

BFX-UA300

Hardware Unit Test Report

4 *MIC Test

Hardware version	FW version	Sample No.
V025	Google TV	S/N: YUX07V6-2154002568-02S2N

Additional test: 2020/11/20

SPONGE_MIC_SILICON_140X24X0D5T rubber

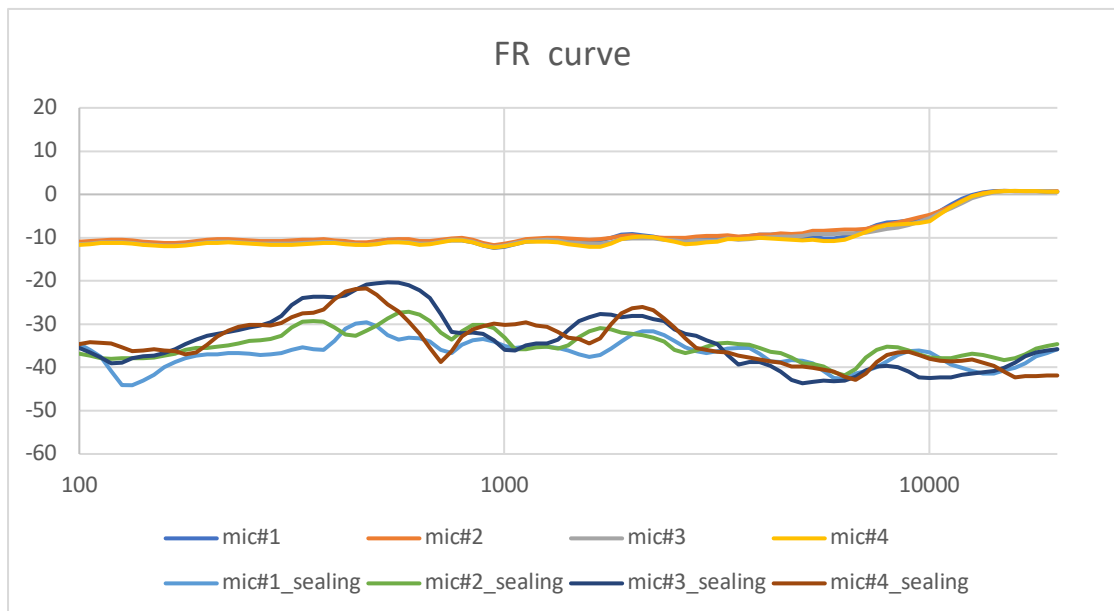
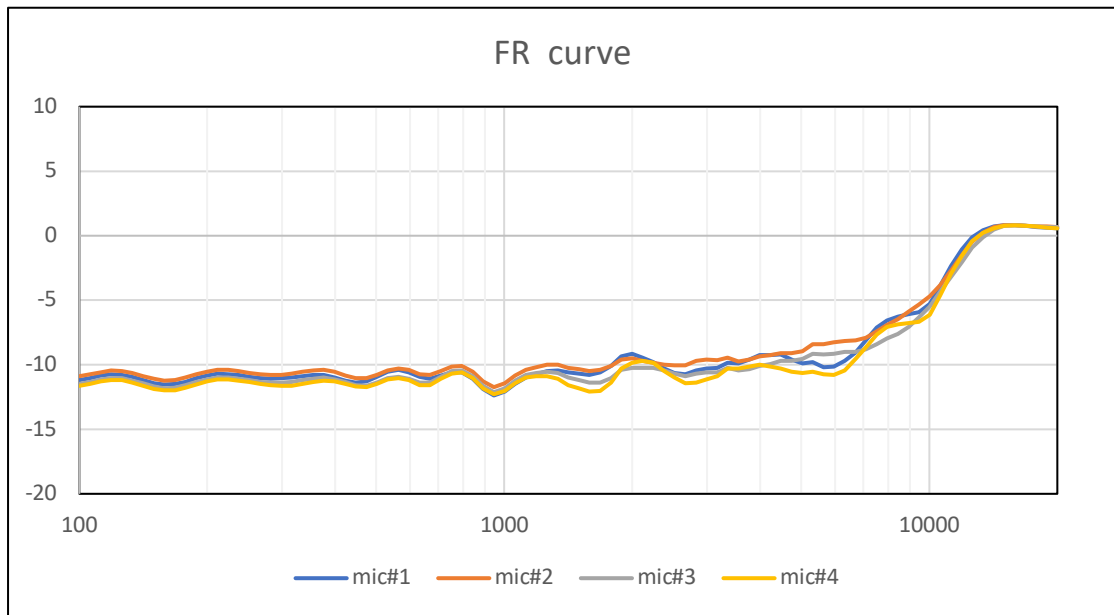
--0.7mm / 0.9mm / 1.1mm

SILICON_MIC-UA300 rubber

--New rubber is for fit MIC board.

For PONGE_MIC_SILICON_140X24X0D5T rubber, vendor suggests us to add adhesive at top and bottom side to test. But the MIC board is broken and no further bottom side adhesive test result. But vendor suggests to add adhesive at bottom side will be better than top side. The results will verify on DVT build.

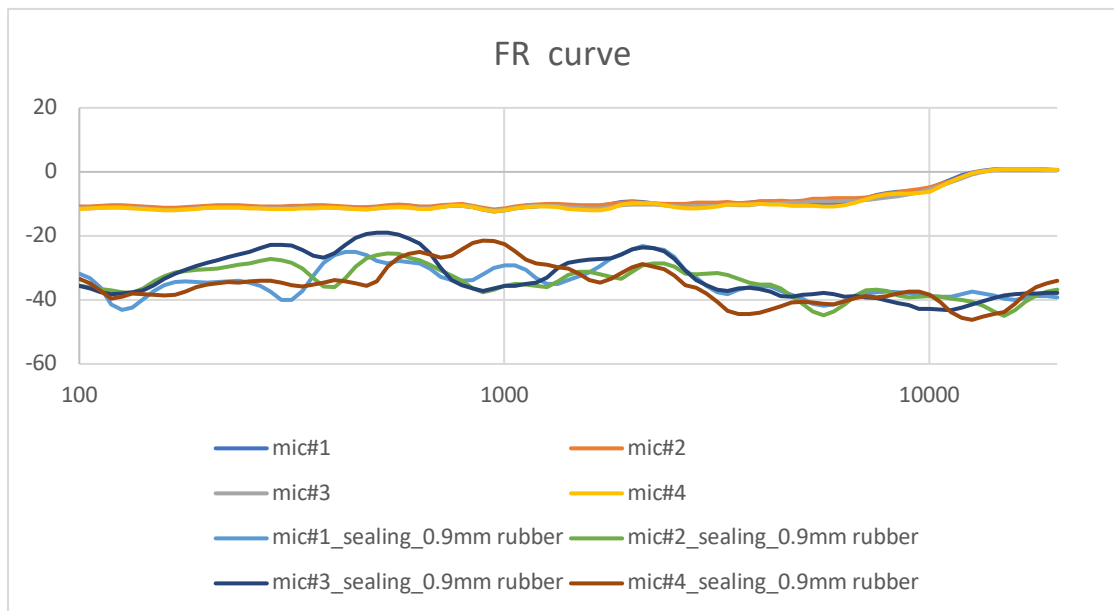
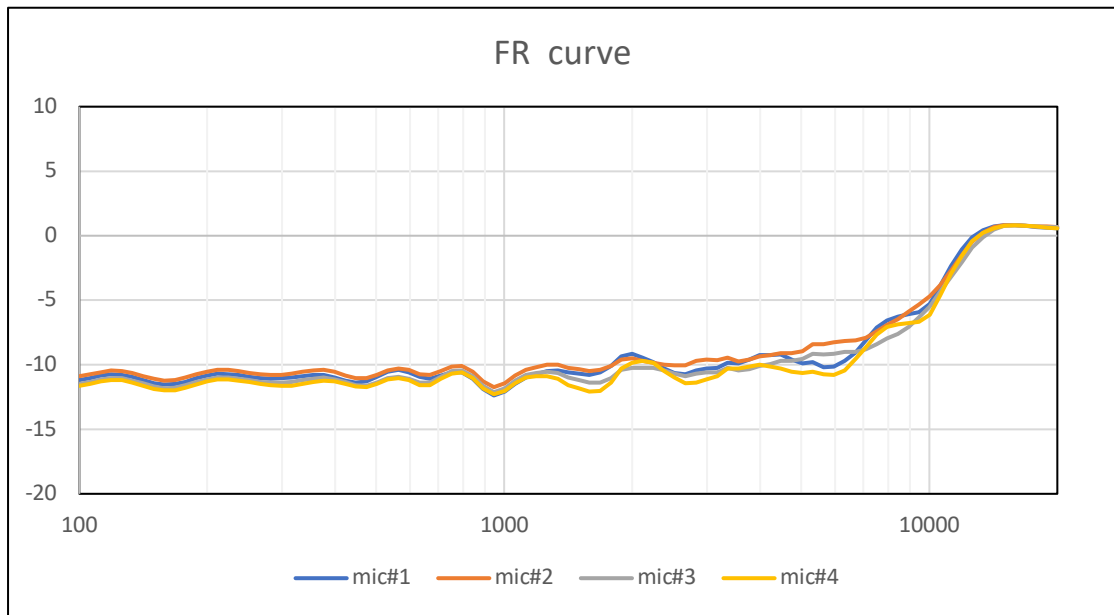
0.7 mm rubber w/o adhesive:



Note:

Mic#3 and MIC#4 maybe not assemble well or mockup sample has some deformation to cause not sealing well.

