

SERVICE MANUAL (COMMON)

ORIGINAL MANUAL ISSUE DATE: 2021.05

GR1VH CHASSIS
Segment : AG

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LCD TV

SONY®

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

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REVISION HISTORY

Version	Date	Subject
1	2021.05	1 st Issue

SONY®

MODEL LIST

Sony CONFIDENTIAL
For Authorized Servicer

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



REGION

AMERICA

ASIA

CHINA

MODEL

XR-65X95J

XR-75X95J

XR-85X95J

XRM-65X95J

XRM-75X95J

XRM-85X95J

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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 Caution Handling of LCD Panel

When repairing the LCD Panel, make sure you are grounded with a wrist band.

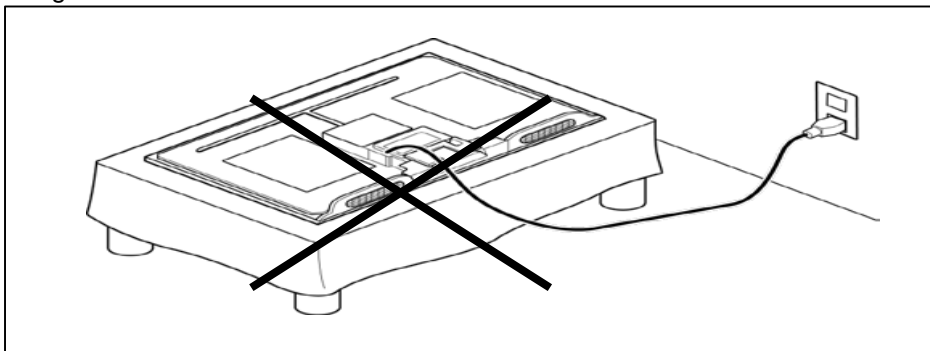
When repairing the LCD Panel on the wall, the panel must be secured using the 4 mounting holes on the rear cover.

- 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 time of period.
- 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)

※Things to prepare in advance

ESD wrist-strap



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.

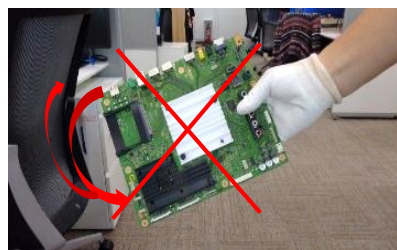
① Hold the board with both hands



② Do not hold/push Heat-Sink



③ Handle with care. Do not swing.



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



⑤ Do not stack up

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

SAFETY NOTES

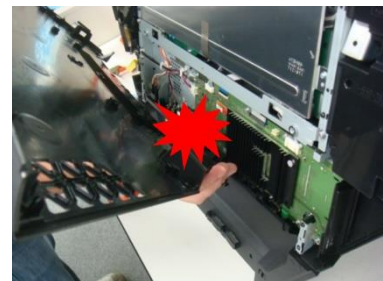
⑦ Do not hold Heat-Sink when take out or install it..



2) Caution for Board handling(ESD)

Be sure to observe the following contents.

① When take off Rear-Cover, do not touch to board



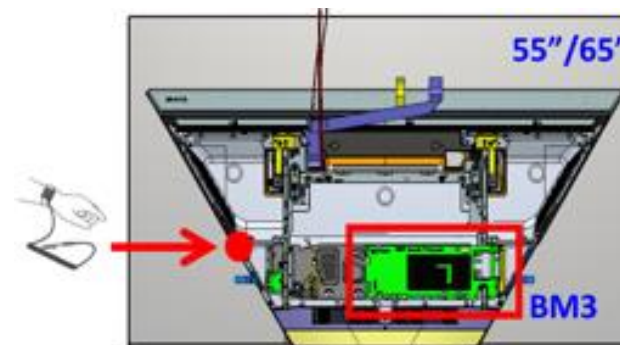
② Use ESD wrist-strap



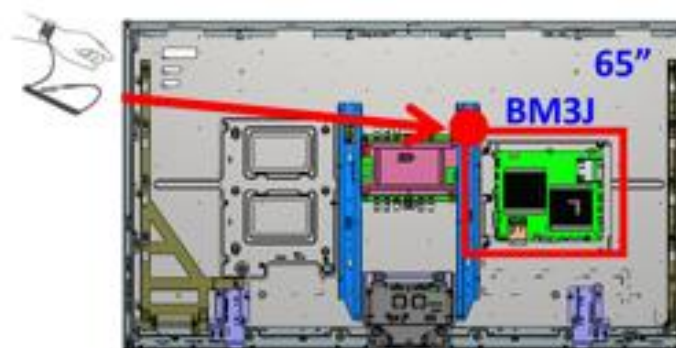
※ Installation example of wrist-strap

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



SAFETY NOTES

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)

*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 = $\sqrt{2}$ 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

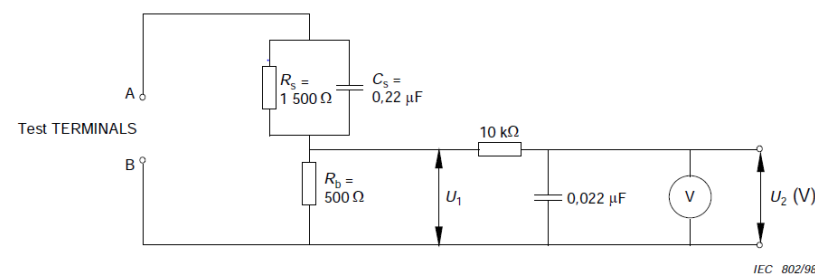


Figure 2 – Measuring network for Leakage Current

IEC 802/98

SAFETY NOTES

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).

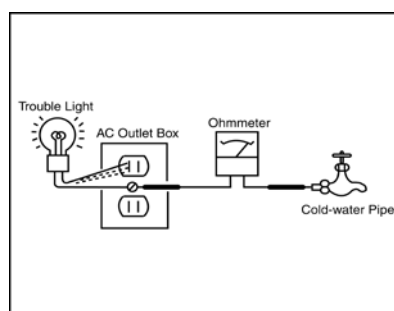


Figure B. Checking for earth ground.

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

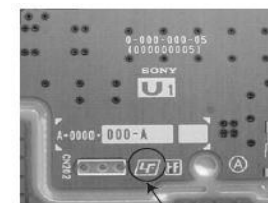


Figure 5: LF logo on circuit board

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

Blue italic: detect at startup sequence only.

<G>: Power supply board, : Main board, <T>: T-con board, <LD>: LD board

<P>: Panel module, <S>: Speaker

SELF DIAGNOSTIC FUNCTION**Self Diagnosis Quick Reference (Not LED blinking [Record Only])**

Error Item	AG
TU_DEMOD	-
TCON_ERR	<T> T-CON device I2C communication failure
AUD_ERR_I2C	 Audio amp I2C communication failure
TEMP_ERR_I2C	<B/H> Temp sensor I2C communication failure
TU_DEMOD_I2C	 Tuner & Demodulator I2C communication failure
EARC_ERR_I2C	-
8KBE_COM_ERR	-
8KSHV_ERR	-
AMB_ERR_I2C	-

Notes:

: Main board, <T>: T-con board, <H>: LED / IR & sensor board

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	Number of off/on action for MAIN_POWER shutdown is recorded to STDWN_OFFON_CNT_MAIN_POWER.
3x	DC_ALERT (5V)	STDWN_RTRY_LIMIT = 2	
	AUD_ERR	STDWN_RTRY_LIMIT = 2	Number of off/on action during the error shutdown is recorded to STDWN_OFFON_CNT.
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	

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

*2) When the main micon 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 Colour 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									
	2	3	4	5	6	7	8	TU_DEMOD	TU_DEMOD_I2C	TCON_ERR	FRCTC_I2C	AUD_ERR_I2C	4KPQ_ERR_I2C	TEMP_ERR_I2C	EARC_ERR_I2C	8KBE_COM_ERR	AMB_ERR_I2C
Main Board	▲	●	■	■	■	●	●		●	▲		●		▲			
Power Board	●	▲	■	■	■												
Receiver Board														●			
Speaker		▲															
Wifi & BT Module																	
Local Dimming Board			▲		▲												
V By One FFC				▲						▲							
Tcon				●						●							
LCD Panel			●	▲	●	▲				■							
Problem	Power	Power	Panel	Panel (Communication)	Panel (Backlight)	TEMP	4KBE										
		Audio	LD	Tcon													

TROUBLESHOOTING

Triage Chart

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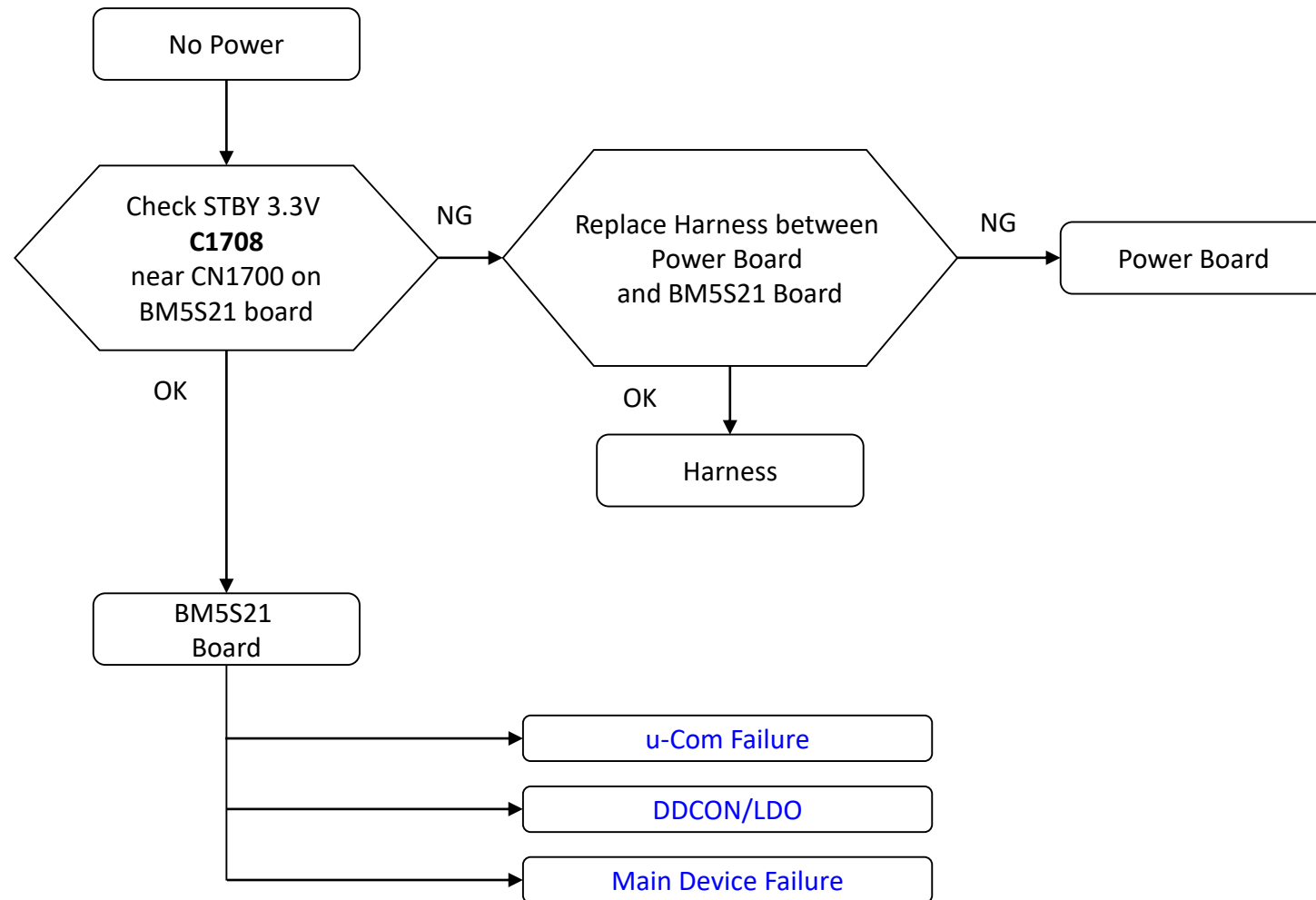
GREEN SQUARE: Tertiary possible defective part

BLACK TEXT: Board that may correct the symptom

Reference	No Power	Video - missing or distorted				Remote	Network	Audio	Smart Core	Bluetooth (BT)
	No White Power LED & does not response to remote (Dead Set)	Stationary colored lines or dots	No video One of Inputs	NO RF input	No video all Inputs	No Remote	Cannot connect to Wireless Network	No Audio	Smart Core no LED (Set is still alive)	Bluetooth / One Step Remote (OSR) can't connect
Main Board	▲	▲	●	●	●	▲	▲	●	▲	▲
Power Board	●				▲			▲		
Receiver Board	▲					●			●	
Speaker								●		
Wifi & BT Module							●			●
Local Dimming Board					▲					
V By One FFC		▲			▲					
Tcon		▲			■					
LCD Panel		●			■					
Problem										

TROUBLESHOOTING

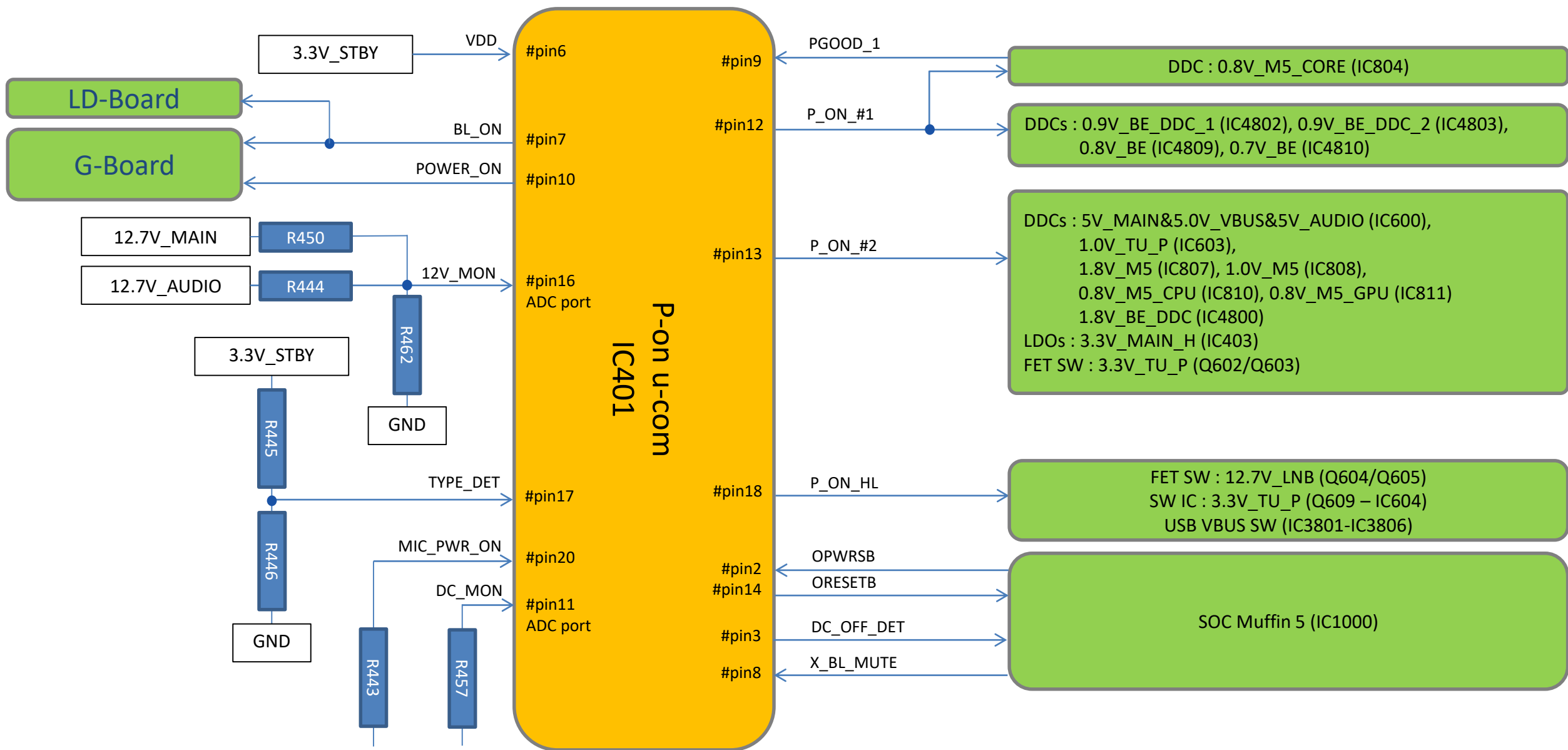
1.1 No Power



TROUBLESHOOTING

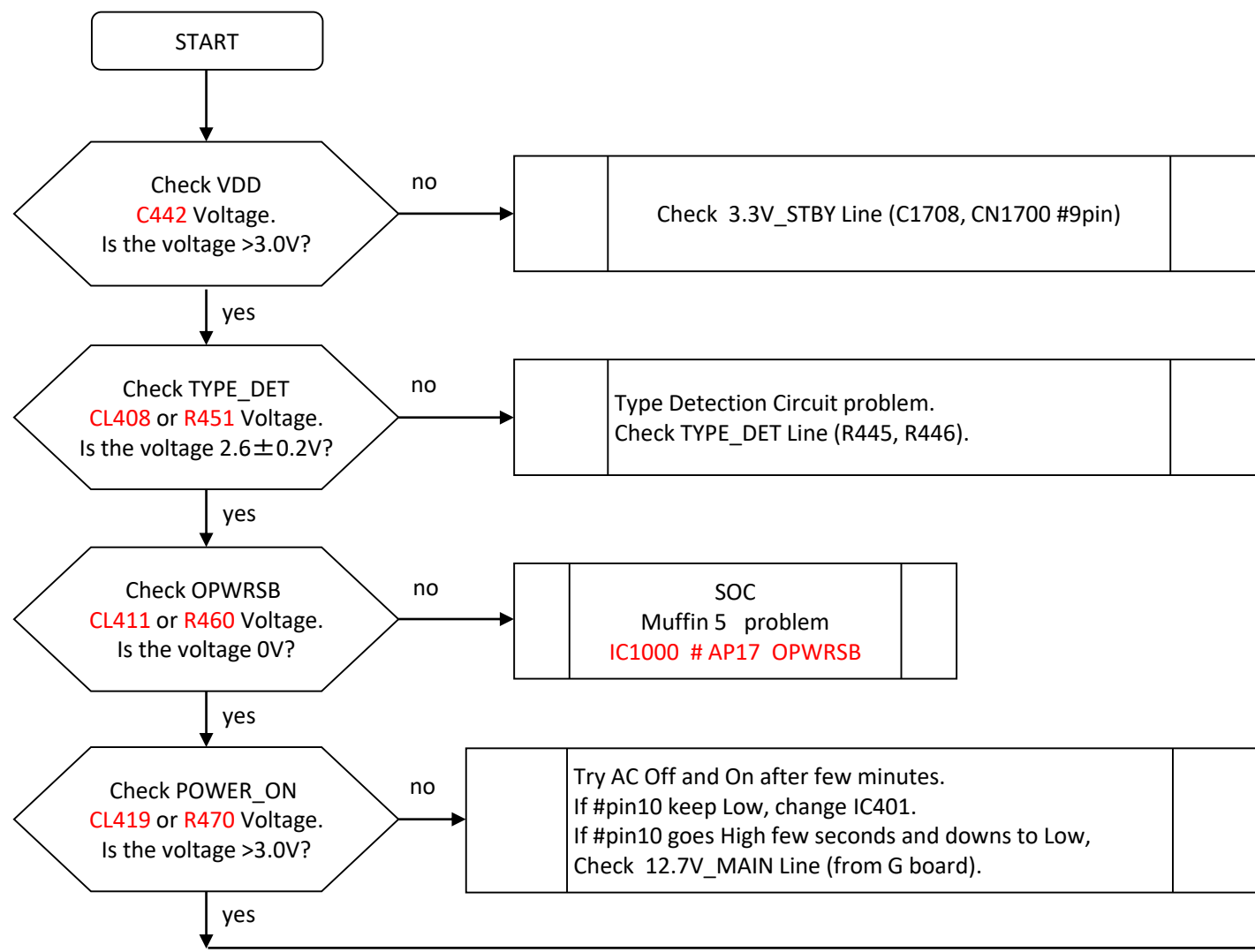
1.2 No Power U-Com Failure

P-on u-com control signal path summary

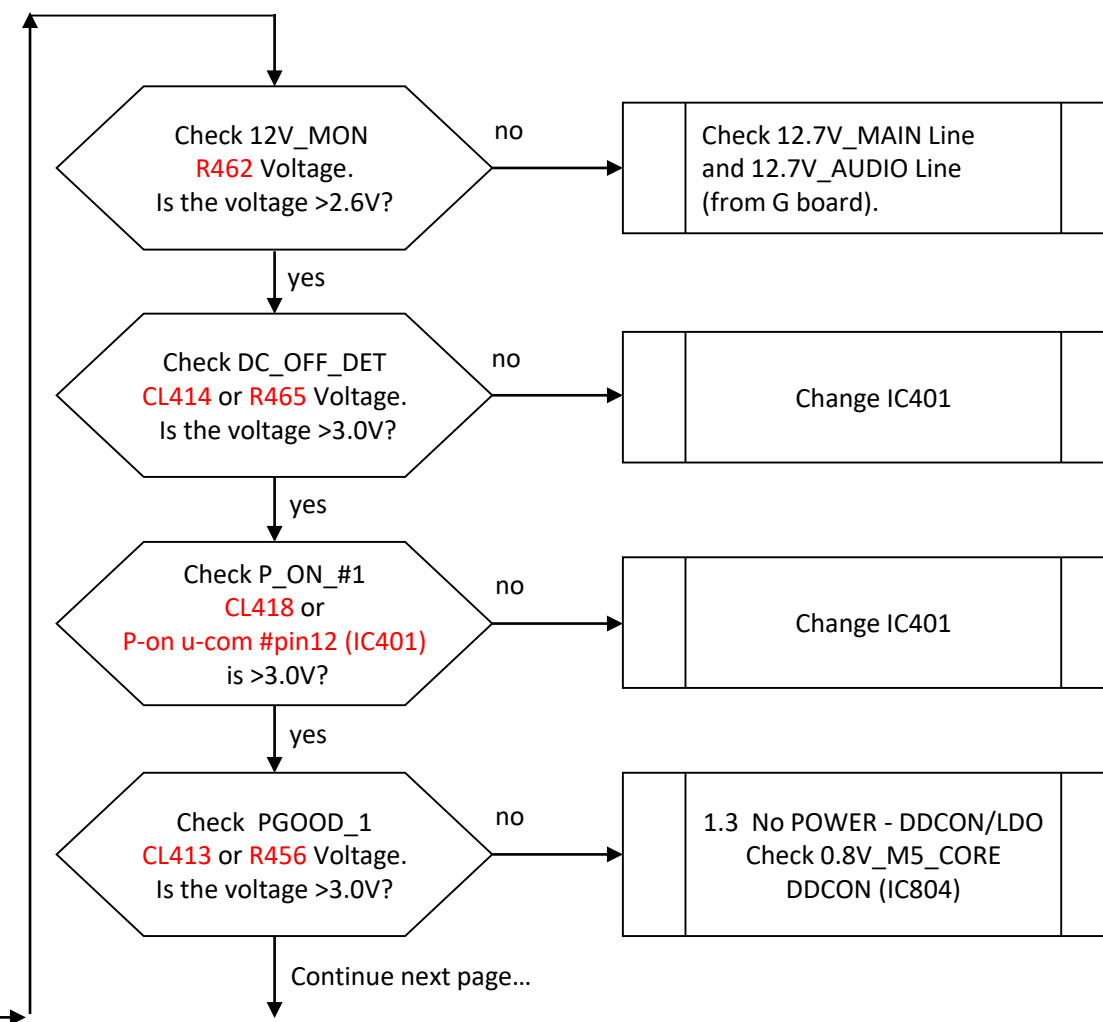


TROUBLESHOOTING

1.2 No Power U-Com Failure



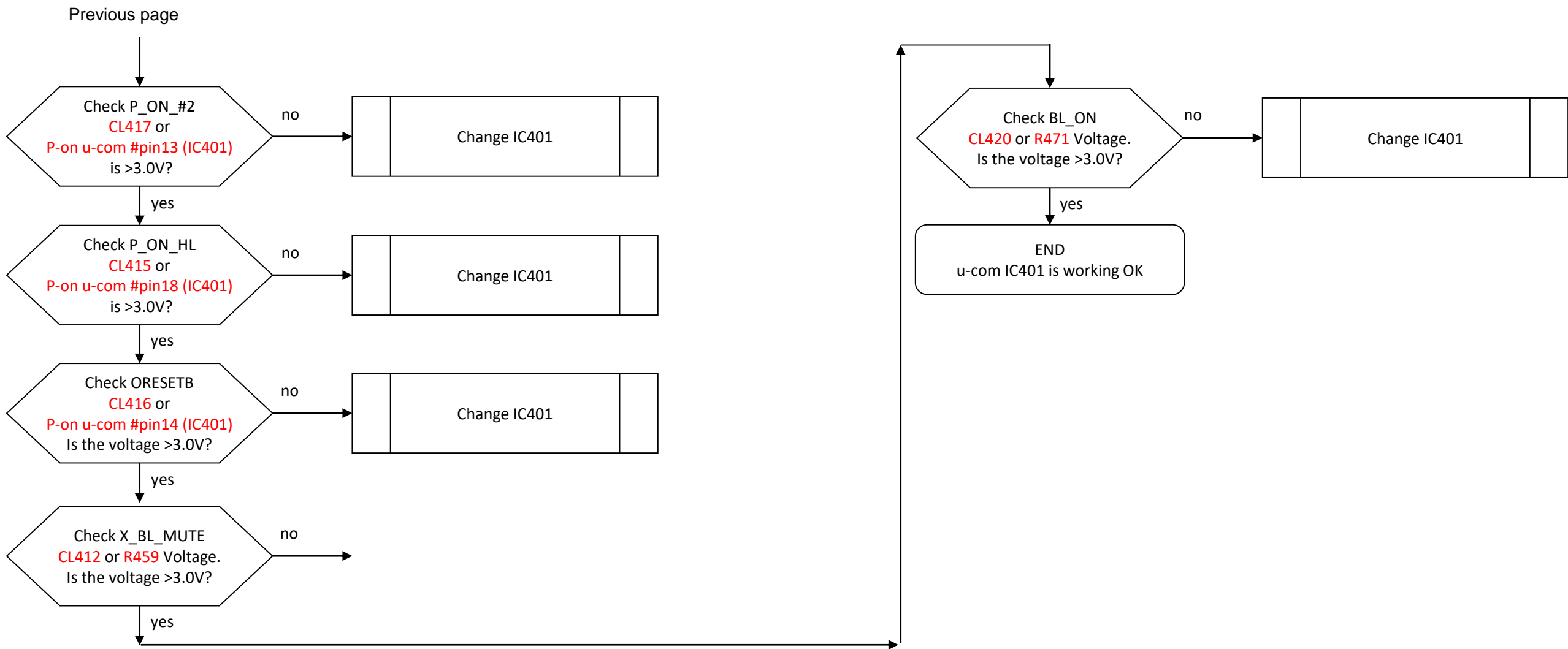
P-on u-com control signal path summary



TROUBLESHOOTING

1.2 No Power U-Com Failure

P-on u-com control signal path summary



TROUBLESHOOTING

1.3 No Power DDCON / LDO

Check Item Summary

Board	Operation	IC Ref	Voltage supply	Output ref.	Enable pin	Enable source	Fuse	Vcc ref.
BM5S21	DCDC	IC418	5.0V_STBY_H	C508/JL1212	R557	R557(3.3V_STBY)	-	C505
BM5S21	LDO	IC403	3.3V_MAIN_H	C416/CL402	R413(shorted)	P_ON_#2	-	C415
BM5S21	DC/DC	IC600	5V_MAIN/5V_AUDIO	C610/JL601	R600(shorted)/CL604	P_ON_#2	F600	C601
BM5S21	DC/DC	IC601	3.3V_MAIN/3.3V_AUDIO	C619/JL603	R658/CL605	R658(1.8V_BE_DDC)	F601	C618
BM5S21	DC/DC	IC603	1.0V_TU_P	C630/CL607	R631(shorted)/JL607	P_ON_#2 or IC1000 #AL18 (EWS_PWR_ON)	-	C628
BM5S21	DC/DC	IC801	1.1V_M5_DDR	C806/JL801	R913(shorted)	R804/R907 (3.3V_STBY)	-	C801/CL819
BM5S21	DC/DC	IC802	0.9V_M5_STBY	C809/CL803	R908(shorted)	R804/R907 (3.3V_STBY)	-	C807/CL822
BM5S21	DC/DC	IC803	1.8V_STBY	C812/CL811	R822(shorted)	R804 (3.3V_STBY)	-	C810/CL824
BM5S21	DC/DC	IC804	0.8V_M5_CORE	C846/JL803	R849(shorted)/CL816	P_ON_#1	F802	C831
BM5S21	LDO	IC806	1.8V_M5_ET_STBY	C818/JL808	R832(shorted)	IC1000 #AN19 (ETHER_PWR_EN)	-	C817/CL826
BM5S21	DC/DC	IC807	1.8V_M5	C823/JL811	R833(shorted)/CL827	P_ON_#2	F800	C822
BM5S21	DC/DC	IC808	1.0V_M5	C829/JL813	R839(shorted)/CL828	P_ON_#2	F801	C828
BM5S21	LDO	IC809	3.3V_M5_STBY	C816/CL831	R917	R917(3.3V_STBY)	-	C815
BM5S21	DC/DC	IC810	0.8V_M5_CPU	C861/JL816	R914/CL829	P_ON_#2	F803	C855
BM5S21	DC/DC	IC811	0.8V_M5_GPU	C874/JL818	R915/CL830	P_ON_#2	F804	C868

