



PRODUCT SPECIFICATION

TITLE

MOLEX LTE ANTENNA HINGED

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DOCUMENT NUMBER: PS-2135230001	CREATED / REVISED BY: Kang Cheng 2019/10/18	CHECKED BY: Cooper Zhou 2019/10/18	APPROVED BY: Stary Song 2019/10/18

MOLEX LTE ANTENNA HINGED

1.0 SCOPE

This product specification covers the mechanical, electrical and environmental performances specification for molex LTE antenna hinged.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBER (S)

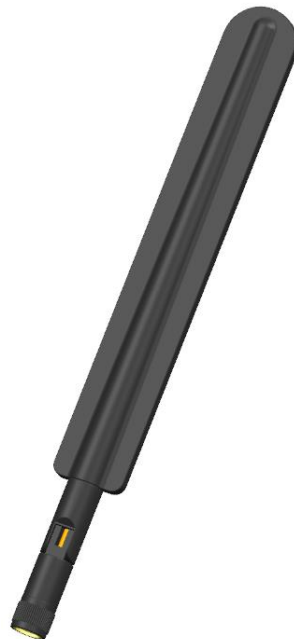
Product name: Molex LTE antenna hinged
Series Number: 213523

2.2 DESCRIPTION

213523 is external antenna being designed to cover all Cellular working frequencies in the 698-2690MHz spectrum. The joint hinge of the antenna allows 90°rotating on vertical plane, and the SMA-J connector allows 180°rotating on horizontal plane.

2.3 FEATURES

- Full band cellular antenna
- Flex size 171.5 x 19.4 mm
- SMA connector
- Black and white color
- Connector can be customized between SMA-J (male pin) and RP-SMA-J (female socket)
- RoHS Compliant



MOLEX 213523 SERIES MODULE BLACK 3D VIEW

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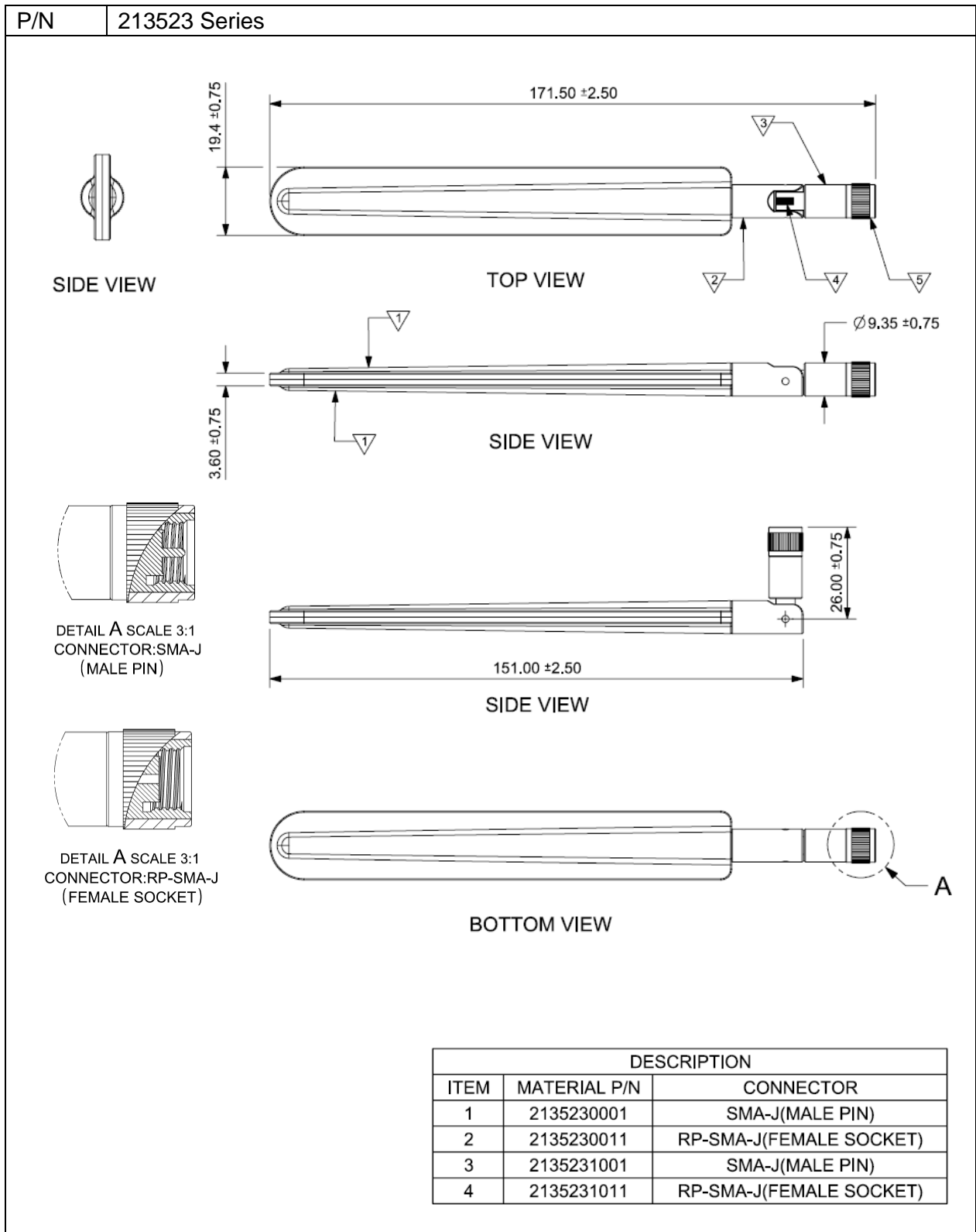
MOLEX 213523 SERIES MODULE WHITE 3D VIEW

