REALISTIC®

Service Manual

DX-300

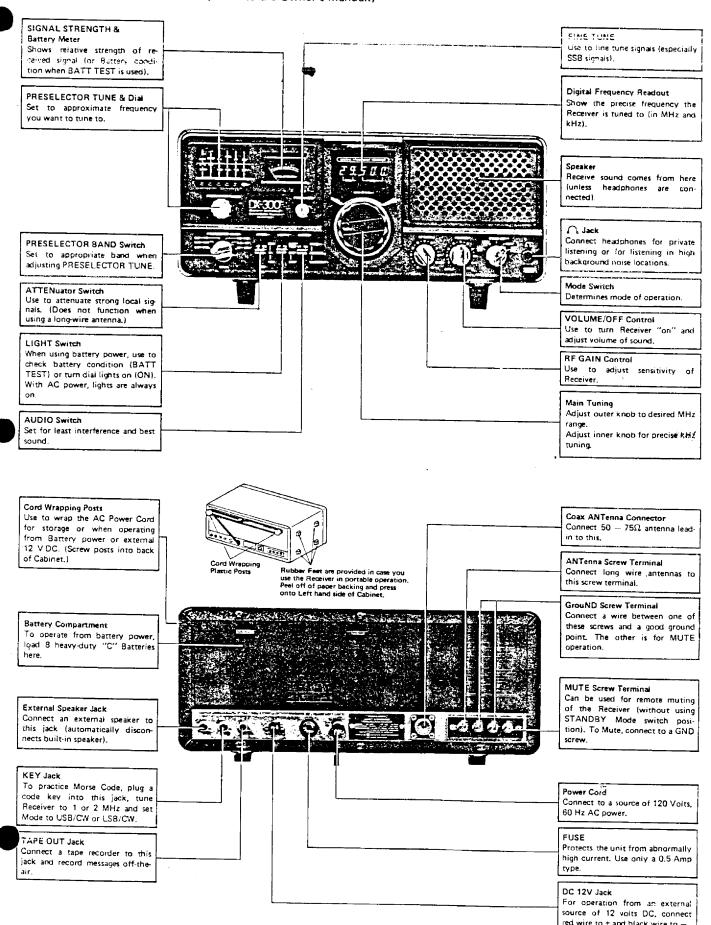
QUARTZ-SYNTHESIZED DIGITAL LED-READOUT COMMUNICATIONS RECEIVER

Catalog Number: 20-204



CONTROLS AND THEIR FUNCTIONS

(For complete details on operation, refer to the Owner's Manual.)



SPECIFICATIONS

Description	Condition	Nominal Spec.	Limit Spec.
Frequency Coverage	Band A	10 - 150 kHz	10 - 150 kHz
	Band B	150 - 500 kHz	150 - 500 kHz
4	Band C	500 1600 kHz	500 - 1600 kHz
	Band D	1.6 4.5 MHz	1.6 - 4.5 MHz
	Band E	4.5 - 12 MHz	4.5 - 12 MHz
	Band F	12 - 30 MHz	12 - 30 MHz
Sensitivity	50 kHz	AM 30 μV SSB 30 μV	Not specified
(S+N)/N = 10 dB	150 kHz	$5 \mu V$ $5 \mu V$	AM 50 μV SSB 50 μV
AF Output = 50 mW	300 kHz	$1 \mu V$ $0.5 \mu V$	10 μV 5 μV
	900 kHz	$0.5 \mu\text{V}$ $0.3 \mu\text{V}$	10 μV 5 μV
	3.1 MHz	0.5 μV 0.3 μV	$2 \mu V$ $1 \mu V$
	7.1 MHz	$0.5 \mu\text{V}$ $0.3 \mu\text{V}$	$2\mu V$ $1\mu V$ $1\mu V$
	15.1 MHz	$0.5\mu\text{V}$ $0.3\mu\text{V}$	$2 \mu V$ $1 \mu V$
	28.1 MHz	0.5 μV 0.3 μV	2 μV 1 μV
Loop Antenna	180 kHz	11 mV	50 mV
Sensitivity	- 300 kHz	4 mV	15 mV
(S+N)/N = 20 dB	470 kHz	2 mV	8 mV
	600 kHz	1 mV	2 mV
	900 kHz	550 µV	1,5 mV
	1.4 MHz	450 µV	1 mV
Image Ratio	10 – 50 kHz	Not specified	
•	100 kHz	70 dB	Not specified
	300 kHz	70 dB	50 dB
	900 kHz	70 dB	50 dB
	3.1 MHz	1	50 dB
	7.1 MHz	60 dB	50 dB
	15.1 MHz	60 dB	50 dB
	28.1 MHz	60 dB	50 dB
Intermediate Francis		60 dB	50 dB
Intermediate Frequency	1st	54.5 - 55.5 MHz	
	2nd	3 2 MHz	
	3rd	455 kH2	
Spurious Rejection	between 2 MHz and 150 MHz	60 dB	30 dB
at 7.1 MHz		0,00	SOUB
Birdies at 7.0 MHz	(S+N)/N = 10 dB	2.0 μV	10 μV
Input Attenuator	0 dB		
	20 dB	22 dB	16 ~ 28 dB
	40 dB	40 dB	34 46 dB
Selectivity	±10 kHz	94 dB	60 dB
Selectivity	6 dB	5.5 kHz	3.5 – 7.5 kHz
Audio Output	8Ω, 10% T.H.D.	1.5 W	1.2 W
Phone Jack Output	8Ω, 0.5 W AF Output	100 mV	50 – 200 mV
	7.1 MHz 1 mV (1 kHz 30%	1331114	DO - ZOO IIIV
Tape Output	MOD), 0.5 W AF Output	300 mV	150 — 600 mV
Signal-to-Noise Ratio	7.1 MHz 1 mV (1 kHz 30% MOD), 0.5 W AF Output	40 dB	35 dB
Hum & Noise	at 8Ω Speaker Output	AM/CCO 0 ::	
(VOLUME : Minimum)		AM/SSB 2 mV	AM/SSB 5 mV
(Jeowe . winningin)	at 8Ω Phone Jack Output	AM/SSB 0.25 mV	AM/SSB 0.5 mV

Description	Condition	Nominal Spec.	Limit Spec.	
Meter Sensitivity	S-9 at 7.1 MHz	30 μV		
Audio Response 0 dB NORMAL 1 kHz	NORMAL 300 Hz 3 kHz WIDE 1 kHz 300 Hz 3 kHz NARROW 1 kHz 300 Hz 3 kHz	5 d8 14 dB +-3 dB +-0.5 dB 7 dB 1 dB 1 dB 18 dB	5 ± 6 dB Not specified +3 ± 3 dB +0.5 ± 6 dB Not specified1 ± 3 dB 0 ± 6 dB Not specified	
Frequency Display Frequency Stability Antenna Impedance Operation Temperature Power source	5-digit LED display (MHz/kł Within ±1 kHz after one hou 50Ω unbalanced type (s High impedance type (s 0°C to 43.3°C AC 120 V, 60 Hz for USA & EUROPEAN & AUSTRALIA DC 12 V (negative ground of	0 V, 50 Hz for		

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.

- PRINCIPLES OF OPERATION

This Receiver is a triple-conversion type and employs a "double tuning" system. MHz Tuning tunes to the MHz "unit" of the receiving frequency (i.e. selects the desired 1 MHz portion to be tuned) and kHz Tuning tunes to the kHz "unit(s)"

Retaito the Block Diagram as you read through the following description:

An RF signal picked up by the Antenna goes to RF section via ATTenuator and Preselector. The RF signal is amplified by Q201, and up-mixed in 1st Mixer Q202 and Q203 with 1st Local Oscillator Q401 (MHz Tuning). Q401 produces 55.5 MHz to 84.5 MHz signals in 1 MHz spreads as required for the MHz portion of the receiving frequency (i.e. 55.5 MHz for "0" MHz spread ... from 10 kHz to 999 kHz, 56.5 MHz for 1 MHz to 1.999 MHz... etc. ...). The resulting frequency will always be from 55.5 MHz to 54.5 MHz. Note the frequency inversion as well as the up-conversion. This signal is amplified by 1st IF Amp Q205 and Q214.

The Reference Oscillator generates a 4 MHz crystal-controlled frequency using Q507. This is divided down to 1 MHz by IC502. D501 and D502 are used for the harmonics generator and produce integer harmonics of 1 MHz, which then are mixed in IC201 with 1st Local Oscillator frequency (55.5 MHz to 84.5 MHz). Of the harmonics mixed with the 1st Local Oscillator signal, only the 52.5 MHz signal is amplified by Q207 — Q209, and fed into Q206. In other words, only those harmonics that will produce 52.5 MHz when mixed with 1st Local Oscillator are applied to the 2nd Mixer. For example, to receive a 4 MHz signal, the 1st Local Oscillator frequency must be 59.5 MHz, so the 7th harmonic from the Harmonics Generator (i.e. 7 MHz) is used to produce required 52.5 MHz.

This 52.5 MHz frequency is down-mixed with 1st IF (55.5 - 54.5 MHz) and produces a 3 - 2 MHz 2nd IF (again note that the signal is "reversed" - i.e. 3 to 2, not 2 to 3 MHz). The 3rd Local Oscillator produces a signal 455 kHz higher than the 2nd IF, and is down-mixed with the 2nd IF at Q302, and a 3rd IF of 455 kHz is produced.

Note that the 55.5 — 84.5 MHz Local Oscillator is used both for 1st and 2nd mixing. This cancels frequency drift. For example, if the 1st heterodyning frequency drifts 1 kHz. The 2nd heterodyning frequency also drifts 1 kHz, thus the drift is cancelled.

For instance:

When funed to CB Channel 1, 26.965 MHz, and if the Local Oscillator is running at 81.6 MHz (but it should be 81.5 MHz) this is what happens.

Αc	tu	al
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Should be

1st Mix. 81.6 - 26.965 = 54.635	MHz
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81.5 - 26.965 = 54.535 MHz

2nd Osc. 29 MHz

29 MHz

3rd Mix. 81.6 - 29 =

81.5 - 29 ≈ 52.5 MHz

3rd Mix. 81.6 - 29 = 52.6 MHz 2nd Mix. 54.635 - 52.6 = 2.035 MHz

54.535 - 52.5 = 2.035 MHz

Thus, drift is cancelled.

Frequency Readout:

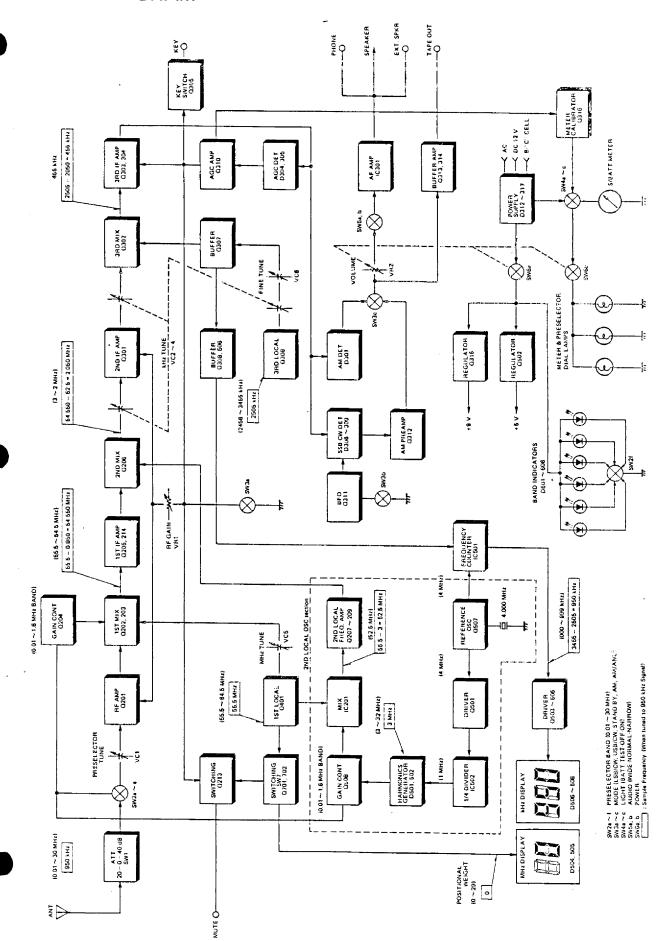
Just as with Tuning, frequency readout is done in two stages: MHz and kHz.

The MHz indicator is mechanical: MHz tuning capacitor VC5 is mechanically ganged with SW7.

SW7 makes the switch wafer to readout 0-29: it will indicate "0" when 1st Osc. is set to 55.5 MHz, "1" for 56.5 MHz, etc. ...

For kHz readout, IC501 counts the 3rd Local Oscillator frequency, which is, as described above, the kHz Tuning. The 3rd Osc. signal is buffered and amplified by Q307, Q308 and Q506, and applied to IC501. IC501 then converts this signal and drives the kHz display.

BLOCK DIAGRAM



OPERATION CHECK/ALIGNMENT PREPARATION

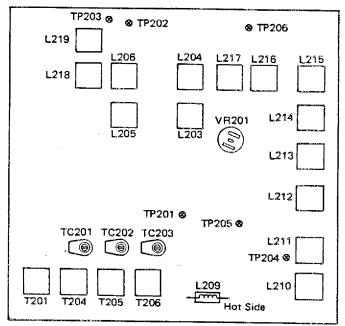
Test instruments required.

- 1. Oscilloscope
- 2. AC VTVM (RF)
- 3. DC VTVM
- 4. Spectrum Analyzer (if available) or Monitor Scope (40 MHz 60 MHz)
- 5. Frequency Counter
- 6. 8Ω Dummy Load
- 7. RF Signal Generator (10 kHz 30 MHz)
- 8. Audio Signal Generator
- 9. Distortion Meter
- 10. Sweep Signal Generator (40 MHz 60 MHz)
- 11. Detector

NOTE: Prior to alignment allow instruments and unit to warm up for 15 minutes. Maintain Generator output level at minimum necessary (to avoid saturation and clipping).

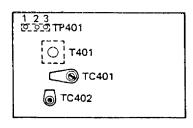
ALIGNMENT LOCATIONS AND POINTS

RF P.C.B.

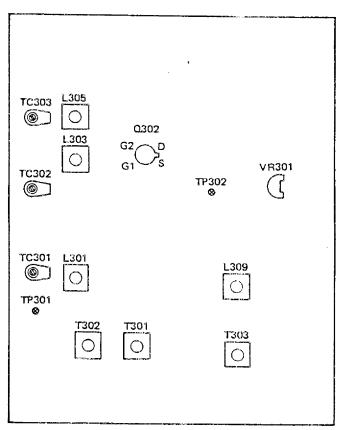


T202/T203 are bar antenna coil.

MHz P.C.B. (Soldering Side View)



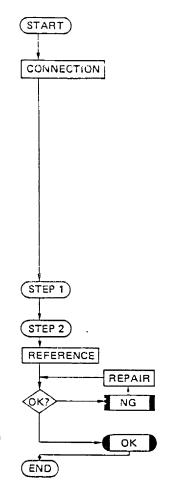
IF/AF P.C.B.



NOTE: T201 and T303 happen to be adjustable due to parts procurement ease. No need to adjust them.

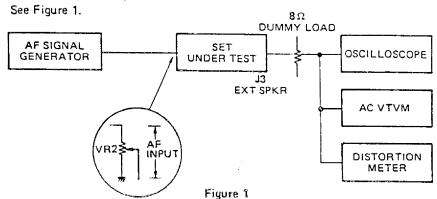
VR302 is attached to lug terminal on bottom side of IF/AF PCB.

AF OPERATION CHECK



Connect AF Generator to "hot" end of VOLUME Control.

Connect AC VTVM, Oscilloscope and Distortion Meter to EXT SPKR Jack J3 across 8Ω Dummy Load.



Control setting: VOLUME (max), AUDIO (NORMAL), Mode (AM)

AF Generator setting: 1 kHz

Check AF Output with 10 - 20 mV input.

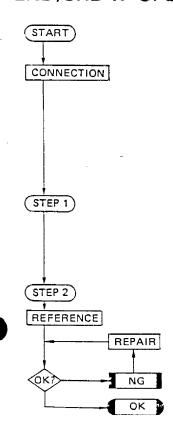
AF Output Power should be 0.5 W with 10 - 20 mV input.

Check AF circuit. See Troubleshooting 3).

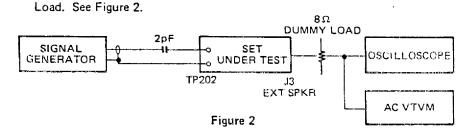
AF Output Power is not 0.5 W with 10 - 20 mV input and/or Distortion is over 10%.

AF Output Power is 0.5~W with 10-20~mV input and Distortion is less than 10%.

2ND/3RD IF OPERATION CHECK



Connect SG to TP 202 through a 2pF capacitor. Connect AC VTVM and Oscillator to EXT SPKR Jack J3 across 8Ω Dummy



Control setting

: Mode (AM), VOLUME (max), RF GAIN (max)

AUDIO (NORMAL)

Signal Generator

: 2.5 MHz (1 kHz, 30% Mod.) ν

MHz/kHz Tuning : 10.500 MHz

Check AF Output level with $700 - 1400 \,\mu\text{V}$ input.

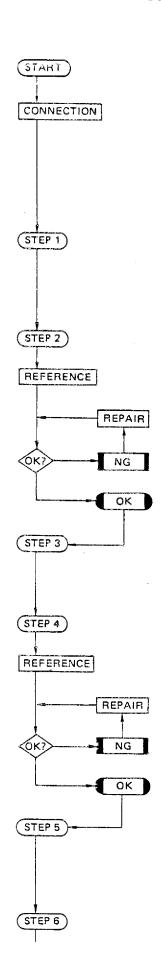
AF Output level should be 3 V with 700 - 1400 µV input.

Check 2nd IF Stage, 3rd IF Stage, DET circuit and/or associated circuit components.

AF Output level is not 3 V with 700 - 1400 µV input.

AF Output level is 3 V with $700 - 1400 \,\mu\text{V}$ input.

TOTAL GAIN CHECK



Connect SG to ANT Jack A - 1 and DC VTVM to TP 301. See Figure 3.



Control Setting

: RF GAIN (max.)

PRESELECTOR BAND (0.01 - 0.15)

MHz/kHz Tuning (100 kHz)

SG Setting

: 100 kHz

Increase SG output until 1.5 V reading is obtained on DC VTVM.

SG output is 7.5 - 30 μ V

Check RF and/or IF Stage and/or associated components.

SG output is more than $30 \,\mu\text{V}$

SG output is $7.5 - 30 \,\mu\text{V}$

Control Setting

: PRESELECTOR BAND (0.15 - 0.5)

MHz/kHz Tuning (300 kHz)

SG Setting

: 300 kHz

Increase SG output until 1.5 V reading is obtained on DC VTVM.

SG output is $0.75 - 3 \mu V$

Check RF Stage and/or associated circuit components.

SG output is more than 3 μ V

SG output is $0.75 - 3 \mu V$

Control Setting

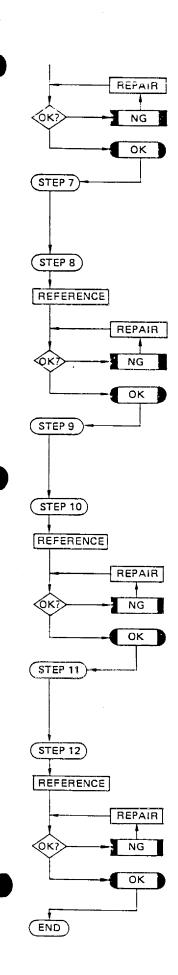
: PRESELECTOR BAND (0.5 - 1.6)

MHz/kHz Tuning (900 kHz)

SG output

: 900 kHz

Increase SG output until 1.5 V reading is obtained on DC VTVM.



Check RF Stage and/or associated circuit component.

SG output is more than $2 \mu V$

SG output is $0.5 - 2 \mu V$

Control Setting : PRESELECTOR BAND (1.6 - 4.5)

MHz/kHz Tuning (3.1 MHz)

SG Setting : 3.1 MHz

Increase SG output until 1.5 V reading is obtained on DC VTVM.

SG output is 1.5 \sim 6 μ V

Check RF Stage and/or associated circuit components.

SG output is more than $6 \,\mu V$

SG output is $1.5-6 \mu V$

Control Setting : PRESELECTOR BAND (4.5 - 12)

MHz/kHz Tuning (7.1 MHz)

SG Setting : 7.1 MHz

Increase SG output until 1 V reading is obtained on DC VTVM.

SG output is $0.75 - 3 \mu V$

Check RF Stage and/or associated circuit component.

SG output is more than 3 μ V

SG output is 0.75 $-3 \mu V$

Control Setting : PRESELECTOR BAND (12 - 30)

MHz/kHz Tuning (21.1 MHz)

SG Setting : 21.1 MHz

Increase SG output until 1 V reading is obtained on DC VTVM.

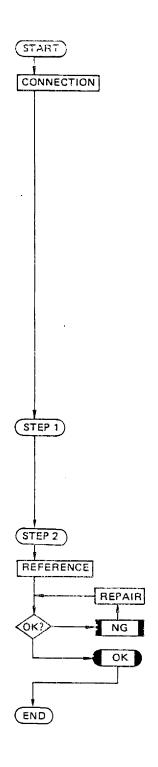
SG output is $1.5 - 6 \mu V$

Check RF Stage and/or associated circuit component.

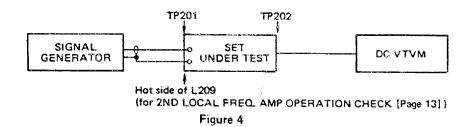
SG output is less than 6 μ V

SG output is 1.5 - 6 μ V

1ST IF OPERATION CHECK



Connect SG to TP201 and DC VTVM to TP202. See Figure 4.



NOTE

- 1. Connect Pin-2 of TP401 to Pin-3 of TP401 in order to inhibit the 1st Local Oscillator.
- 2. Supply GND level to the point where C240 and a coaxial cable is jointed in order to inhibit the output of Harmonics Generator (D501, D502).

Control Setting : Mode (AM)

PRESELECTOR BAND (4.5 – 12 MHz)
PRESELECTOR TUNE (10 MHz)
MHz/kHz Tuning (10.5 MHz)

Signal Generator

Setting : 55 MHz (No Mod.)

Increase SG output until 100 mV (250 mV) reading is obtained on DC VTVM.

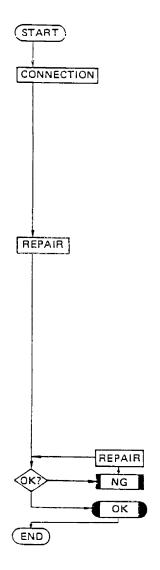
SG output is 2.14 - 4.22 mV (21.4 - 42.2 mV).

Check 1st IF stage and/or associated circuit components.

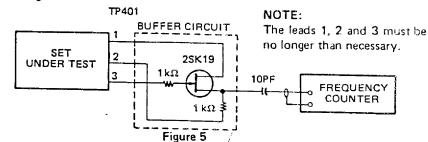
SG output is not 2.14 - 4.22 mV (21.4 - 42.2 mV).

SG output is 2.14 - 4.22 mV (21.4 - 42.2 mV).

1ST LOCAL OSC OPERATION CHECK



Connect Frequency Counter to TP401 through a Baffer circuit; See Figure 5.



The following readings should be obtained on Frequency Counter in accordance with MHz Tuning.

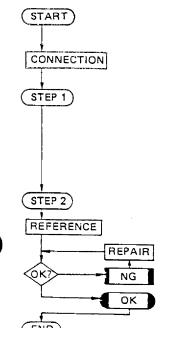
MHz Readout	Frequency Counter Readings
(MHz)	(MHz)
0	55.5 ± 0.1
1	56.5 ± 0.1
2	. 57.6 ± 0.1
•	·
•	
28	83.5 ± 0.1
29	84.5 ± 0.1

See 1ST LOCAL OSC ALIGNMENT on page 19.

The reading does not meet the chart.

The reading meet the chart.

2ND LOCAL FREQ. AMP OPERATION CHECK



Connect SG to "hot" side of L209 and DC VTVM to TP202. See Figure 4.

Control Setting : Mode (AM)

PRESELECTOR BAND (4.5 -- 12 MHz)
PRESELECTOR TUNE (10 MHz)

MHz/kHz Tuning (10.5 MHz)

Signal Generator

Setting : 52.5 MHz (No Mod.)

Increase SG output until 100 mV (350 mV) reading is obtained on DC VTVM.

SG output is 2.14 - 4.22 mV (21.4 - 42.2 mV).

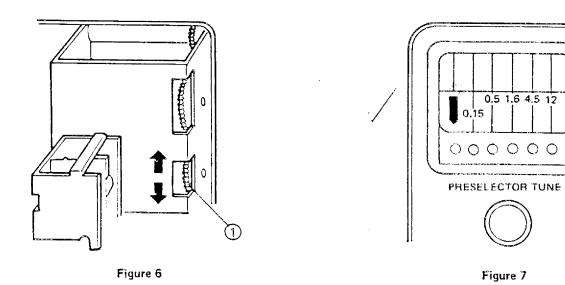
Check Q207 — Q209 and/or associated circuit components.

SG output is not 2.14 - 4.22 mV (21.4 - 42.2 mV).

SG output is 2.14 - 4.22 mV (21.4 - 42.2 mV).

PRESELECTOR DIAL CALIBRATION

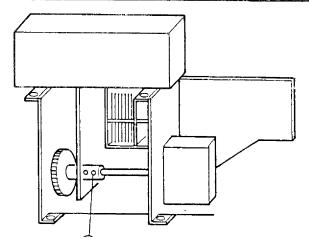
V 1000	
CONTROL SETTING	Set PRESELECTOR TUNE fully counter-clockwise.
CALIBRATION	Hold PRESELECTOR TUNE knob with your hand, and set the gear (1), shown in Figure 6, so that the Preselector Dial is as shown in Figure 7.



