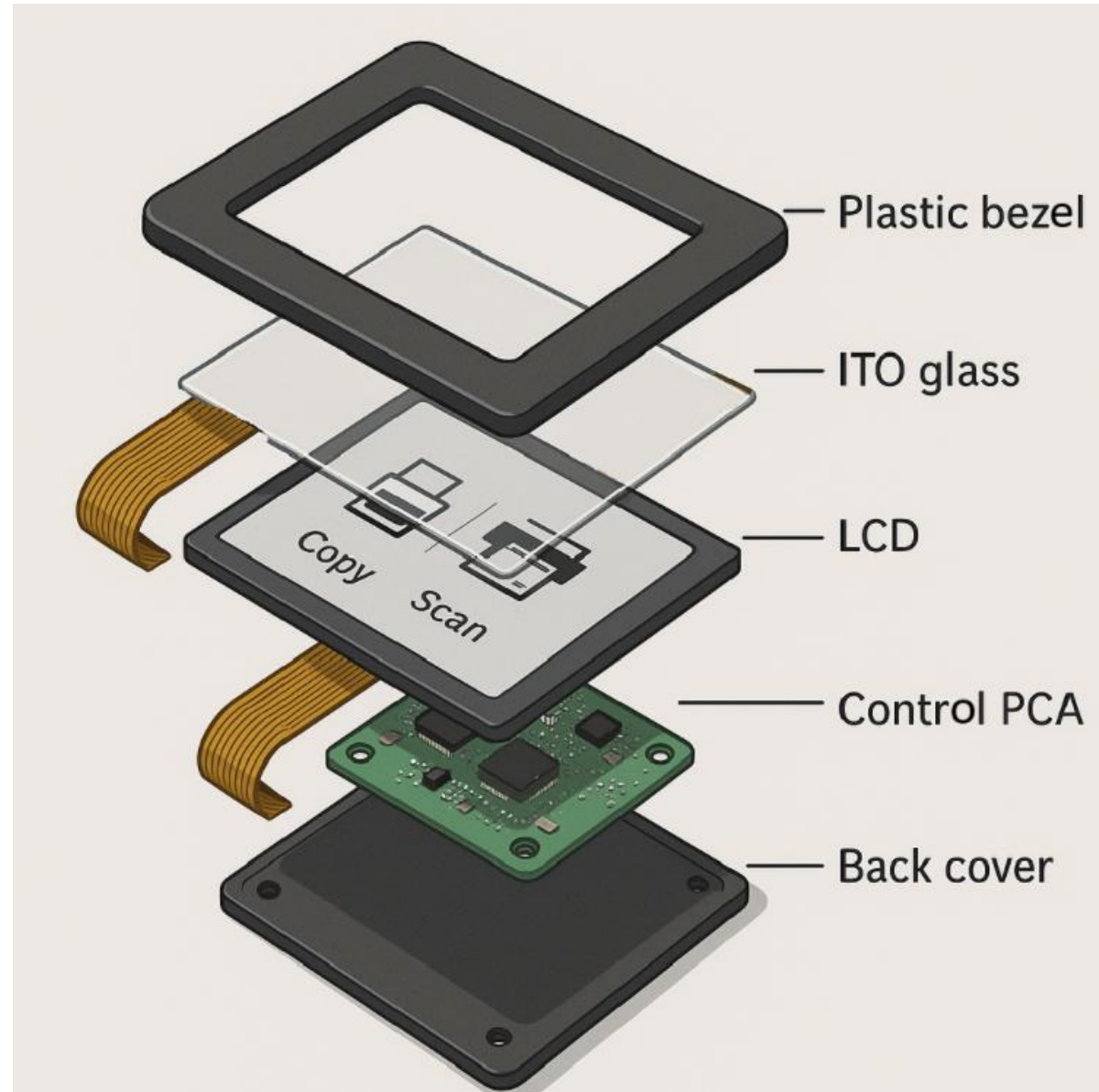


4.3-inch Control Panel Redesign

Amarjit Bhatia



Control Panel Architecture



Control Panel touch redesign to low cost | \$15M savings



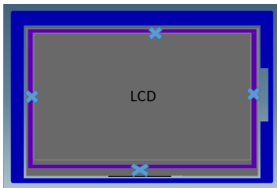
Sustainable solution



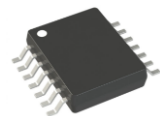
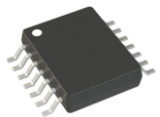
Complexity reduction



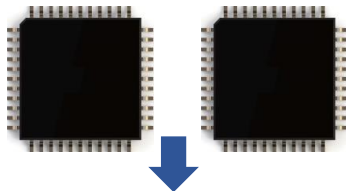
Lower cost implementation



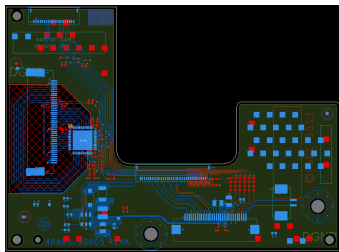
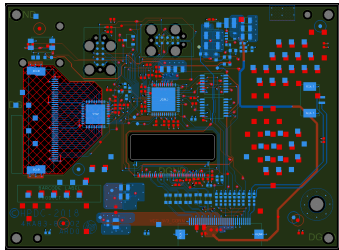
Cost reduce
Display to ITO
Glass attach



