UNCLASSIFIED

TECHNICAL MANUAL

for

SOLID STATE EXCITER

MODEL SMEE-1

THE TECHNICAL MATERIEL CORPORATION

MAMARONECK, N.Y. OTTAWA, ONTARIO

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THE TECHNICAL MATERIEL CORPORATION
COMMUNICATIONS ENGINEERS
700 FENIMORE ROAD MAMARONECK, N. Y.

Warranty

The Technical Materiel Corporation, hereinafter referred to as TMC, warrants the equipment (except electron tubes,* fuses, lamps, batteries and articles made of glass or other fragile or other expendable materials) purchased hereunder to be free from defect in materials and workmanship under normal use and service, when used for the purposes for which the same is designed, for a period of one year from the date of delivery F.O.B. factory. TMC further warrants that the equipment will perform in a manner equal to or better than published technical specifications as amended by any additions or corrections thereto accompanying the formal equipment offer.

TMC will replace or repair any such defective items, F.O.B. factory, which may fail within the stated warranty period, PROVIDED:

1. That any claim of defect under this warranty is made within sixty (60) days after discovery thereof and that inspection by TMC, if required, indicates the validity of such claim to TMC's satisfaction.
2. That the defect is not the result of damage incurred in shipment from or to the factory.
3. That the equipment has not been altered in any way either as to design or use whether by replacement parts not supplied or approved by TMC, or otherwise.
4. That any equipment or accessories furnished but not manufactured by TMC, or not of TMC design shall be subject only to such adjustments as TMC may obtain from the supplier thereof.

Electron tubes*furnished by TMC, but manufactured by others, bear only the warranty given by such other manufacturers. Electron tube warranty claims should be made directly to the manufacturer of such tubes.

TMC's obligation under this warranty is limited to the repair or replacement of defective parts with the exceptions noted above.

At TMC's option any defective part or equipment which fails within the warranty period shall be returned to TMC's factory for inspection, properly packed with shipping charges prepaid. No parts or equipment shall be returned to TMC, unless a return authorization is issued by TMC.

No warranties, express or implied, other than those specifically set forth herein shall be applicable to any equipment manufactured or furnished by TMC and the foregoing warranty shall constitute the Buyers sole right and remedy. In no event does TMC assume any liability for consequential damages, or for loss, damage or expense directly or indirectly arising from the use of TMC Products, or any inability to use them either separately or in combination with other equipment or materials or from any other cause.

*Electron tubes also include semi-conductor devices.

PROCEDURE FOR RETURN OF MATERIAL OR EQUIPMENT

Should it be necessary to return equipment or material for repair or replacement, whether within warranty or otherwise, a return authorization must be obtained from TMC prior to shipment. The request for return authorization should include the following information:

1. Model Number of Equipment.
2. Serial Number of Equipment.
3. TMC Part Number.
4. Nature of defect or cause of failure.
5. The contract or purchase order under which equipment was delivered.

PROCEDURE FOR ORDERING REPLACEMENT PARTS

When ordering replacement parts, the following information must be included in the order as applicable:

1. Quantity Required.
2. TMC Part Number.
3. Equipment in which used by TMC or Military Model Number.
4. Brief Description of the Item.
5. The *Crystal Frequency* if the order includes crystals.

PROCEDURE IN THE EVENT OF DAMAGE INCURRED IN SHIPMENT

TMC's Warranty specifically excludes damage incurred in shipment to or from the factory. In the event equipment is received in damaged condition, the carrier should be notified immediately. Claims for such damage should be filed with the carrier involved and not with TMC.

All correspondence pertaining to Warranty Claims, return, repair, or replacement and all material or equipment returned for repair or replacement, within Warranty or otherwise, should be addressed as follows:

THE TECHNICAL MATERIEL CORPORATION
Engineering Services Department
700 Fenimore Road
Mamaroneck, New York

RECORD OF CORRECTIONS MADE

Change No.	Date of Change	Date Entered	Entered By

SOLID STATE EXCITER

MODEL SMEE-1

GENERAL INFORMATION

The SMEE exciter is essentially similar to the SME exciter except for the following comparisons:

SMEE	SME
Has additional circuitry for operation in a TechniMatiC* tuned transmitter.	Has no circuitry for operation in a TechniMatiC* tuned transmitter.
Has single conversion with one i-f frequency (1.75 mc).	Has double conversion with two i-f frequencies (250 kc and 1.75 mc).
Uses r-f tuned converters with one frequency selection per converter (TTRT-1B, 2B, 3B, and 4B).	Uses r-f tuned converters with two frequency selections per converter (TTRT-1,2,3, and 4).
Has ALDC input.	Has no ALDC input.
Has broad-band linear amplifier and associated power supply.	Has no broad-band linear amplifier and associated power supply.
All terminal strip and remote control connections are filtered for RF.	Terminal strips and remote control connections are not filtered for RF.
Has no provision for remoting USB/LSB control.	Has provision for remoting USB/LSB control.

Overall outward appearance of the SMEE is the same as that of the SME with the addition of two components mounted on the chassis rear panel. These additions are (1) a stepping switch with code input and readback output receptacles for remote control of the CHANNEL selector switch and (2) a connector receptacle (J1534) for interconnecting wiring between transmitter tuning circuits and sequential relays in the SMEE.

The circuitry in the SMEE for TechniMatiC tuning enables remote control of the CHANNEL (output frequency) selector switch and a consequent automatic tuning and loading of the transmitter to that frequency. Sequential relays operate to turn on the SMEE carrier output during the transmitter tuning phase.

INSTALLATION

Mechanical installation of the SMEE is the same as that for the SME. Electrical installation is the same except for the following (applying to the SMEE):

(1) Connect transmitter tuning cable at J1534 receptacle, located on the chassis rear panel.

(2) There is no remote control of sideband switching in the SMEE at terminal 18 of E1501 as is in the SME.

*Trademark applied for.

(3) Connect ALDC input from transmitter at J1536 receptacle on the chassis rear panel.

OPERATOR'S SECTION

All controls appearing on the SME control panel also appear on the SMEE panel and have the same functions.*

The operating procedure of the SMEE in a manual tuning of the transmitter is the same as that for the SME**. Operating procedure for a TechniMatiC tuning, however, differs in its sequence, since certain controls must be pre-set before the automatic tuning of the transmitter takes place.

To operate the SMEE for TechniMatiC transmitter tuning:

(1) Set SMEE POWER switch to OFF.

(2) Using CHANNEL selector, select desired operating frequency.

(3) Using mode switch at SMEE, select desired mode of transmission (CW, SSB, -20DB, AME or MCW).

(4) Using SMEE LSB/USB switch, select desired sideband.

(5) Set SMEE VOX/PTT switch at PTT.

(6) Set SMEE RF GAIN knob fully clockwise and AF GAIN knob fully counter-clockwise.

(7) Set SMEE METER switch at AF.

(8) Set POWER switch at ON. Transmitter tuning and loading now takes place.

(9) When indicators on transmitter show tuning is complete, apply normal audio input test signal at SMEE, turning SMEE AF GAIN knob slowly clockwise until SMEE meter reads "0 db." Leave RF GAIN set at its maximum clockwise position.

NOTE

AF GAIN knob may be left in this position for subsequent tunings. After each tuning, readjust knob to "0 db", if necessary.

(10) If VOX operation is desired, set VOX/PTT switch at VOX and make adjustment to VOX GAIN and ANTI VOX knobs as described in SME manual.

* The exception is the F1/F2 switch on the TTRT converters; there is no switch on SMEE TTRT converters.
**In the SMEE, however, continuous-rotation CHANNEL knob may be turned in a clockwise direction only.

PRINCIPLES OF OPERATION (Figure A)

Principles involved in the operation of the SMEE are similar to those of the SME with three exceptions. These are (1) in the i-f section, (2) in the addition of automation circuitry and (3) in the signal output level.

The i-f section of the SMEE has one conversion stage (to 1.75 mc), with two modulators, two sideband filters and one oscillator; the SME has two conversion stages (to 250 kc and 1.75 mc), with one modulator, one sideband filter and three oscillators (see figure 4-1 in SME manual). In the SMEE i-f section (see figure A) the audio output from the a-f section is applied to either an LSB input or a USB input in the i-f section, depending on the position of the LSB/USB switch. There is a separate balanced modulator for each input and the appropriate sideband filter at the modulator output. The 1.75 mc oscillator provides the injection frequency for both modulators and the settings of the individual potentiometers (R1707 and R1716) cancel out the 1.75 mc component in each modulator output. The sideband frequencies are then applied to the mixer and carrier re-insertion into the signal is obtained from the 1.75 mc oscillator. Automatic carrier level selection is provided through the mode switch in the same manner as for the SME.

The function of the automation circuitry in the SMEE is to enable an automatic tuning of the power amplifier stages of the transmitter to the desired frequency from a positioning of the SMEE CHANNEL (frequency selector) switch. Tuning of the power amplifier is divided into two main phases: pre-positioning of the tuning controls (coarse tuning) and final tuning (fine tuning). The SMEE starts with its regular signal output shut off and extends the selected frequency information (from the CHANNEL switch position) to the amplifier for the pre-positioning phase; then it extends an r-f output, containing the carrier component only, for the final tuning phase. When the tuning is completed, the SMEE presents the full signal consisting of sideband (and/or carrier) and transmission of intelligence begins. During the tuning phase, the carrier component is extended regardless of the mode of transmission selected (i.e., CW and SSB modes contain no carrier component). Circuitry in the SMEE keeps this tuning carrier at a level of power equal to the aggregate power of all components (sideband and carrier) to appear in the final transmitted signal. This arrangement prevents a consequent overdriving of the power amplifier stages when the tuning is completed and the regular signal is applied.

Automation circuitry in the SMEE (see figure A) consists of relays K1501 through K1504, an extra

Figure A. Functional Block Diagram, SMEE

wafer on mode switch S1517, potentiometer R1553, carrier notch filter FL1501, a cam attached to S1515 CHANNEL switch shaft, cam-operated switch S1519, and pre-positioning wafer on S1515.

S1515 SMEE CHANNEL switch movement starts the sequence of events in the tuning process. The movement of S1515 works through the cam and microswitch S1519 to energize relay K1501 while the movement continues, and de-energize it when the movement stops. The energized K1501 keeps the SMEE r-f output shut off and de-activates the transmitter power amplifier tuning circuits. The SMEE r-f output is kept shut off by breaking the energization path to the T/R relay (K1500) from the relay driver in the PTT/VOX circuit. (K1500, energized, supplies power voltage to SMEE i-f and r-f stages.) This arrangement prevents an inadvertent application of audio (through the VOX/PTT circuit) from causing the SMEE to transmit at this instance. The transmitter tuning circuitry is de-activated by extending a ground to it, via pins W and U of J1534, to shut off power at the site.

When S1515 CHANNEL switch is brought to its proper position, pre-positioning takes place. Relay K1501 de-energizes and power is again supplied to the transmitter tuning circuitry. Information from the pre-positioning wafer of S1515 is now fed to the tuning circuit via pins A through K in J1534 receptacle and the amplifier controls become pre-positioned. After this event, the tuning circuitry extends a 24V supply across pins R and P of J1534, energizing relays K1502 and K1503.

The energized K1502 and K1503 relays cause the SMEE to put forth the carrier sample at the proper level for final tuning purposes. K1502, energized, allows carrier generation only (without sideband) by disabling the a-f section and energizing K1500 relay to supply power voltages to the i-f and r-f sections. K1503, energized, adjusts the carrier component to the proper level by causing the 1.75 mc carrier re-insertion line to by-pass the dropping resistors selected by mode switch S1517. In carrier components modes (-20DB, AME and MCW) K1503 also energizes relay K1504; K1504 then causes the i-f section output to by-pass carrier notch filter FL1501, further heightening the tuning sample.

When the transmitter tuning is complete, the SMEE is returned to its normal operating state. When sensing servos in the tuning circuitry have moved the controls to zero-in on the SMEE frequency, the 24V sitting across pins R and P of J5134 is removed, de-energizing relays K1502, 3 and 4. K1502 re-connects power voltages to the a-f section and disconnects voltages to the i-f and r-f sections by de-energizing K1500. K1500 can now only be energized in the normal manner (i.e. through the VOX/PTT relay driver output). K1503 reconnects the carrier re-insertion line back across the proper dropping resistor for the selected mode of transmission and the de-energized K1504 re-connects carrier notch filter FL1501 back into the i-f output line. The transmitter is now ready to be operated by means of

the VOX/PTT circuit working on T/R relay K1500.

An r-f pre-amplifier stage is added into the SMEE in order to step up power output for automatic tuning purposes and supply a buffer in this area for load variations during tuning. To supply power required for operation of the pre-amplifier, an additional power supply board (CK1263) is coupled to the a-c line voltage through additional transformer T903.

PARTS LIST

The parts list for the SMEE-1 is included in this addendum.

SCHEMATIC DIAGRAMS

The full complement of schematic diagrams listed for the SMEE-1 is attached to this addendum. They are:

Overall Schematic, SMEE-1 (2 sheets)	CK1184
CW Oscillator Board	CK1172
Transmitter Audio Board	CK1171
Transmitter Intermediate Frequency Board	CK1285
Meter Board	CK1169
Linear Power Amplifier	CK1275
Power Supply Board	CK1170
Power Supply Board	CK1263

NOTE

Schematics for TTRT Transmitter Converters are included in the separate TTRT instruction manual, accompanying this manual.

PARTS LIST

for

LINEAR AMPLIFIER, POWER SUPPLY BOARD ASSY.

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
C1	CAPACITOR, FIXED, ELECTROLYTIC: tantalum; 50 uf, 60 WVDC; polarized.	CE107-1
C2 thru C4	Same as C1.	
CR1	SEMICONDUCTOR DEVICE, DIODE: silicon	1N2071A
CR2 thru CR4	Same as CR1.	
CR5	SEMICONDUCTOR DEVICE, DIODE: silicon	1N2986B
L1	COIL, RADIO FREQUENCY: fixed; 3 PI; 1 mh inductance; 23 ohms, ±10%; max. current rating 75-100 ma.	CL101-2
R1	RESISTOR, FIXED, COMPOSITION: 100 ohms, ±5%; 1 watt.	RC32GF101J
R2	Same as R1.	
R3	RESISTOR, FIXED, COMPOSITION: 1,800 ohms, ±5%; 1 watt.	RC32GF182J

PARTS LIST

for

LINEAR AMPLIFIER, BOARD ASSEMBLY

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
C1	CAPACITOR, FIXED, CERAMIC DIELECTRIC: 10,000 uuf, GMV; 500 WVDC.	CC100-16
C2 thru C6	Same as C1.	
C7	CAPACITOR, FIXED, CERAMIC DIELECTRIC: 100,000 uuf, +80% -20%; 100 WVDC.	CC100-28
C8	Same as C1.	
C9	Same as C1.	
C10	Same as C7.	
L1	COIL, RADIO FREQUENCY: fixed; 100 uh, ±10%; max. DC resistance 2.8 ohms; molded case.	CL240-100
L2	Same as L1.	
L3	Same as L1.	
L4	NOT USED	
L5	COIL, RADIO FREQUENCY: fixed; 2.20 uh, ±20%; max. DC resistance 0.35 ohms; molded case.	CL240-2.2
L6 thru L8	Same as L1.	
Q1	TRANSISTOR	2N3296
Q2	Same as Q1.	
R1	RESISTOR, FIXED, COMPOSITION: 47 ohms, ±5%; 1/2 watt.	RC20GF470J
R2	RESISTOR, FIXED, COMPOSITION: 6,800 ohms, ±5%; 1/4 watt.	RC07GF682J
R3	RESISTOR, FIXED, COMPOSITION: 1,000 ohms, ±5%; 1/4 watt.	RC07GF102J
R4	RESISTOR, VARIABLE, COMPOSITION: 5,000 ohms, ±30%; 1/2 watt.	RV124-1-502

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
R5	RESISTOR, FIXED, COMPOSITION: 10 ohms, ±5%; 1/2 watt.	RC20GF100J
R6	RESISTOR, FIXED, COMPOSITION: 220 ohms, ±5%; 1/4 watt.	RC07GF221J
R7	NOT USED	
R8	Same as R3.	
R9	RESISTOR, FIXED, COMPOSITION: 3,300 ohms, ±5%; 1/4 watt.	RC07GF332J
R10	Same as R4.	
R11	Same as R5.	
R12	RESISTOR, FIXED, COMPOSITION: 270 ohms, ±5%; 1/2 watt.	RC20GF271J
R13	RESISTOR, FIXED, COMPOSITION: 68 ohms, ±5%; 1/4 watt.	RC07GF680J
R14	RESISTOR, FIXED, COMPOSITION: 15 ohms, ±5%; 1/4 watt.	RC07GF150J
R15	Same as R14.	

