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## CHAPTER 4 — REALIGNMENT PROCEDURES FOR MODELS 681A, 681X, 682A, and 682X FOLLOWING MODIFICATION

### General

These procedures must be followed to properly align the Hy-Gain Ia and IIa transceivers (Models 681A, 681X, 682A, and 682X). Alignment should not be undertaken unless the technician has adequate test equipment and a full understanding of the circuitry of the transceiver.

**IMPORTANT:** Tuning adjustment of this transceiver "shall be made by or under the immediate supervision and responsibility of a person holding a first or second-class commercial radiotelephone operators license," as stipulated in Part 95.97 (b) of the FCC Rules and Regulations.

The procedures are divided into two main sections: Receiver Alignment and Transmitter Alignment. See *Equipment* below for a complete list of recommended equipment. These procedures assume that voltages are present at all points of the unit. If not, troubleshoot before continuing.

**NOTE:** The ferrite cores in the tuning coils are easily chipped or broken. Always use care when inserting an alignment tool in the tuning coil: insert it straight into the core.

### Recommended Equipment

The following tools and equipment are recommended for use in aligning the models noted above.

Audio Signal Generator, 1 kHz

AC VTVM, 1 mV measurable

DC Ampere Meter, 2A

Variable Regulated Power Supply, DC 8-15V, 2A or higher

Frequency Counter, 0 to 40 MHz, high input impedance type

VTVM with RF probe

Oscilloscope, 30 MHz, high input impedance

RF wattmeter and 50 ohm, 5W dummy load

Standard RF signal generator, 27 MHz CB band

Speaker dummy resistor, 8 ohm, 5W

VOM 20 kohm V

All test equipment should be properly calibrated.

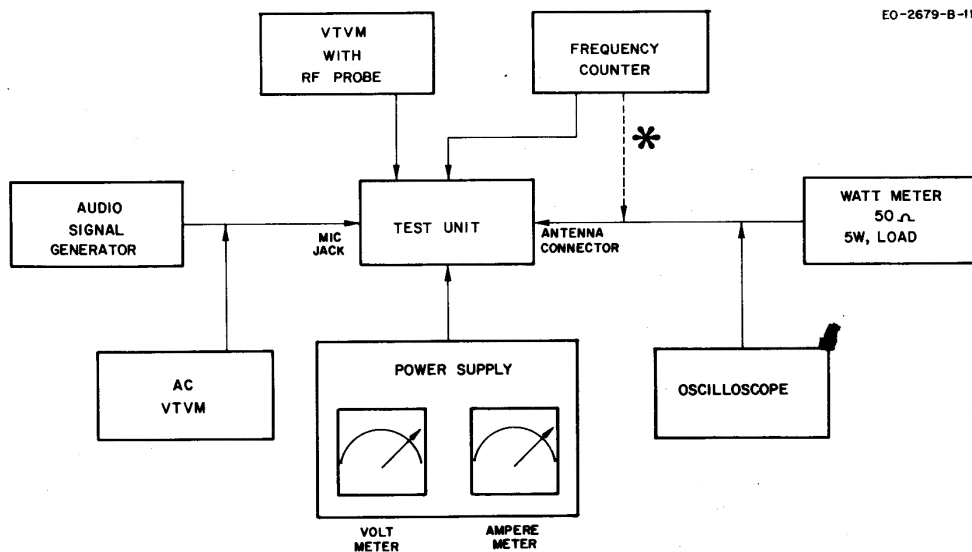
**NOTE:** Test voltage is 13.8 VDC unless otherwise specified.

### Transmitter Alignment Procedures

#### **Equipment Set-Up**

Refer to figure 4-4 for the location of components to be adjusted for transmitter alignment.

Connect all test equipment as shown below.



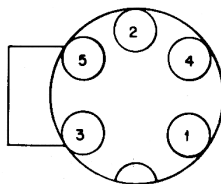
EO-2679-B-111

**Figure 4-1. Equipment Set-Up, Transmitter Alignment**

**\*NOTE:** See figure 4-2 for connection of the frequency counter and dummy load.

To set the transceiver to the transmit mode without the microphone, insert a 5-pin plug wired as shown below into the MIC jack on the transceiver. When applying an audio modulation signal to the microphone input circuit, use the same plug.

EO-0681-A-017



### **Pre-Alignment Frequency Check**

Before alignment, using the frequency counter through a 1000 pF coupling capacitor connected in series with the counter input probe, check the operating frequencies at the following points.

Buffer, Q104, collector frequency should be 6400.5 MHz.

Buffer, Q108, base frequency should be 21.0195 MHz in the channel 2 position.

Offset Oscillator, Q109, emitter frequency should be 5945.300 MHz.

### **VCO Alignment**

1. Place the Channel Selector in the channel 1 position.
2. Connect the VOM (DC 3V range) between ground and R114 (TP-8 side).
3. Adjust the T101 core clockwise to obtain  $1.5V \pm 0.1V$  on the meter.

4. Place the Channel Selector in the open channel position. A voltage reading of 5.1V to 5.4V is obtained.

5. Place the Channel Selector in the channel 40 position and read the value on the meter. It should be  $4.0V \pm .06V$ .

### RF Output Adjustment

1. Adjust the power supply voltage to 13.8 VDC.
2. Connect a wattmeter and 5W dummy load across the antenna jack.
3. If power output is greater than 2 watts, detune L106 by turning the core clockwise to obtain 2 watts.
4. Tune L111, L103, L104, T102 and T103 to obtain maximum output on channel 19.
5. While tuning these parts, detune L106 even further to maintain a reading between 2 - 2.7W.
6. When no further increase can be obtained by adjusting L111, L103, L104, T102 and T103 while on channel 19, tune L106, L109 and L110 for maximum output power.
7. If power exceeds 4W turn the core of L109 clockwise to decrease power to 4W.
8. Output power on channel 1 and channel 40 may decrease slightly but must never be greater than 4.0W.

Total transceiver current at this setting should not exceed 1.2A.

