TECHNICAL MANUAL

for

SOLID STATE EXCITER

MODEL SMEB-1

THE TECHNICAL MATERIEL CORPORATION
MAMARONECK, N.Y. OTTAWA, CANADA

SOLID STATE EXCITER

MODEL SMEB-1

GENERAL INFORMATION

The SMEB-1 exciter is essentially similar to the SME exciter except for the following comparisons:

SMEB-1	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-1C, 2C, 3C, and 4C).	Uses r-f tuned converters with two frequency selections per converter (TTRT-1,2,3, and 4).
Has proportional oven control of the oscillator (applies to TTRT modules).	Has no oven control.
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 SMEB 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

*Trademark applied for.

sequential relays in the SMEB.

The circuitry in the SMEB 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 carrier output during the transmitter tuning phase.

INSTALLATION

Mechanical installation of the SMEB is the same as that for the SME. Electrical installation is the same except for the following:

(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 SMEB at terminal 18 of E1501 as in the SME.

(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 SMEB panel and have the same functions.*

The operating procedure of the SMEB 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.

*The exception is the F1/F2 switch on the TTRT converters; there is no switch on SMEB TTRT converters.

**In the SMEB, however, continuouus-rotation CHANNEL knob may be turned in a clockwise direction only.

To operate the SMEB for TechniMatiC transmitter tuning:

(1) Set POWER switch at OFF.

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

(3) Select desired mode of transmission, using CW, SSB, -20DB, AME and MCW switch.

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

(5) Set VOX/PTT switch at PTT.

(6) Set RF GAIN knob fully clockwise and AF GAIN knob fully counterclockwise.

(7) Set 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 SMEB, turning AF GAIN knob slowly clockwise until meter indicates "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, re-adjust 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.

PRINCIPLES OF OPERATION (Figure A)

Principles involved in the operation of the SMEB 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 SMEB has one conversion stage (to 1.75 mc), with two balanced modulators, two sideband filters and one hermetically sealed crystal 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 SMEB i-f section (see figure A) the audio output from the a-f section is applied to both the LSB and USB balanced modulators. Depending on the position of the LSB/USB switch, 1.75 mc oscillator injection frequency from the hermetically

sealed crystal oscillator is extended to either the USB or the LSB balance potentiometer of the balanced modulator. The difference frequency from the balanced modulator is then applied to a two stage amplifier where carrier re-insertion can be applied to the signal from the 1.75 mc oscillator. Automatic carrier level selection is provided in the same manner as for the SME.

The function of the automation circuitry in the SMEB is to enable an automatic tuning of the power amplifier stages of the transmitter to the desired frequency from a positioning of the 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 SMEB 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 complete the SMEB 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 SMEB 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 over driving of the power amplifier stages when the tuning is completed and the regular signal is applied.

Automation circuitry in the SMEB (see figure A) consists of relays K1501 and K1502, potentiometer R1553, carrier notch filter Y1800, a cam attached to S1515 CHANNEL switch shaft, cam-operated switch S1519, and pre-positioning wafer on S1515.

S1515 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 SMEB r-f output shut off and deactivates the transmitter power amplifier tuning circuits. The SMEB 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 SMEB i-f and r-f stages.) This arrangement prevents an inadvertent application of audio (through the VOX/PTT circuit) from cuasing the SMEB 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 24 V supply across pins R and P of J1534, energizing relay K1502.

The energized relay K1502 causes the SMEB 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.

When the transmitter tuning is complete, the SMEB is returned to its normal operating state. When sensing servos in the tuning circuitry have moved the controls to zero-in on the SMEB frequency, the 24V sitting across pins R and P of J1534 is removed, de-energizing relays K1502. Relay 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). 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 SMEB 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-ampliffier, 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 SMEB is included in this addendum.

Figure A. Functional Block Diagram, SMEB

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.

POWER SUPPLY, MAIN CHASSIS ASSEMBLY

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	

POWER SUPPLY, MAIN CHASSIS ASSEMBLY

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

TRANSMITTER IF BOARD ASSEMBLY

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
C1800	CAPACITOR, FIXED, CERAMIC DIELECTRIC: 20,000 uuf, +80% -20%; 500 WVDC.	CC100-24
C1801	Same as C1800.	
C1802	CAPACITOR, FIXED, MICA DIELECTRIC: 22 uuf, ±5%; 100 WVDC.	CM111C220J1S
C1803	CAPACITOR, VARIABLE, CERAMIC DIELECTRIC: 2.2-11 uuf; 200 WVDC; miniature disc type.	CV112-2
C1804	Same as C1802.	
C1805	Same as C1803.	
C1806	CAPACITOR, FIXED, MICA DIELECTRIC: 1,000 uuf, ±5%; 100 WVDC.	CM111C102J1S
C1807	Same as C1806.	
C1808	CAPACITOR, FIXED, MICA DIELECTRIC: 47 uuf, ±5%; 100 WVDC.	CM111C470J1S
C1809	CAPACITOR, VARIABLE, CERAMIC DIELECTRIC: 10 - 75 uuf; 350 WVDC.	CV109-8
C1810	Same as C1809.	
C1811	CAPACITOR, FIXED, CERAMIC DIELECTRIC: 200,000 uuf, +80% -20%; 25 WVDC.	CC100-33
C1812	Same as C1806.	
C1813	Same as C1800.	
C1814 thru C1817	Same as C1806.	
C1818	CAPACITOR, FIXED, MICA DIELECTRIC: 100 uuf, ±5%; 100 WVDC.	CM111C101J1S
C1819	Same as C1811.	
C1820	Same as C1800.	
CR1800	TRANSISTOR	1N34A

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
CR1801 thru CR1807	Same as CR1800.	
FL1800	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
FL1801	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
L1800	COIL, RADIO FREQUENCY: 1,000 uh, ±10%; 17.5 ohms DC resistance.	CL275-102
L1801	NOT USED	
L1802 thru L1805	Same as L1800.	
Q1800	TRANSISTOR	2N3904
Q1801	Same as Q1800.	
Q1802	Same as Q1800.	
Q1803	TRANSISTOR	MPF104
Q1804	Same as Q1803.	
Q1805	Same as Q1800.	
Q1806	Same as Q1803.	
Q1807	Same as Q1800.	
Q1808	TRANSISTOR	2N3646
R1800	RESISTOR, FIXED, COMPOSITION: 560 ohms, ±5%; 1/2 watt.	RC20GF561J
R1801	Same as R1800.	
R1802	RESISTOR, FIXED, COMPOSITION: 1,000 ohms, ±5%; 1/2 watt.	RC20GF102J
R1803 thru R1809	Same as R1802	

PARTS LIST (CONT)

TRANSMITTER IF BOARD ASSEMBLY

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
R1810	Same as R1800.	
R1811	Same as R1800.	
R1812	RESISTOR, VARIABLE, COMPOSITION: 1,000 ohms, ±10%; 0.25 watts.	RV111U102A
R1813	Same as R1812.	
R1814	RESISTOR, FIXED, COMPOSITION: 330 ohms, ±5%; 1/2 watt.	RC20GF331J
R1815 thru R1817	Same as R1814.	
R1818	RESISTOR, FIXED, COMPOSITION: 3,300 ohms, ±5%; 1/2 watt.	RC20GF332J
R1819	Same as R1818.	
R1820	RESISTOR, FIXED, COMPOSITION: 470,000 ohms, ±5%; 1/2 watt.	RC20GF474J
R1821	RESISTOR, FIXED, COMPOSITION: 47 ohms, ±5%; 1/2 watt.	RC20GF470J
R1822	RESISTOR, FIXED, COMPOSITION: 100,000 ohms, ±5%; 1/2 watt.	RC20GF104J
R1823	RESISTOR, FIXED, COMPOSITION: 15,000 ohms, ±5%; 1/2 watt.	RC20GF153J
R1824	RESISTOR, FIXED, COMPOSITION: 10,000 ohms, ±5%; 1/2 watt.	RC20GF103J
R1825	Same as R1821.	
R1826	Same as R1802.	
R1827	NOT USED	
R1828	NOT USED	
R1829	RESISTOR, VARIABLE, COMPOSITION: 10,000 ohms, ±10%; 0.25 watts.	RV111U103A
R1830	RESISTOR, FIXED, COMPOSITION: 56,000 ohms, ±5%; 1/2 watt.	RC20GF563J

PARTS LIST (CONT)

TRANSMITTER IF BOARD ASSEMBLY

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
R1831	Same as R1823.	
R1832	Same as R1800.	
R1833	Same as R1814.	
R1834	Same as R1824.	
R1835	Same as R1818.	
R1836	RESISTOR, FIXED, COMPOSITION: 100 ohms, ±5%; 1/2 watt.	RC20GF101J
R1837	Same as R1814.	
T1800	TRANSFORMER, IF OUTPUT: operating frequency 1750 Kc; 100 ohms output impedance.	TZ10001
Y1800	CRYSTAL UNIT, QUARTZ: 1.75 Mc, ±.005%; operating temperature range -55°C to +50°C; HC-6/U holder type.	CR18A/U1.7500-00
Z1800	OSCILLATOR, PROPORTIONAL OVEN CONTROLLED: operating frequency 1.75 Mc.	A0123-1.750000

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.	

AF TRANSMITTER, BOARD ASSEMBLY

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 T09 case.	TX106
Q1702	TRANSISTOR: germanium; PNP; JEDEC type 2N1370-4 transistor with a controlled hfe limit of 60-75; JEDEC type T09 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.	