LINKAGE ADJUSTMENT OF MHz SWITCH

PRECAUTION: Do the mechanical adjustment only it is actually necessary after CHECK or you replaced some parts.

CONTROL SETTING	OFF/VOLUME : ON MHz Tune : fully clockwise
CHECK	Check the MHz Tuning indication; rotating the MHz Tuning in the counter-clockwise direction causes the MHz Tuning display to vary in 29, 28, 1, 0, sequence and eventually disappear.
ADJUSTMENT	Loosen screw 1 on MHz Switch shaft. Turn the shaft of MHz Switch in the direction that results in a MHz sequence indication of 0, 1, 28, 29; tighten screw 1 at the precise point where the 29 MHz indication disappears. To avoid miss tracking be sure to make this shaft setting very precisely.



3RD IF ALIGNMENT

STEP	TEST INSTRUMENT CONNECTION	CONTROL SETTING	SIGNAL GENERATOR SETTING	ADJUSTMENT	REMARKS
1	Refer to Figure 9	OFF/VOLUME: ON Mode: AM RF GAIN: Max. MHz Tuning: 1 MHz kHz Tuning: 500 kHz	455 kHz 1 mV ± 3 dB (NO MOD.)	T301, T302	Adjust T301 and T302 for max, reading (approx2.3 V) on DC VTVM.
2	Same as Step 1	Same as Step 1	455 kHz 10 mV ± 3 dB (NO MOD.)	Same as Step 1	Adjust T301 and T302 for max, reading (approx. –2.5 V) on DC VTVM.

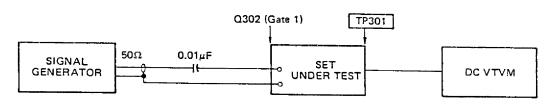


Figure 9

ALIGNMENT OF kHz TRACKING

STEP	CONTROL SETTING	ADJUSTMENT	REMARKS
1	OFF/VOLUME: ON Mode: AM MHz Tuning: 1 MHz Set FINE TUNE to minimum receiving frequency with FINE TUNE knob set to 9 o'clock position. Preset kHz Tuning to fully counterclockwise and return it approximately 1-1/4 turns from the point when slipping starts.	TC303	Adjust TC303 for kHz Readout of "000".
2	OFF/VOLUME: ON Mode: AM MHz Tuning: 1 MHz Set FINE TUNE to 3 o'clock position, and set kHz Tuning fully clockwise and return it approximately 1-1/4 turns from the point when slipping starts.	L305	Adjust L305 for kHz Read- out of "999".
3	Repeat Steps 1 and 2 a couple of times.		

2ND IF ALIGNMENT

STEP	TEST INSTRUMENT CONNECTION	CONTROL SETTING	SIGNAL GENERATOR SETTING	ADJUSTMENT	REMARKS
1	Refer to Figure 10	OFF/VOLUME: ON Mode: AM RF GAIN: Max. VOLUME: Max. MHz Tuning: 2 MHz kHz Tuning: 900 kHz	2.1 MHz 1 mV (10 mV) ±3 dB 1 kHz 30% Mod.	L301, L303	Adjust L301 and L303 for max, reading [approx. 3 V (3.5 V)] on AC VTVM.
2	Same as Step 1	OFF/VOLUME: ON Mode: AM RF GAIN: Max. VOLUME: Max. MHz Tuning: 2 MHz kHz Tuning: 100 kHz	2.9 MHz 1 mV (10 mV) ±3 dB 1 kHz 30% Mod.	TC301, TC302	Adjust TC301 and TC302 for max. reading [approx. 3 V (3.5 V)] on AC VTVM.
3	Repeat Steps 1 a	nd 2 until no further impro	vement can be ob	itained.	

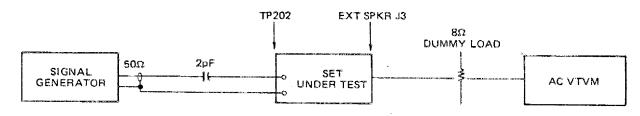
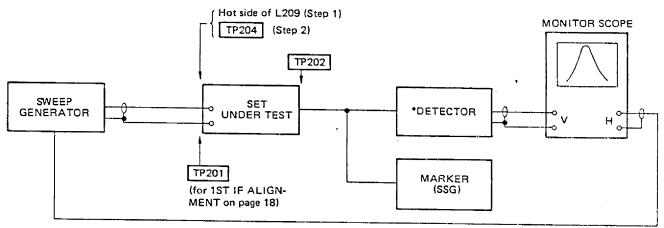


Figure 10

NOTE: Remember, 2nd 1F is "reversed"; 3 to 2 MHz, not 2 to 3 MHz. Thus SG frequency should be 2.1 MHz for 2.9 MHz reception and 2.9 MHz for 2.1 MHz reception.

ALIGNMENT OF 2ND LOCAL FREQ. AMP

STEP	TEST INSTRUMENT CONNECTION	CONTROL SETTING	SIGNAL GENERATOR SETTING	ADJUSTMENT	REMARKS
î	Refer to Figure 11	OFF/VOLUME :ON Mode :AM PRESELECTOR BAND : 4.5 – 12 MHz PRESELECTOR TUNE : 10 MHz MHz Tuning : 10 MHz kHz Tuning : 500kHz	Center Freq. 52.5 MHz Sweep Width 52.5 ± 2 MHz	L212~ L217	Set marker frequency to 52.5 MHz Adjust L212 ~ L217 to peak on monitor scope.
2	Refer to Figure 11	Same as Step 1	Same as Step 1	L210 ~ L217	Set marker frequency to 52.5 MHz. Adjust L210 ~ L217 to obtain the characteristic curve as shown in Figure 12. The core position of each coil should be approximately as illustrated in Figure 13.



* DETECTOR CIRCUIT

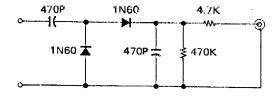
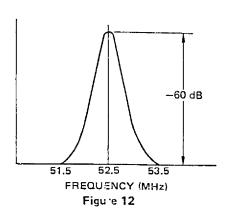
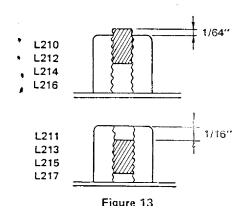


Figure 11

NOTE

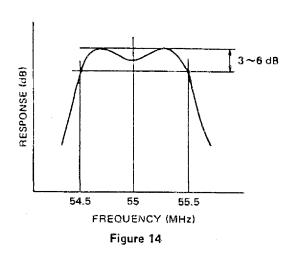
- 1. Connect Pin-2 of TP401 to Pin-3 of TP401.
- 2. Keep leads between DET, and TP202 as short as possible.

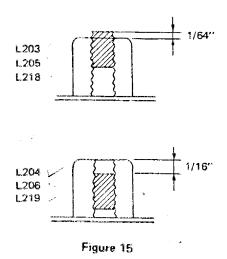




1ST IF ALIGNMENT

STEP	TEST INSTRUMENT CONNECTION	CONTROL SETTING	SIGNAL GENERATOR SETTING	ADJUSTMENT	REMARKS
1	Refer to Figure 11	OFF/VOLUME: ON Mode: AM PRESELECTOR BAND: 4.5 – 12 MHz PRESELECTOR TUNE: 10 MHz MHz Tuning: 10 MHz kHz Tuning: 500 kHz	Center Freq. 55 MHz Sweep Width 55 ± 2 MHz	L203 ~ L206 L218, L219	Set marker frequency to 54.5 MHz, 55.0 MHz and 55.5 MHz. Adjust L203 ~ 206, L218 and L219 to obtain the characteristic curve as shown in Figure 14. The core positions of each coil should be approximately as illustrated in Figure 15.





PRECAUTION FOR VR201 AND 1ST LOCAL OSC ALIGNMENT

Any adjustment of VR201, TC401, TC402 and T401 must be made with great precision. Do not attempt any adjustment unless absolutely necessary.

VR201 ALIGNMENT

NOTE: VR201 affects the MHz tracking. Thus, if you find it mandatory to adjust VR201, do so before finalizing MHz tracking. If VR201 adjustment has little effect, return it to the original setting.

STEP	TEST INSTRUMENT CONNECTION	CONTROL SETTING	SIGNAL GENERATOR SETTING	ADJUSTMENT	REMARKS
1	Refer to Figure 16	OFF/VOLUME: ON Mode: AM RF GAIN: Max. PRESELECTOR BAND : 0.15 0.5 MHz PRESELECTOR TUNE : 0.5 MHz MHz Tuning: 0 MHz kHz Tuning: 500 kHz	500 kHz output: For approx. "3" ~ "5" reading on S-Meter	VR201	Adjust VR201 for max. reading on S-Meter.

1ST LOCAL OSC ALIGNMENT

STEP	TEST INSTRUMENT CONNECTION	CONTROL SETTING	SIGNAL GENERATOR SETTING	ADJUSTMENT	REMARKS
1	Refer to Figure 16	OFF/VOLUME: ON VOLUME : For the desired audio output. Mode: AM RF GAIN: Max. ATTEN: 0 dB PRESELECTOR BAND : 1.6 – 4.5 MHz PRESELECTOR TUNE : 3.5 MHz MHz Tuning: 3 MHz kHz Tuning: 500 kHz	3.5 MHz	T401	Set trimmers TC401 and TC402 to mid-capacity point. Adjust T401 to receive SG signal.
2	Same as Step 1	OFF/VOLUME: ON VOLUME : For the desired audio output. Mode: AM RF GAIN: Max. ATTEN: 0 dB PRESELECTOR BAND : 12 - 30 MHz PRESELECTOR TUNE : 28 MHz MHz Tuning: 28 MHz kHz Tuning: 000 kHz	3.5 MHz	TC402	Adjust TC402 to receive the 8th harmonic of SG signal (28 MHz).
3	Repeat Step 1 an Adjust TC401 as	nd Step 2. Check tracking a required for optimum trac	at 10.5 MHz, 17.5 king.	MHz and 24.5 MH	z.
4	·	make sure 1 MHz step trac		the way from 500	kHz to 29 MHz.

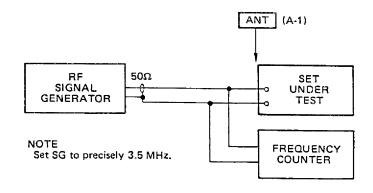


Figure 16

RF STAGE ALIGNMENT

NOTE 1. Maintain SG output level at minimum necessary to obtain usable output (3-4 readings on S-Meter).

2. T202, 203 (Bar Antenna): Refer to Wiring Diagram.

STEP	TEST INSTRUMENT CONNECTION	CONTROL SETTING	SIGNAL GENERATOR SETTING	ADJUSTMENT	REMARKS
	Refer to Figure 16	OFF/VOLUME: ON VOLUME: For the desired audio output. Mode: AM RF GAIN: Max. ATTEN: 0 dB PRESELECTOR BAND: 0.15 - 0.5 MHz MHz Tuning: To the point where the max. noise appears with MHz readout at "0". kHz Tuning: 300 kHz PRESELECTOR TUNE: 300 kHz	300 kHz 1 kHz 30% Mod.	T202	Adjust T202 for max. reading on S-Meter.
2	Same as Step 1	PRESELECTOR BAND : 0.5 — 1.6 MHz PRESELECTOR TUNE: 900 kHz kHz Tuning: 900 kHz Other Controls Setting: Same as Step 1	900 kHz 1 kHz 30% Mod.	T203	Adjust T203 for max, reading on S-Meter.
3	Same as Step 1	PRESELECTOR BAND : 1.6 - 4.5 MHz PRESELECTOR TUNE: 1.8 MHz MHz/kHz Tuning: 1.8 MHz Other Controls Setting: Same as Step 1	1.8 MHz 1 kHz 30% Mod.	T204	Adjust T204 for max. reading on S-Meter.
4	Same as Step 1	PRESELECTOR BAND : 1.6 - 4.5 MHz PRESELECTOR TUNE: 4.5 MHz MHz/kHz Tuning: 4.5 MHz Other Controls Setting: Same as Step 1	4.5 MHz 1 kHz 30% Mod.	TC201	Adjust TC201 for max, reading on S-Meter.
5	Repeat Steps 3 a	ind 4 until no further improvement can be	obtained.		J
6	Same as Step 1	PRESELECTOR BAND : 4.5 - 12 MHz PRESELECTOR TUNE : 5.010 MHz MHz/kHz Tuning : 5.010 MHz Other Controls Setting: Same as Step 1	5.010 MHz 1 kHz 30% Mod.	T205	Adjust T205 for max, reading on S-Meter.
7	Same as Step 1	PRESELECTOR BAND: : 4.5 - 12 MHz PRESELECTOR TUNE: 11.010 MHz MHz/kHz Tuning: 11.010 MHz Other Controls Setting: Same as Step 1	11.010 MHz 1 kHz 30% Mod.	TC202	Adjust TC202 for max, reading on S-Meter.
8	Repeat Steps 6 a	nd 7 until no further improvement can obt	ained.		J
9	Same as Step 1	PRESELECTOR BAND: 12-30 MHz PRESELECTOR GUNE: 13.010 MHz MHz/kHz Tuning: 13.010 MHz Other Controls Setting: Same as Step 1	13.010 MHz 1 kHz 30% Mod.	T206	Adjust T206 for max. reading on S-Meter.
10	Same as Step 1	PRESELECTOR BAND: 12-30 MHz PRESELECTOR TUNE: 28.010 MHz MHz/kHz Tuning: 28.010 MHz Other Controls Setting: Same as Step 1	28.010 MHz 1 kHz 30% Mod.	TC203	Adjust TC203 for max. reading on S-Meter.

BFO ALIGNMENT

NOTE : Set each control for max. reading on S-Meter.

STEP	TEST INSTRUMENT CONNECTION	CONTROL SETTING	SIGNAL GENERATOR SETTING	ADJUSTMENT	REMARKS
1	Refer to Figure 16	OFF/VOLUME: ON VOLUME: For the desired audio Mode:LSB/CW PRESELECTOR BAND :4.5 - 12 MHz PRESELECTOR TUNE: 7.1 MHz RF GAIN: Max. ATTEN: 0 dB MHz/kHz: 7.1 MHz	7.1 MHz 100 μV (No Mod.)	L309	Adjust L309 for zero-beat. Set Mode to USB/CW and adjust kHz Tuning to obtain zero-beat. At this time kHz Readout must be "108" — "109".
2	Same as Step 1	Set MHz/kHz Tuning for max. reading on S-Meter. (7.1 MHz) Other Controls Setting: Same as Step 1	Same as Step 1	Same as Step 1	Alternate between LSB and USB and adjust L309 so the zero-beat is obtained at the same level on S-Meter.

S-METER ALIGNMENT

NOTE

- 1. After checking the specified sensitivities in all bands, adjust S-Meter sensitivity.
- 2. Set each control for max, reading on S-Meter.
- 3. VR302: Refer to Wiring Diagram.

STEP	TEST INSTRUMENT CONNECTION	CONTROL SETTING	SIGNAL GENERATOR SETTING	ADJUSTMENT	REMARKS
1	Refer to Figure 16	OFF/VOLUME: ON Mode: LSB/CW PRESELECTOR BAND : 4.5 - 12 MHz PRESELECTOR TUNE: 7.1 MHz RF GAIN: Max. ATTEN: 0 dB MHz/kHz Tuning: 7.1 MHz	7.1 MHz 1 mV 1 kHz 30% Mod.	VR301	Adjust VR301 for full-scale reading on S-Meter.
2	Same as Step 1	Same as Step 1	7.1 MHz 30 μV 1 kHz 30% Mod.	VR302	Adjust VR302 for a reading of 9 on S-Meter.

TROUBLESHOOTING GUIDE

	Symptom	Possible Causa
1)	Pilot Lamp does not light and/or set fails to operate when power is ON.	A) Faulty power cord. B) Defective Q315 and/or associated circuit components. C) Defective lamp.
2)	Fuse blows.	A) Short-circuit in the DC regulator circuit. B) Short-circuit in the power amplifier circuit.
3)	Pilot Lamp lights but no sound on any band.	A) Defective Speaker. B) Defective PHONE and/or EXT SPKR Jack. C) Defective IC301 and/or associated circuit components. Proceed to A.F. OPERATION CHECK on page 9. D) Defective Mode switch SW-3.
4)	No audio on any band.	A) Faulty Local Oscillator and/or associated circuit components. Proceed to 1ST/2ND LOCAL OSC CHECK on page 13. B) Faulty RF and/or IF Stage and/or associated circuit components. Proceed to TOTAL GAIN CHECK on page 10 – 11.
5)	LSB/CW, USB/CW Mode does not function, AM Mode is OK.	A) Defective SSB/CW Detector D306 - D309 and/or associated circuit components. B) Defective BFO Q311 and/or associated circuit components.
6)	Noisy	 A) Faulty RF Stage amplifier and/or associated circuit components. Proceed to TOTAL GAIN CHECK on page 10 – 11. B) Faulty IF Stage amplifier and/or associated circuit components. Proceed to TOTAL GAIN CHECK on page 10 – 11. C) Defective AF amplifier IC301. Proceed to A.F. OPERATION CHECK on page 9.
7)	Incorrect MHz reading.	A) The 1st Local OSC is out of order. See 1ST LOCAL OSC ALIGNMENT on page 18. B) MHz switch and linkage. See LINKAGE ADJUST-MENT OF MHz SWITCH on page 14.
8)	Incorrect kHz reading.	A) Mistracking of kHz Tuning, See ALIGNMENT OF kHz TRACKING on page 15. B) IF Stage is out of order, See 1ST/2ND/3RD IF ALIGNMENT.
9)	kHz Display is blanked.	 A) 3rd Local Osc and/or associated circuit is defective. B) The Reference OSC (4 MHz) is defective. C) Frequency Counter (IC501) is defective.

SPECIAL NOTE:

(1) If a user is annoyed by excessive birdies, which can not be eliminated by proper adjustment of the MHz tuning dial and/or the preselector and band switch, the problem may be caused by 1 MHz harmonics being passed through the 2nd I.F.

The best solution is to be sure that the shield case for the counter PCB is properly grounded (through the two wires from the RF PCB and the 4 screws). Be sure all shielding is secure. Also, try moving wires to see if you can obtain lower level birdies. Birdies with a level of more than $10\,\mu\text{V}$ (S + N/N equals 10 dB) are out of spec; nominal spec is no more than $2\,\mu\text{V}$ at 7.1 MHz.

(2) Typically you can rule out any possibility of image response being responsible for birdies. Consider the following example for the image of 7.1 MHz....

Fi = Fr + 21F

Fi: Image Frequency

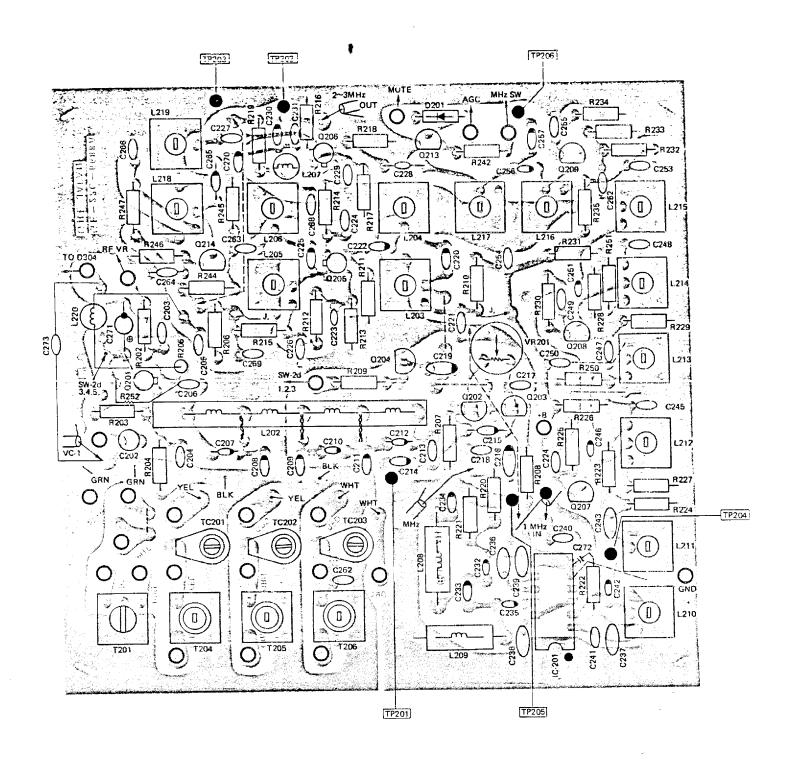
Fr: Receiving Frequency

For instance:

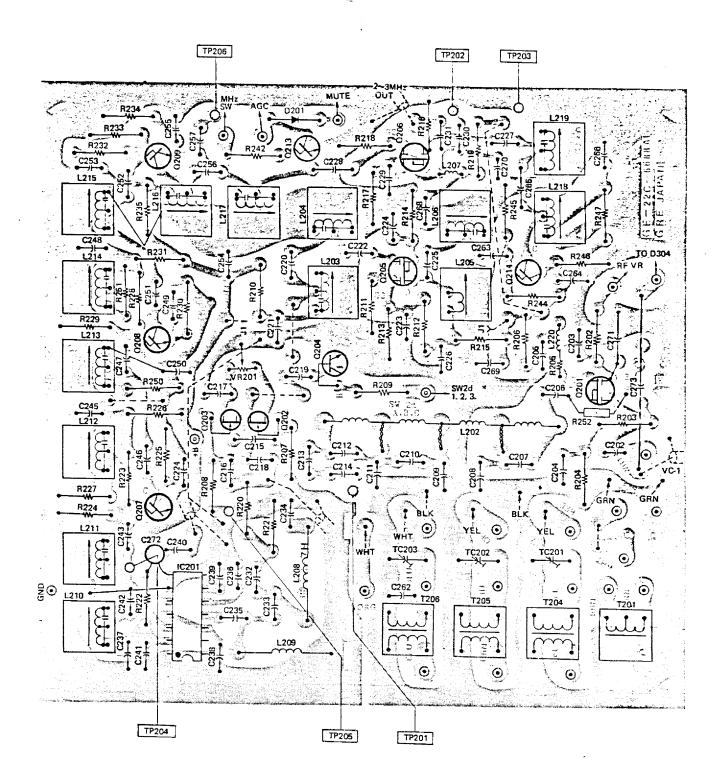
Fr = 7.1 MHz

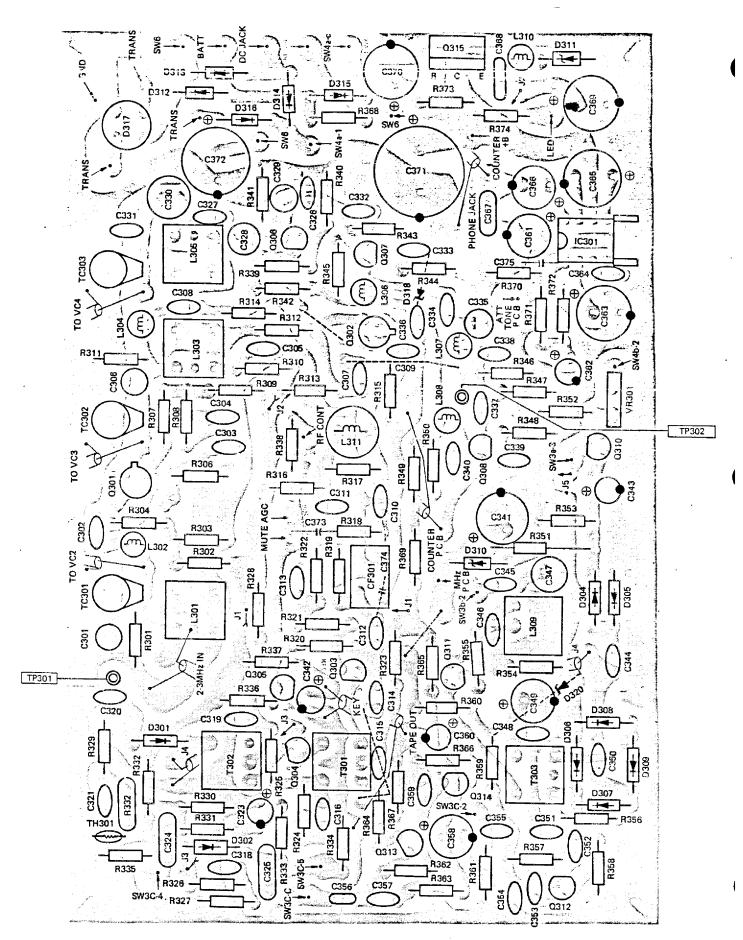
 $Fi = 7.1 + (2 \times 55.4) = 117.9 \text{ MHz}$

