



**Kaeden Harrell**

Sound System Designer  
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## Oscar G. Brockett Theatre Sound System Design Package

Revision A: May 12<sup>th</sup>, 2020

### **Sound System Goals**

The main goal of the system is to provide the space with a new and easily reconfigurable equipment for students depending on the need of the system. The system is designed to be flexible for theater, dance, screenings, music, and effects for various shows. The reconfiguration of this system was designed to be done by students with minimal effort. The simplicity of the connections and common technology helps with the consistency and ease of use.

### Loudspeaker system

- One main speaker aimed at each seating section (4 seating sections total)
- 4 Subwoofers covering the entire room
- A proscenium center cluster
- Corner effects speakers in the four corners of the room
- Two overhead speakers above each seating section (4 seating sections total)
- Separate power amplifiers
- Audio networking interface
- Brackets or flying frames

#### Goals

- Even coverage of space
- Easily rearranged
- Multipurposed

### Mixing system

- A control surface with 38 faders
- Two 32-in/16-out racks to place on either side of the stage
- Four 16-in/8-out XLR snakes
- Rack mount network switch

#### Goals

- Easily controllable

- Integrable
- Flexible

### Wireless Microphone System

- 8-channel wireless microphone system
- Eight belt pack transmitters
- Eight compatible lavalier microphones
- Rechargeable batteries for belt pack transmitters
- Battery charging station for rechargeable batteries
- Antenna distribution system
- Directional antennas

#### Goals

- High quality
- Available for different applications
- Reusable

### Personal Monitor System

- 8-channel personal monitor system
- Dante A-Net distributor

#### Goals

- Easily available
- Connective
- Reliable

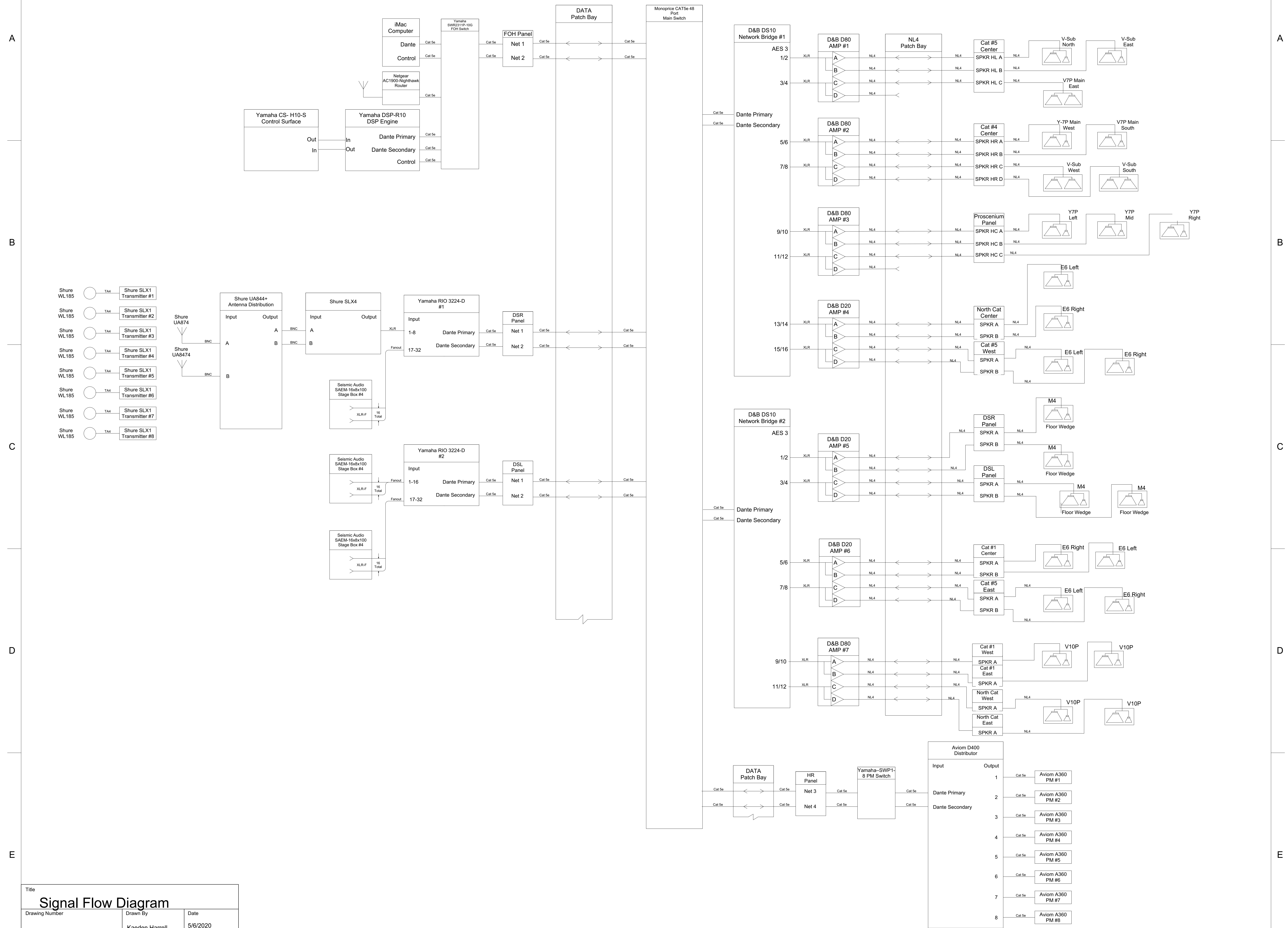
### Networking System

- A computer running Mac OS
- DAW software of your choice
- QLab Audio License
- Dante Virtual Sound Card
- WiFi router

#### Goals

- Easily compatible with system
- Familiar with students
- Reliable

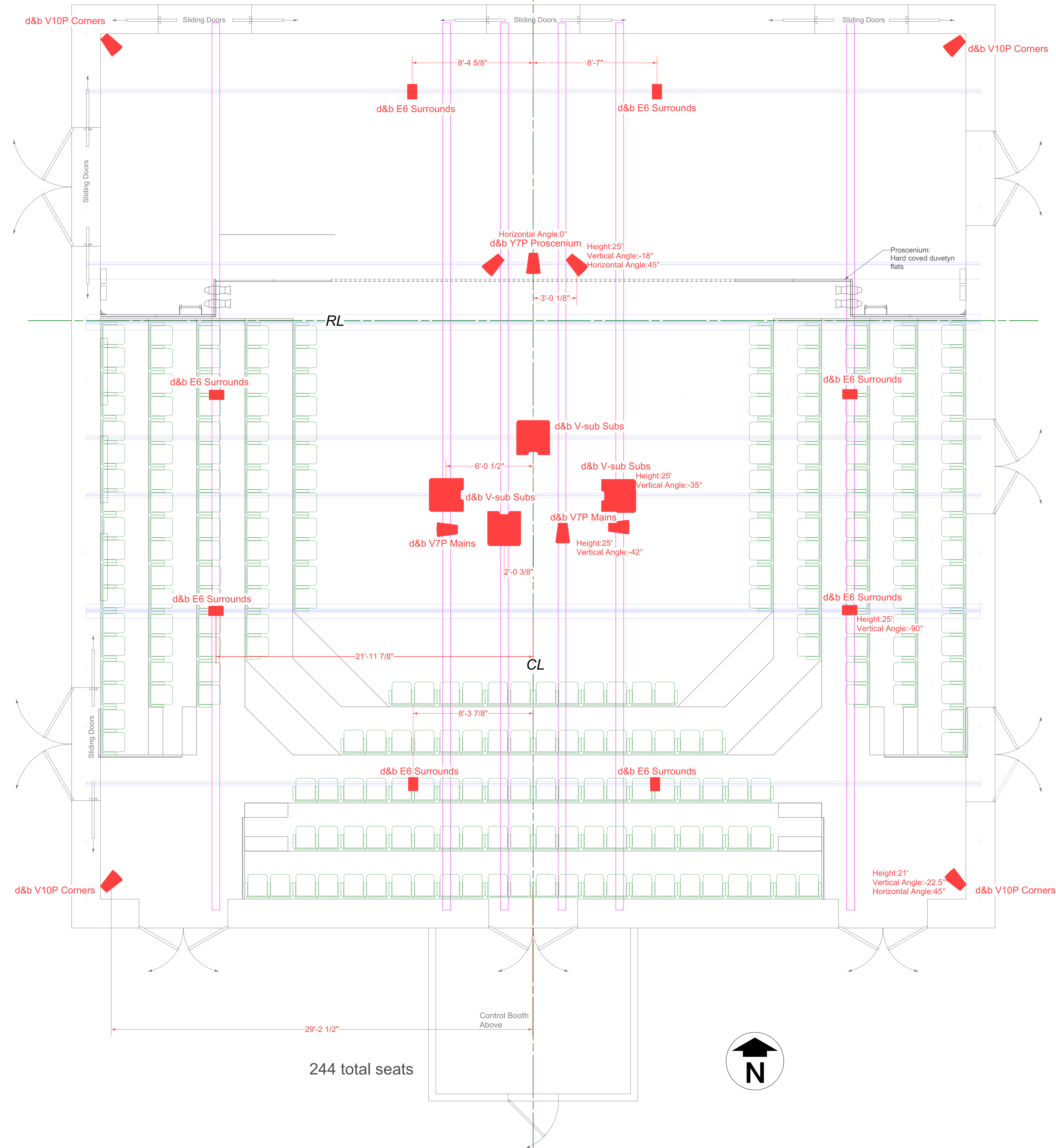




## Signal Flow Diagram

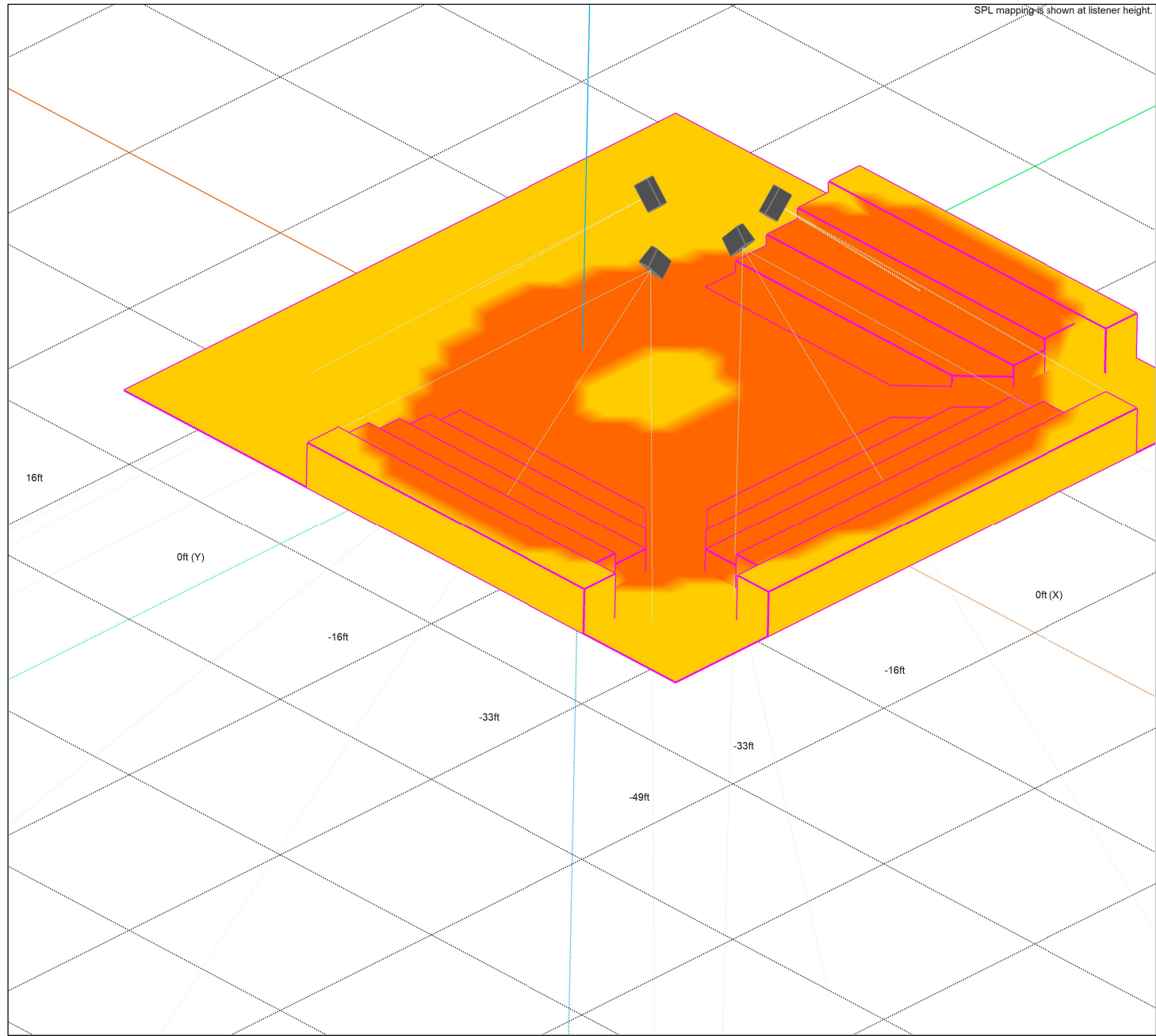
Drawing Number	Drawn By	Date
	Kaeden Harrell	5/6/2020

CAD File Name



3D plot

Live(500 Hz, 0.0 dBu)



SPL calculation

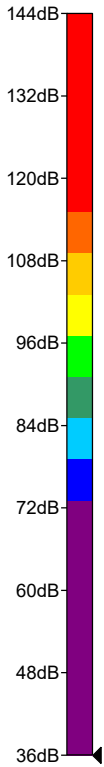
Resolution:	High (3ft)
Highest SPL:	0.0 dB

