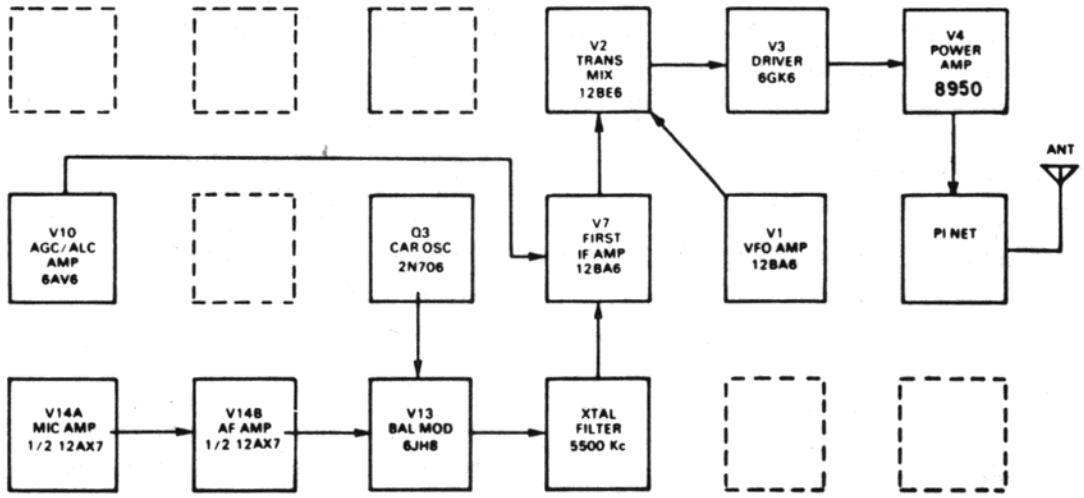

FIGURE 3. BLOCK DIAGRAM, TRANSMIT MODE

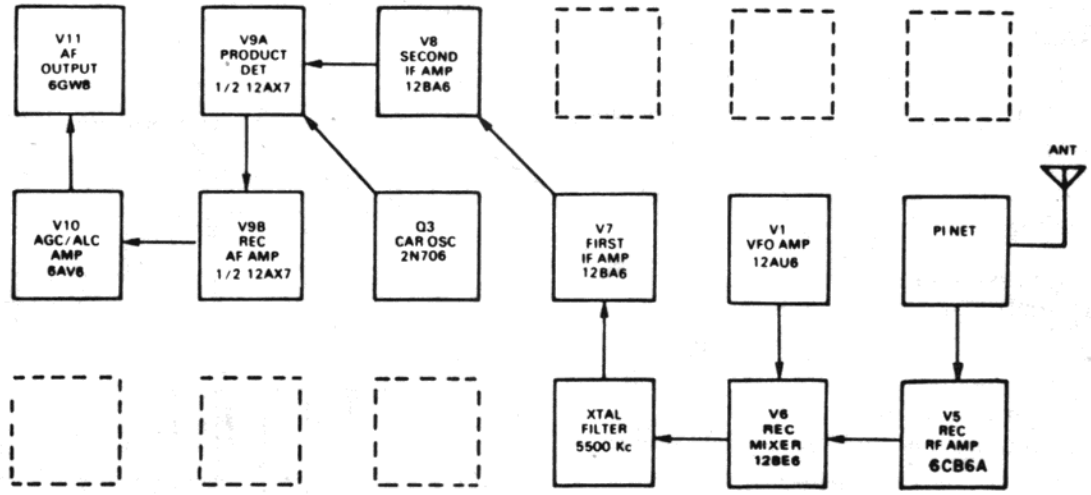

FIGURE 4. BLOCK DIAGRAM, RECEIVE MODE

transmitting and de-energized for receiving. One contact, when de-energized, allows signals from the transmitting tank circuit and antenna to be fed to the Receiver R.F. Amplifier, V5; where they are amplified and then fed to the control grid of the Receiver Mixer, V6. The local oscillator signal from the VFO Amplifier is now used to heterodyne the received signal to the IF frequency. All IF amplification is accomplished at this frequency, nominally 5500.0 KHz, through IF amplifiers V7 and V8. In the Product Detector, V9A, the IF signal is heterodyned with the carrier frequency generated by Carrier Oscillator, Q3. The resultant audio is then amplified by V9B, which then couples to the AGC amplifier, V10, and the audio output stage, V11.

FREQUENCY CALIBRATION

Frequency calibration of the Model 1011C is in 5 KHz increments. Dial accuracy and tracking are quite good, but caution must always be observed when operating near band edges. Measuring the frequency with a frequency standard or marker generator when working near band edges is recommended.

DIAL SET

A DIAL SET control has been provided so that dial adjustment can be made at any point on the dial. Set the main tuning dial to indicate the frequency of the frequency standard or marker generator, then adjust the DIAL SET control to zero-beat the 1011C VFO with the standard or generator signal.