RF P.C. BOARD, TOP VIEW

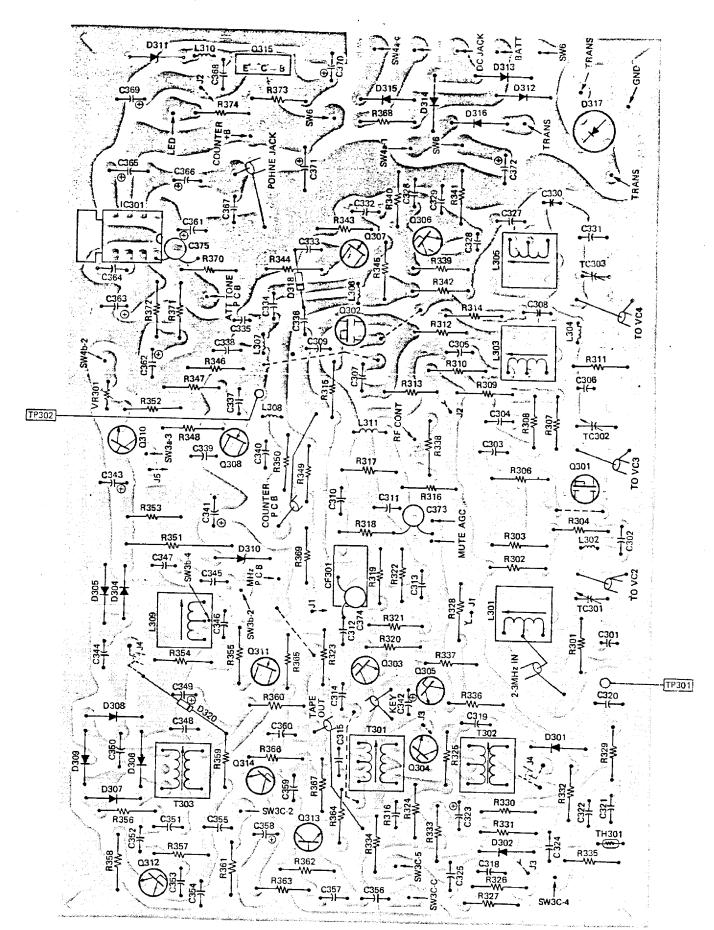


RF P.C. BOARD, BOTTOM VIEW

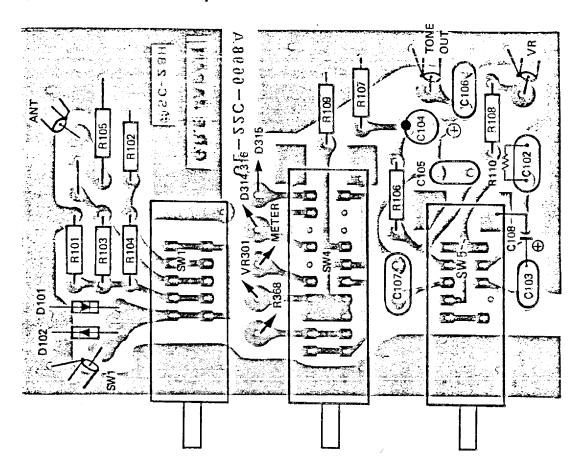




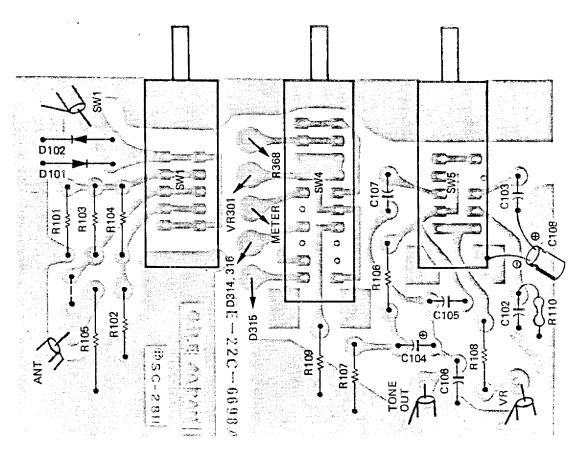
IF/AF P.C. BOARD, BOTTOM VIEW



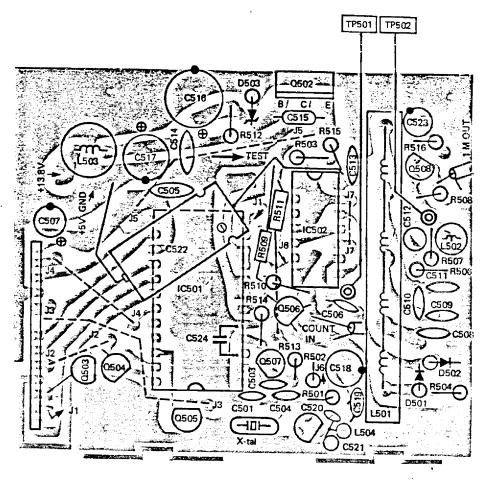
AUDIO/ATT. P.C. BOARD, TOP VIEW



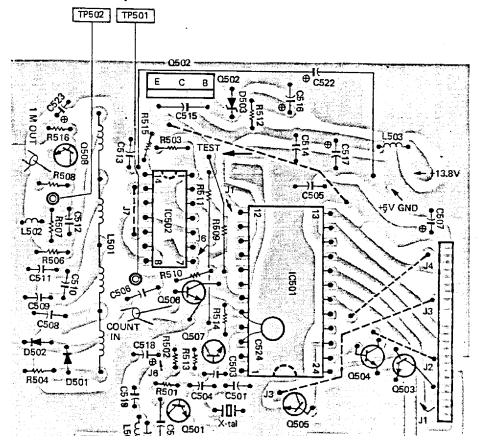
AUDIO/ATT. P.C. BOARD, BOTTOM VIEW



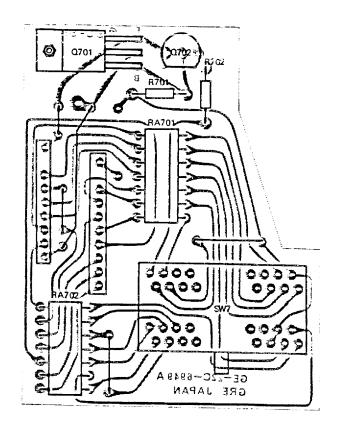
COUNTER P.C. BOARD, TOP VIEW



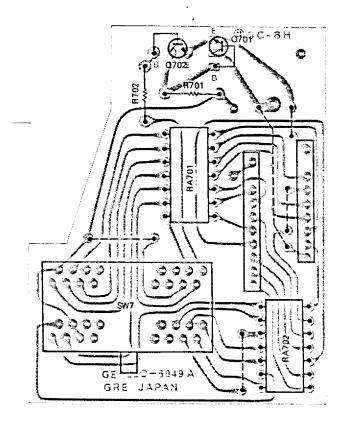
COUNTER P.C. BOARD, BOTTOM VIEW



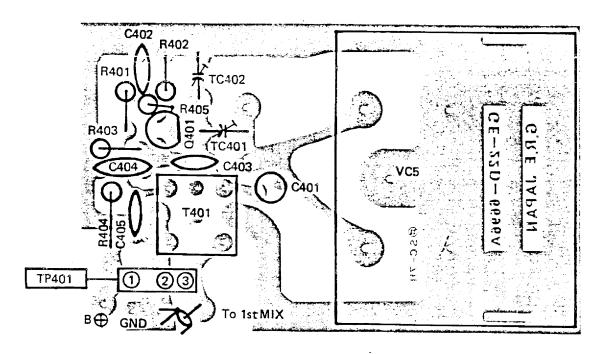
MHz SWITCH P.C. BOARD, TOP VIEW



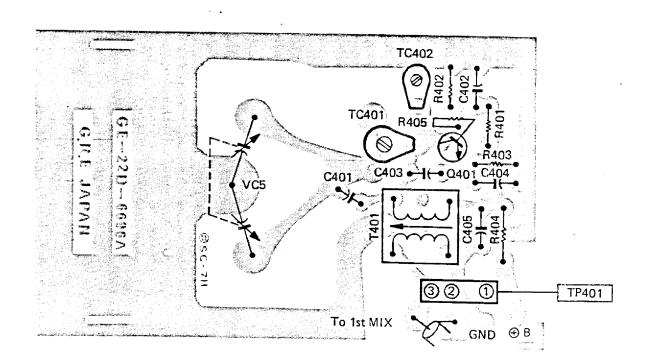
MHz SWITCH P.C. BOARD, BOTTOM VIEW



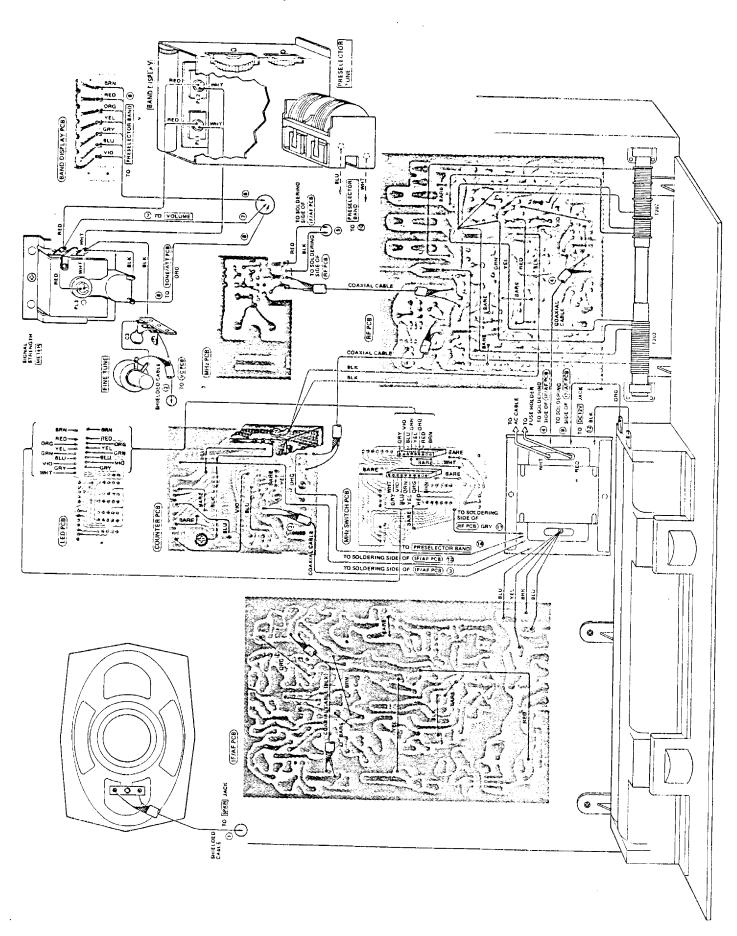
MHz P.C. BOARD, TOP VIEW



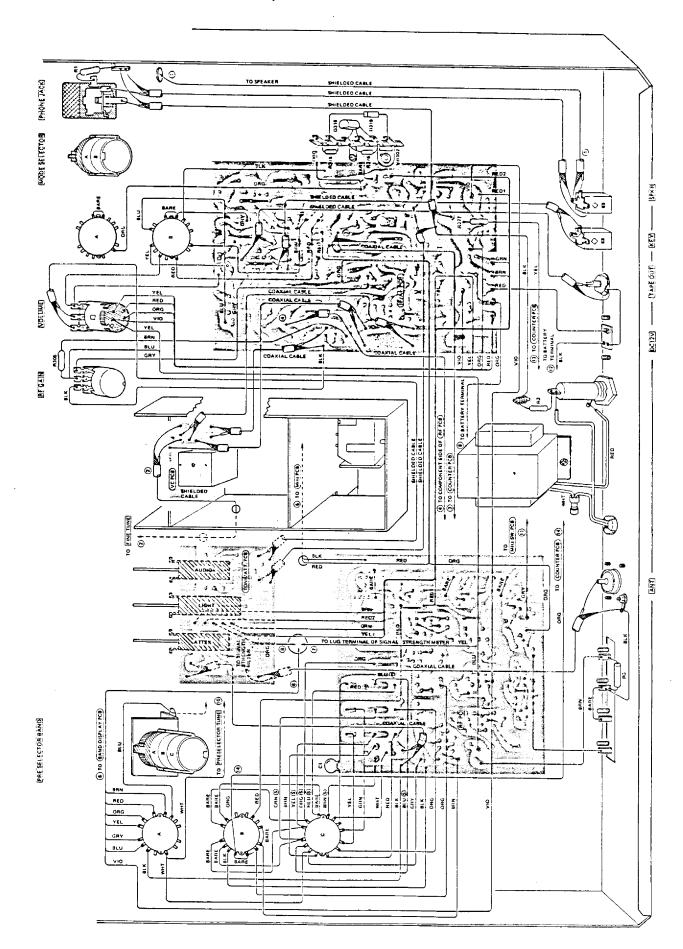
MHz P.C. BOARD, BOTTOM VIEW



WIRING DIAGRAM (TOP)



WIRING DIAGRAM (BOTTOM)



ELECTRICAL PARTS LIST

NOTE: Temperature characteristics

(C) NPO (U) N750

	N750)			Raf. No.	Value	ege (V)	ancs (%)	Material
					C243	47pF	50	±10	Ceramic
1	CAPACI	TORS		Ī	C244	0.01µF	25	-20, +80	Ceramic
	Mar. No. 1986 Called and Salahan annuage				C245	0.01µF	25	20, +80	Ceramic
Ref. No.	Value	Voit	Toler-		C246	1pF	50	±0.25pF	Ceramic (C)
Lei Mo	v aius	age (V)	ance (%)	Material	C247	47pF	50	±10	Ceramic
		107	1701		C248	0.01μF	25	-20, ÷80	Ceramic
C1	220pF	50	±10	Ceramic	C249 C250	0.01μF	25	-20, +80	Ceramic
C2	Not used		0	Ceranne		0.01μF	25	-20, ÷80	Ceramic
C3	2pF	50	±0.25pF	Ceramic (C)	C251 C252	1pF	50	±0.25pF	Ceramic (C)
	2,51		-0.2 0p.	Ceramic (C)	C252	0.001μF 0.01μF	50	±10	Ceramic
C101	Not used	1			C254	0.01μF	25 25	-20, +80	Ceramic
C102	0.056µF	50	±10	Mylar	C255	0.01μF 0.01μF	25	-20, +80 -20, +80	Ceramic
C103	0.022µF	50	±10	Mylar	C256	5pf	50	±0.25pF	Ceramic
C104	1µF	50	-10, +75	Electrolytic	C257	3pF	50	±0.25pF	Ceramic (C)
C105	0.033µF	50	±10	Mylar	C258	Not used	30	20.25pF	Ceramic (C)
C106	$0.033 \mu F$	50	±10	Mylar	C259	Not used			
C107	$0.027 \mu F$	50	±10	Mylar	C260	Not used			
C108	47μF	10	-10, ÷50	Electrolytic	C261	Not used	1		
1					C262	27pF	50	±10	Ceramic (C)
C201	Not used				C263	47pF	50	±10	Ceramic
C202	270pF	50	±5	Polystyrene	C264	0.01µF	25	-20, +80	Ceramic
C203	0.047μF	25	-20, +80	Ceramic	C265	3pF	50	± 0.25pF	Ceramic (C)
C204	0.01µF	25	-20, +80	Ceramic	C266	0.01µF	25	-20, +80	Ceramic
C205	0 .01μF	25	-20, ÷80	Ceramic	C267	Not used		,	
C206	0.01µF	25	-20, +80	Ceramic	C268	0.047µF	25	-20, +80	Ceramic
C207	3pF	50	±0.25pF	Ceramic (C)	C269	0.01µF	25	-20, +80	Ceramic
C208	33pF	50	±10	Ceramic (C)	C270	Not used		*	
C209	33pF	50	±10	Ceramic (C)	C271	1μF	50	-10, +75	Electrolytic
C210	3pF	50	±0.25pF	Ceramic (C)	C272	0.01μF	25	-20, +80	Ceramic
C211	27pF	50	±10	Ceramic (C)	C273	10pF	50	±0.5pF	Ceramic
C212	5pF	50	±0.25pF	Ceramic (C)					
C213	0.01µF	25	-20, +80	Ceramic	C301	150pF	50	±5	Polystyrene
C214	22pF	50	±10	Ceramic (C)	C302	0.01μF	25	-20, +80	Ceramic
C215 C216	22pF 100pF	50	±10	Ceramic (C)	C303	0.047µF	25	-20, +80	Ceramic
C218	47pF	50	±10	Ceramic	C304	0.047μF	25	-20, +80	Ceramic
C217	4/pr 0.01μF	50 25	±10	Ceramic	C305	0.047μF	25	20, +80	Ceramic
C218	33pF	50	-20, +80 ±10	Ceramic	C306	150pF	50	±5	Polystyrene
C220	5pF	50	±0.25pF	Ceramic (C)	C307	0.01μF	25	-20, +80	Ceramic
C221	0.01µF	25	20, ÷80	Ceramic (C) Ceramic	C308	0.01µF	25	-20, +80	Ceramic
C222	15pF	50	±10	Ceramic (C)	C309	0.01µF	25	-20, +80	Ceramic
C223	0,01µF	25	-20, +80	Ceramic	C310 C311	0.01µԲ 0.047µF	25	-20, +80	Ceramic
C224	0.01µF	25	-20, +80	Ceramic	C312	0.047μF 0.01μF	25 25	-20, +80	Ceramic
C225	3pF	50	±0.25pF	Ceramic (C)	C312	0.047µF	25	-20, +80 -20, +80	Ceramic
C226	0.01µF	25	-20, +80	Ceramic	C314	0.047дг 2pF	50	±0.25pF	Ceramic
C227	82pF	50	±10	Ceramic	C315	0.047μF	25	-20, +80	Ceramic (C)
C228	$0.01 \mu F$	25	-20, ÷80	Ceramic	C316	0.047μF	25	-20, +80	Ceramic Ceramic
C229	$0.01 \mu F$	25	-20, +80	Ceramic	C317	Not used	23	-20, +80	Ceramic
C230	22pF	50	±10	Ceramic (C)	C318	0.047µF	25	-20, +80	Ceramic
C231	0.01µF	25	-20, ÷80	Ceramic	C319	0.047µF	25	-20, +80	Ceramic
C232	10pF	50	±0.5pF	Ceramic (C)	C320	0.01μF	25	-20, +80	Ceramic
C233	5pF	50	±0.25pF	Ceramic (C)	C321	0.01μF	25	-20, +80	Ceramic
C234	22pF	50	±10	Ceramic (C)	C322	0.1μF	50	±10	Mylar
C235	10pF	50	±0.5pF	Ceramic (C)	C323	10µF	16	-10, +50	Electrolytic
C236	0.047µF	25	-20, +80	Ceramic	C324	0.01µF	50	±10	Mylar
C237	0.047µF	25	-20, +80	Ceramic	C325	0.1µF	50	±10	Mytar
C238	0.047µF	25	-20, +80	Ceramic	C326	0.01µF	25	-20, +80	Ceramic
C239	0.047μF	25	-20, +80	Ceramic	C327	120pF	50	±10	Ceramic (C)
C240	0.01μF	25	-20, +80	Ceramic	C328	680pF	50	±5	Polystyréne
C241	0.001μF	50	±10	Ceramic	C329	1000pF	50	±5	Polystyrene
C242	2pF	50	±0.25pF	Ceramic (C)	C330	3300pF	50	±5	Polystyrene

Volt

ĭ olar-

THIS IS
WHAT MY
ORIGINAL
SOURCE
HAS FOR
THIS
PAGE.

CUILS & TRANSFORMERS					
Ref. No.	Description	RS Part No.	MFR's Part No.		
L201	Not used				
L202	BPF Coil	CA-5014	6NNB-134		
L203	RF Coil (52.5 55 MHz)	CA-5022	10SSB-127		
L204	RF Coil (52.5 - 55 MHz)	CA-5022	10SSB-127		
L205	RF Coil (52.5 - 55 MHz)	CA-5022	10SSB-127		
L206	RF Coil (52.5 - 55 MHz)	CA-5022	10SSB-127		
L207	Inductor (330 µH)	07.13022	LF1-331K		
L208	Choke Coil (1.2 µH)	CB-2437	4LNC-135		
L209	Choke Coil (0.84 µH)	CB-2195	4LNC-027		
L210	RF Coil (52.5 - 55 MHz)	CA-5022			
L211	RF Coil (52.5 – 55 MHz)	CA-5022	10SSB-127		
L212	RF Coil (52.5 – 55 MHz)	i	10SSB-127		
L213	RF Coil (52.5 – 55 MHz)	CA-5022	10SSB-127		
L214	RF Coil (52.5 – 55 MHz)	CA-5022	10SSB-127		
L215	RF Coil (52.5 – 55 MHz)	CA-5022	10SSB-127		
1.216	RF Coil (52.5 – 55 MHz)	CA-5022	10SSB-127		
L217	RF Coil (52.5 – 55 MHz)	CA-5022	10SSB-127		
L218	RF Coil (52.5 – 55 MHz)	CA-5022	10SSB-127		
L219	RF Coil (52.5 – 55 MHz)	CA-5022	10SSB-127		
L220	Inductor (1 mH)	CA-5022	10SSB-127		
		CB-2434	LF5-102K		
L301	IF Coil (3 – 2 MHz)	CA-7955	10SSA-128		
L302	Inductor (4.7 µH)	CA-3891	LF4-4R7K		
L303	IF Coil (3 – 2 MHz)	CA-7955	10SSA-128		
L304	Inductor (4.7 µH)	CA-3891	LF4-4R7K		
L305	OSC Coil (3 – 2 MHz)	CA-5012	10SSO-129		
L306	Inductor (100 μ H)	CB-2427	LF1-101K		
L307	Inductor (27 μH)	CA-3730	LF 1-270K		
L308	Inductor (270 μH)	CB-2429	LF1-271K		
L309	BFO Coil (455 kHz)	CA-5016	10\$\$0-131		
L310	Inductor (470 µH)	C-0835	LF 1-471K		
L311	Inductor (1 mH)	CB-2434	LF5-102K		
L501	BPF Coil	CA-5014	6NNB-134		
L502	Inductor (8.2 µH)	CB-2438	LF4-8R2K		
L503	Inductor (1 mH)	CB-2434	LF5-102K		
L504	Inductor (8.2 μH)	CB-2438	LF4-8R2K		
T1	Power Transformer (See APPENDIX for Australian, EC, UK and Canadian Models)	TA-0708	TK-1284		
T201	Antenna Coil (0.01 – 0.15 MHz)	CA-5017	10SSA-123		
T202	Bar Antenna Coil (0.15 - 0.5 MHz)	CA-0676	12BNA-143		
T203	Bar Antenna Coil (0.5 — 1.6 MHz)	CA-0676	12BNA-143		
T204	Antenna Coil (1.6 – 4.5 MHz)	CA-5018	6PNA-124		
T205	Antenna Coil (4.5 – 12 MHz)	CA-5018 CA-5019	6PNA-125		
T206	Antenna Coil (12 — 30 MHz)	CA-5019	6PNA-126		
T301	IF Transformer (455 kHz)	CA-7953	10SSI-132		
T302	IF Transformer (455 kHz)	CA-7954	10SSI-133		
T303	IF Transformer (455 kHz)	CA-7954	10SSI-133		
T401	MHz OSC Coil	CA-5013	10SSO-130		

CERAMIC FILTERS & CRYSTALS						
Ref. No.	Description	RS Part No.	MFR's Part No.			
CF301 X1	Filter (455 kHz) X'tal (4,000 MHz)	C-0978 MX-2378	KBF-455R-4A			

	DIC	DDE	
Ref. No.	Description	RS Part No.	MFR's Part No.
D101, 102	Silicon	DX-0270	1S1555
D201	Germanium	DX-0161	1N60
D301, 302 D303	Germanium Not used	CS-0161	1N60
D304 - 309	Germanium	DX-0161	1N60
D310	Zener (9 V)	DX-0110	EQA01-09 (R)
D311	Zener (10 V)	DX-1213	EQA01-10 (S)
D312 - 316	Silicon	DX-1108	ER812-01
D317	Rectifier	DX-1212	1848 or 18481
D318	Zener (4.7 V)	DX-1214	02BZ4.7V
D319	Zener (4 V)	DX-1216	HZ4B3
D320	Zener (4.7 V)	DX-1214	02BZ4.7V
D501, 502	Germanium	DX-0161	1N60
D503	Zener (6 V)	DX-1217	EQA01-06 (R)
D504 - 508	LED		TLR312
D601 - 606	LED	DX-0496	TLR102

INTEGRATED CIRCUITS					
Ref. No.	Description	RS Part No.	MFR's Part No.		
IC201	Mixer	MX-3809	SN 76514N		
IC301	AF Amp	MX-3383	μPC575C2		
IC501 IC502	Freq. Counter Divider	MX-3807 MX-3808	M54826P SN74LS74N		

LAMPS					
Ref. No.	Description	RS Part No.	MFR's Part No.		
PL1, 2	Preselector Dial (12 V, 50 mA)	L-0990	L50-F12V50		
PL3	Meter (12 V, 50 mA)	L-0990	L50-F12V50		

NOTE 1: Unless otherwise specified all resistors are carbon film, wattage 1/4W, tolerance ±5%.

NOTE 2: R2 is not used for Australian/European Models.

