

Instruction Manual
STL-10
Broadcast Aural
STL Transmitter

MARTI

WARNING

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!

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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.

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Model STL-10

Broadcast Aural STL Transmitter

SPECIFICATIONS

Frequency range:	140 - 180 MHz	STL-10/150
	200 - 260 MHz	STL-10/215
	280 - 340 MHz	STL-10/300
	400 - 480 MHz	STL-10/450
	500 - 960 MHz	STL-10/950

RF power output: (+0 - .5 dB) 15 watts (140 - 480 MHz); 10 watts (500 - 960 MHz)

Output impedance: 50 ohms

Carrier frequency stability: $\pm 0.00025\%$ (-20°C to +50°C)

Type of modulation: Direct FM

Audio input: Balanced 600 ohms, +8 dBm, barrier strip. BNC connectors for unbalanced input

Subcarrier inputs: Two BNC connectors for remote control and/or subcarrier inputs. 50-600 ohms unbalanced, 3 V. P-P for 10% injection

Power requirements: 120/220 VAC*, 50/60 Hz, 80 watts; 13.5 VDC at 2.6 Amperes; 24-28 VDC** at 2.6 Amperes

AC power supply: Precision, electronically regulated with current/temperature limiting

Fuse: 2.5 Amp Slo-Blo for 115 V operation. 1.25 Amp Slo-Blo for 230 V operation. Type 3AG

Spurious emissions: More than 60 dB below carrier

Automatic changeover: Provision for automatic changeover by addition of ATS-15E Automatic Switcher

Accessory connector: 15 pin D connector on rear panel provides filtered access to **Remote Control**, and **Automatic Changeover**, **Remote Power Metering**, and **External DC Power** (Model UPS-12 Uninterruptible Power Supply)

Metering: Precision "Peak-hold" Bar Graph Modulation Meter. Illuminated RF Wattmeter indicates **Forward Power**, **Reverse Power**. Test Meter reads **PA Current**, **Subcarrier Level**, **13.5 Volt Supply**, and **RF Drive 1**, **RF Drive 2**. LED indicates **Transmit**.

Panel controls: **Transmit switch**, **Test Meter switch**, **Power Adjust pot**

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Features of the STL-10 Transmitter include:

- FCC approved under Parts 74 and 94
- User selectable audio processing provides 0, 25, 50, or 75 microsecond pre-emphasis options
- Low-pass filters designed to eliminate overshoot on complex audio waveforms
- Calibrated RF watt meter for forward and reflected power
- Test meter on front panel indicates Subcarrier Level, Supply Voltage, PA Current, RF Driver 1 and RF Driver 2. Additional test points are located inside transmitter.
- Twelve segment bar graph for display of peak transmitter modulation. The five highest LED's (100% to 250%) have a "peak-hold" feature which will display instantaneous peak value for one second, a valuable feature when dealing with pre-emphasized program audio.
- Automatic switching capability by addition of Model ATS-15E Transmitter Switcher
- Accessory plug for external DC power, remote control, remote metering, and other functions
- Low power consumption for operation on AC, solar cell, battery, or other single-polarity DC source. (Marti Model UPS-12 Uninterruptible Power System).
- Terminal strip for balanced 600 ohm audio input, BNC jacks for unbalanced audio input, Sub 1 input, Sub 2 input.

The Marti STL-10 system derives its excellence from Marti's experience in supplying thousands of such systems world-wide over the past thirty years. This equipment incorporates state-of-the-art technology and is manufactured in modern, efficient facilities under high quality-control standards.

STL-10 System Specifications

Freq Range MHz	Transmitter	Maximum Power	Maximum Deviation	Receiver	Receiver IF Bandwidth	System Specifications		
						Frequency Response	Distortion	Noise
600-960	STL-10/950	10 watts	±50 KHz	R-10/950	200 KHz	±0.25 dB, 20-15000 Hz	0.25% or less	-80 dB or better
400-480	STL-10/450	15 watts	±25 KHz	R-10/450	125 KHz	±0.25 dB, 20-15000 Hz	0.30% or less	-75 dB or better
280-340	STL-10/300	15 watts	±15 KHz	R-10/300	125 KHz	±0.25 dB, 20-15000 Hz	0.30% or less	-72 dB or better
200-260	STL-10/215	15 watts	±15 KHz	R-10/215	125 KHz	±0.25 dB, 20-15000 Hz	0.30% or less	-72 dB or better
140-180	STL-10/150	15 watts	±9 KHz	R-10/150	125 KHz	±0.25 dB, 20-15000 Hz	0.30% or less	-65 dB or better

System specifications shown are for 200 KHz receiver IF bandwidth. Narrow band channels requiring 85 KHz IF bandwidth have ±0.25 dB response, 0.3% distortion.

System Applications

Freq Range MHz	Application	FCC Part	B.W. Each Channel	Frequency Response	Distortion	Noise	Channel Separation
800-960	FM Stereo STL	74	200 KHz	±0.25 dB, 20-15000 Hz	0.25% or less	-80 dB or better	80 dB
800-960	FM Stereo STL	74	150 KHz	±0.3 dB, 20-15000 Hz	0.3% or less	-72 dB or better	72 dB
800-960	AM Stereo STL	74	100 KHz	±0.3 dB, 20-15000 Hz	0.3% or less	-72 dB or better	72 dB
928-960	Data or Background Music	94	100 KHz	±0.3 dB, 20-15000 Hz	0.3% or less	-72 dB or better	72 dB
928-960	4-channel Sat. Pgm. Feed	94	100 KHz	±0.3 dB, 20-15000 Hz	0.3% or less	-70 dB or better	70 dB

Stereo System Differential Phase 0.5 degrees or less

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

Dimensions: 3.5 inches High x 19 inches Wide x 14 inches Deep
8.89 cm High x 48.26 cm Wide x 35.56 cm Deep

Weight: Net 11 pounds. Domestic packed 18 pounds.
Net 4.9 kilograms. Export packed 8.2 kilograms.

RF connector: UG-58 (type N female)

Type Acceptance Number FCC ID: BEN9EZSTL-10/950
(FCC Part 94 & Part 74):

* Voltage must be specified with order.

** Requires APS-28/18 Power Supply.

Specifications subject to change without notice

UNPACKING & 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, stop further unpacking and request immediate inspection by lo-

cal 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

Transmitter connections (Refer to Drawing 702-058)

1. Program audio output is connected to balanced audio input screw terminals. Use shielded wire. Program audio level required is +8 dBm, 600 ohms balanced and isolated from ground. For dual channel stereo repeat instructions at second transmitter. Audio processing requirements will be discussed in **OPERATION**.

2. Connect a Remote Control or Subcarrier Generator (modulator) to the jack marked "J1 SUB IN". The subcarrier source may be 50 to 600 ohms impedance, and the input level required is approximately one (1) volt RMS. Subcarrier frequencies may be between 39 KHz and 67 KHz. Systems factory supplied with 200 KHz IF bandwidths will carry subcarriers up to 92 KHz. For other subcarrier frequencies or narrow IF bandwidth systems contact the factory. A second subcarrier generator can be connected to J3. If a dual channel stereo STL is used connect one subcarrier generator to J1 on each channel's transmitter.

3. The accessory connector has several uses such as remote control, automatic switching, and external DC power. Connection instructions are furnished with these accessories.

4. Connect STL transmitting antenna coax to "J6 ANTENNA". This requires a type N male connector.

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 RF ground potential.

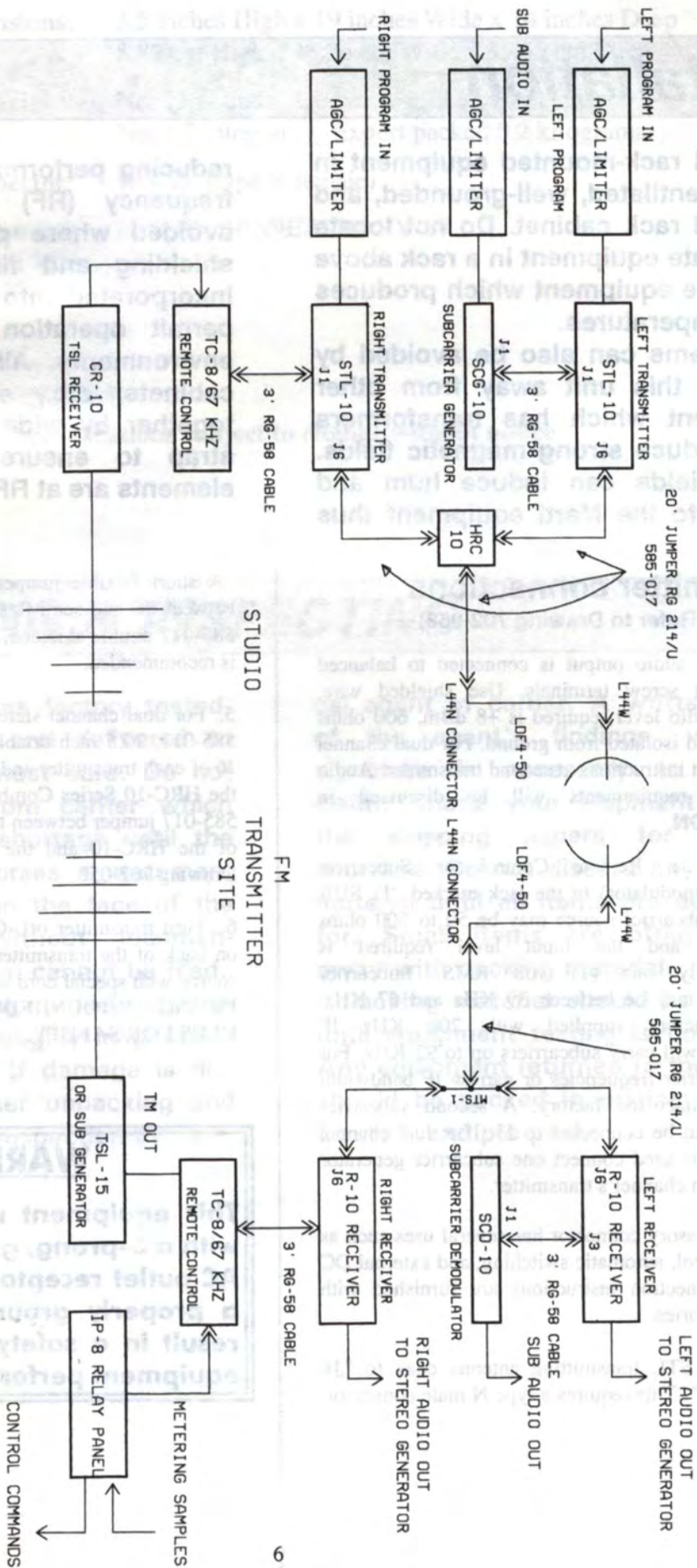
A short flexible jumper (20" max.) may be used between J6 and semi-flexible coax. **Marti Part No. 585-017** double shielded, low-loss RG 214/U jumper is recommended.

5. For dual channel stereo, use only Marti Part No. 585-017, 20.5 inch double shielded jumper between J6 of each transmitter and the indicated connectors of the HRC-10 Series Combiners. Use a third Part No. 585-017 jumper between the "ANTENNA" connector of the HRC-10 and the semi-rigid coax. Refer to Drawing 702-058.

6. Turn transmitter off. Connect AC line receptacle on back of the transmitter to a 115 volt AC power source with special cord set supplied. **USE ONLY 3-PRONG GROUNDED OUTLET RECEPTACLES FOR SAFETY.**

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!



FOR DETAILED INSTRUCTIONS READ EQUIPMENT INSTRUCTION MANUALS

MARTI ELECTRONICS
CLEBURNE, TX 76033-0661

DRAWING NO.
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06-JAN-94

702-058

TITLE
STEREO STL SYSTEM BLOCK DIAGRAM

ANTENNAS

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. Errors are frequently made in assembly of the RF feed dipole elements which must be installed in the same plan as the reflector grids. In other words, if the reflector grid elements are horizontal, then the feed dipole elements must also be horizontal. Cross polarization of grid and feed dipole will result in total loss of antenna gain!

Transmission Line Connector Assembly

Do not use RG-58 U or RG-8 U cable for STL station antennas! They have too much loss at VHF and UHF frequencies. 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 over at least two layers of 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.

Location and Grounding of Coaxial Cable

Keep the STL 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 STL antenna system be properly grounded for safety and proper operation.

Antenna Installation and Adjustment

The polarization of the transmit and receive antennas of the STL system must be the same! This means that if the transmitting antenna is horizontal, the receiving antenna must also be horizontal. Each antenna should be attached to the tower to allow for final adjustment in azimuth heading and vertical tilt. After visual adjustment of the antennas, the transmitter and receiver can be used to make the final adjustments of the antennas. With the transmitter driving one antenna, the receiver antenna is adjusted for maximum signal (indicated on the receiver) in both horizontal and vertical directivity. **CAUTION:** Antennas have a "major" and several "minor" lobes in their directivity patterns. A common error is to peak the antenna on a minor lobe, resulting in a signal level of only a fraction of the major lobe signal. This error can be avoided only by swinging the antenna through a large angle so that all lobes are evaluated and the major lobe clearly determined. After one antenna is adjusted, the transmitter and receiver locations are reversed, to allow adjustment of the other antenna. If an RF wattmeter is available, each antenna and transmission line can be checked for VSWR when the transmitter is 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 orientation of antennas in both horizontal and vertical directions.

YOU CAN BE *KILLED* IF AN ANTENNA COMES IN CONTACT WITH ELECTRIC POWER LINES OR EXPOSED ELECTRICAL WIRING. FOR YOUR SAFETY USE EXTREME CAUTION WHEN INSTALLING ANTENNAS. KEEP AWAY FROM POWER LINES.

Operation

Transmit-Off Switch & LED

This toggle switch controls the RF output of the transmitter. The red LED above this switch is a visual indication that the switch is in "TRANSMIT" position. The audio circuits, the 13.5 volt regulated power supply and the meter illumination lamps remain on when the TRANSMIT switch is "OFF".

Forward-Reflected Switch & RF Power Meter

The **RF POWER METER**, with its selector switch, allows monitoring parameters within the transmitter as follows:

1. When switched to "**FORWARD POWER**", the meter indicates the RF power output of the STL-10 transmitter. The maximum power is 10 Watts (9 Watts nominal) for the 890-960 MHz (United States) band and 15 Watts for all other (export) frequencies.
2. When switched to "**REFLECTED POWER**", the **TEST METER** indicates the amount of power returning on the coaxial line from the antenna. This is useful in determining the VSWR (Voltage Standing Wave Ratio) for the antenna system. The lower the VSWR for a given forward power, the better. Most antennas guarantee a VSWR of less than 1.5 to 1.

The table below gives VSWR for various reflected powers:

Forward Power	Reflected Power	VSWR
10 Watts (890-960 MHz)	0.3 watts	1.40
10 Watts (890-960 MHz)	0.4 watts	1.50
10 Watts (890-960 MHz)	0.5 watts	1.57
10 Watts (890-960 MHz)	0.7 watts	1.70
10 Watts (890-960 MHz)	1.0 watts	1.90
15 watts (140-480 MHz)	0.3 watts	1.35
15 watts (140-480 MHz)	0.4 watts	1.40
15 watts (140-480 MHz)	0.5 watts	1.45
15 watts (140-480 MHz)	0.7 watts	1.55
15 watts (140-480 MHz)	1.0 watts	1.70

Peak Modulation Meter

A "**peak-hold**" twelve segment **bar graph display** is included on the STL-10 transmitter for setting and monitoring peak STL modulation (composite or mono mode). The five highest LED's (100% to 250%) have a "peak-hold" feature which will display an instantaneous peak value for one second. This is a valuable feature when dealing with pre-emphasized program audio. The procedure for setting peak modulation is to adjust audio input level into the STL-10 until the 100% bar is flashing on audio peaks. The 110% through 250% bars indicate over-modulation and require a reduction in input level to obtain a 100% peak indication.

Test Meter

The **TEST METER** with its selector switch, allows monitoring of five important parameters within the transmitter as follows:

1. "**SUB LEVEL**" - Indicates subcarrier injection. 0 VU is approximately 20% injection. For 10% injection use -6 VU. Subcarrier voltage at J1 or J3 is approximately 1 volt for 20% injection, 0.5 volts for 10%.
2. "**+13 VOLT SUPPLY**" - Indicates regulated voltage supply operation. +1.5 VU is approximately 13.5 VDC.
3. "**P.A. CURRENT**" - The collector current of the final amplifier and its driver is calibrated to read "0 VU" on the meter at rated power output and efficiency. The **POWER ADJUST** potentiometer should never be set to produce a P.A. current greater than 0 VU.
4. "**RF DRIVE 1**" - The RF drive level at TP-4 of MULTIPLIER, 800-163.
5. "**RF DRIVE 2**" - The RF drive level at TP-5 of MULTIPLIER, 800-163.

Pre-Emphasis Selection

Two programmable switches, S1 and S2, on **800-194 Audio Board**, enable the user to select 0 μ s, 25 μ s, 50 μ s, or 75 μ s pre-emphasis characteristics. The selection of one of these options in the transmitter requires a corresponding selection of S1 and S2 on the **receiver (R-10) Audio Processing Board, 800-205**. Refer to **STL-10 Drawing 702-056** and **R-10 Drawing 702-057** for the location of these switches. The switches as shown in the diagrams, are positioned for 75 μ s at the factory. 75 μ s pre-emphasis and de-emphasis produces the best threshold noise performance in an FM system.

It does, however, present problems in modulation control. Some users, therefore, may wish to use 50 μ s, 25 μ s, or flat processing. AM stations will find flat processing desirable since the STL can be treated as a pair of wires in proof-of-performance tests without possible overmodulation of the link at high

audio frequencies. With 75 μ s pre-emphasis, audio input levels to the transmitter should be reduced 20 dB below 100% modulation when running frequency response tests to prevent overmodulation at the higher audio frequencies. With a full-quieting RF signal into the receiver (0 μ s de-emphasis), 0 μ s pre-emphasis will produce a system signal-to-noise ratio approximately 6 dB less than 75 μ s pre-emphasis. Received signal levels less than full quieting may produce a difference of as much as 13 dB between flat and 75 μ s pre-emphasis.

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. This procedure is covered in the **TUNE UP and ADJUSTMENT** section.

Power	Reflected	SWR
100%	0.00	1.00
90%	0.05	1.05
80%	0.10	1.10
70%	0.15	1.15
60%	0.20	1.20
50%	0.25	1.25
40%	0.30	1.30
30%	0.35	1.35
20%	0.40	1.40
10%	0.45	1.45
0%	0.50	1.50

System Performance Tests

The **STL-10** transmitter, R-10 receiver with the associated antenna system can be tested and compared with factory test data included in this manual. The following procedures should be followed in order to obtain reliable and accurate results.

