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SERVICE MANUAL (COMMON)

ORIGINAL MANUAL ISSUE DATE: 2021.03

GR1VH CHASSIS
Segment : AR

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LCD TV

SONY

Sony EMCS (M) Sdn. Bhd., SHES-M

REVISION HISTORY

Version	Date	Subject
1	2021.03	1st Issue

SONY

MODEL LISTS

Self Diagnosis Supported model

THIS SERVICE MANUAL CONTAINS **COMMON INFORMATION** FOR BELOW REGIONS AND MODELS:

REGION

AMERICA

ASIA

CHINA

MODEL

XR-50X9*J	XR-55X9*J	XR-65X9*J	XR-75X9*J	XR-100X9*
XRM-50X9*J	XRM-55X9*J	XRM-65X9*J	XRM-75X9*J	

TABLE OF CONTENTS

Please refer Service Manual – Unique for below information :

- Disassembly and Removal Caution
- Wire Dressing
- Circuit Board Location
- Exploded Views and Part Lists

Note: Pictures provided in this manual may have difference from actual sets

SAFETY NOTES

1-1. Warnings and Caution

1) CAUTION :These servicing instructions are for use by qualified service personnel only.

2) To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

3) WARNING!! : An isolation transformer should be used during any service to avoid possible shock hazard, because of live chassis. The chassis of this receiver is directly connected to the ac power line.

The replaceable fuse could be in the neutral of the mains supply. When replacing the fuse, the mains shall be disconnected for de-energize the phase conductors.

(*Except AC ADAPTOR, Because it does not carry out replacing an internal fuse.)

4) CARRYING THE TV : Be sure to follow these guidelines to protect your property and avoid causing serious injury :

• Carry the TV with an adequate number of people; larger size TVs require two or more people.

•Correct hand placement while carrying the TV is very important for safety and to avoid damages.

5) SAFETY-RELATED COMPONENT WARNING!! : Components identified by shading and ! mark on the exploded views, and in the parts list are critical for safe operation. Replace these components with Sony parts whose part numbers appear as shown in this manual or in supplements published by Sony. Circuit adjustments that are critical for safe operation are identified in this manual. Follow these procedures whenever critical components are replaced or improper operation is suspected.

6) IMPORTANT REMINDER FOR TV MAINBOARD REPLACEMENT :

It is mandatory for service centers to confirm the TV's system information after each repair carried out with Mainboard replacement.

Whenever a TV Main board is replaced, the correct TV Model and Serial number must be reinserted into memory.

This is a MANDATORY procedure that each service center must apply.

Please refer to the chapter of ADJUSTMENT in this service manual to find out how to set the model number and serial number in service mode.

1-2-1. Caution Handling of LCD Panel

When repairing the LCD Panel, make sure you are grounded with a wrist band.
When repairing the LCD Panel on the wall, the panel must be secured using the 4 mounting holes on the rear cover.

1) Do not press the panel or frame edge to avoid the risk of electric shock.

2) Do not scratch or press on the panel with any sharp objects.

3) Do not leave the module in high temperature or in areas of high humidity for an extended period of time.

4) Do not expose the LCD panel to direct sunlight.

5) Avoid contact with water. It may cause short circuit within the module.

6)Disconnect the AC power when replacing the backlight (CCFL) or inverter circuit. (High voltage occurs at the inverter circuit at 650Vrms)

7) Always clean the LCD panel with a soft cloth material.

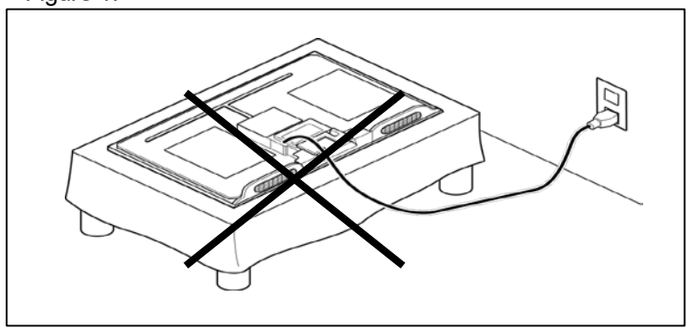
8) Use care when handling the wires or connectors of the inverter circuit. Damaging the wires may cause a short circuit.

9) Protect the panel from ESD to avoid damaging the electronic circuit (C-MOS).

SAFETY NOTES

10) During the repair, DO NOT leave the Power On or Burn-in period for more than 1 hour while the TV is face down on a cloth. Refer Figure 1

Figure 1.



1-3. Caution_for_Board_handling

Symptom : The following problems will occur due to handling of the IC mounted on the board

- ・Solder crack due to substrate handling (stress)
- ・IC breakdown due to static electricity (ESD)

When repairing the TV at the customer's home or service station or Repair of defect board, please pay attention to the handling of the board

※Substrate that needs attention for handling
・Main Board（B** - Board）
・Backend Board（D** - Board）

ESD wrist-strap


※Things to prepare in advance

ESD cushion/sheet
Please use a bag containing the board or a special seat

ESD wrist-strap to be checked daily.
Use Multi-meter to make sure resistance of ESD wrist-strap is OK.
(R=750K Ohms to 35Mega Ohms)

SAFETY NOTES

1) Caution for Board handling(Stress)
Be sure to observe the following contents.

① Hold the board with both hands


② Do not hold/push Heat-Sink

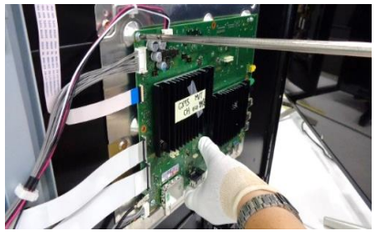
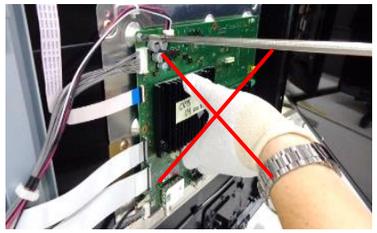

③ Handle with care. Do not swing.

④Regardless of Good board or Defective board, always put it on ESD cushion/sheet slowly.


⑤Do not stack up

⑥Keep vertical position and put in/take out from Box.
Always put in to ESD bag then place into Box/Container Box.

SAFETY NOTES

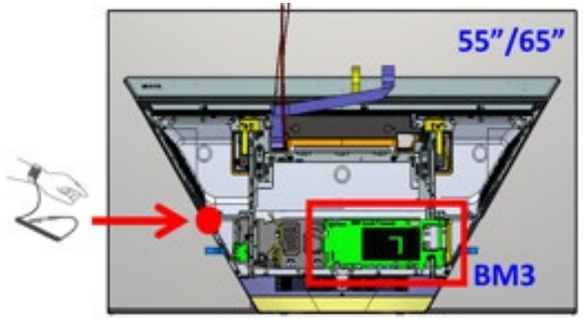
⑦Do not hold Heat-Sink when take out or install it..
 

2) Caution for Board handling(ESD)
Be sure to observe the following contents.

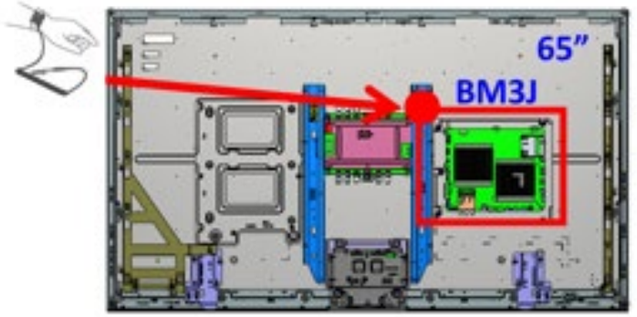
①When take off Rear-Cover, do not touch to board	②Use ESD wrist-strap
	

※Installation example of wrist-strap
Please connect the clip to the metal part of the chassis of the TV with the wristband grounded. Below is a grounding example of each model.

＜K*-55/65A9F＞



＜K*-65Z9F＞



※Caution
ESD wrist-strap to be checked daily.
Use Multi-meter to make sure resistance of ESD wrist-strap is OK.(R=750K Ohms to 35Mega Ohms)

SAFETY NOTES

③When holding board, do not hit/touch to Plastic part(s)

④After take defective board out from TV, put it into ESD bag. Do not place on floor mat/carpet direct. And, always put it on ESD cushion

1-4. Caution About the Lithium Battery

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

2) Outer case broken battery should not contact to water.

1-5. Safety Check-Out

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:-

1)Check the area of your repair for unsoldered or poorly soldered connections. Check the entire board surface for solder splashes and bridges.

2)Check the inter board wiring to ensure that no wires are pinched or contact high-wattage resistors.

3)Check all control knobs, shields, covers, ground straps and mounting hardware have been replaced. Be absolutely certain you have replaced all the insulators.

4) Look for unauthorized replacement parts, particularly transistors that were installed during a previous repair. Point them out to the customer and recommend their replacement.

5) Look for parts which, though functioning show obvious signs of deterioration. Point them out to the customer and recommend their replacement.

6) Check the line cords for cracks and abrasion. Recommend the replacement of any such line cord to the customer.

7) Check the antenna terminals, metal trim, metalized knobs, screws and all other exposed metal parts for AC leakage. Check leakage test as described next.

8. For safety reasons, repairing the Power board and/or Inverter board is prohibited.

1-6. Leakage Test

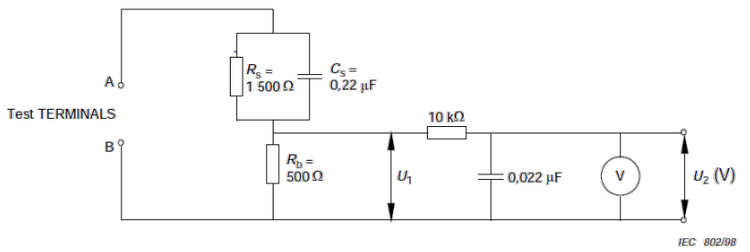
(To protect electric shock when customer touch the terminal.)
Leakage current can be measured by V: Voltmeter or oscilloscope (r.m.s. or peak reading)

Stabilized power supply instrument and isolated voltage transformer:
Use too much current capacity and isolated voltage transformer does not need to use stabilized power supply equipment.
Specification of RMS volt meter: Input resistance > 1 Mohm, Input capacitance < 200 pF, Frequency range: 15 Hz – 1MHz . Refer Figure 2. Isolated type volt -meter (FLUKE 8921A etc *1)

Stabilized power supply instrument and isolated voltage transformer:
Use too much current capacity and isolated voltage transformer does not need to use stabilized power supply equipment.
Specification of RMS volt meter: Input resistance > 1 Mohm, Input capacitance < 200 pF, Frequency range: 15 Hz – 1MHz . Refer Figure 2. Isolated type volt -meter (FLUKE 8921A etc *1)
*1 Not use FLUKE 8920A that connected to protective earth by diode
Leakage current of measurement instrument is less than 10μArms when under test equipment AC plug is opened
Set up the following condition and turn on the set. Applied voltage: Nominal input voltage (Description on Nameplate)
Measure the leakage current between one phase conductor and neutral for terminal A and terminal B.
Read rms value, and then calculate to peak value PEAK VALUE =√2 RMS VALUE

Comply with the following requirement
Class II equipment (2-pin plug): for each terminal, the worst value of measurement must not exceed AC 350uA peak).
Note: including AC adaptor, AC adaptor/DC operated unit combination

Figure 2 – Measuring network for Leakage Current



1-7. How to Find a Good Earth Ground

1)A cold-water pipe is a guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground.
2)If the retaining screw is to be used as your earth ground, verify that it is at ground by measuring the resistance between it and a cold-water pipe with an ohmmeter. The reading should be zero ohms.
3)If a cold-water pipe is not accessible, connect a 60- to 100-watt trouble- light (not a neon lamp) between the hot side of the receptacle and the retaining screw. Try both slots, if necessary, to locate the hot side on the line; the lamp should light at normal brilliance if the screw is at ground potential (see Figure 3).

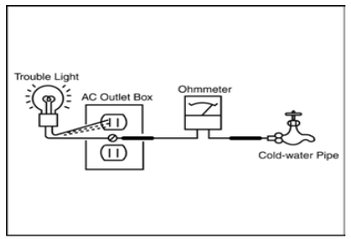


Figure 3. Checking for earth ground.

1-8. Lead Free Information

The circuit boards used in these models have been processed using Lead Free Solder. The boards are identified by the LF logo located close to the board designation.

Figure 4: LF Logo

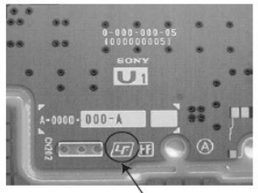


Figure 5: LF logo on circuit board

The servicing of these boards requires special precautions. It is strongly recommended to use Lead Free Solder material in order to guarantee optimal quality of new solder joints.

SELF DIAGNOSTIC FUNCTION

The units in this manual contain a self-diagnostic function. If an error occurs, the Smart Core Red LED will automatically begin to flash. The number of times the LED flashes translates to a probable source of the problem.

A definition of the Smart Core Red LED flash indicators is listed in the instruction manual for the user's knowledge and reference.
If an error symptom cannot be reproduced, the remote commander can be used to review the failure occurrence data stored in memory to reveal past problems and how often these problems occur.

DIAGNOSTIC TEST INDICATORS

When an error occurs, the Smart Core Red LED will flash a set number of times to indicate the possible cause of the problem. If there is more than one error, the LED will identify the first of the problem areas.

Result for all of the following diagnostic items are displayed on screen. If the screen displays a "0", no error has occurred .

Self Diag. Quick Reference (LED blinking)

Smart Core RED LED blinking count	Error Item	AR
2x	MAIN_POWER	<B/G> Main 12V over voltage
3x	DC_ALERT	<B/G> Main 5.0V failure
	AUD_ERR	<B/S> Audio amp. protection
4x	*LD_ERR*	<LD/P/B/G> LED driver failure/LED voltage protection
	BCM_ERR	<LD/B> LD IC initialize failed. *Error detection of the I2C communication between the Main device and the LD IC.*
5x	*P_ID_ERR*	<B/T/P/G> *Panel ID EEPROM I2C No ACK (Also panel power failure is a suspect)*
6x	BACKLIGHT_ERR	<B/G/P/LD> Backlight failure
7x	TEMP_ERR	<B/H/P> Over temperature protection
8x	4KBE_ERR	<B> 4KBE WDT

Blue italic: detect at startup sequence only.
<G>: Power Supply board, <B>: Main board, <T>: T-con board,
<LD>: LD board, <Tu>: Tuner board, <A>: Power Adapter,
<P>: Panel module, <S>: Speaker, <H>: H-board

SELF DIAGNOSTIC FUNCTION

Self Diag. Quick Reference (Not LED blinking) – Record Only

Error Item	AR
TCON ERR	<T> T-CON device I2C communication failure
AUD_ERR_I2C	<B> Audio amp I2C communication failure
TEMP_ERR_I2C	<B/H> Temp sensor I2C communication failure
TU_DEMOD_I2C	<B> Tuner & Demodulator I2C communication failure

Blue italic: detect at startup sequence only.
<G>: Power Supply board, <B>: Main board, <T>: T-con board,
<LD>: LD board, <Tu>: Tuner board, <A>: Power Adapter,
<P>: Panel module, <S>: Speaker, <H>: H-board

SELF DIAGNOSTIC FUNCTION

Self Diagnosis Service Menu

Entry (Self Diagnosis Display)

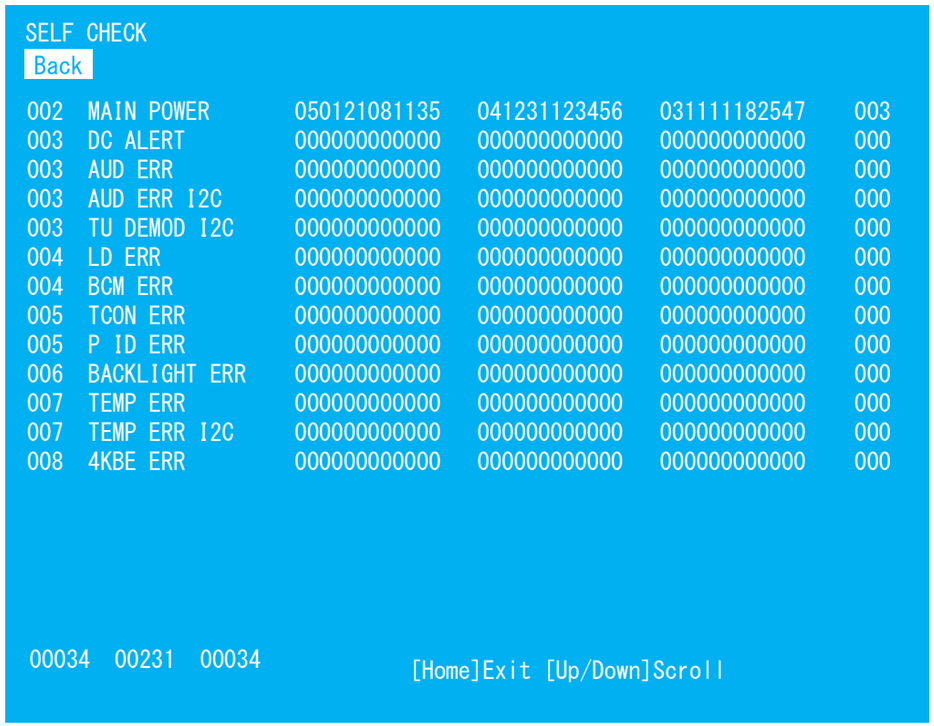
- Go to the standby by a remote.
- Push the buttons sequentially:
  <Display><5><Vol-><Power>

Exit

-If you want to finish service mode app, do **AC OFF/ON**
→*Service mode app is disable perfectly

-if you want to move home menu, push <HOME>button
→*Service mode app do background(not disable perfectly)

Self Diagnosis Display [Example]



SELF DIAGNOSTIC FUNCTION

Self Diagnosis Display

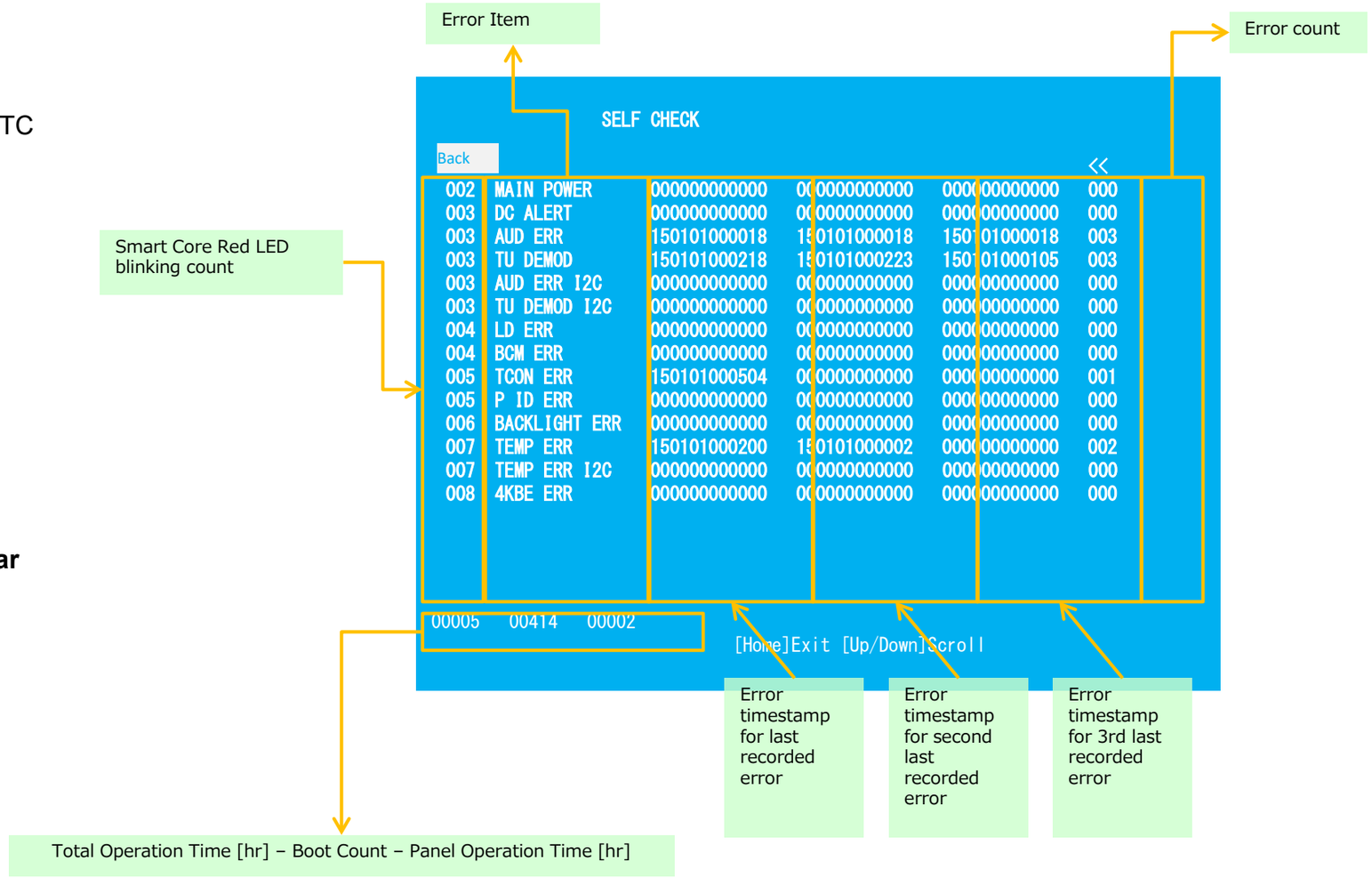
Format of error timestamps
YYMMDDhhmmss (in UTC)
Example:
120823132523 -> Aug 23 2012 13:25:23 UTC
* Only when time is set, an error timestamp is saved.

Panel Operation Time clear
<7> -> <0>

Timestamps and Error Count clear
<8> -> <0>

Total Operation Time and Boot Count clear
<9> -> <0>

•Panel Operation Time is recorded every 30 min, but Total Operation Time is recorded every 1 hour. Therefore, the panel op. time might become larger than the total op. time.



SELF DIAGNOSTIC FUNCTION

Retry Limitation by Remote / Power Key

Smart Core Red LED blinking count	Error Name	Retry Permission Times *1	Note
2x	MAIN_POWER	STDWN_RTRY_LIMIT_MAINPOWR = 1	
3x	DC_ALERT (5V)	STDWN_RTRY_LIMIT = 2	
	AUD_ERR	STDWN_RTRY_LIMIT = 2	
4x	LD_ERR	STDWN_RTRY_LIMIT = 2	
	BCM_ERR	STDWN_RTRY_LIMIT = 2	
5x	P_ID_ERR	STDWN_RTRY_LIMIT = 2	
6x	BACKLIGHT	STDWN_RTRY_LIMIT = 2	
7x	TEMP_ERR	STDWN_RTRY_LIMIT = 2	
8x	4KBE_ERR	STDWN_RTRY_LIMIT = 2	

Number of off/on action for MAIN_POWER shutdown is recorded to STDWN_OFFON_CNT_MAIN_POWER.

Number of off/on action during the error shutdown is recorded to STDWN_OFFON_CNT.

*1) If STDWN_OFFON_CNT <= STDWN_RTRY_LIMIT, and STDWN_OFFON_CNT_MAIN_POWER <= STDWN_RTRY_LIMIT_MAINPOWR, you can turn the set on by remote/power key. At this time, if the error occurs again, the STDWN_OFFON_CNT is incremented by 1.

*2) When the main micro operates normally for STDWN_OFFON_CLR = 60 minutes, STDWN_OFFON_CNT and STDWN_OFFON_CNT_MAIN_POWER are cleared.

TROUBLESHOOTING

Triage Chart

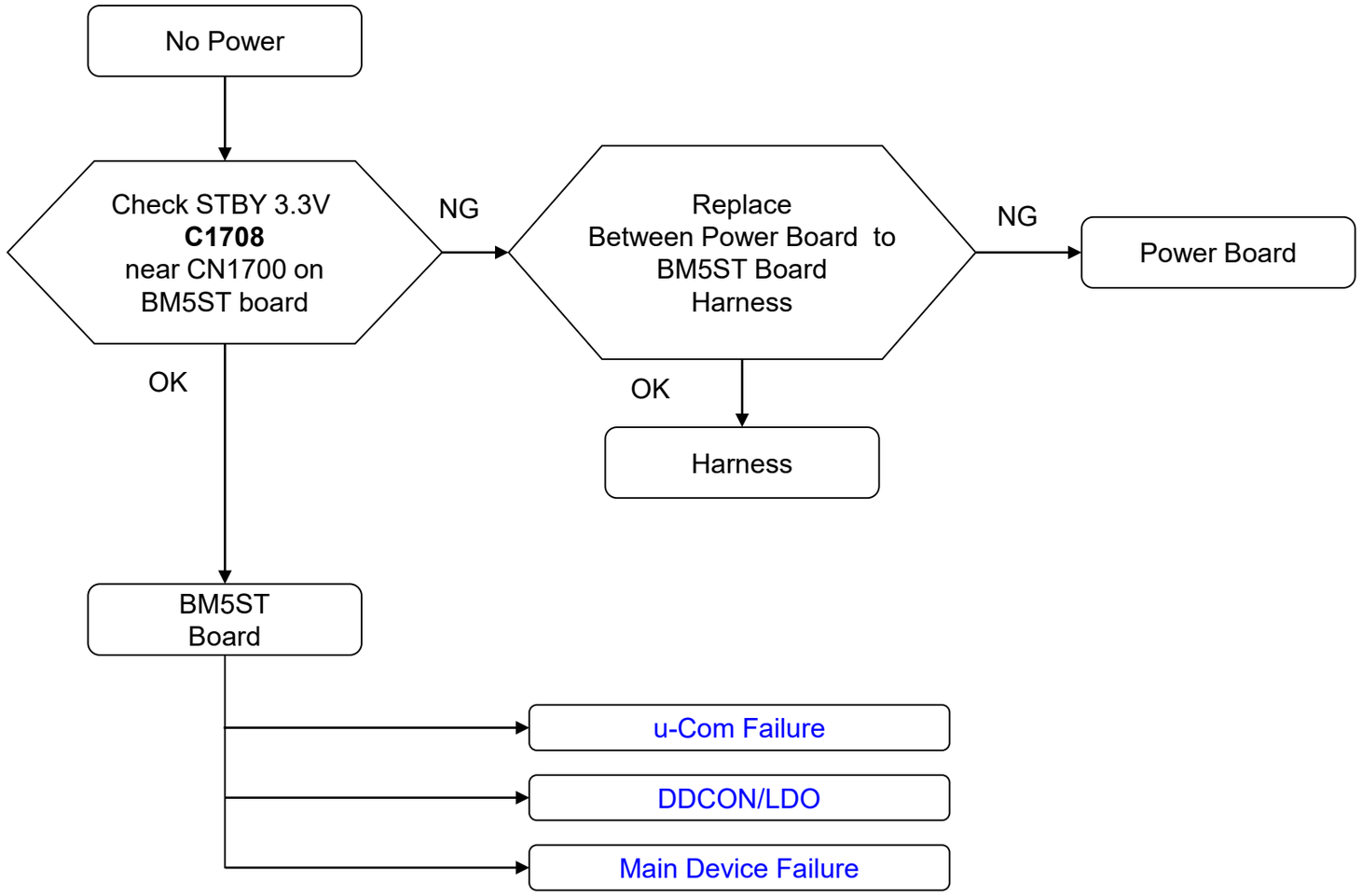
Before you make the service call…

1. Confirm the symptom from the customer.
2. Select that symptom from the chart.
3. Bring all the boards and cables listed for that symptom.
4. Follow the troubleshooting charts in the technical guides to isolate the board.
5. Chart Color Code

RED DOT: Most likely defective part
BLUE TRIANGLE: Secondary possible defective part
GREEN SQUARE: Tertiary possible defective part
BLACK TEXT: Board that may correct the symptom

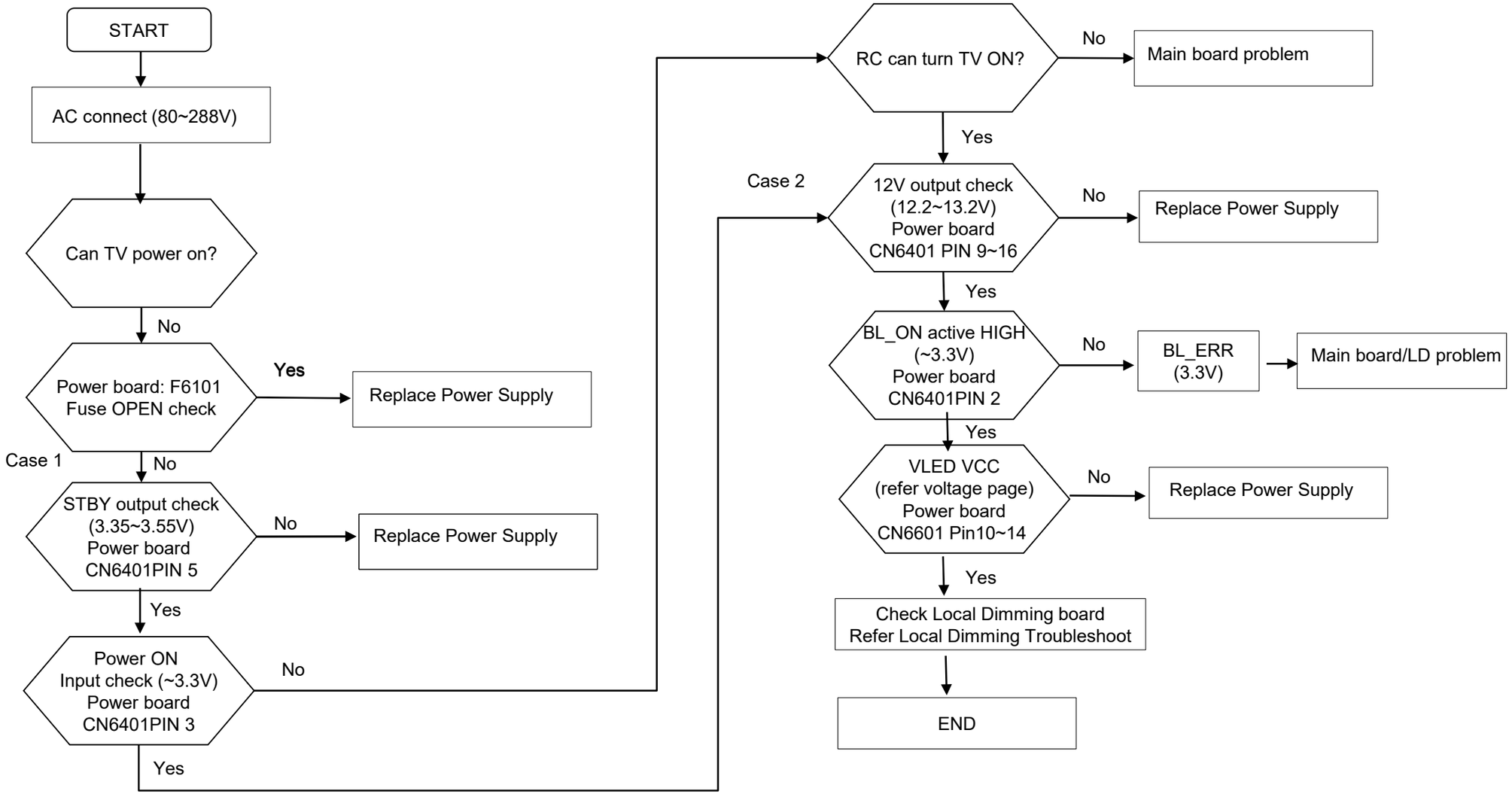
Reference	Symptoms - Shutdown. Power LED blinking red diagnostics sequences							Symptoms - no shutdown Error log record only								No Power	Video - missing or distorted				Remote	Network	Audio	Smart Core	Bluetooth (BT)	Built in MIC
	2	3	4	5	6	7	8	TU_DEMOD	TU_DEMOD_I2C	TCON_ERR	FRCTC_I2C	AUD_ER R_I2C	4KPQ_ERR_I2C	TEMP_ER R_I2C	EARC_ER R_I2C	Does not reponse to remote (Dead Set)	Stationary colored lines or dots	No video One of Inputs	NO RF input	No video all Inputs	No Remote	Wireless can't connect	No Audio	Smart Core no LED (Set is still alive)	Bluetooth / One Step Remote (OSR) can't connect	"OK Google" detection fail
Main Board	▲	●	▲	■	▲	●	●	●	●	▲		●		●	●	▲	▲	●	●	●	▲	▲	●	▲	▲	▲
Power Board	●	▲	▲	■	●											●				▲			▲			
Receiver Board																▲					●			●		▲
Speaker		▲																					●			
Wifi & BT Module																						●			●	
Local Dimming Board			●																	▲						
V By One FFC				▲						▲							▲			▲						
Tcon				●						●							▲			■						
LCD Panel			▲	■	●					■							●			■						
Problem	Power	Power Audio	LD BCM	Panel (Communication)	Panel (Backlight)	TEMP	4KBE																			

1.1 No Power

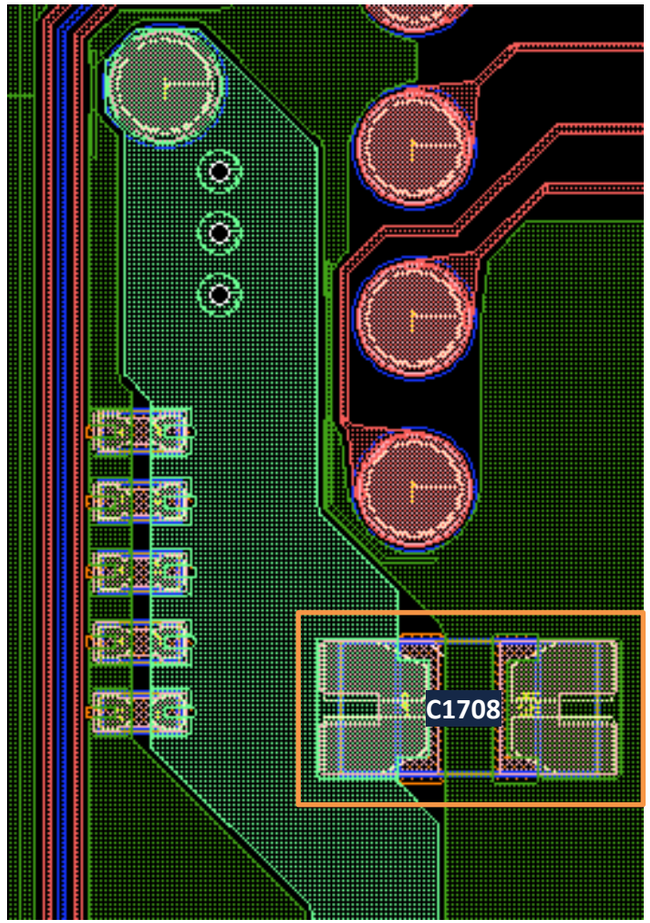

No Power
Check STBY 3.3V
C1708
near CN1700 on
BM5ST board
NG
Replace
Between Power Board to
BM5ST Board
Harness
NG
Power Board
OK
OK
Harness
BM5ST
Board
u-Com Failure
DDCON/LDO
Main Device Failure

TROUBLESHOOTING

1.1 No Power – Power board (Tv Condition)

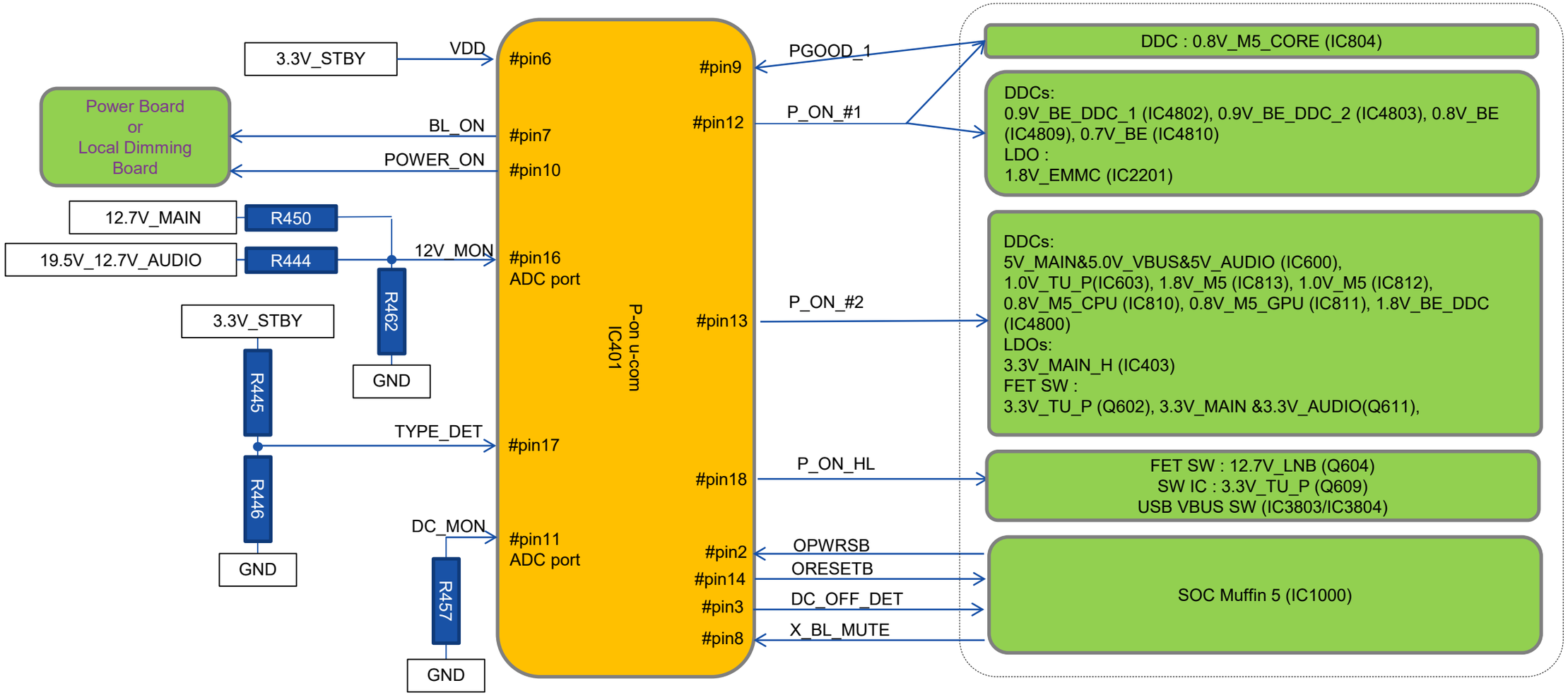


1.1 No Power – Checking Point board BM5ST

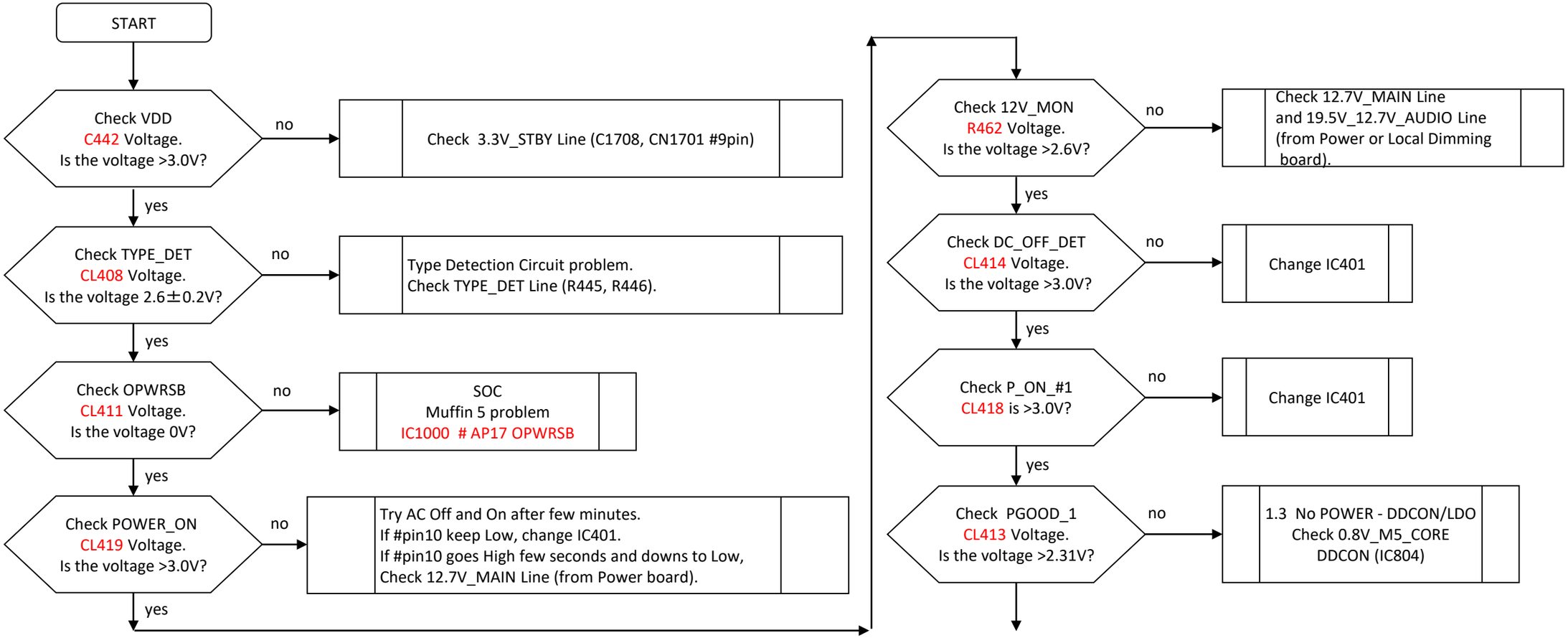


1.2 No Power U-Com Failure

P-on u-com control signal path summary



1.2 No Power U-Com Failure



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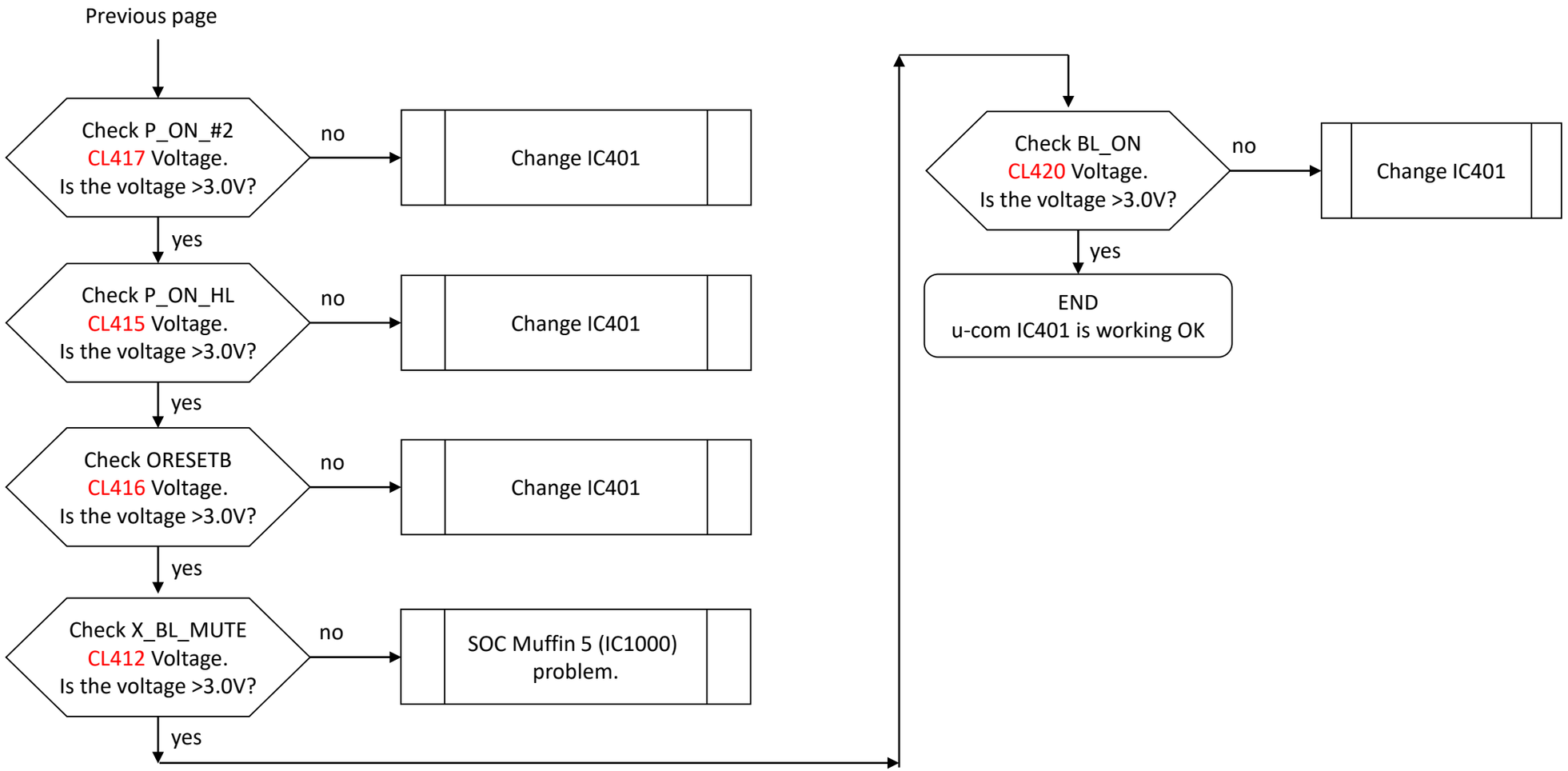
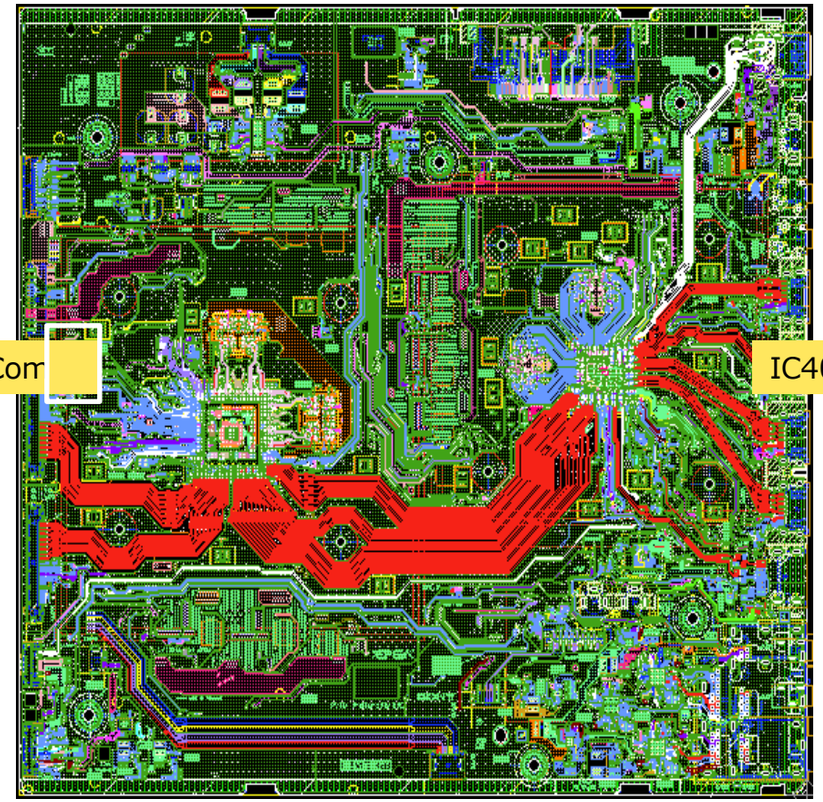
1.2 No Power U-Com Failure

