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HARRISON

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SERVICE MANUAL

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SPECIFICATIONS

1. GENERAL

CHANNEL ———— AM: 40CH FM: 40CH
FREQUENCY———— 26.965 TO 27.405 MHz
FREQUENCY GENERATION———— BY MEANS OF PLL SYNTHESIZER
FREQUENCY STABILITY———— +/- 0.001%
OPERATING TEMPERATURE———— -10℃ TO +55℃
POWER SOURCE———— DC 13.8V
MODULATION———— F3E / A3E
IMPEDANCE ———— 50 ohm
DIMENSIONS———— 150(W) x 45(H) x 157(D)mm
WEIGHT———— 1.4 Kg

2. RECEIVER SECTION

CIRCUIT TYPE———— DUAL CONVERSION SUPERHETERODYNE
IF FREQUENCY———— 1'st IF : 10.695MHz , 2'nd IF : 455KHz
SENSITIVITY————FM: 0.5uV FOR 20dB SINAD, W/CCITT FILTER
AM: 0.7uV FOR 10dB SND
SELECTIVITY———— 60dB Min.
SPURIOUS & IMAGE REJECTION——— 60dB Min.
INTER MODULATION DISTORTION—— 54dB Min.
S/N RATIO———— 40dB
AUDIO OUTPUT @10%THD———— 2.0W

3. TRANSMITTER SECTION

POWER OUTPUT ———— PEP
MODULATION———— FM :2KHZ, AM : 85%
SPURIOUS RESPONSE REJECTION— ALL HARMONICS & SPURIOUS , SUPPRESSION
GREATER THAN CEPT REQUIREMENTS
S/N RATIO———— 40dB
CURRENT DRAIN(UNMOD)———— LESS THAN 1400mA

THEORY OF OPERATION

1. SEMICONDUCTORS AND FUNCTION

1.1 IC COMPLEMENT

REF.NO	TYPE	MANUFACTURER	FUNCTION
IC-401	KIA7217AP	KEC	AUDIO AMP.
IC-901	LC72338	SANYO	CPU W/PLL IC
IC-001	NJM3713M	JRC	SHIFT RESISTOR
IC-303	KIA7808	KEC	8V REGULATOR
IC-300	KIA78L05	KEC	5V REGULATOR
IC-201	TK10930V	JAPAN TOKO	IF DEMODULATOR
IC-202	KIA358F	KEC	COMPARATOR OP AMP
IC-850	KIA4558F	KEC	MIC AMP

1.2 TRANSISTOR COMPLEMENT

REF.NO	TYPE	MANUFACTURER	FUNCTION
Q901	KTC3876	KEC	LAMP SWITCHING
Q902	KTC3876	KEC	LAMP SWITCHING
*Q301	KTB1366	KEC	AVR CONTROL
*Q309	KTA1505S	KEC	AVR CONTROL
*Q310	KTC3875	KEC	AVR CONTROL
Q300	KTA1505S	KEC	TX B+ SWITCHING
Q306	KRC110S	KEC	TX SWITCHING
Q305	KRC110S	KEC	RX SWITCHING
Q307	KTA1505S	KEC	RX B+ SWITCHING
Q311	KRC110S	KEC	POW.ON SWITCHING
Q308	KRC110S	KEC	AVR OPEN IN RX MODE
Q506	KRC110S	KEC	RX BAND SWITCHING
Q507	KRC110S	KEC	RX BAND SWITCHING
Q501	KTC3880Y	KEC	1'ST RX AMP
Q511	KRC110S	KEC	RX BAND SWITCHING
Q510	KRC110S	KEC	RX BAND SWITCHING
Q502,505	KTK211	KEC	BALANCE MIXER
Q201	KTC3880Y	KEC	IF AMP
Q203	KRC112S	KEC	SQ CONTROL
Q404	KTC3875S	KEC	AUTO-Q SWITCHING
Q504	KTC3880Y	KEC	AM AGC CONTROL
Q503	KTC3875S	KEC	AM AGC DRIVER
Q202	KRC112S	KEC	AM RX MUTE
Q100	KTC3875S	KEC	CHARGE PUMP
Q105	KTC3875S	KEC	CHARGE PUMP
Q101	KTC3880Y	KEC	VCO OSC
Q104	KTC3875S	KEC	TX VCO SWITCHING
Q107	KTC3880Y	KEC	VCO BUFFER
Q855	KRC110S	KEC	MIC MUTE
Q403	KTC3875S	KEC	RX MUTE
*Q903	KRC112S	KEC	SIO CONTROL
Q603	KTC1969	KEC	RF POWER AMP
Q602	KTC1006	KEC	RF DRIVER
Q609	KTC3880Y	KEC	PRE DRIVER
Q606	KTC3875S	KEC	UNLOCK SWITCHING
Q601	KTC3880Y	KEC	DOUBLER
Q610-613	KRC110S	KEC	TX BAND SWITCHING
Q616	KTC3875S	KEC	TX BAND SWITCHING
Q402	KTA1505S	KEC	AM MOD CONTROL
Q405	KTC3875S	KEC	AMC CONTROL
Q853	KRA110S	KEC	AM MOD SIGNAL SW
Q854	KRC111S	KEC	AM MOD SIGNAL MUTE
Q851-852	KRC112S,KTC3875	KEC	FM DEV MUTE

1.3 DIODE COMPLEMENT

REF.NO	TYPE	MANUFACTURER	FUNCTION
D901-904	KDS181	KEC	CPU KEY MATRIX
D301	IN4003	KEC	REV. DC PROTECT
D303	KDS187	KEC	5V SWITCHING
D304	KDS187	KEC	BACK UP SWITCHING
D503	KDS226	KEC	RF LIMITTER
D507	KDV251	KEC	RX BAND SWITCHING
D505	KDV251	KEC	RX BAND SWITCHING
D506	KDV251	KEC	RX BAND SWITCHING
D202	KDS184	KEC	A/F AUDIO SWITCHING
D502	KDS187	KEC	RX MUTE IN TX MODE
D509	KDS193	KEC	AM AGC
D101	KDV251	KEC	VCO OSC CONTROL
D102	KDV251	KEC	FM DEVIATION
D850	KDS181	KEC	FM LIMITER
D402	IN4002	KEC	AM MOD IN PUT
D103	KDS226	KEC	CHARGE PUMP
D100	KDV251	KEC	VCO OSC
D102	KDV251	KEC	FM DEV. OSC

※ REMARKS.

KEC : KOREA ELECTRONICS CO., LTD.

ROHM : ROHM KOREA CORP.

JRC : JAPAN RADIO COMPANY.

SANYO : TOKYO SANYO ELECTRNIC CO., LTD.

TOKO : JAPAN TOKO ELECTRNIC CO.,LTD

2. DESCRIPTION OF FREQUENCY DETERMINING AND STABILING CIRCUIT

2.1 INTRODUCTION

THE FREQUENCIES FOR TRANSMITTER AND RECEIVER LOCAL FREQUENCIES ARE ALL DRIVED FROM A SINGLE 3.6 [MHz] CRYSTAL BY MEANS OF A PHASE LOCKED LOOP.

THE FIRST LOCAL OSCILLATOR FREQUENCIES ARE 16.270 [MHz] (CH.1) TO 16.710 [MHz] (CH.40). THE SECOND LOCAL FREQUENCY IS FIXED AT 10.240 [MHz] TO GENERATE SECOND IF 455 [KHz]. DURING TRANSMIT, THE VCO OF THE PLL OPERATES 13.4825 [MHz] (CH.1) TO 13.7025 [MHz] (CH.40) THE VCO FREQUENCY GOES TO THE DOUBLER CIRCUIT Q107,T9,T10 WHICH DOUBLES THE FREQUENCY TO GENERATE 26.965 [MHz] (CH.1) TO 27.405 [MHz] (CH.40).

Q101 ——————> Q601 ——————> TO TRANSMITTER

VCO DOUBLER

13.4825 [MHz](CH.1) ~ 13.7025 [MHz](CH.40)

26.96500 [MHz](CH.1) ~ 27.405[MHz](CH.40)

THE VCO OPERATING FREQUENCY FOR THE RECEIVER IS 16.270 [MHz] (CH.1) TO 16.710 [MHz] (CH.40) AS THE FIRST LOCAL OSCILLATOR, INJECTED THROUGH THE BUFFER AMP Q107 INTO.

THE FIRST TR MIXER Q4

2.2 DESCRIPTIONS OF EACH BLOCK

(1) INTRODUCTION

THE SYNTHESIZER IS IMPLEMENTED WITH THE FOLLOWING

COMPONENTS : PLL IC (IC901), X-TAL (XT901), VCO,VARICAP DIODE (D101)

IC901 IS A CMOS LSI THAT INCLUDES MOST OF PLL BLOCK AND LCD DRIVER,

THE Q101,T100, C126, C125, C108, C112, C111,VARICAP DIODE D101 ARE

CLAPP OSCILLATOR CIRCUITTO OPERATE AS A VCO OF THE IC901.

Q104 IS A SWITCHING TRANSISTOR TO CONNECT OR DISCONNECT THE TUNING CAPACITOR IN THE VCO OSCILLATOR TANK CIRCUIT FOR TRANSMITTER OR RECEIVER.

Q107 WORKS AS A BUFFER AMP FOR RX LOCAL FREQUENCIES(16 [MHz]) AND TX CARRIER GENERATING FREQUENCIES(13 [MHz]).

(2) REFERENCE FREQUENCY

THE CRYSTAL,XT901(3.600 [MHz]) AND OTHER COMPONENTS AT PIN.1 AND 80 OF IC901 CAN MAKE A REFERENCE FREQUENCY OSCILLATOR WITH INTERNAL AMPLIFIER.

(3) VCO

Q101 AND SURROUNDING PARTS ARE CONSISTING A CLAPP OSCILLATOR WORKS AS A VCO OF CPU WITH APPROPRIATE CONTROL VOLTAGE ON D101, THE VCO CAN BE OSCILLATE OVER THE REQUIRED RANGE OF 13.4825 [MHz] TO 16.7100 [MHz].

(4) PROGRAMMABLE DIVIDER AND ITS CONTROL

THE PROGRAMMABLE INPUTS FOR EACH CHANNELS ARE SETTED IC INSIDE. EACH INPUT SIGNAL TO CONTROL THE PLL IC IS DONE WITH THE PROVIDED KEY MATRIX INPUT PINS - T1(PIN.15) TO T5(PIN.18) AND KO(PIN.10) TO K3(PIN.14). FOR EACH KEY MATRIX INPUT, AN INTERNAL CODE CONVERT ERROM PROVIDES THE APPROPRIATE BINARY CONTROL TO THE PROGRAMMABLE DIVIDER FOR THAT CHANNEL.

SINCE THE BINARY NUMBER NECESSARY TO CHANGE DURING TRANSMIT AND RECEIVE, AN ADDITIONAL BIT IS REQUIRED AT PIN.66 OF IC901 TO ALLOW THE ROM TO RECOGNIZING THE STATUS IS TX OR RX.
DURING TRANSMIT, THE PUSH TO TALK SWITCH MAKES PIN.66 OF PLL IC IS HI DIGITALLY UNDER TRANSMIT MODE.
THE PROGRAMMABLE DIVIDER OUTPUT IS FED TO THE PHASE DETECTOR FOR COMPARING WITH THE 2.5 [KHz] REFERENCE FREQUENCY INSIDE THE IC5.

(5) PHASE DETECTOR AND VCO CONTROL

THE PHASE DETECTOR IS A DIGITAL PHASE COMPARATOR WHICH COMPARES THE PHASE OF THE REFERENCE SIGNAL WITH PROGRAMMABLE DIVIDER OUTPUT SQUARE WAVES AND DEVELOPS A SERIES OF PULSES WHOSE DC LEVEL DEPENDS ON THE PHASE ERROR OF EACH SIGNAL.
THE PHASE DETECTOR PULSE OUTPUT IS FED TO AN ACTIVE LOW PASS FILTER ,AND FED TO VARICAP D101 CONTROL THE VCO FREQUENCY.

(6) TRANSMITTER / RECEIVER BUFFER AMP

OUTPUT SIGNAL OF Q101 IS FED INTO THE BUFFER AMP Q107 TO INCREASE THE STRENGTH OF TX CARRIER FREQUENCY AND 1st LOCAL FREQUENCIES.

(7) TRANSMITTER DOUBLER

THE OUTPUT SIGNAL OF Q107 GOES TO AN AMPLIFIER WITH TUNING CIRCUIT Q601,T601,T602 WHICH DOUBLES INCOMING 13 MHz SIGNALS.

(8) SWITCHING OF TUNING CAPACITOR IN VCO

THE VCO CIRCUIT MUST TUNE WITH A WIDE RANGE OF FREQUENCIES 13.4825~13.7025 [MHz] FOR TRANSMITTER AND 16.27 ~ 16.71 [MHz] FOR RECEIVER.
TO COMPLY ABOVE RANGE OF VCO, THE TUNING CAPACITANCE SHOULD SWITCHED FOR TRANSMISSION OR RECEPTION.
THE TUNING CIRCUIT CONSISTS WITH T100,C126,C125,C112 WHEN THE VCO IS WORKING AS A RECEIVER , Q104 BECOMES TURN OFF.
SO, T100 AND C112 MAKES TUNING FUNCTION WHEN TRANSMITTING Q104 BECOMES ON.
SO, T100 AND THE PARALLEL CAPACITANCE OF C125 AND C126 MAKE TUNING FUNCTION.

(9) RECEIVER LOCAL OSCILLATOR OUTPUTS

1st MIXER : THE SECONDARY OUTPUT SIGNALS OF T503 IS INJECTED TO THE SOURCES OF 1st MIXER Q502,505 IN THE 1st IF MIXER SECTION.

2nd MIXER : THE OUTPUT OF 10.24 [MHz] OSCILLATOR CIRCUIT WITH XT201 IS INJECTED INTO THE IF MODULE (IC201). INCOMING IF SIGNAL AND 10.24 [MHz] SIGNAL ARE MIXED INSIDE THE IF IC TO EXTRACT 2nd IF SIGNAL 455 [KHz].

2.3 FREQUENCY STABILITY

LET : Fo=CRYSTAL OSCILLATOR FREQUENCY

Fr=PHASE DETECTOR REFERENCE FREQUENCY

Fvco=VCO FREQUENCY

Ft=TRANSMIT FREQUENCY

THEN : Fr=Fo/1800

AND UNDER LOCKED CONDITIONS : Fr = Fvco / N

Where , "N" IS THE DIVIDE RATIO OF PROGRAMMABLE DIVIDER.

THEN : Fvco = N X Fr

FROM WHICH IT CAN BE SEEN, THE PERCENTAGE ERROR IN Ft IS THE SAME AS THE PERCENTAGE ERROR IN Fo. THE STABILITY OF THE CRYSTAL OSCILLATOR IS DETERMINED PRIMARILY BY THE CRYSTAL ITSELF AND HAVING PASSIVE COMPONENTS OF THE OSCILLATOR.

THE CHOICE OF CRYSTAL AND COMPONENTS IS SUCH THAT THE REQUIRED FREQUENCY STABILITY IS MAINTAINED OVER THE REQUIRED VOLTAGE AND TEMPERATURE RANGE.

2.4 DESCRIPTION OF OTHER CIRCUITS

TRANSMITTER

(1) RF AMPLIFICATION

THE OUTPUT OF DOUBLER AMP Q601 IS FED THROUGH TUNING IFT T601 AND T602

TO THE BASE OF PRE DRIVER AMP Q609.

THE OUTPUT IS THEN SUPPLIED THROUGH CAPACITOR C634 TO RF DRIVER AMP Q602.

THE OUTPUT OF Q602 IS SPLITTED WITH TUNING CIRCUIT L607,C608,C616 GOES TO THE BASE OF FINAL RF AMP Q603.

THE OUTPUT OF Q603 IS SUPPLIED TO THE ANTENNA THROUGH L-C TUNING CIRCUIT.

(2) CIRCUIT FOR SUPPRESSION OF SPURIOUS RADIATION

THE TUNING CIRCUIT BETWEEN THE OUTPUT OF FINAL AMP Q603 AND ANTENNA, 4-STAGE "PHI" NETWORK T604,C607,C620,L604,C621,L602,C609,C605,C606,L605 SERVES AS A SPURIOUS RADIATION

SUPPRESSOR.
THIS NETWORK ALSO SERVES TO MATCH THE IMPEDANCE
BETWEEN TX POWER AMP Q20 AND THE ANTENNA.

(3) MAXIMUM MODULATION CONTROL

3-1:FM

MODULATION SIGNALS ARE FILTERED WITH RC NETWORK AND GOES TO THE MIC AMP IC850
TO MAKE NOMINAL SIGNAL LEVEL TO ACHIEVE WANTED MODULATION.
TO CONTROL INCOMING AUDIO SIGNAL, DIODE LIMITTINHG CIRCUIT D850, CORRESPONDING
ALC CIRCUIT CONTROLS WITH PROPORTIONAL TO SAMPLED AUDIO OUTPUT LEVEL.
ADJUST VR850 SHALL NOT EXCEED 2.2KHZ DEVIATION UNDER 1250[Hz] AF 20dB UP FROM 1.5KHZ
DEV LEVEL INPUT.

3-2:AM

MODULATION SIGNALS ARE FILTERED WITH RC NETWORK AND GOES TO THE AUDIO AMP IC401
TO MAKE NOMINAL SIGNAL LEVEL TO ACHIEVE WANTED MODULATION.
TO CONTROL INCOMING AUDIO SIGNAL Q402,Q405 AND CORRESPONDING ALC CIRCUIT
CONTROLS WITH PROPORTIONAL TO SAMPLED AUDIO OUTPUT LEVEL.
ADJUST RV401 SHALL NOT EXCEED +/- 90% MODULATION UNDER 1KHz AF 20dB UP FROM 50%
MOD LEVEL INPUT.

RECEIVER

(1) RF AMP Q501AMPLIFY RF SIGNAL FROM ANTENNA
THE AMPLIFIED RF SIGNAL IS FED THROUGH TUNING COILS T501,502,503,504 TO THE GATE OF MIXER Q502,505, ALSO VCO SOURCE'S FREQUENCY LOWER 10.695MHz THAN THE FREQUENCY OF EACH CHANNEL IS SUPPLIED TO MIXER

(2) THE SOURCE OF 10.695MHz FREQUENCY PASSED TUNING COIL T503
IS FED THROUGH MCF501 TO Q201.

(3) THE 455KHz FREQUENCY SIGNAL PRODUCED FROM IC201 BY MIXING THE OUTPUT SOURCE OF FL1 10.695MHz FILTER AND THE SOURCE OF 10.240MHz FREQUENCY
FROM CRYSTAL OSCILLATOR XT201.