213523 Series Material Number:

MOLEX P/N	DESCRIPTION	COLOR	CONNECTOR
2135230001	Molex LTE Antenna Hinged B-M	Black	SMA-J
2135230011	Molex LTE Antenna Hinged B-F	Black	RP-SMA-J
2135231001	Molex LTE Antenna Hinged W-M	White	SMA-J
2135231011	Molex LTE Antenna Hinged W-F	White	RP-SMA-J

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2.4 PRODUCT STRUCTURE INFORMATION



Mechanical Structure Information for 213523 Series

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3.0 APPLICABLE DOCUMENTS

Document	Number	Description
Sale Drawing (SD)	SD-2135230001	Mechanical Dimension of the product
Application Guide (AS)	AS-2135230001	Antenna Application and surrounding
Packing Drawing (PK)	PK-2135230001	Product packaging specifications

4.0 GENERAL SPECIFICATION

Product name	698~2690MHz External Antenna	
Part number	2135230001(Black)	2135230011(Black)
	2135231001(White)	2135231011(White)
Frequency	698~2690 MHz	
Polarization	Linear	
Operating with matching	-40°C to 85°C	
Storage with matching	-40°C to 85°C	
RF power	2 Watts	
Impedance with matching	50 Ohms	
Connector type	SMA-J (male pin)	RP-SMA-J (female socket)
Single weight	14.125g	14.25g

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5.0 ANTENNA SPECIFICATION.

All measurements are done of the antenna mounted on a 100*100mm ground with VNA Agilent 5071C and Over-The-Air (OTA) chamber for the part No.213523 series.

5.1 ELECTRICAL REQUIREMENT

DESCRIPTION	EQUIPMENT	REQUIREMENT	
Frequency Range	VNA E5071C	698-960MHz	1.71-2.69GHz
Return Loss	VNA E5071C	<-5 dB	<-10 dB
Peak Gain (Max)	OTA Chamber	2.3dBi	4.8dBi
Average Total Efficiency	OTA Chamber	>55%	>70%
Polarization	OTA Chamber	Linear	
Input Impedance	VNA E5071C	50 ohms	

Note that the above antenna performance is measured with just the antenna mounted on a PCB to simulate a free-space condition. When implement into the system, the frequency resonant might be off-tune due to the loading of surrounding components especially metal plane. This off-tune can be compensated through matching. Although module manufacturers specify a peak gain limit, it is based on free-space conditions. The peak gain will be degraded by 1 to 2dBi in the actual implementation as the radiation pattern will change due to the surround components. As such, during selection of antenna, you can select one with high peak gain to compensate for the loss. Molex can offer assistant to choose the best location and best tuning in-order to meet this peak gain requirement.

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6.0 ENVIRONMENTAL SPECIFICATION

DESCRIPTION	SPECIFICATION
Low Temperature Storage	<ol style="list-style-type: none"> 1. Keep test samples in $-40\pm 2^{\circ}\text{C}$ chamber with 24 hours. 2. Parts should meet RF spec before and after test. 3. No cosmetic problem (No soldering problem; No adhesion problem of glue)
High Temperature Storage	<ol style="list-style-type: none"> 1. Keep test samples in $85\pm 2^{\circ}\text{C}$ chamber with 48 hours. 2. Parts should meet RF spec before and after test. 3. No cosmetic problem (No soldering problem; No adhesion problem of glue)
Mechanical Shock	<ol style="list-style-type: none"> 1. Shock accelerated speed: $a=500\pm 10\%$ m/S², 2. Time input: $t=6$ ms, Test 10 times each in six axis (X,Y,Z,-X,-Y,-Z) Mechanical and Function in spec after test 3. Mechanical and Function in spec after test.
Salt Mist	<ol style="list-style-type: none"> 1. NACL concentration:$5\%\pm 1\%$; Temperature:$35\pm 2^{\circ}\text{C}$; PH Range:6.5-7.2, Salt fog deposition:1-2ml/(80cm²•h), Time:48h 2. Parts should meet RF spec before and after test. 3. No visible corrosion. 4. Discoloration acceptable
Humidity Test	<ol style="list-style-type: none"> 1. Test temperature: $40\pm 2^{\circ}\text{C}$, humidity: 95%, time: 96h 2. Parts should meet RF spec before and after test. 3. No cosmetic problem (No soldering problem; No adhesion problem of glue)