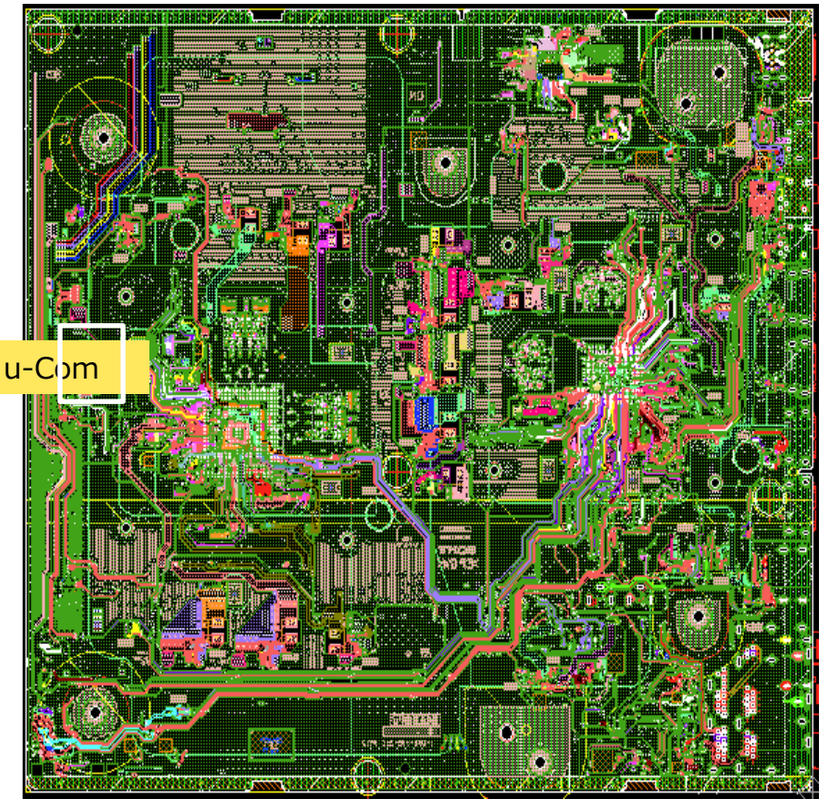


1.2 No Power U-Com Failure – Board View

Top Side

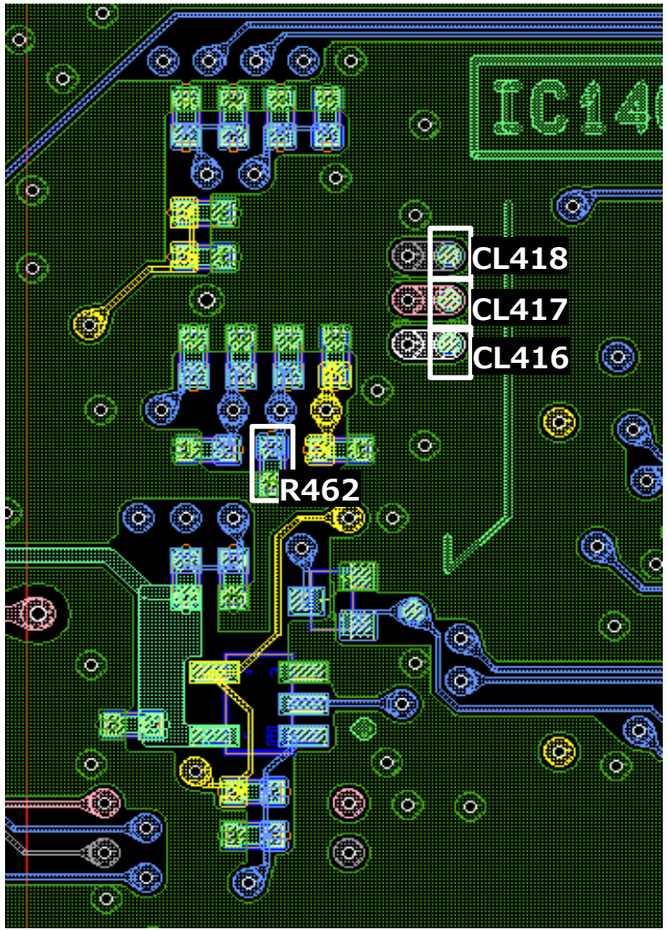


B-Side

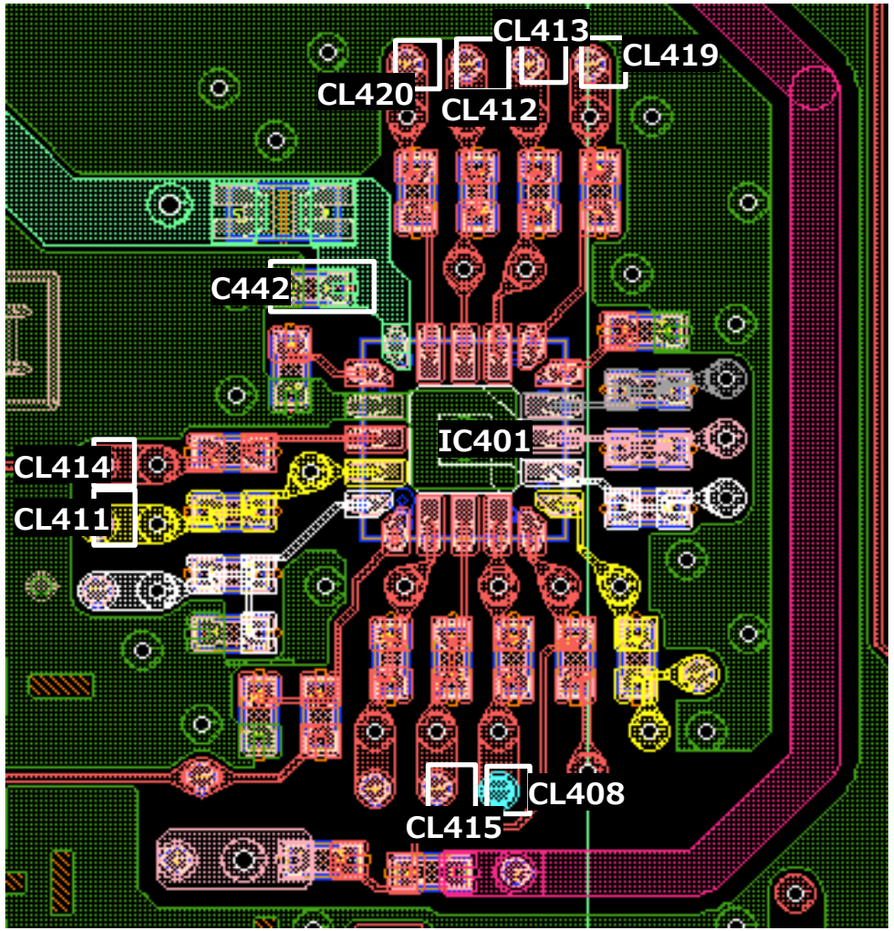


1.2 No Power U-Com Failure – Checking Point

Top Side



B-Side



1.3 No Power DDCON / LDO

P_ON_#1 : P-on u-com IC401 #pin12

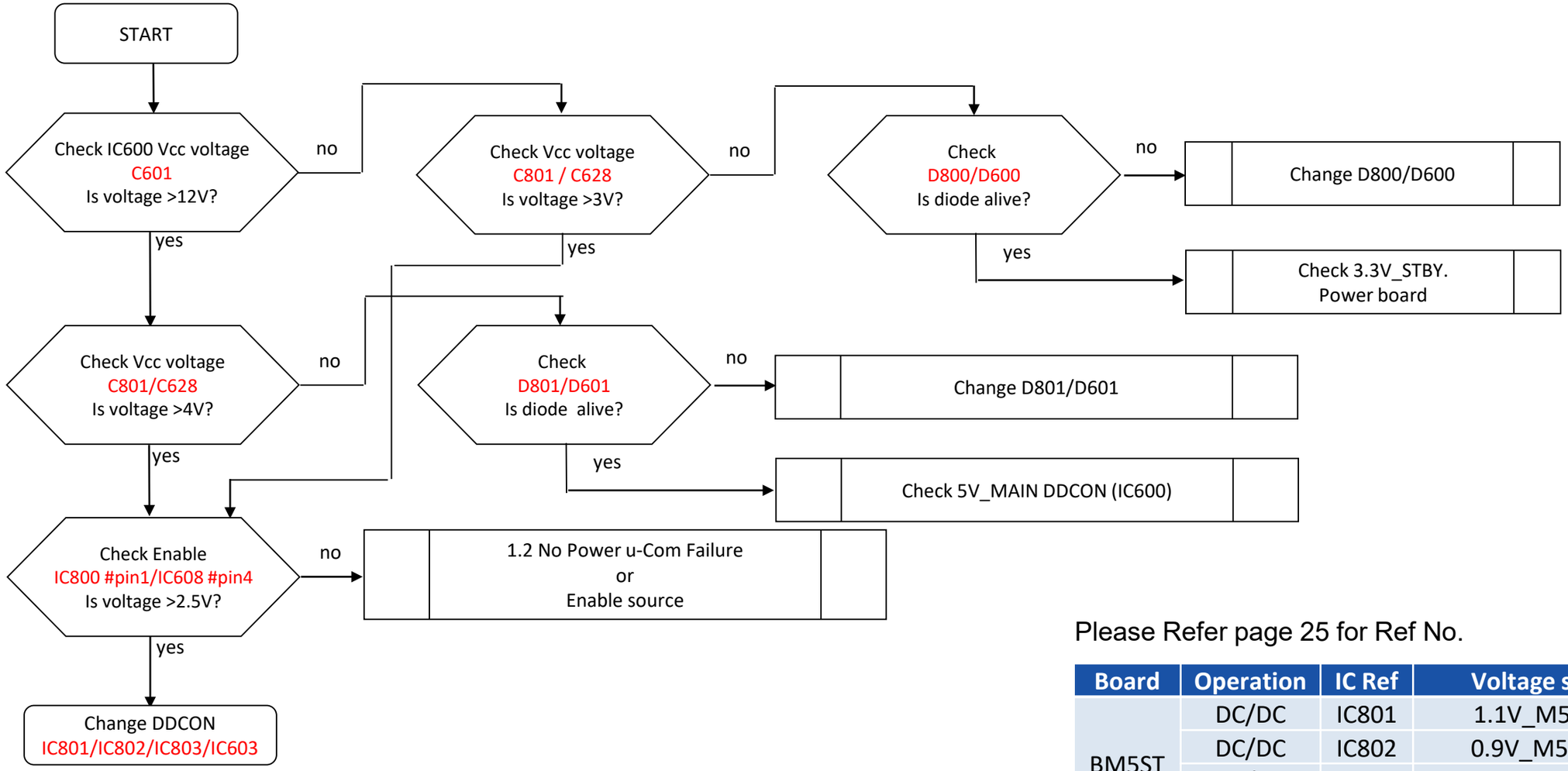
P_ON_#2 : P-on u-com IC401 #pin13

ORESETB : P-on u-com IC401 #pin14

Check Item Summary

Board	Operation	IC Ref	Voltage supply	Output ref.	Enable pin	Enable source	Fuse	Vcc ref.
BM5ST	DC/DC	IC418	5.0V_STBY_H	C510	R557	Vin	-	C505
	LDO	IC403	3.3V_MAIN_H	C416	IC403 Pin#3	P_ON_#2	-	C415
	DC/DC	IC600	5V_MAIN/5.0V_VBUS/5V_AUDIO	C610	IC600 Pin#15	P_ON_#2	F600	C601
	DC/DC	IC607	3.3V_DDC_OUT	C656	IC607 Pin#11	1.8V_BE_DDC	F604	C665
	DC/DC	IC603	1.0V_TU_P	C630	IC603 Pin#4	P_ON_#2 or IC1000 #AL18 (EWS_PWR_ON)	-	C628
	DC/DC	IC801	1.1V_M5_DDR	C806	IC801 Pin#4	R804/R907 (3.3V_STBY)	-	C801
	DC/DC	IC802	0.9V_M5_STBY	C809	IC802 Pin#4	R804/R907 (3.3V_STBY)	-	C807
	DC/DC	IC803	1.8V_STBY	C812	IC803 Pin#4	R804 (3.3V_STBY)	-	C810
	DC/DC	IC804	0.8V_M5_CORE	C846	IC804 Pin#8	P_ON_#1	F802	C831
	LDO	IC806	1.8V_M5_ET_STBY	C818	IC806 Pin#3	IC1000 #AN19 (ETHER_PWR_EN)	-	C817
	DC/DC	IC813	1.8V_M5	C904	IC813 Pin#4	P_ON_#2	F807	C902
	DC/DC	IC812	1.0V_M5	C898	IC812 Pin#4	P_ON_#2	F805	C896
	LDO	IC809	3.3V_M5_STBY	C816	R917	R917 (3.3V_STBY)	-	C815
	DC/DC	IC810	0.8V_M5_CPU	C861	IC810 Pin#19	P_ON_#2	F803	C855
	DC/DC	IC811	0.8V_M5_GPU	C874	IC811 Pin#19	P_ON_#2	F804	C868
	LDO	IC2201	1.8V_EMMC	C2216	IC2201 Pin#3	P_ON_#1 or ORESETB	-	C2214
	DC/DC	IC4800	1.8V_BE_DDC	C4805	IC4800 Pin#4	P_ON_#2	F4800	C4803
	DC/DC	IC4801	1.1V_BE	C4813	IC4801 Pin#4	1.8V_BE_DDC	F4801	C4812
	DC/DC	IC4802	0.9V_BE_DDC_1	C4820	IC4802 Pin#4	P_ON_#1	F4802	C4819
	DC/DC	IC4803	0.9V_BE_DDC_2	C4828	IC4803 Pin#4	P_ON_#1	F4803	C4827
	DC/DC	IC4809	0.8V_BE	C4860	IC4809 Pin#8	P_ON_#1	F4804	C4845
	DC/DC	IC4810	0.7V_BE	C4876	IC4810 Pin#8	P_ON_#1	F4805	C4863

1.3 No Power DDCON / LDO - DDCONs Check



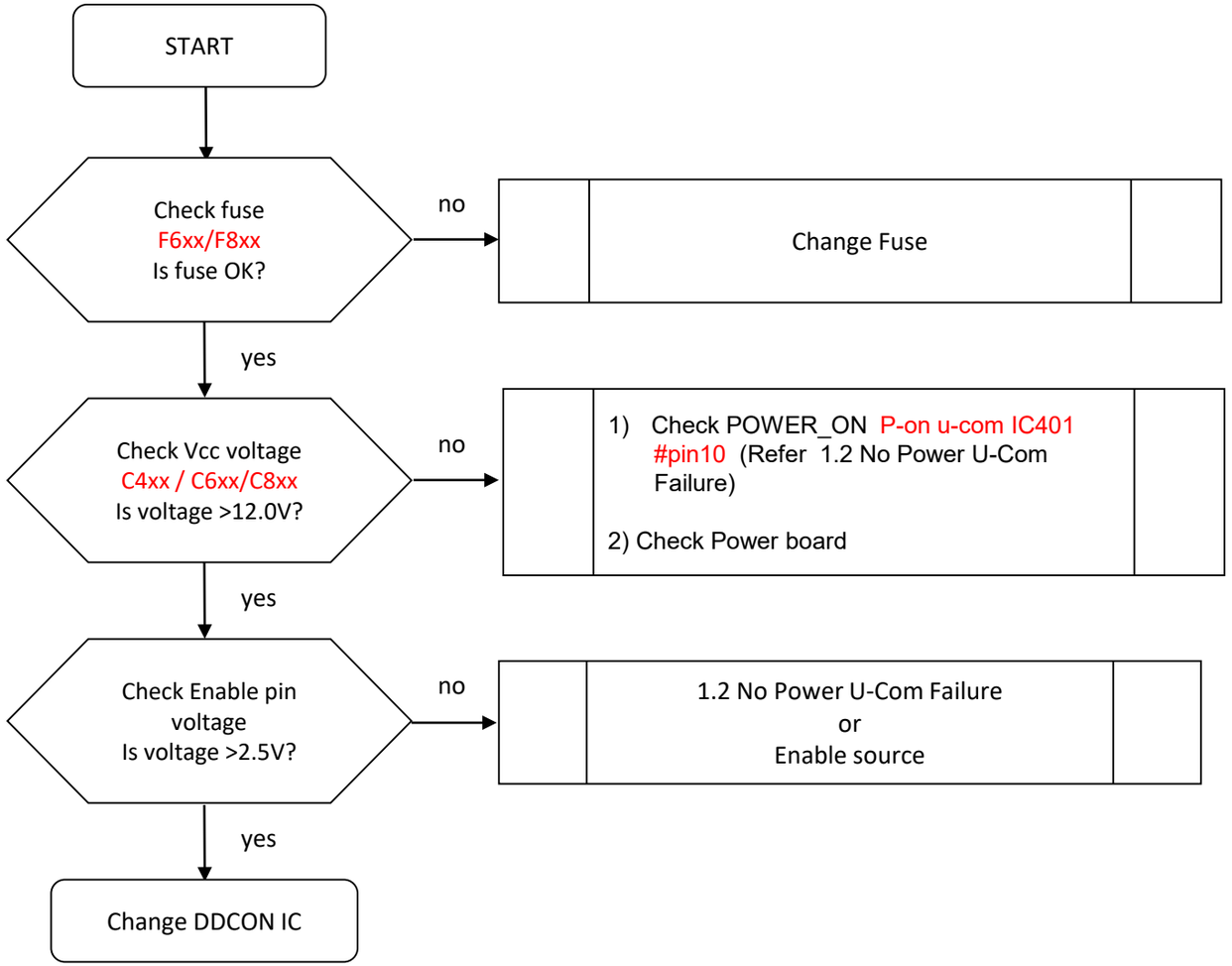
Please Refer page 25 for Ref No.

Board	Operation	IC Ref	Voltage supply
BM5ST	DC/DC	IC801	1.1V_M5_DDR
	DC/DC	IC802	0.9V_M5_STBY
	DC/DC	IC803	1.8V_STBY
	DC/DC	IC603	1.0V_TU_P

1.3 No Power DDCON / LDO - DDCON Check

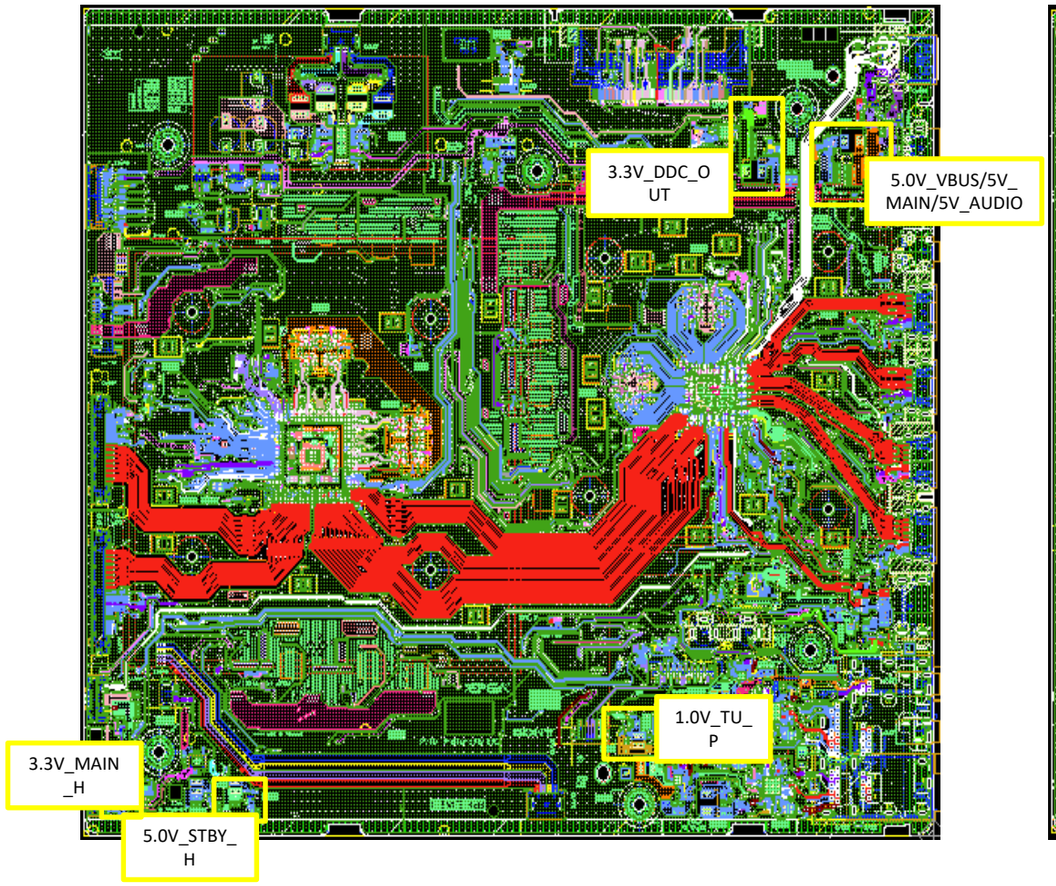
Please Refer page 25 for Ref No.

Board	Operation	IC Ref	Voltage supply
BM5ST	DC/DC	IC414	5.0V_STBY_H
	DC/DC	IC600	5V_MAIN/5V_AUDIO
	DC/DC	IC607	3.3V_DDC_OUT
	DC/DC	IC804	0.8V_M5_CORE
	DC/DC	IC813	1.8V_M5
	DC/DC	IC812	1.0V_M5
	DC/DC	IC810	0.8V_M5_CPU
	DC/DC	IC811	0.8V_M5_GPU
	DC/DC	IC4800	1.8V_BE_DDC
	DC/DC	IC4801	1.1V_BE
	DC/DC	IC4802	0.9V_BE_DDC_1
	DC/DC	IC4803	0.9V_BE_DDC_2
	DC/DC	IC4809	0.8V_BE
	DC/DC	IC4810	0.7V_BE

