Acoustical Analysis
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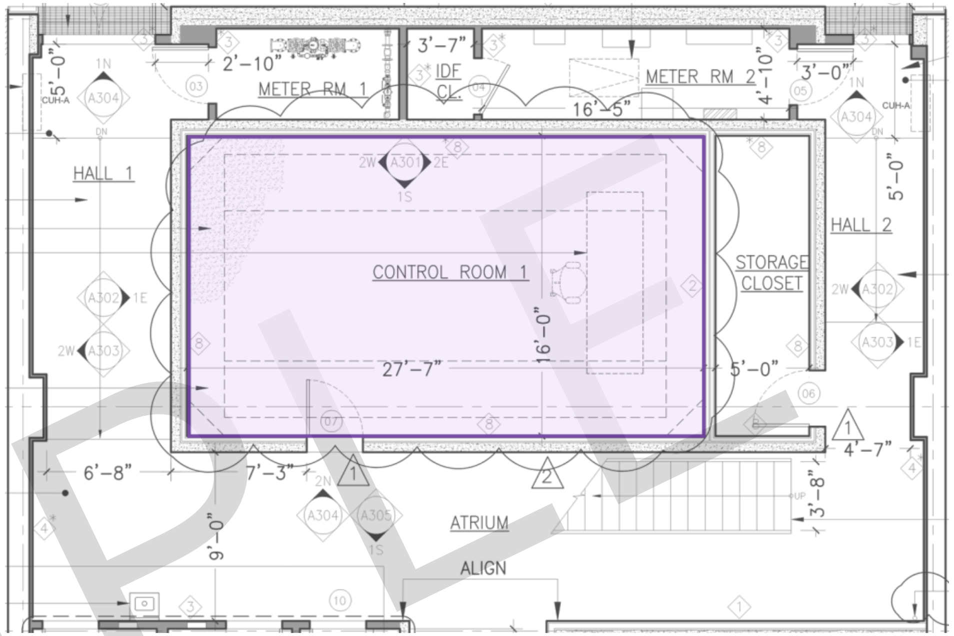

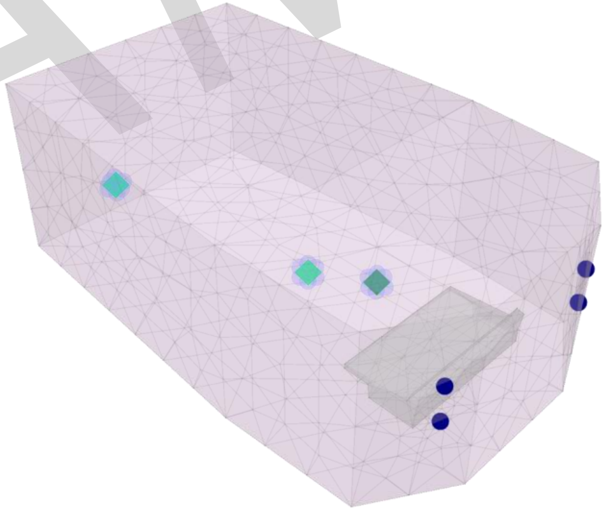

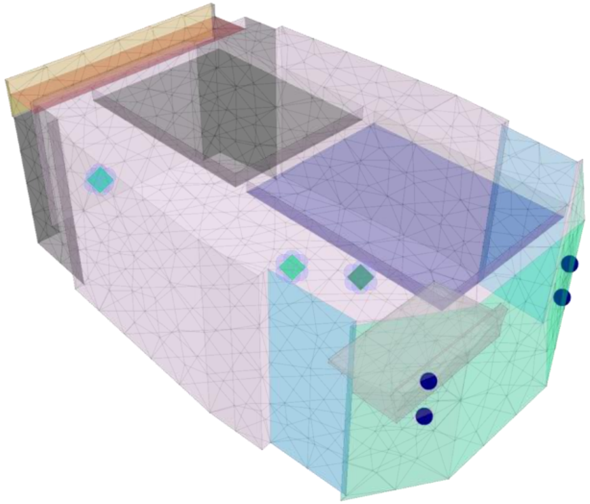

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RESEARCH EDUCATION DEVELOPMENT INITIATIVE
www.rediacoustics.com

Prepared for: John Doe

YOUR LOGO

Sample Control Room

Low Frequency Analysis (LFA)

Specular Reflection Analysis (SRA)

NIRO™

Date: January 01, 20XX

Author: REDI Acoustics

Review: REDI Acoustics

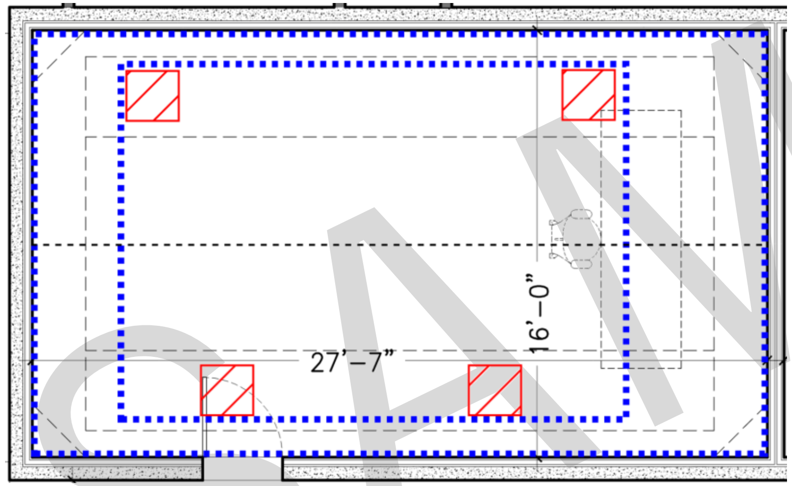
Glossary

- **Frequency Response:** the output to input relationship of a system. Mathematically, it is the Fourier transform of the output divided by the Fourier transform of the input. Represents how the room behaves to a known input signal.
- **Schroeder Frequency:** it is the transition frequency in which the room modes start overlapping and become proportional to the reverberation time. It will be used to determine the upper limit of our analysis. The expected reverberation time and the room volume are used to estimate it.
- **Sound Pressure Level:** it is a representation of the sound pressure in decibels, a logarithm of the ratio of given sound pressure to the reference sound pressure.
- **Impulse Response:** the way a system responds to an impulse. For example, the reverberation of a room can also be thought of as its impulse response. It's the time equivalent of the frequency response.
- **Decay Spectrum:** the decay of the impulse response over time. The decay of the room modes is directly related to their reverberation time.
- **Boundary Element Method:** method used to calculate the sound pressure inside the room. Accounts for the direct sound and the reflected sound at the receiving positions.
- **Acoustical Center:** it's the point chosen to properly represent the acoustical source. According to the IEC standard, it is the point where one can observe diverging spherical wavefronts. It is dependent on the frequency of analysis - the higher the frequency the closer the point will be to the face of the speaker cabinet.

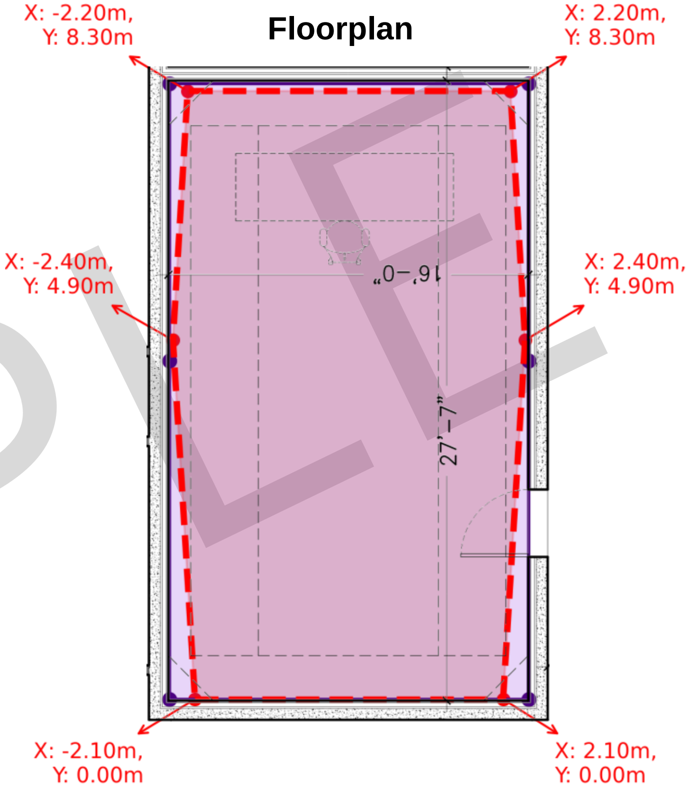
I. Geometric Optimization

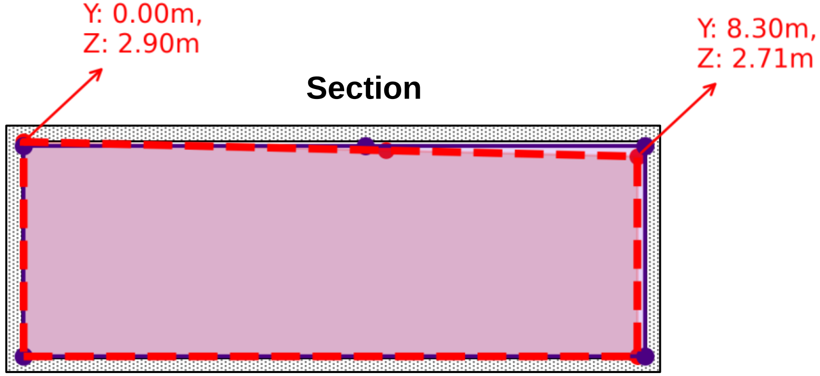
1. Boundary Changes

The room boundary has been altered to further improve the frequency response at the listening positions. The Figure below shows the minimum and maximum limits of the room boundary in a dotted blue line, which are determined by the outer shell and the positions of the HVAC ducts shown in red.



The Figures on the right show an overlay of the **existing drawing**, in purple, and the **optimized geometry**, in red, along with the **coordinates for each wall vertex**. In there, **X represents the width**, **Y the length**, and **Z the height**, with the **origin set at where the center of rear wall meets the floor**. From now on all the drawings will be of the optimized room geometry.





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I. Geometric Optimization

2. Floorplan and Section

Listing positions:

❖ Mix Position (1st row):
Centered, X.XX from rear, X.XX high [m]

❖ Mix Position (2nd row):
X.XX from center, X.XX from rear, X.XX high [m]

❖ Couch Position:
X.XX from center, X.XX from rear, X.XX high [m]

Speaker position:

❖ Mains:
X.XX from center, X.XX from rear, woofers at X.XX and X.XX high [m]

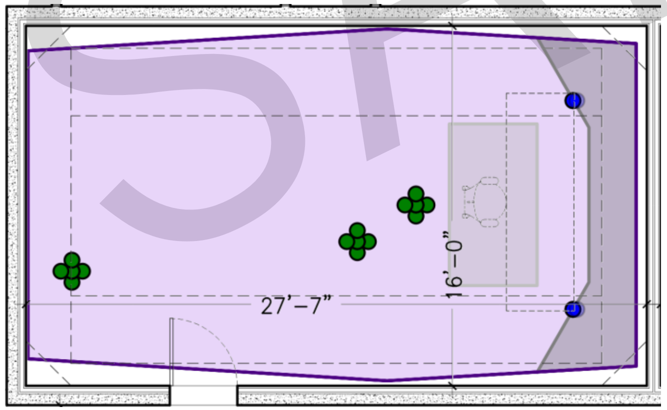
Project notes:

- Can move ceiling and all the walls
- Optimized for soffit mounted speakers
- Optimization animation

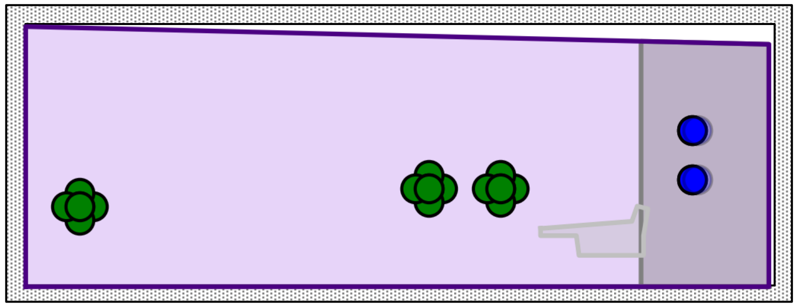
Room spectral properties:

- First resonant frequency ≈ 23 [Hz]
- Schroeder frequency: ≈ 107 [Hz]

Floorplan



Section



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Plan and section view of the room – Speaker and listener positions are marked and listed. The speaker acoustical center is indicated by the dot in front of the speaker cabinet.

The room spectral properties are given by the room dimensions. The minimum frequency relates to the biggest wavelength that the biggest dimension in the room supports. The Schroeder frequency determines were the modal region ends.

Date:	January 01, 20XX
Author:	REDI Acoustics
Review:	REDI Acoustics
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II. Treatment Recommendations

1. Treatment Specifications

Treatment 1: perforated Helmholtz resonator

❖Placed on rear wall dihedral corners and on the ceiling
X.XX [m] I X.XX from the rear

❖Dimensions (LxWxD):
Rear wall:
X.XX x X.XX x X.XX [m]
X.XX’ x X.XX’ X.XX’

Lateral walls:
X.XX x X.XX x X.XX [m]
X.XX’ x X.XX’ X.XX’

Ceiling:
X.XX x X.XX x X.XX [m]
X.XX’ x X.XX’ X.XX’

❖**Finished face of treatment:**
Fabric covering (optional)

❖**Plate thickness:**
X.XX [mm] I X.XX”

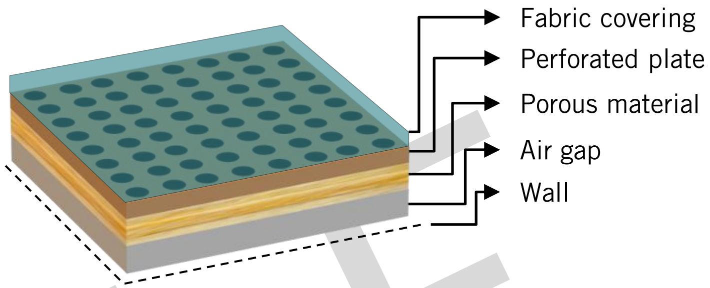
❖**Hole diameter and spacing:**
X.XX [mm] and X.XX [mm] I X.XX ” and X.XX ”

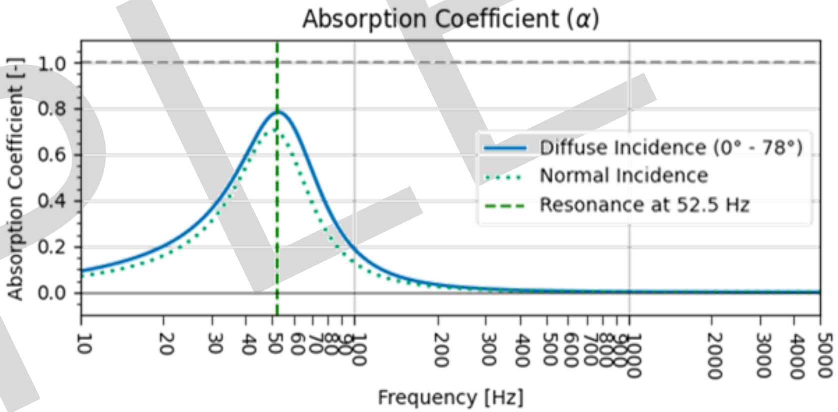
❖**Porous material type and thickness:**
Owens Corning XXX or equivalent - X.XX [mm] I X.XX ”

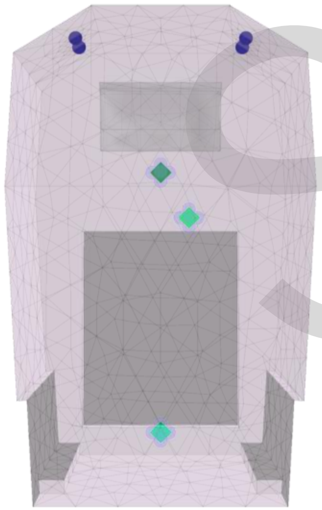
❖**Flow resistivity of porous material:**
X.XX [rayls/m]

❖**Air gap depth:**
X.XX [mm] I X.XX ”

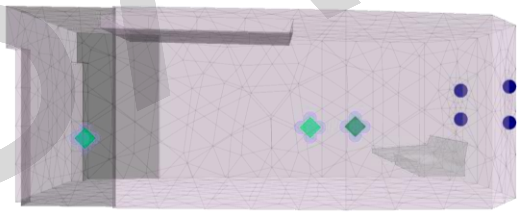
❖**Total treatment depth:** X.XX [mm] I X.XX ”







Floorplan



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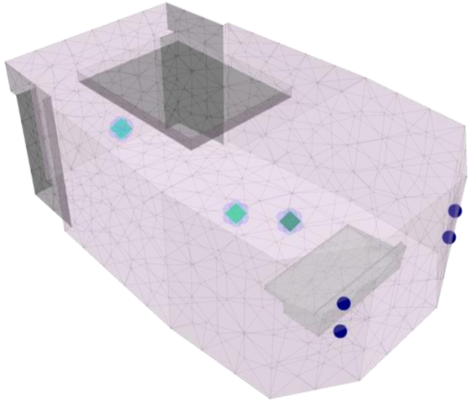
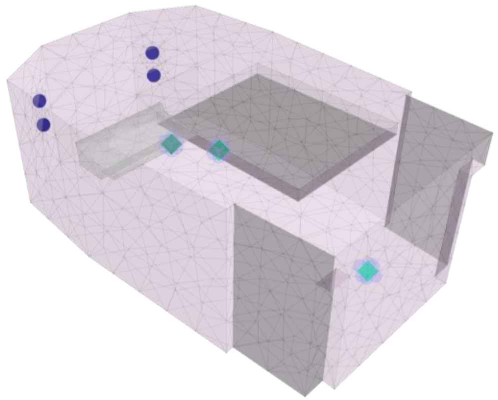


Front of room



Rear of room

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YOUR LOGO

Plan and section view of the room – Speaker and listener positions are marked and listed.

The treatment locations are marked on the drawings as a reference. Each treatment is placed in the high-pressure area of their target frequency.

Date:	January 01, 20XX
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Review:	REDI Acoustics

II. Treatment Recommendations

1. Treatment Specifications

Treatment 2: perforated Helmholtz resonator

❖Placed on rear wall dihedral ceiling corner X.XX [m] I X.XX' from the floor

❖Dimensions (LxWxD):
X.XX x X.XX x X.XX [m]
X.XX' x X.XX' x X.XX'

❖Finished face of treatment:
Fabric covering (optional)

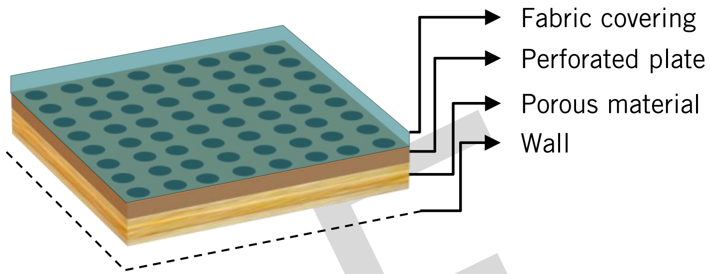
❖Plate thickness:
X.XX [mm] I X.XX''

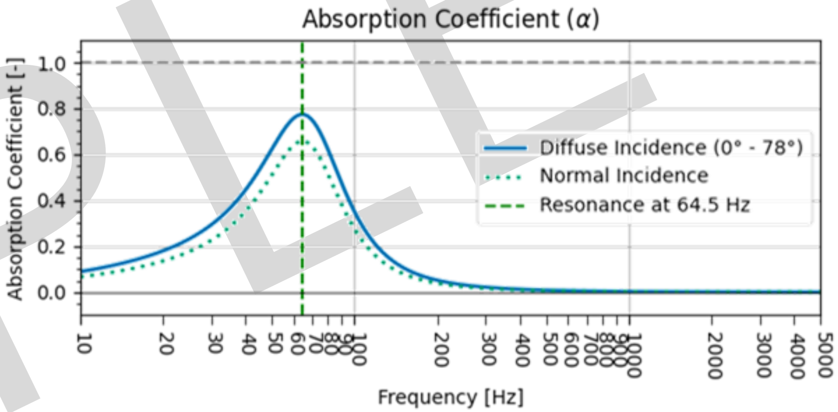
❖Hole diameter and spacing:
X.XX [mm] and X.XX [mm] I X.XX '' and X.XX ''

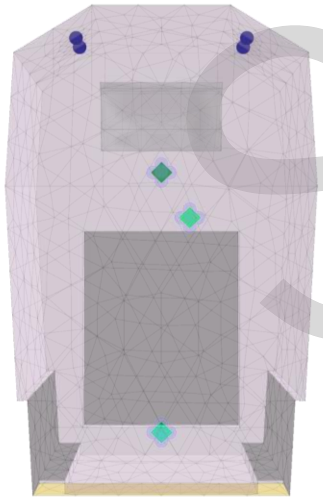
❖Porous material type and thickness:
Owens Corning XXX or equivalent - X.XX [mm] I X.XX ''

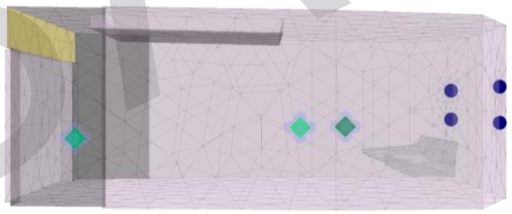
❖Flow resistivity of porous material:
X.XX [rayls/m]

❖Total treatment depth: X.XX [mm] I X.XX ''






Floorplan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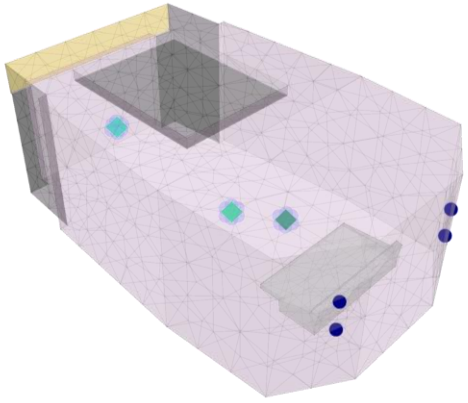
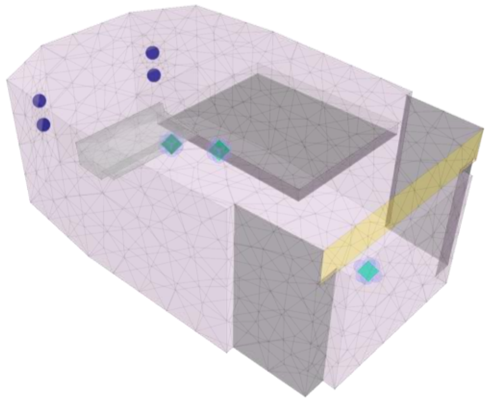

Front of room


Rear of room

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Prepared for: John Doe

YOUR LOGO

Plan and section view of the room – Speaker and listener positions are marked and listed.

The treatment locations are marked on the drawings as a reference. Each treatment is placed in the high-pressure area of their target frequency.

