

FROZEN PROTOTYPE / SUPPLIER REVIEW

Chalk Ember. Frozen at R3.1.

For Max at RPS: the printed design baseline, current CAD, and the information needed to review a first cast prototype.

**Core shell**

78 x 150 x 24 mm

93 fabricated STEP groups

24 print / optional meshes

5 Bambu projects

14 cutting DXFs

Native Autodesk Fusion archive and full reference assembly included.

Print feedback

The owner reported that the printed parts look good. Measurements, exact printed pieces and functional results have not yet been recorded.

Frozen means traceable. These CAD and print files will remain unchanged. Subsequent geometry edits use **R3.2**, currently reserved. This is a prototype review release; casting, RF, electrical, optical and durability qualification remain open.

Permanent release: walkieone.com/cad-handoff/concept-28-r3-1

Use the permanent release link when sharing this frozen version.

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What is in this release

R3.1 retains the approved exterior. It incorporates the latest PCB integration and adjustable button mechanisms, then corrects the hidden light alignment. No geometry was changed to create this frozen package.

Revision	Change carried into R3.1
R1	Chalk shell / soft rim, woven grille, round steel play cap, round lowered light and smooth ember PTT.
R2	fb5acde7 PCB, nominal U6 placeholder, bottom-port microphone seal and local retention corrections.
R3	Removable side switch cradles, adjustable seat/contact/stop stacks and rear keeper features.
R3.1	LED, guide and keeper moved down 3 mm; local shell cradle and hidden lens receiver aligned to the unchanged light at X=0, Y=2 mm.

File authority and use

Location	Use
CAD/*.f3d	Editable native source. Includes bought-in references and hidden study geometry; inspect fabrication schedule before making parts.
CAD/*REFERENCE_ASSEMBLY*.step	Full positional reference; purchased parts and nominal placeholders are not fabrication jobs.
CAD/Fabricated_Parts_93	Current nominal finished-part STEP groups; no shrink compensation.
Printing	Exact original P1S ZIP plus accessible projects, meshes and cut-stock profiles. Read material-role notes before slicing.
Documents / Verification / References	RPS brief, materials, schedule, assembly guides, open items, checks and supplier PCB release.

Read RELEASE.json and FILE_MANIFEST.json for source identities and checksums. Older prefixes inside component names are retained identifiers. This frozen R3.1 assembly and schedule govern placement. Do not mix R3.1 shells/lenses with the older offset light layout.

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Materials and colour targets

Default: Chalk Ember. Pantone identifiers and libraries have been verified on the official site. They remain proposed physical-sample targets; an exact match to our device render has not been established. See page 4 for direct links and lookup instructions.

Part	Material / finish intent	Colour target
Front / rear shells	Tough rigid cast urethane; matte. RPS to agree resin grade.	9081 C
Soft rim	Matte elastomer; 85A inherited starting target, grade to qualify.	Warm Gray 9 C
Smooth PTT grip	Smooth matte flexible elastomer; qualify hardness and bond.	173 C
Play cap / bezel	304 stainless; fine brush / satin.	Natural metal coupon
Volume caps	6061 aluminium; fine brush and protective clear.	Natural metal coupon
Woven grille / scrim	Purchased graphite metal mesh, black acoustic scrim; finished retained edges.	Supplier coupon
Lens / light guide	Clear optical polymer; controlled output diffusion.	No pigment target

Optional Palladium finish study

The website also offers Palladium on the same geometry: shell / proposed 428 C; rim / 423 C; play cap if painted / 7541 C; PTT and volume colour / 444 C. Clickable official references are on page 4. Metal effects require a separate physical coupon. This study is not the default RPS instruction and does not authorize a solid-metal shell. Confirm RF compatibility of coatings.

Full table: Documents/Materials_and_Colour_Targets.md. Pantone 9081 C uses the Pastels & Neons Coated reference; the other named references use Solid Coated. HEX values in companion documents describe website/CAD appearance, not certified Pantone equivalents. Approve actual material, texture and lighting before matching a batch.