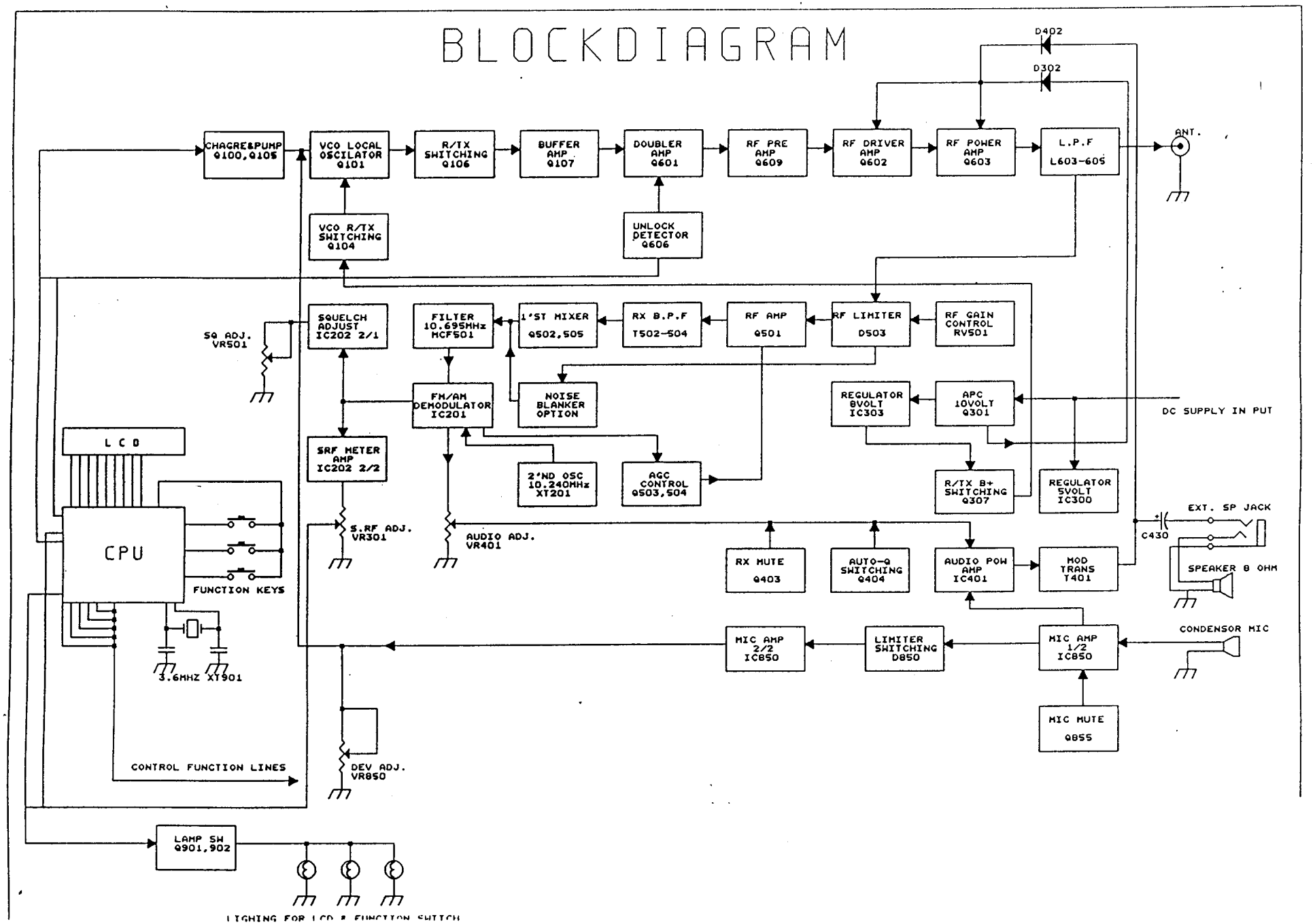
(4) INTERNAL AM AND FM DETECTOR OF IC1 DETECT AM & FM AUDIO SIGNAL

(5) A.G.C (AUTOMATIC GAIN CONTROL) SIGNAL OF IC1 FED TO IC2,Q105,Q104
CONTROL RECEIVING SENSITIVITY.

(6) AM AUDIO OUTPUT
DETECTED AUDIO SIGNAL IS FED THROUGH C222,R207,C206,C209,RV401 TO
LOW FREQUENCY AUDIO AMP FOR DRIVING SPEAKER.

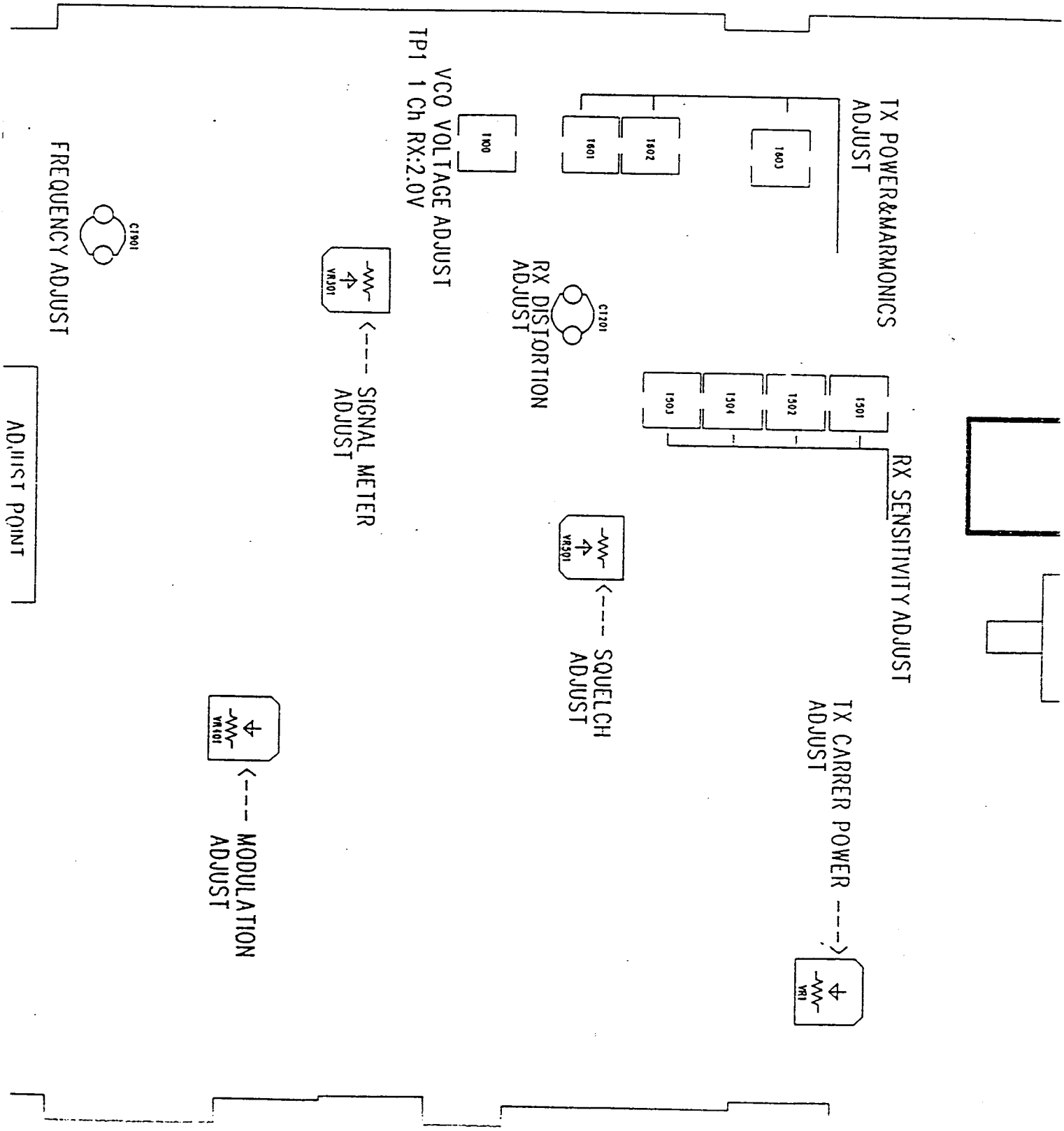
(7) FM AUDIO OUTPUT
DETECTED AND AMPLIFIED AUDIO SIGNAL IS FED THROUGH HIGH CUT FILTER
C221,R209,C210,C202,RV401 TO SPEAKER

BLOCKDIAGRAM



ALIGNMENT INSTRUCTIONS

1. ALIGINMENT LAYOUT



2. TEST EQUIPMENT REQUIRED

1) CPU and Phase Locked Loop Section

① Frequency Counter

② DC Power Supply

③ DC Volt Meter

④ Oscilloscope

2) Transmitter Section

① RF Power Meter(RF SSVM)

② 50Ω Load(non-inductive)

③ RF Attenuator

④ Oscilloscope

⑤ Audio Generator

⑥ DC Power Supply

⑦ Spectrum Analyzer

⑧ Frequency Counter

⑨ Coupler

3) Receiver Section

① RF Signal Generator

② RF Power Meter

③ Distortion Meter

④ DC Power Supply

3. ALIGNMENT PROCEDURE

1) PHASE LOOKED LOOP AND CPU SECTION

STEP	SETTING	CONNECTION	ADJUST	ADJUST FOR
1	Frequency adjustment ; Mode : Receive Volume : Optional Squelch : Optional CH Selector : 1	Frequency counter to output pin_1 of IC5(LC72338) (Figure-1)	CT901	4.5MHz ±100Hz
2	CPU Voltage check ; Mode : Receive Volume : Optional Squelch : Optional CH Selector : Optional	Connect DC volt. meter to TP1 on CPU board. (Alignment Layout CPU Section)		Indication on DC voltmeter must be 4.8～5.2volt.

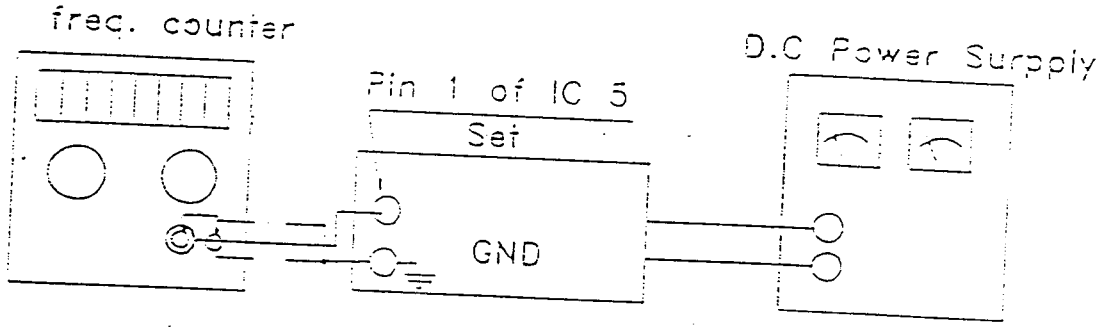
2) TRANSMITTER SECTION

STEP	SETTING	CONNECTION	ADJUST	ADJUST FOR
1	RF Driver stage ; Mode : Transmit Volume : Optional Squelch : Optional CH Selector : 19	Connect oscilloscope prove to base of Q602 (Figure-3)	T601 T602	Adjust for maximum wave form on the oscilloscope.
2	RF Power stage ; Mode : Transmit Volume : Optional Squelch : Optional CH Selector : 19	Connect dummy load and RF power meter to the external ANT-jack on the set (Figure-4)	T604	Adjust for max. indication on the power meter(4W)
3	Second harmonic check ; Mode : Transmit Volume : Optional Squelch : Optional CH Selector : 19	Connect RF power meter with dummy load to spectrum analyzer through coupler/-40dB atten. to EXT-ANT. jack on the set (Figure-5).		At no modulation, compare the level of fundamental freq-spectrum to the level of harmonic freq-spe -ctrum. Suppression of the 2nd harmonic Freq. level must be lower than -54dBm. Check for the other channel's
4	Frequency check ; Mode : Transmit Volume : Optional Squelch : Optional CH Selector : 19	Connect dummy load and frequency counter through coupler to RF power meter. Also connect power meter to EXT-ANT. jack on the set. (Figure-6)	CT901	Make sure that the indication of the transmitter freq. is 27.185MHz±300Hz on the frequency counter.
5	MAX deviation check ; Mode : Transmit Volume : Optional Squelch : Optional CH Selector : 19	Connect dummy load and modulation meter through coupler to RF power meter. Also connect power meter to EXT-ANT. jack on the set. (Figure-7)	VR401 VR850	adjust VR401 so that the indication of the modulation analyzer is 90% with ±5% tolerance at high power mode. Adjust VR850 so that the indication of the deviation analyzer is 2.0KHz with +/- 0.2KHz tolerance at high power mode

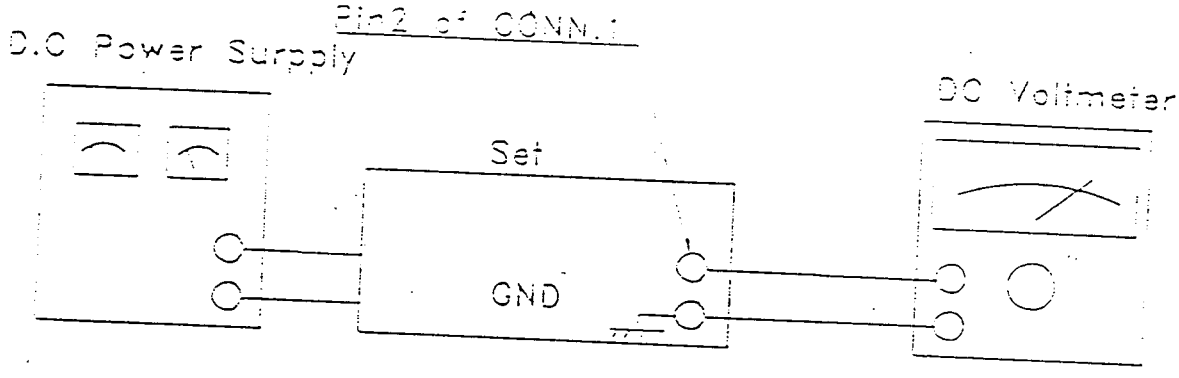
3) RECEIVER SECTION

STEP	SETTING	CONNECTION	ADJUST	ADJUST FOR
1	RX senstivity ; Mode : Receiver Volume : Fully clockwise Squelch : Turn to counterclockwise CH Selector : 19 SSG : 27.185MHz,1KHz, 1uV(-107dBm) <AM> 30% MOD.	Connect RF signal generator to external ANT. Jack. Connect SSVM,Sinadder and distortion meter across EXT-Speaker out jack with 8Ω dummy load (Figure-8)	T501 T502 T504 T503	Adjust the parts of tuning circuitry with observing ADM(Automatic Dist Meter)indicates 20dB SINAD in AM mode , and adjust output level of RF-SSG until speaker out level reaches about 500 miliwatt(2.0Volt)
			T001	adjust for Maximum indication ON SSVM
2	Squelch Adjustment ; Mode : Receiver Volume : 500mW(2.0V) Squelch : TIGHT CH Selector : 19 SSG : 27.185MHz, 1KHz <Tight> 2.815 μV(-47dBm) 30% MOD	Connect RF signal generator to external ANT. Jack. Connect RF power meter and distortion meter Across EXT-Speaker out jack with 8Ω dummy load (Figure-8)	VR501	At each mode , Adjust the point until the audio output appeared on ocsilloscope.
3	Signal Meter Adjustment ; Mode : Receiver Volume : 500mW(2.0V) Squelch : Turn to counterclockwise CH Selector : 19 SSG : 27.185MHz, 1KHz, 100Uv(-67dBm) No MOD.	Connect RF signal generator to external ANT. Jack. Connect RF power meter and distortion meter across EXT-Speaker out jack with 8Ω dummy load (Figure-8)	VR301	Adjust so that the 9th LCD Bar display on the LCD

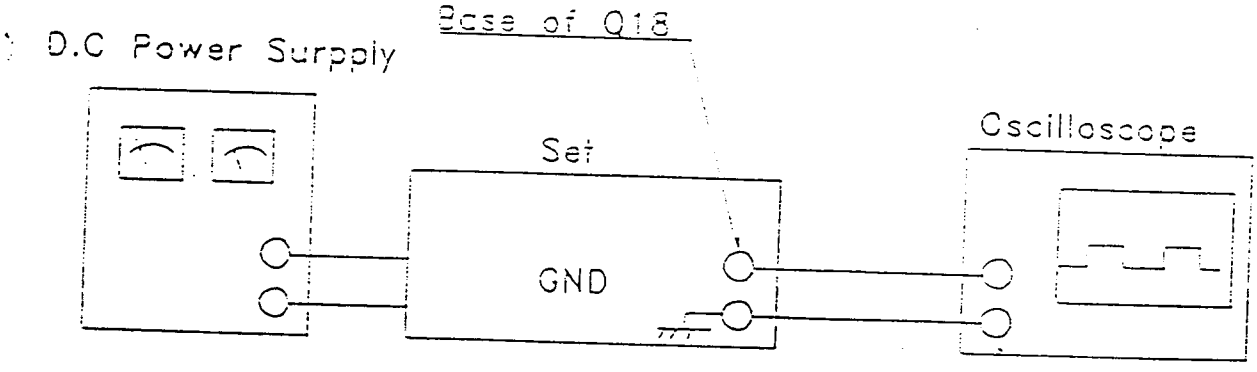
TEST EQUIPMENT SET-UP



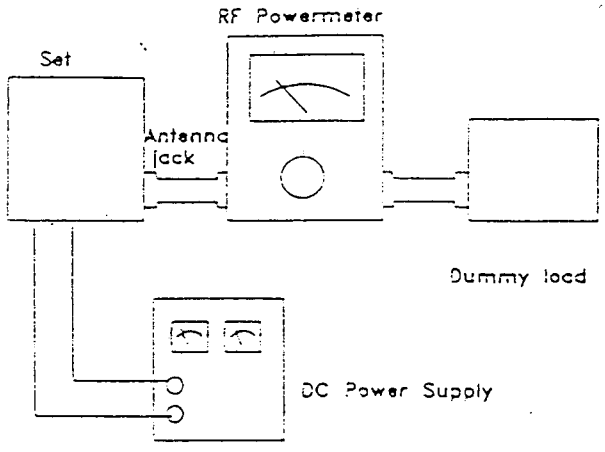
[FIGURE 1]



