

PRS-950

SERVICE MANUAL

Ver. 1.0 2010.10

US Model
Canadian Model



Note:

Be sure to keep your PC used for service and checking of this unit always updated with the latest version of your anti-virus software. In case a virus affected unit was found during service, contact your Service Headquarters.

SPECIFICATIONS

Model name

PRS-950

Power source

Built-in rechargeable battery: 3.7 V DC
AC adapter: 5.0 V DC, 1,500 mA
USB communication: Hi-Speed USB (USB 2.0 compliant)

Battery life (continuous playback)

Maximum Battery: Approx. 20,000 continuous page turns when reading only *

* Measured using a text based content in ePub format and a fully charged battery, consecutive page-turns at approximately one second per page under the recommended operating temperature. Actual battery life may vary based on usage patterns and individual device.

User available capacity

Approx. 1.4 GB after initial setting
Depending on size of pre-loaded excerpts, available memory capacity may vary.

Operating/charging temperature

41°F to 95°F (5°C to 35°C)

Dimensions (w/h/d)

Approx. 5 1/8 × 7 7/8 × 13/32 inches (128 × 200 × 9.6 mm)

Mass

Approx. 9 6/10 oz. (273 g)

Display:

7.1" (180.98 mm) diagonal electrophoretic display
600 × 1,024 pixel, 0.151 × 0.153 pixel/mm
16-level gray scale

Mobile network:

HSPA/WCDMA 850/900/1900/2100 MHz
GPRS/EDGE 850/900/1800/1900 MHz

Wi-Fi:

802.11b / g compliant

Expansion slots

Memory Stick PRO Duo™ slot, SD card slot

AC Adapter for Reader (PRSA-AC1)

- Output: 5.0 V DC, 1,500 mA
- Input: 100 - 240 V AC, 50/60 Hz, 0.2 A
- Operating/Charging temperature: 41°F to 95°F (5°C to 35°C)
- Dimensions (w/h/d):
Approx. 1 7/16 × 2 7/8 × 1 5/16 inches (Approx. 36 × 70 × 33 mm)
- Mass: Approx. 1.76 oz. (50 g)
- USB cable length: Approx. 58 1/8 inches (1.5 m)

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DIGITAL BOOK READER

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SONY®

FLEXIBLE CIRCUIT BOARD REPAIRING

- Keep the temperature of soldering iron around 270 °C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

CAUTION
 Danger of explosion if battery is incorrectly replaced.
 Replace only with the same or equivalent type.

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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.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE \triangle SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

SECTION 1 SERVICING NOTES

NOTE THE EACH BOARDS REPAIRING

The mount parts on each boards installed in this set cannot exchange with single. When the each boards are damaged, exchange the entire mounted board.

NOTE OF REPLACING THE COMPLETE MAIN BOARD OR MAIN BLOCK ASSY

Please do the following work when you exchange COMPLETE MAIN board or MAIN BLOCK ASSY.

Note: INK INDICATOR 7inch ELEMENT is included in MAIN BLOCK ASSY.

- Write VCOM: Refer to “20. Write VCOM” on page 14.
- REWRITING THE LUT: Refer to this page.

REWRITING THE LUT

As for INK INDICATOR 7inch ELEMENT, the parameter that rewrites the screen of each lot number is different. This parameter is called LUT (Look Up Table).

When replacing the complete MAIN board or MAIN BLOCK ASSY (including INK INDICATOR 7inch ELEMENT) you need to rewrite the LUT.

However, rewriting is not required if the lot number is the same.

Note: LUT is written in IC2003 on the MAIN board.

Refer to the following for the “How to enter the test mode” and “How to change the LUT”.

• How to enter the test mode

1. Connect the set to PC by the USB cable.
2. The file for the test mode is copied under the “READER” drive.

Note: Confirm the method of obtaining the file for test mode to each service headquarters.

3. Remove the set from PC. Then, the power supply automatically becomes on.
4. Confirm “Test Mode Available” is displayed on the screen.



5. Press the key as following order.
[Ⓚ] → [⬆] → [Ⓚ] → [⬆]
6. After a while, indicate the test mode menu, enter the test mode.

• Releasing the test mode

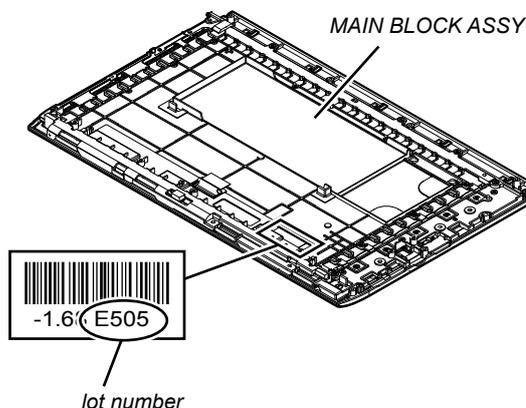
Slide the [POWER] key for 5 seconds or more to turn the power off. Then, delete the file copied in “How to enter the test mode” from the “READER” drive.

• How to change the LUT

1. Confirm the lot number of INK INDICATOR 7inch ELEMENT referring to the figure below.

Note: The lot number disappears when the MAIN board is assembled.

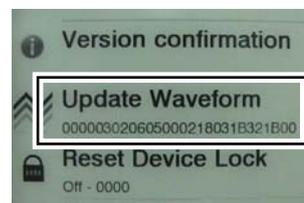
Record the lot number in the memo etc. before assembling the MAIN board.



2. Confirm the version and the LUT file of LUT corresponding to the lot number to each service headquarters.
3. Make the following folder under the “READER” drive.

/Sony Reader/software/data

4. Copy the LUT file updated under the folder made in step 3, and change the file name to “lut.bin”.
5. The current LUT version displayed at the lower side of “Update Waveform” on test mode menu 1 (Example: “000003020605000218031B321B00” in the figure below).



(Example of displaying current LUT version)

6. Touch the “Update Waveform” in the test mode menu page 1, it starts rewriting LUT version.
7. After about 10 seconds, screen changes into all white.
8. Press [RESET] key and reboot the set.
9. Enter the test mode again, and confirm LUT version has been updated.

Wi-Fi OPERATION CHECK

- MAIN board is replaced.
- WWAN ANTENNA is replaced.
- Cable of WWAN ANTENNA is removed.

In the above-mentioned case, confirm the Wi-Fi operation referring to the following.

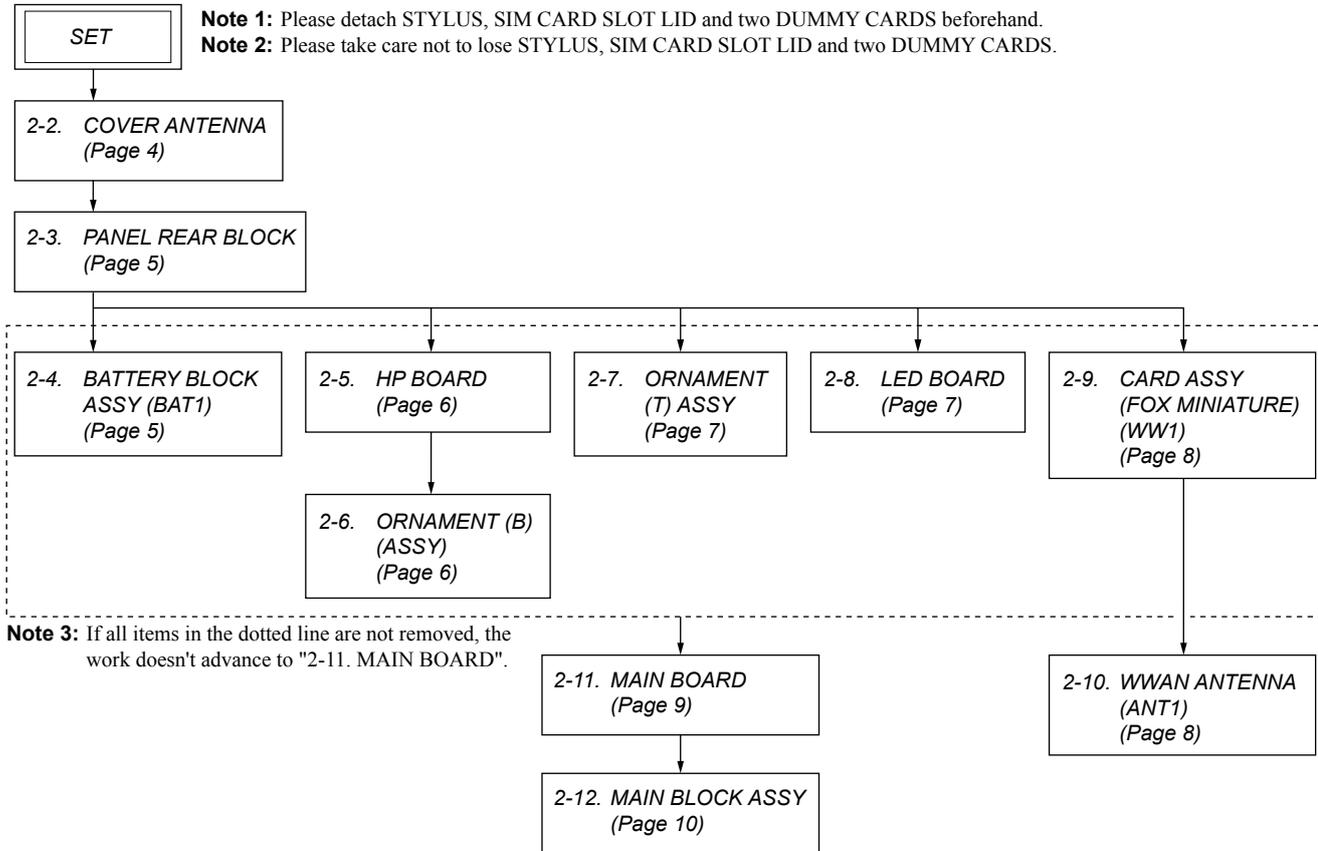
Procedure:

1. Slide the [WIRELESS] switch to ON.
2. Touch in order of “Settings” → “Wi-Fi Network Settings” → “Refresh Network List”.
3. Confirm the Wi-Fi access point is displayed.