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

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

TROUBLESHOOTING

1.3 No Power DDCON / LDO

Check Item Summary

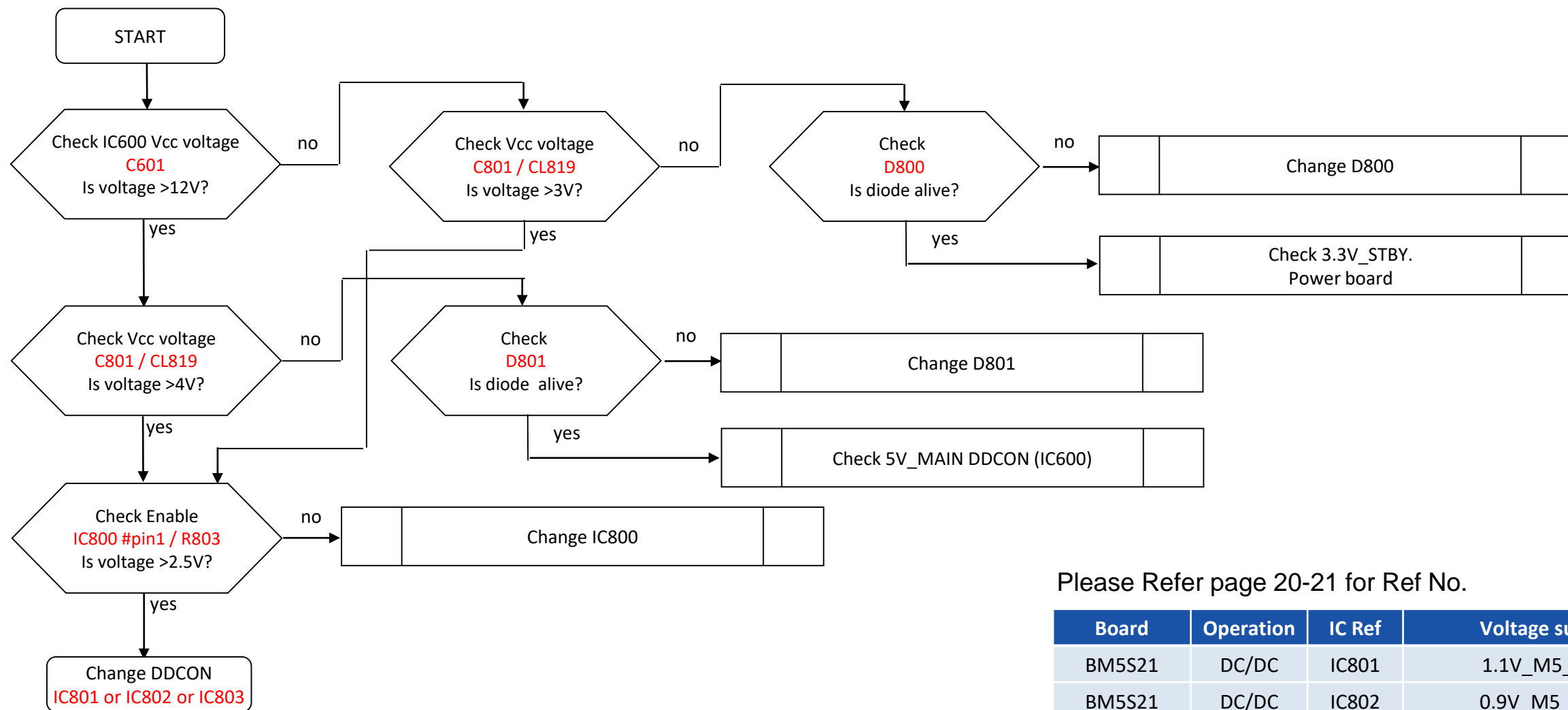
Board	Operation	IC Ref	Voltage supply	Output ref.	Enable pin	Enable source	Fuse	Vcc ref.
BM5S	DC/DC	IC4800	1.8V_BE_DDC	C4805/JL4801	R4801(shorted)/CL4816	P_ON_#2	F4800	C4803
BM5S	DC/DC	IC4801	1.1V_BE	C4813/JL4803	R4907/CL4817	R4907(1.8V_BE_DDC)	F4801	C4812
BM5S	DC/DC	IC4802	0.9V_BE_DDC_1	C4820/JL4805	R4819(shorted)/CL4818	P_ON_#1	F4802	C4819
BM5S	DC/DC	IC4803	0.9V_BE_DDC_2	C4828/JL4807	R4827(shorted)/CL4819	P_ON_#1	F4803	C4827
BM5S	DC/DC	IC4809	0.8V_BE	C4860/JL4819	R4849(shorted)/CL4808	P_ON_#1	F4804	C4845
BM5S	DC/DC	IC4810	0.7V_BE	C4878/JL4821	R4865(shorted)/CL4811	P_ON_#1	F4805	C4863

P_ON_#1 : P-on u-com IC401 #pin12
P_ON_#2 : P-on u-com IC401 #pin13

TROUBLESHOOTING

1.3 No Power DDCON / LDO

DDCONs Check



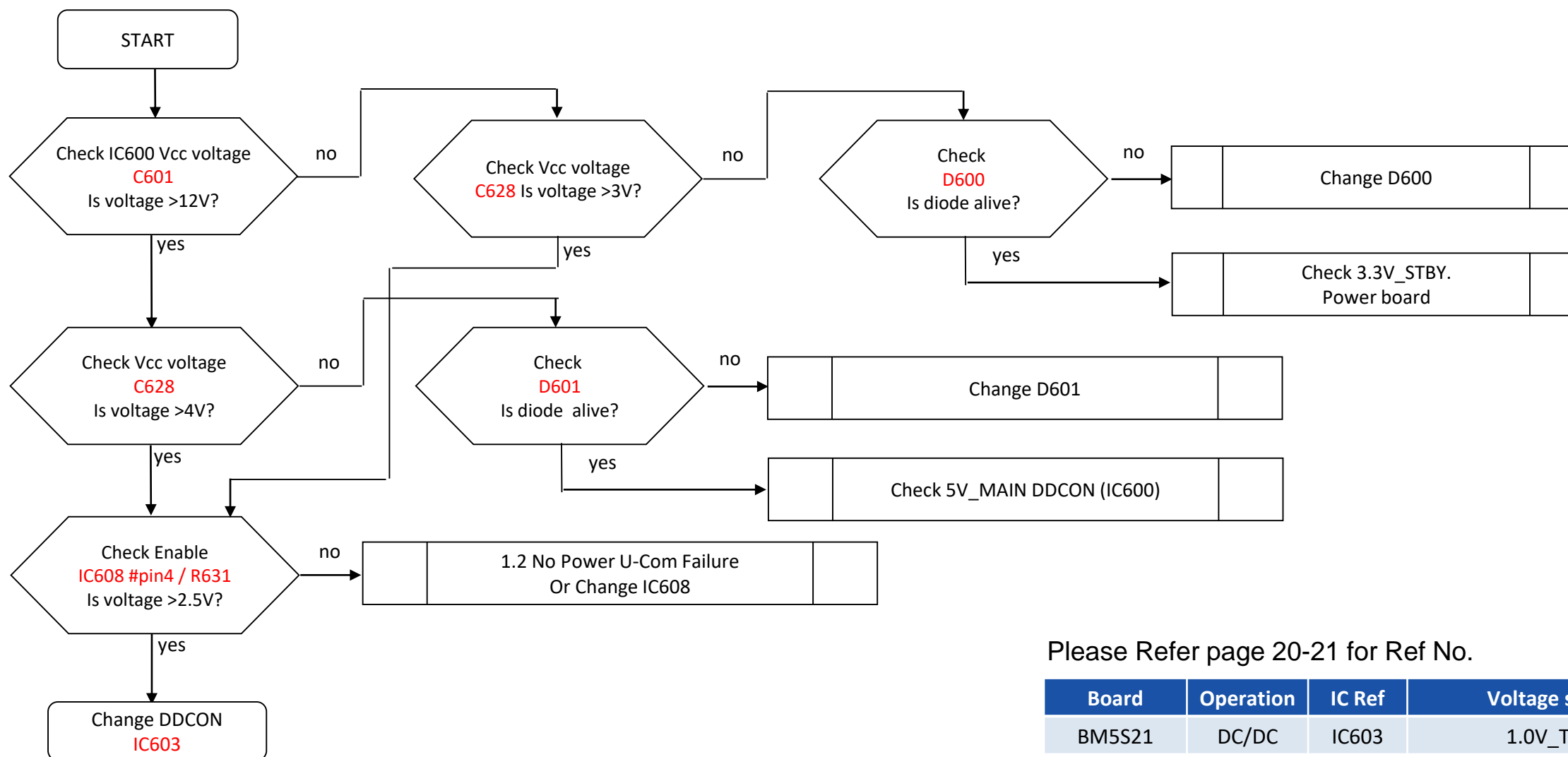
Please Refer page 20-21 for Ref No.

Board	Operation	IC Ref	Voltage supply
BM5S21	DC/DC	IC801	1.1V_M5_DDR
BM5S21	DC/DC	IC802	0.9V_M5_STBY
BM5S21	DC/DC	IC803	1.8V_STBY

TROUBLESHOOTING

1.3 No Power DDCON / LDO

DDCONs Check *Philippines Only



Please Refer page 20-21 for Ref No.

Board	Operation	IC Ref	Voltage supply
BM5S21	DC/DC	IC603	1.0V_TU_P

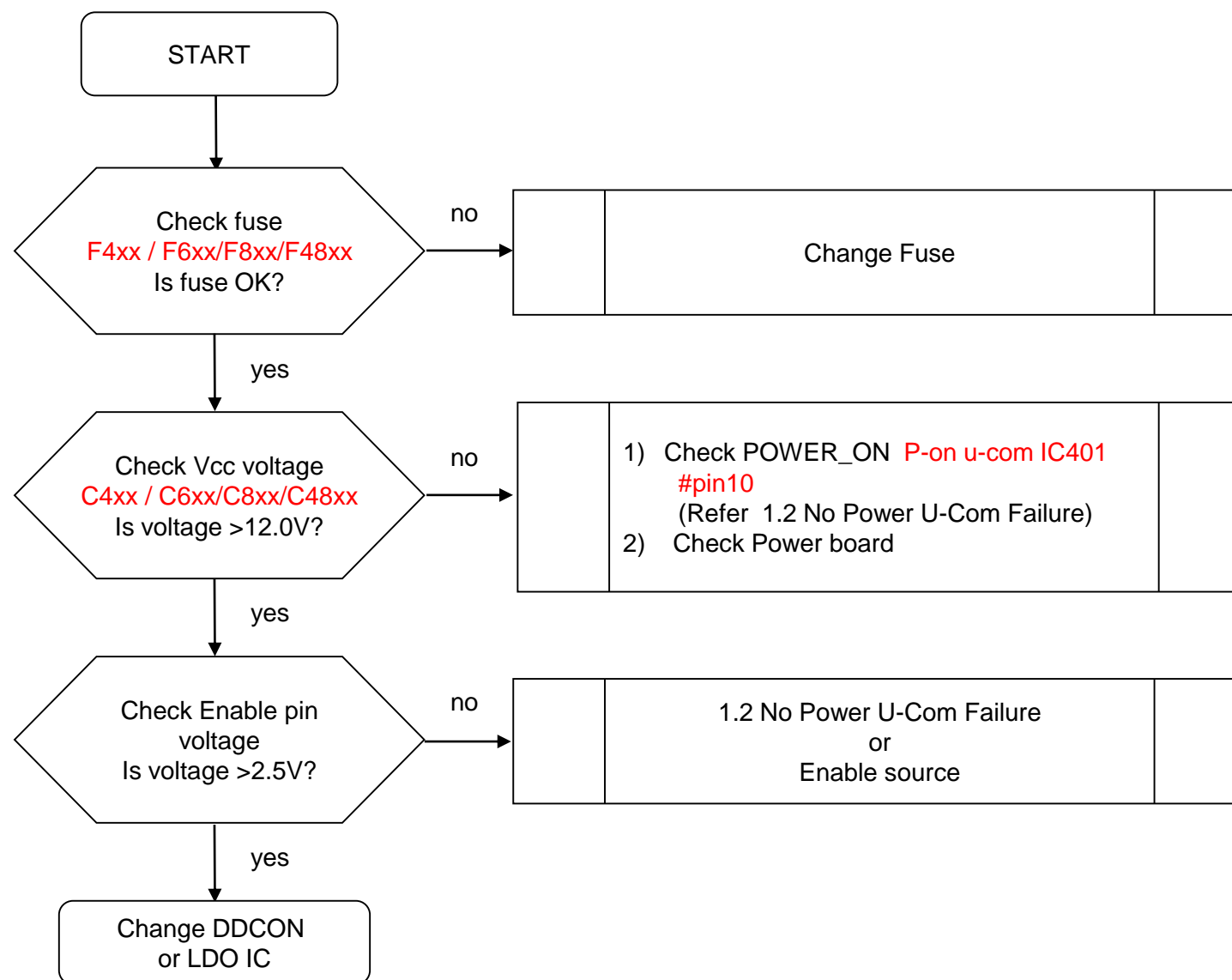
TROUBLESHOOTING

1.3 No Power DDCON / LDO

DDCONs & LDO Check

Please Refer page 20-21 for Ref No.

Board	Operation	IC Ref	Voltage supply
BM5S21	DC/DC	IC600	5V_MAIN/5V_AUDIO
BM5S21	DC/DC	IC601	3.3V_MAIN/3.3V_AUDIO
BM5S21	DC/DC	IC804	0.8V_M5_CORE
BM5S21	DC/DC	IC807	1.8V_M5
BM5S21	DC/DC	IC808	1.0V_M5
BM5S21	DC/DC	IC810	0.8V_M5_CPU
BM5S21	DC/DC	IC811	0.8V_M5_GPU
Board	Operation	IC Ref	Voltage supply
BM5S21	DC/DC	IC4800	1.8V_BE_DDC
BM5S21	DC/DC	IC4801	1.1V_BE
BM5S21	DC/DC	IC4802	0.9V_BE_DDC_1
BM5S21	DC/DC	IC4803	0.9V_BE_DDC_2
BM5S21	DC/DC	IC4809	0.8V_BE
BM5S21	DC/DC	IC4810	0.7V_BE



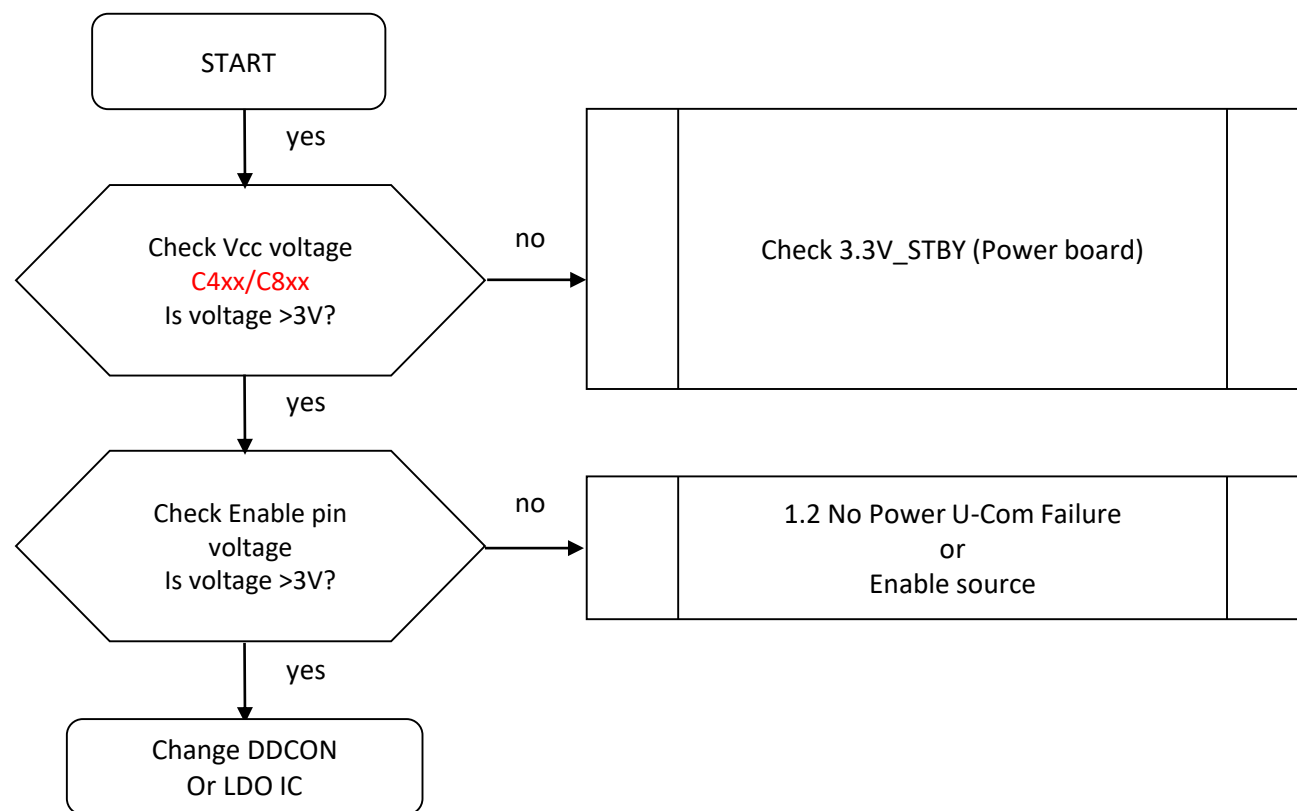
TROUBLESHOOTING

1.3 No Power DDCON / LDO

DDCONs & LDOs Check

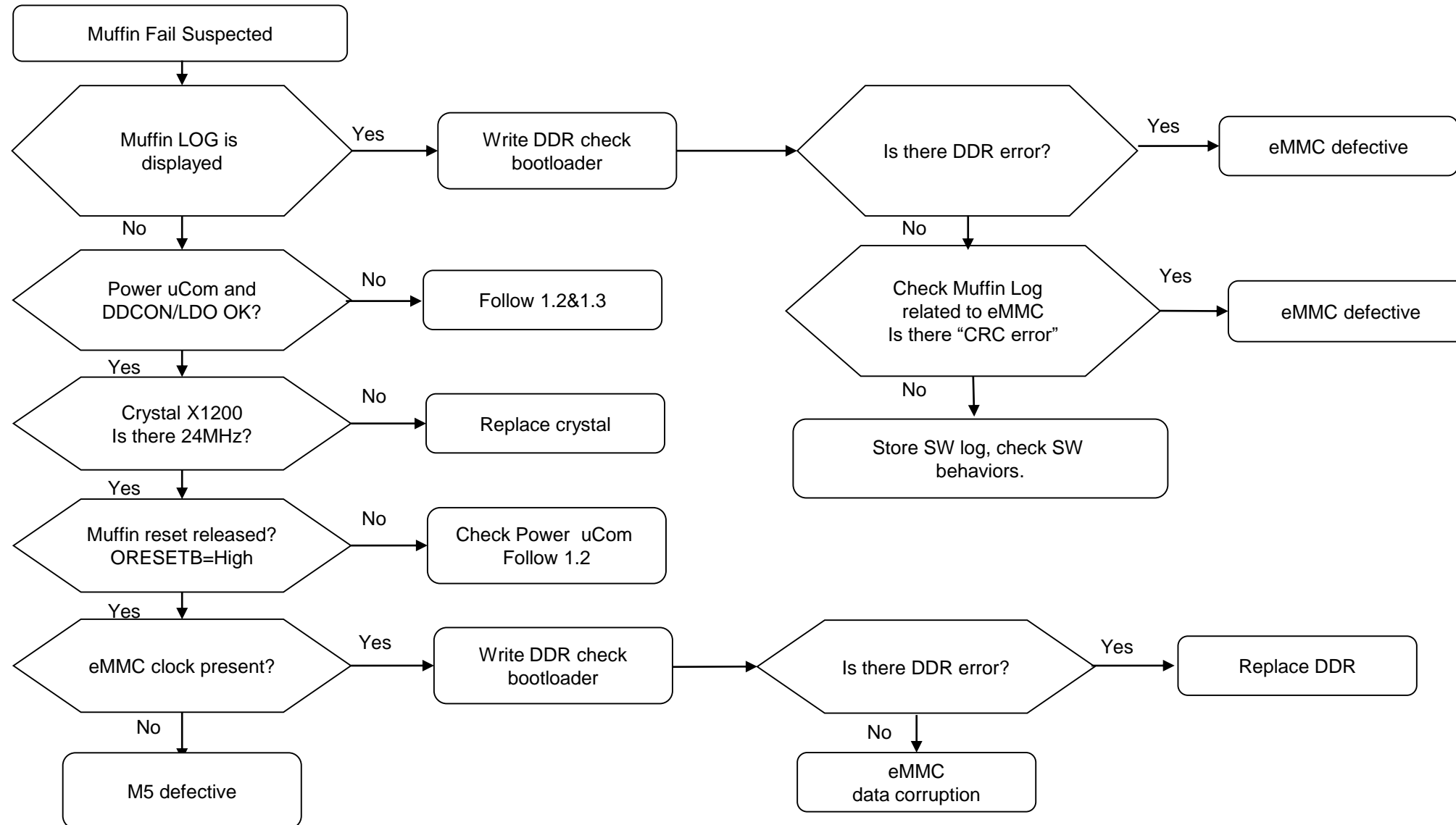
Please Refer page 20-21 for Ref No.

Board	Operation	IC Ref	Voltage supply
BM5S21	DC/DC	IC418	5.0V_STBY_H
BM5S21	LDO	IC403	3.3V_MAIN_H
BM5S21	LDO	IC806	1.8V_M5_ET_STBY
BM5S21	LDO	IC809	3.3V_M5_STBY



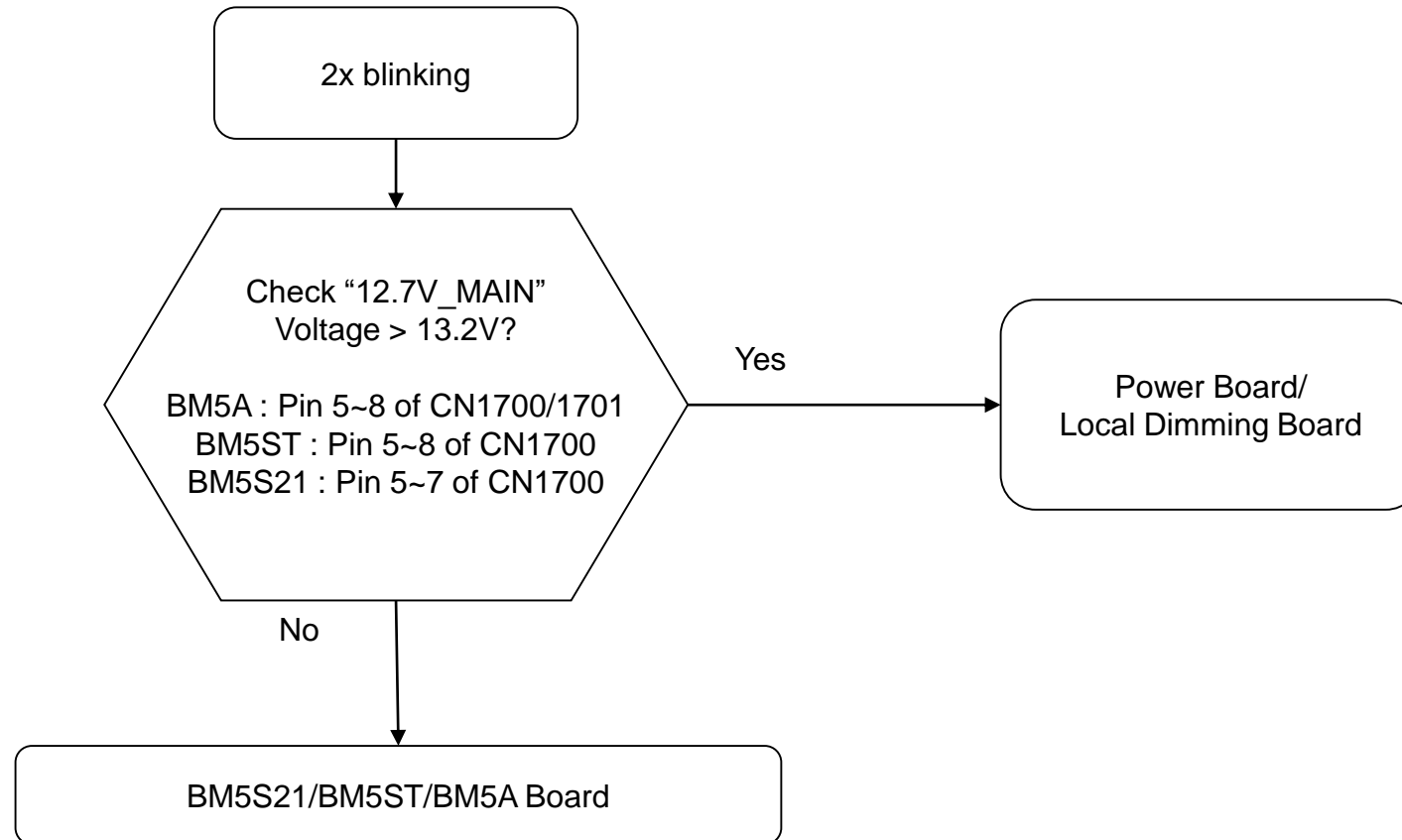
TROUBLESHOOTING

1.4 No Power Muffin5 Failure



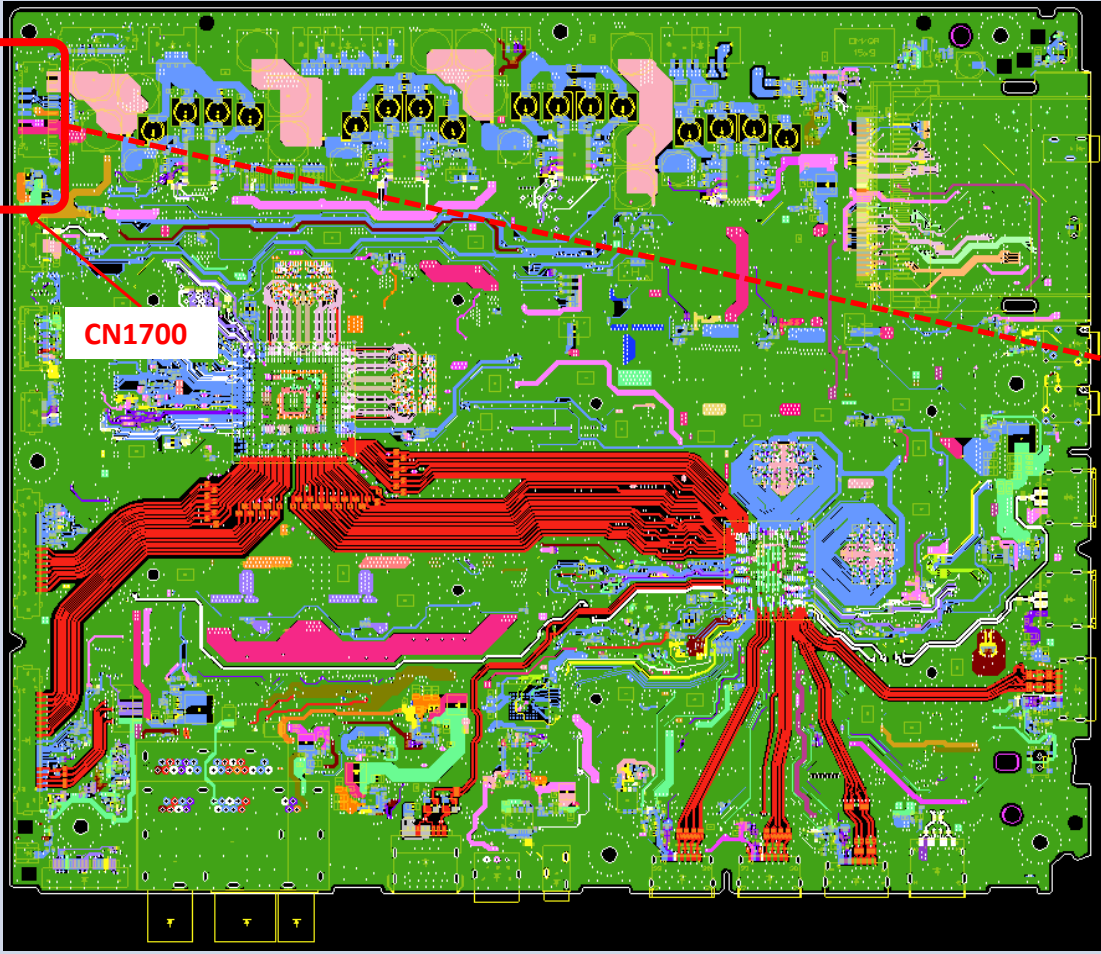
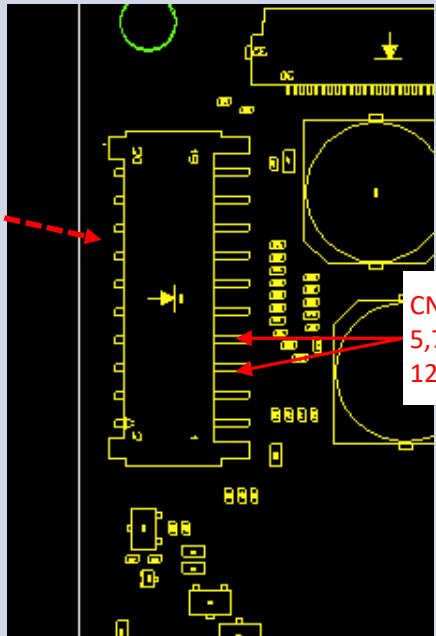
TROUBLESHOOTING

