NOTE

Repair or adjustment of transmitter circuits must be under supervision of a person with first-or second-class radiotelephone license.
(Refer to FCC Rules and Regulations Part 95, Subpart C & D.)

The frequency of the transmitter should be checked periodically with a secondary frequency standard to insure proper and legal operation.

Best results will be obtained when adjusting the final RF output circuit if the antenna normally used is connected and the chassis is as nearly in the cabinet as possible.

Connect either 50-ohm dummy load or the normally used antenna system.

SPECIFICATIONS

GENERAL SPECIFICATIONS

Description

Transmitter ..... Crystal controlled PLL synthesizer, amplitude modulation
Receiver ..... Crystal controlled double conversion, superheterodyne system
Communicating frequencies ..... All 40 CB channels (26.965 to 27.405 MHz)
(All 18 channels [27.015 to 27.225 MHz] for Australian models)
Voltage operation ..... 12 — 16 V DC
(positive or negative ground vehicles)
Temperature and Humidity range ..... −30° C to +60° C and 10% to 90%
Transmitter/Receiver switching ..... Electronic

STANDARD TEST CONDITIONS

Battery supply voltage ..... 13.8 V DC
Modulation ..... 1000 Hz, 30%
Receiver output power ..... 500 mW at external SP.
Receiver output impedance ..... 8 ohms, non-inductive
Ant. load impedance of transmitter ..... 50 ohms, non-inductive
Ambient conditions
temperature ..... 17 to 23°C
humidity ..... 40 to 70%

TRANSMITTER SPECIFICATIONS

Description	Nominal	Limit
RF power output	4.0 watts (max.)	3.6-4.4watts
Emission	8A3 (6A3 for Australian models)	
Modulation Capabilities	+90%, −100%	
AMC Range at 1 kHz	40 dB	30 dB
Frequency accuracy	0.002%	0.005%
Spurious radiation & Harmonic signal radiation ratio from fundamental ..	−65 dB	−60 dB
Mic Sensitivity (50% Mod. 1 kHz)	1.5 mV	<2 mV
Current consumption		
unmodulated	1050 mA	1400 mA
1 kHz, 80% mod.	1650 mA	1950 mA
Envelope distortion ...	10% max. 1000 Hz, 50% mod.	
Hum and Noise level ...	40 dB min. below max. mod.	
Stability against variation of antenna impedance ..	Satisfactory when dummy antenna is varied from 40 ohms to 200 ohms.	

RECEIVER SPECIFICATIONS

Description	Nominal	Limit
Intermediate frequency		
1st IF	10.695 MHz	
2nd IF	455 kHz	
Sensitivity for 500 mW output	0.25 μV	0.5 μV
Sensitivity at 10 dB S + N/N ..	0.6 μV	1.2 μV
Adjacent Channel Rejection ...	60 dB	56 dB
Image Rejection at 5.7 MHz	45 dB	35 dB
Bandwidth (−6 dB)	7.6 kHz	5 − 9 kHz
Signal-to-Noise ratio		
at 1 mV input	40 dB	34 dB
Distortion at 1 mV input	2.5%	<5%
AGC figure of merit		
at 50 mV input	90 dB	>70 dB
Power output at 500 μV Input		
Undistorted (10% THD) ...	3.5W	>3 W
Maximum	5 W	>4 W
Electrical fidelity compared to 1000 Hz		
450 Hz	−6 dB	−6 ± 3 dB
2500 Hz	−6 dB	−6 ± 3 dB
Cross Modulation	50 dB	>45 dB
Squelch	Adjustable from 0.8 μV to 1 mV	
Current consumption		
(no signal)	300 mA	<350 mA

OTHER ITEMS

Fuse ..... 2 Amp.
General power requirement ..... 12 − 16 V DC
Dimensions ..... (H)1-21/32"(42mm) × (W)5-15/32"(139mm) × (D)8-9/16"(217mm)
Weight ..... 2 Lbs. 3 oz. (1.0 kg)

NOTE: Nominal Specs represent the design specs; all units should be able to approximate these − some will exceed and some may drop slightly below these specs. Limit Specs represent the absolute worst condition which still might be considered acceptable; in no case should a unit perform to less than within any Limit Spec.

ALIGNMENT INSTRUCTIONS

PLL SECTION

1. Test Equipment Required

a. Frequency Counter
b. DC Power Supply (13.8 Volt, 2.5 Amp.)
c. RF Output Power Meter
d. DC Volt Meter (above 100 K Ω /V)

NOTE: Figure 1 provides test point and alignment location information.

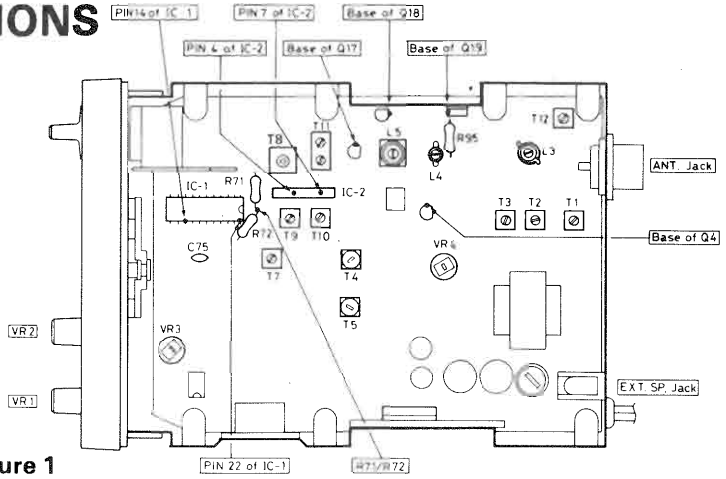


Figure 1

2. Alignment Procedure

STEP	OUTPUT INDICATOR CONNECTION	ADJUST	ADJUST FOR
1	MIC: Receive, POWER: "on", VOLUME: Optional, SQUELCH: Optional, Channel Selector: Optional, ANL: OUT.		
2	Connect Frequency Counter to pin 14 of IC-1. (Figure 2)	C75	If the frequency is not 10.240 MHz ± 300 Hz, change value of C75 (15 — 33 pF).
3	Connect RF V.T.V.M. (or Oscilloscope) to pin 22 on IC-1. (Figure 3)	T7	Alignment of Programmable Divider Input Adjust for maximum indication on RF V.T.V.M. (or Oscilloscope). REFERENCE: 0.8 — 1.2 Vpp
4	MIC: Transmit, Channel Selector: Channel 40 (Channel 18 for Australian models).		
5	Connect DC Volt Meter to R71/R72 (Figure 4)	T8	Alignment of VCO Adjust for 6.0 (5.0 for Australian models) Volt indication on DC Volt Meter.
6	MIC: Receive, Channel Selector: Channel 1		
7	Same as step 5	Check for indication on DC Volt Meter; must be 2.8—3.3 Volt (or 3.0—4.0 Volt for Australian models). If DC Volt Meter does not indicate 2.8—3.3 Volt (or 3.0—4.0 Volt for Australian models) readjust T8 (return to step 5).	

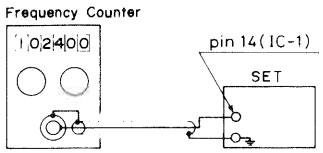


Figure 2

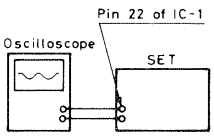


Figure 3

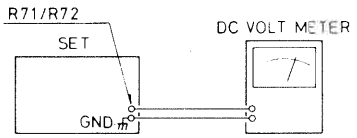


Figure 4

TRANSMITTER SECTION

1. Test Equipment Required

a. RF Output Power Meter
b. 50 Ohm Load (non-inductive)
c. RF Attenuator
d. Oscilloscope
e. Audio Generator
f. DC Power Supply (13.8 Volt, 2.5 Amp.)
g. Field Strength Meter (or Spectrum Analyzer)
h. Frequency Counter
i. Coupler

NOTE: Figure 1 provides test point and alignment location information.

2. Alignment Procedure

STEP	OUTPUT INDICATOR CONNECTION	ADJUST	ADJUST FOR
1	MIC: Transmit, POWER: "on", VOLUME: Optional, SQUELCH: Optional, Channel Selector: Channel 18 (Channel 9 for Australian models), ANL: OUT		
2	Connect RF V.T.V.M. to pin 4 of IC-2 (Figure 5)	T9	Alignment of Transmit Mixer ①Adjust for maximum indication on RF V.T.V.M. ②If the indication on RF V.T.V.M. is above 110 mV, adjust core of T9 upwards (counter-clockwise) to obtain a 110 mV reading.
3	Disconnect R95 (or short base of Q19 to ground with 0.01 μF). (Figure 6)		
4	Connect RF V.T.V.M. to pin 7 of IC-2. (Figure 7)	T10	Alignment of Pre-Driver Stage Adjust for maximum indication on RF V.T.V.M.
5	Connect RF V.T.V.M. to base of Q17. (Figure 8)	T11	
6	①Make sure that the level (at base of Q17) of Channel 1 and Channel 40 (Channel 18 for Australian models) is above 500 mV on RF V.T.V.M. ②Make sure that the differential level (at base of Q17) of Channel 1 and Channel 40 (Channel 18 for Australian models) is below 30 mV on RF V.T.V.M. If the differential level (and level) is above 30 mV (and below 500 mV), repreat steps 4 and 5 as necessary to obtain maximum output.		
7	Connect RF V.T.V.M. to base of Q18. Connect Power Meter through Dummy Load to ANT connector. (Figure 9)	L5	Alignment of Pre-Driver Adjust for maximum indication on RF V.T.V.M.; then back off 1/2 turn (downwards) from peak.
8	Re-connect R95 (or remove shorting capacitor). (Figure 10)		
9	Connect RF V.T.V.M. to base of Q19 (Figure 11)	L4	Alignment of Drive Adjust for maximum indication on RF V.T.V.M.
10	Set Channel Selector to Channel 40 (Channel 18 for Australian models).		
11	Connect Dummy Load and Frequency Counter through Coupler to RF Power Meter. Connect RF Power Meter to EXT. ANT Jack on Set. (Figure 12)	L3	Alignment of Final Stage Adjust for maximum indication on RF Power Meter; then adjust ½ turn up from peak. Also check if frequency is correct.