### Transmitter Frequency Check

1. Turn the transceiver off.
2. Connect the dummy load and frequency counter of the antenna jack as shown below.

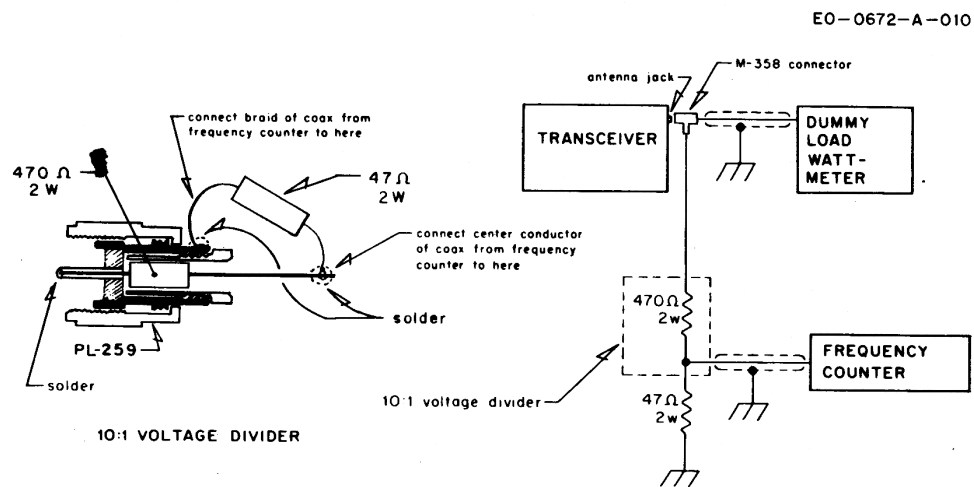


Figure 4-2. Connection of the Frequency Counter and Dummy Load

3. Key the transmitter with the microphone PTT button.
4. Check the frequency of each channel with the chart below.

### CHANNEL FREQUENCY

Channel	MHz	Channel	MHz
1	26.965	21	27.215
2	26.975	22	27.225
3	26.985	23	27.255
4	27.005	24	27.235
5	27.015	25	27.245
6	27.025	26	27.265
7	27.035	27	27.275
8	27.055	28	27.285
9	27.065	29	27.295
10	27.075	30	27.305
11	27.085	31	27.315
12	27.105	32	27.325
13	27.115	33	27.335
14	27.125	34	27.345
15	27.135	35	27.355
16	27.155	36	27.365
17	27.165	37	27.375
18	27.175	38	27.385
19	27.185	39	27.395
20	27.205	40	27.405

### Modulation Sensitivity Alignment

1. Set the unit in the transmit mode and apply a 20 mV, 1 kHz signal to the microphone input circuit.
2. RV102 should be adjusted to obtain 90% modulation in this condition.
3. Decrease the signal input to 6 mV and ensure that the modulation ratio is keeping a value higher than 80%.

### RF Meter Alignment

Adjust RV104 so that the meter pointer indicates the same wattage as the reading obtained on the wattmeter; or so that the meter pointer coincides with the center of the red zone on the meter scale.

**NOTE:** Refer to the RF output adjustment procedure to set the reference power level, 3.8W on the wattmeter.

Refer to figure 4-5 for the location of components to be adjusted for receiver alignment.

### Receiver Alignment Procedure

### Equipment Set-Up

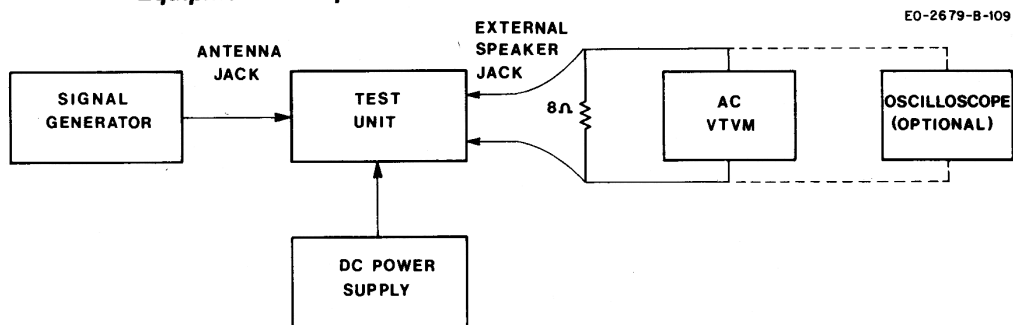
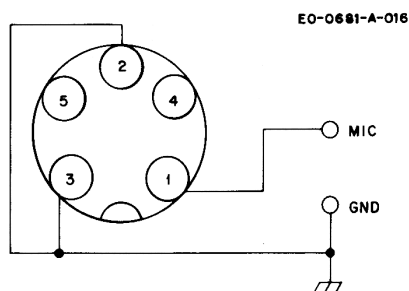


Figure 4-3. Equipment Set-Up, Receiver Alignment

**NOTE:** Place the ANL switch in the ON position (682A and 682X only). To put the transceiver in the receive mode, insert a 5-pin plug wired as shown below into the microphone jack on the front panel.



### **Receiver Alignment**

1. Set the signal generator to 27.115 MHz, 1 kHz, 30% modulation and set the transceiver to the channel 13 position.

**NOTE:** This alignment should be performed with an extremely small signal input from the signal generator to avoid inaccurate alignment due to AGC action.

2. Adjust L115, T104, T105, L112, T106, T107, T108 and T109 for maximum audio output on the oscilloscope, or use the S-meter on the unit.

### **Tight Squelch Adjustment**

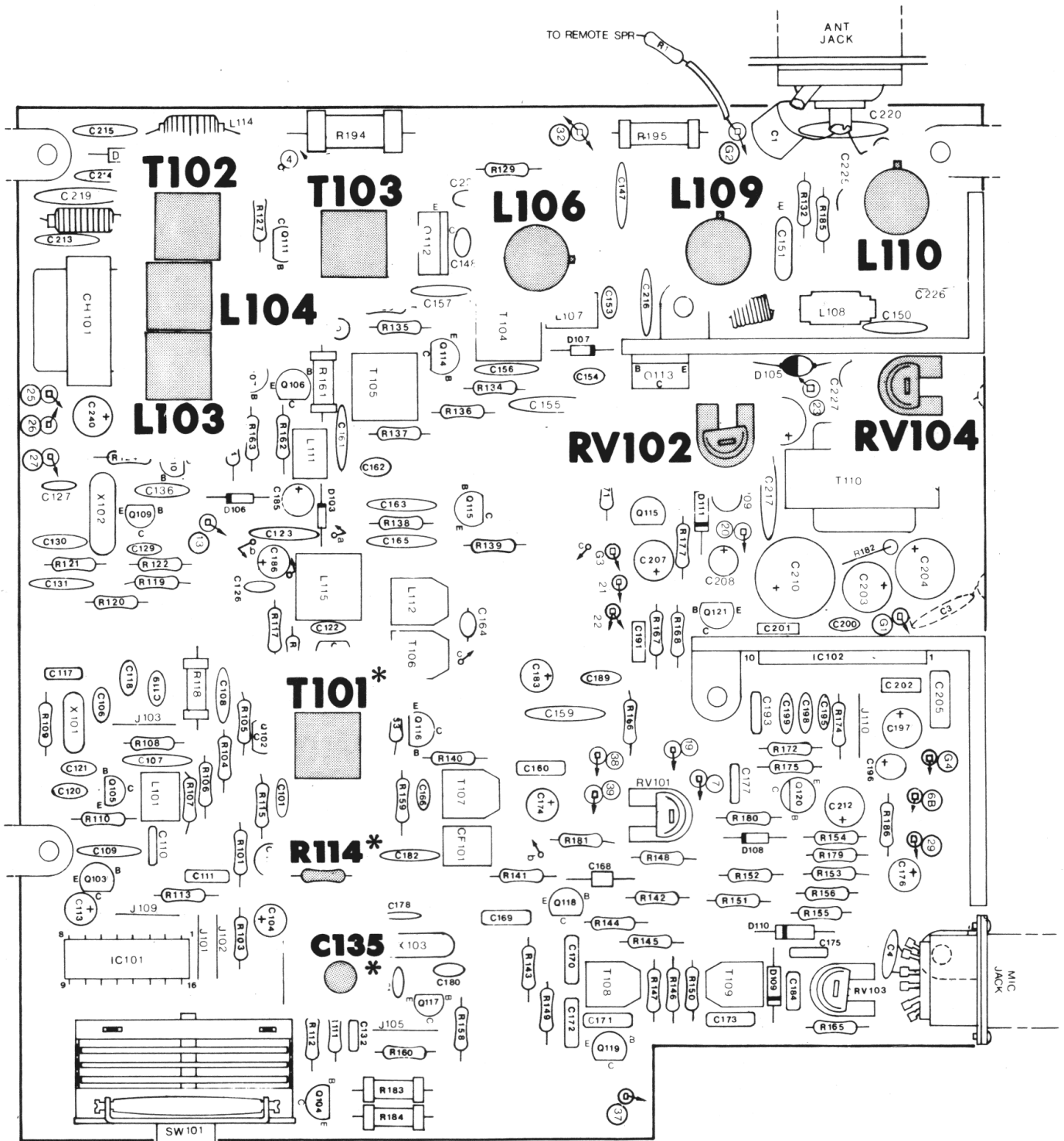
1. Set the signal generator to provide an RF input of 50  $\mu$ V (1 kHz, 30% modulation).
2. Rotate the squelch control fully clockwise.
3. Adjust RV101 so that tight squelch just breaks with the 50  $\mu$ V input.

