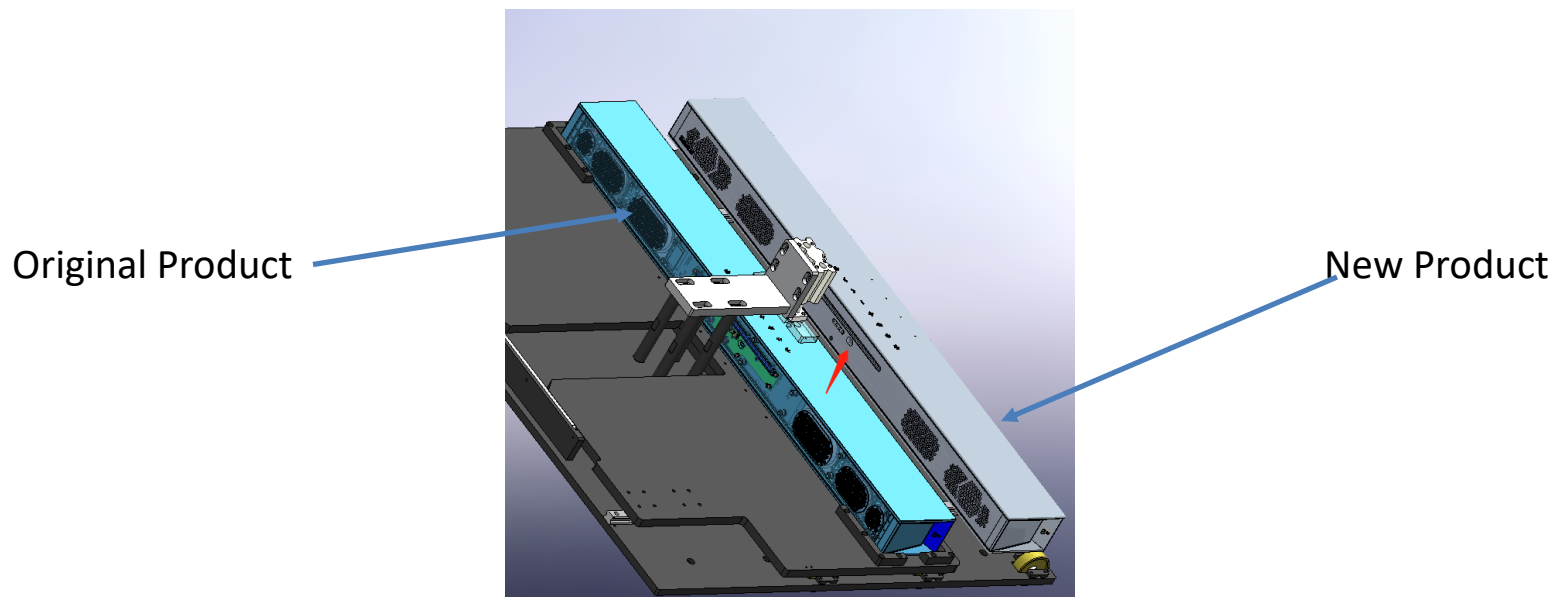


OTT AI Soundbar Tester Modification Proposal

2021.6.6

Objective:

Modify original AI Sound Bar Acoustic Tester to new version of product.



Version	Change	Owner	Date
V01	Initial	Stanley Wong	2021.3.31
v02	Change fixture design concept	Stanley Wong	2021.4.6

Assumptions

- Assuming 4 SPK + 4 MIC to be tested
- The proposal will use 1 share mouth simulator to test 4 MIC and collecting audio signal in parallel, the audio signal will be difference to each MIC, the test results probably will be difference with product specification, the test limits definition will base on the GRR & CPK data from golden samples test results.
- The proposal will use 4 MIC to test 4 SPK separately and assuming each SPK can be controlled via ADB command separately.
- Audio chamber will operate manually.