PARTS LIST

for

TRANSMITTER METER, BOARD ASSEMBLY

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
C1	CAPACITOR, FIXED, CERAMIC DIELECTRIC: .22 uf, ±20%; 25 WVDC.	CC112R224M
C2	CAPACITOR, FIXED, ELECTROLYTIC: 50 uf, -10% +150% at 120 Hz at 25°C; 15 WVDC; polarized.	CE105-50-15
C3	Same as C1.	
C4	CAPACITOR, FIXED, ELECTROLYTIC: 5 uf, -10% +150% at 120 Hz at 25°C; 15 WVDC; polarized.	CE105-5-15
C5A,B	CAPACITOR, FIXED, CERAMIC DIELECTRIC: 2 x 2,000 uuf, GMV; 1,000 WVDC.	CC100-19
CR1	SEMICONDUCTOR DEVICE, DIODE: germanium	1N270
CR2	SEMICONDUCTOR DEVICE, DIODE: silicon	1N252
L1	COIL, RADIO FREQUENCY: fixed; 0.560 uh, ±10%; current rating 100 ma; molded case.	CL140-5
Q1	TRANSISTOR: germanium; PNP; JEDEC type 2N1370-7 transistor with a controlled hfe limit of 120-150; JEDEC type TO5 case.	TX108
Q2	Same as Q1.	
R1	RESISTOR, FIXED, COMPOSITION: 1.5 megohms, ±5%; 1/2 watt.	RC20GF155J
R2	RESISTOR, FIXED, COMPOSITION: 10,000 ohms, ±5%; 1/2 watt.	RC20GF103J
R3	RESISTOR, FIXED, COMPOSITION: 3,300 ohms, ±5%; 1/2 watt.	RC20GF332J
R4	RESISTOR, FIXED, COMPOSITION: 4,700 ohms, ±5%; 1/2 watt.	RC20GF472J
R5	RESISTOR, FIXED, COMPOSITION: 5,600 ohms, ±5%; 1/2 watt.	RC20GF562J
R6	Same as R4.	
R7	RESISTOR, FIXED, COMPOSITION: 8,200 ohms, ±5%; 1/2 watt.	RC20GF822J
R8	RESISTOR, FIXED, COMPOSITION: 82,000 ohms, ±5%; 1/2 watt.	RC20GF823J

PARTS LIST

for

POWER SUPPLY, MAIN CHASSIS ASSEMBLY

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
C900 thru C906	NOT USED	
C907	CAPACITOR, FIXED, ELECTROLYTIC: 2,000 uf, 25 WVDC; polarized.	CE116-5VN
C908	CAPACITOR, FIXED, ELECTROLYTIC: 100 uf, -10% +150% at 120 Hz at 25°C; 25 WVDC; polarized.	CE105-100-25
C909	Same as C908.	
C910	Same as C907.	
C911	Same as C907.	
C912	Same as C908.	
C913	Same as C908.	
C914	NOT USED	
C915	CAPACITOR, FIXED, ELECTROLYTIC: 20 uf, -10% +150% at 120 Hz at 25°C; 100 WVDC; polarized.	CE105-20-100
C916	Same as C915.	
C917	Same as C915.	
C918	CAPACITOR, FIXED, ELECTROLYTIC: 25 uf, -10% +150% at 120 Hz at 25°C; 50 WVDC; polarized.	CE105-25-50
C919	CAPACITOR, FIXED, CERAMIC DIELECTRIC: 20,000 uuf, +80% -20%; 500 WVDC.	CC100-24
C920	Same as C919.	
C921	CAPACITOR, FIXED, ELECTROLYTIC: 100 uf, 150 WVDC; polarized.	CE116-7VN
CR900 thru CR909	NOT USED	
CR910	SEMICONDUCTOR DEVICE, DIODE: silicon	1N547
CR911	Same as CR910.	
CR912	SEMICONDUCTOR DEVICE, DIODE: silicon	1N3022B

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
CR913	Same as CR910.	
CR914	Same as CR910.	
CR915	Same as CR912.	
CR916	Same as CR910.	
CR917	Same as CR910.	
CR918	SEMICONDUCTOR DEVICE, DIODE: silicon	1N3033B
F900 thru F906	NOT USED	
F907	FUSE, CARTRIDGE: 1/16 amp; time lag; 1-1/4" long x 1/4" dia.; slo-blo. (For 230 VAC operation)	FU102-.062
F907	FUSE, CARTRIDGE: 1/8 amp; time lag; 1-1/4" long x 1/4" dia.; slo-blo. (For 115 VAC operation)	FU102-.125
* F908	FUSE, CARTRIDGE: ___ amp; time lag; 1-1/4" long x 1/4" dia.; slo-blo.	FU102-XXX
F909	FUSE, CARTRIDGE: 1/8 amp; 1-1/4" long x 1/4" dia.; quick acting.	FU100-.125
F910	Same as F909.	
F911	Same as F909.	
F912	FUSE, CARTRIDGE: 1/4 amp; 1-1/4" long x 1/4" dia.; quick acting.	FU100-.250
J900 thru J903	NOT USED	
J904	CONNECTOR, RECEPTACLE, ELECTRICAL: male	MS3102A16S5P
J905	CONNECTOR, RECEPTACLE, ELECTRICAL: 2 prong male.	JJ119-3
L900	NOT USED	
L901	NOT USED	
L902	COIL, RADIO FREQUENCY: fixed; 3 PI; 1 mh inductance; 23 ohms, ±10% resistance; current rating 75-100 ma.	CL101-2

* F908 fuse size is dependent upon the type of OC-100 crystal oven used.

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
L903	Same as L902.	
L904	Same as L902.	
Q900	TRANSISTOR: germanium	2N350A
Q901	Same as Q900.	
Q902	Same as Q900.	
Q903	TRANSISTOR	2N3789
R900 thru R910	NOT USED	
R911	RESISTOR, FIXED, COMPOSITION: 100 ohms, ±5%; 1 watt.	RC32GF101J
R912	Same as R911.	
R913 thru R915	NOT USED	
R916	Same as R911.	
R917	Same as R911.	
R918	NOT USED	
R919	RESISTOR, FIXED, COMPOSITION: 1,000 ohms, ±5%; 1 watt.	RC32GF102J
R920	Same as R919.	
R921	Same as R919.	
S900	NOT USED	
S901	SWITCH, TOGGLE: DPST; bat type handle.	ST22K
S902	SWITCH, TOGGLE: DPDT; bat type handle.	ST22N
T900	NOT USED	
T901	NOT USED	

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
T902	TRANSFORMER, POWER: step-down; primary input (#1) 104/115 or 208/230 VAC; secondary (#1,2) 24 V at 300 ma, (#3) 80 V at 100 ma, CT; 15 solder lug type terminals; open frame case.	TF298
T903	TRANSFORMER, POWER: primary 115/230 VAC; frequency 50/60 cps (Hz), single phase; secondary 123 V RMS; CT at 61.5 V; current rating 1.1 amps; 7 solder lug type terminals; stud mounted.	TF312
XF900 thru XF906	NOT USED	
XF907	FUSEHOLDER: accommodates cartridge fuse 1-1/4" long x 1/4" dia.; current rating 15 amps at 250 volts.	FH103
XF908 thru XF912	Same as XF907.	
XQ900	SOCKET, SEMICONDUCTOR DEVICE: 7 pin accommodation; 0.040 or 0.050 dia.; polarized; 1 terminal lug grounding strap; o/a dim. 1-37/64" x 1" max.	TS166-1
XQ901 thru XQ903	Same as XQ900.	

PARTS LIST

for

IF TRANSMITTER, BOARD ASSEMBLY

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
C1701	CAPACITOR, FIXED, CERAMIC DIELECTRIC: 10,000 uuf, GMV; 1,000 WVDC.	CC100-16
C1702	Same as C1701.	
C1703	CAPACITOR, VARIABLE, MICA DIELECTRIC: 280 uuf when tight, 25 uuf at three turns; 175 WVDC; compression type.	CV114-1
C1704	CAPACITOR, FIXED, MICA DIELECTRIC: 160 uuf, ±5%; 100 WVDC.	CM111C161J1S
C1705	CAPACITOR, FIXED, MICA DIELECTRIC: 100 uuf, ±5%; 100 WVDC.	CM111C101J1S
C1706	CAPACITOR, FIXED, MICA DIELECTRIC: 1,000 uuf, ±5%; 100 WVDC.	CM111C102J1S
C1707	CAPACITOR, FIXED, MICA DIELECTRIC: 180 uuf, ±5%; 100 WVDC.	CM111C181J1S
C1708	Same as C1707.	
C1709	CAPACITOR, VARIABLE, CERAMIC DIELECTRIC: 9 to 35 uuf, 100 WVDC; miniature disc type.	CV112-2
C1710	Same as C1709.	
C1711	Same as C1701.	
C1712	Same as C1701.	
C1713	Same as C1704.	
C1714	Same as C1703.	
C1715	Same as C1706.	
C1716	Same as C1705.	
C1717	Same as C1707.	
C1718	Same as C1707.	
C1719	Same as C1709.	
C1720	Same as C1709.	
C1721	Same as C1707.	

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
C1722	Same as C1707.	
C1723	CAPACITOR, FIXED, CERAMIC DIELECTRIC: 200,000 uuf, +80% -20%; 25 WVDC.	CC100-33
C1724	Same as C1723.	
C1725	Same as C1703.	
C1726	CAPACITOR, FIXED, MICA DIELECTRIC: 1,500 uuf, ±5%; 100 WVDC.	CM112C152J1S
C1727	Same as C1726.	
C1728	Same as C1703.	
C1729	CAPACITOR, FIXED, CERAMIC DIELECTRIC: 100,000 uuf, +80% -20%; 100 WVDC.	CC100-28
C1730	Same as C1723.	
C1731	Same as C1729.	
C1732	Same as C1729.	
C1733	CAPACITOR, FIXED, MICA DIELECTRIC: 47 uuf, ±5%; 100 WVDC.	CM111C470J1S
C1734	CAPACITOR, VARIABLE, CERAMIC DIELECTRIC: 10 to 75 uuf; 350 WVDC.	CV109-8
C1734A	Same as C1733.	
C1735		
C1736	Same as C1706.	
C1737	Same as C1729.	
C1738	Same as C1705.	
C1739	Same as C1733.	
C1740	Same as C1701.	
C1741	Same as C1723.	
C1742	Same as C1729.	

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
CR1701	SEMICONDUCTOR DEVICE, DIODE: germanium	1N34A
CR1702 thru CR1708	Same as CR1701.	
FL1701	FILTER, SIDEBAND: low 1750.300 Kc max. at 3 db, high 1753.000 Kc min. at 3 db, low 1749.000 Kc min. at 60 db, high 1755.000 Kc max. at 60 db; for LSB operation.	FX10014-1
FL1702	FILTER, SIDEBAND: low 1747.000 Kc max. at 3 db, high 1749.700 Kc min. at 3 db, low 1745.000 Kc min. at 60 db, high 1751.000 max. at 60 db; for USB operation.	FX10014-2
Q1701	TRANSISTOR	2N2084
Q1702 thru Q1706	Same as Q1701.	
R1701	RESISTOR, FIXED, COMPOSITION: 1,000 ohms, ±5%; 1/2 watt.	RC20GF102J
R1702 thru R1704	Same as R1701.	
R1705	RESISTOR, FIXED, COMPOSITION: 330 ohms, ±5%; 1/2 watt.	RC20GF331J
R1706	Same as R1705.	
R1707	RESISTOR, VARIABLE, COMPOSITION: 10,000 ohms, ±10%; 0.25 watts; linear taper.	RV111U103A
R1708	RESISTOR, FIXED, COMPOSITION: 680 ohms, ±5%; 1/2 watt.	RC20GF681J
R1709	Same as R1708.	
R1710 thru R1713	Same as R1701.	
R1714	Same as R1705.	
R1715	Same as R1705.	

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
R1716	Same as R1707.	
R1717	Same as R1708.	
R1718	Same as R1708.	
R1719	Same as R1701.	
R1720	Same as R1701.	
R1721	RESISTOR, FIXED, COMPOSITION: 3,300 ohms, ±5%; 1/2 watt.	RC20GF332J
R1722	Same as R1721.	
R1723	RESISTOR, FIXED, COMPOSITION: 30,000 ohms, ±5%; 1/2 watt.	RC20GF303J
R1724	Same as R1701.	
R1725	RESISTOR, FIXED, COMPOSITION: 1,500 ohms, ±5%; 1/2 watt.	RC20GF152J
R1726	Same as R1701.	
R1727	RESISTOR, FIXED, COMPOSITION: 470 ohms, ±5%; 1/2 watt.	RC20GF471J
R1728	RESISTOR, FIXED, COMPOSITION: 39,000 ohms, ±5%; 1/2 watt.	RC20GF393J
R1729	RESISTOR, FIXED, COMPOSITION: 15,000 ohms, ±5%; 1/2 watt.	RC20GF153J
R1730	RESISTOR, FIXED, COMPOSITION: 12,000 ohms, ±5%; 1/2 watt.	RC20GF123J
R1731	RESISTOR, FIXED, COMPOSITION: 4,700 ohms, ±5%; 1/2 watt.	RC20GF472J
R1732	Same as R1701.	
R1733	Same as R1701.	
R1734	Same as R1728.	
R1735	Same as R1729.	
R1736	Same as R1727.	

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
T1701	TRANSFORMER, INTERMEDIATE FREQUENCY: fixed; operating frequency 1.75 mc; nominal primary inductance 5.0 uh, ±0.250 uh; 4 terminals, wire lead type.	TZ124
T1702	TRANSFORMER, INTERMEDIATE FREQUENCY: fixed; operating frequency 1.75 mc; nominal primary inductance 5.5 uh, ±0.300 uh; 5 terminals, wire lead type.	TZ125
Y1701	CRYSTAL UNIT, QUARTZ: operating frequency 1750.00 Kc (KHz); max. impedance 400 ohms; HC-25/U type holder.	CR10006
Z1701	OVEN, CRYSTAL: operating voltage 115 VAC; current rating 0.05 amps; operating temperature 75°C, ±2.5°C;	OC100-3

PARTS LIST

for

AF TRANSMITTER, BOARD ASSEMBLY

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
C1701	CAPACITOR, FIXED, ELECTROLYTIC: 6 uf, -10% +150% at 120 cps (Hz) at 25°C; 15 WVDC; polarized.	CE105-6-15
C1702	CAPACITOR, FIXED, CERAMIC DIELECTRIC: 200,000 uuf, +80% -20%; 25 WVDC.	CC100-33
C1703	CAPACITOR, FIXED, ELECTROLYTIC: 50 uf, -10% +150% at 120 cps (Hz) at 25°C; 15 WVDC; polarized.	CE105-50-15
C1704	Same as C1701.	
C1705	CAPACITOR, FIXED, ELECTROLYTIC: 10 uf, -10% +150% at 120 cps (Hz) at 25°C; 15 WVDC; polarized.	CE105-10-15
C1706	Same as C1703.	
C1707	Same as C1705.	
C1708	CAPACITOR, FIXED, ELECTROLYTIC: 4 uf, -10% +150% at 120 cps (Hz) at 25°C; 15 WVDC; polarized.	CE105-4-15
C1709	Same as C1701.	
C1710	Same as C1703.	
C1711	Same as C1702.	
C1712	CAPACITOR, FIXED, ELECTROLYTIC: 20 uf, -10% +150% at 120 cps (Hz) at 25°C; 15 WVDC; polarized.	CE105-20-15
C1713 thru C1728	NOT USED	
C1729	Same as C1705.	
C1730 thru C1760	NOT USED	
C1761	Same as C1702.	
C1762	NOT USED	
C1763	NOT USED	
C1764	Same as C1702.	