Date: January 01, 20XX

Author: REDI Acoustics

Review: REDI Acoustics

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YOUR LOGO

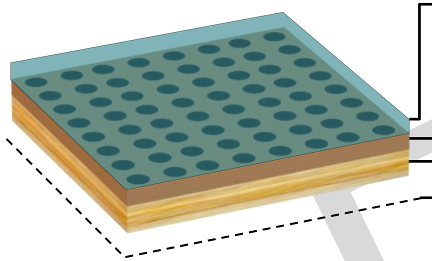
II. Treatment Recommendations

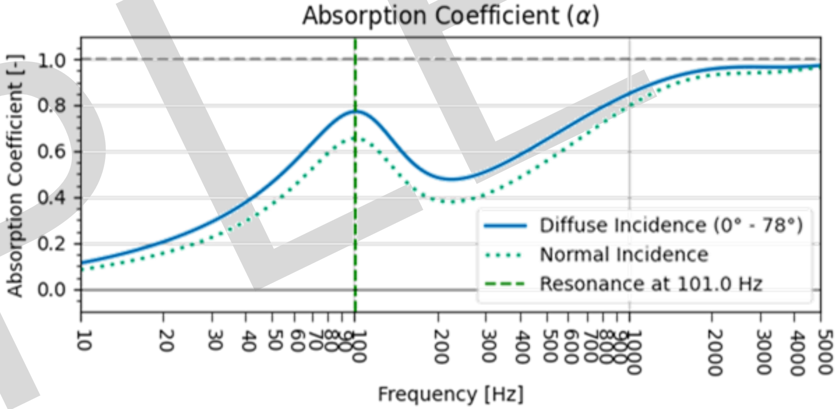
1. Treatment Specifications

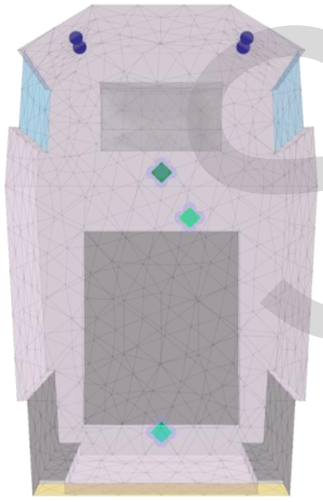
Treatment 3: perforated Helmholtz resonator

- ❖Placed on the lateral walls in alignment with the console
- ❖Dimensions (LxWxD):
  X.XX x X.XX x X.XX [m]
  X.XX' x X.XX' x X.XX'

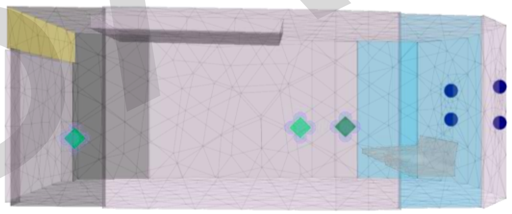
- ❖Finished face of treatment:
  Fabric covering (optional)
- ❖Plate thickness:
  X.XX [mm] I X.XX''
- ❖Hole diameter and spacing:
  X.XX [mm] and X.XX [mm] I X.XX '' and X.XX ''
- ❖Porous material type and thickness:
  Owens Corning XXX or equivalent - X.XX [mm] I X.XX ''
- ❖Flow resistivity of porous material:
  X.XX [rayls/m]
- ❖Total treatment depth: X.XX [mm] I X.XX ''







Floorplan



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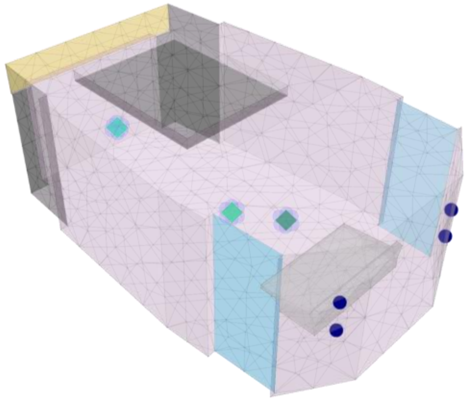
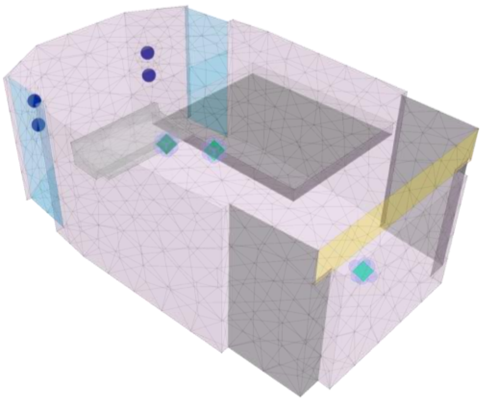


Front of room



Rear of room

Plan and section view of the room – Speaker and listener positions are marked and listed.

The treatment locations are marked on the drawings as a reference. Each treatment is placed in the high-pressure area of their target frequency.

Date: January 01, 20XX

Author: REDI Acoustics

Review: REDI Acoustics

II. Treatment Recommendations

1. Treatment Specifications

Treatment 4: perforated Helmholtz resonator

❖Placed on ceiling
X.XX [m] I X.XX' from the rear wall

❖Dimensions (LxWxD):
X.XX x X.XX x X.XX [m]
X.XX' x X.XX' x X.XX'

❖Finished face of treatment:
Fabric covering (optional)

❖Plate thickness:
X.XX [mm] I X.XX''

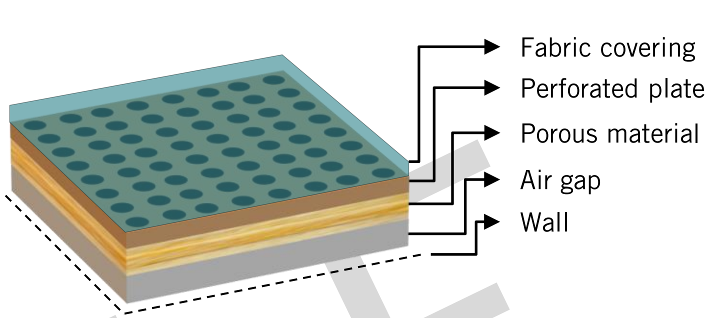
❖Hole diameter and spacing:
X.XX [mm] and X.XX [mm] I X.XX '' and X.XX ''

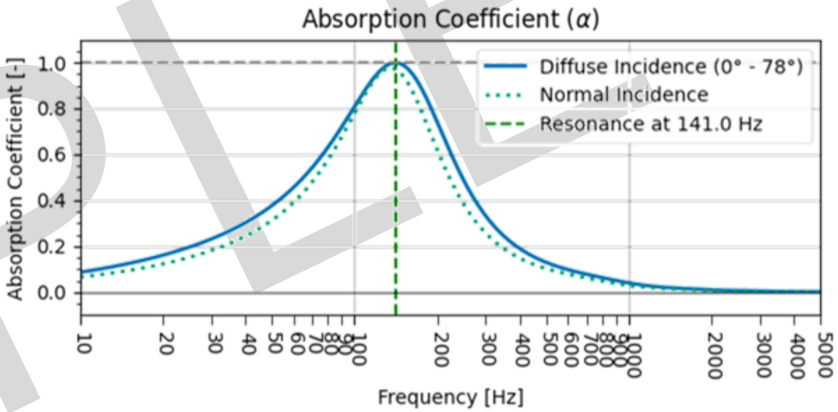
❖Porous material type and thickness:
Owens Corning XXX or equivalent - X.XX [mm] I X.XX ''

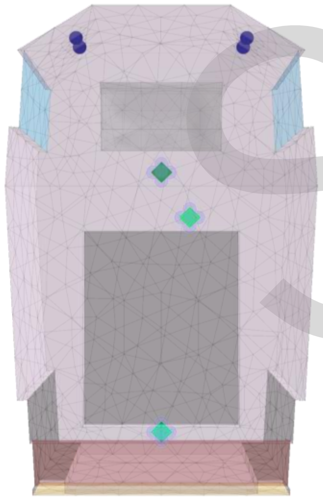
❖Flow resistivity of porous material:
X.XX [rayls/m]

❖Air gap depth:
X.XX [mm] I X.XX ''

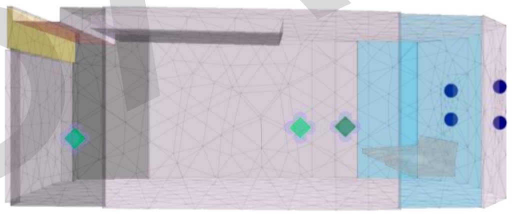
❖Total treatment depth: X.XX [mm] I X.XX ''







Floorplan



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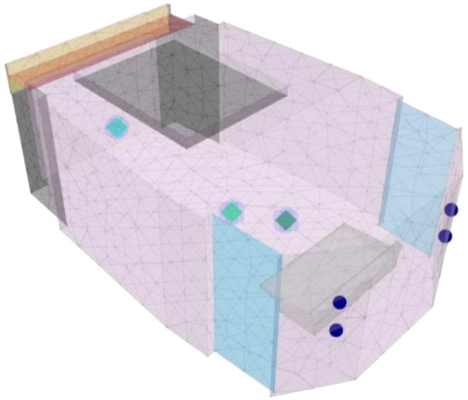
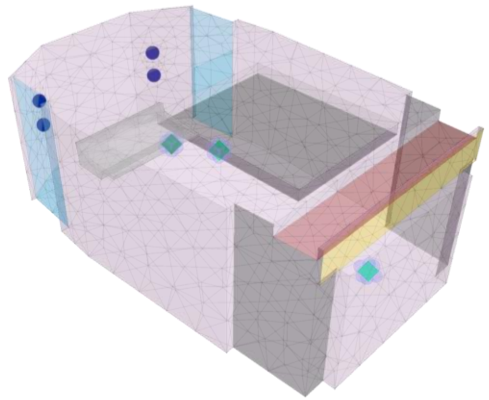


Front of room



Rear of room

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Prepared for: John Doe

YOUR LOGO

Plan and section view of the room – Speaker and listener positions are marked and listed.

The treatment locations are marked on the drawings as a reference. Each treatment is placed in the high-pressure area of their target frequency.

Date: January 01, 20XX

Author: REDI Acoustics

Review: REDI Acoustics

II. Treatment Recommendations

1. Treatment Specifications

Treatment 5: perforated Helmholtz resonator

❖Placed on ceiling
X.XX [m] I X.XX' from the rear wall

❖Dimensions (LxWxD):
X.XX x X.XX x X.XX [m]
X.XX' x X.XX' x X.XX'

❖Finished face of treatment:
Fabric covering (optional)

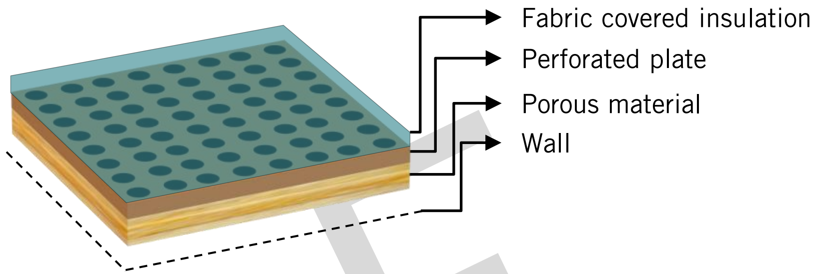
❖Plate thickness:
X.XX [mm] I X.XX''

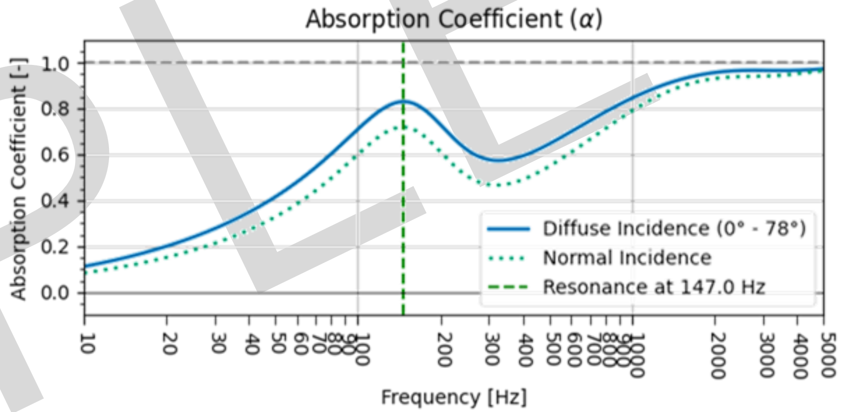
❖Hole diameter and spacing:
X.XX [mm] and X.XX [mm] I X.XX '' and X.XX ''

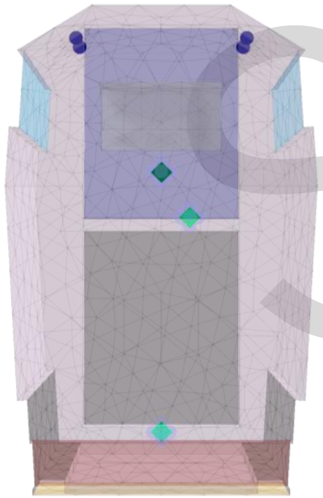
❖Porous material type and thickness:
Owens Corning XXX or equivalent - X.XX [mm] I X.XX ''

❖Flow resistivity of porous material:
X.XX [rayls/m]

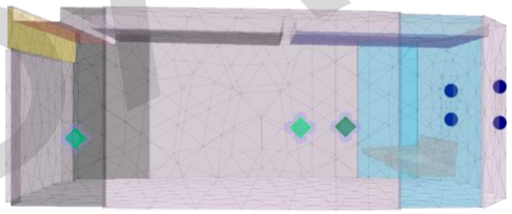
❖Total treatment depth: X.XX [mm] I X.XX ''







Floorplan



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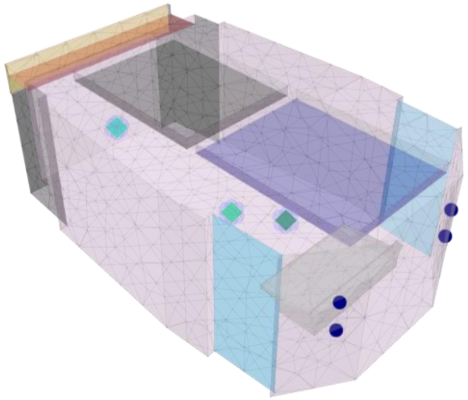
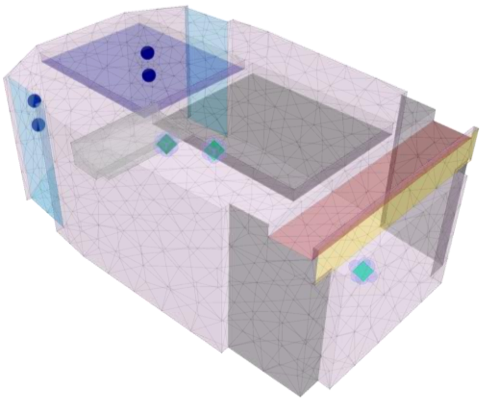


Front of room



Rear of room

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YOUR LOGO

Plan and section view of the room – Speaker and listener positions are marked and listed.

The treatment locations are marked on the drawings as a reference. Each treatment is placed in the high-pressure area of their target frequency.

Date: January 01, 20XX

Author: REDI Acoustics

Review: REDI Acoustics

II. Treatment Recommendations

1. Treatment Specifications

Treatment 6: fabric covered fiberglass panel

❖Placed the exposed faces of the front wall

❖Dimensions (LxWxD):

Center:

X.XX x X.XX x X.XX [m]

X.XX' x X.XX' x X.XX'

Left and right:

X.XX x X.XX x X.XX [m]

X.XX' x X.XX' x X.XX'

❖Finished face of treatment:

Fabric covering

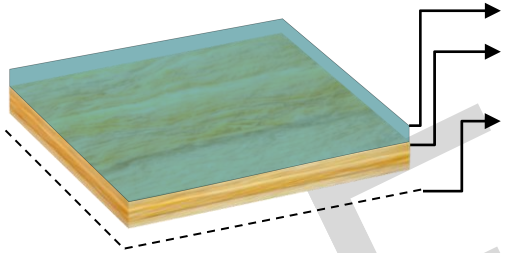
❖Porous material type and thickness:

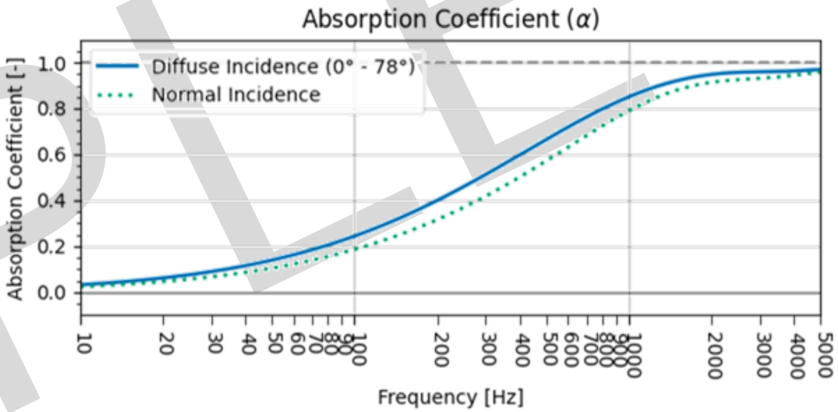
Owens Corning XXX or equivalent - X.XX [mm] I X.XX''

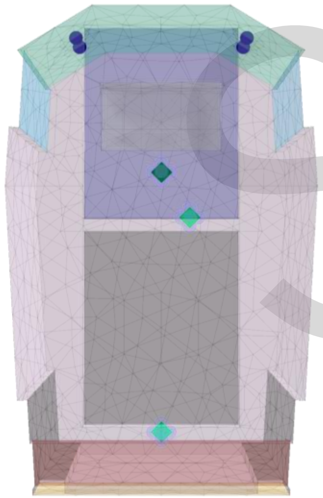
❖Flow resistivity of porous material:

X.XX [rayls/m]

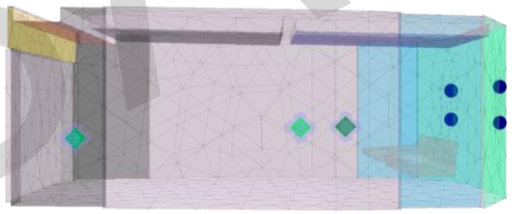
❖Total treatment depth: X.XX [mm] I X.XX''







Floorplan



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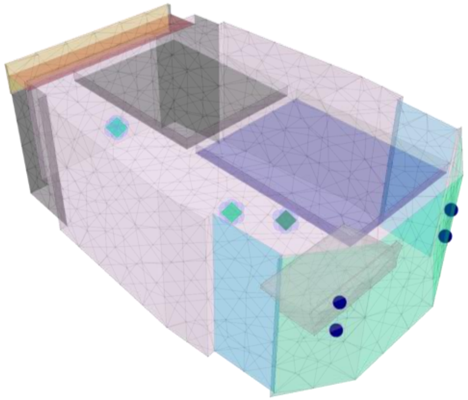
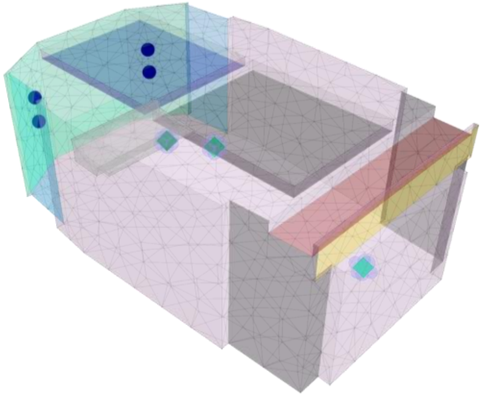


Front of room



Rear of room

Plan and section view of the room – Speaker and listener positions are marked and listed.

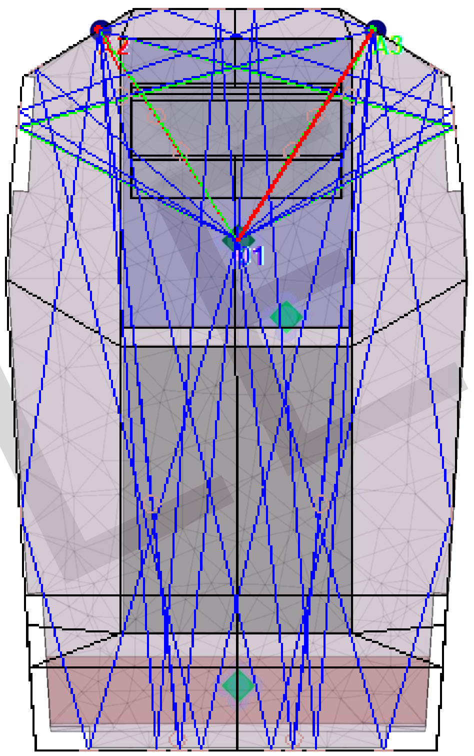
The treatment locations are marked on the drawings as a reference. Each treatment is placed in the high-pressure area of their target frequency.

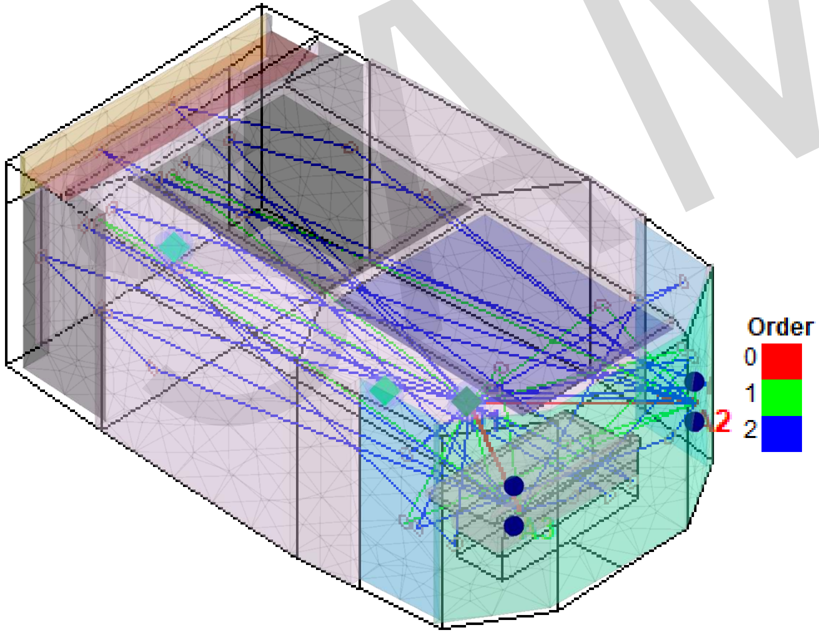
II. Treatment Recommendations

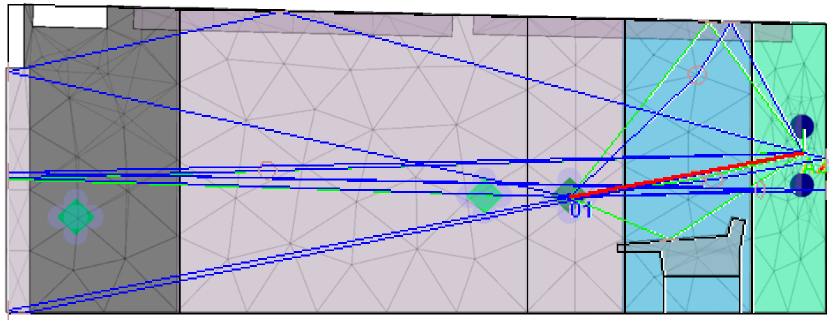
2. Specular Reflection Analysis

By using the Image-Source Model, we can trace the reflections to the mix position and their origin. This provides information to determine if there are any reflections going to the mix position that we can treat with absorption and the locations where we can apply it. It also helps determining the size and location of the diffusor.