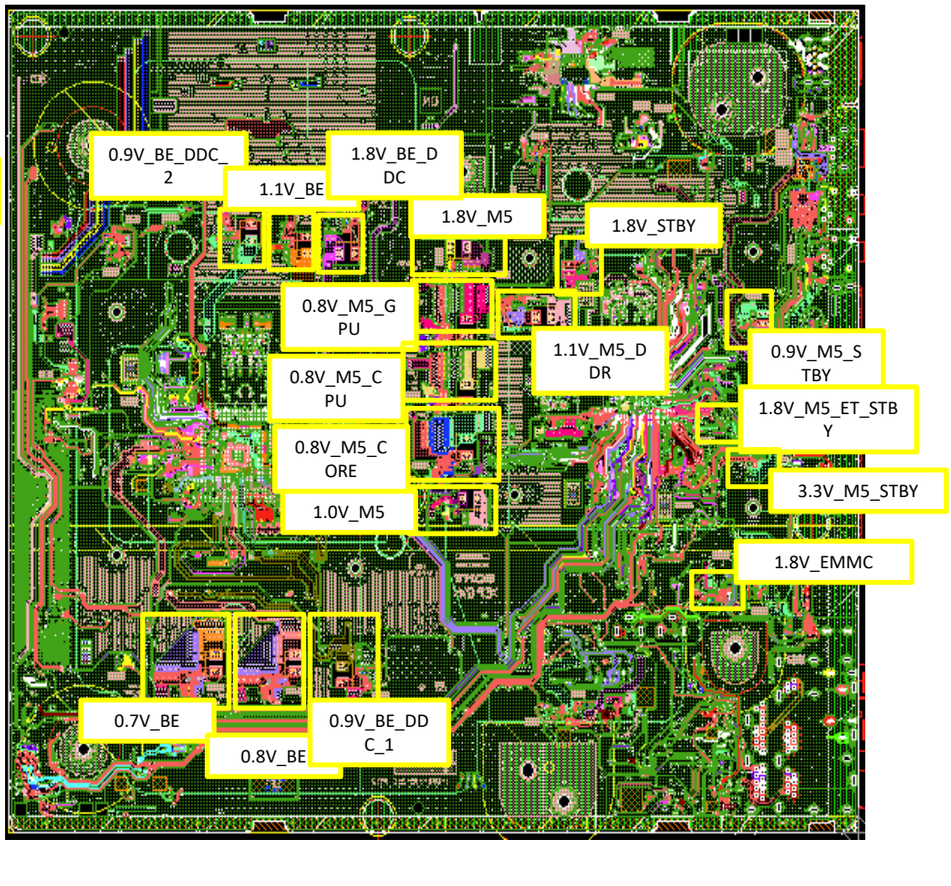


1.3 No Power DDCON / LDO – Board View

Top Side



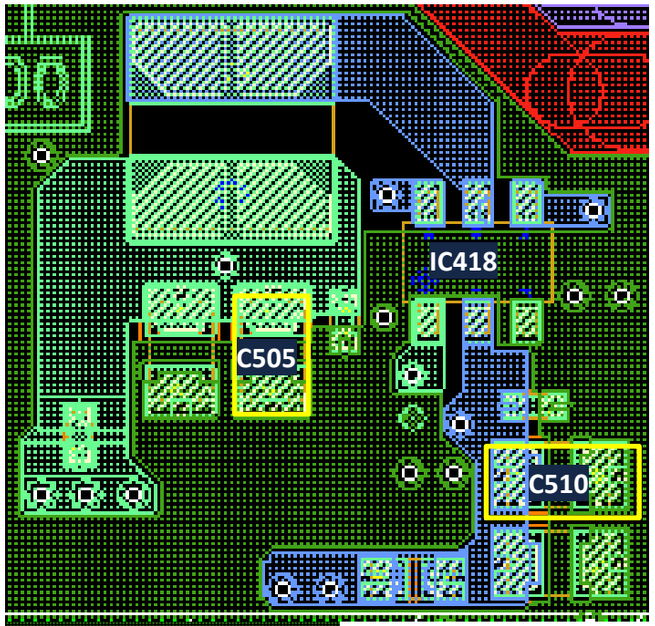
B-Side

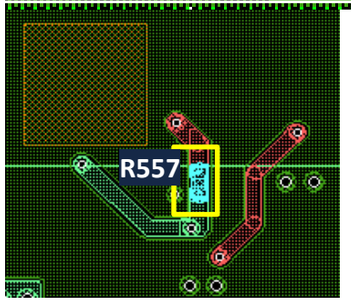


1.3 No Power DDCON / LDO – Checking Point

5.0V_STBY_H

A-Side

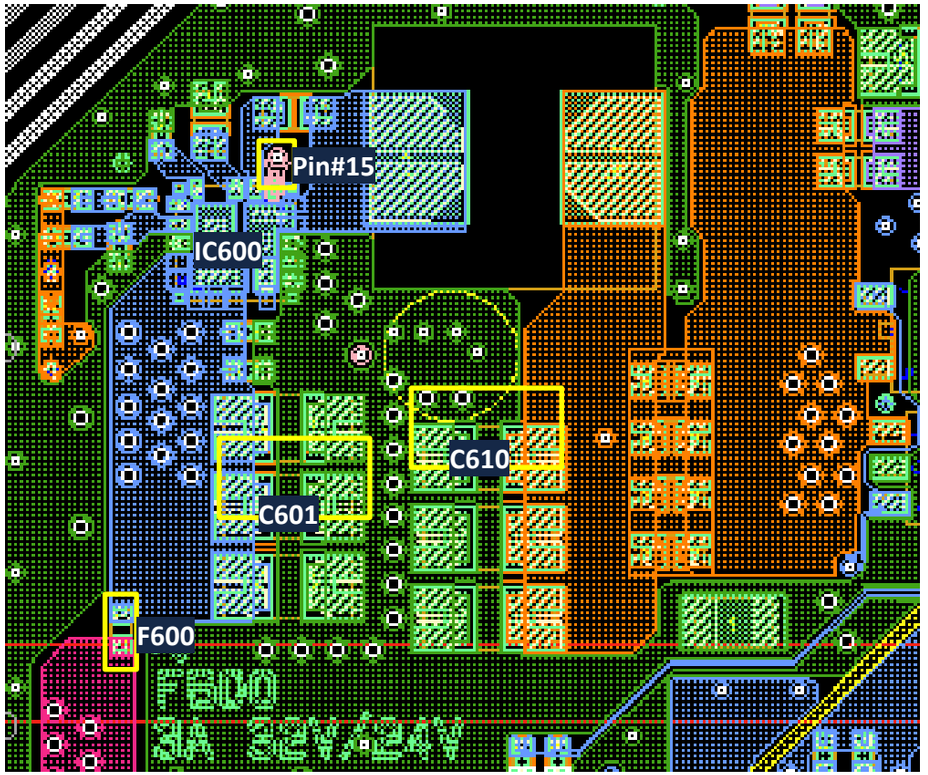




B-Side

5.0V_VBUS/5V_MAIN/5V_AUDIO

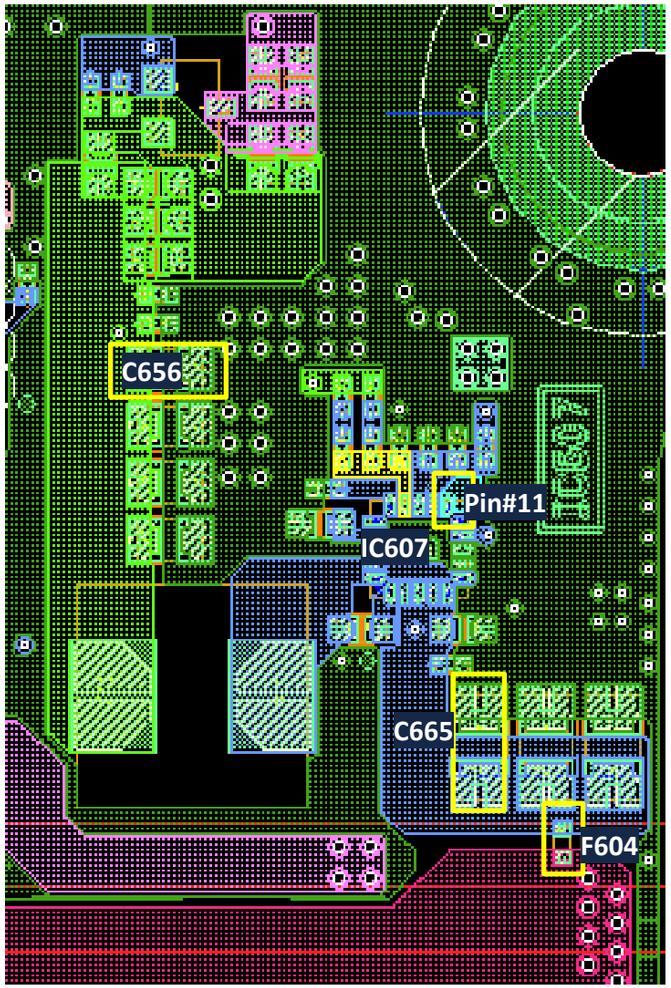
Top Side



1.3 No Power DDCON / LDO – Checking Point

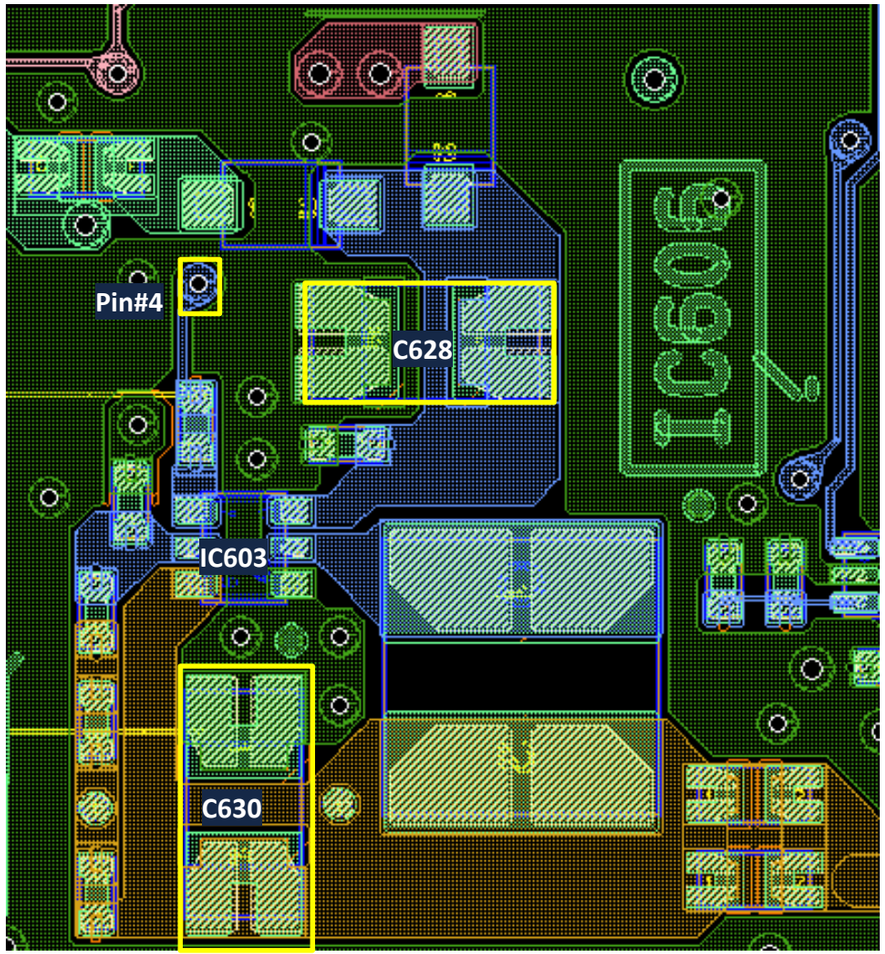
3.3V_DDC_OUT

Top Side



1.0V_TU_P

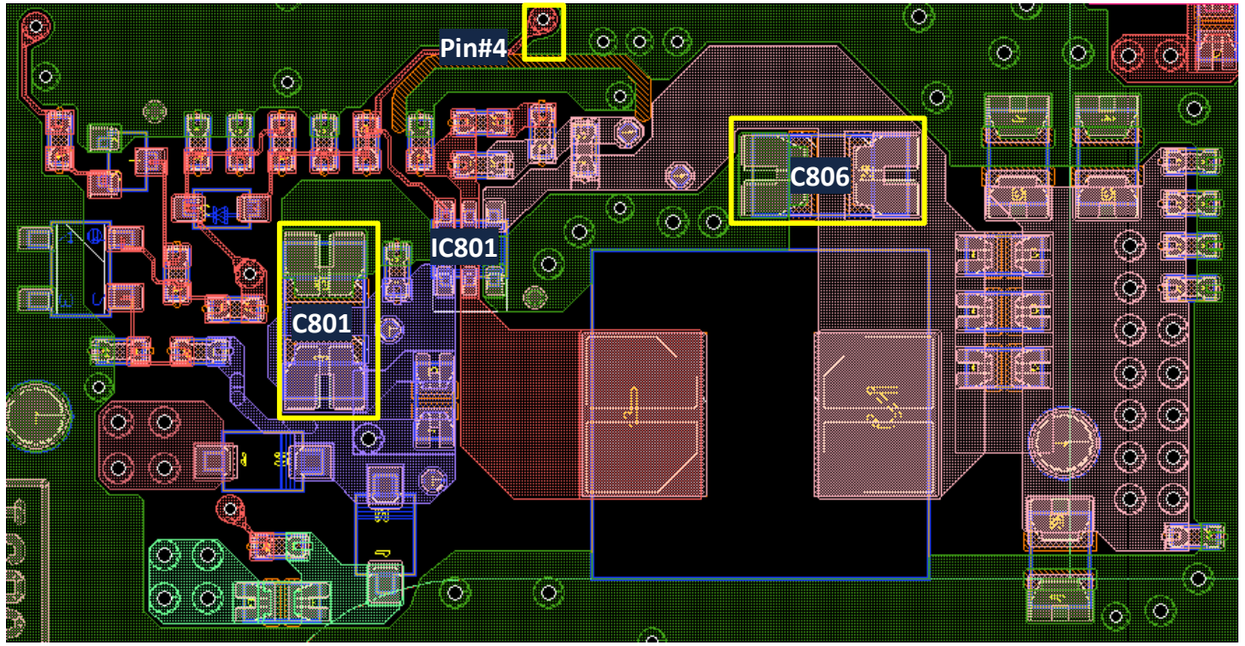
Top Side



1.3 No Power DDCON / LDO – Checking Point

1.1V_M5_DDR

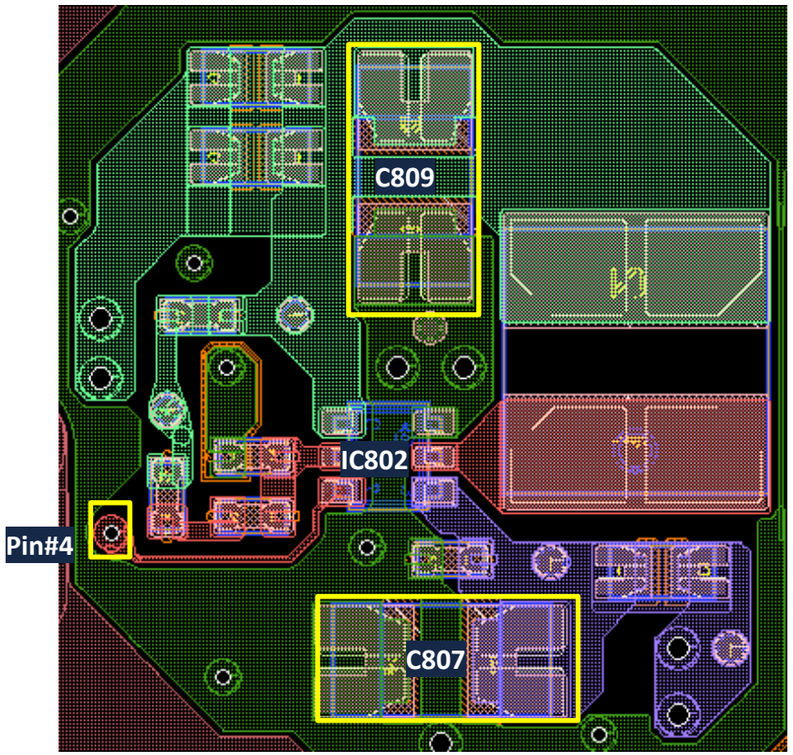
B-Side



1.3 No Power DDCON / LDO – Checking Point

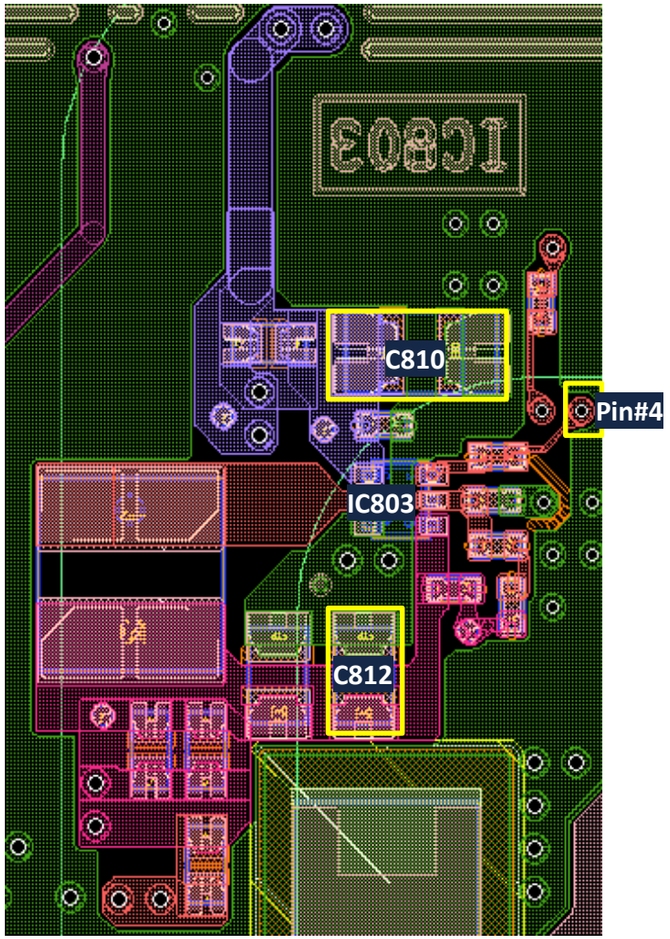
0.9V_M5_STBY

B-Side



1.8V_STBY

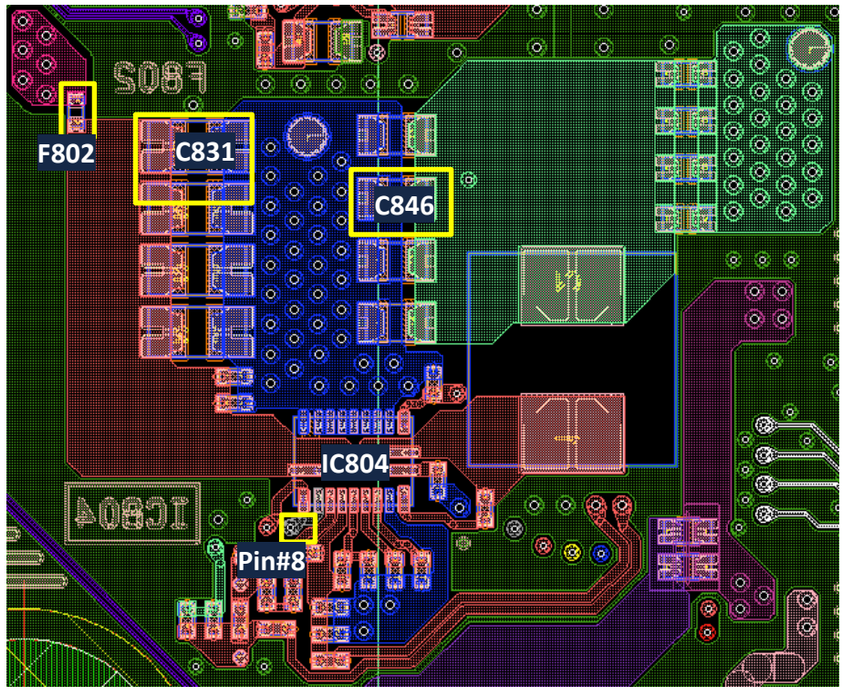
B-Side



1.3 No Power DDCON / LDO – Checking Point

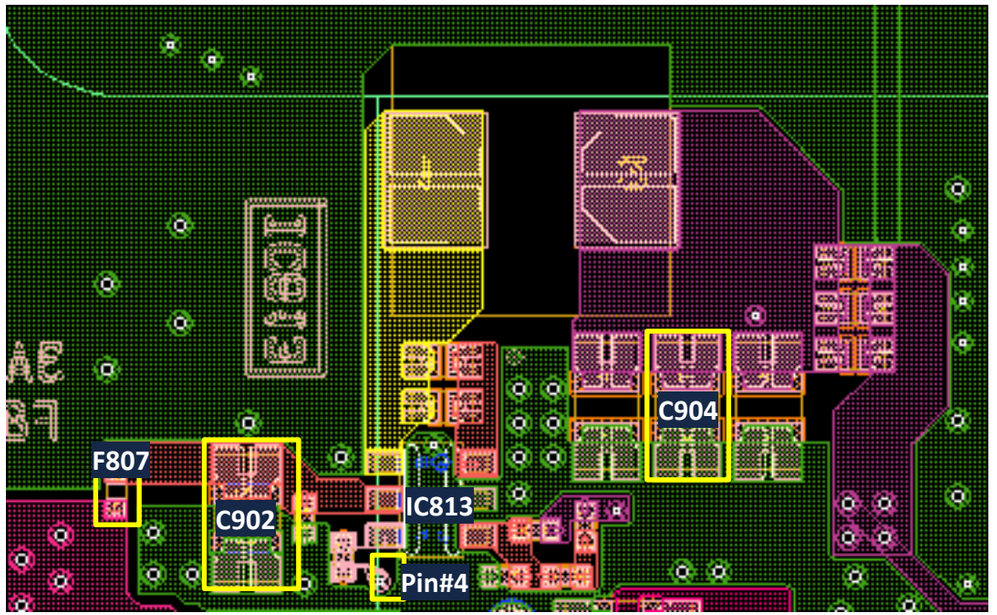
0.8V_M5_CORE

B-Side



1.8V_M5

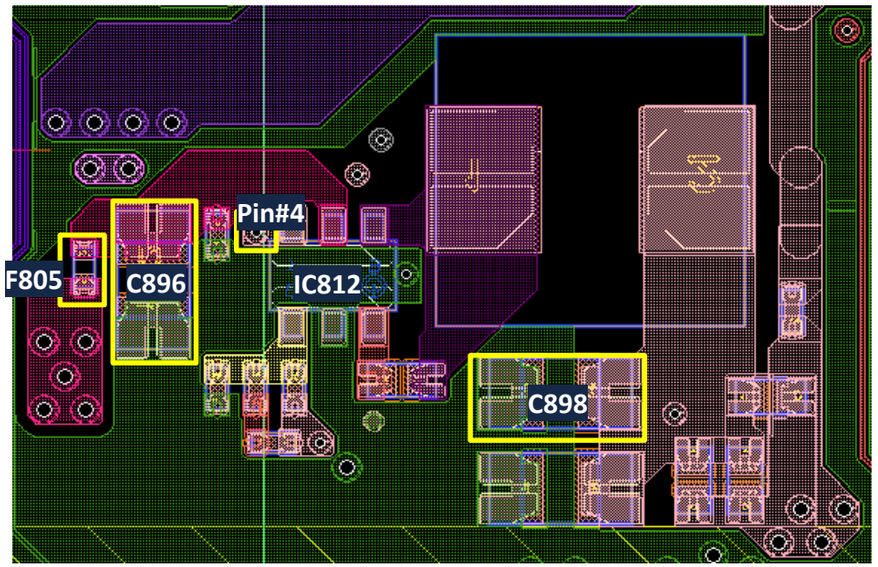
B-Side



1.3 No Power DDCON / LDO – Checking Point

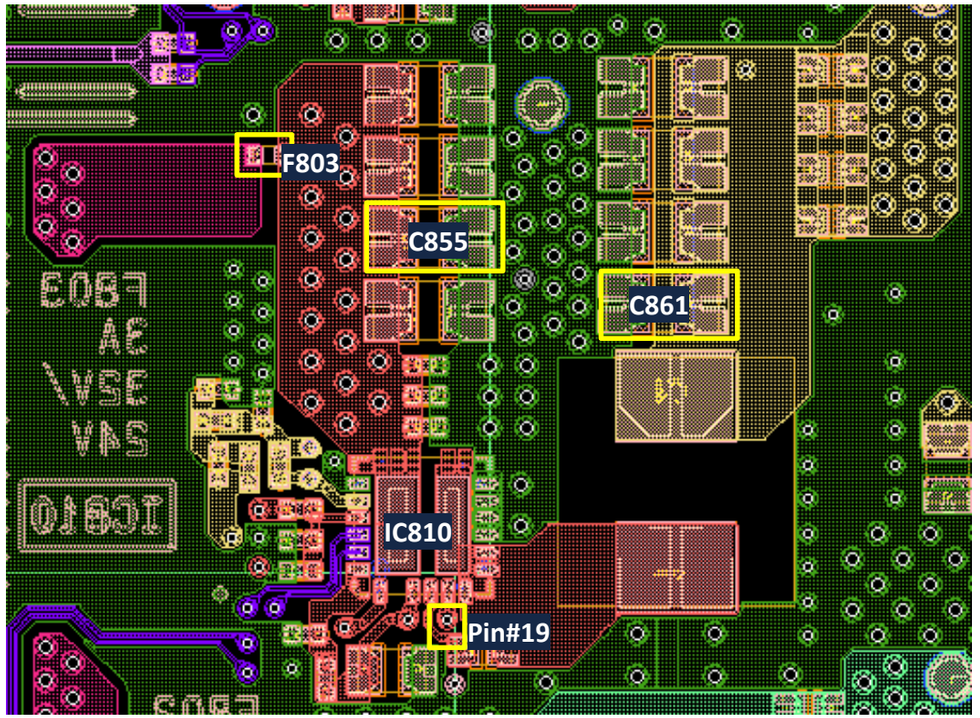
1.0V_M5

B-Side



0.8V_M5_CPU

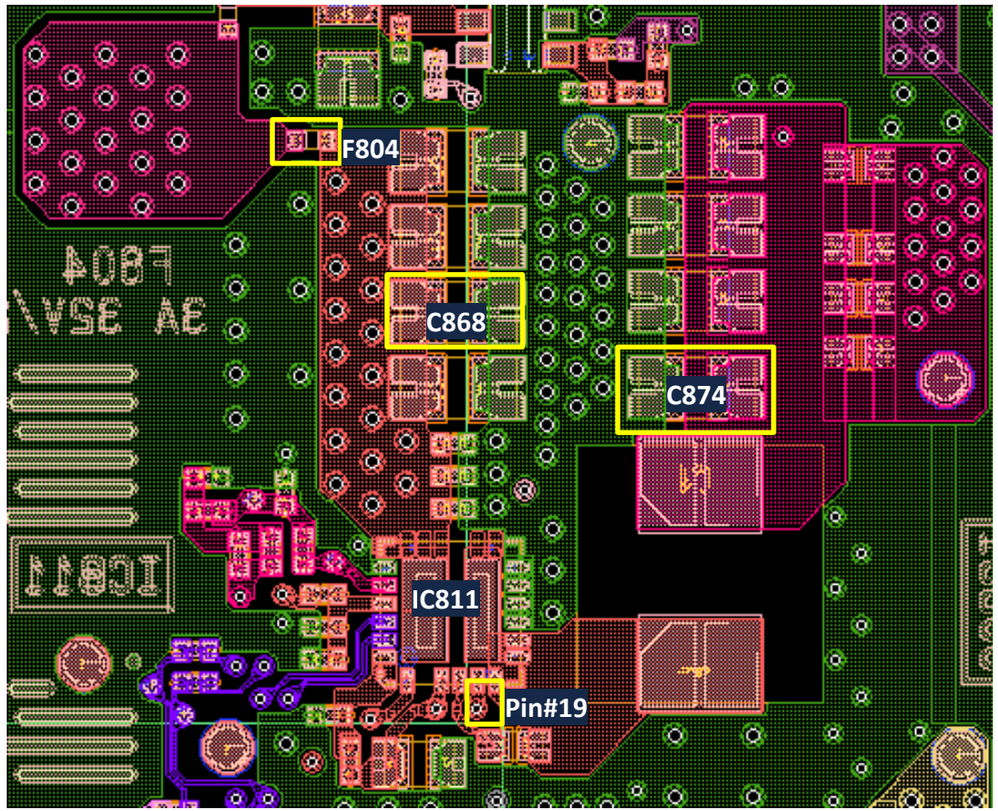
B-Side



1.3 No Power DDCON / LDO – Checking Point

0.8V_M5_GPU

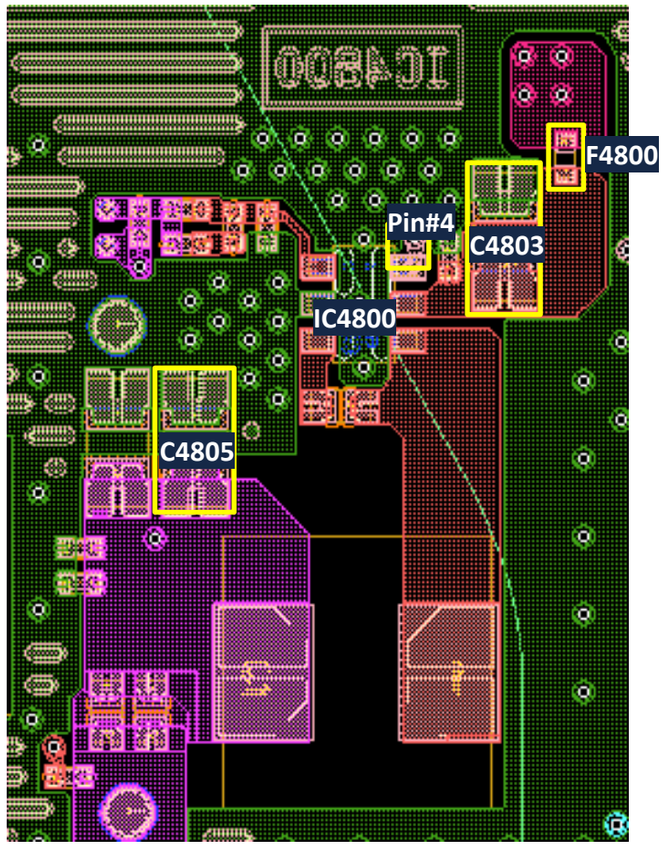
B-Side



1.3 No Power DDCON / LDO – Checking Point

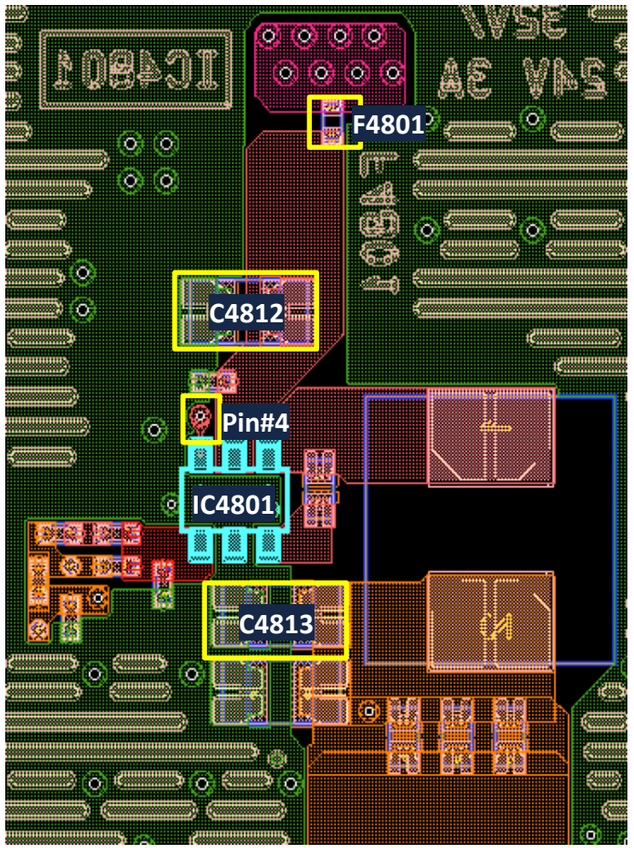
1.8V_BE_DDC

B-Side



1.1V_BE

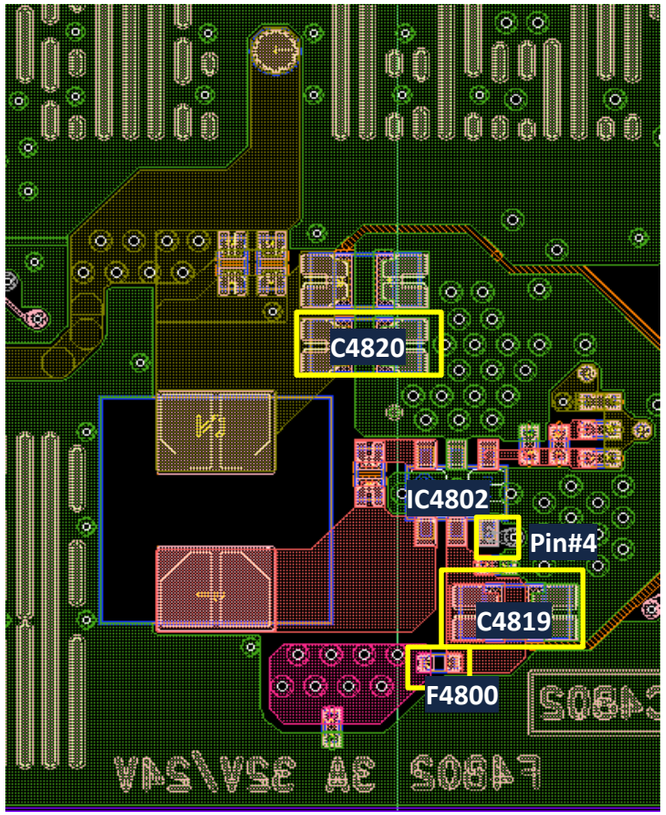
B-Side



1.3 No Power DDCON / LDO – Checking Point

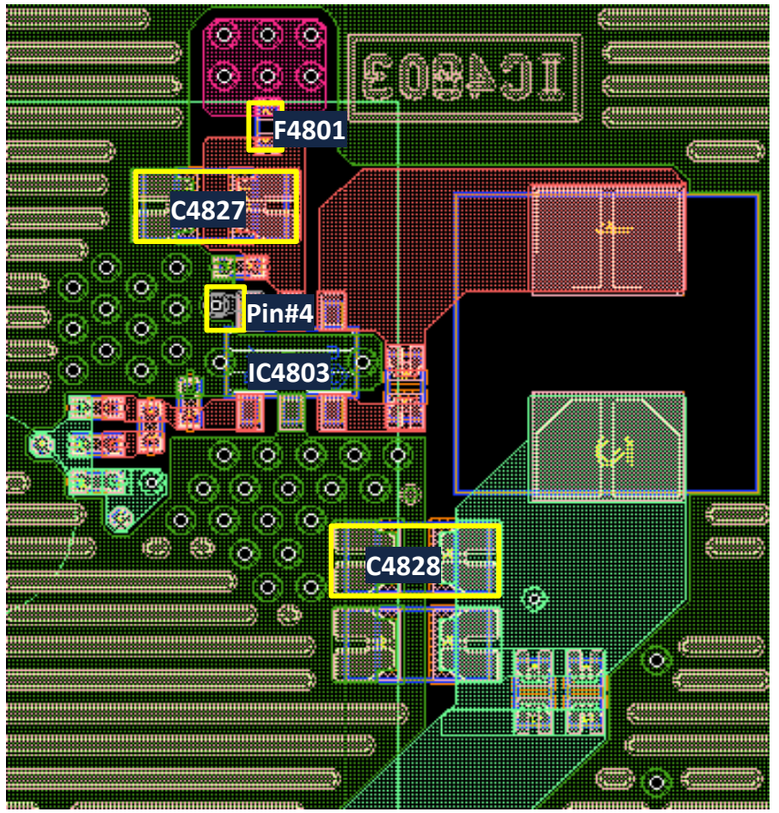
0.9V_BE_DDC_1

B-Side



0.9V_BE_DDC_2

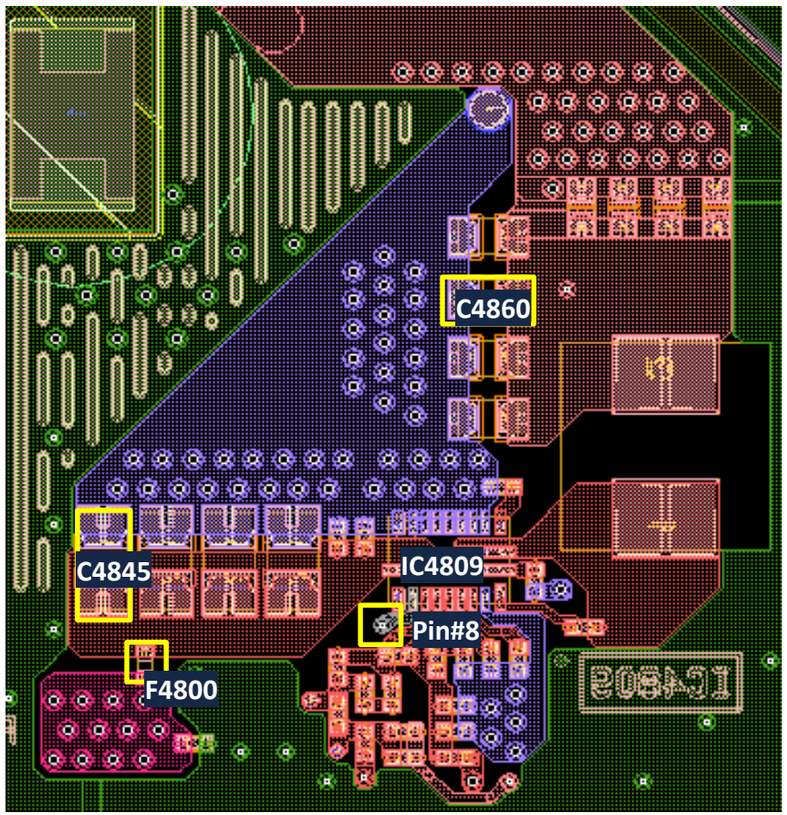
B-Side



1.3 No Power DDCON / LDO – Checking Point

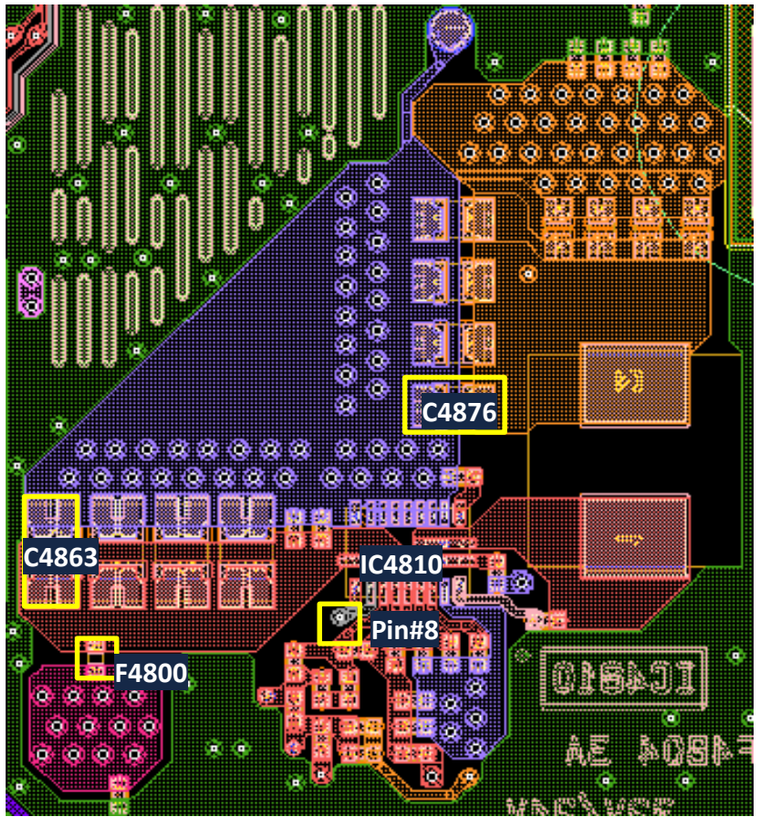
0.8V_BE

B-Side



0.7V_BE

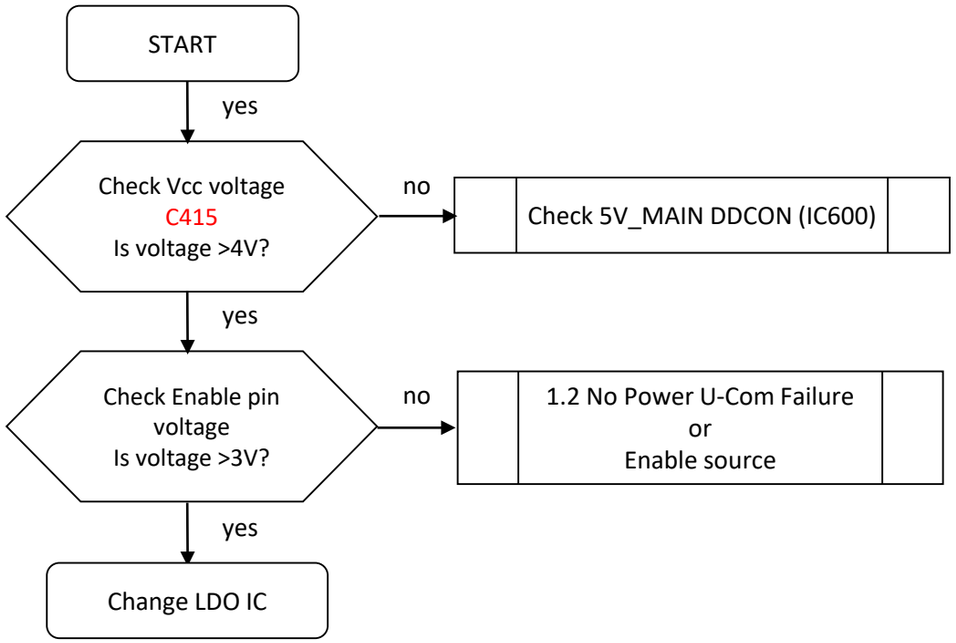
B-Side



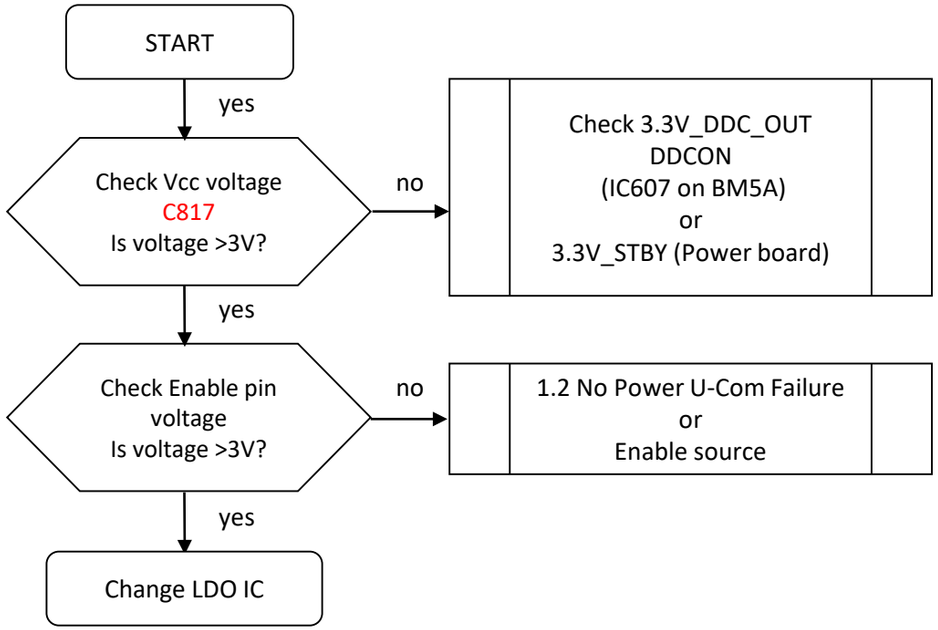
1.3 No Power DDCON / LDO – LDO Check

Please refer page 25 for Ref number.

Board	Operation	IC Ref	Voltage supply
BM5ST	LDO	**IC403**	3.3V_MAIN_H



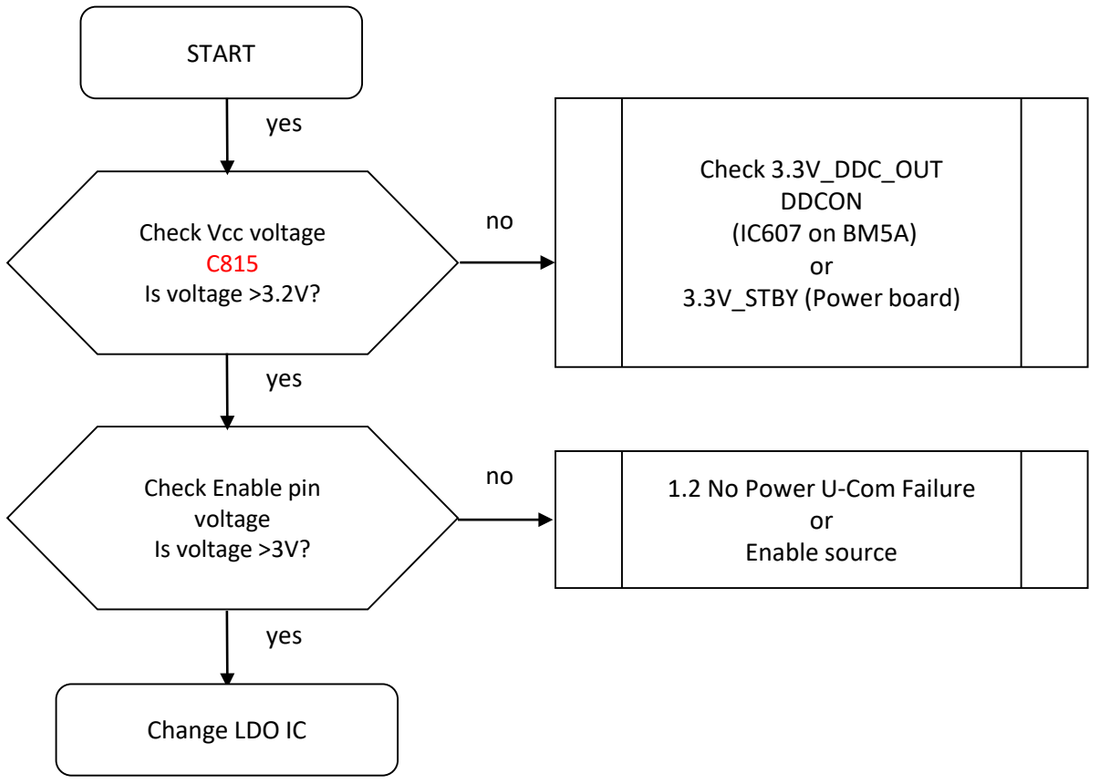
Board	Operation	IC Ref	Voltage supply
BM5ST	LDO	**IC806**	1.8V_M5_ET_STBY



1.3 No Power DDCON / LDO – LDO Check

Please refer page 25 for Ref number.

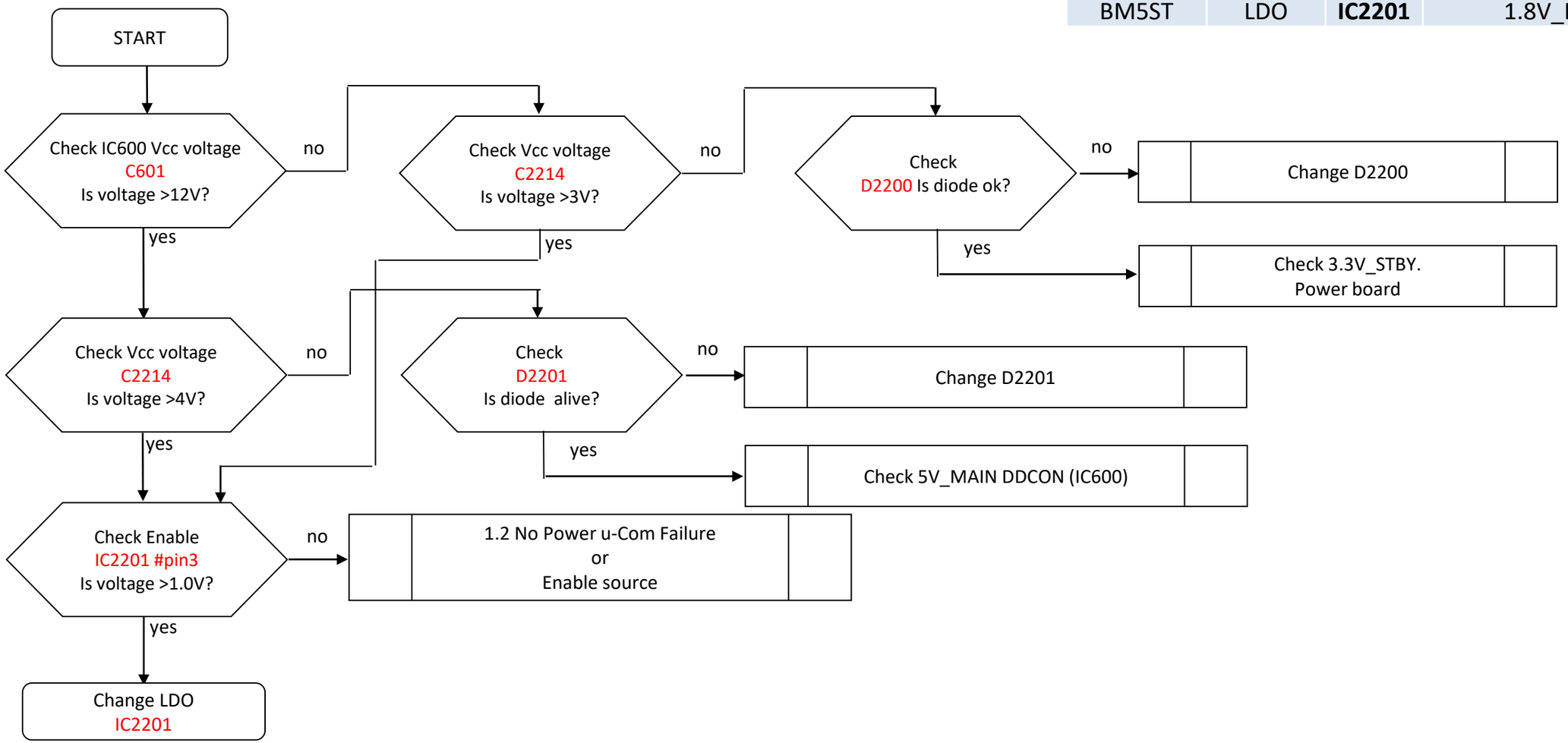
Board	Operation	IC Ref	Voltage supply
BM5ST	LDO	**IC809**	3.3V_M5_STBY



1.3 No Power DDCON / LDO – LDO Check

Please refer page 25 for Ref number.

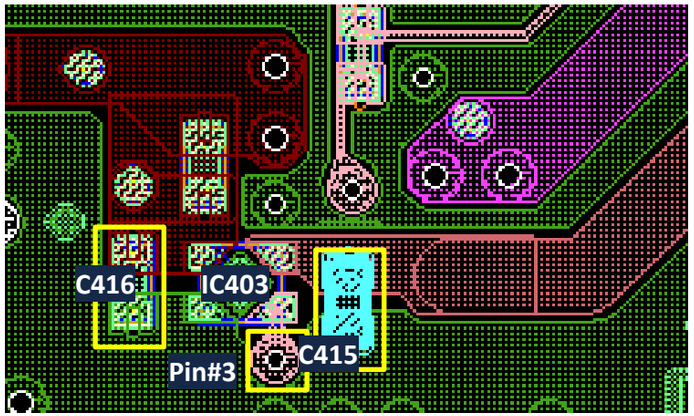
Board	Operation	IC Ref	Voltage supply
BM5ST	LDO	**IC2201**	1.8V_EMMC



1.3 No Power DDCON / LDO – Checking Point

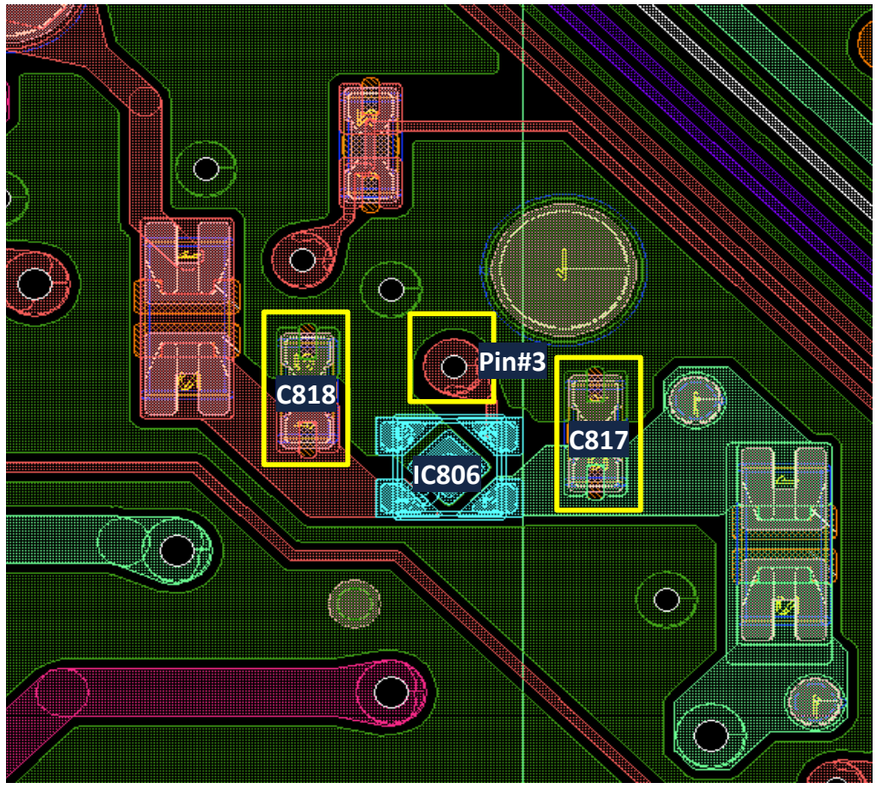
3.3V_MAIN_H

B-Side

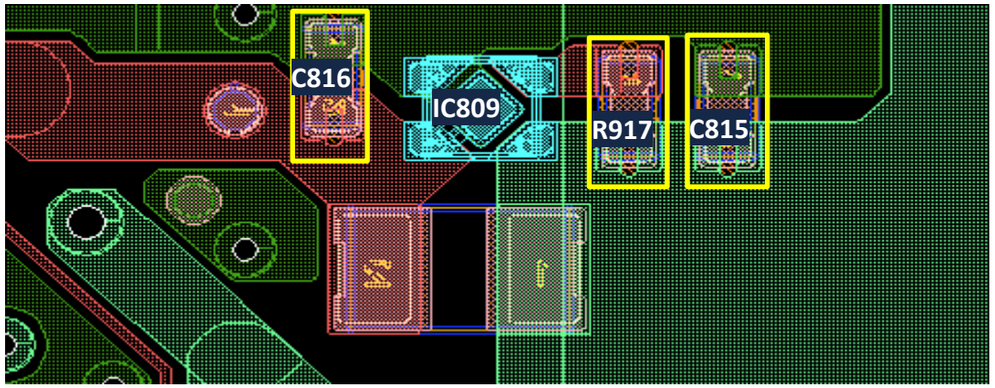


1.8V_M5_ET_STBY

B-Side

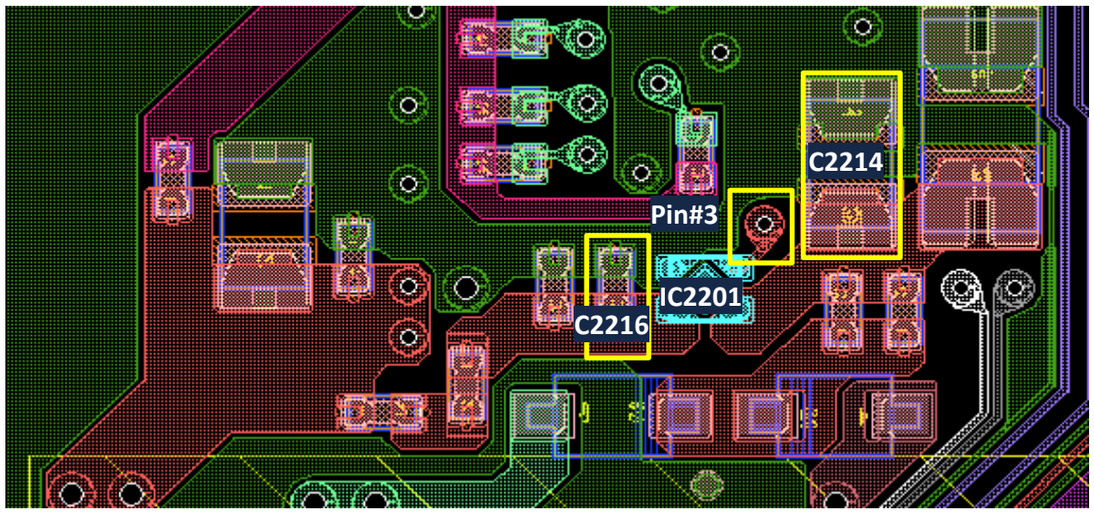


1.3 No Power DDCON / LDO – Checking Point



3.3V_M5_STBY

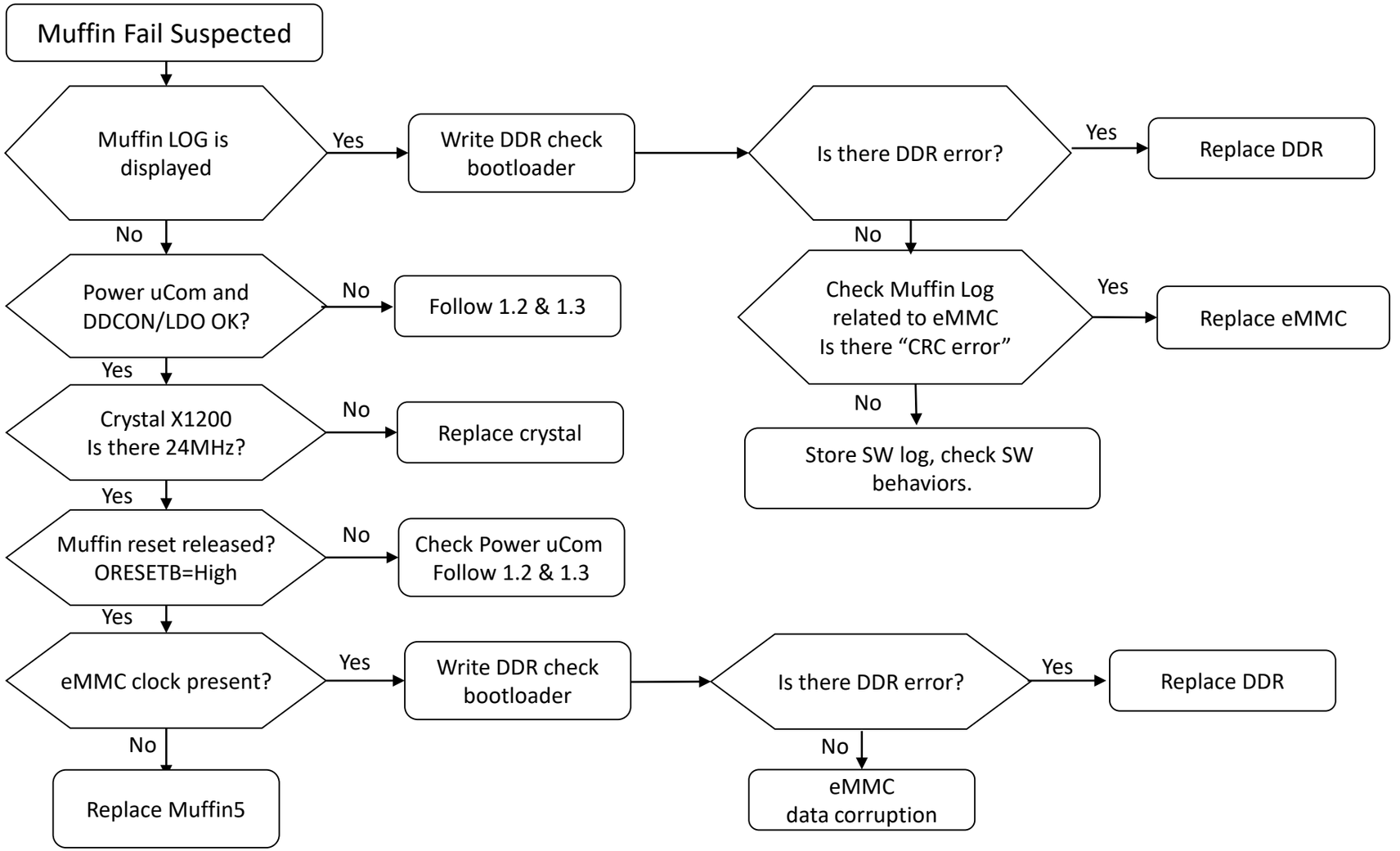
B-Side



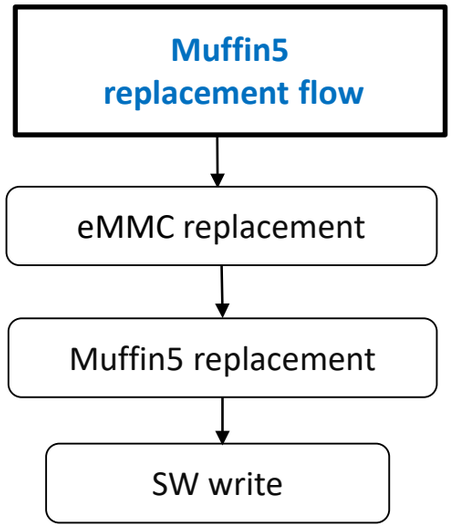
1.8V_EMMC

B-Side

1.4 No Power – Muffin5 Failure

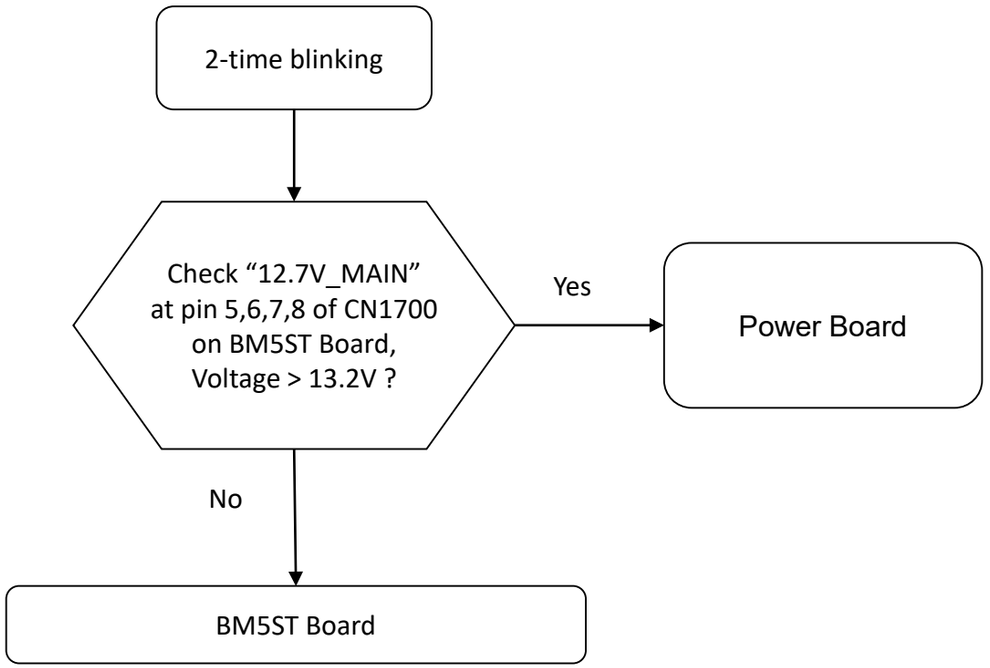


1.5 No Power – Muffin5 Replacement

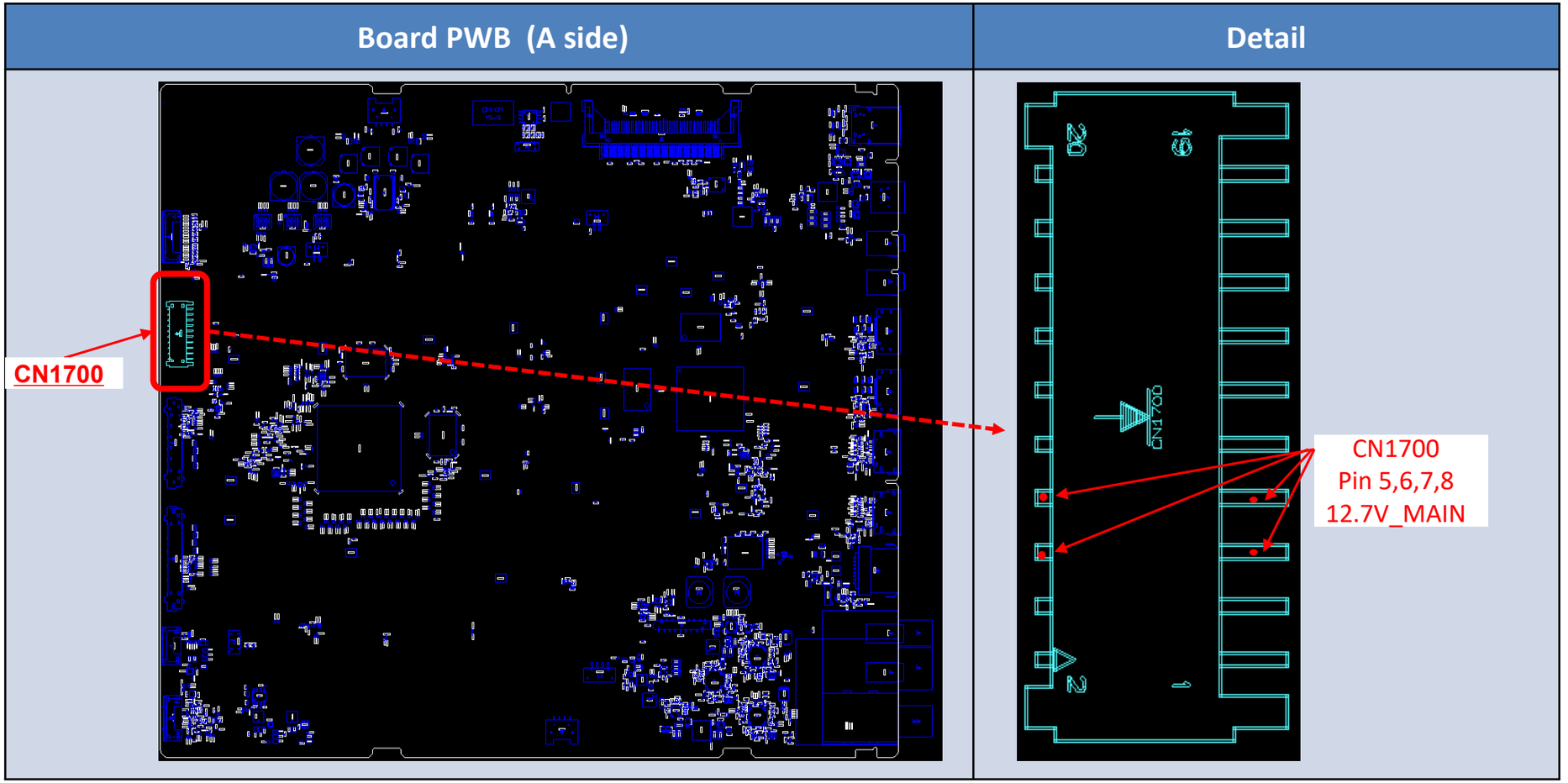


eMMC need to be replaced when changing Muffin5.

