ICF-704S

SERVICE MANUAL

Australian Model

Ver 1.0 2004. 04

SPECIFICATIONS

Frequency range:

Band	ICF-704S
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:
450 mW (at 10 % harmonic distortion)
Output:
⏀ (earphone) (ø 3.5 mm minijack)
Power requirements:
230 V AC, 50 Hz
6V DC, four R6 (size AA) batteries
Dimensions:
Approx. 282.5 × 153.5 × 83.5 mm (w/h/d)
(11 1/8 × 6 1/8 × 3 3/8 inches) incl. projecting parts and control with carrying handle pushed in.
Mass:
Approx. 1211 g (2 lb 10.7 oz) incl. batteries
Supplied accessory:
AC power cord (1)

Design and specifications are subject to change without notice.

FM/SW/MW 3 BAND RADIO

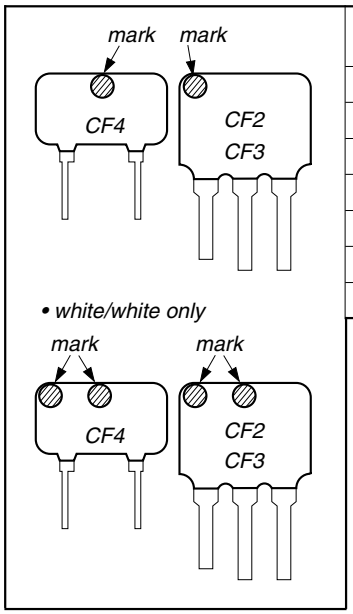
9-877-784-01
2004D04-1

Sony Corporation
Personal Audio Company
Published by Sony Engineering Corporation

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.



mark	Center Frequency
red	10.70 MHz
blue	10.67 MHz
orange	10.73 MHz
black	10.64 MHz
white	10.76 MHz
white/white	10.75 MHz
yellow	10.79 MHz

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.

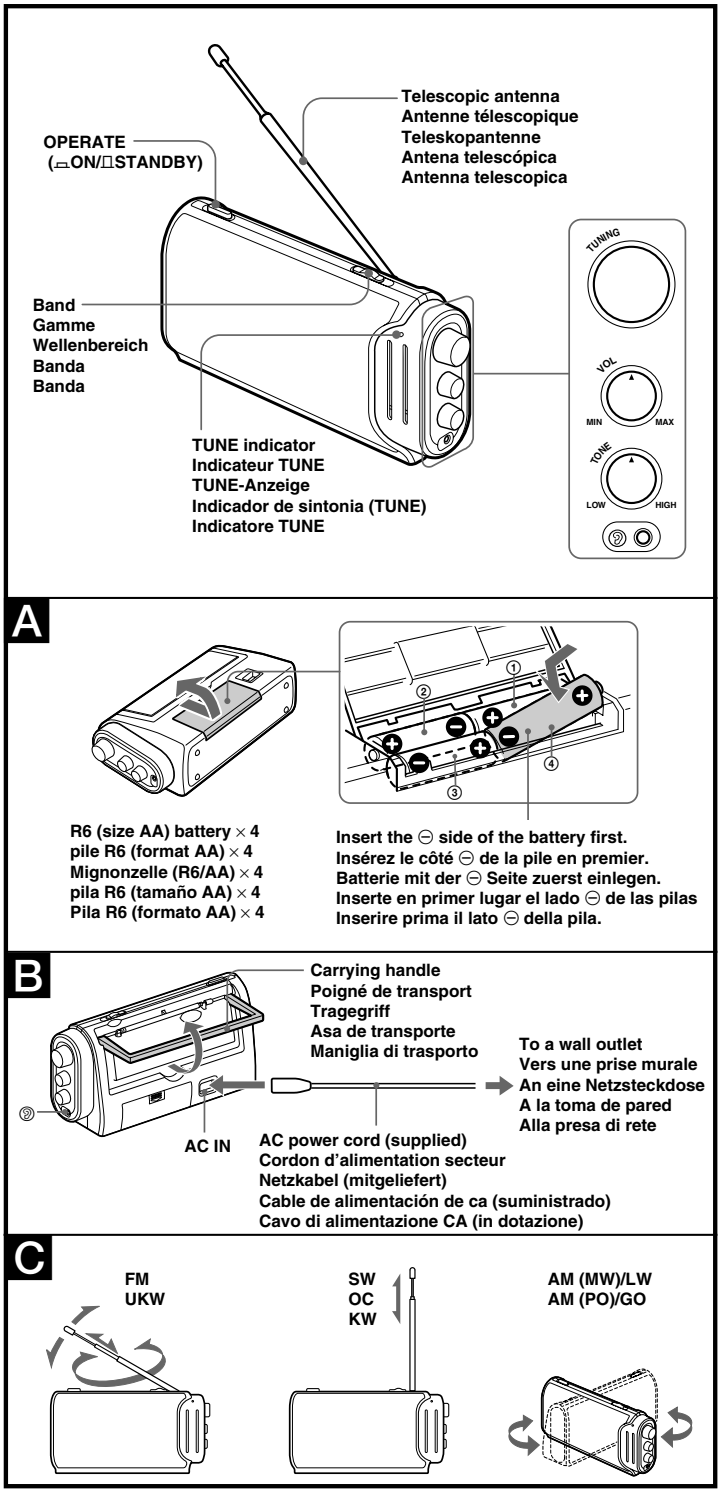
SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ 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.

TABLE OF CONTENTS

SECTION 1
GENERAL

This section is extracted from instruction manual.



Choosing Power Sources

Installing the batteries (See Fig. A)

1. Open the lid of the battery compartment.
2. Install four R6 (sizeAA) batteries (not supplied) with correct polarity.
3. Close the lid.

Note

When operating the unit on batteries, remove the AC power cord from the AC IN jack. The unit cannot be operated on batteries when the AC power cord is connected to the AC IN jack.

Battery life (Approx. hours) (JEITA*)

When using	FM	SW	AM(MW)	LW
Sony alkaline LR6 (size AA)	100	110	110	110
Sony R6 (size AA)	36	40	40	40

* Measured by JEITA (Japan Electronics and Information Technology Industries Association) Standards. The actual battery life may vary depending on the circumstance of the unit.

Replacing batteries

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

Notes on batteries

- Do not charge the dry batteries.
- Do not carry the dry batteries with coins or other metallic objects. It can generate heat if the positive and negative terminals of the batteries are accidentally contacted by a metallic object.
- Do not use different types of batteries at the same time.
- When you replace the batteries, replace all with new ones.
- When you are not going to use the unit for a long time, remove the batteries to avoid damage from battery leakage and corrosion.

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.

Note

Use only the supplied AC power cord.