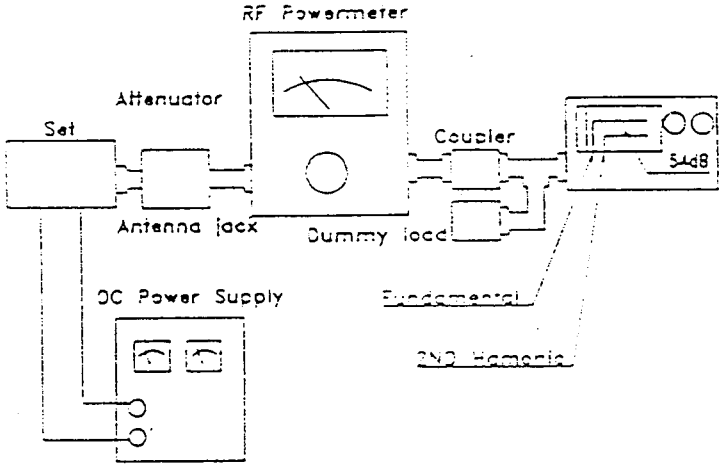
[FIGURE 2]



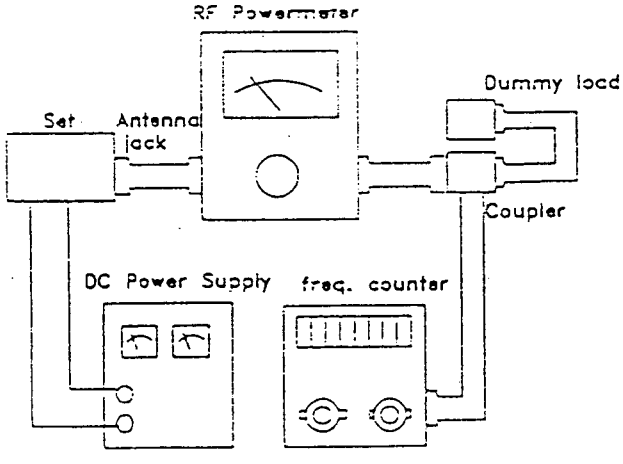
[FIGURE 3]



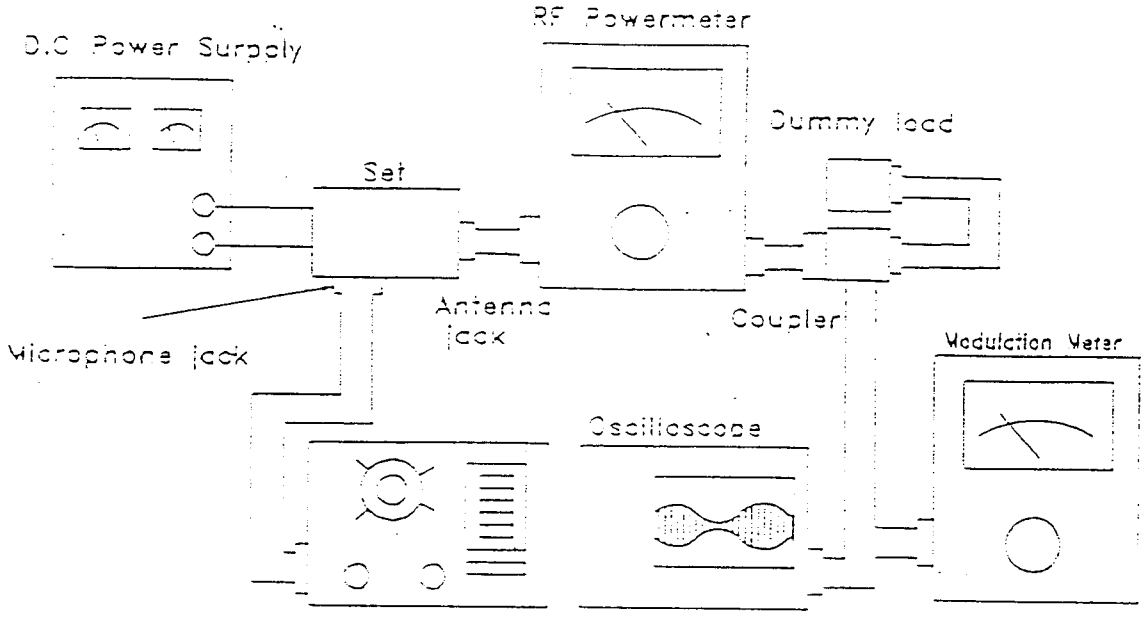
[FIGURE 4]



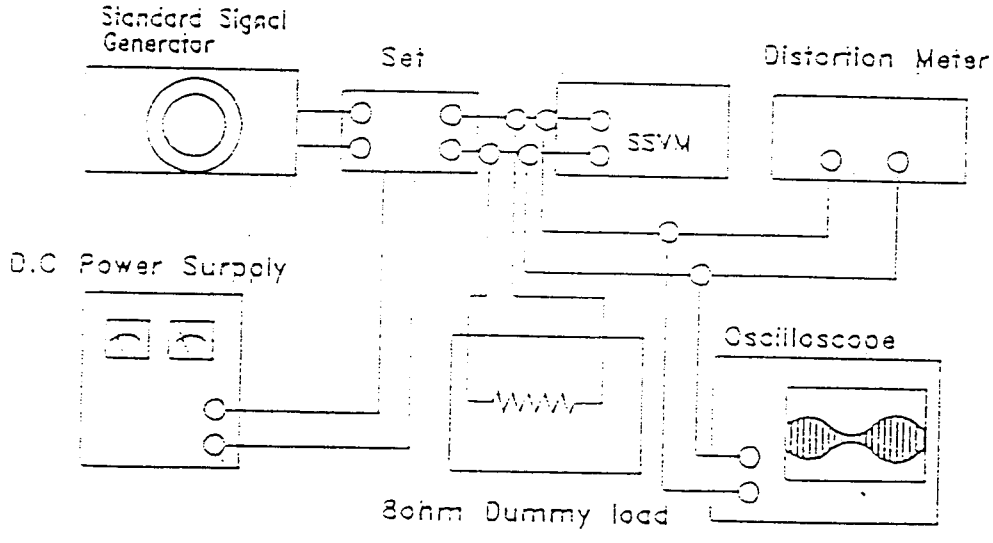
[FIGURE 5]



[FIGURE 6]



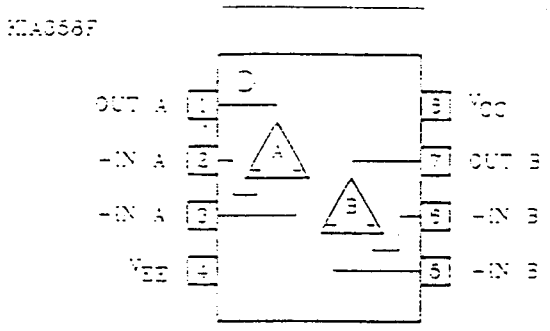
[FIGURE 7]



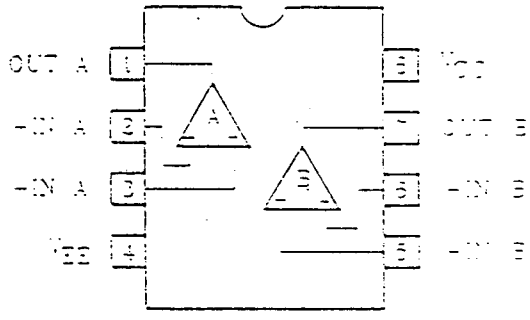
[FIGURE 8]

SEMICONDUCTOR LEAD INDENTIFICATION AND IC INTERNAL DIAGRAM

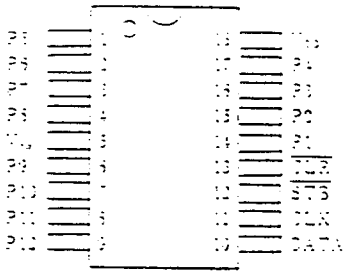
KIA3558F



KIA4558F



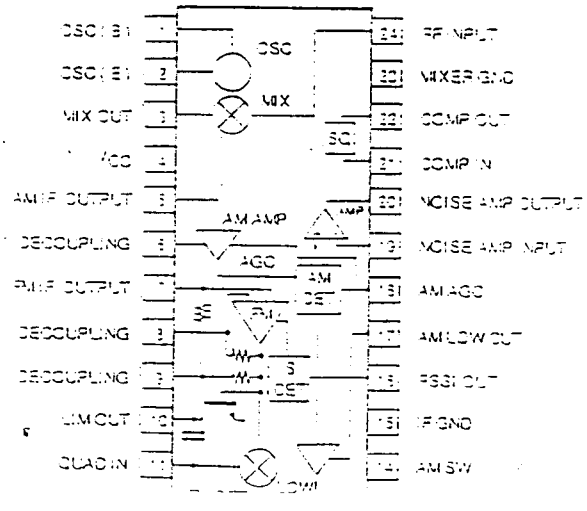
NJU3713

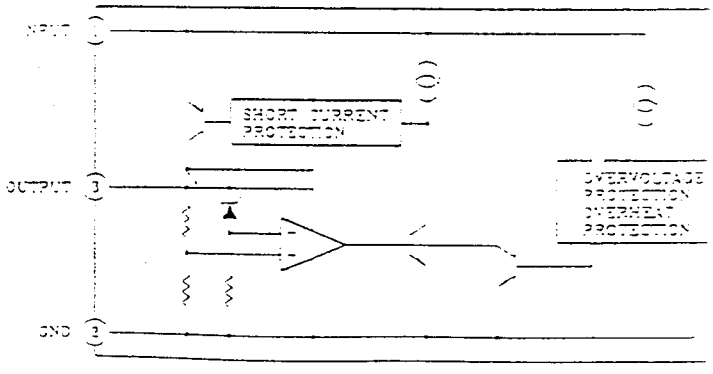


78L05

TK10930V

BLOCK DIAGRAM





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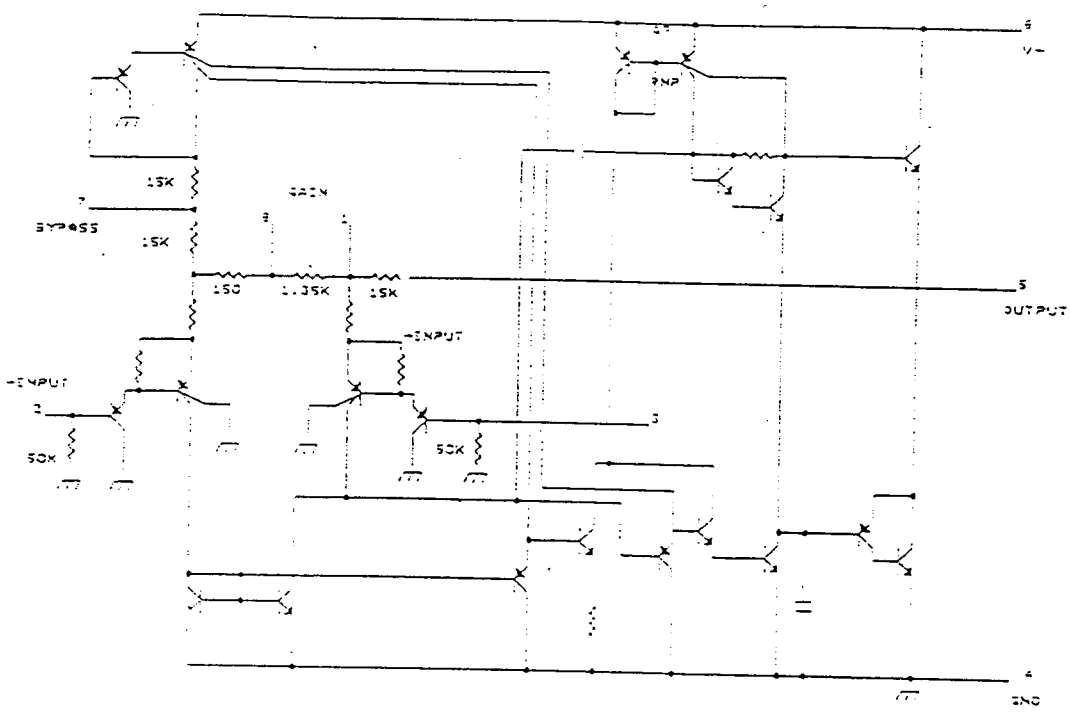
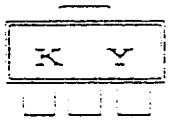


C.TRANSISTORS & DIODES



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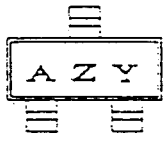

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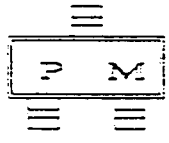

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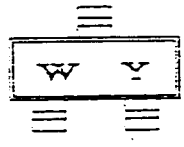

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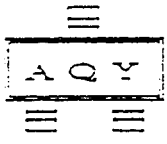

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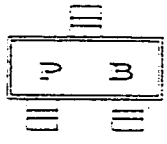

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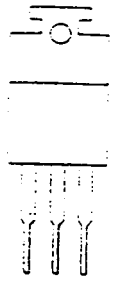

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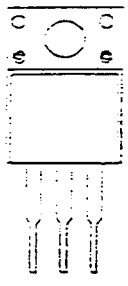

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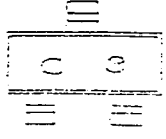

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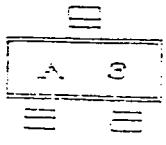

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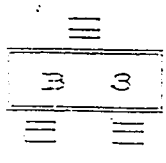
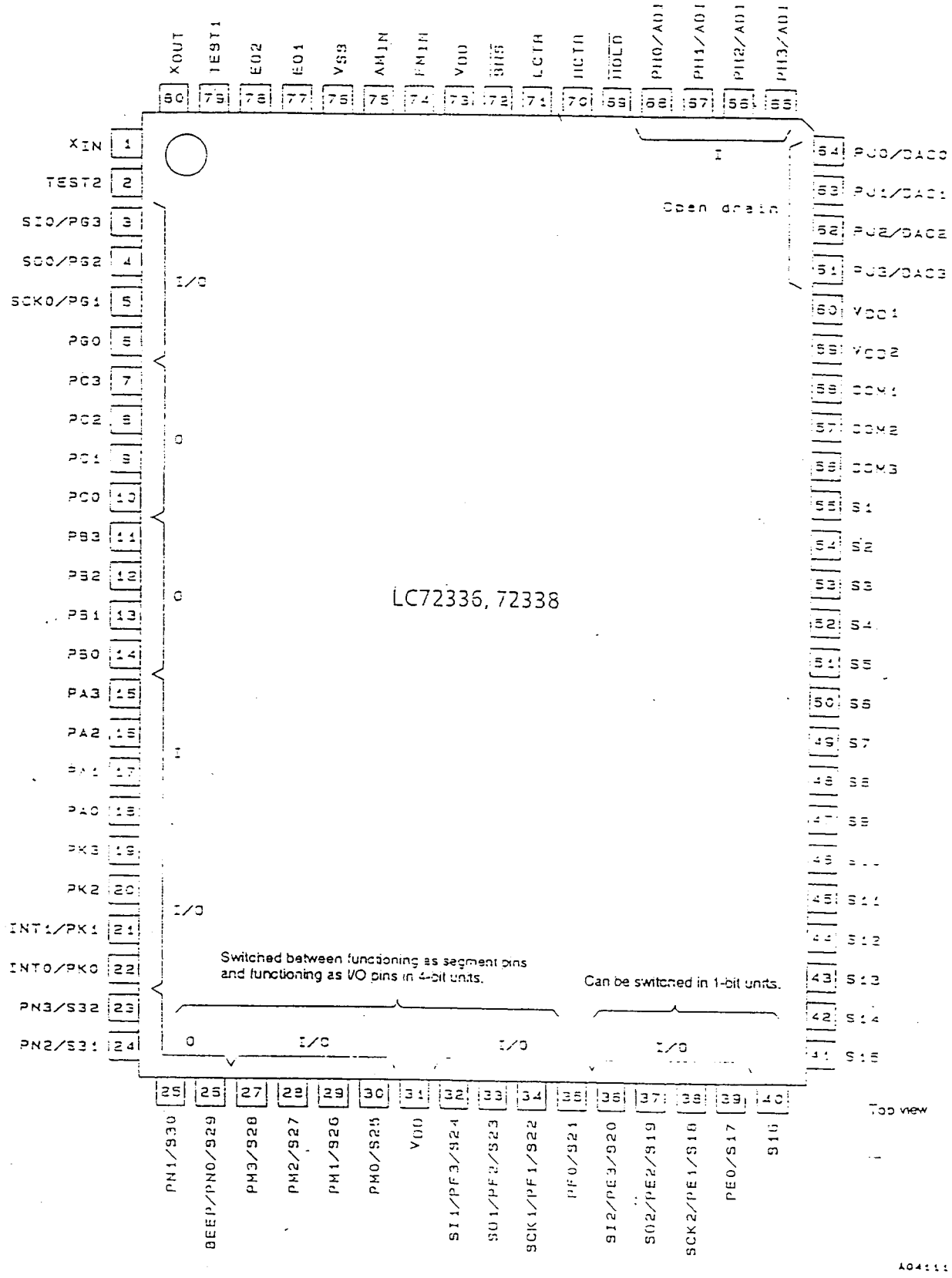


KDS181

SEMICONDUCTOR LEAD INDENTIFICATION AND IC INTERNAL DIAGRAM

LC72338 CPU



* EM-27 CPU PIN ASSIGNMENT(LC72338)