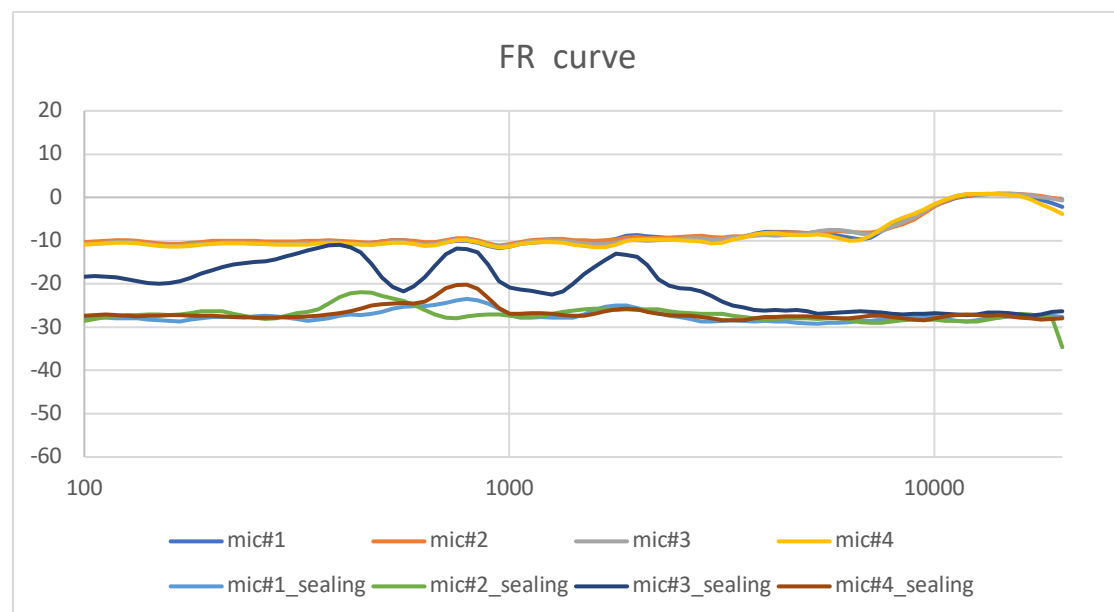
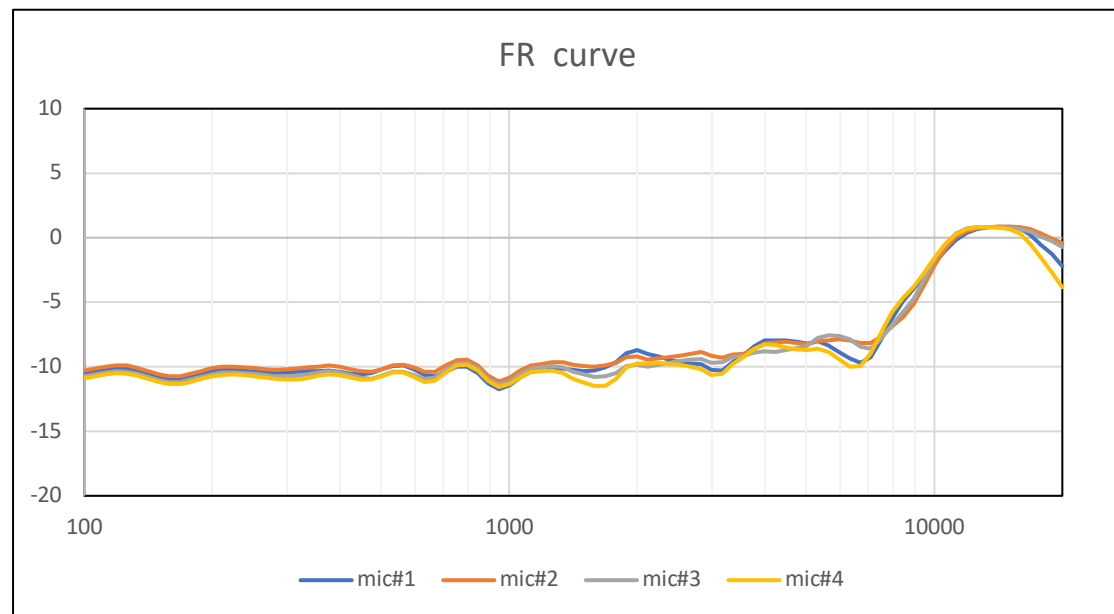
0.9 mm rubber w/o adhesive:



Note:

0.9mm rubber is not better than 0.7mm rubber.

0.7 mm rubber w/ adhesive at top side:



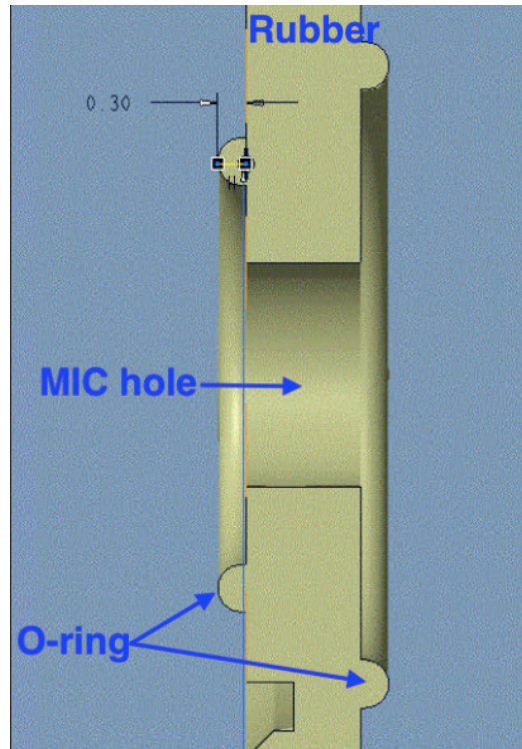
Note:

Mic#3 maybe not assemble well or mockup sample has some deformation to cause not sealing well..

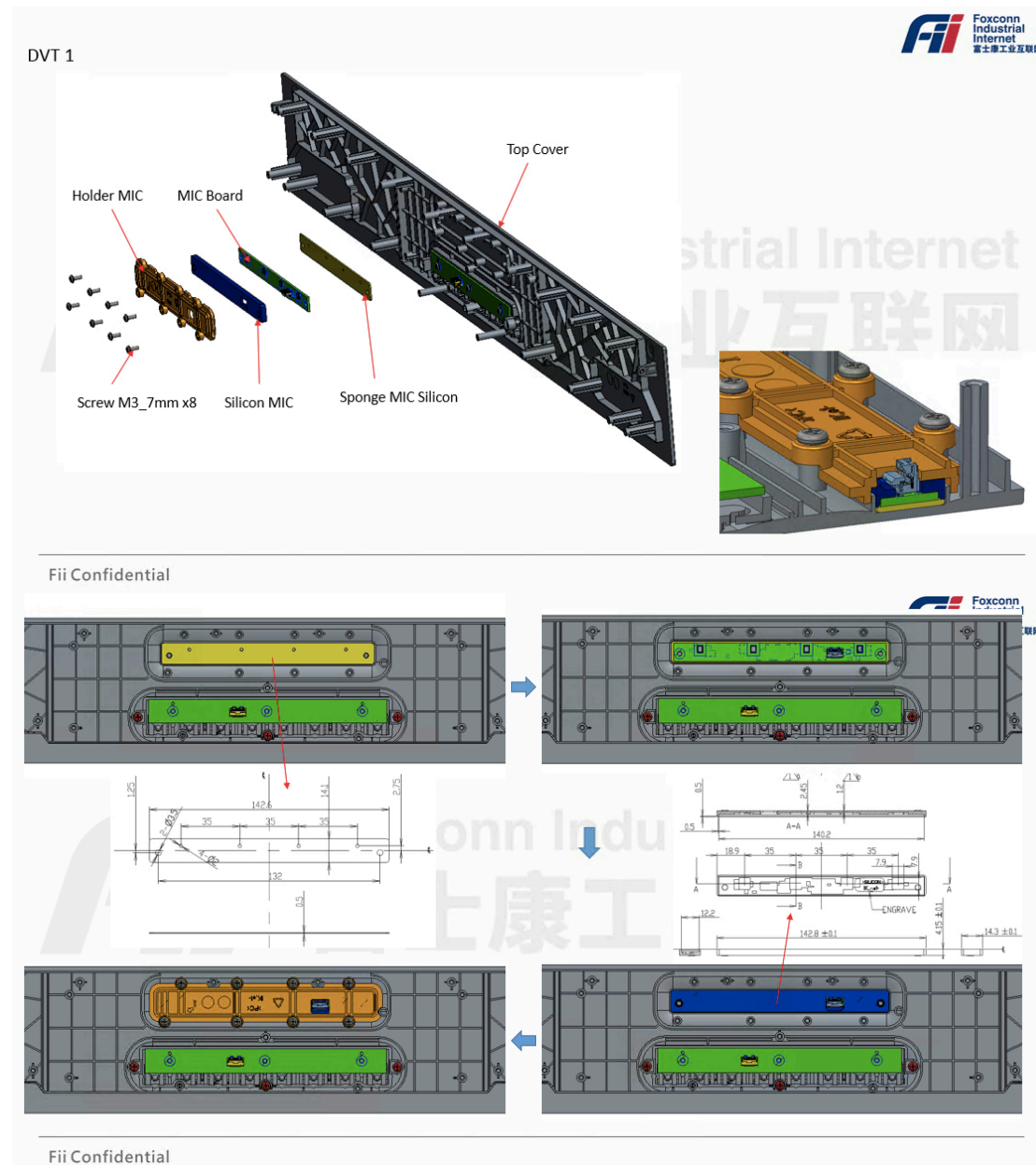
The adhesive at top side of rubber seems better than w/o adhesive. But bottom side test result is not completed due to MIC board broken. But vendor suggests to test with hard tooling on DVT build and also can test gasket if that can help to seal the mic board.