Test Structure Proposal

Test Coverage

- MIC frequency response
- MIC Harmonic Distortion
- MIC sensitivity
- MIC isolation test (1K)
- SPK frequency response
- SPK Harmonic Distortion
- SPK Rub & Buzz
- SPK R/L Balance

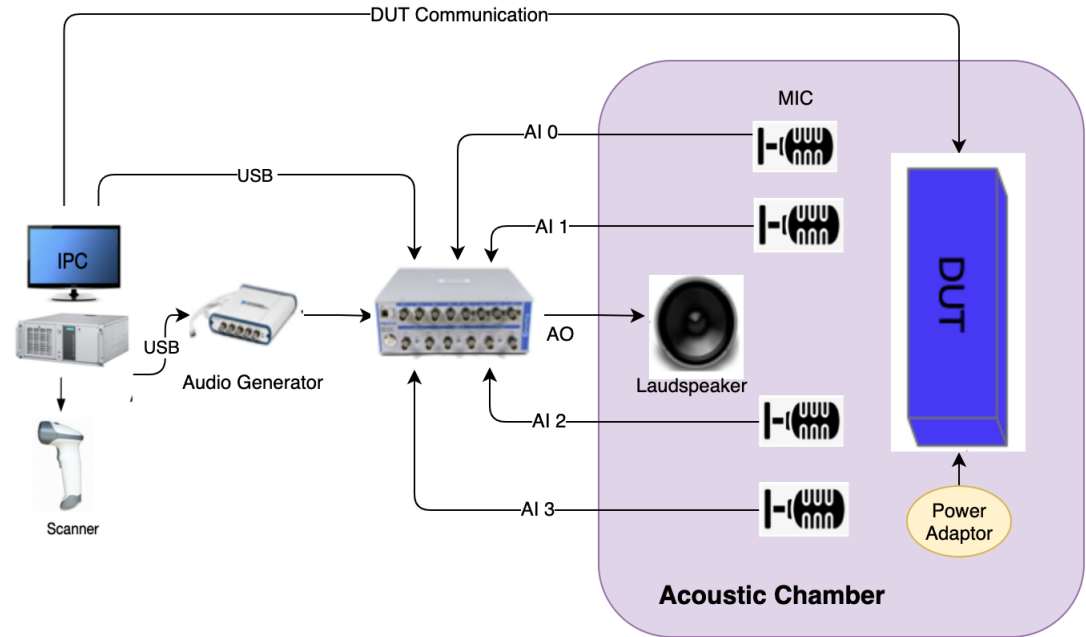
Proposed Test Equipment

- IPC with monitor, Keyboard & Mouse
- barcode scanner – Honeywell 1900
- DC Power adaptor –Customer consign
- Audio Generator – NI USB-4431
- Loudspeaker -- Customize
- Audio amplifier & Analyzer – MegaSig PM 6143
- MIC – GRAS 40 pp * 4
- Acoustic Chamber
- Test Fixture
- Test Control PCBA

Test Software

- Labview
- NI Sound & Vibration Toolkit

Test System Diagram



Configuration change to the modification

Re-use equipment:

- Test PC
- Acoustic chamber
- Audio generator, NI USB-4431
- Audio amplifier & Analyzer – MegaSig PM 6143
- MIC – GRAS 40 pp * 2
- barcode scanner – Honeywell 1900

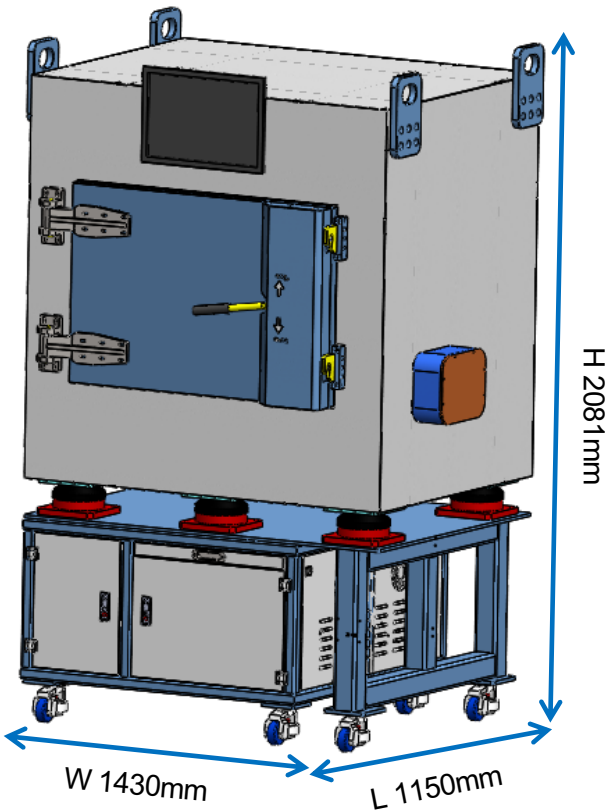
Items to be changed:

- Re-design/fabricate a new test fixture inside the acoustic chamber to support the new model of products.
- Add 2 new MIC (GRAS 40pp) to test 4 SPK of the new model of product.
- Re-develop new test software to test the new model of product.

