

MASPRO

MASPRO SATELLITE RECEIVING SYSTEM

SATELLITE RECEIVER

Frequency Range 950~1750MHz

SRE - 90R

PLL Frequency Synthesized Tuning

/S

SERVICE MANUAL

FRONT PANEL CONTROLS

1. POWER key

Press the POWER key to turn the receiver on or off (stand-by mode). When the receiver is off, it is possible for your TV to still have off air reception. The LNB remains powered.

2. UP/DOWN ARROW key

Press the UP and DOWN arrow keys to change channels in sequence. The current channel is displayed in the three digit LED. An L indicates the channel is locked (Parental Control Feature).

3. IR sensor

Infrared remote control sensor.

4. WIDE indicator

When the wide indicator is lit, a wide audio bandwidth is selected. When the indicator is off, a narrow audio bandwidth is selected.

5. HOR indicator

When the HOR indicator is lit, horizontal polarization is selected. When the light is off, vertical polarization is selected.

6. VIDEO FREQ indicator

When the video frequency mode is selected by the remote control unit, the VIDEO FREQ indicator lights and the three digit LED displays video tuning frequency.

7. AUDIO FREQ indicator

When the audio frequency mode is selected by the remote control unit, the AUDIO FREQ indicator lights and the three digit LED displays the audio subcarrier frequency.

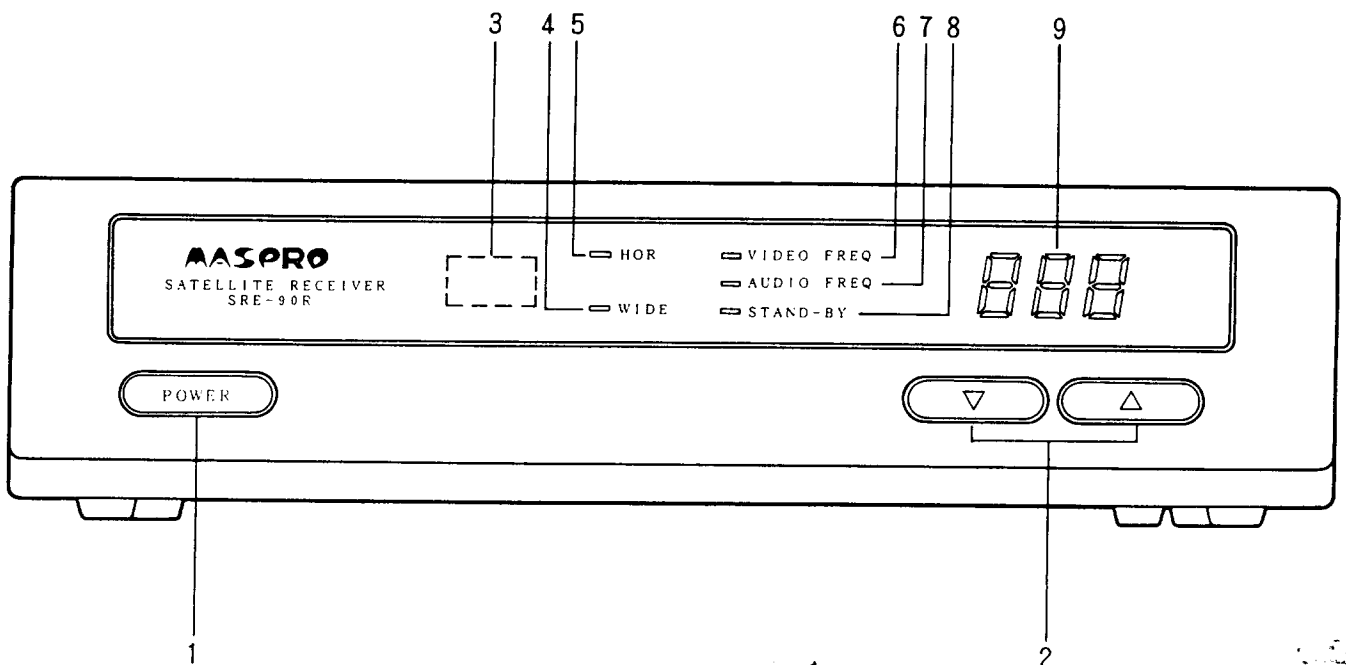
8. STAND-BY indicator

When the receiver is switched off, the STAND-BY indicator lights. When the receiver is on, the STAND-BY indicator turns off.

9. Three digit LED indicator

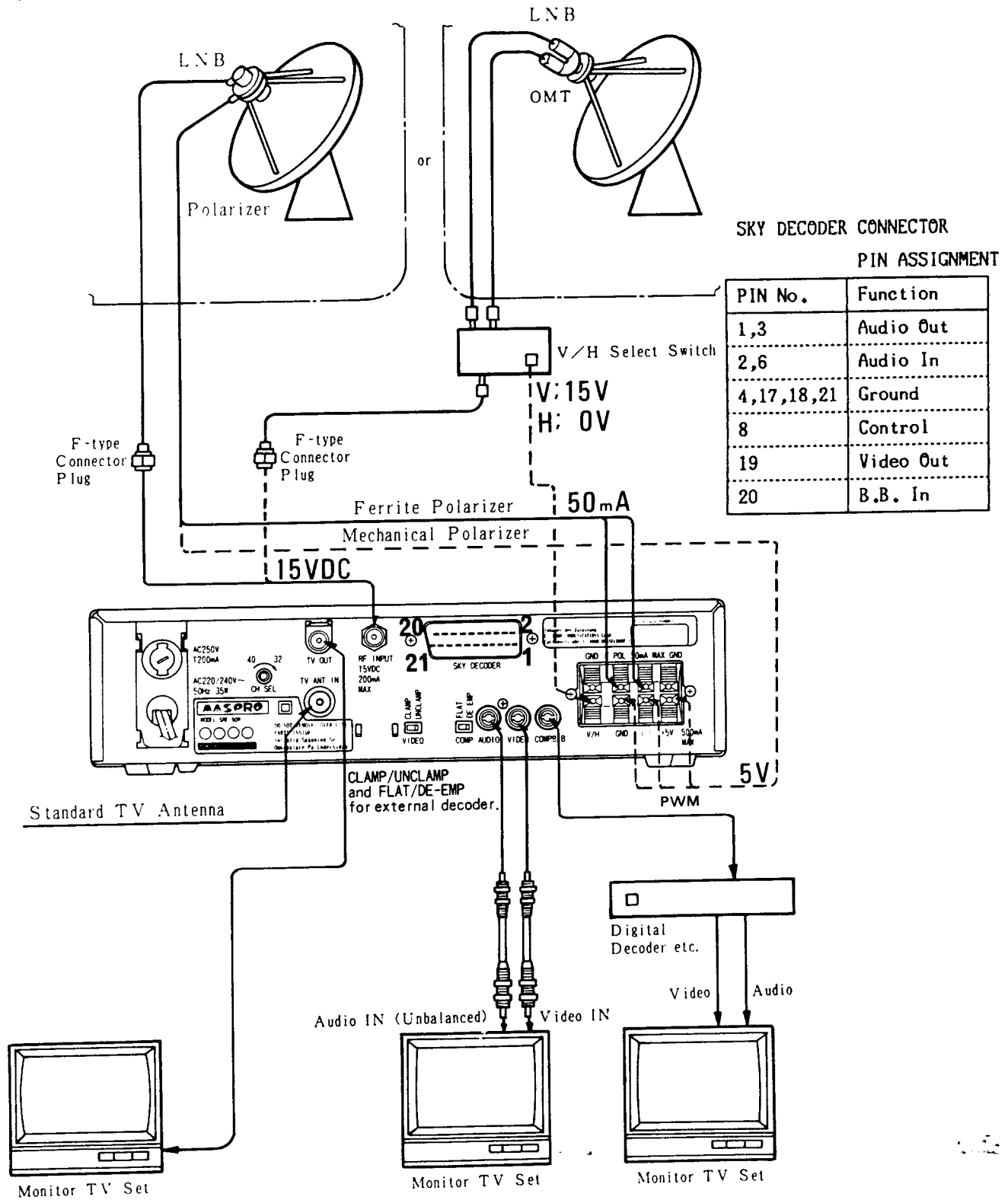
The three digit LED indicator displays channel, video channel frequency and audio subcarrier frequency depending on the mode. The receiver always defaults to the CH mode. The video frequency will not display leading "1" for the data more than 1000MHz.

< FRONT PANEL LAYOUT >



The necessary rear panel connections on your receiver are shown below. Please make sure your antenna, polarizer, and LNB are correctly installed, and your antenna is aligned to the selected satellite. Contact your dealer for further information on the system configuration.

< Rear Panel Connections >



ADJUSTMENT PROCEDURE

I. MEASURING INSTRUMENTS

To perform adjustments on the receiver model SRE-90R, the measuring instruments shown below are required.

All instruments shall be calibrated.

a) DVM (Digital Voltmeter)

Measuring range : 0.1 to 500 V AC
0.01 to 100 V DC

b) Oscilloscope / Synchroscope

Measuring range : 0.01 to 10 V/Div.
Frequency range : DC to 20 MHz
Probe : 10:1

c) TV test signal generator (PAL system)

(Used as video signal source)

d) Audio signal generator

(Used as an audio signal source)

Frequency range : 50 Hz to 15 KHz

e) RF signal generator

(Used as a RF signal source)

having wide FM deviation and CCIR REC. 405, 625-line video pre-emphasis functions.

Frequency range : 950 to 1,750 MHz
FM deviation : 16 MHz P-P
Output level : -65 to -28 dBm

f) Signal generator

(Used as an audio subcarrier source)

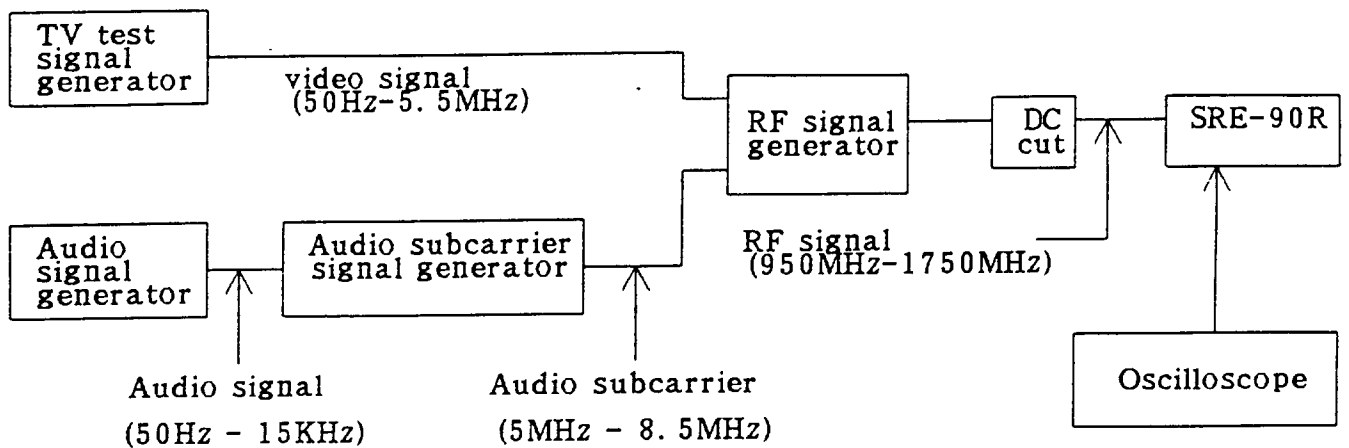
having frequency modulation and audio 50 μ second pre-emphasis functions.

Frequency range : 5 to 8 MHz
FM deviation : ± 1 MHz maximum

g) Distortion muter

Measuring range : 0.01 to 3 % min
0.1 to 1 Vrms
Frequency : 400 Hz

II. MEASURING INSTRUMENTS CONNECTION



IMPORTANT : If the receiver is connected to the AC power, do not connect the RF signal generator directly to the "RF INPUT" terminal of the receiver. The RF signal generator may be damaged by the +15V powering voltage from the receiver. Be sure to use the "DC CUT" coupler.

III. AUDIO SIGNAL ADJUSTMENT

Distortion adjustment

1. Set the receiver as follows.

AFC	: ON position
POLARIZATION	: any position
AUDIO WIDE/NARROW	: Wide position
CHANNEL	: Channel 15
VIDEO FREQUENCY	: 1347 MHz
AUDIO FREQUENCY	: 6.50 MHz
AUDIO OUTPUT LEVEL	: MAX (USING REMOTE CONTROLLER)

2. Set the RF signal generator as follows. (TV test signal generator OFF).

Frequency	: 1347 MHz
Output level	: -50 dBm level at receiver input.