TRANSMIT AND RECEIVE SWITCHING

Transmit and receive switching is performed by relay K1. In TRANSMIT, only those tubes that operate in the transmit mode are operative, all others being biased to cutoff through the relay contacts. In RECEIVE, with the relays de-energized, the tubes that are used only in transmit are cut off in the same manner. Relay K1 when de-energized, feeds signals from the output Pi-network to the receiver. Note that relay K1 will not operate when the BAND SWITCH control is in "CB" position.

POWER RATING

The Siltronix 1011C is capable of over 200 watts, P.E.P. input under steady state two-tone test conditions. The peak envelope power, when voice modulated, is considerably greater, typically 300 watts, or more.

The built-in power supply produces a no-load plate voltage of approximately 880 volts. Under TUNE conditions, this voltage will drop to approximately 680 volts and maximum input power will be reduced considerably below the voice P.E.P. rating. Under voice modulation, because average power is considerably less, the power amplifier plate and screen voltages will be maintained higher, even during voice peaks, by the power supply filter capacitors. Peak plate current will therefore also be higher than with two-tone test conditions. Under typical operating conditions, peak plate current before flat-topping will be 380 ma. at 800 volts, to result in an input of about 300 watts P.E.P. Readings of cathode current will not reflect this power input, however, because of the damping in the cathode current meter. Cathode current readings under normal voice input should not average more than 100 to 120 ma.

POWER AMPLIFIER PLATE DISSIPATION

There is often a misunderstanding about the plate dissipation of tubes operated as AB1 amplifiers under voice modulation. In the Siltronix 1011C, while in the transmit mode, and with no modulation, the plate voltage will be approximately 830 volts, the plate current 40 ma., and the power input 33 watts.

Authorities agree that the average voice power is 10 to 20 db below peak voice power. Normally, some peak clipping in the power amplifier can be tolerated, and a peak-to-average ratio of only 6 db may sometimes occur. Under such conditions, the average power input will be 80 watts, and average plate current will be 100 ma. With power amplifier efficiency of 65 percent, plate dissipation will be approximately 26 watts. The 8950 is rated at 40 watts, continuous duty cycle. Thus it can be seen that under normal operating conditions, the Power Amplifier tube in the 1011C is not being driven very hard. Note, however, that proper modulation level must be maintained by correct setting of MIC. GAIN. and that the length of time in TUNE position must be limited to not more than 30 seconds at a time.

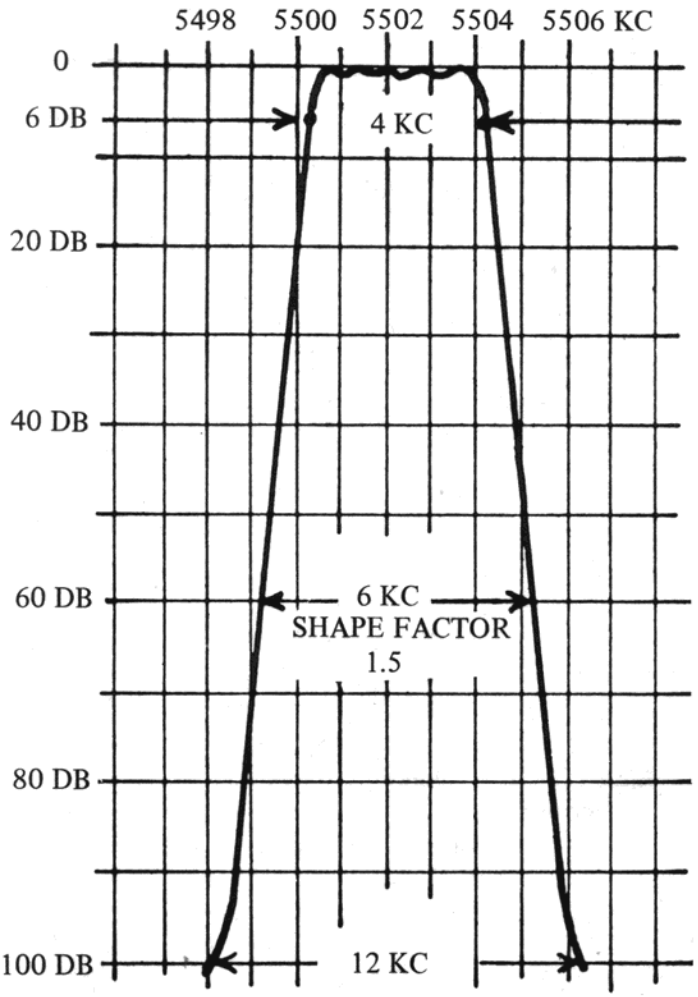

FIGURE 5. CRYSTAL FILTER CHARACTERISTICS

ALIGNMENT AND TROUBLESHOOTING

The alignment procedures presented in this section are routine touch-up procedures for all tuned circuits and other adjustments. It is recommended that the procedures be performed in the order presented. However, if complete realignment is not required (as may be the case when just one tube is replaced), perform just those procedures required. Refer to Figures 6 and 7 for component placement.