Operating the Radio

1. Press **OPERATE** (⏏) to turn on the radio.
2. Select a desired band, and tune into 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 **OPERATE** (□).
- To listen with an earphone connect the earphone (not supplied) to the ⓟ (earphone) jack. The speaker is deactivated when an earphone is connected.

Improving the Reception (See Fig. C)

FM: Extend the telescopic antenna and adjust the length and angle for the best reception.

SW: Extend the telescopic antenna vertically.

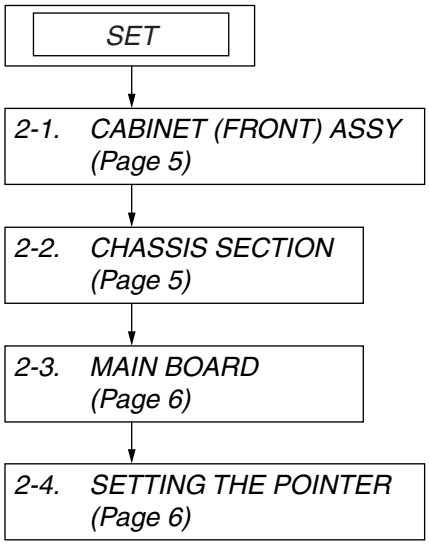
AM(MW)/LW: Rotate the unit horizontally for optimum reception. A ferrite bar antenna is built into the unit.

Note

Adjust the direction of the antenna by holding the bottom of it. The antenna can be damaged when you move the antenna with excessive force.

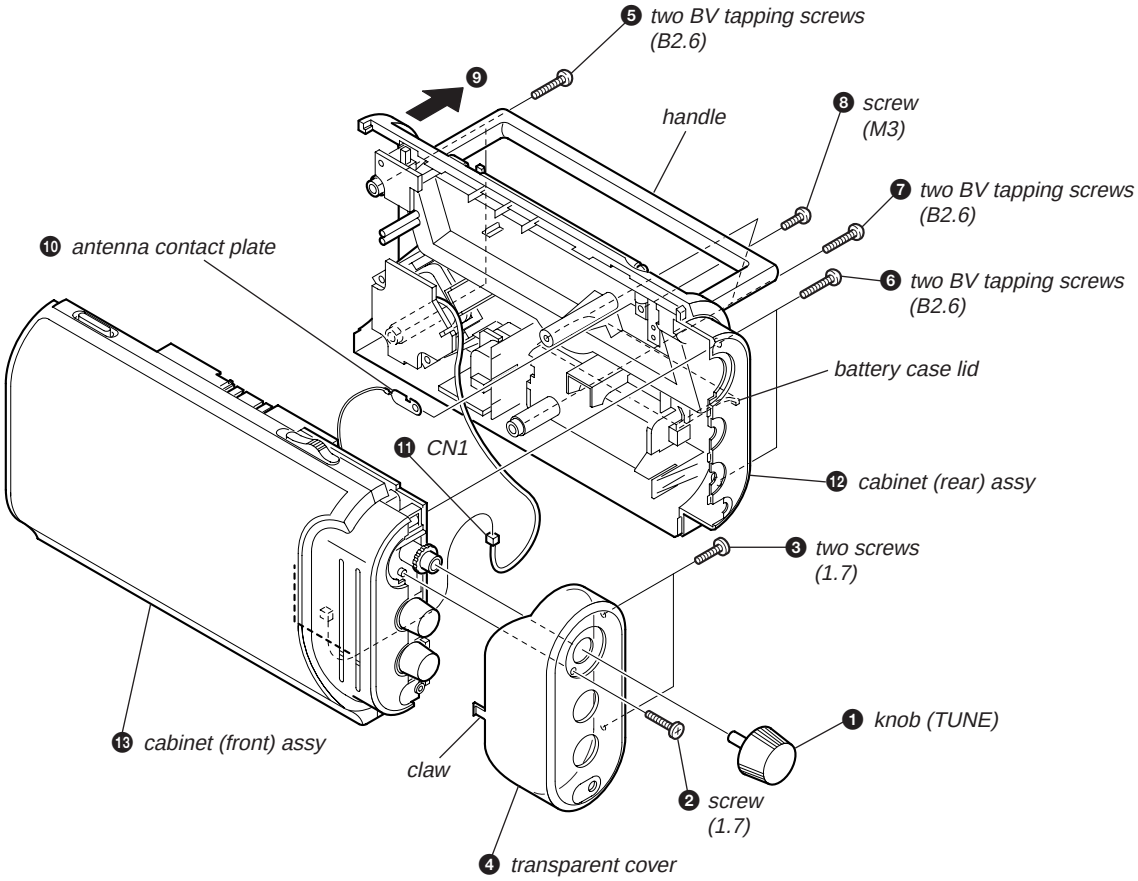
SECTION 2
DISASSEMBLY

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

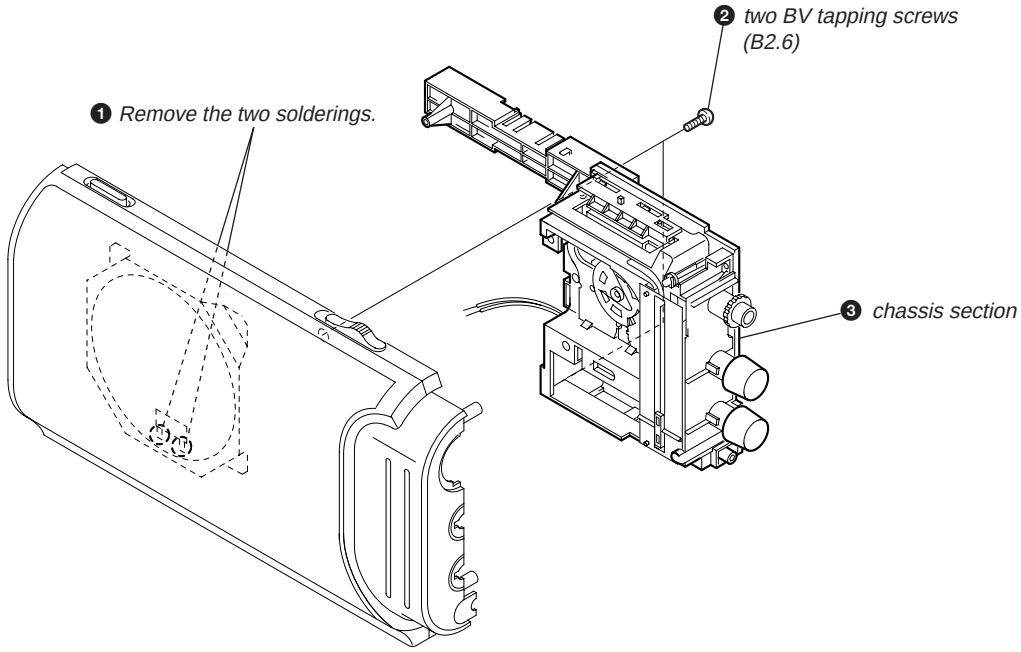


Note : Follow the disassembly procedure in the numerical order given.

