TITLE

WIFI6E LOW GAIN FLEX ANTENNA

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WIFI6E LOW GAIN FLEX ANTENNA

1.0 SCOPE

This Product Specification covers the mechanical, electrical and environmental performances specification for WiFi6E low gain flex antenna.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBER (S)

Product name: WiFi6e Low Gain Flex Antenna
Series Number: 219611 Series

2.2 DESCRIPTION

Series 219611 is a balanced, dipole-type, high efficiency antenna with low gain for 2.4/5/6 GHz applications, including WiFi 6E, Bluetooth, Zigbee and others. This antenna is made from poly flexible material with small size 35*15*0.1mm and has double-sided adhesive tape for easy “peel and stick” mounting. This balanced antenna with ground plane independent design offers various cable length options for ease of integration into various devices.

2.3 FEATURES

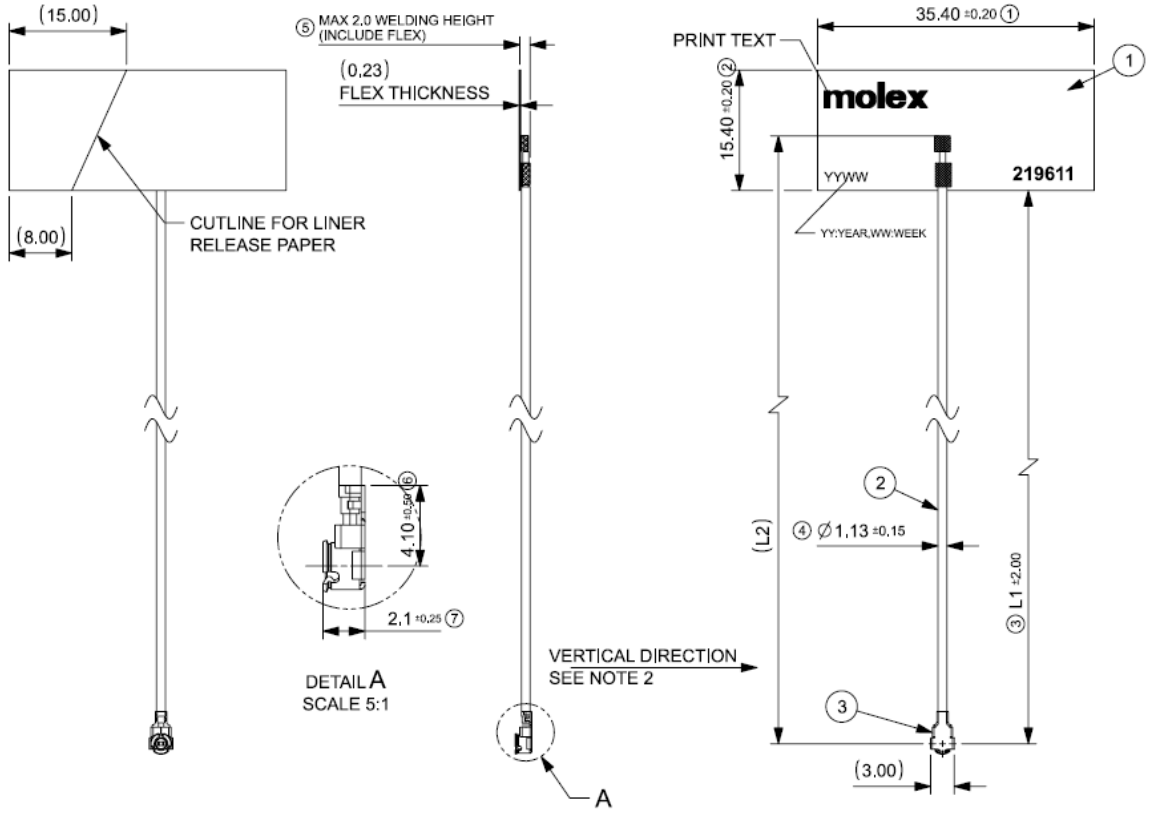
- 2400~2500MHz,5150~5850MHz,5925~7125MHz, linear polarization
- Ground plane independent, balanced tri band antenna
- MHF (U.FL compatible) Connector
- Cable 6 standard length options (50/100/150/200/250/300mm)
- Cable and connector can be customized

Molex 219611 SERIES 3D VIEW

3.0 GENERAL SPECIFICATION

Product name	WIFI6E LOW GAIN FLEX ANTENNA		
Part number	219611		
Frequency	2.4GHz-2.5GHz	5.15GHz-5.85GHz	5.925GHz-7.125GHz
Polarization	Linear		
Operating with matching	-40℃ to 85℃		
Storage with matching	-40℃ to 85℃		
RF Power	2 Watts		
Impedance with matching	50 Ohms		
Antenna type	Flex		
Connector type	MHF1		
User Implementation type	Adhesive 3M9077		
Cable diameter	Ø1.13mm		
Cable length	50 mm (P/N for 2196110050)		
	100 mm (P/N for 2196110100)		
	150 mm (P/N for 2196110150)		
	200 mm (P/N for 2196110200)		
	250 mm (P/N for 2196110250)		
	300 mm (P/N for 2196110300)		