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Verified Pantone references

All seven colour codes resolve to their exact named swatches on Pantone's official US website. Click a code below to open its page directly. The existing palette is retained; no physical-colour approval is implied.

Design / surface	Exact search text / link	Pantone library
Chalk Ember / shell	9081 C	Pastels & Neons Coated
Chalk Ember / rim	Warm Gray 9 C	Solid Coated
Chalk Ember / PTT	173 C	Solid Coated
Palladium / shell	428 C	Solid Coated
Palladium / rim	423 C	Solid Coated
Palladium / play if painted	7541 C	Solid Coated
Palladium / PTT, volume	444 C	Solid Coated

Why the search looked different

The live search for **9081 C** returned 137 swatches across several libraries, with Cotton TCX first. The exact match appeared under **Graphics / Pastels & Neons Coated**. Enter the full code including C, select the listed library, then open the identically named result. Similar TCX, U and CP results are different references.

Correct code does not mean exact render match

The handoff's HEX values describe website/CAD appearance. They are **not certified Pantone equivalents**. Lighting, texture, gloss and metallic effects change the rendered appearance. The public Pantone pages hide numerical RGB/HEX data behind Pantone Connect access; no numerical conversion is certified here.

Pantone identifies its screen swatches as simulations and directs users to physical publications for colour evaluation. Approve RPS samples in the actual resin/elastomer and finish against physical Pantone chips. Natural metal, graphite mesh and clear/frosted optics require finish samples. The Palladium solid-colour references do not specify metallic coating.

C1 scope: documentation only. The frozen CAD, original P1S print files, colour targets and qualification status are unchanged. Original documentation remains archived under its original download links.

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Buttons: adjustable, then measured

Four LIDUOLE switches remain nominal-size references. Actual body tolerances, wired terminal envelope, actuator height, force and travel have not been measured. The removable cradles and replaceable shim/contact stacks allow the first article to be tuned.

Nominal CAD stack, mm	PTT	Volume x2	Front
Switch size	6 x 6 x 6	6 x 6 x 5	12 x 12 x 4.3
Seat shim	0.40	0.40	0.40
Compliant contact	0.25	0.20	0.25
Released contact gap	0.15	0.15	0.15
Stop shim (matched pair)	0.10	0.10	0.10
Key stroke to stop	0.45	0.45	0.50
Side backing / rear pad	0.15 / 0.50	0.15 / 0.50	Not used

Adjustment and acceptance

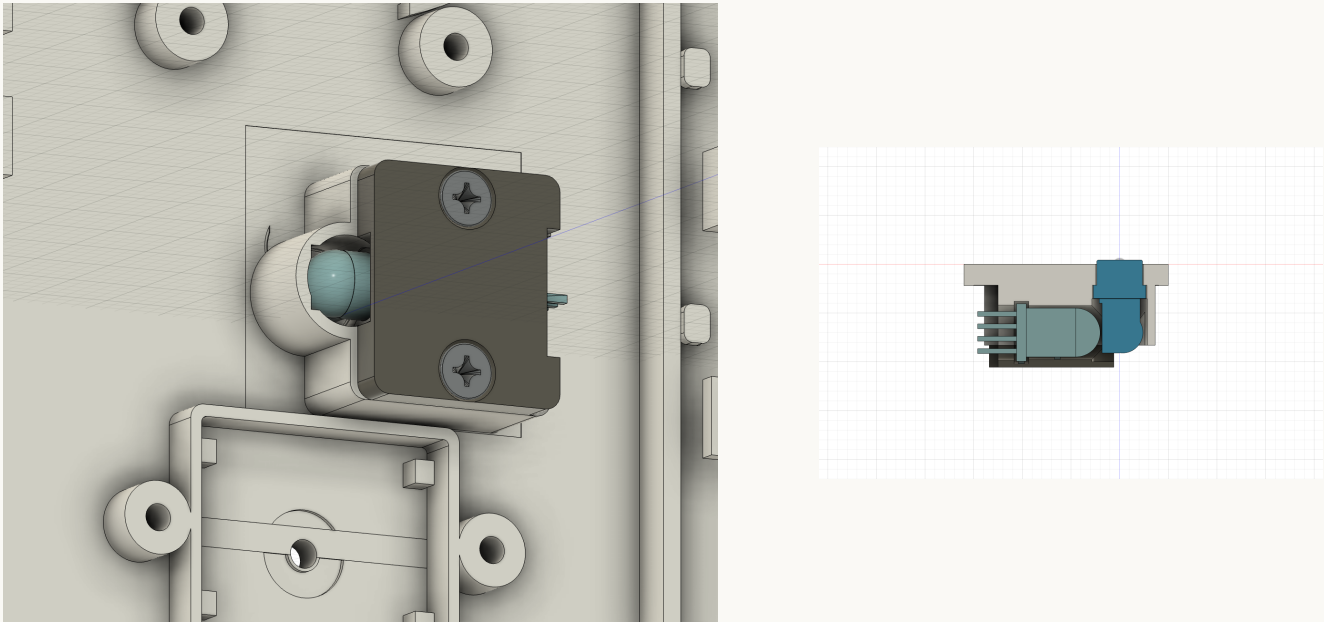
- Measure actual switches first. Trial their solder and insulation envelope inside the holders; CAD pins are not electrical pinouts.
- Begin gentle testing with the thicker 0.15 mm stops for shorter travel. Monitor electrical state and return; establish permissible travel on real samples.
- Increasing seat or contact thickness reduces the rest gap. Do not independently select both thickest options. All film dimensions include adhesive.
- Test center and edge presses, especially the long PTT, with the shell closed and wiring installed. Reject binding, persistent activation, switch movement or detached contact pads.
- Check the local 0.40 mm volume-cradle lips. Slicer toolpaths existed; casting robustness, physical strength and repeatability remain to be established.