AF TRANSMITTER, BOARD ASSEMBLY

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

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
J1500 thru J1514	NOT USED	
J1515	SOCKET, PANEL MOUNT: 6 male contacts, straight type.	JJ212
J1516	CONNECTOR, RECEPTACLE, ELECTRICAL: 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

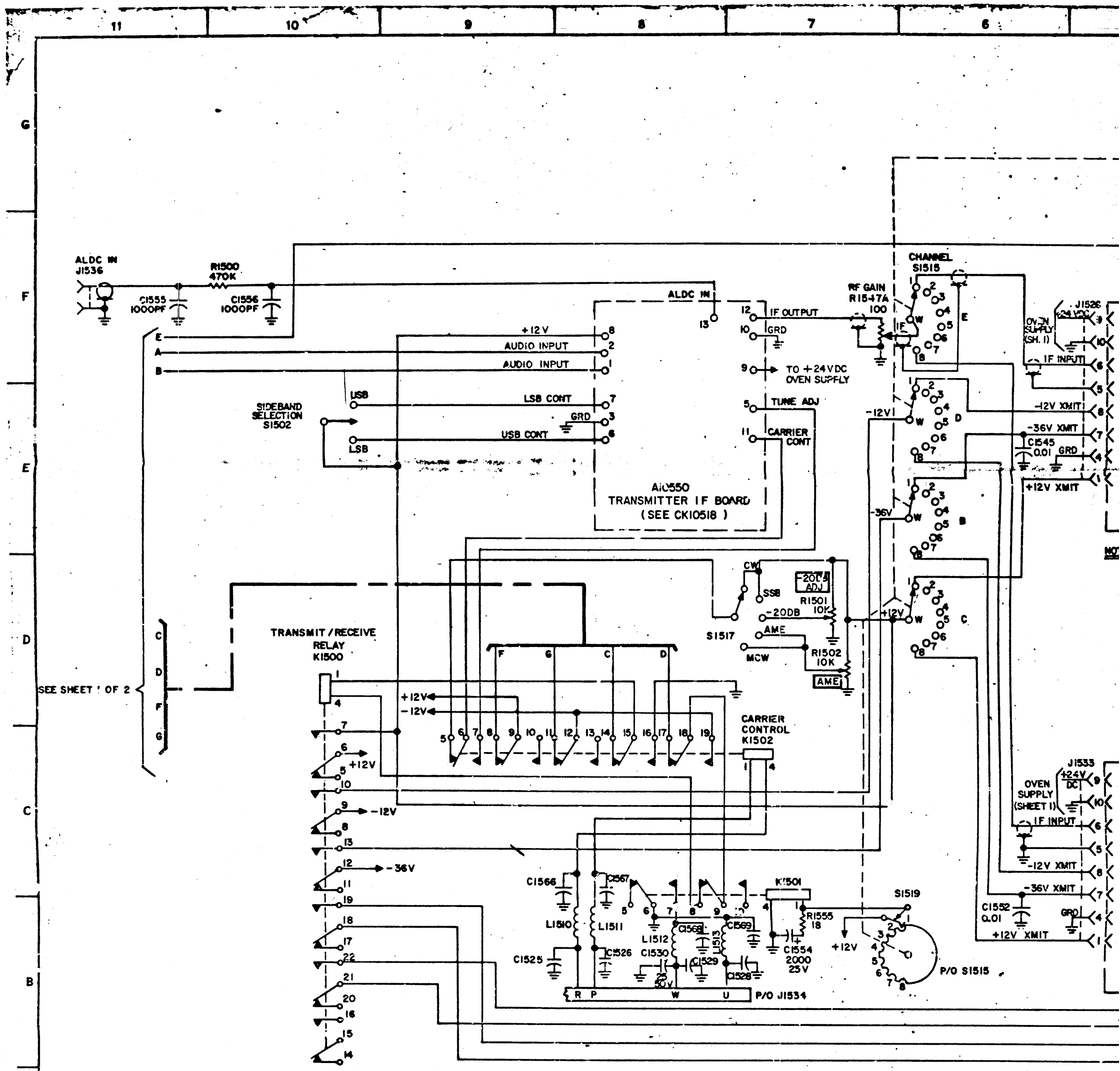
REF SYMBOL	DESCRIPTION	TMC PART NUMBER
K1501	RELAY, ARMATURE: DPDT; 185 ohms, ±10% DC resistance; operating voltage 12 VDC; current rating 65 ma; power rating 700 mw at 25°C; 8 contacts rated for 3 amps at 115 VAC resistive or 5 amps at 29 VDC resistive; clear high impact styrene dust cover case.	RL156-13
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
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.	RV111S103A
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	NOT USED	

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
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
T1501	TRANSFORMER, INPUT: primary impedance 200,000 ohms; DC resistance 6,500 ohms; secondary impedance 1,000 ohms; DC resistance 245 ohms; frequency 100 (Hz) to 20 Kc; open frame, lacquer coated.	TF246-6X
TB1500	NOT USED	
TB1501	NOT USED	

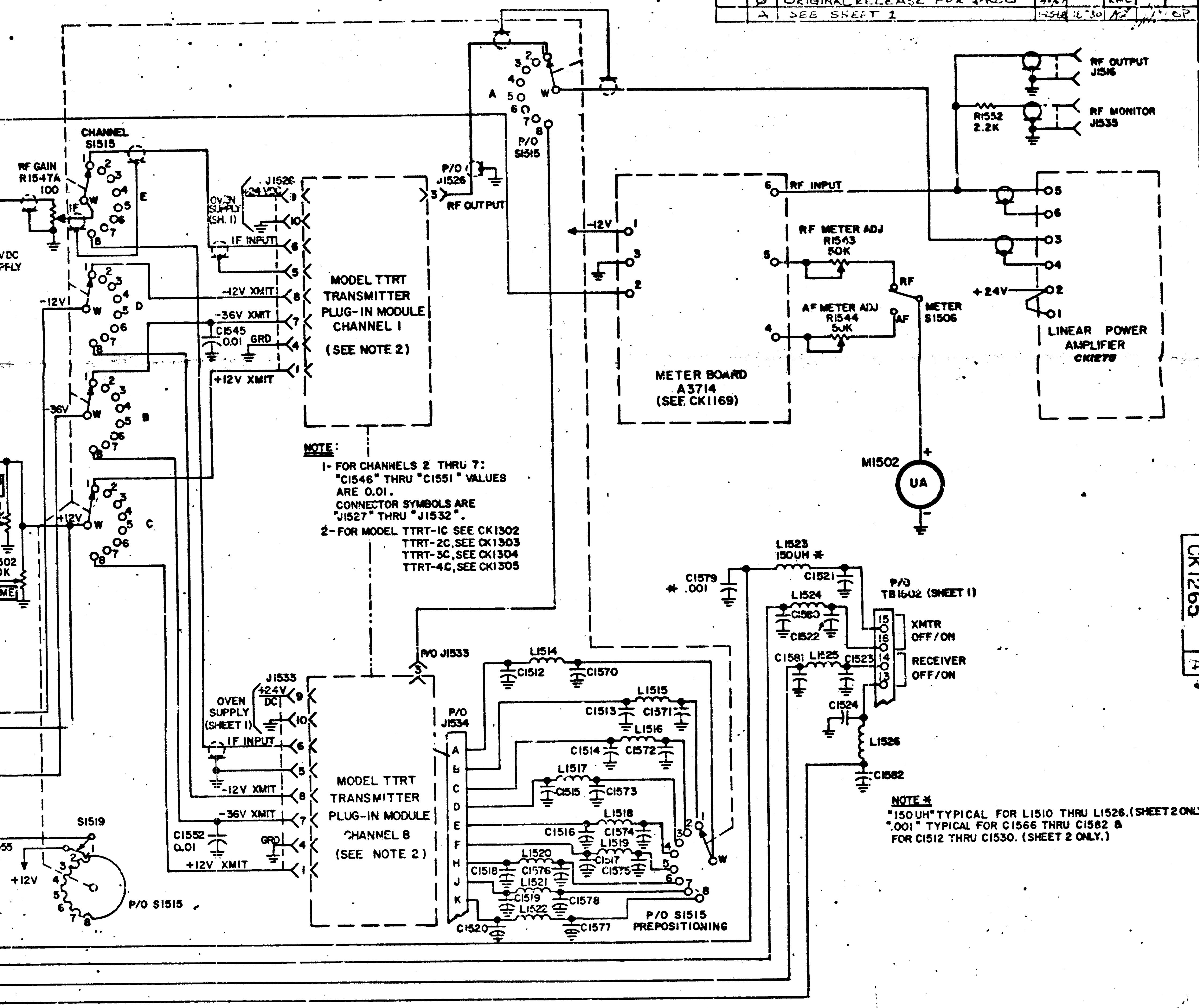
REF SYMBOL	DESCRIPTION	TMC PART NUMBER
TB1502	TERMINAL BOARD, BARRIER: eighteen 6-32 thd. x 1/4" long binding head machine screws; black phenolic body.	TM100-18
XDS1500	NOT USED	
XDS1501	LIGHT, INDICATOR: with white translucent lens, subminiature type.	TS153-5
XK1500	SOCKET, RELAY: with retainer; 18 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.	


ALDC IN J1536
R1500 470K
C1555 1000PF
C1556 1000PF
ALDC IN
+12 V
AUDIO INPUT
AUDIO INPUT
SIDEBAND SELECTION S1502
USB
LSB
LSB CONT
GRD
USB CONT
A10550 TRANSMITTER IF BOARD (SEE CK10518)
12 IF OUTPUT
10 GRD
9 TO +24VDC OVEN SUPPLY
5 TUNE ADJ
11 CARRIER CONT
RF GAIN R1547A 100
CHANNEL S1515
J1528 +24 VDC
OVEN SUPPLY (SH. 1)
IF INPUT
-12V XMIT
-36V XMIT
C1545 0.01
GRD
+12V XMIT
-12V
-36V
+12V
SEE SHEET 1 OF 2
TRANSMIT/RECEIVE RELAY K1500
CW
SSB
-20DB
AME
MCW
S1517
-20DB ADJ
R1501 10K
R1502 10K
AME
CARRIER CONTROL K1502
+12V
-12V
-36V
J1533 +24V DC
OVEN SUPPLY (SHEET 1)
IF INPUT
-12V XMIT
-36V XMIT
C1552 0.01
GRD
+12V XMIT
C1566
C1567
L1510
L1511
L1512
C1525
C1526
C1530
C1568
C1569
L1513
C1529
C1528
K1501
R1555 18
C1554 2000 25V
S1519
P/O S1515
R P W U
P/O J1534

6	5	4	3	2	1

REVISIONS

ZONE	SYM	DESCRIPTION	DATE	E.N. NO	DRAFT	CHKD	APPD
	X	[illegible]					
	X1	ON NOTE "150 UH" WAS 270UH - SEE SHEET 1 OF 2	11-6-67	X1	GDL		
	X2	R1555 ADDED. SEE SHEET 1	11-8-67	X2	RME	[illegible]	
	X3	C1512 THRU C1530, R1501, R1502 ADD. [illegible] SEE SHEET 1	[illegible]	X3	[illegible]		
	X4	NOTE 2 REVISED ON MODEL REF. DELE "CARRIER INSERTION" SEE SHEET 1	3/16/67	X4	RME		
	Ø	ORIGINAL RELEASE FOR PROD	3/6/67		RME		
	A	SEE SHEET 1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]



