MAINTENANCE MANUAL

TRANSMITTER/RECEIVER/SYNTHESIZER BOARD FOR CMX-8630 TWO-WAY MOBILE RADIOS

TABLE OF CONTENTS

DESCRIPTION

The transmitter/receiver synthesizer (TRS) board for the CMX-8630 two-way mobile radio consists of the following circuits:

- A frequency synthesizer for generating the transmitter output frequencies and the receiver 1st IF injection frequencies
- The transmitter exciter, driver, PA and power control stages
- The receiver front end, IF and audio stages
- Voltage regulators
- System interface connectors for power on-off and volume controls, battery, microphone, TQ2310 programmer, and an optional external speaker

Operation of the TRS board is controlled by the microprocessor circuitry located on the logic board.

The TRS board is mounted at the bottom of the "U" frame chassis, under the logic board. See the Table of Contents for a block diagram of the complete radio.

Simplified diagrams and lead identification information for the Integrated Circuit modules are contained on the Service Sheets listed in the Table of Contents.

CIRCUIT ANALYSIS

POWER DISTRIBUTION

Power connections to the radio are made to system connector J23. Power from the battery (+13.6 Volts nominal) is connected to J23-11. The battery input is filtered by C201, C202, C203, L51, L52 and surge protector Z31, and is applied to relay contact K2-4. Reverse polarity protection is provided by diode CR31.

A continuous 13.6 Volt supply is taken from the junction of L51 and L52, and applied to the following circuits:

- o Logic board reset/memory stage and 5-Volt regulator (A16)
- o Driver module final amplifier (A11)
- o PA collector bias (Q12)

The 13.6 Volts from the ignition switch is applied to J23-1. This input is filtered by C208 and C209, and applied to the power on-off switch on the control panel. Reverse polarity protection is provided by CR32.

Overvoltage protector (A27) protects SW +13.6 V from damage due to over supply voltage.

Pressing in the power-on switch energizes power relay K2. Energizing the relay applies the switched 13.6 Volts to the following:

- 8-volt regulator
- TRS board 5-volt, 8-volt and 9-volt regulators A1-A4 and A10
- PA Driver module A11
- Antenna relay K1

FREQUENCY SYNTHESIZER

The frequency synthesizer circuit consists of reference oscillator module Z1, phase-lock loop (PLL) module A5, dual modulus pre-scaler A6, charge pump Q2 and Q3, voltage-controlled oscillator (VCO) Z2, a loop filter and associated circuitry. A Block Diagram of the synthesizer circuitry is shown in Figure 1.

Reference Oscillator Module

Reference oscillator Z1 operates at a frequency of 12.8 MHz. The oscillator is temperature compensated to provide a frequency stability of 2.5 PPM. Voltage for the oscillator is supplied by 5-Volt regulator A2. The oscillator output is applied to PLL module A5 on pin 17.

PLL Module

PLL module A5 consists of a 1024-divider, a phase detector, and a divide-by-N counter. (See Figure 2).

When the PTT switch is pressed (transmit) or released (receive), new frequency data is received on the clock, data, and enable lines and the synthesizer immediately begins generating the new RF frequency. This serial data determines the VCO frequency by setting the internal dividers. The reference oscillator frequency applied to the programmable divide-by-N counter is divided down to some lower frequency as indicated by the input data and applied to the internal phase detector.

The phase detector compares this signal with the output of the internal divide-by-N counter. The output of the divide-by-N counter is a function of the RF frequency which is divided down by the dual modulus prescaler and the divide-by-N counter. When operating on the correct frequency, the inputs to the phase detector are identical and the output voltage of the phase detector is constant. Under these conditions, the VCO is stabilized or locked on frequency.

If the compared frequencies (phases) differ, an error voltage is generated and applied to the VCO through the frequency acquisition circuit, causing the phase-lock loop to acquire the new frequency. The SYNTH UNLOCK line provides the PLL lock status information to the microcomputer on the logic board. When the PLL is out of lock, the SYNTH UNLOCK lead goes low. When locked on frequency, the lead goes high.

VCO Module

The output of the PLL module at A5-12 and A5-13 are applied to a charge pump consisting of Q2 and Q3. The transistors "sum" the two outputs of A5 and apply the PLL output to a loop filter.

The loop filter consists of C26, C27, C28, R17 and R18, and is fed back from the output (collector) of buffer amplifier Q4 through R68 and C19 to the dual modulus pre-scaler. The filter reduces any spurious output from the phase detector, and controls the loop stability. The filter output is applied to the voltage control input (VC) of VCO Z2.

The charge pump output voltage changes with frequency, changing the VCO output frequency approximately 5 MHz per volt. The charge pump output is metered at TP1 with typical readings of 2.0 to 6.0 Volts.

TX AUDIO from the logic board is coupled through MOD ADJUST R64 to the VCO.

Band switching transistor Q6 switches the VCO output from the 806-825 MHz range to the 851-870 MHz range for repeater Talk-Around applications. The logic board output at J3-6 (BAND SW) is applied to the base of Q6. Turning Q6 on (J3-6 output high) applies a low to the VCO, switching the VCO output to the desired frequency range. Turning Q6 off applies a high to the VCO control input, switching the VCO output to the second frequency range.

The modulated output of the VCO is coupled through an attenuator network and an impedance-matching circuit to the base of RF buffer-amplifier Q4. The attenuator network consists of R32, R33 and R34. The matching circuit consists of C30, L3 and R19. Bias voltage for the buffer stage is metered at TP3.

The buffer amplifier output is applied to a hybrid RF "splitter" (L5, C36 and T1) to provide drive for transmitter exciter module A9 and to receiver injection amplifier Q9.

TRANSMITTER

The transmitter consists of exciter module A9, driver module A11, PA transistor Q12, isolator Z15, a low-pass filter, and power control circuit. Supply voltage for the exciter is provided by a switched Tx 8-Volt regulator.

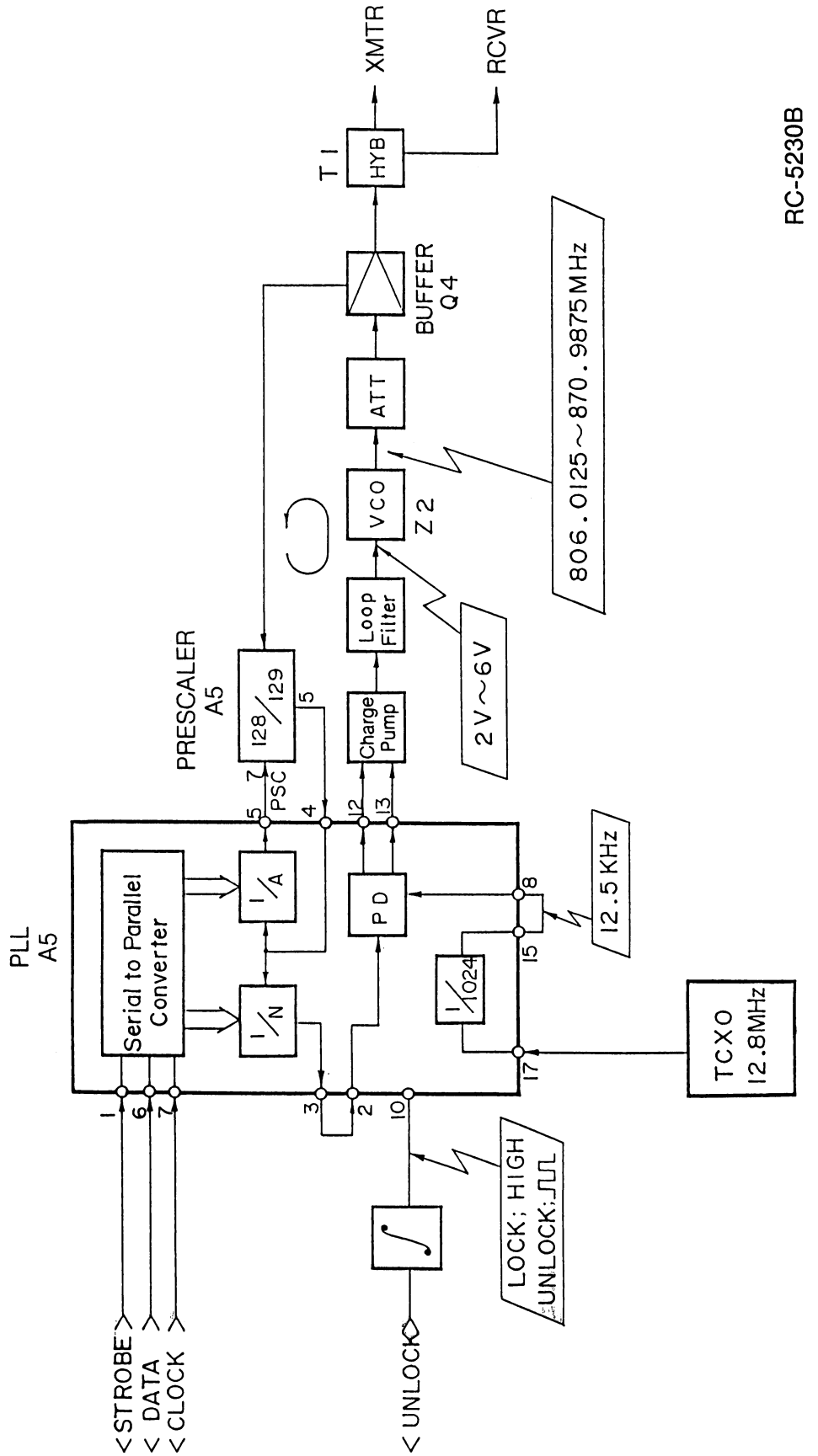

Figure 1 - Synthesizer Block Diagram

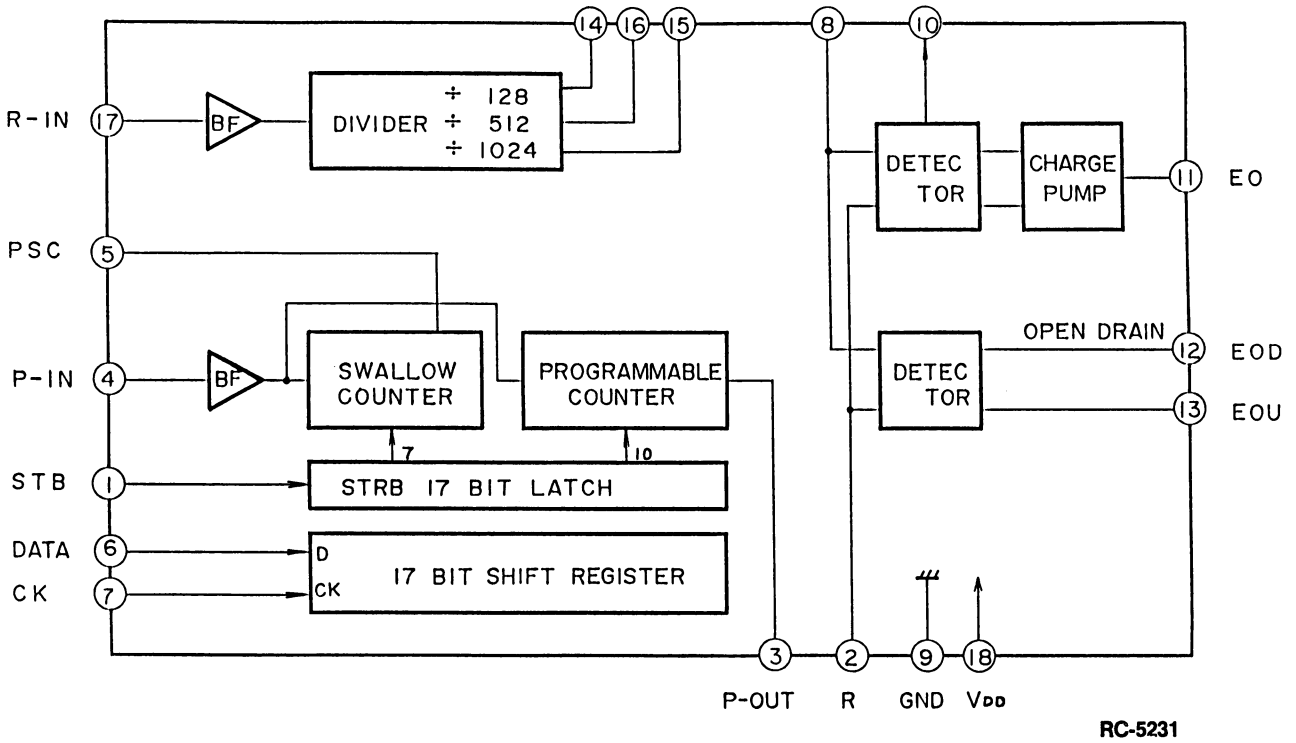

Figure 2 - PLL Module A5 Simplified Diagram

8-Volt Regulator

The 8-Volt regulator operates from the 13.6 volt ignition switch voltage. The regulator circuit consists of 8-Volt regulator A10 and Tx 8-Volt switches Q7 and Q8. Switches Q7 and Q8 are controlled by the D-PTT lead from the logic board. (See Figure 3).