4.0 PRODUCT STRUCTURE INFORMATION



ITEM	DESCRIPTION
1	FPC
2	CABLE
3	CONNECTOR

NOTES:
1. MATERIAL:
   CONNECTOR:RF 2.5H MHF-1 CONNECTOR(GOLD PLATED).
   FLEX SOLDER MASK:BLACK.
   CABLE COLOR:BLACK.
   ADHESIVE:3M9077.
2. FOR PULL TEST, CAN NOT LIFT UP IN THE VERTICAL DIRECTION.
3. THE CONNECTOR WILL BE PROTECTED WITH A CAP.

ITEM	MATERIAL P/N	"L1"LENGTH	"L2"LENGTH
1	2196110050	43	50
2	2196110100	93	100
3	2196110150	143	150
4	2196110200	193	200
5	2196110250	243	250
6	2196110300	293	300

5.0 APPLICABLE DOCUMENTS

DOCUMENT	NUMBER	DESCRIPTION
Sale Drawing (SD)	SD-2196110100	Mechanical Dimension of the product
Application Guide (AS)	AS-2196110100	Antenna Application and surrounding
Packing Drawing (PK)	PK-2196110100	Product packaging specifications

6.0 ANTENNA SPECIFICATION

All measurements are done of the antenna mounted on a PC/ABS material block of 1.5 mm thickness with VNA Agilent E5071C and Over-The-Air (OTA) chamber. All measurements in this document are done with the part no.2196110100 for different cable length.

6.1 ELECTRICAL REQUIREMENT

6.1.1 ELECTRICAL REQUIREMENTS FOR CABLE LENGHTH 50mm			
P/N	2196110050		
Frequency Range	2.4GHz-2.5GHz	5.15GHz-5.85GHz	5.925-7.125GHz
Peak Gain (Max)	2.67dBi	3.67dBi	4.12dBi
Average Total efficiency	>78%	>79%	>80%
Return Loss	< -10 dB	< -10 dB	< -10 dB

6.1.2 ELECTRICAL REQUIREMENTS FOR CABLE LENGHTH 100mm			
P/N	2196110100		
Frequency Range	2.4GHz-2.5GHz	5.15GHz-5.85GHz	5.925-7.125GHz
Peak Gain (Max)	2.5dBi	3.4dBi	3.8dBi
Average Total efficiency	>75%	>75%	>75%
Return Loss	< -10 dB	< -10 dB	< -10 dB

6.1.3 ELECTRICAL REQUIREMENTS FOR CABLE LENGHTH 150mm			
P/N	2196110150		
Frequency Range	2.4GHz-2.5GHz	5.15GHz-5.85GHz	5.925-7.125GHz
Peak Gain (Max)	2.32dBi	3.12dBi	3.47dBi
Average Total efficiency	>72%	>70%	>69%
Return Loss	< -10 dB	< -10 dB	< -10 dB

6.1.4 ELECTRICAL REQUIREMENTS FOR CABLE LENGHTH 200mm			
P/N	2196110200		
Frequency Range	2.4GHz-2.5GHz	5.15GHz-5.85GHz	5.925-7.125GHz
Peak Gain (Max)	2.15dBi	2.85dBi	3.15dBi
Average Total efficiency	>69%	>66%	>64%
Return Loss	< -10 dB	< -10 dB	< -10 dB

6.1.5 ELECTRICAL REQUIREMENTS FOR CABLE LENGHTH 250mm			
P/N	2196110250		
Frequency Range	2.4GHz-2.5GHz	5.15GHz-5.85GHz	5.925-7.125GHz
Peak Gain (Max)	1.97dBi	2.57dBi	2.82dBi
Average Total efficiency	>66%	>63%	>59%
Return Loss	< -10 dB	< -10 dB	< -10 dB

6.1.6 ELECTRICAL REQUIREMENTS FOR CABLE LENGHTH 300mm			
P/N	2196110300		
Frequency Range	2.4GHz-2.5GHz	5.15GHz-5.85GHz	5.925-7.125GHz
Peak Gain (Max)	1.8dBi	2.3dBi	2.5dBi
Average Total efficiency	>63%	>59%	>55%
Return Loss	< -10 dB	< -10 dB	< -10 dB

Note that the above antenna performance is measured with just the antenna mounted on a PC/ABS block to similar 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.