The Figures in this page indicate the 1st and 2nd order reflections coming from the **main speakers** that arrive at the mix position. The next pages will show a separate analysis of 1st and 2nd order reflections for ease of visualization.







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Review: REDI Acoustics

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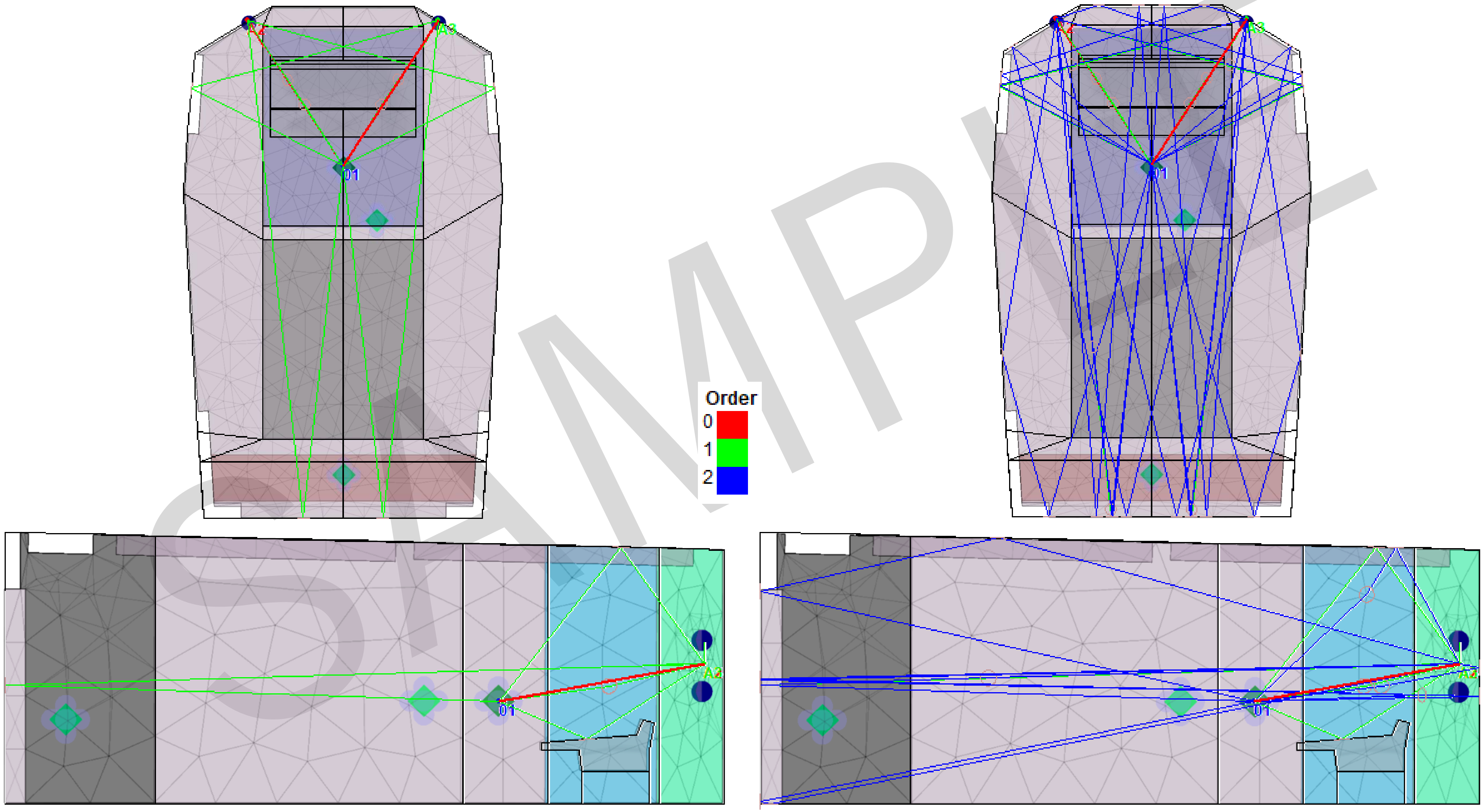
II. Treatment Recommendations

2. Specular Reflection Analysis – Arrival at Mix Position



This analysis shows the 1st and 2nd order specular reflections from the main speakers arriving at mix position.

The locations in which the specular reflections occur indicate the areas that should have porous treatment applied. Controlling these reflections is key to a good imaging at the mix position.

The Image Source Model was used to predict the reflection paths.

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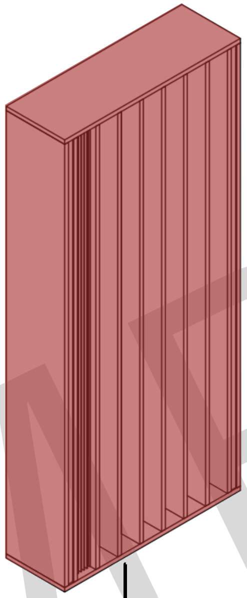
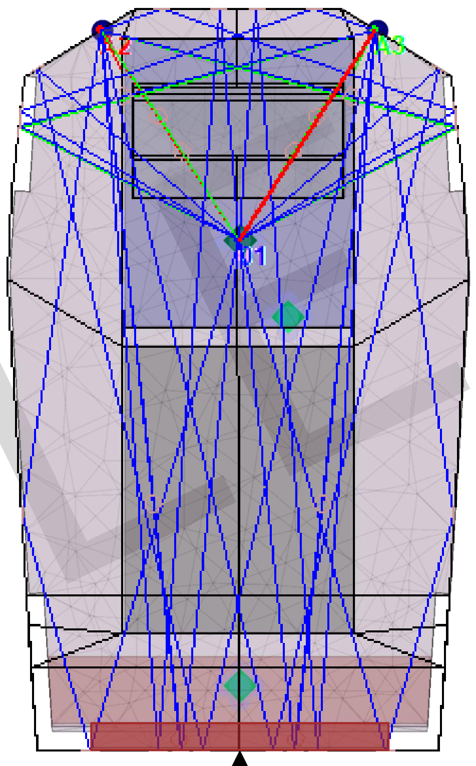
Author:	REDI Acoustics
Review:	REDI Acoustics

II. Treatment Recommendations

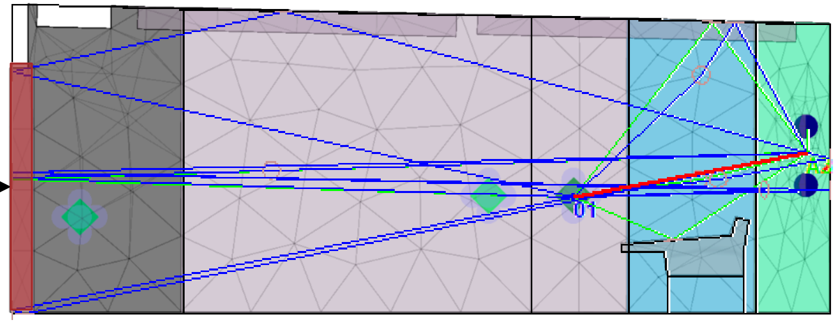
3. Diffusor Specification

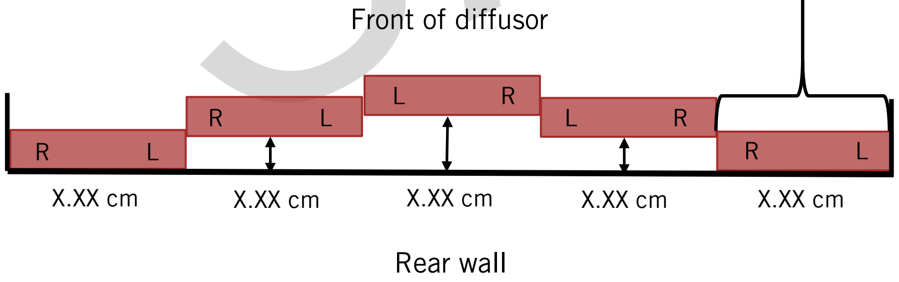
In order to redirect as many reflections as possible from the rear wall to the mix position, the dimension of the diffusor should encapsulate 1st and 2nd order reflections. With that in mind we recommended that X units of XXX XXXXXXXXXXX are used.





The diffusor should be X.XX [m] wide and X.XX [m] tall. The units should follow the orientation and placement as shown below to reduce periodicity effects and maximize the diffusion coefficient. A detailed installation drawing will be provided by XXX.





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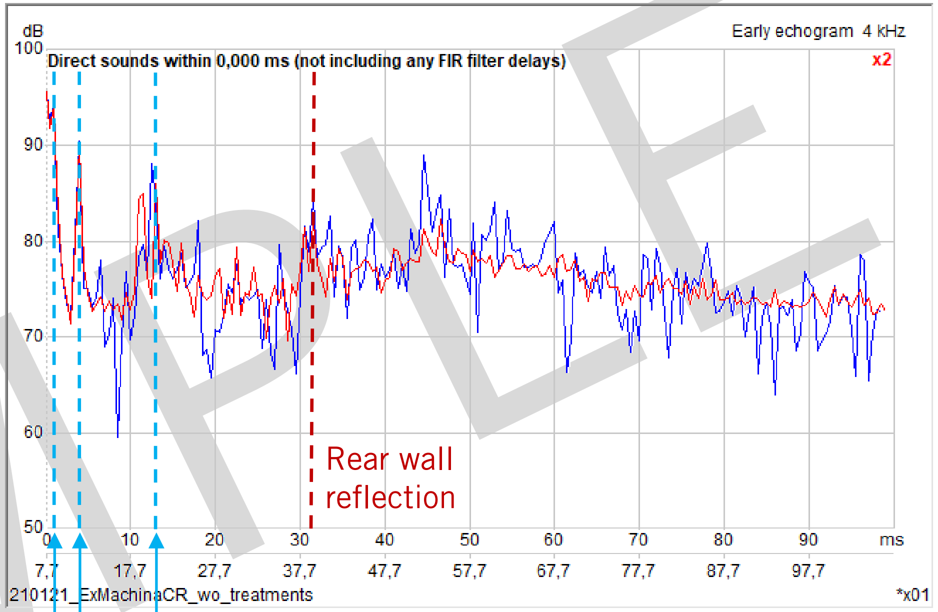
II. Treatment Recommendations

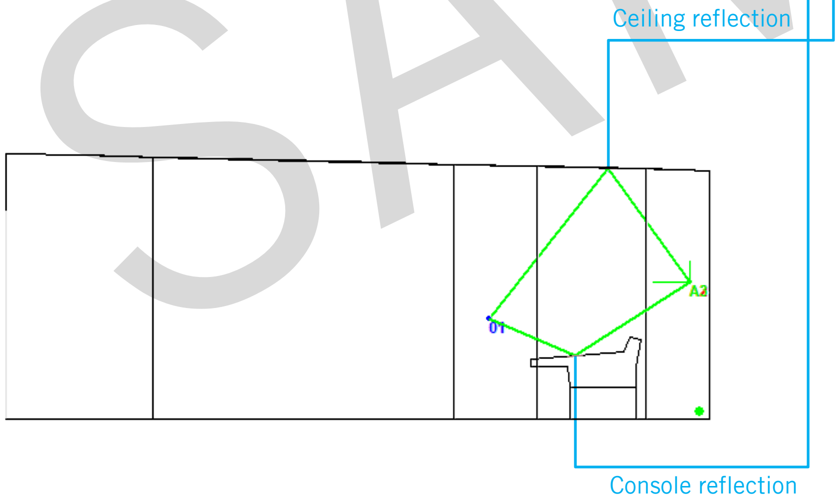
4. RFZ/DFZ Analysis

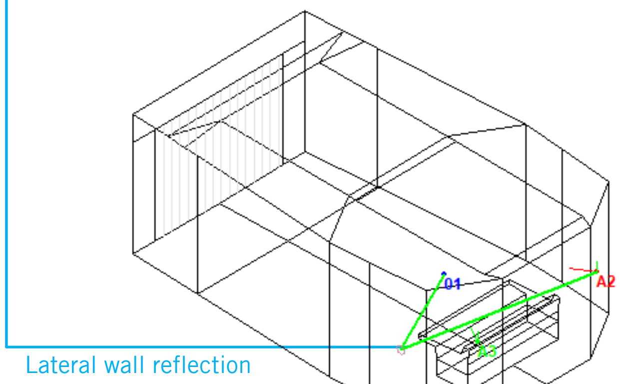
The Figure on the right shows the room impulse response at the mix position without all the proposed treatments and diffusors. Our goal here is to evaluate the RFZ/DFZ design of the room and the effectiveness of the proposed design.

Between the direct sound and the reflection coming from the rear wall, which arrives at 30 [ms], we have three harmful interfering reflections arriving at the mix position. The first reflection comes from the console, the second from the lateral walls and the third from the ceiling.

After the rear wall reflection, we can observe that the decay of the response is not smooth due to the lack of diffusion in the rear of the room.







The Reflection Free Zone (RFZ) refers to the time between the direct sound and the first arrival from the rear of the room, and it is ideally between 20 and 30 dB below the direct sound.

The Diffuse Field Zone (DFZ) begins at the arrival of the rear wall reflection and is characterized by being a zone of high temporal density, typically created with reflection phase gratings diffusors.

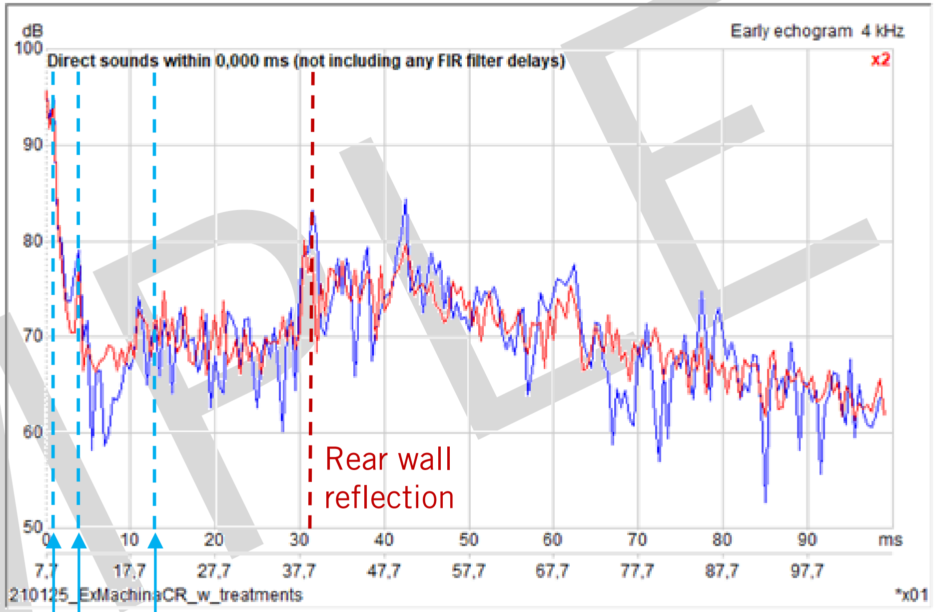
II. Treatment Recommendations

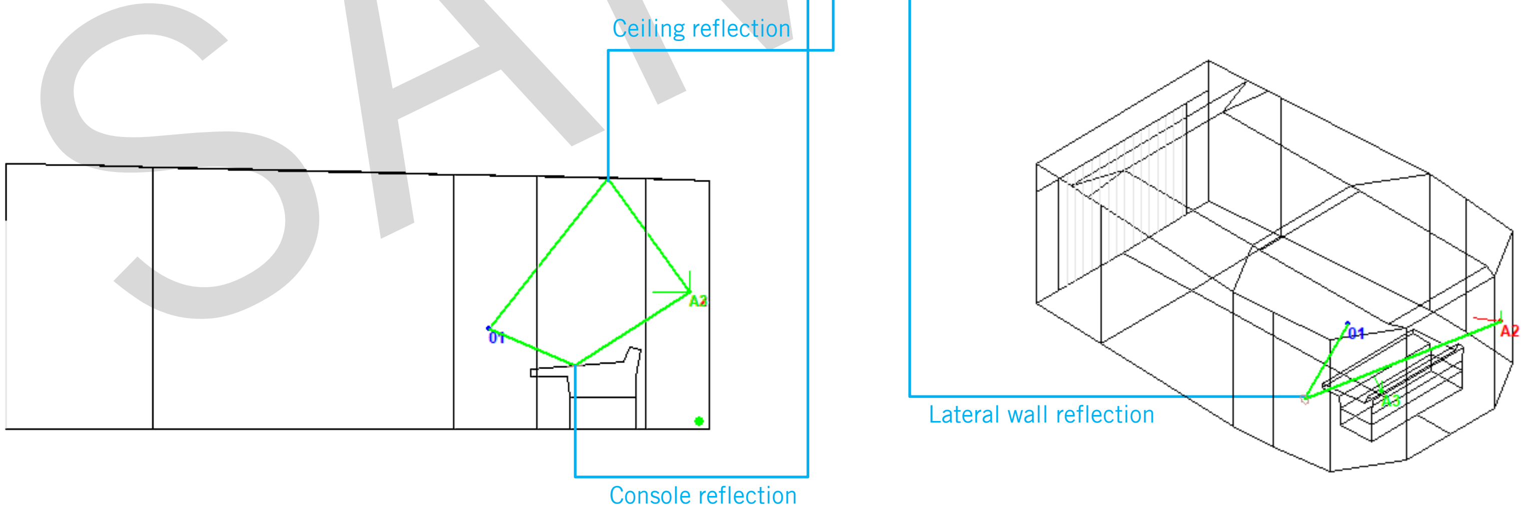
4. RFZ/DFZ Analysis

After the treatments and diffusors were applied, we observe a severe improvement in the impulse response at the mix position, which is shown at the Figure to the right.

Except for the console bounce, the other two harmful reflections were properly controlled, successfully creating the Reflection Free Zone.

The application of the diffusors also improved the Diffuse Field Zone coming from the rear of the room.





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The Reflection Free Zone (RFZ) refers to the time between the direct sound and the first arrival from the rear of the room, and it is ideally between 20 and 30 dB below the direct sound.

The Diffuse Field Zone (DFZ) begins at the arrival of the rear wall reflection and is characterized by being a zone of high temporal density, typically created with reflection phase gratings diffusors.

Date: January 01, 20XX

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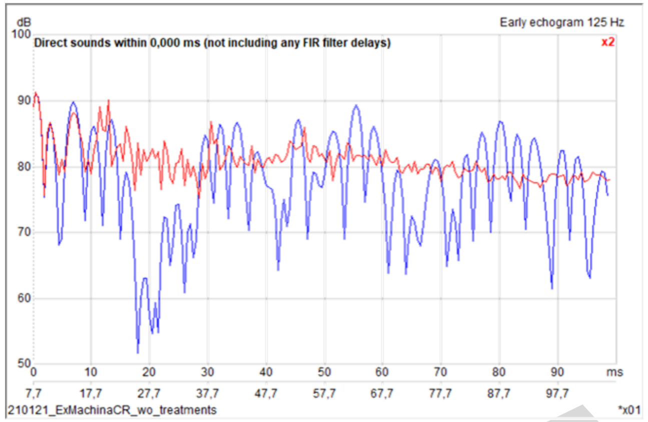
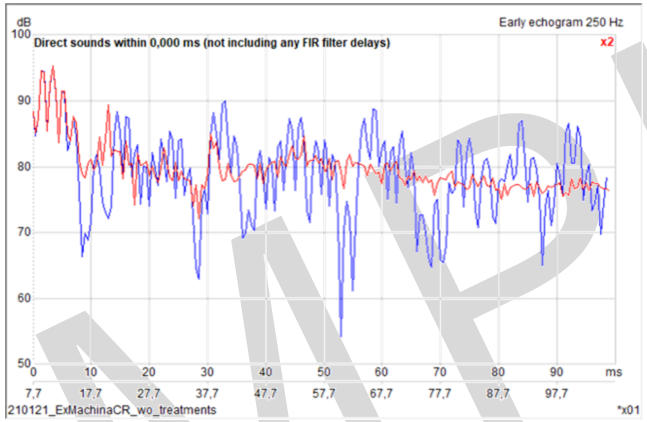
II. Treatment Recommendations

4. RFZ/DFZ Analysis

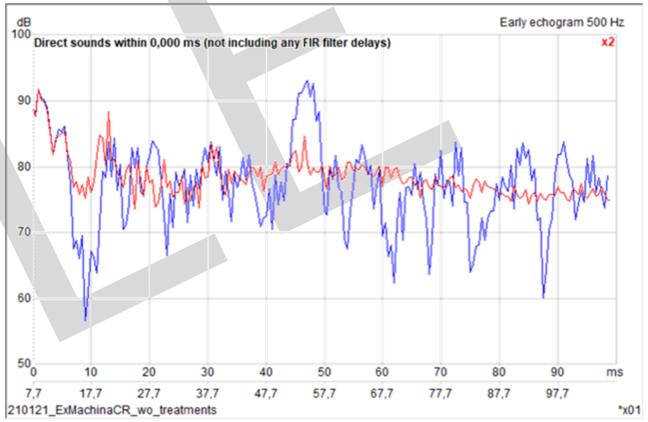
➢Without treatments



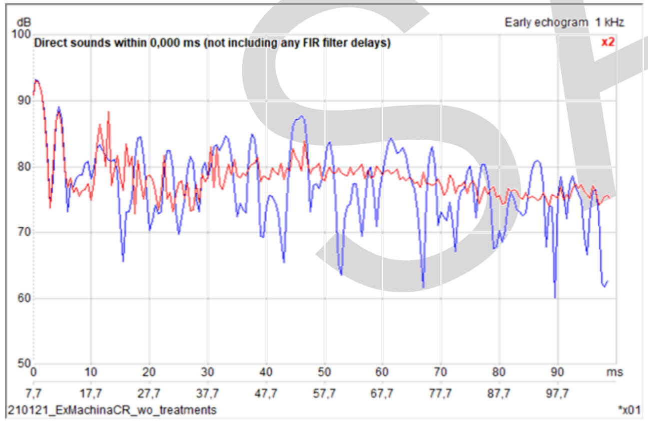
Echogram @ 125 Hz



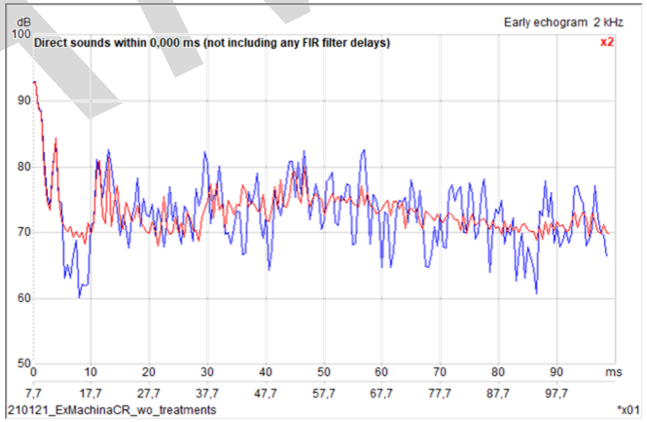
Echogram @ 250 Hz



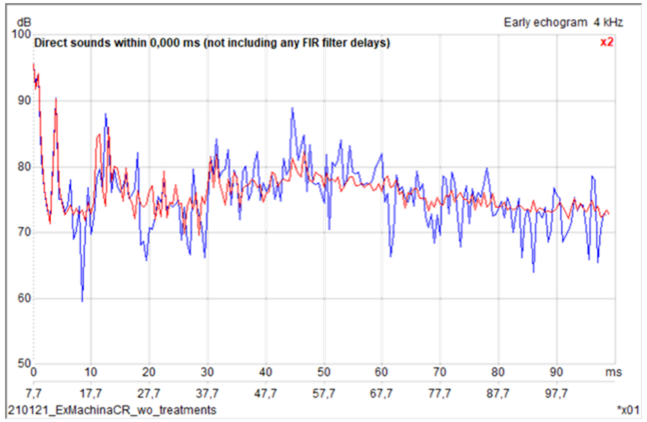
Echogram @ 500 Hz



Echogram @ 1k Hz



Echogram @ 2k Hz



Echogram @ 4k Hz

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These graphs are the frequency dependent echograms at the mix position. They are used to evaluate the RFZ/DFZ.

