

HyperSound Professional Audio Solutions: Overview

COMPANY

Corporate Overview

- Turtle Beach Corporation designs audio products for consumer, commercial and healthcare markets.
- Industry leader in gaming headsets with features such as active noise cancelation, Bluetooth, mic monitoring and superhuman hearing
- Under the brand HyperSound[®], the company markets pioneering directed audio solutions that have applications in digital signage, museums, POP, kiosks, consumer electronics and healthcare

HyperSound Overview

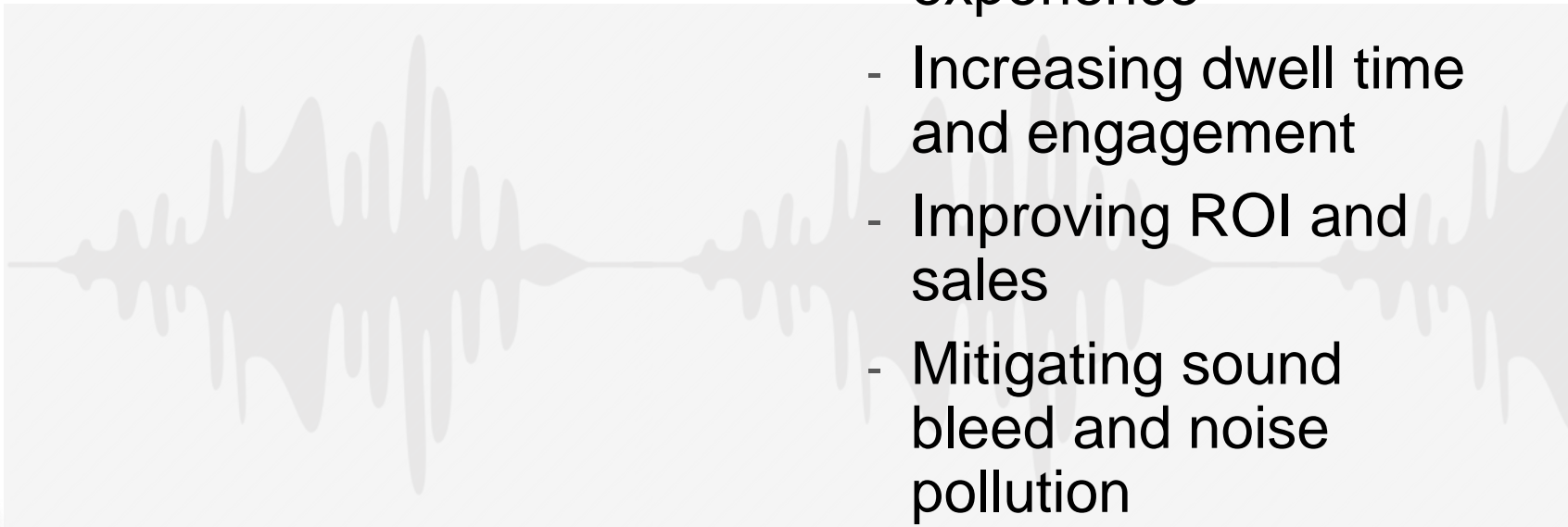
- HyperSound technology originated in San Diego with Parametric Sound
- Parametric Sound merged with Turtle Beach in 2014
- HyperSound has a robust, expanding IP portfolio with over 55 US issued and pending patents

Why HyperSound?