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
CR1701	SEMICONDUCTOR DEVICE, DIODE	1N34A
CR1702 thru CR1705	Same as CR1701.	
Q1701	TRANSISTOR: germanium; NPN; JEDEC type 2N1308 transistor with a controled hfe limit of 80-150; JEDEC type TO9 case.	TX106
Q1702	TRANSISTOR: germanium; PNP; JEDEC type 2N1370-4 transistor with a controlled hfe limit of 60-75; JEDEC type TO9 case.	TX107
Q1703 thru Q1705	Same as Q1702.	
Q1706	Same as Q1701.	
Q1707	Same as Q1702.	
Q1708	TRANSISTOR	2N2001
R1701	RESISTOR, FIXED, COMPOSITION: 22,000 ohms, ±5%; 1/2 watt.	RC20GF223J
R1702	RESISTOR, FIXED, COMPOSITION: 10,000 ohms, ±5%; 1/2 watt.	RC20GF103J
R1703	NOT USED	
R1704	RESISTOR, FIXED, COMPOSITION: 4,700 ohms, ±5%; 1/2 watt.	RC20GF472J
R1705	RESISTOR, FIXED, COMPOSITION: 2,200 ohms, ±5%; 1/2 watt.	RC20GF222J
R1706	Same as R1702.	
R1707	Same as R1705.	
R1708	RESISTOR, FIXED, COMPOSITION: 68,000 ohms, ±5%; 1/2 watt.	RC20GF683J
R1709	Same as R1702.	

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
R1710	RESISTOR, FIXED, COMPOSITION: 3,300 ohms, ±5%; 1/2 watt.	RC20GF332J
R1711	Same as R1710.	
R1712	RESISTOR, FIXED, COMPOSITION: 220 ohms, ±5%; 1/2 watt.	RC20GF221J
R1713	Same as R1702.	
R1714	Same as R1702.	
R1715	RESISTOR, FIXED, COMPOSITION: 8,200 ohms, ±5%; 1/2 watt.	RC20GF822J
R1716	RESISTOR, FIXED, COMPOSITION: 3,900 ohms, ±5%; 1/2 watt.	RC20GF392J
R1717	RESISTOR, FIXED, COMPOSITION: 1,000 ohms, ±5%; 1/2 watt.	RC20GF102J
R1718	RESISTOR, VARIABLE, COMPOSITION: 500 ohms, ±10%; 0.25 watt at 70°C.	RV111U501A
R1719	RESISTOR, VARIABLE, COMPOSITION: 250,000 ohms, ±10%; 0.25 watt at 70°C.	RV111U254A
R1720	RESISTOR, FIXED, COMPOSITION: 1.5 megohm, ±5%; 1/2 watt.	RC20GF155J
R1721	NOT USED	
R1722	Same as R1702.	
R1723	RESISTOR, FIXED, COMPOSITION: 5,600 ohms, ±5%; 1/2 watt.	RC20GF562J
R1724	Same as R1704.	
R1725	Same as R1702.	
R1726	Same as R1717.	
R1727	Same as R1723.	
R1728	RESISTOR, FIXED, COMPOSITION: 100,000 ohms, ±5%; 1/2 watt.	RC20GF104J

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
R1729	RESISTOR, FIXED, COMPOSITION: 150,000 ohms, ±5%; 1/2 watt.	RC20GF154J
R1730	Same as R1704.	
R1731	Same as R1705.	
R1732	Same as R1715.	
R1733	Same as R1729.	
R1734	RESISTOR, FIXED, COMPOSITION: 33 ohms, ±5%; 1 watt.	RC32GF330J
R1735	Same as R1729.	
R1736 thru R1773	NOT USED	
R1774	RESISTOR, FIXED, COMPOSITION: 100 ohms, ±5%; 1/2 watt.	RC20GF101J
T1701	TRANSFORMER, AUDIO FREQUENCY: fixed; primary impedance 25,000 ohms, CT; 1,550 ohms DC resistance, ±20%; secondary impedance 1,200 ohms, CT; 88 ohms DC resistance, ±20%; operating frequency range 200 to 15,000 cps (Hz); frequency response ±3db at 250 to 3,500 (Hz).	TF267-4
T1702	TRANSFORMER, AUDIO FREQUENCY: primary impedance 500 ohms CT; 60 ohms DC resistance; operating frequency range 100 cps (Hz) to 20 KC; open frame, lacquer coated.	TF246-17Z

PARTS LIST

for

ALDC BOARD ASSEMBLY

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
Q1800 thru Q1806	NOT USED	
Q1807	TRANSISTOR	2N3646
Q1808	Same as Q1807.	
R1800 thru R1836	NOT USED	
R1837	RESISTOR, FIXED, COMPOSITION: 1,000 ohms, ±5%; 1/2 watt.	RC20GF102J
R1838	RESISTOR, FIXED, COMPOSITION: 470,000 ohms, ±5%; 1/2 watt.	RC20GF474J

PARTS LIST

for

SIDEBAND MULTICHANNEL EXCITER, MODEL SMEE-1

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
C1500	CAPACITOR, FIXED, ELECTROLYTIC: 2,000 uf, 25 WVDC.	CE116-5VN
C1501 thru C1533	NOT USED	
C1534	CAPACITOR, FIXED, CERAMIC DIELECTRIC: 10,000 uuf, GMV; 1,000 WVDC.	CC100-16
C1535	CAPACITOR, FIXED, CERAMIC DIELECTRIC: 200,000 uuf, +80% -20%; 25 WVDC.	CC100-33
C1536	Same as C1534.	
C1537	Same as C1534.	
C1538	CAPACITOR, FIXED, ELECTROLYTIC: 50 uf, -10% +150% at 120 cps (Hz) at 25°C; 15 WVDC; polarized.	CE105-50-15
C1539	NOT USED	
C1540	NOT USED	
C1541	CAPACITOR, FIXED, MICA DIELECTRIC: 39 uuf, ±5%; 500 WVDC.	CM15C390J03
C1542	CAPACITOR, FIXED, CERAMIC DIELECTRIC: 5,000 uuf, GMV; 500 WVDC.	CC100-15
C1543	Same as C1535.	
C1544	CAPACITOR, FIXED, ELECTROLYTIC: 5 uf, -10% +150% at 120 cps (Hz) at 25°C; 15 WVDC; polarized.	CE105-5-15
C1545 thru C1552	Same as C1534.	
C1553	NOT USED	
C1554	CAPACITOR, FIXED, ELECTROLYTIC: 1,000 uf, 50 WVDC.	CE116-8VN
C1555	CAPACITOR, FIXED, MICA DIELECTRIC: 1,000 uuf, 300 WVDC.	CB21QW102K
C1556 thru C1558	Same as C1555.	

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
C1559	Same as C1554.	
C1560 thru C1582	Same as C1555.	
DS1501	LAMP, INCANDESCENT: 28 VAC/DC; 0.20 amps; single contact, T-1-3/4 bulb.	BI110-7
FL1501	FILTER, BAND SUPPRESSION: input-output impedance 100 ohms; 4 pin contact; stud mounted.	FX273
J1500 thru J1514	NOT USED	
J1515	SOCKET, PANEL MOUNT: 6 male contacts, straight type.	JJ212
J1516	CONNECTOR, RECEPTACLE, ELECTRICAL: 1 female contact, straight type; 52 ohms; series BNC.	UG625*/U
J1517 thru J1525	NOT USED	
J1526	CONNECTOR, RECEPTACLE, ELECTRICAL: 20 female contacts; current rating 5 amps continuous, 600 VAC RMS.	JJ287-20
J1527 thru J1533	Same as J1526.	
J1534	CONNECTOR, RECEPTACLE, ELECTRICAL: 20 male contacts; 1,900 V RMS at sea level, 700 V RMS at 60,000 feet.	JJ242-6P
J1535	Same as J1516.	
J1536	CONNECTOR, RECEPTACLE, ELECTRICAL: 1 round female contact, straight type; series BNC to BNC.	JJ172
K1500	RELAY, ARMATURE: 6PDT; 185 ohms, ±10% DC resistance; operating voltage 12 VDC; current rating 60 ma; power rating 700 mw at 25°C; 20 contacts rated for 0.5 amps at 115 VAC resistive or 1 amp at 29 VDC resistive; clear high impact styrene dust cover case.	RL156-6

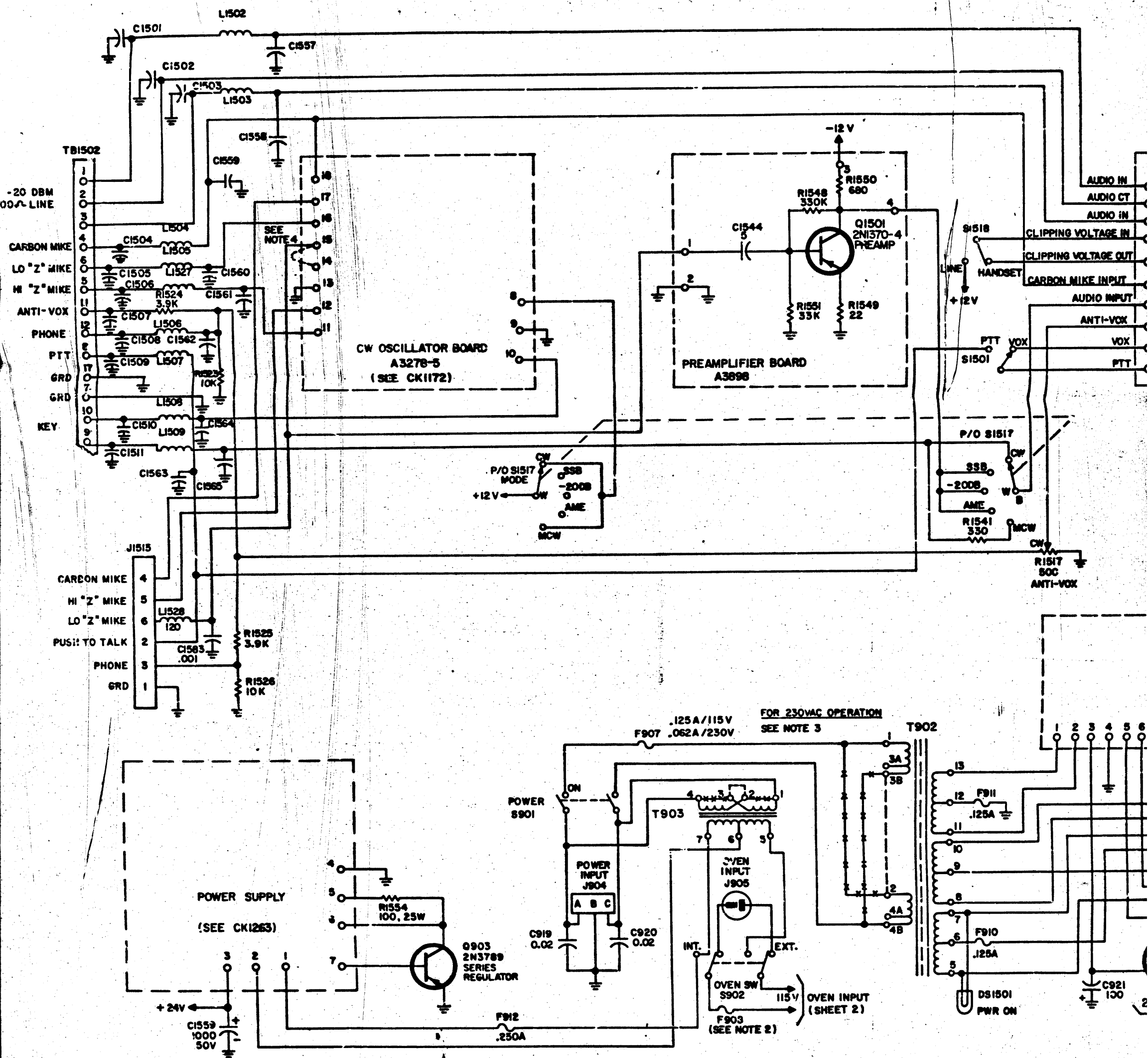
REF SYMBOL	DESCRIPTION	TMC PART NUMBER
K1501	RELAY, ARMATURE: DPDT; 185 ohms, ±10% DC resistance; operating voltage 12 VDC; current rating 65 ma; power rating 700 mw at 25°C; 8 contacts rated for 3 amps at 115 VAC resistive or 5 amps at 29 VDC resistive; clear high impact styrene dust cover case.	RL156-13
K1502	RELAY, ARMATURE: 6PDT; 430 ohms, ±10% DC resistance; operating voltage 24 VDC; current rating 56 ma; power rating 1,500 mw at 25°C; 20 contacts rated for 3 amps at 115 VAC resistive or 5 amps at 29 VDC resistive; clear high impact styrene dust cover case.	RL156-5
K1503	RELAY, ARMATURE: DPDT; coil rating 675 ohms DC resistance; 26.5 V nominal; min. operating current .019 amps; 13.5 V at 25°C; 8 contacts rated for 3 amps at 26.5 VDC; solder hook type terminals; hermetically sealed case.	RL143-6
K1504	Same as K1503.	
L1500	NOT USED	
L1501	COIL, RADIO FREQUENCY: fixed; 0.150 uh, ±10%; current rating 400 ma; molded case.	CL140-2
L1502 thru L1527	Same as L1501.	
L1528	COIL, RADIO FREQUENCY: 120 uh, ±10%; molded case.	CL275-121J
M1500	NOT USED	
M1501	NOT USED	
M1502	METER, AF/RF: 0-50 ua movement; 2,000 ohms, approx. resistance; knife edge pointer; rectangular case.	MR183
Q1500	TRANSISTOR: germanium; NPN; JEDEC type 2N1308 transistor with a controlled hfe limit of 80-150; JEDEC type TO-5 case.	TX106
Q1501	Same as Q1500.	
R1500 thru R1512	NOT USED	

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
R1513	RESISTOR, VARIABLE, COMPOSITION: 10,000 ohms, ±10%; 2 watts.	RV4NAYSA103A-YY
R1514 thru R1516	NOT USED	
R1517	RESISTOR, VARIABLE, COMPOSITION: 500 ohms, ±10%; 2 watts.	RV4NAYSA501A-YY
R1518	NOT USED	
R1519	NOT USED	
R1520	RESISTOR, FIXED, COMPOSITION: 68 ohms, ±5%; 1/2 watt.	RC20GF680J
R1521	Same as R1520.	
R1522	RESISTOR, FIXED, COMPOSITION: 10,000 ohms, ±5%; 1/2 watt.	RC20GF103J
R1523	Same as R1522.	
R1524	RESISTOR, FIXED, COMPOSITION: 3,900 ohms, ±5%; 1/2 watt.	RC20GF392J
R1525	Same as R1524.	
R1526	Same as R1523.	
R1527	RESISTOR, FIXED, COMPOSITION: 48,000 ohms, ±5%; 1/2 watt.	RC20GF483J
R1528	RESISTOR, FIXED, COMPOSITION: 4,700 ohms, ±5%; 1/2 watt.	RC20GF472J
R1529 thru R1531	Same as R1528.	
R1532	RESISTOR, FIXED, COMPOSITION: 1,800 ohms, ±5%; 1/2 watt.	RC20GF182J
R1533	RESISTOR, VARIABLE, COMPOSITION: 10,000 ohms, ±10%; 0.25 watts at 70°C.	RV111B103A
R1534	NOT USED	

