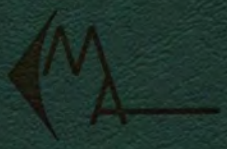
INSTRUCTION MANUAL

MODEL RPL-2

REMOTE PICKUP LINK



MOSELEY ASSOCIATES, INC.
SANTA BARBARA RESEARCH PARK
GOLETA, CALIFORNIA 93017

INSTRUCTION MANUAL

MODEL RPL-2

REMOTE PICKUP LINK

MOSELEY ASSOCIATES, INC.
Santa Barbara Research Park
111 Castilian Drive
Goleta, California 93017

May, 1970

TABLE OF CONTENTS

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REMOTE PICKUP LINK

I. INTRODUCTION

The Model RPL-2 Remote Pickup Link will provide a high-quality program link between the broadcast studio and a remote pickup point. Low distortion and extended bandwidth characteristics are major features of this system. The RPL-2 System is designed to operate in the 148-174 MHz band, and when suitably converted, will operate in the 450 MHz to 470 MHz spectrum.

The RPL-2 Remote Pickup Link consists of a transmitter and receiver, both separately packaged. It is designed for continuous duty and employs only silicon semiconductors. The transmitter will operate from a power source of 120/240 VAC 50-60 Hz or from a 13.5 VDC storage battery. The transmitter has been ruggedly designed for mobile or fixed-portable service. The receiver mounts in a standard 19 inch rack and requires only 5¼ inches of vertical rack space. Front-panel accessibility to all components is made possible by a slide-drawer-chassis construction. The operating control on the transmitter is limited to an on-off switch. No operating controls are provided on the receiver. Thus, operation of the RPL-2 is straightforward.

The RPL-2 Transmitter offers a unique concept in remote pickup equipment. The Transmitter has only one 600 Ω balanced input for modulation. Thus, a broadcaster has the option of using existing remote audio-mixer consoles to program the RPL-2 Transmitter. The Moseley Associates, Inc. Model RPA-1 Remote Pickup Amplifier may also be used. This unit was specifically designed for use with the RPL-2 Transmitter. Two microphones and one line input may be used with the RPA-1. An internal limiter with a 20 db control range and attack time of 1 millisecond make the RPA-1 ideal for use with the RPL-2 Transmitter.

II. SPECIFICATIONS

A. Overall System

Audio Response	±1.5 db, 30 Hz - 12,000 Hz
Distortion	Less than 1.3%, 30 - 12,000 Hz
Signal-to-Noise Ratio	55 db below 100% (58 db typical)
Frequency Range	148 MHz - 174 MHz or 450 MHz - 470 MHz, as ordered

B. Transmitter Performance Specifications

RF Output	
148 - 174 MHz	Minimum 30 watts continuous into 50 Ω load, 36 watts maximum
450 - 470 MHz	Minimum 18 watts continuous into 50 Ω load, 22 watts maximum Type UHF female connector
VSWR Protection	Output automatically reduced with excessive VSWR
Emission	
148 - 174 MHz	30F3 (±5 kHz for 100% modulation)
450 - 470 MHz	50F3 (±15 kHz for 100% modulation)
Frequency Stability	0.0005% (-30°C to 60°C)
Audio Input	+10 dbm, 600 Ω, balanced
Temperature Range	-30°C to 60°C
Power Requirements	
AC	120/240 VAC, 50-60 Hz, 35 watts-standby, 150 watts-operate
DC	13.5 VDC, negative ground, 0.5 ampere - standby, 6 amperes - operate; 16 VDC maximum - 11 VDC minimum (at reduced output)
Size	6-3/4 inches high, 16 inches wide, 10¼ inches deep
Shipping Information (Approximate)	33 pounds, 1.0 cubic foot 26 pounds net.

C. Receiver Performance Specifications

Sensitivity (160 MHz & 450 MHz)	0.7 microvolt for 20 db SNR, with optional 75 microseconds de-emphasis. 2 microvolts for 20 db SNR, unweighted (flat)
Selectivity	-6 db at ±15 kHz, -80 db at ±60 kHz
Image Rejection	85 db
Frequency Stability	0.0005% (-20°C to 55°C)
RF Input	50 Ω, Type UHF female connector
Audio Output	+10 dbm @ 100% modulation, 600 Ω, balanced
Squelch	Automatic and adjustable, electronic
Temperature Range	-20°C to 55°C
Power Requirements	120/240 VAC, 50-60 Hz, 10 watts
Size	5¼ inches high, 19 inches wide, 11 inches deep
Shipping Information (Approximate)	10 pounds, 1.0 cubic foot

III. INITIAL CHECKOUT AND INSTALLATION

A. General

A Model RPL-2 Transmitter and Receiver should be carefully unpacked and inspected for concealed shipping damage upon receipt of the equipment. Retain all boxes and packing material in case a claim is to be made against the carrier for damages.

CAUTION: Do not attempt any tuning adjustments at this time. All tuned circuits have been prealigned at the factory, and they should not be adjusted without proper test equipment. Field-adjustment procedures are outlined elsewhere in this manual.

B. Initial Checkout

A 50 Ω RF termination with a dissipation rating in excess of 40 watts should be connected to the UHF output connector on the rear of the transmitter chassis. If a suitable dummy load is not available, the antenna may be used to terminate the Transmitter. Turn the power control switch to the position labeled REMOTE OR OFF. Connect the line cord to a source of 120 VAC 50-60 Hz and a VOM multimeter

MOSELEY ASSOCIATES, INC.

MODEL RPL-2

FINAL TEST DATA

DATE September 29,1970
F.O.# 9-1599
TESTER Jim Welch

CUSTOMER KSFO
RPL-2/T SERIAL NO. 4917
RPL-2/R SERIAL NO. 4915
FREQUENCY 166.250 MHz

READINGS TAKEN WITH 20,000 OHMS PER VOLT MULTIMETER OR WATTMETER

TRANSMITTER

Function	Reading	Function	Reading
+13.5V (Col.Q301)	12.5 V	+12 volts (Col.Q402)	-10 V
Bias (TP101)	0.4 V	-12 volts (Col.Q403)	-12 V
RFA Drive (TP102)	14 V	Discriminator (TPZ01)	- 0.05V
RFA Output 35 Watts	0.42 V,J404-5		
Col. Volts 31 V	14 V,J404-6		

OVERALL SYSTEM PERFORMANCE

SNR -58 db. +10 dbm audio input required for 100% modulation of transmitter.

Frequency in Hz	Response in db	Distortion in %
50	-3	0.65
400	0	0.4
1000	0	0.4
5000	-1	0.4
10,000	-2.5	0.6