Ref. No. Value RS Part No. Wattage Annex (W) (%)	RESISTORS						
**R2	Ref. No.	Value	RS Part No.	age	ance	Material	
R3		180Ω	NEG-0144	1	±5	Metal	
R101 82Ω NEE-0122 R102 82Ω NEE-0122 R103 1kΩ NEE-0196 R104 1kΩ NEE-0196 R105 1.8MΩ NEE-0281 R106 3.3kΩ NEE-0281 R108 2.2kΩ NEE-0281 R108 2.2kΩ NEE-0216 R109 390Ω NEE-0162 R110 3.3kΩ NEE-0230 NEE-0162 R110 3.3kΩ NEE-0230 NEE-0311 R204 220Ω NEE-0149 R203 100kΩ NEE-0371 R204 220Ω NEE-0149 R205 560Ω NEE-0176 R206 220Ω NEE-0176 R208 100kΩ NEE-0371 R210 220Ω NEE-0176 R209 22kΩ NEE-0371 R211 100kΩ NEE-0371 R212 33kΩ NEE-0324 R213 33kΩ NEE-0324 R213 33kΩ NEE-0324 R213 33kΩ NEE-0324 R214 220Ω NEE-0149 R216 100kΩ NEE-0371 R217 220Ω NEE-0149 R216 100kΩ NEE-0371 R217 220Ω NEE-0149 R218 100kΩ NEE-0371 R219 220Ω NEE-0149 R220 1kΩ NEE-0316 R221 470Ω NEE-0169 R221 470Ω NEE-0169 R222 27kΩ NEE-0169 R222 27kΩ NEE-0169 R222 27kΩ NEE-0169 R222 27kΩ NEE-0169 R223 27kΩ NEE-0262 R225 1kΩ NEE-036 R226 220Ω NEE-0149 R223 27kΩ NEE-0345 R228 22kΩ NEE-036 R226 220Ω NEE-0149 R223 27kΩ NEE-0262 R225 1kΩ NEE-0262 R225 1kΩ NEE-036 R226 220Ω NEE-0149 R223 27kΩ NEE-0262 R225 1kΩ NEE-0262 R225 1kΩ NEE-0262 R226 220Ω NEE-0149 R223 27kΩ NEE-0267 R233 4kΩ NEE-0267 R		_	1	1/2	±5	Carbon	
R102 82Ω NEE-0122 R103 1kΩ NEE-0196 R104 1kΩ NEE-0196 R105 1.8MΩ NEE-0230 R107 10kΩ NEE-0230 R107 10kΩ NEE-0230 NEE-0162 R108 2.2kΩ NEE-0230 NEE-0162 R109 390Ω NEE-0162 R110 3.3kΩ NEE-0230 NEE-0320 R107 10kΩ NEE-0320 NEE-0162 R110 3.3kΩ NEE-0320 NEE-0162 R110 3.3kΩ NEE-0320 NEE-0149 R203 100kΩ NEE-0371 R204 220Ω NEE-0149 R205 560Ω NEE-0176 R206 220Ω NEE-0149 R207 560Ω NEE-0371 R209 22kΩ NEE-0371 R210 220Ω NEE-0149 R211 100kΩ NEE-0371 R212 33kΩ NEE-0324 R213 33kΩ NEE-0324 R214 220Ω NEE-0149 R215 220Ω NEE-0149 R216 100kΩ NEE-0371 R217 220Ω NEE-0149 R218 100kΩ NEE-0371 R219 220Ω NEE-0149 R218 100kΩ NEE-0371 R219 220Ω NEE-0149 R220 1kΩ NEE-0316 R221 470Ω NEE-0196 R222 22kΩ NEE-0196 R223 27kΩ NEE-0316 R224 6.8kΩ NEE-0262 R225 1kΩ NEE-0362 R226 22kΩ NEE-0316 R227 56kΩ NEE-0362 R226 22kΩ NEE-0316 R227 56kΩ NEE-0362 R226 22kΩ NEE-0316 R227 56kΩ NEE-0362 R226 22kΩ NEE-0316 R229 6.8kΩ NEE-0262 R230 1kΩ NEE-0262 R231 12cΩ NEE-0196 R223 3.7kΩ NEE-0262 R230 1kΩ NEE-0262 R231 12cΩ NEE-0196 R231 220Ω NEE-0196 R231 220Ω NEE-0196 R233 4.7kΩ NEE-0267	R3	1.8ΜΩ	NEF-0521	1/2	±5	Carbon	
R102 82Ω NEE-0122 R103 1kΩ NEE-0196 R104 1kΩ NEE-0196 R105 1.8MΩ NEE-0230 R107 10kΩ NEE-0230 R107 10kΩ NEE-0230 NEE-0162 R108 2.2kΩ NEE-0230 NEE-0162 R109 390Ω NEE-0162 R110 3.3kΩ NEE-0230 NEE-0320 R107 10kΩ NEE-0320 NEE-0162 R110 3.3kΩ NEE-0320 NEE-0162 R110 3.3kΩ NEE-0320 NEE-0149 R203 100kΩ NEE-0371 R204 220Ω NEE-0149 R205 560Ω NEE-0176 R206 220Ω NEE-0149 R207 560Ω NEE-0371 R209 22kΩ NEE-0371 R210 220Ω NEE-0149 R211 100kΩ NEE-0371 R212 33kΩ NEE-0324 R213 33kΩ NEE-0324 R214 220Ω NEE-0149 R215 220Ω NEE-0149 R216 100kΩ NEE-0371 R217 220Ω NEE-0149 R218 100kΩ NEE-0371 R219 220Ω NEE-0149 R218 100kΩ NEE-0371 R219 220Ω NEE-0149 R220 1kΩ NEE-0316 R221 470Ω NEE-0196 R222 22kΩ NEE-0196 R223 27kΩ NEE-0316 R224 6.8kΩ NEE-0262 R225 1kΩ NEE-0362 R226 22kΩ NEE-0316 R227 56kΩ NEE-0362 R226 22kΩ NEE-0316 R227 56kΩ NEE-0362 R226 22kΩ NEE-0316 R227 56kΩ NEE-0362 R226 22kΩ NEE-0316 R229 6.8kΩ NEE-0262 R230 1kΩ NEE-0262 R231 12cΩ NEE-0196 R223 3.7kΩ NEE-0262 R230 1kΩ NEE-0262 R231 12cΩ NEE-0196 R231 220Ω NEE-0196 R231 220Ω NEE-0196 R233 4.7kΩ NEE-0267	D101	920	NCE 0400		İ		
R103			1				
R104				}			
R105			i				
R106 3.3kΩ NEE-0230 R107 10k Ω NEE-0281 R108 2.2kΩ NEE-0216 R109 390 Ω NEE-0230 R201 Not used NEE-0230 R202 33kΩ NEE-0324 R203 100kΩ NEE-0371 R204 220Ω NEE-0149 R205 560 Ω NEE-0176 R206 220Ω NEE-0149 R207 560 Ω NEE-0176 R208 100kΩ NEE-0311 R209 22kΩ NEE-0311 R201 220Ω NEE-0371 R202 33kΩ NEE-0371 R211 100kΩ NEE-0371 R212 33kΩ NEE-0324 R213 33kΩ NEE-0324 R214 220Ω NEE-0149 R215 220Ω NEE-0149 R216 100kΩ NEE-0371 R217 220Ω NEE-0149 R221 470Ω NEE-0149 R222 1kΩ NEE-0169 R222				113	٠		
R107			1	1/2	-15	Carbon	
R108 2.2kΩ NEE-0216 R109 390Ω NEE-0162 R110 3.3kΩ NEE-0230 R201 Not used NEE-0324 R202 33kΩ NEE-0371 R204 220Ω NEE-0149 R205 560 Ω NEE-0176 R206 220Ω NEE-0176 R208 100kΩ NEE-0371 R209 22kΩ NEE-0311 R210 220Ω NEE-0311 R211 100kΩ NEE-0324 R211 100kΩ NEE-0324 R213 33kΩ NEE-0324 R214 220Ω NEE-0149 R215 220Ω NEE-0149 R216 100kΩ NEE-0149 R217 220Ω NEE-0149 R218 100kΩ NEE-0149 R219 220Ω NEE-0149 R221 470Ω NEE-0149 R222 1kΩ NEE-0149 R222 22ΩΩ NEE-0149 R223 27kΩ NEE-0149 R226							
R109 390Ω NEE-0162 R110 3.3kΩ NEE-0230 R201 Not used NEE-0324 R202 33kΩ NEE-0371 R204 220Ω NEE-0149 R205 560 Ω NEE-0176 R206 220Ω NEE-0149 R207 560Ω NEE-0371 R208 100kΩ NEE-0371 R209 22kΩ NEE-0311 R200 220Ω NEE-0371 R210 220Ω NEE-0371 R211 100kΩ NEE-0371 R212 33kΩ NEE-0324 R213 33kΩ NEE-0344 R214 220Ω NEE-0149 R215 220Ω NEE-0149 R216 100kΩ NEE-0371 R217 220Ω NEE-0149 R221 100kΩ NEE-0196 R221 470Ω NEE-0196 R221 470Ω NEE-0196 R222 220Ω NEE-0149 R222 1kΩ NEE-0345 R222							
R110 3.3kΩ NEE-0230 R201 Not used R202 33kΩ NEE-0324 R203 100kΩ NEE-0149 R204 220Ω NEE-0176 R206 220Ω NEE-0149 R207 560Ω NEE-0176 R208 100kΩ NEE-0311 R209 22kΩ NEE-0311 R210 220Ω NEE-0149 R211 100kΩ NEE-0371 R212 33kΩ NEE-0324 R213 33kΩ NEE-0324 R214 220Ω NEE-0149 R215 220Ω NEE-0149 R216 100kΩ NEE-0371 R217 220Ω NEE-0149 R218 100kΩ NEE-0149 R2218 100kΩ NEE-0149 R2219 1kΩ NEE-0169 R2221 47ΩΩ NEE-0169 R2222 220Ω NEE-0149 R223 27kΩ NEE-0149 R224 6.8kΩ NEE-0149 R225 1kΩ							
R201 Not used R202 33kΩ NEE-0324 R203 100kΩ NEE-0371 R204 220Ω NEE-0149 R205 560 Ω NEE-0176 R206 220Ω NEE-0149 R207 560Ω NEE-0176 R208 100kΩ NEE-0371 R209 22kΩ NEE-0371 R210 220Ω NEE-0311 R211 100kΩ NEE-0371 R212 33kΩ NEE-0324 R213 33kΩ NEE-0324 R214 220Ω NEE-0149 R215 220Ω NEE-0149 R216 100kΩ NEE-0371 R217 220Ω NEE-0371 R218 100kΩ NEE-0371 R219 220Ω NEE-0149 R221 470Ω NEE-0149 R222 220Ω NEE-0149 R222 220Ω NEE-0149 R223 27kΩ NEE-0345 R224 6.8kΩ NEE-036 R225 1kΩ <							
R202 33kΩ NEE-0324 R203 100kΩ NEE-0371 R204 220Ω NEE-0149 R205 560 Ω NEE-0176 R206 220Ω NEE-0149 R207 560Ω NEE-0371 R208 100kΩ NEE-0371 R209 22kΩ NEE-0149 R210 220Ω NEE-0149 R211 100kΩ NEE-0324 R212 33kΩ NEE-0324 R213 33kΩ NEE-0324 R214 220Ω NEE-0149 R215 220Ω NEE-0149 R216 100kΩ NEE-0371 R217 220Ω NEE-0149 R218 100kΩ NEE-0371 R219 220Ω NEE-0149 R221 470Ω NEE-0149 R222 1kΩ NEE-0149 R222 220Ω NEE-0149 R222 220Ω NEE-0149 R222 22kΩ NEE-0345 R222 1kΩ NEE-0345 R222 <t< td=""><td></td><td>3.3.133</td><td></td><td></td><td></td><td></td></t<>		3.3.133					
R203	R201	Not used					
R204 220Ω NEE-0149 R206 560 Ω NEE-0176 R206 220Ω NEE-0149 R207 560Ω NEE-0176 R208 100kΩ NEE-0371 R209 22kΩ NEE-0311 R210 220Ω NEE-0149 R211 100kΩ NEE-0324 R211 100kΩ NEE-0324 R213 33kΩ NEE-0324 R214 220Ω NEE-0149 R215 220Ω NEE-0149 R216 100kΩ NEE-0371 R217 220Ω NEE-0149 R218 100kΩ NEE-0149 R219 220Ω NEE-0149 R220 1kΩ NEE-0196 R221 470Ω NEE-0169 R222 220Ω NEE-0149 R223 27kΩ NEE-0316 R224 6.8kΩ NEE-0362 R225 1kΩ NEE-0345 R226 220Ω NEE-0149 R227 56kΩ NEE-0341 R229 <	R202	33kΩ	NEE-0324				
R205 560 Ω NEE-0176 R206 220Ω NEE-0149 R207 560Ω NEE-0371 R208 100kΩ NEE-0311 R209 22kΩ NEE-0311 R210 220Ω NEE-0149 R211 100kΩ NEE-0371 R212 33kΩ NEE-0324 R213 33kΩ NEE-0324 R214 220Ω NEE-0149 R215 220Ω NEE-0149 R216 100kΩ NEE-0371 R217 220Ω NEE-0149 R218 100kΩ NEE-0149 R219 220Ω NEE-0149 R221 470Ω NEE-0196 R221 470Ω NEE-0149 R222 220Ω NEE-0149 R223 27kΩ NEE-0149 R224 220Ω NEE-0149 R222 220Ω NEE-0149 R223 1kΩ NEE-0196 R226 220Ω NEE-0149 R227 56kΩ NEE-0196 R231 <t< td=""><td>R203</td><td>100kΩ</td><td>NEE-0371</td><td></td><td></td><td></td></t<>	R203	100kΩ	NEE-0371				
R206 220Ω NEE-0149 R207 560Ω NEE-0371 R208 100kΩ NEE-0311 R209 22kΩ NEE-0311 R210 220Ω NEE-0149 R211 100kΩ NEE-0371 R212 33kΩ NEE-0324 R213 33kΩ NEE-0324 R214 220Ω NEE-0149 R215 220Ω NEE-0149 R216 100kΩ NEE-0371 R217 220Ω NEE-0149 R218 100kΩ NEE-0149 R219 220Ω NEE-0149 R220 1kΩ NEE-0196 R221 470Ω NEE-0149 R222 220Ω NEE-0149 R222 220Ω NEE-0149 R223 27kΩ NEE-0316 R224 6.8kΩ NEE-0345 R225 1kΩ NEE-0149 R226 220Ω NEE-0149 R227 56kΩ NEE-0311 R229 6.8kΩ NEE-036 R231 <td< td=""><td>I</td><td>220Ω</td><td>NEE-0149</td><td></td><td></td><td></td></td<>	I	220Ω	NEE-0149				
R207 560Ω NEE-0176 R208 100kΩ NEE-0371 R209 22kΩ NEE-0311 R210 220Ω NEE-0149 R211 100kΩ NEE-0324 R212 33kΩ NEE-0324 R213 33kΩ NEE-0149 R214 220Ω NEE-0149 R215 220Ω NEE-0149 R216 100kΩ NEE-0371 R217 220Ω NEE-0149 R218 100kΩ NEE-0149 R219 220Ω NEE-0168 R221 470Ω NEE-0168 R221 470Ω NEE-0169 R222 220Ω NEE-0149 R223 27kΩ NEE-0316 R224 6.8kΩ NEE-0262 R225 1kΩ NEE-0149 R226 220Ω NEE-0149 R227 56kΩ NEE-0345 R228 22kΩ NEE-0311 R229 6.8kΩ NEE-0345 R231 220Ω NEE-0149 R232 <	R205	560 Ω	NEE-0176				
R208 100kΩ NEE-0371 R209 22kΩ NEE-0311 R210 220Ω NEE-0149 R211 100kΩ NEE-0371 R212 33kΩ NEE-0324 R213 33kΩ NEE-0324 R214 220Ω NEE-0149 R215 220Ω NEE-0149 R216 100kΩ NEE-0371 R217 220Ω NEE-0149 R218 100kΩ NEE-0371 R219 220Ω NEE-0149 R220 1kΩ NEE-0169 R221 470Ω NEE-0169 R222 220Ω NEE-0149 R223 27kΩ NEE-0316 R224 6.8kΩ NEE-0262 R225 1kΩ NEE-0196 R226 220Ω NEE-0149 R227 56kΩ NEE-0345 R228 22kΩ NEE-0196 R231 220Ω NEE-0196 R231 220Ω NEE-0149 R232 15kΩ NEE-0297 R233 <td< td=""><td></td><td>220Ω</td><td>NEE-0149</td><td></td><td></td><td></td></td<>		220Ω	NEE-0149				
R209 22kΩ NEE-0311 R210 220Ω NEE-0149 R211 100kΩ NEE-0371 R212 33kΩ NEE-0324 R213 33kΩ NEE-0324 R214 220Ω NEE-0149 R215 220Ω NEE-0149 R216 100kΩ NEE-0371 R217 220Ω NEE-0149 R218 100kΩ NEE-0371 R219 220Ω NEE-0149 R220 1kΩ NEE-0196 R221 470Ω NEE-0169 R222 220Ω NEE-0149 R223 27kΩ NEE-0316 R224 6.8kΩ NEE-0262 R225 1kΩ NEE-0196 R226 220Ω NEE-0149 R227 56kΩ NEE-0345 R228 22kΩ NEE-0149 R230 1k Ω NEE-0149 R231 220Ω NEE-0149 R232 15kΩ NEE-0297 R233 4.7kΩ NEE-0247 R234 <td< td=""><td></td><td>560Ω</td><td>NEE-0176</td><td></td><td></td><td></td></td<>		560Ω	NEE-0176				
R210 220Ω NEE-0149 R211 $100k\Omega$ NEE-0371 R212 $33k\Omega$ NEE-0324 R213 $33k\Omega$ NEE-0149 R214 220Ω NEE-0149 R215 220Ω NEE-0149 R216 $100k\Omega$ NEE-0371 R217 220Ω NEE-0149 R218 $100k\Omega$ NEE-0371 R219 220Ω NEE-0149 R220 $1k\Omega$ NEE-0196 R221 470Ω NEE-0169 R222 220Ω NEE-0149 R223 $27k\Omega$ NEE-0316 R224 $6.8k\Omega$ NEE-0262 R225 $1k\Omega$ NEE-0196 R226 220Ω NEE-0149 R227 $56k\Omega$ NEE-0311 R228 $22k\Omega$ NEE-0196 R231 220Ω NEE-0149 R232 $15k\Omega$ NEE-0297 R233 $4.7k\Omega$ NEE-0247 R234 $1k\Omega$ NEE-0196 R235 22Ω NEE-0078	R208	100kΩ	NEE-0371				
R211 100kΩ NEE-0371 R212 33kΩ NEE-0324 R213 33kΩ NEE-0149 R214 220Ω NEE-0149 R215 220Ω NEE-0149 R216 100kΩ NEE-0371 R217 220Ω NEE-0149 R218 100kΩ NEE-0196 R221 470Ω NEE-0169 R221 470Ω NEE-0169 R222 220Ω NEE-0149 R223 27kΩ NEE-0316 R224 6.8kΩ NEE-0262 R225 1kΩ NEE-0196 R226 220Ω NEE-0149 R227 56kΩ NEE-0345 R228 22kΩ NEE-0311 R229 6.8kΩ NEE-0262 R230 1k Ω NEE-0196 R231 220Ω NEE-0149 R232 15kΩ NEE-0297 R233 4.7kΩ NEE-0297 R234 1kΩ NEE-0196 R235 22Ω NEE-0078 R236 <t< td=""><td>R209</td><td>22kΩ '</td><td>NEE-0311</td><td>·</td><td>ļ</td><td></td></t<>	R209	2 2kΩ '	NEE-0311	·	ļ		
R212 $33kΩ$ NEE-0324 R213 $33kΩ$ NEE-0149 R214 $220Ω$ NEE-0149 R215 $220Ω$ NEE-0371 R217 $220Ω$ NEE-0149 R218 $100kΩ$ NEE-0149 R219 $220Ω$ NEE-0196 R220 $1kΩ$ NEE-0169 R221 $470Ω$ NEE-0169 R222 $220Ω$ NEE-0149 R223 $27kΩ$ NEE-0316 R224 $6.8kΩ$ NEE-0262 R225 $1kΩ$ NEE-0196 R226 $220Ω$ NEE-0149 R227 $56kΩ$ NEE-0311 R228 $22kΩ$ NEE-0196 R231 $220Ω$ NEE-0149 R231 $220Ω$ NEE-0149 R232 $15kΩ$ NEE-0297 R233 $4.7kΩ$ NEE-0247 R234 $1kΩ$ NEE-0196 R235 $22Ω$ NEE-0078 R236 Not used NEE-0078 R239 Not used		220Ω	NEE-0149		ļ		
R213 33kΩ NEE-0324 R214 220Ω NEE-0149 R215 220Ω NEE-0149 R216 100kΩ NEE-0371 R217 220Ω NEE-0149 R218 100kΩ NEE-0149 R219 220Ω NEE-0196 R220 1kΩ NEE-0169 R221 470Ω NEE-0149 R222 220Ω NEE-0149 R223 27kΩ NEE-0316 R224 6.8kΩ NEE-0262 R225 1kΩ NEE-0196 R226 220Ω NEE-0149 R227 56kΩ NEE-0345 R228 22kΩ NEE-0311 R229 6.8kΩ NEE-0262 R230 1k Ω NEE-0196 R231 220Ω NEE-0149 R232 15kΩ NEE-0297 R233 4.7kΩ NEE-0247 R234 1kΩ NEE-0196 R235 22Ω NEE-0078 R236 Not used R239 Not used </td <td>ı</td> <td></td> <td>NEE-0371</td> <td></td> <td></td> <td></td>	ı		NEE-0371				
R214 220 Ω NEE-0149 R215 220 Ω NEE-0149 R216 100 $k\Omega$ NEE-0371 R217 220 Ω NEE-0149 R218 100 $k\Omega$ NEE-0149 R219 220 Ω NEE-0196 R220 1 $k\Omega$ NEE-0169 R221 470 Ω NEE-0149 R222 220 Ω NEE-0149 R223 27 $k\Omega$ NEE-0262 R224 6.8 $k\Omega$ NEE-0196 R225 1 $k\Omega$ NEE-0149 R226 220 Ω NEE-0345 R228 22 $k\Omega$ NEE-0311 R229 6.8 $k\Omega$ NEE-0262 R230 1 $k\Omega$ NEE-0196 R231 220 Ω NEE-0149 R232 15 $k\Omega$ NEE-0297 R233 4.7 $k\Omega$ NEE-0247 R234 1 $k\Omega$ NEE-0196 R235 22 Ω NEE-0078 R236 Not used NEE-0078 R239 Not used	_	- 1	_				
R215 220Ω NEE-0149 R216 100kΩ NEE-0371 R217 220Ω NEE-0149 R218 100kΩ NEE-0149 R219 220Ω NEE-0149 R220 1kΩ NEE-0169 R221 470Ω NEE-0169 R222 220Ω NEE-0149 R223 27kΩ NEE-0262 R224 6.8kΩ NEE-0196 R225 1kΩ NEE-0149 R226 220Ω NEE-0149 R227 56kΩ NEE-0311 R228 22kΩ NEE-0196 R230 1kΩ NEE-0196 R231 220Ω NEE-0149 R232 15kΩ NEE-0297 R233 4.7kΩ NEE-0247 R234 1kΩ NEE-0196 R235 22Ω NEE-0078 R236 Not used NEE-0078 R239 Not used R239 Not used	- 1						
R216 100kΩ NEE-0371 R217 220Ω NEE-0149 R218 100kΩ NEE-0196 R219 220Ω NEE-0196 R220 1kΩ NEE-0169 R221 470Ω NEE-0169 R222 220Ω NEE-0149 R223 27kΩ NEE-0316 R224 6.8kΩ NEE-0262 R225 1kΩ NEE-0196 R226 220Ω NEE-0149 R227 56kΩ NEE-0345 R228 22kΩ NEE-0311 R229 6.8kΩ NEE-0262 R230 1k Ω NEE-0196 R231 220Ω NEE-0149 R232 15kΩ NEE-0297 R233 4.7kΩ NEE-0247 R234 1kΩ NEE-0196 R235 22Ω NEE-0078 R236 Not used R239 Not used R239 Not used	_						
R217 220 Ω NEE-0149 R218 100k Ω NEE-0371 R219 220 Ω NEE-0196 R220 1k Ω NEE-0196 R221 470 Ω NEE-0169 R222 220 Ω NEE-0149 R223 27k Ω NEE-0262 R224 6.8k Ω NEE-0196 R225 1k Ω NEE-0149 R226 220 Ω NEE-0345 R228 22k Ω NEE-0311 R229 6.8k Ω NEE-0262 R230 1k Ω NEE-0196 R231 220 Ω NEE-0149 R232 15k Ω NEE-0297 R233 4.7k Ω NEE-0247 R234 1k Ω NEE-0196 R235 22 Ω NEE-0078 R236 Not used NEE-0078 R238 Not used R239							
R218 $100k\Omega$ NEE-0371 R219 220Ω NEE-0149 R220 $1k\Omega$ NEE-0196 R221 470Ω NEE-0169 R222 220Ω NEE-0149 R223 $27k\Omega$ NEE-0316 R224 $6.8k\Omega$ NEE-0262 R225 $1k\Omega$ NEE-0196 R226 220Ω NEE-0149 R227 $56k\Omega$ NEE-0311 R228 $22k\Omega$ NEE-0196 R230 $1k\Omega$ NEE-0196 R231 220Ω NEE-0149 R232 $15k\Omega$ NEE-0297 R233 $4.7k\Omega$ NEE-0247 R234 $1k\Omega$ NEE-0196 R235 22Ω NEE-0196 R236 Not used NEE-0078 R238 Not used Not used R239 Not used R239		- 1	1				
R219 220 Ω NEE-0149 R220 1k Ω NEE-0196 R221 470 Ω NEE-0169 R222 220 Ω NEE-0149 R223 27k Ω NEE-0316 R224 6.8k Ω NEE-0196 R225 1k Ω NEE-0149 R227 56k Ω NEE-0345 R228 22k Ω NEE-0311 R229 6.8k Ω NEE-0262 R230 1k Ω NEE-0196 R231 220 Ω NEE-0149 R232 15k Ω NEE-0297 R233 4.7k Ω NEE-0247 R234 1k Ω NEE-0196 R235 22 Ω NEE-0078 R236 Not used NEE-0078 R238 Not used Not used R239 Not used			- f	1			
R220 $1 k \Omega$ NEE-0196 R221 470Ω NEE-0169 R222 220Ω NEE-0149 R223 $27 k \Omega$ NEE-0316 R224 $6.8 k \Omega$ NEE-0262 R225 $1 k \Omega$ NEE-0196 R226 220Ω NEE-0149 R227 $56 k \Omega$ NEE-0345 R228 $22 k \Omega$ NEE-0311 R229 $6.8 k \Omega$ NEE-0262 R230 $1 k \Omega$ NEE-0196 R231 220Ω NEE-0149 R232 $15 k \Omega$ NEE-0297 R233 $4.7 k \Omega$ NEE-0247 R234 $1 k \Omega$ NEE-0196 R235 22Ω NEE-0078 R236 Not used Not used R239 Not used R239		1	I		- 1		
R221 470Ω NEE-0169 R222 220Ω NEE-0149 R223 $27k\Omega$ NEE-0316 R224 $6.8k\Omega$ NEE-0262 R225 $1k\Omega$ NEE-0196 R226 220Ω NEE-0149 R227 $56k\Omega$ NEE-0345 R228 $22k\Omega$ NEE-0311 R229 $6.8k\Omega$ NEE-0262 R230 $1k\Omega$ NEE-0196 R231 220Ω NEE-0149 R232 $15k\Omega$ NEE-0297 R233 $4.7k\Omega$ NEE-0247 R234 $1k\Omega$ NEE-0196 R235 22Ω NEE-0078 R236 Not used Not used R239 Not used R239			ı	ļ			
R222 220 Ω NEE-0149 R223 27k Ω NEE-0316 R224 6.8k Ω NEE-0262 R225 1k Ω NEE-0196 R226 220 Ω NEE-0149 R227 56k Ω NEE-0345 R228 22k Ω NEE-0311 R229 6.8k Ω NEE-0262 R230 1k Ω NEE-0196 R231 220 Ω NEE-0149 R232 15k Ω NEE-0297 R233 4.7k Ω NEE-0247 R234 1k Ω NEE-0196 R235 22 Ω NEE-0078 R236 Not used NEE-0078 R238 Not used R239 Not used				1	ŀ		
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R224 $6.8k\Omega$ NEE-0262 R225 $1k\Omega$ NEE-0196 R226 220Ω NEE-0149 R227 $56k\Omega$ NEE-0345 R228 $22k\Omega$ NEE-0311 R229 $6.8k\Omega$ NEE-0262 R230 $1k\Omega$ NEE-0196 R231 220Ω NEE-0149 R232 $15k\Omega$ NEE-0297 R233 $4.7k\Omega$ NEE-0247 R234 $1k\Omega$ NEE-0196 R235 22Ω NEE-0078 R236 Not used NEE-0078 R238 Not used Not used R239 Not used Not used		ļ	-				
R225 $1k\Omega$ NEE-0196 R226 220Ω NEE-0149 R227 $56k\Omega$ NEE-0345 R228 $22k\Omega$ NEE-0311 R229 $6.8k\Omega$ NEE-0262 R230 $1k\Omega$ NEE-0196 R231 220Ω NEE-0149 R232 $15k\Omega$ NEE-0297 R233 $4.7k\Omega$ NEE-0247 R234 $1k\Omega$ NEE-0196 R235 22Ω NEE-0078 R236 Not used NEE-0078 R238 Not used R239 Not used							
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R227 $56kΩ$ NEE-0345 R228 $22kΩ$ NEE-0311 R229 $6.8kΩ$ NEE-0262 R230 $1kΩ$ NEE-0196 R231 $220Ω$ NEE-0149 R232 $15kΩ$ NEE-0297 R233 $4.7kΩ$ NEE-0247 R234 $1kΩ$ NEE-0196 R235 $22Ω$ NEE-0078 R236 Not used R237 Not used R238 Not used R239 Not used	R226			Ī			
R229 $6.8k\Omega$ NEE-0262 R230 $1k\Omega$ NEE-0196 R231 220Ω NEE-0149 R232 $15k\Omega$ NEE-0297 R233 $4.7k\Omega$ NEE-0247 R234 $1k\Omega$ NEE-0196 R235 22Ω NEE-0078 R236 Not used Not used R238 Not used R239 Not used Not used	R227	56kΩ		Į			
R230 1k $Ω$ NEE-0196 R231 220 $Ω$ NEE-0149 R232 15k $Ω$ NEE-0297 R233 4.7k $Ω$ NEE-0247 R234 1k $Ω$ NEE-0196 R235 22 $Ω$ NEE-0078 R236 Not used R237 Not used R238 Not used R239 Not used	R228	22kΩ	l l	ĺ			
R231 $220Ω$ NEE-0149 R232 $15kΩ$ NEE-0297 R233 $4.7kΩ$ NEE-0247 R234 $1kΩ$ NEE-0196 R235 $22Ω$ NEE-0078 R236 Not used R237 Not used R238 Not used R239 Not used	- 1	6.8kΩ	NEE-0262	}			
R232 15kΩ NEE-0297 R233 4.7kΩ NEE-0247 R234 1kΩ NEE-0196 R235 22Ω NEE-0078 R236 Not used R237 Not used R238 Not used R239 Not used	T I	ì	i				
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R237 Not used R238 Not used R239 Not used	ľ		MEE-00/8			ļ	
R238 Not used R239 Not used		- 1	-				
R239 Not used	,	1	1				
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Det No	1 /-i	D2D . N	Watt-	Toler-	
Ref. No.	Value	RS Part No.	age	ance	Material
			(W)	(%)	
R241	Not used				
R242	33kΩ	NEE-0324	ĺ		
R243	Not used	NCE-0324			
R244	Not useu 22kΩ	NEE OOM	}		
R245		NEE-0311	1		
£	6,8kΩ	NEE-0262			
R246	1kΩ	NEE-0196			
R247	220Ω	NEE-0149	ŀ	1	İ
R248	Not used		ł		
R249	Not used				
R250	47kΩ	NEE-0340	[(:
R251	47kΩ	NEE-0340		1	
R252	220Ω	NEE-0149	Ì		
0204	561.0			1	-
R301	56kΩ	NEE-0345			
R302	47kΩ	NEE-0340			
R303	10kΩ	NEE-0281	İ		
R304	100kΩ	NEE-0371	ŀ	-	
R305	47kΩ	NEE-0340			
R306	68kΩ	NEE-0354			
R307	100Ω	NEE-0132	l		
R308	470Ω	NEE-0169	1		İ
R309	$2.2k\Omega$	NEE-0216			
R310	220Ω	NEE-0149			
R311	56k Ω	NEE-0345	ŀ		
R312	100kΩ	NEE-0371			
R313	1M Ω	NEE-0445		į .	·
R314	100kΩ	NEE-0371	}		
R315	22 0Ω	NEE-0149			
R316	220Ω	NEE-0149]	1	
R317	1.5k Ω	NEE-0206]		
R318	1.5kΩ	NEE-0206	į		i
R319	3.3kΩ	NEE-0230			
R320	220kΩ	NEE-0396	1		
R321	100 Ω	NEE-0132			
R322	1kΩ	NEE-0196			
R323	220 Ω	NEE-0149			
R324	3.3kΩ	NEE-0230			
R325	10kΩ	NEE-0281			
R326	15Ω	NEE-0074		i	
R327	470 Ω	NEE-0169			
R328	220Ω	NEE-0149			
R329	470Ω	NEE-0169			
R330	10kΩ	NEE-0281			
R331	33kΩ	NEE-0324	1		
R332	470kΩ	NEE-0423			
R333	10kΩ	NEE-0281	+		
R334	470kΩ	NEE-0423	1		
R335	470kΩ	NEE-0423		-	,
R336	3.9kΩ	NEE-0237	1		
R337	22kΩ	NEE-0311			j
R338	33kΩ	NEE-0324			
R339	18kΩ	NEE-0303		ļ	
R340	33kΩ	NEE-0324			
R341	1kΩ	NEE-0196			
R342	1kΩ	NEE-0196			
R343	100kΩ	NEE-0371	1		
R344	100Ω	NEE-0132	1		i
R345	2.2kΩ	NEE-0216	1	:	
R346	1kΩ	NEE-0196		i	
R347	100kΩ	NEE-0371			
R348	220Ω	NEE-0149			j
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R350 2 R351 2 R352 2 R353 4 R354 4 R355 1 R356 3 R357 1 R358 1 R359 4 R360 2 R361 4 R362 1 R363 1 R364 5 R365 4 R366 3 R367 2 R368 3 R369 3 R370 4 R371 1 R372 1 R372 1 R373 3 R374 2 R375 1 R377 1 R401 2 R402 4 R403 6 R404 10	.2kΩ 120kΩ 120kΩ 120kΩ 13kΩ NEE-0132 NEE-0216 NEE-0396 NEE-0149 NEE-0247 NEE-0340 NEE-0230 NEE-0247 NEE-0450 NEE-0450 NEE-0449 NEE-0423 NEE-0450 NEE-0257 NEE-0169 NEE-0237 NEE-03311 NEE-0324 NEE-0337				
R350 2 R351 2 R352 2 R353 4 R354 4 R355 1 R356 3 R357 1 R358 1 R359 4 R360 2 R361 4 R362 1 R363 1 R364 5 R365 4 R366 3 R367 2 R368 3 R369 3 R370 4 R371 1 R372 1 R372 1 R373 3 R374 2 R375 1 R377 1 R401 2 R402 4 R403 6 R404 10	.2kΩ 120kΩ 120kΩ 120kΩ 17kΩ 16kΩ 17kΩ NEE-0216 NEE-0396 NEE-0149 NEE-0247 NEE-0340 NEE-0132 NEE-0230 NEE-0450 NEE-0196 NEE-0247 NEE-0149 NEE-0423 NEE-0450 NEE-0257 NEE-0257 NEE-0257 NEE-0311 NEE-0337 NEE-0337				
R351 2 R352 2 R353 4 R354 4 R355 1 R356 3 R357 1 R358 1 R359 4 R360 2 R361 4 R362 1 R363 1 R364 5 R365 4 R366 3 R367 2 R368 3 R369 3 R370 4 R371 1 R372 1 R372 1 R373 3 R374 2 R373 3 R374 2 R375 1 R377 1 R401 2 R402 4 R403 6 R404 10	20kΩ	NEE-0396 NEE-0149 NEE-0247 NEE-0340 NEE-0132 NEE-0230 NEE-0450 NEE-0196 NEE-0247 NEE-0149 NEE-0423 NEE-0450 NEE-0257 NEE-0257 NEE-0311 NEE-0337 NEE-0337 NEE-0337			
R352 2 R353 4 R354 4 R355 1 R356 3 R357 1 R358 1 R359 4 R360 2 R361 4 R362 1 R363 1 R364 5 R365 4 R366 3 R367 2 R368 3 R369 3 R370 4 R371 1 R372 1 R372 1 R373 3 R374 2 R375 1 R377 1 R401 2 R402 4 R403 63 R404 10	20Ω 1 .7kΩ 1 .7kΩ 1 .7kΩ 1 .3kΩ 1 .5MΩ 1 .7k	NEE-0149 NEE-0247 NEE-0340 NEE-0132 NEE-0230 NEE-0450 NEE-0196 NEE-0247 NEE-0149 NEE-0423 NEE-0450 NEE-0257 NEE-0257 NEE-0169 NEE-0237 NEE-0311 NEE-0324 NEE-0337 NEE-0337			
R353 4 R354 4 R355 1 R356 3 R357 1 R358 1 R359 4 R360 2 R361 4 R362 1 R363 1 R364 5 R365 4 R366 3 R367 2 R368 3 R369 3 R370 4 R371 1 R372 1 R373 3 R374 2 R373 3 R374 2 R375 1 R377 1 R401 2 R402 4 R403 63 R404 10	.7kΩ 1 .7kΩ 1 .7kΩ 1 .00Ω 1 .3kΩ 1 .5MΩ 1 .7kΩ 1 .20Ω 1 .5M 1 .6kΩ 1 .6kΩ 1 .9kΩ 1 .3kΩ 1 .3kΩ 1 .3kΩ 1 .3kΩ 1 .3kΩ 1 .3kΩ 1	NEE-0247 NEE-0340 NEE-0132 NEE-0230 NEE-0450 NEE-0196 NEE-0247 NEE-0149 NEE-0423 NEE-0257 NEE-0257 NEE-0257 NEE-0311 NEE-0324 NEE-0324 NEE-0337 NEE-0337			
R354 4 R355 1 R356 3 R357 1 R358 1 R359 4 R360 2 R361 4 R362 1 R363 1 R364 5 R365 4 R366 3 R367 2 R368 3 R369 3 R370 4 R371 1 R372 1 R372 1 R373 3 R374 2 R375 1 R376 1 R377 1 R401 2 R402 4 R403 6 R404 10	.7kΩ 1 .00Ω 1 .3kΩ 1 .5MΩ 1 .7kΩ 1 .20Ω 1 .5M 1 .5M 1 .5M 1 .5M 1 .5M 1 .5KΩ 1 .5KΩ 1 .5KΩ 1 .5KΩ 1 .5KΩ 1 .5KΩ 1 .5KΩ 1 .5KΩ 1 .5KΩ 1 .5KΩ 1 .5KΩ 1 .5KΩ 1 .5KΩ 1 .5KΩ 1	NEE-0340 NEE-0132 NEE-0230 NEE-0450 NEE-0196 NEE-0247 NEE-0149 NEE-0423 NEE-0257 NEE-0257 NEE-0237 NEE-0311 NEE-0324 NEE-0337 NEE-0337			
R355 1 R356 3 R357 1 R358 1 R359 4 R360 2 R361 4 R362 1 R363 1 R364 5 R365 4 R366 3 R367 2 R368 3 R369 3 R370 4 R371 1 R372 1 R372 1 R373 3 R374 2 R375 1 R376 1 R377 1 R401 2 R402 4 R403 6 R404 10	00Ω 1 .3kΩ 1 .5MΩ 1 .7kΩ 1 .20Ω 1 .5M 1 .5M 1 .5M 1 .5M 1 .5M 1 .5KΩ 1 .5KΩ 1 .5KΩ 1 .5KΩ 1 .5KΩ 1 .5KΩ 1 .5KΩ 1 .5KΩ 1 .5KΩ 1 .5KΩ 1 .5KΩ 1 .5KΩ 1 .5KΩ 1 .5KΩ 1 .5KΩ 1	NEE-0132 NEE-0230 NEE-0450 NEE-0196 NEE-0247 NEE-0149 NEE-0423 NEE-0257 NEE-0257 NEE-0169 NEE-0237 NEE-0311 NEE-0324 NEE-0337			
R356 3 R357 1 R358 1 R359 4 R360 2 R361 4 R362 1 R363 1 R364 5 R365 4 R366 3 R367 2 R368 3 R369 3 R370 4 R371 1 R372 10 R373 33 R374 2 R375 1 R376 10 R377 10 R401 22 R403 63 R404 10	.3kΩ 1,5MΩ 1,7kΩ 1,7kΩ 1,7kΩ 1,5M 1,0kΩ 1,6kΩ 1,9kΩ 1,9kΩ 1,3kΩ	NEE-0230 NEE-0450 NEE-0196 NEE-0247 NEE-0149 NEE-0423 NEE-0257 NEE-0257 NEE-0237 NEE-0311 NEE-0324 NEE-0337			
R357 1 R358 1 R359 4 R360 2 R361 4 R362 1 R363 1 R364 5 R365 4 R366 3 R367 2 R368 3 R370 4 R371 1 R372 1 R372 1 R373 R374 2 R375 1 R376 1 R377 1 R401 2 R402 4 R403 6 R404 1 R404 1 R404 R404 R404 R404 R404	.5MΩ kΩ .7kΩ 20Ω 70k .5M .6kΩ .6kΩ .9kΩ 3kΩ 3kΩ 3kΩ	NEE-0450 NEE-0196 NEE-0247 NEE-0149 NEE-0423 NEE-0450 NEE-0257 NEE-0169 NEE-0237 NEE-0311 NEE-0324 NEE-0337			
R358 1 R359 4 R360 2 R361 4 R362 1 R363 1 R364 5 R365 4 R366 3 R367 2 R368 3 R369 3 R370 4 R371 1 R372 1 R372 1 R373 3 R374 2 R375 1 R376 1 R377 1 R401 2 R402 4 R403 63 R404 10	kΩ 1,7kΩ 1,20Ω 1,5M 1,6kΩ 1,6kΩ 1,9kΩ 1,2kΩ 1,3kΩ 1	NEE-0196 NEE-0247 NEE-0149 NEE-0423 NEE-0450 NEE-0257 NEE-0169 NEE-0237 NEE-0311 NEE-0324 NEE-0337			
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R360 2 R361 4 R362 1 R363 1 R364 5 R365 4 R366 3 R367 2 R368 3 R369 3 R370 4 R371 1 R372 1 R372 1 R373 3 R374 2 R375 1 R376 10 R401 2 R402 4 R403 63 R404 10	20Ω 1 70k 1 70k 1 .5M 1 0kΩ 1 .6kΩ 1 70Ω 1 .9kΩ 1 3kΩ 1 3kΩ 1 3kΩ 1	NEE-0149 NEE-0423 NEE-0450 NEE-0281 NEE-0257 NEE-0169 NEE-0237 NEE-0311 NEE-0324 NEE-087 NEE-0337			
R361 4 R362 1 R363 1 R364 5 R365 4 R366 3 R367 2 R368 3 R369 3 R370 4 R371 1 R372 10 R373 33 R374 2 R375 1 R376 10 R377 10 R401 22 R402 4 R403 63 R404 10	70k 1 .5M 1 0kΩ 1 .6kΩ 1 70Ω 1 .9kΩ 1 2kΩ 1 3kΩ 1 3kΩ 1	NEE-0423 NEE-0450 NEE-0281 NEE-0257 NEE-0169 NEE-0237 NEE-0311 NEE-0324 NEE-0087 NEE-0337			
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R364 5 R365 4 R366 3 R367 2 R368 3 R369 3 R370 4 R371 1 R372 10 R373 3 R374 2 R375 1 R376 10 R377 10 R401 22 R402 4 R403 63 R404 10	.6kΩ 1 70Ω 1 .9kΩ 1 2kΩ 1 3kΩ 1 3kΩ 1 3kΩ 1	NEE-0257 NEE-0169 NEE-0237 NEE-0311 NEE-0324 NEE-0087 NEE-0337			
R365 4 R366 3 R367 2 R368 3 R369 3 R370 4 R371 1 R372 10 R373 3 R374 2 R375 1 R376 10 R377 10 R401 22 R402 4 R403 63 R404 10	70Ω .9kΩ 2kΩ 3kΩ 3Ω 3kΩ	NEE-0169 NEE-0237 NEE-0311 NEE-0324 NEE-0087 NEE-0337			
R366 3 R367 2 R368 3 R369 3 R370 4 R371 1 R372 10 R373 3 R374 2 R375 1 R376 10 R377 10 R401 22 R402 4 R403 63 R404 10	.9kΩ 1 2kΩ 1 3kΩ 1 3Ω 1 3kΩ 1	NEE-0237 NEE-0311 NEE-0324 NEE-0087 NEE-0337			
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R368 3 R369 3 R370 4 R371 1 R372 10 R373 3 R374 2 R375 1 R376 10 R377 10 R401 2 R402 4 R403 63 R404 10	3kΩ 1 3Ω 1 3kΩ 1	NEE-0324 NEE-0087 NEE-0337			
R369 3 R370 4 R371 1 R372 10 R373 3 R374 2 R375 1 R376 10 R377 10 R401 21 R402 4 R403 63 R404 10	3Ω 1 3kΩ 1	NEE-0087 NEE-0337			
R370 4 R371 1 R372 10 R373 3 R374 2 R375 1 R376 10 R377 10 R401 2 R402 4 R403 6 R404 10	3kΩ I	NEE-0337		1 .	
R371 1 R372 11 R373 3 R374 2 R375 1 R376 10 R377 10 R401 2 R402 4 R403 6 R404 10					
R372 10 R373 33 R374 2 R375 1 R376 10 R377 10 R401 2 R402 4 R403 63 R404 10	50kΩ				
R373 33 R374 2 R375 1 R376 10 R377 10 R401 2 R402 4 R403 63 R404 10	1	NEE-0384			
R374 2. R375 1. R376 10 R377 10 R401 2: R402 4. R403 63 R404 10		NEE-0371			
R375 1. R376 10 R377 10 R401 2: R402 4. R403 6: R404 10	I .	NEE-0162			
R376 10 R377 10 R401 2: R402 4. R403 6: R404 10		NEE-0216			
R377 11 R401 2: R402 4. R403 6: R404 10	l l	NEE-0297			
R401 2: R402 4. R403 6: R404 1:		NEE-0281			
R402 4. R403 6: R404 10	ου ι	NEE-0063			
R403 6	2kΩ r	NEE-0311			
R404 10	.7kΩ f	NEE-0247			
1 1	1 Ω 08	VEE-0183			
ا مممما	0002 1	VEE-0132			
R405 11	οοΩ ι	NEE-0132			
R501 10	00kΩ 1	NEE-0371			•
R502 4.	.7kΩ f	NEE-0247			
R503 4.	.7kΩ r	NEE-0247			
R504 10	1 Ω00	NEE-0132			
l I	ot used		l i		
l I	00Ω 1	NEE-0132			
R507 10	00Ω 1	NEE-0132			
R508 3.	.3kΩ N	NEE-0230			ļ
R509 2.	.2kΩ N	NEE-0216]	ĺ
R510 15	50kΩ N	NEE-0384		- 1	
R511 3	300 1	NEE-0159		,	
R512 47	70Ω N	VEE-0169		ļ	ľ
R513 27	70kΩ N	NEE-0402			į
1	kΩ	NEE-0281		ļ	
R515 10	ν Ω0C	NEE-0132		ł	
R516 22	2kΩ N	NEE-0311			
R701 15	2K36 1	NEE-0297			
R702 2.		NEE-0216		ľ	