Before audio tests or subcarrier tests are begun check the receiver "SIG. LEVEL" METER for required minimum signal. A conversion from VU to microvolts is given under OPERATION in the R-10 receiver manual. For a 950 MHz. system using 50 KHz FM deviation, typical noise levels are:

1 μ v	for 20 dB S/N ratio
3 μ v	for 50 dB S/N ratio
10 μ v	for 60 dB S/N ratio
20 μ v	for 70 dB S/N ratio
50+ μ v	for ultimate S/N ratio

For the above system with 20% subcarrier injection, the following noise level on the subcarrier (Marti SCG-10 - SCD-10 System) was measured: (no modulation main or sub)

10 μ v	for 40 dB Subcarrier S/N ratio
20 μ v	for 47 dB Subcarrier S/N ratio
30 μ v	for 50 dB Subcarrier S/N ratio
150 μ v	for ultimate Subcarrier S/N ratio

With ultimate S/N ratio, main to sub crosstalk should be -40 to -45 dB (using Marti SCG-10 - SCD-10 Subcarrier System).

NOISE

Noise measurements should be made first, since high noise levels will influence distortion readings. Also ground loops in the audio oscillator to transmitter connections and distortion analyzer to receiver connections must be resolved before testing begins. The influence of high RF fields upon the test equipment must be determined and corrected before accurate measurements can be made. NOTE: NOISE AND DISTORTION MEASUREMENTS ARE MADE WITH SUBCARRIER AND REMOTE CONTROL INPUT SIGNALS REMOVED. System signal to noise ratio is determined while modulating the transmitter 100% at 400 Hz. A level of +8 dBm across the balanced audio input terminals of TB-1

will produce a reading of 100% modulation on the "PEAK MODULATION" indicator. Set Receiver "PGM LEVEL ADJ" pot for +10 dBm output into the distortion analyzer. If the distortion analyzer has a high impedance input, add a 600 ohm load resistor to match the receiver. Establish +10 dBm on the audio voltmeter of the analyzer as the reference level for 100% modulation. Next, remove the audio signal from the transmitter input and measure noise level below reference (100% modulation). This reading should compare with that published under **SYSTEM SPECIFICATIONS** in this manual.

DISTORTION

Harmonic distortion is usually measured at 100% modulation and at several frequencies. If pre-emphasis processing is used in the transmitter with corresponding de-emphasis in the receiver, it is normal for available audio level at the receiver to drop with increasing frequency according to the de-emphasis curve selected. At 15 KHz, there is sufficient level to operate most modern distortion analyzers. Distortion levels should be within specifications. If distortion is out of specs, check system noise, check for test equipment ground loops, RFI, and transmitter/receiver operating frequency. If either unit is off frequency, the FM modulation sidebands are not centered within the IF filter bandpass, which can cause audio distortion.

FREQUENCY RESPONSE

If the STL-10 System is switched to flat processing, frequency response can be measured as if the signal were being sent over straight wires. If pre-emphasis processing is used (especially 75 μ s) allowance must be made in the transmitter audio input level to prevent over-modulation at test frequencies above 400 Hz. The simplest and fastest method is to set the transmitter audio input level for 100% modulation at 400 Hz., then attenuate this level 20 dB. Set receiver output level to -10 dBm as the reference, then sweep the audio band for response. Response should be within limits published in the **SYSTEM SPECIFICATIONS**.

THEORY OF OPERATION

Refer to Block Diagram Drawing No. 702-097 and appropriate Schematic Diagrams.

POWER SUPPLY, 800-168 and 800-168-1

Board 800-168 contains a bridge rectifier (D1 - 4), filter capacitor C5, and voltage adjust pot R2, and reverse polarity protection diodes D5, D6, and D7. The unregulated output voltage of this supply is 17 - 20 volts. 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, 800-193A

All input/output circuits connected to ACCESSORY connector J4, as well as the AC line input, have radio-frequency filters.

CONTROL BOARD, 800-197

Switching, interfacing, remote metering and control functions are available at the 10-pin connector of the control board. Since the +13.5 volt DC supply is on continually when the STL-10 is plugged into the 120 volt AC source, the transmitter RF power output is controlled by placing switch S3 in the emitter circuit of the first stage of MULTIPLIER, 800-163. This control function is also available at pin 15 of Accessory Connector J4.

Transistor Q1 isolates the "FORWARD POWER" METER sample from the remote meter terminal (pin 13 of J4).

Automatic switching between two STL-10 transmitters is accomplished by use of the optional ATS-15E Automatic Transmitter Switcher. Consult the factory or Marti catalog for additional information.

AUDIO BOARD, 800-194

The 600 ohm balanced audio input to the transmitter is connected to the inputs of a unity gain differential amplifier IC-1A. A potentiometer, R9, is provided for adjusting the amplifier to produce the

maximum common mode rejection (CMR). The output of the differential amplifier is direct-coupled to the pre-emphasis amplifier and has two capacitors selected by switches S1 and S2, which provide options of 0, 25, 50 or 75 microseconds pre-emphasis. Following the pre-emphasis circuit are two stages of active Butterworth low-pass filtering. The signal then is fed to the MODULATOR audio input and to metering amplifiers IC3A and IC3B. The subcarrier input is routed to the MODULATOR subcarrier input.

MODULATOR, 800-195

The MODULATOR consists of a voltage-controlled crystal oscillator Q2, buffer amplifier Q3, subcarrier modulator D2, precision voltage regulator IC1 and oven heater control Q1. Precise frequency control is obtained by thermally coupling components Y1, Q1, Q2, and IC1 to the temperature regulated Frequency Control Module, 800-160-1.

Coarse and fine frequency adjustment is provided by L1 and L2 while main channel modulation is provided by a voltage variable capacitance diode in the Frequency Control Module. Bias for this diode is obtained through voltage divider resistors R4, R5, and R7. Diode D1 temperature compensates the bias supply. Components L3, C13, and D2 permit phase modulation of the subcarrier information upon the RF output of transistor Q3.

MULTIPLIER BOARD, 800-163

The modulator RF output is frequency-multiplied in the multiplier board to obtain the various operating frequencies listed on the STL-10 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
500 - 960 Mhz	24 X*

*Power varactor doubler brings total multiplication to 48 X.

The power level at the input to the multiplier is approximately 5 mw. and the output level is 0.7 to 1.2 watts.

RF POWER AMPLIFIER, 800-170

RF output of the MULTIPLIER BOARD is connected to the input of the power amplifier board at a 50 ohm impedance. Transformation of the 50 ohm input to the base impedance of Q1 is accomplished by C1, C2, and L1. L1, L12, and R1 provide a path for Q1 base current and the L12 - R1 parallel circuit reduces low frequency gain and instability. The RF output power of Q1 is approximately 4 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 ohms by the L-C network shown. The collector supply to Q1 and Q2 is de-coupled by L4 and C7 - 12.

OUTPUT LOW-PASS FILTER, DIRECTIONAL COUPLER, 700-046

On frequencies below 480 MHz., RF output from the RF POWER AMPLIFIER passes through a four-section low-pass filter and directional coupler before reaching the output connector J6. The directional coupler is of microstrip construction.

OUTPUT LOW-PASS FILTER, VARACTOR DOUBLER, DIRECTIONAL COUPLER, 700-045

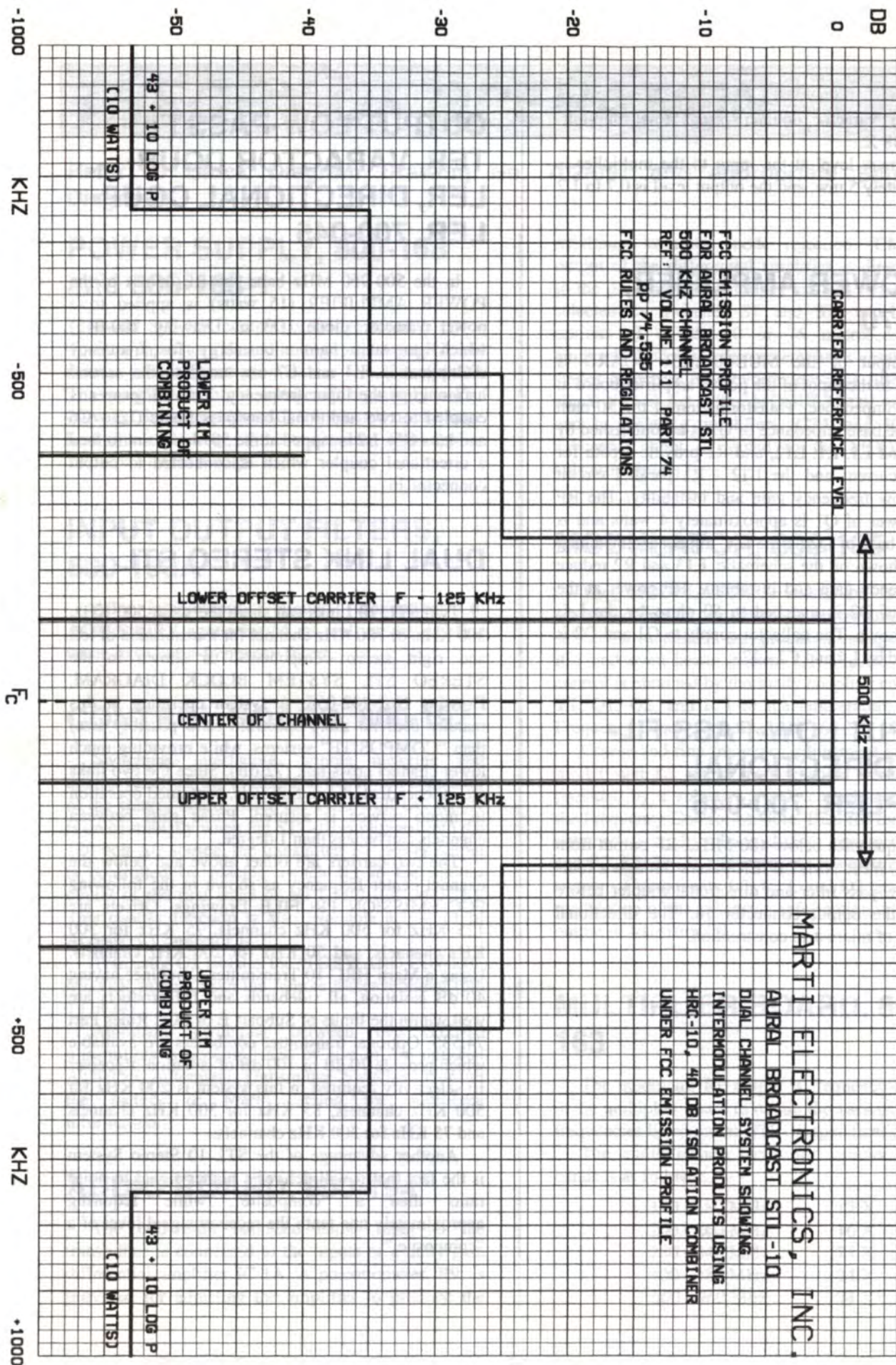
In the 500-960 MHz band the RF output of the POWER AMPLIFIER (15 watts) is applied to a power varactor diode (D3 in Drawing 700-045) which generates harmonic energy for frequency multiplication. L4 and C7 are tuned to the second harmonic of the input frequency. This RF power is coupled to two additional bandpass filters (L3 - C6 and L2 - C5). L2 is tapped at the 50 ohm point to feed a directional coupler which is connected to output connector J6.

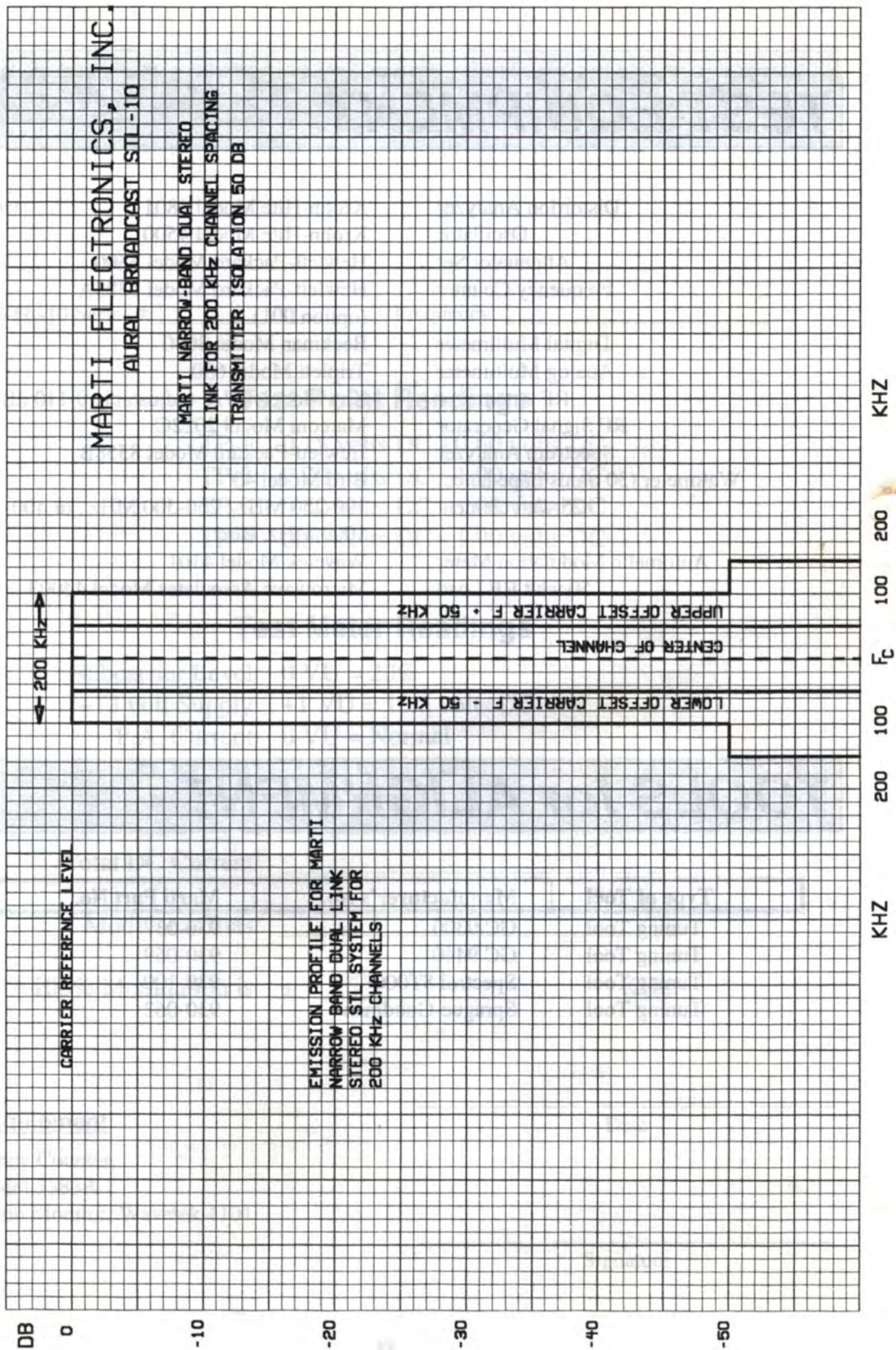
DUAL LINK STEREO STL

Two STL-10 Links can share the same 500 KHz, 300 KHz, or 200 KHz channel for transmission of left and right stereo components, as shown in the STEREO STL SYSTEM BLOCK DIAGRAM, Drawing No. 702-058. A system operating in this manner uses no more spectrum (and possibly less) than "COMPOSITE" systems, while providing much lower channel cross-talk (72 dB). Since the two links are independent, if one link fails, continued operation in mono service is assured. Phase shift between channels can be less than 1 degree.

The two carriers are offset above and below the channel center frequency as shown in the following FCC EMISSION PROFILE Drawings. Offsets are 125 KHz for 500 KHz channels, 75 KHz for 300 KHz channels, and 50 KHz for 200 KHz channels. Using a Marti HRC-10 Transmitter Combiner having 40 dB isolation, all sidebands and IM products are well within the limits of Subpart E of FCC Rules Part 74.535. Optional transmitter combiners are available which provide 70 dB or 100 dB of isolation. Receiver IF selectivity required in this system is 200 KHz for 500 KHz channels, 85 KHz for 300 KHz channels and 75 KHz for 200 KHz channels.

Another advantage of the STL-10 Stereo System is the fact that it will deliver a higher signal to noise ratio than a "composite" while requiring approximately one-tenth the receiver signal level of a "composite."





TEST EQUIPMENT

Distortion Analyzer	Krohn-Hite Model 6801
Oscillator	Krohn-Hite Model 4500
Attenuator Set	Hewlett-Packard Model 3500
Frequency Counter	Hewlett-Packard Model 5383A (option 001)
Digital Multimeter	Beckman Model 3030
Analog Multimeter	Triplett Model 630
RF Attenuator	Kay Model 437A (adjustable 0-110 dB)
RF Signal Generator	Marconi Model 2022C
Spectrum Analyzer	Hewlett-Packard Model 8558B
Wattmeter (50 ohms impedance)	Bird Model 43
25 watt element	100-250 MHz., 250-500 MHz., or 400- 1000 MHz. Bird
Automatic Modulation Meter	Wavetek Model 4101
50 watt RF Load	Microwave Associates Model 44003

TOOLS for ALIGNMENT

Type of Tool	Manufacturer's No.	Marti Part No.
Tuning Tool	GC 9300	930-037
Tuning Tool	GC 9440	930-069
Tuning Tool	Spectrol 8T000	930-100
Tuning Tool	Sprague-Goodman	930-062

TRANSMITTER TEST REPORT

Customer: _____

Address: _____

STL-10 Serial #: _____ Frequency: _____

Test Point Readings

TP-1: 0.15 volts DC - 0.60 volts DC
TP-2: 0.70 volts DC - 1.90 volts DC
TP-3: 0.50 volts DC - 1.00 volts DC
TP-4: 0.50 volts DC - 1.90 volts DC

Test Meter Readings

Subcarrier Level: 0 VU = 20%

+13 volt Supply: +1 VU = 13.5 volts DC

P.A. Current: 0 VU = Normal

RF Drive 1: -2 VU to +3 VU

RF Drive 2: -2 VU to +3 VU

Total DC Current: _____

Modulator Bias: _____

100% Modulation is: \pm _____ KHz.

Test Equipment

Frequency Counter,

HP Model 5383A

Deviation Monitor, Wavetek 4101

Date

Signature

TUNE-UP and ADJUSTMENTS

Refer to Location of Adjustments Drawing No. 702-098 and appropriate schematic diagrams for each module.

POWER SUPPLY BOARD, 800-168

1. Remove Dummy Load to RF output J6. 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, 800-168. Connect negative lead to chassis ground.
2. Place CONTROL switch in "TRANSMIT" position and adjust R2 for 13.5 volts, DC.

MODULATOR BOARD, 800-195

Connect dummy load with sampling attenuator to ANTENNA connector J6 of transmitter. Connect an accurate standard FM deviation meter and frequency counter to sampling attenuator or J5 FREQUENCY TEST JACK. Place CONTROL switch in "TRANSMIT" position.

