

# ICF-703S

## SERVICE MANUAL

Ver 1.0 2000.04

*AEP Model  
Australian Model*



(Photo: BLACK)

### SPECIFICATIONS

#### Frequency range:

Band	ICF-703S
FM	87.5 - 108.0 MHz
SW	5.95 - 18 MHz
MW	530 - 1605 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 (AEP model)

240 V AC, 50 Hz (Australian model)

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/SW/MW 3 BAND RADIO**

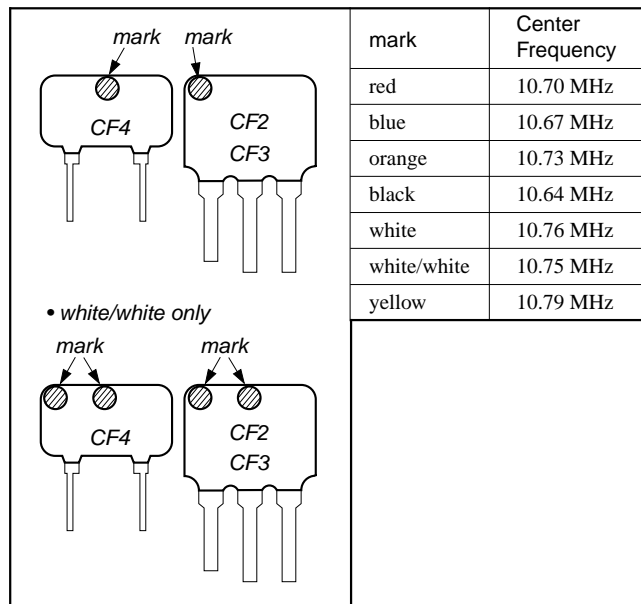
**SONY®**

## 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

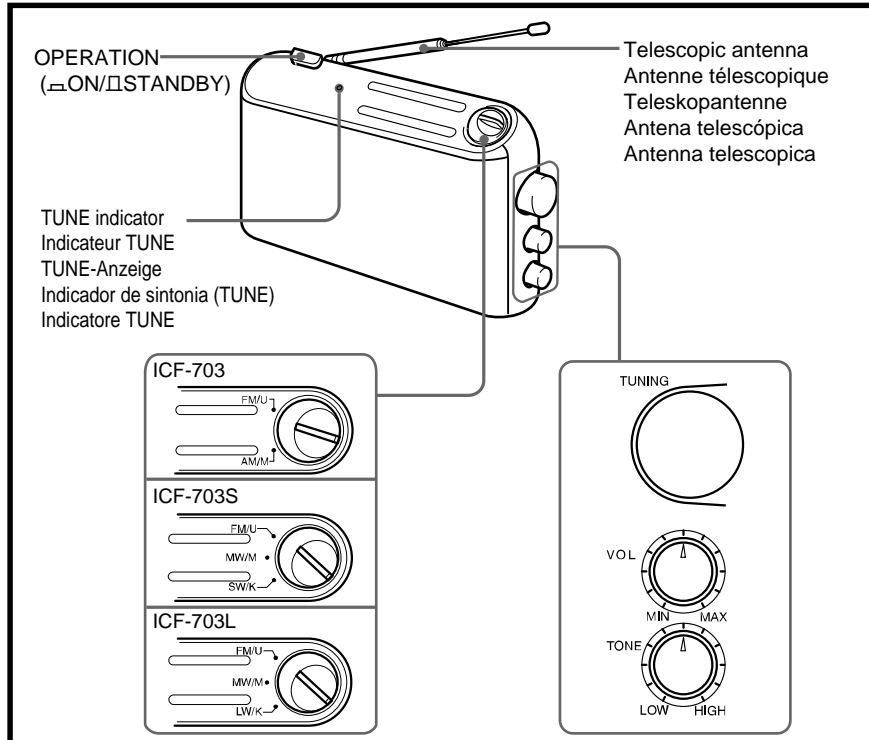
- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

