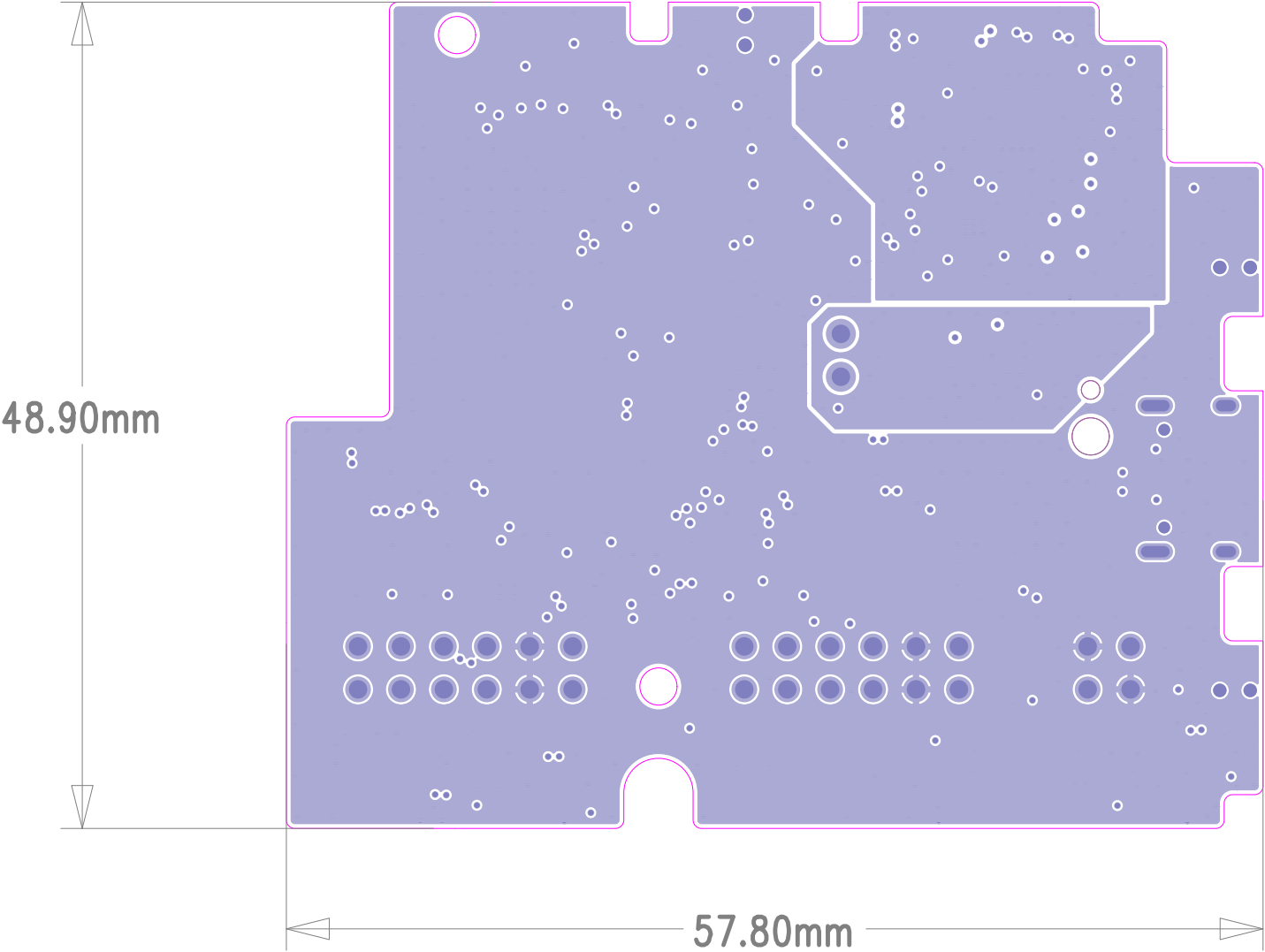


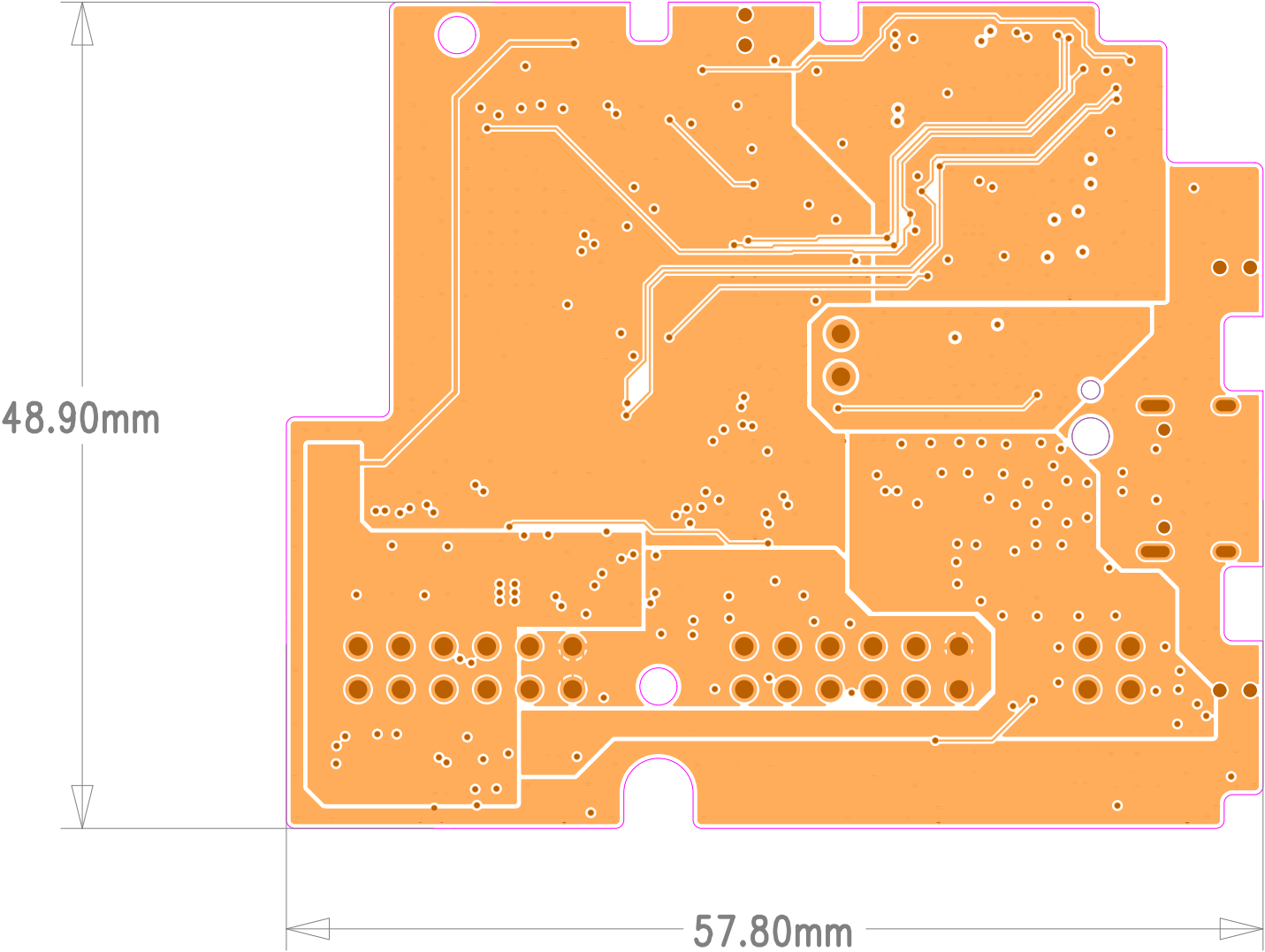
ESPRESSIF SYSTEMS				
乐鑫科技 (上海) 股份有限公司				
Title ESP32-S3-BOX				
Task 36377		Rev 2.4		
Date Fri, Sep 17, 2021		Confidential and Proprietary		
Thickness	Impedance	Width	Separation	Gap
1.0 mm	90 ohm	7.3 mil	5 mil	5 mil