### **S-Meter Adjustment**

1. Set the signal generator to provide a 10  $\mu$ V signal input.
2. Adjust RV103 so the S-meter pointer indicates 7 on the meter on the front panel.

### N CODE — FREQUENCY CORRELATION CHART

CHANNEL	RF FREQ.	VCO FREQ	PROGRAM CODE	40	20	10	8	4	2	1
1	26.965	21.020	00	0	0	0	0	0	0	0
2	26.975	21.030	01	0	0	0	0	0	0	1
3	26.985	21.040	02	0	0	0	0	0	1	0
4	27.005	21.060	04	0	0	0	0	1	0	0
5	27.015	21.070	05	0	0	0	0	1	0	1
6	27.025	21.080	06	0	0	0	0	1	1	0
7	27.035	21.090	07	0	0	0	0	1	1	1
8	27.055	21.110	09	0	0	0	1	0	0	1
9	27.065	21.120	10	0	0	1	0	0	0	0
10	27.075	21.130	11	0	0	1	0	0	0	1
11	27.085	21.140	12	0	0	1	0	0	1	0
12	27.105	21.160	14	0	0	1	0	1	0	0
13	27.115	21.170	15	0	0	1	0	1	0	1
14	27.125	21.180	16	0	0	1	0	1	1	0
15	27.135	21.190	17	0	0	1	0	1	1	1
16	27.155	21.210	19	0	0	1	1	0	0	1
17	27.165	21.220	20	0	1	0	0	0	0	0
18	27.175	21.230	21	0	1	0	0	0	0	1
19	27.185	21.240	22	0	1	0	0	0	1	0
20	27.205	21.260	24	0	1	0	0	1	0	0
21	27.215	21.270	25	0	1	0	0	1	0	1
22	27.225	21.280	26	0	1	0	0	1	1	0
23	27.255	21.310	29	0	1	0	1	0	0	1
24	27.235	21.290	27	0	1	0	0	1	1	1
25	27.245	21.300	28	0	1	0	1	0	0	0
26	27.265	21.320	30	0	1	1	0	0	0	0
27	27.275	21.330	31	0	1	1	0	0	0	1
28	27.285	21.340	32	0	1	1	0	0	1	0
29	27.295	21.350	33	0	1	1	0	0	1	1
30	27.305	21.360	34	0	1	1	0	1	0	0
31	27.315	21.370	35	0	1	1	0	1	0	1
32	27.325	21.380	36	0	1	1	0	1	1	0
33	27.335	21.390	37	0	1	1	0	1	1	1
34	27.345	21.400	38	0	1	1	1	0	0	0
35	27.355	21.410	39	0	1	1	1	0	0	1
36	27.365	21.420	40	1	0	0	0	0	0	0
37	27.375	21.430	41	1	0	0	0	0	0	1
38	27.385	21.440	42	1	0	0	0	0	1	0
39	27.395	21.450	43	1	0	0	0	0	1	1
40	27.405	21.460	44	1	0	0	0	1	0	0



(FRONT PANEL)

**NOTES:**

- \*T101 adjusted in VCO Alignment only.
- \*R114 and C135 are connection points for VCO Alignment.

