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Cobra 3GTL and 6GTL Service Manual

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SERVICE MANUAL

SERVICE MANUAL

COBRA 3GTL/6GTL
SOLID STATE
HAND HELD TRANSCEIVERS



Cobra Communications Product Group
DYNASCAN CORPORATION
6460 W. Cortland Street
Chicago, Illinois 60635

494-100-9-001

WARNING

ALL TRANSMITTER ADJUSTMENT OTHER THAN THOSE SUPPLIED BY THE MANUFACTURER AS FRONT PANEL OPERATING CONTROLS, MUST BE MADE BY, OR UNDER THE SUPERVISION OF, THE HOLDER OF AN FCC-ISSUED 1st OR 2nd CLASS RADIO OPERATOR LICENSE.

REPLACEMENT OR SUBSTITUTION OF CRYSTALS, TRANSISTORS, REGULAR DIODES OR OTHER PARTS OF THIS UNIQUE NATURE, WITH PARTS OTHER THAN THOSE RECOMMENDED BY DYNASCAN, MAY CAUSE VIOLATION OF THE TECHNICAL REGULATIONS OF PART 95 OF THE FCC RULES, OR VIOLATION OF THE TYPE ACCEPTANCE REQUIREMENTS OF PART 2 OF THE RULES.

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Cobra 3GTL Specifications

GENERAL

Channels	3 (1 channel [14] supplied with transmit and receive crystals; 2 other channels optional).
Frequency Range	26.965 to 27.405 MHz.
Frequency Control	Crystals (transmit and receive).
Frequency Tolerance	0.005%
Operating Temperature Range	-10° F to +120° F.
Microphone	Built-in; condenser type.
Input Voltage	8 alkaline or standard type (1.5 volts) "AA" batteries or 10 rechargeable nickel-cadmium batteries (1.2 volts), "AA" size.
Size	9¼" H x 3" W x 2½" D.
Weight	2 pounds.
Antenna	Telescopic.
Semiconductors	16 transistors, 10 diodes, 1 integrated circuit.

TRANSMITTER

Power Input	2 watts.
Power Output	1.6 watts.
Spurious Ratio	-65 dB or better.
Current Drain at Maximum Output Power	550 mA maximum.

RECEIVER

Sensitivity at 10 dB S+N/N	0.5 μ V (nominal).
IF Rejection Ratio	80 dB typical.
Audio Output Power at 10% Distortion	0.5 watts.
Current Drain at Maximum Output Power	400 mA maximum.
Squelch	Adjustable; threshold less than 1 μ V.
Frequency Response	300-3000 Hz.
Distortion	Less than 7% at 2 watts.
External Speaker (Not supplied)	8 ohms; disables internal speaker when connected.

Cobra 6GTL

Specifications

GENERAL

Channels	6 (1 channel [14] supplied with transmit and receive crystals; 5 other channels optional).
Frequency Range	26.965 to 27.405 MHz.
Frequency Control	Crystals (transmit and receive).
Frequency Tolerance	0.005%
Operating Temperature Range	-10°F to +120°F.
Microphone	Built-in; condenser type.
Input Voltage	8 alkaline or standard type (1.5 volts) "AA" batteries or 10 rechargeable nickel-cadmium batteries (1.2 volts), "AA" size.
Size	9¼" H x 3" W x 2¼" D.
Weight	2 pounds.
Antenna	Telescopic with loading coil.
Semiconductors	15 transistors, 10 diodes, 1 integrated circuit.