Remove Back
bias buffers



Two chip to single
chip Solution
Hardware and
Firmware redesign

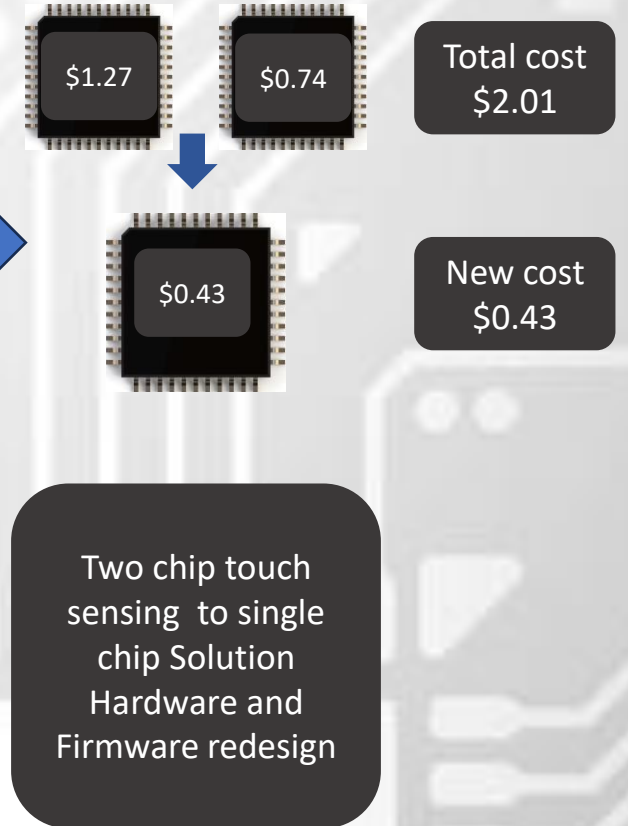
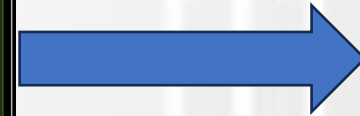
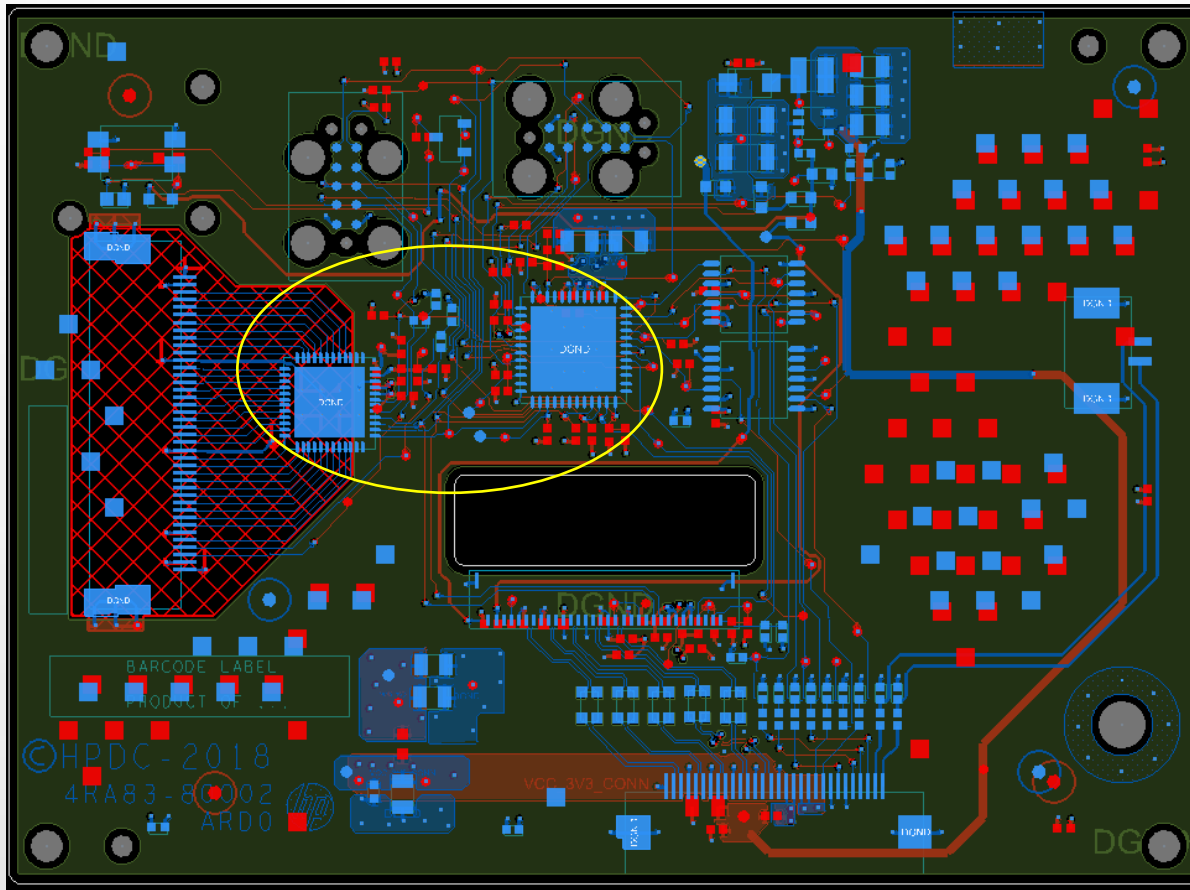