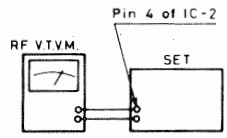


Figure 5

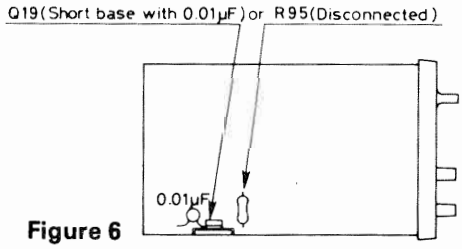


Figure 6

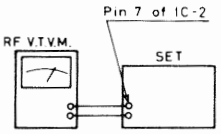


Figure 7

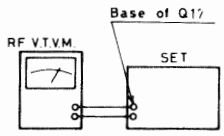


Figure 8

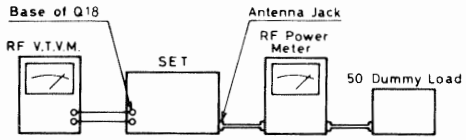


Figure 9

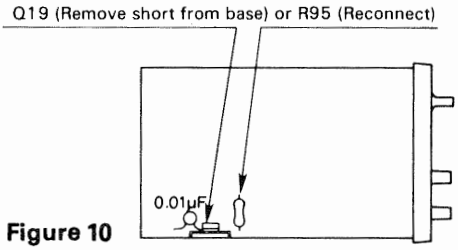


Figure 10

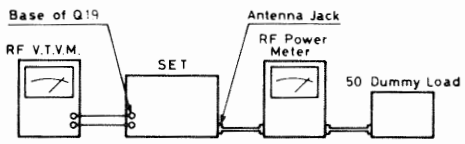


Figure 11

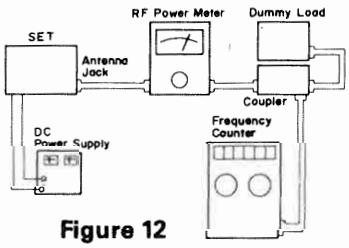


Figure 12

STEP	OUTPUT INDICATOR CONNECTION	ADJUST	ADJUST FOR
12	Make sure that the differential output power between channels is less than 0.2 Watt. If the differential output power is more than 0.2 Watt, repeat steps 9 through 11 until no further improvement can be made.		
13	Set Channel Selector to Channel 18 (Channel 9 for Australian models).		
14	Same as step 11.		Check that RF output power is 3.7 to 4.3 W on all channels with no modulation. If it is not within the above range, change R95 value (0—15 ohms).
15	Connect Dummy Load and Oscilloscope through Coupler to RF Power Meter. Connect RF Power Meter to EXT. ANT Jack on Set. (Figure 13)		
16	Audio Generator (1 kHz) across C115 or to Microphone Connector, pin 4. (Figure 13) Adjust audio signal level to obtain 80—100% modulation level.		Check scope pattern for proper modulation
17	Connect Dummy Load and Field Strength Meter through Coupler to RF Power Meter. Connect RF Power Meter to EXT. ANT Jack on set. (Figure 14) Tune to 2nd harmonic frequency 54.35 MHz (54.23 MHz for Australian models) on Field Strength Meter.	T12	Alignment of 2nd harmonic frequency Adjust for min. 54.35 MHz (54.23 MHz for Australian models) indication on Field Strength Meter.
18	Check level of fundamental and 2nd harmonic frequency 54.35 MHz (54.23 MHz for Australian models).		
19	Check suppression of 2nd harmonic frequency 54.35 MHz (54.23 MHz for Australian models) compared to fundamental (must be better than —70 dB).		
20	Check all Channels and if necessary, repeat steps 17 through 19 to obtain more than —65 dB on all channels with no modulation.		
21	When output power of transmit is 4 ± 0.3 Watt, make sure that S/RF Meter on set indicates 1/4—7/8 on red zone. If indication of S/RF Meter is not 1/4—7/8 on red zone, change R2 (4.7KΩ —15KΩ). (see Figure 15)		

:If you have a Spectrum Analyzer, you can obtain more precise readings with it.

STEP	OUTPUT INDICATOR CONNECTION	ADJUST	ADJUST FOR
A	Connect Spectrum Analyzer and RF Attenuator through RF Power Meter. Connect RF Power Meter to EXT. ATN. Jack on Set. (Figure 16)	T12	Adjust for min. 54.35 MHz (54.23 MHz for Australian models) indication on Spectrum Analyzer.
B	Go to step 18.		

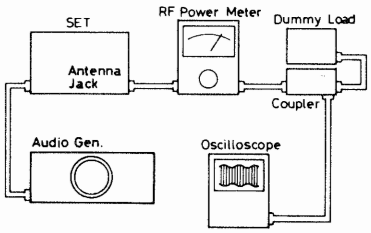


Figure 13

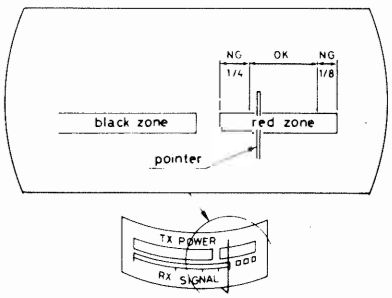


Figure 15

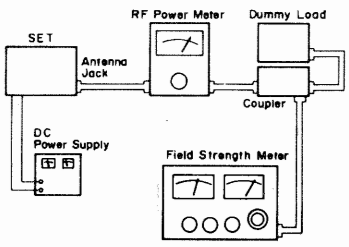


Figure 14

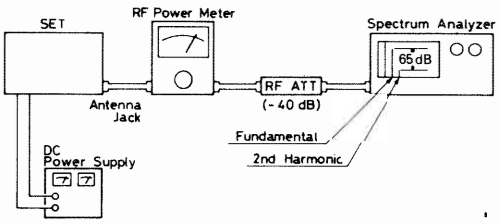


Figure 16

RECEIVER SECTION

1. Test Equipment Required

a. RF Signal Generator
b. V.T.V.M.
c. Oscilloscope
d. Distortion Meter

2. General Alignment Conditions

1. Signal input must be kept as low as possible, to avoid overload and clipping. (Use highest possible sensitivity of output indicator.)
2. Standard modulation is 1000 Hz at 30% amplitude.
3. A non-metallic alignment tool must be used for all adjustments.
4. Power supply adjusted for 13.8V DC, 2A

NOTE: Figure 1 provides alignment location information.

3. Alignment Procedure

STEP	SET SIGNAL	ADJUST	ADJUST FOR
1	MIC: Receive, POWER: "on", VOLUME: fully clockwise, SQUELCH: fully counterclockwise, Channel Selector: Channel 18 (Channel 9 for Australian models), ANL: OUT.		
2	Connect RF Signal Generator to base of Q4 through 0.01 μF Capacitor. Connect V.T.V.M. across EXT. Speaker Jack with 8 Ω Dummy load. (Figure 17)		
3	455 kHz, 1 kHz 30% Modulation. The output of RF Signal Generator must be adjusted to minimum level so that the IF circuit is not saturated.	T4	Alignment of 2nd IF
4		T5	Adjust for maximum output.
5	Connect RF Signal Generator to Antenna Connector. Connect V.T.V.M. and Distortion Meter across EXT. Speaker Jack with 8 Ω Dummy load. (Figure 18)		
6	27.175 MHz (*27.115) 1 kHz, 30% Mod.	T1	Overall Adjustment
7		T2	Adjust for maximum indication on V.T.V.M. Be sure to lower RF input signal level to maintain an audio output level of 500 mW (2 V).
8		T3	
9	If Audio output is below 500 mW when RF SG output is 0.25 μV, go back to step 6 through 8 and readjust. If still improper, change R15 value (0—15 ohms).		
10	27.175 (*27.115) MHz 1 kHz, 30% Mod. Set Output of RF SG to 5 mV.	T5	Alignment of T5 Adjust for minimum indication on Distortion Meter (reference 1.5 — 2%)
11	27.175 (*27.115) MHz 1 kHz, 30% Mod. Set output of RF SG to 100 μV.	VR-4	Adjustment of S-Meter Adjust for S-9 indication on S/RF Meter.
12	27.175 (*27.115) MHz 1 kHz, 30% Mod. Set output of RF SG to 1 mV.	VR-3	Adjustment of SQUELCH 1. Turn VR-3 fully counterclockwise. (At this time, output will be "ON".) 2. Then, slowly adjust in a counterclockwise direction. As you rotate, output will cease; as you continue, output will return. The best adjustment point is just when output returns.