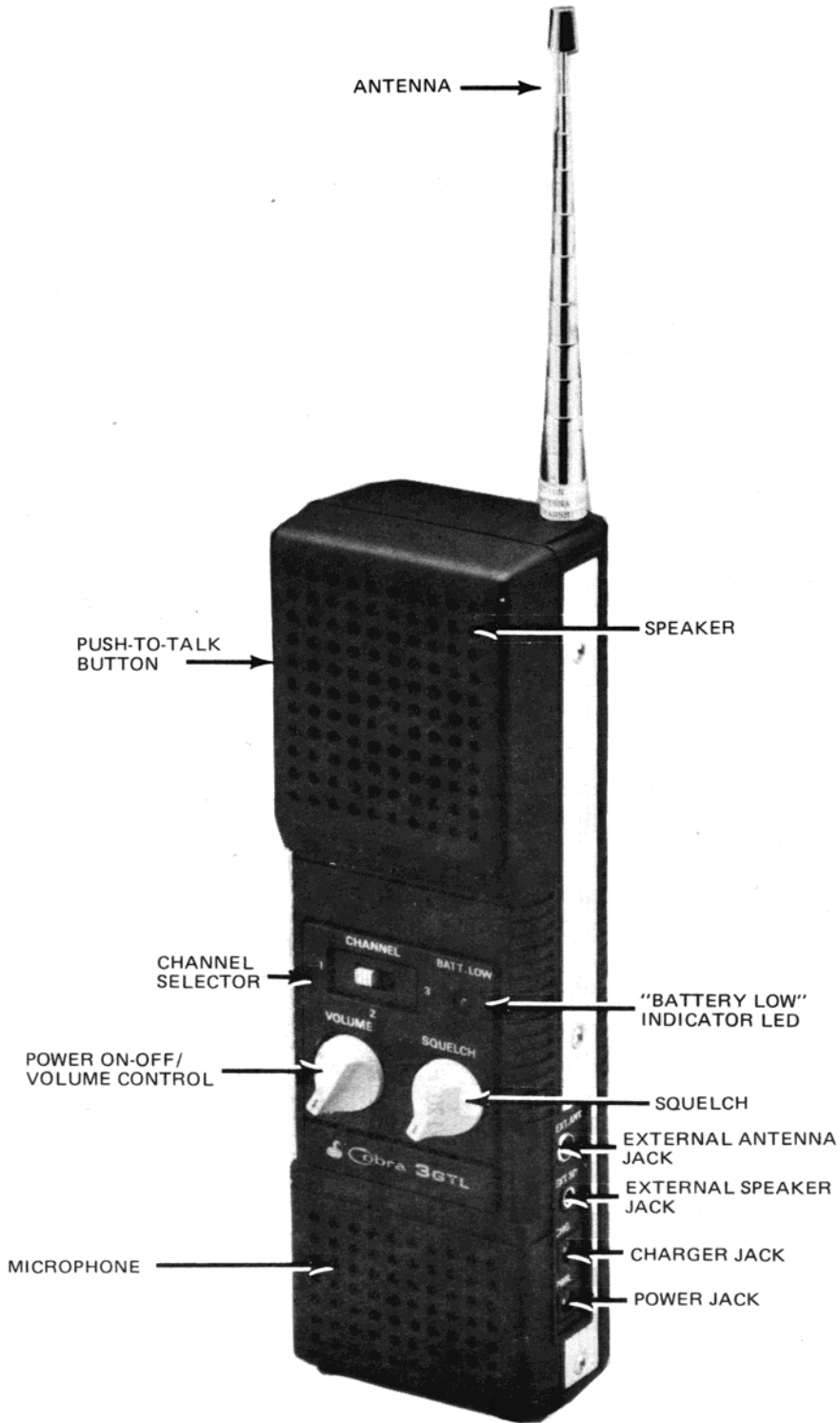
TRANSMITTER

Power Input	5 watts.
Power Output	4 watts.
Spurious Ratio	-65 dB or better.
Current Drain at Maximum Output Power	1000 mA maximum.