CHANNEL S1515
RF GAIN R1547A 100
IF
VDC SUPPLY
-12V
-36V
+12V
E
D
B
C
A
W
P/O S1515
P/O J1526
RF OUTPUT
J1526
OVEN SUPPLY (SH. 1)
+24 VDC
IF INPUT
-12V XMIT
-36V XMIT
C1545 0.01
GRD
+12V XMIT
MODEL TTRT TRANSMITTER PLUG-IN MODULE CHANNEL 1
(SEE NOTE 2)
NOTE:
1- FOR CHANNELS 2 THRU 7: "C1546" THRU "C1551" VALUES ARE 0.01. CONNECTOR SYMBOLS ARE "J1527" THRU "J1532".
2- FOR MODEL TTRT-1C SEE CK1302
TTRT-2C, SEE CK1303
TTRT-3C, SEE CK1304
TTRT-4C, SEE CK1305
P/O J1533
J1533
+24V DC
OVEN SUPPLY (SHEET 1)
C1552 0.01
MODEL TTRT TRANSMITTER PLUG-IN MODULE CHANNEL 8
(SEE NOTE 2)
S1519
+12V
P/O S1515
P/O J1534
L1514
C1512
C1570
L1515
C1513
C1571
L1516
C1514
C1572
L1517
C1515
C1573
L1518
C1516
C1574
L1519
C1517
C1575
L1520
C1518
C1576
L1521
C1519
C1578
L1522
C1520
C1577
P/O S1515 PREPOSITIONING
RF INPUT
RF METER ADJ R1543 50K
AF METER ADJ R1544 50K
RF
AF
METER S1506
METER BOARD A3714 (SEE CK1169)
M1502
UA
RF OUTPUT J1516
RF MONITOR J1535
R1552 2.2K
+24V
LINEAR POWER AMPLIFIER CK1279
L1523 150UH *
C1579 * .001
C1521
P/O TB1502 (SHEET 1)
L1524
C1580
C1522
XMTR OFF/ON
C1581
L1525
C1523
RECEIVER OFF/ON
C1524
L1526
C1582
NOTE *
"150UH" TYPICAL FOR L1510 THRU L1526. (SHEET 2 ONLY.)
".001" TYPICAL FOR C1566 THRU C1582 & FOR C1512 THRU C1530. (SHEET 2 ONLY.)

CK1265 | A

QTY 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

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THE TECHNICAL MATERIEL CORP.
MAMARONECK, NEW YORK

TITLE: DIAGRAM, INTERCONNECT

DRAWN: H. AUSTIN 12-5-66

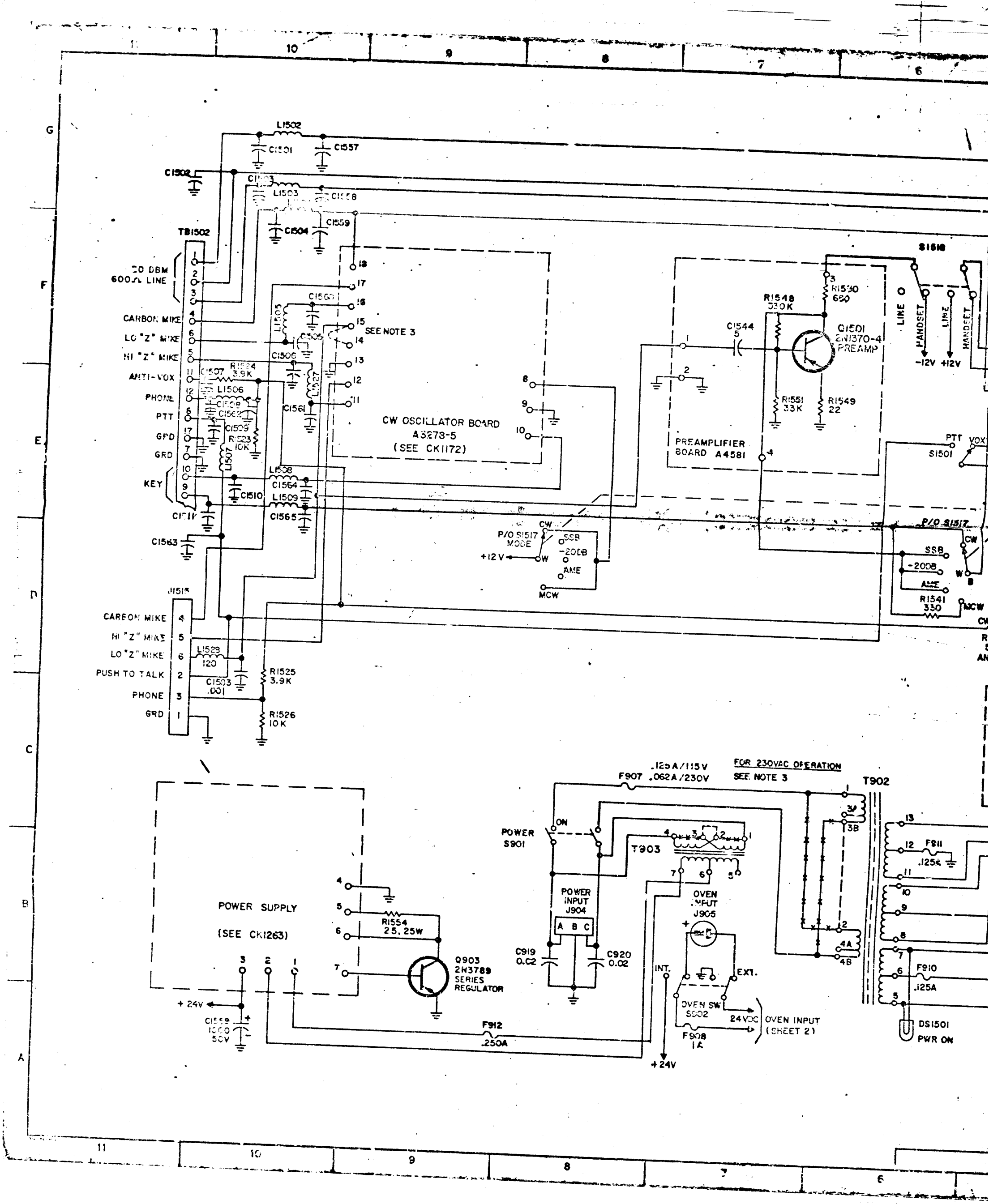
FINAL APPROVAL: [illegible]