Summary:

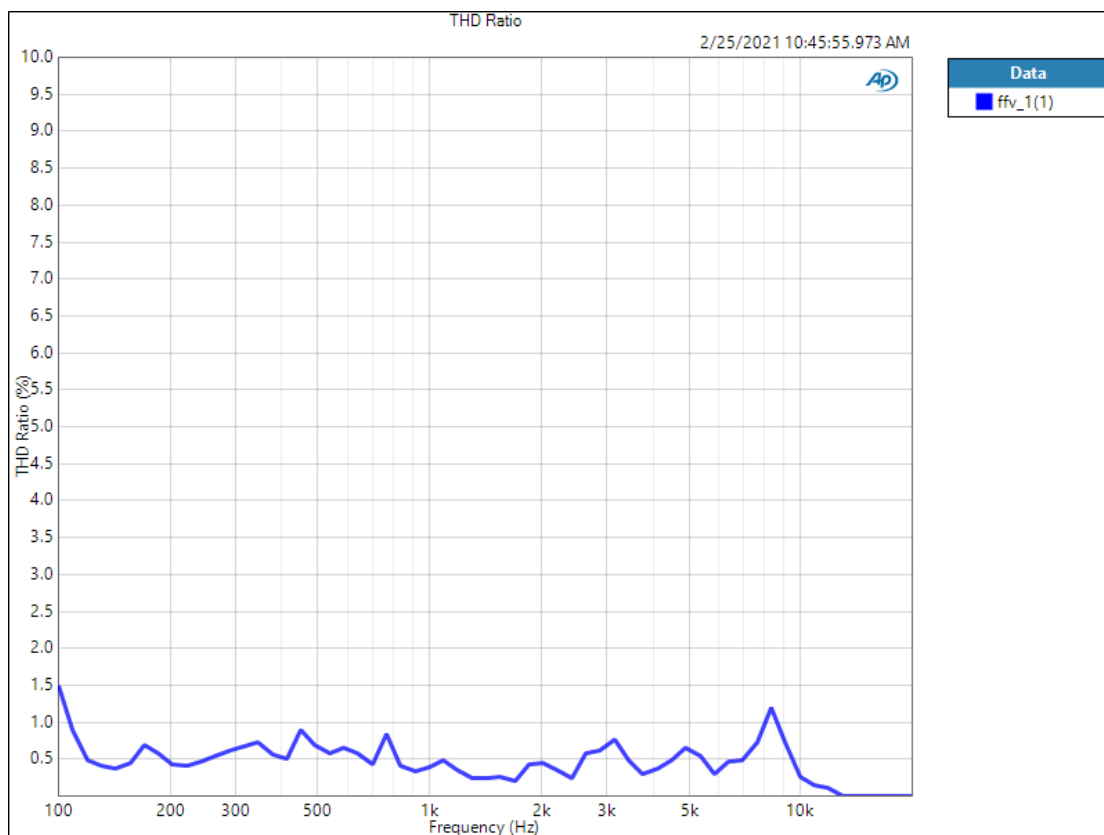
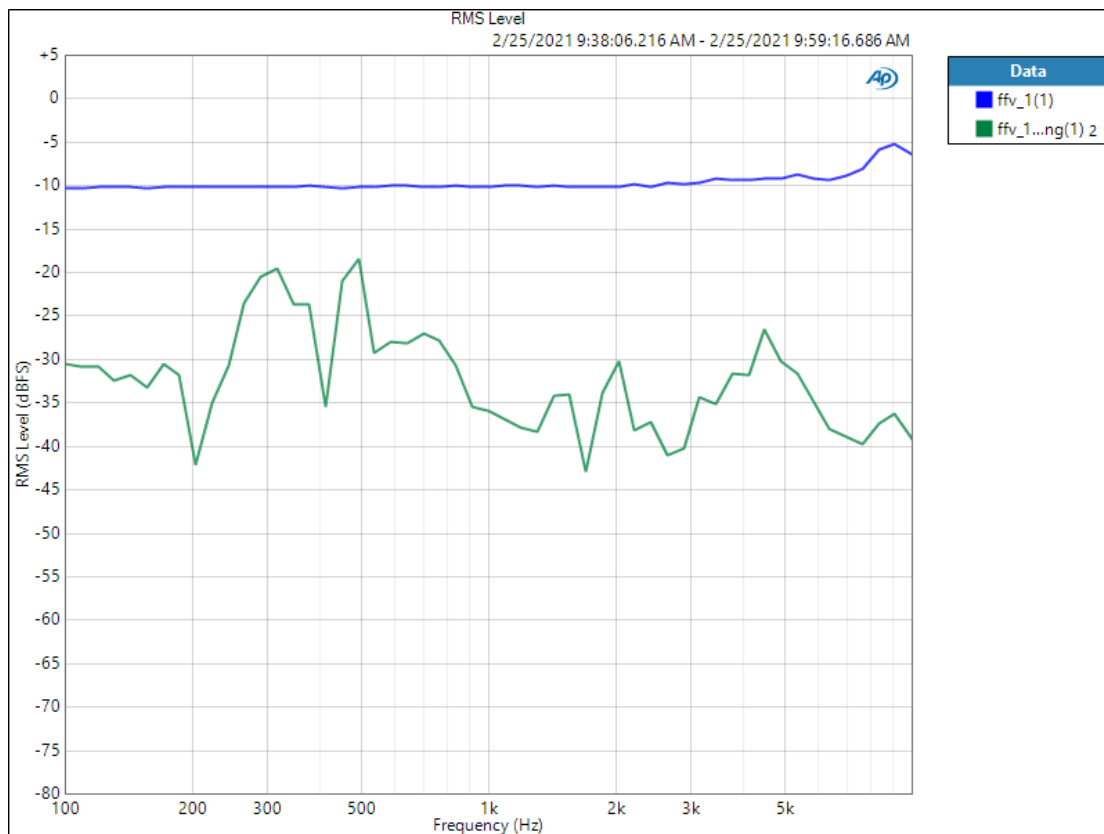
1. *SPONGE_MIC_SILICON_140X24X0D5T* rubber 0.7mm is good to use on DVT build, but we would like to try 0.5mm rubber which is respect to be better than 0.7mm.
2. The DVT build can use *SPONGE_MIC_SILICON_140X24X0D5T* rubber 0.7mm+ *SILICON_MIC_UA300* rubber w/o adhesive. But we can verify more other solutions such as adhesive at bottom side of 0.7mm and 0.5mm, and add O-Ring at mic hole with 0.3mm thickness to have better sealing.



