

8D Report

for cosmetic issue of BFX - AT100 (T99X171)



Foxconn Industrial Internet
富士康工业互联网

Date : 15 November 2019

Prepared by: Luu Mien

D1. Establish the Team

Team Leader: Mike Kao

QA: Mai Huy Dat

PQE: Luu Mien

PM: Mary Nguyen/ Henry Chiou

PD: Huu Loi

PE: Frank Nguyen

IE: Dang Hung

SQE: Tony Trinh

RD: Sean Chiang

D2. Description of the Problem

➤ Issue Description

**1 November 2019, ALT customer complain [BFX-AT100] 3rd Mass production
Cosmetic issue.**

Defect Total

- Scratch on the top housing: 5/500pcs
- Scratch on the bot housing : 6/500pcs
- Damaged product (look like scratch) : 7/500pcs
- Buffing housing: 1/500pcs
- LED issue: 1/500pcs
- Giftbox : 6/500pcs
- Carton: 1/500pcs

D2. Description of the Problem (continue)

2.1. Scratch on the top housing

Defect q'ty: 5/500pcs

Defect rate: 1%



D2. Description of the Problem (continue)

2.2. Scratch on the bot housing

Defect q'ty: 6/500pcs

Defect rate: 1.2%



D2. Description of the Problem (continue)

2.3. Damaged product (look like scratch)

Defect q'ty: 7/500pcs (1.4%)



D2. Description of the Problem (continue)

2.3. Damaged product (look like scratch)
(cont):
Defect q'ty: 7/500pcs



D2. Description of the Problem (continue)

2.4. Buffing housing

Defect q'ty: 1/500pcs

Defect rate: 0.2%



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D2. Description of the Problem (continue)

2.5. LED issue

Defect q'ty: 1/500pcs

Defect rate: 0.2%



D2. Description of the Problem (continue)

2.6. Giftbox defect

Defect q'ty: 6/500pcs

Defect rate: 1.2%



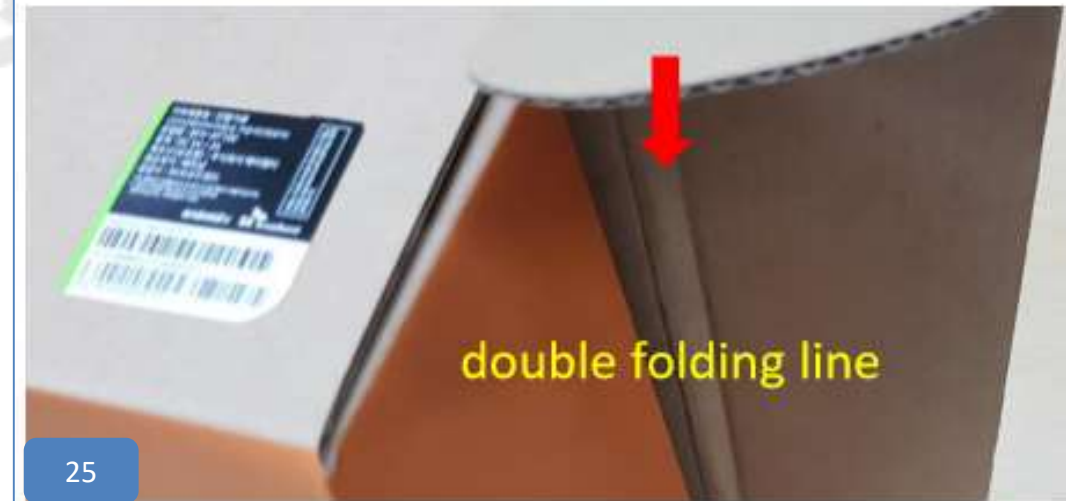
D2. Description of the Problem (continue)

2.6. Giftbox defect (cont):

Defect q'ty: 6/500pcs (1.2%)



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D2. Description of the Problem (continue)

2.7. Carton defect (cushion carton sheet (Top) is missing inside carton box)

Defect q'ty: 1/500pcs

Defect rate: 0.2%



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D3. Containment

3.1. Immediately notice this issue to all operators at production line and hang quality alert to all related working stations (VI station, Packing, OBA station).