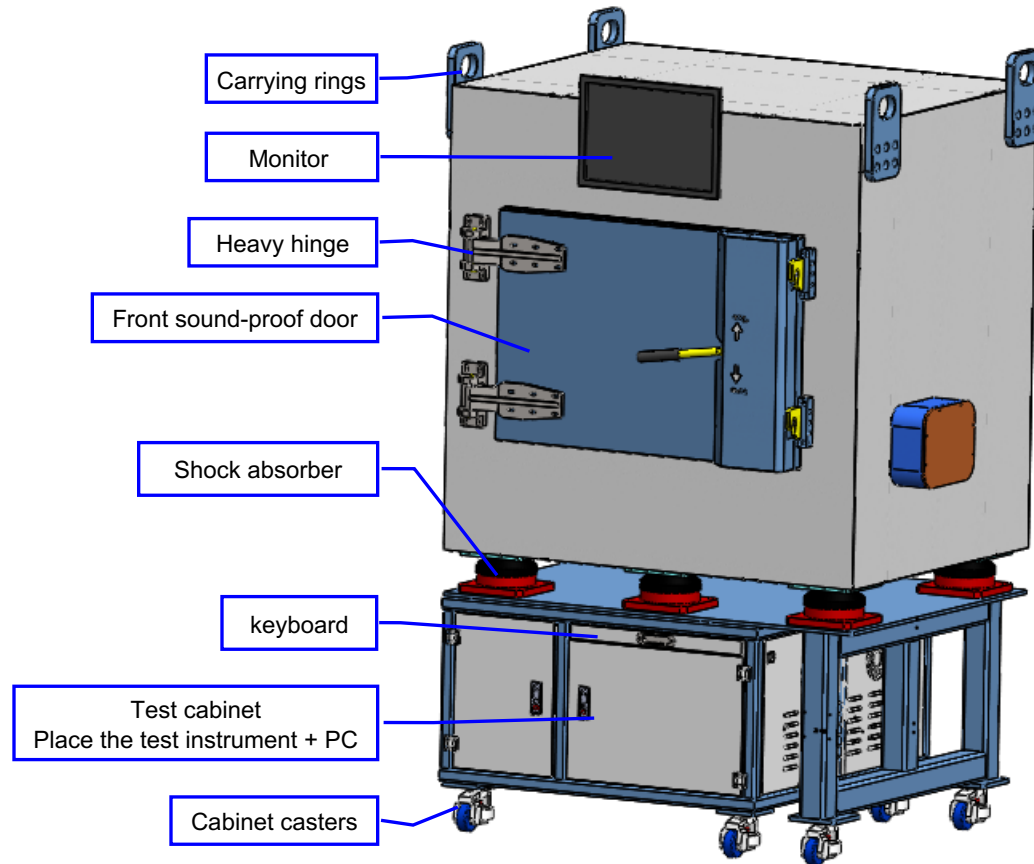
Acoustic Chamber Spec. Description

- 1.Total outer size of equipment: W1000mm x D800mm x H2000mm
- 2.Empty space inside the box: W800mm x D600m x H745m
- 3.Material : Steel 2mm High density board + soundproof cotton
- 4.Surface Finish : Epoxy Powdered Coating(Customizable according to the customer)Power Input : 220V
- 5.Weight : about 800Kg
- 6.Opening mode of shielding : manual operation Isolation Effect

Sound insulation						
Frequency	20Hz	100Hz	500Hz	1KHz	10KHz	24KHz
Test Sound source	94dB	94dB	94dB	94dB	94dB	94dB
Sound insulation effect	≥30dB	≥40dB	≥40dB	≥50dB	≥50dB	≥50dB