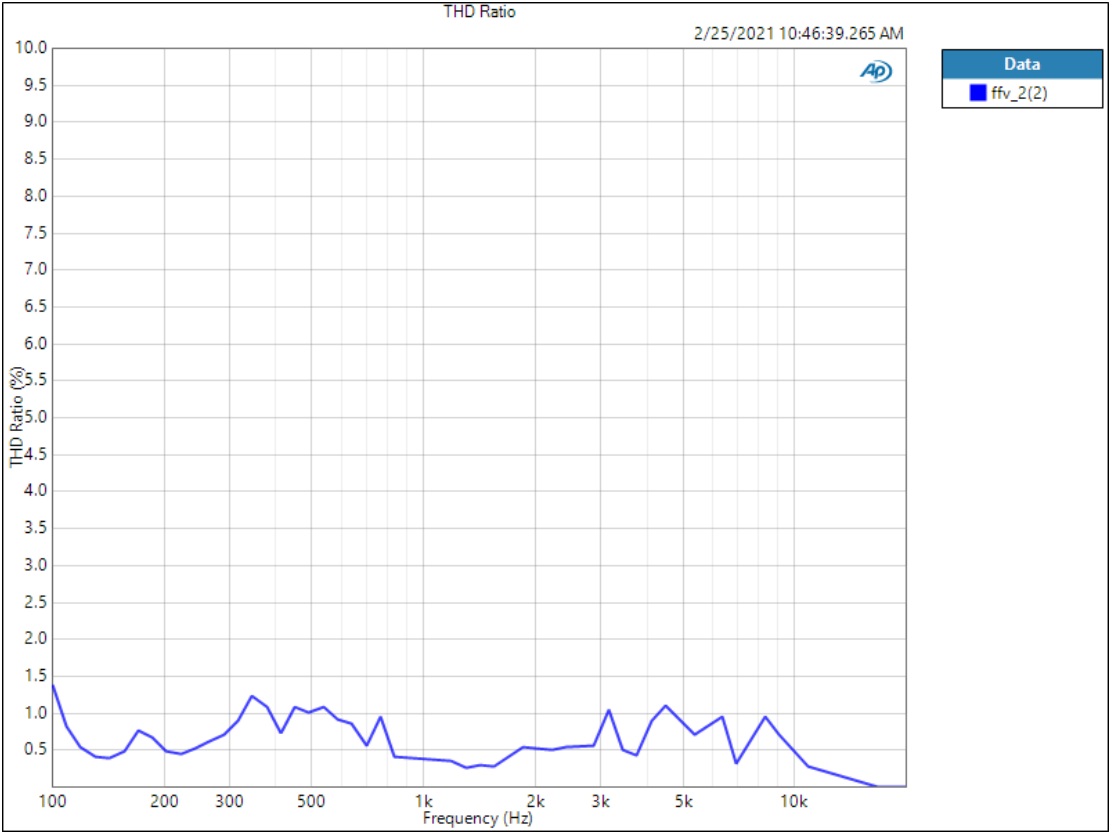
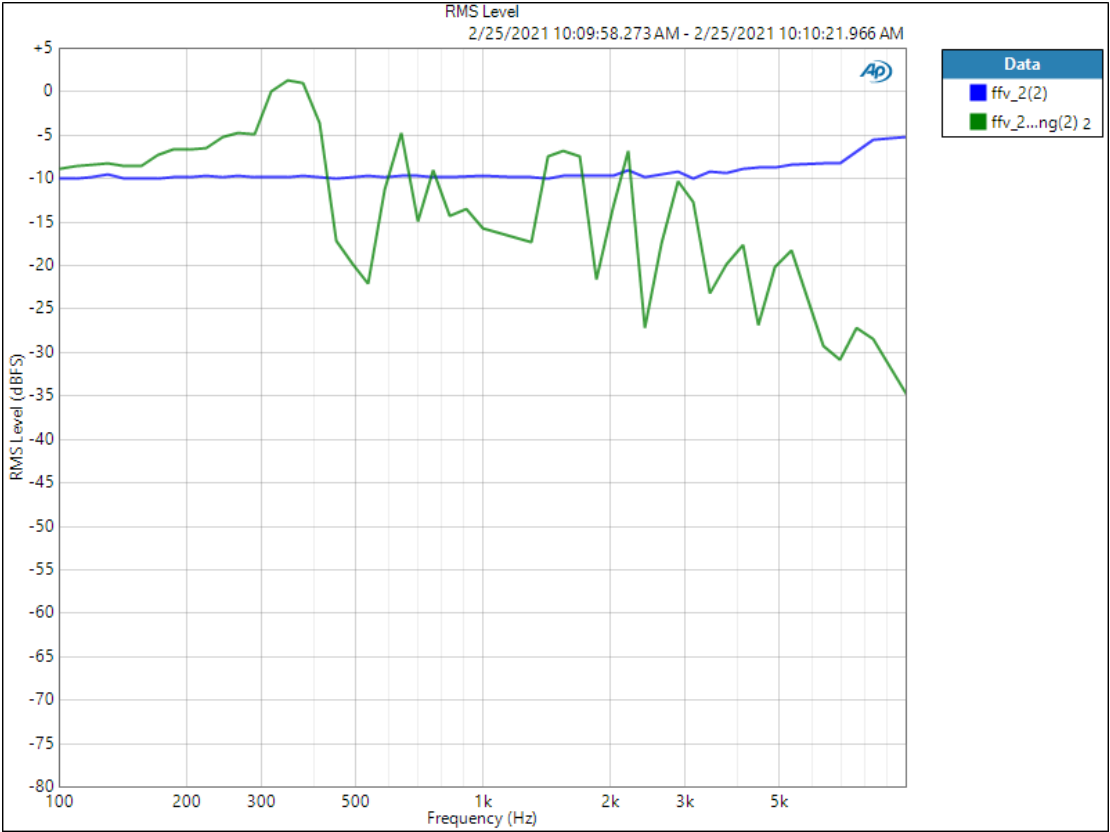
--New rubber is for fit MIC board, 4.15mm.



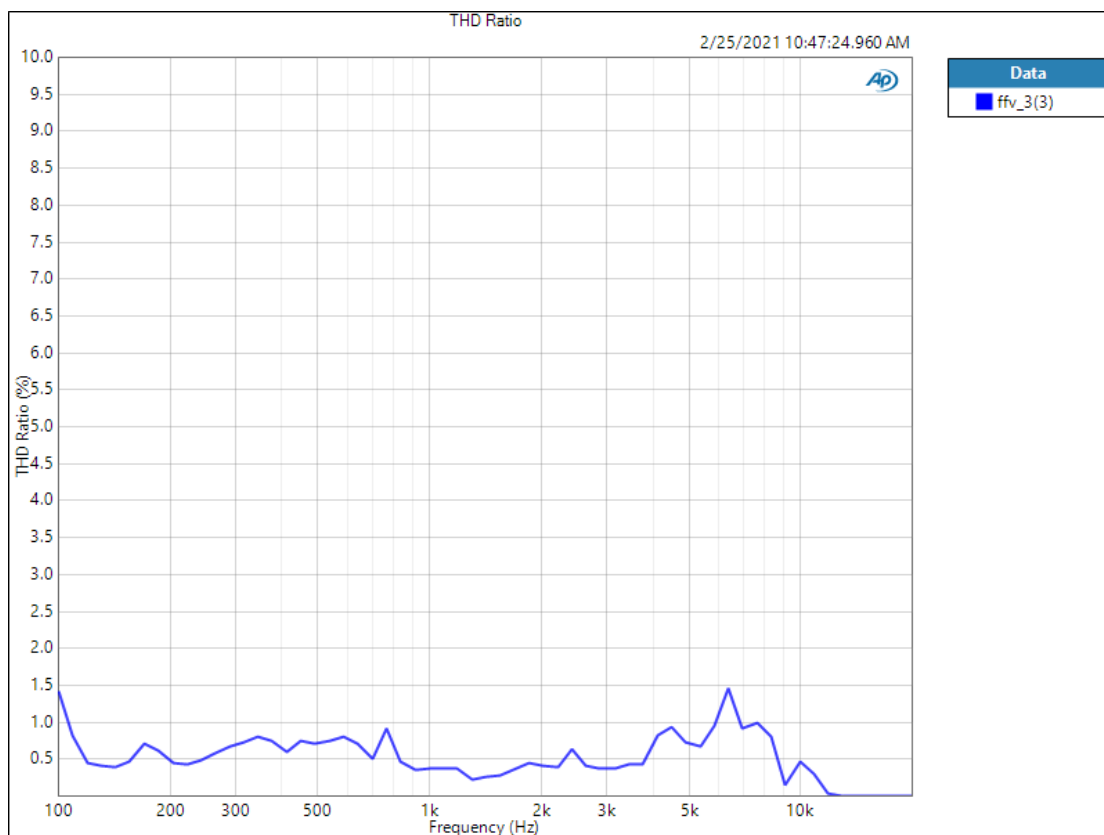
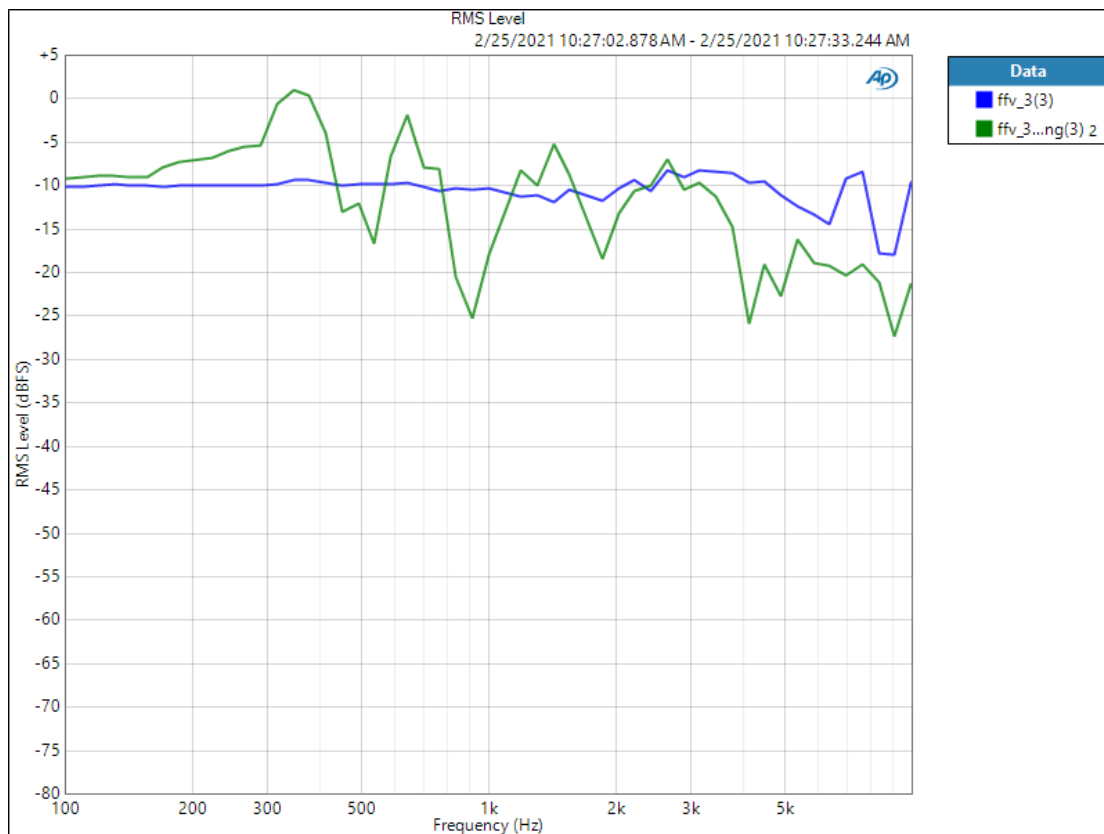
MIC1: fail, over -25dB



