



PRODUCT SPECIFICATION

TITLE

2.4/5GHz SMT Chip Antenna

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<u>REVISION:</u> B	<u>ECR/ECN INFORMATION:</u> B ABU2016-0014 <u>DATE:</u> 2016-05-06	<u>TITLE:</u> 2.4/5GHz SMT Chip Antenna	<u>SHEET No.</u> 1 of 5
<u>DOCUMENT NUMBER:</u> PS-146175-001	<u>CREATED / REVISED BY:</u> Ryan Liu 2016-05-06	<u>CHECKED BY:</u> Chris Yu 2016-05-06	<u>APPROVED BY:</u> Welson Tan2016-05-06



PRODUCT SPECIFICATION

2.4/5GHz SMT Chip Antenna

1.0 SCOPE

This Product Specification covers the mechanical, electrical and environmental performances requirements and test methods for 2.4/5GHz SMT chip antenna.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBER

Product name: 2.4/5GHz SMT Chip Antenna 146175-0001

2.2 Design and Construction

Antenna shall be of the design, construction and physical dimensions specified on the applicable sales drawing.

2.3 Materials

- a) Housing: Refer to respective Molex sales or engineering drawings
- b) Plating: Refer to respective Molex sales or engineering drawings

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

See drawings and other sections of this specification for the relevant reference documents. In cases where the specification differs from the drawings, the drawings take precedence.

4.0 RATINGS

4.1 RF POWER

2 Watts

4.2 TEMPERATURE

Operating: - 40°C to + 125°C
 Storage : - 40°C to + 125°C

4.3 HUMIDITY

Storage : +15~70% RH
 Test : +80~95% RH

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5.0 PERFORMANCE

5.1 ELECTRICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT	
5.1.1	Frequency Range	Measure antenna on recommended PCB through VNA E5071C	2400MHz-2483.5MHz	5150MHz-5850MHz
5.1.2	Return Loss	Measure antenna on recommended PCB through VNA E5071C	< -6 dB	< -6 dB
5.1.3	Peak Gain	Measure antenna on recommended PCB through OTA chamber	3dBi	4.2dBi
5.1.4	Avg. Total Efficiency	Measure antenna on recommended PCB through OTA chamber	>70%	>70%
5.1.5	Polarization	Measure antenna on recommended PCB through OTA chamber	Linear	Linear
5.1.6	Input Impedance	Measure antenna on recommended PCB through VNA E5071C	50Ohms	50Ohms

5.2 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
5.2.1	Plating thickness measure	Use X-ray measure the thickness of plating	The plating thickness spec: Cu 12~16um; Ni 1~2.5um; Au 0.1~0.2um.
5.2.2	Cross cut Test	Cross cut adhesion test Testing is performed in accordance with ASTM D-3359-93	Acceptance criteria > 2B as acceptance, <35% peeling off.

5.3 RELIABILITY REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
5.3.1	Peeling Force	Apply six axial peeling force on parts soldered on the PCB at the speed rate of 25±3 mm/minute	8 N Min
5.3.2	Solderability testing	Dip solder tails into the molten solder (held at 245+/-5°C for 5s)	Solder coverage: 95% Min.

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5.4 ENVIRONMENTAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
5.4.1	Humidity Test	1. Test condition: The device under test is kept for 12 hours in an environment with a temperature of 55 degrees and a relative humidity of 95%. Thereafter for 12 Hours in an environment with a temperature of 25 degrees and a relative humidity of 95%. The cycle is repeated until a total of 6 cycles have been completed. Hereafter the conditions are stabilized at room temperature.	1) Parts should meet RF spec before and after test. 2) No cosmetic problem
5.4.2	Temperature cycling test	1. Test condition: The device under test at -40 °C ⇌ 125 °C by 72 cycles, Dwell of 30 mins, transition time between Dwell 15 secs (~ 61 mins / cycle) and each item should be measured after exposing them in normal temperature and humidity for 24 h.	1) Parts should meet RF spec before and after test. 2) No cosmetic problem
5.4.3	Salt mist test	1. Test condition: The device under test is exposed to a spray of a 5% (by volume) resolution of NaCl in water for 2 hours. Thereafter the device under test is left for 1 week in room temperature at a relative humidity of 95%. The cycle is repeated until a total of 2 cycles have been completed. Here after the conditions are stabilized at room temperature.	1) Parts should meet RF spec before and after test. 2) No visible corrosion. Discoloration accept.
5.4.4	HNO3 Test	General test condition	1) No corrosion.

The meaning of text “**No mechanical damage**” in the table above is:

- a. no soldering problem
- b. no adhesion problem of glue
- c. no peel off of plating

6.0 TEST GROUPINGS

Note: All test specimens (except group 5) shall pass the reflow process for 3 times.

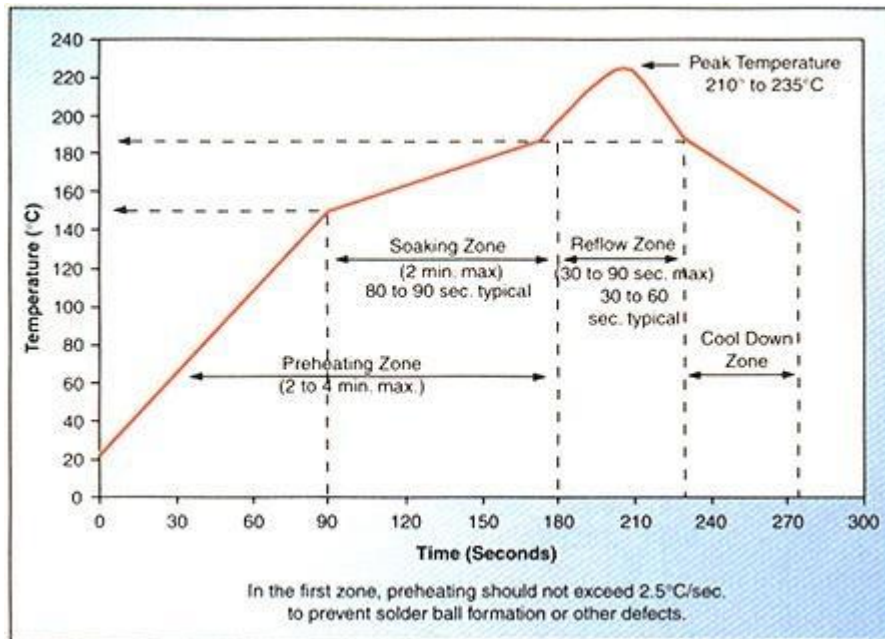
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Test Item	Description	Group1	Group2	Group3	Group4	Group5	Group6
5.3.1	Peeling Force	X					
5.3.2	Solderability testing		X				
5.4.1	Humidity Test			X			
5.4.2	Temperature cycling test				X		
5.4.3	Salt mist test					X	
5.4.4	HNO3 Test						X
	Sample Quantity	5	5	5	5	5	5

7.0 RECOMMENDED REFLOW CONDITION



8.0 PACKAGING

Refer to the Molex related packaging drawings.

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