Detailed procedure and alternative stock thicknesses: Documents/Print_and_Assembly/Button_Adjustment_Guide.md. Record each accepted stack in First_Article_Inspection.md.

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The light path is now aligned

The circular visible light remains at X=0, Y=2 mm. R3.1 moves the LED, right-angle guide, optical coupling allowance, pads, keeper and two screws down 3 mm together, and changes the hidden receiver and local shell support.



Native Fusion views of R3.1. Blue in the section identifies clear polymer; it is not a blue material specification.

The sideways LED is intentional. It feeds a right-angle clear guide that redirects light toward the front. A support behind the bend is expected; the exit leg now aligns with the front lens.

Interface	Nominal geometry
Visible aperture / lens	Aperture diameter 4.9 mm; visible lens diameter 4.7 mm.
Hidden flange / seat	Flange diameter 5.4 mm; seat diameter 5.6 mm; nominal radial clearance 0.10 mm.
Keeper screws	Two M2 x 5 mm; X=-7 mm, Y=-3.4 and +7.4 mm. Historical name suffixes are not current coordinates.

393 candidate body pairs showed no new solid intersections in the light correction; receiver probes showed zero opaque-shell overlap. These checks do not predict brightness. Use clear parts and test powered output, colour uniformity and leakage; opaque PLA optical proxies establish dry fit only.

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Electronics and internal fit

The full reference assembly includes supplied and approximate components. RPS should use it to understand the layout; Elian should close the hardware-specific measurements and powered tests.

Component	Current basis / remaining check
PCB	Flux release fb5acde7; 60 x 80 mm nominal. Original populated STEP and Gerbers/BOM/placement files are included under References/PCB_fb5acde7.
U6 cellular module	SIMCom SIM7670G-MNGV, nominal 24 x 24 x 2.4 mm placeholder. The supplied PCB STEP omits its solid. Corrected STEP or actual populated measurements are required for final clearance.
Battery	Adafruit 2011, nominal 60 x 36 x 7 mm. Verify actual maximum pack/lead envelope and low-force pad compression; do not force the shell closed.
Microphone	Adafruit 3421 bottom-port breakout. Use current offset soft seal, membrane and relieved keeper; preserve the acoustic path and passive-component clearances.
Speaker	CMS-40504N-L152 with gaskets, preload and keepers. Verify grille/scrim and adhesive do not obstruct the acoustic opening.
Cellular antenna	Taoglas FXUB63.07.0150C, nominal 96 x 21 x 0.2 mm with 150 mm coax. Verify routing and RF/metal clearance in the complete enclosure.
GNSS	No second antenna or GNSS cable for this prototype; leave the PCB capability available.
Harness / connectors	Confirm actual connector mates, USB opening and wired terminal envelope. Control pin assignment and harness are not released by this mechanical package.