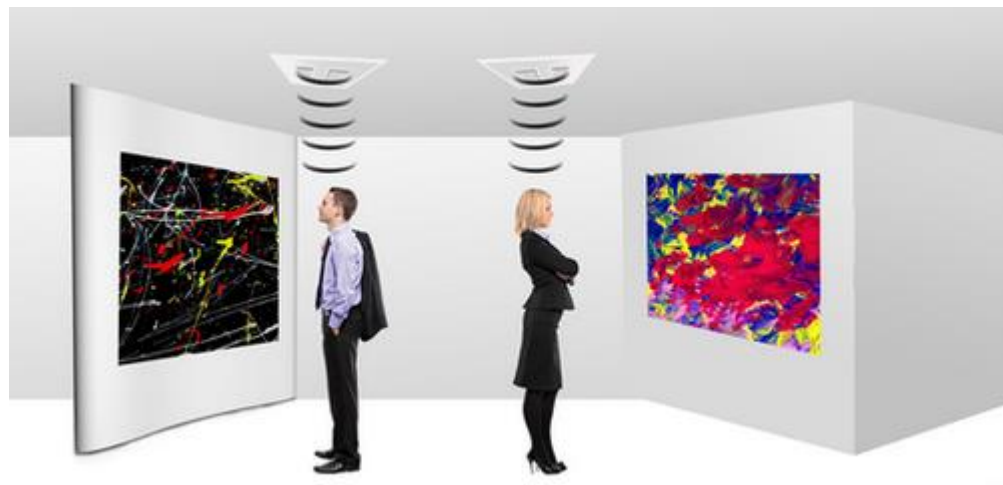
HYPER SOUND IS AN INNOVATIVE, HIGHLY-DIRECTIONAL SPEAKER UNIQUELY DESIGNED FOR CREATING **IMMERSIVE 3D SOUND ZONES.**

- **Effective solution for:**
 - Improving marketing message retention
 - Enhancing customer experience
 - Increasing dwell time and engagement
 - Improving ROI and sales
 - Mitigating sound bleed and noise pollution



Where does HyperSound work well?

- *Retail POP*
- *Endcaps*
- *Audio Only*
- *Audio Way Finding*
- *Video Walls*
- *Interactive Kiosks*
- *Greetings*
- *Exhibits*
- *Entry & Exit Points – Audio Greeter*
- *Healthcare Recovery Beds/ Treatment Centers*
- *Queue Lines & Gathering Points*
- *Trade Show Applications*
- *Experimental Environments*
- *Vending Machines*