SECTION 2 DISASSEMBLY

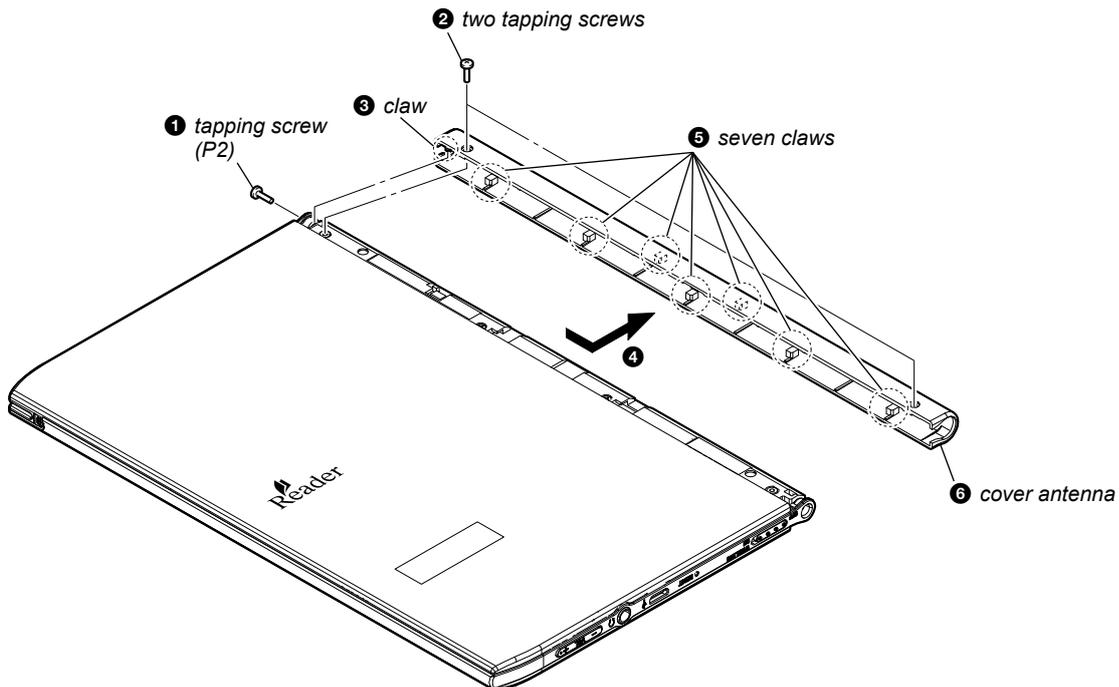
- This set can be disassembled in the order shown below.

2-1. DISASSEMBLY FLOW



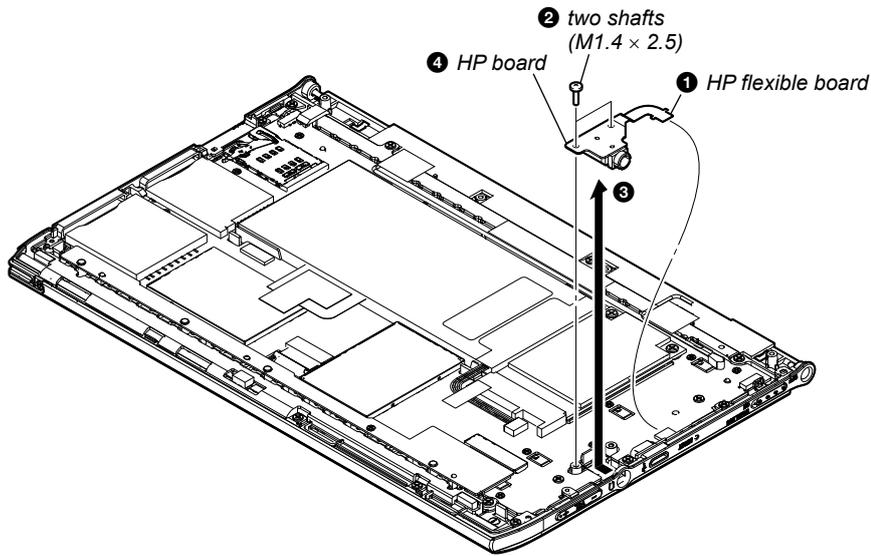
Note: Follow the disassembly procedure in the numerical order given.