### 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.

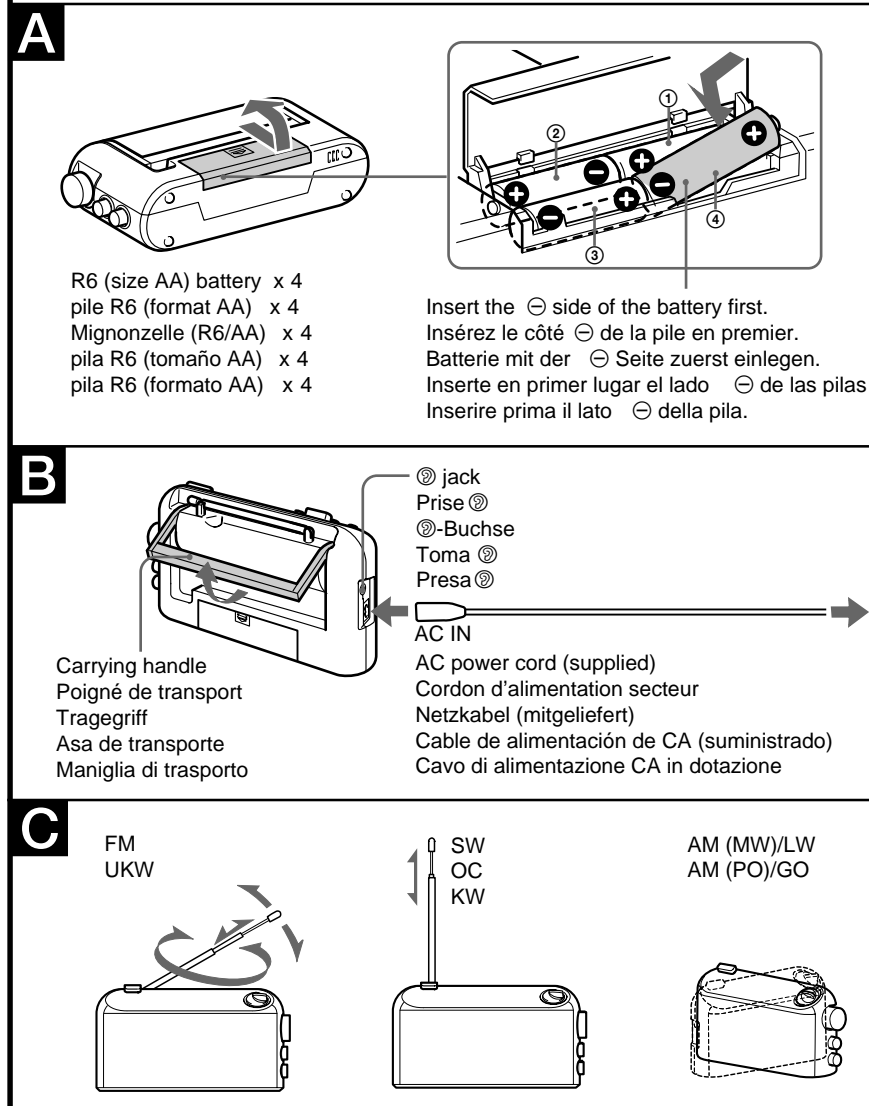
## House Current (See Fig. B)

- 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.