3. Set the audio signal generator and subcarrier as follows.

Frequency	: 6.50 MHz
Diviation	: ± 75 KHz
Modulation	: 400Hz

4. Rotate variable capacitor C236 to its minimum position at "AUDIO OUT".

IV. VIDEO SIGNAL ADJUSTMENT

Video output level adjustment

1. Set the receiver as follows.

AFC	: ON position
POLARIZATION	: any position
AUDIO WIDE/NARROW	: Wide position
CHANNEL	: Channel 15
VIDEO FREQUENCY	: 1347 MHz
AUDIO FREQUENCY	: any position
VIDEO CLAMP	: CLAMP position
DE - EMP	: DE - EMP ON

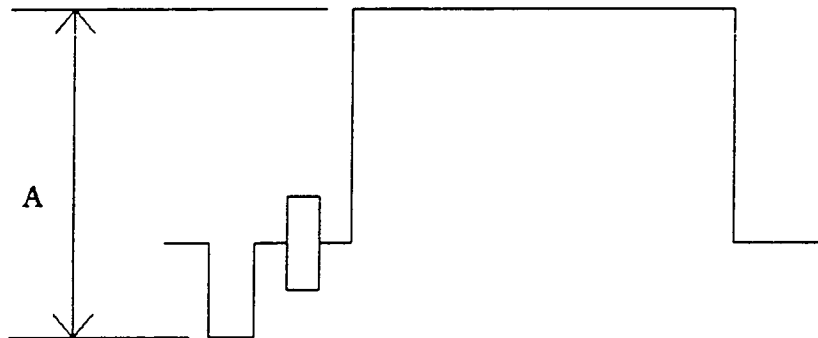
2. Set the RF signal generator as follows.

Frequency	: 1347 MHz
Output level	: -50 dBm level at the receiver input.
Divition	: 16 MHz p-p
Pre-emphasis	: CCIR Rec. 405, 625-line.
TV test signal	: White 100 %

3. Set the "VIDEO LEVEL".

Rotate potentiometer VR304 to adjust the video output level, 1

V_{p-p} at "VIDEO OUT" terminated with 75 ohm resistor. ($A = 1 V_{p-p}$)



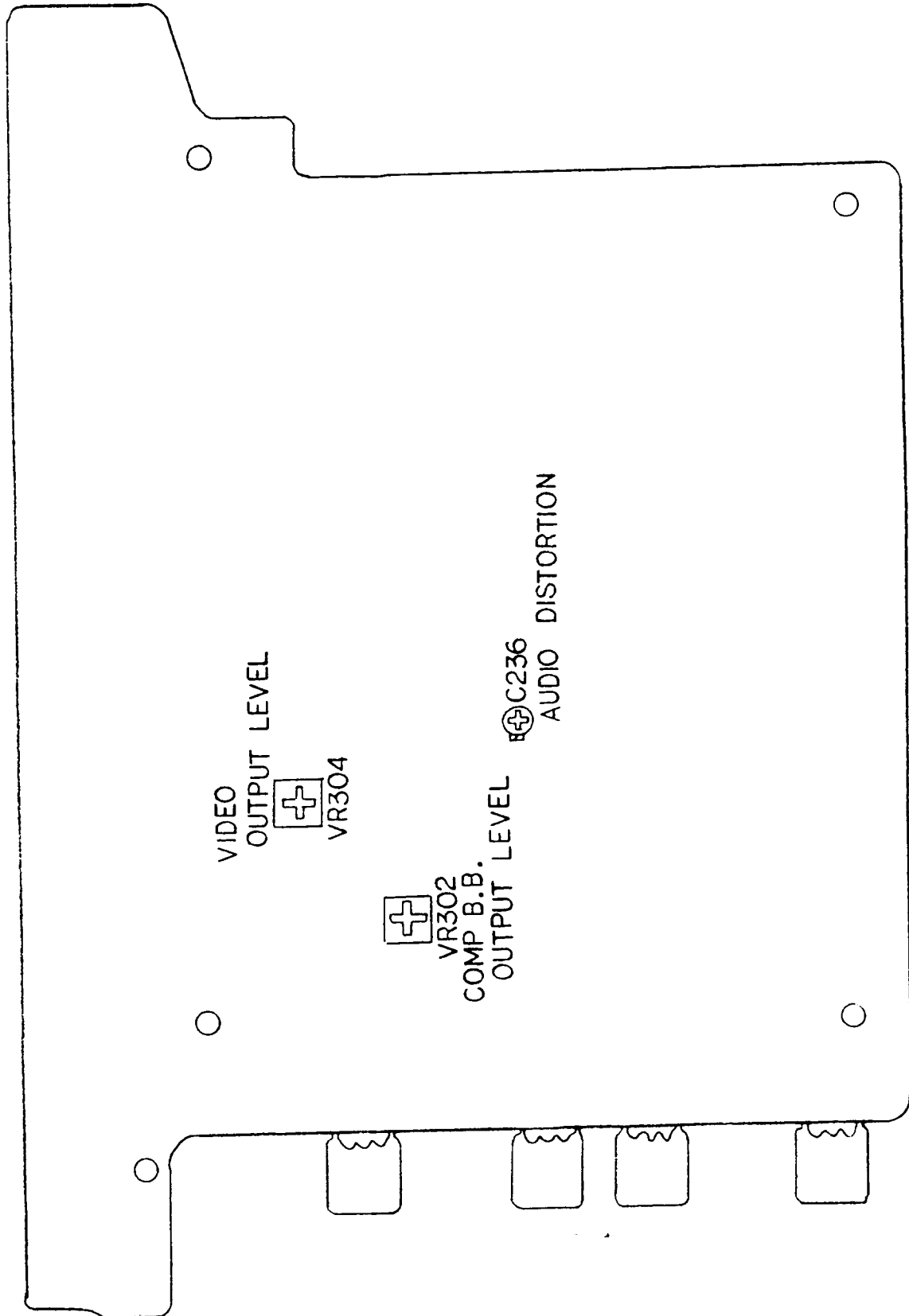
4. Adjust the "VIDEO LEVEL" control for 1 V_{p-p} video output level. ($A = 1 V_{p-p}$)

CBB (Composite Base Band) level adjustment

1. Set the receiver and signal generator as the above.

2. Adjust potentiometer VR302 so that the composite base band output level is 1 V_{p-p} at "COMPOSITE BASE BAND OUT" terminated with 75 ohm resistor.

ADJUSTMENT POINTS



MPU PIN FUNCTION TABLE (IC101)

PIN	NAME	I/O	ACTIVE	FUNCTIONAL DESCRIPTION
1	Vcc		5V	Power supply +5V
2	AVss		0	GND
3	Vref		5V	Power supply +5V for A/D refernce voltage
4	D/A	O	0~5V	D/A output (5 bit, 32 steps) for volume control
5	PWM	O	L/H	Ferrite polarizer (FPOL) control
6	P63	O		Not used (GND)
7	P62	O		Not used (GND)
8	P61	O		Not used (GND)
9	P60	O		Not used (GND)
10	P47/AN7	I	0~5V	A/D converter for AFC voltage
11	P46/AN6	I		Not used (GND)
12	P45/AN5	I		Not used (GND)
13	P44/AN4	I		Not used (GND)
14	P43	I		Not used (GND)
15	P42	I	L/H	Remote control data
16	P41	I	L/H	NVM DO (data input)
17	P40	O	H	Video PLL chip select (CS)
18	P37	O	H	Audio PLL chip select (CS)
19	P36	O	L/OPEN	PAL G/I select (L:I mode OPEN:G mode)
20	P35	O	L/H	PLL/NVM data
21	P34	O	L/H	PLL/NVM clock
22	P33/CNTR	O	H	NVM chip select (CS)
23	P32/INT2	I	L	Stand-by key input
24	P31	I	L	▼ key input
25	P30	I	L	▲ key input
26	INT1	I	NEGATIVE EDGE	Remote control interrupt
27	CNVss		0	GND
28	RESET	I	NEGATIVE EDGE	Reset
29	Xin	I		Oscillator input
30	Xout	O		Oscillator output

< CHANNEL/FREQUENCY PARAMETERS TABLE >

Factory-Programmed Frequency Allocation

Channel Number	VIDEO FREQ. (MHz)	V/H	AUDIO FREQ. (MHz)	W/N	Satellite
1	1317	V	6.50	W	ASTRA
2	1376	V	6.50	W	ASTRA
3	1435	V	6.50	W	ASTRA
4	1258	V	6.50	W	ASTRA
5	1332	H	6.50	W	ASTRA
6	1391	H	6.50	W	ASTRA
7	1421	H	6.50	W	ASTRA
8	1214	H	6.50	W	ASTRA
9	1273	H	6.50	W	ASTRA
10	1362	H	6.50	W	ASTRA
11	1303	H	6.50	W	ASTRA
12	1244	H	6.50	W	ASTRA
13	1229	V	6.50	W	ASTRA
14	1288	V	6.50	W	ASTRA
15	1347	V	6.50	W	ASTRA
16	1406	V	6.50	W	ASTRA
17	987	V	6.50	W	ECS1
18	1091	V	6.65	W	ECS1
19	1140	V	6.60	W	ECS1
20	1507	V	6.65	W	ECS1
21	1674	V	6.65	W	ECS1
22	1008	H	6.60	W	ECS1
23	1175	H	6.65	W	ECS1
24	1472	H	6.65	W	ECS1
25	1486	H	6.65	W	ECS1

Channel Number	VIDEO FREQ. (MHz)	V/H	AUDIO FREQ. (MHz)	W/N	Satellite
26	1650	H	6.65	W	ECS1
27	975	H	6.65	W	INTEL27.5° W
28	1015	H	6.60	W	INTEL27.5° W
29	1135	H	6.60	W	INTEL27.5° W
30	1155	V	6.65	W	INTEL27.5° W
31	974	H	6.65	W	INTEL60° E
32	1010	H	6.65	W	INTEL60° E
33	1138	H	6.65	W	INTEL60° E
34	1174	H	6.65	W	INTEL60° E
35	1550	H	6.65	W	INTEL60° E
36	1600	H	6.65	W	INTEL60° E
37	977	V	6.50	W	TDF1
38	1054	V	6.50	W	TDF1
39	1131	V	6.50	W	TDF1
40	1208	V	6.50	W	TDF1
41	997	H	6.50	W	TVSAT1
42	1073	H	6.50	W	TVSAT1
43	1150	H	6.50	W	TVSAT1
44	1227	H	6.50	W	TVSAT1
45	1035	V	6.50	W	BSB
46	1112	V	6.50	W	BSB
47	1188	V	6.50	W	BSB
48	1265	V	6.50	W	BSB
49	1342	V	6.50	W	BSB
50	1317	V	6.50	W	FREE

NOTE : CH27-CH50 have fixed video frequency and V/H setting.

< SPECIFICATIONS >

RF PERFORMANCE

Input Frequency	950 to 1750MHz (1MHz step)
Input Level Range	-65 to -28 dBm
Input Impedance	75Ω (F-type)
Intermediate Frequency	402.78 MHz
IF Bandwidth	27MHz
Threshold Level	< 7dB
AFC Hold Range	± 3MHz

VIDEO PERFORMANCE

Frequency Response	50Hz to 5MHz
Output Level	1Vp-p
Impedance	75Ω (RCA-type)
S/N (unweighted)	60dB
De-emphasis	CCIR Rec. 405, 625 Lines
Clamp	ON/OFF Switchable

AUDIO PERFORMANCE

Subcarrier Frequency	5.0 to 8.5MHz (10KHz step)
Frequency Response	50Hz to 15KHz
Output Level	Max. 0.55Vrms ± 20%
Impedance	> 600Ω (RCA-type)
S/N(CCIR-ARM weighted)	40dB
De-emphasis and Deviation	50μs 150KHz/280KHz
Total Harmonic Distortion	2%

COMPOSITE BASEBAND

Frequency Response	50Hz to 10.5MHz
Impedance	75Ω (RCA-type)
De-emphasis	CCIR Rec. 405, 625 Lines FLAT/DE-EMP Switchable
Output Level	1Vp-p