Redesign PCB to
smaller size

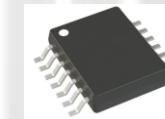
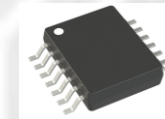
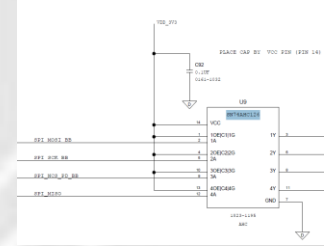
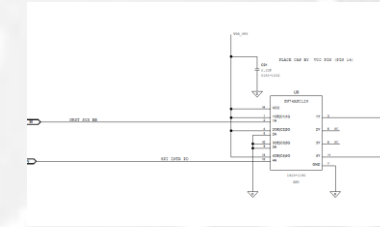
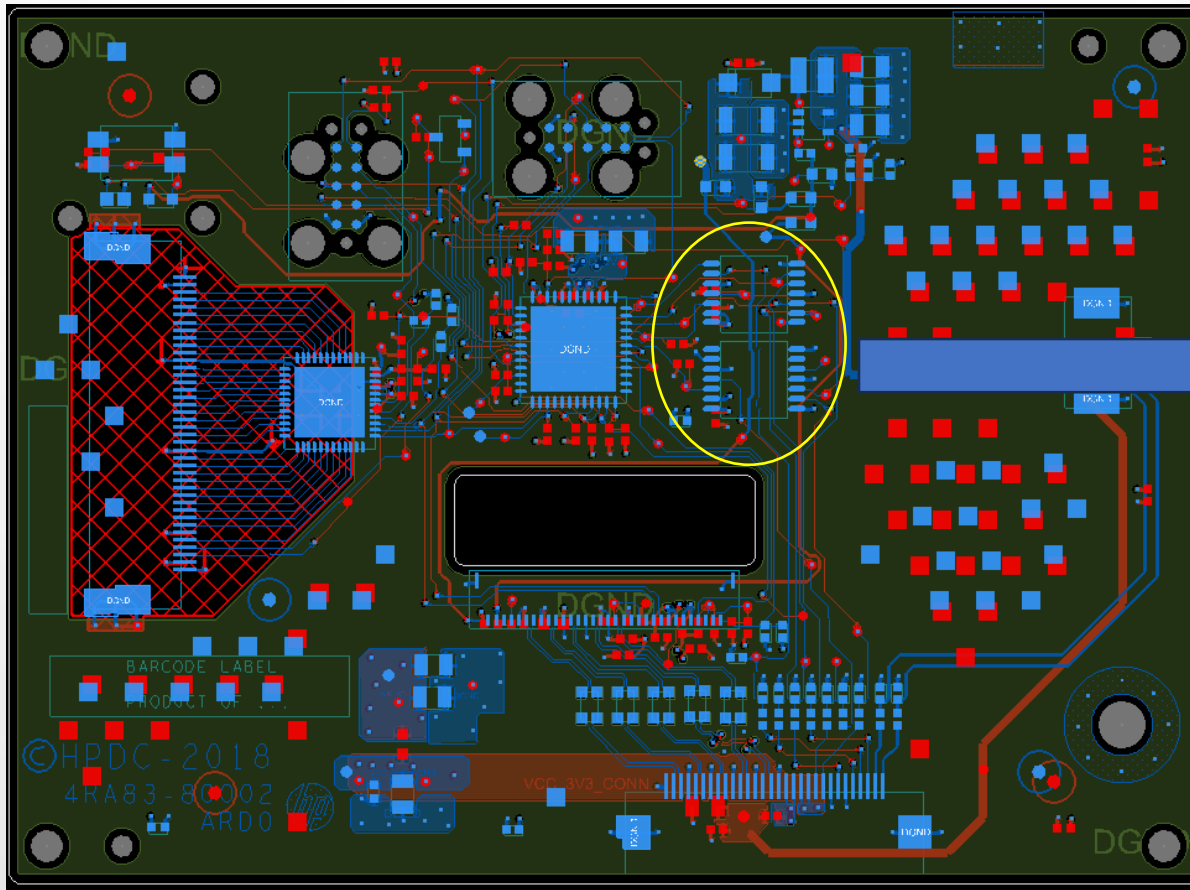


Qualify lower
cost speaker
supplier

Capacitive touch 2 microcontroller to Single microcontroller | \$1.58/unit savings