CK1265 | A

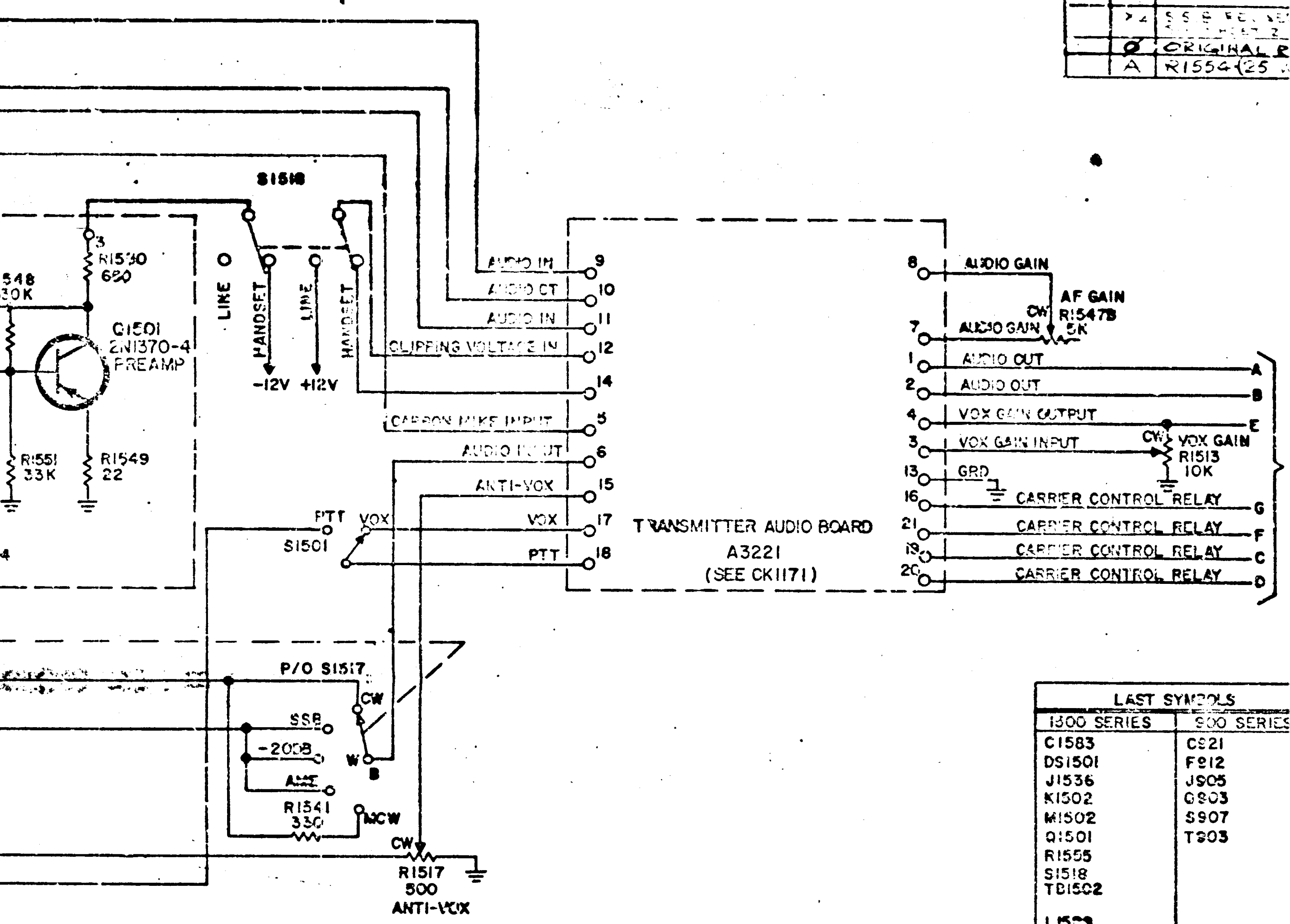
SHEET 2 OF 2

NOTES

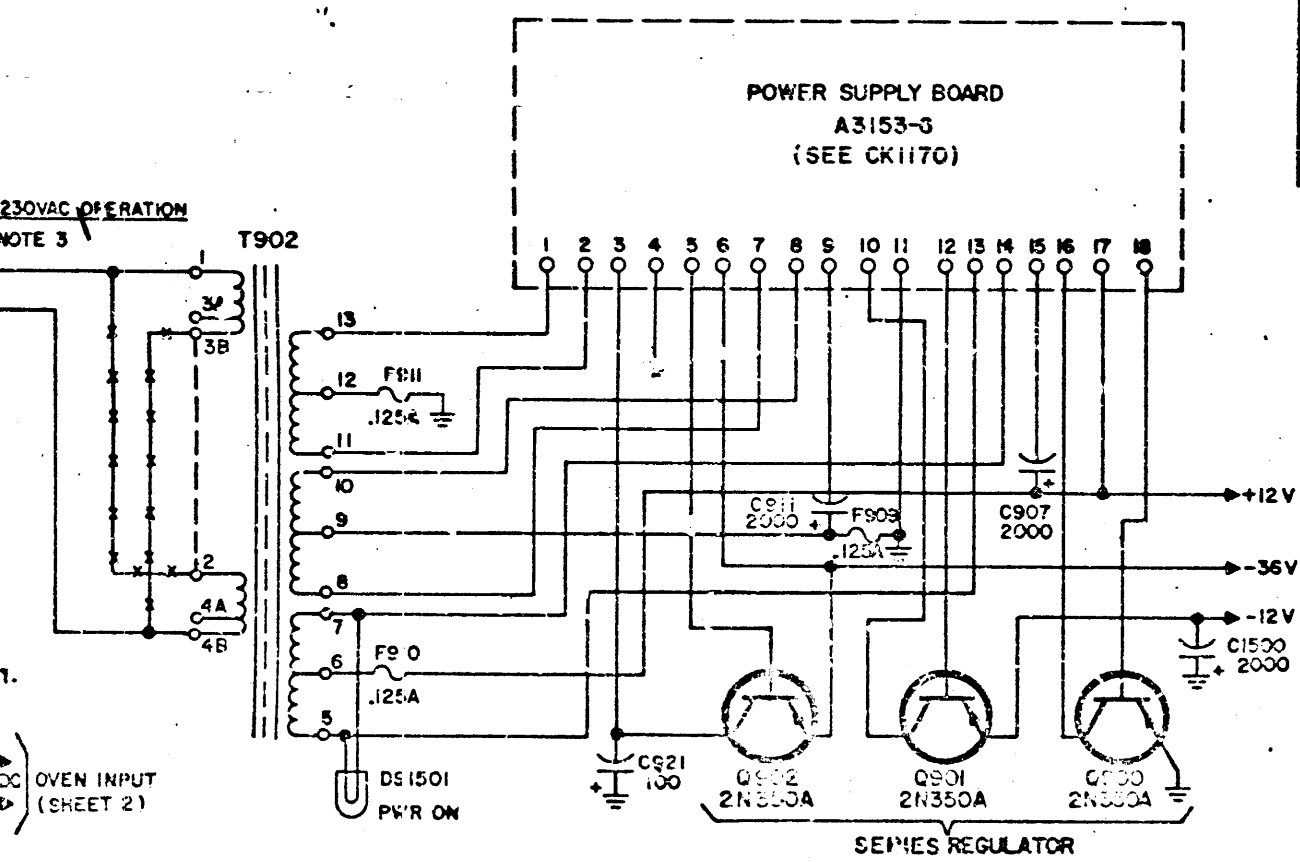
	6	5	4	3	2	1


L1502
C1501
C1557
C1502
C1503
L1503
C1558
C1504
C1559
TB1502
50 DBM 600Ω LINE
CARBON MIKE
LO "Z" MIKE
HI "Z" MIKE
ANTI-VOX
PHONE
PTT
GRD
GRD
KEY
C1560
L1505
C1505
C1506
R1524 3.9K
C1507
L1506
C1508
C1562
C1509
R1523 10K
L1507
L1508
C1564
C1510
L1509
C1565
C1511
C1563
C1561
L1527
SEE NOTE 3
CW OSCILLATOR BOARD A3278-5 (SEE CK1172)
J1518
CARBON MIKE
HI "Z" MIKE
LO "Z" MIKE
PUSH TO TALK
PHONE
GRD
L1528 120
C1503 .001
R1525 3.9K
R1526 10K
P/O S1517 MODE
CW
SSB
-20DB
AME
+12V
MCW
PREAMPLIFIER BOARD A4581
R1548 330K
C1544 5
C1501 2N1370-4 PREAMP
R1530 680
R1551 33K
R1549 22
S1518
LINE
HANDSET
-12V
+12V
S1501
PTT
VOX
P/O S1517
R1541 330
POWER SUPPLY (SEE CK1263)
R1554 25, 25W
Q903 2N3789 SERIES REGULATOR
C1558 1000 50V
+24V
F912 .250A
C919 0.02
C920 0.02
POWER S901
ON
T903
POWER INPUT J904
A B C
OVEN INPUT J905
INT.
EXT.
OVEN SW S902
24VDC
OVEN INPUT (SHEET 2)
F908 1A
+24V
.125A/115V
F907 .062A/230V
FOR 230VAC OPERATION SEE NOTE 3
T902
F911 .125A
F910 .125A
DS1501 PWR ON

ZONE	LTR	DESCRIPTION	DATE	E.R.O. NO.	DRAFT	CHKD	APPD
	X	ENG. INITIAL RELEASE					
	X1	NOTE "5" ADDED. SEE SHEET 2 OF 2	1-10-67	X1	CDL		
	X2	R1555 ADDED TO LAST SYM. SEE SHEET 2		X2	EME		
	X3	C901 THRU C1510 ADDED. SEE SHEET 2		X3			
	X4	S.S.B. REVISED. PRE-AMPL BD. WAS A1898 SEE SHEET 2			EME		
	Ø	ORIGINAL RELEASE FOR PROD	3/6/67		EME		
	A	R1554 (25 WAS 100)	1-25-68	18730			



LAST SYMBOLS		MISSING SYMBOLS	
1500 SERIES	900 SERIES	1500 SERIES	900 SERIES
C1583 DS1501 J1536 K1502 M1502 Q1501 R1555 S1518 TB1502 L15??	C921 F912 J905 Q903 S907 T903	C1531 THRU C1543 DS1500 J1500 THRU J1514 J1517 THRU J1525 M1500, M1501 Q1500 R1503 THRU R1512 R1514 ↕ R1516 R1518 ↕ R1522 R1527 THRU R1539 R1540 R1542 R1543 THRU R1547 S1503 ↕ S1505 S1507 THRU S1514 S1516 TB1500, TB1501 C1553	C900 THRU C906 C908 ↕ C910 C912 ↕ C918 F900 ↕ F906 J900 THRU J903 S900 S903 THRU S906 T900, T901



NOTES

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

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

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

4- 150 UH TYPICAL FOR L1502 THRU L1509, L1527. (SHEET 1 ONLY).
.001 UF TYPICAL FOR C1501 THRU C1511, C1557 THRU C1565. (SHEET 1 ONLY.)

NOTES

CK1265 A

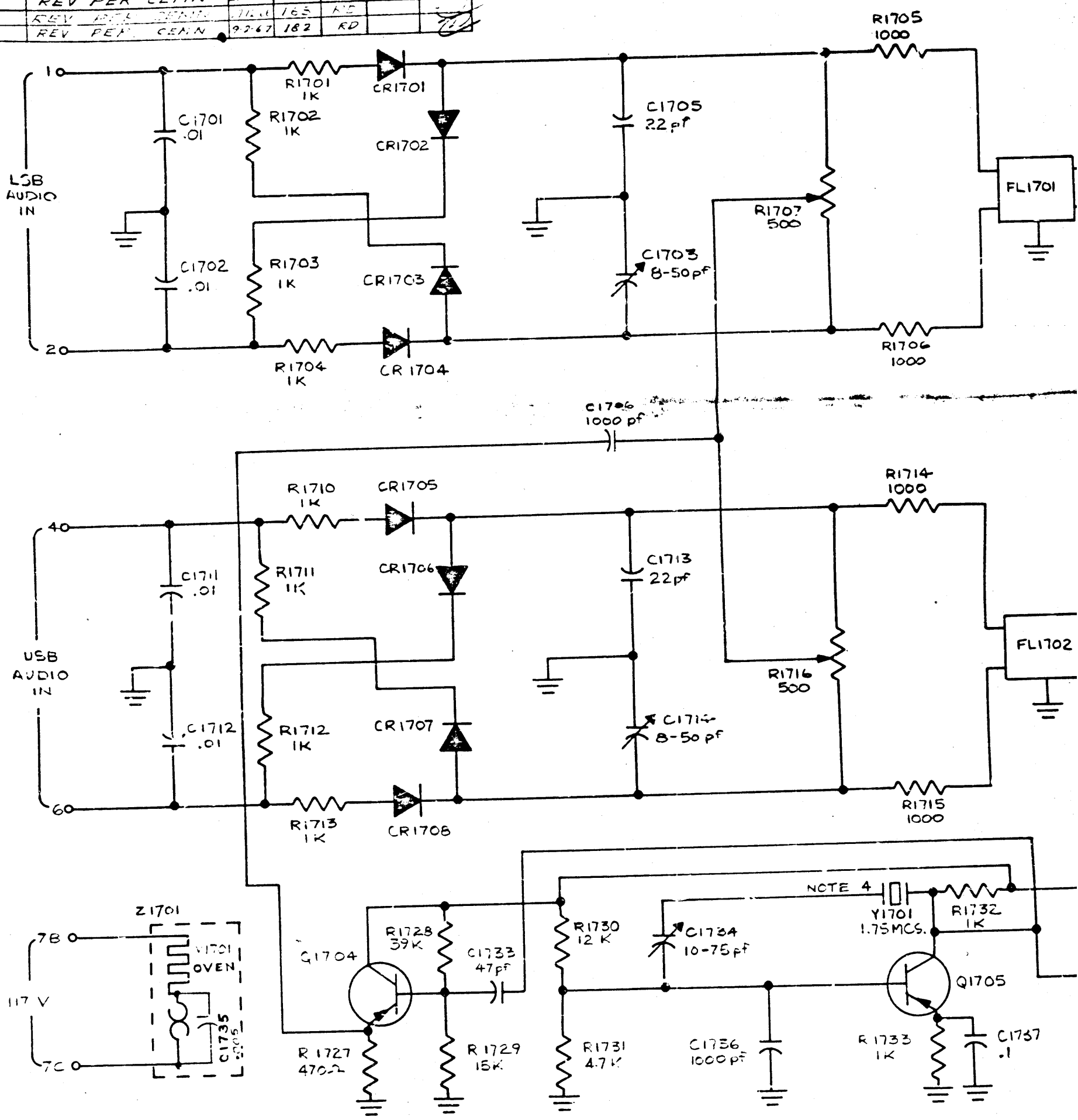
IF IT IS FOUND DESIRABLE TO CHANGE ANY TOLERANCE OR OTHER DETAIL SPECIFIED ON THIS DRAWING NOTIFY THE PURCHASER PROMPTLY

MAXIMUM ALLOWABLE TOLERANCES HAVE BEEN DETERMINED AND DEVIATIONS WILL BE CAUSE FOR REJECTION REMOVE ALL BURRS AND SHARP EDGES

DIMENSIONS IN INCHES UNLESS OTHERWISE SPECIFIED

ISSUE	ITEM	CHANGED FROM	DATE	CN NO	DRAFTS	CHECKER	ENG APP
*		RELEASED TO PROD	NOV 1/66		RPL		
A		REV PER CEMN	2/11/66	126	RD		
B		REV PER CEMN	7/6/66	165	RD		
C		REV PER CEMN	9-2-67	182	RD		

ISS.	ITEM	CHANGED FROM	DATE	CN. NO.	DRAFTS	CHCK'R	ENG APP
D		REV. PER CEMN	12/6/67	243	A.P.		