Simulated signal

Level:	0.0 dBu
Signal:	500 Hz
Show interferences:	Off

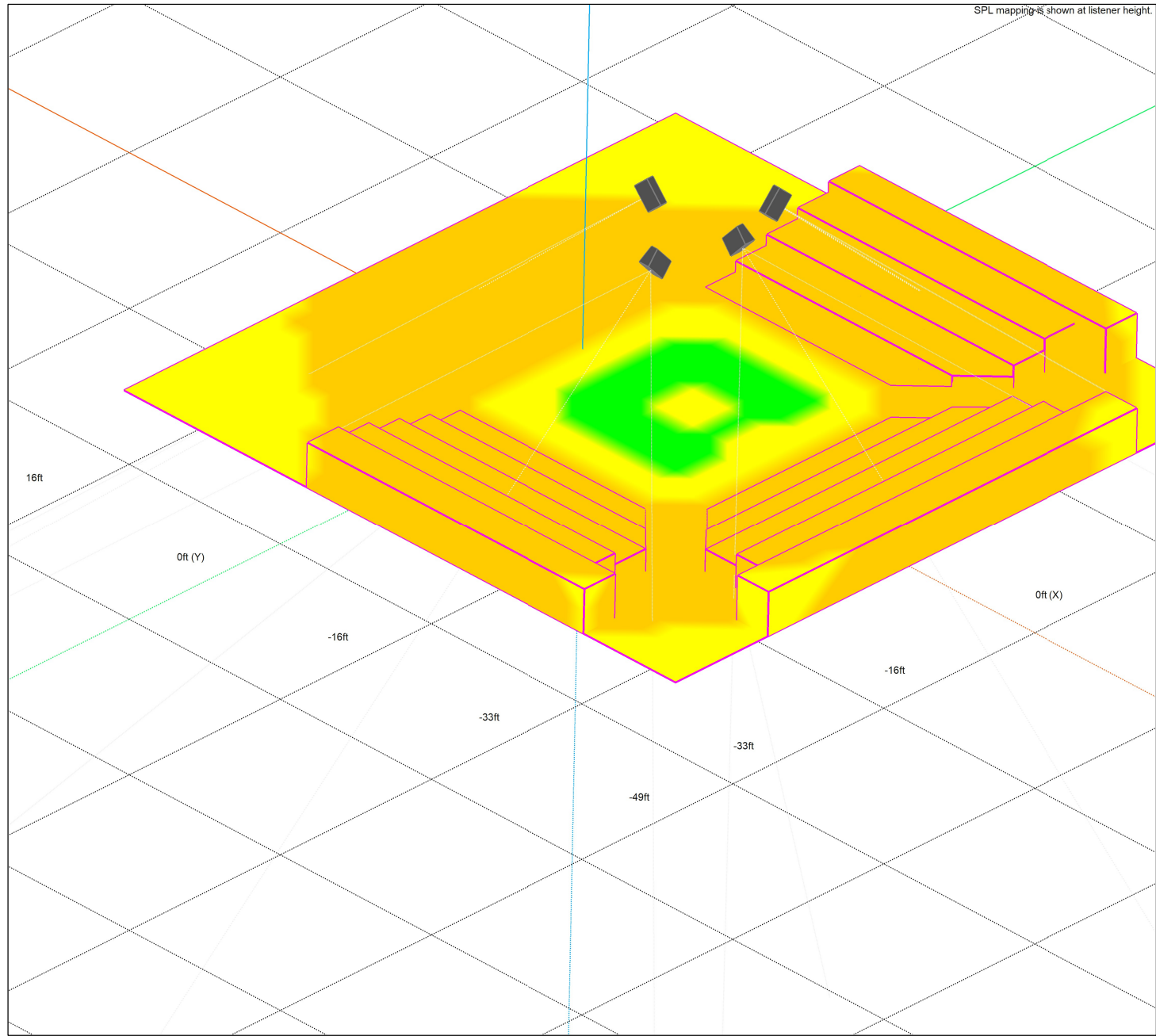
Air absorption

On/Off:	Off
Temperature:	68 °F
Humidity:	60.0 %



3D plot

Live(1000 Hz, 0.0 dBu)



SPL calculation

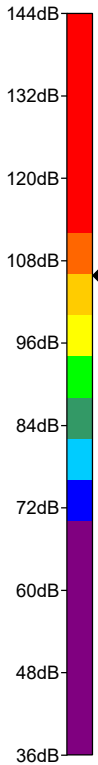
Resolution:	High (3ft)
Highest SPL:	105.9 dB

Simulated signal

Level:	0.0 dBu
Signal:	1000 Hz
Show interferences:	Off

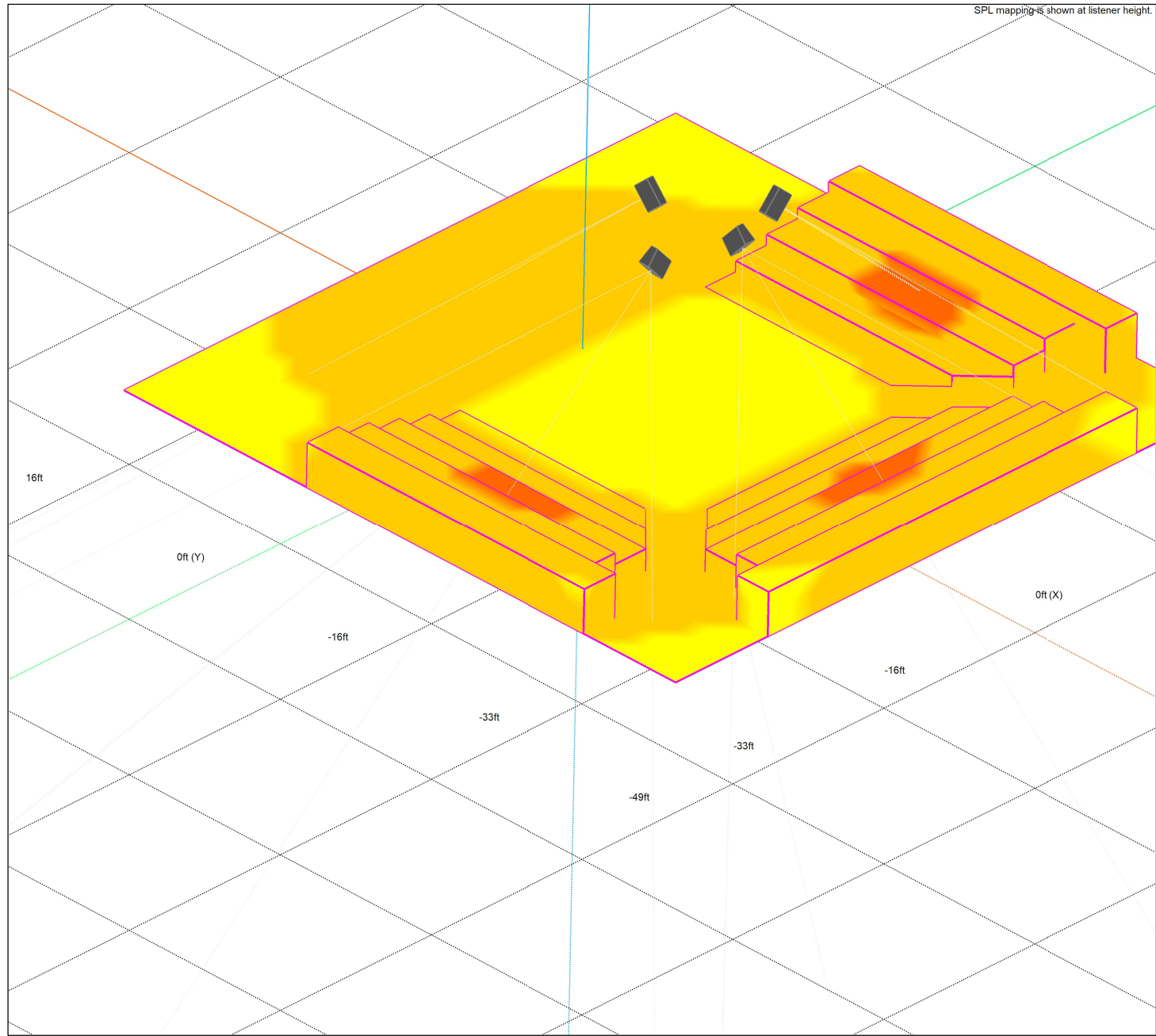
Air absorption

On/Off:	Off
Temperature:	68 °F
Humidity:	60.0 %



3D plot

Live(2000 Hz, 0.0 dBu)



SPL calculation

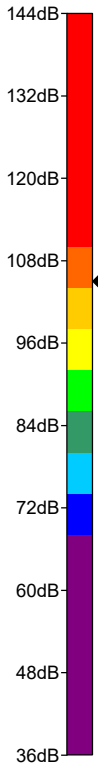
Resolution:	High (3ft)
Highest SPL:	105.0 dB

Simulated signal

Level:	0.0 dBu
Signal:	2000 Hz
Show interferences:	Off

Air absorption

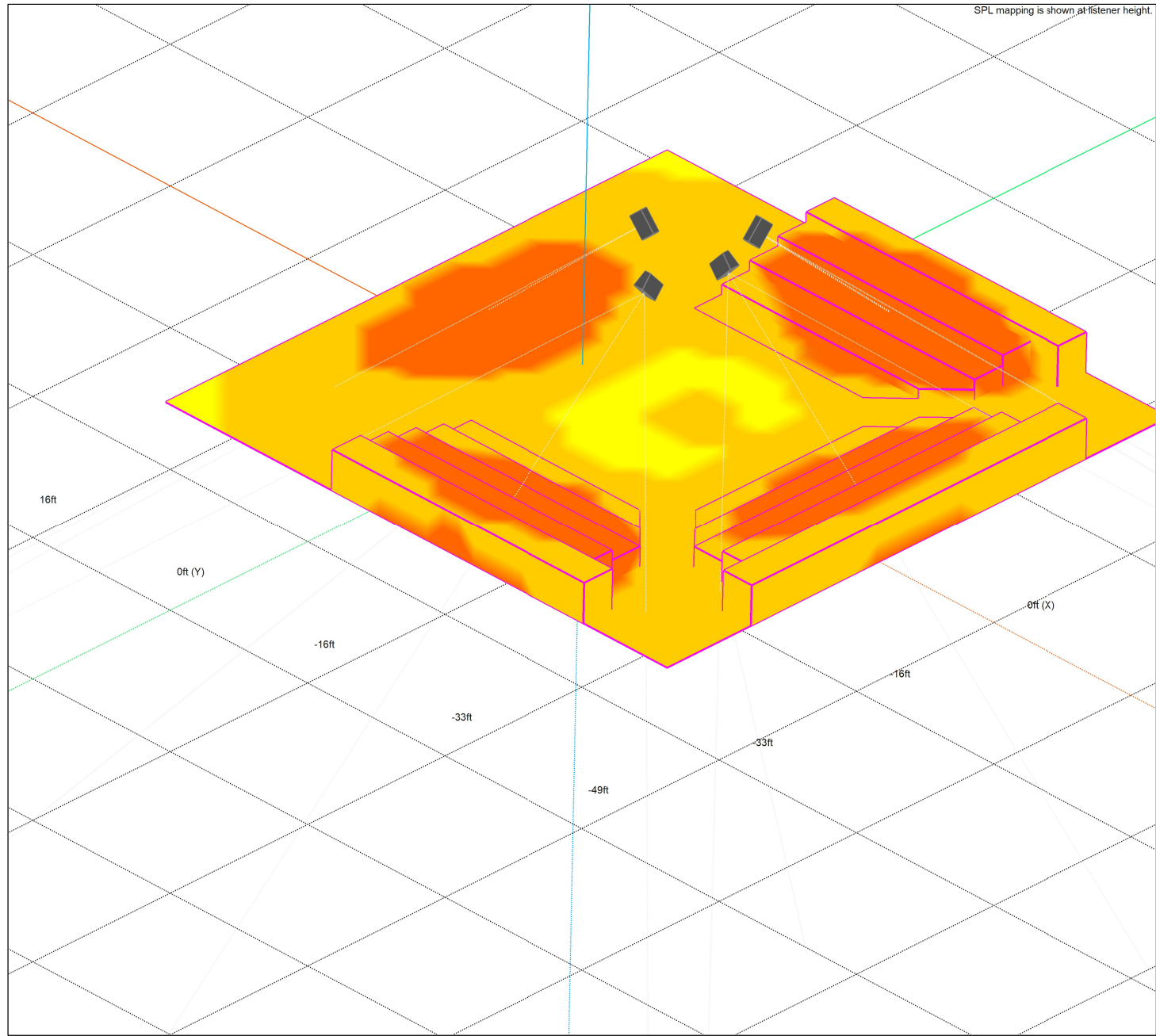
On/Off:	Off
Temperature:	68 °F
Humidity:	60.0 %





3D plot

Live(4000 Hz, 0.0 dBu)



SPL calculation

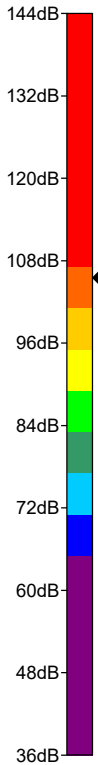
Resolution:	High (3ft)
Highest SPL:	105.6 dB

Simulated signal

Level:	0.0 dBu
Signal:	4000 Hz
Show interferences:	Off

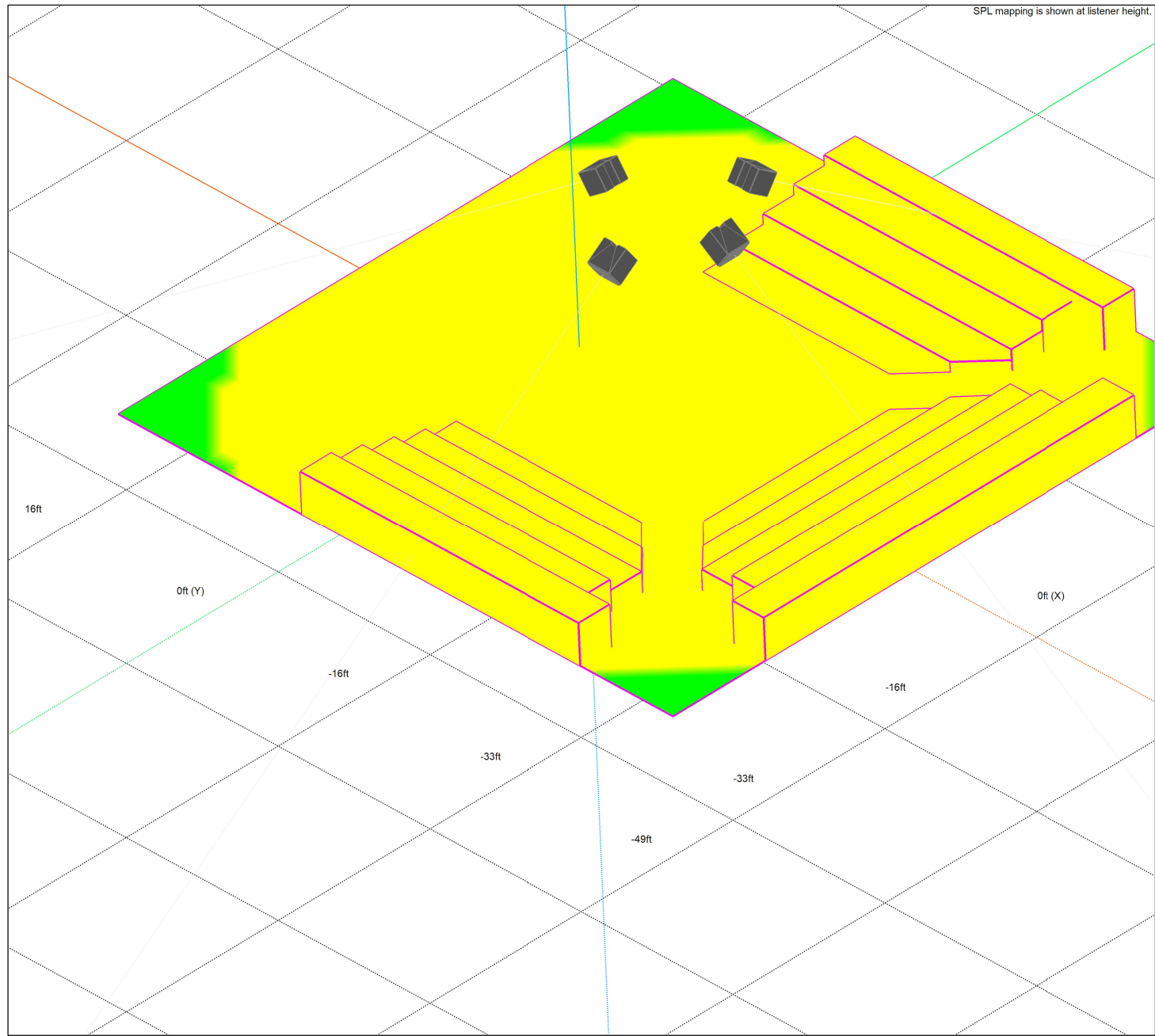
Air absorption

On/Off:	Off
Temperature:	68 °F
Humidity:	60.0 %



3D plot

Live(40 Hz, 0.0 dBu)