2.0 2x LED Blinking : Main Power Error



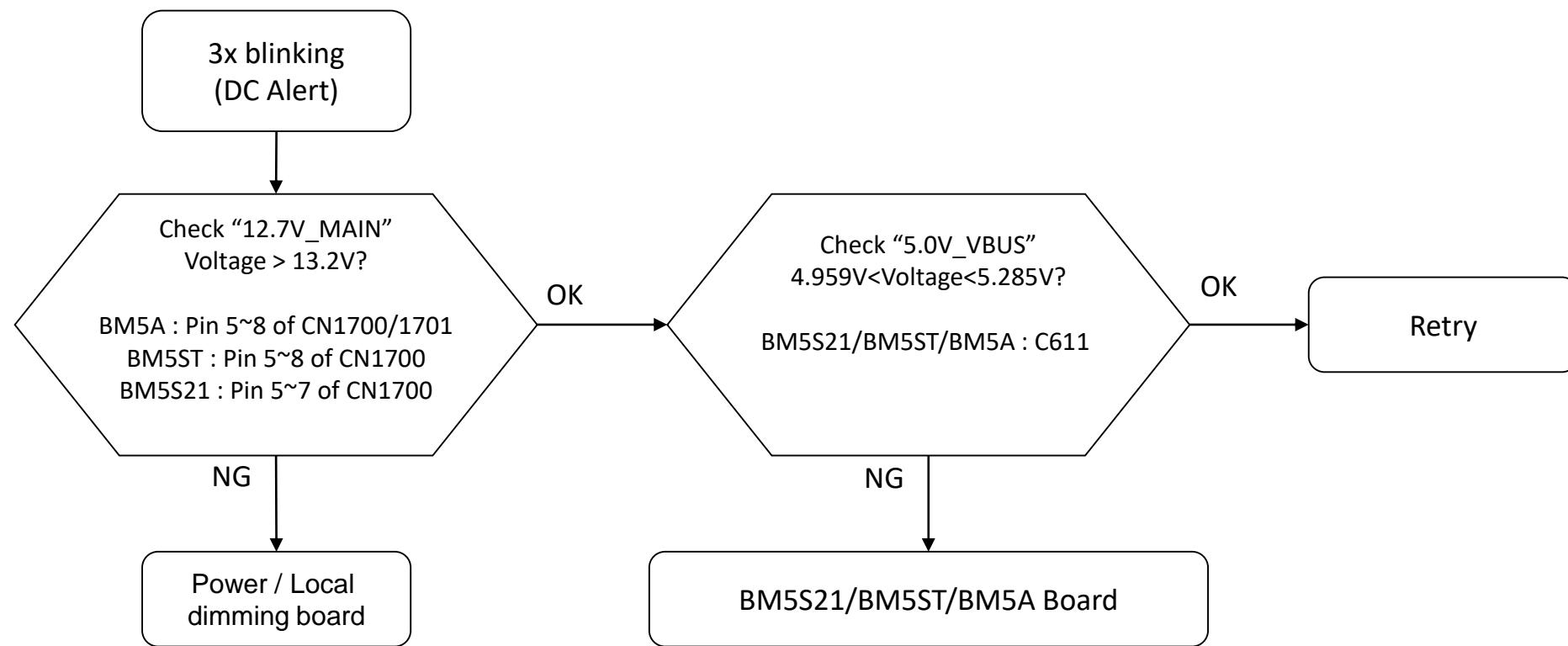
TROUBLESHOOTING

2.0 2x LED Blinking : Main Power Error

Name	Board PWB (A side)	Detail
BM5S21		

TROUBLESHOOTING

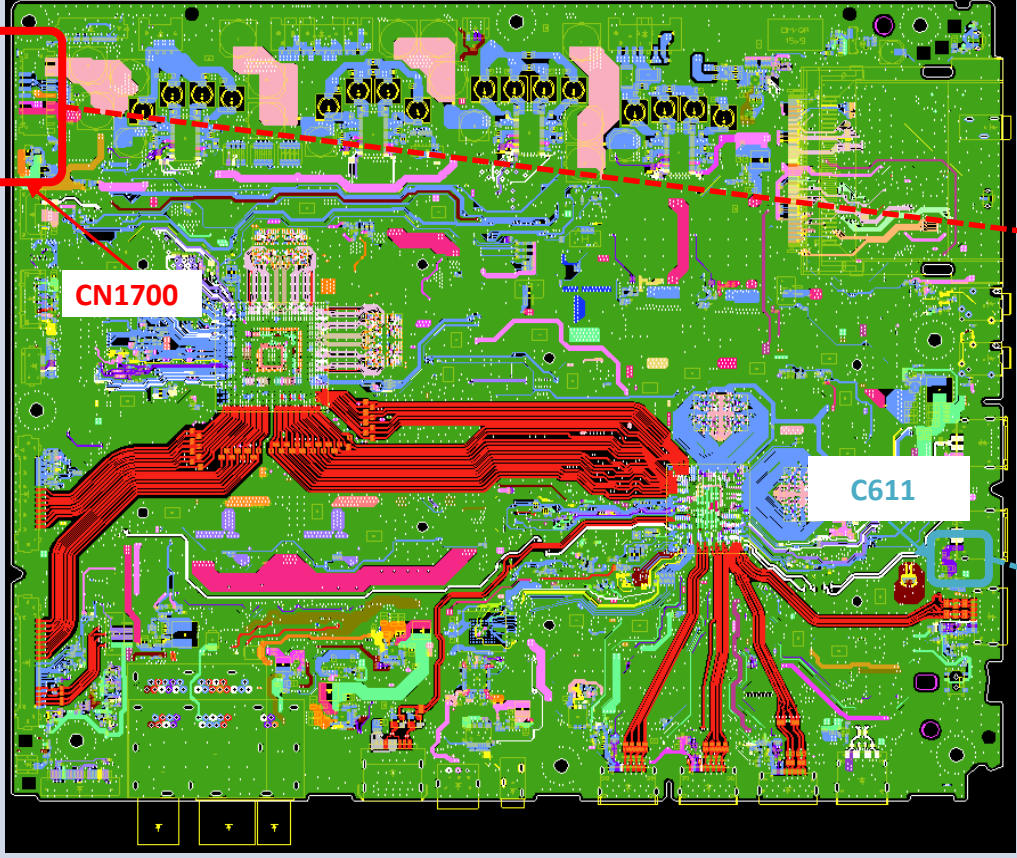
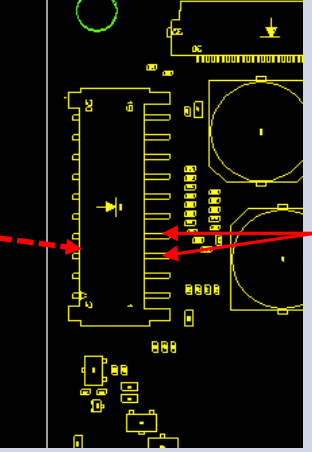
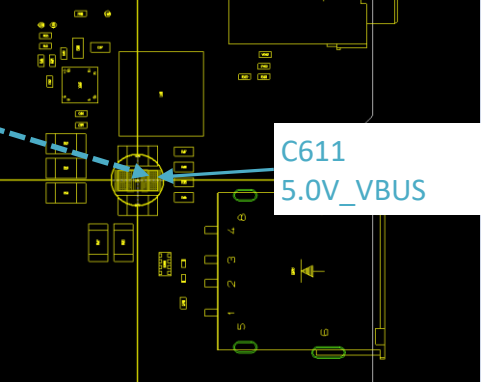
2.1 3x LED Blinking : DC Alert



	Error Item	Number of STBY LED Blinking	Description
Valhalla	DC_ALERT	3	Main 5V power failure
	AUD_ERR	3	Audio amp. protection

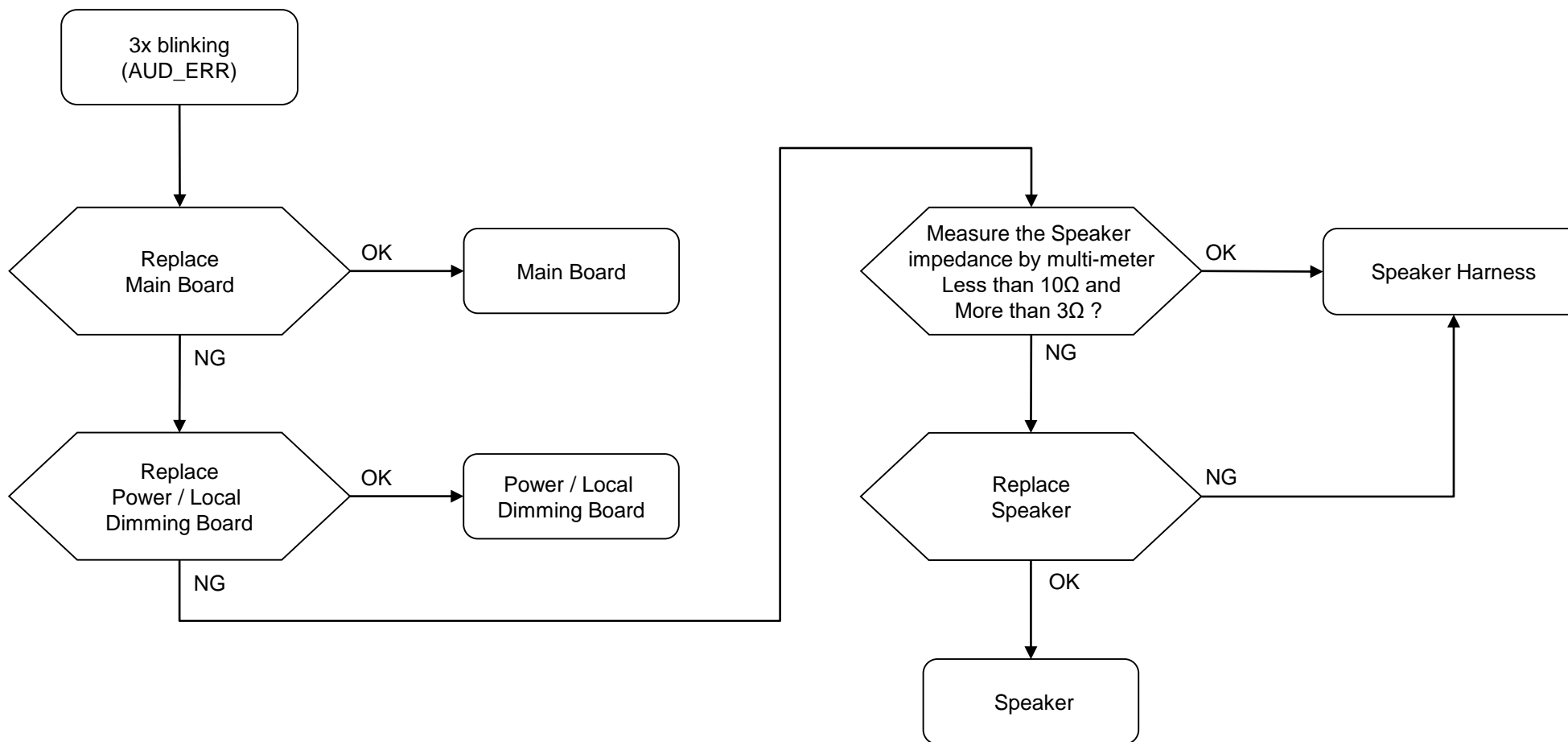
TROUBLESHOOTING

2.1 3x LED Blinking : DC Alert

Name	Board PWB (A side)	Detail
BM5S21		 <p data-bbox="1945 619 2200 737">CN1700 5,7pin 12.7V_MAIN</p>  <p data-bbox="1917 1040 2171 1129">C611 5.0V_VBUS</p>

TROUBLESHOOTING

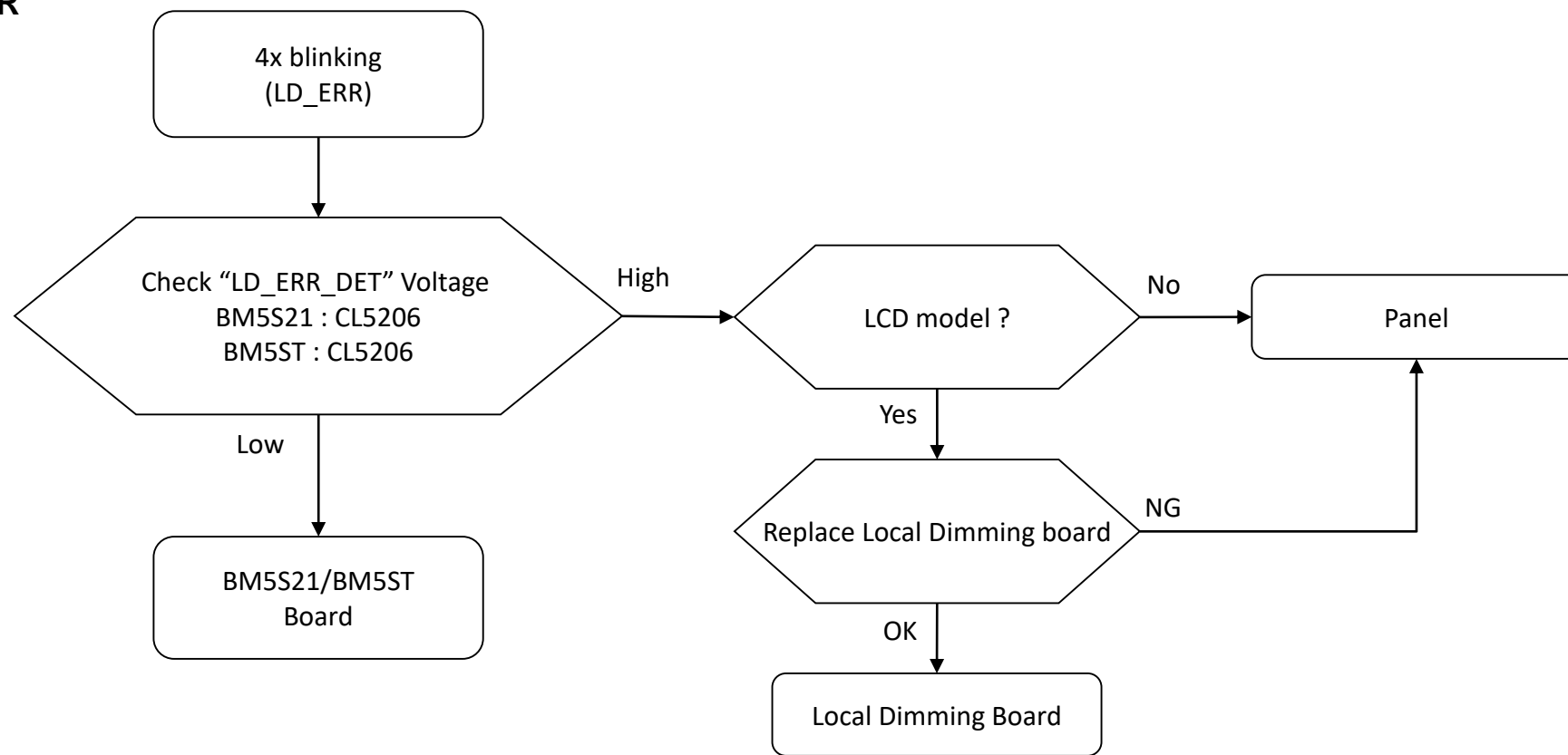
2.2 3x LED Blinking : AUD_ERR



	Error Item	Number of STBY LED Blinking	Description
Valhalla	DC_ALERT	3	Main 5V power failure
	AUD_ERR	3	Audio amp. protection

TROUBLESHOOTING

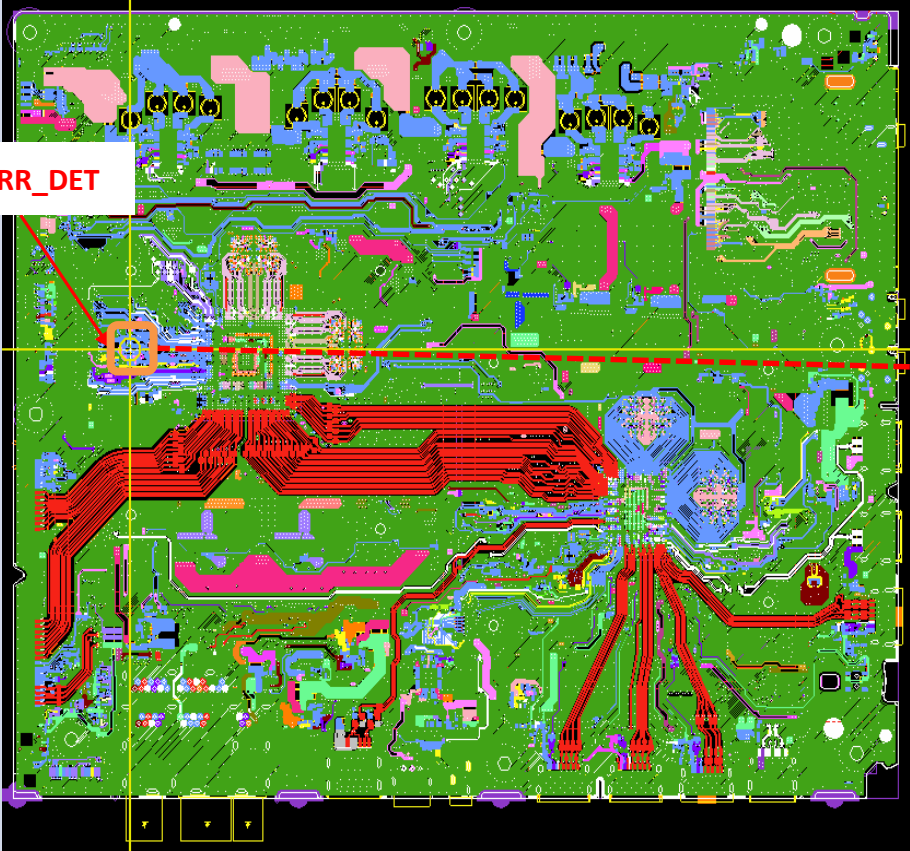
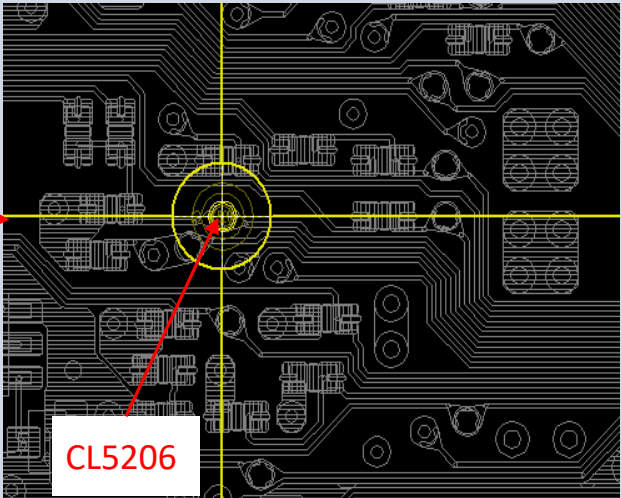
2.3 4x LED Blinking : LD ERR



	Error Item	Number of STBY LED Blinking	Description	
Valhalla	LD_ERR	4	LCD	LED driver failure/LED voltage protection
			OLED	TCON internal or I2C communication failure
	BCM_ERR	4	LCD	LD IC initialize or I2C communication failure
			OLED	Panel power failure

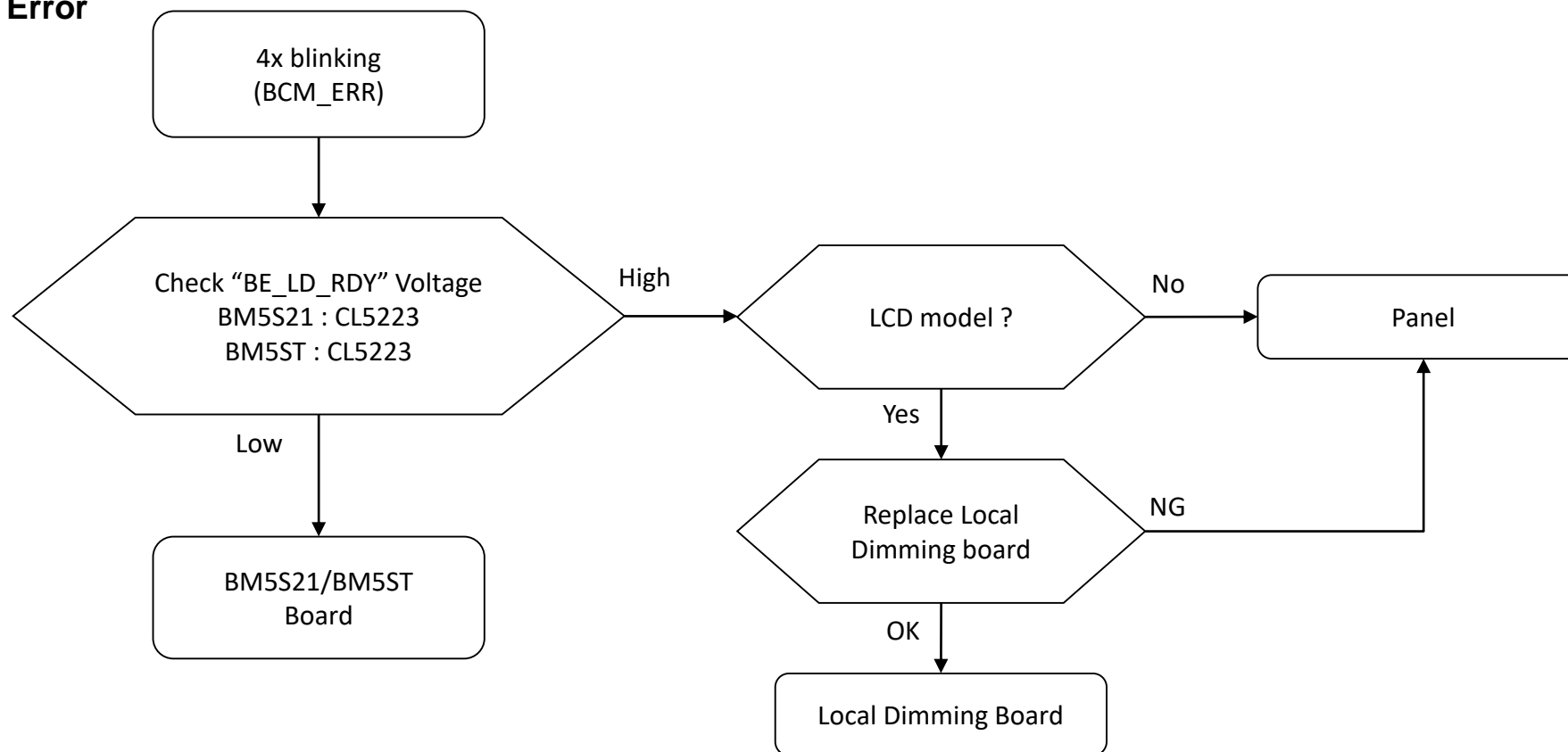
TROUBLESHOOTING

2.3 4x LED Blinking : LD Error

Name	Board PWB (A side)	Detail
BM5S21	 <p>LD_ERR_DET</p>	 <p>CL5206</p>

TROUBLESHOOTING

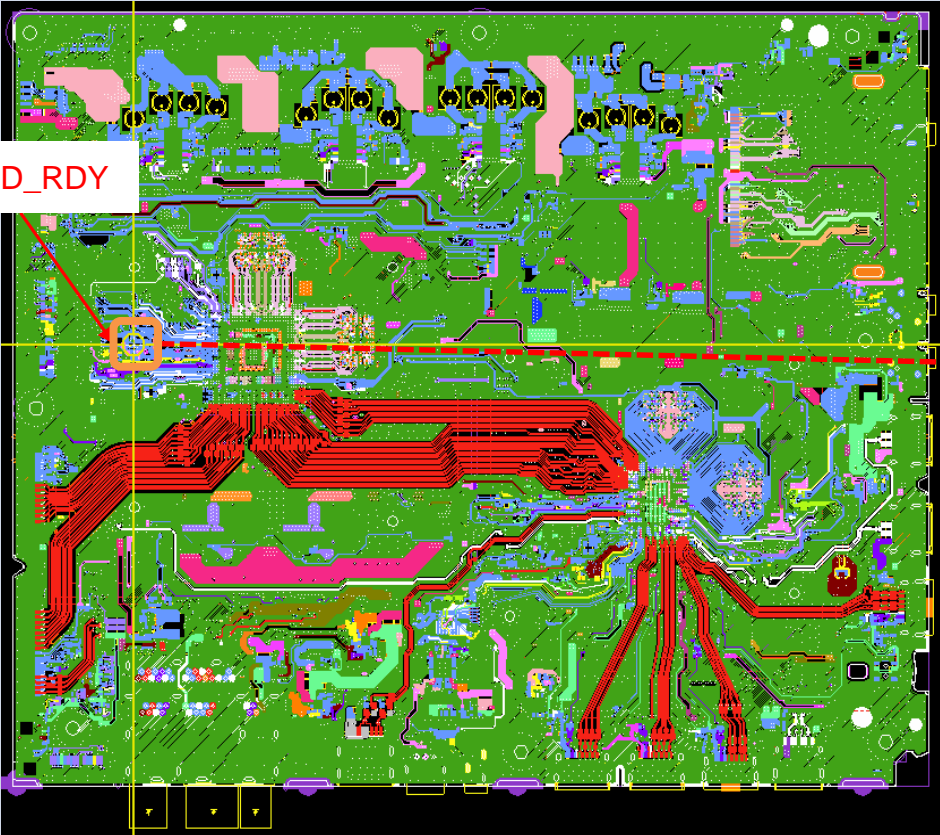
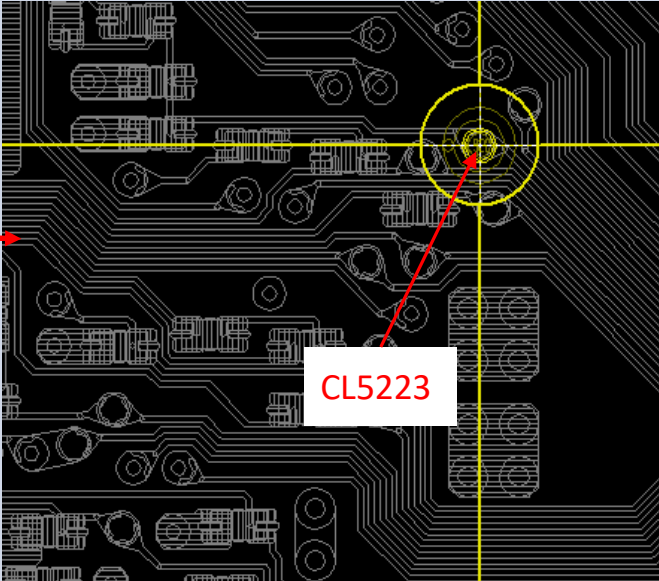
2.4 4x LED Blinking : BCM Error



	Error Item	Number of STBY LED Blinking	Description	
Valhalla	LD_ERR	4	LCD	LED driver failure/LED voltage protection
			OLED	TCON internal or I2C communication failure
	BCM_ERR	4	LCD	LD IC initialize or I2C communication failure
			OLED	Panel power failure