NOTES

1- UNLESS OTHERWISE SPECIFIED:
- ALL RESISTORS 1/2 WATT
- ALL CAPACITORS μf

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

3- ALL TRANSISTORS 2N2094

4- LOCATED IN Z1701

TOLERANCES		SCALE
ALL OTHERS	DEC DIM ± FRAC DIM ± ANGULAR DIM °	DRILL, PUNCH, COMMERCIAL STOCK SIZES AND MANUFACTURERS TOLERANCES ARE NOT INCLUDED.

TTR-1
MODEL

FORM-18

ENG APP

DES	ITEM	PART NO	DESCRIPTION	SYMBOL

R1723
30K

12 REINSERT CARRIER

T1702

Q1703

C1728
30-280pf

C1727
.0015

9 I.F. OUT

T1701

R1708
1000Ω

FL1701

R1709
1000Ω

C1729
.1

C1730
.2

C1726
.0015

C1725
30-280pf

C1721
180pf

Q1701

R1719
1K

C1723
.2

R1721
10K

R1724
1K

R1725
1.5K

R1726
1K

C1732
.1

C1724
.2

R1720
1K

R1722
10K

11 +12 VDC

R1738
10K

C1722
180pf

Q1702

5

C1731
.1

C1742
.1

L1702
220μh

R1717
1000Ω

FL1702

R1718
1000Ω

CK10511 | C

R1737
820Ω

7A-12 VDC

C1738
100pf

R1734
39K

Q1706

C1741
.2

C1739
47pf

C1737
.1

R1735
15K

R1736
470Ω

C1740
.01

8 CARRIER OUT

3 AND 10 GND.

D:

THIS DRAWING SUPERSEDES CK10476

2N2094

TTR-10A	005/66	A10395	NOV 1/66
M DEL	PROJECT NO.	ASSY. NO.	DATE
USED ON			

STOCK SIZE

MATERIAL | WEIGHT PER PC

TYPE & TEMPER

HEAT TREAT SPEC

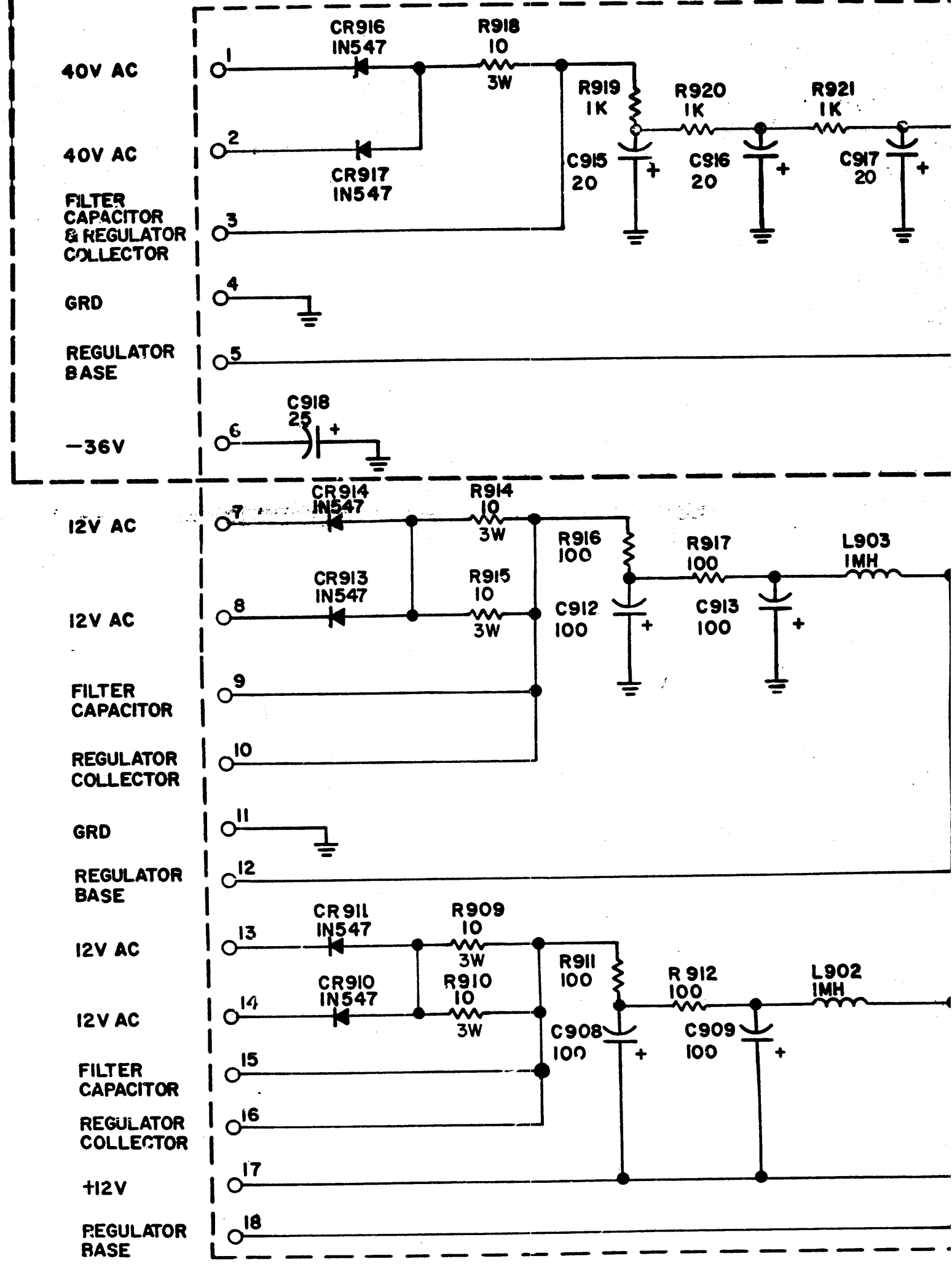
FINISH & SPEC NO

TMC (Canada) LIMITED
OTTAWA ONTARIO

SCHEMATIC,
TRANSMIT I.F. BOARD

DRAWN	ELEC DES APP	MECH DES APP.
RPL		
CHECKED	SIGNAL APPROVAL	
MUTASI	CK10511	C

FOR A3153-6 ON



LAST SYMBOLS	MISSING SYMBOLS
R921 C918 L904 CR918	R913 C910, C911, C914

UNLESS OTHERWISE SPECIFIED
ALL RESISTANCE VALUES ARE IN OHMS, 1 W
ALL INDUCTANCE VALUES ARE IN MICROHEN

QTY./UNIT	S
SCALE	

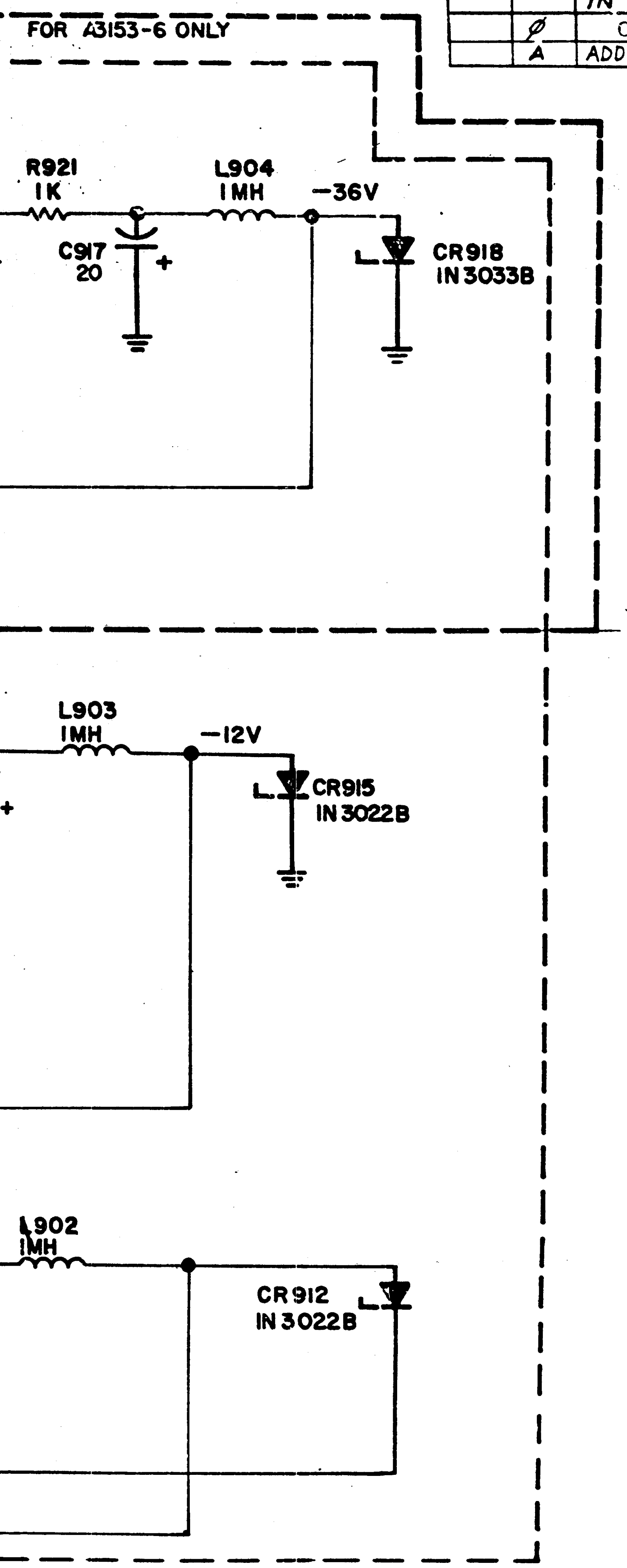
THE CONTENTS OF THI
OF THE TECHNICAL MA
REPR DUCTION IN WH

NOTES

THIC FORM 110

REVISIONS

ZONE	SYM	DESCRIPTION	DATE	E.M.N. NO.	DRAFT	CHKD	APPD
	X	EXPERIMENTAL RELEASE	[illegible]	X	RME	[illegible]	
	X1	ADD. 3W TO R918, R914, R915, R909 & R910 IN NOTES 1 WATT WAS 1/2 WATT	9/				
	Ø	ORIGINAL RELEASE FOR PRODUCTION	2-16-67		L.A.K.		
	A	ADDED "FOR A3153-6 ONLY	7-5-67	18310	L.A.K.	[illegible]	



IN OHMS, 1 WATT.
IN MICROHENRIES.