Stack up	Material	Base copper (oz)	Thickness (mil)	DR
CM			0.4	4
L1 Top	Finished Copper 1 OZ	0.33	0.8	
L2 Core	100% 100% R230%	1	8.22	4.5
L3 Prepreg	Core	1	Adjustable	4.5
L4 Prepreg	100% 100% R230%	1	1.2	4.5
L5 Bottom	Finished Copper 1 OZ	0.33	0.8	
SM			0.4	4



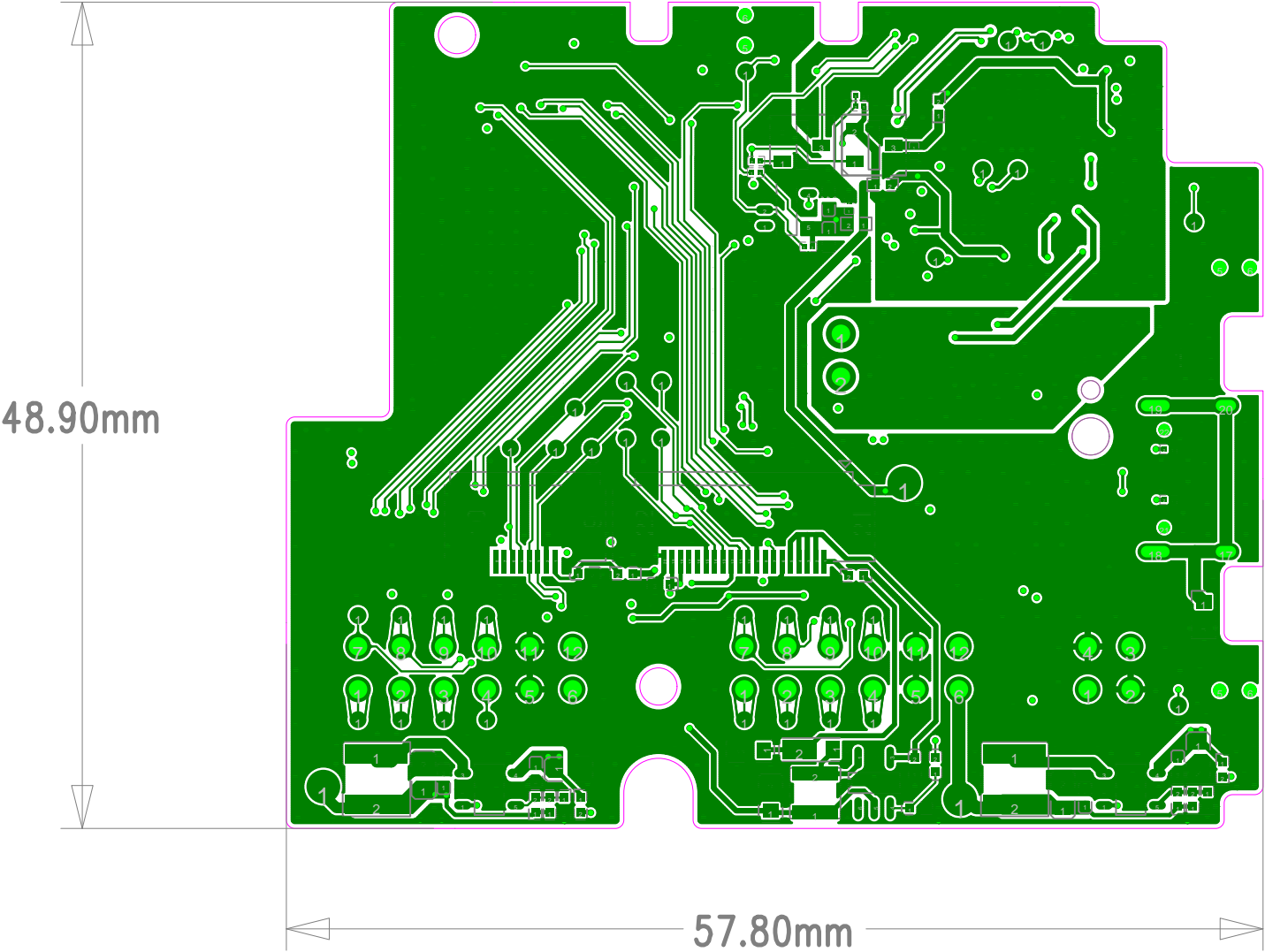
ESPRESSIF SYSTEMS				
乐鑫信息科技（上海）股份有限公司				
Title ESP32-S3-BOX				
Task 36377			Rev 2.4	
Date Fri, Sep 17, 2021		Confidential and Proprietary		
Thickness	Impedance	Width	Separation	Gap
1.0 mm	90 ohm	7.3 mil	5 mil	5 mil