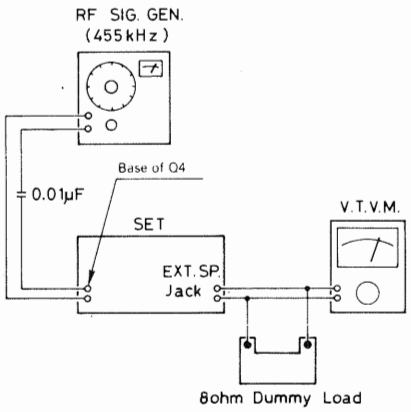


Figure 17

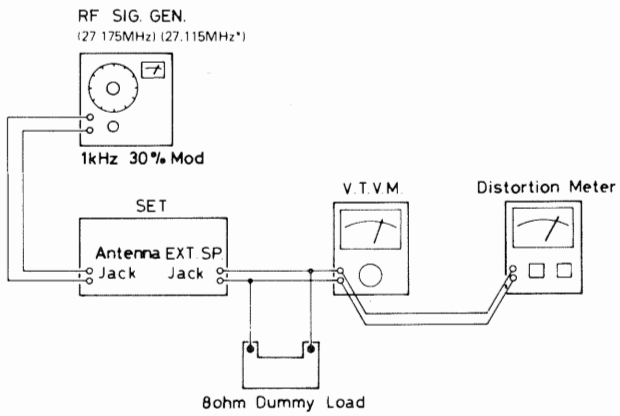


Figure 18

FREQUENCIES GENERATED AND MIXED TO OBTAIN EACH CHANNEL

RECEIVE

*VCO FREQUENCY = [(N/2048 + 1.5)] × [REFERENCE FREQUENCY (10.240 MHz)]

TRANSMIT

*VCO FREQUENCY = [(N/2048 + 1.5) × (REFERENCE FREQUENCY (10.240 MHz)]
*TRANSMIT FREQUENCY
= (VCO FREQUENCY) + [REFERENCE FREQUENCY (10.240 MHz)]

For USA & Canadian models

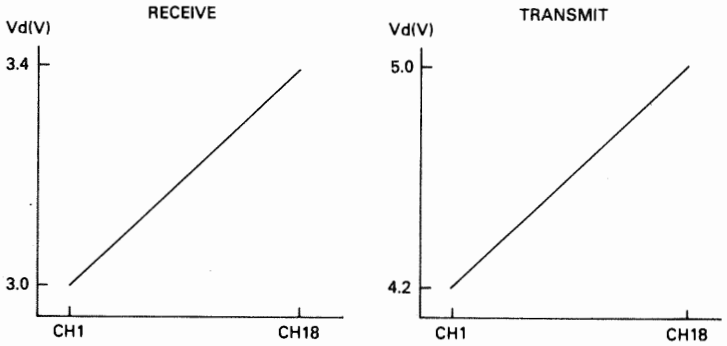
CHANNEL NUMBERS	BCD INPUT TO IC-1		RECEIVE		TRANSMIT		
	IC-1 PIN NUMBERS 8765	4321	N	VCO FREQUENCY (MHz)	N	VCO FREQUENCY (MHz)	TRANSMIT FREQUENCY (MHz)
1	0000	0001	182	16.270	273	16.725	26.965
2	0000	0010	184	16.280	275	16.735	26.975
3	0000	0011	186	16.290	277	16.745	26.985
4	0000	0100	190	16.310	281	16.765	27.005
5	0000	0101	192	16.320	283	16.775	27.015
6	0000	0110	194	16.330	285	16.785	27.025
7	0000	0111	196	16.340	287	16.795	27.035
8	0000	1000	200	16.360	291	16.815	27.055
9	0000	1001	202	16.370	293	16.825	27.065
10	0001	0000	204	16.380	295	16.835	27.075
11	0001	0001	206	16.390	297	16.845	27.085
12	0001	0010	210	16.410	301	16.865	27.105
13	0001	0011	212	16.420	303	16.875	27.115
14	0001	0100	214	16.430	305	16.885	27.125
15	0001	0101	216	16.440	307	16.895	27.135
16	0001	0110	220	16.460	311	16.915	27.155
17	0001	0111	222	16.470	313	16.925	27.165
18	0001	1000	224	16.480	315	16.935	27.175
19	0001	1001	226	16.490	317	16.945	27.185
20	0010	0000	230	16.510	321	16.965	27.205
21	0010	0001	232	16.520	323	16.975	27.215
22	0010	0010	234	16.530	325	16.985	27.225
23	0010	0011	240	16.560	331	17.015	27.255
24	0010	0100	236	16.540	327	16.995	27.235
25	0010	0101	238	16.550	329	17.005	27.245
26	0010	0110	242	16.570	333	17.025	27.265
27	0010	0111	244	16.580	335	17.035	27.275
28	0010	1000	246	16.590	337	17.045	27.285
29	0010	1001	248	16.600	339	17.055	27.295
30	0011	0000	250	16.610	341	17.065	27.305
31	0011	0001	252	16.620	343	17.075	27.315
32	0011	0010	254	16.630	345	17.085	27.325
33	0011	0011	256	16.640	347	17.095	27.335
34	0011	0100	258	16.650	349	17.105	27.345
35	0011	0101	260	16.660	351	17.115	27.355
36	0011	0110	262	16.670	353	17.125	27.365
37	0011	0111	264	16.680	355	17.135	27.375
38	0011	1000	266	16.690	357	17.145	27.385
39	0011	1001	268	16.700	359	17.155	27.395
40	0000	0000	270	16.710	361	17.165	27.405

IC-1 VOLTAGE CHART & DC VOLTAGE OF PLL LOW PASS FILTER OUTPUT (Vd). (FOR AUSTRALIAN MODELS)

IC-1 (HD42856) Voltage Chart

PIN NO.	1	2	3	4	5	6	7	8	9	10	11
RECEIVE	4.7	0	0	4.7	0	0	2.1	1.2	4.6	0.8	4.7
TRANSMIT	4.7	0	0	4.7	0	0	2.1	0.9	0.4	0.8	4.7
PIN NO.	12	13	14	15	16	17	18	19	20	21	22
RECEIVE	2.0	2.2	0.8	0	4.7	1.5	1.5	3.2	0	0	2.1
TRANSMIT	2.0	2.2	0.8	4.6	4.6	1.3	1.3	4.7	0	0	2.1

DC Voltage of PLL Low Pass Filter Output (Vd)



FREQUENCIES GENERATED AND MIXED TO OBTAIN EACH CHANNEL (Australian Models)

RECEIVE

*VCO FREQUENCY = [(N/2048 + 1.5)] × [REFERENCE FREQUENCY (10.240 MHz)]

TRANSMIT

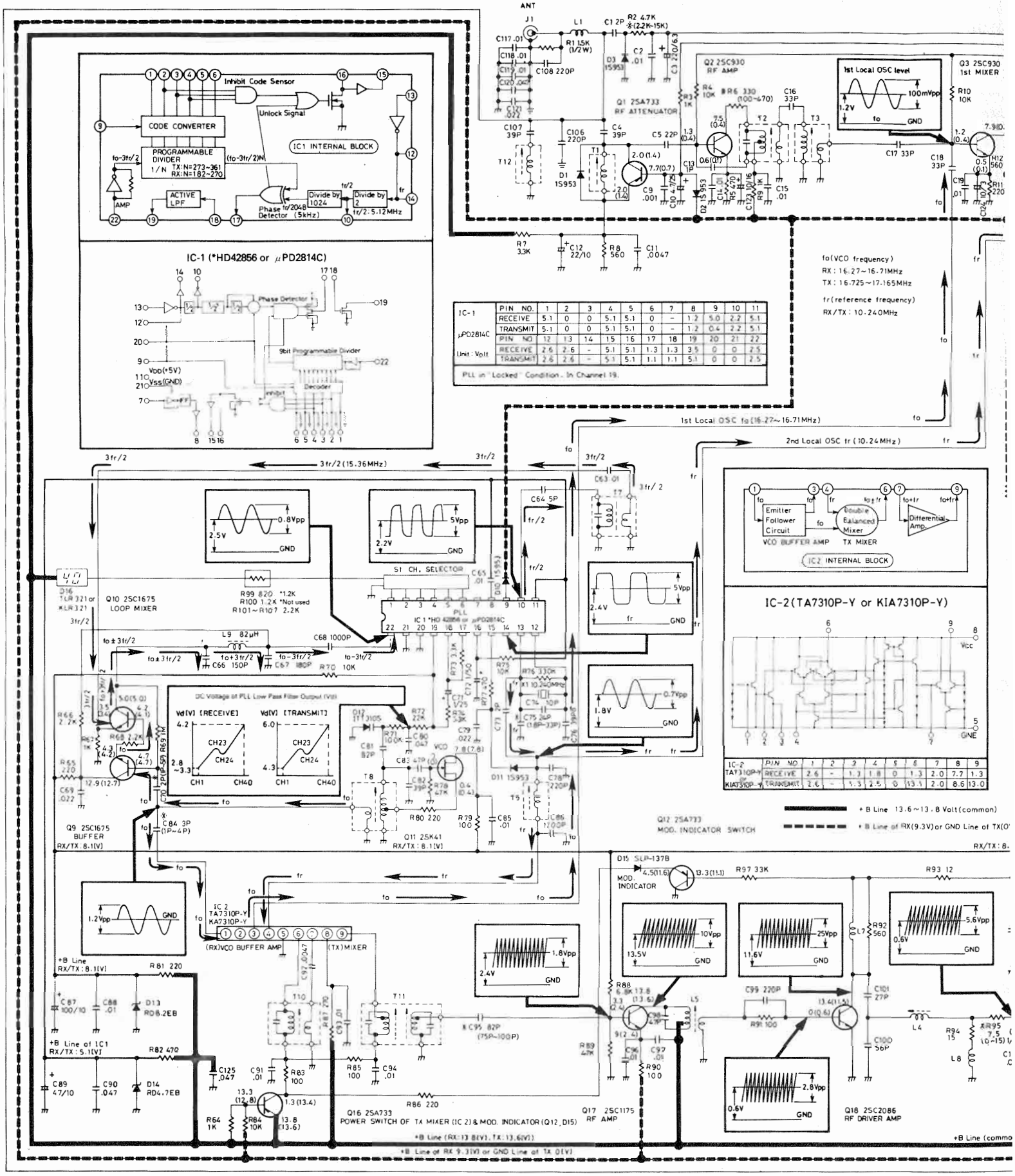
*VCO FREQUENCY = [(N/2048 + 1.5) × (REFERENCE FREQUENCY (10.240 MHz)]