Receiver Signal Strength Calibration

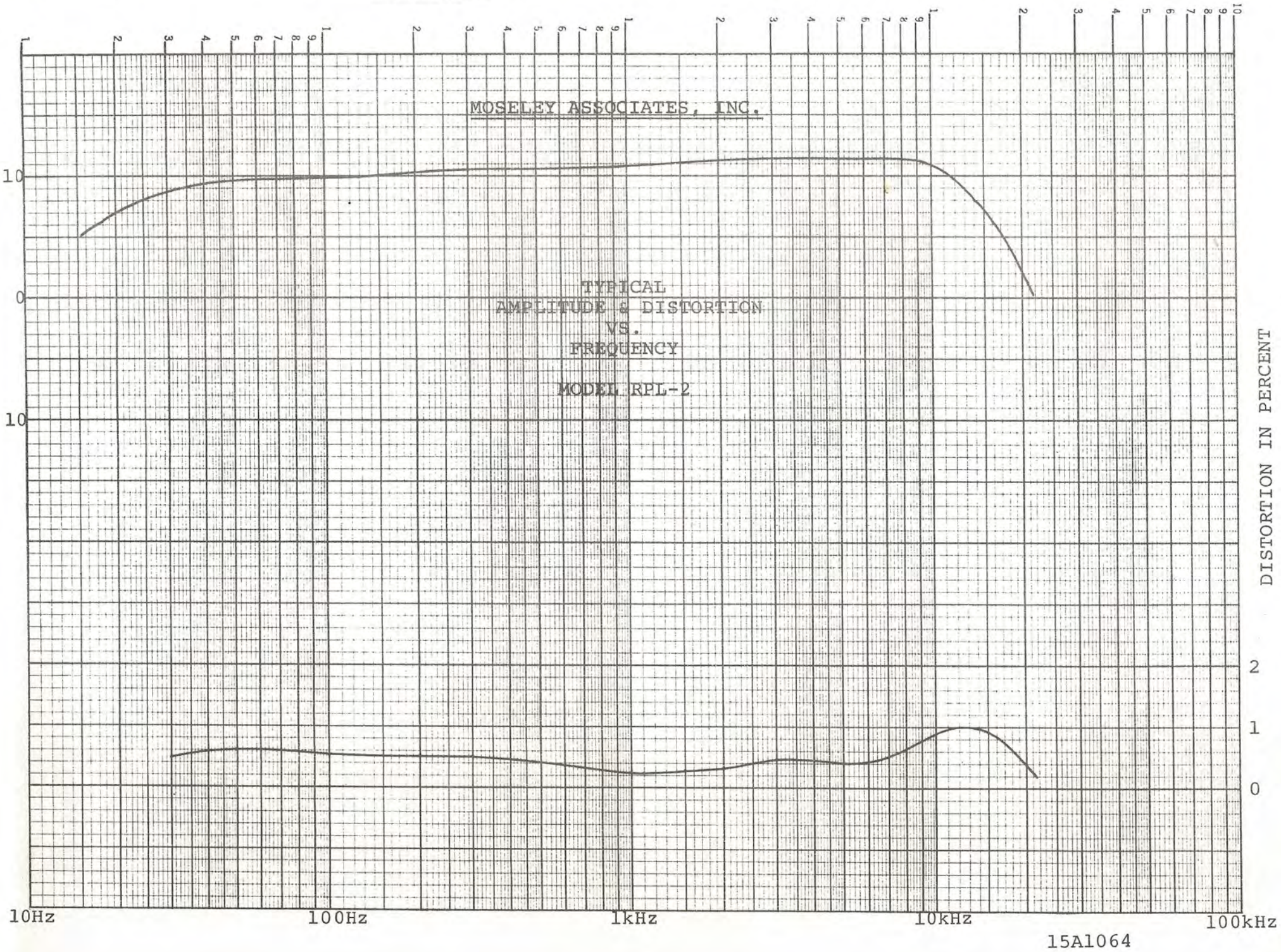
µvolt input	Squelch Volts*	Noise dbm
1	0.1	-10
3	0.4	-19
10	1.0	-32
30	3.0	-42
100	4.8	-49
300	5.0	-50
1000	5.0	-51

*Measured at Blue Jumper Wire

X Tx deviation control set for +10 dbm=100% Mod.
X Rx audio gain control set for +10 dbm=100% Mod.
Squelch control set at 5 µV.

Comments:

SEMI-LOGARITHMIC 46 6013
KEUFFEL & ESSER CO



between pins 5 and 7 of J-404, the 8-pin connector on the rear of the transmitter chassis. The negative lead of the multimeter should be connected to pin 7. Set the multimeter to the 3 VDC range. Turn the power control switch to the LOCAL ON position, and the meter should read between 1 VDC and 2 VDC. When using a 50 Ω termination, the reading may be compared to the value listed as RFA Output on the Final Test Data sheet included in Section II of this manual. Differences in test measurements and conditions may result in variations of 20%. The purpose of this test is to confirm the power output of the RPL-2 Transmitter. For 220 VAC operation, refer to the schematic diagrams for information on rewiring the primary winding of the transformers.

If the RPL-2 Transmitter is to be operated from a 13.5 VDC battery, disconnect the 120 VAC power cord, and connect the battery to the equipment using the cable connector provided. A battery should be capable of delivering at least 6 amperes to the RPL-2. When using a battery power source, observe the correct polarity as indicated by the markings next to the connector. A diode and fuse have been included in the RPL-2 Transmitter to protect the circuitry in case polarity is accidently reversed.

The receiver should be placed nearby and connected to the 120 VAC, 50-60 Hz power line. To simplify operation of the equipment, the RPL-2 Receiver does not have a power switch. Only the indicator lamp and fuse holder are mounted on the front panel. The lamp will be on when the receiver is connected to the power source. To minimize multipath effects during the initial checkout, a small piece of wire should be inserted in the UHF antenna input connector of the receiver. Do not make any tuning adjustments on the Receiver or Transmitter at this time.

To confirm the operation of the equipment, apply a +10 dbm signal at 1 kHz to the 600 Ω balanced input of the transmitter. This input is available at pins 1 and 2 of J-404 on the rear of the transmitter. The 600 Ω balanced output of the receiver should be connected to a monitor amplifier or suitable test equipment. The receiver output should be terminated with a 680 Ω resistor if specific audio measurements are to be made. A +10 dbm input to the Transmitter corresponds to 100% modulation of the RPL-2 System.

C. Installation

The transmitter may be operated from either an AC Power source (120 VAC or 240 VAC) or from a DC source of 12 volts to 16 volts at 6 amperes. When using the Transmitter in a fixed application such as STL service outside the USA, care should be taken to insure that adequate ventilation is provided for the heat sinks on each end of the Transmitter. The unit may be mounted by placing it on a shelf panel installed in the rack. The unit should not be mounted directly above a source of heat, such as high-power vacuum tube

equipment. Also, holes should be punched in the floor of the shelf bracket to increase the cool-air flow around the heat sinks.

When installing the RPL-2 Transmitter in a vehicle, straps or equivalent restraints should be placed over the unit to firmly secure it in place. If the unit is mounted in a closed trunk, it will be necessary to limit the continuous operation of the Transmitter if the ambient temperature inside the trunk of the vehicle exceeds 140°F (60°C).

D. Antenna and Transmission Line

Transmission line considerations will determine to some extent the placement of the equipment. As lengthy transmission lines will introduce unwanted amounts of attenuation, it is always good practice to place both the RPL-2 Transmitter and Receiver as close as possible to the antennas. If a long length of transmission line is required, use the lowest loss line practical. There are many possible antenna configurations which will work satisfactorily with the RPL-2, and the choice should be determined by the particular application and service of the equipment. However, transmitting antennas with VSWR in excess of 2.5:1 are undesirable in high temperature environments because of heating effects in the transmitter RF power amplifier. Antenna matching may be improved by the use of a wattmeter capable of measuring forward and reflected powers. Antennas should be adjusted with the wattmeter as close to the antenna as possible. Adjust the antenna for minimum reflected power. Both transmitting and receiving antennas should be polarized in the same plane.

IV. OPERATION

A. Transmitter

To place the RPL-2 Transmitter in operation, connect the AC power cord to a source of 120 VAC, 50-60 Hz or connect the DC power cord to a source of 12 VDC to 16 VDC capable of delivering at least 6 amperes of current. Connect the RF transmission line to the type UHF output connector. The audio signal for modulation is applied to the 600 Ω balanced input terminals, pins 1 and 2 of J-404. Power is applied to the entire Transmitter by turning the switch on the front panel to LOCAL ON. For 100% modulation, the RPL-2 transmitter carrier is shifted approximately ±5 kHz from its mean frequency. The RPL-2 Transmitter employs a 15 microsecond pre-emphasis network. This compensates for the relatively narrow receiver I.F. response. When making response measurements, it is not necessary to reduce the transmitter modulation level as the modulating frequency is increased.

→ ? maybe 150 µs

B. Receiver

In normal service, the Receiver requires no maintenance and will operate as delivered from the factory without adjustments. A table showing squelch voltage as a function of the received signal strength is included in the Final Test Data sheet in Section II. The actual received signal may be measured by connecting a multimeter from the blue jumper wire on the receiver audio board to ground. Set the meter to the -10 VDC range when making this measurement.