When the D-PTT lead is activated (PTT keyed), Q8 turns on. This turns on transistor switch Q7 and applies the regulator output at A10-3 to exciter module A9.

TP5 is used to meter the regulator output (typically 7.6 Volts).

Exciter

Applying the Tx 8-Volts to the exciter forward-biases diode CR5, allowing the VCO output from the RF splitter circuit to be applied to exciter input A9-1. The exciter input is coupled through an attenuator circuit (R24, R25 and R26) which provides approximately 3 dB attenuation. The RF input is amplified to provide 400 milliwatts drive to driver module A11.

30-Watt PA

The 30-Watt PA uses driver module A11 and PA transistor Q12 to provide the 30-Watt RF power output.

Driver module A11 contains three broadband, fixed-tuned amplifiers that amplify the 400 milliwatt exciter output to provide 15 Watts drive to the PA. The driver module is supplied by both the continuous and switched 13.6 Volts. The switched 13.6 Volts supply the 1st and 2nd amplifiers, and the continuous 13.6 Volts supplies the final driver stage. Final amplifier supply voltage is metered at TP12.

The 15-Watt driver output is matched to the emitter of PA transistor Q12 by C85, C87, C88 and the 50-ohm stripline (part of printed board). L28 provides an isolated DC return path for the emitter of Q12, which operates as a fixed-tuned, Class C amplifier. The continuous 13.6-Volt supply is applied to the collector of Q12 through a collector feed network consisting of L29, L30, L34 and associated circuitry. The 50-ohm PA output is provided by the 50-ohm stripline, C89, C90 and C95. C96 provides DC blocking in the output circuit. The PA collector voltage is metered at TP14.

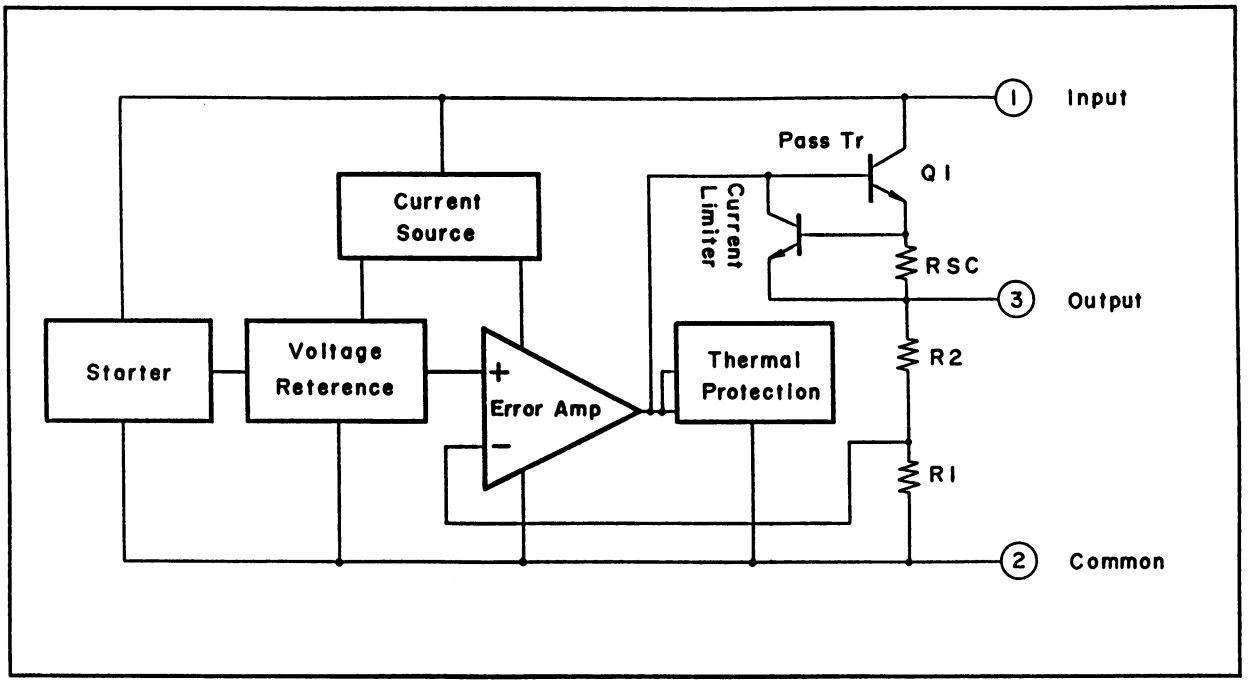

Figure 3 - Simplified Regulator Circuit

The PA output is coupled through isolator module Z15 and a low-pass filter (L31-L33, C123-C125) to antenna relay K1.

Antenna Relay

Antenna relay K1 is controlled by the delayed PTT output of the logic board. When the D-PTT output goes high, Q26 turns on. Turning on Q26 turns off Q18, allowing Q17 to conduct and energize the relay.

PA Control Circuits

The power control circuit protects the transmitter PA from damage due to excessive output power, reflected power or temperature.

The output power control circuit allows the RF output power to be set at the rated output by R87 and R107. Resistor R107 is adjustable only in the 806-825 MHz range.

If the output power of the PA increases, more RF power is rectified by CR11 and applied to A12-5. This causes the output at A12-1 to decrease, causing Q14 to conduct less. Q14 conducting less increases the base voltage on PNP pass transistor Q15, causing it to conduct less. This results in less voltage being applied to the first amplifier stage in the driver/PA stage, reducing the power output of the driver/PA in proportion to the increase in output power detected by the circuit.

To protect the PA against badly mismatched loads, a reverse power (VSWR) detector consisting of isolator Z15, diode CR12, transistor Q13, A12, Q14 and pass transistor Q15 detect reverse (reflected) power. When sufficient power is detected by CR12 to cause Q13 to conduct, this reduces the voltage at the collector of Q15, causing the driver/PA module to produce less output power, protecting the PA. The reverse power level is set by R83.

The PA is protected against temperature increases by thermal detector Z13, A12, Q14 and Q15.

As the temperature increases, the resistance to ground of thermal detector Z13 decreases. This causes Q15 to conduct less, causing a decrease in the PA output until the temperature is reduced. The temperature level is set by R97.

Instructions for setting R83, R87 and R97 are provided in the Transmitter Alignment Procedure in the Service Section of this Maintenance Manual.

RECEIVER

The receiver is a dual conversion, superheterodyne FM receiver for operation in the 851 to 870 MHz range. A regulated 9-Volt supply is used for all receiver stages except for audio PA module A26. The audio PA module operates off of the 13.6 Volt switched supply.

The receiver uses intermediate frequencies of 45.000 MHz and 455 kHz. Adjacent channel selectivity is obtained by using two bandpass filters: a 45.000 MHz crystal filter and a 455 kHz ceramic filter.

All receiver circuitry is mounted on the transmitter/receiver/synthesizer (TRS) board. The receiver consists of:

- Receiver Front End and First Mixer
- 45.000 MHz First IF Circuitry
- Second Oscillator
- 455 kHz Second IF Circuitry with FM Detector
- Audio PA Circuit

All squelch functions are performed by the logic board circuitry.

Receiver Front End

RF from the antenna is coupled through dielectric filter (FL2) to the base of RF amplifier Q21. Q21 is a Class A, common emitter amplifier that provides a gain of approximately 10 dB to 12 dB. The amplified output is coupled through dielectric filter FL3 to the first mixer. The two dielectric filters provide the front end selectivity.

First Mixer

The first mixer is a double-balanced diode mixer that converts a signal in the 851 MHz - 870 MHz range to the 45.000 MHz first IF frequency.

RF from the front end dielectric filter is coupled directly to the mixer. The 45 MHz injection input from the synthesizer is coupled through an attenuator (R44, R45 and R46) to 1st mixer Z21. The injection input port is isolated from the RF input and IF output by a balancing transformer in the mixer.

The first mixer output is coupled through a tuned circuit (L42 and C139) that matches the mixer output to gate of first IF amplifier Q22.

First IF Amplifier and Filter

IF Amplifier Q22 is a single gate FET that provides good intermodulation and desensitization characteristics. The amplifier also acts as a buffer between the variable balanced mixer output impedance and the crystal filter.

The IF output signal at the drain of Q22 is coupled through a tuned circuit (L43 and C143) that sets the impedance to crystal filter FL5.

FL5 is a 45.000 MHz, four-pole crystal filter that provides a minimum of 25 dB adjacent channel rejection. The filter output is coupled through a tuned circuit (L44 and C146) that matches the output impedance of FL5 to the second IF amplifier.

Second IF AMPL

The output of filter FL5 is applied to base of 2nd IF Amplifier Q23 and the output is taken from the collector. The amplifier provides approximately 20 dB of IF gain. The output of Q23 is coupled through C150 to the input of 2nd Mixer/Detector A21.

Second Osc/Mixer and Detector

The second oscillator, mixer and detector circuit consists of A21 and associated circuitry (see Figure 4). The 2nd oscillator operates at 44.545 MHz. The oscillator crystal is Y1. The 45.000 MHz input frequency is mixed with the oscillator frequency to provide the second IF frequency of 455 kHz. L46 is used to set the 2nd oscillator frequency. The 2nd oscillator circuit can be metered at TP22.

The output of the 2nd mixer at A21-5 is coupled through ceramic filter FL6 which provides the 455 kHz selectivity. The filter output is then applied to A21-7.

Following filter FL6 is a 455 kHz limiter and a quadrature FM detector. L47 is used to tune the detector output. The circuit is metered at TP25 (RSSI). The detector output is applied to amplifier A23.

Audio Circuits

The output at A23-2 is coupled through C168 to the logic board where the audio is filtered, amplified and then applied to the TRS board (RX AUDIO) and to active high pass filters A23 and A25. R165 and C170 in the feedback loop of A23 provide the receiver de-emphasis. The filter output at A25-8 is then coupled through the volume control on the control panel and through a bilateral switch to audio PA stage A26. Audio amplifier IC A26 drives the speaker at the audio level set by the VOLUME control. The feedback loop containing R190, R191 and C179 determines the amplifier closed loop gain.

Rx Mute Circuit

Receiver muting is controlled by the Rx Mute output from the logic board. A high output from the RX Mute lead turns on transistor Q30. Turning on Q30 switches bilateral switch A28, opening the audio path from the volume control, muting the receiver.

