

K18X001.00 FT2 Station Test Fail Report

Prepare by: PE- Loc

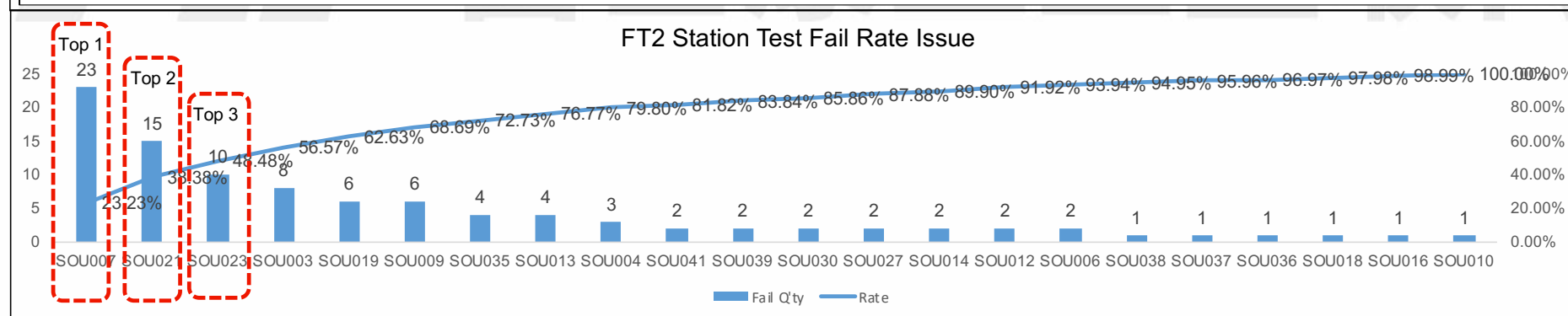
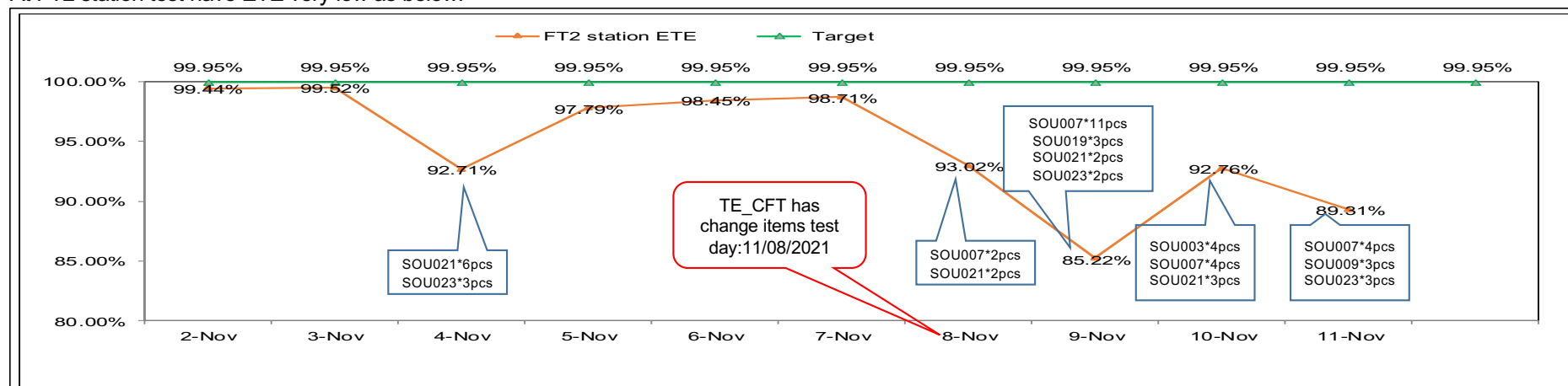
Date: Nov 12th 2021

FT2 Station ETE Yield Rate

Background Information:

K18X001.00 MP production 2K form 11/02/2021 to 11/13/2021. with 2 MO: 2639001581*1297pcs, 2639001826*499, 2639001868*196pcs.

