

NAPHOME – Phase I Manufacturer Brief

Confidential

Objective

Develop **Phase I prototypes (Qty 200)** using an existing sleep/wellness product from your catalog, upgraded with: ESP32-S3 MCU as the central controller Sensor suite (Temperature, Humidity, CO₂, VOC, Light, PM 2.5, Sound) Far-field microphone array (dual mic) RGB LED ambient lighting Cloud connectivity (Wi-Fi / Access Point mode) OTA-enabled firmware for updates and diagnostics This phase leverages your proven mechanical design and speaker assembly while integrating our intelligent control electronics.

Design Context

Feature	Description
Base Device	Use existing sleep or bedside smart speaker from your catalog (dual speakers and diffuser lighting)
MCU Upgrade	Replace internal microcontroller with ESP32-S3 for Wi-Fi, BLE, I ² S audio, and cloud integration.
Audio Path	Maintain existing speaker driver; integrate I ² S digital microphone for far-field voice pickup.
Sensors	Compact PCB with Bosch/DFRobot-class sensors for air quality and environmental monitoring.
Lighting	Reuse or retrofit RGB LED diffuser assembly for ambient mode and status indication.
Firmware Stack	Based on ESP-IDF/CircuitPython; supports AWS IoT Core backend and OTA update.
Cloud Features	Spotify streaming via backend, voice-to-voice conversational AI, and environmental data push.
Power	Optimize for low-noise DC rail; optional 2–3 hr backup battery.

Deliverables for Manufacturer

Item	Description
Prototype Batch (200 units)	Existing housing with new internal PCB + sensors + ESP32-S3.
Electrical Layout	Maintain high-fidelity audio path; ensure sensor isolation from heat/audio zones.
Firmware Loading	Factory-flashed OTA-enabled firmware, provisioned for cloud registration.
Testing Requirements	Verify Wi-Fi setup, OTA update, LED control, mic sensitivity, and sensor readout.
BOM Target	≤ USD \$40 per unit (Phase II goal). Phase I may exceed slightly due to low volume.
Certifications (Phase II)	FCC/CE, RoHS, ETL pending full redesign.

Next Steps

Review catalog for compatible base device (dual-speaker bedside / sleep device). Provide mechanical drawings and PCB footprint space. We supply reference PCB (ESP32 + sensors + mic + I²S). Joint validation of electrical and acoustic performance before production run.