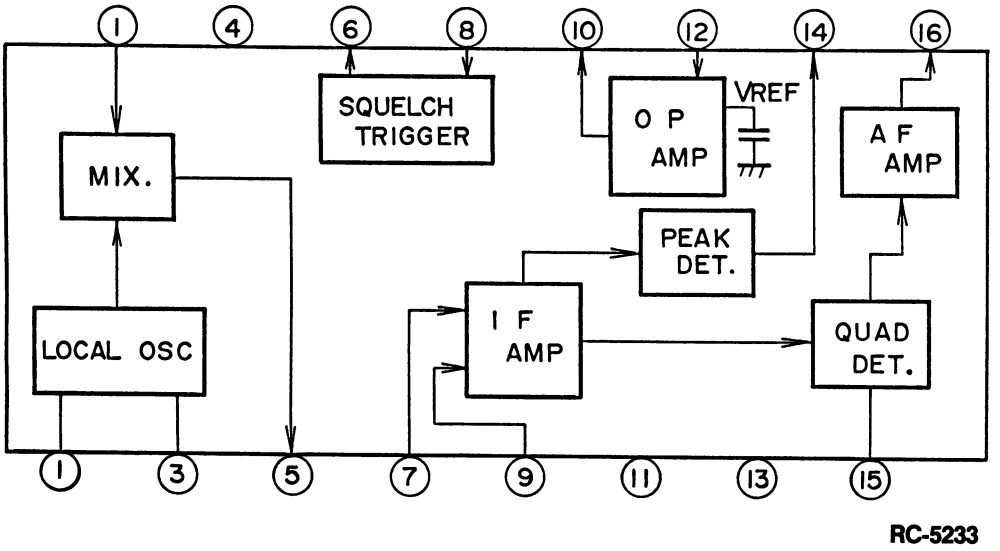

Figure 4 - Simplified Second Osc/Mixer and Detector

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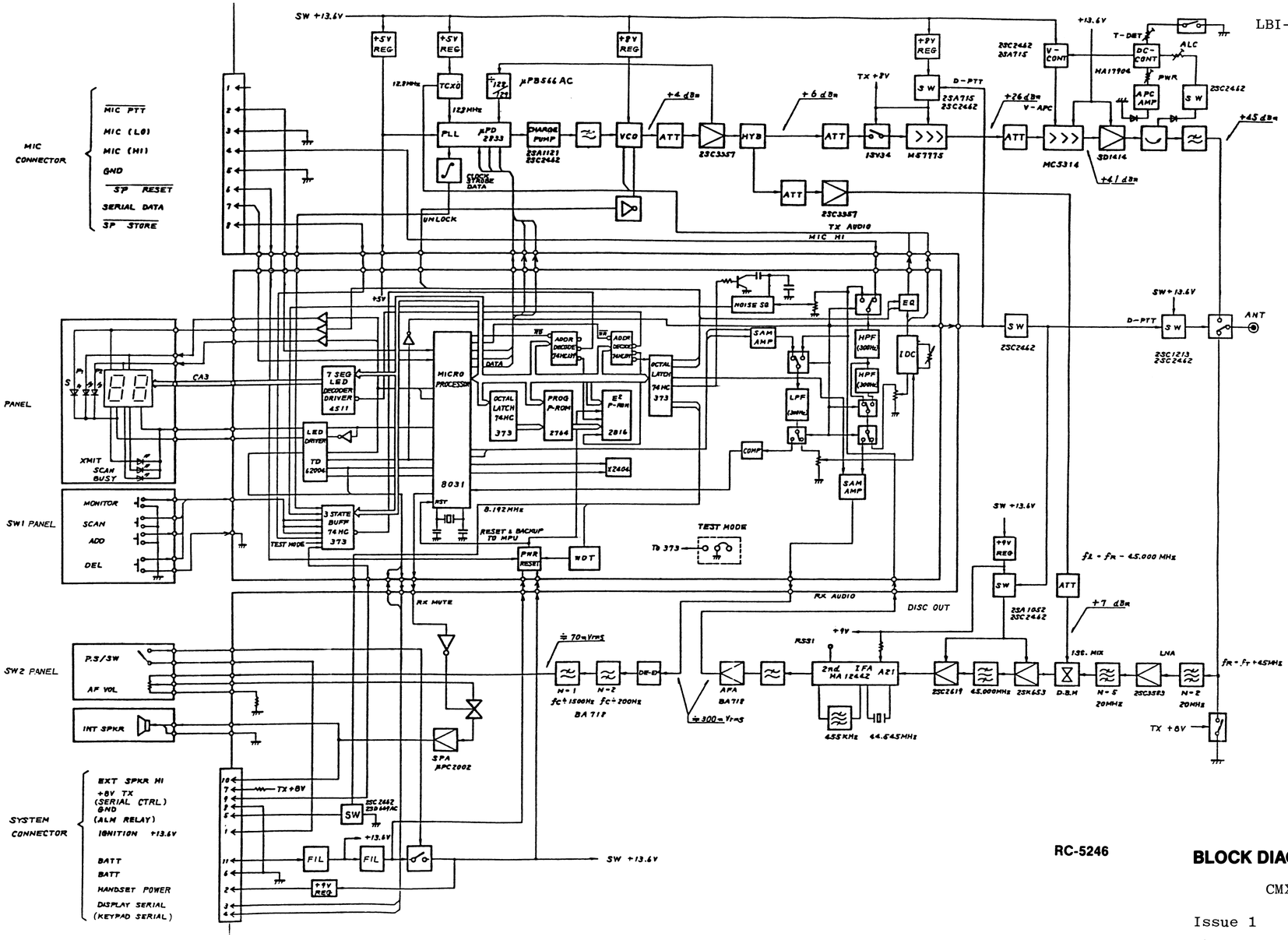


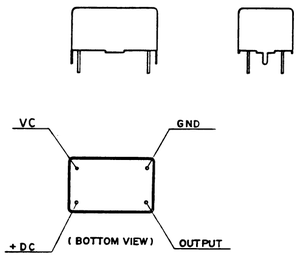
RC-5246

BLOCK DIAGRAM

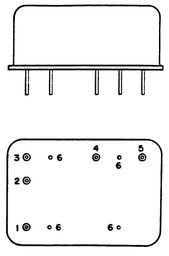
CMX-8630

OSCILLATORS

12.8MHz TCXO (Z1)



VCO (KLH3557)

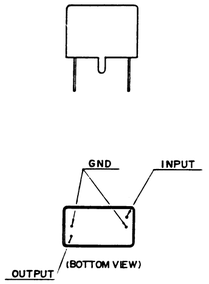


(BOTTOM VIEW)

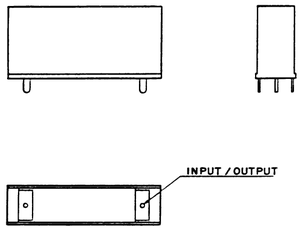
PIN
1. CONTROL VOLTAGE
2. MOD INPUT
3. BAND SWITCH
4. Vcc
5. OUTPUT
6. GND

FILTERS

4-POLE QUARTZ FILTER
FL5

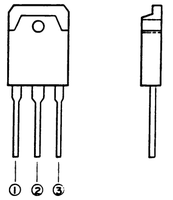


DIELECTRIC FILTER
FL3



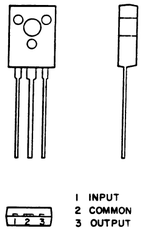
VOLTAGE REGULATORS

5-VOLT REGULATOR
A1



1 GND
2 OUTPUT
3 INPUT

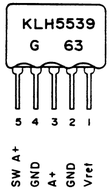
5- & 9-VOLT REGULATOR
A2,A3,A10



1 INPUT
2 COMMON
3 OUTPUT

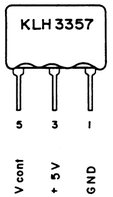
OVERVOLTAGE PROTECTOR
A27

I.C (O,V,P) (KLH5539)

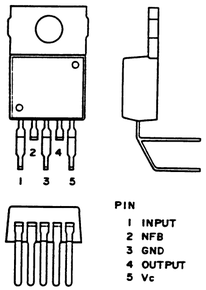


VOLTAGE CONTROL
Z3

V-CONT (Z3 : KLH3557)

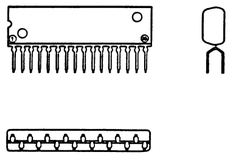


AUDIO PA
A26

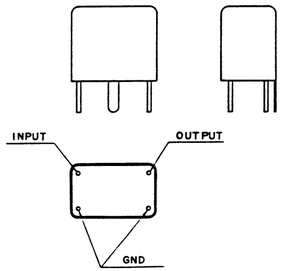


PIN
1 INPUT
2 NFB
3 GND
4 OUTPUT
5 Vc

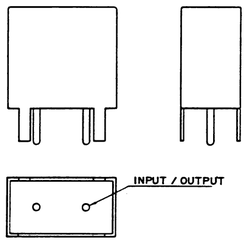
MIXER-IF-DETECTOR
A21



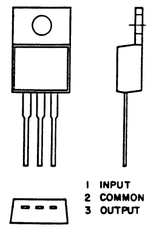
CERAMIC FILTER
FL6



DIELECTRIC FILTER
FL2

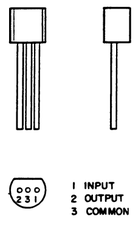


9-VOLT REGULATOR
A4



1 INPUT
2 COMMON
3 OUTPUT

9-VOLT REGULATOR
A31



1 INPUT
2 OUTPUT
3 COMMON

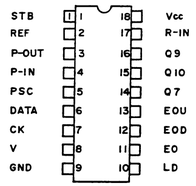
RC5235A

SERVICE SHEET

Integrated Circuits

PLL MODULE
A5

PIN CONFIGURATION



(TOP VIEW)

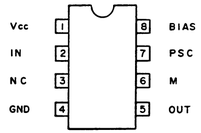
PLL
A5

PIN ASSIGNMENT

PIN NO.	NAME	FUNCTION
1	STB	STROBE INPUT PIN FOR 17 BITS LATCH TO SPECIFY "N" VALUE
2	REF	REFERENCE SIGNAL INPUT
3	P-OUT	OUTPUT PIN OF PROGRAMMABLE DIVIDER
4	P-IN	INPUT PIN OF PROGRAMMABLE DIVIDER
5	PSC	*PRESCALER CONTROL OUTPUT CONTINOUS
6	DATA	DATA INPUT PIN OF 17 BIT SHIFT RESISTOR
7	CK	CLICK INPUT PIN OF 17 BIT SHIFT RESISTOR
8	V	VARIABLE INPUT OF PHASE COMPARATOR.
9	GND	GND
10	LD	*LOCK DETECTOR, HIGH =LOCK
11	EO	PHASE COMPARATOR OUTPUT
12	EOD	* PHASE COMPARATOR OUTPUT
13	EOU	* PHASE COMPARATOR OUTPUT
14	Q7	REF. FREQUENCY DIVIDER OUTPUT ÷ 128
15	Q10	REF. FREQUENCY DIVIDER OUTPUT ÷ 1024
16	Q9	REF. FREQUENCY DIVIDER OUTPUT ÷ 512
17	R-IN	RF. FREQUENCY DIVIDER OUTPUT 1V P-P
18	VDD	SUPPLY VOLTAGE (+5V)

* PIN NO. 5 PRESCALER CONTROL OUTPUT, N = HIGH, (N+1)=LOW
* PIN NO. 10 LOCK DETECTOR, HIGH OUTPUT, LOCKED, PULSED OUTPUT, NOT LOCKED
* PIN NO. 12 PHASE COMPARATOR OUTPUT FOR EXTERNAL CHANGE PUMP, NCH OPEN DRAIN
* PIN NO. 13 PHASE COMPARATOR OUTPUT FOR EXTERNAL CHARGE PUMP, CMOS OUTPUT.