Quality Alert

D4. Identify the Root Cause

4.1. For Scratched housing.

Review defect dimension of all pictures to compare with criteria that customer provided (BFX-AT100_inspection criteria_Rev02_190906):

4.1.1. We found that there were 9 units not compliant with cosmetic defined criteria

Criteria	Picture	Class	Q'ty	Defect Dimension: length (mm)	OK/NG
Class A: $W \leq 0.1\text{mm}$, $L \leq 3\text{mm}$ $(DS > 10\text{mm})$ Allowed quantity 2 for high gloss; Max $w \leq 0.05\text{mm}$, $L \leq 12\text{mm}$ Allowed quantity 1 for low gloss or matte.	2	A	1	8.14	OK (All defect dimension are within inspection criteria)
	3	A	1	5.96	
	4	A	1	1.92	
	5	B	1	13.32	
	6	B	1	4.21	
	7	B	1	10.81	
	10	B	1	4.75	
	15	A	2	1.93/1.21	
	17	B	2	5.79/5.09	
	1	A	1	4.95	
Class B: $W \leq 0.1\text{mm}$, $L \leq 20\text{mm}$ $(DS > 20\text{mm})$ Allowed quantity 3 for high gloss; $W \leq 0.1\text{mm}$, $L \leq 20\text{mm}$ $(DS > 20\text{mm})$ Allowed quantity 3 for low gloss or matte	8	B	1	9.81	NG (Defect dimension and quantities were not compliant with cosmetic defined criteria)
	9	B	4	13.88/12.11/14.14/9.67	
	11	B	1	10.20	
	12	B	1	NA	
	13	B	1	4.30	
	14	A	1	5.39	
	16	B	1	8.99	
	18	B	1	12.32	

D4. Identify the Root Cause (continue)

4.1.2. Recheck all stations and operation in production line and find out:

Operator at stick housing label station did not wear finger cover at little finger so during operating process her nail touched on housing lead to scratched housing.



D4. Identify the Root Cause (continue)

4.1.3. **Escape cause:** Checked defect rate at VI (R_VI1):

Defect q'ty: 10/50375pcs (Defect rate: 0.01%)

However, sometimes production line was congestion, VI operator did not check product carefully lead to defect escaped.

Quality Management (QM) - 2019/10/09 - sfis - Yield Rate

Connect to... Option SQL Field Save to Excel About Quit

☒ Period 2019/09/01 07:30 to 2019/09/30 24:00

T99X171.00	ALL	ALL	ALL
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Yield Rate | Defect Analysis | Repair Analysis | QC Analysis | DPMO | First Fail Qty analysis

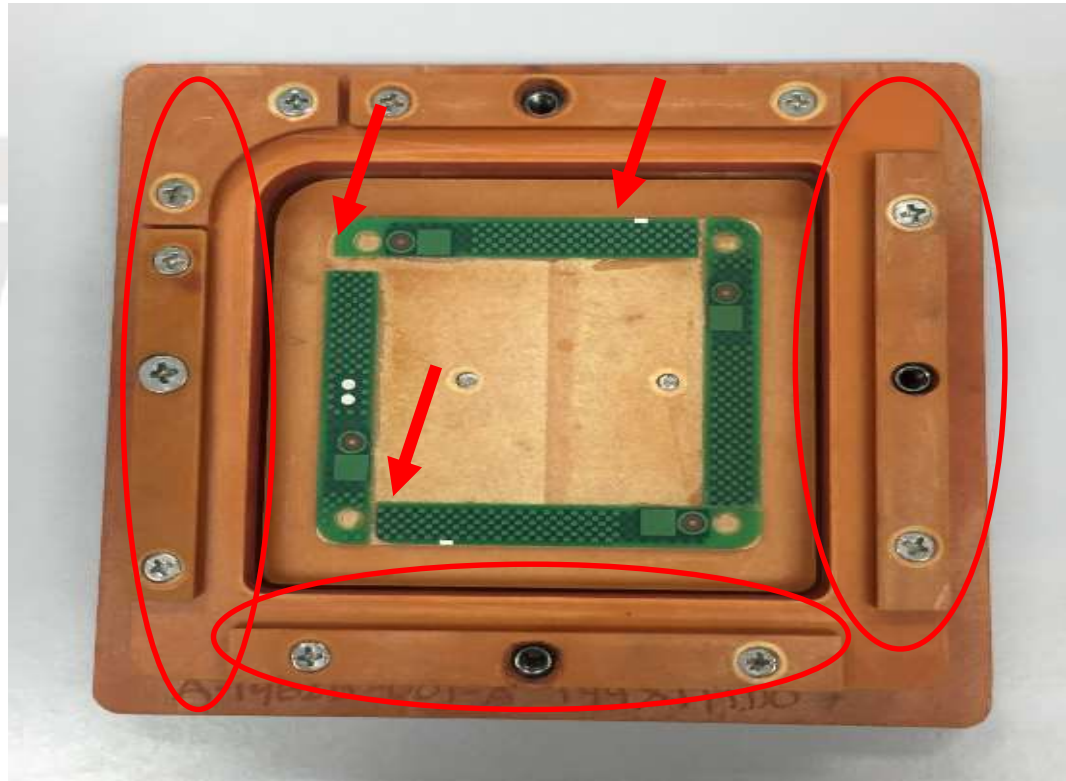
Group Name	Pass QTY	Fail QTY	FIRST_FAIL_QTY	Total QTY	F.P.Y.Rate	F.P. Rate
PACK_PALT	50375	0	0	50375	100	100.00
R_VI1	10	0	0	10	100	100.00

