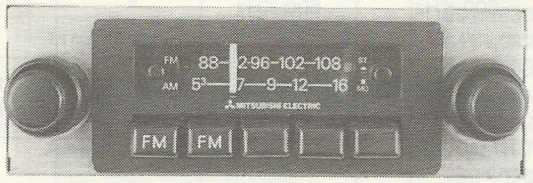
MITSUBISHI

SERVICE MANUAL

AM/FM CAR RADIO

MODEL : AR-2700E



SPECIFICATIONS

Circuit System:
Superheterodyne with RF amplifier

Tuning Range:
FM 88 – 108 MHz
AM 525 – 1605 KHz

Intermediate Frequency:
FM 10.7 MHz
AM 455 KHz

Power Output:
Undistorted 4 W Maximum 6 W

Output impedance:
4Ω

Power Source:
11 V – 16 V Negative ground only

Current Consumption:
MAX. 1.5 A at 13.2 V

IC:
7

Transistors:
4

Diodes:
17

Shaft Distance:
5-1/8″

Size:
W 6-1/2″
H 2″
D 5″

Weights:
2.4 lbs

MITSUBISHI ELECTRIC CORPORATION
Head Office : 2-3 Marunouchi 2-Chome, Chiyodaku, Tokyo, Japan Cable Address : MELCO TOKYO

ALIGNMENT PROCEDURES

1 AM (IF, RF) Alignment (Power Source Voltage DC 14.4 V)

Procedures	Circuit	Signal generator connection	Signal generator frequency	Radio dial setting	Indicator connection	Adjust	Remarks
1	IF	Fig. 1	455 KHz	High freq. end stop	Fig. 2	T2~T5	Try to get the maximum voltage and equalize the degree of diminution near ±3 KHz
2							
3							
4	RF	Fig. 3	1630 kHz	High freq. end stop	"	VC3	Tune in
5			1400 KHz	1400 KHz	"	VC1, VC2	Adjust VC1, VC2 and get the maximum voltage of the output.
6			600 KHz	600 KHz	"	T1	Turn T1 gradually and find the maximum sensitivity near 600 KHz.
7					"	Repeat procedures 5–6	
8				Low freq. end stop			Check the range of the frequency of the received wave. This is the end of the adjustment.

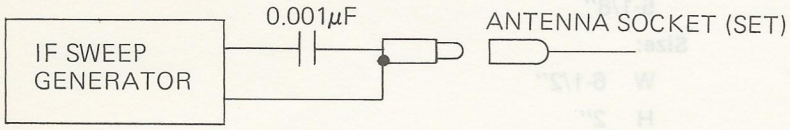


Fig. 1

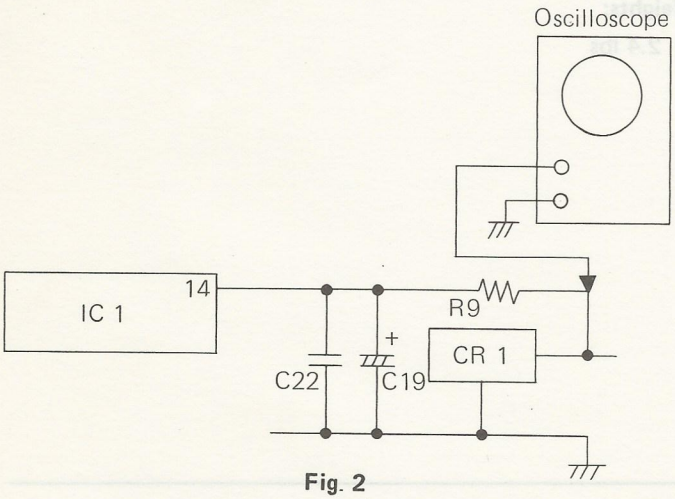


Fig. 2

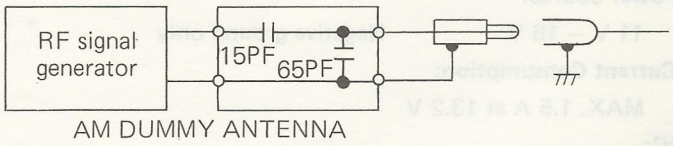
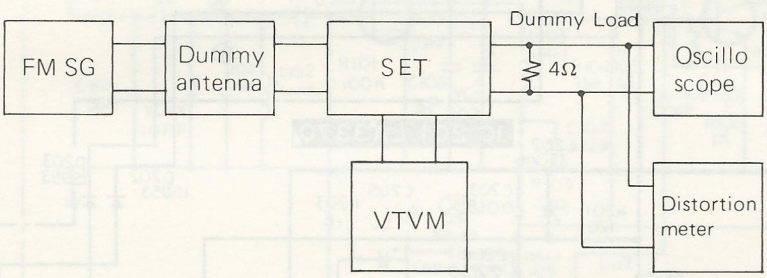


