

ICF-703/703L

SERVICE MANUAL

Ver 1.0 2000.03

AEP Model
ICF-703/703L

UK Model
ICF-703L



(Photo: ICF-703L (BLACK))

SPECIFICATIONS

Frequency range:

Italy

Band	ICF-703	ICF-703L
FM	87.5 - 108.0 MHz	—
AM	526.5 - 1606.5 kHz	—

Other countries

Band	ICF-703	ICF-703L
FM	87.5 - 108.0 MHz	87.5 - 108.0 MHz
SW	—	—
AM (MW)	530 - 1605 kHz	530 - 1605 kHz
LW	—	153 - 255 kHz

Speaker

Approx. 10.2 cm (4 1/8 inches) dia. 8 ohms

Power output

430 mW (at 10 % harmonic distortion)

Output

Ⓢ jack (ø 3.5 mm minijack)

Power requirements

With the supplied AC power cord:

220 - 230 V AC, 50 Hz

With four R6 (size AA) batteries: 6V DC

Dimensions

Approx. 265 × 137 × 69 mm (w/h/d)

(10 1/2 × 5 1/2 × 2 3/4 inches) incl. projecting parts
and control with carrying handle pushed in.

Mass

Approx. 1019 g (2 lb 4 oz) incl. batteries

Supplied accessory

AC power cord (1)

Design and specifications are subject to change without notice.

FM/AM RADIO

ICF-703

FM/MW/LW 3 BAND RADIO

ICF-703L

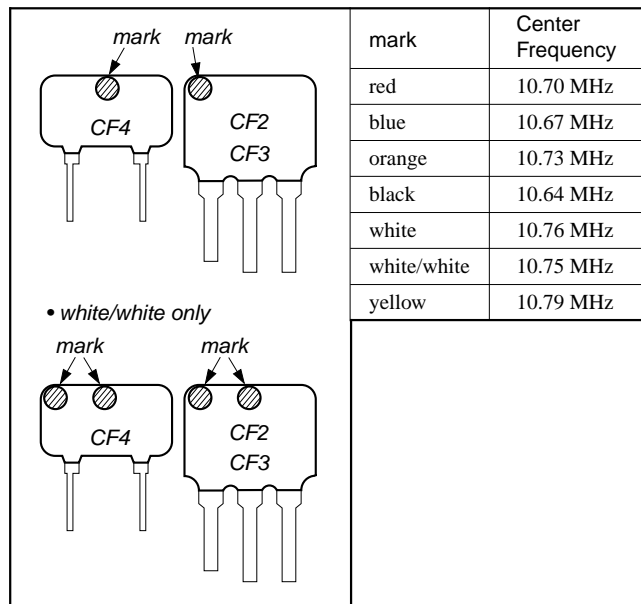
SONY®

HOW TO CHANGE THE CERAMIC FILTERS

This model is used two ceramic filters of CF2, CF3 and CF4.

You must use same type of color marked ceramic filters in order to meet same specifications.

Therefore, the ceramic filter must change two pieces together since it's supply two pieces in one package as a spare parts.



Notes on Chip Component Replacement

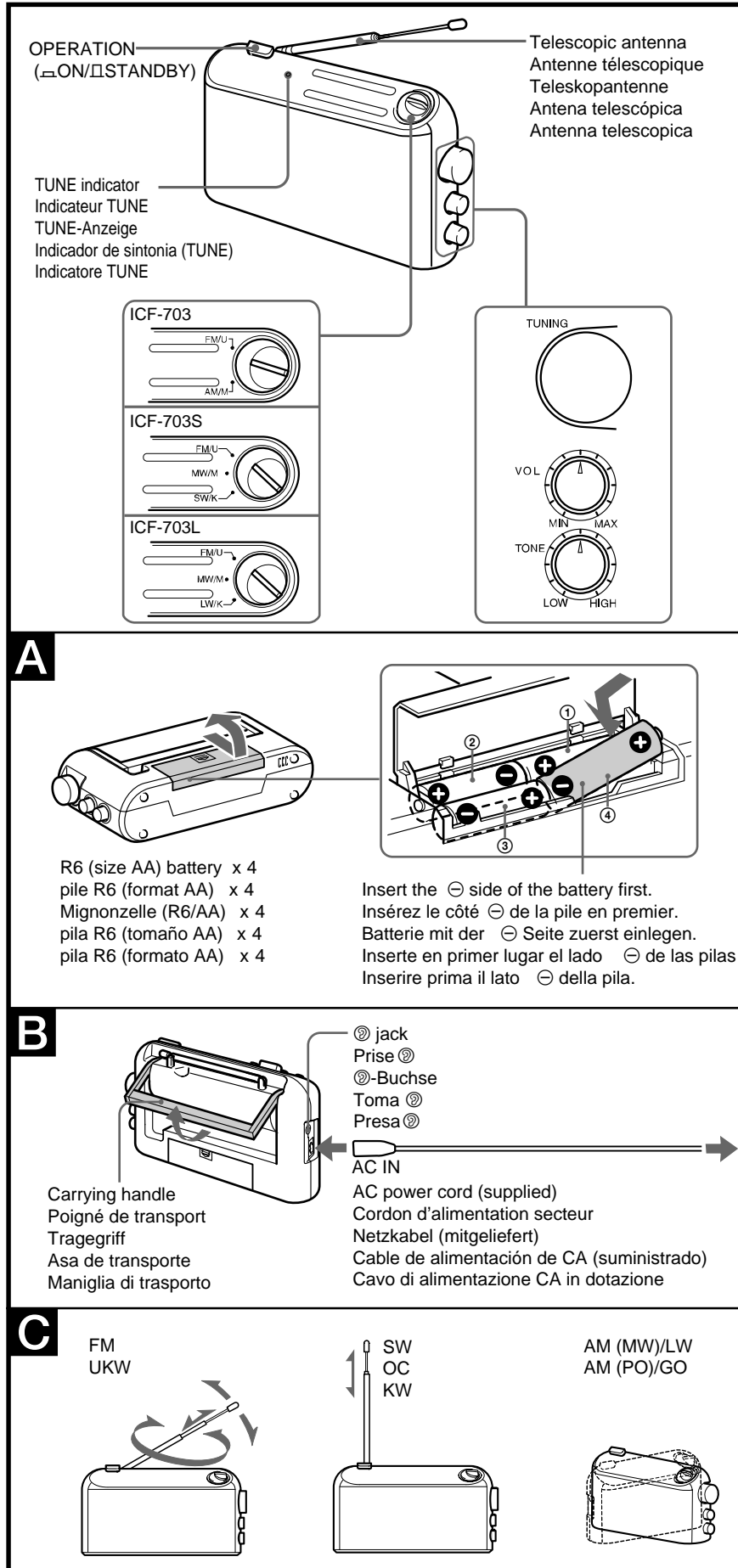
- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK \triangle OR DOTTED LINE WITH MARK \triangle ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SECTION 1 GENERAL

This section is extracted from instruction manual.



Choosing Power Sources

Batteries (See Fig. A)

- 1 Open the lid of the battery case.
Slide fully in the direction of the arrow (▶) on the lid and lift it. Do not force to open it.
Doing so may damage the unit.
- 2 Insert four R6 (size AA) batteries (not supplied) with correct polarity.
- 3 Close the lid.