D4. Identify the Root Cause (continue)

4.2. For damaged product (scratch).

Root cause: This defect was due to be impacted to rubber pad stick fixture during operator's operating. (we also found out DUTs be scratched in random when using this fixture to stick rubber pad)

(51K was already in production when we did the 8D report for 9K so this defect was escaped in lot of 51K)



➤ **Escape cause:** VI operator did not check carefully lead to defect escaped.

D4. Identify the Root Cause (continue)

4.3 For buffing housing.

Root cause: During checking cosmetic, VI operator found out this unit be dirty and cleaned it with strong force lead to buffing.

4.4 For LED issue

This defect is belongs to bin code PW05 [in specification](#) with reddish color. Please see detail in corrective action page 31, 32.

D4. Identify the Root Cause (continue)

4.5 For giftbox defect

4.5.1. Missing plastic vinyl (PE bag).

Root cause: Checked production history of this box and found out it was packed at line 8 (BFX-AT100 is run at line 7) at the middle of September when we added one more package line to push capacity for 51K. Operators of VI station being supported by the manpower resources from an other building so she was not acquainted with the job on the started time lead to forget put product into PE bag after checking cosmetic.

Escape cause: Pack box operator was also performed by the support human resource, he did not check carefully lead to defect escaped.

SHIPPING_SN		SERIAL_NUMBER		MO_NUMBER		MODEL_NAME	
▶ 2149688001201904025665		2149688001201904025665		2151011916		T99X171.00	

MODEL_NAME	TYPE	VERSION	LINE_NAME	SECTION_NAME	GROUP_NAME	LOCATION	IN_STATION_TIME
T99X171.00		02S2	L8	SI	VI	512,513	2019/09/17 10:55:13 AM
T99X171.00		02S2	L8	SI	PACK_BOX	83,0	2019/09/17 11:05:32 AM
T99X171.00		02S2	L8	SI	CHECK_BOX_WEIGHT	83,0	2019/09/17 11:06:50 AM
▶ T99X171.00		02S2	L8	SI	PACK_CTN	83,0	2019/09/17 1:38:47 PM

D4. Identify the Root Cause (continue)

4.5.2. Folding failure and double folding line

4.5.2.1. Pack box operator was performed by the support human resource so he did not fold carefully lead to make defect.

4.5.2.2. Through pictures, all defects were inside box at hide position after folding so we can not see these defects.

4.5.2.3. For giftbox criteria, in Inspection criteria 'BFX-AT100_inspection criteria_Rev02_190906' have no detail giftbox package criteria so we follow our factory's criteria.

Criteria	Position	Dimension	Judgement	Picture	OK/NG
Torn	Unfold and unhide	NA	Reject	22	OK
	Hide after folding	$W \leq 2\text{mm}$	OK	23	OK
	Unhide after folding	$W \leq 2\text{mm}, L \leq 15\text{mm}$	OK	24	NG
Wrinkled	Logo and product name	NA	Reject	25	OK
	Other	$W \leq 2\text{mm}, L \leq 1/2$ edge's length	OK		



➤ According to pictures, defects are at hide positions after folding. These defects of pictures 22, 23, 25 are satisfy the criteria.

D4. Identify the Root Cause (continue)

4.6 For carton defect (cushion carton sheet (Top) is missing inside carton box)

Root cause: Checked production history of this box and found out it was packed at line 6. Due to pushed capacity so production line took some cartons to line 6 for package and print carton label lead to forget put cushion sheet inside carton.

Escape cause: After pack carton, we can not see inside so defect escaped.