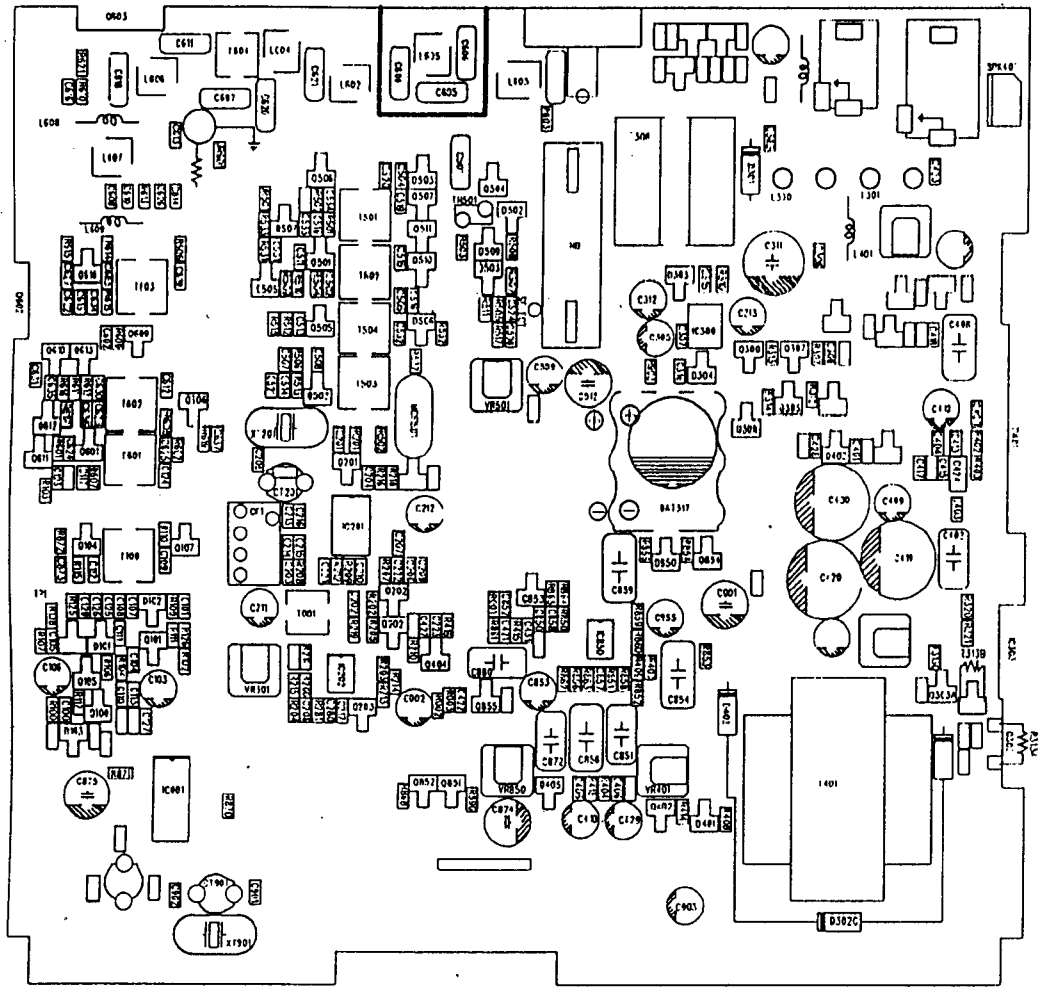
PIN NO.	NAME	DESCRIPTION		STATUS		REMARK
				HIGH	LOW	
1	XIN	X-TAL INPUT				4.5MHz
2	TEST2	NOT USED(LC72338N : GND)				
3	T-D	TONE DETECTOR INPUT	PG3			
4	T-DATA	TONE DATA OUTPUT	PG2			
5	T-CLOCK	TONE CLOCK OUTPUT	PG1			
6	SQ-IN	SQUELCH INPUT	PG0	MUTE OFF	MUTE	
7	T-STB	TONE STROBE	PC3			OUTPUT ONLY PC
8	S-STB	SERIAL DATA STROBE	PC2			NJU3713 CONTROL
9		NOT USED	PC1			
10	RR4	OPTION ROW2 OUTPUT	PC0	ENABLE	DISABLE	
11	RR3	OPTION ROW1 OUTPUT	PB3	ENABLE	DISABLE	OUTPUT ONLY PB
12	RR2	KEY ROW2 OUTPUT	PB2	ENABLE	DISABLE	
13	RR1	KEY ROW1 OUTPUT	PB1	ENABLE	DISABLE	
14	RR0	KEY ROW0 OUTPUT	PB0	ENABLE	DISABLE	
15	CC3	KEY COLUMN INPUT	PA3	ON	OFF	WITH PULL DOWN
16	CC2	KEY COLUMN INPUT	PA2	ON	OFF	WITH PULL DOWN
17	CC1	KEY COLUMN INPUT	PA1	ON	OFF	WITH PULL DOWN
18	CC0	KEY COLUMN INPUT	PA0	ON	OFF	WITH PULL DOWN
19		NOT USED	PK3			
20	PWR	POWER SWITCH INPUT	PK2			
21	DOWN	ROTARY DOWN PULS IN	PK1		EDGE	
22	UP	ROTARY UP PULS INPUT	PK0		EDGE	
23-55	SEGMANT	LCD SEGMENT OUTPUT				
56-58	COMON	LCD COMON OUTPUT				
31	VDD	POWER VDD				
59	VDD2	LCD 1/3 DUTY voltage				
60	VDD1	LCD 1/3 DUTY voltage				
61		NOT USED	PJ3			
62	LAMP1	LAMP CONTROL OUTPUT	PJ2	DIN	OFF	
63	LAMP2	LAMP CONTROL OUTPUT	PJ1	BRT	OFF	
64	BEEP	BEEP TONE OUTPUT	PJ0			
65	K-AD1	MIKE KEY1 INPUT	PH3			ANALOG INPUT
66	K-AD2	MIKE KEY2 INPUT	PH2			ANALOG INPUT

PIN NO.	NAME	DESCRIPTION		STATUS		REMARK
				HIGH	LOW	
67	SRF-IN	SIGNAL LEVEL INPUT	PH1			ANALOG INPUT
68	BAT-LO	BAT VOLTAGE INPUT	PH0			ANALOG INPUT
69	HOLD	POWER OFF DETECT	HOLD	NOMAL	PWR OFF	
70	HCTR	NOT USED	HCTR			
71	LCTR	NOT USED	LCTR			
72	SNS	POWER FAIL DETECT	SNS	NOMAL	PWR FAIL	
73	VDD	CPU VDD	VDD			
74	FMIN	NOT USED	FMIN			
75	F-IN	VCO FREQ. INPUT	AMIN			
76	VSS	CPU GND	GND			
77	EO1	PHASE ERROR OUTPUT1	EO1			NOT USED.
78	PD	PHASE ERROR OUTPUT2	EO2			VCO CONTROL
79	TEST1	NOT USED	TEST1			GND
80	XOUT	X-TAL OUTPUT				
		NJU3713 OUPUT EXPENDER				
14	RX-MUTE	AUDIO ON/OFF	P1	AUDIO OFF	ON	
15	RX-B- CTRL	RX POWER ON/OFF	P2	ENABLE	DISABLE	
16	TX-B- CTRL	TX POWER ON/OFF	P3	ENABLE	DISABLE	
17	POWER	TOTAL POWER ON/OFF	P4			
1	HI/LOW	TX RF POWER HI/LOW	P5	LOW	HIGH	
2	AM/FM	AM/FM CONTROL	P6	FM	AM	
3	TX-MUTE	TX CONTROL FOR UNLOCK	P7	NO TX	OK TX	
4	AUTO-Q	AUTO SMALL MUTE	P8	ENABLE	DISABLE	
6	BAND-3	VCO CONTROL	P9	ENABLE	DISABLE	
7	BAND-2	VCO CONTROL	P10	ENABLE	DISABLE	
8	BAND-1	VCO CONTROL	P11	ENABLE	DISABLE	
9	MUTE1750	MIKE MUTE FOR 1750HZ	P12	MUTE	NO-MUTE	