2-2. COVER ANTENNA



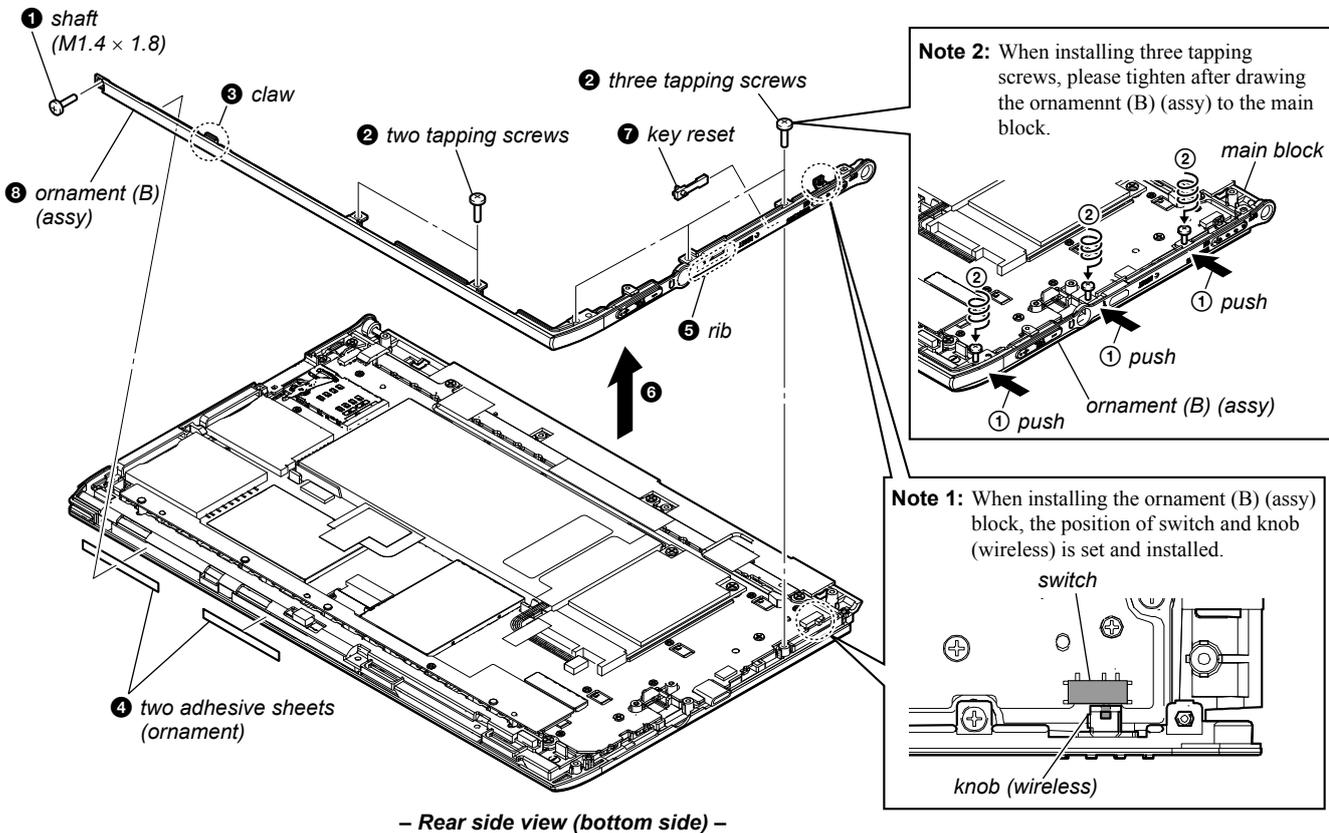
– Rear side view (bottom side) –

2-5. HP BOARD



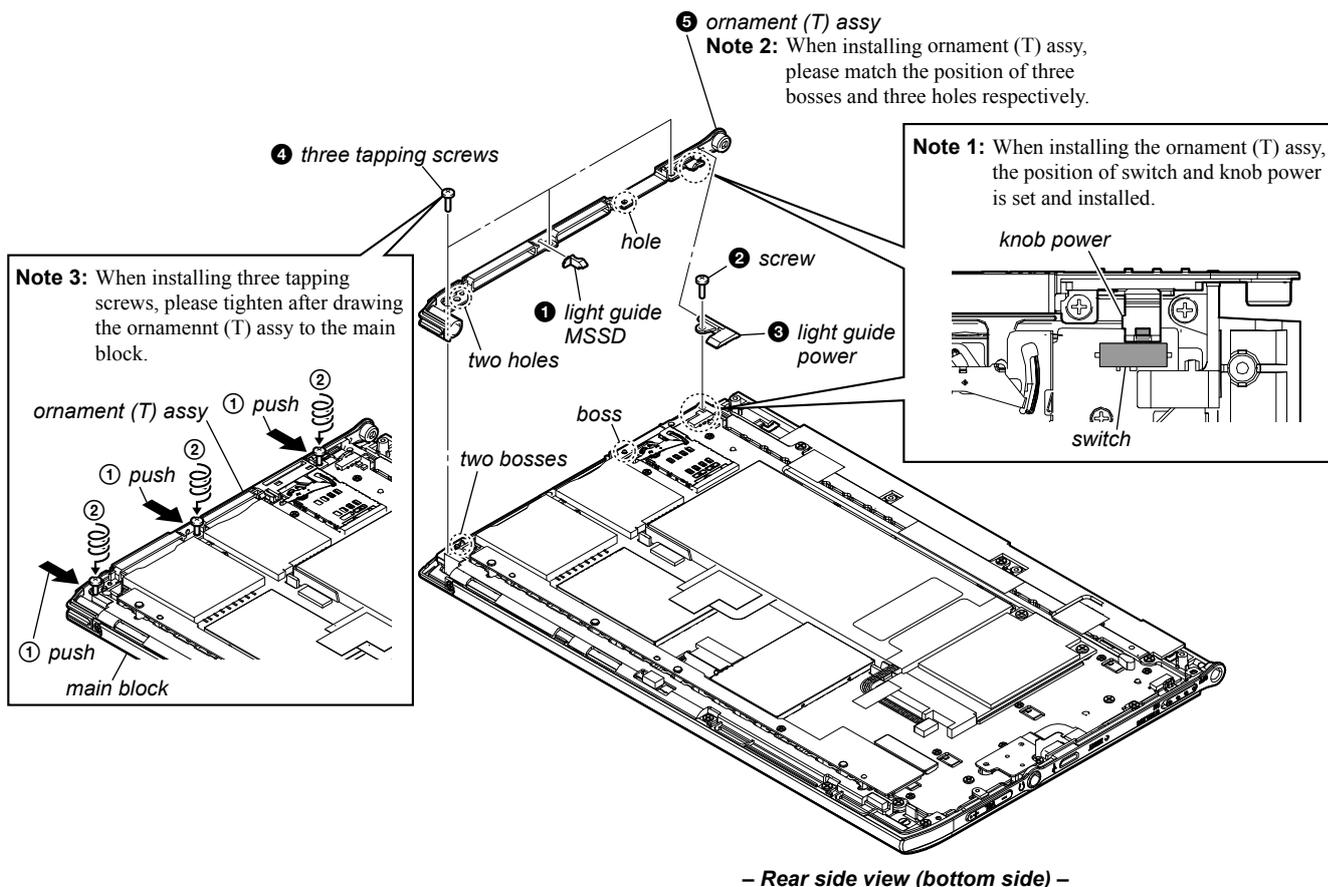
– Rear side view (bottom side) –

2-6. ORNAMENT (B) (ASSY)