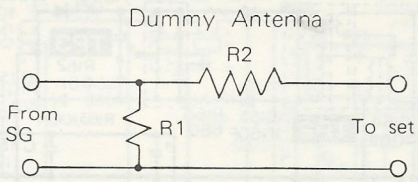
Fig. 3

2 FM Alignment

- Power source voltage DC·14.4 V.

Step	Circuit	Connection		Signal generator frequency	Radio tuning	Adjust	Remarks
		Input	Output				
1	IF	SMG output TP1 thru. 33 PF (Fig. 4)	SMG input TP3	10.7 MHz 40 dB (μV)	High freq. end stop (TP2 and C161 open)	T151, 152 VR151	Center freq. is determined by ceramic filter characteristic
2	Discrimi-nator	SMG output TP1 thru. 33 PF	SMG input TP4	10.7 MHz 40 dB (μV)	High freq. end stop (TP2 con-nected)	T153	Adjust T153 to make the linear part of the S curve sharp.
3	RF	SSG output, Ant socket thru. dummy antenna (Fig. 4)	AC voltmeter speaker connector	108 MHz	High freq. end stop (C161 con-nected)	VC103	Maximum reading
4				88 MHz	Low freq. end stop	—	
5				98 MHz	98 MHz	VC101, 102	
6				Repeat steps 3 to 5			
7	MPX		Freq. counter TP5		High freq. end stop	VR202	19.0 ± 0.1 KHz
8	Separation	SSG output Ant socket thru. dummy antenna (Fig. 4)	AC voltmeter speaker connector	98 MHz 1 KHz, 30% mod.	98 MHz	VR201	Maximum separation
9						VR151	Limiting sensitivity 14 ~ 20 dB (μV)