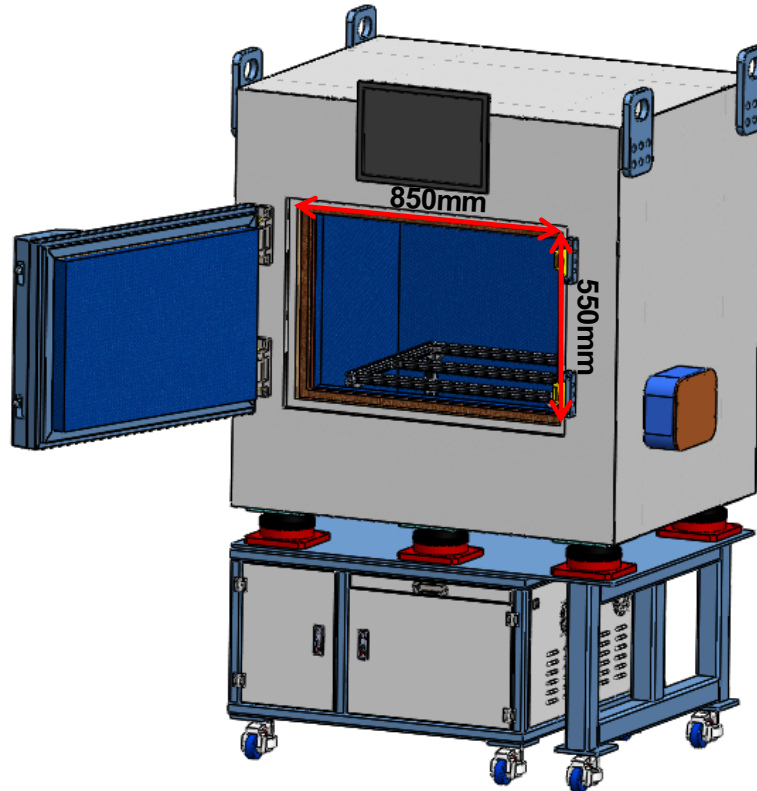
Acoustic Chamber -- Structure description



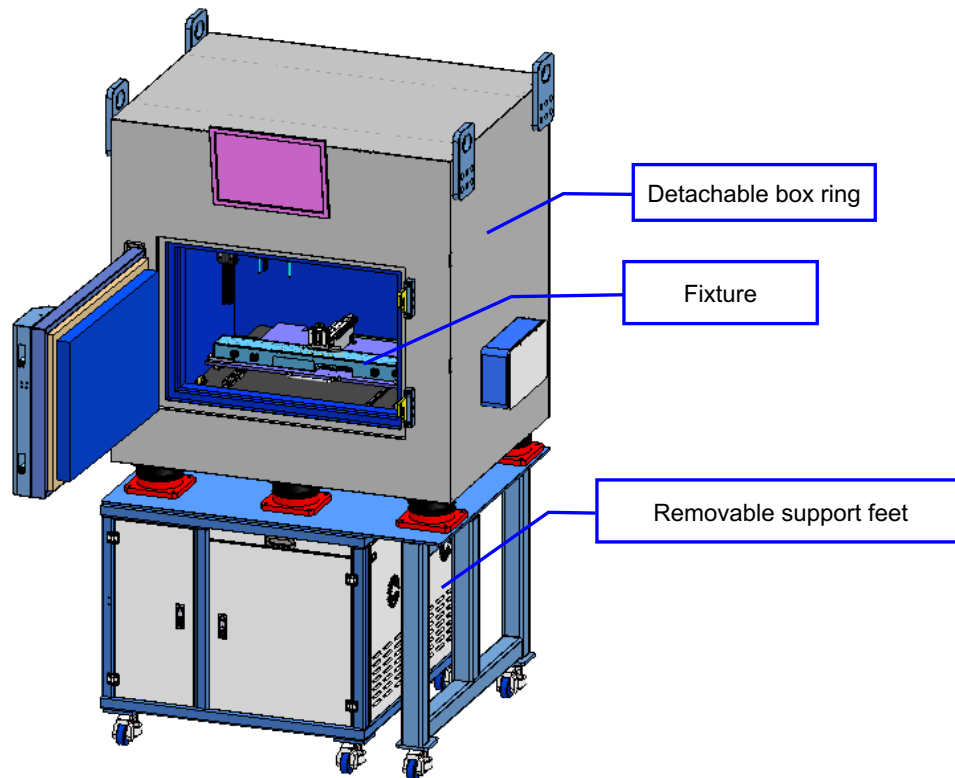
1. The sound-proof cotton on the door is pointed the
2. Add protective cover around the sound insulation cotton of the door panel.
3. Add mobile casters at the bottom of the audio test equipment.
4. The protective cover of the soundproof cotton on the door panel is completely surrounded by the opening.