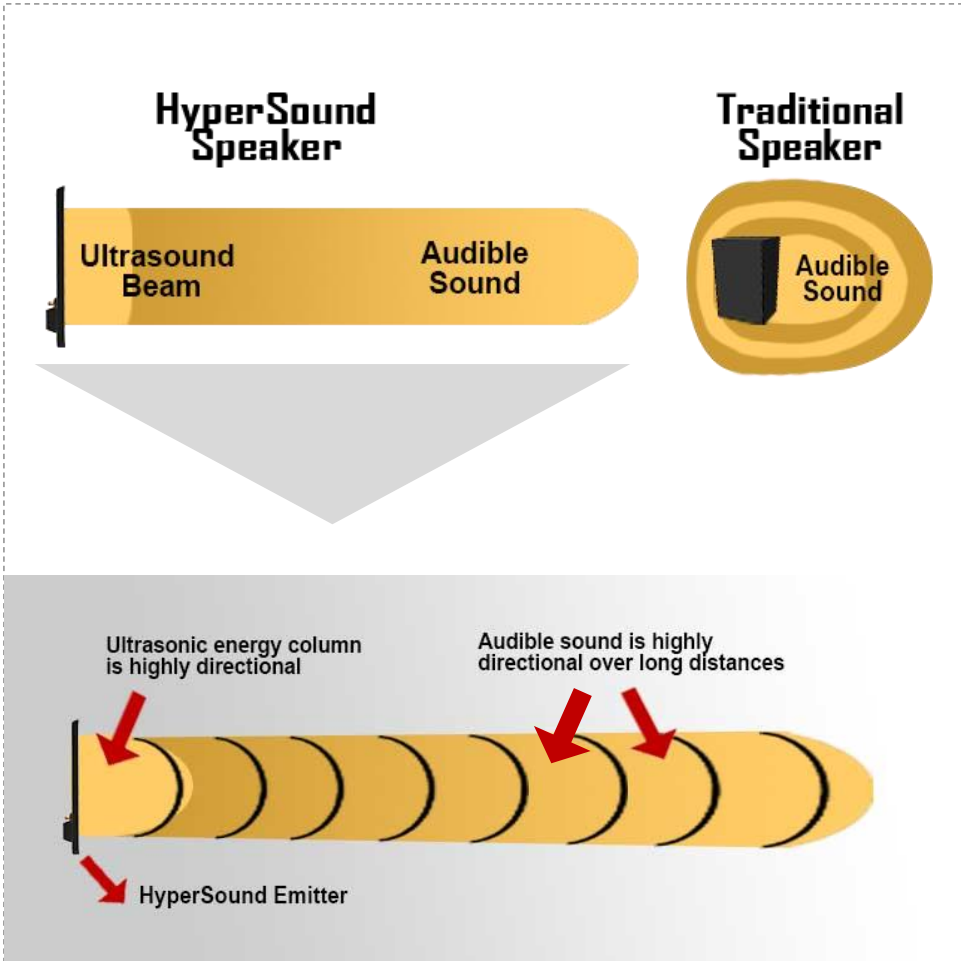
A Revolutionary New Audio Solution



| Key Features | Benefits |
|--|---|
| Small speaker size, lightweight | <ul style="list-style-type: none">• Easy integration into commercial applications• Multiple mounting options, easy to mount, very thin and flat |
| Highly directional | <ul style="list-style-type: none">• Creates tight audio zones• Isolates sound to a specific region or person• Diminishes sound bleed and noise pollution• Communicate audio over longer distances while maintaining intelligibility• Effective in high ambient noise environments |
| Can act as a virtual audio source | <ul style="list-style-type: none">• Sound can be projected from surfaces |
| Ability to target each ear individually | <ul style="list-style-type: none">• Produces 3D audio effect |
| Patented DSP processing | <ul style="list-style-type: none">• Innovative techniques generate low distortion and enhanced frequency response to support a multitude of directed audio applications |

Features, Setup and Specifications

How the Technology Works



TRADITIONAL LOUSPEAKERS

- Like a bare light bulb, radiates sound in all directions
- No control over audio placement

HYPER SOUND

- Like a flashlight, emits sound in a highly controlled beam
- Ability to place sound exactly where you want it, while eliminating sound from all other areas

HyperSound Setup



- [YouTube: HyperSound Setup Guide](#)
- HyperSound is a 2 channel amplifier with 1 or 2 emitters
- Class D amplifier
- 2 RCA inputs
- 1 RCA output for subwoofer
- Power handling is ~15 watts per Ch.
- Max SPL is 100dB at 1.5kHz at 2m
- Frequency range is 300hz to 18kHz
- Ultrasonic Carrier is 45kHz
- Ultrasonic SPL is 140dB SPL



System Specifications

- Amplifier is CE, FCC
- Power Supply is UL/CE approved 30v DC @ 1.5amps
- Recommended speaker wire is 12 gauge.
- Recommended maximum speaker length is 140'
- Amp has a small input clip indicator light, green & yellow
- Minimum listening distance is 3 feet
- Maximum listening distance is 40 feet



Advantages of Directed Audio

HyperSound Audio in Digital Signage & Retail Ceiling to Floor

- In digital signage and retail settings, HyperSound creates a virtual audio zone that is fundamentally immersive and intelligible
- This vivid audio experience helps retailer inform customers while creating emotional ties between them and the brand, motivating their purchasing behavior
- As seen to the right HyperSound works very well in video walls, kiosks and sound zone creation
- YouTube Video: [InfoComm 2014 - Ceiling to Floor Example](#)



Increase Metrics for proven Return on Investment

- Maximize the value of the customer experience
- Increase customer interaction
- Increase customer engagement
- Increase dwell time and message retention
- **Increased metrics = Increased Sales = ROI**



Directed Audio in Retail

- A high-quality experience is critical to attracting and retaining customers—and driving revenue.
- Research shows that directional audio:
 - Increases initial interaction
 - Increases engagement
 - Increases message retention
 - Increases purchasing behavior

60%

In 2012, a study conducted by Lexter Technology & Sound investigated the effectiveness of directional audio on selected beverage products in ICA stores. Sales of two well-known beverage products rose nearly 60 percent during an advertising campaign incorporating directional audio, compared to non-campaigned beverages.