POWER REQUIREMENTS

Power Supply Voltage	220/240V AC 50 Hz Switchable
Power Consumption	35W

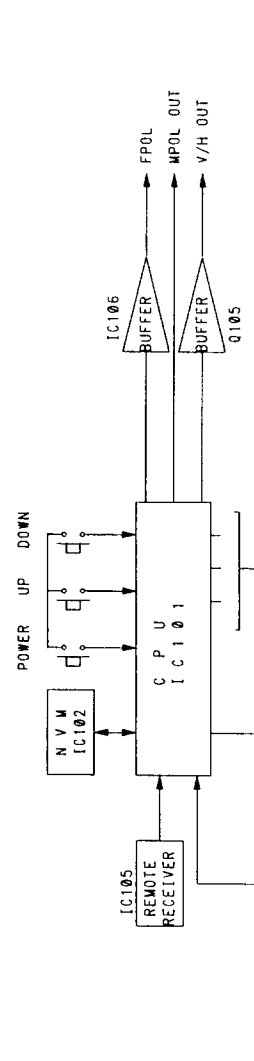
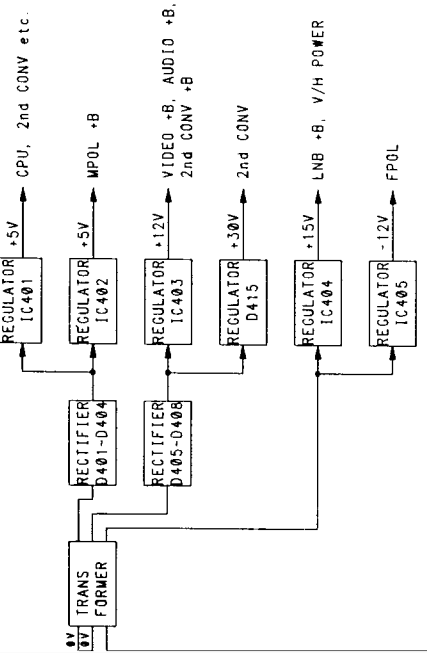
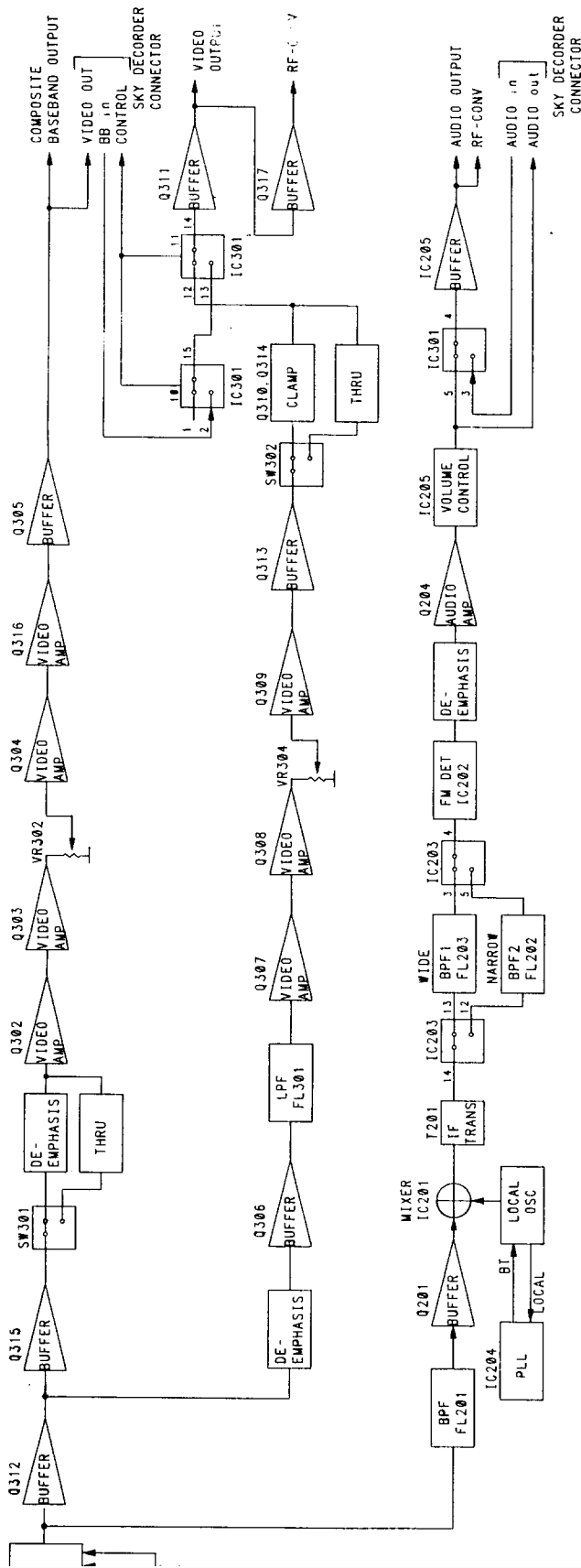
OTHERS

Output Voltage	15 VDC 3 W max. (through RF INPUT connector)
Ferrite Polarizer	± Current Drive 50mA max.
Mechanical Polarizer	5V 500mA max. τ 0.8-2.2mS
V/H Switch	V 15V H 0V
SCART Connector	Sky Decoder Compatible
Temperature Range	0~40℃
Dimensions H×W×D	70 × 300× 190mm
Weight	Approx. 2.8kg