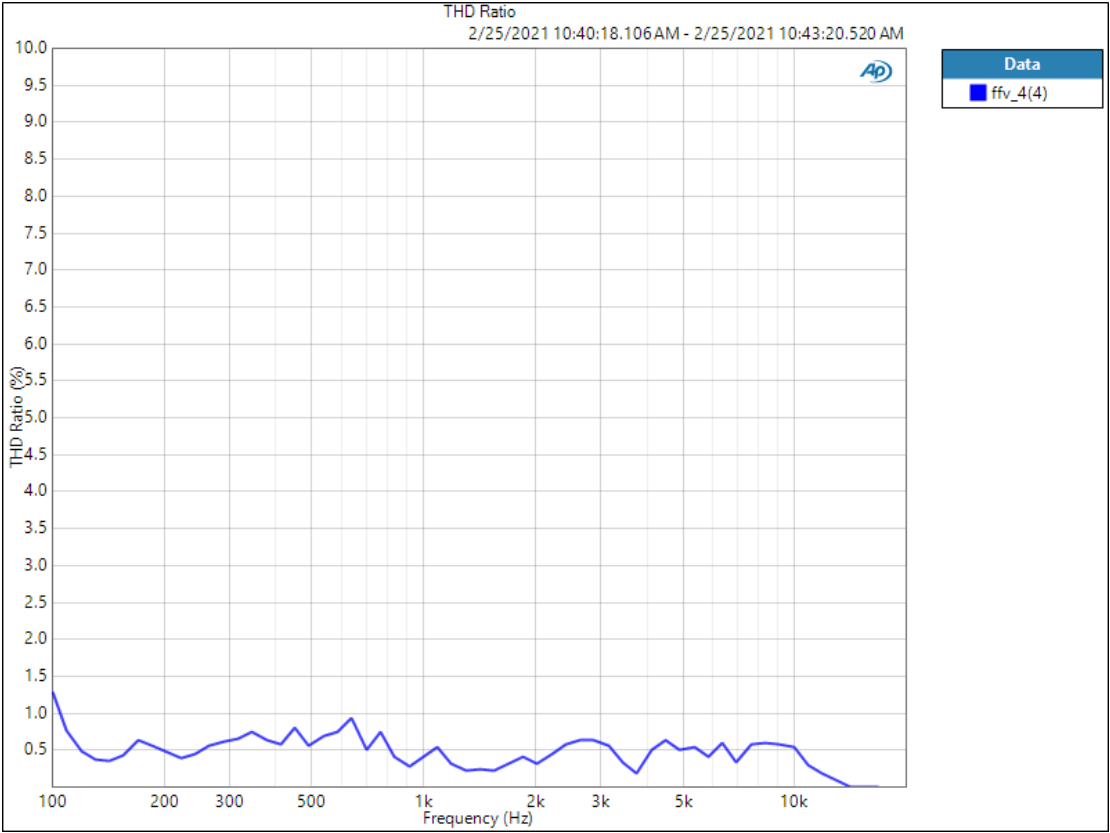
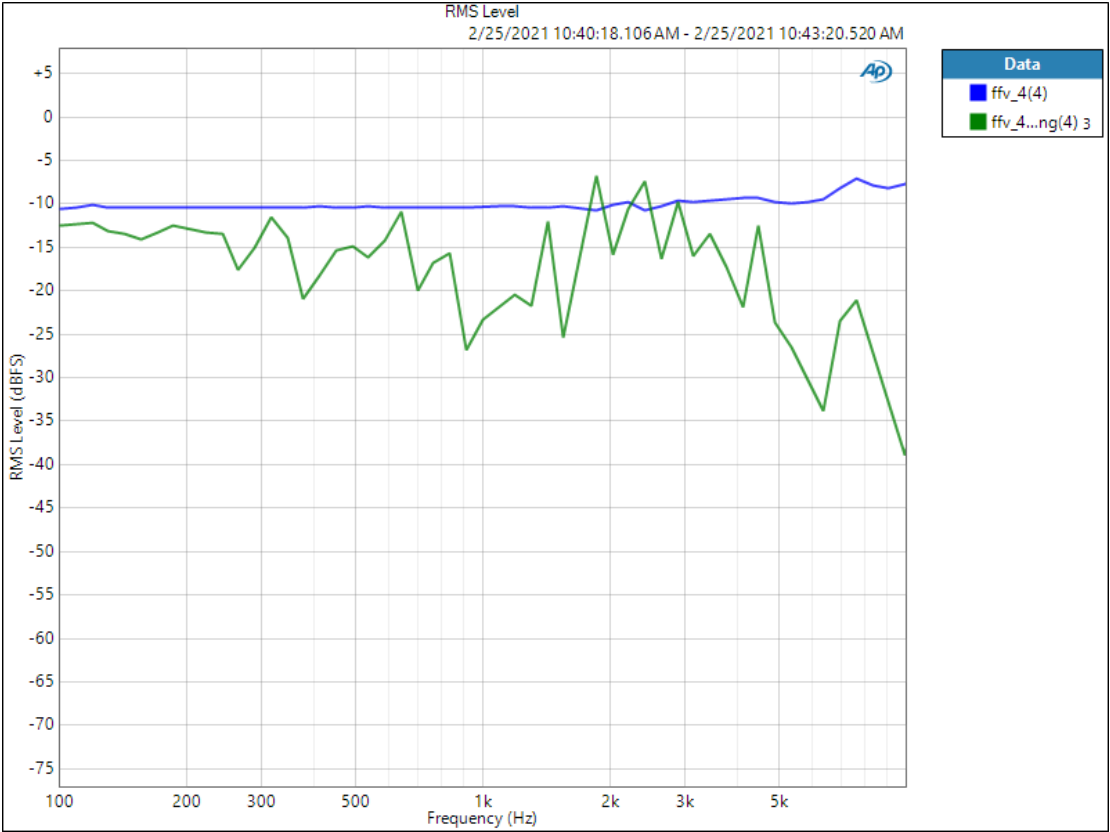
MIC2: fail over -25dB and no sealing effect



MIC3: fail over -25dB and no sealing effect



MIC4: fail over -25dB and no sealing effect



Summary:

1. The DVT sample for far field mic sealing seems NG.

Suspect:

1. Assembly issue: Need FATP to verify.
 2. MIC soldering ring NG: See picture 1.
 3. Need adhesive between top cover and SPONGE_MIC_SILICON rubber
 4. MIC hole is different for EVT and DVT samples: See picture 2.
2. Wrong rubber pad(*SILICON_MIC_UA300* rubbe)
The rubber pad has no any isolation for MIC2 and MIC3, and there is a open hole around the FFC connector. Also MIC1 and MIC4 have no better isolation effect.



3. SPONGE_MIC_SILICON rubber is without O-ring.
ME suggested on EVT build but the DVT build still has no O-ring on SPONGE_MIC_SILICON rubber.



Picture 1. Soldering ring is NG.



Picture 2. Far field mic hole on top cover.