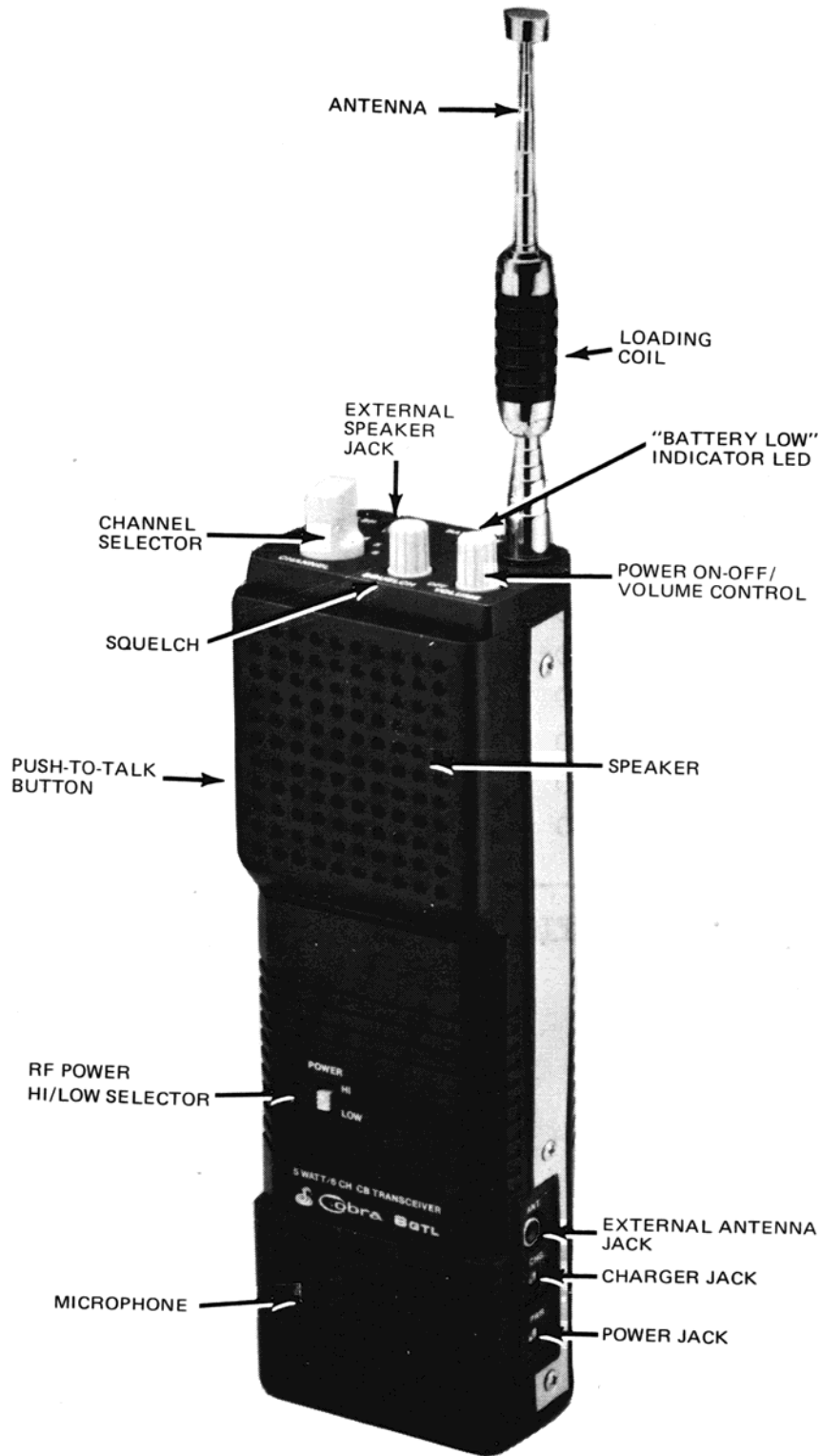
RECEIVER

Sensitivity at 10 dB S+N/N	0.5 μ V (nominal).
IF Rejection Ratio	80 dB typical.
Audio Output Power at 10% Distortion	0.5 watts.
Current Drain at Maximum Output Power (DC)	400 mA maximum.
Squelch	Adjustable; threshold less than 1 μ V.
Frequency Response	300-3000 Hz.
Distortion	Less than 7% at 2 watts.
External Speaker (Not supplied)	8 ohms; disables internal speaker when connected.

