	# PRODUCT SPECIFICATION

TITLE

Full LTE SMT Antenna

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PS-146200-001	**Benson Liu 2016-02-22**		**Chris Zhong 2016-02-22**	**Welson Tan 2016-02-22**	

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Full LTE SMT Antenna

1.0 SCOPE

This Product Specification covers the mechanical, electrical and environmental performances requirements and test methods for Full LTE SMT antenna.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBER
Product name: Full LTE SMT Antenna 146200-0001

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) Ceramic: 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: - 30°C to + 85°C
Storage   : - 40°C to + 95°C

4.3 HUMIDITY
Operating   :-30°C to+85°C
-30°C to+50°C, 85%RH or less
+50°C to+85°C, 60%RH or less

Storage   : -40°C to+95°C
-40°C to+50°C, 85%RH or less
+50°C to+95°C, 60%RH or less

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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	698-960MHz	1.7-2.7GHz
5.1.2	Return Loss	Measure antenna on recommended PCB through VNA E5071C	< -5 dB	< -5 dB
5.1.3	Peak Gain	Measure antenna on recommended PCB through OTA chamber	1.1dBi	4.5dBi
5.1.4	Avg. Total Efficiency	Measure antenna on recommended PCB through OTA chamber	60%	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	50 Ohms	50 Ohms

5.2 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
5.2.1	Ag thickness measure	Use X-ray measure the thickness of Ag	Ag thickness spec: 8-10um.
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

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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 relating 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 ℃⇔125 ℃ by 72 cycles, Dwell of 30 min, transition time between Dwell 15 sec (~ 61 min / 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	**High Temperature**	Test condition: 1) Temperature:125℃, time:1008hours 2) There is no substantial obstruction to air flow across and around the samples, and the samples are not touching each other	1) Parts should meet RF spec before and after test. 2) No cosmetic problem
5.4.4	**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.

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.

Test Item	Description	Group1	Group2	Group3	Group4	Group5	Group6	Group7
5.2.1	Ag thickness	X						
5.2.2	Cross cut		X					
5.3.1	Peeling Force			X				
5.4.1	Humidity Test				X			
5.4.2	Temperature cycling test					X		
5.4.3	High Temperature						X	
5.4.4	Salt mist test							X
	Sample Quantity	5	5	5	5	5	5	5

7.0 RECOMMENDED REFLOW CONDITION
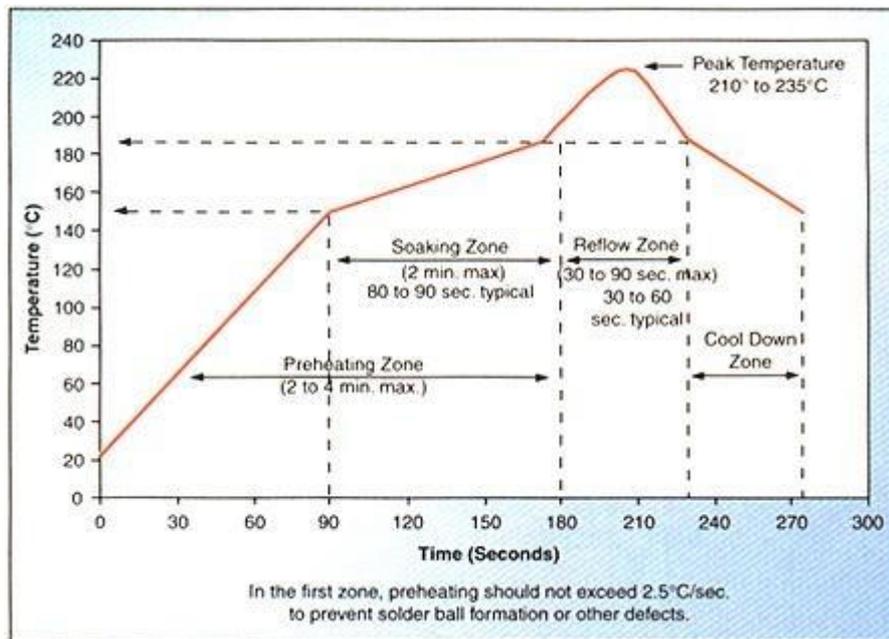
8.0 PACKAGING

Refer to the Molex related packaging drawings.

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