RECEIVER ALIGNMENT

Receiver alignment involves only the adjustment of the Second IF coil. The RF coils which affect receiver performance are also used in the TRANSMIT mode. Their adjustment is covered under "TRANSMITTER ALIGNMENT."

1 After allowing approximately five minutes for warmup, tune the receiver to the middle of the band and on a "clear" frequency.

2 Adjust the P.A. TUNE, P.A. LOAD, AND DRIVER controls for maximum noise.

3 Adjust the Second IF coil (L801) for maximum background noise.

S-METER ADJUSTMENT

With the antenna disconnected, R.F. GAIN control fully clockwise, and Meter switch in S-METER position, set R705, located on the rear panel, for zero meter reading. Make sure no local signals are being received.

TRANSMITTER ALIGNMENT

1. To adjust the Power Amplifier Bias:

   a Switch Meter switch to P.A. CATHODE position.

   b Rotate CARRIER INSERTION control fully counterclockwise.

   c After allowing approximately five minutes for warm-up, key the transmitter with the microphone switch. Without speaking into the microphone, adjust the Carrier Balance control on the bottom cover for a Null.

   d Again key the transmitter with the microphone switch, and without speaking into the microphone, adjust the P.A. BIAS control on the rear panel until the meter reads 40 ma. of *idling current*. This point is indicated on the meter by the *"delta"* symbol.

2. The alignment of transmitter circuits involves the adjustment of tuned circuits in the VFO Amplifier, V1; the Transmit MIXER, V2; and the DRIVER stage, V3. It is recommended that a 50 ohm dummy load be connected to the antenna jack during this series of adjustments.

   a Set the tuning dial to approximately 28.5 MHz, and the DRIVER control at 12 o'clock.

   b Set P.A. LOAD control to 9 o'clock.

   c Set Meter switch to P.A. CATHODE.

   d Press Mic. button. Check *idling current.* It should be on the *"delta"* symbol when the CARRIER BALANCE control is nulled, and the CARRIER INSERTION control is fully counterclockwise. Adjust P.A. BIAS control if necessary.

   e With Mic. button pressed, adjust CARRIER BALANCE control for slight increase in meter reading, 50 to 60 ma. Adjust P.A. TUNE control to resonance (dip).

   f Adjust coils L101, L201, and L301, for maximum reading. When reading goes higher than 80 ma., or so, adjust CARRIER BALANCE control for 60 ma. again.

   g Adjust coils carefully for maximum peak. Exercise caution with CARRIER BALANCE control. Do not exceed 100 ma. reading for more than a few seconds. Be sure P.A. TUNE control is resonated (adjusted for "dip" in meter reading).

3. Power Amplifier Neutralization.

   a After allowing approximately five minutes for warm-up, tune transmitter to approximately 28.5 MHz.

   b Set the P.A. LOAD control to 9 o'clock.

   c Set Meter switch to P.A. CATHODE.

   d Key the transmitter with the Mic. button, and without speaking into the microphone, adjust the CARRIER BALANCE control for a reading of approximately 100 ma. Quickly adjust

