



# PRODUCT SPECIFICATION

## TITLE

## Molex WiFi/BT Antenna Hinged

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D	EC No: 714684 DATE: 2022/07/19	<b>Molex WiFi/BT Antenna Hinged Product Specification</b>	1 of 9
DOCUMENT NUMBER:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
<b>PS-2144150001</b>	Cooper Zhou	Cheng Kang	Ma Horace

## Molex WiFi/BT Antenna Hinged

### 1.0 SCOPE

This product specification covers the mechanical, electrical and environmental performances specification for Molex WiFi/BT Antenna Hinged.

### 2.0 PRODUCT DESCRIPTION

#### 2.1 PRODUCT NAME AND SERIES NUMBER (S)

Product name: Molex WiFi/BT Antenna Hinged  
Series Number: 214415

#### 2.2 DESCRIPTION

214415 is external antenna being designed to cover WiFi\BT working frequencies in the 2400-2500MHz spectrum. The joint hinge of the antenna allows 90°rotating on vertical plane, and the SMA(M) connector allows 180°rotating on horizontal plane.

#### 2.3 FEATURES

- Single band 2.4~2.5GHz
- Antenna size: 108.4xØ9.35 mm
- Optional connector selection: SMA(M) or RP-SMA(M)
- Optional antenna color selection: Black or White
- RoHS Compliant
- Flame Retardant: HB



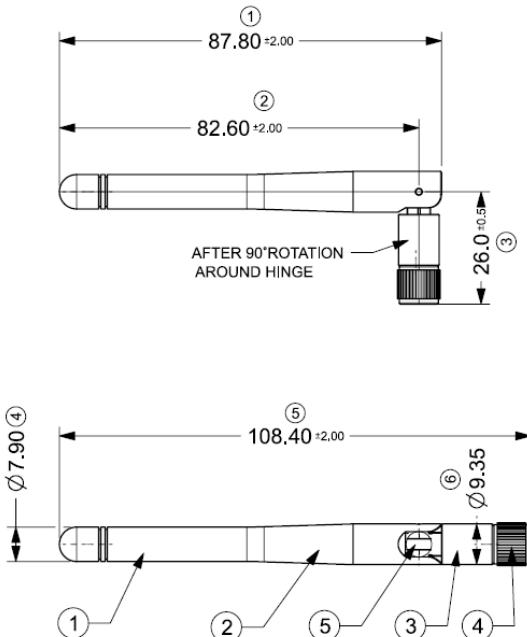
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PRODUCT PICTURE

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## 2.4 PRODUCT STRUCTURE INFORMATION



CONFIGS	PN	DESCRIPTION
1	2144150001	MOLEX WIFI/BT ANTENNA HINGED (BLACK, SMA-M)
2	2144150011	MOLEX WIFI/BT ANTENNA HINGED (BLACK, RP-SMA-M)
3	2144151001	MOLEX WIFI/BT ANTENNA HINGED (WHITE, SMA-M)
4	2144151011	MOLEX WIFI/BT ANTENNA HINGED (WHITE, RP-SMA-M)

PN:2144150001—MOLEX WIFI/BT ANTENNA HINGED (BLACK, SMA-M)		
NO.	DESCRIPTION	MATERIAL
1	ANTENNA CAP	TPEE, COLOR: BLACK
2	UPPER BASE	PBT+PC,COLOR:BLACK
3	BOTTOM BASE	PBT+PC, COLOR: BLACK
4	CONNECTOR	SMA-MALE STRAIGHT PLUG FOR RG-178
5	CABLE	RG-178 CABLE TRANSPARENCY BROWN,50Ω

PN:2144150011—MOLEX WIFI/BT ANTENNA HINGED (BLACK, RP-SMA-M)		
NO.	DESCRIPTION	MATERIAL
1	ANTENNA CAP	TPEE, COLOR: BLACK
2	UPPER BASE	PBT+PC,COLOR:BLACK
3	BOTTOM BASE	PBT+PC, COLOR: BLACK
4	CONNECTOR	RP-SMA-MALE STRAIGHT PLUG
5	CABLE	RG-178 CABLE TRANSPARENCY BROWN,50Ω

