

INC

VMA10003-R. 3727. A

作成承認印

配布許可印



Nikon

COOLPIX L15

VMA10003

REPAIR MANUAL

Nikon | NIKON CORPORATION
Tokyo, Japan

Copyright © 2007 by Nikon Corporation.

All Rights Reserved.

無断転載を禁ず!!

Contents

Disassembly

Warning	D1
External screw	D2
Removal of Rear Cover Unit	D3
Discharge of Condenser Unit	D4
Rear cover Unit	D4
TFT LCD Unit	D5
Removal of Front Cover Unit	D6
Front Cover Unit	D6-D7
Unsoldering of Main PCB Unit	D7
SB PCB Unit	D8-D9
Removal of Chassis Unit and Main PCB Unit	D10
Lens Unit	D11
Chassis Unit	D12

Assembly

Chassis Unit	A1-A2
Lens Unit	A2-A3
Mounting of LCD Main PCB Unit on Chassis Unit	A4
Flash Unit	A5
SB PCB Unit	A5-A8
Soldering of Main PCB Unit	A9
TFT LCD Unit	A10
Battery Cover Unit	A11
Front Cover Unit	A11
Assembly of Front Cover Unit	A12
Rear Cover Unit	A12
Assembly of Rear Cover Unit	A13
External screw	A14

Adjustment	A15 - A42
------------	-----------


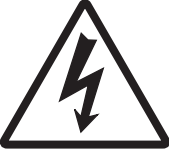
Circuit diagram	E1-E15
-----------------	--------

FUSE Arrangement (MAIN BOARD UNIT)	E16
------------------------------------	-----

Inspection standards	R1 - R6
----------------------	---------

Tool List	T1 - T3
-----------	---------

DISASSEMBLY

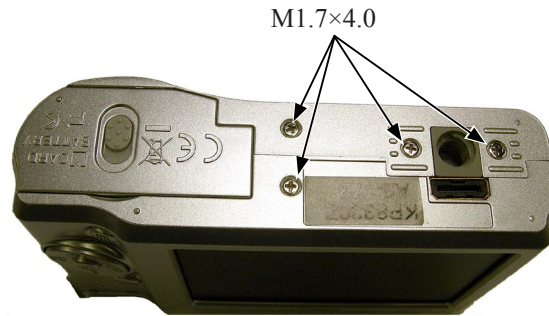
 WARNING	
	<ul style="list-style-type: none">● There are high voltage parts inside. Be careful of this electric shock, when you remove the cover.● You must discharge the main condenser according to the instruction of this repair manual after you remove the cover.

Points to notice for Lead-free solder products
<ul style="list-style-type: none">▪ Lead-free solder is used for this product.▪ For soldering work, the special solder and soldering iron are required.▪ Do NOT mix up lead-free solder with traditional solder.▪ Use the special soldering iron respectively for lead-free solder and lead solder. They cannot be used in common.

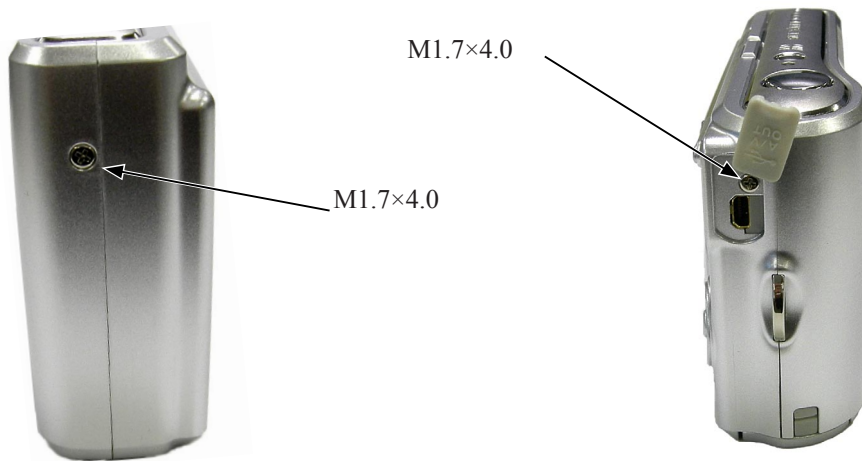
- Note :
- ① Be sure to remove the SD memory card and batteries before disassembly.
 - ② When disassembling, make sure to memorize the processing state of wires, screws to be fixed and their types, etc.
 - ③ Because electrical parts are easily damaged by static electricity, make sure that you are well earthed/grounded.

External screw

- Take out four screws (M1.7×4.0).



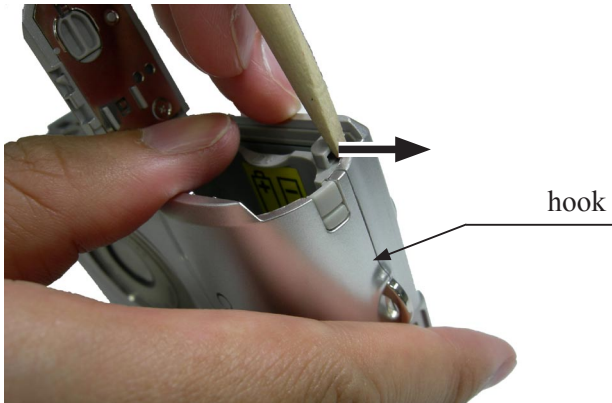
- Take out two screws (M1.7×4.0).



Removal of Rear Cover Unit

- Unhook each and remove the rear cover unit.

① Push in the direction of the arrow, and unhook.



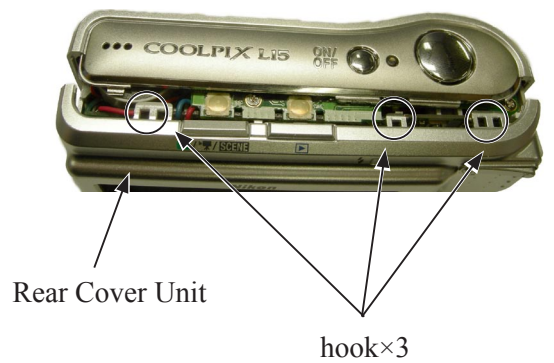
② Widen the gap by hand by pulling toward the below directions.



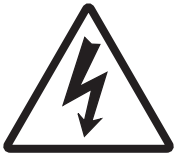
③ Loosen the rear cover unit in numeric order.



④ Remove the rear cover by unhooking it at three places.



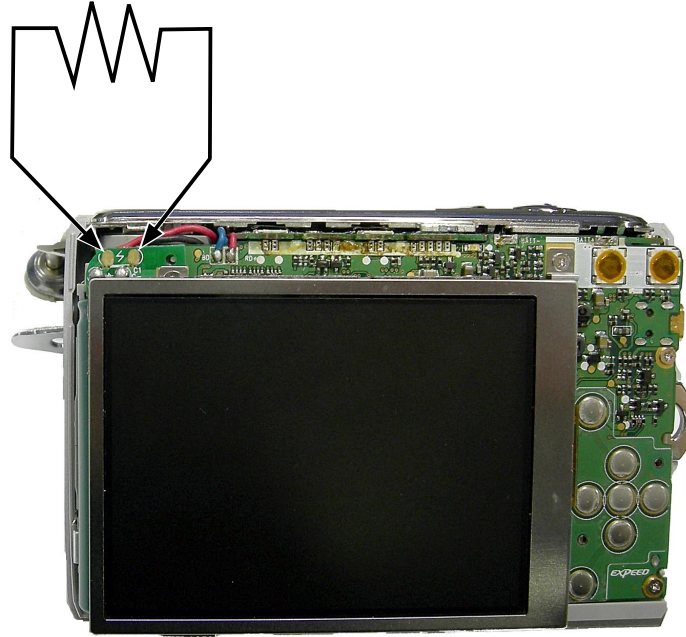
⚠ WARNING



- There are high voltage parts inside. Be careful of this electric shock, when you remove the cover.
- You must discharge the main condenser according to the instruction of this repair manual after you remove the cover.

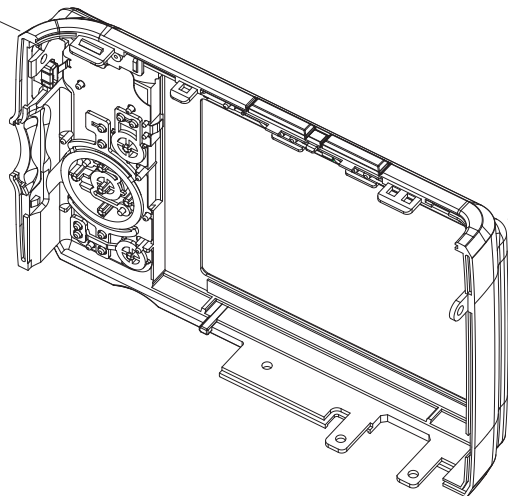
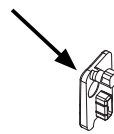
Discharge of Condenser Unit

2k Ω / 5W



Rear Cover Unit

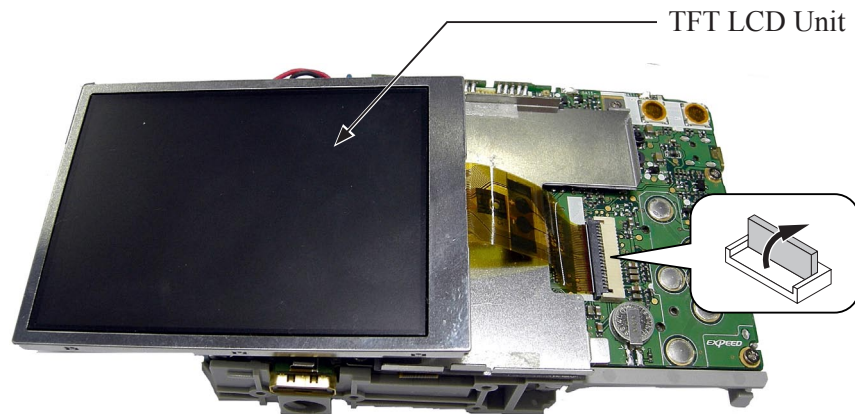
USB Cover



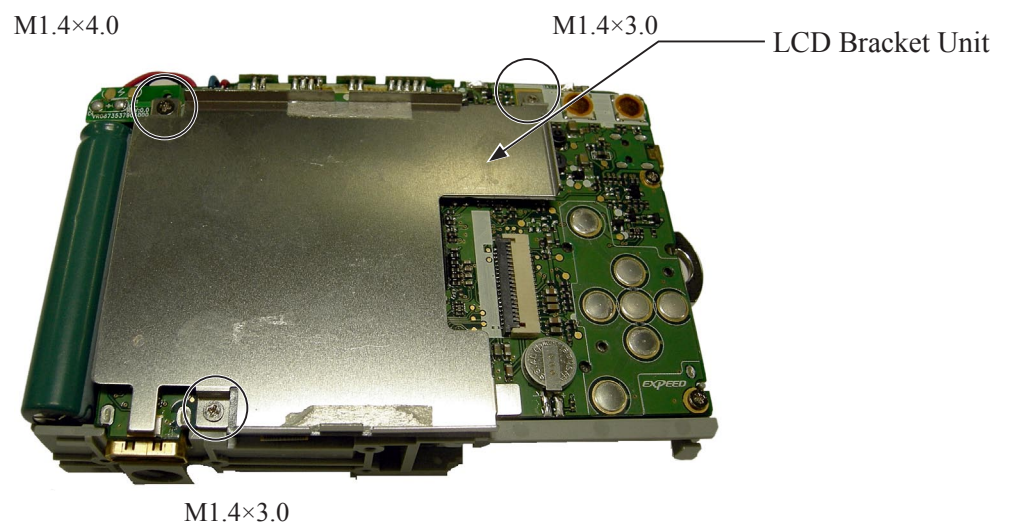
Rear cover unit

TFT LCD Unit

- Remove the TFT LCD unit, which is attached with the adhesive double-coated tape, from the LCD Bracket unit.
- Disconnect the connector.

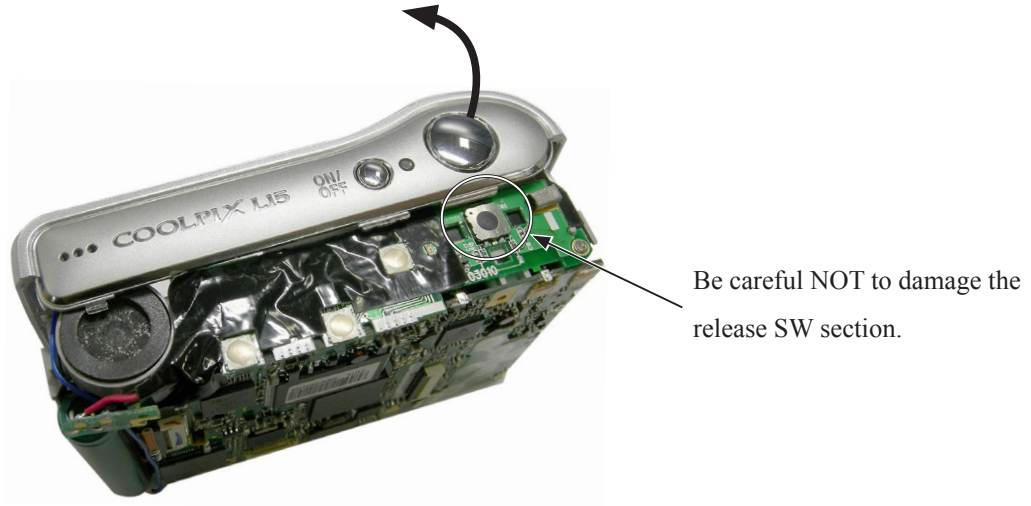


- Take out the screw (M1.4×4.0).
- Take out the two screws (M1.4×3.0).
- Remove the LCD bracket unit.

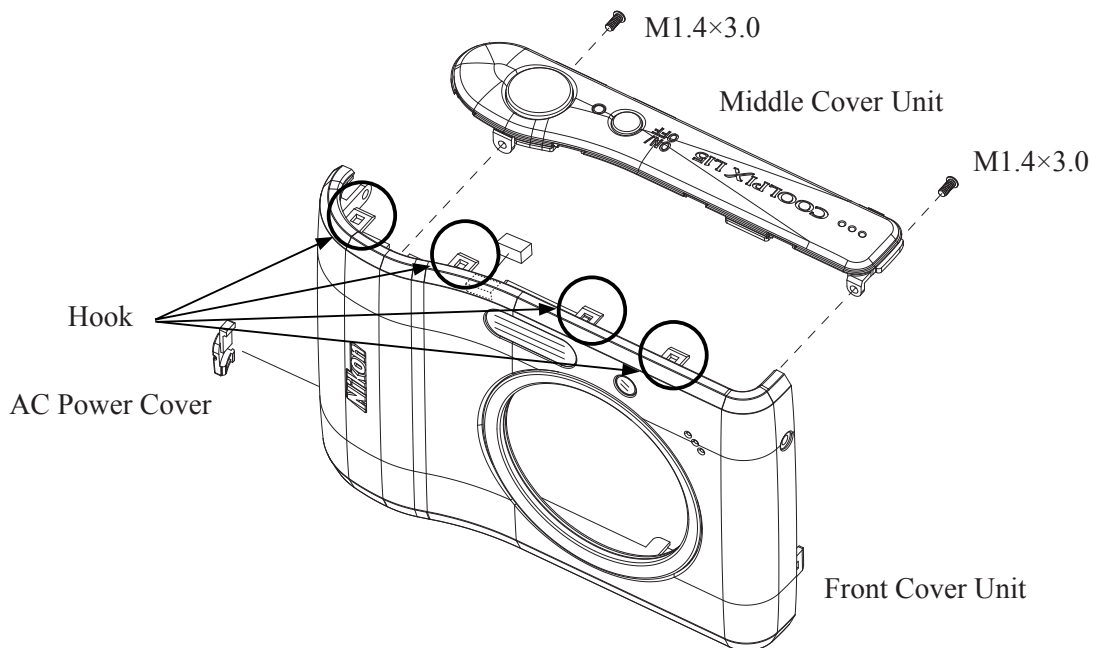


Removal of Front Cover Unit

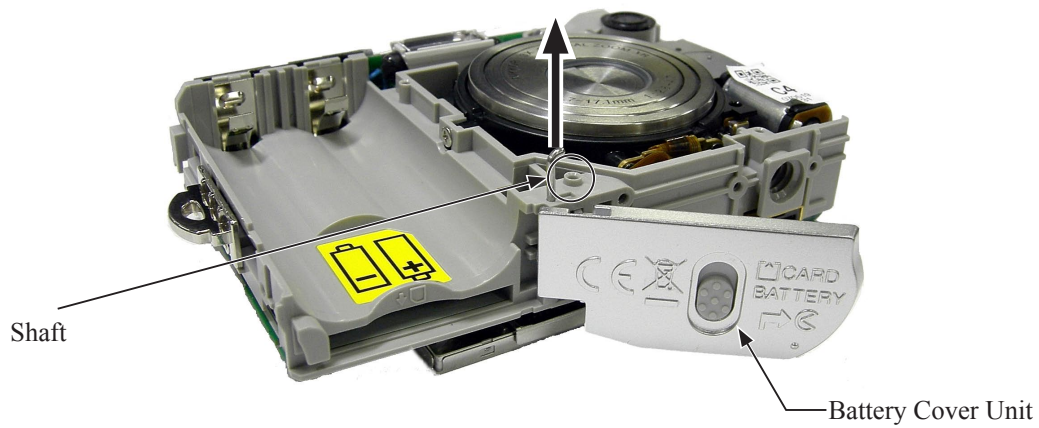
- While lifting the release area, remove the front cover unit.



Front Cover Unit

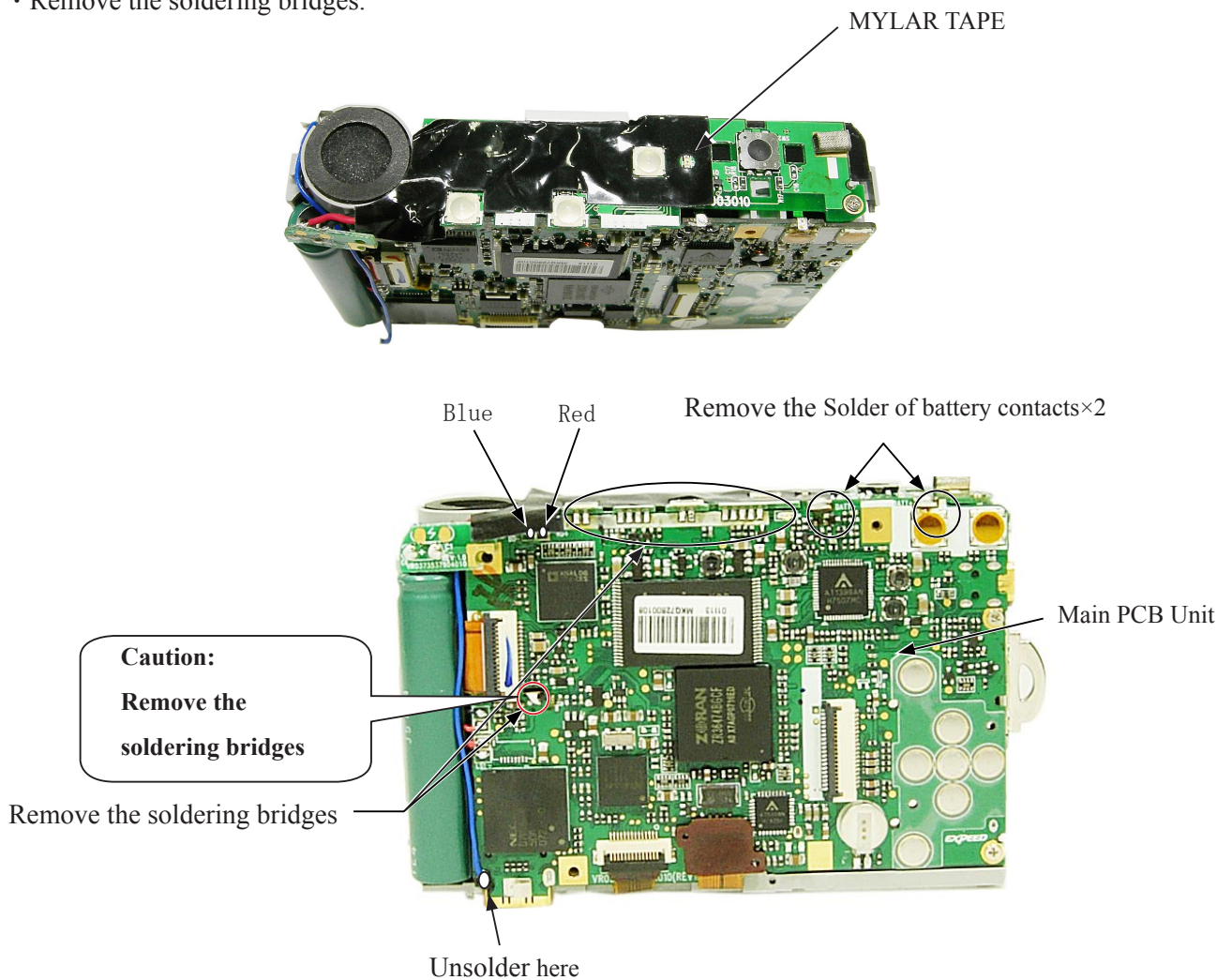


- Remove the shaft by pulling it in the direction of the arrow. (adhered by the screw lock)
- Remove the battery cover unit.



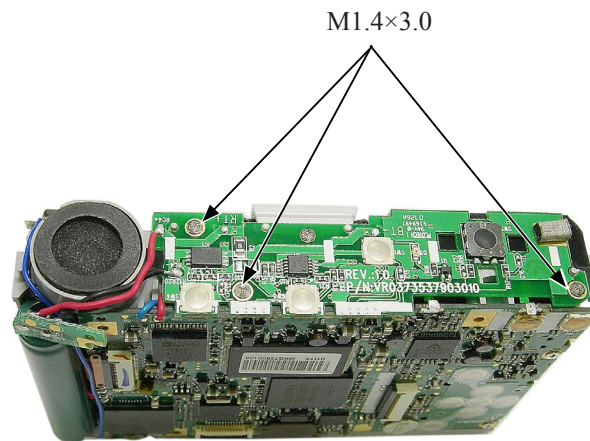
Unsoldering of Main PCB Unit

- Remove the mylar tape.
- Unsolder the LED(Blue and Red).
- Remove the soldering bridges.

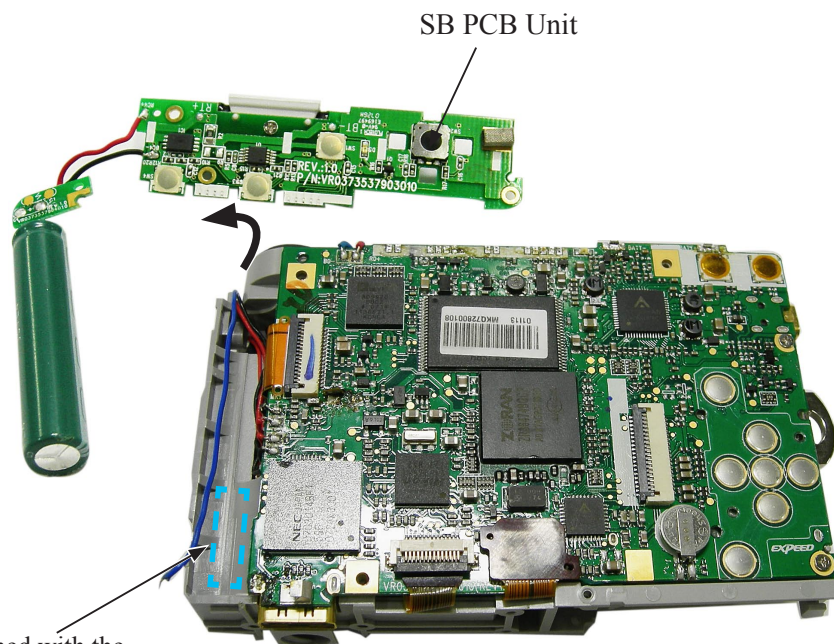


SB PCB Unit

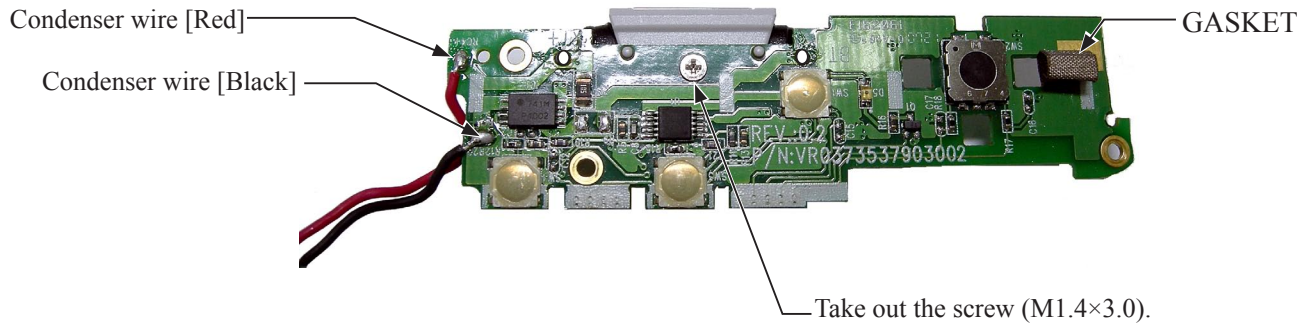
- Take out the three screws (M1.4×3.0).



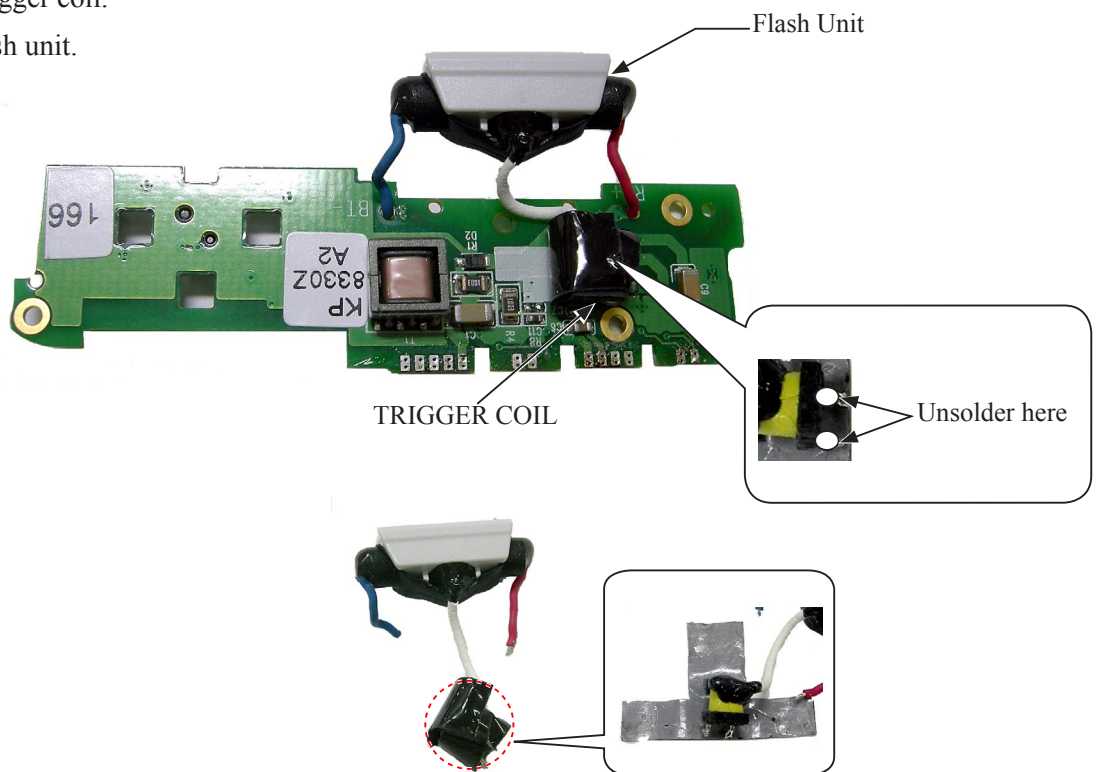
- Remove the SB PCB unit.



- Remove the gasket.
- Unsolder the condenser wires (Red and Black).
- Take off the screw (M1.4×3.0).