**Figure 4-4**

**Components Adjusted for Transmitter Alignment.**



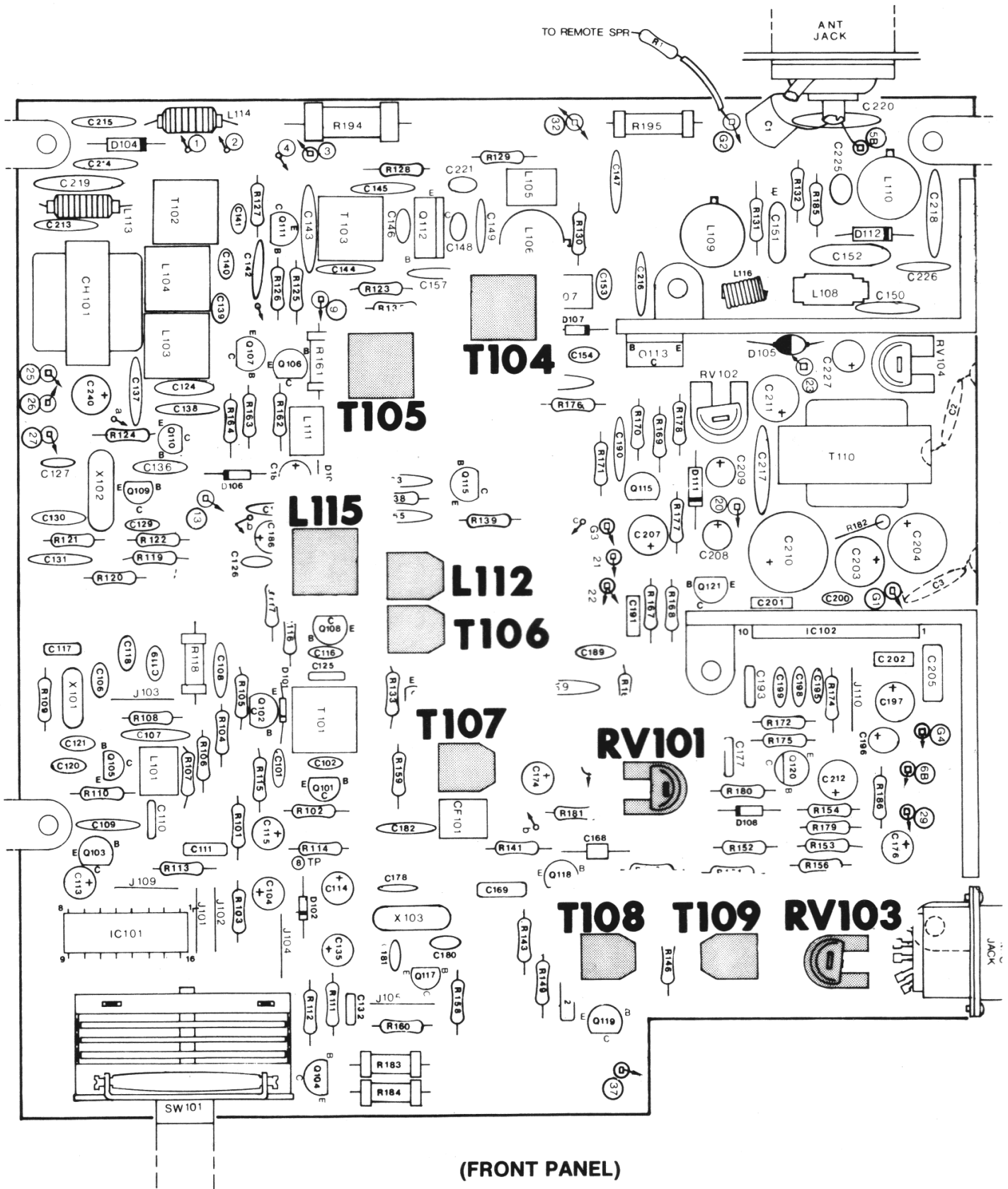


Figure 4-5

Components Adjusted for Receiver Alignment

## CHAPTER 5 — PARTS LIST

### **Application**

The following parts lists contain only those parts which have been added or deleted as a result of modification. Consult the applicable service manual for a complete parts listing and use it in conjunction with the following lists for modified radios.

## 681A

■ Deleted Components  
All other components are added

Reference Designator	Description	Part No.
C1	330 pF, 500V, mica .....	721681
	■ 220 pF, 500V, mica .....	FM11ZC221KS
C122	33 pF, 50V, ceramic disc .....	722406
	■ 8 pF, 50V, ceramic disc .....	CC-CB080DOM
C129	.001 uF, 50V, ceramic disc .....	722849
	■ 560 pF, 50V, ceramic disc .....	CK-CB561KBM
C162	33 pF, 50V, ceramic disc .....	722406
	■ 10 pF, 50V, ceramic disc .....	CC-CB100DOM
C600	.001 uF, 50V, ceramic disc .....	722849
C601	1 pF, 50V, ceramic disc .....	722447
C602	82 pF, 50V, ceramic disc .....	722410
C603	220 pF, 50V, ceramic disc .....	721665
C604	330 pF, 50V, mica .....	721681
C605	(not used)	
C606	.001 uF, 50V, ceramic disc .....	722489
C607	(not used)	
C608	.001 uF, 50V, ceramic disc .....	722849
C609	.001 uF, 50V, ceramic disc .....	722849
C610	(not used)	
C611 thru C613	.001 uF, 50V, ceramic .....	722849
D600	1N4148, germanium .....	760037
Dial Skirt	Dial Skirt, (40 channel) .....	450317
	■ Dial Skirt, (23 channel) .....	450324
L600	.18 uH RF coil .....	722871
L601	6.8 uH RF choke .....	722857
L602	6.8 uH RF choke .....	722857
L603	(not used)	
L604	6.8 uH RF choke .....	722857
Q101	MPS3704 .....	760142
	■ 2SC710D (Mitsubishi) .....	QT-C0710XBE
Q110	MPS3704 .....	670142
	■ 2SC710D (Mitsubishi) .....	QT-C0710XBE
R101	330, ¼w, 10% carbon film .....	722522
	■ 100, ¼w, 10%, carbon film .....	RD25RJ101D
R119	3.3k, ¼w, 10%, carbon film .....	722576
	■ 1.5k, ¼W, 10%, carbon film .....	RD25RJ152D
R121	2.2k, ¼w, 10%, carbon film .....	722572
	■ 1k, ¼w, 10%, carbon film .....	RD25RJ102D
R600	18k, ¼W, 10%, carbon film .....	722594
SW101	Switch .....	700057
	■ Switch, Rotary Wafer .....	SR-0724301H

## 681X

■ Deleted Components  
All other components are added

Reference Designator	Description	Part No.
C1	330 pF, 500V, mica .....	721681
	■ 220 pF, 500V, mica .....	FM11ZC221KS
C122	22 pF, 50V, ceramic disc .....	722406
	■ 8 pF, 50V, ceramic disc .....	CC-CB080DOM
C129	.001 uF, 50V, ceramic disc .....	722849
	■ 560 pF, 50V, ceramic disc .....	CK-CB561KBM
C162	33 pF, 50V, ceramic disc .....	722406
	■ 10 pF, 50V ceramic disc .....	CC-CB100DOM
C600	.001 uF, 50V, ceramic disc .....	722849
C601	1 pF, NPO 50V, ceramic disc .....	722447
C602	82 pF, Y5F 50V ceramic disc .....	722410
C603	220 pF, 50V, ceramic disc .....	721665
C604	330 pF, 50V, mica .....	721681
D600	1N4148, germanium .....	760037
Dial Skirt	Dial Skirt, (40 channel) .....	450317
Dial Skirt	■ Dial Skirt, (23 channel) .....	450324
L600	.18 uH RF coil .....	722871
Q101	MPS3704 .....	760142
	■ 2SC710D (Mitsubishi) .....	QT-CO710XBE
Q110	MPS3704 .....	670142
	■ 2SC710D (Mitsubishi) .....	QT-C0710XBE
R101	330, 1/4W, 10%, carbon film .....	722522
	■ 100, 1/4W, 10%, carbon film .....	RD25RJ101D
R119	3.3k, 1/4W, 10%, carbon film .....	722576
	■ 1.5k, 1/4W, 10%, carbon film .....	RD25RJ152D
R121	2.2k, 1/4W, 10%, carbon film .....	722572
	■ 1k, 1/4W, 10%, carbon film .....	RD2.5RJ102D
R600	18k, 1/4W, 10%, carbon film .....	722594
SW101	Switch .....	700057
	■ Switch, Rotary Wafer .....	SR-0724301H

