

1-658

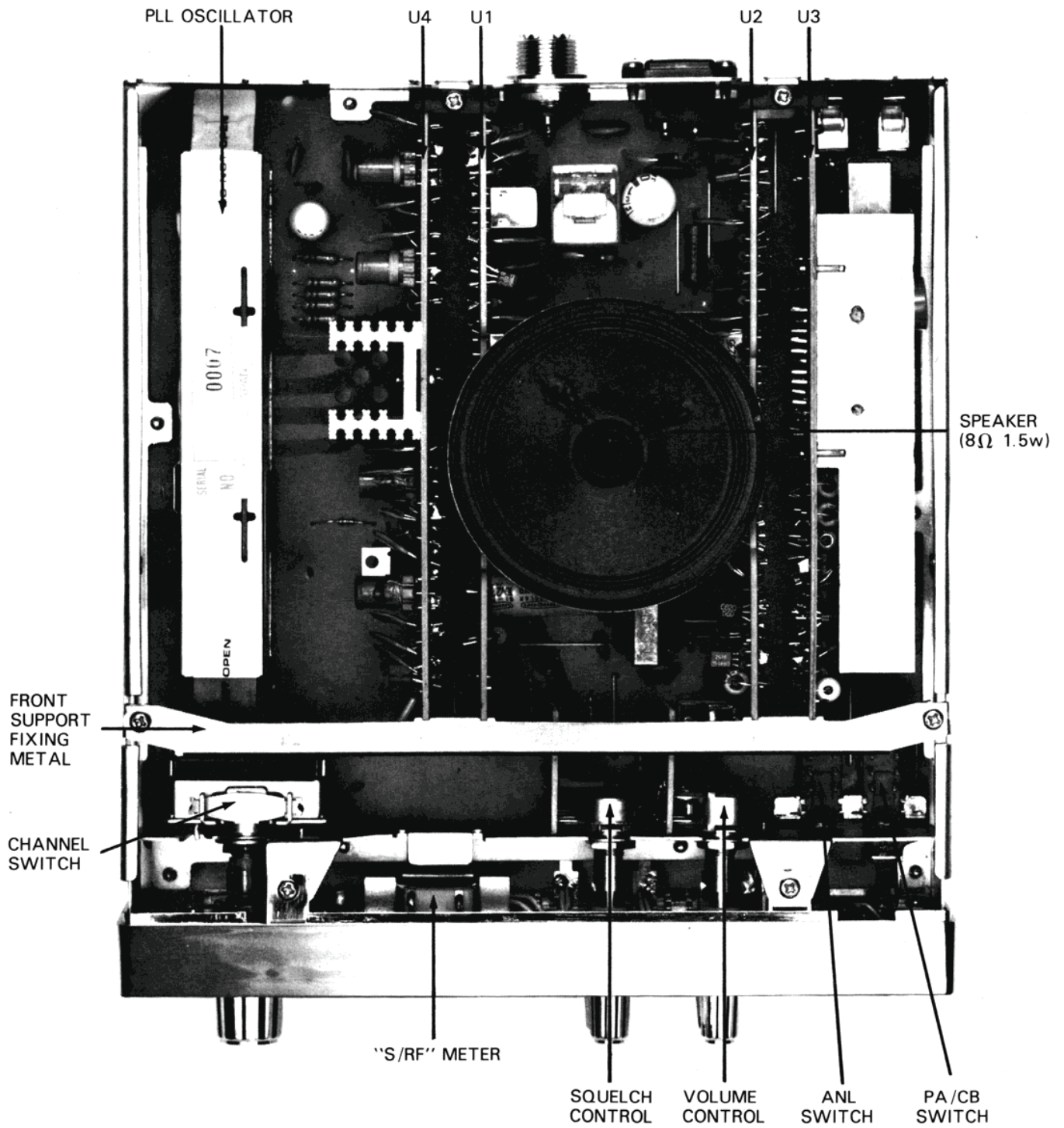


FIG 1

1-658