Stack up	Material	Base copper (oz)	Thickness (mil)	DK
CM			0.4	4
L1 Top	Finished Copper 1 OZ	0.33	0.6	
L2 Core	FR208 TG150 RC50%		8.22	4.6
L3 Prepreg		1	1.2	
L4 Core	Core		Adjustable	4.6
L5 Prepreg		1	1.2	
L6 Core	FR208 TG150 RC50%		8.22	4.6
L7 Copper	Finished Copper 1 OZ	0.33	0.6	
SM			0.4	4



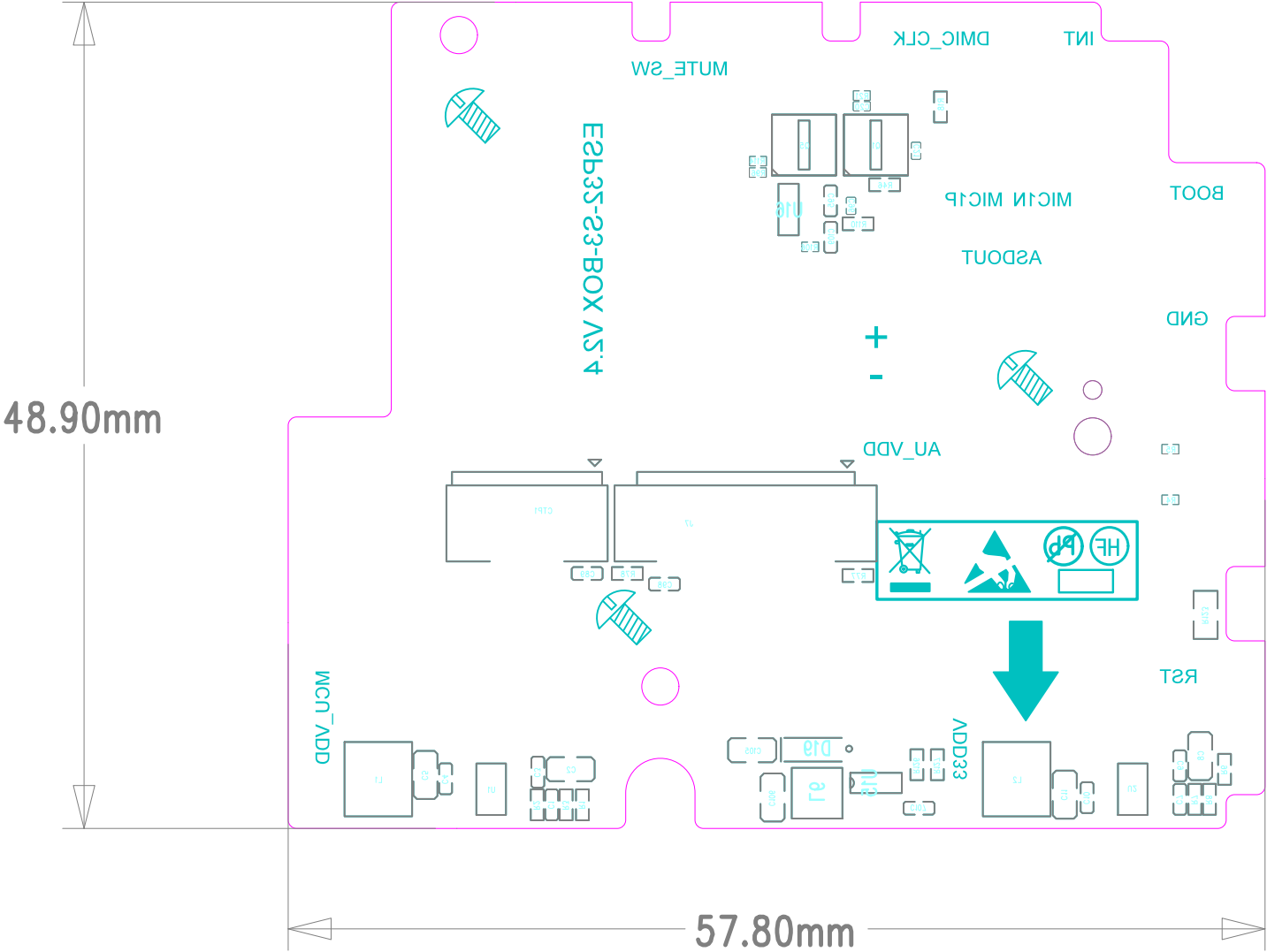
ESPRESSIF SYSTEMS				
乐鑫信息科技（上海）股份有限公司				
Title	ESP32-S3-BOX			Rev 2.4
Task	36377			
Date	Fri, Sep 17, 2021			Confidential and Proprietary
Thickness	Impedance	Width	Separation	Gap
1.0 mm	90 ohm	7.3 mil	5 mil	5 mil