Acoustic Chamber – Manual Operation

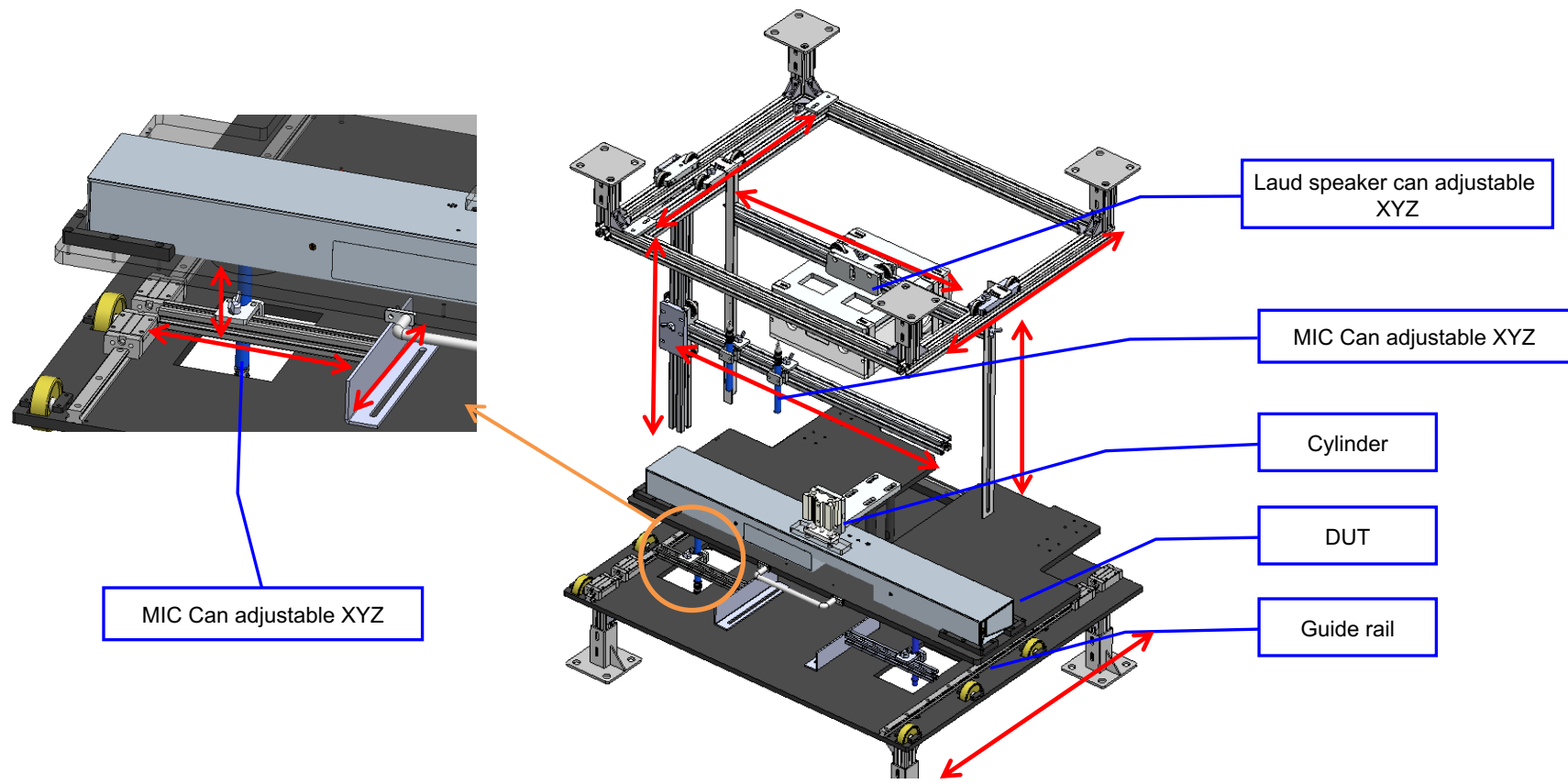
Front sound-proof door opening size :
850*550mm.



Acoustic Chamber structure description



Acoustic Chamber -- Fixture Structure description



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