Battery life

Using Sony LR6 (size AA) alkaline batteries:
Approx. 100 hours
Using Sony R6 (size AA) batteries:
Approx. 35 hours

Replacing batteries

When the sound becomes weak or distorted, replace all the batteries with new ones.

Notes on batteries

- Insert the batteries with correct polarity.
- Do not charge the dry batteries.
- Do not use different types of batteries at the same time.
- When you replace the batteries, replace all with new ones.
- When the unit is not being used for a long period of time, remove the batteries to avoid damage from battery leakage and corrosion.
- If a battery leakage occurs, wipe the battery compartment with a soft cloth before inserting new ones.

House Current (See Fig. B)

- 1 Connect the AC power cord supplied to the AC IN jack of the radio.
- 2 Plug into a wall outlet.

Operating the Radio

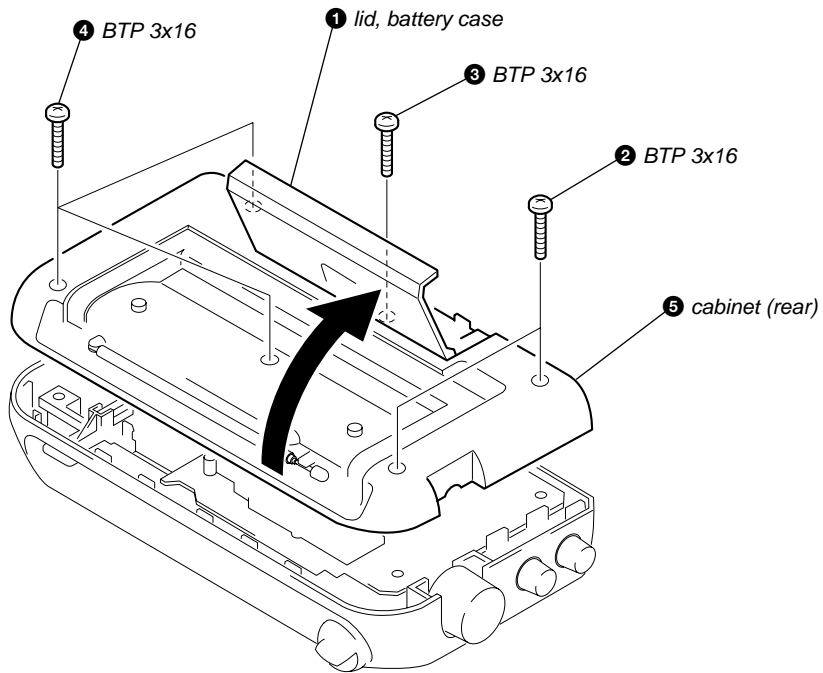
- 1 Press OPERATION (⏻) to turn on the radio.
- 2 Select a desired band, and tune in a station using TUNING.
TUNE (tuning) indicator lights up when a station is tuned in.
- 3 Adjust the volume using VOL.
- 4 Adjust the tone to your preference using TONE.
To obtain clear treble, turn to "HIGH".
To reinforce bass, set to "LOW".

- To turn off the radio, press OPERATION (⏻).
- To listen with an earphone connect the earphone to the ⊙ (earphone) jack.
The speaker is deactivated when an earphone is connected.
- **To improve Receiving condition (See Fig. C)**
FM: Extend the telescopic antenna and adjust the length and angle for the best reception.
SW: Extend the telescopic antenna vertically.
AM(MW)/LW: Since the reception is affected by the direction of the radio, rotate the unit horizontally for optimum reception.

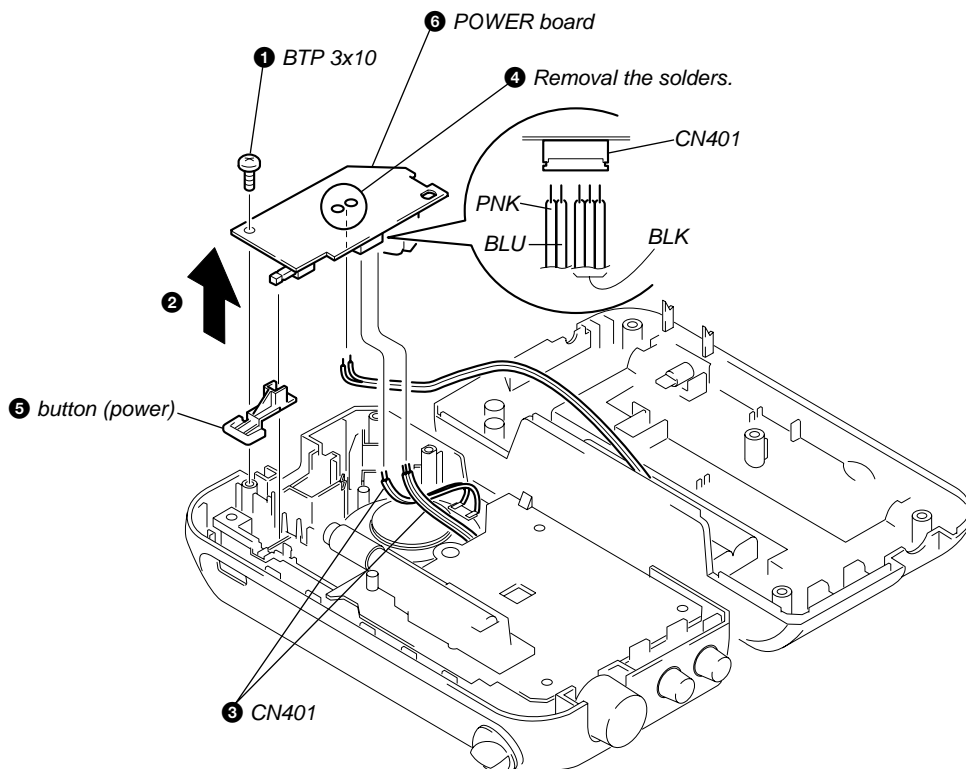
SECTION 2 DISASSEMBLY

Note : Follow the disassembly procedure in the numerical order given.