*TRANSMIT FREQUENCY

= (VCO FREQUENCY) + [REFERENCE FREQUENCY (10.240 MHz)]

For Australian models

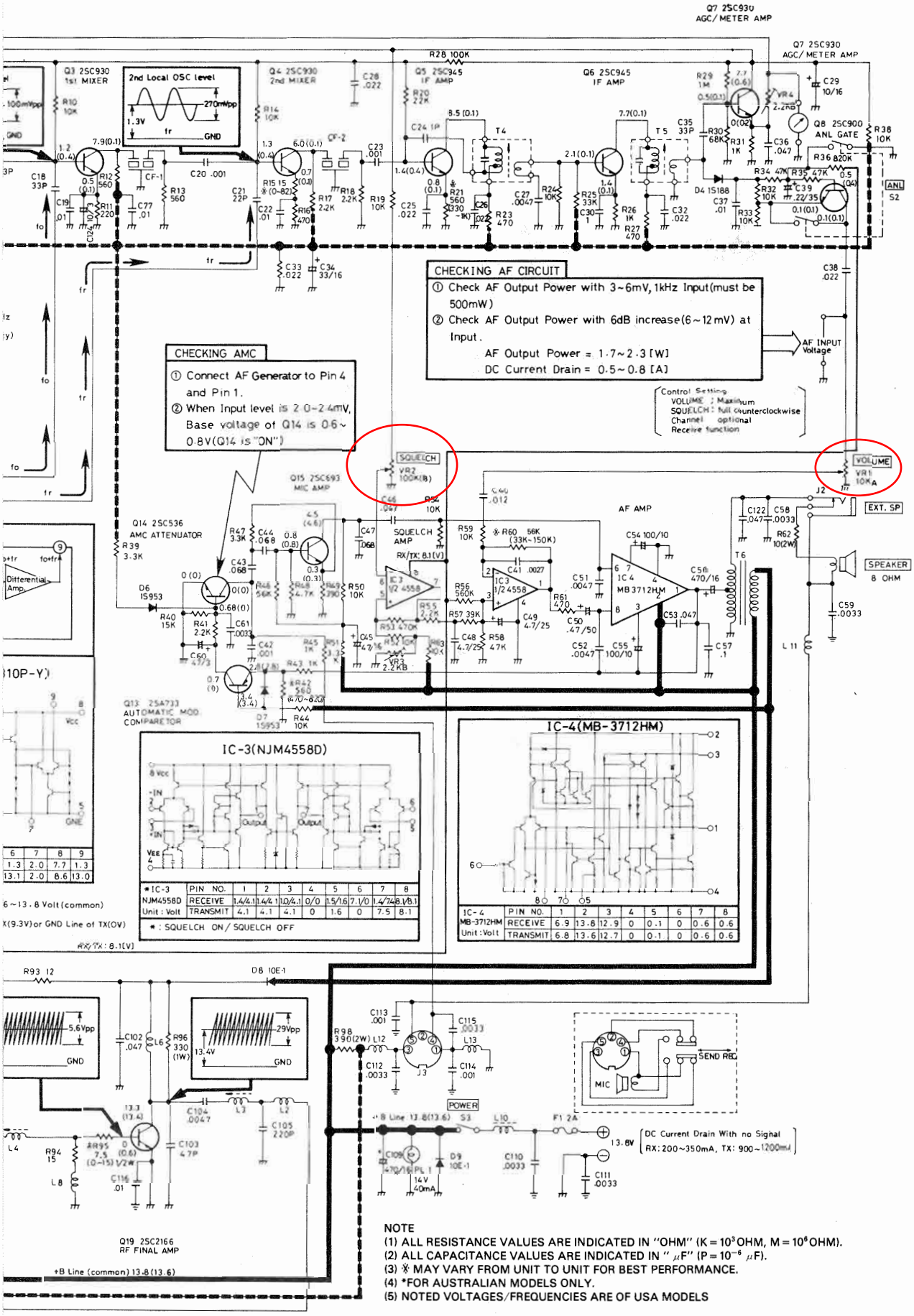
CHANNEL NUMBERS	BCD INPUT TO IC-1		RECEIVE		TRANSMIT		
	IC-1 PIN NUMBERS		N	VCO FREQUENCY (MHz)	N	VCO FREQUENCY (MHz)	TRANSMIT FREQUENCY (MHz)
	8765	4321					
1	0000	0001	192	16.320	283	16.775	27.015
2	0000	0010	194	16.330	285	16.785	27.025
3	0000	0011	196	16.340	287	16.795	27.035
4	0000	0100	200	16.360	291	16.815	27.055
5	0000	0101	202	16.370	293	16.825	27.065
6	0000	0110	206	16.390	297	16.845	27.085
7	0000	0111	208	16.400	299	16.855	27.095
8	0000	1000	210	16.410	301	16.865	27.105
9	0000	1001	212	16.420	303	16.875	27.115
10	0001	0000	214	16.430	305	16.885	27.125
11	0001	0001	216	16.440	307	16.895	27.135
12	0001	0010	220	16.460	311	16.915	27.155
13	0001	0011	222	16.470	313	16.925	27.166
14	0001	0100	224	16.480	315	16.935	27.175
15	0001	0101	226	16.490	317	16.945	27.185
16	0001	0110	228	16.500	319	16.955	27.195
17	0001	0111	230	16.510	321	16.965	27.205
18	0001	1000	234	16.530	325	16.985	27.225



IC-1	PIN NO.	1	2	3	4	5	6	7	8	9	10	11
μPD2814C	RECEIVE	5.1	0	0	5.1	5.1	0	-	1.2	5.0	2.2	5.1
	TRANSMIT	5.1	0	0	5.1	5.1	0	-	1.2	0.4	2.2	5.1
Unit : Volt	PIN NO.	12	13	14	15	16	17	18	19	20	21	22
	RECEIVE	2.6	2.6	-	5.1	5.1	1.3	1.3	3.5	0	0	2.5
	TRANSMIT	2.6	2.6	-	5.1	5.1	1.1	1.1	5.1	0	0	2.5

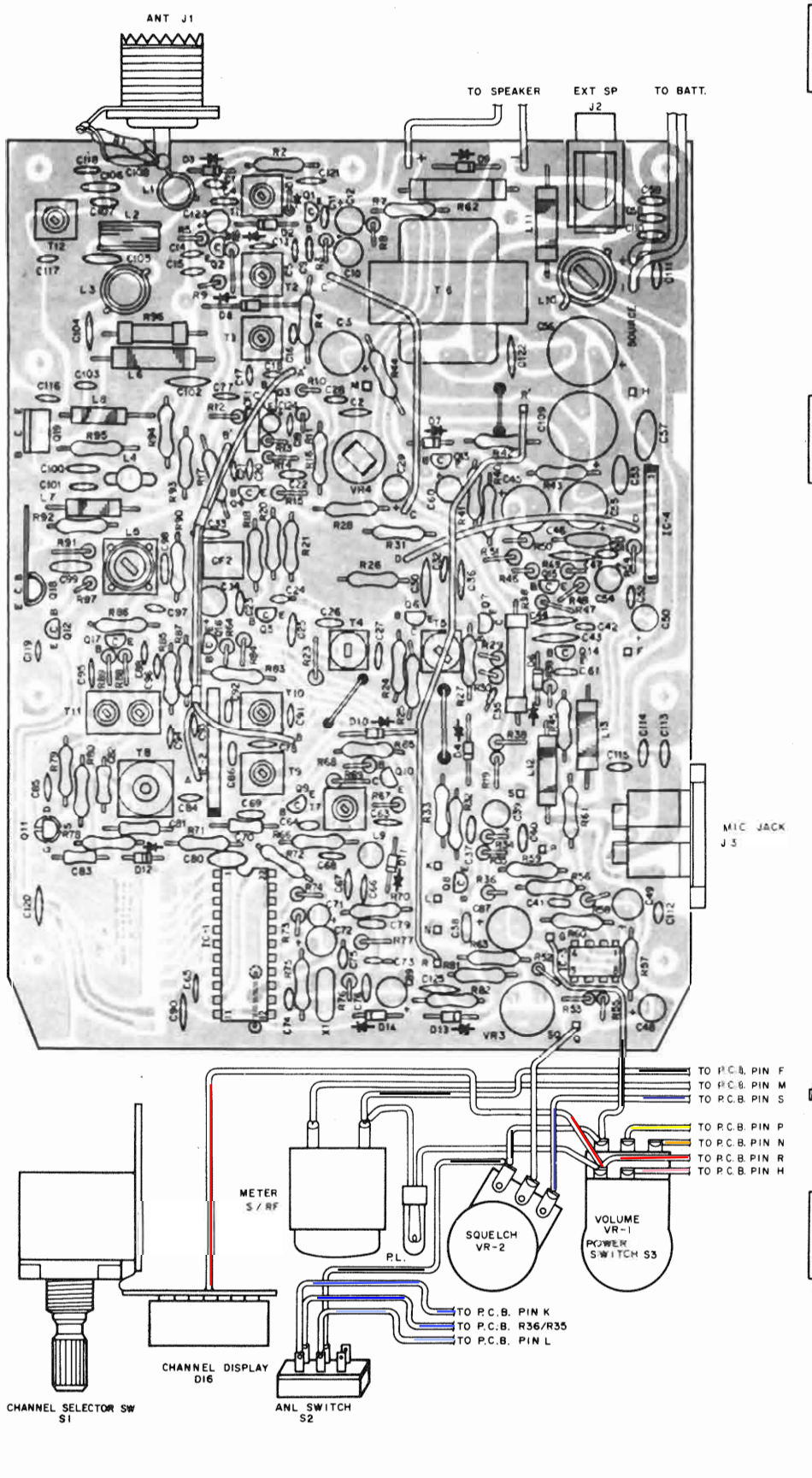
PLL in "Locked" Condition. In Channel 19.