Test DVT sample for far field MIC sealing issue: 2021/3/8

SPONGE_MIC_SILICON_140X24X0D5T rubber

--0.5mm

SILICON_MIC_UA300 rubber

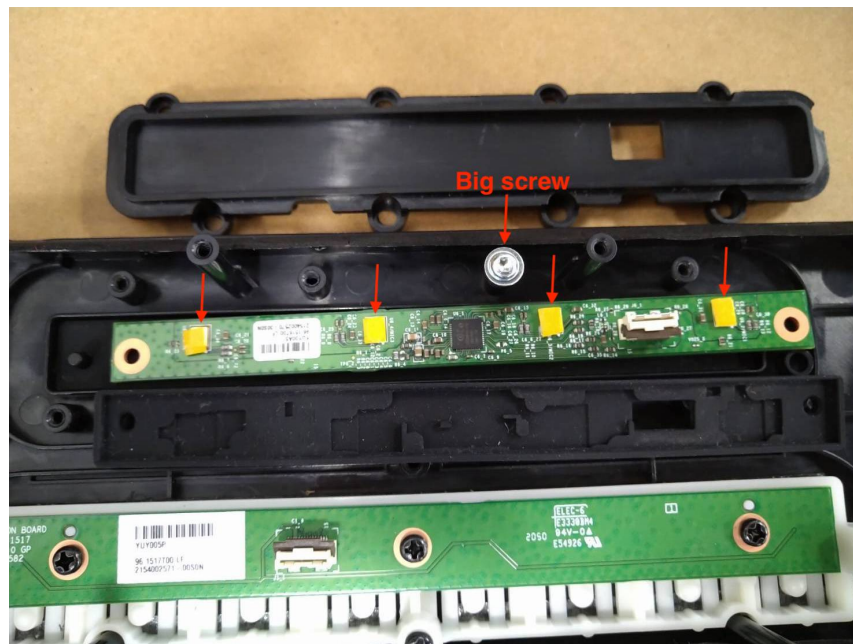
--New rubber is for fit MIC board.

Due to 2021/2/25 test fail, we have some solutions for mic sealing issue.

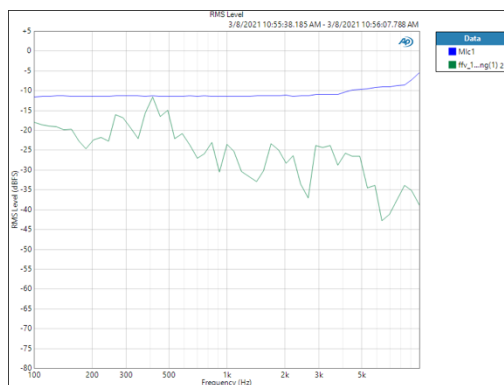
1. Paste a material to fill the space between rubber and MIC component. And change big screw for higher pressure for sealing, see picture 3 and 4.
2. Use clay to fill around the FFC connector for isolation, see picture 5 and 6.
3. Isolating MIC2 and MIC3, see picture 5 and 7.
4. Fill the MIC component for isolation, see picture 8 and 9.
5. Duplicate to second top cover, see picture 10.
6. Paste the sponge(1.1mm) adhesive on mic hole, see picture 11 and 12.

Test results:

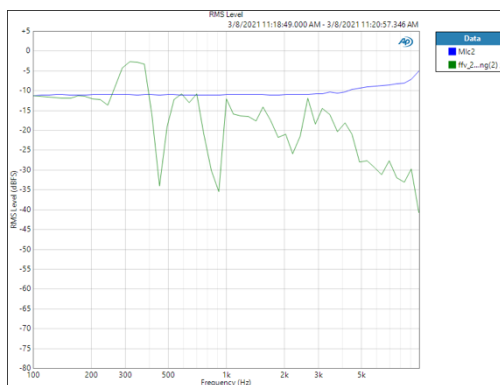
Solution1:



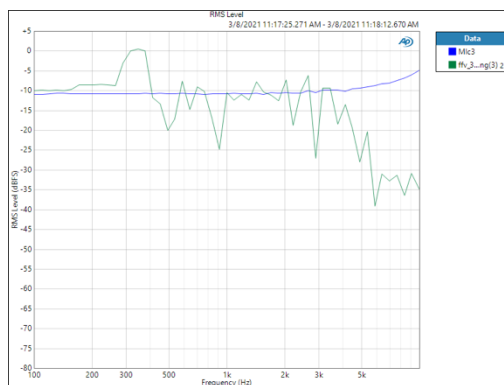
Picture 3. Fill the MIC component, and change big screw.



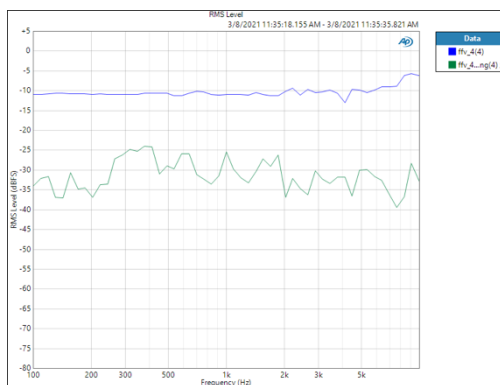
MIC1



MIC2



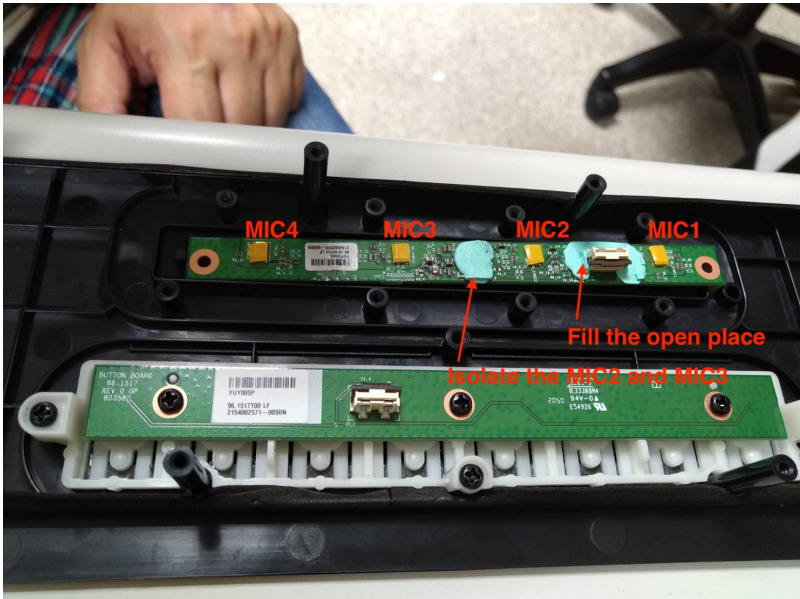
MIC3



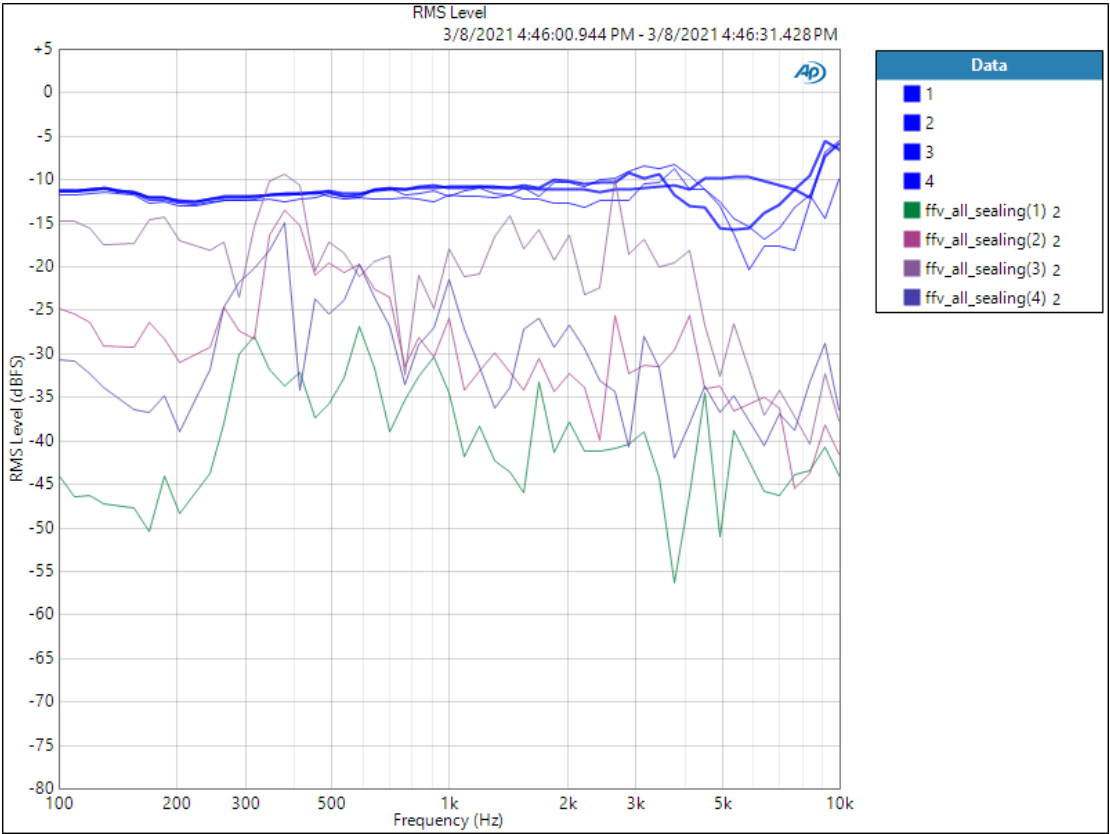
MIC4

Picture 4, MIC1~MIC4 sealing test results.