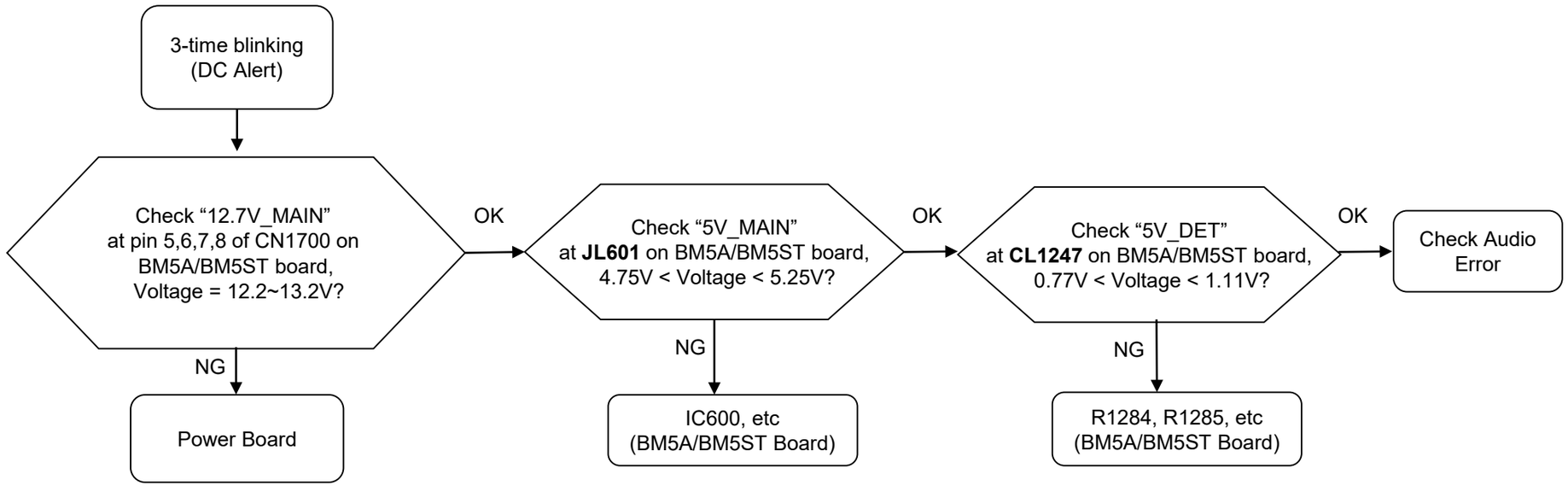
2.0 LED Blinking : 2x (Main power error)



2.0 LED Blinking : Check Point

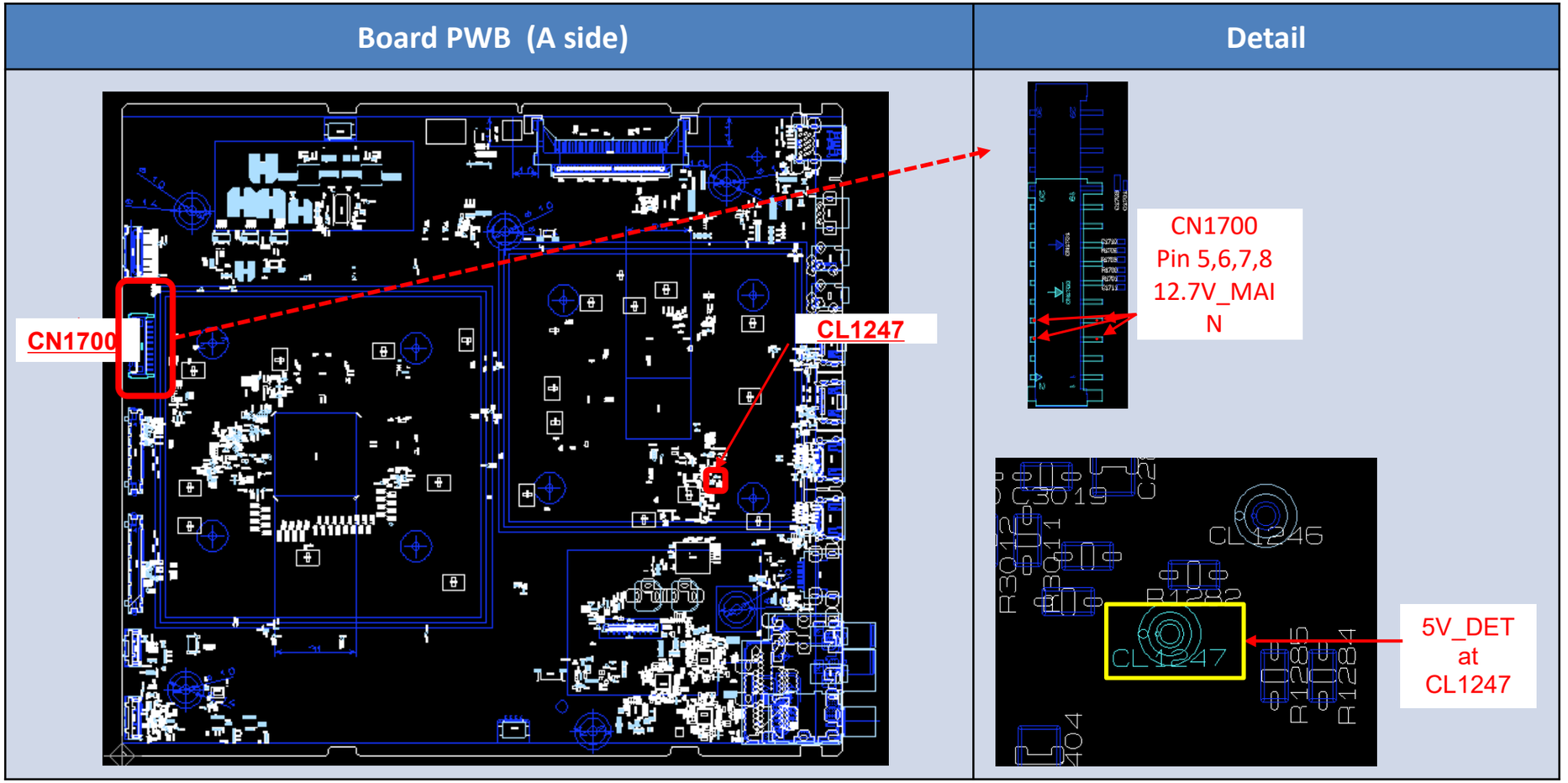


2.1 LED Blinking : 3x (DC Alert)

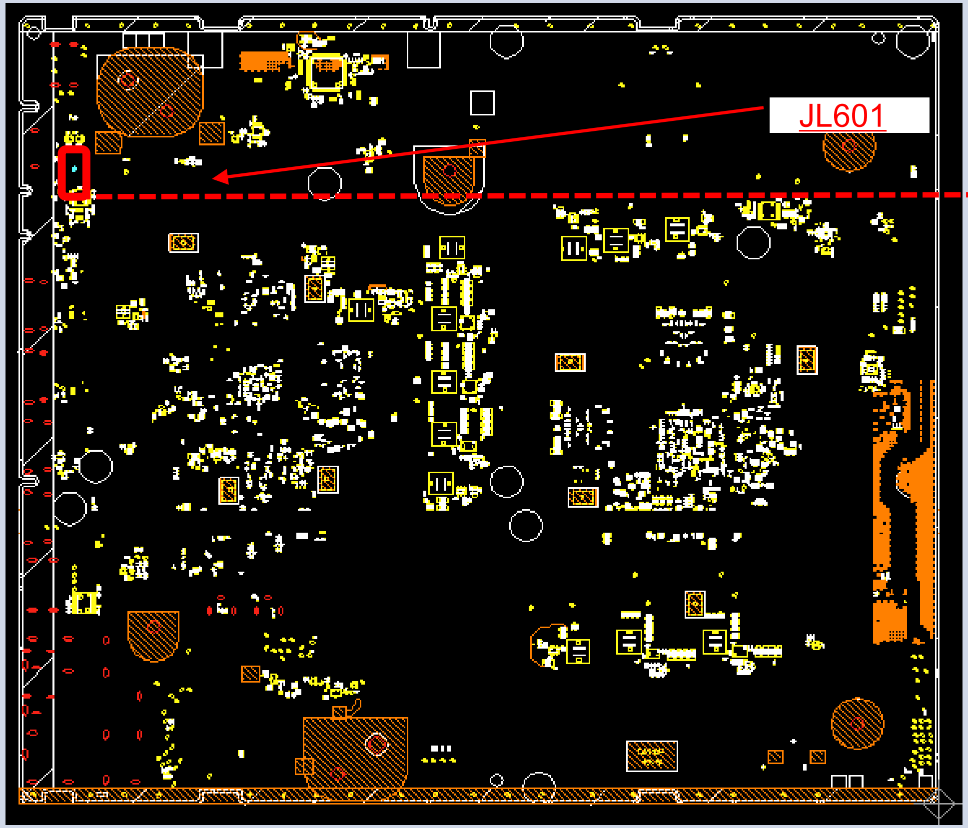
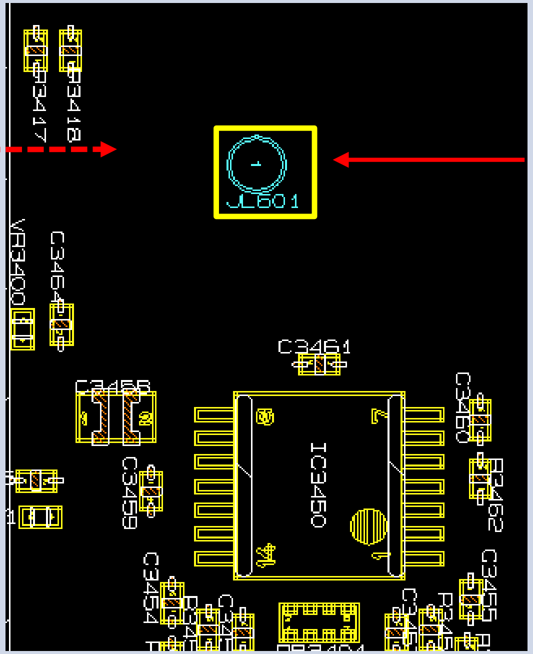


	Error Item	Number of STBY LED flashing	Description
Valhalla2	DC_ALERT	3	Main board 5V power rail monitoring
	AUD_ERR	3	Audio amp error detection

2.1 LED Blinking : Check Point

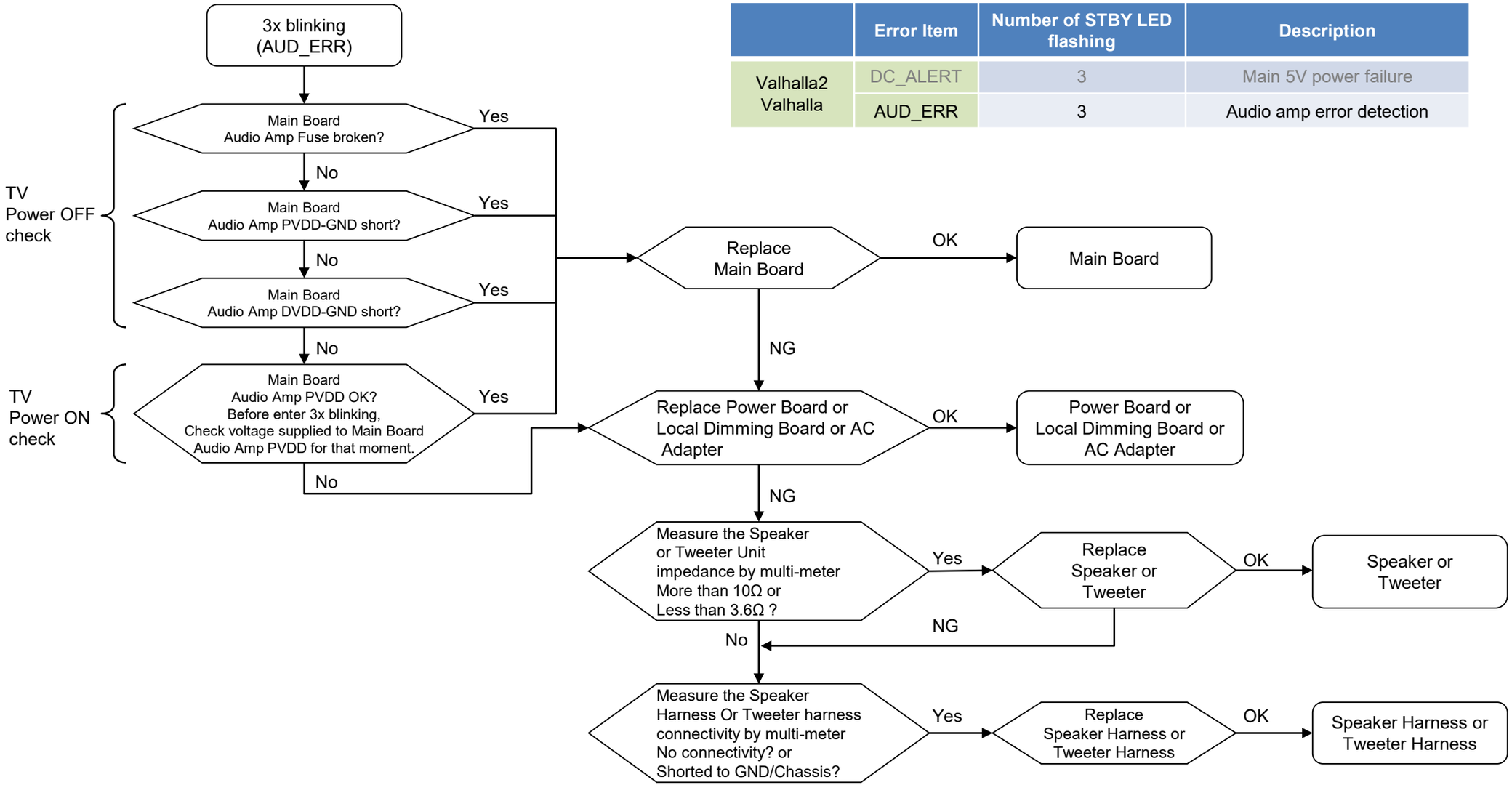


2.1 LED Blinking : Check Point

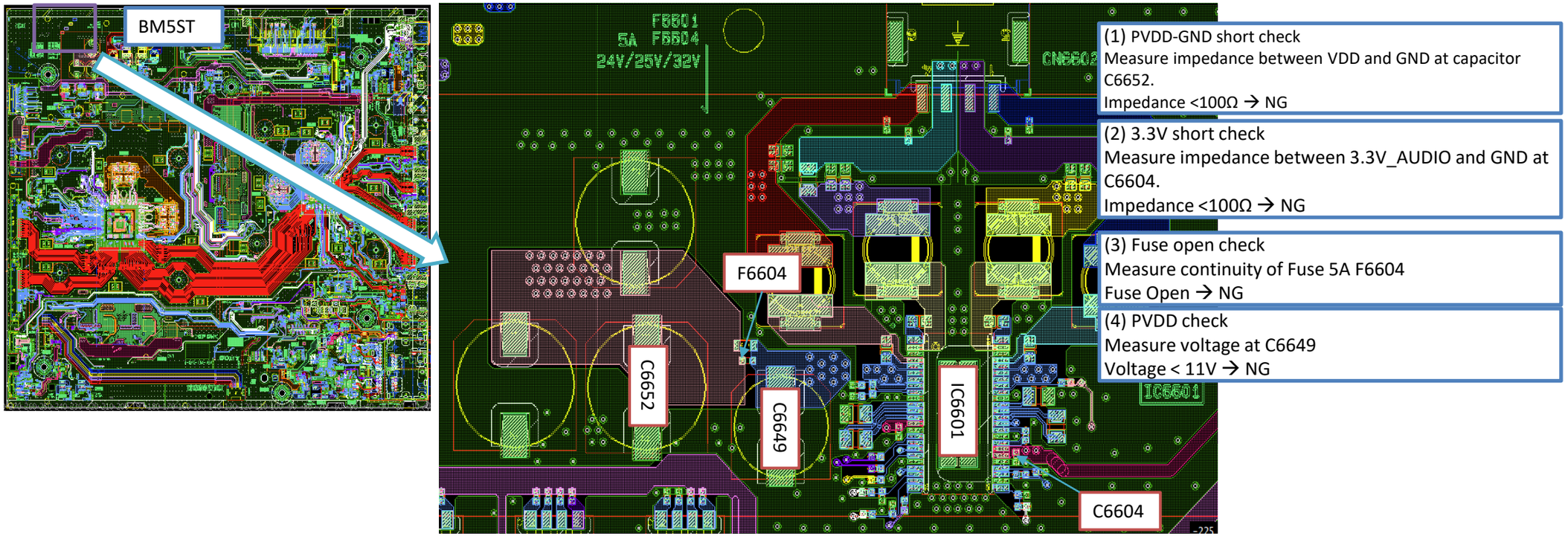
Board PWB (B side)	Detail
	 5V_MAIN at JL601

2.2 3x Blinking : Audio Error

	Error Item	Number of STBY LED flashing	Description
Valhalla2 Valhalla	DC_ALERT	3	Main 5V power failure
	AUD_ERR	3	Audio amp error detection



2.2 3x Blinking : Audio Error



(1) PVDD-GND short check
Measure impedance between VDD and GND at capacitor C6652.
Impedance <100Ω → NG

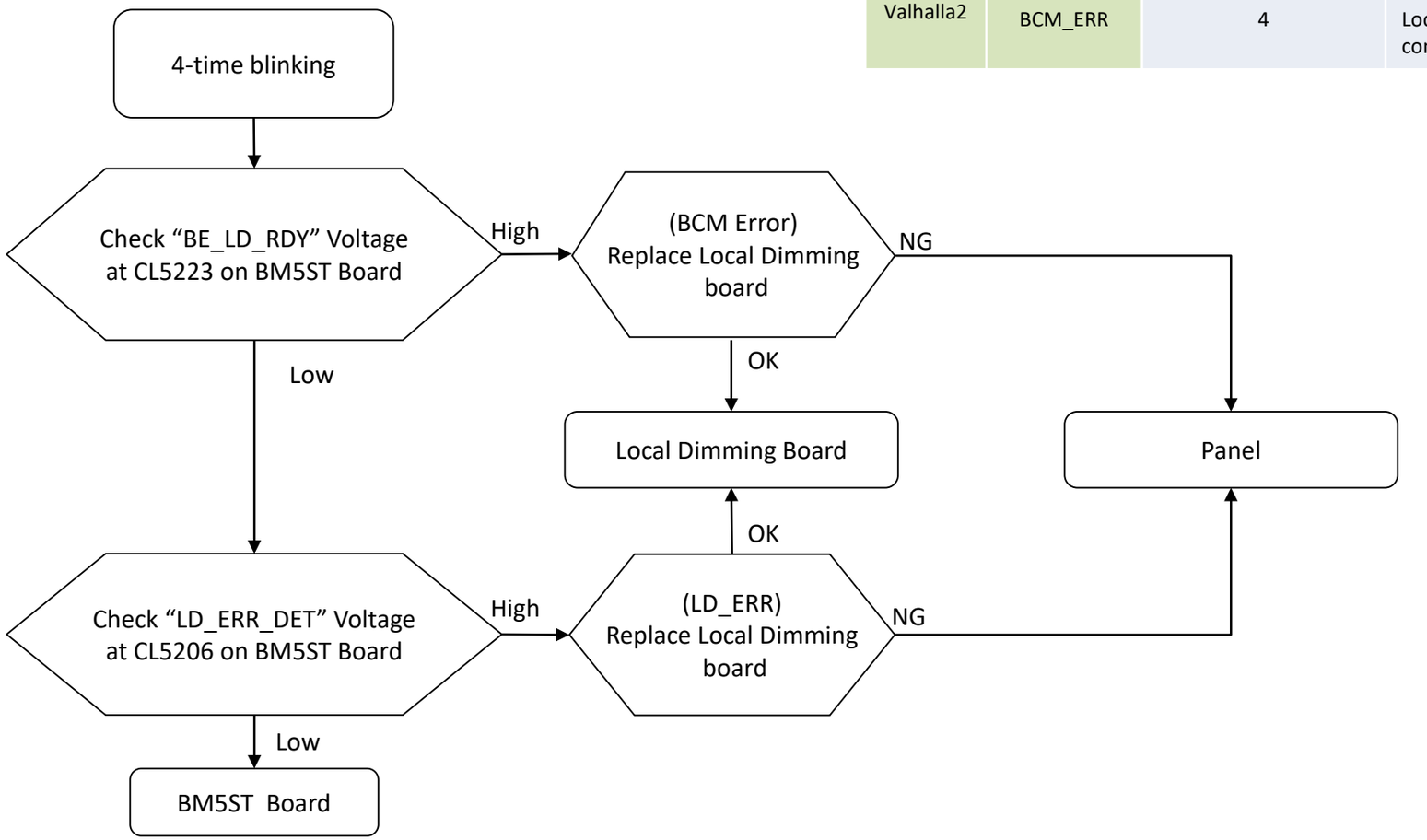
(2) 3.3V short check
Measure impedance between 3.3V_AUDIO and GND at C6604.
Impedance <100Ω → NG

(3) Fuse open check
Measure continuity of Fuse 5A F6604
Fuse Open → NG

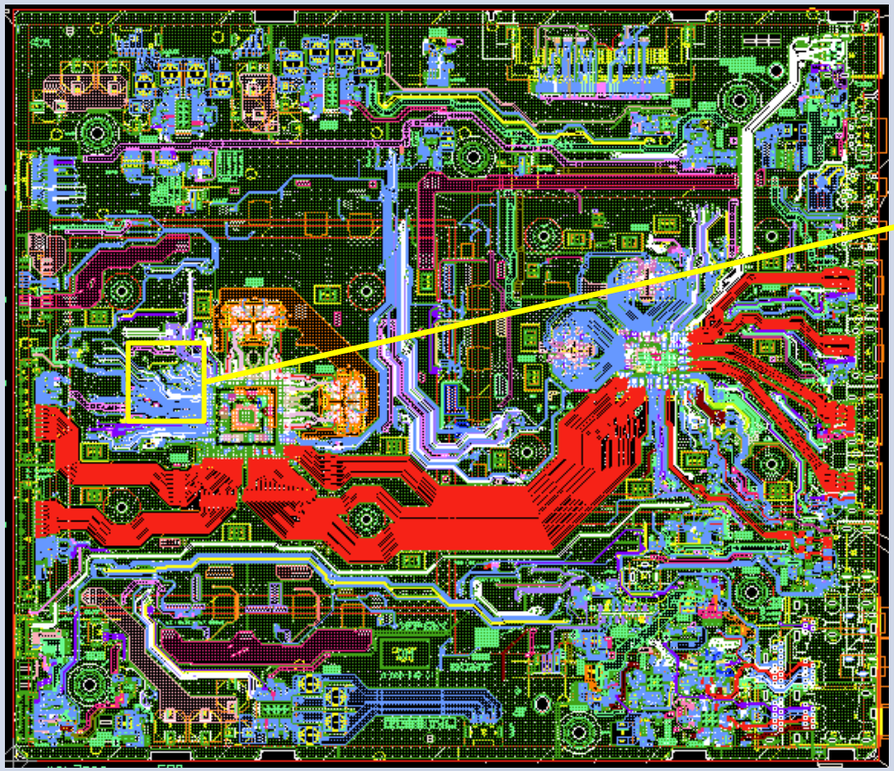
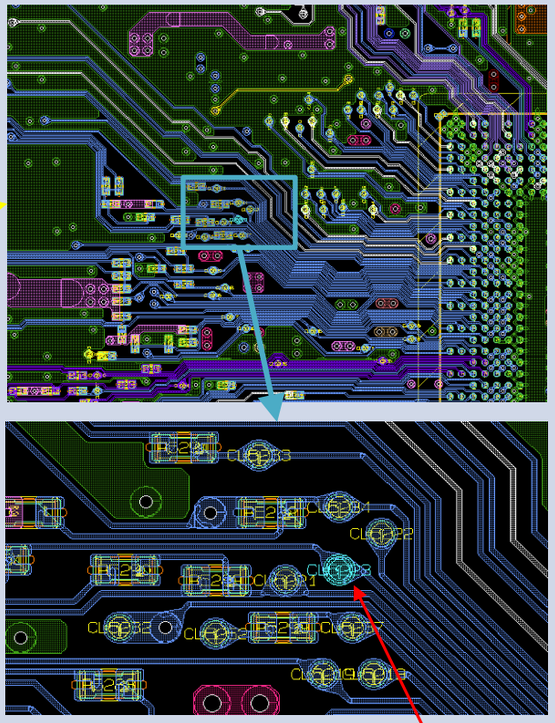
(4) PVDD check
Measure voltage at C6649
Voltage < 11V → NG

2.3 4x Blinking

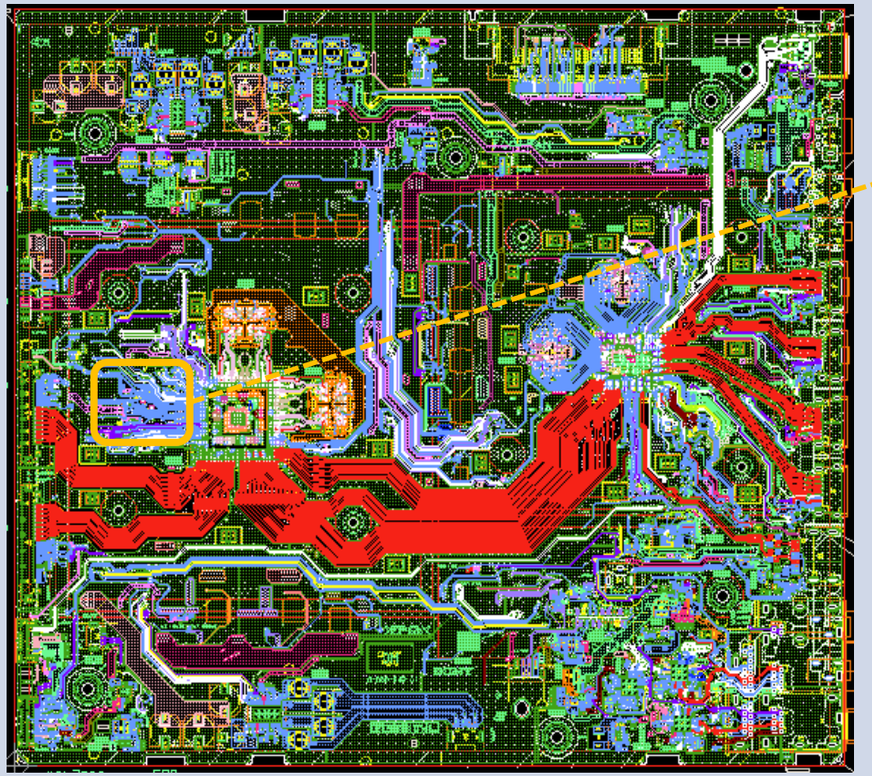
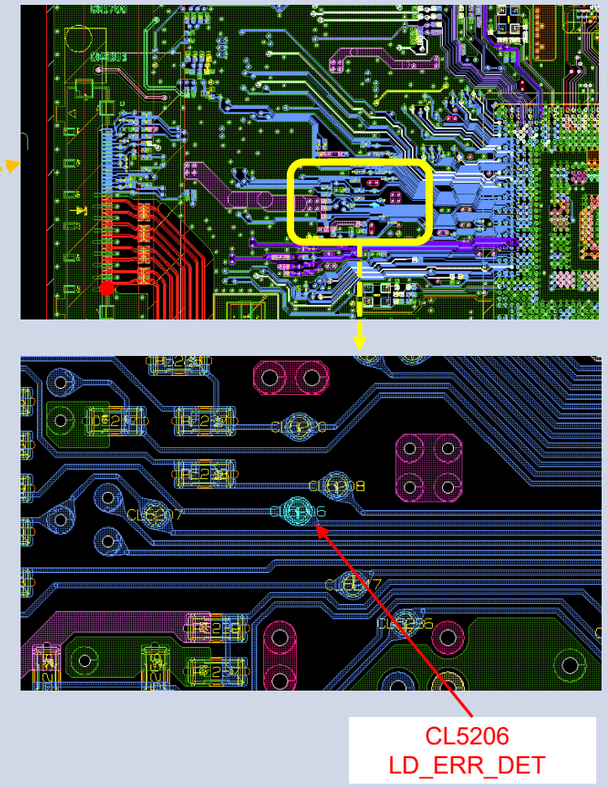
	Error Item	Number of STBY LED flashing	Description
Valhalla2	LD_ERR	4	Local Dimming board error detection by LD IC
	BCM_ERR	4	Local Dimming IC Initialize / FW Update / SPI communication error detection.



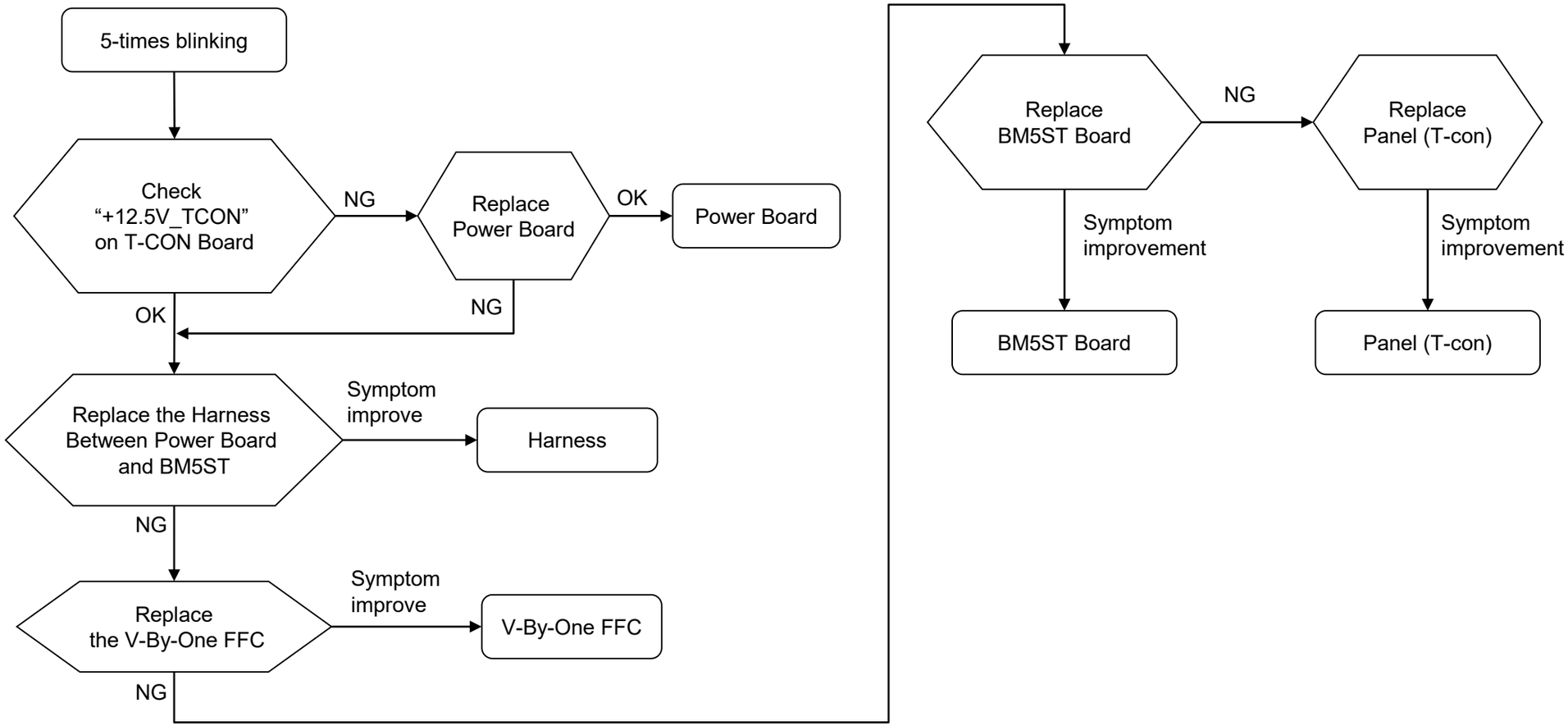
2.4 4x Blinking : Check point for CL5223 LD_RDY

Board PWB (A side)	Detail
	

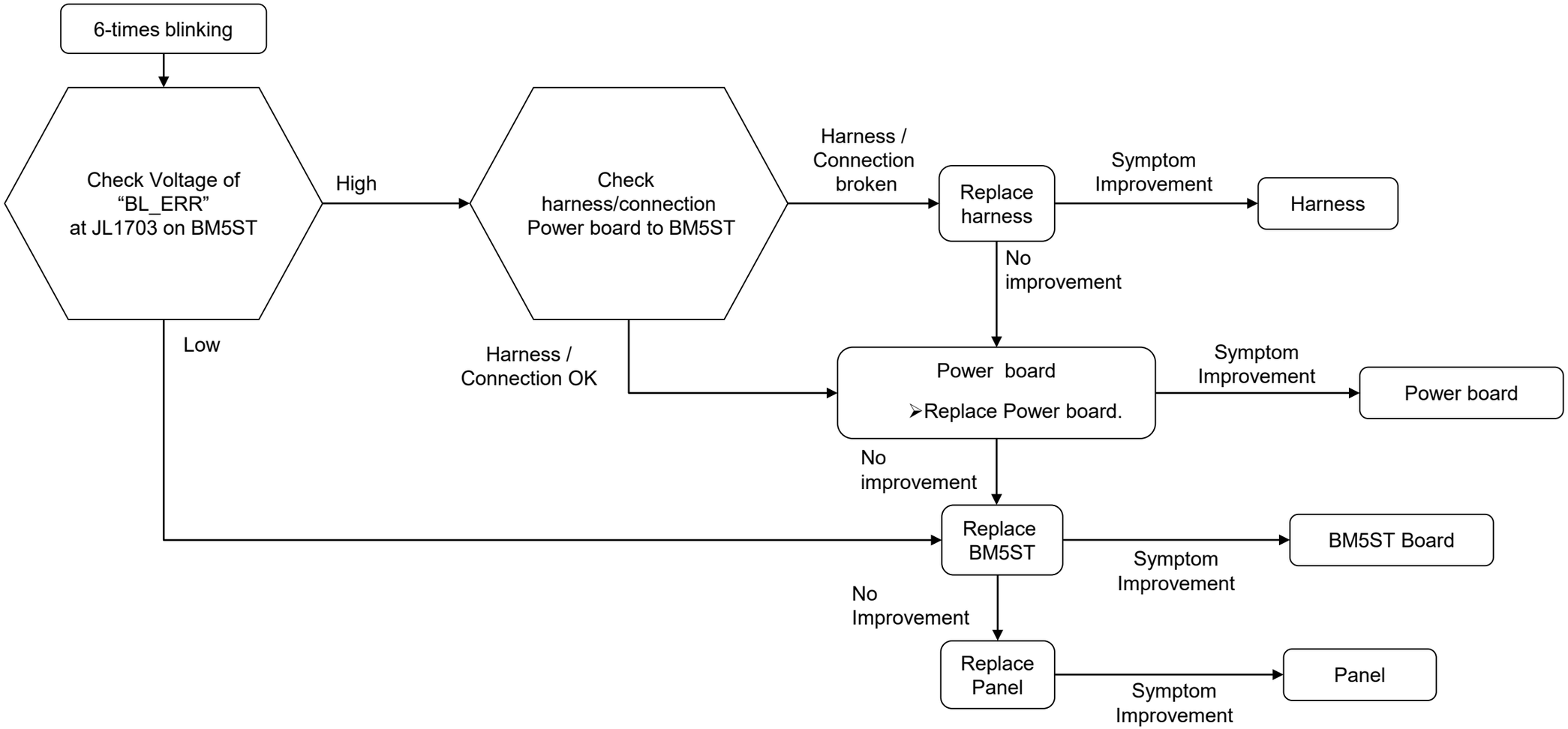
2.4 4x Blinking : Check point for CL5206 LD_ERR_DET

Board PWB (B side)	Detail
	

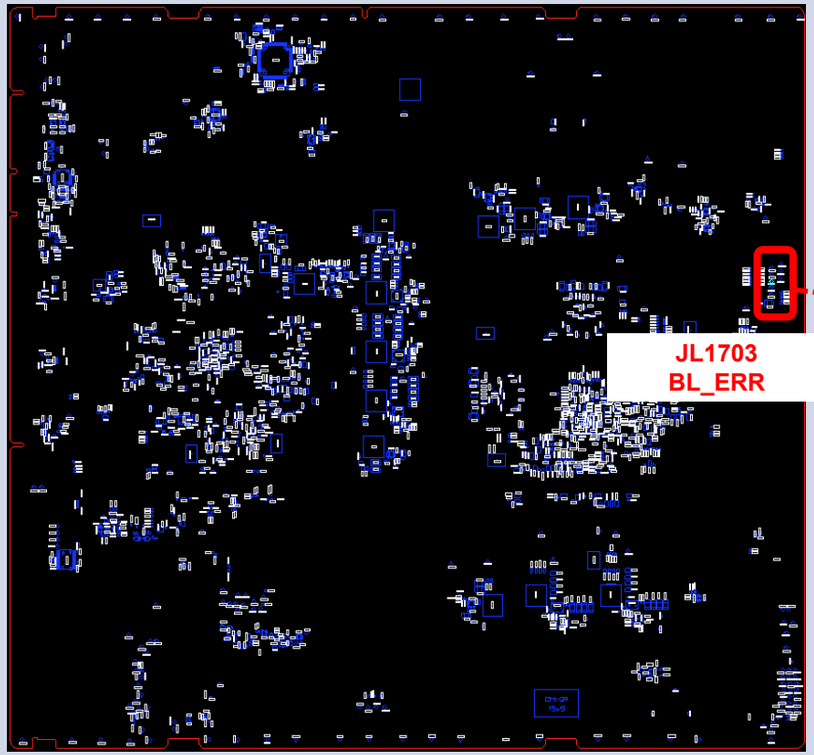
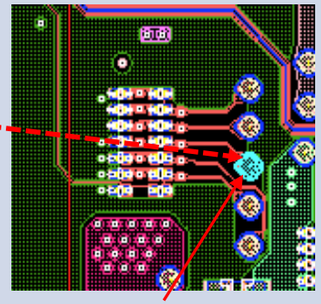
2.5 LED Blinking : 5x Blinking (Panel ID Read Error)



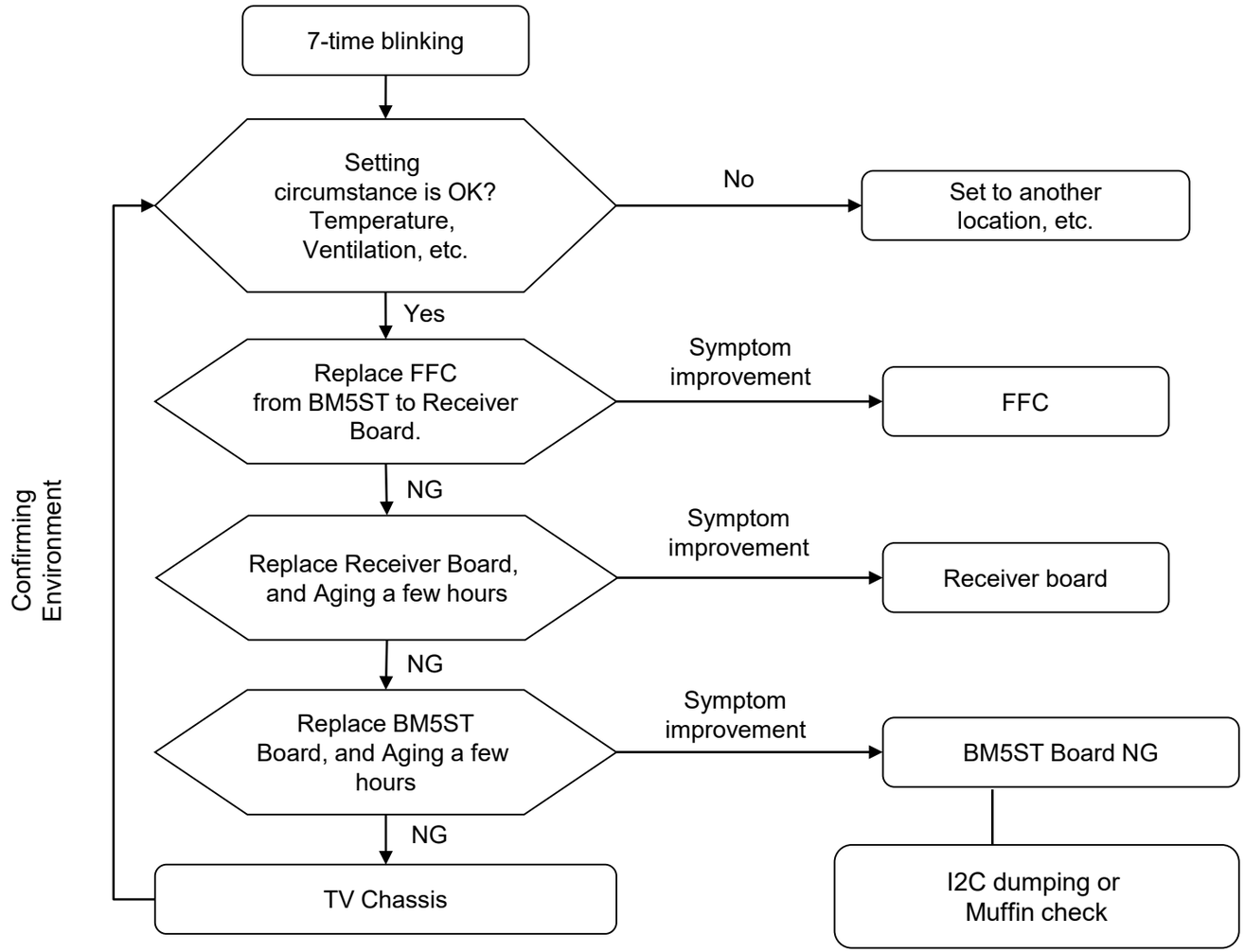
2.6 LED Blinking : 6x Blinking (Backlight Error)