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
R1535	RESISTOR, FIXED, COMPOSITION: 47,000 ohms, ±5%; 1/2 watt.	RC20GF473J
R1536	RESISTOR, FIXED, COMPOSITION: 5,600 ohms, ±5%; 1/2 watt.	RC20GF562J
R1537	Same as R1528.	
R1538	RESISTOR, FIXED, COMPOSITION: 390 ohms, ±5%; 1/2 watt.	RC20GF391J
R1539	NOT USED	
R1540	NOT USED	
R1541	RESISTOR, FIXED, COMPOSITION: 330 ohms, ±5%; 1/2 watt.	RC20GF331J
R1542	RESISTOR, FIXED, COMPOSITION: 1 megohm, ±5%; 1/2 watt.	RC20GF105J
R1543	RESISTOR, VARIABLE, COMPOSITION: 5,000 ohms, ±10%; 2 watts.	RV4LAYSA502A
R1544	Same as R1543.	
R1545	NOT USED	
R1546	NOT USED	
R1547A,B	RESISTOR, VARIABLE, COMPOSITION: dual; (A) 100 ohms, (B) 5,000 ohms, ±20%; linear taper.	RV109-3
R1548	RESISTOR, FIXED, COMPOSITION: 330,000 ohms, ±5%; 1/2 watt.	RC20GF334J
R1549	RESISTOR, FIXED, COMPOSITION: 22 ohms, ±5%; 1/2 watt.	RC20GF220J
R1550	Same as R1532.	
R1551	RESISTOR, FIXED, COMPOSITION: 330 ohms, ±5%; 1/2 watt.	RC20GF331J
R1552	RESISTOR, FIXED, COMPOSITION: 2,200 ohms, ±5%; 1/2 watt.	RC20GF222J
R1553	RESISTOR, VARIABLE, COMPOSITION: 10,000 ohms, ±10%; 1/2 watt.	RV106UX8B103A

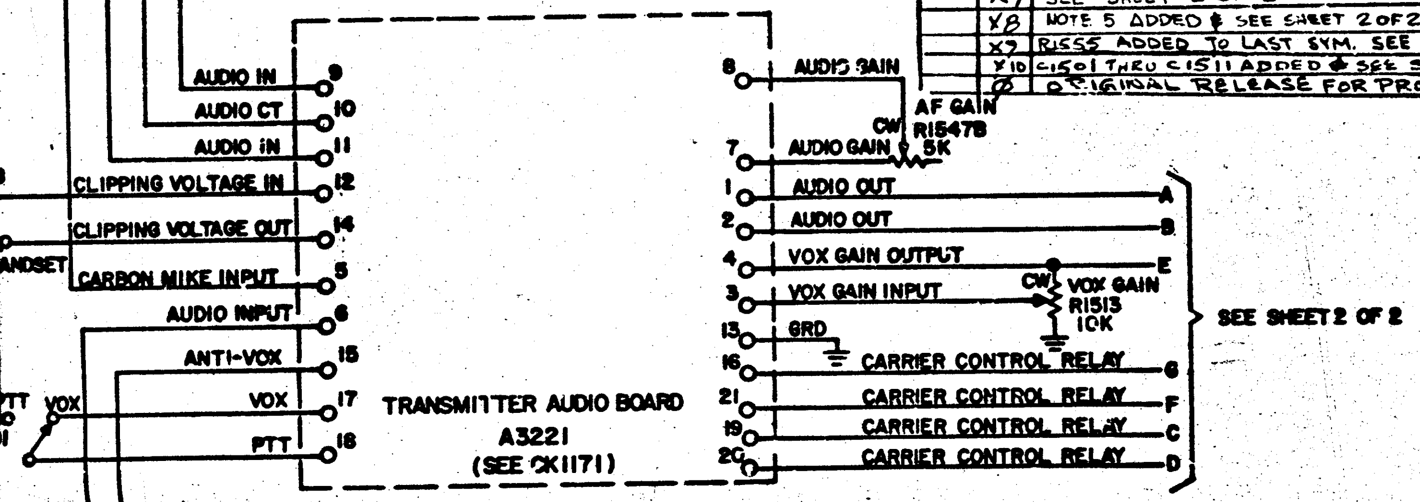
REF SYMBOL	DESCRIPTION	TMC PART NUMBER
R1554	RESISTOR, FIXED, WIREWOUND: 25 ohms; 25 watts.	RW111-6
R1555	RESISTOR, FIXED, COMPOSITION: 18 ohms, ±5%; 1/2 watt.	RC20GF180J
R1556	RESISTOR, FIXED, COMPOSITION: 100,000 ohms, ±5%; 1/2 watt.	RC20GF104J
S1500	NOT USED	
S1501	SWITCH, TOGGLE: SPST; 28° angle of throw; bat type handle.	ST12D
S1502	SWITCH, ROTARY: 1 section, 2 positions; non-shorting type contacts; mycalex wafer insulation.	SW119
S1503 thru S1505	NOT USED	
S1506	Same as S1501.	
S1507 thru S1514	NOT USED	
S1515	SWITCH, ROTARY: 5 sections, 8 positions; non-shorting type contacts; mycalex wafer insulation.	SW434
S1516	NOT USED	
S1517	SWITCH, ROTARY: tab	SW375-1
S1518	Same as S1501.	
S1519	SWITCH, MICRO: SPDT; 5 amps at 125/250 VAC.	SW353-2
T1500	NOT USED	
T1501	TRANSFORMER, INPUT: primary impedance 200,000 ohms; DC resistance 6,500 ohms; secondary impedance 1,000 ohms; DC resistance 245 ohms; frequency range 100 (Hz) to 20 Kc; open frame, lacquer coated.	TF246-6X
TB1500	NOT USED	
TB1501	NOT USED	

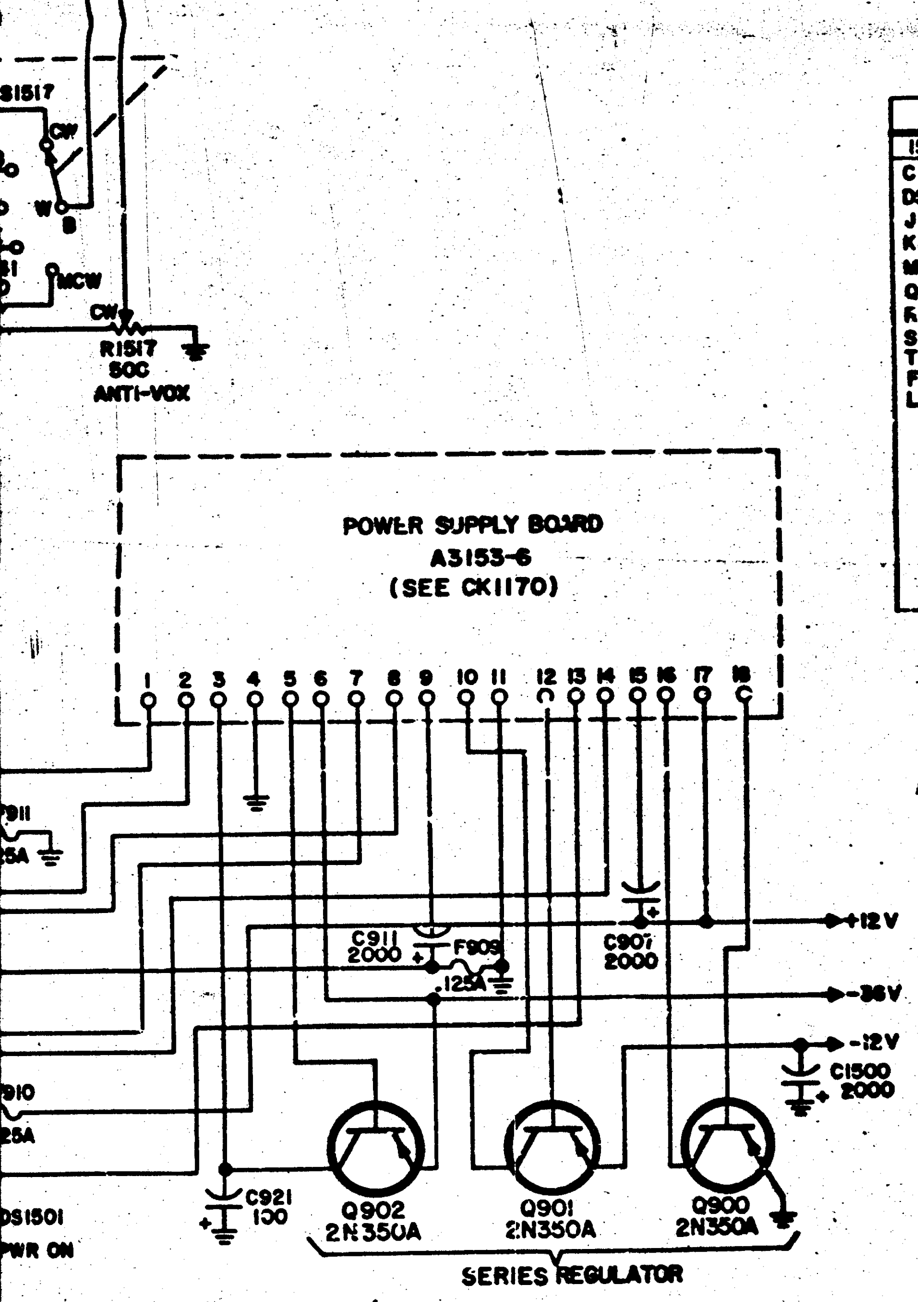
REF SYMBOL	DESCRIPTION	TMC PART NUMBER
TB1502	TERMINAL BOARD, BARRIER: eighteen 6-32 thd. x 1/4" long binding head machine screws; black phenolic body.	TM100-18
XDS1500	NOT USED	
XDS1501	LIGHT, INDICATOR: with white translucent lens, sub-miniature type.	TS153-5
XK1500	SOCKET, RELAY: with retainer; 18 male beryllium copper gold plated contacts; black phenolic body.	TS171-2
XK1501	SOCKET, RELAY: with retainer; 6 male beryllium copper gold plated contacts; black phenolic body.	TS171-1
XK1502	Same as XK1500.	


TB1502
-20 DBM 600Ω LINE
CARBON MIKE
LO "Z" MIKE
HI "Z" MIKE
ANTI-VOX
PHONE
PTT
GRD
GRD
KEY
C1501
C1502
C1503
L1502
L1503
C1557
C1558
C1559
L1504
L1505
C1504
C1505
L1527
C1560
C1506
R1524 3.9K
C1561
C1507
L1506
C1508
C1562
C1509
L1507
R1523 10K
L1508
C1510
L1509
C1564
C1511
C1563
C1565
SEE NOTE 4
CW OSCILLATOR BOARD A3278-5 (SEE CK1172)
P/O S1517 MODE
CW
SSB
-200B
AME
MCW
+12V
J1515
CARBON MIKE
HI "Z" MIKE
LO "Z" MIKE
PUSH TO TALK
PHONE
GRD
L1528 120
C1583 .001
R1525 3.9K
R1526 10K
-12 V
R1550 680
R1548 330K
Q1501 2N1370-4 PREAMP
C1544
R1551 33K
R1549 22
PREAMPLIFIER BOARD A3898
S1518
LINE
HANDSET
+12V
AUDIO IN
AUDIO CT
AUDIO iN
CLIPPING VOLTAGE IN
CLIPPING VOLTAGE OUT
CARBON MIKE INPUT
AUDIO INPUT
ANTI-VOX
VOX
PTT
S1501
P/O S1517
SSB
-200B
AME
R1541 330
MCW
R1517 50C ANTI-VOX
POWER SUPPLY (SEE CK1263)
R1554 100, 25W
Q903 2N3789 SERIES REGULATOR
+24V
C1559 1000 50V
F912 .250A
.125A/115V
F907 .062A/230V
FOR 230VAC OPERATION SEE NOTE 3
POWER S901
ON
T903
POWER INPUT J904
A B C
C919 0.02
C920 0.02
OVEN INPUT J905
INT.
EXT.
OVEN SW S902
115V
OVEN INPUT (SHEET 2)
F903 (SEE NOTE 2)
T902
3A
3B
4A
4B
F911 .125A
F910 .125A
DS1501 PWR ON
C921 100

NOTES

ZONE	SYM	DESCRIPTION	DATE	E.N.R. NO.	DRAFT	CHKD	APPD
	REVISIONS						
	X	EXPERIMENTAL RELEASE	8-6-66	—	JC	[illegible]	
	X1	ADDED T903 TO PICTORIAL, NOTE 3 & LAST SYMBOLS CHART SEE SHEET 2. ALSO ADDED NOTE 4	8-6-66		HLA		
	X2	19 & 20 ON AUDIO BD WERE TO TRANSMIT RECEIVE RELAY; 16 WAS TO -12V; 21 WAS TO +12V. S519 DELETED. T903 REWIRED. NOTES REVISED. SEE SHEET 2 OF 2	10/5/66	—	WHW		
	X3	K1503 & R1553 ON LAST SYMBOL CHART WERE K1502 & R1552. SEE SHEET 2	10/26/66		JL		
	X4	POWER SUPPLY BD ADDED. T903 REVISED L1502 & 3, C1537-9, R1554 & Q903 ADDED SEE SHEET 2 OF 2	11/7/66	—	WHO		
	X5	ADD. "L1504" THRU "C1565", "L1527" & "C1559" THRU "C1565"; CHG. VALUE OF "C1557" & "C1558" TO ".001" (WAS .1). ADD "F912", ADD. LAST SYMBOLS TO CHART ACCORDINGLY. CHG. MODEL TO "SMEC-1" & "SMEE-1" (WAS "SMEA-1"). SEE SHEET 2 OF 2	12/5/66	-	HLA	[illegible]	[illegible]
	X6	ON PREAMP BD "-12" WAS "+12V"; Q1531 WAS "TN06 2N1308" - R1550 WAS "1.8K". ADD. L1528 & C1583 UPDATED LAST SYMBOL CHART -	12/66	-	HLA	[illegible]	[illegible]
	X7	SEE SHEET 2 OF 2	12-28-66	—	RME		
	X8	NOTE 5 ADDED & SEE SHEET 2 OF 2	1-10-67	X8	CDL	[illegible]	
	X9	R1555 ADDED TO LAST SYM. SEE SHEET 2	1-18-67	X9	RME	[illegible]	
	X10	C1501 THRU C1511 ADDED & SEE SHEET 2	2/4/67	X10	LAK	[illegible]	[illegible]
	Ø	ORIGINAL RELEASE FOR PROD	2/14/67	Ø	LAK	[illegible]	[illegible]





LAST SYMBOLS		MISSING SYMBOLS	
1500 SERIES	900 SERIES	1500 SERIES	900 SERIES
C1583	C921	C1501 THRU C1543	C900 THRU C906
DS1501	F912	DS1500	C908 ↕ C910
J1536	J905	J1500 THRU J1514	C912 ↕ C918
K1504	Q903	J1517 THRU J1525	F900 ↕ F906
M1502	S907	M1500, M1501	J900 THRU J903
Q1501	T903	Q1500	S900
R1555		R1500 THRU R1512	S903 THRU S906
S1518		R1514 ↕ R1516	T900, T901
TB1502		R1518 ↕ R1522	
FL1501		R1527 THRU R1535	
L1528		R1539, R1540	
		R1542	
		R1545 THRU R1547	
		S1503 ↕ S1505	
		S1507 THRU S1514	
		S1516	
		TB1500, TB1501	
		C1553	

CK1184 Ø

NOTES

1- UNLESS OTHERWISE SPECIFIED, ALL RESISTANCE VALUES ARE IN OHMS, 1/2 W. ALL CAPACITANCE VALUES ARE IN MICROFARADS AND ALL INDUCTANCE VALUES ARE IN MICROHENRIES.