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

MATERIAL

FINISH

1	SMEA-1	A3153-6
Q'TY./UNIT	MODEL USED ON	ASS'Y. NO.

SCALE | CODE

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

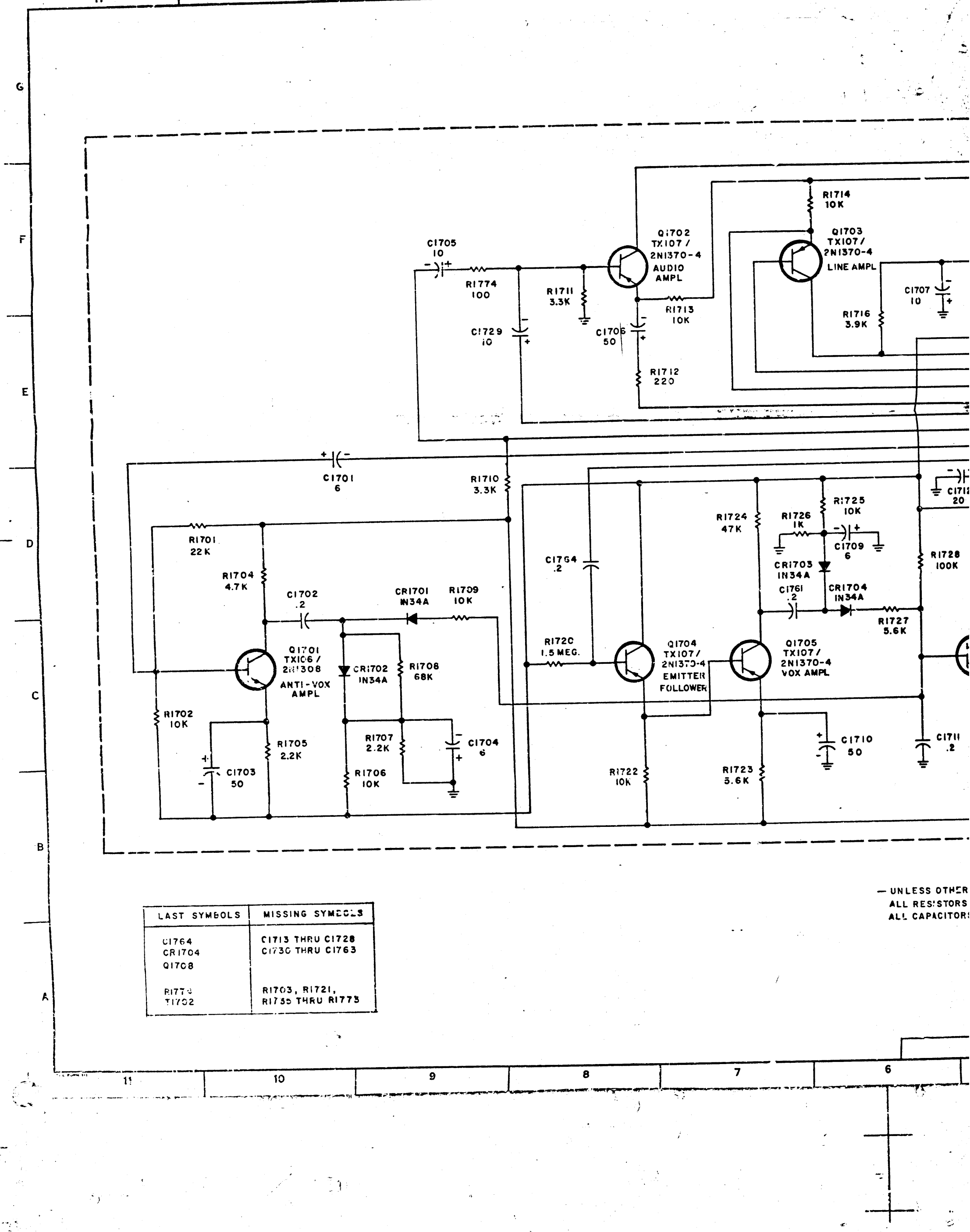
DECIMALS: .X ± .05, .XX ± .01, .XXX ± .005 — TOLERANCES — FRACTIONS ± 1/64, ANGLES ± 0° 30'

THE TECHNICAL MATERIEL CORP.
MAMARONECK, NEW YORK

TITLE: DIAGRAM, SCHEMATIC POWER SUPPLY BD.

DRAWN: RME — DATE: [illegible]
CHECKED: [illegible] — DATE: 1-17-67
ELECT. DES. — DATE
MECH. DES. — DATE
FINAL APPROVAL: [illegible] — DATE: 2/5/67
CK 1170 — SHEET — REV. LTR. A

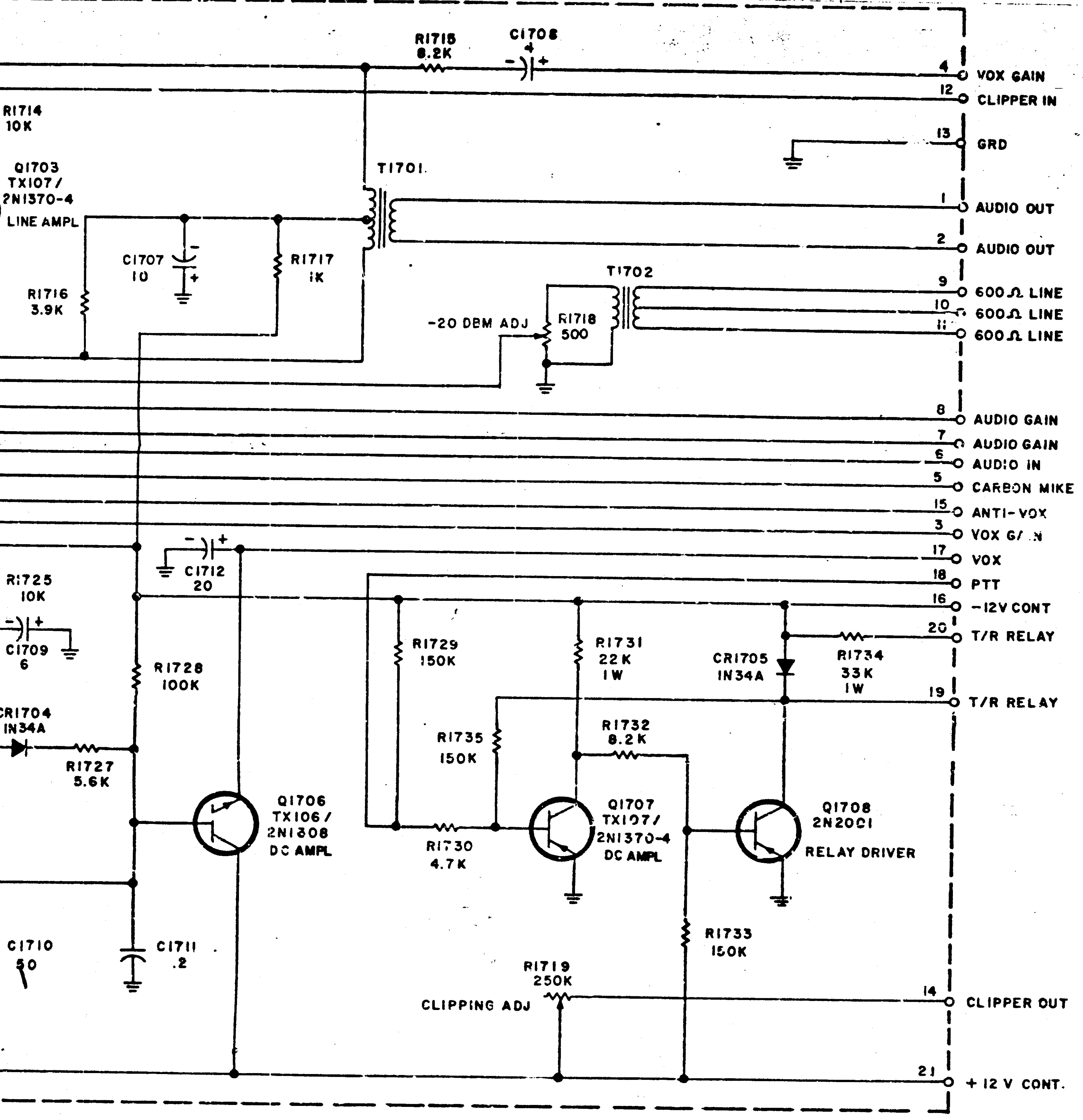
CK1170 A



LAST SYMBOLS	MISSING SYMBOLS
C1764 CR1704 Q1708	C1713 THRU C1728 C1730 THRU C1763
R1774 T1702	R1703, R1721, R1755 THRU R1775

— UNLESS OTHER
ALL RESISTORS
ALL CAPACITORS

ZONE	SYM	DESCRIPTION	DATE	E.N.M. NO.	DRAFT	CHKD	APPD
	X	EXPERIMENTAL RELEASE					
	X1	ADD. POLARITY TO C1705; "R1734" WAS "R1746", "R1735" WAS 22K, "C1712" WAS 75.					
	A	ORIGINAL RELEASE FOR PRODUCTION					



