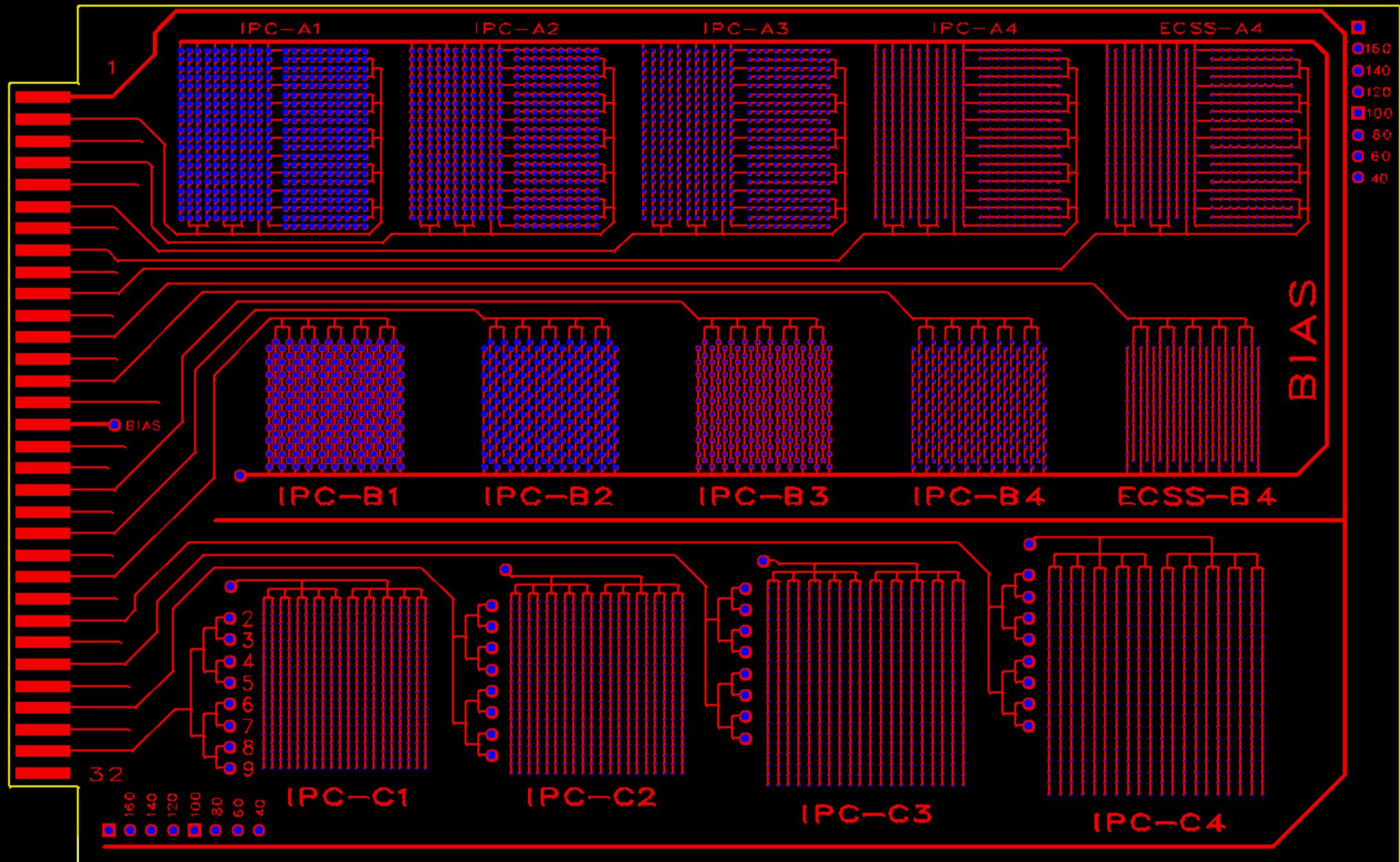


# CAF pattern version 7

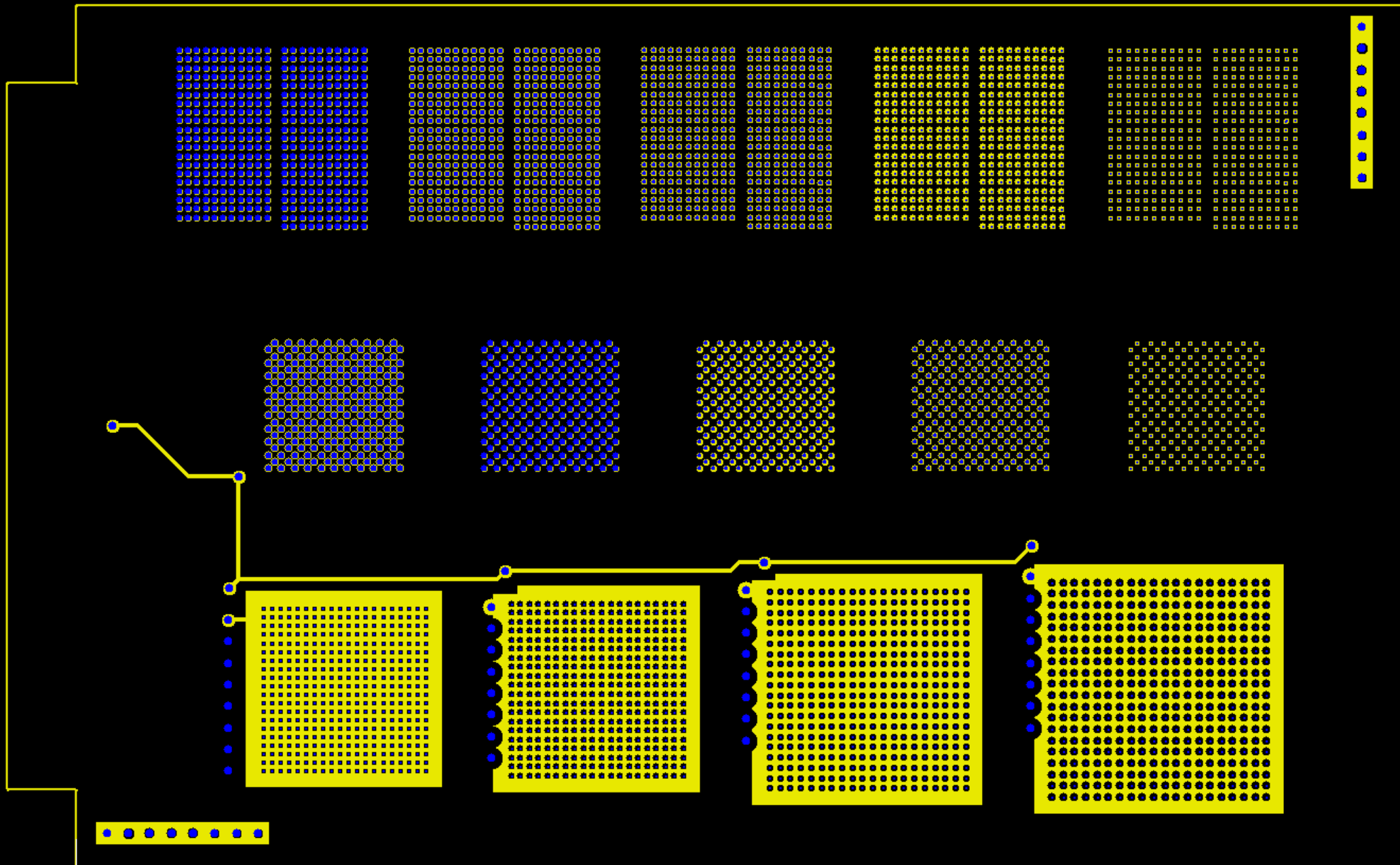
- 10 layer board, 1.6mm thickness +/-10% measured over connector
- Board to be manufactured with 2 subsequent press cycles, representing curing of final board acc. to a twinstack construction (all 10 layers to be laminated in first press cycle and again in 2<sup>nd</sup> press cycle)
- 17µm nominal innerlayer copper, and outer start copper
- Std. ECSS-Q-ST-70-11C performance requirements, though ENIG board finish, and tangency annularring requirement for outerlayers and innerlayers as exception. But as design is made with very small innerlayer pads, it is agreed that boards with below 160µm misregistration drill to innerlayer can be accepted. Preferred condition is below 100µm misregistration when measured in corner F-type coupons in design (for electrical verification)
- Two registration coupons are implemented in design. To be verified in delivered test items that the two square pads do not short. (registration defined as 1.0mm drilled PTH may not short to plane in innerlayers with 1.24mm opening representing +/-100µm innerlayer to drill registration incl. wicking and drill wander (20µm allocated to wicking and drill wander)
- Layers defined in Gerber X-files. Layer 1-10. (xxxx.1 –xxxx.10)
- Drill layer defined in Gerber-X (xxxx.20), all sizes to be drilled diameter, not final hole but drill bit diameter to be used
- Drill drawing layer defined in Gerber-X (xxxx.21), all sizes to be drilled diameter, not final hole but drill bit diameter to be used
- Routing (milling) layer defined as Gerber-X (xxxx.25), max. X dimension 162mm, max. Y dimension 100mm.
- Boards to be final cleaned acc. to manufacturers PID.