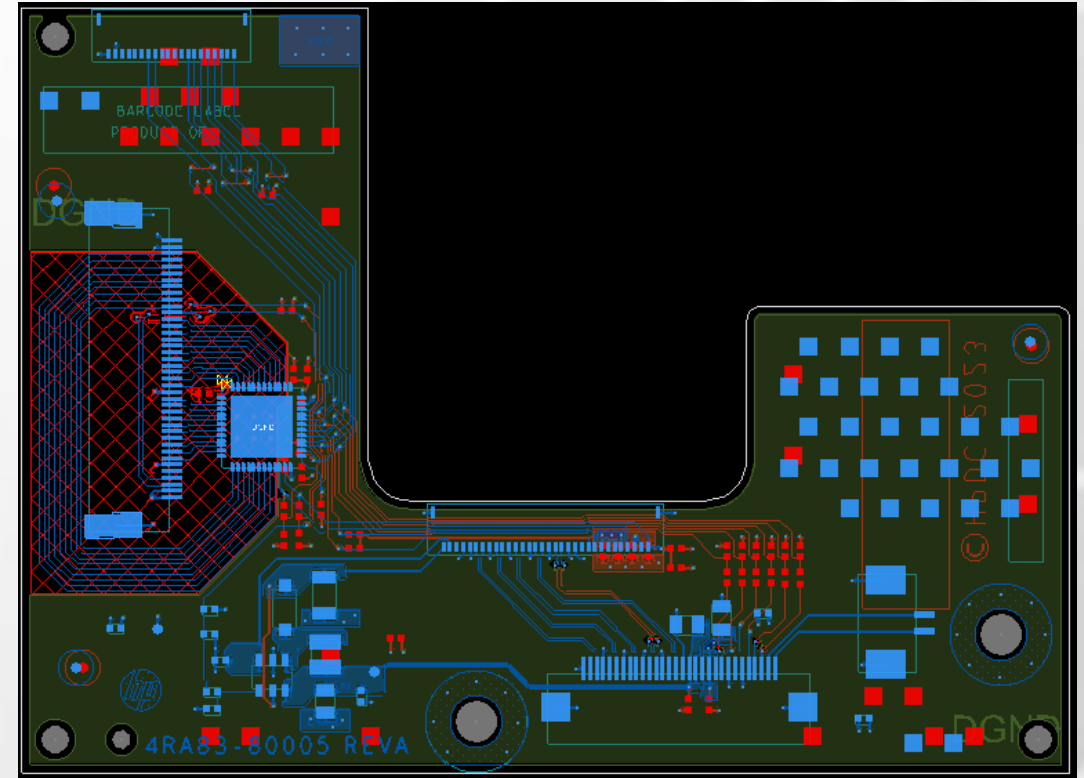
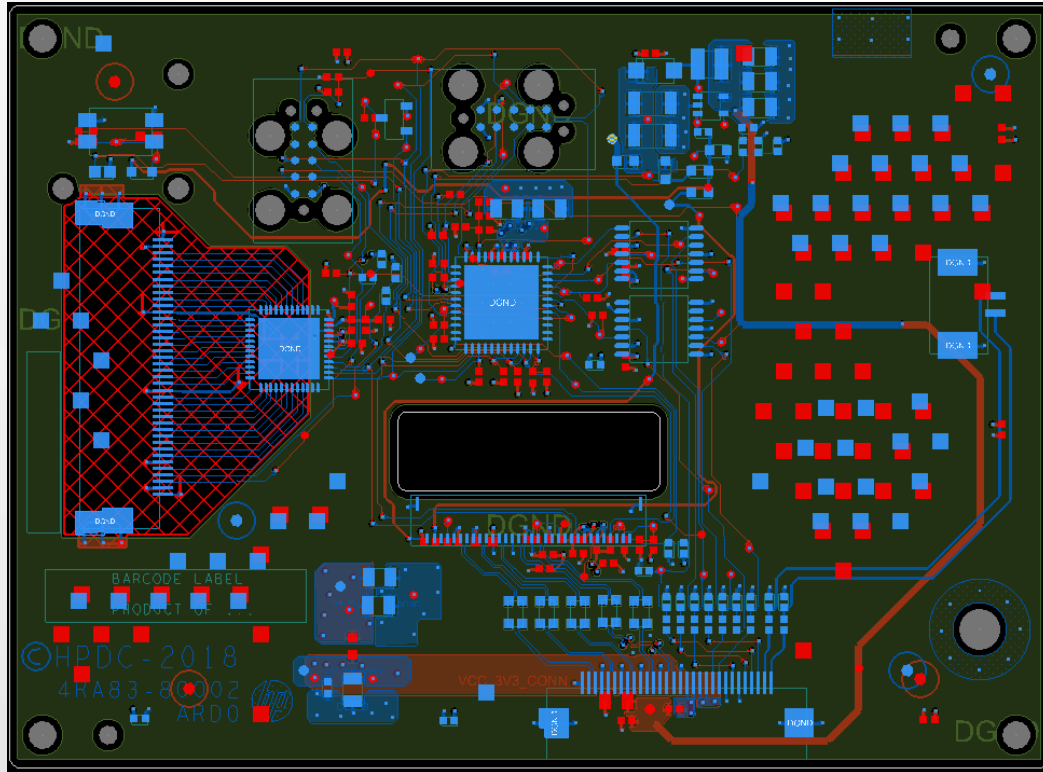


Remove Back Bias Buffers | \$0.20/unit savings



Remove Back Bias buffers while maintaining good signal Integrity

Redesign PCB to smaller nested PCB | Saving \$0.38/unit



Use ITO adhesive to attach display | \$0.10/unit



Touchscreen Adhesive enlarged by adding material to the inner dimension

Part Number	Description	unit cost	qty	Ext. cost
3SJ05-00004	Adhesive - LCD	0.034	2	0.069
3SJ05-00005	Adhesive - LCD Side	0.015	2	0.029
			Savings	0.098

Worked with the ITO supplier to grow ITO attach area, removed 4 inner adhesive strips and direct attach the Display to ITO glass