CARTON_NO	MCARTON_NO	SERIAL_NUMBER		
214CUL69350154	214CUL69350154	2149688001201904011531		
214CUL69350154	214CUL69350154	2149688001201904011536		
214CUL69350154	214CUL69350154	2149688001201904011532		
214CUL69350154	214CUL69350154	2149688001201904011533		
214CUL69350154	214CUL69350154	2149688001201904011534		
214CUL69350154	214CUL69350154	2149688001201904011535		
214CUL69350154	214CUL69350154	2149688001201904011537		
214CUL69350154	214CUL69350154	2149688001201904011538		
214CUL69350154	214CUL69350154	2149688001201904011539		
214CUL69350154	214CUL69350154	2149688001201904011540		
LINE_NAME	SECTION	GROUP_NAME	STATION_NAME	IN_STATION_TIME
L6	SI	PACK_CTN	PACK_CTN	2019/08/29 3:48:34 PM

D5. Corrective Action

5.1. For scratched housing:

5.1.1. Required operator at stick device label station wear finger cover at little finger when operating to avoid of finger nail touch to housing and cause scratching.

Line leader remind and alarm before production and often monitor daily.

IPQC on line keep audit and verifying the implementation on production line.

Owner: PD/PQE: Huu Loi, Luu Mien Due date: 2 November 2019 (done)



Before



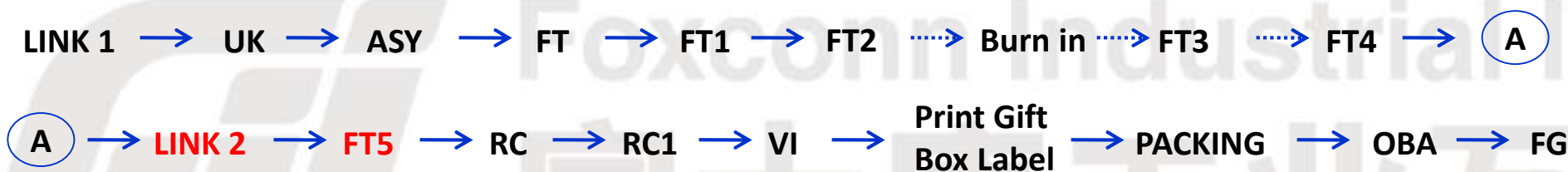
After

D5. Corrective Action (continue)

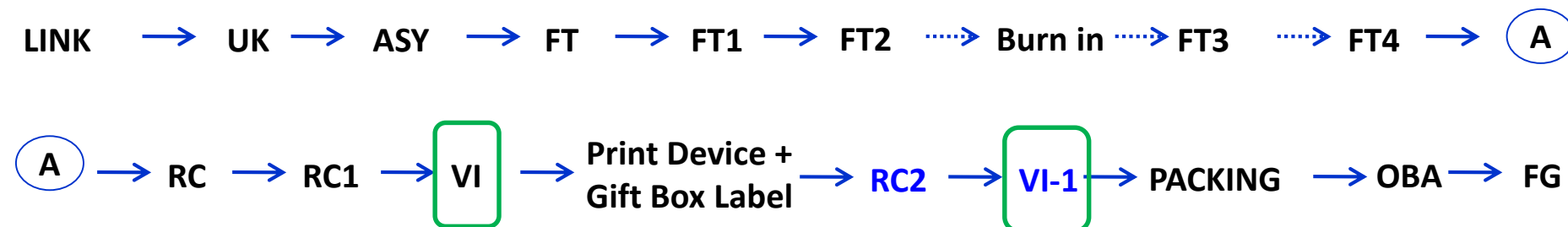
5.1.2. In order to meet customer requirement about capacity and quality, a new flow was modified from the end of September (with customer's approval) and whereby one more VI station was added to double check cosmetic.

Owner: PE/PQE/IE: Frank Nguyen, Luu Mien, Dang Hung Due date: 20 September 2019 (done)

Old flow chart:



New flow chart:



D5. Corrective Action (continue)

5.2. For damaged product

5.2.1. We suggested our ME design a proper fixture as mentioned in previous report but the fixture was still not effective. Thus, we still manual stick rubber pad to avoid risk of scratch, dirty, damaged to housing,... caused by fixture.



New fixture but not effective



Manual stick rubber pad

D5. Corrective Action (continue)

5.2.2. We did work with vendor to change more customized protective film with connector hole cut already from the lot of 89K.

Owner: RD PM: Henry Chiou Due date: from lot of 89K (implemented already)



Old protective film is not customized without cutting connector hole



New protective film is more customized with connector hole cut already

D5. Corrective Action (continue)

5.3. For buffing housing

Alarm and remind line leader and all operators at production line **do not allowed clean housing in any case**. If find out cosmetic defect over inspection criteria, all defects need compulsory is scanned error code and then put them on NG tray for line leader double check and handle by changing housing.