PCB VIEWS

1. MAIN BOARD

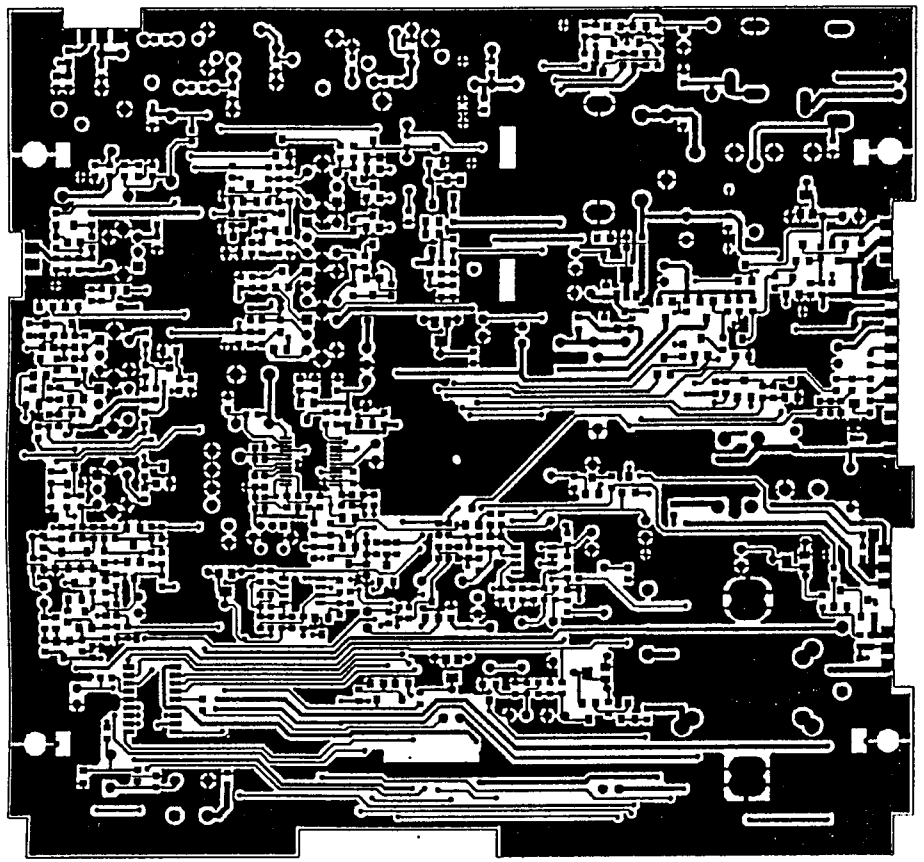
TOP LOCATION



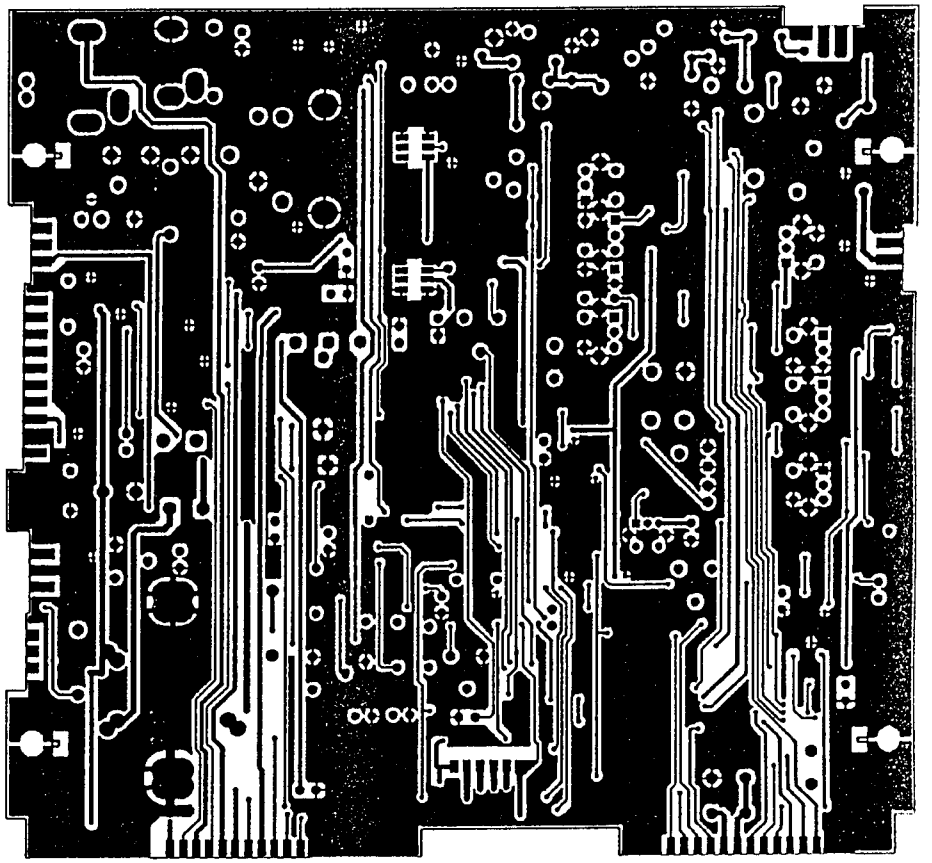
PCB VIEWS

1. MAIN BOARD

TOP PATTERN



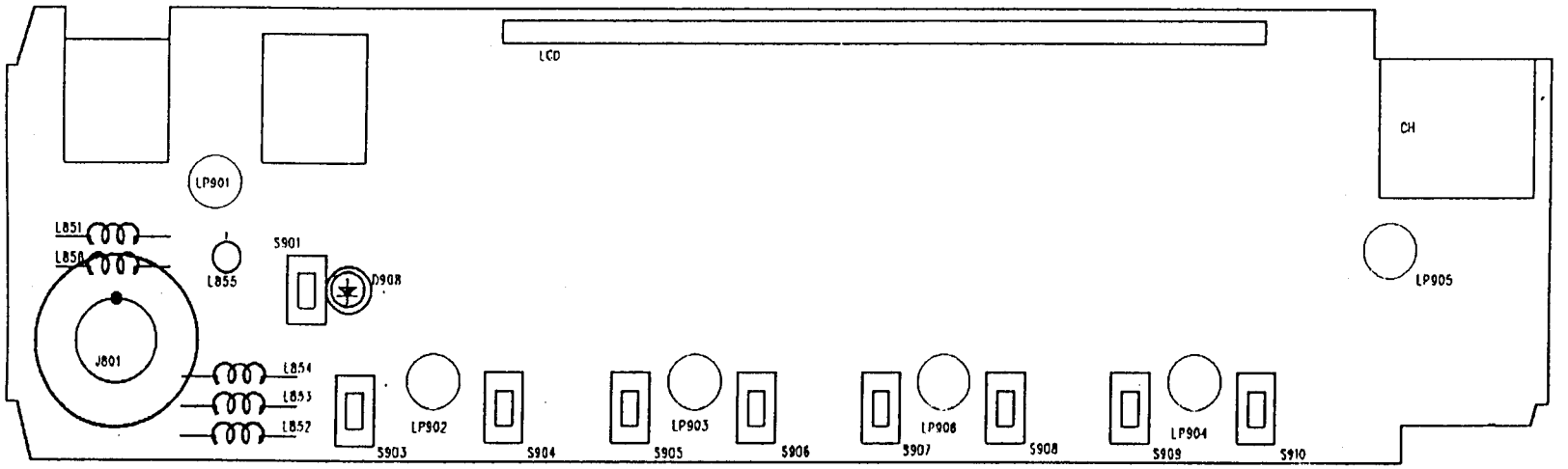
BOTTOM PATTERN



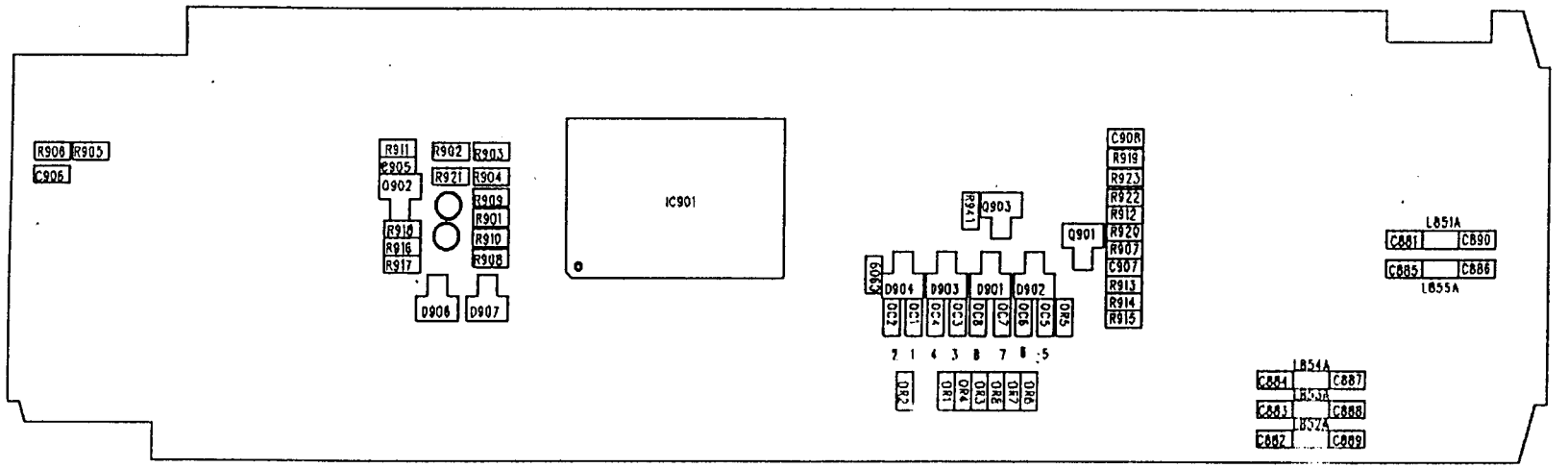
PCB VIEWS

2. FRONT BOARD

TOP LOCATION



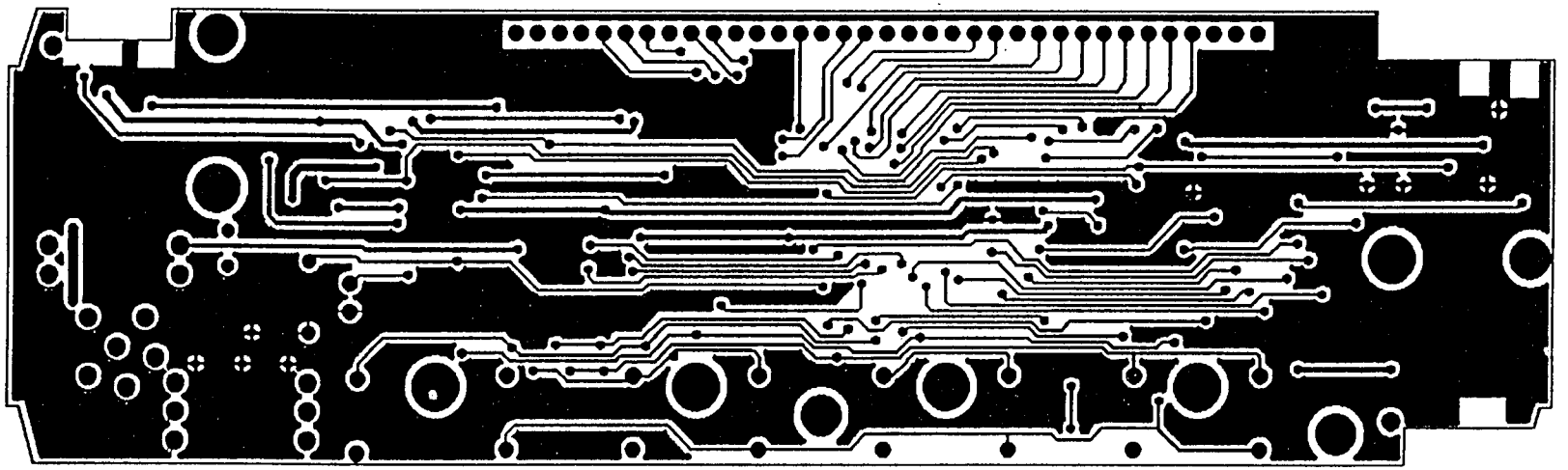
BOTTOM LOCATION



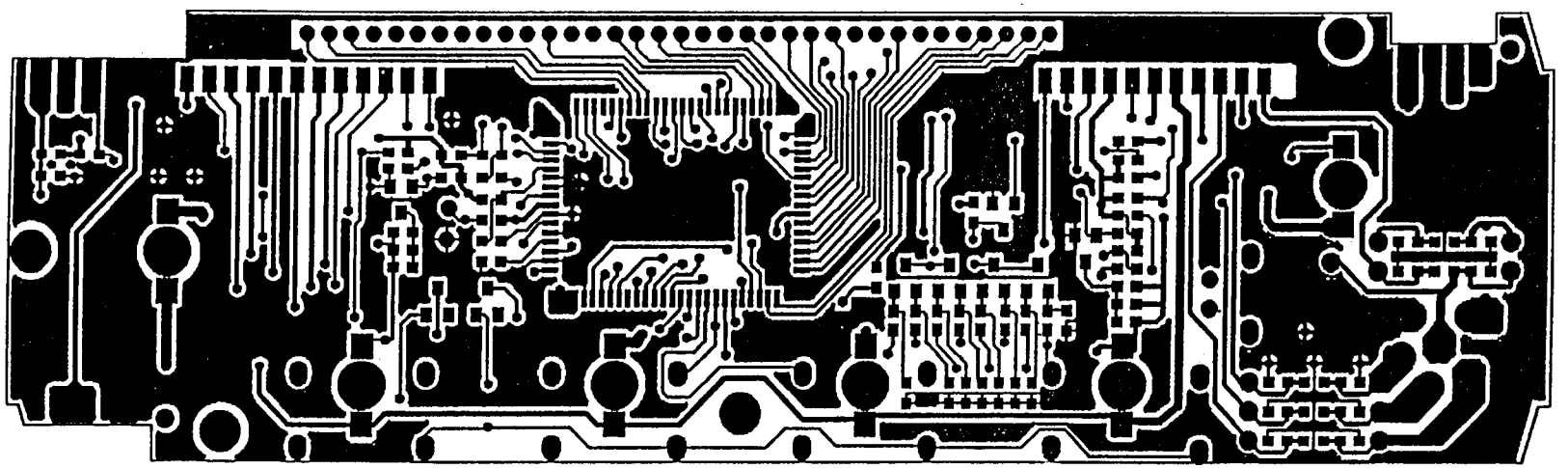
PCB VIEWS

2. FRONT BOARD

TOP PATTERN



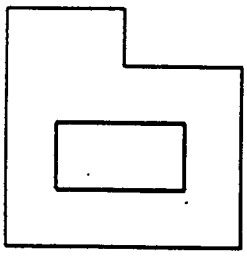
BOTTOM PATTERN

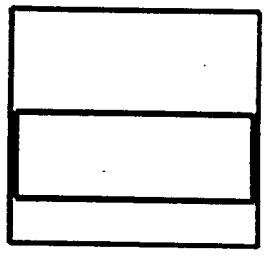


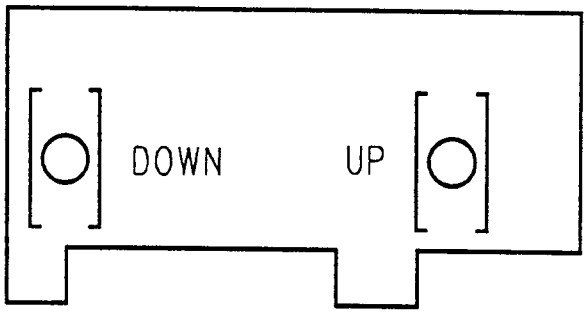
PCB VIEWS

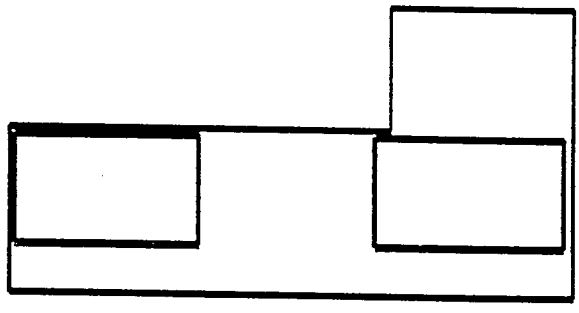
5. SUB BOARD

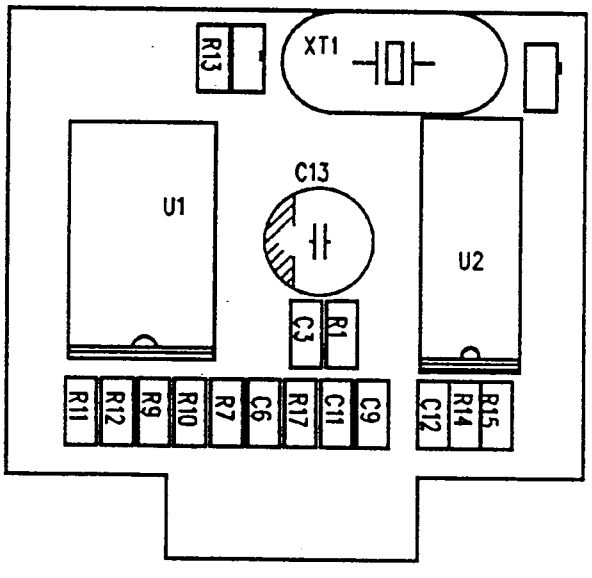
TOP LOCATION

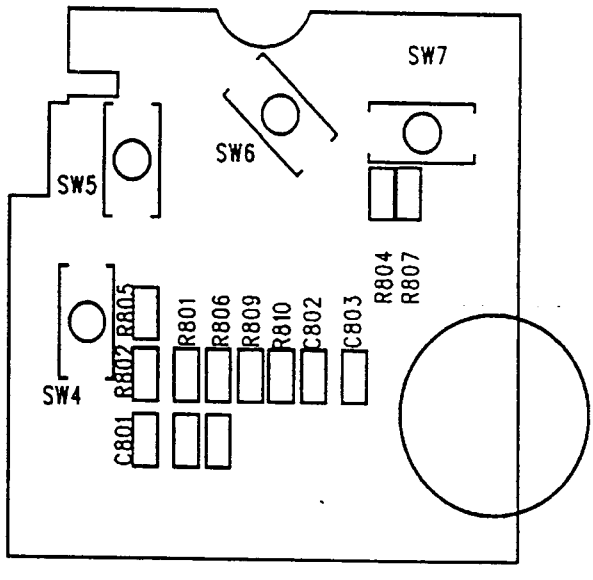








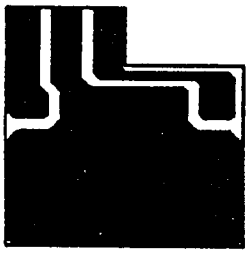


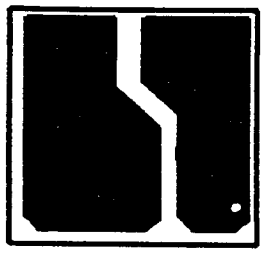


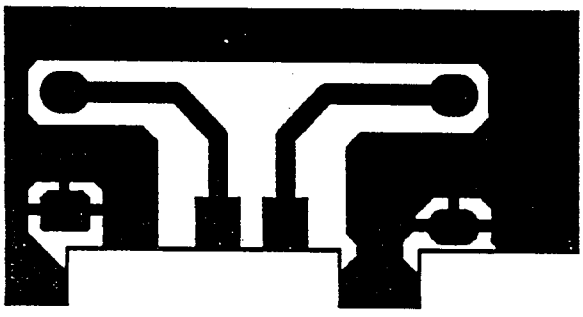
PCB VIEWS

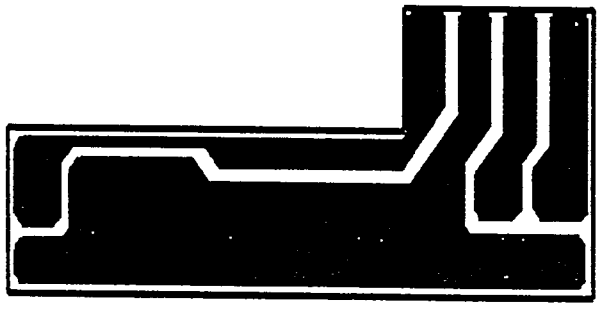
5. SUB BOARD

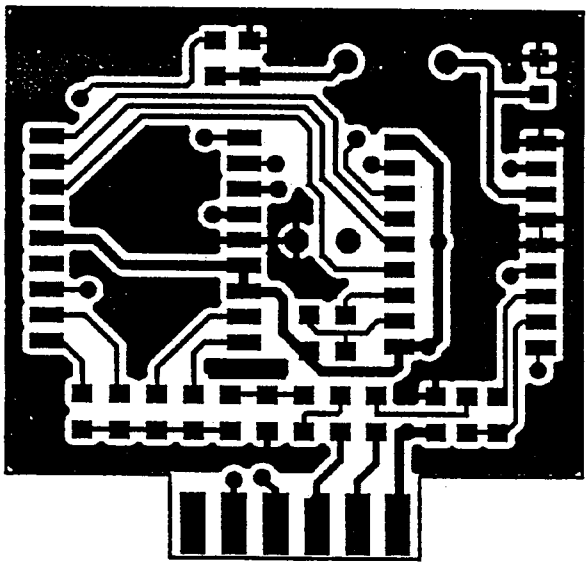
TOP PATTERN

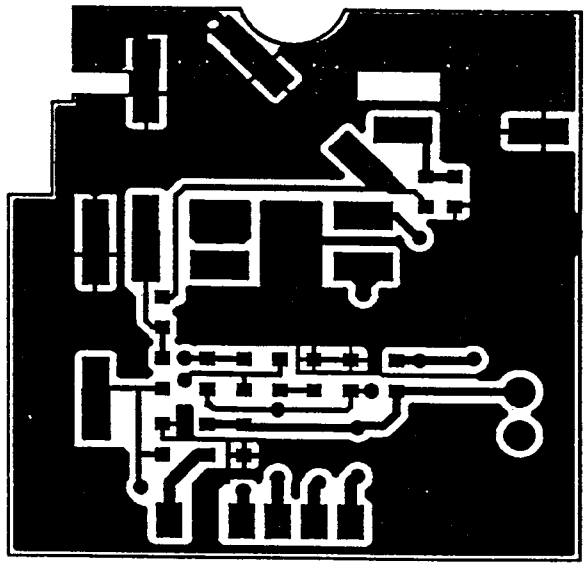








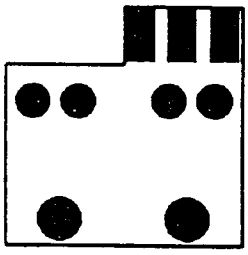


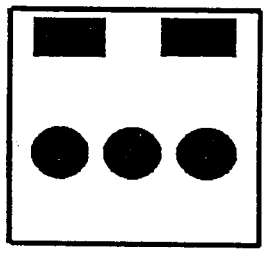


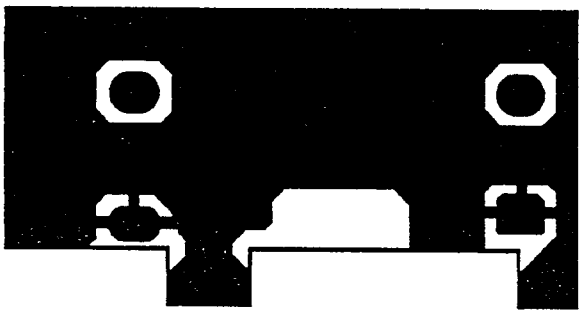
PCB VIEWS

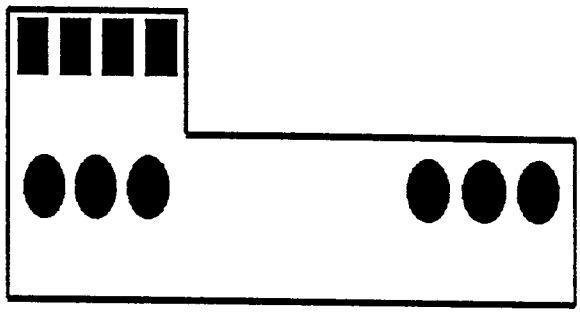
5. SUB BOARD

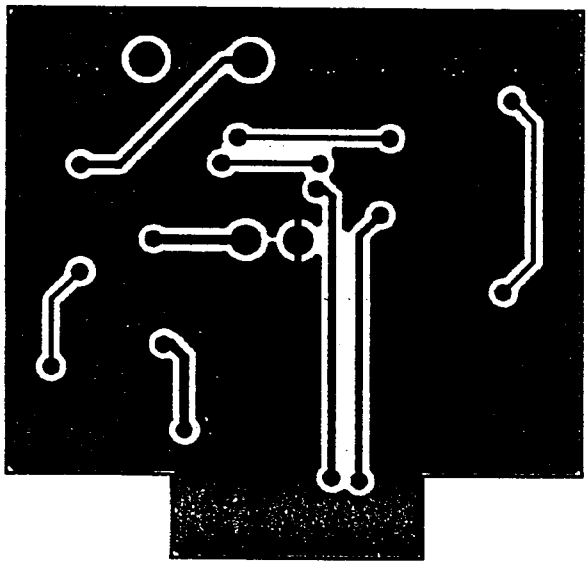
BOTTOM PATTERN

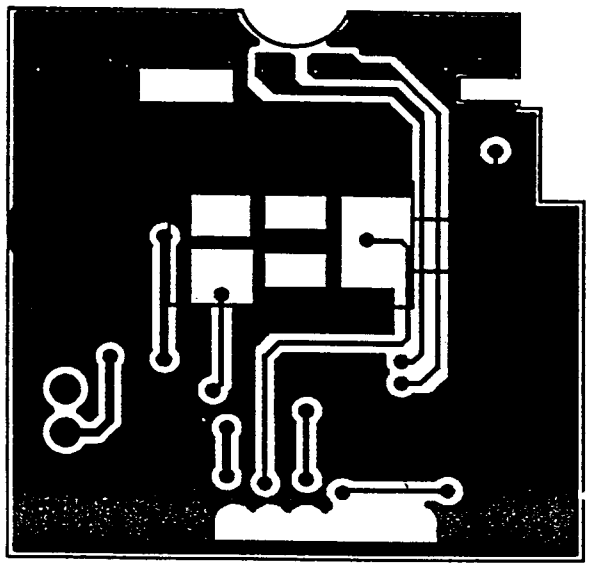








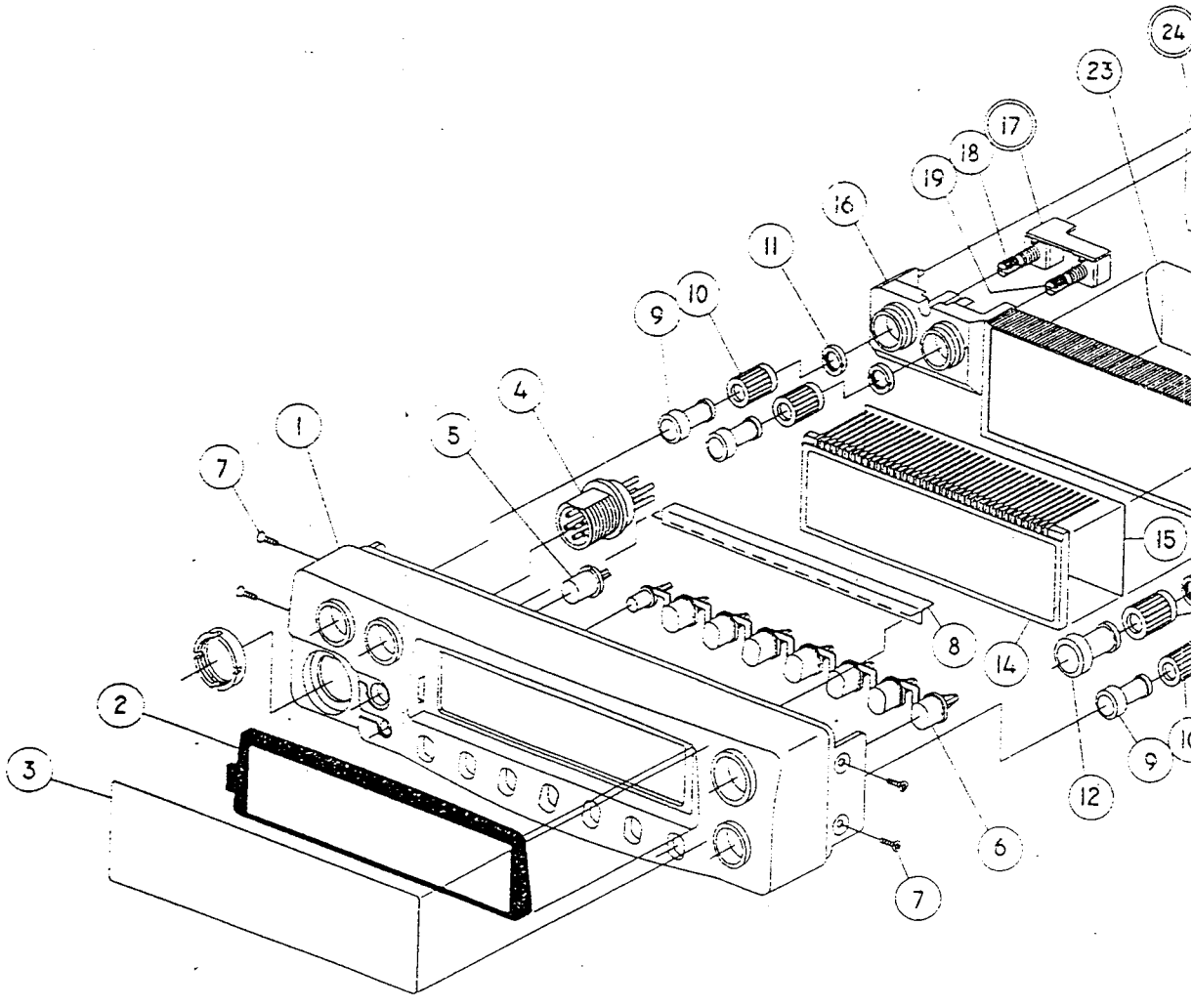




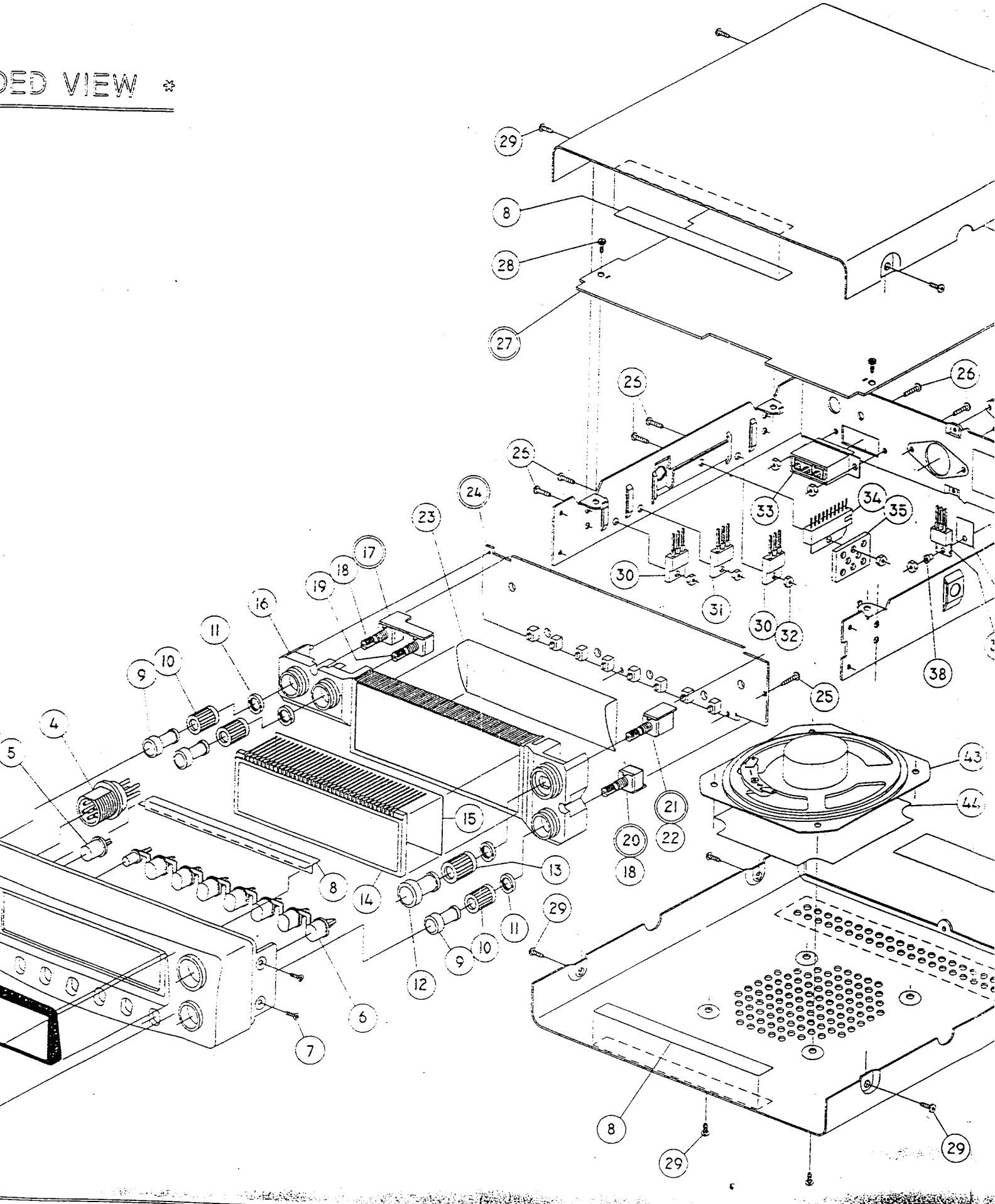
TROUBLE SHOOTING CHART

SYMPTOM	PROBLEM	REMEDY
Unit does not work at all	1.Defective power switch VR-1 2.Defective Q301,IC5(LC72338)	1.Replace 2.Replace
No output from speaker at all	1.Defective external speaker jack 2.Defective IC201,D202,IC401,JACK401,MICor cold solder	1.Replace or repail 2.Replace defective component
No noise on speaker	1.Measure all the voltage of Q501,502,505,201,VR-401 2.Defective Squelch circuit components IC202,Q203,Q403,VR501	1.replace 2.Replace
Squelch does not work	1.Defective VR501,IC202 2.Improperly adjusted RV-1	1.Replace 2.Readjust
No modulation	1.Defective CM901 2.Poor audio output and defective modulation microphone amplifier components(IC401) 3.Defective MIC Module	1.Replace 2.Replace defective components 3.Replace
LCD Meter does not work	1.Defective IC201,VR301,IC202	1.Replace
LCD Display does not work	1.Defective XT901,IC901,IC300	1.Replace
CH UP/DOWN does not work	1.Defective S902	1.Replace
CH9.does not work	1.Defective IC901	1.Replace
No TX output power	1.Defective Q601,Q609,Q602,Q603	1.Replace

* EXPLODED VIEW *



ED VIEW *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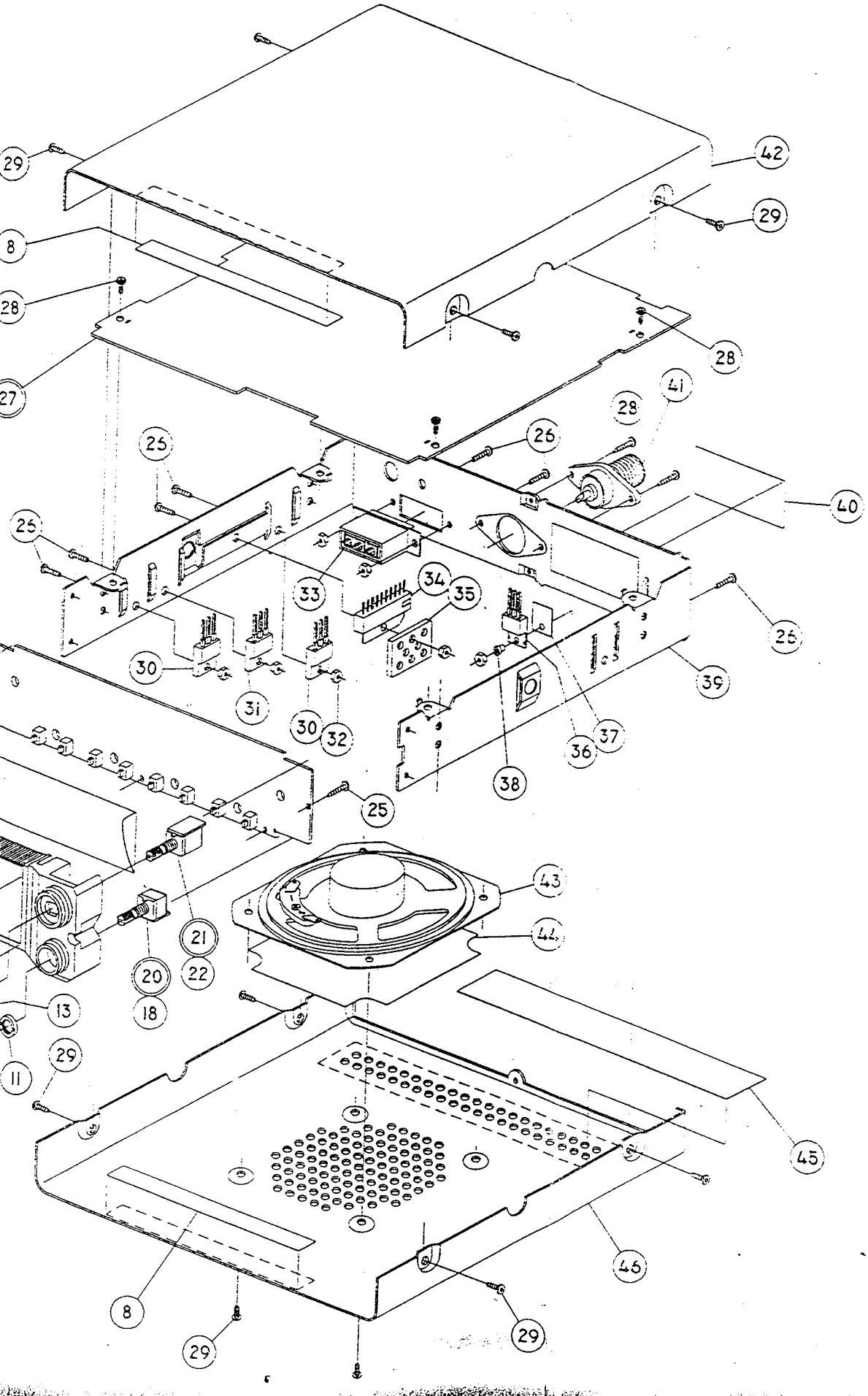
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** EXPLODED VIEW PARTS LIST **

No	PART CODE	DESCRIPTION	SPECIFICATION	QT'Y	REMARK
1	61000132	COVER-FRONT	ABS, BLK, AL-COATING	1	xm 7042
2	61000099	WINDOW-LCD	ACRYL, CLEARNESS	1	
3	66000116	TAPE-CLEAN	PASCAL TAPE	1	
4	32020005	CONN-MIC(R)	SCN-16-6(S1)	1	
5	61000101	BUTTON-POWER	M/ABS, SPRAY & SILK	1	
6	61000100	BUTTON-FUNCTION	M/ABS, SPRAY & SILK	1	
7	68000008	SCREW-F.H, M/C	(+)M2*L5, FZY	4	
8	70000025	FELT-VIBRATION	FELT, 0.3t, BLK	3	
9	61000103	KNOB-VOLUME	ABS, BLK	3	
10	64000018	BELT-VOLUME KNOB	SILICONE, BLK	3	
11	67000008	NUT "2"-VOLUME	MBsBD1, M6*1.5H	4	
12	61000104	KNOB-CHANNEL	ABS, BLK	1	
13	64000019	BELT-CHANNEL KNOB	SILICONE, BLK	1	
14	28020006	LCD	WC-0046AGP	1	
15	65000005	FILTER-LCD	PC 0.25t, WHT	1	
16	61000102	REFLECTOR	ACRYL, CLEARNESS	1	
17	80038010	ASS'Y VOLUME "2"		1	
18	1662B503	RESISTOR-CONVERSION	V9MS15KC-15A50K	2	
19	1662B103	RESISTOR-CONVERSION	V9MN15KC-15A10K	1	
20	80038009	ASS'Y VOLUME "1"		1	
21	80038011	ASS'Y CHANNEL		1	
22	35420003	SWITCH-PULSE	20STEP, PULSE TYPE	1	
23	70000028	FILTER-REFLECTION	P.E FILM, 0.05INCH	1	
24	80038008	ASS'Y FRONT B'D		1	
25	68000019	SCREW-B.H, T/P2	(+)M2*L6, FZY	3	
26	68000021	SCREW-B.H, M/C	(+)M2.6*L8, FNW	7	
27	80053020	ASS'Y MAIN B'D		1	
28	68000028	SCREW-B.H, T/P2	(+)M3*L6, FNW	6	
29	68000027	SCREW-P.H, T/P2	(+)M3*L6, FZB	12	
30	13020002	TR-PNP	KTB1366	2	
31	11720001	IC-REGULATOR	7808, TO-220	1	
32	68000018	NUT-HEXAGON	M2.6, FZY	7	
33	33020004	CONN-POWER	CB-3R, 3PIN	1	
34	11720002	IC-AUDIO	KIA7217P	1	
35	63000005	HEAT-SINK "D"	AL, 2t	1	
36	13220002	TR-NPN	KTC2078	1	
37	38030001	INSULATOR-RUB.	SILICONE-RUB.	1	
38	38230001	INSULATOR-BUSHING	NYLON	1	

No	PART CODE	DESCRIPTION	SPECIFICATION	QT'Y	REMARK
39	62000023	CHASSIS-MAIN	SPC 1t, Ni-PLATING	1	