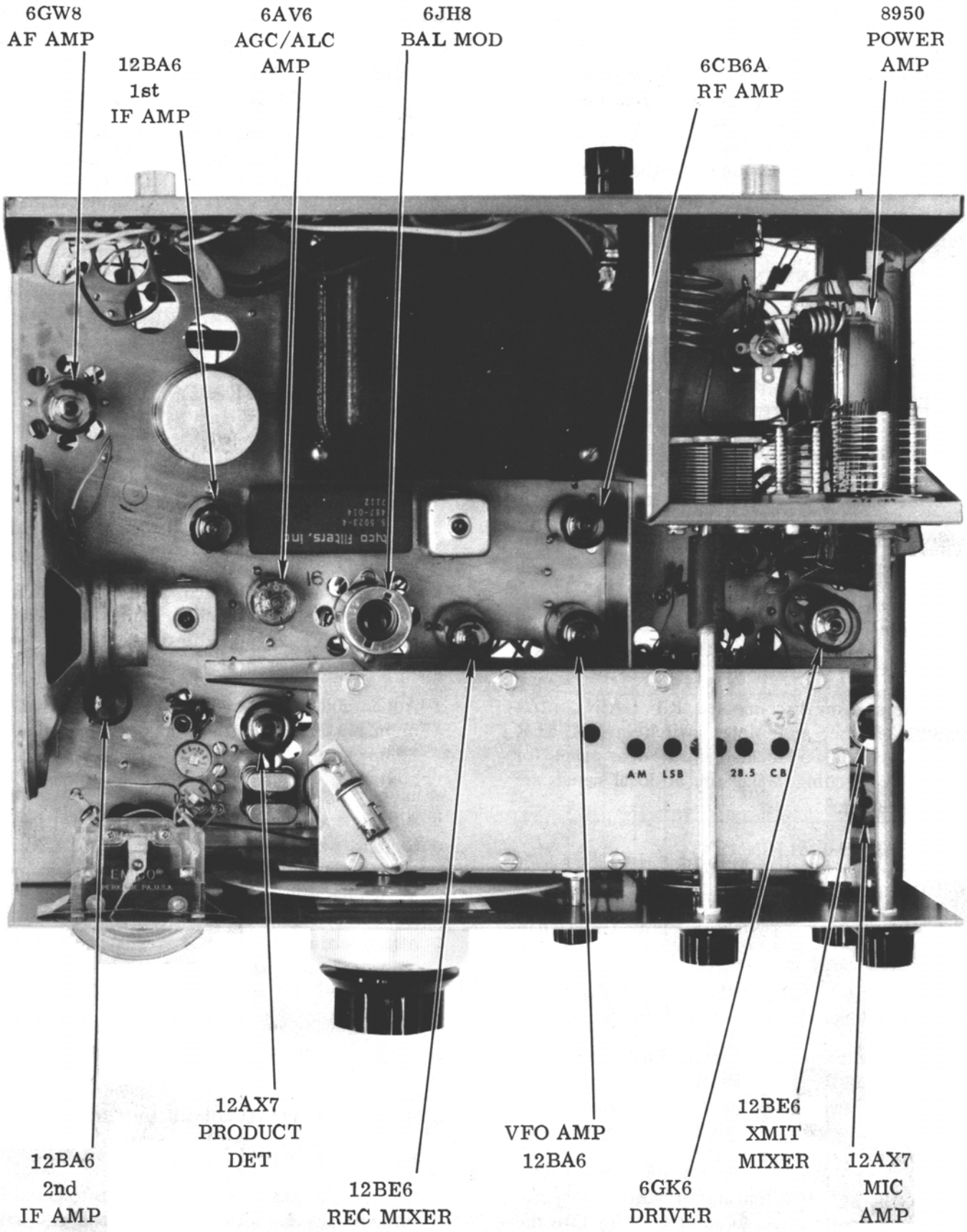

FIGURE 6. SILTRONIX MODEL 1011C, TOP VIEW

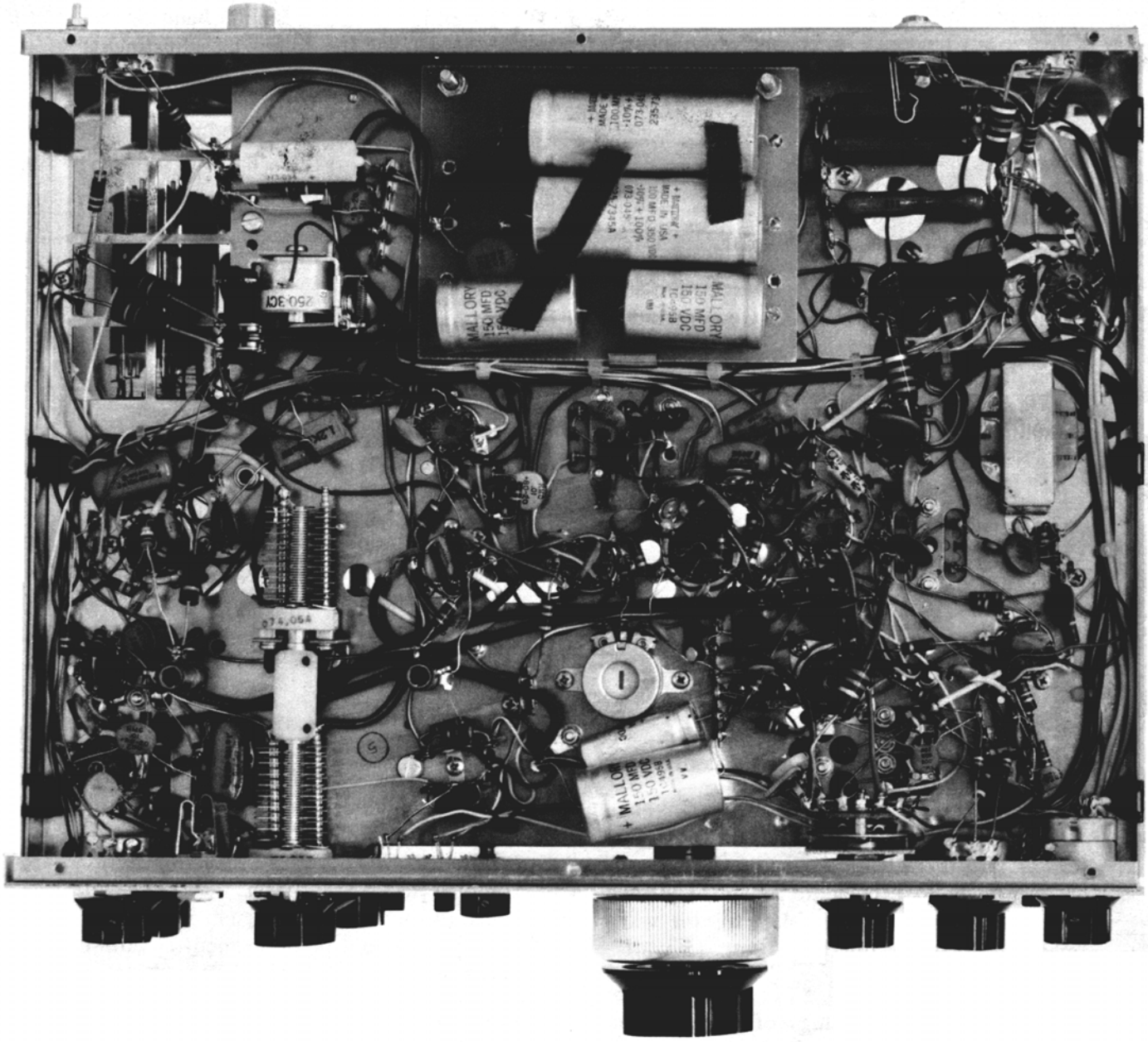

FIGURE 7. SILTRONIX MODEL 1011C, BOTTOM VIEW

the DRIVER control for a peak. Quickly readjust the CARRIER BALANCE control to 100 ma. if it increased to a higher reading.

e With the Mic. button still pressed, rotate the P.A. TUNE control through its range from 9 o'clock to 3 o'clock. You will note a pronounced "dip" in meter reading at resonance. Observe any tendency for the meter to "peak" above the 100 ma. plateau on either side of resonance. If there is such a peak, adjust C401, the P.A. NEUTRALIZING trimmer to suppress the peak. When properly neutralized, the meter reading will hold steadily at 100 ma. except for the sharp dip at resonance, but there will be no peak above the 100 ma. level.

f Key the transmitter with the Mic. button, and readjust the CARRIER BALANCE control for minimum Power Amplifier current. Power Amplifier idling current should be on the *"delta"* symbol. If not, repeat the Power Amplifier Bias adjustment described in TRANSMITTER ALIGNMENT, STEP 1.

4. Carrier Frequency Adjustment.

A dummy load wattmeter and audio generator are required for this adjustment.

a After allowing a five minute warm-up period, tune the transmitter to approximately 28.5 MHz USB.

b Key the transmitter with the Mic. button, and adjust the CARRIER BALANCE control for minimum power amplifier current.

c Insert 1500 Hertz of audio from an audio generator into the MIC. jack on the front panel. Adjust the gain of the audio generator and the MIC GAIN control (R1404) until the wattmeter reads approximately 10 to 15 watts.

d Adjust the First I.F. coil, L701, for maximum output. Adjust both slugs of the balanced modulator transformer, T1301, for maximum output.

e Increase gain of audio generator until the wattmeter reads 40 watts. Sweep generator down to 200 Hertz and adjust the USB carrier oscillator trimmer, C1503, for a reading of 10 watts.