Owner: PD/PQE: Huu Loi, Luu Mien Due date: 2 November 2019 (done)



D5. Corrective Action (continue)

5.4. For LED issue

5.4.1. In production process, we also found out the reddish LED and informed customer in the middle of October and had a summary report for this issue (as attached file “Mixed white LED issue” below).

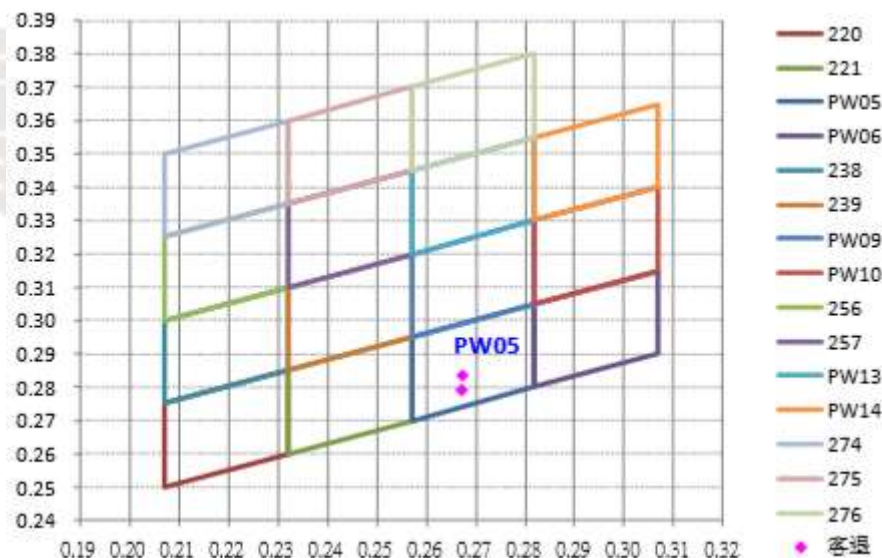
We also sent two samples to vendor for further analysis.

The result was the reddish LED belongs to PW05 bin code within CIE bin grading specification (see picture and vendor report below).

Owner: RD/SQE: Sean Chiang, Tony Trinh Due date: 15.Oct. 2019



**Mixed white LED
issue**



Vendor report

D5. Corrective Action (continue)

5.4.2. RD will send to factory 2 samples with reddish color (bin code PW05) which customer approved as golden sample. In case of suspecting LED abnormal, we will compare with golden sample for judgement.

Owner: RD: Sean Chiang Due date: 11 November 2019(done)

5.4.3. Required vendor add bin code information in Lot code in order to IQC upload to system for controlling. We will separate Lot code with PW05 bin code to run a MO and monitor if have any LED reddish color over specification and then send to vendor analysis and improve (as picture below)

Owener: RD/SQE: Sean Chiang, Tony Trinh Due date: 17 January 2020



D5. Corrective Action (continue)

5.5. For giftbox defect and carton defect

5.5.1. Showed and reminded all operators to pay attention to their operating and follow SOP. Operator at pack box and pack carton station need fold giftbox more carefully and recheck cushion sheet before packing carton to avoid missing.

Owner: PD/PQE: Huu Loi, Luu Mien Due date: 2 November 2019 (done)



Quality Alert



SOP

5.5.2. Discussed with ME and PD to guide operator folding to avoid defects.

Owner: PD/PQE: Huu Loi, Luu Mien Due date: 4 November 2019 (done)

5.5.3. We are following Foxconn internal criteria for Giftbox cosmetic inspection, and the feedback defect photos seems to satisfy with our current internal requirement, so if customer has a more specific criteria please share to us for further discuss and review together to define a final judgement criteria.

Owner: RD PM: Henry Chiou Due date: 20 November 2019

D6. Verification of effectiveness

6.1. Quality alert and SOP were already updated in inspection requirement and hang on production line, IPQC keep audit and verifying the implementation on production line.

6.2. Operators were reminded and trained to know this issue for more pay attention to their job, compulsory follow standard operation procedure.



D7. Prevent recurrence

7.1. Line leader remind all operators before production and monitor their operating daily.

IPQC will random sample check after VI and pack box station to recheck product and package status.

Owner: PD/PQE: Huu Loi, Luu Mien (done)

7.2. Inspection criteria 'BFX-AT100_inspection criteria_Rev02_190906' have no detail giftbox package criteria.

So RD/PM team work with customer to add more giftbox package criteria in cosmetic criteria.

Owner: RD/PM: Henry Chiou, Mary Nguyen Due date: 15 November 2019