The two curves are the octave band filtered energy echogram and pressure impulse response, shown in red and blue, respectively.

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Author: REDI Acoustics

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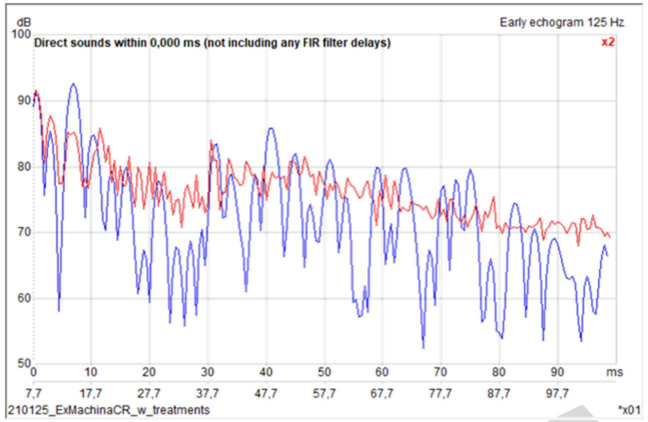
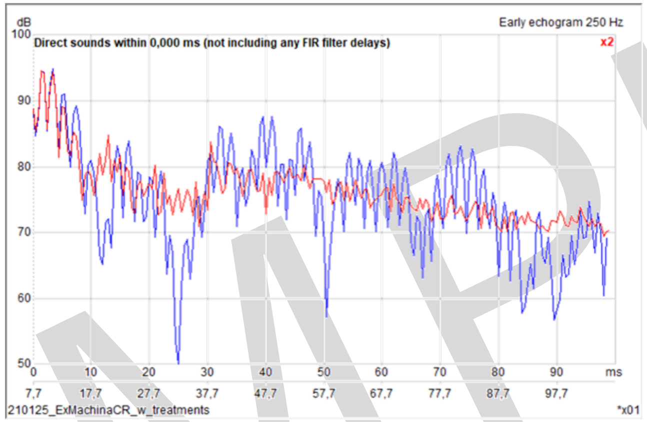
II. Treatment Recommendations

4. RFZ/DFZ Analysis

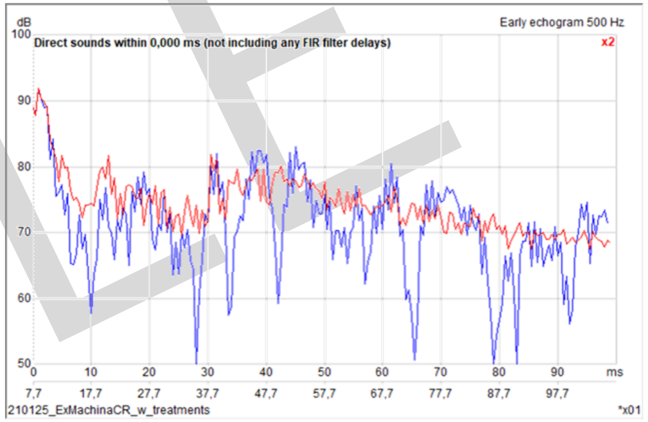
➢With treatments



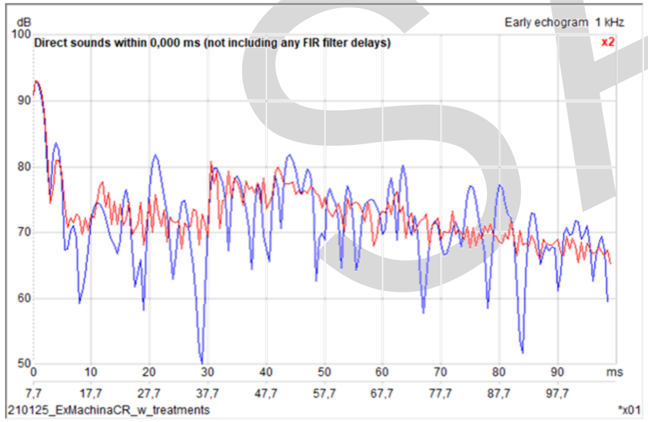
Echogram @ 125 Hz



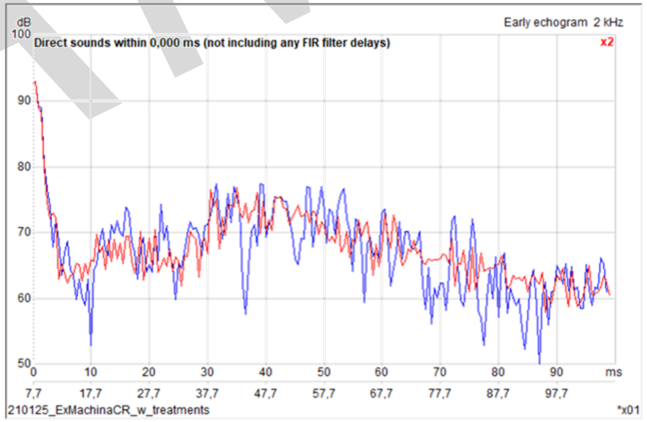
Echogram @ 250 Hz



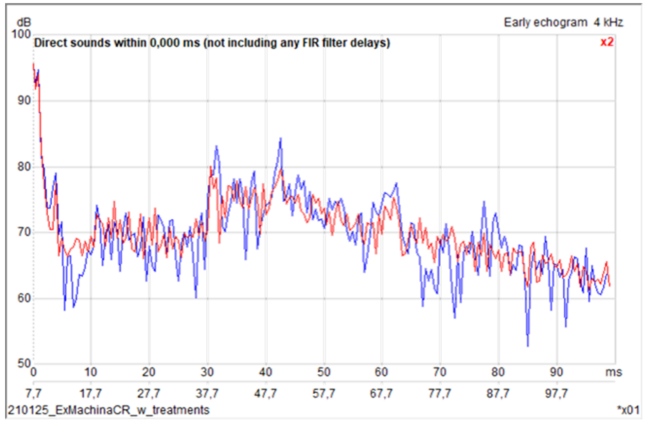
Echogram @ 500 Hz



Echogram @ 1k Hz



Echogram @ 2k Hz



Echogram @ 4k Hz

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The two curves are the octave band filtered energy echogram and pressure impulse response, shown in red and blue, respectively.

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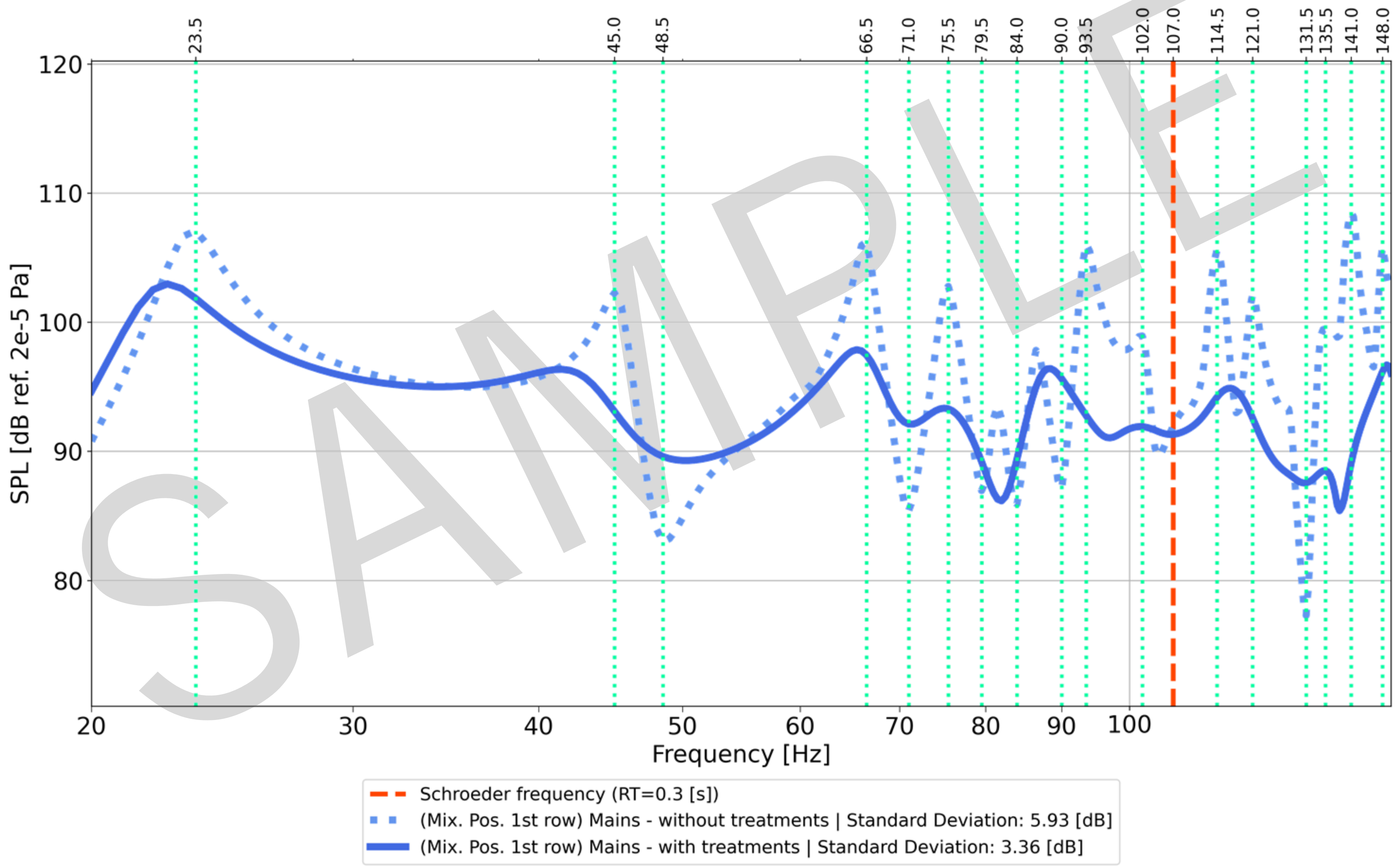
Author: REDI Acoustics

Review: REDI Acoustics

III. Low Frequency Analysis

1. Frequency Response – Mains at Mix Position (1st row)



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The graph shows the predicted frequency response at the various listening positions.

The lines mark the critical frequency ranges. Pressure distribution plots of these frequencies are depicted on the following pages.

The actual room geometry has been used for this calculation.

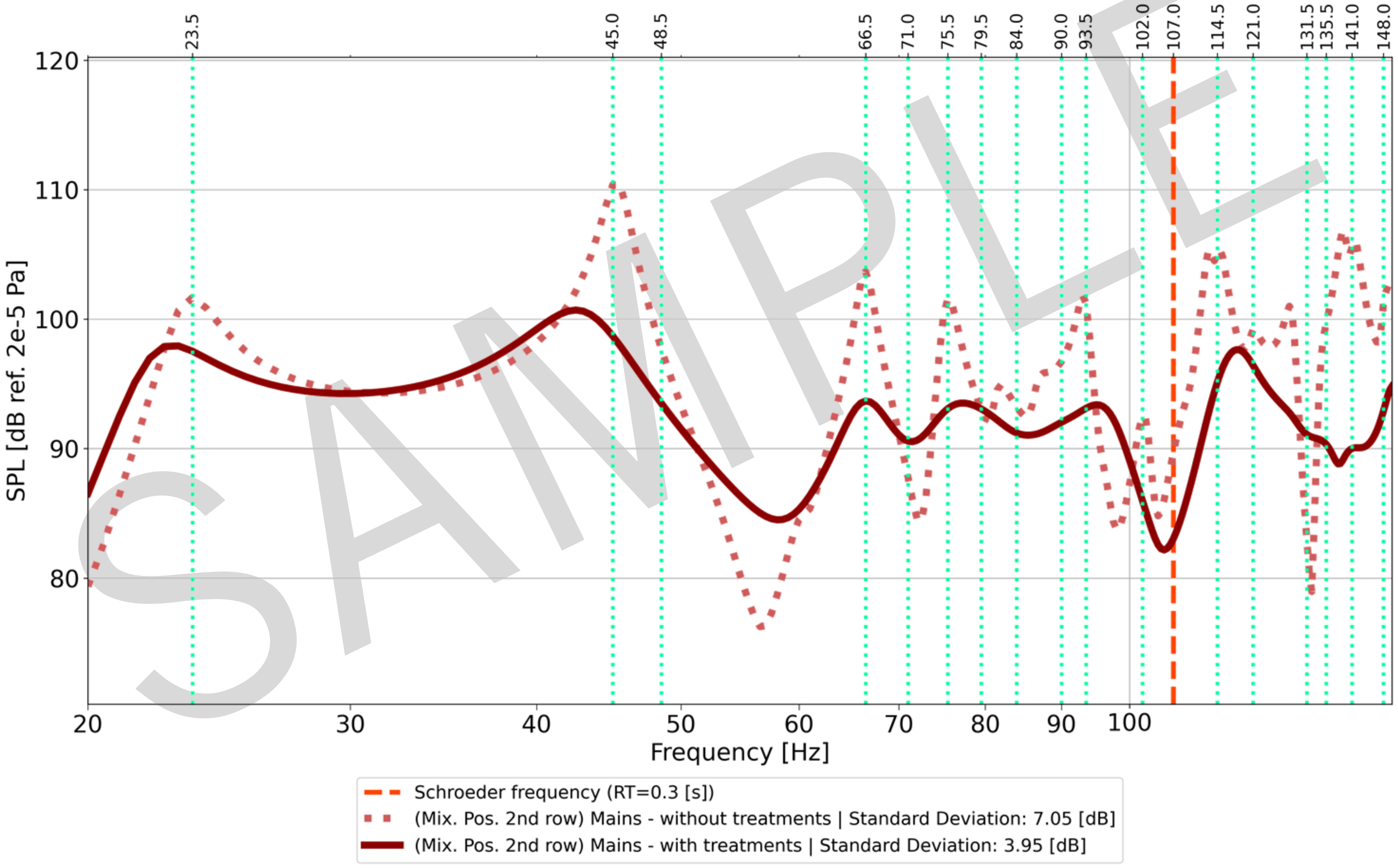
Date: January 01, 20XX

Author: REDI Acoustics

Review: REDI Acoustics

III. Low Frequency Analysis

2. Frequency Response – Mains at Mix Position (2nd row)



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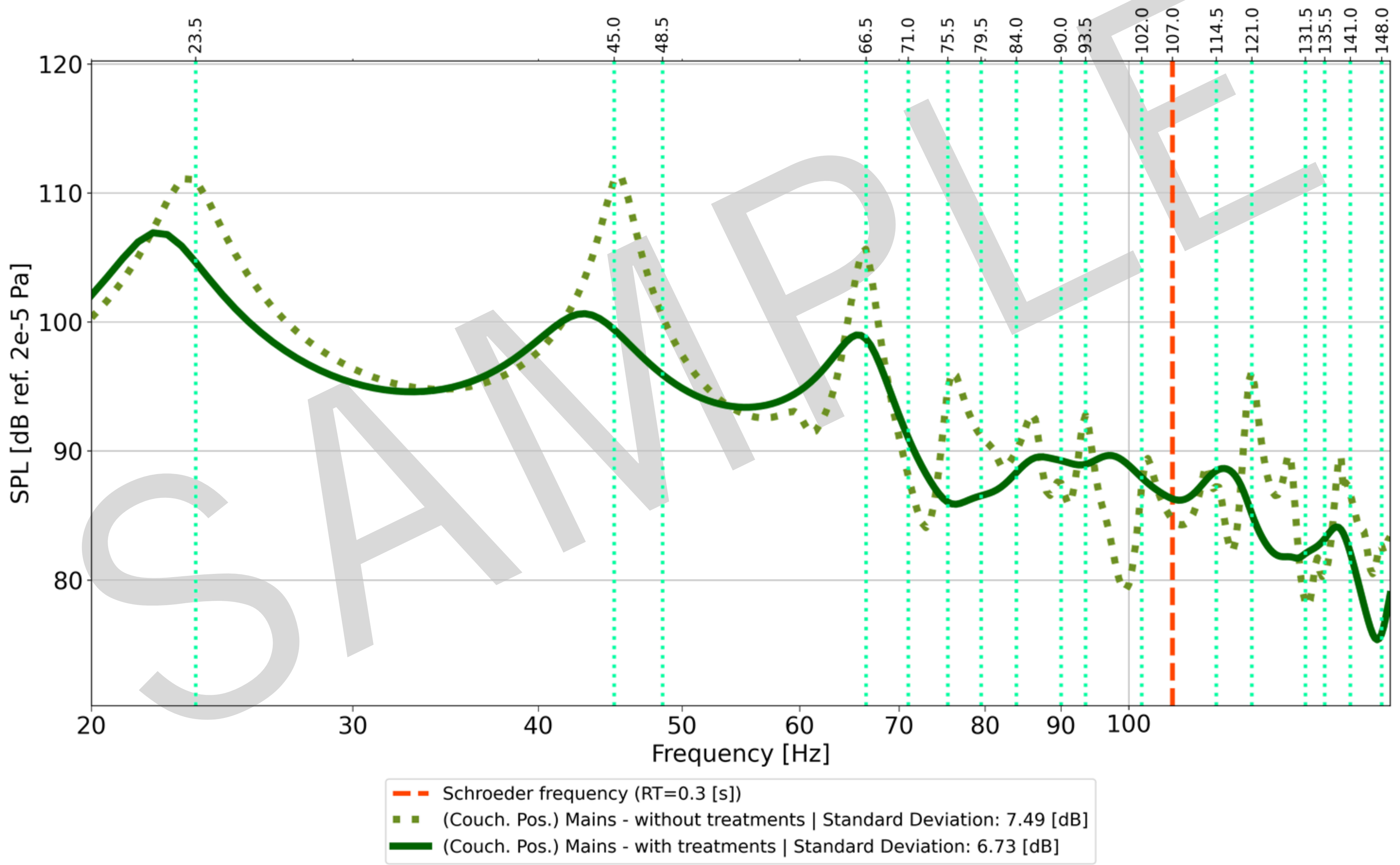
III. Low Frequency Analysis

3. Frequency Response – Mains at Couch Position



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The graph shows the predicted frequency response at the various listening positions.

The lines mark the critical frequency ranges. Pressure distribution plots of these frequencies are depicted on the following pages.

The actual room geometry has been used for this calculation.

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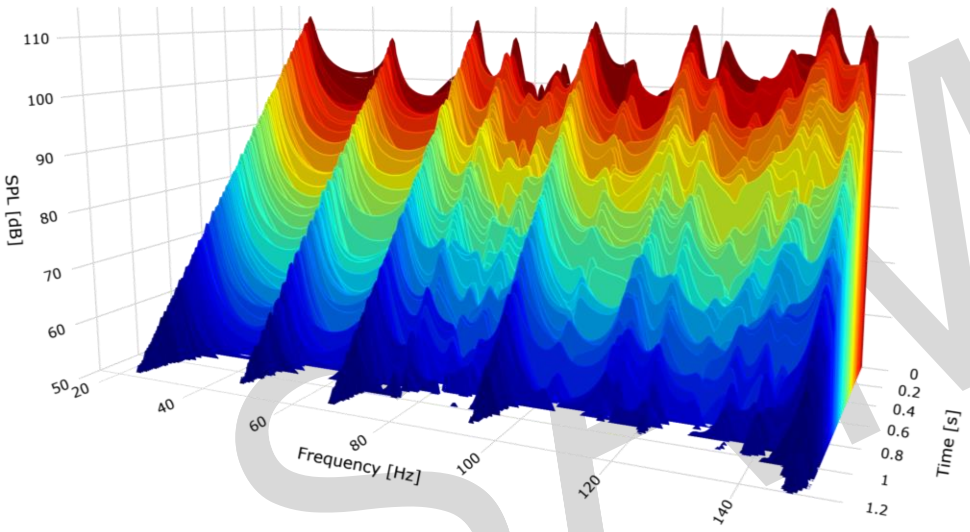
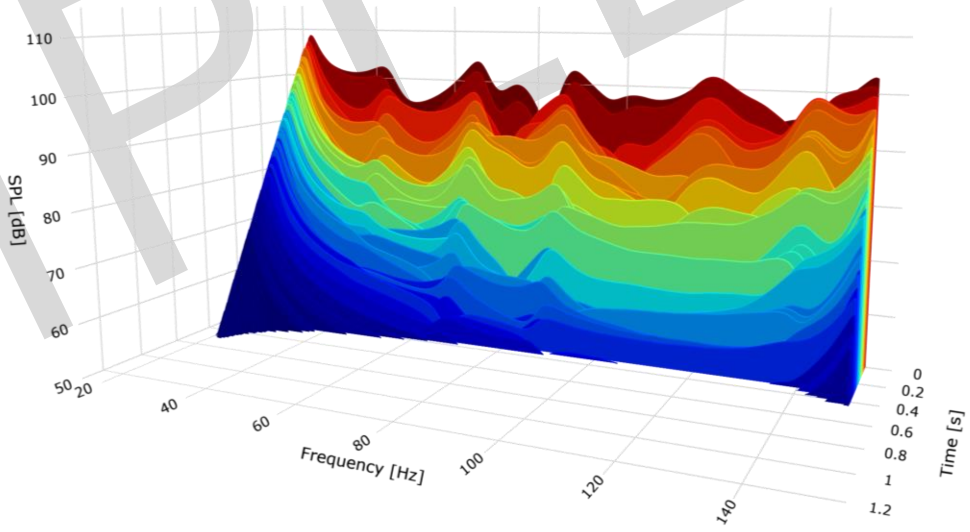
III. Low Frequency Analysis

4. Decay Spectrum Prediction - Mains at Mix Position (1st row)

Without treatments



With treatments



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The graph shows the predicted decay spectrum response at the mixing position.

Pressure distribution plots of the most prominent frequencies will be shown.

The actual room geometry has been used for this calculation.