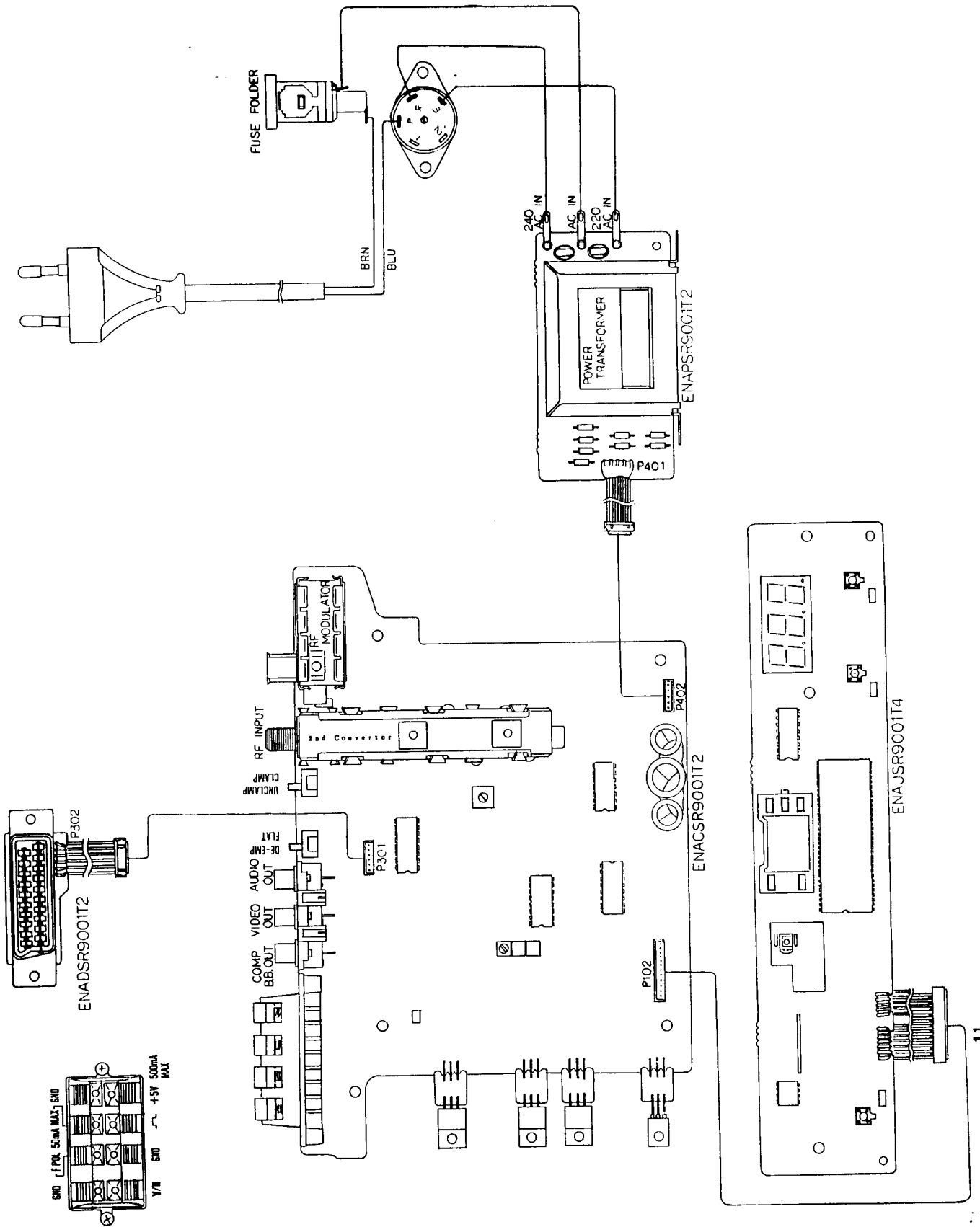
ACCESSORIES

- Infrared Remote Control Unit
- Two AAA Batteries

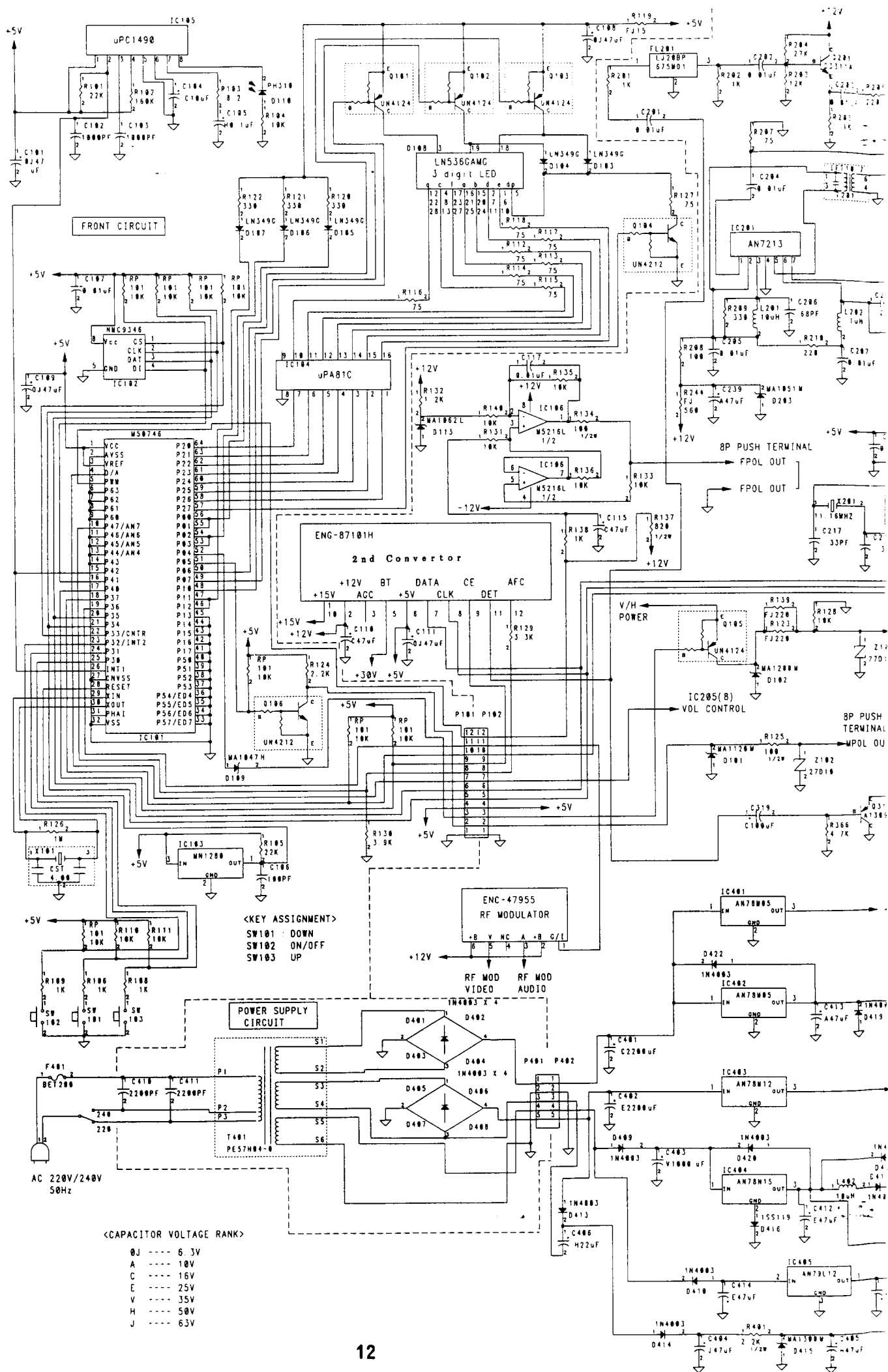
AGRAM

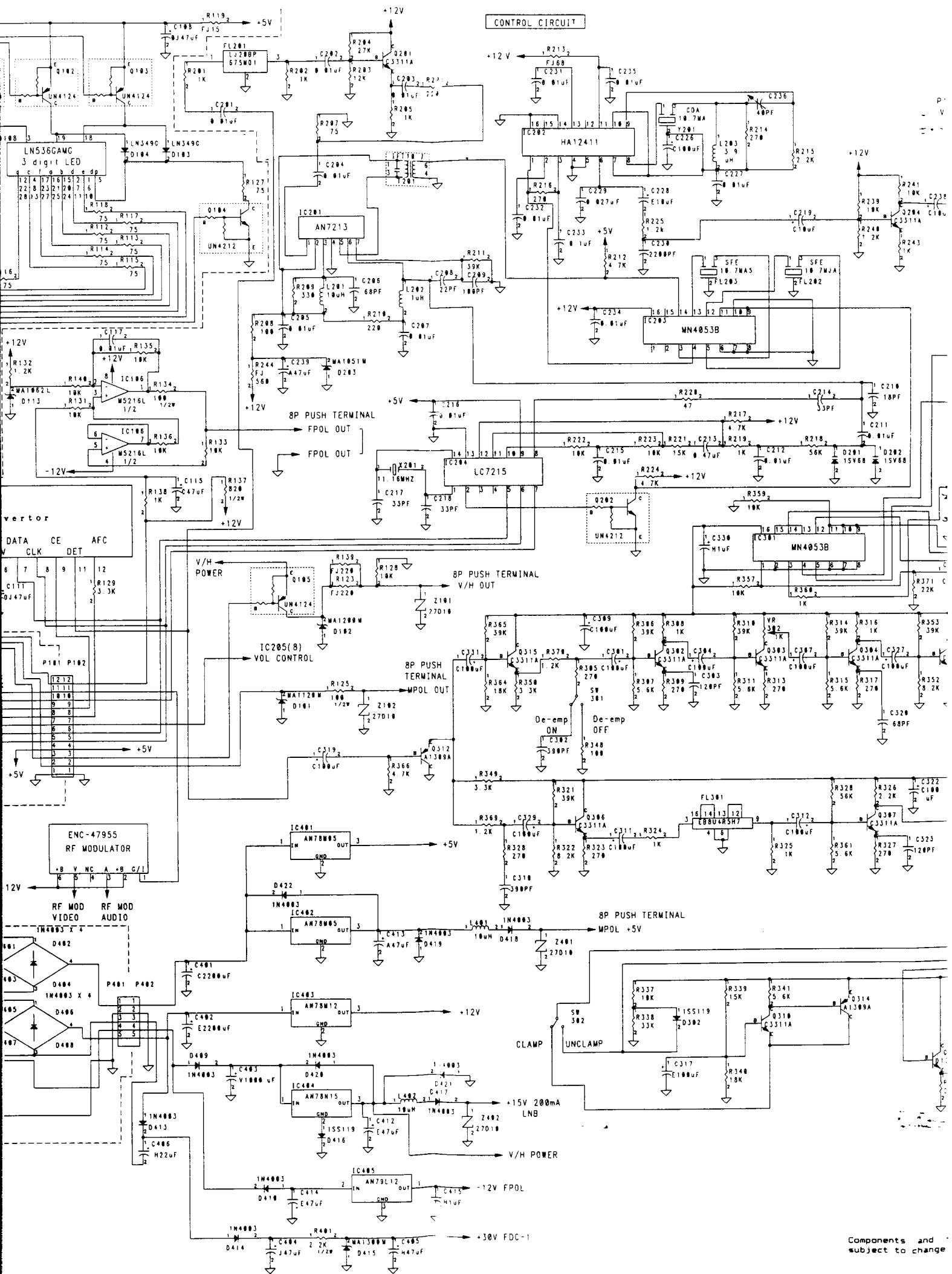


WIRING DIAGRAM



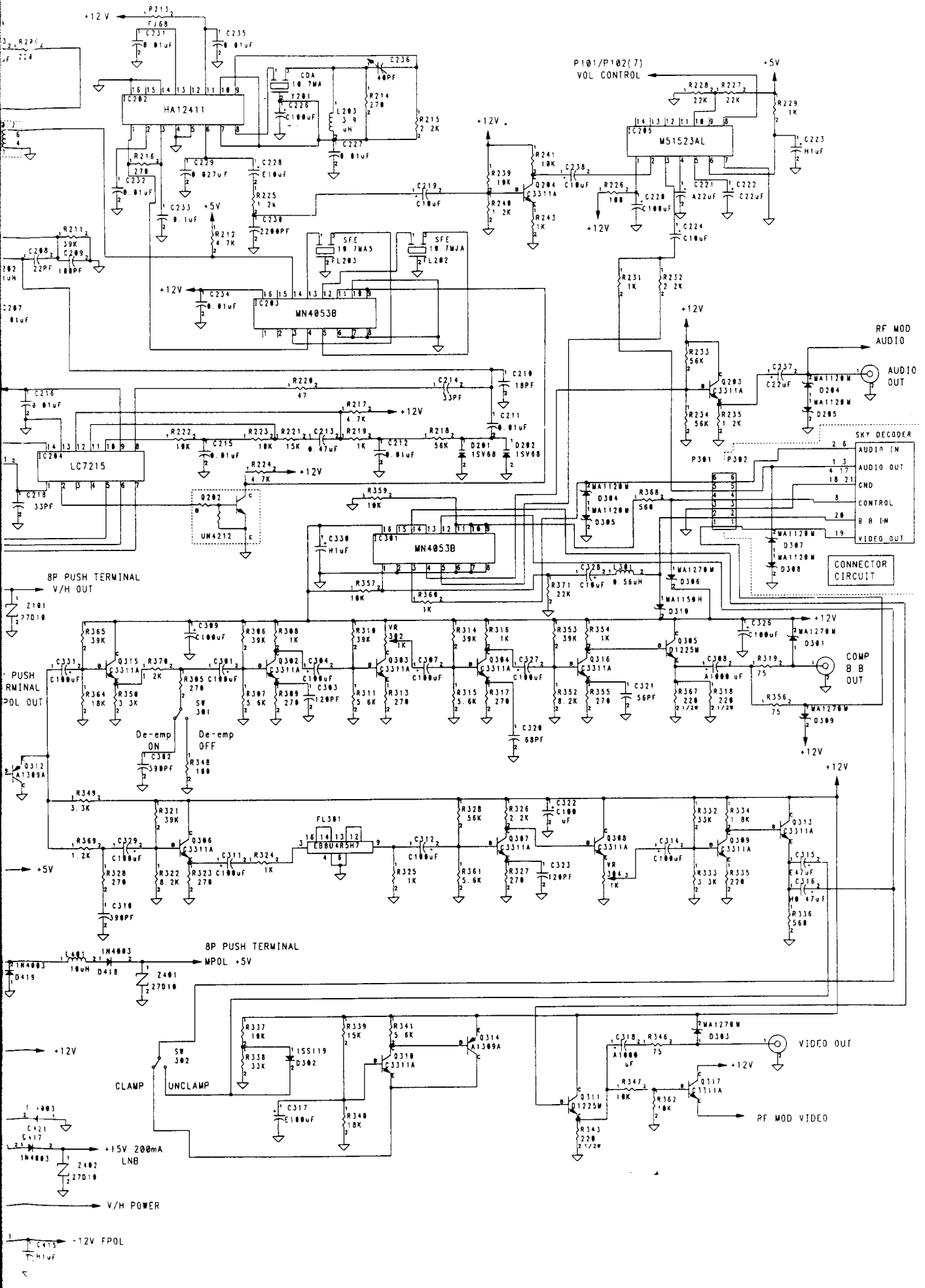
SCHEMATIC DIAGRAM





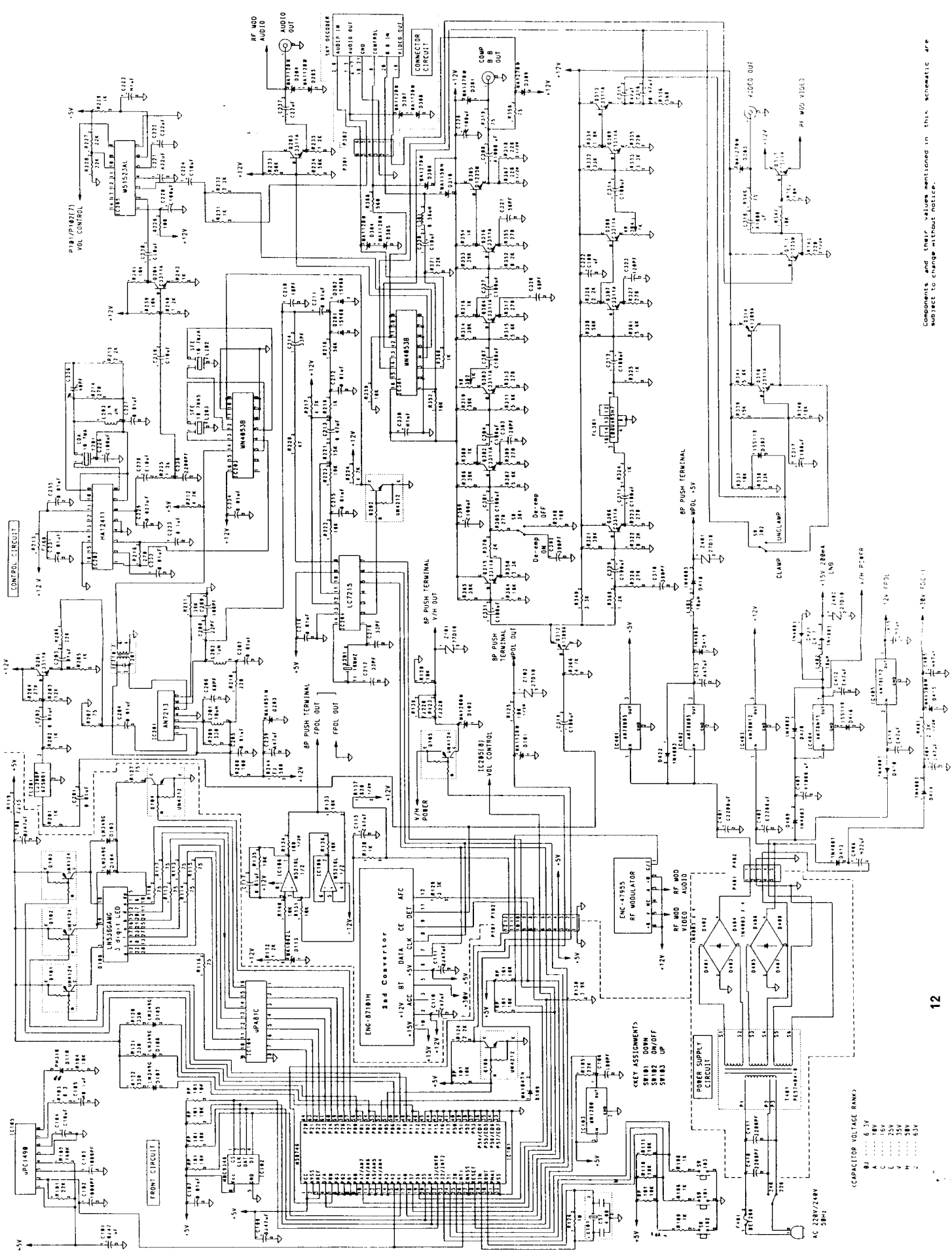
Components and subject to change

CONTROL CIRCUIT



Components and their values mentioned in this schematic are subject to change without notice.

SCHEMATIC DIAGRAM



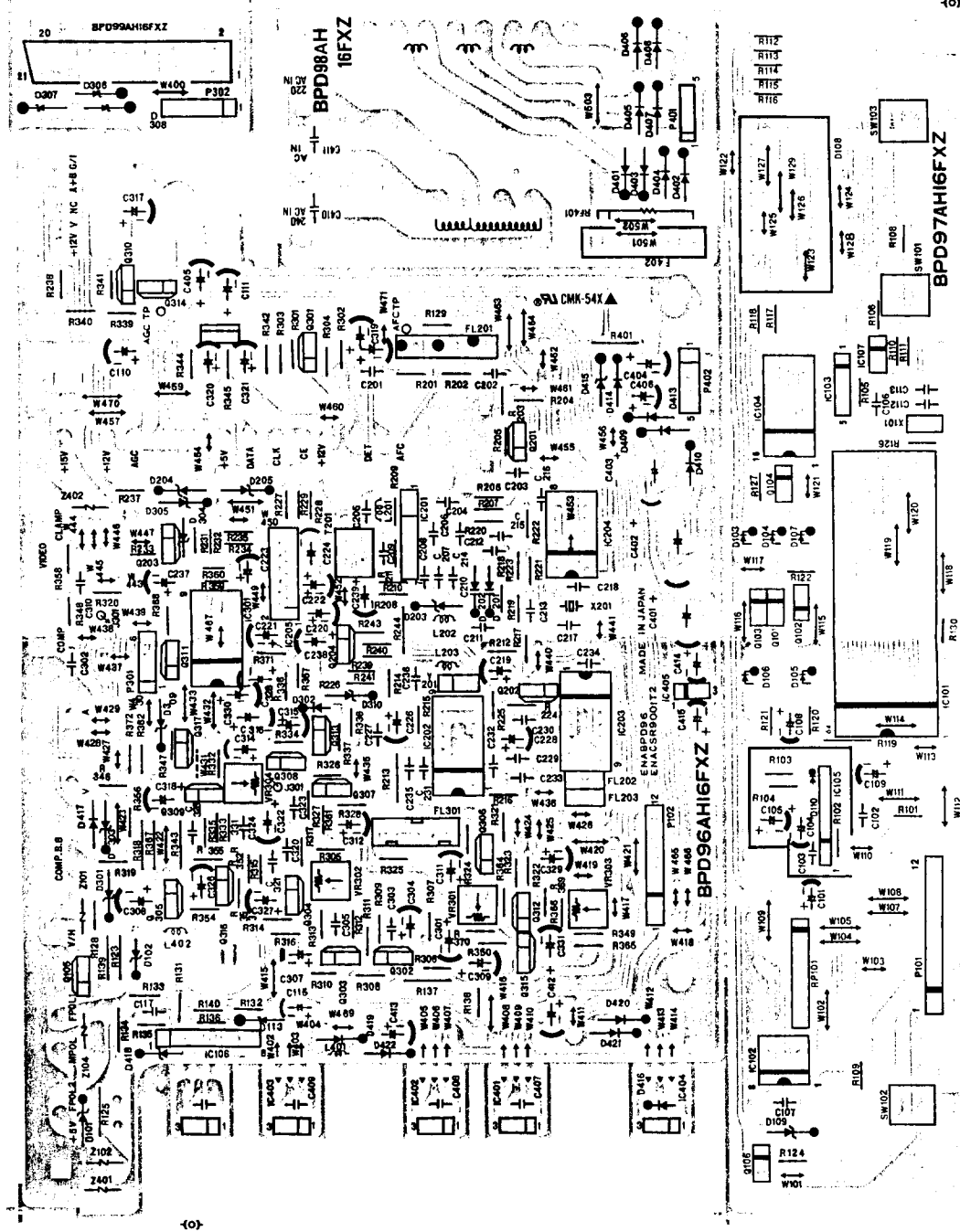
(CAPACITOR VOLTAGE RANG)
 B1 6.3V
 B2 16V
 C 25V
 D 50V
 E 100V
 F 250V
 G 500V
 H 6.3V

Components and their values mentioned in this schematic are subject to change without notice.