Qualified Lower cost Speaker | \$0.14/unit

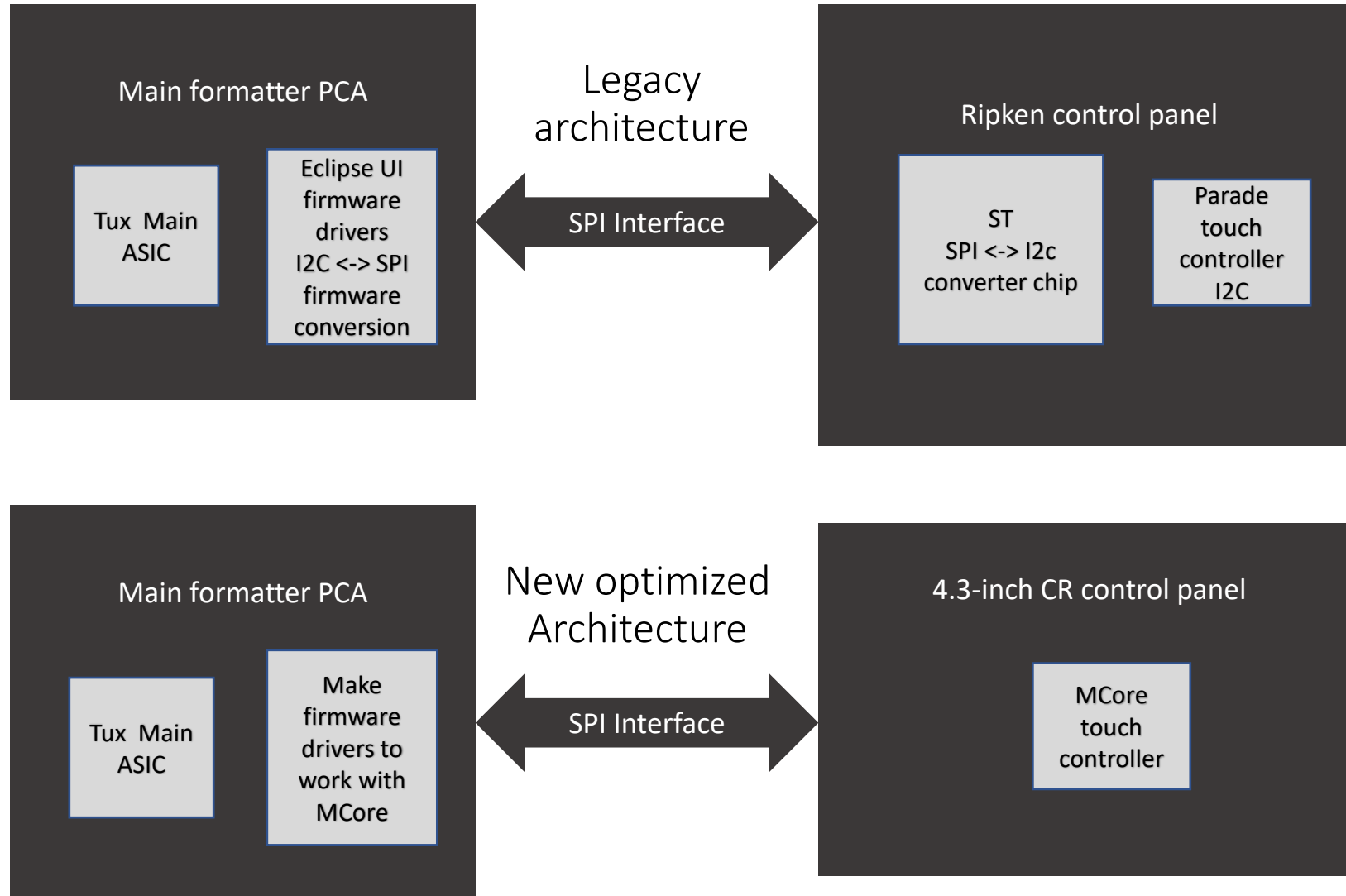


Collaborated with the supplier to design and qualify a speaker at a lower cost, while meeting the audio performance.