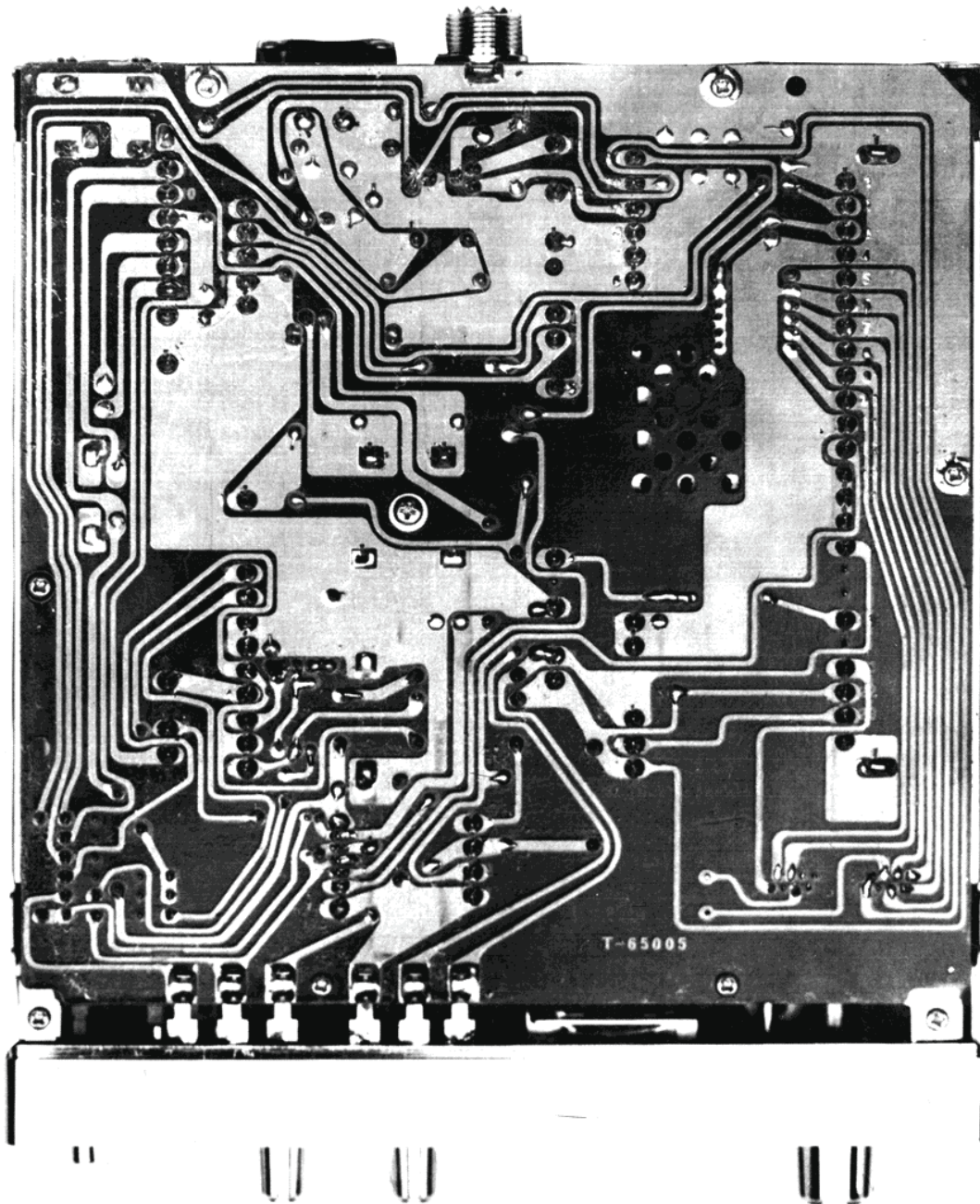
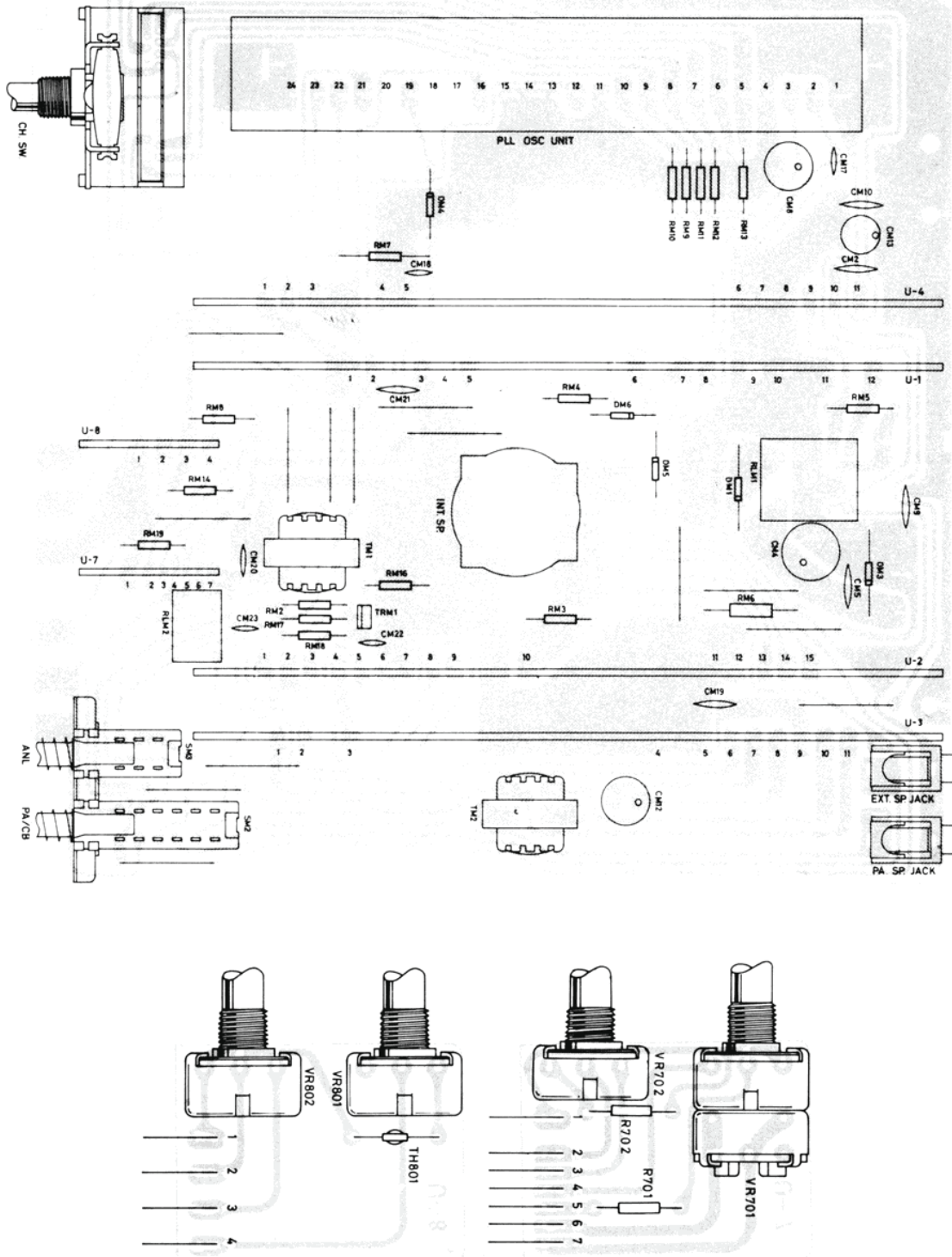