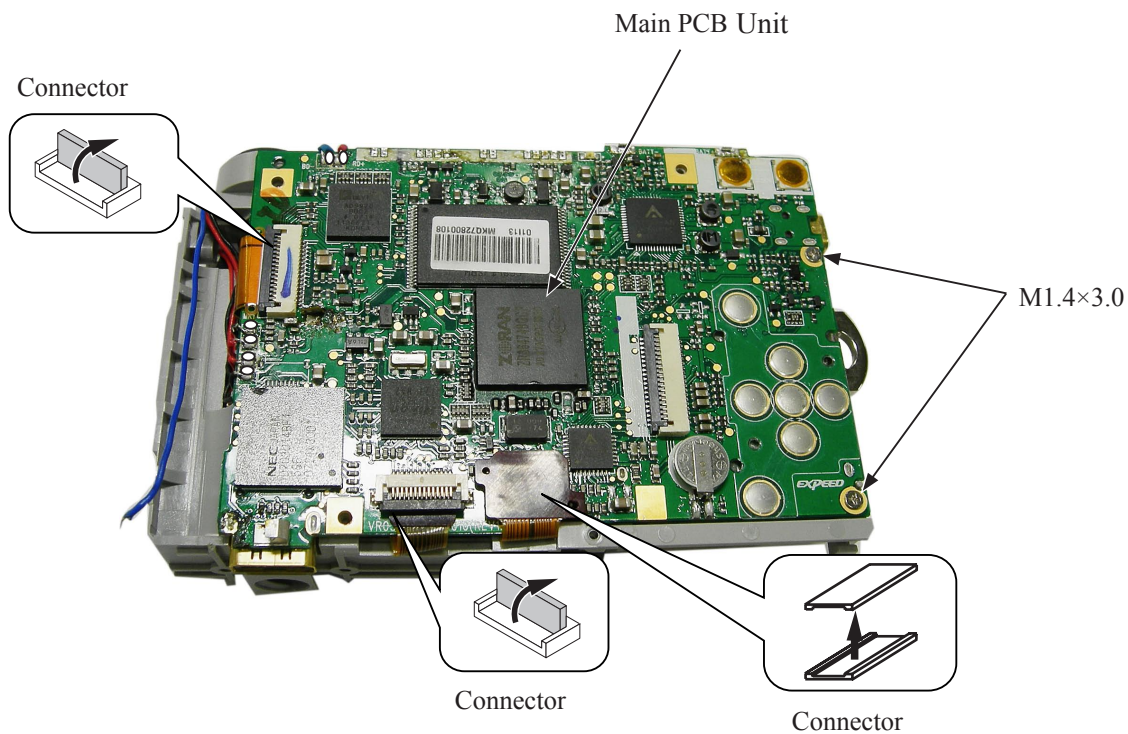


- Unsolder the wires (Blue and Red).
- Unsolder the trigger coil.
- Remove the flash unit.

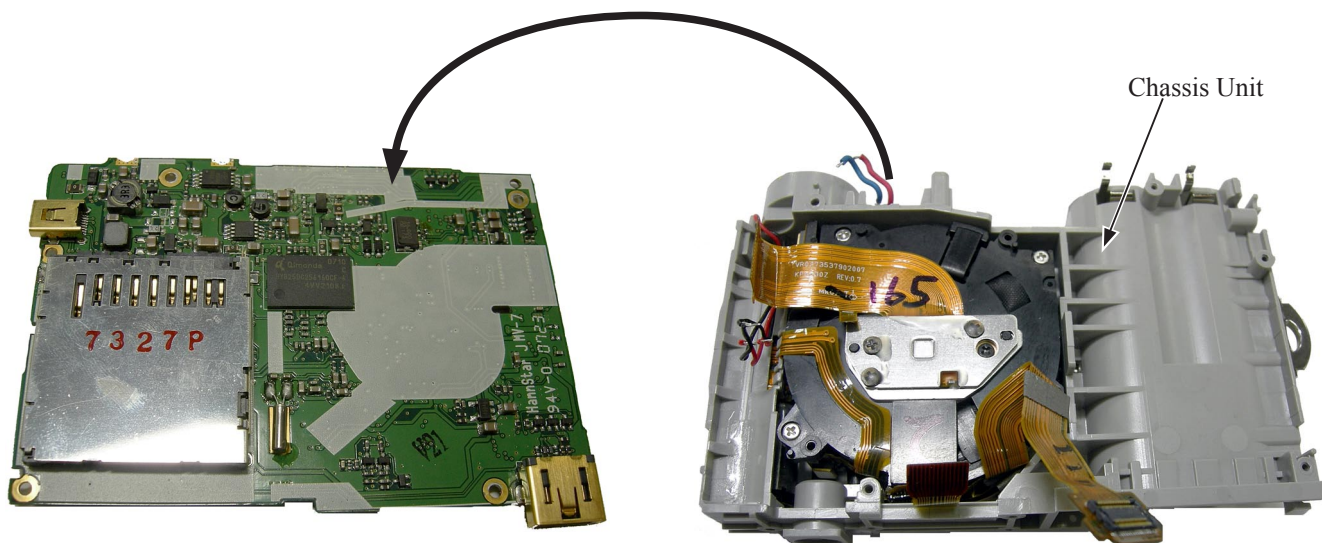


Removal of Chassis Unit and Main PCB Unit

- Disconnect the three connectors.
- Take out the two screws (M1.4×3.0).

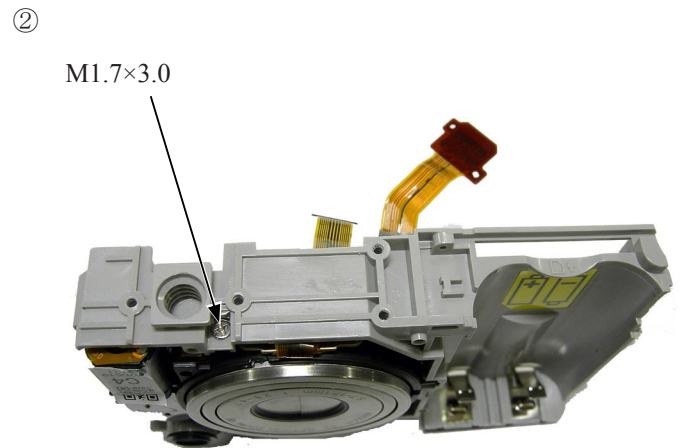
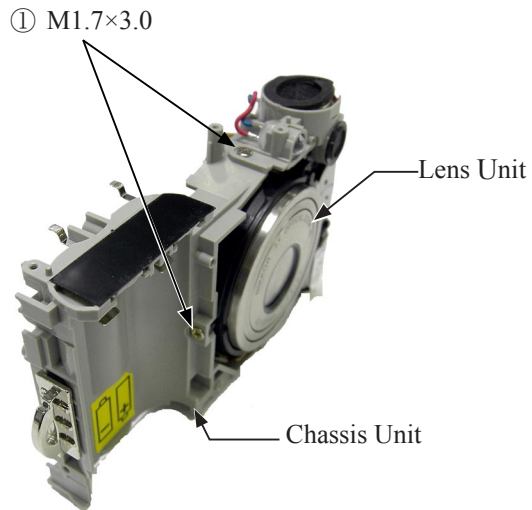


- Remove the main PCB unit.

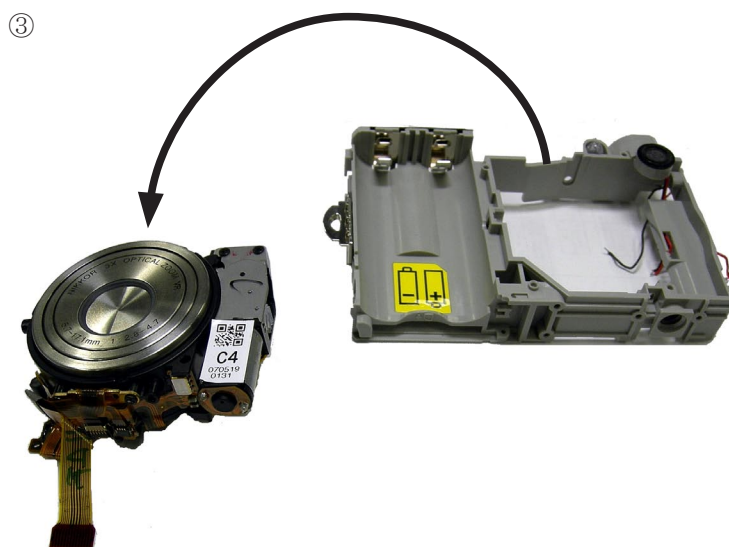


Lens Unit

- Take out the three screws (M1.7×3.0).
- Remove the lens unit from the chassis unit.

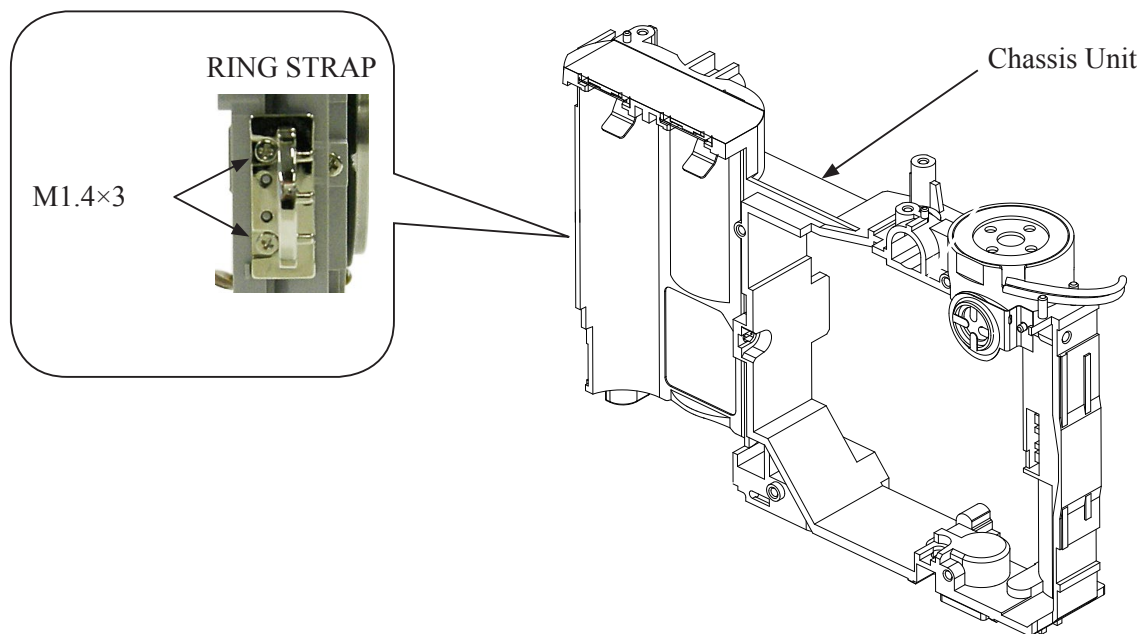


- Remove the lens unit.



Chassis Unit

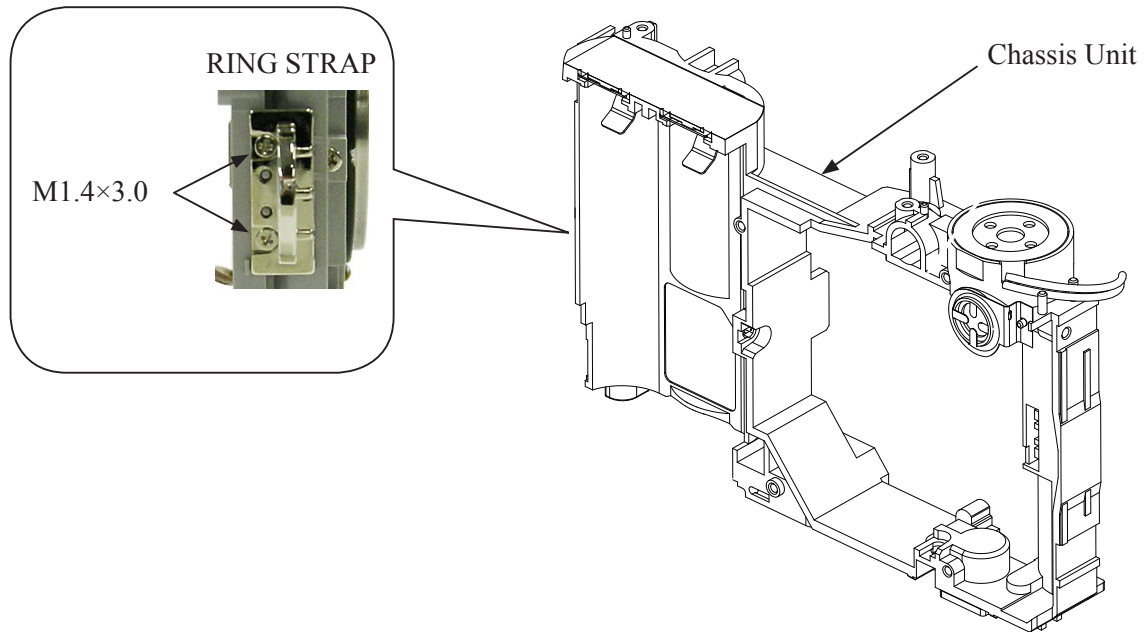
- Take out the two screws (M1.4×3.0).
- Remove the lens unit from the ring strap.



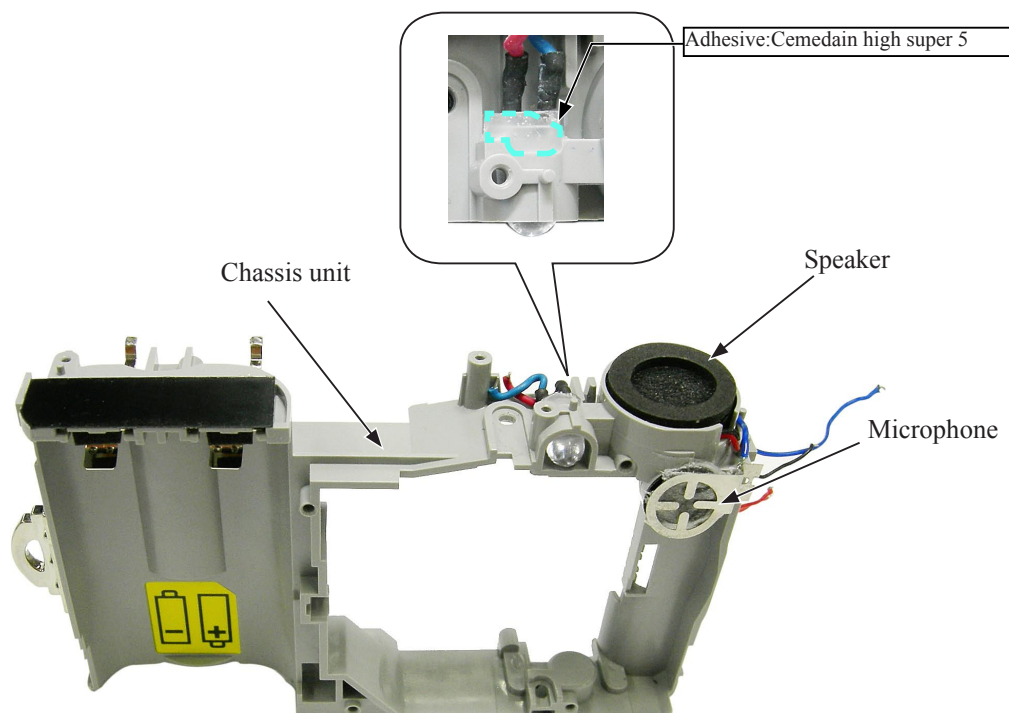
ASSEMBLY

Chassis Unit

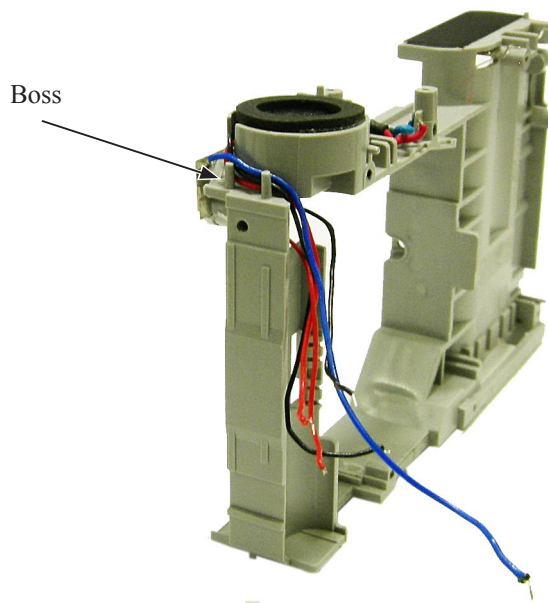
- The ring strap to the chassis unit.
- Tighten the two screws (M1.4×3.0).



- LED to the chassis unit.



- Arrange the wires behind the bosses along the speaker area.

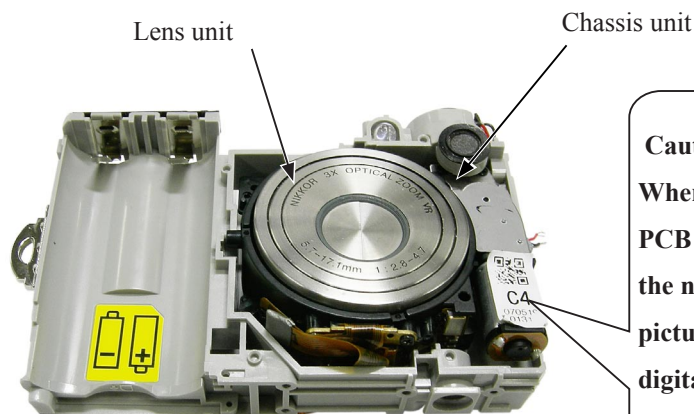


Lens unit

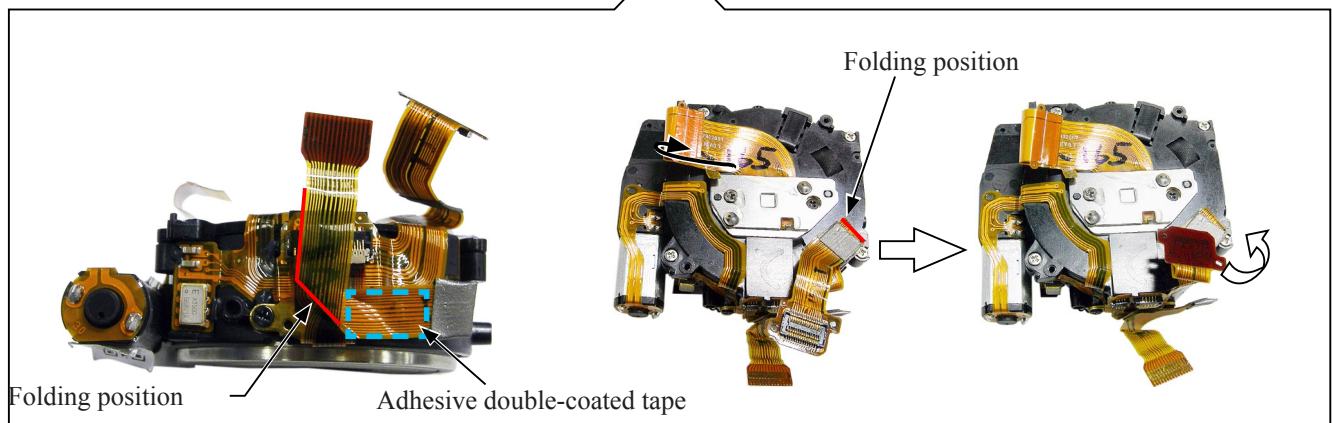
- Mount the lens unit on the chassis unit.

Caution:

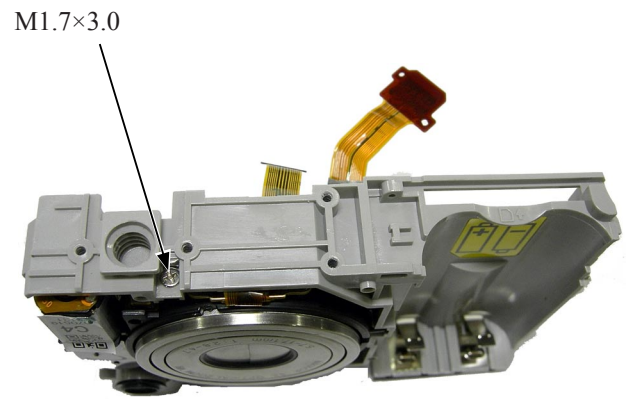
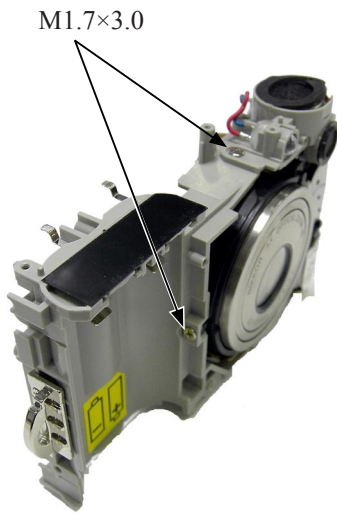
Because swing and tilt adjustments can NOT be made at service facilities, replace with the lens unit that has the CCD mounted when making replacements of the lens unit.



Caution:
When replacing the main PCB and/or replacing with the new lens unit, take a picture of QR code with the digital camera.

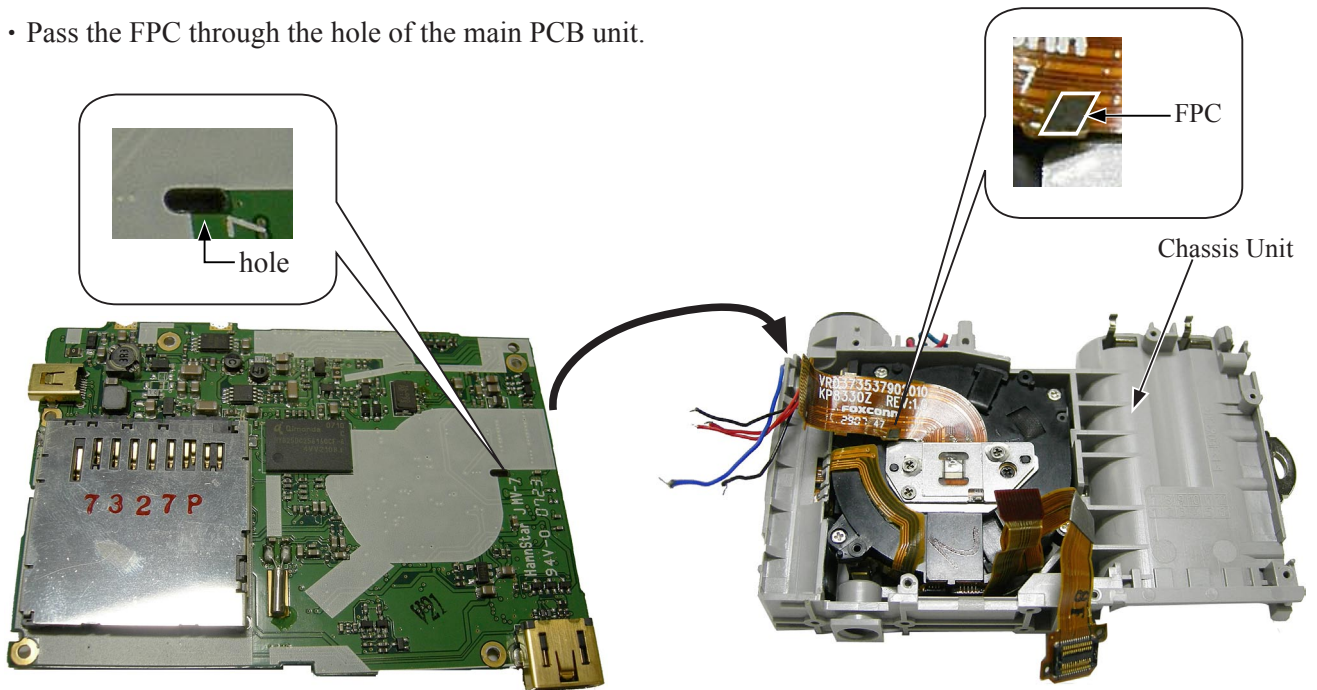


- Tighten the three screws (M1.7×3.0).

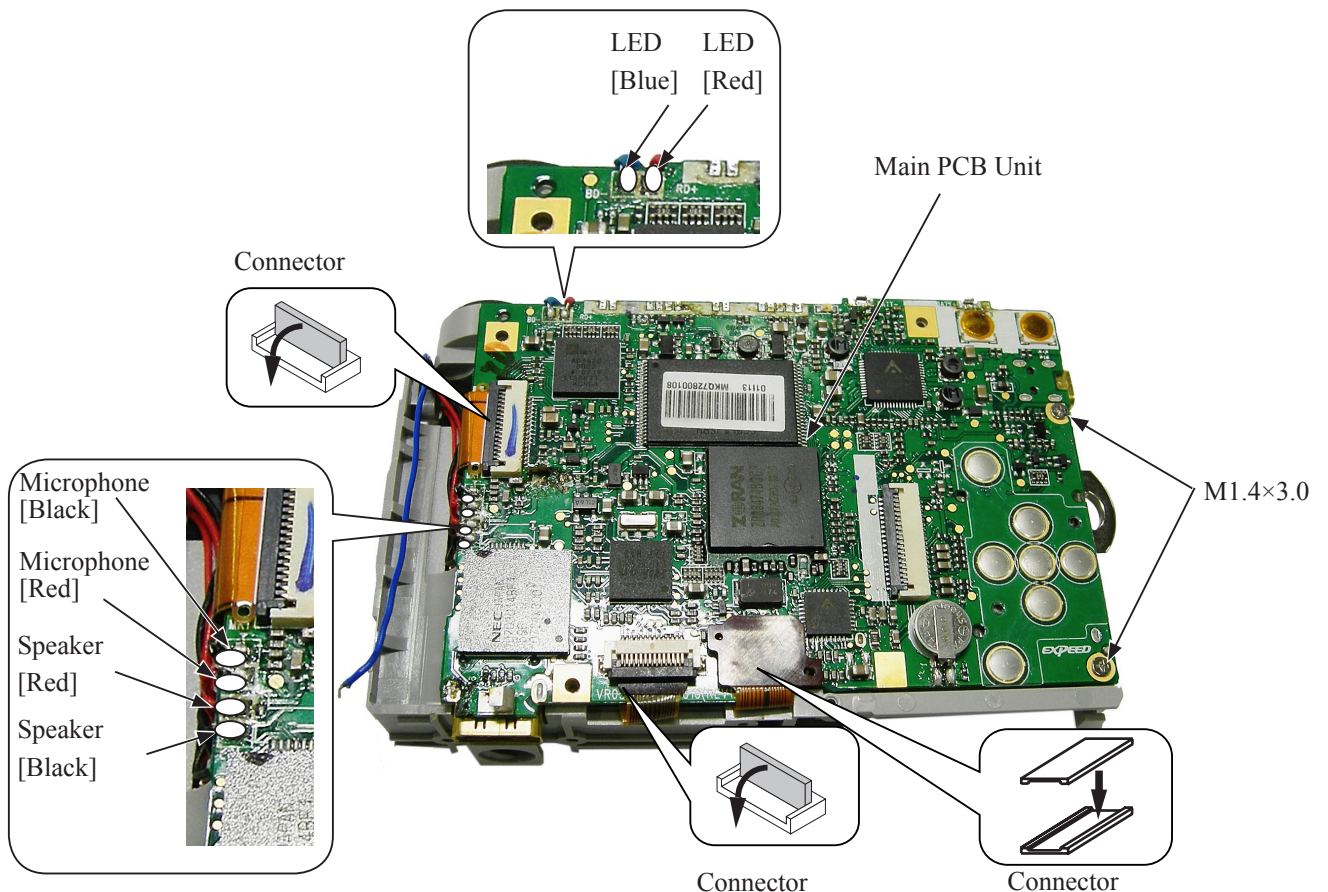


Mounting of LCD Main PCB Unit on chassis unit

- Mount the LCD Main PCB unit on the chassis unit.
- Pass the FPC through the hole of the main PCB unit.