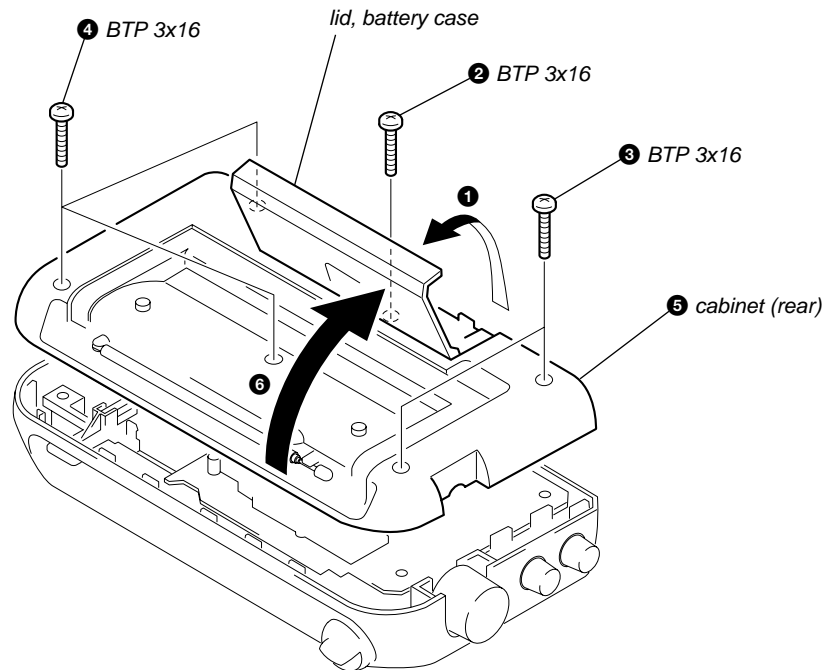
## SECTION 2 DISASSEMBLY

**Note :** This set can be disassemble according to the following sequence.

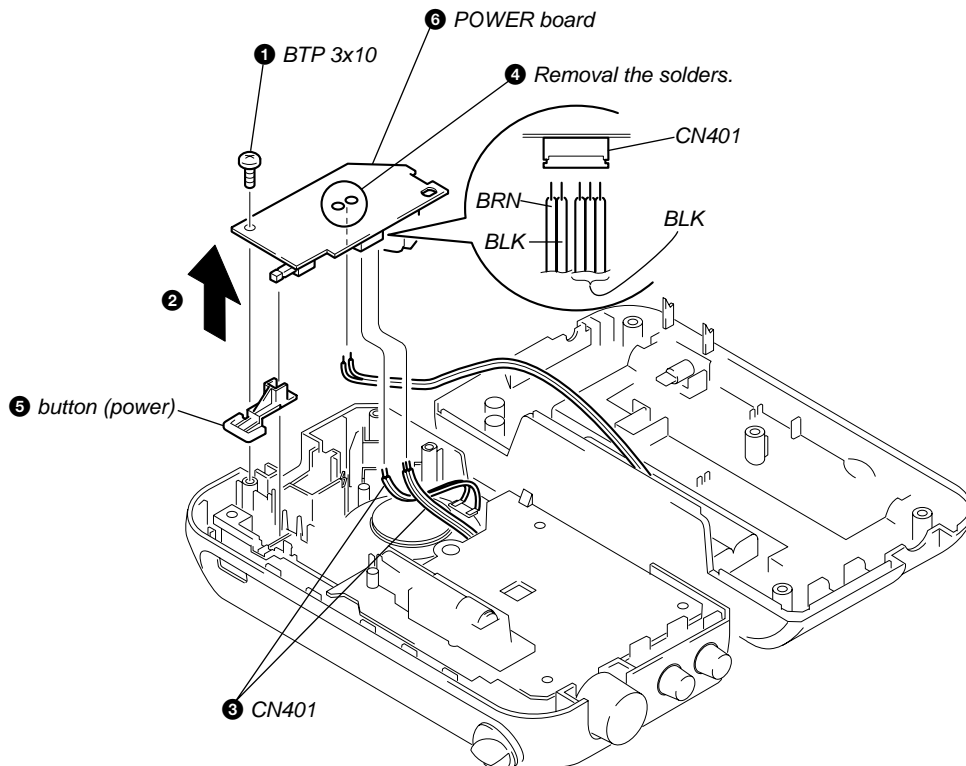
Set → Cabinet (Rear) → Power Board → Main Board, Led Board → Setting the Pointer

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

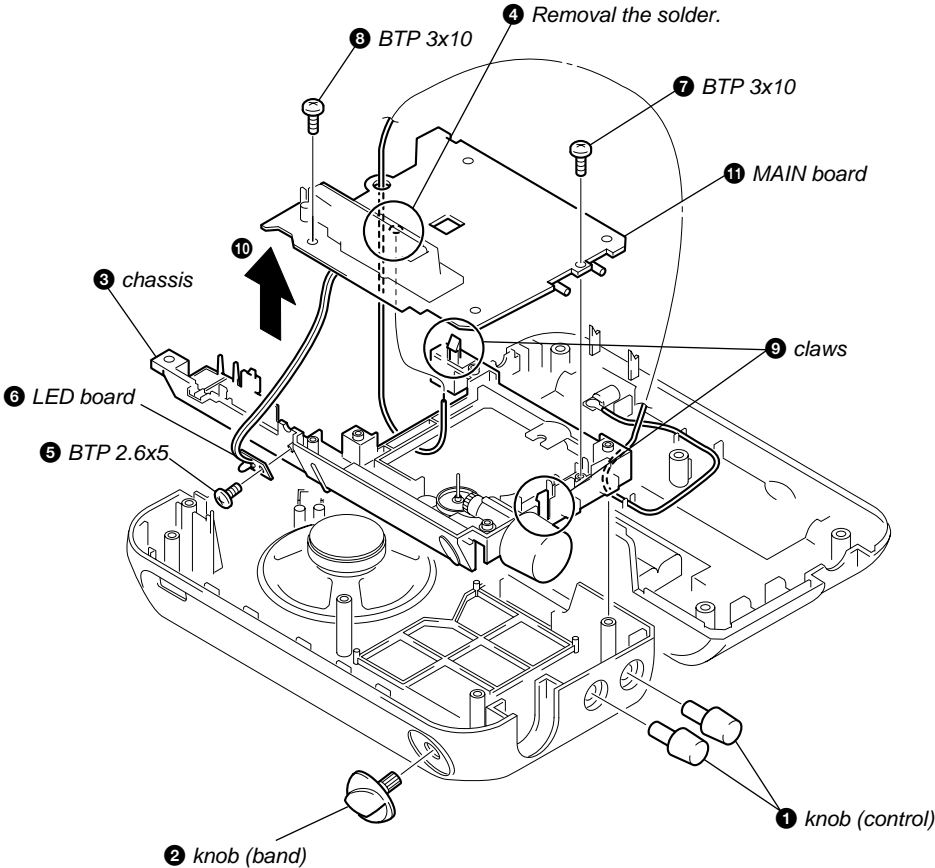
### 2-1. CABINET (REAR)



