

Design for Manufacturing Review

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Subject	3-in-1 wireless charging stand (sample)	Process	Injection molded polycarbonate
Reviewed	Enclosure, 5 parts, pre-tooling	Findings	2 blocking, 2 advisory, 2 clear

Findings

#	Finding	Severity	Action
1	USB-C port clashes with docked device. Input port sits where the phone lands in the lower dock position. Contact under normal use.	BLOCKING	Move the port to the rear face. Cheap to change now, requires a new tool if found after cutting steel.
2	Wall thickness varies 1.6–3.1 mm across the main body. Thick sections next to thin ones invite sink marks and warp.	BLOCKING	Normalize to 2.0 mm nominal, core out thick sections, add ribs where stiffness is lost.
3	Coil pocket depth is nominal with no tolerance allowance. Coil fit becomes interference at the extremes of the molding tolerance band.	ADVISORY	Add 0.15 mm clearance and a chamfered lead-in. Run a stack-up before release.
4	Heat concentrates at the upper coil. CFD under simultaneous load put the peak at 40.7 °C, roughly 20 °C above ambient.	ADVISORY	Within range for this class of product. Keep the vent path clear through the device bays; re-check if coil power rises.
5	Draft analysis: zero undercut faces. All surfaces release along the intended pull direction.	CLEAR	Standard two-plate tool. No side actions or lifters, which keeps tooling cost down.
6	Part split supports sub-assembly. Coil modules seal and install without opening the main shell.	CLEAR	Keep. Simplifies line assembly and makes a coil swap possible without scrapping the housing.

Recommended order of work

1. Relocate the USB-C port and re-check clearance in both dock positions.
2. Normalize wall thickness and core out the thick sections.
3. Add coil pocket clearance and run a tolerance stack-up.
4. Release production drawings and issue the quote package to the manufacturer.

Scope note

This review covers enclosure geometry, material and process selection, assembly method, and clearance. Mold and tooling engineering — cavity and core design, gate and ejector layout, cooling channels — is executed by a tooling engineer. I write the spec that engineer works from and stay in the loop through tool release.

This is a sample document showing the format and level of detail clients receive. Findings are drawn from a self-initiated project, not client work.