CAF test board 14 test patterns, layer 1 copper (red) + drill (blue)



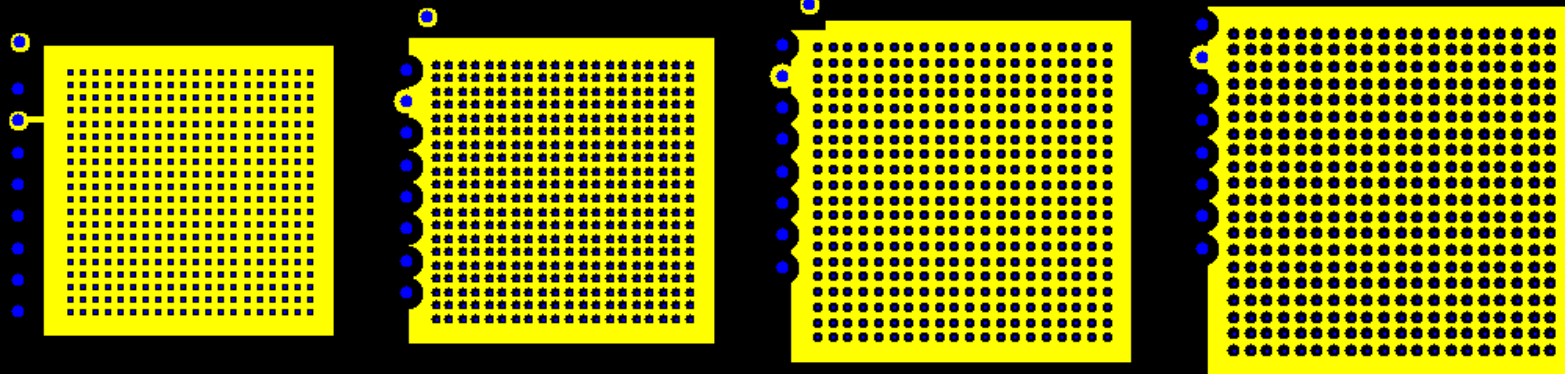
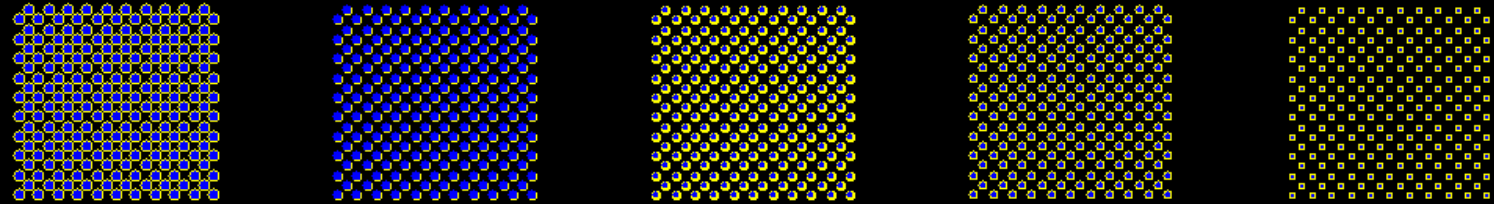
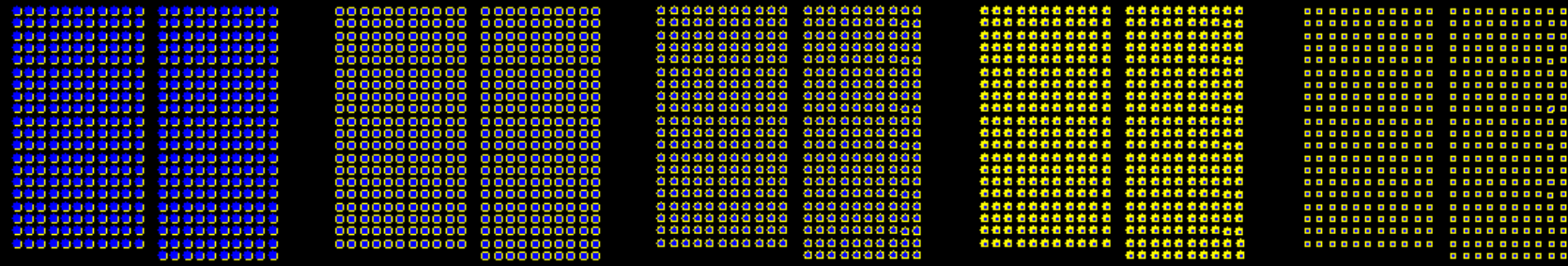
Track connections to test patterns made on layer 1 (except for C-patterns, partly connections also on layer 2)