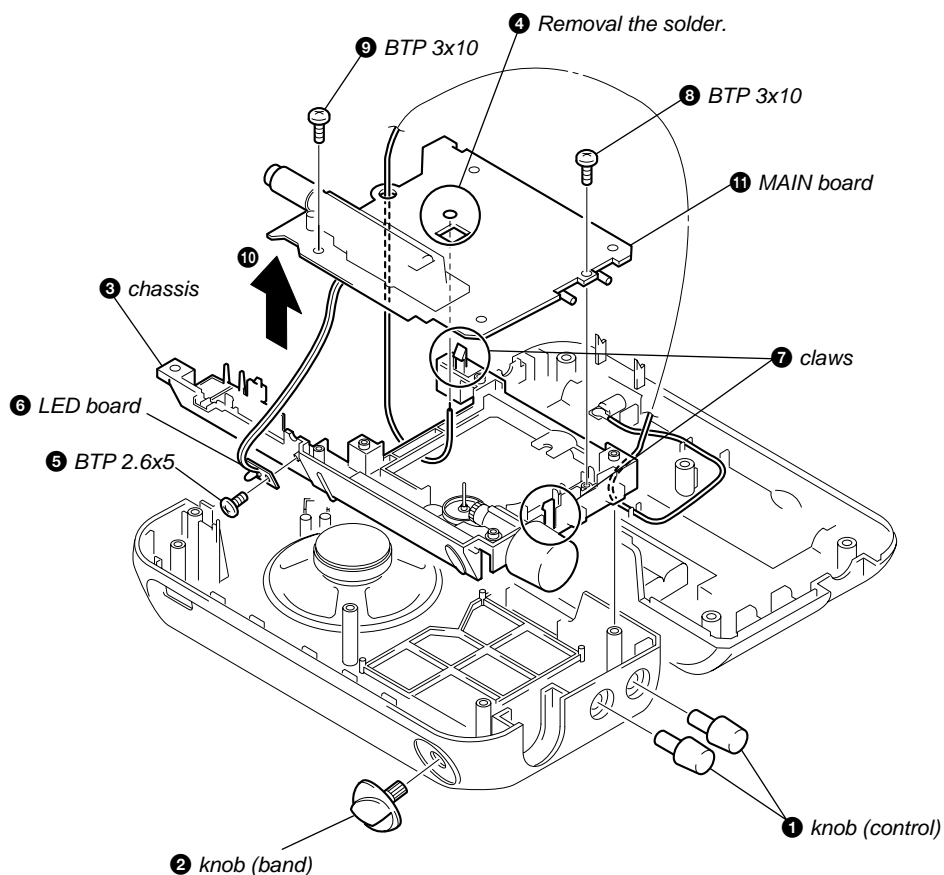
2-1. CABINET (REAR)



2-2. POWER BOARD



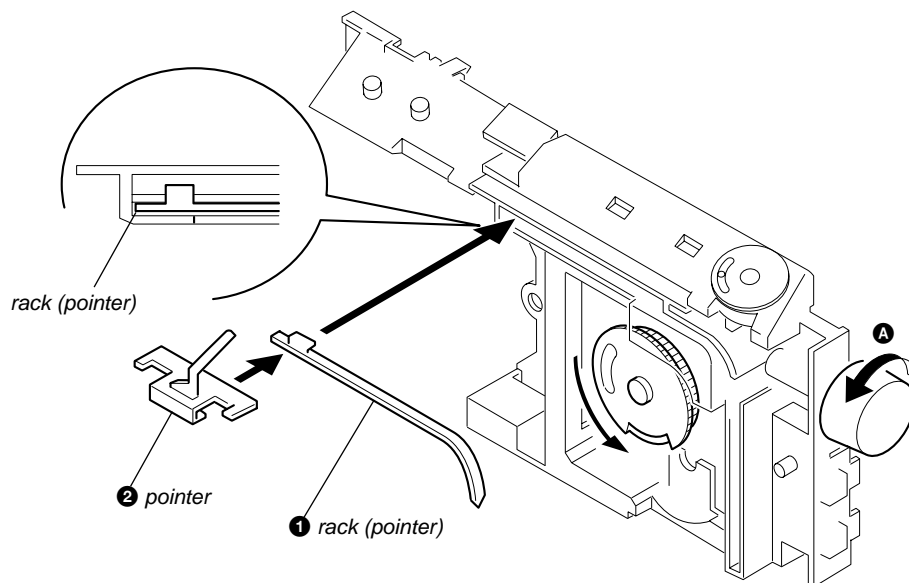
2-3. MAIN BOARD, LED BOARD



2-4. SETTING THE POINTER

• *Setting the Pointer*

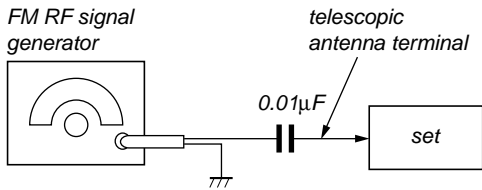
1. Turn the Knob (Tuning) in the direction of **A** until it is stopped.
2. Place the rack as shown in the figure.
3. Mount the pointer.



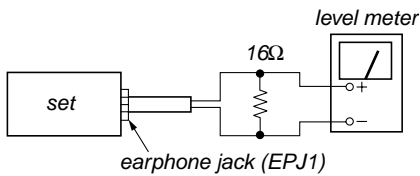
SECTION 3 ELECTRICAL ADJUSTMENTS

FM SECTION

BAND switch : FM



400Hz, 30% FM modulation
frequency deviation ± 22.5 kHz
Output level: as low as possible



- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

ICF-703:

FM FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on level meter	
L4	86.5 (87.35) MHz
CT1-3	109.5 (108.25) MHz

FM TRACKING ADJUSTMENT	
Adjust for a maximum reading on level meter	
L6, L7	86.5 (87.35) MHz
CT1-4	109.5 (108.25) MHz

NOTE :

() : Italian model

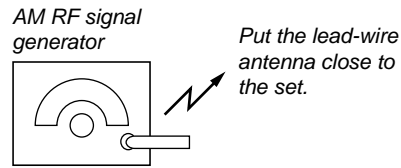
ICF-703L:

FM FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on level meter	
L4	86.5 MHz
CT1-3	109.5 MHz

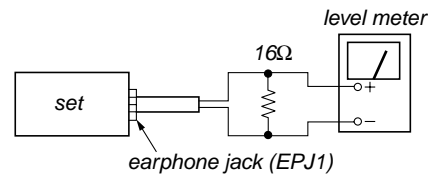
FM TRACKING ADJUSTMENT	
Adjust for a maximum reading on level meter	
L6, L7	86.5 MHz
CT1-4	109.5 MHz

AM (703)/MW (703L) SECTION

BAND switch : AM



400Hz, 30% AM modulation
Output level: as low as possible



- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

AM/MW FREQUENCY COVERAGE ADJUSTMENT

Adjust for a maximum reading on level meter	
L5	520 (516.5) kHz
CT1-2	1,650 (1,631.5) kHz

AM/MW TRACKING ADJUSTMENT

Adjust for a maximum reading on level meter	
L1-1	600 (620) kHz
CT1-1	1,400 kHz

NOTE :

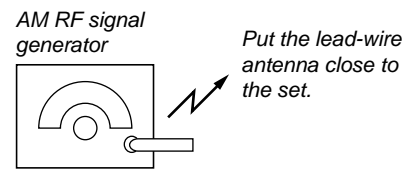
() : Italian model

AM/MW IF ADJUSTMENT

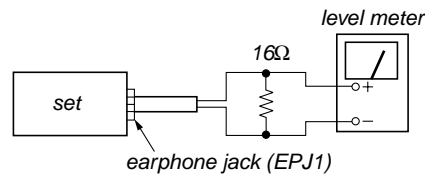
Adjust for a maximum reading on level meter	
T1	455 kHz

