inc.</i> PO BOX 661 CLEBURNE, TX 76031	<b>DRAWING NO</b> 800-252-1	<b>REV.</b>	<b>DATE</b> 11/3/86	<b>APPROVED</b>	<b>USED ON</b> RPT-30	<b>TITLE</b> METER BOARD PARTS LOCATOR
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**PARTS LIST**  
**RPT-30 METER BOARD, 800-252**

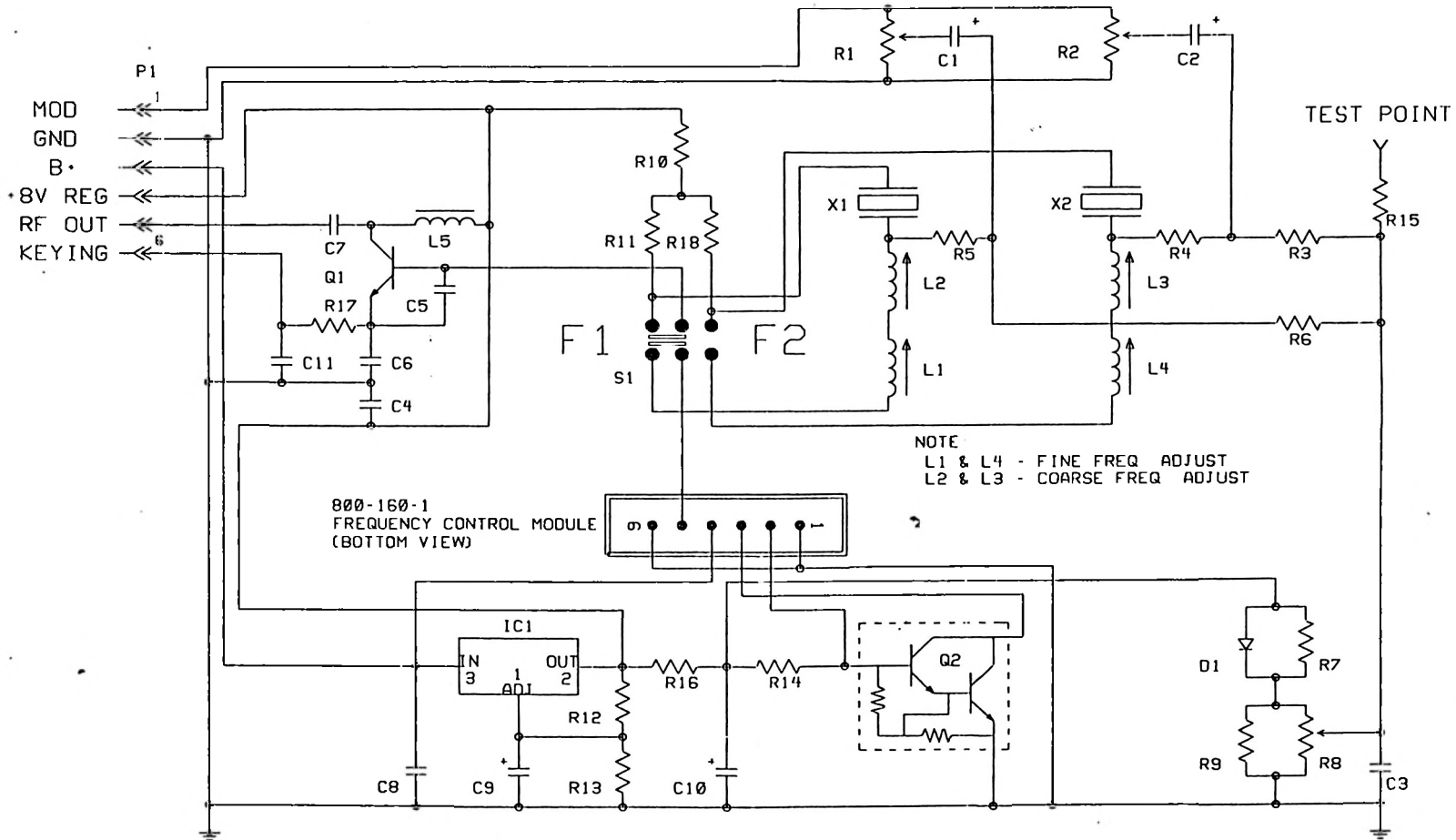
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
B 1	510-196	Lamp, Subminiature
C 1	217-104	Capacitor, .01 $\mu$ F 25 v
C 2	219-200	Capacitor, 22 $\mu$ F 25 v
C 3	217-104	Capacitor, .01 $\mu$ F 25 v
C 4	217-104	Capacitor, .01 $\mu$ F 25 v
C 5	219-200	Capacitor, 22 $\mu$ F 25 v
D 1	415-410	Diode, TLBR-5410 Blinking LED
D 2	415-410	Diode, TLBR-5410 Blinking LED
D 3	410-110	Diode, 1N4741
IC1	400-293	Integrated Circuit, LM-393
M	030-039	Meter, VU
R 1	145-100	Resistor, 10 $\Omega$ 1/4 W 5%
R 2	145-100	Resistor, 10 $\Omega$ 1/4 W 5%
R 3	145-181	Resistor, 180 $\Omega$ 1/4 W 5%
R 4	145-101	Resistor, 100 $\Omega$ 1/4 W 5%
R 5	145-102	Resistor, 1000 $\Omega$ 1/4 W 5%
R 6	145-222	Resistor, 2200 $\Omega$ 1/4 W 5%
R 7	145-103	Resistor, 10K $\Omega$ 1/4 W 5%
R 8	145-181	Resistor, 180 $\Omega$ 1/4 W 5%
R 9	145-223	Resistor, 22K $\Omega$ 1/4 W 5%
R10	145-102	Resistor, 1000 $\Omega$ 1/4 W 5%
R11	145-561	Resistor, 560 $\Omega$ 1/4 W 5%