SPL calculation

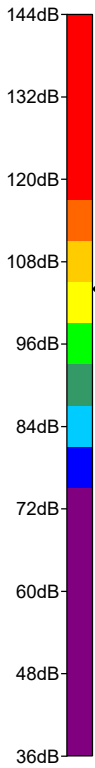
Resolution:	High (3ft)
Highest SPL:	104.0 dB

Simulated signal

Level:	0.0 dBu
Signal:	40 Hz
Show interferences:	Off

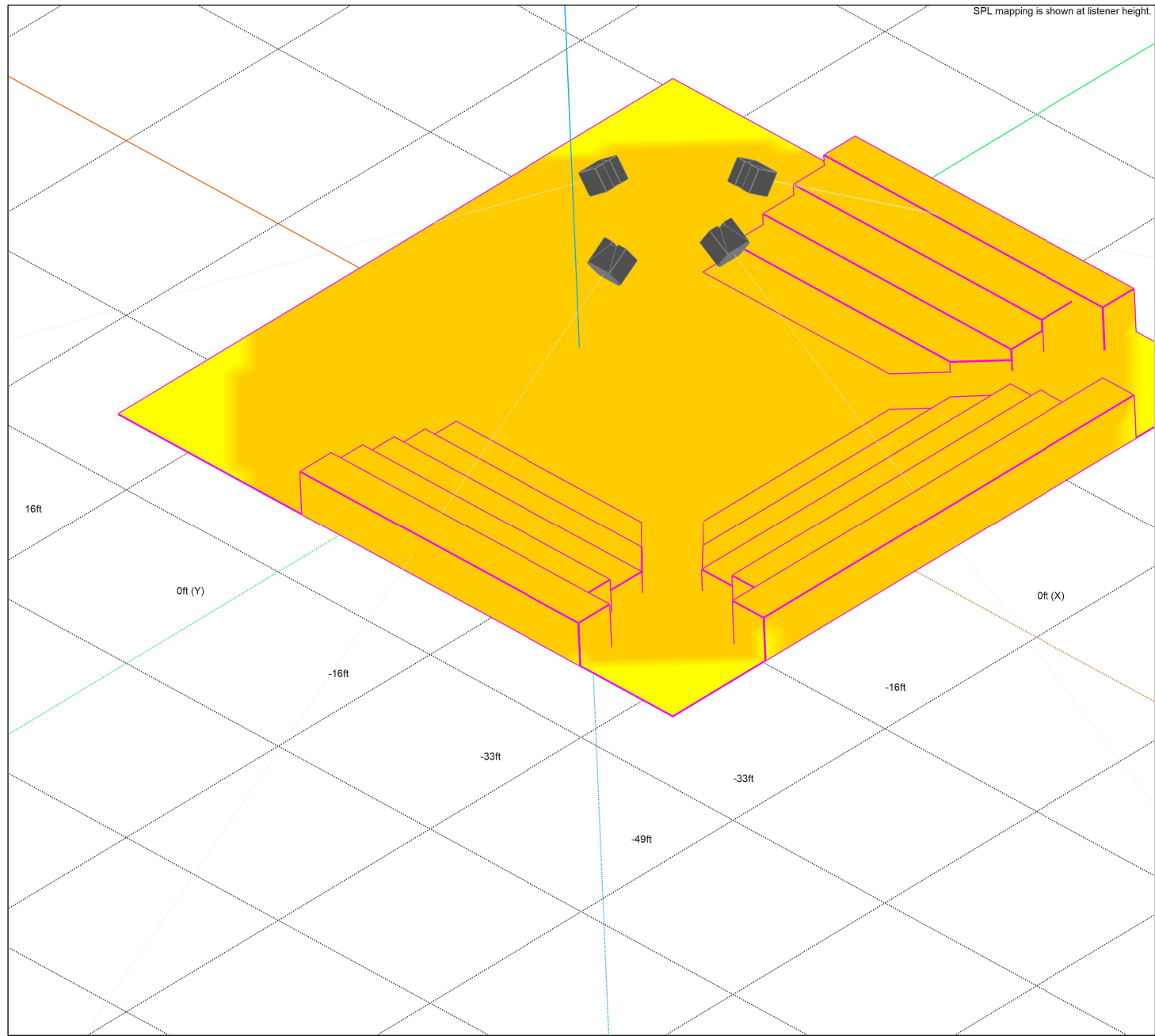
Air absorption

On/Off:	Off
Temperature:	68 °F
Humidity:	60.0 %



3D plot

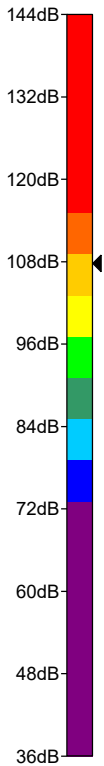
Live(50 Hz, 0.0 dBu)



SPL calculation	
Resolution:	High (3ft)
Highest SPL:	107.8 dB

Simulated signal	
Level:	0.0 dBu
Signal:	50 Hz
Show interferences:	Off

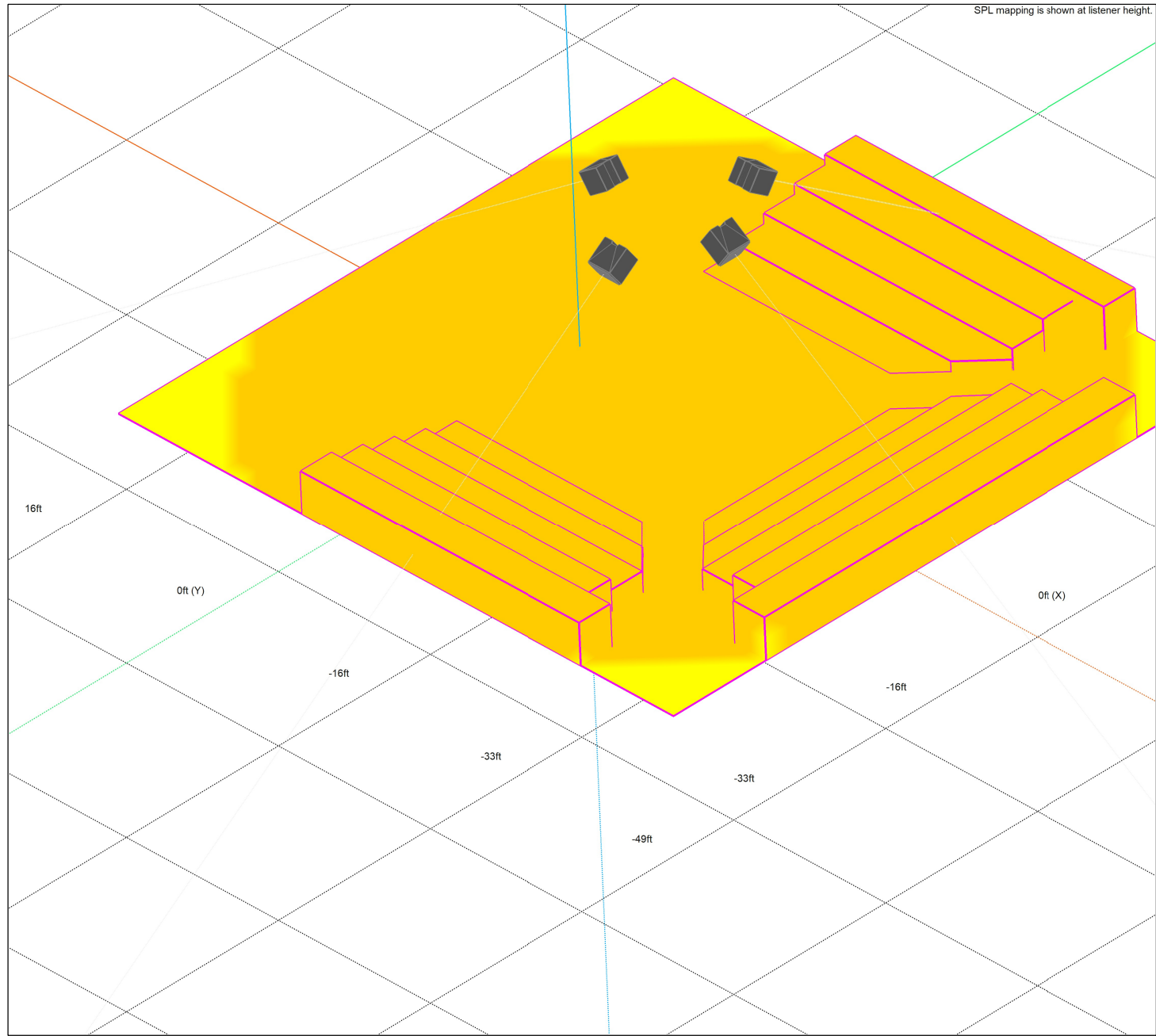
Air absorption	
On/Off:	Off
Temperature:	68 °F
Humidity:	60.0 %





3D plot

Live(63 Hz, 0.0 dBu)



SPL calculation

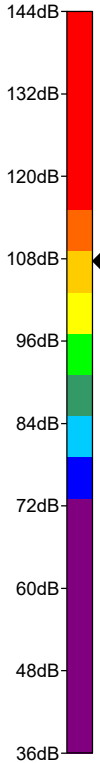
Resolution:	High (3ft)
Highest SPL:	107.7 dB

Simulated signal

Level:	0.0 dBu
Signal:	63 Hz
Show interferences:	Off

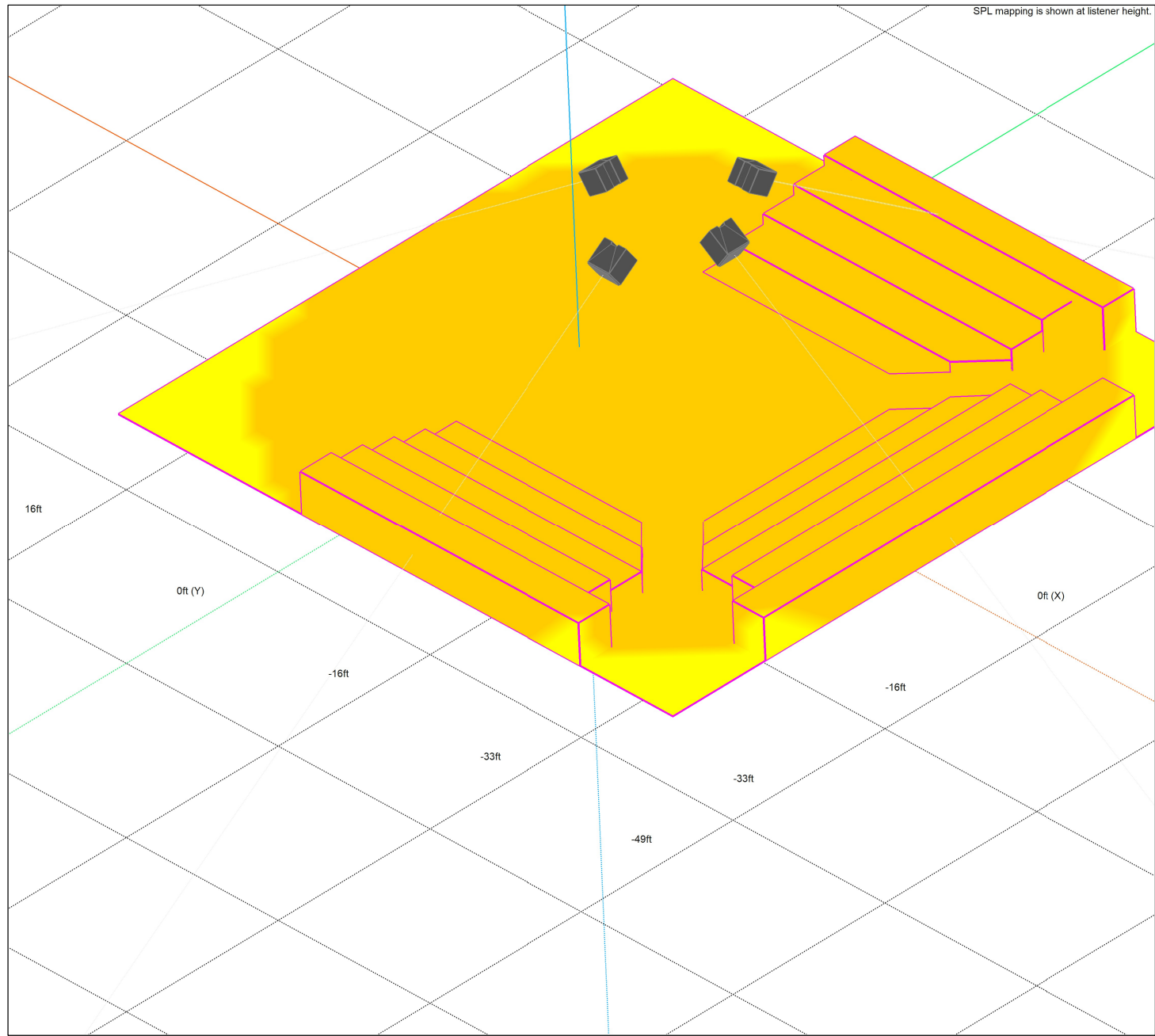
Air absorption

On/Off:	Off
Temperature:	68 °F
Humidity:	60.0 %



3D plot

Live(80 Hz, 0.0 dBu)



SPL calculation

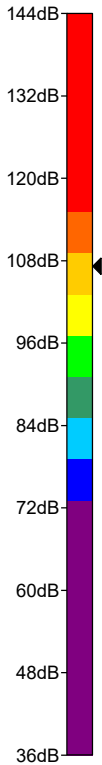
Resolution:	High (3ft)
Highest SPL:	107.2 dB

