HISTORY INFORMATION FOR THE FOLLOWING MANUAL:

SERVICE MANUAL (COMMON)

GN3TR *CHASSIS*

Segment: KF

Version	Date	Subject
1	10/2016	1st Issue.
2	02/2017	Add 49in and 55in models

LCD TV

SONY®

9-888-720-02

For SM - Unique , please refer :

9-888-720-Ax (America)

9-888-720-Cx (China)

9-888-720-Ex (Europe)

9-888-720-Px (Pan Asia)

SERVICE MANUAL (COMMON)

GN3TR *CHASSIS*

Segment: KF

LCD TV

SONY

MODEL LIST

Self Diagnosis Supported model

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

REGION

ASIA *AMERICA* *EUROPE* *CHINA* *JAPAN*

MODEL

*FW-43XE8**	*FW-49XE8**	*FW-55XE8**
*KD-43XE8**	*FW-49X8*E*	*FW-55X8*E*
*KD-43X8*E*	*KD-49XE8**	*KD-55XE8**
*KJ-43X8*E*	*KD-49X8*E*	*KD-55X8*E*
*XBR-43X8*E*	*KJ-49X8*E*	*XBR-55X8*E*
	*XBR-49X8*E*	

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Please refer to Service Procedure for Panel , Board and Software Change / Upgrade Manual , part number 9-888-719-0x in TISS .

Please refer Service Manual – Unique for below information :

-Safety Warnings

-Wire Dressing

-Circuit Board Location

-Disassembly and Exploded View.

Note: Pictures provided in this Service Manual might have slight difference from the actual sets.

SECTION 1
SAFETY NOTES

1-1. Warnings and Caution

1) 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) 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.
4) 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) 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.

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 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).

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.

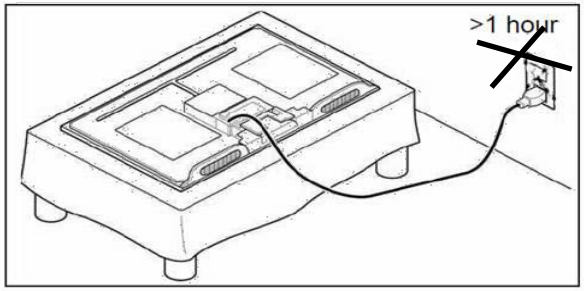


Figure 1. TV is faced down on a cloth during repair.

1-3. 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.

1-4. 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.

1-5.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 1.
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 1 and terminal
2. 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 283uA peak).
Note: including AC adaptor, AC adaptor/DC operated unit combination
Note: Products which are always used in touch with human body: 141uA (peak)
Note: As for products destined for Southeast Asia (Rod Antenna is accessory. Or it is packed with a product.), the worst value must not exceed AC 141uA (peak).

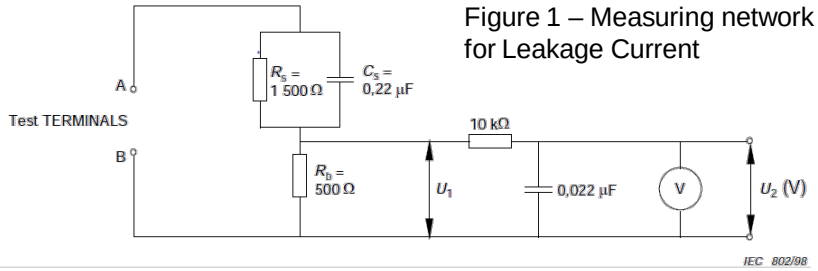


Figure 1 – Measuring network for Leakage Current

1-6. 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).

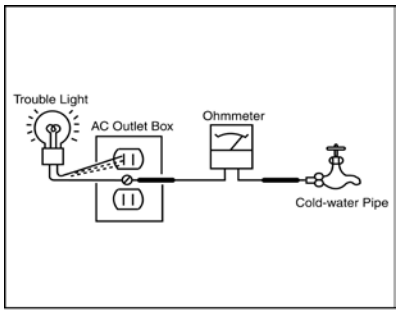


Figure B. Checking for earth ground.

Figure 3. Checking for earth ground.

1-7. 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

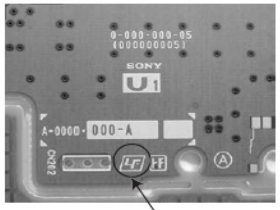
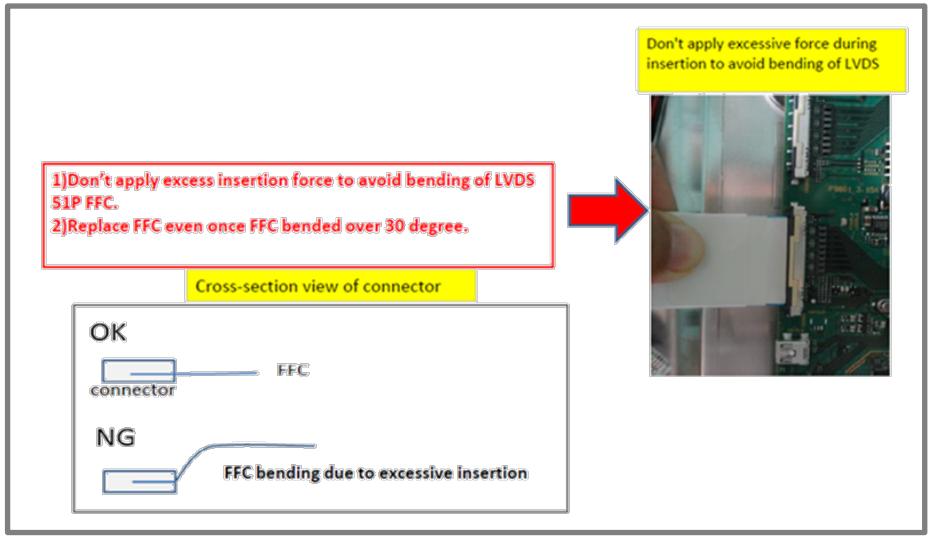


Figure 5: LF logo on circuit board

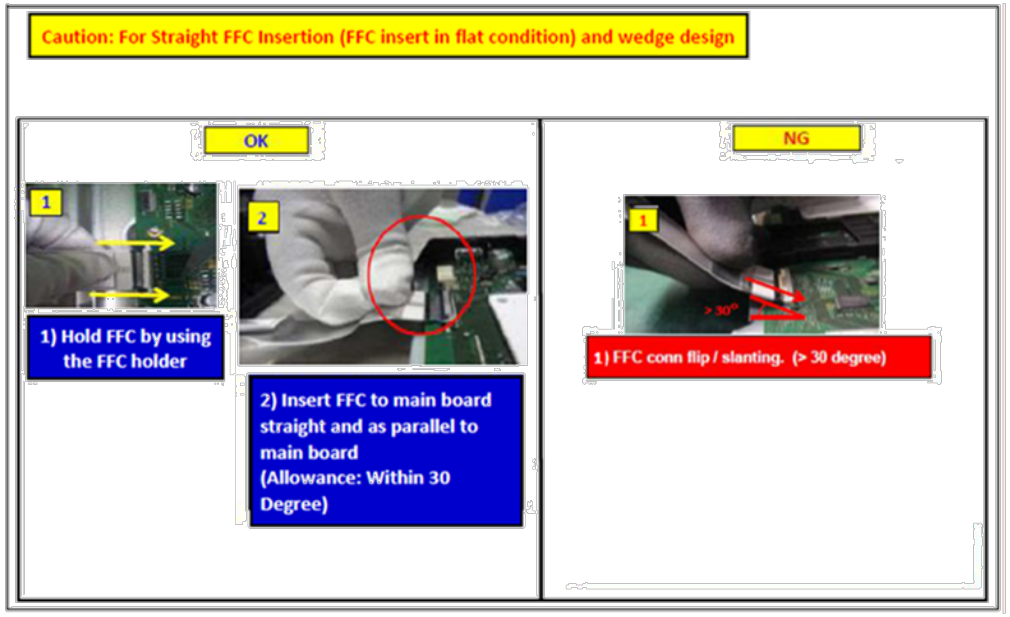
The servicing of these boards requires special precautions. It is strongly recommended to use Lead Free Solder material in order to guarantee optimal quality of new solder joints.

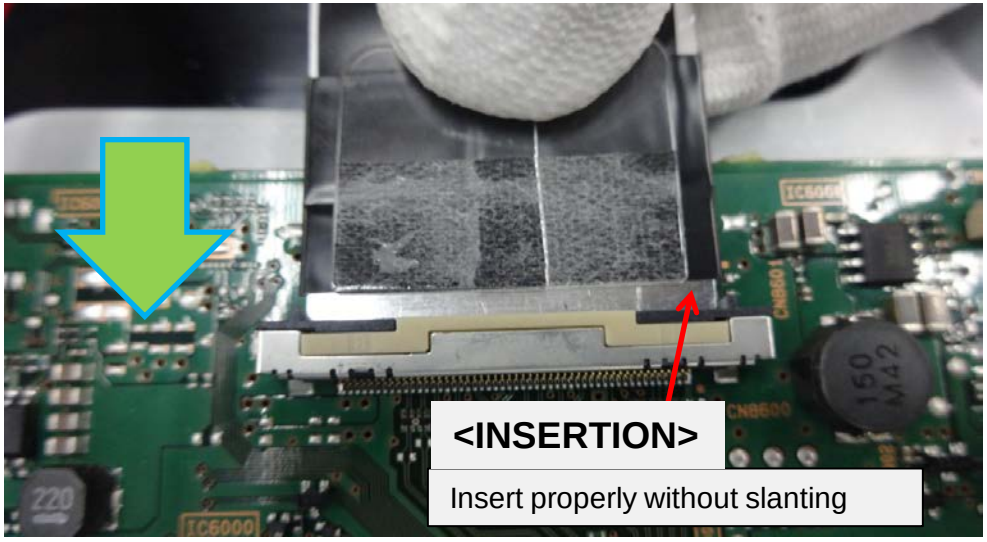
1-8. Handling the FLEXIBLE FLAT CABLE (FFC)

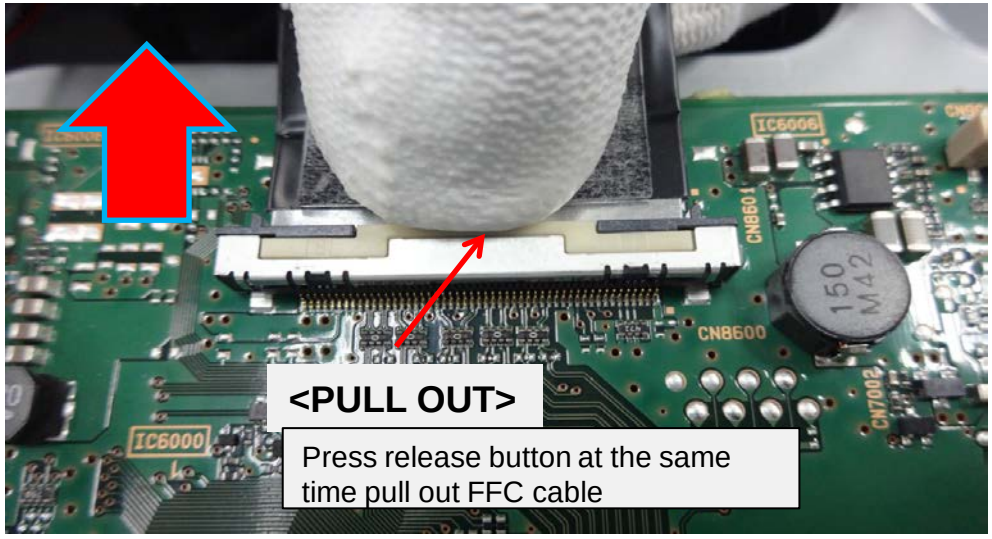
- When you insert / pull out FFC, please grasp a reinforcement board and main body of FFC.



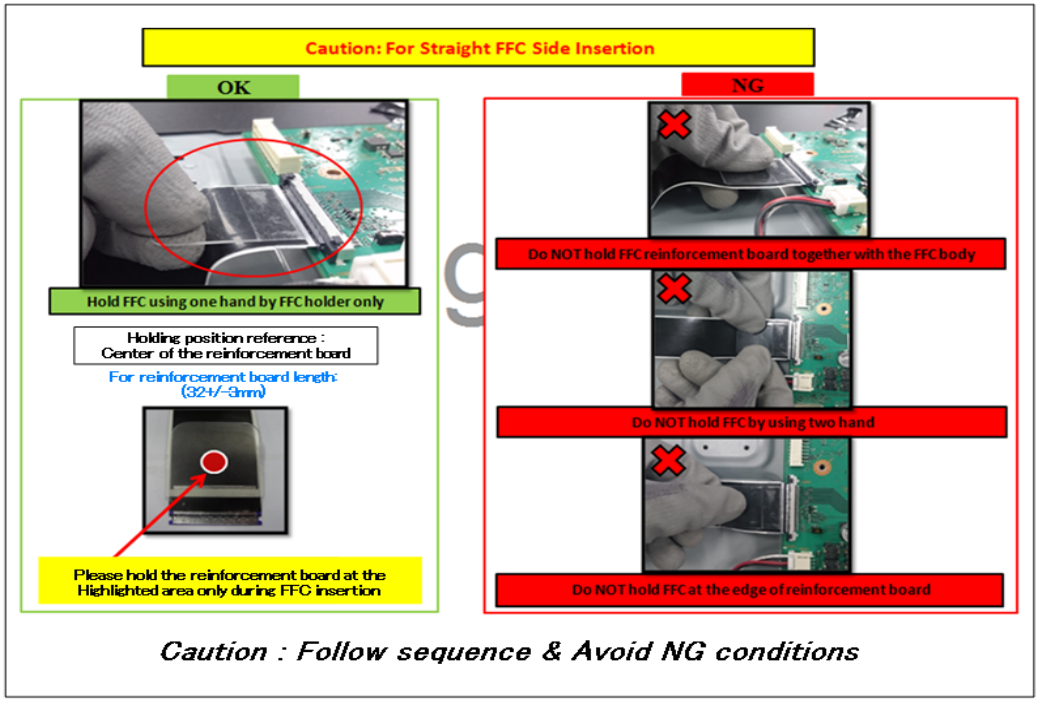
1-8. Handling the FLEXIBLE FLAT CABLE (FFC) (continue)

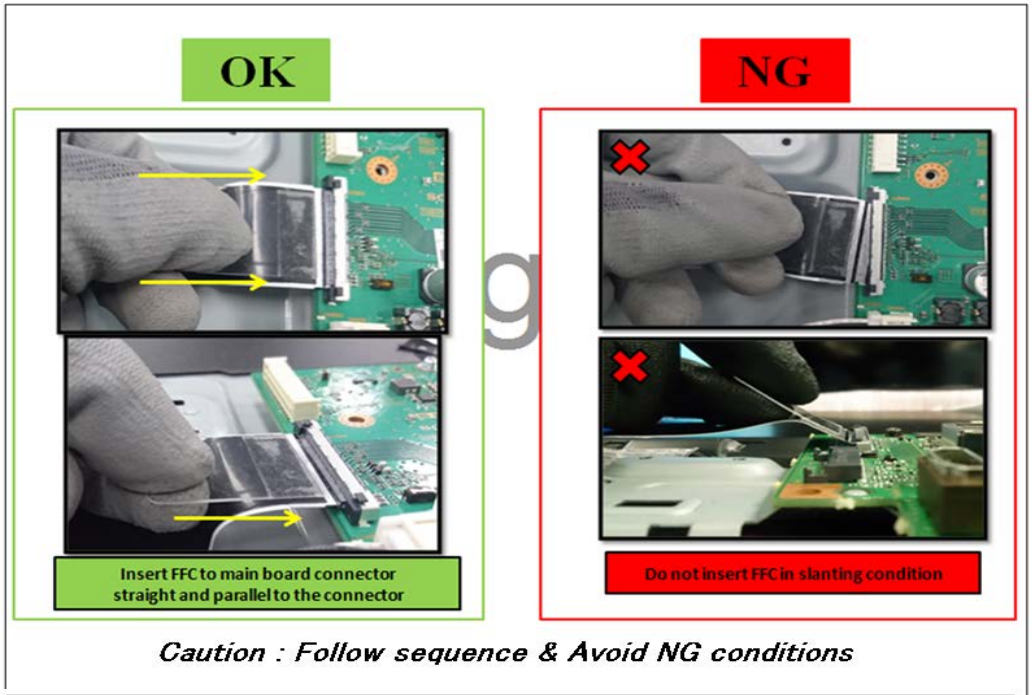


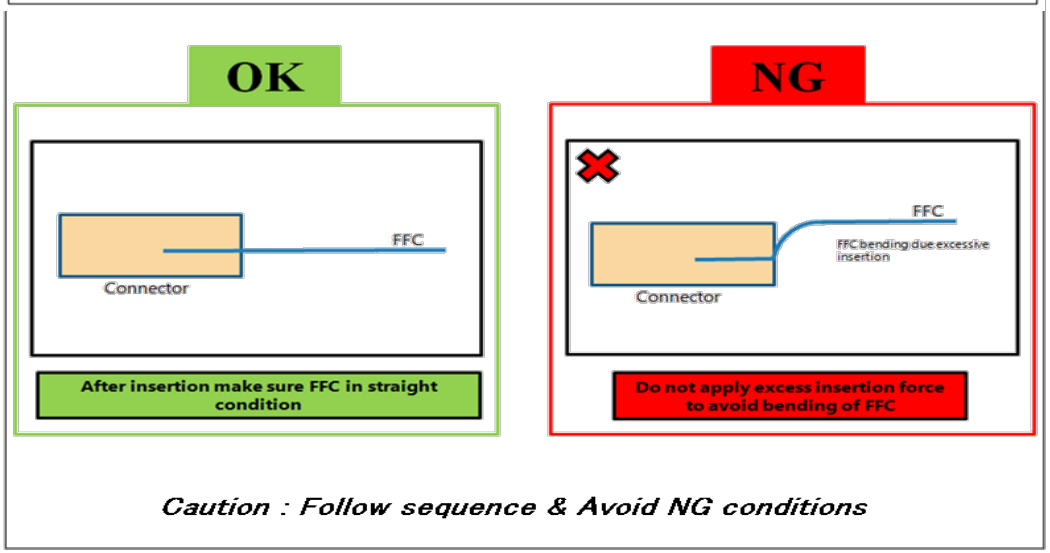


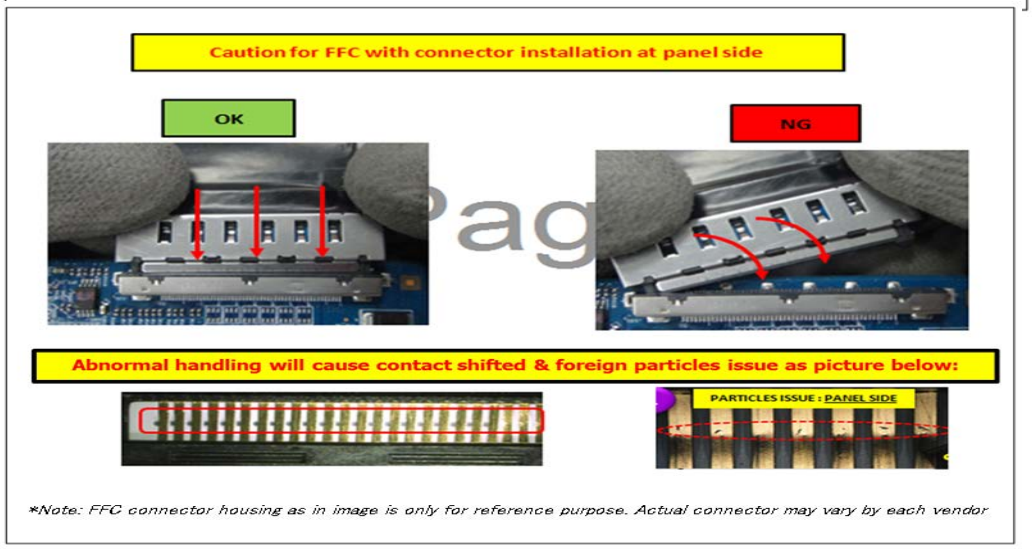


1-8. Handling the FLEXIBLE FLAT CABLE (FFC) (continue)



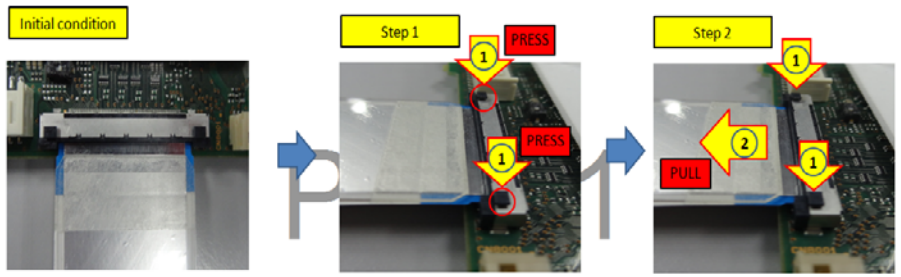






1-8. Handling the FLEXIBLE FLAT CABLE (FFC) (continue)

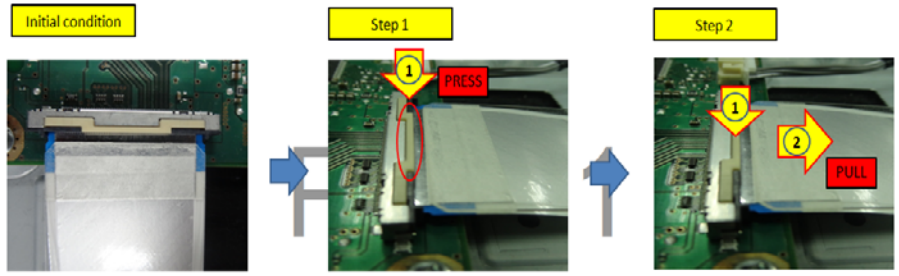
〈 Application 〉	Withdrawal of FFC using Non-ZIF (IPEX connector)
〈 Connector location 〉	Main board side
〈 Method 〉	See as follows
〈 Caution 〉	See as follows



1. Press the release lock button downward at same time (highlighted in red).
2. Pull FFC in straight direction while pressing both release lock button at the same time.

Note: FFC as in image is only for reference purpose. Actual FFC outlook may vary by each vendor.

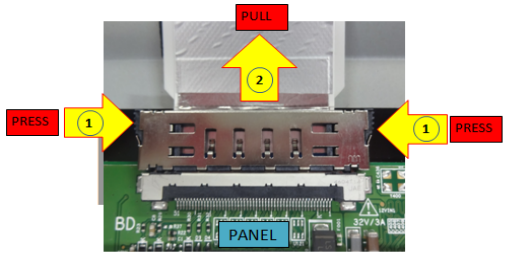
〈 Application 〉	Withdrawal of FFC using Non-ZIF (Yamaichi connector)
〈 Connector location 〉	Main board side
〈 Method 〉	See as follows
〈 Caution 〉	See as follows



1. Press the release lock button downward (highlighted in red).
2. Pull FFC in straight direction while pressing release lock button at the same time.

Note: FFC as in image is only for reference purpose. Actual FFC outlook may vary by each vendor.

〈 Application 〉	Withdrawal of 51P FFC using plug type from panel side
Connector location 〉	Panel side
〈 Method 〉	See as follows
〈 Caution 〉	See as follows



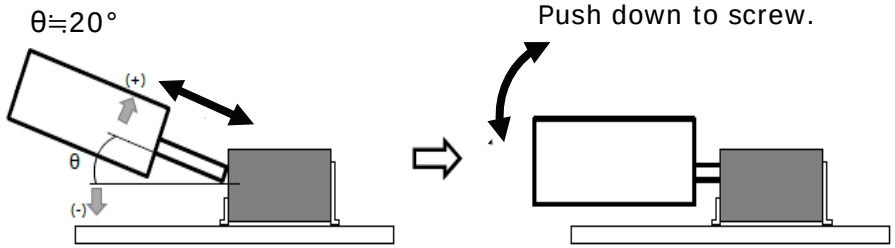
1. Please press on both lock release button
2. Pull FFC in straight direction while holding both lock relase button at the same time

Note: FFC as in image is only for reference purpose. Actual FFC outlook may vary by each vendor.

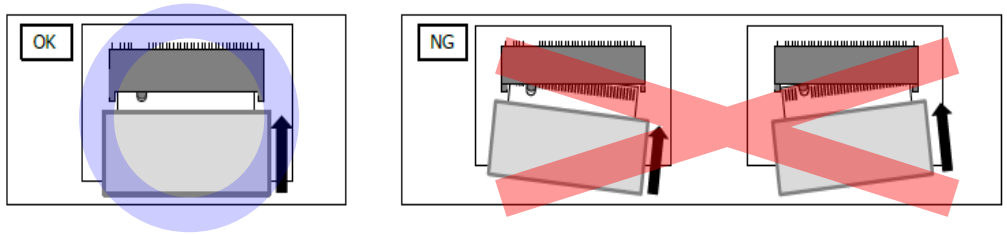
1-9. Solder-less tuner replacement procedure

Mounting Method

① The insertion & extraction angle of the module is permitted to specified degree for connector



② Please insert or extract the module straightly toward the connector. Do NOT insert or extract the module with an angle.



Service manual operation (agreed by service member):

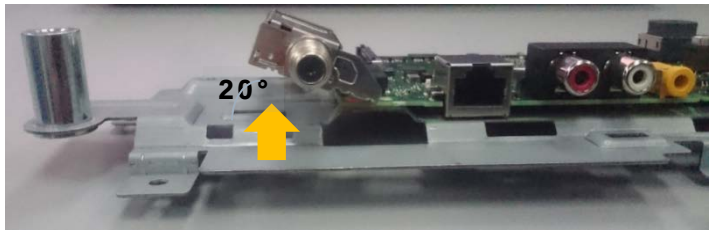
Not using insertion jig. Due quantity not many as production.

SC can control by:

1) Issue service manual for WW ASC.

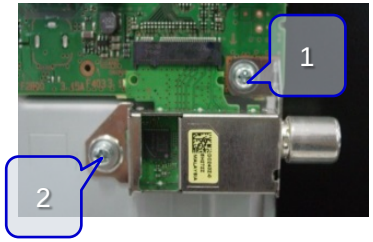
2) Give training / lecture how to assemble tuner. Will be handle by SOEM service

- For removing Tuner Module,
In the case of small type Tuner module.
After un screwed, Automatically the Module will float to correct degree.
So please extract it with keeping this degree.

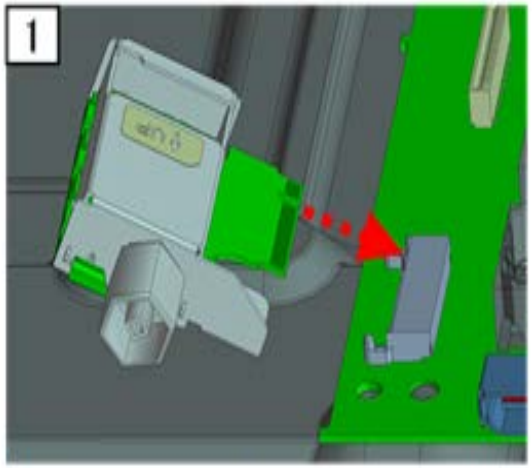


- Please confirms whether no dust and no bend on terminal of connecter(CN2800) and card-edge connecter

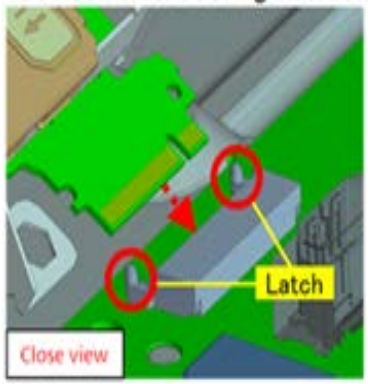
- Attachment order of screw.
  1. Side of antenna terminal (W/BFX board).
  2. Rear side of Tuner module.

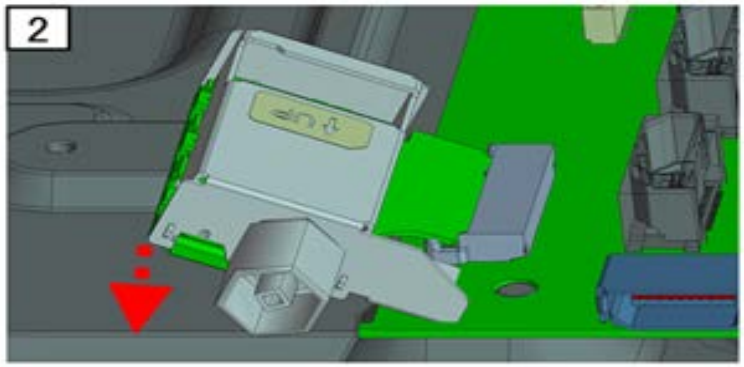


1-9. Solder-less tuner replacement procedure (Cont.)

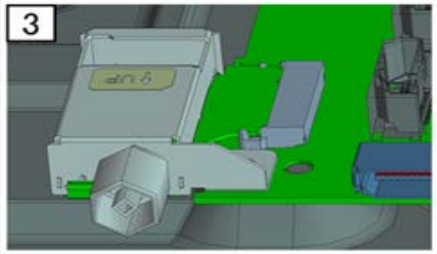


1). Insert Tuner carefully in straight condition (cannot slanting) to card edge connector.
- Do not hit latch during insertion (do not insert 0 degree condition)

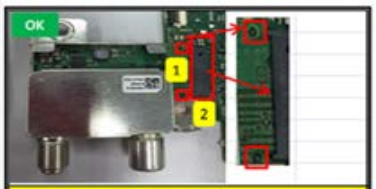




2). Confirm Tuner can insert to connector correctly.
→ Check Tuner card not hitting to Left/Right edge.
→ Ensure that Tuner is fully insert (Terminal cannot be seen)



3). Make sure, tuner is easy to press down.
If it is hard to press down the tuner, do not force the Tuner.
Repeat step 1 & 2.



Tuner fully inserted.
1. Both pin connector can seen inside the tuner board
2. Terminal cannot be seen

Tuner half inserted.
1. Both pin connector cannot be seen inside the tuner board.
2. Terminal can be seen.

1-9. Solder-less tuner replacement procedure (Cont.)

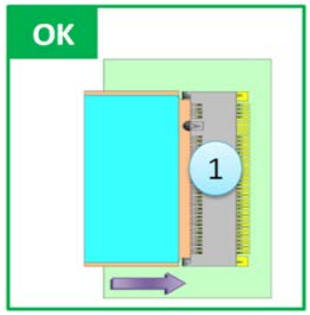
Caution Point during Insertion

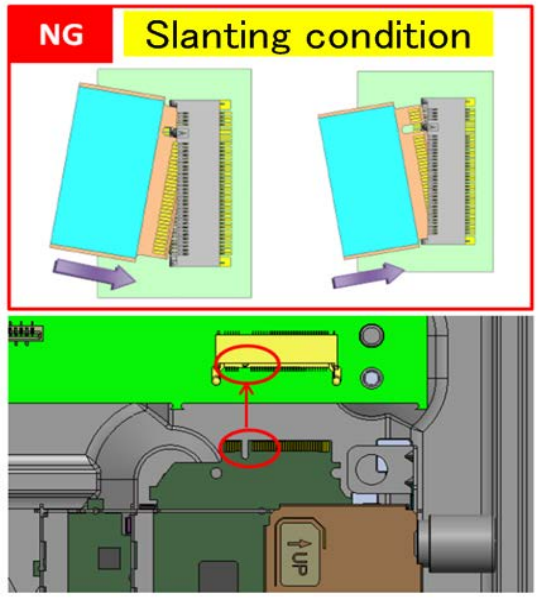
Carefully slot in the Tuner. Ensure the terminal directly insert to the housing.
Wrong insertion will damage the terminal.

Terminal at below housing

Terminal at upper housing
Terminal at 0 degree insertion

Terminal slot in directly into housing





SECTION 2
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 .

Smart Core RED LED blinking count	Detection Items
2x	<B/G/A/LD> Main 12V over voltage [MAIN_POWER]
3x	<B> Main 5.0V failure [DC_ALERT]
	<B/S/K> Audio amp. protection [AUD_ERR]
4x (**KP/KPSP/KS only)**	<LD/P> LED driver failure/LED voltage protection [LD_ERR] <LD/P>*Error detection of the I2C communication between the Main device and the LD IC.[BCM_ERR]*
5x	<P/T/G/B> *Panel ID EEPROM I2C No ACK (Also panel power failure is a suspect) [P_ID_ERR]*
6x	<G/P/B/LD> Backlight failure [BACKLIGHT]
7x	Over temperature protection [TEMP_ERR] <B> Temp. sensor I2C No ACK [TEMP_ERR]
8x (**KP/KPSP**) 8x (**KS**)	<B> 4KBE Error (4KBE WDT) <B> 4KPQ Error (4KPQ WDT)

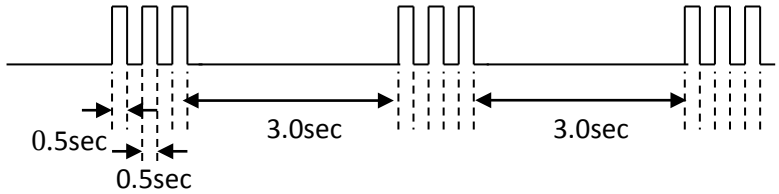
Blue italic: detect at startup sequence only.
<G>: Power supply board,
<B>: Main board,
<T>: T-con board,
<LD>: LD board (if AC adapter model, it would power supply for Set),
<P>: Panel module,
<S>: Speaker,
<A>: Power Adapter,
<Tu>: Tuner board,
<K> : Audio board (KFW/KPSP only)

Record Only Item	Detection Items
TU_DEMOD	<B/Tu> Tuner & Demodulator I2C communication failure Tuner board set detect signal monitoring
TCON ERR (**KP/KPSP/KS/KH only**)	<T> *T-CON device I2C communication failure*
FRCTC_I2C (**KS/KH**) **(KF/KFW/KFC)**	<B> *FRC device is not finished Initial sequence* FRC device I2C communication failure <T/B> *FRC device is not finished Initial sequence* FRC device I2C communication failure
AUD_ERR_I2C (**KP/KPSP/KS/KH only**)	<B/K> Audio amp I2C communication failure
4KPQ_ERR_I2C **(KS/KH only)**	<B> 4KPQ device I2C communication failure

Blue italic: detect at startup sequence only.
<G>: Power supply board,
<B>: Main board,
<T>: T-con board,
<LD>: LD board (if AC adapter model, it would power supply for Set),
<P>: Panel module,
<S>: Speaker,
<A>: Power Adapter,
<Tu>: Tuner board,
<K> : Audio board (KFW/KPSP only)

LED Pattern

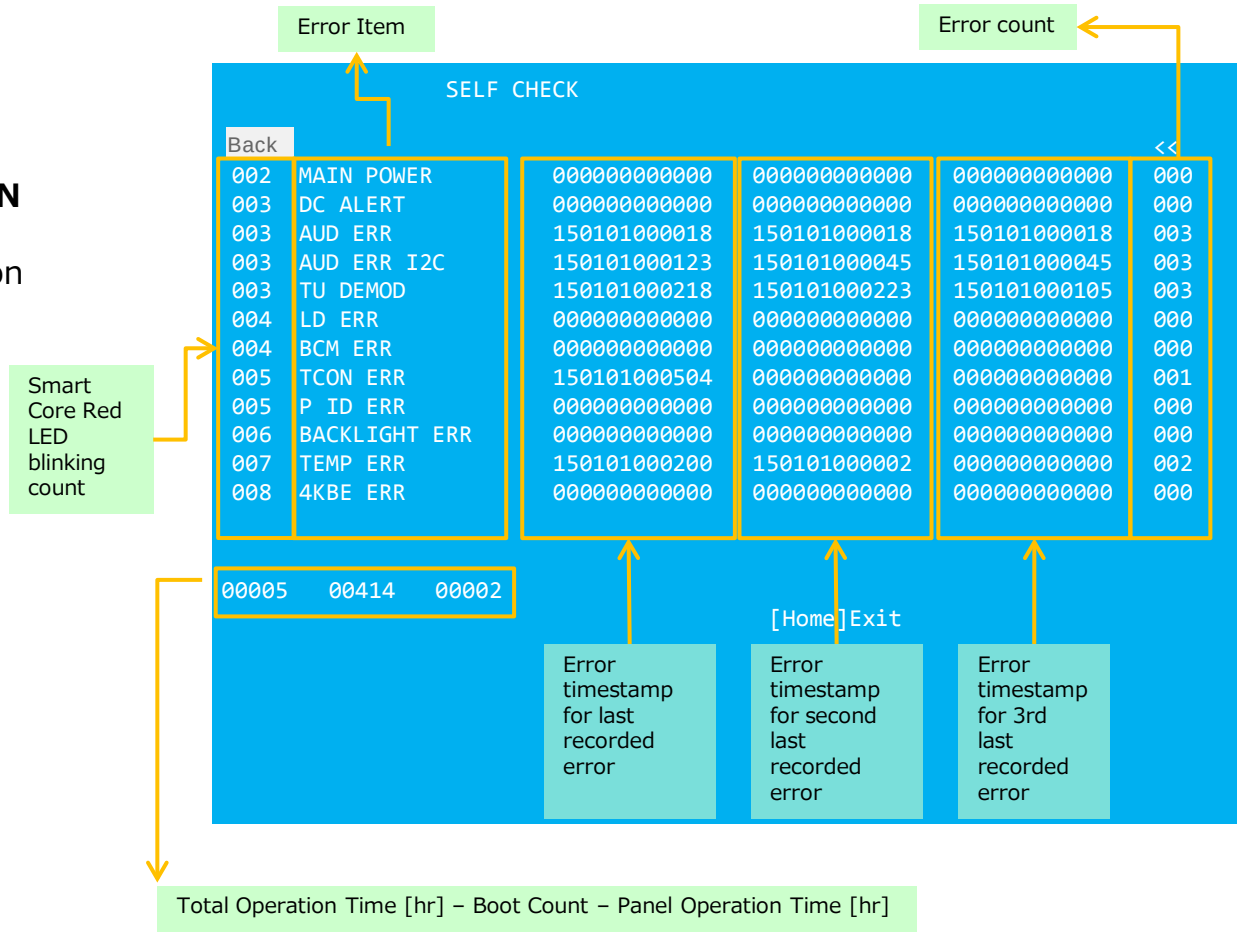
When safety shutdown occurs, Standby LED display reports the cause by using the lightning patterns as indicated below.



Example: The figure above shows LED display when SHUTDOWN is caused by Audio Error.
It repeats flashing for a specified number of times in 0.5sec/cycle and has a 3 seconds interval of lighting off.
Please note that a 3 seconds interval of lighting off is fixed regardless of abnormal state types.

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)



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 hr.
Therefore, the panel op. time might become larger than the total op. time.

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

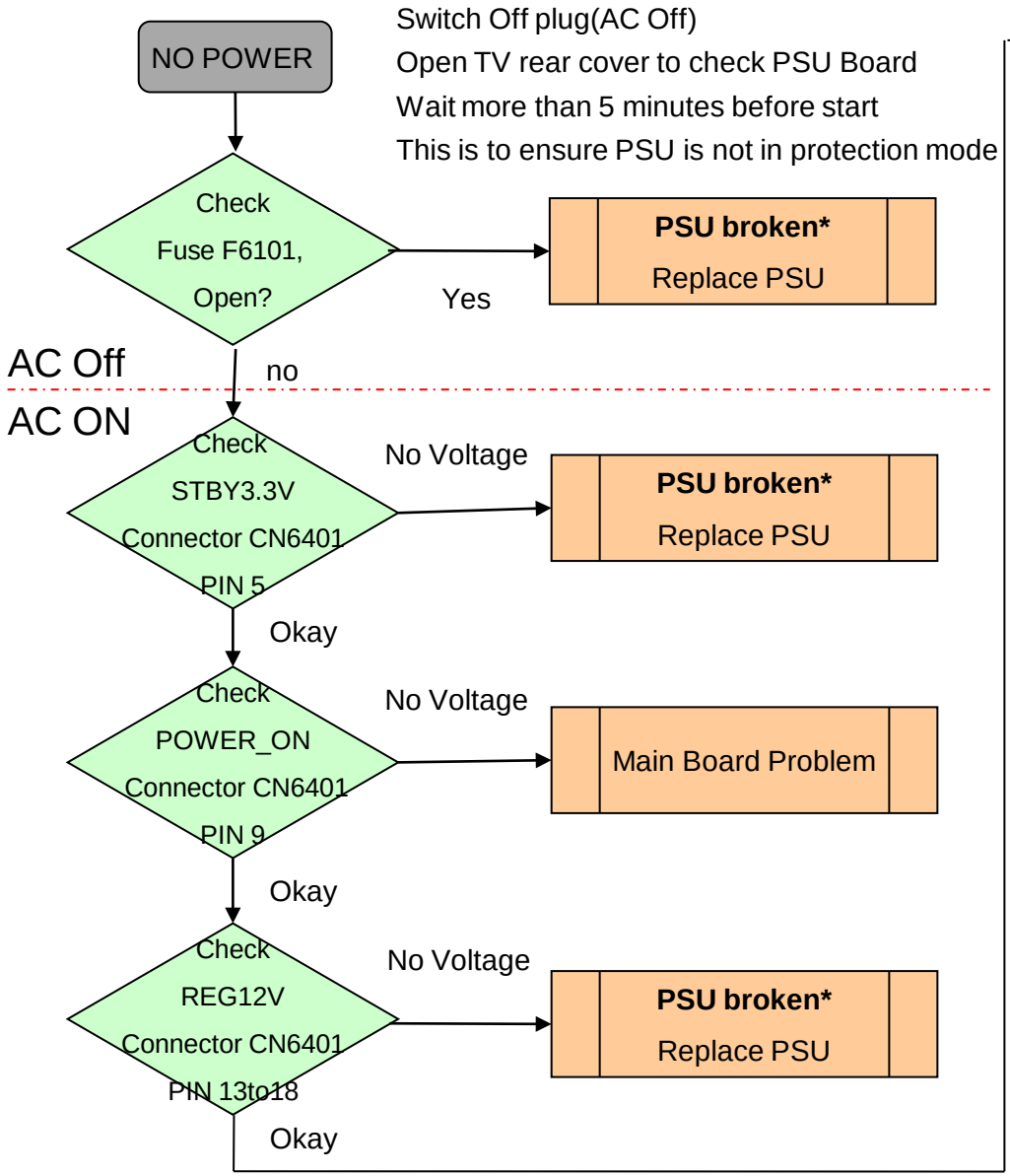
▲ BLUE TRIANGLE: Secondary possible defective part

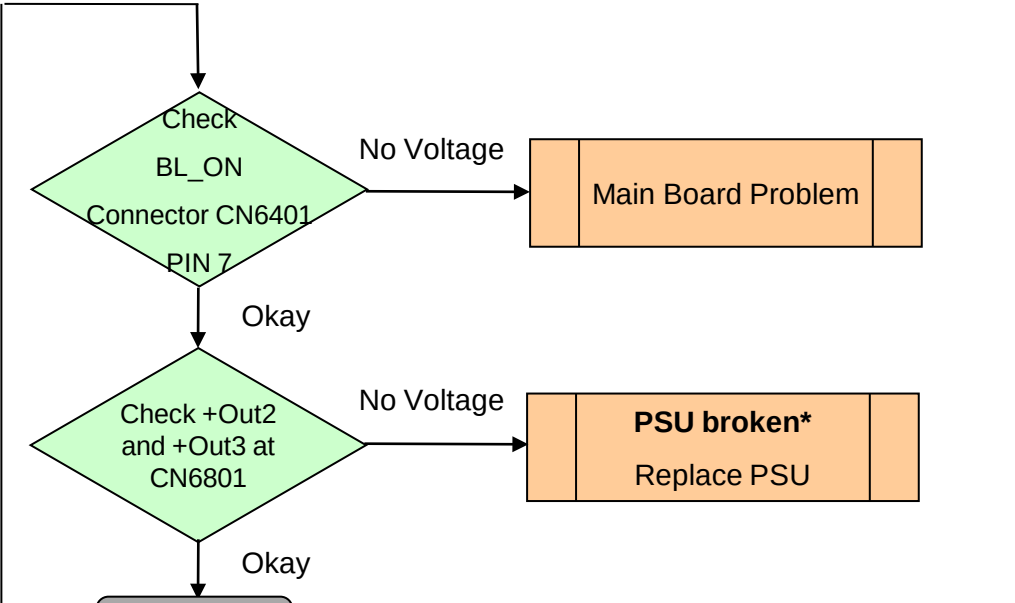
ABC BLACK TEXT: Board that may correct the symptom

GN3 KF segment

Reference	Symptoms - Shutdown. Power LED blinking red diagnostics sequences									No Power	Video - missing or distorted			Remote	Network	Audio	Smart Core	Bluetooth (BT)
	2	3	4	5	6	7	8	9	10	No White Power LED & does not reponse to remote (Dead Set)	Stationary colored lines or dots	No video One of Inputs	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
B* Board	▲	●	▲	▲	▲	●	●			▲	▲	●	●	▲	▲	●	▲	▲
G* Board	●	▲	▲	▲	●					●						▲		
H* Board										▲				●			●	
K* Board		▲														●		
Speaker		▲														●		
Wifi & BT Module							●								●			●
LD* Board			●										▲					
V By One FFC				▲							▲		▲					
Tcon				●					▲		▲		▲					
LCD Panel			▲	●	●	▲					●		▲					

KF/KFW 55” No Power(GL71 PSU board)





Connector	Output Name	Input/output Voltage	PIN
CN6401	STBY3.3V	3.35~3.55V	5
CN6401	POWER_ ON	2.6~3.55V	9
CN6401	REG12V	12.2~13.2V	13~18
CN6401	BL_ON	2.6~3.55V	7
CN6801	+OUT2/3	85.5~125.3V	2~3

*If PSU board replaced, please proceed with PSU standalone check

GL71 Broken PSU standalone checking

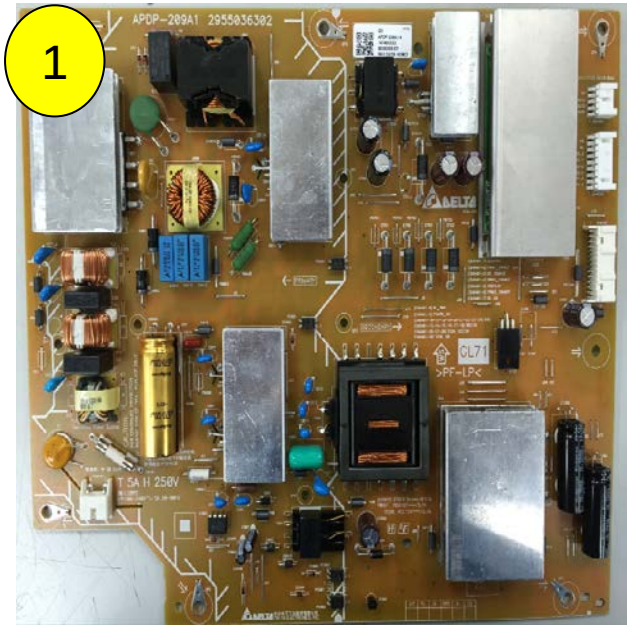
1. Appearance check
2. PSU info checking and confirmation
3. Broken parts checking

Note: PSU board CANNOT be repair(unless requested by design)

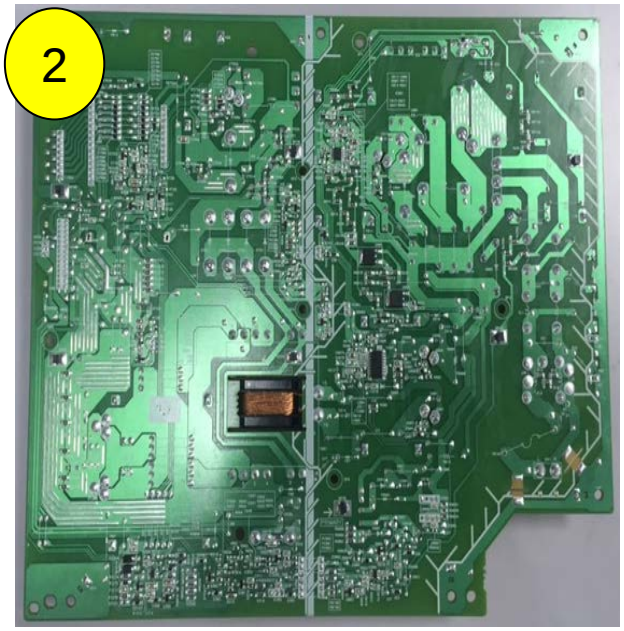
Any request to repair will be instruct.

Appearance check

No	Operation	Tool	Remarks
1	Check A-side appearance	Glove	Visual check
	Keep record	PC/Pen/Photo	
2	Check B-side appearance	Glove	Visual check
	Keep record	PC/Pen/Photo	



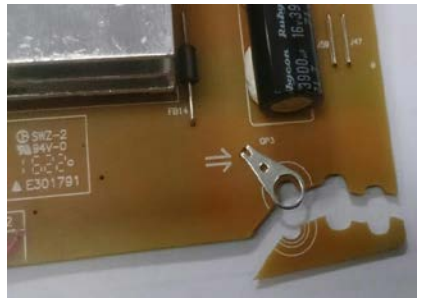
A-side



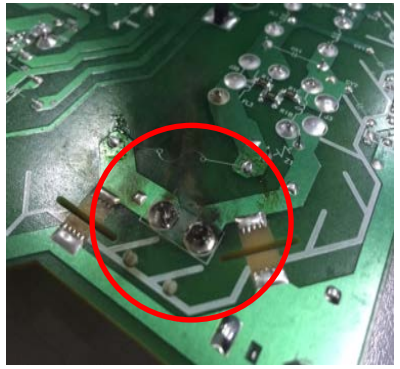
B-side

Criteria: No abnormality

Example: PWB crack/Burn mark



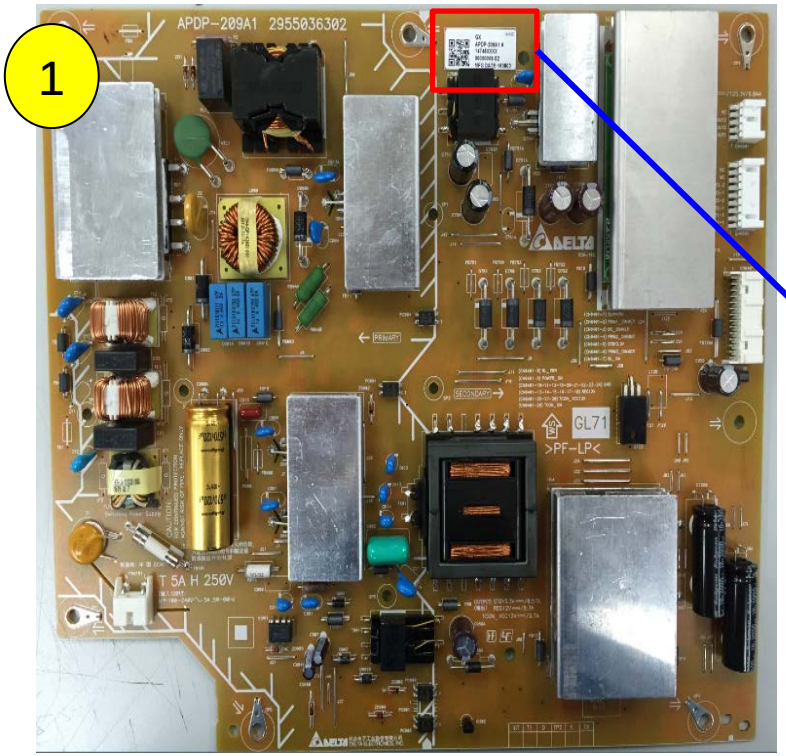
PWB crack

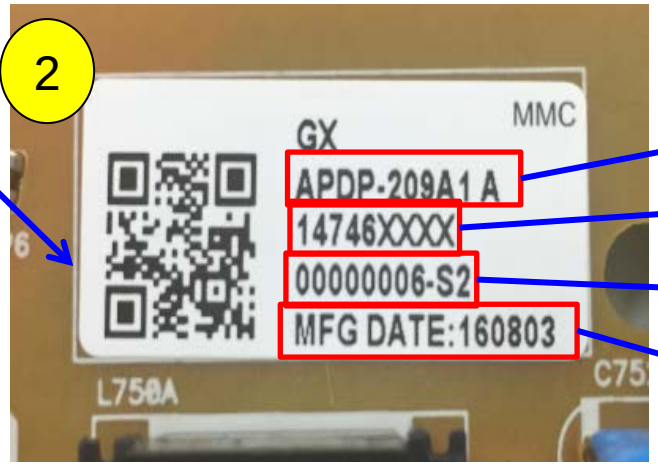


Burn mark at AC inlet PIN(L~N)

PSU info checking and confirmation

No.	Operation	Tool	Remarks
1	Check label marking	Glove	Visual check
	Keep record	PC/Pen/Photo	
2	Record PN/SN/MFG Date	Glove	Visual check
	Keep record	PC/Pen/Photo	





PSU name

PSU PN(Part Number)

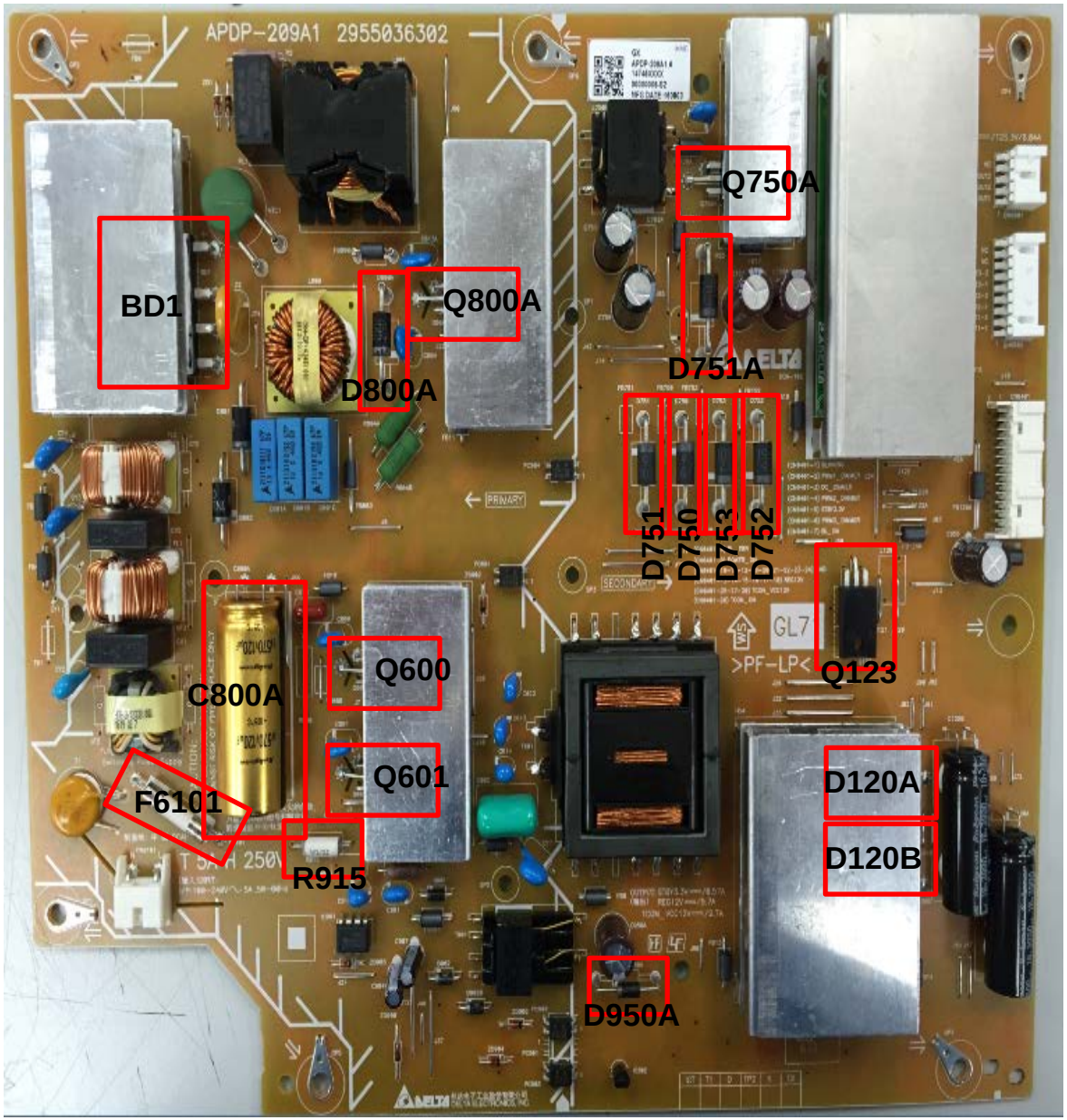
PSU SN(Serial Number)

MFG Date(Manufacturing date)

Broken parts checking

No.	Parts	Checking	Criteria
1	F6101(Fuse)	Resistance	NG (high impedance)
2	C800A(main cap)	Visual	NG (vent)
3	BD1(Bridge diode)	Resistance	NG (low impedance)
4	Q800A(PFC MOSFET)	Resistance	NG (low impedance)
5	D800A(PFC diode)	Resistance	NG (low impedance)
6	Q600(LLC MOSFET)	Resistance	NG (low impedance)
7	Q601(LLC MOSFET)	Resistance	NG (low impedance)
8	D120A(LLC Rectifier for 12V)	Resistance	NG (low impedance)
9	D120B(LLC Rectifier for 12V)	Resistance	NG (low impedance)
10	Q750A(LED boost MOSFET)	Resistance	NG (low impedance)
11	D751A(LED boost diode)	Resistance	NG (low impedance)
12	D750(LLC Rectifier for LED)	Resistance	NG (low impedance)
13	D751(LLC Rectifier for LED)	Resistance	NG (low impedance)
14	D752(LLC Rectifier for LED)	Resistance	NG (low impedance)
15	D753(LLC Rectifier for LED)	Resistance	NG (low impedance)
16	R915(Aux Fusible resistor)	Resistance	NG (high impedance)
17	D950A(Aux Rectifier diode)	Resistance	NG (low impedance)
18	Q123(Tcon12V switch MOSFET)	Resistance	NG (low impedance)

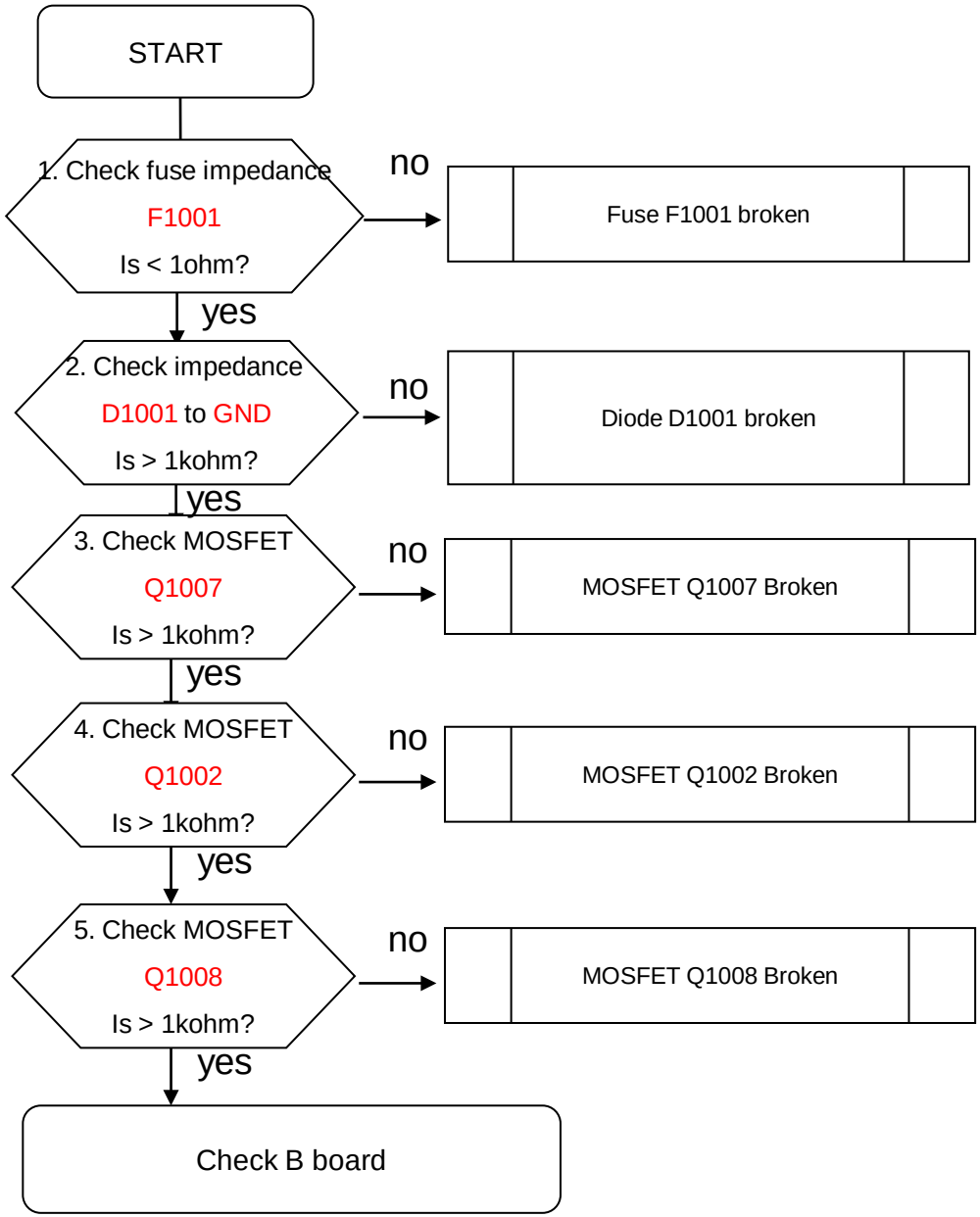
Broken parts checking(parts location)



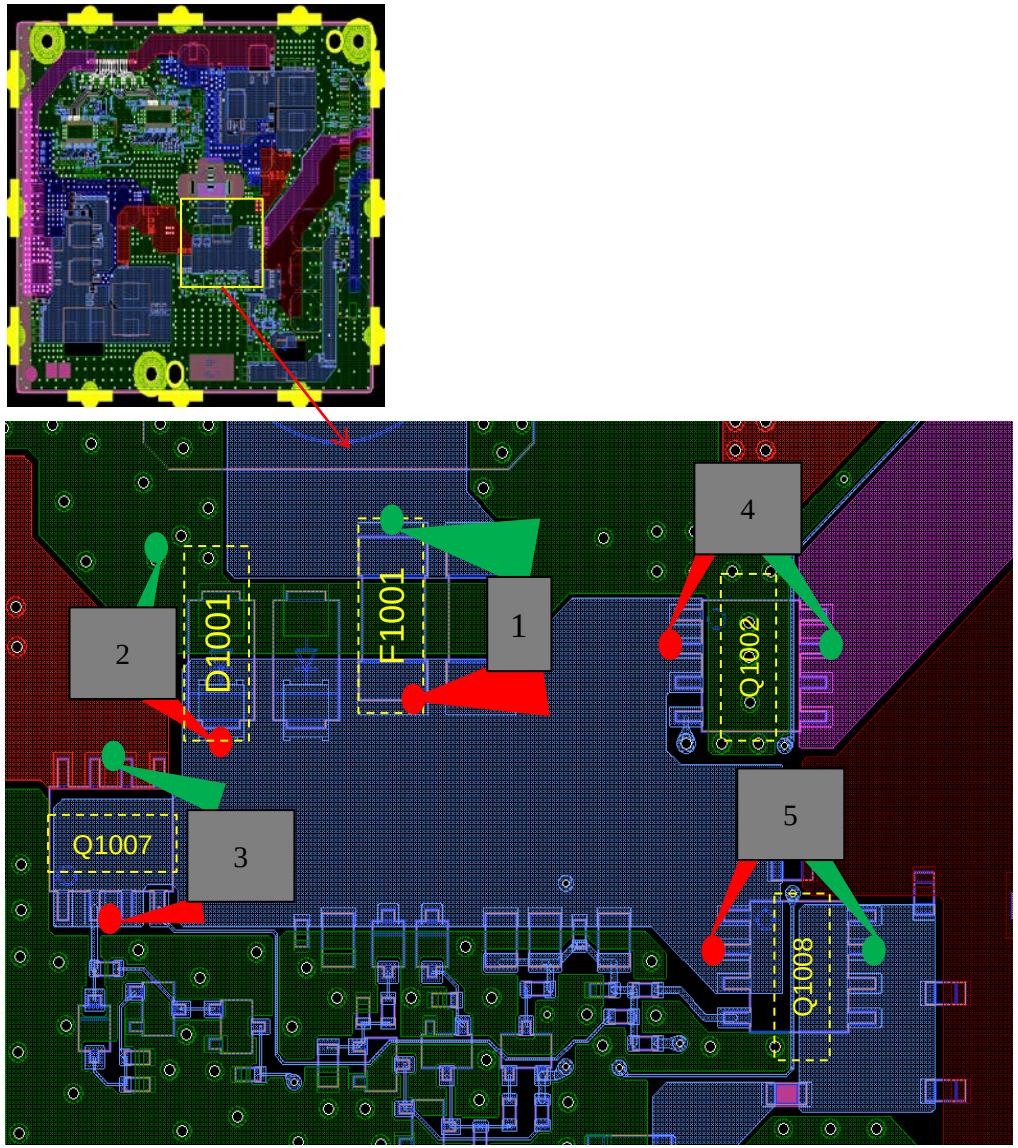
Escalation Check sheet(Hardware)

Defect symptom Details				
Does problem occur during first turn on?	Yes:		No:	
Frequency of the symptom	Always:		Intermittently:	
Does the symptom recover by AC Off for more than 5 minutes?	Yes:		No:	
Please describe the recover method (if any)				
Please provide the humidity and temperature condition of the defect area/ Wheater During Problem Occur	**Temperature:**	**____°C**	**Humidity:**	**____H**
Symptom occur for 1 particular set?	Yes:		No:	(Specify)
Able to duplicate the symptom in workshop	Yes:		No:	
Other comment/Information				
Any LED blink indication	Yes:	____times	No:	
Are there any other equipment or devices broken together?	Yes:		No:	
Is there any burn mark could be notice on the defective board?	Yes:	____parts	No:	
Symptom occur on all input modes (HDMI, Video, Analogue RF, Digital RF)	Yes:		No:	(Specify)
Any other devices connected to TV set	Yes:		No:	
If yes, please provide the device and brand				

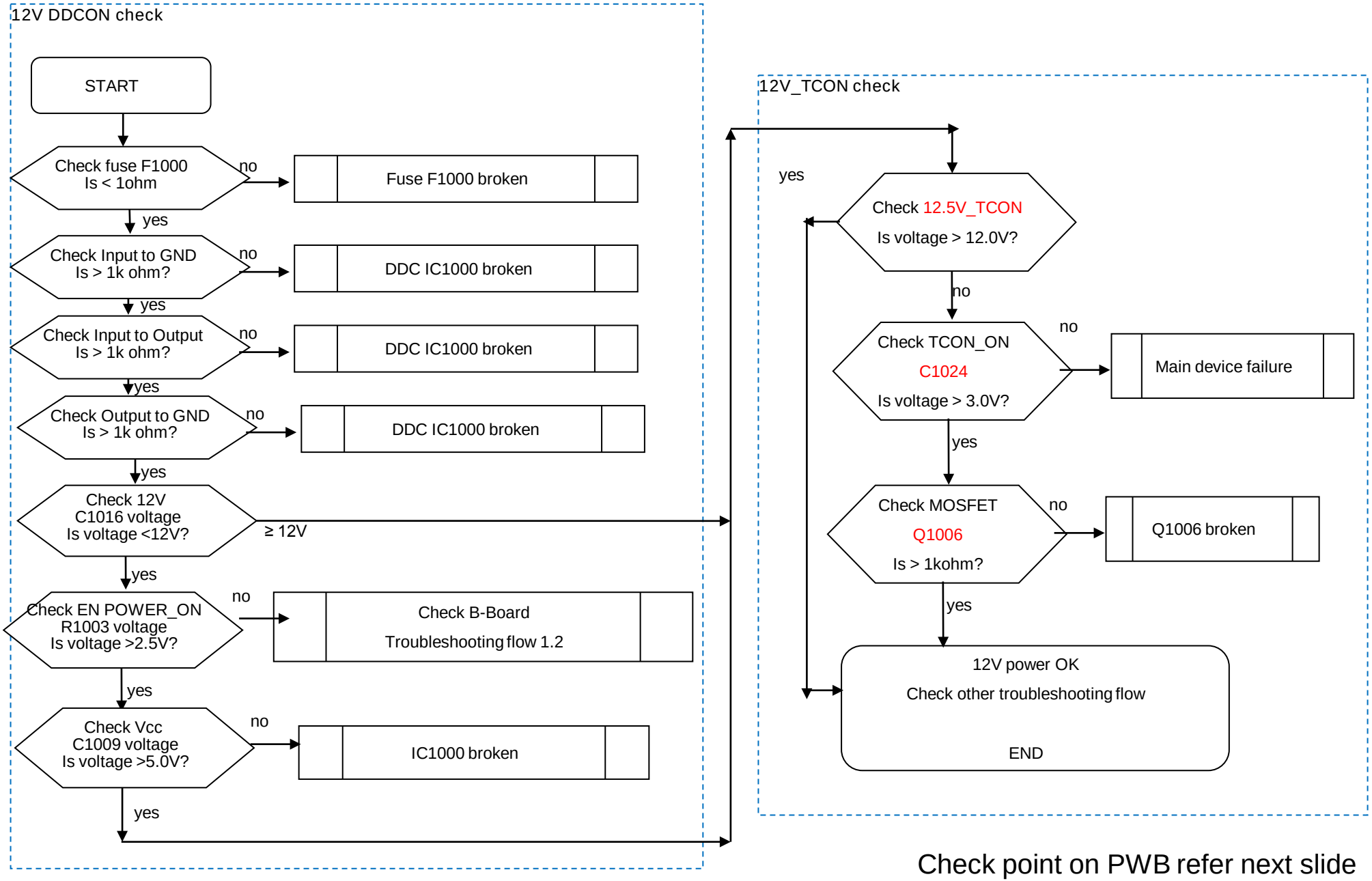
1.1 No power - LD board



LD board

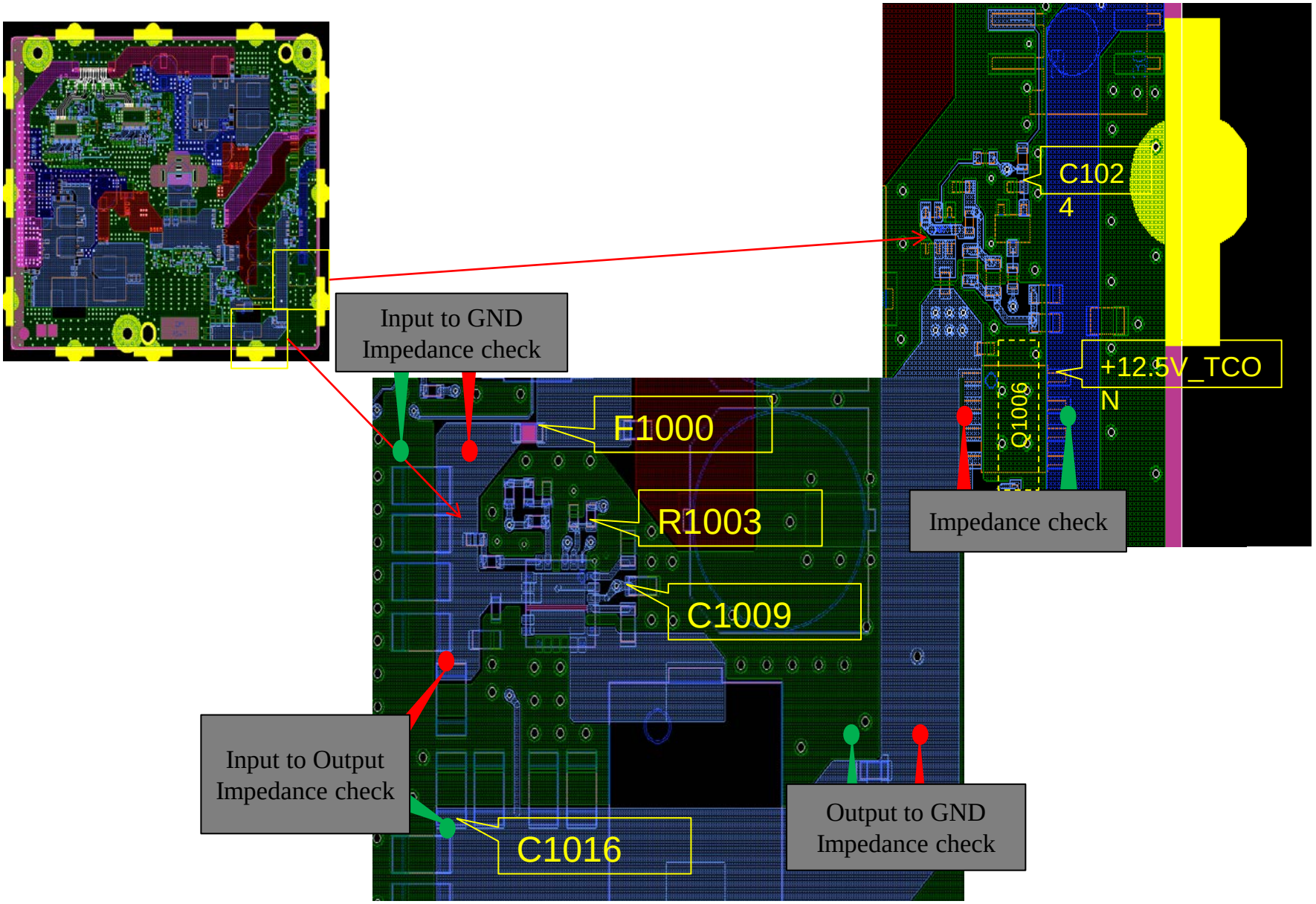


1.1 No power - LD board

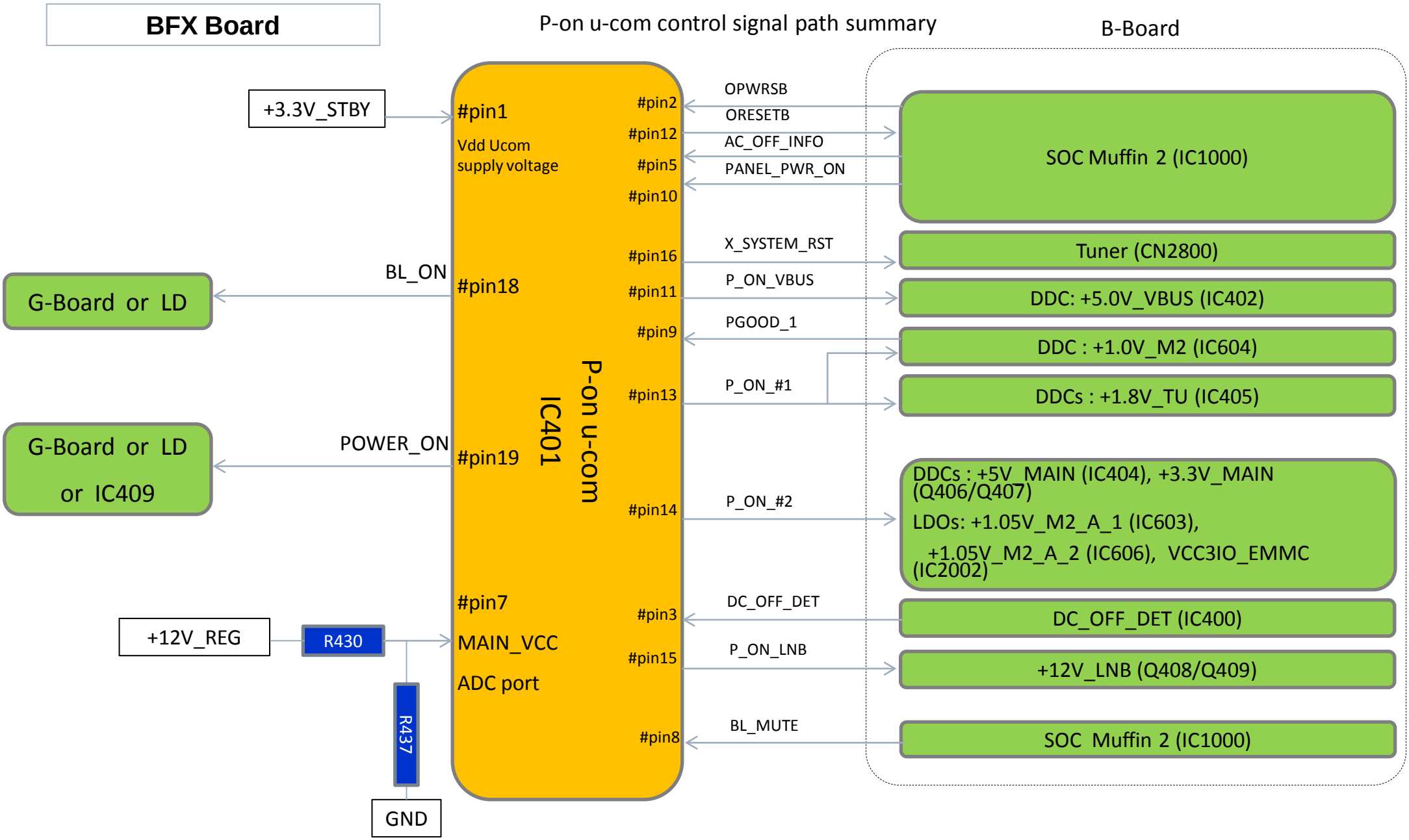


Check point on PWB refer next slide

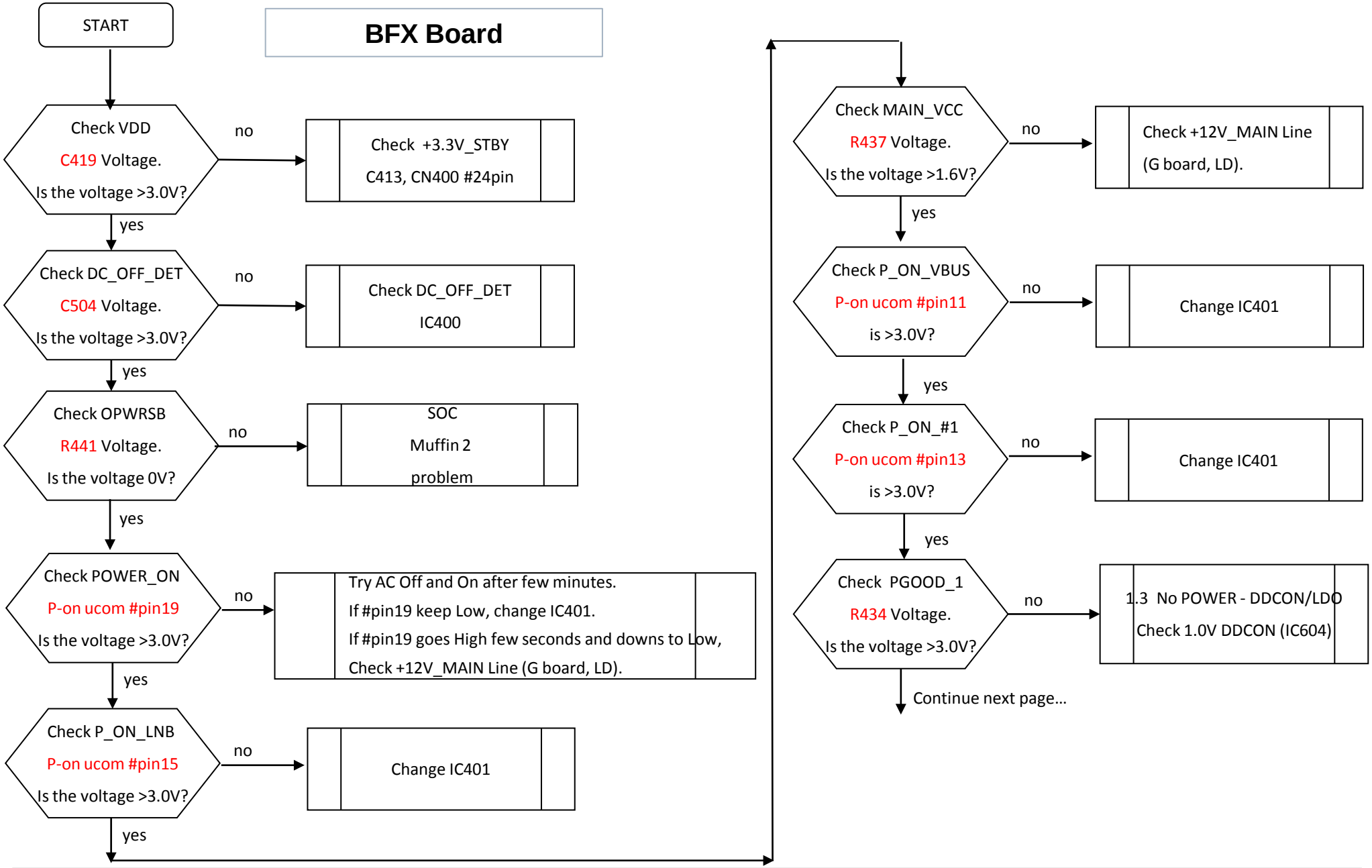
1.1 No power - LD board



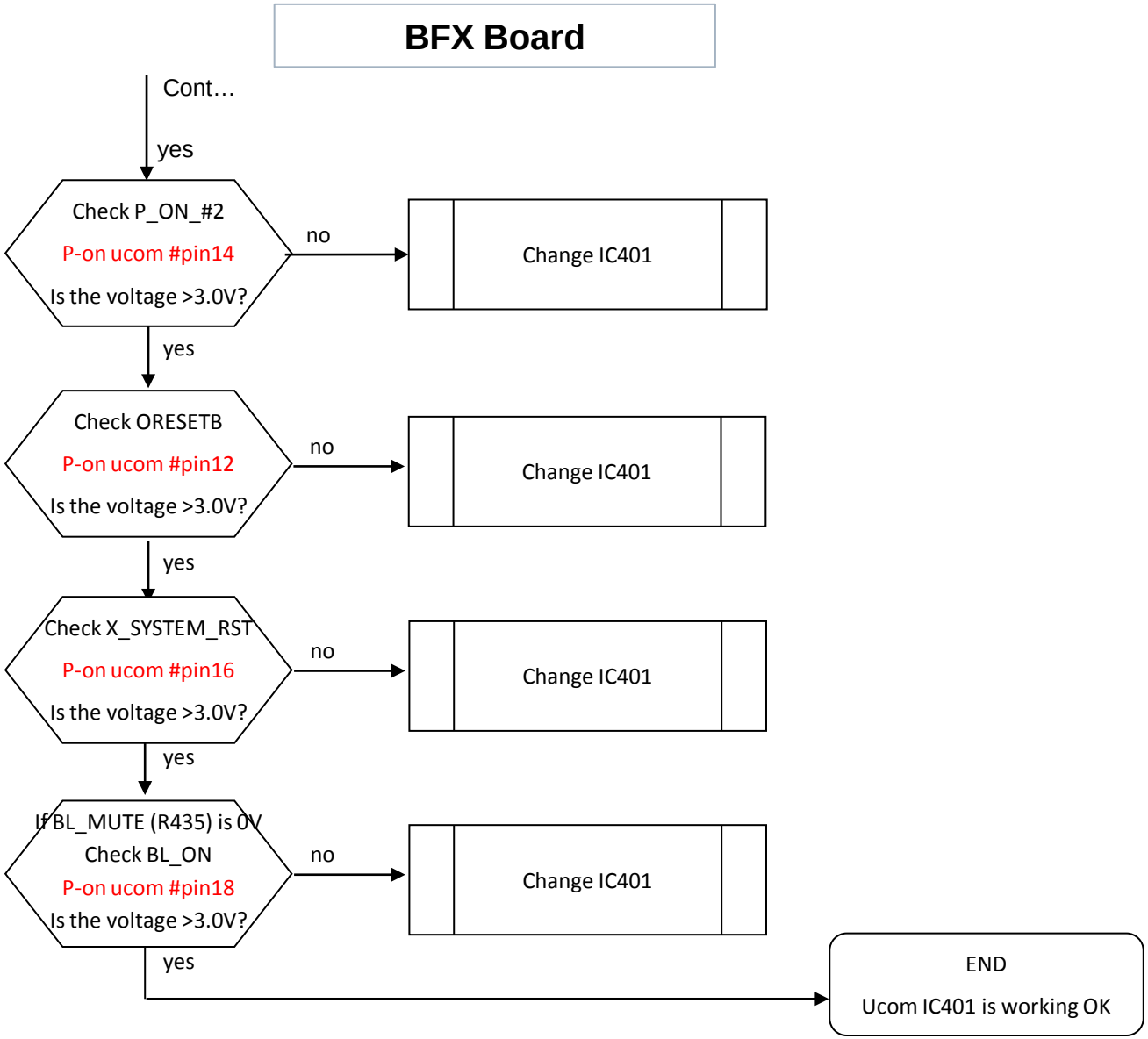
1.2 No Power u-com Failure



1.2 No Power u-com Failure



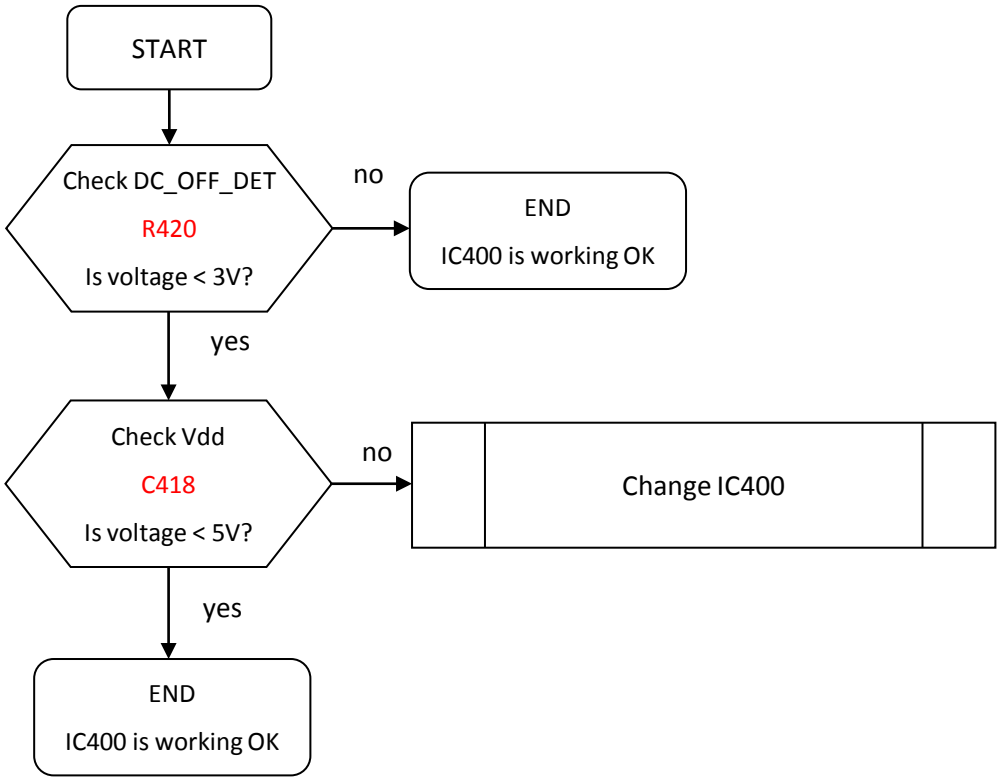
1.2 No Power u-com Failure



1.2 No Power u-com Failure

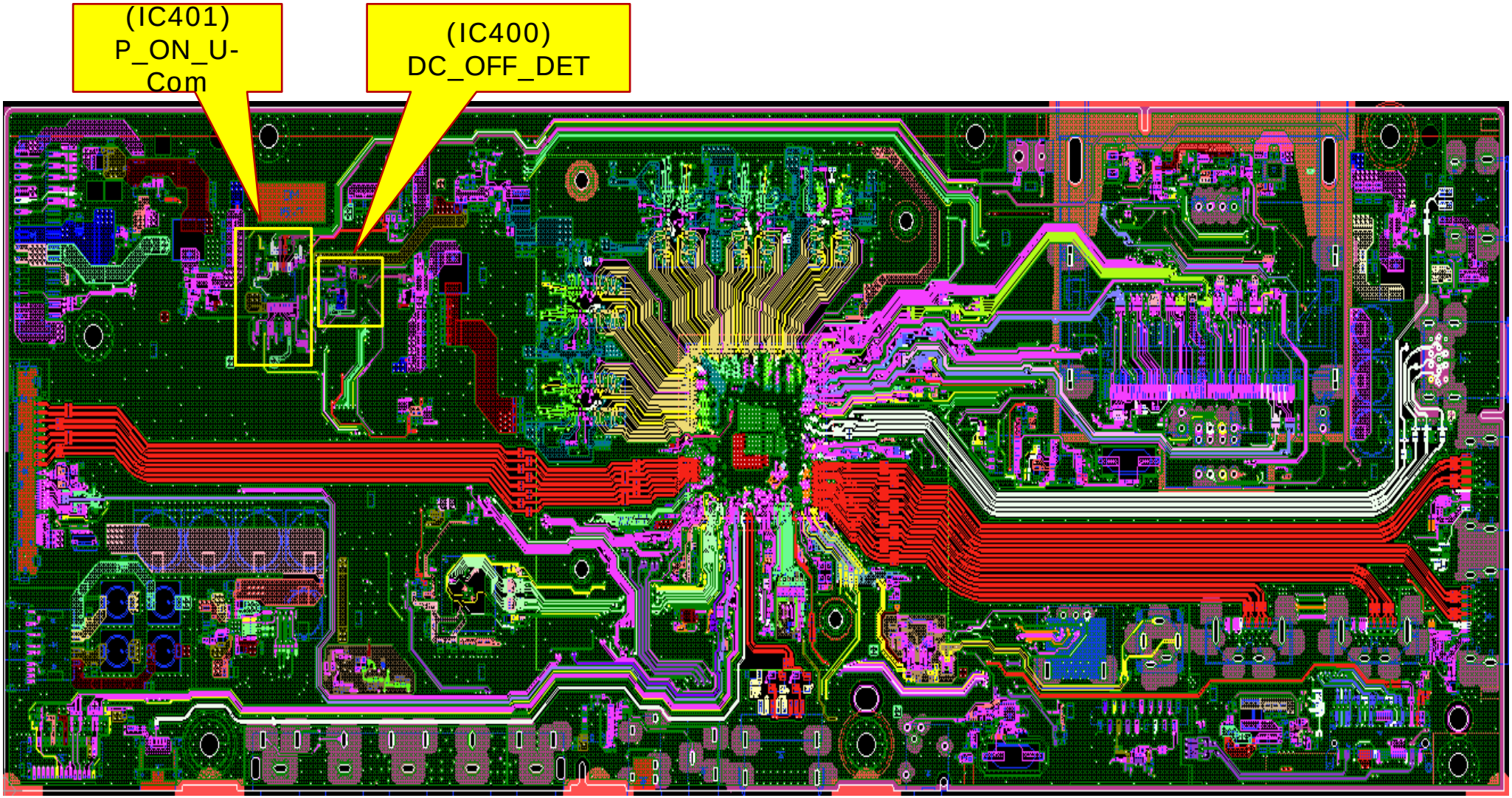
BFX Board

DC_OFF_DET check



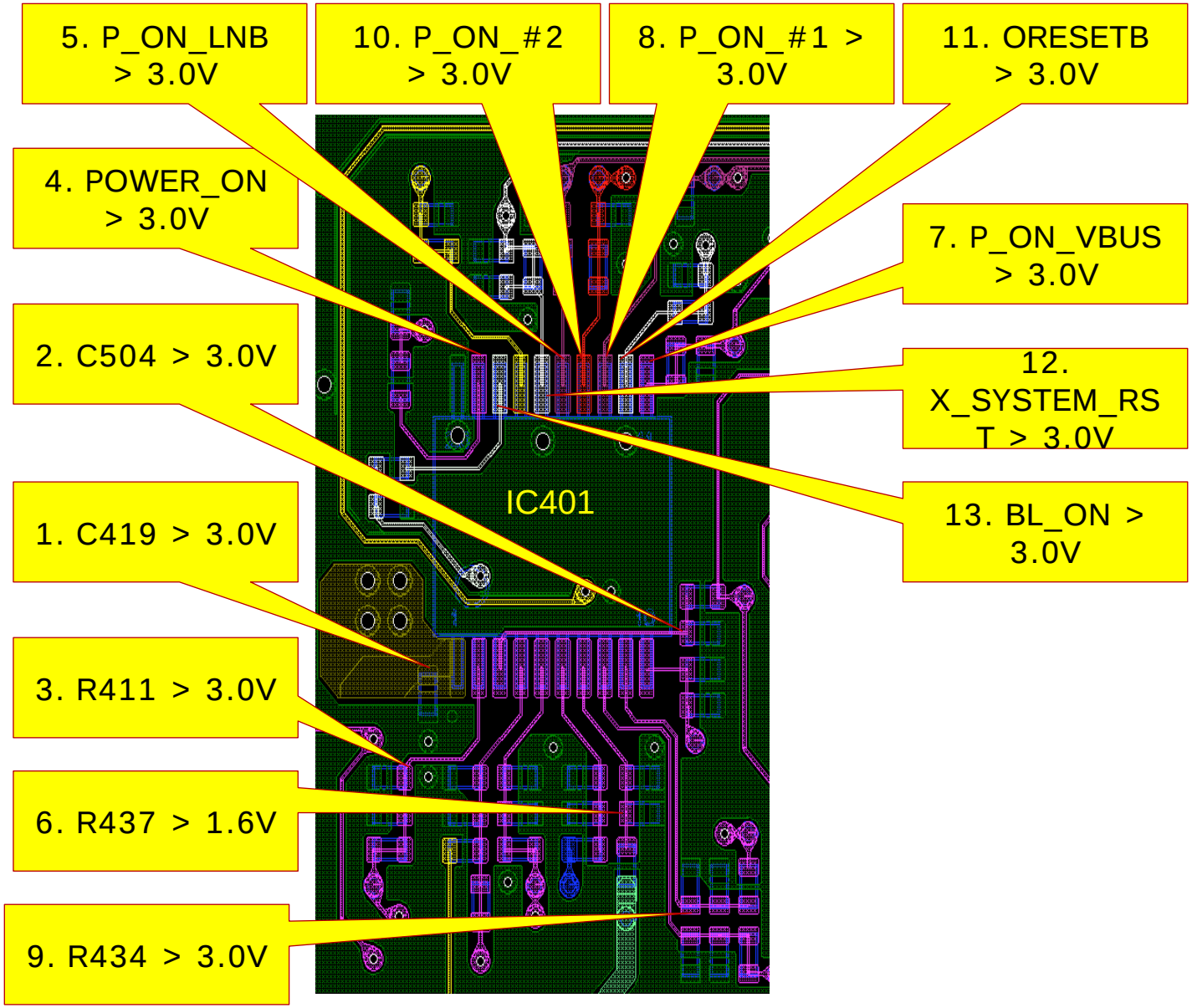
1.2 No Power u-com Failure

P-on u-com & DC_OFF_DET Location



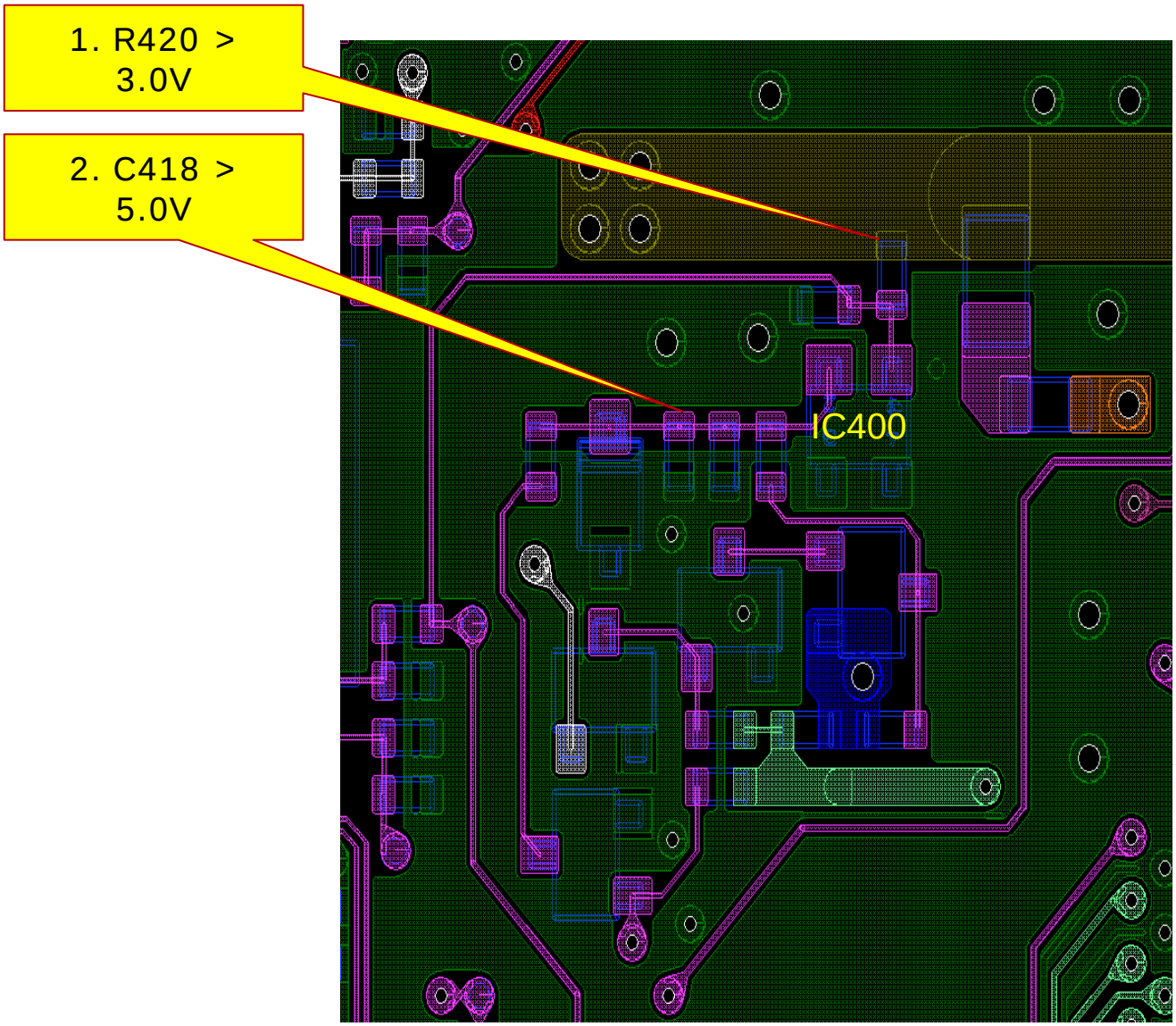
1.2 No Power u-com Failure

P-on u-com & DC_OFF_DET Location



1.2 No Power u-com Failure

DC_OFF_DET component location



1.3 No Power DDCON/LDO

DC-DC Converter Reference Points

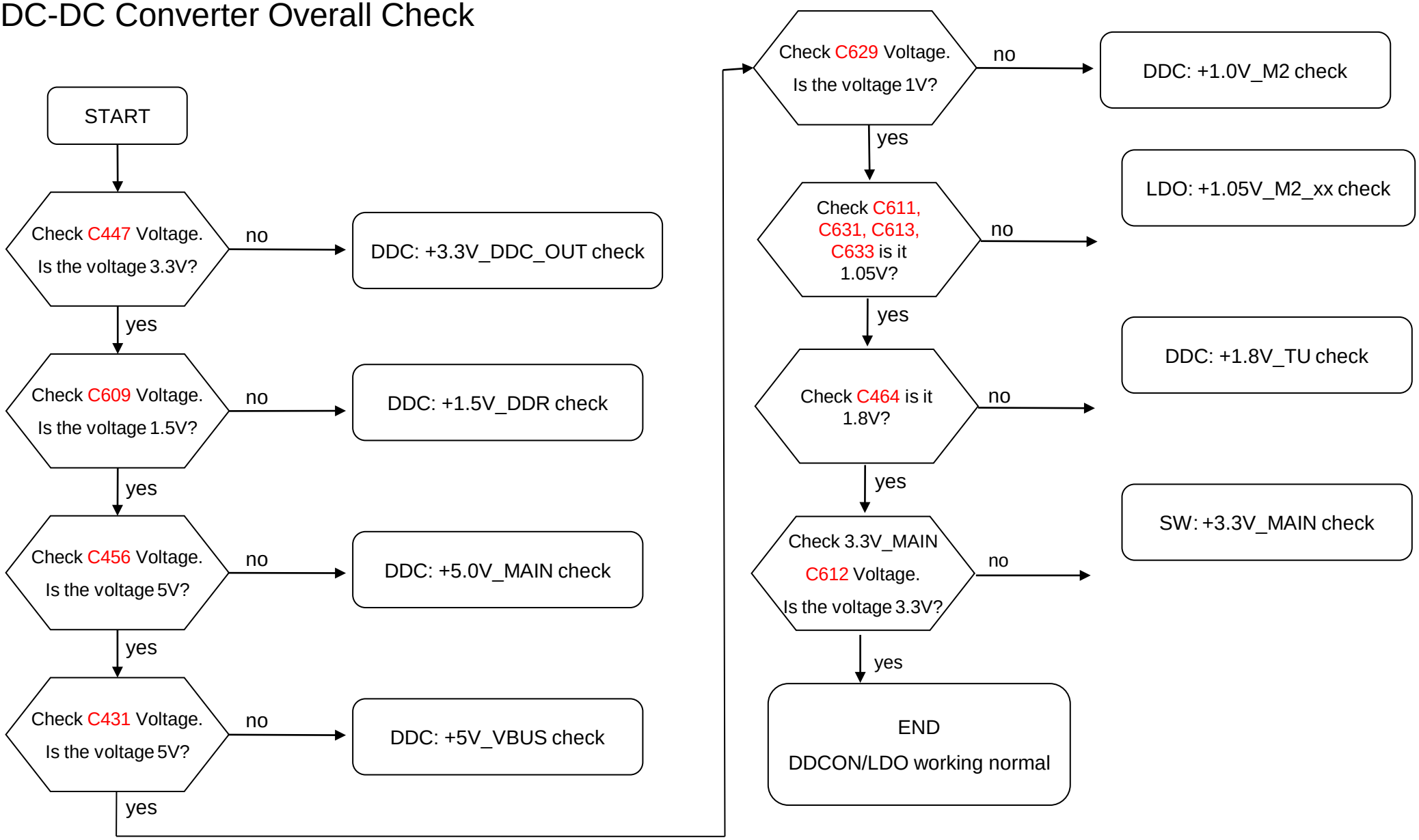
IC Ref	Voltage supply	Output ref.	Enable pin	Enable source	Fuse	Vcc ref.
IC403	+3.3V_STBY	C447	R467	+19.5V_12.5V_MAIN	F401	C443
IC601	+1.5V_DDR	C609	C605	+5V_STBY	-	-
IC404	+5.0V_MAIN	C456	R480	P-on ucom IC401	F402	-
IC402	+5.0V_VBUS	C431	R455	P-on ucom IC401	F400	C428
IC604	+1.0V_M2	C629	R623	P-on ucom IC401	F600	C623
IC405	+1.8V_TU	C464	IC405 #pin4	P-on ucom IC401	F403	-
Q407	3.3V_MAIN	Q407 #pin2	Q407 #pin1	P-on ucom IC401	-	-

LDO Reference Points

IC Ref	Voltage supply	Output ref.	Enable Pin	Enable source	Fuse	VDD ref.
IC602	+1.05V_M2_STBY	C611	IC602 pin#3	+3.3V_STBY	-	C610
IC605	+1.05V_M2_ST_ET	C631	IC605 pin#3	P-on ucom IC401	-	C630
IC603	+1.05V_M2_A_1	C613	IC603 pin#3	P-on ucom IC401	-	R612
IC606	+1.05V_M2_A_2	C633	IC606 pin#3	P-on ucom IC401	-	R632

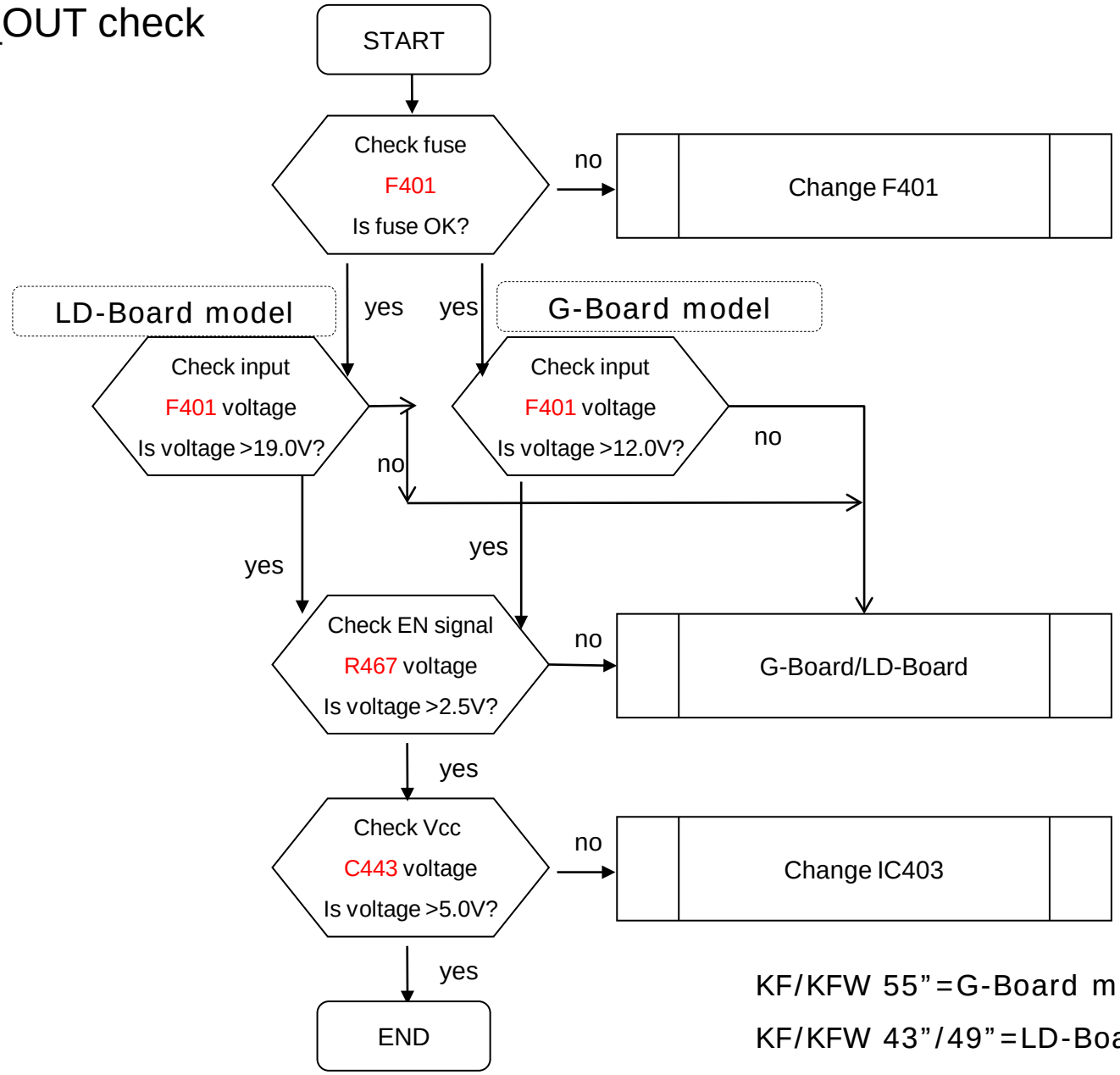
1.3 No Power DDCON/LDO

DC-DC Converter Overall Check



1.3 No Power DDCON/LDO

DDC: +3.3V_DDC_OUT check

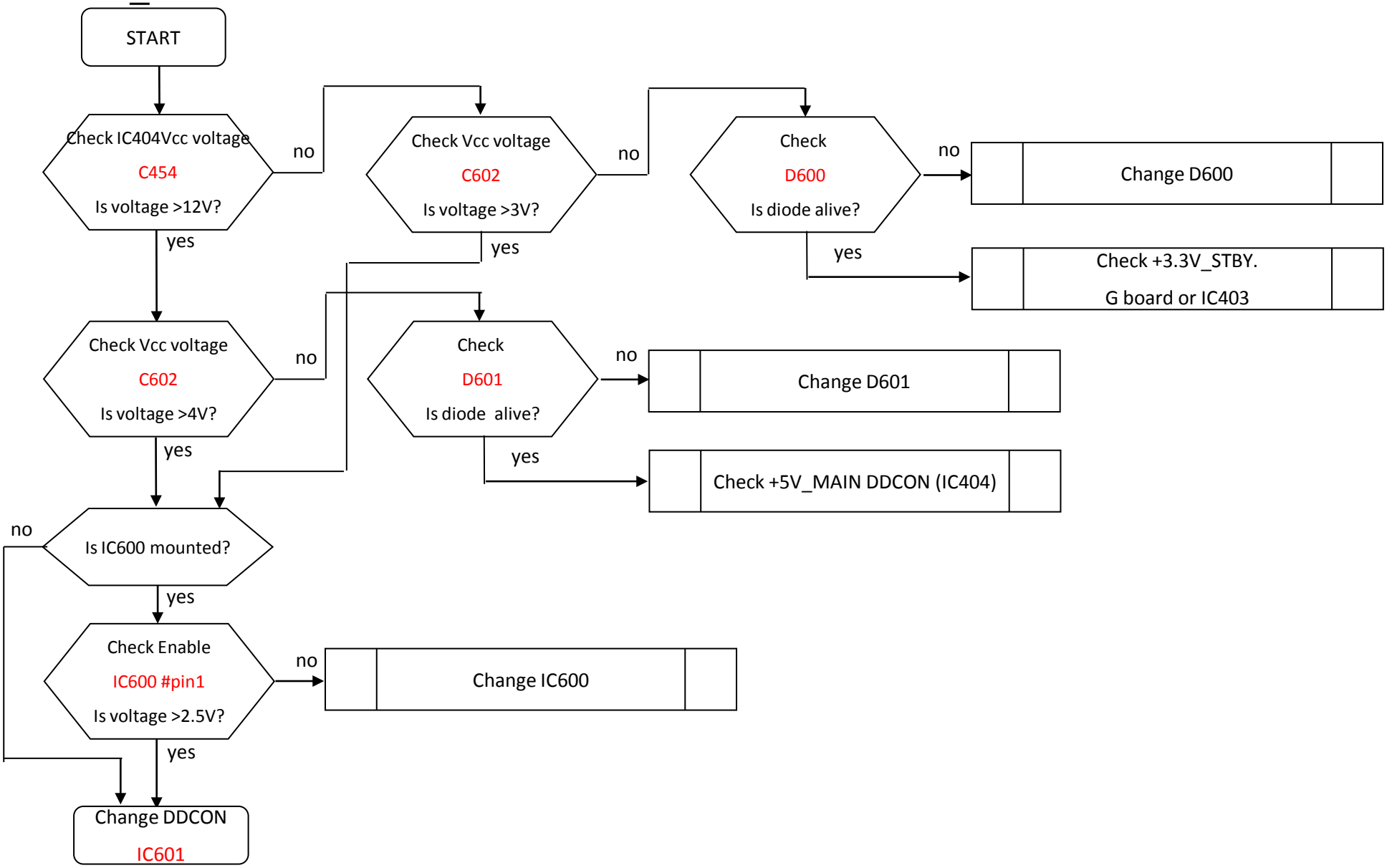


KF/KFW 55”=G-Board model (PSU)

KF/KFW 43”/49”=LD-Board model (ADP)

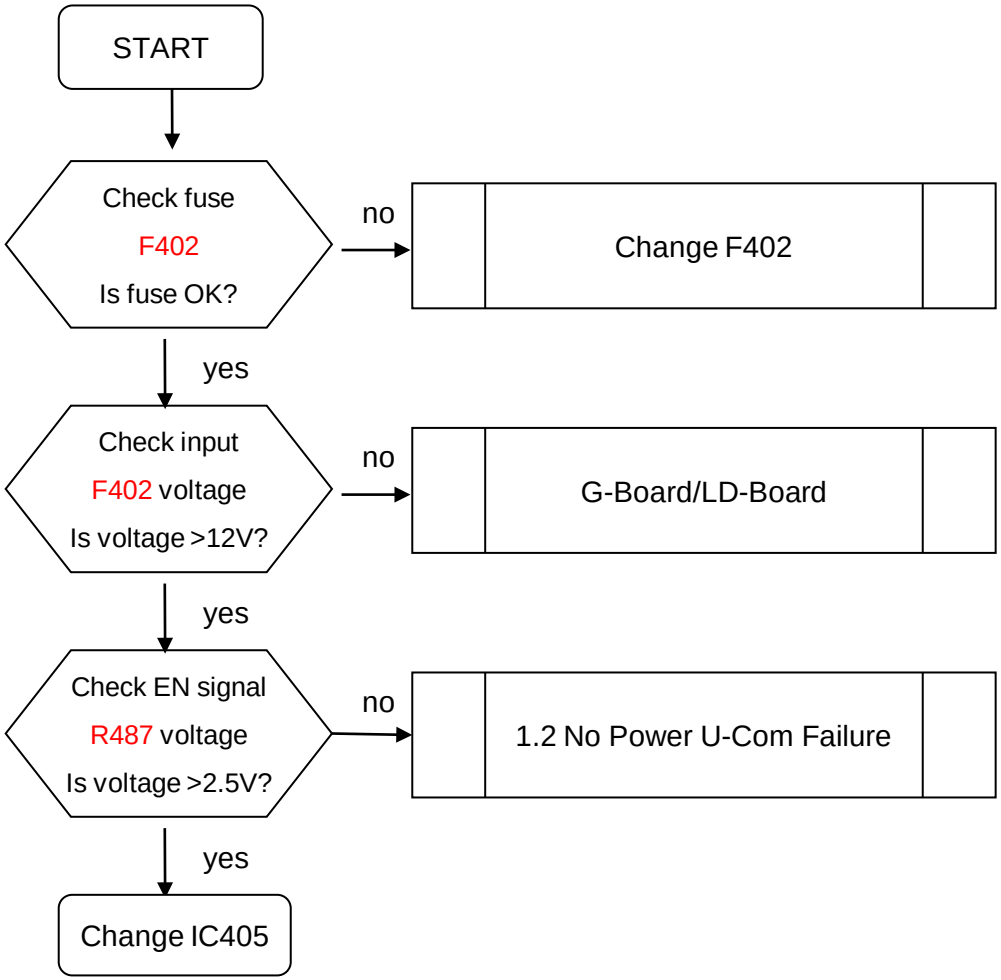
1.3 No Power DDCON/LDO

DDC: +1.5V_DDR check



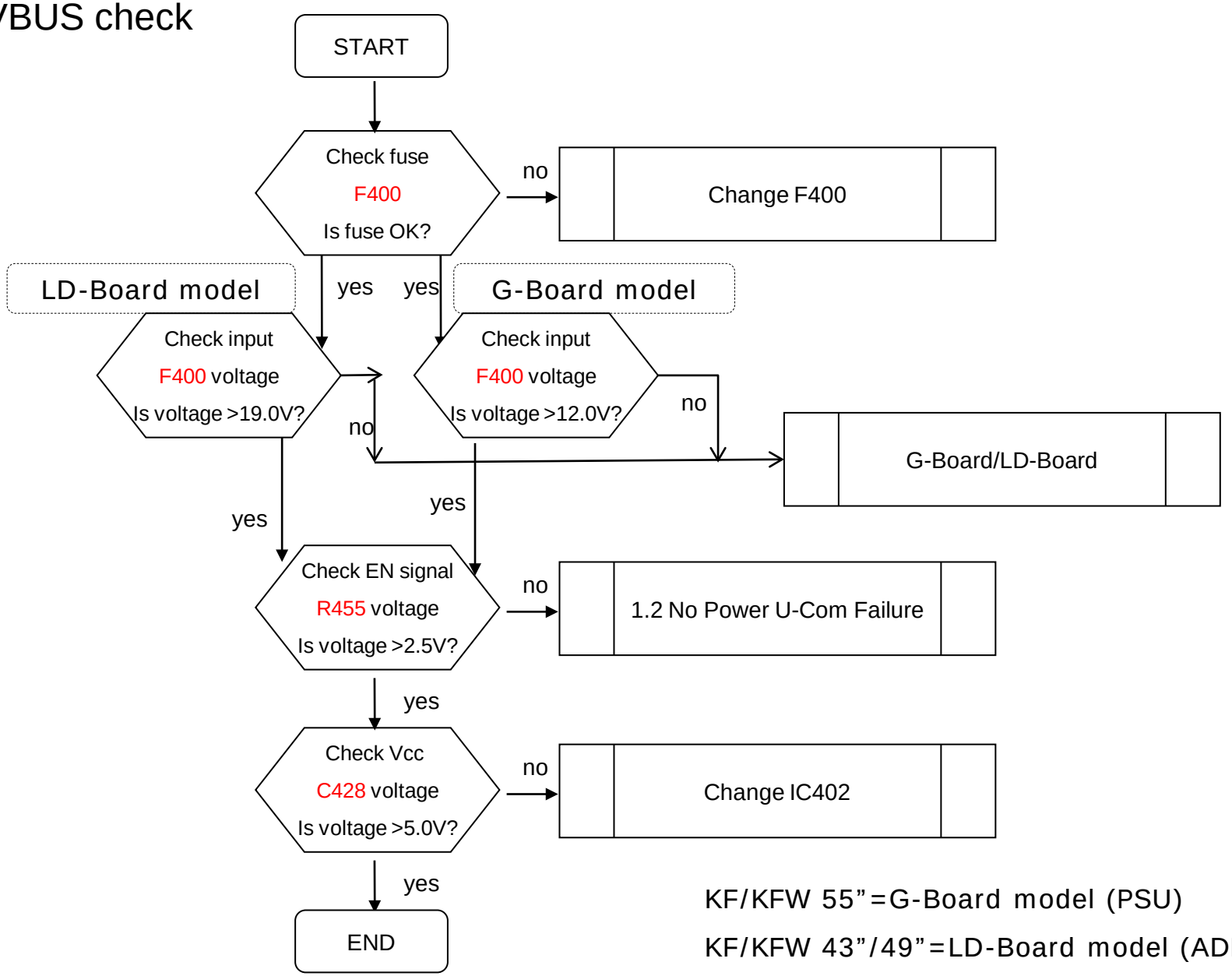
1.3 No Power DDCON/LDO

DDC: +5V_MAIN check



1.3 No Power DDCON/LDO

DDC: +5.0V_VBUS check

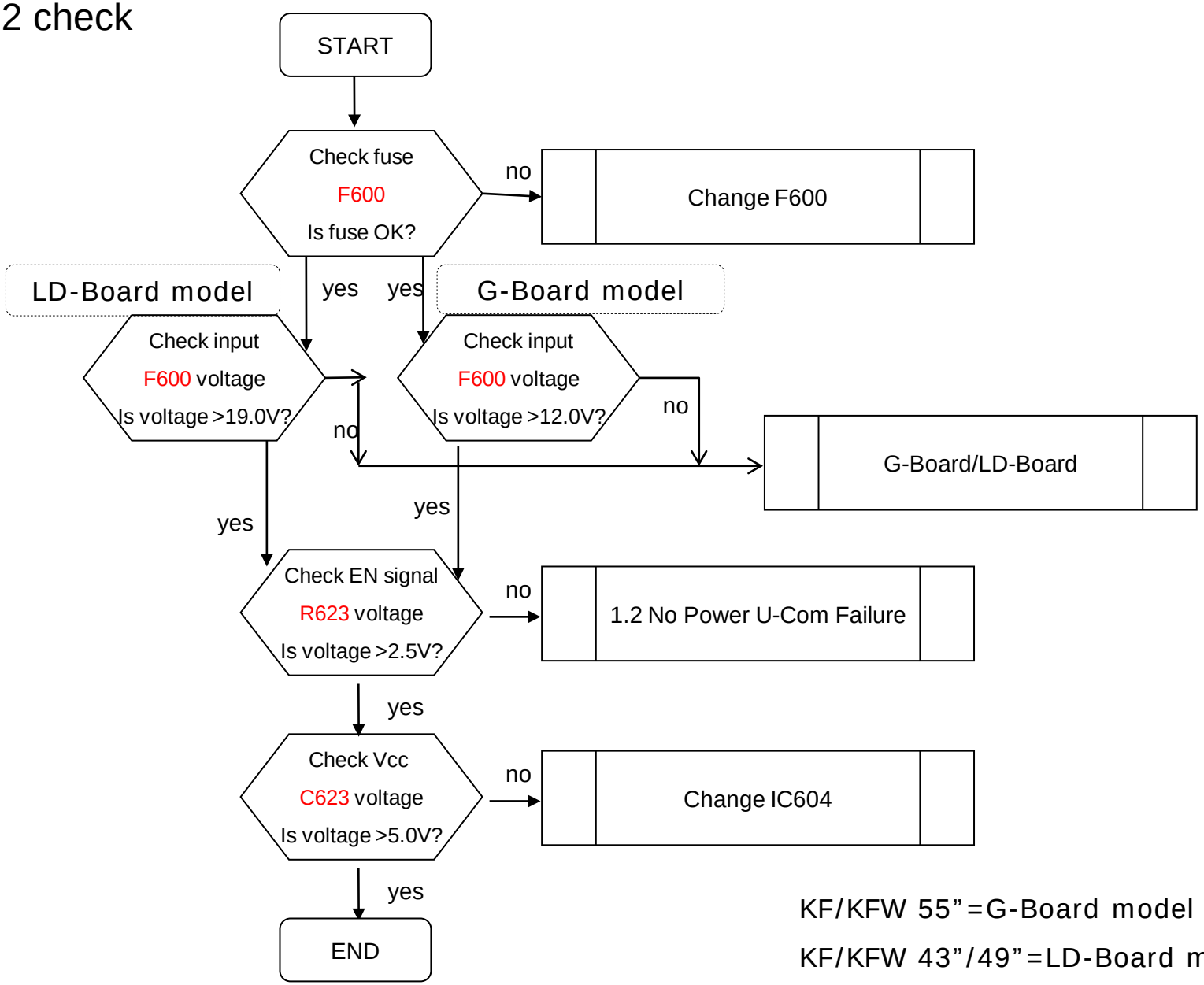


KF/KFW 55”=G-Board model (PSU)

KF/KFW 43”/49”=LD-Board model (ADP)

1.3 No Power DDCON/LDO

DDC: +1.0V_M2 check



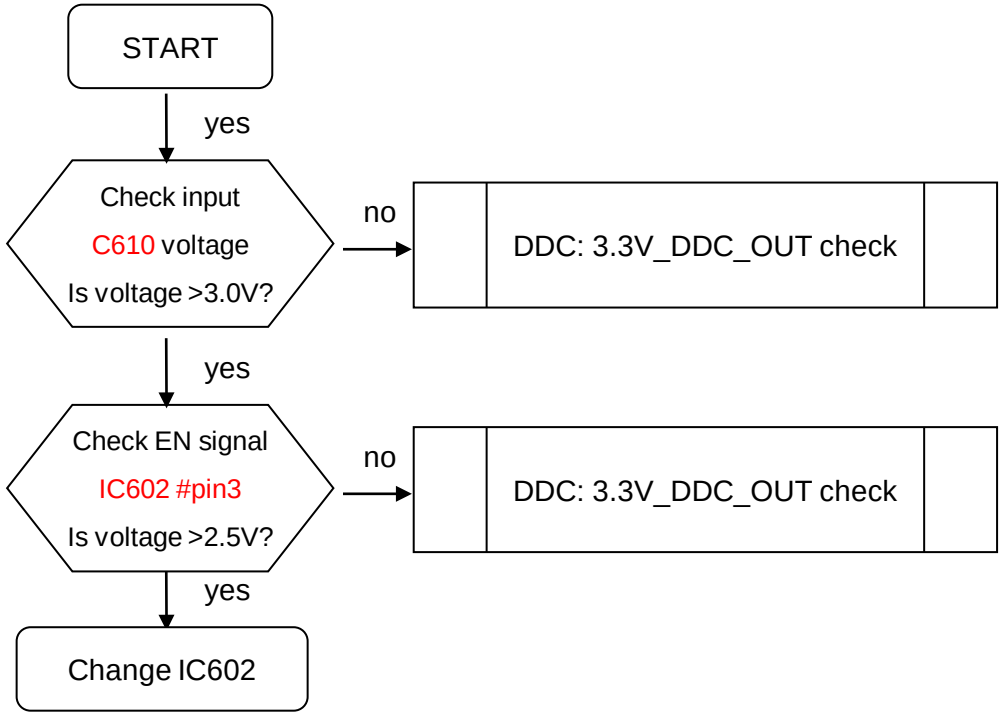
KF/KFW 55”=G-Board model (PSU)

KF/KFW 43”/49”=LD-Board model (ADP)

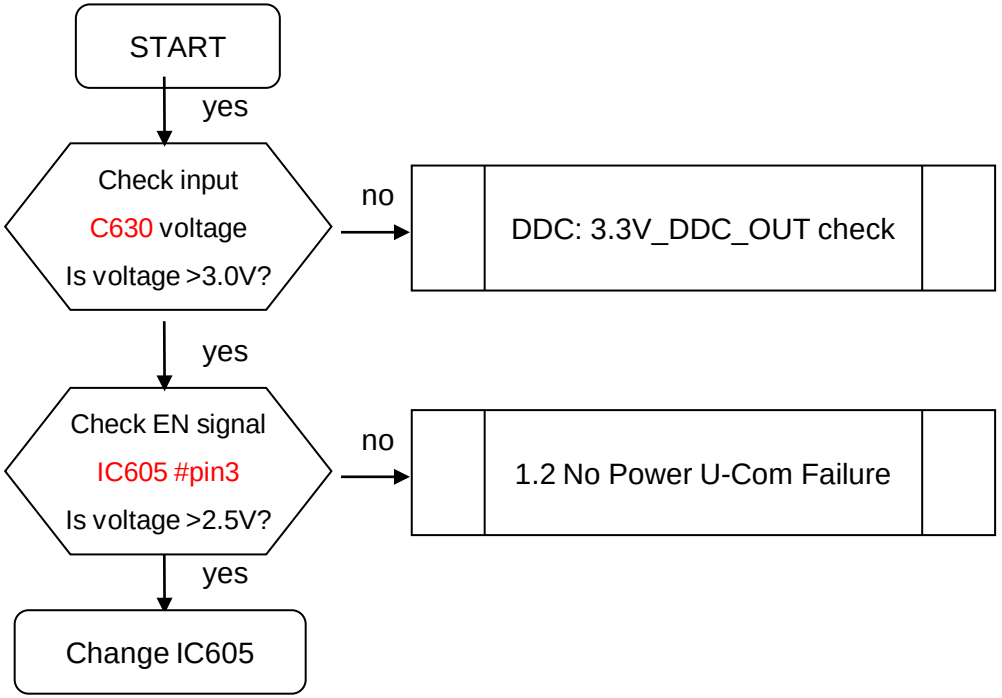
1.3 No Power DDCON/LDO

LDO: +1.05V_M2_xx check

+1.05V_M2_STBY



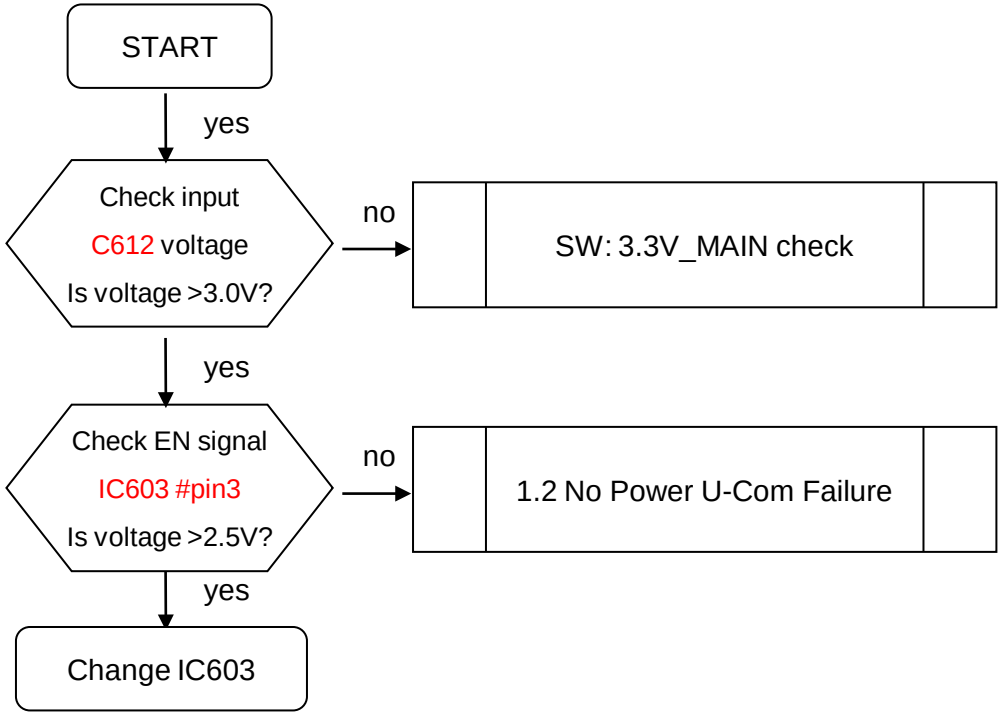
+1.05V_M2_STBY_ET



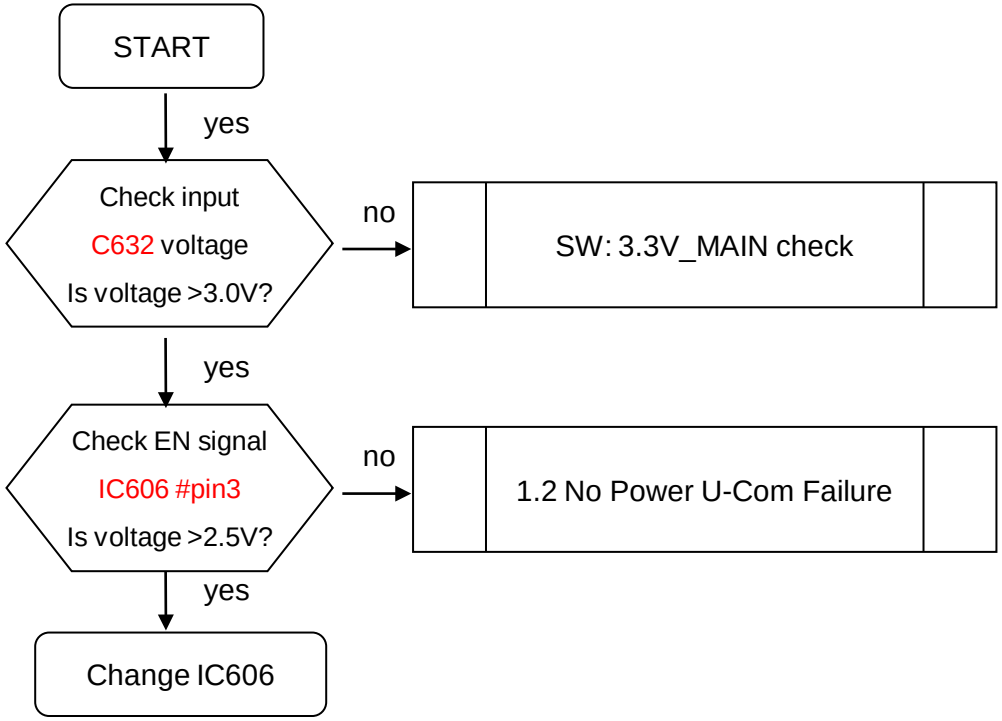
1.3 No Power DDCON/LDO

LDO: +1.05V_M2_xx check

+1.05V_M2_A_1

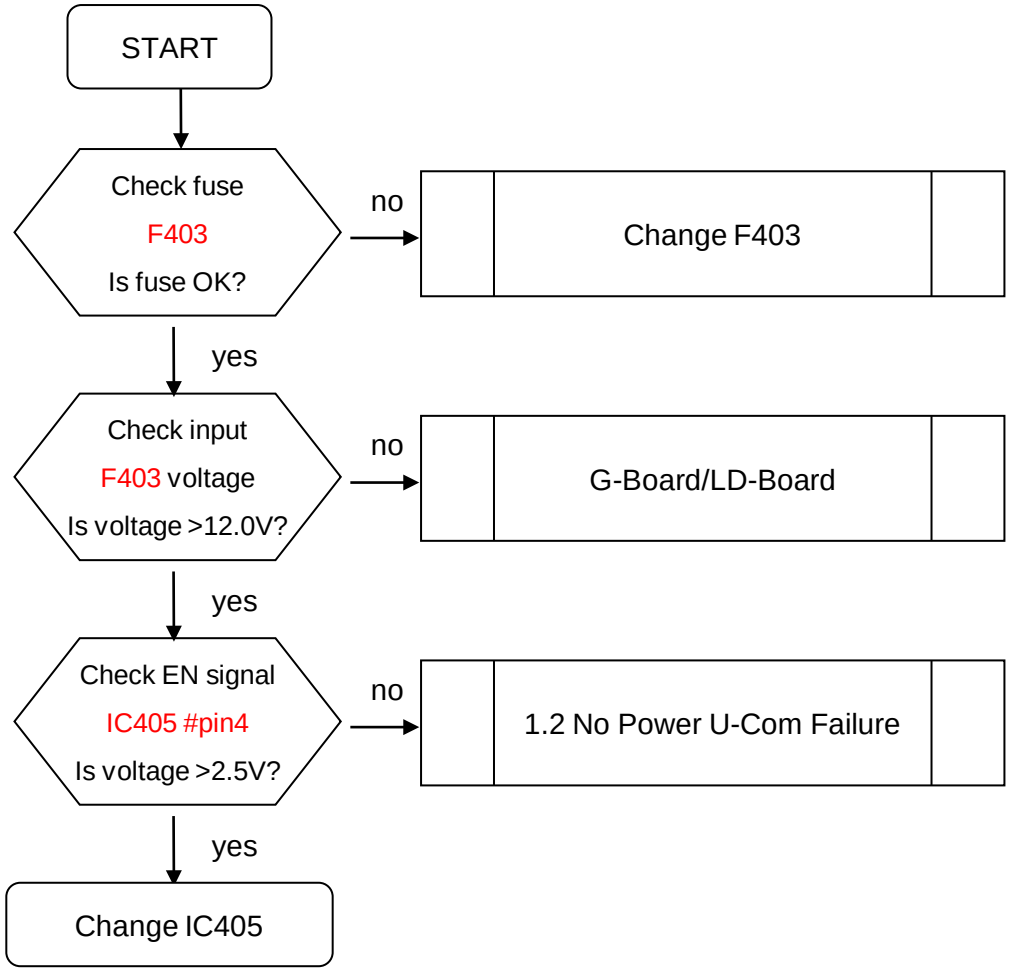


+1.05V_M2_A_2



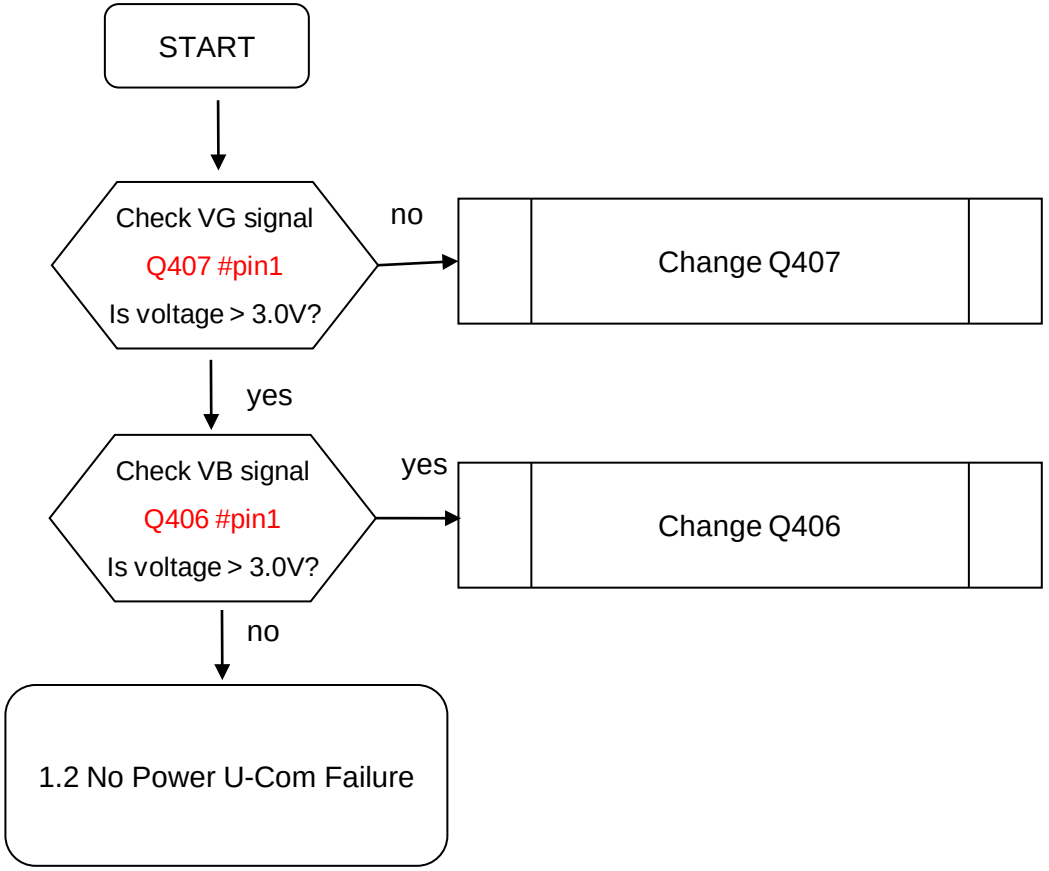
1.3 No Power DDCON/LDO

DDC: 1.8V_TU check



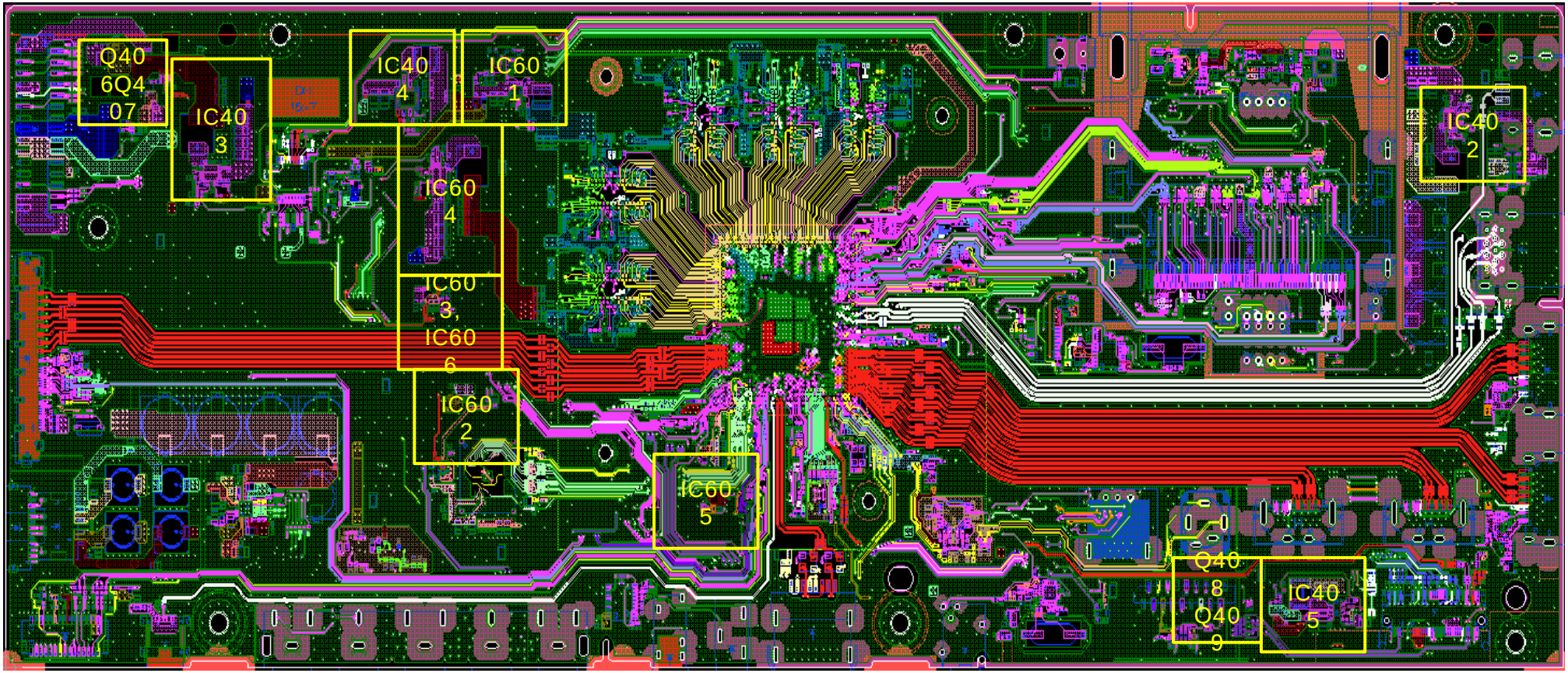
1.3 No Power DDCON/LDO

SW: +3.3V_MAIN check



1.3 No Power DDCON/LDO

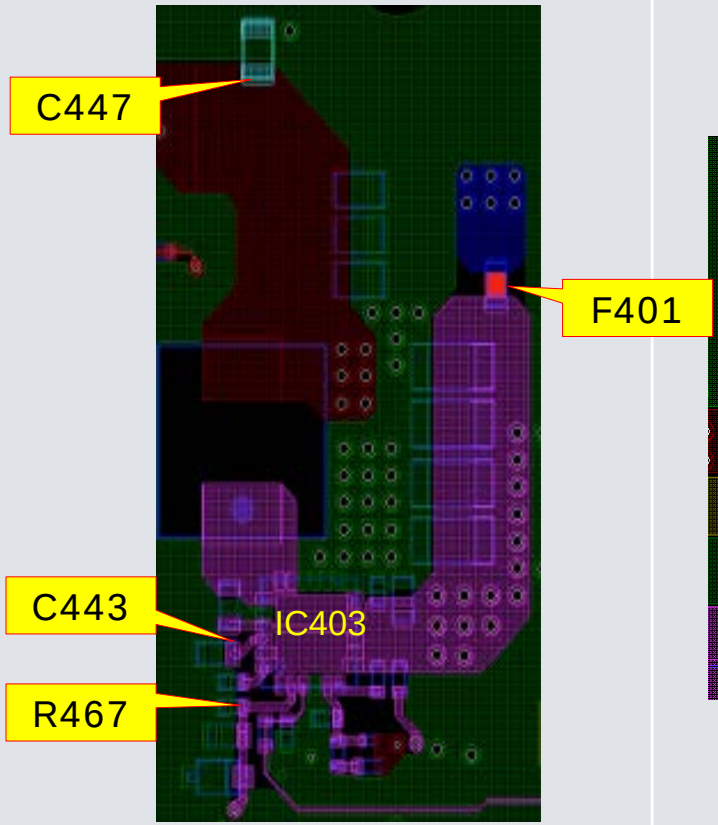
DDC & LDO Locations

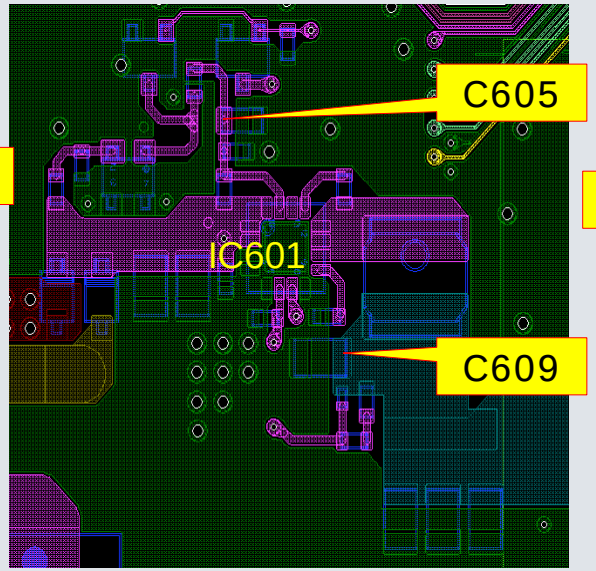


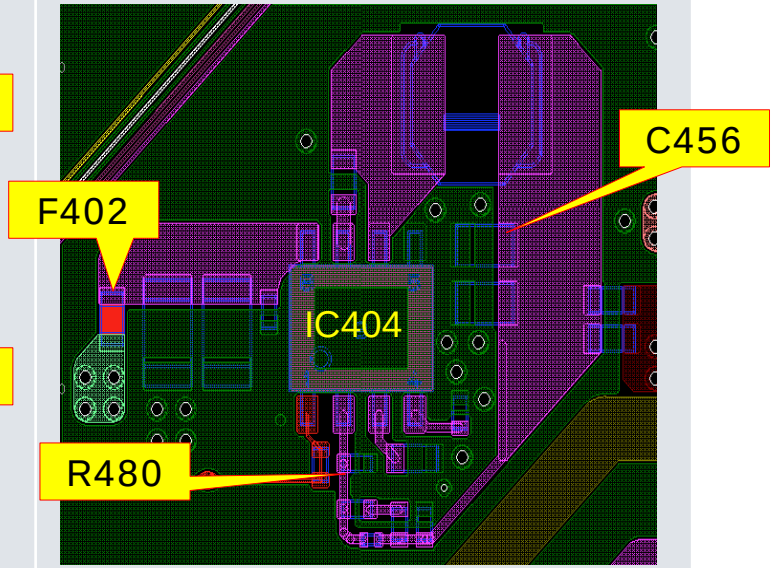
1.3 No Power DDCON/LDO

DDC & LDO Locations

DDC: +3.3V_DDC_OUT	DDC: +1.5V_DDR	DDC: +5.0V_MAIN



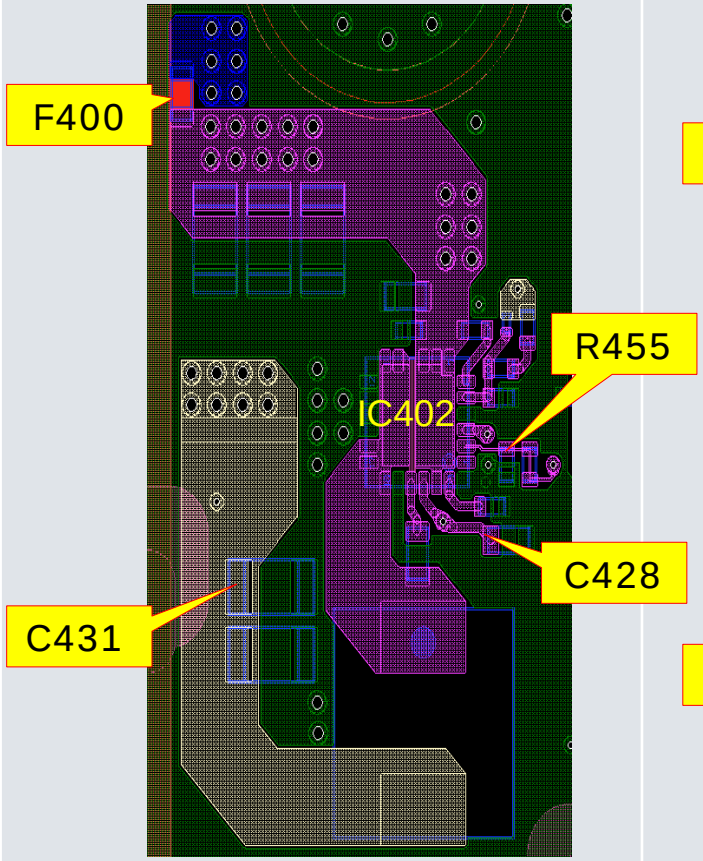


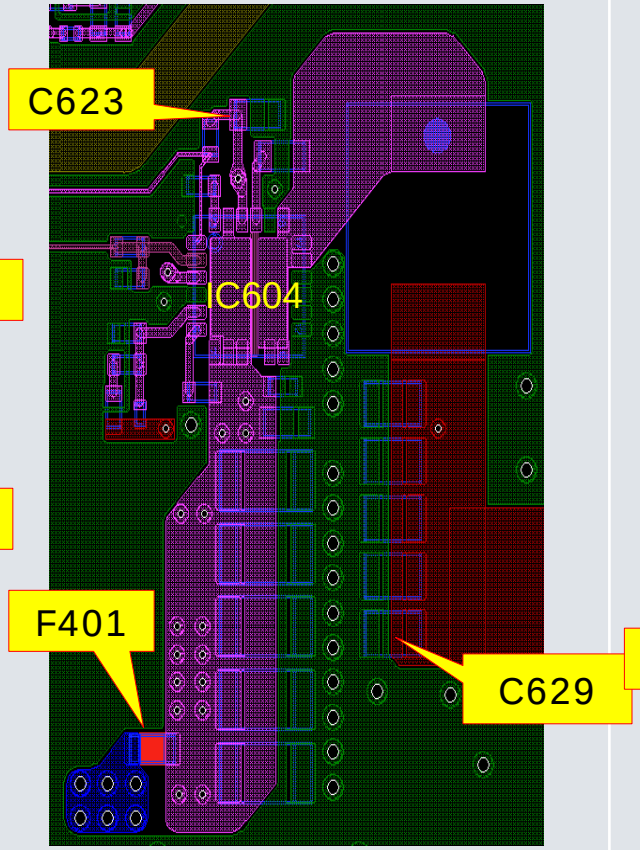


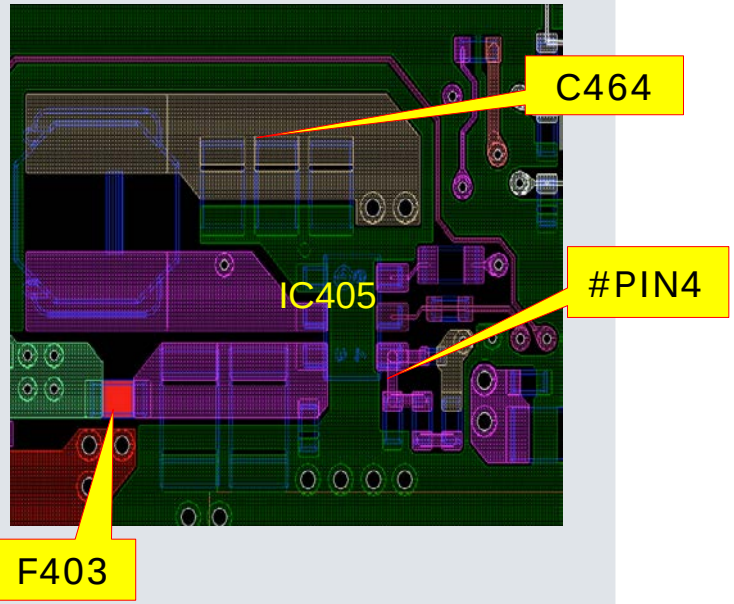
1.3 No Power DDCON/LDO

DDC & LDO Locations

DDC: +5.0V_VBUS	DDC: +1.0V_M2	DDC: +1.8V_TU

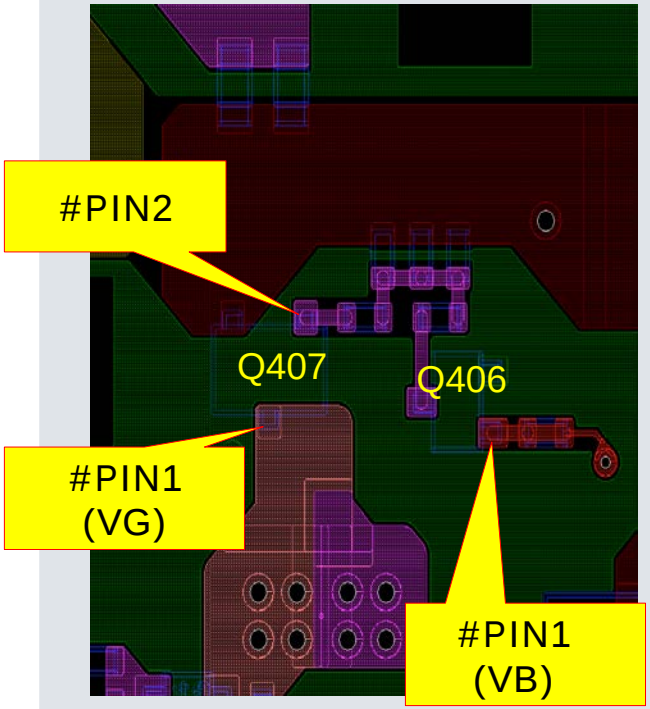
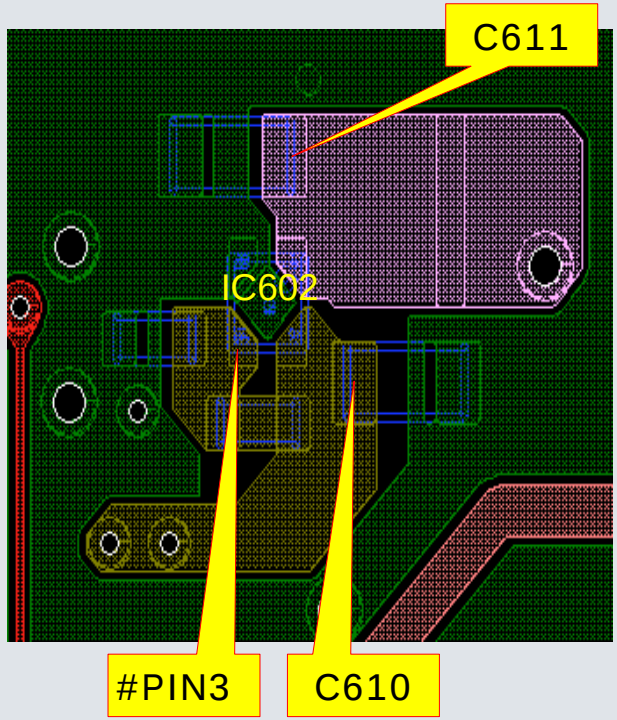
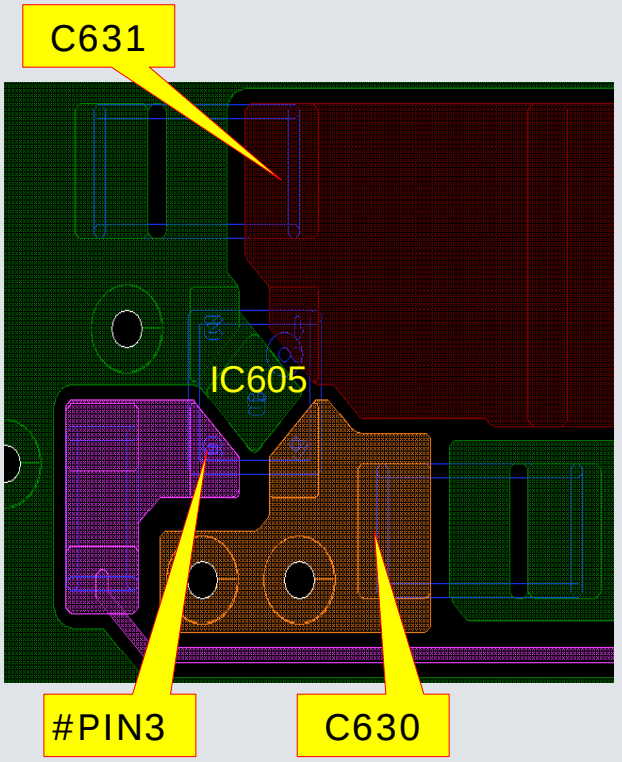






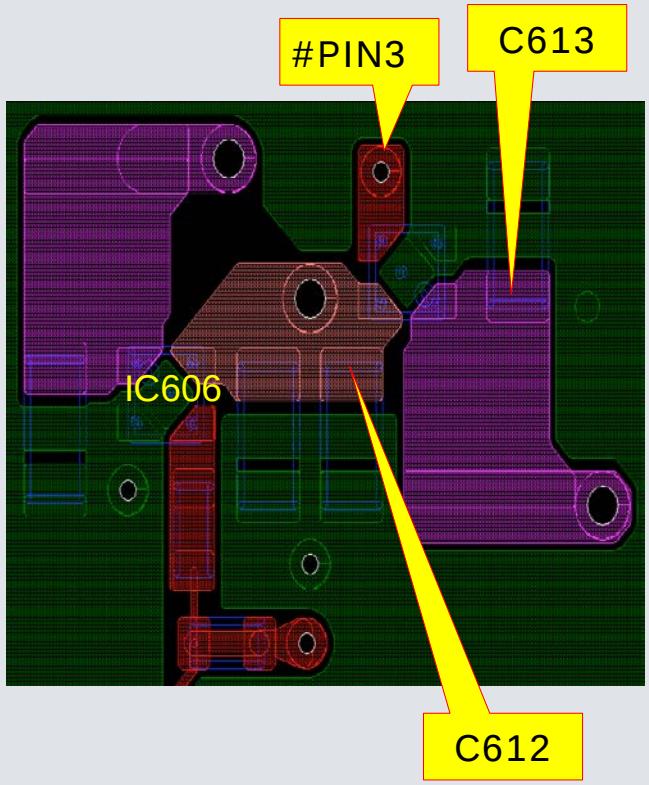
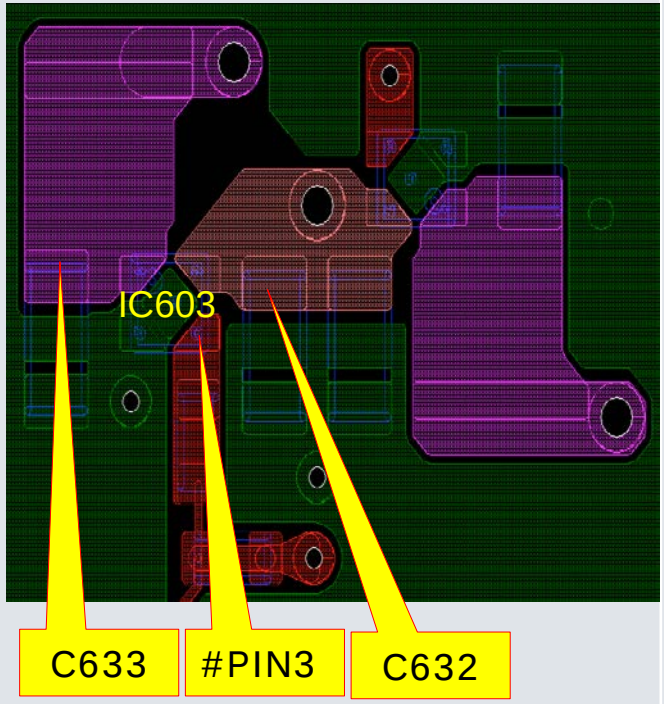
1.3 No Power DDCON/LDO

DDC & LDO Locations

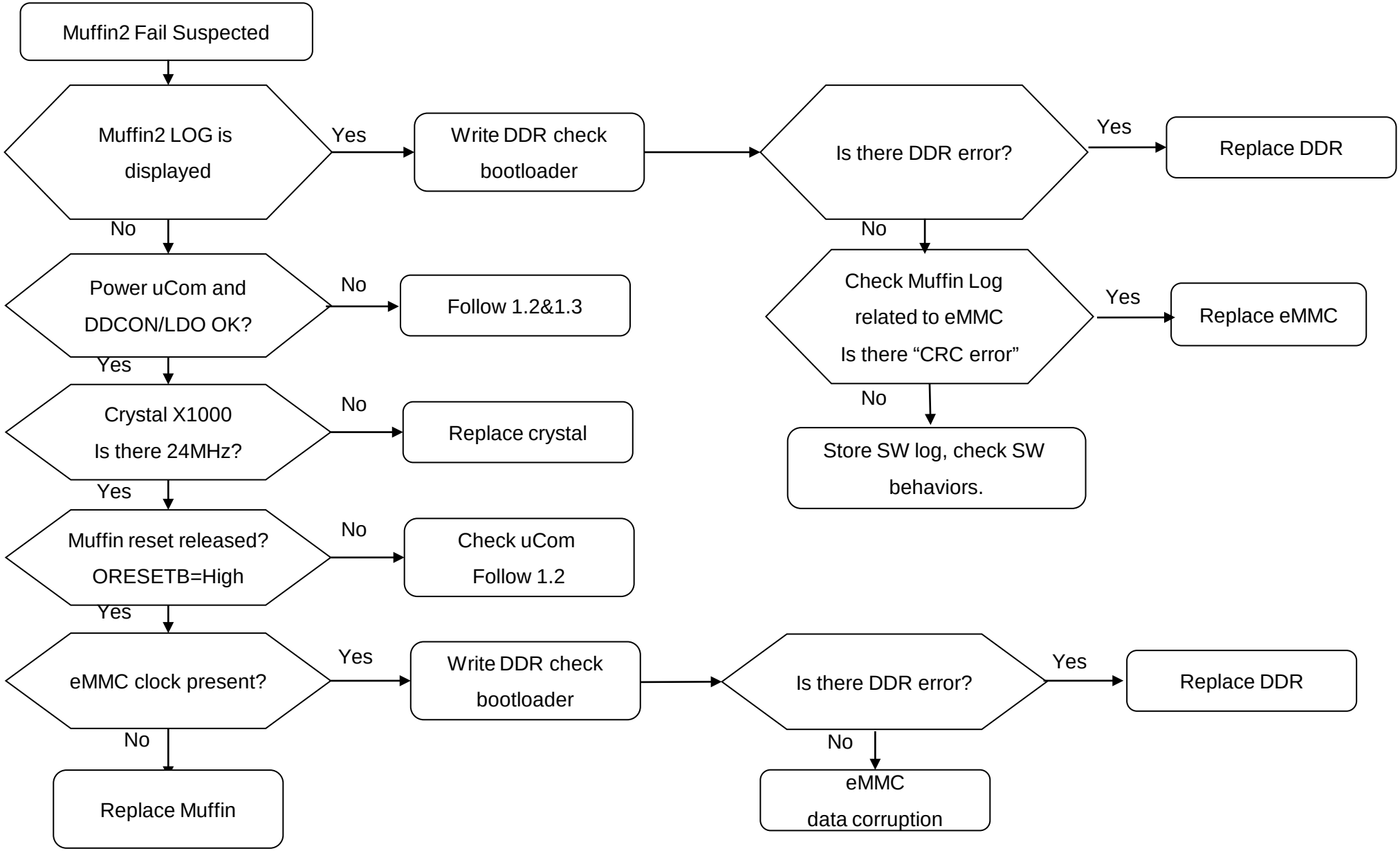
DDC: +3.3V_MAIN	DDC: +1.05V_M2_STBY	DDC: +1.05V_M2_ST_ET
		

1.3 No Power DDCON/LDO

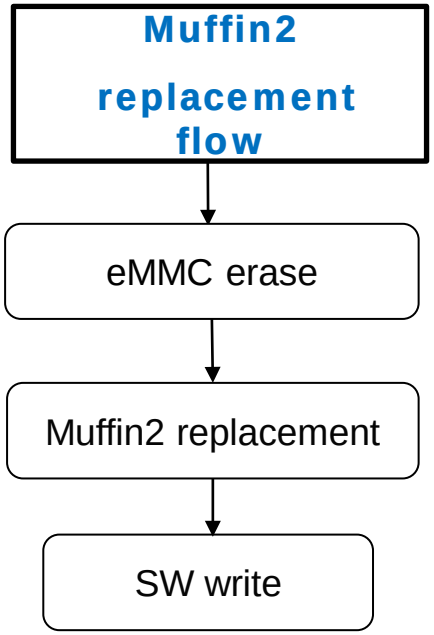
DDC & LDO Locations

DDC: +1.05V_M2_A_1	DDC: +1.05V_M2_A_2	
		

1.4 NO POWER – Muffin2 Failure



1.4 NO POWER – Muffin2 Replacement

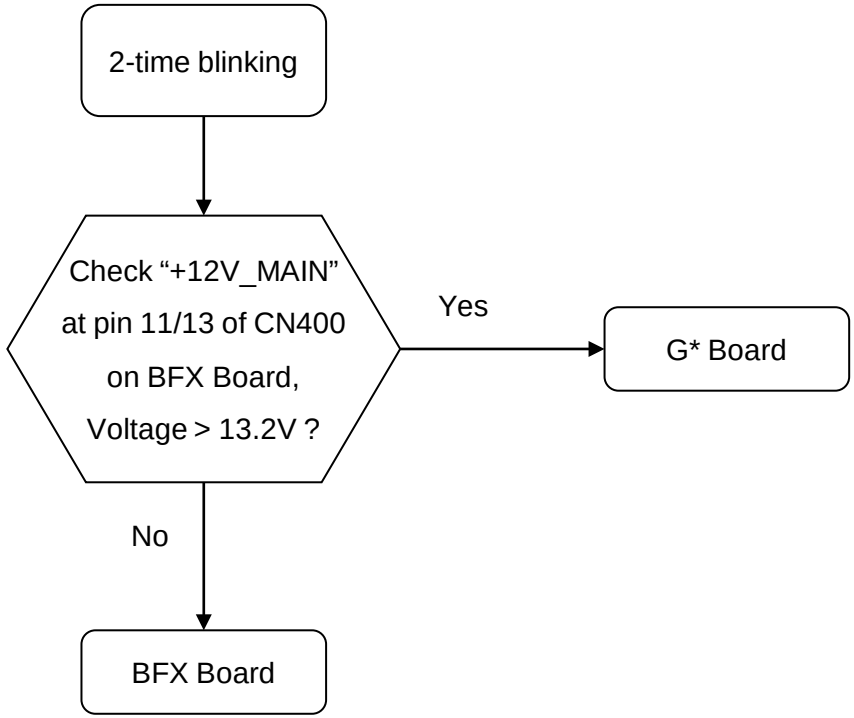


Data on eMMC need to be erase first before changing Muffin

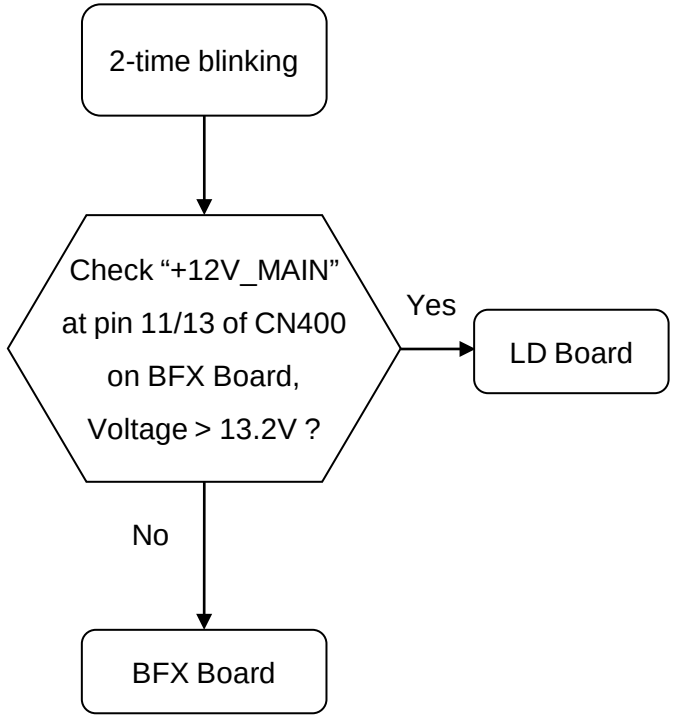
If cannot be erased, erase after replacing Muffin

2.0 LED Blinking: 2x (Main power Error)

BFX（G* Board model）

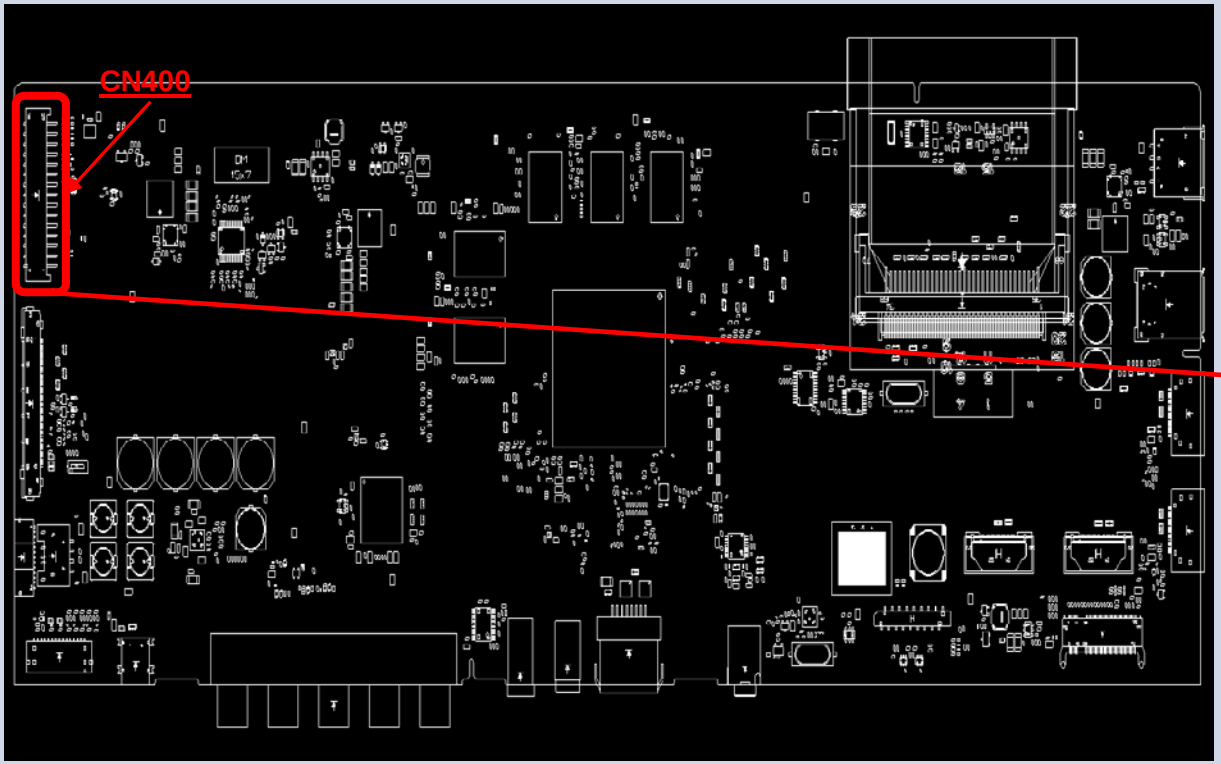


BFX（AC adapter model）

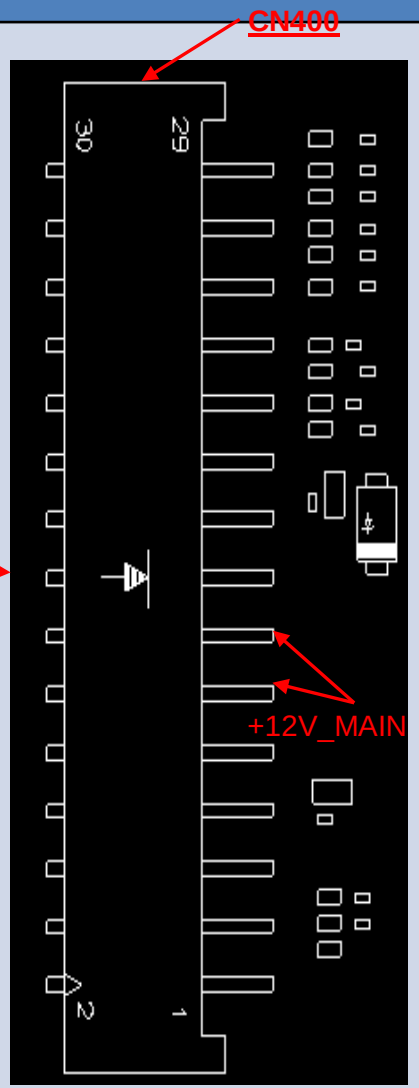


Check point for BFX

BFX (A side)



Detail

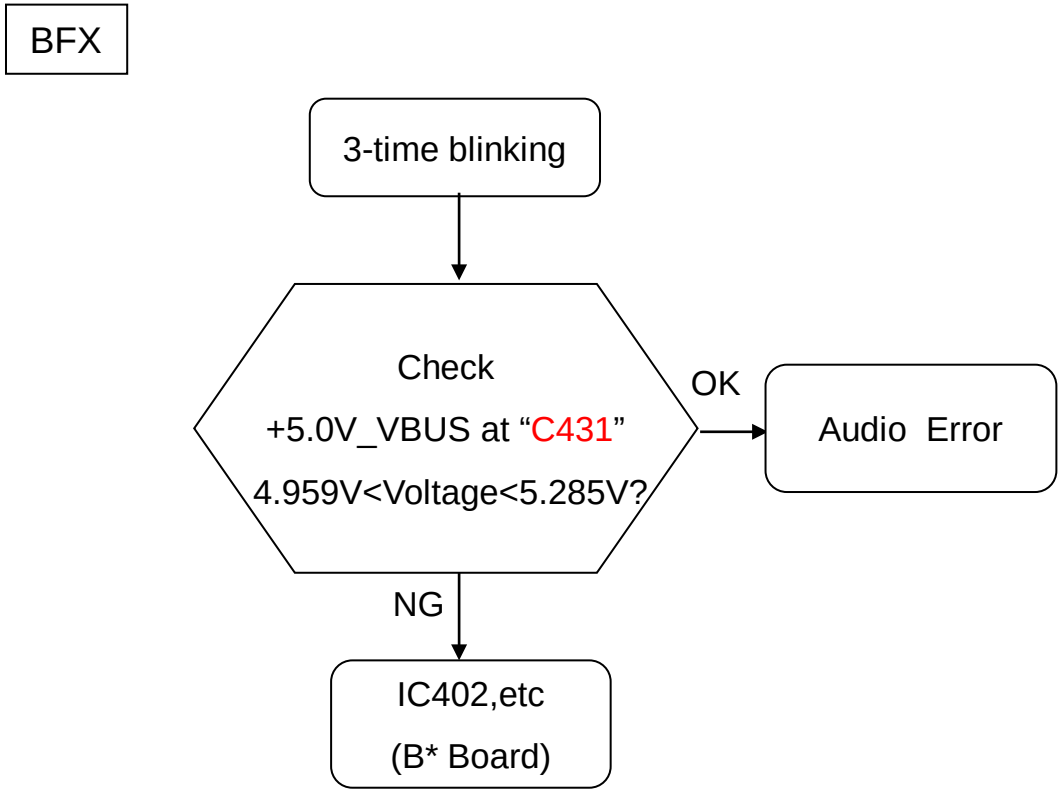


Detail of 3x LED Blinking

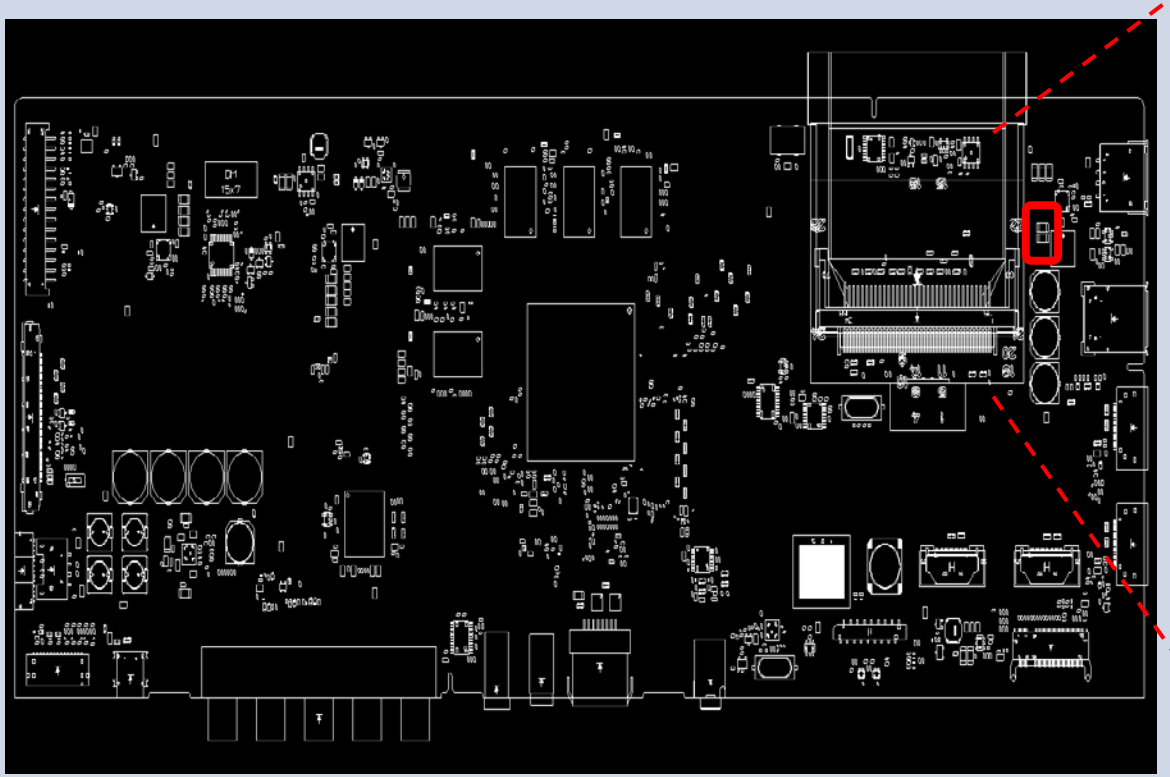
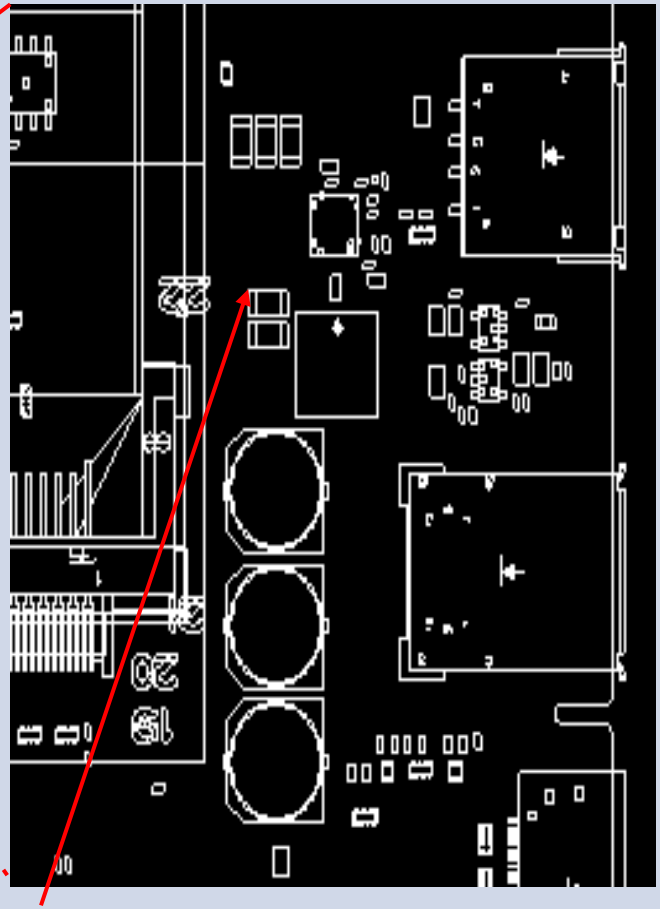
	Error Item	Number of STBY LED flashing	Description
Trinity2	DC_ALERT	3	Main board 5V power rail monitoring
	AUD_ERR	3	Audio amp error detection

Trinity2 Board: BFX;

2.1 LED Blinking: 3x (DC Alert Error)



Check point for BFX

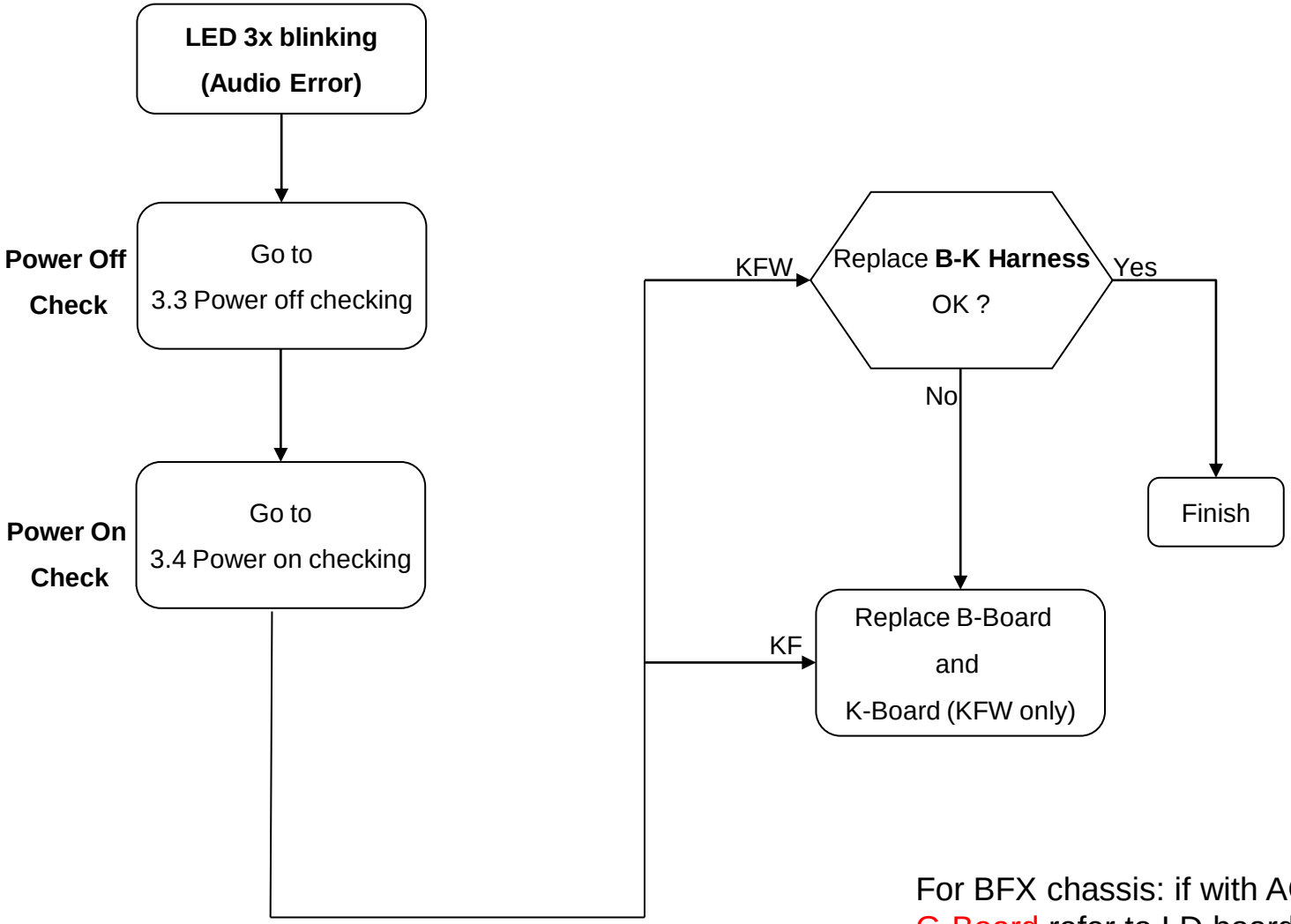
Board PWB (A side)	Detail
	 +5.0V_VBUS at “C431”

Detail of 3x LED Blinking

	Error Item	Number of STBY LED flashing	Description
Trinity2	DC_ALERT	3	Main board 5V power rail monitoring
	AUD_ERR	3	Audio amp error detection

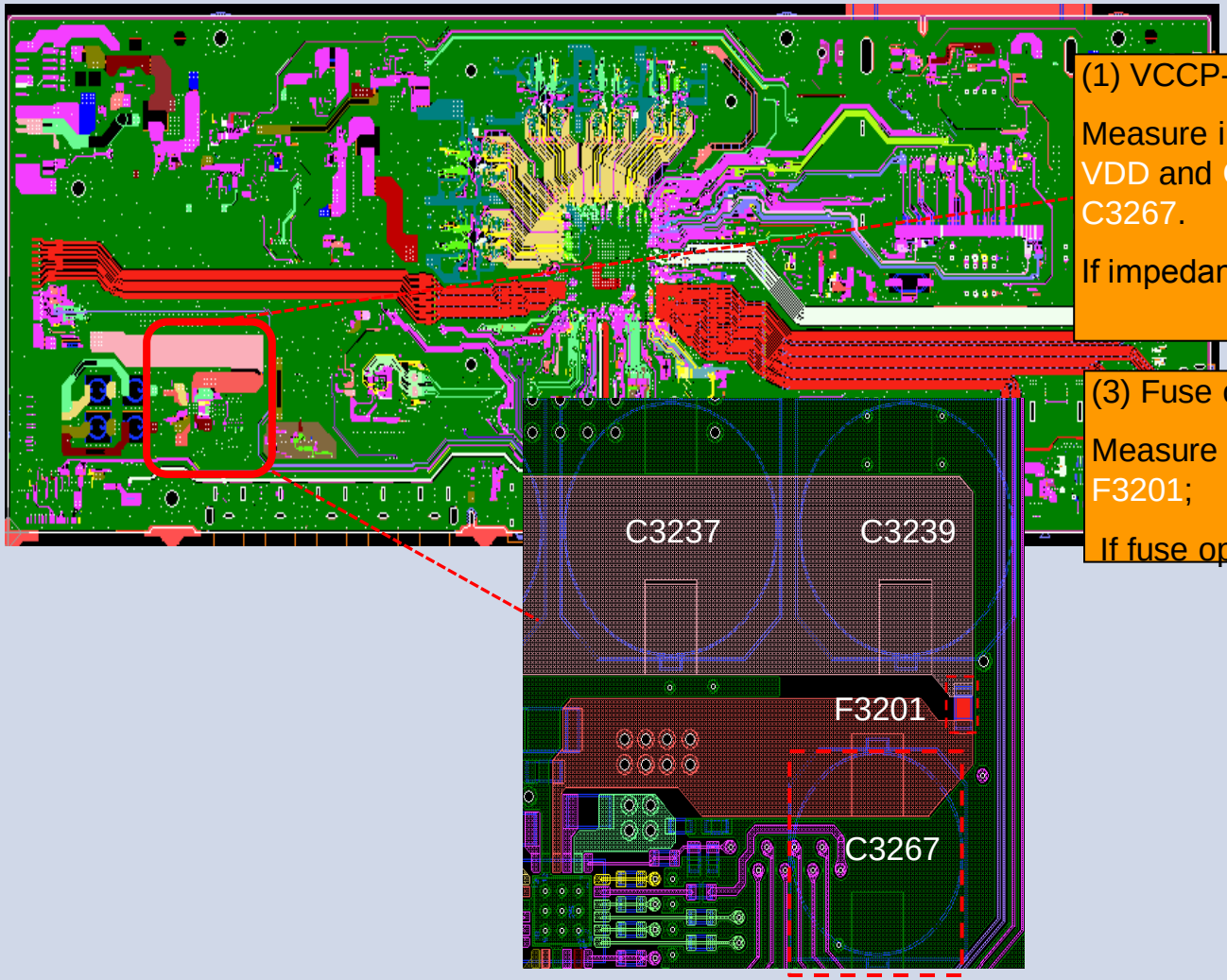
Trinity2 Board: BFX;

2.2 LED Blinking: 3x (Audio Error)



For BFX chassis: if with AC adapter,
G-Board refer to LD board

Check point for BFX

Name	B* board (A side)
BFX	

(1) VCCP-GNDP short check

Measure impedance between VDD and GND at capacitor C3267.

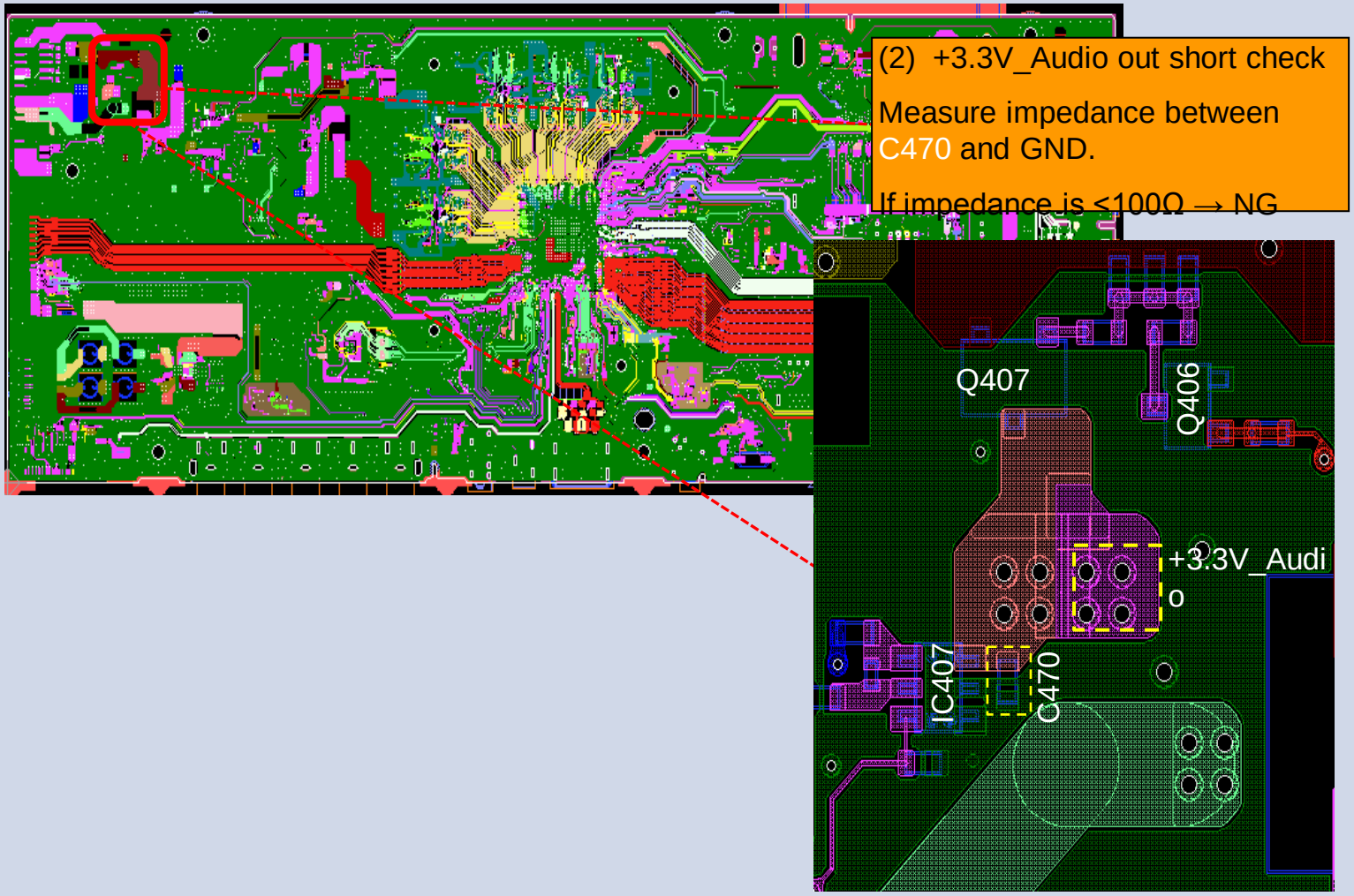
If impedance is <100Ω → NG

(3) Fuse open check

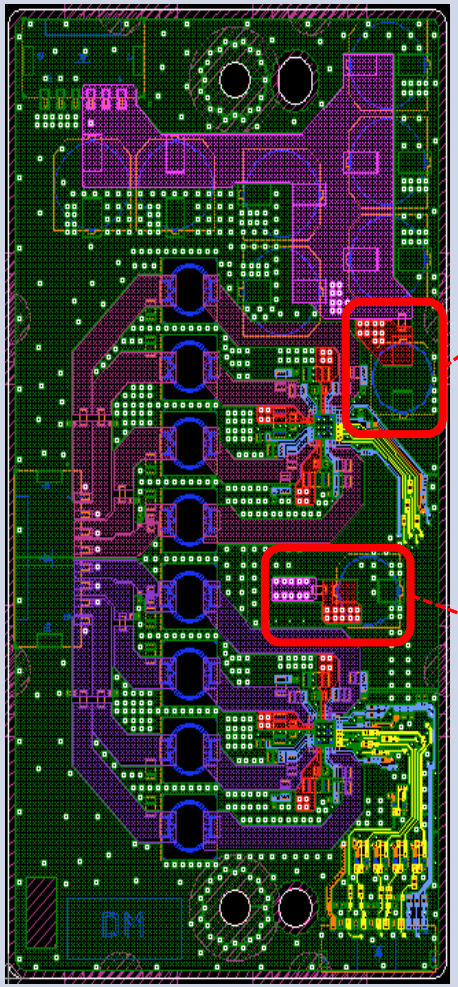
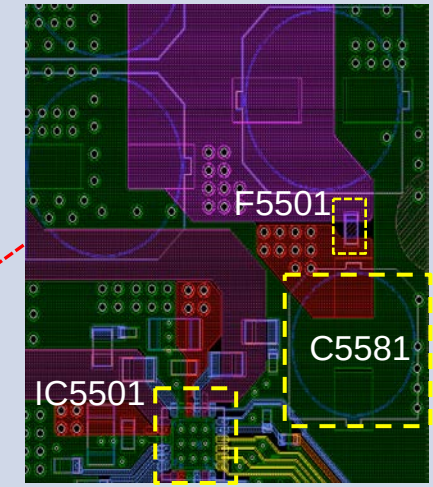
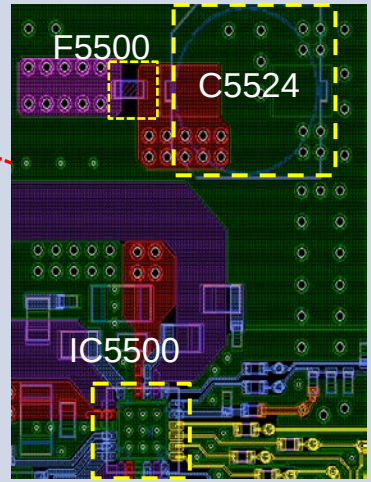
Measure impedance of fuse F3201;

If fuse open → NG

Check point for BFX

Name	B* board (A side)
BFX	

Check point for BFX

Name	K* board (A side)
KK3	   (1) VCCP-GNDP short check Measure impedance between VDD and GND at capacitor C5581 and C5524. If impedance is <100Ω → NG (3) Fuse open check Measure impedance of fuse F5500 and F5501; If fuse open → NG

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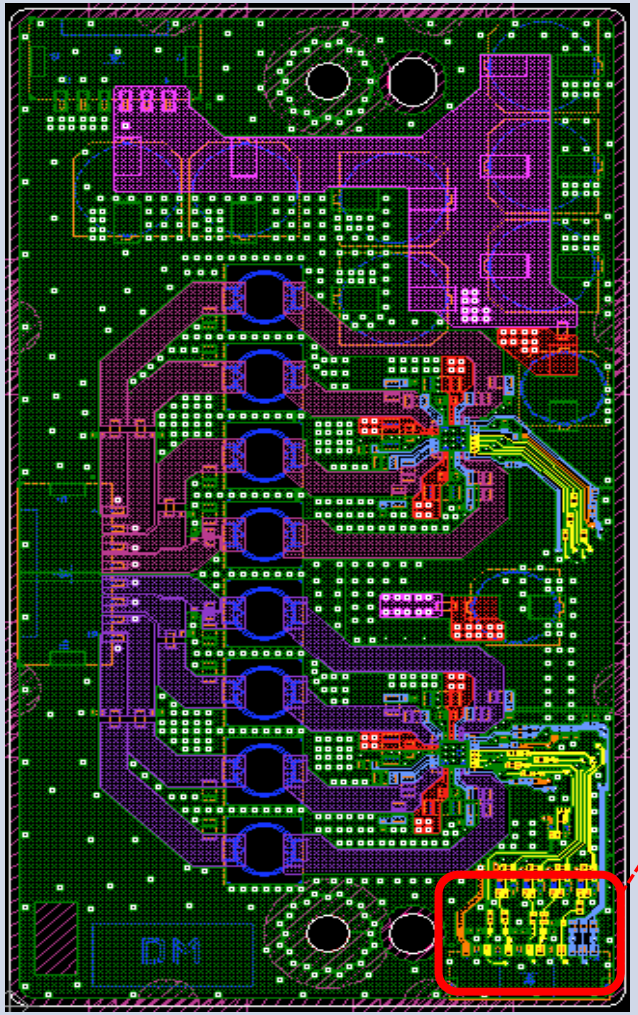
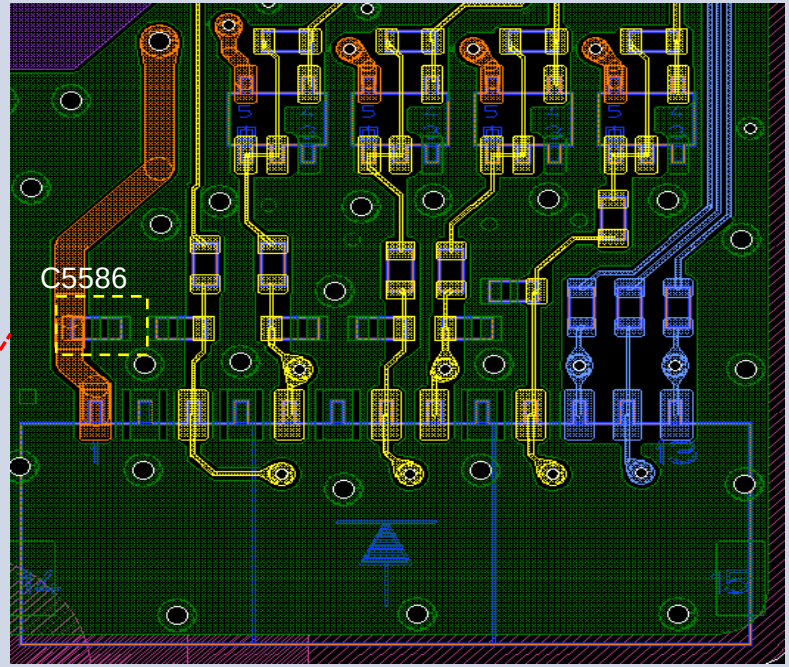
Check point for BFX

Name	K* board (A side)
KK3	

(2) +3.3V_Audio out short check

Measure impedance between C5586 and GND.

If impedance is <100Ω → NG



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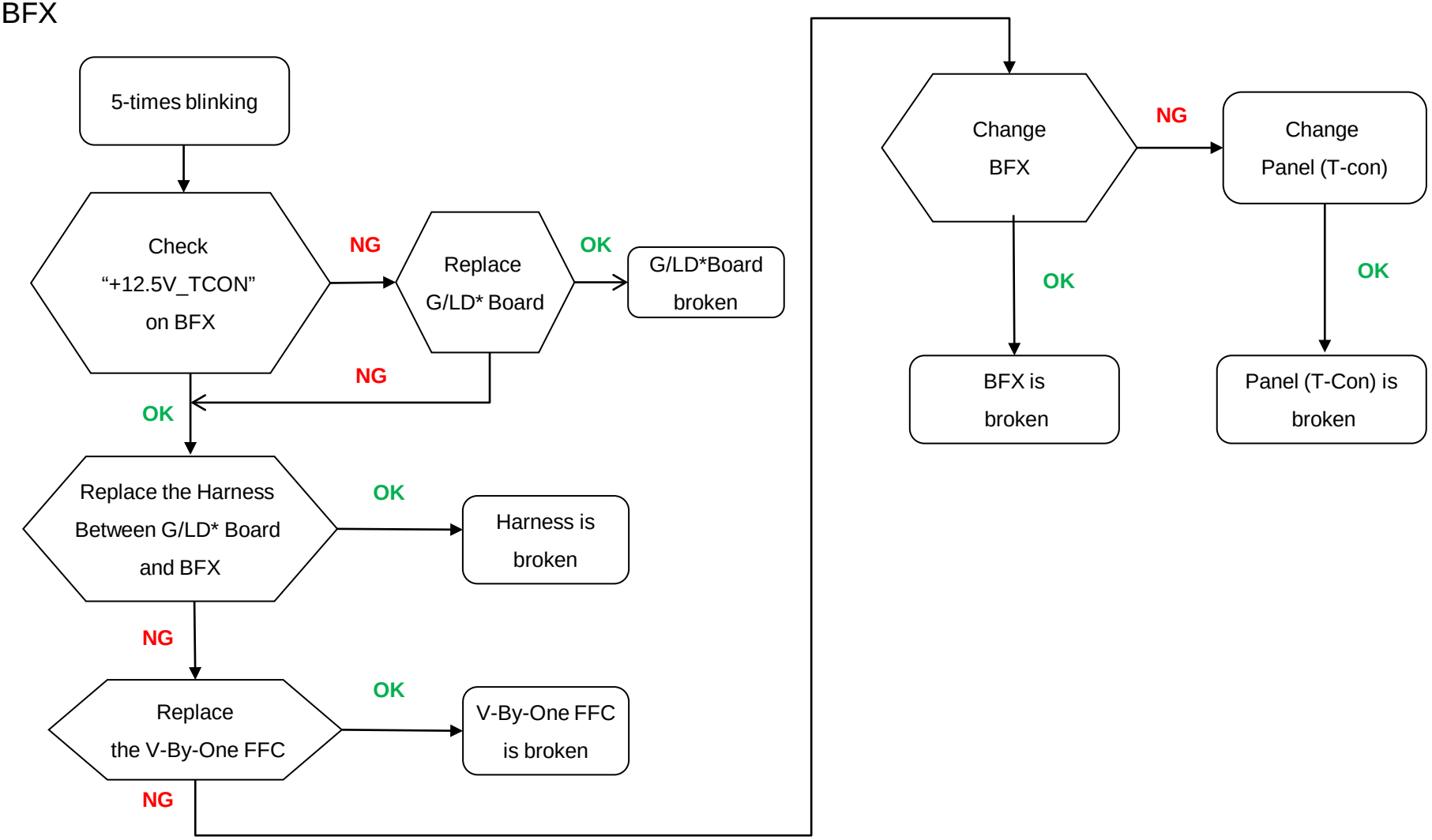
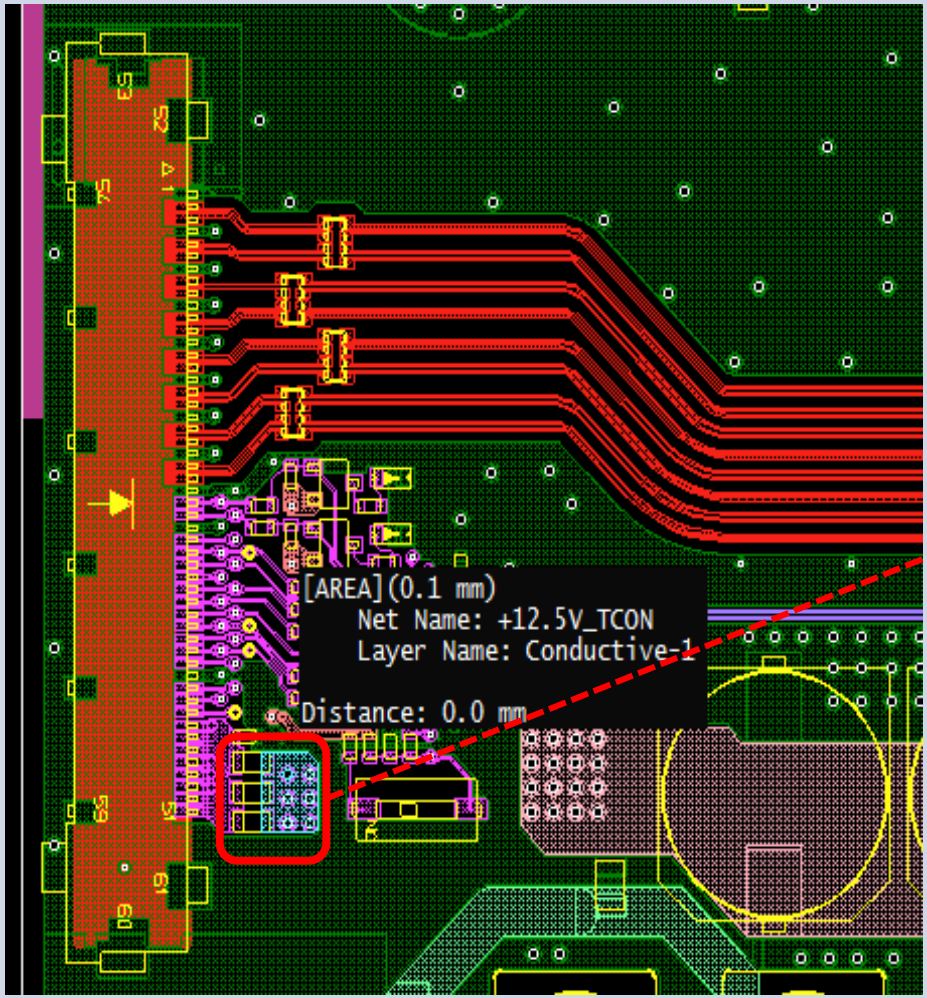
2.4 LED BLINKING: 5x (Panel Communication Error)

BFX

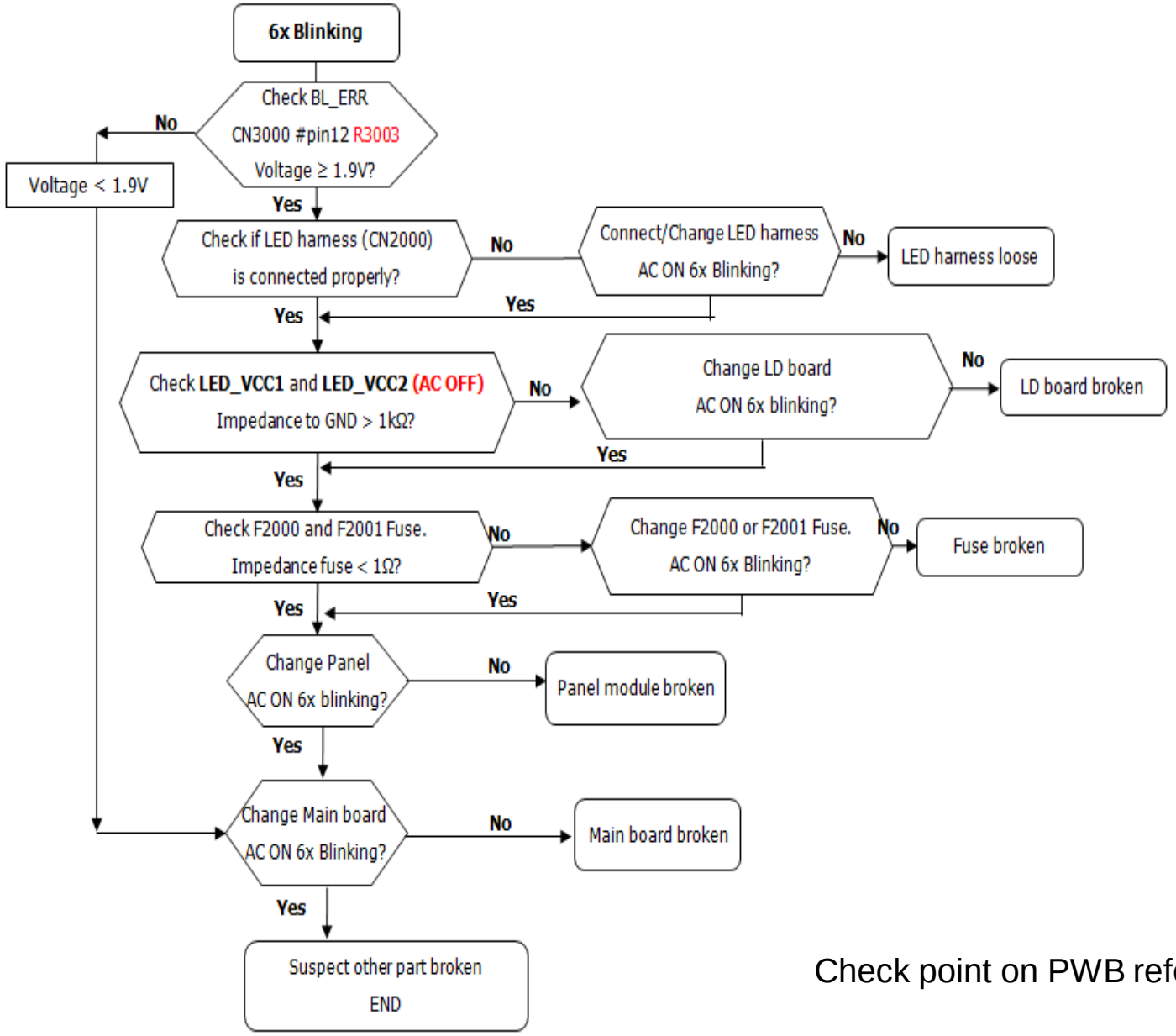


G/LD* Board: G board or LD board

Check point for BFX

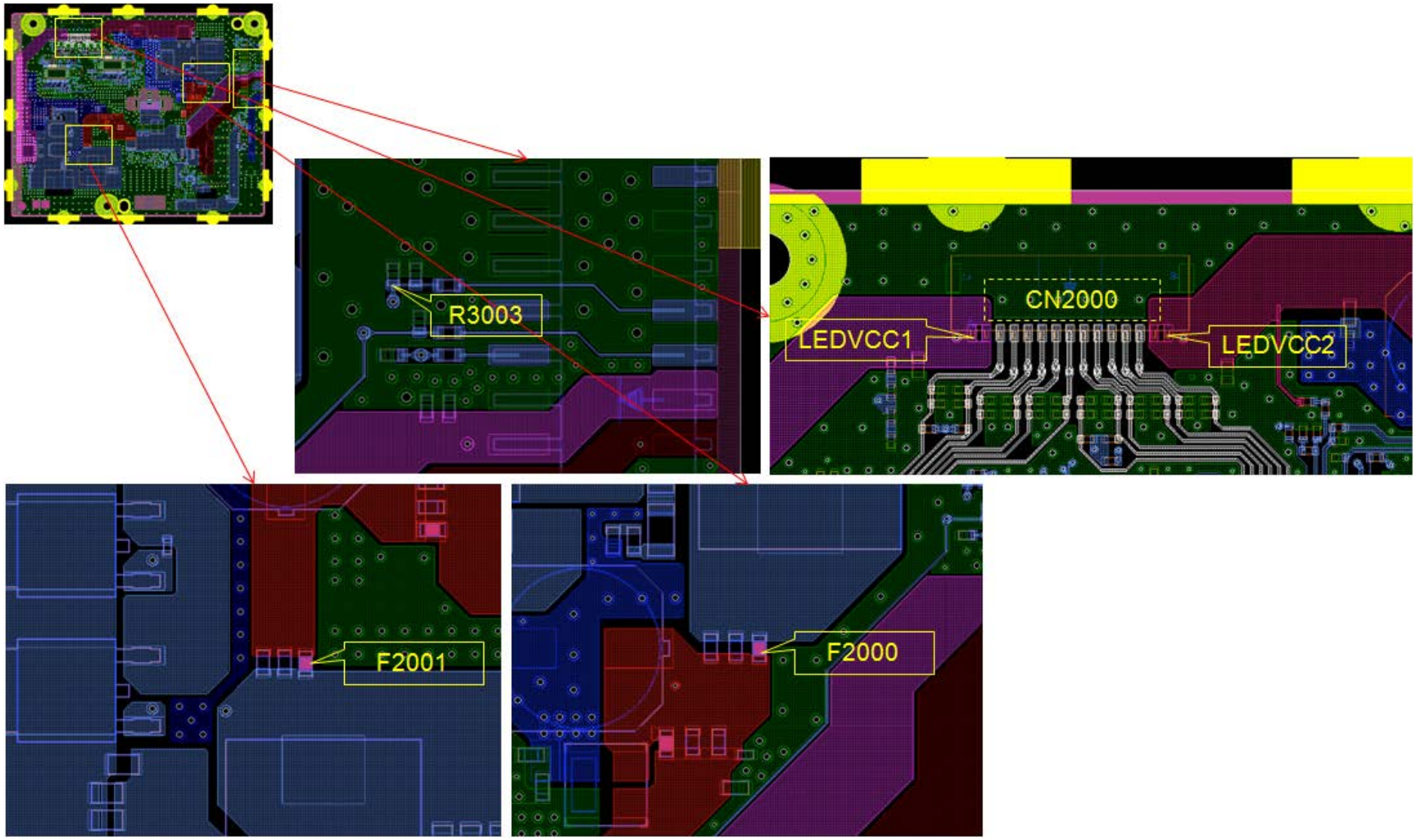
Name	B* board (A side)
BFX	

2.5 6x Blinking backlight error

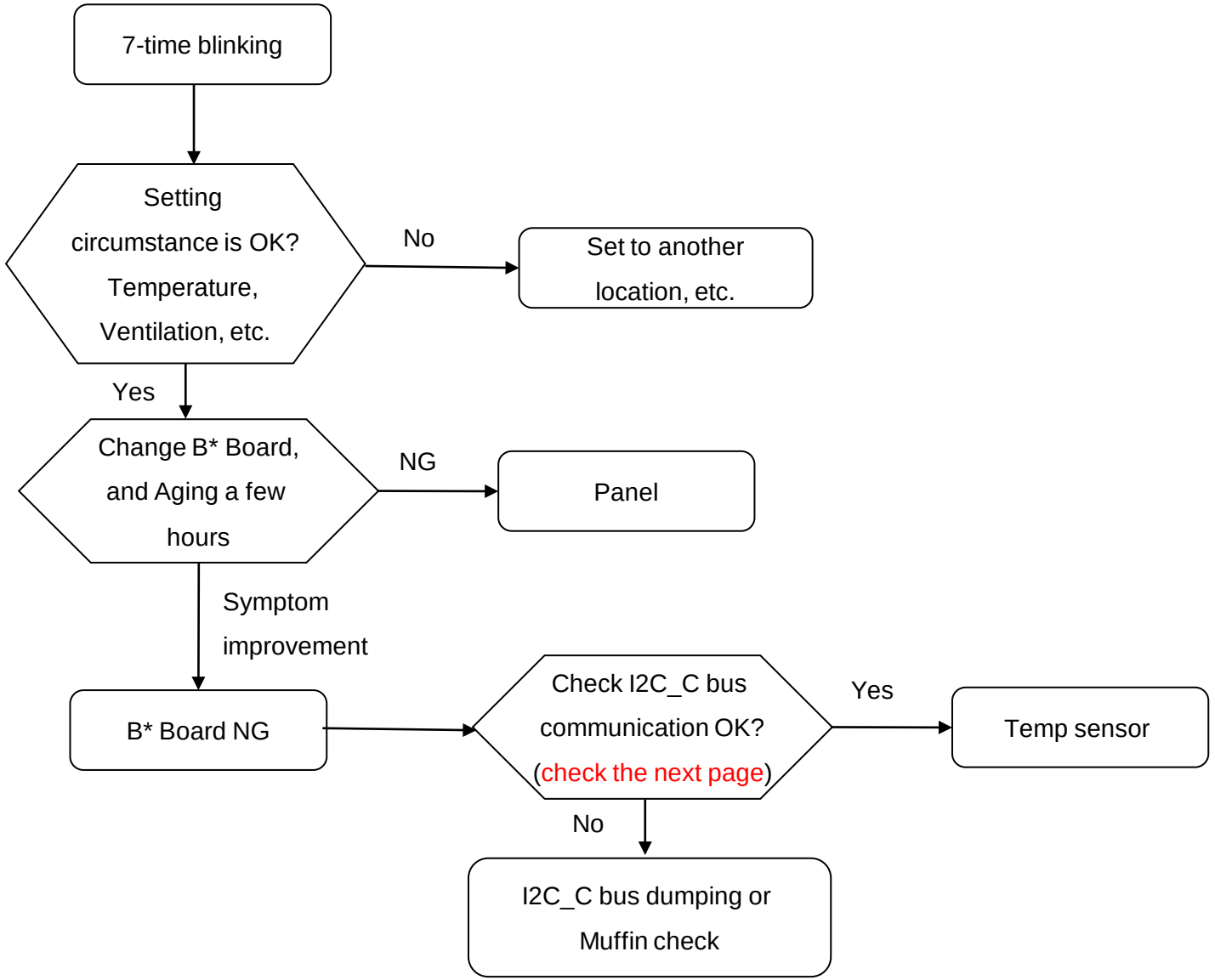


Check point on PWB refer next slide

2.5 6x Blinking backlight error

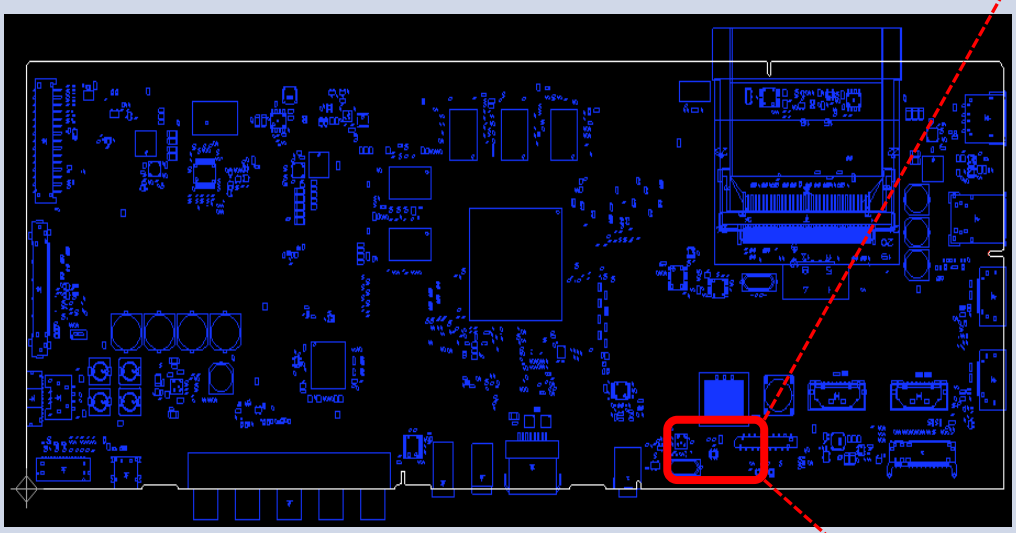


2.6 LED BLINKING: 7x (Temperature Error)

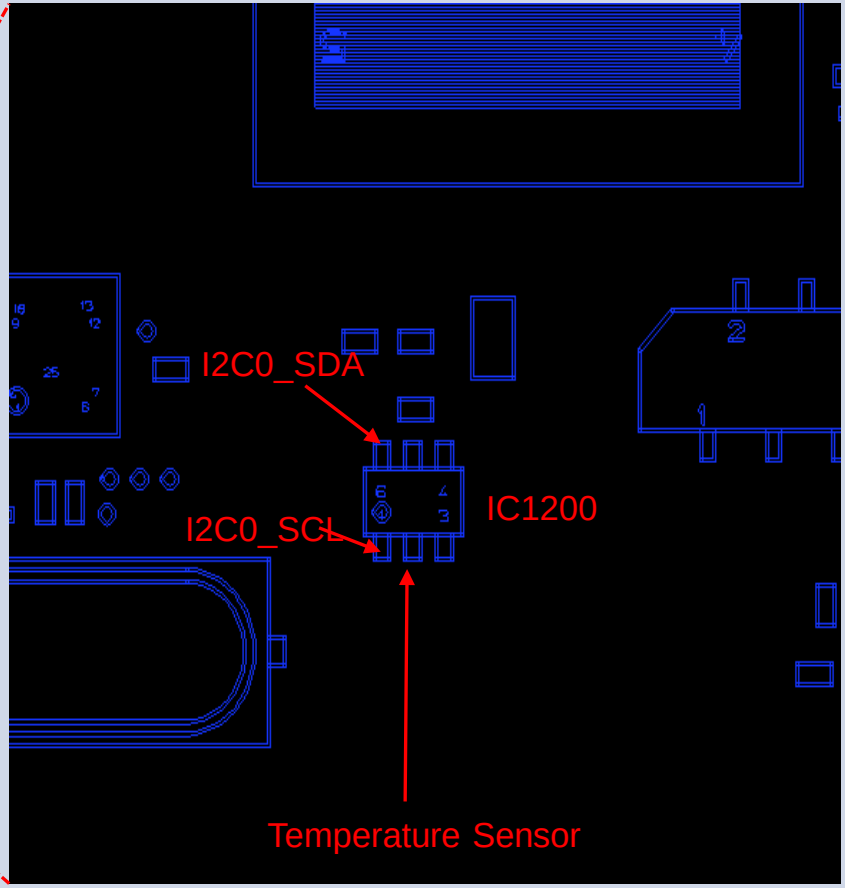


Check point for BFX

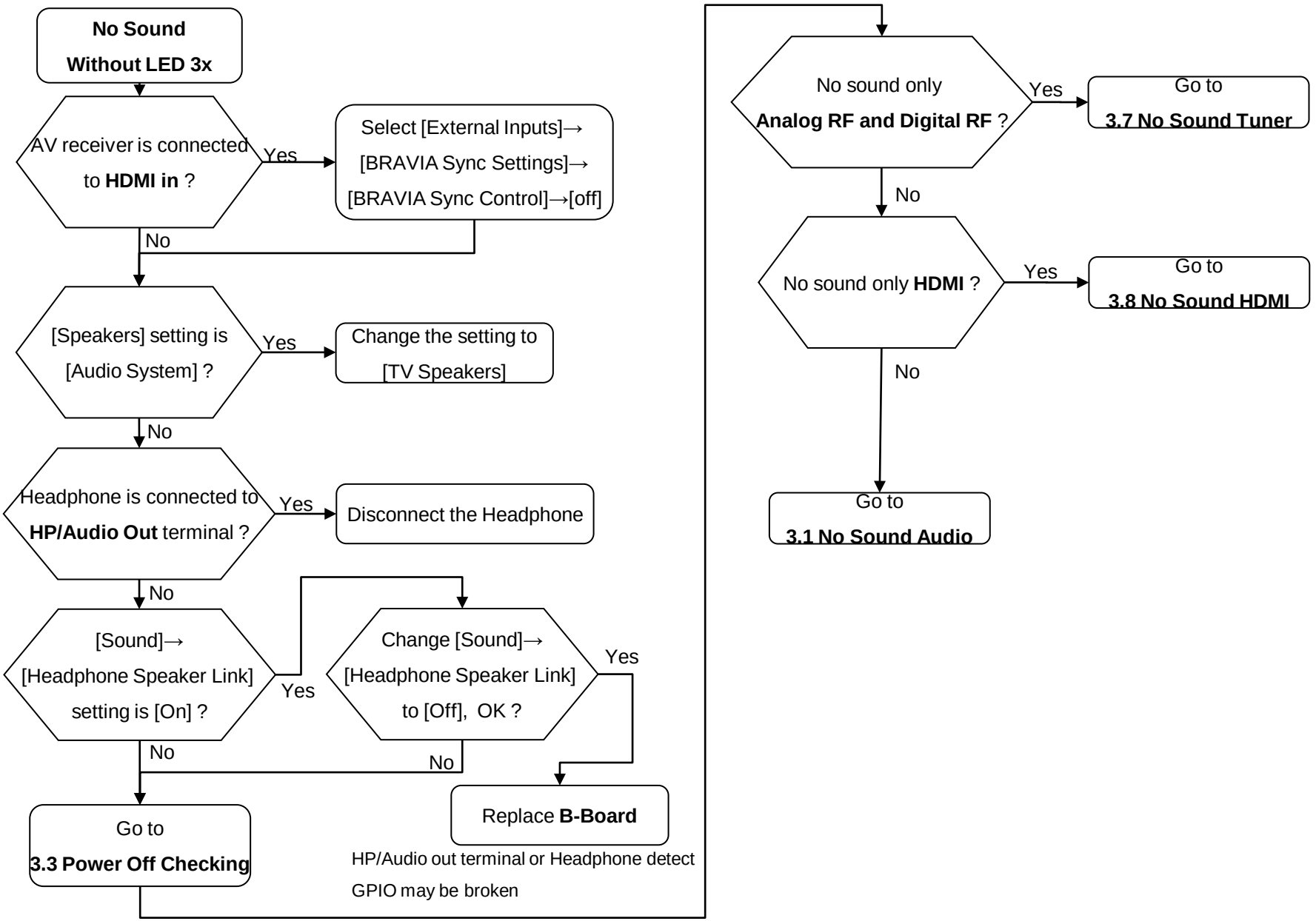
BFX board (A side)



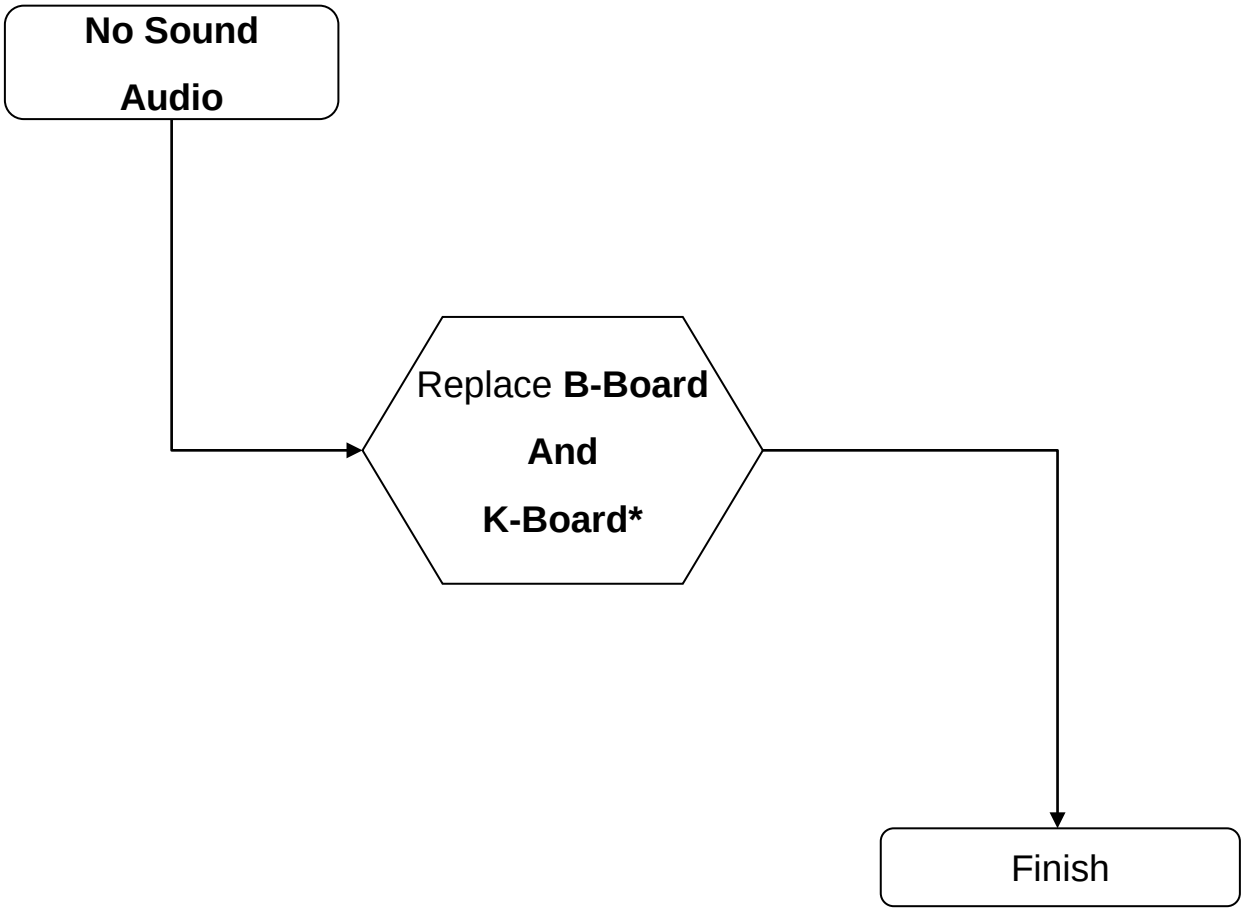
Detail



3.0 No Sound


No Sound
Without LED 3x
AV receiver is connected to HDMI in ?
Yes
Select [External Inputs]→ [BRAVIA Sync Settings]→ [BRAVIA Sync Control]→[off]
No
[Speakers] setting is [Audio System] ?
Yes
Change the setting to [TV Speakers]
No
Headphone is connected to HP/Audio Out terminal ?
Yes
Disconnect the Headphone
No
[Sound]→ [Headphone Speaker Link] setting is [On] ?
Yes
Change [Sound]→ [Headphone Speaker Link] to [Off], OK ?
Yes
No
No
Go to 3.3 Power Off Checking
Replace B-Board
HP/Audio out terminal or Headphone detect GPIO may be broken
No sound only Analog RF and Digital RF ?
Yes
Go to 3.7 No Sound Tuner
No
No sound only HDMI ?
Yes
Go to 3.8 No Sound HDMI
No
Go to 3.1 No Sound Audio

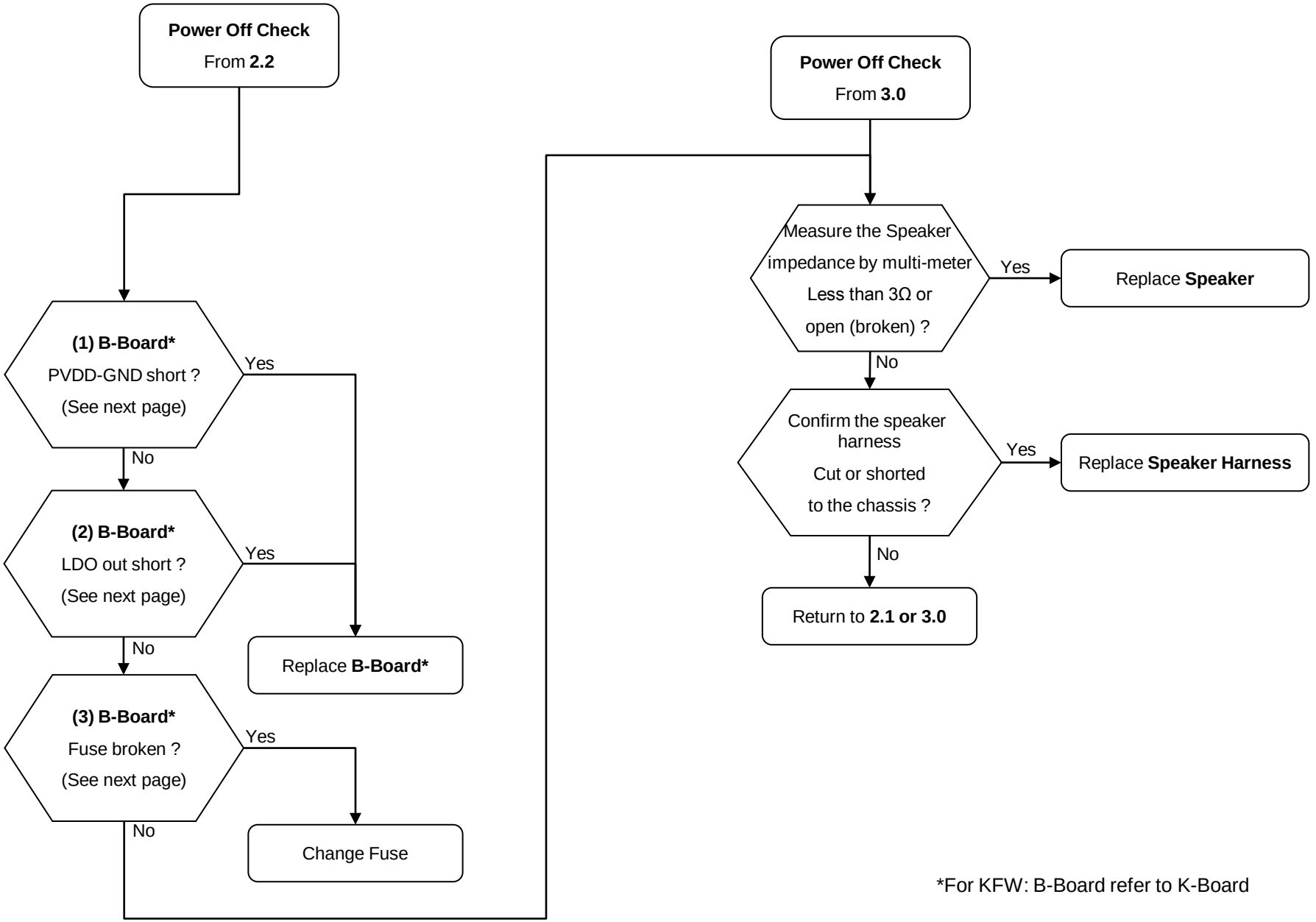
3.1 No Sound Audio



*For KF segment: Only replace BFX board

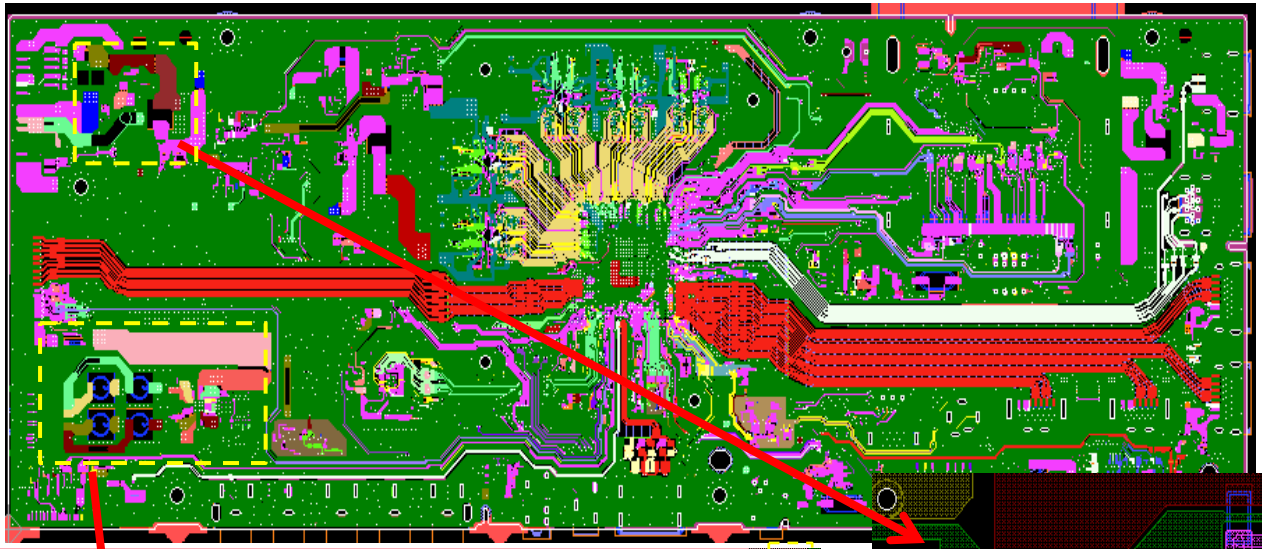
*For KFW segment: Replace KK3 Board and BFX board

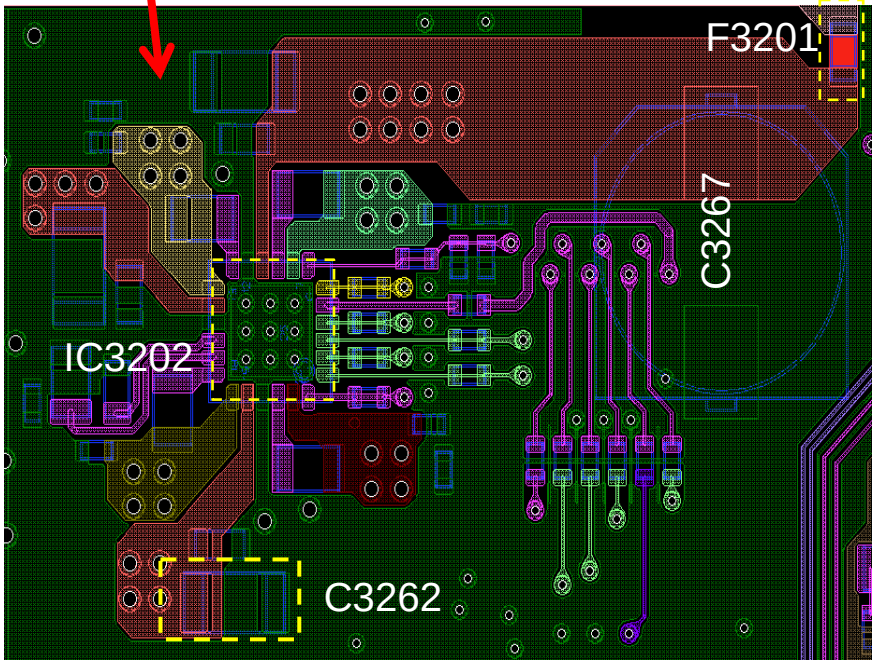
3.3 No Sound Power Off Check [KF/KFW]

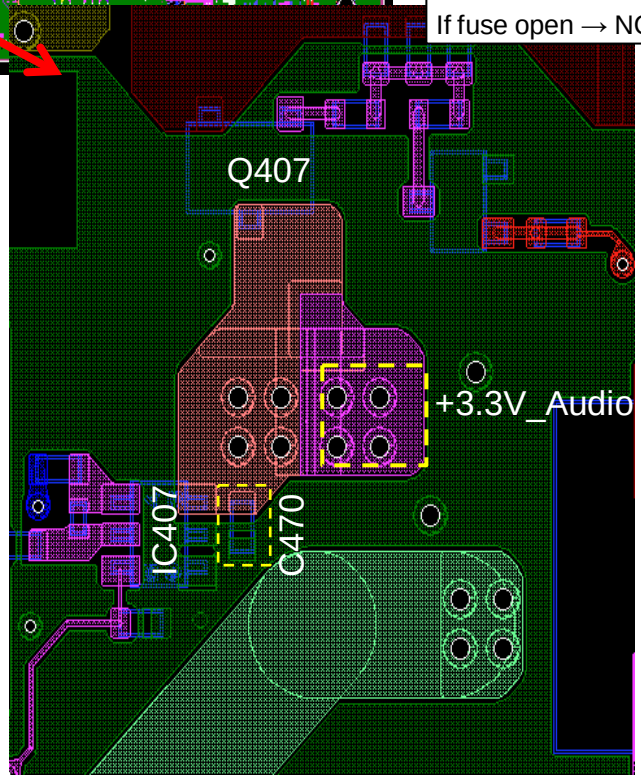


*For KFW: B-Board refer to K-Board

BFX-Board [KF only]







(1) PVDD-GND short check

Measure impedance between PVDD and GND at capacitor C3262.

If impedance is <100Ω → NG

(2) LDO out short check

Measure impedance between +3.3V_Audio and GND at C470.

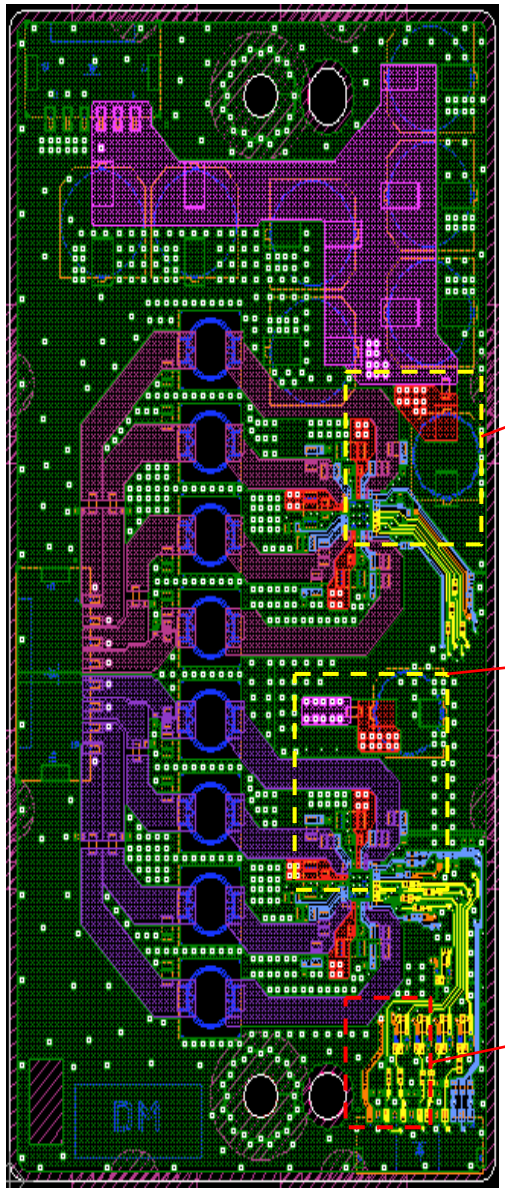
If impedance is <100Ω → NG

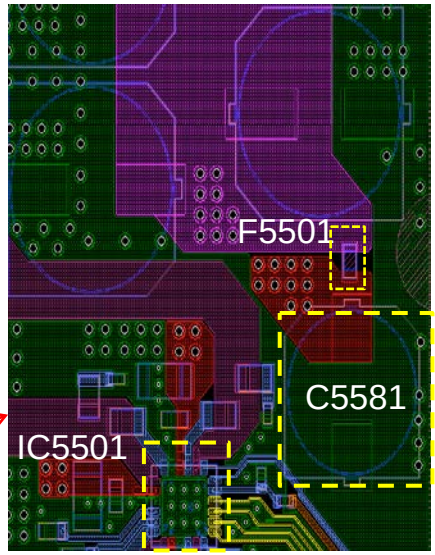
(3) Fuse open check

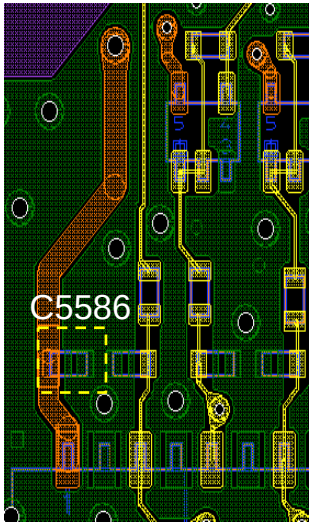
Measure impedance of fuse F3201 5A (12.5V or 19.5V)

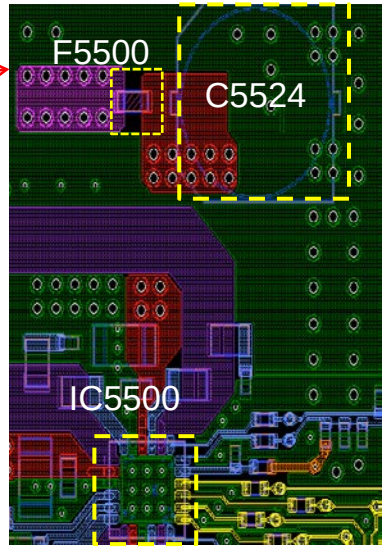
If fuse open → NG (Change Fuse)

KK3-Board [KFW only]









(1) PVDD-GND short check

Measure impedance between PVDD and GND at capacitor C5581 and C5524.

If impedance is <100Ω → NG

(2) LDO out short check

Measure impedance between +3.3V_Audio and GND at C5586.

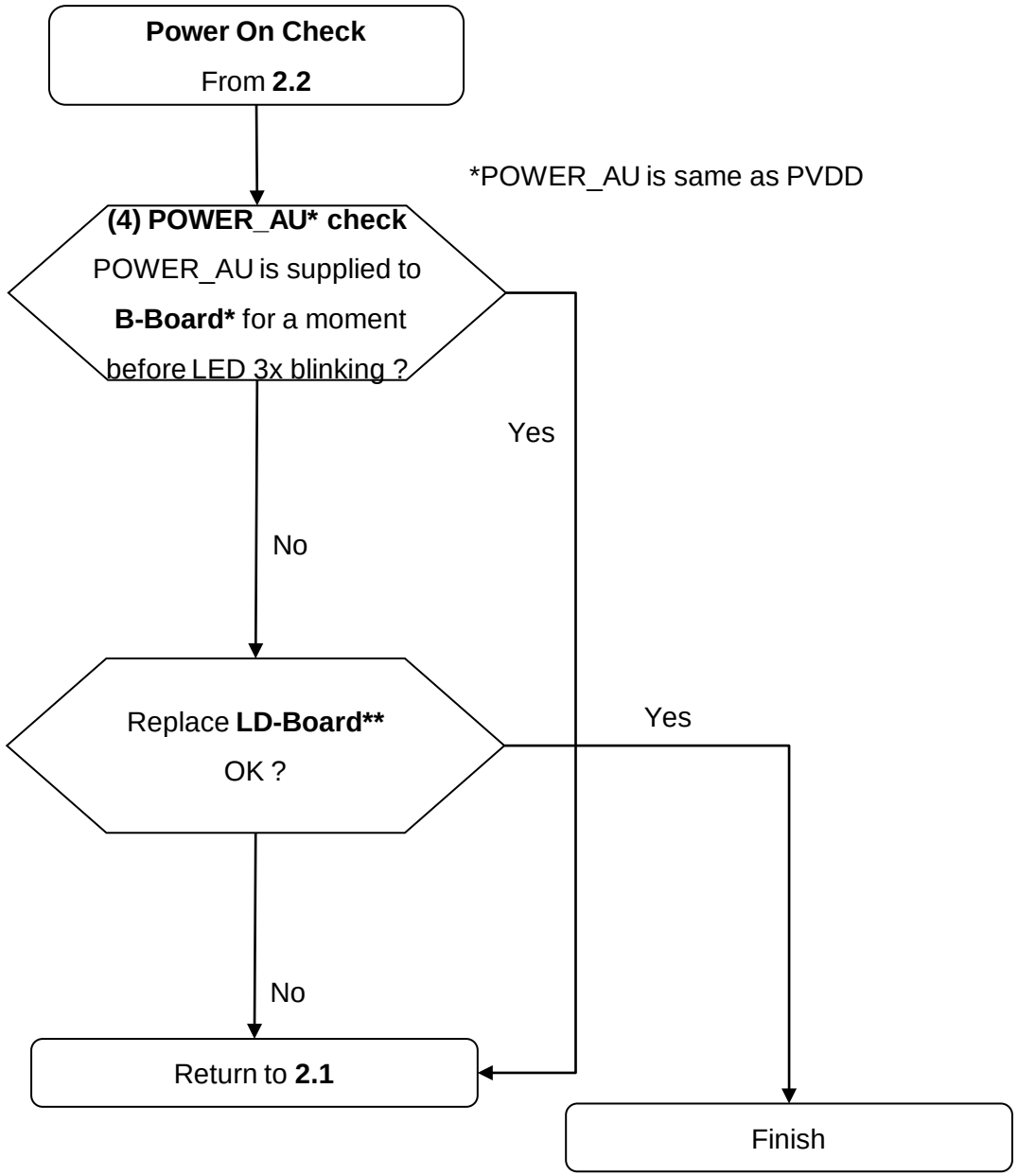
If impedance is <100Ω → NG

(3) Fuse open check

Measure impedance of fuse
F5500 and F5501 [5A] (12.5V or 19.5V)

If fuse open → NG (Change Fuse)

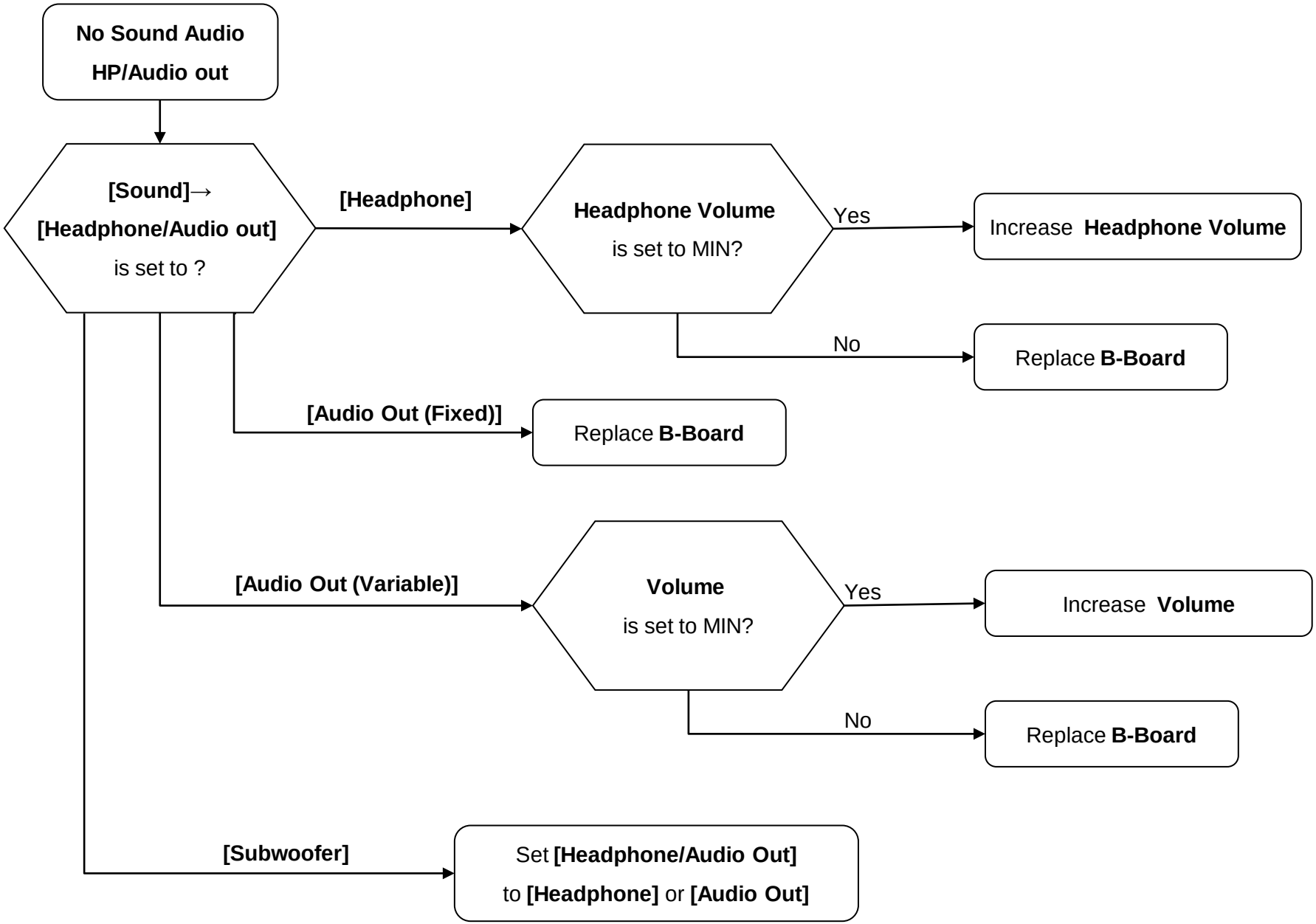
3.4 No Sound Power On Check [KF/KFW]



* For KFW, B-Board refer to KK3-Board

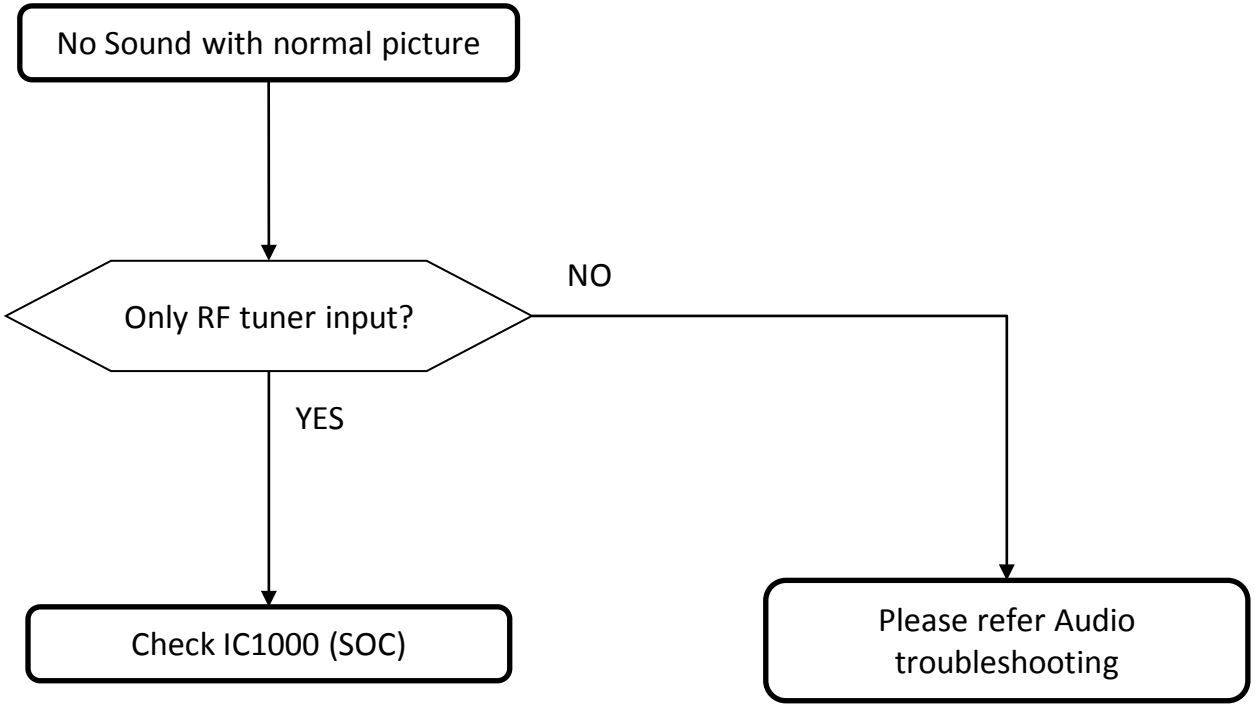
**For BFX chassis: If non AC adapter model, LD-Board refer to G board;

3.5 No Sound Audio HP/Audio out

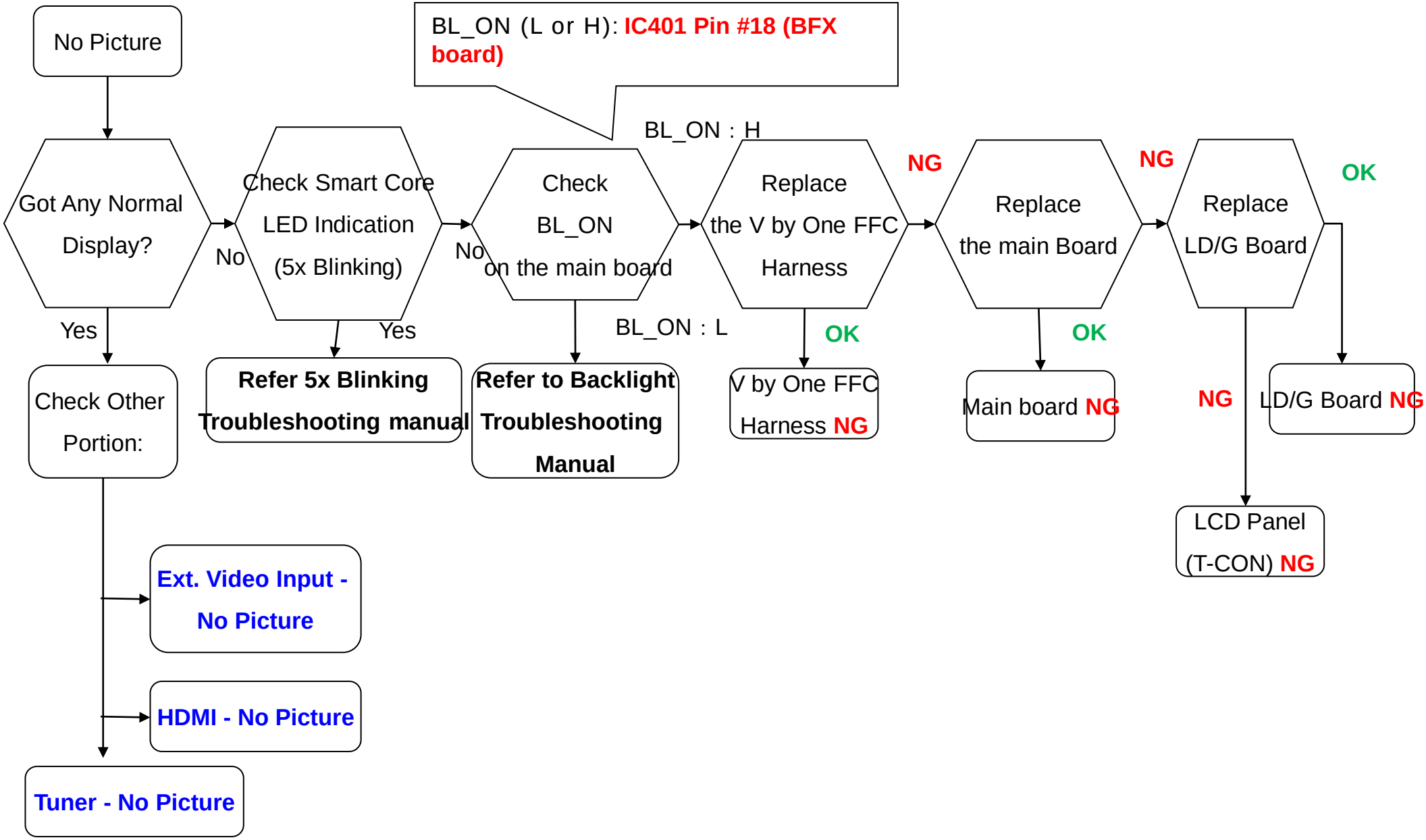


3.6 [Not Applicable]

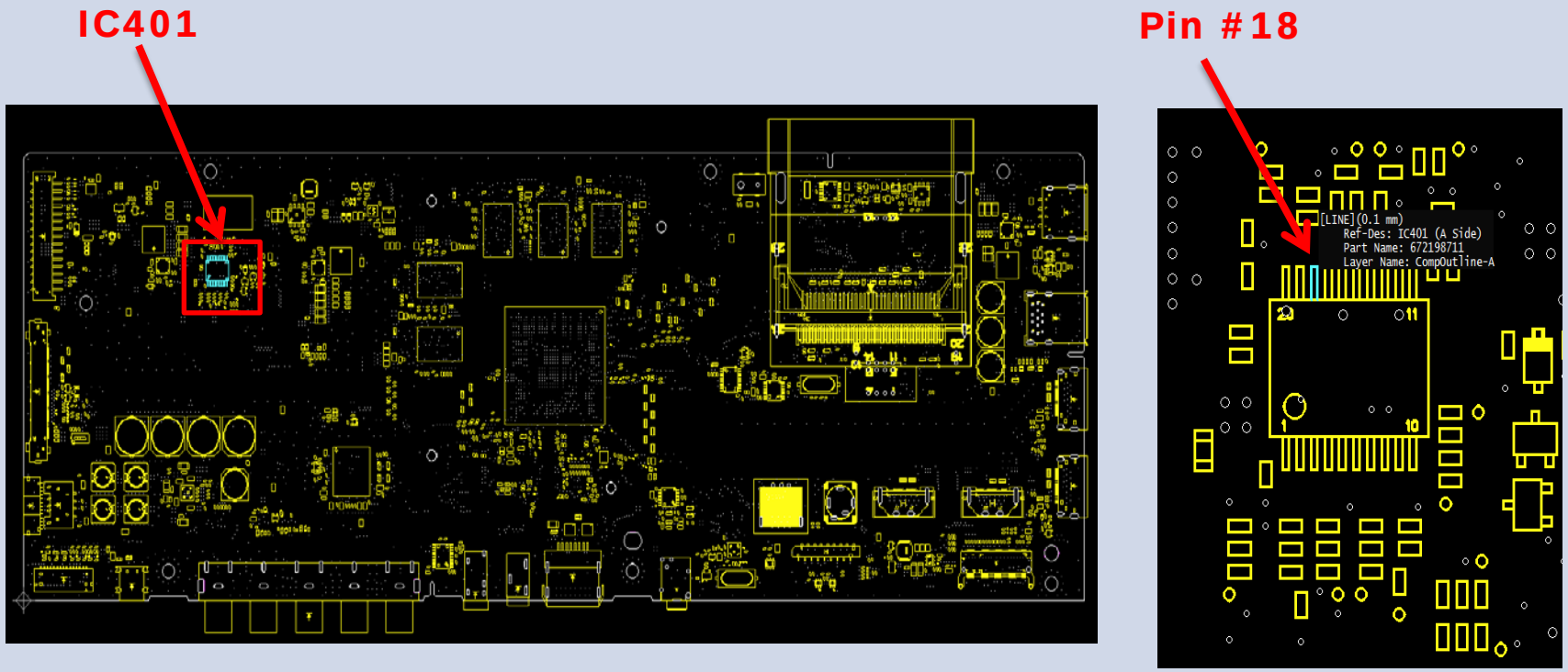
3.7 NO SOUND: @ TUNER



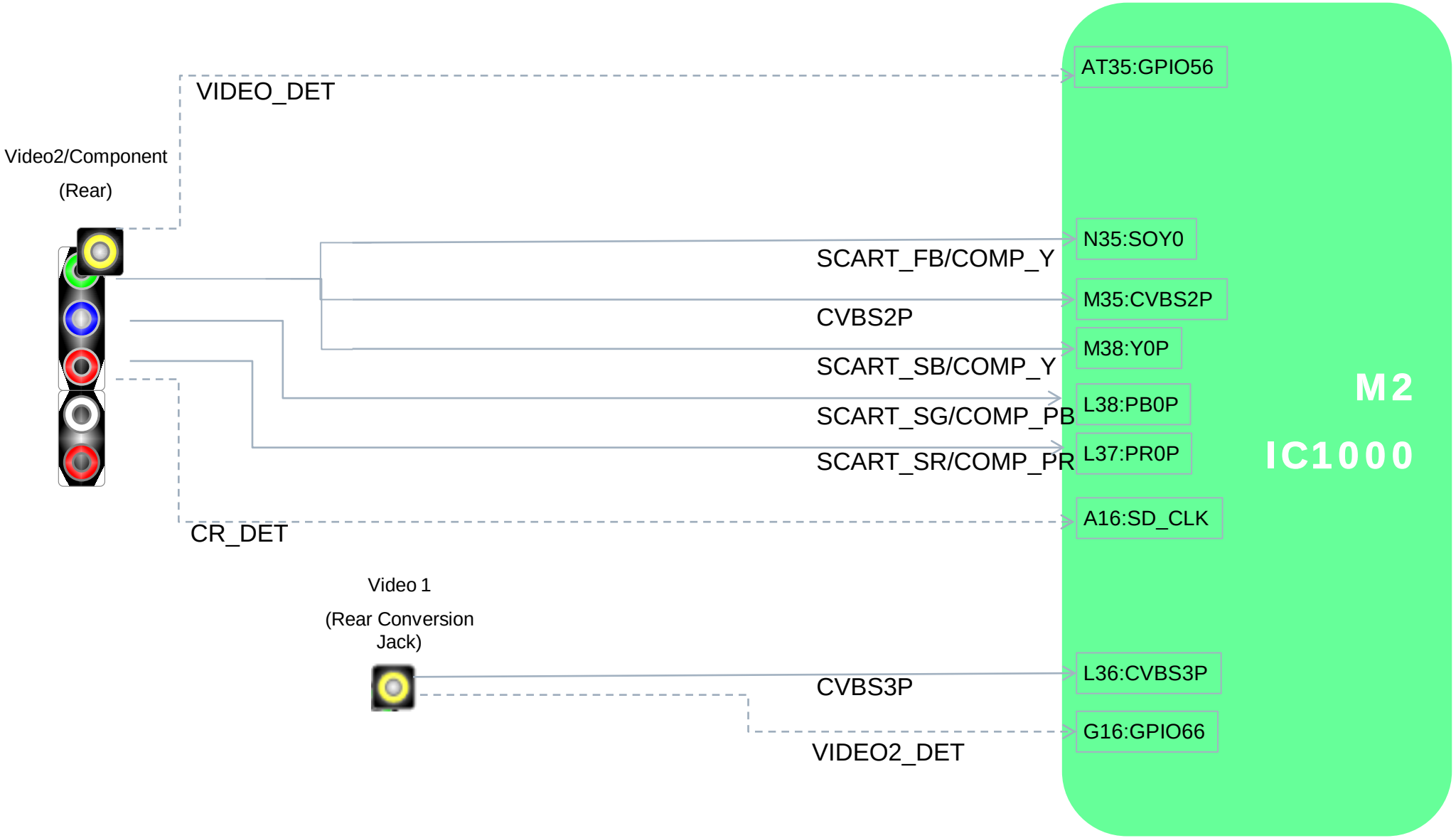
4.0 No Picture



BL_ON (IC401: Pin #18)

Board Name	Board PWB A-side
BFX	

4.1 : Video Analog Signal Path



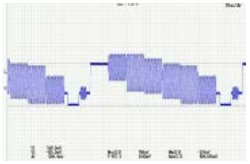
4.2 : No Picture ALL Destination (BFX)(Conversion Jack)

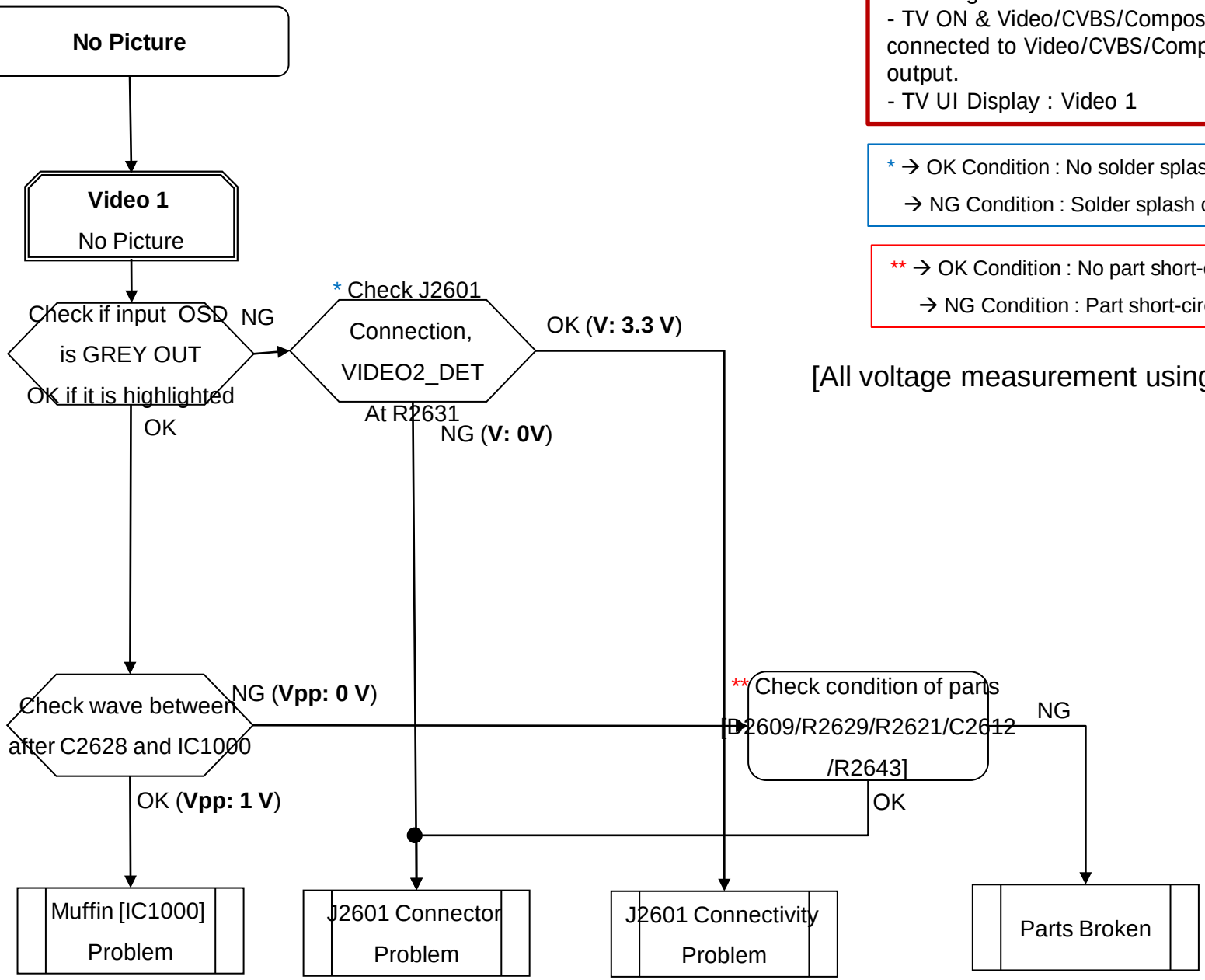
Checking condition:
- TV ON & Video/CVBS/Composite input cable is connected to Video/CVBS/Composite source output.
- TV UI Display : Video 1

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

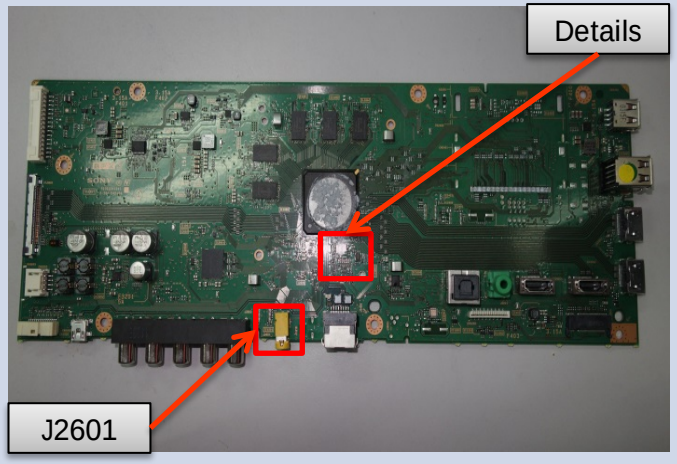
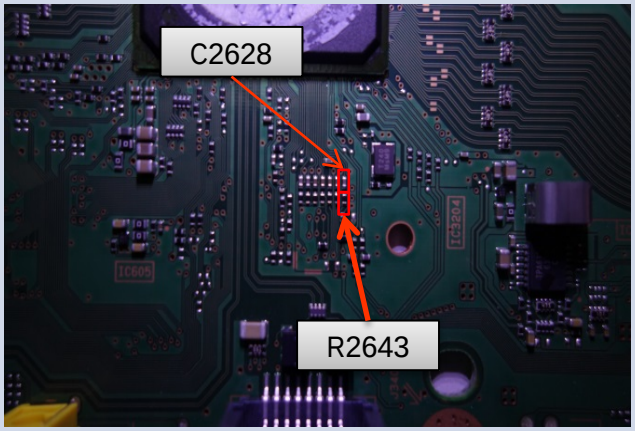
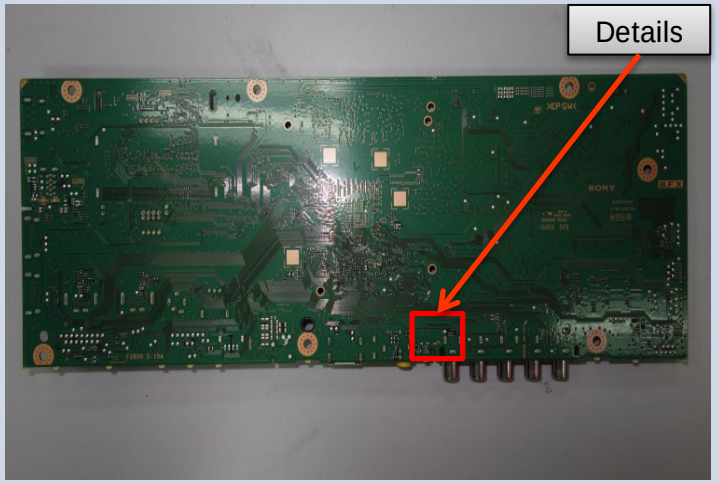
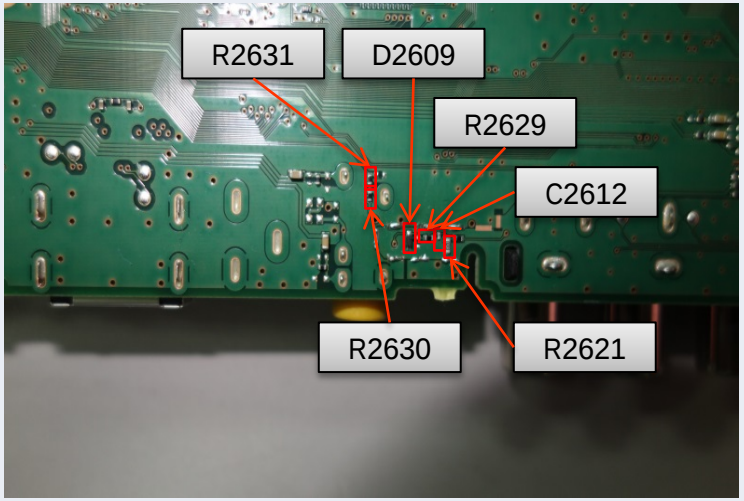
** → OK Condition : No part short-circuited
→ NG Condition : Part short-circuited

[All voltage measurement using Oscilloscope]



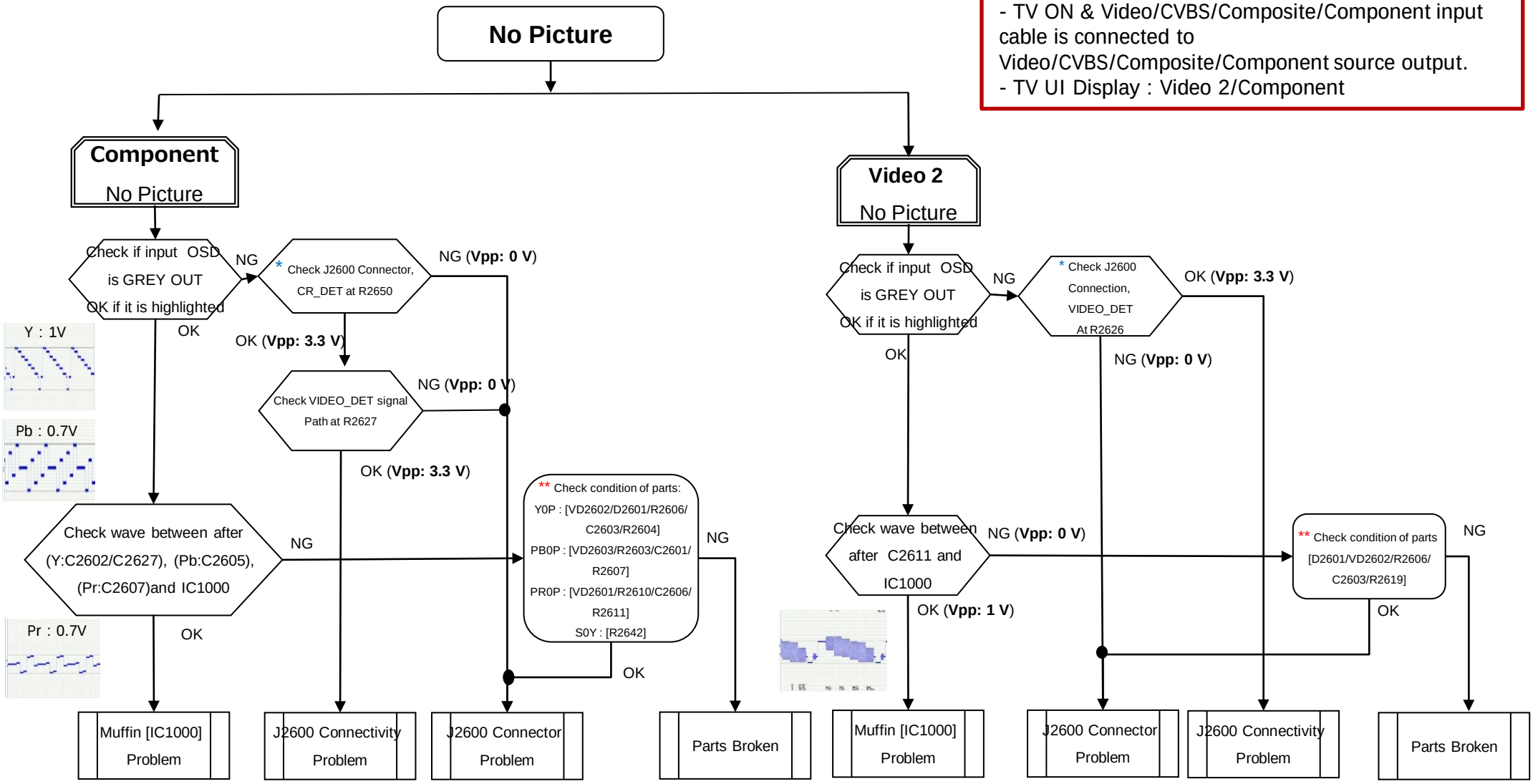


4.21- Video Analog Signal Path - Checking Point

Board Name	Board PWB (A side)	Detail
BFX(A-Side) J2601 C2628 R2643		
BFX(B-side) R2630 R2631 D2609 R2629 R2621 C2612		

4.3 : No Picture ALL Destination (BFX)(Component)

Checking condition:
- TV ON & Video/CVBS/Composite/Component input cable is connected to Video/CVBS/Composite/Component source output.
- TV UI Display : Video 2/Component

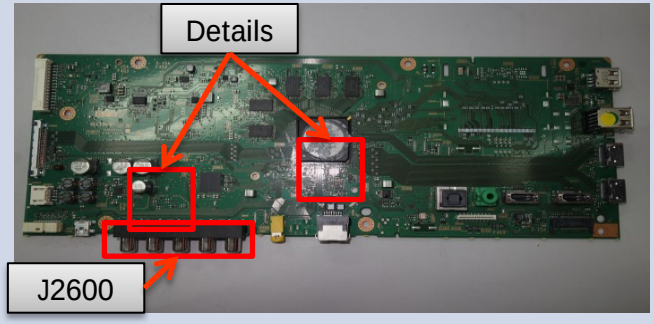
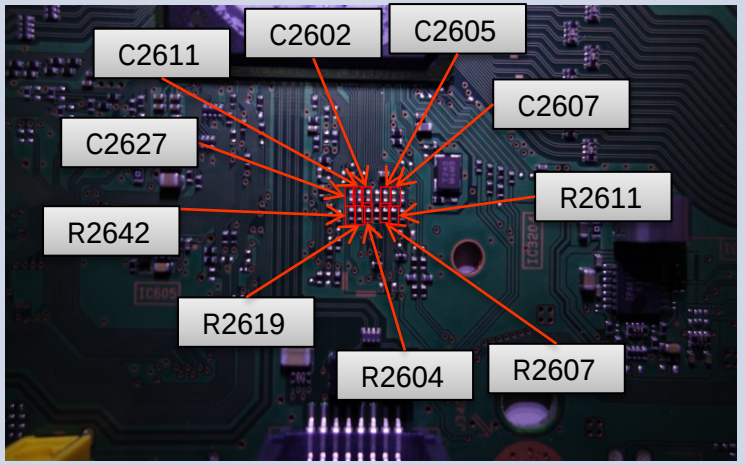
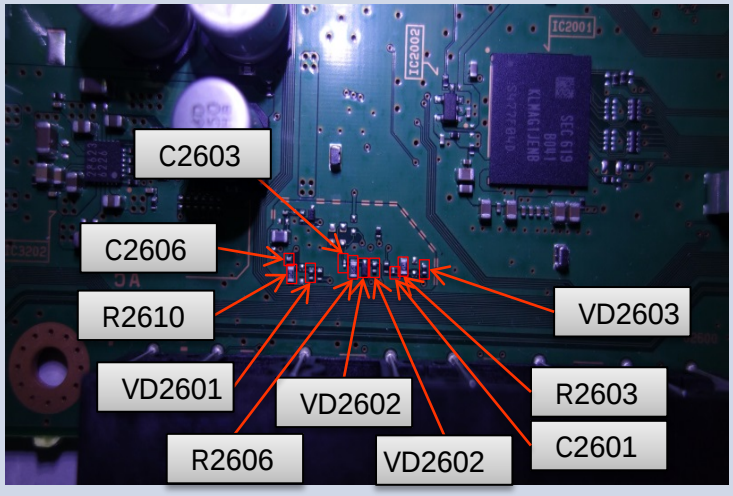


[All voltage measurement using Oscilloscope]

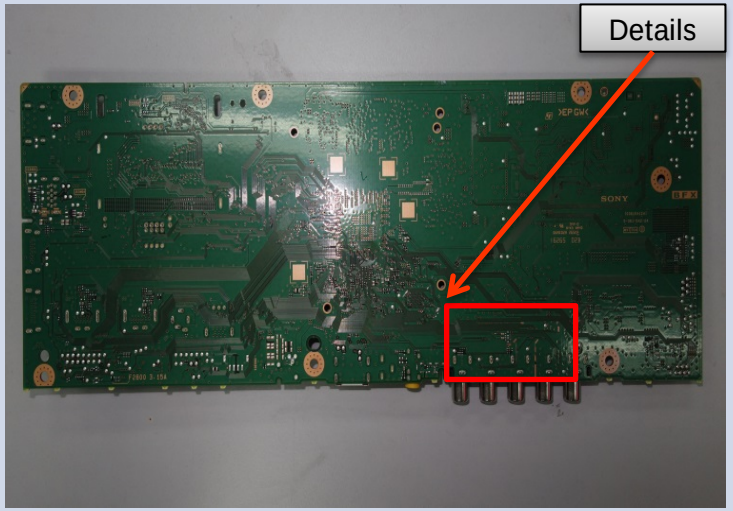
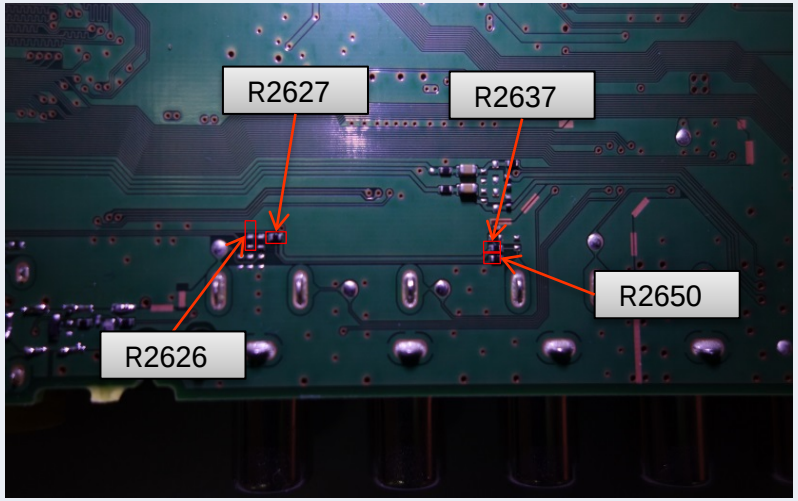
* → OK Condition : No solder splash can be seen
→ NG Condition : Solder splash can be seen

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

4.31- Video Analog Signal Path - Checking Point

Board Name	Board PWB (A side)	Detail
BFX(A-Side) J2600 C2602 C2605 C2607 C2627 VD2602 D2601 R2606 C2603 R2604 VD2603 R2603 C2601 R2607 VD2601 R2610 C2606 R2611 R2642 R2619 C2611		 

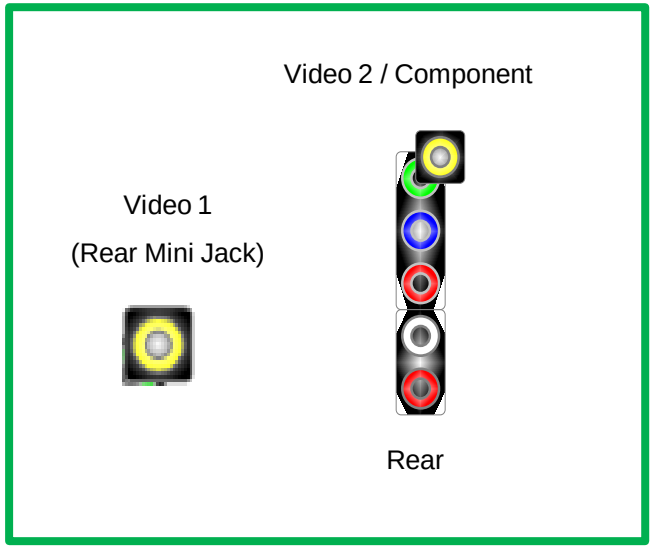
4.31- Video Analog Signal Path - Checking Point

Board Name	Board PWB (A side)	Detail
BFX(B-side) R2626 R2650 R2627 R2637		

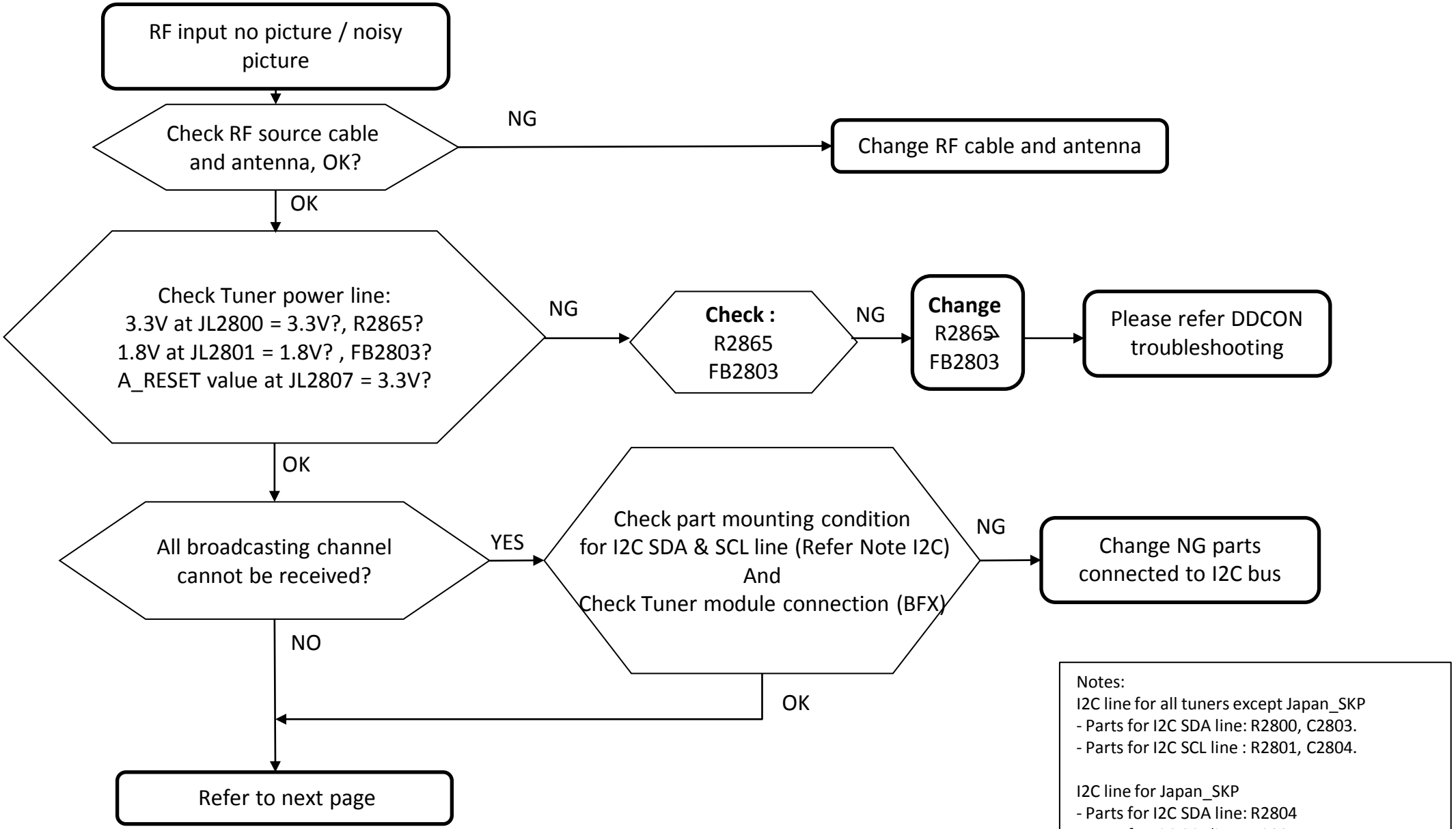
Condition	Actions to be taken
Muffin [IC1000] Problem	Refer to IC troubleshooting for further investigation
CN2600 Connectivity Problem J2601 Connector Problem J2600 Connectivity Problem	Change Connector
Parts Broken	Change Part according to ** remarks

4.2/4.3 : Input Skip function (BFX)

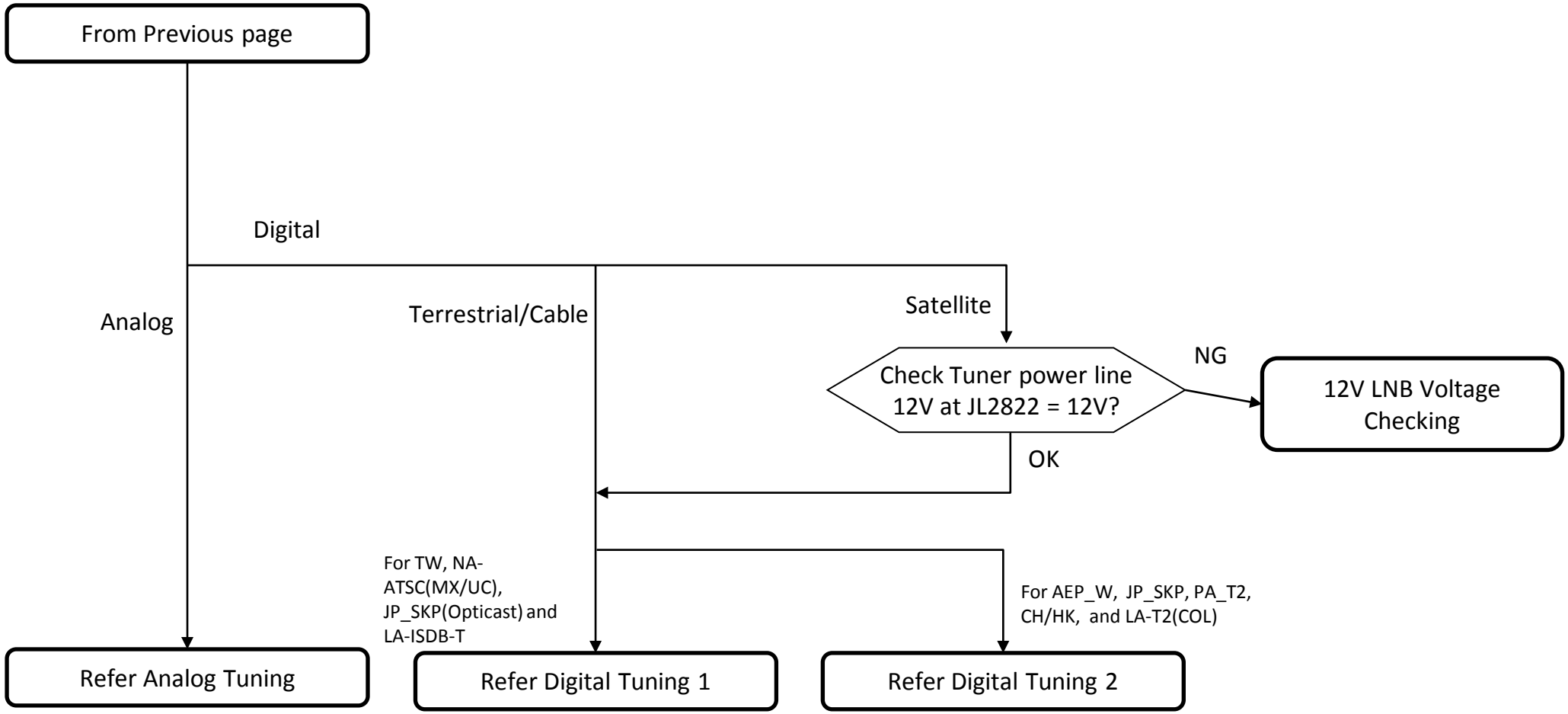
Input	Signal	Non-Detect (Typical)	Detect (Typical)
Video 1	VIDEO2_DET IC1000 G16-GPIO66	0V	3.3V
Video 2 / Component	VIDEO_DET IC1000 AT35-GPIO56	0V	3.3V
	CR_DET IC1000 A16-SD_CLK	0V	3.3V



4.4 NO PICTURE: @ TUNER

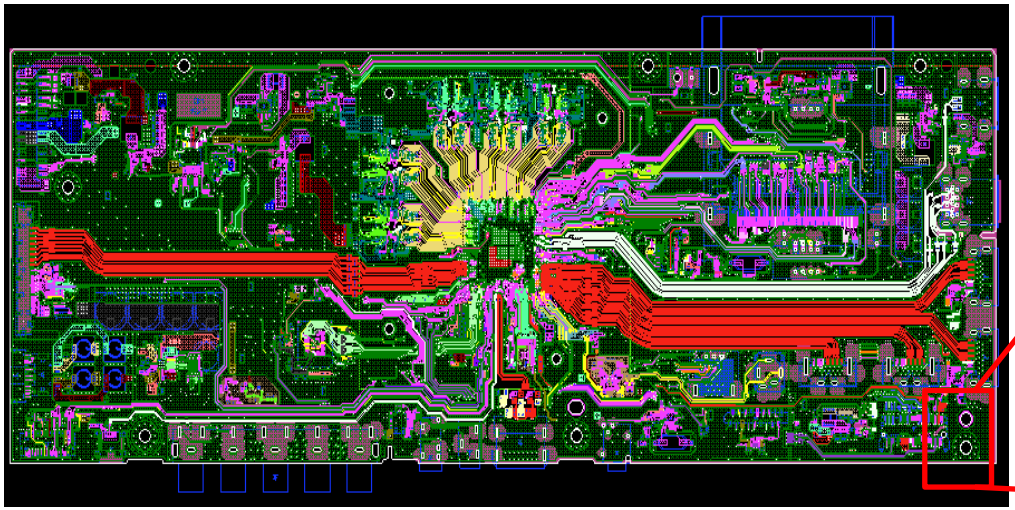


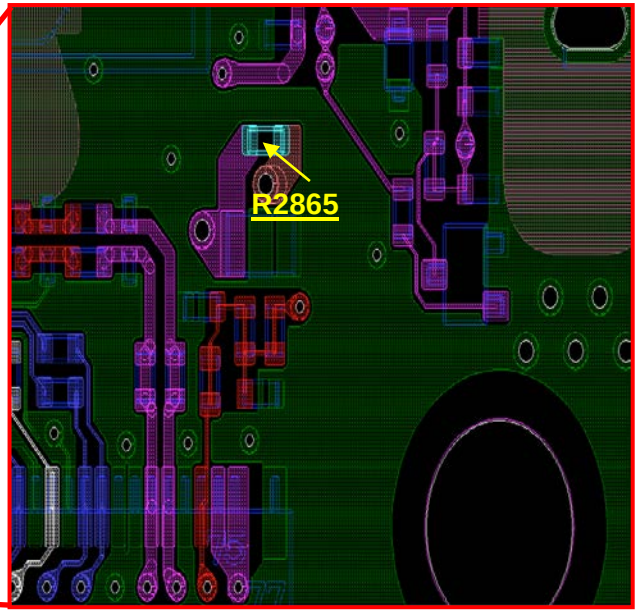
4.4 NO PICTURE: @ TUNER



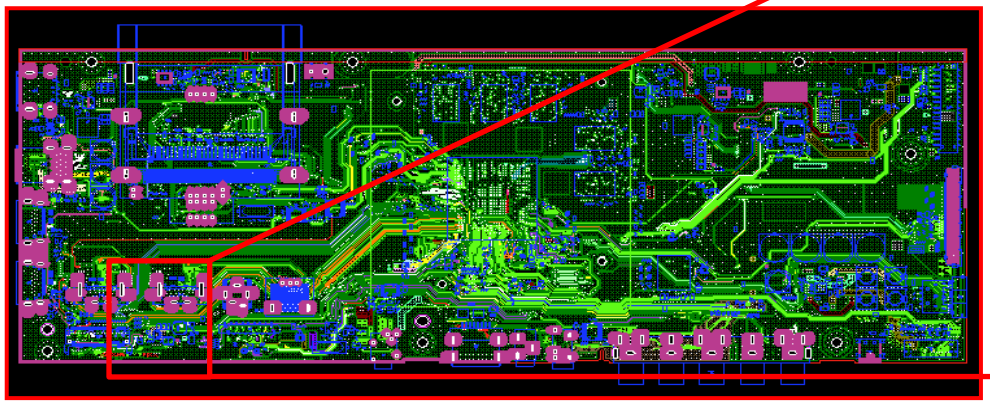
4.4 NO PICTURE: @ TUNER (BFX)

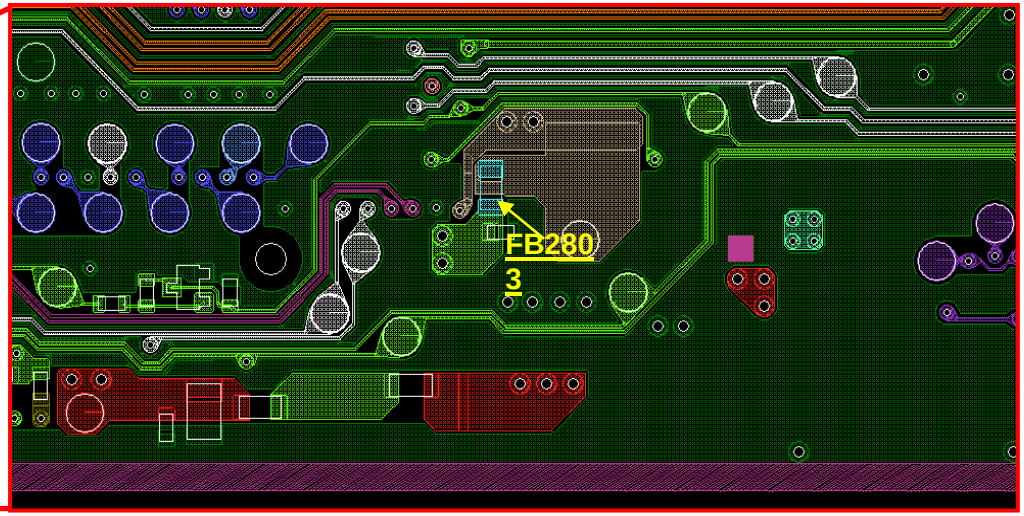
BFX (Top View)
For Tuner Power Lines





BFX (Back View)
For Tuner Power Lines

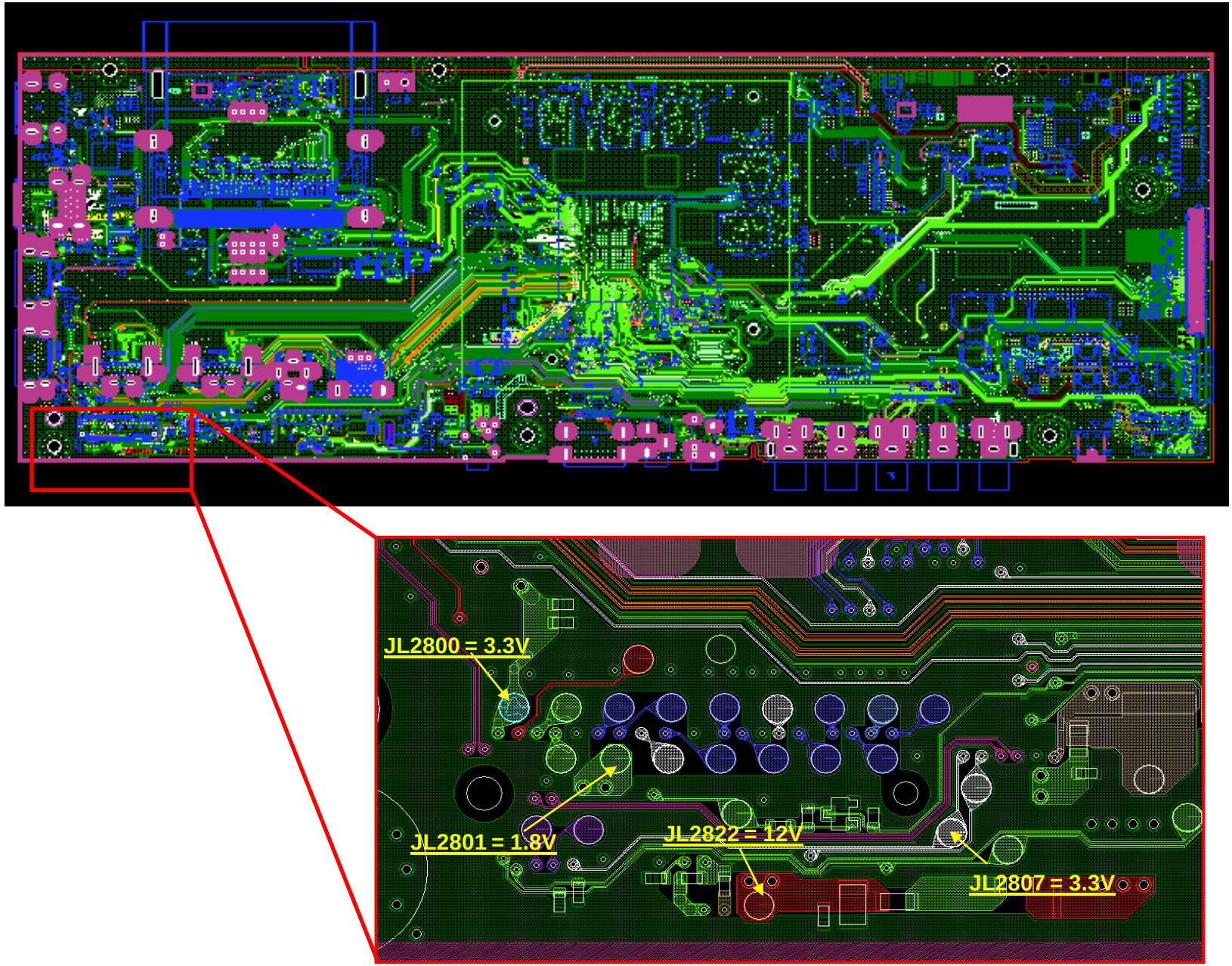




4.4 NO PICTURE: @ TUNER (BFX)

BFX (Back View)

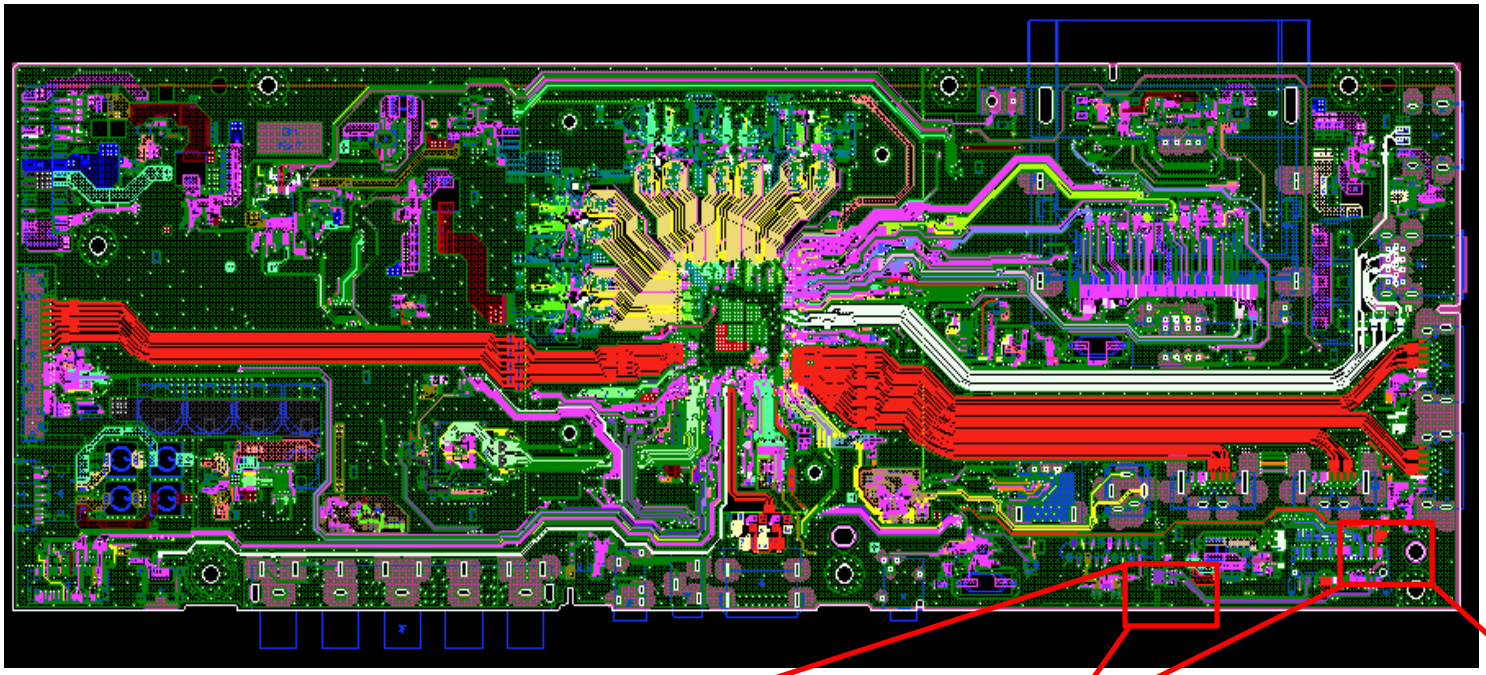
For Tuner Power Lines

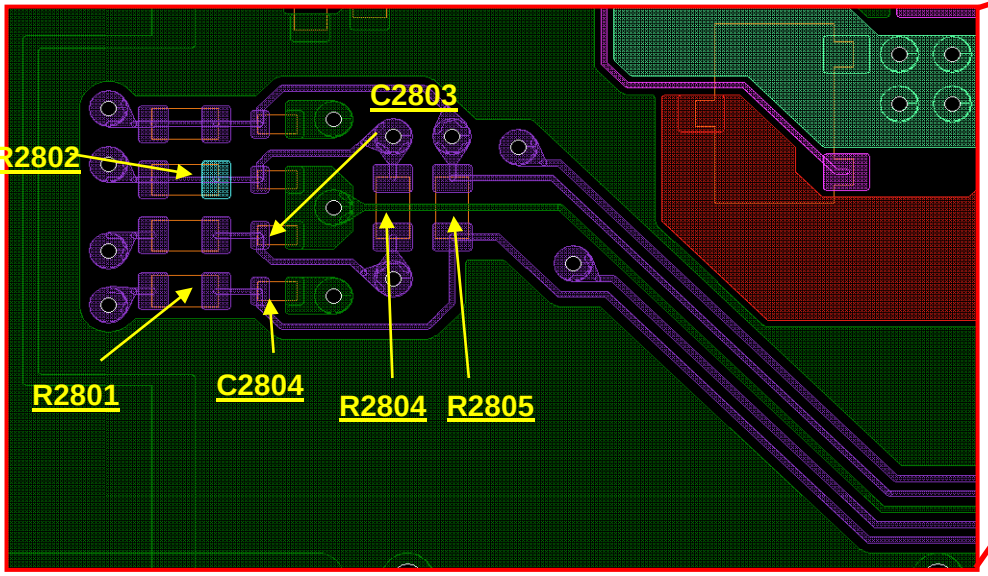


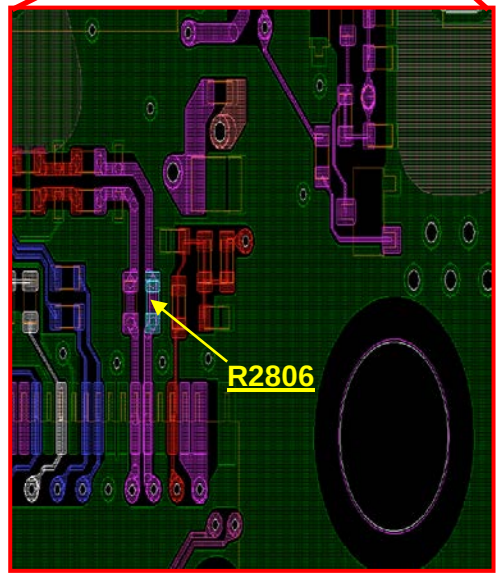
4.4 NO PICTURE: @ TUNER (BFX)

BFX (Top View)

For Tuner I2C line

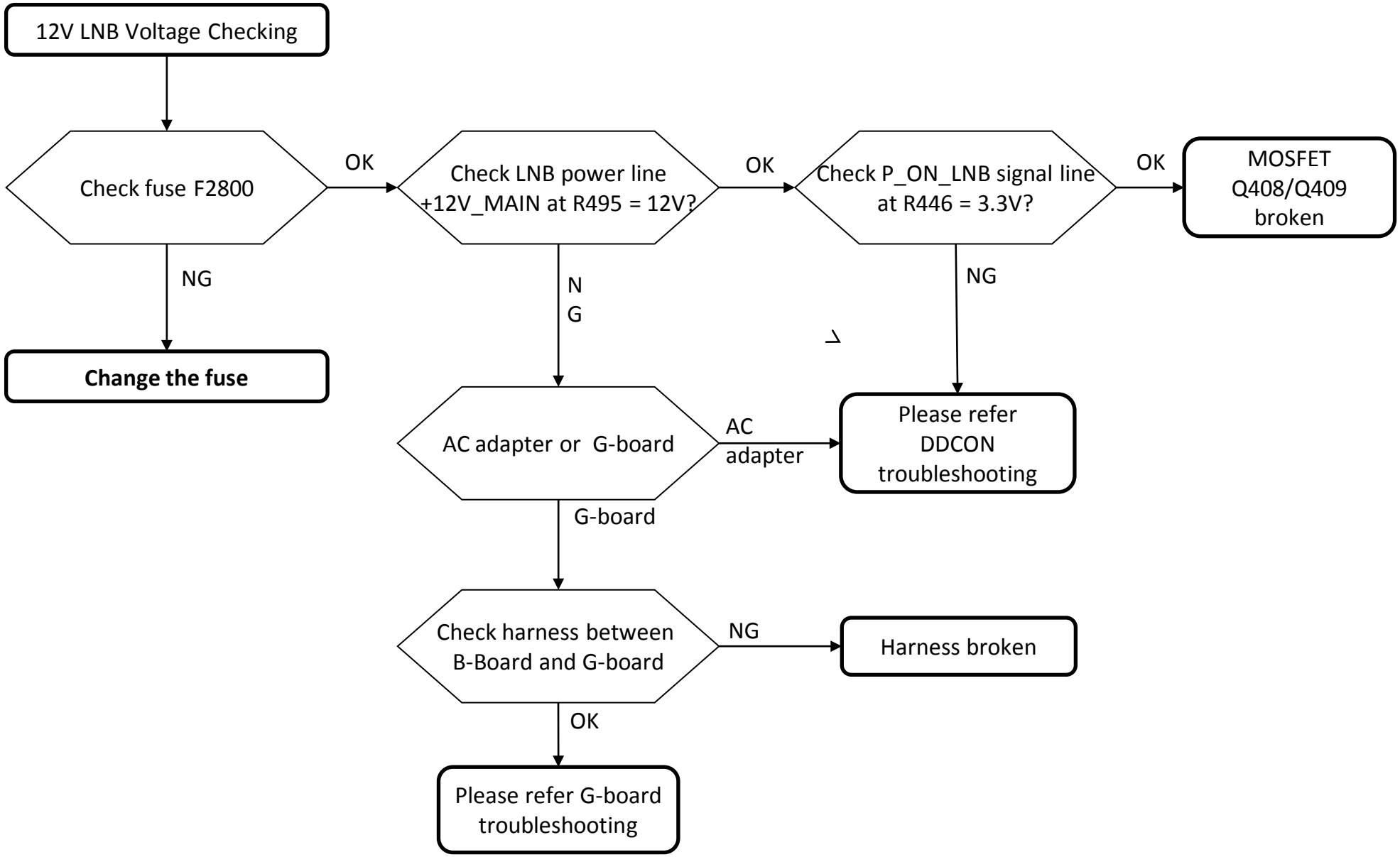






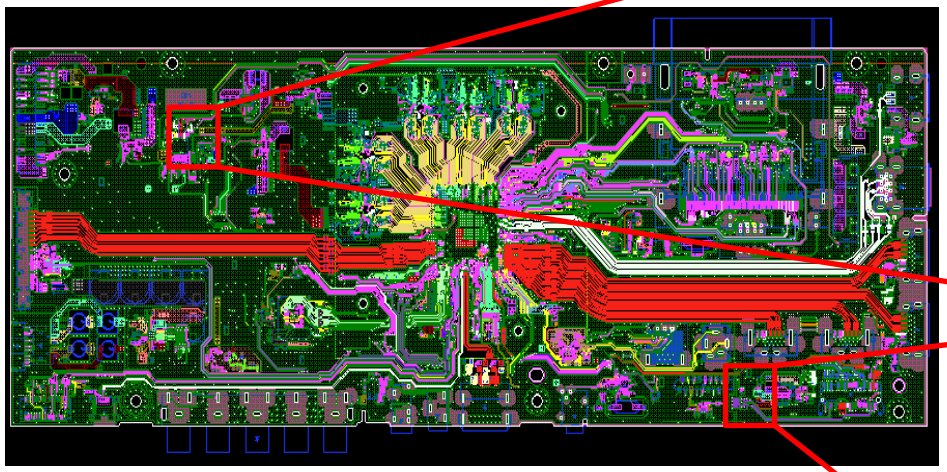
4.4 NO PICTURE: @ TUNER

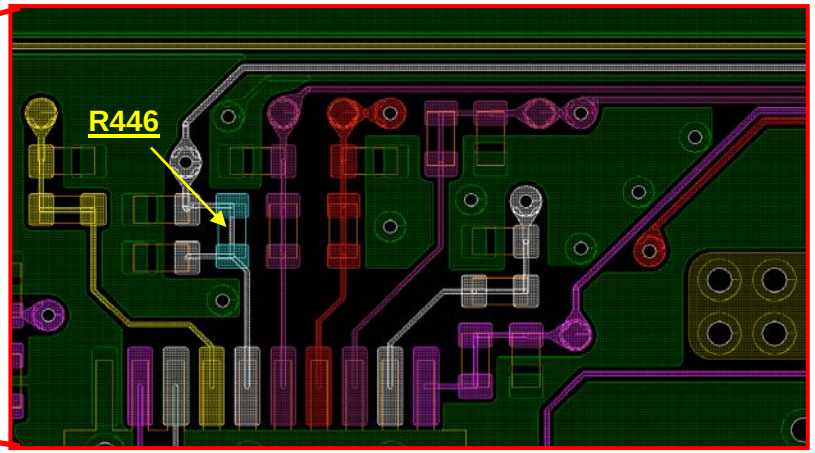
FOR 12V LNB Voltage Checking: @ AEP_W and JP_SKP

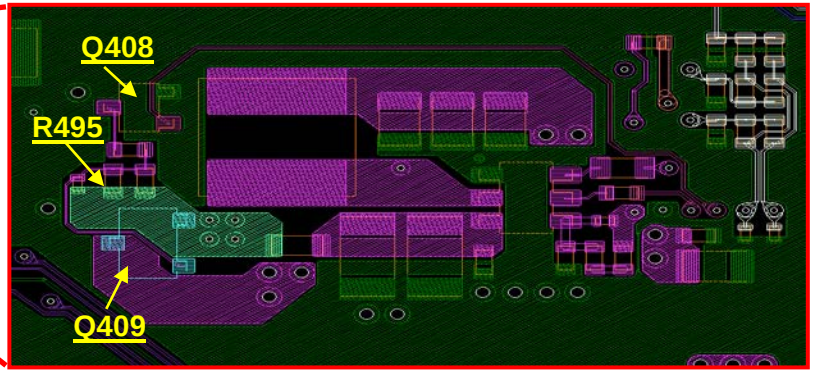


4.4 NO PICTURE: @ TUNER (BFX)

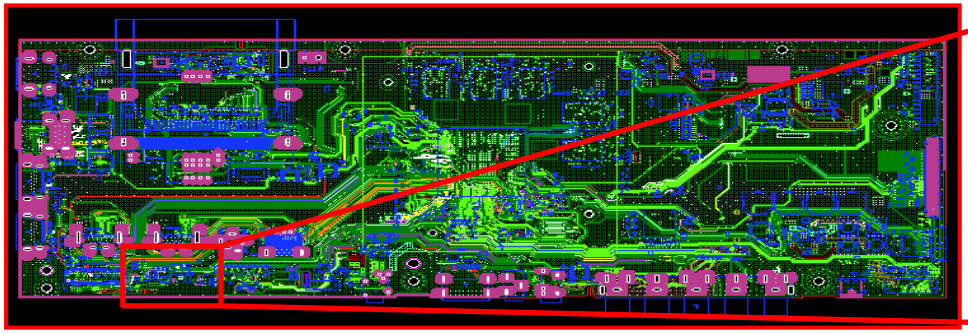
BFX (Top View)
12V LNB Voltage line

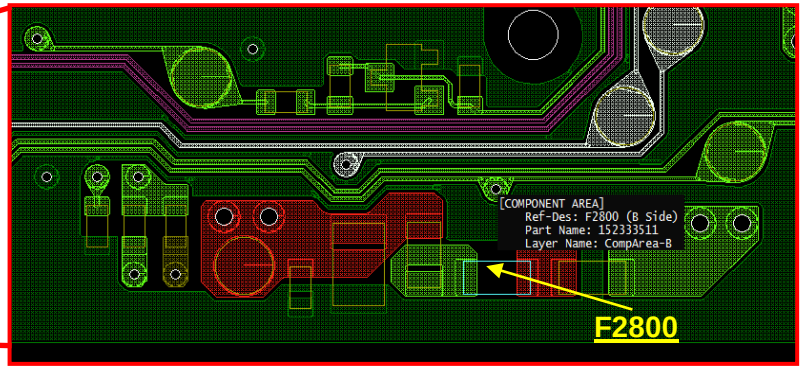






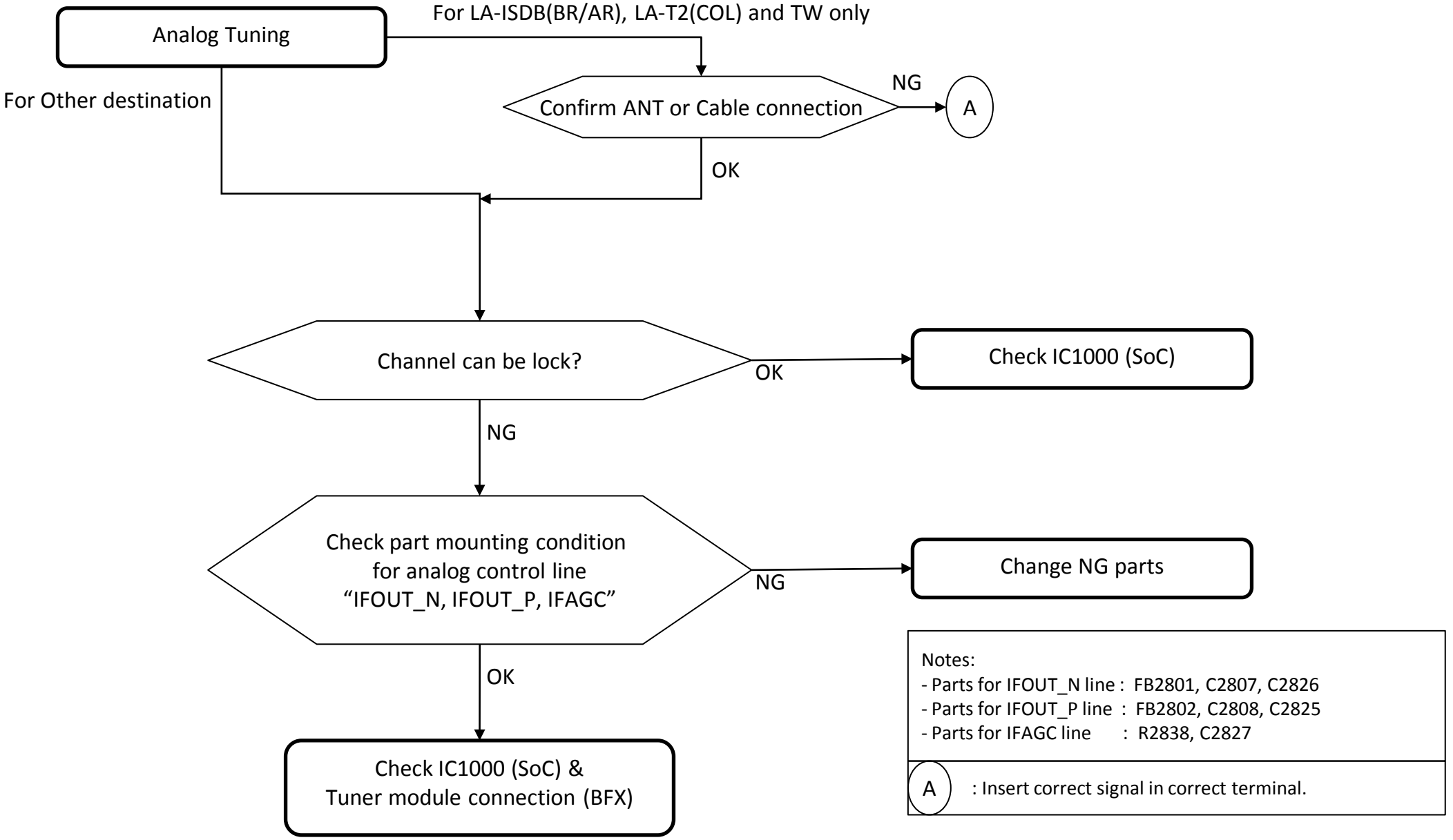
BFX (Back View)
12V LNB Voltage line





4.4 NO PICTURE: @ TUNER

FOR ANALOG TUNING: @ All destination except JP_SKP

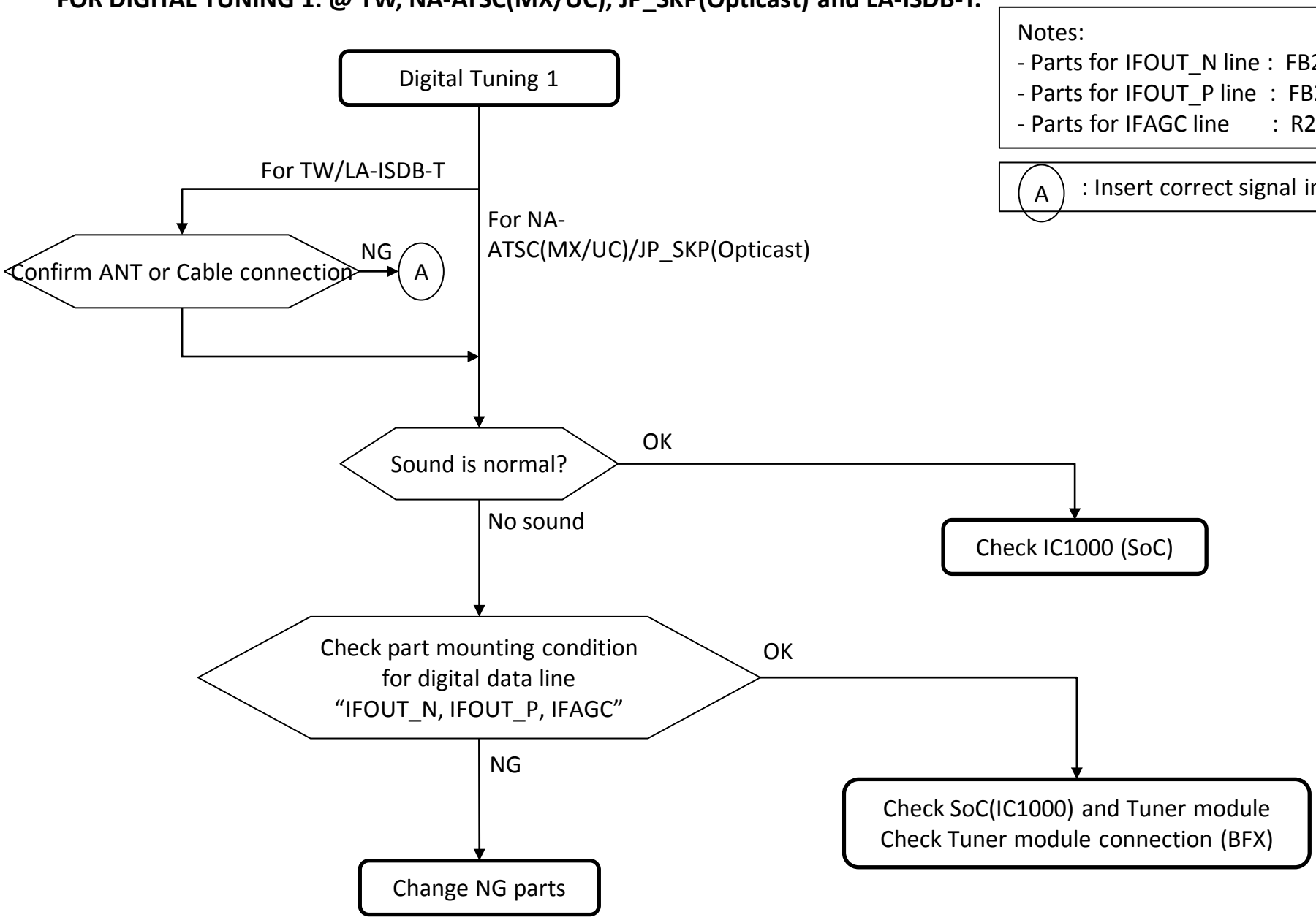


Notes:
- Parts for IFOUT_N line : FB2801, C2807, C2826
- Parts for IFOUT_P line : FB2802, C2808, C2825
- Parts for IFAGC line : R2838, C2827

A : Insert correct signal in correct terminal.

4.4 NO PICTURE: @ TUNER

FOR DIGITAL TUNING 1: @ TW, NA-ATSC(MX/UC), JP_SKP(Opticast) and LA-ISDB-T.

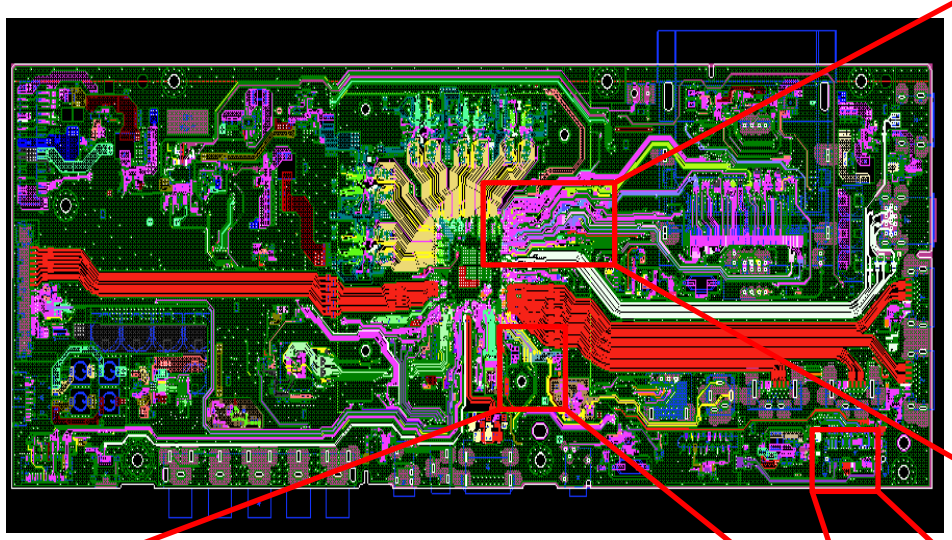


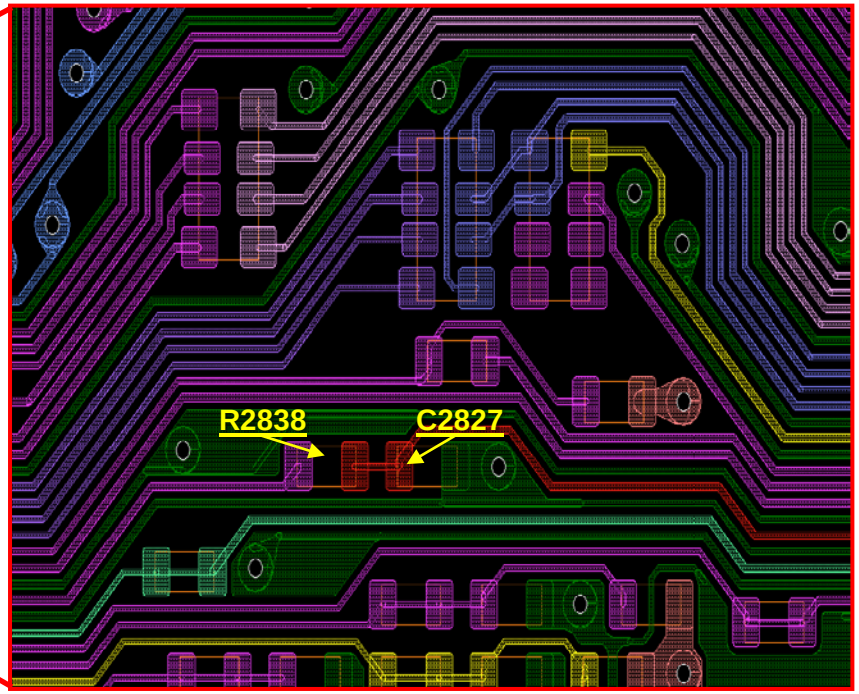
Notes:
- Parts for IFOUT_N line : FB2801, C2807, C2826
- Parts for IFOUT_P line : FB2802, C2808, C2825
- Parts for IFAGC line : R2838, C2827

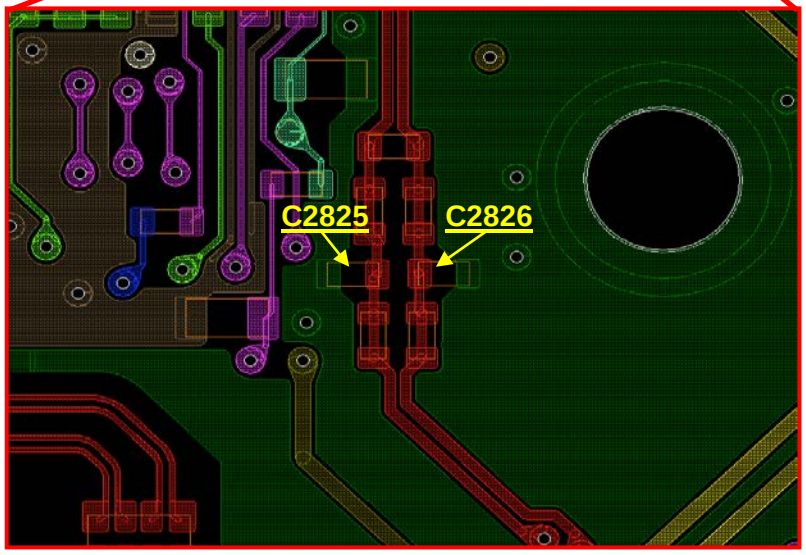
A : Insert correct signal in correct terminal.

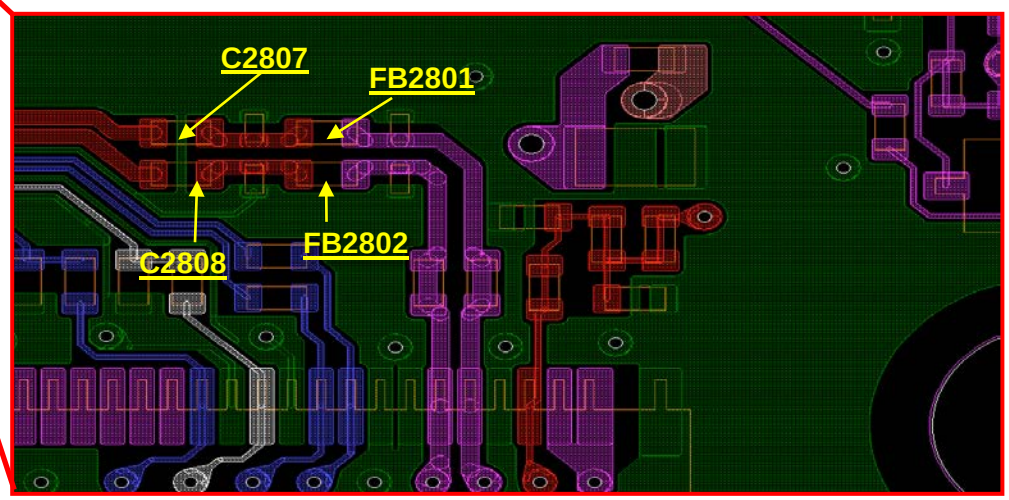
4.4 NO PICTURE: @ TUNER (BFX)

BFX (Top View)
IF & IFAGC line



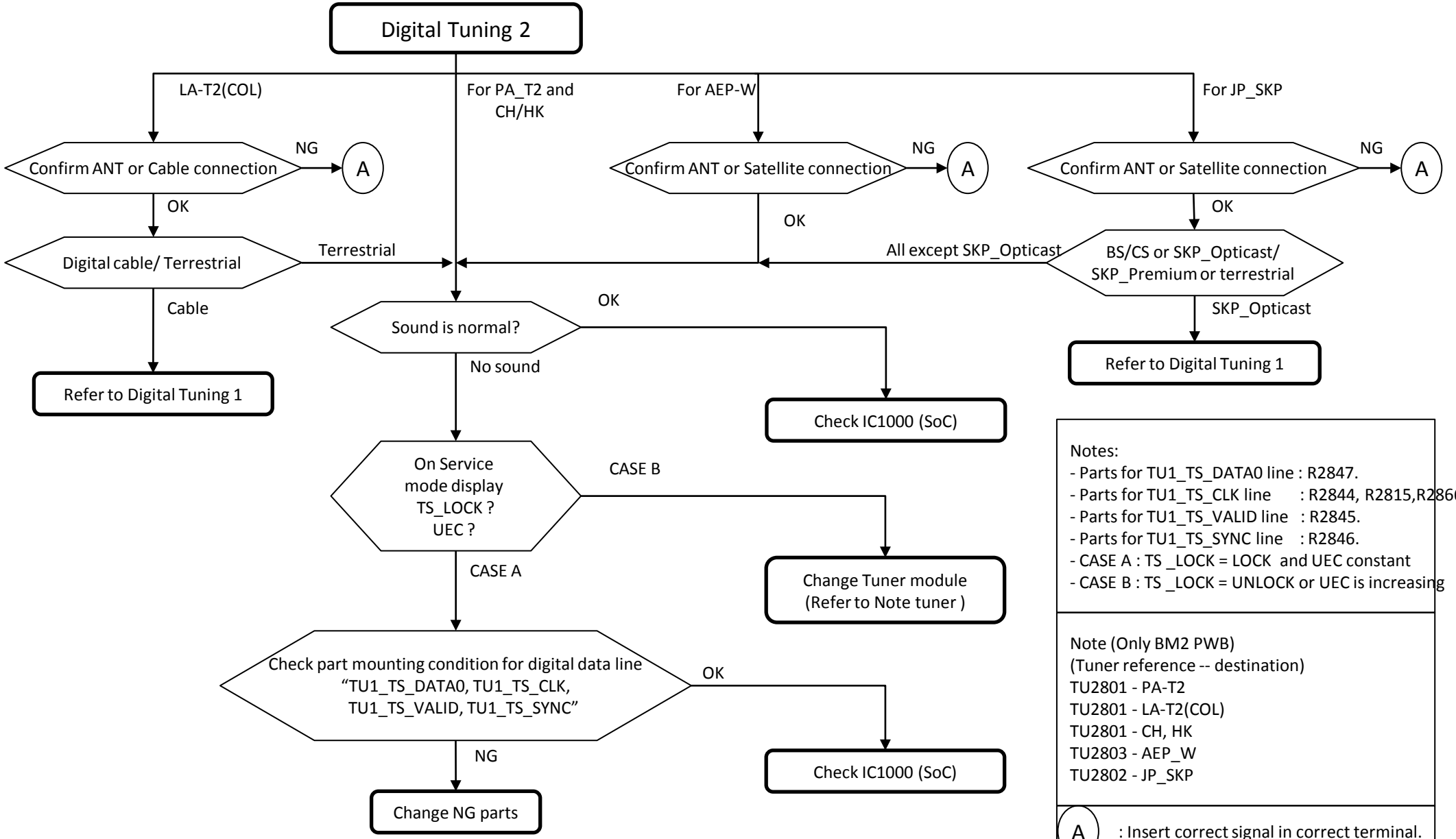






4.4 NO PICTURE: @ TUNER

FOR DIGITAL TUNING 2: @ AEP_W, JP_SKP, PA_T2, CH/HK, and LA-T2(COL)



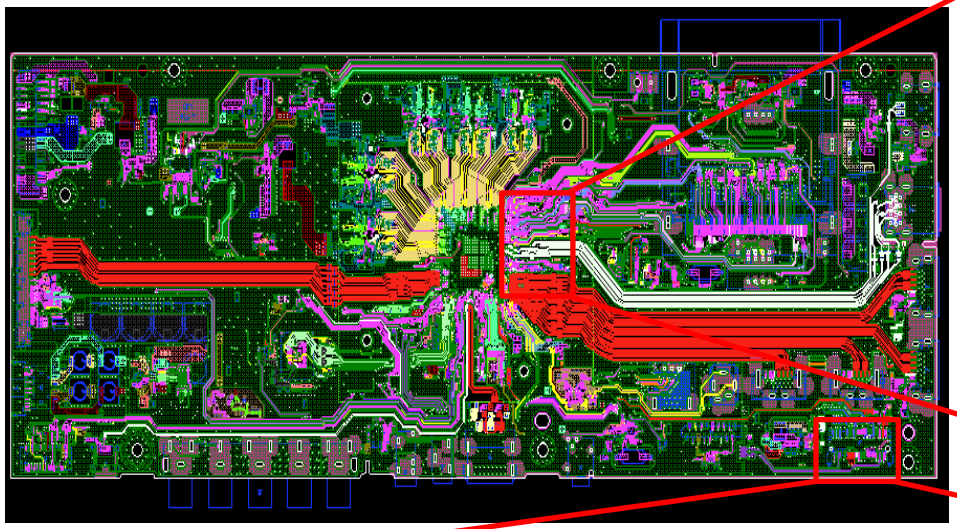
Notes:
- Parts for TU1_TS_DATA0 line : R2847.
- Parts for TU1_TS_CLK line : R2844, R2815,R2866
- Parts for TU1_TS_VALID line : R2845.
- Parts for TU1_TS_SYNC line : R2846.
- CASE A : TS _LOCK = LOCK and UEC constant
- CASE B : TS _LOCK = UNLOCK or UEC is increasing

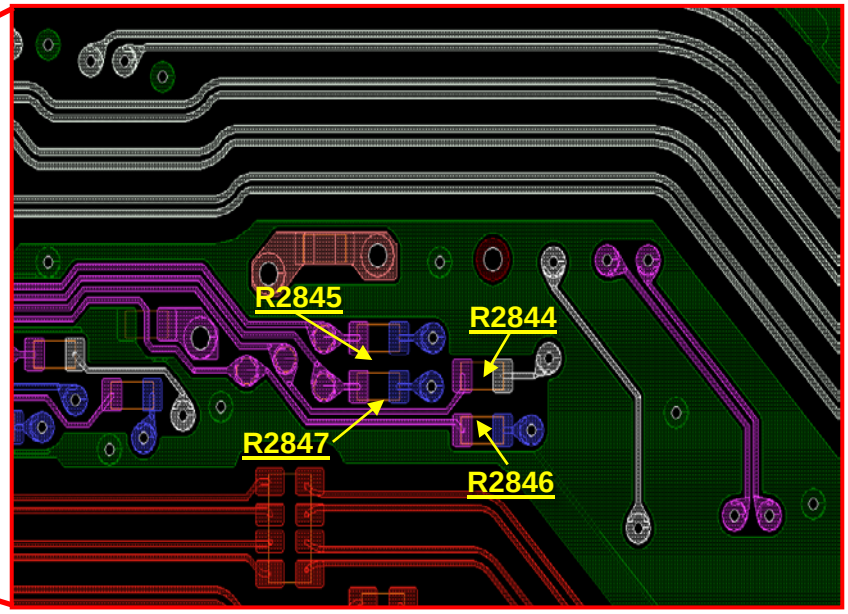
Note (Only BM2 PWB)
(Tuner reference -- destination)
TU2801 - PA-T2
TU2801 - LA-T2(COL)
TU2801 - CH, HK
TU2803 - AEP_W
TU2802 - JP_SKP

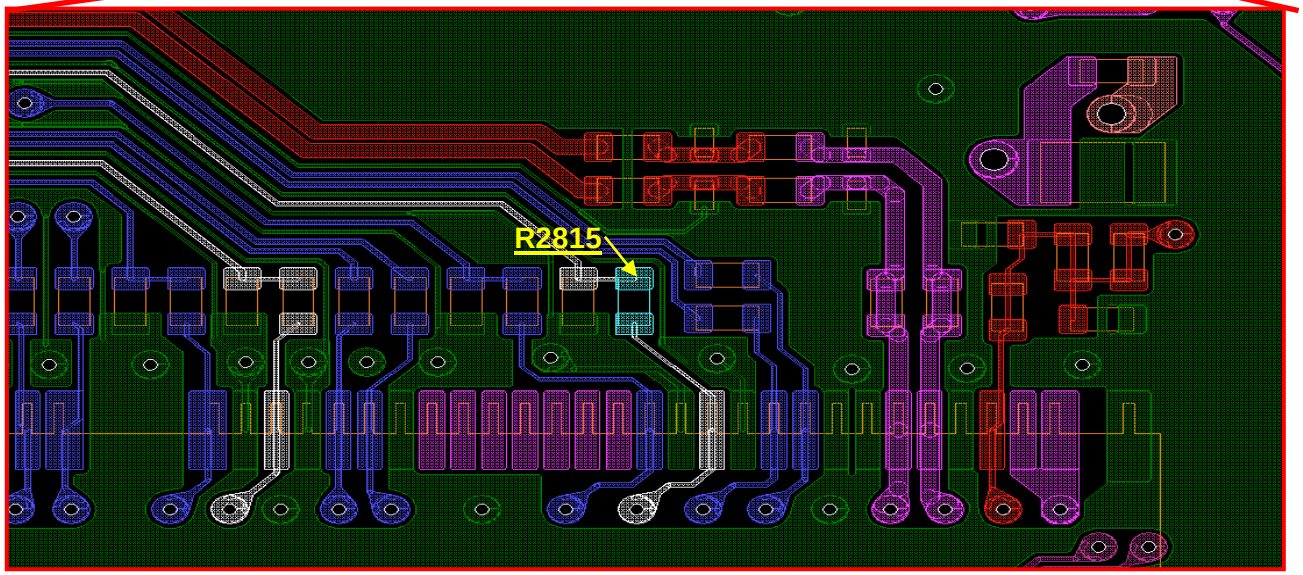
A : Insert correct signal in correct terminal.

4.4 NO PICTURE: @ TUNER (BFX)

BFX (Top View)
TS1 line





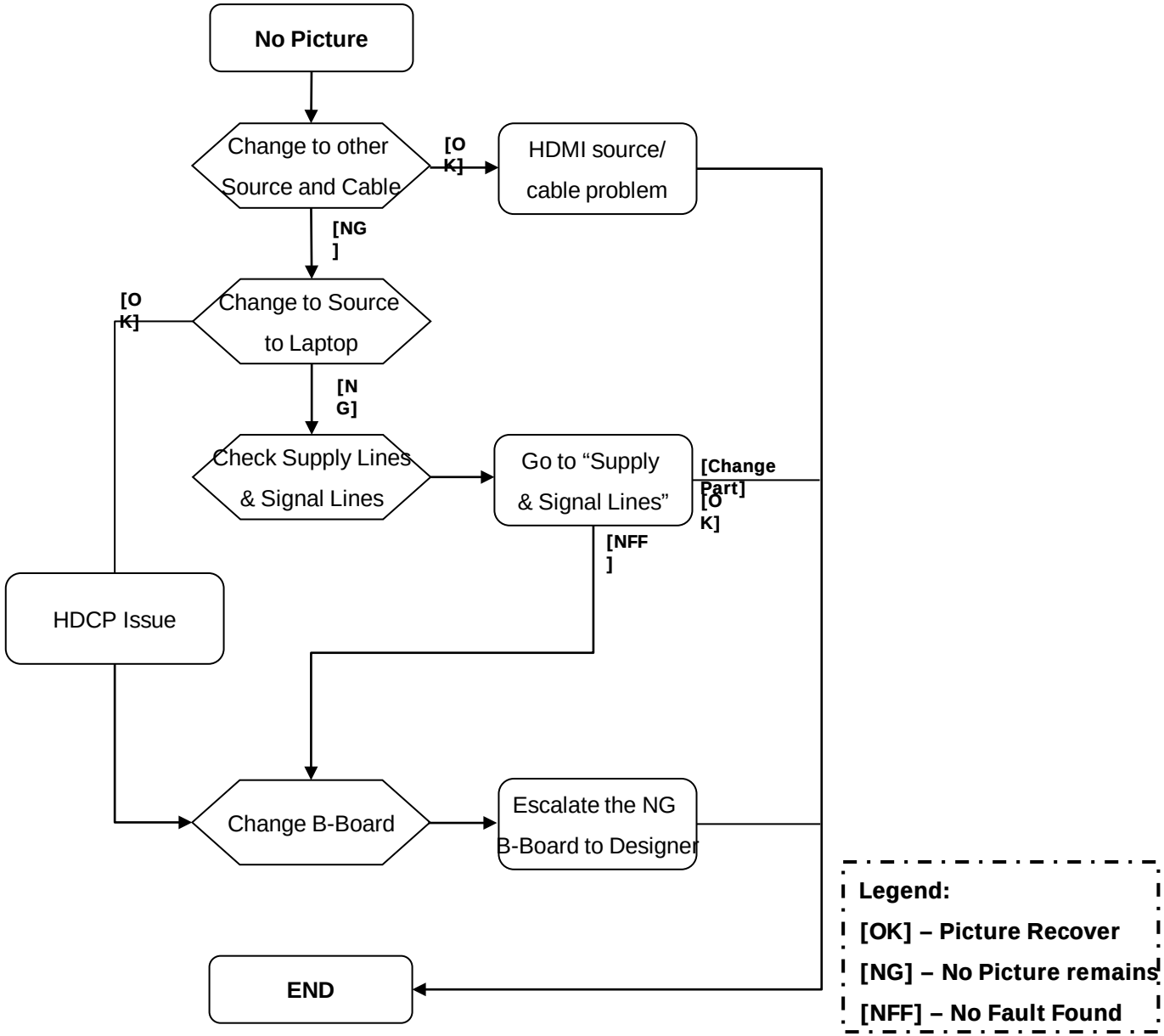


100

4.5 NO PICTURE: HDMI 1, 2, 3, 4

Pre-Check Condition

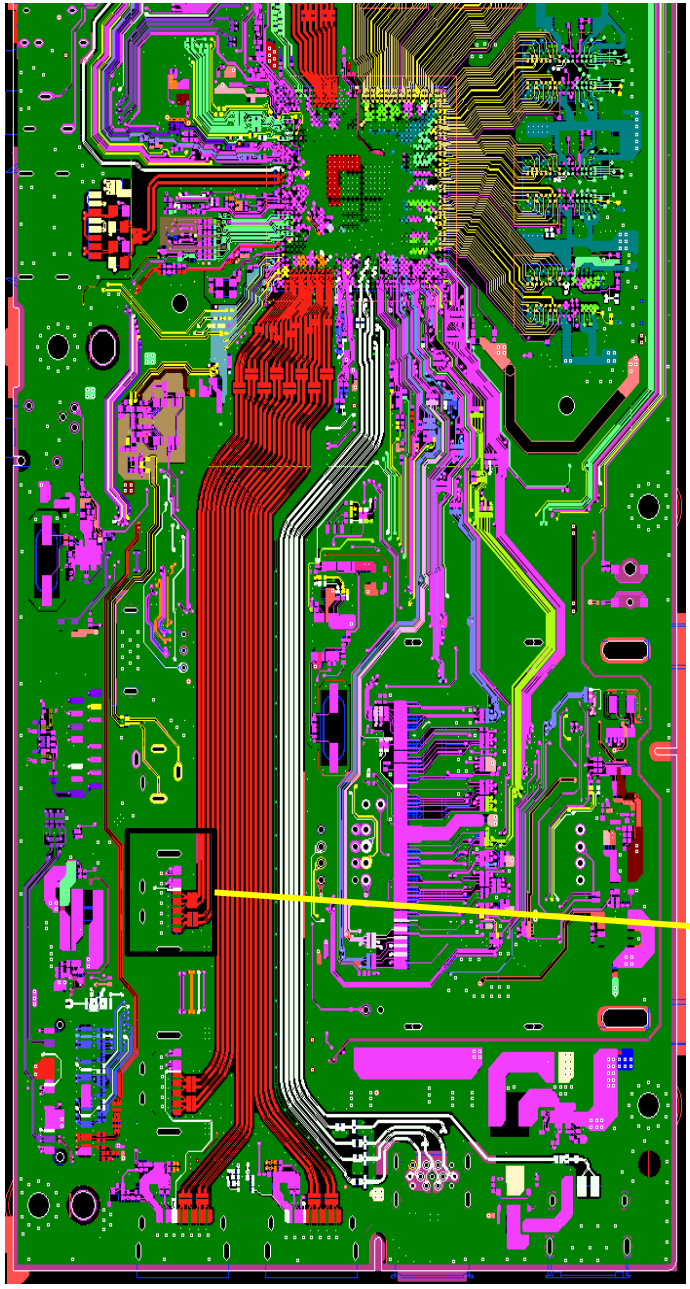
- Connection of the TV is direct to source. Splitter/Distributor is not preferable.
- Power source between TV and Source is preferred to be on the same level (110V or 240V)
- Physical condition of the Board/TV is OK (No defect at HDMI Connector, CMF or other parts)
- Confirm the set could be Power On properly and the No Picture is due to HDMI related source.

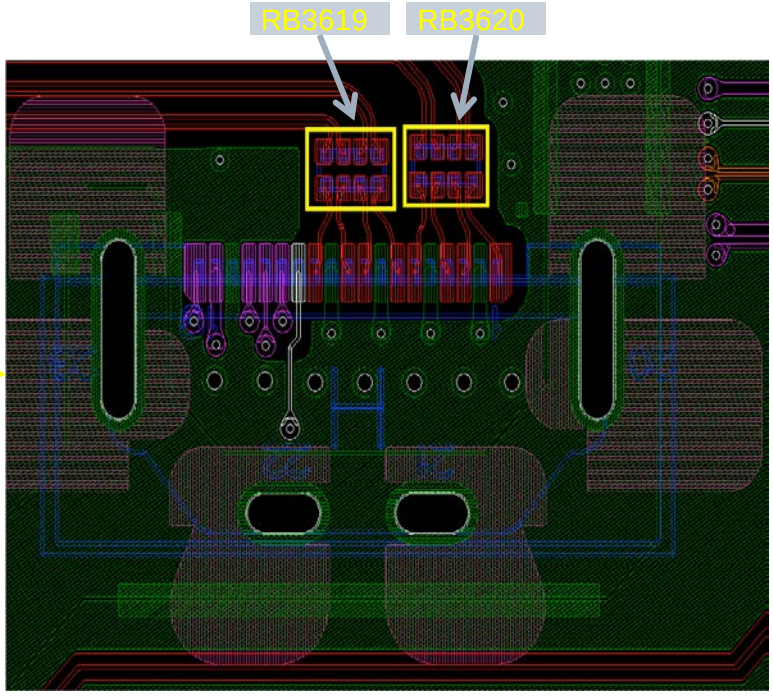


4.5 NO PICTURE: HDMI 1 [Supply & Signal Lines]

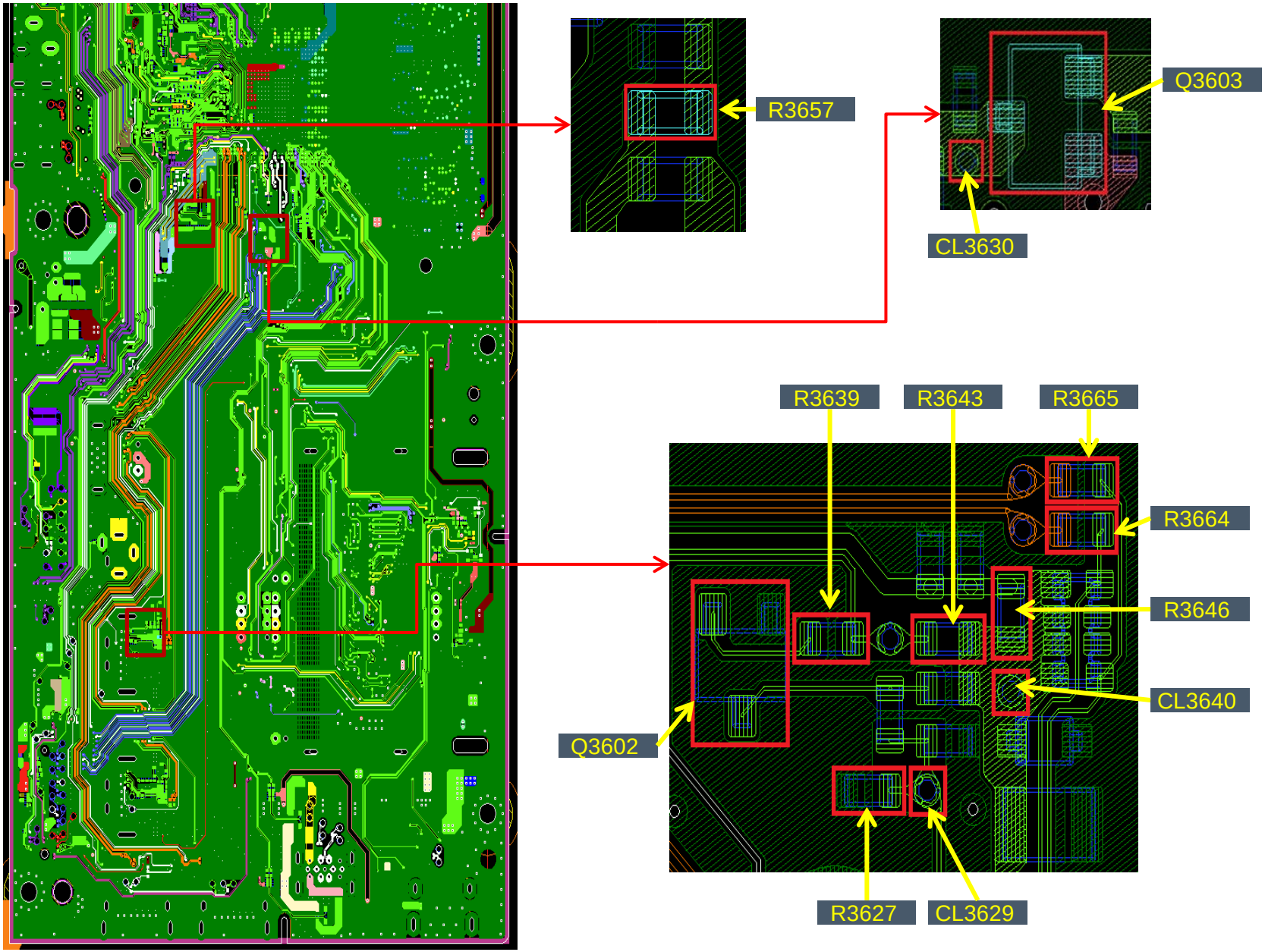
Power / Signal Lines	Check Point	Voltage Specification	Part to Check for NG/Broken
+5V	CL3640	$4.8 \leq V_{5V} \leq 5.3$	R3646
Hot Plug Detect	CL3629	$4.8 \leq V_{5V} \leq 5.3$	R3627, R3639, R3643, Q3602
I^2C - SDA	R3664	$4.5V \leq V_{SDA} \leq 5.5V$	R3664
I^2C - SCL	R3665	$4.5V \leq V_{SCL} \leq 5.5V$	R3665
TMDS CLK	RB3619	$2.6V \leq V_{TMDSCLK} \leq 3.3V$	RB3619
TMDS D0	RB3619	$2.6V \leq V_{TMDSD0} \leq 3.3V$	RB3619
TMDS D1	RB3620	$2.6V \leq V_{TMDSD1} \leq 3.3V$	RB3620
TMDS D2	RB3620	$2.6V \leq V_{TMDSD2} \leq 3.3V$	RB3620
+1.05V	R3657	+1.05V ± 10%	R3657
+3.3V Main	CL3630	+3.3V ± 10%	Q3603

4.5 NO PICTURE: HDMI1





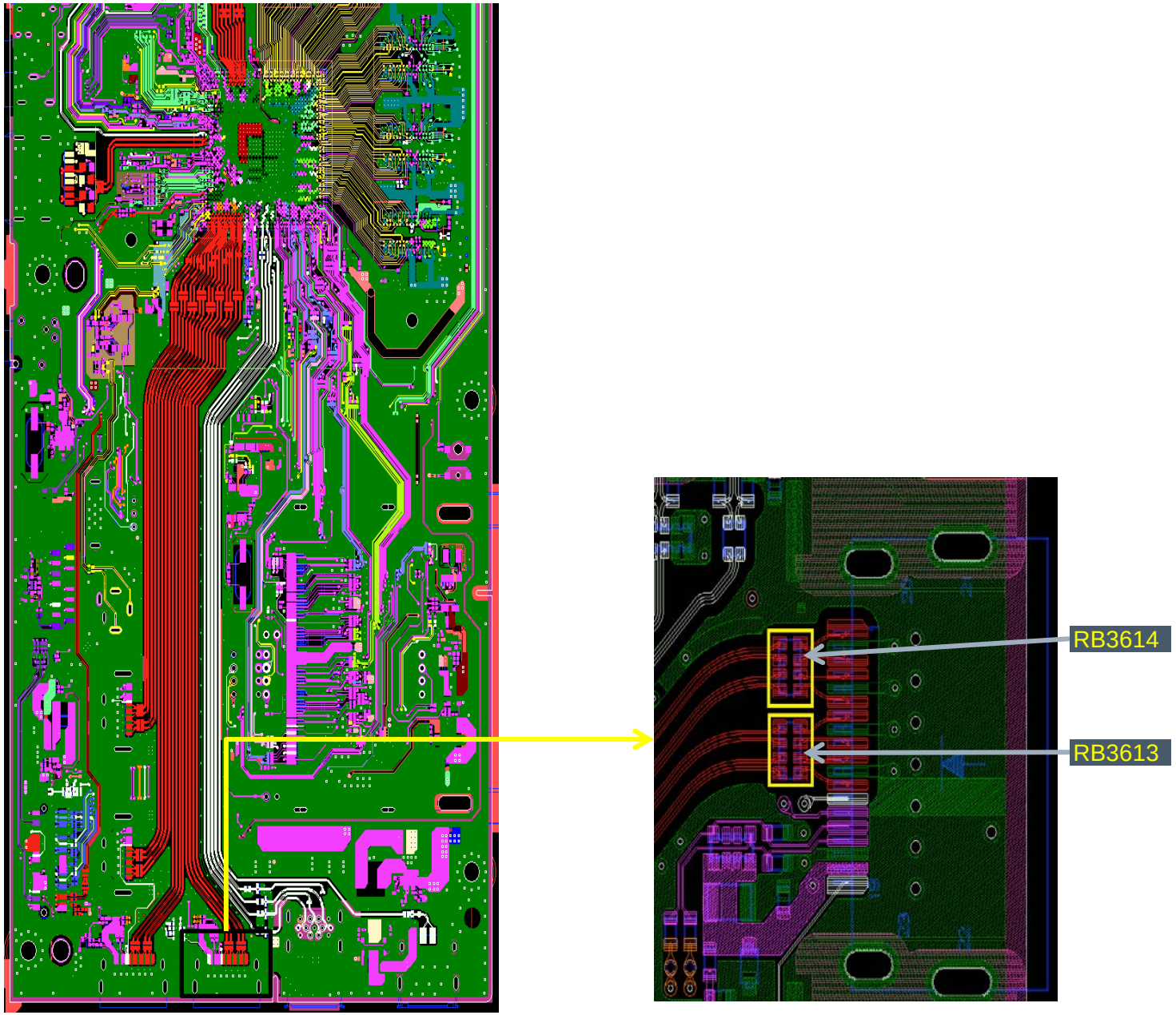
4.5 NO PICTURE: HDMI1



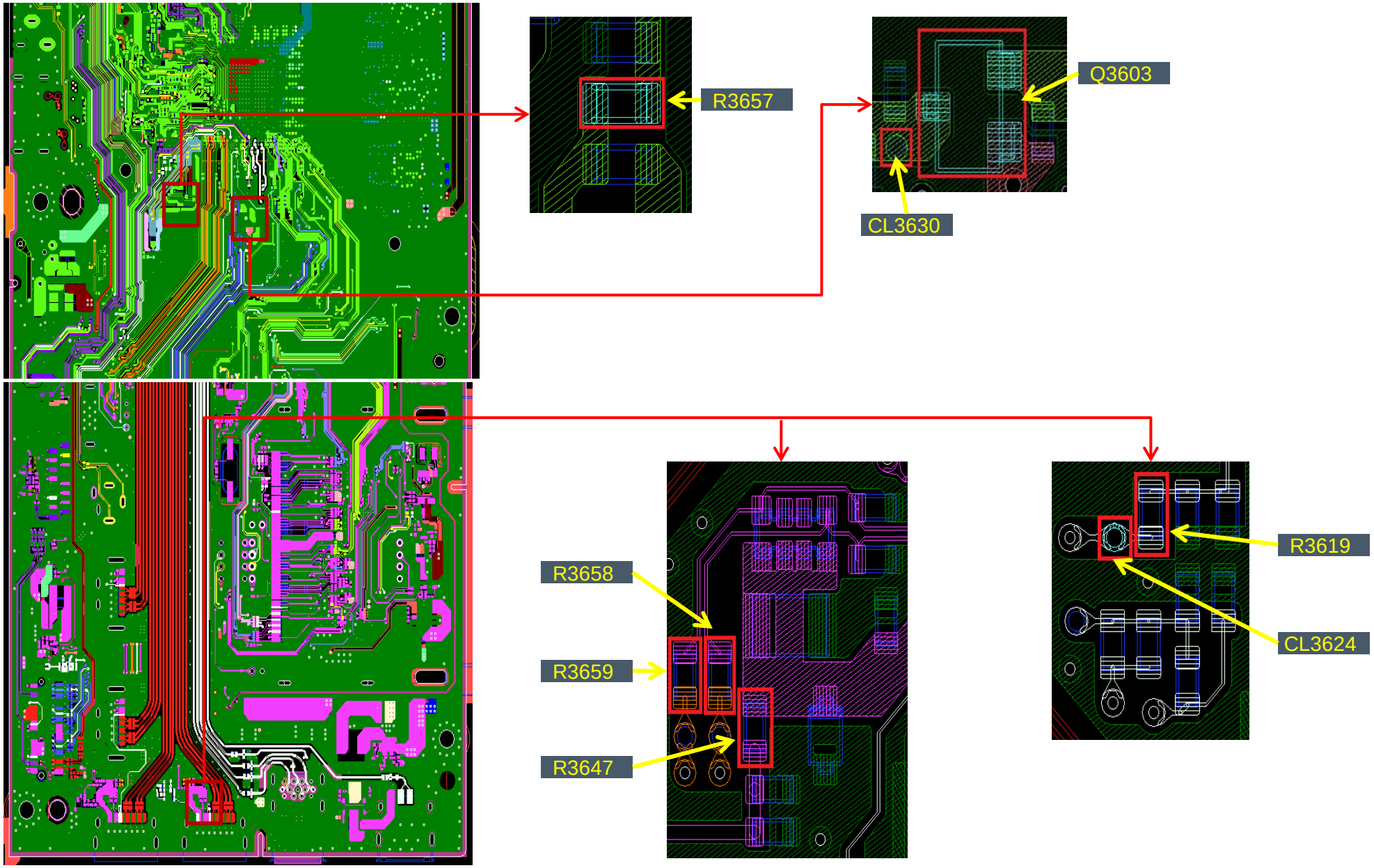
4.5 NO PICTURE: HDMI 2 [Supply & Signal Lines]

Power / Signal Lines	Check Point	Voltage Specification	Part to Check for NG/Broken
+5V	R3647	$4.8 \leq V_{5V} \leq 5.3$	R3647
Hot Plug Detect	CL3624	$4.8 \leq V_{5V} \leq 5.3$	R3619
I^2C - SDA	R3658	$4.5V \leq V_{SDA} \leq 5.5V$	R3658
I^2C - SCL	R3659	$4.5V \leq V_{SCL} \leq 5.5V$	R3659
TMDS CLK	RB3613	$2.6V \leq V_{TMDSCLK} \leq 3.3V$	RB3613
TMDS D0	RB3613	$2.6V \leq V_{TMDSD0} \leq 3.3V$	RB3613
TMDS D1	RB3614	$2.6V \leq V_{TMDSD1} \leq 3.3V$	RB3614
TMDS D2	RB3614	$2.6V \leq V_{TMDSD2} \leq 3.3V$	RB3614
+1.05V	R3657	+1.05V ± 10%	R3657
+3.3V Main	CL3630	+3.3V ± 10%	Q3603

4.5 NO PICTURE: HDMI2



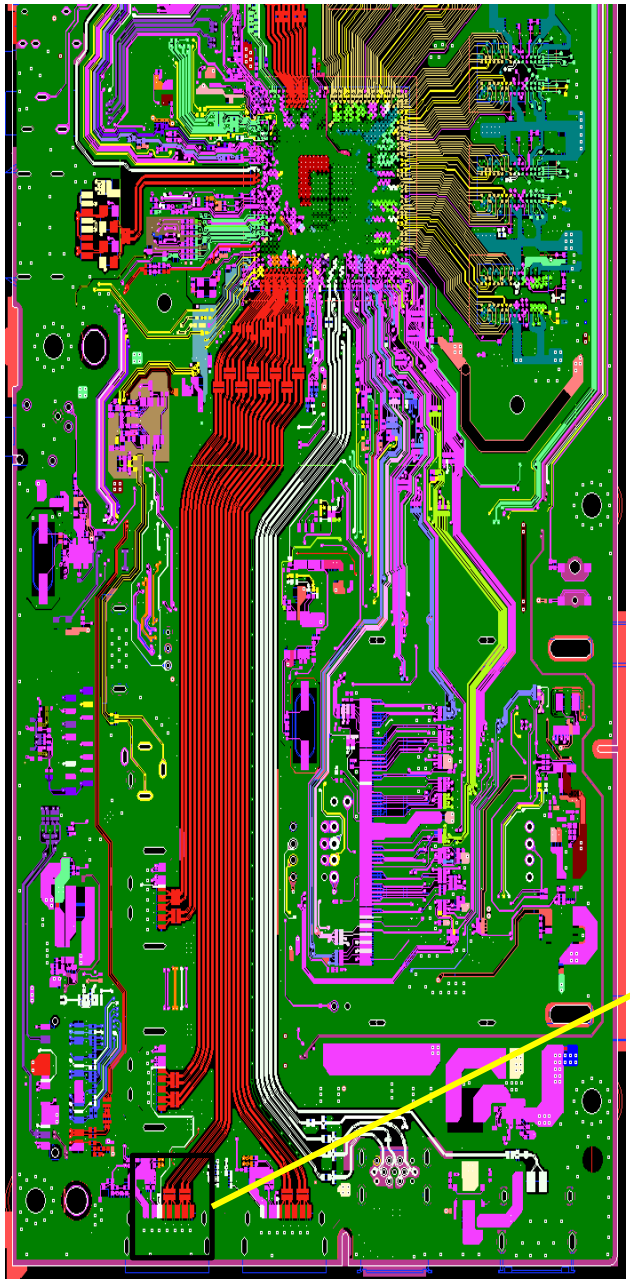
4.5 NO PICTURE: HDMI2

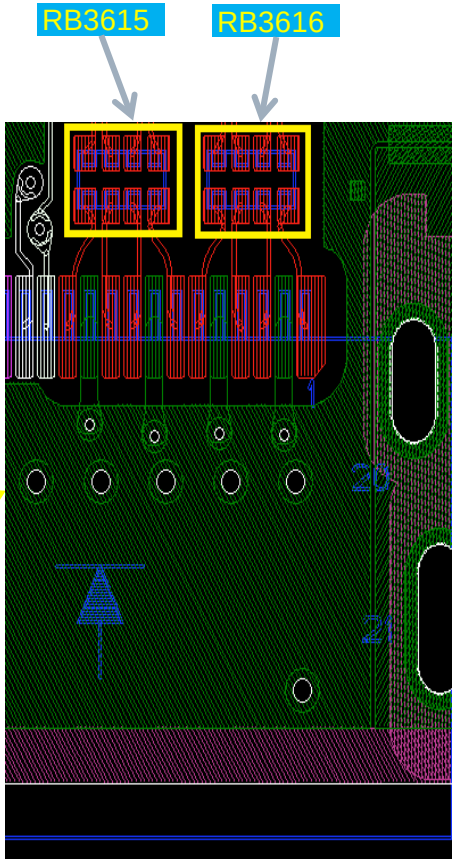


4.5 NO PICTURE: HDMI 3 [Supply & Signal Lines]

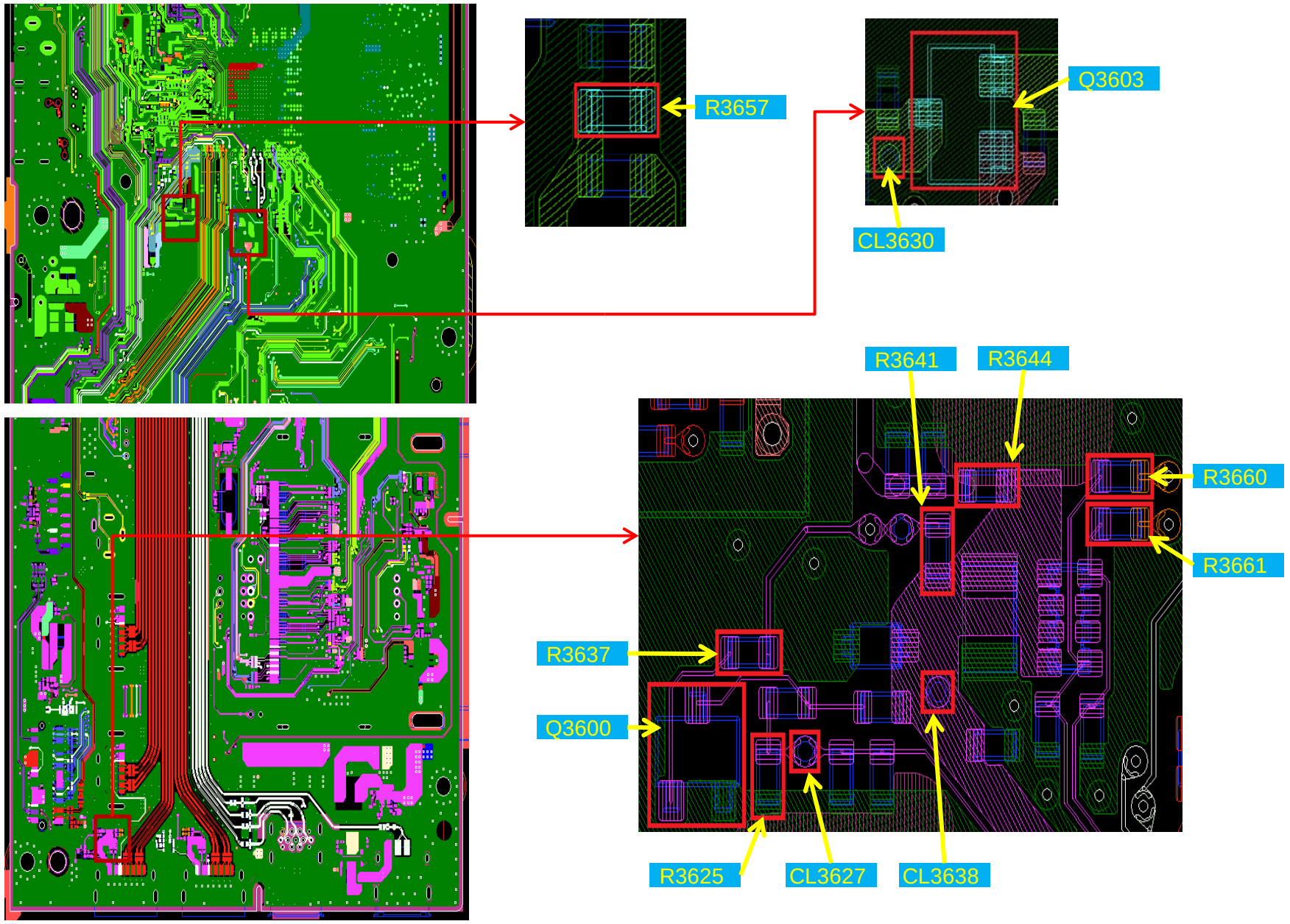
Power / Signal Lines	Check Point	Voltage Specification	Part to Check for NG/Broken
+5V	CL3638	$4.8 \leq V_{5V} \leq 5.3$	R3644
Hot Plug Detect	CL3627	$4.8 \leq V_{5V} \leq 5.3$	R3625, R3637, Q3600, R3641
I^2C - SDA	R3660	$4.5V \leq V_{SDA} \leq 5.5V$	R3660
I^2C - SCL	R3661	$4.5V \leq V_{SCL} \leq 5.5V$	R3661
TMDS CLK	RB3615	$2.6V \leq V_{TMDSCLK} \leq 3.3V$	RB3615
TMDS D0	RB3615	$2.6V \leq V_{TMDSD0} \leq 3.3V$	RB3615
TMDS D1	RB3616	$2.6V \leq V_{TMDSD1} \leq 3.3V$	RB3616
TMDS D2	RB3616	$2.6V \leq V_{TMDSD2} \leq 3.3V$	RB3616
+1.05V	R3657	+1.05V ± 10%	R3657
+3.3V Main	CL3630	+3.3V ± 10%	Q3603

4.5 NO PICTURE: HDMI 3





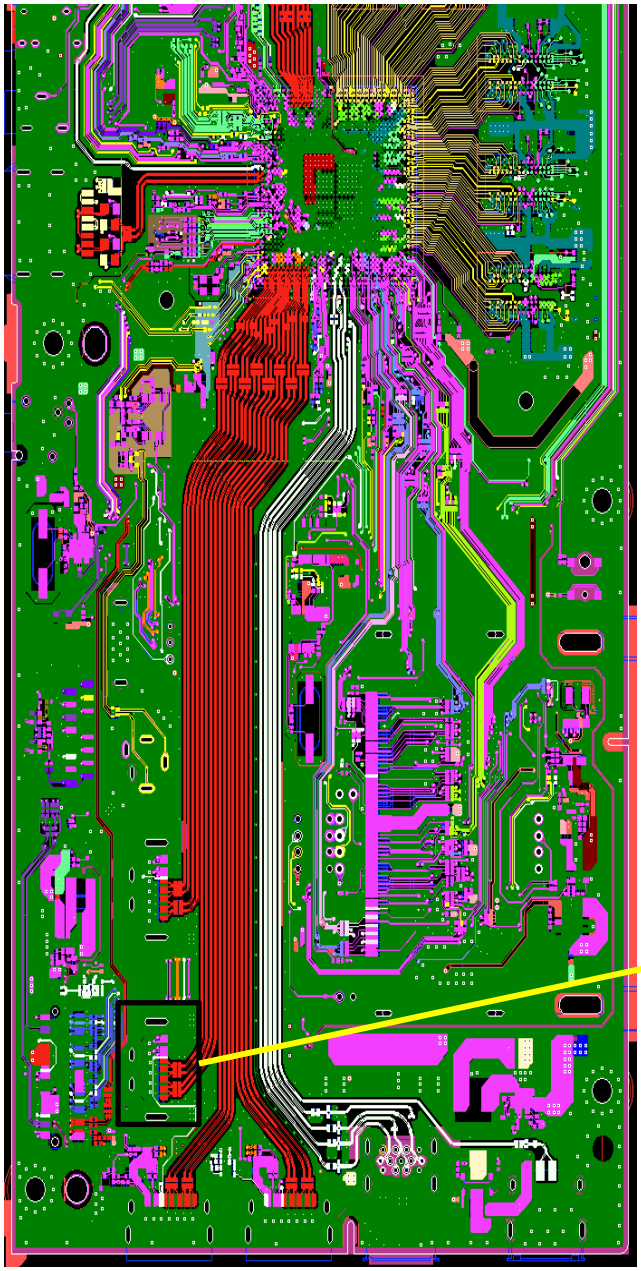
4.5 NO PICTURE: HDMI 3

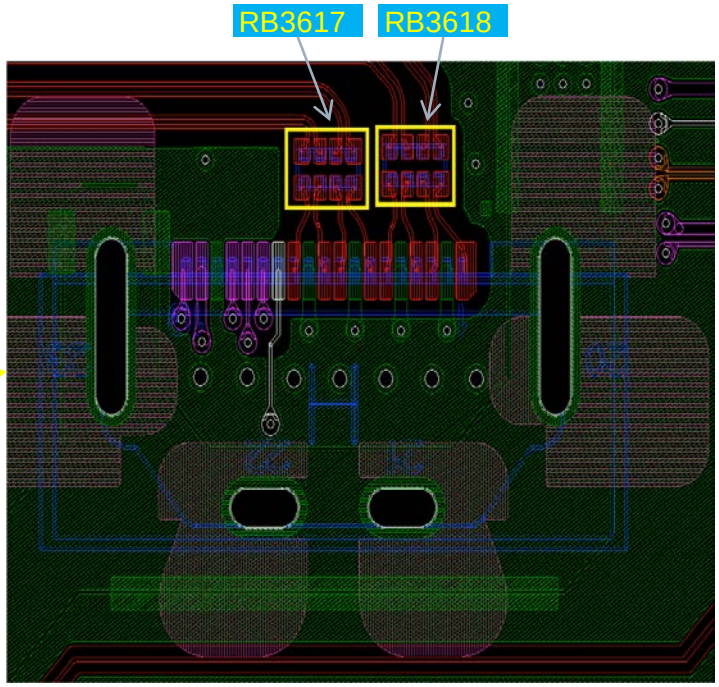


4.5 NO PICTURE: HDMI 4 [Supply & Signal Lines]

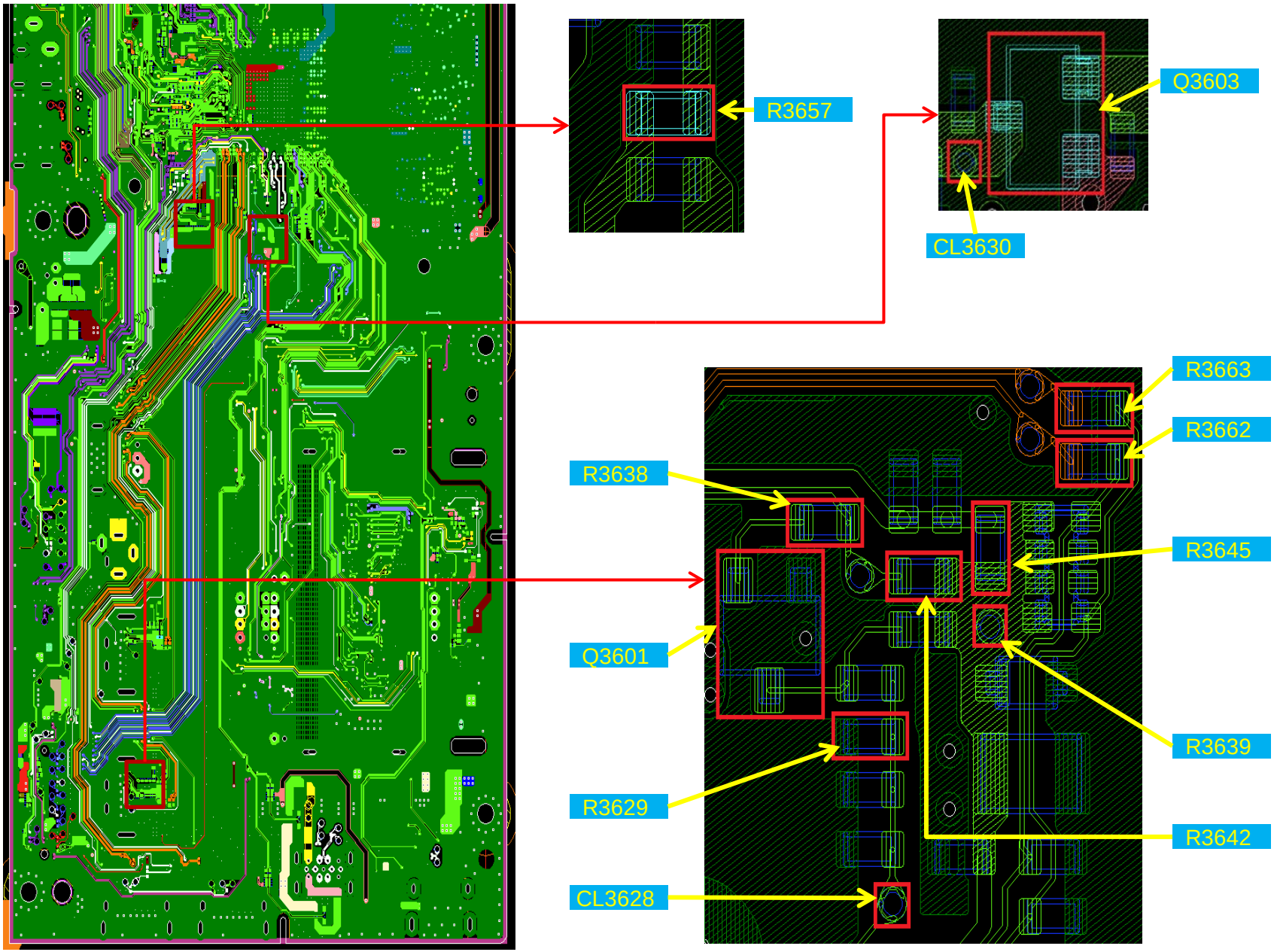
Power / Signal Lines	Check Point	Voltage Specification	Part to Check for NG/Broken
+5V	CL3639	$4.8 \leq V_{5V} \leq 5.3$	R3645
Hot Plug Detect	CL3628	$4.8 \leq V_{5V} \leq 5.3$	R3626, R3638, R3642, Q3601
I^2C - SDA	R3662	$4.5V \leq V_{SDA} \leq 5.5V$	R3662
I^2C - SCL	R3663	$4.5V \leq V_{SCL} \leq 5.5V$	R3663
TMDS CLK	RB3617	$2.6V \leq V_{TMDSCLK} \leq 3.3V$	RB3617
TMDS D0	RB3617	$2.6V \leq V_{TMDSD0} \leq 3.3V$	RB3617
TMDS D1	RB3618	$2.6V \leq V_{TMDSD1} \leq 3.3V$	RB3618
TMDS D2	RB3618	$2.6V \leq V_{TMDSD2} \leq 3.3V$	RB3618
+1.05V	R3657	+1.05V ± 10%	R3657
+3.3V Main	CL3630	+3.3V ± 10%	Q3603

4.5 NO PICTURE: HDMI 4





4.5 NO PICTURE: HDMI 4



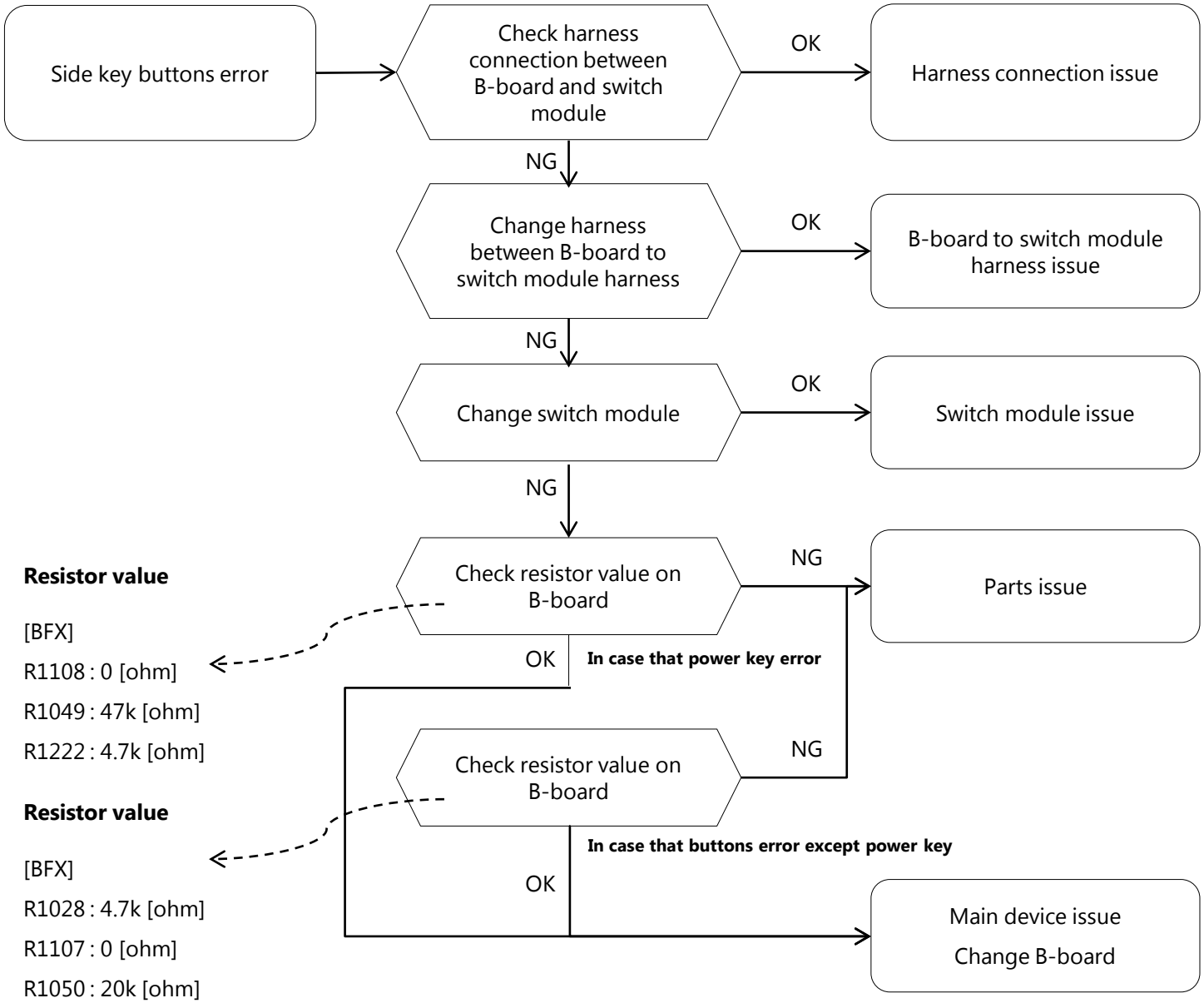
4.5 NO PICTURE: Part Change List & Description

Part Name	Part No.	Part Value	Part Description	Part Size
R3644 R3645 R3646 R3647	121895381	1K	RES, CHIP 1.0K (1005)	1005
R3625 R3626 R3627	121897781	100k	RES, CHIP 100K (1005)	1005
R3637 R3638 R3639	121895381	1k	RES, CHIP 1.0K (1005)	1005
R3641 R3642 R3643	121896181	4.7k	RES, CHIP 4.7K (1005)	1005
R3619	122080381	4.7	RES, CHIP 4.7 (1005)	1005
Q3600 Q3601 Q3602	872923064	-	TRANSISTOR 2SC4116YG-TE85L	S8550
R3658 R3659 R3660 R3661 R3662 R3663 R3664 R3665	121894181	100	RES, CHIP 100 (1005)	1005

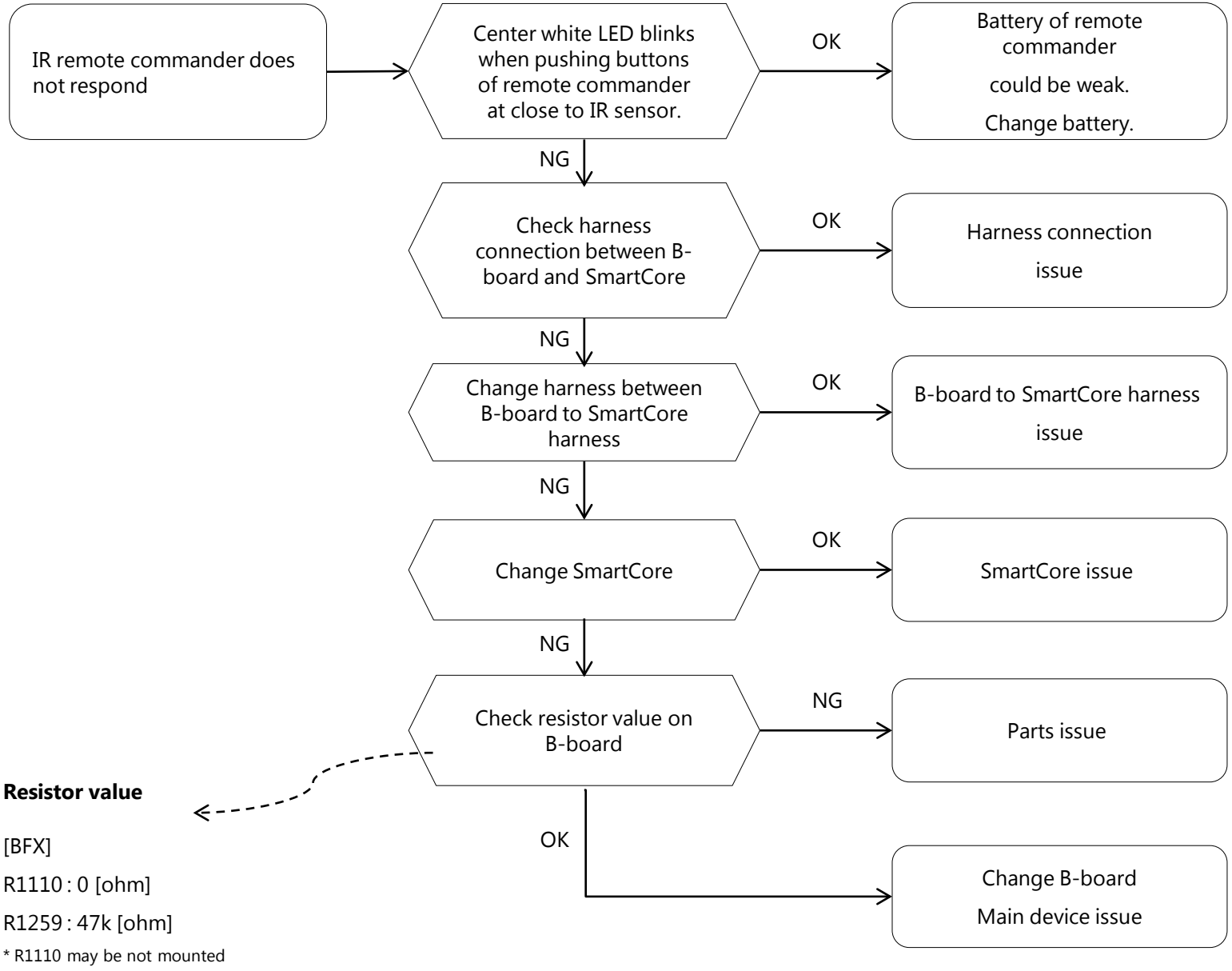
4.5 NO PICTURE: Part Change List & Description

Part Name	Part No.	Part Value	Part Description	Part Size
RB3613 RB3614 RB3615 RB3616 RB3617 RB3618 RB3619 RB3620	123440021	0.05	CONDUCTOR, NETWORK (1005X4)	1005X4
R3657	121899081	0	CONDUCTOR, CHIP (1005)	1005
Q3603	655356601	-	TR SSM3K324R,LSONYF	-

5.0 Key Switch Buttons Error



5.1 IR Remote Commander Error



Resistor value

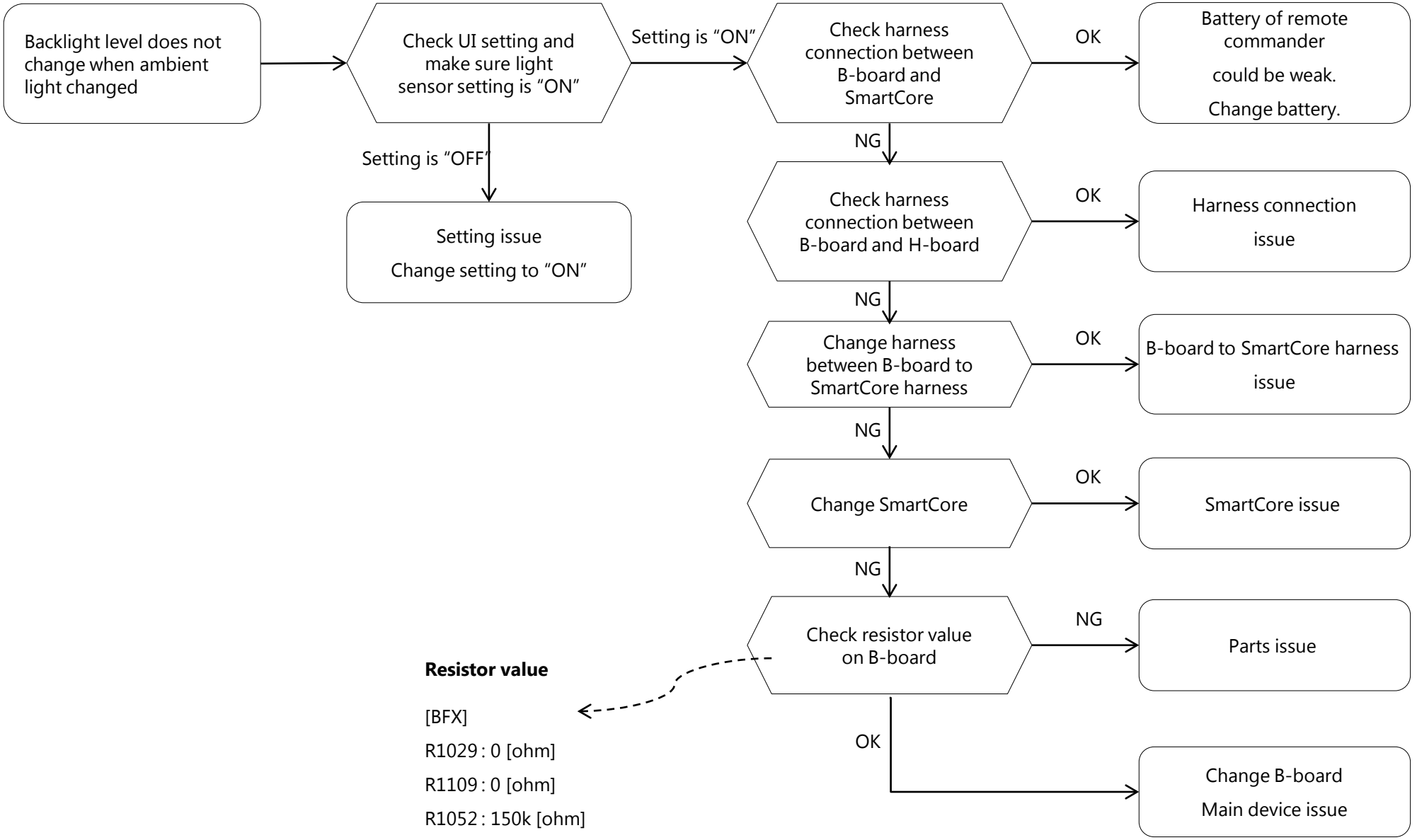
[BFX]

R1110 : 0 [ohm]

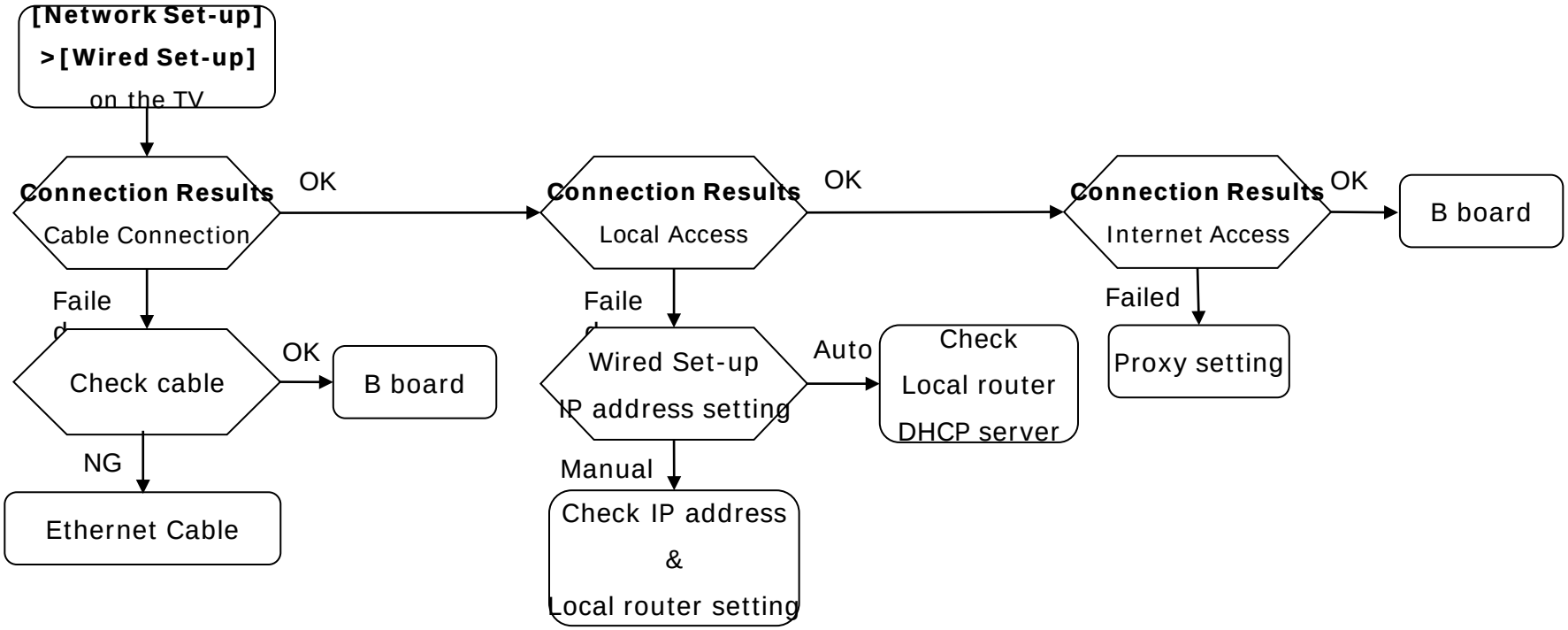
R1259 : 47k [ohm]

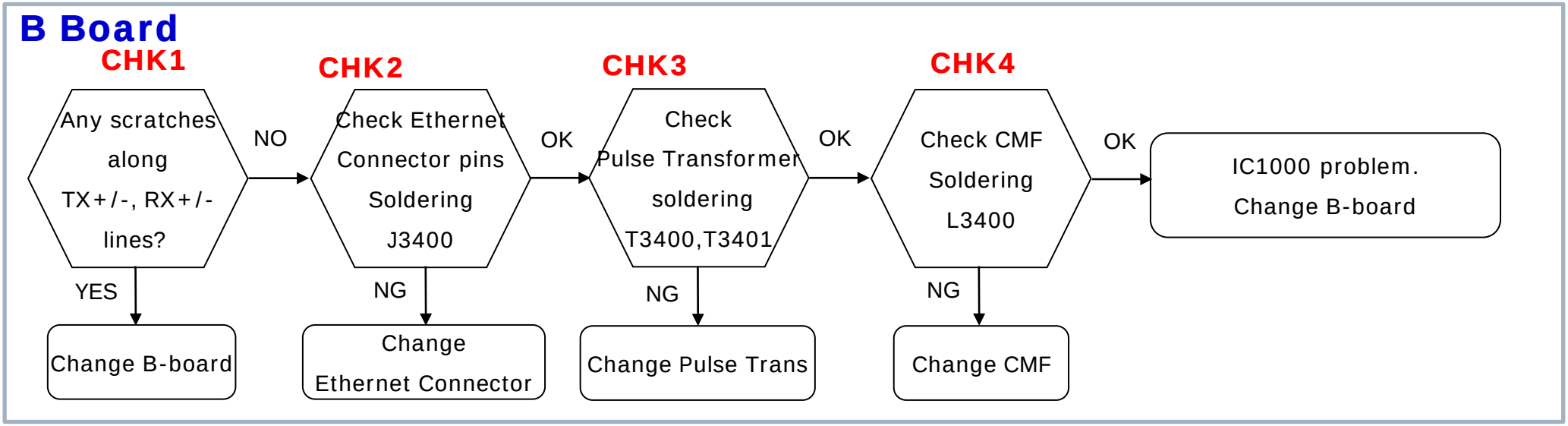
* R1110 may be not mounted

5.2 Light Sensor Error

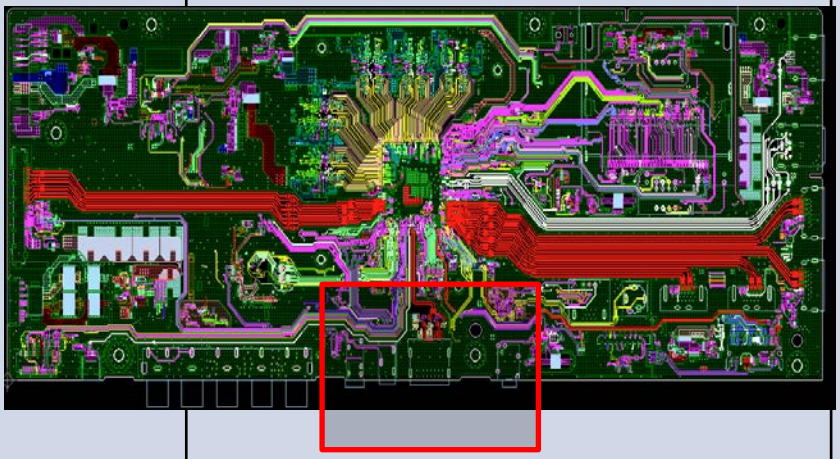
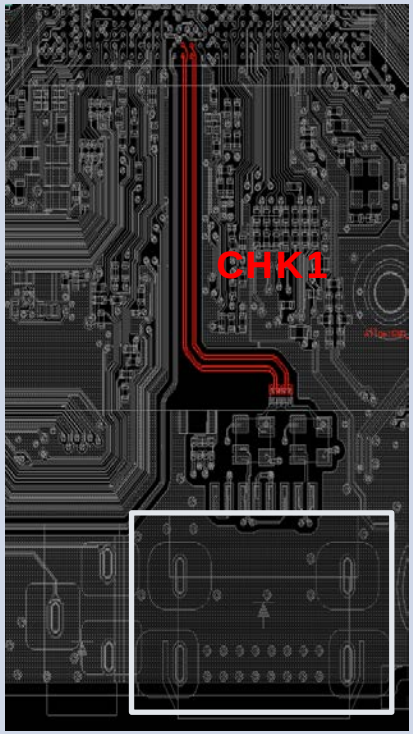
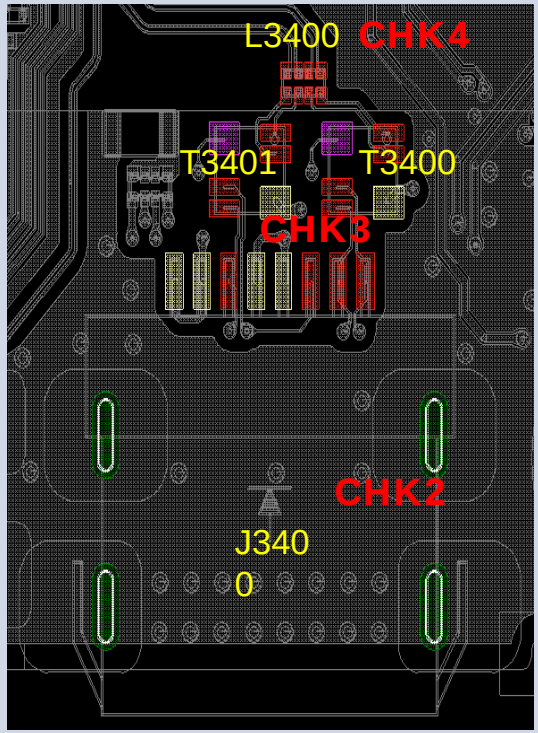


6.1 Ethernet Troubleshooting Flow



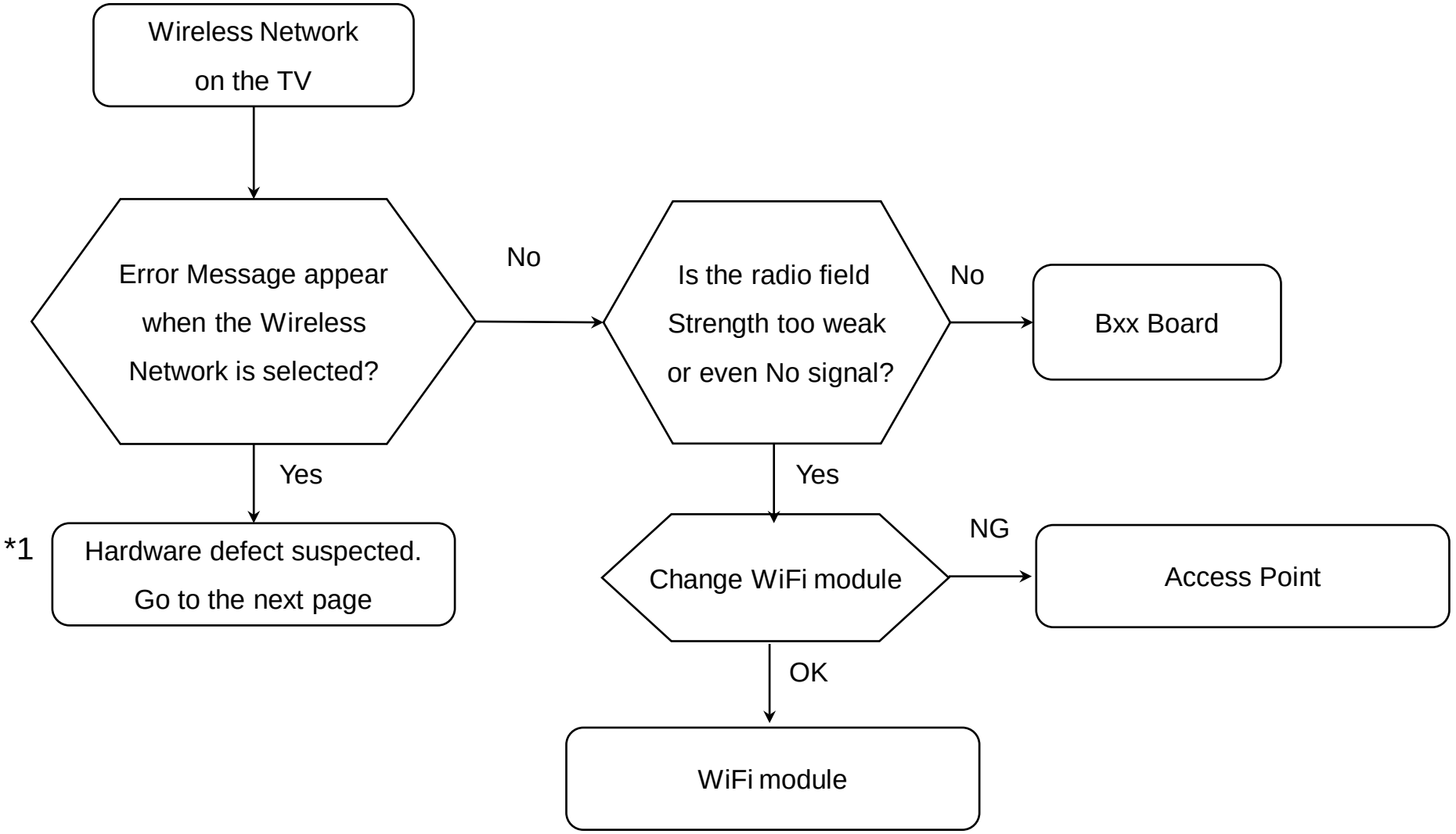


6.1 Ethernet Troubleshooting Flow (Checking Points)

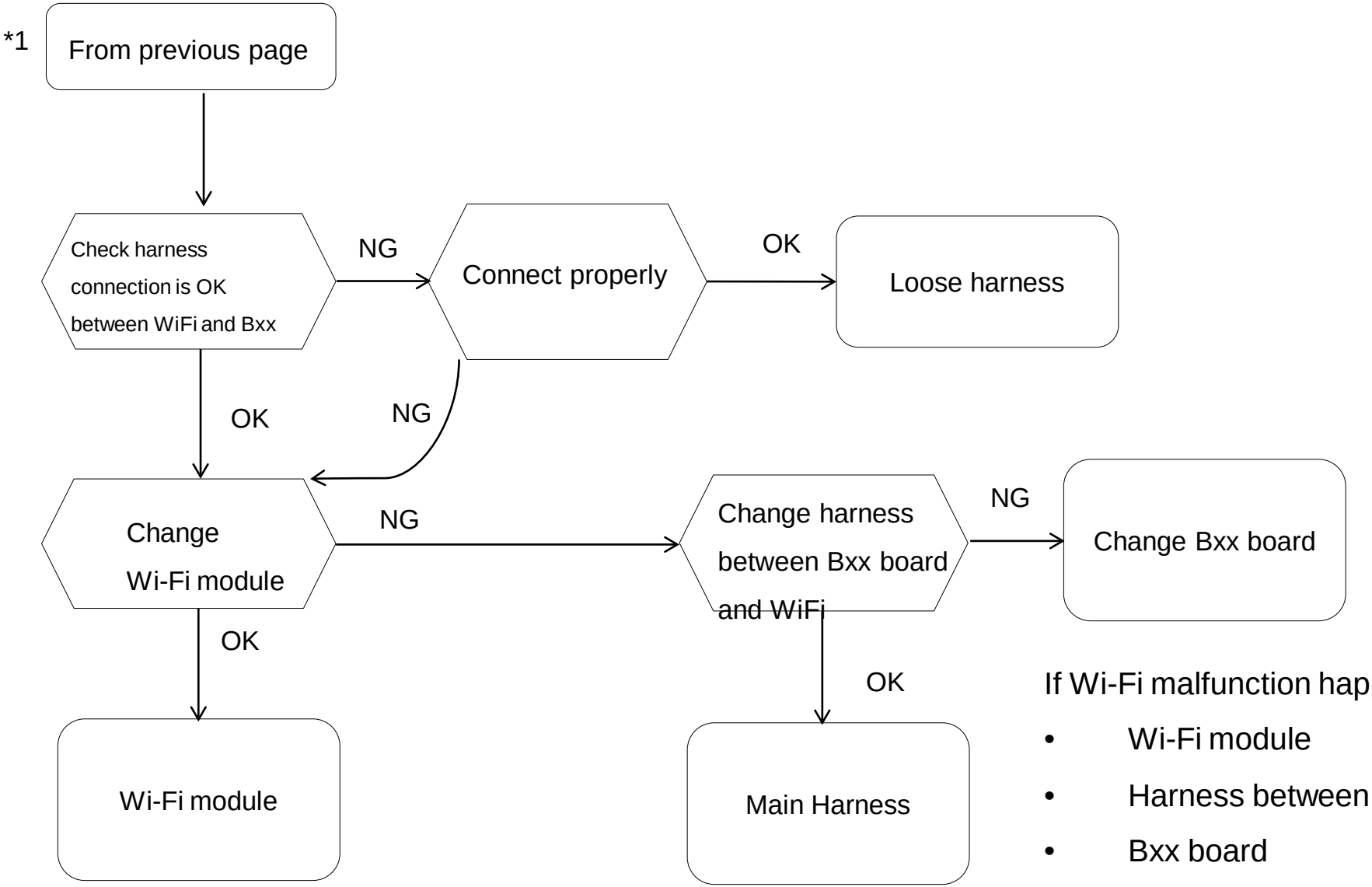
Board Name	Board PWB (A side)	Detail
BFX		 

6.2 Wireless Network malfunction (continue)

1) Internal Wireless Network malfunction



6.2 Wireless Network malfunction

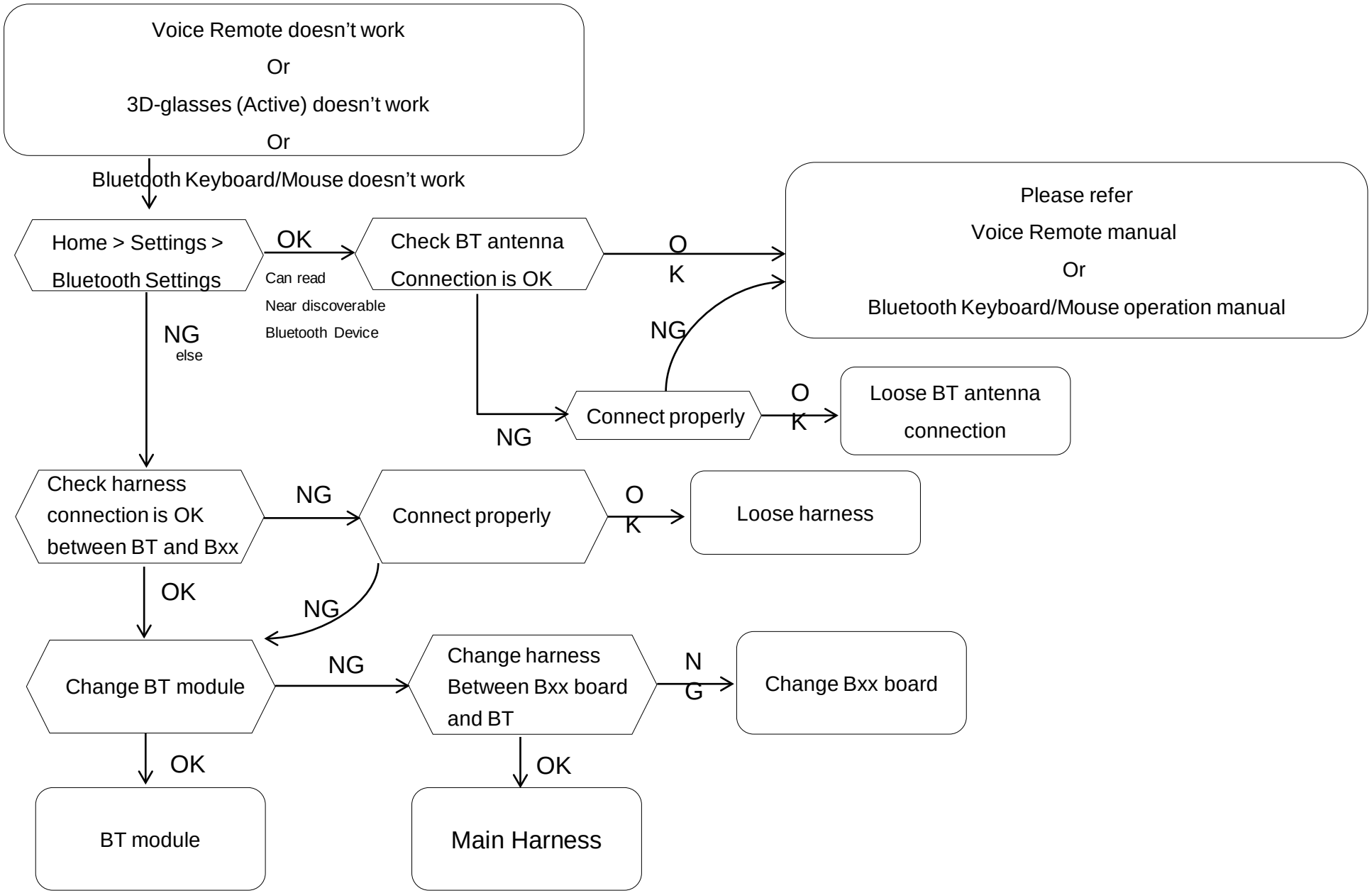


If Wi-Fi malfunction happens,

- Wi-Fi module
- Harness between WiFi and Bxx
- Bxx board

are suspected.

6.3 Bluetooth malfunction



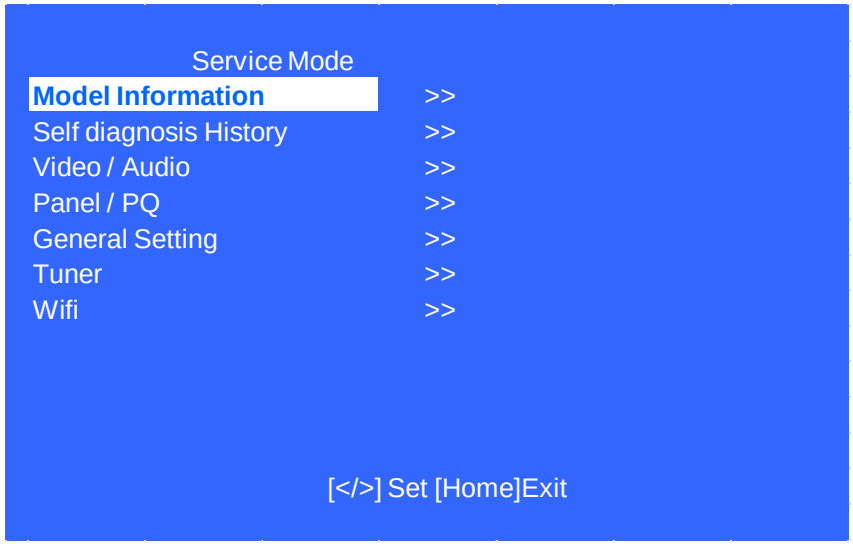
When finished the operation of service mode , please AC Plug OFF/ON the TV set.

How to Enter Service Mode

From Standby Mode

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

RC

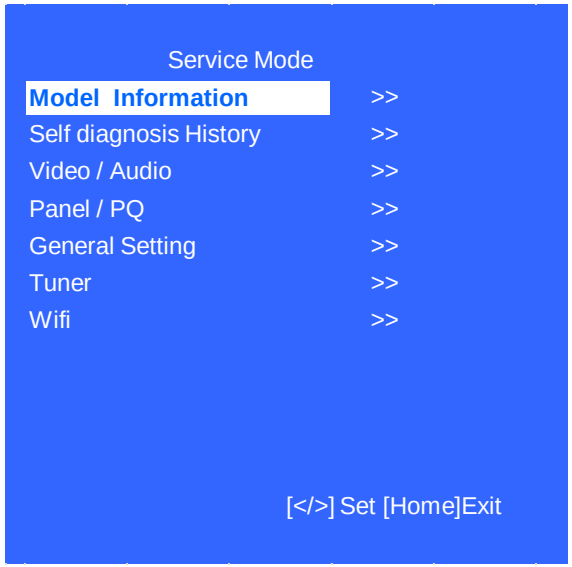


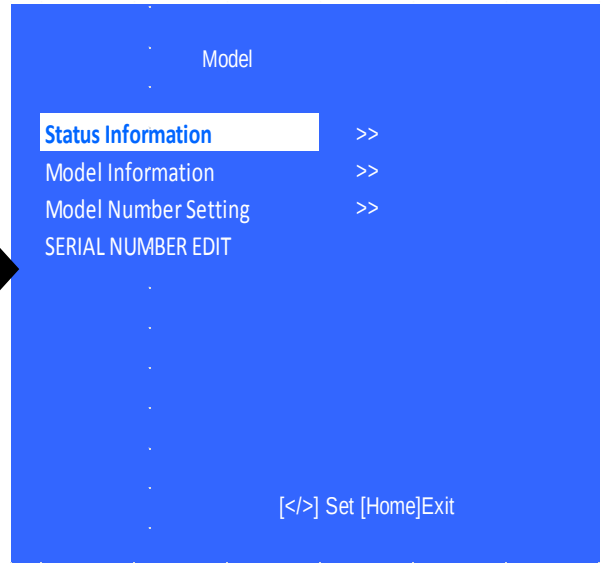
Key Behavior Summary

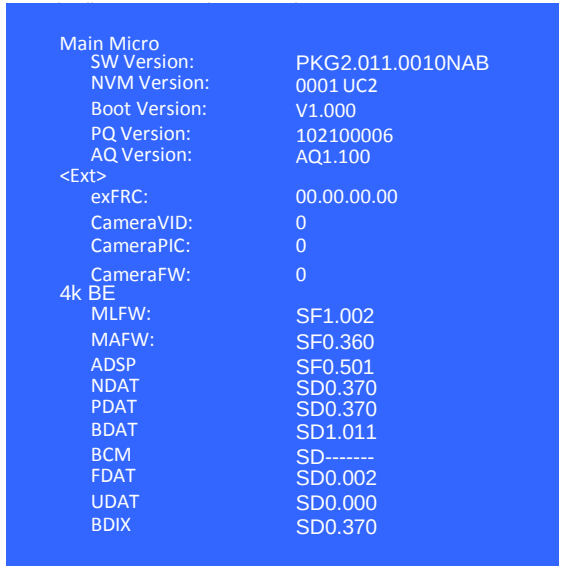
Key	Behavior
Menu	Close service menu
Cursor/Enter	Return Previous page, Change potion of focus item, Enter next page of focus item, etc..
Return	Return to previous page, close service menu etc..

*Service menu disappears, but the app is working in the background, If you don’t do AC plug OFF/ON, remain the Service Mode App and User can see the Service Mode after RC ON

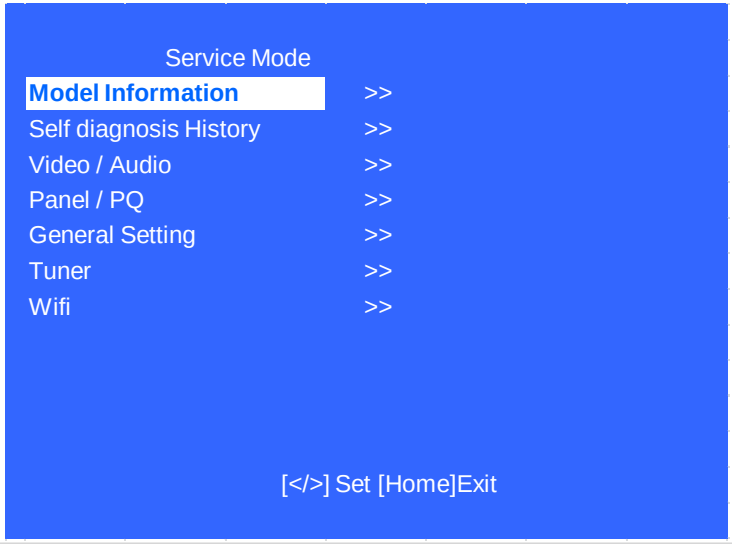
1) In Service Mode, select “Model Information”, press “Enter” or → button to enter Status Information







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



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

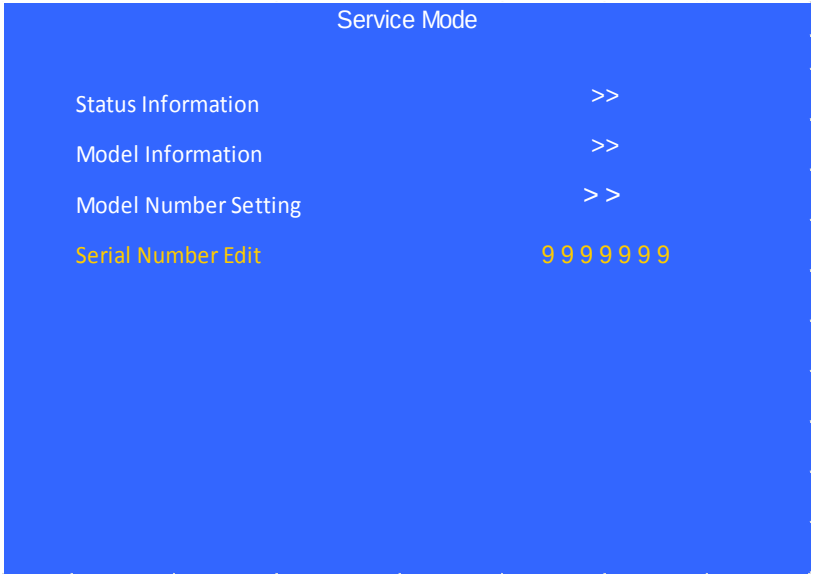
3) Press “↑” or “↓” to input numbers

4) After user input data , press <Enter>

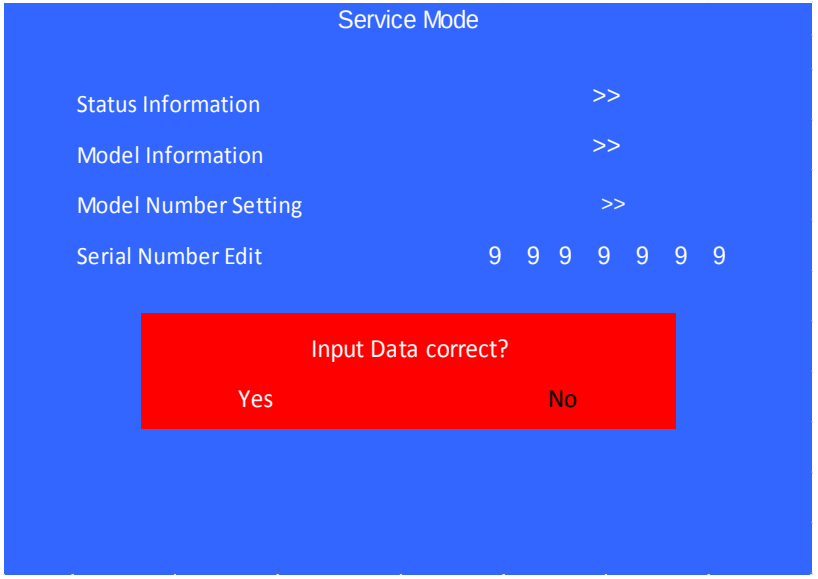
- Pop-up dialog appear to confirm input data correct
- Serial Number can be set ONLY ONCE

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.

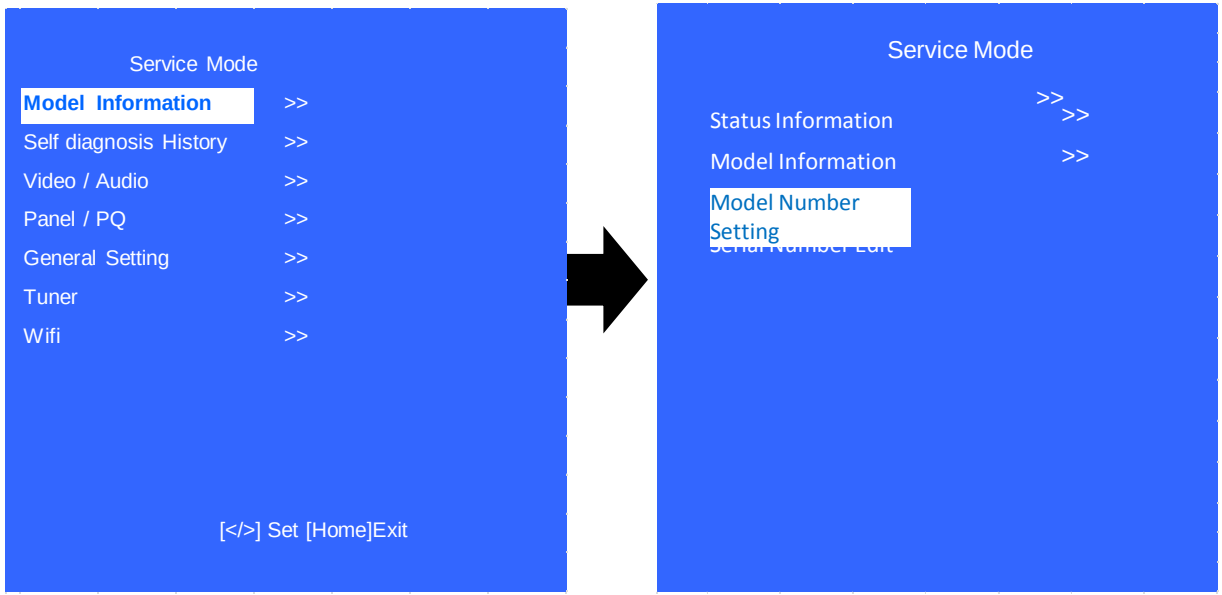
If YES is selected, the input data is saved into EEPROM. SERIAL NUMBER EDIT is grayed out and the serial number that has been input is displayed. User will not able to edit anymore.

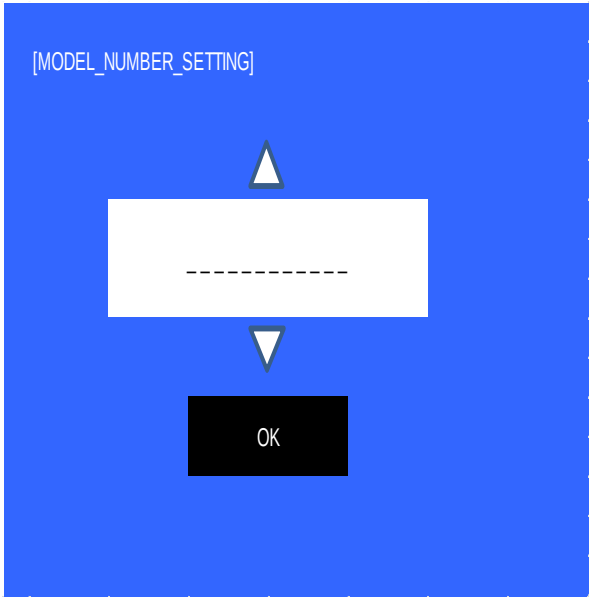


If NO is selected, the input data is not saved into EEPROM. The serial number that has been input is displayed. User can still edit the Serial Number.



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. KDL-40X500B CO1,KDL-40X500C BR6)
4) Select one Product Name from the list, press <Enter> will pop dialog to inform user to confirm data
   Model dependent settings will be overwritten into EEPROM.

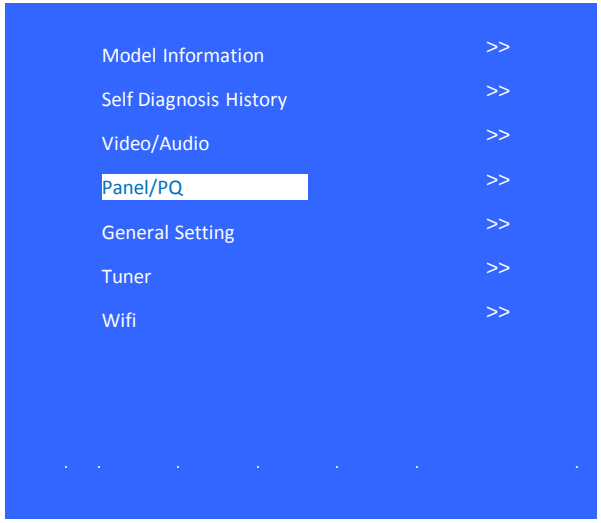




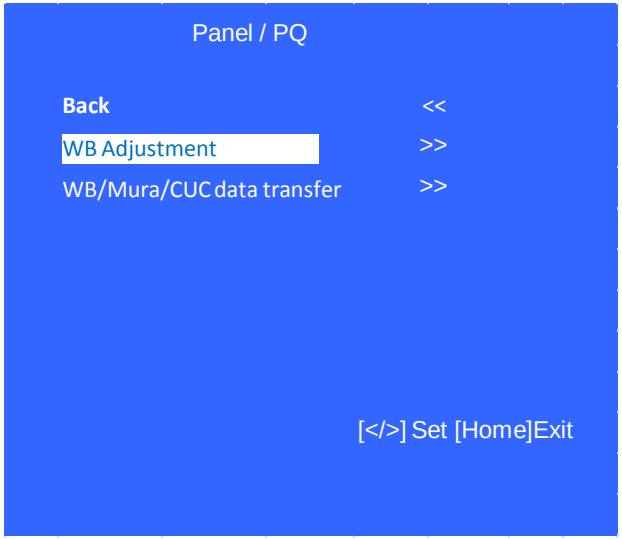
Please apply Main board or panel is replaced.

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.

a.



b.



c.

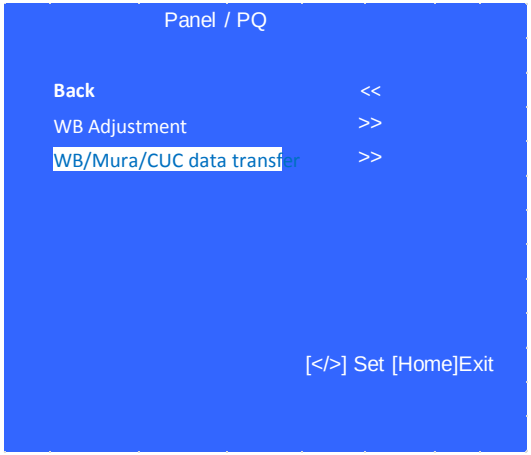
Please apply Main board or panel is replaced.

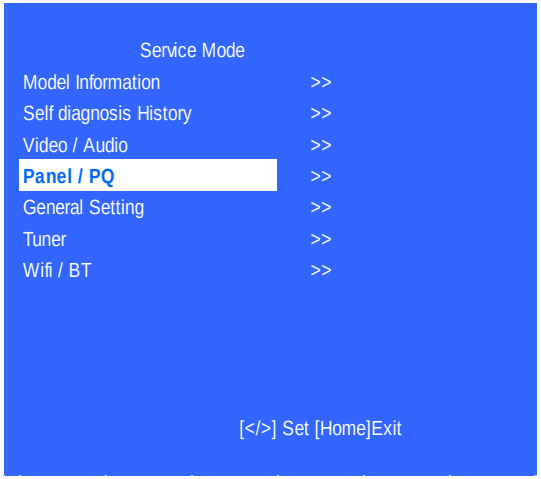
1. In “Panel/PQ” service mode

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:

- SoC to T-con
- T-con to SoC
- Not atction

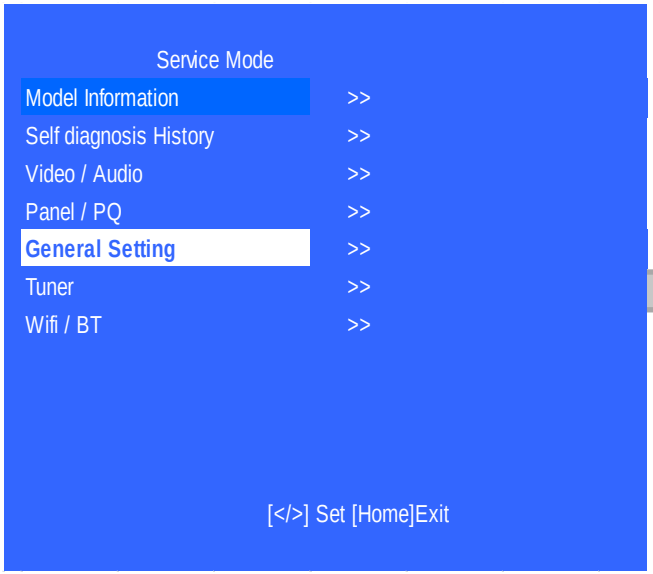
c. Select “[start]” and press “Enter” button to start transfer.

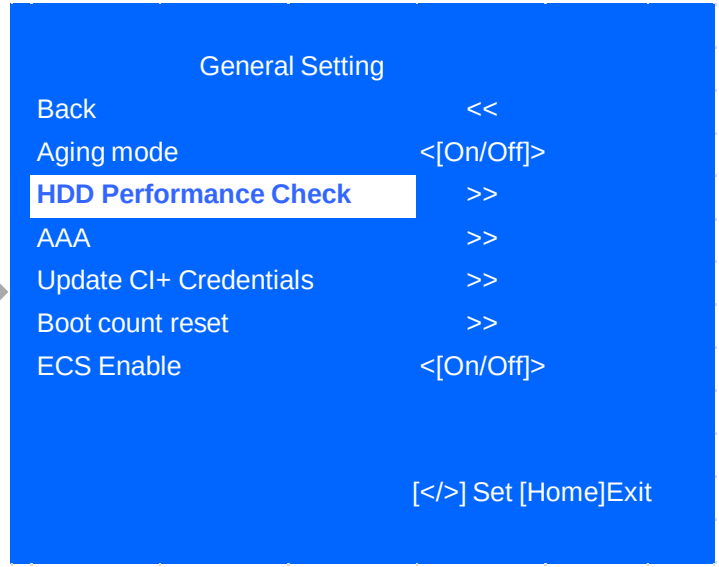
1) In “Service Mode”, select “General Setting” by pressing “↑” or “↓” then pressing “Enter” or “→” button to enter inside.

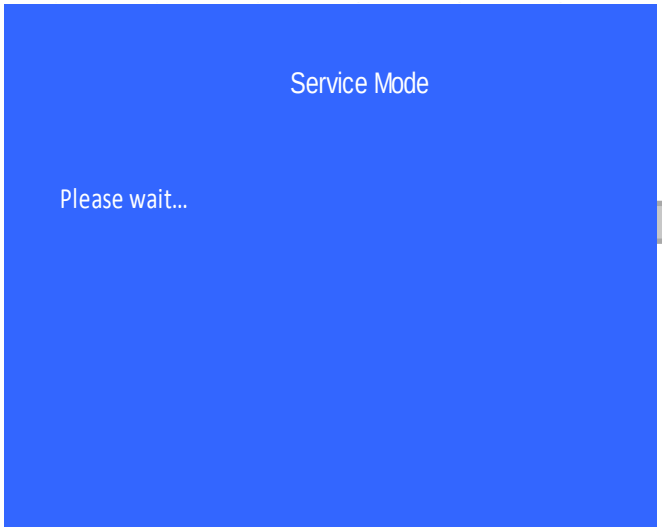
2) Select “HDD Performance check ” by pressing “↑” or “↓” then pressing “Enter” or “→” button to enter inside.

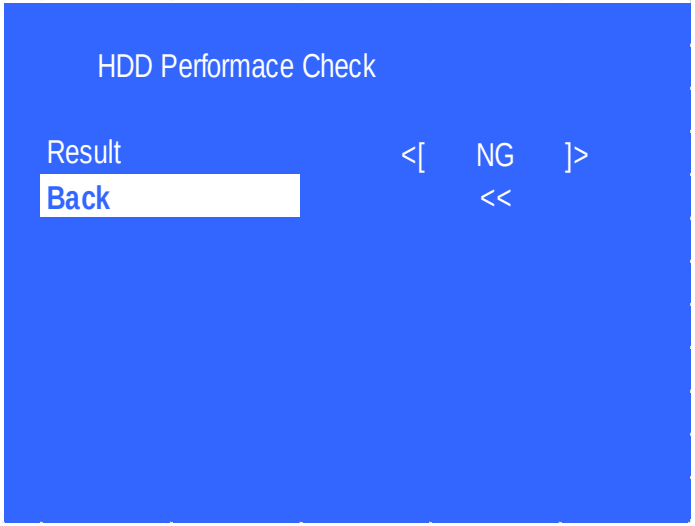
3) A message "Please wait ..." is displayed during performance check processing.

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





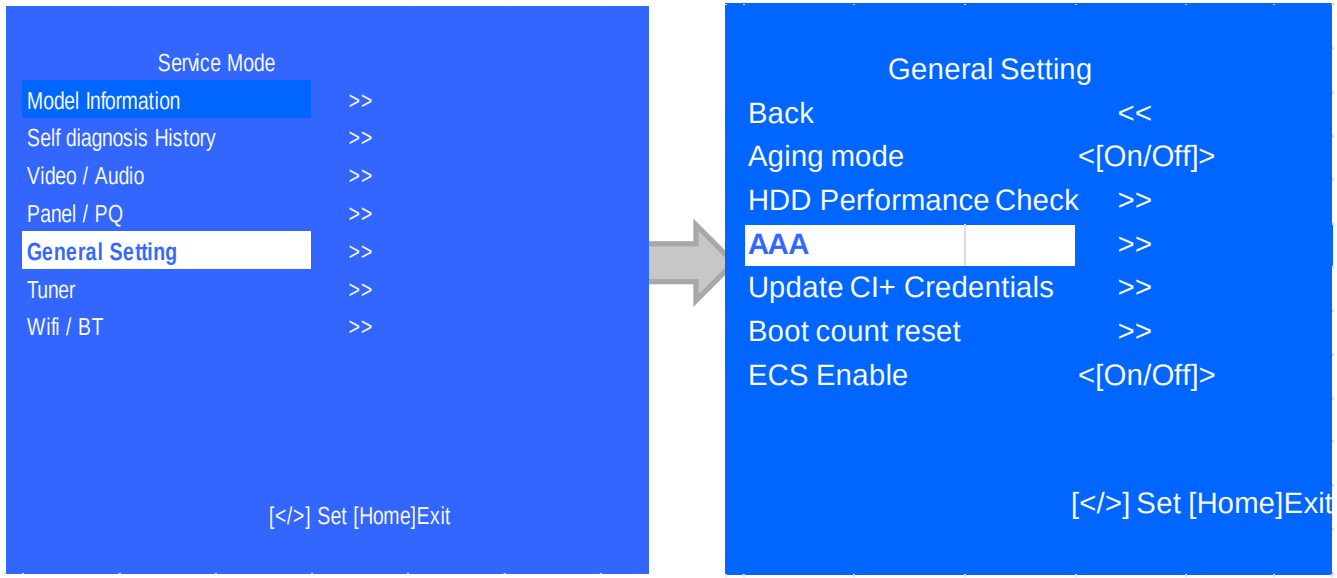


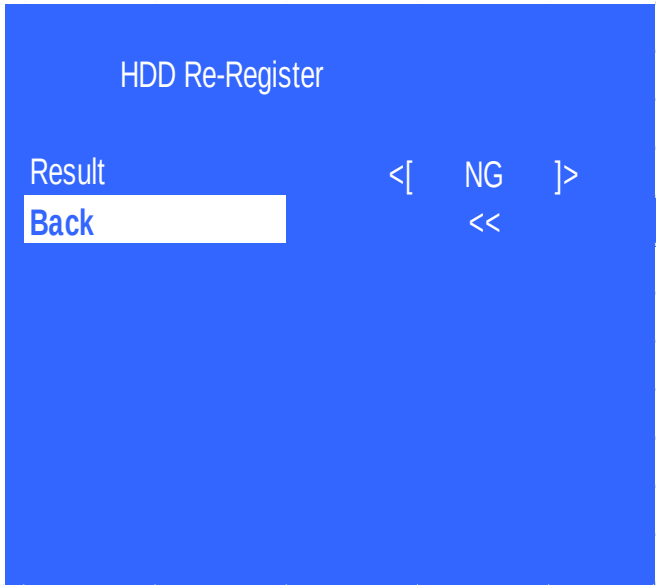


1. In “Service Mode”, select “General Setting” by pressing “↑” or “↓” then pressing “Enter” or “→” button to enter inside.

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

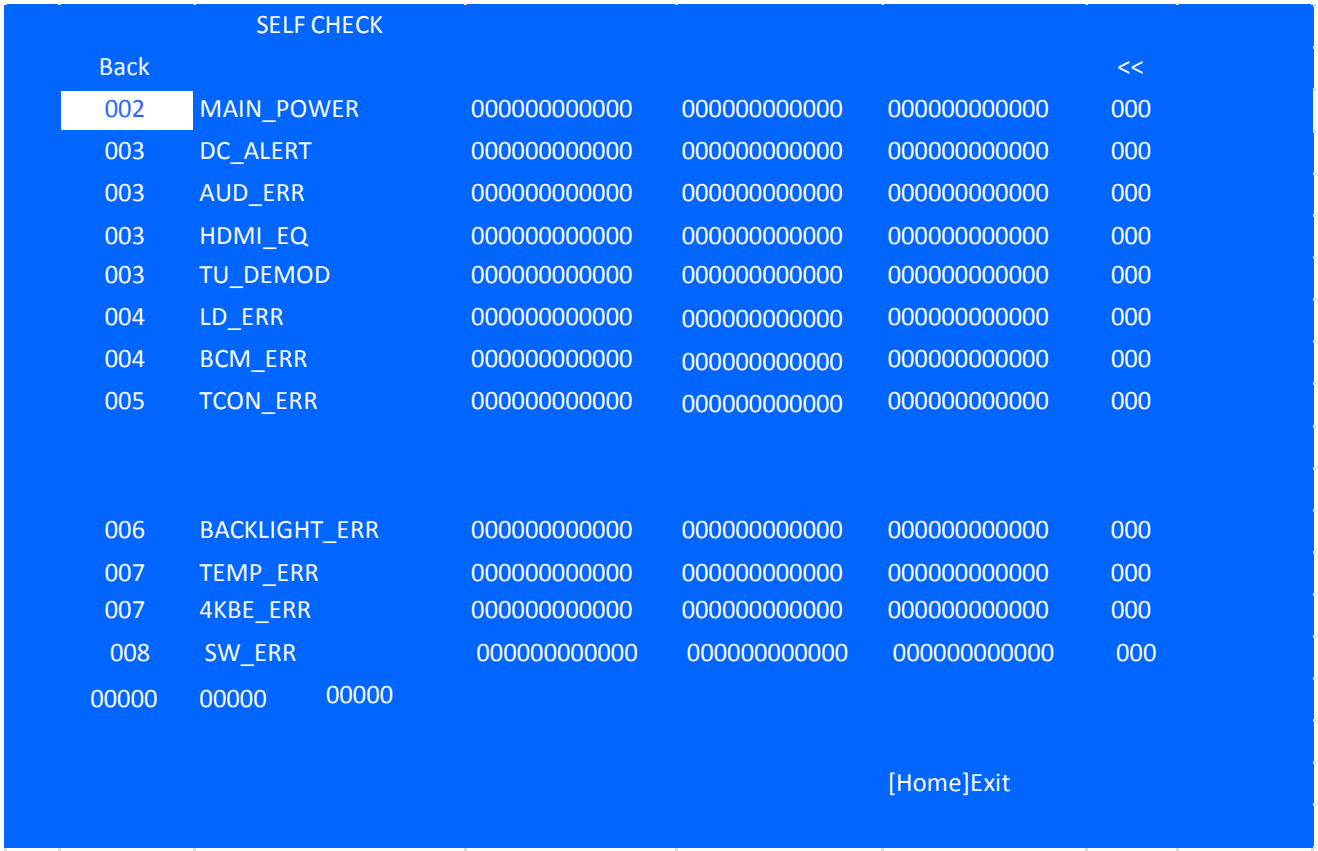




Function	The flow of control
Service mode on	Display><5><Vol Up><Power>
Service mode off	AC plug OFF
Item up / down	<↑>/ <↓>
Item select　left/right	<←>/<→>
Execute (実行)	<OK>

Directly go to Self diagnosis display without entering Service Mode

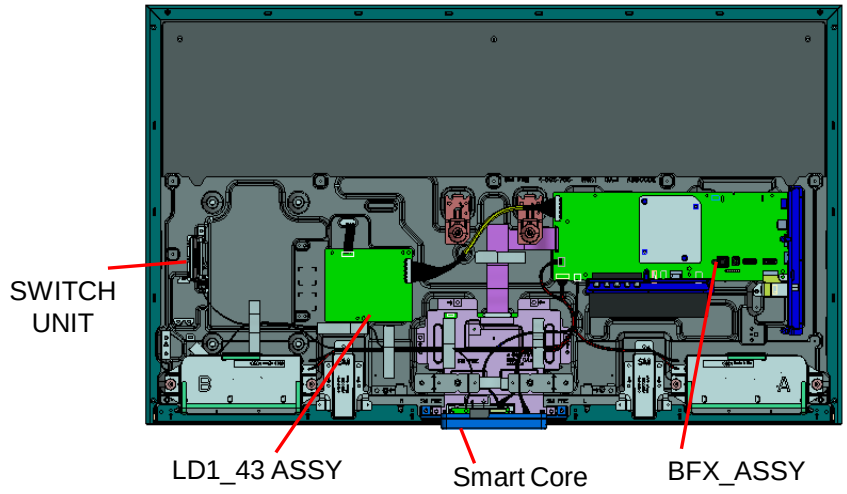
1. Go to TV standby condition by remote commander.
2. Press “i+ (info)”, “5”, “Volume-” then “TV power” on remote.
3. You can see Self Check.



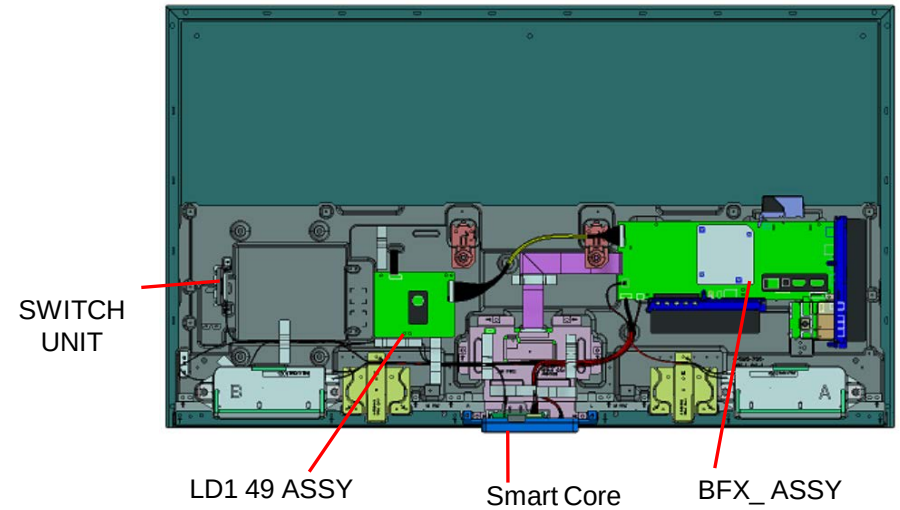
SECTION 2
DIAGRAMS

2-1.CIRCUIT BOARD LOCATION

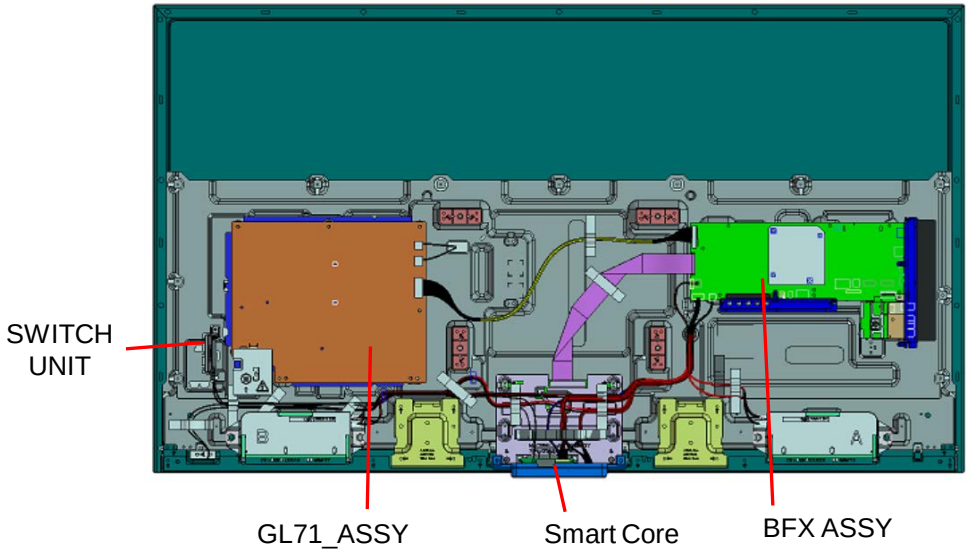
1. KDL- 43*



2. KDL- 49*

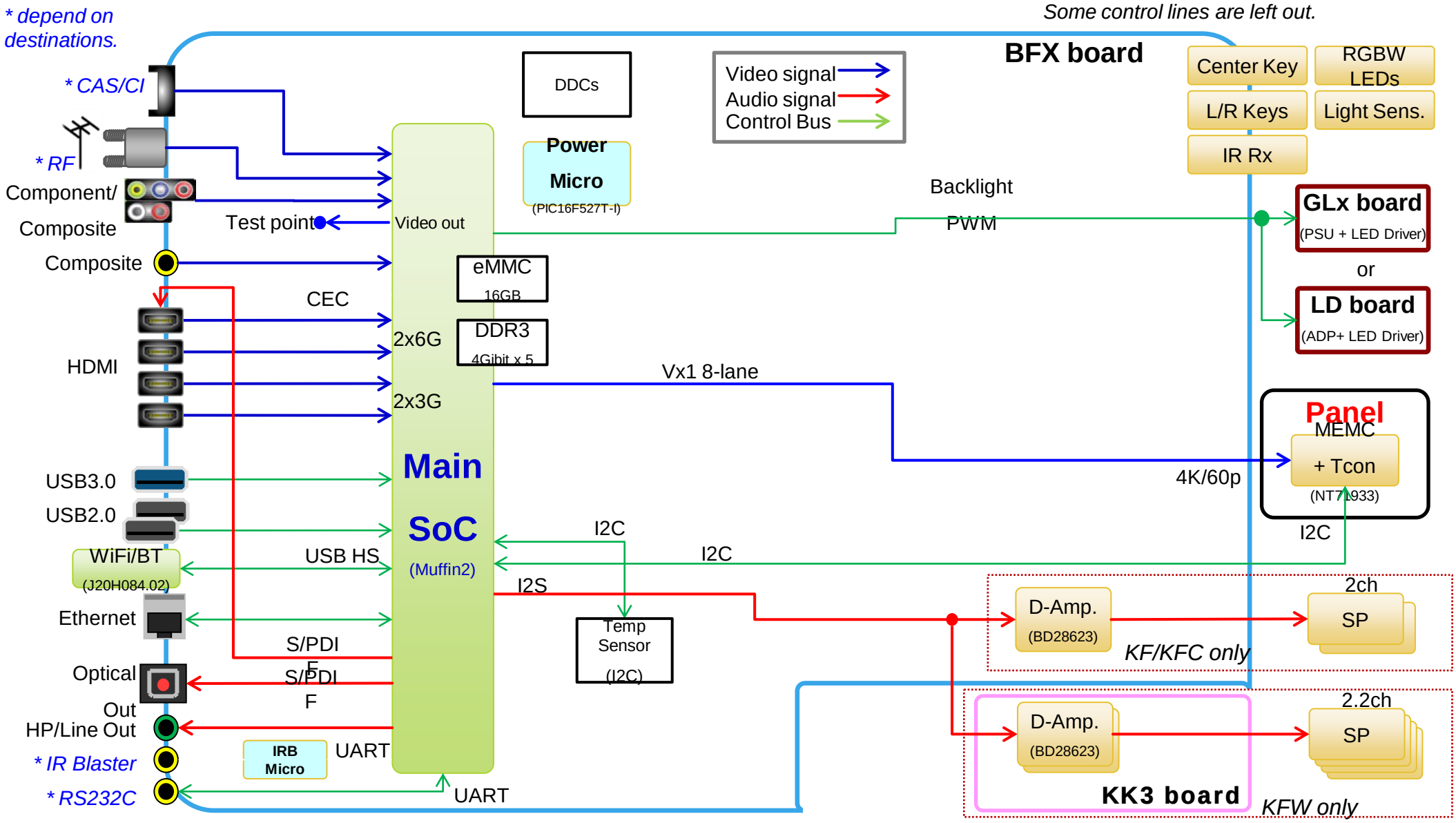


3. KDL- 55*

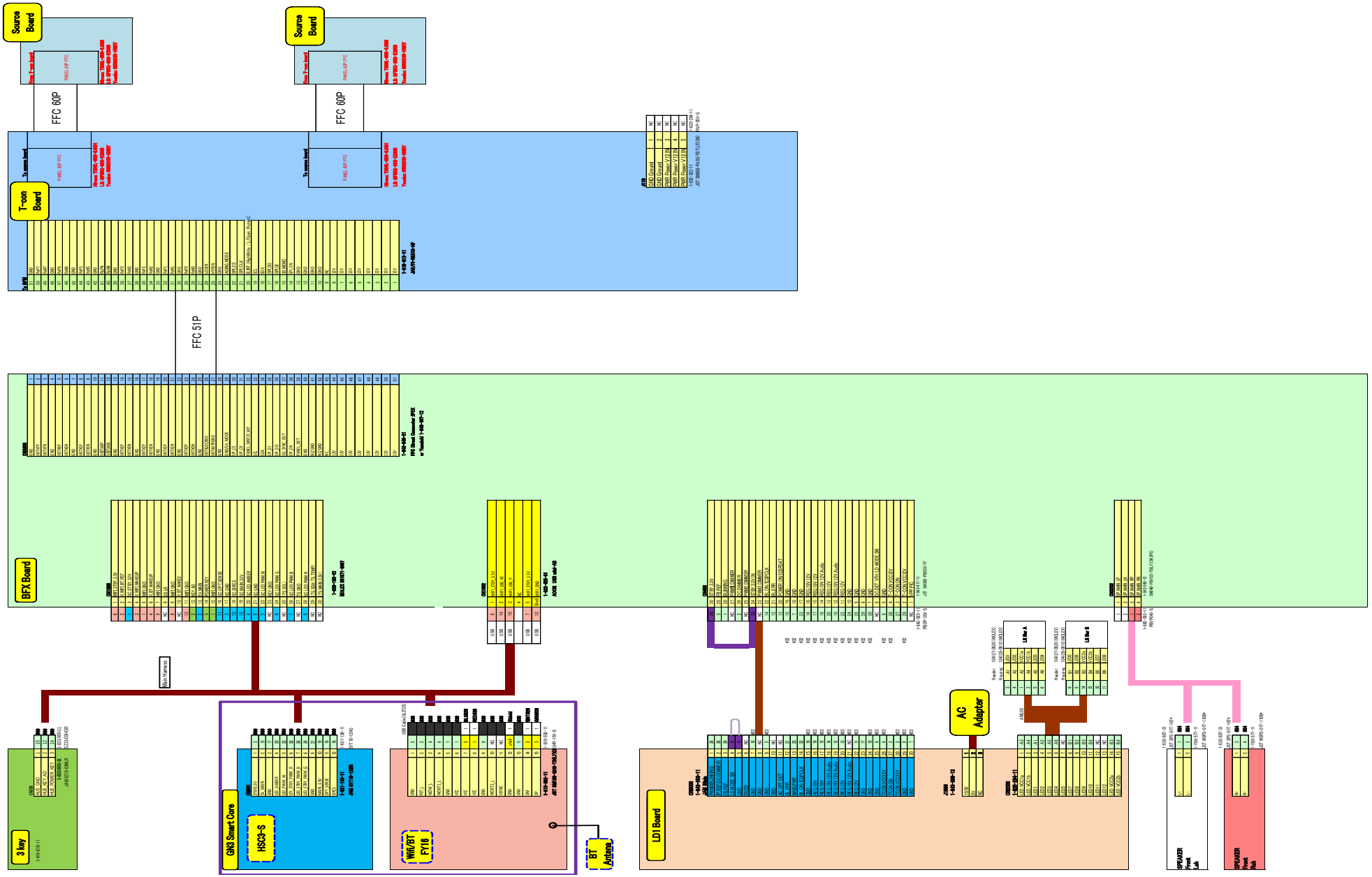


SMART CORE BLOCK

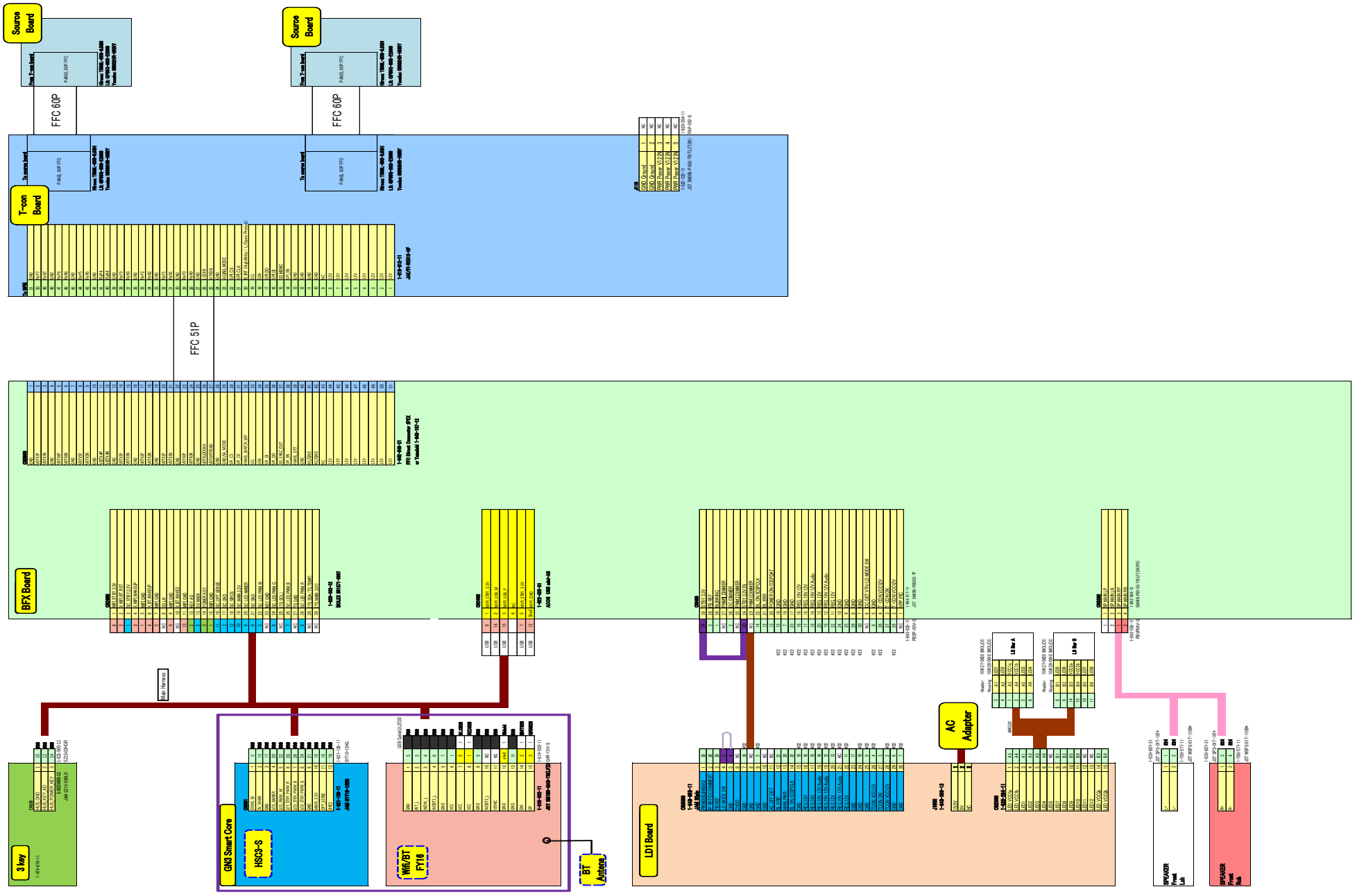
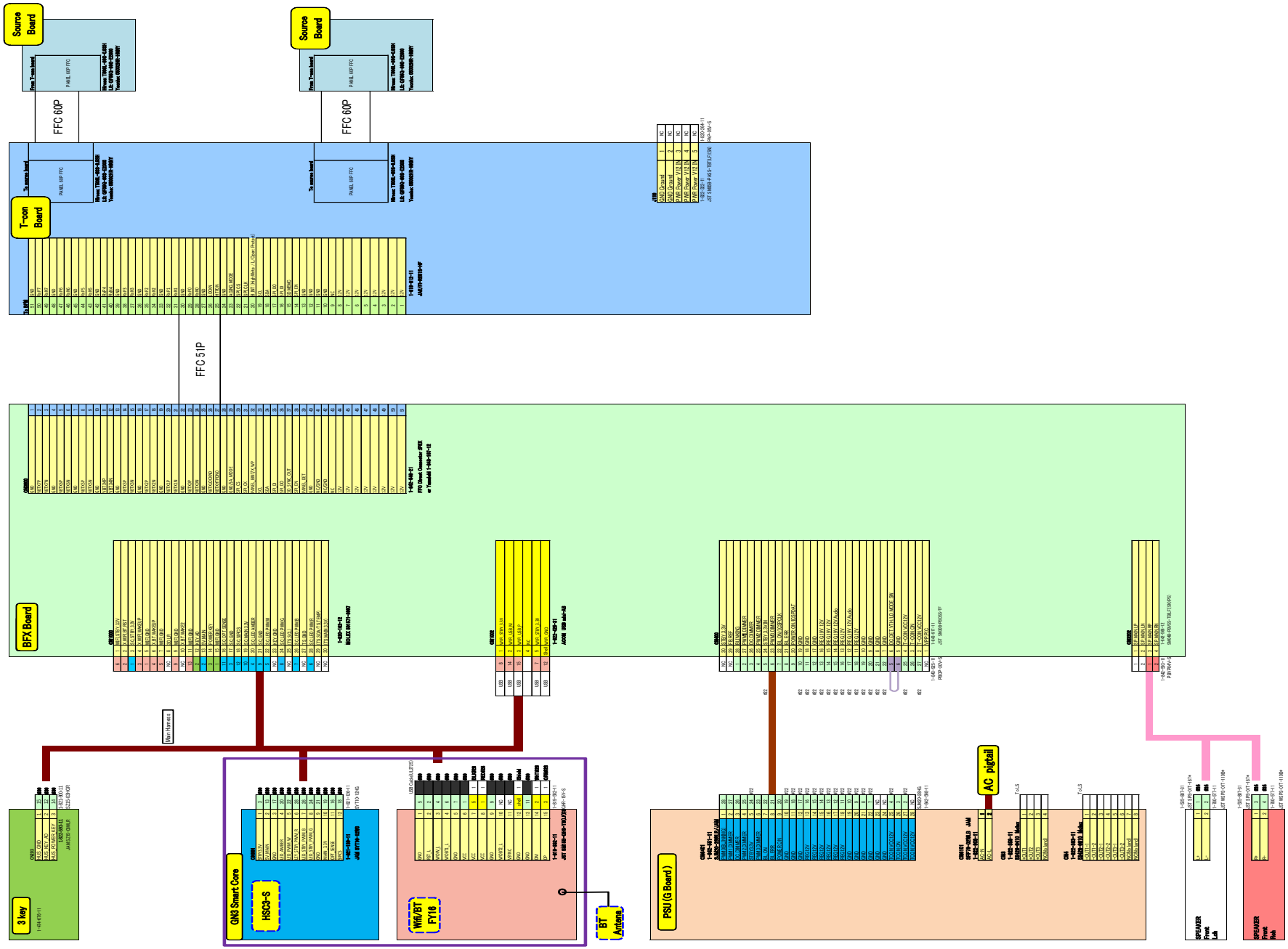
FY17 KF/KFC/KFW



5-3. Connector Diagram : KF_43”



5-3. Connector Diagram : KF_49”



5-3. Connector Diagram : KF_55”