3GTTL



6GTL



CRYSTAL FREQUENCIES FOR COBRA 3/6 GTL

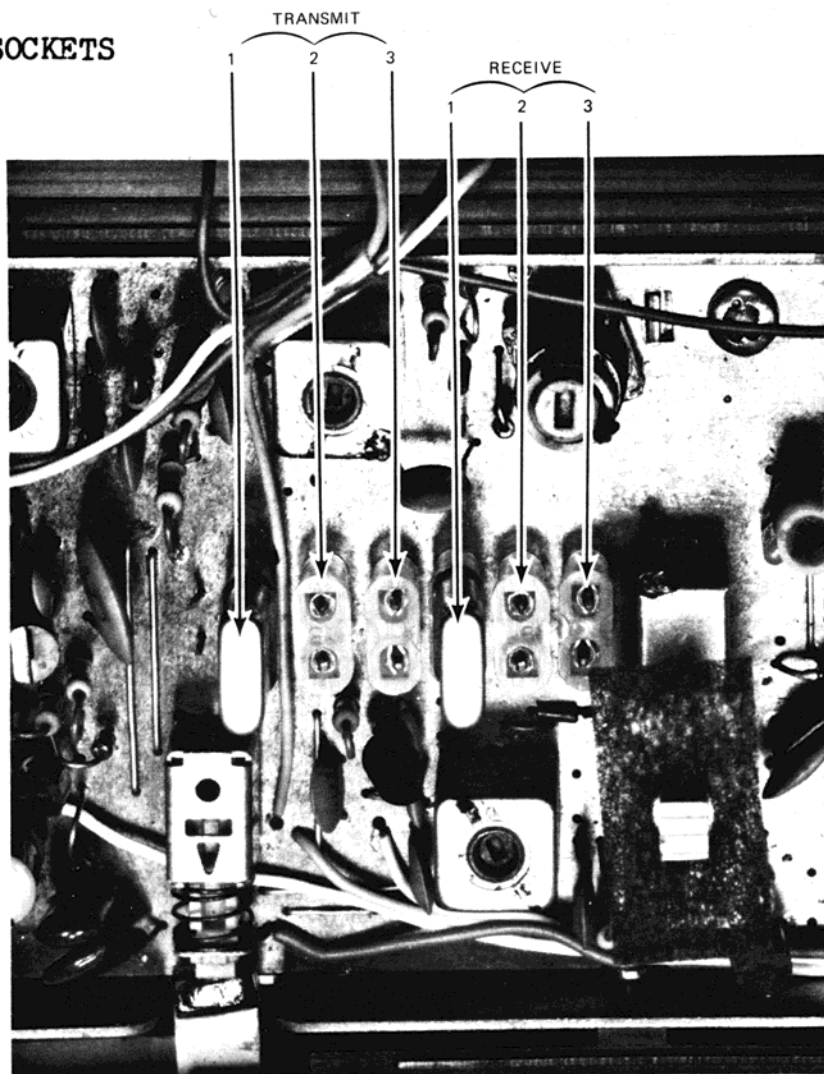
<u>CHANNEL</u>	<u>TX FREQUENCY</u>	<u>RX FREQUENCY</u>	<u>CHANNEL</u>	<u>TX FREQUENCY</u>	<u>RX FREQUENCY</u>
1	26.965 MHz	26.510 MHz	21	27.215 MHz	26.760 MHz
2	26.975	26.520	22	27.225	26.770
3	26.985	26.530	23	27.255	26.800
4	27.005	26.550	24	27.235	26.780
5	27.015	26.560	25	27.245	26.790
6	27.025	26.570	26	27.265	26.810
7	27.035	26.580	27	27.275	26.820
8	27.055	26.600	28	27.285	26.830
9	27.065	26.610	29	27.295	26.840
10	27.075	26.620	30	27.305	26.850
11	27.085	26.630	31	27.315	26.860
12	27.105	26.650	32	27.325	26.870
13	27.115	26.660	33	27.335	26.880
14	27.125	26.670	34	27.345	26.890
15	27.135	26.680	35	27.355	26.900
16	27.155	26.700	36	27.365	26.910
17	27.165	26.710	37	27.375	26.920
18	27.175	26.720	38	27.385	26.930
19	27.185	26.730	39	27.395	26.940
20	27.205	26.750	40	27.405	26.950