V. CIRCUIT DESCRIPTION

A. Transmitter

The complete schematic disgram of the RPL-2 Transmitter is shown in drawing 91C6376. The Transmitter consists of 3 major subsections. These are the power supply, VCXO and multiplier, and RF amplifier. The Varactor-Tripler Assembly in the 450 MHz version is mounted on the power supply heat sink. The power supply consists of a power transformer, bridge rectifier, filter capacitor and electronic regulator. The power supply is located on the left side of the transmitter when viewed from the front. The two series pass transistors of the regulator are located on the left heat sink. The control circuit is located underneath the chassis and is available by removing the bottom cover. The adjustable 10 K potentioneter, R-305, on the PC board controls the 13.5 volt regulator output. The VCXO and associated multipliers are also located under the chassis and to the right of the chassis partition. The crystal oscillator is frequency modulated by the two varicap diodes, CR-103 and CR-104. The output of the crystal oscillator is multiplied 36 times to the carrier frequency and amplified to 500 milliwatts in the following seven stages on the VCXO PC card. The RF power amplifier, which is bolted to the large heat sink to the right of the chassis, amplifies the 160 MHz carrier to 30 watts in Q-201 through Q-206.

The output stage of the RF amplifier consists of three transistors in parallel so that if one transistor fails, adequate power output is still maintained. A peak RF voltage detector is incorporated in the power amplifier to prevent excessive RF voltage, caused by high antenna VSWR conditions, from damaging the final transistors. This voltage may be measured at pin 6 of J-404 for ease in field adjustments. A DC sample voltage of a relative RF power output may be monitored at pin 5 of J-404. Nominal values of these voltages are included in the Final Test Data sheet.

When the transmitter is operating at 450 MHz, the VCXO crystal frequency is determined by dividing the output frequency by 108. The power output of the power amplifier is fed into a Varactor-Tripler Assembly before appearing at the UHF output connector. Both the 160 MHz RF power amplifier and varactor-tripler circuits are well filtered to suppress spurious and harmonic signals at the output of the RPL-2 Transmitter.

B. Receiver

The complete schematic diagram of the RPL-2 Receiver is shown in drawing 91C6375. The receiver consists of the following four printed circuit subassemblies; power supply, 160 MHz RF amplifier, 10.7 MHz/455 kHz I.F. amplifier, and audio amplifier. The receiver in the 160 MHz configuration is a dual-conversion, superhetrodyne receiver with 10.7 MHz and 455 kHz I.F. frequencies. The received signal is applied to the gate of a low-noise FET transistor through a triple-tuned pre-selector. The signal is converted to 10.7 MHz, amplified, and mixed to 455 kHz. There are four stages of narrow-band amplification at 455 kHz, followed by a ratio detector for superior noise immunity. The audio output of the ratio detector is fed to the gain control on the audio board and then amplified in a low-noise, integrated circuit (IC) operational amplifier. The operational-amplifier output drives a pair of complementary emitter-followers which feed the audio output transformer. For 100% modulation of the transformer, the output available from the receiver is +10 dbm at the barrier strip on the rear. Squelch is achieved by clamping a diode across the audio input of the operational amplifier. Squelch action is controlled by a DC voltage rectified in the 455 kHz amplifier. A squelch level control is provided on the audio board. This control can be adjusted to operate at any signal level between 1 µvolt to 10,000 µvolts when applied to the input of the receiver. The squelch control is normally set to operate with an input signal level of 5 µvolts. The receiver power supply is conventional and delivers + and -12 VDC.

VI. FIELD ADJUSTMENTS

A. Transmitter

A complete alignment of a Transmitter in the field is not recommended. Due to the relatively low impedence and broad bandwidth of the circuit design, replacement of the RF power transistors in the RPL-2 Transmitter can be achieved without field tuning. Before considering replacement of the RF power transistors on the RF Power Amplifier, verify with a wattmeter and dummy load that the amplifier is not delivering the rated power of 30 watts. To replace the transistors in the power amplifier, proceed as follows.

Remove the top and bottom covers of the Transmitter. Disconnect the input and output BNC connectors on the RF power amplifier. Turn the Transmitter on its side with the RF amplifier heat sink lying flat down against the bench. Remove the three screws underneath the chassis which hold the heat sink to the chassis. Lay the main chassis down and turn the heat sink so that the fins are exposed. Remove the three screws and five nuts on the finned side of the heat sink. Turn the whole assembly over and remove the 10 screws holding the brass chassis to the heat sink. Lift the chassis off the heat sink. The transistors will still be in the sockets. Remove each transistor, one at a time, test it for DC gain, and return it to the same socket. When the defective one is found, install a new transistor. Replace the RF amplifier back on the heat sink. Install the 10 screws that hold the RF amplifier to the heat sink. Now, turn the unit over and install the three screws that pull the RF chassis down to the transistors. Be certain that all three screws are firmly seated. Now install the nuts on the transistor studs. Do not tighten these nuts too hard or the transistors will be damaged, but tighten them just enough to prevent the nuts from unscrewing by themselves. Remount the heat sink to the side of the chassis.

If the VCXO transistor is replaced, the operating frequency may by slightly shifted. To set the frequency of the Transmitter, adjust L-104 on the VCXO PC card while observing the DC output of the ratio detector at TP-201 on the receiver until the value is the same as that shown on the final test data sheet. Alternatively, use a frequency meter or counter to set the frequency of the Transmitter. The RF amplifier harmonic filter is adjusted to match into a resistive 50 Ω termination. When the transmitter is terminated into an antenna whose VSWR is not 1:1, C-231 should be adjusted for a maximum forward power and C-224 must be adjusted for minimum peak collector voltage at pin 6, J-401. These two adjustments are available by removing that cover (not the heat sink) of the RF power amplifier. Be sure to use a nonmetallic screwdriver when adjusting C-224 and C-231.

B. Receiver

In normal operation, receiver field adjustments are not required. If, however, the high frequency crystal, Y-101, is replaced, it may be necessary to adjust L-104. With a multimeter set to the 10 volt position and connected to TP-201, adjust L-104 for the value indicated for this point on the Final Test Data sheet. The RPL-2 Transmitter can be used as the signal source. If a different squelch point is desired, R-417 on the audio board may be adjusted. A signal generator is useful when making this adjustment. As stated previously, the factory adjustment provides squelching at a 5 μvolt RF input level.

The tuned circuits in the 160 MHz pre-selector and the 10.7 MHz and 455 kHz I.F. amplifier are adjusted for a maximum voltage on TP-202 on the I.F. amplifier printed circuit board. Field adjustment of the I.F. tuned circuits is not suggested unless a competent technician with proper test equipment is available.

VII. REMOTE CONTROL OF TRANSMITTER

A. With the RPA-1 Remote Pickup Amplifier

The RPA-1 is a Remote Pickup Amplifier designed as both an independent audio mixer and control head for the RPL-2 Transmitter. When used as a control head, the RPA-1 will control the transmitter on and off function. The audio level meter of the RPA-1 can be switched to monitor the peak collector RF voltage of the final amplifier and the power output of the Transmitter. In normal operation, both these readings will show between 0 db and +3 db. When using these two RPA-1 meter positions as monitors for adjustment of the RPL-2 transmitter antenna matching, C-231 should be adjusted for a maximum reading in the ANTENNA RF position and C-224 should be adjusted for a minimum reading in the COLLECTOR RF position. If, by using a wattmeter, the RPL-2 Transmitter has been previously adjusted into the antenna, these adjustments should not be made and the monitor positions on the RPA-1 unit will merely serve as indicators of proper operation.

B. With Control Panel

In some fixed-station applications, it may be desirable to have a control and monitor panel for the RPL-2 Transmitter. A diagram of such a panel is included in this manual. One meter and two switches are required for this panel. The panel will monitor antenna RF or collector RF and will provide on-off control of the Transmitter.

VIII. FIELD CONVERSION 160 MHz to 450 MHz

A. Transmitter

To field convert the RPL-2 Transmitter from 160 MHz to 450 MHz, the following items are needed.