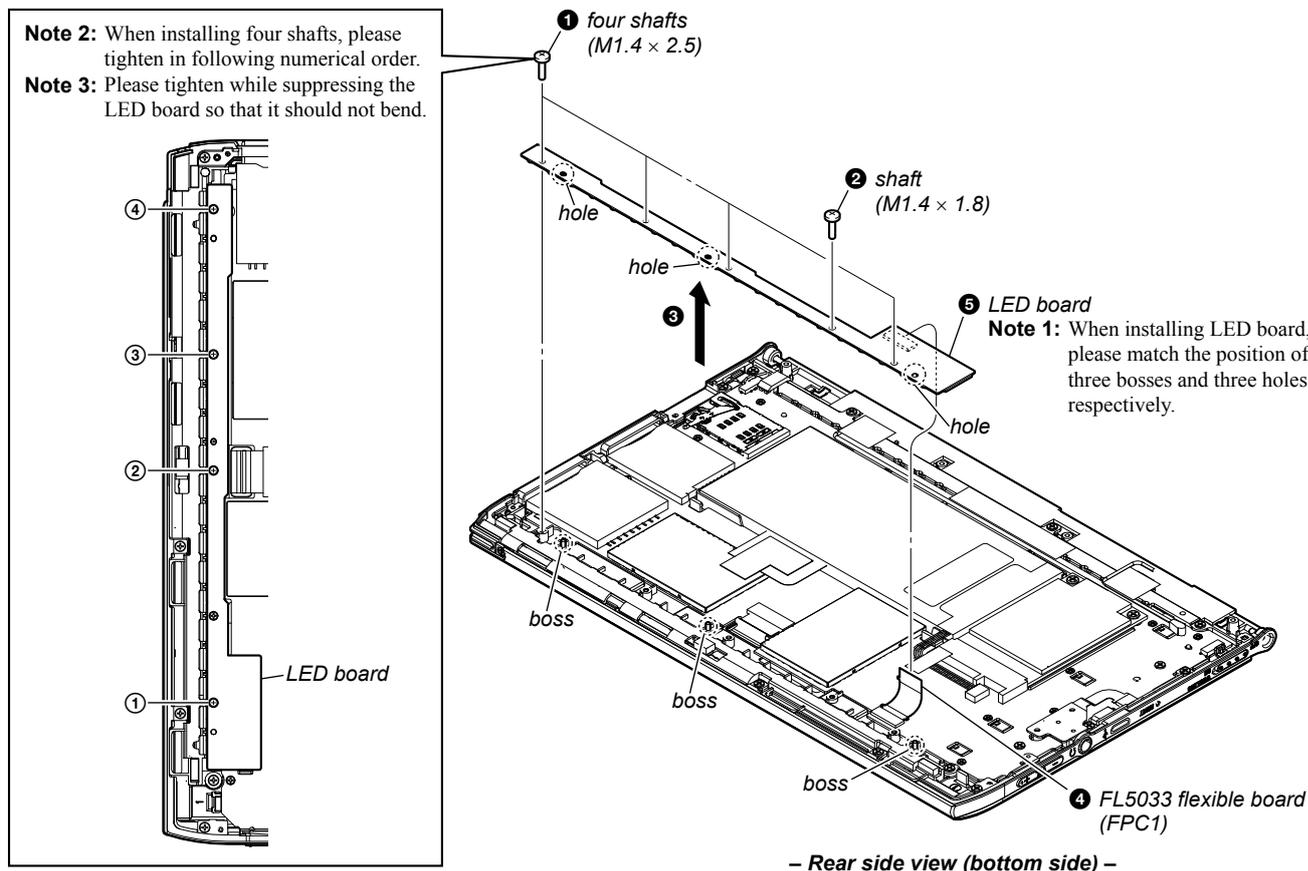


– Rear side view (bottom side) –

2-7. ORNAMENT (T) ASSY

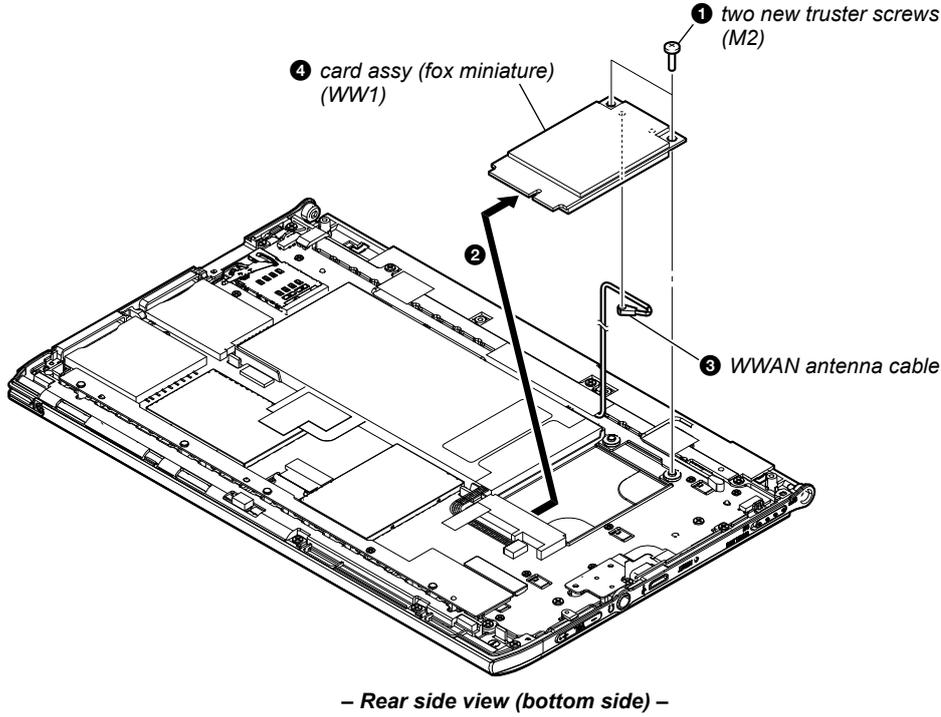


2-8. LED BOARD



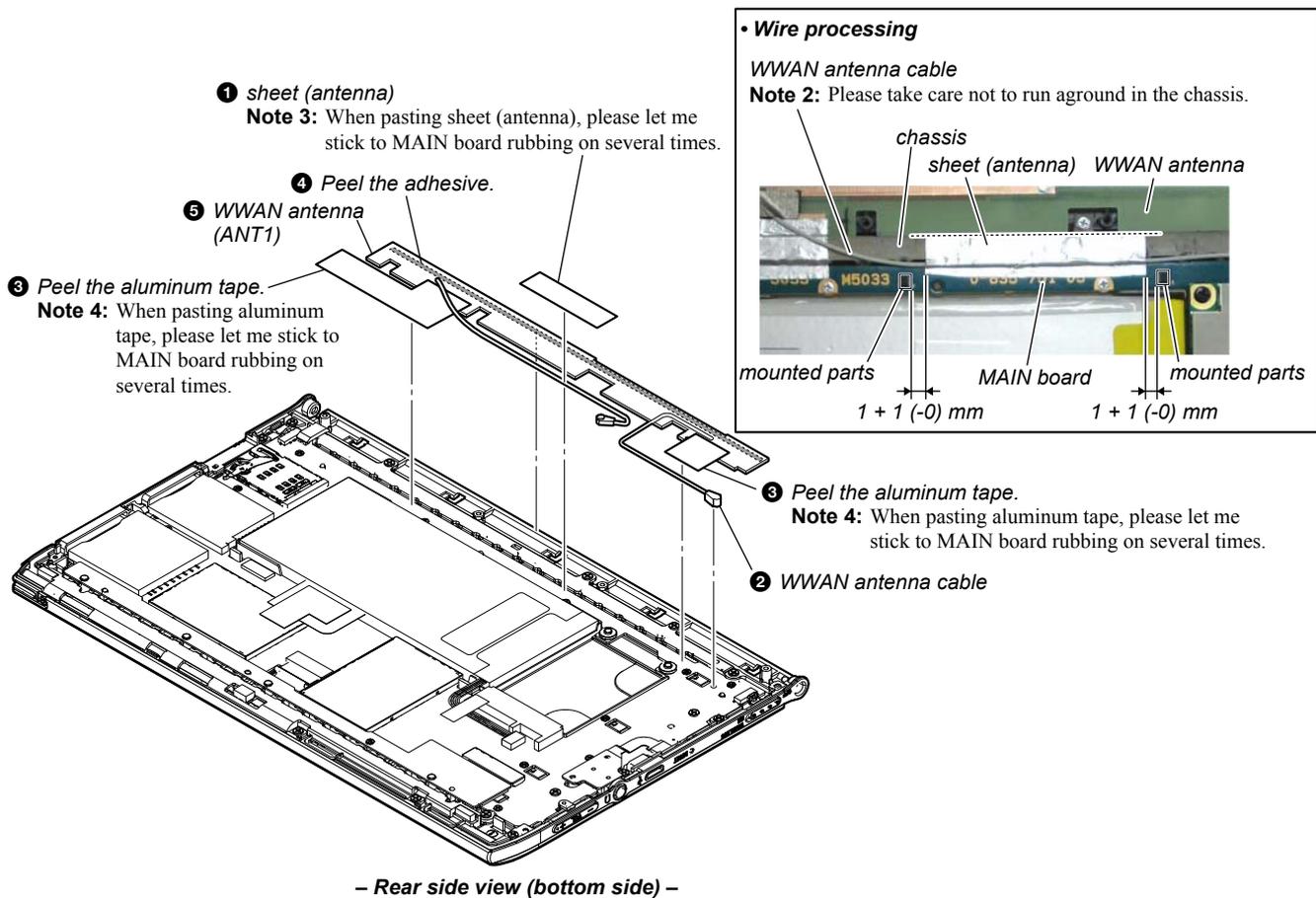
2-9. CARD ASSY (FOX MINIATURE) (WW1)

Note: When the WWAN antenna cable is removed, refer to “Wi-Fi OPERATION CHECK” (page 3).



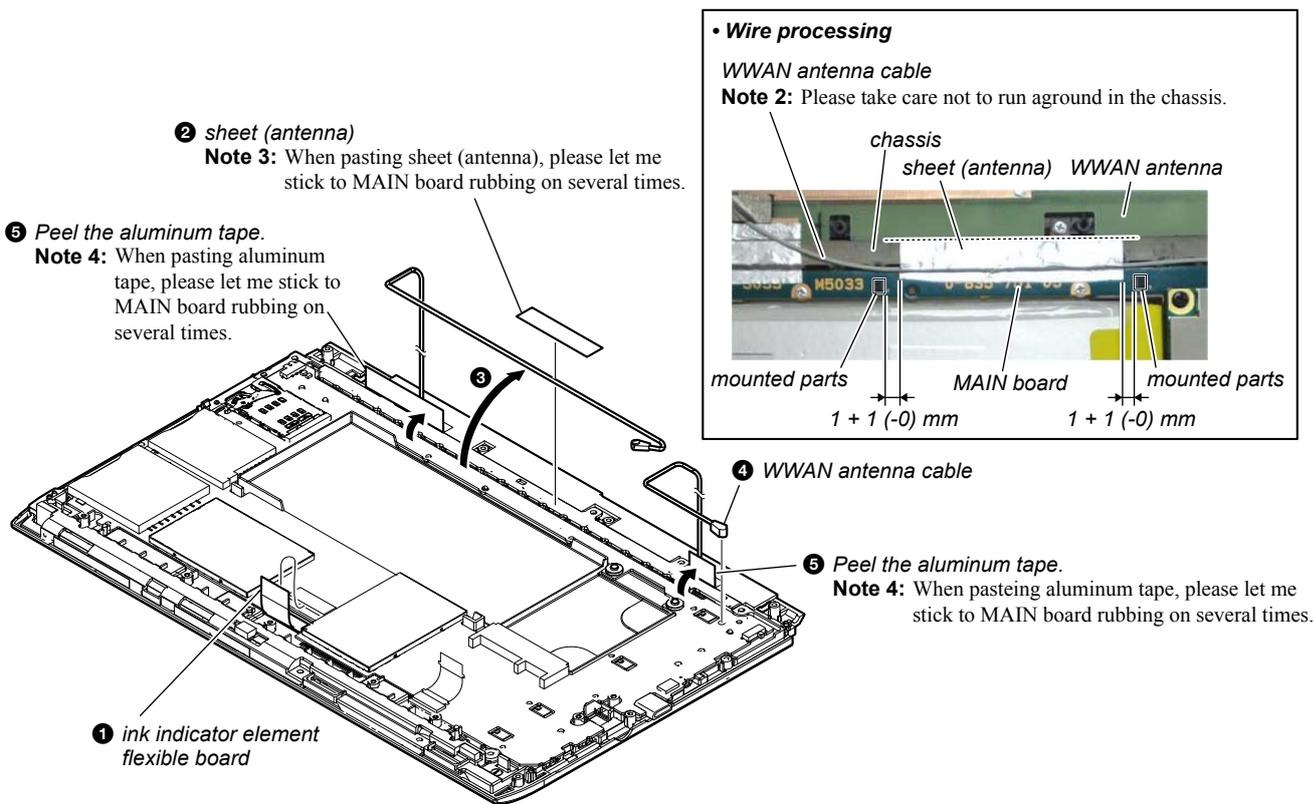
2-10. WWAN ANTENNA (ANT1)

Note 1: When the WWAN antenna is removed, refer to “Wi-Fi OPERATION CHECK” (page 3).