CRYSTAL SPECIFICATIONS FOR 3/6 GTL

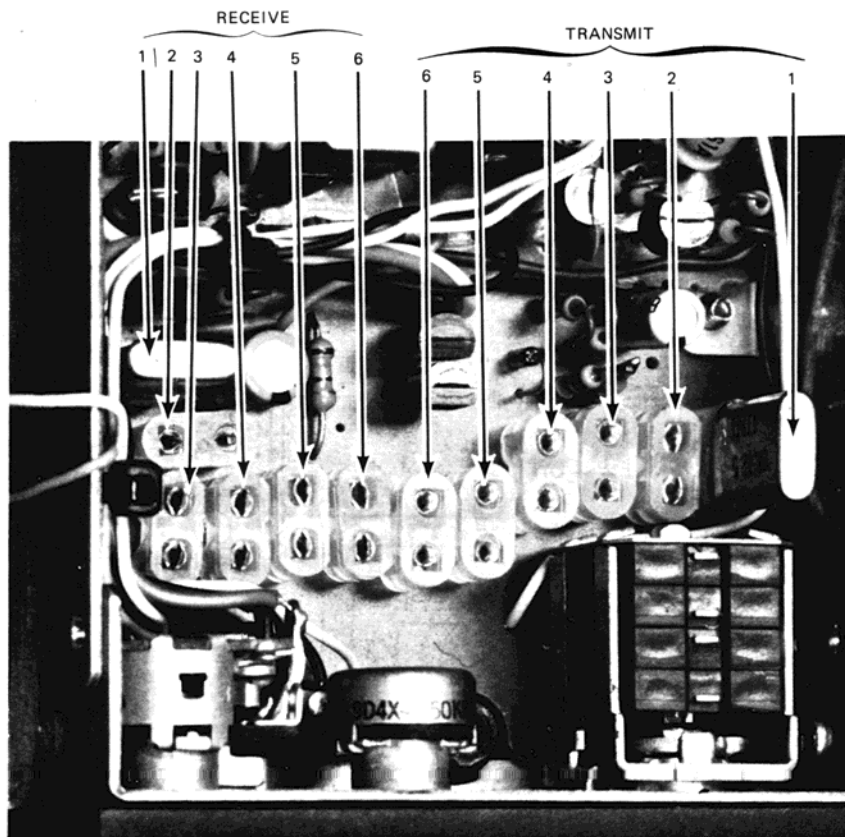
- | | |
|---|---|
| 1. Frequency Range | 26.965 to 27.405MHz for transmit, (Chan. Freq. - 0.455) MHz for receive |
| 2. Holder | HC-25/U |
| 3. Mode | 3rd Overtone |
| 4. Load capacity TS-683/TSM | 32pF |
| 5. Rated Drive Level | 2.0 ± 0.4mW |
| 6. Equivalent Resistance | 35 ohms max. |
| 7. Frequency Tolerance at Room Temp. | ± 30 ppm |
| Center Freq. Drift over operating temp. range | ± 50 ppm |
| 8. Operating Temp. range | -10C to 50C |
| 9. Shunt Capacity | Less than 7pF |
| 10. Aging | Less than 5 ppm/yr. |
| 11. Insulation resistance | 500 Mohms min. |
| 12. Marking | Freq. in MHz to 3 decimal places Ch. # R or T (1R, 1T, - 4OR, 4OT) on top in place of Dynascan P/N Vendor Code & Date |