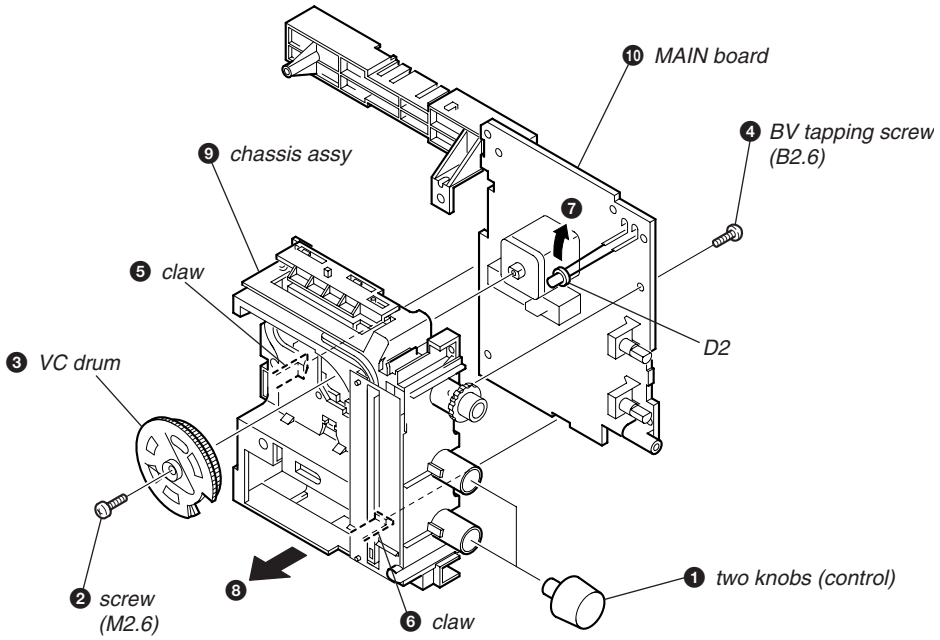
2-1. CABINET (FRONT) ASSY



2-2. CHASSIS SECTION



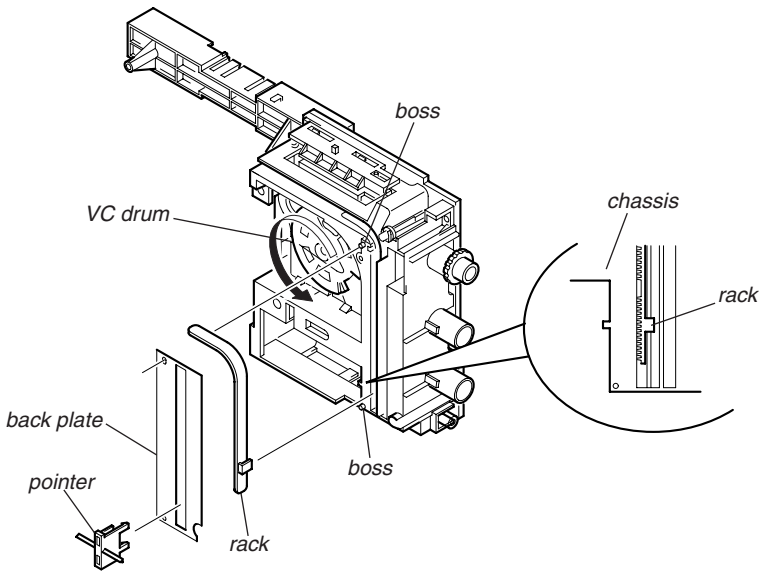
2-3. MAIN BOARD



2-4. SETTING THE POINTER

• Setting the Pointer

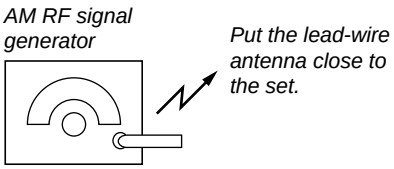
1. Rotate the VC drum in the direction of the arrow until it is stopped.
2. Fit the rack on the projection of the chassis.
3. Fit the back plate on the bosses and attach the plate.
4. Install the pointer.



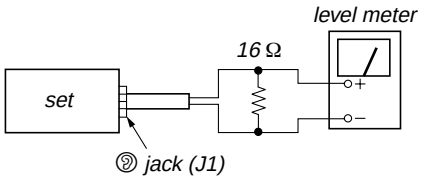
SECTION 3
ELECTRICAL ADJUSTMENTS

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.

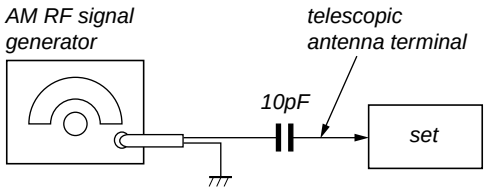
MW IF ADJUSTMENT
Adjust for a maximum reading on level meter
T1
455 kHz

MW FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on level meter	
L5	520 kHz
CT1-2	1,650 kHz

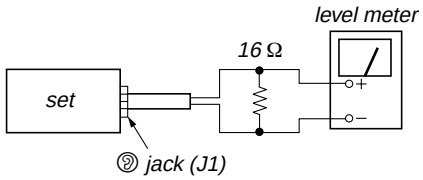
MW TRACKING ADJUSTMENT	
Adjust for a maximum reading on level meter	
L4	600 kHz
CT1-1	1,400 kHz

SW SECTION

BAND switch : SW



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



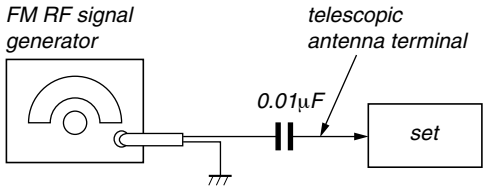
• Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

SW FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on level meter	
L7	5.85 MHz
CT3	18.25 MHz

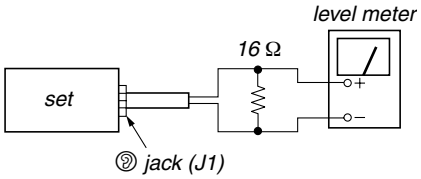
SW TRACKING ADJUSTMENT	
Adjust for a maximum reading on level meter	
L6	5.85 MHz
CT2	18.25 MHz