1. Measure bias voltage at TP (test point) of MODULATOR BOARD, 800-195 using digital DC voltmeter. This voltage should be that recorded on STL-10 **TRANSMITTER TEST REPORT**. To ensure low distortion modulation, **DO NOT CHANGE THIS VOLTAGE SETTING**.
2. Set transmitter on frequency by adjusting L2 (fine) coil slug using correct insulated tool. If necessary, L1 (coarse adjustment) can be made using the insulated tool specified.
3. Feed a 400 Hz, +8 dBm signal from an audio signal generator into TB-1. The PEAK MODULATION meter should read "100%". This was set at the factory and *should not require field adjustment*. If an accurate FM modulation meter is available, adjust R24 (modulation meter calibrate) on AUDIO BOARD, 800-194 for 100% on PEAK MODULATION meter. The FM deviation meter should read the deviation specified under "100% Modulation" on the STL-10 **TRANSMITTER TEST**

REPORT. If not, adjust R6 on MODULATOR BOARD, 800-195.

4. Remove 400 Hz tone. Feed audio signal generator set for 67 KHz at one (1) volt into J1 Sub In. Set TEST METER switch to "Sub Level" and adjust audio signal generator level for a meter reading of "0 VU." Adjust R11 for 20% subcarrier injection as indicated on the linear vertical display on a spectrum analyzer..

AUDIO BOARD, 800-194

1. Connect an audio voltmeter to Pin 1 (modulator audio) of AUDIO BOARD, 800-194. Connect a jumper between Terminal 1 and 2 (the outer terminals) of TB-1, the 600 ohm balanced input. Connect an audio signal generator between chassis and either Terminal 1 or 2. Set generator to 100 Hz at 1 volt output. Increase sensitivity of audio voltmeter until the 100 Hz output component is indicated. Adjust R9 (CMR, Common Mode Rejection) for minimum common mode output.
2. Set S1 and S2 on AUDIO BOARD, 800-194 for 75 us pre-emphasis with S1 and S2 positioned toward R15. Remove jumper and feed audio signal generator into Terminals 1 and 2 of TB-1. Set generator to 15 KHz and adjust level for 0.78 volts (0 dBm), on the audio voltmeter connected as in (1) above. Set generator to 400 Hz and observe audio voltmeter. Level at 400 Hz and observe audio voltmeter. Level at 400 Hz should be exactly 17 dB below the level at 15 KHz. If not, return to 15 KHz and adjust R15 by the amount in error at 400 Hz. Repeat process until exact pre-emphasis is obtained.

3. Modulation meter calibration is covered in MODULATOR BOARD, 800-195.

MULTIPLIER BOARD, 800-163

Remove top cover of unit. Remove coaxial cable plug at RF Output jack J2 of MULTIPLIER BOARD, 800-163. Refer to Layout Drawing 702-056 for location of connectors, test points and adjustments.

1. Connect Bird, Model #43 Wattmeter with 5 watt element and 50 ohm 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. 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 frequencies below 200 MHz.

5. Move negative probe of meter to TP-5, adjust C27 and C28 for maximum indication. Turn "POWER ADJUST" pot, R14 for maximum power.

6. Adjust C36 and C37 for maximum indication on the wattmeter connected to J2. (Should be .75 to 2 watts output.)

7. Place CONTROL switch in "OFF" position. Remove wattmeter from J2 and re-install coaxial cable plug at J2. Adjust R14, "POWER ADJUST", for correct transmitter output power.

POWER AMPLIFIER, 800-170

Most adjustments can be reached through the holes in the POWER AMPLIFIER shield. This shield may be removed for tuning purposes by removing two screws. Unsolder the short wire jumper between the amplifier board and the output filter 700-045 or 700-046. Prepare a 12" length of RG-58 coax by stripping one end back 1". Unbraid the shield, twist it to form a "lead". Solder the center conductor to the point on the board where the jumper is located. Solder the shield to the nearest ground on the board. The other end of this cable should be equipped with a connector to fit a Bird Wattmeter. Special "N" connectors are available for RG-58, however, if one is unavailable use a PL-259 with a "UHF to Type N" adapter. Connect this cable to a Bird Wattmeter with 50 ohm load and element of correct power and frequency rating. Unsolder the red B+ lead from the feed-through capacitor and insert a 0-5 Amp. DC ammeter in this circuit.

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 power amplifier is approximately:

140-340 MHz.	15 watts	2.00 amps
400-480 MHz.	15 watts	2.40 amps

(The 800-960 MHz transmitter POWER AMPLIFIER BOARD also outputs in the 400-480 MHz range. A frequency doubler, MULTIPLIER_FILTER MODULE, 700-045, is used to achieve the final frequency.)

3. Place CONTROL switch in "OFF", remove ammeter, resolder red wire, and the jumper from the output to MULTIPLIER_FILTER MODULE, 700-045, or FILTER MODULE, 700-046. Replace the power amplifier cover with the two screws. Re-check power output and reset "POWER ADJUST", R14 (on MULTIPLIER BOARD), if necessary.

MULTIPLIER-FILTER MODULE, 700-045 (transmitters operating above 800 MHz only)

Refer to Drawing 702-056 for adjustment locations. Adjustments to this module should be made using a microwave 50 ohm dummy load with a variable RF sampler or attenuator, feeding a 1 GHz spectrum analyzer, since adjustments can cause spurious emissions.

1. With STL-10 connected as above, turn transmitter CONTROL switch to "TRANSMIT" and set front panel POWER ADJUST control fully clockwise.

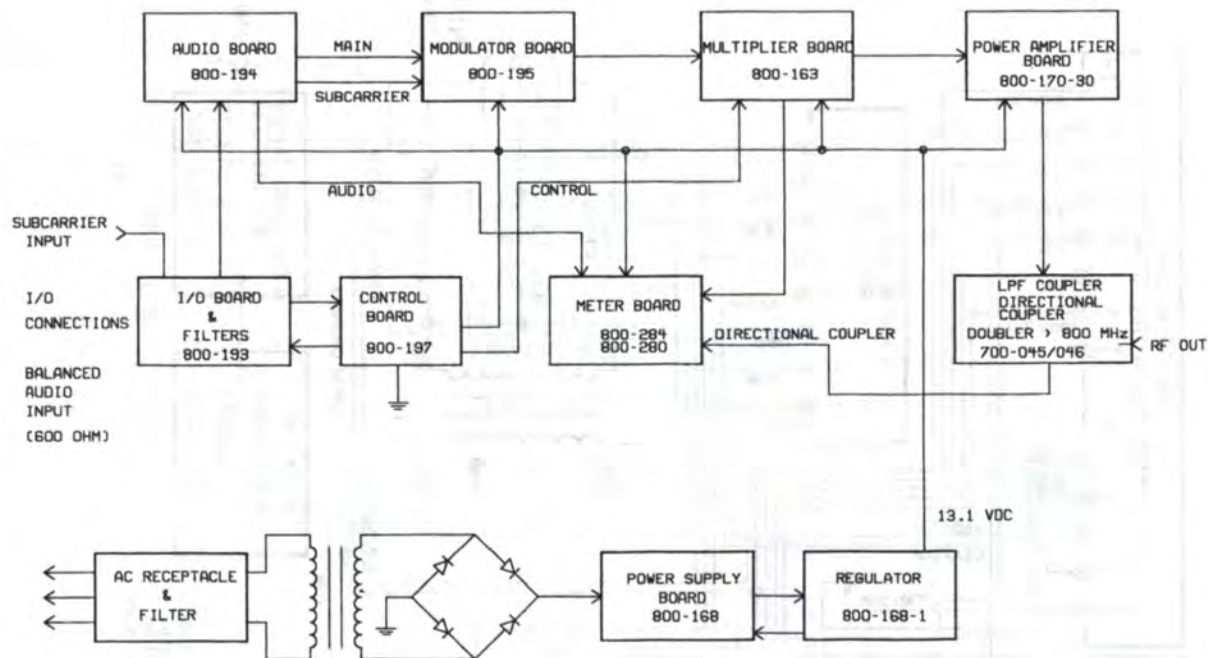
2. Unscrew gold capacitor covers, then adjust C8, C7, C6, C5 for maximum power output. Repeat until no improvement is seen.

3. Switch TEST METER switch to "P.A. CURRENT", adjust C9 for maximum power output for minimum PA current.

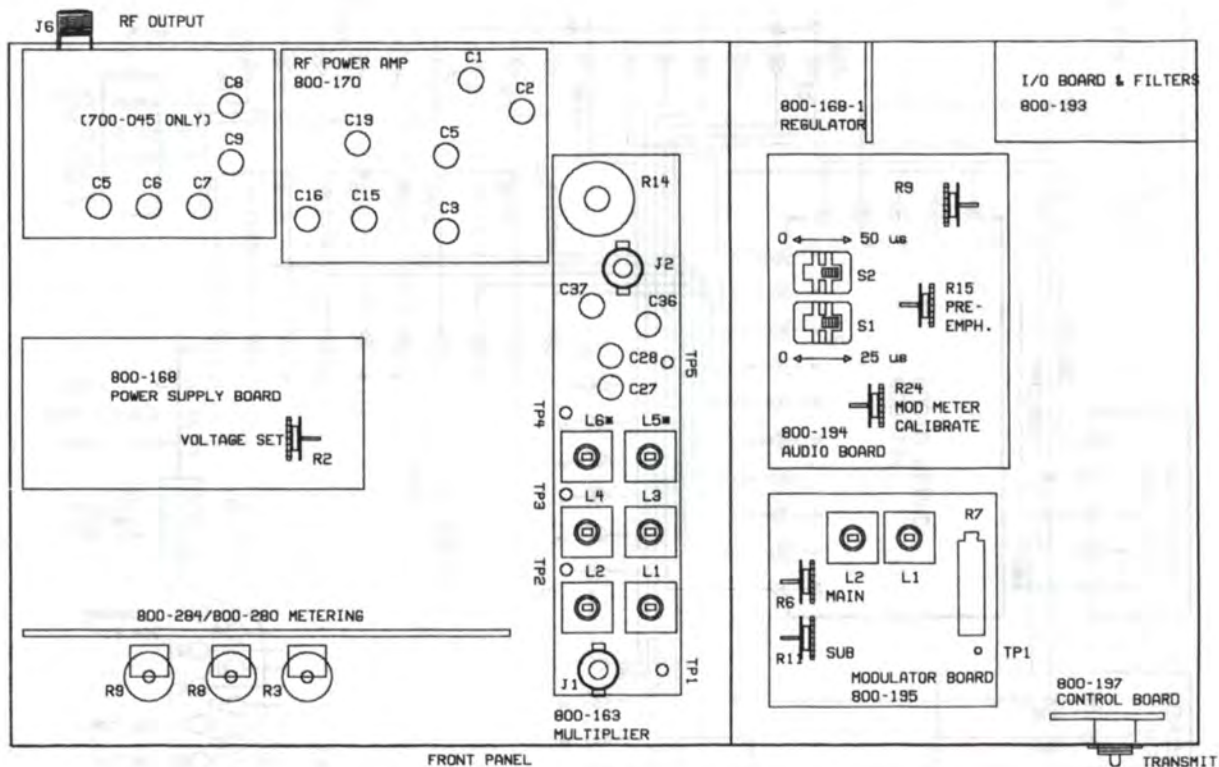
4. Set POWER ADJUST for 10 watts output. The "P.A. CURRENT" should indicate approximately "0 VU" on the TEST METER. If meter reads above "0 VU", slightly re-adjust C9 until 10 watts output is obtained at "0 VU" PA current.

6. Replace gold capacitor covers.

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, J5, (RCA phono jack) on the transmitter rear panel. The adjustment procedure is covered in the section MODULATOR BOARD, 800-195, above.



MARTI ELECTRONICS CLEBURNE, TX 76033-0661	DRAWING NO. COPYRIGHT 702-050	TITLE STL-10 TRANSMITTER BLOCK DIAGRAM
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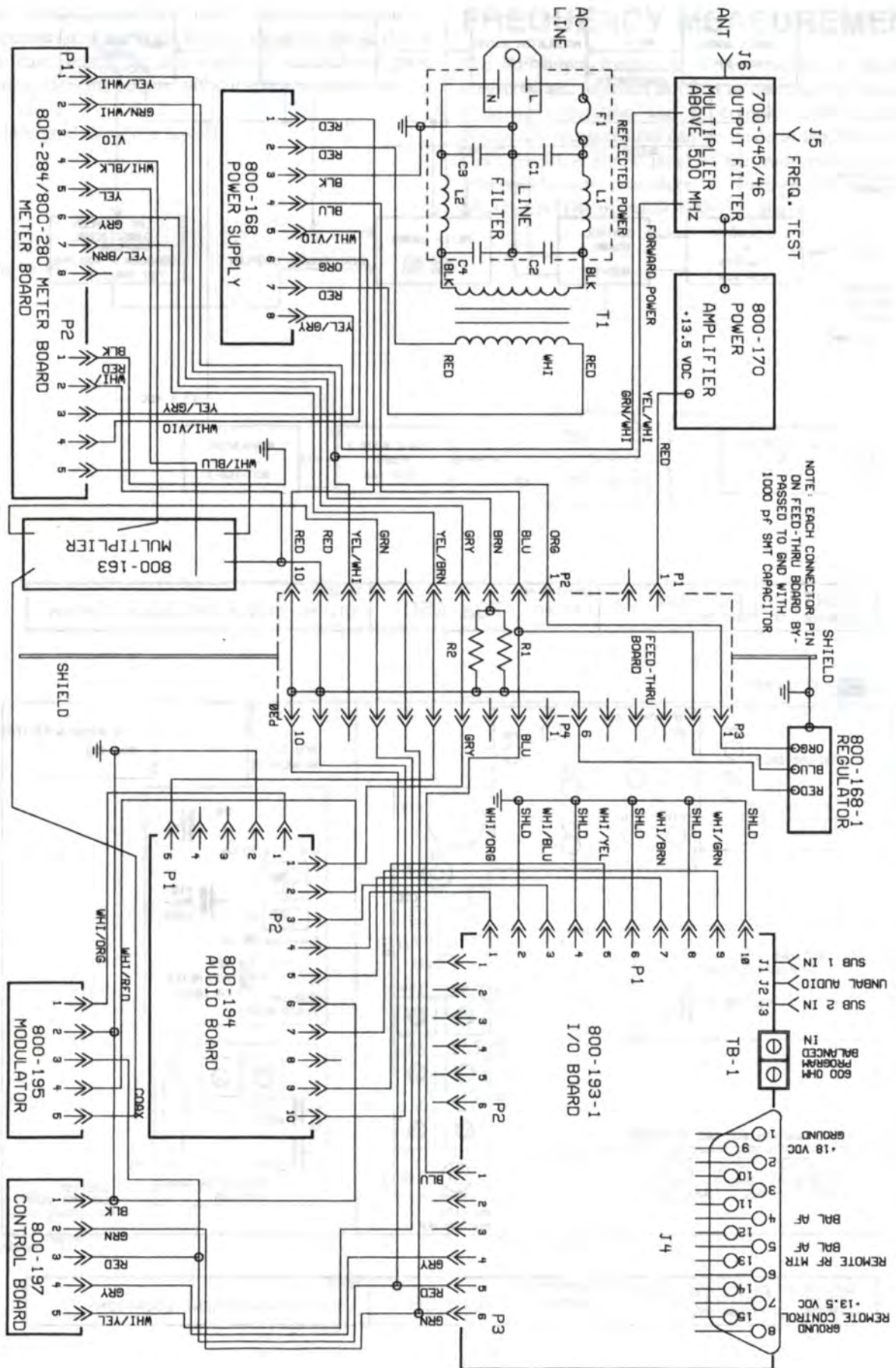
MARTI ELECTRONICS CLEBURNE, TX 76033-0661	DRAWING NO. COPYRIGHT 702-056	TITLE STL-10 ADJUSTMENT LOCATIONS
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MARTI ELECTRONICS
CLEBURNE, TX 76033-0661

DRAWING NO.
COPYRIGHT 21-JAN-94 702-049-1

TITLE
STL-10 MAIN FRAME



Parts List
Main Frame, STL-10 Transmitter
MARTI NO. 702-049-1

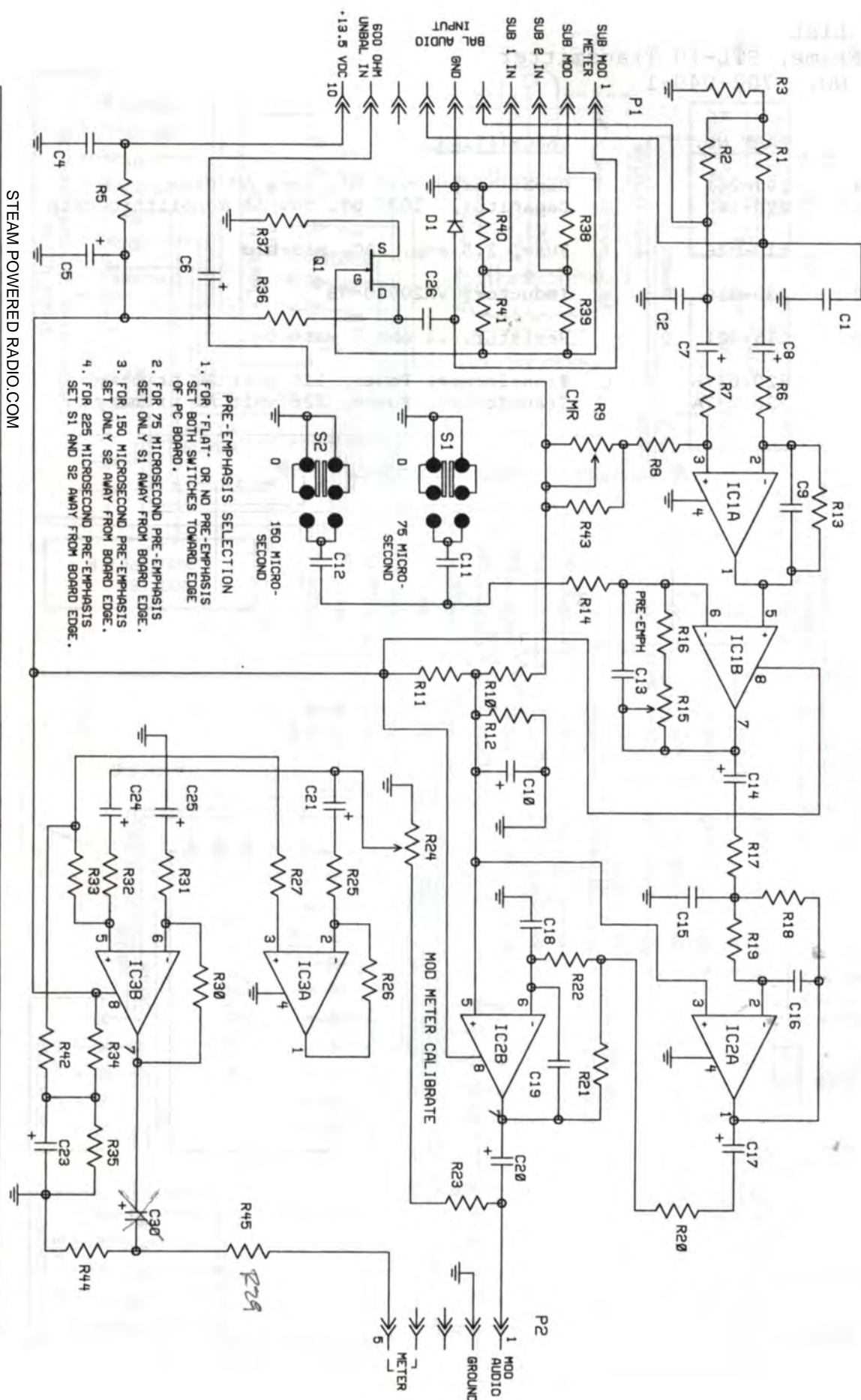
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
C1 - C4	297-201	Capacitor, .0022 mf, Type AU Disc
C5 - C15	270-102	Capacitor, 1000 pf, 50v 5% monolithic chip
F1	510-026	Fuse, 2.5 amp, 3AG, slo-blo
L1 - L2	330-019	Inductor, VK20010-3B
R1 - R2	115-001	Resistor, .1 ohm 2 watt 5%
T1	320-037B 320-037A	Transformer, Power, 110 volt AC primary Transformer, Power, 220 volt AC primary

