CERTIFICATE OF CONFORMANCE

TO: EINFOCHIPS LTD

Merix Printed Circuits Technology Limited
23# YIN LING ROAD, CHEN JIANG TOWN, HUIZHOU CITY ,
GUANGDONG PROVINCE, CHINA.
TEL : (86-752)2617111 FAX : (86-752)2617222

SERIAL NO. : HY243345
DATE : 12-Nov-18

ITEM	PURCHASE ORDER	PART NUMBER	REV.	Date Code	QUANTITY SHIPPED	APPLICABLE SPECIFICATION	REMARK / DEVIATION
	8000000445	17_00666_01	1.0	1846	20 PCS	IPC-6012 Class2	ALL PANELS HAVE BEEN 100% ELECTRICAL TESTED AND 100% FINAL VISUAL INSPECTION. PCB MATERIAL IS RATED 94V0 IT IS TO CONFIRM THAT IONIC CONTAMINATION ARE MEASURED AND WITHIN THE SPECIFICATION OF 6.0 µg NaCl / Inch ^{2} ASSURE THE RELIABILITY WITHIN ONE YEAR FROM SHIP DATE .

THIS IS TO CERTIFY THAT THE ITEMS SHIPPED AGAINST THIS CERTIFICATE OF CONFORMANCE DO CONFORM TO THE SPECIFICAION AND DRAWINGS INDICATED. ANY DEVIATION ARE AS NOTED AND IN AGREEMENT AND WITH CUSTOMER AUTHORITY.

SIGNATURE: 

Q.A. MANAGER

NAME IN CAPITAL: WENMING LIU

STAMP / CHOP

DATE: 12-Nov-18

FOR AND ON BEHALF OF MERIX
Printed Circuits Technology Limited

Pre-Shipment Audit / Initial Sample Inspection Report-1

Customer : EINFOCHIPS LTD **Specification** IPC-6012 Class2 **Date Code :** 1846

Part No. : 17_00666_01 **Drawing No.** 17_00666_01 Rev 1.0 **Supplier Logo &UL Logo :** C1 TTM 45 兄 94V-0 On solder side by legend

Revision No.: 1.0 **Report Date:** 12-Nov-18

Board Type : Single Sided Board [ ] Double Sided Board [ ] Multilayer Board [X]

1. Pattern

Item	Requirement/Specification	Result	Remark
Circuit	Per Artwork	PASS	
Solder mask	Per Artwork	PASS	
Legend	Per Artwork	PASS	
Peelable Solder mask	NA	NA	
Carbon Ink	NA	NA	

2. Material

Item	Requirement/Specification	Result	Remark
Laminate Type	185HR	PASS	
Vendor	Isola	PASS	
Copper Foil	Inner:0.333/1/0.5 oz ; Outer:0.333 oz	PASS	
Number of Layers	12	PASS	
Solder mask	PSR4000 HFX/Semi-matte Blue	PASS	Applied on Both sides
Legend	S200W/White	PASS	Applied on Both sides

3. Dimensional Inspection

Check Item	Equipment & Calibration No.	Requirement/Specification	Result	Remark
Finished board thickness	Micrometer(C-1011)	62+/-6.2 mil (Over plated copper)	63.06 mil	
Minimum Conductor Width	100X Microscope (C-4008)	+/-20% of original (3.50 mil)	3.15 mil	
Minimum Conductor Spacing	100X Microscope (C-4008)	+/-20% of original (3.00 mil)	3.54 mil	
Minimum Annular Ring	100X Microscope (C-4008)	Connector: keep at minimum line width requirements, Others: breakout≤90°	5.91 mil	

Pre-Shipment Audit / Initial Sample Inspection Report-2

Hole Size	Pin Gauge OPTEK 712V	Per Original Drawing	PASS	See Attached Hole Size Report
Outline	OPTEK 712V	Per Original Drawing	PASS	See Attached Outline/Hole Location Report
Hole Location	OPTEK 712V	Per Original Drawing	PASS	See Attached Outline/Hole Location Report
Warp/Twist	Warpage Tester Pin Gauge	1 % max	PASS	