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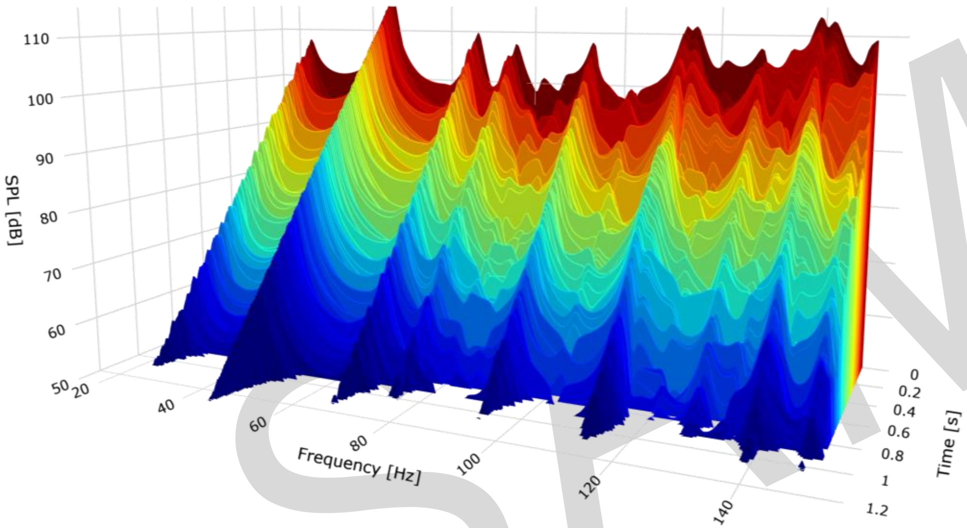
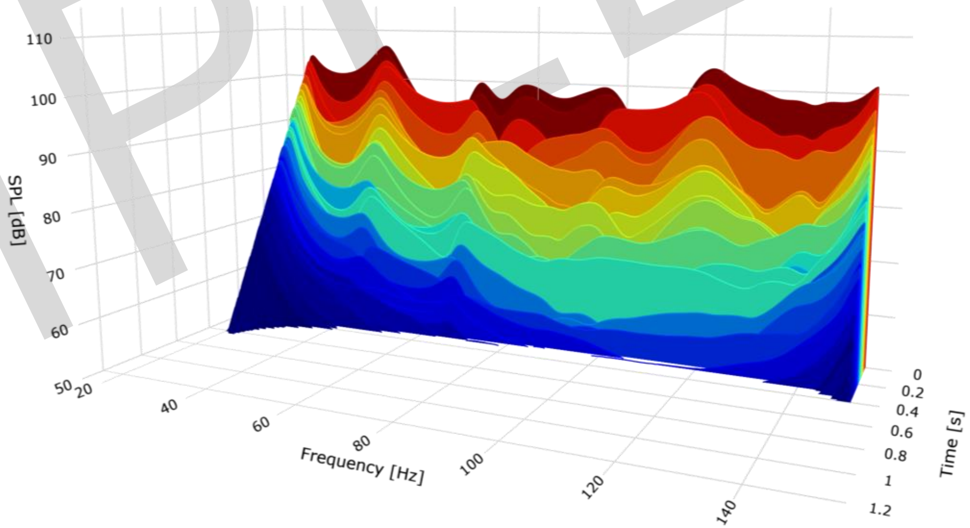
III. Low Frequency Analysis

5. Decay Spectrum Prediction - Mains at Mix Position (2nd row)

Without treatments



With treatments



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The graph shows the predicted decay spectrum response at the mixing position.

Pressure distribution plots of the most prominent frequencies will be shown.

The actual room geometry has been used for this calculation.

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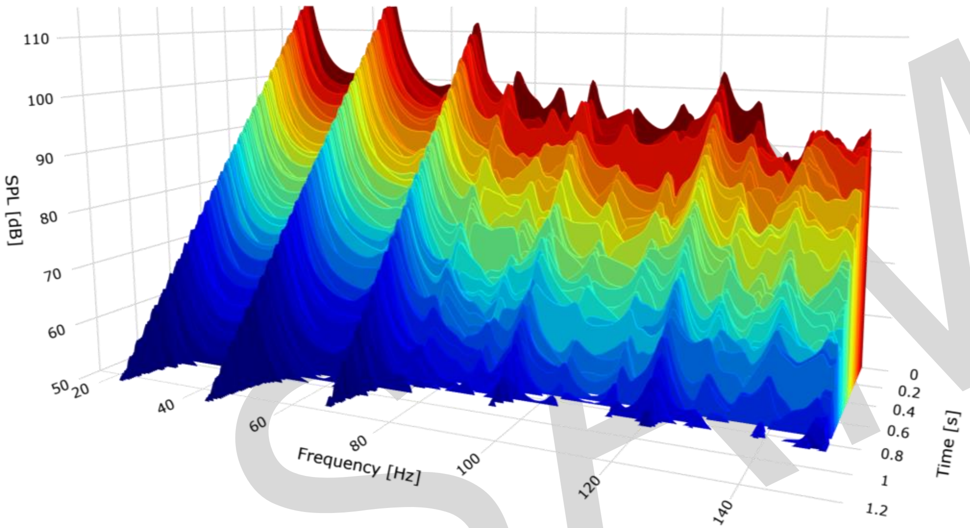
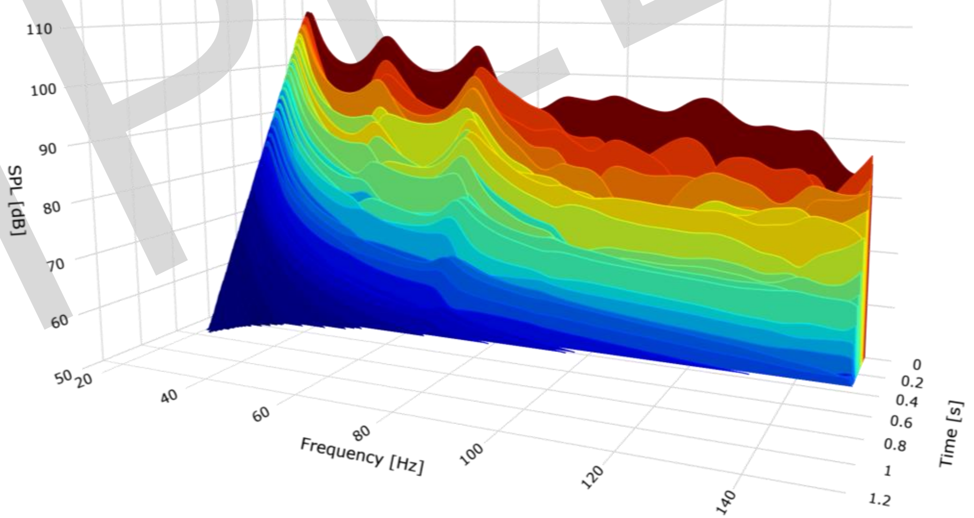
III. Low Frequency Analysis

6. Decay Spectrum Prediction – Mains at Couch Position

Without treatments



With treatments



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The graph shows the predicted decay spectrum response at the mixing position.

Pressure distribution plots of the most prominent frequencies will be shown.

The actual room geometry has been used for this calculation.

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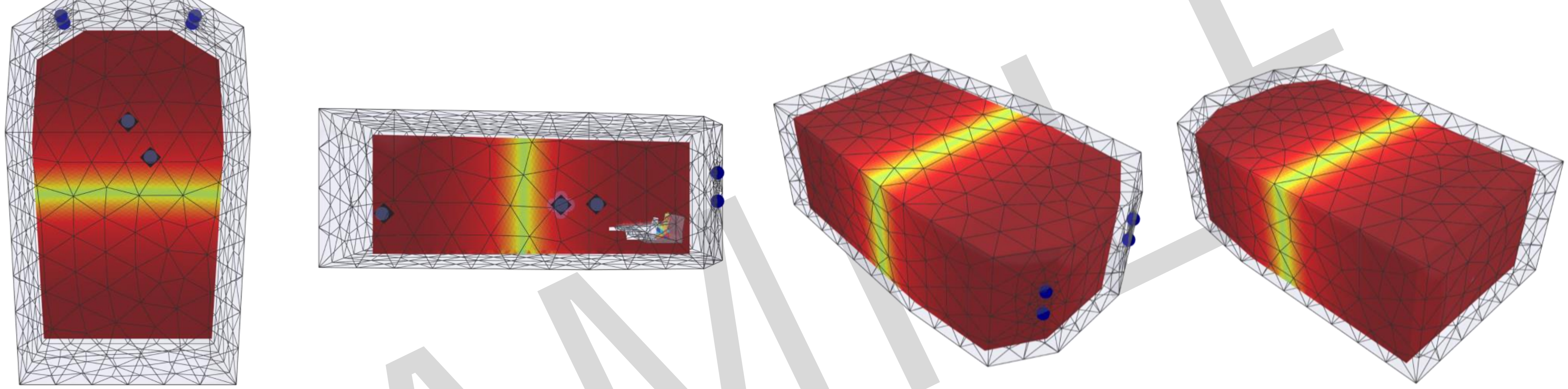
Pressure Distribution

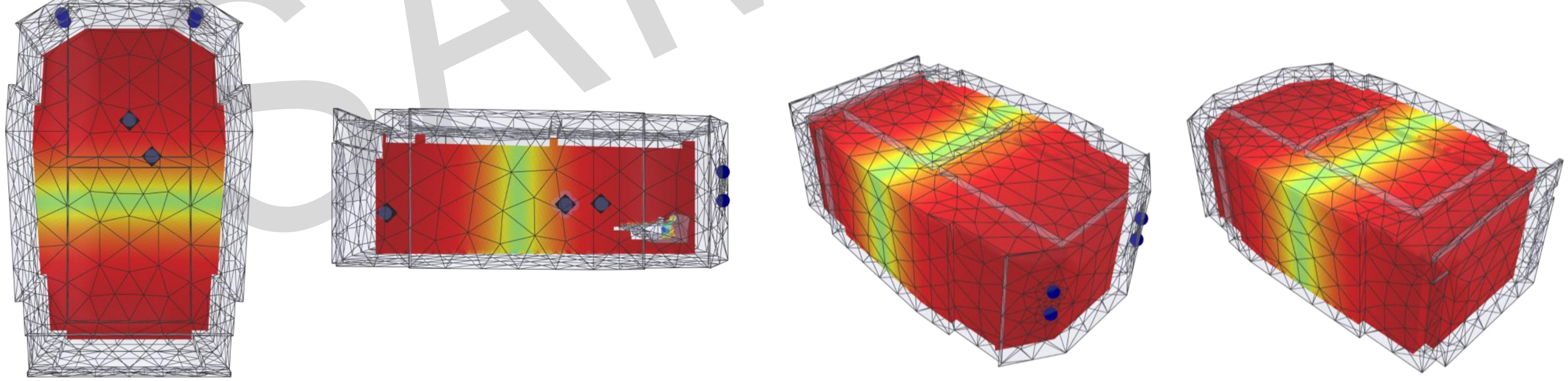
1. Mains - 23 Hz

➢ Without treatments



Z: 1.14 [m] | X: 0.00 [m] | Front of room | Rear of room

➢ With treatments



Z: 1.14 [m] | X: 0.00 [m] | Front of room | Rear of room

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These graphs show the predicted pressure distribution for the actual room layout based on a BEM analysis. The plan view represents the pressure distribution on listener ear level as seen from above. The section view represents the pressure distribution on the symmetry- axis as seen from the side.

Zones of high pressure appear as shades of red, zones of low pressure as shades of blue.

Date: January 01, 20XX
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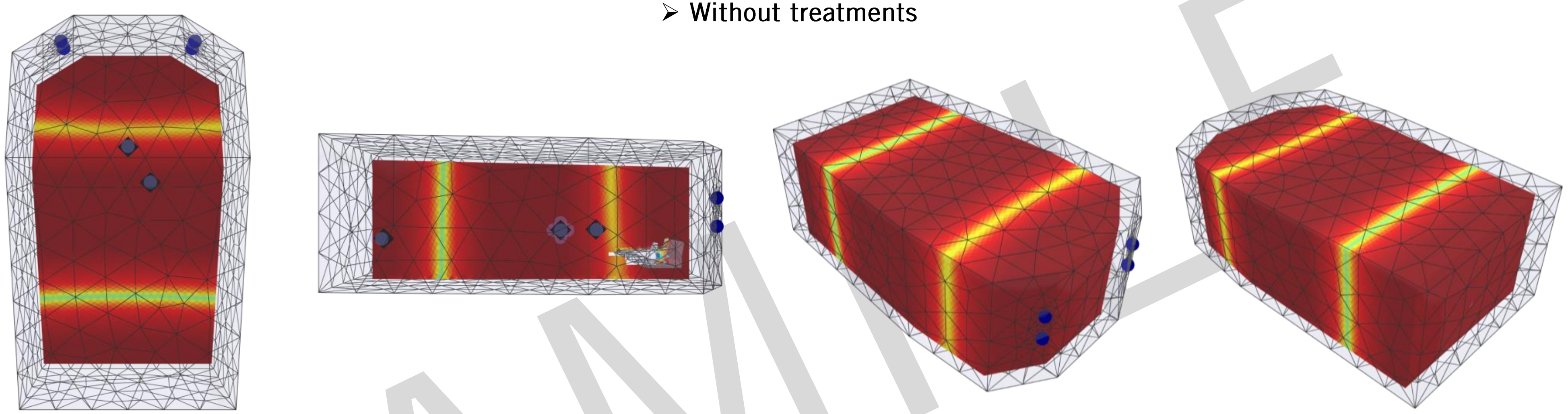
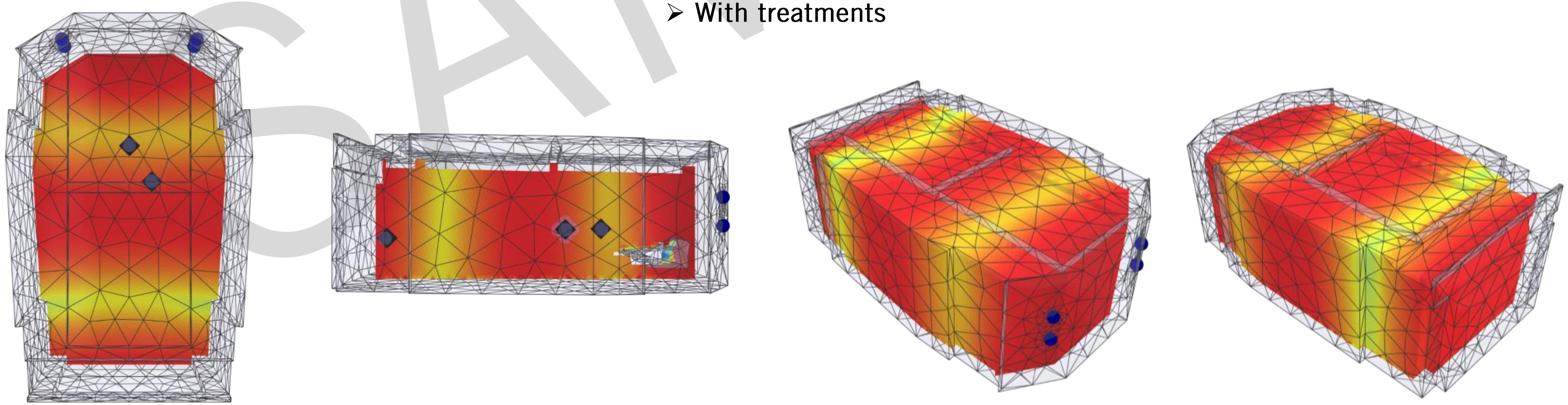
Pressure Distribution
1. Mains - 45 Hz

➢ Without treatments



Z: 1.14 [m] | X: 0.00 [m] | Front of room | Rear of room

➢ With treatments



Z: 1.14 [m] | X: 0.00 [m] | Front of room | Rear of room

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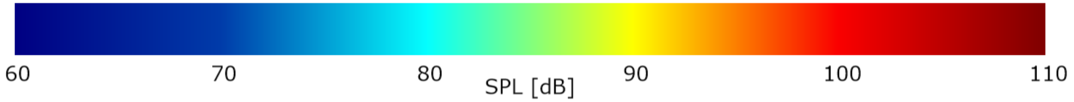
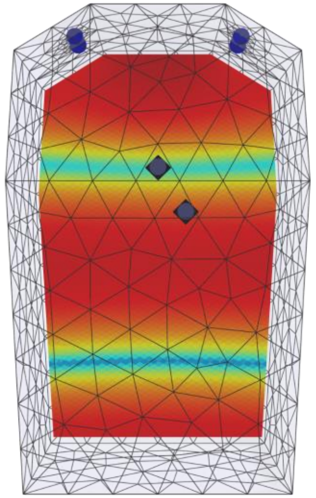
Pressure Distribution

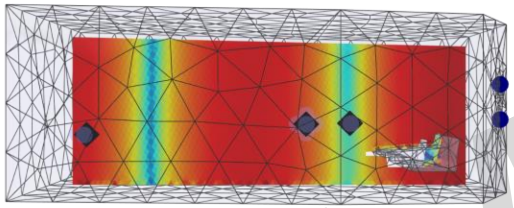
1. Mains - 48 Hz



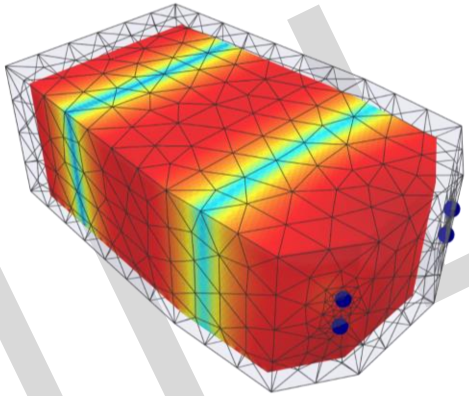
➢ **Without treatments**



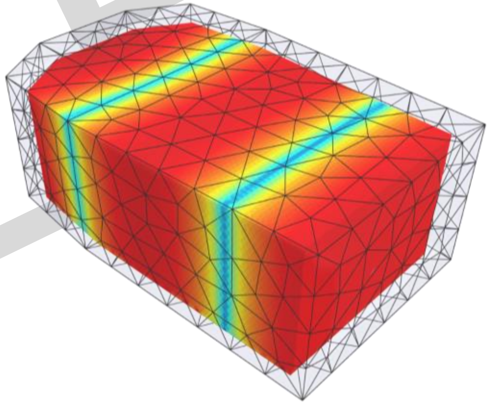
Z: 1.14 [m]



X: 0.00 [m]

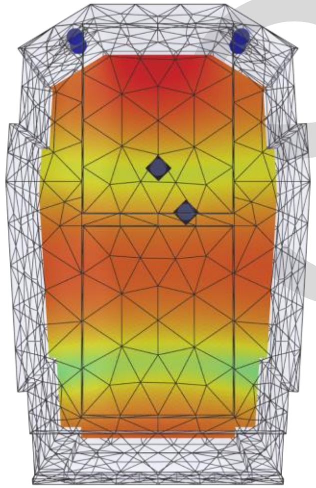


Front of room

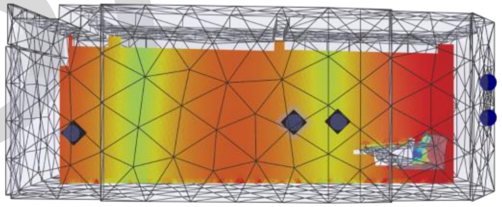


Rear of room

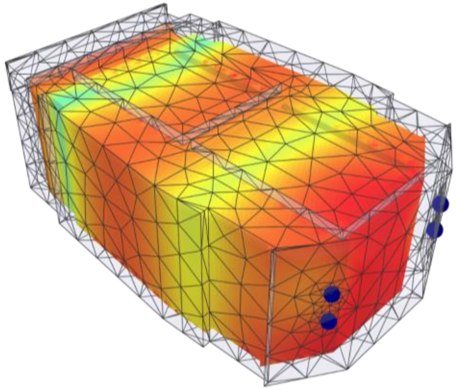
➢ **With treatments**



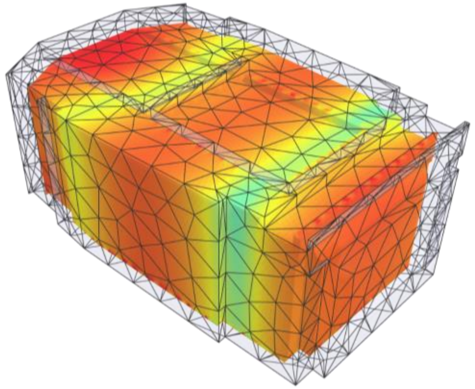
Z: 1.14 [m]



X: 0.00 [m]



Front of room



Rear of room

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These graphs show the predicted pressure distribution for the actual room layout based on a BEM analysis. The plan view represents the pressure distribution on listener ear level as seen from above. The section view represents the pressure distribution on the symmetry- axis as seen from the side.

Zones of high pressure appear as shades of red, zones of low pressure as shades of blue.

Date: January 01, 20XX

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Review: REDI Acoustics

Pressure Distribution

1. Mains - 66 Hz

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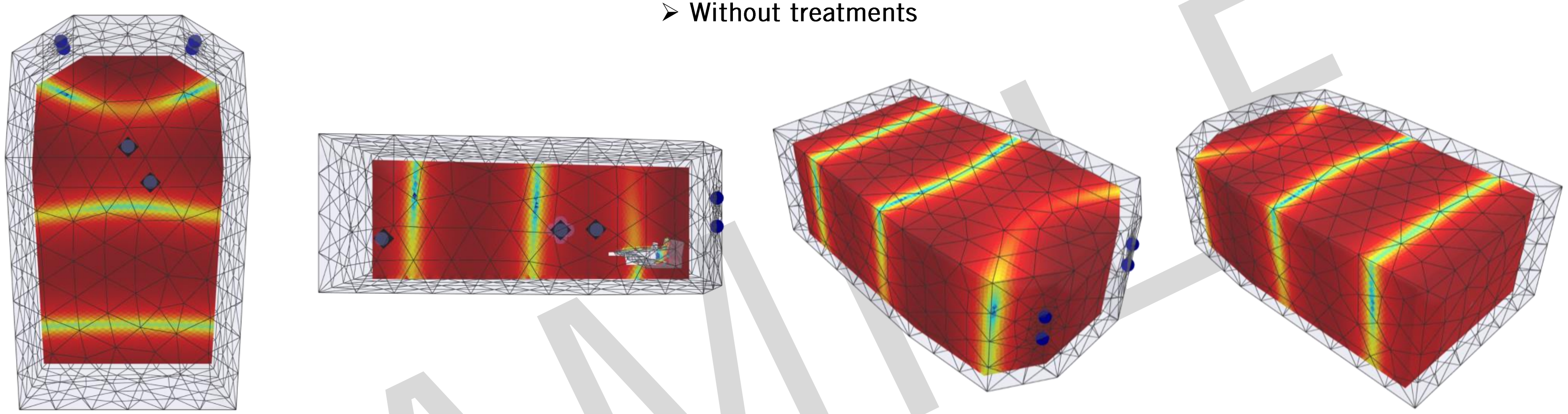
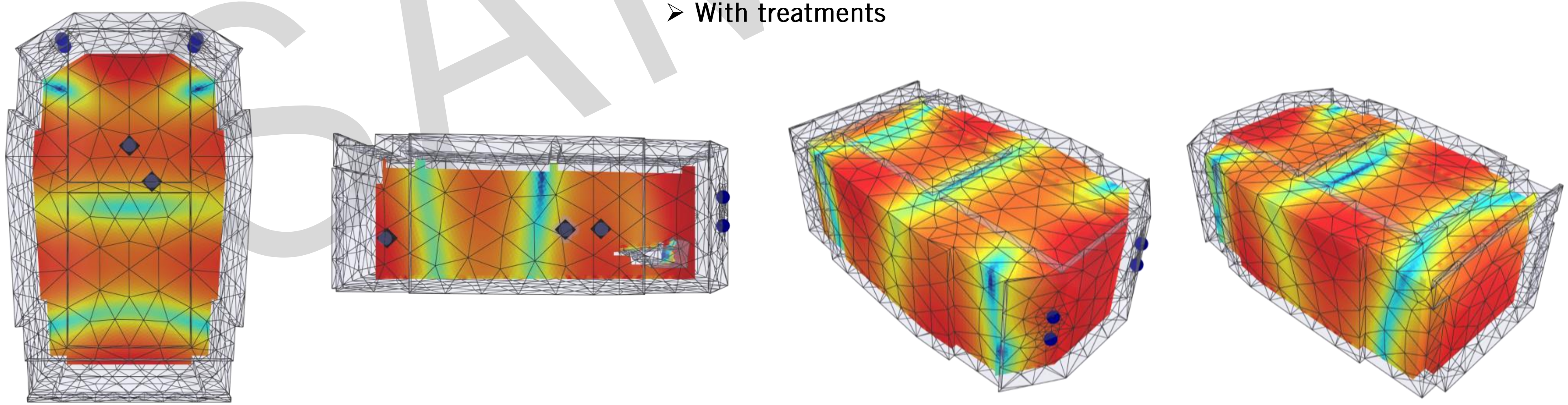
YOUR LOGO

➢ Without treatments



Z: 1.14 [m] X: 0.00 [m] Front of room Rear of room

➢ With treatments



Z: 1.14 [m] X: 0.00 [m] Front of room Rear of room

These graphs show the predicted pressure distribution for the actual room layout based on a BEM analysis. The plan view represents the pressure distribution on listener ear level as seen from above. The section view represents the pressure distribution on the symmetry- axis as seen from the side.