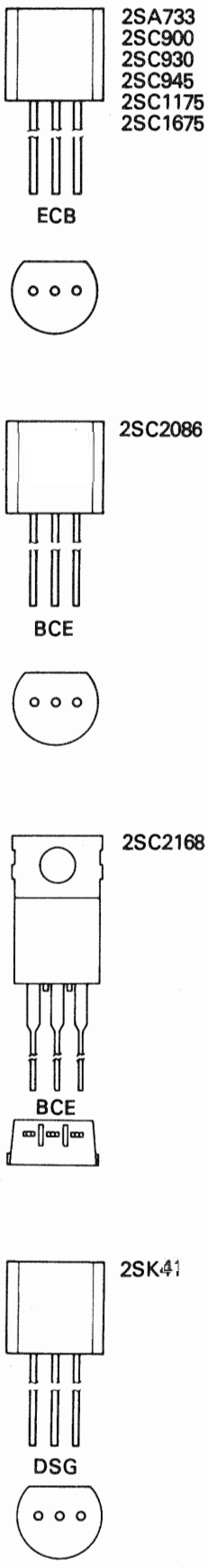
IC-2	PIN NO	1	2	3	4	5	6	7	8	9
TA7310P-Y	RECEIVE	2.6	-	1.7	1.8	0	1.3	2.0	7.7	1.3
KIA7310P-Y	TRANSMIT	2.6	-	5.3	2.5	0	5.1	2.0	8.6	13.0



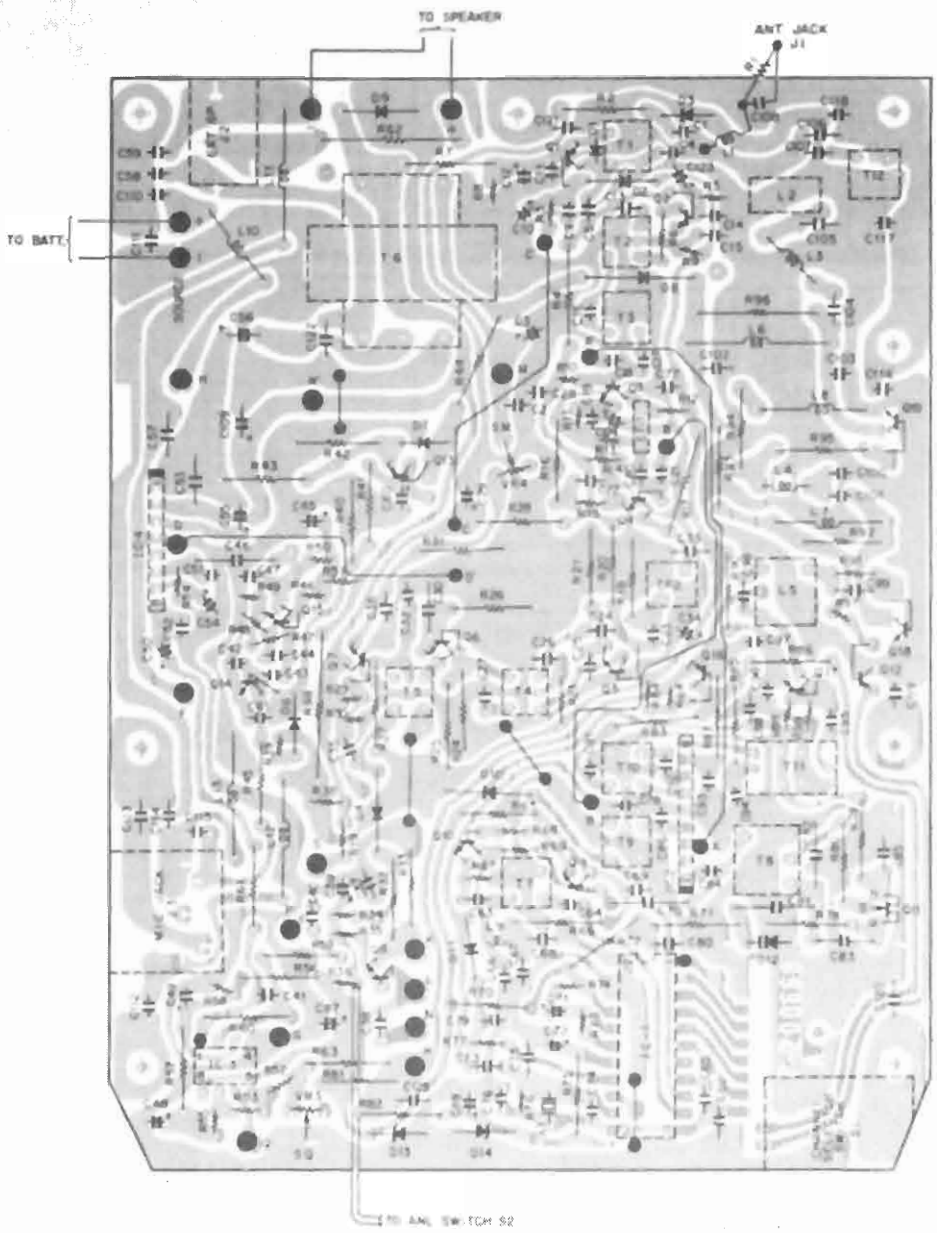
NOTE
(1) ALL RESISTANCE VALUES ARE INDICATED IN "OHM" (K = 10^3 OHM, M = 10^6 OHM).
(2) ALL CAPACITANCE VALUES ARE INDICATED IN " μF" (P = 10^{-6} μF).
(3) ※ MAY VARY FROM UNIT TO UNIT FOR BEST PERFORMANCE.
(4) *FOR AUSTRALIAN MODELS ONLY.
(5) NOTED VOLTAGES/FREQUENCIES ARE OF USA MODELS

PRINTED CIRCUIT BOARD (TOP VIEW)

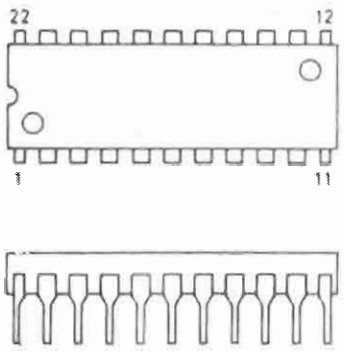




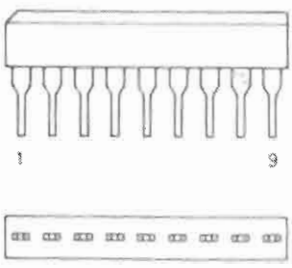
PRINTED CIRCUIT BOARD (BOTTOM VIEW)



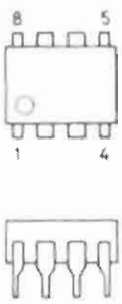
IC-1 HD42853 or μPD2814C
(HD42856 for Australian models)