Simulated signal

Level:	0.0 dBu
Signal:	80 Hz
Show interferences:	Off

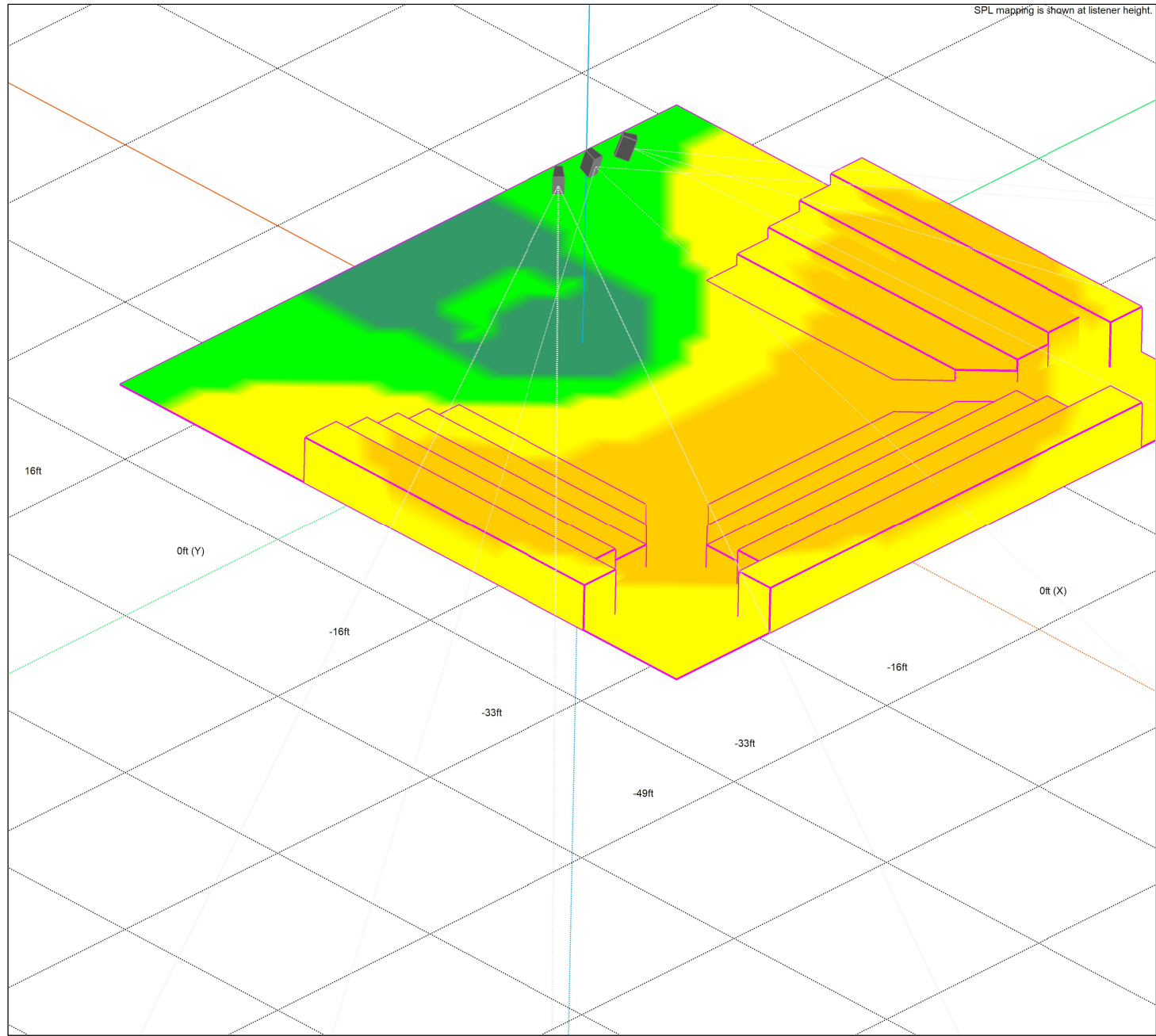
Air absorption

On/Off:	Off
Temperature:	68 °F
Humidity:	60.0 %



3D plot

Live(500 Hz, 0.0 dBu)



SPL calculation

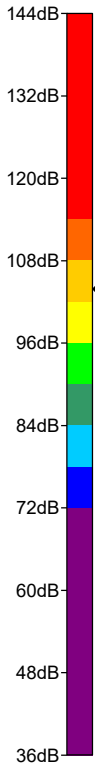
Resolution:	High (3ft)
Highest SPL:	103.9 dB

Simulated signal

Level:	0.0 dBu
Signal:	500 Hz
Show interferences:	Off

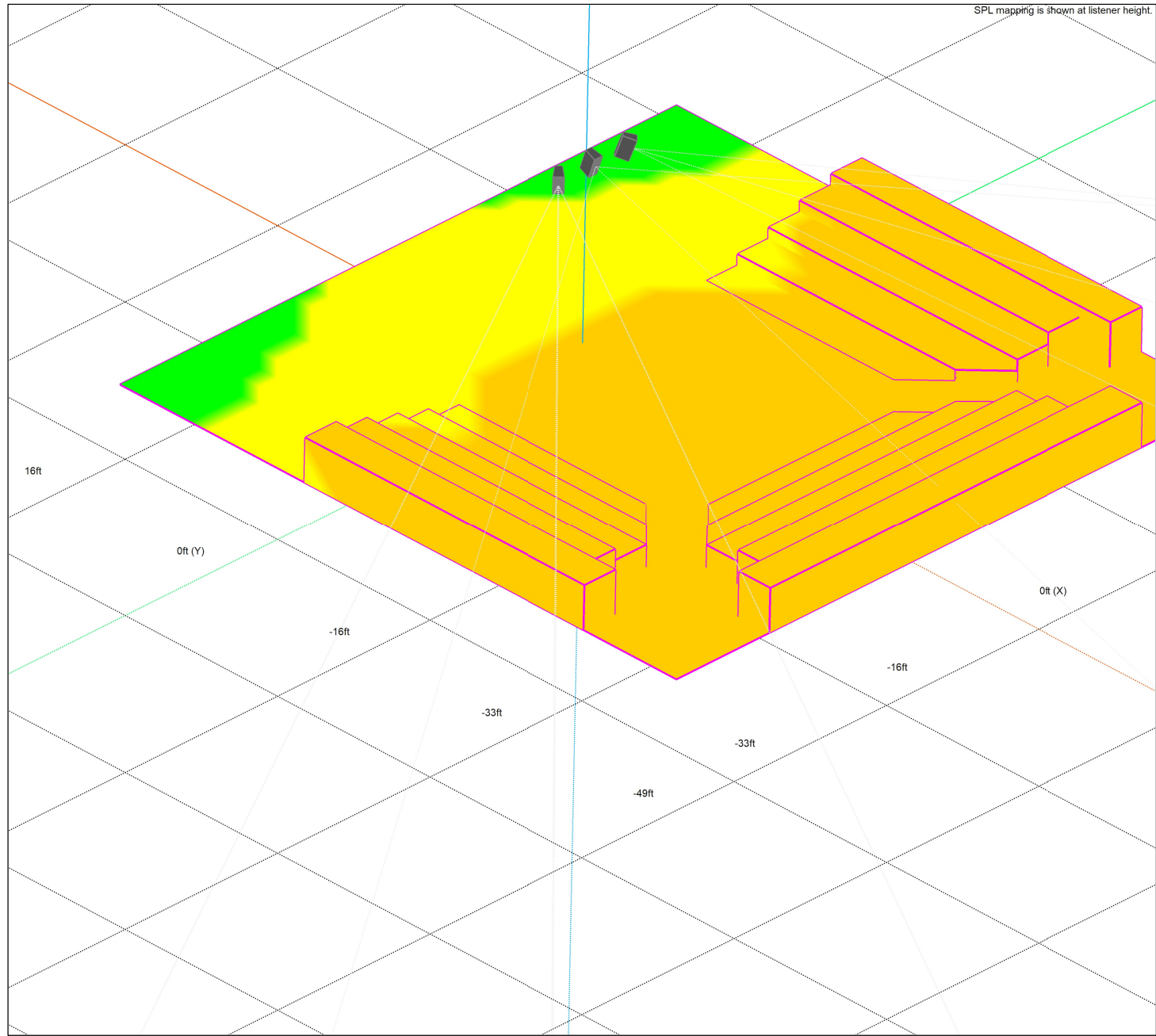
Air absorption

On/Off:	Off
Temperature:	68 °F
Humidity:	60.0 %



3D plot

Live(1000 Hz, 0.0 dBu)



SPL calculation

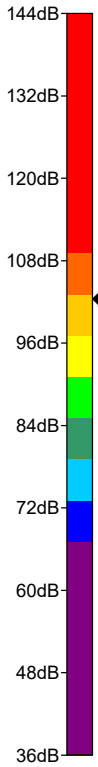
Resolution:	High (3ft)
Highest SPL:	102.5 dB

Simulated signal

Level:	0.0 dBu
Signal:	1000 Hz
Show interferences:	Off

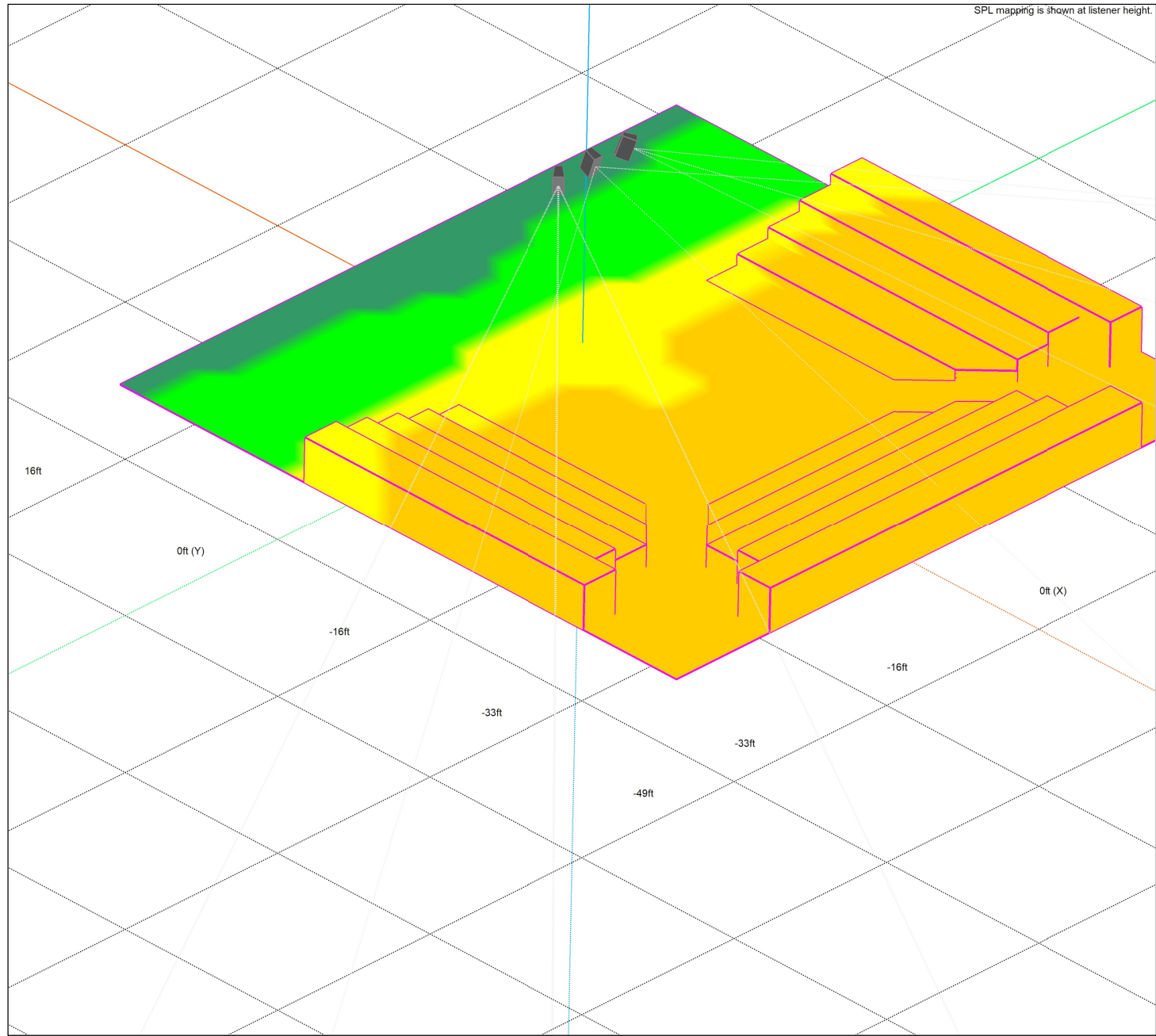
Air absorption

On/Off:	Off
Temperature:	68 °F
Humidity:	60.0 %



3D plot

Live(2000 Hz, 0.0 dBu)



SPL calculation

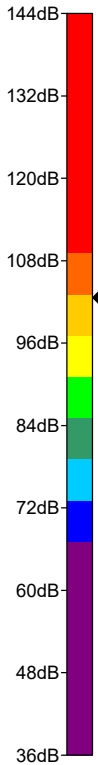
Resolution:	High (3ft)
Highest SPL:	102.6 dB

Simulated signal

Level:	0.0 dBu
Signal:	2000 Hz
Show interferences:	Off

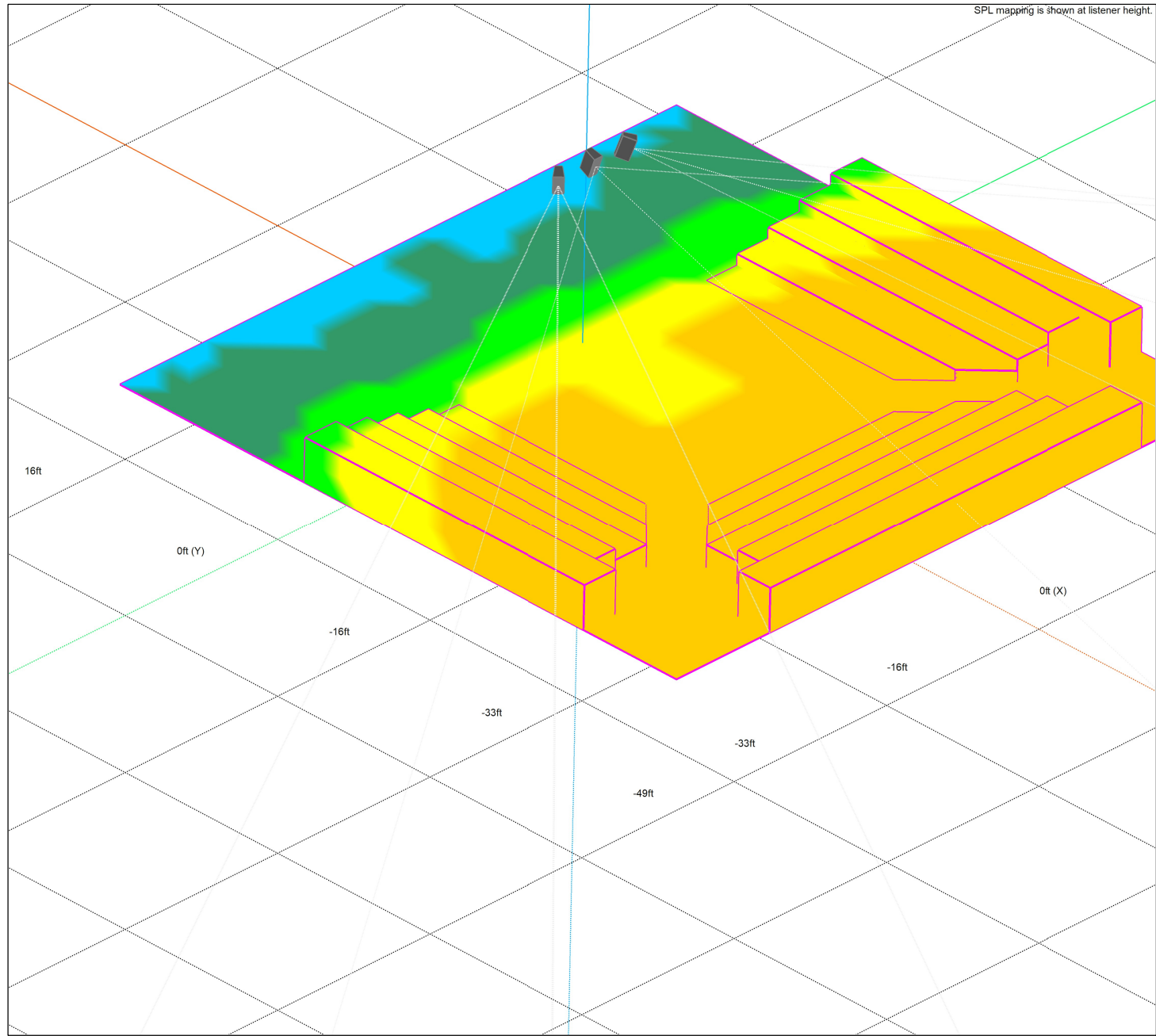
Air absorption

On/Off:	Off
Temperature:	68 °F
Humidity:	60.0 %



3D plot

Live(4000 Hz, 0.0 dBu)