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MARTI ELECTRONICS
CLEBURNE, TX 76033-0661

DRAWING NO.
COPYRIGHT 800-194A
06-JAN-94

TITLE AUDIO BOARD - STL-10
WITH LED PEAK MODULATION METER

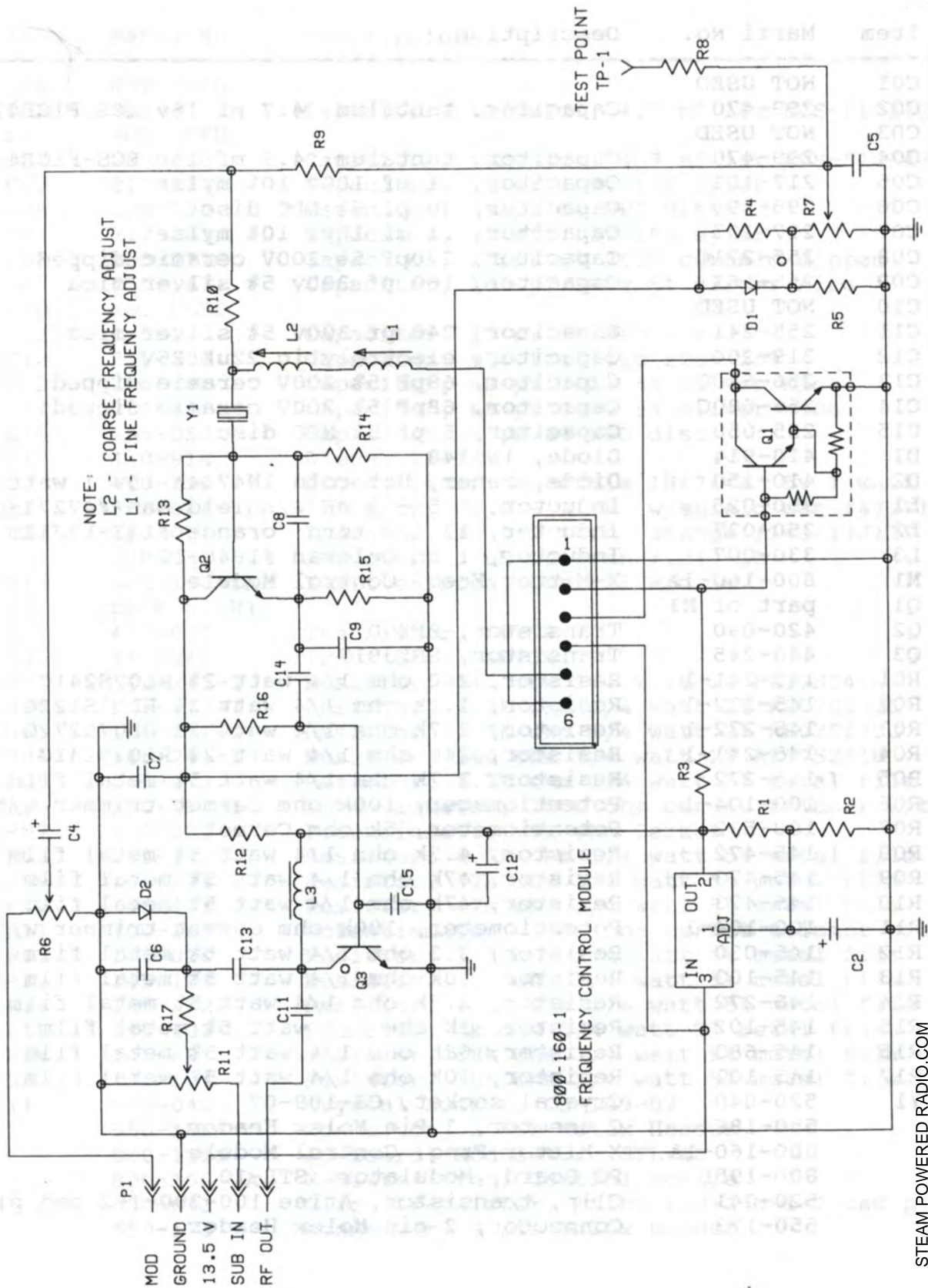


Parts List
 STL-10 Audio Board
 MARTI 800-194 01-14-94

Item	Marti No.	Description
C01	270-102	Capacitor, monolithic chip, 1000 pf 50v 5%
C02	270-102	Capacitor, monolithic chip, 1000 pf 50v 5%
C03	NOT USED	
C04	270-102	Capacitor, monolithic chip, 1000 pf 50v 5%
C05	219-221	Capacitor, electrolytic 220uF 25V radial
C06	219-220	Capacitor, electrolytic 22uF 25V radial
C07	219-220	Capacitor, electrolytic 22uF 25V radial
C08	219-220	Capacitor, electrolytic 22uF 25V radial
C09	255-100	Capacitor, 10 pf 5% NPO disc
C10	219-221	Capacitor, electrolytic 220uF 25V radial
C11	215-102	Capacitor, .001 mfd 2.5% 100v polypropylen
C12	215-202	Capacitor, .002 mfd 2.5% 100v polypropylen
C13	256-131	Capacitor, 130 pf 5% 50V NPO disc
C14	219-220	Capacitor, electrolytic 22uF 25V radial
C15	215-301	Capacitor, 300 pf 2.5% 100v polypropylene
C16	215-151	Capacitor, 150 pf 2% silver mica
C17	219-220	Capacitor, electrolytic 22uF 25V radial
C18	215-242	Capacitor, .0024 mfd 2.5% 100v polypropyle
C19	215-151	Capacitor, 150 pf 2% silver mica
C20	219-220	Capacitor, electrolytic 22uF 25V radial
C21	219-220	Capacitor, electrolytic 22uF 25V radial
C22	NOT USED	
C23	219-220	Capacitor, electrolytic 22uF 25V radial
C24	219-220	Capacitor, electrolytic 22uF 25V radial
C25	219-220	Capacitor, electrolytic 22uF 25V radial
C26	217-103	Capacitor, .1 mf 100v 10% mylar
C27	NOT USED	
C28	NOT USED	
C29	299-470	Capacitor, tantalum, 4.7 mf 16v ECS-F1CE47
C30	299-470	Capacitor, tantalum, 4.7 mf 16v ECS-F1CE47
D1	412-494	Diode, Germanium, 1N270
D2	NOT USED	
D3	NOT USED	
D4	NOT USED	
D5	NOT USED	
D6	NOT USED	
IC1	400-072	Integrated Circuit, TI TL072CP
IC2	400-072	Integrated Circuit, TI TL072CP
IC3	400-072	Integrated Circuit, TI TL072CP
Q1	423-822	Transistor, 2N3822
R01	145-681	Resistor, 680 ohm 1/4 watt 5% metal film
R02	145-681	Resistor, 680 ohm 1/4 watt 5% metal film
R03	145-104	Resistor, 100k ohm 1/4 watt 5% metal film
R04	145-122-1	Resistor, 1.2k ohm 1/4 watt 2% RLO7S122G
R05	145-220	Resistor, 22 ohm 1/4 watt 5% metal film
R06	145-124	Resistor, 120k ohm 1/4 watt 2% carbon comp
R07	145-124	Resistor, 120k ohm 1/4 watt 2% carbon comp
R08	145-563	Resistor, 56k ohm 1/4 watt 5% carbon film
R09	101-104	Potentiometer, 100K ohm cermet 3309P-104-
R10	145-122-1	Resistor, 1.2k ohm 1/4 watt 2% RLO7S122G
R11	145-223	Resistor, 22k ohm 1/4 watt 5% metal film
R12	145-223	Resistor, 22k ohm 1/4 watt 5% metal film

Parts List
STL-10 Audio Board
MARTI 800-194 01-14-94

Item	Marti No.	Description
R13	145-683-1	Resistor, 68k ohm 1/4 watt 2% RL07S683G
R14	145-102-1	Resistor, 1k ohm 1/4 watt 2% RL07S102G
R15	101-502	Potentiometer, 5K ohm cermet
R16	145-223	Resistor, 22k ohm 1/4 watt 5% metal film
R17	145-473-1	Resistor, 47k ohm 1/4 watt 2% RLO7S473G
R18	145-473-1	Resistor, 47k ohm 1/4 watt 2% RLO7S473G
R19	145-223-1	Resistor, 22k ohm 1/4 watt 2% RL07S223G
R20	145-183-1	Resistor, 18k ohm 1/4 watt 2% RL07S183G
R21	145-183-1	Resistor, 18k ohm 1/4 watt 2% RL07S183G
R22	145-912-1	Resistor, 9.1k ohm 1/4 watt 2% RL07S912G
R23	145-102	Resistor, 1k ohm 1/4 watt 5% metal film
R24	101-104	Potentiometer, 100K ohm cermet 3309P-104-
R25	145-104	Resistor, 100k ohm 1/4 watt 5% metal film
R26	145-104	Resistor, 100k ohm 1/4 watt 5% metal film
R27	145-104	Resistor, 100k ohm 1/4 watt 5% metal film
R28	NOT USED	
R29	145-103	Resistor, 10k ohm 1/4 watt 5% metal film
R30	145-104	Resistor, 100k ohm 1/4 watt 5% metal film
R31	145-104	Resistor, 100k ohm 1/4 watt 5% metal film
R32	145-104	Resistor, 100k ohm 1/4 watt 5% metal film
R33	145-104	Resistor, 100k ohm 1/4 watt 5% metal film
R34	145-223	Resistor, 22k ohm 1/4 watt 5% metal film
R35	145-223	Resistor, 22k ohm 1/4 watt 5% metal film
R36	145-222	Resistor, 2.2k ohm 1/4 watt 5% metal film
R37	145-152	Resistor, 1.5k ohm 1/4 ohm 5% metal film
R38	145-472	Resistor, 4.7k ohm 1/4 watt 5% metal film
R39	145-103	Resistor, 10k ohm 1/4 watt 5% metal film
R40	145-472	Resistor, 4.7k ohm 1/4 watt 5% metal film
R41	145-103	Resistor, 10k ohm 1/4 watt 5% metal film
R42	145-030	Resistor, 3.3 ohm 1/4 watt 5% metal film
R43	145-223	Resistor, 22k ohm 1/4 watt 5% metal film
R44	145-103	Resistor, 10k ohm 1/4 watt 5% metal film
R45	145-103	Resistor, 10k ohm 1/4 watt 5% metal film
S1	530-053	Switch, slide Alco SLSA-220-1
S2	530-053	Switch, slide Alco SLSA-220-1
	800-194B	PC Board, Audio STL-10
	550-070	IC Socket, 8 pin
	550-125	Connector, 5 pin Molex Header



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 CLEBURNE, TX 76033-0661

DRAWING NO. 800-195
 COPYRIGHT
 06-JAN-94

TITLE

MODULATOR

Parts List

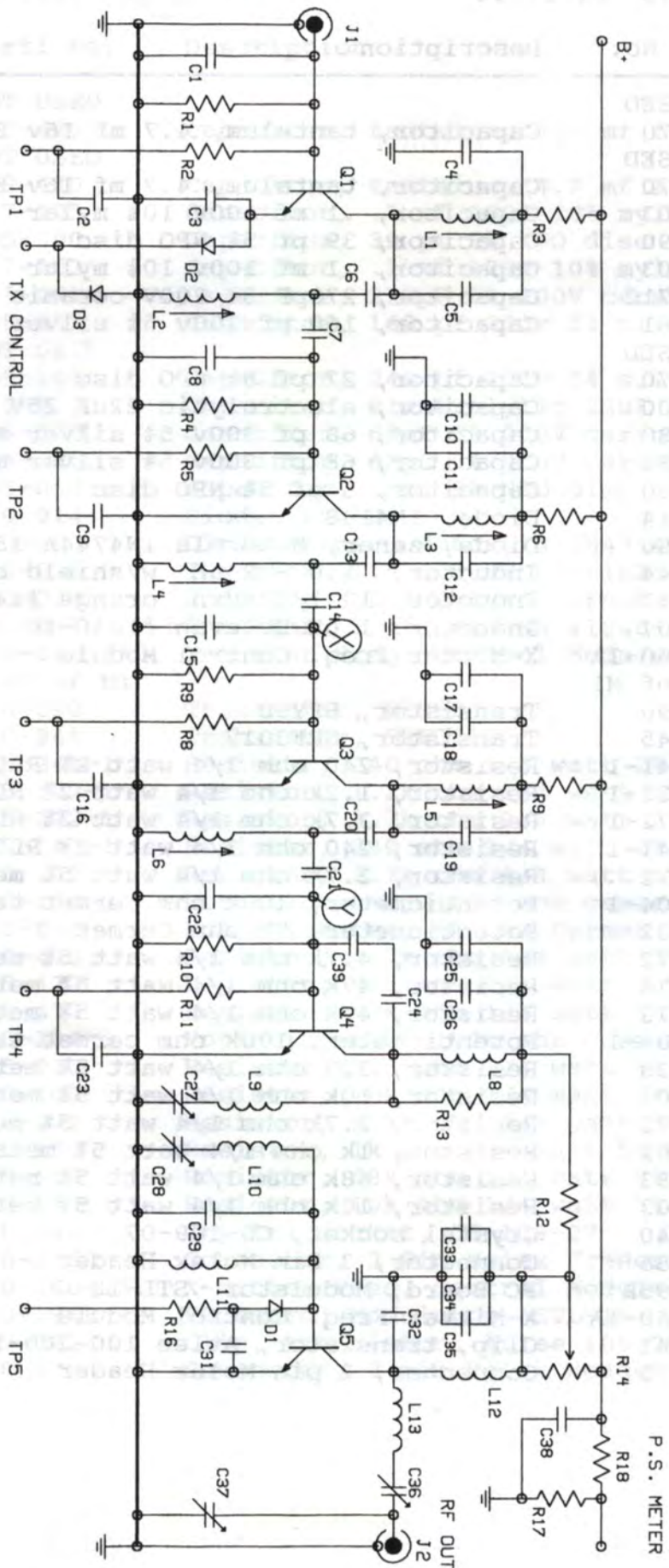
STL-10/30 150/215/300 Modulator

MARTI 800-195 01-17-94

Item	Marti No.	Description
C01	NOT USED	
C02	299-470	Capacitor, tantalum, 4.7 mf 16v ECS-F1CE47
C03	NOT USED	
C04	299-470	Capacitor, tantalum, 4.7 mf 16v ECS-F1CE47
C05	217-103	Capacitor, .1 mf 100v 10% mylar
C06	295-390	Capacitor, 39 pf 5% NPO disc
C07	217-103	Capacitor, .1 mf 100v 10% mylar
C08	255-271C	Capacitor, 270pF 5% 200V ceramic dipped
C09	255-161	Capacitor, 160 pf 300v 5% silver mica
C10	NOT USED	
C11	255-241	Capacitor, 240 pf 300v 5% silver mica
C12	219-200	Capacitor, electrolytic 22uF 25V
C13	256-680C	Capacitor, 68pF 5% 200V ceramic dipped
C14	256-680C	Capacitor, 68pF 5% 200V ceramic dipped
C15	255-050	Capacitor, 5 pf 5% NPO disc
D1	410-914	Diode, 1N4148
D2	410-150	Diode, zener, Motorola 1N4744A 15v 1 watt
L1	350-025	Inductor, 1.5 - 3 uH w/shield can #47271-0
L2	350-037	Inductor, 13 1/2 turn orange #143-13J12S
L3	330-007	Inductor, 1 uH Delevan #1840-10
M1	800-160-1A	X-Mitter Freq. Control Module
Q1	part of M1	
Q2	420-090	Transistor, BFY90
Q3	440-245	Transistor, SRF3017
R01	145-241-1	Resistor, 240 ohm 1/4 watt 2% RL07S241G
R02	145-122-1	Resistor, 1.2k ohm 1/4 watt 2% RL07S122G
R03	145-272-1	Resistor, 2.7k ohm 1/4 watt 2% RL07S272G
R04	145-241-1	Resistor, 240 ohm 1/4 watt 2% RL07S241G
R05	145-272	Resistor, 2.7k ohm 1/4 watt 5% metal film
R06	100-104-1	Potentiometer, 100k ohm cermet trimmer w/t
R07	100-532	Potentiometer, 5k ohm Cermet
R08	145-472	Resistor, 4.7k ohm 1/4 watt 5% metal film
R09	145-473	Resistor, 47k ohm 1/4 watt 5% metal film
R10	145-473	Resistor, 47k ohm 1/4 watt 5% metal film
R11	100-104-1	Potentiometer, 100k ohm cermet trimmer w/t
R12	145-030	Resistor, 3.3 ohm 1/4 watt 5% metal film
R13	145-103	Resistor, 10k ohm 1/4 watt 5% metal film
R14	145-272	Resistor, 2.7k ohm 1/4 watt 5% metal film
R15	145-102	Resistor, 1k ohm 1/4 watt 5% metal film
R16	145-683	Resistor, 68k ohm 1/4 watt 5% metal film
R17	145-103	Resistor, 10k ohm 1/4 watt 5% metal film
Y1	520-040	Crystal socket, CS-109-07
	550-186	Connector, 3 Pin Molex Header
	800-160-1A	X-Mitter Freq. Control Module
	800-195B	PC Board, Modulator STL-10
	520-041	Clip, transistor, Atlee 100-200-1-2 cad pl
	550-173	Connector, 2 pin Molex Header