IC-2 TA7310P or KIA7310P



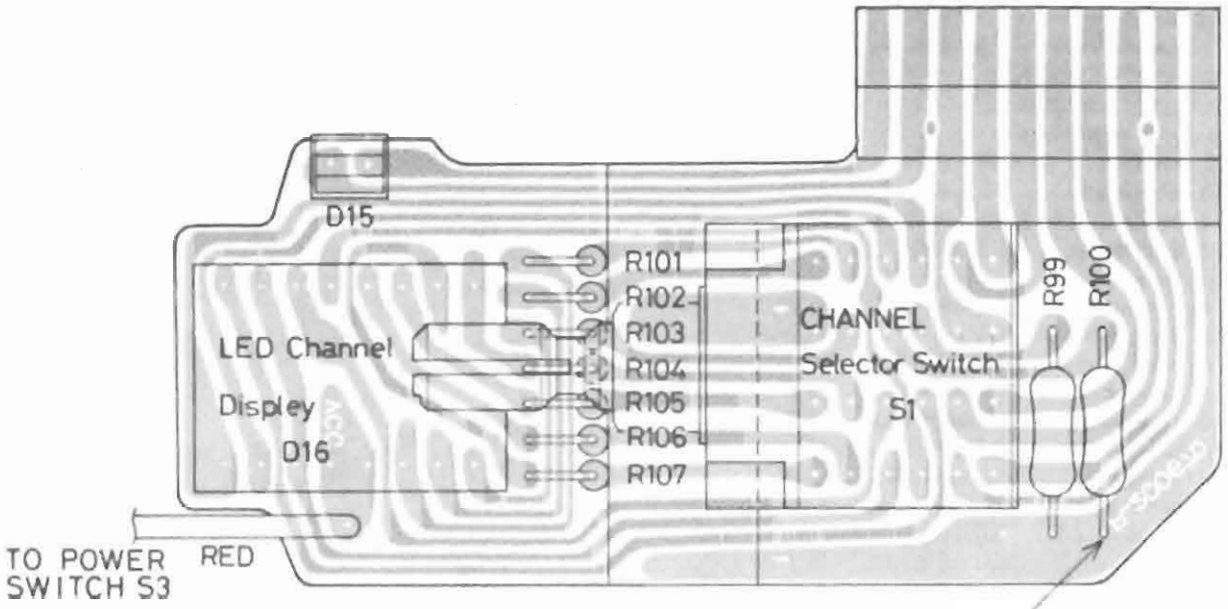
IC-3 NJM4558D



IC-4 MB3712

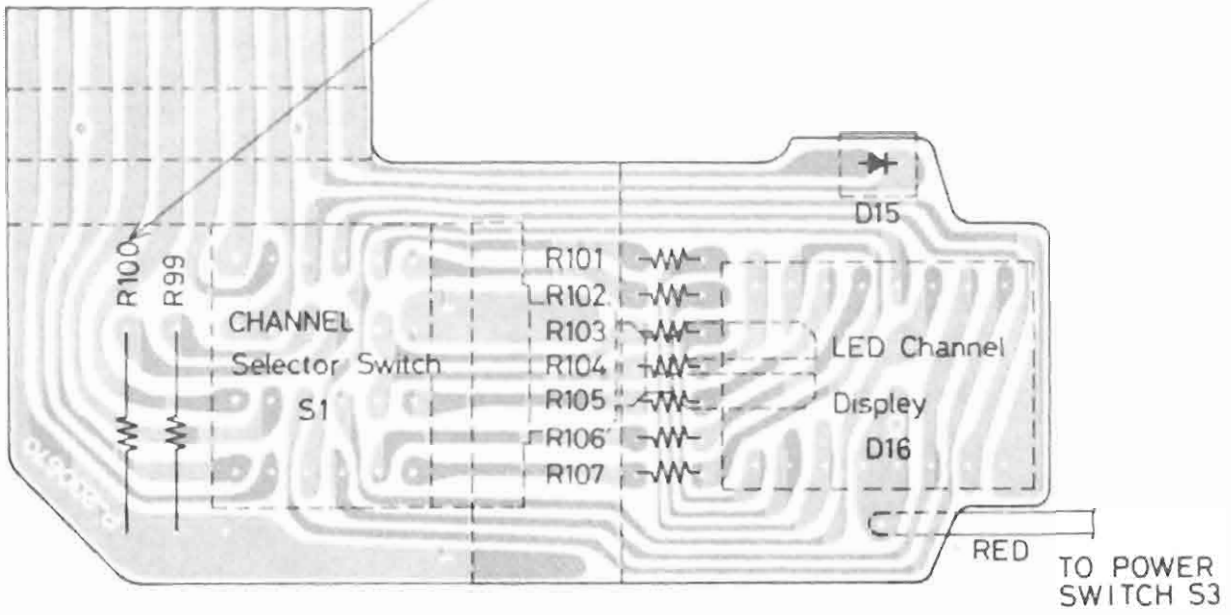
FLEXIBLE PRINTED CIRCUIT BOARD

TOP VIEW



*Not Used for AUSTRALIAN MODELS

BOTTOM VIEW



ELECTRICAL PARTS LIST

Ref. No.	Description	R/S Part No. Mrf's Part No.
CAPACITORS SL: 350 — 1000 ppm/°C		
C 1	Ceramic 2pF ± 0.25pF 50 WV SL	CF-1025
C 2	Ceramic 0.01μF 50 WV SL	
C 3	Electrolytic 220μF/6.3V	
C 4	Mica 39pF ± 5 % 50 WV	
C 5	Ceramic 22pF ± 10% 50 WV SL	CF-1490
C 6	(Not used)	
C 7	(Not used)	
C 8	(Not used)	
C 9	Mylar 0.001μF ± 10% 50 WV	
C10	Electrolytic 4.7μF/25V	
C11	Mylar 0.0047μF ± 10% 50 WV	
C12	Electrolytic 22μF/10V	
C13	Ceramic 1pF ± 0.25pF 50 WV SL	CF-1015
C14	Ceramic Barrier 0.01μF 25 WV	
C15	Ceramic Barrier 0.01μF 25 WV	
C16	Mica 33 pF ± 5 % 50 WV	
C17	Ceramic 33pF ± 10% 50 WV SL	
C18	Ceramic 33pF ± 10% 50 WV SL	
C19	Ceramic Barrier 0.01μF 25 WV	
C20	Mylar 0.001μF ± 10% 50 WV	
C21	Ceramic 22pF ± 10% 50 WV SL	
C22	Mylar 0.01μF ± 10% 50 WV	
C23	Mylar 0.001μF ± 10% 50 WV	
C24	Ceramic 1pF ± 0.25pF 50 WV SL	CF-1015
C25	Mylar 0.022μF ± 10% 50 WV	
C26	Mylar 0.022μF ± 10% 50 WV	
C27	Mylar 0.0047μF ± 10% 50 WV	
C28	Mylar 0.022μF ± 10% 50 WV	
C29	Electrolytic 10μF/16V	
C30	Ceramic Barrier 0.1μF 25 WV	
C31	(Not used)	
C32	Mylar 0.022μF ± 10% 50 WV	
C33	Mylar 0.022μF ± 10% 50 WV	
C34	Electrolytic 33μF/16V	
C35	Ceramic 33pF ± 10% 50 WV SL	
C36	Ceramic 0.047μF 50 WV SL	
C37	Mylar 0.01μF ± 10% 50 WV	
C38	Mylar 0.022μF ± 10% 50 WV	
C39	Tantalum 0.022μF/35V	
C40	Mylar 0.012μF ± 10% 50 WV	
C41	Mylar 0.0027μF ± 10% 50 WV	
C42	Mylar 0.001μF ± 10% 50 WV	
C43	Ceramic Barrier 0.068μF 25 WV	
C44	Ceramic Barrier 0.068μF 25 WV	
C45	Electrolytic 47μF/16V	
C46	Mylar 0.047μF ± 10% 50 WV	
C47	Ceramic Barrier 0.068μF 25 WV	
C48	Electrolytic 4.7μF/25V	
C49	Electrolytic 4.7μF/25V	

Ref. No.	Description	R/S Part No. Mrf's Part No.
C50	Electrolytic 0.47μF/50V	
C51	Mylar 0.0047μF ± 10% 50 WV	
C52	Mylar 0.0047μF ± 10% 50 WV	
C53	Mylar 0.047μF 50 WV	
C54	Electrolytic 100μF/10V	
C55	Electrolytic 100μF/10V	
C56	Electrolytic 470μF/16V	
C57	Mylar 0.1μF 50 WV	
C58	Mylar 0.0033μF ± 10% 50 WV	
C59	Mylar 0.0033μF ± 10% 50 WV	
C60	Tantalum 47μF/3.15V	
C61	Mylar 0.0033μF ± 10% 50 WV	
C62	(Not used)	
C63	Ceramic Barrier 0.01μF 25 WV	
C64	Ceramic 5pF ± 0.25pF 50 WV SL	CF-1100
C65	Ceramic 0.01μF 50 WV SL	
C66	Ceramic 150pF ± 10% 50 WV SL	CF-1462
C67	Ceramic 180pF ± 10% 50 WV SL	CF-1470
C68	Mylar 0.001μF ± 10% 50 WV	
C69	Mylar 0.022μF ± 10% 50 WV	
C70	Ceramic 1 ~ 5(2)pF ± 0.25pF 50 WV SL	CF-1025
C71	Tantalum 1μF/25V	
C72	Electrolytic 1μF/50V	
C73	Ceramic 2pF ± 0.25pF 50 WV SL	CF-1025
C74	Mica 10pF ± 5 % 50 WV	
C75	Mica 18 ~ 33(20)pF ± 5 % 50 WV	
C76	Mica 39pF ± 5 % 50 WV	
C77	Ceramic 0.01μF 50 WV	
C78	Ceramic 220pF ± 10% 50 WV SL	CF-1490
C79	Mylar 0.022μF ± 10% 50 WV	
C80	Mylar 0.047μF 50 WV	
C81	Ceramic 82pF ± 5 % 50 WV	CF-1823
C82	Ceramic 39pF ± 5 % 50 WV	CF-1326
C83	Ceramic 47pF ± 5 % 50 WV	CF-1360
C84	Ceramic 1 ~ 4(3)pF ± 0.25pF 50 WV SL	CF-1045
C85	Ceramic 0.01μF 50 WV	
C86	Mylar 0.0012μF ± 10% 50 WV	
C87	Electrolytic 100μF/10V	
C88	Ceramic 0.01μF 50 WV	
C89	Electrolytic 47μF/10V	
C90	Ceramic 0.047μF 50 WV	
C91	Ceramic Barrier 0.01μF 25 WV	
C92	Mylar 0.0047μF ± 10% 50 WV	
C93	Ceramic Barrier 0.01μF 25 WV	
C94	Ceramic Barrier 0.01μF 25 WV	
C95	Ceramic 75 ~ 100(82)pF ± 10% 50 WV SL	CF-1823
C96	Ceramic Barrier 0.01μF 25 WV	
C97	Ceramic Barrier 0.01μF 25 WV	
C98	Mica 47pF ± 5 % 50 WV	
C99	Mica 220pF ± 10% 50 WV	