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	RESISTO	R ARRAYS	
Ref. No.	Description	RS Part No.	MFR's Part No.
RA701 RA702	1.5 kΩ x 7 1.5 kΩ x 7	RX-0090 RX-0090	EXB-R7152M EXB-R7152M

SWITCHES				
Ref. No.	Description	RS Part No.	MFR's Part No.	
SW1	Lever Switch (ATTEN)	S-0919	SLR-523	
SW2a f	Rotary Switch (PRESELECTOR BAND)	S-1326	SRN3066N	
SW3a – c	Rotary Switch (Mode)	S-1327	SRN2045N	
SW4a – c	Lever Switch (LIGHT/BATT)	\$-0920	SLR-643-02	
SW5a, b	Lever Switch (AUDIO)	S-0919	SLR-523	
SW6a, b	Power Switch included in VOL- UME Control VR2 Rotary Switch (included in MHz/ kHz Tune Ass'y)	S-1325	CB-2-29	

THERMISTOR					
Ref. No.	Description	RS Part No.	MFR's Part No.		
TH301	10 kΩ	T-1012	M-10K		

	TRANSISTORS				
Ref. No.	Description	RS Part No.	MFR's Part No.		
Q201	Rf Amp,		3SK45(B)-9		
Q202	1st Mixer		2SK19(Y) or		
			2SK19(GR)		
Q203	1st Mixer		2SK19(Y) or		
			2SK19(GR)		
Q204	Gain Control	ļ	2SC1815(GR)		
Q205	1st IF Amp,		3SK45(B)-9		
Q206	2nd Mixer		3SK45(B)-9		
Q2 0 7	52.5 MHz Local		2SC1923(R)		
	Freq. Amp				
Q208	52.5 MHz Local		2SC1923(O)		
	Freq. Amp				
Q209	52.5 MHz Local		25C1923(O)		
0046	Freq. Amp				
Q210	Not used				
Q211	Not used				
Q212	Not used				
Q213 Q214	Switching	İ	2SC1815(GR)		
0214	1st IF Amp.		2SC1923(O)		
Q301	2nd IF Amp.	į.	3SK45(B)-9		
Q302	3rd Mixer		3SK45(B)-9		
Q303	3rd IF Amp.		2SC1815(Y)		
Q304	3rd IF Amp.	,	2SC1815(Y)		
Q305	AGC Switch	į	2SC1815(GR)		
Q306	3rd Local OSC	i	2SC1815(Y)		
Q307	Buffer Amp.		2SK19(GR)		
Q308	Buffer Amp.		2SK19(GR)		
Q309	Not used				
Q310	AGC Amp.	i	2SC1815(GR)		
Q311	BFO		2SK19(GR)		
Q312 Q313	AF Preamp.		2SC1815(GR)		
Q313 Q314	Buffer Amp.		2SC1815(GR)		
Q314	Buffer Amp.	İ	2SC1815(GR)		
Q316	Regulator Meter Calibrator		2SD526(O)		
2515	Weter Camprator		2SC1815(GR)		
Q401	1st Local OSC		2SC1923(O)		
Q501	Driver Amp.		2SC1815(GR)		
Q502	Regulator		2SD526(Q)		
Q503	kHz Display Driver		2SC1815(GR)		
Q504	kHz Display Driver		2SC1815(GR)		
Q505	kHz Display Driver		2SC1815(GR)		
Q506	Buffer		2SC1815(GR)		
Q507	2nd Local OSC		2SC1815(GR)		
Q508	Gain Control		2SC1815(GR)		
Q701	MHz Display SW		2SD526(Q)		
Q702	MHz Display SW		2SC1815(GR)		
-		ļ i	200.0.010111		

	VARIABLE CAPACITORS		
Ref. No.	Description	RS Part No.	MFR's Part No.
TC201 - 203	Trimmer (50pF)	C-0979	ECV-1ZW50X32
TC301 - 303	Trimmer (50pF)	C-0561	ECV-1ZW50X32
TC401 TC402	Trimmer (50pF) Trimmer (10pF)	C-0561 C-0870	ECV-1ZW50X32 ECV-1ZW50X53
VC1	PRESELECTOR TUNE included in Preselector Dial Ass'y (29)	C-4671	C123A214
VC2 - 4 VC5 VC6	kHz Tune included in MHz/kHz Tune Ass'y (30) MHz Tune included in MHz/kHz Tune Ass'y (30) FINE TUNE	C-4673 C-4764 C-4675	PVC-20G3J1-10H C521C133 FT7-25-NE

VARIABLE RESISTORS				
Ref. No.	Description	RS Part No.	MFR's Part No.	
VR201	Semi-fixed (4.7 kΩ B)	P-1936	SR19R3 4.7kB	
VR301 VR302	Semi-fixed (500 Ω B) Semi-fixed (20 k Ω B)		EVN-J0AA00B52 EVL-T0AA00B24	
VR1 VR2/(SW6)	RF GAIN Control (50 k Ω B) VOLUME Control (50 k Ω A) w/Power Switch	P-1937 P-1938	VM10A620C-50kE VM11AA90C- 5M1222-50kA	

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Ref. No.	Description	RS Part No.	MFR's Part No.
	RF P.C. Board		GE-22C-6688A
	IF/AF P.C. Board		GE-22C-6695C
	AUDIO/ATT P.C.Board		GE-22C 6698A
	MHz P.C. Board		GE-22D-6696A
	MHz Switch P.C. Board		GE-22C-6949A
-	Counter P.C. Board		GE-22D-6948
	LED P.C. Board		GE-22D-6947
	Band Display P.C. Board		GE-22D-6946
4-1	ANT Jack	J-1009	NC-552-D
11	KEY Jack	J-0840	S-G8022
J2	Phone Jack	J-1013	S-G7625
J3	External SPKR Jack	J-0840	S-G8022
J4	DC 12 V Jack	J-1010	ND-409
J5	TAPE OUT Jack	J-1011	NR-205-2
	8P Wire Connector Ass'y		GE-23D-7082
	9P Wire Connector Ass'y		GE-23D-7083
	Connector (8P: male)		5048-08A
	Connector (9P : male)		5048-09A
TP401	Connector (3P: male) for Test Point		5048-03A
TP201 - 206	Test Point		CHP-01
TP301, 302	Test Point		CHP-01
TP501, 502	Test Point		CHP-01

MECHANICAL PARTS LIST

NOTE: * Australian, EC, UK and Canadian Models employ different part. Refer to the APPENDIX for these models.