LOCATION OF CRYSTAL SOCKETS

3GTL



6GTL



ALIGNMENT OF RECEIVER SECTION

3GTL

1. Equipment Required

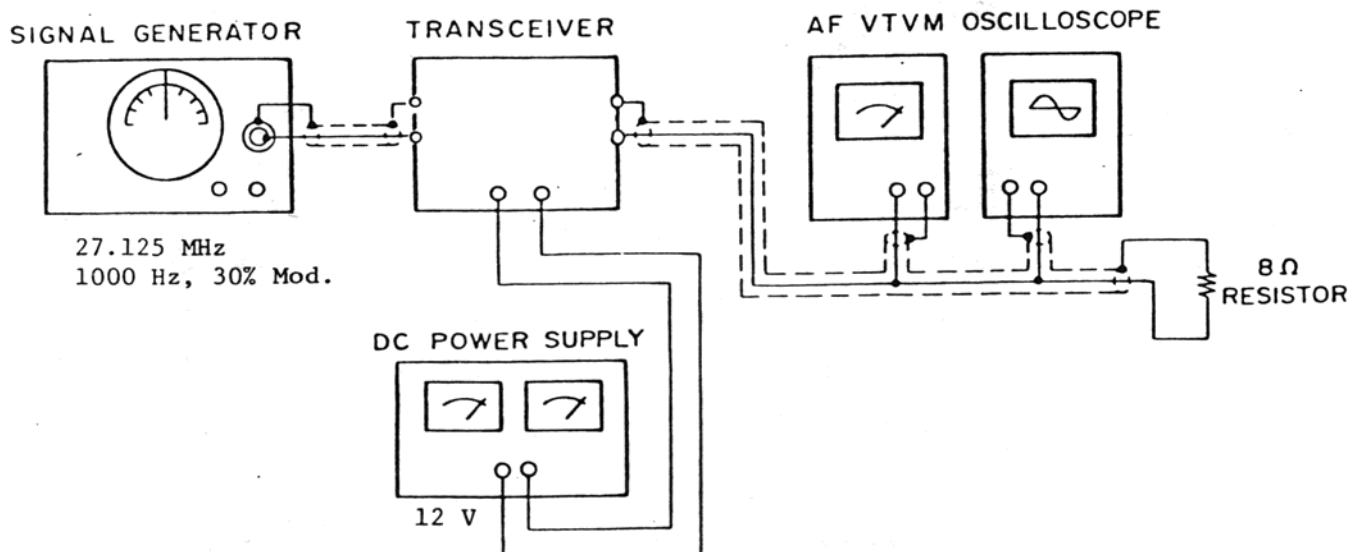
- a. Signal Generator
- b. VTVM
- c. 8 ohm Dummy Load

- d. Oscilloscope
- e. DC Power Supply

2. Procedure

STEP	SET UP	ADJUSTMENT	REMARKS
1	CH: 14 RX mode	L 2	Set the core to bottom. Adjust the level of SG to 2mV.
2	Same as Step 1	L 1, L 3 L 4, L 5	Adjust coils for maximum reading on VTVM.
3	Same as Step 1	L 1, L 2 L 4, L 5	Adjust the level of SG to 1 uV. Adjust for maximum reading on VTVM.
4	Same as Step 1	VR 3	Set the level of SG to 2mV, and squelch VR to full CW. Adjust VR 3 so that the AF signal will just appear on the Oscillo- scope.