## 682A

■ Deleted Components  
All other components are added

Reference Designator	Description	Part No.
C1	330pF, 500V, mica .....	721681
	■ 220pF, 50V, mica .....	FM11ZC221KS
C122	33pF, 50V, ceramic disc .....	722406
	■ 8pF, 50V, ceramic disc .....	CC-CB080DOM
C129	.001uF, 50V, ceramic disc .....	722849
	■ 560pF, 50V, ceramic disc .....	CK-CB561KBM
C162	33pF, 50V, ceramic disc .....	722406
	■ 10pF, 50V, ceramic disc .....	CC-CB100DOM

Reference Designator	Description	Part No.
C600	.001 uF, 50V, ceramic disc	722849
C601	1 pF, NPO 50V, ceramic disc	722447
C602	82 pF, Y5F 50V, ceramic disc	722410
C603	220 pF, 50V, ceramic disc	721665
C604	330 pF, 50V, mica	721681
C605	(not used)	
C606	.001 uF, 50V, ceramic disc	722849
C607	(not used)	
C608 thru C613	.001 uF, 50V, ceramic disc	722849
D600	IN4148, germanium	760037
Dial Skirt	Dial Skirt, (40 channel)	450317
	■ Dial Skirt, (23 channel)	450324
L600	.18 uH RF coil	722871
L601 thru L604	6.8 uH RF choke	722857
Q101	MPS3704	760142
	■ 2SC710D (Mitsubishi)	QT-C0170XBE
Q110	MPS3704	760142
	■ 2SC710D (Mitsubishi)	QT-C0710XBE
R101	330, 1/4W, 5%, carbon film	722522
	■ 100, 1/4W, 5%, carbon film	RD25RJ101D
R119	3.3k, 1/4W, 5%, carbon film	722576
	■ 1.5k, 1/4W, 5%, carbon film	RD25RJ152D
R121	2.2k, 1/4W, 5%, carbon film	722572
	■ 1k, 1/4W, 5%, carbon film	RD25RJ102D
R600	18k, 1/4W, 5%, carbon film	722594
SW101	Switch	700057
	■ Switch, Rotary Wafer	SR-0724301H

### 682X

- Deleted Components
- All other components are added

Reference Designator	Description	Part No.
C1	330 pF, 500V, mica	721681
	■ 220 pF, 500V, mica	FM11ZC221KS
C122	33 pF, 50V, ceramic disc	722406
	■ 8 pF, 50V, ceramic disc	CC-CB080DOM
C129	.001 uF, 50V, ceramic disc	722849
	■ 560 pF, 50V, ceramic disc	CK-CB561KBM
C162	33 pF, 50V, ceramic disc	722406
	■ 10 pF, 50V ceramic disc	CC-CB100DOM
C600	.001 uF, 50V, ceramic disc	722849
C601	1 pF, NPO 50V, ceramic disc	722447
C602	82 pF, Y5F 50V ceramic disc	722410
C603	220 pF, 50V, ceramic disc	721665
C604	330 pF, 50V, mica	721681
C605	(not used)	
C606	(not used)	
C607	(not used)	
C608	(not used)	
C609	(not used)	
C610	.001 uF, 50V, ceramic Disc	722849

Reference Designator	Description	Part No.
D600	IN4148, germanium .....	760037
Dial Skirt	Dial Skirt (40 channel) .....	450317
	■Dial Skirt (23 channel) .....	450324
L600	.18uH RF coil .....	722871
Q101	MPS3704 .....	760142
Q110	■2SC710D (Mitsubishi) .....	QT-C0170XBE
	MPS3704 .....	760142
R101	330, ¼W, carbon film .....	722522
	■100, ¼W, carbon film .....	RD25RJ101D
R119	3.3k, ¼W, carbon film .....	722576
R121	■1.5k, ¼w, carbon film .....	RD25RJ152D
	2.2k, ¼W, carbon film .....	722572
R600	■1k, ¼W, carbon film .....	RD25RJ102D
	18k, ¼W, carbon film .....	722594
SW101	Switch .....	700057
	■Swith, Rotary Wafer .....	SR-0724301H

### 2680A

- Deleted Components
- All other components are added

Reference Designator	Description	Part No.
C1	330pF, 500V, mica .....	721681
	■220pF, 500V, mica .....	FM11ZC221KS
C129	.001 uF, 50V, ceramic disc .....	722849
	■560pF, 50V, ceramic disc .....	CK-CB561KBM
C162	120pF, 50V, ceramic disc .....	722413
	■10pF, 50V, ceramic disc .....	CC-CB100D0M
C600	.001 uF, 50V, ceramic disc .....	722849
C601	1 pF, NPO 50V, ceramic disc .....	722447
C602	82pF, Y5F 50V, ceramic disc .....	722410
C603	(not used)	
C604	330pF, 50V, mica .....	721681
C605	(not used)	
C606 thru C609	.001 uF, 50V, ceramic disc .....	722849
C610	(not used)	
C611 thru C613	.001 uF, 50V, ceramic disc .....	722849
C614	220pF, 50V, mica .....	721665
D600	IN4148, germanium .....	760037
Dial Skirt	Dial Skirt, (40 channel) .....	450317
	■Dial Skirt, (23 channel) .....	450324
L600	.18uH RF coil .....	722871
L601 thru L602	6.8uH RF choke .....	722857
L603	(not used)	
L604	6.8uH RF choke .....	722857
Q101	MPS3704 .....	760142
	■2SC710D (Mitsubishi) .....	QT-C0710XBE
R101	330, ¼W, 5%, carbon film .....	722522
	■100, ¼W, 5%, carbon film .....	RD25RJ101D
R119	3.3k, ¼W, 5%, carbon film .....	722576

Reference Designator	Description	Part No.
R121	■ 1.5k, ¼W, 5%, carbon film .....	RD25RJ152D
	2.2k, ¼W, 5%, carbon film .....	722572
R600	■ 1k, ¼W, 5%, carbon film .....	RD25RJ102D
	18k, ¼W, 5%, carbon film .....	722594
SW101	Switch .....	700047
	■ Switch, Rotary Wafer .....	SR-0724102W
	Interconnecting p.c. board .....	750092

**2680X**

■ Deleted Components  
 All other components are added

Reference Designator	Description	Part No.
C1	330pF, 500V, mica .....	721681
C129	■ 220pF, 500V, mica .....	FM11ZC221KS
	.001 uF, 50V, ceramic disc .....	122849
C162	■ 560pF, 50V, ceramic disc .....	CK-CB561KBM
	120pF, 50V, ceramic disc .....	722413
C600	■ 10pF, 50V, ceramic disc .....	CC-CB100DOM
	.001 uF, 50V, ceramic disc .....	722849
C601	1 pF, NPO 50V, ceramic disc .....	722447
C602	82pF, Y5F 50V, ceramic disc .....	722410
C603	(not used)	
C604	330pF, 50V, mica .....	721681
C605 thru C613	(not used)	
C614	220pF, 500V, mica .....	721665
D600	IN4148, germanium .....	760037
Dial Skirt	Dial Skirt, (40 channel) .....	450317
	■ Dial Skirt, (23 channel) .....	450324
L600	.18uH RF coil .....	722871
Q101	MPS3704 .....	760142
	■ 2SC710D (Mitsubishi) .....	QT-C0710XBE
R101	330, ¼W, 5%, carbon film .....	722522
	■ 100, ¼W, 5%, carbon film .....	RD25RJ101D
R119	3.3k, ¼W, 5%, carbon film .....	722576
R121	■ 1.5k, ¼W, 5%, carbon film .....	RD25RJ152D
	2.2k, ¼W, 5%, carbon film .....	722572
R600	■ 1k, ¼W, 5%, carbon film .....	RD25RJ102D
	18k, ¼W, 5%, carbon film .....	722594
SW101	Switch .....	700057
	■ Switch, Rotary Wafer .....	SR-0724102W
	Interconnecting p.c. board .....	750092

## 2682X

■ Deleted Components  
All other components are added

Reference Designator	Description	Part No.
C1	330pF, 500V, mica .....	721681
	■ 220pF, 500V, mica .....	FM11ZC221KS
C129	.001 uF, 50V, ceramic disc .....	722849
	■ 560pF, 50V, ceramic disc .....	CK-CB561KBM
C162	120pF, 50V, ceramic disc .....	722413
	■ 10pF, 50V, ceramic disc .....	CC-CB100DOM
C600	.001 uF, 50V, ceramic disc .....	722849
C601	1 pF, NPO 50V, ceramic disc .....	722447
C602	82pF, Y5F 50V, ceramic disc .....	722410
C603	220pF, 50V, ceramic disc .....	721665
C604	330pF, 50V, mica .....	721681
C605 thru C609	(not used)	
C610	.001 uF, 50V, ceramic disc .....	722849
D600	1N4148, germanium .....	760037
Dial Skirt	Dial Skirt, (40 channel) .....	450317
	Dial Skirt, (23 channel) .....	450324
L600	.18 uH RF coil .....	722871
Q101	MPS3704 .....	760142
	■ 2SC710D (Mitsubishi) .....	QT-C0710XBE
R101	330, ¼W, 5%, carbon film .....	722522
	■ 100, ¼W, 5%, carbon film .....	RD25RJ101D
R119	3.3k, ¼W, 5%, carbon film .....	722576
	■ 1.5k, ¼W, 5%, carbon film .....	RD25RJ152D
R121	2.2k, ¼W, 5%, carbon film .....	722572
	■ 1k, ¼W, 5%, carbon film .....	RD25RJ102D
R600	18k, ¼W, 5%, carbon film .....	722594
SW101	Switch .....	700047
	■ Switch, Rotary Wafer .....	SR-0724102W
	Interconnecting p.c. board .....	750092

## 2682B

Reference Designator	Description	Part No.
C1	330pF, 500V, mica .....	721681
	■ 220pF, 500V, mica .....	FM11ZC221KS
C129	.001 uF, 50V, ceramic disc .....	722849
	■ 560pF, 50V, ceramic disc .....	CK-CB561KBM
C162	120pF, 50V, ceramic disc .....	722413
	■ 10pF, 50V, ceramic disc .....	CC-CB100DOM
C600	.001 uF, 50V, ceramic disc .....	722849
C601	1 pF, NPO 50V, ceramic disc .....	722447
C602	82pF, Y5F 50V, ceramic disc .....	722410
C603	(not used)	
C604	330pF, 500V, mica .....	721681
C605	220pF, 50V, ceramic disc .....	721665
C606	.001 uF, 50V, ceramic disc .....	722849
C607	(not used)	
C608 thru C613	.001 uF, 50V, ceramic disc .....	722849



Reference Designator	Description	Part No.
D600	IN4148, germanium .....	760037
Dial Skirt	Dial Skirt, (40 channel) .....	450317
	■ Dial Skirt, (23 channel) .....	450324
L600	.18uH RF coil .....	722871
C601 thru C604	6.8uH RF choke .....	722857
Q101	MPS3704 .....	760142
	■ 2SC710D (Mitsubishi) .....	QT-C0710XBE
R101	330, ¼W, 5%, carbon film .....	722522
	■ 100, ¼W, 5%, carbon film .....	RD25RJ101D
R119	3.3k, ¼W, 5%, carbon film .....	722576
	■ 1.5k, ¼W, 5%, carbon film .....	RD25RJ152D
R121	2.2k, ¼W, 5%, carbon film .....	722572
	■ 1k, ¼W, 5%, carbon film .....	RD25RJ102D
R600	18k, ¼W, 5%, carbon film .....	722594
SW101	Switch .....	700047
	■ Switch, Rotary Wafer .....	SR-0724102W
	Interconnecting p.c. board .....	750092

### 2710X

- Delete from the 2710 parts list.

Reference Designator	Description	Part No.
C313	■ .01uF, 50V, ceramic disc .....	722488
C314 thru C315	■ .001uF, 50V, ceramic disc .....	722849
C606 thru C609	■ .001uF, 50V, ceramic disc .....	722849
L601	■ 6.8uH, RF choke .....	722857
L602	■ 1.5uH, RF choke .....	722440
L603	■ 6.8uH, RF choke .....	722857

### 3084X

- Deleted Components
- All other components are added

Reference Designator	Description	Part No.
C129	.001uF, 50V, ceramic disc .....	722849
	■ 560pF, 50V, ceramic disc .....	CK-CB561KBM
C162	120pF, 50V, ceramic disc .....	722413
	■ 33pF, 50V, ceramic disc .....	CC-CB103KPM
C600	.001uF, 50V, ceramic disc .....	722849
C601	1pF, NPO 50V, ceramic disc .....	722447
C602	82pF, Y5F 50V, ceramic disc .....	722410
C603	220pF, 50V, ceramic disc .....	721665
C604	330pF, 50V, mica .....	721681
C605 thru C615	(not used)	
C616	.001uF, 50V, ceramic disc .....	722849
D600	IN4148, germanium .....	760037

Reference Designator	Description	Part No.
Dial Skirt	Dial Skirt, (40 channel) .....	450346
	■ Dial Skirt, (23 channel) .....	450347
L600	.18uH RF coil .....	722871
Q101	MPS3704 .....	760142
	■ 2SC710D (Mitsubishi) .....	QT-C0710XBE
R101	330, ¼W, 5%, carbon film .....	722522
	■ 100, ¼W, 5%, carbon film .....	RD25RJ101D
R119	3.3k, ¼W, 5%, carbon film .....	722576
	■ 1.5k, ¼W, 5%, carbon film .....	RD25RJ152D
R121	2.2k, ¼W, 5%, carbon film .....	722572
	■ 1k, ¼W, 5%, carbon film .....	RD25RJ102D
R600	18k, ¼W, 5%, carbon film .....	722594
SW101	Switch .....	700047
	■ Switch, Rotary Wafer .....	SR-0724102W
	Interconnection p.c. board .....	750092

### 3084B

■ Deleted Components  
All other components are added

Reference Designator	Description	Part No.
C129	.001uF, 50V, ceramic disc .....	722849
	■ 560pF, 50V, ceramic disc .....	CK-CB561KBM
C162	120pF, 50V, ceramic disc .....	722413
	■ 33pF, 50V, ceramic disc .....	CC-CB330KPM
C600	.001uF, 50V, ceramic disc .....	722849
C601	1pF, NPO 50V, ceramic disc .....	722447
C602	82pF, Y5F 50V, ceramic disc .....	722410
C603	220pF, 50V, ceramic disc .....	721665
C604	330pF, 50V, mica .....	721681
C605	330pF, 50V, mica .....	721681
C606 thru C608	.001uF, 50V, ceramic disc .....	722849
C609 thru C610	(not used)	
C611 thru C620	.001uF, 50V, ceramic disc .....	722849
D600	IN4148, germanium .....	760037
Dial Skirt	Dial Skirt, (40 channel) .....	450346
	■ Dial Skirt, (23 channel) .....	450347
L600	18.uH RF coil .....	722871
L601 thru L602	6.8uH RF choke .....	722857
L603	(not used)	
L604 thru L605	6.8uH RF choke .....	722857
L606	1.5uH RF coil .....	722488
Q101	MPS3704 .....	760142
	■ 2SC710D (Mitsubishi) .....	QT-C0710XBE
R101	330, ¼W, 5%, carbon film .....	722522
	■ 100, ¼W, 5%, carbon film .....	RD25RJ101D
R119	3.3k, ¼W, 5%, carbon film .....	722576
	■ 1.5k, ¼W, 5%, carbon film .....	RD25RJ152D

Reference Designator	Description	Part No.
R121	2.2k, ¼W, 5%, carbon film .....	722572
	■ 1k, ¼W, 5%, carbon film .....	RD25RJ102D
R600	18k, ¼W, 5%, carbon film .....	722594
SW101	Switch .....	700047
	■ Switch, Rotary Wafer .....	APTSW013AA
	Interconnecting p.c. board .....	750092

### 3087A

■ Deleted Components  
 All other components are added

Reference Designator	Description	Part No.
C129	.001 uF, 50V, ceramic disc .....	722849
	■ 560pF, 50V, ceramic disc .....	CK-CB561KBM
C162	120pF, 50V, ceramic disc .....	722413
	■ 33pF, 50V, ceramic disc .....	CC-CB103KPM
C600	.001 uF, 50V, ceramic disc .....	722849
C601	1pF, NPO 50V, ceramic disc .....	722447
C602	82pF, Y5F 50V, ceramic disc .....	722410
C603	(not used)	
C604 thru C605	330pF, 50V, mica .....	721681
C606 thr C614	.001 uF, 50V, ceramic disc .....	722849
D600	IN4148, germanium .....	760037
Dial Skirt	Dial Skirt, (40 channel) .....	450317
	■ Dial Skirt, (23 channel) .....	450324
L600	.18uH RF coil .....	722871
L601 thru L606	6.8uH RF coil .....	722857
Q101	MPS3704 .....	760142
	■ 2SC710D (Mitsubishi) .....	QT-C0710XBE
R101	330, ¼W, 5%, carbon film .....	722522
	■ 100, ¼W, 5%, carbon film .....	RD25RJ101D
R119	3.3k, ¼W, 5%, carbon film .....	722576
	■ 1.5k, ¼W, 5%, carbon film .....	RD25RJ152D
R121	2.2k, ¼W, 5%, carbon film .....	722572
	■ 1k, ¼W, 5%, carbon film .....	RD25RJ102D
R600	18k, ¼W, 5%, carbon film .....	722594
SW101	Switch .....	700047
	■ Switch, Rotary Wafer .....	SR-0742102W

### 3087X

■ Deleted Components  
All other components are added

Reference Designator	Description	Part No.
C129	.001 uF, 50V, ceramic disc .....	722849
	■ 560pF, 50V, ceramic disc .....	CK-CB561KBM
C162	120pF, 50V, ceramic disc .....	722413
	■ 33pF, 50V, ceramic disc .....	CC-CB330KPM
C600	.001 uF, 50V, ceramic disc .....	722849
C601	1 pF, NPO 50V, ceramic disc .....	722447
C602	82pF, Y5F 50V, ceramic disc .....	722410
C603	(not used)	
C604 thru C605	330pF, 50V, mica .....	721681
D600	IN4148, germanium .....	760037
Dial Skirt	Dial Skirt, (40 channel) .....	450317
	■ Dial Skirt, (23 channel) .....	450324
L600	.18uH RF coil .....	722871
Q101	MPS3704 .....	760142
	■ 2SC710D (Mitsubishi) .....	QT-C0710XBE
R101	330, ¼W, 5%, carbon film .....	722522
	■ 100, ¼W, 5%, carbon film .....	RD25RJ101D
R119	3.3k, ¼W, 5%, carbon film .....	722576
	■ 1.5k, ¼W, 5%, carbon film .....	RD25RJ152D
R121	2.2k, ¼W, 5%, carbon film .....	722572
	■ 1k, ¼W, 5%, carbon film .....	RD25RJ102D
R600	18k, ¼W, 5%, carbon film .....	722594
SW101	Switch .....	700047
	■ Switch, Rotary Wafer .....	SR-0724102W

### 2683A

■ Deleted Components  
All other components are added

Reference Designator	Description	Part No.
C1	180pF, 500V, ceramic disc .....	EM-SD181KCS
C129	.001 uF, 50V, ceramic disc .....	722849
	■ 560pF, 50V, ceramic disc .....	CK-CB561KBM
C162	120pF, 50V, ceramic disc .....	722413
	■ 33pF, 50V, ceramic disc .....	CC-CB330KPM
C600	.001 uF, 50V, ceramic disc .....	722849
C601	1 pF, NPO 50V, ceramic disc .....	722447
C602	82pF, Y5F 50V, ceramic disc .....	722410
C603	220pF, 50V, ceramic disc .....	721665
C604 thru C605	330pF, 50V, mica .....	721681
C606	.001 uF, 50V, ceramic disc .....	722849
C607	(not used)	
C608 thru C613	.001 uF, 50V, ceramic disc .....	722849
D600	IN4148, germanium .....	760037
Dial Skirt	Dial Skirt, (40 channel) .....	450317
	■ Dial Skirt, (23 channel) .....	450324