SPL calculation

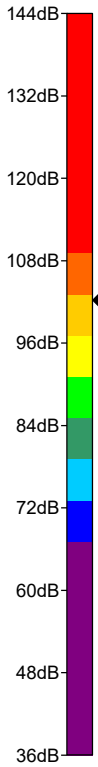
Resolution:	High (3ft)
Highest SPL:	102.3 dB

Simulated signal

Level:	0.0 dBu
Signal:	4000 Hz
Show interferences:	Off

Air absorption

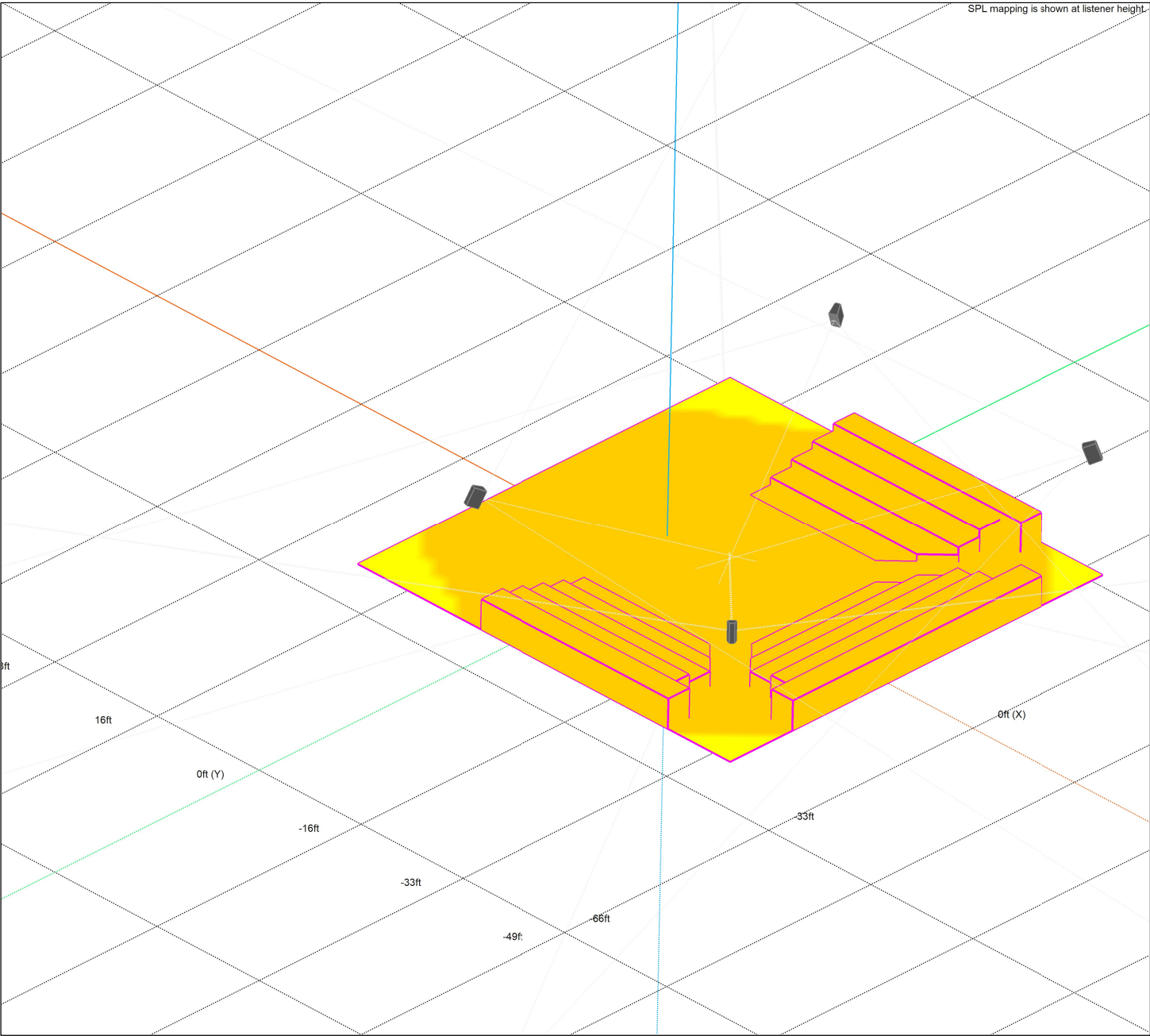
On/Off:	Off
Temperature:	68 °F
Humidity:	60.0 %





3D plot

Live(500 Hz, 0.0 dBu)



SPL calculation

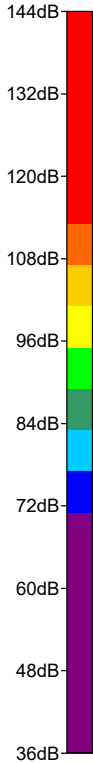
Resolution:	High (3ft)
Highest SPL:	106.5 dB

Simulated signal

Level:	0.0 dBu
Signal:	500 Hz
Show interferences:	Off

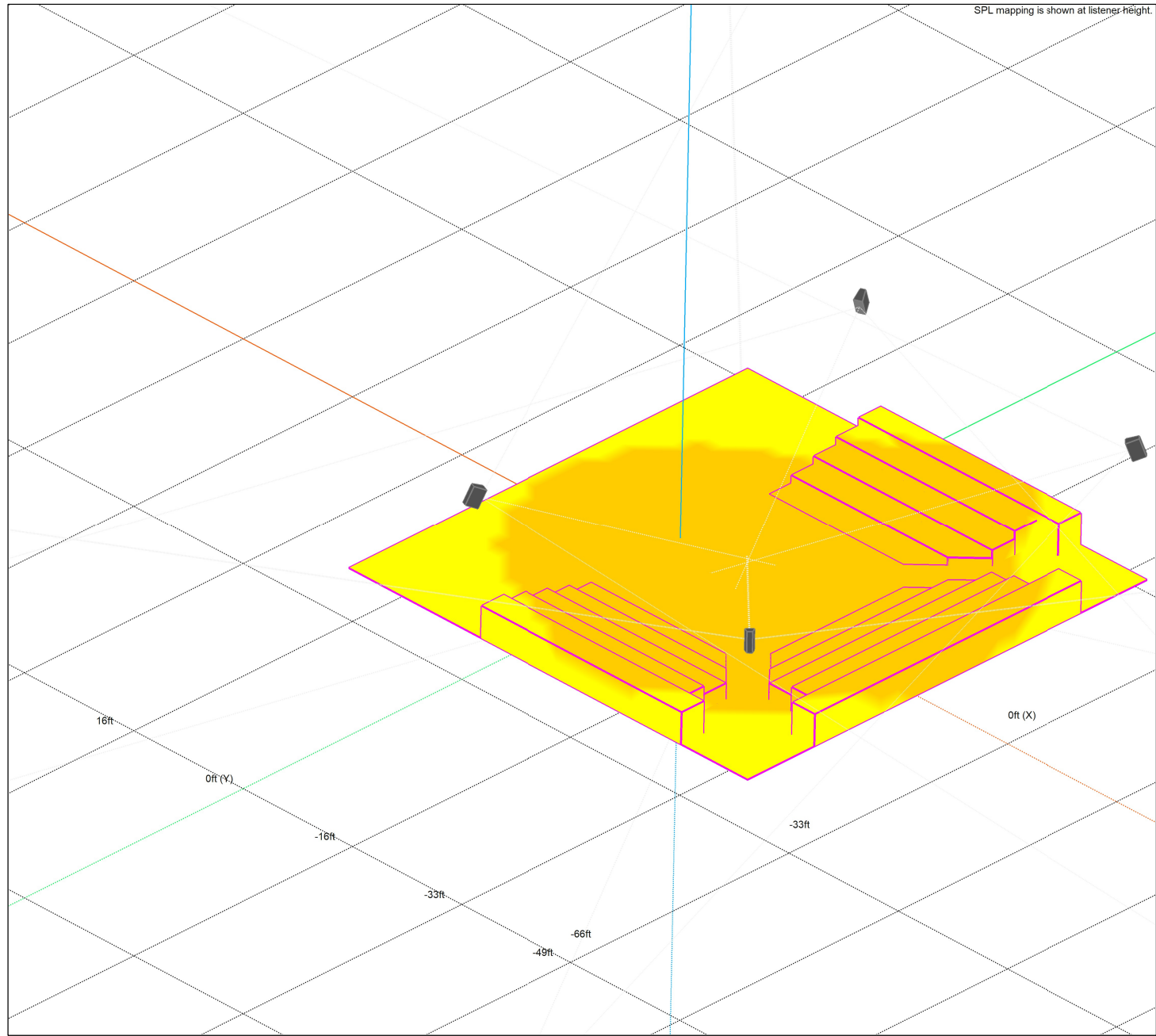
Air absorption

On/Off:	Off
Temperature:	68 °F
Humidity:	60.0 %



3D plot

Live(1000 Hz, 0.0 dBu)



SPL calculation

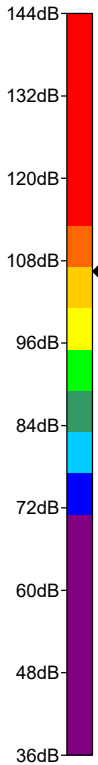
Resolution:	High (3ft)
Highest SPL:	106.5 dB

Simulated signal

Level:	0.0 dBu
Signal:	1000 Hz
Show interferences:	Off

Air absorption

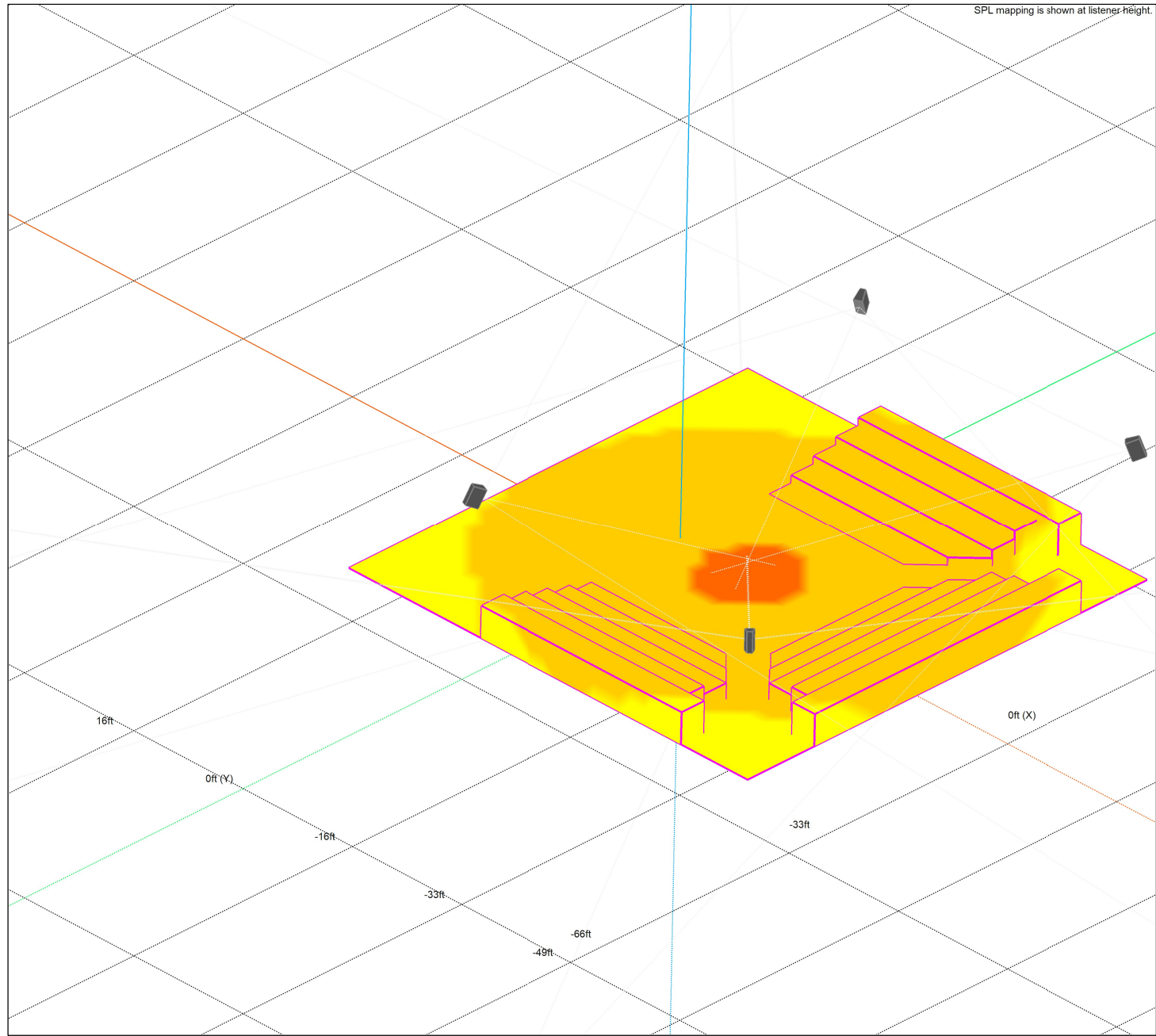
On/Off:	Off
Temperature:	68 °F
Humidity:	60.0 %





3D plot

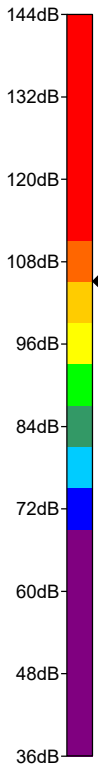
Live(2000 Hz, 0.0 dBu)