At FT2 station test have ETE very low as below:



FT2 Station Issue History

K18X001.00 FT2 issue history:

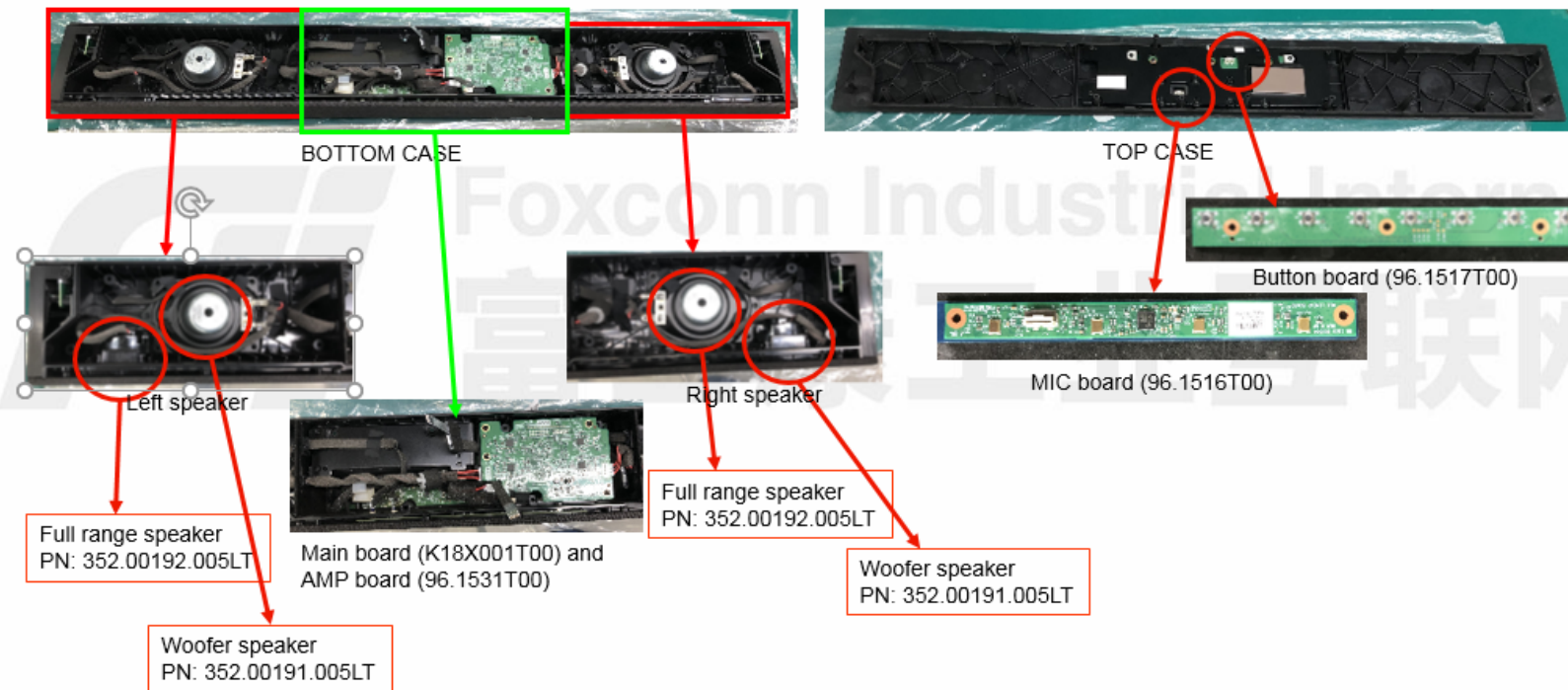
K18X001.00 FT2 Station Issue History				
The builds	Q'ty production	FT2 Station Defect rate	FT2 issue	Remark
DVT1	40pcs	17.50%	Check speaker failure 1. Check VI did not find out abnormal 2. Re-test 7pcs at FT2 station. 5pcs PASS, 2pcs still speaker check fail 3. Test 3 times 2pcs fail then have fail value is different 4. Shipping 2pcs NG speaker to RD further analysis. 02/08 => Suggest ATBU device issue	1. Ship 2pcs fail speaker at FT2 station for RD analysis. 02/08 2. Co_work with ATBU vendor to verify environment 3. Need RD team update the root cause and action to improve this issue
DVT2	132pcs	6.06%	Check THD speaker failure 1. Check VI did not find out abnormal 2. Both Left and Right speaker also failed THD test item , the fail value focus on upper limited spec which were around 8 ~ 10 dB 3. Swapping left treble speaker , this issue follows treble speaker but value also margin upper limited spec => Suggest spec or environment issue need RD confirm this issue	1. PE/TE keep monitoring this is issue 2. Co_work with ATBU vendor change spec 03/01. done 3. After change spec then FT2 test fail 8/132pcs 4. Need RD team and ATBU vendor update root cause and action to improve check THD speaker fail issue Solution in next build 1. Send NG speaker (PN: 352.00190.005LT) to DREAMUS vendor to further analysis. Owner: PE: Louis/ QA: Ken 2. Record the video of the operation send to RD for improve. Owner: PE: Louis, RD: Henry. Due date: Next build
DVT3	185pcs	0%		