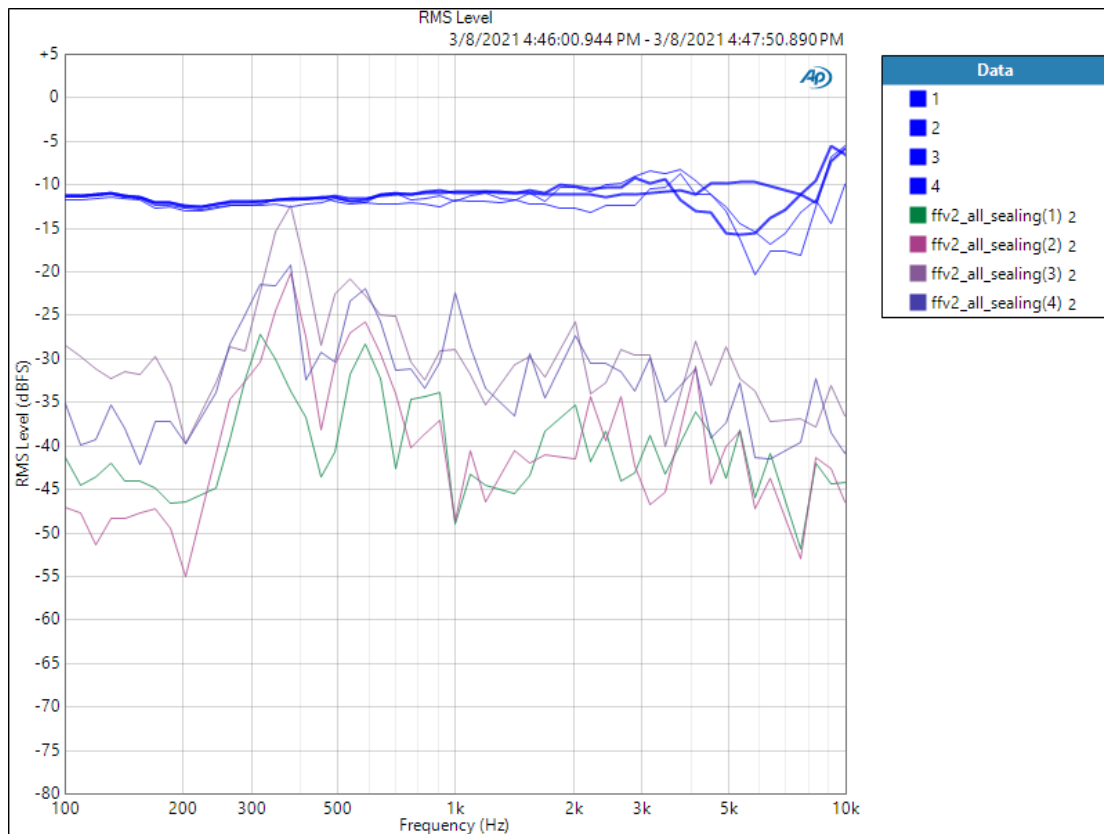
Solution2 and 3:



Picture 5. Fill the open place and isolate the MIC2/MIC3.

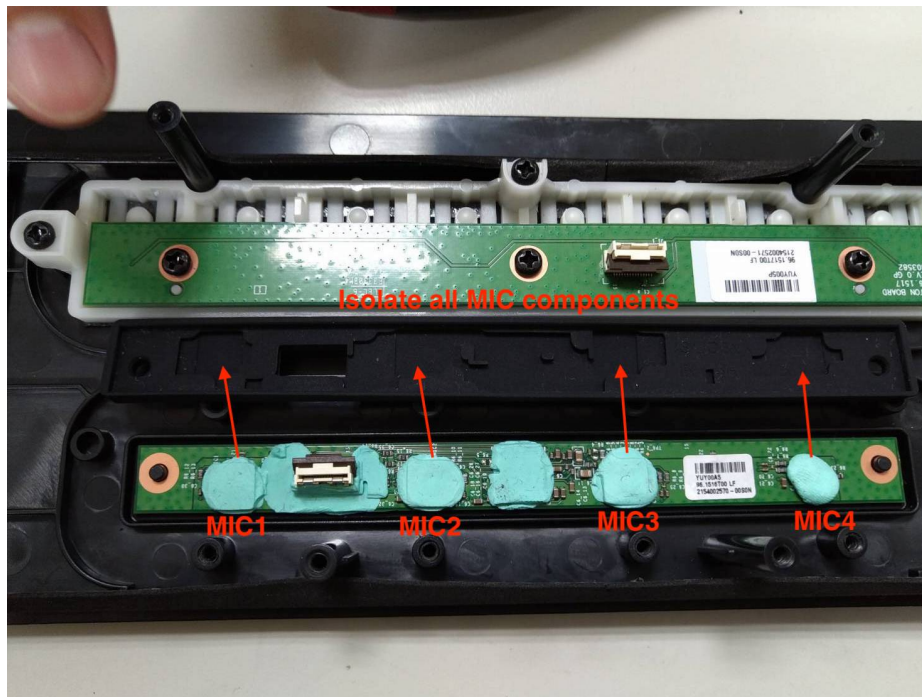


Picture 6. Fill the open place around FFC connector.

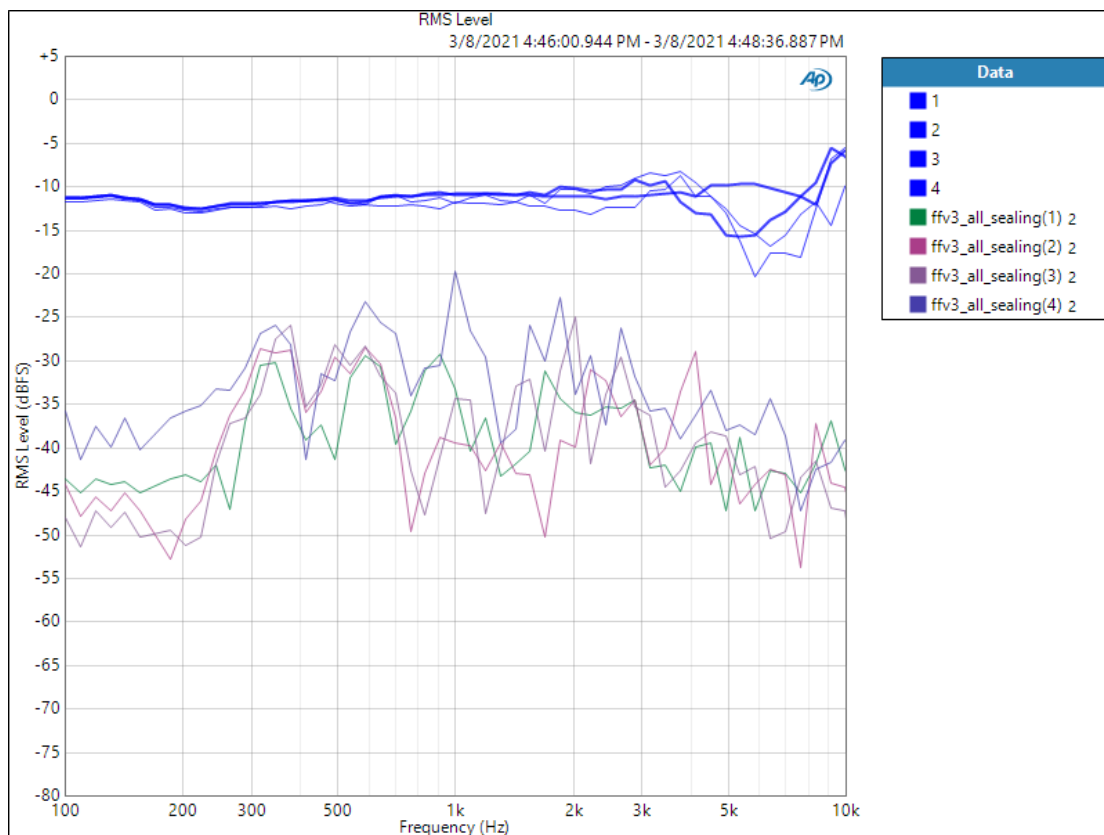


Picture 7. IsoLat MIC2 and MIC3.