Open circuit R1: —— R2: 25Ω

Close circuit R1: 50Ω R2: 25Ω

Fig. 4

* CF151.152

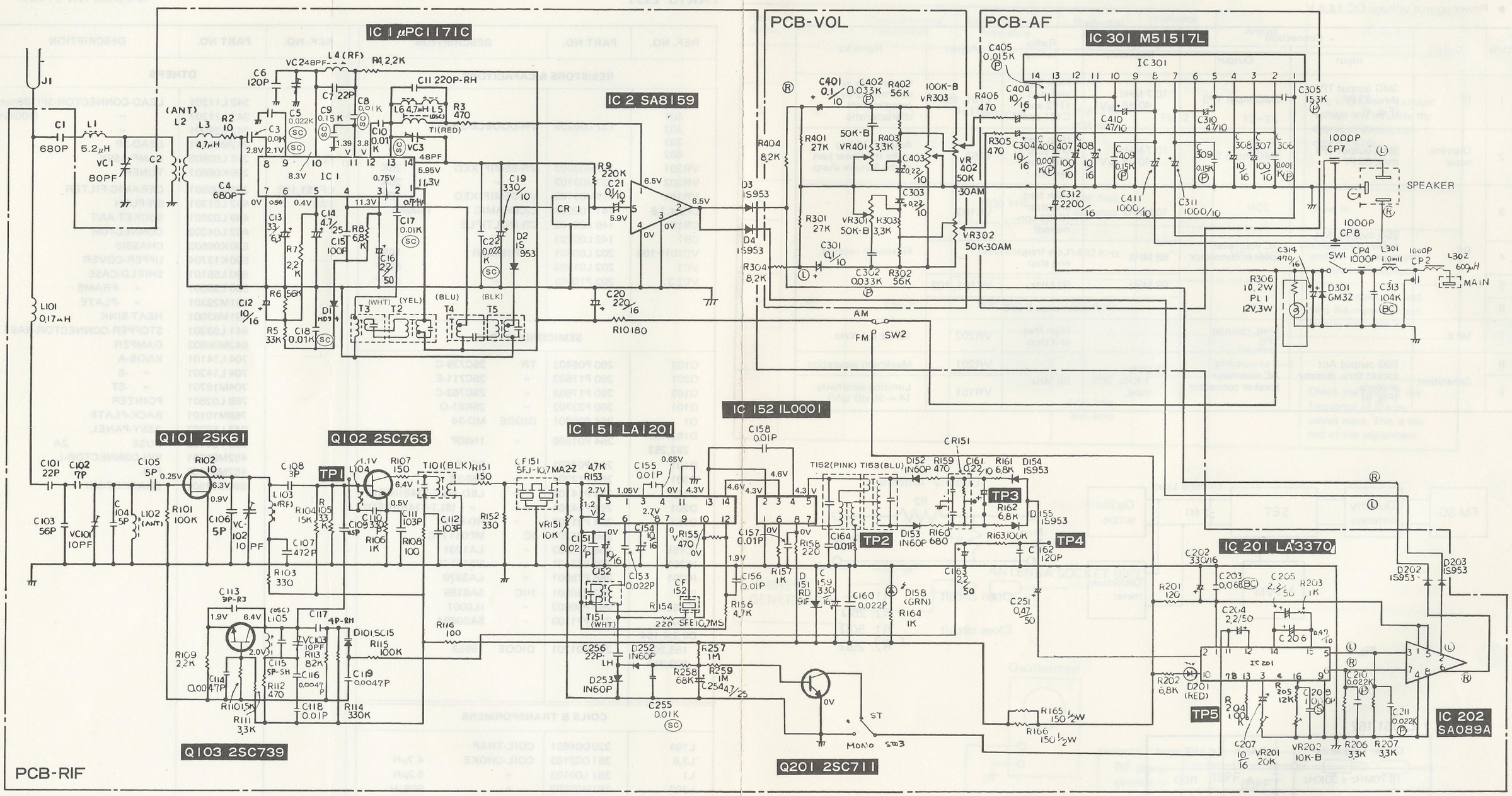
Center Frequency	RANK	CARE coad
10.70MHz ± 30KHz	A	RED
10.67MHz ± "	B	BLU
10.73MHz ± "	C	ORG
10.64MHz ± "	D	BRK
10.76MHz ± "	E	WHT

REF. NO.	PART NO.	DESCRIPTION
RESISTORS & CAPACITORS		
VR301, 401 302 303 402	122 L06205	VR-DOUBLE-SHAFT
VR201	127M03003	VR-SEMIFIXED 20K
VR202	127M03102	" 20K
VR151	127M03103	VR-SEMIFIXED 10K
CP2,4,7,8	141 P02003	C-CERAMIC 1000PF
CR151	149 L00102	CR-MULTIPLE
CR1	149 L00201	"
VC101~103	202 L00301	C-TRIMMER 10PF
VC1	202 L01303	" 80PF
VC2,3	202 P10401	" 48PF
SEMICONDUCTORS		
Q103	260 P05403	TR 2SC739-C
Q201	260 P17502	" 2SC711-E
Q102	260 P17603	" 2SC763-C
Q101	260 P23702	" 2SK61-O
D1	264 P00401	DIODE MD-34
D152,153 252,253	264 P01306	" 1N60P
D101	264 P07501	" SC-15
D301	264 P13201	" GM-3Z
D158	264 P14101	" LED (SLT-214B)(GRN)
D201	264 P14301	" " (SLT-114B)(RED)
D151	264 P21103	" RD-9.1F
IC1	266 P01201	IC MPC1171C
IC151	266 P30402	" LA1201
IC301	266 P35101	" M51517L
IC201	266 P78901	" LA3370
IC2	267 P30301	HIC SA8159
IC152	267 P30502	" IL0001
IC202	267 P71103	" SA8089A
D2,3,4,154 155,202, 203,251	269M01201	DIODE 1S953
COILS & TRANSFORMERS		
L104	320D04601	COIL-TRAP
L3,6	351D02103	COIL-CHOKE 4.7μH
L1	351 L00103	" 5.2μH
L302	351M00202	" 600μH
L301	351 P00108	TRANS-CHOKE 1.0mH
L101	361M00101	COIL-RF 0.17μH
T1	373M00101	TRANS-OSC (RED)
T101	374 L00201	TRANS-IF (BLK)
T151	374 L00202	" (WHT)
T152	374 L00603	" (PINK)
T153	374 L00604	" (BLU)
T3	374 L01201	" (WHT)
T2	374 L01202	" (YEL)
T4	374 L01203	" (BLU)
T5	374 L01204	" (BLK)