Zones of high pressure appear as shades of red, zones of low pressure as shades of blue.

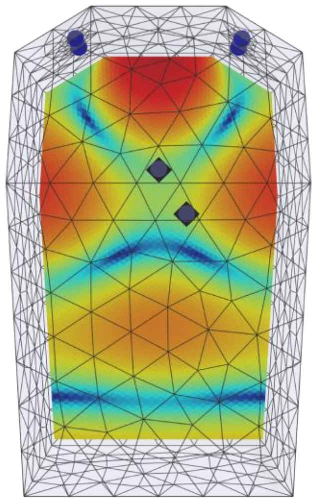
Date:	January 01, 20XX
Author:	REDI Acoustics
Review:	REDI Acoustics

Pressure Distribution
1. Mains - 71 Hz

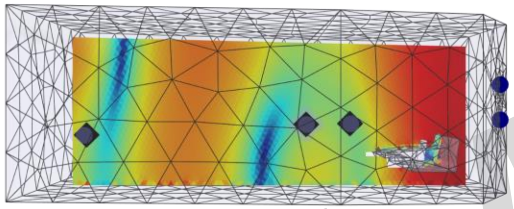
60 70 80 90 100 110

SPL [dB]

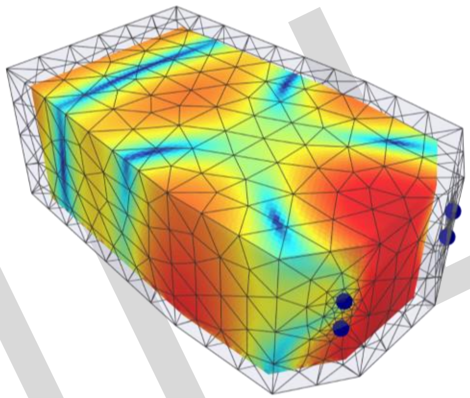
➢ Without treatments



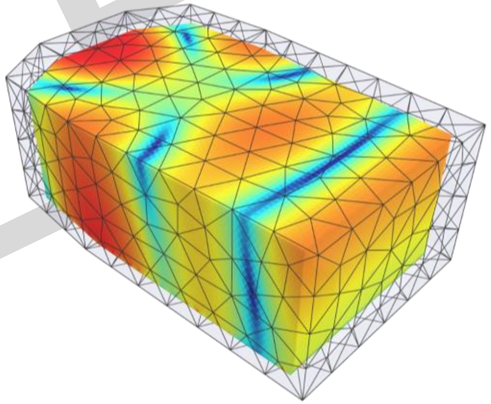
Z: 1.14 [m]



X: 0.00 [m]

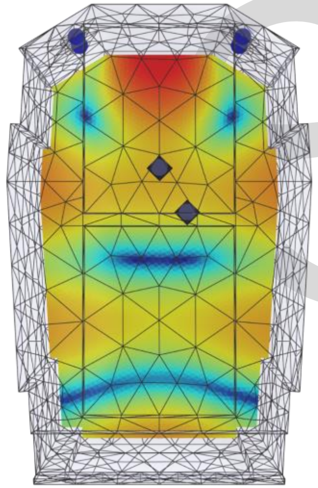


Front of room

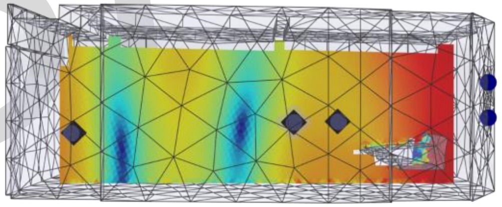


Rear of room

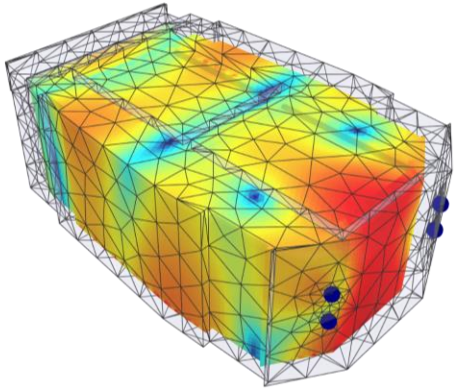
➢ With treatments



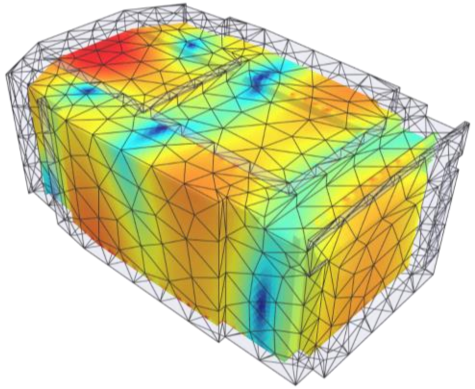
Z: 1.14 [m]



X: 0.00 [m]



Front of room



Rear of room

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www.rediacoustics.com

Prepared for:	John Doe

YOUR LOGO

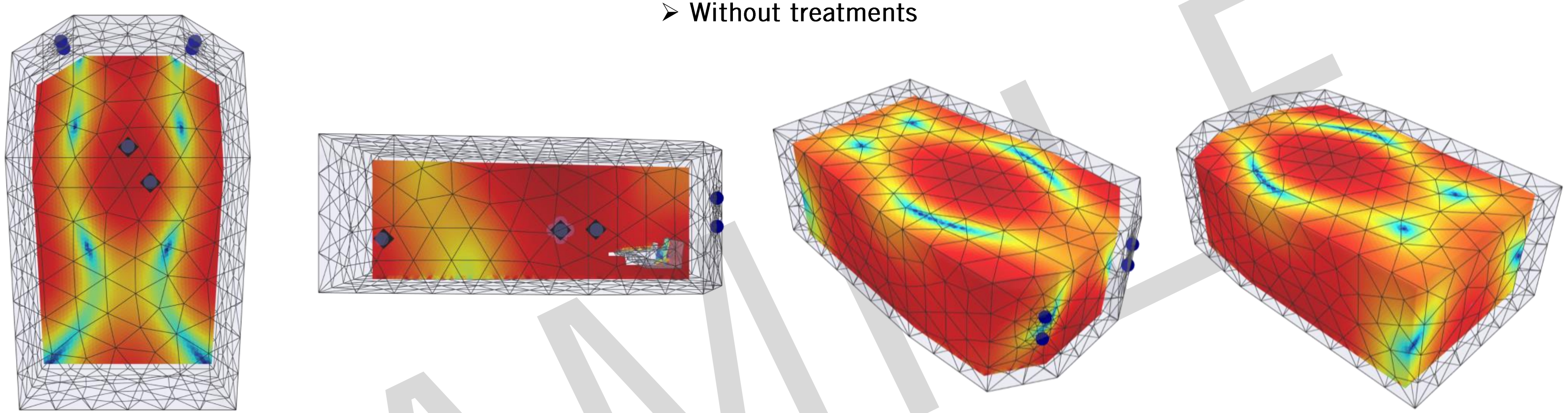
These graphs show the predicted pressure distribution for the actual room layout based on a BEM analysis. The plan view represents the pressure distribution on listener ear level as seen from above. The section view represents the pressure distribution on the symmetry- axis as seen from the side.

Zones of high pressure appear as shades of red, zones of low pressure as shades of blue.

Date:	January 01, 20XX
Author:	REDI Acoustics
Review:	REDI Acoustics
Page:	28

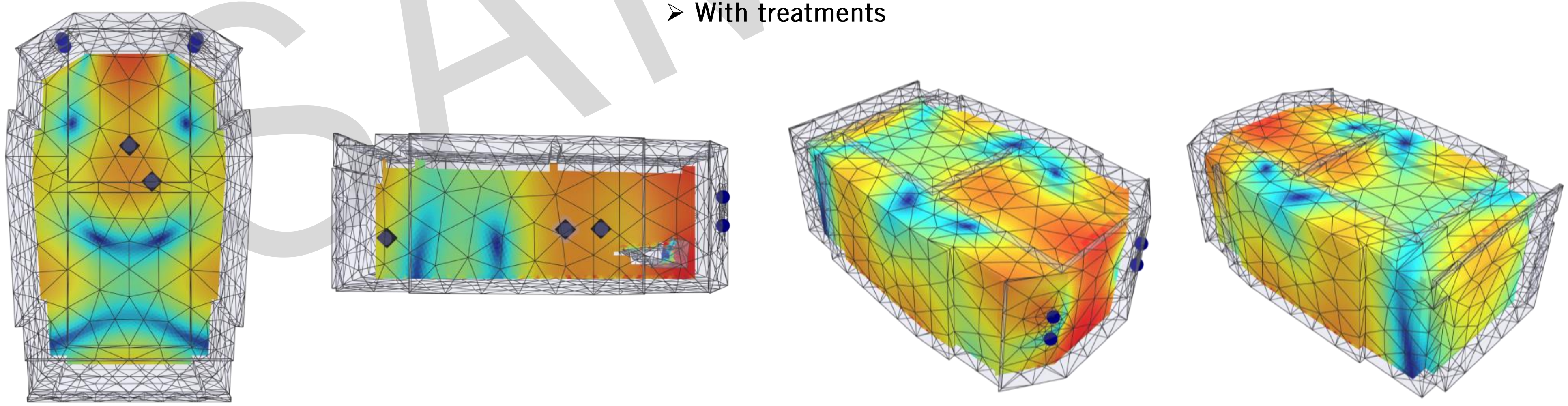
Pressure Distribution
1. Mains - 75 Hz

➢ Without treatments



Z: 1.14 [m] | X: 0.00 [m] | Front of room | Rear of room

➢ With treatments



Z: 1.14 [m] | X: 0.00 [m] | Front of room | Rear of room

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Prepared for: John Doe

YOUR LOGO

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Date: January 01, 20XX

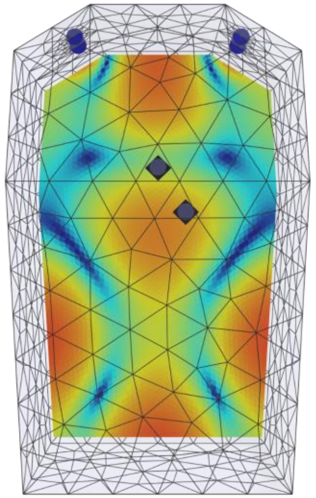
Author: REDI Acoustics

Review: REDI Acoustics

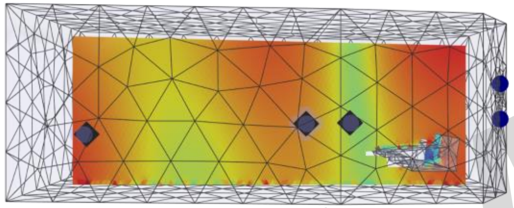
Pressure Distribution

1. Mains - 79 Hz

➢ Without treatments



Z: 1.14 [m]



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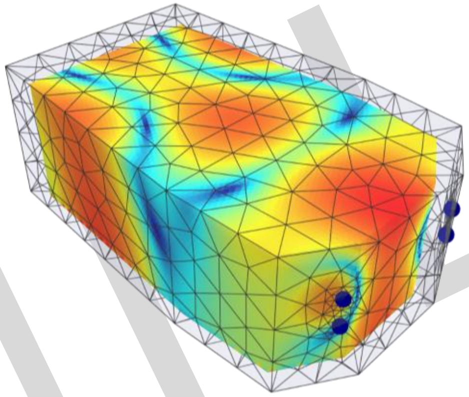
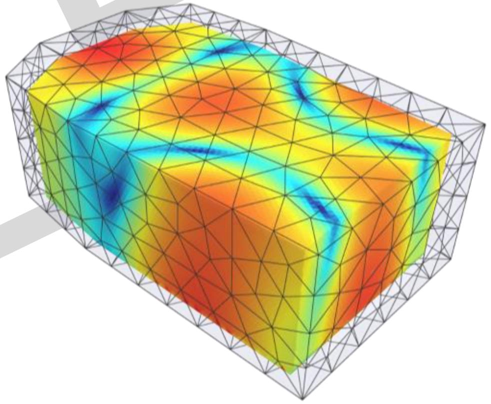
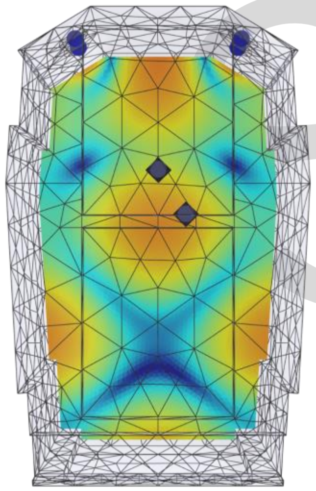


Front of room

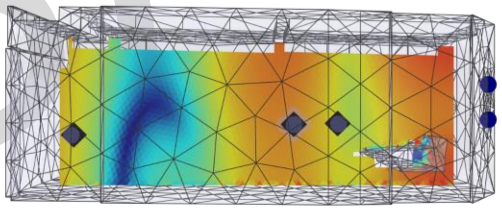


Rear of room

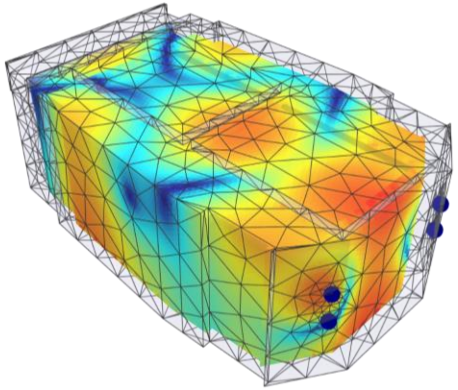
➢ With treatments



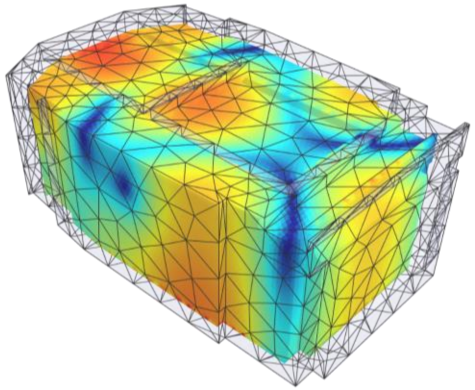
Z: 1.14 [m]



X: 0.00 [m]



Front of room



Rear of room

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Prepared for: John Doe

YOUR LOGO

These graphs show the predicted pressure distribution for the actual room layout based on a BEM analysis. The plan view represents the pressure distribution on listener ear level as seen from above. The section view represents the pressure distribution on the symmetry- axis as seen from the side.

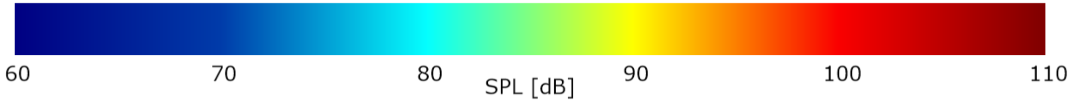
Zones of high pressure appear as shades of red, zones of low pressure as shades of blue.

Date: January 01, 20XX

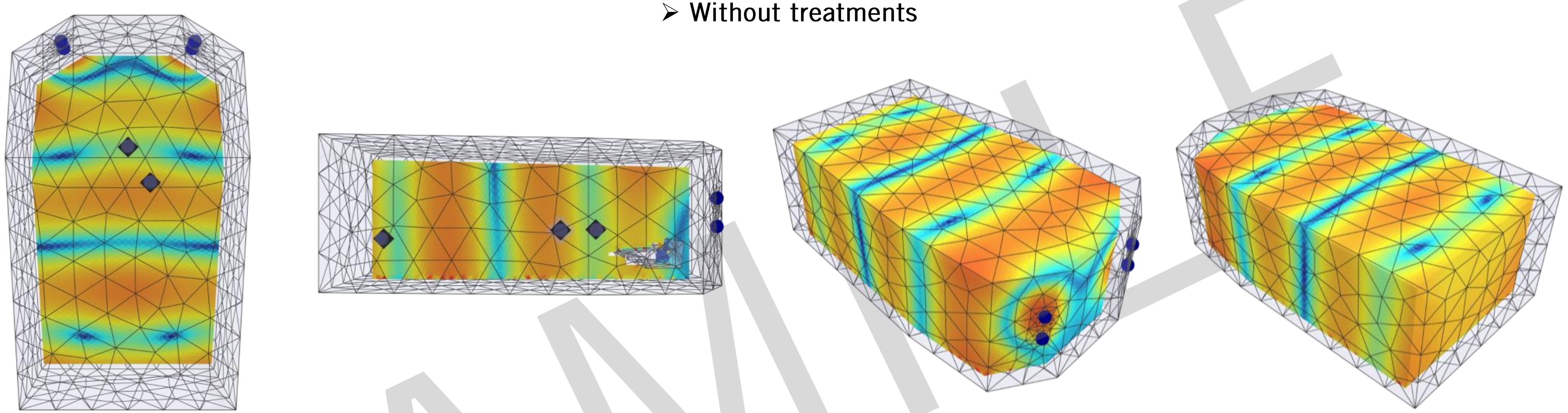
Author: REDI Acoustics

Review: REDI Acoustics

Pressure Distribution
1. Mains - 84 Hz

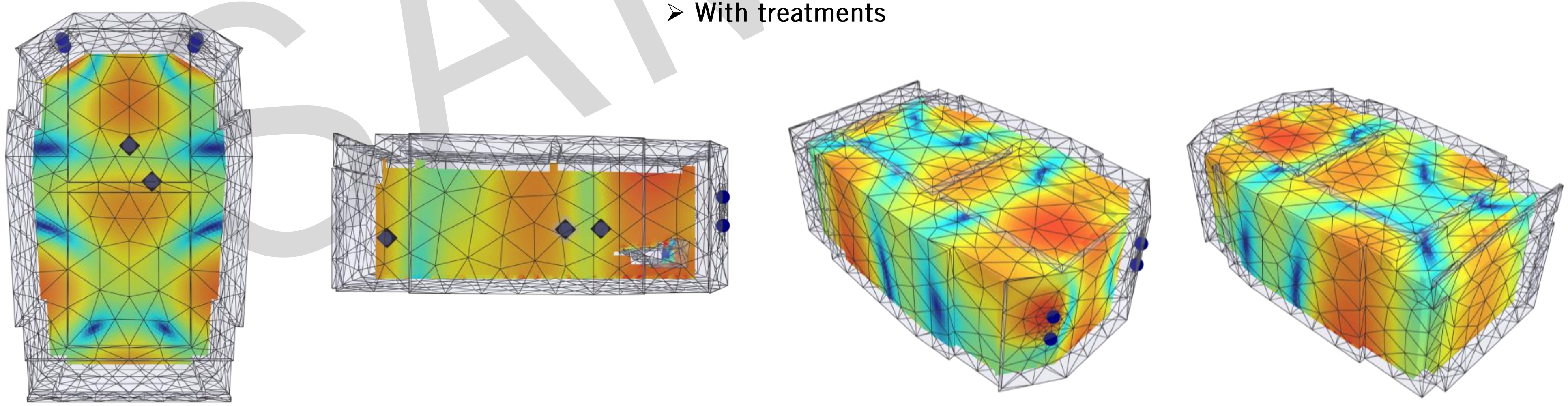


➢ Without treatments



Z: 1.14 [m] X: 0.00 [m] Front of room Rear of room

➢ With treatments



Z: 1.14 [m] X: 0.00 [m] Front of room Rear of room

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Prepared for: John Doe

YOUR LOGO

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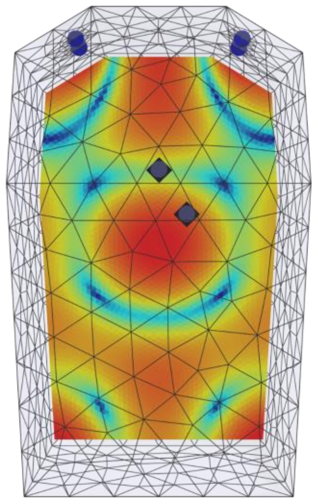
Date: January 01, 20XX
Author: REDI Acoustics
Review: REDI Acoustics

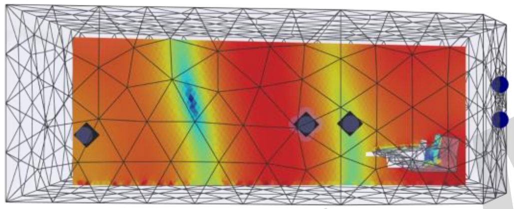
Pressure Distribution

1. Mains - 90 Hz

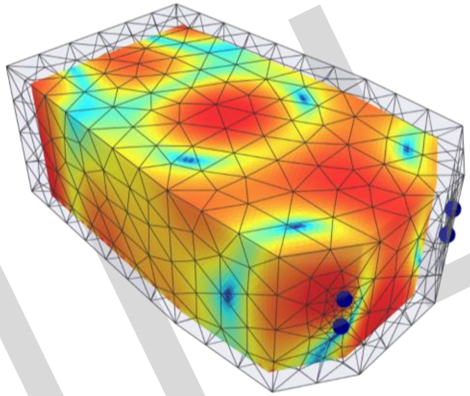
➢ Without treatments



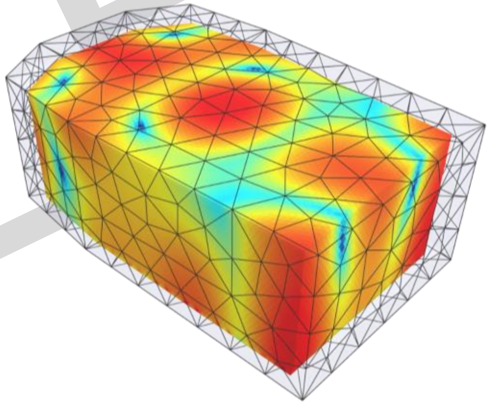
Z: 1.14 [m]



X: 0.00 [m]

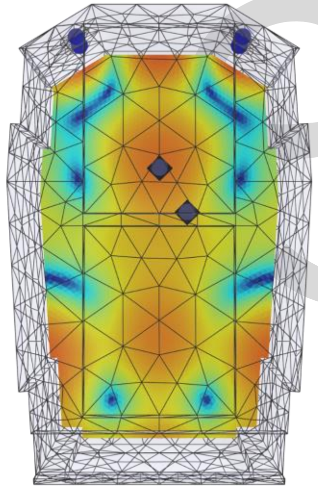


Front of room

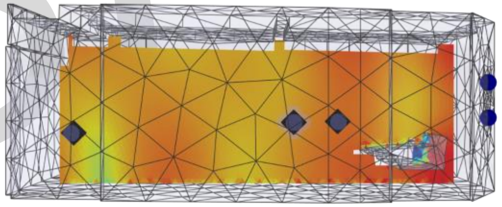


Rear of room

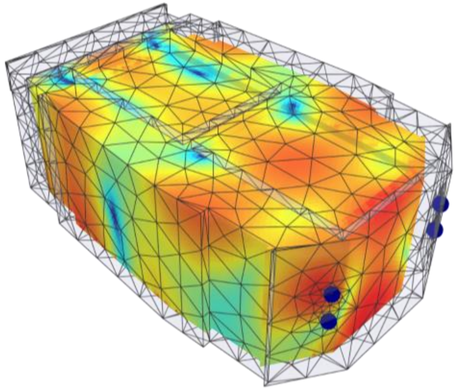
➢ With treatments



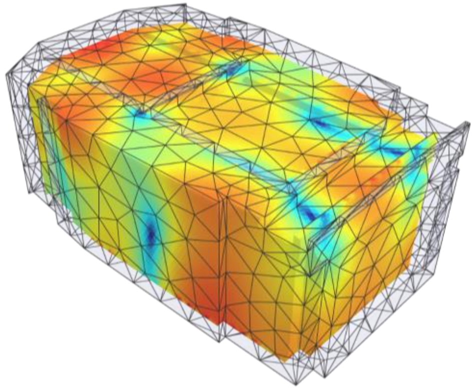
Z: 1.14 [m]



X: 0.00 [m]



Front of room



Rear of room

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Prepared for: John Doe

YOUR LOGO

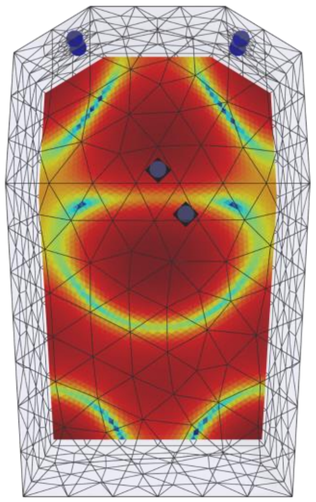
These graphs show the predicted pressure distribution for the actual room layout based on a BEM analysis. The plan view represents the pressure distribution on listener ear level as seen from above. The section view represents the pressure distribution on the symmetry- axis as seen from the side.