2- THE VALUE OF F908 DEPENDS UPON THE OVEN SUPPLY VOLTAGE USED.

3- FOR 230 VOLT OPERATION, REMOVE JUMPERS MARKED -x-x-x- ADD JUMPERS BETWEEN TRANSFORMER TERMINALS 2 AND 3, ON T903 AND TERMINALS 2 AND 38 ON T902 MARKED — — — —

4- THESE TERMINALS ARE CONNECTED TOGETHER ONLY WHEN A HIGH IMPEDANCE MICROPHONE IS USED.

5- 150 UH TYPICAL FOR L1502 THRU L1527
.001 UF TYPICAL FOR C1557 THRU C1582

QTY./UNIT	MODEL USED ON	APPV. NO.
1	SMEE-1	
1	SMEC-1	

SCALE | CODE

NOTES

REQ'D.	ITEM	PART NUMBER	DESCRIPTION	SYMBOL
O. POSE		LIST OF MATERIAL		

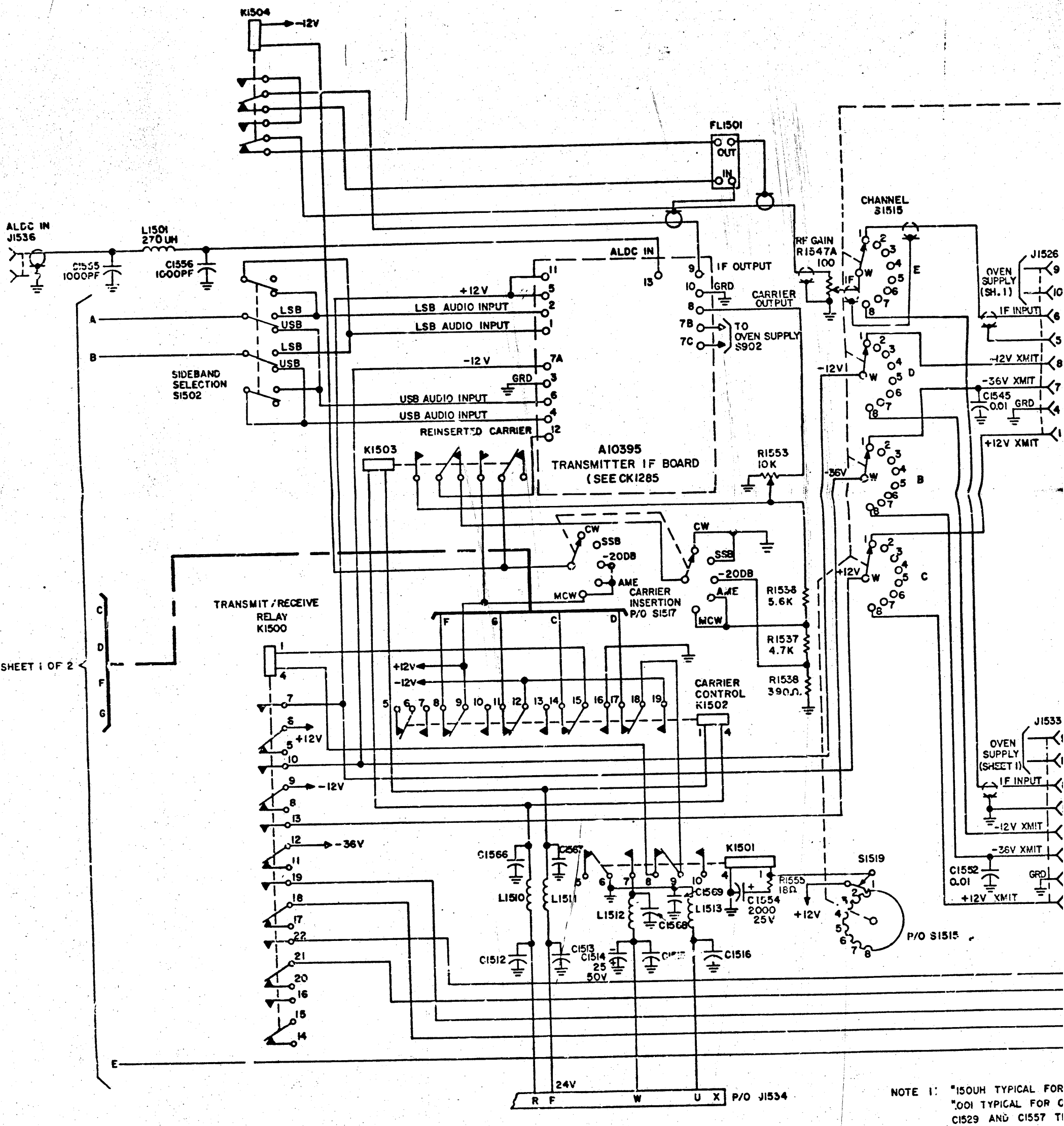
MATERIAL
FINISH

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE CHEMICALLY APPLIED OR PLATED FINISHES
DECIMALS .X ± .03, .XX ± .01, .XXX ± .005 TOLERANCES FRACTIONS ± 1/64 ANGLES ± 0° 30'

THE TECHNICAL MATERIEL CORP.
MAMARONECK, NEW YORK

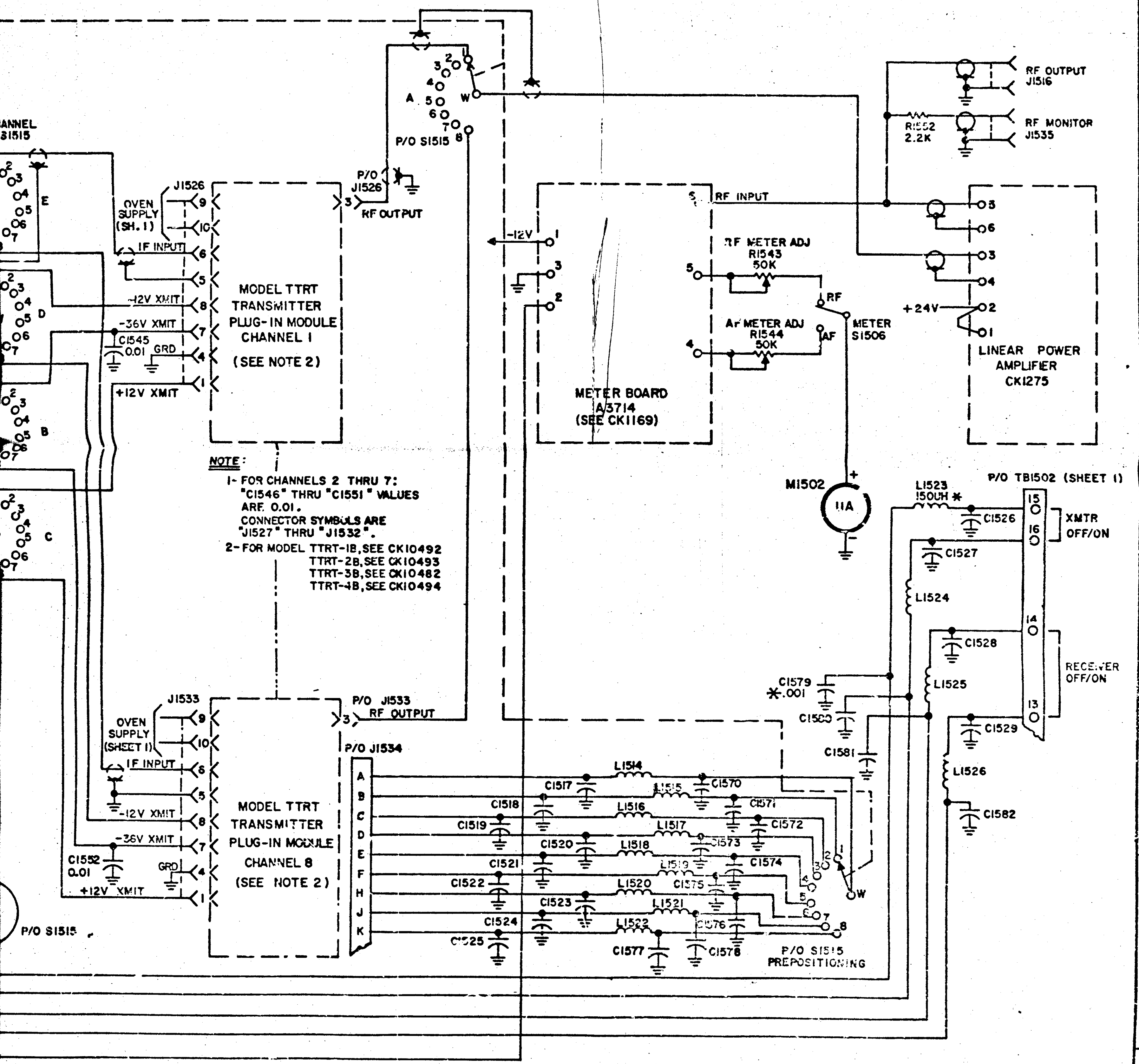
TITLE: DIAGRAM, INTERCONNECT

DRAWN: H. AUSTIN DATE: 8-5-66
CHECKED: [illegible] DATE: 11/
FINAL APPROVAL: [illegible]
CK1184 Ø
SHEET 1 OF 2


K1504
-12V
FL1501
OUT
IN
ALDC IN
J1536
L1501
270 UH
C1555
1000PF
C1556
1000PF
ALDC IN
13
9
IF OUTPUT
10
GRD
8
CARRIER
OUTPUT
7B
7C
TO
OVEN SUPPLY
S902
RF GAIN
R1547A
100
CHANNEL
S1515
J1526
OVEN
SUPPLY
(SH. 1)
IF INPUT
-12V XMIT
-36V XMIT
C1545
0.01
GRD
+12V XMIT
+12V
LSB AUDIO INPUT
LSB AUDIO INPUT
-12 V
GRD
USB AUDIO INPUT
USB AUDIO INPUT
REINSERTED CARRIER
A
B
LSB
USB
LSB
USB
SIDEBAND
SELECTION
S1502
K1503
A10395
TRANSMITTER IF BOARD
(SEE CK1285
R1553
10K
CW
SSB
-20DB
AME
MCW
CARRIER
INSERTION
P/O S1517
R1538
5.6K
R1537
4.7K
R1538
390Ω
TRANSMIT / RECEIVE
RELAY
K1500
SEE SHEET 1 OF 2
CARRIER
CONTROL
K1502
K1501
S1519
C1566
C1567
L1510
L1511
L1512
L1513
C1568
C1569
C1554
2000
25V
R1555
18Ω
C1512
C1513
C1514
25
50V
C1516
C1552
0.01
P/O S1515
24V
R F W U X
P/O J1534
NOTE 1: "150UH TYPICAL FOR
".001 TYPICAL FOR C
C1529 AND C1557 T
NOTE 2: SEE CK1186 FOR LE
(DRIVE FOR S1515)

REVISIONS

ZONE	SYM	DESCRIPTION	DATE	E.W.N. NO	DRAFT	CHKD	APPD
	X7	LINEAR POWER AMPLIFIER WAS CK1263 NOTE 2 ADDED, SEE SHEET 1	[illegible]	X7	RM		
	X8	R1536 WAS 10K, R1537 WAS 10K, [illegible] NOTE 1, [illegible] WAS 270UH [illegible]	[illegible]	X8	GD		
	X9	R1555 ADDED. SEE SHEET 1.	[illegible]	X9	RME		
	X10	C1512 THRU C1529 ADDED	[illegible]	X10	WD		
	Ø	ORIGINAL RELEASE FOR PRODUCTION	2.16.67	Ø	WD		



NOTE 1: "150UH TYPICAL FOR L1502 THRU L1527.
".001 TYPICAL FOR C1512, C1513 & C1515 THRU C1529 AND C1557 THRU C1582.

NOTE 2: SEE CK1186 FOR LEDEX CONNECTIONS, SMEC-1. (DRIVE FOR S1515)

NOTES

QTY/UNIT		
1	SMEC-1	
1	SMEC-1	

O. POSE

LIST OF MATERIAL

THE TECHNICAL MATERIEL CORP.
ECK, NEW YORK

DIAGR… INTERCONNECT

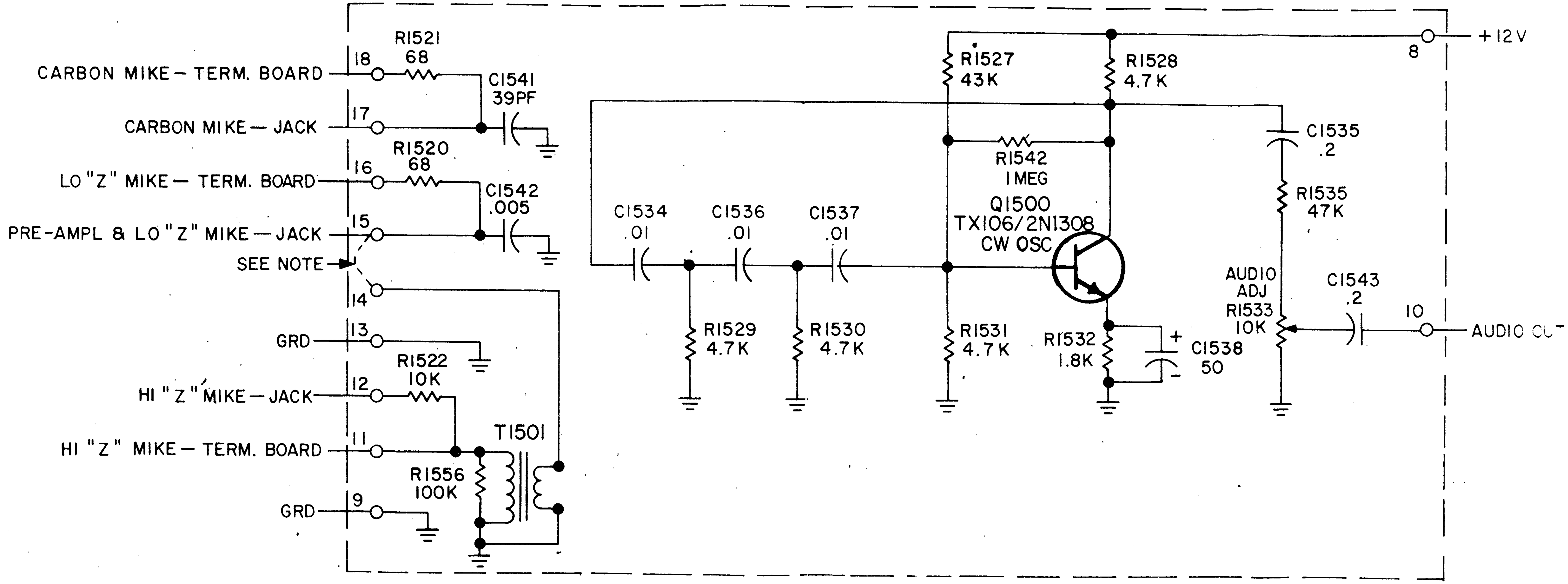
CK118…

LAST SYMBOLS	MISSING SYMBOLS
C1543 Q1500 R1556 T1501	C1501 THRU C1533 C1539, C1540 R1501 THRU R1519 R1523 THRU R1526 R1534 THRU R1541 R1543 THRU R1555

CK1172

REVISIONS

SYM	DESCRIPTION	DATE	E.M.N.			APPD
X	EXPERIMENTAL RELEASE	8-25-66		HLA		



NOTE:

TERMINALS 14 & 15 ARE JUMPERED WHEN A HIGH IMPEDANCE MICROPHONE IS TO BE USED. JUMPER IS OMITTED FOR LOW IMPEDANCE OR CARBON MICROPHONE.

NOTES

UNLESS OTHERWISE SPECIFIED

ALL RESISTANCE VALUES ARE IN OHMS, 1/2 W.
ALL CAPACITANCE VALUES ARE IN MICROFARADS.