RECEIVER TEST EQUIPMENT SETUP DIAGRAM



ALIGNMENT OF TRANSMITTER SECTION

3GTL

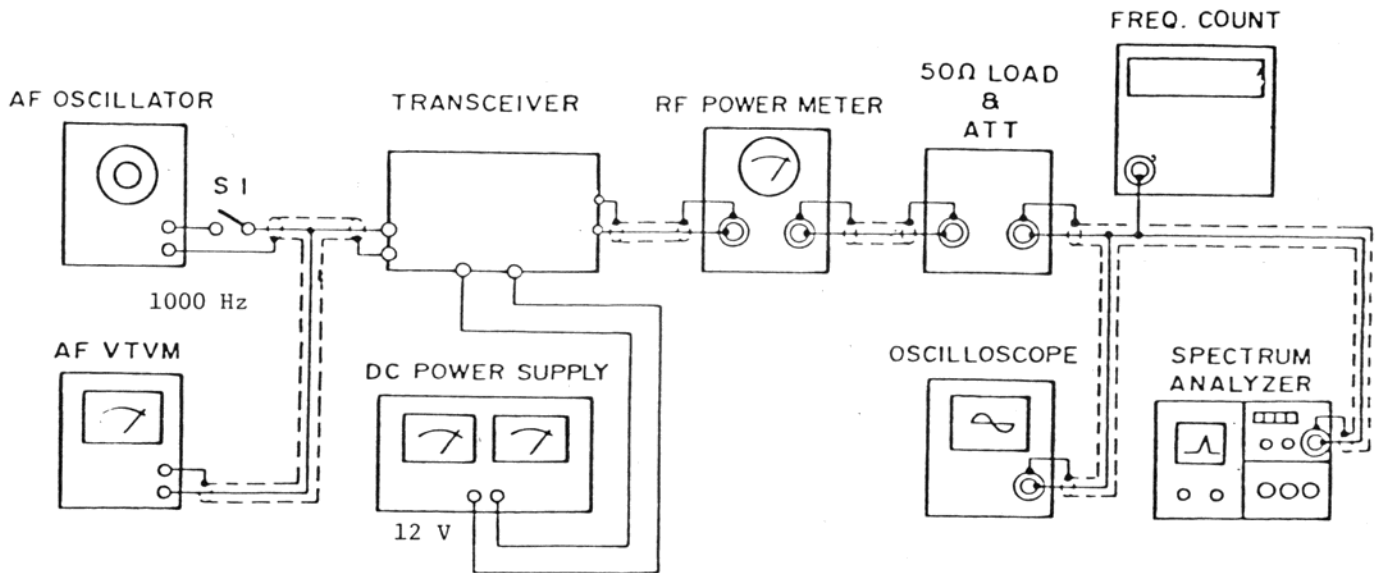
1. Equipment Required

- a. VTVM
- b. RF Output Power Meter
- c. AF Oscillator
- d. 50 ohm Load and Attenuator
- e. Frequency Counter
- f. Oscilloscope
- g. DC Power Supply
- h. Spectrum Analyzer

2. Procedure

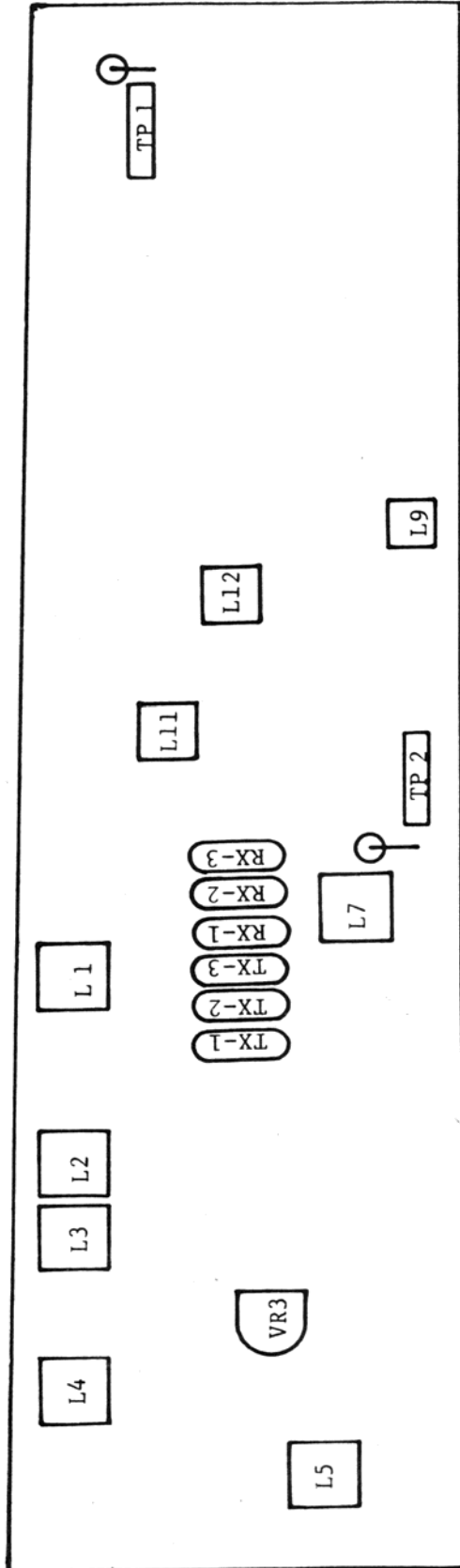
STEP	SET UP	ADJUSTMENT	REMARKS
1	CH: 14 TX mode S1: OFF	L 7	Adjust for maximum indication on Oscilloscope.
2	Same as STEP 1	L 9, L 12	Adjust for maximum reading on RF Power Meter.
3	Same as STEP 1	L 12	Adjust to obtain monimal 1.3W of RF Output Power.
4	Same as STEP 1	L 11	Adjust to show minimun 2'nd harmo- nic(54MHz) on Spectrum Analyzer.
5	CH: 14 TX mode S1: ON		Check that the modulated wave on Oscilloscope.