PC BOARD DIAGRAM (1)

Component Side

AP3 (ENABPD96)

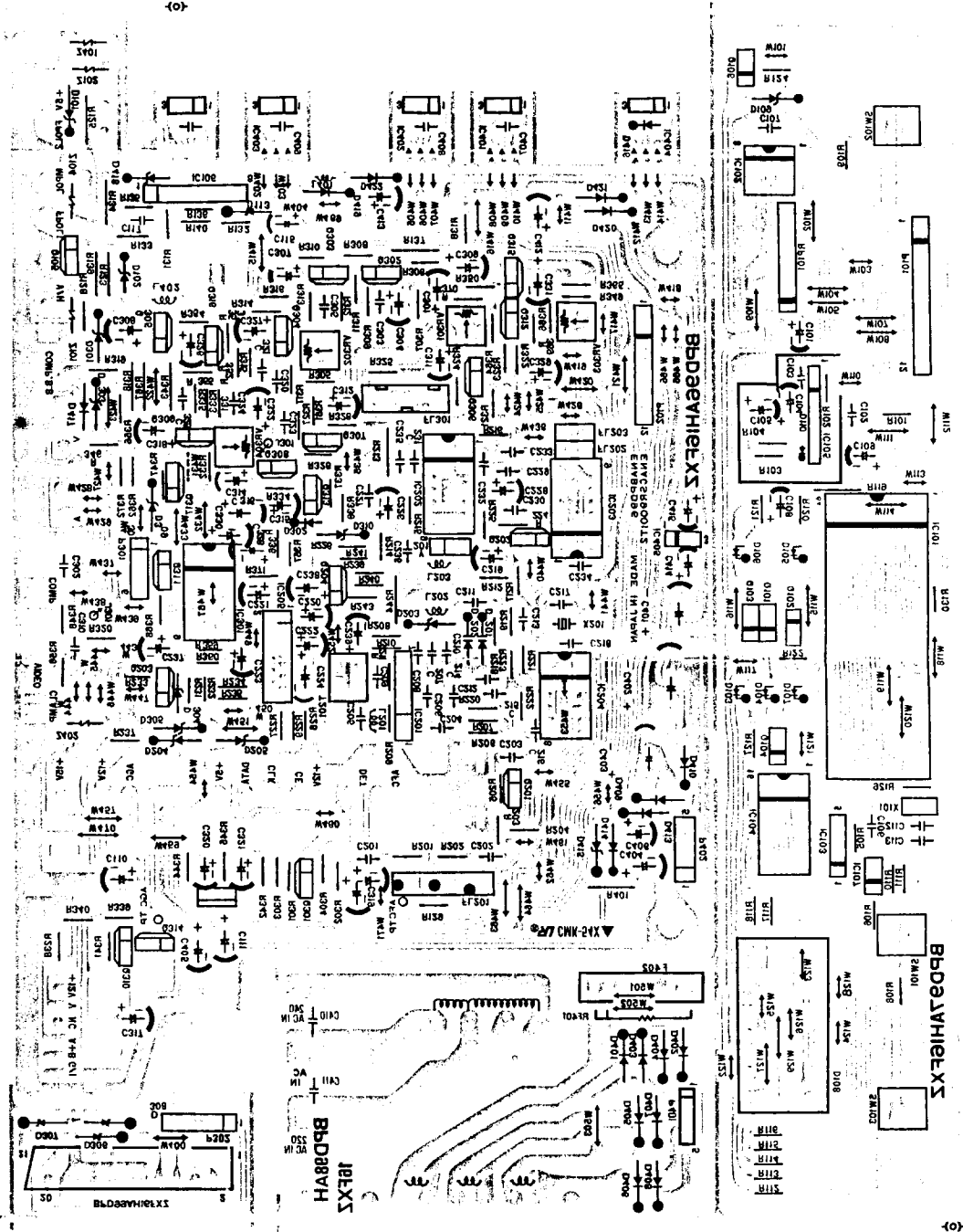


API (ENABPD97)

PC BOARD DIAGRAM (2)

Foil Side

AP3 (ENABPD96)

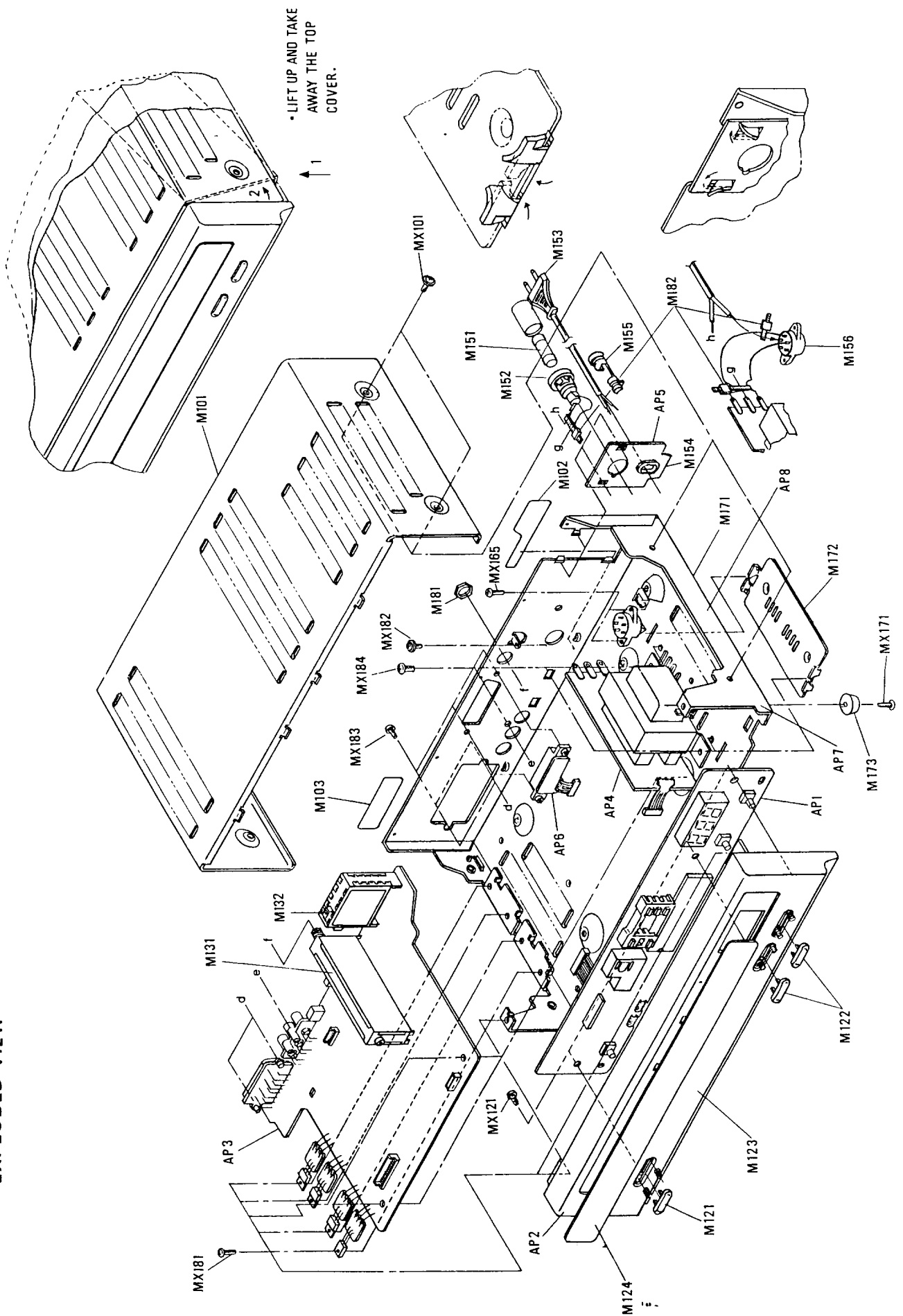


AP6 (ENABPD99)

AP4 (ENABPD98)

AP1 (ENABPD97)

EXPLODED VIEW



PARTS LIST

<<ENA17201A.000010>>
 PARTS LIST FOR SRE-90R
 PARTS NAME :GENERAL
 MODULE NO. :ENA17201A

NO.	RefNo	C	Part Name & Description	Part No.	QTY
		D			
			CHASSIS ASSY	ENAT4F17201	1
	M101		TOP COVER	ENABDP31	1
			S/N CODE LABEL	ENASEL05	2
	M102		CAUTION LABEL	ENASEN08	1
	M103		FTZ LABEL	ENASEN10	1
			OWNER'S MANUAL	ENAPAR40	1
			RMT CONTROL	EUR68001	1
			BATTERY	UM-4NEP-2S	2
			POLYETHYLENE BAG	ENAPAP29	1
			PACKING (CASE)	ENAPAK28	1
			PACKING (CUSHION)	ENAPAT26	2
			PACKING CASE	ENAPAK27	
			PACKING (PALET)	ENAPAS31	
			PACKING (PAD A)	ENAPAS32	
			PACKING (PAD B)	ENAPAS33	
			PACKING (BAND)	ENAPAP10	
			P.P. TAPE	ENASEL25	
			PROTECT TAPE	ENASEL14	
	MX101		SCREW (COVER)	XTW3+6LFZ	4

<<T4F17201.000010>>
 PARTS LIST FOR SRE-90R
 PARTS NAME : CHASSIS ASSY (AP8)
 MODULE NO. : ENAT4F17201

NO.	RefNo	C D	Part Name & Description	Part No.	QTY
			CONTROL P.C.B. ASSY	ENACSR9001T2	1
			FRONT PANEL ASSY	ENAJSR9001T4	1
			POWER ASSY	ENAFSR9001T2	1
			POWER P.C.B. ASSY	ENAPSR9001T2	1
			CONNECTOR P.C.B. ASSY	ENADSR9001T2	1
			CHASSIS SUB ASSY	ENACHUA057H	1
	M181		NUT	SRN01AV11FN	1
	M182		CLAMPER	KM-85	3
			TUBE	WT08T025HK1V	2
	MX181		SCREW (CONTROL, FRONT)	XTV3+8F	8
	MX182		SCREW (RF-COMVERTER)	XSN3+W5F	1
	MX183		SCREW (RGB, TERMINAL)	XTN3+8G	5
	MX184		SCREW (TRANS)	XTN4+5F	2
	MX185		SCREW (SELECT SWITCH)	XTV3+10F	2

<<FSR9001.000010>>
 PARTS LIST FOR SRE-90R
 PARTS NAME :POWER ASSY (AP5)
 MODULE NO. :ENAFSR9001T2

NO.	RefNo	C D	Part Name & Description	Part No.	QTY
	M151		FUSE (200mA)	BET200MA	1
	M152		FUSE HOLDER	FH-B12	1
	M153		AC POWER CORD	ENAWKPA047H	1
	M154		BRACKET (FUSE HOLDER)	ENABRL57	1
			WIRE ASSY	ENAWKPA048H	3
	M155		CORD BUSHING	KF-41	1
	M156		VOLTAGE SELECT SWITCH	J-R1025	1

<<JSR9001.000010>>
PARTS LIST FOR SRE-90R
PARTS NAME : FRONT PANEL ASSY (AP2)
MODULE NO. : ENAJSR9001T4

NO.	RefNo	C D	Part Name & Description	Part No.	QTY
			FRONT PANEL P.C.B. ASSY	ENAJSR9001T2	1
			SPRING	ENASPC02	6
	M121		BUTTON	ENABTS13	1
	M122		BUTTON	ENABTS14	2
	M123		FRONT PANEL	ENASEC36	1
			DOUBLE SIDED TAPE	ENASEN16	1
	M124		LENS	ENASEC37	1
	MX121		SCREW (FRONT P.C.B)	XTN3+8G	3

<<CHUA057H.000010>>
 PARTS LIST FOR SRE-90R
 PARTS NAME :CHASSIS SUB ASSY (AP7)
 PART NO. :ENACHUA057H

NO.	RefNo	C D	Part Name & Description	Part No.	QTY
	M171		CHASSIS	ENACHU32	1
	M172		BRACKET	ENABRL58	1
	M173		RUBBER FOOT	ENASSM07	4
	MX171		SCREW (RUBBER FOOT)	XTN3+8FFX	4