Ref. No.	Description	R/S Part No. Mrf's Part No.
C100	Mica 56pF ± 5 % 50 WV	
C101	Mica 27pF ± 5 % 50 WV	
C102	Ceramic 0.047μF ± 5 % 50 WV	
C103	Mica 47pF ± 5 % 50 WV	
C104	Ceramic 0.0047μF 50 WV	
C105	Mica 220pF ± 10% 50 WV	
C106	Mica 220pF ± 10% 50 WV	
C107	Mica 39pF ± 5 % 50 WV	
C108	Mica 220pF ± 10% 50 WV	
C109	Electrolytic 470μF/16V	
C110	Mylar 0.0033μF ± 10% 50 WV	
C111	Mylar 0.0033μF ± 10% 50 WV	
C112	Mylar 0.0033μF ± 10% 50 WV	
C113	Mylar 0.001μF ± 10% 50 WV	
C114	Mylar 0.001μF ± 10% 50 WV	
C115	Mylar 0.0033μF ± 10% 50 WV	
C116	Ceramic Barrier 0.01μF 25 WV	
C117	Ceramic Barrier 0.01μF 25 WV	
C118	Ceramic Barrier 0.01μF 25 WV	
C119	Ceramic Barrier 0.01μF 25 WV	
C120	Ceramic 0.047μF 50 WV	
C121	Ceramic 0.022μF 50 WV	
C122	Ceramic 0.047μF 50 WV	
C123	Electrolytic 10μF/16V	
C124	Tantalum 10μF/3.15V	
C125	Ceramic 0.047μF 50 WV	
C126		
C127		
C128		
C129		
C130		
C131		
C132		
C133		
C135		
C136		

Ref. No.	Description	R/S Part No.	Mfr's Part No.
FILTERS			
CF1	Ceramic Filter SFE 10.7 MJ	C-0913	P-130056
CF2	Ceramic Filter CF 455 or SFP455H	C-0957 C-0991	P-130061 or P-130069

Ref. No.	Description	R/S Part No.	Mfr's Part No.
DIODES			
D 1	Silicon Diode 1S953	DX-0259	
D 2	Silicon Diode 1S953	DX-0259	
D 3	Silicon Diode 1S953	DX-0259	
D 4	Germanium Diode 1S188AM or 1N60	DX-0240 DX-0161	
D 5	(Not used)		
D 6	Silicon Diode 1S953	DX-0259	
D 7	Silicon Diode 1S953	DX-0259	
D 8	Silicon Diode 10E1	DX-1039	
D 9	Silicon Diode 10E1	DX-1039	
D10	Silicon Diode 1S953	DX-0259	
D11	Silicon Diode 1S953	DX-0259	
D12	Variable Capacitance Diode ITT310S	DX-1080	
D13	Zener Diode RD8.2EB1	DX-1249	
D14	Zener Diode RD4.7EB2	DX-1248	
D15	Light Emitting Diode SLP137B		
D16	Light Emitting Diode TLR321 or KLR321		
FUSE			
F 1	Fuse (Tube Type) 125V, 2A		P-250115
INTEGRATED CIRCUIT			
IC 1	μPD2814C	MX-3878	
*IC 1	HD42856		
IC 2	TA7310P(Y) or KIA7310P(Y)	MX-3547	
IC 3	NJM4558D-G	MX-3877	
IC 4	MB3712HM		
COILS			
L 1	Filter Coil	CA-3548	P-380043
L 2	Filter Coil	CA-3918	P-380044
L 3	Filter Coil	C-0755	P-380092
L 4	Filter Coil	CA-3910	P-380134
L 5	Pri Drive Coil	CA-3937	P-380158
L 6	Choke Coil	CB-2284	P-380048
L 7	Choke Coil	CB-2283	P-380047
L 8	Choke Coil	CB-2318	P-390098
L 9	RF Choke Coil	CA-7625	P-380035
L10	Line Choke Coil	CA-5011	P-380186
L11	Choke Coil	CB-2318	P-380098
L12	Choke Coil	CB-2318	P-380098
L13	Choke Coil	CB-2318	P-380098

* For Australian models

Ref. No.	Description	R/S Part No.	Mfr's Part No.
JACKS			
J 1	Antenna Connector	J-0843 J-1032	P-190111 or P-190184
J 2	EXT. SP. Jack	J-0957	P-190133
J 3	Mic Connector	J-6707	P-190180
METER			
M1	S/RF Meter 560μA	M-0320	P-230055
LAMP			
PL1	Meter Lamp		P-240119
TRANSISTORS			
Q 1	2SA733 (P)		
Q 2	2SC930 (D)		
Q 3	2SC930 (D)		
Q 4	2SC930 (C)		
Q 5	2SC945 (P)		
Q 6	2SC945 (P)		
Q 7	2SC930 (E)		
Q 8	2SC900 (U)		
Q 9	2SC1675(K or L)		
Q10	2SC1675(K or L)		
Q11	FET 2SK41 (E1)		
Q12	2SA733 (P)		
Q13	2SA733 (P)		
Q14	2SC536 (F)		
Q15	2SC693 (G)		
Q16	2SA733 (P)		
Q17	2SC1175(D or E)		
Q18	2SC2086		
Q19	2SC2166		

Ref. No.	Description	R/S Part No.	Mfr's Part No.
RESISTORS ( ): Typical Value, UY: Radial Type, PY: Axial Type			
R 1	Carbon PY 1.5 KΩ ½W	NEF-0206	
R 2	Carbon PY 2.2 ~ 15(4.7) KΩ ¼W	NEE-0247	
R 3	Carbon UY 1KΩ ¼W	NEE-0196	
R 4	Carbon PY 10KΩ ¼W	NEE-0281	
R 5	Carbon UY 470Ω ¼W	NEE-0169	
R 6	Carbon UY 100 ~ 470(330) Ω ¼W	NEE-0159	
R 7	Carbon UY 3.3KΩ ¼W	NEE-0230	
R 8	Carbon UY 560Ω ¼W	NEE-0176	
R 9	Carbon UY 1KΩ ¼W	NEE-0196	
R10	Carbon UY 10KΩ ¼W	NEE-0281	
R11	Carbon UY 220Ω ¼W	NEE-0149	
R12	Carbon UY 560Ω ¼W	NEE-0176	
R13	Carbon UY 560Ω ¼W	NEE-0176	
R14	Carbon UY 10KΩ ¼W	NEE-0281	
R15	Carbon UY 0 ~ 82(15) Ω ¼W	NEE-0074	
R16	Carbon PY 470Ω ¼W	NEE-0169	
R17	Carbon PY 2.2KΩ ¼W	NEE-0216	
R18	Carbon PY 2.2KΩ ¼W	NEE-0216	
R19	Carbon UY 10KΩ ¼W	NEE-0281	
R20	Carbon PY 22KΩ ¼W	NEE-0311	
R21	Carbon PY 330 ~ 1K(560) Ω ¼W	NEE-0176	
R22	(Not used)		
R23	Carbon UY 470Ω ¼W	NEE-0169	
R24	Carbon PY 10KΩ ¼W	NEE-0281	
R25	Carbon PY 33KΩ ¼W	NEE-0324	
R26	Carbon PY 1KΩ ¼W	NEE-0196	
R27	Carbon PY 470Ω ¼W	NEE-0169	
R28	Carbon PY 100KΩ ¼W	NEE-0371	
R29	Carbon UY 1MΩ ¼W	NEE-0445	
R30	Carbon UY 68KΩ ¼W	NEE-0354	
R31	Carbon PY 1KΩ ¼W	NEE-0196	
R32	Carbon PY 10KΩ ¼W	NEE-0281	
R33	Carbon PY 10KΩ ¼W	NEE-0281	
R34	Carbon UY 47KΩ ¼W	NEE-0340	
R35	Carbon UY 47KΩ ¼W	NEE-0340	
R36	Carbon UY 820KΩ ¼W		
R37	(Not used)		
R38	Carbon UY 10KΩ ¼W	NEE-0281	
R39	Carbon UY 3.3KΩ ¼W	NEE-0230	
R40	Carbon PY 15KΩ ¼W	NEE-0297	
R41	Carbon PY 2.2KΩ ¼W	NEE-0216	
R42	Carbon PY 470~820(560) KΩ ¼W	NEE-0429	
R43	Carbon PY 1KΩ ¼W	NEE-0196	
R44	Carbon PY 10KΩ ¼W	NEE-0281	
R45	Carbon PY 1KΩ ¼W	NEE-0196	
R46	Carbon UY 56KΩ ¼W	NEE-0345	
R47	Carbon UY 3.3KΩ ¼W	NEE-0230	
R48	Carbon UY 4.7KΩ ¼W	NEE-0247	
R49	Carbon UY 390Ω ¼W	NEE-0162	
R50	Carbon UY 10KΩ ¼W	NEE-0281	