REF. NO.	PART NO.	DESCRIPTION
OTHERS		
	242 L11201	LEAD-CONNECTOR-3P(180mm)
	242 L11207	" (100mm)
	242 L28001	"
	242M23801	LEAD-3P
PL1	253 L00805	LAMP-ASSY
	295K06607	TUNER
CF151,152	296M00501	CERAMIC-FILTER
SW3	432 L01301	SW-PUSH
J1	449 L02501	SOCKET-ANT
	452 L04202	CONNECTOR
	560K06502	CHASSIS
	590K13704	UPPER-COVER
	590 L55101	SHIELD-CASE
	590 L55501	" -FRAME
	591M29301	" -PLATE
	591M63001	HEAT-SINK
	641 L03201	STOPPER-CONNECTOR-BASE
	642M06803	DAMPER
	704 L14101	KNOB-A
	704 L14201	" -B
	704M19701	" -ST
	768 L02801	POINTER
	768M10101	BACK-PLATE
	943 L56303	ASSY-PANEL
	283 P00102	FUSE 2A
	452M01201	PIN-CONNECTOR-L
	452M01603	PIN
	590M77501	BRACKET-MH

SCHEMATIC DIAGRAM

MODEL : AR-2700E



NOTICE:

1. Indication
   - All resistors are ohms unless otherwise specified. (K = 10^3 ohm, M = 10^3 ohm).
   - All capacitors are microfarads unless otherwise specified. (P = 10^{-6} microfarad)
2. Resistors
   - Kinds: Carbon resistor: No mark
     Solid resistor: (S) mark
     Printed resistor: (W) mark
     Tip resistor: (W) mark
   - Wattage: No indication = 1/4W. Other wattage will be indicated.
   - Tolerance

Mark	Tolerance
J	±5%
K	±10%

3. Capacitors
   - Types: Ceramic condenser: No mark
     Semiconductor ceramic condenser: (BC) mark
     Polyester film condenser: (P) mark
     Styrol condenser: (S) mark
     Tantalic condenser: (T) mark
     Aluminum electrolytic condenser: (Al) mark
     Tip condenser: (T) mark
   - Tolerance

Mark	Tolerance	Mark	Tolerance
C	±0.25PF	M	±20%
D	±0.5PF	Z	+80% −20%
J	±5%	No mark	+100% −0
K	±10%		

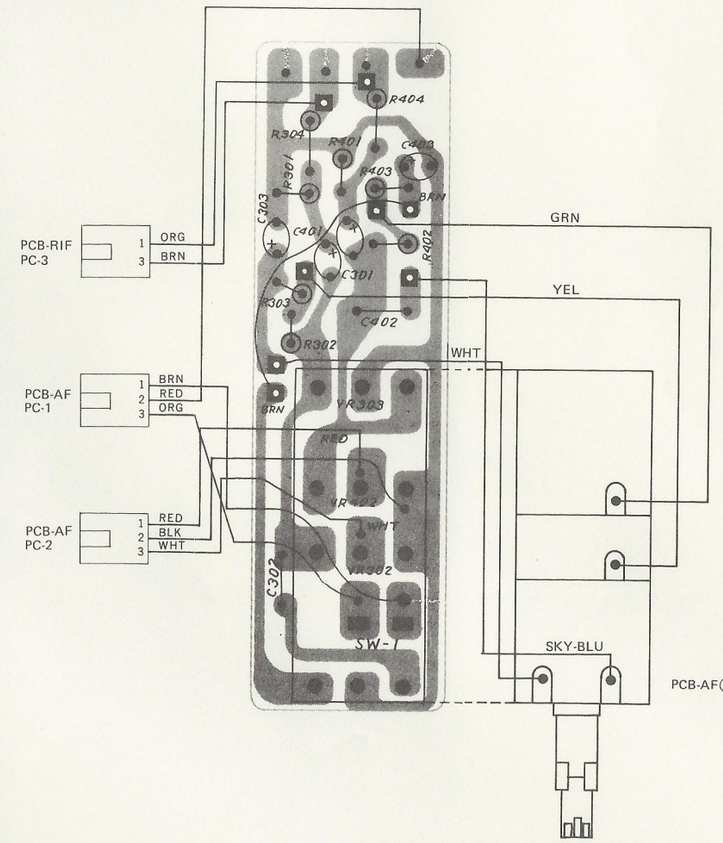
4. Voltage Measurements
   Voltage measurment made with D.C. voltmeter (20 KΩ/V DC) to chassis ground with no signal input (Source voltage 14.4V).
5. This circuit is subject to change for improvement without notice.