QTY./UNIT	MODEL USED ON	ASS'Y. NO.
1	SMEA-1	A3278-5

SCALE — CODE

REQ'D.	ITEM	PART NUMBER	DESCRIPTION	SYMBOL
O· POSE				

LIST OF MATERIAL

MATERIAL —

FINISH —

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE CHEMICALLY APPLIED OR PLATED FINISHES

TOLERANCES: DECIMALS .X ± .05, .XX ± .01, .XXX ± .005; FRACTIONS ± 1/64; ANGLES ± 0° 30'

THE TECHNICAL MATERIEL CORP.
MAMARONECK, NEW YORK

TITLE: DIAGRAM, SCHEMATIC, CW OSC P/C BOARD

DRAWN: H. AUSTIN — DATE 8-25-66
CHECKED — DATE
ELECT. DES. — DATE
MECH. DES. — DATE
FINAL APPROVAL — DATE

CK1172

SHEET — REV. LTR.

TMC FORM 109

11 10 9

G F E D C B

C1705
10

R1774
100

R1711
3.3K

C1729
10

C176
50

C1701
6

R1710
3.3K

R1701
22K

R1704
4.7K

C1702
.2

CR1701
IN34A

R1709
10K

Q1701
TX106 /
2N1308
ANTI-VOX
AMPL

CR1702
IN34A

R1708
68K

R1720
1.5 MEG.

C1764
.2

R1702
10K

R1705
2.2K

C1703
50

R1707
2.2K

C1704
6

R1706
10K

R17
10

R1715
8.2K

C1708
4

R1714
10K

Q1702
TX107 /
2N1370-4
AUDIO
AMPL

Q1703
TX107 /
2N1370-4
LINE AMPL

T1701

C1707
10

R1717
1K

R1713
10K

C1706
50

R1716
3.9K

-20 DBM ADJ

R1712
220

R1725
10K

R1726
1K

C1709
6

C1712
20

CR1703
IN34A

R1728
100K

R1729
150K

C1761
.2

CR1704
IN34A

R1735
150K

R1727
5.6K

Q1704
TX107 /
2N1370-4
EMITTER
FOLLOWER

Q1705
TX107 /
2N1370-4
VOX AMPL

Q1706
TX106 /
2N1308
DC AMPL

R1730
4.7K

C1710
50

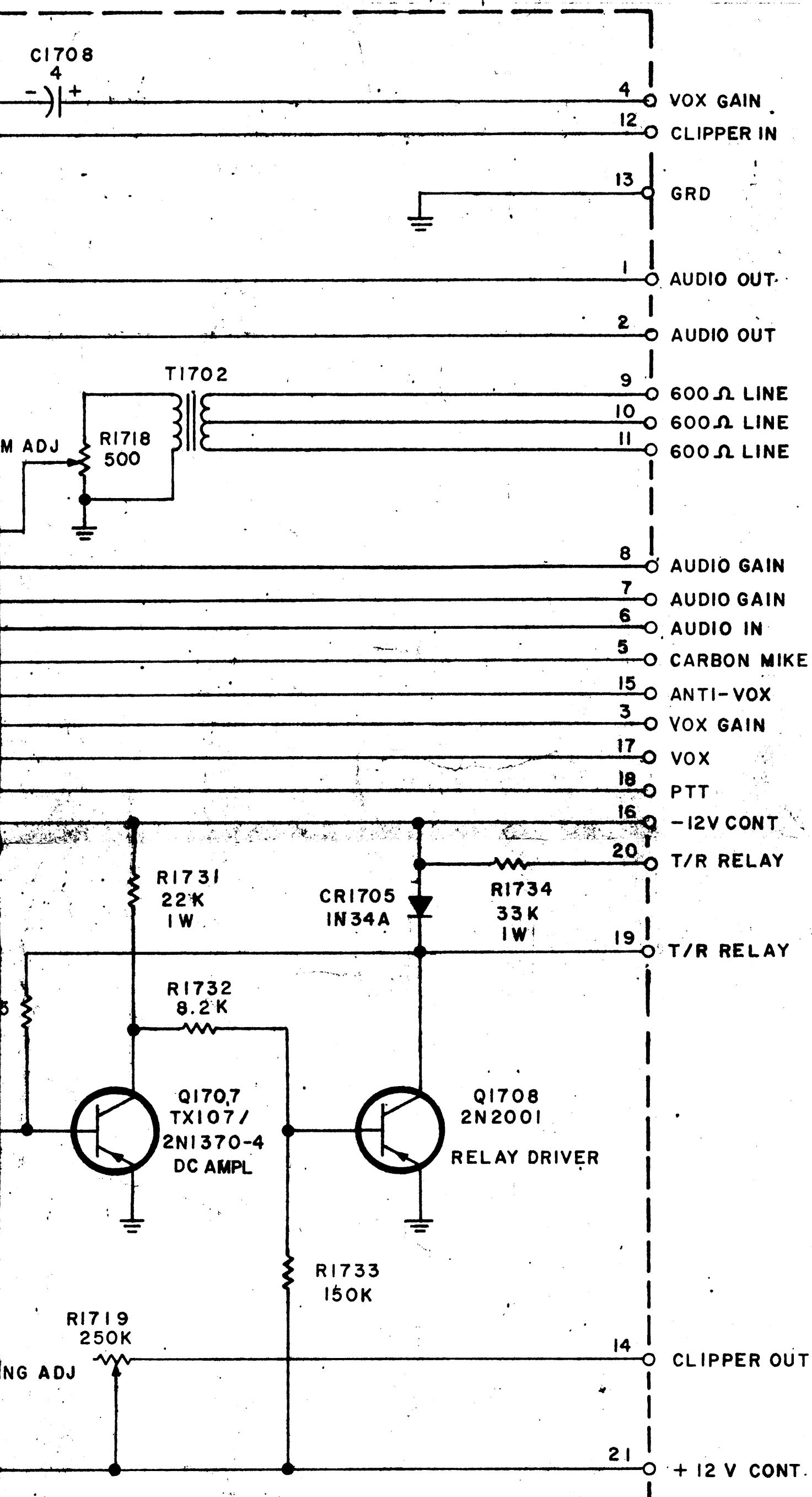
C1711
.2

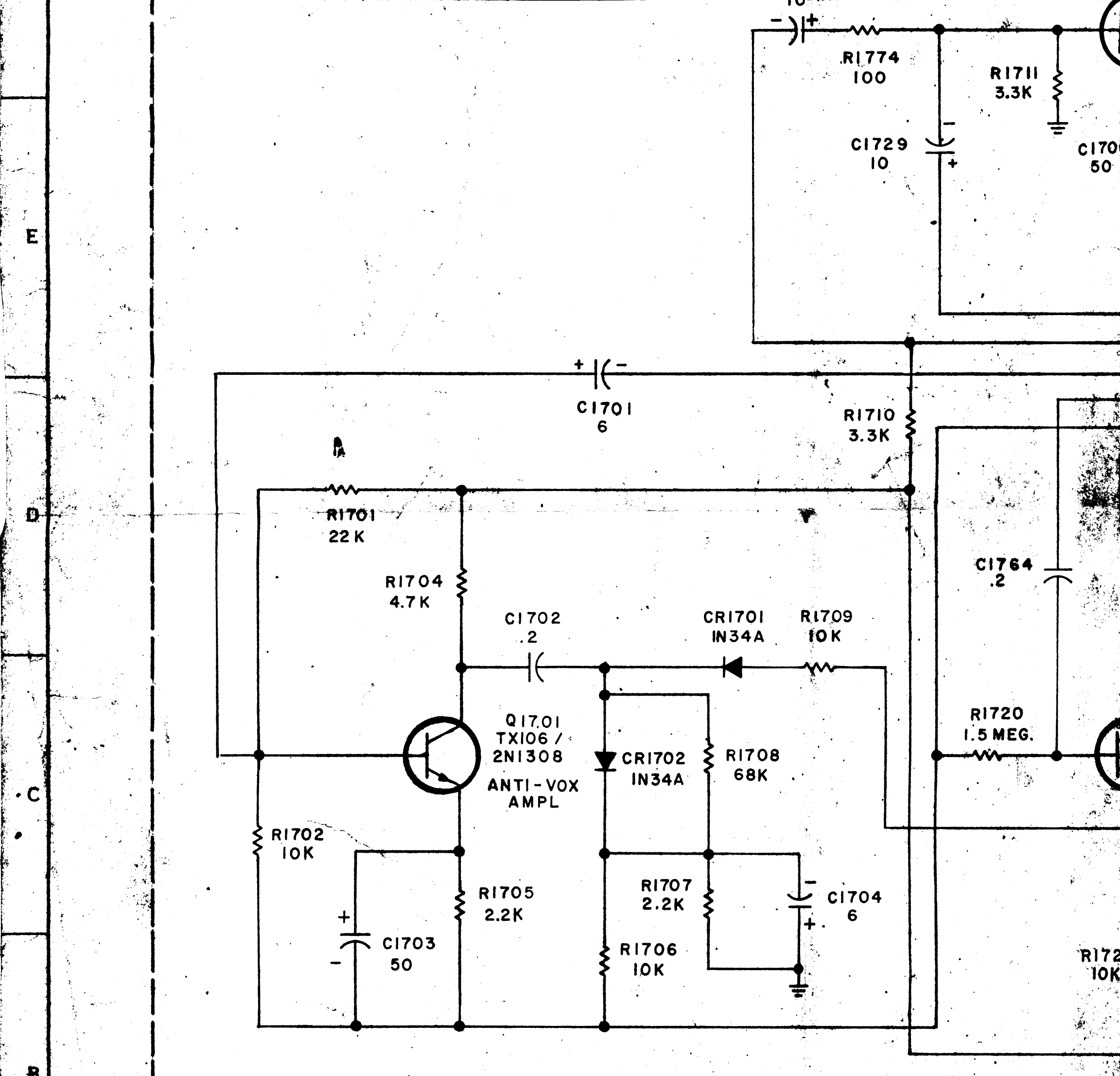
R1722
10K

R1723
5.6K

CLIPPING ADJ

REVISIONS							
ZONE	SYM	DESCRIPTION	DATE	APPROVED	DRAFT	CHECK	ENGR
	X	EXPERIMENTAL RELEASE	8-19-66	—	DME		
	X_1	ADD. POLARITY TO C1705; "R1774" WAS "R1744", "R1705" WAS 22K, "C1718" WAS 75.	8-30-66	—	HLA		
	Ø	ORIGINAL RELEASE FOR PRODUCTION	2-16-67		L.A.K.		





LAST SYMBOLS	MISSING SYMBOLS
C1764 CR1704 Q1708	C1713 THRU C1728 C1730 THRU C1763
R1774 T1702	R1703, R1721, R1735 THRU R1773