40	66000133	LABEL-SERIAL	TETRON, 0.05t	1	xm 7042
41	32020003	CONNECTOR-ANT	SO-239D	1	
42	62000024	COVER-TOP	COLOR STEEL SHEET, 1t	1	
43	30020003	SPEAKER	8ohm, 2W. Ø66	1	
44	70000022	FELT-SPEAKER	FELT, 0.2t, BLK	1	
45	70000024	FELT-AIR VENT	FELT, 0.2t, BLK	1	
46	62000025	COVER-BOTTOM	COLOR STEEL SHEET, 1t	1	

ELECTRICAL PARTS LIST

PARTCODE.	DESCRIPTION	SPECIFICATION	LOCATION NO.
80067001	E27FP,ASS'Y CB SET		
80038006	EM27IH,ASS'Y B/COVER		
30020005	SPEAKER	PS-07711-A7813	SPK401
80067004	E27FP,ASS'Y FRONT		
16020104	RESISTER-FIXED(AX)	100K-J-1/16W	JR5,JR3
17010104	C-CERAMIC	GRM39 Y5V 104Z 25	JC5,JC3
80038019	EM27IH,ASS'Y FRONT		
80038008	EM27IH,ASS'Y F/B.D		
21620008	INDUCTOR-AXIAL	10UH, 03TYPE	L852,L853,L854,L851 L855
28020006	LCD	WC-0046AGP	LCD
28420001	LED LAMP	DKL 30RD	D908
28620001	LAMP-PILOT	6.3V,40mA,3PI,W/CAP	LP901,LP902,LP903 LP904,LP905,LP906
35020002	SWITCH-TACT	DT1101A	S901,S910,S903,S904 S905,S906,S907,S908 S909
80038018	EM27IH.ASS'Y FRONT		
11010008	CPU EM-27-3	LC72338-9287	IC901
13210004	TR-NPN	KTC3876S	Q901,Q902
13210011	TR-NPN	KRC112S	Q903
15210104	RESISTOR-FIXED	100K-J-1/16W (0603)	R901,R908,R911,R941
15210272	RESISTOR-FIXED	2.7K-J-1/16W (0603)	R920,R921
15210330	RESISTOR-FIXED	33-J-1/16W (0603)	R913,R914,R915
15210470	RESISTOR-FIXED	47-J-1/16W (0603)	R916,R917,R918
15210471	RESISTOR-FIXED	470-J-1/16W (0603)	R912
15210473	RESISTOR-FIXED	47K-J-1/16W (0603)	R905,R906,R907,R909 R919,R922,R923
15210474	RESISTOR-FIXED	470K-J-1/16W (0603)	R910
17010102	C-CERAMIC	GRM39 X7R 102K 50	C886,C887,C888,C889 C890
17010103	C-CERAMIC	GRM39 X7R 103K 50	C881,C882,C883,C884 C885,C905,C906,C907
17010104	C-CERAMIC	GRM39 Y5V 104Z 25	
17010181	C-CERAMIC	GRM39 COG 181J 50	C909
17010470	C-CERAMIC	GRM39 COG 470J 50	C908
19610001	DIODE-SWITCH	KDS181	D901,D902,D903,D904
19610004	DIODE-SWITCH	KDS187	D906,D907
M40E035B	PCB-EM-27-FRONT	128*39.5*1.2T	
80038022	EM27IH,ASS'Y REFLECTOR		
80038009	EM27IH,ASS'Y VOL1		
1662A503	RESISTOR-VARIABLE	V-9M-5520009-50K	RV501
M40E036A	PCB-EM-27-VOL1	26.5*13*1.2T	
80038010	EM27IH,ASS'Y VOL2		
1662A503	RESISTOR-VARIABLE	V-9M-5520009-50K	RV401
1662B103	RESISTOR-VARIABLE	V-9M-5553002-B10K	RV502
M40E037A	PCB-EM-27-VOL2	9.0*8.5*1.2T	
80038011	EM27IH,ASS'Y CH B.D		
35420003	SWITCH-PULSE	20STEP,PULSE TYPE	S902
M40E038A	PCB-EM-27-S/W	13.2*13*1.2T	

PARTCODE.	DESCRIPTION	SPECIFICATION	LOCATION NO.
80067007	E27FP,ASS'Y F/COVER		
32020005	CONN-MIC(R)	SCN-16-6(S1)	
80067005	EM27FP,ASS'Y MAIN		
80067012	E27FP,ASS'Y CHASSIS		
11720001	IC-REGULATOR	7808,TO-220	IC303
11720002	IC-AUDIO	KIA7217P	IC401
13020002	TR-PNP	KTB1366	Q301
13220002	TR-NPN	KTC2078	Q603
17040220	C-CERAMIC(DISK)	220PF-J-50V,NPO	C617
32020003	CONNECTOR-ANT(M)	SO-239D EM-27CA	ANT501
33020004	CONN-POWER	CB-3R,3PIN EM-27CA	JACK301
38030001	INSULATOR-RUB	SILICONE-RUB.	Q603
38230001	INSULATOR-BUSHING	NYLON	Q603
80067020	EM27FP,ASS'Y MAIN		
13220001	TR-NPN	KTC1006	Q602
16020022	RESISTOR-FIXED	22-J-1/2W MINI SIZE	R604
16550103	RESISTOR-SEMI FIXED	6PI,10KB,631H	VR401
16550104	RESISTOR-SEMI FIXED	6PI,100KB,631H	VR301
16550223	RESISTOR-SEMI FIXED	6PI,20KB,631H	VR501
16550502	RESISTOR-SEMI FIXED	6PI,5KB,631H	VR1,VR850
16820501	RESISTOR-THERMISTE	TD5-150(500)	TH501
17020104	C-CERAMIC (AX)	104AX	C309,C330
17650001	C-MYLAR	0.1UF-K-50V,MCQ92M	C854,C859,C856
17650047	C-MYLAR	0.047UF-K-50V,MCQ92M	C860
17650068	C-MYLAR	0.068UF-K-50V,MCQ92M	C402,C408,C872
17656800	C-MYLAR	6800PF-K-50V,MCQ92M	C851
18050001	C-ELECT	1UF-M-50V,SMS	C853,C410
18050010	C-ELECT	10UF-M-25V,SMS	C211,C212,C304,C312 C855
18050022	C-ELECT	22UF-M-16V,SMS	C509
18050033	C-ELECT	33UF-M-25V,SMS	C429
18050047	C-ELECT	47UF-M-16V,SMS	C313,C409,C412,C874 C875
18050100	C-ELECT	100UF-M-16V,SMS	C305,C512,C103,C001
18050225	C-ELECT	2.2UF-M-50V.SMS	C106,C002
18050330	C-ELECT	330UF-M-16V,SMS	C311
18050470	C-ELECT	470UF-M-16V,SMS	C430
18051000	C-ELECT	1000UF-M-16V,SMS	C419,C420
18420030	TRIMMER-6 PI	CVC-06-300	CT201,CT901
19820005	DIODE-SWITCH	1N4003	D301,D402
21220001	COIL-CHOCK	1UH,CORE,0.4PI,8TURN	L300,L301
21420005	COIL-IFT	005(BLK)QIID	T001
21420029	COIL-IFT	7BL-N5305	T100
21420031	COIL-IFT	7BL-C5307	T501
21420033	COIL-IFT	7BL-N5309	T502
21420035	COIL-IFT	7BL-C5311	T504
21420036	COIL-IFT	7BL-C5063	T503
21420037	COIL-IFT	7BL-5312	T603
21420039	COIL-IFT	7BL-C5314	T601,T602
21620001	COIL-AXIAL	0.47UH,03TYPE	L609
21620003	COIL-AXIAL	6.8UH,03TYPE	L608
21620009	INDUCTOR-AXIAL	10UH, 04TYPE	L401
21820001	COIL-SPRING	0.6*4.0*5.5T(R)	L607