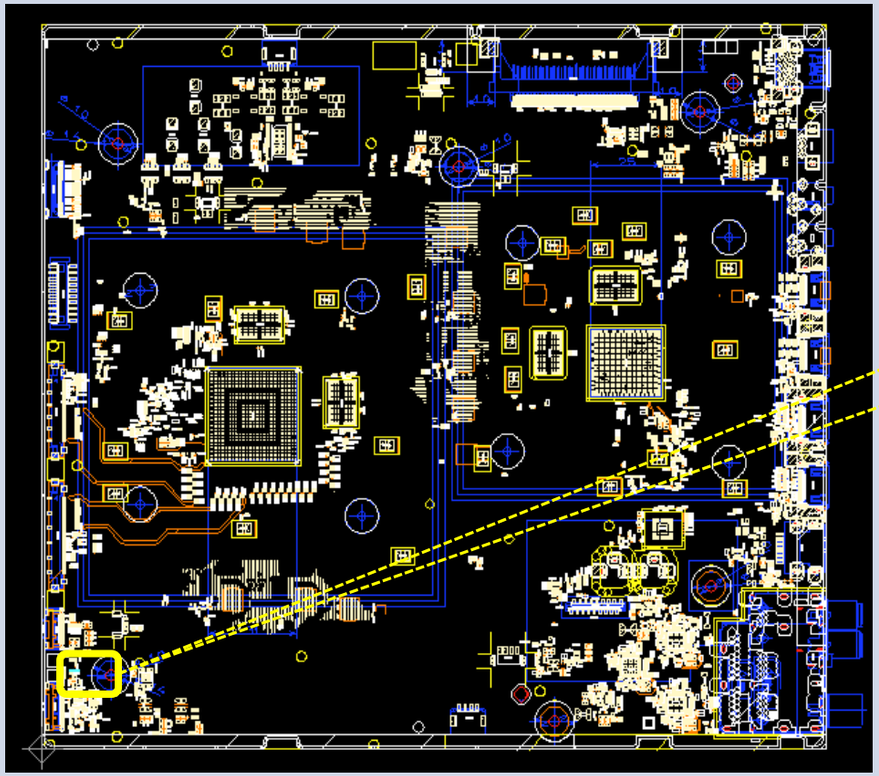
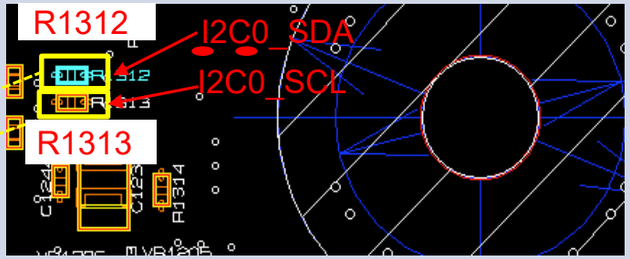
2.6 LED Blinking : Check point

Board PWB (B side)	Detail
	

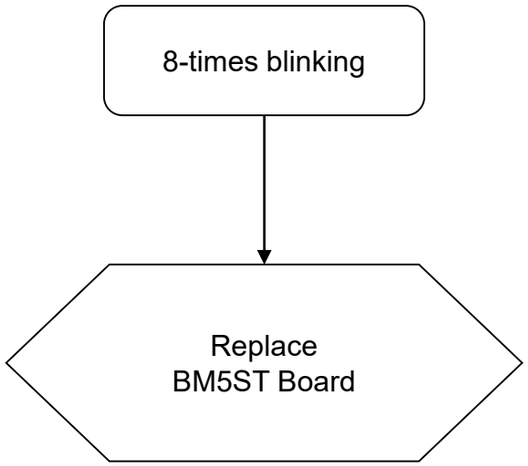
2.7 LED Blinking : 7x Blinking (Temperature Error)



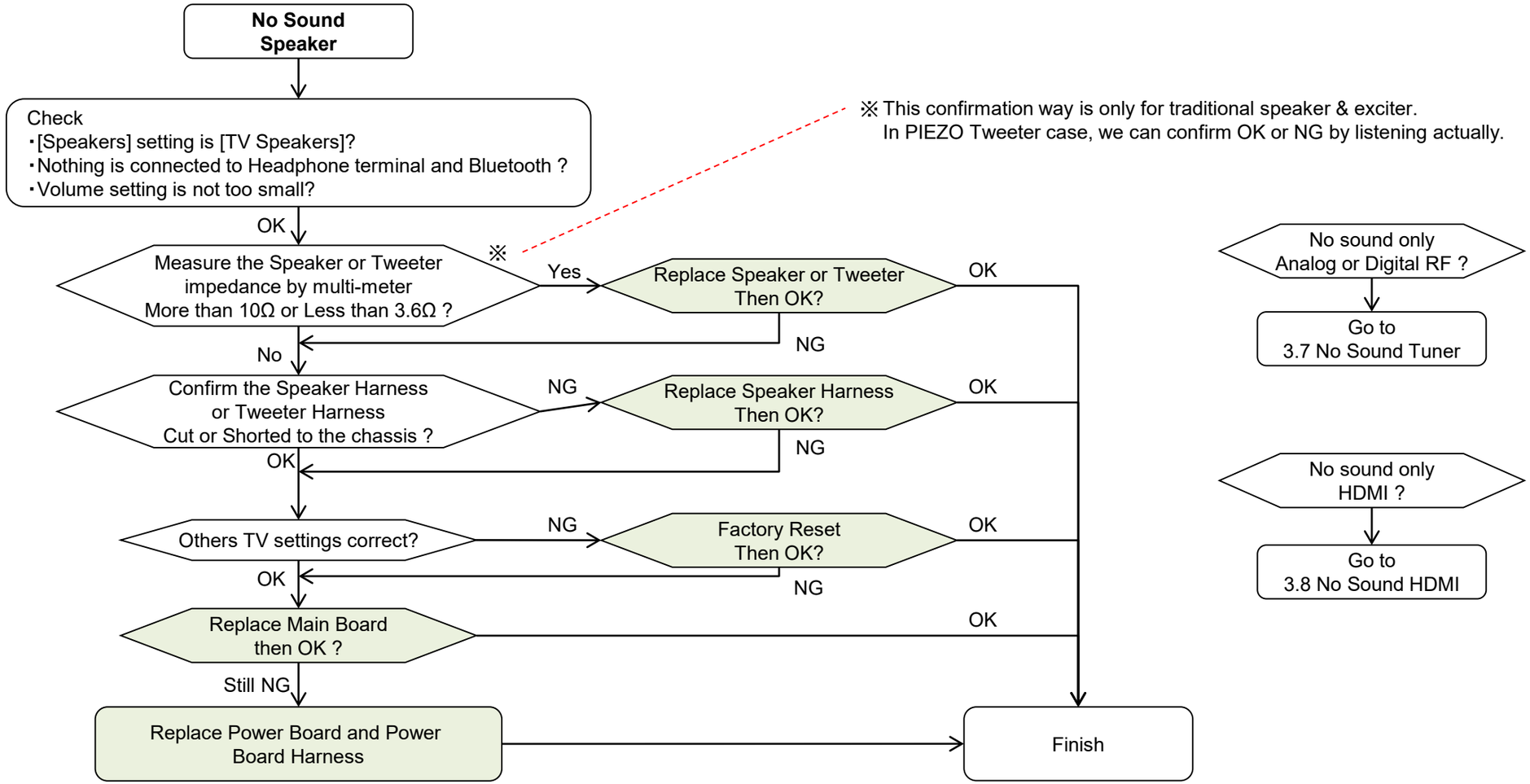
2.7 LED Blinking : Check Point

Board PWB (A side)	Detail
	

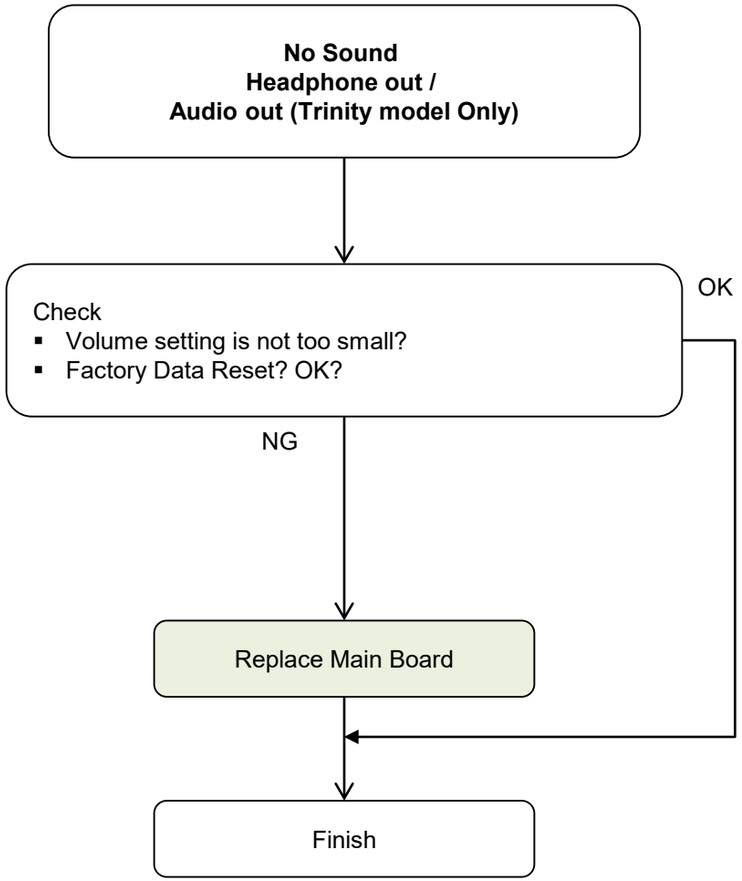
2.8 LED Blinking : 8x Blinking (Sharaku Error)

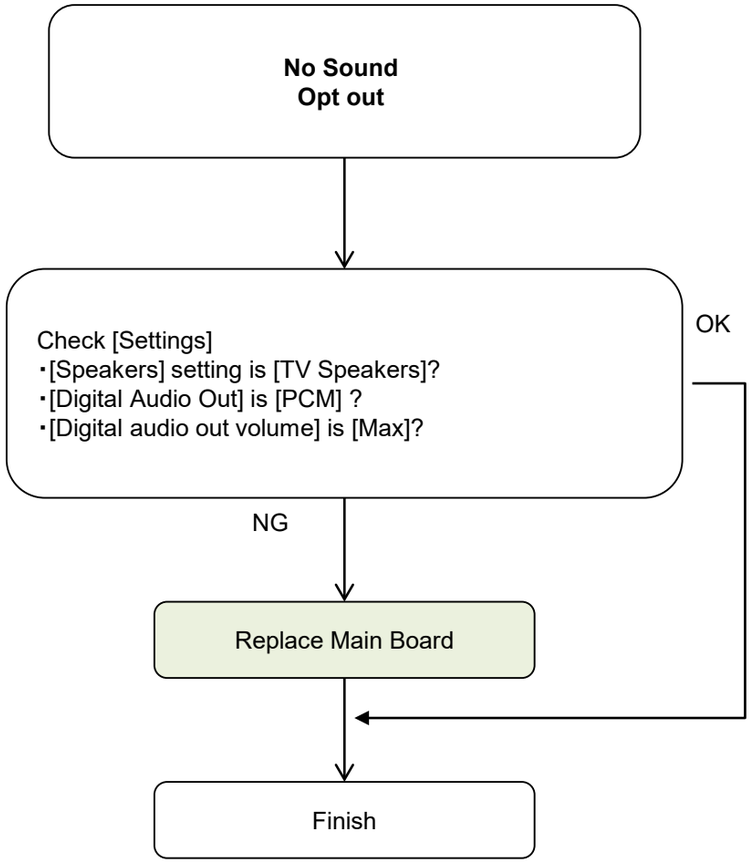


3.1 No Sound: Speaker

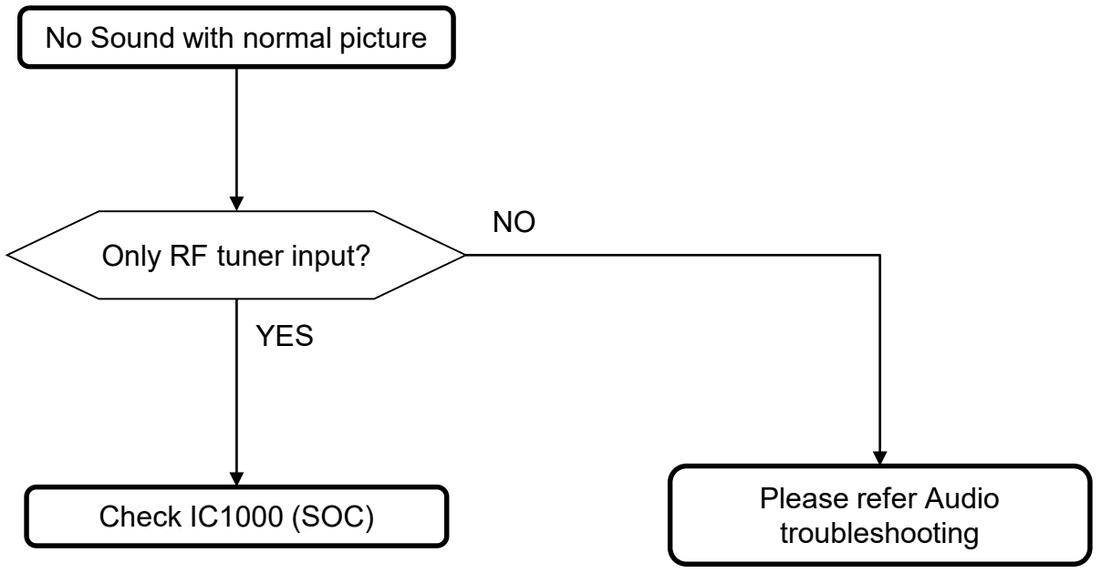


3.2 No Sound: Headphone out / Audio out / Optical out

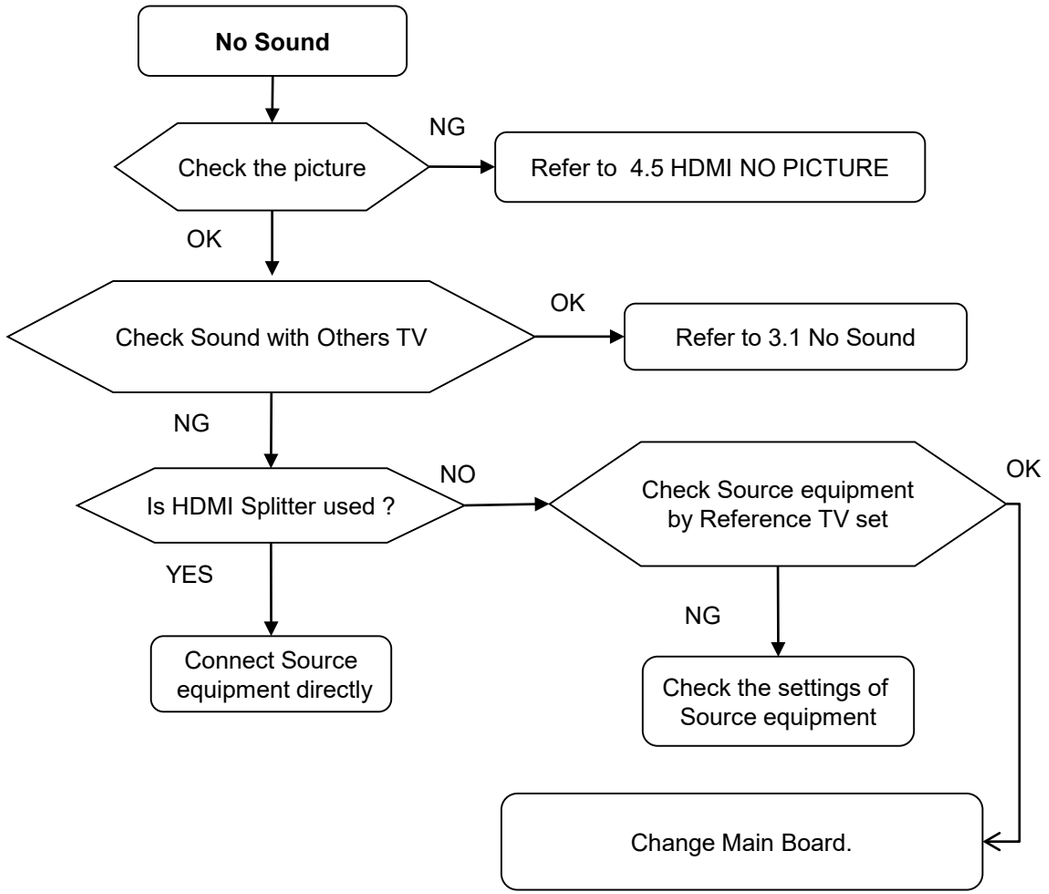


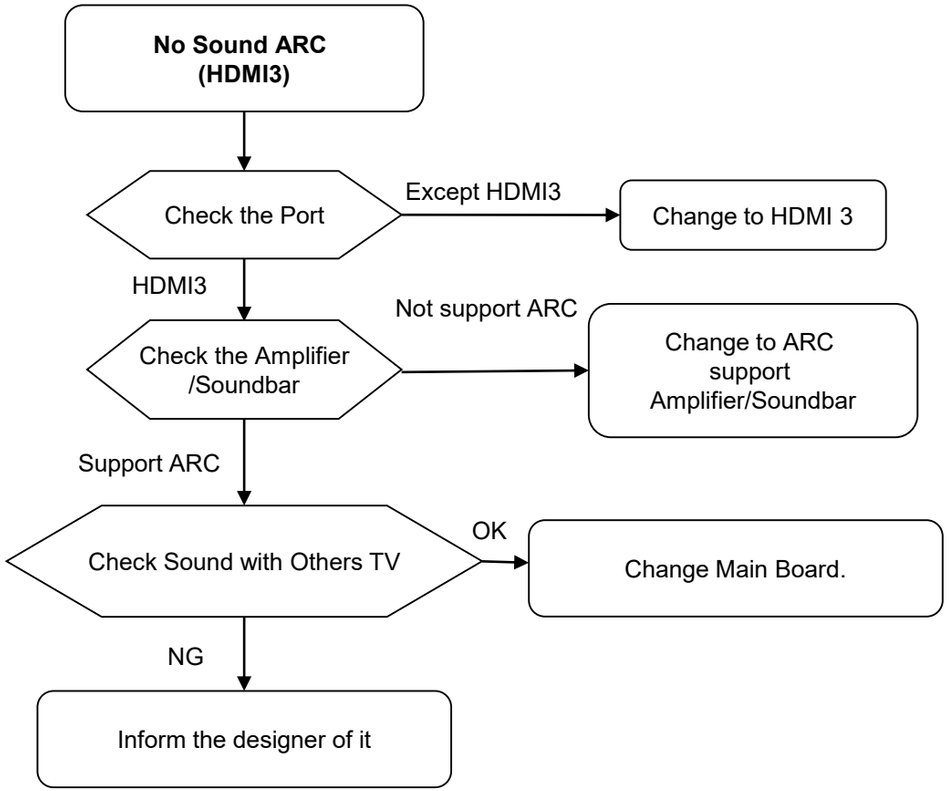


3.7 No Sound: Tuner

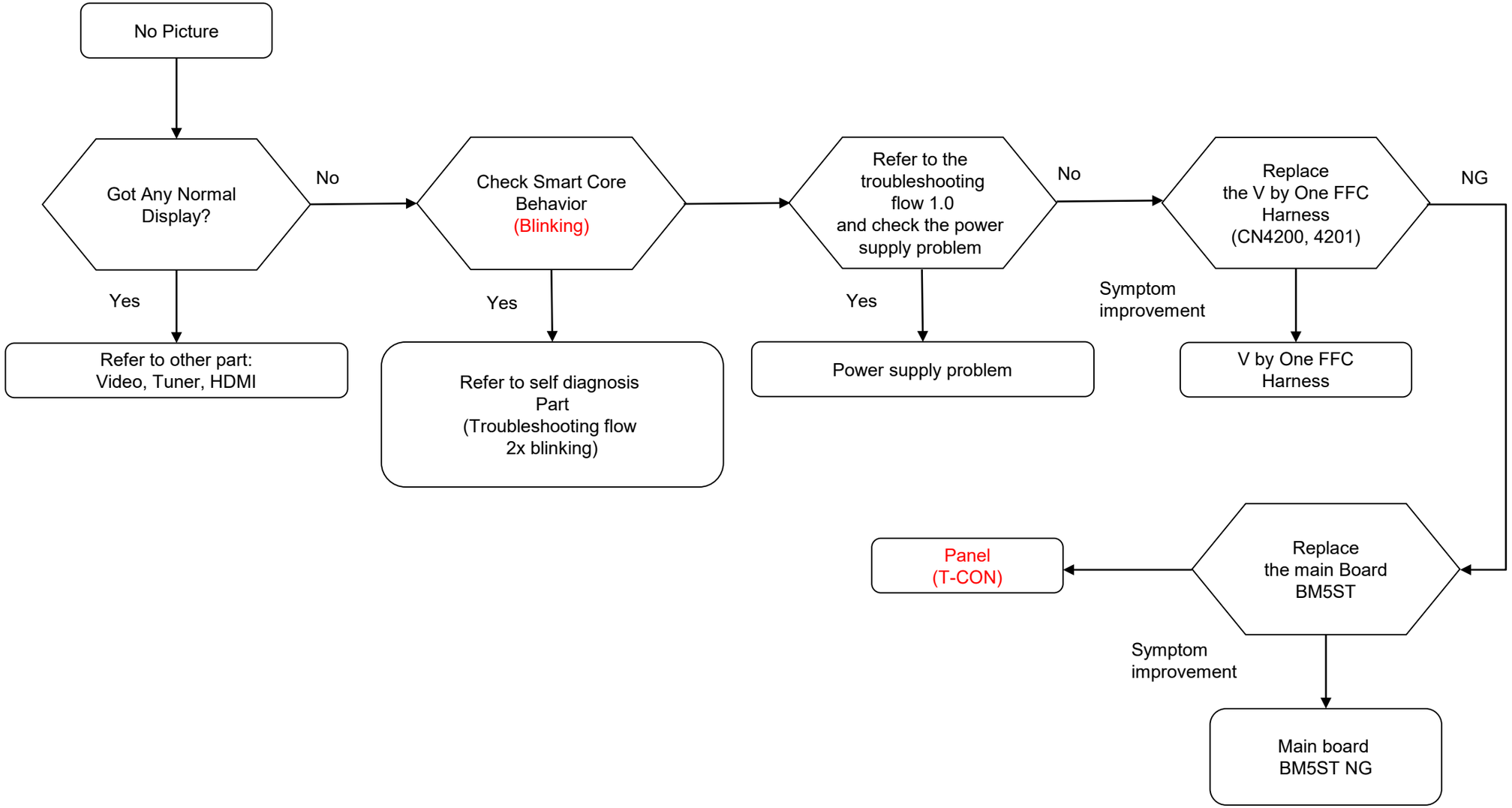


3.8 No Sound: HDMI 1/2/3/4

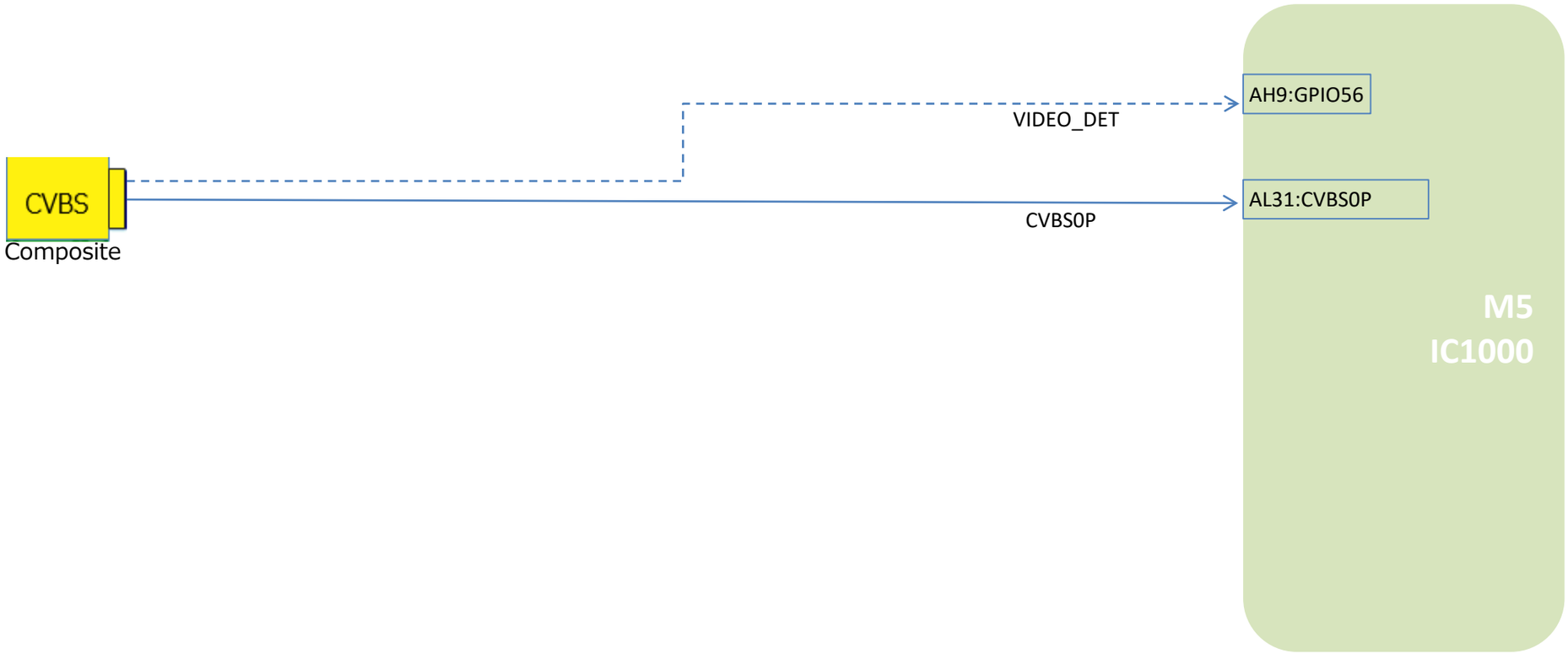




4.0 No Picture

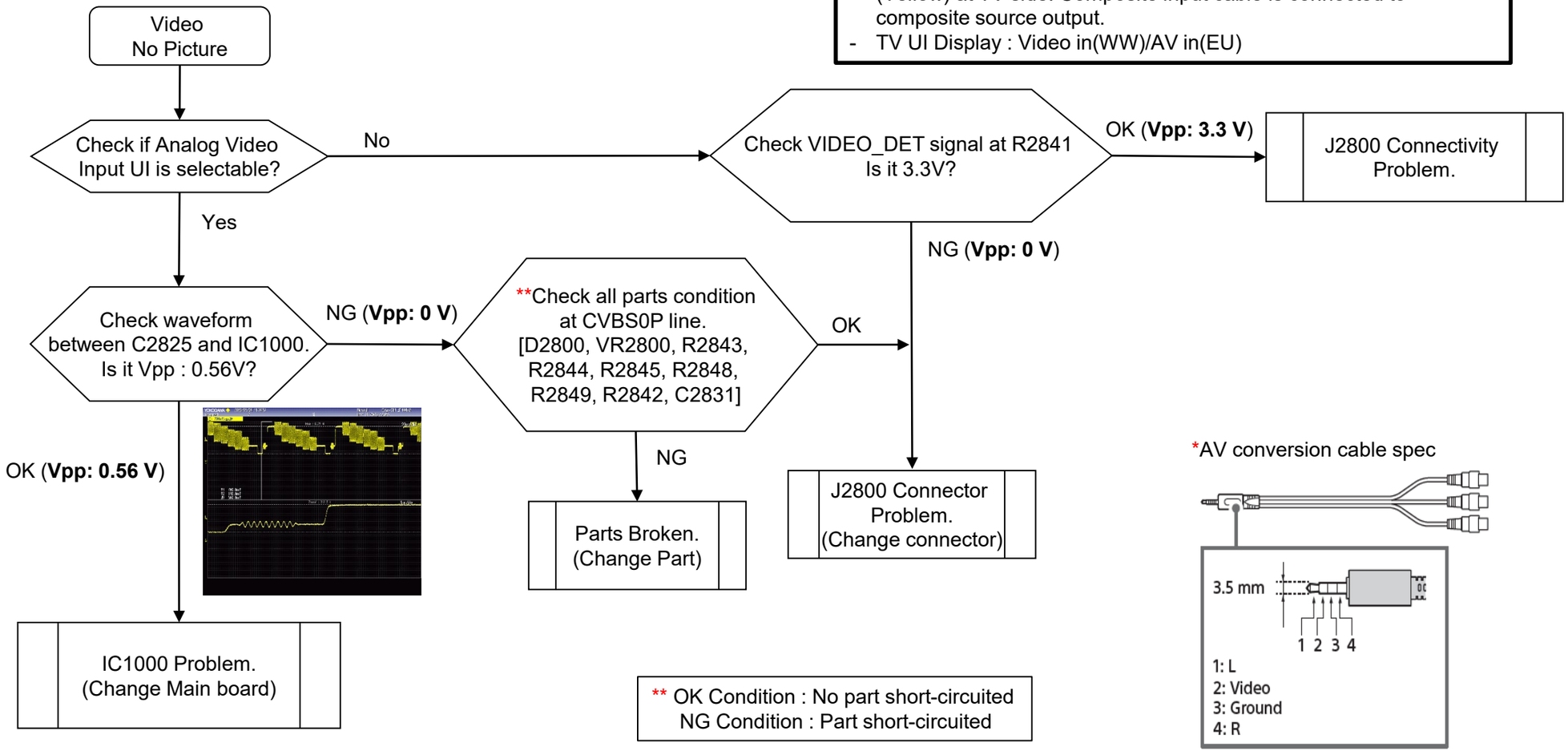


4.1 Analog Video Signal Path (WW destination)



4.2 No Picture – Investigation Flow (WW destination)

Checking condition:
- TV ON, *AV conversion cable is connected to conversion jack input (Yellow) at TV side. Composite input cable is connected to composite source output.
- TV UI Display : Video in(WW)/AV in(EU)



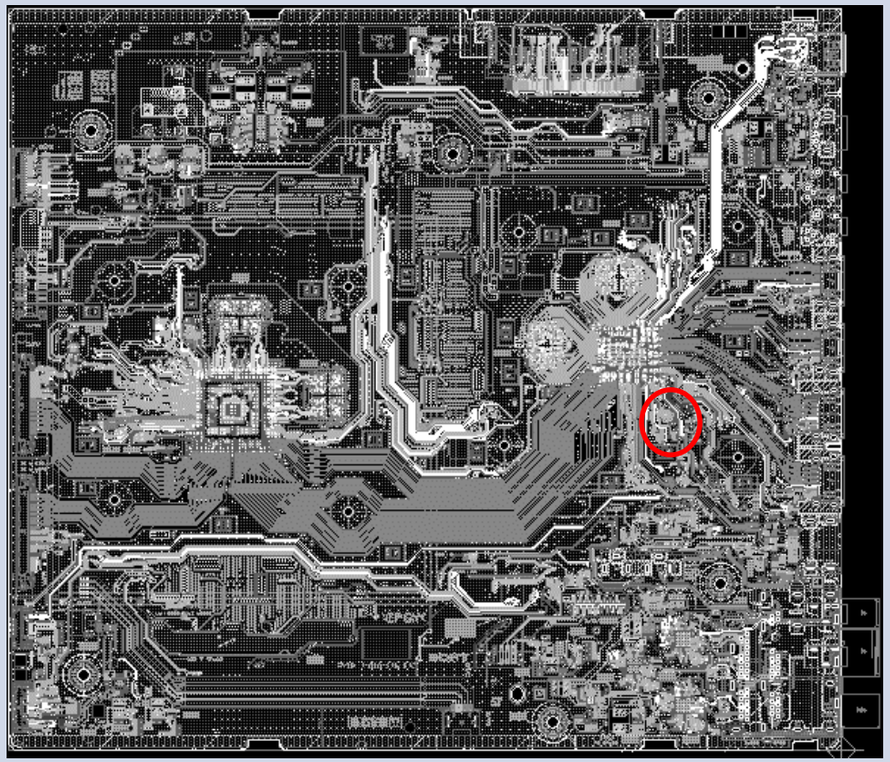
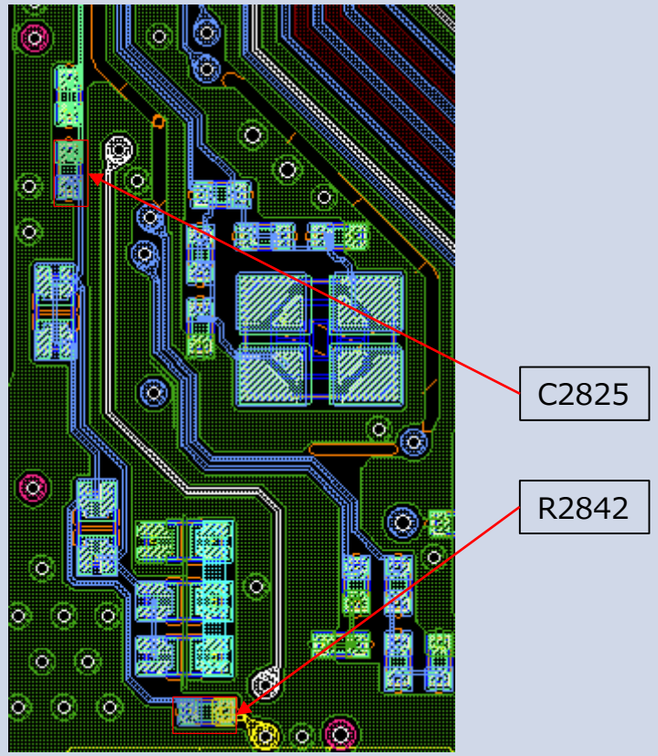
** OK Condition : No part short-circuited
NG Condition : Part short-circuited

*AV conversion cable spec

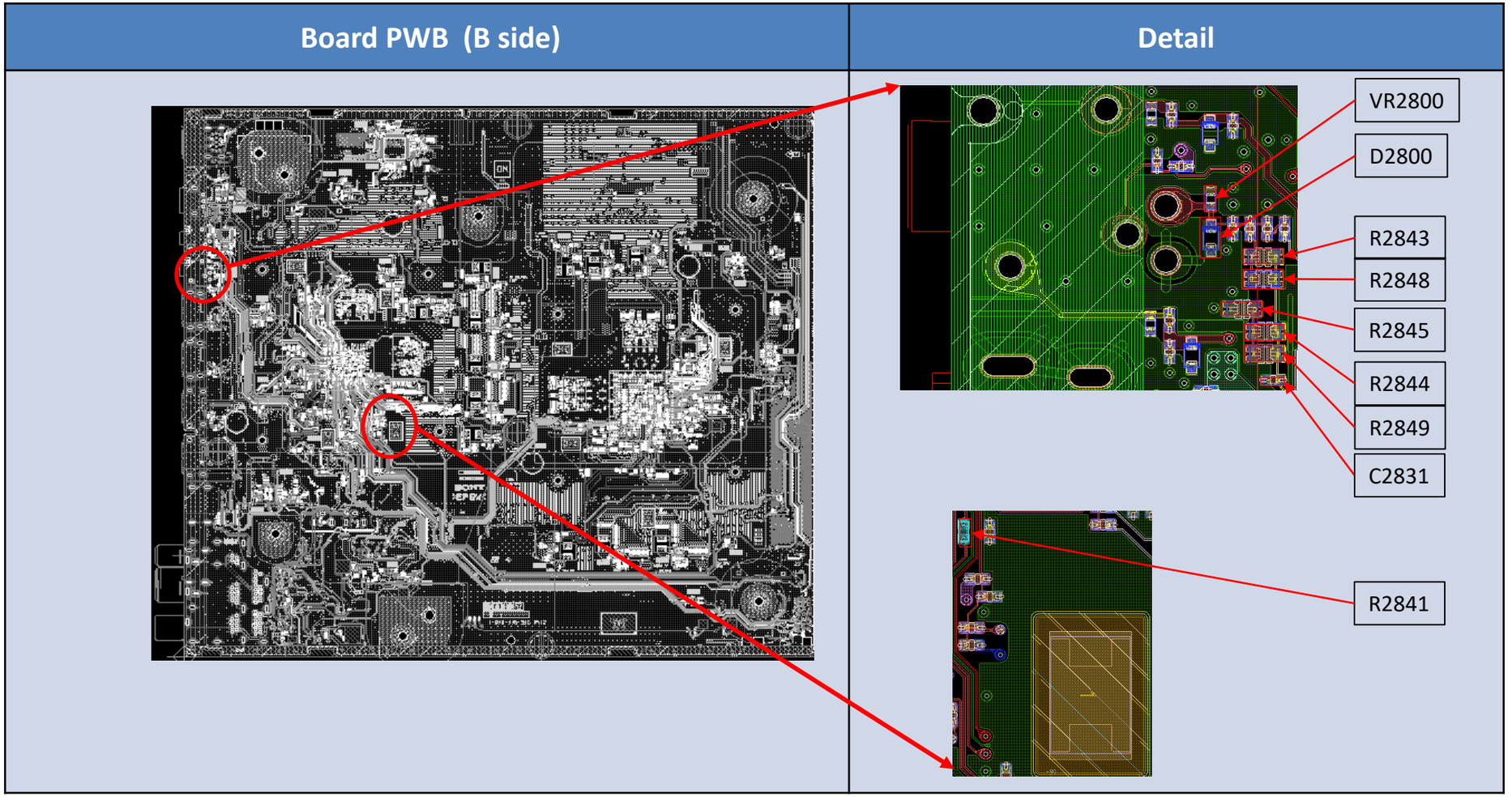
4.2 No Picture – Actions Flow (WW destination)

Condition	Actions to be taken
Muffin [IC1000] Problem	Change Main board
Connector Problem Connectivity Problem	Change Connector
Parts Broken	Change Part according to ** remarks

4.2 No Picture – Parts Location (WW destination)

Board PWB (A side)	Detail
	

4.2 No Picture – Parts Location (WW destination)



4.3 Input Skip Function

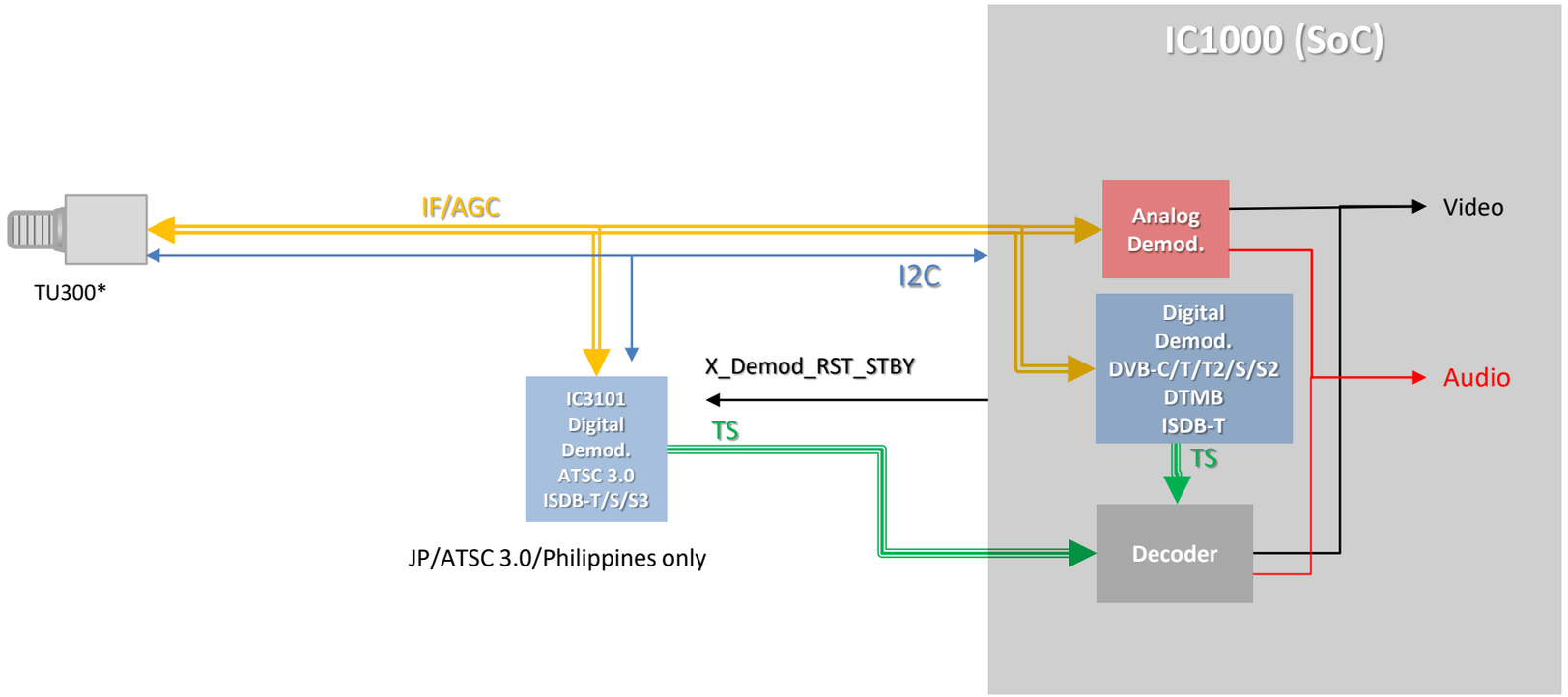
Under default condition;

If user insert analog video cables into video jacks, the Video/Component will be highlighted and can be selected.

The detection mechanism is based on below tables.