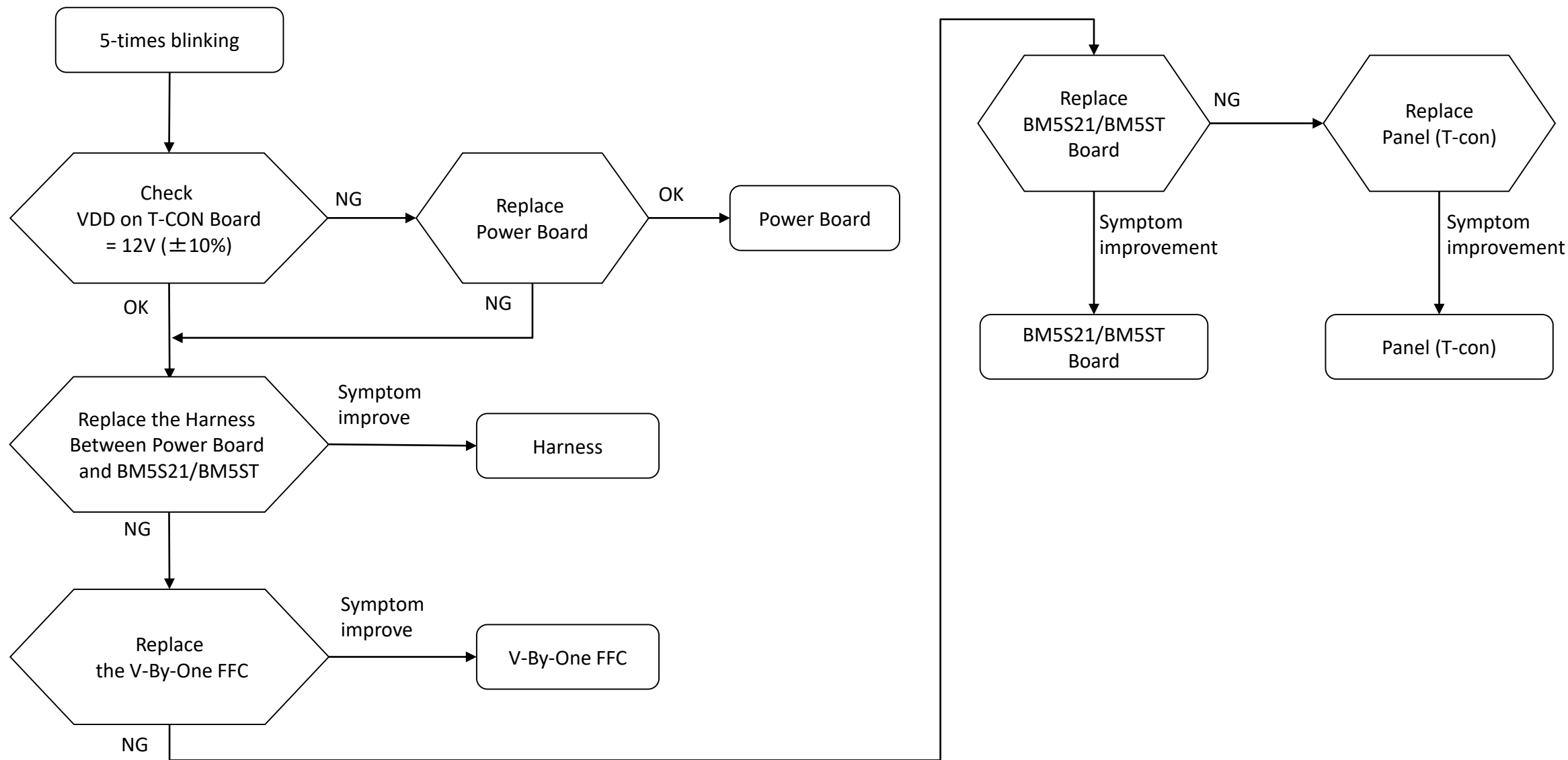
TROUBLESHOOTING

2.4 4x LED Blinking : BCM Error

Name	Board PWB (A side)	Detail
BM5S21	 <p>BE_LD_RDY</p>	 <p>CL5223</p>

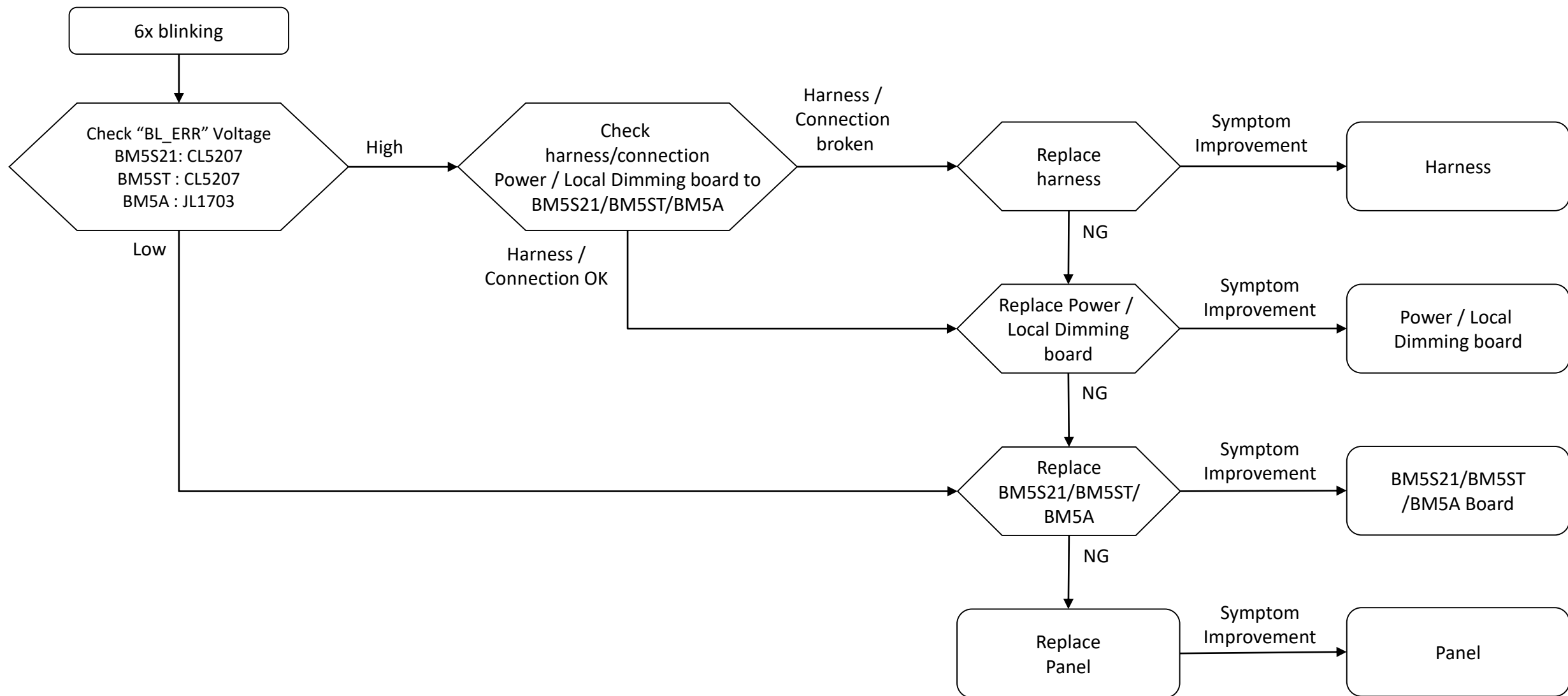
TROUBLESHOOTING

2.5 5x LED Blinking : P_ID_ERR



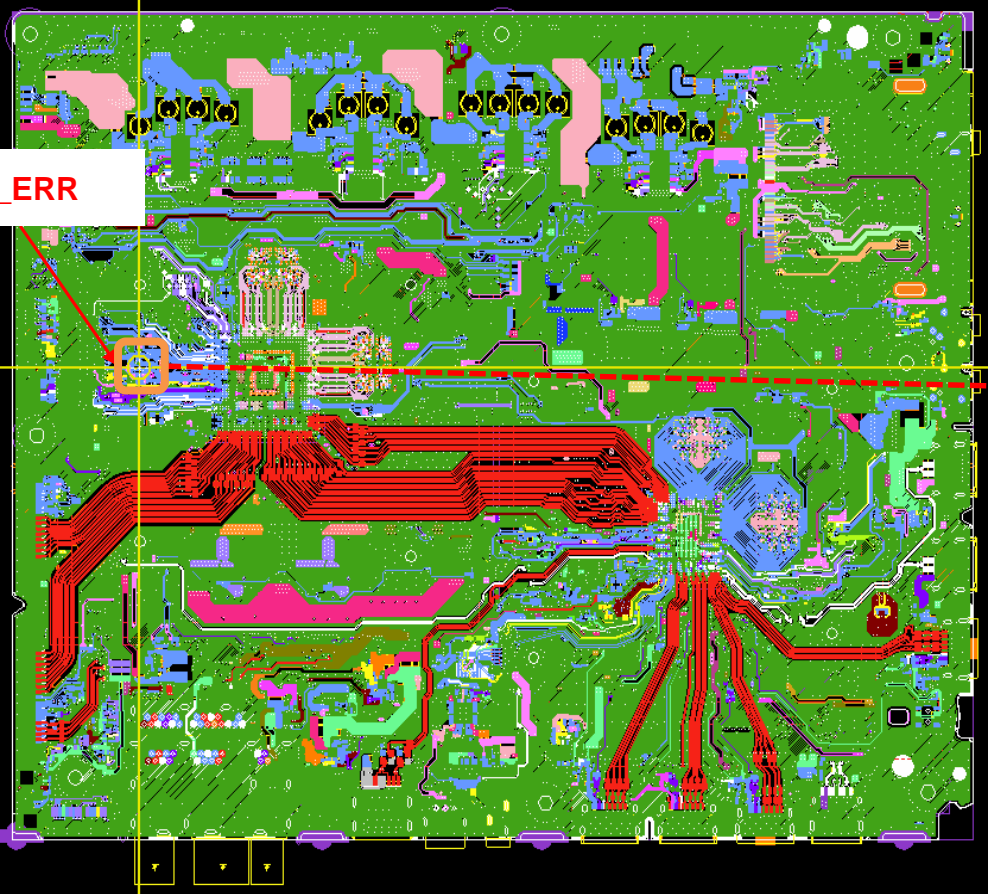
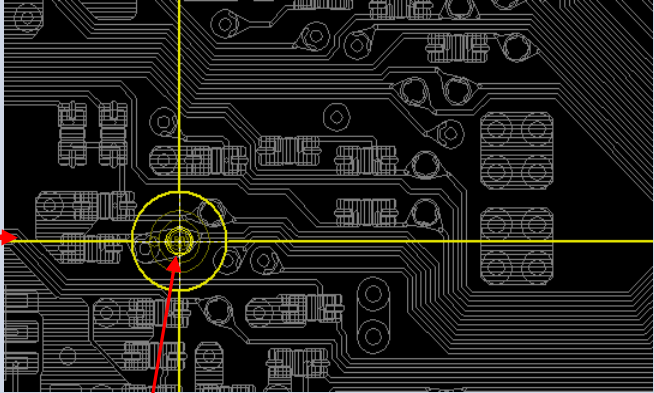
TROUBLESHOOTING

2.6 6x LED Blinking : Backlight Error



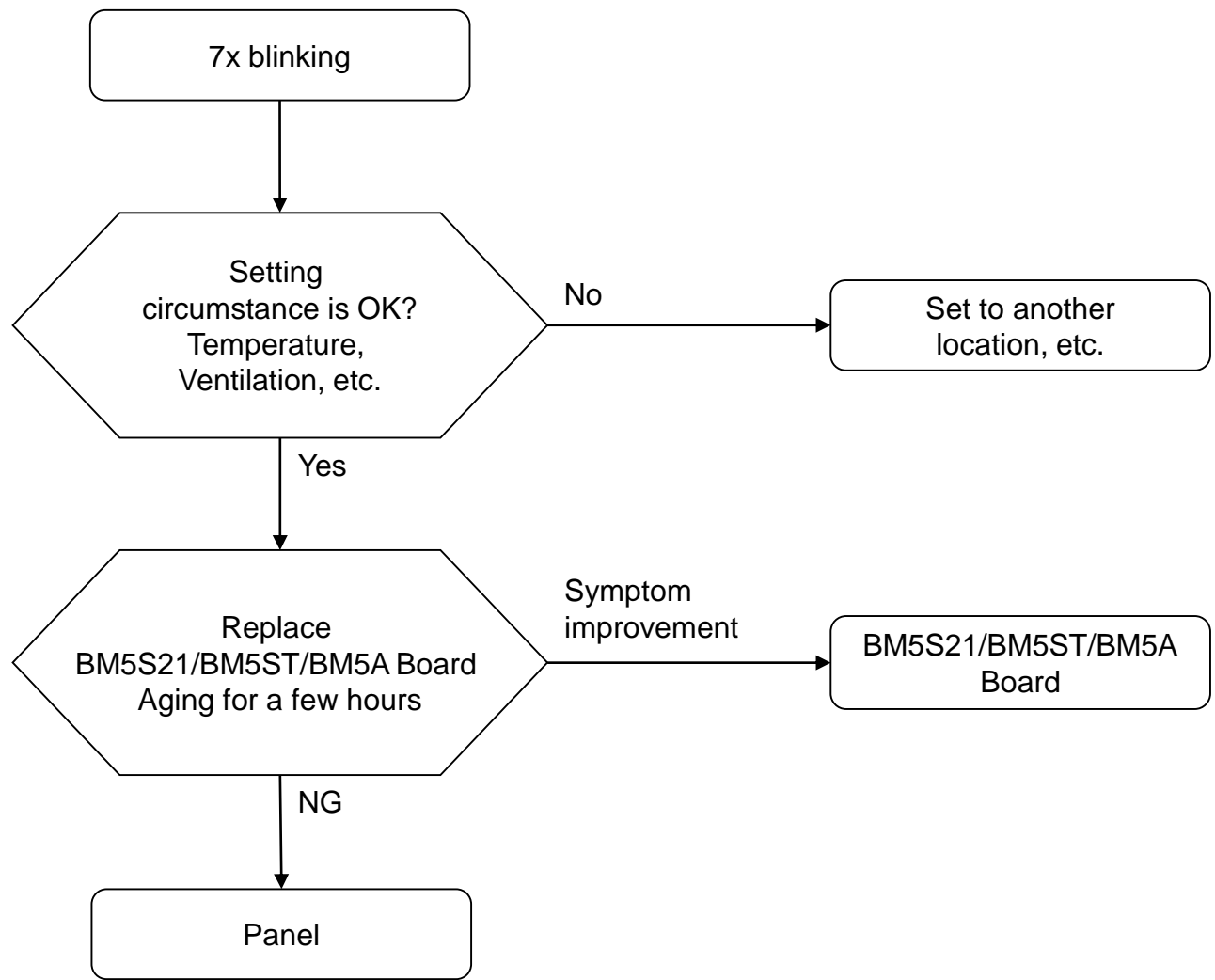
TROUBLESHOOTING

2.6 6x LED Blinking : Backlight Error

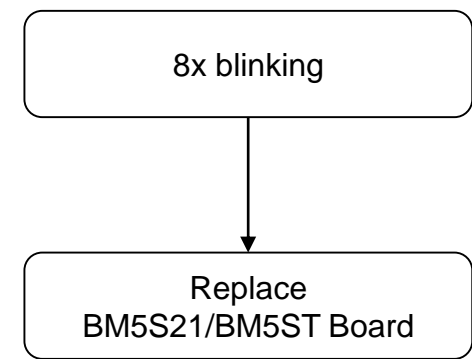
Name	Board PWB (A side)	Detail
BM5S21	 <p>BL_ERR</p>	 <p>CL5207</p>