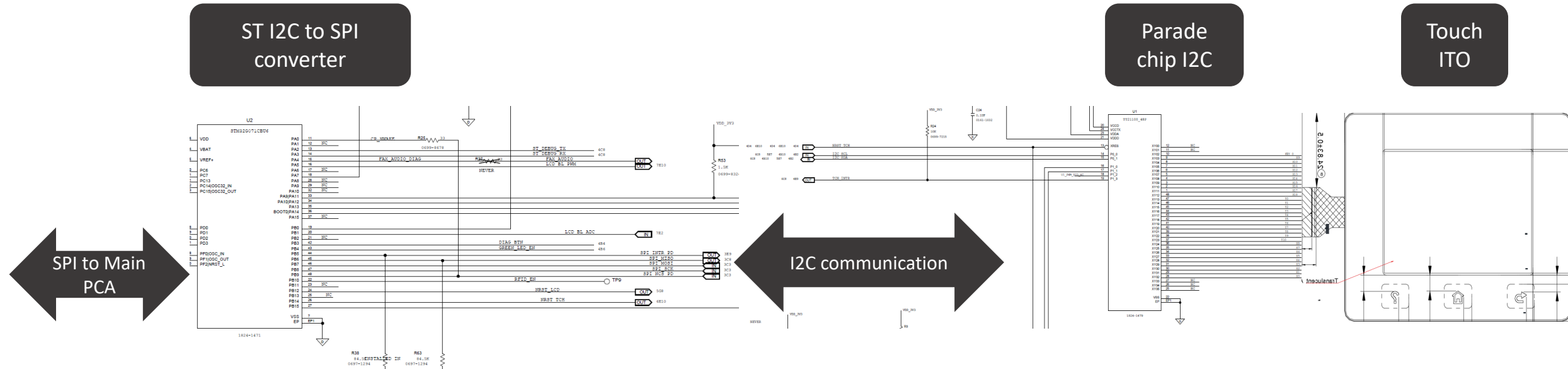
Summary of design changes



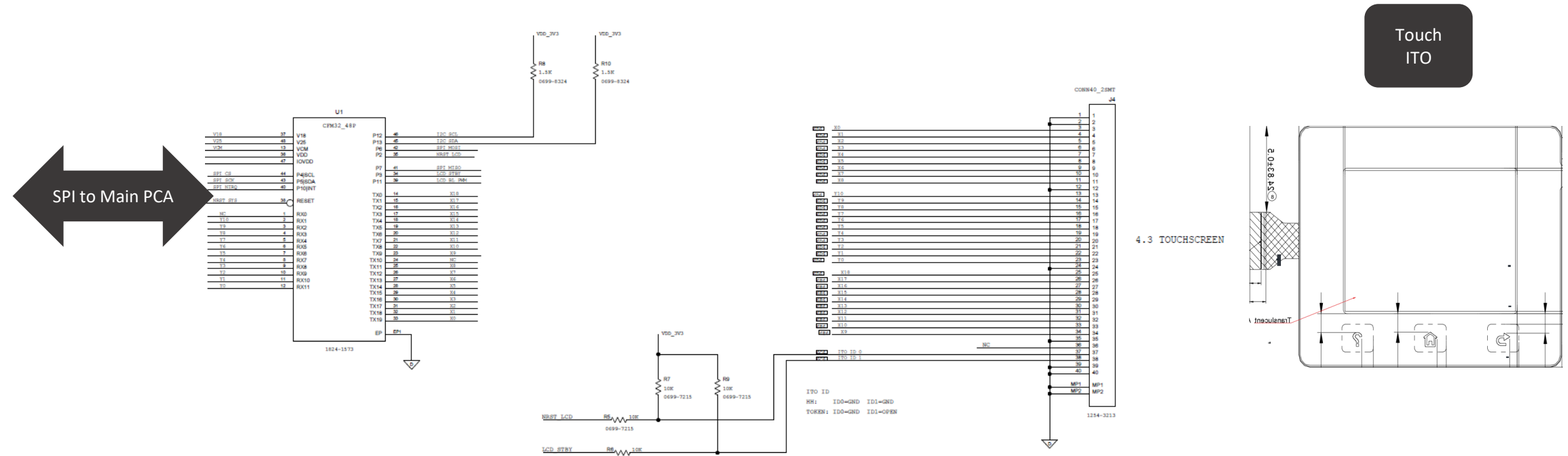
Legacy Architecture



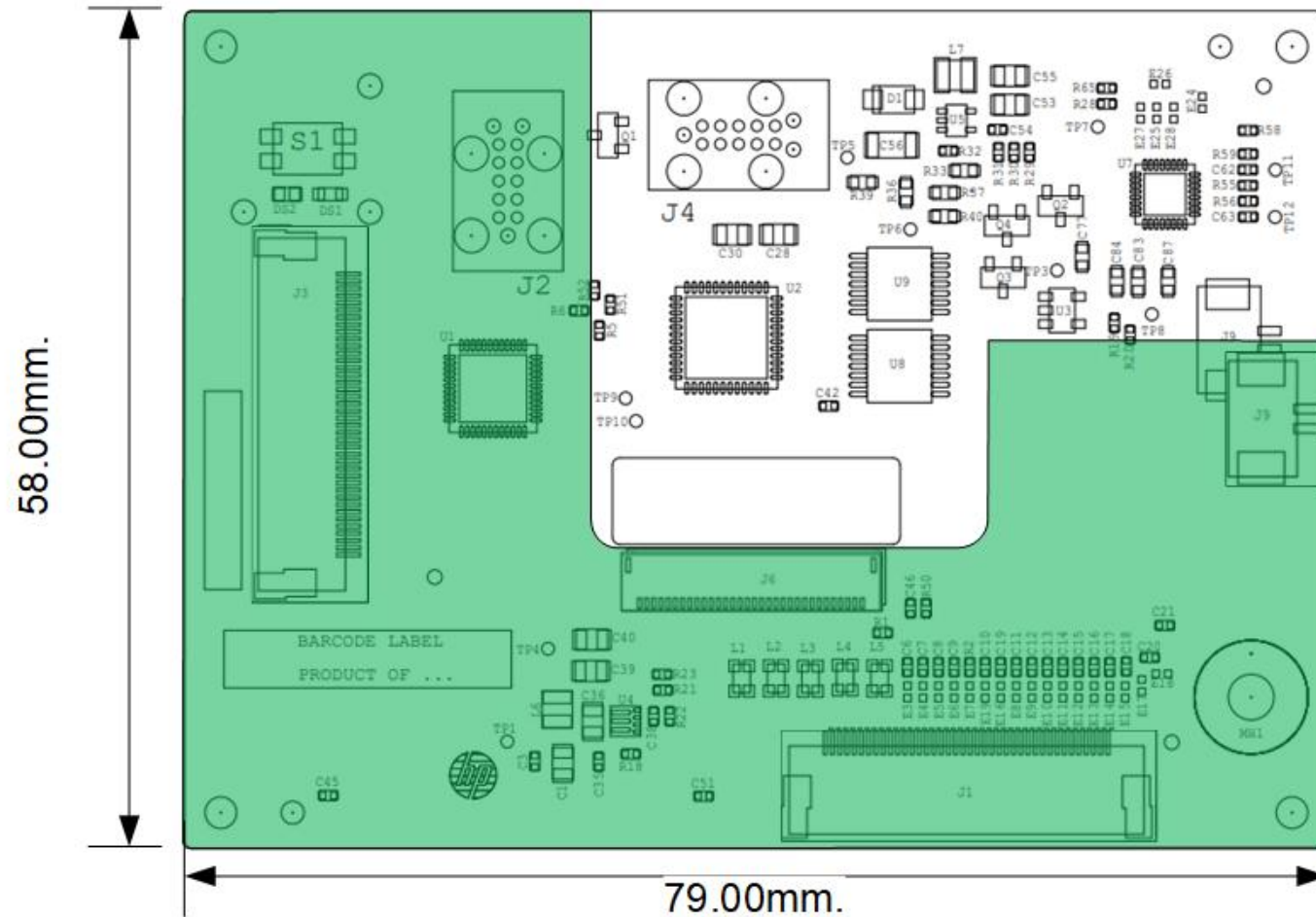
Legacy Architecture 2 Chip design for Cap Touch