PRINTED CIRCUIT BOARD (Pattern Side)

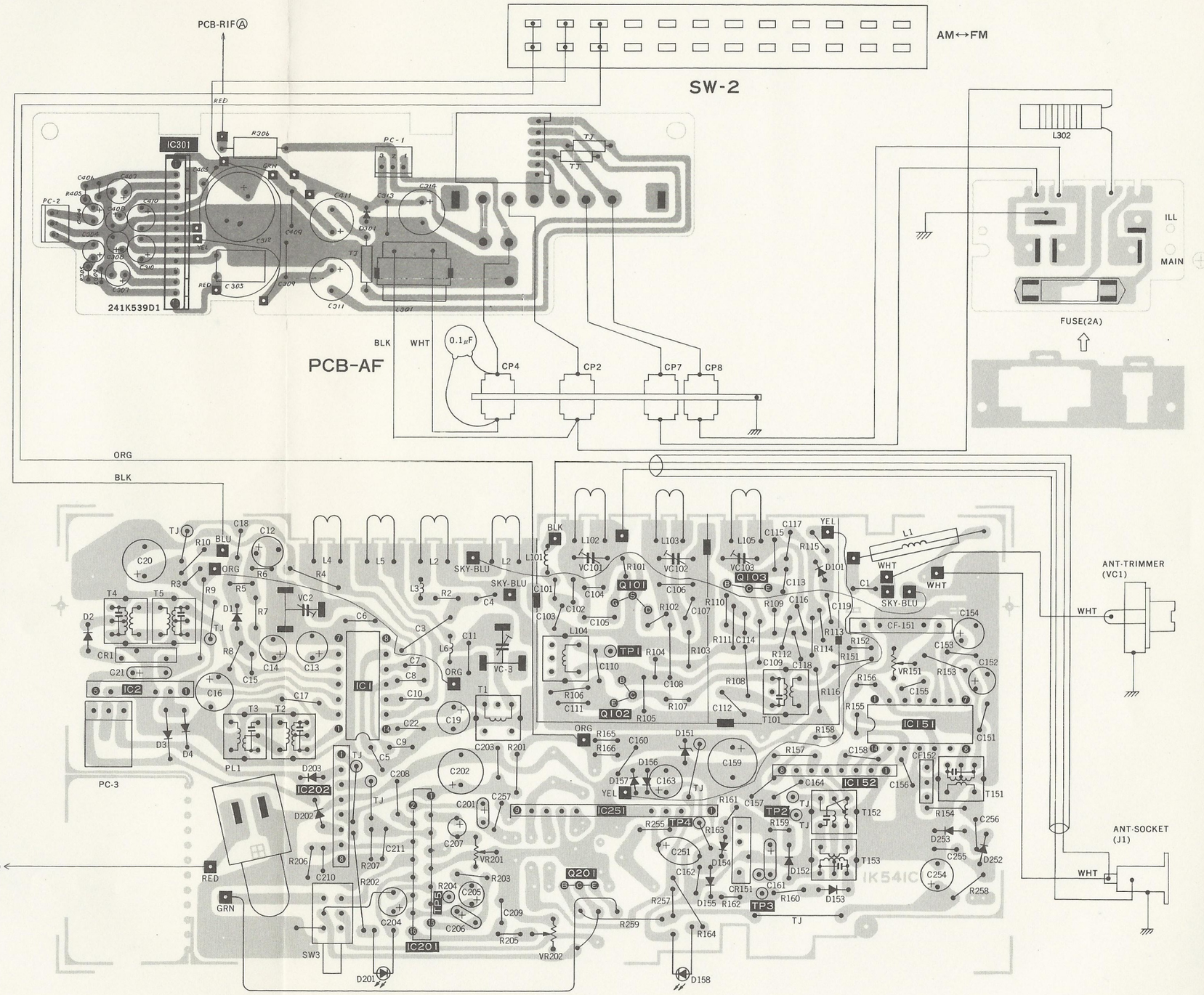
MODEL : AR-2700E

PCB-RIF

REF. No.	INDEX
ICS	
IC 1	F-5
IC 2	E-5
IC 151	J-5
IC 152	J-6
IC 201	G-6
IC 202	F-6
TRANSISTORS	
Q 102	H-5
Q 103	I-5
Q 201	H-7
Q 101	H-5
DIODES	
D1	F-5
D2	E-5
D 3	E-6
D 4	E-6
D 101	J-4
D 151	I-6
D 152	I-7
D 153	J-7
D 154	I-6
D 155	I-7
D 156	H-6
D 157	H-6
D 158	I-7
D 202	F-6
D 203	F-6
D 252	J-6
D 253	J-6
COILS	
L 1	J-4
L 2	G-4
L 3	G-5
L 4	F-4
L 5	G-4
L 6	G-5
L 101	H-4
L 102	H-4
L 103	I-5
L 104	H-5
L 105	I-5
TRANSFORMERS	
T 1	G-5
T 2	F-6
T 3	F-6
T 4	E-5
T 5	E-5
T 101	I-5
T 151	J-6
T 152	J-6
T 153	J-6
CONDENSERS	
C 1	J-4
C 2	
C 3	G-5
C 4	G-5
C 5	G-6
C 6	F-5
C 7	G-5
C 8	G-5
C 9	G-6
C 10	G-5
C 11	G-5
C 12	F-4
C 13	F-5
C 14	F-5
C 15	F-5
C 16	F-5
C 17	F-5
C 18	F-4
C 19	G-5
C 20	E-4
C 21	E-5
C 22	G-5
C 101	H-5
C 102	H-5
C 103	H-5
C 104	H-5
C 105	I-5
C 106	I-5
C 107	I-5
C 108	I-5
C 109	I-5
C 110	H-5
C 111	H-5
C 112	I-5
C 113	I-5
C 114	I-5
C 115	I-4
C 116	I-5
C 117	I-4
C 118	I-5