(1) RF GAIN Control (2) VOLUME Control with Power Switch (3) Rotary Switch (Mode) (4) Rotary Switch (Mode) (5) Variable Capacitor (FINE TUNE) (6) Variable Capacitor (FINE TUNE) (7) Knob (FINE TUNE) (8) Knob (FINE TUNE) (8) Knob (FINE TUNE) (8) Knob (FINE TUNE) (9) Knob (FINE TUNE) (10) Knob (KINE TUNE) (10) Knob (KINE TUNE) (11) Knob (KINE TUNE) (12) IF/AF P.C. Board Ass'y (13) RF P.C. Board Ass'y (14) Mtz P.C. Board Ass'y (15) Mtz Witch P.C. Board Ass'y (16) Audio/Art P.C. Board Ass'y (17) Counter P.C. Board Ass'y (18) LED P.C. Board Ass'y (19) Band Display P.C. Board Ass'y (19) Band Display P.C. Board Ass'y (19) Band Display P.C. Board Ass'y (19) Band Display P.C. Board Ass'y (19) Band Display P.C. Board Ass'y (19) Band Display P.C. Board Ass'y (10) Speaker (10) Kine (Mixer Merricular Strips (ANT/GND/MUTE) (10) Kine (Mixer Merricular Strips (ANT/GND/MUTE) (10) Kine (Mixer Merricular Strips (ANT/GND/MUTE) (10) Kine (Mixer Merricular Strips (ANT/GND/MUTE) (10) Kine (Mixer Merricular Strips (ANT/GND/MUTE) (10) Kine (Mixer Merricular Strips (ANT/GND/MUTE) (10) Kine (Mixer Merricular Strips (ANT/GND/MUTE) (10) Kine (Mixer Merricular Strips (ANT/GND/MUTE) (10) Kine (Mixer Merricular Strips (ANT/GND/MUTE) (10) Kine (Mixer Merricular Strips (ANT/GND/MUTE) (10) Kine (Mixer Merricular Strips (ANT/GND/MUTE) (10) Kine (Mixer Merricular Strips (ANT/GND/MUTE) (10) Kine (Mixer Merricular Strips (ANT/GND/MUTE) (10) Kine (Mixer Merricular Strips (ANT/GND/MUTE) (11) Kine (Mixer Merricular Strips (ANT/GND/MUTE) (12) Kine (Mixer Merricular Strips (ANT/GND/MUTE) (13) Kine (Mixer Merricular Strips (ANT/GND/MUTE) (14) Kine (Mixer Merricular Strips (ANT/GND/MUTE) (15) Kine (Mixer Merricular Strips (ANT/GND/MUTE) (16) Kine (Mixer Merricular Strips (ANT/GND/MUTE) (17) Kine (Mixer Merricular Strips (ANT/GND/MUTE) (18) Kine (Mixer Merricular Strips (ANT/GND/MUTE) (19) Kine (Mixer Merricular Strips (ANT/GND/MUTE) (19) Kine (Mixer Merricular Strips (ANT/GND/MUTE) (19) Kine (Mixer Merricular Strips (Mixer Merricular Strips (Mixer Merricula	Ref. No.	Description	RS Part No.	MFR's Part No.
(2) VOLUME Control with Power Switch (3) Rotary Switch (Mode) (4) Rotary Switch (Mode) (5) Variable Capacitor (FINE TUNE) (6) Variable Capacitor (FINE TUNE) (7) Knob (PRESELECTOR TUNE) (8) Knob (PRESELECTOR TUNE) (8) Knob (VOLUME/RF GAIN/PRESELECTOR BAND/Mode) (8) Knob (VOLUME/RF GAIN/PRESELECTOR BAND/Mode) (9) Knob (KHz Tune) (10) Knob (KHz Tune) (11) Knob (KHz Tune) (11) Knob (MHz Tune) (12) Knob (MHz Tune) (13) RF P.C. Board Ass'y (14) MHz P.C. Board Ass'y (15) MHz Switch P.C. Board Ass'y (16) Audio/Att P.C. Board Ass'y (16) Audio/Att P.C. Board Ass'y (17) Counter P.C. Board Ass'y (18) LED P.C. Board Ass'y (19) Band Display P.C. Board Ass'y (20) Speaker (21) Meter (S/BATT) A-2 (22) AN T Jack (23) ANT Jack (24) FUSE Holder (0.5 A) (25) D.C. 12 V Jack (27) KEY Jack/SPKR Jack (28) PLOSE Holder (0.5 A) (28) Preselector Dial Ass'y (28) Preselector Dial Ass'y (29) Preselector Dial Ass'y (20) Speaker (20) Speaker (21) ANT Jack (23) ANT Jack (24) PUSE Holder (0.5 A) (25) D.C. 12 V Jack (26) TAPE OUT Jack (27) KEY Jack/SPKR Jack (28) PLONE Jack (29) Preselector Dial Ass'y (20) Preselector Dial Ass'y (20) Speaker (20) Speaker (21) ANT Jack (23) ANT Jack (24) Preselector Dial Ass'y (25) D.S. Ass'y (26) Reselector Dial Ass'y (27) KEY Jack/SPKR Jack (28) PLONE Jack (29) Preselector Dial Ass'y (20) Speaker (30) Mtz/KHz Tune Ass'y (31) Bara Antenna (32) Preselector Dial Ass'y (33) Preselector Dial Ass'y (34) Preselector Dial Ass'y (35) Rear Panel Ass'y (36) G. 23E- (37) Rear Panel Ass'y (38) Pront Panel Preselector Unifow (36) Chassis (37) Rear Panel (38) Power Transformer (39) Preselector Window (36) Chassis (37) Rear Panel (38) Batter Perminal (A), + (BASSIS G. 23B- (BASSIS			P. 1937	
(3) Rotary Switch (Mode) (4) Rotary Switch (PRESELECTOR BAND) (5) Variable Capacitor (FINE TUNE) (6) Variable Capacitor (FINE TUNE) (7) Knob (FINE TUNE) (8) Knob (PRESELECTOR TUNE) (8) Knob (VOLUME/RF GAIN/PRESELECTOR BAND/Mode) (9) Knob (ATTEN/LIGHT/AUDIO) (10) Knob (KHz Tune) (11) Knob (KHz Tune) (12) IF/AF P.C. Board Ass'y (13) RF P.C. Board Ass'y (14) MHz Switch P.C. Board Ass'y (15) MHz Switch P.C. Board Ass'y (16) Audio/Att P.C. Board Ass'y (17) Knob (KHz P.C. Board Ass'y (18) LED P.C. Board Ass'y (19) Band Display P.C. Board Ass'y (19) Band Display P.C. Board Ass'y (20) Speaker (21) Meter (S/BATT) (22) Meter (S/BATT) (23) ANT Jack (24) FUSE Holder (I.O. 5A) (25) DC 12 V Jack (27) Preselector Dial Ass'y Preselector Dial Ass'y Preselector Dial Ass'y Preselector Gear Ass'y (30) MHz/kHz Gaer Ass'y Preselector Gear Ass'y Preselector Gear Ass'y Preselector Gear Ass'y Preselector Gear Ass'y Preselector Dial Ass'y Preselector Gear Ass'y Preselector Gea	(2)	VOLUME Control with Power Switch	1 1	VM10A620C-50k
(3) Notary Switch (Mode) (4) Rotary Switch (PRESELECTOR BAND) (5) Variable Capacitor (FINE TUNE) (6) Variable Capacitor (FINE TUNE) (7) Knob (FINE TUNE) (8) Knob (FINE TUNE) (8) Knob (FINE TUNE) (8) Knob (FINE TUNE) (9) Knob (INE TUNE) (10) Knob (KHz Tune) (11) Knob (MHz Tune) (12) IF/AF P.C. Board Ass'y (13) RF P.C. Board Ass'y (14) MHz Switch P.C. Board Ass'y (15) MHz Switch P.C. Board Ass'y (16) MHz Switch P.C. Board Ass'y (17) Band Display P.C. Board Ass'y (18) LED P.C. Board Ass'y (19) Band Display P.C. Board Ass'y (10) Bard Display P.C. Board Ass'y (10) Bard Display P.C. Board Ass'y (10) Bard Display P.C. Board Ass'y (10) Bard Display P.C. Board Ass'y (10) Bard Display P.C. Board Ass'y (10) Bard Display P.C. Board Ass'y (10) Bard Display P.C. Board Ass'y (10) Bard Display P.C. Board Bard P.C. Board Ba			1 1330	
(4) Rotary Switch (PRESELECTOR BAND) (5) Variable Capacitor (FINE TUNE) (6) Knob (PRESELECTOR TUNE) (7) Knob (FINE TUNE) (8) Knob (FINE TUNE) (8) Knob (FINE TUNE) (8) Knob (COLUME/RF GAIN/PRESELECTOR BAND/Mode) (9) Knob (ATTEN/LICHT/AUDIO) (10) Knob (Khz Tune) (11) Knob (Khz Tune) (12) IF/AF P.C. Board Ass'y (13) IF/AF P.C. Board Ass'y (14) MHz P.C. Board Ass'y (15) MHz Switch P.C. Board Ass'y (16) Audio/Att P.C. Board Ass'y (17) Counter P.C. Board Ass'y (18) LED P.C. Board Ass'y (18) LED P.C. Board Ass'y (19) Band Display P.C. Board Ass'y (20) Speaker (21) Meter (S/BATT) (22) Meter (S/BATT) (23) ANT Jack (24) FUSE Holder (D.5 A) (25) DC 12 V Jack (27) Preselector Dial Ass'y Preselector Dial Ass'y Preselector Dial Ass'y Preselector Dial Ass'y Preselector Dial Ass'y Preselector Dial Ass'y Preselector Dial Ass'y Preselector Dial Ass'y Preselector Dial Ass'y Preselector Dial Ass'y Preselector Dial Ass'y Preselector Dial Ass'y Preselector Dial Ass'y Preselector Dial Ass'y Preselector Dial Ass'y Preselector Dial Dass'y Preselector Dial Ass'y Pres	(3)	Rotary Switch (Mode)	C 1227	5M1222-50kA
(5) Variable Capacitor (FINE TUNE) (6) Knob (PRESELECTOR TUNE) (7) Knob (FRESELECTOR TUNE) (8) Knob (FINE TUNE) (8) Knob (FINE TUNE) (8) Knob (VOLUME/RF GAIN/PRESELECTOR BAND/Mode) (9) Knob (ATTEN/LIGHT/AUDIO) (10) Knob (kHz Tune) (11) Knob (kHz Tune) (11) Knob (kHz Tune) (11) Knob (kHz Tune) (12) IF/AF P.C. Board Ass'y (13) RF P.C. Board Ass'y (14) MHz P.C. Board Ass'y (15) MHz Switch P.C. Board Ass'y (16) Audio/Att P.C. Board Ass'y (17) Counter P.C. Board Ass'y (18) Band Display P.C. Board Ass'y (19) Band Display P.C. Board Ass'y (20) Speaker (21) Meter (S/BATT) (22) 4P Screw Terminal Strips (ANT/GND/MUTE) (23) ANT Jack (24) FUSE Holder (0.5 A) (25) DC 12 V Jack (27) TAPE OUT Jack (28) PHONE Jack (29) Preselector Dial Ass'y Preselector Dial Ass'y Preselector Dial Ass'y Preselector Dial Ass'y Preselector Dial Ass'y ROARD ASS'Y Preselector Dial Ass'y Preselector Dial Ass'y Preselector Dial Ass'y Preselector Dial Ass'y Preselector Dial Ass'y Preselector Dial Ass'y Preselector Dial Ass'y Preselector Dial Ass'y ROARD ASS'Y ROARD ASS'Y ROARD ASS'Y ROARD ASS'Y ROARD ASS'Y PROMONE ASS'Y ROARD ASS'Y PROMONE ASS'	(4)		1 1	
(6) Knob (PRESELECTOR TUNE) (7) Knob (FINE TUNE) (8) Knob (FINE TUNE) (8) Knob (FINE TUNE) (9) Knob (ATTEN/LIGHT/AUDIO) (10) Knob (KHz Tune) (11) Knob (MHz Tune) (12) IF/AF P.C. Board Ass'y (13) KP.P.C. Board Ass'y (14) MHz P.C. Board Ass'y (15) MHz Switch P.C. Board Ass'y (16) Audio/Att P.C. Board Ass'y (17) Counter P.C. Board Ass'y (18) LED P.C. Board Ass'y (19) Band Display P.C. Board Ass'y (20) Speaker (21) Meter (S/BATT) (22) AP Screw Terminal Strips (ANT/GND/MUTE) (23) ANT Jack (24) FUSE Holder (0.5 A) (25) DC 12 V Jack (27) KEY Jack/SPKR Jack (28) PHONE Jack (29) Preselector Gear Ass'y (30) MHz/KHZ Tune Ass'y (30) MHz/KHZ Tune Ass'y (31) Variable Capacitor (32) Variable Capacitor (33) MHz/KHZ Gear Ass'y (34) Frost Panel (35) Power Transformer (36) Transformer (37) Rear Panel (37) Rear Panel (38) Chassis (37) Rear Panel (37) Rear Panel (37) Rear Panel (37) Rear Panel (37) Rear Panel (37) Rear Panel (37) Rear Panel (37) Rear Panel (37) Rear Panel (37) Rear Panel (37) BRASS GE-23A-	(5)	Variable Capacitor (FINF TUNE)		
(7) Knob (FINE TUNE) K-3326 GE-23D- (8) Knob (VOLUME/RF GAIN/PRESELECTOR BAND/Mode) K-3330 GE-23D- (10) Knob (KHz Tune) K-3329 GE-23D- (110) Knob (KHz Tune) K-3329 GE-23B- (121) IF/AF P.C. Board Ass'y X-8003 GE-23E- (132) RF P.C. Board Ass'y X-8003 GE-23E- (133) RF P.C. Board Ass'y X-8003 GE-23E- (144) MHz P.C. Board Ass'y X-8005 GE-23E- (155) MHz Switch P.C. Board Ass'y X-8006 GE-23E- (166) Audio/Art P.C. Board Ass'y X-8006 GE-23E- (177) Counter P.C. Board Ass'y X-8008 GE-23E- (188) LED P.C. Board Ass'y X-8009 GE-23E- (19) Band Display P.C. Board Ass'y X-8009 GE-23E- (20) Speaker X-8009 GE-23E- (21) Meter (S/BATT) M-0412 M-		Knob (PRESELECTOR TUNE)		
(8) Knob (VOLUME/RF GAIN/PRESELECTOR BAND/Mode) (9) Knob (ATTEN/LIGHT/AUDIO) (11) Knob (Mt Zune) (12) Knob (Mt Zune) (12) IF/AF P.C. Board Ass'y (13) RF P.C. Board Ass'y (14) Mtz P.C. Board Ass'y (15) Mtz Switch P.C. Board Ass'y (16) Audio/Att P.C. Board Ass'y (17) Counter P.C. Board Ass'y (18) LED P.C. Board Ass'y (19) Band Display P.C. Board Ass'y (20) Speaker (21) Meter (S/BATT) (22) 4P Screw Terminal Strips (ANT/GND/MUTE) (23) ANT Jack (24) FUSE Holder (0.5 A) (25) D. 12 V Jack (27) KEY Jack/SPKR Jack (28) PHONE Jack (29) Preselector Dial Ass'y (30) MHZ P.C. Board Ass'y (30) MHZ P.C. Board Ass'y (31) Assignment of the property		Knob (FINE TUNE)	1	GE-23D-7069
(9) Knob (ATTEN/LIGHT/AUDIO) (10) Knob (kHz Tune) (11) Knob (kHz Tune) (12) IF/AF P.C. Board Ass'y (13) RF P.C. Board Ass'y (14) MHz P.C. Board Ass'y (15) MHz Switch P.C. Board Ass'y (16) Audio/Att P.C. Board Ass'y (17) Counter P.C. Board Ass'y (18) LED P.C. Board Ass'y (19) Band Display P.C. Board Ass'y (20) Speaker (21) Meter (S/BATT) (22) ANT Jack (23) ANT Jack (24) FUSE Holder (0.5 A) (25) DC 12 V Jack (27) TAPE OUT Jack (28) PHONE Jack (29) Preselector Gear Ass'y Dial (30) MHz/Switch (31) Bar Antenna (32) Warisble Capacitor (33) Warisble Capacitor (34) Warisble Capacitor (35) Cabinet (36) Cabinet (37) Rear Panel Ass'y Front Panel Preselector Window Frequency Terminal (A), + HB.8335 GE-238- GE-238- GE-	L.		1	GE-23D-7036
(10) Knob (kHz Tune) K-3328 GE-23B (GE-23B (GE-23E (GE		Knob (ATTEN/LIGHT/AUDIO)	, ,	GE-23D-7070
(11) Knob (MHz Tune) (12) IF/AF P.C. Board Ass'y (13) RF P.C. Board Ass'y (14) MHz P.C. Board Ass'y (15) MHz P.C. Board Ass'y (16) MHz Switch P.C. Board Ass'y (17) Counter P.C. Board Ass'y (18) LED P.C. Board Ass'y (19) Band Display P.C. Board Ass'y (20) Speaker (21) Meter (S/BATT) (22) 4P Screw Terminal Strips (ANT/GND/MUTE) (23) ANT Jack (24) FUSE Holder (0.5 A) (25) DC 12 V Jack (26) TAPE OUT Jack (27) KEY Jack/SPKR Jack (29) Preselector Gear Ass'y Preselector Gear Ass'y (30) MHz P.C. Board Ass'y (30) MHz P.C. Board Ass'y (31) MHz P.C. Board Ass'y (32) Preselector Gear Ass'y (33) MHz P.C. Board Ass'y (34) Freselector Gear Ass'y (35) National Description of C-4673 (36) WHz P.C. Board Ass'y Preselector Gear Ass'y Rotary Switch (37) MHz/KHz Tune Ass'y Rotary Switch (38) Preselector Gear Ass'y Rotary Switch (39) Preselector Gear Ass'y Rotary Switch (30) MHz/KHz Tune Ass'y Rotary Switch (31) Bar Antenna (32) Variable Capacitor (33) Bar Antenna (34) Pront Panel Preselector Window Frequency Window (35) Chassis (36) Cabinet (37) Rear Panel Ass'y Rear Panel Battery Terminal (A), + HB.8335 GE-238-7 REAR GE-238-7 REAR PANEL REAR GE-238-7 REAR PANEL REAR GE-238-7 REAR PANEL REAR PANEL REAR REAR GE-238-7 REAR PANEL REAR REAR GE-238-7 REAR PANEL REAR REAR GE-238-7 REAR PANEL REAR REAR GE-238-7 REAR PANEL REAR REAR GE-238-7 REAR PANEL REAR REAR GE-238-7 REAR PANEL REAR PANEL REAR REAR GE-238-7 REAR PANEL REAR REAR REAR REAR REAR REAR PANEL REAR REAR PANEL REAR REAR REAR REAR REAR REAR REAR REA		Knob /kHz Tupa)		GE-23D-7071
(12) IF/AF P.C. Board Ass'y X8002 GE-23E-(13) RF P.C. Board Ass'y X-8003 GE-23E-(14) MHz P.C. Board Ass'y X-8004 GE-23E-(15) MHz Switch P.C. Board Ass'y X-8005 GE-23E-(16) Audio/Att P.C. Board Ass'y X-8006 GE-23E-(17) Counter P.C. Board Ass'y X-8007 GE-23E-(17) Counter P.C. Board Ass'y X-8007 GE-23E-(18) LED P.C. Board Ass'y X-8008 GE-23E-(19) Band Display P.C. Board Ass'y X-8009 GE-23E-(19) Meter (S/BATT) M-0412 M90334 M-0412 M9033				GE-23B-7068
(13) RF P.C. Board Ass'y (14) MHz P.C. Board Ass'y (15) MHz Switch P.C. Board Ass'y (16) MHz Switch P.C. Board Ass'y (16) Audio/Att P.C. Board Ass'y (17) Counter P.C. Board Ass'y (18) LED P.C. Board Ass'y (18) LED P.C. Board Ass'y (19) Band Display P.C. Board Ass'y (20) Speaker (21) Meter (S/BATT) A-2 (22) 4P Screw Terminal Strips (ANT/GND/MUTE) (23) ANT Jack (24) FUSE Holder (0.5 A) (25) DC. 12 V Jack (27) KEY Jack/SPKR Jack (29) PHONE Jack (29) PHONE Jack (29) Preselector Dial Ass'y Preselector Dial Ass'y Preselector Gear Ass'y Rotard Switch Variable Capacitor MHz/kHz Tune Ass'y Rotard Switch Variable Capacitor VP.C. Board VP.C. Boa			1 1	GE-23B-7067
(14) MHz P.C. Board Ass'y (15) MHz Switch P.C. Board Ass'y (16) Audio/Att P.C. Board Ass'y (17) Counter P.C. Board Ass'y (18) LED P.C. Board Ass'y (18) LED P.C. Board Ass'y (19) Band Display P.C. Board Ass'y (20) Speaker (21) Meter (S/BATT) A-2 (22) AP Srew Terminal Strips (ANT/GND/MUTE) (23) ANT Jack (24) FUSE Holder (0.5 A) (25) DC 12 V Jack (27) KEY Jack/SPKR Jack (28) PHONE Jack (29) Preselector Dial Ass'y (29) Preselector Gear Ass'y (30) MHz/kHz Tune Ass'y (31) Bard Antenna (31) Bar Antenna (32) Holder for Bar Antenna (33) Power Transformer (34) Front Panel (35) Chassis (36) Cabinet (37) Rear Panel (37) Rear Panel (38) Chassis (36) Cabinet (37) Rear Panel (37) Rear Panel (38) Bar Antenna (39) Capacitor (30) Chassis (30) Chassis (31) Rear Panel (32) Front Panel (33) Rear Panel (34) Rear Panel (35) Battery Terminal (A), + HB.8335			1 1	GE-23E-7389
(15) MHz Switch P.C. Board Ass'y (16) Audio/Att P.C. Board Ass'y (17) Counter P.C. Board Ass'y (18) LED P.C. Board Ass'y (19) Band Display P.C. Board Ass'y (20) Speaker (21) Meter (S/BATT) A-2 (22) 4P Screw Terminal Strips (ANT/GND/MUTE) (23) ANT Jack (24) FUSE Holder (0.5 A) (25) DC .12 V Jack (27) KEY Jack/SPKR Jack (29) PHONE Jack (29) Preselector Dial Ass'y Preselector Gear Ass'y Dial Variable Capacitor (30) MHz/k,Hz Gear Ass'y MHz/k,Hz Gear Ass'y Rotary Switch Variable Capacitor VC P.C. Board Variable Capacitor VC P.C. Board Variable Capacitor VC P.C. Board Variable Capacitor (31) Bar Antenna (32) Holder for Bar Antenna Preselector Window Frequency Window				GE-23E-7390
(16) MHZ SWITCH P.C. Board Ass'y X-8006 GE-23E-18 (17) Counter P.C. Board Ass'y X-8007 GE-23E-18 (18) LED P.C. Board Ass'y X-8008 GE-23E-18 (18) LED P.C. Board Ass'y X-8009 GE-23E-18 (19) Band Display P.C. Board Ass'y X-8009 GE-23E-18 (20) Speaker S-4793 SR-305-1 Meter (S/BATT) M-0412 49C334 4P Screw Terminal Strips (ANT/GND/MUTE) J-4584 UB-1004 J-1009 NC-552-18 (23) ANT Jack J-1009 NC-552-18 (24) F-1069 NC-552-18 (25) DC. 12 V Jack J-1010 ND-409 NC-552-18 (25) DC. 12 V Jack J-1011 NR-205-18 (27) KEY Jack/SPKR Jack J-0840 S-68022 (28) PHONE Jack J-1011 NR-205-18 (29) Preselector Dial Ass'y D-1014 NR-205-18 (29) Preselector Dial Ass'y Preselector Gear Ass'y D-1014 NR-205-19 (20) MHZ/KHz Tune Ass'y C-4671 C123A21 (20) MHZ/KHz Tune Ass'y C-4672 GE-23E-18 (20) MHZ/KHz Gear Ass'y NR-2664 D-0407 GE-23C-18 (20) MHZ/KHz Gear Ass'y C-4672 GE-23E-18 (20) NR-1014 NR-10		MHz P.C. Board Ass'y	X-8004	GE-23E-7391
(16) Audio/Att P.C. Board Ass'y (17) Counter P.C. Board Ass'y (18) LED P.C. Board Ass'y (19) Band Display P.C. Board Ass'y (20) Speaker (21) Meter (S/BATT) (22) AP Screw Terminal Strips (ANT/GND/MUTE) (23) ANT Jack (24) FUSE Holder (0.5 A) (25) DC 12 V Jack (27) KEY Jack/SPKR Jack (29) PHONE Jack (29) Preselector Dial Ass'y Preselector Gear Ass'y Dial Variable Capacitor WHz/kHz Tune Ass'y Rotary Switch Variable Capacitor Variable Capacitor VC P.C. Board Variable Capacitor (31) Bar Antenna (32) Holder for Bar Antenna Power Transformer Front Panel Preselector Window Frequency Window Chassis (36) Cabinet (37) Rear Panel Battery Terminal (A), + HB.8335 K.8006 GE-23E-3 X.8007 GE-23E-3 X.8008 GE-23E-3 X.8009 GE-23E-3 X.8009 GE-23E-3 X.8009 GE-23E-3 X.8009 GE-23E-3 X.8009 GE-23E-3 X.8009 GE-23E-3 X.8009 GE-23E-3 X.8009 GE-23E-3 X.8009 GE-23E-3 X.8009 GE-23E-3 X.8009 GE-23E-3 X.8009 GE-23E-3 X.8009 GE-23E-3 X.8009 GE-23E-3	(15)	MHz Switch P.C. Board Ass'y	X-8005	GE-23E-7392
(17) Counter P.C. Board Ass'y X-8007 GE-23E- (18) LED P.C. Board Ass'y X-8008 GE-23E- (20) Speaker S-4793 SR-305-1 (20) Meter (S/BATT) M-0412 49G334 (21) Meter (S/BATT) M-0412 49G334 (22) 4P Screw Terminal Strips (ANT/GND/MUTE) J-4584 UB-1004 (23) ANT Jack FUSE Holder (0.5 A) F-1069 NC-552-E (25) DC 12 V Jack J-1010 ND-409 (26) TAPE OUT Jack J-1011 NR-205-E (27) KEY Jack/SPKR Jack J-1011 NR-205-E (28) PHONE Jack J-1013 S-67625-E (29) Preselector Dial Ass'y D-3264 GE-23E- (29) Preselector Gear Ass'y D-3264 GE-23E- (30) MHz/kHz Tune Ass'y G-4671 C-123Ac1 (30) MHz/kHz Gear Ass'y GE-23E- (31) Mary Switch S-1325 C8-2-29 (32) Variable Capacitor C-4671 C-4673 PVC-206 (31) Bar Antenna C-4674 C521C13 (32) Holder for Bar Antenna (32) Holder for Bar Antenna (33) Power Transformer Front Panel Ass'y Front Panel Preselector Window Frequency Window (35) Chassis Cabinet Ge-23E- (36) Cabinet Rear Panel Ass'y Rear Panel Battery Terminal (A), + HB-8335 GE-23E-	l l	Audio/Att P.C. Board Ass'y	X-8006	GE-23E-7393
(18)	1	Counter P.C. Board Ass'y	X-8007	GE-23E-7394
(29) Speaker (21) Meter (S/BATT) M-0412 4P Screw Terminal Strips (ANT/GND/MUTE) J-4584 UB-1004 4P Screw Terminal Strips (ANT/GND/MUTE) J-4584 UB-1009 NC-552-(22) (23) ANT Jack UB-1009 NC-552-(24) FUSE Holder (0.5 A) F-1069 S-N1301 J-1010 ND-409 (25) DC .12 V Jack J-1011 NR-205-(26) TAPE OUT Jack J-1011 NR-205-(28) PHONE Jack J-1013 S-G7625 (28) PHONE Jack J-1013 S-G7625 Dial Variable Capacitor MHz/kHz Tune Ass'y Preselector Gear Ass'y Dial Variable Capacitor WLA/KHz Gear Ass'y GE-23E-7 Rotary Switch Variable Capacitor VC P. C. Board Variable Capacitor C-4671 C-4673 PVC-206 (32) Proselector Dial Ass'y GE-23E-7 Rotary Switch Sarah Holder for Bar Antenna C-4674 C521C13 (32) Holder for Bar Antenna C-4674 C521C13 (33) Power Transformer Tont Panel Ass'y Front Panel Ass'y Front Panel Ass'y Front Panel Ass'y GE-23A-7 Rear Panel Battery Terminal (A), +			X-8008	GE-23E-7395
(20) Speaker S-4793 SR-305-1 (21) Meter (S/BATT) M-0412 49C334 (22) 4P Screw Terminal Strips (ANT/GND/MUTE) J-4584 UB-1004 (23) ANT Jack J-1009 NC-552-E (24) FUSE Holder (0.5 A) F-1069 S-N1301 (25) DC .12 V Jack J-1010 ND-409 (26) TAPE OUT Jack J-1011 NR-205-E (27) KEY Jack/SPKR Jack J-1013 S-G7625 (28) PHONE Jack J-1013 S-G7625 (29) Preselector Dial Ass'y D-3264 GE-23E-F (29) Preselector Gear Ass'y D-3264 GE-23E-F (30) MHz/kHz Tune Ass'y C-4671 C123A21 (30) MHz/kHz Gear Ass'y GE-23E-F (31) Rotary Switch S-1325 C3-2-29 (31) Variable Capacitor C-4673 PVC-20G (32) Variable Capacitor C-4674 C521C13 (32) Variable Capacitor C-4674 C521C13 (33) Bar Antenna CA-0676 12BNA-1 (34) Front Panel Ass'y Front Panel Ass'y (35) Chassis Cabinet (37) Rear Panel Ass'y (38) Cabinet GE-23A-7 (39) Rear Panel Ass'y (39) Rear Panel Battery Terminal (A) + HB-8335 GE-23E-7 (39) GE-23E-7 (310) Rear Parminal (A) + HB-8335 GE-23E-7 (311) Rear Panel Battery Terminal (A) + HB-8335 GE-23E-7 (312) Rear Panel Battery Terminal (A) + HB-8335 GE-23E-7 (313) Rear Parminal (A) + HB-8335 GE-23E-7 (314) Rear Panel Battery Terminal (A) + HB-8335 GE-23E-7 (315) GE-23E-7 (316) GE-23E-7 (317) Rear Panel Battery Terminal (A) + HB-8335 GE-23E-7 (A) Candon MC-12			X-8009	
A-2 (22)	. 1	·	i I	
A-2 (22)	1		M-0412	
(23) ANT Jack (24) FUSE Holder (0.5 A) (25) DC 12 V Jack (26) TAPE OUT Jack (27) KEY Jack/SPKR Jack (27) KEY Jack/SPKR Jack (28) PHONE Jack (29) Preselector Dial Ass'y Preselector Gear Ass'y Dial Variable Capacitor MHz/kHz Tune Ass'y Rotary Switch Variable Capacitor VC P.C. Board Variable Capacitor (31) Bar Antenna (32) Holder for Bar Antenna Power Transformer Front Panel Ass'y Front Panel Preselector Window Frequency Window (35) Cabinet (37) Rear Panel Battery Terminal (A), + HB-8335 J-1010 ND-409 S-N1301 NR-205 1010 ND-409 S-N1301 NR-205 1010 ND-409 S-N1301 NR-205 1010 ND-409 S-R0202 GE-23E 10407 GE-23		4P Screw Terminal Strips (ANT/GND/MUTE)	!	
(24) FUSE Holder (0.5 A) DC .12 V Jack J-1010 ND-409 ND-409 TAPE OUT Jack J-1011 NR-205-(27) KEY Jack/SPKR Jack J-0840 S-G8022 PHONE Jack J-1013 S-G7625 Preselector Dial Ass'y Dial D-409 Nd-409 Nd-409 Nd-409 Nd-409 Nd-409 Nd-409 Nd-409 Nd-409 Nd-409 Nd-264 Nd-26	(23)	ANT Jack	1	
(25) DC .12 V Jack (26) TAPE OUT Jack (27) KEY Jack/SPKR Jack (28) PHONE Jack (29) Preselector Dial Ass'y Preselector Gear Ass'y Dial Variable Capacitor MHz/kHz Tune Ass'y Rotary Switch Variable Capacitor VC P.C. Board V2 Ariable Capacitor V2 P.C. Board V3 Ariable Capacitor V2 P.C. Board V3 Ariable Capacitor V6 P.C. Board V6 P.C. Board V6 P.C. Board V6 P.C. Board V6 P.C. Board V6 P.C. Board V6 P.C. Board V6 P.C. Board V7 P.C. Board V8 P.C. Board V8 P.C. Board V8 P.C. Board V9 P.C. Board V9 P.C. Board V1 P.C. Board V1 P.C. Board V1 P.C. Board V1 P.C. Board V2 P.C. Board V3 P.C. Board V6 P.C. Board V6 P.C. Board V6 P.C. Board V6 P.C. Board V6 P.C. Board V6 P.C. Board V7 P.C. Board V8 P.C. 206 V8 P.C. Board V8 P.C. 206 V8 P.C. 206 V8 P.C. 206 V8 P.C. 206 V8 P.C. 206 V8 P.C. 206 V8 P.C. 206 V8 P.C. 206 V8 P.C. 206 V8 P.C. 206 V8 P.C. 206 V8 P.C. 206 V9 P.C	(24)	FUSE Holder (0.5 A)	1	
(26) TAPE OUT Jack (27) KEY Jack/SPKR Jack (28) PHONE Jack (29) Preselector Dial Ass'y Preselector Gear Ass'y Dial Variable Capacitor (30) MHz/kHz Tune Ass'y Rotary Switch Variable Capacitor VC P.C. Board Variable Capacitor (31) Bar Antenna (32) Holder for Bar Antenna (33) Power Transformer Front Panel Ass'y Front Panel Preselector Window Frequency Window (35) Cabinet (37) Rear Panel Battery Terminal (A), + TAPE OUT Jack J-1011 NR-205-2 J-1021 NR-205-2 J-0840 S-68022 J-1013 S-G7625 GE-23E-7 GE-23E-7 GE-23E-7 GE-23C-7 G			, , ,	
(27) KEY Jack/SPKR Jack (28) PHONE Jack (29) Preselector Dial Ass'y			1	
(28) PHONE Jack (29) Preselector Dial Ass'y			1 1	
Preselector Dial Ass'y			1	
Preselector Gear Ass'y Dial	1			
Dial Variable Capacitor C-4671 C123A25 C-4672 GE-23C-7 C-4671 C123A25 C-4672 GE-23E-7 GE	, , , ,			GE-23E-7398
(30) Variable Capacitor MHz/kHz Tune Ass'y MHz/kHz Gear Ass'y Rotary Switch Variable Capacitor VC P.C. Board Variable Capacitor Variable Capacitor Variable Capacitor VC P.C. Board Variable Capacitor (31) Bar Antenna (32) Holder for Bar Antenna (33) Power Transformer Front Panel Ass'y Front Panel Preselector Window Frequency Window (35) Chassis (36) Cabinet Rear Panel Battery Terminal (A), + Variable Capacitor C-4671 C-4672 GE-23E-7 GE-23E-7 C-4673 PVC-20G X-8010 GE-22D-6 C-4674 C521C13 C-4674 C521C13 C-4674 C521C13 C-4674 C521C13 C-4674 C521C13 C-4674 C521C13 C-4674 C521C13 C-4674 C521C13 C-4674 C521C13 C-4674 C521C13 C-4674 C521C13 C-4674 C521C13 C-4674 C521C13 C-4674 C521C13 C-4674 C521C13 C-4674 C521C13 C-4674 C521C13 C-4674 C521C13 C-4674 C521C13 C-4673 PVC-20G C-4673 PVC-20G C-4673 PVC-20G C-4673 PVC-20G C-4673 PVC-20G C-4673 PVC-20G C-4674 C521C13 C-4674 C521C13 C-4674 C521C13 C-4674 C521C13 C-4674 C521C13 C-4674 C521C13 C-4674 C521C13 C-4674 C521C13 C-4674 C521C13 C-4674 C521C13 C-4672 C-4673 PVC-20G C-4674 C521C13 C-4674 C-46				GE-23-E-7197
(30) MHz/kHz Tune Ass'y MHz/kHz Gear Ass'y Rotary Switch Variable Capacitor VC P.C. Board Variable Capacitor C-4673 Variable Capacitor C-4674 C521C13 CA-0676 12BNA-1 No. 152 TA-0708 TK-1284 Z-4522 GE-23A-7 Front Panel Preselector Window Frequency Window Frequency Window Rear Panel Battery Terminal (A), + HB-8335 GE-23A-7			I I	GE-23C-7196
MHz/kHz Gear Ass'y Rotary Switch Variable Capacitor VC P.C. Board Variable Capacitor Vari	(30)	MHz/kHz Tupe Assis		C123A214
Rotary Switch Variable Capacitor VC P.C. Board Variable Capacitor VC P.C. Board Variable Capacitor V	(50)		C-4672	GE-23E-7399
Variable Capacitor VC P.C. Board Variable Capacitor VC P.C. Board Variable Capacitor (31) Bar Antenna Holder for Bar Antenna Holder for Bar Antenna Power Transformer Front Panel Ass'y Front Panel Preselector Window Frequency Window (35) Chassis (36) Cabinet Rear Panel Ass'y Rear Panel Battery Terminal (A), + CA-0676 TA-0708 TK-1284 TA-0708 TA-0708 TA-0708 TK-1284 TA-0708 TA-0708 TA-0708 TK-1284 TA-0708 TA-07		Rotony Switch		GE-23E-7198
VC P.C. Board Variable Capacitor Variable Capacitor Variable Capacitor Variable Capacitor Variable Capacitor C-4674 C521C13 C4674 C521C13 C4674 C521C13 C4674 C4676 C521C13 C4676 C4676 C521C13 C4676 C4676 C521C13 C4676 C4676 C521C13 C4676 C4676 C4676 C4676 C4674 C521C13 C4676 C4			S-1325	CB-2-29
Variable Capacitor X-8010 GE-22D-6 (31) Bar Antenna C-4674 CA-0676 (32) Holder for Bar Antenna No. 152 (33) Power Transformer TA-0708 TK-1284 (34) Front Panel Ass'y Z-4522 GE-23A-7 (35) Chassis GE-23A-7 (36) Cabinet GE-23A-7 (37) Rear Panel Ass'y Z-4523 GE-23A-7 (37) Rear Panel Battery Terminal (A), + HB-8335 GE-23A-7 (38) Cabinet GE-23A-7 (39) GE-23A-7 GE-23A-7 (31) GE-23A-7 GE-23A-7 (32) GE-23A-7 GE-23A-7 (33) GE-23A-7 GE-23A-7 (34) GE-23A-7 GE-23A-7 (35) GE-23A-7 GE-23A-7 (36) GE-23A-7 GE-23A-7 (37) GE-23A-7 GE-23A-7 (38) GE-23A-7 GE-23A-7 (39) GE-23A-7 GE-23A-7 (30) GE-23A-7 GE-23A-7 (31) GE-23A-7 GE-23A-7 (31) GE-23A-7 GE-23A-7 (32) GE-23A-7 GE-23A-7 (34) GE-23A-7 GE-23A-7 (35) GE-23A-7 GE-23A-7 (36) GE-23A-7 GE-23A-7 (37) GE-23A-7 GE-23A-7 (38) GE-23A-7 GE-23A-7 (39) GE-23A-7 GE-23A-7 (39) GE-23A-7 GE-23A-7 (30) GE-23A-7 GE-23A-7 (30) GE-23A-7 GE-23A-7 (30) GE-23A-7 GE-23A-7 (30) GE-23A-7 GE-23A-7 (31) GE-23A-7 GE-23A-7 (31) GE-23A-7 GE-23A-7 (31) GE-23A-7 GE-23A-7 (31) GE-23A-7 GE-23A-7 (31) GE-23A-7 GE-23A-7 (32) GE-23A-7 GE-23A-7 (33) GE-23A-7 GE-23A-7 (34) GE-23A-7 GE-23A-7 (35) GE-23A-7 GE-23A-7 (36) GE-23A-7 GE-23A-7 (36) GE-23A-7 GE-23A-7 (36) GE-23A-7 GE-23A-7 (36) GE-23A-7 GE-23A-7 (36) GE-23A-7 GE-23A-7 (36) GE-23A-7 GE-23A-7 GE-23A-7 (36) GE-23A-7 GE-23A-7 GE-23A-7 (36) GE-23A-7 GE-2			C-4673	PVC-20G3J1-10H
(31) Bar Antenna (C-4674 (C521C13 (C4076) (C40			X-8010	GE-22D-6990
(31) Bar Antenna (22) Holder for Bar Antenna (23) Holder for Bar Antenna (23) Power Transformer (23) Power Transformer (24) TA-0708 TK-1284 (25) Front Panel Preselector Window Frequency Window (25) Chassis (26) Cabinet (27) Rear Panel Ass'y Rear Panel Battery Terminal (A), + HB-8335 (26-236-7) Reservance (27) Reserva	(24)		C-4674	C521C133
* (33)				12BNA-143
(33) Power Transformer TA-0708 TK-1284 Z-4522 GE-23A-7	1			
(34) Front Panel Ass'y Front Panel Preselector Window Frequency Window (35) Chassis (36) Cabinet (37) Rear Panel Ass'y Rear Panel Battery Terminal (A), + Front Panel Ass'y GE-23A-7 G			TA-0708	
Front Panel Preselector Window Frequency Window (35) Chassis (36) Cabinet GE-23A-7	(34)		1 [GE-23A-7064
Frequency Window GE-23A-7 G				GE 20/1/00+
(35) Chassis (36) Cabinet (37) Rear Panel Ass'y Rear Panel Battery Terminal (A), + Chassis GE-23A-7 GE-23A-7 GE-23A-7 GE-23A-7 GE-23A-7 GE-23A-7 GE-23A-7 GE-23A-7 GE-23A-7 GE-23A-7	ļ			
(36) Cabinet GE-23A-7 (37) Rear Panel Ass'y Z-4523 GE-23E-7 Rear Panel Battery Terminal (A), + HB-8335 GE-23C-7				
(37) Rear Panel Ass'y GE-23A-7 Rear Panel Battery Terminal (A), + GE-23A-7 GE-23A-7 GE-23A-7 GE-23A-7 GE-23A-7				GE-23A-7059
Rear Panel Ass y Rear Panel Battery Terminal (A), + Rear Panel Battery Terminal (A), + Rear Panel GE-23E-7 GE-23C-7				GE-23A-7059
Rear Panel Battery Terminal (A), + HB-8335 GE-23A-7 HB-8335	(37)		Z-4523	
Dattery Terminal (A), + HB-8335 GE-23C-7		Rear Panel	7525	
	1	Battery Terminal (A), +	HB 022E	
Matton: Towning (D)				GE-23D-7117
Potton: Torminal (C) 1				GE-23D-7118
Power, Tub.			1	GE-23D-7119
(38) Batton Court	(38)			GE-23D-7384 GE-238-7066