### 2-2. POWER BOARD

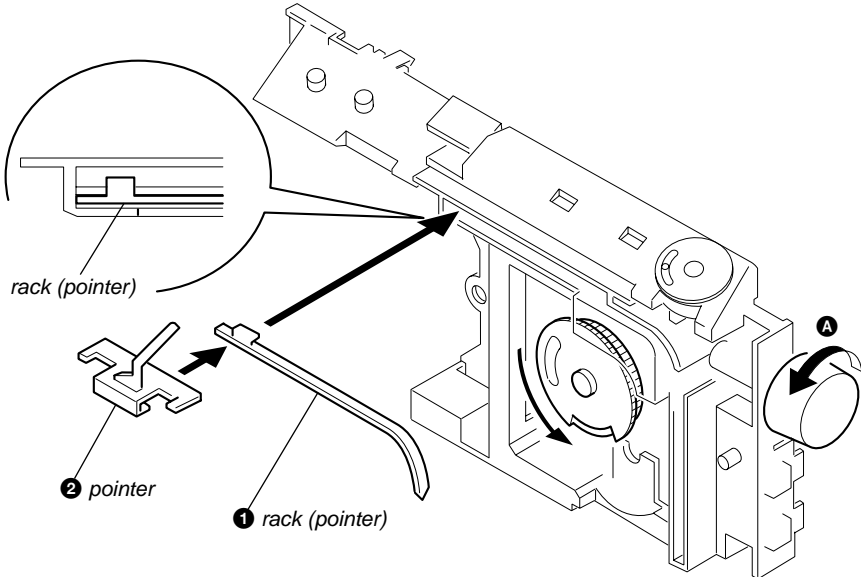


**2-3. MAIN BOARD, LED BOARD**



**2-4. SETTING THE POINTER**

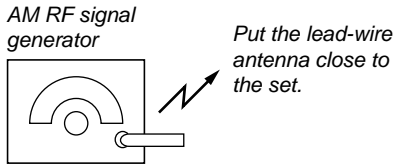
- *Setting the Pointer*
  1. Turn the Knob (Tuning) in the direction of **A** until it is stopped.
  2. Place the rack as shown in the figure.
  3. Mount the pointer.



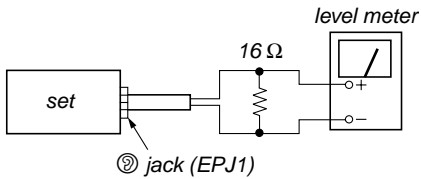
## SECTION 3 ELECTRICAL ADJUSTMENTS

### MW SECTION

BAND switch : MW



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.

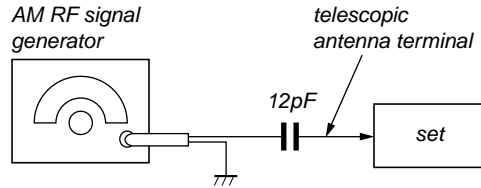
MW IF ADJUSTMENT	
Adjust for a maximum reading on level meter	
T1	
455 kHz	

MW FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on level meter	
L5	520 kHz
CT1-4	1,650 kHz

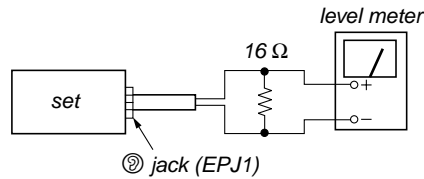
MW TRACKING ADJUSTMENT	
Adjust for a maximum reading on level meter	
L1	600 kHz
CT1-1	1,400 kHz

### SW SECTION

BAND switch : SW



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



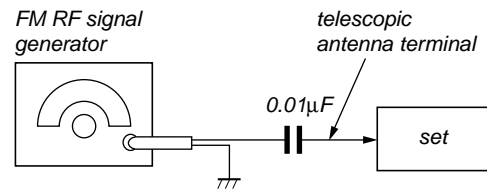
- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

SW FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on level meter	
L7	5.8 MHz
CT6	18.5 MHz

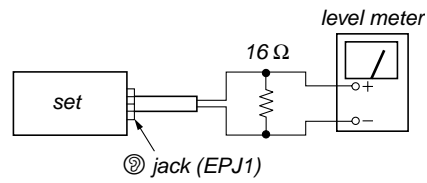
SW TRACKING ADJUSTMENT	
Adjust for a maximum reading on level meter	
L6	5.8 MHz
CT5	18.5 MHz