Parts List
STL-10/30 450/950 Modulator
MARTI 800-195 01-17-94

Item	Marti No.	Description
C01	NOT USED	
C02	299-470	Capacitor, tantalum, 4.7 mf 16v ECS-F1CE47
C03	NOT USED	
C04	299-470	Capacitor, tantalum, 4.7 mf 16v ECS-F1CE47
C05	217-103	Capacitor, .1 mf 100v 10% mylar
C06	295-390	Capacitor, 39 pf 5% NPO disc
C07	217-103	Capacitor, .1 mf 100v 10% mylar
C08	255-271C	Capacitor, 270pF 5% 200V ceramic dipped
C09	255-161	Capacitor, 160 pf 300v 5% silver mica
C10	NOT USED	
C11	255-270	Capacitor, 27 pf 5% NPO disc
C12	219-200	Capacitor, electrolytic 22uF 25V
C13	256-680	Capacitor, 68 pf 300v 5% silver mica
C14	256-680	Capacitor, 68 pf 300v 5% silver mica
C15	255-050	Capacitor, 5 pf 5% NPO disc
D1	410-914	Diode, 1N4148
D2	410-150	Diode, zener, Motorola 1N4744A 15v 1 watt
L1	350-044	Inductor, 1.0 - 2 uH w/shield can #47271
L2	350-037	Inductor, 13 1/2 turn orange #143-13J12S
L3	330-007	Inductor, 1 uH Delevan #1840-10
M1	800-160-1A	X-Mitter Freq. Control Module
Q1	part of M1	
Q2	420-090	Transistor, BFY90
Q3	440-245	Transistor, SRF3017
R01	145-241-1	Resistor, 240 ohm 1/4 watt 2% RL07S241G
R02	145-122-1	Resistor, 1.2k ohm 1/4 watt 2% RL07S122G
R03	145-272-1	Resistor, 2.7k ohm 1/4 watt 2% RL07S272G
R04	145-241-1	Resistor, 240 ohm 1/4 watt 2% RL07S241G
R05	145-272	Resistor, 2.7k ohm 1/4 watt 5% metal film
R06	100-104-1	Potentiometer, 100k ohm cermet trimmer w/t
R07	100-532	Potentiometer, 5k ohm Cermet
R08	145-472	Resistor, 4.7k ohm 1/4 watt 5% metal film
R09	145-473	Resistor, 47k ohm 1/4 watt 5% metal film
R10	145-473	Resistor, 47k ohm 1/4 watt 5% metal film
R11	100-104-1	Potentiometer, 100k ohm cermet trimmer w/t
R12	145-030	Resistor, 3.3 ohm 1/4 watt 5% metal film
R13	145-103	Resistor, 10k ohm 1/4 watt 5% metal film
R14	145-272	Resistor, 2.7k ohm 1/4 watt 5% metal film
R15	145-102	Resistor, 1k ohm 1/4 watt 5% metal film
R16	145-683	Resistor, 68k ohm 1/4 watt 5% metal film
R17	145-103	Resistor, 10k ohm 1/4 watt 5% metal film
Y1	520-040	Crystal socket, CS-109-07
	550-186	Connector, 3 Pin Molex Header
	800-195B	PC Board, Modulator STL-10
	800-160-1A	X-Mitter Freq. Control Module
	520-041	Clip, transistor, Atlee 100-200-1-2 cad pl
	550-173	Connector, 2 pin Molex Header



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

STEAM POWERED RADIO.COM

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800-163

TITLE

MULTIPLIER BOARD

Parts List
X-Mitter 150 Multiplier
MARTI 800-163 01-14-94

Item	Marti No.	Description
C01	255-241	Capacitor, 240 pf 300v 5% silver mica
C02	217-104	Capacitor, .01 mf 50v GMV disc
C03	268-203	Capacitor, .02 mf 50v Z5U disc
C04	217-104	Capacitor, .01 mf 50v GMV disc
C05	256-750	Capacitor, 75 pf 300v 5% silver mica
C06	255-020	Capacitor, 2 pf 5% type QC
C07	256-151	Capacitor, 150 pf 5% NPO disc
C08	255-241	Capacitor, 240 pf 300v 5% silver mica
C09	217-104	Capacitor, .01 mf 50v GMV disc
C10	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C11	217-103	Capacitor, .1 mf 100v 10% mylar
C12	256-680C	Capacitor, 68pF 5% 200V ceramic dipped
C13	255-020	Capacitor, 2 pf 5% type QC
C14	256-680C	Capacitor, 68pF 5% 200V ceramic dipped
C15	NOT USED	
C16	NOT USED	
C17	NOT USED	
C18	NOT USED	
C19	NOT USED	
C20	NOT USED	
C21	NOT USED	
C22	256-131	Capacitor, 130 pf 5% 50V NPO disc
C23	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C24	241-270	Capacitor, uncased mica 27pF 5% FWM602
C25	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C26	270-102	Capacitor, monolithic chip, 1000 pf 50v 5%
C27	230-109	Capacitor, variable, vertical 1.9-15.7 pf
C28	230-109	Capacitor, variable, vertical 1.9-15.7 pf
C29	241-680	Capacitor, uncased mica 68 pf 5% FWM602
C30	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C31	253-471	Capacitor, 470 pf 50v 10% Y5P disc
C32	241-100	Capacitor, uncased mica 10 pf 5% FWM602
C33	299-220	Capacitor, tantalum, 2.2 mf 25v ECS-F1EE22
C34	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C35	217-103	Capacitor, .1 mf 100v 10% mylar
C36	290-521	Capacitor, variable, 5-25 pf GUK-25000
C37	290-521	Capacitor, variable, 5-25 pf GUK-25000
C38	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
D1	412-494	Diode, Germanium, 1N270
D2	412-494	Diode, Germanium, 1N270
D3	414-007	Diode, Fagor 1N4007
J1	550-084	Connector, Phono Jack, Molex 15-24-0503
J2	550-084	Connector, Phono Jack, Molex 15-24-0503
L01	350-040	Inductor, 6 1/2 turn blue #144-06J12S
L02	350-040	Inductor, 6 1/2 turn blue #144-06J12S
L03	350-039	Inductor, 2 1/2 turn red #144-02J12S
L04	350-039	Inductor, 2 1/2 turn red #144-02J12S
L05	NOT USED	
L06	NOT USED	
L07	NOT USED	
L08	350-152	Inductor, 6 turn 22 AWG CW 215 Mult.
L09	350-164	Inductor, 4 turn 22 AWG buss wire cw on .0

Parts List
X-Mitter 150 Multiplier
MARTI 800-163 01-14-94

Item	Marti No.	Description
L10	350-153	Inductor, 4 turn 20 AWG CW
L11	330-021	Inductor, 3.3uH #70-19
L12	330-020	Inductor, .33 uH
L13	350-156	Inductor, 6 turn 20 AWG CCW
Q1	440-245	Transistor, SRF3017
Q2	440-245	Transistor, SRF3017
Q3	NOT USED	
Q4	424-427	Transistor, SRF944
Q5	420-237	Transistor, Philips BFQ43S
R01	145-102	Resistor, 1k ohm 1/4 watt 5% metal film
R02	145-103	Resistor, 10k ohm 1/4 watt 5% metal film
R03	145-101	Resistor, 100 ohm 1/4 watt 5% metal film
R04	145-272	Resistor, 2.7k ohm 1/4 watt 5% metal film
R05	145-153	Resistor, 15k ohm 1/4 watt 5% metal film
R06	145-680-C	Resistor, 68 ohm 1/4 watt 5% carbon comp
R07	NOT USED	
R08	NOT USED	
R09	NOT USED	
R10	145-331	Resistor, 330 ohm 1/4 watt 5% metal film
R11	145-103	Resistor, 10k ohm 1/4 watt 5% metal film
R12	145-680-C	Resistor, 68 ohm 1/4 watt 5% carbon comp
R13	145-471	Resistor, 470 ohm 1/4 watt 5% metal film
R14	100-101	Potentiometer, 100 ohm Mallory MR100P
R15	NOT USED	
R16	145-471	Resistor, 470 ohm 1/4 watt 5% metal film
R17	145-102	Resistor, 1k ohm 1/4 watt 5% metal film
R18	145-473	Resistor, 47k ohm 1/4 watt 5% metal film
	511-038	Terminal, #1238
	800-163B	PC Board, Multiplier RPT-2/15/30 STL-10
	520-049	Heatsink, Thermalloy 2260R Red

Parts List
X-Mitter 215 Multiplier
MARTI 800-163 01-14-94

Item	Marti No.	Description
C01	255-241	Capacitor, 240 pf 300v 5% silver mica
C02	217-104	Capacitor, .01 mf 50v GMV disc
C03	268-203	Capacitor, .02 mf 50v Z5U disc
C04	217-104	Capacitor, .01 mf 50v GMV disc
C05	255-470C	Capacitor, 47pF 5% 200V ceramic dipped
C06	255-020	Capacitor, 2 pf 5% type QC
C07	256-680C	Capacitor, 68pF 5% 200V ceramic dipped
C08	256-131	Capacitor, 130 pf 5% 50V NPO disc
C09	217-104	Capacitor, .01 mf 50v GMV disc
C10	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C11	217-103	Capacitor, .1 mf 100v 10% mylar
C12	255-270	Capacitor, 27 pf 5% NPO disc
C13	255-040	Capacitor, 3.9 pf 5% type QC
C14	255-470C	Capacitor, 47pF 5% 200V ceramic dipped
C15	255-241	Capacitor, 240 pf 300v 5% silver mica
C16	217-104	Capacitor, .01 mf 50v GMV disc
C17	NOT USED	
C18	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C19a	255-270	Capacitor, 27 pf 5% NPO disc
C19b	255-050	Capacitor, 5 pf 5% NPO disc
C20	255-040	Capacitor, 3.9 pf 5% type QC
C21	295-390	Capacitor, 39 pf 5% NPO disc
C22	295-390	Capacitor, 39 pf 5% NPO disc
C23	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C24a	241-220	Capacitor, uncased mica 22pF 5% FWM602
C24b	241-470	Capacitor, uncased mica 47 pf 5% FWM602
C25	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C26	270-102	Capacitor, monolithic chip, 1000 pf 50v 5%
C27	230-103	Capacitor, variable, vertical 1.3-5.4 pf T
C28	230-103	Capacitor, variable, vertical 1.3-5.4 pf T
C29	241-680	Capacitor, uncased mica 68 pf 5% FWM602
C30	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C31	253-471	Capacitor, 470 pf 50v 10% Y5P disc
C32	241-100	Capacitor, uncased mica 10 pf 5% FWM602
C33	299-220	Capacitor, tantalum, 2.2 mf 25v ECS-F1EE22
C34	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C35	217-103	Capacitor, .1 mf 100v 10% mylar
C36	290-521	Capacitor, variable, 5-25 pf GKU-25000
C37	290-521	Capacitor, variable, 5-25 pf GKU-25000
C38	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
D1	412-494	Diode, Germanium, 1N270
D2	412-494	Diode, Germanium, 1N270
D3	414-007	Diode, Fagor 1N4007
J1	550-084	Connector, Phono Jack, Molex 15-24-0503
J2	550-084	Connector, Phono Jack, Molex 15-24-0503
L01	350-037	Inductor, 13 1/2 turn orange #143-13J12S
L02	350-037	Inductor, 13 1/2 turn orange #143-13J12S
L03	350-040	Inductor, 6 1/2 turn blue #144-06J12S
L04	350-040	Inductor, 6 1/2 turn blue #144-06J12S
L05	350-039	Inductor, 2 1/2 turn red #144-02J12S
L06	350-039	Inductor, 2 1/2 turn red #144-02J12S
L07	NOT USED	

Parts List
X-Mitter 215 Multiplier
MARTI 800-163 01-14-94

Item	Marti No.	Description
L08	350-152P	Inductor, 6 turn 22 AWG CW 215 Mult.
L09	350-154P	Inductor, 5 turn 20 AWG CW 215 Mult.
L10	350-154P	Inductor, 5 turn 20 AWG CW 215 Mult.
L11	330-021	Inductor, 3.3uH #70-19
L12	350-121	Inductor, 10 turn .15 uH #70-03
L13	350-157P	Inductor, 5 turn 20 AWG CCW 215 Mult.
Q1	440-245	Transistor, SRF3017
Q2	440-245	Transistor, SRF3017
Q3	440-245	Transistor, SRF3017
Q4	424-427	Transistor, SRF944
Q5	420-237	Transistor, Philips BFQ43S
R01	145-102	Resistor, 1k ohm 1/4 watt 5% metal film
R02	145-103	Resistor, 10k ohm 1/4 watt 5% metal film
R03	145-331	Resistor, 330 ohm 1/4 watt 5% metal film
R04	145-272	Resistor, 2.7k ohm 1/4 watt 5% metal film
R05	145-153	Resistor, 15k ohm 1/4 watt 5% metal film
R06	145-680-C	Resistor, 68 ohm 1/4 watt 5% carbon comp
R07	145-561	Resistor, 560 ohm 1/4 watt 5% metal film
R08	145-103	Resistor, 10k ohm 1/4 watt 5% metal film
R09	145-680-C	Resistor, 68 ohm 1/4 watt 5% carbon comp
R10	145-561	Resistor, 560 ohm 1/4 watt 5% metal film
R11	145-103	Resistor, 10k ohm 1/4 watt 5% metal film
R12	145-680-C	Resistor, 68 ohm 1/4 watt 5% carbon comp
R13	145-222	Resistor, 2.2k ohm 1/4 watt 5% metal film
R14	100-101	Potentiometer, 100 ohm Mallory MR100P
R15	NOT USED	
R16	145-472	Resistor, 4.7k ohm 1/4 watt 5% metal film
R17	145-102	Resistor, 1k ohm 1/4 watt 5% metal film
R18	145-473	Resistor, 47k ohm 1/4 watt 5% metal film
	511-038	Terminal, #1238
	520-049	Heatsink, Thermalloy 2260R Red
	800-163B	PC Board, Multiplier RPT-2/15/30 STL-10

Parts List
X-Mitter 300 Multiplier
MARTI 800-163 01-14-94

Item	Marti No.	Description
C01	256-301	Capacitor, 300 pf 5% NPO disc
C02	217-104	Capacitor, .01 mf 50v GMV disc
C03	268-203	Capacitor, .02 mf 50v Z5U disc
C04	217-104	Capacitor, .01 mf 50v GMV disc
C05	256-750	Capacitor, 75 pf 300v 5% silver mica
C06	255-040	Capacitor, 3.9 pf 5% type QC
C07	256-151	Capacitor, 150 pf 5% NPO disc
C08	255-241	Capacitor, 240 pf 300v 5% silver mica
C09	217-104	Capacitor, .01 mf 50v GMV disc
C10	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C11	217-103	Capacitor, .1 mf 100v 10% mylar
C12	256-680C	Capacitor, 68pF 5% 200V ceramic dipped
C13	255-040	Capacitor, 3.9 pf 5% type QC
C14	256-131	Capacitor, 130 pf 5% 50V NPO disc
C15	256-131	Capacitor, 130 pf 5% 50V NPO disc
C16	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C17	217-103	Capacitor, .1 mf 100v 10% mylar
C18	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C19	255-270	Capacitor, 27 pf 5% NPO disc
C20	255-020	Capacitor, 2 pf 5% type QC
C21	255-470C	Capacitor, 47pF 5% 200V ceramic dipped
C22	295-390	Capacitor, 39 pf 5% NPO disc
C23	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C24	241-270	Capacitor, uncased mica 27pF 5% FWM602
C25	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C26	270-102	Capacitor, monolithic chip, 1000 pf 50v 5%
C27	230-109	Capacitor, variable, vertical 1.9-15.7 pf
C28	230-109	Capacitor, variable, vertical 1.9-15.7 pf
C29	241-470	Capacitor, uncased mica 47 pf 5% FWM602
C30	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C31	253-471	Capacitor, 470 pf 50v 10% Y5P disc
C32	NOT USED	
C33	299-220	Capacitor, tantalum, 2.2 mf 25v ECS-F1EE22
C34	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C35	217-103	Capacitor, .1 mf 100v 10% mylar
C36	290-523	Capacitor, variable, 3.5-36 pf GXA-36000
C37	290-523	Capacitor, variable, 3.5-36 pf GXA-36000
C38	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C39	241-120	Capacitor, uncased mica 12 pf 5% FWM602
D1	412-494	Diode, Germanium, 1N270
D2	412-494	Diode, Germanium, 1N270
D3	414-007	Diode, Fagor 1N4007
J1	550-084	Connector, Phono Jack, Molex 15-24-0503
J2	550-084	Connector, Phono Jack, Molex 15-24-0503
L01	350-040	Inductor, 6 1/2 turn blue #144-06J12S
L02	350-040	Inductor, 6 1/2 turn blue #144-06J12S
L03	350-039	Inductor, 2 1/2 turn red #144-02J12S
L04	350-039	Inductor, 2 1/2 turn red #144-02J12S
L05	350-038	Inductor, 1 1/2 turn brown 144-01J12S
L06	350-038	Inductor, 1 1/2 turn brown 144-01J12S
L07	NOT USED	
L08	350-152	Inductor, 6 turn 22 AWG CW 215 Mult.