PN:2144151001—MOLEX WIFI/BT ANTENNA HINGED (WHITE, SMA-M)		
NO.	DESCRIPTION	MATERIAL
1	ANTENNA CAP	TPEE, COLOR: WHITE
2	UPPER BASE	PBT+PC,COLOR:WHITE
3	BOTTOM BASE	PBT+PC, COLOR: WHITE
4	CONNECTOR	SMA-MALE STRAIGHT PLUG FOR RG-178
5	CABLE	RG-178 CABLE TRANSPARENCY BROWN,50Ω

PN:2144151011—MOLEX WIFI/BT ANTENNA HINGED (WHITE, RP-SMA-M)		
NO.	DESCRIPTION	MATERIAL
1	ANTENNA CAP	TPEE, COLOR: WHITE
2	UPPER BASE	PBT+PC,COLOR:WHITE
3	BOTTOM BASE	PBT+PC, COLOR: WHITE
4	CONNECTOR	RP-SMA-MALE STRAIGHT PLUG FOR RG-178
5	CABLE	RG-178 CABLE TRANSPARENCY BROWN,50Ω

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## 3.0 APPLICABLE DOCUMENTS

Document	Number	Description
Sale Drawing (SD)	SD-2144150001	Mechanical Dimension of the product
Application Guide (AS)	AS-2144150001	Antenna Application and surrounding
Packing Drawing (PK)	PK-2128600001	Product packaging specifications

## 4.0 GENERAL SPECIFICATION

Product name	MOLEX WIFI/BT ISM/DSRC ANTENNA HINGED			
Part number	2144150001	2144150011	2144151001	2144151011
Antenna Color	Black	Black	White	White
Frequency	2.4~2.5GHz			
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(M)	RP-SMA(M)	SMA(M)	RP-SMA(M)

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## 5.0 ANTENNA SPECIFICATION.

All measurements are done of the antenna mounted on a 100\*100mm ground PCB with VNA Agilent 5071C and Over-The-Air (OTA) chamber for the part No.214415 series.

## 5.1 ELECTRICAL REQUIREMENT

Description	Equipment	Requirement
Part Number		2144150001 2144150011 2144151001 2144151011
Frequency Range	VNA E5071C	2.4~2.5GHz
Return Loss	VNA E5071C	<-10 dB
Peak Gain (Max)	OTA Chamber	5.3dBi
Average Total Efficiency	OTA Chamber	>80%
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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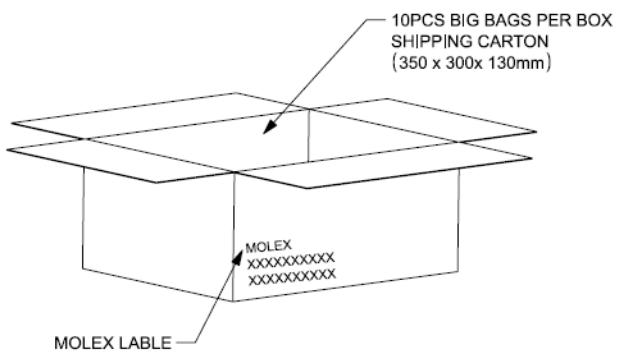
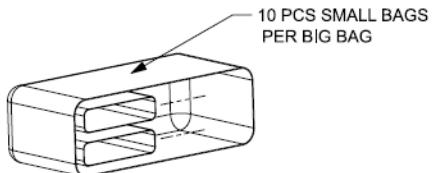
## 6.0 ENVIRONMENTAL SPECIFICATION