SPL calculation	
Resolution:	High (3ft)
Highest SPL:	105.2 dB

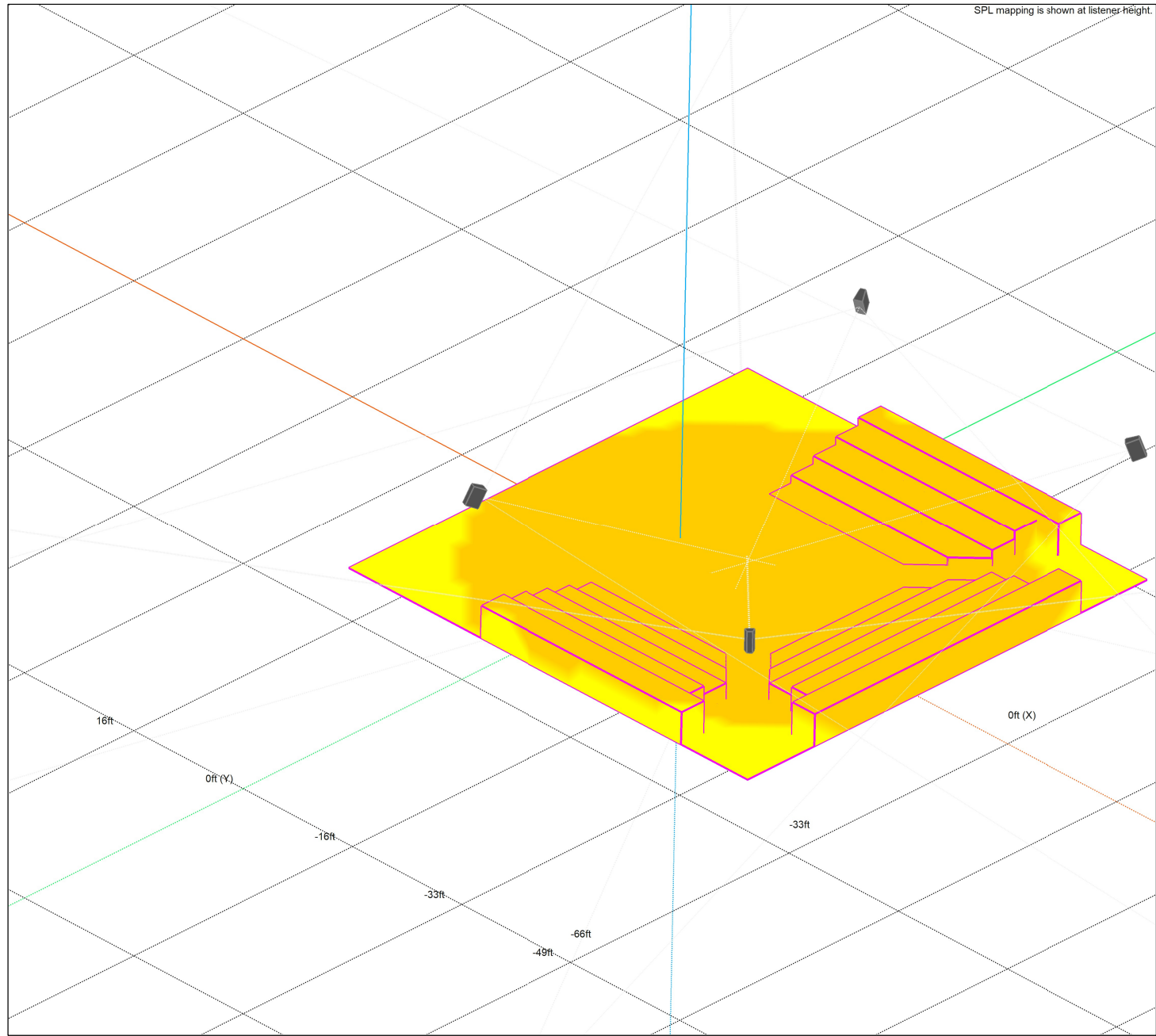
Simulated signal	
Level:	0.0 dBu
Signal:	2000 Hz
Show interferences:	Off

Air absorption	
On/Off:	Off
Temperature:	68 °F
Humidity:	60.0 %



3D plot

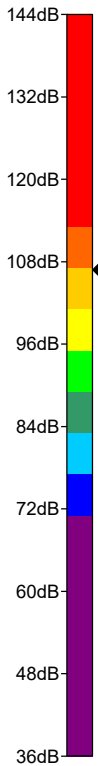
Live(4000 Hz, 0.0 dBu)



SPL calculation	
Resolution:	High (3ft)
Highest SPL:	106.8 dB

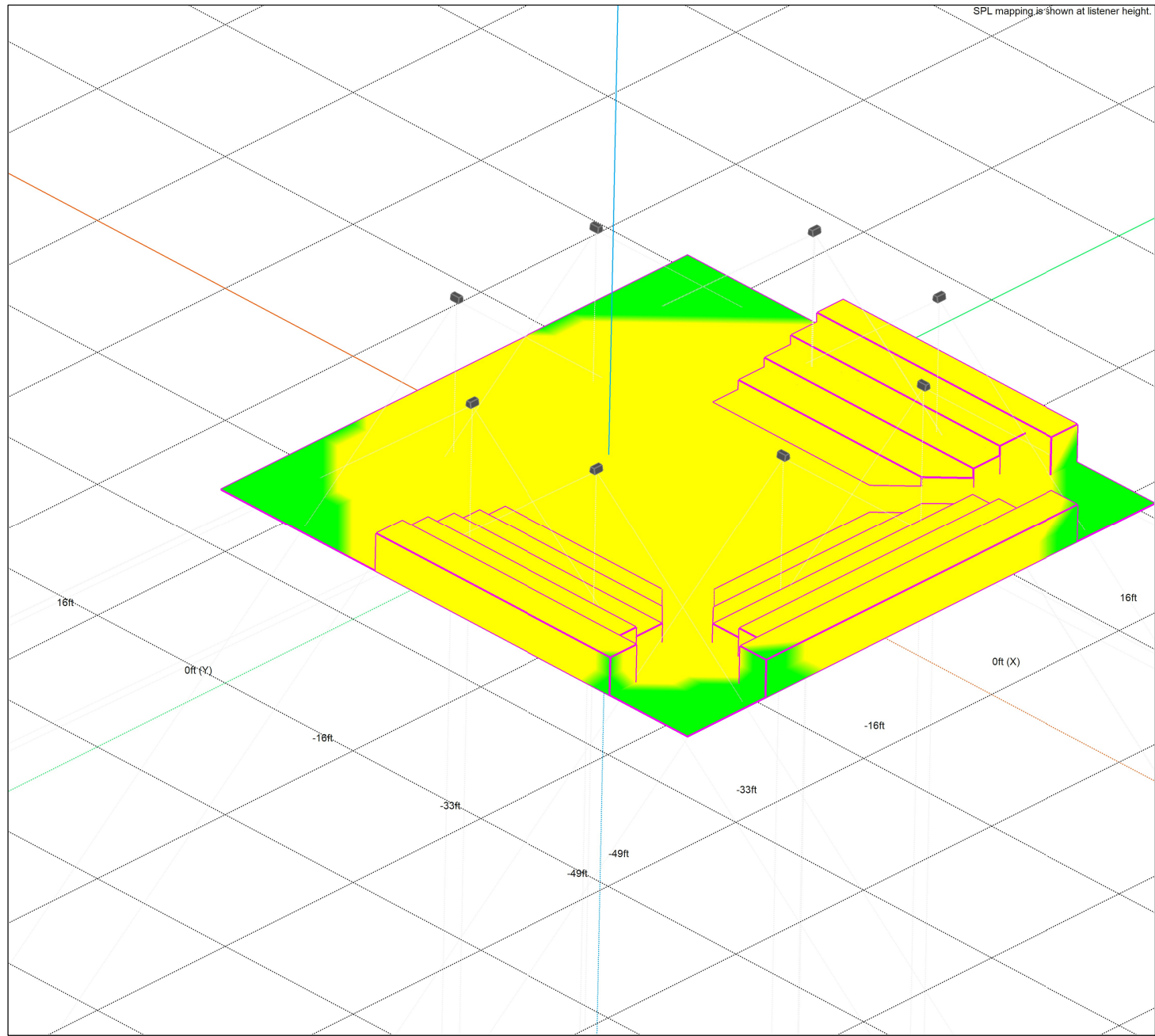
Simulated signal	
Level:	0.0 dBu
Signal:	4000 Hz
Show interferences:	Off

Air absorption	
On/Off:	Off
Temperature:	68 °F
Humidity:	60.0 %



3D plot

Live(500 Hz, 0.0 dBu)



SPL calculation

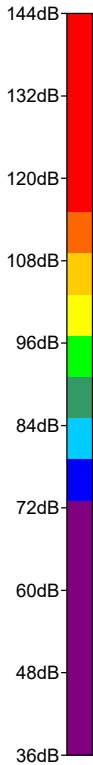
Resolution:	High (3ft)
Highest SPL:	100.6 dB

Simulated signal

Level:	0.0 dBu
Signal:	500 Hz
Show interferences:	Off

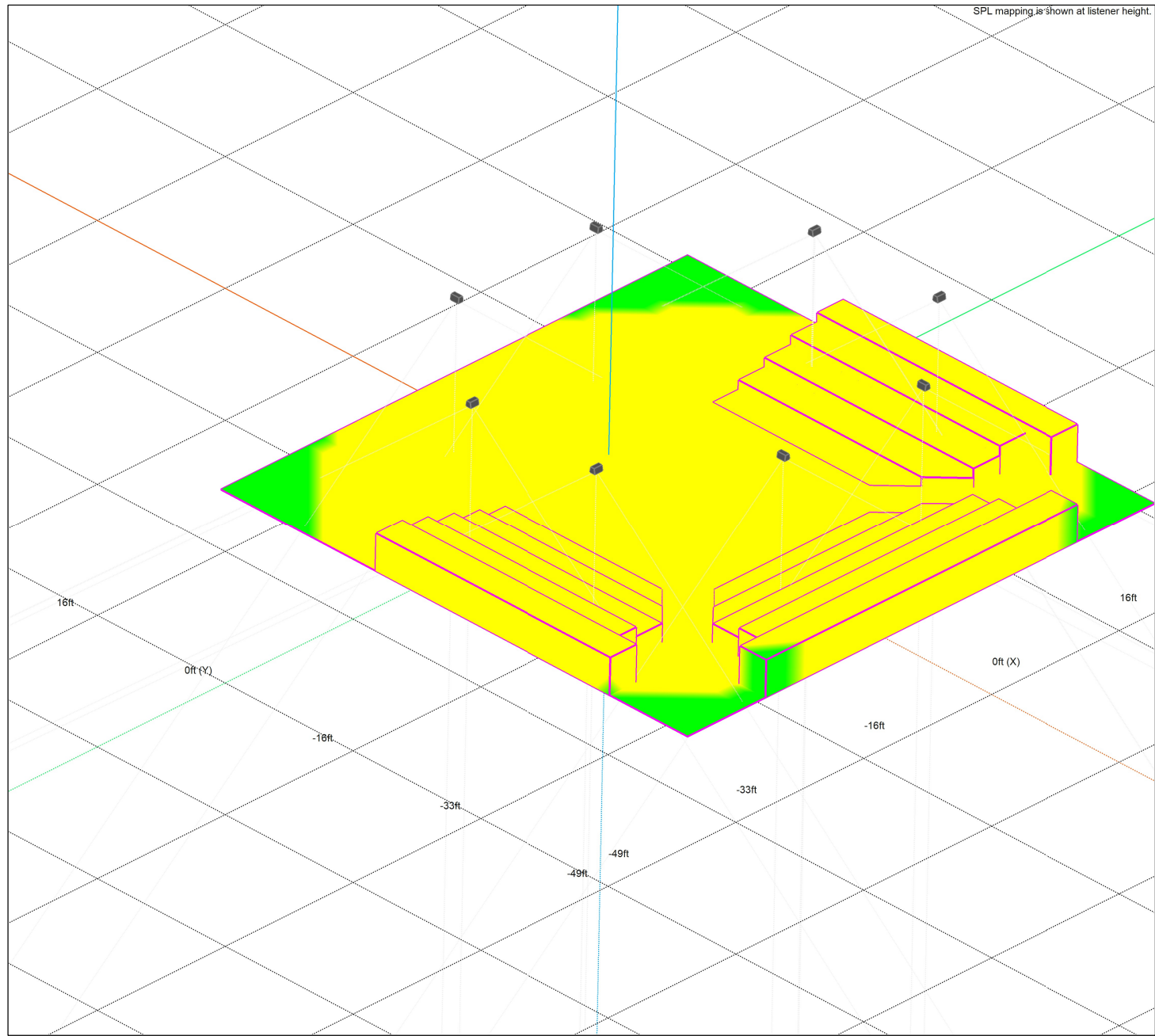
Air absorption

On/Off:	Off
Temperature:	68 °F
Humidity:	60.0 %



3D plot

Live(1000 Hz, 0.0 dBu)



SPL calculation

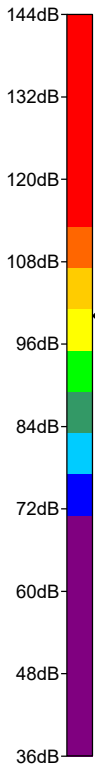
Resolution:	High (3ft)
Highest SPL:	100.2 dB

Simulated signal

Level:	0.0 dBu
Signal:	1000 Hz
Show interferences:	Off

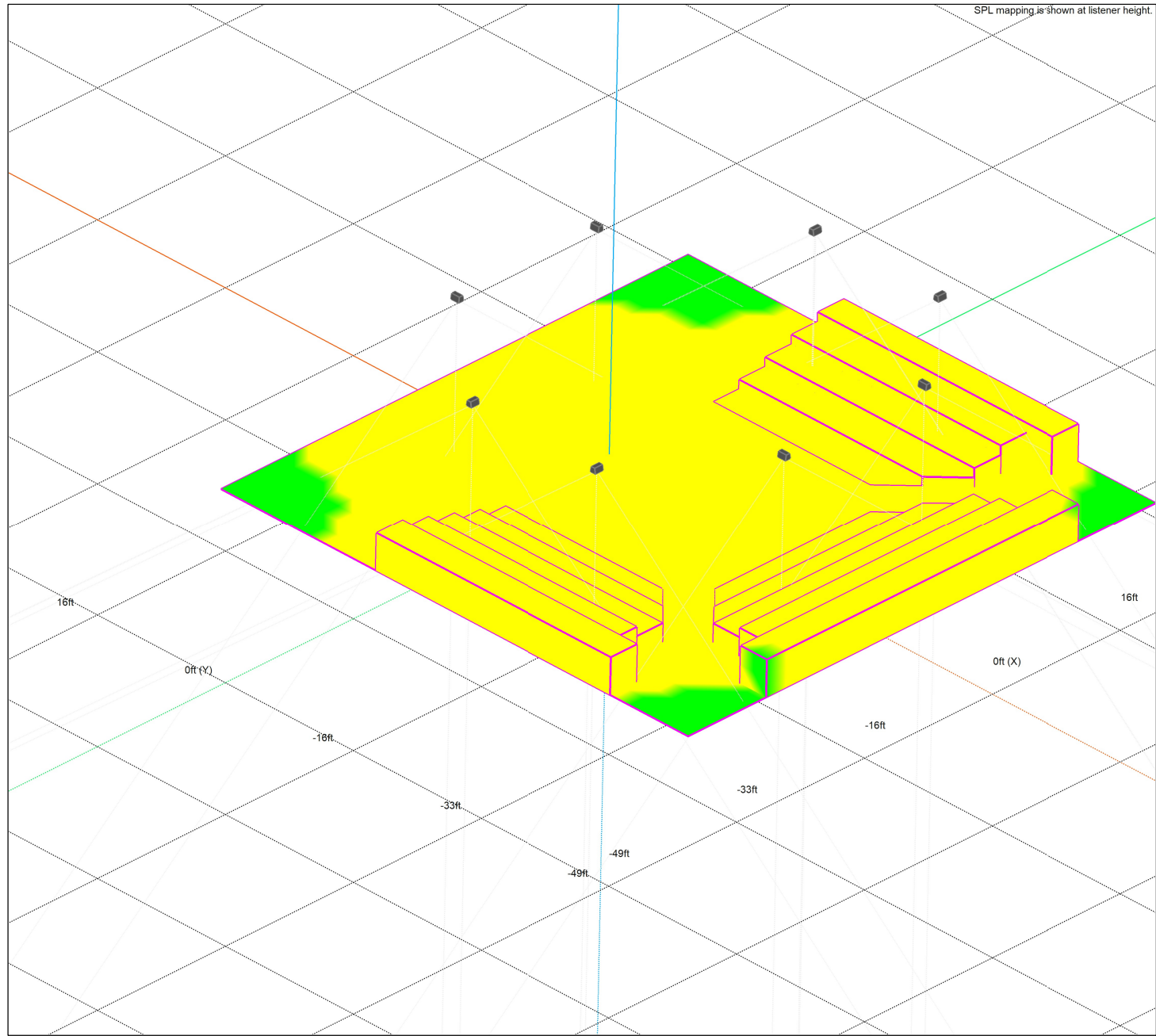
Air absorption

On/Off:	Off
Temperature:	68 °F
Humidity:	60.0 %



3D plot

Live(2000 Hz, 0.0 dBu)