TRANSMITTER TEST EQUIPMENT SETUP DIAGRAM



ALIGNMENT LOCATION

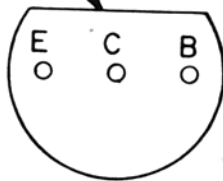
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TRANSISTOR

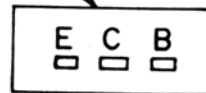
NOTE: B: BASE
E: EMITTER
C: COLLECTOR

MARKING
SIDE



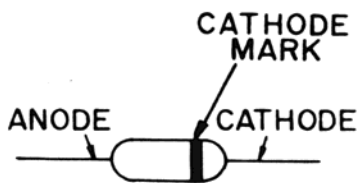
2SA733P
2SC945-AQ
2SC1674-L
2SC1675-L

MARKING
SIDE

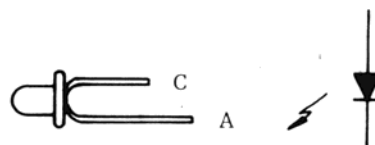


2SC2028 B/20

DIODE



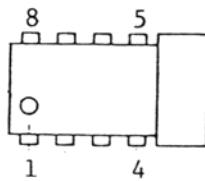
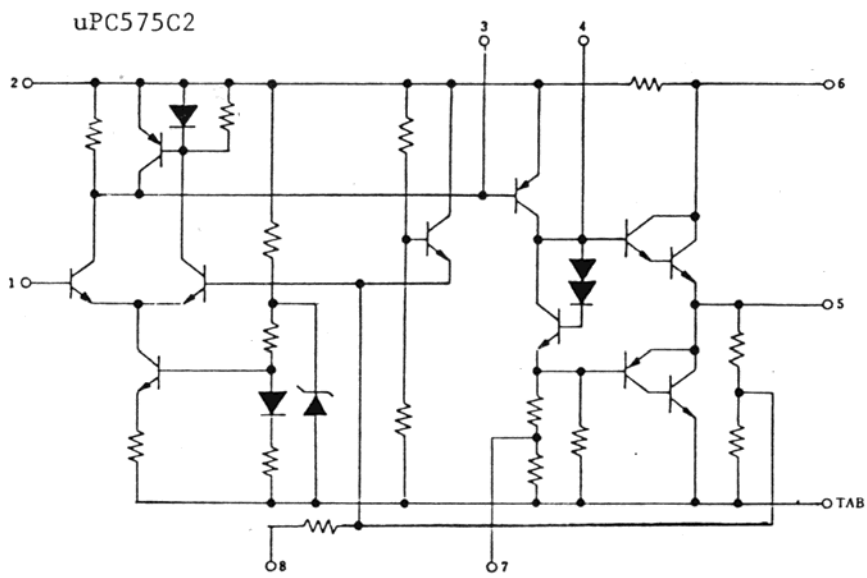
SR1K-1
1S1555
RD9.1EB3
RD9.1EB2



T1R-124

IC PIN OUT

3GTL



WIRING DIAGRAM

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