Ref. No.	Description	RS Part No.	MFR's Part No.
(39)	Bracket for RF GAIN/VOLUME Controls and Mode SW	HB-8339	GE-23D-7241
(40)	Bracket for PRESELECTOR BAND SW	HB-8340	GE-23D-7062
(41)	Bracket for Meter	HB-8341	GE-23D-7062 GE-23D-7061
(42)	Bracket for Preselector Dial Lamp	HB-8342	GE-23D-7063
(43)	Lug Terminal (2P)	110 0042	1L2P
(44)	Lug Terminal (5P)		1L5P
(45)	Shaft, PRESELECTOR BAND SW	RT-1953	GE-23D-7120
(46)	Coupler, Shaft and PRESELECTOR BAND SW	HB-8344	GE-23D-7120 GE-23D-7194
(47)	Bracket for Front Panel (A)	110-0344	GE-23D-7060
(48)	Bracket for Front Panel (B)	e e	GE-23D-7060
(49)	Foot (L)	F-0249	NO. 7112
(50)	Foot (\$)	F-0250	NO. 7105
(51)	Hand Strap	H-6250	GE-23D-7121
(52)	Shield Case (Top) for Counter P.C. Board	H-0250	GE-23C-7121
(53)	Shield Case (Bottom) for Counter P.C. Board		GE-23C-7116
	Pressure Terminal		1-SD
(54)	Solder Lug Terminals		3φ
	Wrapping Posts		
	Insulator for Band Display P.C. Board		1.2 x 12.5 mm
	Protection Cloth for Lever SW (ATTEN/LIGHT/AUDIO)		GE-23D-7313
	Protection Cloth for FINE TUNE Control		GE-23D-7374
	Protection Cloth for Rear Panel	-	GE-23D-7375
	Protection Cloth for Counter Case and Cabinet		GE-23D-7472
	Protector for Hand Strap	H-6251	GE-20D-5297
	Lamp, Meter and Preselector Dial	L-0990	GE-23D-7404
	Lamp Grommet for Meter	1	L50-F12V50
	Lamp Grommet for Preselector Dial	HB-1182	BU687
	Wire Clip	HB-8338 °	GE-23D-7243
	Wire Clip (A1)		220-JD485210-01
	Wire Binder		GE-23D-7319
	Wire Grommet		BK-1
	* AC Power Cord (6 Feet, UL, Black)		OCB-500
	* Cord Strain Relief		KP-10, AWG-18
	Wrapping Post for AC Power Cord		SR-3P4
	Fuse	HF-0025	GE-18D-4215
	Fuse Caution Label (0.5 A)	111 0025	0.5A, UL GE-23D-7537
	Causion Label		GE-19D-4860
	* Model Label		GE-22D-6998
	Screws		GL*22D-0998
(55)	Pan-Head Taptite Screws		3 x 10 mm
(56)	Pan-Head Taptite Screws		4 x 8 mm
(57)	Binding-Head Self Tapping Screws	HD-3020	2.6 x 7 mm
(58)	Pan-Head Self Tapping Screws	HD-3026	3 x 6 mm
(59)	Pan-Head Self Tapping Screws	HD-2057	3 x 8 mm
(60)	Round-Head Self Tapping Screws	HD-3108	3 x 6 mm
(61)	Binding-Head Screws		2 x 6 mm
(62)	Binding-Head Screws	HD-3030	3 x 12 mm
(63)	Binding-Head Screws		4 x 8 mm
(64)	Binding-Head Screws	HD-3047	4 × 10 mm
(65)	Binding-Head Screws	HD-3049	4 x 15 mm
(66)	Pan-Head Screws	HD-2044	2.6 x 6 mm
(67)	Pan-Head Screws	HD-2054	3 x 5 mm
(68)	Pan-Head Screws	HD-2055	3 x 6 mm
(69)	Pan-Head Screws	HD-2057	3 x 8 mm
(70)	Flat-Head Screws	HD-4019	3 x 6 mm
(71)	Pan-Head Screws	HD-1181	3 x 6 mm (Nylon)
(72)	Binding-Head Screws		3 x 6 mm (Black)
			THE THIN (DIGCK)

Ref. No.	Description	RS Part No.	MFR's Part No.
(73) (74) (75) (76) (77) (78)	Internal Star Lock Washers Internal Star Lock Washers Flat Washers Hex Nuts Hex Nuts Speed Nuts	HD-8045 HD-8041 HD-7003 HD-7088 HC-7013	2.6 φ 3 φ 3 φ 3 φ 9 φ (Black) PSN-3

ACCESSORY LIST

Ref. No.	Description	RS Part No.	MFR's Part No.
DC Power (Fuse Cautio Antenna A Antenna Connect Rubber Fee	on Label ss'y a tor (Plug)	A-0323	DC-1021 GE-23D-7491 GE-23E-7402 SJ-5112

APPENDIX TO PARTS LIST

For Australian, EC, UK and Canadian Models, some parts are changed. Following parts list information applies to these models.