ICF-703L:
LW SECTION

BAND switch : LW



400Hz, 30%
AM modulation
Output level: as low as possible

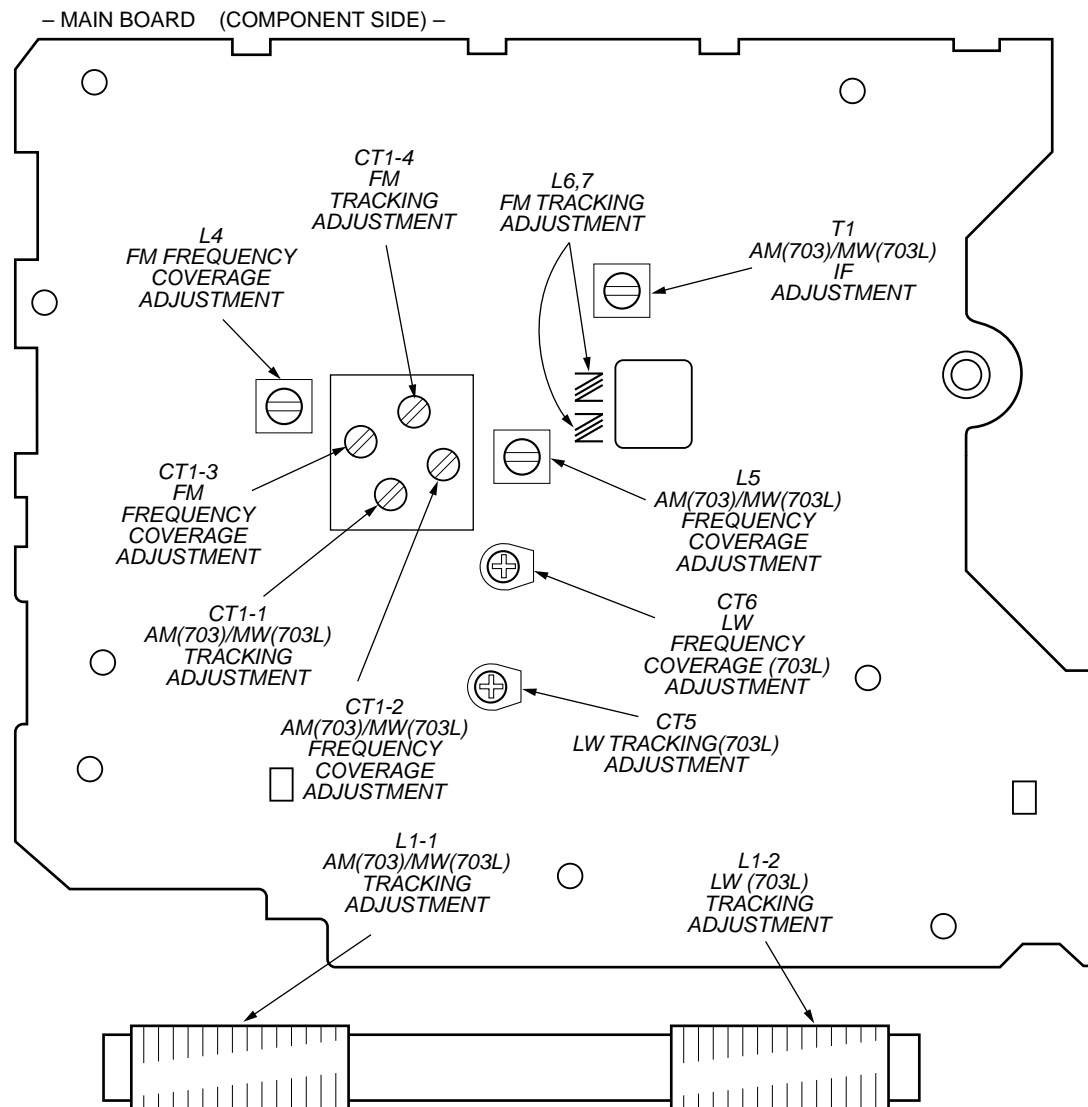


- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

LW FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on level meter	
CT6	145 kHz
<confirmation>	265 kHz

LW TRACKING ADJUSTMENT	
Adjust for a maximum reading on level meter	
L1-2	160 kHz
CT5	240 kHz