<<MSR9001.000010>>
 PARTS LIST FOR SRE-90R
 PARTS NAME : FRONT PCB ASSY (AP1)
 MODULE NO. : ENAJSR9001T2

NO.	RefNo	C	Part Name & Description	Part No.	QTY
		D			1
					1
					1
	IC101		MPU	M50746-164SP	1
	IC101	A	MPU	M50746-171SP	1
	IC102		NVM IC	NMC9346E	1
	IC103		RESET IC	MN1280-Q	1
	IC103	A	RESET IC	M51943BL	1
	IC104		TRANSISTOR ARRAY IC	MPA81C	1
	IC105		PRE AMP IC	MPC1490H	1
	Q101		TRANSISTOR	UN4124	1
	Q101	A	TRANSISTOR	DTB123YS	1
	Q102		TRANSISTOR	UN4124	1
	Q102	A	TRANSISTOR	DTB123YS	1
	Q103		TRANSISTOR	UN4124	1
	Q103	A	TRANSISTOR	DTB123YS	1
	Q104		TRANSISTOR	UN4212	1
	Q106		TRANSISTOR	UN4212	1
	D103		LED (GREEN)	LN349GP-LS	1
	D104		LED (GREEN)	LN349GP-LS	1
	D105		LED (GREEN)	LN349GP-LS	1
	D106		LED (GREEN)	LN349GP-LS	1
	D107		LED (GREEN)	LN349GP-LS	1
	D108		3 DIGITS LED (GREEN)	LN536GAMG	1
	D109		ZENER DIODE (4.7V)	MA1047H	1
	D110		PIN PHOTO DIODE	PH310	1
	C101		ALUMI ELECTRY 6.3V47 μ F	ECEA0JK470B	1
	C102		CERAMIC 1000PF +80%-20%	ECKR1H102KB5	1
	C103		CERAMIC 1000PF +80%-20%	ECKR1H102KB5	1
	C104		ALUMI ELECTRY 16V 10 μ F	ECEA1CKG100B	1
	C105		ALUMI ELECTRY 50V0.1 μ F	ECEA1HKOR1B	1
	C106		CERAMIC 100PF \pm 5%	ECCR1H101JC5	1
	C107		CERAMIC 0.01 μ F +80%-20%	ECKR1H103ZF5	1
	C108		ALUMI ELECTRY 6.3V47 μ F	ECEA0JK470B	1
	C109		ALUMI ELECTRY 6.3V47 μ F	ECEA0JK470B	1
	R101		CARBON 1/4W 22K Ω \pm 5%	ERDS2TJ223	1
	R102		CARBON 1/4W 160K Ω \pm 5%	ERDS2TJ164	1
	R103		CARBON 1/4W 8.2 Ω \pm 5%	ERDS2TJ8R2	1
	R104		CARBON 1/4W 10K Ω \pm 5%	ERDS2TJ103	1
	R105		CARBON 1/4W 22K Ω \pm 5%	ERDS2TJ223	1
	R106		CARBON 1/4W 1K Ω \pm 5%	ERDS2TJ102	1
	R108		CARBON 1/4W 1K Ω \pm 5%	ERDS2TJ102	1
	R109		CARBON 1/4W 1K Ω \pm 5%	ERDS2TJ102	1
	R110		CARBON 1/4W 10K Ω \pm 5%	ERDS2TJ103	1

* "A" in item "CD" shows alternative parts.

<<MSR9001.000020>>
PARTS LIST FOR SRE-90R
PARTS NAME :FRONT PCB ASSY (AP1)
MODULE NO. :ENAJSR9001T2

NO.	RefNo	C D	Part Name & Description	Part No.	QTY
	R111		CARBON 1/4W 10K Ω \pm 5%	ERDS2TJ103	1
	R112		CARBON 1/4W 75 Ω \pm 5%	ERDS2TJ750	1
	R113		CARBON 1/4W 75 Ω \pm 5%	ERDS2TJ750	1
	R114		CARBON 1/4W 75 Ω \pm 5%	ERDS2TJ750	1
	R115		CARBON 1/4W 75 Ω \pm 5%	ERDS2TJ750	1
	R116		CARBON 1/4W 75 Ω \pm 5%	ERDS2TJ750	1
	R117		CARBON 1/4W 75 Ω \pm 5%	ERDS2TJ750	1
	R118		CARBON 1/4W 75 Ω \pm 5%	ERDS2TJ750	1
	R119		FLAMEPROOF 1/4W 15 Ω	ERD25FJ150S	1
	R120		CARBON 1/4W 330 Ω \pm 5%	ERDS2TJ331	1
	R121		CARBON 1/4W 330 Ω \pm 5%	ERDS2TJ331	1
	R122		CARBON 1/4W 330 Ω \pm 5%	ERDS2TJ331	1
	R124		CARBON 1/4W 2.2K Ω \pm 5%	ERDS2TJ222	1
	R126		CARBON 1/4W 1M Ω \pm 5%	ERDS2TJ105	1
	R127		CARBON 1/4W 75 Ω \pm 5%	ERDS2TJ750	1
	R130		CARBON 1/4W 3.9K Ω \pm 5%	ERDS2TJ392	1
	RP101		RESISTOR ARRAY 10K Ω \times 8	EXBP88103K	1
	X101		CERAMIC OSCILLATOR 4MHz	CST4.00MGW	1
	SW101		LIGHT TOUCH SWITCH	EVQQS507K	1
	SW102		LIGHT TOUCH SWITCH	EVQQS507K	1
	SW103		LIGHT TOUCH SWITCH	EVQQS507K	1
	P101		CONNECTOR 12P(2.5mm)	CCRA106H	1
			LED HOLDER	ENAHLH04	1
			SHIELD CASE	ENACVS74	1
			HOLD PLATE	ENABRL42	1
			SHIELD PLATE	ENACVS75	1
	PCB		FRONT P.C.B.	ENABPD97	1

<<MSR9001.000030>>
PARTS LIST FOR SRE-90R
PARTS NAME :CONTROL PCB ASSY (AP3)
MODULE NO. :ENACSR9001T2

NO.	RefNo	C	Part Name & Description	Part No.	QTY
		D			
	IC106		OP AMP IC	M5216L	1
	IC201		MIX IC	AN7213	1
	IC202		FM DETECTOR IC	HA12411	1
	IC203		ANALOG SWITCH IC	MN4053B	1
	IC204		PLL IC	LC7215	1
	IC205		VOLUME CONTROL IC	M51523AL	1
	IC301		ANALOG SWITCH IC	MN4053B	1
	IC401		REG IC (+5V)	AN78M05	1
	IC402		REG IC (+5V)	AN78M05	1
	IC403		REG IC (+12V)	AN78M12	1
	IC404		REG IC (+15V)	AN78N15	1
	IC405		REG IC (-12V)	AN79L12	1
	Q105		TRANSISTOR	UN4124	1
	Q105	A	TRANSISTOR	DTB123YS	
	Q201		TRANSISTOR	2SC3311A	1
	Q202		TRANSISTOR	UN4212	1
	Q203		TRANSISTOR	2SC3311A	1
	Q204		TRANSISTOR	2SC3311A	1
	Q302		TRANSISTOR	2SC3311A	1
	Q303		TRANSISTOR	2SC3311A	1
	Q304		TRANSISTOR	2SC3311A	1
	Q305		TRANSISTOR	2SD1225M	1
	Q306		TRANSISTOR	2SC3311A	1
	Q307		TRANSISTOR	2SC3311A	1
	Q308		TRANSISTOR	2SC3311A	1
	Q309		TRANSISTOR	2SC3311A	1
	Q310		TRANSISTOR	2SC3311A	1
	Q311		TRANSISTOR	2SD1225M	1
	Q312		TRANSISTOR	2SA1309A	1
	Q313		TRANSISTOR	2SC3311A	1
	Q314		TRANSISTOR	2SA1309A	1
	Q315		TRANSISTOR	2SC3311A	1
	Q316		TRANSISTOR	2SC3311A	1
	Q317		TRANSISTOR	2SC3311A	1

* "A" in item "CD" shows alternative parts.

<<MSR9001.000040>>

PARTS LIST FOR SRE-90R

PARTS NAME : CONTROL PCB ASSY (AP3)

MODULE NO. : ENACSR9001T2

NO.	RefNo	C D	Part Name & Description	Part No.	QTY
	D101		ZENER DIODE(12V)	MA1120M	1
	D102		ZENER DIODE(20V)	MA1120M	1
	D113		ZENER DIODE(6.2V)	MA1062L	1
	D201		TUNING DIODE	1SV68	1
	D202		TUNING DIODE	1SV68	1
	D203		ZENER DIODE(5.1V)	MA1051M	1
	D204		ZENER DIODE(12V)	MA1120M	1
	D205		ZENER DIODE(12V)	MA1120M	1
	D301		ZENER DIODE(27V)	MA1270M	1
	D302		SILICON DIODE	1SS119	1
	D303		ZENER DIODE(27V)	MA1270M	1
	D304		ZENER DIODE(12V)	MA1120M	1
	D305		ZENER DIODE(12V)	MA1120M	1
	D306		ZENER DIODE(27V)	MA1270M	1
	D309		ZENER DIODE(27V)	MA1270M	1
	D310		ZENER DIODE(15V)	MA1150H	1
	D409		POWER DIODE	IN4003	1
	D409	A	POWER DIODE	S5566G	
	D410		POWER DIODE	IN4003	1
	D410	A	POWER DIODE	S5566G	
	D413		POWER DIODE	IN4003	1
	D413	A	POWER DIODE	S5566G	
	D414		POWER DIODE	IN4003	1
	D414	A	POWER DIODE	S5566G	
	D415		ZENER DIODE(30V)	MA1300M	1
	D416		SILICON DIODE	1SS119	1
	D417		POWER DIODE	IN4003	1
	D417	A	POWER DIODE	S5566G	
	D418		POWER DIODE	IN4003	1
	D418	A	POWER DIODE	S5566G	
	D419		POWER DIODE	IN4003	1
	D419	A	POWER DIODE	S5566G	
	D420		POWER DIODE	IN4003	1
	D420	A	POWER DIODE	S5566G	
	D421		POWER DIODE	IN4003	1
	D421	A	POWER DIODE	S5566G	
	D422		POWER DIODE	IN4003	1
	D422	A	POWER DIODE	S5566G	

* "A" in item "CD" shows alternative parts.

<<MSR9001.000050>>

PARTS LIST FOR SRE-90R

PARTS NAME :CONTROL PCB ASSY (AP3)

MODULE NO. :ENACSR9001T2

000000.000278
197108 107 7111 21914
000000.000278
197108 107 7111 21914

NO.	RefNo	C D	Part Name & Description	Part No.	QTY
	C110		ALUMI ELECTRY 16V 47 μ F	ECEA1CU470B	1
	C111		ALUMI ELECTRY 6.3V 47 μ F	ECEA0JU470B	1
	C115		ALUMI ELECTRY 16V 47 μ F	ECEA1CU470B	1
	C117		CERAMIC 0.01 μ F +80%-20%	ECKR1H103ZF5	1
	C201		CERAMIC 0.01 μ F +80%-20%	ECKR1H103ZF5	1
	C202		CERAMIC 0.01 μ F +80%-20%	ECKR1H103ZF5	1
	C203		CERAMIC 0.01 μ F +80%-20%	ECKR1H103ZF5	1
	C204		CERAMIC 0.01 μ F +80%-20%	ECKR1H103ZF5	1
	C205		CERAMIC 0.01 μ F +80%-20%	ECKR1H103ZF5	1
	C206		CERAMIC 68PF \pm 5%	ECCR1H680JC5	1
	C207		CERAMIC 0.01 μ F +80%-20%	ECKR1H103ZF5	1
	C208		CERAMIC 22PF \pm 5%	ECCR1H220JC5	1
	C209		CERAMIC 100PF \pm 5%	ECCR1H101JC5	1
	C210		CERAMIC 10PF \pm 0.25PF	ECCR1H100DC5	1
	C211		CERAMIC 0.01 μ F +80%-20%	ECKR1H103ZF5	1
	C212		CERAMIC 0.01 μ F +80%-20%	ECKR1H103ZF5	1
	C213		MYLAR 0.47 μ F \pm 5%	ECQV1H474JZ3	1
	C214		CERAMIC 33PF \pm 5%	ECCR1H330JC5	1
	C215		CERAMIC 0.01 μ F +80%-20%	ECKR1H103ZF5	1
	C216		CERAMIC 0.01 μ F +80%-20%	ECKR1H103ZF5	1
	C217		CERAMIC 33PF \pm 5%	ECCR1H330JC5	1
	C218		CERAMIC 33PF \pm 5%	ECCR1H330JC5	1
	C219		ALUMI ELECTRY 16V 10 μ F	ECEA1CU100B	1
	C220		ALUMI ELECTRY 16V 100 μ F	ECEA1CU101B	1
	C221		ALUMI ELECTRY 10V 22 μ F	ECEA1AU220B	1
	C222		ALUMI ELECTRY 16V 22 μ F	ECEA1CU220B	1
	C223		ALUMI ELECTRY 50V 1 μ F	ECEA1HU010B	1
	C224		ALUMI ELECTRY 16V 10 μ F	ECEA1CU100B	1
	C226		ALUMI ELECTRY 16V 100 μ F	ECEA1CU101B	1
	C227		CERAMIC 0.01 μ F +80%-20%	ECKR1H103ZF5	1
	C228		ALUMI ELECTRY 25V 10 μ F	ECEA1EU100B	1
	C229		MYLAR 0.027 μ F \pm 5%	ECQM1H273JV3	1
	C230		CERAMIC 2200PF \pm 5%	ECKR1H222KB5	1
	C231		CERAMIC 0.01 μ F +80%-20%	ECKR1H103ZF5	1
	C232		CERAMIC 0.01 μ F +80%-20%	ECKR1H103ZF5	1
	C233		CERAMIC 0.1 μ F +80%-20%	ECFR1H104ZF5	1
	C234		CERAMIC 0.01 μ F +80%-20%	ECKR1H103ZF5	1
	C235		CERAMIC 0.01 μ F +80%-20%	ECKR1H103ZF5	1
	C236		VARIABLE CAPACITOR ~40PF	ECRHA040E41	1
	C237		ALUMI ELECTRY 16V 22 μ F	ECEA1CU220B	1
	C238		ALUMI ELECTRY 16V 10 μ F	ECEA1CU100B	1
	C239		ALUMI ELECTRY 10V 47 μ F	ECEA1AU470B	1