f Switch to the LSB position. Adjust the LSB carrier oscillator trimmer, C1501, for a reading of 10 watts.

g Re-check with audio generator set at 1500 Hertz and 40 watts. Sweep down to 200 Hertz and readjust carrier oscillator trimmers, if required, for 10 watts.

NOTE

An RF signal generator or AM transmitter covering the CB or 10-meter bands will be required for the following adjustments.

h Switch to USB. Tune in an AM carrier from the transmitter or an unmodulated signal from the generator. Adjust the main tuning dial for zero beat.

i Switch to LSB and retune for zero beat using the LSB VFO shifter (C1621).

NOTE

An AM transmitter must be used for the following steps.

j Apply voice modulation to the AM transmitter and adjust the AM VFO shifter (C1613) for best received audio quality.

k Remove modulation from the AM transmitter. Turn the SPOT switch on and adjust the AM carrier oscillator trimmer (C1507) for zero beat.

5. VFO Calibration

After allowing approximately five minutes for warm-up, set the main tuning dial to lowest frequency in the band for which you have a frequency standard or marker generator signal. Adjust the dial set to the 12 o'clock position. Locate the VFO cover and adjust the appropriate trimmer to zero – beat the VFO with the standard or generator signal. This adjustment procedure should be performed for both the CB and 10-meter bands in the USB position.

Use an insulated alignment tool for adjustment. Accuracy in other parts of the bands will be quite good, but remember that the 1011C is not to be considered a frequency standard; be cautious when operating near band edges.

6. Troubleshooting.

The information contained in Figures 6 and 7, together with the voltage and resistance measurements in Table 1; and the information in Table 2, should be sufficient for most troubleshooting by the average licensed amateur radio operator.

TABLE 1. VOLTAGE AND RESISTANCE MEASUREMENTS

Voltage measurements were taken using a HEWLETT PACKARD Model 410C/B VTVM. Resistance measurements were taken using a SIMPSON Model 260 Volt-Ohm meter.