DUAL MODULUS PRESCALER
A6

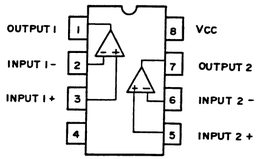


(TOP VIEW)

PIN

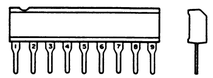
1	Vcc	POWER SUPPLY
2	IN	SIGNAL INPUT
3	–	NO CONNECTION
4	GND	GROUND
5	OUT	SIGNAL OUT
6	M	DIVISION RADIO CONTROL (Vcc 64/65, OPEN 128/129)
7	PSC	MODULUS CONTROL INPUT
8	BIAS	REFERENCE BIAS INPUT

OP-AMP
A12

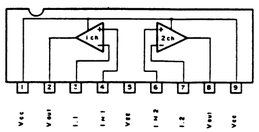


TOP VIEW

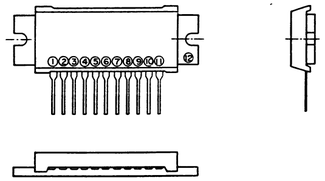
OP-AMP (BA718)
A23/A25



BA718 BLOCK DIAGRAM



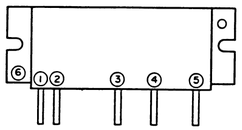
EXCITER
A9



PIN

①	INPUT TERMINAL
②~④	GND
⑤	1st STAGE DC SUPPLY TERMINAL
⑥~⑧	GND
⑨	FINAL STAGE DC SUPPLY TERMINAL
⑩	GND
⑪	OUTPUT TERMINAL
⑫	FIN (GND)

DRIVER
A11



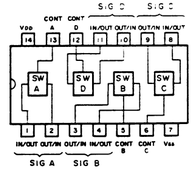
PIN

①	INPUT TERMINAL
②	1st STAGE DC SUPPLY TERMINAL
③	2nd STAGE DC SUPPLY TERMINAL
④	FINAL STAGE DC SUPPLY TERMINAL
⑤	OUTPUT TERMINAL
⑥	FIN (GROUND)

RC5236A

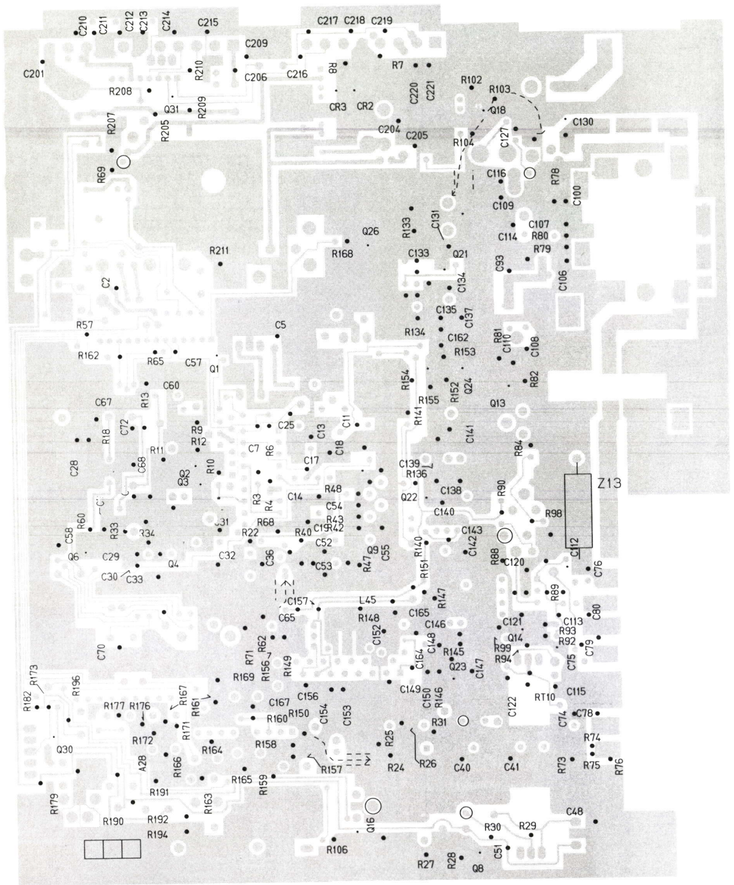
QUAD BILATERAL SWITCH (μPD4066BG)
A26

PIN CONFIGRATION/ BLOCK DIAGRAM

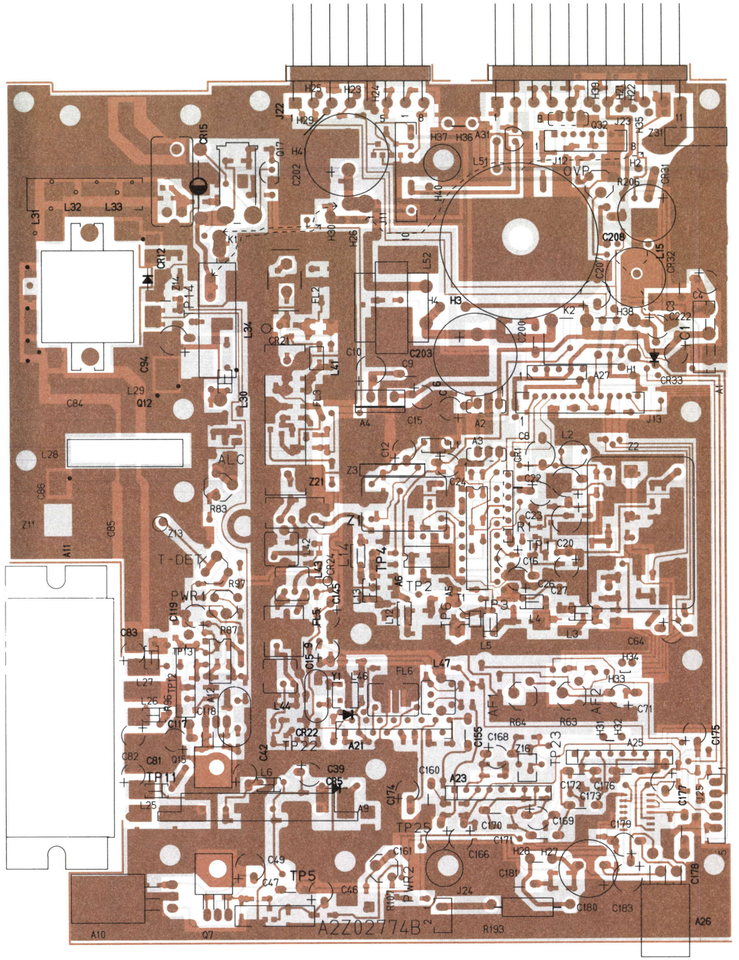


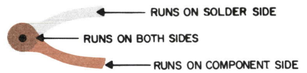
(TOP VIEW)