Ref. No.	Description				R/S Part No. Mrf's Part No.
R51	Carbon	UY	3.3 K Ω	¼W	NEE-0230
R52	Carbon	UY	10 K Ω	¼W	NEE-0281
R53	Carbon	UY	470 K Ω	¼W	NEE-0423
R54	Carbon	UY	10 K Ω	¼W	NEE-0281
R55	Carbon	UY	2.2 K Ω	¼W	NEE-0216
R56	Carbon	PY	560 K Ω	¼W	NEE-0429
R57	Carbon	PY	39 K Ω	¼W	NEE-0330
R58	Carbon	UY	47 K Ω	¼W	NEE-0340
R59	Carbon	PY	10 K Ω	¼W	NEE-0281
R60	Carbon	PY	33~150 (56) K Ω	¼W	NEE-0345
R61	Carbon	PY	470 Ω	¼W	NEE-0423
R62	Metal Film	PY	10 Ω	2W	NEH-0063
R63	Carbon	PY	10 K Ω	¼W	NEE-0281
R64	Carbon	UY	1 K Ω	¼W	NEE-0196
R65	Carbon	PY	220 Ω	¼W	NEE-0149
R66	Carbon	PY	2.2 K Ω	¼W	NEE-0216
R67	Carbon	UY	1 K Ω	¼W	NEE-0196
R68	Carbon	UY	2.2 K Ω	¼W	NEE-0216
R69	Carbon	UY	1 M Ω	¼W	NEE-0445
R70	Carbon	PY	10 K Ω	¼W	NEE-0281
R71	Carbon	PY	100 K Ω	¼W	NEE-0371
R72	Carbon	PY	22 K Ω	¼W	NEE-0311
R73	Carbon	UY	3.3 K Ω	¼W	NEE-0230
R74	Carbon	UY	3.3 K Ω	¼W	NEE-0230
R75	Carbon	PY	10 K Ω	¼W	NEE-0281
R76	Carbon	UY	330 K Ω	¼W	NEE-0410
R77	Carbon	UY	470 Ω	¼W	NEE-0169
R78	Carbon	PY	47 K Ω	¼W	NEE-0340
R79	Carbon	PY	100 Ω	¼W	NEE-0132
R80	Carbon	PY	220 Ω	¼W	NEE-0149
R81	Carbon	PY	220 Ω	¼W	NEE-0149
R82	Carbon	PY	470 Ω	¼W	NEE-0169
R83	Carbon	PY	100 Ω	¼W	NEE-0132
R84	Carbon	UY	10 K Ω	¼W	NEE-0281
R85	Carbon	PY	100 Ω	¼W	NEE-0132
R86	Carbon	PY	220 Ω	¼W	NEE-0149
R87	Carbon	PY	270 Ω	¼W	NEE-0155
R88	Carbon	UY	6.8 K Ω	¼W	NEE-0262
R89	Carbon	UY	4.7 K Ω	¼W	NEE-0247
R90	Carbon	PY	100 Ω	¼W	NEE-0132
R91	Carbon	UY	100 Ω	¼W	NEE-0132
R92	Carbon	PY	560 Ω	¼W	NEE-0176
R93	Carbon	PY	12 Ω	¼W	NEE-0067
R94	Carbon	PY	15 Ω	¼W	NEE-0074
R95	Carbon	PY	0 ~ 15(7.5) Ω	½W	
R96	Metal Oxide	PY	330 Ω	1W	NEG-0159
R97	Carbon	UY	33 K Ω	¼W	NEE-0324
R98	Metal Oxide	PY	390 Ω	2W	NEH-0162
R99	Carbon	PY (*1.2 K)	820 Ω	¼W	NEE-0187
R100	Carbon	PY (*Not used)	1.2 K Ω	¼W	NEE-0199
R101	Carbon		2.2 K Ω	1/5W	
R102	Carbon		2.2 K Ω	1/5W	
R103	Carbon		2.2 K Ω	1/5W	
R104	Carbon		2.2 K Ω	1/5W	

Ref. No.	Description			R/S Part No. Mrf's Part No.
R105	Carbon	2.2 K Ω	1/5W	
R106	Carbon	2.2 K Ω	1/5W	
R107	Carbon	2.2 K Ω	1/5W	

Ref. No.	Description	R/S Part No.	Mfr's Part No.
SPEAKER			
SP	Speaker	S-4615 S-4645	P-270075 or P-270051

Ref. No.	Description	R/S Part No.	Mfr's Part No.
SWITCHES			
S 1	CHANNEL Selector Switch STH-40		P-180377
*S 1	CHANNEL Selector Switch		P-180447
S 2	ANL Switch ANL/OUT	S-2518	P-180378
S 3	Power Switch (with VR-1)	P-1961	P-170462

Ref. No.	Description	R/S Part No.	Mfr's Part No.
TRANSFORMERS			
T 1	ANT. Coil	CZ-3543	P-380038
T 2	Tuning Coil 27 MHz	CA-3916	P-380140
T 3	Tuning Coil 27 MHz	CA-3917	P-380141
T 4	IF Transformer	CA-7972	P-130066
T 5	IF Transformer	CA-7973	P-130067
T 6	Modulation Transformer	TD-0172	P-100519
T 7	Tripler Coil	CA-4939	P-380136
T 8	VCO Coil	CA-3911	P-380137
T 9	Filter Coil 10.24MHz	CA-3935	P-380160
T10	Tuning Coil 27 MHz	CA-3923	P-380149
T11	Filter Coil 27 MHz	CA-3925	P-380151
T12	Trap Coil	CA-3908	P-380132

Ref. No.	Description	R/S Part No.	Mfr's Part No.
VARIABLE RESISTOR			
VR-1	VOLUME Resistor (with S3) 10KΩ(A)	P-1961	P-170462
VR-2	SQUELCH Resistor 100KΩ(B)	P-1960	P-170463
VR-3	Semi-Fixed Resistor SR19R 2.2KΩ B	P-6543	P-170298
VR-4	Semi-Fixed Resistor SR19R 2.2KΩ B	P-6543	P-170298

Ref. No.	Description	R/S Part No.	Mfr's Part No.
CRYSTAL			
X1	Crystal HC-18/U 10.240 MHz	MX-2295 MX-2297 MX-2388	P-390047 or P-390049 or P-390066

* For Australian models

EXPLODED VIEW PARTS LIST

Ref. No.	Description	R/S Part No.	Mfr's Part No.
	Thumb Screw for Mounting Bracket	K-2181	P-650170
	Mounting Bracket	MB-0229	P-411749
	Rubber Washer	HB-6357	P-680114
	Case Top	Z-4742	P-411753
	Cushion	HB-6023	P-660123
	In-line Fuse Holder	F-1147	P-260023
	Main P.C.B.	X-8093	P-200668
	Main P.C.B.		P-200669
	Earth Plate	HB-8559	P-411841
	Insulator Plate	HB-8560	P-480252
	Strain Relief	HB-0598	P-480010
	FCC Panel	HB-8563	P-730260
•	DOC Panel	HB-8564	P-730274
*	PMG Panel		P-730248
	Chassis		P-400232
	Heat Sink "A"	HH-0321	P-411752
	Insulator "A"	HB-8556	P-480238
	IC-4 (MB 3721)		
	Plate Nut	HD-7130	P-411751
	Antenna Connector	J-0843	P-190111
			or P-190184
	EXT. SP. Jack	J-0957	P-190133
	Q19 (2SC2166)		
	Insulator "B"	HH-0205	P-480156
	Heant Sink (with Q18)		
	Mic Connector, 5P DIN	J-6707	P-190180
	Earth Lug	HB-7744	P-411541
	VOLUME Control (VR-1/S3)	P-1961	P-170462
	SQUELCH Control (VR-2)	P-1960	P-170463
	Slide Switch (S2)	S-2518	P-180378
	Meter Lamp		P-240119
	Lamp Cover	HB-7594	P-680176
	Meter Holder	HB-8562	P-610620
	Flexible P.C.B.		P-200670
	LED Cushion	HB-7595	P-680179
	Channel Selector Switch		P-180377
*	Channel Selector Switch		P-180447
	LED Channel Display		
	Meter	M-0320	P-230055
	Meter Cover	HB-7590	P-610572
	Heat Sink	HH-0282	P-411540
	Front Panel	Z-4741	P-700370
	Knob for Channel Selector	K-2974	P-650266A
	Knob for VOLUME & SQUELCH	K-2973	P-650265
	Speaker 77m/m 8 ohm	S-4645	P-270051
		or S-4815	P-270075
	Speaker Bracket	HB-7596	P-411240
	Net	HB-7597	P-820380
	Case Bottom	Z-4743	P-411754
	Spacer	HB-8561	P-680185

Ref. No.	Description	R/S Part No.	Mfr's Part No.
	Tapping Screw (Tap Tight) 3ϕ x 6P		P470021
	Tapping Screw (Poly Wave) 3ϕ x 6PTII		
	Rivet YB-320		
	Screw 3ϕ x 8P		
	Spring Washer 3SW		
	Nut 3N		
	Screw 2.6ϕ x 6P		
	Screw 2ϕ x 4P		
	Nut 2.6N		
	Screw 2ϕ x 6P		
	Screw 3ϕ x 5P		
	Screw (Black) 3ϕ x 6P		

• For Canadian models
* For Australian models