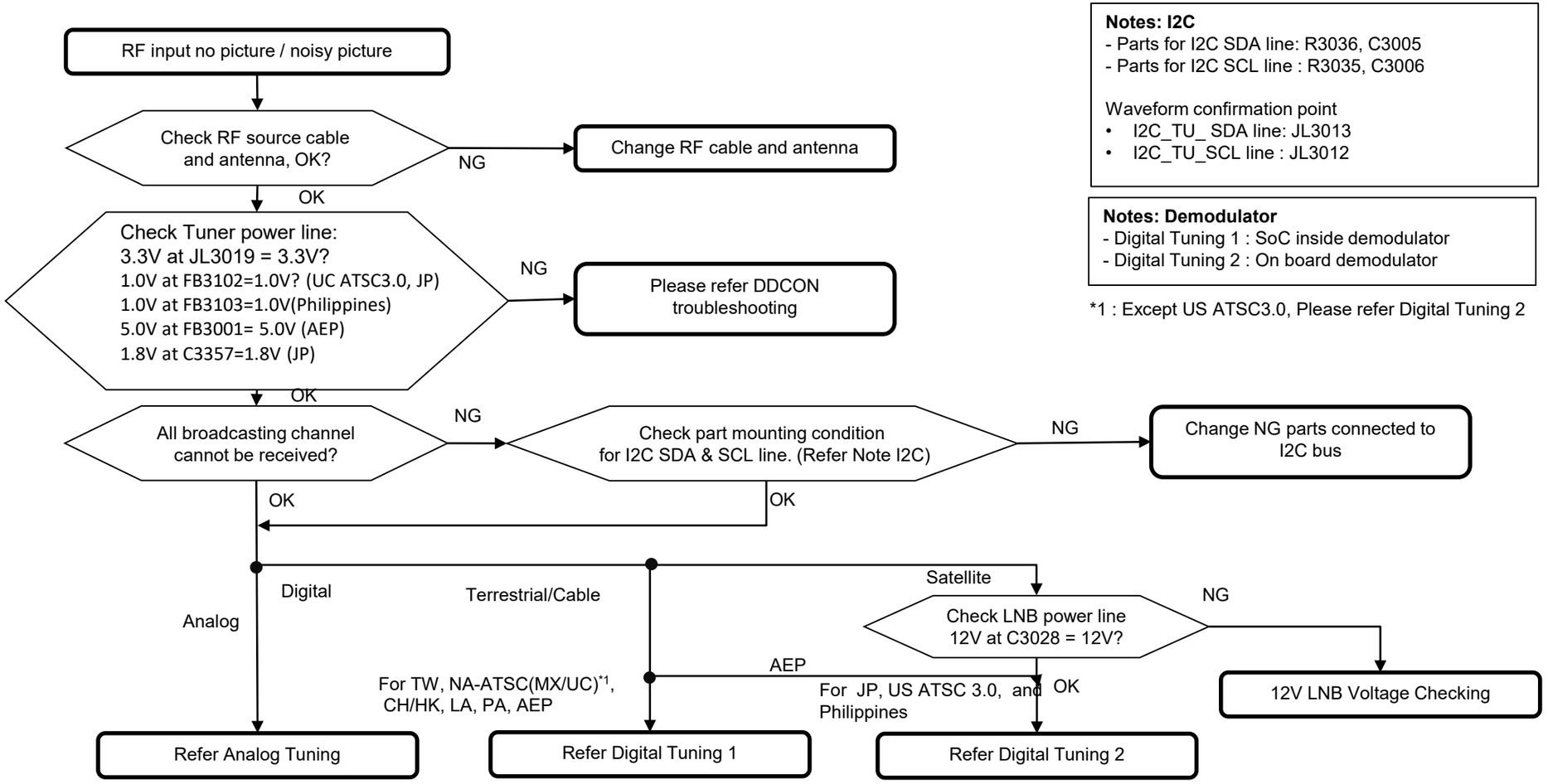
Destination	Input	Signal	Non-Detect (Typical)	Detect (Typical)
WW /EU	VIDEO IN /AV IN	VIDEO_DET IC1000 AH9-GPIO56	0V	3.3V

4.4 No Picture - Tuner



TU3001:NA-ATSC, Philippines, PAD,TW, CH/HK
TU3002:LA
TU3003:AEP
TU3004: JP

4.4 No Picture - Tuner



Notes: I2C
- Parts for I2C SDA line: R3036, C3005
- Parts for I2C SCL line : R3035, C3006

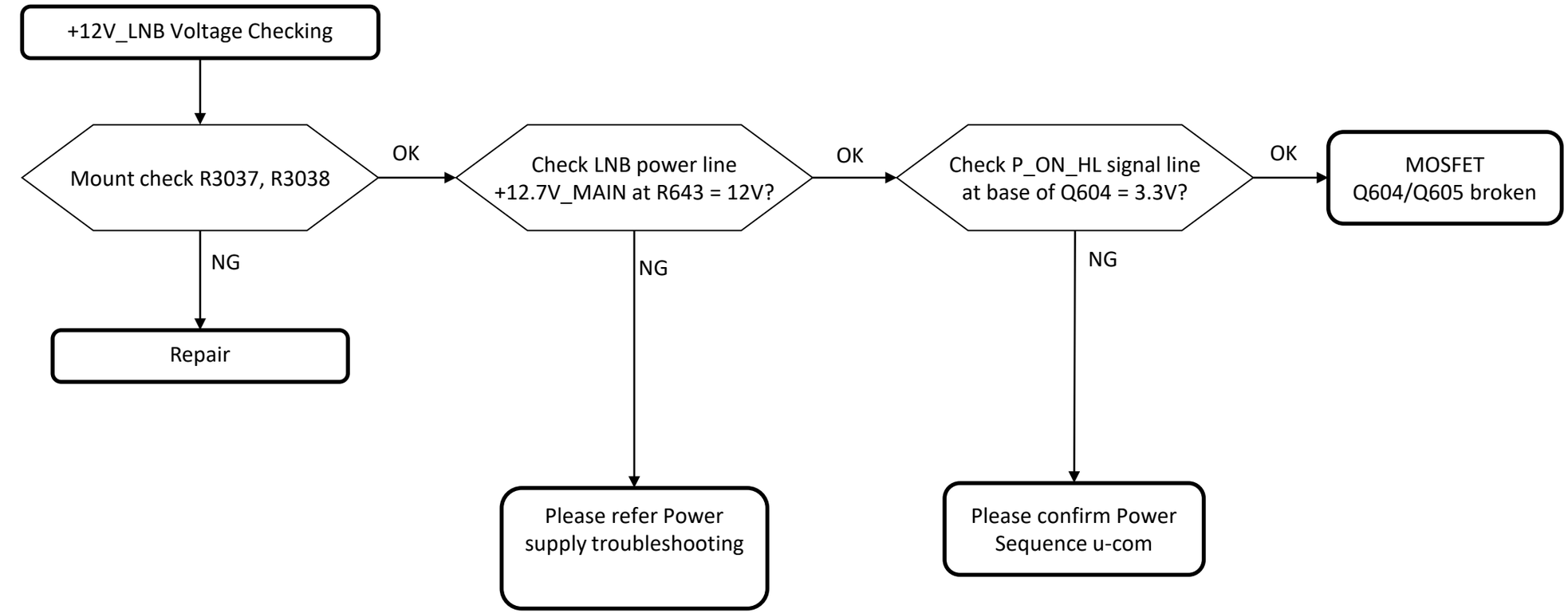
Waveform confirmation point
- I2C_TU_ SDA line: JL3013
- I2C_TU_SCL line : JL3012

Notes: Demodulator
- Digital Tuning 1 : SoC inside demodulator
- Digital Tuning 2 : On board demodulator

*1 : Except US ATSC3.0, Please refer Digital Tuning 2

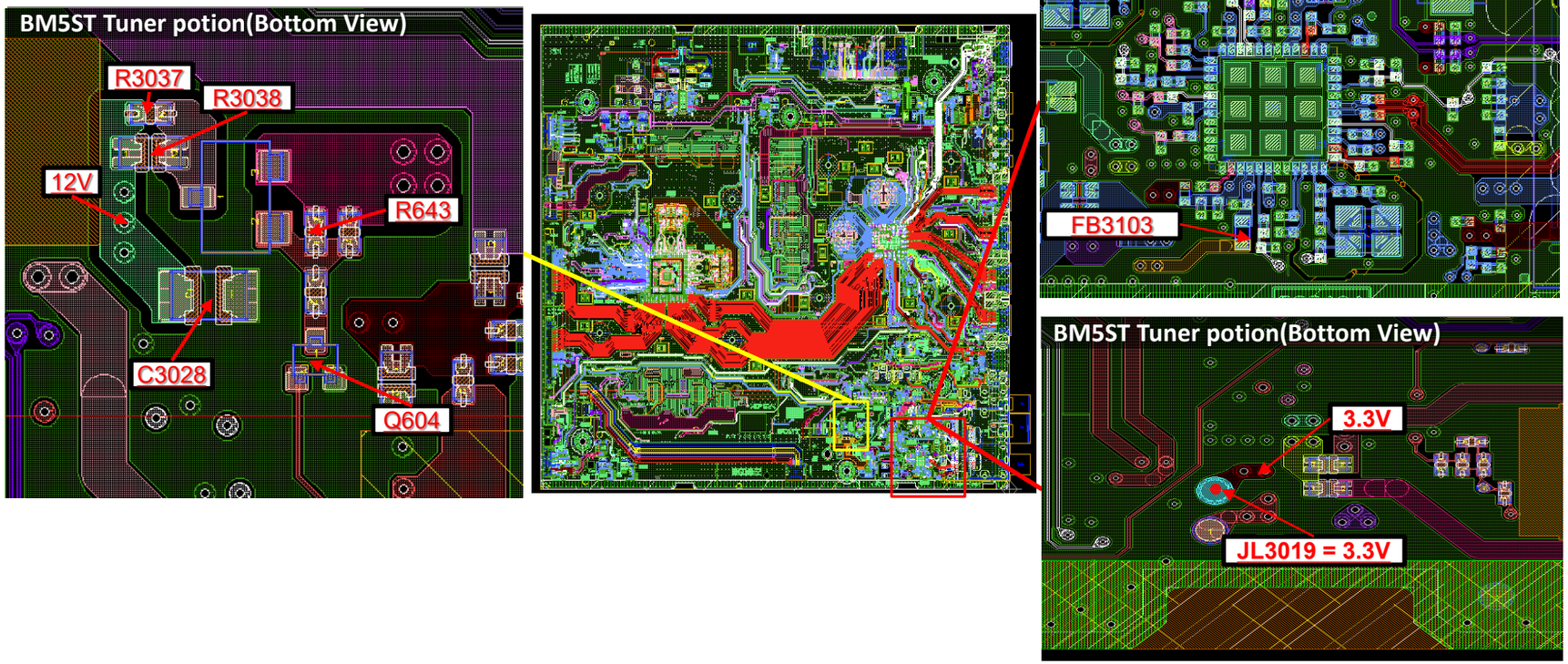
4.4 No Picture - Tuner

FOR 12V LNB Voltage Checking: @ AEP and JP



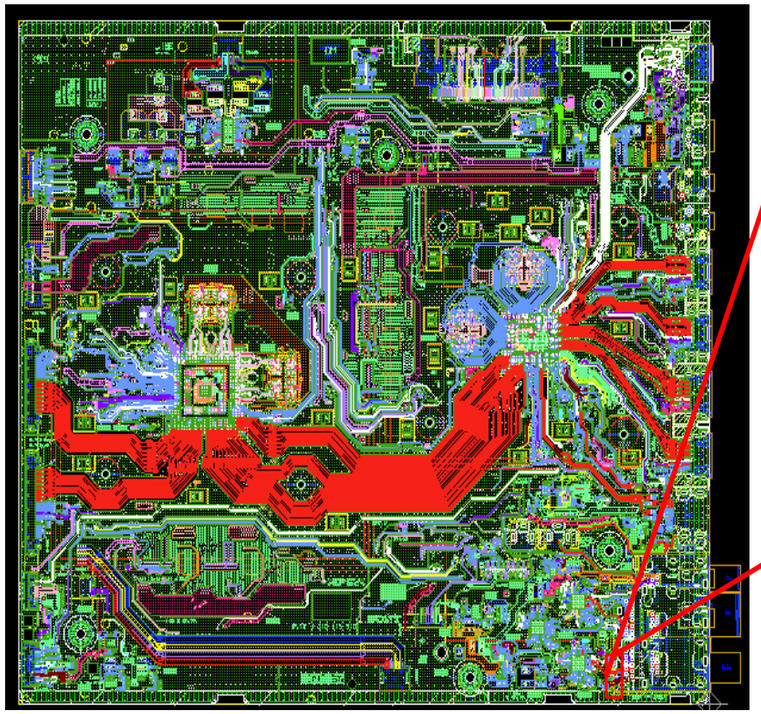
4.4 No Picture - Tuner

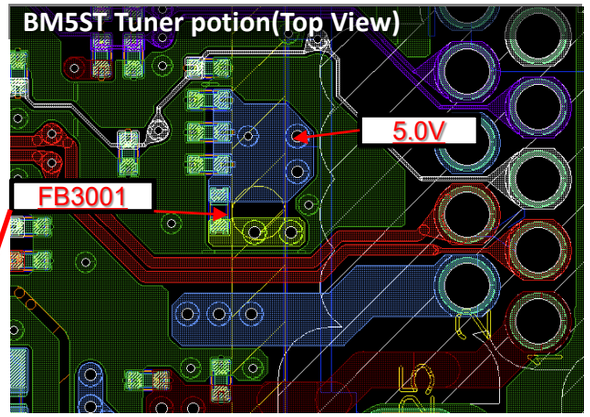
Tuner Power Lines: 3.3V, 12.0V, 1.0V
(Top View)

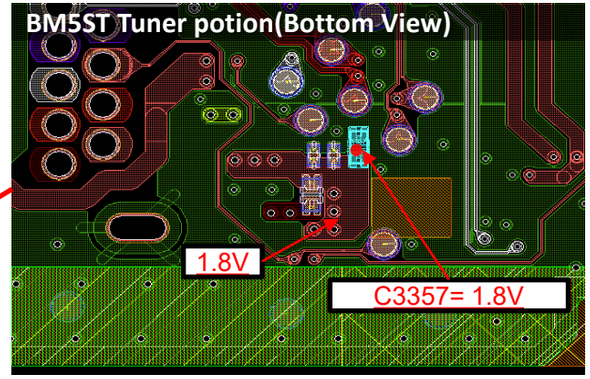


4.4 No Picture - Tuner

Tuner Power Lines: 1.8V, 5.0V
(Top View)

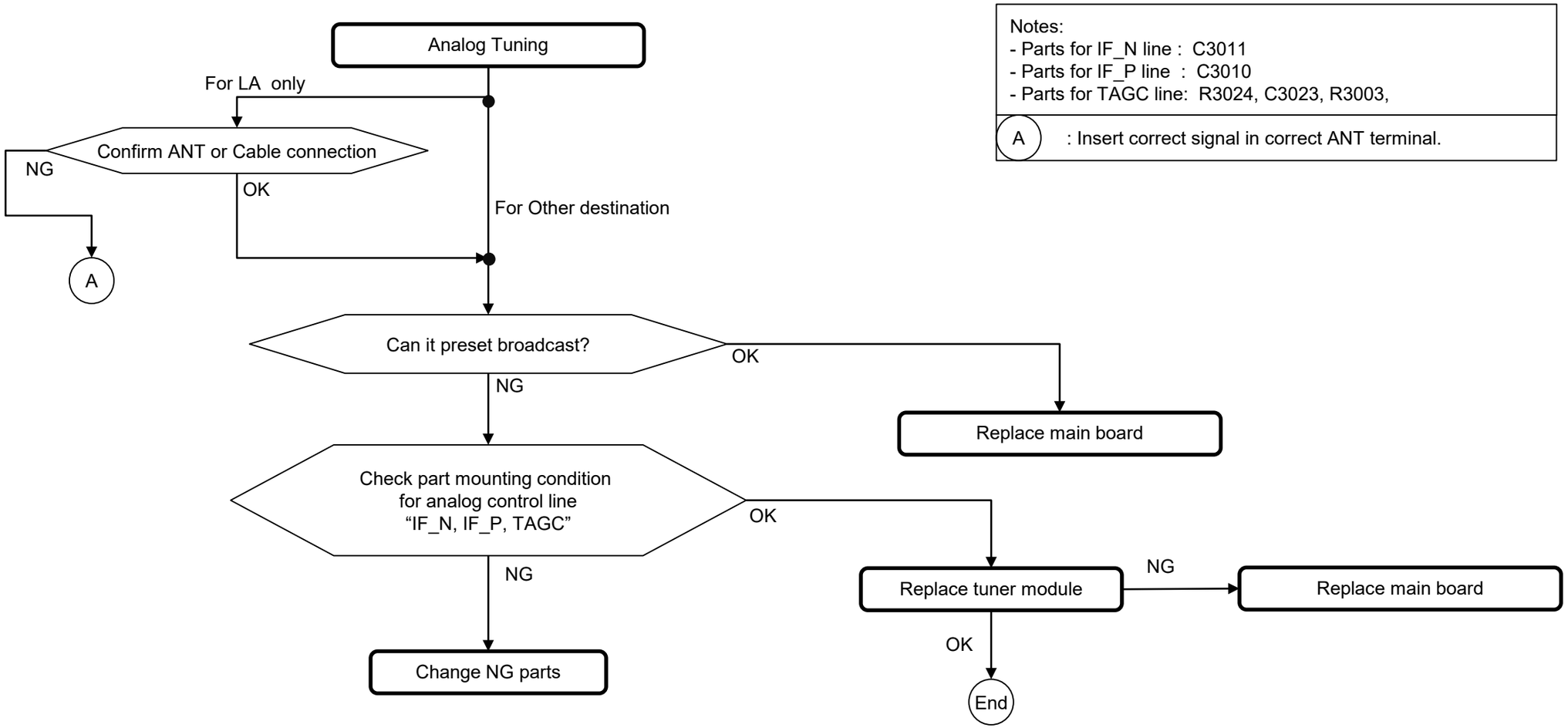






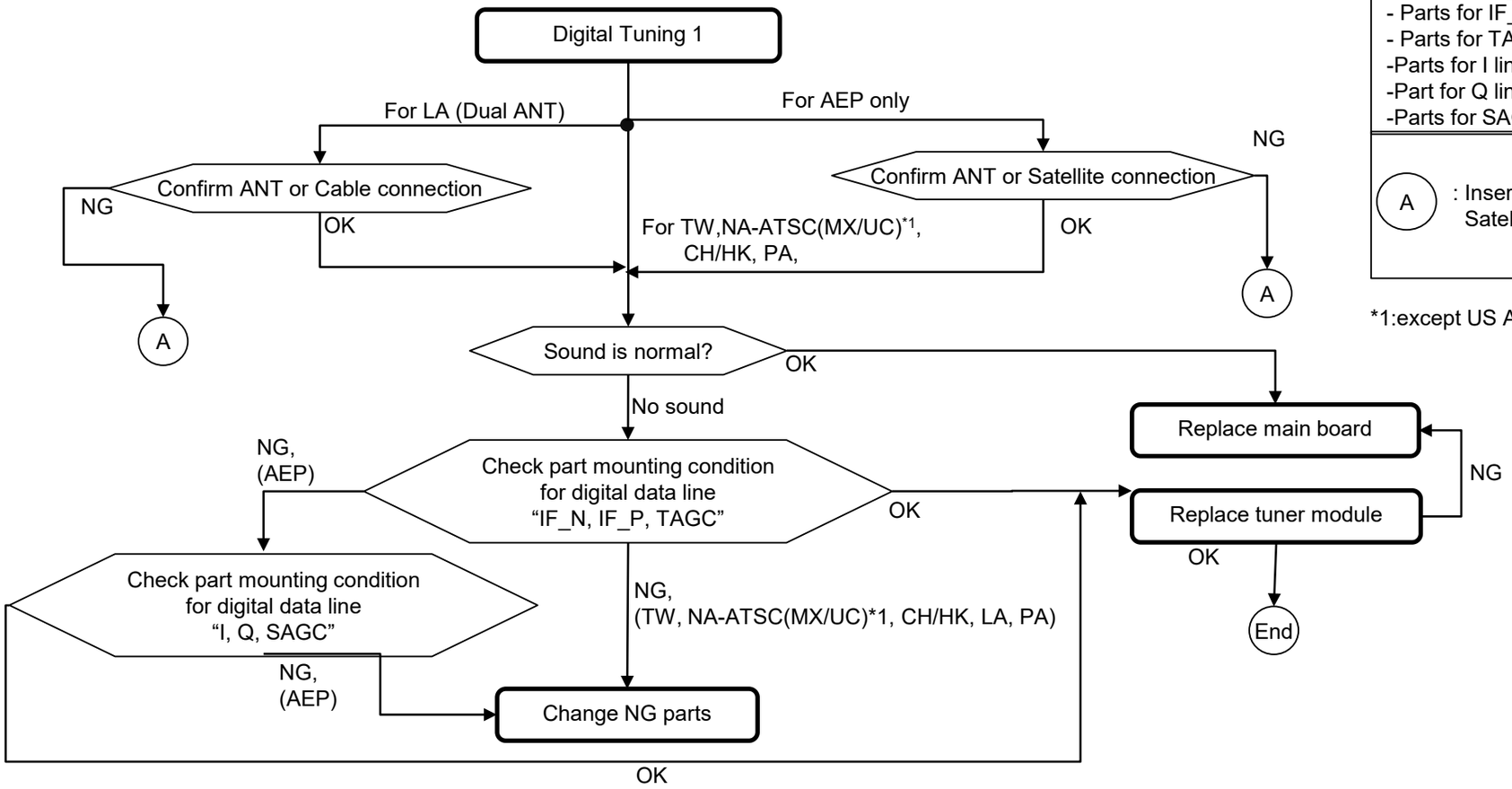
4.4 No Picture - Tuner

FOR ANALOG TUNING: @ All destination except JP



4.4 No Picture - Tuner

FOR DIGITAL TUNING 1: @ For TW, NA-ATSC(MX/UC)*1, CH/HK, LA, PA, AEP



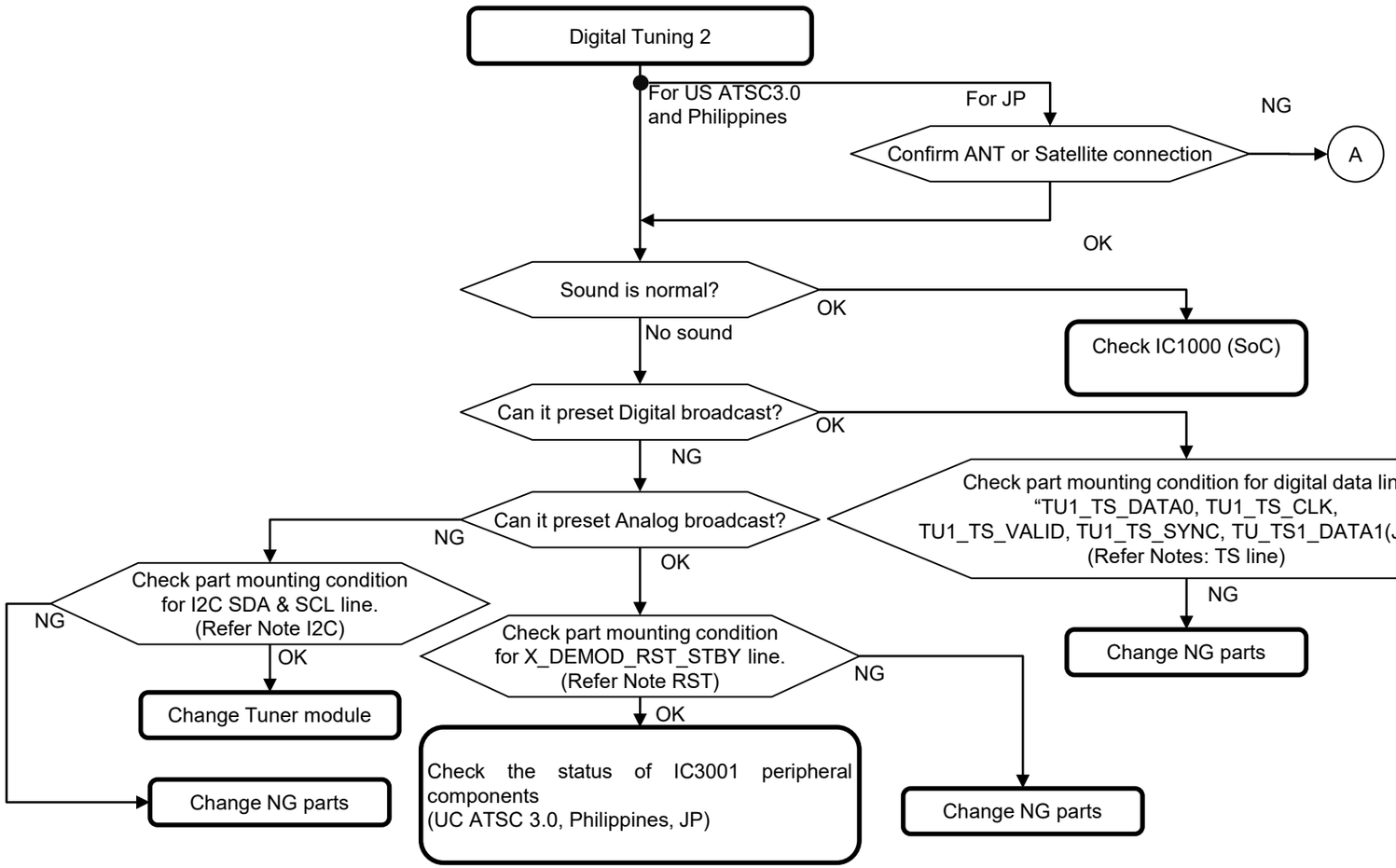
Notes:
- Parts for IF_N line : C3011
- Parts for IF_P line : C3010
- Parts for TAGC line: R3024, C3023, R3003,
-Parts for I line:C3009
-Part for Q line:C3012
-Parts for SAGC line:C3024, C3025

A : Insert correct signal in correct ANT/CABLE/ Satellite terminal.

*1:except US ATSC3.0, Please refer Digital Tuning 2

4.4 No Picture - Tuner

FOR DIGITAL TUNING 2: @ JP, US ATSC3.0 and Philippines



Notes: I2C
- Parts for I2C SDA line: R3036, C3005
- Parts for I2C SCL line : R3035, C3006

Waveform confirmation point
- I2C_TU_ SDA line: JL3013
- I2C_TU_SCL line : JL3012

Notes: TS line
-TS line parts for US ATSC3.0/Philippines
R3120/R3121/ R3122/ R3123/ R3114/ C3126/ R3116/R3117/RB3001
- TS line parts for JP :
R3113/R3120/R3121/ R3122/ R3123/ R3114/ C3126/ R3116/R3117/RB3001

A : Insert correct signal in correct ANT terminal.

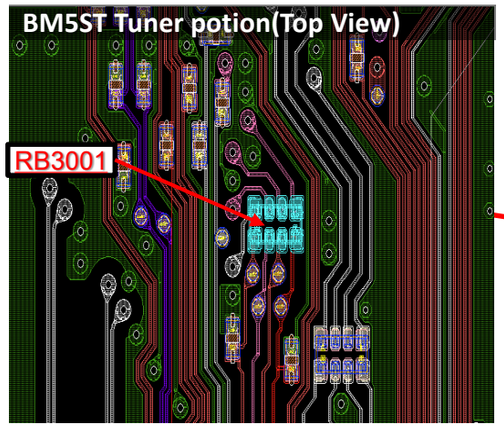
Notes: RST
- Parts for X_DEMOD_RST_STBY line:
R3109, C3117

Voltage confirmation point
C3117 = 3.3V

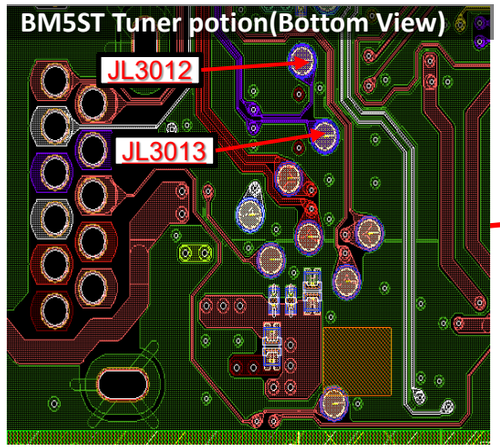
4.4 No Picture - Tuner

IF_N, IF_P, TAGC, TS Lines(Near SOC)

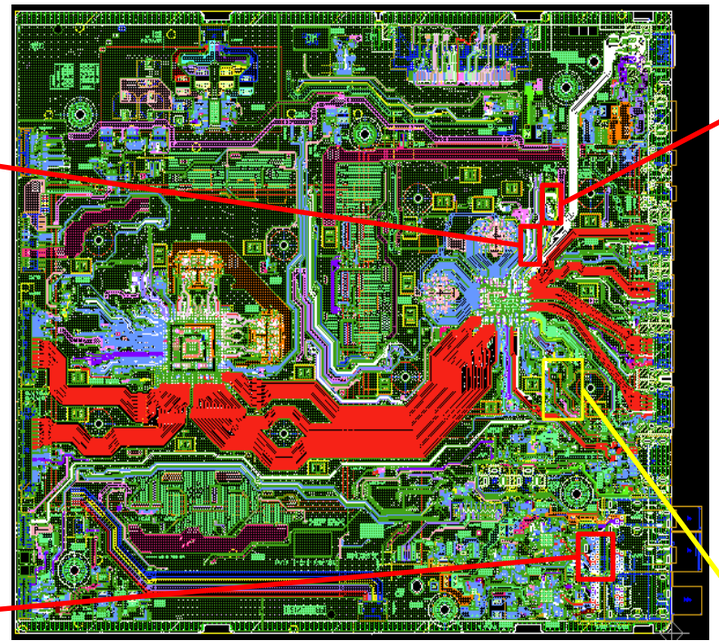
BM5ST Tuner potion(Top View)



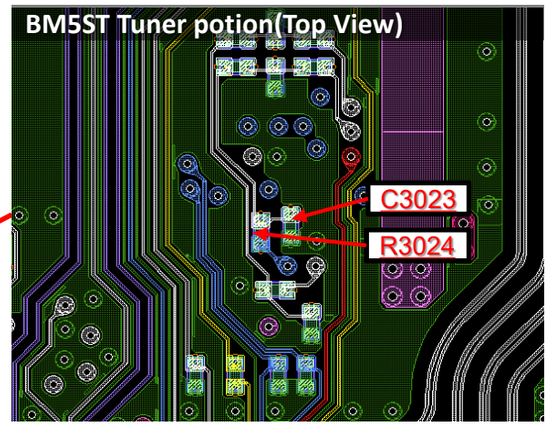
BM5ST Tuner potion(Bottom View)



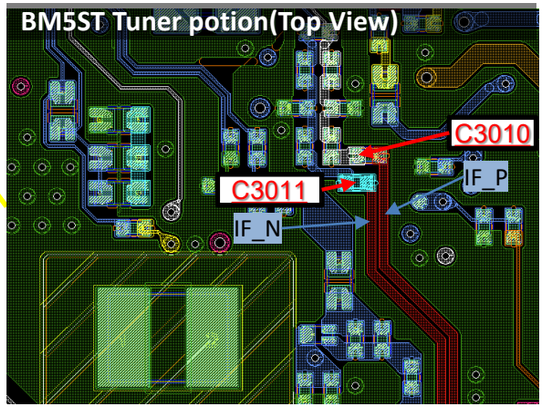
BM5ST(Top View)



BM5ST Tuner potion(Top View)



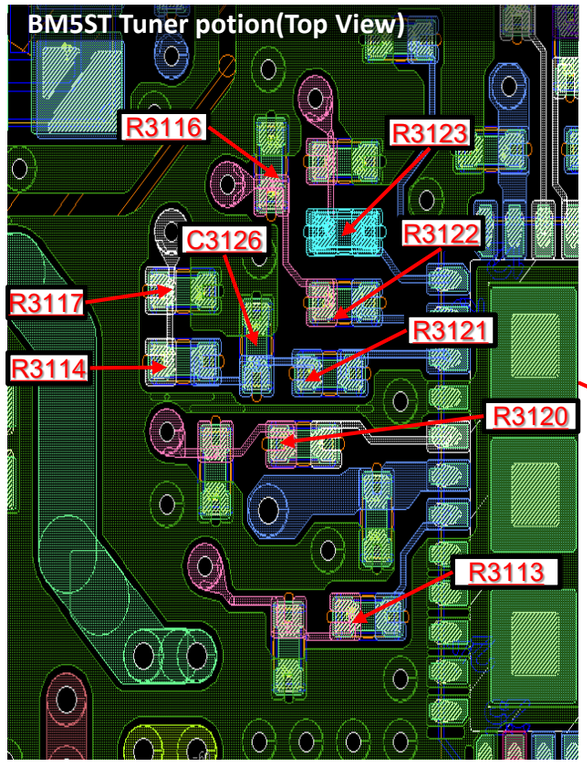
BM5ST Tuner potion(Top View)



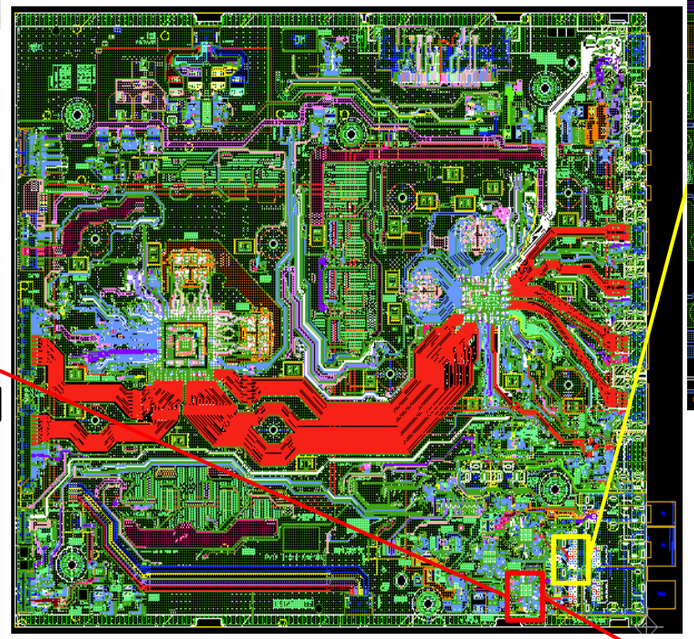
4.4 No Picture - Tuner

I2C_SDA, I2C_SCL, TS Lines(Near tuner), X_DEMOD_RST_STBY

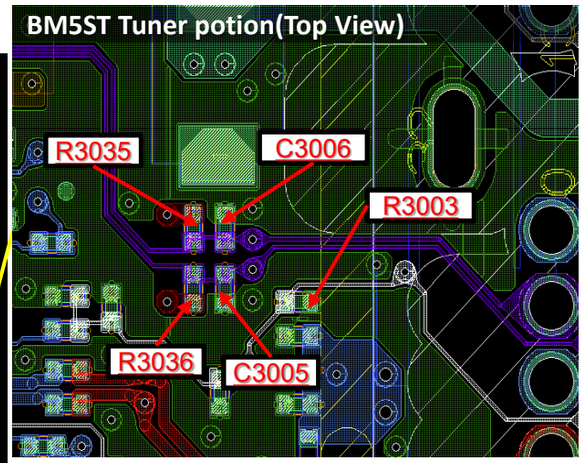
BM5ST Tuner potion(Top View)



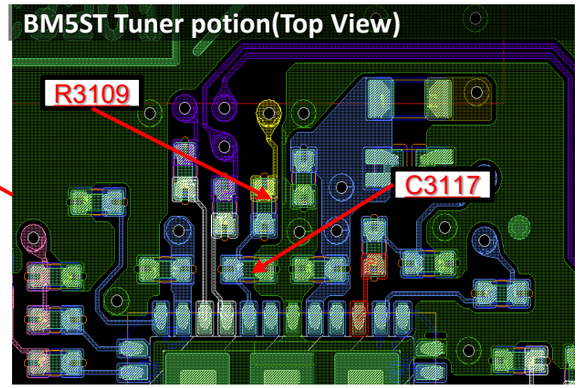
BM5ST(Top View)



BM5ST Tuner potion(Top View)



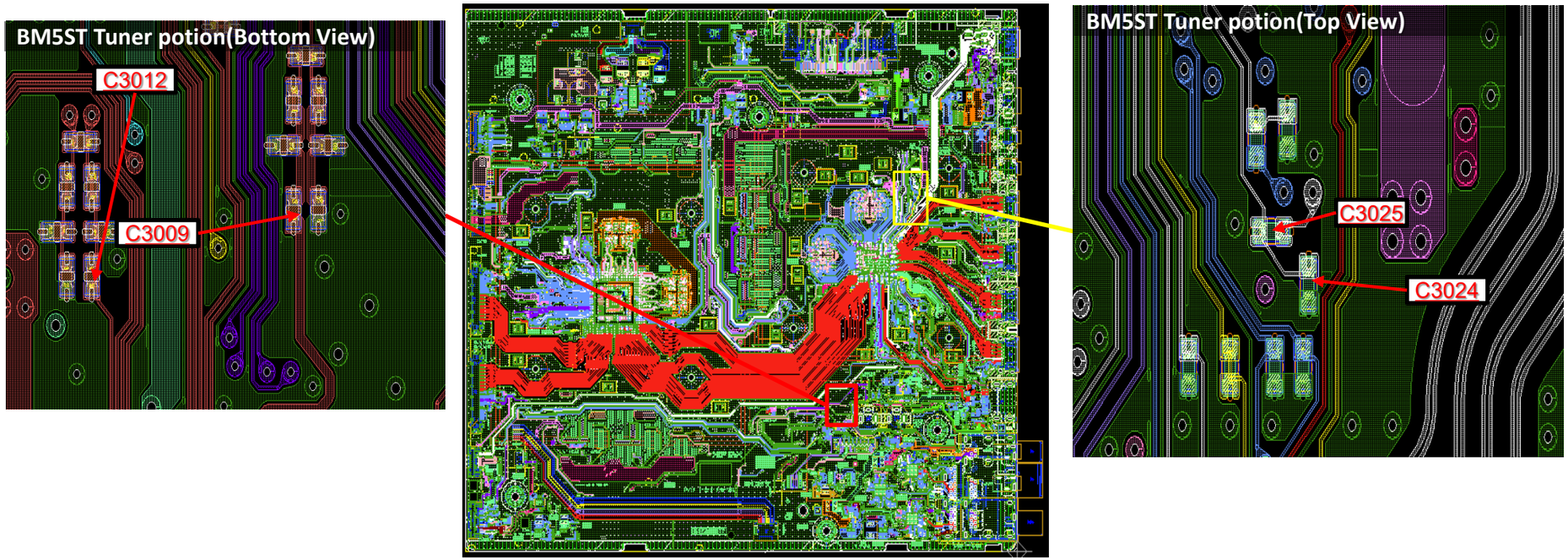
BM5ST Tuner potion(Top View)



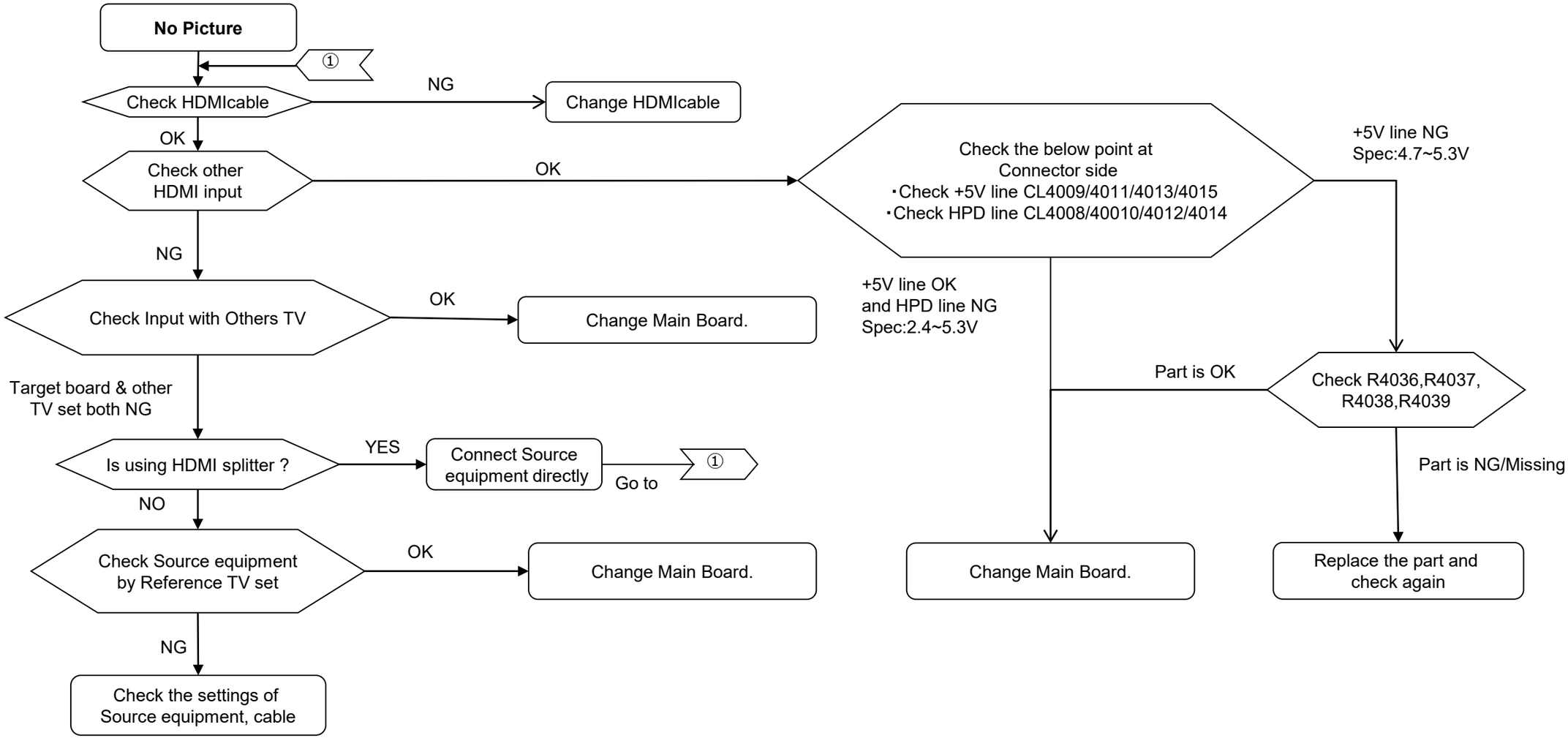
4.4 No Picture - Tuner

I,Q, SAGC(Near SOC)

BM5ST(Top View)



4.5 No Picture – HDMI 1/2/3/4



4.5 No Picture – Check Points HDMI 1/2/3/4

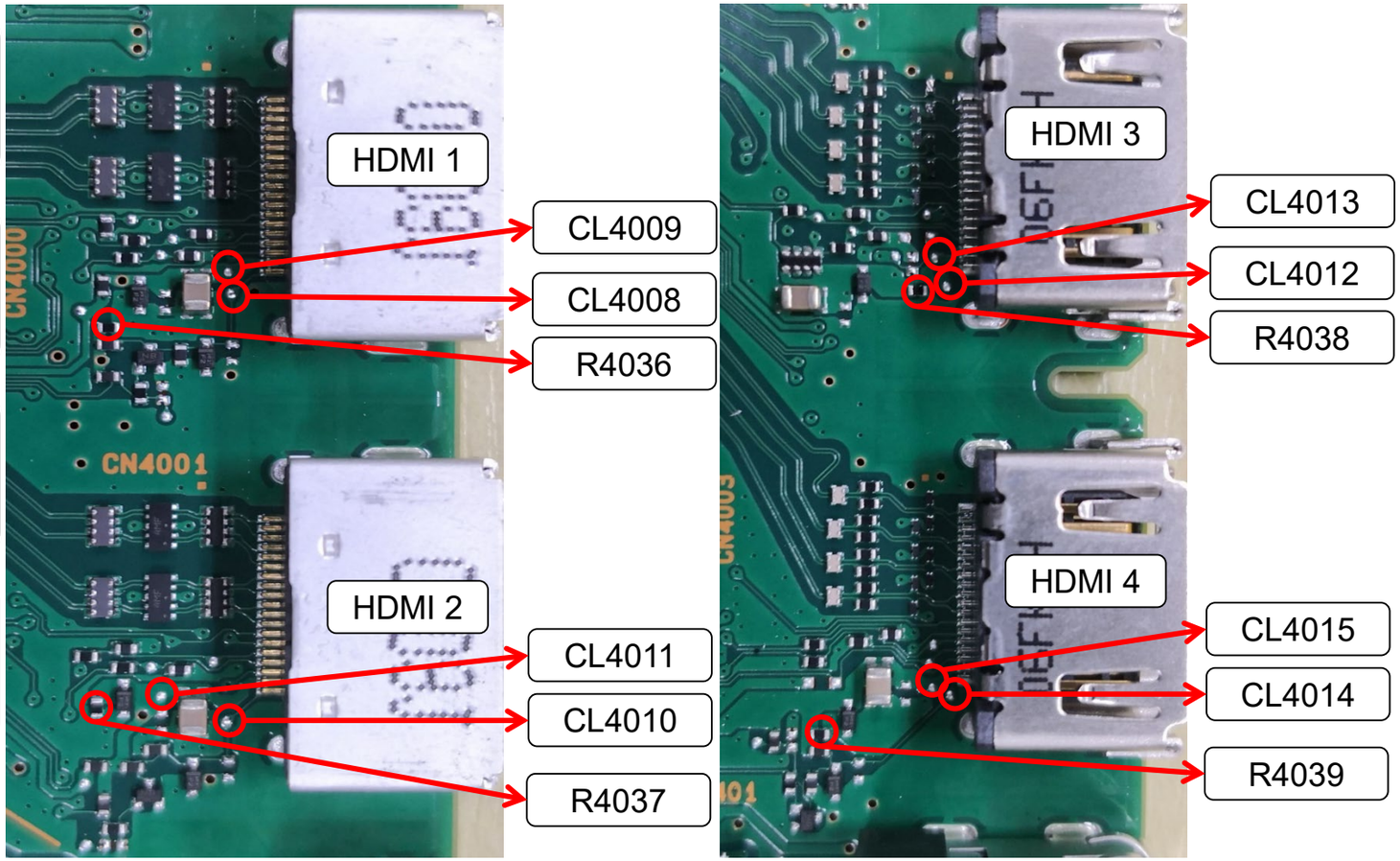
A-side

HDMI 1
+5V part :R4036
+5V line :CL4009
HPD line :CL4008

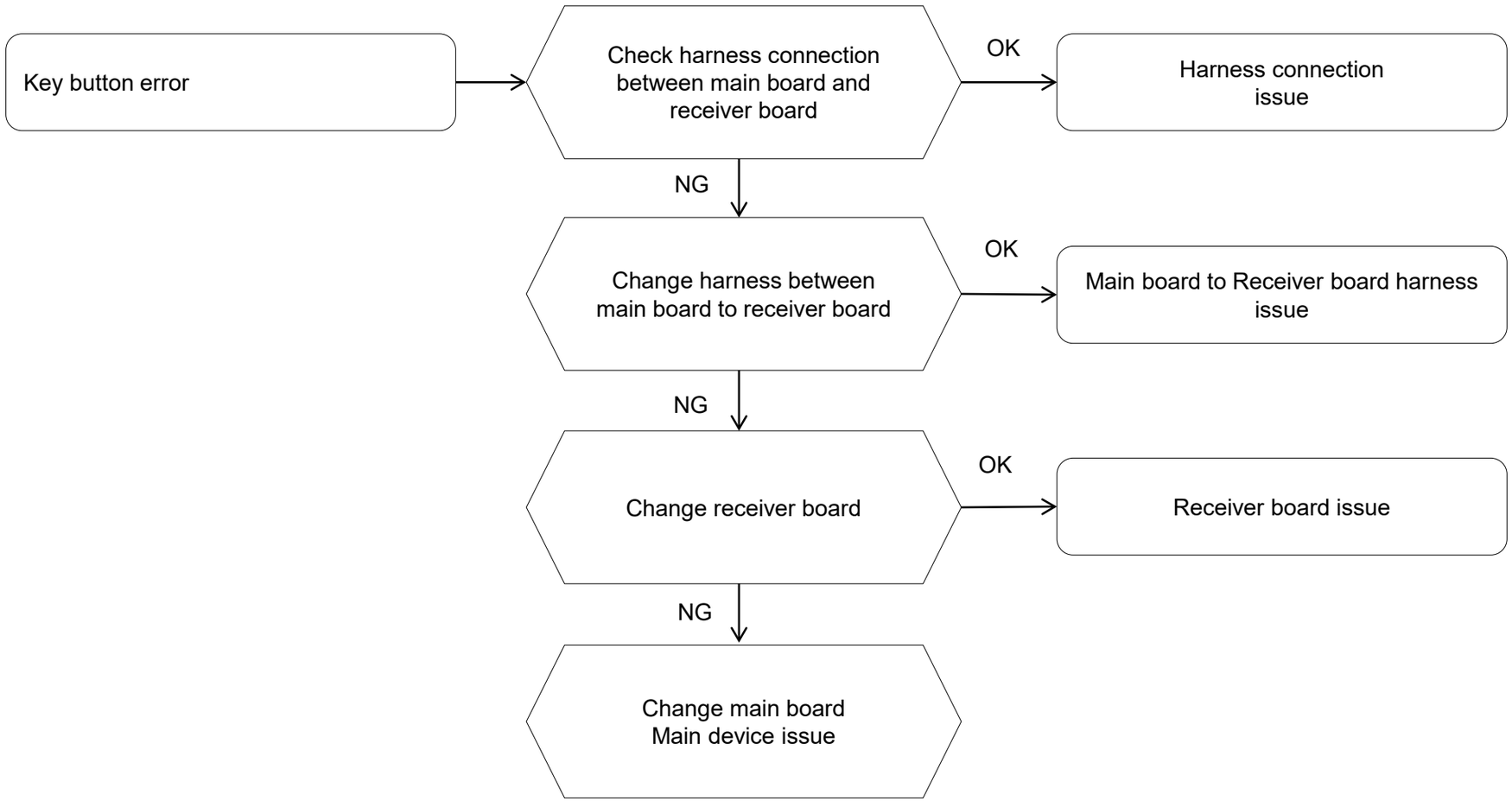
HDMI 2
+5V part :R4037
+5V line :CL4011
HPD line :CL4010