# CAF Test board, innerlayer design, (layer 2 copper (yellow) + drill (blue))



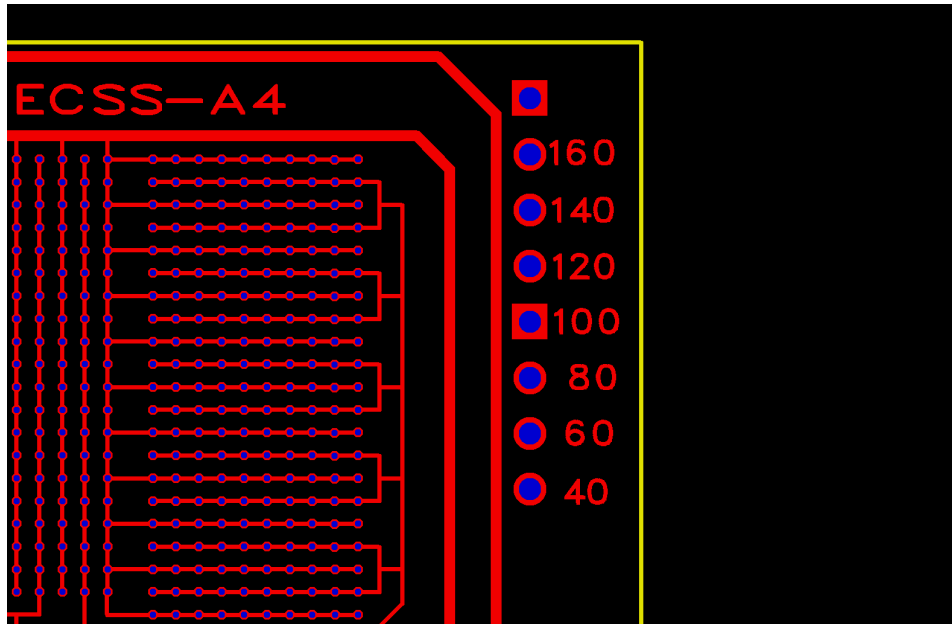
Seperate plane connections made through vias to innerlayer for C patterns (planes with openings)

# CAF Test board, innerlayer design, (layer 3 copper (yellow) + drill (blue))



4 plane connections made through vias for C patterns (plane with openings)