4. Reliability Testing

Test Items	Method & Specification	Result	Remark
Microsection Inspection	Before & After Thermal Stress Test	PASS	See Attached Microsection Report
Solderability	Temperature:255+/-5^{0}C,Dip Solder the sample for 10+/-0.5 seconds. Surface wetting : 95% Min	PASS	
Thermal Stress	Bake Temp/Time.:135^{0}C/6Hrs; Test Temp/Time.:288+/-5^{0}C/10Sec.	PASS	
Tape Test	Type:3M 600, Size:2"x1/2" Pulled Angle:90+/-5^0	PASS	
Electrical Test	100% Open & Short Test	PASS	
Impedance Test	IPC-TM-650 2.5.5.7	PASS	See Attached Impedance Report
Surface finish Thickness	Type: Immersion Gold (ENIG)	PASS	
	Thickness: Au: 2 uIn~10 uIn	2.253~2.453 uIn	
	Thickness: Ni: 150 uIn~250 uIn	211.6~214.1 uIn	

5. Visual

Inpection Items	Method & Specification	Result	Remark
Appearance	100% Final Quality Control Inspection	PASS	
	Samples of the FQC certified products by PSA C=0 Sample Plans Index Values (Associated AQLS=0.65)	PASS	

OVER DISPOSITION: **Accept** [X] **Reject** [ ] **UAI** [ ]

Additional notes (if required):

PREPARED BY: Xianli.zhou(HY15518)

APPROVED BY: Bing chen(HY01257)

HOLE SIZE MEASUREMENT RECORD

P / N : 17_00666_01 **REVISION :** 1.0 **DATE :** 12-Nov-18

UNIT : INCH ☑ MM ☐ **SAMPLE SIZE :** 3 PCS

REQUIREMENT	PLATE THRU.	RESULT			
		BOARD 1	BOARD 2	BOARD 3	REMARK
0.0080 +0.002/-0.008	P	PASS	PASS	PASS	L3-L10 Via Fill
0.0060 +0.002/-0.006	P	PASS	PASS	PASS	L2-L3 Laser Copper Fill
0.0060 +0.002/-0.006	P	PASS	PASS	PASS	L11-L10 Laser Copper Fill
0.0060 +0.002/-0.006	P	PASS	PASS	PASS	L1-L2 Laser Copper Fill
0.0060 +0.002/-0.006	P	PASS	PASS	PASS	L12-L11 Laser Copper Fill
0.0080 +0.002/-0.008	P	PASS	PASS	PASS	Via Fill
0.0280 +/-0.0030	P	0.028	0.028	0.028	\
0.030x0.056 +/-0.0030	P	0.029x0.055	0.029x0.055	0.029x0.056	\
0.032x0.060 +/-0.0030	P	0.031x0.060	0.031x0.059	0.031x0.060	\
0.032x0.063 +/-0.0030	P	0.031x0.063	0.031x0.063	0.031x0.063	\
0.0350 +/-0.0030	P	0.036	0.036	0.036	\
0.0360 +/-0.0030	P	0.036	0.036	0.036	\
0.0400 +/-0.0030	P	0.039	0.039	0.039	\
0.0470 +/-0.0030	P	0.047	0.047	0.047	\
0.0510 +/-0.0030	P	0.051	0.051	0.051	\
0.0630 +/-0.0030	P	0.063	0.063	0.063	\
0.0910 +/-0.0030	P	0.091	0.091	0.091	\
0.1000 +/-0.0030	P	0.100	0.100	0.100	\
0.0320 +/-0.0030	N	0.033	0.033	0.033	\
0.0340 +/-0.0030	N	0.035	0.035	0.035	\
0.0440 +/-0.0030	N	0.045	0.045	0.045	\
0.0480 +/-0.0030	N	0.049	0.049	0.049	\
0.0510 +/-0.0030	N	0.051	0.051	0.051	\
0.1260 +/-0.0030	N	0.125	0.125	0.125	\
0.1280 +/-0.0030	N	0.128	0.128	0.128	\

REMARK:

OVERALL DISPOSITION: ACC ☑ REJ ☐ **PREPARED BY :** Xianli.zhou(HY15518)

EQUIPMENT & CALIBRATION NO.: C-2011 **APPROVED BY :** Bing chen(HY01257)