SOLDER SIDE



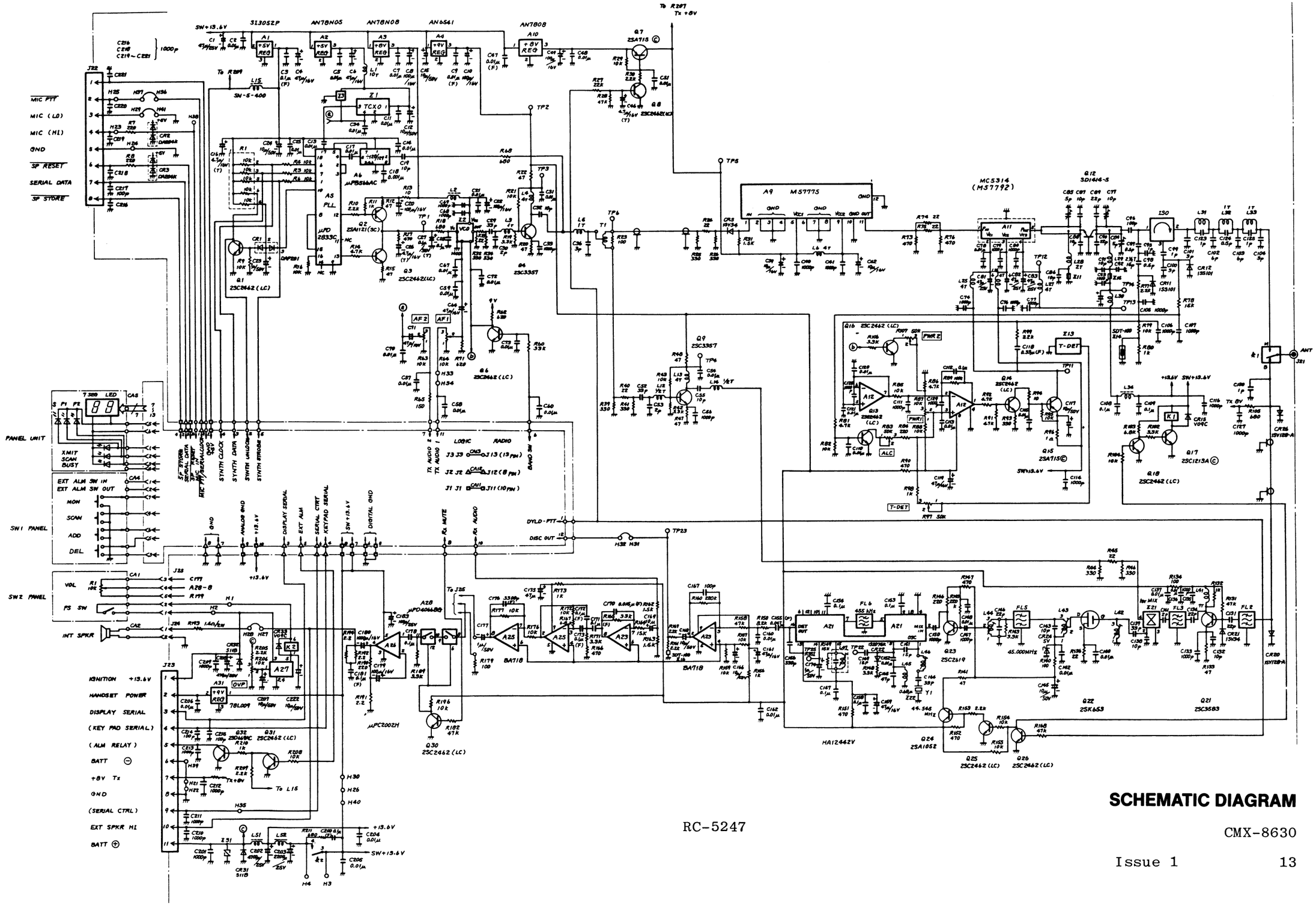
COMPONENT SIDE





OUTLINE DIAGRAM

CMX-8630



RC-5247

SCHEMATIC DIAGRAM

CMX-8630

PARTS LIST

TRANSMIT/RECEIVE/SYNTHESIZER BOARD
FOR
CMX-8630

ISSUE 1

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - INTEGRATED CIRCUITS - - - - - - -
A1	KEC/2AAE033249	VTG-REG, SI3052P, 5 VDC
A2	KEC/2AAE049146	VTG-REG, AN78N05, 5 VDC
A3	KEC/2AAE049153	VTG-REG, AN78N08, 8 VDC
A4	KEC/2AAE049047	VTG-REG, AN6541, 9 VDC
A5	KEC/2AAH025044	PLL, upD2833C
A6	KEC/2AAH025055	Dual, Modulus, N, upB566AC
A9	KEC/2AAK013070	Exciter, M57775
A10	KEC/2AAE049039	VTG-REG, AN7808, 8 VDC
A11	KEC/2AAA020059	Driver, M57792 (MC5314)
A12	KEC/2AAB005141	Dual Op-Amp, HA17904GS
A21	KEC/2AAJ008089	Mixer, Disc, HA12442V
A23	KEC/2AAB020017	Dual Op-Amp, BA718
A25	KEC/2AAB020017	Dual Op-Amp, BA718
A26	KEC/2AAJ009079	Audio PA, upC2002H
A31	KEC/2AAE049104	VTG-REG, AN78L09, 9 VDC
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C1	KEC/2CBJ001254	Electrolytic, KME25VB, 47 uF ±20%
C2	KEC/2CAK005396	Ceramic chip, 0.01 uF ±10%, 50 V
C3	KEC/2CDC001018	Film, ECQ-V1H 104JZ, 0.1 uF ±5%, 50 V
C4	KEC/2CCF001488	TANTALUM, 204M1602-476B ±20%
C5	KEC/2CAK005396	Ceramic chip, 0.01 uF ±10%, 50 V
C6	KEC/2CBJ001239	Electrolytic, KME16VB, 47 uF ±20%
C7	KEC/2CAK005396	Ceramic chip, 0.01 uF ±10%, 50 V
C8	KEC/2CBB042132	Electrolytic, KME16VB, 100 uF ±20%
C9	KEC/2CDC001067	Film, ECQ-V1H 103JZ, 0.01 uF ±5%, 50 V
C10	KEC/2CBB042132	Electrolytic, KME16VB, 100 uF ±20%
C11	KEC/2CAK005396	Ceramic chip, 0.01 uF ±10%, 50 V
C12	KEC/2CBJ001221	Electrolytic, KME50VB, 10 uF ±20%
C13 and C14	KEC/2CAK005396	Ceramic chip, 0.01 uF ±10%, 50 V
C15	KEC/2CBJ001221	Electrolytic, KME50VB, 10 uF ±20%
C16	KEC/2CCF001470	Tantalum, 204M1602-475MB ±20%
C17	KEC/2CAK005396	Ceramic chip, 0.01 uF ±10%, 50 V
C18	KEC/2CAK005388	Ceramic chip, 1000 pF ±10%, 50 V
C19	KEC/2CAK005115	Ceramic chip, 10 pF CH ±0.5 pF, 50 V
C20	KEC/2CBB042132	Electrolytic, KME16VB, 100 uF ±20%
C21	KEC/2CAK005396	Ceramic chip, 0.01 uF ±10%V 50V
C22	KEC/2CBB042132	Electrolytic, KME16VB, 100 uF ±20%
C23	KEC/2CBJ001213	Electrolytic, KME50VB, 1 uF ±20%
C24	KEC/2CBJ001221	Electrolytic, KME50VB, 10 uF ±20%
C25	KEC/2CAK005396	Ceramic chip, 0.01 uF ±10%, 50 V
C26	KEC/2CCF001470	Tantalum, 204M1602-475MB ±20%
C27	KEC/2CCF001496	Tantalum, 204M3502 104MB ±20%
C28	KEC/2CAK005503	Ceramic chip, 0.1 uF +80/-20%, 50 V
C29	KEC/2CAK005164	Ceramic chip, 33 pF CH ±5%, 50 V
C30	KEC/2CAK005040	Ceramic chip, 2 pF CK ±0.25 pF, 50 V
C31	KEC/2CAK005396	Ceramic chip, 0.01 uF ±10%, 50 V
C32	KEC/2CAK005115	Ceramic chip, 10 pF CH ±0.5 pF, 50 V
C33	KEC/2CAK005388	Ceramic chip, 1000 pF ±10%, 50 V
C34	KEC/2CAK005396	Ceramic chip, 0.01 uF ±10%, 50 V
C36	KEC/2CAK005057	Ceramic chip, 3 pF CJ ±0.25 pF, 50 V
C39	KEC/2CBB042124	Electrolytic, KME16VB, 10 uF ±20%
C40 and C41	KEC/2CAK005388	Ceramic chip, 1000 pF ±10%, 50 V
C42	KEC/2CBB042124	Electrolytic, KME16VB, 10 uF ±20%
C46	KEC/2CCF001470	Tantalum, 204M1602 475MB, 10 uF ±20%
C47	KEC/2CDC001067	Film, ECQ-V1H 103JZ, 0.01 uF ±5%, 50 V
C48	KEC/2CAK005396	Ceramic chip, 0.01 uF ±10%, 50 V
C49	KEC/2CBB042132	Electrolytic, KME16VB, 100 uF ±20%
C51	KEC/2CAK005396	Ceramic chip, 0.01 uF ±10%, 50 V
C52	KEC/2CAK005164	Ceramic chip, 33 pF CH ±5%, 50 V
C53	KEC/2CAK005040	Ceramic chip, 2 pF CK ±0.25 pF, 50 V
C54	KEC/2CAK005396	Ceramic chip, 0.01 uF ±10%, 50 V
C55	KEC/2CAK005180	Ceramic chip, 10 pF RH ±0.5 pF, 50 V
C56	KEC/2CAK005388	Ceramic chip, 1000 pF ±10%, 50 V
C57 thru C60	KEC/2CAK005396	Ceramic chip, 0.01 uF ±10%, 50V
C64	KEC/2CBJ001239	Electrolytic, KME16VB, 47 uF ±20%
C65	KEC/2CAK005396	Ceramic chip, 0.01 uF ±10%, 50 V
C67	KEC/2CAK005396	Ceramic chip, 0.01 uF ±10%, 50 V
C68 and C69	KEC/2CAK005388	Ceramic chip, 1000 pF ±10%, 50V
C70	KEC/2CAK005396	Ceramic chip, 0.01 uF ±10%, 50 V
C71	KEC/2CBB001239	Electrolytic, KME16VB, 47 uF ±20%
C72 and C73	KEC/2CAK005396	Ceramic chip, 0.01 uF ±10%, 50 V
C74 thru C76	KEC/2CAK005388	Ceramic chip, 1000 pF ±10%, 50V
C78	KEC/2CAK005396	Ceramic chip, 0.01 uF ±10%, 50 V
C79 and C80	KEC/2CAK005383	Ceramic chip, 1000 pF ±10%, 50 V
C81	KEC/2CCC032197	Tantalum, 204M2502-476M3 ±20%
C82 and C83	KEC/2CBJ001254	Electrolytic KME25VB, 47 uF ±20%
C84 and C85	KEC/2CGB001236	Variable A11-5
C86	KEC/2CAK005115	Ceramic chip, 10 pF CH ±0.5 pF, 50 V
C87 and C88	KEC/2CFA098102	Mica chip, UC232H 0100C, 10 pF ±0.25 pF, 500 V
C89 and C90	KEC/2CFA098110	Mica chip, UC232H 0220F, 22 pF ±1%, 500 V
C91	KEC/2CAK005115	Ceramic chip, 10 pF CH ±0.5 pF, 50 V
C92	KEC/2CAK005131	Ceramic chip, 15 pF CH ±0.5 pF, 50 V
C93	KEC/2CAK005388	Ceramic chip, 1000 pF ±10%, 50 V
C94	KEC/2CBB043163	Electrolytic, KME25VB, 100 uF ±20%
C95	KEC/2CAK005024	Ceramic chip 1 pF CK ±0.25 pF 50 V
C96	KEC/2CFA098250	Mica chip, UC342H1000J, 1000 pF ±1%, 500 V
C97 thru C99	KEC/2CAK005016	Ceramic chip, 0.5 pF CK ±0.25 pF, 50 V
C100	KEC/2CAK005057	Ceramic chip, 3 pF CJ ±0.25 pF, 50 V
C101	KEC/2CFA098060	Mica chip, UC232H 0030C, 3 pF ±0.25 pF, 500 V
C102 and C103	KEC/2CFA098144	Mica chip, UC232H 0060C, 6 pF ±0.25 pF, 500 V
C104	KEC/2CFA098060	Mica chip, UC232H 0030C, 3 pF ±0.25 pF, 500 V
C105 thru C107	KEC/2CAK005383	Ceramic chip, 1000 pF ±10%, 50 V
C108 and C109	KEC/2CAK005503	Ceramic chip, 0.1 uF +80/-20%, 50 V
C110	KEC/2CAK005396	Ceramic chip, 0.01 uF ±10, 50 V
C111	KEC/2CAK005388	Ceramic chip, 1000 pF ±10%, 50 V
C112	KEC/2CAK005503	Ceramic chip, 0.1 uF +80/-20%, 50 V
C113	KEC/2CAK005396	Ceramic chip, 0.01 uF ±10%, 50 V
C114	KEC/2CAK005388	Ceramic chip, 1000 pF ±10%, 50 V
C115	KEC/2CAK005396	Ceramic chip, 0.01 uF ±10%, 50 V
C116	KEC/2CAK005388	Ceramic chip, 1000 pF ±10%, 50 V
C117	KEC/2CBJ001221	Electrolytic, KME50VB, 10 uF ±20%
C118	KEC/2CDC001158	Film, ECQ-V1H 334JZ, 0.33 uF ±5%, 50 V
C119	KEC/2CBB001239	Electrolytic, KME16VB, 47 uF ±20%
C120 and C121	KEC/2CAK005396	Ceramic chip, 0.01 uF ±10%, 50 V
C123	KEC/2CFA098045	Mica chip, UC232H 0010C, 1 pF ±0.25 pF, 500 V
C124	KEC/2CFA098151	Mica chip, UC232H 00R5C, 0.5 pF ±0.25 pF, 500 V
C125	KEC/2CFA098045	Mica chip, UC232H 0010C, 1 pF ±0.25 pF, 500 V
C127 thru C129	KEC/2CAK005388	Ceramic chip, 1000 pF ±10%, 50V
C130	KEC/2CAK005024	Ceramic chip, 1 pF CK ±0.25 pF, 50 V
C131	KEC/2CAK005156	Ceramic chip, 22 pF CH ±5%, 50 V
C132	KEC/2CAK005115	Ceramic chip, 10 pF CH ±5%, 50 V
C133	KEC/2CAK005388	Ceramic chip, 1000 pF ±10%, 50 V
C134	KEC/2CAK005156	Ceramic chip, 22 pF CH ±5%, 50 V
C135	KEC/2CAK005388	Ceramic chip, 1000 pF ±10%, 50 V
C136 and C137	KEC/2CAK005396	Ceramic chip, 0.01 uF ±10%, 50 V
C138	KEC/2CAK005180	Ceramic chip, 10 pF RH ±0.5 pF, 50 V
C139	KEC/2CAK005222	Ceramic chip, 33 pF RH ±5%, 50 V
C140	KEC/2CAK005396	Ceramic chip, 0.01 uF ±10%, 50 V
C141	KEC/2CAK005040	Ceramic chip, 2 pF CK ±0.25 pF, 50 V
C142	KEC/2CAK005396	Ceramic chip, 0.01 uF ±10%, 50 V
C143	KEC/2CAK005180	Ceramic chip, 10 pF RH ±0.5 pF, 50 V
C145	KEC/2CBJ001221	Electrolytic, KME50VB, 10 uF ±20%
C146	KEC/2CAK005206	Ceramic chip, 22 pF RH ±5%, 50 V
C147	KEC/2CAK005388	Ceramic chip, 1000 pF ±10%, 50 V
C148	KEC/2CAK005396	Ceramic chip, 0.01 uF ±10%, 50 V
C149	KEC/2CAK005198	Ceramic chip, 15 pF RH ±10%, 50 V
C150	KEC/2CAK005388	Ceramic chip, 1000 pF ±10%, 50 V
C151	KEC/2CAK005198	Ceramic chip, 15 pF RH ±5%, 50 V
C152	KEC/2CAK005396	Ceramic chip, 0.01 uF ±10%, 50 V
C153 and C154	KEC/2CAK005503	Ceramic chip, 0.1 uF +80/-20%, 50 V
C155	KEC/2CDC001125	Film, ECQ-V1H 473JZ, 0.047 uF ±5%, 50 V
C156	KEC/2CAK005289	Ceramic chip, 330 pF RH ±5%, 50 V