Zones of high pressure appear as shades of red, zones of low pressure as shades of blue.

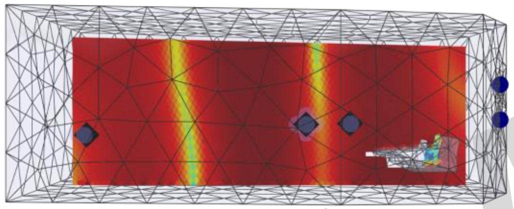
Date: January 01, 20XX
Author: REDI Acoustics
Review: REDI Acoustics

Pressure Distribution
1. Mains - 93 Hz

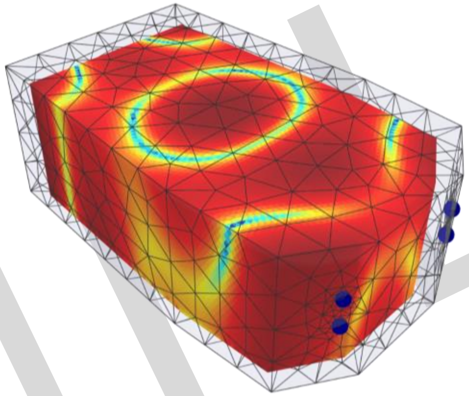
➢ Without treatments



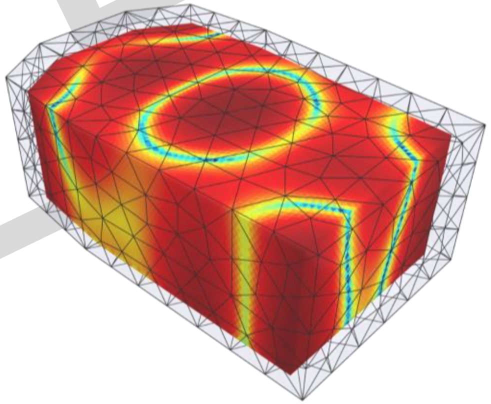
Z: 1.14 [m]



X: 0.00 [m]

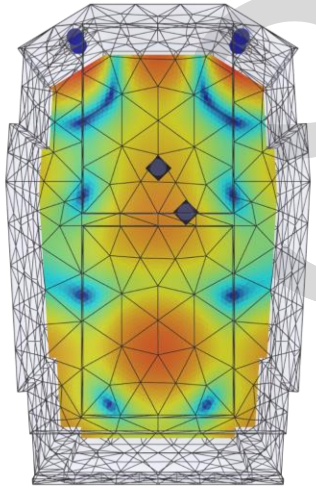


Front of room

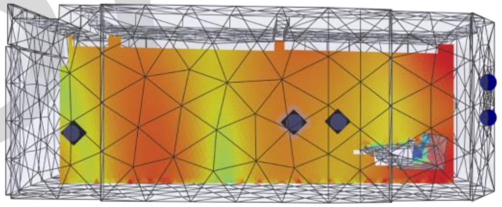


Rear of room

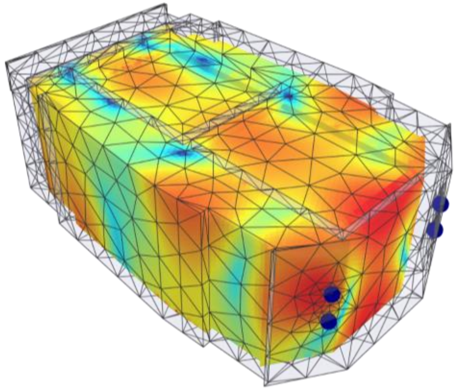
➢ With treatments



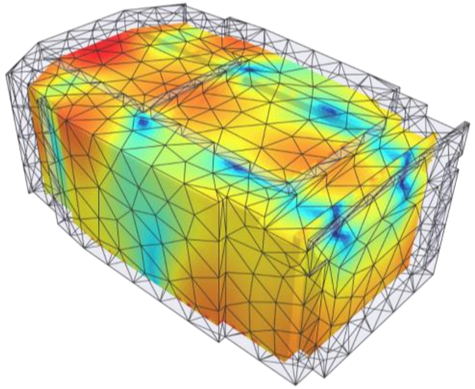
Z: 1.14 [m]



X: 0.00 [m]



Front of room



Rear of room

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Prepared for: John Doe

YOUR LOGO

These graphs show the predicted pressure distribution for the actual room layout based on a BEM analysis. The plan view represents the pressure distribution on listener ear level as seen from above. The section view represents the pressure distribution on the symmetry- axis as seen from the side.

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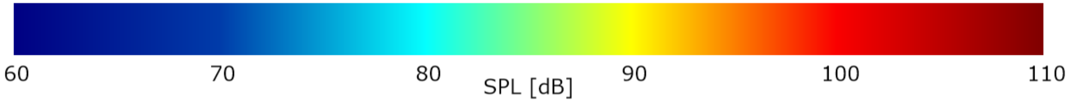
Date: January 01, 20XX

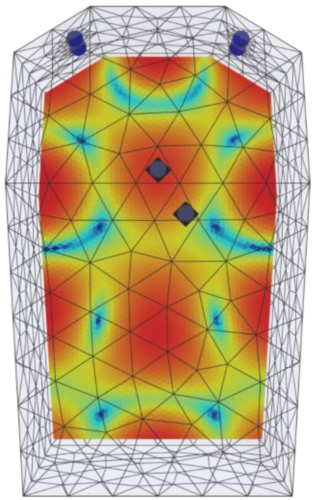
Author: REDI Acoustics

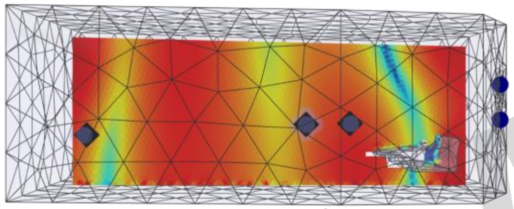
Review: REDI Acoustics

Pressure Distribution
1. Mains - 102 Hz



➢ Without treatments


Z: 1.14 [m]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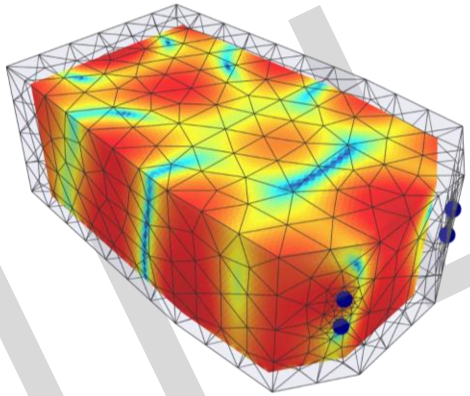
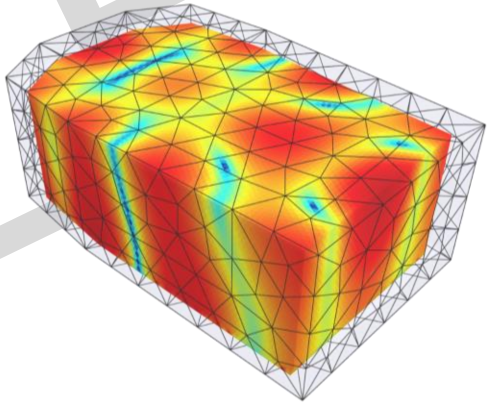
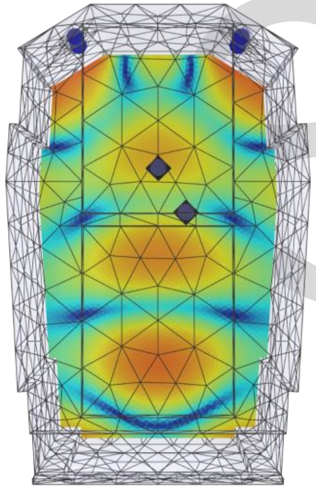
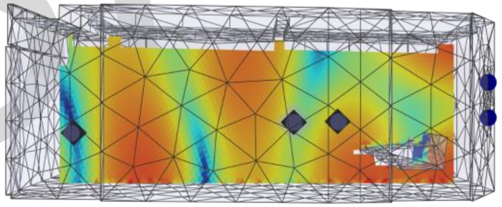

Front of room


Rear of room

➢ With treatments


Z: 1.14 [m]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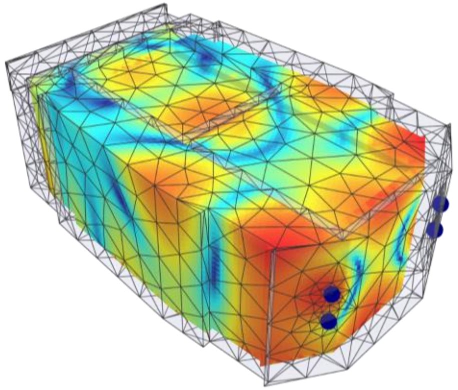
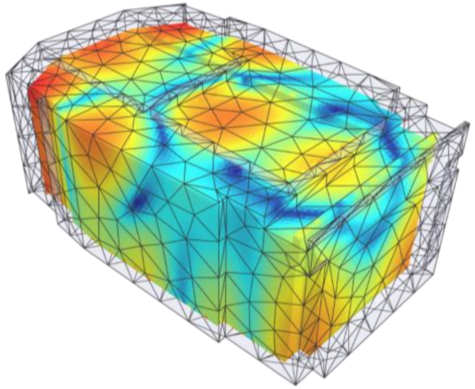

Front of room


Rear of room

Prepared for: John Doe

YOUR LOGO

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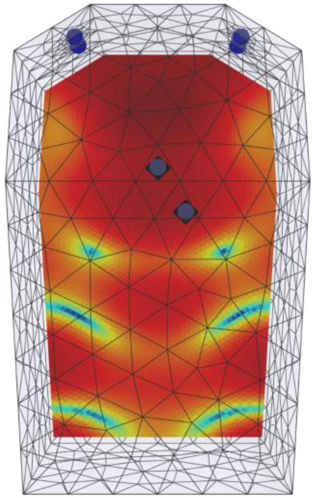
Date: January 01, 20XX

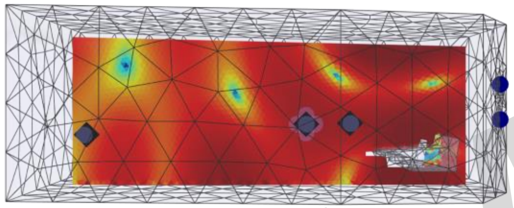
Author: REDI Acoustics

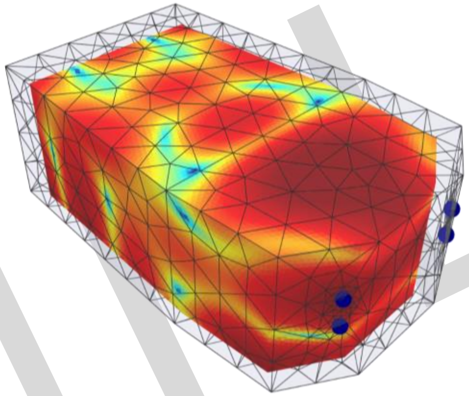
Review: REDI Acoustics

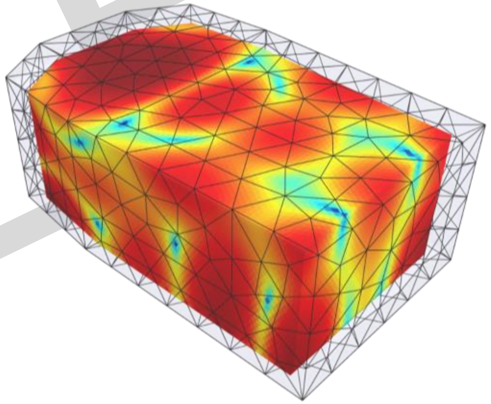
Pressure Distribution
1. Mains - 114 Hz

➢ Without treatments

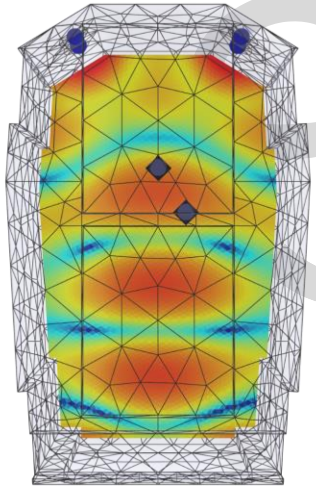

Z: 1.14 [m]

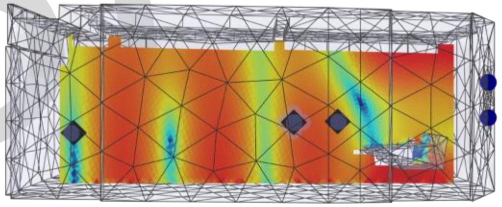

X: 0.00 [m]

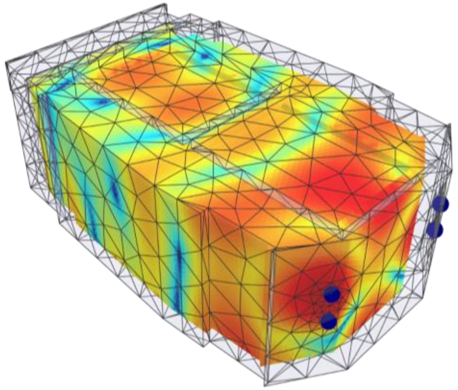

Front of room

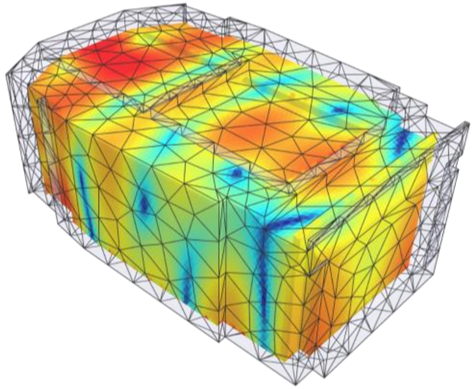

Rear of room

➢ With treatments


Z: 1.14 [m]


X: 0.00 [m]


Front of room


Rear of room

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www.rediacoustics.com

Prepared for: John Doe

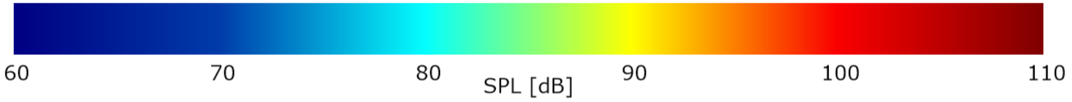
YOUR LOGO

These graphs show the predicted pressure distribution for the actual room layout based on a BEM analysis. The plan view represents the pressure distribution on listener ear level as seen from above. The section view represents the pressure distribution on the symmetry- axis as seen from the side.

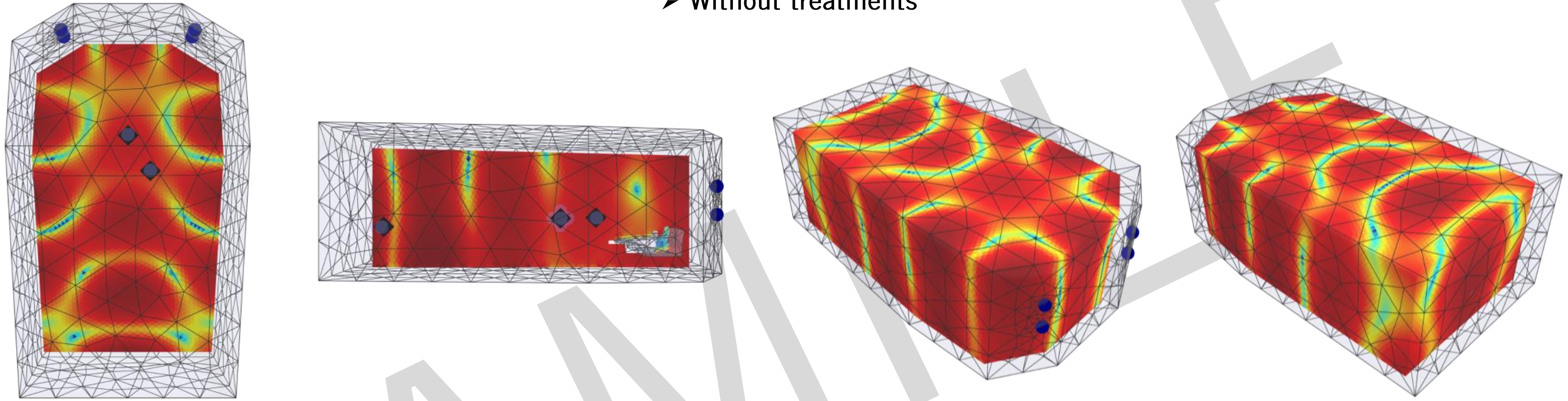
Zones of high pressure appear as shades of red, zones of low pressure as shades of blue.