PARTCODE.	DESCRIPTION	SPECIFICATION	LOCATION NO.
21820004	COIL-TUNING	0.45*2.3*6.5(R),M5Z	T604
21820005	COIL-SPRING	0.55*3.4*9.5T(R)	L603
21820007	COIL-SPRING	0.55*3.4*7.5T(R)	L602,L605
21820008	COIL-SPRING	0.55*3.4*6.5T(R)	L604
21820011	COIL-SPRING	0.6*4.0*7.5T(R)	L606
22220001	COIL	5MM IFT CAN	T604
23020010	CRYSTAL-49U	10.24MHZ,18PF,30PPM	XT201
23020011	CRYSTAL-49U	3.6MHZ,18PF,30PPM	XT901
24020001	FILTER-CERAMIC	CFWS455HT	CF1
24220002	FILTER-CRYSTAL	HC-49/U 10.695M 7.5A	MCF501
26020002	TRANSFORMER-CHOKE	19mm,0.6PI,50TURN	T300
26020003	MODE-TRANSFORMER	24M/M,104/78T,BLUE	T401
33020005	JACK-3.5PI	TH-35C#POM	R JACK401
37020022	WIRE	AWG26,150MM,RED,GREEN	
42050002	BATTERY (NI-MH)	3V/70H	C317
80067013	EM27FP,ASS'Y M/SMD		
11610001	IC-IF-AMP	TK10930	IC201
11610002	IC-OP-AMP	KIA358F	IC202
11610003	IC-OP-AMP	KIA4558F	IC850
11710001	IC-SHIFT RESISTOR	NJU3713G(T1)	IC001
11710002	IC-REGULATOR	78L05,SOT-89	IC300
13010001	TR-PNP	KTA1505S	Q300,Q307,Q309
13010002	TR-PNP	KRA110S	Q853
13010011	TR-PNP	KTA1504S	Q402
13210001	TR-NPN	KRC110S	Q305,Q306,Q311,Q506 Q507,Q510,Q511,Q610 Q613,Q855,Q308,Q611
13210002	TR-NPN	KTC3880S	Q612 Q101,Q107,Q201,Q501
13210005	TR-NPN	KRC111S	Q504
13210008	TR-NPN	KTC3881S	Q202,Q854
13210009	TR-NPN	KTC3875S	Q601,Q609 Q100,Q105,Q310,Q503 Q616,Q606,Q405,Q104
13210011	TR-NPN	KRC112S	Q403,Q404
13410001	TR-FET	KTK211GR	Q203
15210000	RESISTOR-FIXED	0-J-1/16W (0603)	Q502,Q505
15210100	RESISTOR-FIXED	10-J-1/16W (0603)	JR501
15210101	RESISTOR-FIXED	100-J-1/16W (0603)	R102,R310,R618
15210102	RESISTOR-FIXED	1K-J-1/16W (0603)	R512,R513,R515 R103,R415,R503,R613
15210103	RESISTOR-FIXED	10K-J-1/16W (0603)	R615,R100,R104,R407 R109,R211,R305,R307
15210104	RESISTOR-FIXED	100K-J-1/16W (0603)	R312,R313,R314
15210106	RESISTOR-FIXED	10M-J-1/16W (0603)	R204,R206,R215,R321
15210123	RESISTOR-FIXED	12K-J-1/16W (0603)	R203
15210151	RESISTOR-FIXED	150-J-1/16W (0603)	R510,R418
15210152	RESISTOR-FIXED	1.5K-J-1/16W (0603)	R903,R501
15210154	RESISTOR-FIXED	150K-J-1/16W (0603)	R302,R303,R537
15210182	RESISTOR-FIXED	1.8K-J-1/16W (0603)	R507
15210183	RESISTOR-FIXED	18K-J-1/16W (0603)	R502
15210221	RESISTOR-FIXED	220-J-1/16W (0603)	R218,R107 R504,R601,R859

PARTCODE.	DESCRIPTION	SPECIFICATION	LOCATION NO.
15210222	RESISTOR-FIXED	2.2K-J-1/16W (0603)	R212,R608
15210223	RESISTOR-FIXED	22K-J-1/16W (0603)	R409,R428
15210224	RESISTOR-FIXED	220K-J-1/16W (0603)	R505
15210272	RESISTOR-FIXED	2.7K-J-1/16W (0603)	JR502,R404
15210273	RESISTOR-FIXED	27K-J-1/16W (0603)	R216,R856,R414,R517
15210R2	RESISTOR-FIXED	2.2-J-1/16W (0603)	R621
15210332	RESISTOR-FIXED	3.3K-J-1/16W (0603)	R106,R511
15210333	RESISTOR-FIXED	33K-J-1/16W (0603)	R862,R865
15210335	RESISTOR-FIXED	3.3M-J-1/16W (0603)	R213
15210392	RESISTOR-FIXED	3.9K-J-1/16W (0603)	R509
15210470	RESISTOR-FIXED	47-J-1/16W (0603)	R403,R506,R606,R609 R610
15210471	RESISTOR-FIXED	470-J-1/16W (0603)	R112,R402,R416
15210472	RESISTOR-FIXED	4.7K-J-1/16W (0603)	R108,R619,R861,R870
15210473	RESISTOR-FIXED	47K-J-1/16W (0603)	R871,R872,R001,R207 R110,R125,R208,R214 R219,R508,R531,R532 R533,R611,R617,R205
15210474	RESISTOR-FIXED	470K-J-1/16W (0603)	R612,R616
15210563	RESISTOR-FIXED	56K-J-1/16W (0603)	R320
15210682	RESISTOR-FIXED	6.8K-J-1/16W (0603)	R111,R115,R126,R210 R281,R614,R850
15210821	RESISTOR-FIXED	820-J-1/16W (0603)	R408,R603
15210822	RESISTOR-FIXED	8.2K-J-1/16W (0603)	R201
15210823	RESISTOR-FIXED	82K-J-1/16W (0603)	R602
17010020	C-CERAMIC	GRM39 COG 020C 50	R607
17010050	C-CERAMIC	GRM39 COG 050C 50	C515
17010060	C-CERAMIC	GRM39 COG 060D 50	C109
17010070	C-CERAMIC	GRM39 COG 070D 50	C519
17010080	C-CERAMIC	GRM39 COG 080D 50	C516,C520
17010100	C-CERAMIC	GRM39 COG 100D 50	C505,C623,C635,C636
17010101	C-CERAMIC	GRM39 CCG 101J 50	C902
17010102	C-CERAMIC	GRM39 X7R 102K 50	C104,C531
17010103	C-CERAMIC	GRM39 X7R 103K 50	C217,C422,C850 C117,C129,C204,C280 C301,C302,C303,C306 C307,C308,C315,C316 C431,C507,C510,C524 C534,C625,C637,C405
17010104	C-CERAMIC	GRM39 Y5V 104Z 25	C406,C209,C428A C203,C208,C213,C214 C215,C216,C421
17010120	C-CERAMIC	GRM39 COG 120J 50	C127
17010121	C-CERAMIC	GRM39 COG 121J 50	C532
17010151	C-CERAMIC	GRM39 COG 151J 50	C111,C621
17010152	C-CERAMIC	GRM39 X7R 152K 50	C423
17010180	C-CERAMIC	GRM39 COG 180J 50	C501
17010181	C-CERAMIC	GRM39 COG 181J 50	C123
17010220	C-CERAMIC	GRM39 COG 220J 50	C630,C631
17010221	C-CERAMIC	GRM39 COG 221J 50	C603,C609,C616,C403
17010223	C-CERAMIC	GRM39 X7R 223K 25	C504,C404,C415,C413 C417
17010270	C-CERAMIC	GRM39 COG 270J 50	C108,C626,C901

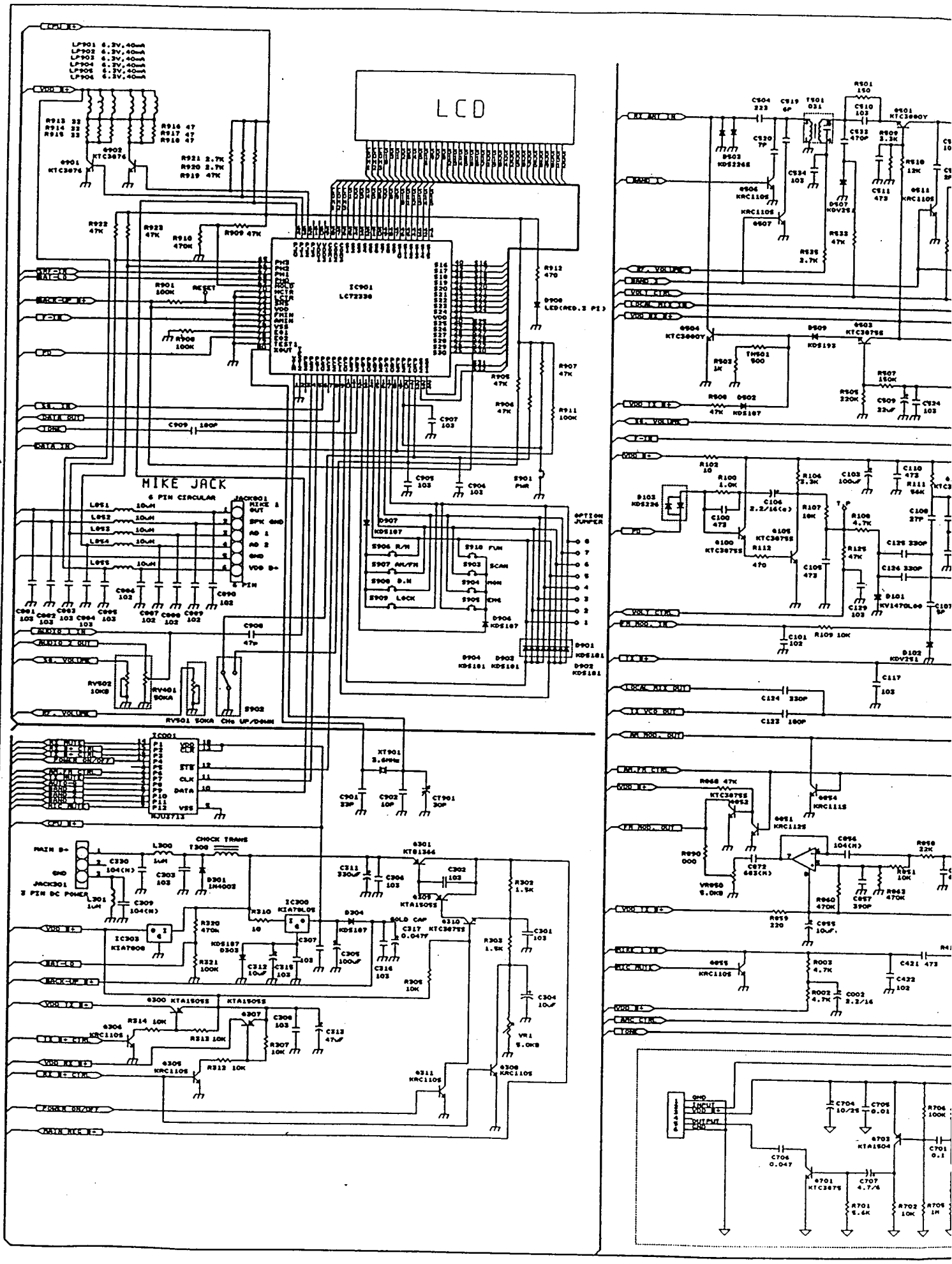
PARTCODE.	DESCRIPTION	SPECIFICATION	LOCATION NO.
17010271	C-CERAMIC	GRM39 COG 271J 50	C608,C620
17010330	C-CERAMIC	GRM39 COG 330J 50	C113
17010331	C-CERAMIC	GRM39 COG 331J 50S	C124,C125,C126,C128
17010333	C-CERAMIC	GRM39 X7R 333K 16	C407
17010390	C-CERAMIC	GRM39 COG 390J 50	C207
17010391	C-CERAMIC	GRM39 COG 391J 50S	C112
17010470	C-CERAMIC	GRM39 COG 470J 50	C606
17010471	C-CERAMIC	GRM39 COG 471J 50S	C205,C521,C858,C618
17010473	C-CERAMIC	GRM39 Y5V 473Z 50	C533,C611,C615,C622
			C100,C105,C110,C201
			C418,C502,C506,C508
			C511,C513,C514,C602
			C613,C614,C619,C624
			C627,C634,C871,C223
17010560	C-CERAMIC	GRM39 COG 560J 50	C206.C401,C873,C427
17010680	C-CERAMIC	GRM39 COG 680J 50	C612
17010681	C-CERAMIC	GRM39 X7R 681K J50	C605,C607
17040047	C-CERAMIC(DISK)	47PF-J-50V,NPO	C610
1821A047	C-CHIP-TANTAL	4.7uF-M-6V, SIZE A	C424
19610002	DIODE-SWITCH	KDS226	D103,D503
19610003	DIODE-SWITCH	KDS184	D202
19610004	DIODE-SWITCH	KDS187	D303,D304,D502,D401
19610005	DIODE-SWITCH	KDS193S	D509
20210001	DIODE-VAR.CAPACITOR	KDV251S	D505,D506,D507
20210003	DIODE-VAR CAPACITOR	KV1470TLOO	D101
89015001	ASS'Y,DTMF B.D		
11010009	CPU-DTMF	PIC16C54	U1
11610009	IC-DECODER	LC7385M	U2
15210103	RESISTOR-FIXED	10K-J-1/16W (0603)	R14
15210104	RESISTOR-FIXED	100K-J-1/16W (0603)	R7,R15,R17
15210124	RESISTOR-FIXED	120K-J-1/16W (0603)	R12
15210153	RESISTOR-FIXED	15K-J-1/16W (0603)	R9
15210274	RESISTOR-FIXED	270K-J-1/16W (0603)	R1
15210303	RESISTOR-FIXED	30K-J-1/16W (0603)	R10
15210472	RESISTOR-FIXED	4.7K-J-1/16W (0603)	R13
15210623	RESISTOR-FIXED	62K-J-1/16W (0603)	R11
17010103	C-CERAMIC	GRM39 X7R 103K 50	C3,C6,C9,C11
17010473	C-CERAMIC	GRM39 Y5V 473Z 50	C12
M40E042A	PCB-EM-27-DTMF	28.0*27.0*1.2T	PCB
M40E034E	PCB-EM-27-MAIN	139*128*1.2T	PCB
89006008	VSQ-1000 ASS'Y		
11610003	IC-OP-AMP	KIA4558F	IC1
13010005	TR-PNP	KRA102S	Q4
13210001	TR-NPN	KRC110S	Q5
13210006	TR-NPN	KRC102S	Q2
13210014	TR-PNP	KRA104S	Q1
15210100	RESISTOR-FIXED	10-J-1/16W (0603)	R12
15210103	RESISTOR-FIXED	10K-J-1/16W (0603)	R4,R11
15210124	RESISTOR-FIXED	120K-J-1/16W (0603)	R5,R10
15210222	RESISTOR-FIXED	2.2K-J-1/16W (0603)	R3
15210331	RESISTOR-FIXED	330-J-1/16W (0603)	R7
15210333	RESISTOR-FIXED	33K-J-1/16W (0603)	R1,R2,R8,R9

PARTCODE.	DESCRIPTION	SPECIFICATION	LOCATION NO.
15210682	RESISTOR-FIXED	6.8K-J-1/16W (0603)	R13
16550223	RESISTOR-SEMI FIXED	6PI,20KB,631H	SVR1
17010102	C-CERAMIC	GRM39 X7R 102K 50	C12,C13
17010103	C-CERAMIC	GRM39 X7R 103K 50	C7
17010104	C-CERAMIC	GRM39 Y5V 104Z 25	C2,C3,C10
17010220	C-CERAMIC	GRM39 COG 220J 50	C5
17010330	C-CERAMIC	GRM39 COG 330J 50	C4,C11
17010331	C-CERAMIC	GRM39 COG 331J 50S	C6
17010820	C-CERAMIC	GRM39 COG 820J 50	C14
18050033	C-ELECT	33UF-M-25V,SMS	C8
18050047	C-ELECT	47UF-M-16V,SMS	C9
1805R047	C-ELECT	4.7UF-16V,SMS	C1
19610002	DIODE-SWITCH	KDS226	D1
32420020	CONNECTOR	4PIN 3M/M(BLACK,RED)	J1
M40E066A	PCB-EM-27-VSQ	30*10*1.2T	PCB
80067002	E27FP,ASS'Y MIKE		
80038015	EM27IH,ASS'Y M/CH		
35020002	SWITCH-TACT	DT1101A	SW1,SW2
M40E040A	PCB-EM-27-UP/DOWN	28.3*14.2*1.2T	
80038021	EM27IH,ASS'Y M/M/B.D		
30620002	C-MIC	CMP-756,56dB,9.7PI	CM801
32020004	CONN-MIC(P)	SCN-16-6(P)	CON801
35020001	SWITCH-PUSH	DP2210A	SW801
80038014	EM27IH,ASS'Y MIKE		
15210103	RESISTOR-FIXED	10K-J-1/16W (0603)	R802,R804,R805,R806 R807,R809
15210123	RESISTOR-FIXED	12K-J-1/16W (0603)	R801
15210273	RESISTOR-FIXED	27K-J-1/16W (0603)	R810
15210682	RESISTOR-FIXED	6.8K-J-1/16W (0603)	
17010102	C-CERAMIC	GRM39 X7R 102K 50	C803
17010103	C-CERAMIC	GRM39 X7R 103K 50	C801,C802
35010001	SWITCH-TACT S/W	TACT S/W,DT1101S	SW4,SW5,SW6,SW7
M40E039A	PCB-EM-27-MIC	32*32*1.2T	PCB
39005008	CORD-CURL	5.2PI,6PIN,1SHIELD	J801
80067003	E27FP,ASS'Y PACKING		
80038016	EM27IH,ASS'Y ACCESSORY		
80038017	EM27IH,ASS'Y ELEMENT		
80067022	E27FP,ASS'Y N.B B.D		
13010011	TR-PNP	KTA1504S	
13210009	TR-NPN	KTC3875S	
13410001	TR-FET	KTK211GR	
15210103	RESISTOR-FIXED	10K-J-1/16W (0603)	
15210104	RESISTOR-FIXED	100K-J-1/16W (0603)	
15210105	RESISTOR-FIXED	1M-J-1/16W (0603)	
15210472	RESISTOR-FIXED	4.7K-J-1/16W (0603)	
15210562	RESISTOR-FIXED	5.6K-J-1/16W (0603)	
15210822	RESISTOR-FIXED	8.2K-J-1/16W (0603)	
17010102	C-CERAMIC	GRM39 X7R 102K 50	
17010103	C-CERAMIC	GRM39 X7R 103K 50	
17010104	C-CERAMIC	GRM39 Y5V 104Z 25	
17010151	C-CERAMIC	GRM39 COG 151J 50	
17010333	C-CERAMIC	GRM39 X7R 333K 16	
17010473	C-CERAMIC	GRM39 Y5V 473Z 50	