Stack up	Material	Base copper (OZ)	Thickness (mil)	DK
CM			0.4	4
L1 Top	Finished Copper 1 OZ	0.33	0.6	
L2 Core	FR208 TG150 RC50%		8.22	4.6
L3 Prepreg		1	1.2	
L4 Core	Core		Adjustable	4.6
L5 Prepreg		1	1.2	
L6 Core	FR208 TG150 RC50%		8.22	4.6
L7 Copper	Finished Copper 1 OZ	0.33	0.6	
SM			0.4	4



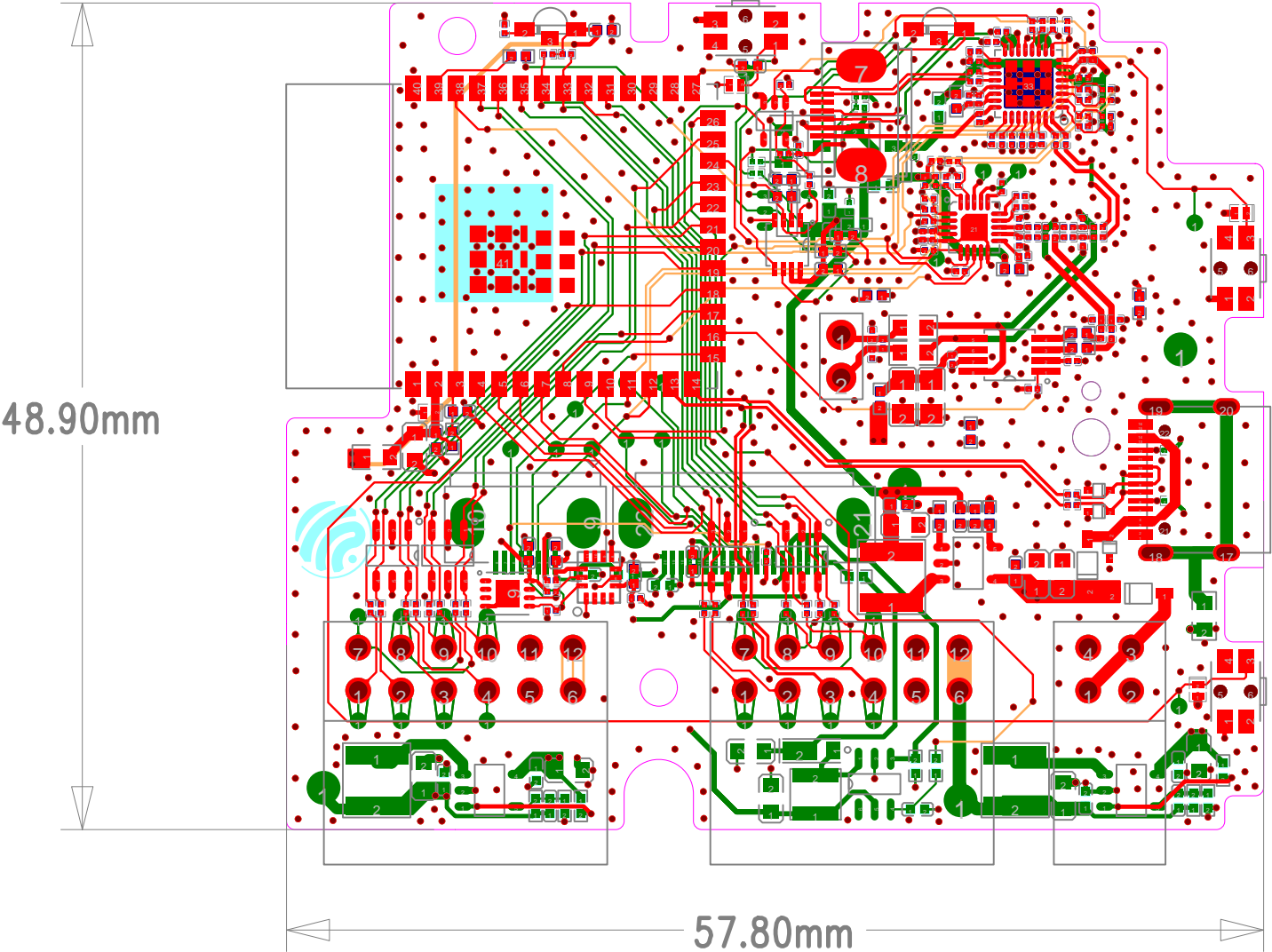
ESPRESSIF SYSTEMS				
乐鑫信息科技（上海）股份有限公司				
Title ESP32-S3-BOX				
Task 36377			Rev 2.4	
Date Fri, Sep 17, 2021		Confidential and Proprietary		
Thickness	Impedance	Width	Separation	Gap
1.0 mm	90 ohm	7.3 mil	5 mil	5 mil