**FM SECTION**

BAND switch : FM



22.5kHz frequency deviation  
by 400Hz signal  
Output level: as low as possible

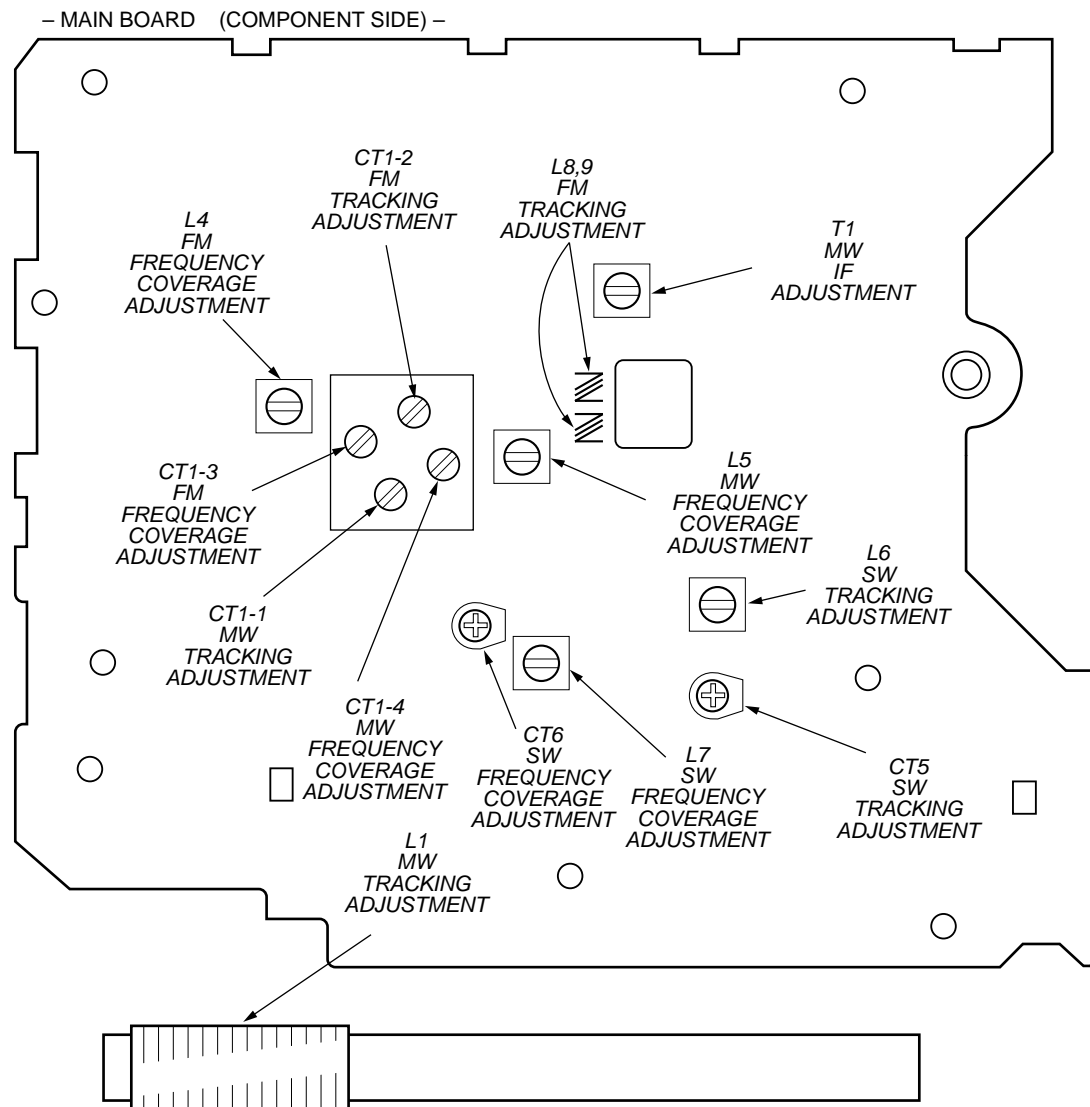


- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