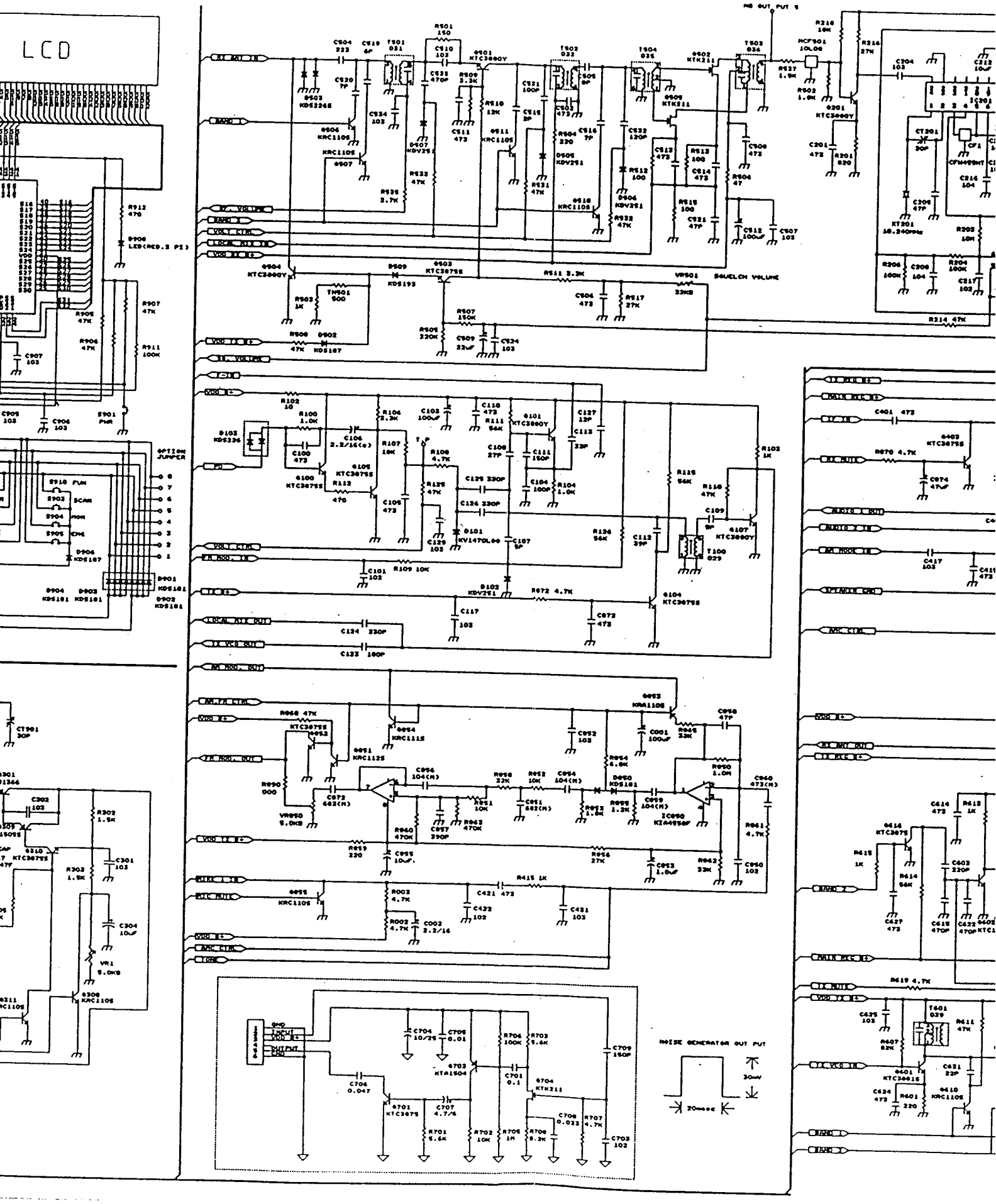
RARTCODE.	DESCRIPTION	SPECIFICATION	LOCATION NO.
18050010	C-ELECT	10UF-M-25V,SMS	
1821A047	C-CHIP-TANTAL	4.7uF-M-6V, SIZE A	
M40E063A	PCB-EM-27-N.B		
89005006	CORD-POWER	1.5M,AWG22,250 2A	

2A

2B

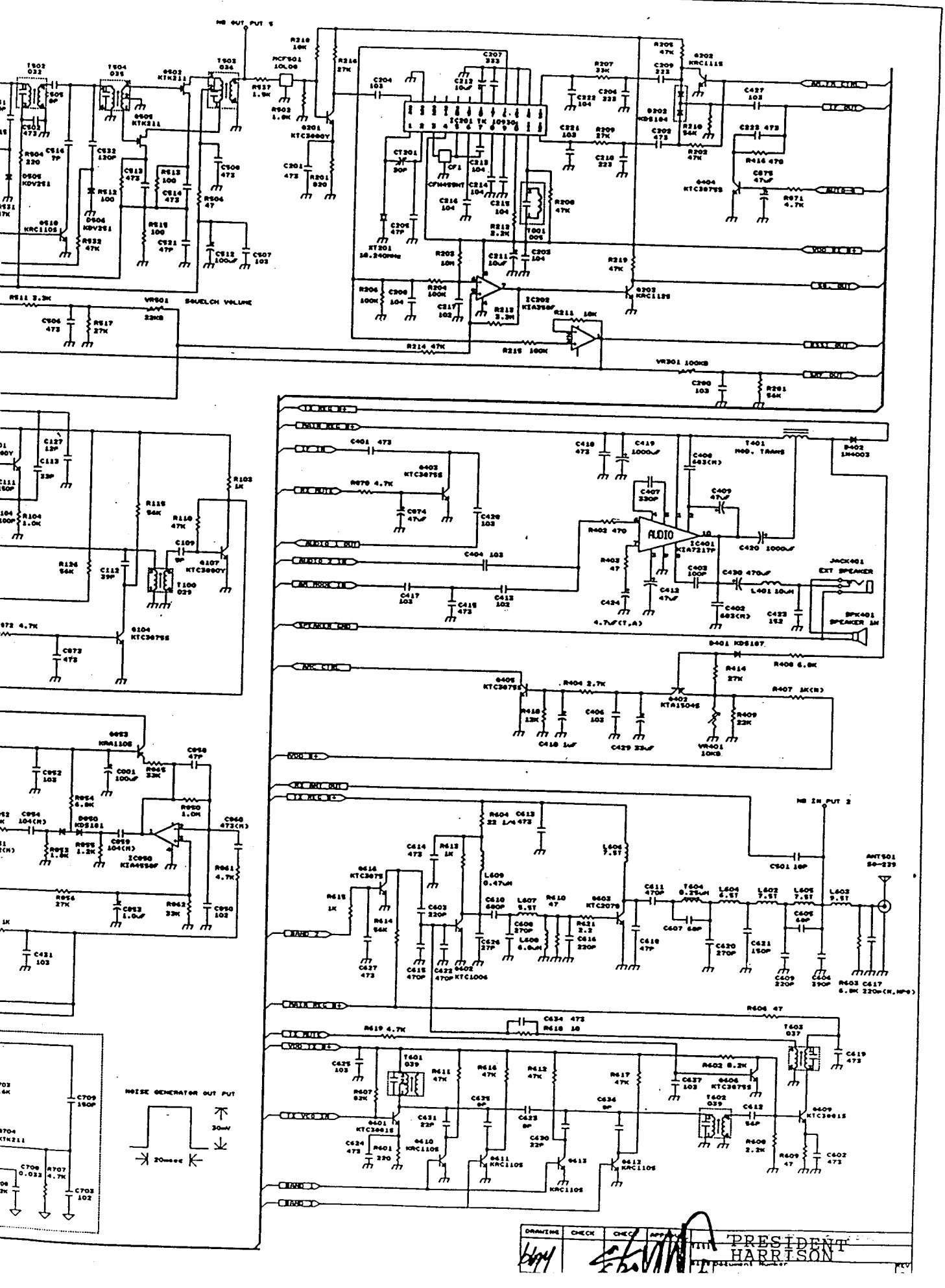

LCD
IC901
LC72336
MIKE JACK
6 PIN CIRCULAR
OPTION JUMPER
IC001
KU3713
XT901
3.6MHz
IC300
KIA78L05
IC303
KIA7806
T300
CHOCK TRANS
JACK301
2 PIN DC POWER
MAIN B+
KTA1505S
KRC110S
KTC3875S
KTC3880Y
KDS187
KDS181
KDS193
KDV29A
KV1470L00
VR950
6.0KB
VR1
5.0KB
IC704
BA3404
IC705
BA3404
IC706
BA3404

2B 2C


LCD
OPTION JUMPER
SQUELCH VOLUME
NOISE GENERATOR OUT PUT
20msec
30mV

2C

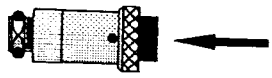
2D



PRESIDENT ELECTRONICS

CABLAGES PRISES MICRO

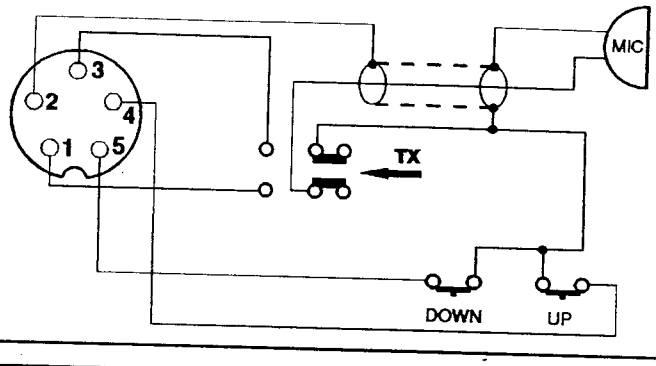
vue côté broches



NC 516 5 BROCHES

PRESIDENT LINCOLN
EMPEROR Shõgun

N°	CABLES
1	MODUL.
2	MASSE
3	TX
4	UP
5	DOWN



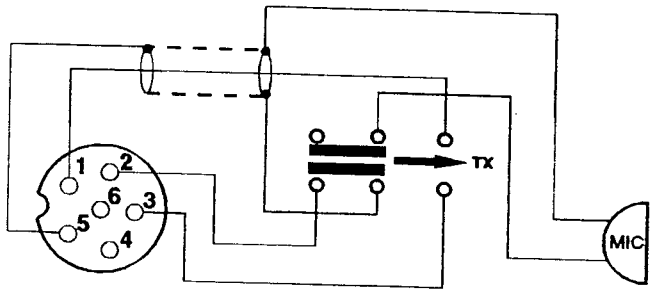
NC 518 6 BROCHES

Micro electret :
PRESIDENT JIMMY, JOHNNY, HARRY,

Micro dynamique :
PRESIDENT TAYLOR, VALERY, WILSON, HERBERT, ROBERT, JFK, GRANT, RICHARD, JACKSON, MC 6700

* NC : non connectée

N°	CABLES
1	MODUL.
2	RX
3	TX
4	NC*
5	MASSE
6	NC*

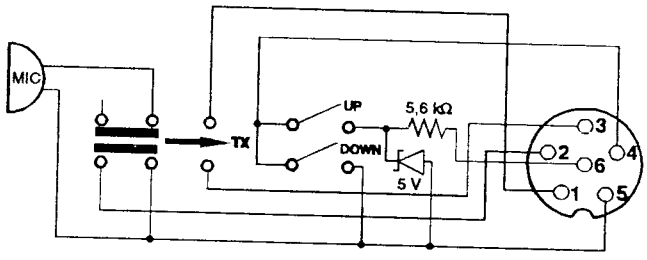


ATTENTION : Coté poste, la broche N° 6 est alimentée en 13,2 Volts, ne pas remplacer un micro dynamique par un electret et inversement.

NC 518 6 BROCHES

PRESIDENT JOHNSON, JAMES, GEORGE

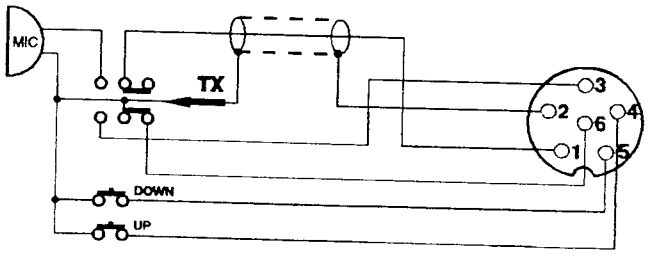
N°	CABLES
1	MODUL.
2	RX
3	TX
4	UP/DOWN
5	MASSE
6	ALIM.



NC 518 6 BROCHES

EMPEROR Samuraï

N°	CABLES
1	MODUL.
2	MASSE
3	TX
4	UP
5	DOWN
6	RX

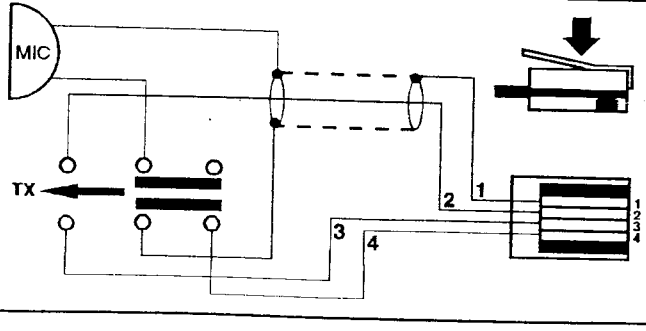


ATTENTION : Brochage incompatible avec le NC 518 6 broches PRESIDENT

CONNECTEUR TYPE "TELEPHONIE"

PRESIDENT BILLY

N°	CABLES
1	MASSE
2	MODUL.
3	TX
4	RX



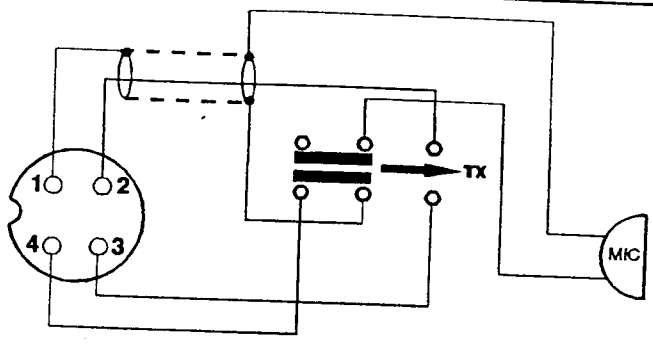
NC 514 4 BROCHES

Micro electret :
PRESIDENT JIMMY,
JOHNNY,

Micro dynamique :
PRESIDENT FRANCOIS,
VALERY, WILSON, HERBERT,
JFK, SS 120, JACK, GRANT,
JACKSON, RONALD,
FRANKLIN, SS 360,
BENJAMIN

Ancienne génération

N°	*CABLES*
1	MASSE
2	MODUL.
3	TX
4	RX



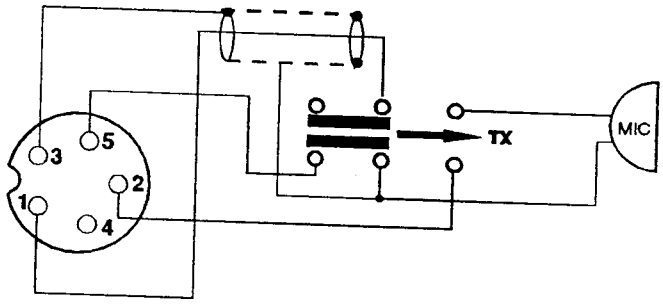
ATTENTION : Ne pas remplacer un micro dynamique par un electret et inversement.

DIN 5 BROCHES

PRESIDENT HARRY, TAYLOR

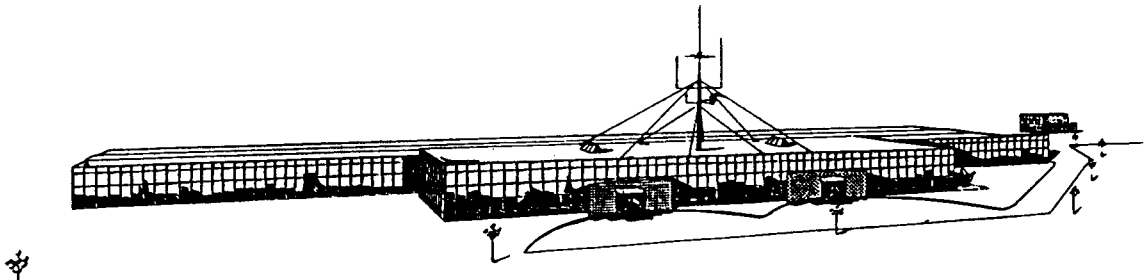
Ancienne génération

N°	*CABLES*
1	MODUL.
2	TX
3	MASSE
4	NC*
5	RX



* NC : non connectée

PRESIDENT
ELECTRONICS



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E-mail : president@mail.mnet.fr

N°1 CB PRESIDENT

VENTE EXCLUSIVE AUX DISTRIBUTEURS