Stack up	Material	Base copper (OZ)	Thickness (mil)	DK
CM			0.4	4
L1 Top	Finished Copper 1 OZ	0.33	0.6	
L2 Core	FR208 TG150 RC50%		8.22	4.6
L3 Prepreg		1	1.2	
L4 Core	Core		Adjustable	4.6
L5 Prepreg		1	1.2	
L6 Core	FR208 TG150 RC50%		8.22	4.6
L7 Copper	Finished Copper 1 OZ	0.33	0.6	
SM			0.4	4



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Title ESP32-S3-BOX				
Task 36377			Rev 2.4	
Date Fri, Sep 17, 2021		Confidential and Proprietary		
Thickness	Impedance	Width	Separation	Gap
1.0 mm	90 ohm	7.3 mil	5 mil	5 mil

Stack up	Material	Base copper (OZ)	Thickness (mil)	DK
CM			0.4	4
L1-TOP	Finished Copper 1 OZ	0.33	0.6	
L1-BOT	FR28 TG150 RC50%		8.22	4.6
L2-CORE		1	1.2	
L2-PREP	Core		Adjustable	4.6
L3-PREP		1	1.2	
L3-BOT	FR28 TG150 RC50%		8.22	4.6
L4-BOTTOM	Finished Copper 1 OZ	0.33	0.6	
SM			0.4	4



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Thickness	Impedance	Width	Separation	Gap
1.0 mm	90 ohm	7.3 mil	5 mil	5 mil

Stack up	Material	Base copper (oz)	Thickness (mil)	DK
CM			0.4	4
L1 Top	Finished Copper 1 OZ	0.33	0.8	
102B 10150 RC30%			8.22	4.6
L1 Core	Core	1	1.2	
L1 Prepreg			Adjustable	4.6
L2 Prepreg		1	1.2	
102B 10150 RC30%			8.22	4.6
L4 Bottom	Finished Copper 1 OZ	0.33	0.8	
SM			0.4	4