Reference Designator	Description	Part No.
L600	.18uH RF coil .....	722871
L601 thru L604	6.8uH RF choke .....	722857
Q101	MPS3704 .....	760142
	■2SC710D (Mitsubishi) .....	QT-C0710XBE
R101	330, 1/4W, 5%, carbon film .....	722522
	■100, 1/4W, 5%, carbon film .....	RD25RJ101D
R119	3.3k, 1/4W, 5%, carbon film .....	722576
	■1.5k, 1/4W, 5%, carbon film .....	RD25RJ152D
R121	2.2k, 1/4W, 5%, carbon film .....	722572
	■1k, 1/4W, 5%, carbon film .....	RD25RJ102D
R600	18k, 1/4W, 5%, carbon film .....	722594
SW101	Switch .....	700047
	■Switch, Rotary Wafer .....	SR-0724102W

### 2683X

■Deleted Components  
All other components are added

Reference Designator	Description	Part No.
C1	180pF, 500V, ceramic disc .....	FM11ZC221K5
C129	.001 uF, 50V, ceramic disc .....	722849
	■560pF, 50V, ceramic disc .....	CK-CB561KBM
C162	120pF, 50V, ceramic disc .....	722413
	■33pF, 50V, ceramic disc .....	CC-CB330KPM
C600	.001 uF, 50V, ceramic disc .....	722849
C601	1pF, NPO 50V, ceramic disc .....	722447
C602	82pF, Y5F 50V, ceramic disc .....	722410
C603	220pF, 50V, ceramic disc .....	721665
C604 thru C605	330pF, 50V, mica .....	721681
D600	IN4148, germanium .....	760037
Dial Skirt	Dial Skirt, (40 channel) .....	450317
	■Dial Skirt, (23 channel) .....	450324
Q101	MPS3704 .....	760142
	■2SC710D (Mitsubishi) .....	QT-C0710XBE
R101	330pF, 1/4W, 5%, carbon film .....	722522
	■100, 1/4W, 5%, carbon film .....	RD25RJ101D
R119	3.3k, 1/4W, 5%, carbon film .....	722576
	■1.5k, 1/4W, 5%, carbon film .....	RD25RJ152D
R121	2.2k, 1/4W, 5%, carbon film .....	722572
	■1k, 1/4W, 5%, carbon film .....	RD25RJ102D
R600	18k, 1/4W, 5%, carbon film .....	722594
SW101	Switch .....	700047
	■Switch, Rotary Wafer .....	SR-0724102W

## 2679A

■ Deleted Components  
 All other components are added

Reference Designator	Description	Part No.
C122	15pF, 50V, ceramic disc .....	722401
	■ 5pF, 50V, ceramic disc .....	CC-CB150KOM
C129	.001uF, 50V, ceramic disc .....	722849
	■ 560pF, 50V, ceramic disc .....	CK-CB561KBM
C162	120pF, 50V, ceramic disc .....	722413
	■ 33pF, 50V, ceramic disc .....	CC-CB330KPM
C600	.001uF, 50V, ceramic disc .....	722849
C601	1pF, NPO 50V, ceramic disc .....	722447
C602	82pF, Y5F 50V, ceramic disc .....	722410
C603	220pF, 50V, ceramic disc .....	721665
C604	330pF, 50V, mica .....	721681
C605 thru C607	.001uF, 50V, ceramic disc .....	722849
C608	330pF, 50V, ceramic disc .....	721681
C609	.0047uF, 50V, ceramic disc .....	722853
C610	(not used)	
C611	.01uF, 50V, ceramic disc .....	722440
D600	IN4148, germanium .....	760037
L600	.18uH RF coil .....	722871
C601 thru C604	6.8uH RF choke .....	722857
L605	1.5uF RF choke .....	722488
Q101	MPS3704 .....	760142
	■ 2SC710D (Mitsubishi) .....	QT-C0710XBE
R101	330, 1/4W, 5%, carbon film .....	722522
	■ 100, 1/4W, 5%, carbon film .....	RD25RJ101D
R119	3.3k, 1/4W, 5%, carbon film .....	722576
	■ 1.5k, 1/4W, 5%, carbon film .....	RD25RJ152D
R121	2.2k, 1/4W, 5%, carbon film .....	722572
	■ 1k, 1/4W, 5%, carbon film .....	RD25RJ102D
R600	18k, 1/4W, 5%, carbon film .....	722594
R601	5.6k, 1/4W, 5%, carbon film .....	722582

### 2679 Logic (Channel Selector P.C. Board)

L606	6.8uH RF choke .....	722857
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### 2679 Microphone P.C. Board

■ Deleted Components  
 All other components are added

D401	IN4148, germanium .....	760037
	■ IN270, germanium .....	765722

## 2679X

■ Deleted Components  
All other components are added

Reference Designator	Description	Part No.
C1	330pF, 500V, mica .....	721681
	■ 220pF, 500V, mica .....	FM11ZC221KS
C122	15pF, 50V, ceramic disc .....	722401
	■ .5pF, 50V, ceramic disc .....	CC-CB150KOM
C129	.001uF, 50V, ceramic disc .....	722849
	■ 560pF, 50V, ceramic disc .....	CK-CB561KBM
C162	120pF, 50V, ceramic disc .....	722413
	■ 33pF, 50V, ceramic disc .....	CC-CB330KPM
C600	.001uF, 50V, ceramic disc .....	722849
C601	1pF, NPO 50V, ceramic disc .....	722447
C602	82pF, Y5F 50V, ceramic disc .....	722410
C603	220pF, 50V, ceramic disc .....	721665
C604	330pF, 50V, mica .....	721681
C605 thru C607	(not used)	
C608	330pF, 50V, ceramic disc .....	721681
C609	.001uF, 50V, ceramic disc .....	722849
D600	IN4148, germanium .....	760037
L600	.18uH RF coil .....	722871
Q101	MPS3704 .....	760142
	■ 2SC710D (Mitsubishi) .....	QT-C0710XBE
R101	330, 1/4W, 5%, carbon film .....	722522
	■ 100, 1/4W, 5%, carbon film .....	RD25RJ101D
R119	3.3k, 1/4W, 5%, carbon film .....	722576
	■ 1.5k, 1/4W, 5%, carbon film .....	RD25RJ152D
R121	2.2k, 1/4W, 5%, carbon film .....	722572
	■ 1k, 1/4W, 5%, carbon film .....	RD25RJ102D
R600	18k, 1/4W, 5%, carbon film .....	722594
R601	5.6k, 1/4W, 5%, carbon film .....	722582

### Microphone P.C. Board

■ Deleted Components  
All others components are added

D401	IN4148, germanium .....	760037
	■ IN270, germanium .....	765722

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