DVT4	100pcs	6%	SOU021: Woofer Speaker_Left to Right Radio check fail 1. Check VI find out housing assembly not well => Assembly sticking plaster gasket not well*3pcs 2. The value different of two speaker left and right: Woofer Speaker_Balance_Left - 1k Hz = 1.720914 db(0.1, 20) PASS Woofer Speaker_Balance_Right - 1k Hz = 3.261951 db(0.1, 20) PASS Woofer Speaker_Left to Right Radio = 0.527572 % (0.7, 1.4) Fail => Balance value of left and right speaker not equal*3pcs	- Training OP stick gasket on case top follow SOP - Need TE and soundbar test vendor improve spec issue
Pre_MP_1K	768pcs	1.69%	SOU021: Woofer Speaker_Left to Right Radio check fail 1. Check VI find out housing assembly not well => Assembly top case not well*2pcs 2. The value different of two speaker left and right: - Balance left = 2.889682 db , spec (0.1,20) - Balance right = 6.240623 db, spec (0.1,20) - Left to Right Radio = Balance_Left / Balance_Right= 2.889682 / 6.240623 = 0.463044 % => Balance value of left and right speaker not equal*11pcs	Short term: - Training OP assembly top case follow SOP - Replace speakers with nearly the same value spec. Long term: - Need TE and sound bar test vendor improve spec issue
MP_2K	2000pcs	4.92%	1. SOU007: Full Range Speaker_Frequency Response - 8k Hz check fail*1.18% 2. SOU021: Woofer Speaker_Air Leakage Test_Pushing - 550 Hz check fail * 0.75% 3. SOU023: Woofer Speaker Air Leakage Test Pushing - 550 Hz check fail * 0.5%	1. TE_CFT change FT2 test program: change item: Woofer Speaker_Air Leakage Test_Pushing - 550 Hz check fail * 0.75% from SOU023 to SOU021. 11082021 2. PE under FA