SPL calculation

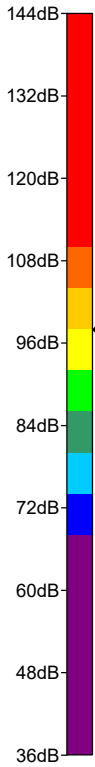
Resolution:	High (3ft)
Highest SPL:	98.0 dB

Simulated signal

Level:	0.0 dBu
Signal:	2000 Hz
Show interferences:	Off

Air absorption

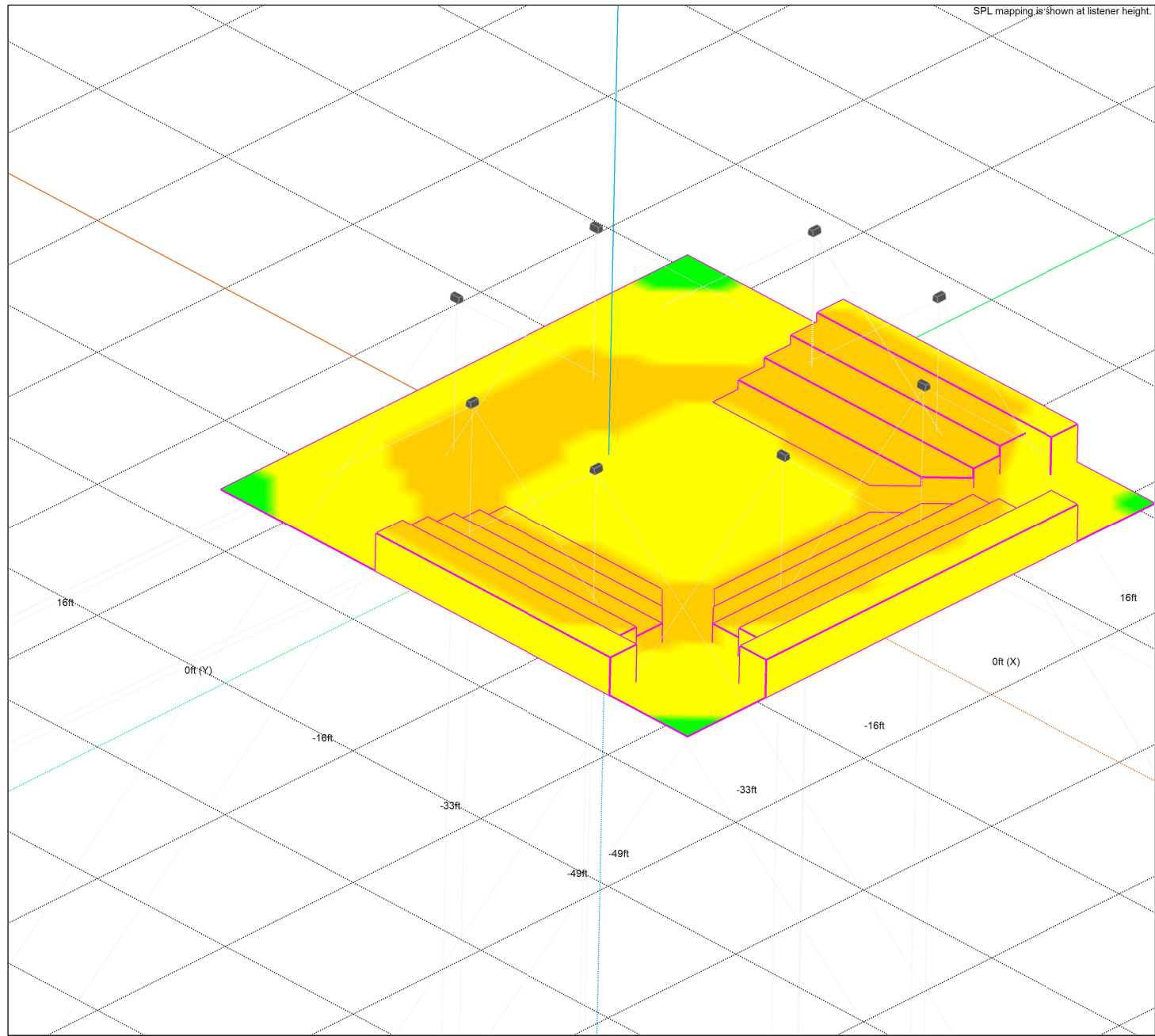
On/Off:	Off
Temperature:	68 °F
Humidity:	60.0 %





3D plot

Live(4000 Hz, 0.0 dBu)



SPL calculation

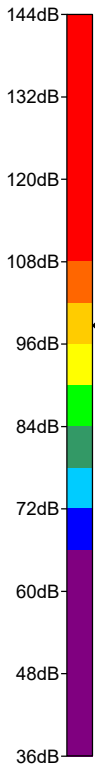
Resolution:	High (3ft)
Highest SPL:	98.7 dB


Simulated signal

Level:	0.0 dBu
Signal:	4000 Hz
Show interferences:	Off

Air absorption

On/Off:	Off
Temperature:	68 °F
Humidity:	60.0 %





E-mail: kaedenharrell@gmail.com

*Brockett Theatre*

*Sound System Design*

General Notes:

Venue: Brockett Theatre	
Director:	
Designer: Kaeden Harrell	
Technical Director: W. Scott Bussey	
Drawn by: Kaeden Harrell	
Date: April 29, 2020	
Scale: 1/4" = 1'-0"	Drawing size: Arch D

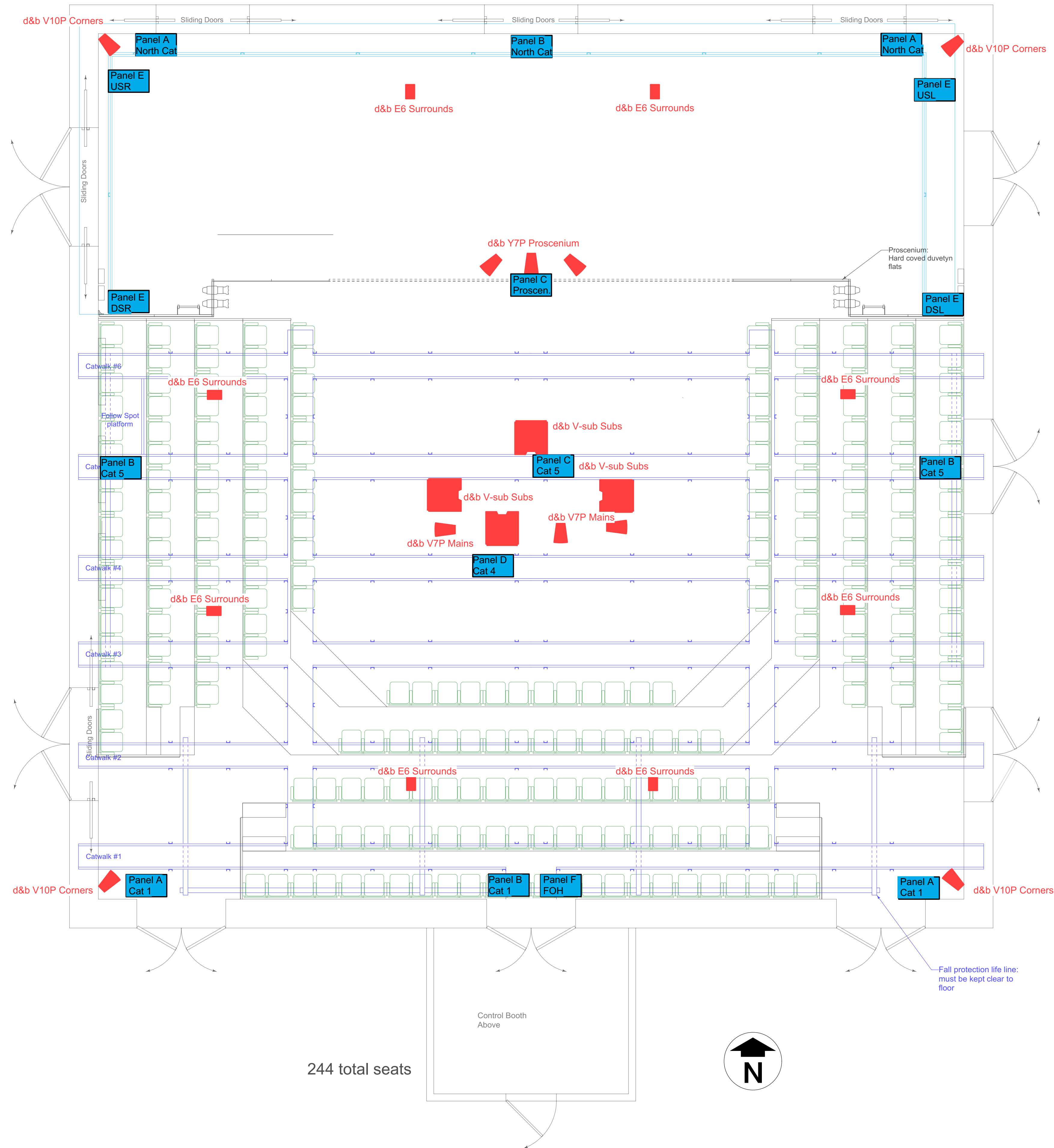
Scenic unit

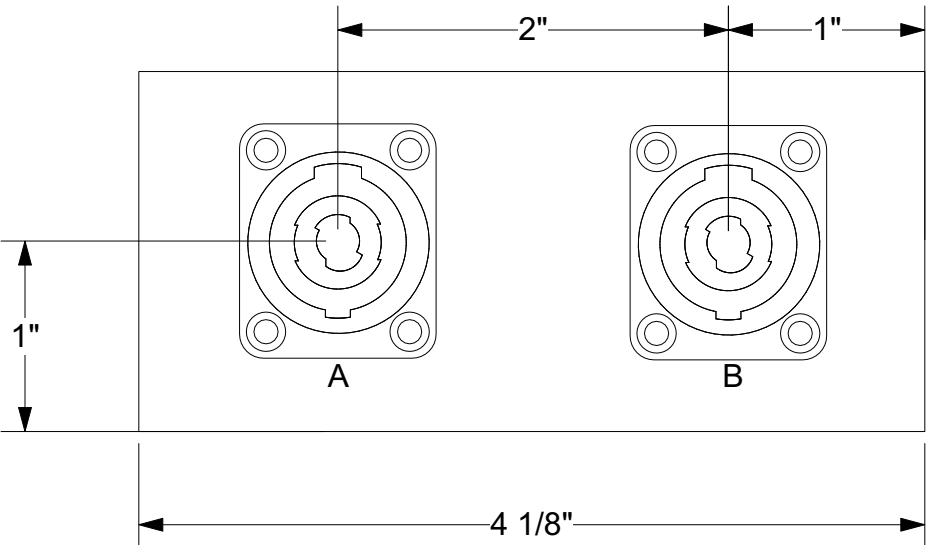
Ground Plan

Drawing No. :