<<MSR9001.000060>>
PARTS LIST FOR SRE-90R
PARTS NAME :CONTROL PCB ASSY (AP3)
MODULE NO. :ENACSR9001T2

NO.	RefNo	C D	Part Name & Description	Part No.	QTY
	C301		ALUMI ELECTRY 16V100 μ F	ECEA1CU101B	1
	C302		CERAMIC 390PF \pm 5%	ECCR1H391J5	1
	C303		CERAMIC 120PF \pm 5%	ECCR1H121JC5	1
	C304		ALUMI ELECTRY 16V100 μ F	ECEA1CU101B	1
	C307		ALUMI ELECTRY 16V100 μ F	ECEA1CU101B	1
	C308		ALUMI ELECTRY10V1000 μ F	ECEA1AGE102B	1
	C309		ALUMI ELECTRY 16V100 μ F	ECEA1CU101B	1
	C310		CERAMIC 390PF \pm 5%	ECCR1H391J5	1
	C311		ALUMI ELECTRY 16V100 μ F	ECEA1CU101B	1
	C312		ALUMI ELECTRY 16V100 μ F	ECEA1CU101B	1
	C314		ALUMI ELECTRY 16V100 μ F	ECEA1CU101B	1
	C315		ALUMI ELECTRY 25V 47 μ F	ECEA1EU470B	1
	C316		ALUMI ELECTRY50V0.47 μ F	ECEA1HUR47B	1
	C317		ALUMI ELECTRY 16V100 μ F	ECEA1CU101B	1
	C318		ALUMI ELECTRY10V1000 μ F	ECEA1AU102B	1
	C319		ALUMI ELECTRY 16V100 μ F	ECEA1CU101B	1
	C320		CERAMIC 68PF \pm 5%	ECCR1H680JC5	1
	C321		CERAMIC 56PF \pm 5%	ECCR1H560JC5	1
	C322		ALUMI ELECTRY 16V100 μ F	ECEA1CU101B	1
	C323		CERAMIC 120PF \pm 5%	ECCR1H121JC5	1
	C326		ALUMI ELECTRY 16V100 μ F	ECEA1CU101B	1
	C327		ALUMI ELECTRY 16V100 μ F	ECEA1CU101B	1
	C328		ALUMI ELECTRY 16V 10 μ F	ECEA1CU100B	1
	C329		ALUMI ELECTRY 16V100 μ F	ECEA1CU101B	1
	C330		ALUMI ELECTRY 50V 1 μ F	ECEA1HU010B	1
	C331		ALUMI ELECTRY 16V100 μ F	ECEA1CU101B	1
	C401		ALUMI ELECTRY16V2200 μ F	ECEA1CU222E	1
	C402		ALUMI ELECTRY25V2200 μ F	ECEA1EU222E	1
	C403		ALUMI ELECTRY35V1000 μ F	ECEA1VU102E	1
	C404		ALUMI ELECTRY 63V 47 μ F	ECEA1JU470B	1
	C405		ALUMI ELECTRY 50V 47 μ F	ECEA1HU470B	1
	C406		ALUMI ELECTRY 50V 22 μ F	ECEA1HU220B	1
	C412		ALUMI ELECTRY 25V 47 μ F	ECEA1EU470B	1
	C413		ALUMI ELECTRY 10V 47 μ F	ECEA1AU470B	1
	C414		ALUMI ELECTRY 25V 47 μ F	ECEA1EU470B	1
	C415		ALUMI ELECTRY 50V 1 μ F	ECEA1HU010B	1

<<MSR9001.000070>>
PARTS LIST FOR SRE-90R
PARTS NAME :CONTROL PCB ASSY (AP3)
MODULE NO. :ENACSR9001T2

NO.	RefNo	C D	Part Name & Description	Part No.	QTY
	R123		FLAMEPROOF 1/4W 220Ω	ERD25FJ221S	1
	R125		CARBON 1/2W 100Ω ± 5%	ERDS1TJ101	1
	R128		CARBON 1/4W 10KΩ ± 5%	ERDS2TJ103	1
	R129		CARBON 1/4W 3.3KΩ ± 5%	ERDS2TJ332	1
	R131		CARBON 1/4W 10KΩ ± 5%	ERDS2TJ103	1
	R132		CARBON 1/4W 1.2KΩ ± 5%	ERDS2TJ122	1
	R133		CARBON 1/4W 10KΩ ± 5%	ERDS2TJ103	1
	R134		CARBON 1/2W 100Ω ± 5%	ERDS1TJ101	1
	R135		CARBON 1/4W 10KΩ ± 5%	ERDS2TJ103	1
	R136		CARBON 1/4W 10KΩ ± 5%	ERDS2TJ103	1
	R137		CARBON 1/2W 820Ω ± 5%	ERDS1TJ821	1
	R138		CARBON 1/4W 1KΩ ± 5%	ERDS2TJ102	1
	R139		FLAMEPROOF 1/4W 220Ω	ERD25FJ221S	1
	R140		CARBON 1/4W 10KΩ ± 5%	ERDS2TJ103	1
	R201		CARBON 1/4W 1KΩ ± 5%	ERDS2TJ102	1
	R202		CARBON 1/4W 1KΩ ± 5%	ERDS2TJ102	1
	R203		CARBON 1/4W 12KΩ ± 5%	ERDS2TJ123	1
	R204		CARBON 1/4W 27KΩ ± 5%	ERDS2TJ273	1
	R205		CARBON 1/4W 1KΩ ± 5%	ERDS2TJ102	1
	R206		CARBON 1/4W 220Ω ± 5%	ERDS2TJ221	1
	R207		CARBON 1/4W 75Ω ± 5%	ERDS2TJ750	1
	R208		CARBON 1/4W 100Ω ± 5%	ERDS2TJ101	1
	R209		CARBON 1/4W 330Ω ± 5%	ERDS2TJ331	1
	R210		CARBON 1/4W 220Ω ± 5%	ERDS2TJ221	1
	R211		CARBON 1/4W 39KΩ ± 5%	ERDS2TJ393	1
	R212		CARBON 1/4W 4.7KΩ ± 5%	ERDS2TJ472	1
	R213		FLAMEPROOF 1/4W 68Ω	ERD25FJ680S	1
	R214		CARBON 1/4W 270Ω ± 5%	ERDS2TJ271	1
	R215		CARBON 1/4W 2.2KΩ ± 5%	ERDS2TJ222	1
	R216		CARBON 1/4W 270Ω ± 5%	ERDS2TJ271	1
	R217		CARBON 1/4W 4.7KΩ ± 5%	ERDS2TJ472	1
	R218		CARBON 1/4W 56KΩ ± 5%	ERDS2TJ563	1
	R219		CARBON 1/4W 1KΩ ± 5%	ERDS2TJ102	1
	R220		CARBON 1/4W 47Ω ± 5%	ERDS2TJ470	1
	R221		CARBON 1/4W 15KΩ ± 5%	ERDS2TJ153	1
	R222		CARBON 1/4W 10KΩ ± 5%	ERDS2TJ103	1
	R223		CARBON 1/4W 10KΩ ± 5%	ERDS2TJ103	1
	R224		CARBON 1/4W 4.7KΩ ± 5%	ERDS2TJ472	1
	R225		CARBON 1/4W 1.2KΩ ± 5%	ERDS2TJ122	1
	R226		CARBON 1/4W 100Ω ± 5%	ERDS2TJ101	1
	R227		CARBON 1/4W 22KΩ ± 5%	ERDS2TJ223	1
	R228		CARBON 1/4W 22KΩ ± 5%	ERDS2TJ223	1
	R229		CARBON 1/4W 1KΩ ± 5%	ERDS2TJ102	1
	R231		CARBON 1/4W 1KΩ ± 5%	ERDS2TJ102	1
	R232		CARBON 1/4W 2.2KΩ ± 5%	ERDS2TJ222	1

<<MSR9001.000080>>

PARTS LIST FOR SRE-90R

PARTS NAME :CONTROL PCB ASSY (AP3)

MODULE NO. :ENACSR9001T2

NO.	RefNo	C	Part Name & Description	Part No.	QTY
	R233		CARBON 1/4W 56K Ω \pm 5%	ERDS2TJ563	1
	R234		CARBON 1/4W 56K Ω \pm 5%	ERDS2TJ563	1
	R235		CARBON 1/4W 1.2K Ω \pm 5%	ERDS2TJ122	1
	R237		JUMPER CW 6mm	WL05D160CM05	1
	R239		CARBON 1/4W 10K Ω \pm 5%	ERDS2TJ103	1
	R240		CARBON 1/4W 1.2K Ω \pm 5%	ERDS2TJ122	1
	R241		CARBON 1/4W 10K Ω \pm 5%	ERDS2TJ103	1
	R243		CARBON 1/4W 1K Ω \pm 5%	ERDS2TJ102	1
	R244		FLAMEP ROOF 1/4W 560 Ω	EPD25FJ561S	1
	R305		CARBON 1/4W 270 Ω \pm 5%	ERDS2TJ271	1
	R306		CARBON 1/4W 39K Ω \pm 5%	ERDS2TJ393	1
	R307		CARBON 1/4W 5.6K Ω \pm 5%	ERDS2TJ562	1
	R308		CARBON 1/4W 1K Ω \pm 5%	ERDS2TJ102	1
	R309		CARBON 1/4W 270 Ω \pm 5%	ERDS2TJ271	1
	R310		CARBON 1/4W 39K Ω \pm 5%	ERDS2TJ393	1
	R311		CARBON 1/4W 5.6K Ω \pm 5%	ERDS2TJ562	1
	R312		JUMPER CW 6mm	WL05D160CM05	1
	R313		CARBON 1/4W 270 Ω \pm 5%	ERDS2TJ271	1
	R314		CARBON 1/4W 39K Ω \pm 5%	ERDS2TJ393	1
	R315		CARBON 1/4W 5.6K Ω \pm 5%	ERDS2TJ562	1
	R316		CARBON 1/4W 1K Ω \pm 5%	ERDS2TJ102	1
	R317		CARBON 1/4W 270 Ω \pm 5%	ERDS2TJ271	1
	R318		CARBON 1/4W 220 Ω \pm 5%	ERDS1TJ221	1
	R319		CARBON 1/4W 75 Ω \pm 5%	ERDS2TJ750	1
	R320		CARBON 1/4W 270 Ω \pm 5%	ERDS2TJ271	1
	R321		CARBON 1/4W 39K Ω \pm 5%	ERDS2TJ393	1
	R322		CARBON 1/4W 8.2K Ω \pm 5%	ERDS2TJ822	1
	R323		CARBON 1/4W 270 Ω \pm 5%	ERDS2TJ271	1
	R324		CARBON 1/4W 1K Ω \pm 5%	ERDS2TJ102	1
	R325		CARBON 1/4W 1K Ω \pm 5%	ERDS2TJ102	1
	R326		CARBON 1/4W 2.2K Ω \pm 5%	ERDS2TJ222	1
	R327		CARBON 1/4W 270 Ω \pm 5%	ERDS2TJ271	1
	R328		CARBON 1/4W 56K Ω \pm 5%	ERDS2TJ563	1
	R331		JUMPER CW 6mm	WL05D160CM05	1
	R332		CARBON 1/4W 33K Ω \pm 5%	ERDS2TJ333	1
	R333		CARBON 1/4W 3.3K Ω \pm 5%	ERDS2TJ332	1
	R334		CARBON 1/4W 1.8K Ω \pm 5%	ERDS2TJ182	1
	R335		CARBON 1/4W 220 Ω \pm 5%	ERDS2TJ221	1
	R336		CARBON 1/4W 560 Ω \pm 5%	ERDS2TJ561	1
	R337		CARBON 1/4W 10K Ω \pm 5%	ERDS2TJ103	1
	R338		CARBON 1/4W 33K Ω \pm 5%	ERDS2TJ333	1
	R339		CARBON 1/4W 15K Ω \pm 5%	ERDS2TJ153	1
	R340		CARBON 1/4W 18K Ω \pm 5%	ERDS2TJ183	1
	R341		CARBON 1/4W 5.6K Ω \pm 5%	ERDS2TJ562	1

<<MSR9001.000090>>

PARTS LIST FOR SRE-90R

PARTS NAME :CONTROL PCB ASSY (AP3)