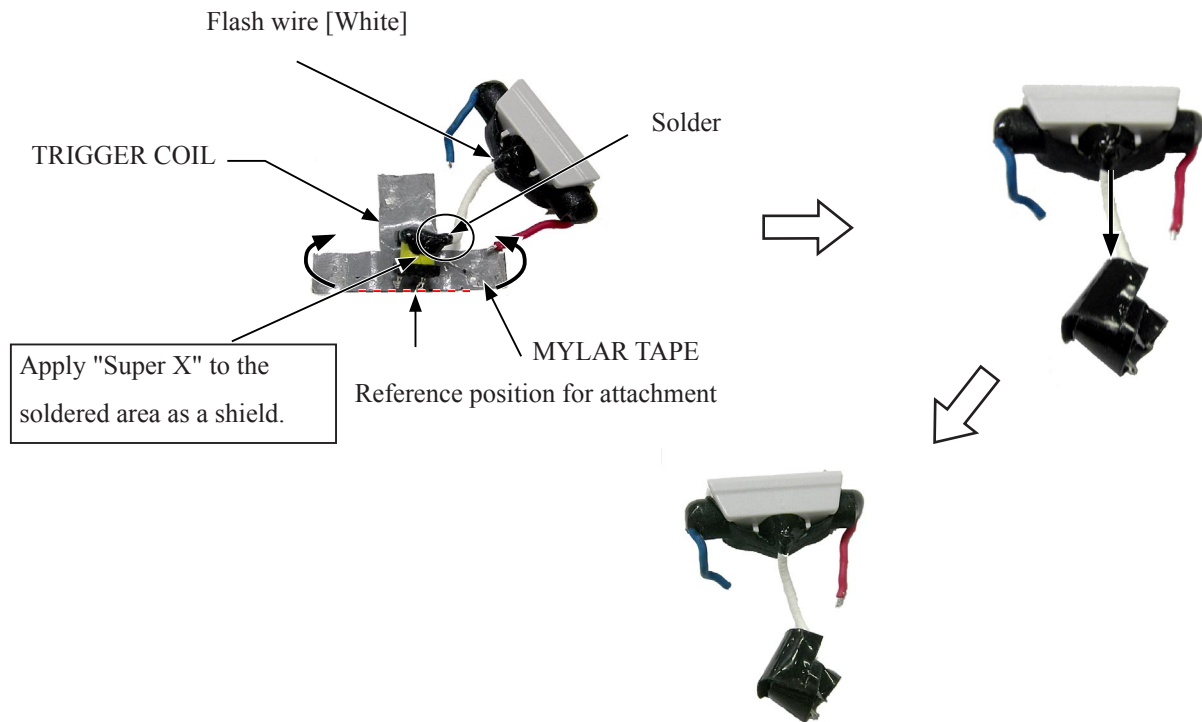


- Tighten the two screws (M1.4×3.0).
- Solder the speaker wires (Red and Black).
- Solder the microphone wires (Red and Black).
- Solder the LED wires (Red and Blue).
- Mount the three connector.

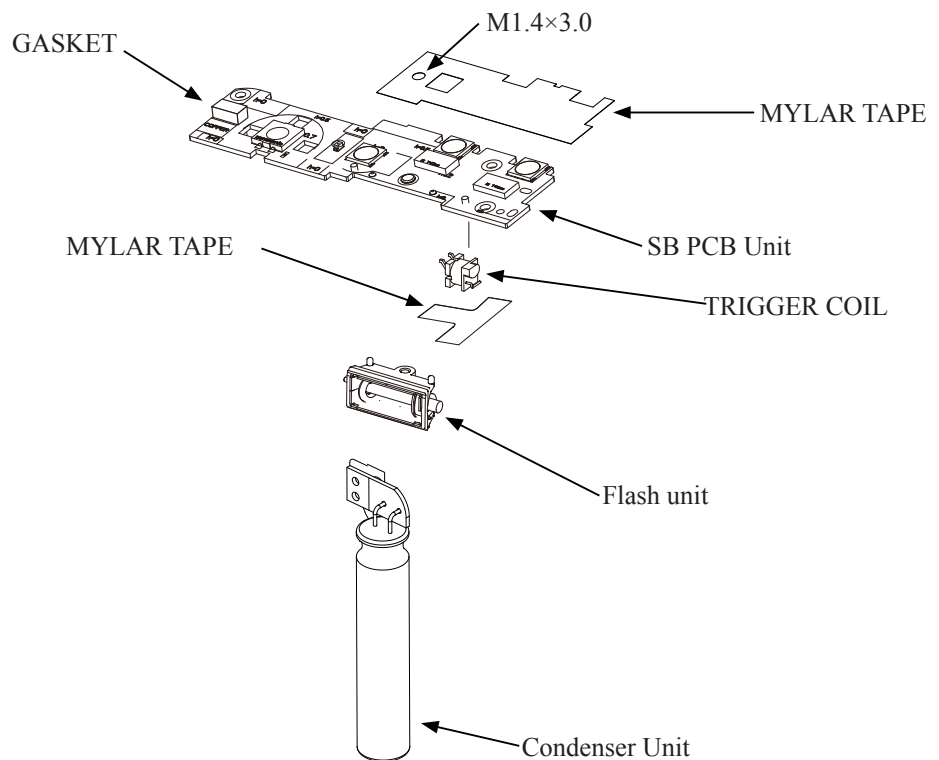


Flash Unit

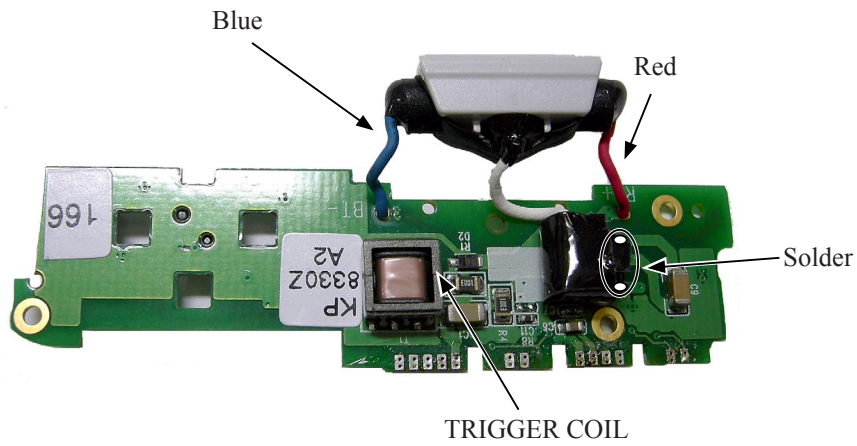
- Solder the white wire, which is connected from the flash unit, on the trigger coil.
(Apply "Super X" to the soldered area as a shield.)
- Attach the mylar tape to the trigger coil.



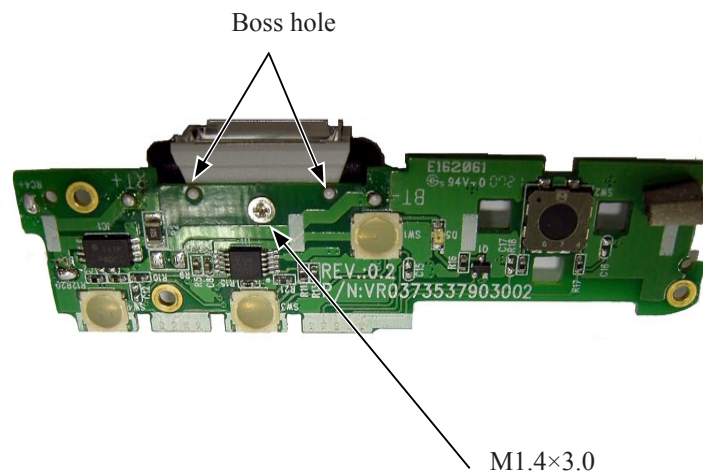
SB PCB Unit



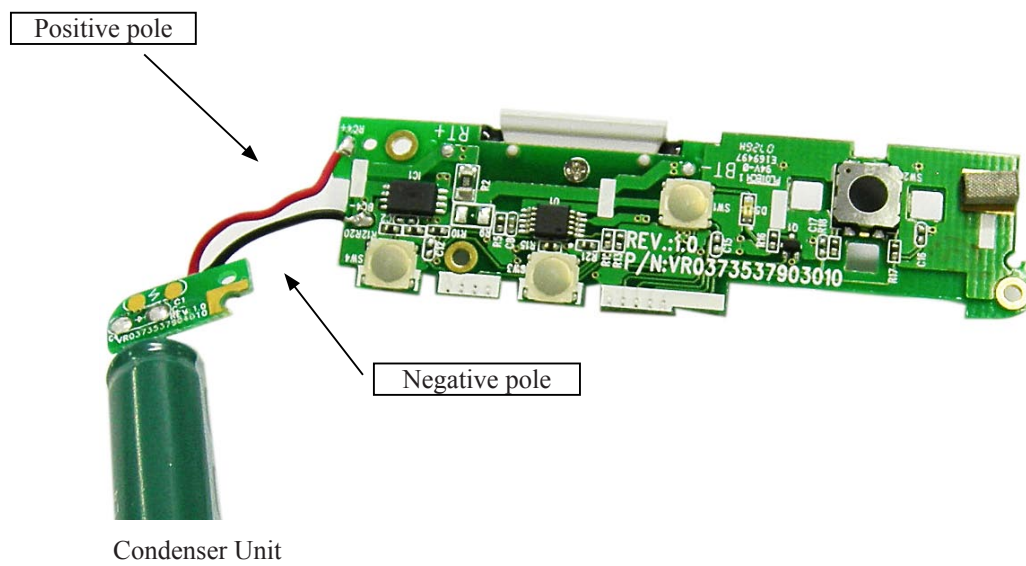
- Mount the trigger coil on the SB PCB unit, and solder it at two places.
- Solder the wires (Blue and Red) that are connected from the flash unit.



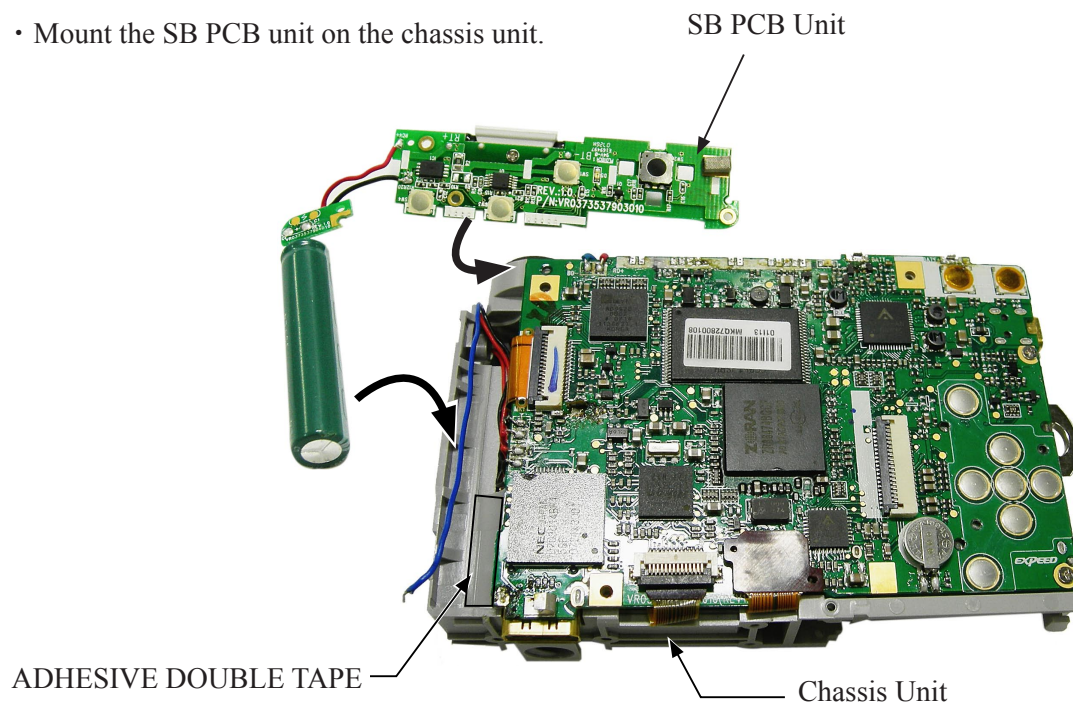
- Mount the flash unit on the SB PCB unit by fitting with the two boss holes.
- Tighten the screw (M1.4×3.0).



- Set the tips of the wires [red (positive pole) and black (negative pole)], which are connected from the condenser unit, to the SB PCB unit, then solder them.

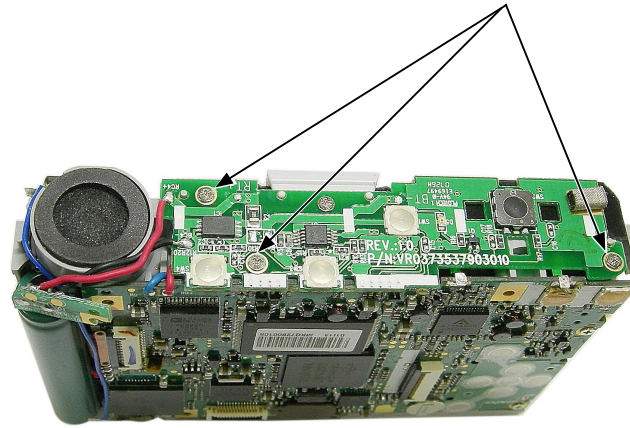


- Attach the adhesive double-coated tape to the chassis unit.
- Mount the condenser on the chassis unit.
- Mount the SB PCB unit on the chassis unit.



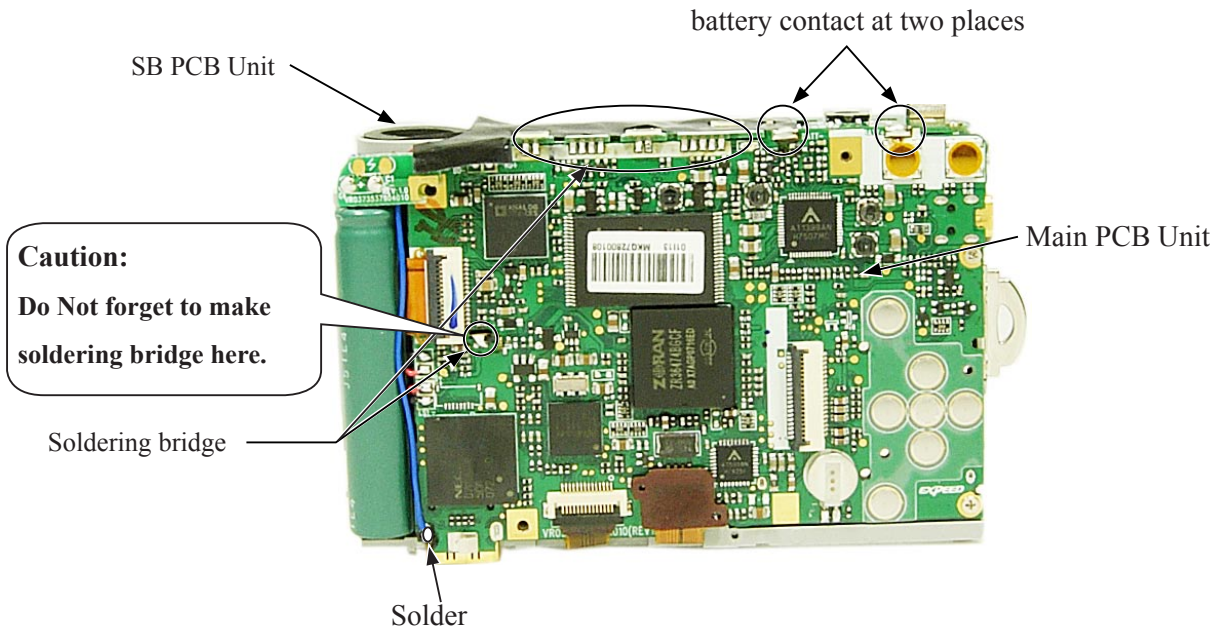
• Tighten the three screws (M1.4×3.0).

M1.4×3.0

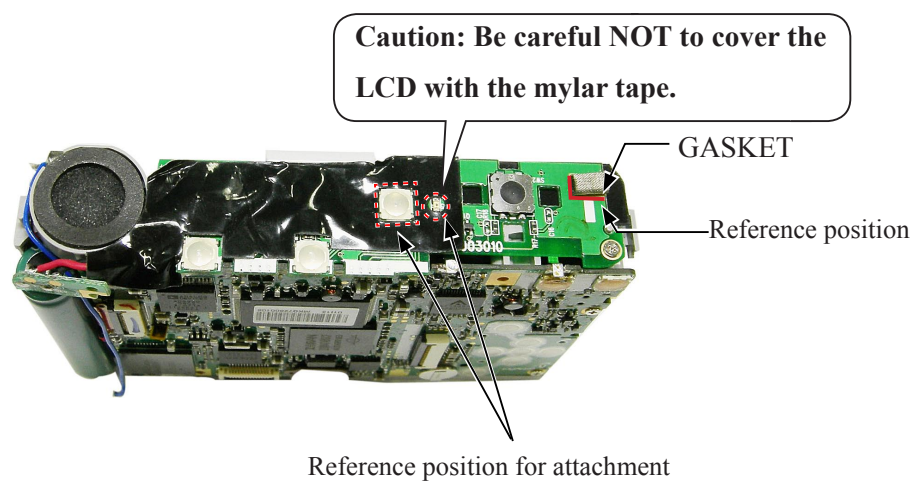


Soldering of Main PCB Unit

- Make soldering bridges between the main PCB unit and SB PCB unit.
- Solder the battery contact at two places.

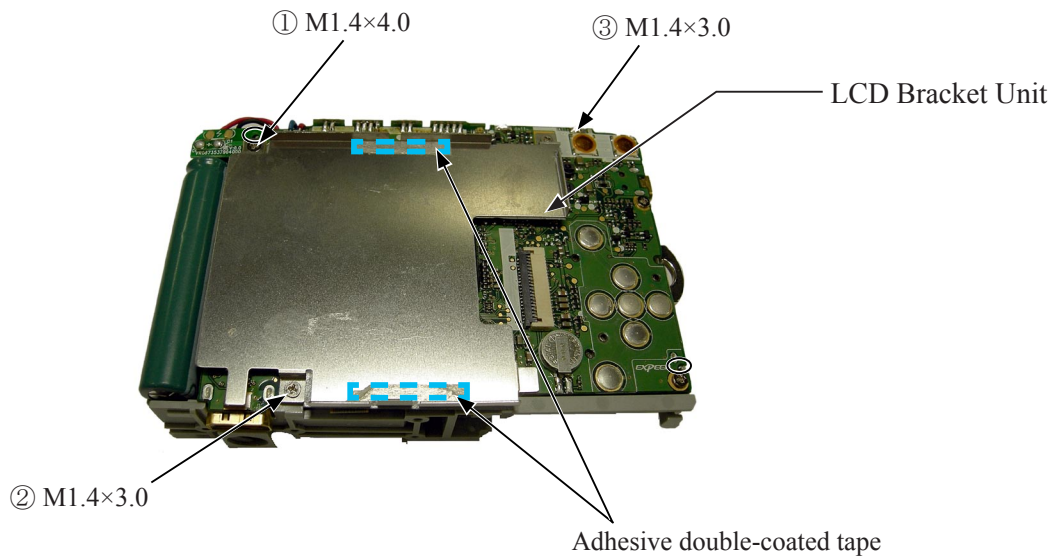


- Attach the mylar tape.

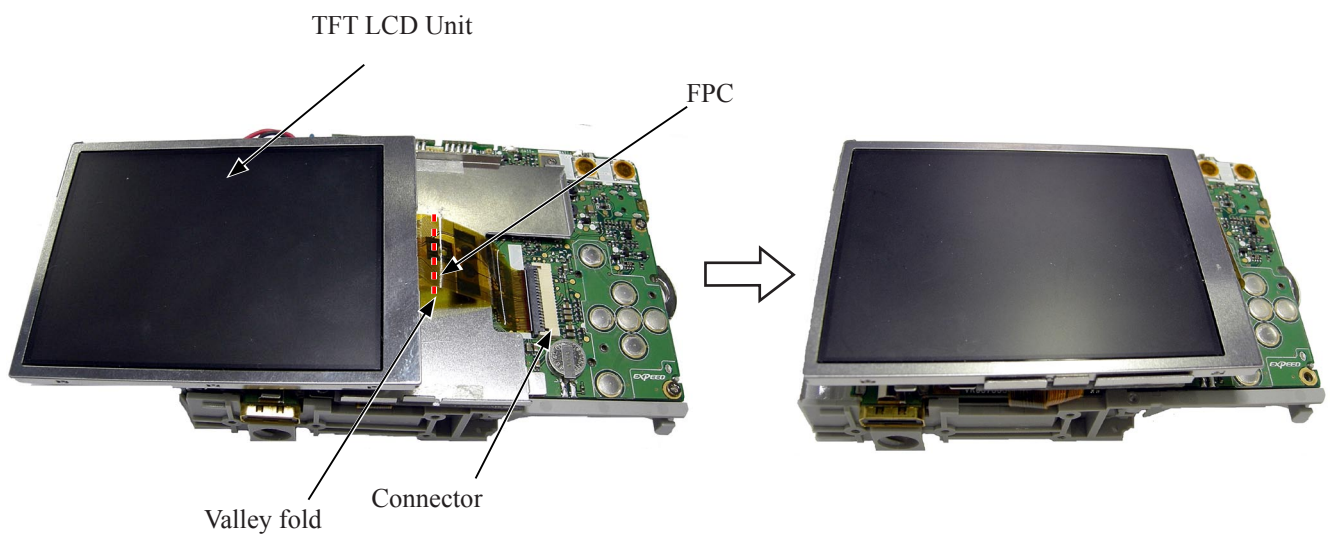


TFT LCD Unit

- Mount the LCD bracket unit.
- Tighten the screws [(M1.4×4.0) and (M1.4×3.0)] in numeric order as below.

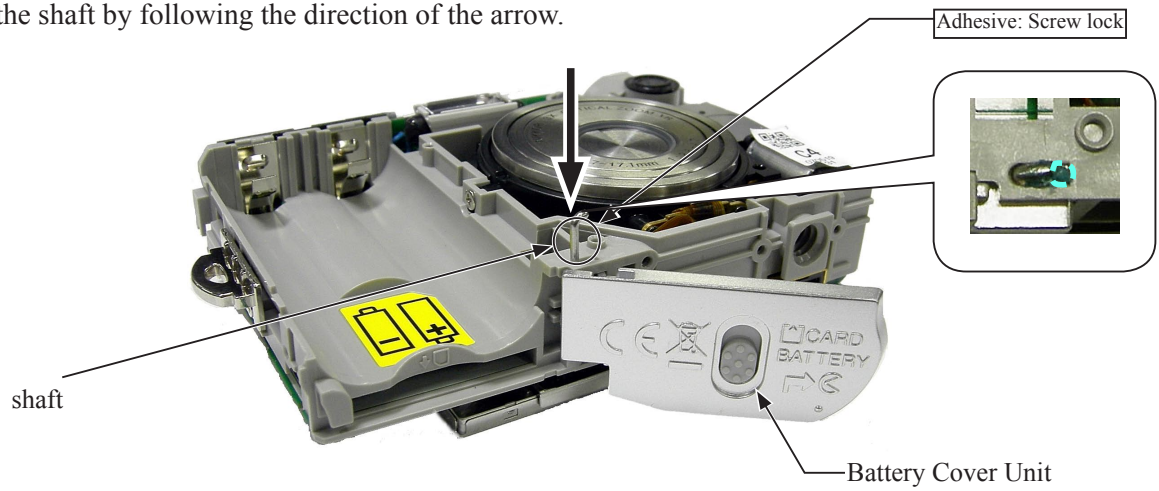


- Make a fold on the FPC.
- Connect the FPC to the connector.
- Mount the TFT LCD unit on the LCD bracket unit.



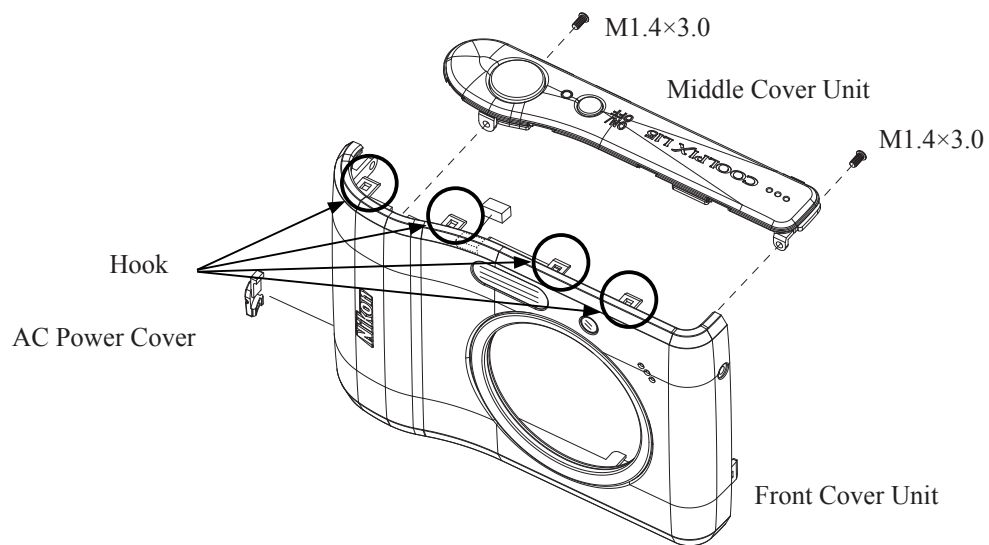
Battery Cover Unit

- Set the battery cover unit.
- Put the shaft by following the direction of the arrow.



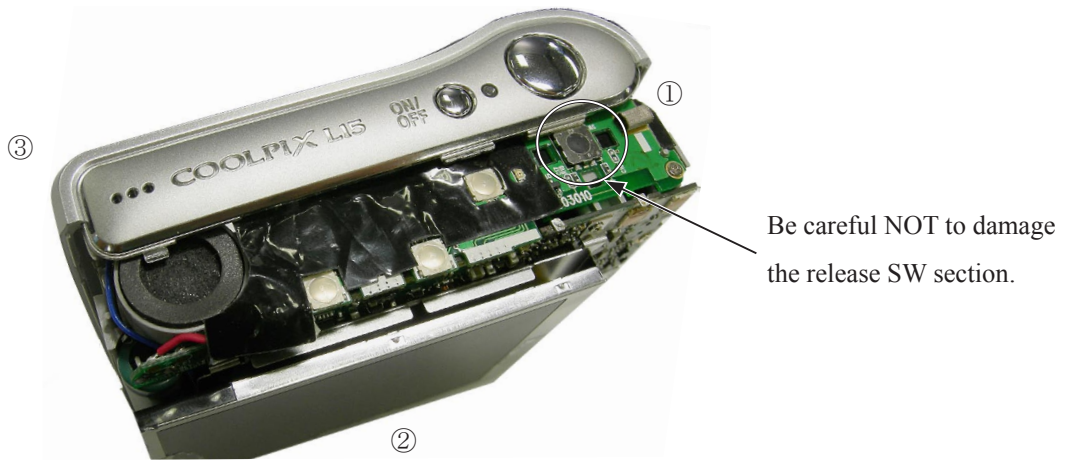
Front Cover Unit

- Tighten the two screws (M1.4×3.0).

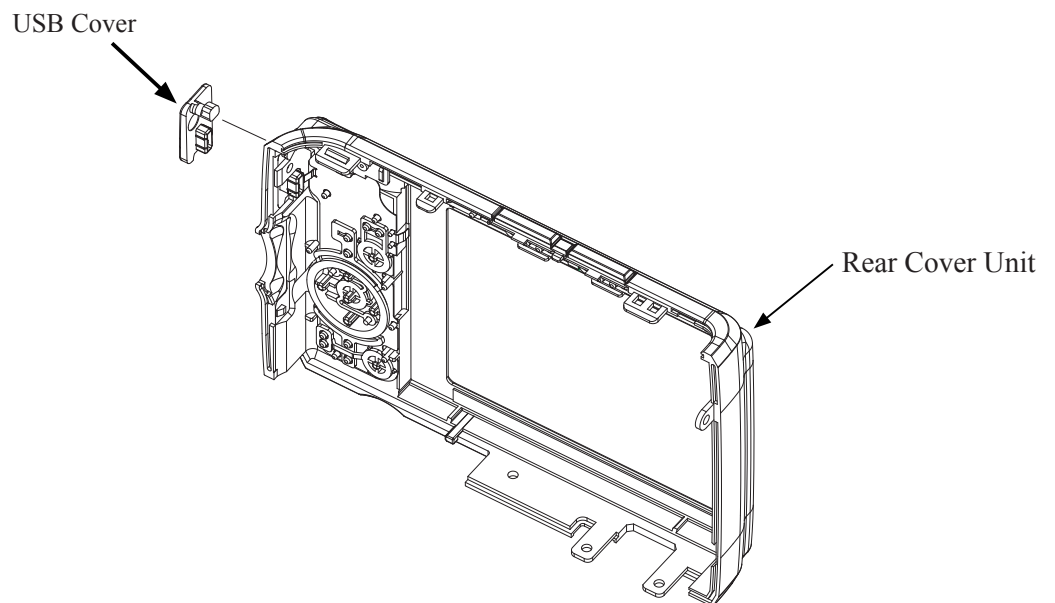


Assembly of Front Cover Unit

- While lifting the release section, assemble the body into the front cover unit.