FM SECTION

BAND switch : FM



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

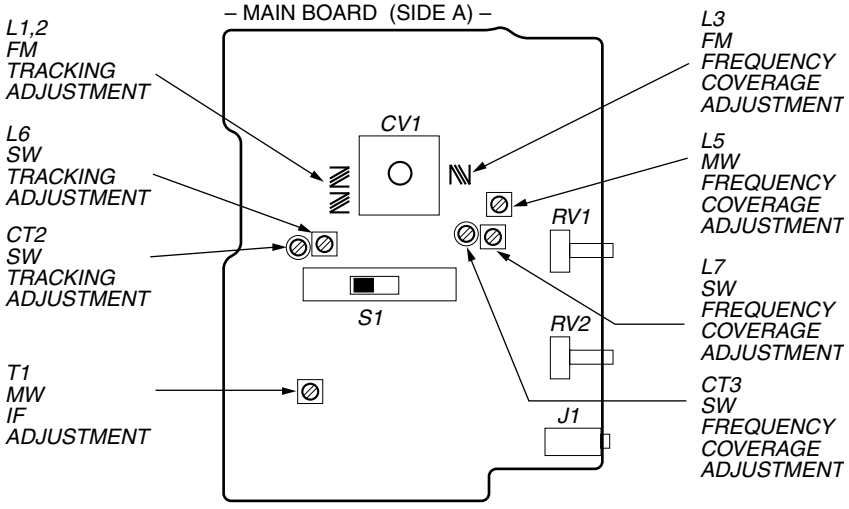


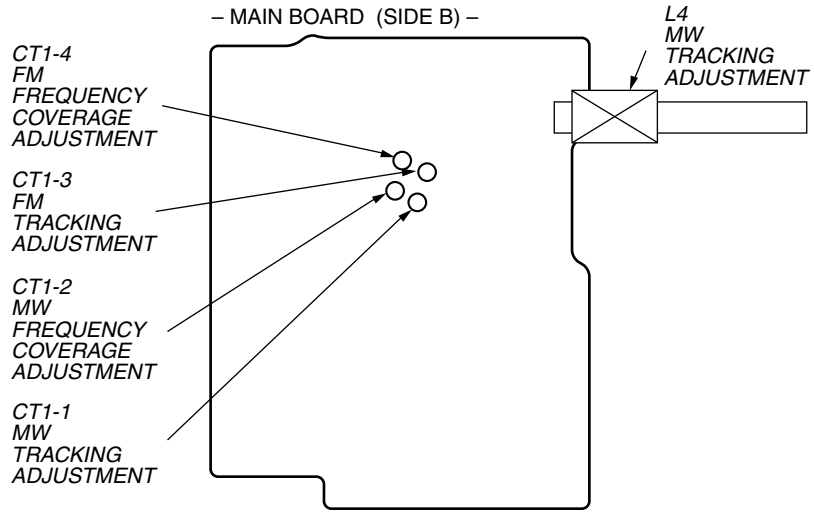
- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

FM FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on level meter	
L3	86.5 MHz
CT1-4	109.5 MHz

FM TRACKING ADJUSTMENT	
Adjust for a maximum reading on level meter	
L1, 2	86.5 MHz
CT1-3	109.5 MHz

Adjustment Location: MAIN BOARD





SECTION 4
DIAGRAMS

4-1. NOTE FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

For schematic diagrams.

Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- △ : internal component.
- ▭ : panel designation.

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

- ▬ : B+ Line.
- ▭ : adjustment for repair.
- Total current is measured with power on.
- Power voltage is dc 6V and fed with regulated dc power supply from battery terminal.
- Voltage is dc with respect to ground under no-signal (detuned) condition.
  no mark : FM
  ( ) : MW
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⇨ : FM
  ➡ : MW

For printed wiring boards.

Note:

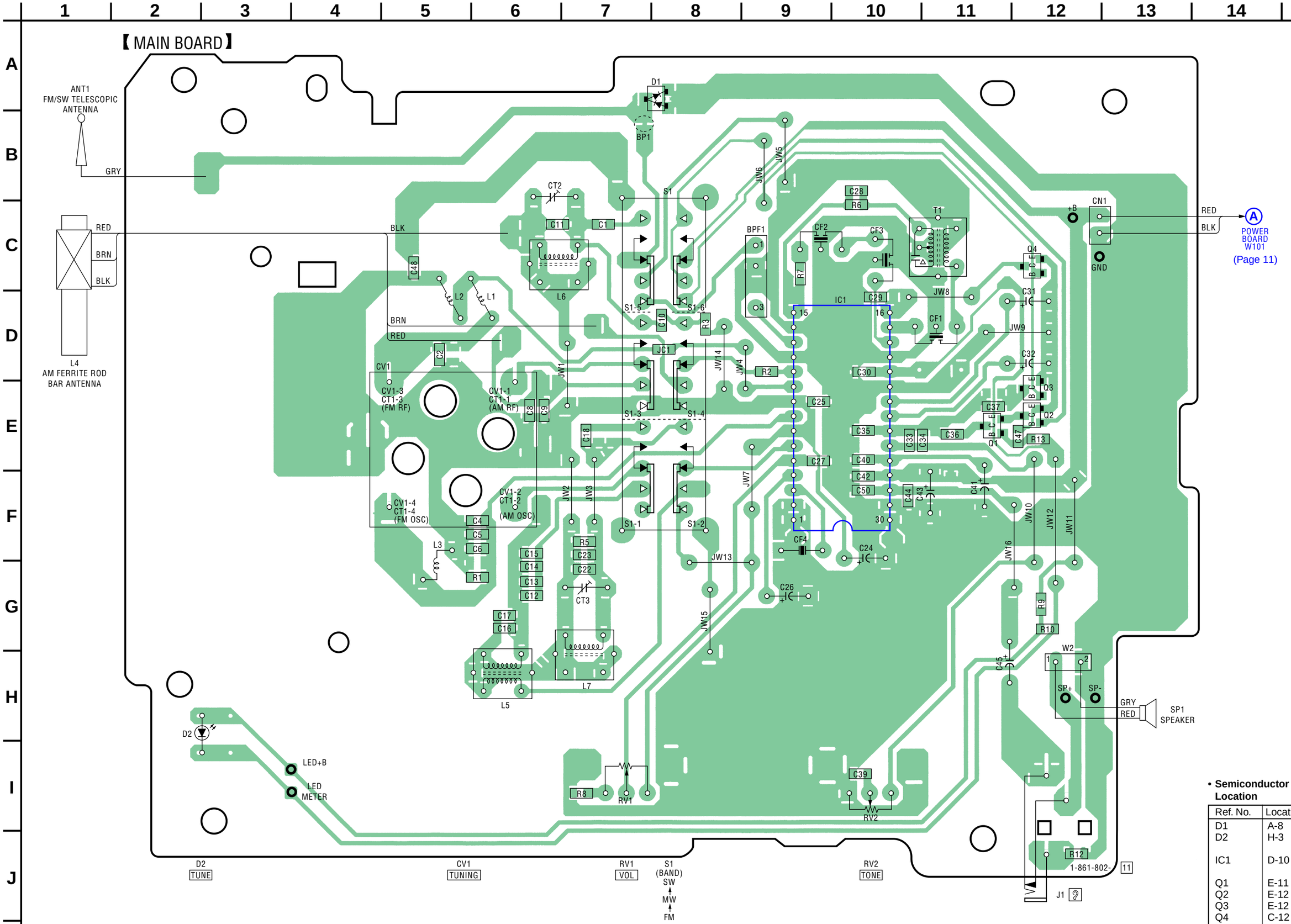
- o——— : parts extracted from the component side.
- ——— : parts extracted from the conductor side.
- ○ : Through hole.
- ▬ : Pattern from the side which enables seeing.