25%

There was also a 25% increase in brand evaluation when directional audio content for the campaigned beverage was played within the store.

15

In another 2012 study, researchers examined the effects of directional audio on shopper behavior when played in a grocery store dairy department. Investigators found that shoppers exposed to directional audio stayed in the dairy section 15 seconds longer than those not exposed to directional audio.

10%

Results also showed that product sales for the campaigned organic dairy products rose nearly 10 percent with directional audio compared with sales of those same products prior to installation of the system.

87%

Additionally, there was a 87% increase in the number of shoppers who purchased a new organic dairy product that they previously were not aware of.

- Lexter Technology & Sound, 2012

Retail Case Studies

Retail Use Case: Activision Floor to Ceiling Example



- *Deployed across 987 Best Buy locations in North America*
- *Represents the largest implementation of virtual reality audio in a retail setting*
- *YouTube: [Floor to Ceiling Installation](#)*
- *Best Buy Case Study: [Retail Video](#)*



Case Study: Cellular Sales Using HyperSound as a Attractor Beacon



Challenge

- While many of the displays are designed with promotional video screens, the retailer found that only a few incorporated audio content.
- The retailer sought to provide customers with enhanced audio experiences without creating a disruptive, cacophony of conflicting sounds.
- They needed a solution that would allow audio to be played **without it bleeding into nearby product zones.**

Solution

- Cellular Sales partnered with HyperSound Audio Solutions to design a three-installation pilot in a Knoxville, Tennessee location.
- The pilot was designed to create immersive sound zones that minimized bleed and enhanced customer interaction.



Case Study: Cellular Sales

Return on Objective (ROO)

The audio content was memorable.

- 93% of shoppers reported remembering the audio content.
- 60% of respondents provided positive feedback related to the audio experience
 - Only 25% provided positive feedback related to the visual experience.

The experience was informative and engaging.

- When compared to similar product displays:
 - 61% said that their experience was more informative
 - 87% of shoppers said the experience was more captivating

The experience improved shoppers' brand perception.

- 76.7% said the interaction with the display gave them more positive feelings about the brand than before

The overall HyperSound-integrated display experience was a positive one.

- 85% of shoppers said they were very (58%) or extremely (27%) satisfied with the overall experience

Return on Investment (ROI)

- When comparing the average growth between September and October to November and December, total sales within the HS pilot store grew 43%
- Sales within all of Knoxville only grew by 9% over same period.
- Store to store net gain of +34% in HS vs Non-HS Stores