2N1370-4
AUDIO
AMPL

R1713
10K

C1706
50

R1712
220

2N1370-4
LINE AMPL

C1707
10

R1717
1K

R1716
3.9K

-20 DBM ADJ

R1725
10K

R1726
1K

C1709
6

CR1703
IN34A

C1761
.2

CR1704
IN34A

R1727
5.6K

C1712
20

R1728
100K

R1729
150K

R1735
150K

R1730
4.7K

Q1704
TX107/
2N1370-4
EMITTER
FOLLOWER

Q1705
TX107/
2N1370-4
VOX AMPL

Q1706
TX106/
2N1308
DC AMPL

C1710
50

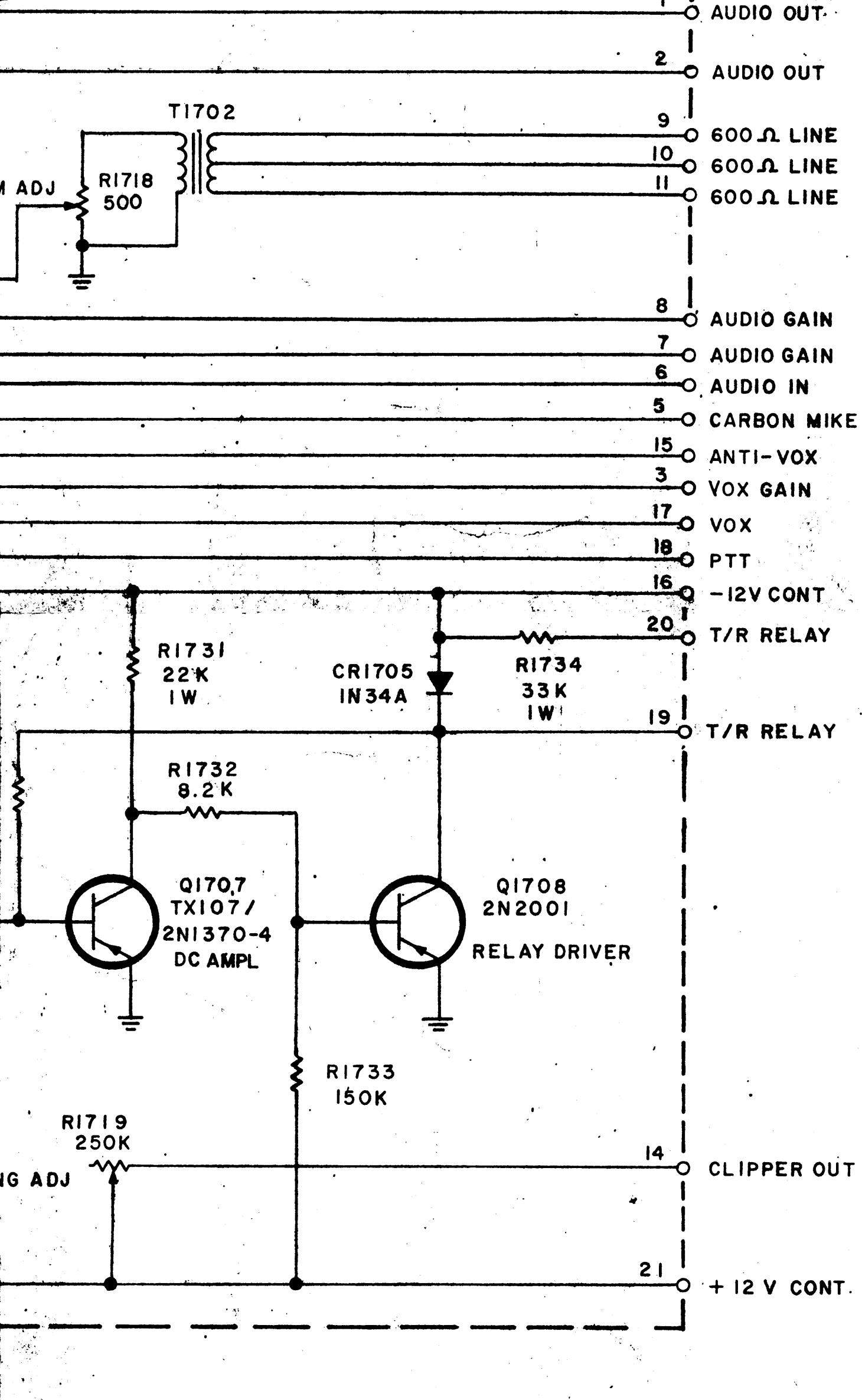
C1711
.2

R1722
10K

R1723
5.6K

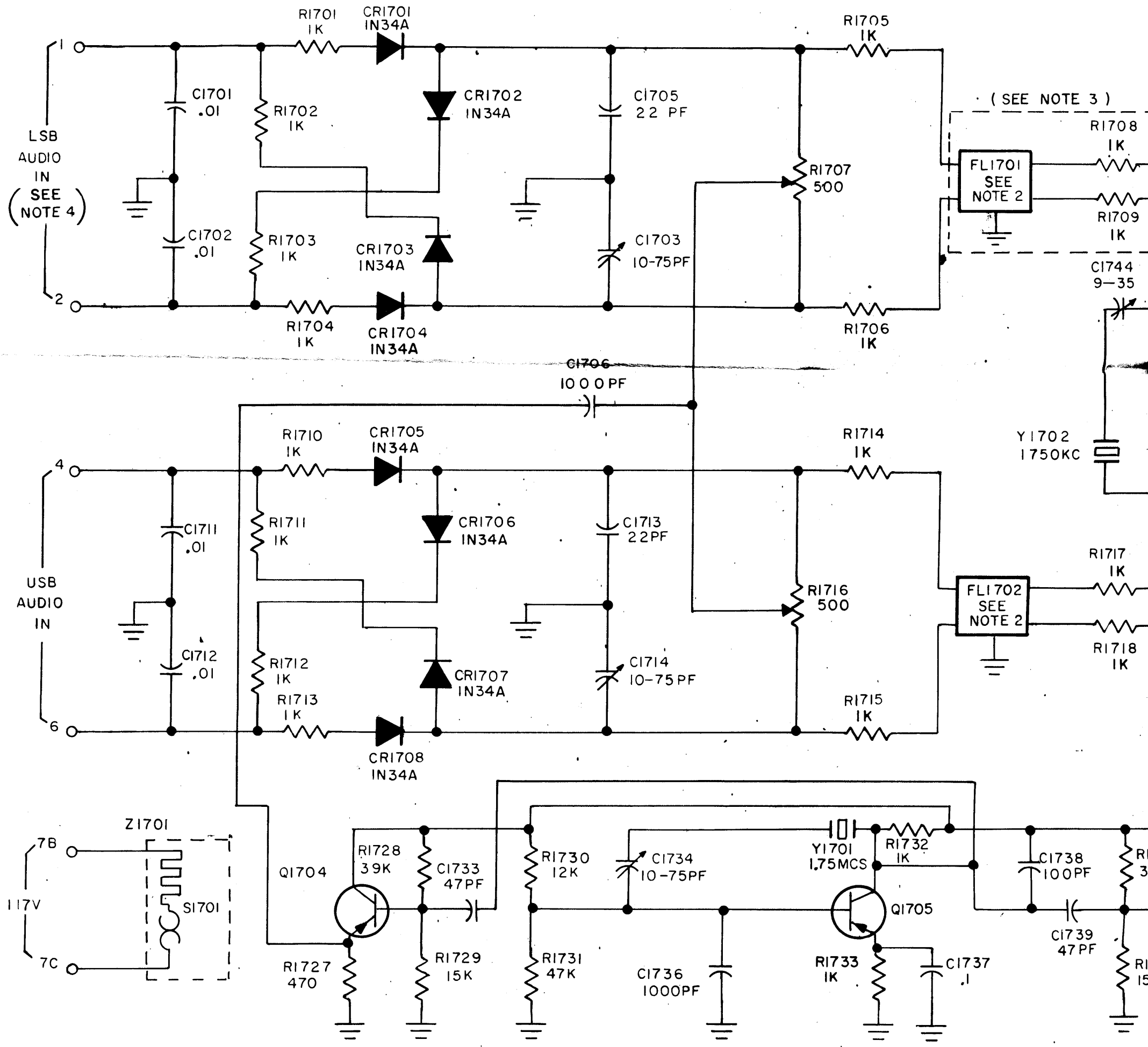
CLIPPING ADJ

— UNLESS OTHERWISE SPECIFIED —
ALL RESISTORS ARE IN OHMS, 1/2 W.
ALL CAPACITORS ARE IN MICRO-FARADS.



CK1171

SMEA-1			
O-ROSE			
		THE TECHNICAL MATERIEL CORP. MAMARONECK, NEW YORK	
		DIAGRAM, SCHEMATIC TRANSMITTER AUDIO BOARD	
		G. D. L. 6-3-66	CK 1171 A
			1



LAST SYMBOLS	MISSING SYMBOLS
C1744	C1704, C1707 THRU
CR1708	C1710, C1715 THRU
L1702	C1720, C1735, C1743
Q1706	L1701
R1739	
S1701	
T1702	
Y1702	
Z1701	
FL1702	

NOTES

1- UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS, 1/2 WATT.
ALL CAPACITORS MICROFARADS.

2- FL1701 IS FX10014-1
FL1702 IS FX10014-2

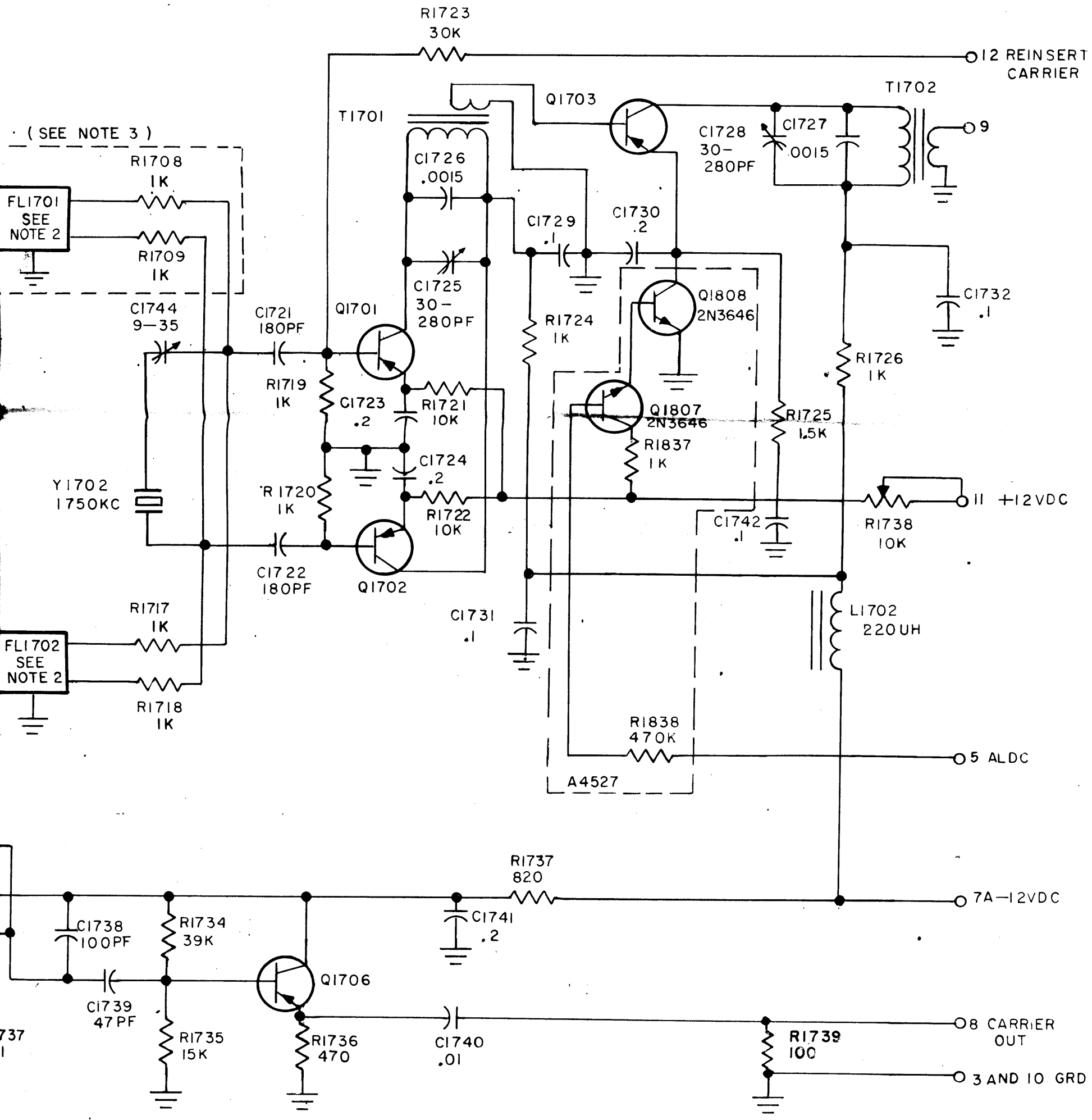
3- LOWER SIDEBAND FILTER REMOVED FOR "USB-ONLY" APPL

4- ALTHOUGH LSB AUDIO CIRCUITRY IS PHYSICALLY CONTAINED IN UNIT IT IS DISCONNECTED

5- ALL TRANSISTORS 2N2084.

MODEL
TTR-10A

REVISION							
ZONE	LTR	DESCRIPTION	DATE	E.M.N.NO.	DRAFT	CHKD	APPD
	X						
	X1						
	X2	R1739 ADDED	2/15/67	X2			



FOR "USB-ONLY" APPLICATION
RY IS
T IS DISCONNECTED

QTY REQ	ITEM	PART NO.	DESCRIPTION	SYMBOL
			LIST OF MATERIAL	

FINAL APPROVAL		DATE	2/15/67
MECH DES.		DATE	
ELECT DES		DATE	2-15-67
CHECKED		DATE	
DRAWN		DATE	

THE TECHNICAL MATERIAL CORP.
MARARONECK, NEW YORK.

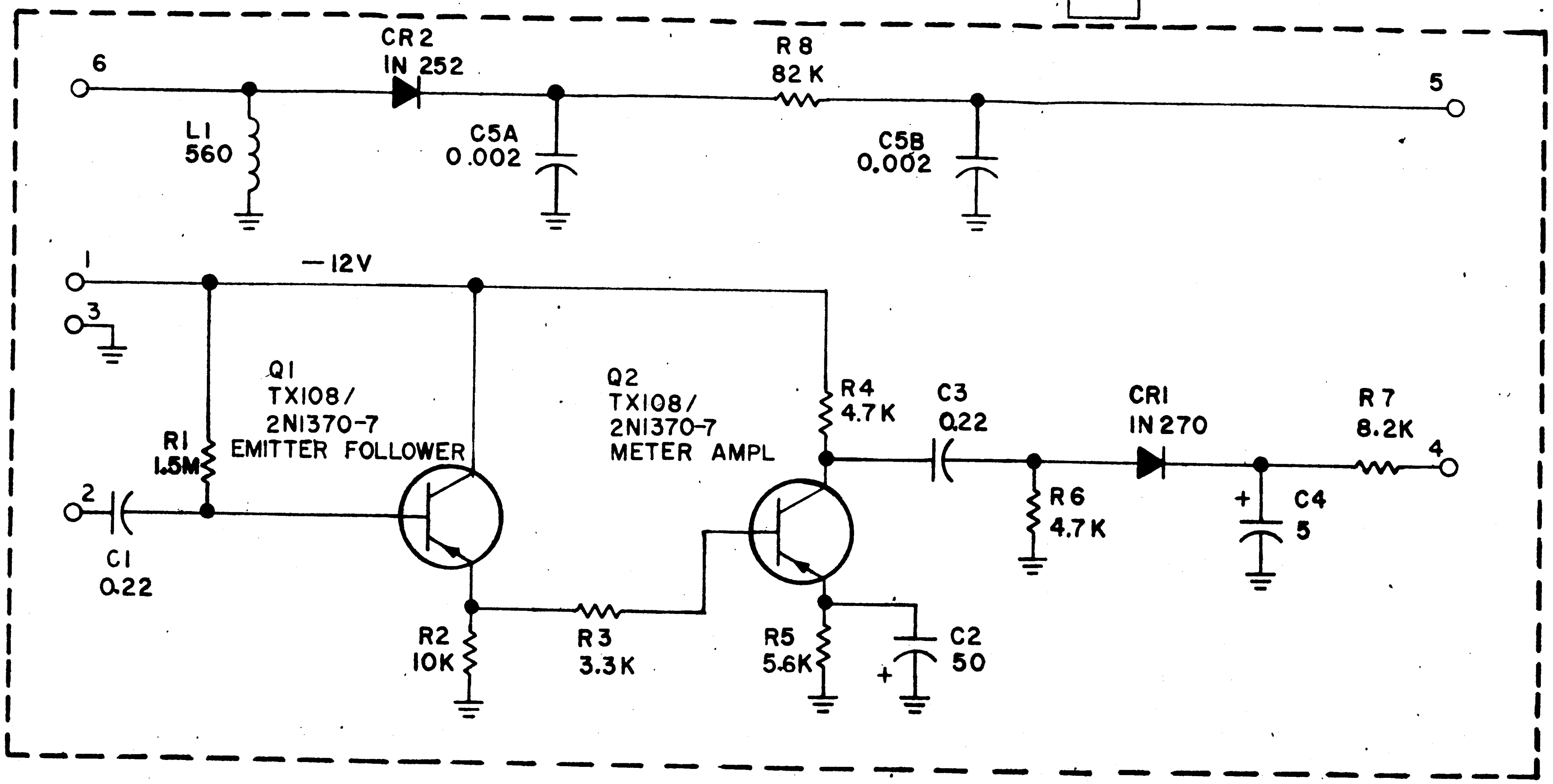
DIAGRAM, SCHEMATIC

SIZE	CODEIDENT.NO.	DWG NO.	ISSUE
C	82679	CK1285	
SCALE			SHEET OF

MODEL
TTR-10A

REVISIONS						
SYM	DESCRIPTION	DATE	E.M.N. NO	DRAFT	CHKD	APPD
X	EXPERIMENTAL RELEASE					
Ø						

CK1169



LAST SYMBOLS	MISSING SYMBOLS
CR2 R8 L1 C5B Q2	

NOTES

UNLESS OTHERWISE SPECIFIED
ALL RESISTANCE VALUES ARE IN OHMS, 1/2 WATT.
ALL INDUCTANCE VALUES ARE IN MICROHENRIES.

Q'TY./UNIT	MODEL USED ON	ASS'Y. NO.
1	SMEA-1	A 3714

SCALE | CODE

REQ'D.	ITEM	PART NUMBER	DESCRIPTION	SYM OL

POSE

LIST OF MATERIAL

MATERIAL

FINISH

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES AND INCLUDE CHEMICALLY APPLIED OR PLATED FINISHES

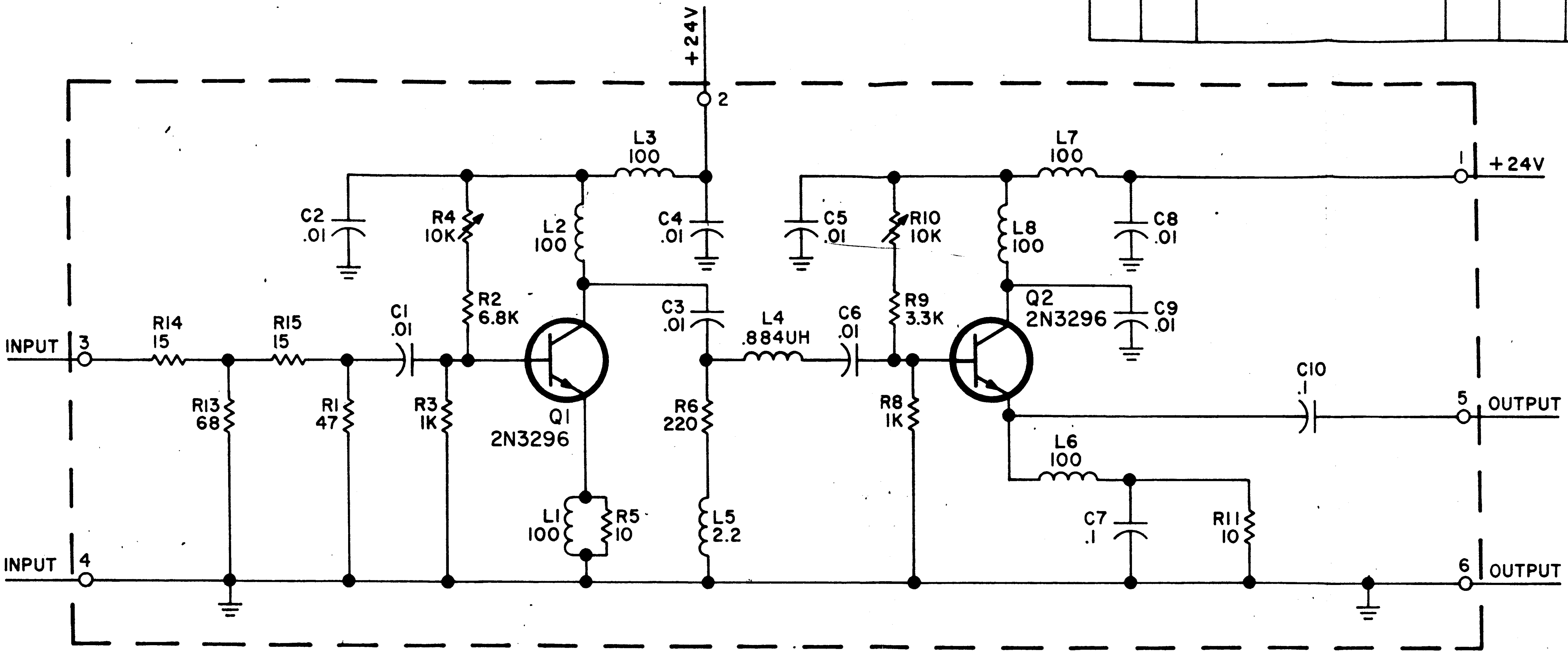
TOLERANCES: DECIMALS .X ± .05, .XX ± .01, .XXX ± .005; FRACTIONS ± 1/64; ANGLES ± 0° 30′

THE TECHNICAL MATERIEL CORP.
MAMARONECK, NEW YORK

TITLE: DIAGRAM, SCHEMATIC ... METER ...