(The other layers' patterns are not indicated.)

Caution:

Pattern face side: (Side B)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Side A)	Parts on the parts face side seen from the parts face are indicated.

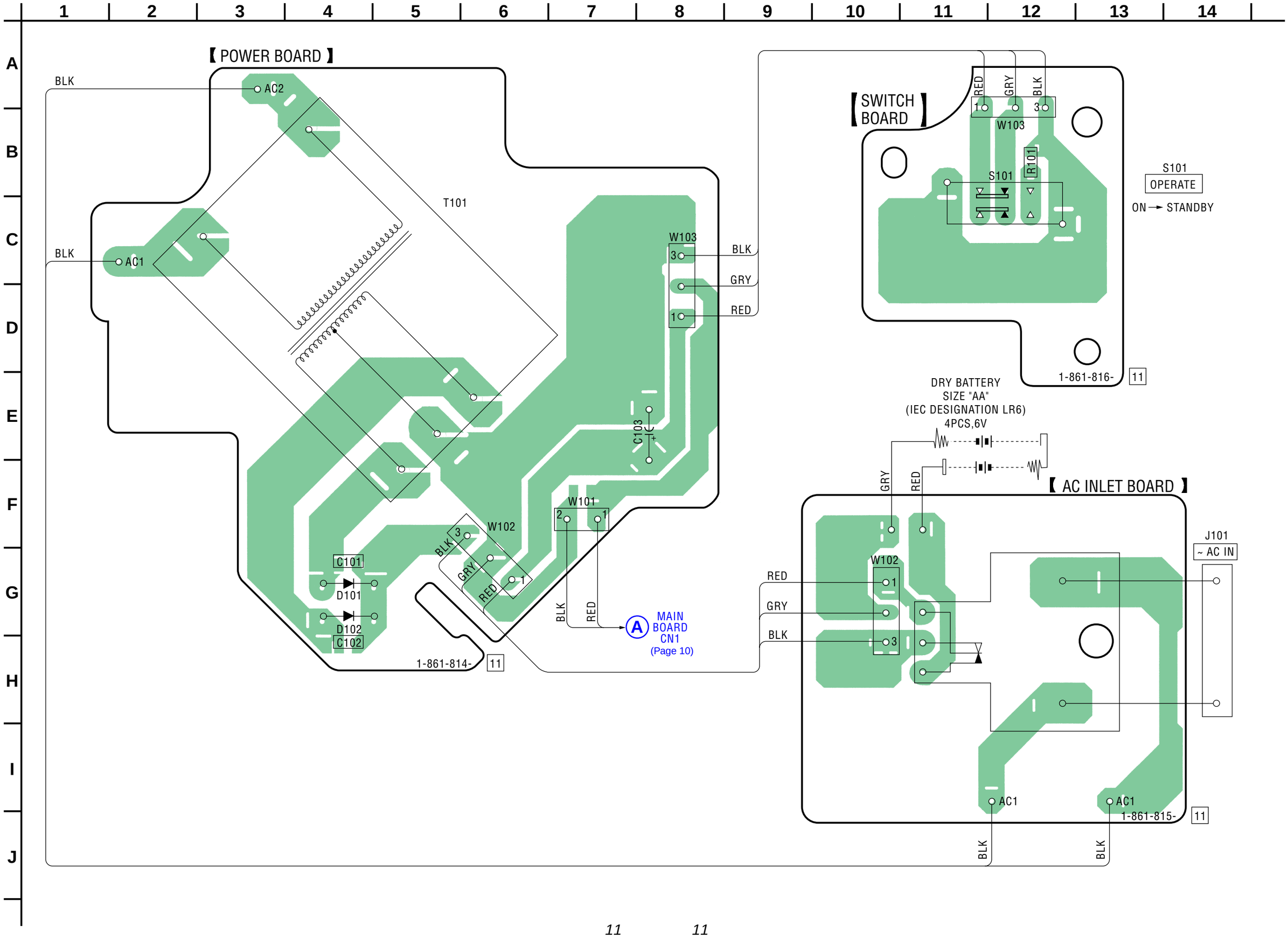
4-2. PRINTED WIRING BOARD — MAIN SECTION —