Parts List
X-Mitter 300 Multiplier
MARTI 800-163 01-14-94

Item	Marti No.	Description
L09	350-120P	Inductor, 1-1/2 turn 14 AWG (CW) silver
L10	350-120P	Inductor, 1-1/2 turn 14 AWG (CW) silver
L11	145-470-C	Resistor, 47 ohm 1/4 watt 5% carbon comp
L12	350-121	Inductor, 10 turn .15 uH #70-03
L13	350-165	Inductor, 3 turn 16AWG
Q1	440-245	Transistor, SRF3017
Q2	440-245	Transistor, SRF3017
Q3	440-245	Transistor, SRF3017
Q4	424-427	Transistor, SRF944
Q5	420-629	Transistor, Motorola MRF629
R01	145-102	Resistor, 1k ohm 1/4 watt 5% metal film
R02	145-103	Resistor, 10k ohm 1/4 watt 5% metal film
R03	145-331	Resistor, 330 ohm 1/4 watt 5% metal film
R04	145-272	Resistor, 2.7k ohm 1/4 watt 5% metal film
R05	145-153	Resistor, 15k ohm 1/4 watt 5% metal film
R06	145-680-C	Resistor, 68 ohm 1/4 watt 5% carbon comp
R07	145-272	Resistor, 2.7k ohm 1/4 watt 5% metal film
R08	145-153	Resistor, 15k ohm 1/4 watt 5% metal film
R09	145-680-C	Resistor, 68 ohm 1/4 watt 5% carbon comp
R10	145-561	Resistor, 560 ohm 1/4 watt 5% metal film
R11	145-103	Resistor, 10k ohm 1/4 watt 5% metal film
R12	145-030-C	Resistor, 3.3 ohm 1/4 watt 5% carbon comp
R13	145-152-C	Resistor, 1.5k ohm 1/4 watt 5% carbon comp
R14	100-101	Potentiometer, 100 ohm Mallory MR100P
R15	NOT USED	
R16	145-472	Resistor, 4.7k ohm 1/4 watt 5% metal film
R17	145-102	Resistor, 1k ohm 1/4 watt 5% metal film
R18	145-473	Resistor, 47k ohm 1/4 watt 5% metal film
	800-163B	PC Board, Multiplier RPT-2/15/30 STL-10
	520-049	Heatsink, Thermalloy 2260R Red
	511-038	Terminal, #1238

Parts List

X-Mitter 450 Multiplier STL-10

MARTI 800-163 01-17-94

Item	Marti No.	Description
C01	255-220	Capacitor, 22 pf 5% NPO disc
C02	217-104	Capacitor, .01 mf 50v GMV disc
C03	268-203	Capacitor, .02 mf 50v Z5U disc
C04	217-104	Capacitor, .01 mf 50v GMV disc
C05	255-390C	Capacitor, 39pF 5% 200V ceramic dipped
C06	255-020	Capacitor, 2 pf 5% type QC
C07	256-680C	Capacitor, 68pF 5% 200V ceramic dipped
C08	256-151	Capacitor, 150 pf 5% NPO disc
C09	217-104	Capacitor, .01 mf 50v GMV disc
C10	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C11	217-103	Capacitor, .1 mf 100v 10% mylar
C12a	255-270	Capacitor, 27 pf 5% NPO disc
C12b	255-030-1	Capacitor, 3 pf 5% NPO disc
C13	255-010	Capacitor, 1 pf 5% type QC
C14	255-470C	Capacitor, 47pF 5% 200V ceramic dipped
C15	255-750	Capacitor, 75 pf 5% NPO disc
C16	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C17	217-103	Capacitor, .1 mf 100v 10% mylar
C18	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C19	255-110	Capacitor, 11 pf 5% NPO disc
C20	255-010	Capacitor, 1 pf 5% type QC
C21	255-140	Capacitor, 14 pf 5% NPO disc
C22	255-270	Capacitor, 27 pf 5% NPO disc
C23	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C24	241-120	Capacitor, uncased mica 12 pf 5% FWM602
C25	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C26	270-102	Capacitor, monolithic chip, 1000 pf 50v 5%
C27	230-103	Capacitor, variable, vertical 1.3-5.4 pf T
C28	230-103	Capacitor, variable, vertical 1.3-5.4 pf T
C29	241-120	Capacitor, uncased mica 12 pf 5% FWM602
C30	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C31	253-471	Capacitor, 470 pf 50v 10% Y5P disc
C32	NOT USED	
C33	299-220	Capacitor, tantalum, 2.2 mf 25v ECS-F1EE22
C34	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C35	217-103	Capacitor, .1 mf 100v 10% mylar
C36	230-106	Capacitor, variable, vertical 1.7-11 pf
C37	230-103	Capacitor, variable, vertical 1.3-5.4 pf T
C38	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C39	241-390	Capacitor, uncased mica 39 pf 5% FWM602
D1	412-494	Diode, Germanium, 1N270
D2	412-494	Diode, Germanium, 1N270
D3	414-007	Diode, Fagor 1N4007
J1	550-084	Connector, Phono Jack, Molex 15-24-0503
J2	550-084	Connector, Phono Jack, Molex 15-24-0503
L01	350-040	Inductor, 6 1/2 turn blue #144-06J12S
L02	350-040	Inductor, 6 1/2 turn blue #144-06J12S
L03	350-039	Inductor, 2 1/2 turn red #144-02J12S
L04	350-039	Inductor, 2 1/2 turn red #144-02J12S
L05	350-038	Inductor, 1 1/2 turn brown 144-01J12S
L06	350-038	Inductor, 1 1/2 turn brown 144-01J12S
L07	NOT USED	

Parts List

X-Mitter 450 Multiplier STL-10

MARTI 800-163 01-17-94

Item	Marti No.	Description
L08	350-120P	Inductor, 1-1/2 turn 14 AWG (CW) silver
L09	350-120P	Inductor, 1-1/2 turn 14 AWG (CW) silver
L10	350-120P	Inductor, 1-1/2 turn 14 AWG (CW) silver
L11	513-016	Ferrite Bead, #56-590-65/4B
L12	350-121	Inductor, 10 turn .15 uH #70-03
L13	350-118P	Inductor, 1 1/2 turn 14 AWG silver
Q1	440-245	Transistor, SRF3017
Q2	440-245	Transistor, SRF3017
Q3	440-245	Transistor, SRF3017
Q4	424-427	Transistor, SRF944
Q5	420-629	Transistor, Motorola MRF629
R01	145-102	Resistor, 1k ohm 1/4 watt 5% metal film
R02	145-103	Resistor, 10k ohm 1/4 watt 5% metal film
R03	145-151	Resistor, 150 ohm 1/4 watt 5% metal film
R04	145-272	Resistor, 2.7k ohm 1/4 watt 5% metal film
R05	145-153	Resistor, 15k ohm 1/4 watt 5% metal film
R06	145-680-C	Resistor, 68 ohm 1/4 watt 5% carbon comp
R07	145-272	Resistor, 2.7k ohm 1/4 watt 5% metal film
R08	145-153	Resistor, 15k ohm 1/4 watt 5% metal film
R09	145-680-C	Resistor, 68 ohm 1/4 watt 5% carbon comp
R10	145-561	Resistor, 560 ohm 1/4 watt 5% metal film
R11	145-103	Resistor, 10k ohm 1/4 watt 5% metal film
R12	145-030-C	Resistor, 3.3 ohm 1/4 watt 5% carbon comp
R13	145-331	Resistor, 330 ohm 1/4 watt 5% metal film
R14	100-101	Potentiometer, 100 ohm Mallory MR100P
R15	NOT USED	
R16	145-472	Resistor, 4.7k ohm 1/4 watt 5% metal film
R17	145-102	Resistor, 1k ohm 1/4 watt 5% metal film
R18	145-473	Resistor, 47k ohm 1/4 watt 5% metal film
	520-049	Heatsink, Thermalloy 2260R Red
	800-163B	PC Board, Multiplier RPT-2/15/30 STL-10
	511-038	Terminal, #1238

Parts List

X-Mitter 950 Multiplier STL10/RPT30

MARTI 800-163 01-21-94

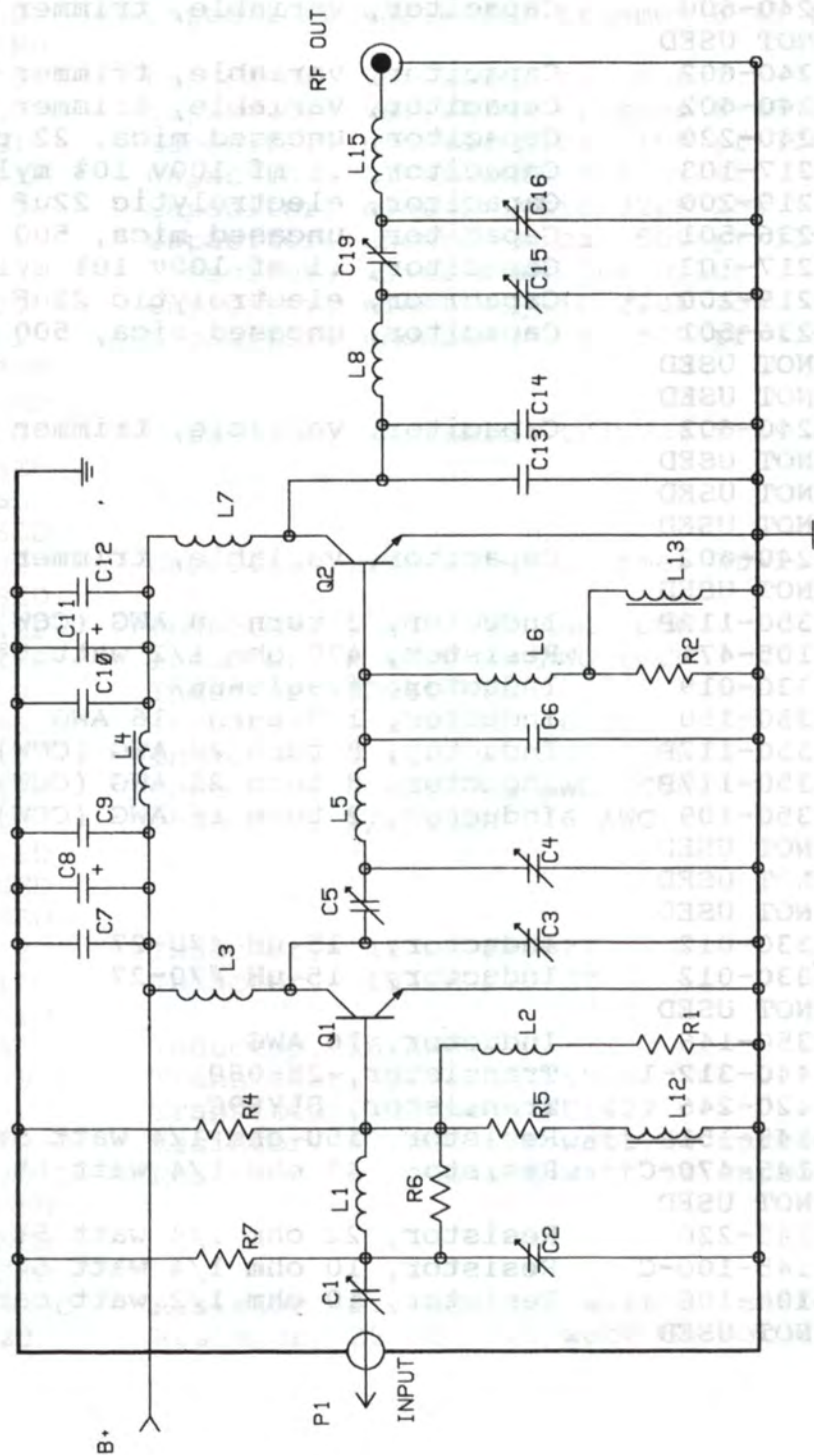
Item	Marti No.	Description
C01	255-220	Capacitor, 22 pf 5% NPO disc
C02	217-104	Capacitor, .01 mf 50v GMV disc
C03	268-203	Capacitor, .02 mf 50v Z5U disc
C04	217-104	Capacitor, .01 mf 50v GMV disc
C05	255-390C	Capacitor, 39pF 5% 200V ceramic dipped
C06	255-020	Capacitor, 2 pf 5% type QC
C07	256-680C	Capacitor, 68pF 5% 200V ceramic dipped
C08	256-151	Capacitor, 150 pf 5% NPO disc
C09	217-104	Capacitor, .01 mf 50v GMV disc
C10	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C11	217-103	Capacitor, .1 mf 100v 10% mylar
C12	255-030-1	Capacitor, 3 pf 5% NPO disc
C12	255-270	Capacitor, 27 pf 5% NPO disc
C13	255-010	Capacitor, 1 pf 5% type QC
C14	255-470C	Capacitor, 47pF 5% 200V ceramic dipped
C15	255-750	Capacitor, 75 pf 5% NPO disc
C16	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C17	217-103	Capacitor, .1 mf 100v 10% mylar
C18	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C19	255-110	Capacitor, 11 pf 5% NPO disc
C20	255-010	Capacitor, 1 pf 5% type QC
C21	255-140	Capacitor, 14 pf 5% NPO disc
C22	255-270	Capacitor, 27 pf 5% NPO disc
C23	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C24	241-120	Capacitor, uncased mica 12 pf 5% FWM602
C25	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C26	270-102	Capacitor, monolithic chip, 1000 pf 50v 5%
C27	230-103	Capacitor, variable, vertical 1.3-5.4 pf T
C28	230-103	Capacitor, variable, vertical 1.3-5.4 pf T
C29	241-390	Capacitor, uncased mica 39 pf 5% FWM602
C30	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C31	253-471	Capacitor, 470 pf 50v 10% Y5P disc
C33	299-220	Capacitor, tantalum, 2.2 mf 25v ECS-F1EE22
C34	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C35	217-103	Capacitor, .1 mf 100v 10% mylar
C36	230-106	Capacitor, variable, vertical 1.7-11 pf
C37	230-103	Capacitor, variable, vertical 1.3-5.4 pf T
C38	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C39	241-120	Capacitor, uncased mica 12 pf 5% FWM602
D1	412-494	Diode, Germanium, 1N270
D2	412-494	Diode, Germanium, 1N270
D3	414-007	Diode, Fagor 1N4007
J1	550-084	Connector, Phono Jack, Molex 15-24-0503
J2	550-084	Connector, Phono Jack, Molex 15-24-0503
L01	350-040	Inductor, 6 1/2 turn blue #144-06J12S
L02	350-040	Inductor, 6 1/2 turn blue #144-06J12S
L03	350-039	Inductor, 2 1/2 turn red #144-02J12S
L04	350-039	Inductor, 2 1/2 turn red #144-02J12S
L05	350-038	Inductor, 1 1/2 turn brown 144-01J12S
L06	350-038	Inductor, 1 1/2 turn brown 144-01J12S
L08	350-120P	Inductor, 1-1/2 turn 14 AWG (CW) silver
L09	350-120P	Inductor, 1-1/2 turn 14 AWG (CW) silver

Parts List

X-Mitter 950 Multiplier STL10/RPT30

MARTI 800-163 01-21-94

Item	Marti No.	Description
L10	350-120P	Inductor, 1-1/2 turn 14 AWG (CW) silver
L11	513-016	Ferrite Bead, #56-590-65/4B
L12	350-121	Inductor, 10 turn .15 uH #70-03
L13	350-118P	Inductor, 1 1/2 turn 14 AWG silver
Q1	440-245	Transistor, SRF3017
Q2	440-245	Transistor, SRF3017
Q3	440-245	Transistor, SRF3017
Q4	424-427	Transistor, SRF944
Q5	420-629	Transistor, Motorola MRF629
R01	145-102	Resistor, 1k ohm 1/4 watt 5% metal film
R02	145-103	Resistor, 10k ohm 1/4 watt 5% metal film
R03	145-151	Resistor, 150 ohm 1/4 watt 5% metal film
R04	145-272	Resistor, 2.7k ohm 1/4 watt 5% metal film
R05	145-153	Resistor, 15k ohm 1/4 watt 5% metal film
R06	145-680-C	Resistor, 68 ohm 1/4 watt 5% carbon comp
R07	145-272	Resistor, 2.7k ohm 1/4 watt 5% metal film
R08	145-153	Resistor, 15k ohm 1/4 watt 5% metal film
R09	145-680-C	Resistor, 68 ohm 1/4 watt 5% carbon comp
R10	145-561	Resistor, 560 ohm 1/4 watt 5% metal film
R11	145-103	Resistor, 10k ohm 1/4 watt 5% metal film
R12	145-030-C	Resistor, 3.3 ohm 1/4 watt 5% carbon comp
R13	145-331	Resistor, 330 ohm 1/4 watt 5% metal film
R14	100-101	Potentiometer, 100 ohm Mallory MR100P
R15	NOT USED	
R16	145-472	Resistor, 4.7k ohm 1/4 watt 5% metal film
R17	145-102	Resistor, 1k ohm 1/4 watt 5% metal film
R18	145-473	Resistor, 47k ohm 1/4 watt 5% metal film
	511-038	Terminal, #1238
	800-163B	PC Board, Multiplier RPT-2/15/30 STL-10
	520-049	Heatsink, Thermalloy 2260R Red



STEAM POWERED RADIO.COM

MARTI ELECTRONICS
CLEBURNE, TX 76033-0661

DRAWING NO.
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17-JAN-94

800-170

TITLE	DATE	BY	REMARKS
1. The first part of the report is devoted to a general survey of the situation in the country.	1950	John Doe	See page 10 for details.
2. The second part of the report deals with the economic situation and the progress of the various industries.	1950	John Doe	See page 15 for details.
3. The third part of the report discusses the social conditions and the state of the population.	1950	John Doe	See page 20 for details.
4. The fourth part of the report is devoted to a detailed study of the agricultural sector.	1950	John Doe	See page 25 for details.
5. The fifth part of the report discusses the state of the education system and the progress of the various schools.	1950	John Doe	See page 30 for details.
6. The sixth part of the report deals with the state of the health services and the progress of the various hospitals.	1950	John Doe	See page 35 for details.
7. The seventh part of the report discusses the state of the transportation system and the progress of the various roads.	1950	John Doe	See page 40 for details.
8. The eighth part of the report deals with the state of the communication system and the progress of the various telegraph lines.	1950	John Doe	See page 45 for details.
9. The ninth part of the report discusses the state of the defense forces and the progress of the various military units.	1950	John Doe	See page 50 for details.
10. The tenth part of the report deals with the state of the foreign relations and the progress of the various diplomatic missions.	1950	John Doe	See page 55 for details.