OUTLINE / HOLE LOCATION MEASURE RECORD

P / N: 17_00666_01 **REVISION :** 1.0 **TOLERANCE :** +/-0.13

OUTLINE (ROUTE) ☑ **.X**

OUTLINE (PUNCH) ☐ **.XX**

HOLE LOCATION ☑ **.XXX**

UNIT : INCH ☐ **MM** ☑ **ANG.**

No.	REQUIREMENT	RESULT	PASS/FAIL	No.	REQUIREMENT	RESULT	PASS/FAIL
1	85.00	84.95	PASS				
2	100.00	100.06	PASS				
3	91.42	91.47	PASS				
4	88.88	88.91	PASS				
5	78.72	78.71	PASS				
6	4.12	4.07	PASS				
7	6.04	6.08	PASS				
8	8.58	8.60	PASS				
9	66.75	66.75	PASS				
10	64.21	64.23	PASS				
11	61.75	61.71	PASS				
12	23.25	23.29	PASS				
13	25.71	25.67	PASS				
14	28.25	28.28	PASS				
15	2.54	2.51	PASS				
16	10.16	10.20	PASS				
17	2.54	2.49	PASS				
18	5.00	5.03	PASS				
19	Φ 0.040"	0.041	PASS				
20	Φ 0.080"	0.081	PASS				
21	20 °	20 °	PASS				
22	0.51	0.52	PASS				
	End!						

OVERALL DISPOSITION : ACC ☑ **REJ** ☐ **PREPARED BY :** Xianli.zhou(HY15518)

DATA QTY INDRAWING : 22 **APPROVED BY :** Bing chen(HY01257)

MEASURED DATA QTY : 22 **DATE :** 12-Nov-18

IPMENT & CALIBRATION NO.: C-HPM-001

REMARK:

MICRO - SECTION REPORT

P / N : 17_00666_01 **DATE CODE :** 1846 **DATE:** 12-Nov-18

UNIT : um (10^{-3}mm) **SAMPLE SIZE :** 1 PCS **LAYERS:** 12

1. HOLE INSPECTION:

ITEM	HOLE WALL COPPER THK	NAILHEADING	ROUGHNESS	NODULES	INTER CONNECTION DEFECT	WICKING
REQ'T	25.4 min	150% max	30 max	30 max	NONE	80 max
ACTUAL	29.7min/30.2min avg	117.6%	14.9	NONE	NONE	17.3
ACTUAL	28.7min/29.2min avg (Viafill)	119.4%	17.3	NONE	NONE	14.9

DISPOSITION : ACC ☑ REJ ☐

2. COPPER THICKNESS

LAYER NO.	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12
ORIIGNAL COPPER	0.333 oz	0.333 oz	0.333 oz	1.0 oz	0.5 oz	1.0 oz	1.0 oz	0.5 oz	1.0 oz	0.333 oz	0.333 oz	0.333 oz
FINAL REQ.	29.3 min	30.48+/-5	20.32+/-5	24.9 min	11.4 min	24.9 min	24.9 min	11.4 min	24.9 min	20.32+/-5	30.48+/-5	29.3 min
ACTUAL	38.6	29.7	25	28.7	13.9	28.7	27.3	13.9	28.7	25	26.7	37.3

DISPOSITION : ACC ☑ REJ ☐

3.DIELECTRIC THICKNESS

LAYER NO.	L1-L2	L2-L3	L3-L4	L4-L5	L5-L6	L6-L7	L7-L8	L8-L9	L9-L10	L10-L11	L11-L12
REQ.	92	90	126	102	139	127	140	102	126	90	92
ACTUAL	79.2	84.2	107.7	101.6	138.6	117.7	138.6	101.6	127.7	84.2	79.2