Adjustment Location: MAIN BOARD

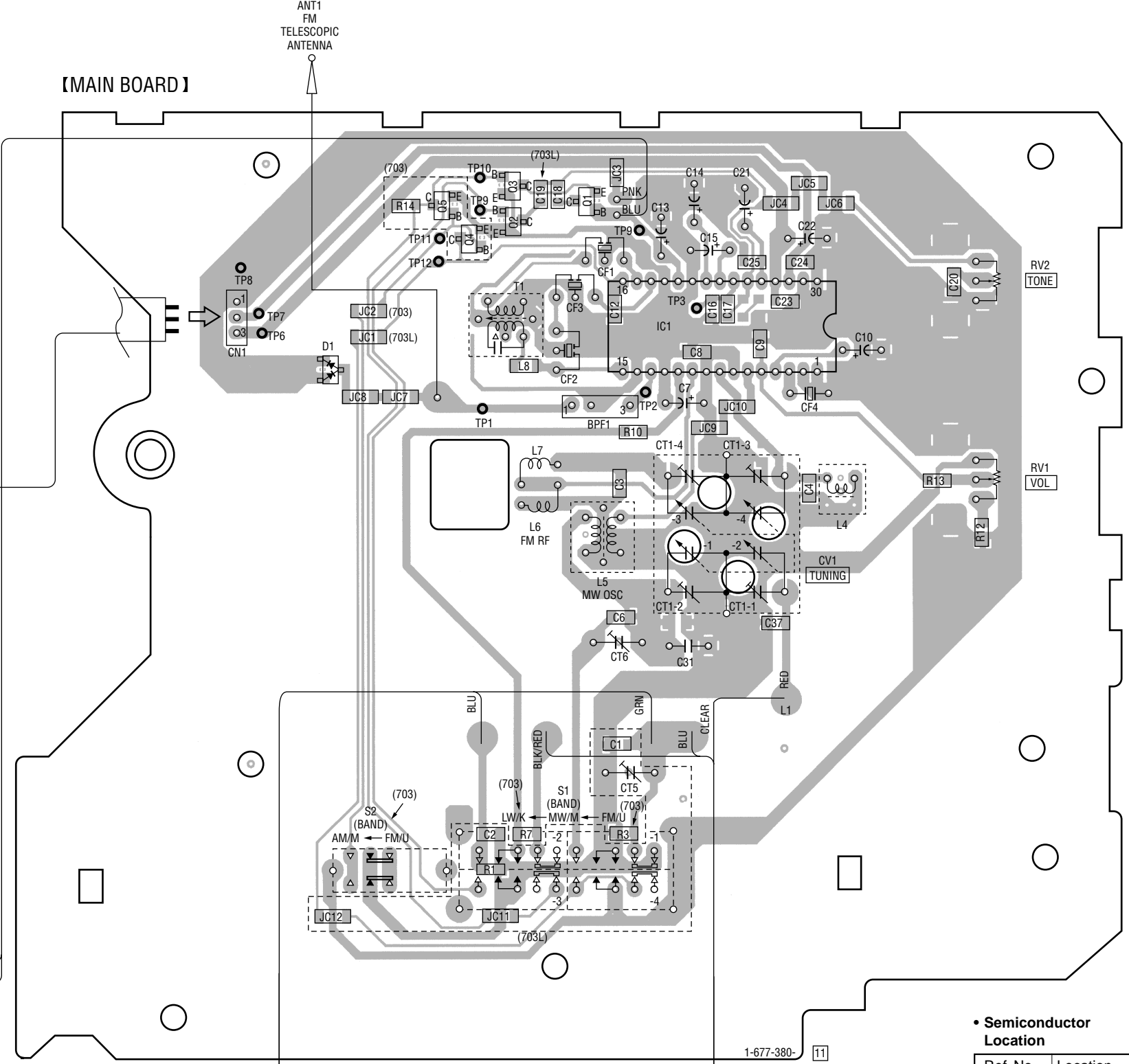
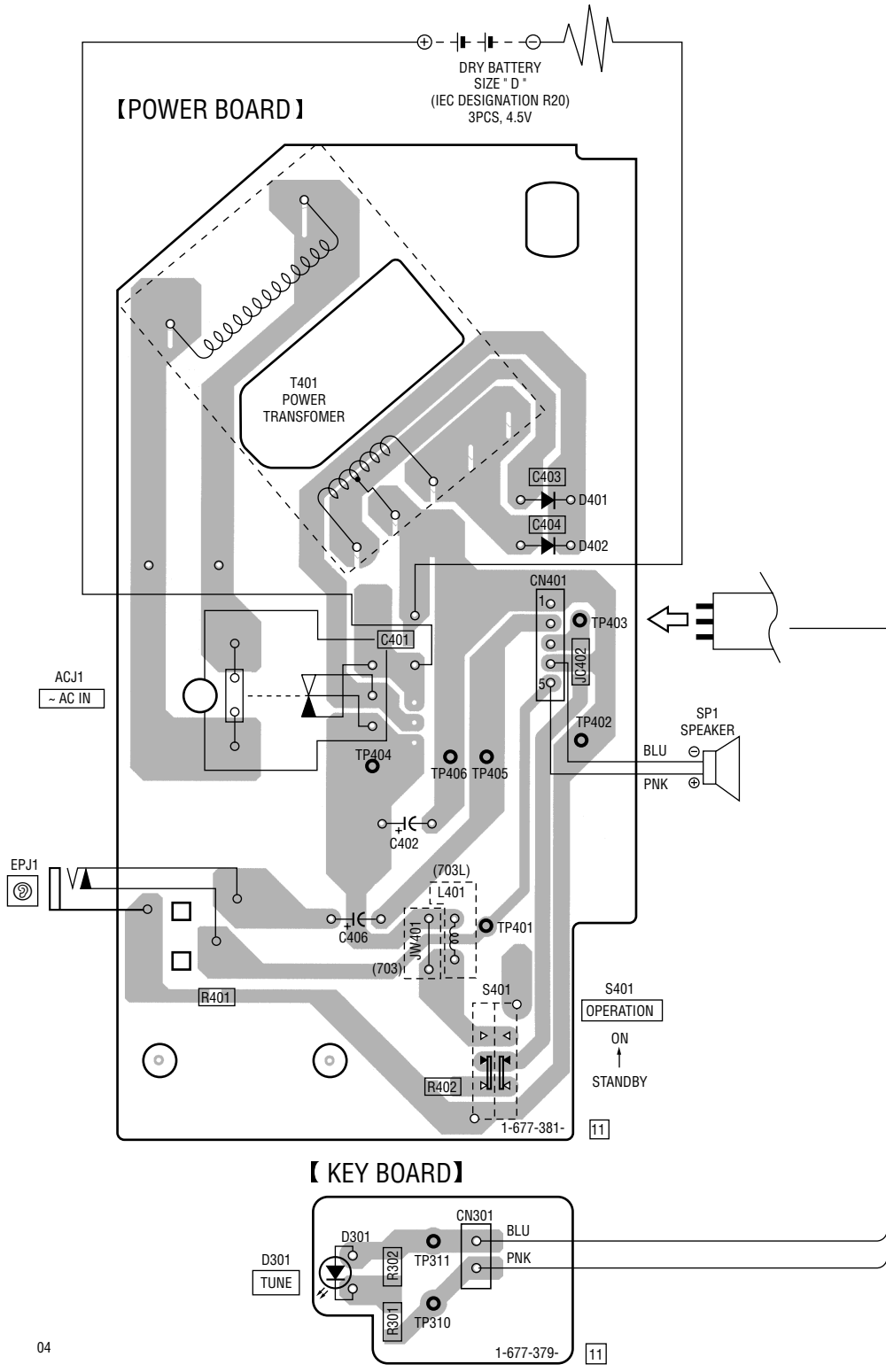