Crystal ($f_o \div 108$)

VOM Multimeter

Grid-dip Meter

Wattmeter with 50 watt, 100-250 MHz element and
25 watt, 200-500 MHz element

Dummy load, 50 Ω, 40 watt minimum rating

Varactor-Tripler Assembly, Moseley Associates, Inc. part No. 21A2274

BNC Jumper Cable, Moseley Associates, Inc. part No. 14-4001-25A

Disconnect the BNC Connector on J-201 and terminate it in the dummy load. Remove Y-101 and install the new transmitter crystal. Adjust L-104 until the grid-dip meter indicates oscillation of Q-101. Using the grid-dip meter as a detector, peak L-106 and L-107 for a frequency three times the frequency of Y-101. Adjust L-110 and L-111 in the same manner for a peak nine times Y-101. Place the multimeter across R-145 and adjust L-106, L-107, L-110, and L-111 for a maximum DC reading. Place the meter across R-147 and adjust L-113 for a maximum reading. Connect the multimeter from TP-102 to ground. Adjust C-145, C-146, C-151, and C-152 for a maximum reading (approximately 10 VDC). Turn the RPL-2 Transmitter off, and turn R-305 on the power supply board fully clockwise. Disconnect the BNC connector from the dummy load, and reconnect it to the RF amplifier input. Connect the dummy load to J-402 through a wattmeter with the 50 watt, 100 to 250 MHz element installed in it. Turn the Transmitter on, and adjust all RF amplifier capacitors for maximum power output. Start with C-231 and work backwards to C-201. Repeat these adjustments at least three times. Now turn R-305 counter-clockwise until the B+ is 13.5V or the power output is 35 watts, whichever comes first. Readjust C-231 through C-201 for maximum RF power output. Turn the Transmitter off. Install the Varactor-Tripler Assembly on the power supply heat sink as shown on the drawings contained with the varactor-tripler. Using the jumper cable supplied, connect the output of the RF amplifier to the varactor-tripler input and connect the cable from the UHF output connector on the rear of the transmitter to the output of the tripler assembly. Install a 25 watt, 200 to 500 MHz, element in the wattmeter and connect it to the output of the RPL-2 Transmitter. Turn the Transmitter on and adjust C-231 for maximum output. The power output should be between 18 watts and 22 watts. The varactor-tripler has been pre-tuned at the factory for the frequency marked on it. Replace all covers except the bottom plate. This will be installed after the receiver has been converted.

B. Receiver

To field convert the RPL-2 Receiver from 160 MHz to 450 MHz, the following items are needed.

Crystal at 74.650 MHz

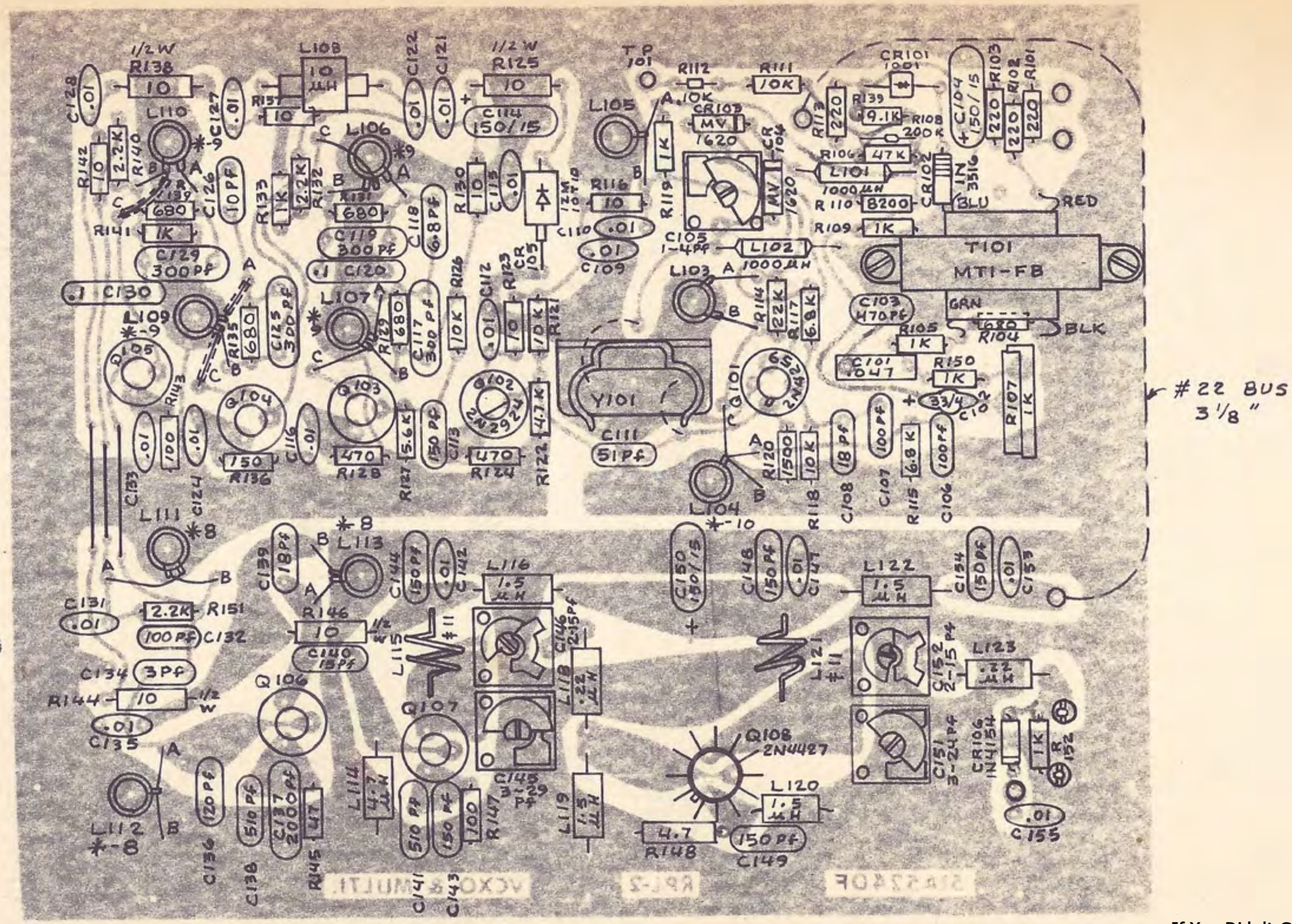
450 MHz Converter, Moseley Associates, Inc., part No. 20A2176

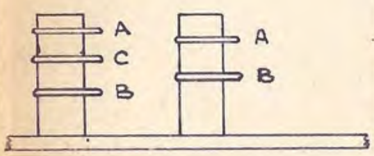
Grid-dip Meter

Since the 450 MHz Converter is factory pre-tuned, installation is simpler than the Varactor-Tripler Assembly. First remove and discard the aluminum cover plate directly behind the 160 MHz printed circuit amplifier. Screw the 450 MHz Converter printed circuit card to the chassis. Attach the input and output leads and B+ as indicated on the instructions with the converter. Replace Crystal Y-101 in the 160 MHz amplifier with the 74.650 MHz crystal. Using the Grid-dip Meter as a detector, adjust L-104 for maximum oscillation of Q-102. If no 450 MHz signal generator is available, the transmitter may be used as one. Disconnect the BNC connector from J-201 on the RF amplifier and apply power to the transmitter. Insert a small piece of wire in the receiver RF Input. If this does not provide sufficient signal for the input of the receiver, connect the BNC connector from the VCXO printed circuit card of the Transmitter through an antenuator to the receiver input. Adjust the antenuator to attain 20 db quieting at the receiver output.

With the multimeter connected to TP-201 on the receiver I.F. amplifier PC board, adjust the first local oscillator tuned circuit, L-104, to obtain a discriminator reading as noted on the Final Test Data sheet. This reading will nominally be in the -0.1 VDC to 0 VDC range. Move the test lead of the multimeter to TP-202 and tune inductors L-101 thru L-108, except for L-104, for a maximum reading.

Reconnect the BNC connector to J-201 on the transmitter and install the bottom cover. This completes the field version of the RPL-2 for operation on 450 MHz.