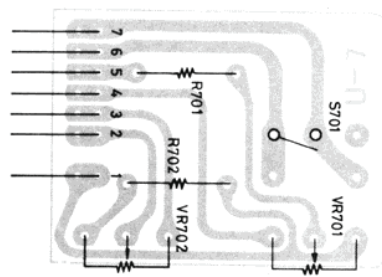
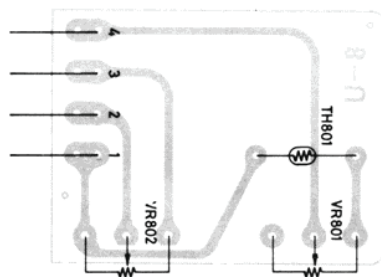
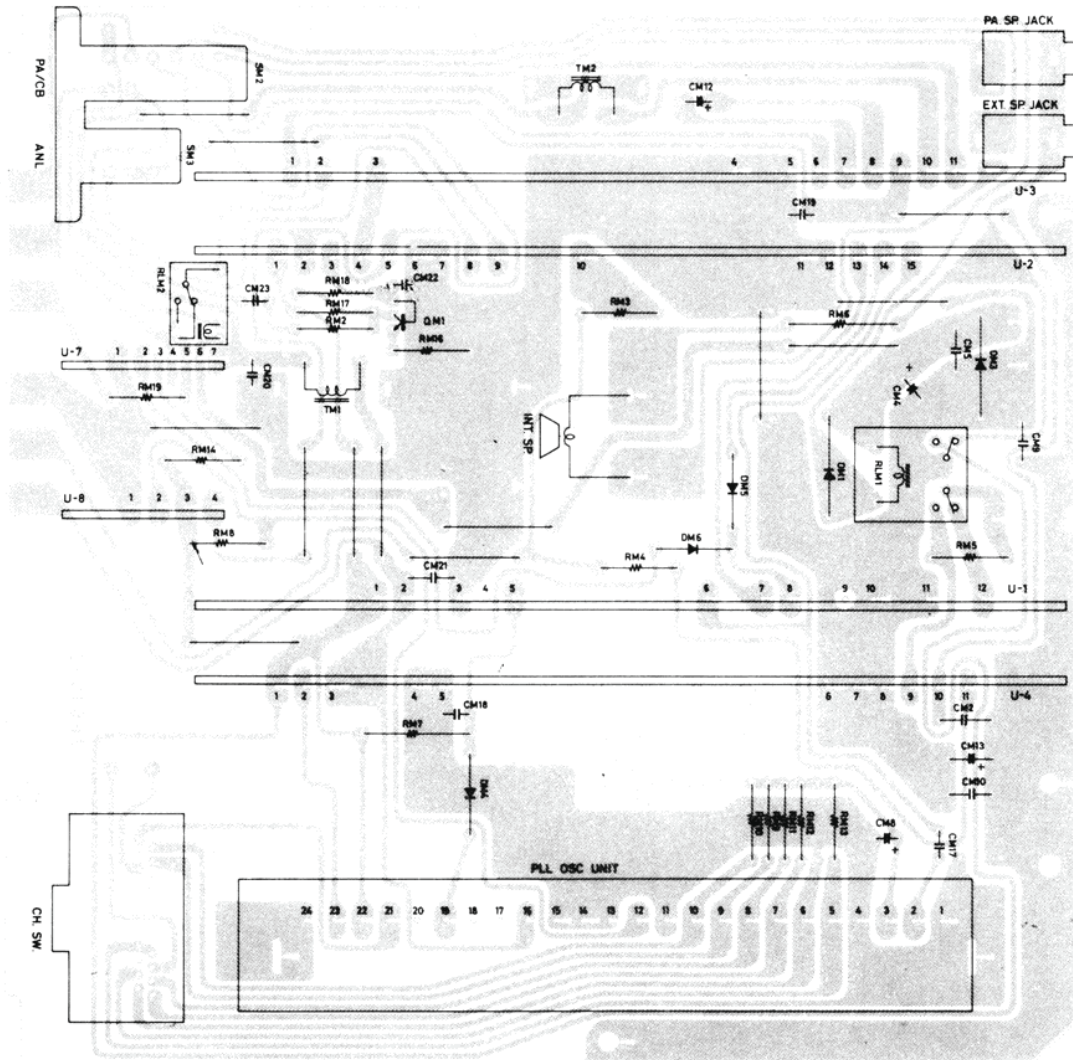