SECTION 4
DIAGRAMS

4-1. PRINTED WIRING BOARDS

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A
B
C
D
E
F
G
H
I
J

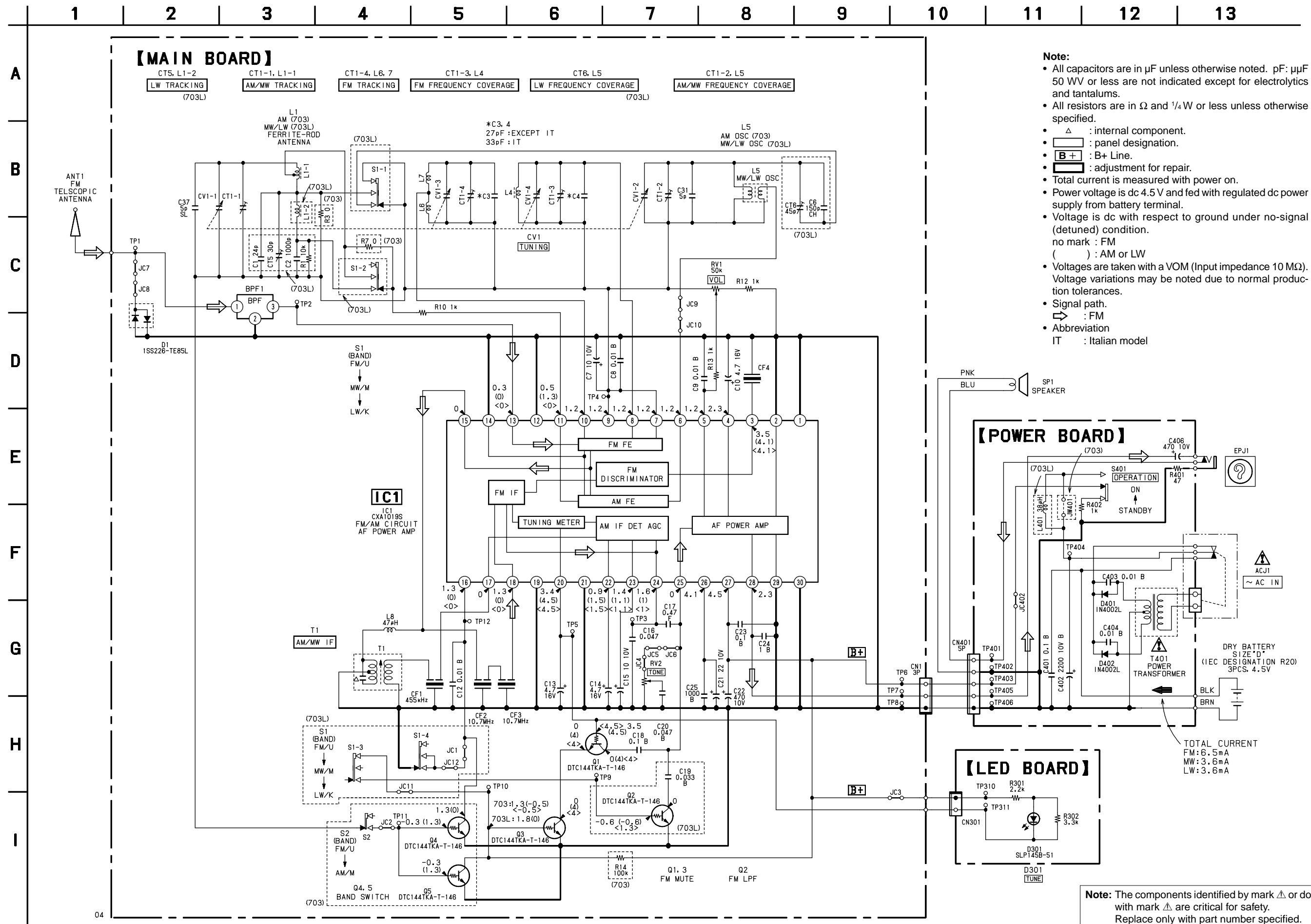


Note:
 ○ : parts extracted from the component side.
 — : parts extracted from the conductor side.
 △ : internal component.
 ▨ : Pattern from the side which enables seeing.

• Semiconductor Location

Ref. No.	Location
D1	C-9
D401	D-4
D402	D-4
IC1	C-11
Q1	B-11
Q2	B-10
Q3	B-10
Q4	B-10
Q5	B-9

4-2. SCHEMATIC DIAGRAMS



SECTION 5 EXPLODED VIEW

NOTE:

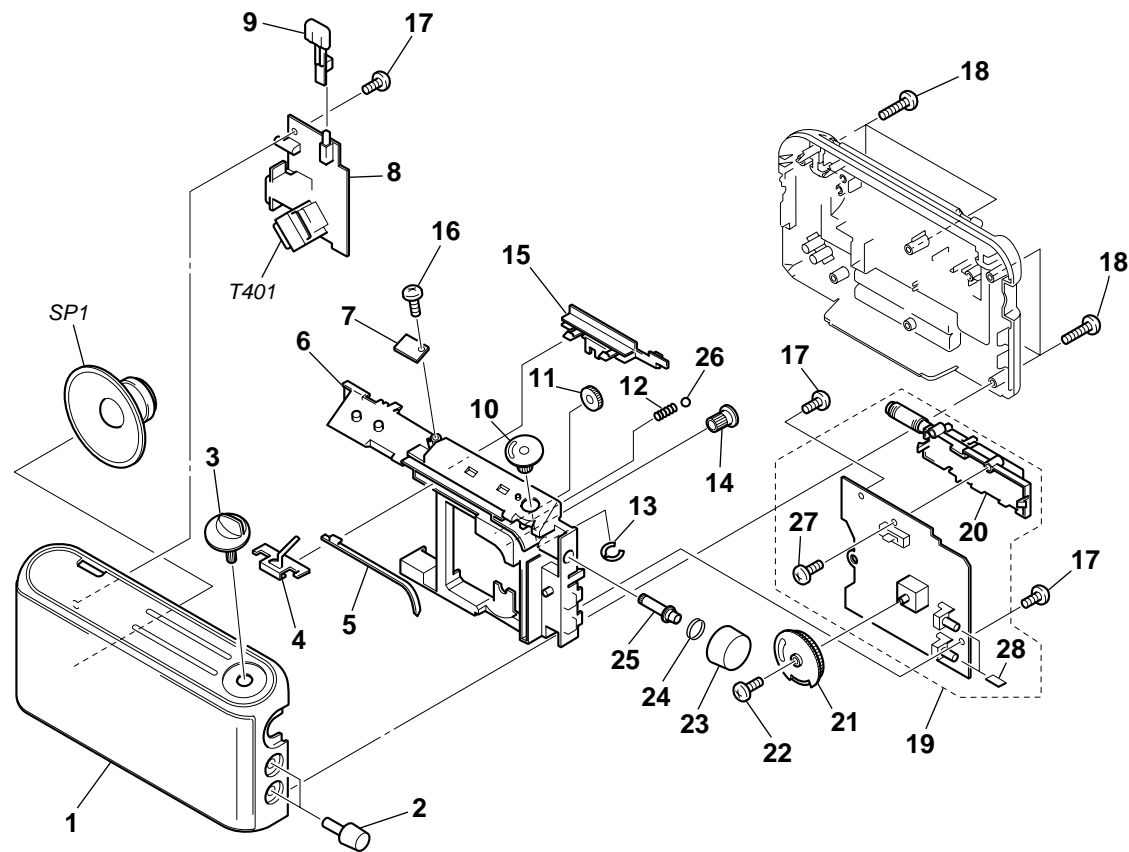
- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- Color Indication of Appearance Parts
Example :
KNOB, BALANCE (WHITE) ... (RED)
↑ ↑
Parts Color Cabinet's Color
- Accessories and packing materials are given in the last of this parts list.

- Abbreviation
IT : Italian model

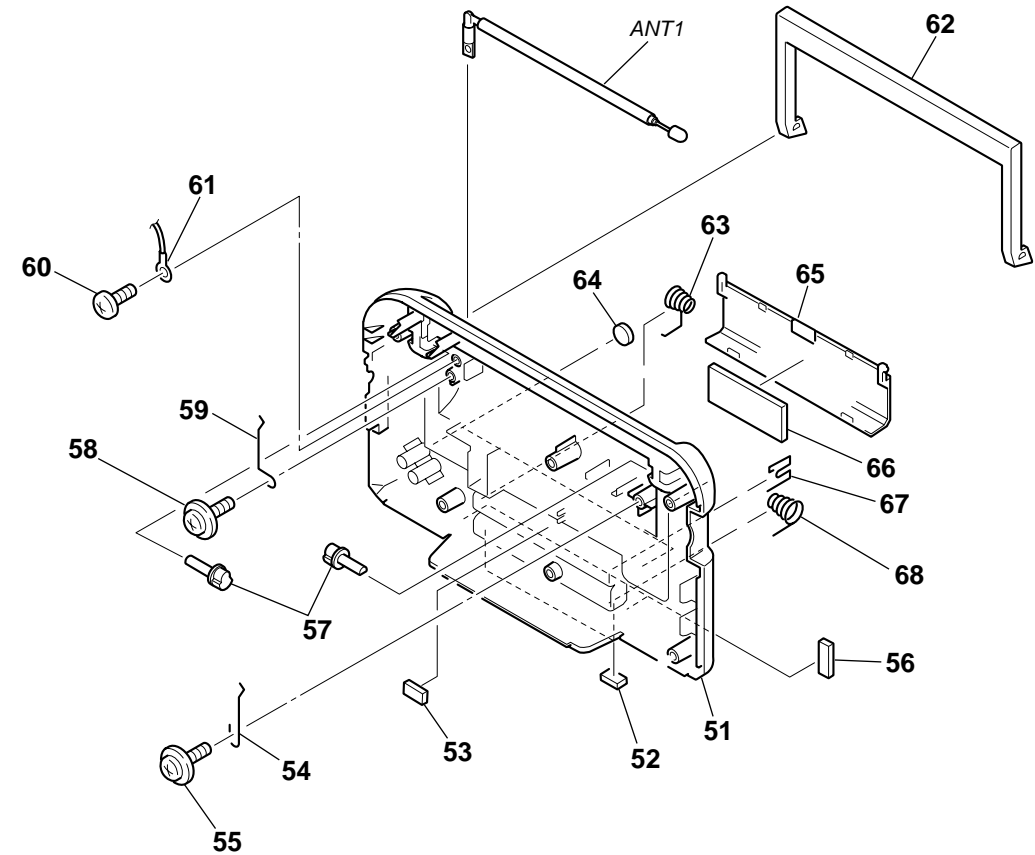
The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