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

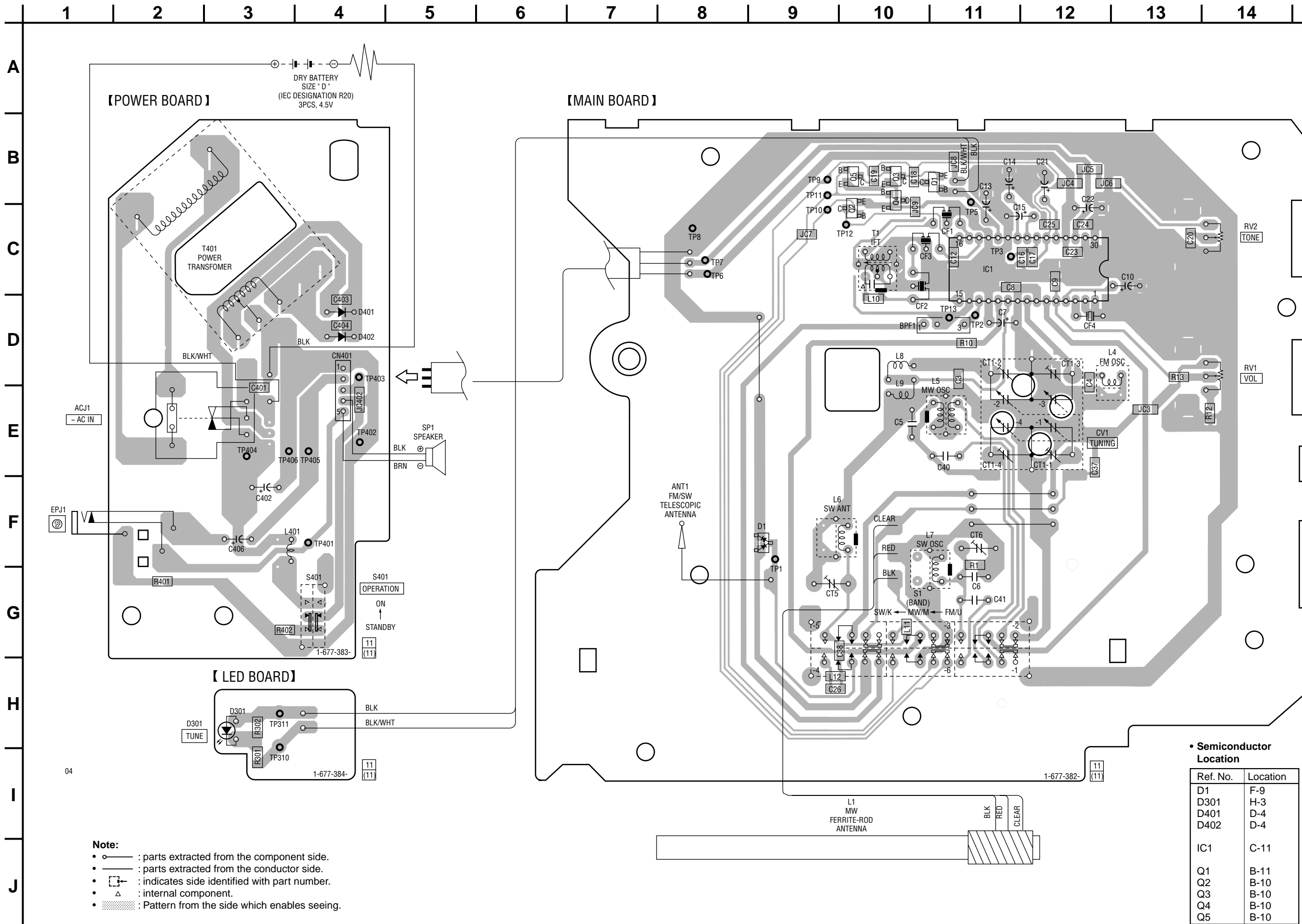
FM TRACKING ADJUSTMENT	
Adjust for a maximum reading on level meter	
L8, L9	86.5 MHz
CT1-2	109.5 MHz