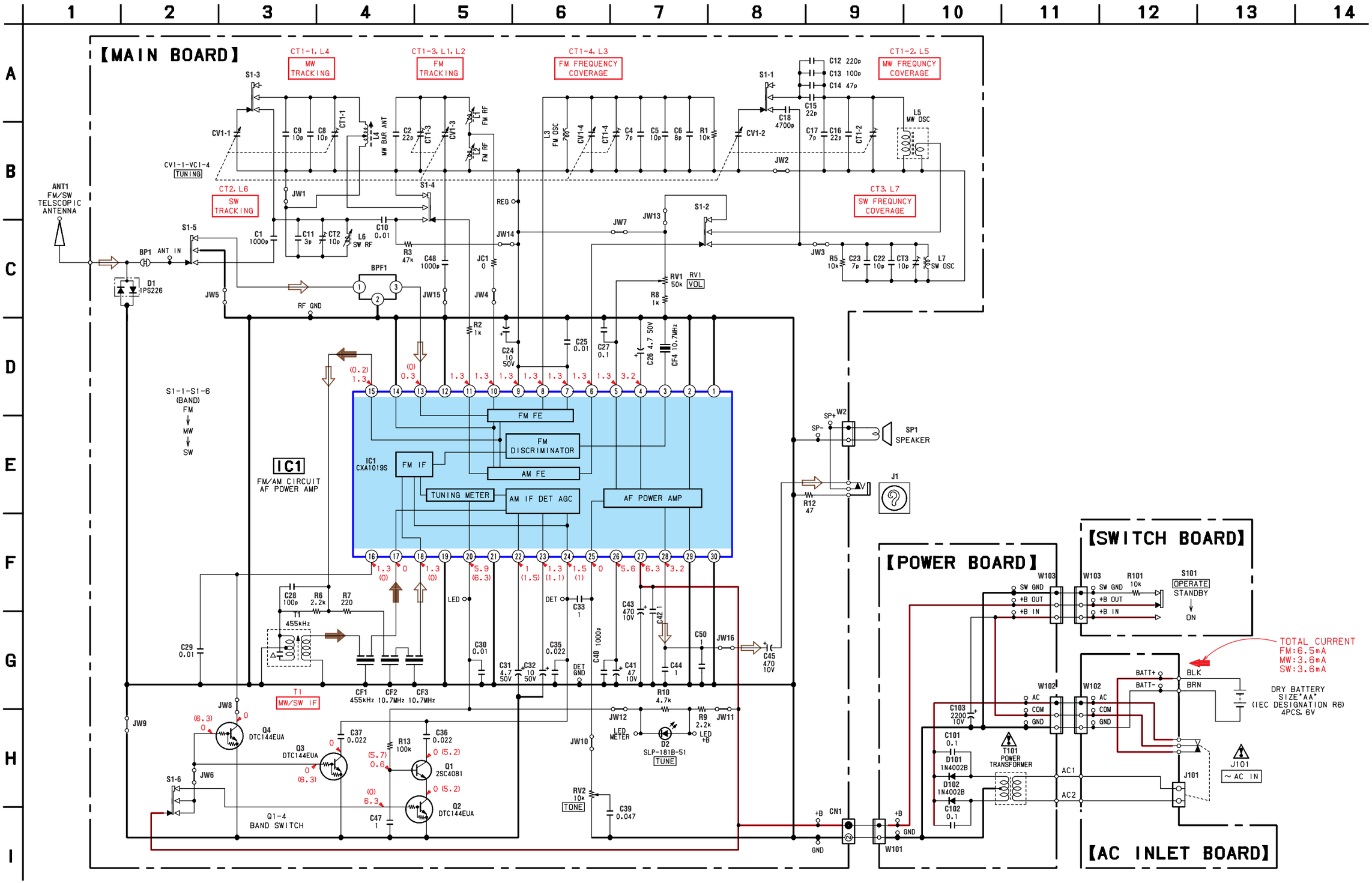
• **Semiconductor Location**

Ref. No.	Location
D1	A-8
D2	H-3
IC1	D-10
Q1	E-11
Q2	E-12
Q3	E-12
Q4	C-12

4-3. PRINTED WIRING BOARDS — POWER SECTION —



4-4. SCHEMATIC DIAGRAM

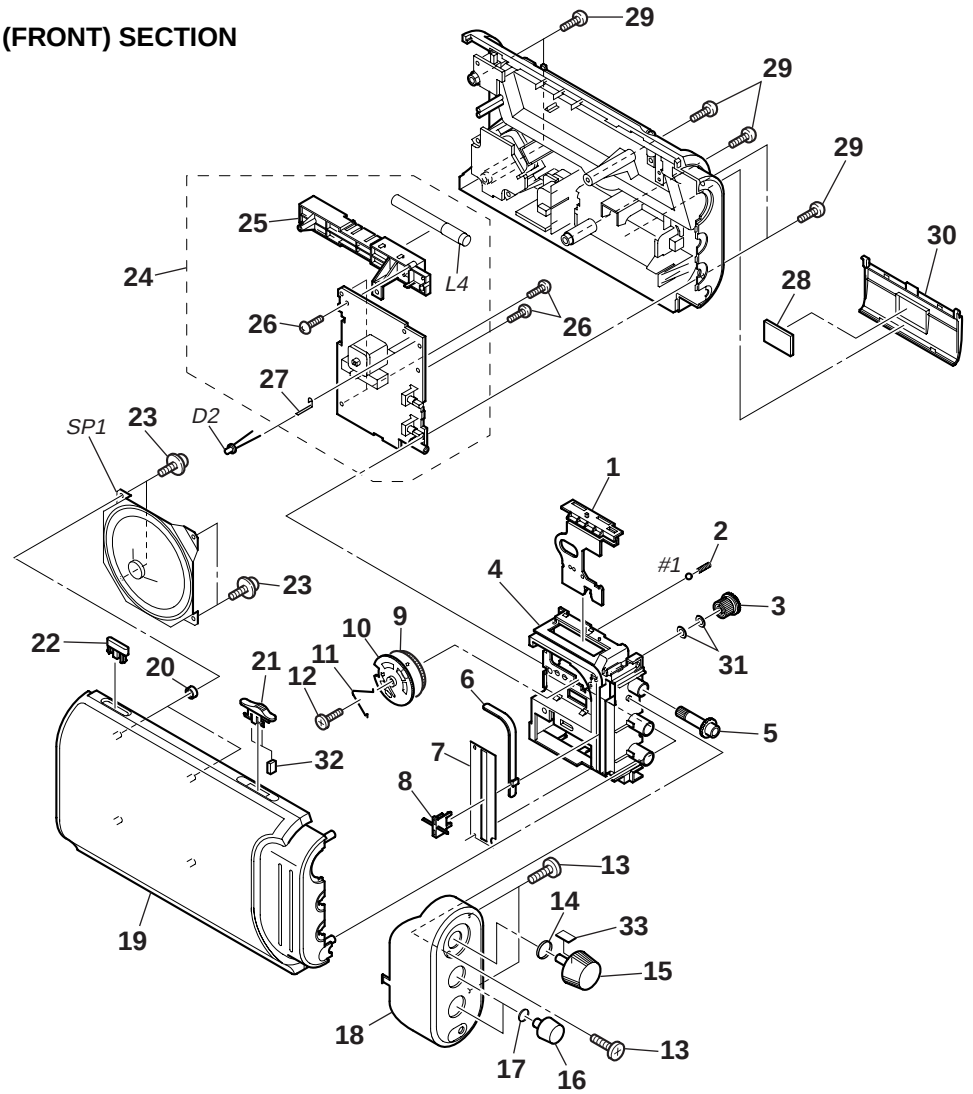


SECTION 5
EXPLODED VIEWS

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 are given in the last of this parts list.