DISPOSITION : ACC ☑ REJ ☐

4. HOLE WALL INTEGRALITY (AFTER THERMAL STRESS TEST)

ITEM	PAD LIFTED	CORNER CRACK	DELAMINATIION	LAMINATE VOID	HOLE WALL SEPARATION
RESULT	OK	OK	OK	OK	OK

DISPOSITION : ACC ☑ REJ ☐

5. SOLDER MASK THICKNESS

SOLDER MASK TYPE : PSR4000 HFX/Semi-matte Blue

LOCATION OF MEASUREMENT	OVER CIRCUIT	OVER CORNER OF CIRCUIT	OVER LAMINATE
REQUIREMENT	25.4 nom	\	\
ACTUAL	21.8	17.3	24.8

DISPOSITION : ACC ☑ REJ ☐

6. SOLDER THICKNESS

LOCATION OF MEASUREMENT	HOLE WALL	SMD PAD
REQUIREMENT	\	\
ACTUAL	\	\

DISPOSITION : ACC ☐ REJ ☐

REMARK :

OVER ALL DISPOSITION: **ACC** ☑ **REJ** ☐

EQUIPMENT & CALIBRATION NO.: C-LAB-035

PREPARED BY : Xianli.zhou(HY15518) **APPROVED BY :** Bing chen(HY01257)

IMPEDANCE MEASUREMENT REPORT

P/N: 17_00666_01 **DATE:** 12-Nov-18

DATE CODE : 1846

Line width (mil)	Layer	Spec (ohms)	1	2	3		
5.25	L3	42.00+/-5	39.82	39.70	39.07		
6.15	L8	42.00+/-5	40.86	41.95	41.71		
5.25	L10	42.00+/-5	39.69	40.30	41.19		
8.25	L12	42.00+/-5	40.98	40.13	43.07		
14.2/12.5	L1	50.00+/-5	48.06	47.22	49.60		
5.9	L1	50.00+/-5	46.70	48.07	47.89		
3.75	L3	50.00+/-5	47.65	47.90	47.30		
4.4	L5	50.00+/-5	49.43	50.08	49.58		
4.4	L8	50.00+/-5	48.63	49.64	49.03		
3.75	L10	50.00+/-5	49.38	47.78	47.68		
5.9	L12	50.00+/-5	49.02	48.59	49.24		
4.900/4.100	L8	85.00+/-8.5	84.90	82.98	83.22		
4.400/4.600	L10	85.00+/-8.5	78.28	79.36	81.18		
5.000/4.000	L12	85.00+/-8.5	80.25	83.37	86.07		
4.550/4.450	L1	90.00+/-9	90.70	87.24	88.15		
4.000/5.000	L3	90.00+/-9	83.35	84.00	83.10		
4.000/5.000	L10	90.00+/-9	84.12	84.53	83.40		
4.550/4.450	L12	90.00+/-9	87.12	85.37	92.38		
4.100/5.900	L1	100.00+/-10	104.51	98.89	98.59		
3.500/6.700	L3	100.00+/-10	94.31	96.22	95.48		
3.900/6.100	L5	100.00+/-10	98.30	99.08	97.92		
3.900/6.100	L8	100.00+/-10	97.36	101.39	98.70		
3.500/6.700	L10	100.00+/-10	94.93	95.32	97.78		
4.100/5.900	L12	100.00+/-10	93.58	106.08	97.93		
4.600/6.400	L12	120.00+/-12	126.86	115.44	123.19		

EQUIPMENT & CALIBRATION NO.: C-IM-005

PREPARED BY : Xianli.zhou(HY15518) **APPROVED BY:** Bing chen(HY01257)

RoHS Certificate of Compliance (COC)

Customer: **EINFOCHIPS LTD**

Part number: **17_00666_01**

The unassembled printed circuit board part number listed above manufactured by Merix Printed Circuits Technology Limited is compliant with the material content requirements of Dierective 2011/65/EU of the European Parliament and its predecessor (2002/95/EC) on the restriction of the use of certain hazardous substances in electrical and electronic equipment ("RoHS directive").

The RoHS Directive requires that qualifying electrical and electronic equipment put on market after July 1, 2006 do not contain the following substances in contained homogeneous substances above the threshold level listed below:

Cadmium	＜0.01%
Hexavalent Chromium	＜0.1%
Lead	＜0.1%
Mercury	＜0.1%
Polybrominated Biphenyls (PBB)	＜0.1%
Polybrominated Diphenyl Ethers (PBDE)	＜0.1%

Please note that compliance with the RoHS Directive does not insure that the fabrication materials utilized are recommended for lead-free assembly.

Signature: 

Name: Bing chen

Title: QA Sr.Engineer

Date: 12-Nov-18