

Sound Laser

Precision Directed Audio Beam System

Deliver crystal-clear sound directly to one person's ears — invisible and inaudible to everyone else.
Personal audio, redefined.

The Problem

Traditional speakers and headphones have major limitations:

- Sound leaks everywhere (disturbs others in public, meetings, libraries)
- Headphones cause discomfort, ear fatigue, and hygiene issues
- Open-ear solutions still spread sound too widely
- No true “personal zone” audio for hands-free, private listening in shared spaces
- We need a solution that puts sound exactly where we want it — like a laser.

The Solution

Sound Laser – A revolutionary directed audio device using parametric array technology.

- Emits ultrasonic waves that demodulate into audible sound only at the target point (optimized near the mouth/ear)
- Wireless emitter + compact amplifier
- Narrow beam (like a laser) — others around you hear almost nothing
- Wearable/clip-on design for hands-free use
- Perfect for calls, music, podcasts, navigation, and accessibility
- Private sound. Public freedom.

How It Works (Technical Overview)

- Audio source → Digital signal processing (modulation)
- Ultrasonic carrier (40kHz+) generated
- Parametric array transducers emit focused ultrasonic beam
- Nonlinear air propagation creates audible sound at the focal point (demodulation)
- Wireless emitter placed optimally near the user's mouth/ear zone
- Amplifier boosts the signal with low distortion
- Result: Sound appears to come from nowhere — only you hear it clearly.

Key Features

- Extremely narrow sound beam (5–15° dispersion)
- Wireless emitter with adjustable positioning
- Bluetooth / app control for volume, beam direction, EQ
- Low power consumption (battery life 8–12 hours)
- Clear voice reproduction and music playback
- Safety features: Automatic shutdown if beam misaligned
- Hands-free, discreet, and highly directional.

Bill of Materials – First Prototype Batch (20 Units)

Component	Specification	Unit Cost (USD)	Qty 20	Total (USD)	Notes
Ultrasonic Transducer Array	40kHz parametric array (16–32 elements)	18.50	20	370	Core directed sound component
Class-D Amplifier Module	Low-distortion, 5–10W	4.80	20	96	Efficient audio amplification
Wireless Emitter Module	Bluetooth 5.3 + microcontroller (ESP32)	6.20	20	124	Positioning & control
Lithium Polymer Battery	1000–1500mAh, rechargeable	3.50	20	70	Long runtime
Custom PCB (small batch)	4-layer, compact form factor	5.50	20	110	Integration
Housing / Enclosure	Recycled PLA or bamboo-composite	4.20	20	84	Sustainable option
Adjustable Clip / Mount	Ergonomic, soft-touch silicone	2.10	20	42	Mouth/ear zone optimization
MEMS Microphone (optional feedback)	For beam calibration	1.80	20	36	Accuracy
Passive Components + Connectors	Resistors, caps, wires	2.50	20	50	Standard
TOTAL		49.10	20	982	≈ \$49.10 per unit

Scaling & Mass Production Costs

- At 1,000 units: ~\$22–28 per unit
- At 10,000+ units: Target \$12–18 per unit (tooling amortized)
- Retail price suggestion: \$89–\$149 (healthy margin)
- High scalability with standard electronics manufacturing.

Sustainability & Eco-Design

- Sound Laser is designed with circular economy principles:
- Housing: Recycled PLA, bamboo fiber composite, or post-consumer recycled plastic (up to 90% recycled content)
- Electronics: Preference for RoHS-compliant, low-conflict minerals; modular design for easy repair
- Packaging: FSC-certified cardboard + soy ink, zero plastic wrap
- Energy Efficiency: Low-power Class-D amp + sleep mode (<0.5W standby)
- End-of-Life: Battery easily replaceable; transducers recyclable; take-back program planned
- Carbon Footprint: Significantly lower than traditional headphones due to no constant ear contact and efficient components
- One of the greenest personal audio devices on the market.

Detailed Sustainable Material Choices

- Enclosure: Bamboo-reinforced bioplastic or recycled ocean plastic
- Mount/Clip: Soft bio-based silicone or TPE from renewable sources
- PCB: Halogen-free substrate + recycled copper traces where possible
- Cables/Wiring: Recycled copper with biodegradable insulation
- Documentation: Digital-first + printed on recycled paper
- All materials chosen for durability, performance, and minimal environmental impact.

Competitive Advantage

- True laser-like directionality (better than most commercial parametric speakers)
- Wearable emitter design optimized for mouth zone
- Strong focus on sustainability and repairability
- Affordable pricing with high margins at scale
- Modular architecture for future upgrades
- No direct competitor combines precision, wearability, and eco-design this well.

Market Opportunity

- Directed audio / parametric speaker market growing rapidly (museums, digital signage, personal audio)
- Global personal audio market: \$100B+
- Sustainability-driven consumers increasingly prefer green electronics
- TAM for Sound Laser segment: \$500M+ in 3–5 years
- Perfect timing for a premium-yet-accessible directed audio product.

Go-to-Market Strategy

- Phase 1: Crowdfunding (Kickstarter) for first 500–1000 units
- Phase 2: Direct-to-consumer via Shopify + Amazon
- Phase 3: B2B partnerships (offices, museums, accessibility tech)
- Phase 4: International expansion with localized packaging
- Strong viral potential through “you won’t believe only I can hear this” demos.

Roadmap

- Month 1–2: Finalize prototype with your visuals/3D models
- Month 3–4: Testing & optimization (beam focus, distortion, battery)
- Month 5–6: Sustainability certification & small batch production
- Month 7+: Launch & scaling
- Ready for market in under 9 months.

Target Audience

- Primary: Children 8–14 and families
- Secondary: Dog lovers of all ages, casual adventure gamers
- Perfect for schools, animal shelters, and parental control-friendly platforms
- Strong appeal in Turkey and international markets

The Ask

- We are seeking partners and investment for:
- Prototype refinement and first production run
- Sustainability certifications
- Marketing & distribution (especially B2B)
- Let's make personal audio truly private and planet-friendly.

Thank You

Sound Laser

- Sound exactly where you want it. Heard by no one else.
- Precision audio. Sustainable design. Future of listening.
- Contact: mehmet@mehmetustaportfolio.com
- Ready to beam the future.