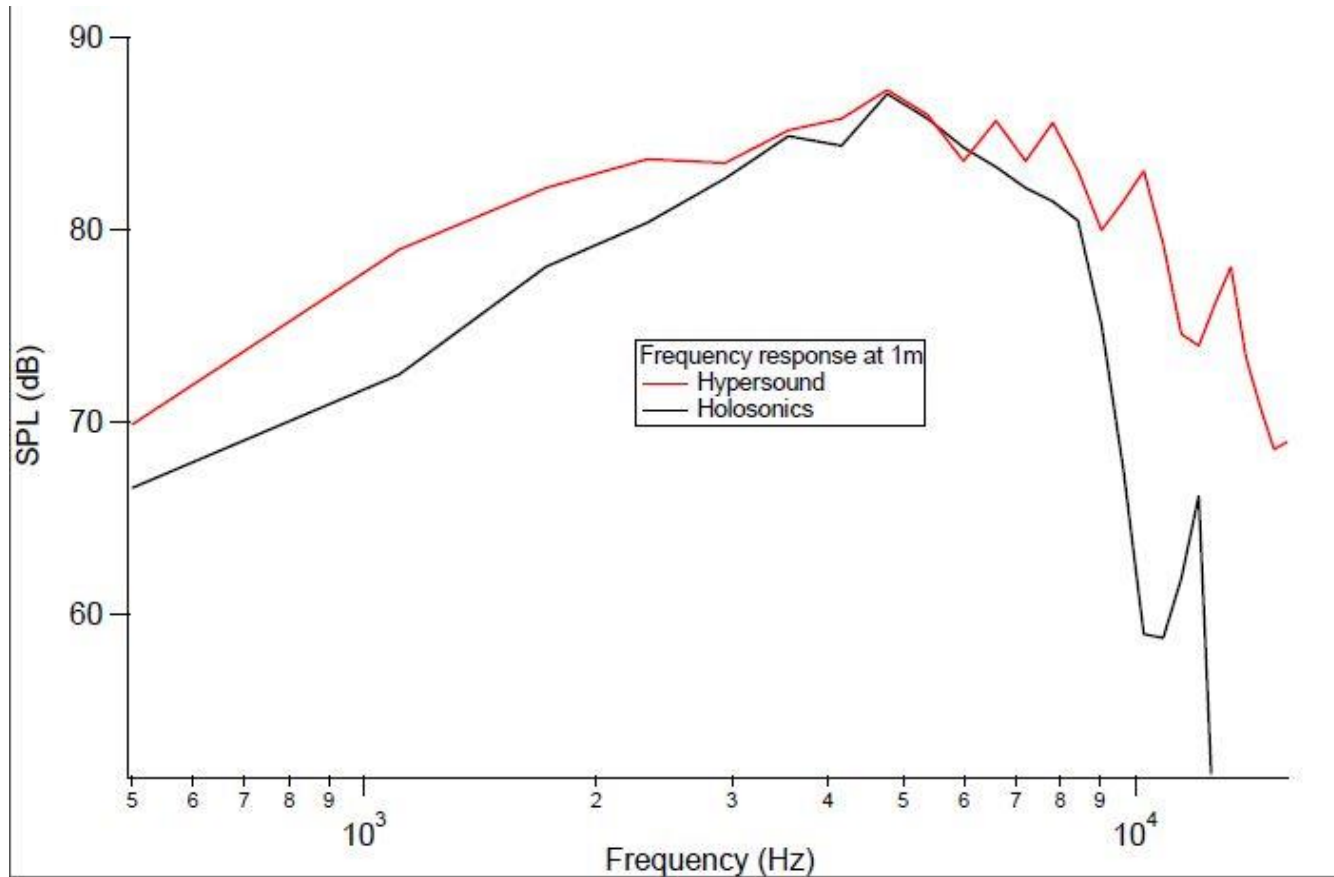
Best Practices and Statistics

HyperSound Installation and Best Practices

- In a scenario with low ceilings 8 to 15 feet the best location for the emitters to be installed would be in the ceiling pointing down. This would help keep the reflection contained to the listening environment.
- In a scenario with high ceilings 20 and above the best approach would be a floor mount pointing up. This would allow the reflection to succumb to natural intensity loss.
- Ceiling box tips. Ensure that ceiling is a 2x2 or 2x4 grid. Anything else will require modifying the grid structure.
- Amplifier cannot be installed in a Plenum ceiling.