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

NOTES

QTY./UNIT	MODEL USED ON	ASSY. NO.
1	SMEA-1	

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

O-POSE — LIST OF MATERIAL

THE TECHNICAL MATERIEL CORP.
MAMARONECK, NEW YORK

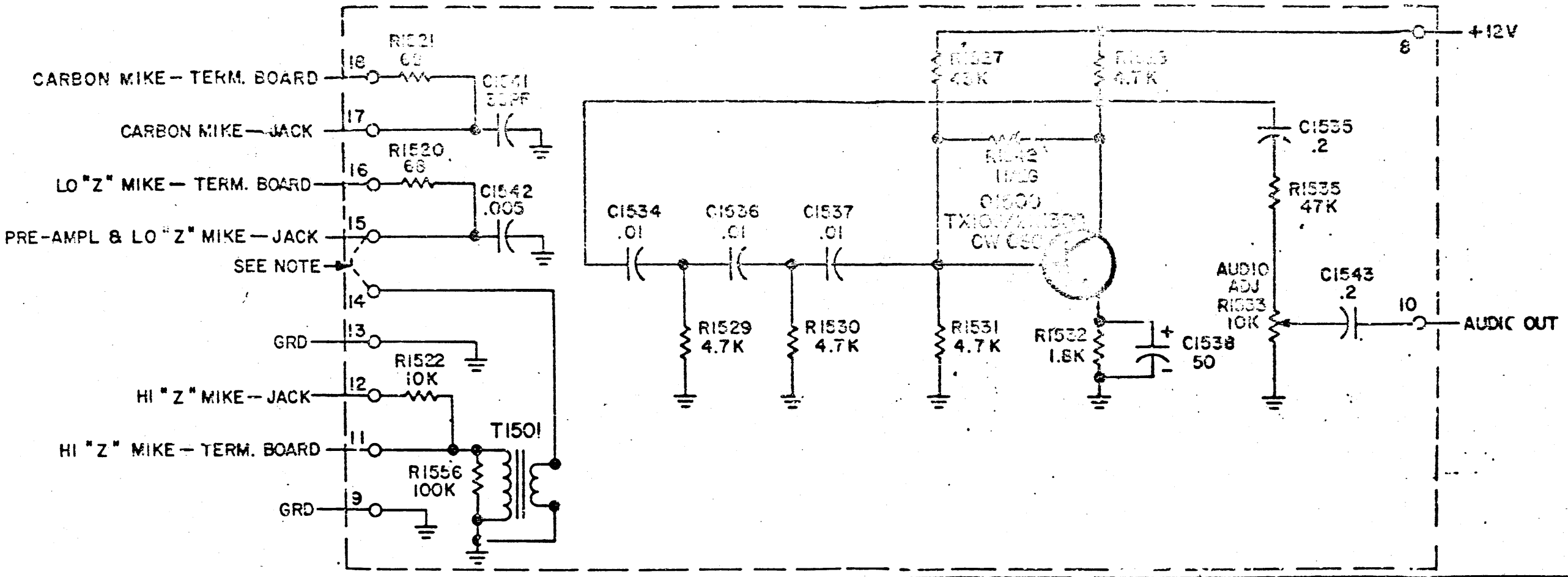
DIAGRAM, SCHEMATIC
TRANSMITTER AUDIO BOARD

DRAWN G.D.L 6-7-65

CK 1171 Ø

LAST SYMBOLS	MISSING SYMBOLS
C1543	C1501 THRU C1533
C1500	C1539, C1540
R1556	R1501 THRU R1519
T1501	R1523 THRU R1526
	R1534 THRU R1541
	R1543 THRU R1553

CK1172



NOTE:

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

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

QTY/UNIT	MODEL/ASSEMBLY	ASSY. NO.
1	SMEA-1	A3278-5

SCALE — CODE

NOTES

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

MATERIAL — FINISH

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES AND INCLUDE CHEMICALLY APPLIED OR PLATED FINISHES
TOLERANCES — FRACTIONS — DECIMALS — ANGLES

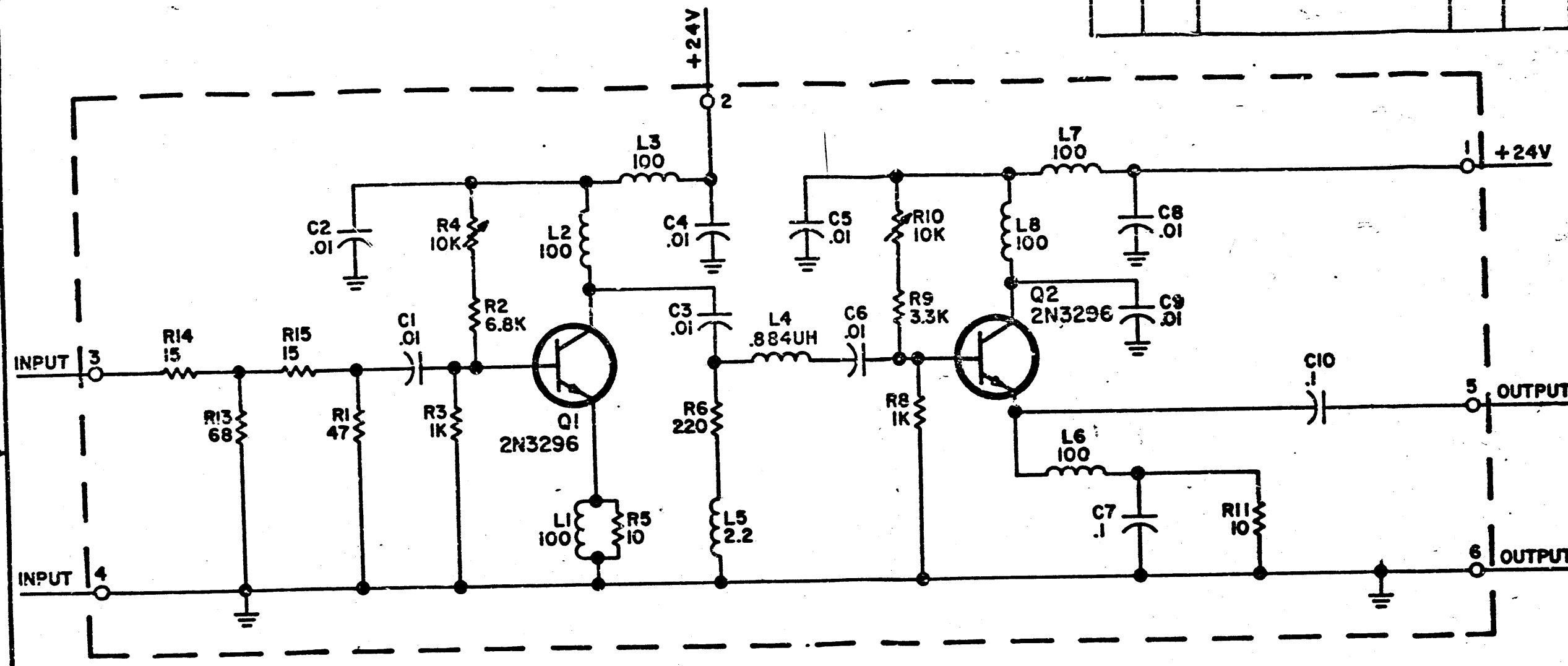
THE TECHNICAL MATERIEL CORP.
MAMARONECK, NEW YORK

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

DRAWN H. AUSTIN	DATE 8-25-65	FINISH	DATE
CHECKED	DATE		
ELECT. DES.	DATE	CK1172	

REMOVED NO. 4 3M

REVISIONS							
ZONE	LTR	DESCRIPTION	DATE	E.M.N. NO.	DRAFT	CHKD	APPD
	X1	R7 DELETED	12-13-67	—	WHW		
	X2	R12 DELETED	2-8-67	X2	LAK		
	Ø	036. RELEASE FOR PRO	3/6/67	Ø	LAK		



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	R7
L8	R12
Q2	
R15	

REF: PCB-48

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

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

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

DECIMALS: X ± .06, XX ± .01, XXX ± .005 — FRACTIONS: 1/64 — TOLS. — ANGLES: 0° 30'

MATERIAL

FINISH

MECH. DES.		DATE 2/15/67
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

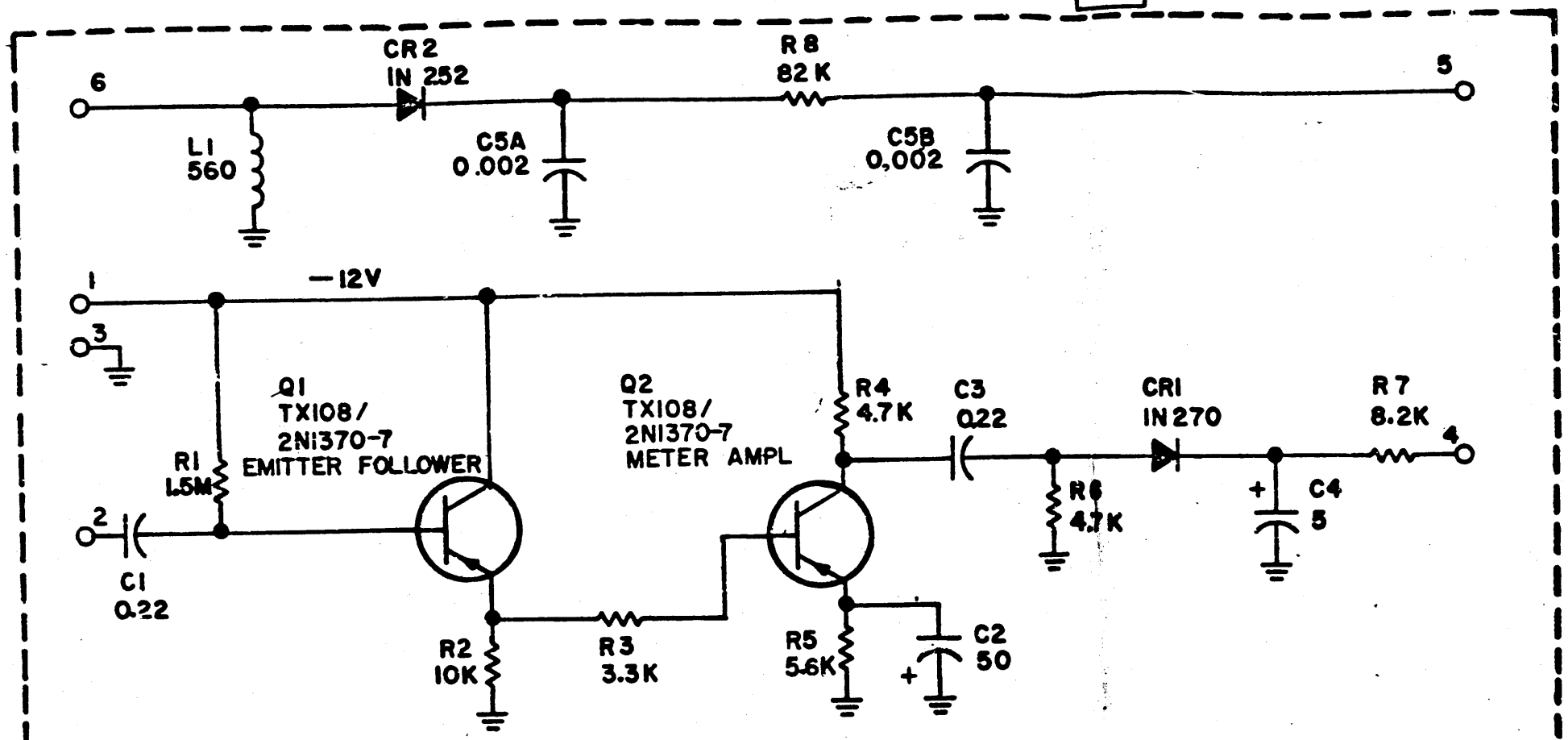
SIZE	CODE IDENT. NO.	DWG NO.	ISSUE
B	82679	CK1275	Ø

SCALE — SHEET OF

FCI-10-170 (10-66)

CK1169

REVISIONS						
SYM	DESCRIPTION	DATE	E.M.N. NO.	DRAFT	CHKD	APPD
X	EXPERIMENTAL RELEASE	8-19-66	X	RME		
Ø	ORIGINAL RELEASE FOR PRODUCTION	2-16-67		L.A.K.		