HDMI 3
+5V part :R4038
+5V line :CL4013
HPD line :CL4012

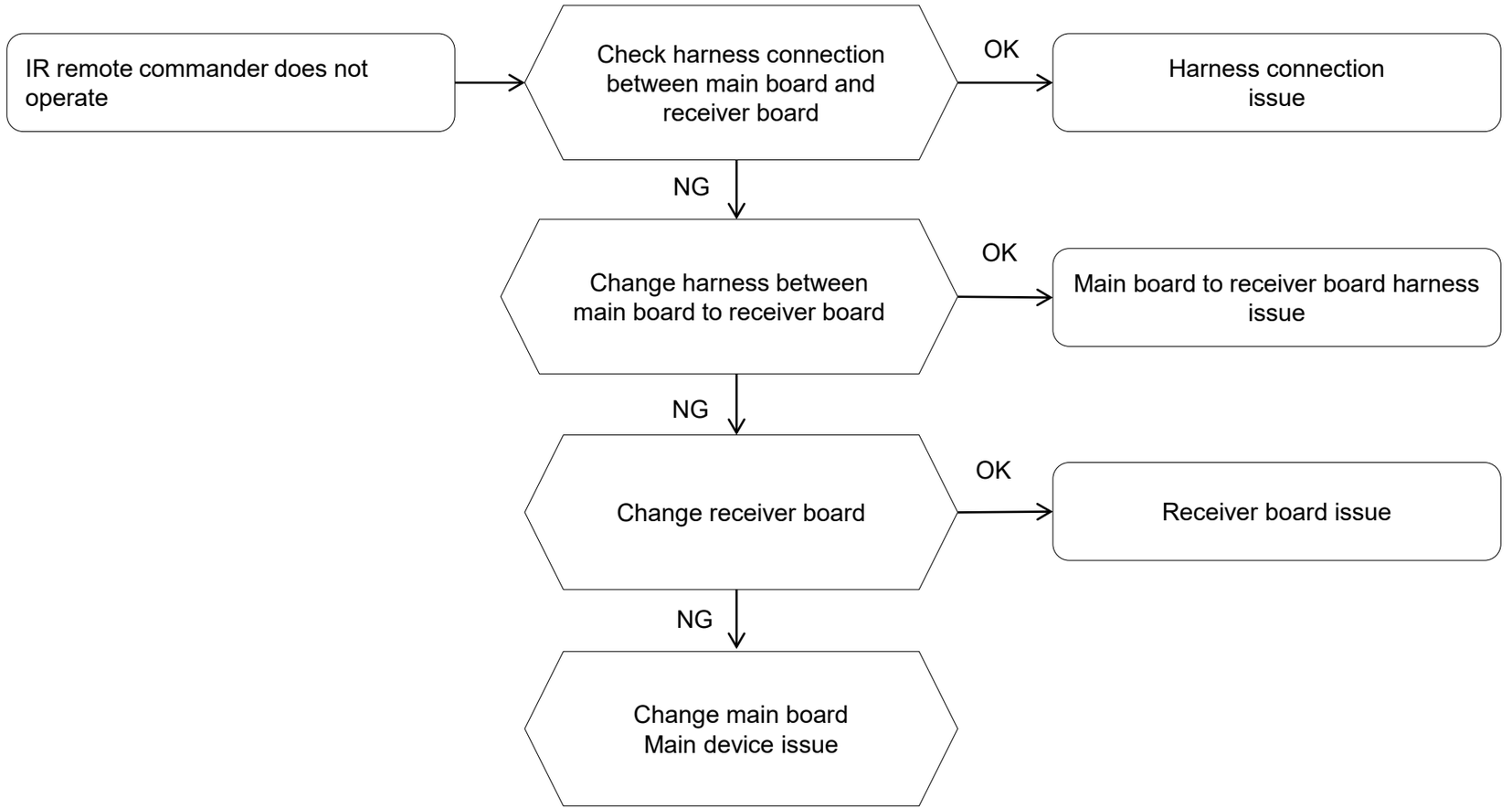
HDMI 4
+5V part :R4039
+5V line :CL4015
HPD line :CL4014



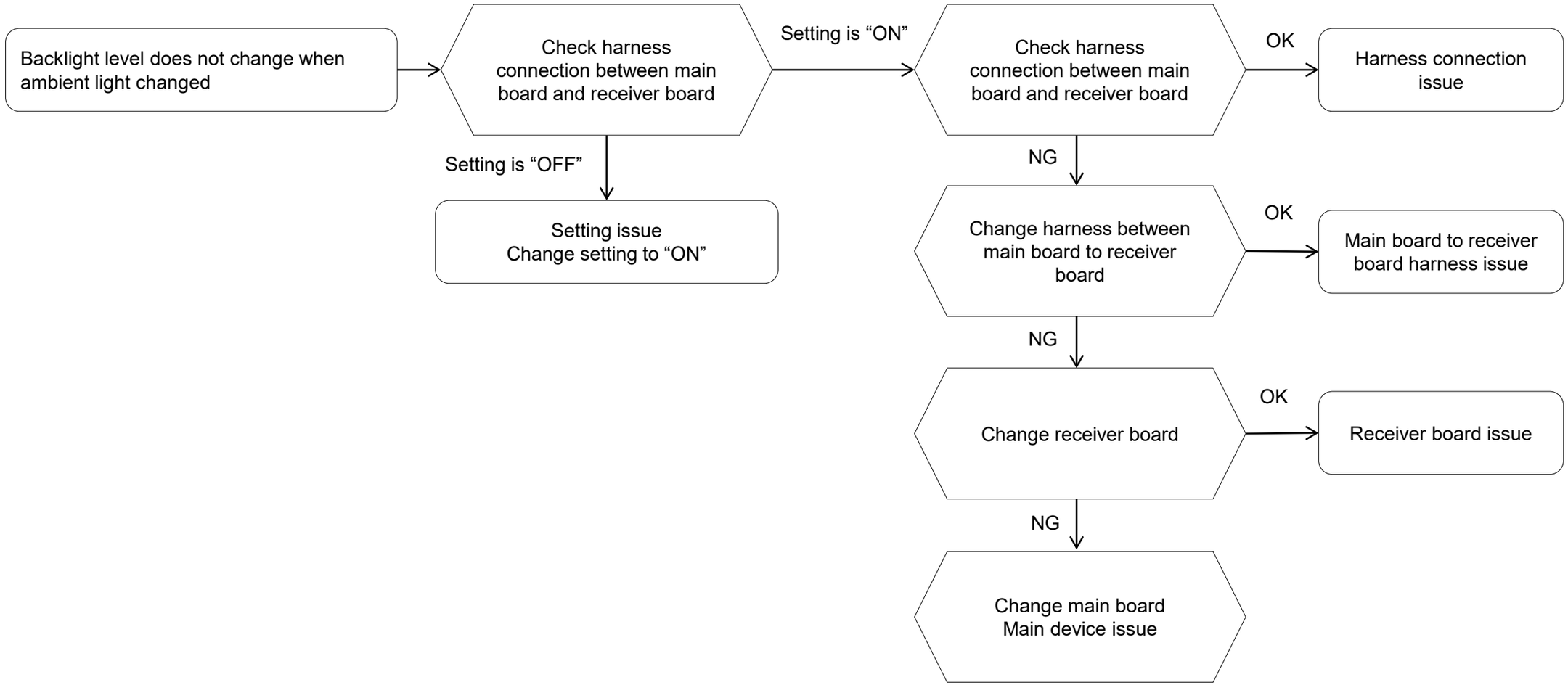
5.0 Key Switch Buttons Errors



5.1 IR Remote Commander



5.2 Light Sensor Errors



5.3 CAS ID Unknown

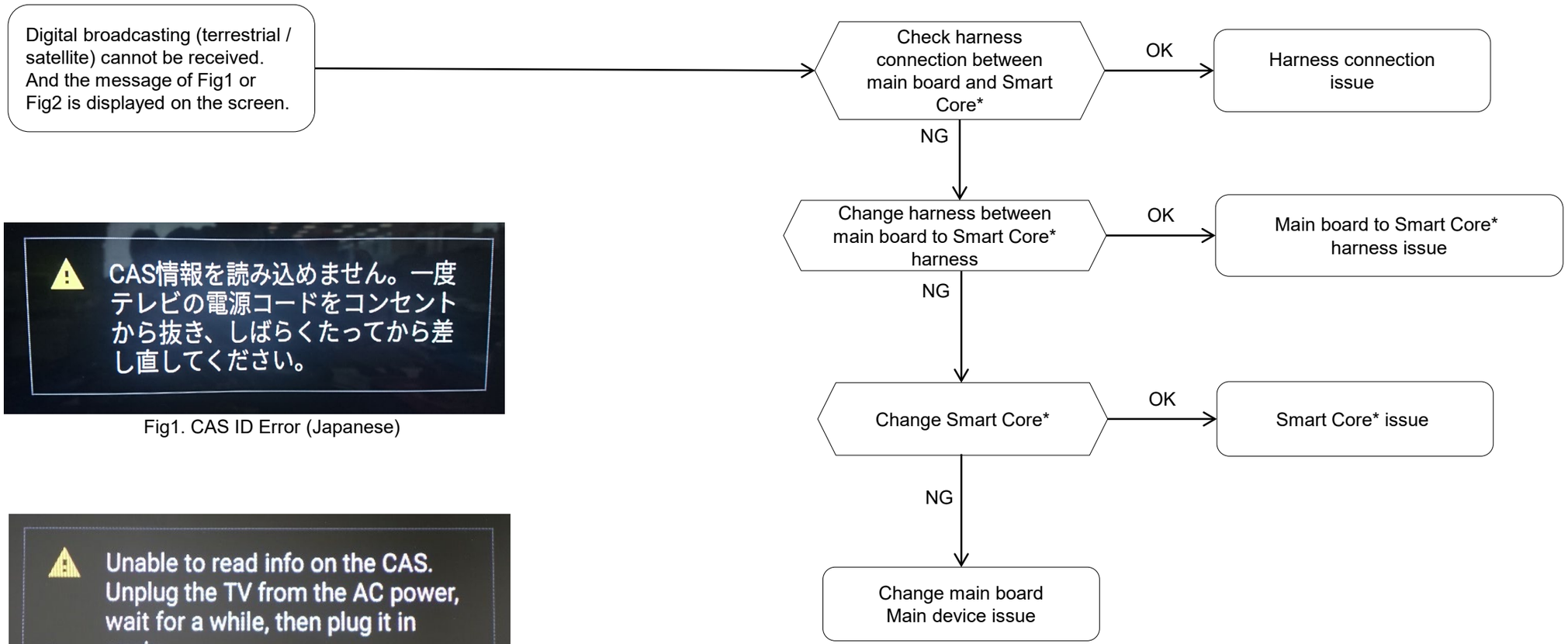


Fig1. CAS ID Error (Japanese)

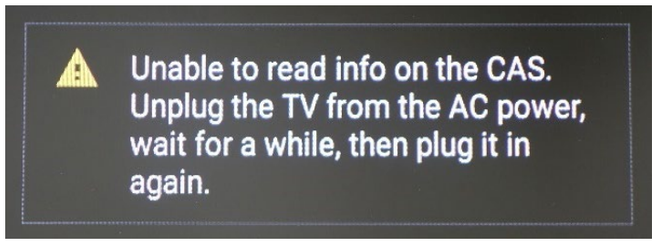
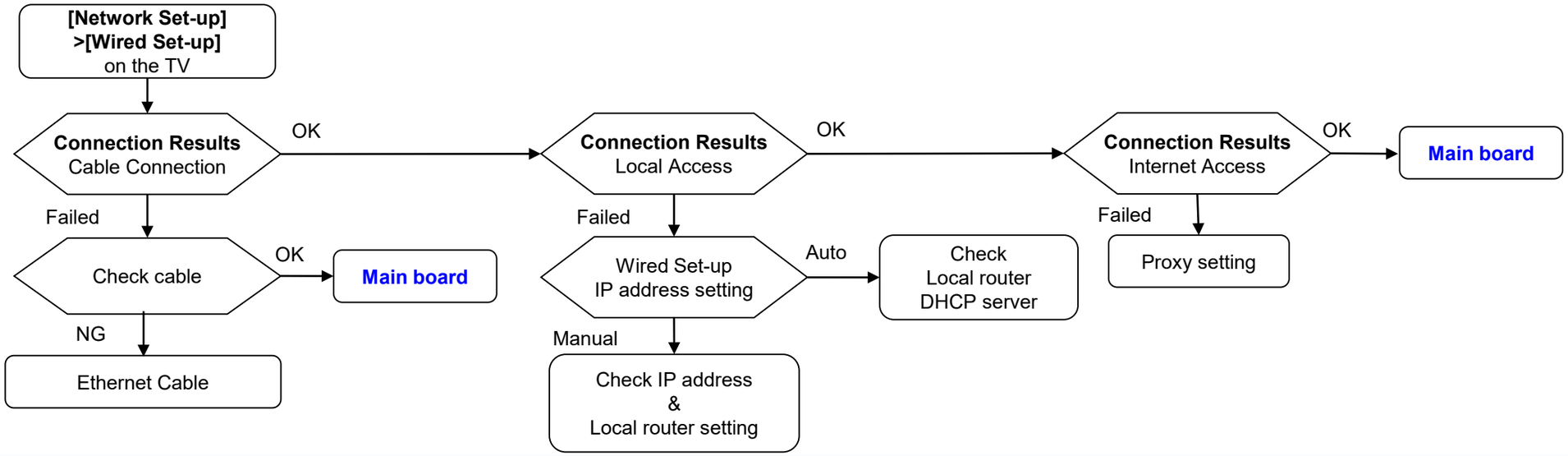
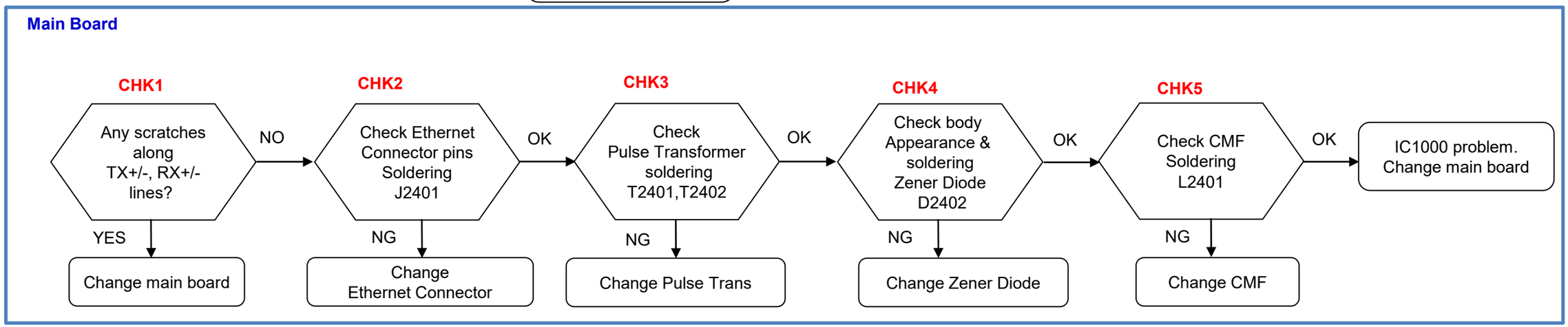


Fig2. CAS ID Error (English)

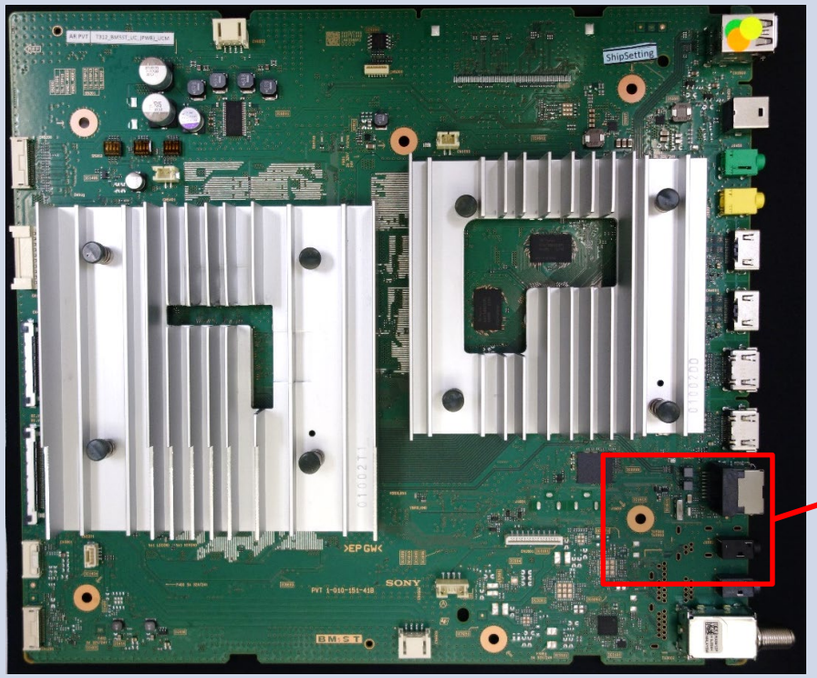
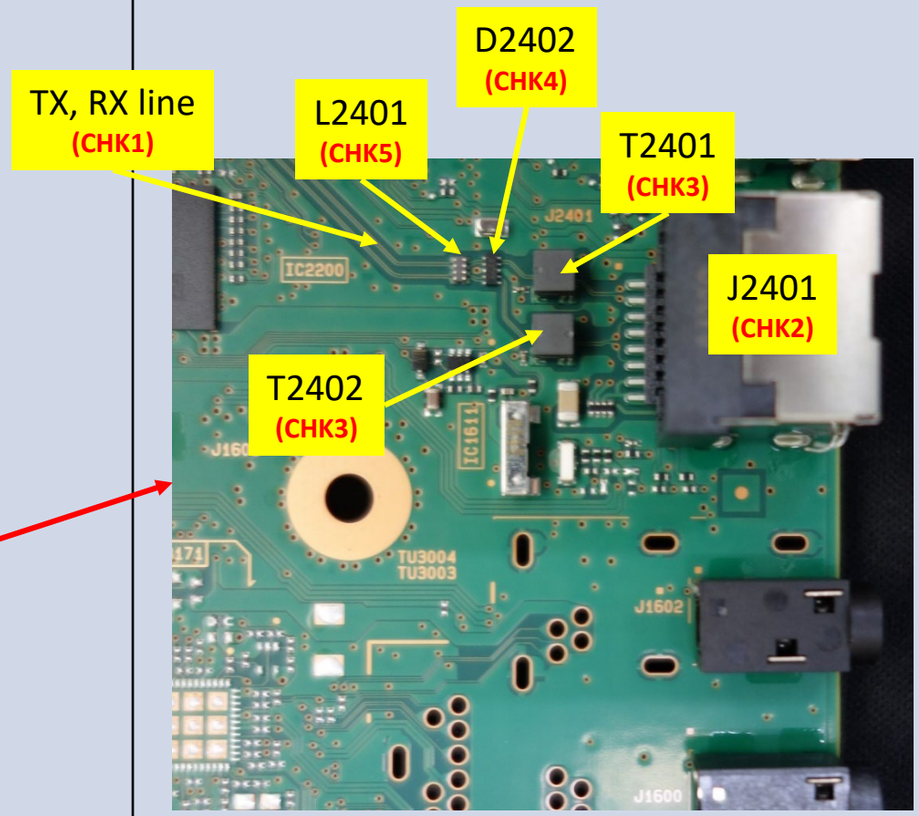
*Smart Core = H board (HT2)

6.0 Network Malfunction : Ethernet Wired

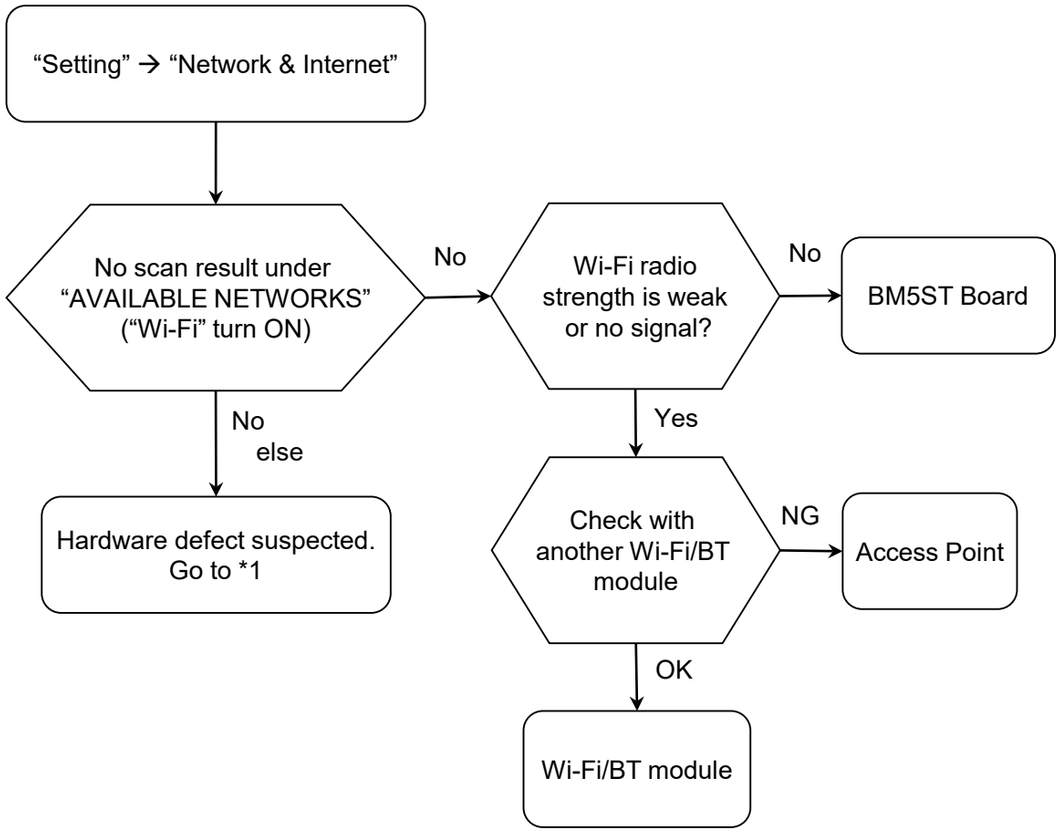


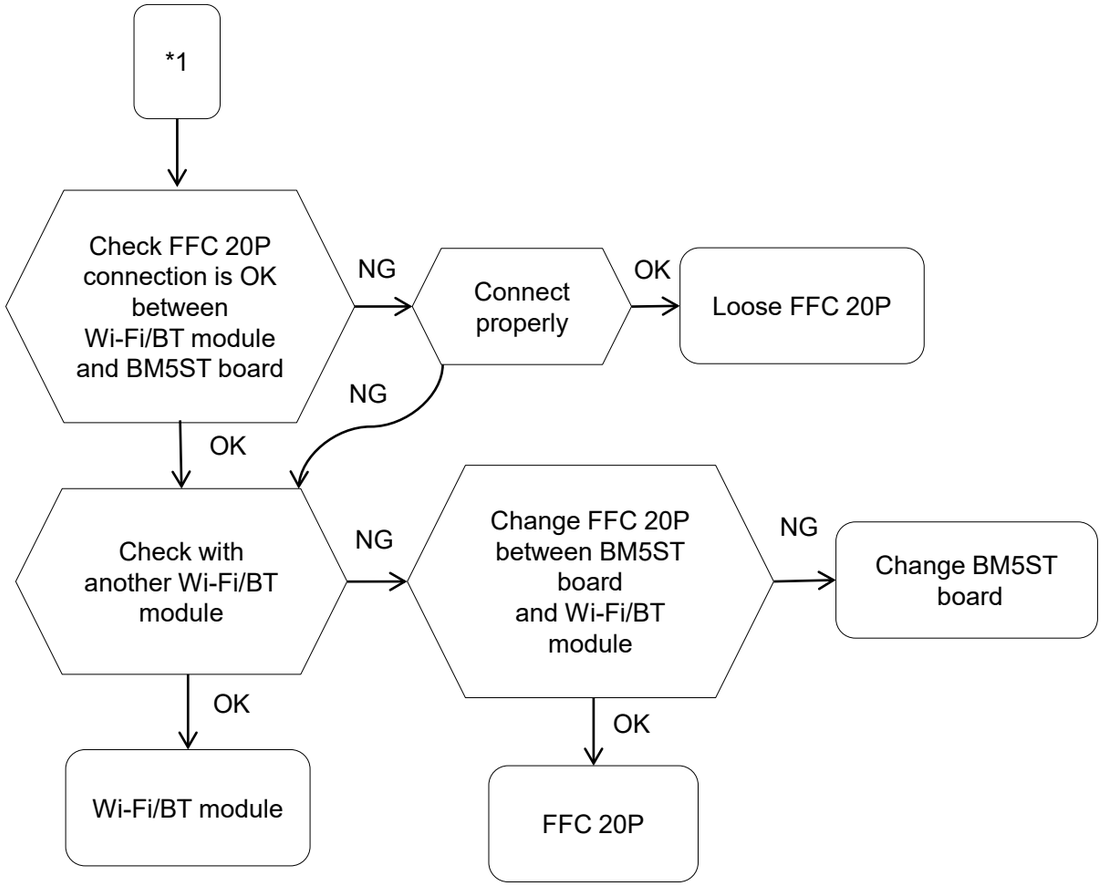


6.0 Network Malfunction : Ethernet Wired

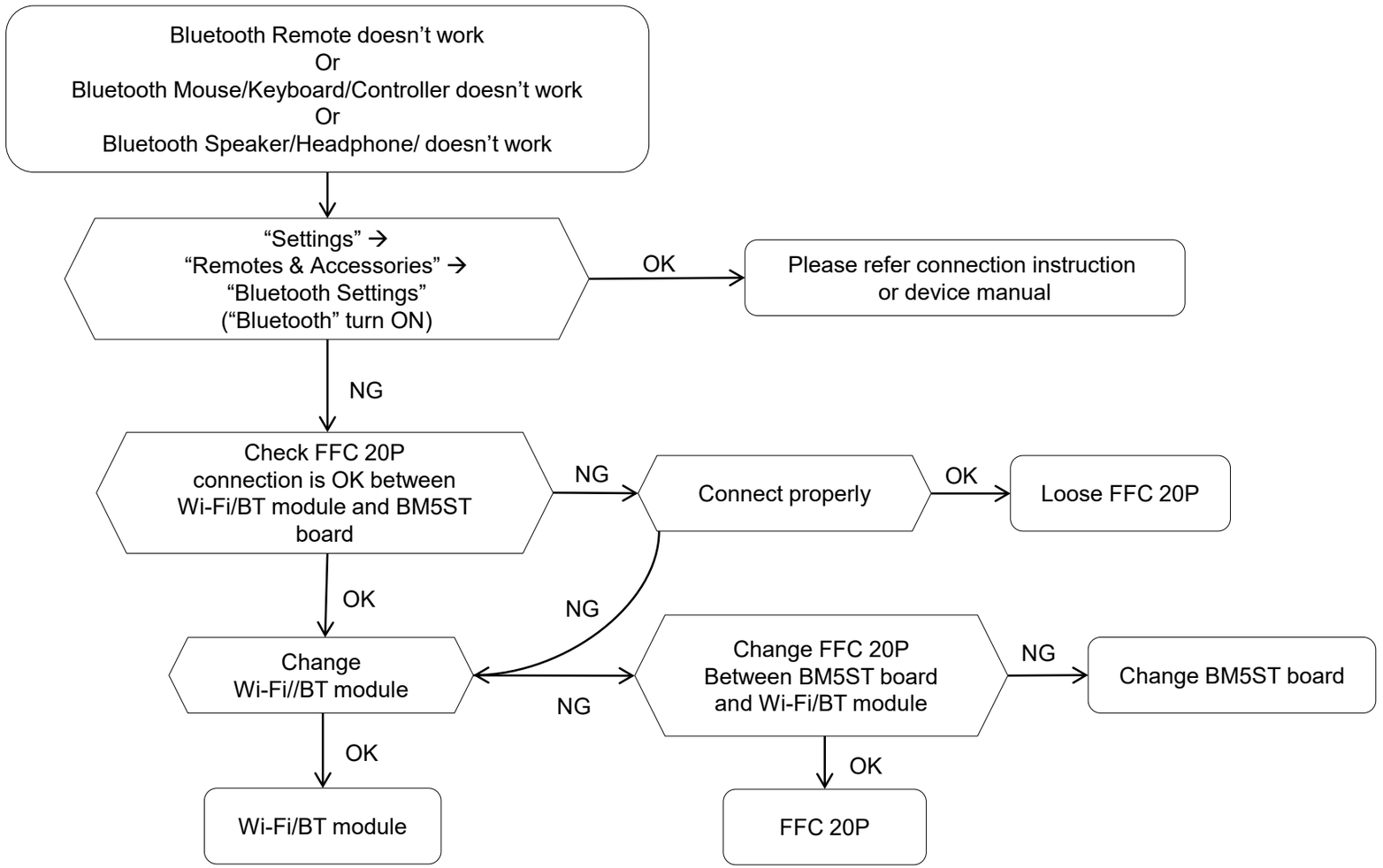
Full board (A side)	Zoomed in view
	

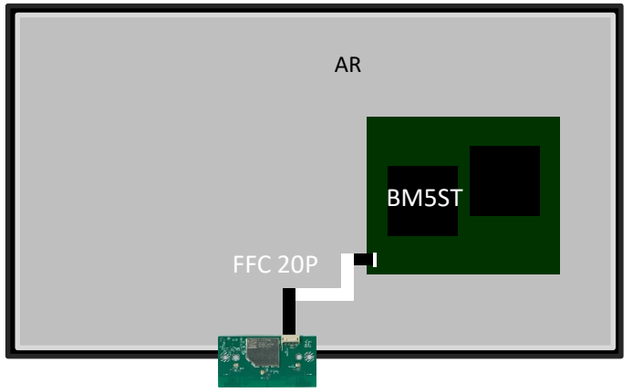
6.1 Wireless Network Malfunction





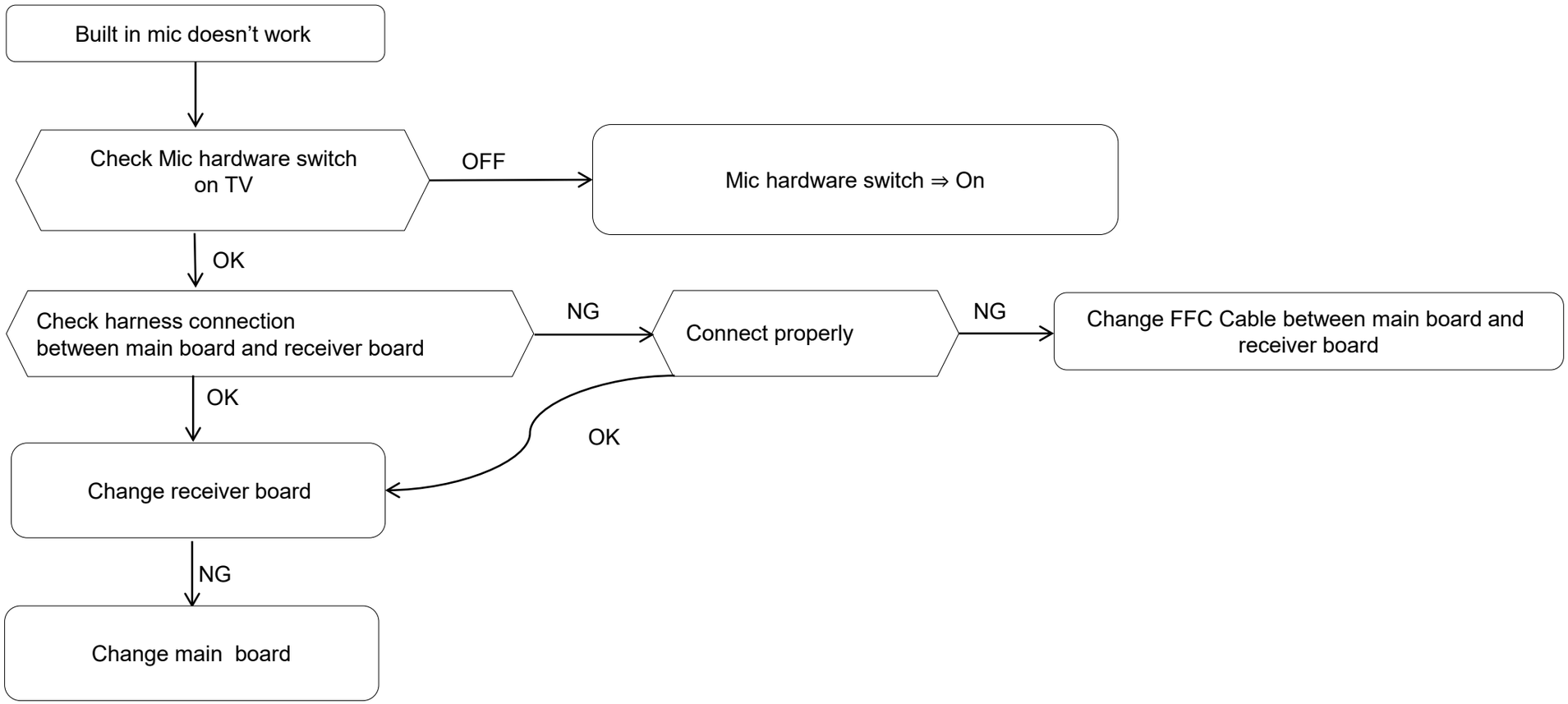
6.2 Bluetooth Malfunction



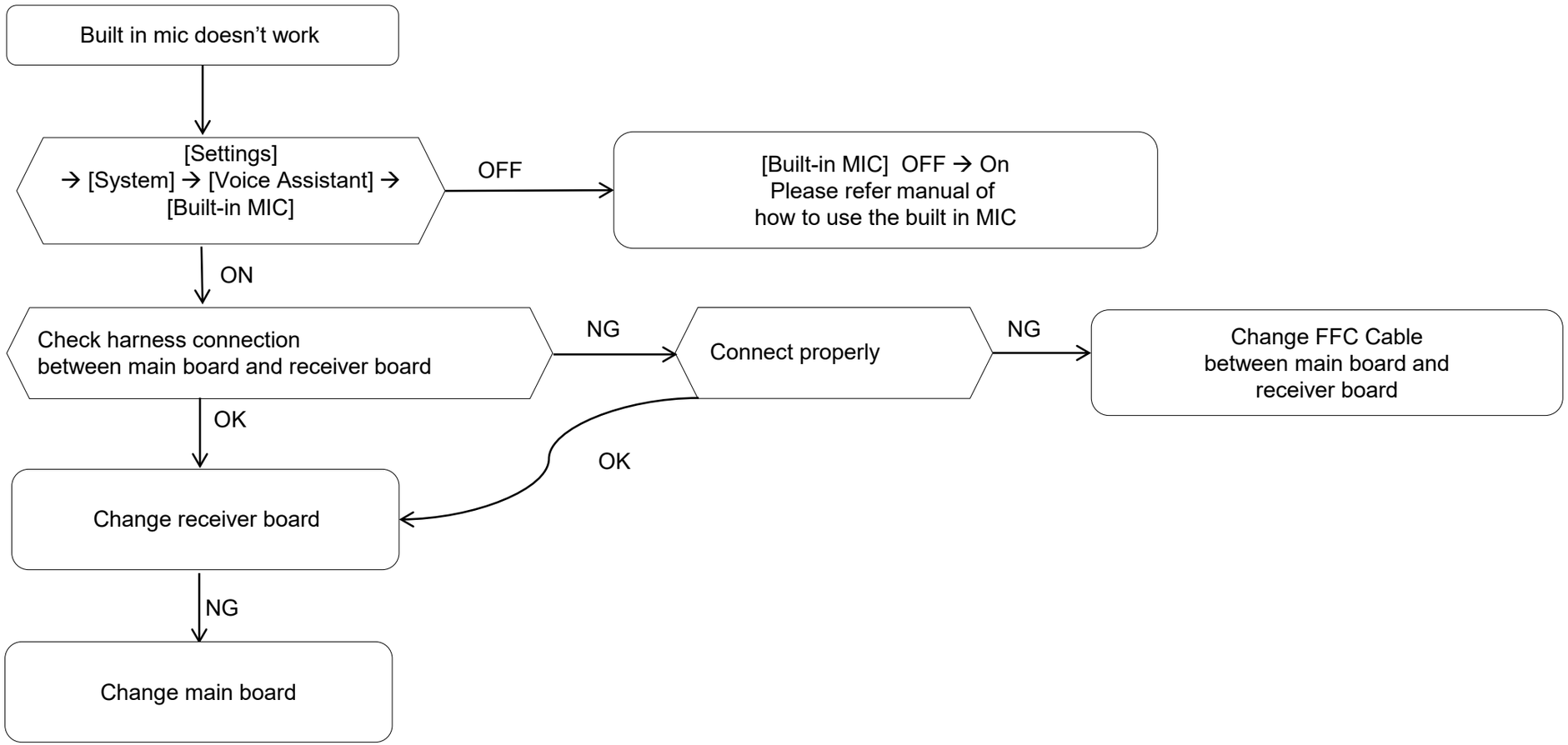


Wi-Fi/BT modules
DHUR-SY63

6.3 Built in Mic Malfunction (WW)



6.3 Built in Mic Malfunction (CN)



SERVICE ADJUSTMENT

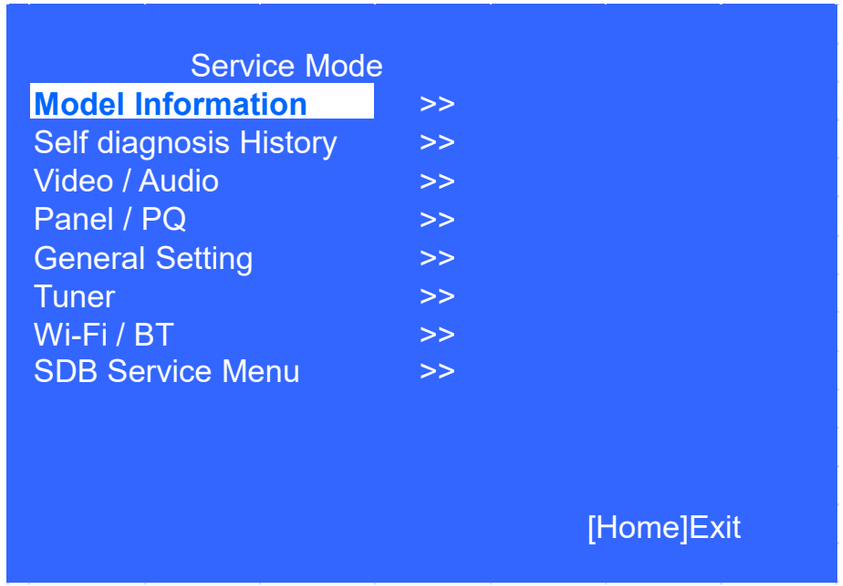
When finished the operation of service mode, please AC Plug OFF/ON the TV set
*If you don't do AC plug OFF/ON, remain the Service Mode App and user can see the Service Mode after RC ON.

4.1 How to Enter Service Mode

From Standby Mode

1. Go to TV standby condition by remote commander.
2. Press "Display or i+ (info)", "5", "Volume+" then "TV power" on remote.
3. You can see Service menu on display.

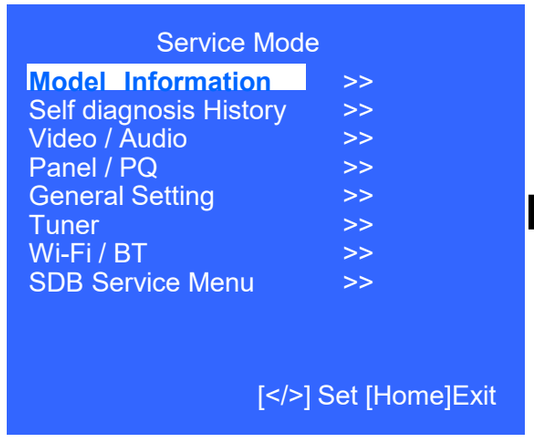
For China models:
Please use FY19 remote (or older) to enter to Service Mode.

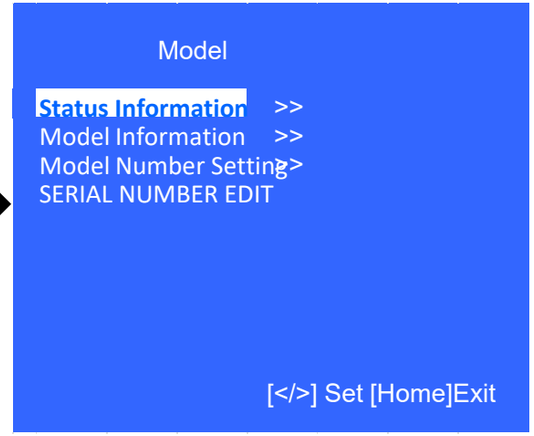


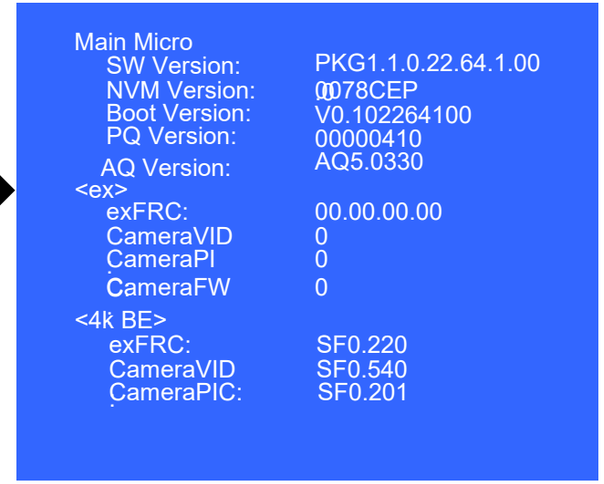
Function	The flow of control
Service mode on	<Display or i+(info)> <5> <Vol. Up> <Power>
Close Service menu	<Home>
Service mode off	AC plug OFF
Item up / down	<↑> / <↓>
Item select left/right	<←> / <→>
Execute	<Enter>

Software Version

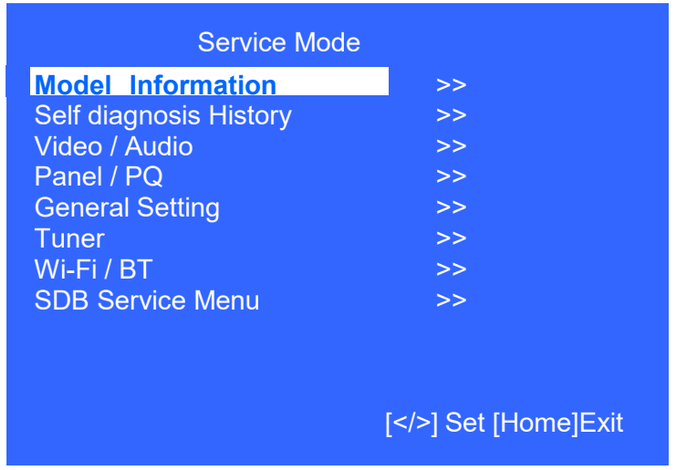
1) In Service Mode, select “Model Information”, press “Enter” or → button to enter **Status Information**







2) Press “Enter” or “BACK” button to return to Service Mode



SERVICE ADJUSTMENT

Serial Number Edit (1)

1) In “Service Mode”, select “Model Information” by pressing “↑” or “↓” then pressing “Enter” or “→” button to enter inside.

2) Select “Serial Number Edit” by pressing “↑” or “↓” button then pressing “→” button

3) Press “↑” or “↓” to input numbers

4) After user input data , press <Enter>
   - Pop-up dialog appear to confirm input data correct
   - **Serial Number can be set ONLY ONCE**

5) Press “→” or “←” button to select YES or NO. Select YES if input data is correct. Select NO if input data is incorrect. Press <Enter> to save answer.

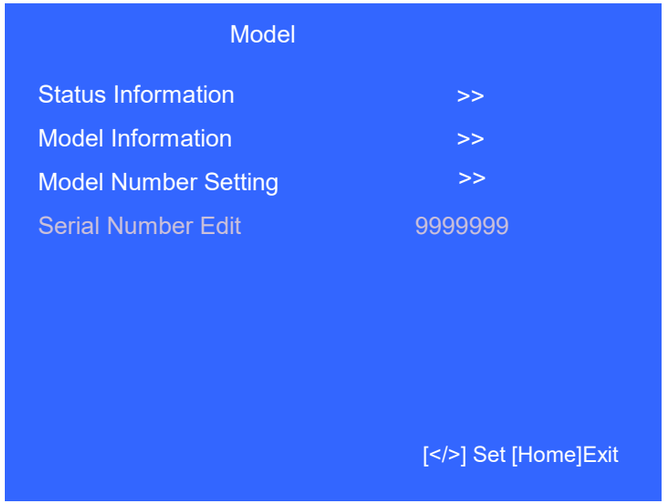
* The font color of YES/NO is change to black when it is selected.