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

SYMBOL	GE PART NO.	DESCRIPTION
C157 and C158	KEC/2CAK005503	Ceramic chip, 0.1 uF +80/-20%, 50 V
C159	KEC/2CBB001239	Electrolytic, KME16VB, 47 uF ±20%
C160	KEC/2CDC001067	Film, ECQ-B1H 103JZ, 0.01 uF ±5%, 50 V
C161	KEC/2CBB001239	Electrolytic, KME16VB, 47 uF ±20%
C162	KEC/2CAK005396	Ceramic chip, 0.01 uF ±10%, 50 V
C164	KEC/2CAK005222	Ceramic chip, 33 pF RH ±5%, 50 V
C165	KEC/2CAK005230	Ceramic chip, 47 pF RH ±5%, 50 V
C166	KEC/2CBJ001221	Electrolytic, KME50VB, 10 uF ±20%
C167	KEC/2CAK005250	Ceramic chip, 100 pF RH ±5%, 50 V
C168 and C169	KEC/2CBJ001225	Electrolytic, KME50VB, 10 uF ±20%
C170	KEC/2CDC001141	Film, ECQ-B1H 153JZ, 0.015 uF
C171 thru C173	KEC/2CDC001018	Film, ECQ-V1H 104JZ, 0.1 uF ±5%, 50 V
C174	KEC/2CBJ001213	Electrolytic, KME50VB, 1 uF ±20%
C175	KEC/2CBB001239	Electrolytic, KME16VB, 47 uF ±20%
C176	KEC/2CDC001059	Film, ECQ-B1H332JZ9, 3300 pF ±5%, 50 V
C177	KEC/2CBJ001213	Electrolytic, KME50VB, 1 uF ±20%
C178	KEC/2CDC001067	Film, ECQ-B1H103JZ9, 0.1 uF ±5%, 50 V
C179	KEC/2CBB042132	Electrolytic, KME16VB, 100 uF ±20%
C180	KEC/2CBB042199	Electrolytic, KME16VB, 1000 uF ±20%
C181	KEC/2CCD001018	Film, ECQ-V1H 104JZ, 0.1 uF ±5%, 50 V
C183	KEC/2CBB043163	Electrolytic, KME25VB, 100 uF ±20%
C200	KEC/2CCD001018	Film, ECQ-V1H104JZ9, 0.01 uF ±5%, 50 V
C201	KEC/2CAK005388	Ceramic chip, 1000 pF ±10%, 50 V
C202	KEC/2CBB083037	Electrolytic, SXE25VB, 4700 uF ±20%
C203	KEC/2CBB083011	Electrolytic, SXE25VB, 2200 uF ±20%
C204 thru C206	KEC/2CAK005396	Ceramic chip, 0.01 uF ±10%, 50 V
C207	KEC/2CBJ001221	Electrolytic, KME50VB, 10 uF ±20%
C208	KEC/2CBB043171	Electrolytic, KME25VB, 470 uF ±20%
C209 thru C213	KEC/2CAK005388	Ceramic chip, 1000 pF ±10%, 50 V
C214 and C215	KEC/2CAK005255	Ceramic chip, 100 pF RH ±5%, 50 V
C216	KEC/2CAK005388	Ceramic chip, 1000 pF ±10%, 50 V
C217	KEC/2CAK005255	Ceramic chip, 100 pF RH ±5%, 50 V
C218 thru C221	KEC/2CAK005388	Ceramic chip, 1000 pF ±10%, 50 V
C222	KEC/2CBJ001221	Electrolytic, KME50VB, 10 uF ±20%
		- - - - - - - - - - DIODES - - - - - - - - - -
CR1	KEC/2QBA015084	Silicon, DAP201
CR2 and CR3	KEC/2QBE005032	Silicon, DA204K
CR5	KEC/2QBA001188	Silicon, 1SV34
CR11 and CR12	KEC/2QBA001100	Silicon, 1SS101
CR15	KEC/2QBC008376	Silicon, V09C
CR20	KEC/2QBA005135	Silicon, 1SV128-A
CR21	KEC/2QBA001188	Silicon, 1SV34
CR22	KEC/2QBA006166	Silicon, 1S2075K
CR24	KEC/2QBB001133	Zener, HZ-5B

SYMBOL	GE PART NO.	DESCRIPTION
CR26	KEC/2QBA005135	Silicon, 1SV128-A
CR31 and CR32	KEC/2QBC008129	Silicon, S11B
CR33	KEC/2QBC008376	Silicon, V09C
		- - - - - - - - - - FILTERS - - - - - - - - - -
FL2	KEC/2EDB003021	861 MHz, A4WX01316
FL3	KEC/2EDB003039	861 MHz, A4WX01318
FL5	KEC/2FAA103033	Crystal, 45 MHz, A4WX01301
FL6	KEC/2FAD005136	Ceramic, SLF-D-15
		- - - - - - - - - - RELAYS - - - - - - - - - -
K1	KEC/2KCA001021	RF CX-1051, 12 VDC
K2	KEC/2KBA003805	G6B-1003H, 12 VDC
		- - - - - - - - - - COILS - - - - - - - - - -
L1	KEC/2LAB013127	RF, 0.5UEW 10T, A4WX00027
L2	KEC/2LAA001297	Choke, FL5H, 101K
L3	KEC/2LAB013036	RF, 0.5UEW 1T, A4WX00027
L4	KEC/2LAB013069	RF, 0.5UEW 4T, A4WX00027
L5	KEC/2LAB013036	RF, 0.5UEW 1T, A4WX00027
L6	KEC/2LAB014069	RF, 0.5UEW 4T, A4WX00027
L12	KEC/2LAB014851	RF, 0.5UEW 1/2 T, A4WX00027
L13	KEC/2LAB013069	RF, 0.5UEW 4T, A4WX00027
L14	KEC/2LAB014851	RF, 0.5UEW 1/2 T, A4WX00027
L15	KEC/2LAA007260	SN-5-400
L25 thru L27	KEC/2LAB013069	RF, 0.5UEW 4T, A4WX00027
L28	KEC/2LAB014224	RF, 0.8UEW 2T, A4WX00027
L29	KEC/2LAB015031	RF, 0.8UEW 2 1/2T, A4WX01446
L30	KEC/2LAB013069	RF, 0.5UEW 4T, A4WX00027
L31 thru L33	KEC/2LAB014869	RF, 0.6UEW 1T, A4WX01331#1
L34	KEC/2LAA021113	Choke, 0.8UEW 11T, A4ZS62846
L41	KEC/2LAB013093	RF, 0.5UEW 7T
L42	KEC/2LAB014885	A4WX00343
L43	KEC/2LAB014877	A4WX00342
L44	KEC/2LAB025188	A4WX00312
L45	KEC/2LAD001062	Chip, MFL3216D-R68K, 0.68 uH
L46	KEC/2LAB014901	A4WX01334
L47	KEC/2LAB030022	7MC-101000ZD
L51	KEC/2LAA007344	Choke, SN-M-10SG
L52	KEC/2LAA024083	Choke, 1mH 2A
		- - - - - - - - - - TRANSISTORS - - - - - - - - - -
Q1	KEC/2QAA001034	Silicon, 2SC2462LC
Q2	KEC/2QAA001026	Silicon, 2SA1121SB
Q3	KEC/2AAA001034	Silicon, 2SC2462LC
Q4	KEC/2QAA002431	Silicon, 2SC3357
Q6	KEC/2QAA001034	Silicon, 2SC2462LC
Q7	KEC/2QAA011218	Silicon, 2SA715C
Q8	KEC/2QAA001034	Silicon, 2SC2462LC
Q9	KEC/2QAA002431	Silicon, 2SC3357
Q12	KEC/2QAB006274	Power TR, SD1414
Q13 and Q14	KEC/2QAA001034	Silicon, 2SC2462LC

SYMBOL	GE PART NO.	DESCRIPTION
Q15	KEC/2QAA011218	Silicon, 2SA715C
Q16	KEC/2QAA001034	Silicon, 2SC2462LC
Q17	KEC/2QAA012448	Silicon, 2SC1213AC
Q18	KEC/2QAA001034	Silicon, 2SC2462LC
Q21	KEC/2QAA002506	Silicon, 2SC3583
Q23	KEC/2QAA012836	Silicon, 2SC2619C
Q24	KEC/2QAA001028	Silicon, 2SA1052
Q25 and Q26	KEC/2QAA001034	Silicon, 2SC2462LC
Q30 and Q31	KEC/2QAA001034	Silicon, 2SC2462LC
Q32	KEC/2QAB013270	Silicon, 2SD669AC
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R1	KEC/2REA034047	RMLS5-103J, 10K ohms ±5%
R3 and R4	KEC/2RGC001213	Square chip, 1/8W, 10K ohms ±5%
R6	KEC/2RGC001213	Square chip, 1/8W, 10K ohms ±5%
R7 and R8	KEC/2RGC001114	Square chip, 1/8W, 220 ohms ±5%
R9	KEC/2RGC001213	Square chip, 1/8W, 10K ohms ±5%
R10	KEC/2RGC001171	Square chip, 1/8W, 2.2K ohms ±5%
R11	KEC/2RGC001155	Square chip, 1/8W, 1K ohms ±5%
R12	KEC/2RGC001064	Square chip, 1/8W, 47 ohms ±5%
R13	KEC/2RGC001023	Square chip, 1/8W, 10 ohms ±5%
R14	KEC/2RGC001197	Square chip, 1/8W, 4.7K ohms ±5%
R15	KEC/2RGC001064	Square chip, 1/8W, 47 ohms ±5%
R16	KEC/2RAA002265	Carbon, 1/8W, 10K ohms ±5%
R17	KEC/2RGC001130	Square chip, 1/8W, 470 ohms ±5%
R18	KEC/2RGC001148	Square chip, 1/8W, 680 ohms ±5%
R19	KEC/2RGC001189	Square chip, 1/8W, 3.3K ohms ±5%
R20	KEC/2RGC001064	Square chip, 1/8W, 47 ohms ±5%
R21	KEC/2RGC001213	Square chip, 1/8W, 10K ohms ±5%
R22	KEC/2RGC001064	Square chip, 1/8W, 47 ohms ±5%
R23	KEC/2RGC001098	Square chip, 1/8W, 100 ohms ±5%
R24	KEC/2RGC001049	Square chip, 1/8W, 22 ohms ±5%
R25 and R26	KEC/2RGC001122	Square chip, 1/8W, 330 ohms ±5%
R27	KEC/2RGC001247	Square chip, 1/8W, 22K ohms ±5%
R28	KEC/2RGC001270	Square chip, 1/8W, 47K ohms ±5%
R29	KEC/2RGC001213	Square chip, 1/8W, 10K ohms ±5%
R30	KEC/2RGC001171	Square chip, 1/8W, 2.2K ohms ±5%
R31	KEC/2RGC001163	Square chip, 1/8W, 1.5K ohms ±5%
R32	KEC/2RGC001122	Square chip, 1/8W, 330 ohms ±5%
R33	KEC/2RGC001049	Square chip, 1/8W, 22 ohms ±5%
R34	KEC/2RGC001122	Square chip, 1/8W, 330 ohms ±5%
R39	KEC/2RGC001122	Square chip, 1/8W, 330 ohms ±5%
R40	KEC/2RGC001049	Square chip, 1/8W, 22 ohms ±5%
R41	KEC/2RGC001122	Square chip, 1/8W, 330 ohms ±5%
R42	KEC/2RGC001189	Square chip, 1/8W, 3.3K ohms ±5%
R43	KEC/2RGC001213	Square chip, 1/8W, 10K ohms ±5%
R44	KEC/2RGC001122	Square chip, 1/8W, 330 ohms ±5%
R45	KEC/2RGC001049	Square chip, 1/8W, 22 ohms ±5
R46	KEC/2RGC001122	Square chip, 1/8W, 330 ohms ±5%