Fii Confidential

Visual Inspection

Visual inspection

- Check visual inspection for NG boards at FT2 station as below :



TOP1: Full Range Speaker_Frequency Response – 8k Hz Check Fail-1

1. Background and fail symptom:

SOU007: Full Range Speaker_Frequency Response - 8k Hz, check fail value < 65dB: (42=> 64.9db), Spec: (65,95), defect rate 23/1991 = **1.16 %**

2. FA status:

-Step 1: Check VI and assembly no find out abnormal.

-Step 2: Retest NG fail board : For fail value : (63 ~ 65) can test PASS margin > = 65 dB spec and for fail value < 63 can not test pass FT2, fail value still < 63 dB

-Step 3: Re-assembly 1pcs NG of two full range speakers (PN: 352.00192.005LT) and then retest test FT2 station result:

K18X001.00 Assembly Again Full Range Speaker Result			
Items	Before-reassembly(65,95)dB	After re-assembly(65,95)dB	Result
Re-assembly full range Speaker	61.862497	65.321215	PASS margin but still spec

- Step 4: Swap 2 NG full range speaker (PN: 352.00192.005LT) with good product such as test result:

K18X001.00 Swap Full Range Speaker Verification		
Items	Test value Spec (65, 95)dB	Result
NG Full range speaker + NG Board	61.862497	Fail
OK Full range speaker + NG Board	74.698025	PASS
NG Full range speaker + OK Board	74.37672	PASS
OK Full range speaker + OK Board	69.283169	PASS

➔ Change full range speaker (PN: 352.00192.005LT) can solve Full Range Speaker_Frequency Response –8k Hz check fail issue

3. Conclusion:

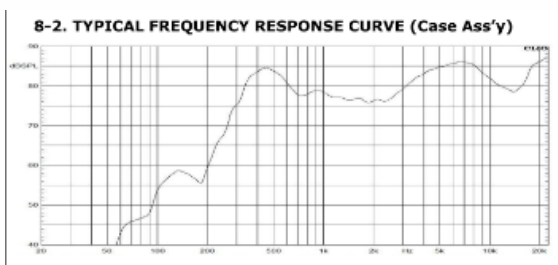
- For fail value (63 ~ 65) dB : Retest FT2 again , Q'ty : 5pcs => PASS value ~65.54dB

- For fail value 61 ~ 63 dB : Re-assembly full range speaker , Q'ty :5pcs => PASS value ~ (65.5, 68)dB

- For fail value < 61 dB : Swap full range speaker , Q'ty : 13pcs => PASS value ~70dB

TOP1: Full Range Speaker_Frequency Response – 8k Hz Check Fail-2

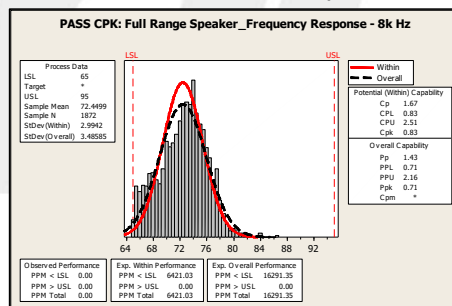
4. Check datasheet of full range speaker, PN: 352.00192.005LT, Des: SPEAKER 4+-0.6ohm 79+-3dB 8~15W GP



→ Check datasheet of full range: when case assembly have power = 85dB at frequency 8K Hz

5. Full Range Speaker_Frequency Response – 8k Hz CPK report:

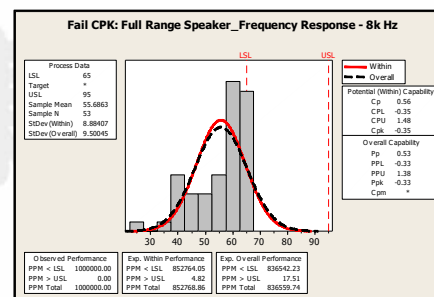
- Check CPK PASS and Fail report of Full Range Speaker_Frequency Response – 8k Hz:



For Pass CPK , CPK = 0.83. level C. Need RD/ TE/ PE/ ME/ Sound bar vendor improvement, average pass value : 72db is less 13 db than datasheet = 85db

Summary:

- Change other full range speaker (PN: 352.00192.005LT) can solve this issue but we can not confirm material issue or not
- Suggest change spec from (65, 95)dB to (54, 90)dB to improve this issue



For Fail CPK data , CPK = -0.35 . Fail value from 27 dB to 64.9db

Top 2: Woofer Speaker_Air Leakage Test_Pushing - 550 Hz Check Fail-1

1. Background and fail symptom:

- Woofer Speaker_Air Leakage Test_Pushing - 550 Hz check fail with defect rate: 15/1991pcs = **0.75 %**.
- This item has add at this build_2K MP (last build_1K MP it is not check)
- Woofer Speaker_Air Leakage Test_Pushing - 550 Hz check fail higher than spec value > - 67db, Spec (-110 ,-67)db

2. FA status:

Step 1: Check VI and assembly no find out any abnormal → Can not check air leakage by hand, naked eye