# Registration coupon, in design

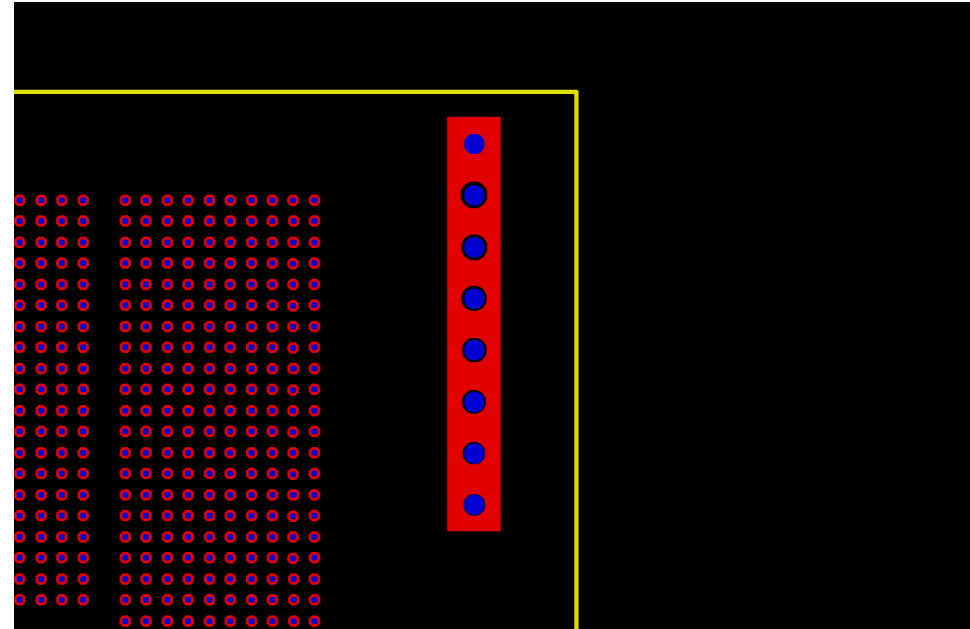


Registration coupon, F-type.

Outer layer pad design.

Two square pads are not allowed to be connected acc. to agreed registration tolerance allowance for innerlayer to drill placement allowance.

Drill diameter 1.0mm. (not final hole but drill bit diameter)



Registration coupon, innerlayer design.

7 plated holes have openings in innerlayers.

4'th hole from top has 1.24mm opening.

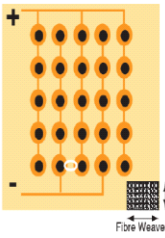
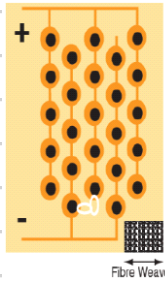
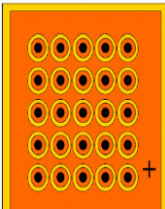
(20microns selected for wicking/drill wander and 100microns for reg. tolerance)

1.0mm hole not allowed to short to plane with 1.24mm opening. (as preferred)

# Board build

- Build acc. to each manufacturers PID
- Can be used both for glass/polyimide and glass/epoxy materials
- Thickness to be 1.6mm +/-10% measured over connector
- Board to be exposed to two subsequent press cycles as for a twin stack construction.

# CAF test parameters selected to be included

	Pattern	Test configuration	Drill diam. ( $\mu\text{m}$ )	Pad diam. ( $\mu\text{m}$ )	Via edge to via edge ( $\mu\text{m}$ )	Via edge to via edge Manhattan distance ( $\mu\text{m}$ )
1020 Pitch 	IPC A1		750	860	270	270
	IPC A2		650	810	370	370
	IPC A3	PTH to PTH Straight	500	750	520	520
		X and Y direction				
	IPC A4		350	690	670	670
	ECSS A4		300	600	720	720
1080 Pitch 	IPC B1		800	940	280	396
	IPC B2	PTH to PTH Staggered	700	890	380	537
	IPC B3		550	840	530	750
	IPC B4		450	750	630	891
	ECSS B4		300	600	780	1103
	Pattern	Test configuration	Drill diam. ( $\mu\text{m}$ )	Pad diam. ( $\mu\text{m}$ )	Clearance diam ( $\mu\text{m}$ )	Via edge to plane ( $\mu\text{m}$ )
	IPC C1		350		640	145
	IPC C2	PTH to plane	350		700	175
	IPC C3		350		850	250
	IPC C4		350		960	305