140-480 MHZ POWER AMPLIFIER

Parts List
 STL-10/15/150 Amplifier Board
 MARTI 800-170 01-17-94

Item	Marti No.	Description
C01	240-602	Capacitor, variable, trimmer 25-115 pf
C02	240-600	Capacitor, variable, trimmer 12-65 pf
C03	NOT USED	
C04	240-602	Capacitor, variable, trimmer 25-115 pf
C05	240-602	Capacitor, variable, trimmer 25-115 pf
C06	240-220	Capacitor, uncased mica, 22 pf 33v 5% FWJ1
C07	217-103	Capacitor, .1 mf 100v 10% mylar
C08	219-200	Capacitor, electrolytic 22uF 25V
C09	236-501	Capacitor, uncased mica, 500 pf 33v 5% FWJ
C10	217-103	Capacitor, .1 mf 100v 10% mylar
C11	219-200	Capacitor, electrolytic 22uF 25V
C12	236-501	Capacitor, uncased mica, 500 pf 33v 5% FWJ
C13	NOT USED	
C14	NOT USED	
C15	240-602	Capacitor, variable, trimmer 25-115 pf
C16	NOT USED	
C17	NOT USED	
C18	NOT USED	
C19	240-602	Capacitor, variable, trimmer 25-115 pf
L01	NOT USED	
L02	350-112P	Inductor, 3 turn 20 AWG (CCW)
L03	105-471	Resistor, 470 ohm 1/2 watt 5% carbon comp
L04	330-019	Inductor, #296166667
L05	350-150	Inductor, 1/2 turn 16 AWG
L06	350-117P	Inductor, 8 turn 22 AWG (CCW)
L07	350-117P	Inductor, 8 turn 22 AWG (CCW)
L08	350-109	Inductor, 2 turn 16 AWG (CCW)
L09	NOT USED	
L10	NOT USED	
L11	NOT USED	
L12	330-012	Inductor, 15 uH #70-27
L13	330-012	Inductor, 15 uH #70-27
L14	NOT USED	
L15	350-146	Inductor, 16 AWG
Q1	440-312-1	Transistor, 2N6080
Q2	420-246	Transistor, BLY89C
R01	145-151	Resistor, 150 ohm 1/4 watt 5% metal film
R02	145-470-C	Resistor, 47 ohm 1/4 watt 5% carbon comp
R03	NOT USED	
R04	145-220	Resistor, 22 ohm 1/4 watt 5% metal film
R05	145-100-C	Resistor, 10 ohm 1/4 watt 5% carbon comp
R06	105-100	Resistor, 10 ohm 1/2 watt carbon comp
R07	NOT USED	

Parts List

STL-10/215 Amplifier Board

MARTI 800-170 01-17-94

Item	Marti No.	Description
C01	260-300	Capacitor, variable, trimmer 8-45 pf C4003
C02	260-300	Capacitor, variable, trimmer 8-45 pf C4003
C03	NOT USED	
C04	260-100	Capacitor, variable, trimmer 2.5-7 pf C400
C05	260-300	Capacitor, variable, trimmer 8-45 pf C4003
C06	240-101	Capacitor, uncased mica, 100 pf 33v 5% FWJ
C07	217-103	Capacitor, .1 mf 100v 10% mylar
C08	219-200	Capacitor, electrolytic 22uF 25V
C09	236-501	Capacitor, uncased mica, 500 pf 33v 5% FWJ
C10	217-103	Capacitor, .1 mf 100v 10% mylar
C11	219-200	Capacitor, electrolytic 22uF 25V
C12	236-501	Capacitor, uncased mica, 500 pf 33v 5% FWJ
C13	NOT USED	
C14	NOT USED	
C15	260-300	Capacitor, variable, trimmer 8-45 pf C4003
C16	NOT USED	
C17	NOT USED	
C18	NOT USED	
C19	240-602	Capacitor, variable, trimmer 25-115 pf
L01	NOT USED	
L02	350-112P	Inductor, 3 turn 20 AWG (CCW)
L03	350-117P	Inductor, 8 turn 22 AWG (CCW)
L04	330-019	Inductor, #296166667
L05	350-150	Inductor, 1/2 turn 16 AWG
L06	350-117P	Inductor, 8 turn 22 AWG (CCW)
L07	350-117P	Inductor, 8 turn 22 AWG (CCW)
L08	350-150	Inductor, 1/2 turn 16 AWG
L09	NOT USED	
L10	NOT USED	
L11	NOT USED	
L12	330-012	Inductor, 15 uH #70-27
L13	330-012	Inductor, 15 uH #70-27
L14	NOT USED	
L15	350-146	Inductor, 16 AWG
Q1	425-945	Transistor, BLW80 2N5945
Q2	443-032	Transistor, Thomson SD1422
R1	145-470-C	Resistor, 47 ohm 1/4 watt 5% carbon comp
R2	145-470-C	Resistor, 47 ohm 1/4 watt 5% carbon comp
R3	NOT USED	
R4	NOT USED	
R5	NOT USED	
R6	145-030-C	Resistor, 3.3 ohm 1/4 watt 5% carbon comp
R7	145-220	Resistor, 22 ohm 1/4 watt 5% metal film

Parts List

STL-10/15/300 Amplifier Board

MARTI 800-170 01-17-94

Item	Marti No.	Description
C01	260-100	Capacitor, variable, trimmer 2.5-7 pf C400
C02	260-100	Capacitor, variable, trimmer 2.5-7 pf C400
C03	260-200	Capacitor, variable, trimmer 4-20 pf C4002
C04	NOT USED	
C05	260-200	Capacitor, variable, trimmer 4-20 pf C4002
C06	240-330	Capacitor, uncased mica, 33 pf 33v 5%
C07	217-103	Capacitor, .1 mf 100v 10% mylar
C08	219-200	Capacitor, electrolytic 22uF 25V
C09	236-501	Capacitor, uncased mica, 500 pf 33v 5% FWJ
C10	217-103	Capacitor, .1 mf 100v 10% mylar
C11	219-200	Capacitor, electrolytic 22uF 25V
C12	236-501	Capacitor, uncased mica, 500 pf 33v 5% FWJ
C13	240-680	Capacitor, uncased mica, 68 pf 33v 5% FWJ1
C14	240-220	Capacitor, uncased mica, 22 pf 33v 5% FWJ1
C15	260-200	Capacitor, variable, trimmer 4-20 pf C4002
C16	260-200	Capacitor, variable, trimmer 4-20 pf C4002
C17	NOT USED	
C18	NOT USED	
C19	240-602	Capacitor, variable, trimmer 25-115 pf
L01	NOT USED	
L02	350-112P	Inductor, 3 turn 20 AWG (CCW)
L03	350-117P	Inductor, 8 turn 22 AWG (CCW)
L04	330-019	Inductor, #296166667
L05	350-150	Inductor, 1/2 turn 16 AWG
L06	350-117P	Inductor, 8 turn 22 AWG (CCW)
L07	350-117P	Inductor, 8 turn 22 AWG (CCW)
L08	NOT USED	
L09	NOT USED	
L10	NOT USED	
L11	NOT USED	
L12	330-012	Inductor, 15 uH #70-27
L13	330-012	Inductor, 15 uH #70-27
L14	NOT USED	
L15	350-146	Inductor, 16 AWG
Q1	425-945	Transistor, BLW80 2N5945
Q2	443-032	Transistor, Thomson SD1422
R1	145-470-C	Resistor, 47 ohm 1/4 watt 5% carbon comp
R2	145-470-C	Resistor, 47 ohm 1/4 watt 5% carbon comp
R3	NOT USED	
R4	NOT USED	
R5	NOT USED	
R6	145-030-C	Resistor, 3.3 ohm 1/4 watt 5% carbon comp
R7	NOT USED	

Parts List

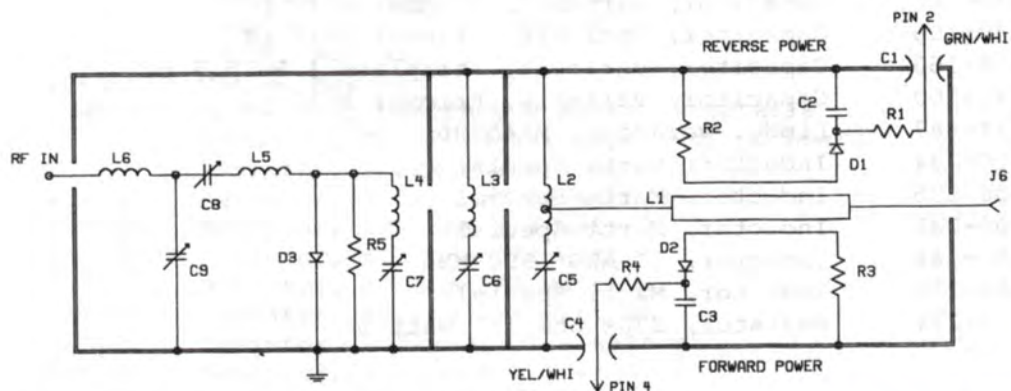
STL-10/15/450 Amplifier Board

MARTI 800-170 01-17-94

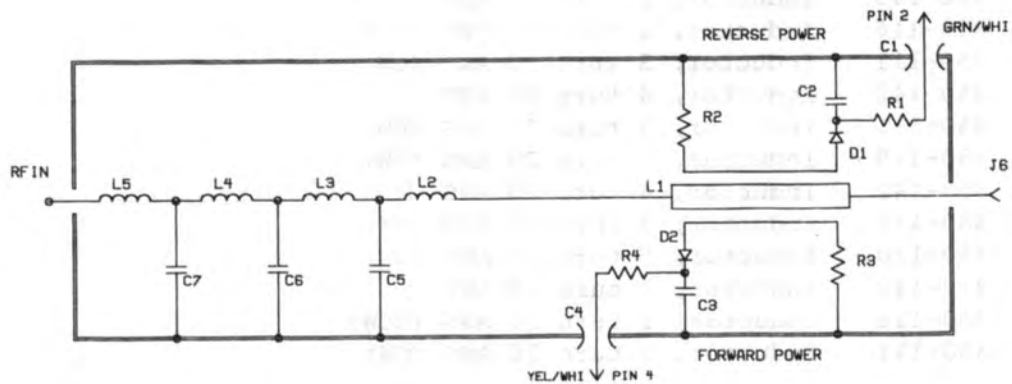
Item	Marti No.	Description
C01	260-100	Capacitor, variable, trimmer 2.5-7 pf C400
C02	260-100	Capacitor, variable, trimmer 2.5-7 pf C400
C03	260-200	Capacitor, variable, trimmer 4-20 pf C4002
C04	NOT USED	
C05	260-200	Capacitor, variable, trimmer 4-20 pf C4002
C06	NOT USED	
C07	217-103	Capacitor, .1 mf 100v 10% mylar
C08	219-200	Capacitor, electrolytic 22uF 25V
C09	236-501	Capacitor, uncased mica, 500 pf 33v 5% FWJ
C10	217-103	Capacitor, .1 mf 100v 10% mylar
C11	219-200	Capacitor, electrolytic 22uF 25V
C12	236-501	Capacitor, uncased mica, 500 pf 33v 5% FWJ
C13	240-220	Capacitor, uncased mica, 22 pf 33v 5% FWJ1
C14	240-220	Capacitor, uncased mica, 22 pf 33v 5% FWJ1
C15	260-200	Capacitor, variable, trimmer 4-20 pf C4002
C16	260-200	Capacitor, variable, trimmer 4-20 pf C4002
C17	NOT USED	
C18	NOT USED	
C19	240-602	Capacitor, variable, trimmer 25-115 pf
L01	NOT USED	
L02	350-117P	Inductor, 8 turn 22 AWG (CCW)
L03	350-117P	Inductor, 8 turn 22 AWG (CCW)
L04	330-019	Inductor, #296166667
L05	NOT USED	
L06	350-117P	Inductor, 8 turn 22 AWG (CCW)
L07	350-117P	Inductor, 8 turn 22 AWG (CCW)
L08	NOT USED	
L09	NOT USED	
L10	NOT USED	
L11	NOT USED	
L12	330-012	Inductor, 15 uH #70-27
L13	330-012	Inductor, 15 uH #70-27
L14	NOT USED	
L15	350-146	Inductor, 16 AWG
Q1	425-945	Transistor, BLW80 2N5945
Q2	443-032-1	Transistor, BLU20/12
R1	145-470-C	Resistor, 47 ohm 1/4 watt 5% carbon comp
R2	145-470-C	Resistor, 47 ohm 1/4 watt 5% carbon comp
R3	NOT USED	
R4	NOT USED	
R5	NOT USED	
R6	NOT USED	
R7	NOT USED	

Parts List
 STL-10/950 Amplifier Board
 MARTI 800-170 01-17-94

Item	Marti No.	Description
C01	260-100	Capacitor, variable, trimmer 2.5-7 pf C400
C02	260-100	Capacitor, variable, trimmer 2.5-7 pf C400
C03	260-200	Capacitor, variable, trimmer 4-20 pf C4002
C04	NOT USED	
C05	260-200	Capacitor, variable, trimmer 4-20 pf C4002
C06	NOT USED	
C07	217-103	Capacitor, .1 mf 100v 10% mylar
C08	219-200	Capacitor, electrolytic 22uF 25V
C09	236-501	Capacitor, uncased mica, 500 pf 33v 5% FWJ
C10	217-103	Capacitor, .1 mf 100v 10% mylar
C11	219-200	Capacitor, electrolytic 22uF 25V
C12	236-501	Capacitor, uncased mica, 500 pf 33v 5% FWJ
C13	240-220	Capacitor, uncased mica, 22 pf 33v 5% FWJ1
C14	240-220	Capacitor, uncased mica, 22 pf 33v 5% FWJ1
C15	260-200	Capacitor, variable, trimmer 4-20 pf C4002
C16	260-200	Capacitor, variable, trimmer 4-20 pf C4002
C17	NOT USED	
C18	NOT USED	
C19	240-602	Capacitor, variable, trimmer 25-115 pf
L01	NOT USED	
L02	350-117P	Inductor, 8 turn 22 AWG (CCW)
L03	350-117P	Inductor, 8 turn 22 AWG (CCW)
L04	330-019	Inductor, #296166667
L05	NOT USED	
L06	350-117P	Inductor, 8 turn 22 AWG (CCW)
L07	350-117P	Inductor, 8 turn 22 AWG (CCW)
L08	NOT USED	
L09	NOT USED	
L10	NOT USED	
L11	NOT USED	
L12	330-012	Inductor, 15 uH #70-27
L13	330-012	Inductor, 15 uH #70-27
L14	NOT USED	
L15	350-145	Inductor, 16 AWG
Q1	425-945	Transistor, BLW80 2N5945
Q2	443-032-1	Transistor, BLU20/12
R1	145-470-C	Resistor, 47 ohm 1/4 watt 5% carbon comp
R2	145-470-C	Resistor, 47 ohm 1/4 watt 5% carbon comp
R3	NOT USED	
R4	NOT USED	
R5	NOT USED	
R6	NOT USED	
R7	NOT USED	



MARTI ELECTRONICS CLEBURNE, TX 76033-0661	DRAWING NO. COPYRIGHT 700-045 06-JAN-94	TITLE 700-960 MHz MULTIPLIER-FILTER
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MARTI ELECTRONICS CLEBURNE, TX 76033-0661	DRAWING NO. COPYRIGHT 700-046 06-JAN-94	TITLE 140-480 MHz OUTPUT FILTER
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PARTS LIST

500-960 MHz Multiplier/Filter

MARTI NO. 700-045

Item	MARTI No.	Description
C5	230-100	Capacitor, variable, trimmer 8-10 pf
C6	230-100	Capacitor, variable, trimmer 8-10 pf
C7	230-100	Capacitor, variable, trimmer 8-10 pf
C8	230-160	Capacitor, variable, stripline 1.9-15.7 pf
C9	230-100	Capacitor, variable, trimmer 8-10 pf
D3	414-887	Diode, varactor, MA45996
L2	700-234	Inductor, Marti Special
L3	700-235	Inductor, Marti Special
L4	700-235	Inductor, Marti Special
L5	350-144	Inductor, 16 AWG 950 MHz
L6	700-236	Inductor, Marti Special
R5	105-274	Resistor, 270k ohm 1/2 watt 5%

PARTS LIST

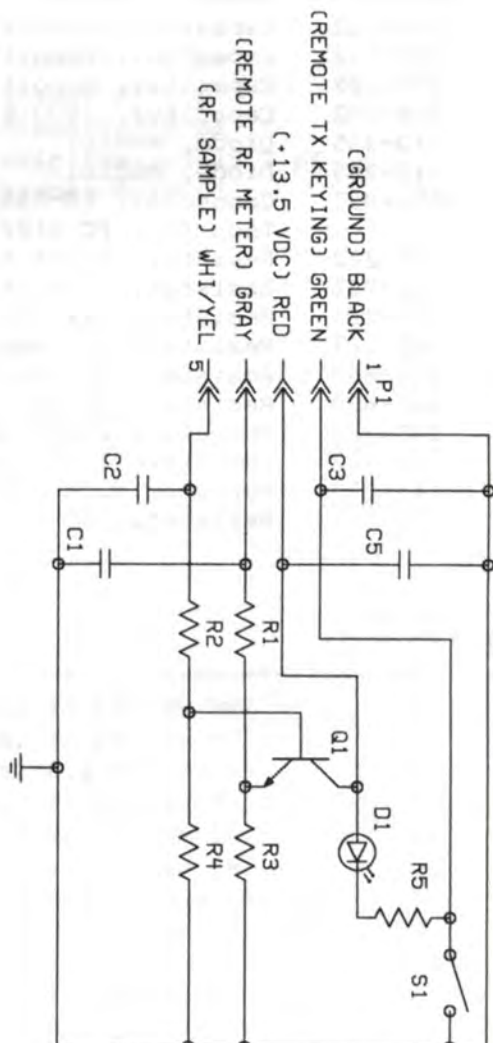
140 - 480 MHz Output Filter

MARTI NO. 700-046

Item	MARTI No.	Description	Band (MHz)
C5	240-160	Capacitor, uncased mica, 16 pf 33v 5%	200-260
C5	240-120	Capacitor, uncased mica, 12 pf 33v 5%	280-340
C5	240-802	Capacitor, uncased mica, 8.2 pf 33v 5%	400-480
C5	240-220	Capacitor, uncased mica, 22 pf 33v 5%	140-180
C6	240-160	Capacitor, uncased mica, 16 pf 33v 5%	200-260
C6	240-120	Capacitor, uncased mica, 12 pf 33v 5%	280-340
C6	240-802	Capacitor, uncased mica, 8.2 pf 33v 5%	400-480
C6	240-220	Capacitor, uncased mica, 22 pf 33v 5%	140-180
C7	240-160	Capacitor, uncased mica, 16 pf 33v 5%	200-260
C7	240-120	Capacitor, uncased mica, 12 pf 33v 5%	280-340
C7	240-802	Capacitor, uncased mica, 8.2 pf 33v 5%	400-480
C7	240-220	Capacitor, uncased mica, 22 pf 33v 5%	140-180
L2	350-143	Inductor, 2 turn 20 AWG	200-260
L2	350-116	Inductor, 1 turn 20 AWG (CCW)	280-480
L2	350-111	Inductor, 3 turn 20 AWG (CW)	140-180
L3	350-142	Inductor, 4 turn 20 AWG	200-340
L3	350-111	Inductor, 3 turn 20 AWG (CW)	400-480
L3	350-110	Inductor, 6 turn 20 AWG (CW)	140-180
L4	350-142	Inductor, 4 turn 20 AWG	200-340
L4	350-111	Inductor, 3 turn 20 AWG (CW)	400-480
L4	350-110	Inductor, 6 turn 20 AWG (CW)	140-180
L5	350-143	Inductor, 2 turn 20 AWG	200-260
L5	350-116	Inductor, 1 turn 20 AWG (CCW)	280-480
L5	350-111	Inductor, 3 turn 20 AWG (CW)	140-180

PARTS LIST
Directional Coupler Board
MARTI NO. 800-201

Item	Marti No.	Description	Band (Mhz)
C1	266-102	Capacitor, 1000 pf feed-thru	
C2	270-102	Capacitor, monolithic chip, 1000 pf 50v 5%	
C3	270-102	Capacitor, monolithic chip, 1000 pf 50v 5%	
C4	266-102	Capacitor, 1000 pf feed-thru	
D1	410-305	Diode, MBD101	
D2	410-305	Diode, MBD101	
J6	550-037	Connector, UG-58A/U N panel receptacle	
L1		Inductor, PC microstrip (part of pc board)	
R1	145-222	Resistor, 2.22k ohm 1/4 watt 5%	200-340
R1	145-752	Resistor, 7.5k ohm 1/4 watt 5%	400-480
R1	145-223	Resistor, 22k ohm 1/4 watt 5%	500-960
R1	145-561	Resistor, 560 ohm 1/4 watt 5%	140-180
R2	145-680	Resistor, 68 ohm 1/4 watt 5%	
R3	145-680	Resistor, 68 ohm 1/4 watt 5%	
R4	145-222	Resistor, 2.22k ohm 1/4 watt 5%	200-340
R4	145-752	Resistor, 7.5k ohm 1/4 watt 5%	400-480
R4	145-223	Resistor, 22k ohm 1/4 watt 5%	800-960
R4	145-561	Resistor, 560 ohm 1/4 watt 5%	140-180