TROUBLESHOOTING

2.7 7x LED Blinking : Temperature Error

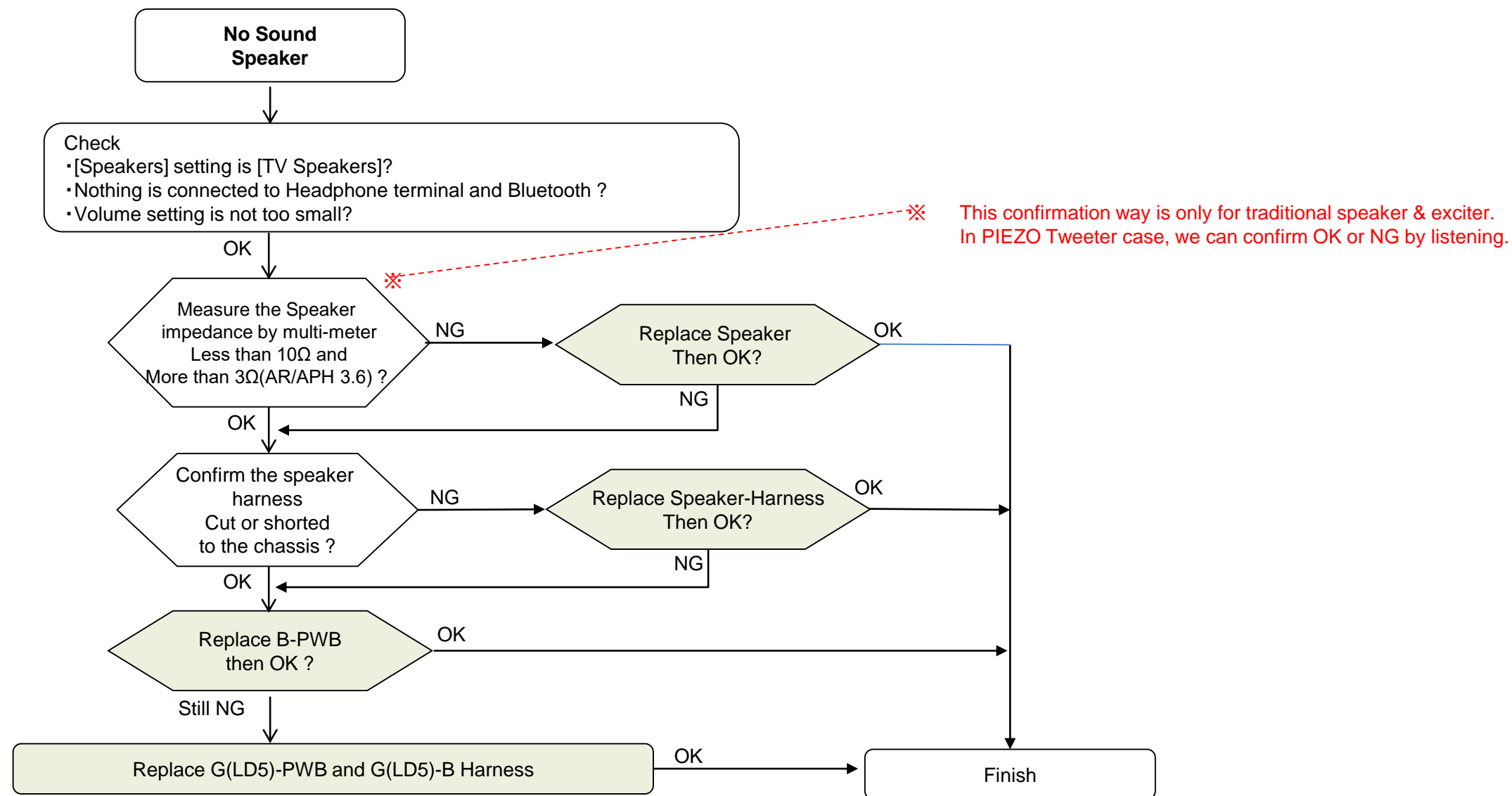


2.8 8x LED Blinking : 4KBE Error



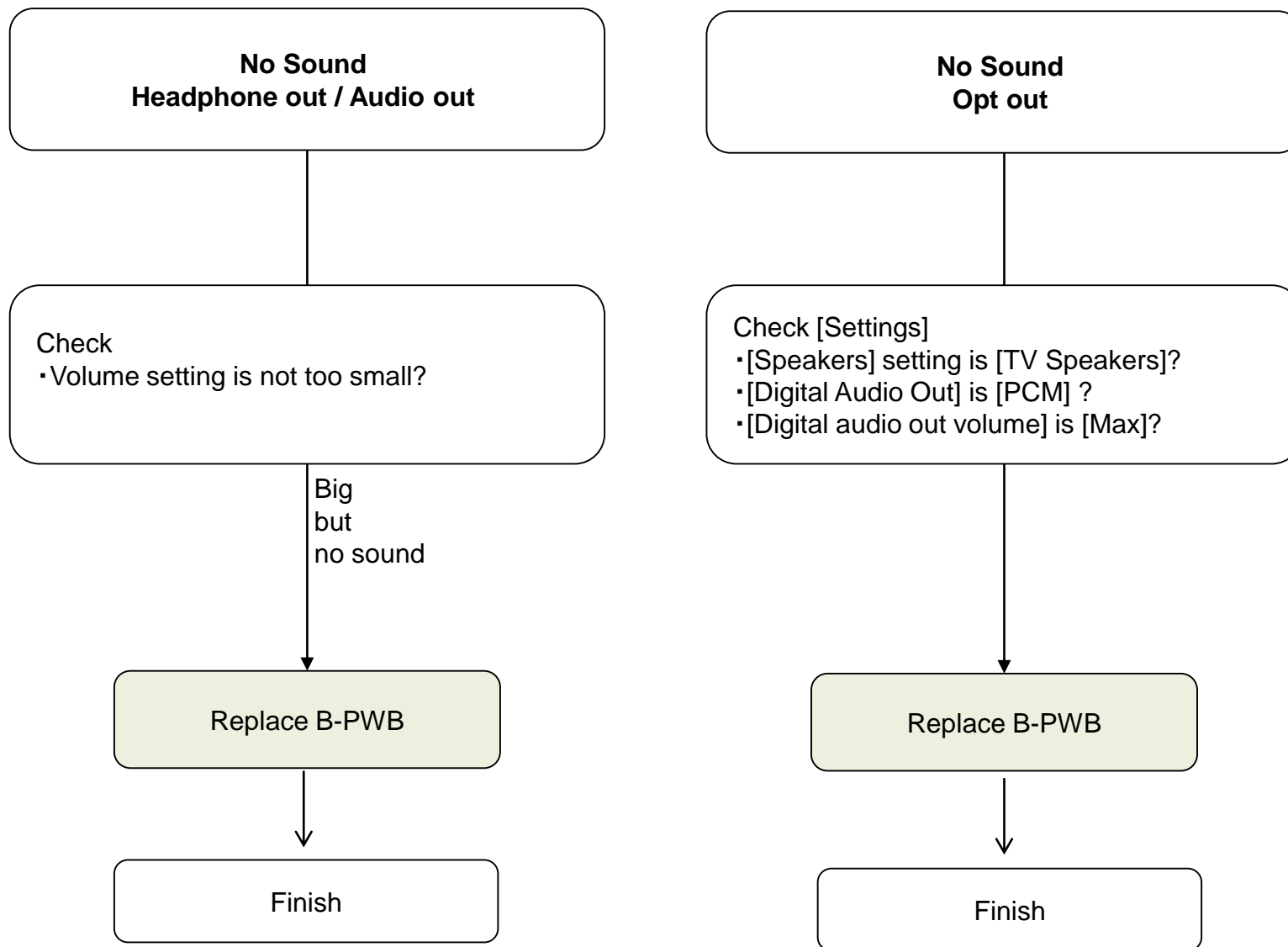
TROUBLESHOOTING

3.1 No Sound - Speaker



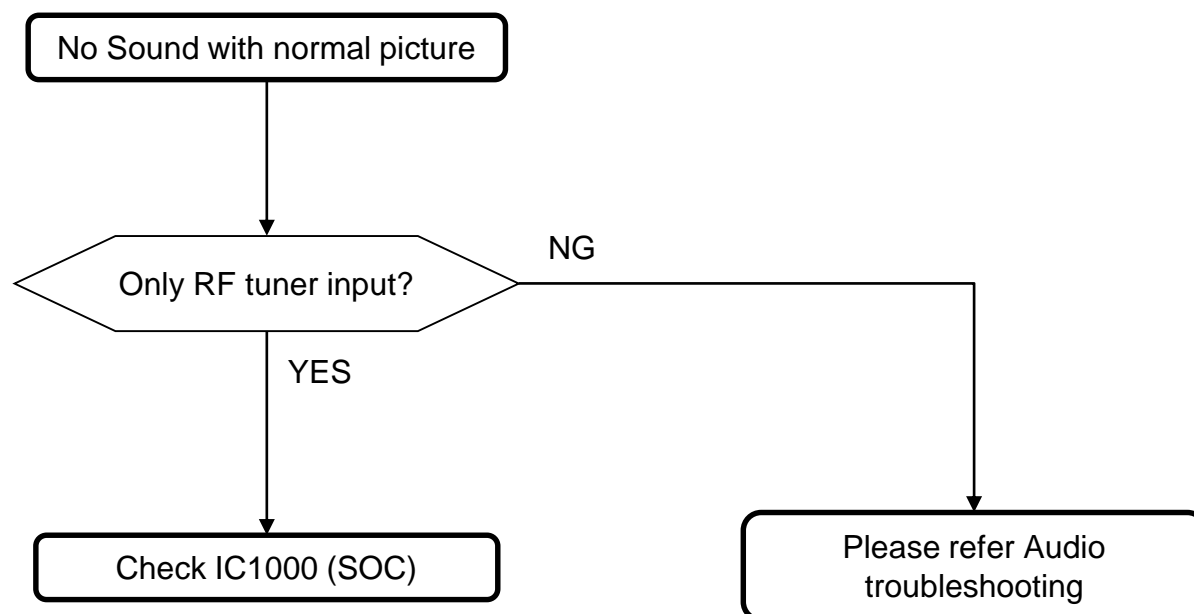
TROUBLESHOOTING

3.2 No Sound – Headphone Out / Audio Out / Opt Out



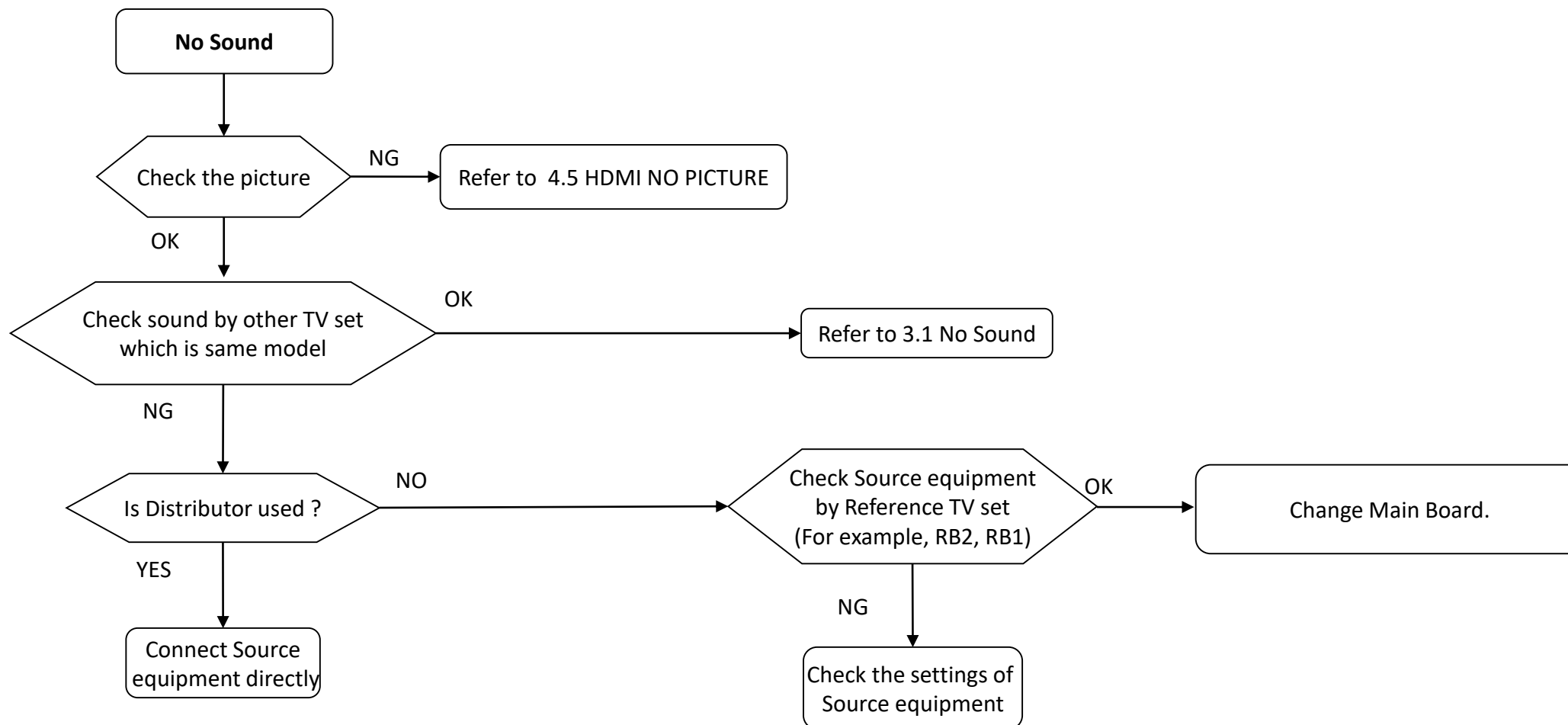
TROUBLESHOOTING

3.7 No Sound – Tuner



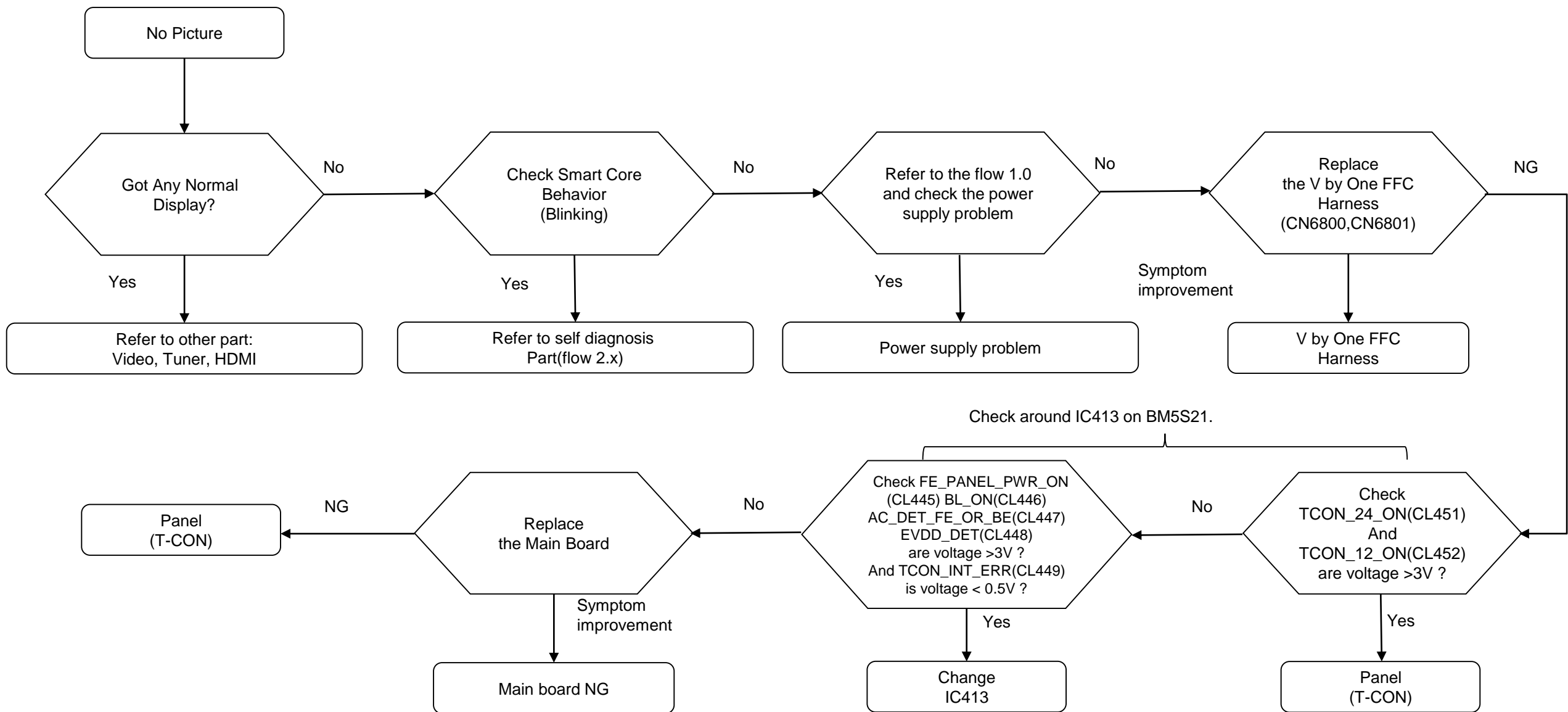
TROUBLESHOOTING

3.8 No Sound – HDMI 1/2/3/4



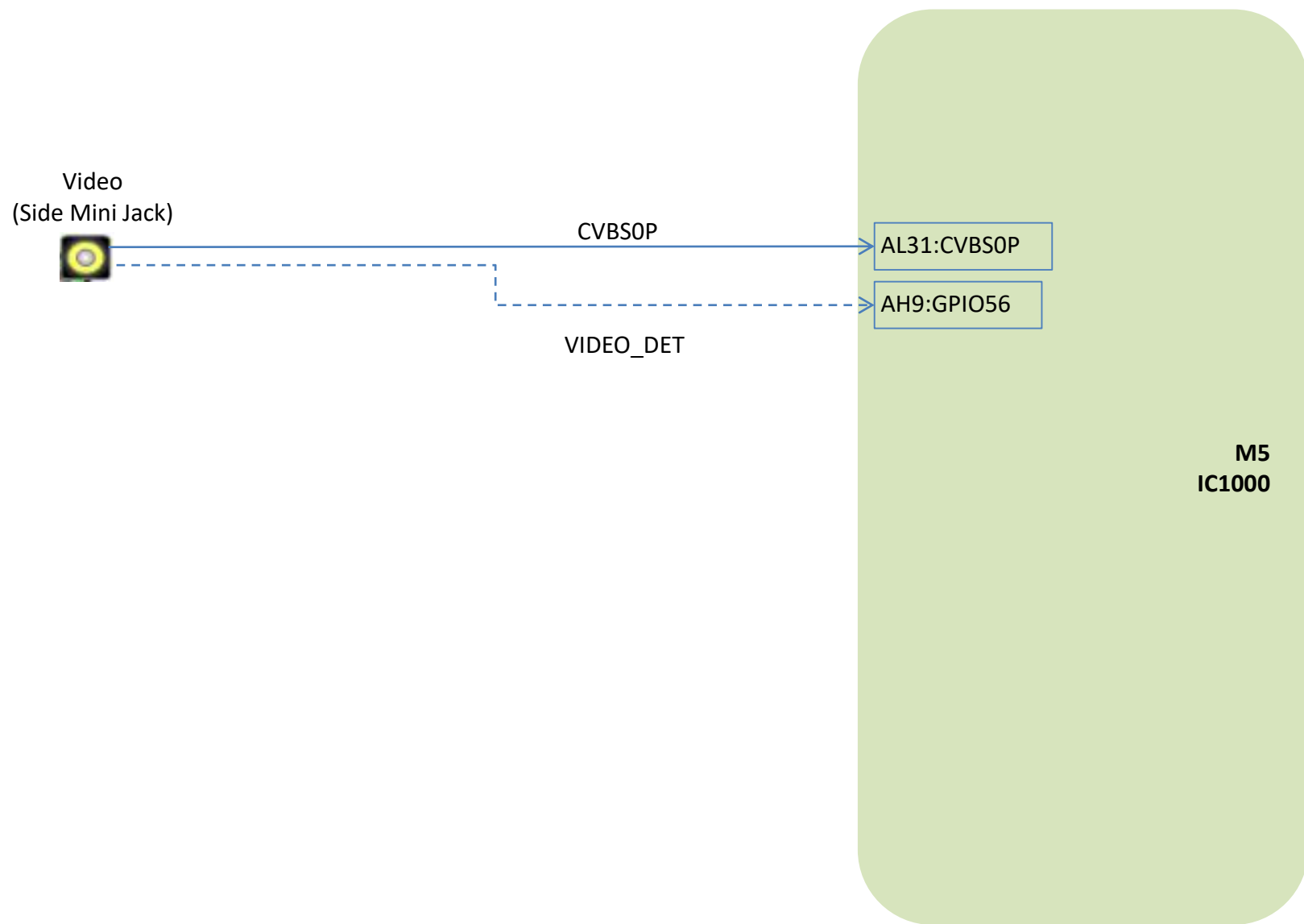
TROUBLESHOOTING

4.0 No Picture



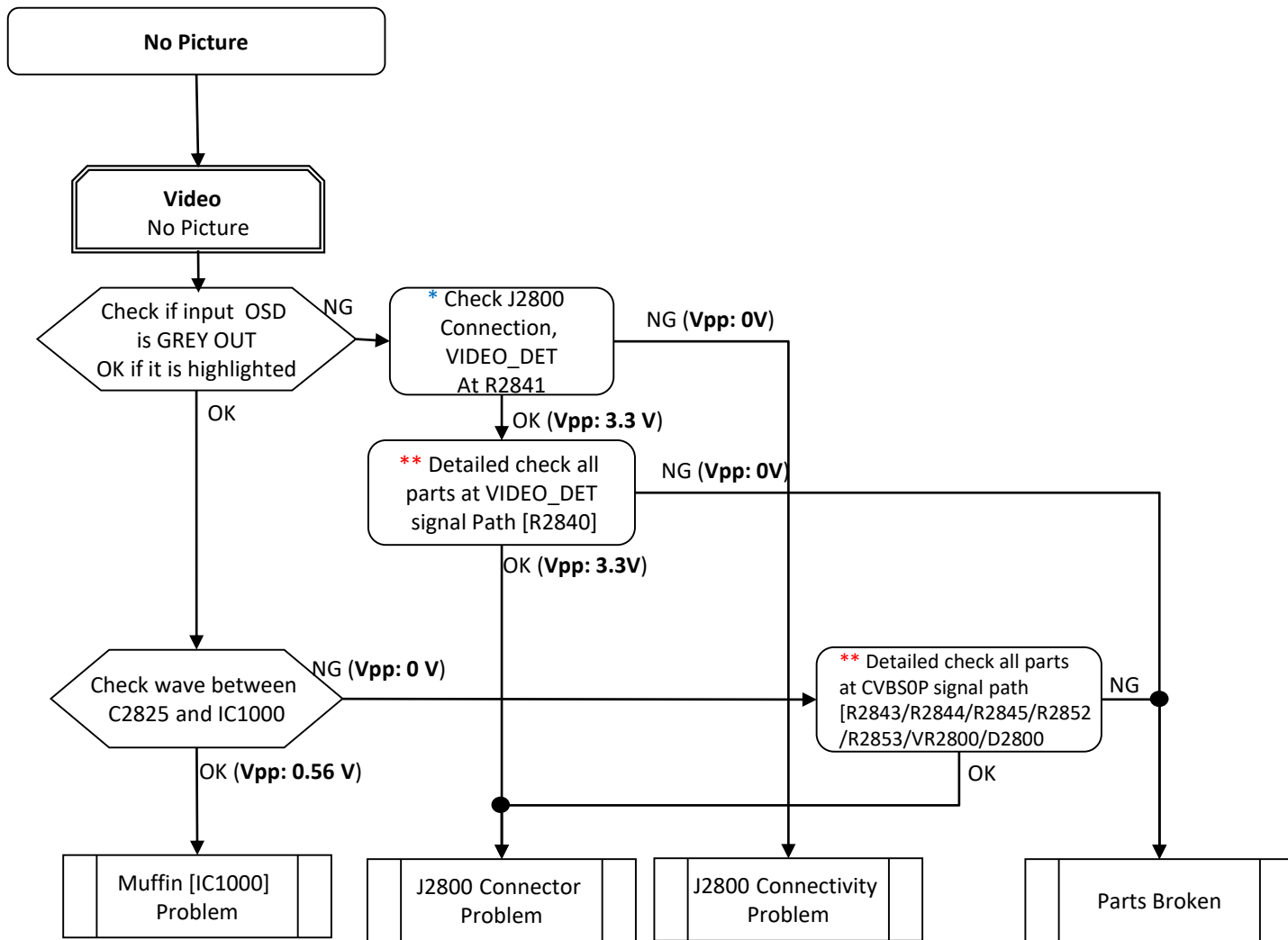
TROUBLESHOOTING

4.1 Video Analog Signal Path



TROUBLESHOOTING

4.2 No Picture



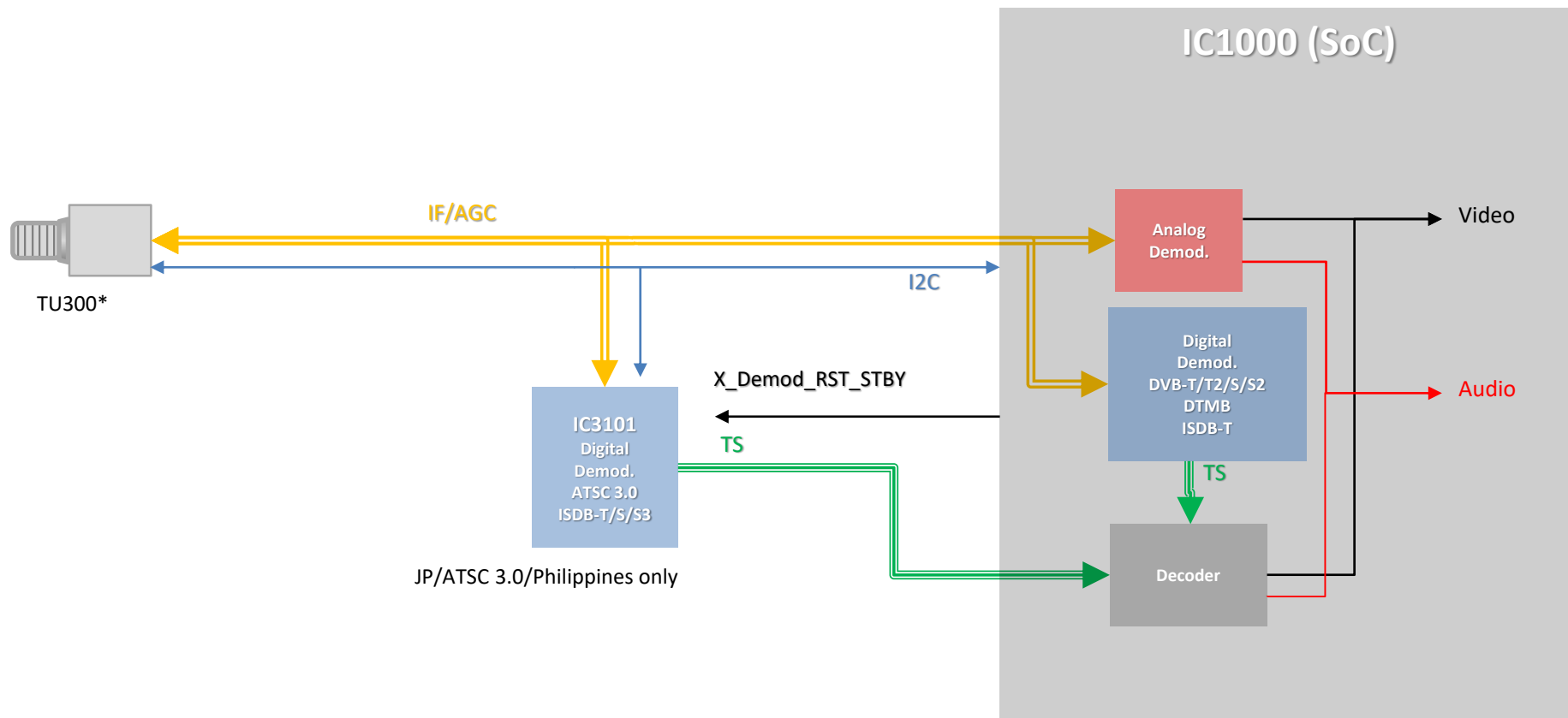
* → OK Condition : No solder splash can be seen
→ NG Condition : Solder splash can be seen

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

Condition	Actions to be taken
Muffin [IC1000] Problem	Refer to IC troubleshooting for further investigation
J2800 Connector Problem	Change Connector
J2800 Connectivity Problem	
Parts Broken	Change Part

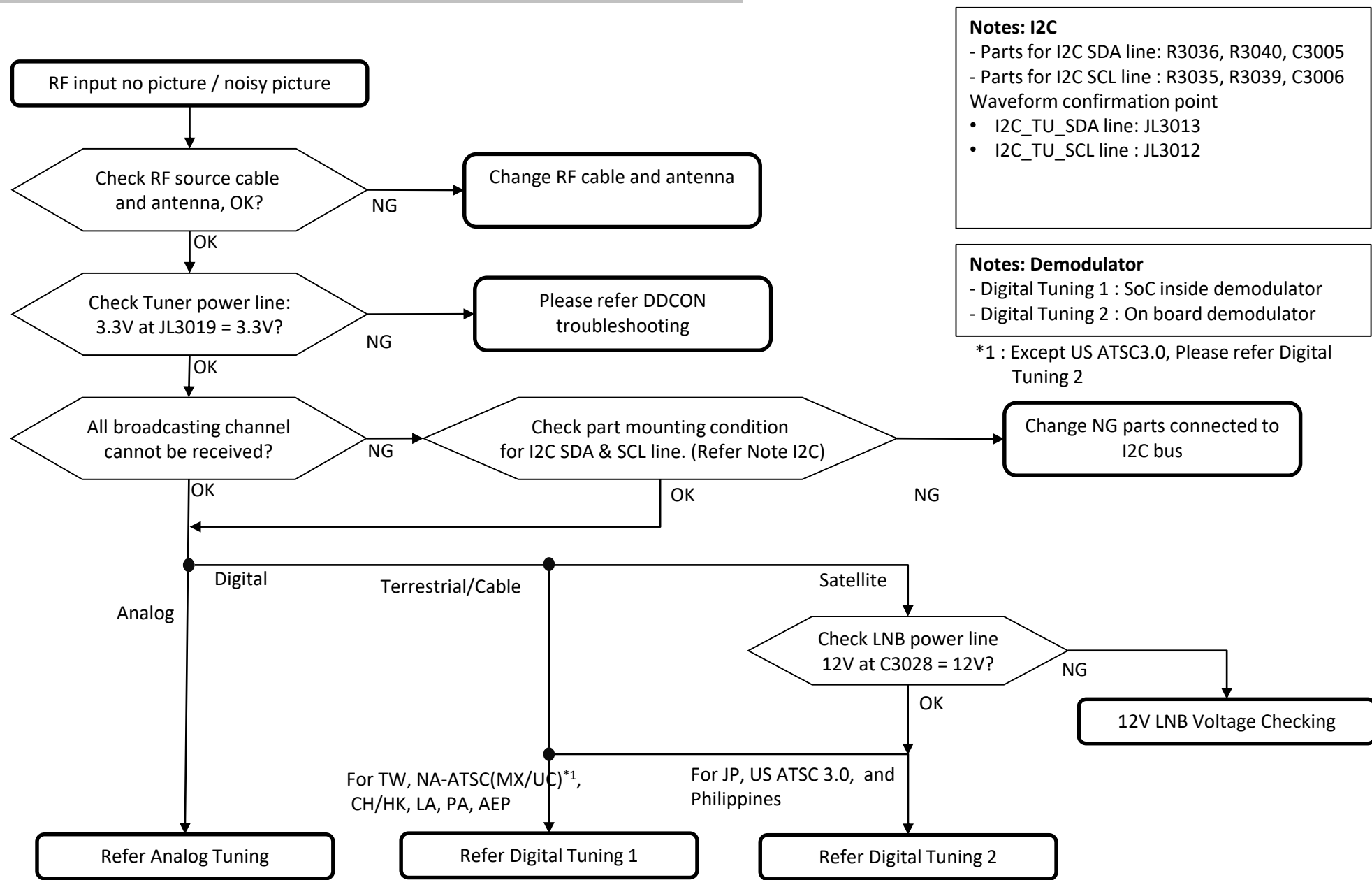
TROUBLESHOOTING

4.4 No Picture - Tuner



TROUBLESHOOTING

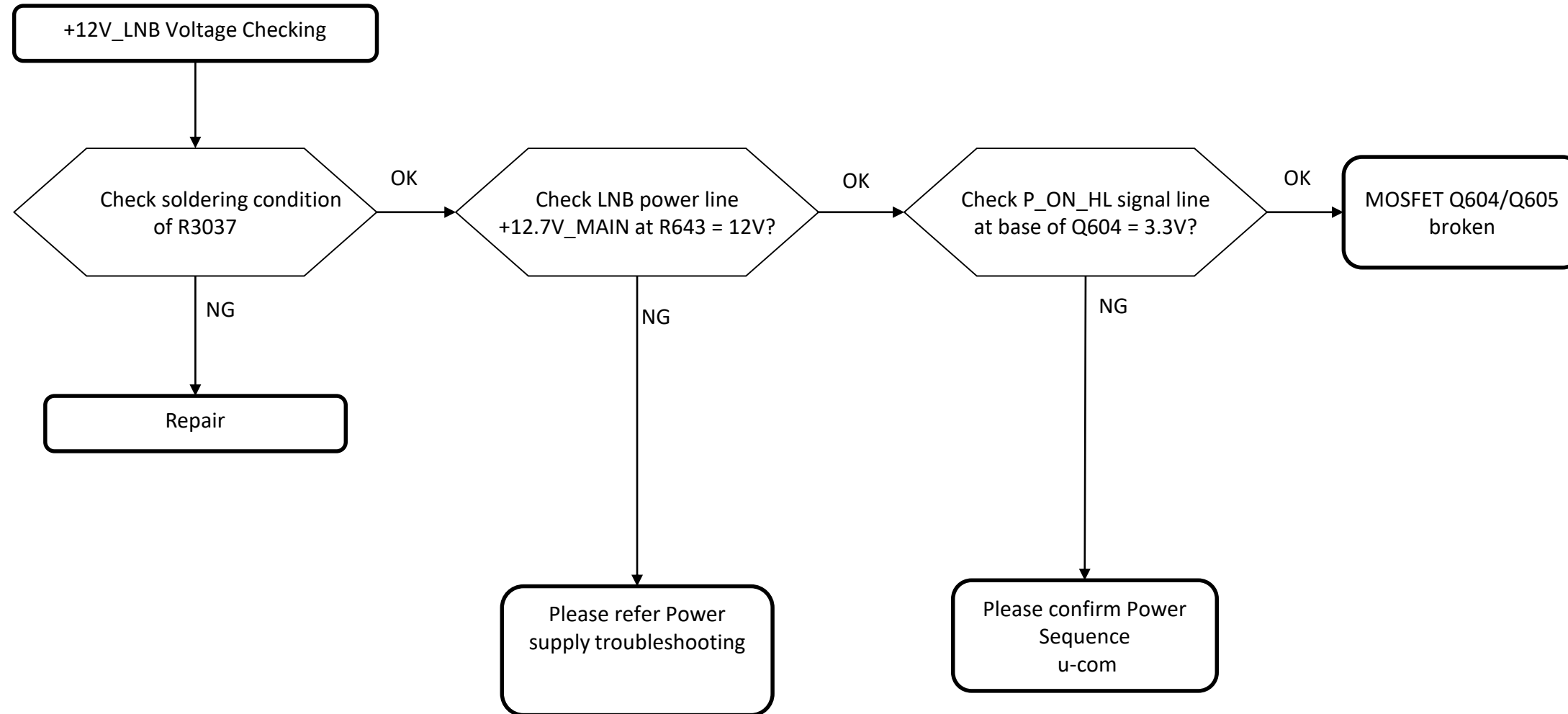
4.4 No Picture - Tuner



TROUBLESHOOTING

4.4 No Picture - Tuner

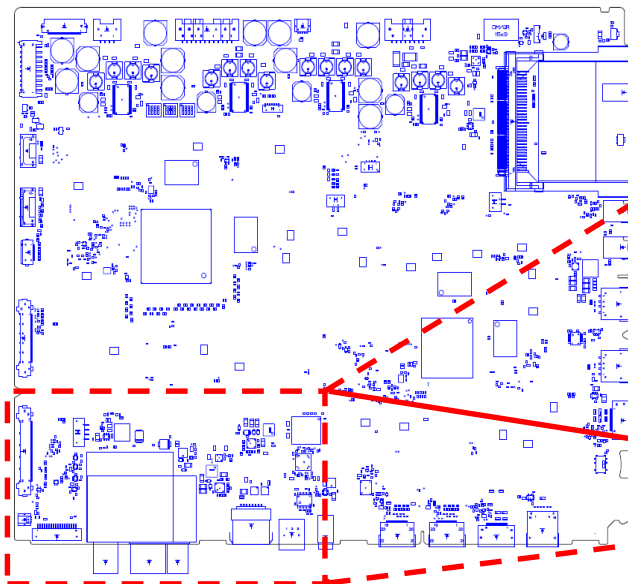
FOR 12V LNB Voltage Checking: @ AEP and JP



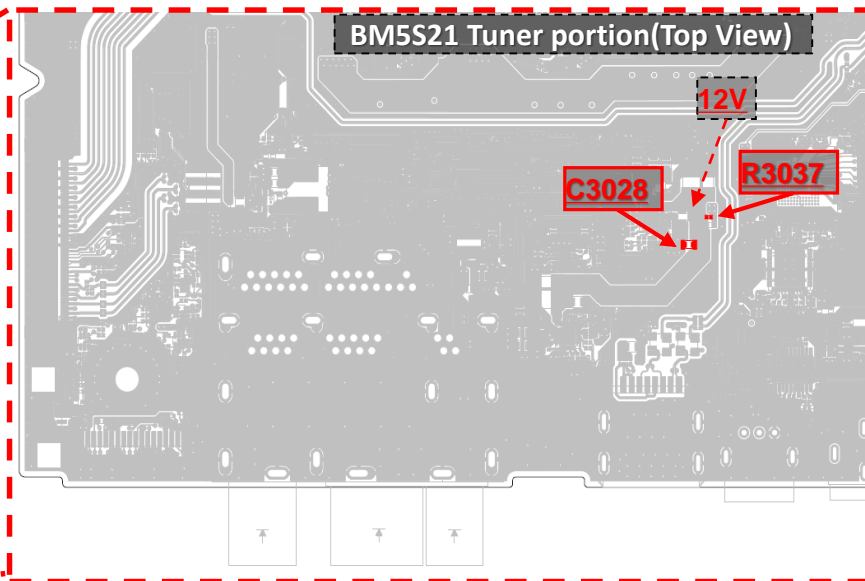
TROUBLESHOOTING

4.4 No Picture - Tuner

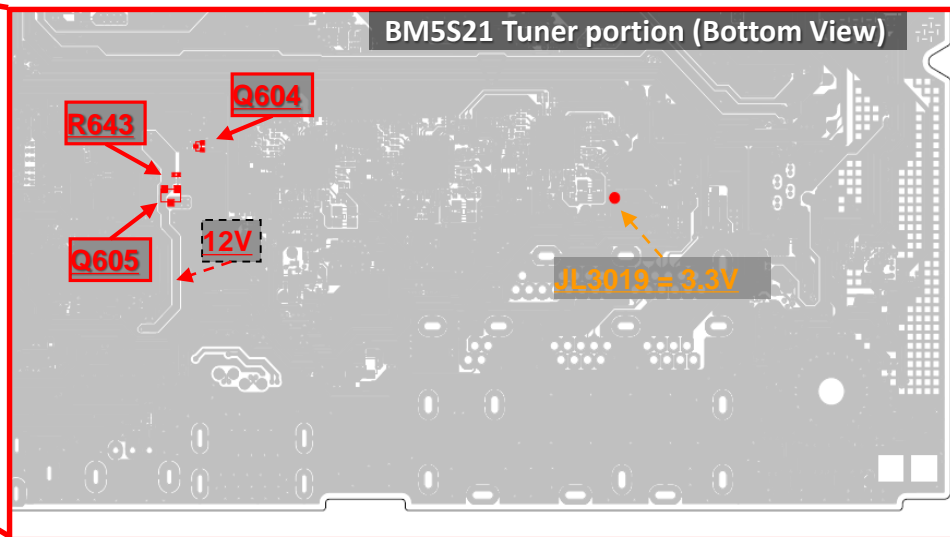
BM5S21 (Top View)



BM5S21 Tuner portion (Top View)



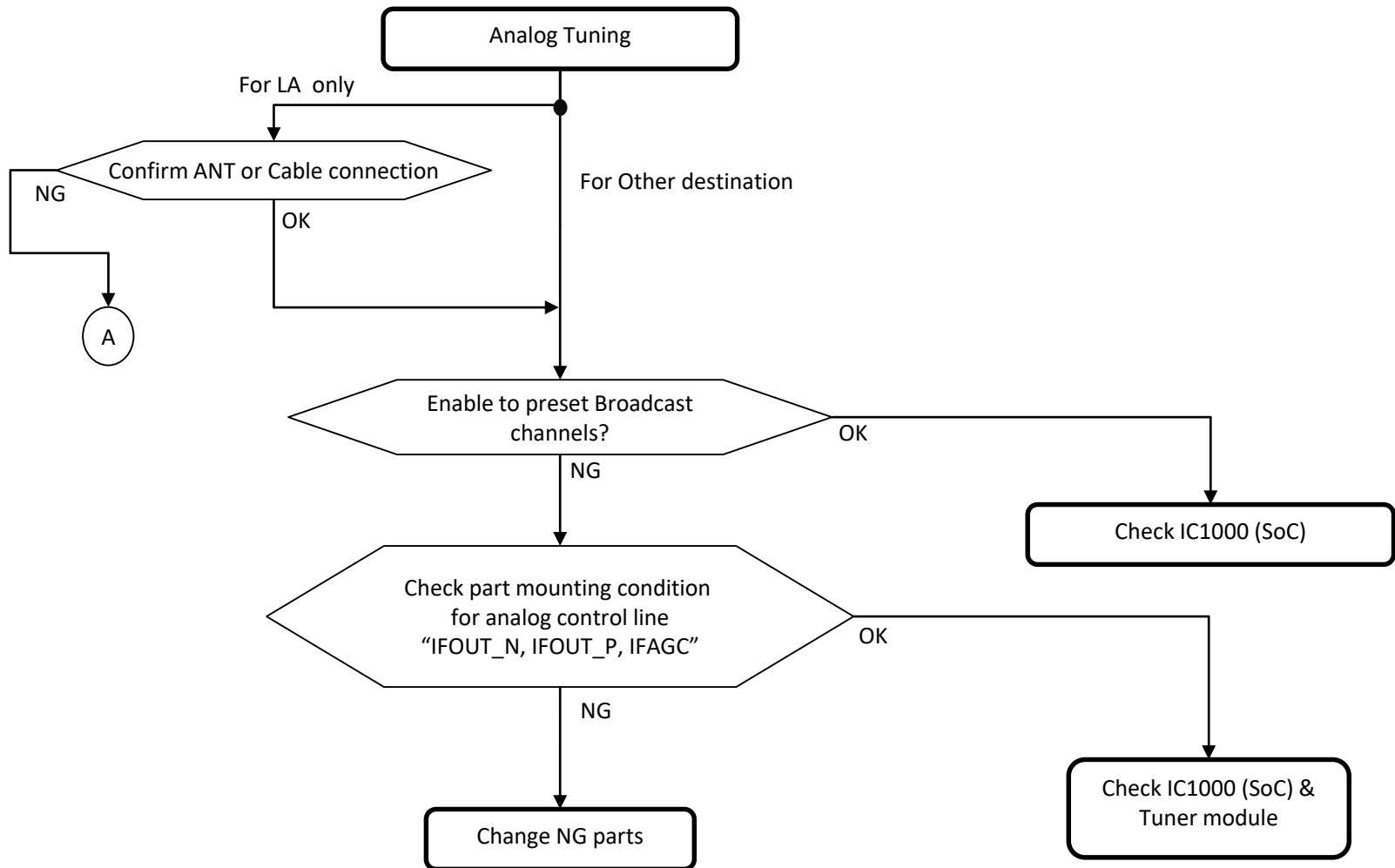
BM5S21 Tuner portion (Bottom View)



TROUBLESHOOTING

4.4 No Picture - Tuner

FOR ANALOG TUNING: @ All destination except JP



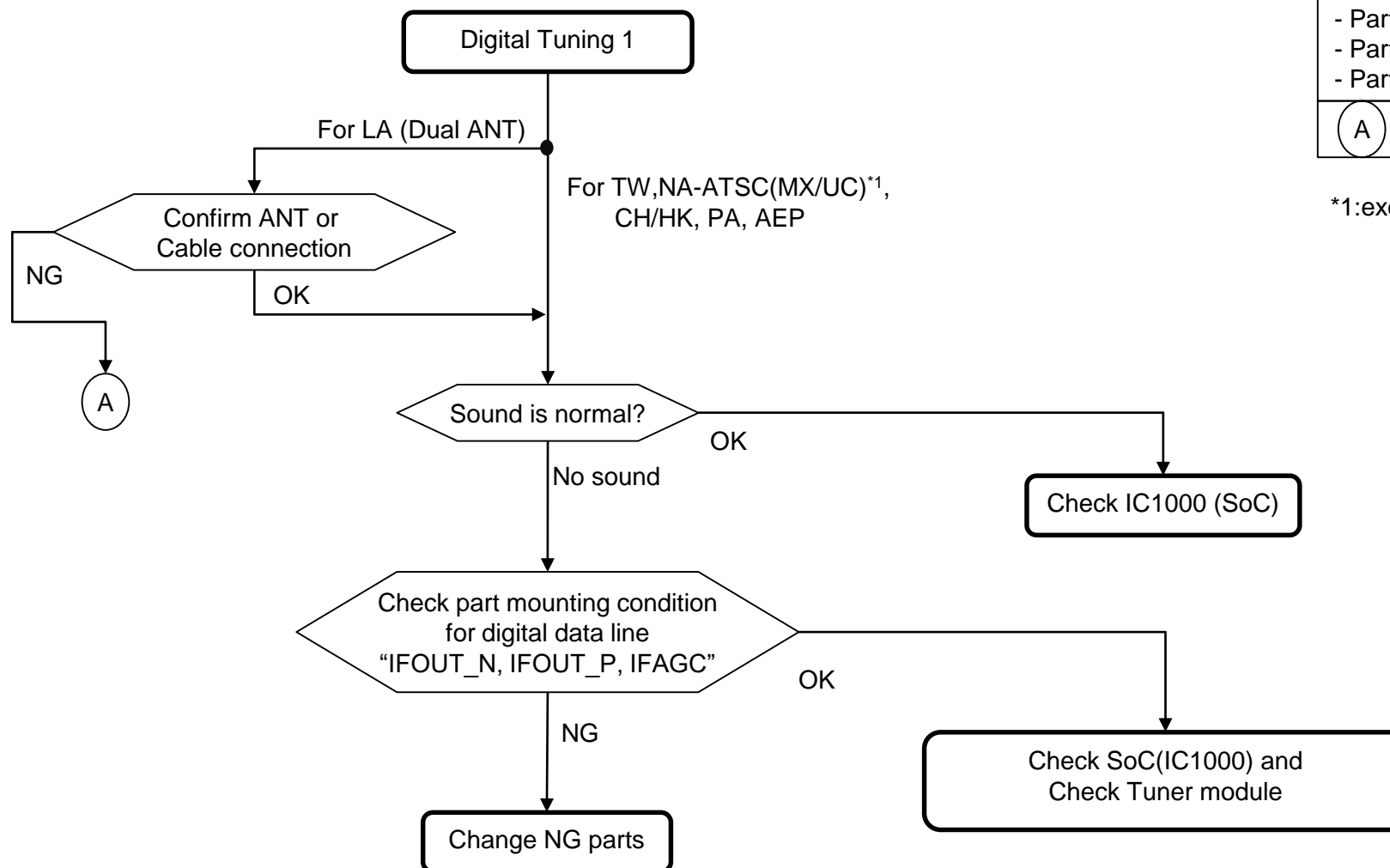
Notes:
 - Parts for IFOUT_N line : C3011
 - Parts for IFOUT_P line : C3010
 - Parts for IFAGC line : R3003 ,R3024, C3023

(A) : Insert correct signal in correct ANT terminal.

TROUBLESHOOTING

4.4 No Picture - Tuner

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



Notes:

- Parts for IFOUT_N line : C3011
- Parts for IFOUT_P line : C3010
- Parts for IFAGC line : R3003 ,R3024, C3023

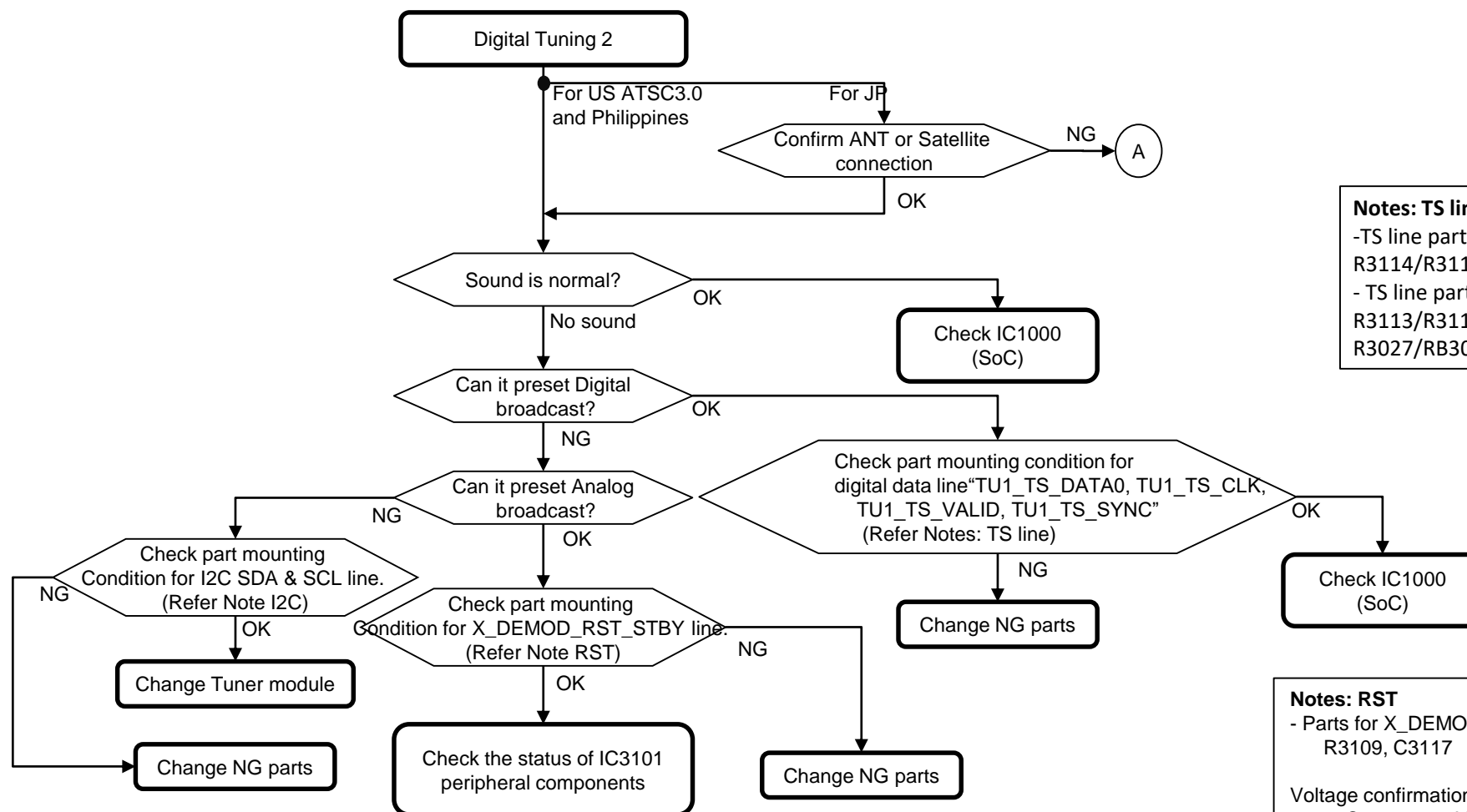
(A) : Insert correct signal in correct ANT terminal.

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

TROUBLESHOOTING

4.4 No Picture - Tuner

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


Notes: I2C

- Parts for I2C SDA line: R3036, R3040, C3005
- Parts for I2C SCL line : R3035, R3039, 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 R3114/R3116/R3117/R3120/R3121/R3122/R3123/RB301
- TS line parts for JP : R3113/R3114/R3116/R3117/R3120/R3121/R3122/R3123/R3027/RB3001

(A) : Insert correct signal in correct ANT terminal.

Notes: RST

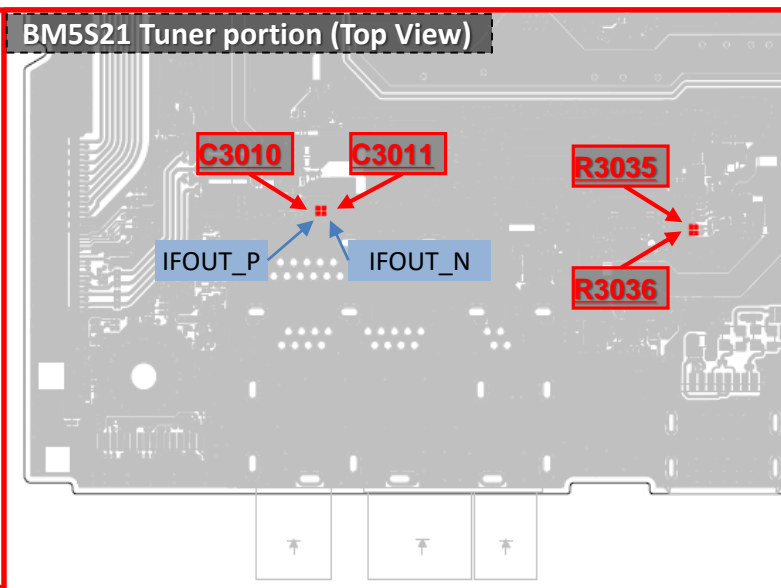
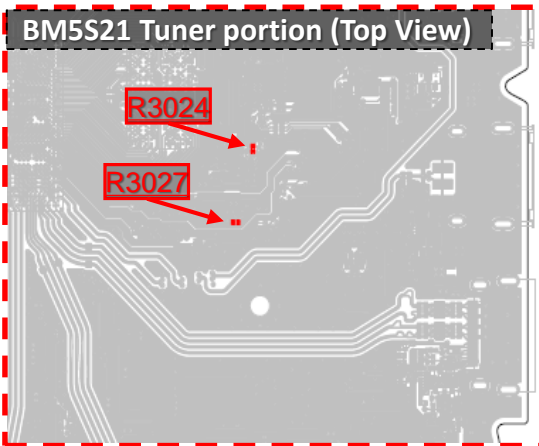
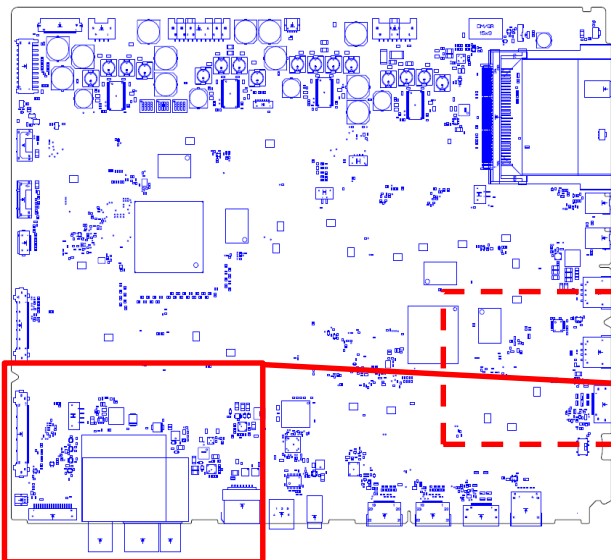
- Parts for X_DEMOD_RST line: R3109, C3117

Voltage confirmation point
C3117 = 3.3V

TROUBLESHOOTING

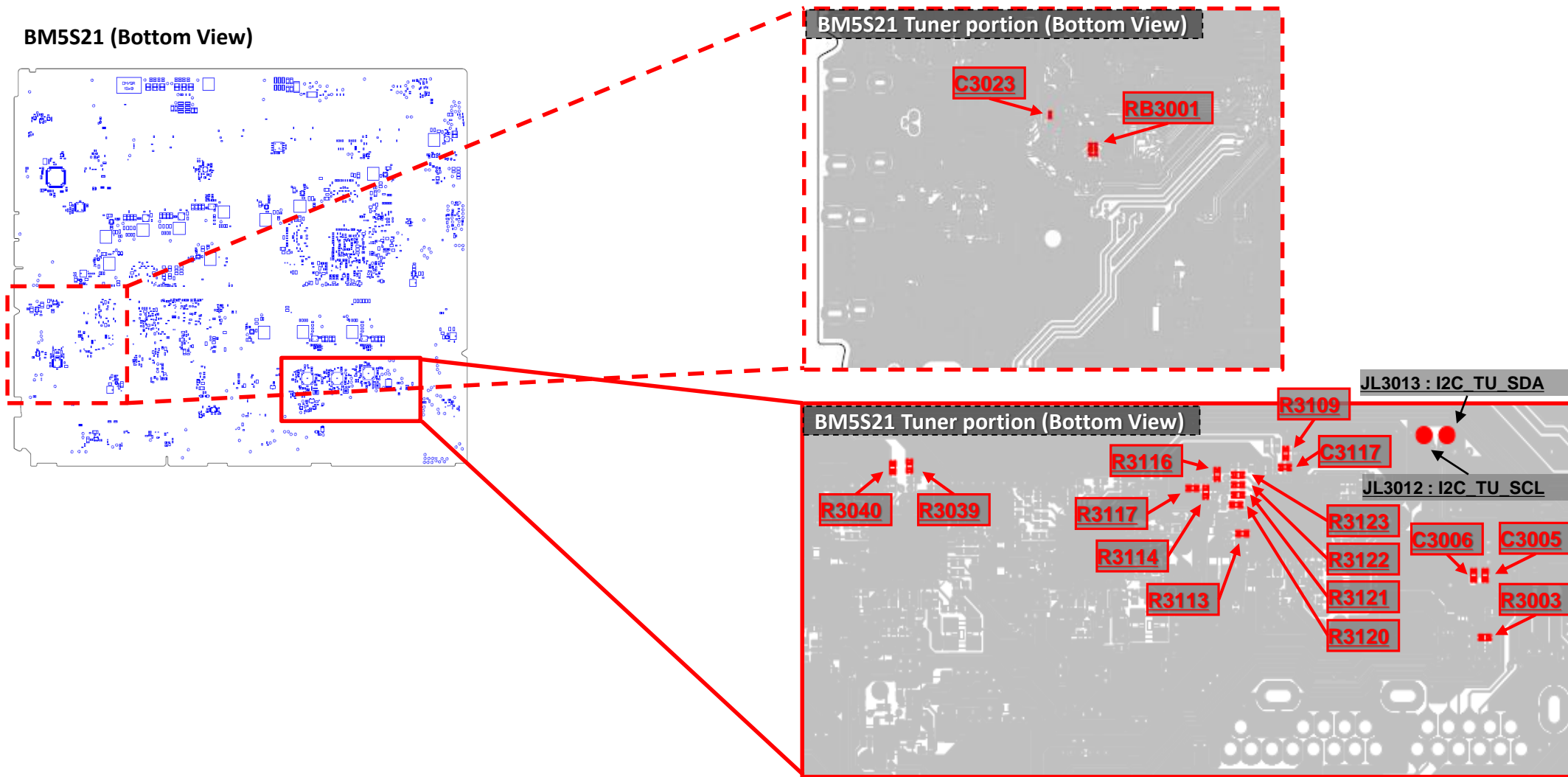
4.4 No Picture - Tuner

BM5S21 (Top View)



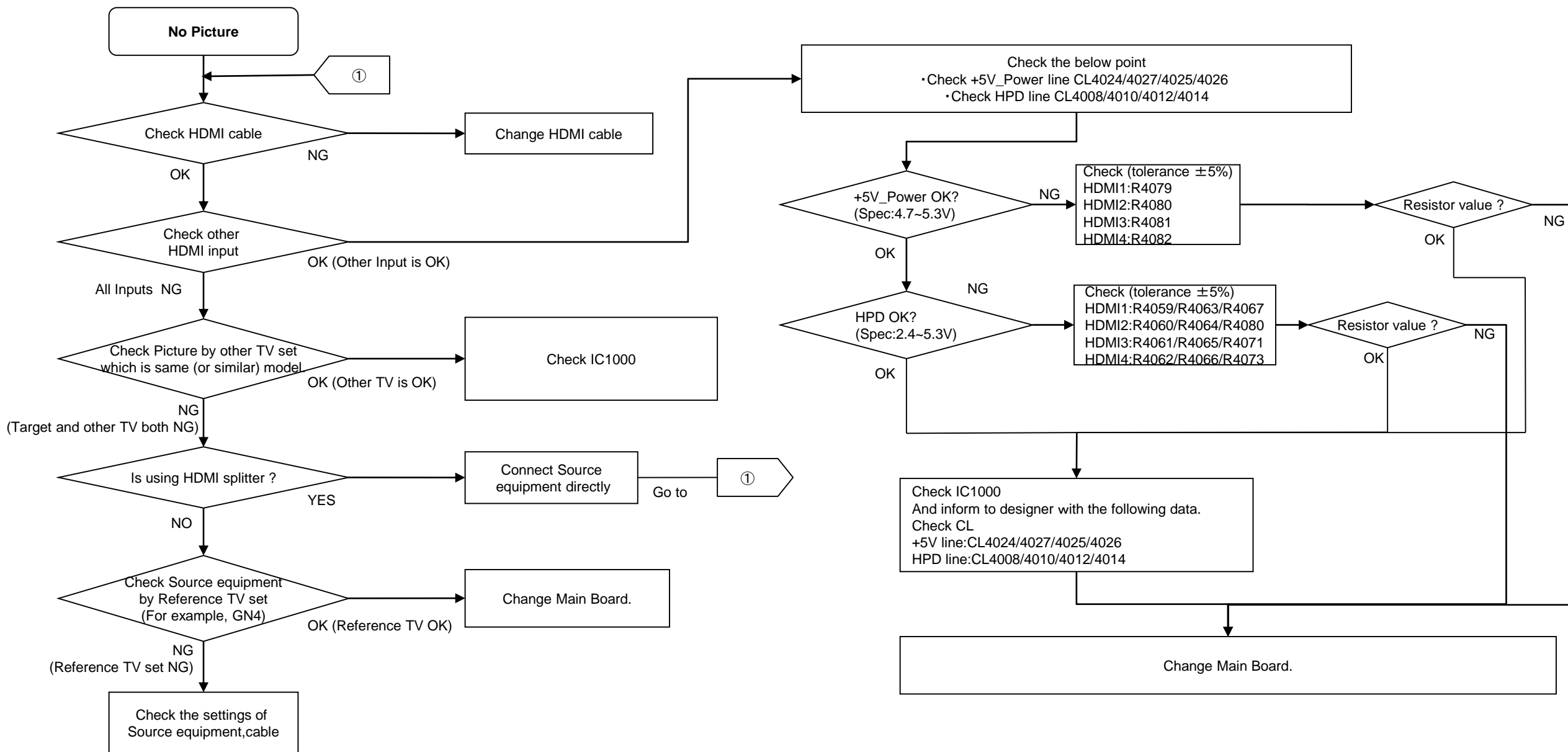
TROUBLESHOOTING

4.4 No Picture - Tuner



TROUBLESHOOTING

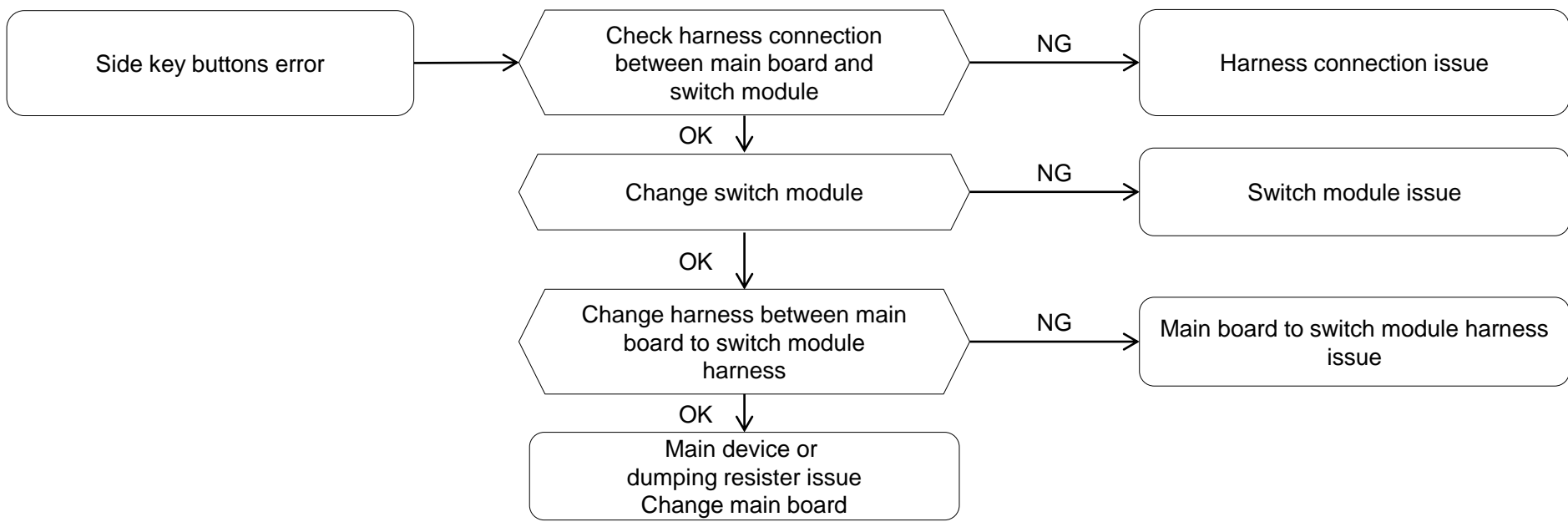
4.5 No Picture – HDMI 1/2/3/4



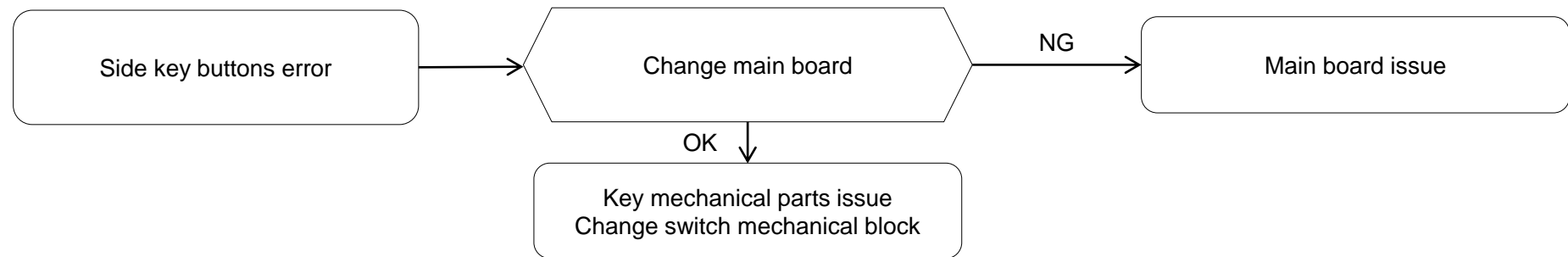
TROUBLESHOOTING

5.0 Key Switch Buttons Errors

1. Switch module type

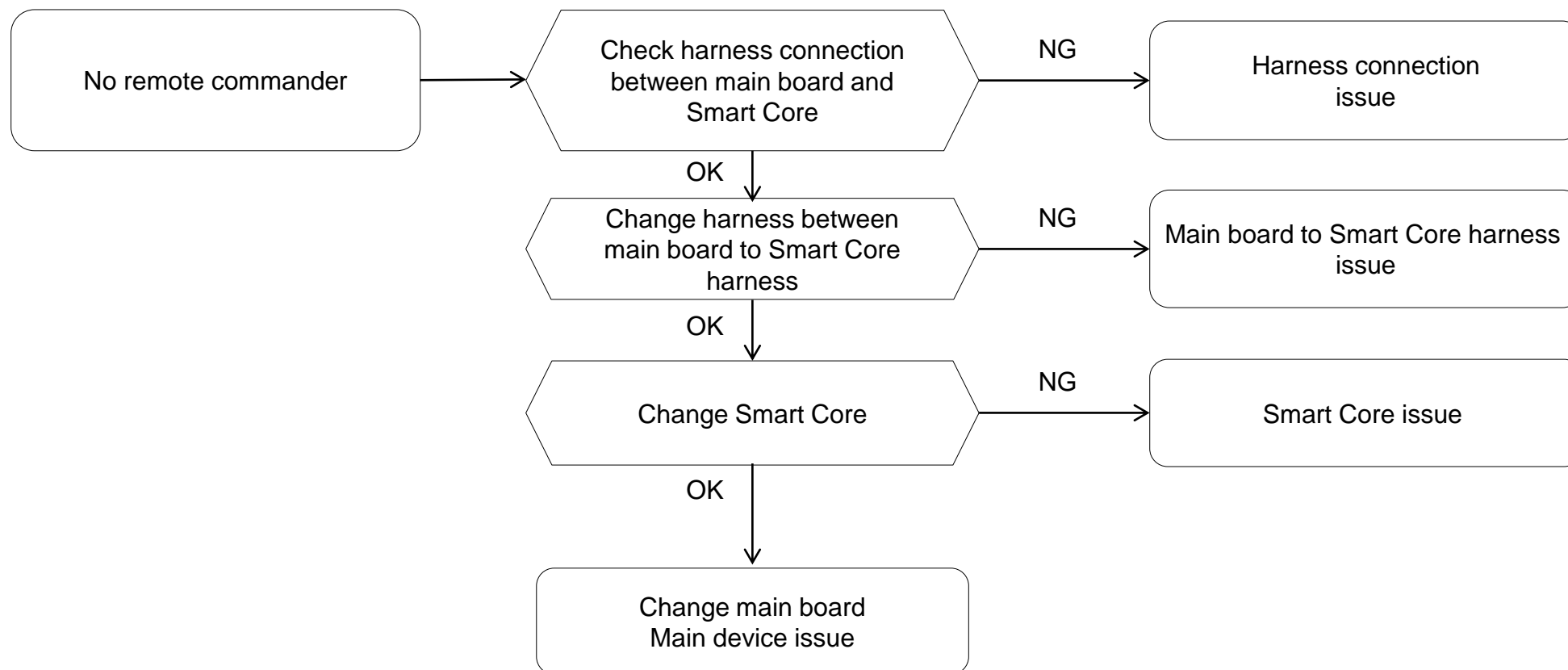


2. On board Switch type



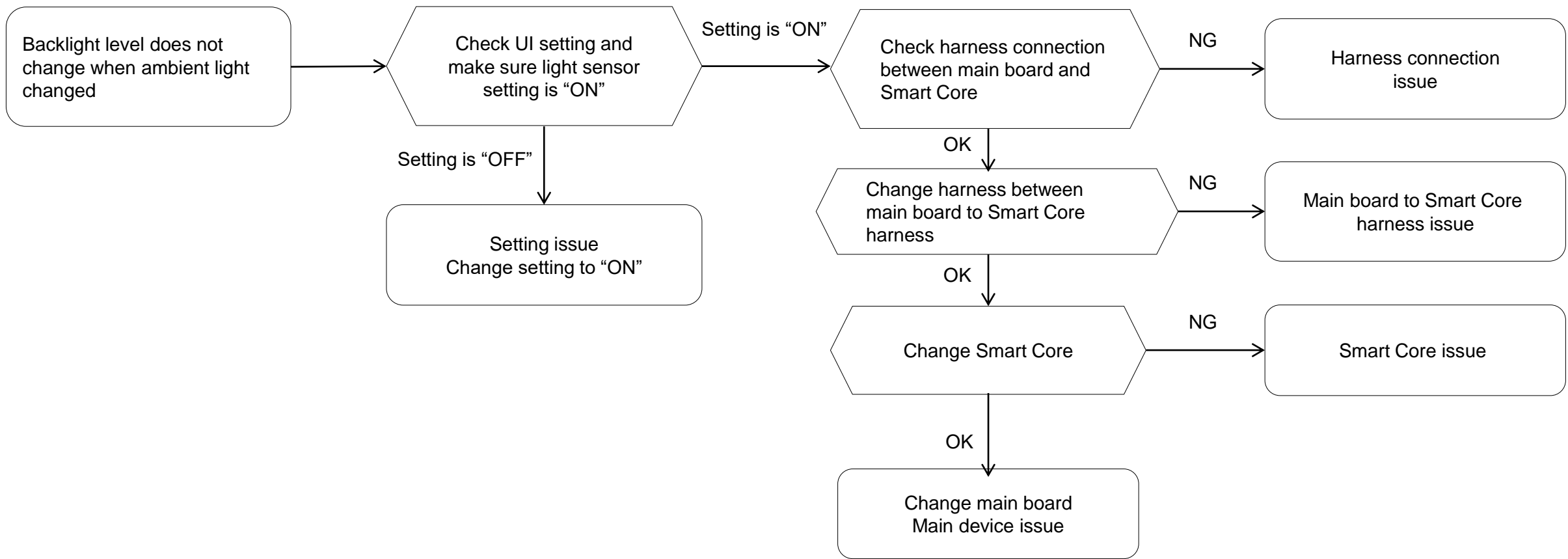
TROUBLESHOOTING

5.1 IR Remote Commander Errors



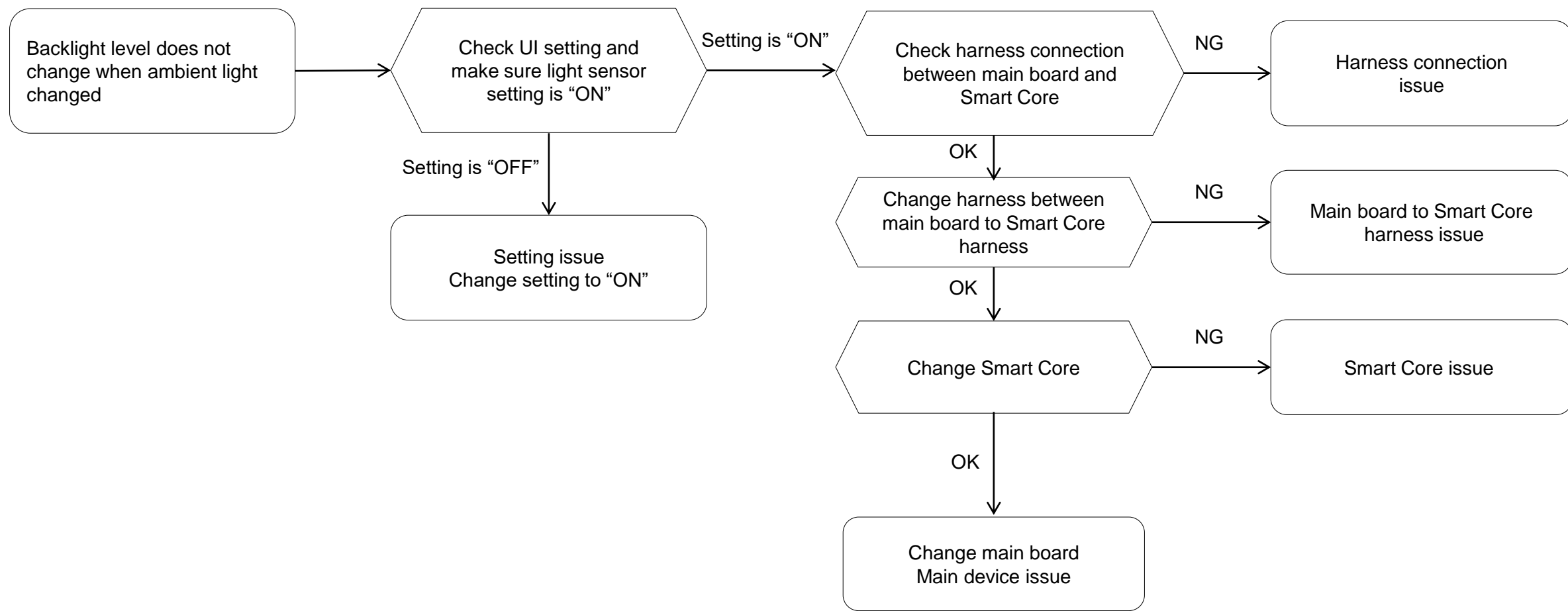
TROUBLESHOOTING

5.2 Light Sensor Errors



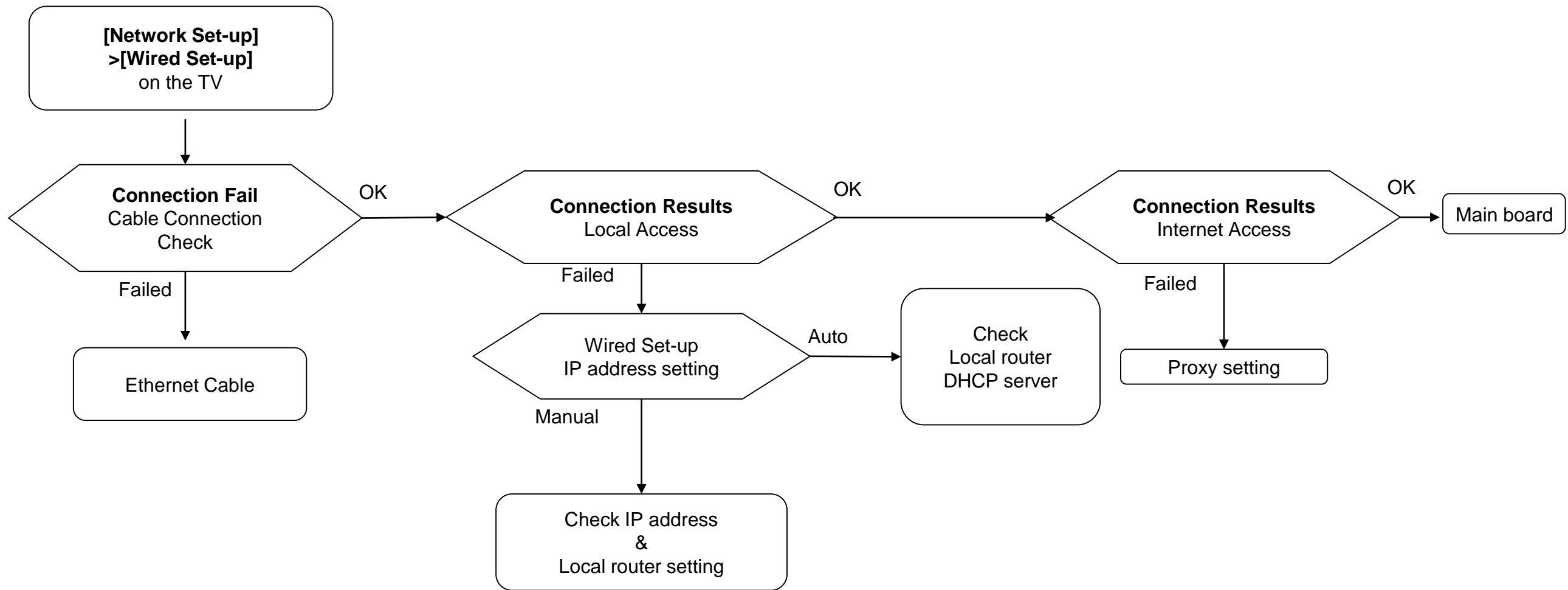
TROUBLESHOOTING

5.3 CAS ID Unknown



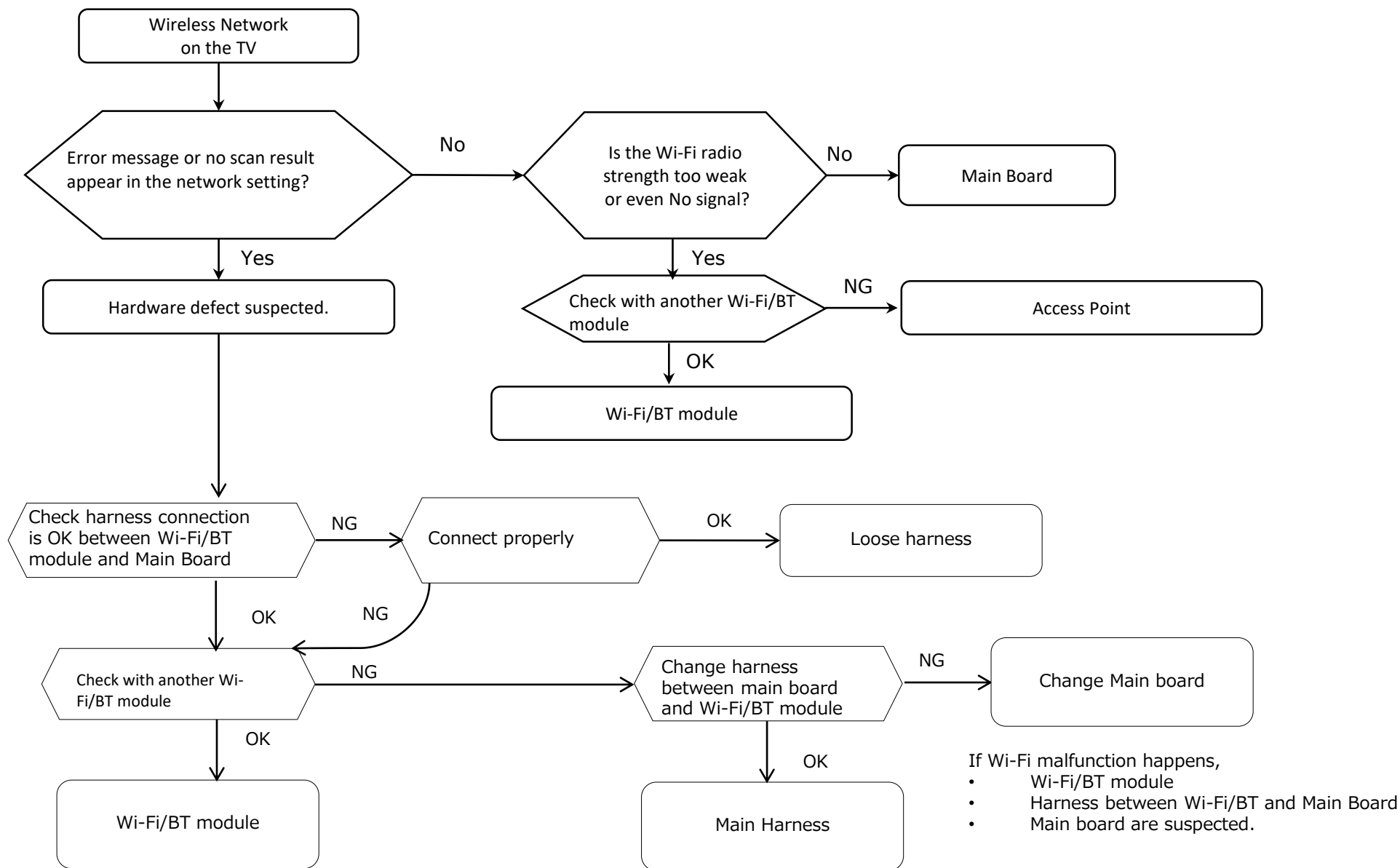
TROUBLESHOOTING

6.0 Network Malfunction : Ethernet Wired



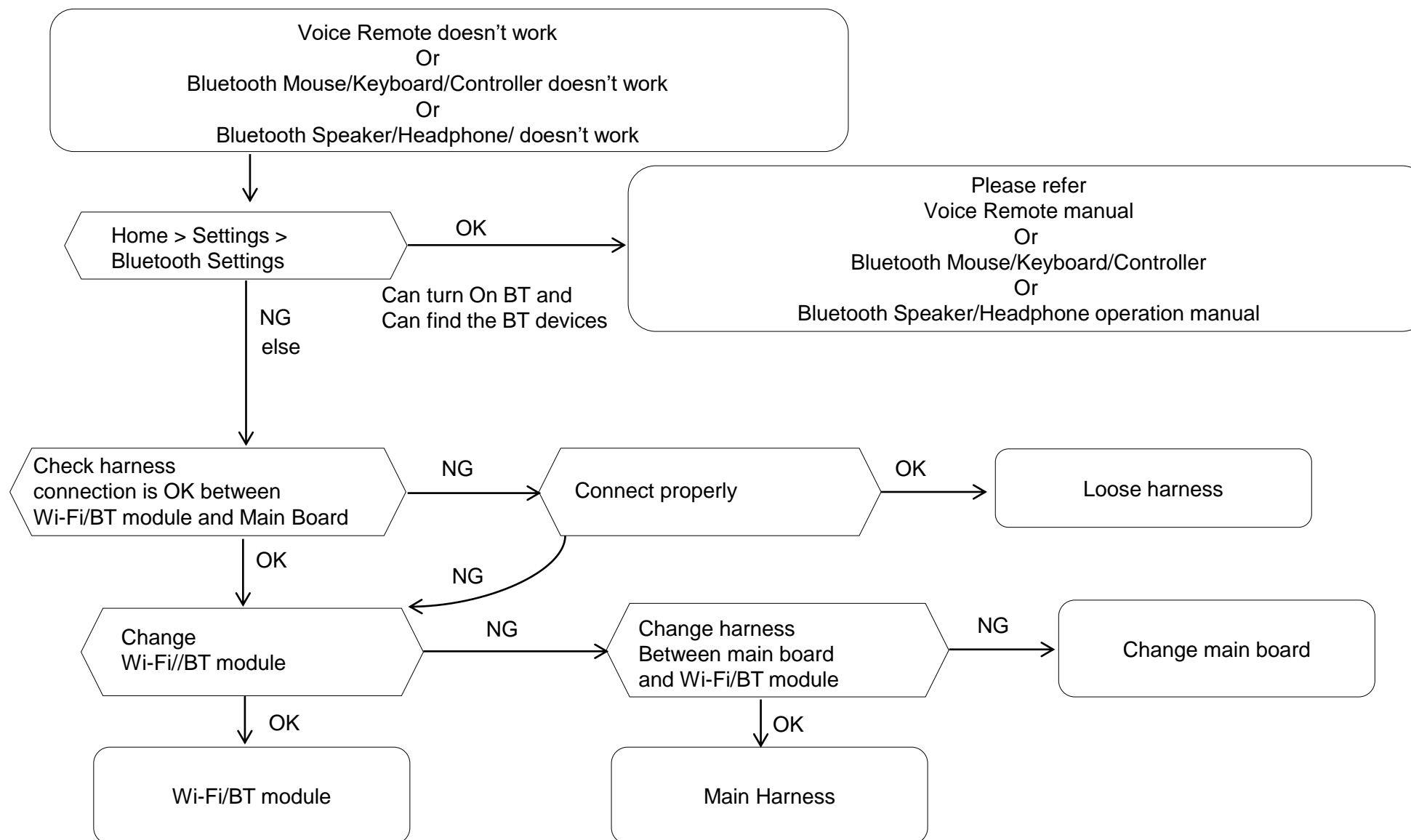
TROUBLESHOOTING

6.1 Wireless Network Malfunction



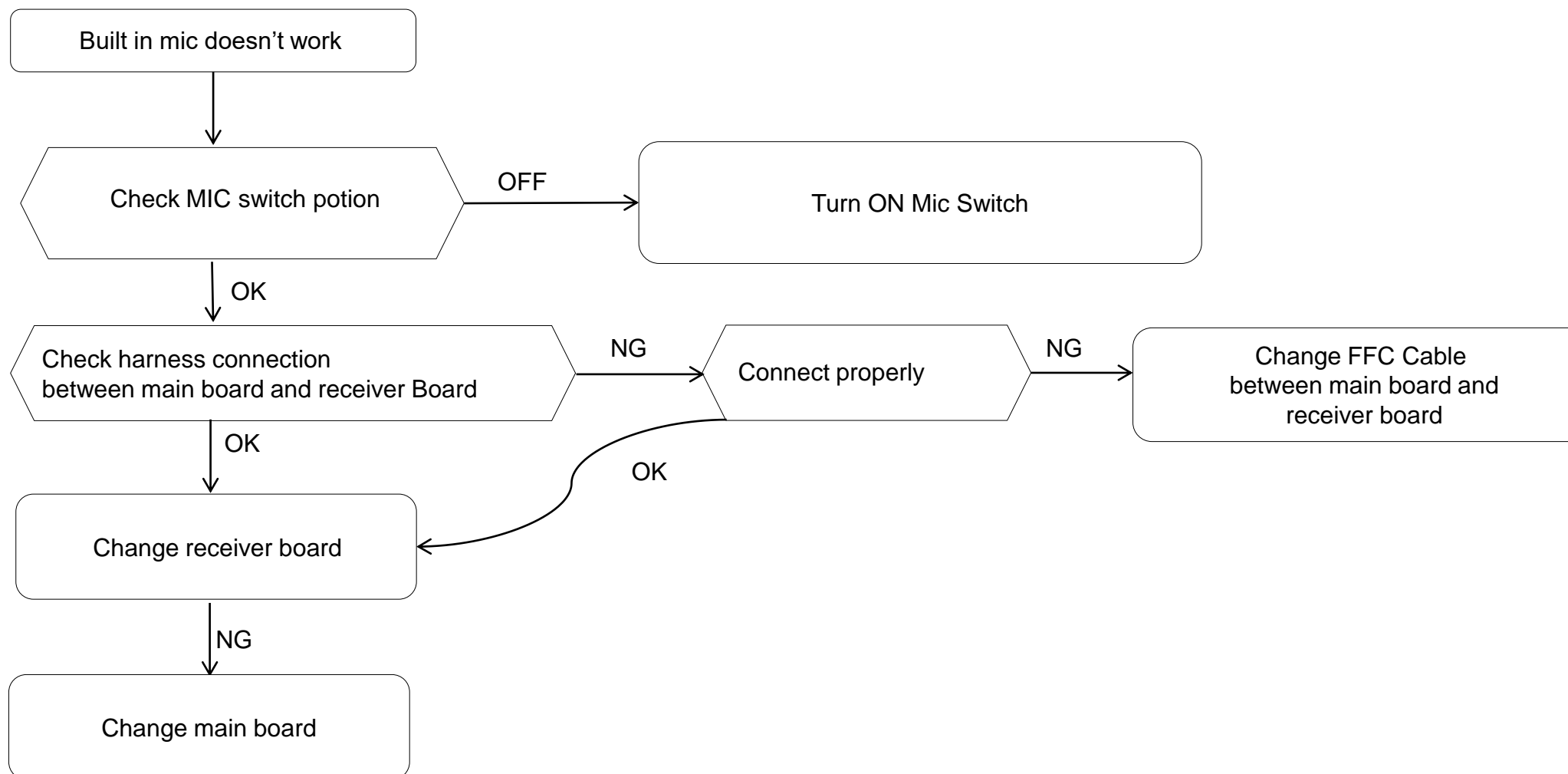
TROUBLESHOOTING

6.2 Bluetooth Malfunction



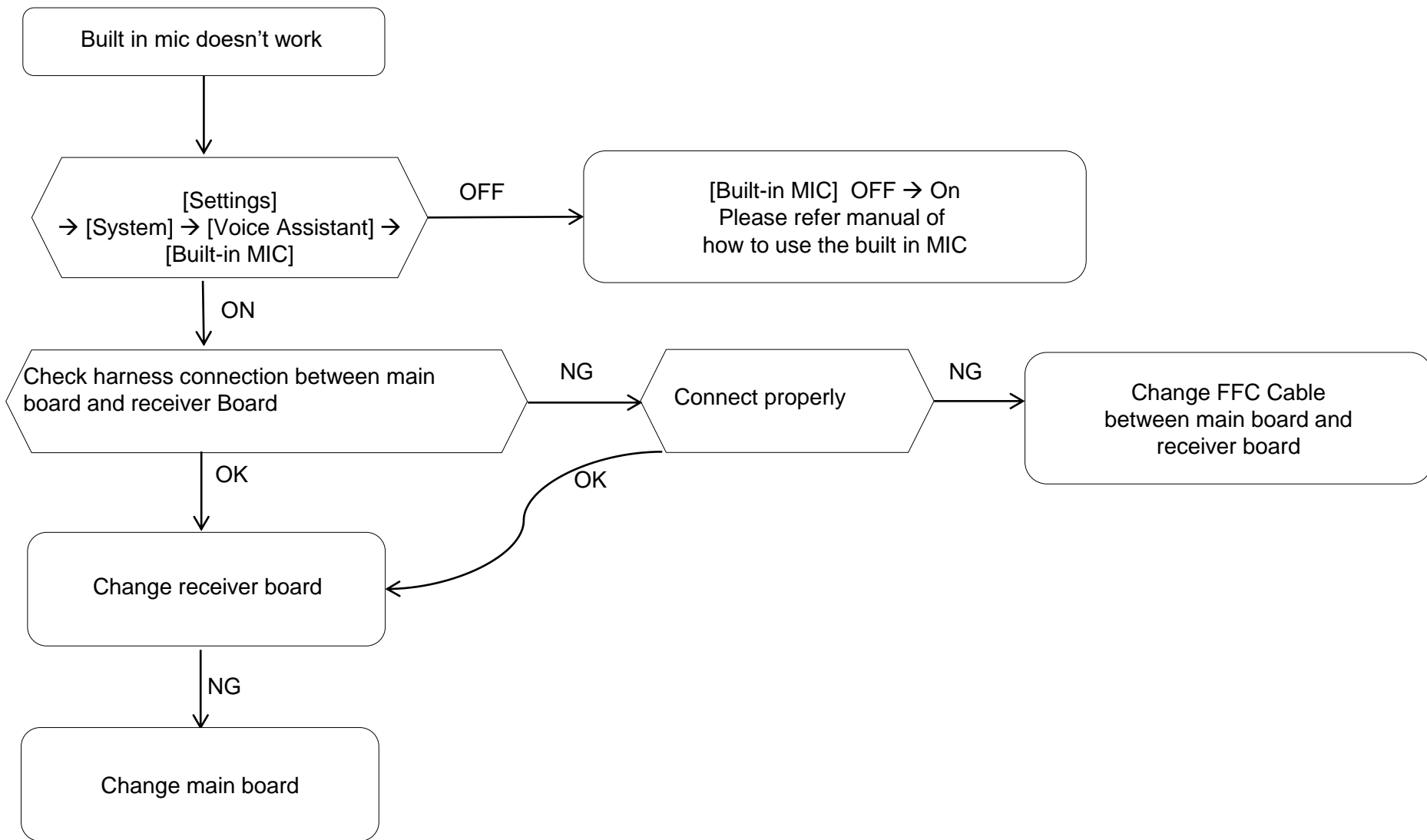
TROUBLESHOOTING

6.3 Built in Mic Malfunction (WW)



TROUBLESHOOTING

6.3 Built in Mic Malfunction (CN)



SERVICE ADJUSTMENT

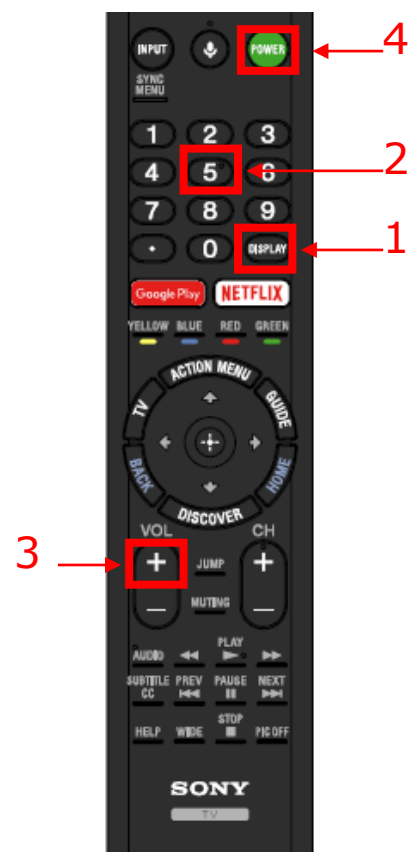
When finished the operation of service mode, please AC Plug OFF/ON the TV set

*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

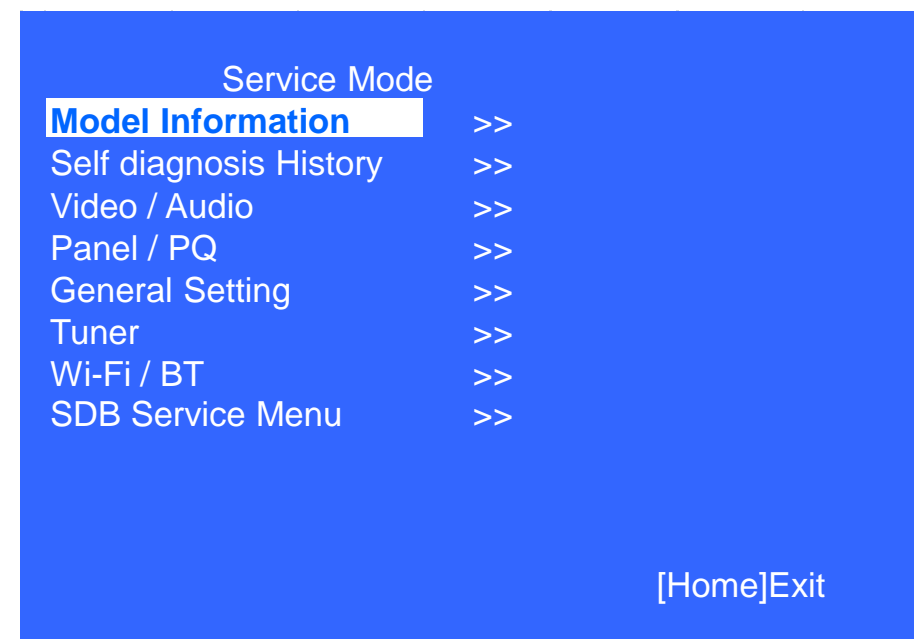
From Standby Mode

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.

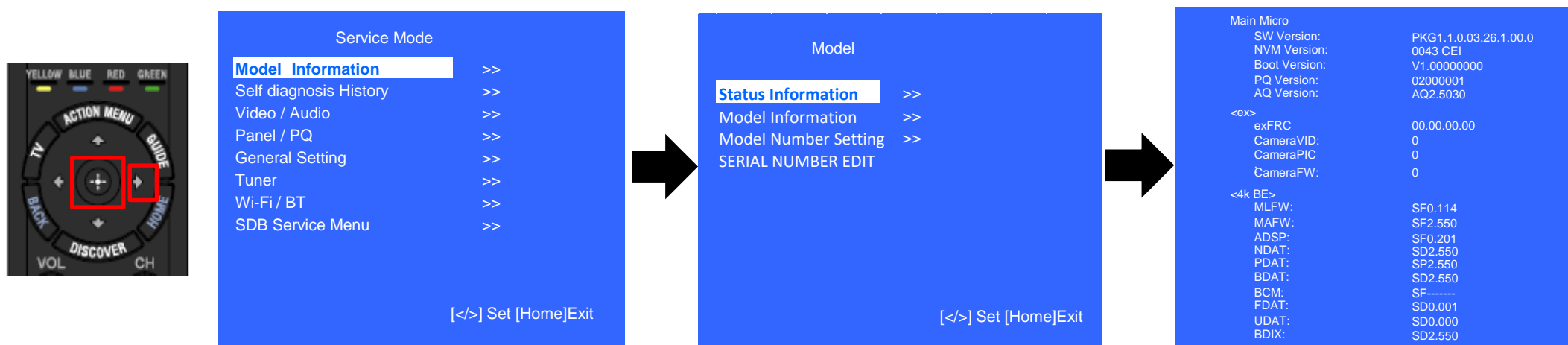


Function	The flow of control
Service mode on	<Display or i+(info)> <5> <Vol. Up> <Power>
Close Service menu	<Home>
Service mode off	AC plug OFF
Item up / down	<↑> / <↓>
Item select left/right	<←> / <→>
Execute	<Enter>

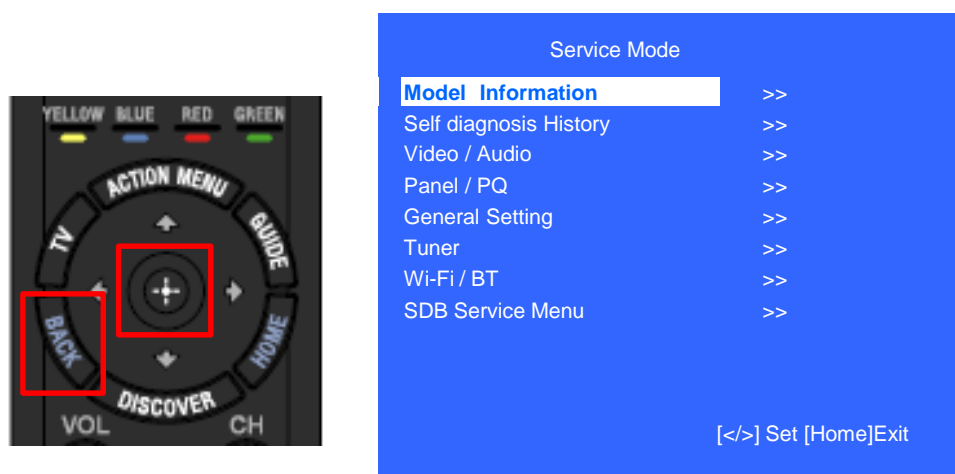
SERVICE ADJUSTMENT

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

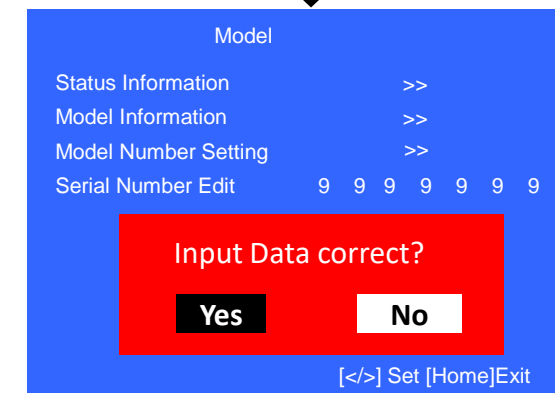
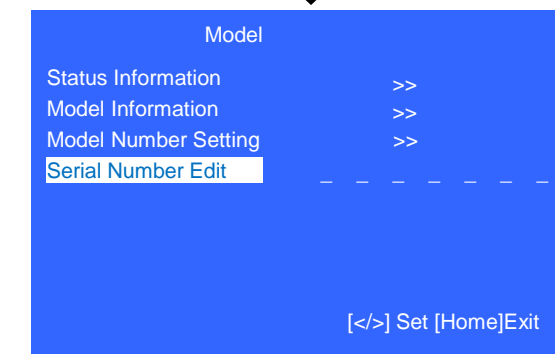
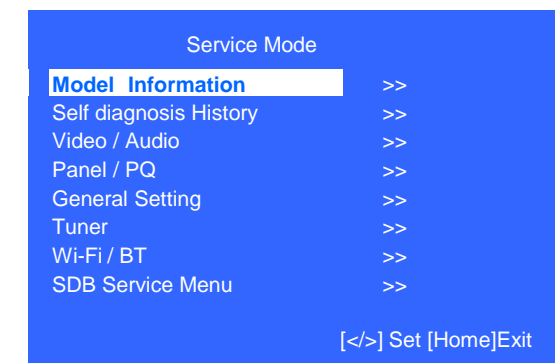


SERVICE ADJUSTMENT

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.

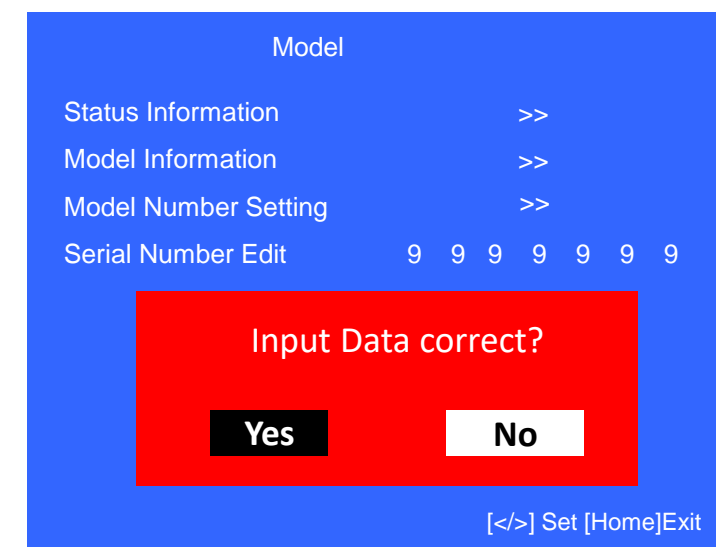
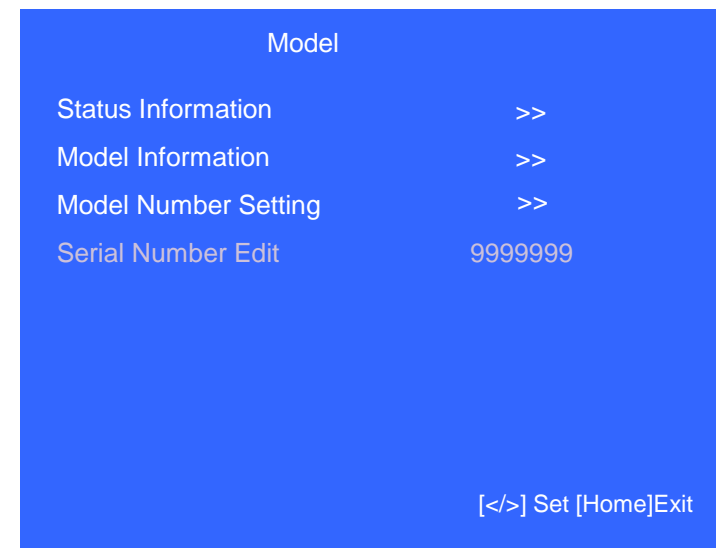


SERVICE ADJUSTMENT

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.

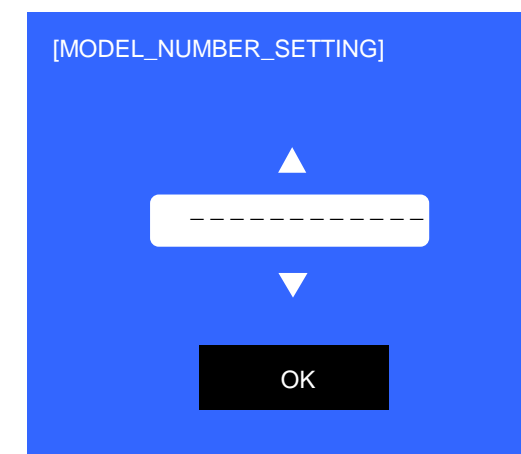
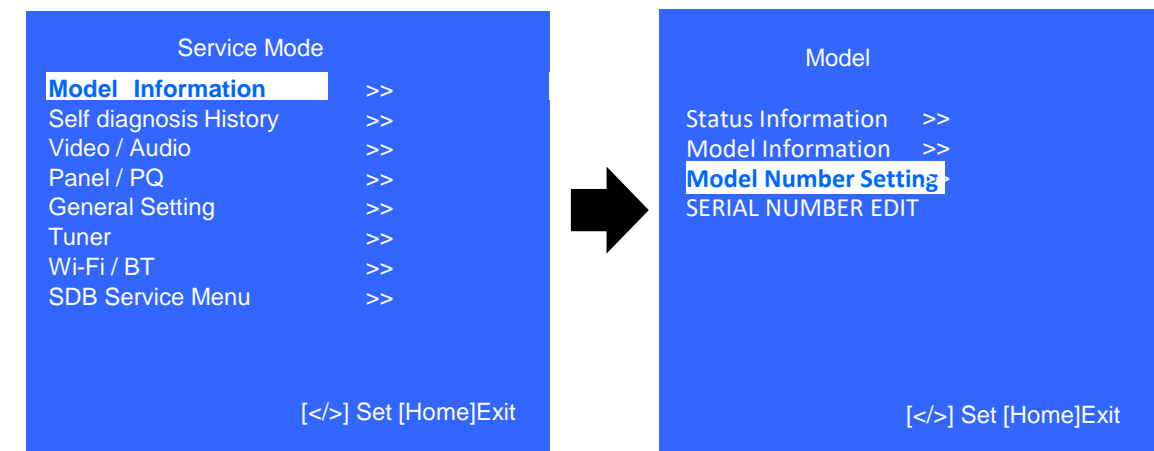


*The font color of YES/NO is change to black when it is selected.

SERVICE ADJUSTMENT

Model Number Setting

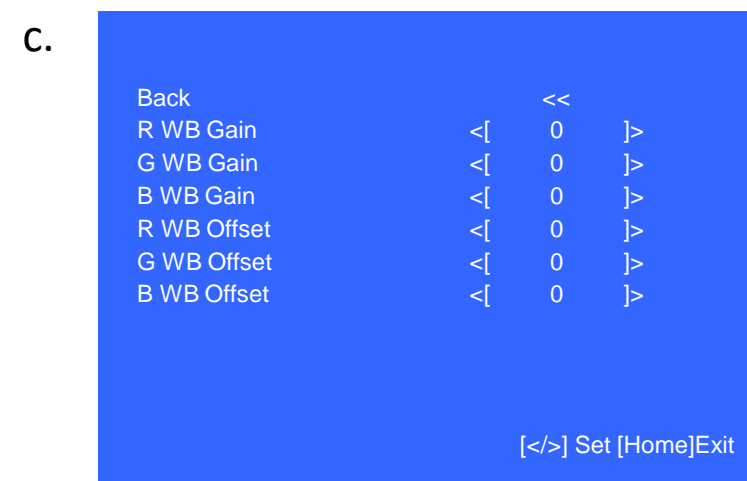
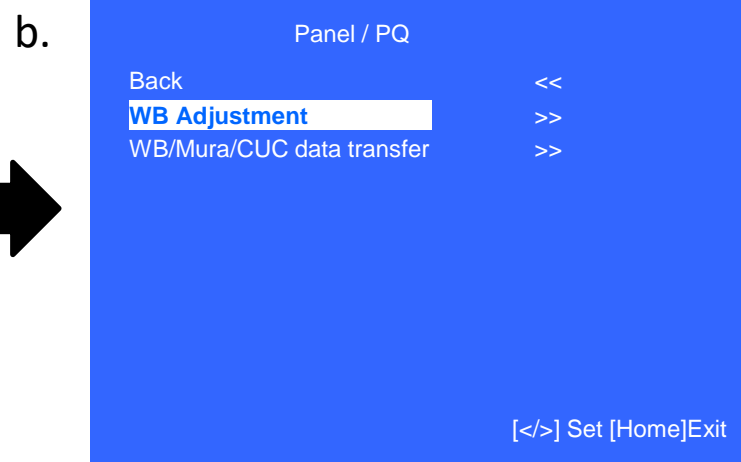
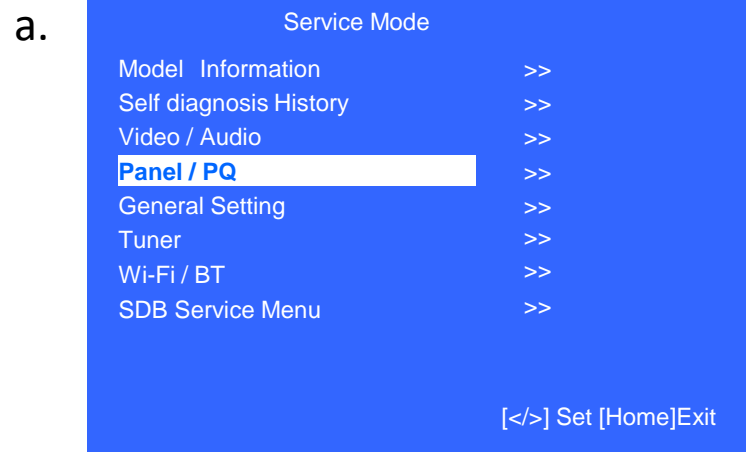
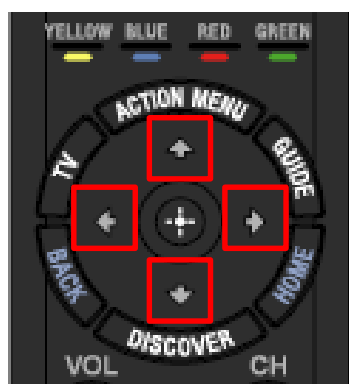
- 1) In "Service Mode", select "Model Information" by pressing "↑" or "↓" then pressing "Enter" or "→" button to enter inside.
- 2) Select "Model Number Setting" by pressing "↑" or "↓" button then pressing "Enter" or "→" button
- 3) Press "↑" or "↓" arrow key to scroll Product Name Candidate. (e.g. XR-55A90J CEI)
- 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.

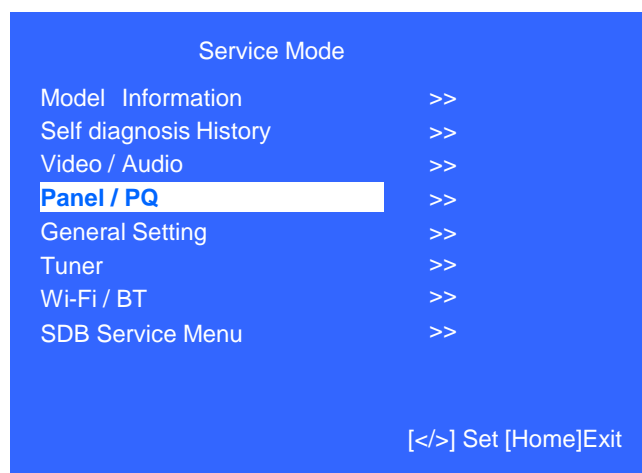
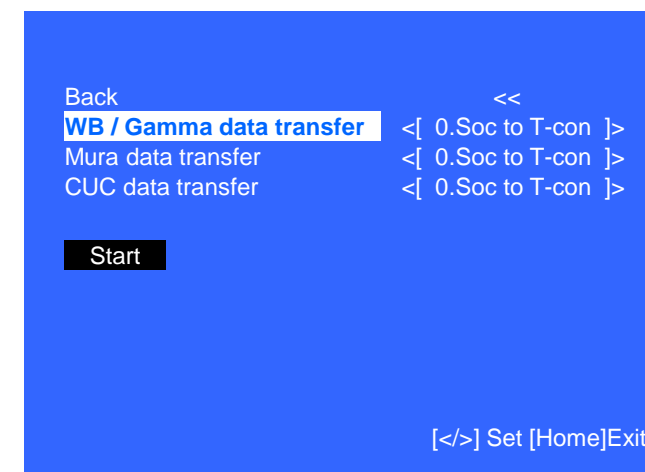
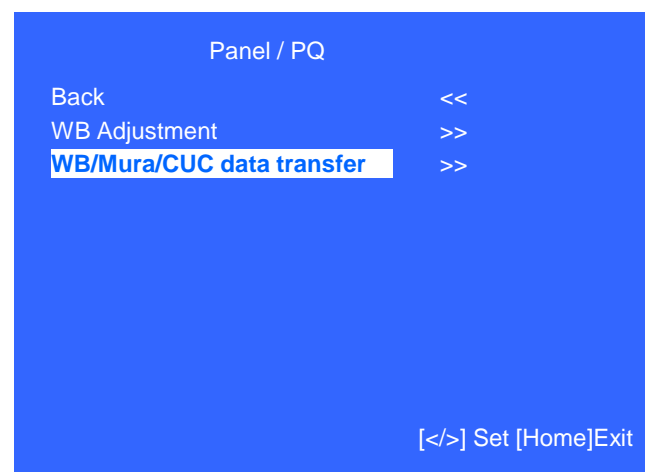
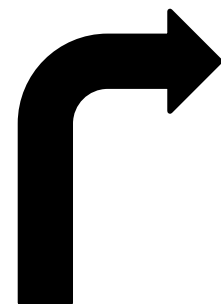


SERVICE ADJUSTMENT

WB/Mura/CUC Data Transfer

Please apply if 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.



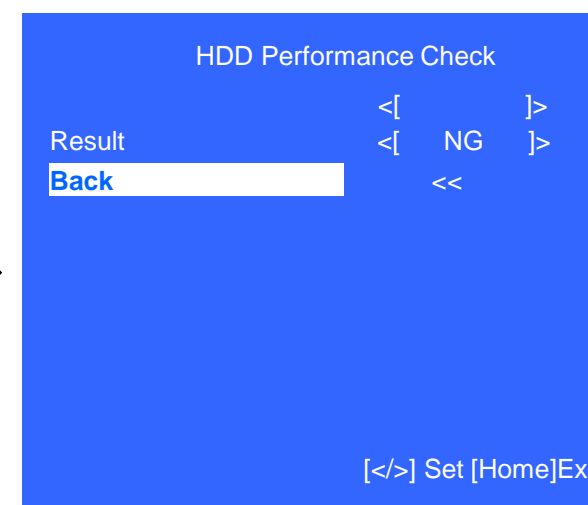
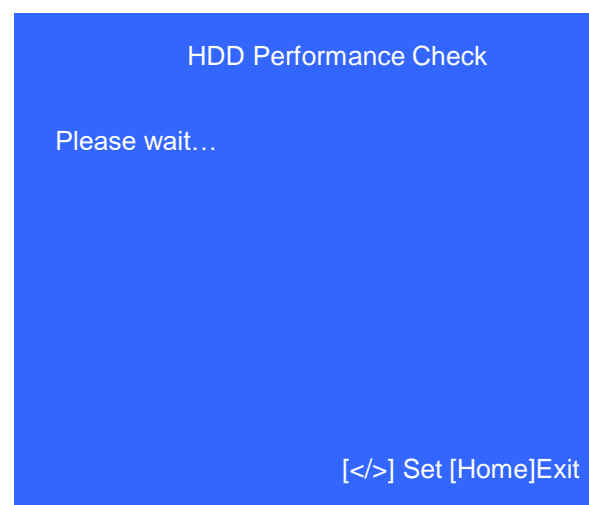
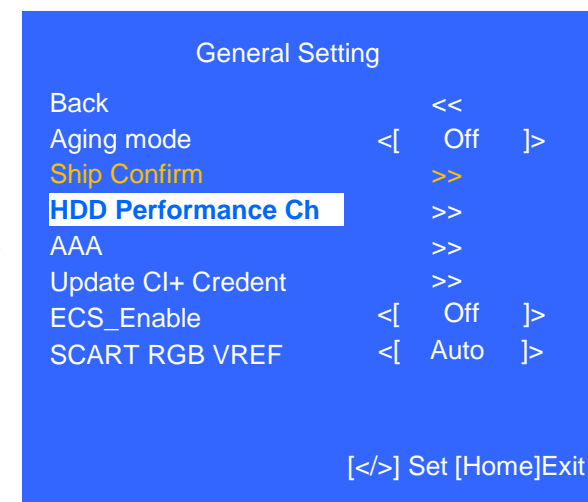
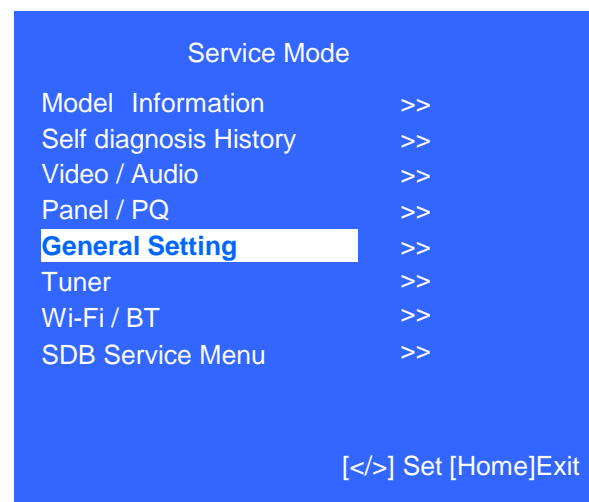
2. In "WB/Mura/CUC data transfer"

- 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 (Only T-con is replaced)
 - 1. T-con to SoC (Main board or Panel is replaced)
 - 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 Only)

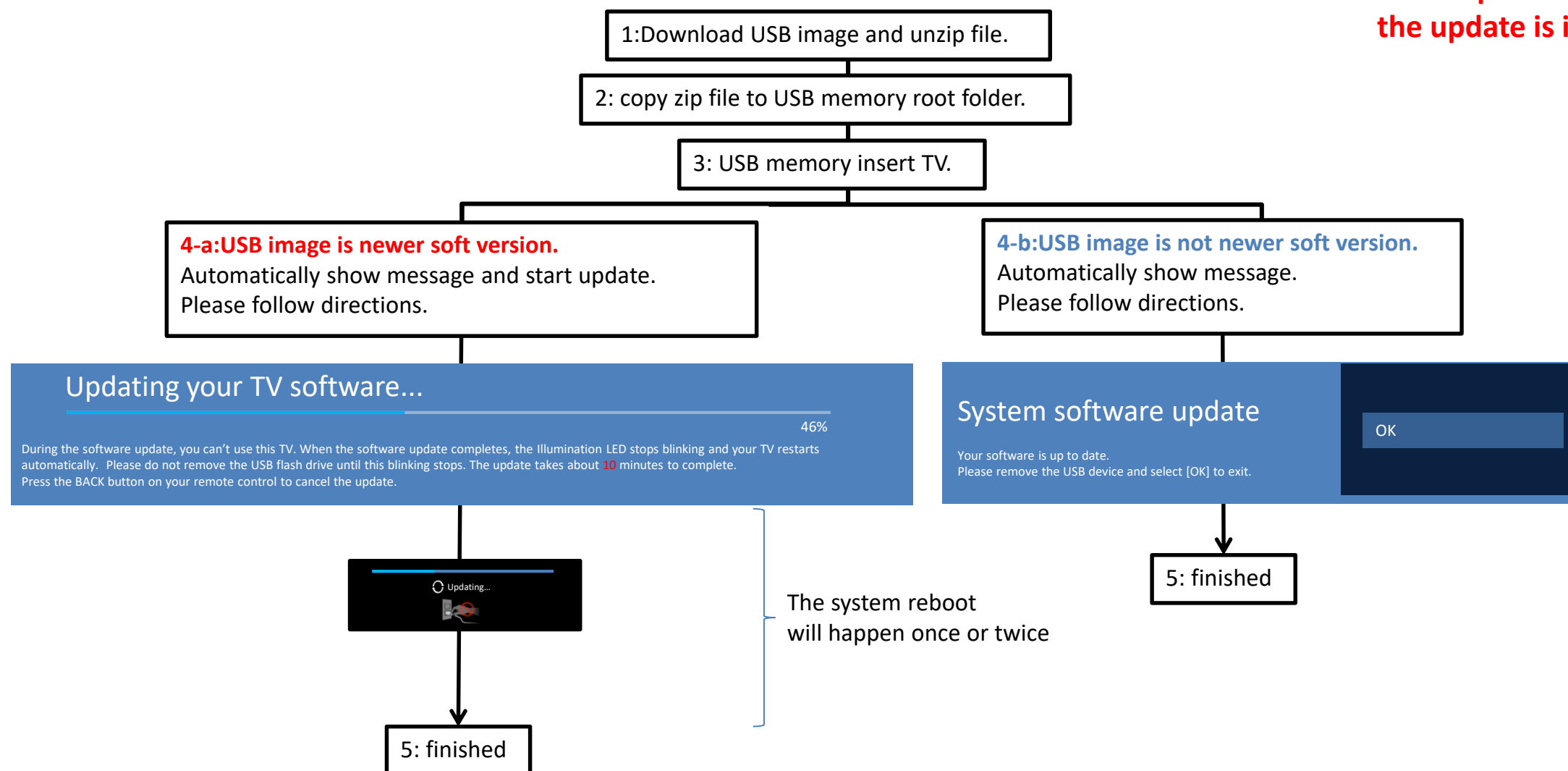
- 1) In "Service Mode", select "General Setting" by pressing "↑" or "↓" then pressing "Enter" or "→" button to enter inside.
- 2) Select "HDD Performance check" by pressing "↑" or "↓" then pressing "Enter" or "→" button to enter inside.
- 3) A message "Please wait ..." is displayed during performance check processing.
- 4) Result **OK** or **NG** will be displayed after performance of HDD is checked



SERVICE ADJUSTMENT

How to update via USB.


Caution:
Do not power off while
the update is in progress.



※ Display may change depending on the model / SW version.

SERVICE ADJUSTMENT

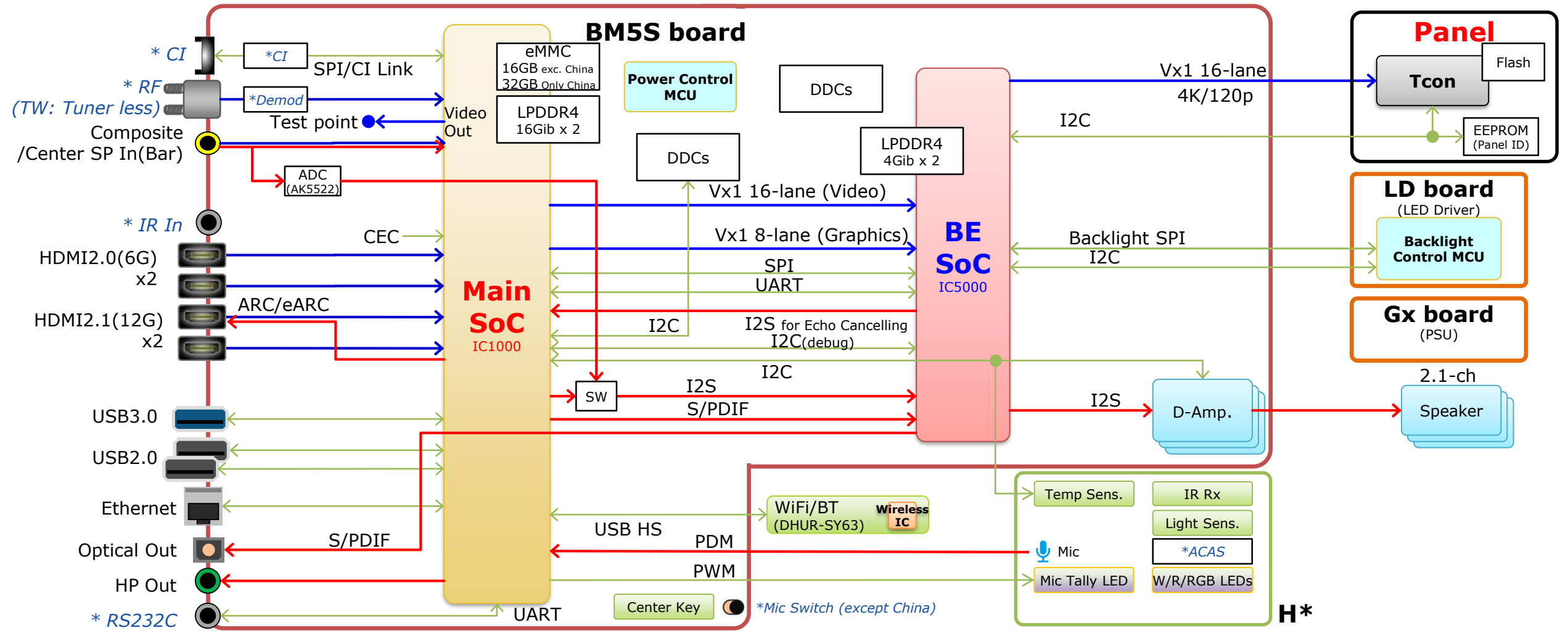
Force FDR by Control Buttons

	1 Key
Key type	 Center Key
Procedure	<ol style="list-style-type: none">1) Press and hold <u>Center Key</u>.2) AC ON.3) Hold the button down for several seconds until the system starts FDR.

DIAGRAM

→ Video signal
→ Audio signal
→ Control Bus

** depend on destinations.*

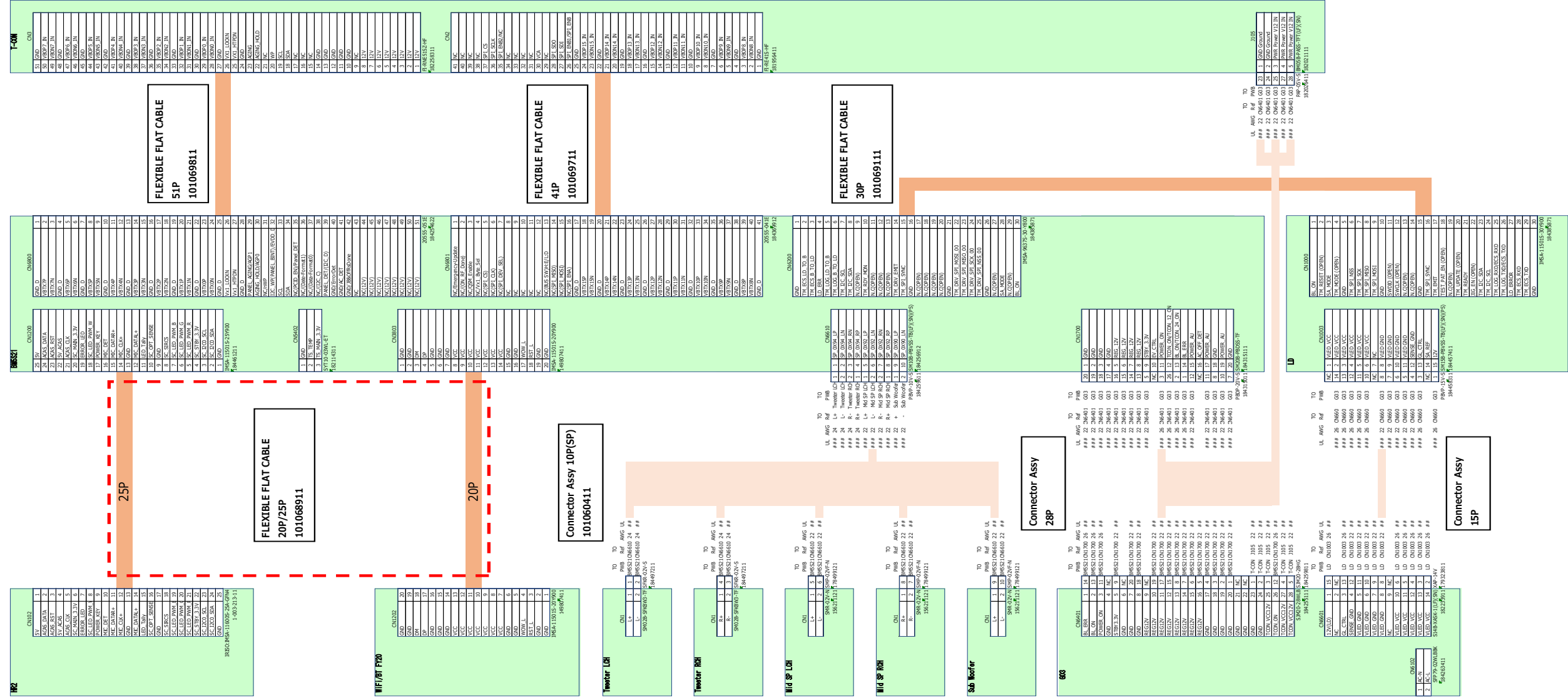


DIAGRAM

75 Connecting Diagram

CONFIDENTIAL

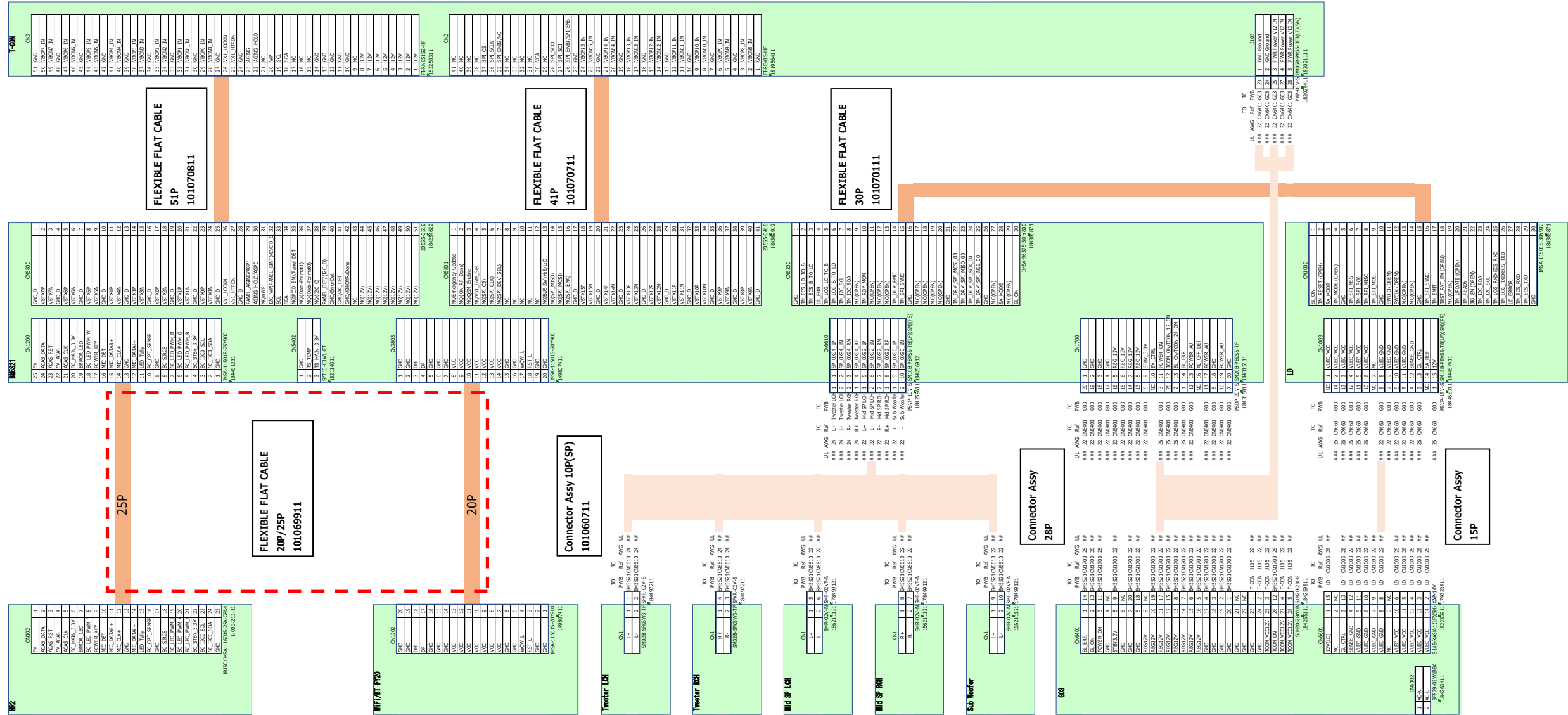
AG75_Connecting_Diagram



DIAGRAM

85 Connecting Diagram

CONFIDENTIAL



AG85_Connecting_Diagram

HANDLING GUIDE

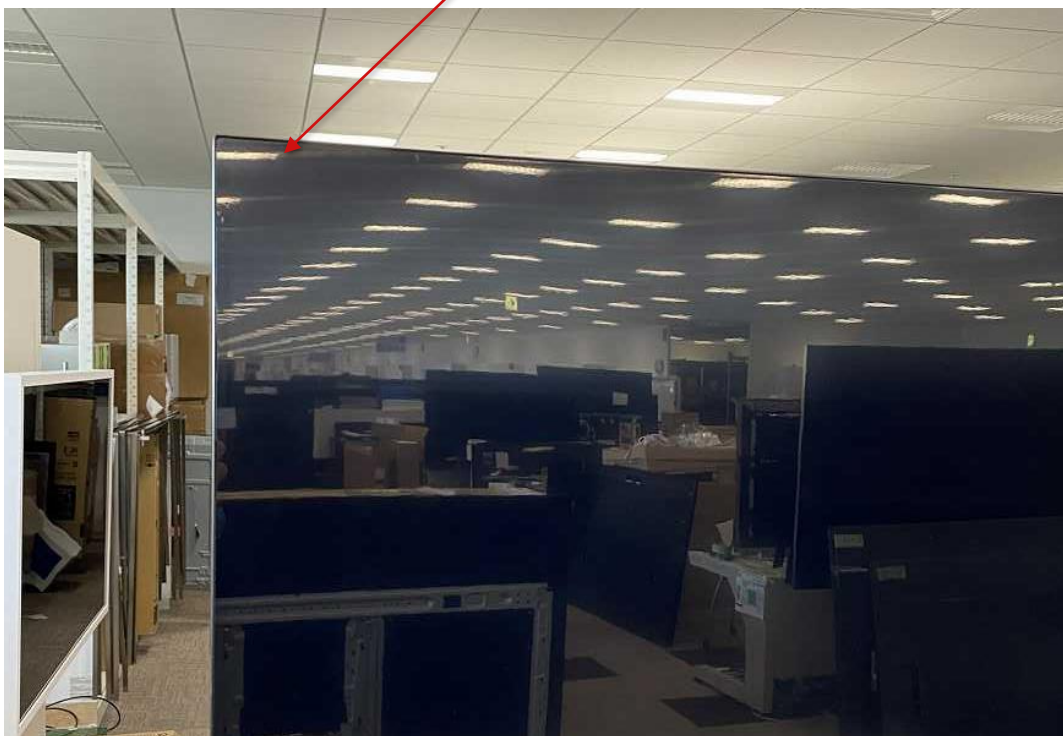
PANEL HANDLING GUIDE - INFORMATION

<FLUSH SURFACE>

There are no bezel in front side.

Need to be careful in case of handling.

Easy to crack panel by pushing



HANDLING GUIDE

PANEL HANDLING GUIDE – HOLDING POSITION



Always wear gloves during P-mod handling



Holding edge of BZ without touching o-cell



Support set at edge of BZ without touching o-cell



Hand pressing o-cell



Hand pressing o-cell

HANDLING GUIDE

PANEL HANDLING GUIDE – CARRY CONDITION



Carry P-mod by vertical position



Carry P-mod by horizontal position

HANDLING GUIDE

PANEL HANDLING GUIDE – CARRY CONDITION 2



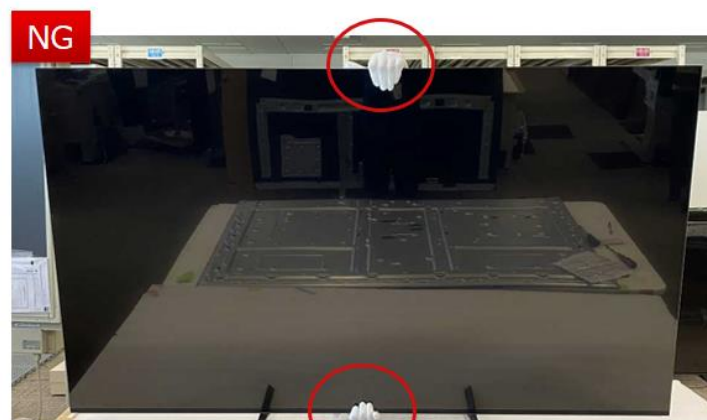
Carry P-mod by 2 persons



Carry P-mod by corners



Carry P-mod by 1 person



Carry P-mod at center area



It is easy to deform by holding in this area

HANDLING GUIDE

PANEL HANDLING GUIDE – RESTING CONDITION

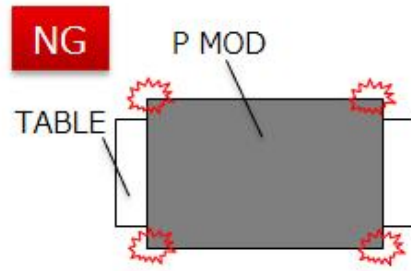
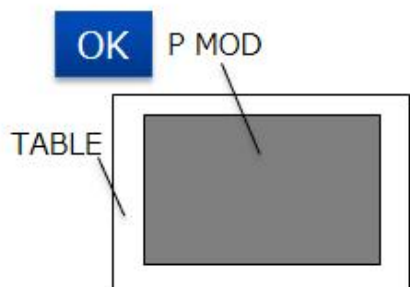


Resting P-mod by 2 persons



Resting P-mod by 1 person

Put the Panel within one flat table surface.

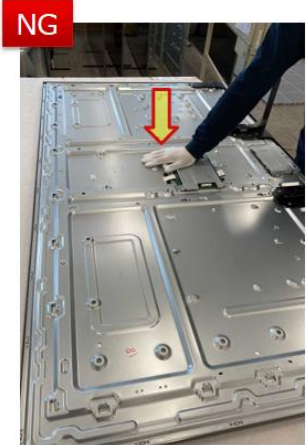


HANDLING GUIDE

PANEL HANDLING GUIDE – PROHIBITED METHOD

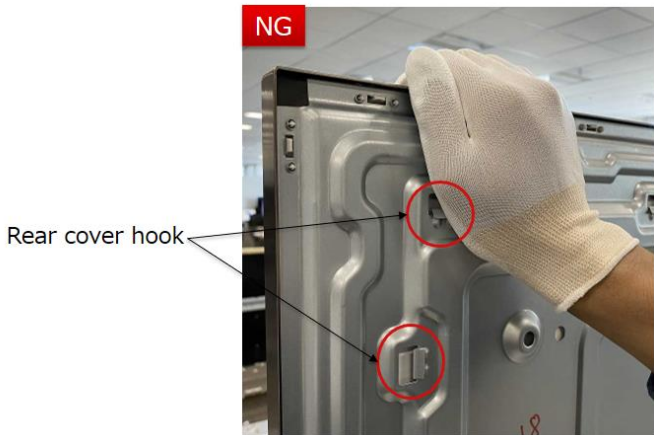


Handle P-mod without gloves



Press on P-mod during Assy & Disassy

PANEL HANDLING GUIDE – RESTRICTED AREA



Avoid touch Rear cover hook during P-mod handling