FIG 2

TOP VIEW 1-658

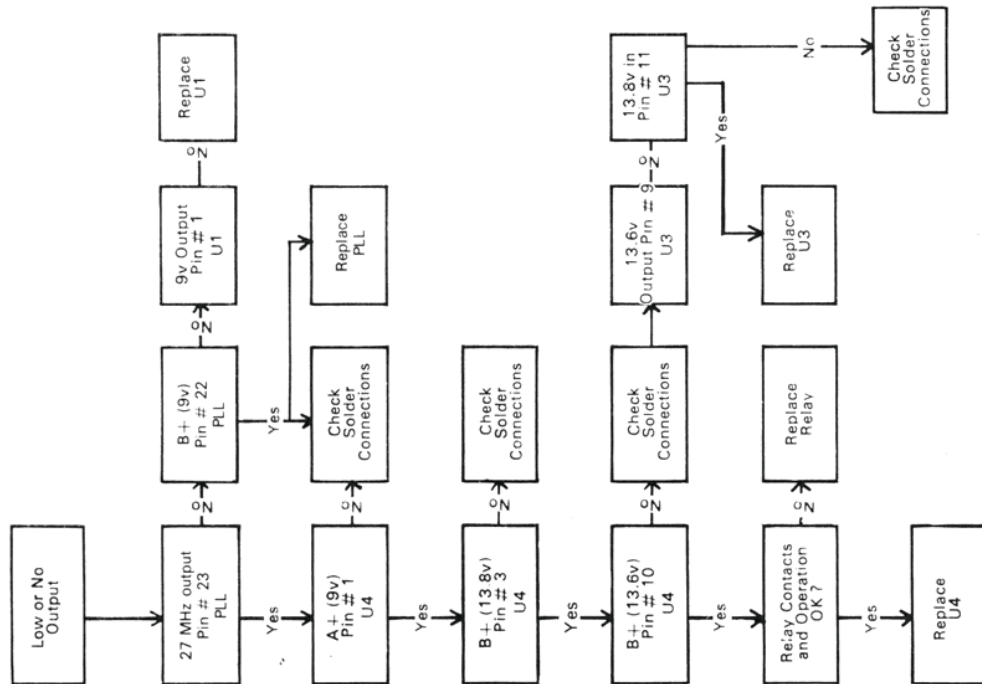


# BOTTOM VIEW 1-658

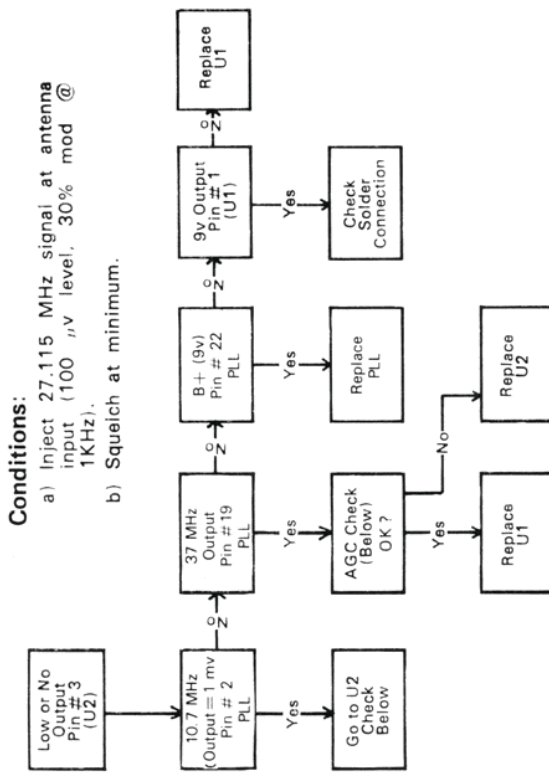


# TROUBLE-SHOOTING CHART

## Transmitter



## Receiver



### Conditions:

- Inject 27.115 MHz signal at antenna input (100  $\mu$ v level, 30% mod @ 1KHz).
- Squelch at minimum.