MODULE NO. :ENACSR9001T2

NO.	RefNo	C	Part Name & Description	Part No.	QTY
		D			
	R343		CARBON 1/2W 220Ω ± 5%	ERDS1TJ221	1
	R346		CARBON 1/4W 750Ω ± 5%	ERDS2TJ750	1
	R347		CARBON 1/4W 10KΩ ± 5%	ERDS2TJ103	1
	R348		CARBON 1/4W 100Ω ± 5%	ERDS2TJ101	1
	R349		CARBON 1/4W 3.3KΩ ± 5%	ERDS2TJ332	1
	R350		CARBON 1/4W 3.3KΩ ± 5%	ERDS2TJ332	1
	R352		CARBON 1/4W 8.2KΩ ± 5%	ERDS2TJ822	1
	R353		CARBON 1/4W 39KΩ ± 5%	ERDS2TJ393	1
	R354		CARBON 1/4W 1KΩ ± 5%	ERDS2TJ102	1
	R355		CARBON 1/4W 270Ω ± 5%	ERDS2TJ271	1
	R356		CARBON 1/4W 750Ω ± 5%	ERDS2TJ750	1
	R357		CARBON 1/4W 10KΩ ± 5%	ERDS2TJ103	1
	R359		CARBON 1/4W 10KΩ ± 5%	ERDS2TJ103	1
	R360		CARBON 1/4W 1KΩ ± 5%	ERDS2TJ102	1
	R361		CARBON 1/4W 5.6KΩ ± 5%	ERDS2TJ562	1
	R362		CARBON 1/4W 10KΩ ± 5%	ERDS2TJ103	1
	R364		CARBON 1/4W 18KΩ ± 5%	ERDS2TJ183	1
	R365		CARBON 1/4W 39KΩ ± 5%	ERDS2TJ393	1
	R366		CARBON 1/4W 4.7KΩ ± 5%	ERDS2TJ472	1
	R367		CARBON 1/2W 220Ω ± 5%	ERDS1TJ221	1
	R368		CARBON 1/4W 560Ω ± 5%	ERDS2TJ561	1
	R369		CARBON 1/4W 1.2KΩ ± 5%	ERDS2TJ122	1
	R370		CARBON 1/4W 1.2KΩ ± 5%	ERDS2TJ122	1
	R371		CARBON 1/4W 22KΩ ± 5%	ERDS2TJ223	1
	R401		CARBON 1/2W 2.2KΩ ± 5%	ERDS1TJ222	1

<<MSR9001.000100>>
 PARTS LIST FOR SRE-90R
 PARTS NAME :CONTROL PCB ASSY (AP3)
 MODULE NO. :ENACSR9001T2

NO.	RefNo	C	Part Name & Description	Part No.	QTY
		D			
	L201		FIXED 10 μ H \pm 10%	ELEPL100KA	1
	L202		FIXED 1 μ H \pm 10%	ELEPL1R0KA	1
	L203		FIXED 3.9 μ H \pm 10%	ELEPL3R9KA	1
	L301		FIXED 0.56 μ H \pm 20%	ELEPLR56MA	1
	L401		FIXED 10 μ H \pm 10%	ELEV100KA	1
	L402		FIXED 10 μ H \pm 10%	ELEV100KA	1
	FL201		BAND PASS FILTER(AUDIO)	LJ20BP675M01	1
	FL202		CERAMIC FILTER	SFE107MJA	1
	FL203		CERAMIC FILTER	SFE107MA5-A	1
	FL301		LOW PASS FILTER(VIDEO)	EB8U4R5H7	1
	Y201		CERAMIC DISCRIMINATER	CDA107MA19A	1
	T201		IF TRANS	TRCA0171	1
	X201		11.16MHZ CRYSTAL	HC43UM11E	1
	VR302		VARIABLE 1K Ω 30%	EVND8AA03B13	1
	VR304		VARIABLE 1K Ω 30%	EVND8AA03B13	1
	Z101		ZNR	ERZC10DK270	1
	Z102		ZNR	ERZC10DK270	1
	Z104		ZNR	ERZC10DK270	1
	Z401		ZNR	ERZC10DK270	1
	Z402		ZNR	ERZC10DK270	1

<<MSR9001.000110>>
PARTS LIST FOR SRE-90R
PARTS NAME :CONTROL PCB ASSY (AP3)
MODULE NO. :ENACSR9001T2

NO.	RefNo	C D	Part Name & Description	Part No.	QTY
	W402		JUMPER CW 10mm	WL05D200CM05	1
	W403		JUMPER CW 10mm	WL05D200CM05	1
	W404		JUMPER CW 10mm	WL05D200CM05	1
	W405		JUMPER CW 10mm	WL05D200CM05	1
	W406		JUMPER CW 10mm	WL05D200CM05	1
	W407		JUMPER CW 10mm	WL05D200CM05	1
	W408		JUMPER CW 10mm	WL05D200CM05	1
	W409		JUMPER CW 10mm	WL05D200CM05	1
	W410		JUMPER CW 10mm	WL05D200CM05	1
	W411		JUMPER CW 6mm	WL05D160CM05	1
	W412		JUMPER CW 10mm	WL05D200CM05	1
	W413		JUMPER CW 10mm	WL05D200CM05	1
	W414		JUMPER CW 10mm	WL05D200CM05	1
	W415		JUMPER CW 10mm	WL05D200CM05	1
	W416		JUMPER CW 10mm	WL05D200CM05	1
	W417		JUMPER CW 6mm	WL05D160CM05	1
	W418		JUMPER CW 6mm	WL05D160CM05	1
	W419		JUMPER CW 6mm	WL05D160CM05	1
	W420		JUMPER CW 10mm	WL05D200CM05	1
	W421		JUMPER CW 10mm	WL05D200CM05	1
	W422		JUMPER CW 10mm	WL05D200CM05	1
	W423		JUMPER CW 10mm	WL05D200CM05	1
	W424		JUMPER CW 6mm	WL05D160CM05	1
	W425		JUMPER CW 6mm	WL05D160CM05	1
	W426		JUMPER CW 6mm	WL05D160CM05	1
	W427		JUMPER CW 6mm	WL05D160CM05	1
	W428		JUMPER CW 6mm	WL05D160CM05	1
	W429		JUMPER CW 6mm	WL05D160CM05	1
	W430		JUMPER CW 6mm	WL05D160CM05	1
	W431			WL05D160CM05	1
	W432		JUMPER CW 10mm	WL05D200CM05	1
	W433		JUMPER CW 10mm	WL05D200CM05	1
	W435		JUMPER CW 6mm	WL05D160CM05	1
	W436		JUMPER CW 6mm	WL05D160CM05	1
	W437		JUMPER CW 6mm	WL05D160CM05	1
	W438		JUMPER CW 6mm	WL05D160CM05	1
	W439		JUMPER CW 6mm	WL05D160CM05	1
	W440		JUMPER CW 6mm	WL05D160CM05	1
	W441		JUMPER CW 6mm	WL05D160CM05	1
	W443		JUMPER CW 6mm	WL05D160CM05	1
	W444		JUMPER CW 6mm	WL05D160CM05	1
	W445		JUMPER CW 6mm	WL05D160CM05	1
	W446		JUMPER CW 6mm	WL05D160CM05	1
	W447		JUMPER CW 6mm	WL05D160CM05	1
	W449		JUMPER CW 6mm	WL05D160CM05	1
	W450		JUMPER CW 6mm	WL05D160CM05	1

<<MSR9001.000120>>
 PARTS LIST FOR SRE-90R
 PARTS NAME :CONTROL PCB ASSY (AP3)
 MODULE NO. :ENACSR9001T2

NO.	RefNo	C	Part Name & Description	Part No.	QTY
		D			
	W451		JUMPER CW 10mm	WL05D200CM05	1
	W452		JUMPER CW 6mm	WL05D160CM05	1
	W453		JUMPER CW 6mm	WL05D160CM05	1
	W454		JUMPER CW 6mm	WL05D160CM05	1
	W455		JUMPER CW 6mm	WL05D160CM05	1
	W456		JUMPER CW 6mm	WL05D160CM05	1
	W457		JUMPER CW 10mm	WL05D200CM05	1
	W459		JUMPER CW 10mm	WL05D200CM05	1
	W460		JUMPER CW 6mm	WL05D160CM05	1
	W461		JUMPER CW 6mm	WL05D160CM05	1
	W462		JUMPER CW 6mm	WL05D160CM05	1
	W463		JUMPER CW 10mm	WL05D200CM05	1
	W464		JUMPER CW 10mm	WL05D200CM05	1
	W465		JUMPER CW 6mm	WL05D160CM05	1
	W466		JUMPER CW 6mm	WL05D160CM05	1
	W467		JUMPER CW 6mm	WL05D160CM05	1
	W469		JUMPER CW 6mm	WL05D160CM05	1
	W470		JUMPER CW 10mm	WL05D200CM05	1

<<MSR9001.000130>>
 PARTS LIST FOR SRE-90R
 PARTS NAME :CONTROL PCB ASSY (AP3)
 MODULE NO. :ENACSR9001T2

NO.	RefNo	C D	Part Name & Description	Part No.	QTY
			PUSH TERMINAL PLATE(8P)	PT-C08P19	1
			PIN JACK(3P)	T6125-AAAA	1
			SLIDE SWITCH	HSW080501020	2
	P102		CONNECTOR PLUG 12P(2mm)	EMCS1250Z	1
	P301		CONNECTOR PLUG 6P(2mm)	EMCS0650Z	1
	P402		CONNECTOR PLUG 5P(2.5)	EMCS0552M	1
	M131		2ND CONVERTOR	ENG-87101H	1
	M132		RF MODULATOR UNIT	ENC-47955	1
	PCB		CONTROL P.C.B.	ENABPD96	1

<<MSR9001.000140>>
 PARTS LIST FOR SRE-90R
 PARTS NAME :FRONT PCB ASSY (AP3)
 MODULE NO. :ENAJSR9001T2

NO.	RefNo	C	Part Name & Description	Part No.	QTY
		D			
	W101		JUMPER CW 6mm	WL05D160CM05	1
	W102		JUMPER CW 10mm	WL05D200CM05	1
	W103		JUMPER CW 6mm	WL05D160CM05	1
	W104		JUMPER CW 10mm	WL05D200CM05	1
	W105		JUMPER CW 10mm	WL05D200CM05	1
	W107		JUMPER CW 10mm	WL05D200CM05	1
	W108		JUMPER CW 10mm	WL05D200CM05	1
	W109		JUMPER CW 10mm	WL05D200CM05	1
	W110		JUMPER CW 6mm	WL05D160CM05	1
	W111		JUMPER CW 10mm	WL05D200CM05	1
	W112		JUMPER CW 10mm	WL05D200CM05	1
	W113		JUMPER CW 6mm	WL05D160CM05	1
	W114		JUMPER CW 10mm	WL05D200CM05	1
	W115		JUMPER CW 10mm	WL05D200CM05	1
	W116		JUMPER CW 10mm	WL05D200CM05	1
	W117		JUMPER CW 6mm	WL05D160CM05	1
	W118		JUMPER CW 10mm	WL05D200CM05	1
	W119		JUMPER CW 10mm	WL05D200CM05	1
	W120		JUMPER CW 10mm	WL05D200CM05	1
	W121		JUMPER CW 6mm	WL05D160CM05	1
	W122		JUMPER CW 6mm	WL05D160CM05	1
	W123		JUMPER CW 6mm	WL05D160CM05	1
	W124		JUMPER CW 6mm	WL05D160CM05	1
	W125		JUMPER CW 6mm	WL05D160CM05	1
	W126		JUMPER CW 6mm	WL05D160CM05	1
	W127		JUMPER CW 10mm	WL05D200CM05	1
	W128		JUMPER CW 6mm	WL05D160CM05	1
	W129		JUMPER CW 10mm	WL05D200CM05	1

<<MSR9001.000150>>
 PARTS LIST FOR SRE-90R
 PARTS NAME :POWER PCB ASSY (AP4)
 MODULE NO. :ENAPSR9001T2

NO.	RefNo	C D	Part Name & Description	Part No.	QTY
	D401		POWER DIODE	IN4003	1
	D401	A	POWER DIODE	S5566G	1
	D402		POWER DIODE	IN4003	1
	D402	A	POWER DIODE	S5566G	1
	D403		POWER DIODE	IN4003	1
	D403	A	POWER DIODE	S5566G	1
	D404		POWER DIODE	IN4003	1
	D404	A	POWER DIODE	S5566G	1
	D405		POWER DIODE	IN4003	1
	D405	A	POWER DIODE	S5566G	1
	D406		POWER DIODE	IN4003	1
	D406	A	POWER DIODE	S5566G	1
	D407		POWER DIODE	IN4003	1
	D407	A	POWER DIODE	S5566G	1
	D408		POWER DIODE	IN4003	1
	D408	A	POWER DIODE	S5566G	1
	C410		CERAMIC 2200PF ± 20%	ECKDNS222ME	1
	C411		CERAMIC 2200PF ± 20%	ECKDNS222ME	1
	W501		JUMPER CW 10mm	WL05D200CM05	1
	W503		JUMPER CW 10mm	WL05D200CM05	1
	T401		POWER TRANSFORMER	PE57H04-0	1
	P301		CONNECTOR PLUG 5P	CCRA104H	1
			LAG TERMINAL	TAL01AA04BN	3
	PCB		POWER P.C.B.	ENABPD98	1
			TUBE	ENAWT08	2

* "A" in item "CD" shows alternative parts.

<<MSR9001.000160>>

PARTS LIST FOR SRE-90R

PARTS NAME :CONNECTOR PCB ASSY (AP6)

MODULE NO. :ENADSR9001T2

NO.	RefNo	C D	Part Name & Description	MACO Part No	QTY
	D306				
	D307		ZENER DIODE(12V)	MA1120M	1
	D308		ZENER DIODE(12V)	MA1120M	1
	W400		JUMPER CW 10mm	WL05D200CM05	1
			RGB CONNECTOR	HXC152501010	1
		A	RGB CONNECTOR	RGB-S21-4	
	P302		CONNECTOR 6P(2mm)	CCRA105H	1
	PCB		CONNECTOR P.C.B.	ENABPD99	1

* "A" in item "CD" shows alternative parts.