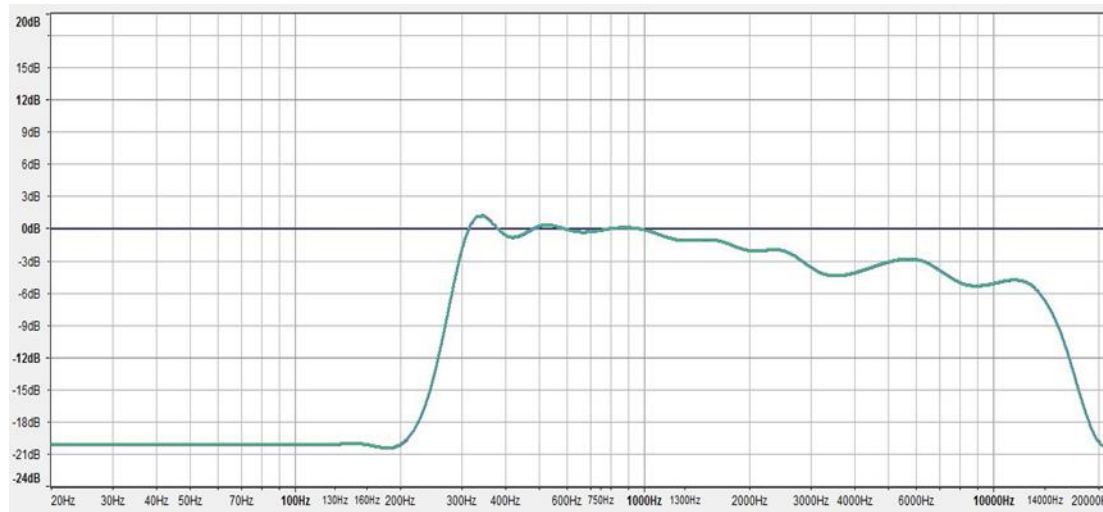
HyperSound vs HoloSonics

Difference in Frequency Response



Audio Optimization

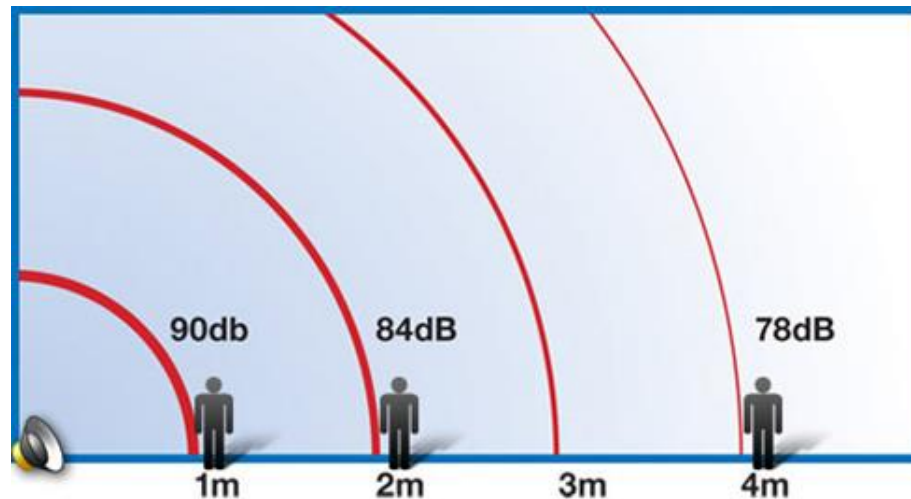
- If you are planning on creating content we have some recommended best practices for audio level.
 - *Reducing 6 and 8khz by 3 to 6dB will help remove the “Brightness” from the content.*
 - *If you have a deployment with a woofer we recommend the x-over point at 500 to 600hz with a 6dB per octave slope.*



FAQs

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- Q. I heard that the Military uses HyperSound as a weapon?
- A. The military uses a device called LRAD. It is not same as HyperSound. We adhere to OSHA and FDA regulations for hearing.
- Q. How far can the sound travel?
- A. Adhering to the Inverse SQ law. Which is a 6dB drop every time you double the distance. If we are at 90dB at 1meter we need to travel 32,768 meters to reach 0dB. This of course is a perfect environment.



FAQ's

- Q. How long can I listen to HyperSound?
- A. You can stand in the beam as long as desired. There are no side effects to long term exposure to HyperSound.
- Q. What kinds of devices can I use to create audio?
- A. The amplifier will playback any kind of audio over the line in.

- **Any questions that you still have concerning HyperSound?**
 - Please reach out to sales@videoteldigital.com