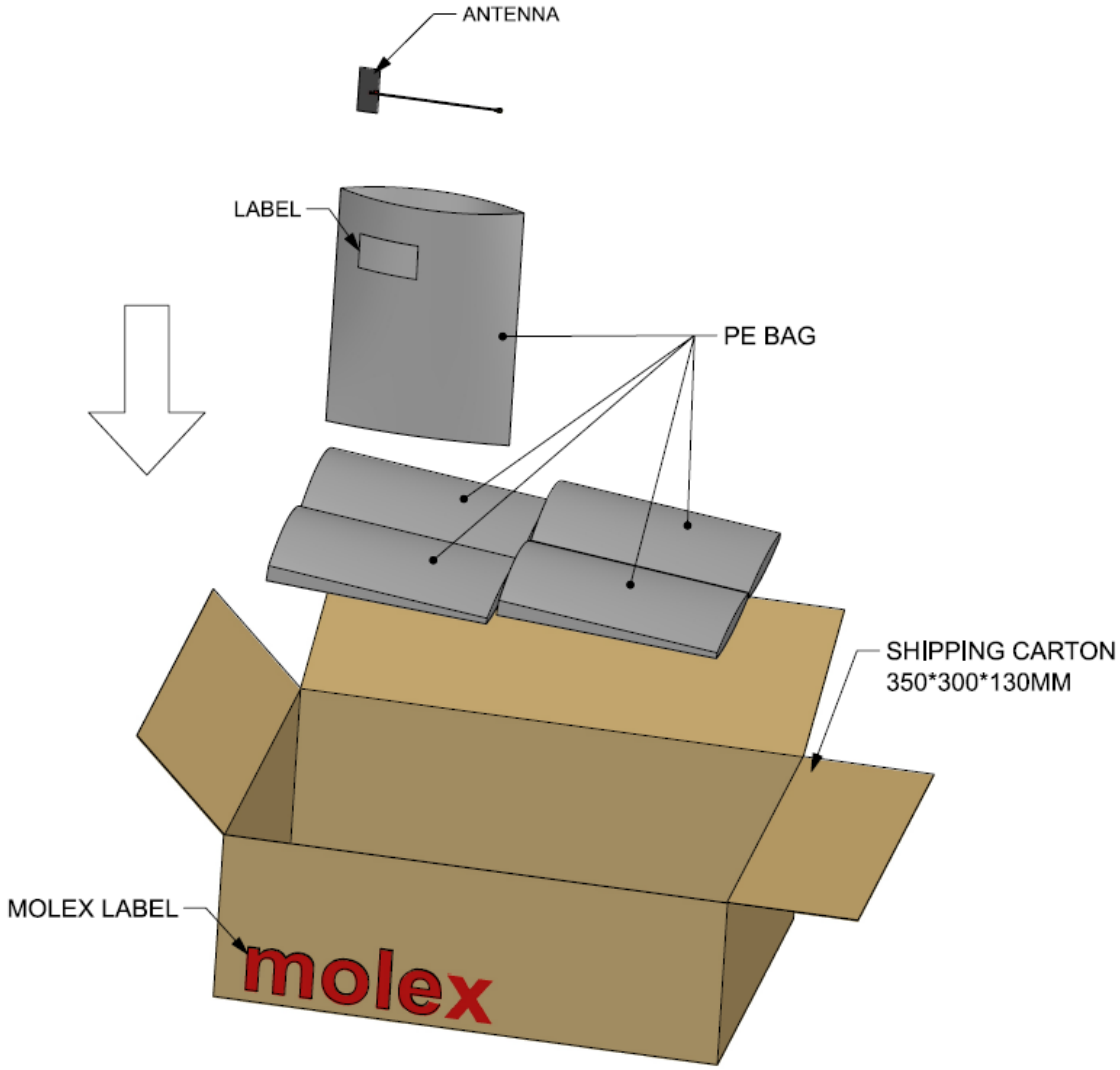
6.2 CABLE LOSS

DESCRIPTION	TEST CONDITION	REQUIREMENTS		
Frequency Range	2 GHz~7.125GHz	2.0GHz~3.0GHz	5GHz~6GHz	6GHz~7.125GHz
Attenuation	1m cable measured by VNA5071C	≤3.5dB/m	≤5.5dB/m	≤6.5dB/m

Balance antenna resonance is insensitive to cable's length, but the cable's loss will affect the total efficiency.

7.0 PACKING

PART NUMBER	PCS/PE BAG	PE BAG/SHIPPING BAG	QTY/CARTON
2196110050	100	20	2000
2196110100	100	20	2000
2196110150	100	20	2000
2196110200	100	20	2000
2196110250	100	20	2000
2196110300	100	20	2000



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 "WIFI6E LOW GAIN FLEX ANTENNA".

8.0 CHANGE HISTORY

CHANGE HISTORY		
REV	DATA	DESCRIPTION
1	2021/12/14	First Release
A	2021/12/22	Upload System
A1	2022/08/02	Update 4.0 information