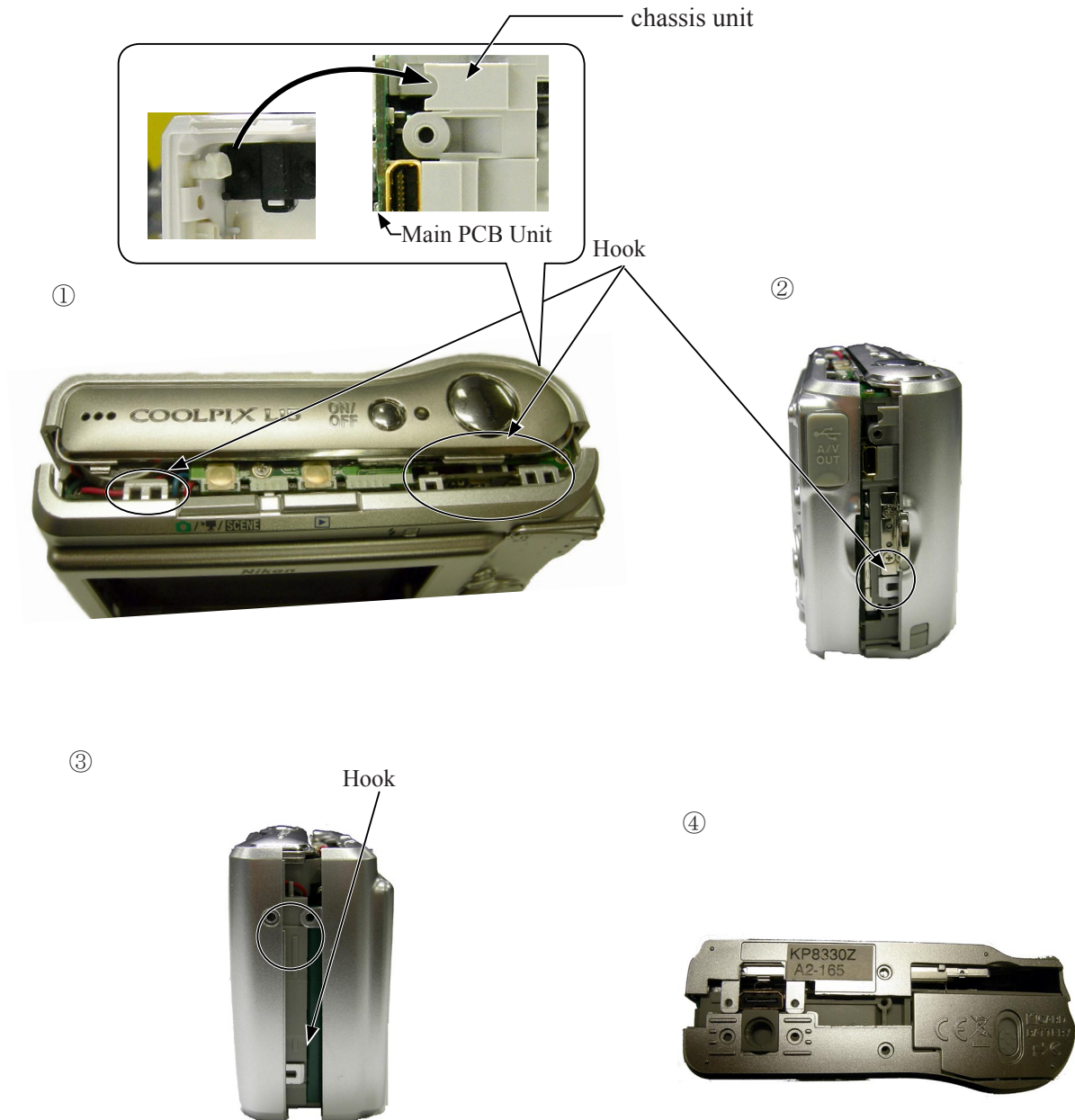


Rear Cover Unit



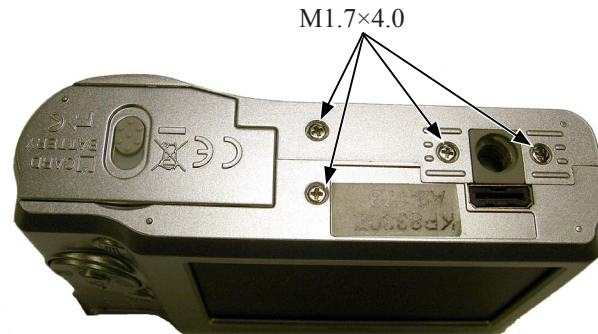
Assembly of Rear Cover Unit

- Put the point of the USB cover between the main PCB and the chassis unit.
- Assemble the rear cover unit in numeric order.

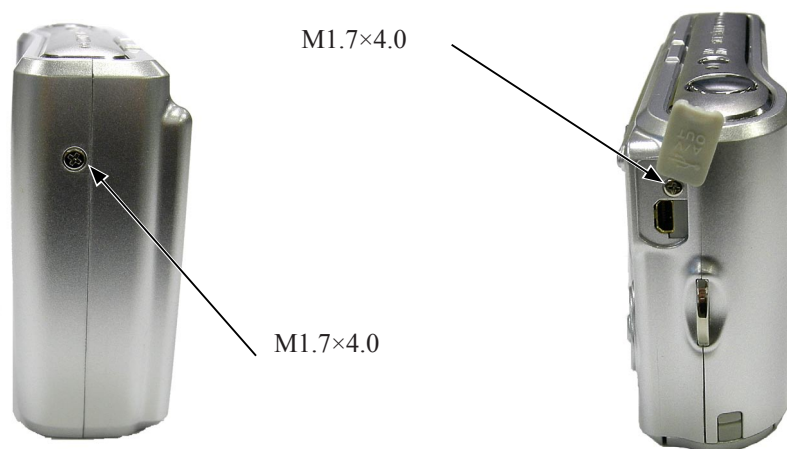


Exterior screw

- Tighten the four screws (M1.7×4.0).



- Tighten the two screws (M1.7×4.0).



ADJUSTMENT

Note) When replacing the lens unit and main PCB CP-1 it is necessary to input the QR code.

For the USB connection of L15, ONLY "PTP" is available.

1. Device:

PC, AC adapter, EH-65A, USB cable (UC-E6)

2. Service tool:

Color Viewer (J63070), collimator (J63090). SD card (that includes "EnablePTPAP.txt" data)
 ND filter 1.0 (J63093) L15_EEPROMTOOL (J65104) Service Center Tool (J65105)
 QR reader software(J65096) Two-dimensional bar code leader (J61222) △ (Addition)

3. EEPROMTOOL set-up

① System requirement

- Windows® XP
- PC/AT compatible machine with Pentium or higher processor
- CD-ROM drive
- Floppy-disk drive for 3.5-inch 2HD
- USB port
- 40MB or more available memory
- 15MB or more available hard disk drive
- VGA or SVGA with 256 or more color display



Tool for writing fixed-value

② Copy "L15_EEPROMTOOL" into any drive of PC.

③ Open "L15_EEPROMTOOL" folder and copy "EnablePTPAP" into the SD card.

4. Order of Adjustments:

1. Firmware update (Adjustment firmware Ver.1.0b for services depts.)
2. Writing of fixed values (use EEPROMTOOL)
3. Preparation for QR code input • Settings of Language and Serial number (use Service Center Tool)
4. Start-up setting
5. FOCUS adjustment
6. WB/AGC adjustment
7. Dark DPC
8. Light/S.S
9. Flash WB
10. Cancellation of start-up setting
11. Firmware update (Firmware Ver.1.0 for commercial products)



5. Firmware update (Adjustment firmware Ver.1.0b for services depts.)

The initial image data and the initial firmware are already written in RP parts.

Device

- AC adapter EH-65A
- Updating SD-card×1

[Create the SD card that is for updating the firmware]

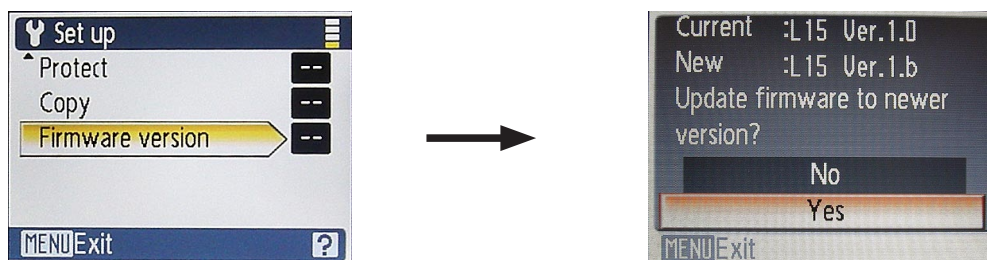
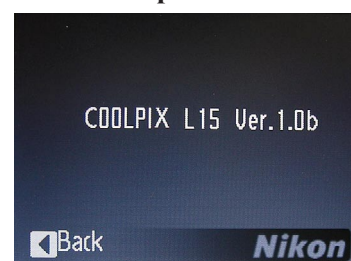
- 1) Format the SD card on PC.
- 2) Create a folder named "firmware" in the root directory of the SD card.
- 3) Copy "firmware.bin" into the created folder.

Procedure

- Turn camera OFF, and connect the AC adapter.
 - Insert the firmware-updating SD card into the camera.
1. Turn camera ON.
 2. Press "MENU" button and set the shooting menu to SETUP.
 3. Highlight "Firmware version".
 4. The screen for updating is displayed. Select "Yes".

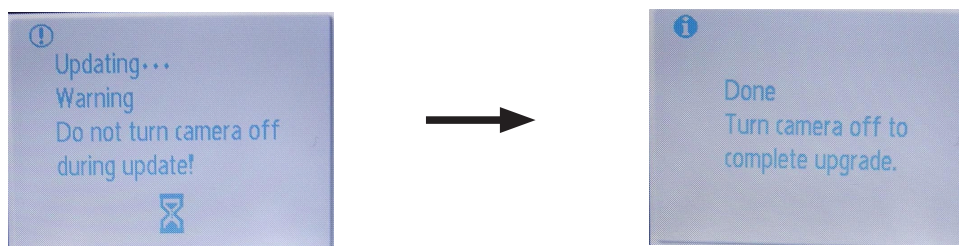
Caution: Do NOT turn OFF camera during updating.

Adjustment firmware for services depts Ver.1.0b



(The language shown when the main PCB is replaced is ENGLISH.)

5. A message indicating the completion is displayed.
6. Turn camera OFF, and remove the SD card.



6. Writing of Fixed values

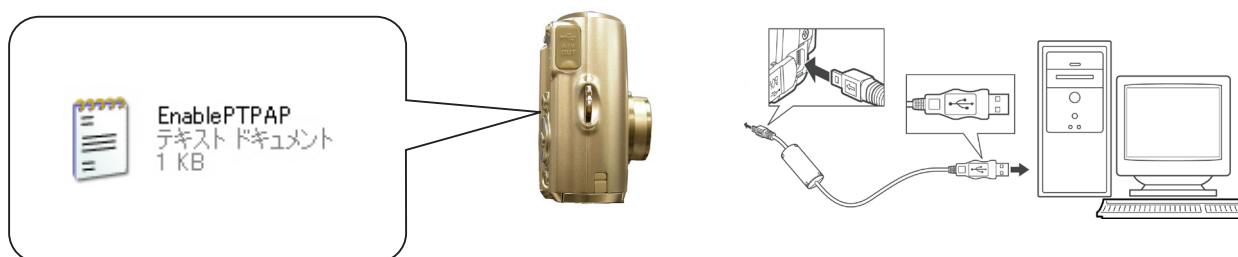
Device

- AC adapter (EH-65A) or fresh battery, PC, USB cable (UC-E6), SD card

[Preparation]

- Insert the SD card, which includes "EnablePTPAP" into the camera.
- Connect the camera and PC via USB cable.
- Supply power from AC adapter (EH65-A) or fresh battery.
- **Turn camera ON.**

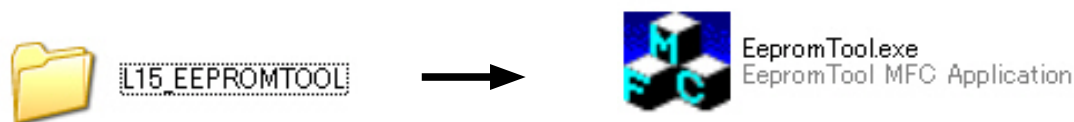
Caution : "Enable Test.text" that were used for L4/L10/L11 can not be used here for L15.



Procedure

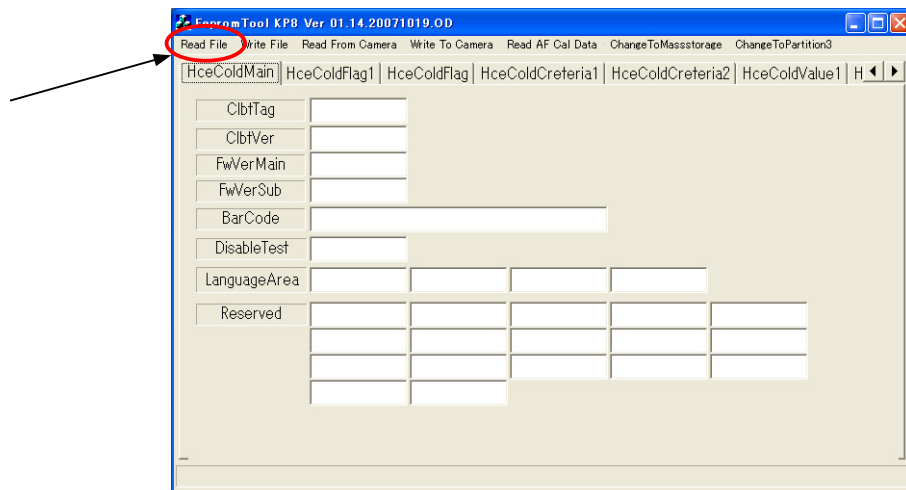
- Open the copied "L15_EEPROMTOOL" folder.
- Double-click on "EEPROMTOOL" icon.

Caution : This is not compatible with "L4/L11 EEPROMTOOL".



Software for writing fixed values in camera

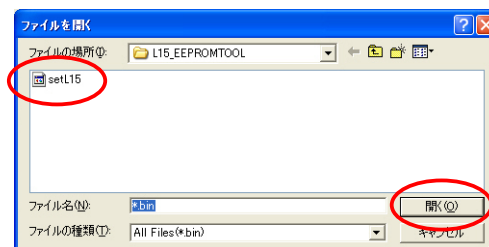
- "EEPROMTOOL" starts up.
- Click "Read File".



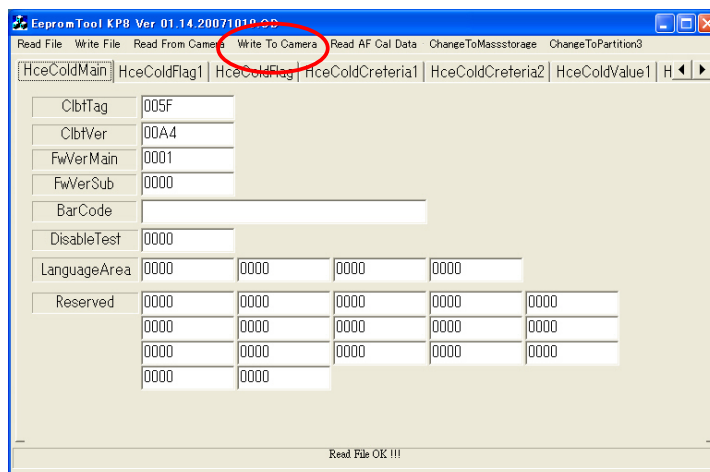
- Choose the file named "setL15.bin" in "L15_EEPROMTOOL", then click "Open".



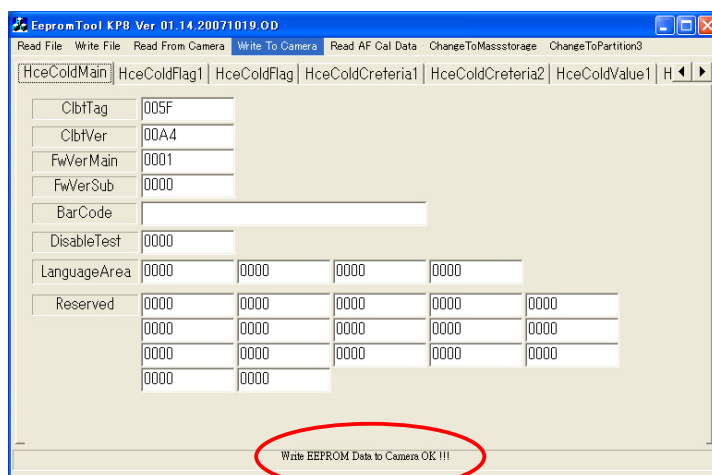
Fixed-value file



- The data on fixed values is displayed.
- Click "Write To Camera".



- When writing the fixed values is completed, "Write EEPROM Data to Camera OK!!!" appears.



- Close "EEPROMTOOL".
- Turn camera OFF, and remove the USB cable.
- Writing of fixed values is completed.



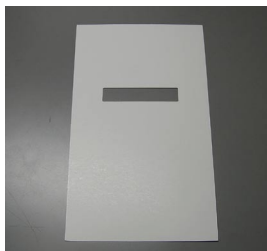
7. Adjustments to be made when parts are replaced

	Input fixed values	Scan QR Code	FOCUS	WB/AGC	DARK DPC	LIGHT/S.S	FLASH WB
LENS	○	○	○	○	○	○	×
MAIN PCB	○	○	○	○	○	○	○
LCD	×	×	×	×	×	×	×
FLASH UNIT	×	×	×	×	×	×	○

○ Necessary × NOT necessary

8. Setting of the two-dimensional bar code reader

- Insert the Two-dimensional bar code reader into the USB terminal.
- Read the bar codes shown below.



Reference:

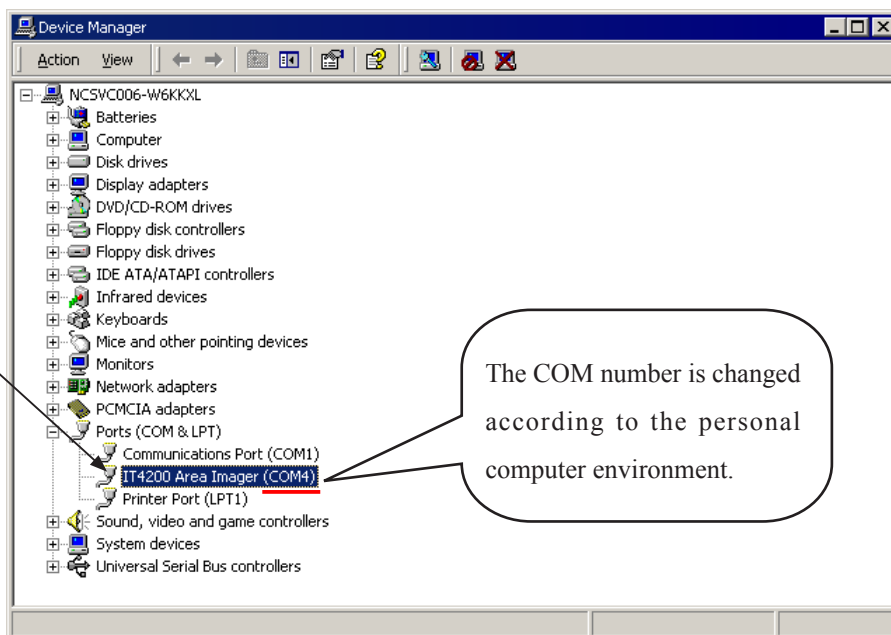
If you perform masking with the sheet which is attached to the two-dimensional bar code reader, you can prevent an reading error.

 ~ D E F A L T .	全デフォルト
 ~ T E R M I D .	ターミナル ID 設定開始
 ~ K 1 K	 USB バーチャル COM インターフェイス
 ~ K 3 K	
 ~ K 0 K	
 ~ M N U S A V .	ターミナル ID 設定終了

- Open “Device Manager” and check the setting of port.
Click the right button of the mouse for “My Computer” . Then, select the items in the following order: [Properties] → [Hardware] → [Device Manager].

Note:The setting of port is changed according to the environment of the personal computer.

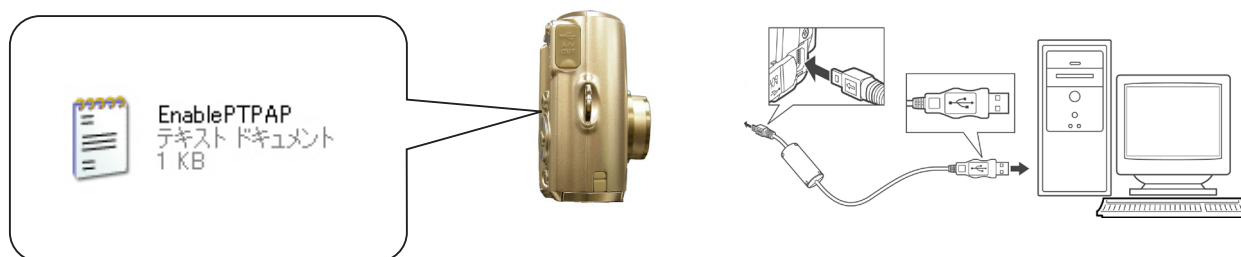
Example: Port is set to “COM4”



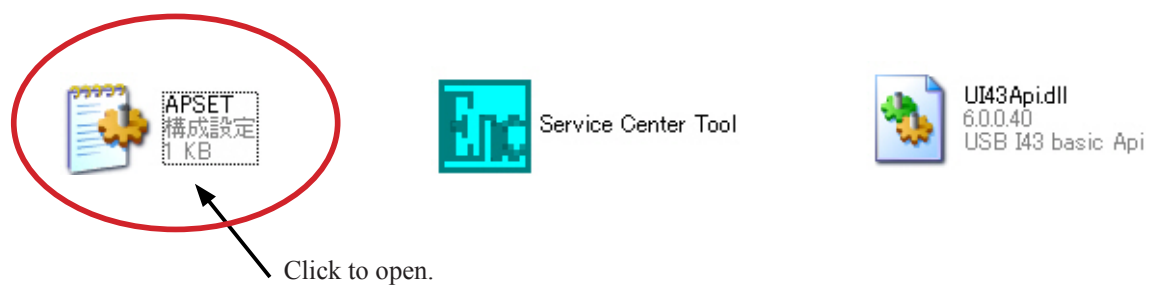
9. Preparation for QR code automatic input

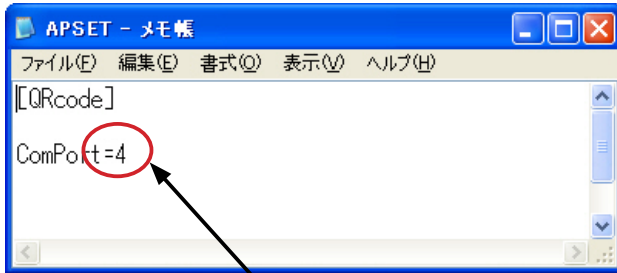
[Preparation]

- Insert the SD card, which includes "EnablePTPAP" into the camera. △ (Addition)
- Connect the camera and PC via USB cable.
- Supply power from AC adapter (EH65-A) or fresh battery.
- Turn the camera ON.



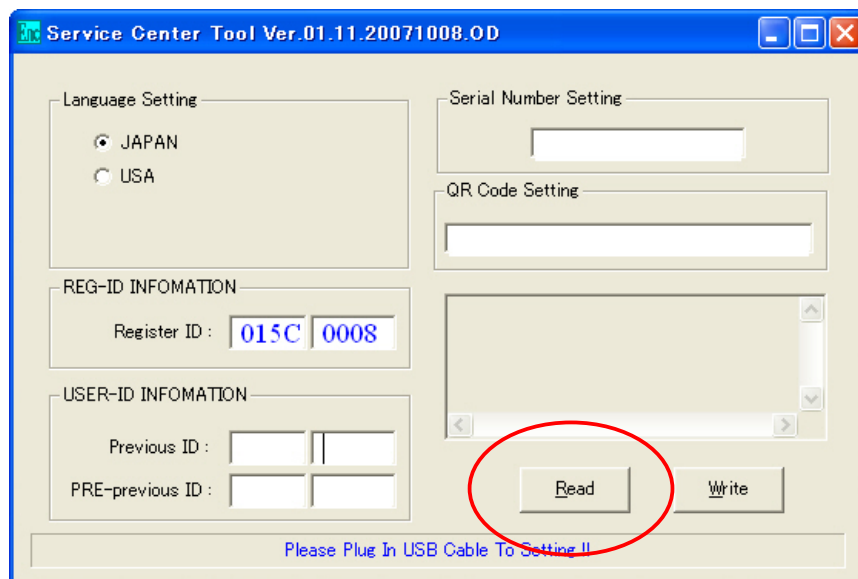
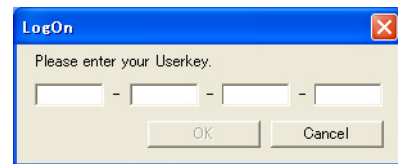
- Open "Service Center Tool" folder.





- Rewrite by changing to the COM port number that corresponds to the two-dimensional barcode reader.
- Overwrite and save it.

- Start the Service Center Tool.
- If the screen for entering the userkey appears, type in the userkey.
(ref. TIE07023)
- Click "Read".



- Place the cursor in "QR Code Setting" entry field.
 - Read the photographed QR code image with the two-dimensional barcode reader.
- After a sound for reading heard, QR code data will be input automatically.



Control number of factory is input.

QR code data will be input automatically.

Place the cursor in "QR Code Setting" entry field.

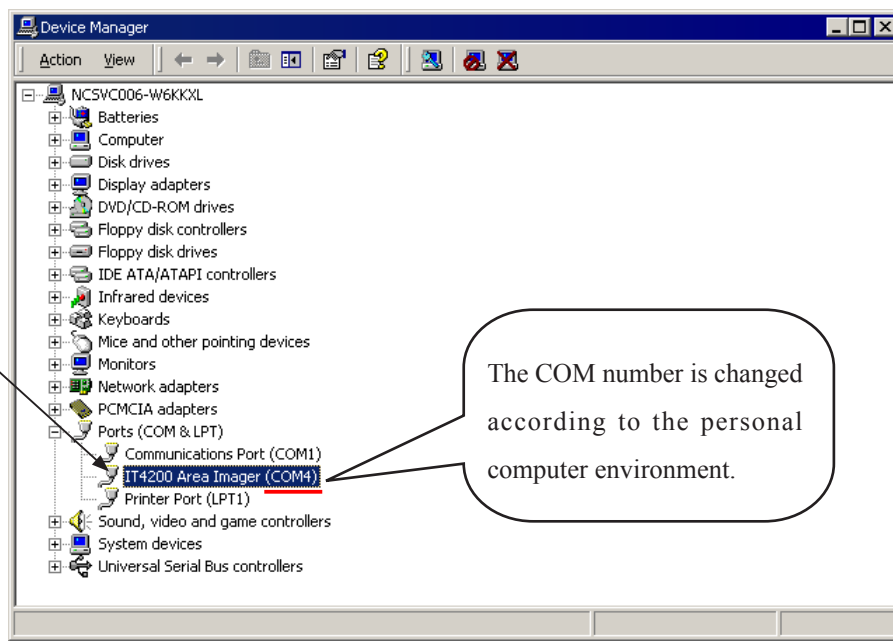
10. Setting of the two-dimensional barcode reader (Manual input)

- Open "Device Manager" and check the setting of port.

Click the right button of the mouse for "My Computer". Then, select the items in the following order: [Properties] → [Hardware] → [Device Manager].

Note: The setting of port is changed according to the environment of the PC.

Example: Port is set to "COM4"



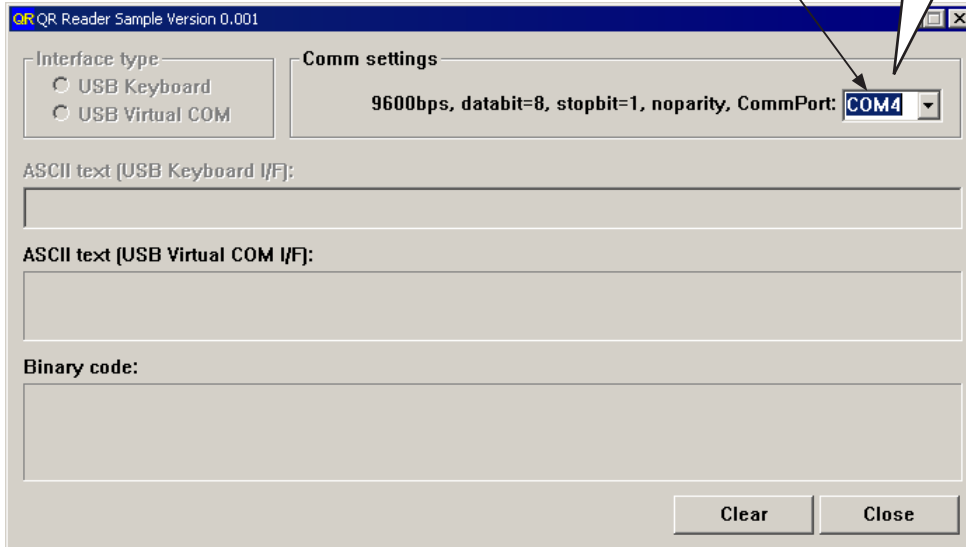
- Start up "QR Reader".