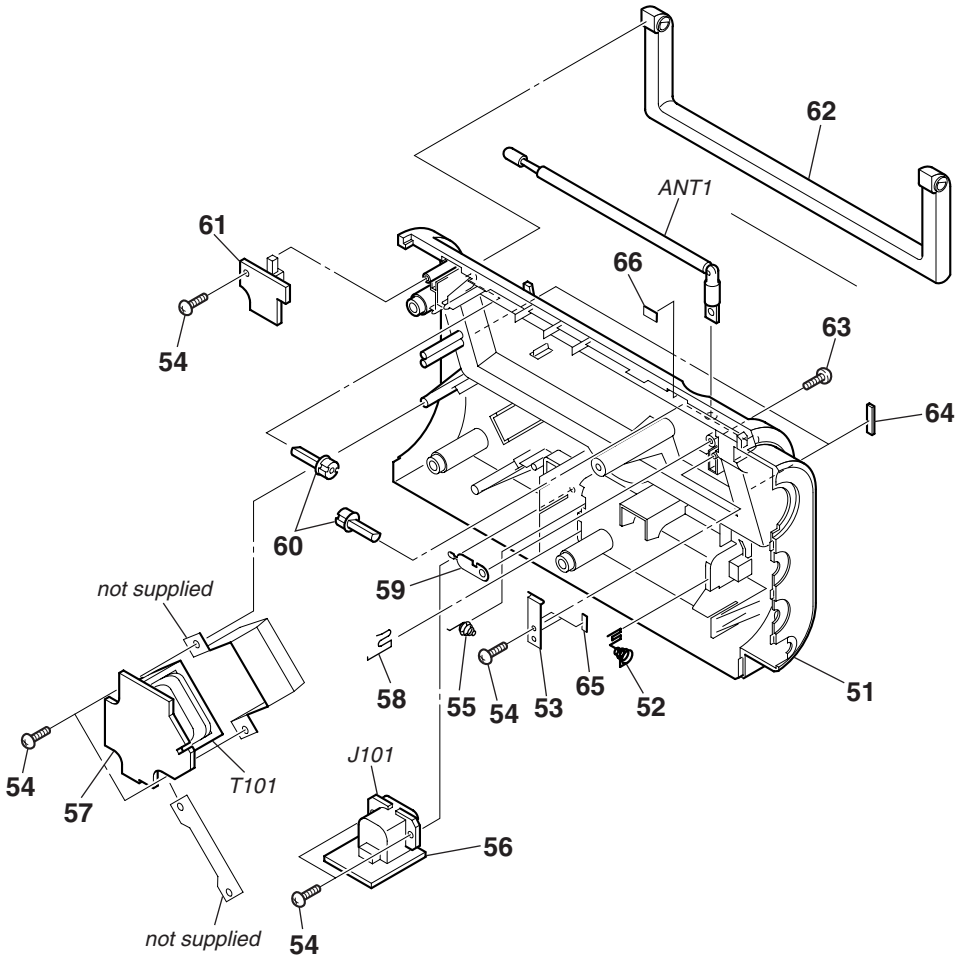
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

5-1. CABINET (FRONT) SECTION



Ref. No.	Part No.	Description	Remark
1	3-264-585-11	SLIDER (BAND SELECTION)	
2	3-264-608-01	SPRING (BAND)	
3	3-264-589-01	GEAR, MIDWAY	
4	3-264-581-01	CHASSIS	
5	3-264-588-01	SHAFT (TUNE)	
6	3-264-591-01	RACK	
7	3-265-121-01	PLATE, BACK	
8	3-264-590-01	POINTER	
9	3-264-586-01	DRUM (A), VC	
10	3-264-587-01	DRUM (B), VC	
11	3-266-375-01	SPRING (DRUM)	
12	3-252-831-01	SCREW (M2.6), (+) P	
13	3-252-825-01	SCREW (1.7)	
14	3-266-360-01	SPRING (TUNING)	
15	3-264-583-01	KNOB (TUNE)	
16	3-264-584-01	KNOB (CONTROL)	
17	3-252-747-01	SPRING, RING	
18	3-264-582-21	COVER, TRANSPARENT	
19	X-2022-199-1	CABINET (FRONT) SUB ASSY	
20	2-024-240-01	SPACER (BOSS)	
21	3-264-611-01	KNOB (BAND) 3B	
22	3-264-593-01	BUTTON (POWER)	
23	3-252-828-01	SCREW (B2.6), (+) PWH TAPPING	
* 24	A-4547-217-A	MAIN BOARD, COMPLETE	
25	3-264-614-01	HOLDER (ANT)	
26	3-252-827-01	SCREW (B2.6), (+) BV TAPPING	
27	3-264-607-01	TERMINAL, LED CONTACT	
28	3-267-201-01	CUSHION (BATTERY CASE LID)	
29	3-254-140-01	SCREW (B2.6), (+) BV TAPPING	
30	3-264-613-01	LID, BATTERY CASE	
31	2-048-404-11	CUSHION (GEAR)	
32	3-553-567-00	CUSHION	
33	3-831-441-11	CUSHION (B)	
D2	8-719-038-29	LED SLP-181B-51 (TUNE)	
L4	1-754-132-21	ANTENNA, FERRITE-ROD (MW)	
SP1	1-825-789-11	SPEAKER (10cm)	
#1	7-671-112-11	BALL, STEEL	

5-2. CABINET (REAR) SECTION



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

Ref. No.	Part No.	Description	Remark
51	3-264-610-01	CABINET (REAR)	
52	3-264-617-01	TERMINAL (+–), BATTERY	
53	3-264-619-01	SPRING (HANDLE)	
54	3-252-827-01	SCREW (B2.6), (+) BV TAPPING	
55	3-264-616-01	TERMINAL (–), BATTERY	
* 56	1-861-815-11	AC INLET BOARD	
* 57	1-861-814-11	POWER BOARD	
58	3-248-610-01	TERMINAL (+), BATTERY	
59	3-228-709-01	PLATE, ANTENNA CONTACT	
60	3-264-618-01	SHAFT (HANDLE)	

Ref. No.	Part No.	Description	Remark
* 61	1-861-816-11	SWITCH BOARD	
62	3-264-612-01	HANDLE	
63	3-252-833-01	SCREW (M3), (+) P	
64	3-014-055-01	FOOT, RUBBER	
65	3-043-480-01	SHEET (C), INSULATING	
66	3-831-441-11	CUSHION (B)	
ANT1	1-501-222-91	ANTENNA, TELESCOPIC (FM)	
⚠J101	1-526-838-31	INLET, AC 2P (∼ AC IN)	
⚠T101	1-443-240-11	TRANSFORMER, POWER	

SECTION 6
ELECTRICAL PARTS LIST

AC INLET | 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 : μ, for example:
  uA.. : μA.. uPA.. : μPA..
  uPB.. : μPB.. uPC.. : μPC.. uPD.. : μPD..
- CAPACITORS
  uF : μF
- COILS
  uH : μH