<b>MARTI</b> <i>Electronics, Inc.</i> PO BOX 661 CLEBURNE, TX 76031	DRAWING NO. 800-253-1	REV. [ ]	DATE 11/3/86	APPROVED [ ]	USED ON RPT-30	TITLE PARTS LOCATOR
	800-255-1					

## OPTIONAL ACCESSORIES FOR RPT-30 SERIES TRANSMITTERS

<u>PART NO.</u>	<u>DESCRIPTION</u>
Crystal	Factory installed with original order-second frequency of DF.
MCD-70B	Cardioid Dynamic Microphone with 4-pin XLR-4 plug. (For push-to-talk operation with 700-251 mobile kit)
MCD-70C	Cardioid Dynamic Microphone with 3-pin XLR-3 plug, 14' cable.
MCD-70D	As above except includes a 9' coiled retractable cable.
700-251	Mobile mounting kit, 4 mtg fasteners, 586-074 DC Power Cable.
586-073	12' microphone cable for push-to-talk control of 700-251 mobile kit. (requires MCD-70B microphone)
586-074	DC Power plug, fuse, cable.
585-037-1	Fixed repeat cable, CR-10 to RPT-30.
585-037-2	Mobile repeat cable, AR-10 to RPT-30.
700-253	Rack mounting kit.
550-111	DB-9 9 pin female plug for RPT-30 Accessory connector. (Requires 550-066 DB-9 Shell)
550-066	DB-9 Shell for 550-111 above. (Order together)
570-038	TR-3 Antenna Relay for 2-way operation.
585-026	20 inch coax cable connects RPT-30 with receiver for two-way operation.
585-038-2	Mute Cable, mutes receiver while transmitting. For two-way operation.



<b>MARTI ELECTRONICS</b> CLEBURNE, TX 76033-0661	DRAWING NO. <b>800-160</b> COPYRIGHT 1989	TITLE <b>RPT-2, RPT-15, RPT-30</b> <b>DUAL-FREQUENCY MODULATOR</b>
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