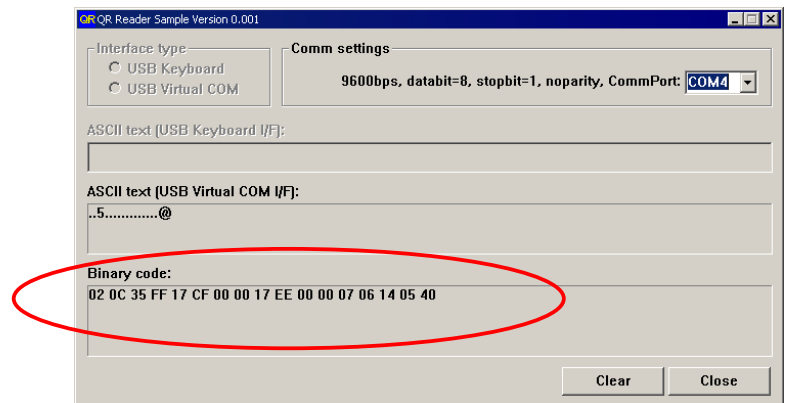
- Set the same port as you have checked by "Device Manager".

Example: Set to "COM4".

Set the same COM number as you have checked by [Device Manager].



- Read the photographed QR code image with the two-dimensional barcode reader.

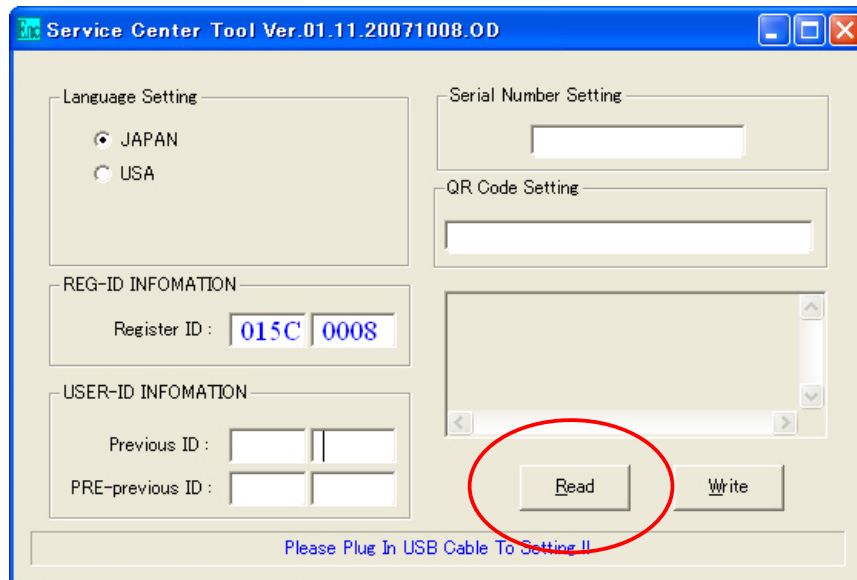


- The QR code data are displayed.

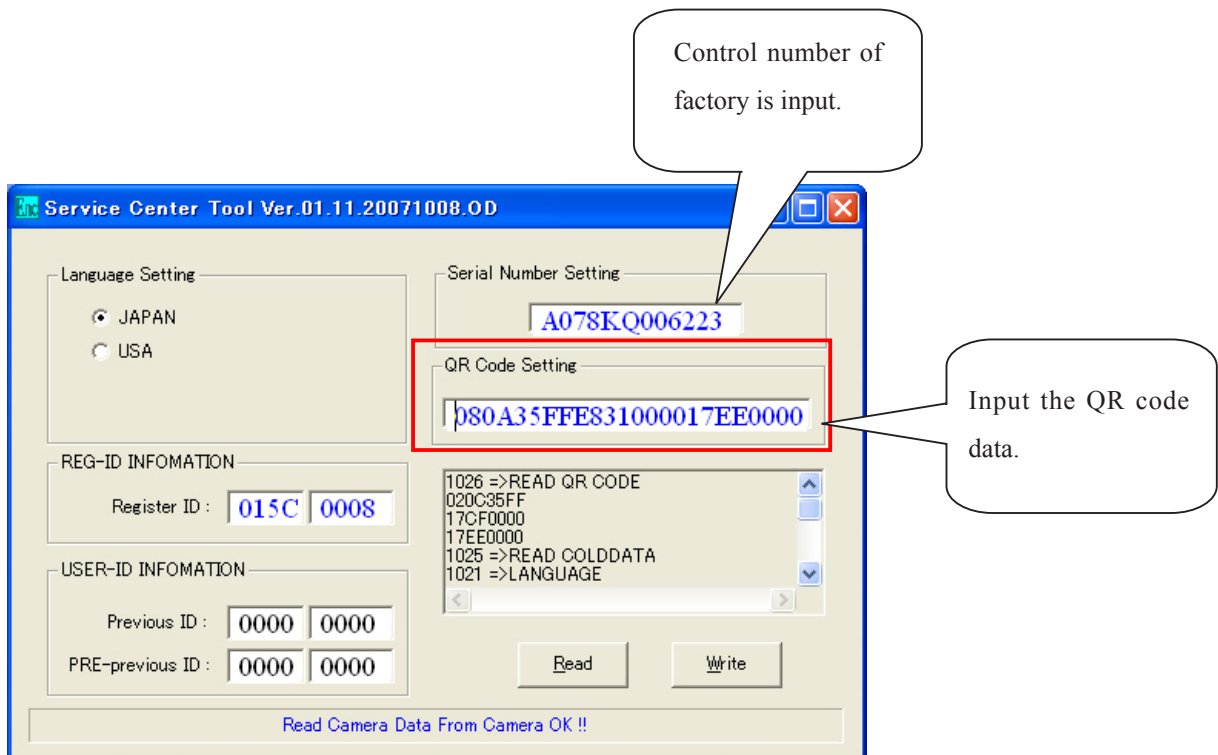
02 0C 35 FF 17 CF 00 00 17 EE 00 00 07 06 14 05 40

These are not used.

- Start the Service Center Tool.
- Click "Read".



- Input the QR code data that was read with the two-dimensional barcod reader.

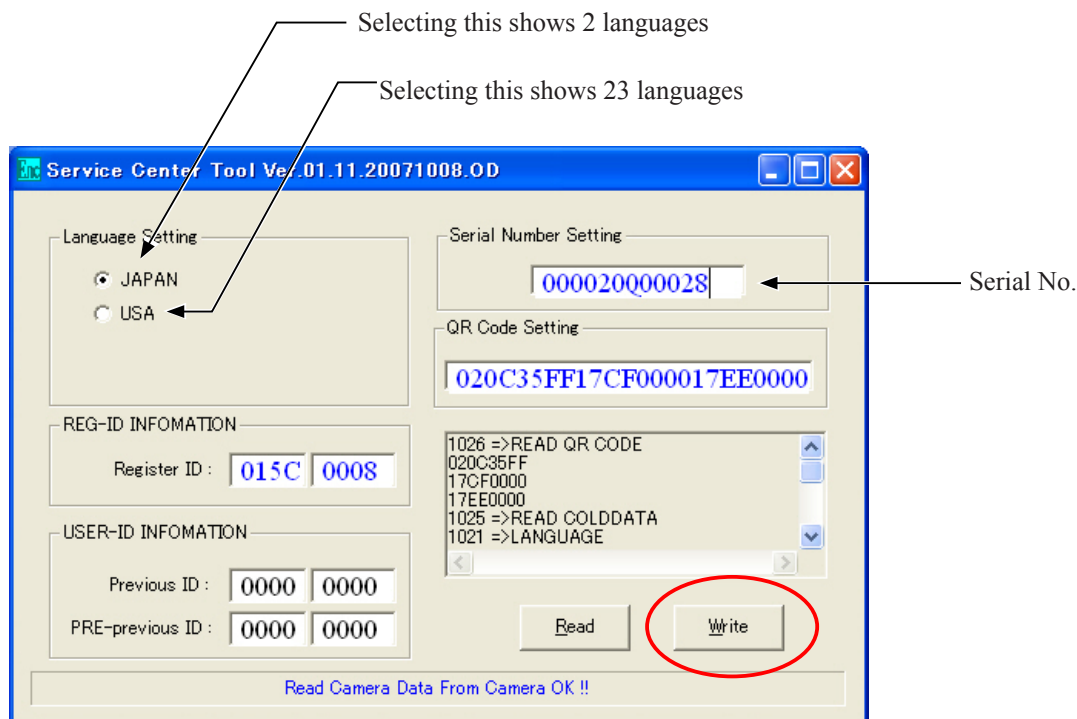


11. Settings of Language and Serial number

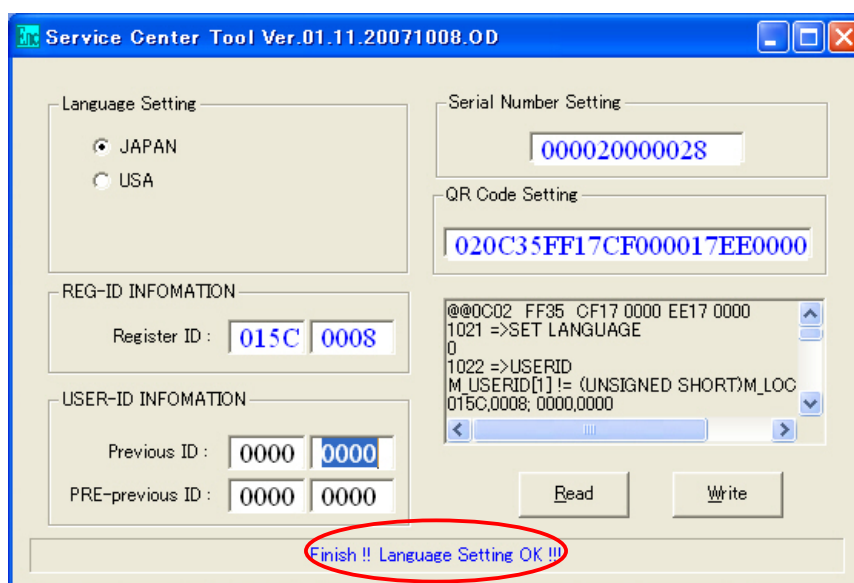
- Select the language, and input the serial number.

Caution: Input 4-digit "0000" at the beginning to become 12-digit number. (ex. Input "0000" before "20000028" as below.)

- Click "Write" .



- When "Finish" is indicated, the adjustment is completed.



12. Start-up setting of Adjustment program

Device

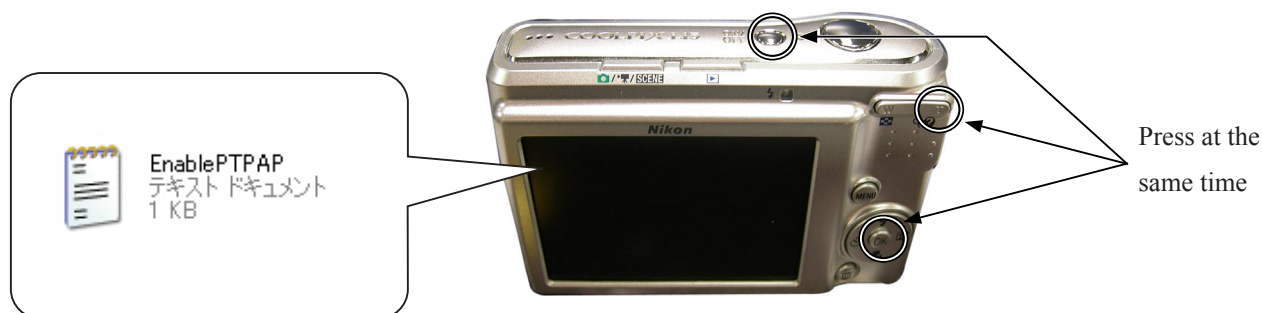
- AC adapter (EH-65A) or fresh battery, SD card

[Preparation]

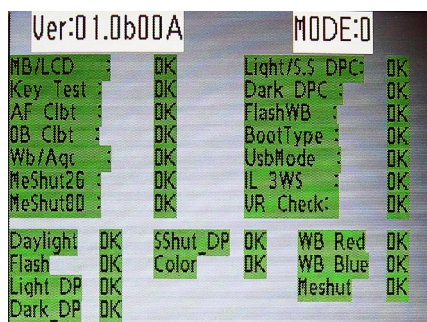
- SD card (that includes the data for starting the adjustment program.)

Procedure

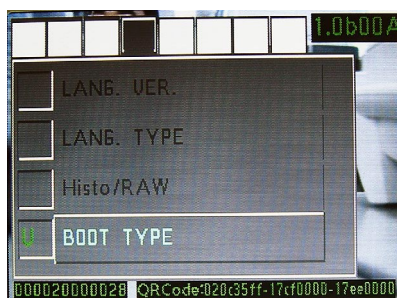
- Insert the above SD card into the camera.
- Press "Tele", "OK" and "Power" buttons at the same time.



- The program starts up.

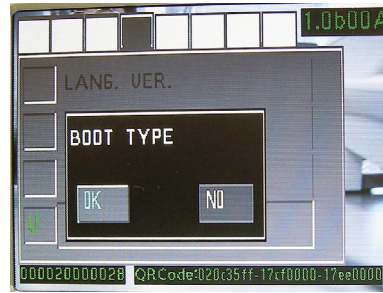


- Press "Playback" button to switch the screen.
- Press "Select" button. Choose "BOOT TYPE" and press "OK".

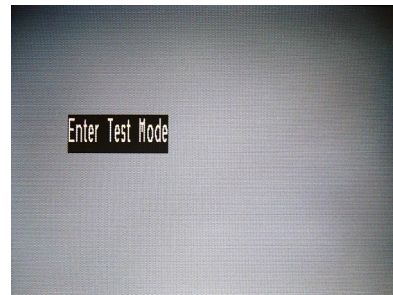


Screen for adjustment items

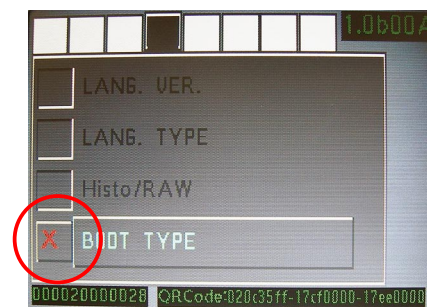
- Select and press "OK" button.



- "Enter Test Mode" appears.
- Press "Playback" button.

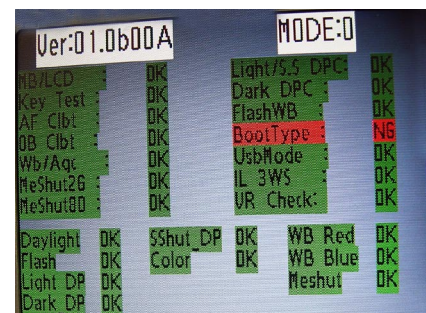


- Turn camera OFF.



"✓ (tick)" mark will be changed to "× (cross)" mark.

- Press "Power" button a few seconds.
The adjustment program starts up.



(Caution)

If the start-up setting of the adjustment program (i.e. BOOT TYPE) is performed, be sure to return to the original state after the adjustment.

13. FOCUS adjustment

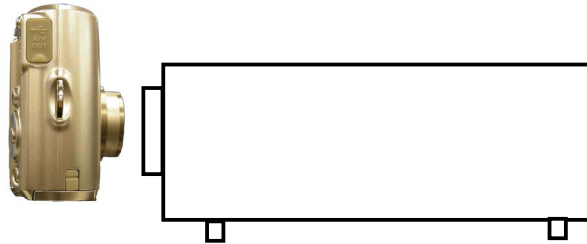
"Zoom Stop" values of 4 steps and "Best Stop" values at infinity are written in "Flash Rom".

Device

- AC adapter (EH-65A) or fresh battery, collimator

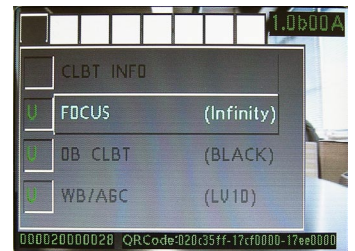
[Preparation]

- Turn on the collimator (J63090).
- Adjust the position so that the center of the chart in the collimator comes to the center of the screen.

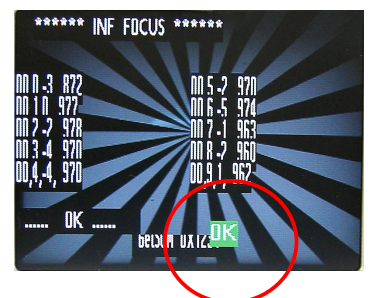
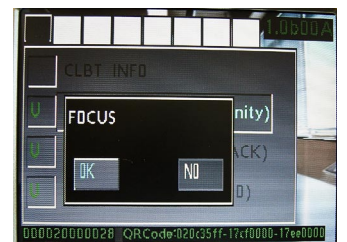
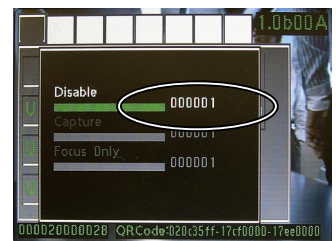


Procedure

- Turn camera OFF. Then, press "power" button for a few seconds, and start the program.
- Press "Playback" button to switch the screen.
- Press "Select" button, and choose "FOCUS (Infinity)".
- Press "Playback" button.
- Press the left or right portion of "Select" button, and change the value of "000001" to "000000".
- Press "OK" button twice.
- Select and press "OK" button.
- FOCUS adjustment starts.
- The result appears in the lower right portion of the screen.
- Turn camera OFF.



Change to "000000" only for "Disable".



14. WB/AGC adjustment

WB : Daylight R/B gain (calibrated value) is written in "Flash Rom".

AGC : ISO gain (calibrated value) is written in "Flash Rom".

Device

- AC adapter (EH-65A) or fresh battery, ND filter (1.0), Color viewer, Luminance meter (BM-3000), Color meter

Sometimes the adjustment result of WB/AGC becomes "NG" due to variation of BM-3000. Therefore, by using the inspection report which is an accessory of BM-3000, set the luminance as below to keep the same luminance without such variation,

The inspection report is in Japanese only. Refer to only data at overseas service facilities.

Procedure

- ① Find the corresponding value by crossing K=1.3 and EV10 in the accessory inspection report, and calculate by putting the corresponding value into the below formula.
- ② Attach the ND filter (1.0) to the illuminating surface of the color viewer, and set the luminance of the color viewer to the calculated result.

計測器検査成績表
2006年 2月 3日発行
映像カンパニー 生産統括部 品質保証部 第四品経課

品名	形式	型番	登録No.
輝度計	BM-3000	036004	
検定器具	4500光ペン (F12196) 標準電圧500V/200W (P0025/P0024) デジタルマルチメータ (F11067) 拡散板 (F12191)	検定実施日 2006年 2月 2日	使用場所 映像・品質保証部 サービス計画課
前回指示値からの変化			
EV11の時の変化	規格: ±0.05EV以内	判定	
	- EV	初回より判定せず	
規定輝度面の指示値			
EV値	指示値 (1.16)	指示値 (1.3)	
15	4976.5 cd/m ²	5573.6 cd/m ²	
14	2424.9 cd/m ²	2750.6 cd/m ²	
13	1218.9 cd/m ²	1365.2 cd/m ²	
12	604.66 cd/m ²	679.04 cd/m ²	
11	299.93 cd/m ²	325.92 cd/m ²	
10	149.77 cd/m ²	168.38 cd/m ²	
9.5	— cd/m ²	118.75 cd/m ²	
9	74.445 cd/m ²	83.603 cd/m ²	
8	37.172 cd/m ²	41.358 cd/m ²	
7	18.527 cd/m ²	20.799 cd/m ²	
6	9.205 cd/m ²	10.302 cd/m ²	
5	4.622 cd/m ²	5.210 cd/m ²	
4	2.365 cd/m ²	2.652 cd/m ²	

次回検定 2007年 2月

株式会社 ニコン

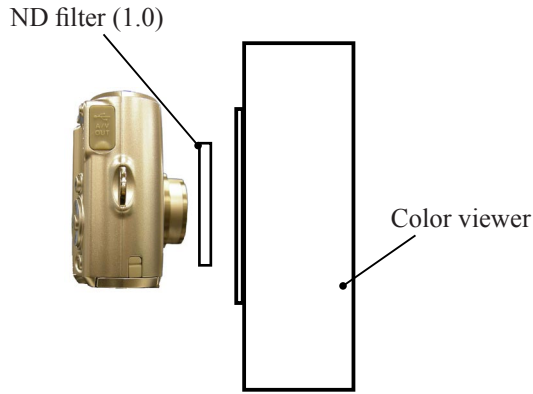
e.g.

$$\frac{25.99 \times 168.38 \text{ cd/m}^2}{32 \text{ Coefficient}} = 136.8 \text{ cd/m}^2$$

Coolpix L15
Set the luminance to
this value.

The calculated result corresponds to "EV9.7" of the inspection report.





Calculated result based on the inspection report

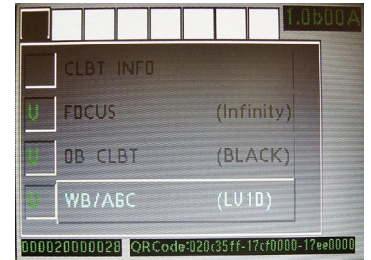
cd/ m²

Color temperature 4800K±200

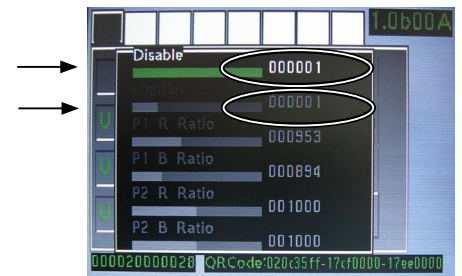
Procedure

- Turn camera OFF. Then, press "playback" button a few seconds, and start the program. power △ (Addition)
- Press "Playback" button to switch the screen.
- Press "Select" button, and choose "WB/AGC (LV10)".
- Press "Playback" button.

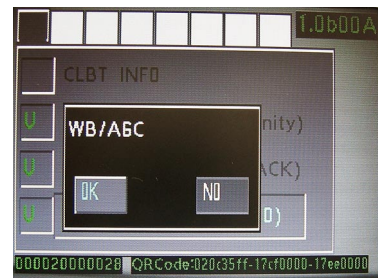
- Press the left or right portion of "Select" button, and change the values of "Disable" and "LightSource" to "000000".



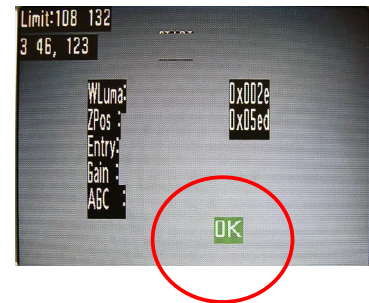
Change to "000000" for "Disable" and "lightSource".



- Press "OK" button twice.
- Select and press "OK" button.
- WB/AGC adjustment starts.



- The result appears in the lower right portion of the screen.
- Turn camera OFF.



Result

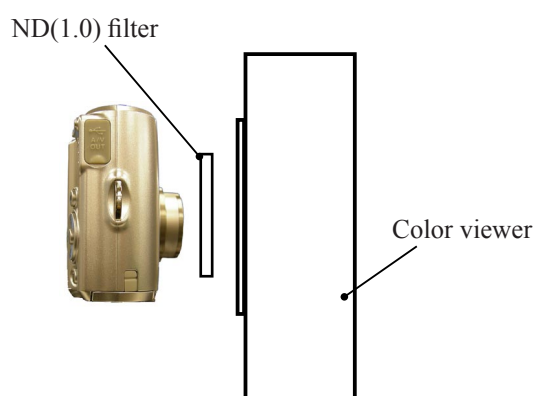
15. Dark DPC

The position of "Dark dead pixel" under bright environment is calculated, and written in "Flash Rom".

Device

- AC adapter (EH-65A) or fresh battery, ND filter (1.0), Color viewer, Luminance meter (BM-3000), Color meter

This adjustment is the same structure as described in "WB/AGC adjustment".



Procedure

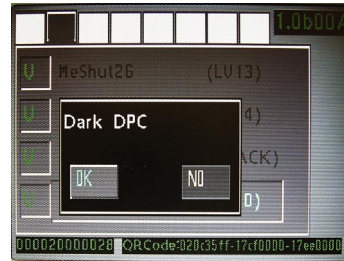
- Turn camera OFF. Then, press "power" button a few seconds, and start the program.
- Press "playback" button to switch the screen.
- Press "Select" button, and choose "Dark DPC".
- Press "Playback" button.
- Press the left or right portion of "Select" button, and change the value of "000001" to "000000".



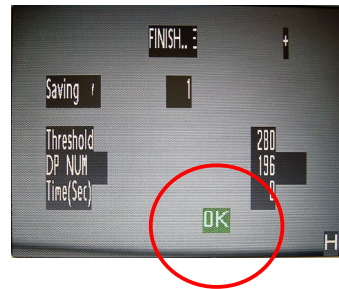
Change to "000000" →
only for "Disable".



- Press "OK" button twice.
- Select and press "OK" button.
- Dark DPC adjustment starts.



- The result appears in the lower right portion of the screen.
- Turn camera OFF.



Standard: DP NUM 7000 or less

16. Light/S.S

Shoot with the shutter being closed, and check "Light pixel".

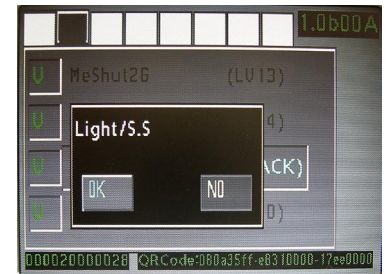
The shutter is open for 30 minutes, and the position of "Slow shutter dead pixel" is calculated and written in "Flash Rom".

Device

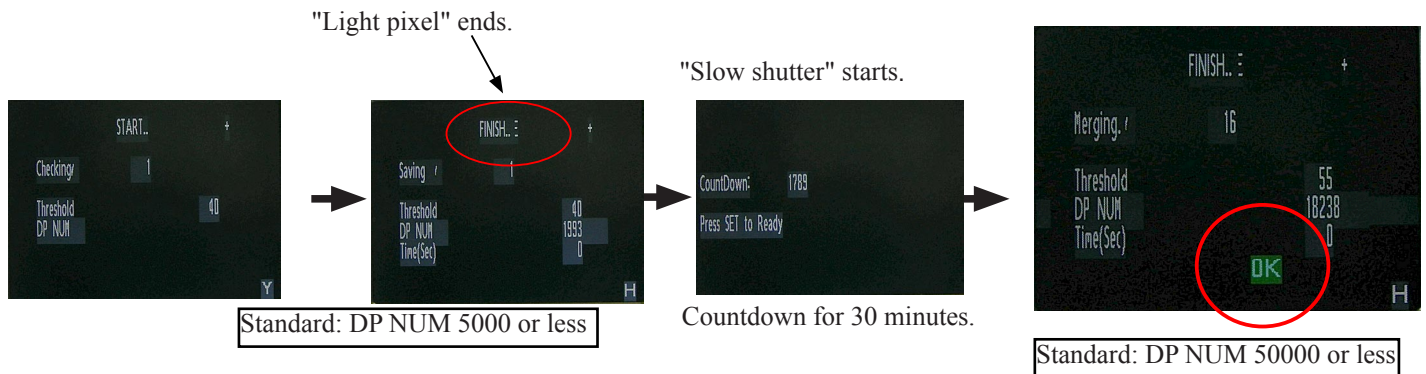
- AC adapter (EH-65A)
- (The measurement takes as long as 30 minutes, so use the AC.)

Procedure

- Turn camera OFF. Then, press "power" button a few seconds, and start the program.
- Press "OK" button twice.
- Select and press "OK" button.
- Light/S.S adjustment starts.



- The result appears in the lower right portion of the screen.
- Turn camera OFF



17. FLASH WB

The average of light is calculated, and "RGain" and "BGain" data is recorded in "Flash Rom" of camera.

Device

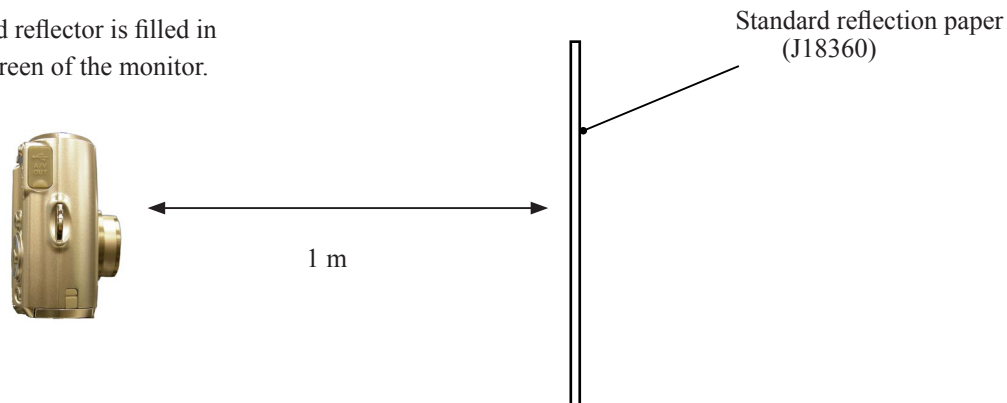
- AC adapter (EH-65A) or fresh battery, standard reflector

[Preparation]

- Set the camera to face right in front of the grey chart (standard reflection paper) as below.
- Set the distance between the lens front to the chart to 1 m.

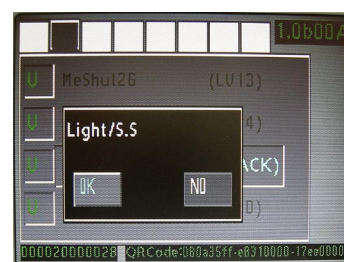
(Caution) Switch off lighting, and adjust without any influence of outside light.

The standard reflector is filled in the entire screen of the monitor.

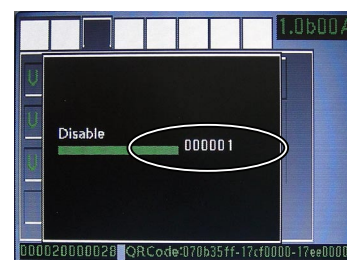


Procedure

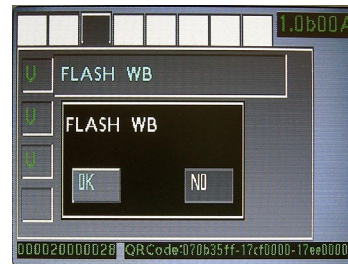
- Turn camera OFF. Then, press "playback" button a few seconds, and start the program.
power △ (Addition)
- Press "playback" button to switch the screen.
- Press "Select" button, and choose "FLASH WB".
- Press "Playback" button.
- Press the left or right portion of "Select" button, and change the value of "000001" to "000000".



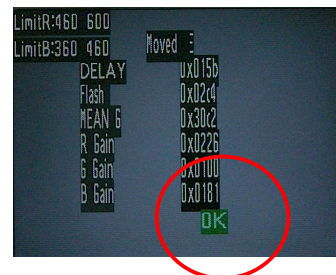
Change to "000000" →
only for "Disable".



- Press "OK" button twice.
- Select and press "OK" button.
- FLASH SB adjustment starts.



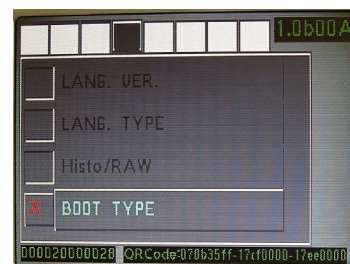
- The result appears in the lower right portion of the screen.
- Turn camera OFF.



18. Cancellation setting of adjustment program

Procedure

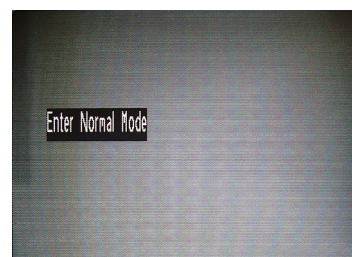
- Turn camera OFF. Then, press "power" button a few seconds, and start the program.
- Press "Playback" button to switch the screen.
- Press "Select" button, and choose "BOOT TYPE".
- Press "Playback" button.



- Select and press "OK" button.



- "Enter Normal Mode" appears.
- Press "Playback" button.

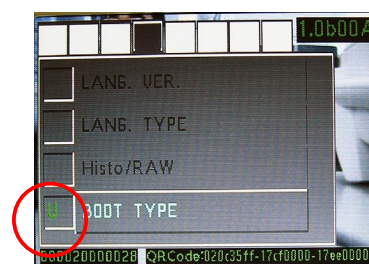


Confirm that "BOOT TYPE" is changed from "× (cross)"-mark to "✓ (tick)"-mark.

- Turn camera OFF.

(Caution)

Confirm that the adjustment program does NOT start by pressing "Playback" button a few seconds.



Caution:

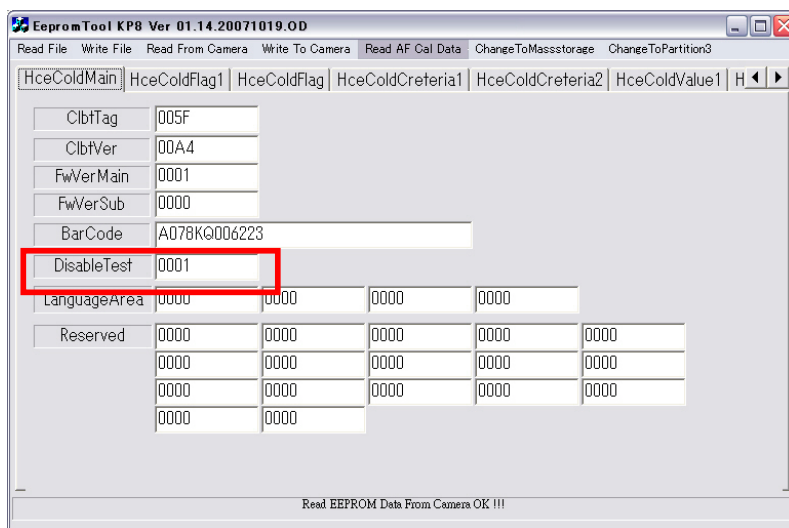
Even if the SD card that includes "Enable PTPAP" is not inserted, pressing "Tele", "OK", and "POWER" buttons simultaneously will initiate the adjustment program. So follow the below procedure.

Procedure

Copy "Enable PTPAP" into SD card, and insert it into the camera.

Connect PC and the camera via USB, and turn the camera ON.

- ① Start "L15_EEPROMTOOL".
- ② Click "Read From Camera".
- ③ Change the value of "Disable Test" from "0000" to "0001".
- ④ Click "Write To Camera".



- ⑤ Turn the camera OFF.
- ⑥ Detach the camera from the PC, and take out the SD card from the camera.
- ⑦ Confirm that the adjustment program does not start up by pressing simultaneously "Tele", "OK", and "Power" buttons.

Caution:

In case of starting the program again for adjustments, change the value "Disable Test" from "0001" to "0000". Otherwise, the program will not start up of this model, even if the SD card that includes "Enable PTPAP" is inserted in the camera.



19. Firmware update (Firmware Ver.1.0 for commercial products)

Device

- AC adapter EH-65A
- Updating SD-card×1

[Create the SD card that is for updating the firmware]

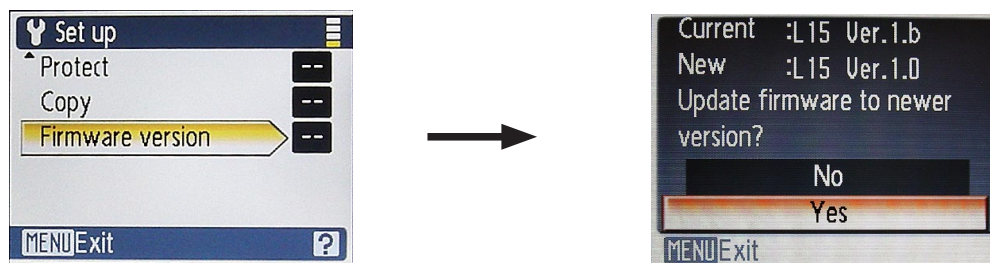
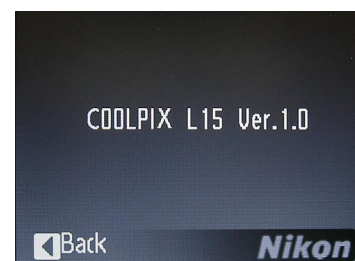
- 1) Format the SD card on PC.
- 2) Create a folder named "firmware" in the root directory of the SD card.
- 3) Copy "firmware.bin" into the created folder.

Procedure

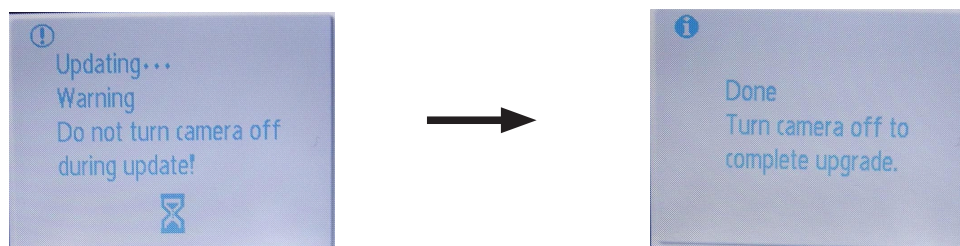
- Turn camera OFF, and connect the AC adapter.
 - Insert the firmware-updating SD card into the camera.
1. Turn camera ON.
 2. Press "MENU" button and set the shooting menu to SETUP.
 3. Highlight "Firmware version".
 4. The screen for updating is displayed. Select "Yes".

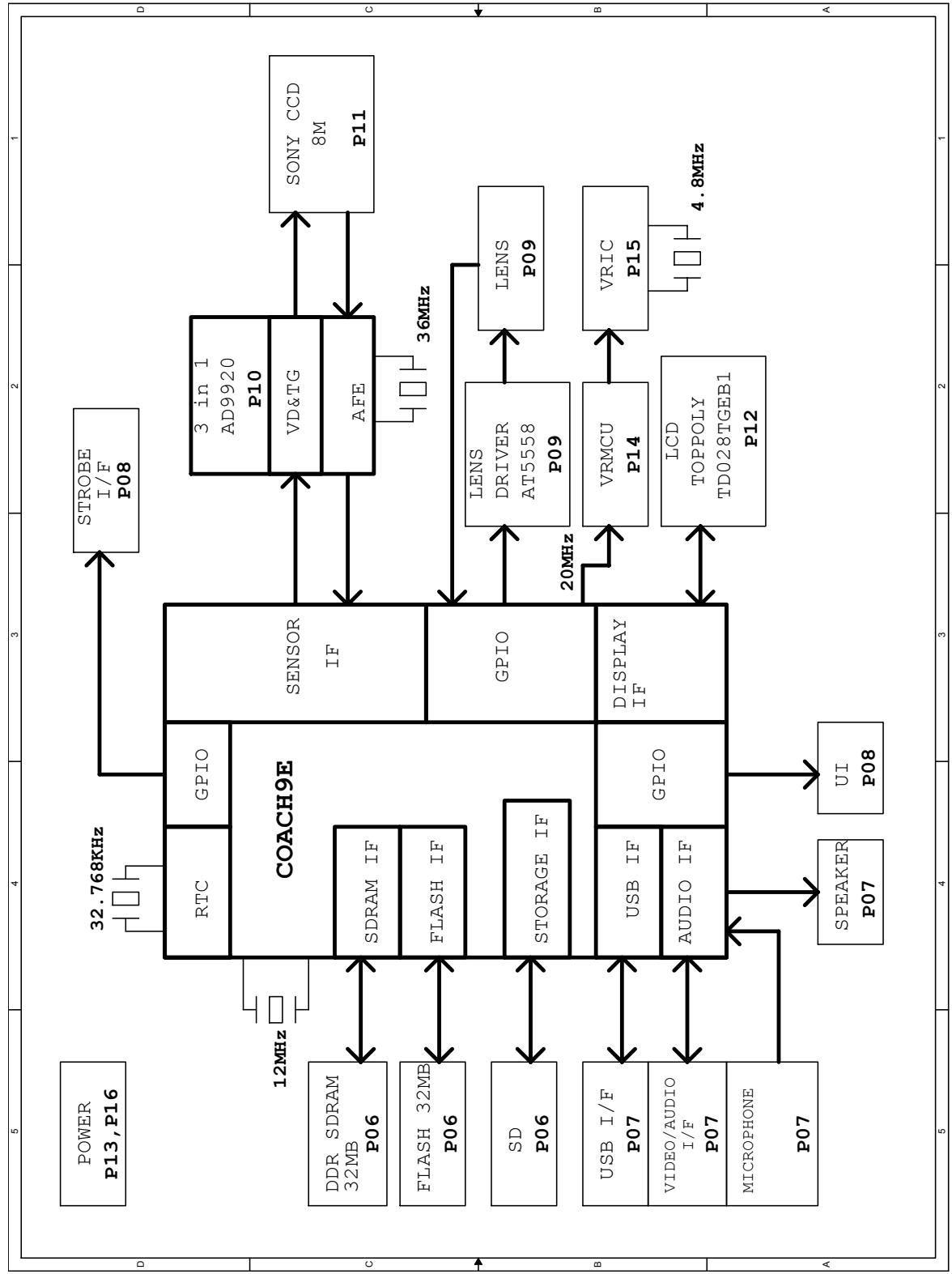
Caution: Do NOT turn OFF camera during updating.

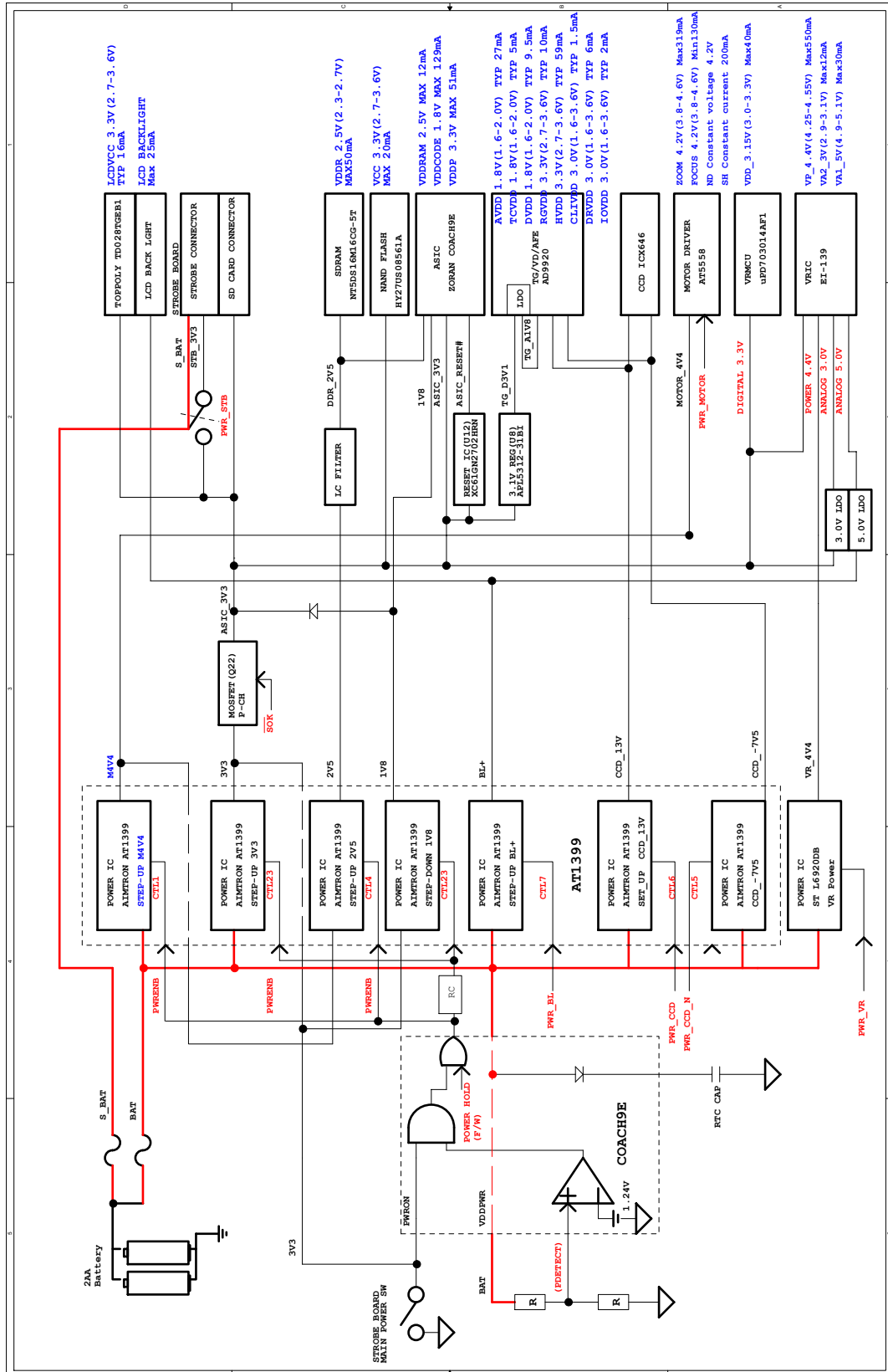
Firmware for commercial products Ver.1.0

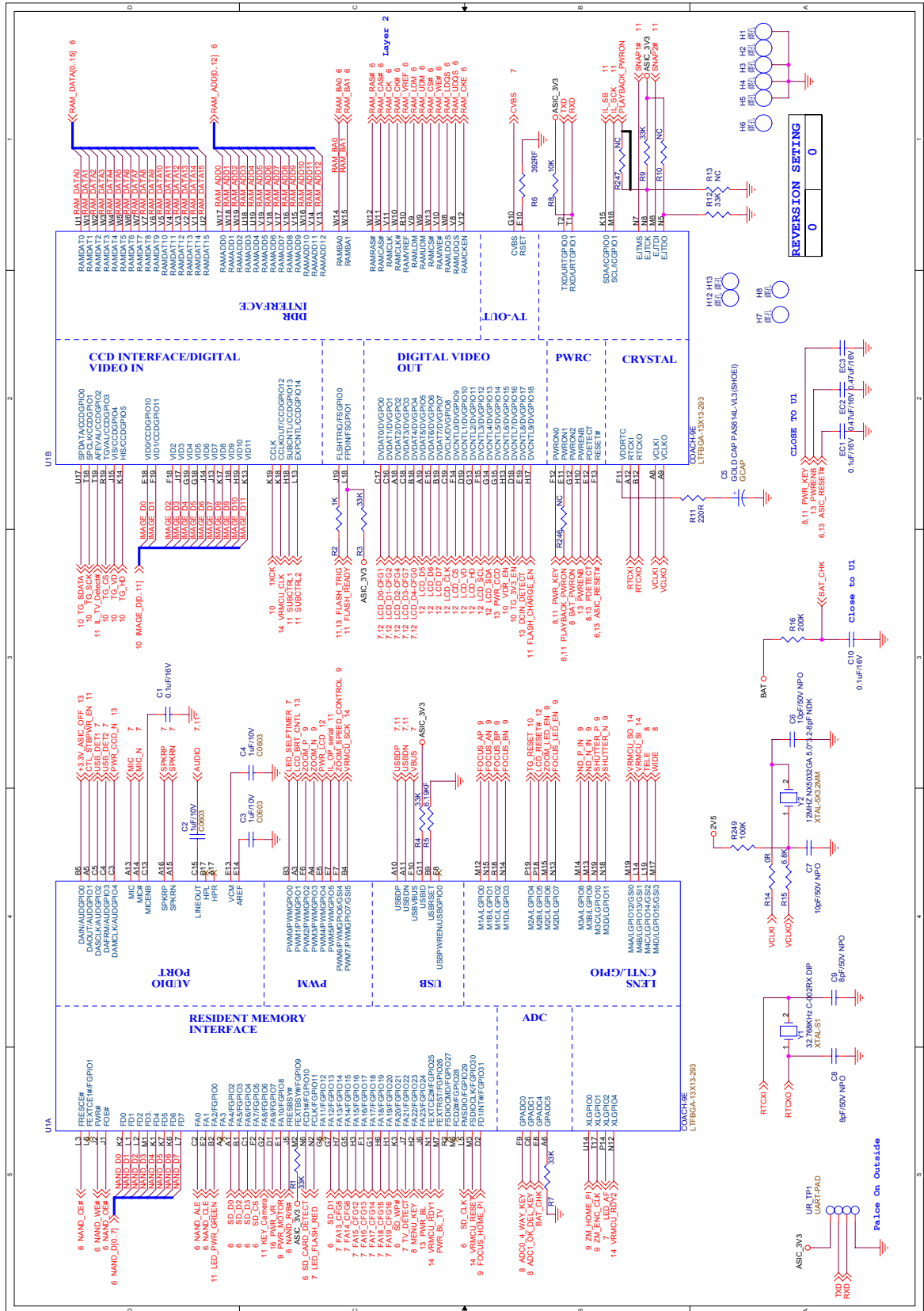


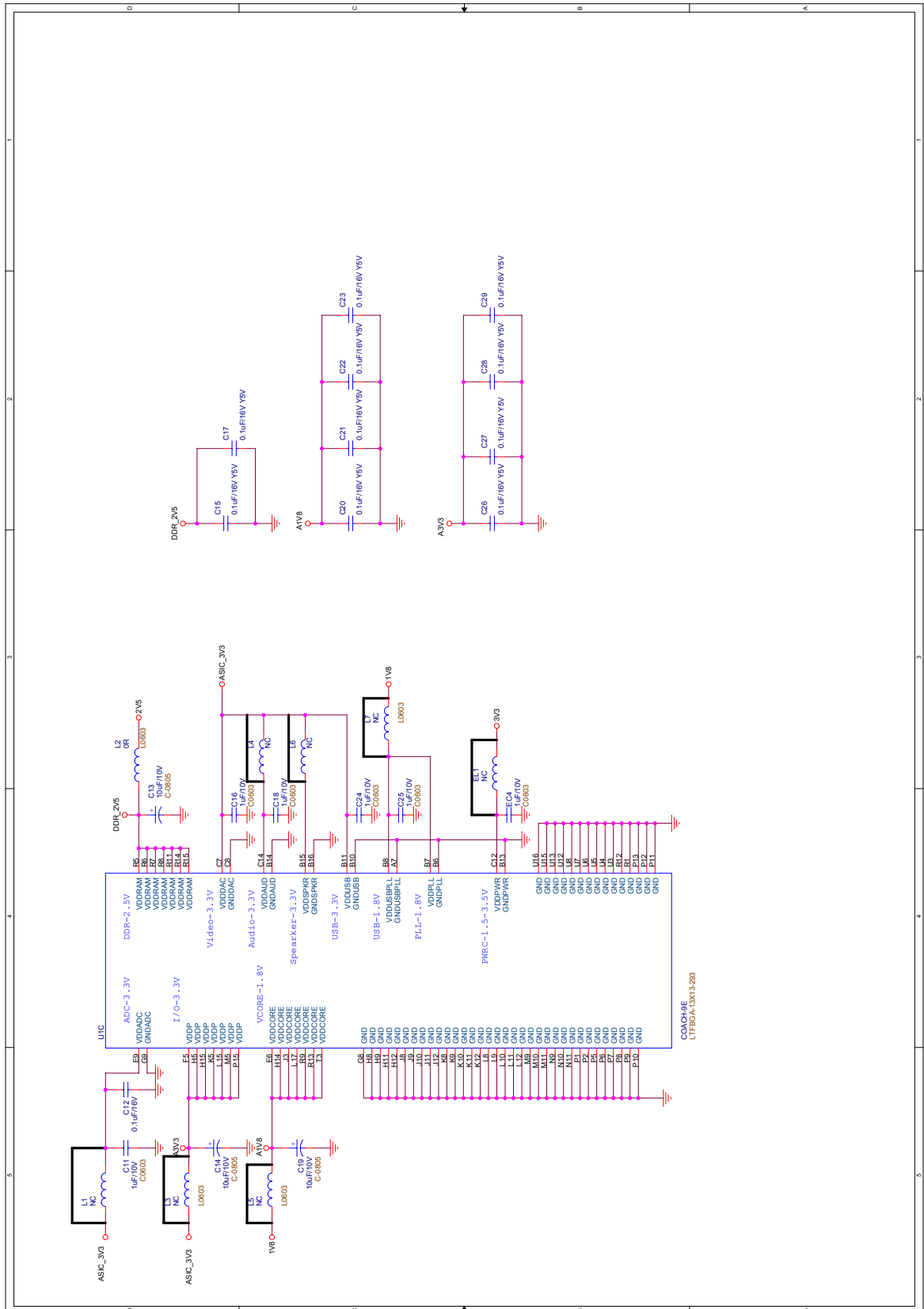
5. A message indicating the completion is displayed.
6. Turn camera OFF, and remove the SD card.

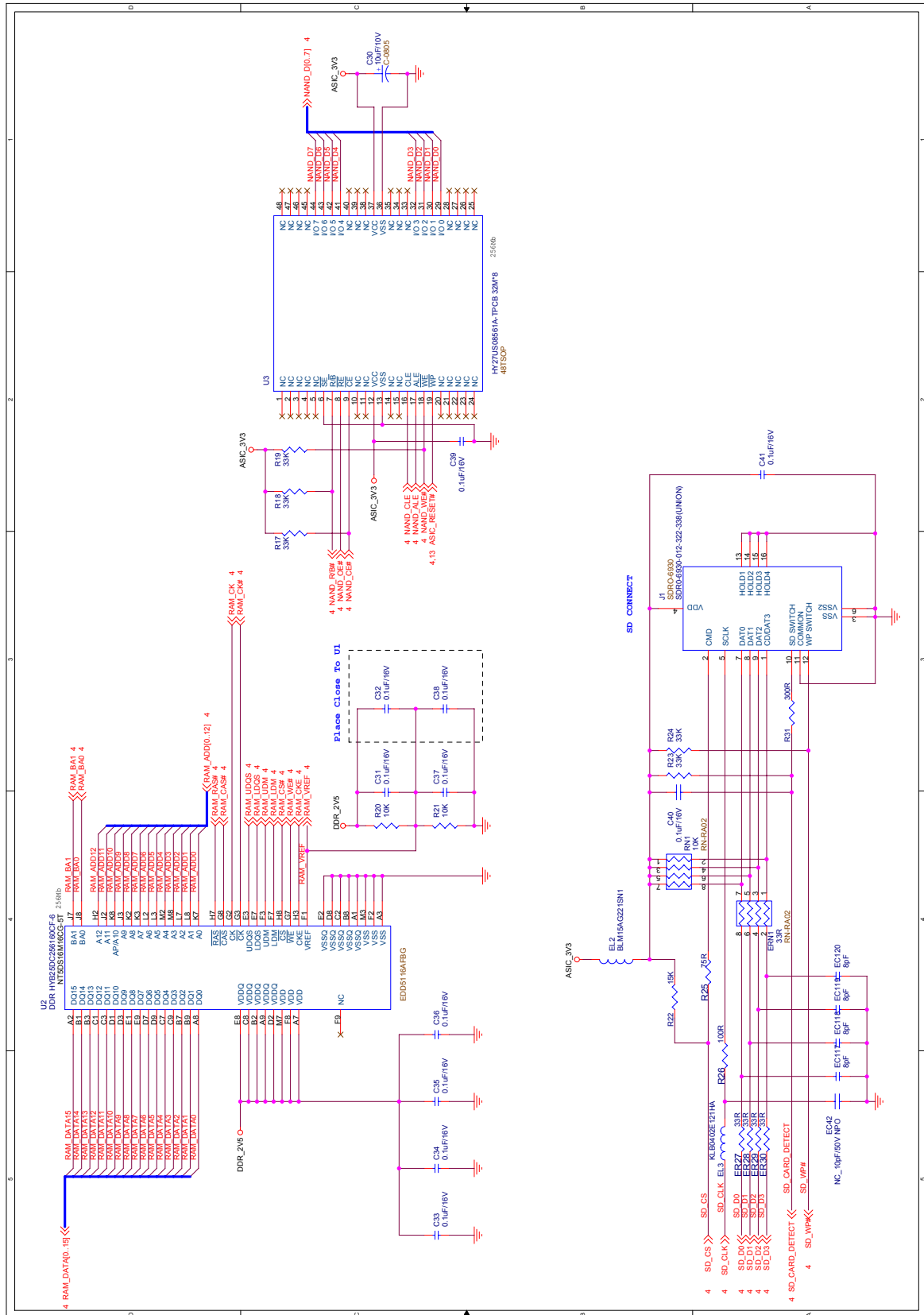


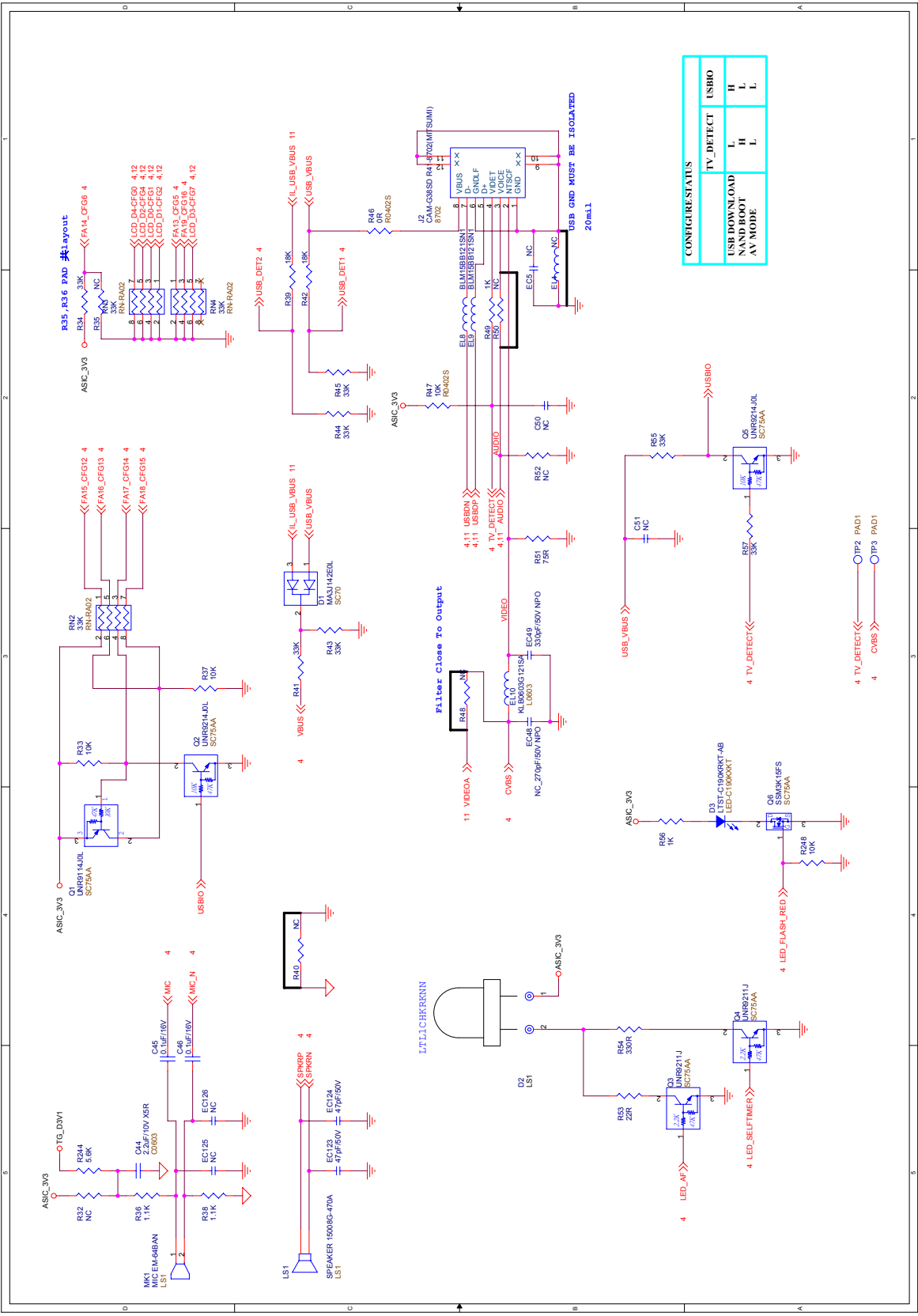


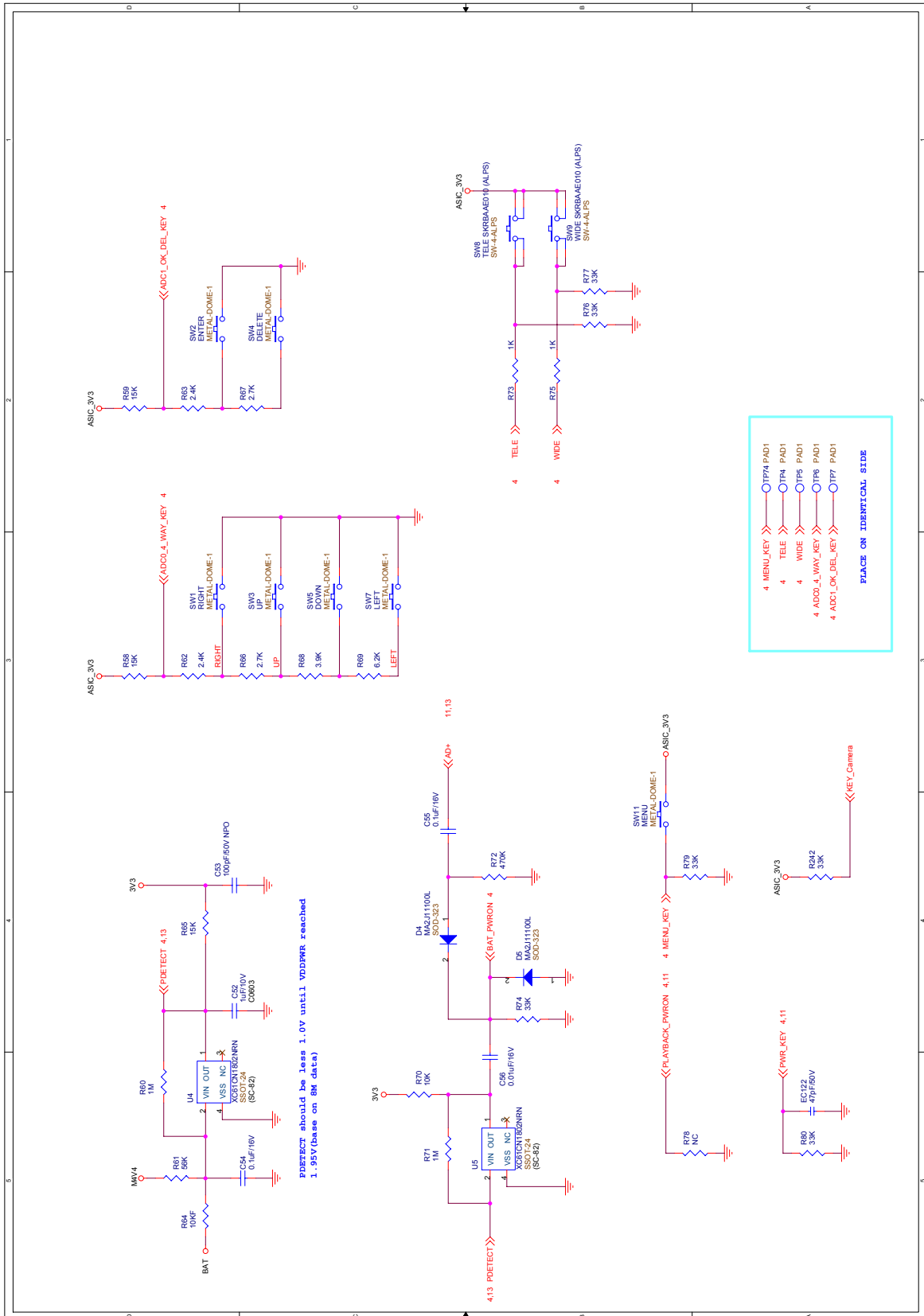


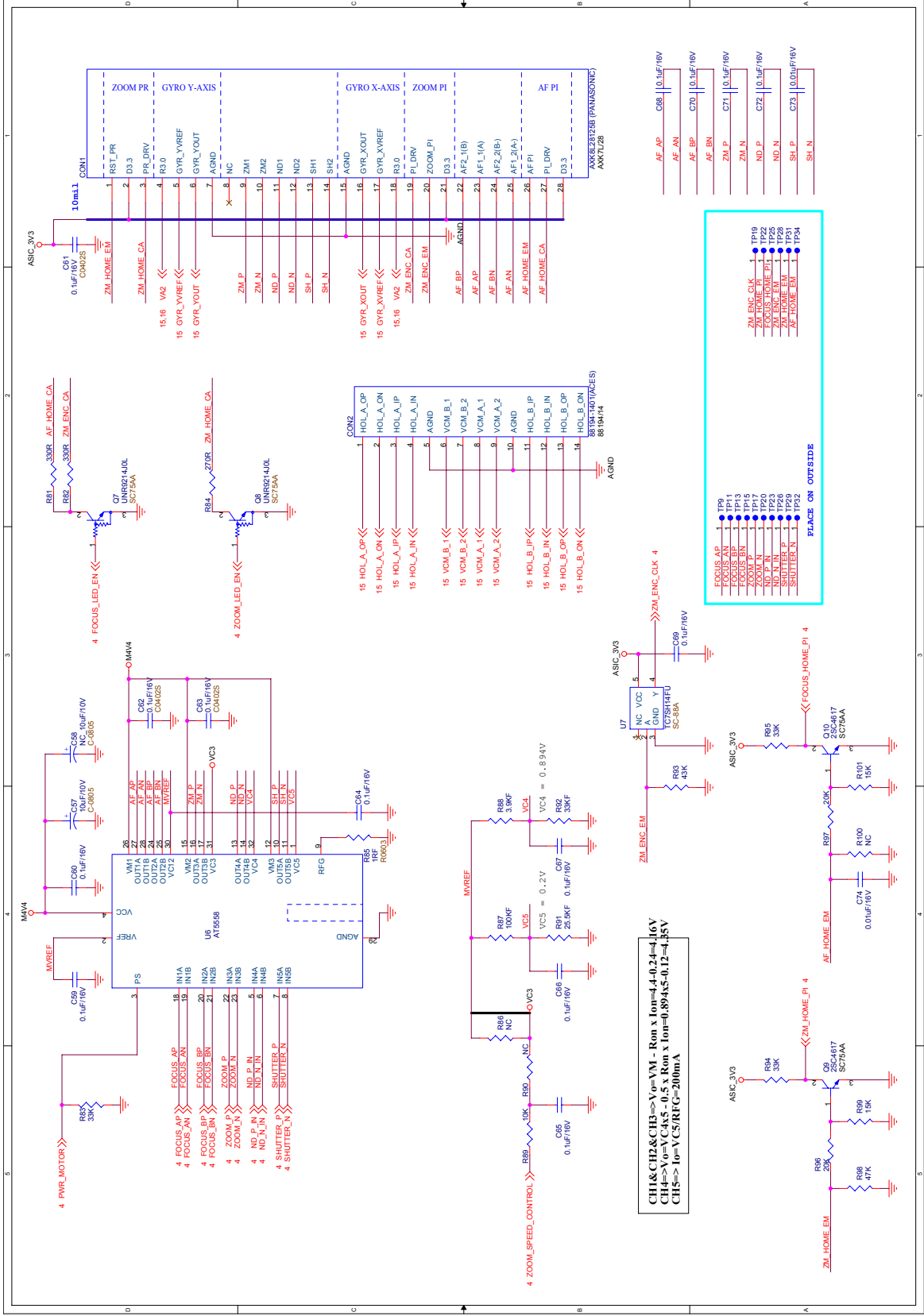


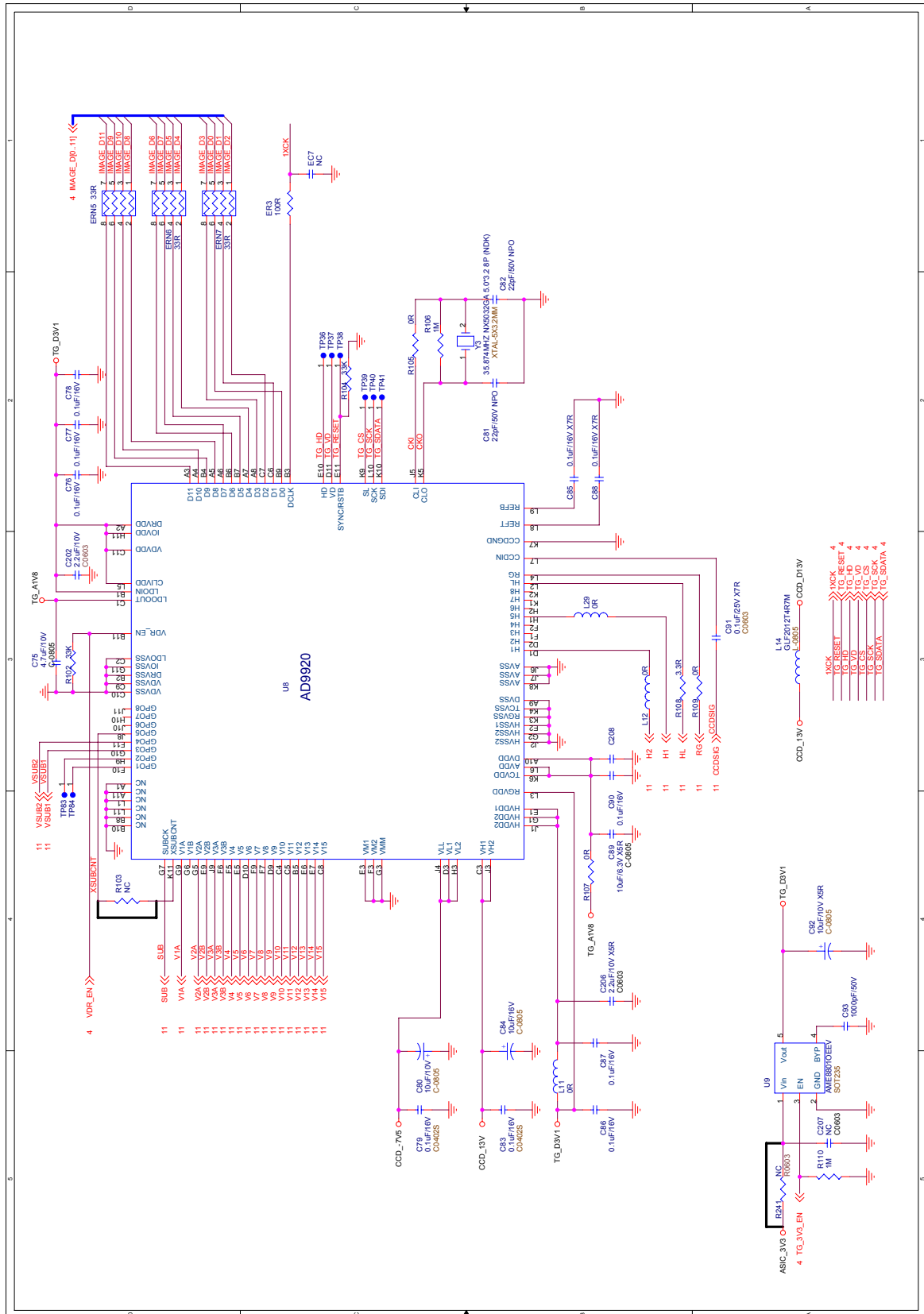


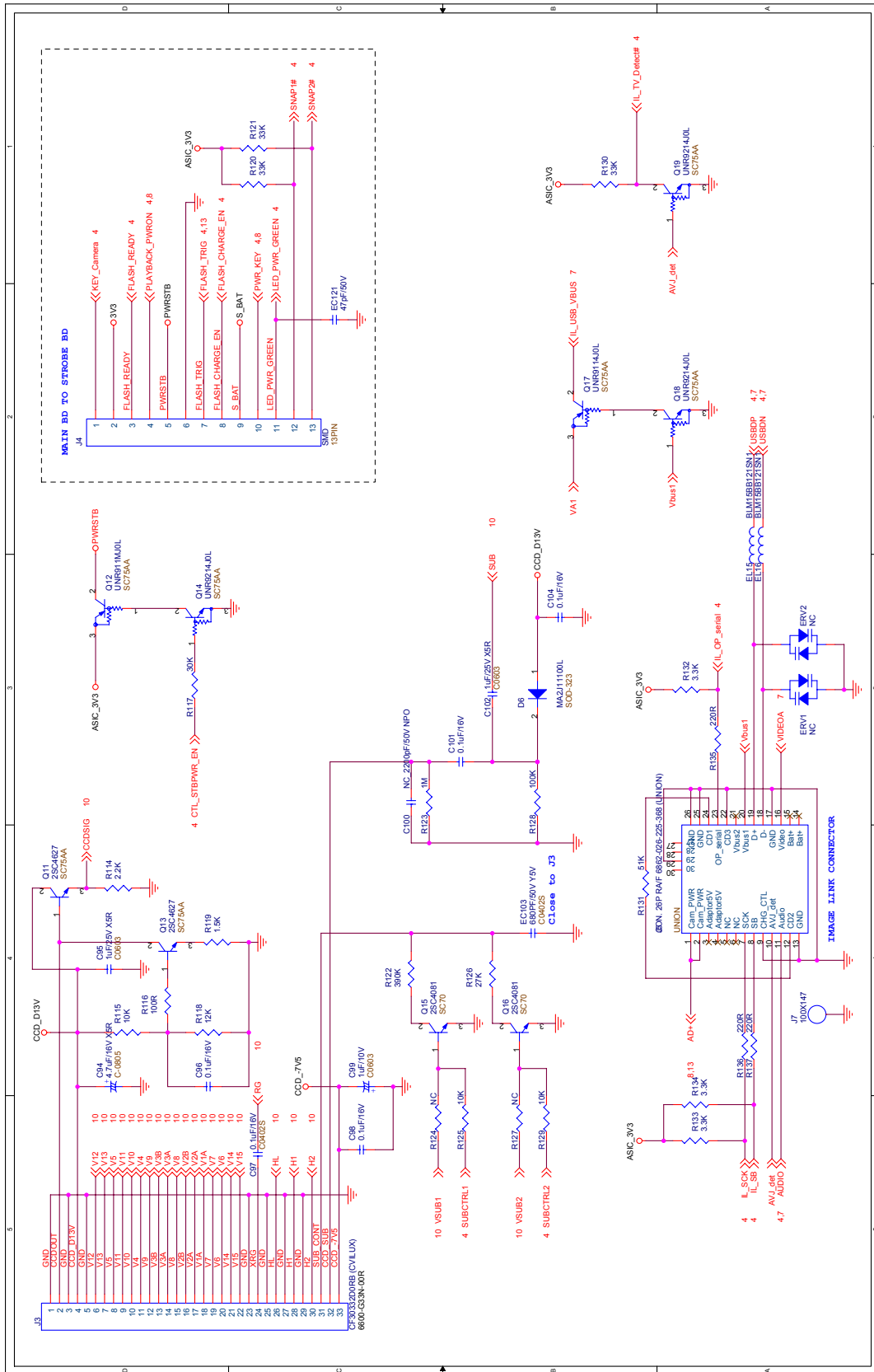


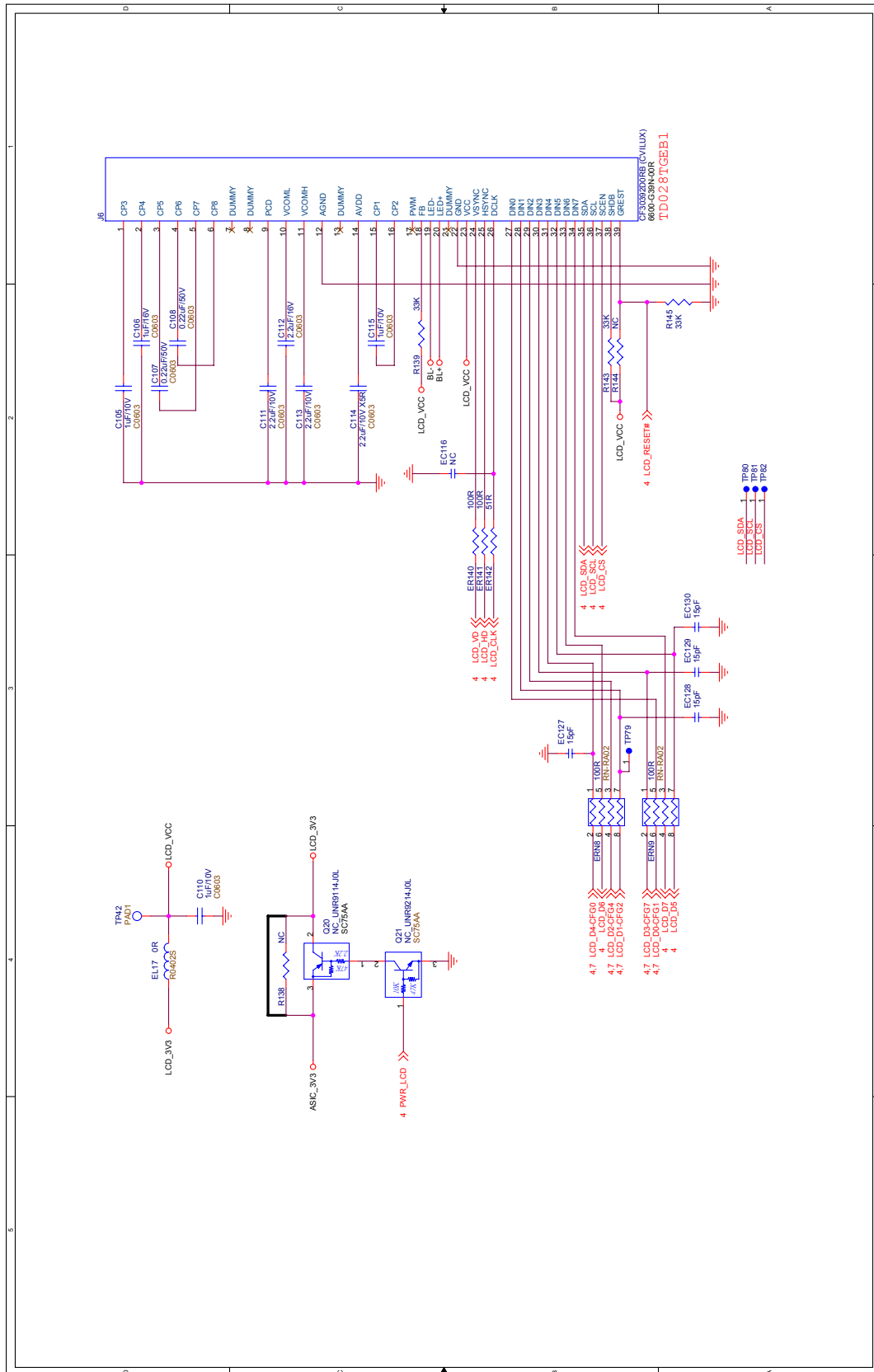


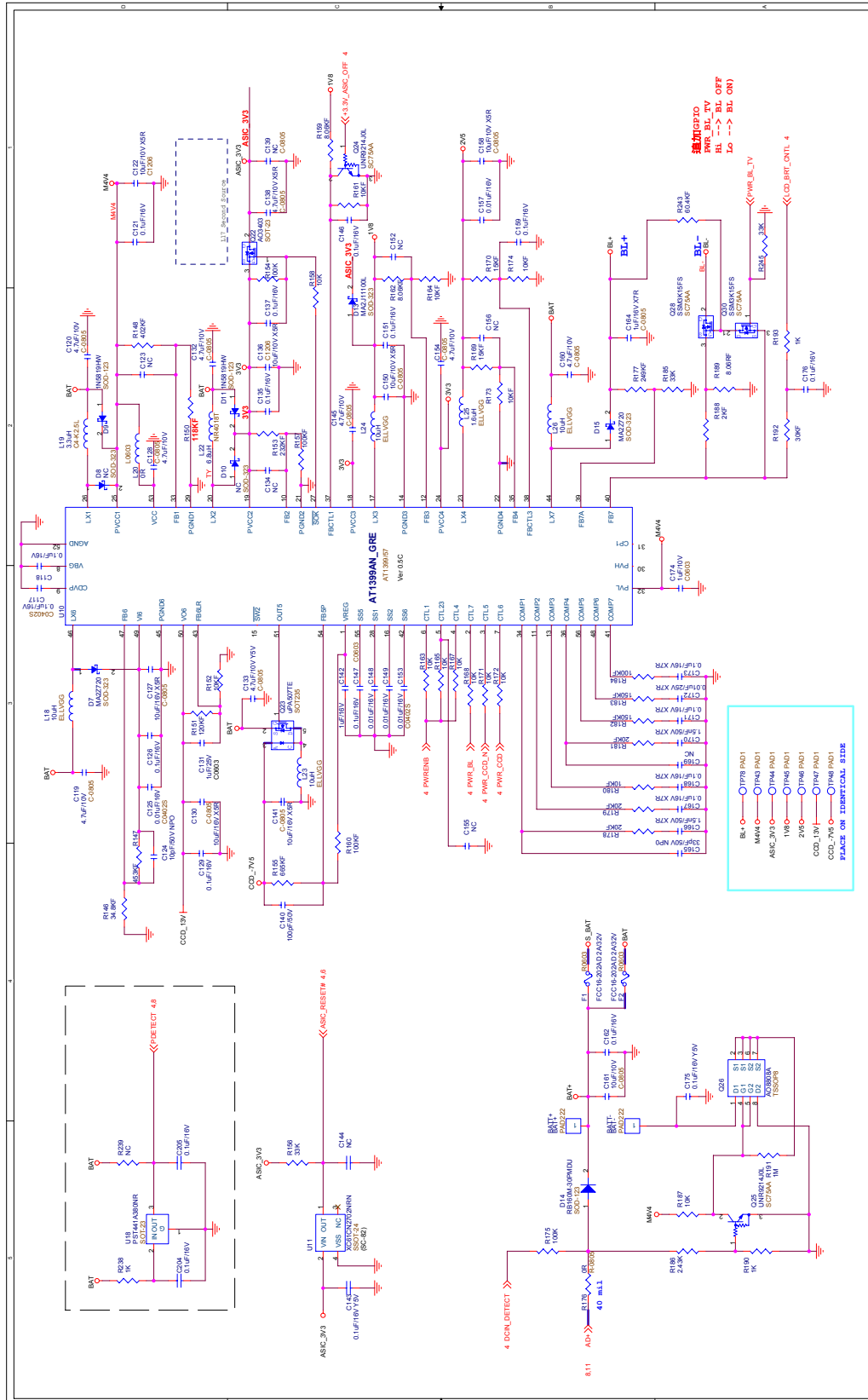


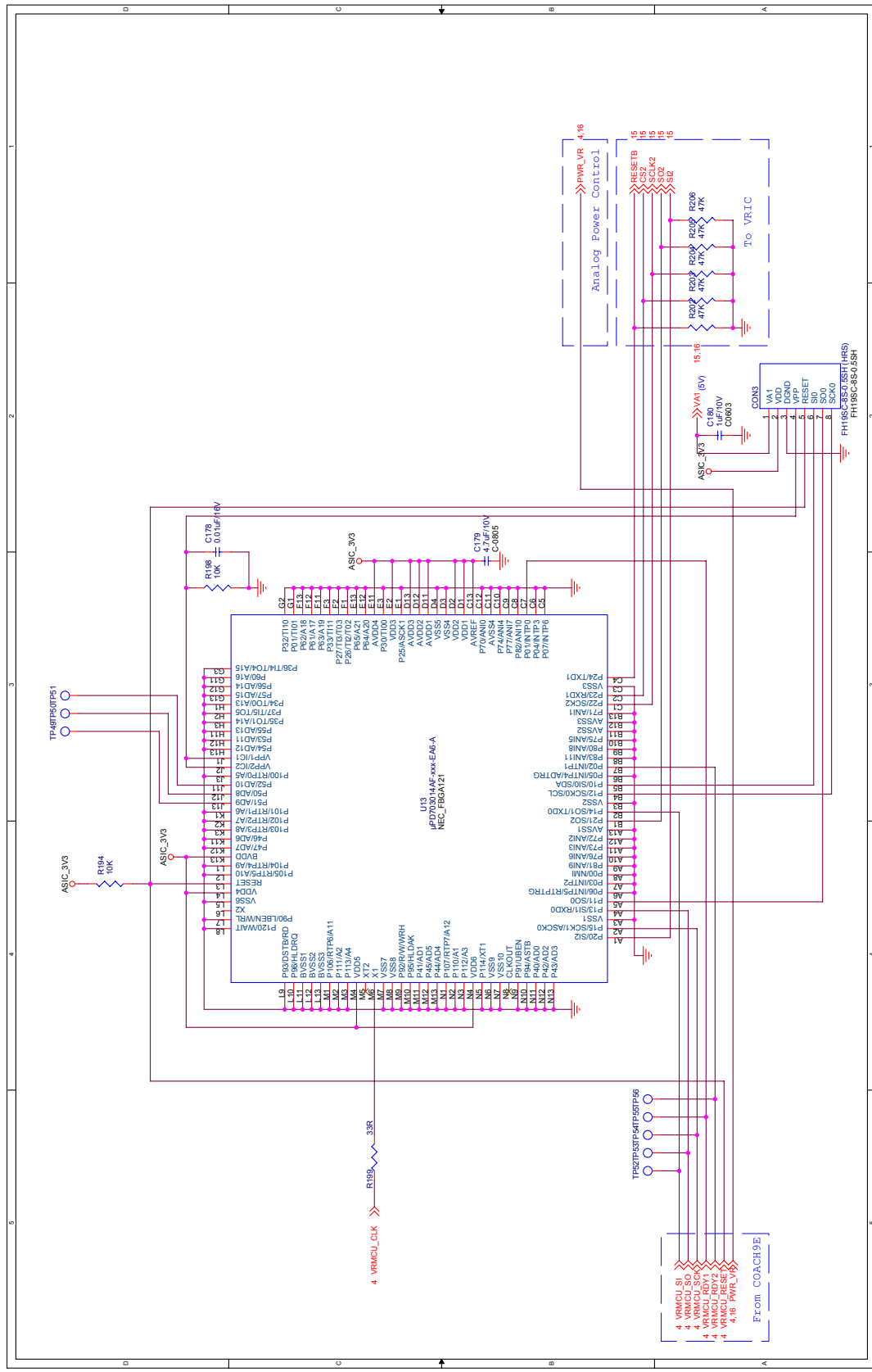


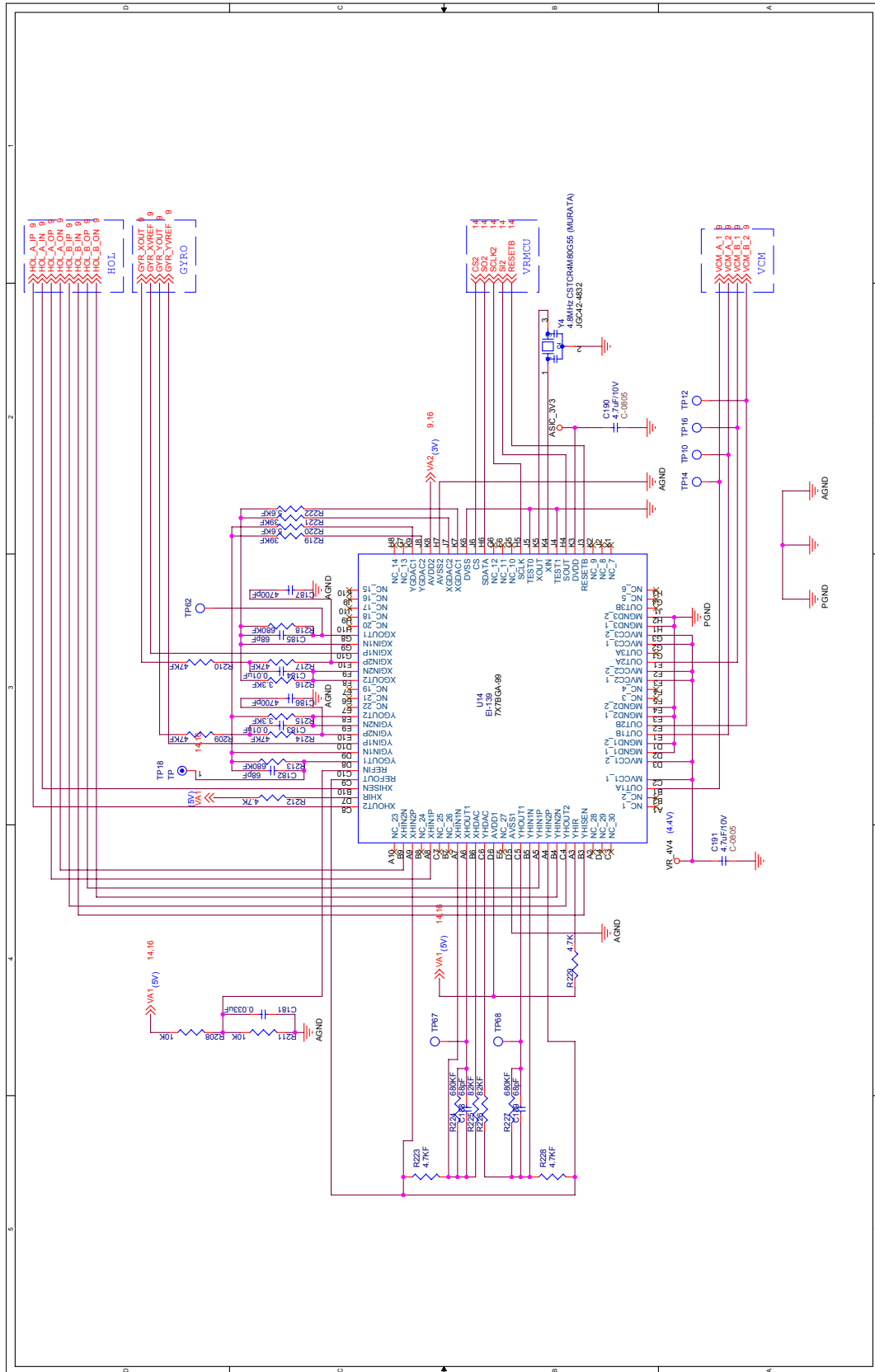


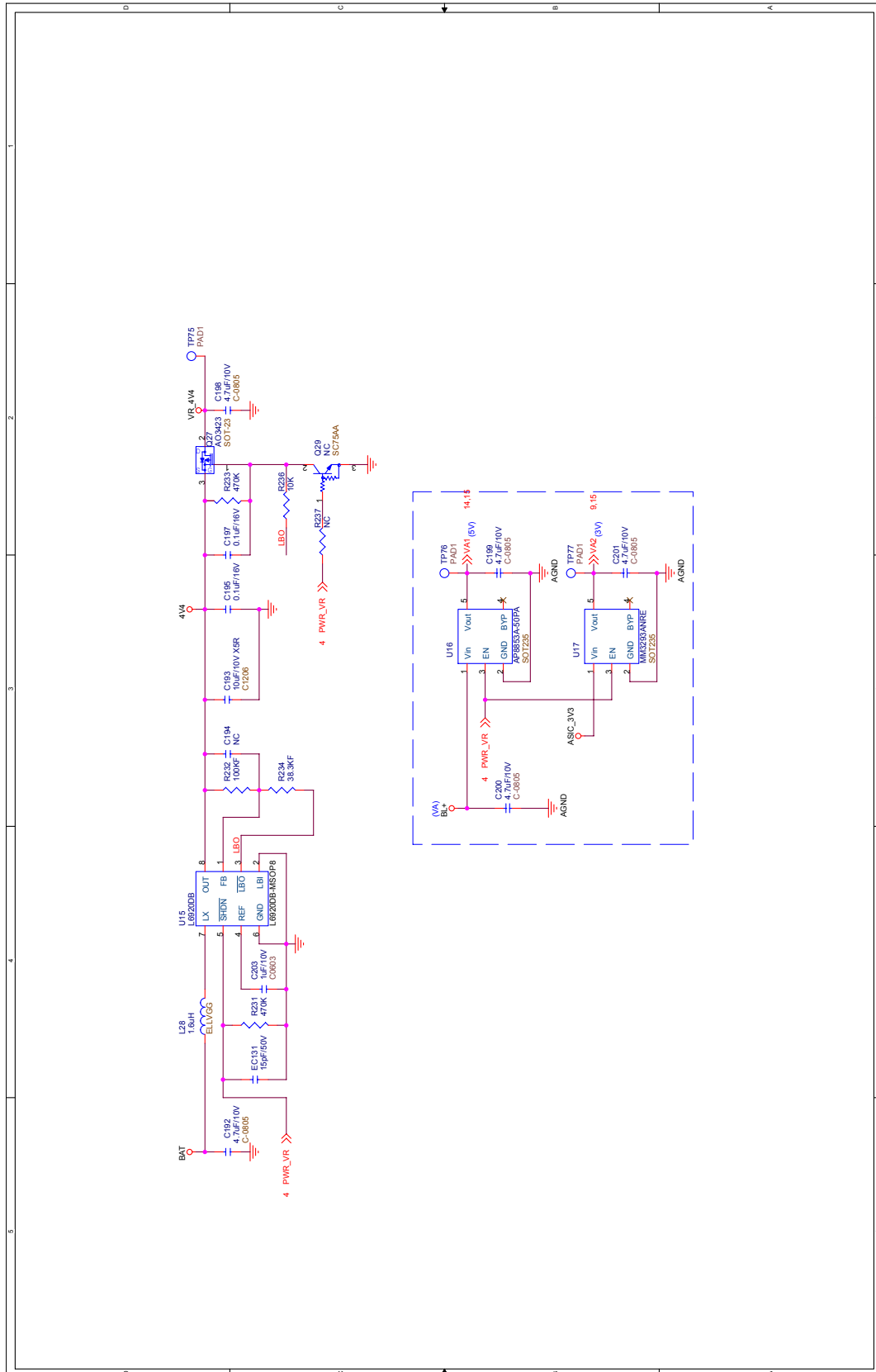




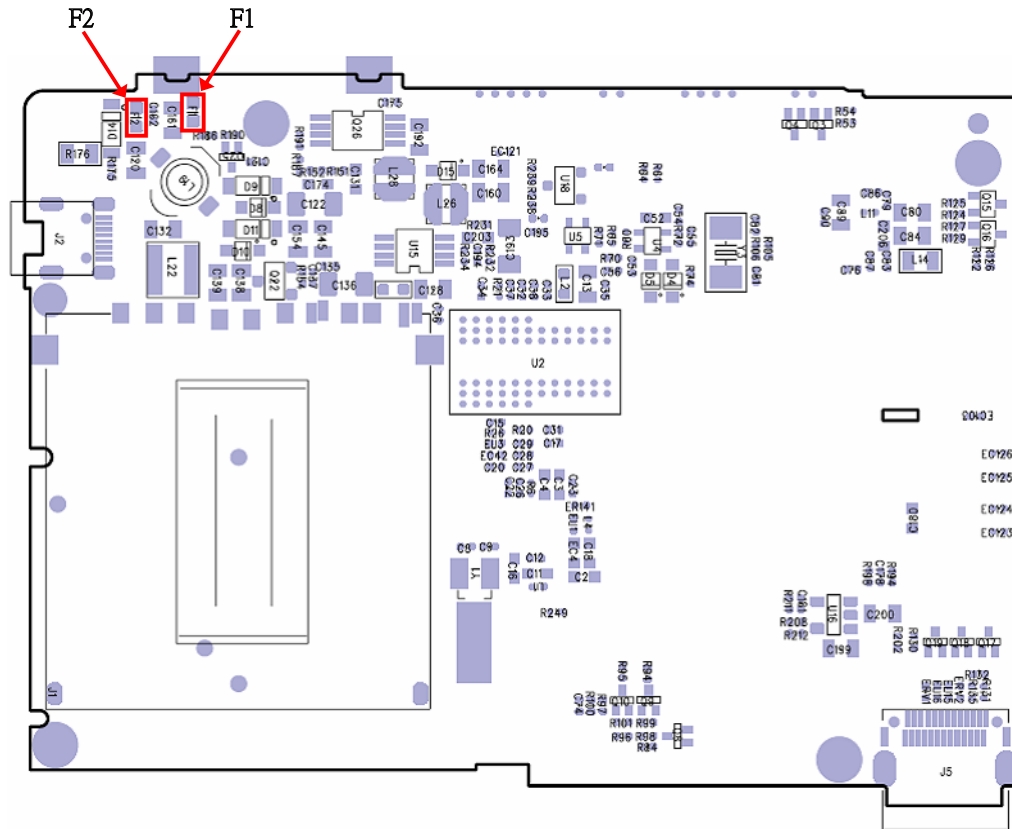








FUSE arrangement (MAIN BOARD UNIT)



FUSE	Function of FUSE	Fuse broken circuit	SPEC.
F1	Strobe board BAT Protection (abnormal Power)	No Power	2A/32V
F2	Main board BAT Protection (abnormal Power)	No Power	2A/32V

Inspection Standards

Item	Criteria	Applied tool(s)
<p>External view</p> <p>Gap/Difference in height</p>	<ul style="list-style-type: none"> • General components <ul style="list-style-type: none"> Gap: 0.3mm or less Difference in steps (height): 0.15 mm or less • When the battery cover is opened/closed: <ul style="list-style-type: none"> Gap in its periphery: 0.3 mm or less Gap in the bottom: 0.5 mm or less Difference btwn right and left: 0.2 mm or less Difference in steps: 0.3mm or less The difference in height for the battery cover must not be protruded from the front cover. 	<p>Visual check</p>
<p>Lens performance</p> <p>Magnification</p>	<ul style="list-style-type: none"> • Wide-end position <ul style="list-style-type: none"> Magnification 166.94 (Set value) Standard 160.65 ~ 173.75 • Tele-end position <ul style="list-style-type: none"> Magnification 59.31 (Set value) Standard 57.04 ~ 61.77 • Measurement must be made only with lens barrel. • Distance to object: 1m • Perform focusing operations; Take pictures at the focused position each at WIDE and TELE. 	<p>Tripod</p> <p>Photoshop</p>
<p>Peripheral light reduction</p>	<ul style="list-style-type: none"> • Against the picture center, the luminance of the nearest peripheral area must be 35% or more. • Against the picture center, the luminance at 70% of the image height must be 55% or more. • Difference between right and left, the luminance: 20% or less. 	<p>Photoshop viewer</p> <p>Viewer</p>
<p>Ghost/Flare</p> <p>Point light source</p> <p>Surface light source</p>	<ul style="list-style-type: none"> • No outstanding ghost/flare in all operating range . • No outstanding flare at the center in all operating range. 	<p>Visual check</p>

Item	Criteria	Applied tool(s)
Distortion	<ul style="list-style-type: none"> • No outstanding deformation. <li style="padding-left: 20px;">(Set value: W: - 6.5%, T: - 0.06%) 	Visual check Take pictures of the linear object at horizontal/vertical shooting positions.
AF Focusing accuracy when AF assist illuminator lights up/ Limit of high intensity for shooting Limit of low intensity for shooting Distance metering (ranging)/Focusing time	<p>The "min" value when shooting an object 10 times in darkness must be as follows:</p> <ul style="list-style-type: none"> • "W" end Center/horizontal 800TV or more • "T" end Center/horizontal 800TV or more <p>(Resolution must be measure at W:1.5m and T:1.1m.)</p> <ul style="list-style-type: none"> • Focus must be obtained at the distance W1.9m/T1.1m. • Distance must be metered under the sunlight (80000 lux or more) • Distance must be metered with "BV-0" or more. • Wide-end : 900ms or less • Tele-end : 900ms or less 	Siemens chart EIAJ chart Oscilloscope Stopwatch Spot meter
Shooting with a speed light Light adjustment accuracy Repeating accuracy Guide No. FULL (ISO100 · m) Recycling time	<ul style="list-style-type: none"> • Tele 0.5 ~ 3.7m • Wide 0.5 ~ 6.3m • In the above range, $\pm 0.5EV$ or less • Max-Min=1EV or less • FULL 6.0 $\pm 0.4EV$ (Charge SB with a full-charged battery for 20 seconds. Flash and measure within 1 second.) • Within 8 seconds 	Standard reflection plate Flash meter Primary battery New primary-battery Stopwatch

Item	Criteria	Applied tool(s)
Image quality Resolution at AF (EIAJ chart shooting)	<ul style="list-style-type: none"> • The resolution must correspond to the following values in all the postures of the EIAJ chart evaluation. < Hight 8M(3264) > • Center horizontal/vertical: 1200 TV pcs. • Periphery horizontal/vertical: 800 TV pcs. < Normal 8M(3264) > • Center horizontal/vertical: 1200 TV pcs. • Periphery horizontal/vertical: 800 TV pcs. < 5M (2592) > • Center horizontal/vertical: 1150 TV pcs. • Periphery horizontal/vertical: 750 TV pcs. < 3M (2048) > • Center horizontal/vertical: 900 TV pcs. • Periphery horizontal/vertical: 600 TV pcs. < PC screen (1024) > • Center horizontal/vertical: 450 TV pcs. • Periphery horizontal/vertical: 300 TV pcs. < TV screen (640) > • Center horizontal/vertical: 250 TV pcs. • Periphery horizontal/vertical: 150 TV pcs. < 16:9 (3264) > • Center horizontal/vertical: 1200 TV pcs. • Periphery horizontal/vertical: 800 TV pcs. 	EIAJ chart Photoshop Siemens chart <ul style="list-style-type: none"> • Take pictures with AUTO (Image quality: High) and full aperture. • Equip the 5100K viewer with a chart in all the positions and at the distance of 0.5m or more and shoot an object in the full range of angle of view. • Open the recorded image data file through Photoshop and check the resolution visually.
Resolution in "Macro"	<ul style="list-style-type: none"> • Center horizontal/vertical: 1000 TV pcs. (Take pictures in near distance, WIDE, TELE and in the high image quality mode.)	
In the case of infinity set by manual	<ul style="list-style-type: none"> • The resolution must correspond to the following value in the whole zoom area. Center horizontal/vertical: 1000 TV pcs. (Take pictures for the whole zoom area in the high image quality mode.)	Infinity chart
In the case of AF (10 ~ 0.5m)	<ul style="list-style-type: none"> • The resolution must correspond to the following value in the whole zoom area. Center horizontal/vertical: 1200 TV pcs. (Take pictures for the whole zoom area in the high image quality mode.)	EIAJ chart Photoshop Siemens chart

Item	Criteria	Applied tool(s)																																																																																										
<p>Image quality</p> <p style="margin-left: 20px;">In the case of AF (0.3 ~ 0.15m)</p> <p style="margin-left: 20px;">In the case of "out of focus"</p> <p style="margin-left: 20px;">Noise</p> <p style="margin-left: 20px;">Reproduction of color</p>	<ul style="list-style-type: none"> • The resolution must correspond to the following value in the whole zoom area. Center horizontal/vertical: 1000 TV pcs. (Take a picture for the whole zoom area in the high image quality mode.) • The resolution must correspond to the following value in the whole zoom area. Center horizontal/vertical: 1000 TV pcs. <p>[Histogram's standard deviation]</p> <ul style="list-style-type: none"> • With Min.ISO sensitivity: Black: 3.5 or less Gray: 3.5 or less • With ISO sensitivity 1000: Black: 13.0 or less Gray: 13.0 or less • Reference value and SPEC (ΔE): <table border="1" style="width: 100%; border-collapse: collapse; margin: 10px 0;"> <thead> <tr> <th style="width: 5%;"></th> <th style="width: 45%;">Color</th> <th style="width: 10%;">L*</th> <th style="width: 10%;">a*</th> <th style="width: 10%;">b*</th> <th style="width: 10%;">ΔE</th> </tr> </thead> <tbody> <tr><td>1</td><td>Bluish Green (1,6)</td><td>76.6</td><td>-35.0</td><td>4.6</td><td>≤ 6</td></tr> <tr><td>2</td><td>Orange(2,1)</td><td>61.4</td><td>33.7</td><td>57.4</td><td>≤ 6</td></tr> <tr><td>3</td><td>Moderate Red (2,3)</td><td>55.4</td><td>55.7</td><td>16.6</td><td>≤ 6</td></tr> <tr><td>4</td><td>Yellow Green (2,5)</td><td>73.5</td><td>-31.9</td><td>59.7</td><td>≤ 6</td></tr> <tr><td>5</td><td>Blue (3,1)</td><td>35.4</td><td>26.5</td><td>-60.4</td><td>≤ 6</td></tr> <tr><td>6</td><td>Green (3,2)</td><td>58.9</td><td>-43.7</td><td>41.2</td><td>≤ 6</td></tr> <tr><td>7</td><td>Red (3,3)</td><td>46.3</td><td>59.4</td><td>36.8</td><td>≤ 6</td></tr> <tr><td>8</td><td>Yellow (3,4)</td><td>81.7</td><td>-13.1</td><td>73.8</td><td>≤ 6</td></tr> <tr><td>9</td><td>Magenta (3,5)</td><td>58.6</td><td>57.5</td><td>-21.0</td><td>≤ 6</td></tr> <tr><td>10</td><td>Cyan (3,6)</td><td>62.1</td><td>-19.2</td><td>-26.9</td><td>≤ 6</td></tr> </tbody> </table> <ul style="list-style-type: none"> • Conditions: "Image" mode set to "Normal"; using standard light source equipment (D65 light source); Macbeth chart (neutral 6.5); Preset (WB) • Take pictures so that the whole Macbeth chart occupies approx. 1/4 area of the LCD monitor. (Background: 18% gray chart) • Open the file through Photoshop, and display the palette for information. • Read the value of "RGB" in the center of each color, and convert to "L*", "a*", and "b*" by calculation. <p style="margin-left: 20px;">Macbeth chart color position</p> <table border="1" style="width: 100%; border-collapse: collapse; margin: 10px 0;"> <tbody> <tr><td style="width: 25px;"></td><td style="width: 25px;"></td><td style="width: 25px;"></td><td style="width: 25px;"></td><td style="width: 25px;"></td><td style="width: 25px;">1</td></tr> <tr><td>2</td><td></td><td>3</td><td></td><td>4</td><td></td></tr> <tr><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table>		Color	L*	a*	b*	ΔE	1	Bluish Green (1,6)	76.6	-35.0	4.6	≤ 6	2	Orange(2,1)	61.4	33.7	57.4	≤ 6	3	Moderate Red (2,3)	55.4	55.7	16.6	≤ 6	4	Yellow Green (2,5)	73.5	-31.9	59.7	≤ 6	5	Blue (3,1)	35.4	26.5	-60.4	≤ 6	6	Green (3,2)	58.9	-43.7	41.2	≤ 6	7	Red (3,3)	46.3	59.4	36.8	≤ 6	8	Yellow (3,4)	81.7	-13.1	73.8	≤ 6	9	Magenta (3,5)	58.6	57.5	-21.0	≤ 6	10	Cyan (3,6)	62.1	-19.2	-26.9	≤ 6						1	2		3		4		5	6	7	8	9	10							<p>EIAJ chart Photoshop Siemens chart</p> <p>EIAJ chart Photoshop Siemens chart</p> <p>Macbeth chart</p>
	Color	L*	a*	b*	ΔE																																																																																							
1	Bluish Green (1,6)	76.6	-35.0	4.6	≤ 6																																																																																							
2	Orange(2,1)	61.4	33.7	57.4	≤ 6																																																																																							
3	Moderate Red (2,3)	55.4	55.7	16.6	≤ 6																																																																																							
4	Yellow Green (2,5)	73.5	-31.9	59.7	≤ 6																																																																																							
5	Blue (3,1)	35.4	26.5	-60.4	≤ 6																																																																																							
6	Green (3,2)	58.9	-43.7	41.2	≤ 6																																																																																							
7	Red (3,3)	46.3	59.4	36.8	≤ 6																																																																																							
8	Yellow (3,4)	81.7	-13.1	73.8	≤ 6																																																																																							
9	Magenta (3,5)	58.6	57.5	-21.0	≤ 6																																																																																							
10	Cyan (3,6)	62.1	-19.2	-26.9	≤ 6																																																																																							
					1																																																																																							
2		3		4																																																																																								
5	6	7	8	9	10																																																																																							

Item	Criteria	Applied tool(s)																														
Dust appearance	<ul style="list-style-type: none"> • There must not be an outstanding dust in a picture. • When the picture center (within the circle whose diameter is 80% of the short side) is Zone I and its outside is Zone II, the light reduction against the periphery must be as follows : <table border="1" data-bbox="491 465 979 573"> <tr> <td></td> <td>a</td> <td>b</td> </tr> <tr> <td>Zone A</td> <td>4 dusts or less</td> <td>0</td> </tr> <tr> <td>Zone B</td> <td>10 dusts or less</td> <td>2 dusts or less</td> </tr> </table> <p>a: 1.5% or less b : More than 1.5% and less than 3.0% (Take pictures of the 5100K viewer under the condition of the "T" end and minimum aperture, then check the image.) (Check on PC.)</p>		a	b	Zone A	4 dusts or less	0	Zone B	10 dusts or less	2 dusts or less	Photoshop CRT monitor																					
	a	b																														
Zone A	4 dusts or less	0																														
Zone B	10 dusts or less	2 dusts or less																														
LCD and others Pixel defects	<ul style="list-style-type: none"> • Defect in lines: None • Defect in pixels must be the followings or less. • High luminescent (white) pixel: Visible normally through 2% ND filter • Low luminescent (white) pixel: Visible normally through 5% ND filter • Dim pixel: Dark pixels <table border="1" data-bbox="491 1205 1182 1339"> <thead> <tr> <th></th> <th>High</th> <th>Low</th> <th>Dim</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>A zone</td> <td>0</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>B zone</td> <td>1</td> <td>2</td> <td>2</td> <td>3</td> </tr> <tr> <td>Total</td> <td>1</td> <td>2</td> <td>2</td> <td>3</td> </tr> </tbody> </table> <ul style="list-style-type: none"> • Continuous luminescent pixels: None • Continuous dim pixels: None <p>(Reproduce each single color of R, G, B and white. Make a visual check.)</p> <table border="1" data-bbox="491 1594 911 1973"> <tr> <td>1</td> <td>4</td> <td>1</td> <td></td> </tr> <tr> <td colspan="3" rowspan="3"> </td> <td>1</td> </tr> <tr> <td>4</td> </tr> <tr> <td>1</td> </tr> </table> <p>B: Valid display range A: Area of 16/36 when measured from the center of B</p>		High	Low	Dim	Total	A zone	0	2	2	2	B zone	1	2	2	3	Total	1	2	2	3	1	4	1					1	4	1	
	High	Low	Dim	Total																												
A zone	0	2	2	2																												
B zone	1	2	2	3																												
Total	1	2	2	3																												
1	4	1																														
			1																													
			4																													
			1																													

Item	Criteria	Applied tool(s)
VR function Vibration control accuracy (Process inspection)	<ul style="list-style-type: none"> • Take a picture 3 times in each position (for horizontal and vertical shooting.) If even one result is out of standard, the function is judged as defective. • Standard : 10 pixels or less 	Antivibration inspection device
Electric characteristics Consumption current Stand-by (idle current) Startup (Shooting)	<ul style="list-style-type: none"> • 0.27 mA or less (when power is OFF, without SD card) • 0.39 mA or less (when power is OFF, with SD card) • 80 mA or less (at "Sleep") • 0.75mW or less (when power is OFF) • 1.1 A or less (AUTO start-up monitor: ON) 	Constant voltage power supply Ammeter (Backup battery must be full charged.)
B. C voltage (When voltage increases) (Alkaline battery) Level 1 Level 2 Level 3 (Ni-MH) Level 1 Level 2 Level 3 (Li battery) Level 1 Level 2 Level 3	<ul style="list-style-type: none"> • 2.28±0.1V • 2.11±0.1V (Battery indicator blinks.) • No regulation on voltage (Power OFF) • 2.38±0.1V • 2.11±0.1V (Battery indicator blinks.) • No regulation on voltage (Power OFF) • 2.56±0.1V • 2.11±0.1V (Battery indicator blinks.) • No regulation on voltage (Power OFF) 	Constant voltage power supply Ammeter Dummy battery pack
Regulation for the battery "half" indicator	<p>Alcali 85 ± 5% (25°C)</p> <p>Ni-MH 85 + 5 / - 10% (25°C)</p> <p>Li battery 75 + 10 / - 15% (25°C)</p> <p>Alcali 75 + 10 / - 15% (10°C)</p> <p>Ni-MH 75 + 10 / - 15% (10°C)</p> <p>Li battery 75 + 10 / - 15% (10°C)</p>	Primary battery Secondary battery

工具一覧表 Tool List

※：新規工具
※：New tool

工具番号 Tool No.	名 称 Name	備 考 Remarks
J63070 (100-240Volts)	カラービューア 5100K Colour Viwer 5100K 	共通 COMMON E900, E910, E950, E700, E800, E995, E775 E885, E5000, L4, S9, L10, L11
J63090	コリメーター (C-DSC) Collimator (C-DSC) 	Common 共通
J61222 △ (追加) △ (Addition)	二次元バーコードリーダー Two-dimensional bar code leader 	共通 Common S10, L12, S500, S510, P5000, P5100
No.RJ availabl	パーソナルコンピュータ Computer	Common 共通
RJ 設定なし No.RJ available	USB ケーブル (UC-E6) USB CABLE (UC-E6)	商品転用 To use Product



※：新規工具

※：New tool

工具番号 Tool No	名 称 Name	備 考 Remarks
RJ 設定なし No. RJ available	AC アダプター (EH-65A) AC adapter (EH-65A)	商品転用 To use Product
※ J65104	L15_EEPROMTOOL	L15 専用 Exclusive for L15
※ J65105	Service Center Tool	L15 専用 Exclusive for L15
J65096	QR リーダーソフト QR Reader Software	共通 COMMON L12, S500, S510, P5000 P5100
J63093	フィルター ND1.0 Filter (ND1.0)	共通 COMMON L4, L10, L11
		
J63081	カラーメーター Color meter	Common 共通
		
J63068	輝度計 BM-3000 Luminosity meter (BM-3000)	Common 共通
		

※：新規工具

※：New tool

工具番号 Tool No	名 称 Name	備 考 Remarks
J18360	標準反射板 Standard reflection paper	Common 共通
EDB0011	ネジ ロック (赤) 1401C Screw lock 1401C 	
EDA1021	セメダイン ハイスーパー 5 Cemedain high super 5 	
J67032	セメダイン スーパー X Cemedain super X 