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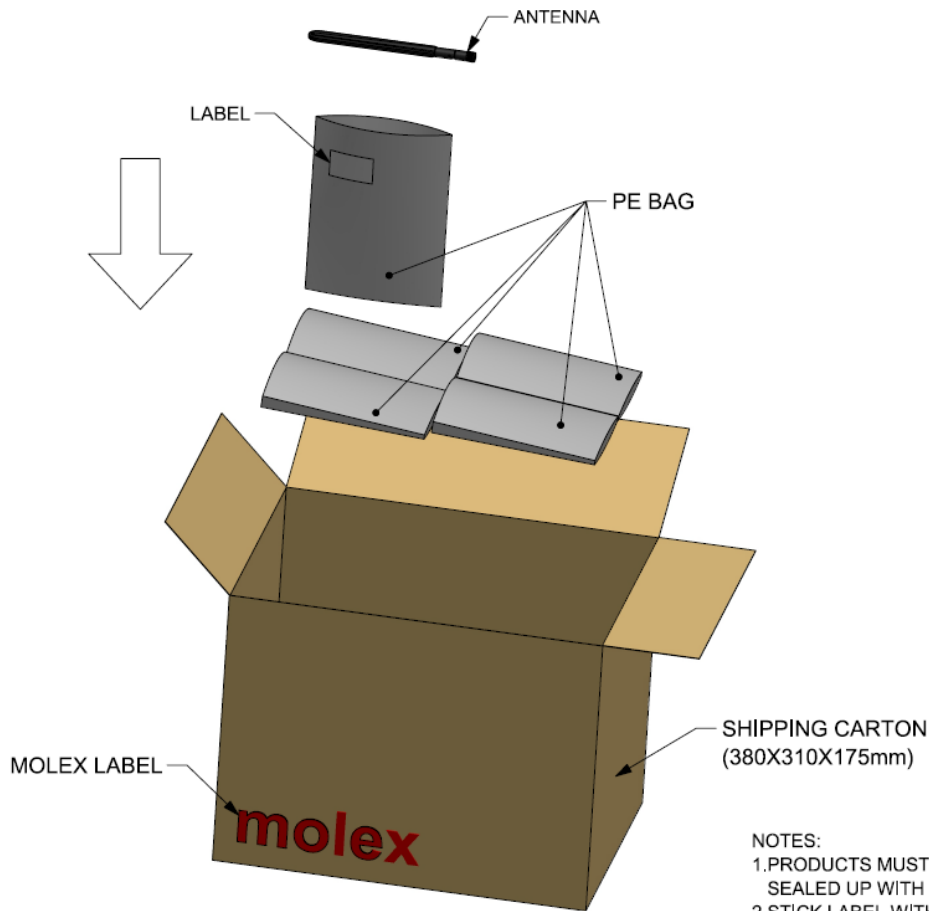
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<p>Thermal Cycle</p>	<ol style="list-style-type: none"> Test steps: <ul style="list-style-type: none"> Temperature High: +85°C, uncontrolled humidity Temperature Low: -40°C, uncontrolled humidity Ramp Rate: 20°C / min. Dwell Time: 23 minutes at High and Low temperatures Close to 60 min /cycle. Repeat 30cycles. Parts should meet RF spec before and after test. No cosmetic problem (No soldering problem; No adhesion problem of glue)
<p>Drop Test</p>	<ol style="list-style-type: none"> Drop height :1 m, tested surface: each surface of product. The surface that product will land: Marble surface Parts should meet RF spec before and after test. No cosmetic problem (No discolor ,No crack, No damage)

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8.0 PACKING

PART NUMBER	PCS/PE BAG	PE BAG/SHIPPING BAG	QTY/CARTON
2135230001	50	10	500
2135230011	50	10	500
2135231001	50	10	500
2135231011	50	10	500
2144290001	50	10	500
2144290011	50	10	500
2144291001	50	10	500
2144291011	50	10	500



- NOTES:
1. PRODUCTS MUST BE PACKED IN CARTONS AND SEALED UP WITH TAPE.
 2. STICK LABEL WITH PART NUMBER AND DATE CODE
 3. STANDARD PACKAGING QUANTITY: SEE TABLE
 4. THIS PACKAGING SPECIFICATION TO BE USED FOR "HINGE SMA EXTERNAL ANTENNA".

Packaging Information For 213523 Series

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