## AGC CHECK

### Conditions:

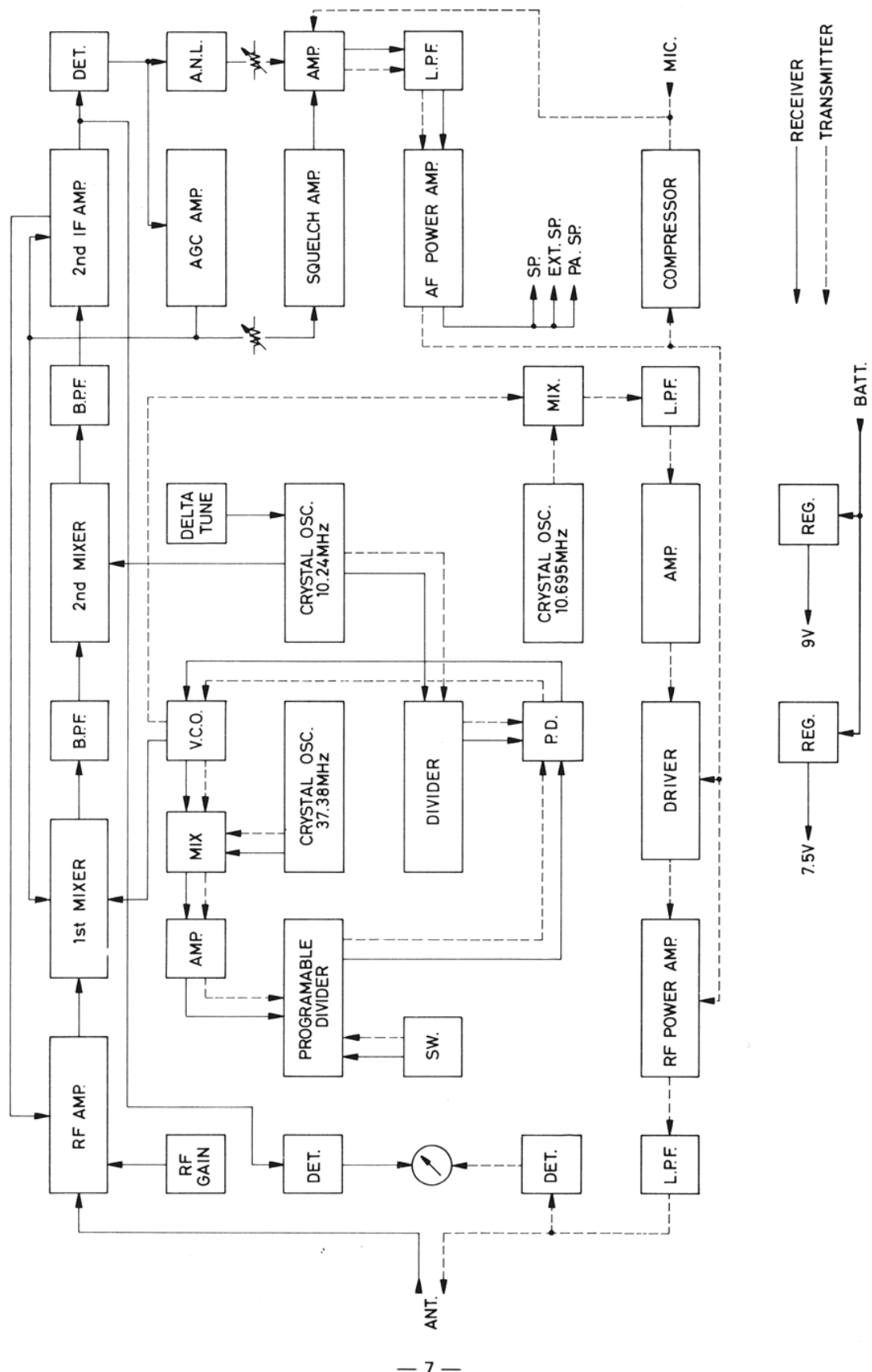
- Inject 455 KHz (1mv) at pin 15 (U2), 30% mod @ 1KHz.
- Squelch at minimum.
- Disconnect pin 6 (U1), then apply power.
- Inject signal as per conditions above.
- Measure AGC voltage at pin 13 (U2) for the following generator settings:

P13v

1mv	.45
100 $\mu$ v	.54
10 $\mu$ v	1.25

## BLOCK DIAGRAM

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## I-658 Voltage Chart

		Vb (V)		Vc (V)		Ve (V)		
		RX	TX	RX	TX	RX	TX	
Q101	2SC1856	1.6	0	7.0	0	0.9	0	
Q102	2SC710C	1.2	0	7.9	0	0.7	0	
Q201	2SC711E	0.6	0	4.6	0	0	0	
Q202	2SC711E	1.2	0	2.1	0	0.6	0	
Q203	2SC711D	0.7	0	4.5	0	0	0	
Q204	2SA695D	4.5	0	0	0	5.1	0	
Q205	2SC620D	0.7	0	0	0	0	0	NO SQUELCH
		0.1	0	2.1	0	0	0	SQUELCH
Q206	2SC945Q	0.1	0	2.1	0	0	0	NO SQUELCH
		0.7	0	0.1	0	0	0	SQUELCH
Q207	2SC945Q	2.5	0	8.6	0	1.9	0	
Q301	2SB561B		0 <sup>*</sup> -0.5		—		0	<sup>*</sup> MIC INPUT LEVEL 0~100mV/600Ω
Q302	2SC711E	1.2	1.2	11.9	11.9	0.5	0.5	NO SQUELCH
		1.1	1.2	13.3	11.9	1.4	0.5	SQUELCH
Q401	2SC1908	2.1	1.8	13.8	13.8	8.6	1.3	
Q402	2SC1728		—	12.7	12.7		—	
Q403	2SC756A <sup>(2)</sup>		—	12.7	12.7		—	

PIN NO		1	2	3	4	5	6	7	8	9	10	11	
Q303	AN315	V 5.7	0	1.2	6.9	10.7	5.7	0	5.7	5.7	13.0	13.6	

# I-658 Alignment Instruction

## **RECEIVER**

- A. Inject at the ant. jack a 27.115MHz signal ( $\pm .002\%$ ; 30% modulation at 1KHz).
- B. Connect an audio voltmeter and oscilloscope across on 8 ohm load and plug into external speaker jack.

Test Equipment	Test Point	Adjust	Remarks
1. RF signal generator (low range to avoid audio saturation)	Inject at ant. jack	Channel sel to 13	_____
		T-101, T-102, T-201,	Max. output with vol. control at max, squelch control at min. output should be more than 500mw (2.0v/8 ohm) with gen. voltage at $1\mu\text{V}$ ; S & N/N= more than 10dB on all channels

## **AGC RESPONSE**

Set the output voltage of a signal generator at  $50000\mu\text{V}$  and adjust the volume control so that the voltmeter output is 500mW (2.0v/8 ohms). Then, lower the output voltage of the generator so that the voltmeter output is 10dB down. The output voltage of the signal generator should be under  $5\mu\text{V}$  at this time.

## **AUDIO POWER CHECK**

With a generator output of 1mV and squelch control at minimum, audio output should be more than 4W (5.7v/8 ohm) at maximum position of volume control.

## **TRANSMITTER**

- A. Power Supply — 13.8VDC.
- B. Use a suitable power meter, non-inductive dummy load and oscilloscope connected to antenna jack.

Test Equipment	Test Point	Adjust	Remarks
1. Power Meter	antenna jack	T-401, T-402, L-403, L-404,	Adjust for maximum output power
2. Freq. Counter	across dummy load	_____	Check all channels $\pm 800\text{Hz}$
3. A.F. Oscillator with AF voltmeter in shunt (1KHz 10mV)	Inject at mic input	_____	— 90% modulation on oscilloscope
		_____	Reduce AF oscillator output to 5mV; modulation $\geq 50\%$