The components identified by mark ⚠ or dotted line with mark. ⚠ 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
*	1-861-815-11	AC INLET BOARD			
		**********			
		< AC INLET >			
⚠J101	1-526-838-31	INLET, AC 2P (~ AC IN)			
**********					
*	A-4547-217-A	MAIN BOARD, COMPLETE			
		**********			
	3-252-827-01	SCREW (B2.6), (+) BV TAPPING			
	3-264-607-01	TERMINAL, LED CONTACT			
	3-264-614-01	HOLDER (ANT)			
		< BPF >			
BPF1	1-236-022-11	FILTER, BAND PASS			
		< CAPACITOR >			
C1	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C2	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C4	1-162-996-11	CERAMIC CHIP	7PF	0.5PF	50V
C5	1-162-997-11	CERAMIC CHIP	10PF	0.5PF	50V
C6	1-162-913-11	CERAMIC CHIP	8PF	0.5PF	50V
C8	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C9	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C10	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C11	1-162-908-11	CERAMIC CHIP	3PF	0.25PF	50V
C12	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C13	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C14	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C15	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C16	1-162-945-11	CERAMIC CHIP	22PF	5%	50V
C17	1-162-912-11	CERAMIC CHIP	7PF	0.5PF	50V
C18	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C22	1-162-997-11	CERAMIC CHIP	10PF	0.5PF	50V
C23	1-162-996-11	CERAMIC CHIP	7PF	0.5PF	50V
C24	1-126-964-11	ELECT	10uF	20%	50V
C25	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C26	1-126-963-11	ELECT	4.7uF	20%	50V
C27	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C28	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C29	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C30	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C31	1-126-963-11	ELECT	4.7uF	20%	50V
C32	1-126-964-11	ELECT	10uF	20%	50V

Ref. No.	Part No.	Description			Remark
C33	1-115-156-11	CERAMIC CHIP	1uF		10V
C35	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C36	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C37	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C39	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C40	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C41	1-126-947-11	ELECT	47uF	20%	35V
C42	1-115-156-11	CERAMIC CHIP	1uF		10V
C43	1-126-925-91	ELECT	470uF	20%	10V
C44	1-115-156-11	CERAMIC CHIP	1uF		10V
C45	1-126-925-91	ELECT	470uF	20%	10V
C47	1-115-156-11	CERAMIC CHIP	1uF		10V
C48	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C50	1-115-156-11	CERAMIC CHIP	1uF		10V
		< FILTER >			
CF1	1-795-157-11	FILTER, CERAMIC			
CF2	1-577-325-81	FILTER, CERAMIC			
CF3	1-577-325-81	FILTER, CERAMIC			
CF4	1-577-325-81	FILTER, CERAMIC			
		< CONNECTOR >			
* CN1	1-785-668-11	PIN, CONNECTOR (PC BOARD) 2P			
		< VARIABLE CAPACITOR >			
CT1	1-141-583-22	CAP, VAR			
CV1	1-141-583-22	CAP, VAR (TUNING)			
		< TRIMMER >			
CT2	1-141-304-21	CAP, CERAMIC TRIMMER	10PF		
CT3	1-141-304-21	CAP, CERAMIC TRIMMER	10PF		
		< DIODE >			
D1	8-719-062-51	DIODE 1PS226-115			
		< IC >			
IC1	8-752-037-02	IC CXA1019S			
		< JACK >			
J1	1-563-836-21	JACK (Ⓟ)			
		< JUMPER RESISTOR >			
JC1	1-216-864-11	SHORT CHIP	0		

ICF-704S

MAIN POWER SWITCH

Ref. No.	Part No.	Description			Remark
		< COIL >			
L1	1-428-291-11	COIL, AIR-CORE			
L2	1-428-291-11	COIL, AIR-CORE			
L3	1-428-222-11	COIL, FM OSC			
L4	1-754-132-21	ANTENNA, FERRITE-ROD (MW)			
L5	1-406-092-31	COIL, OSC (MW)			
L6	1-456-747-11	COIL, SW (ANT)			
L7	1-406-093-31	COIL, OSC (SW)			
		< TRANSISTOR >			
Q1	8-729-905-35	TRANSISTOR 2SC4081-R			
Q2	8-729-029-14	TRANSISTOR DTC144EUA-T106			
Q3	8-729-029-14	TRANSISTOR DTC144EUA-T106			
Q4	8-729-029-14	TRANSISTOR DTC144EUA-T106			
		< RESISTOR >			
R1	1-216-833-11	METAL CHIP	10K	5%	1/10W
R2	1-216-821-11	METAL CHIP	1K	5%	1/10W
R3	1-216-841-11	METAL CHIP	47K	5%	1/10W
R5	1-216-833-11	METAL CHIP	10K	5%	1/10W
R6	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R7	1-216-813-11	METAL CHIP	220	5%	1/10W
R8	1-216-821-11	METAL CHIP	1K	5%	1/10W
R9	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R10	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R12	1-216-805-11	METAL CHIP	47	5%	1/10W
R13	1-216-845-11	METAL CHIP	100K	5%	1/10W
		< VARIABLE RESISTOR >			
RV1	1-227-647-11	RES, VAR, CARBON		50K (VOL)	
RV2	1-227-646-11	RES, VAR, CARBON		10K (TONE)	
		< SWITCH >			
S1	1-571-170-21	SWITCH, SLIDE (BAND)			
		< TRANSFORMER >			
T1	1-404-902-51	TRANSFORMER, IF			
**********					
*	1-861-814-11	POWER BOARD			
		**********			
		< CAPACITOR >			
C101	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C102	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C103	1-126-927-11	ELECT	2200uF	20%	10V
		< DIODE >			
D101	8-719-063-79	DIODE 1N4002B			
D102	8-719-063-79	DIODE 1N4002B			
**********					

Ref. No.	Part No.	Description			Remark
*	1-861-816-11	SWITCH BOARD			
		**********			
		< RESISTOR >			
R101	1-216-833-11	METAL CHIP	10K	5%	1/10W
		< SWITCH >			
S101	1-572-176-21	SWITCH, PUSH (1 KEY) (OPERATE)			
**********					
		MISCELLANEOUS			
		**********			
ANT1	1-501-222-91	ANTENNA, TELESCOPIC (FM)			
D2	8-719-038-29	LED SLP-181B-51 (TUNE)			
SP1	1-825-789-11	SPEAKER (10cm)			
⚠T101	1-443-240-11	TRANSFORMER, POWER			
**********					
		ACCESSORIES			
		**********			
⚠	1-828-834-11	CORD, POWER			
	3-266-178-11	MANUAL, INSTRUCTION (ENGLISH,FRENCH, GERMAN,SPANISH,ITALIAN,DUTCH,SWEDISH, PORTUGUESE,FINNISH)			

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

MEMO

REVISION HISTORY

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Also, clicking the version at the upper on the revised page allows you to jump to the next revised page.

Ver.	Date	Description of Revision
1.0	2004. 04	New