MOB Supplier Brief

Engineering feasibility and pilot manufacturing inquiry

MOB is a pocket AI computer in development. Its intended local model, speech interface, browser and Linux command tools let a user research, prepare work and act through supported integrations on devices they authorize. An iPhone companion handles setup, scope and review. The baseline uses Wi-Fi or a phone hotspot; cellular connectivity is not included.

We seek a bounded feasibility proposal before a 25-unit supervised pilot. We do not yet have an integrated validated hardware prototype, measured runtime or verified call interoperability. These are candidate parts and targets. Please challenge constraints that conflict with feasibility, economics or serviceability.

Physical and component allocations

Element	Baseline or alternative	Integration requirement
Enclosure	112 x 72 x 26 mm outer target	No validated CAD or mass. Include walls, radii, acoustic volume, antennas and service access.
Baseline compute	Open-Q 8550CS QC-SIP-8550W-B 16 GB / 128 GB 54 x 45 x 3.61 mm LGA [1]	Listed Wi-Fi/Bluetooth capability. Carrier, heat path and antenna space are additional. Confirm exact BSP/runtime support.
Compute alternative	Open-Q 8550CS microSOM QC8550-1AP-EO 12 GB / 256 GB 39 x 33 x 3.85 mm [2]	External Wi-Fi/Bluetooth required. Compare total area, power and RAM headroom. Not a drop-in replacement.
Battery	1S, 7 Ah, 3.7 V 90 x 60 x 12 mm allocation	No selected pack. Include protection, tabs, NTC, connector and swelling. Existing-cell proposal preferred.
Speech and calls	IM69D128S PDM mic 3.50 x 2.65 x 1.00 mm [3] Speaker 3923 reference 30 x 20 x 5 mm, 8 ohm / 1 W [4]	Mic layout and acoustic chamber open. Optional BM83: 32 x 15 x 2.5 mm [5]. Retain only if call proof justifies a second radio.
Power and mount	USB-C primary power 100 mm stowed lead target Magnetic mount / Qi evaluation	BQ51013C: candidate 5 W Qi 1.3 receiver [6]. Coil, ferrite and power path additional. No MagSafe/Qi certification claimed.

12-hour mixed-use target: 7 Ah x 3.7 V = 25.9 Wh nominal. At an assumed 85% usable system energy, runtime requires no more than 1.83 W average. At a continuous 6 W, the calculation gives 3.67 hours. These are assumptions and calculations, not measurements.

Feasibility evidence required

Prove the complete system on the selected hardware before committing custom boards or tooling.

01 Local compute and software

Identify the BSP, accelerator backend, model license and quantization for a 3-4B local model. Demonstrate speech input, local inference, speech output, browser access and a real scoped command. Record model/context versions, RAM peaks, cold/warm latency, system input power and throttling. Show offline local inference. Report unsupported operators, packages and recovery limits; TOPS alone is not acceptance evidence.

02 Power and thermal behavior

Measure listening/idle, wake, local task, browsing, call and charging states. Define the mixed-use duty cycle first. Propose a low-power wake path and measure its response-time tradeoff. Verify USB-C negotiation, charge while operating, depleted-battery startup, brownout recovery and thermal cutback. Log battery, touch-surface and compute temperatures. A 5 W receiver cannot alone sustain a higher continuous system load.

03 Audio and iPhone calls

Separate cellular and named VoIP use cases: routing, receiving, answering, speaking and reconnecting. Prove the actual iPhone/OS/app/audio path before retaining BM83 or promising automatic attendance. Bluetooth profile support does not establish call-audio access. Test duplex audio, echo cancellation, interruption, noise and physical mute. State licensing, accessory and app constraints.

04 Device access and user control

Define host types, SSH/API/companion integrations and per-tool permissions. Tailscale provides network reach, not access to every program [7]. Show scope, review, stop and recorded results. Test denied access, expired credentials, offline hosts, interrupted jobs and prevention of unapproved external actions. Pairing must not automatically expose unrestricted shell execution.

05 Mechanical and radio integration

Return a vendor-CAD-based stack: tolerances, keepouts, mass estimate, heat path, battery protection, speaker chamber and USB-C strain relief. Compare radio behavior in hand, in pocket and magnetically mounted. Establish whether one Bluetooth implementation can serve setup and audio. Check coil, metal, magnets, antennas and microphones together before fixing the enclosure.

06 Production and recovery

Define provisioning, unique device identity, updates/rollback, reset, test pads and service access. Provide a failure log and repeatable manufacturing test procedure. Identify rework, spares and long-lead parts. Propose the product, battery, radio and accessory verification needed for intended markets [8]. Module certificates alone do not certify the finished product.

Acceptance record: named hardware revision + firmware/model versions + test conditions + raw logs + observed failures + engineering conclusion. A successful demonstration on one unit is not evidence of repeatability across a pilot build.

Proposal and quotation

Please identify the technical lead, the largest feasibility concern and what you need for a useful scope call.

Stage	Requested response	Release condition
A Feasibility	Relevant Linux/audio experience; named lead; work packages, exclusions, NRE range and available start window.	Agree outputs and acceptance tests before custom PCB/tooling commitment.
B Engineering samples	5-10-unit quote after platform proof. Separate carrier/BSP, mechanical and test work, part lead times and respin allowance.	Local execution and audio/power path demonstrated; architecture and CAD reviewed.
C Supervised pilot	25-unit quotation; 100/1,000-unit budgetary tiers if meaningful. Include serial test logs, traceability, spares, shipping and support.	Verification passes; controlled BOM, firmware, build instructions and test fixture released.

Please answer in your response

1. Which requirements can you own, and which need another partner? Who accepts complete-system integration responsibility?

2. What would you prove first, on which development hardware, and what outcome would trigger an architecture change?

3. What are the MOQ, lead time, validity and currency for exact parts/quantities? Separate NRE, tooling, parts, assembly, test, scrap, packaging, freight and taxes.

4. Can you handle the LGA module, moisture/reflow rules and rework? Which inspection and functional-test records accompany each serial-numbered unit?

5. Which editable CAD, schematic/layout, source, build instructions and fixture files are delivered? Specify IP/tooling ownership, licenses, substitutions and excess parts.

6. What battery reports, shipping provisions, product tests, warranty and repair arrangements are included or excluded? What is needed to confirm them?

No production order is implied. We will provide the latest requirements and concept assets. Controlled vendor drawings and software access follow the agreed work package; conceptual dimensions are not released manufacturing drawings.

Primary references

1 Lantronix 8550CS SOM | 2 Lantronix 8550CS microSOM

3 Infineon IM69D128S | 4 Adafruit speaker 3923

5 Microchip BM83 reference | 6 TI BQ51013C receiver

7 Tailscale SSH platform limits | 8 Apple accessory process

Checked 11 September 2026. Controlled drawings/release notes govern. Mic product table states 1.00 mm; feature text also states 0.98 mm. Confirm the package drawing.