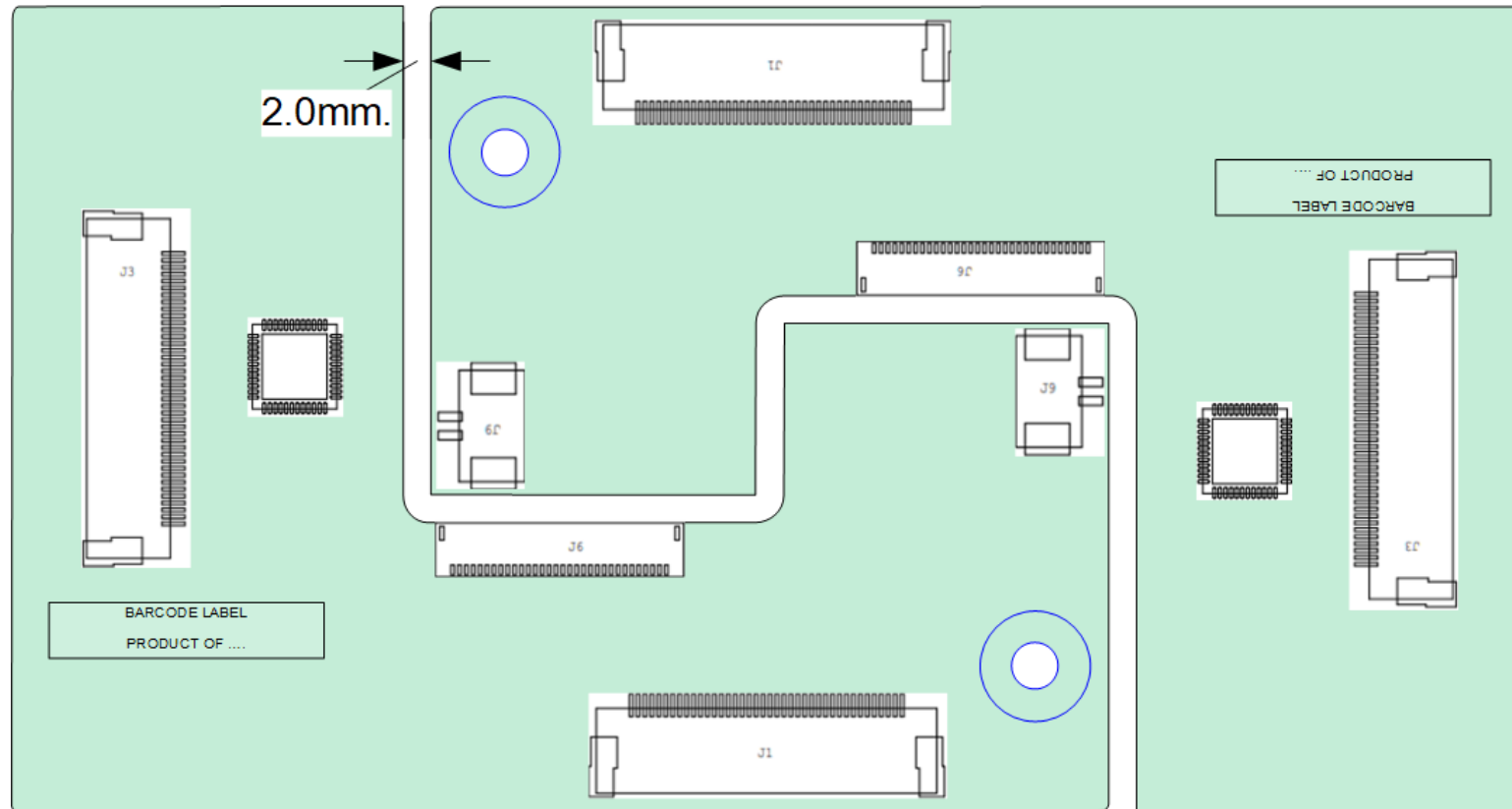
Cost reduced Single chip design for Cap Touch



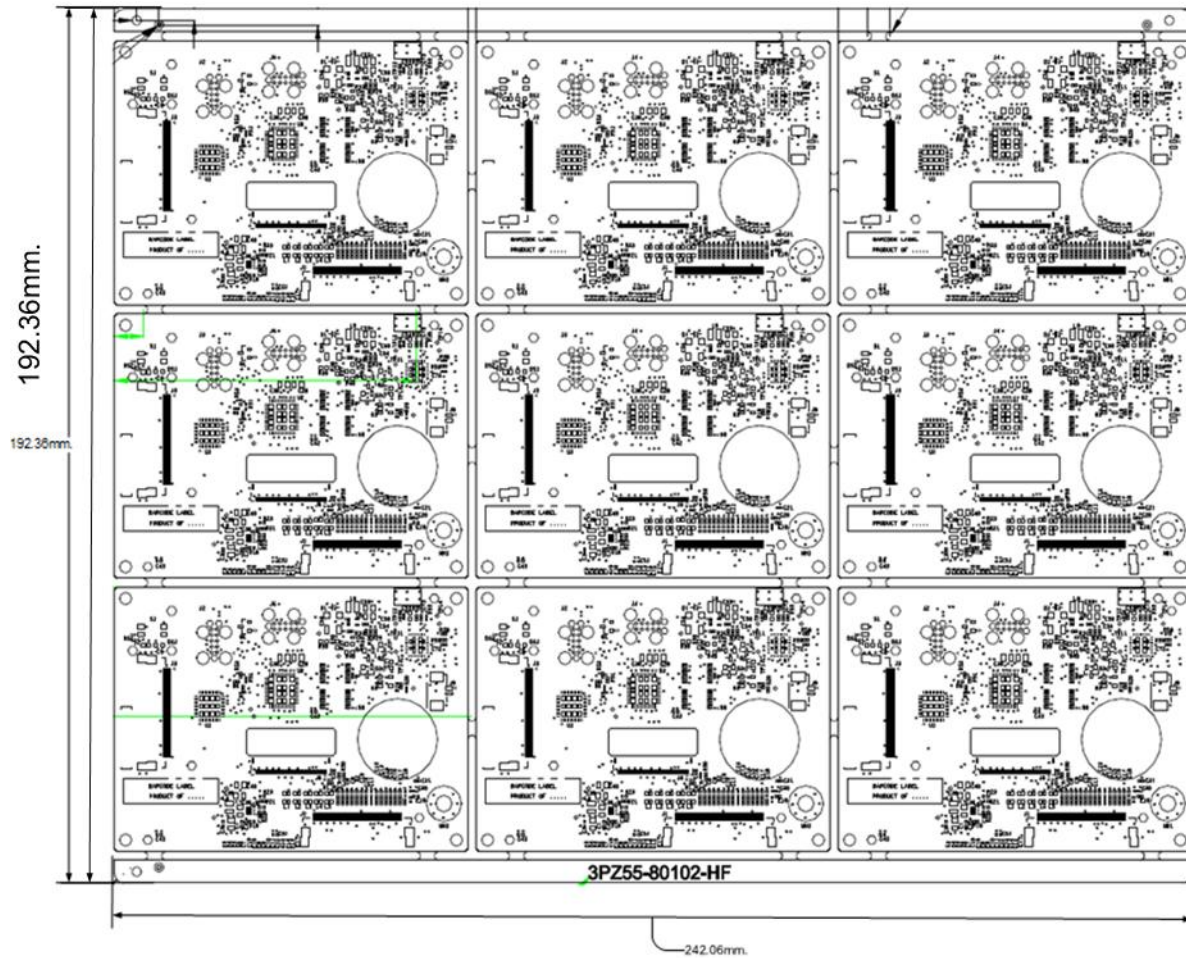
Control panel PCB size reduction concept Drawing