SYMBOL	GE PART NO.	DESCRIPTION
R47 and R48	KEC/2RGC001064	Square chip, 1/8W, 47 ohms ±5%
R60	KEC/2RGC001189	Square chip, 1/8W, 3.3K ohms ±5%
R62	KEC/2RGC001353	Square chip, 1/8W, 620 ohms ±5%
R63 and R64	KEC/2RFB017063	Variable, RGS6-FAN, 10K ohms ±30%
R65	KEC/2RGC001106	Square chip, 1/8W, 150 ohms ±5%
R68	KEC/2RGC001148	Square chip, 1/8W, 680 ohms ±5%
R71	KEC/2RGC001353	Square chip, 1/8W, 620 ohms ±5%
R73	KEC/2RGC001130	Square chip, 1/8W, 470 ohms ±5%
R74 and R75	KEC/2RGC001049	Square chip, 1/8W, 22 ohms ±5%
R76	KEC/2RGC001130	Square chip, 1/8W, 470 ohms ±5%
R77	KEC/2RGC001171	Square chip, 1/8W, 2.2K ohms ±5%
R78	KEC/2RGC001221	Square chip, 1/8W, 15K ohms ±5%
R79	KEC/2RGC001213	Square chip, 1/8W, 10K ohms ±5%
R80	KEC/2RGC001155	Square chip, 1/8W, 1K ohms ±5%
R81	KEC/2RGC001197	Square chip, 1/8W, 4.7K ohms ±5%
R82	KEC/2RGC001213	Square chip, 1/8W, 10K ohms ±5%
R83	KEC/2RFB017071	Variable, RGS6-FAN, 50K ohms ±30%
R84	KEC/2RGC001114	Square chip, 1/8W, 220 ohms ±5%
R85	KEC/2RGC001213	Square chip, 1/8W, 10K ohms ±5%
R86	KEC/2RGC001197	Square chip, 1/8W, 4.7K ohms ±5%
R87	KEC/2RFB017063	Variable, RGS6-FAN, 10K ohms ±30%
R88	KEC/2RGC001213	Square chip, 1/8W, 10K ohms ±5%
R89	KEC/2RGC001304	Square chip, 1/8W, 100K ohms ±5%
R90	KEC/2RGC001130	Square chip, 1/8W, 470 ohms ±5%
R91 and R92	KEC/2RGC001197	Square chip, 1/8W, 4.7K ohms ±5%
R93	KEC/2RGC001122	Square chip, 1/8W, 330 ohms ±5%
R94	KEC/2RGC001023	Square chip, 1/8W, 10 ohms ±5%
R95	KEC/2RGC001213	Square chip, 1/8W, 10K ohms ±5%
R96	KEC/2RDA001055	W1/2P, 0.1 ohms ±10%
R97	KEC/2RFB017071	Variable, RGS6-FAN, 50K ohms ±30%
R98	KEC/2RGC001155	Square chip, 1/8W, 1K ohms ±5%
R99	KEC/2RGC001171	Square chip, 1/8W, 2.2K ohms ±5%
R102	KEC/2RGC001189	Square chip, 1/8W, 3.3K ohms ±5%
R103	KEC/2RGC001205	Square chip, 1/8W, 6.8K ohms ±5%
R104	KEC/2RGC001213	Square chip, 1/8W, 10K ohms ±5%
R105	KEC/2RGC001148	Square chip, 1/8W, 680 ohms ±5%
R106	KEC/2RGC001189	Square chip, 1/8W, 3.3K ohms ±5%
R107	KEC/2RFB017071	Variable, RGS6-FAN, 50K ohms ±30%
R131	KEC/2RGC001270	Square chip, 1/8W, 47K ohms ±5%
R132	KEC/2RGC001155	Square chip, 1/8W, 1K ohms ±5%
R133	KEC/2RGC001064	Square chip, 1/8W, 47 ohms ±5%
R134	KEC/2RGC001098	Square chip, 1/8W, 100 ohms ±5%
R136	KEC/2RGC001049	Square chip, 1/8W, 22 ohms ±5%
R140	KEC/2RGC001098	Square chip, 1/8W, 100 ohms ±5%
R141	KEC/2RGC001064	Square chip, 1/8W, 47 ohms ±5%
R143	KEC/2RGC001189	Ceramic chip, 1/8W, 3.3K ohms ±5%
R145	KEC/2RGC001320	Square chip, 1/8W, 220K ohms ±5%
R146	KEC/2RGC001114	Square chip, 1/8W, 220K ohms ±5%
R147	KEC/2RGC001130	Square chip, 1/8W, 470 ohms ±5%
R148	KEC/2RGC001189	Square chip, 1/8W, 3.3K ohms ±5%
R149	KEC/2RGC001221	Square chip, 1/8W, 15K ohms ±5%
R150	KEC/2RGC001676	Square chip, 1/8W, 8.2K ohms ±5%
R151 and R152	KEC/2RGC001130	Square chip, 1/8W, 470 ohms ±5%
R153	KEC/2RGC001171	Square chip, 1/8W, 2.2K ohms ±5%
R154 and R155	KEC/2RGC001213	Square chip, 1/8W, 10K ohms ±5%
R156	KEC/2RGC001155	Square chip, 1/8W, 1K ohms ±5%
R157	KEC/2RGC001213	Square chip, 1/8W, 10K ohms ±5%
R158	KEC/2RGC001270	Square chip, 1/8W, 47K ohms ±5%
R159	KEC/2RGC001213	Square chip, 1/8W, 10K ohms ±5%
R160	KEC/2RGC001320	Square chip, 1/8W, 220K ohms ±5%
R161	KEC/2RGC001247	Square chip, 1/8W, 22K ohms ±5%
R162 thru R163	KEC/2RGC001163	Square chip, 1/8W, 1.5K ohms ±5%
R164	KEC/2RGC001221	Square chip, 1/8W, 15K ohms ±5%
R165	KEC/2RGC001254	Square chip, 1/8W, 33K ohms ±5%
R166	KEC/2RGC001130	Square chip, 1/8W, 470 ohms ±5%
R167	KEC/2RGC001205	Square chip, 1/8W, 6.8K ohms ±5%
R168	KEC/2RGC001270	Square chip, 1/8W, 47K ohms ±5%
R169	KEC/2RGC001171	Square chip, 1/8W, 2.2K ohms ±5%
R171	KEC/2RGC001189	Square chip, 1/8W, 3.3K ohms ±5%
R172	KEC/2RGC001213	Square chip, 1/8W, 10K ohms ±5%
R173	KEC/2RGC001155	Square chip, 1/8W, 1K ohms ±5%
R176 and R177	KEC/2RGC001213	Square chip, 1/8W, 10K ohms ±5%
R179	KEC/2RGC001098	Square chip, 1/8W, 100 ohms ±5%
R182	KEC/2RGC001270	Square chip, 1/8W, 47K ohms ±5%
R189	KEC/2RGC001189	Square chip, 1/8W, 3.3K ohms ±5%
R190	KEC/2RGC001114	Square chip, 1/8W, 220 ohms ±5%
R191 and R192	KEC/2RGC001684	Square chip, 1/8W, 2.2 ohms ±5%
R193	KEC/2RBA013120	RNM2FB, 1 ohm ±5%
R194	KEC/2RGC001684	Square chip, 1/8W, 2.2 ohms ±5%
R196	KEC/2RGC001213	Square chip, 1/8W, 10K ohms ±5%
R205	KEC/2RGC001171	Square chip, 1/8W, 2.2K ohms ±5%
R206	KEC/2RFB017063	Variable, RGS6-FAN, 10K ohms ±5%
R207	KEC/2RGC001114	Square chip, 1/8W, 220 ohms ±5%
R208	KEC/2RGC001213	Square chip, 1/8W, 10K ohms ±5%
R209	KEC/2RGC001171	Square chip, 1/8W, 2.2K ohms ±5%
R210	KEC/2RGC001155	Square chip, 1/8W, 1K ohms ±5%
R211	KEC/2RGC001148	Square chip, 1/8W, 680 ohms ±5%
		- - - - - - - - - - TEST POINTS - - - - - - - - - -
TP1 thru TP5	KEC/2PYD006016	75404-041
TP11 thru TP14	KEC/2PYD006016	75404-041
TP22 thru TP23	KEC/2PYD006016	75404-041
TP25	KEC/2PYD006016	75404-041
		- - - - - - - - - - - JACKS - - - - - - - - - - -
J11	KEC/2PDA012021	IL-S-10P-S2T2-EF
J12	KEC/2PDA012013	IL-S-8P-S2T2-EF
J13	KEC/2PDA012039	IL-S-13P-S2T2-EF
J21	KEC/2PCB007279	RF N-R A4WX01345
J22A & B	KEC/2PDA020107	5274-04A
J23A	KEC/2PDA020123	5274-06A
J23B	KEC/2PDA020115	5274-05A
J24	KEC/2PDA010738	TSL-P05P-B1
J25	KEC/2PDA017020	TSL-P02P-B1
		- - - - - - - - - - - CRYSTALS - - - - - - - - - - -
Y1	KEC/2YAA181640	HC-18u, 44.545 MHz, A4WX01321
		- - - - - - - - - - - OTHERS - - - - - - - - - - -
Z1	KEC/2YBA103246	TCXO, 12.8 MHz, A4WX01300#1
Z2	KEC/2AAH028345	VCO, 800 MHz, KLH3557
Z11 and Z12	KEC/2LDA014013	Core, L6RH 5.8 x 6.4 x 2.0
Z13	KEC/2KPD002118	Thermal detector, OHD1-80M
Z14	KEC/2QBD005033	Thermistor, SDT-100
Z15	KEC/2EEA004036	Isolater, 3027-A
Z16	KEC/2QBD005033	Thermistor, SDT-100
Z21	KEC/5UAY001054	Double balance mixer UST-3L A4WX01377
Z22	KEC/2YYZ001062	Silicon damper, NB-0252-0.5t
Z31	KEC/2QBD011270	Surge Absorber, ERZ-C10DK330
		- - - - - - - - CONNECTOR ASSEMBLY - - - - - - - -
CA11	KEC/2WHE002880	10 Pin, A4WX01349
CA12	KEC/2WHE002898	8 Pin, A4WX01350
CA13	KEC/2WHE002906	13 Pin, A4WX01351

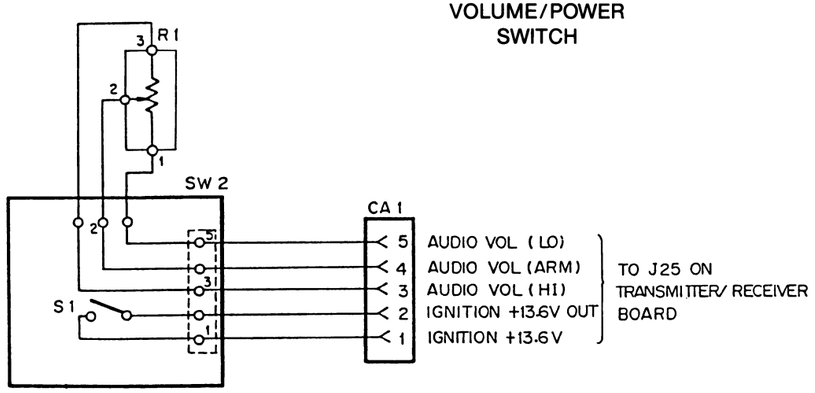
PARTS LIST

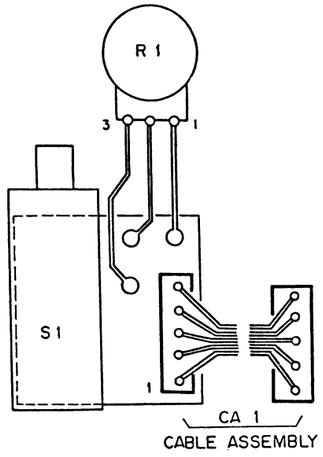
800 MHz ANTENNA
19B209568P4

ISSUE 2

SYMBOL	GE PART NO.	DESCRIPTION
		Whip assembly. 068110-001.
		Whip nut assembly. 068047-001.
		Base nut assembly. 068048-001.
		"O" Ring (LARGE). 007059-122.
		Stud assembly. 068046-001.
	19B209018P5	Plug, Type N; sim to UG536A/U.
		Cable. (Included as part of complete antenna assembly only).