NOTES :

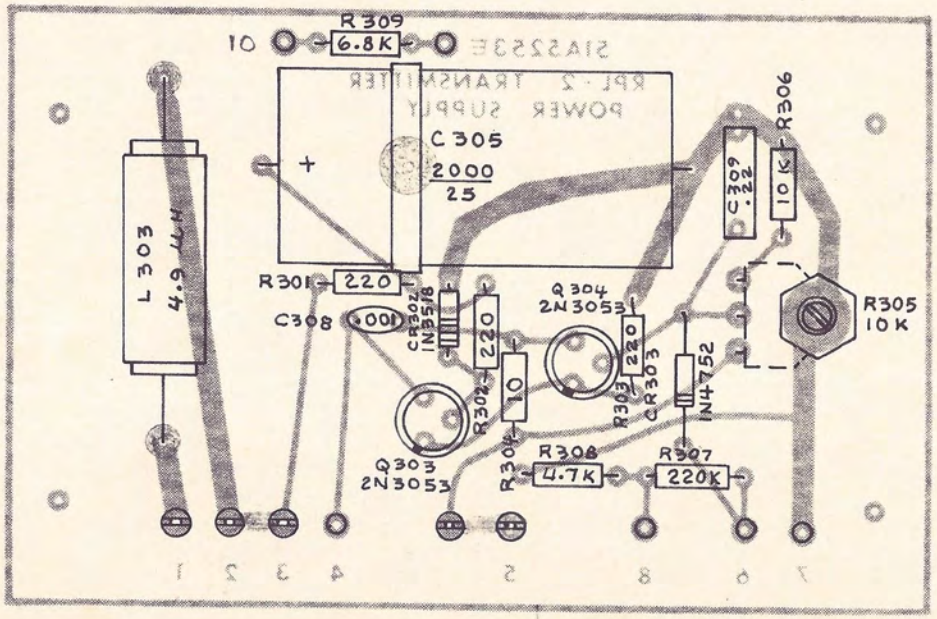
1 UNLESS OTHERWISE SPECIFIED
RESISTOR VALUES ARE IN OHMS, 1/4 W, 10%.
CAPACITOR " " " MICROFARADS.
TRANSISTORS ARE 2N3563.
2 P.C. BOARD 51A5240
3 SCHEMATIC 91C6376
4 NEXT ASSY 21C2272
5 * DENOTES DWG 2A1327
6 SPACER 5A1725 UNDER XTAL SOCKET
7 ‡ DENOTES DWG. 5A1726

REVISIONS	DATE
A	ADD NOTES 5,6 & 7, 2-70
B	B1'S WAS RED & WAS ON COMPON. SIDE OF BD. 3-70
C	TP101 WAS EFJ TEST PT. ADD CR106, C155, R152 PER ECO 339. 4-70
D	L103 & L104 WERE *8 ARTWORK REVISED. OMIT TEFLON TERMS 5/70
E	C134 WAS 2 PF ECO 357 7/70
F	C105 WAS 2-15 PF, C146, C152 WERE 1-4 PF ECO 367. 8-70
G	VALUE CHNGS. PER ECO 373. 8-70
H	VALUE CHANGES PER ECO 377. 9-70

MOSELEY ASSOCIATES, INC.
SANTA BARBARA, CALIFORNIA

COMPONENT LAYOUT
VCXO & MULTIPLIER RPL-2 XMTR

TOL. FRACT ± 1/32, .XX ± .030, .XXX ± .010			
DWN	JAG	2-70	SCALE: FULL
CHK	FXY	2/70	20A2170 H
ENG	[illegible]	2/70	



NOTES :

1. UNLESS OTHERWISE SPECIFIED
   RESISTOR VALUES ARE IN OHMS, 1/2 W, 10%
   CAPACITOR " " " MICROFARADS
2. P.C. BOARD 51A5253
3. NEXT ASSY 21C2272
4. SCHEMATIC 91C6376

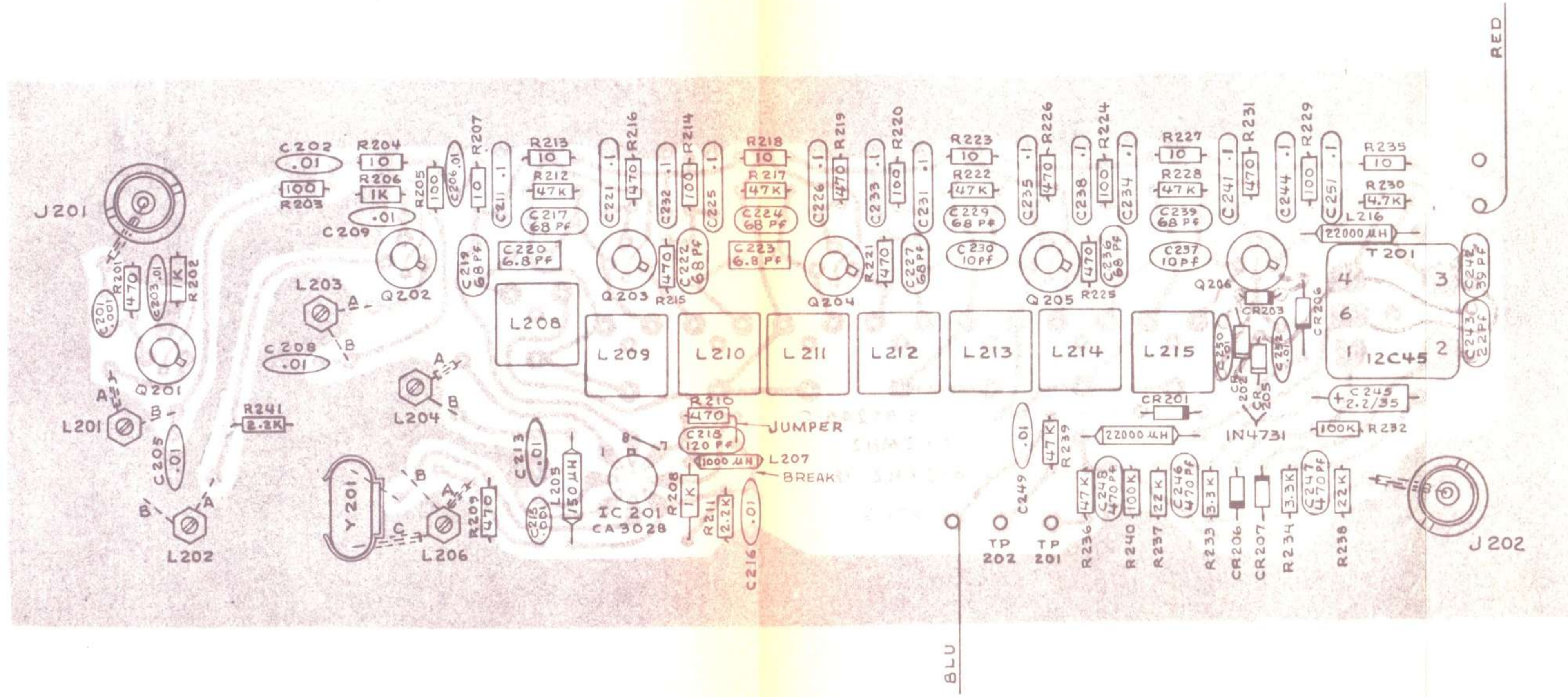
REVISIONS	DATE
G ADD CAP. CLAMP TO C305.	8-70
F CR303 WAS IZ533A	11/12/70
E ADD R303, ECO 351.	5-70
D REDRAWN FOR ART-WORK CHGS.	5-70

MOSELEY ASSOCIATES, INC.
SANTA BARBARA, CALIFORNIA

COMPONENT LAYOUT
RPL-2 XMTR POWER SUPPLY

TOL. FRACT ± 1/32, .XX ± .030, .XXX ± .010

DWN	JAG	5-70	SCALE: FULL
CHK			20A2173 G
ENG			



NOTES:

1 UNLESS OTHERWISE SPECIFIED
RESISTOR VALUES ARE IN OHMS, 1/4 W, 10%
CAPACITOR " " " MICROFARADS
TRANSISTORS ARE 3N154
DIODES ARE IN4154

2 SCHEMATIC 91C6375

3 P.C. BOARD 51B5246

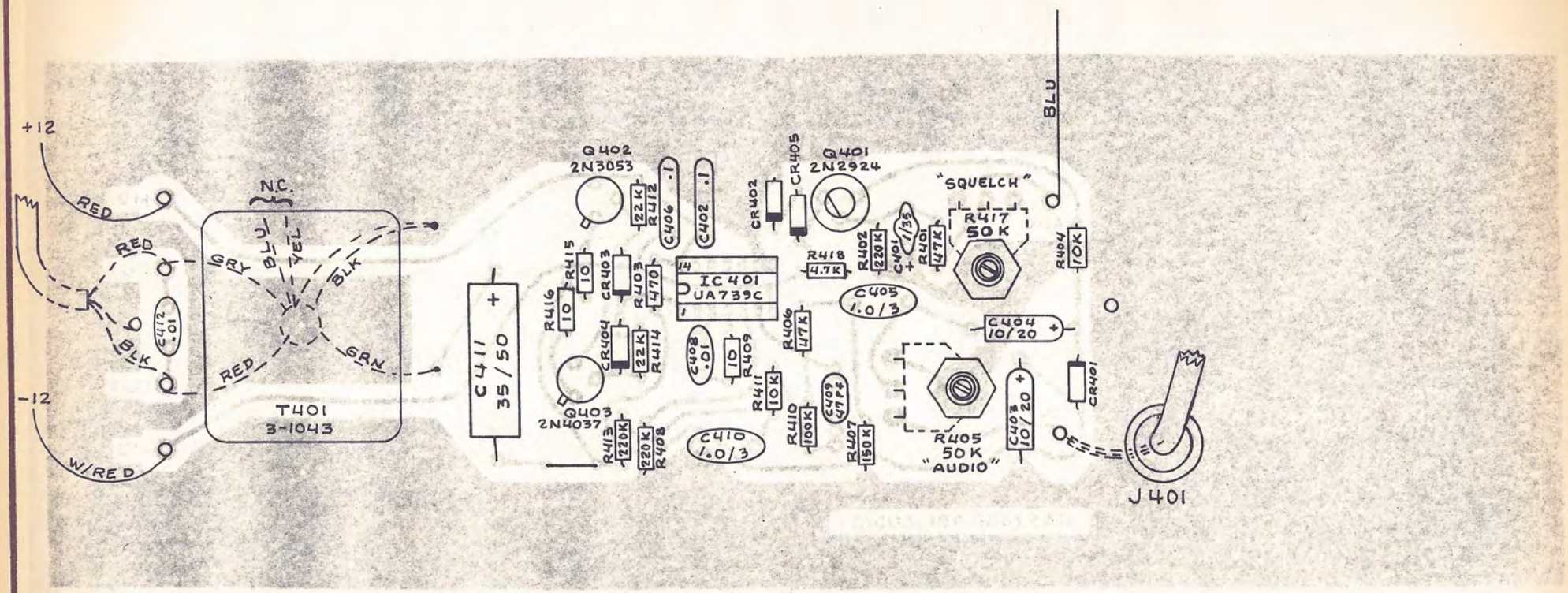
4 * DENOTES DWG 2A1327

B ADD NOTE 4. 2-70
A C245 ... 1-70

MOSELEY ASSOCIATES, INC.
SANTA BARBARA, CALIFORNIA

COMPONENT LAYOUT
RPL-2 RCVR 10.7 MHz 455 MHz IF

DWN JAG 1-70
CHK E.K.Y. 1/70
SCALE FULL
20B2171



NOTES:

1 UNLESS OTHERWISE SPECIFIED
RESISTOR VALUES ARE IN OHMS, 1/4 W, 10 %.
CAPACITOR " " " MICROFARADS
DIODES ARE IN4154

2 SCHEMATIC 91C6375

3 P.C. BOARD 51A5248

REVISIONS	DATE
A ADD CR405. ECO# 307.	1-70

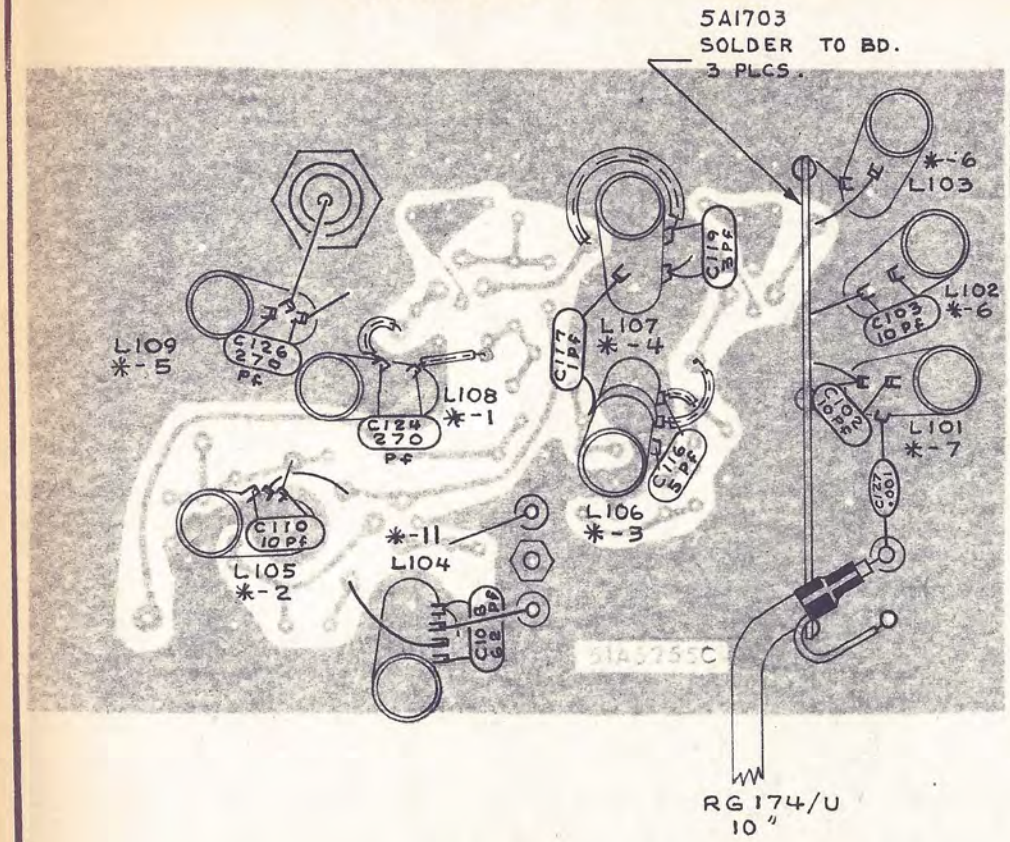
MOSELEY ASSOCIATES, INC.
SANTA BARBARA, CALIFORNIA

COMPONENT LAYOUT
RPL-2 RCVR AUDIO

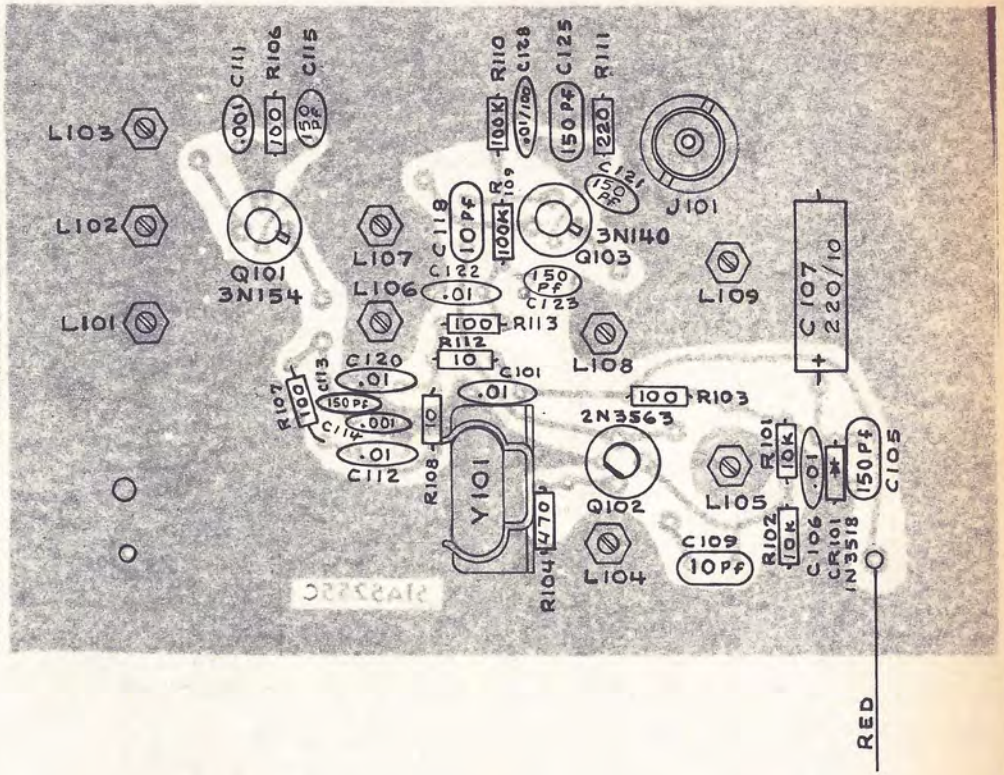
TOL. FRACT ± 1/32, .XX ± .030, .XXX ± .010

DWN	JAG	1-70	SCALE: FULL
CHK	FXY	1/70	20A2172 A
ENG	[illegible]	1/70	

BOTTOM VIEW



TOP VIEW



NOTES:

1. UNLESS OTHERWISE SPECIFIED
   RESISTOR VALUES ARE IN OHMS, 1/4 W, 10 %
   CAPACITOR " " " MICROFARADS.
2. SCHEMATIC 91C6375
3. P.C. BD. 51A5255
4. * DENOTES DWG. 2A1327

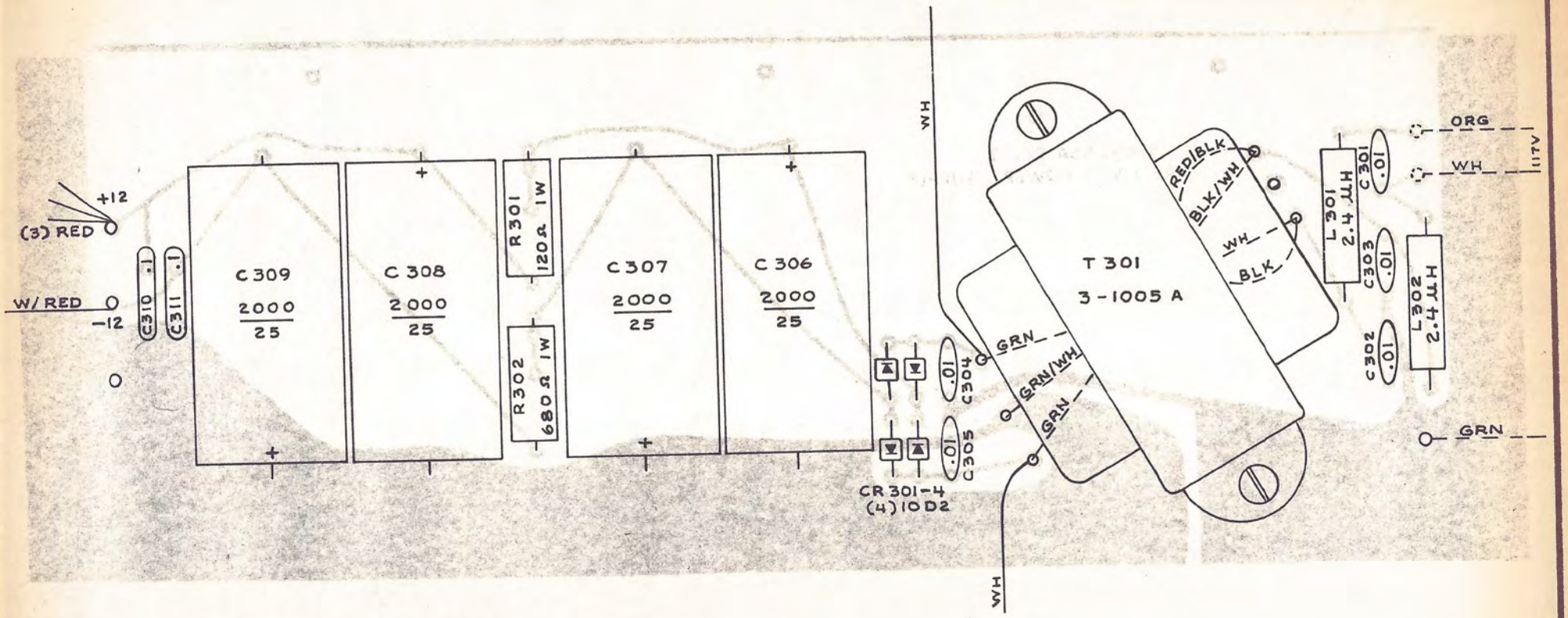
REVISIONS	DATE	
G	2-70	R106 WAS 220, R111 WAS 470, ADD C128 PER ECO 380.
F	9-70	C124, 126 WERE 300 PF ECO 376.
E	8/11/70	C109 WAS 33PF, L104 WAS *-2. ECO 366
D	7/16/70	ADD Q102 EMITTER NOTCH
C	6-70	ADD C127 PER ECO 355.
B	4-70	ARTWORK REVISED.
A	2-70	ADD NOTE 4.

MOSELEY ASSOCIATES, INC.
SANTA BARBARA, CALIFORNIA

COMPONENT LAYOUT
RPL-2 RCVR 161 MHz RF AMP

TOL. FRACT ± 1/32, .XX ± .030, .XXX ± .010

DWN	JAG	1-70	SCALE: FULL
CHK	FXY	1/70	20 A 2174 G
ENG			



NOTES:

1 UNLESS OTHERWISE SPECIFIED
CAPACITOR VALUES ARE IN MICROFARADS

2 SCHEMATIC 91C6375

3 P.C. BOARD 51A5256

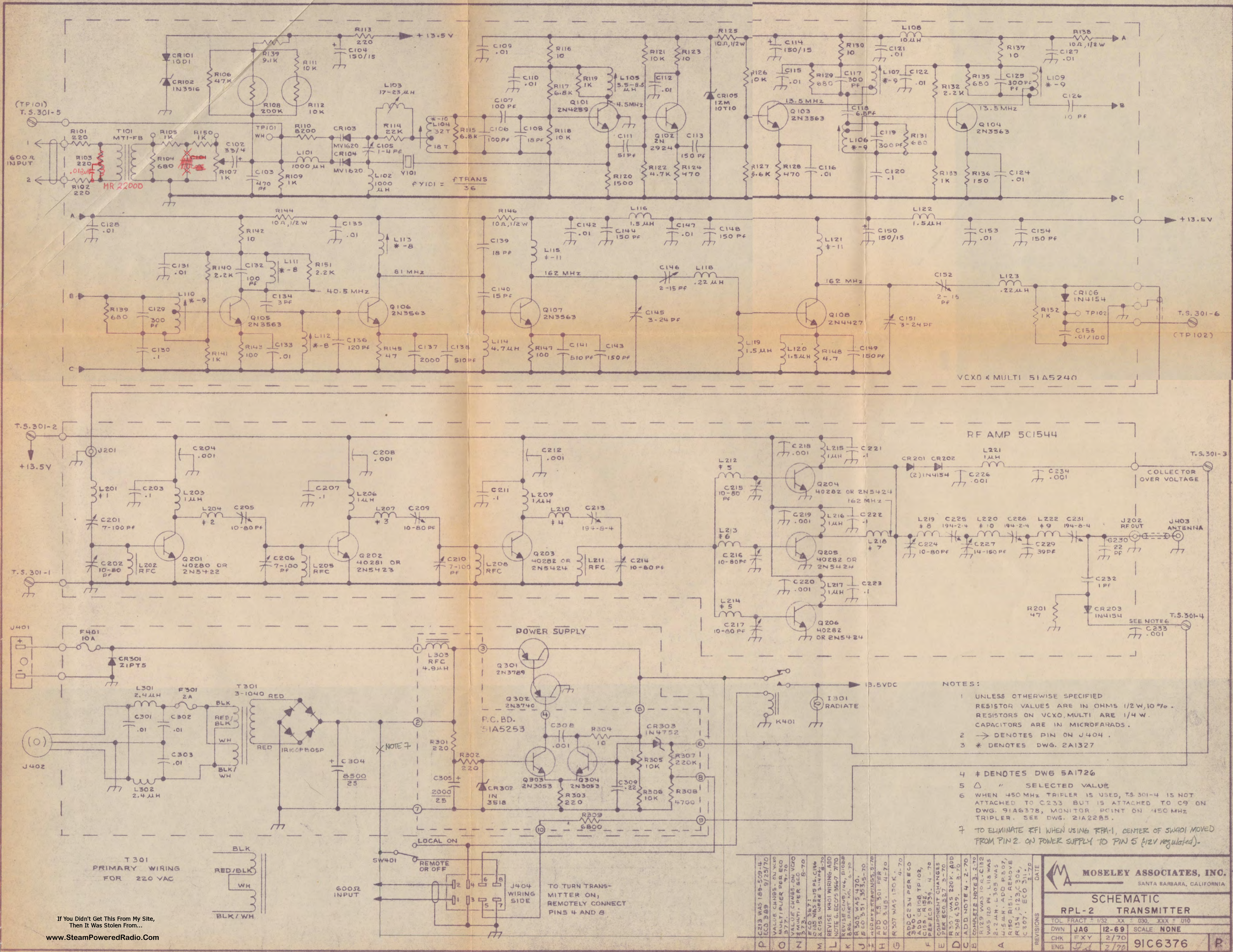
REVISIONS	DATE
A ADD TERMINALS FOR T301 WIRES	7/20/70

MOSELEY ASSOCIATES, INC.
SANTA BARBARA, CALIFORNIA

COMPONENT LAYOUT
RPL-2 RCVR POWER SUPPLY

TOL. FRACT ± 1/32, .XX ± .030, .XXX ± .010

DWN	JAG	1-70	SCALE: FULL
CHK	FXY	1/70	20A2175 A
ENG		1/70	



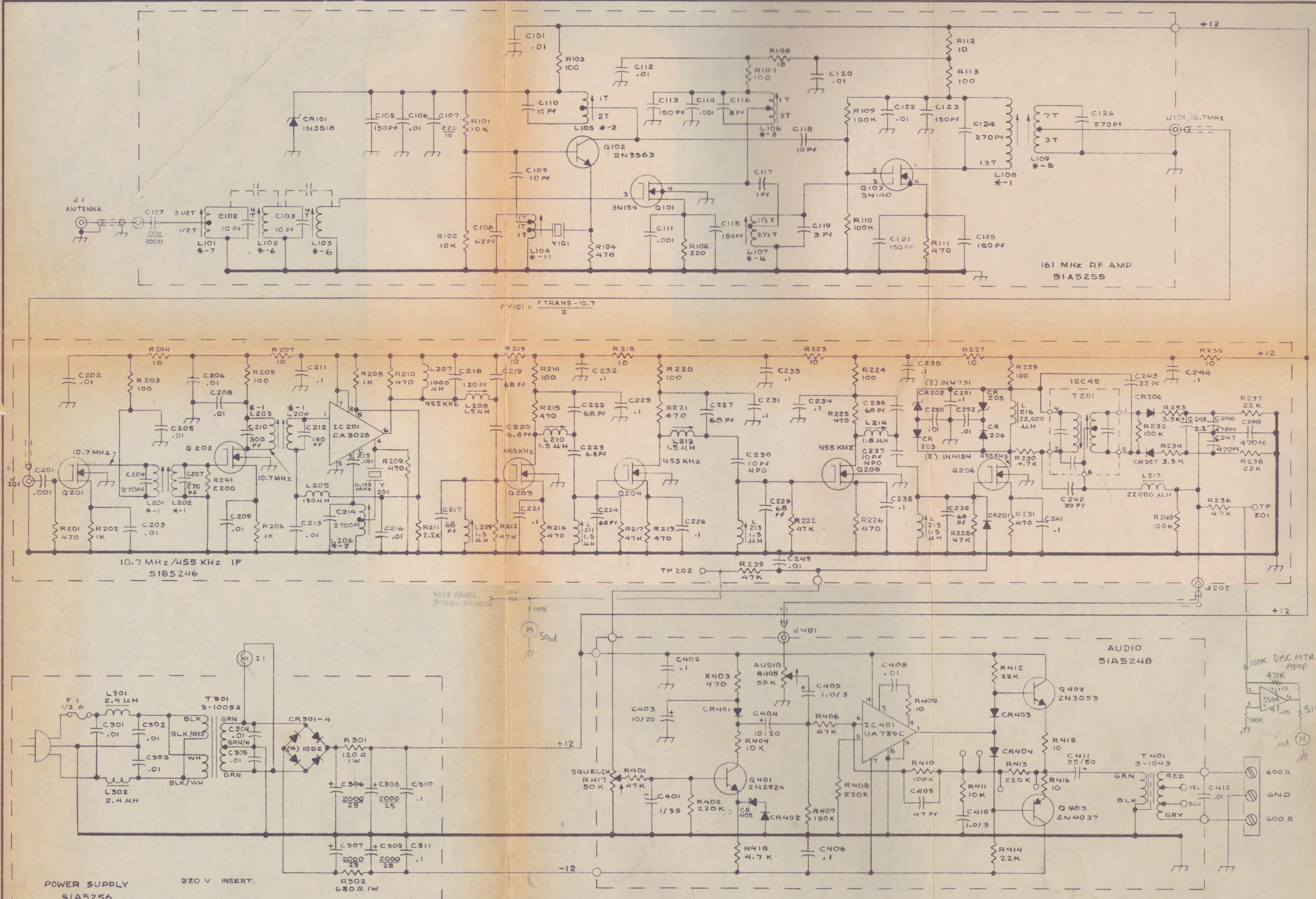
NOTES:

1. UNLESS OTHERWISE SPECIFIED RESISTOR VALUES ARE IN OHMS 1/2 W, 10%. RESISTORS ON VCXO, MULTI ARE 1/4 W. CAPACITORS ARE IN MICROFARADS.
2. → DENOTES PIN ON J404.
3. ✱ DENOTES DWG. 2A1327
4. ‡ DENOTES DWG 5A1726
5. △ " SELECTED VALUE
6. WHEN 450 MHz TRIPLER IS USED, T.S. 301-4 IS NOT ATTACHED TO C233 BUT IS ATTACHED TO C9 ON DWG. 91A6378, MONITOR POINT ON 450 MHz TRIPLER. SEE DWG. 21A2285.
7. TO ELIMINATE RFI WHEN USING RPA-1, CENTER OF SW401 MOVED FROM PIN 2 ON POWER SUPPLY TO PIN 5 (12V regulated).

MOSELEY ASSOCIATES, INC.
SANTA BARBARA, CALIFORNIA

SCHEMATIC
RPL-2 TRANSMITTER

TOL FRACT ± 1/32	.XX ± .030	.XXX ± .010	
DWN JAG	12-69	SCALE: NONE	
CHK FXY	2/70		
ENG	2/70	91C6376	P



NOTES :

1. UNLESS OTHERWISE SPECIFIED
   RESISTOR VALUES ARE IN OHMS, 1/4 W, 10%
   CAPACITOR " " " MICROFARADS
   TRANSISTORS ARE 3N154
   DIODES ARE IN4154
2. ✱ DENOTES DWG. 2A1327

MOSELEY ASSOCIATES, INC.
SANTA BARBARA, CALIFORNIA

SCHEMATIC
RECEIVER MODEL RPL-2

DWN	JAG	11-69
CHK	FXY	1/70
ENG		1/70

SCALE NONE

91C6375 G