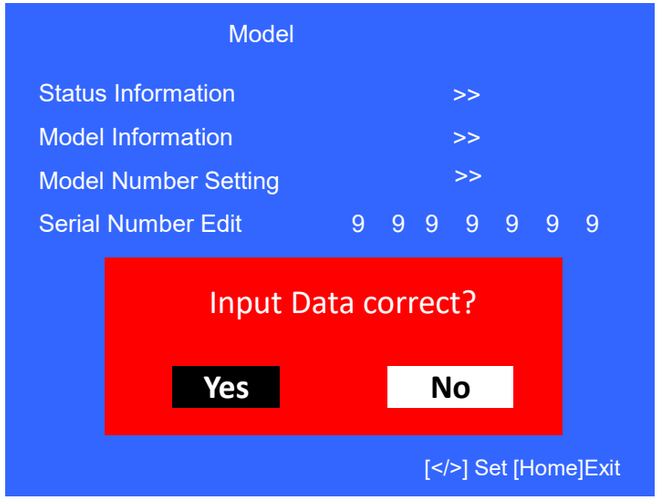
SERVICE ADJUSTMENT

Serial Number Edit (2)

If YES is selected, the input data is saved into EEPROM. SERIAL NUMBER EDIT is greyed out and the serial number that has been input is displayed. Operator will not able to edit anymore.

If NO is selected, the input data is not saved into EEPROM. The serial number that has been input is displayed. Operator can still edit the Serial Number.





*The font color of YES/NO is change to black when it is selected.

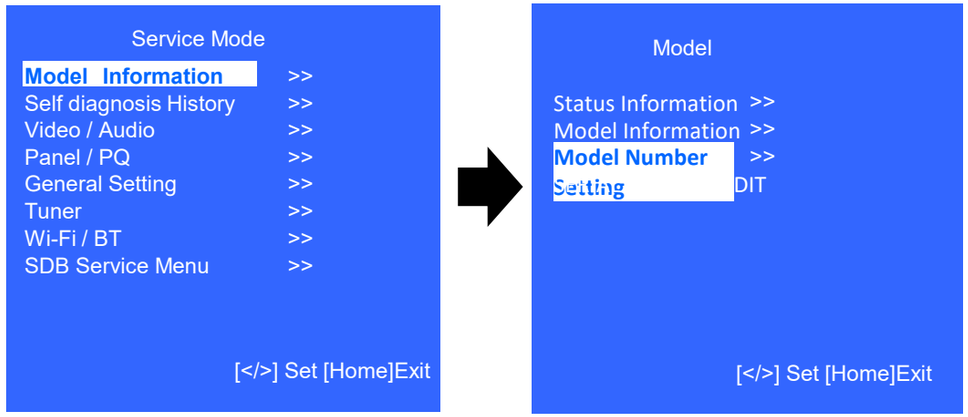
Model Number Setting

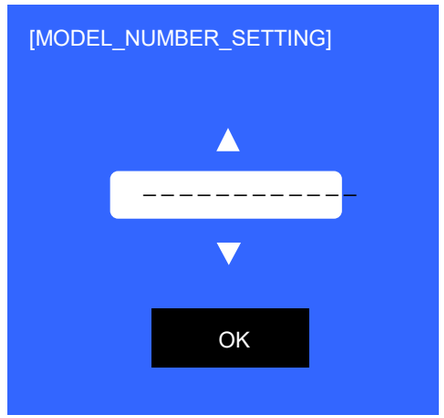
1) In “Service Mode”, select “Model Information” by pressing “↑” or “↓” then pressing “Enter” or “→” button to enter inside.

2) Select “Model Number Setting” by pressing “↑” or “↓” button then pressing “Enter” or “→” button

3) Press “↑” or “↓” arrow key to scroll Product Name Candidate. (e.g. KD-75XJ80 RU3)

4) Select one Product Name from the list. After that select “[OK]” and press “Enter” button.



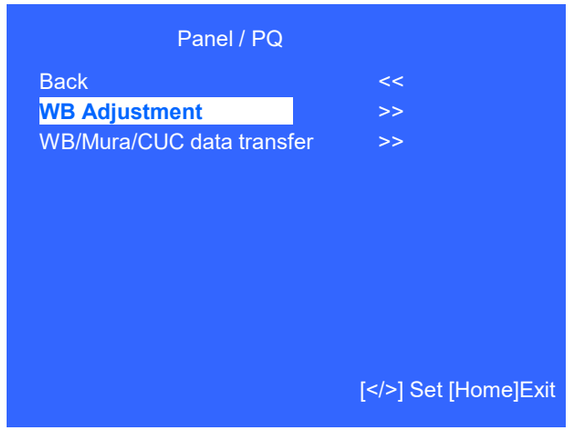


SERVICE ADJUSTMENT

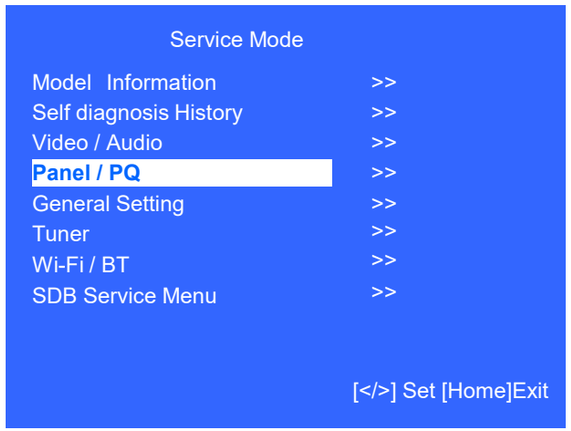
WB Adjustment (if necessary)

1. In **"Panel/PQ"** service mode
   a. Go to **"WB Adjustment"** category by "↑" or "↓".
   b. To select **"WB Adjustment"**, press → button.
   c. To change data , press "←" or "→" on remote commander.

b.



a.



c.

SERVICE ADJUSTMENT

WB / MURA / CUC Data Transfer

Please apply when Main board or panel is replaced.

1. In **"Panel/PQ"** service mode
   a. Go to **"WB/Mura/CUC data transfer"** category by "↑" or "↓".
   b. To select **"WB/Mura/CUC data transfer"**, press → button.
   c. To change data , press "←" or "→" on remote commander.

Service Mode

Model Information	>>
Self diagnosis History	>>
Video / Audio	>>
Panel / PQ	>>
General Setting	>>
Tuner	>>
Wi-Fi / BT	>>
SDB Service Menu	>>

[</>] Set [Home]Exit

Panel / PQ

Back	<<
WB Adjustment	>>
WB/Mura/CUC data transfer	>>

[</>] Set [Home]Exit

Back		<<
WB / Gamma data transfer	<[	0.Soc to T-con
Mura data transfer	<[	0.Soc to T-con
CUC data transfer	<[	0.Soc to T-con
Start		

[</>] Set [Home]Exit

2. In **"WB/Mura/CUC data transfer"**
   a. Select "**WB/Gamma data transfer**" by pressing "↑" or "↓" on remote commander .
   b. To change the items, press "←" or "→" on remote commander and press "Enter" button.
      Selectable items are:
      - 0. SoC to T-con
      - 1. T-con to SoC
      - 2. Not action
   c. Similarly, to select the items in Mura and CUC data.
   d. Select "[start]" and press "Enter" button to start transfer.

SERVICE ADJUSTMENT

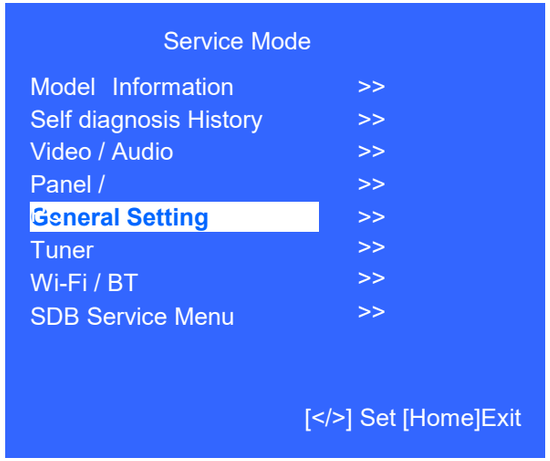
HDD Performance Check (EU, JP ONLY)

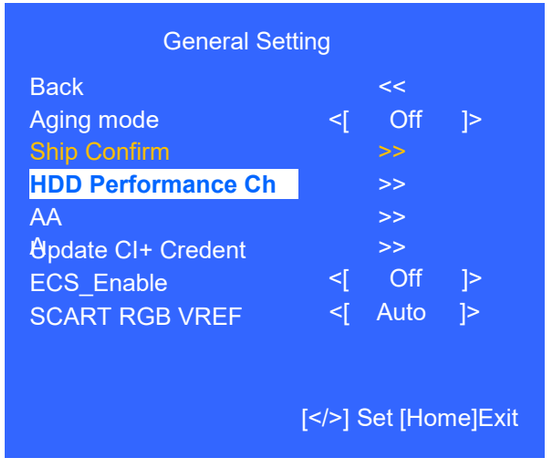
1) In “Service Mode”, select “General Setting” by pressing “↑” or “↓” then pressing “Enter” or “→” button to enter inside.

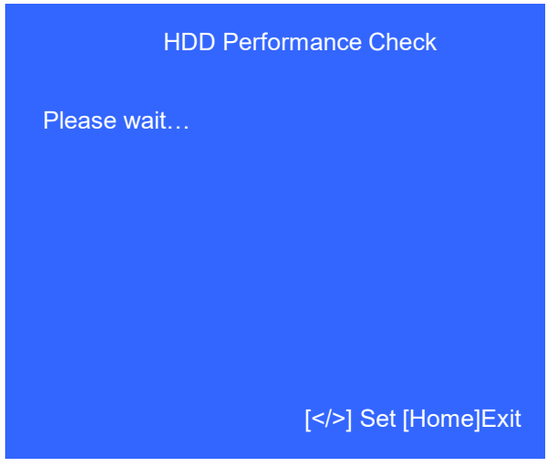
2) Select “HDD Performance check ” by pressing “↑” or “↓” then pressing “Enter” or “→” button to enter inside.

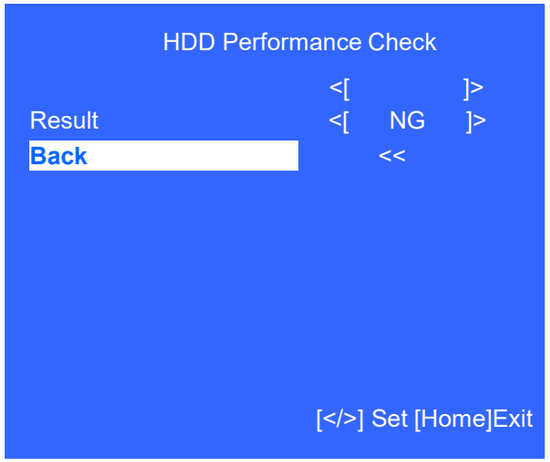
3) A message "Please wait ..." is displayed during performance check processing.

4) Result **OK** or **NG** will be displayed after performance of HDD is checked









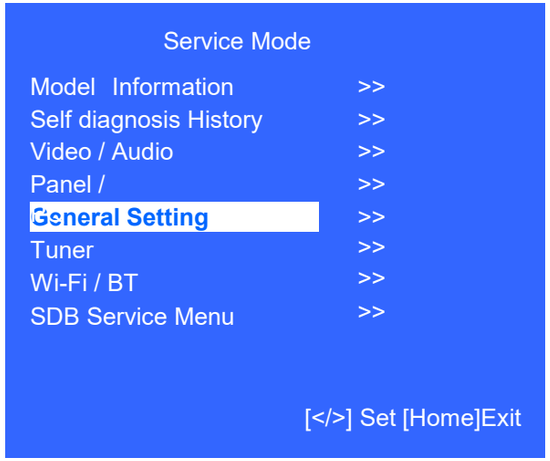
SERVICE ADJUSTMENT

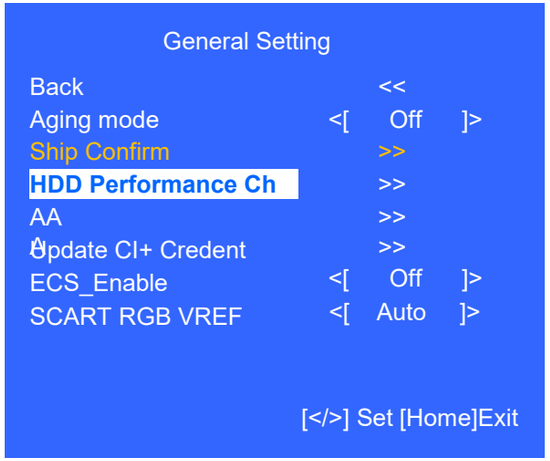
HDD RE-Register (EU, JP ONLY)

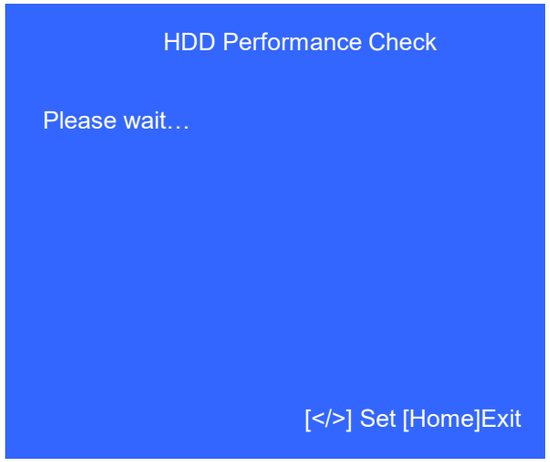
1) In “Service Mode”, select “General Setting” by pressing “↑” or “↓” then pressing “Enter” or “→” button to enter inside.

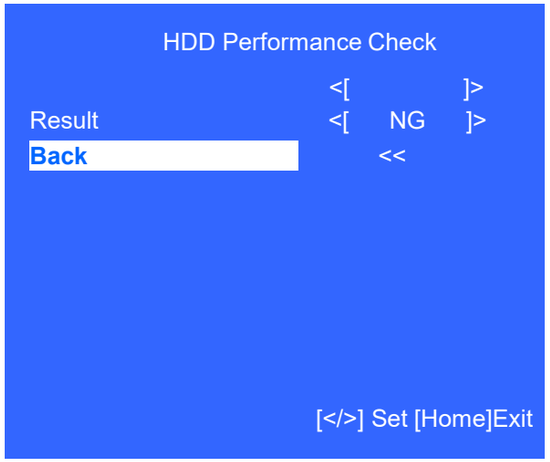
2) Select “AAA” by pressing “↑” or “↓” then pressing “Enter” or “→” button to enter inside.

3) Result **OK** or **NG** will be displayed after HDD re-registration is succeed/failed





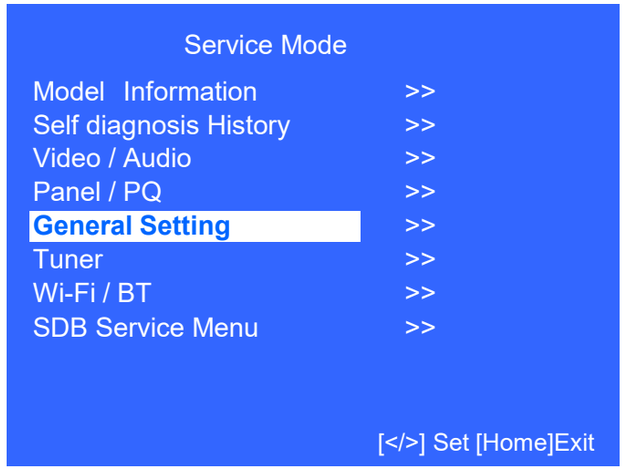


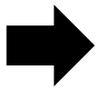


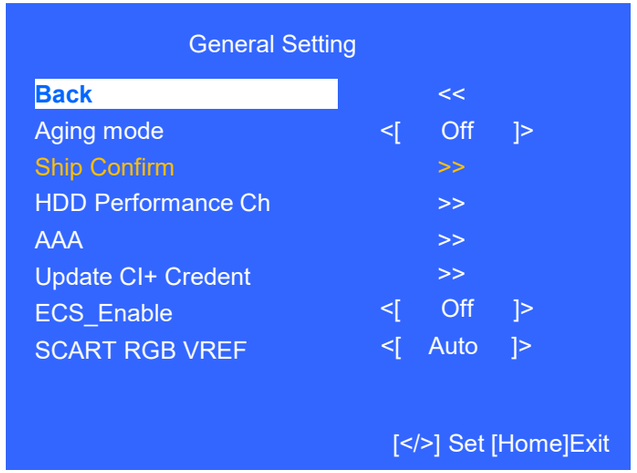
SERVICE ADJUSTMENT

How to enter Aging Mode

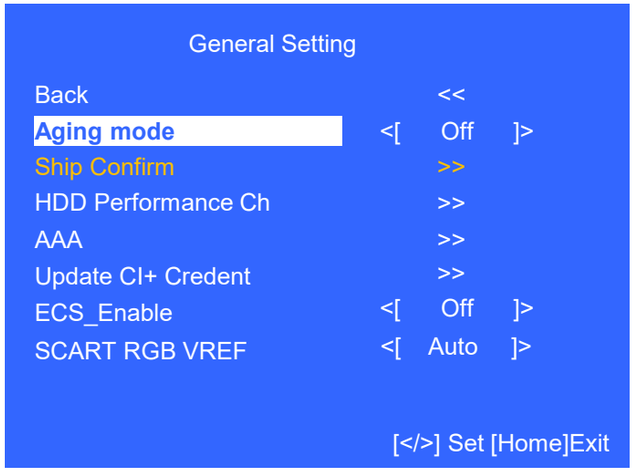
1) In Service Mode, select “General Setting”, press “Enter” or “→” button to enter **General Setting**







2) Press “↓” button to select Aging Mode and “←” button to enter Aging Mode



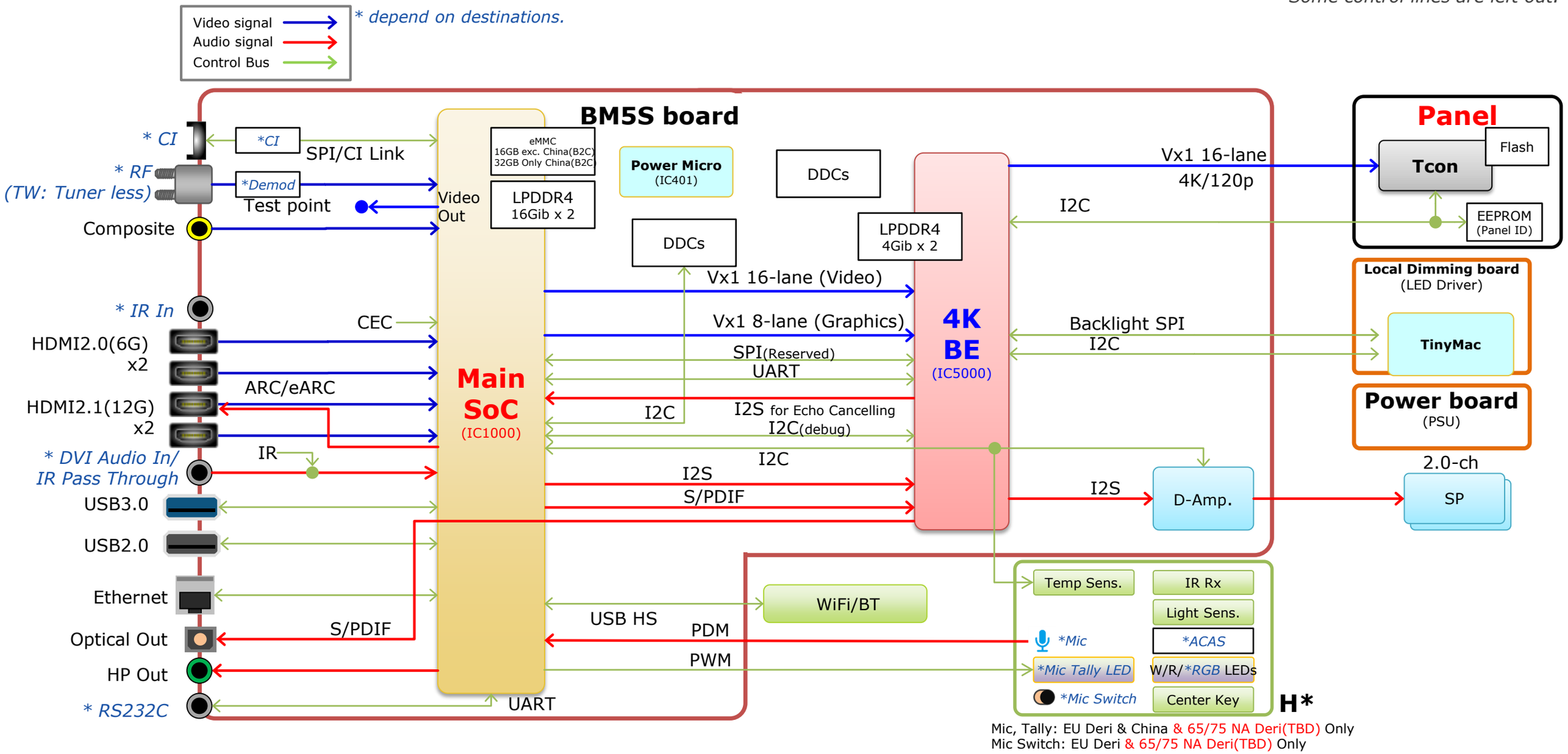
How to exit Aging Mode

1) In Aging mode, press "←" button to exit Aging Mode and return to Service Mode.

** Note : During Aging Mode, if black screen appear after press "Home" or "Return" button, please do AC Off/On to recover.

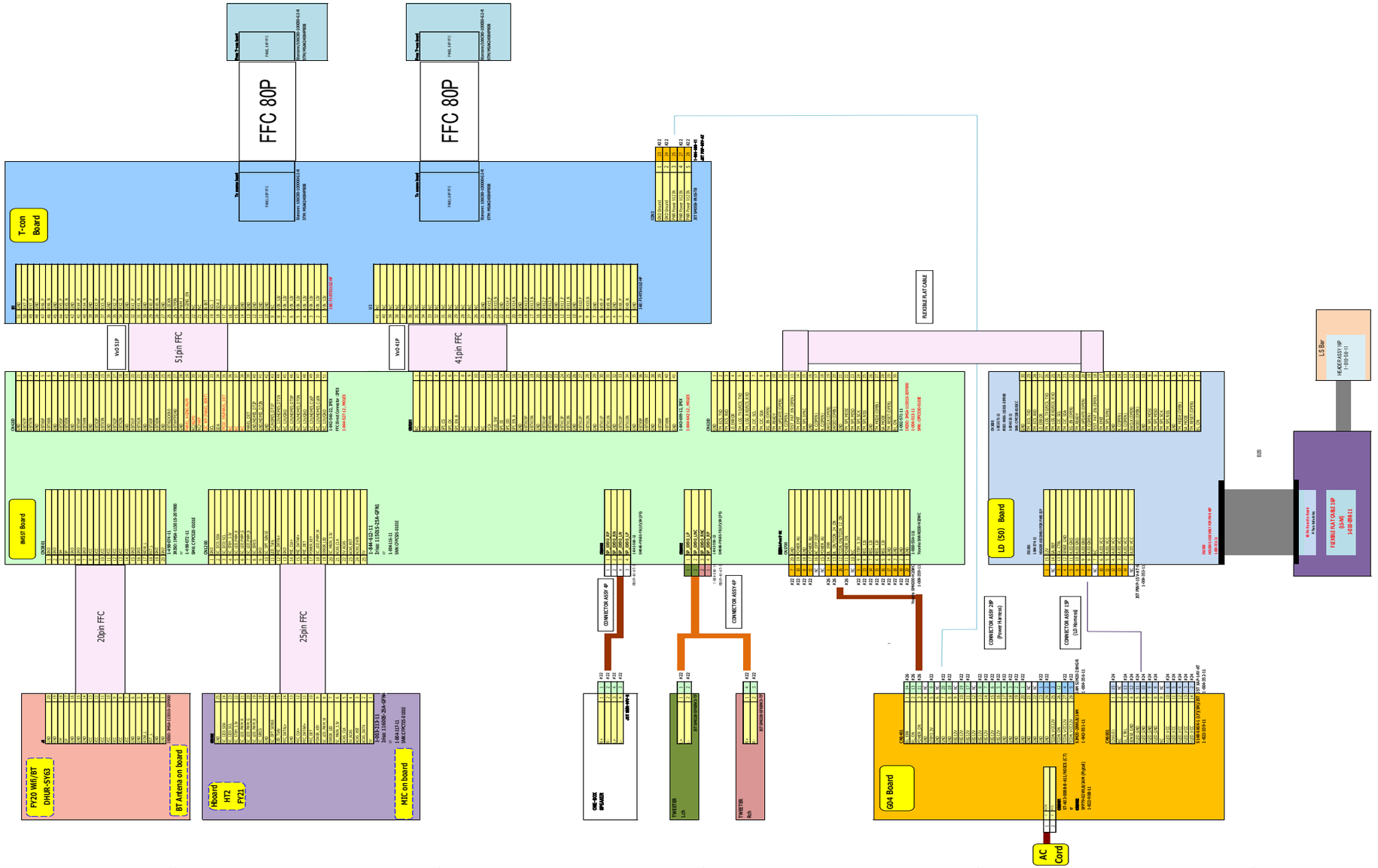
DIAGRAMS

Some control lines are left out.



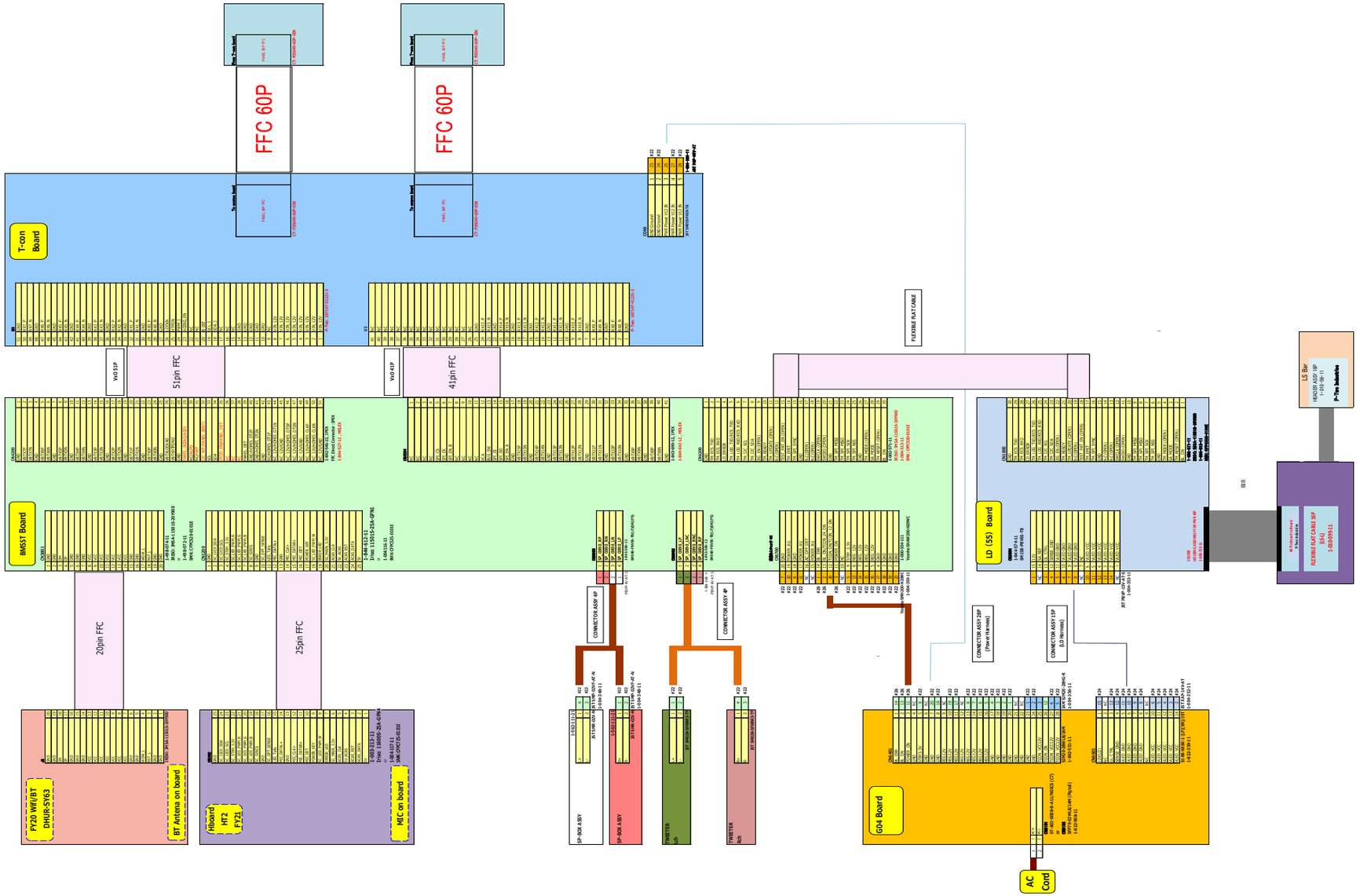
DIAGRAMS

50 Connecting Diagram



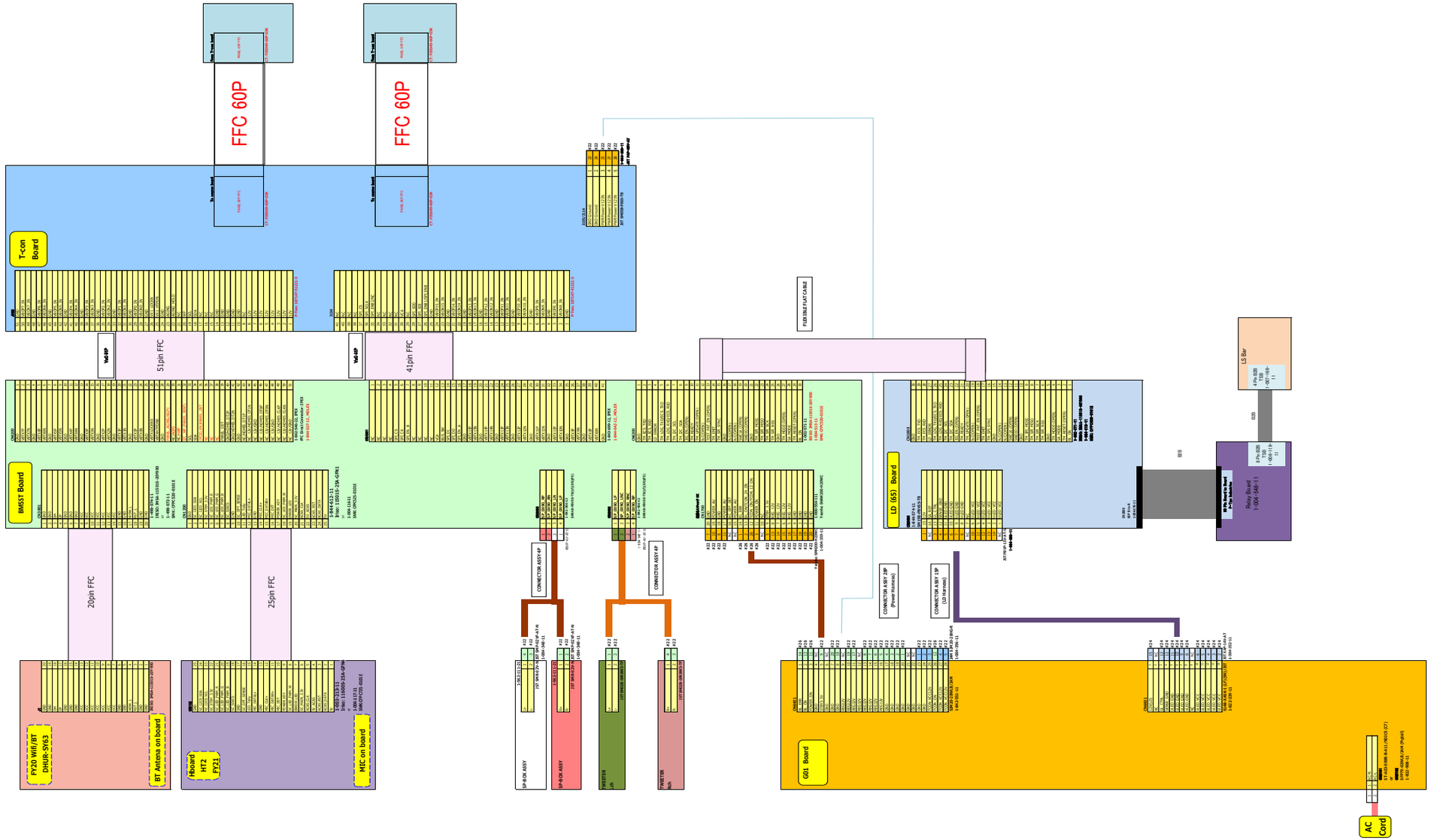
DIAGRAMS

55 Connecting Diagram



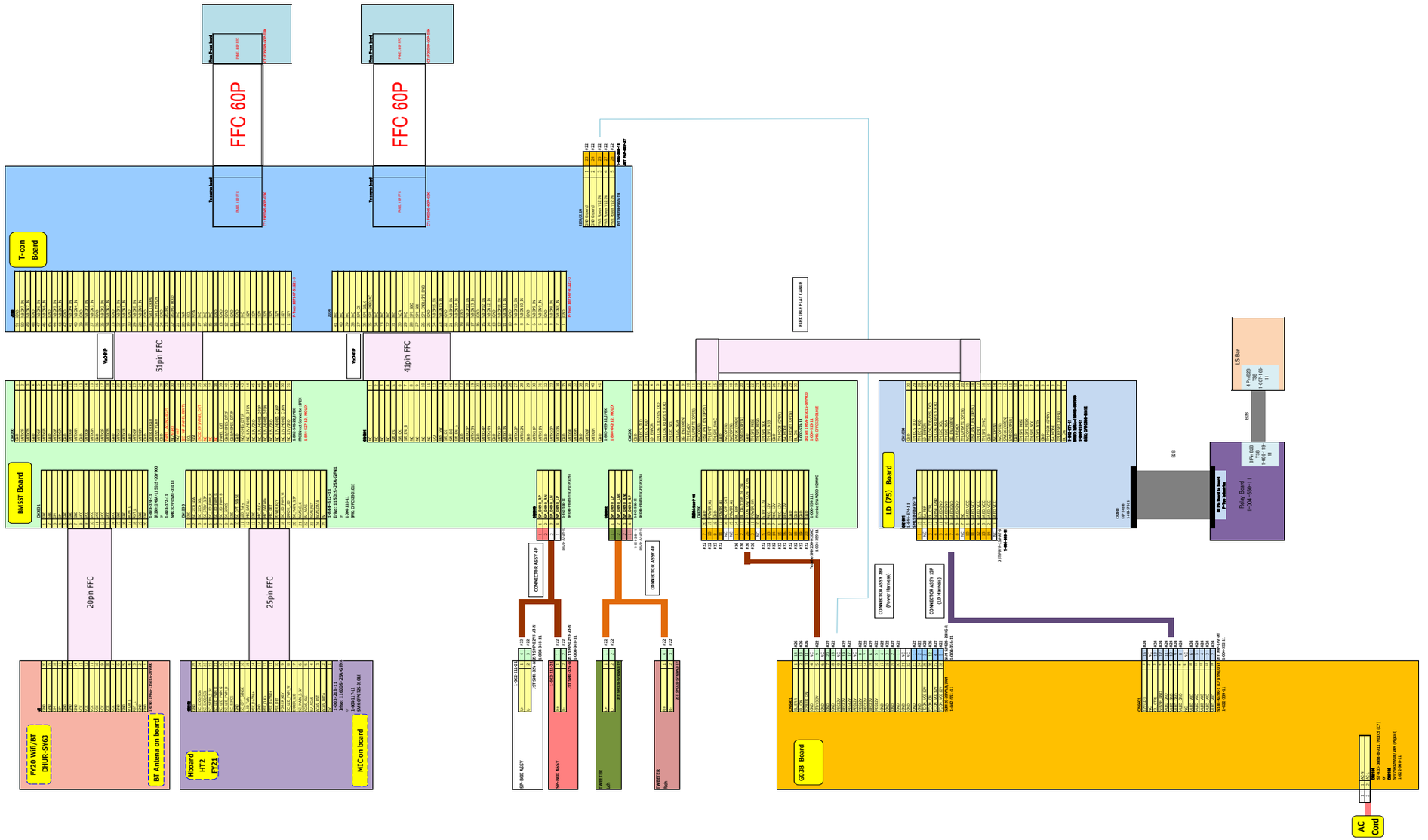
DIAGRAMS

65 Connecting Diagram



DIAGRAMS

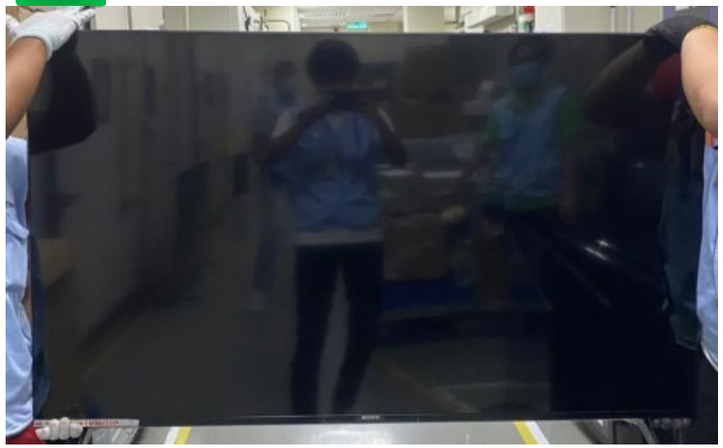
75 Connecting Diagram



PANEL HANDLING

Holding Position

OK



Always wear gloves during P-mod handling

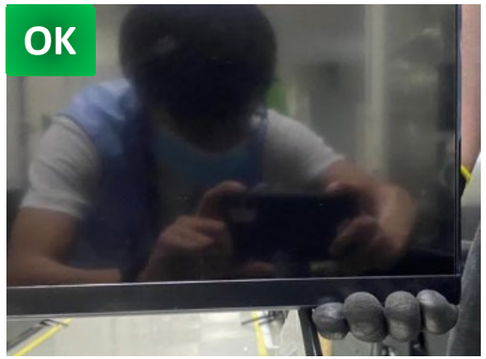
OK

Holding edge of Bezel
without touching O-cell

NG

Hand pressing O-Cell

OK



Support set at edge of Bezel
without touching O-cell

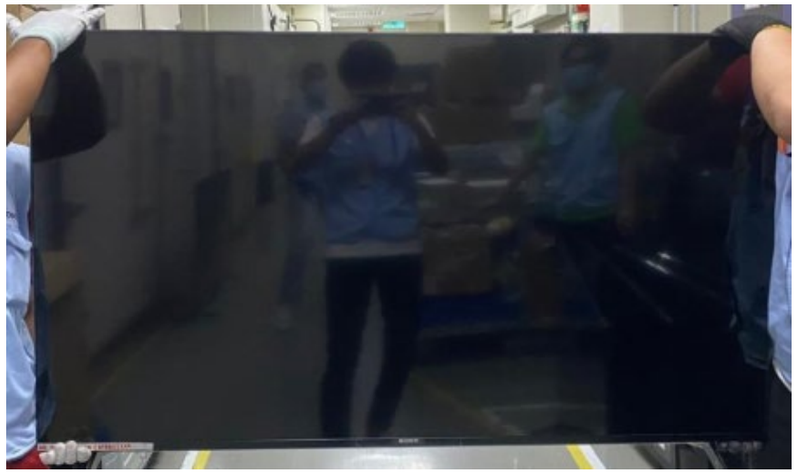
NG

Hand pressing O-Cell

PANEL HANDLING

Carry Position

OK



Carry P-mod by vertical position

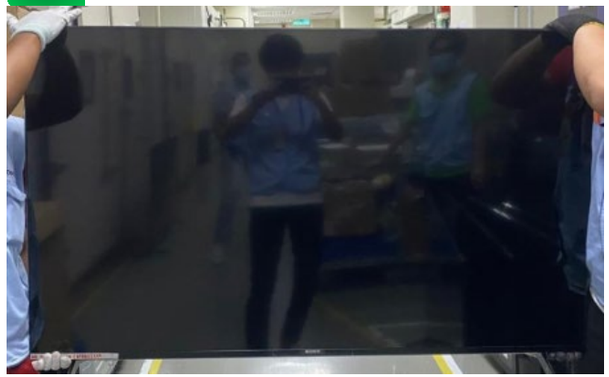
NG

Carry P-mod by Horizontal position

PANEL HANDLING

Carry Condition

OK



Carry P-mod by 2 person

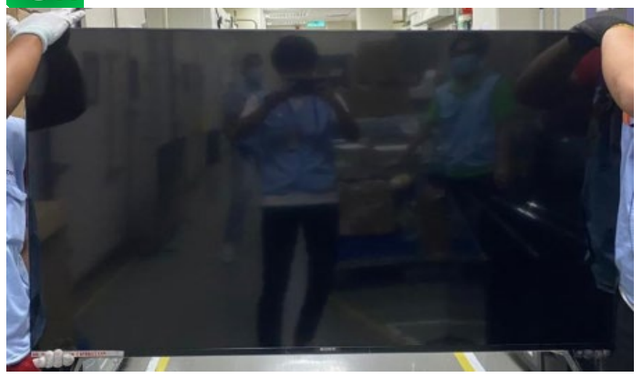
NG

NG

Carry P-mod by 1 person

Do not apply force on Back Chassis and rotate the Bezel
→ Can cause O-cell to pop out

OK



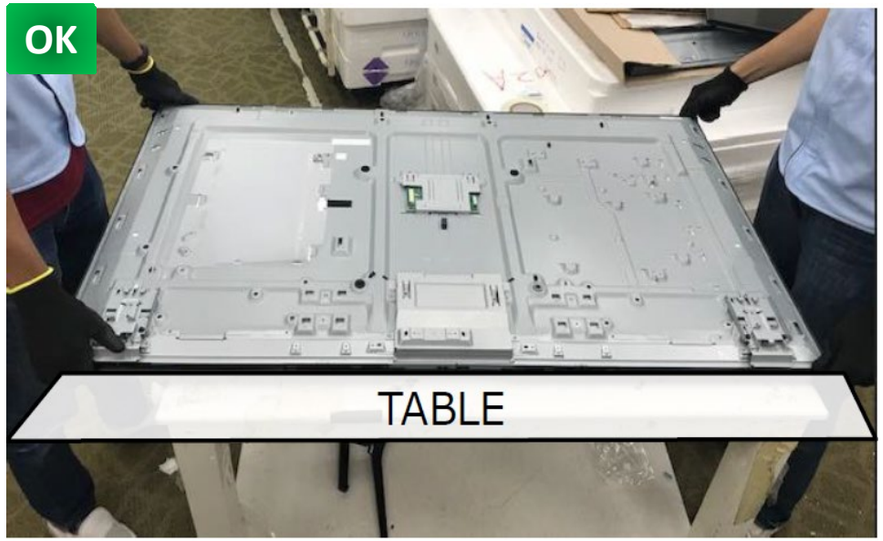
Carry P-mod by Corner

NG

Carry P-mod at center area

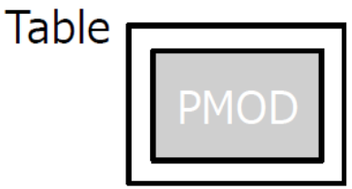
PANEL HANDLING

Resting Condition

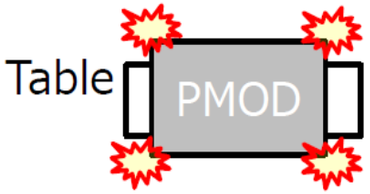


Resting P-mod by 2 persons

Resting P-mod by 1 person



Panel can be fully supported by table surface

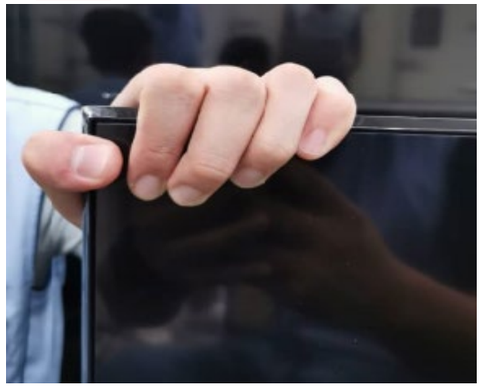


Panel is not fully supported by table surface (Corner / edge is hanging)

PANEL HANDLING

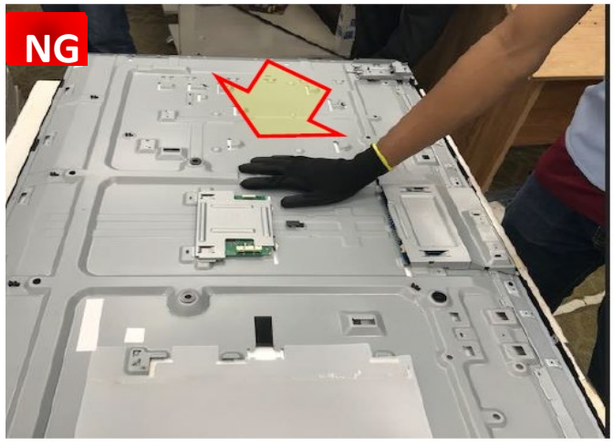
Prohibited Method

NG



Handle P-mod without gloves

NG



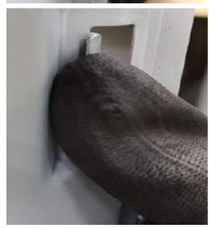
Press on P-mod during Assy & Disassy

NG

Avoid touch Piezo hook and rear cover hook during P-mod handling

NG

Touch on PIEZO hook



Touch on RC hemming

9-888-792-01

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SHES-M

English
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