Step 2: Retest NG fail board(fail value =-62.28db) => Fail with value ~-62db → can not test PASS at FT2 station

Step 3: Re-assembly NG board and retest FT2 result:

Re-assembly for Woofer Speaker_Air Leakage Test_Pushing - 550 Hz check fail, spec (-110, -67)			
Sample	Before Re-assembly	After Re-assembly	Result
NG1	-62.282691	-71.619899	PASS
NG2	-60.543392	-82.145017	PASS
NG3	-65.770688	-74.061681	PASS
NG4	-66.906457	-76.131731	PASS
NG5	-65.825319	-72.018625	PASS

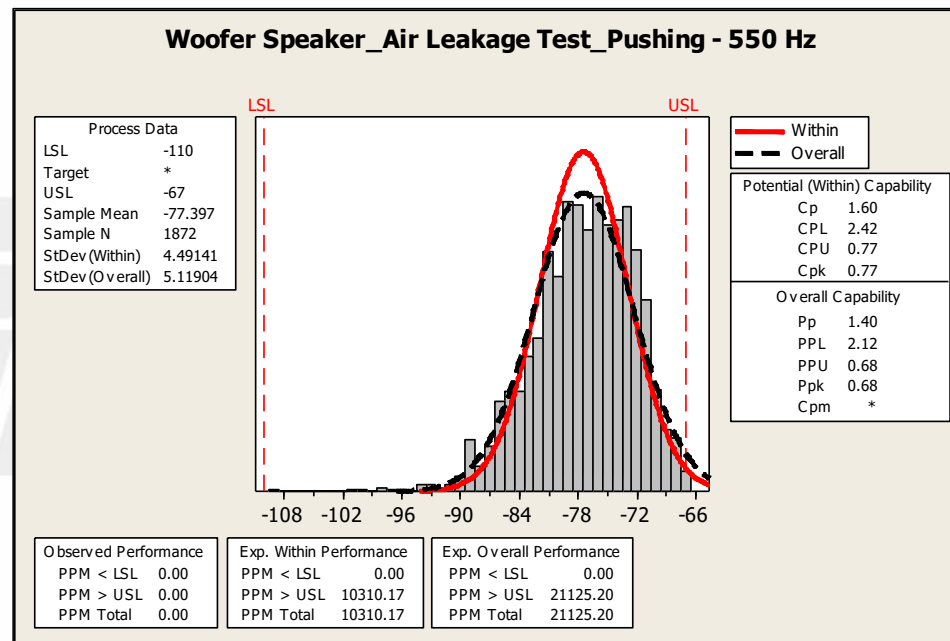
3. Conclusion:

→ Re-assembly can test PASS normally

Top2: Woofer Speaker_Air Leakage Test_Pushing - 550 Hz Check Fail-2

4. Woofer Speaker_Air Leakage Test_Pushing - 550 Hz CPK value

- Check CPK value of Woofer Speaker_Air Leakage Test_Pushing - 550 Hz



Summary:

- CPK value = 0.77. level C. Need RD/ TE/ PE/ ME/ Sound bar vendor improvement, average pass value : -77.34db is higher than average of spec (-110, -67) = 11.16db
- Suggest change spec from (-110, -67)dB to (-99, -56)dB to improve this issue

Next step for 8KHz FR test and air leakage test

Next step for 8KHz FR test:

1. According to cpk, the volume seems too low and need to change ALT volume table to increase SPL on FATP chamber.
2. The average value of 8KHz should be shifted to middle between LSL and USL as 80dBSPL.
3. Not allow FATP to change 8KHz FR test spec as 56~90dB[spec: 65~95dBSPL].
4. Next step will verify ALT volume table to test FW.

Next step for air leakage test:

1. As the fail symptoms are pushing(little gap) and top cover not assembly well issues.
2. As before verified, power spectrum and 850Hz solution can screen these symptoms.
3. Not allow FATP to change spec -99~-56dB [spec: -110~-67dB] @550Hz.



Foxconn Industrial Internet
富士康工业互联网

THANKS