VOLUME/POWER SWITCH

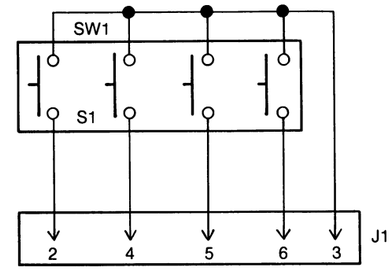




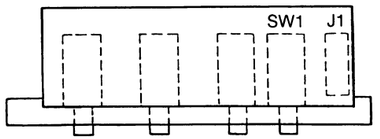
PARTS LOCATION (REAR VIEW)

RC-5249

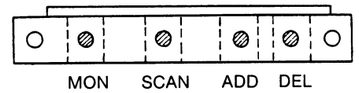
SWITCH PANEL



PARTS LOCATION



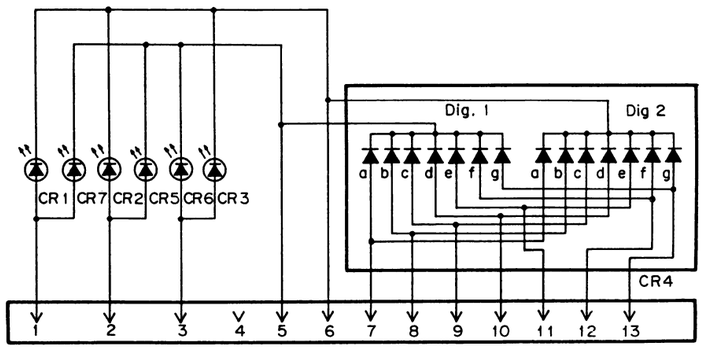
TOP VIEW

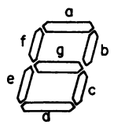


FRONT VIEW

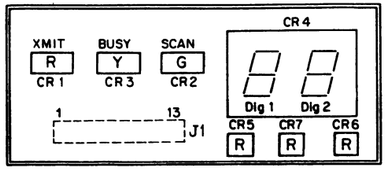
RC-5248

DISPLAY PANEL





7 SEGMENT
ARRANGMENT



PARTS LOCATION (FRONT VIEW)
LED BOARD

RC5239A

PARTS LIST

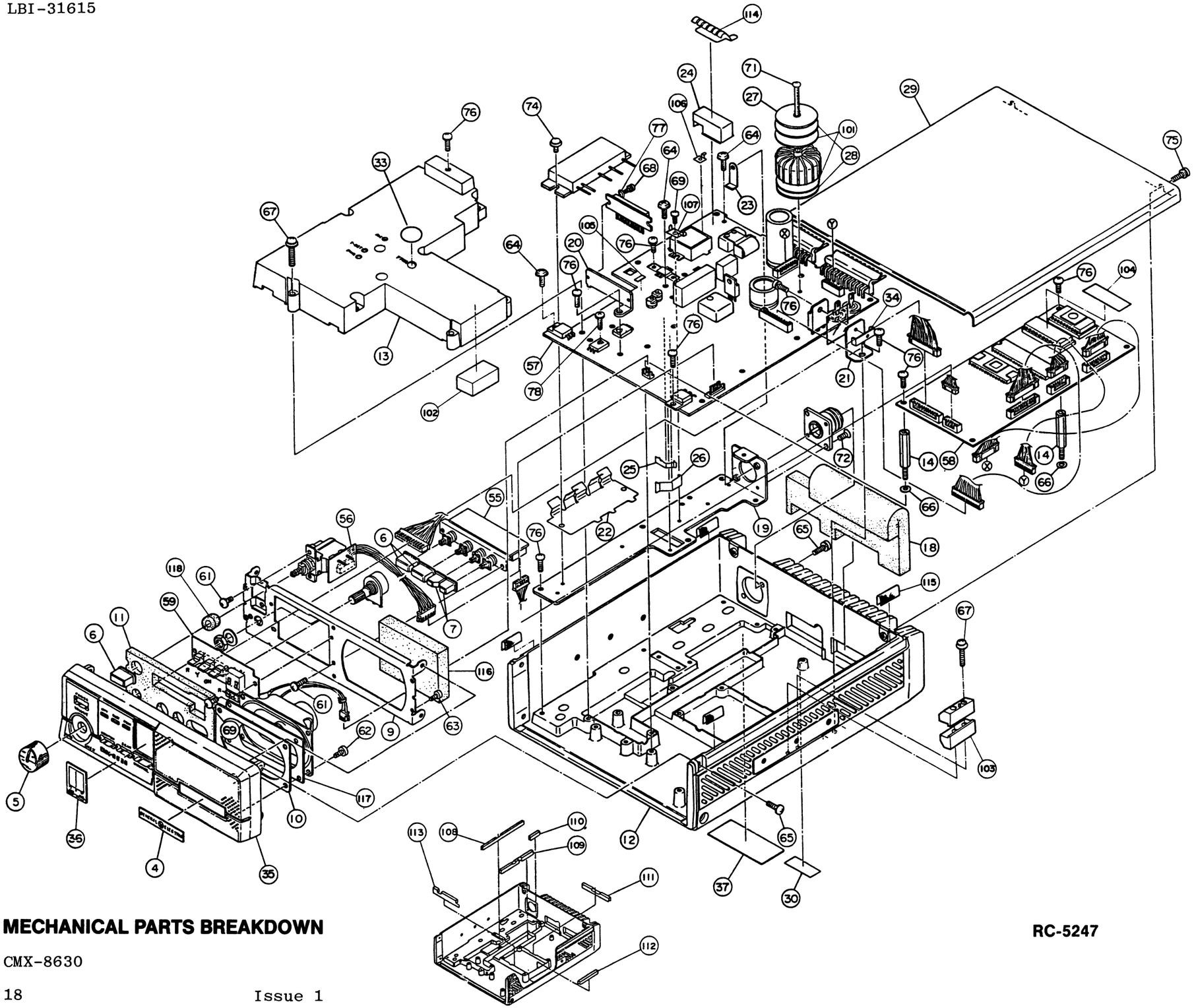
CONTROL PANEL
FOR
CMX-8630
ISSUE 2

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - - - - LEDS - - - - - - - - - -
CR1	KEC/2HAA014055	Diode, Light Emitting, Red.
CR2	KEC/2HAA014063	Diode, Light Emitting, Green.
CR3	KEC/2HAC010051	Diode, Light Emitting, Yellow.
CR4		Dual 7-Segment Display, Green.
CR5 and CR6		Diode, Light Emitting, Red.
		- - - - - - - - - - - - JACKS - - - - - - - - - - -
J1	KEC/2PDA012034	Jack, 13-Pin.
		- - - - - - - - - - - SWITCHES - - - - - - - - - -
SW1	KEC/2KJB004045	MON SCAN ADD DEL
		- - - - - - - - - - - - JACKS - - - - - - - - - - -
J1	KEC/2PDA012281	6-Pin.
		- - - - - - - - - CABLE ASSEMBLY - - - - - - - - -
CA1	KEC/2WHE002914	Power, Volume.
CA2	KEC/2WHE002922	Speaker.
CA3	KEC/2WHE002864	Display Panel.
CA4	KEC/2WHE002872	Switch Panel.
		- - - - - - - - - - - - SPEAKER - - - - - - - - - -
SP1	KEC/2SDA005121	2-Watt/4 ohm.
		- - - - - - - - - - - RESISTORS - - - - - - - - - -
R1	KEC/2REA045016	Variable, Volume.
		- - - - - - - - - - - SWITCHES - - - - - - - - - -
S1	KEC/2KJB004052	Power-On.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

SERVICE SHEET

CMX-8630
Control Panel



RC-5247

MECHANICAL PARTS BREAKDOWN

CMX-8630

PARTS LIST

MECHANICAL PARTS

CMX-8630

SYMBOL	GE PART NO.	DESCRIPTION
1	NA	NA
2	NA	NA
3	NA	NA
4	KEC/A4WL07406	Name Plate
5	KEC/A4WL07243	Volume Knob
6	KEC/A4WL07244	Button A
7	KEC/A4WL07245	Button B
8	NA	NA
9	KEC/A2WL07247	Switch Panel
10	KEC/A4WL07248	Spacer
11	KEC/A4WL07367	Sponge A
12	KEC/A1WL07249	Frame
13	KEC/A1WL07281	Shield Cover
14	KEC/A4WL07317	Post
15	NA	NA
16	NA	NA
17	NA	NA
18	KEC/A4WL07368	Sponge B
19	KEC/A3WL07313	Heat Sink Plate
20	KEC/A4WL07314	Heat Sink A
21	KEC/A4WL07315	Heat Sink B
22	KEC/A4WL07316	Plate for PA Pack IC
23	KEC/A4WL07405	Antenna Lead
24	KEC/A4WL07596	Filter Cover
25	KEC/A4WL07597	Shield A
26	KEC/A4WL07598	Shield B
27	KEC/A4WL05645	Core Plate
28	KEC/A4WL04937	Spacer
29	KEC/A3WL07250	Cover
30	KEC/A3WL07648	Date Code Label
31	NA	NA
32	NA	NA
33	KEC/A4WL07723	Sheet
34	KEC/A4WL07836	Plate Nut
35	KEC/A3WL07756	Front Cap C Sub Assy
36	KEC/A4WL07758	Window
37	KEC/A4WL07759	FCC Name Plate
51	NA	NA
52	NA	NA
53	NA	NA
54	NA	NA
55	KEC/A4Z02680	Switch P.W.B.
56	KEC/A4Z02681	Power SW P.W.B.
57	KEC/A2Z02774	Radio P.W.B.
58	KEC/A3Z02787	Logic P.W.B.
59	KEC/A4Z02783	Led C P.W.B.
61	19A700031P406	Pan Hd Scr, M3x6
62	19A700036P406	Pan Hd Tap Scr, M3x6
63	19A700036P306	Pan Hd Tap Scr, M2.5x6
64	19A700031P408	Pan Hd Scr, M3x8
65	19A700031P410	Pan Hd Scr, M3x10
66	19A700033P5	Lock Washer, M3
67	19A700031P420	Pan Hd Scr, M3x20
68	19A700031P206	Pan Hd Scr, M2x6
69	19A700031P306	Pan Hd Scr, M2.5x6
70	NA	NA
71	19A700031P425	Pan Hd Scr, M3x25
72	19A700035P406	Flat Hd Scr, M3x6
73	19A700034P4	Nut, Hex, M3
74	19A700031P408	Pan Hd Scr, M3x8
75	19A700031P410	Pan Hd Scr, M3x10
76	19A700031P410	Pan Hd Scr, M3x10

SYMBOL	GE PART NO.	DESCRIPTION
77	19A701312P1	Flat Washer, M2
	19A700033P1	Lock Washer, M2
	19A700033P3	Lock Washer, M2.5
	19A700033P5	Lock Washer, M3
	19A701312P4	Flat Washer, M3
78		Pan Hd Scr, Plastic, M3x10
101	KEC/A4WL07964	Damper
102	KEC/A4WL07935	VCO Hold
103	KEC/A4WL08099	P.W.B. Press
104	KEC/A4WL07857	Yellow Card
105	KEC/A4WL07726	Short Bar
106	KEC/A4WL07983	ISO Earth A
107	KEC/A4WL07984	ISO Earth B
108	KEC/A4WL07922	Earth A
109	KEC/A4WL07923	Earth B
110	KEC/A4WL07924	Earth C
111	KEC/A4WL07966	Earth D
112	KEC/A4WL07967	Earth E
113	KEC/A4WL07968	Earth F
114	KEC/A4WL07925	Earth Spring
115	KEC/A4WL08323	Himeron
116	KEC/A4WL07920	Speaker Sponge
117	KEC/A4WL08052	Speaker Damper
118	KEC/A4WL07970	Switch Sponge

NA: NOT APPLICABLE

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES