

FA Report for

BFX-AT100 – LED Color Abnormal Issue



FOXCONN CPEG JBD_VN
May-17, 2022

Team Leader

Foxconn

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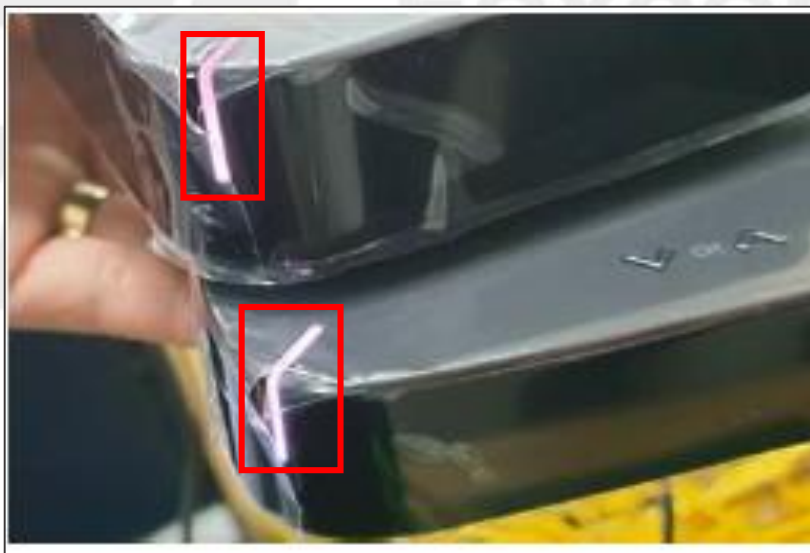
PD: Wen Yong

SQE: Chun Ke

PE: Michel, Nam

✓ Issue Description

- On 2022-Mar-29, Customer complained that the LED color of 2 units of BFX-AT100 model was abnormal.
- ALT has complained LED (yellow & purple) issue on 2021-Feb; the root cause is Everlight LED material issue.
- On 2022-May-04, Fii received 2 LED color issue units (Pink color) from ALT customer.



NG Units-Customer image



OK Unit

Summary: The led color is mixed white and pink color.

✓ Check DC & LC data of LED issue

No	Shipping SN	Foxconn SN	DATE_CODE	Production date	LOT_CODE	Vendor
1	21496880012022011126654	YWO1H3Y	210831	2022/02/24	Y210831E6001KFFWX31	EVERLIGHT
2	21496880012022011126732	YWO1F6Y	210831	2022/02/24	Y210831E6001KFFWX31	EVERLIGHT

- The improved D/C for Everlight LED is 20210620.
- 2 NG units belong D/C:210831. Owner: SQE/ Chun Ke – [Done Mar/29](#)

✓ Fii Holds DC: 210831.

- SQE holds 55800pcs LED in stock belong D/C: 210831. Owner: SQE/ Chun Ke – [Done Mar/29](#)

✓ Check production history and inventory.



- Check production history: Every Light shipped total 244k DC: 210831 to Fii from Nov 11, 2021 to at the present.
- Fii used 188k and there are 55800pcs in stock. Owner: SQE/ Chun Ke – [Done Mar/29](#)



1. Fii check production data.

- ✓ Check production data of 2 units did not find abnormal.

SERIAL_NUMBER	MO_NUMBER	GROUP_NAME	IN_STATION_TIME	WIP_GROUP
38D57AD8E809	2639002451	ASSY	02/23/2022 10:21:10 PM	UK
38D57AD8E809	2639002451	UK	02/23/2022 10:28:20 PM	FT
38D57AD8E809	2639002451	FT	02/23/2022 10:33:09 PM	FT1
38D57AD8E809	2639002451	FT1	02/24/2022 7:33:15 AM	RC
38D57AD8E809	2639002451	RC	02/24/2022 7:37:34 AM	RC1
38D57AD8E809	2639002451	RC1	02/24/2022 8:32:32 AM	VI
38D57AD8E809	2639002451	VI	02/24/2022 8:40:11 AM	RC2

SN: 21496880012022011126732

SERIAL_NUMBER	MO_NUMBER	GROUP_NAME	IN_STATION_TIME	WIP_GROUP
38D57AD8E6C9	2639002451	ASSY	02/23/2022 10:14:34 PM	UK
38D57AD8E6C9	2639002451	UK	02/23/2022 10:22:37 PM	FT
38D57AD8E6C9	2639002451	FT	02/23/2022 10:26:58 PM	FT1
38D57AD8E6C9	2639002451	FT1	02/23/2022 10:33:09 PM	RC
38D57AD8E6C9	2639002451	RC	02/24/2022 7:39:29 AM	RC1
38D57AD8E6C9	2639002451	RC1	02/24/2022 7:49:23 AM	VI
38D57AD8E6C9	2639002451	VI	02/24/2022 7:51:47 AM	RC2

21496880012022011126654

- ✓ Check log test of 2 units at FT1 station, they are passed “check LED” item.

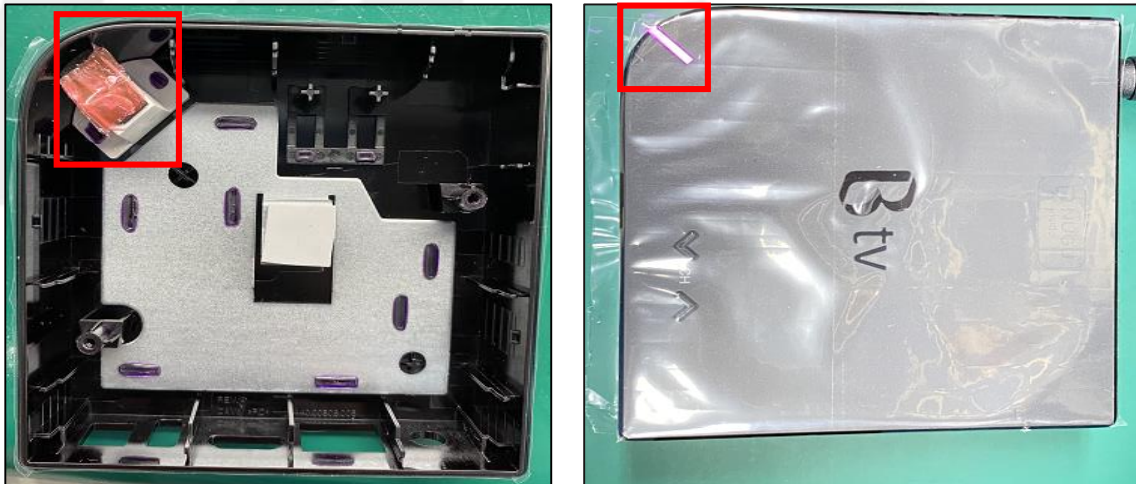
Summary:

- ✓ Two units passed all station normally.
- ✓ Led color issue can cover at FT1 station.

2. Fii check LED issue coverage.

2.1 Fii do experiment -1 to check LED coverage

- ✓ Stick a pink plastic film on the light guide bar then assemble normal PCBA and bottom cover.
- ✓ After that plug power cord (the LED color is mixed white and pink status) and test unit at FT1 station.
- The result is failed at check LED item.



Summary:

- ✓ LED color issue can cover 100% at FT1 station.

2.2 Fii do experiment -2 to check LED coverage

- ✓ Chose 1pcs NG LED, and mounted on the good PCBA. then assemble housing.
- ✓ After that plug power cord and test unit at FT1 station.
- The result is failed at check LED item.



Summary:

- ✓ LED color issue can cover 100% at FT1 station.

D4. Root Cause

3. Fii received 2 units and opened for analysis

3.1 Fii visual inspection

- ✓ After received, Fii inspected and found the SN on housing label is mismatch with the SN which customer feedback.
- ✓ After confirmed with customer, RMA center changed the bottom case.

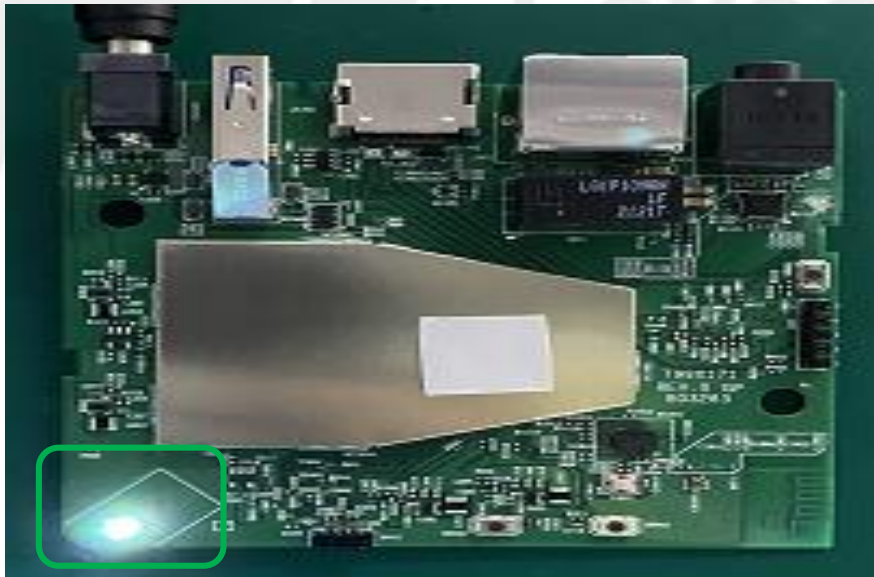
No	Customer feedback device SN	Fii received device SN
1	21496880012022011126654	2149688001202199000109
2	21496880012022011126732	2149688001202199000111



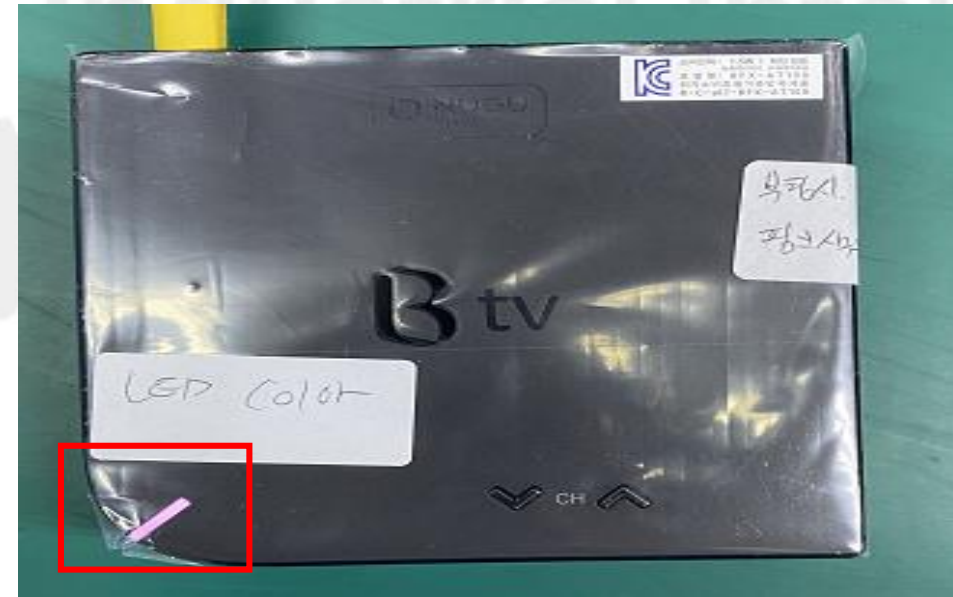
The actual SN and device housing Fii received from customer.

3.2 Fii opens housing and inspects PCBA

- ✓ After opened, Fii inspected Led location and did not find any abnormal, then Fii plugged power cord in PCBA to check Led color and detected Led color is normal with white light.
- ✓ After that, Fii reassembled PCBA into housing and plugged power cord in device to check and detected Led color is abnormal with pink light



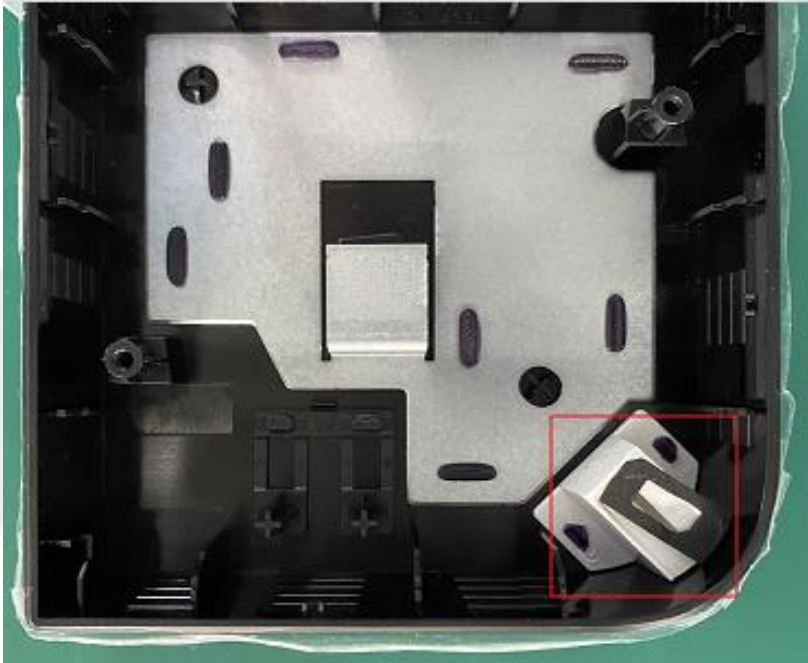
LED light normally on PCBA



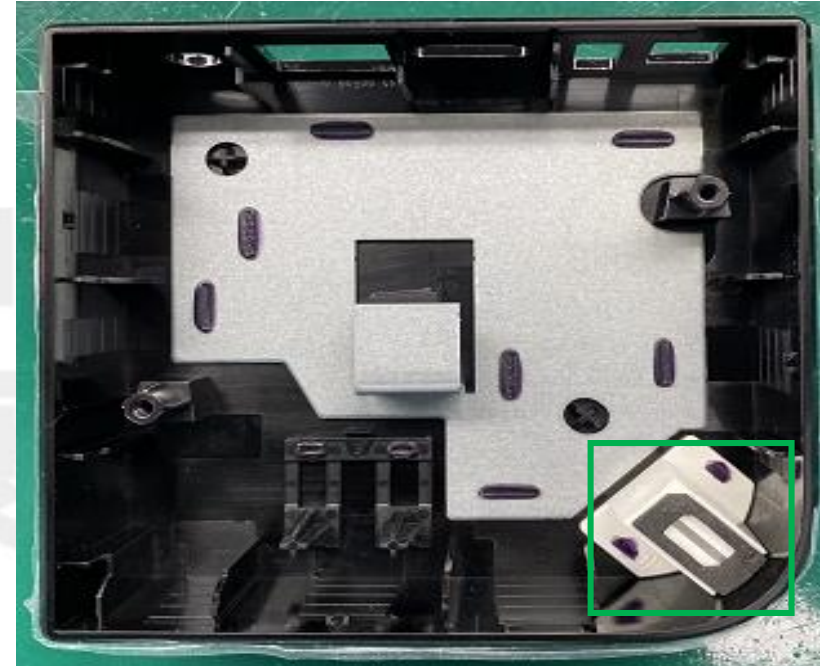
LED light abnormally – Purple color

3.3 Fii opens device and inspects housing

- ✓ After re-opened, Fii found **the sponge was misalign on the top case.**



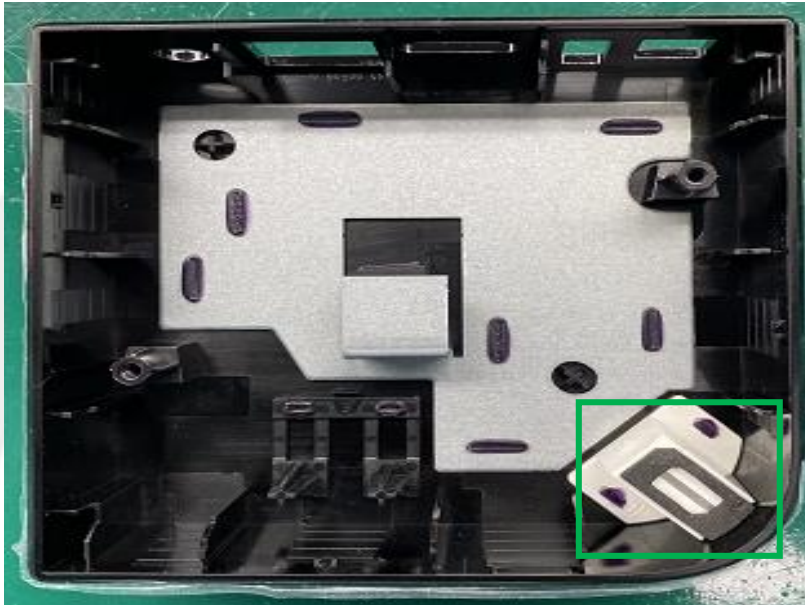
Sponge misalign



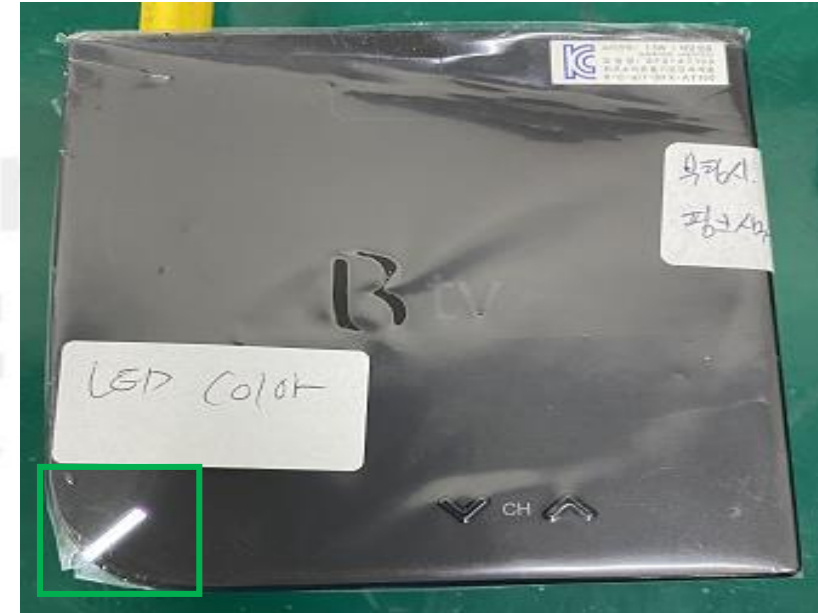
Sponge OK

3.4 Fii adjusted sponge and reassembled

- ✓ Fii adjusted sponge in correct location and reassembled.
- ✓ Then Fii plugged power cord in device to check LED color again and detected Led color is normal with white light.



LED pad OK



LED light normally

D4. Root Cause

3.5 Fii makes experiment and retest at FT1 station

- ✓ Fii makes experiment with 2 cases and retest at 5 times at FT1 station
 - Case 1: Assemble PCBA into housing pasted misalign location of sponge.
 - Case 2: Assemble PCBA into housing pasted correct location of sponge.

Test Machine Name	Case 1		Case 2	
	NG1 Unit	NG2 Unit	NG1 Unit	NG2 Unit
L10T99FT1001	Fail	Fail	Pass	Pass
L10T99FT1002	Fail	Fail	Pass	Pass
L10T99FT1005	Fail	Fail	Pass	Pass
L10T99FT1009	Fail	Fail	Pass	Pass
L10T99FT10012	Fail	Fail	Pass	Pass

Remark:

- **Fail:** Green LED test fail
- **Pass:** All LED test pass

```

Check LEDs
09:35:39 D:\FATP\OTTBIN\KEY>adb shell fac set_led_red
09:35:39 Delay200Ms
09:35:40 D:\FATP\OTTBIN\KEY>
09:35:40 Begin RED LED Test...
09:35:42 Delay1900Ms
09:35:42 Total Red Color: 2094627, Total Green Color:1625035, Total Blue Color:1567240
09:35:42 LED 1 is WHITE
09:35:42 WHITE
09:35:42 Delay700Ms
09:35:43 Total Red Color: 1257085, Total Green Color:469776, Total Blue Color:486775
09:35:43 LED 1 is RED
09:35:43 RED
09:35:43 LED is RED PASS
09:35:43 adb shell fac set_led_green
09:35:43 D:\FATP\OTTBIN\KEY>
09:35:43 Delay200Ms
09:35:43 Begin GREEN LED Test...
09:35:43 Delay200Ms
09:35:43 Total Red Color: 159869, Total Green Color:562241, Total Blue Color:316755
09:35:43 LED 1 is no define
09:35:43 no define
09:35:44 Delay700Ms
09:35:44 Total Red Color: 132410, Total Green Color:541163, Total Blue Color:298183
09:35:44 LED 1 is no define
09:35:44 no define
09:35:45 Delay700Ms
09:35:45 Total Red Color: 111017, Total Green Color:513435, Total Blue Color:270792
09:35:45 LED 1 is no define
09:35:45 no define
09:35:45 Delay700Ms
09:35:46 Total Red Color: 89497, Total Green Color:481896, Total Blue Color:240923
09:35:46 LED 1 is no define
09:35:46 no define
09:35:46 Delay700Ms
09:35:46 Total Red Color: 89468, Total Green Color:478357, Total Blue Color:237349
09:35:46 LED 1 is no define
09:35:46 no define
09:35:54 Delay700Ms
09:35:55 Total Red Color: 78520, Total Green Color:442152, Total Blue Color:208789
09:35:55 LED 1 is no define
09:35:55 no define
09:35:55 Delay500Ms
09:35:55 system command: cmd /c TASKKILL /F /IM LEDTest.exe /T
09:35:56 LED_G1 Check Green LED Fail
  
```

Green LED Fail

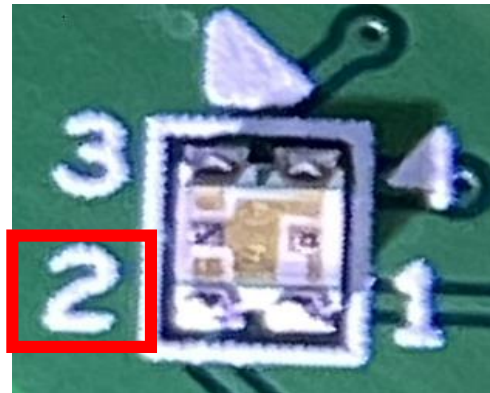
```

Check LEDs
09:38:07 adb shell fac set_led_red
09:38:07 D:\FATP\OTTBIN\KEY>
09:38:07 Delay200Ms
09:38:07 Begin RED LED Test...
09:38:09 Delay1700Ms
09:38:09 Total Red Color: 1468477, Total Green Color:607028, Total Blue Color:502909
09:38:09 LED 1 is RED
09:38:09 RED
09:38:09 LED is RED PASS
09:38:09 adb shell fac set_led_green
09:38:10 D:\FATP\OTTBIN\KEY>
09:38:10 Delay200Ms
09:38:10 Begin GREEN LED Test...
09:38:10 Delay200Ms
09:38:10 Total Red Color: 306062, Total Green Color:1201543, Total Blue Color:511764
09:38:10 LED 1 is GREEN
09:38:10 GREEN
09:38:10 LED is GREEN PASS
09:38:10 adb shell fac set_led_blue
09:38:10 D:\FATP\OTTBIN\KEY>
09:38:10 Delay200Ms
09:38:10 Begin BLUE LED Test...
09:38:11 Delay200Ms
09:38:11 Total Red Color: 625862, Total Green Color:583729, Total Blue Color:1249155
09:38:11 LED 1 is BLUE
09:38:11 BLUE
09:38:11 LED is BLUE PASS
09:38:11 adb shell fac set_led_white
09:38:11 D:\FATP\OTTBIN\KEY>
09:38:11 Delay200Ms
09:38:11 Begin WHITE LED Test...
09:38:11 Delay200Ms
09:38:12 Total Red Color: 1809901, Total Green Color:1424812, Total Blue Color:1403073
09:38:12 LED 1 is WHITE
09:38:12 WHITE
09:38:12 LED is WHITE PASS
  
```

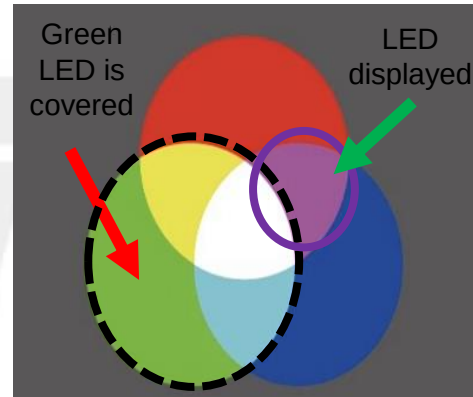
LED Pass

3.6 LED color explanation.

- ✓ The white color light is a combination of Red, Green and Blue Led (Pin 1,2 and 3).
- ✓ However, in this case, Green Led (Pin 2) was covered by misalign Led pad lead to Led color is pink light because pink light is the combination of Red and Blue Led (Pin 1 and 3) as picture 2.



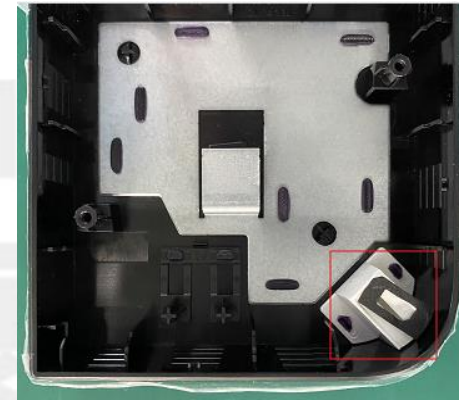
Picture 1



Picture 2



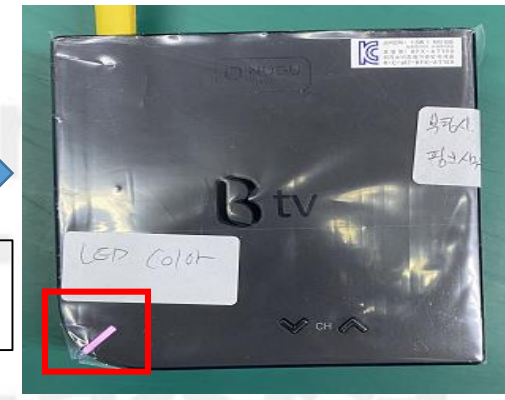
LED Pad
misalign



Picture 3



Purple
LED



Picture 4

Remark:

Pin 1: Red Pin 2: Green
Pin 3: Blue Pin 4: PP_PWR_IN

Summary:

- ✓ Led pad is misalign lead to abnormal light color.

❖ Conclusion

- ✓ The sponge is pasted misalign lead to green color is covered and the Led light color also changes pink color.
- ✓ After Fii do experiments, the Led color issue can be covered 100% at FT1 station.
- ✓ When Fii received 2 Led issue units, the actual shipping SN is different with SN customer's feedback and the devices opened and changed housing before.
- Suspect during changing housing process from customer side, it caused the sponge misalign.