Adjustment Location: MAIN BOARD



SECTION 4  
DIAGRAMS

4-1. PRINTED WIRING BOARDS

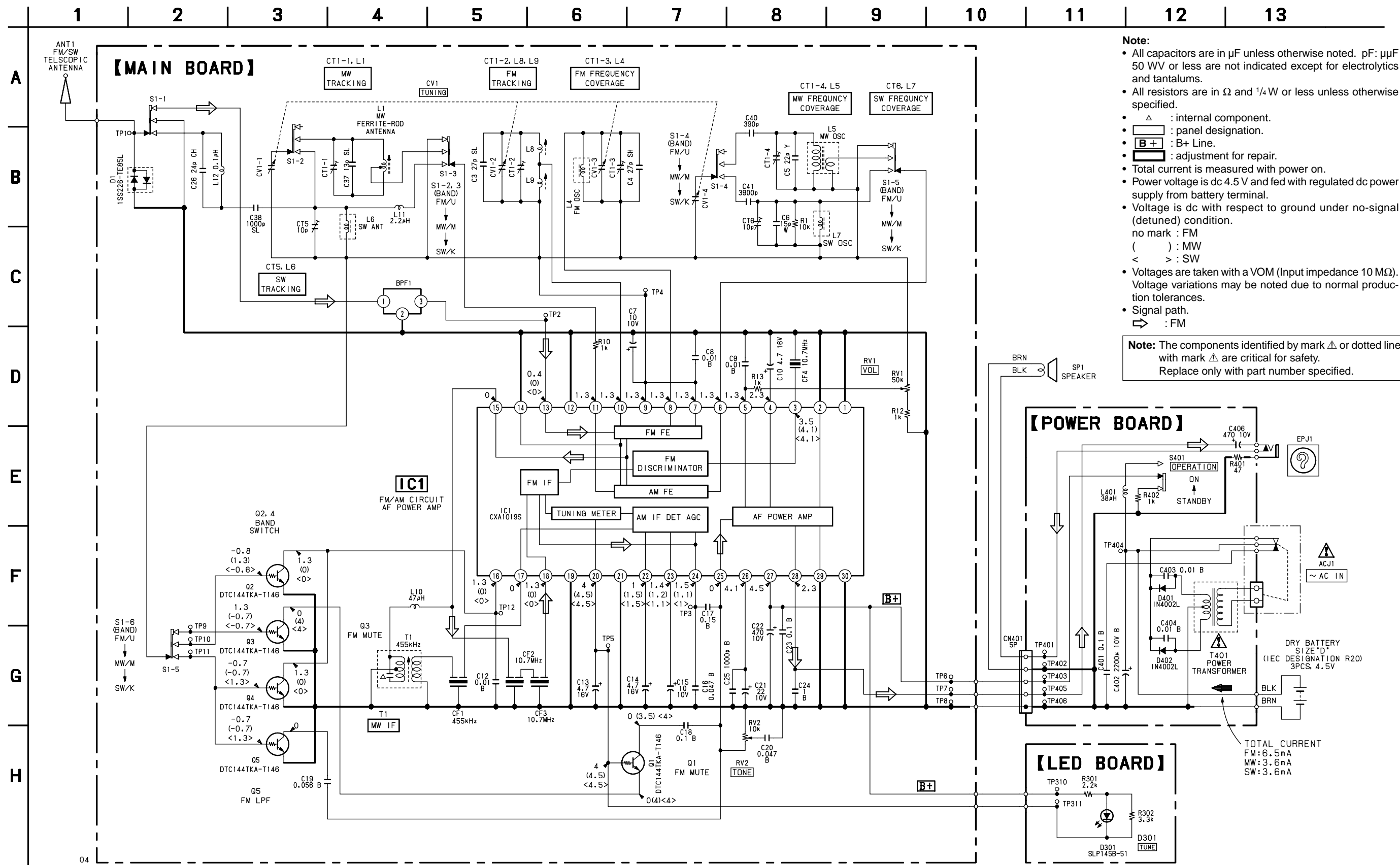


• Semiconductor Location

Ref. No.	Location
D1	F-9
D301	H-3
D401	D-4
D402	D-4
IC1	C-11
Q1	B-11
Q2	B-10
Q3	B-10
Q4	B-10
Q5	B-10



4-2. SCHEMATIC DIAGRAMS





## 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  
AUS : Australian 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 :  $\mu$ , for example:  
uA.. :  $\mu$ A.. uPA.. :  $\mu$ PA..  
uPB.. :  $\mu$ PB.. uPC.. :  $\mu$ PC.. uPD.. :  $\mu$ PD..
- CAPACITORS  
uF :  $\mu$ F
- COILS  
uH :  $\mu$ H