5-1. CABINET (FRONT) SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	X-3379-333-1	CABINET (FRONT) SUB ASSY (BLACK) (703L)		14	3-043-350-01	GEAR (B), MIDWAY	
1	X-3379-335-1	CABINET (FRONT) SUB ASSY (BLACK) (703)		15	3-043-345-01	SLIDER (BAND) (703L)	
1	X-3379-336-1	CABINET (FRONT) SUB ASSY (WHITE) (703L)		15	3-043-345-11	SLIDER (BAND) (703)	
1	X-3379-338-1	CABINET (FRONT) SUB ASSY (WHITE) (703)		16	7-685-532-14	SCREW +BTP 2.6X5 TYPE2 N-S	
2	3-043-337-01	KNOB (CONTROL) (BLACK)		17	7-685-547-19	SCREW +BTP 3X10 TYPE2 N-S	
2	3-043-337-11	KNOB (CONTROL) (WHITE) (AEP)		18	7-685-550-14	SCREW +BTP 3X16 TYPE2 N-S	
3	3-043-343-01	KNOB (BAND) (BLACK)		* 19	A-3683-164-A	MAIN PC BOARD ASSY (703L)	
3	3-043-343-11	KNOB (BAND) (WHITE) (AEP)		* 19	A-3683-177-A	MAIN PC BOARD ASSY (703:AEP)	
4	3-043-347-01	POINTER		* 19	A-3683-196-A	MAIN PC BOARD ASSY (703:IT)	
5	3-043-348-01	RACK (POINTER)		20	3-043-346-01	HOLDER, FERRITE-ROD ANTENNA	
6	3-043-330-01	CHASSIS		21	3-043-342-01	DRUM (A), VC	
* 7	1-677-379-11	LED BOARD		22	3-364-941-11	SCREW (+B) (2.6X5), NYLOK	
* 8	1-677-381-11	POWER BOARD		23	3-043-338-01	KNOB (TUNING) (BLACK)	
9	3-043-339-01	BUTTON (POWER) (BLACK)		23	3-043-338-11	KNOB (TUNING) (WHITE) (AEP)	
9	3-043-339-11	BUTTON (POWER) (WHITE) (AEP)		24	3-045-680-01	SPRING (TUNING)	
10	3-043-344-11	GEAR (BAND) (703)		25	3-043-336-01	SHAFT (TUNING)	
10	3-043-344-21	GEAR (BAND) (703L)		26	7-671-112-11	BALL, STEEL	
11	3-043-349-01	GEAR (A), MIDWAY		27	7-685-534-14	SCREW +BTP 2.6X8 TYPE2 N-S	
12	3-043-721-01	SPRING (BAND)		28	3-049-870-01	WOVEN (VOL), FABRIC NON	
13	3-048-207-01	RING (BAND)		SP1	1-529-676-11	SPEAKER (10.2cm)	
	Δ T401	1-435-513-11	TRANSFORMER, POWER				

5-2. CABINET (REAR) SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	3-045-684-01	CABINET (REAR) (BLACK)		61	7-623-508-01	LUG, 3	
51	3-045-684-11	CABINET (REAR) (WHITE) (AEP)		62	3-043-334-01	HANDLE (BLACK)	
52	3-049-207-01	CUSHION (BATTERY) (B)		62	3-043-334-11	HANDLE (WHITE) (AEP)	
53	3-049-448-01	CUSHION (BATTERY) (D)		63	3-043-718-01	TERMINAL (+-), BATTERY	
54	3-043-717-01	SPRING (HANDLE)		64	3-049-208-01	CUSHION (HANDLE)	
55	7-685-903-31	SCREW +PTPWH 3X10 (TYPE2)		65	3-043-331-01	LID, BATTERY CASE (BLACK)	
56	3-049-447-01	CUSHION (BATTERY) (C)		65	3-043-331-11	LID, BATTERY CASE (WHITE) (AEP)	
57	3-043-335-01	SHAFT (HANDLE)		66	9-911-815-02	CUSHION	
58	7-685-903-21	SCREW +PTPWH 3X8 (TYPE2)		67	3-043-719-01	TERMINAL (+), BATTERY	
59	3-049-592-01	SPRING (HANDLE) (B)		68	3-043-720-01	TERMINAL (-), BATTERY	
60	7-685-534-14	SCREW +BTP 2.6X8 TYPE2 N-S		ANT1	1-501-222-71	ANTENNA, TELESCOPIC (FM)	

SECTION 6 ELECTRICAL PARTS LIST

LED

MAIN

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- RESISTORS
All resistors are in ohms.
METAL: Metal-film resistor.
METAL OXIDE: Metal oxide-film resistor.
F: nonflammable
- Abbreviation
IT : Italian model

- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
In each case, u : μ , for example:
uA.. : μ A.. uPA.. : μ PA..
uPB.. : μ PB.. uPC.. : μ PC.. uPD.. : μ PD..
- CAPACITORS
uF : μ F
- COILS
uH : μ H