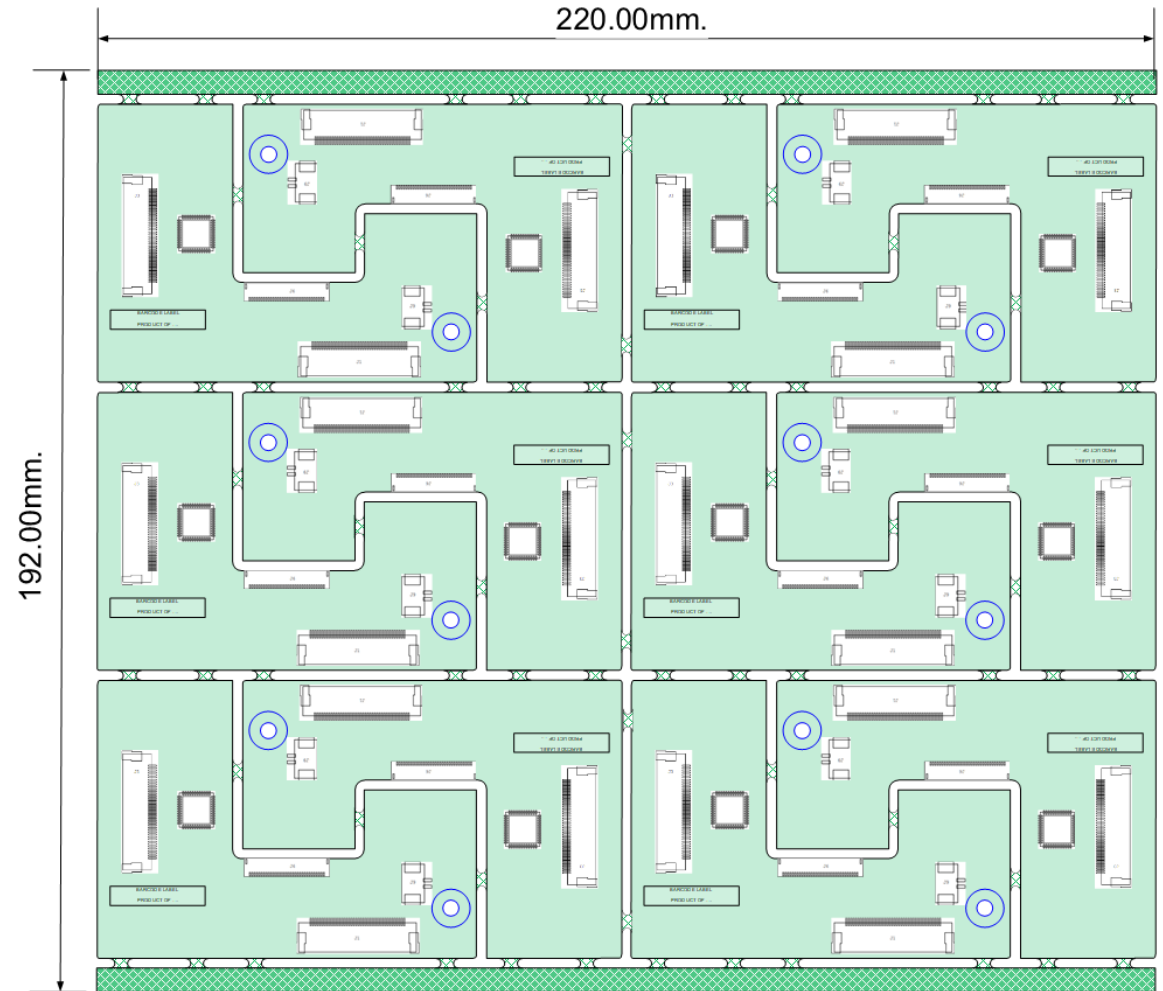
Control panel PCB size nesting concept



PCB panel | Smaller PCB cost optimized design



9 PCBs /panel



12 PCBs /panel