Date:	January 01, 20XX
Author:	REDI Acoustics
Review:	REDI Acoustics

Pressure Distribution
1. Mains - 121 Hz

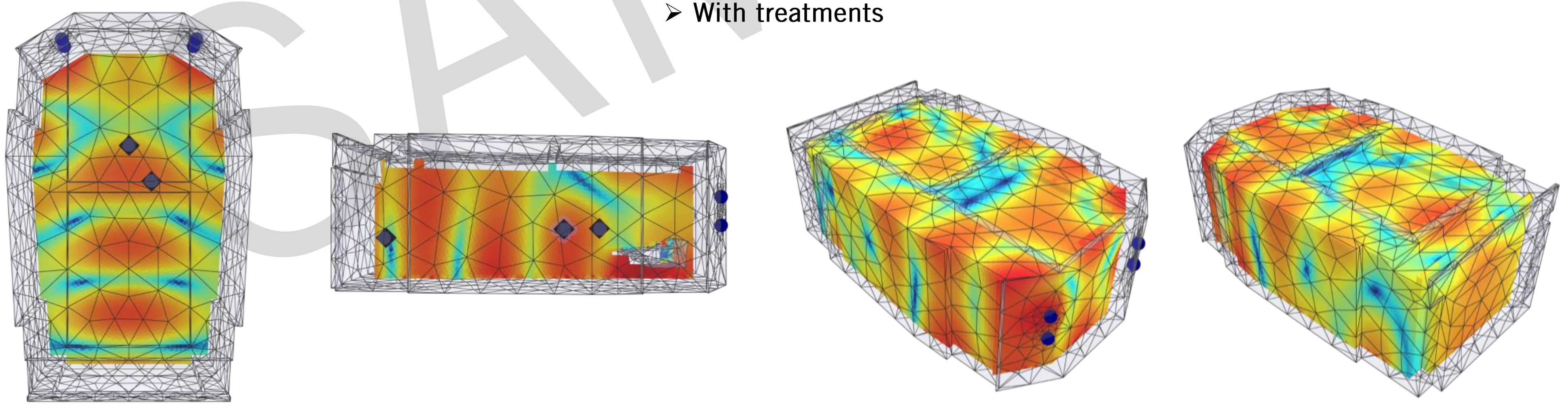


➢ Without treatments



Z: 1.14 [m] | X: 0.00 [m] | Front of room | Rear of room

➢ With treatments



Z: 1.14 [m] | X: 0.00 [m] | Front of room | Rear of room

Prepared for: John Doe

YOUR LOGO

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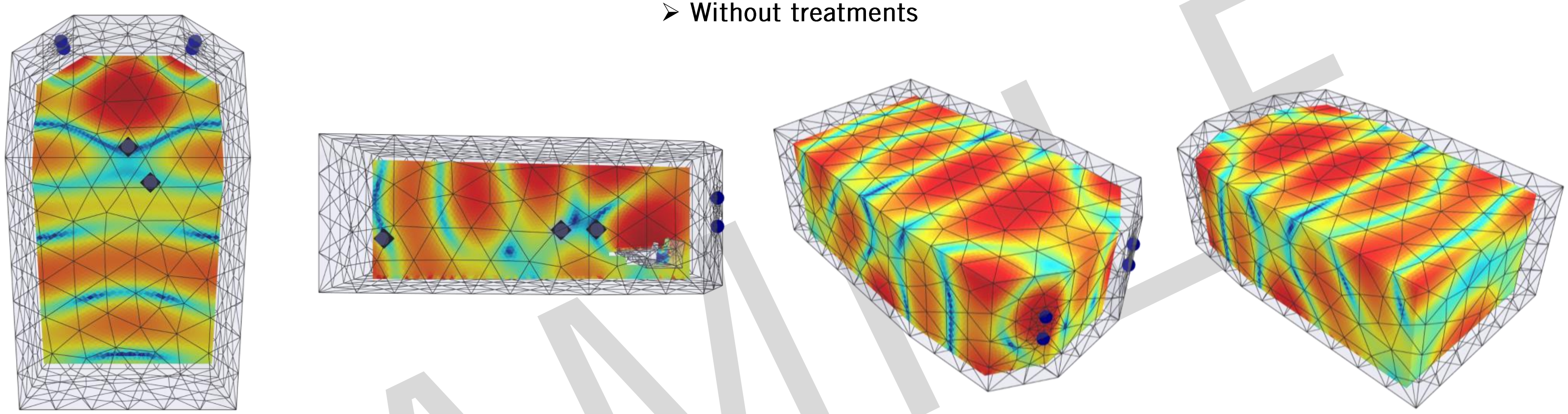
Date: January 01, 20XX

Author: REDI Acoustics

Review: REDI Acoustics

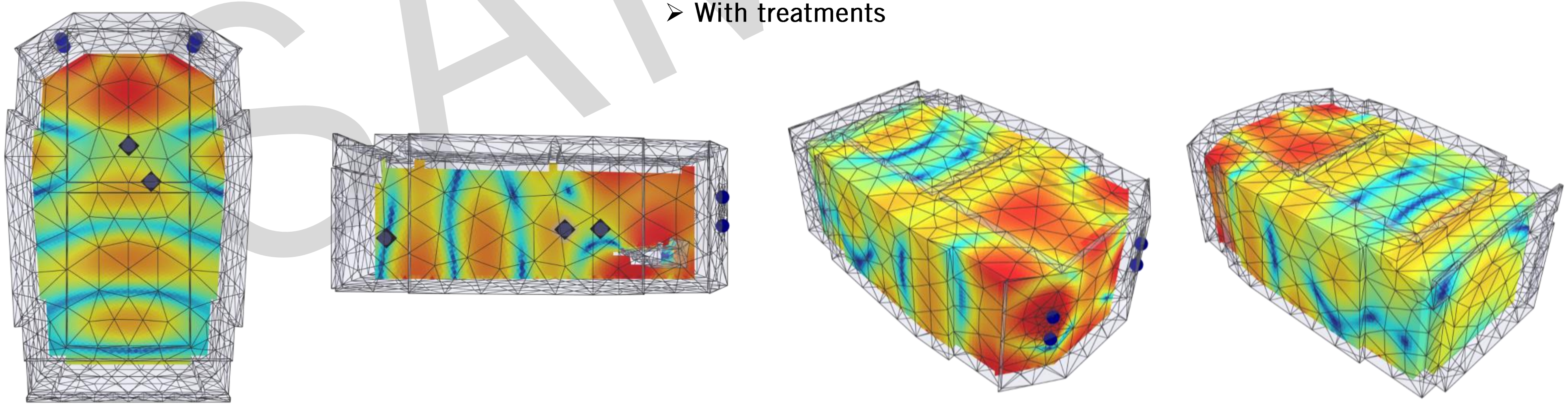
Pressure Distribution
1. Mains - 131 Hz

➢ Without treatments



Z: 1.14 [m] X: 0.00 [m] Front of room Rear of room

➢ With treatments



Z: 1.14 [m] X: 0.00 [m] Front of room Rear of room

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Prepared for: John Doe

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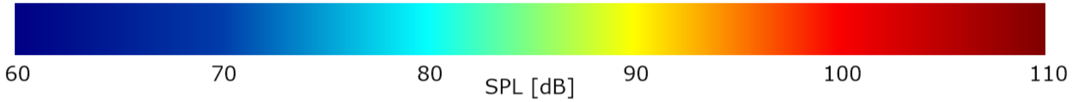
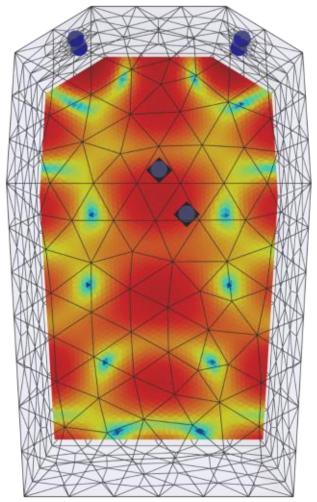
Review: REDI Acoustics

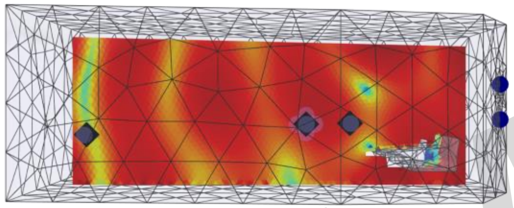
Pressure Distribution

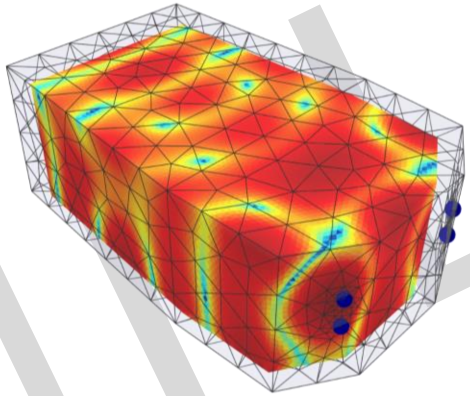
1. Mains - 135 Hz

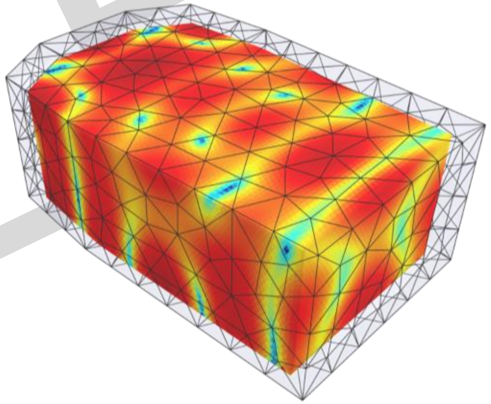


➢ **Without treatments**

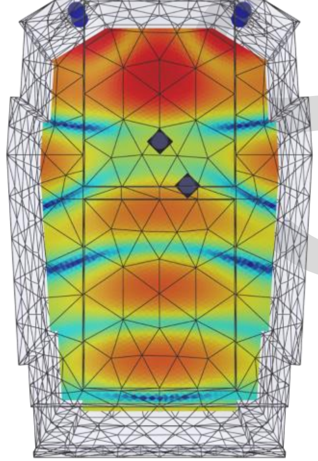

Z: 1.14 [m]

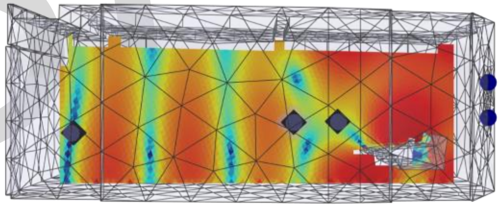

X: 0.00 [m]


Front of room


Rear of room

➢ **With treatments**


Z: 1.14 [m]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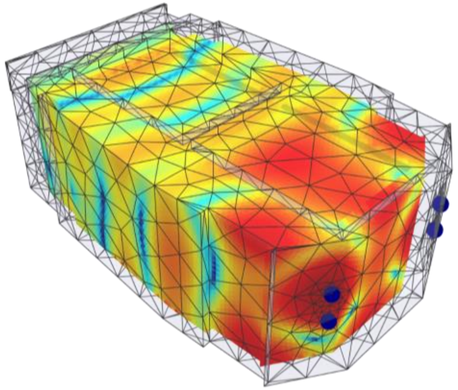
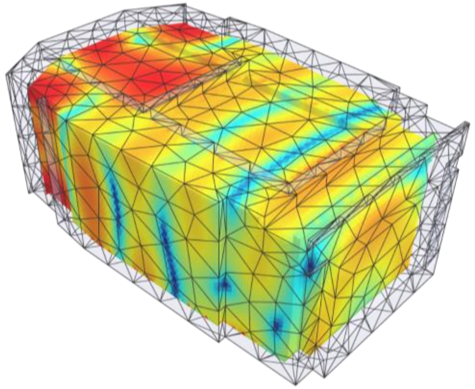

Front of room


Rear of room

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Prepared for: John Doe

YOUR LOGO

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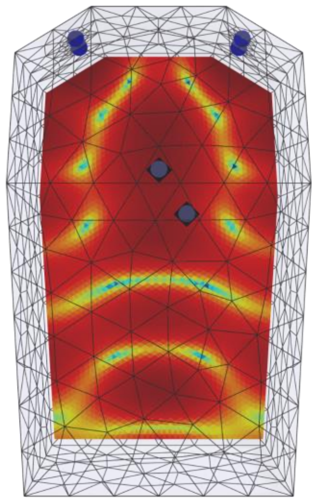
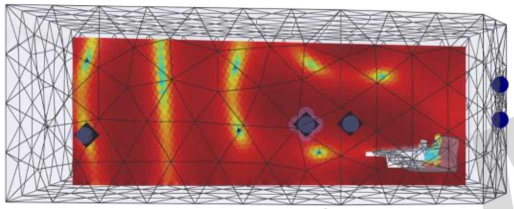
Date:	January 01, 20XX
Author:	REDI Acoustics
Review:	REDI Acoustics

Pressure Distribution
1. Mains - 141 Hz

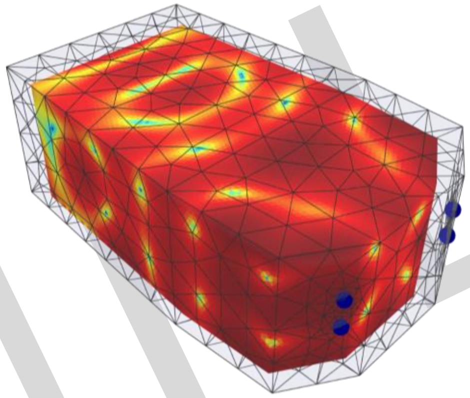
➢ Without treatments



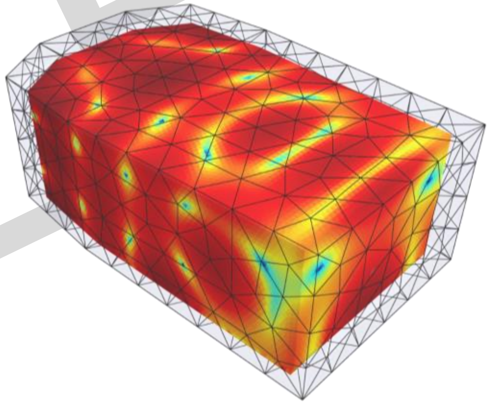
Z: 1.14 [m]



X: 0.00 [m]

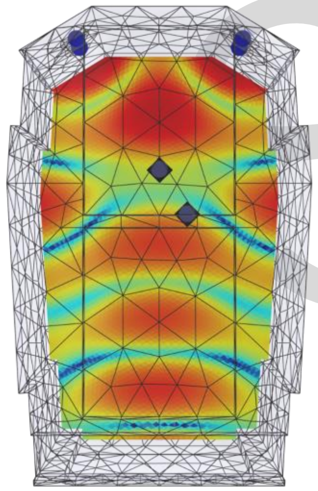


Front of room

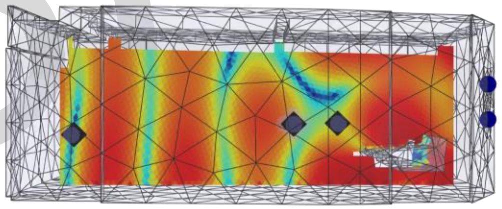


Rear of room

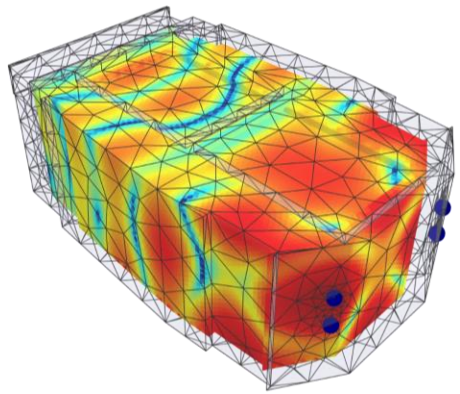
➢ With treatments



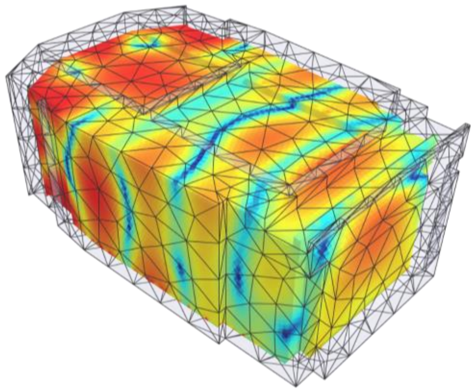
Z: 1.14 [m]



X: 0.00 [m]



Front of room



Rear of room

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Prepared for: John Doe

YOUR LOGO

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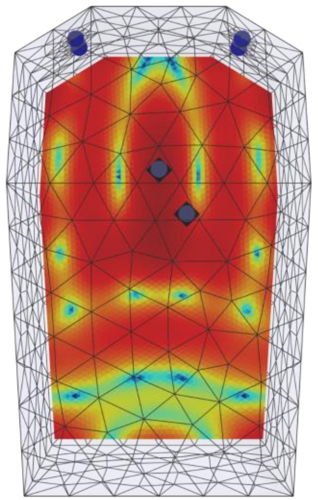
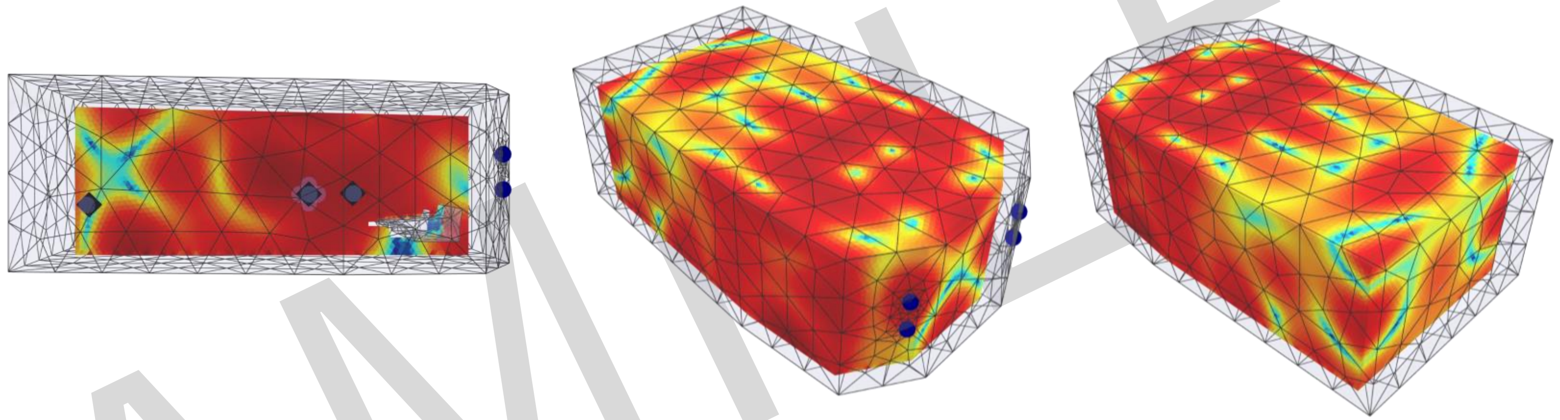
Date:	January 01, 20XX
Author:	REDI Acoustics
Review:	REDI Acoustics

Pressure Distribution
1. Mains - 148 Hz

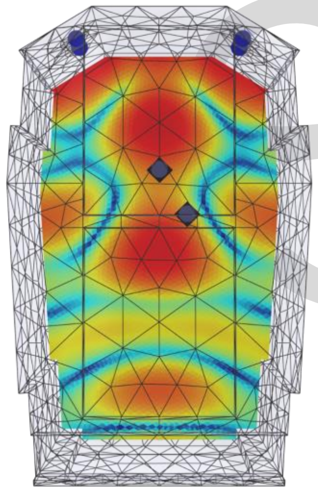
➢ Without treatments

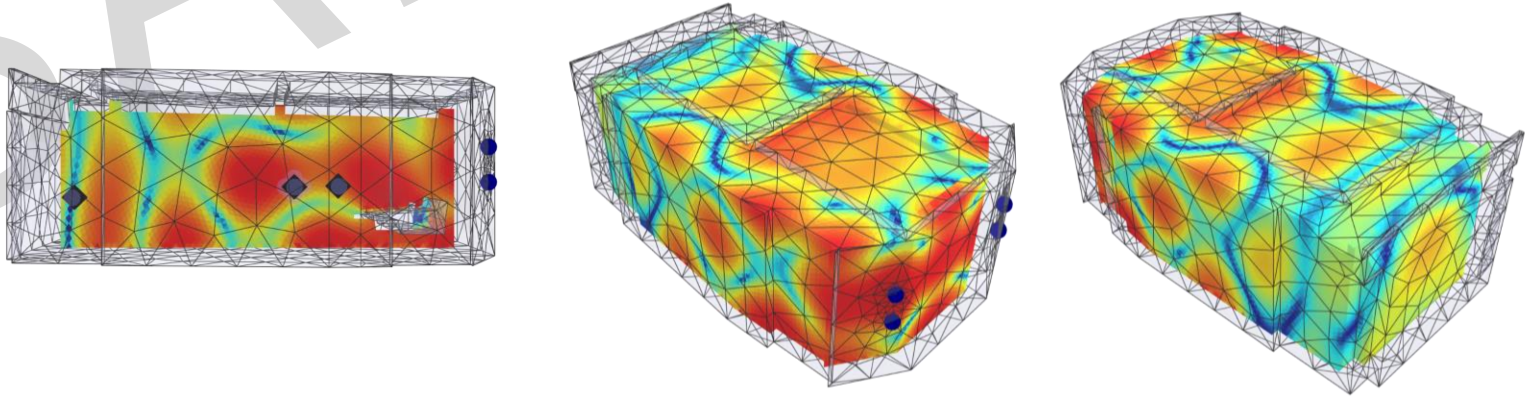




Z: 1.14 [m]   X: 0.00 [m]   Front of room   Rear of room

➢ With treatments





Z: 1.14 [m]   X: 0.00 [m]   Front of room   Rear of room

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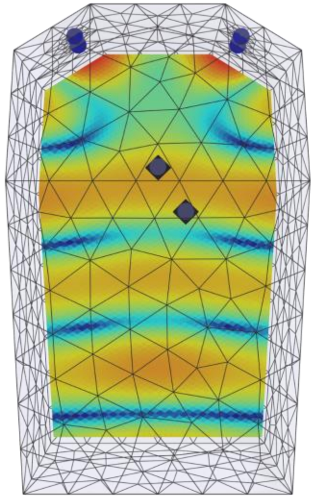
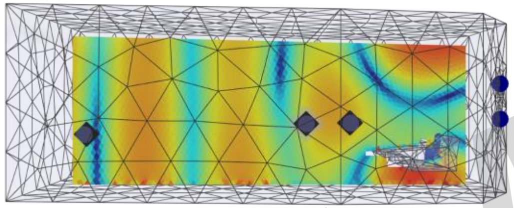
Review:	REDI Acoustics

Pressure Distribution
1. Mains - 107 Hz

➢ **Without treatments**


Z: 1.14 [m]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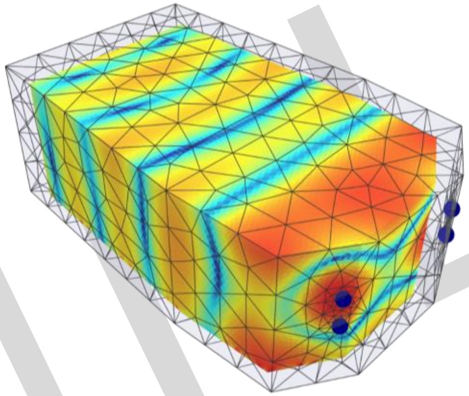
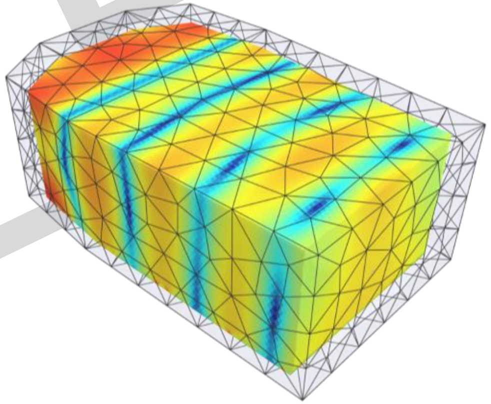
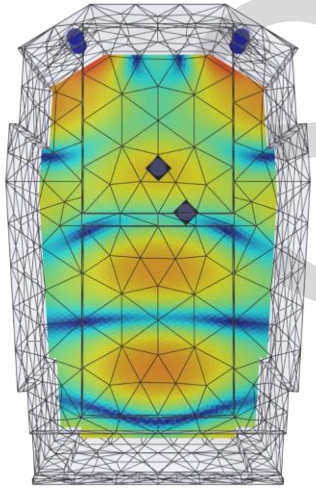

Front of room


Rear of room

➢ **With treatments**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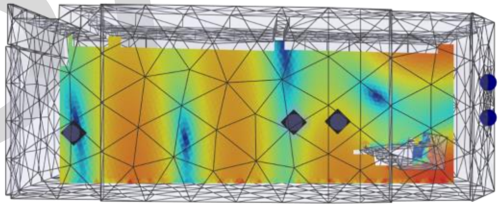
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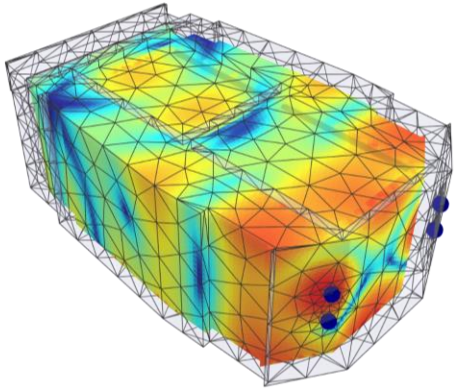
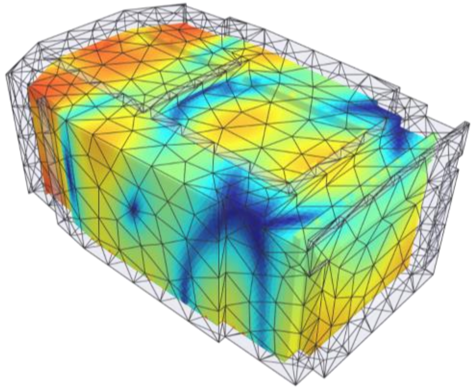

Front of room


Rear of room

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