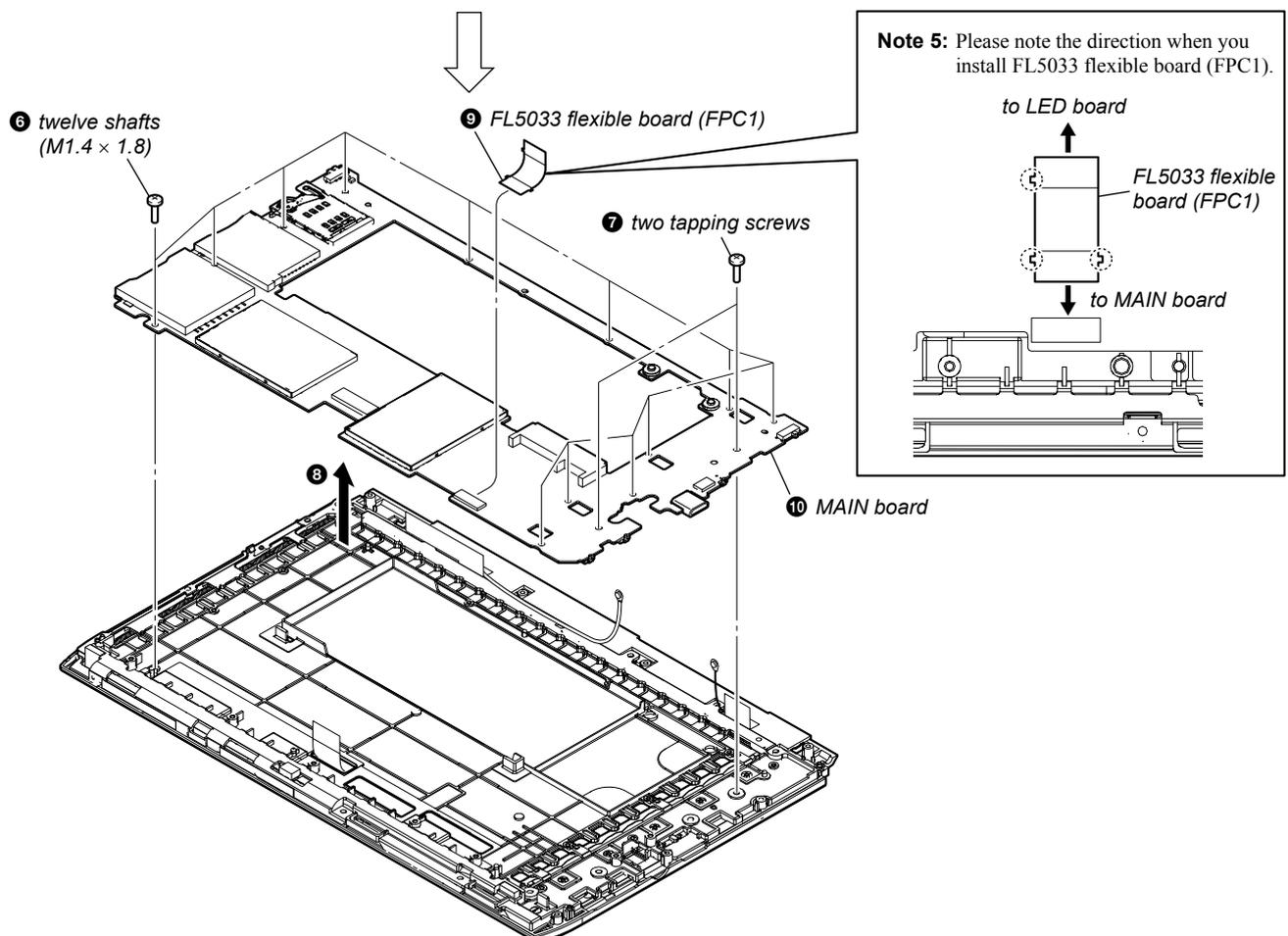


2-11. MAIN BOARD

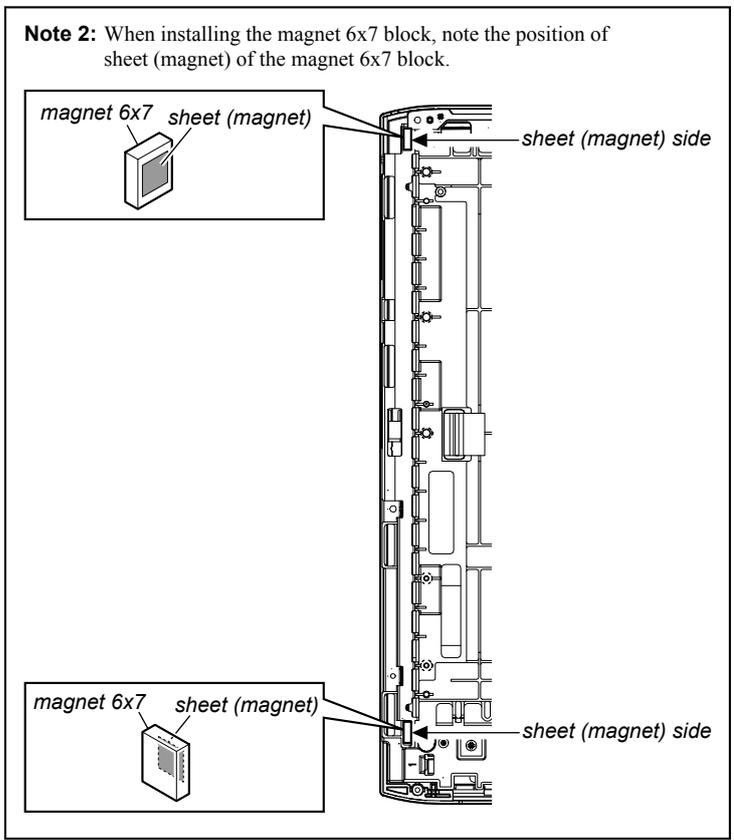
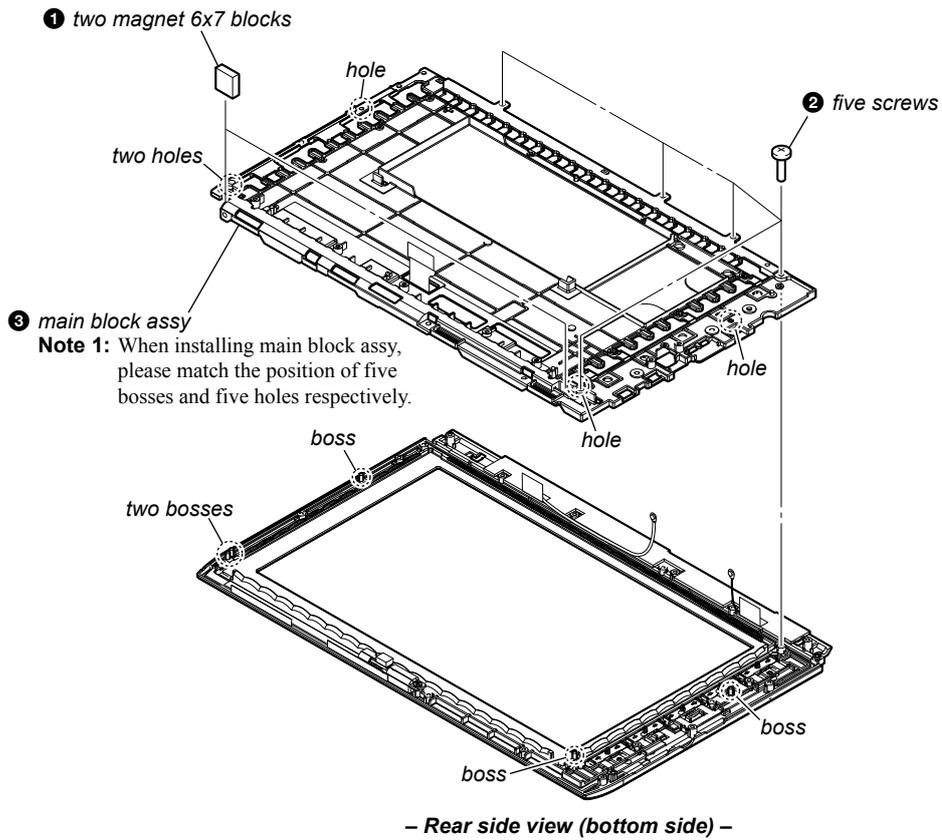
Note 1: When the MAIN board is removed, refer to “Wi-Fi OPERATION CHECK” (page 3).



– Rear side view (bottom side) –



2-12. MAIN BLOCK ASSY



SECTION 3 TEST MODE

HOW TO ENTER THE TEST MODE

1. Connect the set to PC by the USB cable.
 2. The file for the test mode is copied under the “READER” drive.
- Note:** Confirm the method of obtaining the file for test mode to each service headquarters.
3. Remove the set from PC. Then, the power supply automatically becomes on.
 4. Confirm “Test Mode Available” is displayed on the screen.



5. Press the key as following order.
[⊕] → [⬆] → [⊕] → [⬆]
6. After a while, indicate the test mode menu, enter the test mode.
7. Press the [◀]/[▶] keys, change the test mode menu page 1/page 2.



(Test mode menu page 1)



(Test mode menu page 2)

RELEASING THE TEST MODE

Slide the [POWER] key for 5 seconds or more to turn the power off. Then, delete the file copied in “How to enter the test mode” from the “READER” drive.

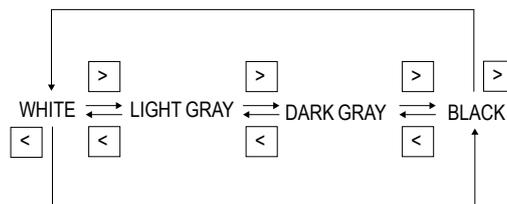
OPERATION OF THE TEST MODE

1. Test Panel

Procedure:

1. Make the following folder under the “READER” drive.

/Sony Reader/software/images
2. Copy the image files under the folder made in step 1.
3. Touch the “Test Panel” in the test mode menu page 1. The screen is changed into the image files.
4. Press the [◀]/[▶] keys, change the image files.
5. Press the [⊕] key, image file display size change to 600×800 or 500×700.
6. If there are no image files, screen is filled with grayscale color. Press the [◀]/[▶] keys, change the grayscale color.



When the setting of “17. Slideshow Setting” is turning on, the image files (or grayscale color) are changes by the automatic operation.

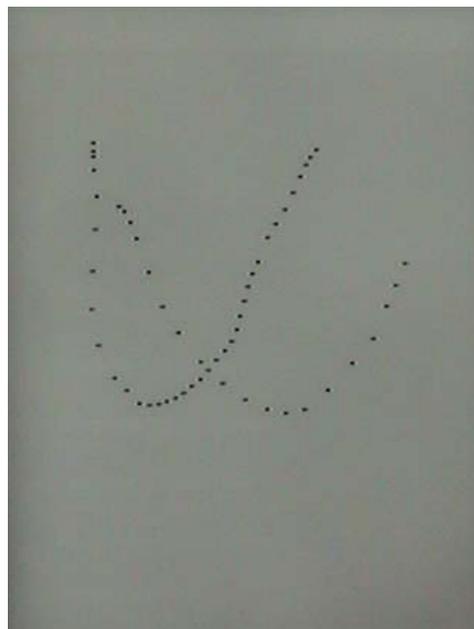
Releasing method:

Press the [⬆] key, return to the test mode menu 1.

2. Drawing with point

Procedure:

1. Touch the “Drawing with point” in the test mode menu page 1. The screen is changed into the drawing check.
2. The scanned coordinate is displayed while dragging.



(Screen display)

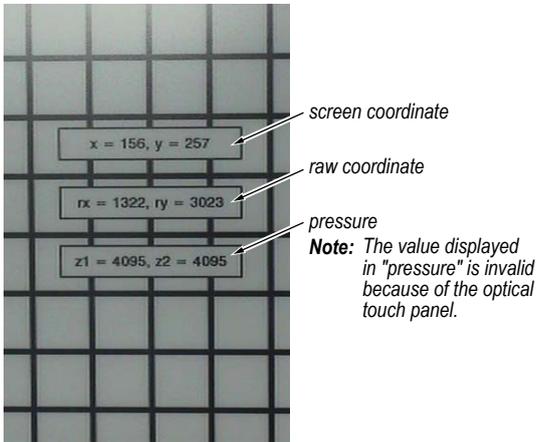
Releasing method:

Press the [⬆] key, return to the test mode menu 1.

3. Test TP Coordinate

Procedure:

1. Touch the “Test TP Coordinate” in the test mode menu page 1. The screen is changed into the touch panel coordinate.
2. The scanned coordinate is displayed pen down and pen up. The grid is drawn every 100 pixels. All the touch panel data is recorded in the log file. (pen down, pen move, pen up, pressure)



(Screen display)

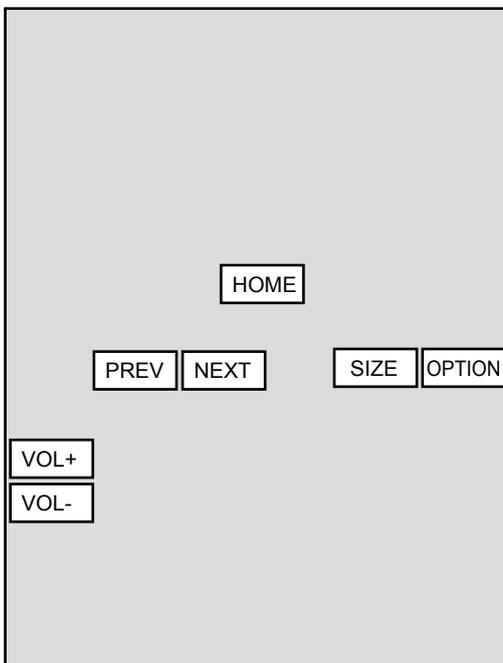
Releasing method:

Press the [HOME] key, return to the test mode menu 1.

4. Test All Keys

Procedure:

1. Touch the “Test All Keys” in the test mode menu page 1. The screen is changed into the all keys state.



(Screen display)

2. Each keys are pressed, the display changed from white into the black.
3. It returns to the test mode menu 1 when all buttons are pressed.

Releasing method:

Press the [OPTION] key for 3 seconds or more, return to the test mode menu 1.

5. Check battery

Touch the “Check battery” in the test mode menu page 1. Display of the right side of “Check battery” on test mode menu changes into the display of the battery level.

6. Factory Initialize

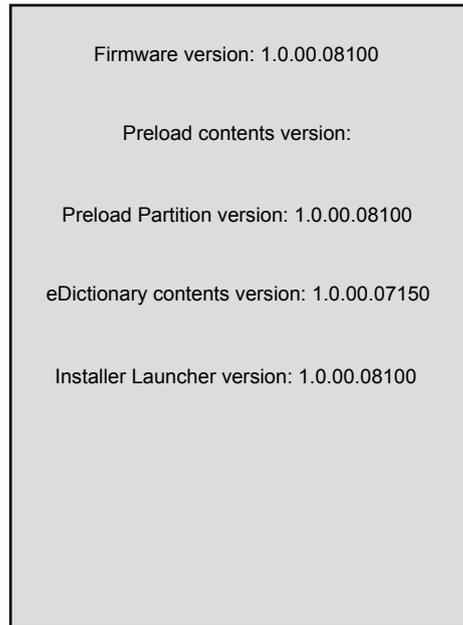
Touch the “Factory Initialize” in the test mode menu page 1. Clean up all the evidence and reset all settings, then shutdown.

7. Version confirmation

Procedure:

1. Touch the “Version confirmation” in the test mode menu page 1.
2. Each version of this set are displayed.

Note: “Preload contents version” is not displayed.



(Screen display)

Releasing method:

Press the [HOME] key, return to the test mode menu 1.

8. Update Waveform

In this mode, it is possible to confirm the variation of LUT and rewrite.

As for INK INDICATOR 7inch ELEMENT, the parameter that rewrites the screen of each lot number is different. This parameter is called LUT (Look Up Table).

When replacing the complete MAIN board or MAIN BLOCK ASSY (including INK INDICATOR 7inch ELEMENT) you need to rewrite the LUT.

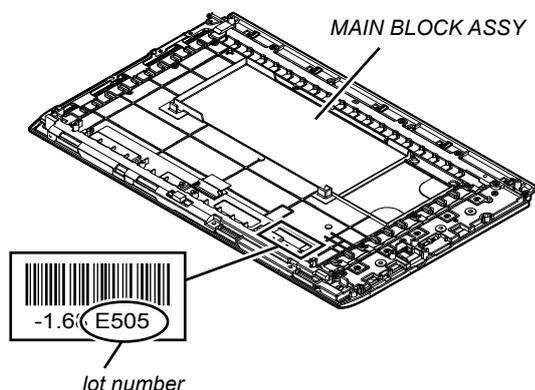
However, rewriting is not required if the lot number is the same.

Note: LUT is written in IC2003 on the MAIN board.

Procedure:

1. Confirm the lot number of INK INDICATOR 7inch ELEMENT referring to the figure below.

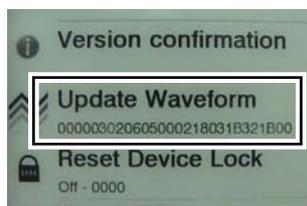
Note: The lot number disappears when the MAIN board is assembled.
Record the lot number in the memo etc. before assembling the MAIN board.



2. Confirm the version and the LUT file of LUT corresponding to the lot number to each service headquarters.
3. Make the following folder under the "READER" drive.

/Sony Reader/software/data

4. Copy the LUT file updated under the folder made in step 3, and change the file name to "lut.bin".
5. The current LUT version displayed at the lower side of "Update Waveform" on test mode menu 1 (Example: "000003020605000218031B321B00" in the figure below).



(Example of displaying current LUT version)

6. Touch the "Update Waveform" in the test mode menu page 1, it starts rewriting LUT version.
7. After about 10 seconds, screen changes into all white.
8. Press [RESET] key and reboot the set.
9. Enter the test mode again, and confirm LUT version has been updated.

9. Reset Device Lock

The current state of device lock and the password are displayed on the right side of "Reset Device Lock" of test mode menu page 1. Touch the "Reset Device Lock" to reset the device lock.

10. Power Off

Touch the "Power Off" in the test mode menu page 1. After a while, the screen display is changed white, so power is turned off.

11. Log Extract

Touch the "Log Extract" in the test mode menu page 1. The device saves the log files of using right now.

12. NAND Log Extract

Touch the "NAND Log Extract" in the test mode menu page 1. The device saves the log files of using last time before rebooted or shutdown.

13. Self Log Extract

It is the tool for the developer. This mode is not used in servicing.

14. Log Convert

It is the tool for the developer. This mode is not used in servicing.

15. Calibration

Note: The calibration need not be executed in this set. There is a possibility that the problem occurs in this set when this item is executed. Never execute this item.

16. Check Temperature

Touch the "Check Temperature" in the test mode menu page 2. Display of the right side of "Check Temperature" on test mode menu changes into the display of the temperature.

17. Slideshow Setting

Touch the "Slideshow Setting" in the test mode menu page 2, slideshow on/off changes whenever it touch the "Slideshow Setting". The setting is on, next image is shown every 3 seconds.

18. Test Audio

Procedure:

1. Make the following folder under the "READER" drive.

/Sony Reader/software/audio

2. Copy the audio files under the folder made in step 1.
3. Touch the "Test Audio" in the test mode menu page 2. The screen is changed into the audio check.
4. Press the [<]/[>] keys, change the audio files.
5. Press the [OPTIONS] key, music play or pause.
6. Press the [VOL +]/[VOL -] keys, volume level up or down.

Releasing method:

Press the [↑] key, return to the test mode menu 2. Even if you return to test mode menu, music is still playing. You can "Test Audio" and other things at the same time.

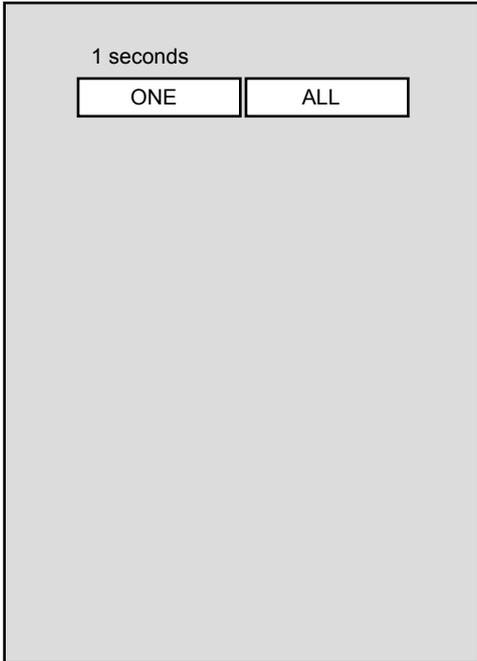
19. Test Battery Life

Procedure:

1. Make the following folder under the “READER” drive.

/Sony Reader/software/books

2. Copy the book contents file supported in this set (ePub, PDF, text, RTF, BBeB) under the folder made in step 1.
3. Touch the “Test Battery Life” in the test mode menu page 2.



(Screen display)

4. Touch the “ONE” or “ALL”, and the page is turned until the battery runs down.

Note: The battery have run out if this mode is executed. Release this mode by pressing the [⬆] key when you want to stop it on the way.

ONE: Page of one book in the copied books is turned.
 ALL: Page of all book in the copied books is turned.

5. Whenever 100 pages are turned, the result is maintained in the following file.

/Sony Reader/software/books/counter

Releasing method:

Press the [⬆] key, return to the test mode menu 2.

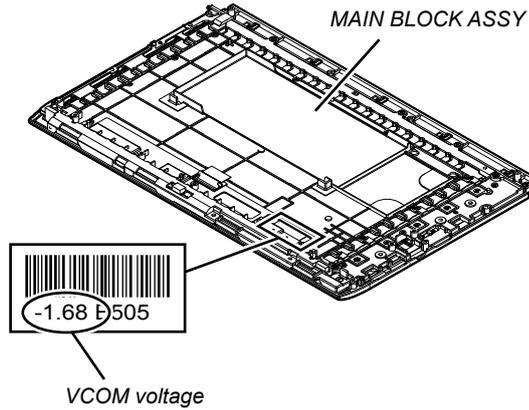
20. Write VCOM

In this mode, the VCOM voltage can be rewritten. The VCOM voltage for INK INDICATOR 7inch ELEMENT varies for each INK INDICATOR 7inch ELEMENT. When replacing the complete MAIN board or MAIN BLOCK ASSY (including INK INDICATOR 7inch ELEMENT) you need to rewrite the VCOM voltage.

Procedure:

1. Confirm the VCOM voltage for INK INDICATOR 7inch (L) ELEMENT referring to the figure below.

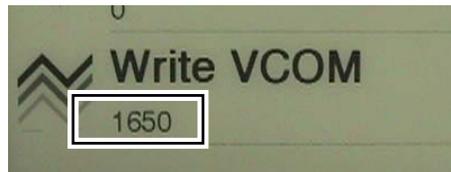
Note: The VCOM voltage disappears when the MAIN board is assembled. Record the VCOM voltage in the memo etc. before assembling the MAIN board.



2. Make the text file, and write the VCOM voltage confirmed in step 1. The VCOM voltage is described by the unit of mV that omits minus (Write “1680” when it is printed on the label as “-1.68 V”). Then, change the file name to “Vcom.dt”.
3. Make the following folder under the “READER” drive.

/Sony Reader/software/data

4. Copy the file made in step 2 under the folder made in step 3.
5. The current VCOM voltage displayed at the lower side of “Write VCOM” on test mode menu 2 (Example: “-1.650 V” in the figure below).

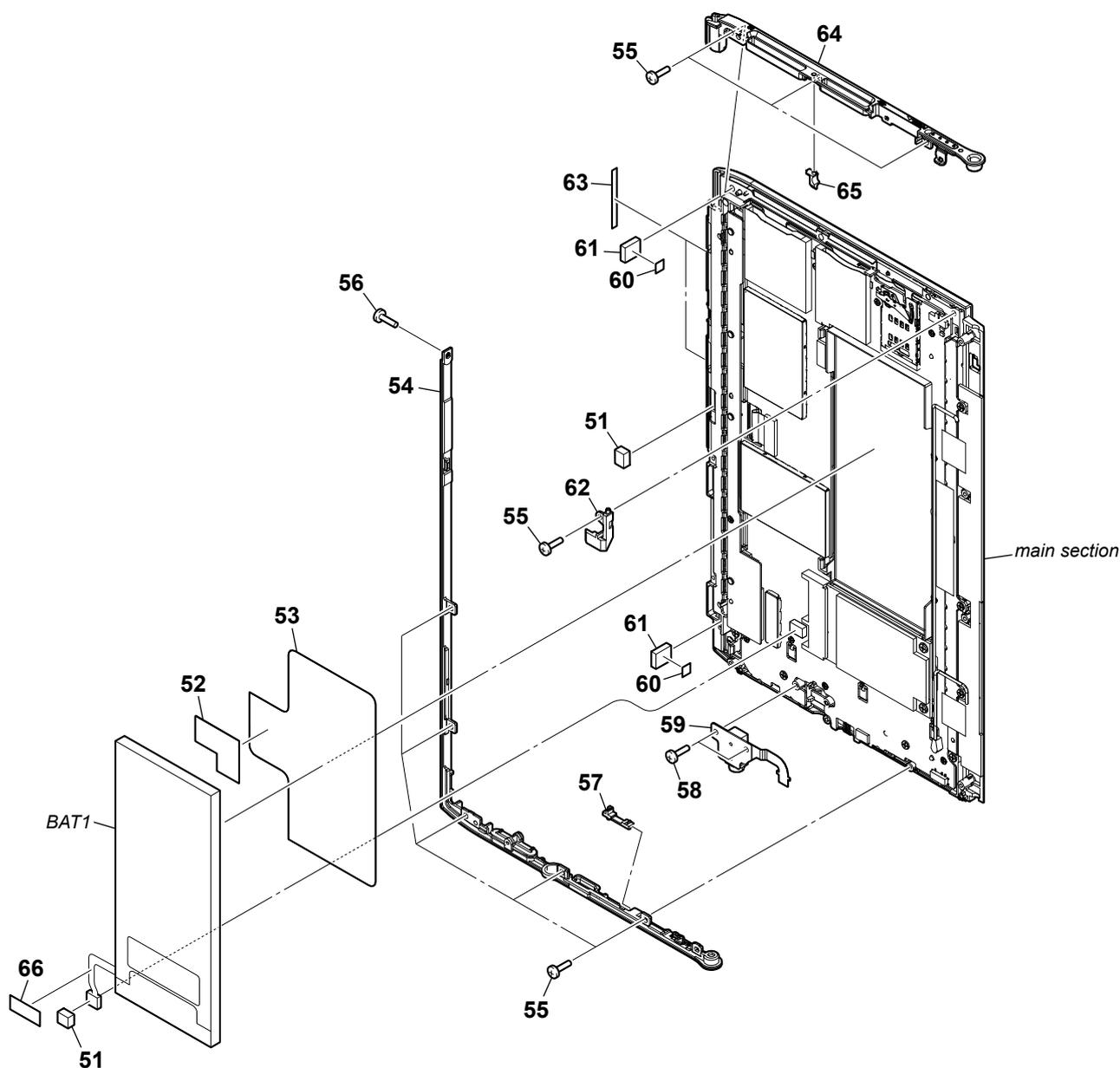


(Example of displaying current VCOM voltage)

6. Touch the “Write VCOM” in the test mode menu page 2, it starts rewriting the VCOM voltage.
7. Confirm the VCOM voltage has been updated.

4-2. ORNAMENT SECTION

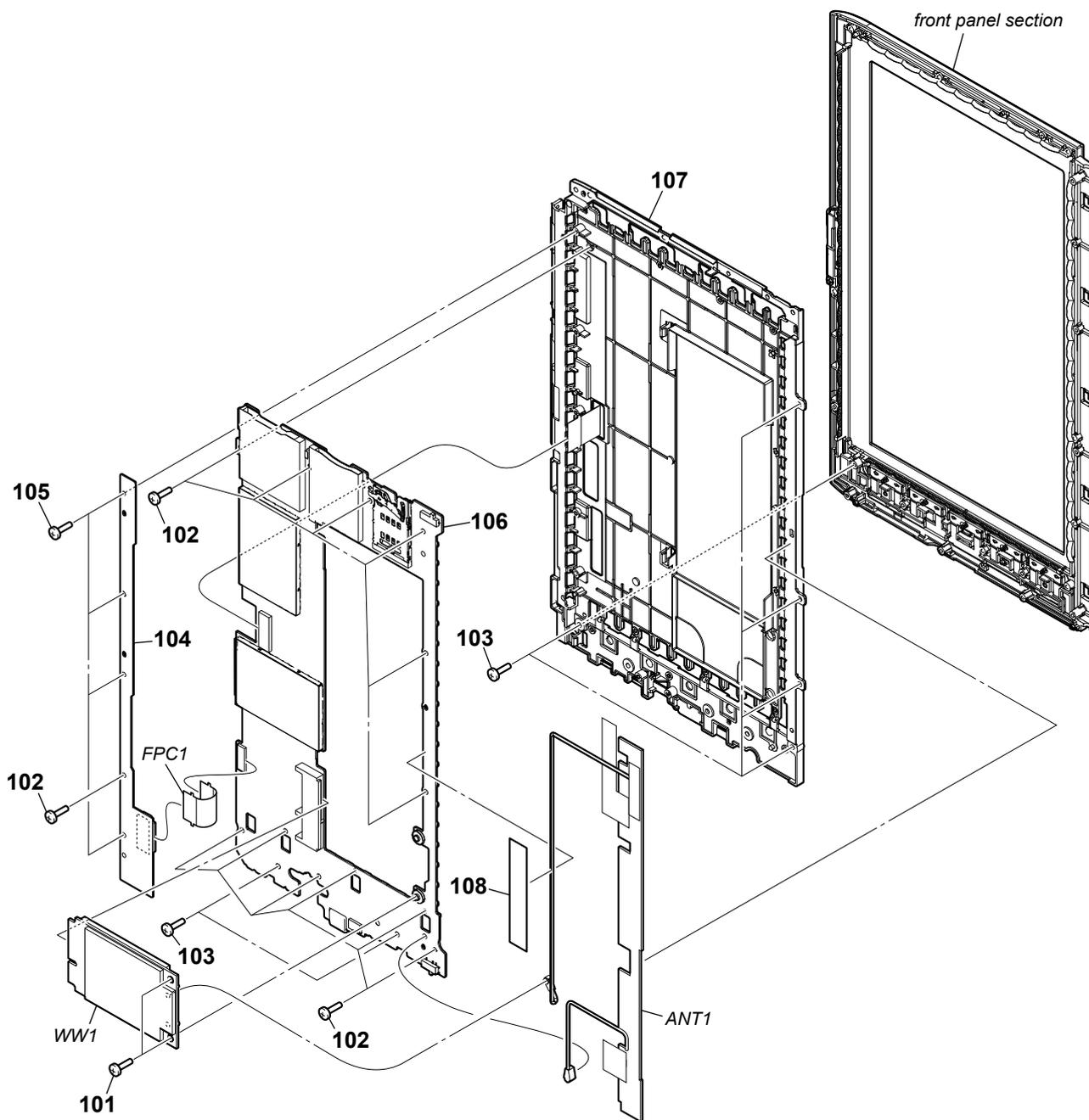
- Rear side view



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	4-259-711-01	CUSHION (STYLUS)		60	4-155-226-01	SHEET (MAGNET)	
52	4-259-712-01	COPPER FOIL (IC)		61	4-196-614-01	MAGNET 6X7	
53	4-199-844-01	SHEET (BATTERY)		62	4-196-610-01	LIGHT GUIDE POWER	
54	X-2560-971-1	ORNAMENT (B) (ASSY)		63	4-198-971-01	SHEET (ORNAMENT), ADHESIVE	
55	3-078-890-11	SCREW, TAPPING		64	X-2560-970-1	ORNAMENT (T) ASSY	
56	4-262-516-11	SHAFT M1.4X1.8 (H=0.2)		65	4-196-609-01	LIGHT GUIDE MSSD	
57	4-196-613-01	KEY RESET		66	4-156-278-01	SHEET (CABLE)	
58	4-262-517-01	SHAFT M1.4X2.5 (B TITE)		BAT1	A-1792-542-A	BATTERY BLOCK ASSY	
59	A-1792-541-A	HP BOARD, COMPLETE					

4-3. MAIN SECTION

- Rear side view

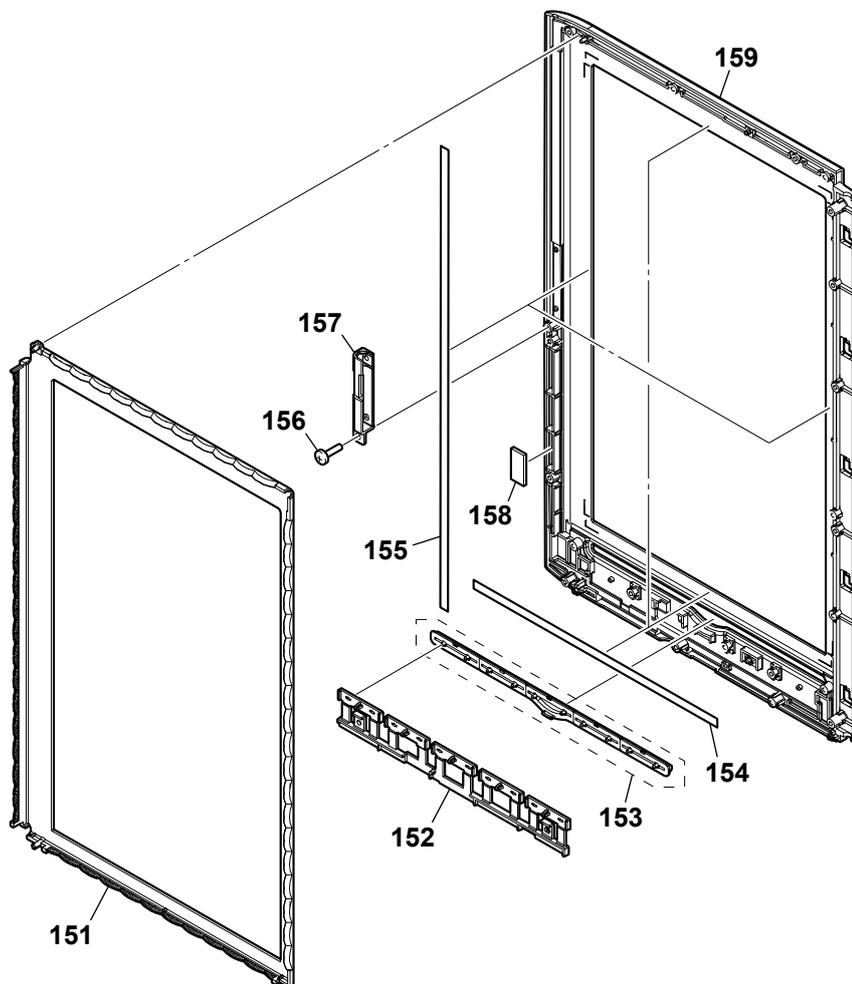


Note: When the MAIN board or WWAN antenna is removed, refer to “Wi-Fi OPERATION CHECK” (page 3).

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
101	2-630-005-21	SCREW (M2), NEW TRUSTER, P2		108	4-199-845-01	SHEET (ANTENNA)	
102	4-262-516-11	SHAFT M1.4X1.8 (H=0.2)		ANT1	1-754-728-11	ANTENNA, WWAN	
103	3-078-890-11	SCREW, TAPPING		FPC1	1-882-791-11	FL5033 FLEXIBLE BOARD	
104	A-1792-764-A	LED BOARD, COMPLETE		WW1	X-2560-949-1	CARD ASSY, (FOX MINIATURE) (Gobi 2000) (for SERVICE)	
105	4-262-517-01	SHAFT M1.4X2.5 (B TITE)					
106	X-2560-948-1	MAIN BOARD, COMPLETE (for SERVICE)					
107	A-1792-537-A	MAIN BLOCK ASSY (Including INK INDICATOR 7inch ELEMENT)					

4-4. FRONT PANEL SECTION

- Rear side view



Note: KEY TOP (Ref. No. 153) included each button by two pairs.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
151	4-196-604-01	LIGHT GUIDE		156	3-078-890-11	SCREW, TAPPING	
152	4-196-603-01	HINJI KEY		157	4-196-605-01	GUIDE STYLUS	
153	4-196-597-11	KEY TOP (1 set)		158	4-259-710-01	GASKET (FRONT)	
154	4-155-094-01	CUSHION TP (UPPER)		159	4-196-596-11	PANEL FRONT	
155	4-155-095-01	CUSHION TP (SIDE)					

SECTION 5 ACCESSORIES

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>
△	1-489-298-12	AC ADAPTOR (PRSA-AC1)	
	1-838-503-21	CABLE, USB (MICRO B) (USB cable)	
	4-257-320-11	QUICK START GUIDE (ENGLISH)	
	X-2560-950-1	CARD ASSY, SIM (for SERVICE)	

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

Les composants identifiés par une marque △ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