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
*	1-677-379-11	LED BOARD *****		C16	1-104-760-11	CERAMIC CHIP 0.047uF	10.00% 50V
		< DIODE >		C17	1-164-005-11	CERAMIC CHIP 0.47uF	25V
				C18	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V
				C19	1-163-989-11	CERAMIC CHIP 0.033uF	10% 25V
D301	8-719-080-08	LED SLP145B-51 (TUNE)		C20	1-104-760-11	CERAMIC CHIP 0.047uF	10.00% 50V
		< RESISTOR >		C21	1-124-234-00	ELECT 22uF	20% 16V
R301	1-216-057-00	METAL CHIP 2.2K 5% 1/10W		C22	1-126-925-11	ELECT 470uF	20.00% 10V
R302	1-216-061-00	METAL CHIP 3.3K 5% 1/10W		C23	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V
*****				C24	1-109-982-11	CERAMIC CHIP 1uF	10.00% 10V
*	A-3683-164-A	MAIN BOARD, COMPLETE (703L)		C25	1-163-009-11	CERAMIC CHIP 0.001uF	10% 50V
*	A-3683-177-A	MAIN BOARD, COMPLETE (703:AEP)		C31	1-102-998-11	CERAMIC 5PF	0.50PF 50V
*	A-3683-196-A	MAIN BOARD, COMPLETE (703:IT)		C31	1-102-942-00	CERAMIC CHIP 5PF	0.50PF 50V
		*****		C37	1-163-088-00	CERAMIC CHIP 5PF	(703 : IT) 50V
	3-043-346-01	HOLDER, FERRITE-ROD ANTENNA				< FILTER >	
	3-049-870-01	WOVEN (VOL), FABRIC NON		CF1	1-578-677-11	FILTER, CRYSTAL	
	7-685-534-14	SCREW +BTP 2.6X8 TYPE2 N-S		CF2	1-577-600-81	FILTER, CERAMIC	
		< FILTER >		CF3	1-577-600-81	FILTER, CERAMIC	
BPF1	1-236-022-11	FILTER, BAND PASS		CF4	1-577-600-81	FILTER, CERAMIC	
		< CAPACITOR >				< TRIMMER >	
C1	1-163-102-00	CERAMIC CHIP 24PF 5.00% 50V	(703L)	CT5	1-141-355-21	CAP, TRIMMER 30PF (703L)	
C2	1-163-141-00	CERAMIC CHIP 0.001uF 5% 50V	(703L)	CT6	1-141-320-11	CAP, TRIMMER 45PF (703L)	
C3	1-163-103-00	CERAMIC CHIP 27PF 5% 50V	(EXCEPT 703:IT)			< VARIABLE CAPACITOR >	
C3	1-163-105-00	CERAMIC CHIP 33PF 5% 50V	(703:IT)	CV1	1-151-631-12	CAP, VARIABLE (TUNING)	
C4	1-163-103-00	CERAMIC CHIP 27PF 5% 50V	(EXCEPT 703:IT)			< DIODE >	
C4	1-163-105-00	CERAMIC CHIP 33PF 5% 50V	(703:IT)	D1	8-719-800-76	DIODE 1SS226	
C6	1-163-255-11	CERAMIC CHIP 150PF 5.00% 50V	(703L)			< IC >	
C7	1-124-261-00	ELECT 10uF 20% 50V		IC1	8-752-037-02	IC CXA1019S	
C8	1-163-021-91	CERAMIC CHIP 0.01uF 10.00% 50V				< JUMPER RESISTOR >	
C9	1-163-021-91	CERAMIC CHIP 0.01uF 10.00% 50V		JC1	1-216-296-91	SHORT 0 (703L)	
C10	1-124-259-11	ELECT 4.7uF 20.00% 16V		JC2	1-216-296-91	SHORT 0 (703)	
C12	1-163-021-91	CERAMIC CHIP 0.01uF 10.00% 50V		JC3	1-216-295-91	SHORT 0	
C13	1-124-259-11	ELECT 4.7uF 20.00% 16V		JC4	1-216-296-91	SHORT 0	
C14	1-124-259-11	ELECT 4.7uF 20.00% 16V		JC5	1-216-296-91	SHORT 0	
C15	1-124-261-00	ELECT 10uF 20% 50V		JC6	1-216-296-91	SHORT 0	
				JC7	1-216-296-91	SHORT 0	

ICF-703/703L

MAIN **POWER**

Ref. No.	Part No.	Description	Remark
JC8	1-216-296-91	SHORT	0
JC9	1-216-296-91	SHORT	0
JC10	1-216-296-91	SHORT	0
JC11	1-216-296-91	SHORT	0 (703L)
JC12	1-216-296-91	SHORT	0 (703L)
< COIL >			
L1	1-754-130-11	ANTENNA, FERRITE-ROD (703)	
L1	1-754-131-11	ANTENNA, FERRITE-ROD (LW.MW) (703L)	
L4	1-406-431-11	COIL (WITH CORE) (OSC)	
L5	1-406-028-00	COIL, OSC (MW)	
L6	1-428-291-11	COIL, AIR-CORE (EXCEPT 703:IT)	
L6	1-428-289-11	COIL, AIR-CORE (703:IT)	
L7	1-428-291-11	COIL, AIR-CORE (EXCEPT 703:IT)	
L7	1-428-289-11	COIL, AIR-CORE (703:IT)	
L8	1-412-959-11	INDUCTOR	47uH
< TRANSISTOR >			
Q1	8-729-027-60	TRANSISTOR	DTC144TKA-T146
Q2	8-729-027-60	TRANSISTOR	DTC144TKA-T146
Q3	8-729-027-60	TRANSISTOR	DTC144TKA-T146
Q4	8-729-027-60	TRANSISTOR	DTC144TKA-T146 (703)
Q5	8-729-027-60	TRANSISTOR	DTC144TKA-T146 (703)
< RESISTOR >			
R1	1-216-073-00	METAL CHIP	10K 5% 1/10W (703L)
R3	1-216-295-91	SHORT	0 (703)
R7	1-216-295-91	SHORT	0 (703)
R10	1-216-049-91	RES-CHIP	1K 5% 1/10W
R12	1-216-049-91	RES-CHIP	1K 5% 1/10W
R13	1-216-049-91	RES-CHIP	1K 5% 1/10W
R14	1-216-097-91	RES-CHIP	100K 5% 1/10W (703)
< VARIABLE RESISTOR >			
RV1	1-225-498-11	RES, VAR, CARBON 50K (VOL)	
RV2	1-225-499-11	RES, VAR, CARBON 10K (TONE)	
< SWITCH >			
S1	1-552-574-21	SWITCH, SLIDE (BAND) (703L)	
S2	1-552-370-00	SWITCH, SLIDE (BAND) (703)	
< TRANSFORMER >			
T1	1-404-790-11	TRANSFORMER, IF	

	1-677-381-11	POWER BOARD	*****
< INLET >			
△ACJ1	1-526-838-11	INLET, AC 2P (～ AC IN)	

Ref. No.	Part No.	Description	Remark
< CAPACITOR >			
C401	1-164-004-11	CERAMIC CHIP	0.1uF 10% 25V
C402	1-126-927-11	ELECT	2200uF 20.00% 10V
C403	1-163-021-91	CERAMIC CHIP	0.01uF 10.00% 50V
C404	1-163-021-91	CERAMIC CHIP	0.01uF 10.00% 50V
C406	1-126-925-11	ELECT	470uF 20.00% 10V
< CONNECTOR >			
* CN401	1-568-271-11	SOCKET, CONNECTOR 5P	
< DIODE >			
D401	8-719-031-85	DIODE	1N4002L
D402	8-719-031-85	DIODE	1N4002L
< JACK >			
EPJ1	1-563-836-21	JACK (Ⓢ)	
< JUMPER RESISTOR >			
JC402	1-216-296-91	SHORT	0
< COIL >			
L401	1-410-294-11	INDUCTOR	38uH (703L)
< RESISTOR >			
R401	1-216-017-91	RES-CHIP	47 5% 1/10W
R402	1-216-049-91	RES-CHIP	1K 5% 1/10W
< SWITCH >			
S401	1-571-042-11	SWITCH, PUSH (1 KEY) (OPERATION)	

MISCELLANEOUS			

ANT1	1-501-222-71	ANTENNA, TELESCOP IC (FM)	
SP1	1-529-676-11	SPEAKER (10.2cm)	
△ T401	1-435-513-11	TRANSFORMER, POWER	

ACCESSORIES & PACKING MATERIALS			

△	1-696-562-11	CORD, POWER (EXCEPT UK)	
△	1-751-115-11	CORD, POWER (UK)	
	3-046-205-11	MANUAL, INSTRUCTION (ENGLISH, FRENCH, GERMAN, SPANISH, ITALIAN, DUTCH, SWEDISH, PORTUGUESE, FINNISH, DANISH)	

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.