TUBE TYPE	R = Rec. T = Trans.	Socket Pin Numbers								
		1	2	3	4	5	6	7	8	9
V1 12BA6	R Volts	-.6	0	0	12.6AC	45	45	0		
VFO Amp.	T Volts	-.6	0	0	12.6AC	50	50	0		
	Ohms	1.2K	0	0	0.2	0	*	0		
V2 12BE6	R Volts	-1.2	0	0	12.6AC	250	-2	0		
Trans. Mixer	T Volts	-1.0	0	0	12.6AC	250	135	0		
	Ohms	100K	0	0	.02	*	11K	35K		
V3 6GK6	R Volts	0	-6.7	0	12.6AC	6.3AC	NC	255	0	0
Driver	T Volts	0	-6.7	0	12.6AC	6.3AC	NC	265	225	0
	Ohms	10	100K	0	0.1	0.3	NC	*	0.2	0
V5 6CB6A	R Volts	0	0	6.3AC	12.6AC	255	115	0		
Rec. R.F.	T Volts	0	0	6.3AC	12.6AC	255	0	0		
	Ohms	1.1M	0	0.1	0.1	14K	40K	0		
V6 12BE6	R Volts	-3.7	0	12.6AC	12.6AC	220	110	0		
Rec. Mixer	T Volts	-3.4	0	12.6AC	12.6AC	220	0	0		
	Ohms	200K	0	0	0	20K	20K	70K		
V7 12BA6	R Volts	-1.8	0	0	12.6AC	210	48	0		
1st I.F.	T Volts	-1.8	0	0	12.6AC	220	50	0		
	Ohms	500	0	0	0.1	15K	50K	0		
V8 12BA6	R Volts	-1.7	0	0	12.6AC	205	105	0		
2nd I.F.	T Volts	-1.7	0	0	12.6AC	225	0	0		
	Ohms	110K	0	0	0.1	15K	40K	0		
V9 12AX7	R Volts	55	-1	0	0	0	145	-.25	0	6.3AC
Det. A.F.	T Volts	-3	-1.6	0	0	0	0	-.25	0	6.3AC
	Ohms	400K	11K	300	0	0	125K	1M	0	0.2
V10 6AV6	R Volts	0	2.0	6.3AC	12.6AC	0	0	225		
AGC Amp.	T Volts	0	1.6	6.3AC	12.6AC	0	0	175		
	Ohms	500K	5K	0.2	0.1	0	700K	100K		
V11	R Volts	0	1.9	215	0	6.3AC	250	9	0	170
A.F. Output	T Volts	.7	0	0	0	6.3AC	250	0	0	0
	Ohms	22	10K	10K	0	0	8K	2.5K	1.1M	120K
V13 6JH8	R Volts	0	0	0	6.3AC	0	-1.4	0	0	0
Bal.Mod.	T Volts	45	45	75	6.3AC	0	-1.4	0	100	100
	Ohms	2K	.75K	500K	0.2	0	35K	0	75K	75K
V14 12AX7	R Volts	50	0	0	0	0	0	0	0	6.3AC
Mic. Amp	T Volts	45	0	0	0	0	75	0	0	6.3AC
	Ohms	1M	0	0	0	0	600K	0	10K	0.2
		1	2,6	3,11	4,10	5,9	7,8	12		
V4 8950	R Volts	0	0	0	0	-75	NC	12.6AC		
Pwr. Amp	T Volts	0	0	180	0	-75	NC	12.6AC		
	Ohms	0	2.4	100	0	180K	NC	0		

TABLE 2. TROUBLESHOOTING GUIDE

DEFECT	POSSIBLE CAUSE
PA Idling Current Unstable	1. Defective Power Amplifier Tube (V4). 2. Defective BIAS control and/or associated components. 3. Defective bias power supply.
Inability to Load per Operation Instructions	1. Antenna not resonant at operating frequency. 2. Defective transmission line. 3. Defective antenna loading coil(s). 4. Tubes V1 through V4 defective.
Insufficient Sideband Suppression	1. Carrier Oscillator (Q3) operating on incorrect frequency. 2. Crystal filter defective or mistuned.
Insufficient Carrier Suppression	1. Tube V13 defective. 2. Transformer T1301 defective or mistuned. 3. Carrier Oscillator (Q3) operating on incorrect frequency.
Microphonics in Transmitter	1. Tubes V13 and/or V14 defective. 2. IF coil L701 Defective or incorrectly adjusted. 3. Microphone defective.
Low Receiver Sensitivity	1. Tubes V5 through V10 defective. 2. Incorrect adjustment of the transmitter Pi-Network. 3. IF coil L801 incorrectly adjusted or defective. 4. K1 relay contacts defective.

TABLE 3. VFO AND CARRIER OSCILLATOR FREQUENCIES

Tuning Dial	V1 Injection Frequency	Q1 Osc. Frequency	Q3 Osc. Carrier Frequency
26,950 KC	21,450 KC	(1/2) 10,725 KC	5500 KC
27,260 KC	21,760 KC	(1/2) 10,880 KC	5500 KC
28,500 KC	23,000 KC	(1/2) 11,500 KC	5500 KC
29,000 KC	23,500 KC	(1/2) 11,750 KC	5500 KC

PARTS LIST

RESISTORS

All resistors are ½ watt 10% tolerance, unless otherwise noted.