## SPECIFICATIONS

### GENERAL

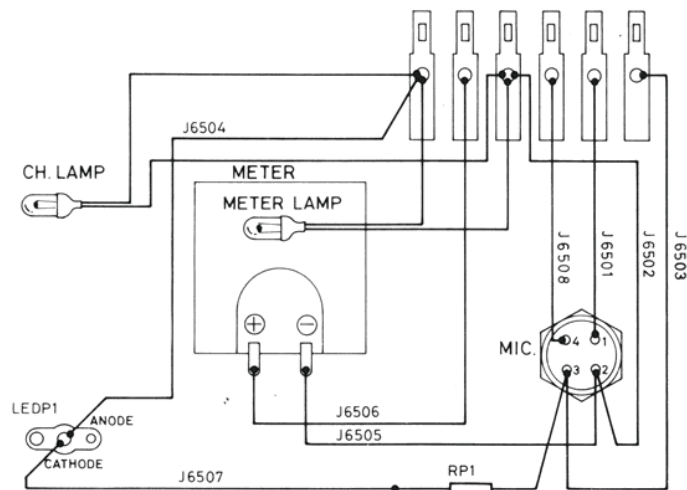
- |  |   |
|--|---|
| 1. Semiconductors                      | : 28 transistors, 23 diodes and 4 integrated circuits.<br>(3 CMOS IC'S)   |
| 2. Self Contained Speaker              | : 3 inch, 8 ohm voice coil.   |
| 3. Microphone                          | : Dynamic microphone with push-to-talk switch, 500 ohms.  |
| 4. Controls, Indicators and Connectors | : Volume control with power on-off switch.<br>: Variable Squelch Control.<br>: Channel Selector.<br>: Illuminated Channel Indicator.<br>: Variable Fine Tuning control.<br>: Variable RF Gain.<br>: Pushbutton A.N.L.<br>: Pushbutton PA-CB.<br>: Coaxial type antenna connector.<br>: Vol-U-Mike.<br>: External Speaker Jack.<br>: Public Address Speaker Jack.<br>: Microphone Connector. |
| 5. Power Supply                        | : 13.8 Volts DC (positive or negative ground).  |
| 6. Cabinet Description                 | : Plastic front with chrome plating and vinyl coated metal cabinet.   |
| 7. Dimensions                          | : 7-9/16"(W) × 2-3/8"(H) × 8-13/16"(D).   |

### RECEIVER

- |  |                                   |
|--|-----------------------------------|
| 1. Frequency Range (MHz)                                 | : 26.965~27.255.                  |
| 2. Sensitivity   | : 0.5 Microvolts for 10db S+N/N.  |
| 3. Selectivity   | : 5KHz minimum at 6db down.       |
| 4. Adj. Channel Rejection                                | : More than 60db.                 |
| 5. Audio Power output at 8 ohm                           | : More than 4W at 10% distortion. |
| 6. Audio fidelity<br>(1KHz=0db, 6 db down)               | : 400Hz~2,000Hz.                  |
| 7. A.G.C. figure of merit<br>(input 94db for 10db range) | : More than 80db.                 |
| 8. Squelch sensitivity<br>(Thres-hold)                   | : 0.3~500 Microvolts.             |
| 9. Spurious Rejection                                    | : 55db or more.                   |

### TRANSMITTER

- |                          |                   |
|--------------------------|-------------------|
| 1. Frequency Range (MHz) | : 26.965~27.255.  |
| 2. RF Output Power       | : 4W average.     |
| 3. Modulation Capability | : 100%.           |
| 4. Spurious Suppression  | : More than 50db. |
| 5. Frequency Tolerance   | : ±0.005%.        |



## **1-658 SERVICE NOTES**

1. After localizing a defective module, it will be necessary to remove the module front support metal before the module can be extracted (see Figure 1).
2. Take particular care in desoldering and resoldering on the main chassis. Engineering tests indicate an average of five solderings before damage results to the foil patterns.
3. If it becomes necessary to remove boards U1 or U2, it is also necessary to remove the entire speaker assembly on some models.
4. The PLL oscillator module is not designed as a field-serviceable unit. Parts will not be made available, so please do not attempt repair. Return defective modules for replacement.