Solution 4:



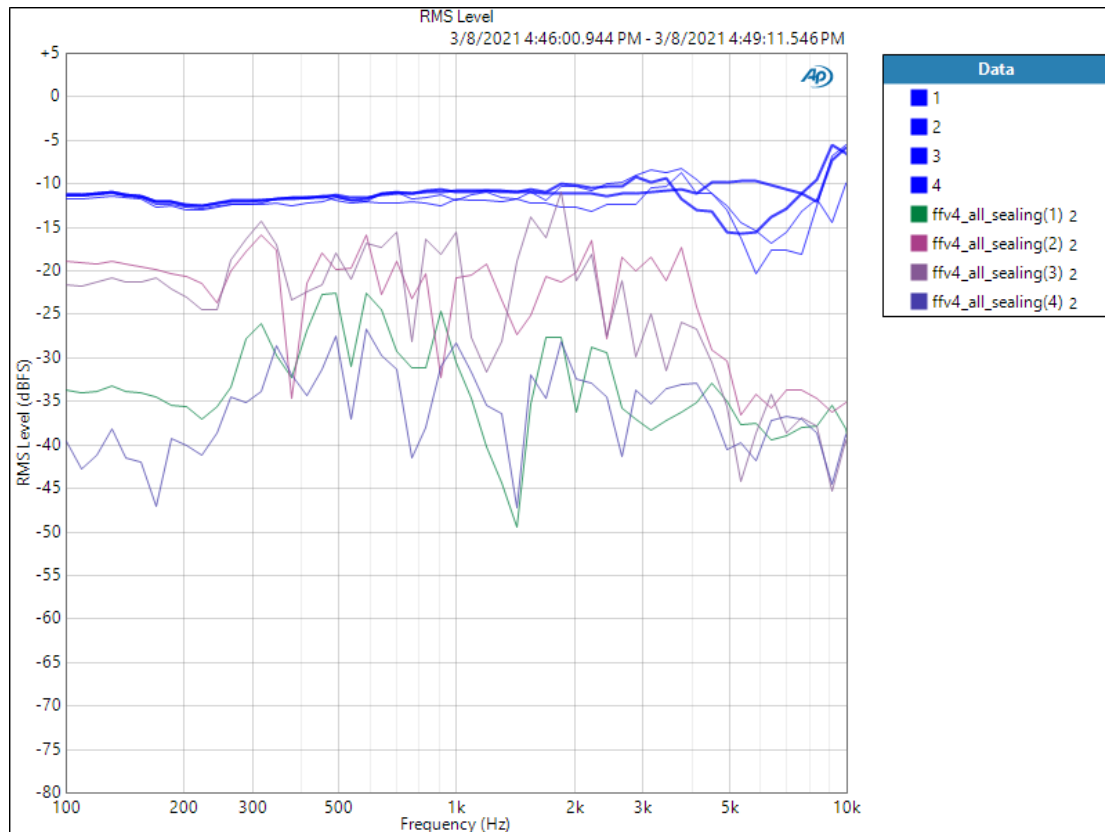
Picture 8. Isolate all MIC components.



Picture 9. Sealing seems good.

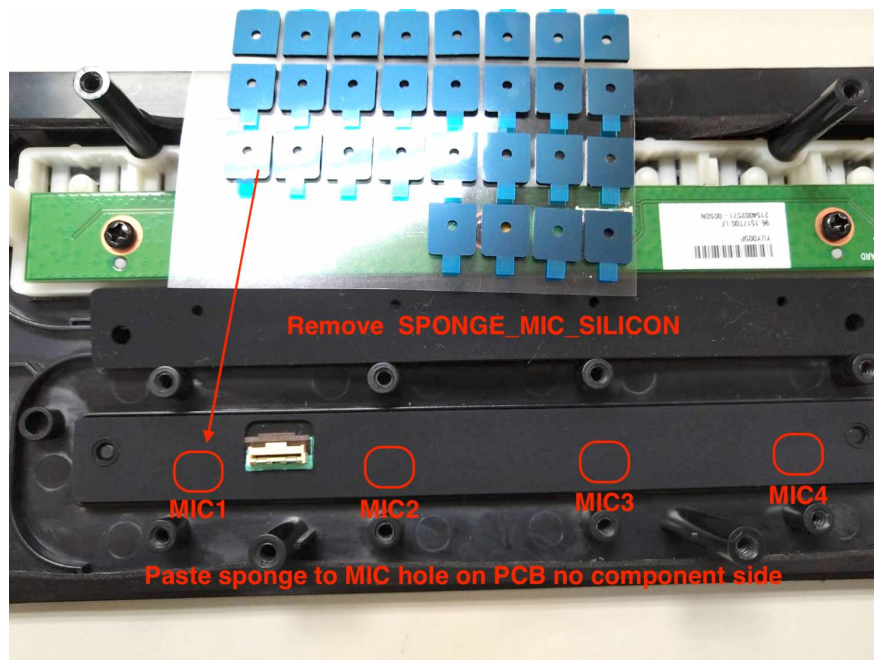
Solution5:

Duplicate to another top cover for FFV mic sealing, but seems has some assembly issue. If ignore the assembly issue, the isolation for all mic components seems correct trend.

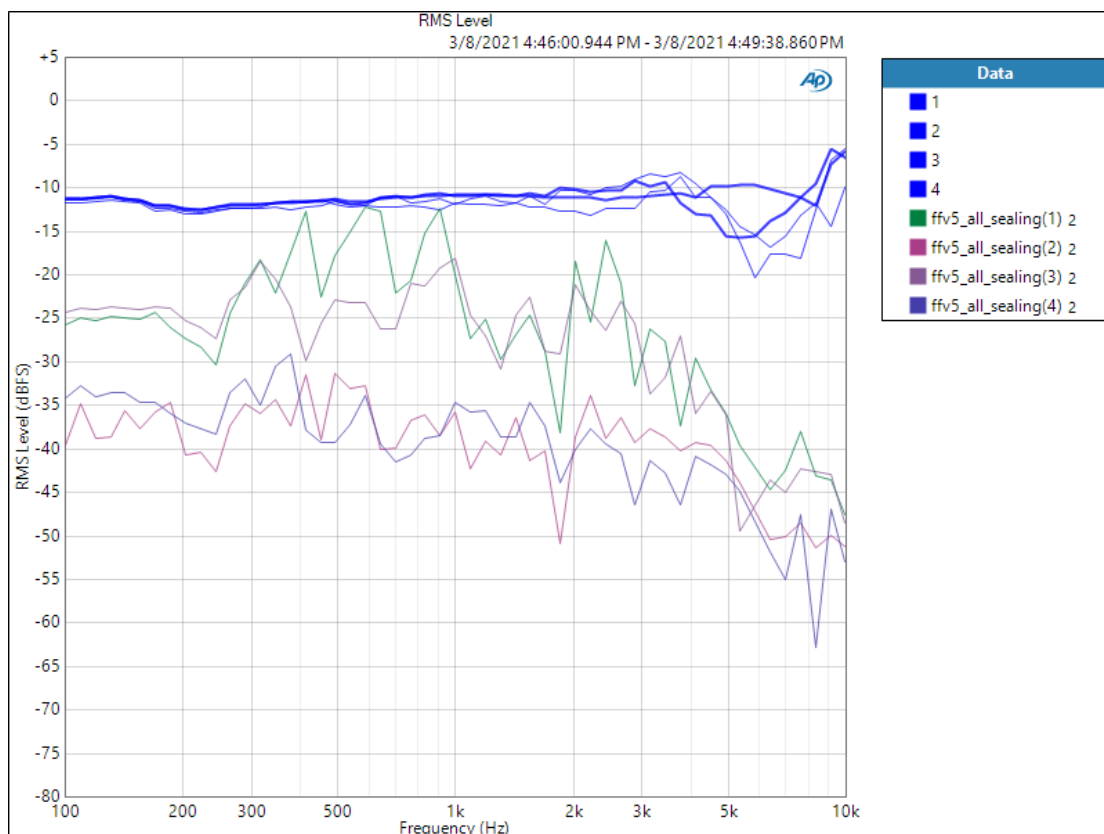


Picture 10. Duplicate to another top cover.

Solution6:



Picture 11. Paste sponge to mic hole with 1.1 thickness.



Picture 12. The sealing curve seems more smooth but sealing is fail with wrong thickness.

Summary:

1. Wrong rubber pad has NG sealing effect.
MIC board on DVT build had move caps and resistors out of mic components for 2mm. This design change suggested by ME, but the rubber pad is still wrong without isolation effect.
2. Isolate MIC for sealing solution, seems works.
Simulate isolation and the results seem ok. But the results are marge.
3. Also needs to add adhesive on both sides of *SPONGE_MIC_SILICON* rubber.
On 2020/11/20, we tested on Knowles lab, and Knowles suggested to paste adhesive on top cover side for better sealing effect.
4. Add O-Ring on the MIC hole of *SPONGE_MIC_SILICON* rubber suggests by ME, but needs to consider the assembly steps. This suggestion needs ME to estimate.