CERTIFICATE OF CONFORMANCE

TO: EINFOCHIPS LTD

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

SERIAL NO. : HY249436
DATE : 12-Mar-19

ITEM	PURCHASE ORDER	PART NUMBER	REV.	Date Code	QUANTITY SHIPPED	APPLICABLE SPECIFICATION	REMARK / DEVIATION
	8000000726	17_00666_02	/	1911	20 PCS	IPC-6012 Class2	ALL PANELS HAD UNDERGONE 100% ELECTRICAL TEST AND FINAL VISUAL INSPECTION. PCB MATERIAL IS RATED 94V0. THE PRODUCT SHELF LIFE ARE WITHIN ONE YEAR FROM MANUFACTURE DATE.

THIS IS TO CERTIFY THAT THE ITEMS SHIPPED WITHIN THIS CERTIFICATE OF CONFORMANCE DID CONFORM TO THE PURCHASE ORDERS, SPECIFICATIONS AND DRAWINGS.

ANY DEVIATIONS ARE NOTED, IN AGREEMENT AND WITH CUSTOMER APPROVAL.

SIGNATURE:

Q.A. MANAGER

NAME IN CAPITAL: WENMING LIU

STAMP / CHOP

DATE: 12-Mar-19

FOR AND ON BEHALF OF MERIX
Printed Circuits Technology Limited

惠州美锐电子科技有限公司 品质保证部 MERIX PRINTED CIRCUITS TECHNOLOGY LIMITED

Pre-Shipment Audit / Initial Sample Inspection Report-1

Customer : EINFOCHIPS LTD **Specification**: IPC-6012 Class2 **Date Code :** 1911

Part No. : 17_00666_02 **Drawing No.**: 17_00666_02 Rev 2.0,array drawing **Supplier Logo &UL Logo :** C1 TTM 45 兄 94V-0 On solder side by legend

Revision No.: / **Report Date:** 12-Mar-19

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 plating)	62.96 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	2.236~2.294 uIn	
	Thickness: Ni: 150 uIn~250 uIn	174.2~176.5 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_02 **REVISION :** / **DATE :** 12-Mar-19

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
0.0060 +0.002/-0.006	P	PASS	PASS	PASS	L12-L11 Laser
0.0080 +0.002/-0.008	P	PASS	PASS	PASS	Via Fill
0.0236x0.0512 +/-0.0030	P	0.024x0.052	0.024x0.052	0.024x0.052	\
0.0276 +/-0.0030	P	0.028	0.028	0.028	\
0.0276x0.0335 +/-0.0030	P	0.028x0.031	0.028x0.032	0.028x0.032	\
0.0280 +/-0.0030	P	0.028	0.028	0.028	\
0.032x0.060 +/-0.0030	P	0.031x0.061	0.031x0.060	0.031x0.060	\
0.032x0.063 +/-0.0030	P	0.031x0.063	0.031x0.063	0.031x0.064	\
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	0.040	0.040	0.040	\
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	0.090	0.090	0.090	\
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	\
0.1300 +/-0.0030	N	0.129	0.129	0.129	\
0.1260 +/-0.0030	N	0.125	0.125	0.125	\

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_02 **REVISION :** / **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	84.94	PASS				
2	100.00	99.98	PASS				
3	91.42	91.37	PASS				
4	88.88	88.82	PASS				
5	78.72	78.79	PASS				
6	4.12	4.17	PASS				
7	6.04	6.08	PASS				
8	8.58	8.54	PASS				
9	66.75	66.69	PASS				
10	64.21	64.17	PASS				
11	61.75	61.69	PASS				
12	23.25	23.27	PASS				
13	25.71	25.73	PASS				
14	28.25	28.24	PASS				
15	2.54	2.56	PASS				
16	10.16	10.13	PASS				
17	2.54	2.53	PASS				
18	5.00	4.95	PASS				
19	Φ 0.040"	0.041	PASS				
20	Φ 0.080"	0.080	PASS				
21	20 °	20 °	PASS				
22	0.51	0.47	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-Mar-19

IPMENT & CALIBRATION NO.: C-HPM-001

REMARK:

MICRO - SECTION REPORT

P / N : 17_00666_02 **DATE CODE :** 1911 **DATE:** 12-Mar-19

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	27.2min/27.8min avg	125.2%	17.3	NONE	NONE	22.3
ACTUAL	33.7min/34.7min avg (Viafill)	118.8%	17.3	NONE	NONE	23.8
ACTUAL	49.5min/50.5min avg (Viafill)	120.5%	15.8	NONE	NONE	20.8

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	34.7	33.7	24.7	25.7	12.4	25.7	25.7	12.4	25.7	24.7	34.7	34.7

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	91	126	102	139	127	140	102	126	90	92
ACTUAL	89.0	79.0	124.0	104.0	139.0	134.0	139.0	104.0	129.0	89.0	84.0

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	7.6 min	\	\
ACTUAL	19.8	15.8	43.6

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_02 **DATE:** 12-Mar-19

DATE CODE : 1911

Layer	Line width (mil)	Spec (ohms)	1	2	3	4	5
L3	5.25	42.00+/-5	44.21	41.17	40.87	43.72	41.08
L8	6.15	42.00+/-5	41.78	42.04	41.33	46.09	41.04
L10	5.25	42.00+/-5	42.65	44.19	39.74	41.01	42.21
L12	8.25	42.00+/-5	45.60	41.93	42.59	43.06	42.05
L1	14.2/12.5	50.00+/-5	49.14	48.41	49.13	47.62	48.98
L1	5.9	50.00+/-5	51.65	51.87	50.77	50.88	52.21
L3	3.75	50.00+/-5	47.69	50.45	51.76	50.66	48.60
L5	4.4	50.00+/-5	48.63	48.53	48.38	48.21	50.37
L8	4.4	50.00+/-5	49.18	48.35	48.87	47.53	49.60
L10	3.75	50.00+/-5	51.40	50.38	51.37	52.13	49.68
L12	5.9	50.00+/-5	50.91	52.13	51.28	51.27	50.48
L8	4.900/4.100	85.00+/-8.5	87.83	84.31	82.75	81.69	81.93
L10	4.400/4.600	85.00+/-8.5	87.03	79.81	77.60	79.78	85.29
L12	5.000/4.000	85.00+/-8.5	86.47	89.08	91.35	88.07	88.93
L1	4.550/4.450	90.00+/-9	94.42	93.22	90.48	92.68	93.64
L3	4.000/5.000	90.00+/-9	86.72	87.10	89.42	83.11	85.64
L10	4.000/5.000	90.00+/-9	93.65	95.81	84.28	87.61	89.38
L12	4.550/4.450	90.00+/-9	95.17	97.48	93.50	95.36	86.78
L1	4.100/5.900	100.00+/-10	104.11	103.92	103.57	103.75	104.35
L3	3.500/6.700	100.00+/-10	98.24	99.29	94.95	102.23	95.26
L5	3.900/6.100	100.00+/-10	95.40	92.98	96.87	98.29	92.72
L8	3.900/6.100	100.00+/-10	92.75	93.62	93.90	96.65	97.15
L10	3.500/6.700	100.00+/-10	104.14	97.85	99.58	98.65	94.66
L12	4.100/5.900	100.00+/-10	105.18	105.14	106.34	103.35	106.19
L1	4.600/6.400	120.00+/-12	123.66	125.52	121.92	121.13	123.98
L12	4.600/6.400	120.00+/-12	125.70	126.60	129.64	127.50	127.31

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_02**

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-Mar-19