Australian model

Ref. No.	Description	RS Part No.	o. MFR's Part No.	
(33) R2	Power Transformer AC Power Cord Strain Relief Model Label Terminal Block 12 pins Fiber for Terminal Block Not used		K6218 SAA 3p 2 m SR-5N-4 GE-23D-7332 3012PT-12 GE-23D-7435	

EC model

Ref. No.	Description	RS Part No.	MFR's Part No.	
(33) R2	Power Transformer AC Power Cord Strain Relief Model Label Cord Label Not used		K6218 KP-419C, LTCE-2F SR-4N-4 GE-23D-7184	

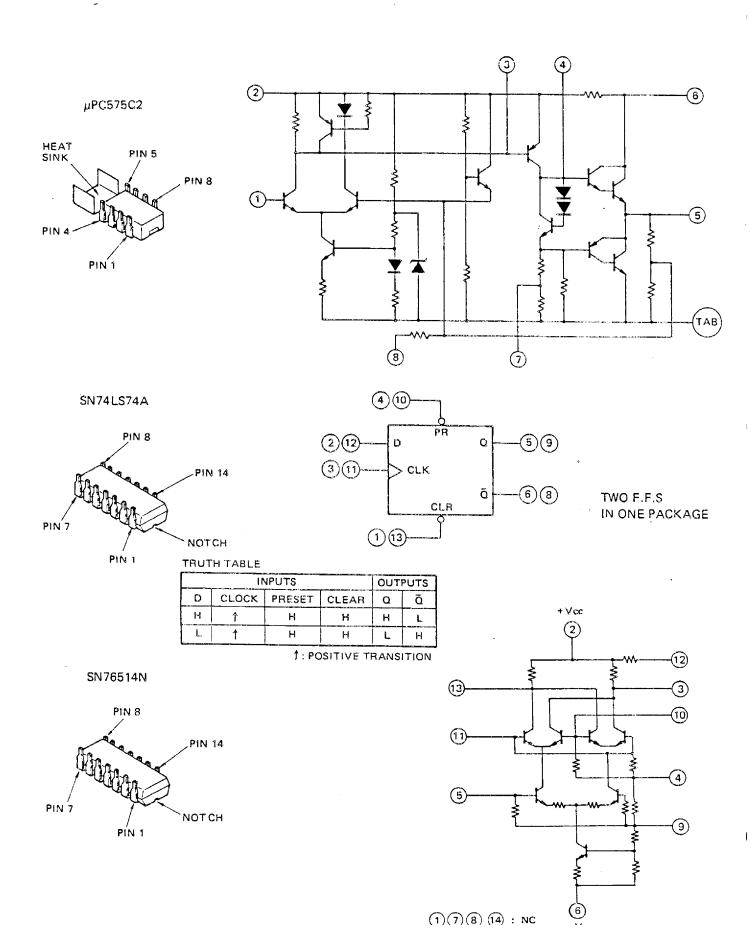
UK model

Ref. No.	Description	RS Part No.	MFR's Part No.
(33) R2	Power Transformer AC Power Cord Strain Relief Model Label Cord Label Not used		K6218 BS 2p 2m SR-4N-4 GE-23D-7184

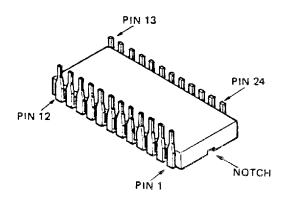
Canadian model

Ref. No.	Description	RS Part No.	MFR's Part No.
(33)	Power Transformer AC Power Cord Strain Relief Model Label		TK 1284B CSA 6 feet 3p SR-5N-4 GE-23D-7183

INTEGRATED CIRCUIT IDENTIFICATION



M54826P



NOTE

- 1 Not used
- 2 Not used
- 4 MHz Crystal Oscillator
- 5 Ground
- 6 INPUT (2456 ~ 3455 kHz)
- 7 Count Mode/Preset Selection Input S1; Low
- 8 Count Mode/Preset Selection Input S2; Low
- 9 Count Mode/Preset Selection Input \$3; Low
- 10 Count Mode/Preset Selection Input S4; Low
- 11 Not used
- 12 Segment Output; q
- 13 Segment Output; f
- 14 Segment Output; e
- 15 Vcc (+5 V)
- 16 Segment Output; d
- 17 Segment Output; c
- 18 Segment Output; b
- 19 Segment Output; a
- 20 Not used
- 21 Not used
- 22 Digital Output; D506
- 23 Digital Output; D507
- 24 Digital Output; D508

TRANSISTOR LEAD IDENTIFICATION

(A); 2SK19(Y)

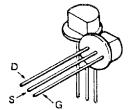
(B); 2SC1815, 2SC1923

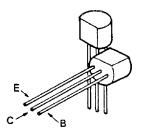
(C); 2SD526

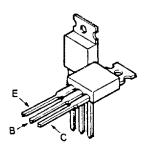
(D); 3SK45(B)-9

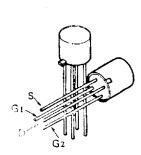












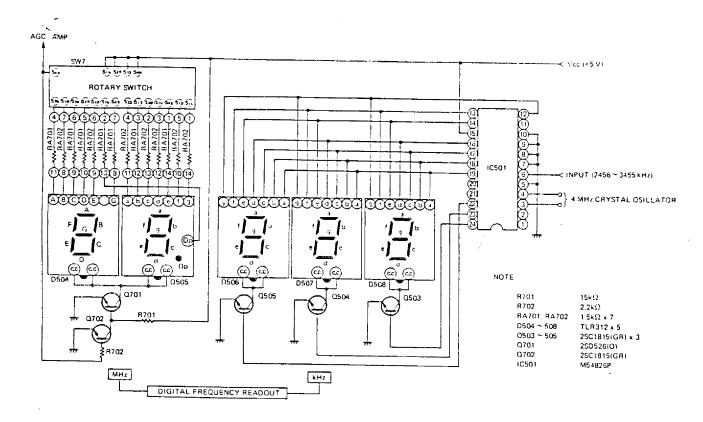
SEMICONDUCTOR VOLTAGE READINGS

Ref	No	Value (V DC)	Rad	. No.	Value (V DC)	Ret.	No.	Value (V DC)
0201	Gi G2 D S	1.8 5.3 3.2 1.85	Q303	B C E	4.6 8.0 3.9	Q504	B C E	2.3 0.3 0
Q202	G D S	0 9.2 1.8	Q304	B C E	2.2 8.4 1.5	Q505	B C E	0.15 0.3 0
0203	G D S	0 9.2 1.8	Q305	8 C E	0.65 0 0	Q 506	B C E	0.4 1.65 0
Q204	B C E	*[0.65 0 0	0306	B C E	2.3 3.8 1.8	Q507	C B	1.0 3.8 0.65
Q205	G1 G2 D	0 4.4 8.9	0307	G D S	0 5.6 0.6	0508	B C E	0.75 0 0
0206	G1 G2	0.6 0 0	G308	D S	5.6 0.75		1 2 3	1.4 1.8 0.2
0206	D S	9.3	Q309	7	Not used]	4 5	0.65
O207	B C	0.23 1.8 9.2	0310	E E E	0.2 8.5 0		6 7 8	1.65
0208	B C	1.05 2.1 9.1	0.311	G D S	0 4.5 1.2		9 10 11	0 0 0.15
0209	<u>Е</u> В С	1.35 2.2 9.5	0312	B C E	1.6 2.6 0.95	IC501	12 13 14 15	0.9 0.9 0.9 5.0
	E	1.5	0242	В	2.3	1	16 17	0.9
Q210 Q211		Not used	Q313	C E	4.5 1.65		18	0.9 0.9
0212		Not used Not used	0244	8 C	4.5		. 19	0.9 0.5
Q213	B C	*** 0.65 0 0 8.5	0314	E 8	8.9 3.9 10.3		21 22 23	0,5 0,15 0,15
Q214	B C	2.2 9.2	Q315	C E	13.8 9.6		1 2	1.65 1.65
	E 1	1.6	Q316	C E	0.6 0 0		3 4 5	5.0 1.5 1.65
1C201	2 3 4 5 6 7 8 9	8.75 8.75 4.35 2.8 0 — 2.8 4.3	IC301	1 2 3 4 5 6 7 8	1.75 13.5 13.0 7.9 6.6 13.8 0.24 1.9	IC502	6 7 8 9 10 11 12	5.0 4.5 5.0 1.6 0.75 5.0 1.6 1.6
	11 12 13 14	4,3 4,35 8,75	Q401	B C E	1.5 8.4 1.3	Q701	14 B C	0 0.65 *** 3.5 0
Q301	Gı G2	1,7 2,7	Q501	B C E	1.0 0.5 0	Q702	B C	0.65 0 0 0.65
	D S Gı	9.3 2.3 0	Q502	В С Е	5.6 13.8 5.0		E	L0 0
Q302	G2 D S	0.86 8.5 0.5	Ω503	B C E	0.15 0.3 0			

NOTE

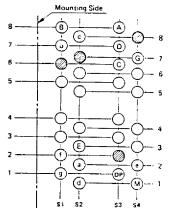
- 1. DC voltage measured with DC VTVM (input impedance = more than 100 k Ω) under the following conditions ; RF GAIN: Maximum
- No input signal 2. (*) The voltage readings are under the condition that PRESELECTOR BAND switch is set to ranges of $0.01 \sim 1.6$ MHz.
- (**) The voltage readings of IC501 are under the condition of kHz readout "000".
 (***) The voltage readings are under the condition that MHz readout is blanked.

SCHEMATIC DIAGRAM OF DIGITAL FREQUENCY READOUT SECTION

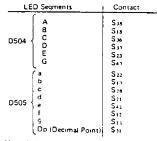


ROTARY SWITCH SW7 (FOR MHz READ OUT)

1. TERMINAL DESIGNATIONS (Soldering Side View)



2. CONTACT FOR LED SEGMENTS

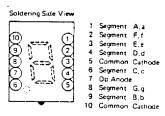


While the rotary switch steps UP/DOWN to next contact. S41 contacts and it not only disables LEDs ID504, 505) but mute the unit.

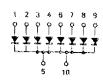
Common (+5 V) O -- Not used

LEDs (D504~508)

1. LEAD IDENTIFICATION



2. EQUIVALENT CIRCUIT



3. FREQUENCY READOUT POSITIONAL WEIGHT

10 MHz ---- 0504 1 MHz --- 0505 100 kHz --- D506 10 kHz --- 0507 1 kHz ~~~ D508

FREQUENCY COUNTER ICSO1 LEAD IDENTIFICATION

•			
UP/DOWN COUNT	MODE	DOWN	COUNT

Not used Not used

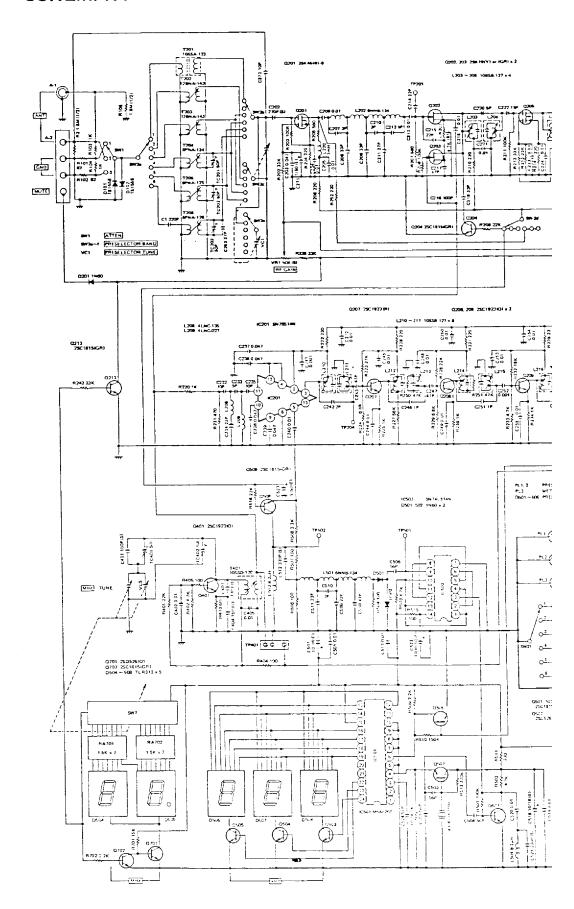
4 MHz Crystal Oscillator Ground INPUT (2456 ~ 3455 kHz)

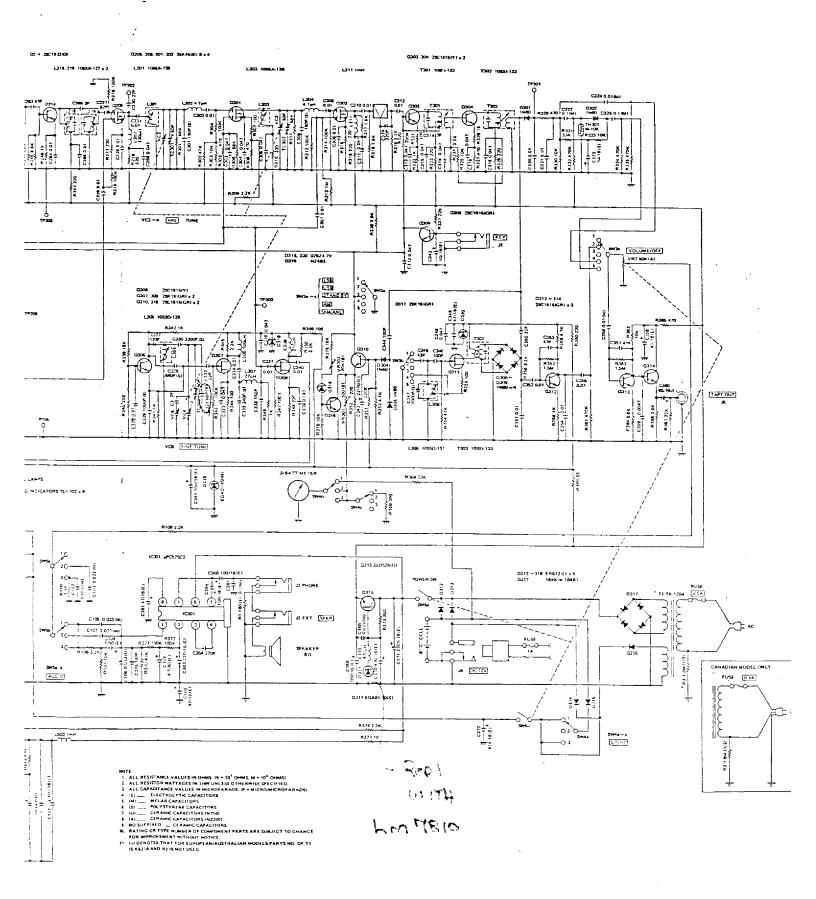
Count Mode/Preset Selection Input S1: Low Count Mode/Preset Selection Input S2: Low Count Mode/Preset Selection Input S3: Low Count Mode/Preset Selection Input S3: Low Count Mode/Preset Selection Input S4: Low Not used Not used
Segment Output: g
Segment Output: f
Segment Output: e

Vcc (+5 V)
Segment Output; d
Segment Output; c 18

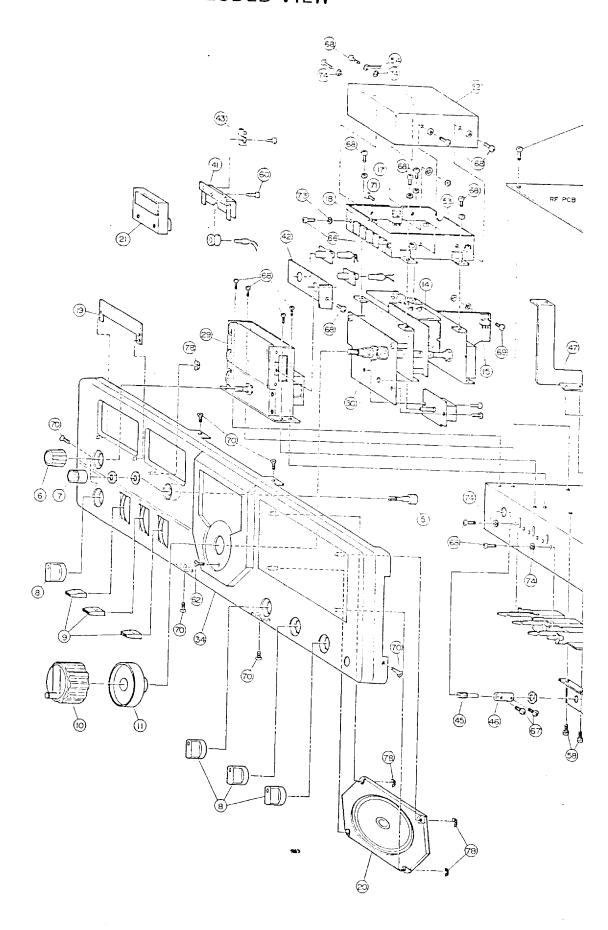
Segment Output; b Segment Output; a Not used Not used 22 Digital Output, D506 23 Digital Output; D507 24 Digital Output; D508

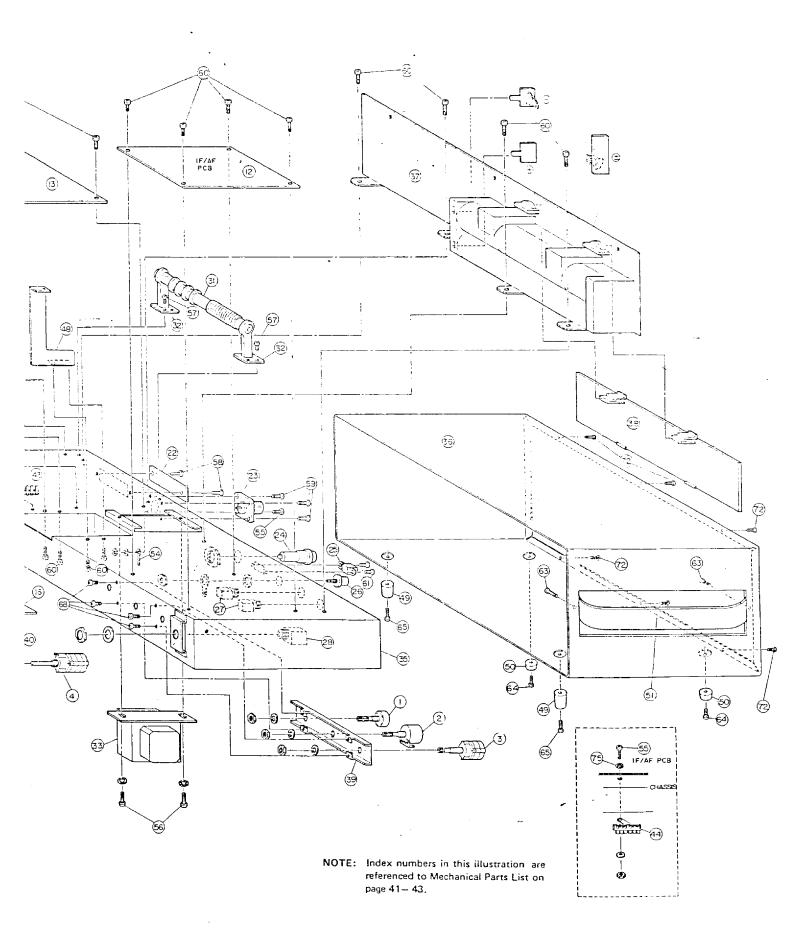
SCHEMATIC DIAGRAM





DISASSEMBLY/EXPLODED VIEW





NO. 1136

Radio shack Service Information Bulletin

Catalog No.: 20-204

Description: DX-300 Communications Receiver

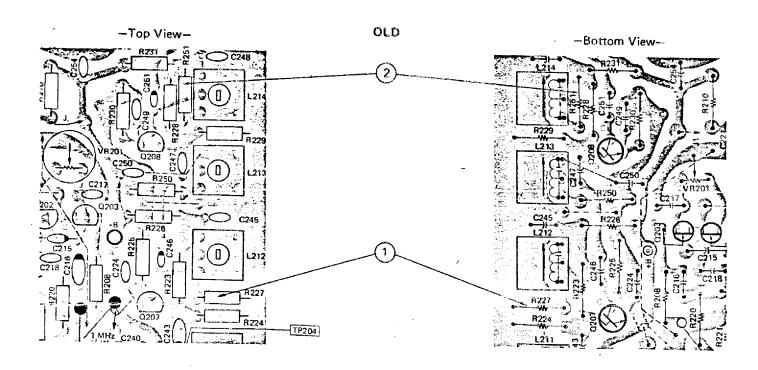
NOTE: First shipments of the DX 300 showed various problems with spurious responses on the bands and improper centering of BFO (for SSB reception). The manufacturer has instituted a number of changes which help to reduce or eliminate such "birdies" and "spurs", plus the BFO setting. This addendum covers those and other changes.

Modification for improvement of 2nd Local Oscillator Circuit (From Date Code 3A9)

See Figure 1.

- 1. Resistor R227 location has been changed and PC pattern is cut as marked.
- 2. Resistor R251 location has been changed and PC pattern is cut as marked.

You may want to make both of these changes on all units brought in for service/repair which have a date code prior to 3A9. Be sure to realign the 2nd Local Oscillator as stated on page 17 of Service Manual since above changes affect frequencies of L212 and L214.



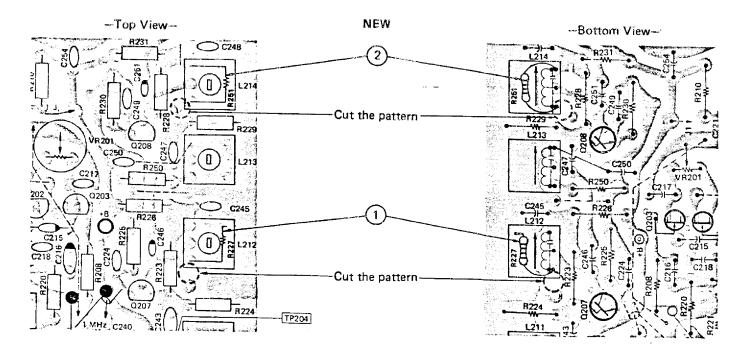
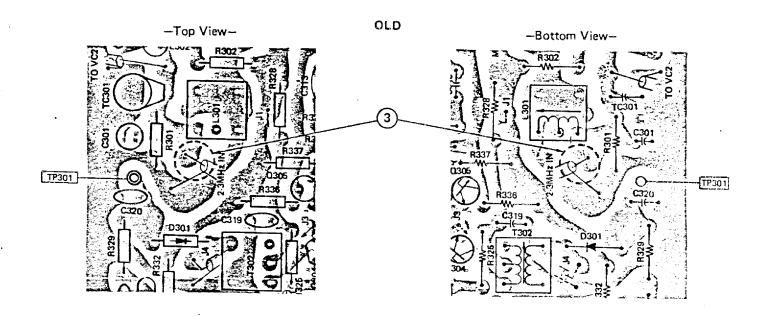


Figure 1: RF P.C.BOARD PARTS LOCATION

3. At an early stage of production, coaxial lead for 2nd IF input to L301 was soldered as shown in "old" of Figure 2. If a unit with such wiring is brought in for repair/service, change the wiring as shown in "new" rigure.



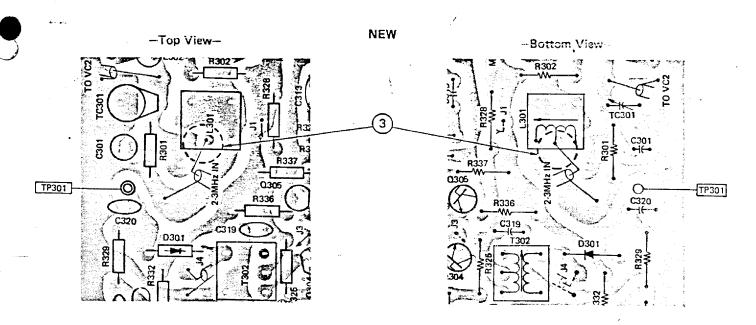


Figure 2: IF/AF P.C.BOARD PARTS LOCATION

Modification of BFO (From Date Code 3A9)

C345 was changed from 43pF (NP0) to 27pF (NP0). Units which have a date code prior to 3A9 should have this change made. After the change, realign BFO as stated on page 21 of Service Manual.

Modification for improvement of 2nd IF circuit (From date code 4A9)

To avoid oscillation when the kHz readout is indicating below "050".

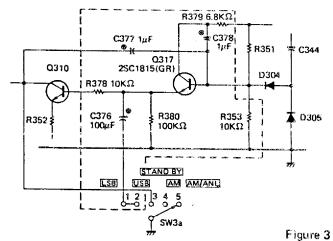
R301 was changed from 56 K ohms to 33 K ohms. Units which have a date code prior to 4A9 should be this change made.

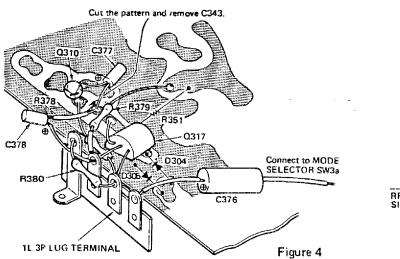
Modification of AGC time constant for improvement for SSB reception (From Date Code 3A9)

To lengthen the release time of AGC when receiving strong SSB signals, make the following changes. See Figures 3 and 4.

- 1. Delete C343 22µF electrolytic capacitor.
- 2. Change R353 from $4.7k\Omega$ to $10k\Omega$.
- 3. Add following parts.

Q317	Transistor 2SC1815(GF	₹)	
C376	Electrolytic Capacitor	100μF/16WV	CE02W1C101C
C377	Electrolytic Capacitor	1μF/50WV	CE04W1H010
C378	Electrolytic Capacitor	1μF/50WV	CE04W1H010
R378	Carbon Film Resistor	10kΩ. 1/4W ±5%	R25-103J
R379	Carbon Film Resistor	$6.8k\Omega$ 1/4W ±5%	R25-682J
R380	Carbon Film Resistor	100kΩ 1/4W ±5%	R25-104J
	Lug Terminal		1L3P







FROM C376

RF GAIN ORG

BACK VIEW OF WAFER A

RADIO SHACK A DIVISION OF TANDY CORPORATION

U.S.A.: FORT WORTH, TEXAS 76102 CANADA: BARRIE, ONTARIO L4M 4W5

TANDY CORPORATION

AUSTRALIA

BELGIUM

U.K.