The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  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
*	1-677-384-11	LED BOARD *****		C37	1-163-096-00	CERAMIC CHIP 13PF 5%	50V
		< DIODE >		C38	1-163-141-00	CERAMIC CHIP 0.001uF 5%	50V
D301	8-719-080-08	LED SLP145B-51 (TUNE)  < RESISTOR >		C40	1-104-732-11	FILM 390PF 5%	100V
R301	1-216-057-00	METAL CHIP 2.2K 5%	1/10W	C41	1-136-682-11	FILM 0.0039uF 5%	100V
R302	1-216-061-00	METAL CHIP 3.3K 5%	1/10W			< FILTER >	
*****				CF1	1-567-177-00	FILTER, CERAMIC	
		< BPF >		CF2	1-577-600-81	FILTER, CERAMIC	
*	A-3683-172-A	MAIN BOARD, COMPLETE *****		CF3	1-577-600-81	FILTER, CERAMIC	
	3-043-346-01	HOLDER, FERRITE-ROD ANTENNA		CF4	1-577-600-81	FILTER, CERAMIC	
	3-049-870-01	WOVEN (VOL), FABRIC NON				< VARIABLE CAPACITOR >	
	7-685-534-14	SCREW +BTP 2.6X8 TYPE2 N-S		CT1-4	1-151-679-11	CAP, VAR	
		< BPF >		CV1-4	1-151-679-11	CAP, VAR (TUNING)	
BPF1	1-236-022-11	FILTER, BAND PASS  < CAPACITOR >				< TRIMMER >	
C3	1-163-103-00	CERAMIC CHIP 27PF 5%	50V	CT5	1-141-354-21	CAP, TRIMMER 10PF	
C4	1-163-103-00	CERAMIC CHIP 27PF 5%	50V	CT6	1-141-354-21	CAP, TRIMMER 10PF	
C5	1-102-959-00	CERAMIC 22PF 5%	50V			< DIODE >	
C6	1-102-951-00	CERAMIC 15PF 5%	50V	D1	8-719-800-76	DIODE 1SS226	
C7	1-124-261-00	ELECT 10uF 20%	50V			< IC >	
C8	1-163-021-11	CERAMIC CHIP 0.01uF 10%	50V	IC1	8-752-037-02	IC CXA1019S	
C9	1-163-021-11	CERAMIC CHIP 0.01uF 10%	50V			< JUMPER RESISTOR >	
C10	1-124-259-11	ELECT 4.7uF 20%	16V	JC3	1-216-296-00	SHORT 0	
C12	1-163-021-11	CERAMIC CHIP 0.01uF 10%	50V	JC4	1-216-296-00	SHORT 0	
C13	1-124-259-11	ELECT 4.7uF 20%	16V	JC5	1-216-296-00	SHORT 0	
C14	1-124-259-11	ELECT 4.7uF 20%	16V	JC6	1-216-296-00	SHORT 0	
C15	1-124-261-00	ELECT 10uF 20%	50V	JC7	1-216-295-00	SHORT 0	
C16	1-163-809-11	CERAMIC CHIP 0.047uF 10%	25V	JC8	1-216-295-00	SHORT 0	
C17	1-164-492-11	CERAMIC CHIP 0.15uF 10%	16V	JC9	1-216-295-00	SHORT 0	
C18	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V			< COIL >	
C19	1-164-343-11	CERAMIC CHIP 0.056uF 10%	25V	L1	1-754-132-11	ANTENNA, FERRITE-ROD (MW)	
C20	1-163-809-11	CERAMIC CHIP 0.047uF 10%	25V	L4	1-406-431-11	COIL (WITH CORE) (OSC)	
C21	1-124-234-00	ELECT 22uF 20%	16V	L5	1-406-092-11	COIL, OSC (MW)	
C22	1-126-925-11	ELECT 470uF 20%	10V	L6	1-402-538-11	COIL, SW (ANT)	
C23	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V	L7	1-406-413-11	COIL, SW (OSC)	
C24	1-109-982-11	CERAMIC CHIP 1uF 10%	10V	L8	1-428-291-11	COIL, AIR-CORE	
C25	1-163-009-11	CERAMIC CHIP 0.001uF 10%	50V	L9	1-428-291-11	COIL, AIR-CORE	
C26	1-104-896-11	CERAMIC CHIP 24PF 2%	50V	L10	1-412-959-11	INDUCTOR 47uH	
				L11	1-410-997-22	INDUCTOR CHIP 2.2uH	

# ICF-703S

**MAIN**      **POWER**

Ref. No.	Part No.	Description	Remark
L12	1-410-981-22	INDUCTOR CHIP 0.1uH	
		< 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	
Q5	8-729-027-60	TRANSISTOR DTC144TKA-T146	
		< RESISTOR >	
R1	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R10	1-216-049-11	RES-CHIP 1K 5% 1/10W	
R12	1-216-049-11	RES-CHIP 1K 5% 1/10W	
R13	1-216-049-11	RES-CHIP 1K 5% 1/10W	
		< VARIABLE RESISTOR >	
RV1	1-225-498-11	RES, VAR, CARBON 50K (VOL)	
RV2	1-225-499-11	RES, VAR, CARBON 10K (TONE)	
		< SWITCH >	
S1	1-571-170-11	SWITCH, SLIDE (BAND)	
		< TRANSFORMER >	
T1	1-404-902-11	TRANSFORMER, IF	
*****			
*	1-677-383-11	POWER BOARD	
		*****	
		< AC INLET >	
△ACJ1	1-526-838-11	INLET, AC 2P (～ AC IN)	
		< CAPACITOR >	
C401	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C402	1-126-927-11	ELECT 2200uF 20% 10V	
C403	1-163-021-11	CERAMIC CHIP 0.01uF 10% 50V	
C404	1-163-021-11	CERAMIC CHIP 0.01uF 10% 50V	
C406	1-126-925-11	ELECT 470uF 20% 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	1-216-296-00	SHORT 0	

Ref. No.	Part No.	Description	Remark
		< COIL >	
L401	1-410-294-11	INDUCTOR 38uH	
		< RESISTOR >	
R401	1-216-017-11	RES-CHIP 47 5% 1/10W	
R402	1-216-049-11	RES-CHIP 1K 5% 1/10W	
		< SWITCH >	
S401	1-571-042-11	SWITCH, PUSH (1 KEY) (OPERATION)	
*****			
		MISCELLANEOUS	
		*****	
ANT1	1-501-222-71	ANTENNA, TELESCOPIC (FM/SW)	
SP1	1-529-676-11	SPEAKER (10.2cm)	
△T401	1-435-513-11	TRANSFORMER, POWER	
*****			
		ACCESSORIES & PACKING MATERIALS	
		*****	
△	1-696-562-11	CORD, POWER (AEP)	
△	1-696-819-11	CORD, POWER (AUS)	
	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.