R101	82 Ohm
R102	47K
R103	10K-2W
R104	56 Ohm
R201	27K
R202	100K
R204	10K-2W
R205	470K
R206	2.7K
R207	100K
R301	100K
R302	100K
R303	10 Ohm
R304	100 Ohm
R401	100 Ohm
R402	25K Bias Pot.
R403	4.7K
R404	1K
R405	3 Ohm-5W
R406	100 Ohm-5W
R407	2.7K
R408	15K
R501	100K
R502	220K
R503	470 Ohm
R504	10K
R505	25K RF Gain Pot
R506	10K
R507	470K
R601	470K
R701	1.5K
R702	33K-2W
R703	1K
R704	47K
R705	25K S-Meter Zero Pot
R706	15K
R707	47K-2W
R708	100K
R801	100K
R802	1K
R803	4.7K
R901	100K
R902	270 Ohm
R903	270K
R904	47K
R905	10 Meg
R906	1 Meg
R907	47K
R908	100K
R1001	1 Meg
R1002	270K
R1003	470K
R1004	4.7K
R1005	15K
R1006	2.2 Meg
R1007	270K
R1008	2.2 Meg
R1009	100K
R1010	150K, ½W
R1101	1 Meg AF Gain Pot
R1102	10K
R1103	100K
R1104	1 Meg
R1105	270 Ohm
R1301	1K
R1302	10K
R1303	10K
R1304	270K
R1305	10K-1W
R1306	27K
R1307	27K
R1308	5K Car. Bal. Pot
R1309	1K
R1310	100K
R1311	27K
R1312	Selected Value
R1313	5K Carrier Insertion Pot
R1401	150K
R1402	47K
R1403	1K
R1404	1 Meg Mic. Gain Pot
R1405	270K
R1406	470K
R1407	2.2 Meg
R1408	47K
R1501	47K
R1502	68K-2W
R1503	22K
R1504	2.2K
R1505	1.5K
R1506	100 Ohm
R1507	47K
R1601	2.7K
R1602	1.5K
R1603	1K
R1604	4.7K
R1605	470 Ohm
R1606	2.7K
R1607	1K
R1608	470 Ohm
R1609	470 Ohm
R1610	4.7K
R1701	10K-2W
R1702	4.7 Ohm
R1703	150K-2W
R1704	150K-2W
R1705	800 Ohm-10W
R1706	1.2K-5W
R1707	270K
R1708	2.7K
R1709	800 Ohm-10W
R1710	500 Ohm-10W

TRANSISTORS

Q1	2N706 Oscillator
Q2	2N5130 Buffer
Q3	2N706 Car. Oscillator

DIODES

D201	1N914
D401	1N34A
D501	1N914
D701	1N914
D702	1N914
D703	1N914
D901	1N34A
D1001	1N914
D1002	1N34A
D1003	1N34A
D1601	1N914
D1702	1A-600V
D1703-1706	RCA 39804
D1707-1710	RCA 39804
D1711	RCA 39804
D1712	1N4742 Zener

COILS

L101	VFO Amp
L201	Trans. Mixer
L301	Driver
L302	82 uh
L401	82 uh
L402	55 uh
L403	Pi-Network
L404	30 uh
L701	5500KC IF
L801	5500KC IF
L1501	200 uh
L1601	VFO Coil
L1602	200 uh
L1603	200 uh
L1701	200 uh
L1702	17 uh

CAPACITORS

Unless otherwise specified, a capacitor is listed in pico farads with a whole number and in micro farads with a decimal number.

C101	.01 +80-20% 500V Disc
C102	.002 20% 1KV Disc
C103	27pf Disc
C105	15pf Disc
C106	5pf Disc
C107	2pf Disc
C110	.01 +80-20% 500V Disc
C111	.002 20% 1KV Disc
C202	.01 +80-20% 500V Disc