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.

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

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

MATERIAL

FINISH

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

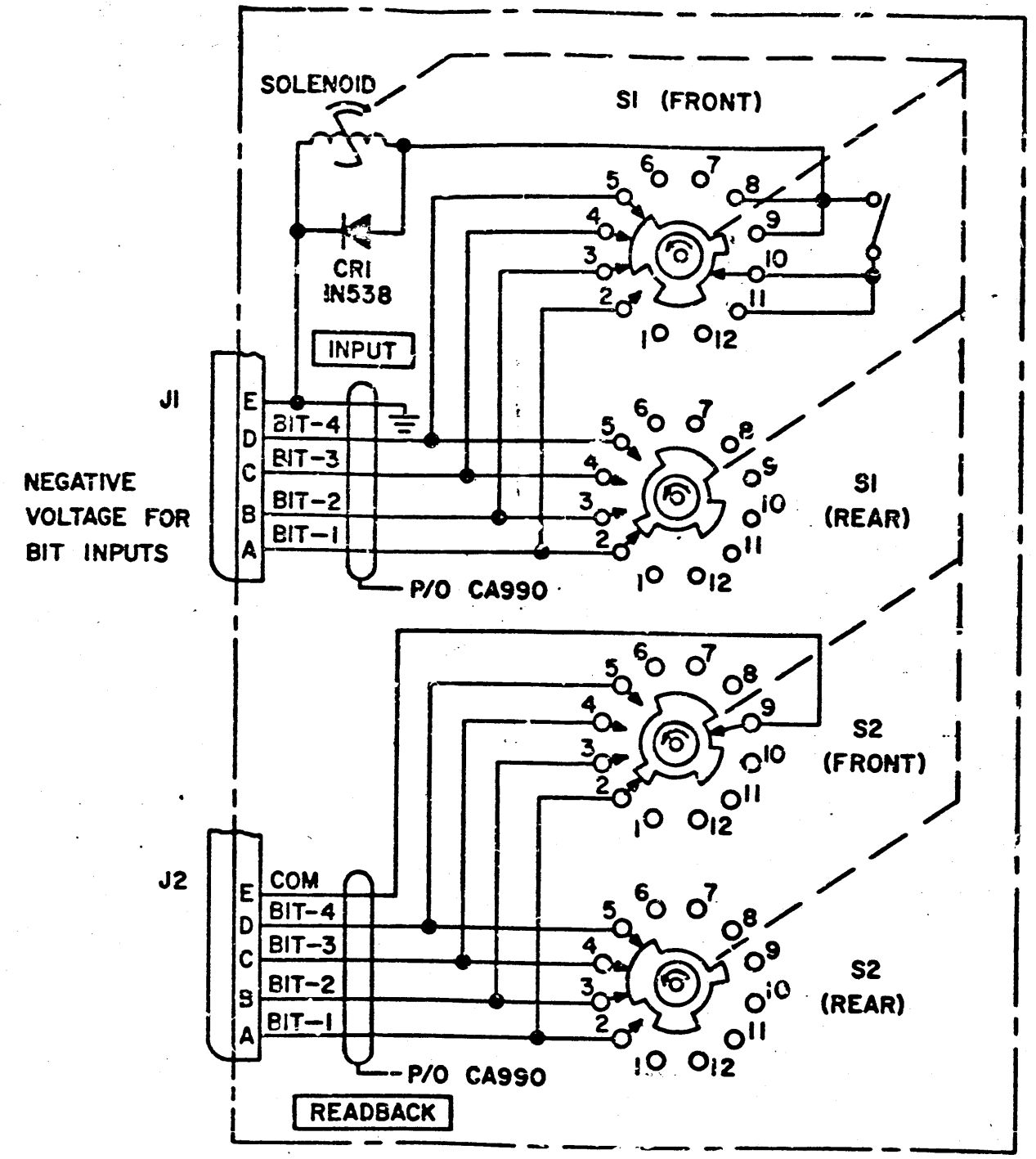
DECIMALS: X ± .05, XX ± .01, XXX ± .005
TOLERANCES
FRACTIONS ± 1/64
ANGLES ± 0° 30'

THE TECHNICAL MATERIEL CORP.
MAMARONECK, NEW YORK

TITLE: DIAGRAM, SCHEMATIC
P/C METER BOARD

DRAWN RME	DATE 8-4-66	FINAL APPROVAL	DATE 2/15/67
CHECKED	DATE		
ELECT. DES.	DATE	CK1169	Ø
MECH. DES.	DATE	SHEET	REV. LTR.

TMC FORM 109



Ø	REVISIONS						
	LTR	DESCRIPTION	DATE	E.M.N. NO.	DRAFT	CHKD	APPD
CK1246	X1	REVERSED DIRECTION OF NO. SERIES ON SWITCHES & RELOC WAFER 1 POS. C.C.W.	3-2-67		RME		
	Ø	ORIGINAL RELEASE FOR PRODUCTION	3-2-67		RME		

NOTES

1	SMEC-1	AX541-3
QTY./UNIT	MODEL USED ON	ASS'Y. NO.

SCALE | CODE

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

DECIMALS: .X ± .06; .XX ± .01; .XXX ± .005
TOLERANCES
FRACTIONS ± 1/64
ANGLES ± 0° 30'

REQ'D.	ITEM	PART NUMBER	DESCRIPTION	SYMBOL

LIST OF MATERIAL

MATERIAL

FINISH

THE TECHNICAL MATERIEL CORP.
MAMARONECK, NEW YORK

TITLE: DIAGRAM, SCHEMATIC

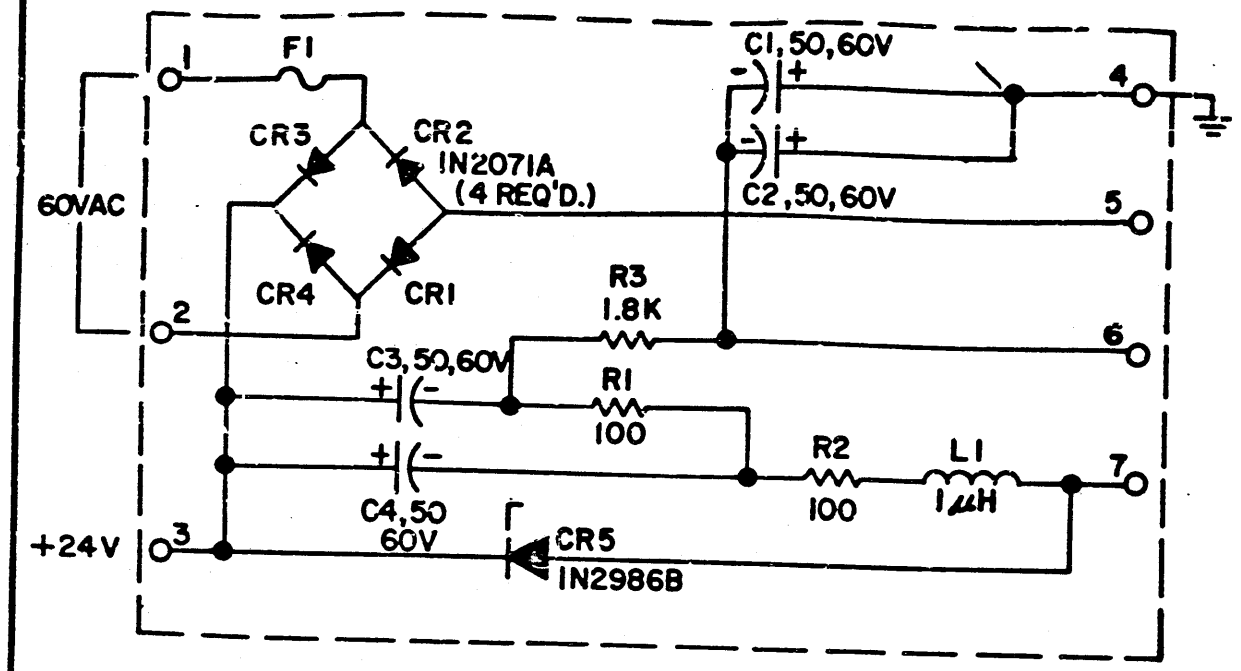
DRAWN WHW	DATE 11-23-66	FINAL APPROVAL	DATE 3/2/67
CHECKED	DATE 11-[illegible]		
ELECT. DES.	DATE	CK1246	Ø
MECH. DES.	DATE	SHEET	REV. LTR.

FORM 169

REPROVEL NO. 440H

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

CK1263 | Ø



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.
Ø	ORIGINAL RELEASE-S.F. FOR PRODUCTION	2-16-67		LAK		
X	EXPERIMENTAL RELEASE	12-13-66		HLA		

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'

SCALE

CODE

REQ.	ITEM	PART NO.	DESCRIPTION	SYMBOL
		STOCK SIZE	THE TECHNICAL MATERIEL CORP. MAMARONECK. NEW YORK	
		MATERIAL	DIAGRAM, SCHEMATIC POWER SUPPLY	
		TYPE & TEMPER / HEAT TREAT. SPEC.	H. AUSTIN / DRAWN / CHECKED / FINAL APPROVAL	
		FINISH & SPEC. NO.	ELEC. DES. APP. / MECH. DES. APP.	CK1263 Ø

TMC FORM 908-A

REPROVEL NO. 440H