Preserve current exterior dimensions. Investigate antenna layout or compatible alternatives before considering an enclosure change; RF testing should drive that decision. PARTS.md is retained as supplied reference, with later decisions above taking precedence.

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Assembly and printing

The P1S package is the exact original ZIP: 0.4 mm nozzle, PLA, five editable Bambu projects. Geometry has not been scaled. The first three plates cover 16 rigid parts; optional metal and optical proxies are clearly labeled. Flexible rim/grip meshes are excluded from PLA plates.

Screws / purpose	Qty	Nominal hardware
Shell closure	4	M2.5 x 14, ISO 7046, metal
Front switch clamp	2	M2 x 8, ISO 7046, metal
Speaker keepers	4	M2 x 5, ISO 7046, metal
Microphone keeper	2	M2 x 4, ISO 7046, metal
LED keeper	2	M2 x 5, ISO 7046, metal
Antenna service frames	4	M2 x 3, ISO 1580, nylon

18 screws total. Match head geometry, length convention and hole depth; blind-floor allowances are small. Pilot bores are not modeled helical threads. Establish tapping/thread-forming and tightening with the actual prototype material. No heat-set insert pockets are provided.

Suggested assembly sequence

- Trial and measure the four switches in their holders before committing to cosmetic bonding.
- Clean shells and retainers. Preserve pins, ribs and optical sleeve; distinguish them from print supports.
- Install speaker and microphone seals/keepers, clear lens/guide and LED assembly.
- Fit control carriers, selected shims/contacts, cradles and clamp. Test electrical state and return.
- Fit dielectric antenna supports, PCB, battery and pads. Route leads clear of screws, seams and moving keys.
- Bring the rear shell into place by hand; do not pull it over an interference with screws. Repeat button checks closed. Add cosmetics and run acoustic, optical, RF and thermal tests.

Printing/START_HERE and the assembly guide contain orientation, support, plate and nonprinted-part details. Five plates were CLI-sliced; 24 meshes passed watertightness checks. No claim of every piece being physically tested is made.

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What Max needs to confirm

Requested next stage: review and quote a first urethane-cast prototype set from this frozen finished-part CAD. No batch quantity or production approval is implied. Please return process/material proposals and any required changes against release 28 R3.1.

Review area	Required result
Process / tooling	Recommended resin, elastomer and clear-part process; parting/gates/vents, draft, shrink allowance, minimum walls and achievable tolerances. R1 shrink masters are obsolete for this revision.
Critical geometry	Assess 0.40 mm local lips, small pins, screw blind floors, side control passages and lens seat. Proposed changes to finished parts must become R3.2.
Mechanical first article	Record real component clearances, screw retention, shell closure, actual switch travel/rest gaps and all selected shim/contact thicknesses.
Functional checks	Powered indicator, speaker/microphone performance, cellular RF, thermal behavior, battery/wire retention and connector access.
Cosmetic samples	Approve chalk/grey/ember coupons and metal finishes; agree elastomer feel and attachment. Screen colours are references only.
Release decision	Complete the supplied inspection form and open-item log. Record deviations, affected stage, owner and disposition before any repeat batch.

Future changes are a separate version

R3.1 remains frozen. Copy and rename the Fusion file before starting R3.2; keep a change log and export a matching complete set. Process tooling derivatives should carry their own identifier tied to the finished-part revision. Never silently overwrite the frozen downloads.

Documents/First_Article_Inspection.md provides a blank acceptance record. Documents/Open_Items.md assigns current unresolved items. Documents/Fabrication_Part_Schedule.md identifies every current fabricated STEP group. The package was prepared from local saved CAD/export evidence and the supplied parts release; it does not replace RPS process approval.