C203	470pf SM
C204	2pf 500V Ceramic
C205	.002 20% 1KV Disc
C206	1.5 pf
C207	.01
C2A	20pf Driver Tuning
C2B	20pf Driver Tuning
C302	.002 20% 1KV Disc
C303	510pf SM
C304	.002 20% 1KV Disc
C305	5pf
C401	20pf Neut. Trimmer
C402	15pf 3KV Disc
C403	.01 +80-20% 500V Disc
C404	.002 20% 1KV Disc
C405	.01 +80-20% 500V Disc
C406	270pf 2500V Mica
C407	40pf P.A. Tune
C408	410pf P.A. Load
C409	.01 +80-20% 500V Disc
C410	.01 +80-20% 500V Disc
C501	.01 +80-20% 500V Disc
C502	.01 +80-20% 500V Disc
C503	30pf Disc
C601	.01 +80-20% 500V Disc
C602	220pf Disc
C603	430pf SM
C701	1MFD 50V
C702	50pf Disc
C703	.01 +80-20% 500V Disc
C704	.01 +80-20% 500V Disc
C705	2pf Disc
C706	.01 +80-20% 500V Disc
C801	.01 +80-20% 500V Disc
C802	.01 +80-20% 500V Disc
C803	.01 +80-20% 500V Disc
C804	50pf Disc
C805	50pf Disc
C901	220pf Disc
C902	.002 20% 1KV Disc
C903	150 pf Disc
C904	2 MFD 450V
C905	500pf Disc
C906	.002 20% 1KV Disc
C1001	.05 200V Mylar
C1002	.05 200V Mylar
C1003	.001 20% Disc
C1004	.01 +80-20% 500V Disc
C1005	.001 20% Disc
C1006	.001 20% Disc
C1007	.001 20% Disc
C1101	220pf Disc
C1102	.002 20% 1KV Disc
C1103	500pf Disc
C1104	.01 10%1000V Tubular
C1301	.01 +80-20% 500V Disc
C1302	.01 +80-20% 500V Disc
C1303	.01 +80-20% 500V Disc
C1304	.01 +80-20% 500V Disc
C1305	.01 +80-20% 500V Disc
C1306	220pf Disc
C1307	.002 20% 1KV Disc
C1401	.01 +80-20% 500V Disc
C1402	.1 10% 400V Mylar
C1403	.01 +80-20% 500V Disc
C1404	.01 +80-20% 500V Disc
C1405	.1 10% 400V Mylar
C1406	100pf Disc
C1407	.01 +80-20% 500V Disc
C1501	6-30pf Ceramic Trimmer
C1502	10pf Disc
C1503	6-30pf Ceramic Trimmer
C1504	270pf SM
C1505	270pf SM
C1506	.01 +80-20% 500V Disc
C1507	30pf
C1601	Selected
C1602	5pf Trimmer
C1603	5pf Trimmer
C1605	Selected
C1608	10pf Main Tuning
C1609	Selected
C1610	2pf Dial Set
C1611	20pf Disc
C1612	270pf SM
C1613	5-30pf Ceramic Trimmer
C1614	.01 +80-20% 500V Disc
C1615	.01 +80-20% 500V Disc
C1616	300pf SM
C1617	27pf SM
C1618	.01 +80-20% 500V Disc
C1619	.01 +80-20% 500V Disc
C1620	.002 20% 1KV Disc
C1621	5-30pf Ceramic Trimmer
C1622	.01 +80-20% 500V Disc
C1701	.01 +80-20% 500V Disc
C1702	100 MFD 35V
C1703	.01 +80-20% 500V Disc
C1705	.0047 1KV
C1706	.0047 1KV
C1707	150 MFD 150V
C1708	100 MFD 350V
C1709	100 MFD 350V
C1710	.002 20% 1KV Disc
C1711	.01 +80-20% 500V Disc
C1712A	80 MFD 400V
C1712B	80 MFD 400V
C1712C	5 MFD 400V
C1712D	5 MFD 400V
C1713	150 MFD 150V
C1714	150 MFD 150V

TRANSFORMERS

T1101	A.F. Output Trans.
T1301	5500KC Bal. Mod. Trans.
T1701	Power Trans.
Z401	Parasitic Suppressor

RELAYS

K1	3 PDT Relay, 12 VDC Coil

CRYSTALS

Y1501	5500KC Carrier Oscillator
Y1502	5504.6KC Carrier Oscillator

TUBES

V1	12BA6 VFO Amp.
V2	12BE6 Trans. Mixer
V3	6GK6 Driver
V4	8950 Power Amp.
V5	6BZ6 Rec. RF Amp.
V6	12BE6 Rec. Mixer
V7	12BA6 First IF Amp.
V8	12BA6 Second IF Amp.
V9	12AX7 Prod. Det/Rec. Audio
V10	6AV6 AGC/ALC Amp.
V11	6GW8 AF Output
V13	6JH8 Bal. Mod.
V14	12AX7 Trans AF/Mic. Amp.

SWITCHES

S1A-B	Bandswitch
S2	Power Off and On (Part of RF Gain)
S3	Rec. Tune
S4	P.A. Cath./S-Meter
S5	ANL
S6	Sideband Selector

WARRANTY POLICY

Siltronix Corporation warrants this equipment against defects in material or workmanship, except for tubes, transistors, and diodes, under normal service for a period of 6 months from date of original purchase. Tubes, transistors, and diodes are covered under the warranty policy for a period of 90 days. This warranty is valid only if the enclosed card is properly filled in and mailed to the factory within ten days of date of purchase. Do not ship to the factory without prior authorization. This warranty is limited to repairing or replacing only the defective parts,. and is not valid if the equipment has been tampered with, misused or damaged. All returns for repairs must be sent freight prepaid. Siltronix will prepay the return freight.