C 119	J-4
C 151	J-5
C 152	J-5
C 153	J-5
C 154	J-5
C 155	J-5
C 156	J-6
C 157	I-6
C 158	J-6
C 159	I-6
C 160	H-6
C 161	I-7
C 162	I-7
C 163	I-6
C 164	I-6
C 201	G-6
C 202	G-6
C 203	H-6
C 204	G-7
C 205	G-7
C 206	G-7
C 207	G-6
C 208	G-6
C 209	H-7
C 210	F-6
C 251	I-7
C 254	J-7
C 255	J-6
C 256	J-6
C 257	G-6
VCS	
VC 2	F-5
VC 3	G-5
VC 101	H-4
VC 102	I-4
VC 103	I-4
RESISTORS	
R 2	G-5
R 3	E-4
R 4	F-4
R 5	F-4
R 6	F-4
R 7	F-5
R 8	F-5
R 9	E-5
R 10	E-4
R 101	H-4
R 102	I-5
R 103	I-5
R 104	I-5
R 105	H-5
R 106	H-5
R 107	I-5
R 108	I-5
R 109	I-5
R 110	I-5
R 111	I-5
R 112	I-5
R 113	J-4
R 114	J-4
R 115	J-4
R 116	J-5
R 151	J-5
R 152	J-5
R 153	J-5
R 154	J-6
R 155	J-5
R 156	J-5
R 157	I-6
R 158	J-6
R 159	I-6
R 160	I-7
R 161	I-6
R 162	I-7
R 163	I-6
R 164	I-7
R 165	H-6
R 166	H-6
R 201	H-6
R 202	F-6
R 203	G-6
R 204	G-7
R 205	H-7
R 206	F-6
R 255	I-6
R 256	
R 257	I-7
R 258	J-7
R 259	H-7
R 260	H-6
VRS	
VR 201	G-6
VR 202	H-7
VR 151	J-5
OTHERS	
CF 151	J-5
CF 152	J-6
CRS	
CR 1	E-5
CR 151	I-7



PCB-VR



PCB-RIF