PARTS LIST

ITEM	PART NO.	DESCRIPTION
C1	270-102	Capacitor, 1000 pf 50v 5% monolithic chip
C2	270-102	Capacitor, 1000 pf 50v 5% monolithic chip
C3	270-102	Capacitor, 1000 pf 50v 5% monolithic chip
C4		Not used
C5	270-102	Capacitor, 1000 pf 50v 5% monolithic chip
D1	410-951	LED, TIL220, 1" red
Q1	425-301	Transistor, 2N3904
R1	145-102	Resistor, 1000 ohm 1/4 watt 5%
R2	145-472	Resistor, 4700 ohm 1/4 watt 5%
R3	145-123	Resistor, 12K ohm 1/4 watt 5%
R4	145-474	Resistor, 470K ohm 1/4 watt 5%
R5	145-471	Resistor, 470 ohm 1/4 watt 5%
S1	530-008	Switch, SPDT, Toggle

STEAM POWERED RADIO.COM

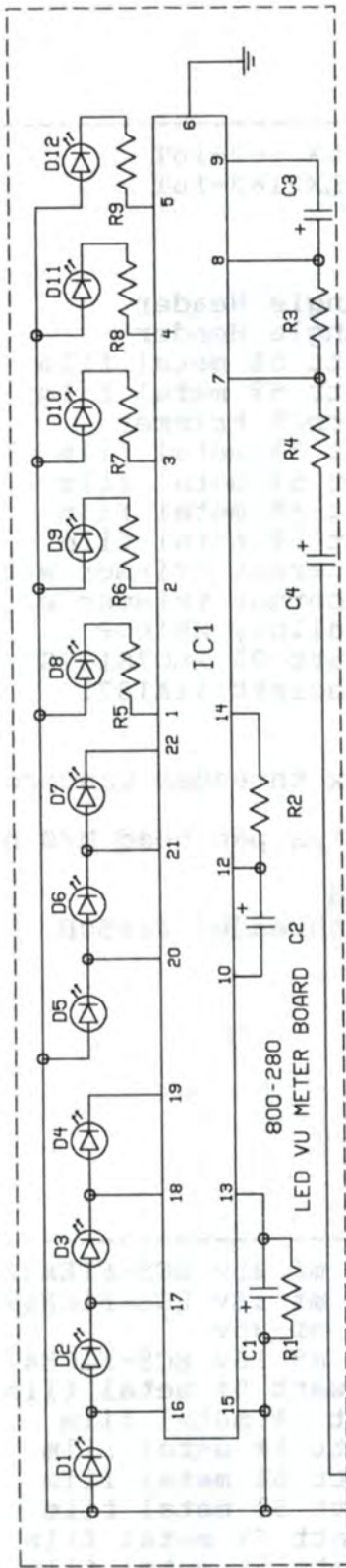
MARTI ELECTRONICS
CLEBURNE, TX 76033-0661

DRAWING NO.
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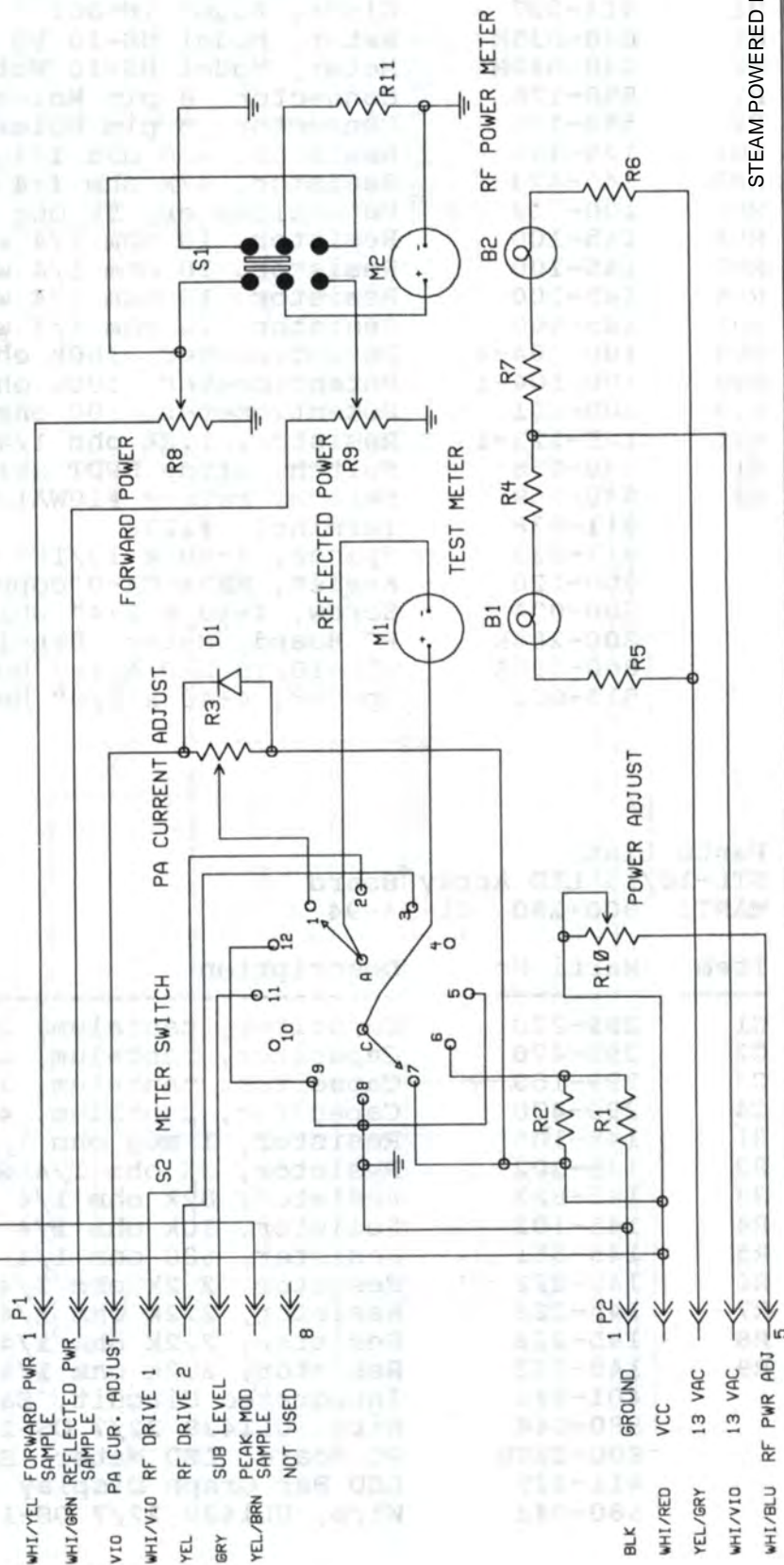
800-197

TITLE

CONTROL BOARD



WHI/YEL FORWARD PWR 1 P1
 WHI/GRN REFLECTED PWR SAMPLE
 VIO PA CUR. ADJUST
 WHI/VIO RF DRIVE 1
 YEL RF DRIVE 2
 GRY SUB LEVEL
 YEL/BRN PEAK MOD SAMPLE
 NOT USED 8



BLK GROUND 1 P2
 WHI/RED VCC
 YEL/GRY 13 VAC
 WHI/VIO 13 VAC
 WHI/BLU RF PWR ADJ 5

STEAM POWERED RADIO.COM

DRAWING NO. 800-284 COPYRIGHT 21-JAN-94	TITLE METER BOARD
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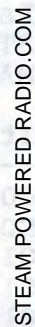
MARTI ELECTRONICS
 CLEBURNE, TX 76033-0661

Parts List
STL-10 Meter Board
MARTI 800-284 01-14-94

Item	Marti No.	Description
B1	510-196	Subminiature Lamp, #IFL-LX2162-16T
B2	510-196	Subminiature Lamp, #IFL-LX2162-16T
D1	414-007	Diode, Fagor 1N4007
M1	030-039M	Meter, Model HS-10 VU
M2	030-040M	Meter, Model HS-10 Watt
P1	550-176	Connector, 8 pin Molex Angle Header
P2	550-175	Connector, 5 pin Molex Angle Header
R01	145-431	Resistor, 430 ohm 1/4 watt 5% metal film
R02	145-473	Resistor, 47k ohm 1/4 watt 5% metal film
R03	100-522	Potentiometer, 5k ohm cermet trimmer
R04	145-100	Resistor, 10 ohm 1/4 watt 5% metal film
R05	145-100	Resistor, 10 ohm 1/4 watt 5% metal film
R06	145-100	Resistor, 10 ohm 1/4 watt 5% metal film
R07	145-100	Resistor, 10 ohm 1/4 watt 5% metal film
R08	100-104-1	Potentiometer, 100k ohm cermet trimmer w/t
R09	100-104-1	Potentiometer, 100k ohm cermet trimmer w/t
R10	100-101	Potentiometer, 100 ohm Mallory MR100P
R11	145-122-1	Resistor, 1.2k ohm 1/4 watt 2% RLO7S122G
S1	530-058	Switch, slide DPDT Switchcraft 11A1871
S2	530-059	Switch, rotary #10WA135
	511-038	Terminal, #1238
	513-033	Spacer, 4-40 x 13/16" hex threaded Concord
	500-120	Eyelet, MR24-CA-0 copper
	500-004	Screw, 4-40 x 1/4" phillips pan head M/S n
	800-284B	PC Board, Meter STL-10
	800-280A	STL-10/15 LED Array Board
	513-022	Spacer, 4-40 x 3/8" hex threaded #1450B

Parts List
STL-10/15 LED Array Board
MARTI 800-280 01-14-94

Item	Marti No.	Description
C1	299-220	Capacitor, tantalum, 2.2 mf 25v ECS-F1EE22
C2	299-470	Capacitor, tantalum, 4.7 mf 16v ECS-F1CE47
C3	299-150	Capacitor, tantalum, 1.5 mf 35v
C4	299-470	Capacitor, tantalum, 4.7 mf 16v ECS-F1CE47
R1	145-105	Resistor, 1 meg ohm 1/4 watt 5% metal film
R2	145-302	Resistor, 3K ohm 1/4 watt 1% metal film
R3	145-823	Resistor, 82k ohm 1/4 watt 1% metal film
R4	145-103	Resistor, 10k ohm 1/4 watt 5% metal film
R5	145-681	Resistor, 680 ohm 1/4 watt 5% metal film
R6	145-222	Resistor, 2.2k ohm 1/4 watt 5% metal film
R7	145-222	Resistor, 2.2k ohm 1/4 watt 5% metal film
R8	145-222	Resistor, 2.2k ohm 1/4 watt 5% metal film
R9	145-222	Resistor, 2.2k ohm 1/4 watt 5% metal film
	401-412	Integrated Circuit, Sanyo LB1412
	580-048	Wire, UL1429 22/7 OS-1 Violet
	800-280B	PC Board, LED Meter STL-10
	411-225	LED Bar Graph Display Lumex SSA-LXB1225-2
	580-043	Wire, UL1429 22/7 OS-1 Red



DRAWING NO. 06-JAN-94

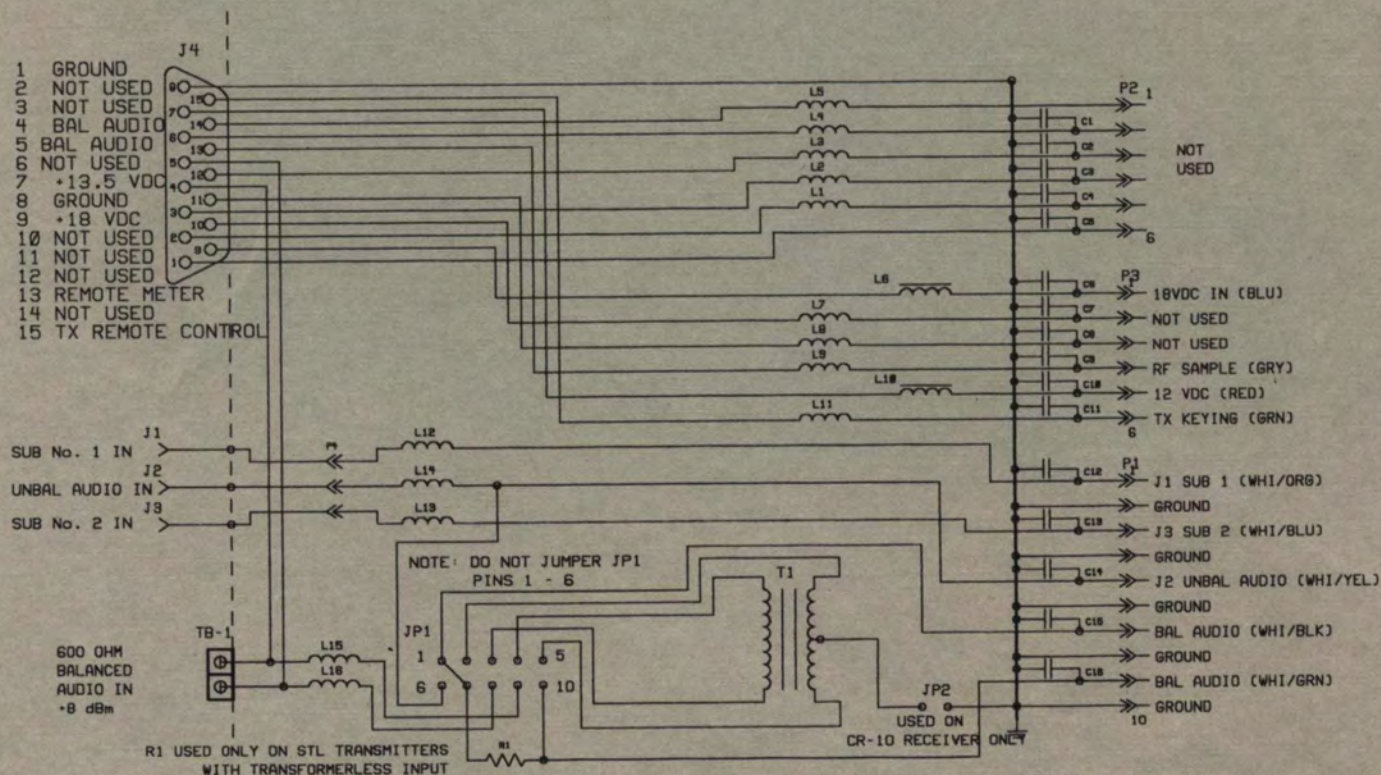
TITLE
STL-10 POWER SUPPLY/REGULATOR

Parts List
STL-10/15C Power Supply
MARTI 800-168 01-14-94

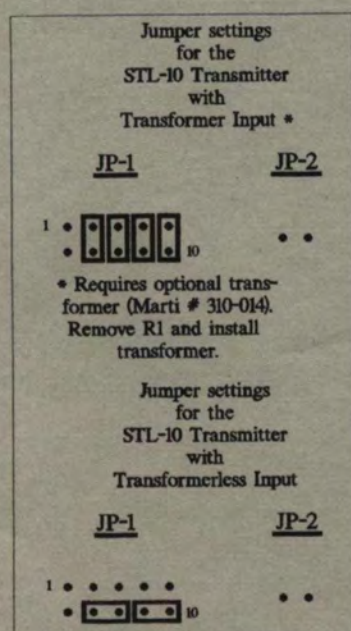
Item	Marti No.	Description
C01	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C02	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C03	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C04	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C05	219-153	Capacitor, electrolytic 15000uF 25V ECE-T2
C06	217-103	Capacitor, .1 mf 100v 10% mylar
C07	NOT USED	
C08	NOT USED	
C09	NOT USED	
C10	NOT USED	
C10B	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C11	NOT USED	
C11B	268-102	Capacitor, .001 mf 50v Z5U disc -20+80%
C12	NOT USED	
C13	270-102	Capacitor, monolithic chip, 1000 pf 50v 5%
C14	270-102	Capacitor, monolithic chip, 1000 pf 50v 5%
C15	270-102	Capacitor, monolithic chip, 1000 pf 50v 5%
C16	270-102	Capacitor, monolithic chip, 1000 pf 50v 5%
C17	270-102	Capacitor, monolithic chip, 1000 pf 50v 5%
D1	415-401	Diode, Fagor 1N5402
D2	415-401	Diode, Fagor 1N5402
D3	415-401	Diode, Fagor 1N5402
D4	415-401	Diode, Fagor 1N5402
D5	414-007	Diode, Fagor 1N4007
D6	414-007	Diode, Fagor 1N4007
D7	415-401	Diode, Fagor 1N5402
L1	NOT USED	
L2	NOT USED	
L3	NOT USED	
L4	NOT USED	
L5	NOT USED	
L6	330-019	Inductor, #296166667
R1	145-202-1	Resistor, 2k ohm 1/4 watt 2% RL07S202G
R2	100-501	Potentiometer, 500 ohm cermet trimmer
	500-148	Eyelet, GS3-12 GM
	800-168B	PC Board, Power Supply RPT-15 STL-10
	550-165	Connector, 4 pin Molex Header

Parts List
STL-10 Power Supply Regulator
MARTI 800-168 01-14-94

Item	Marti No.	Description
C07	219-250	Capacitor, electrolytic 22uF 25V 105
C08	219-250	Capacitor, electrolytic 22uF 25V 105
C10	270-102	Capacitor, monolithic chip, 1000 pf 50v 5%
C11	270-102	Capacitor, monolithic chip, 1000 pf 50v 5%
C12	270-102	Capacitor, monolithic chip, 1000 pf 50v 5%
R03	145-241-1	Resistor, 240 ohm 1/4 watt 2% RL07S241G
	510-191	#4 Bracket, Keystone #612
	550-135	Connector, 6 pin Molex Housing #09-50-8060
	800-168-1B	PC Board, Regulator RPT-15 STL-10
	550-126	Connector, Crimp Terminal Pin Molex #08-50



MARTI ELECTRONICS CLEBURNE, TX 76033-0661	DRAWING NO. COPYRIGHT 7/28/93 800-193A	TITLE INPUT/OUTPUT BOARD
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PARTS LIST

C1 - C5	NOT USED	
C6 - C11	270-102	Capacitor, 1000 pf 50 v monolithic chip
C12 - C14	270-220	Capacitor, 22 pf 50v monolithic chip
C15 - C16	270-102	Capacitor, 1000 pf 50v monolithic chip
J4	550-170	Connector, DB-15, right angle, PC mount
JP1	550-185	Connector, 5 pin dual header
Jumpers	550-182	Open top, two circuit shunt
L1 - L5	NOT USED	
L6, L10	330-019	Inductor, VK20010-3B
L7 - L16	330-018	Inductor, 10 uH, LQ-105
R1	145-222-C	Resistor, 2.2K ohm 1/4 watt 5% carbon comp
T1 (optional)	310-014	Transformer, Audio 600 CT - 600 CT
TB-1	511-043	Terminal Block, 2 terminal PC mount