DESCRIPTION	SPECIFICATION
Low Temperature Storage	<ol style="list-style-type: none"><li>1. Keep test samples in <math>-40 \pm 2^\circ\text{C}</math> chamber with 24 hours.</li><li>2. Parts should meet RF spec before and after test.</li><li>3. No cosmetic problem (No discolor, No crack, No damage)</li></ol>
High Temperature Storage	<ol style="list-style-type: none"><li>1. Keep test samples in <math>85 \pm 2^\circ\text{C}</math> chamber with 48 hours.</li><li>2. Parts should meet RF spec before and after test.</li><li>3. No cosmetic problem (No discolor, No crack, No damage)</li></ol>
Salt Mist	<ol style="list-style-type: none"><li>1. NACL concentration: <math>5\% \pm 1\%</math>; Temperature: <math>35 \pm 2^\circ\text{C}</math>; PH Range: 6.5-7.2, Salt fog deposition: <math>1-2\text{ml}/(80\text{cm}^2 \cdot \text{h})</math>, Time: 48h</li><li>2. Parts should meet RF spec before and after test.</li><li>3. No visible corrosion and discoloration acceptable.</li></ol>
Thermal Cycle	<ol style="list-style-type: none"><li>1. Test steps:<ul style="list-style-type: none"><li>• Temperature High: <math>+85^\circ\text{C}</math>, uncontrolled humidity</li><li>• Temperature Low: <math>-40^\circ\text{C}</math>, uncontrolled humidity</li><li>• Ramp Rate: <math>20^\circ\text{C}/\text{min}</math>.</li><li>• Dwell Time: 30 minutes at High and Low temperatures</li><li>• Repeat 30cycles</li></ul></li><li>2. Parts should meet RF spec before and after test.</li><li>3. No cosmetic problem (No discolor, No crack, No damage)</li></ol>
Humidity Test	<ol style="list-style-type: none"><li>1. Test temperature: <math>40 \pm 2^\circ\text{C}</math>, humidity: 95%, time: 96hours</li><li>2. Parts should meet RF spec before and after test.</li><li>3. No cosmetic problem (No discolor, No crack, No damage)</li></ol>
Mechanical Shock	<ol style="list-style-type: none"><li>1. Shock accelerated speed: <math>a=500 \pm 10\% \text{ m/S}^2</math>, Time input: <math>t=6 \text{ ms}</math>, Test 10 times each in six axis (X,Y,Z,-X,-Y,-Z)</li><li>2. Parts should meet RF spec before and after test.</li><li>3. No cosmetic problem (No discolor, No crack, No damage)</li></ol>
Drop Test	<ol style="list-style-type: none"><li>1. Drop height : 1 m, tested surface: each surface of product. The surface that product will land : marble surface.</li><li>2. Parts should meet RF spec before and after test.</li><li>3. No cosmetic problem (No discolor, No crack, No damage)</li></ol>

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## 8.0 PACKING

PRODUCT P/N	PRODUCTS PER SMALL BAG	SMALL BAGS PER BIG BAG	BIG BAGS PER BOX	TOTAL PARTS PER SHIPPING CARTON
2128600001				
2128600011				
2128601001				
2128601011				
2144140001				
2144140011				
2144141001	10			
2144141011		10		
2144150001				
2144150011				
2144151001				
2144151011				
2128609001				
2144159011				



NOTE:

1. STICK LABEL WITH PART NUMBER AND DATE CODE.
2. THIS PACKAGING IS APPLIED FOR 212860,214414,214415 SERIES.
3. STANDARD PACKAGING QUANTITY (PCS):1000,

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Change History			
Revision Number	Revision Date	Description	Pages Changed
A	2019/9/10	First Release	NA
B	2019/11/22	Change description from SMA-J to SMA(M)	Page#2 and Page#4
C	2022/05/24	Update description and 2D drawings Bom	Page#2 and Page#3
D	2022/07/19	Update 2D Dimension #3 (From 25.8mm to 26mm)	Page#4

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