DRAWN RME	DATE 8-4-66	FINAL APPROVAL	DATE
CHECKED	DATE	CK1169	
ELECT. DES.	DATE		
MECH. DES.	DATE	SHEET	REV. LTR.

TMC FORM 109



UNLESS OTHERWISE SPECIFIED

ALL RESISTANCE VALUES ARE IN OHMS, 1/2 WATT.
ALL CAPACITANCE VALUES ARE IN MICROFARAD.
ALL INDUCTANCE VALUES ARE IN MICROHENRIES.

SYMBOLS	
LAST	MISSING
C10 L8 Q2 R15	R7 R12

QTY / UNIT	MODEL USED ON	ASS'Y NO.
	SMEC-1, SMEE-1	A4543
	SMEA-1, SMEB-1	A4543

APPLICATION

CODE

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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE CHEMICALLY APPLIED OR PLATED FINISHES

DECIMALS .X ± .05 .XX ± .01 .XXX ± .005 TOLS. FRACTIONS 1/64 ANGLES 0° 30'

MATERIAL

FINISH

REF: PC349

REQ'D	ITEM	PART NUMBER	DESCRIPTION	SYM.
			LIST OF MATERIAL	

FINAL APPROVAL — DATE 2/17/67
MECH. DES — DATE
ELECT. DES. — DATE
CHECKED — DATE 1-17-67
DRAWN WHW — DATE 1-5-67

THE TECHNICAL MATERIEL CORP.
MAMARONECK, NEW YORK

DIAGRAM, SCHEMATIC LINEAR PWR AMPL BD

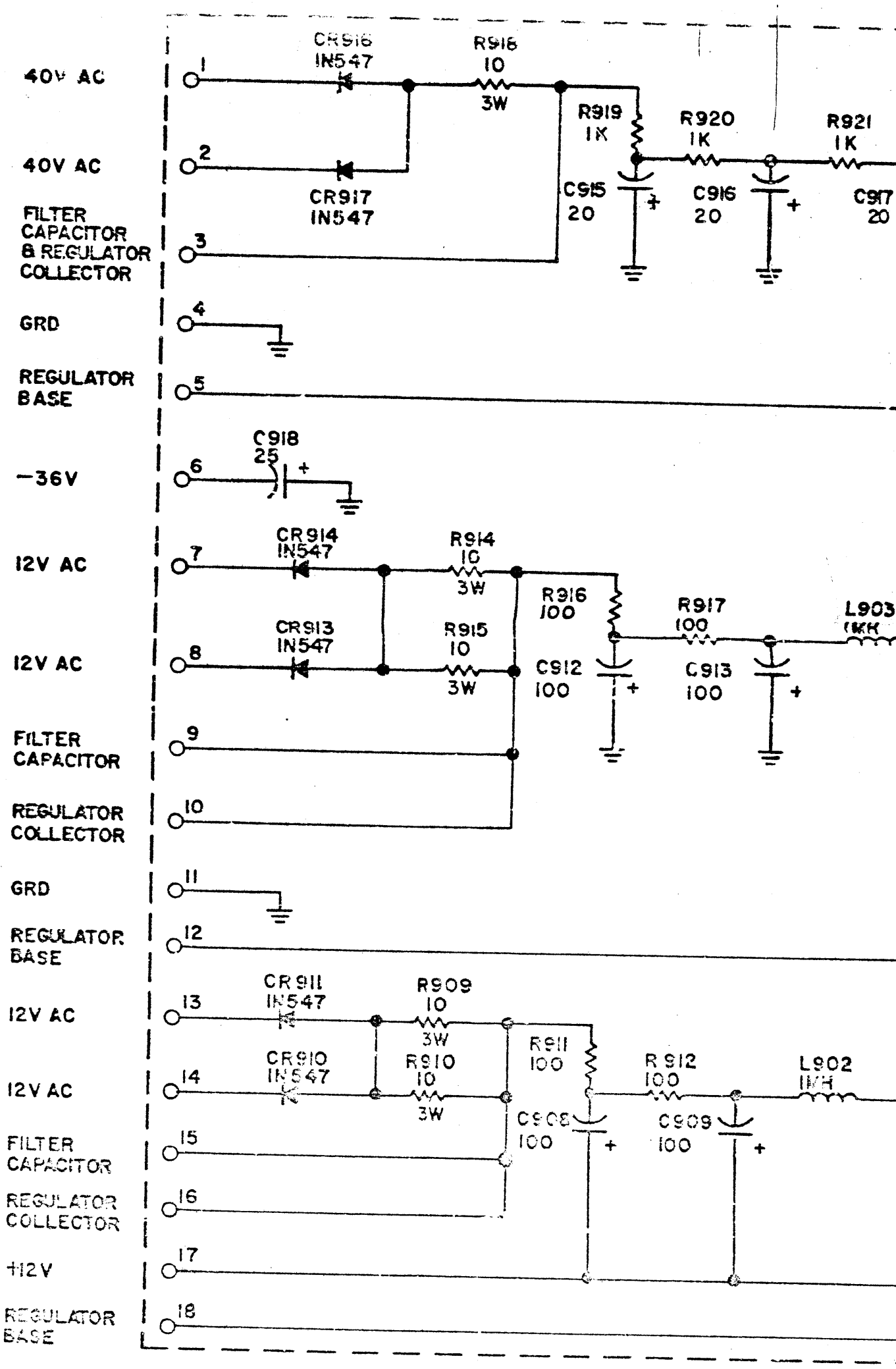
SIZE	CODE IDENT. NO.	DWG NO.	ISSUE
B	82679	CK1275	

SCALE — SHEET

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	E.M.N.	DRAFT	CHK	APPD
		[illegible]					
	X2	R12 [illegible]	2-4-[illegible]				
		[illegible]					

FCI-10-170 10-66



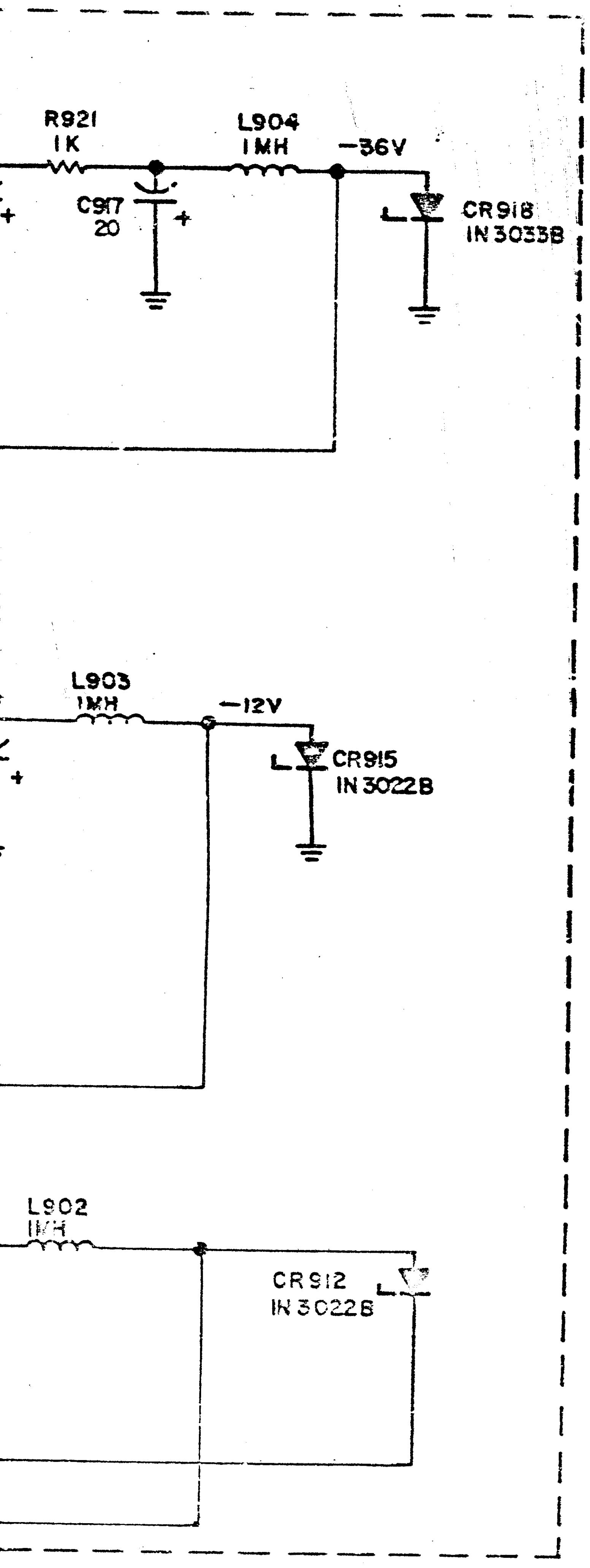
LAST SYMBOLS	MISSING SYMBOLS
R913	R913
C910	C910, C911, C914
L904	
CR913	

NOTES

UNLESS OTHERWISE SPECIFIED
ALL RESISTANCE VALUES ARE IN OHMS,
ALL INDUCTANCE VALUES ARE IN MICRO

SCALE

7 6 5 4



G

F

E

D

C

CK1170

IN OHMS, 1 WATT.
IN MICROHENRIES.

	SMEA-1	A3153-6
		ASSY NO

SCALE | CODE

REQ'D | ITEM | PART NUMBER | DESCRIPTION

LIST OF MATERIAL

MATERIAL

FINISH

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES AND INCLUDE CHEMICALLY APPLIED OR PLATED FINISHES

DECIMALS | TOLERANCES | FRACTIONS ± 1/64 ANGLES

THE TECHNICAL MATERIEL CORP.
MAMARONECK, NEW YORK

TITLE
DIAGRAM, SCHEMATIC
POWER SUPPLY

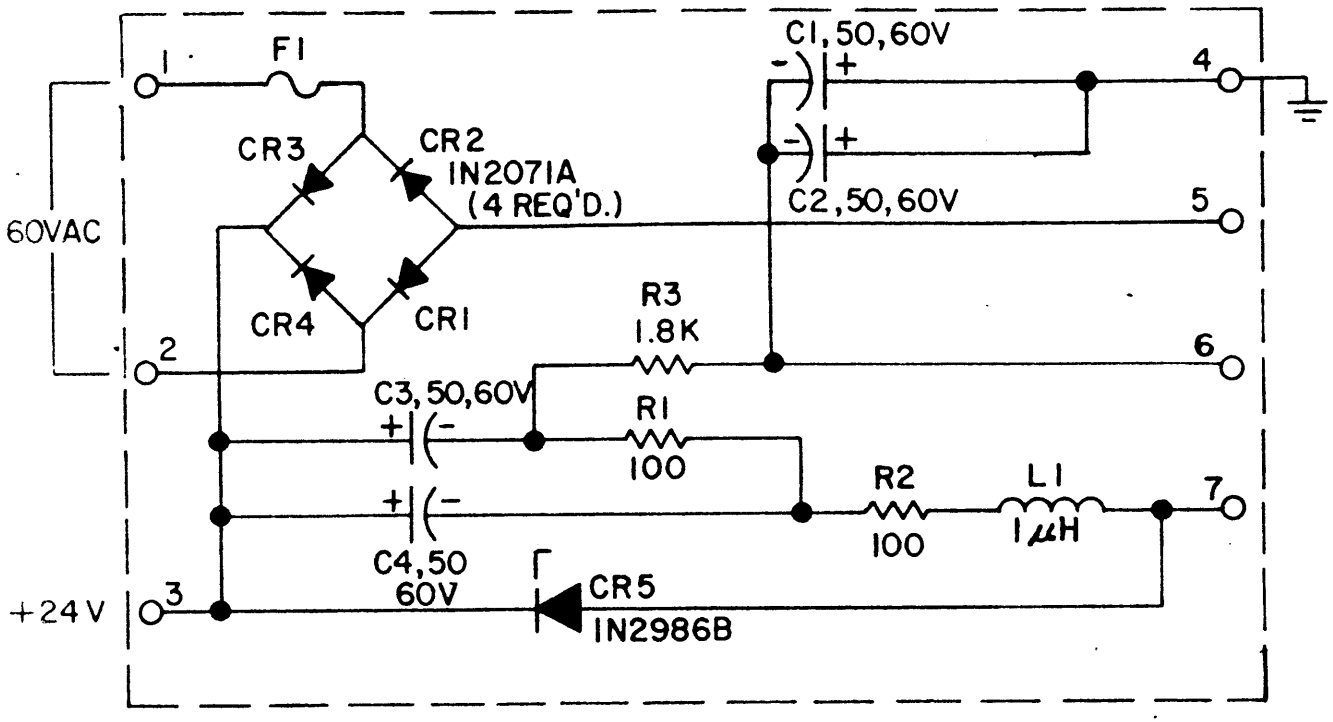
DRAWN PME
CHECKED
ELECT. ENG. | DATE
MECH. ENG. | DATE
SHEET

CK1170

4 | 3 | 2 | 1

REQ. PER UNIT	USED ON MODEL	ASS'Y. NO.	DATE
1	SMEC-1		12-13-66
1	SMEE-1		12-13-66

CK1263



LAST SYMBOLS
C4
CR5
F1
L1
R3

UNLESS OTHERWISE SPECIFIED

1—ALL RESISTANCE VALUES ARE IN OHMS, 1/2 WATT.

2—ALL CAPACITANCE VALUES ARE IN MICROFARADS.

SYM	DESCRIPTION	DATE	CH. NO.	DRAFTS	CHECKER	ENG. APP.
	[illegible] FOR PRODUCTION	[illegible]		L.P.K.		
X	EXPERIMENTAL RELEASE	12-13-66		HLA		

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE CHEMICALLY APPLIED OR PLATED FINISHES

SCALE

DECIMALS X ± .05, XX ± .01, XXX ± .005 — TOLERANCES — FRACTIONS ± 1/64, ANGLES ± 0° 30'

CODE

REQ.	ITEM	PART NO.	DESCRIPTION	SYMBOL

STOCK SIZE

MATERIAL

TYPE & TEMPER | HEAT TREAT. SPEC.

FINISH & SPEC. NO.

THE TECHNICAL MATERIEL CORP.
MAMARONECK. NEW YORK

DIAGRAM, SCHEMATIC
POWER SUPPLY

H·AUSTIN		
DRAWN	CHECKED	FINAL APPROVAL
		CK1263 Ø
ELEC. DES. APP.	MECH. DES. APP.	

IMC FORM 108-A

REPROVEL N . 440H 53643