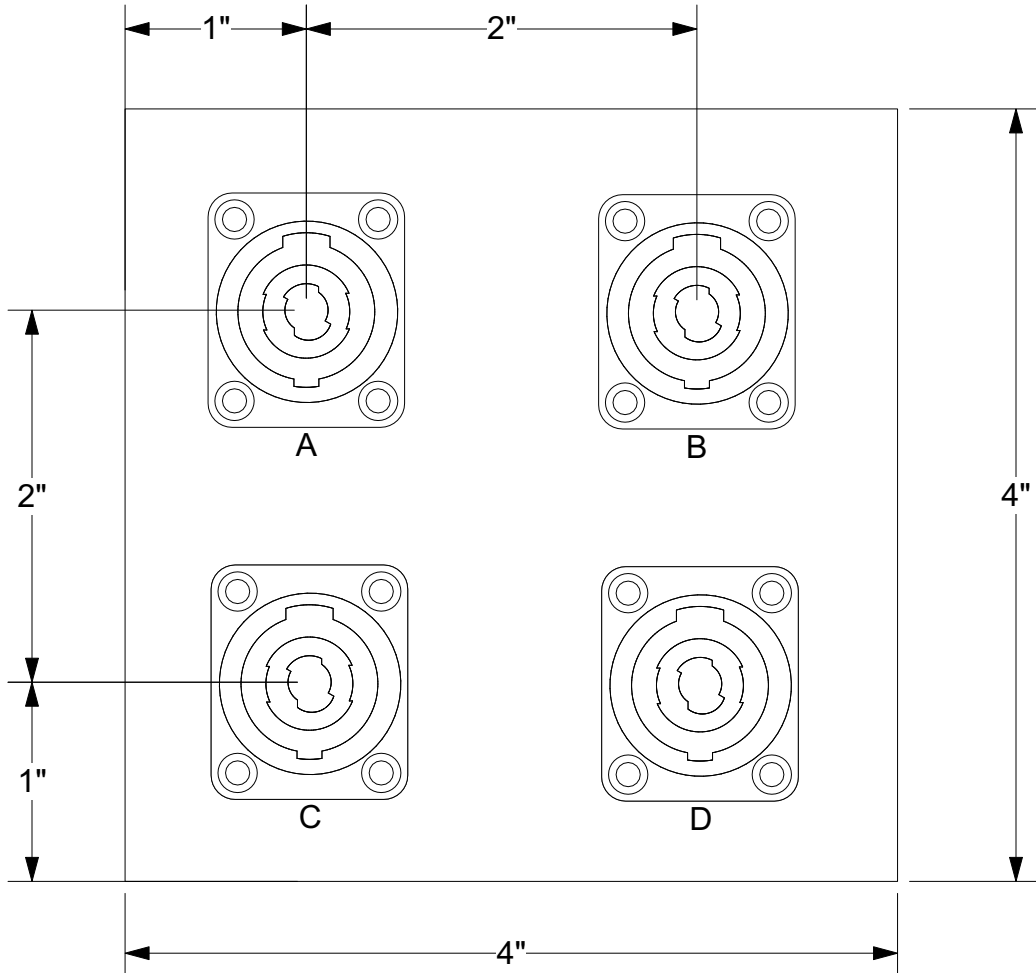
1

of 2

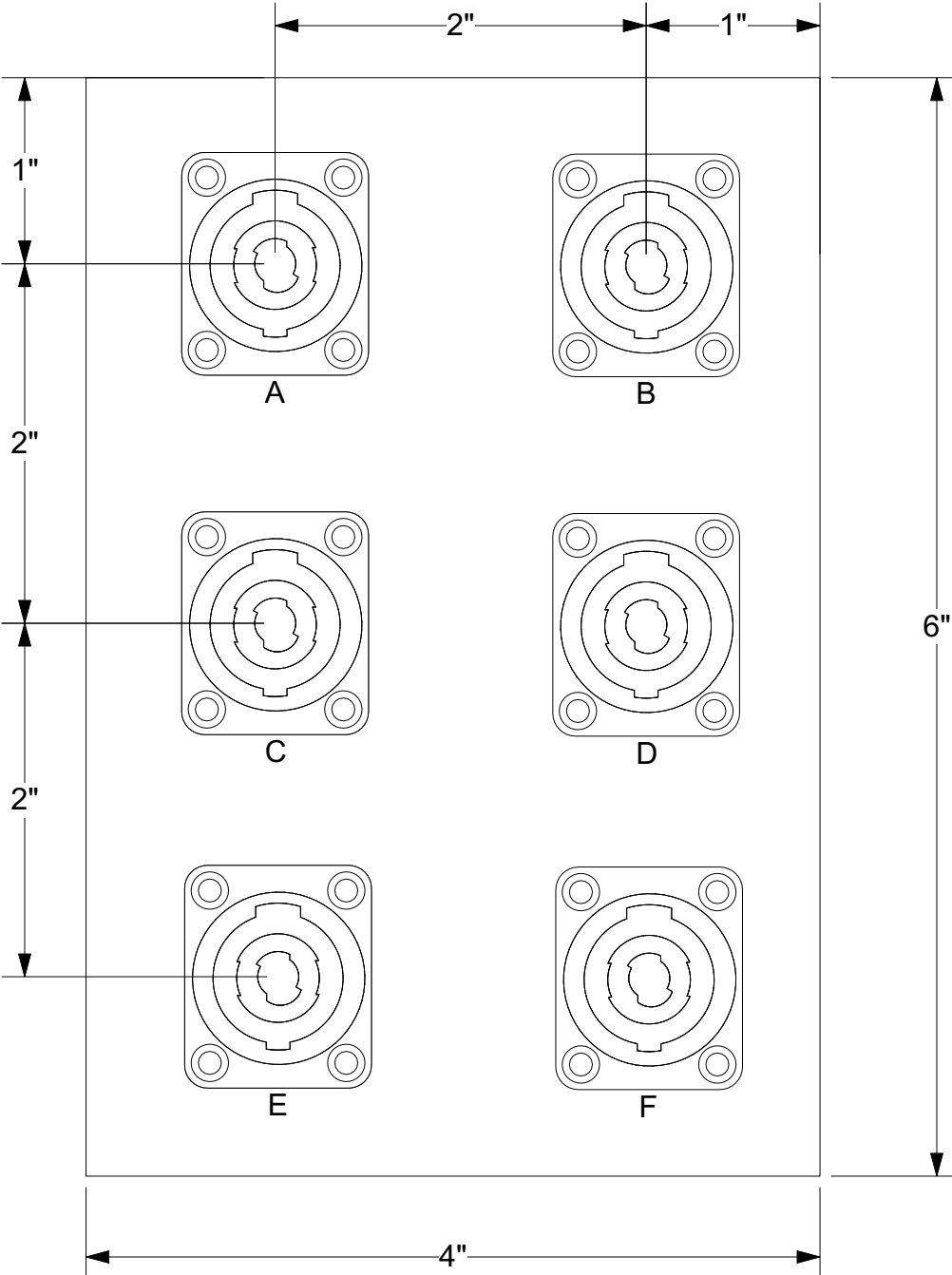




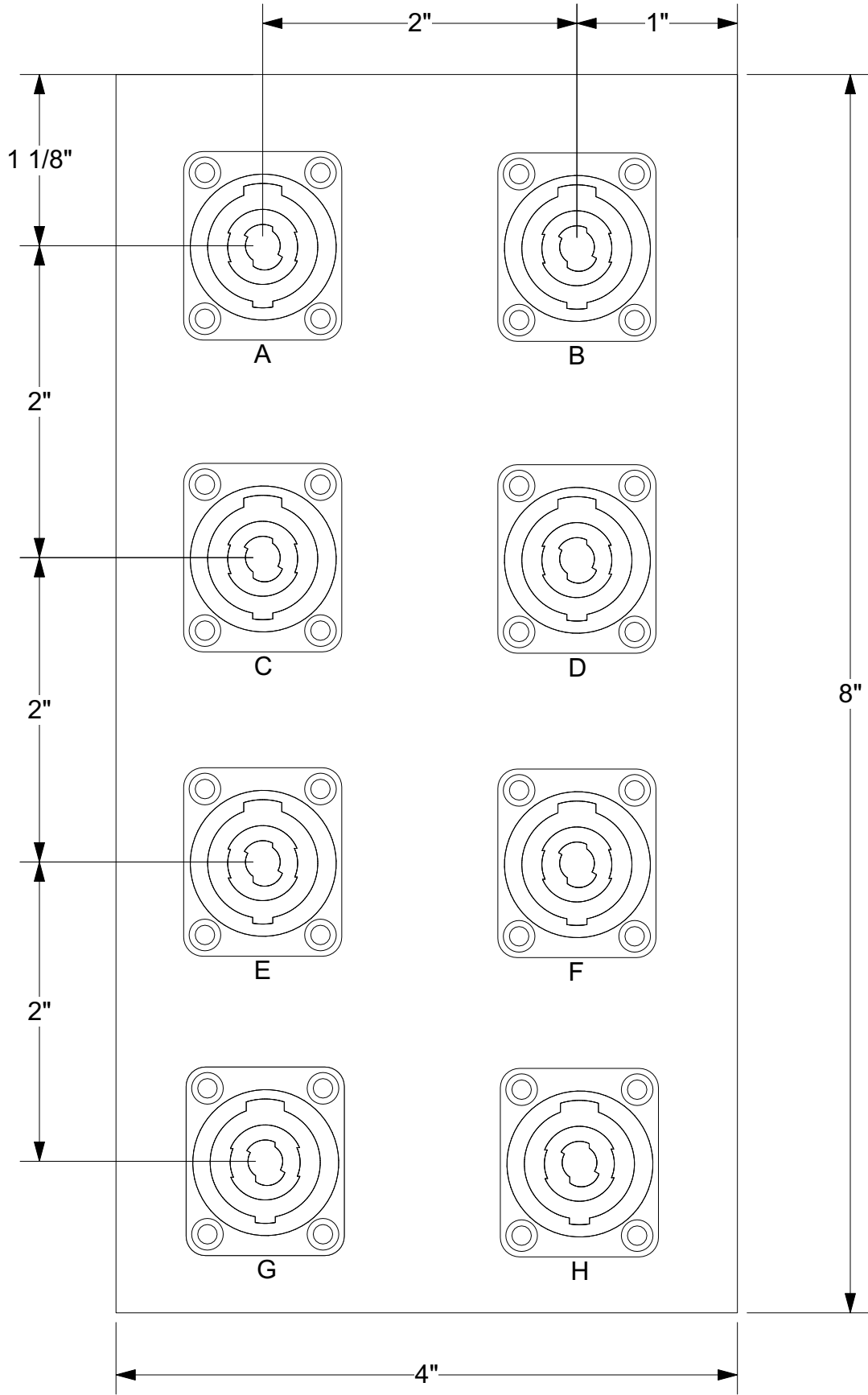
**Wall Panel A**  
North Catwalk East  
North Catwalk West  
Catwalk 1 East  
Catwalk 1 West



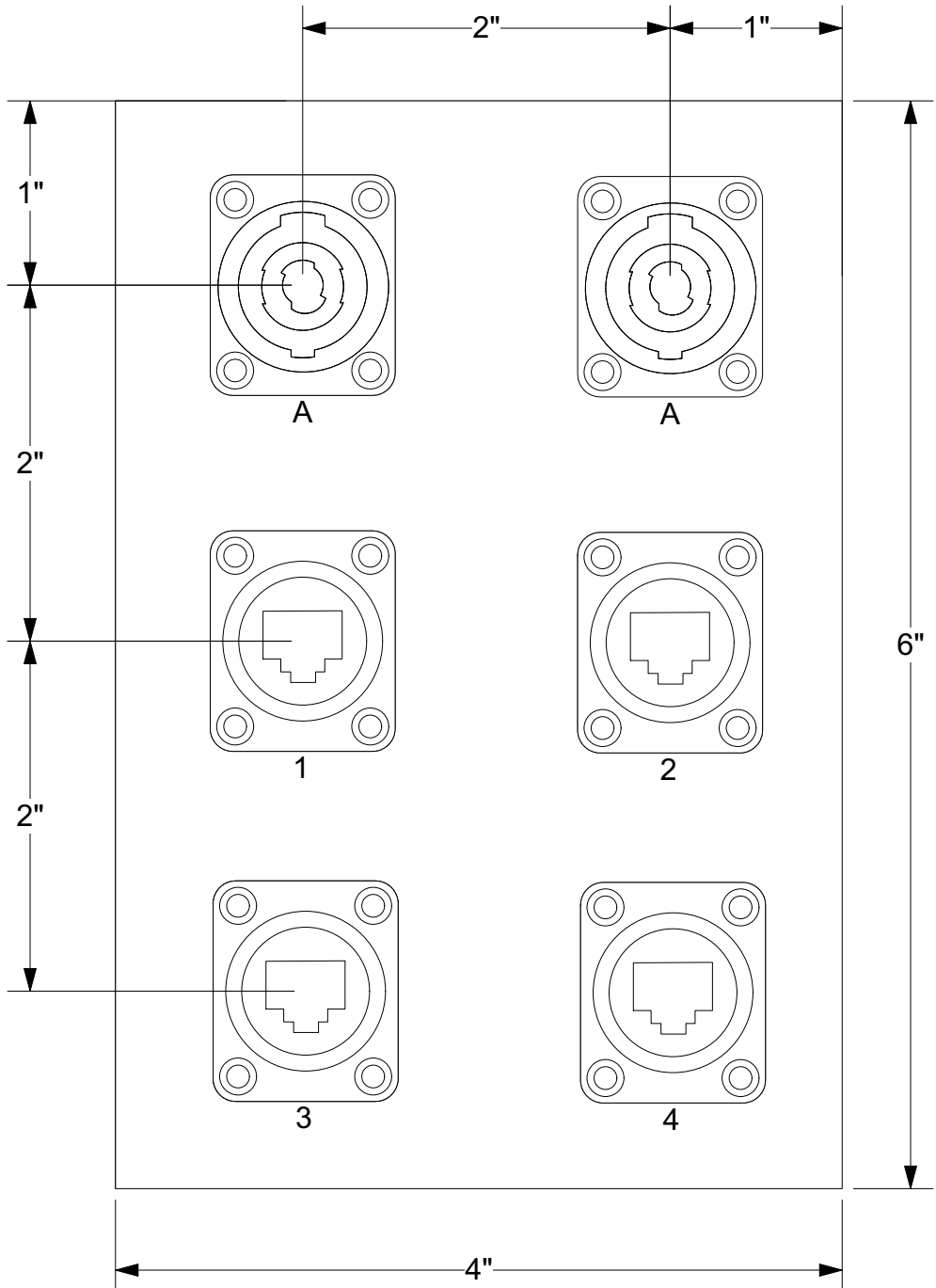
**Wall Panel B**  
North Catwalk Center  
Catwalk 5 East  
Catwalk 5 West  
Catwalk 1 Center



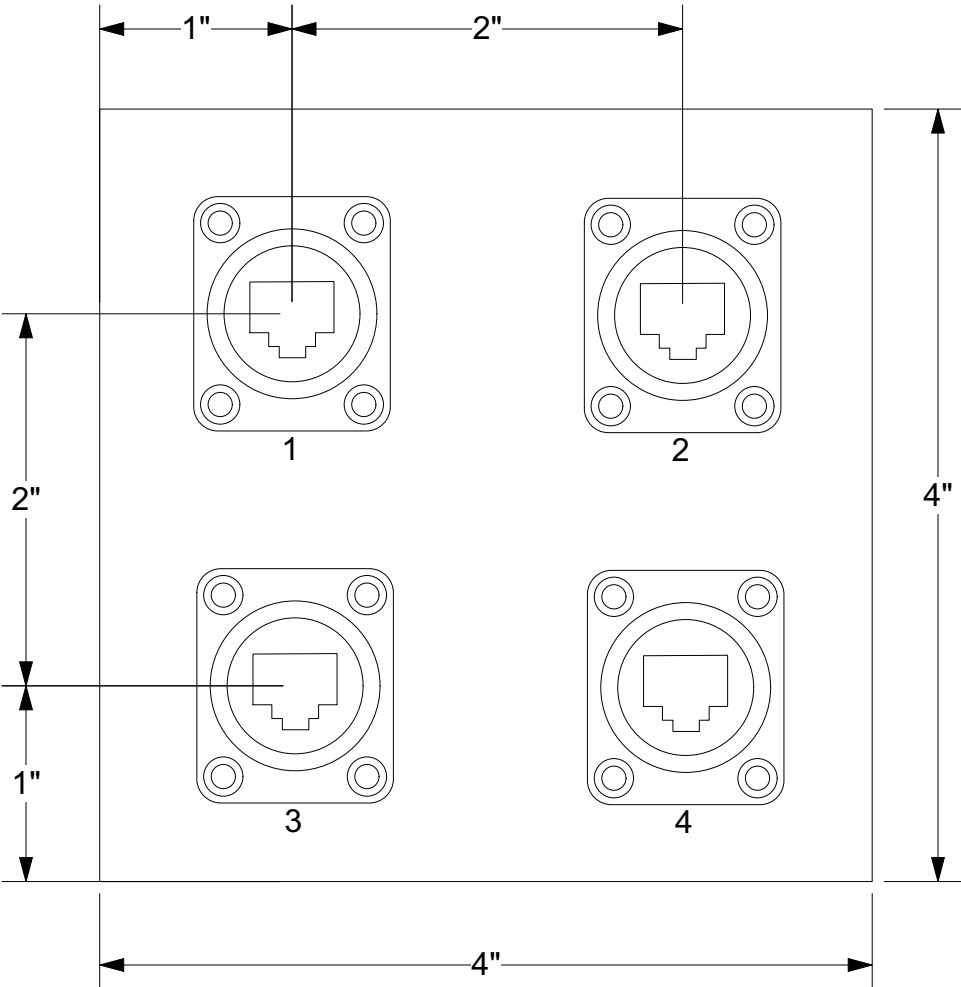
**Wall Panel C**  
Catwalk 5 Center  
Proscenium



**Wall Panel D**  
Catwalk 4 Center

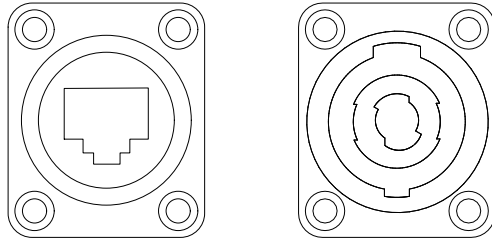


**Wall Panel E**  
Upstage Left  
Upstage Right  
Downstage Left  
Downstage Right



**Wall Panel F**  
Front of House Mix

EtherCon NL4



Title		
Panel Details		
Drawing Number	Drawn By Kaeden Harrell	Date 4/29/2020
CAD File Name		