



# PRODUCT SPECIFICATION

## TITLE

### GNSS FLEX/CABLE DIPOLE ANTENNA

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REVISION: <b>A2</b>	ECR/ECN INFORMATION: EC No: 702681 DATE: 2022/04/08	TITLE: <b>GNSS Flex/Cable Dipole Antenna Product Specification</b>	SHEET No. <b>1 of 9</b>
DOCUMENT NUMBER: <b>PS-2065600050</b>	CREATED / REVISED BY: <b>Kang Cheng</b>	CHECKED BY: <b>Cooper Zhou</b>	APPROVED BY: <b>Horace Ma</b>



# PRODUCT SPECIFICATION

## GNSS FLEX/CABLE DIPOLE ANTENNA

### 1.0 SCOPE

This Product Specification covers the mechanical, electrical and environmental performances specification for 1558-1610MHz GNSS Flex Antenna.

### 2.0 PRODUCT DESCRIPTION

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

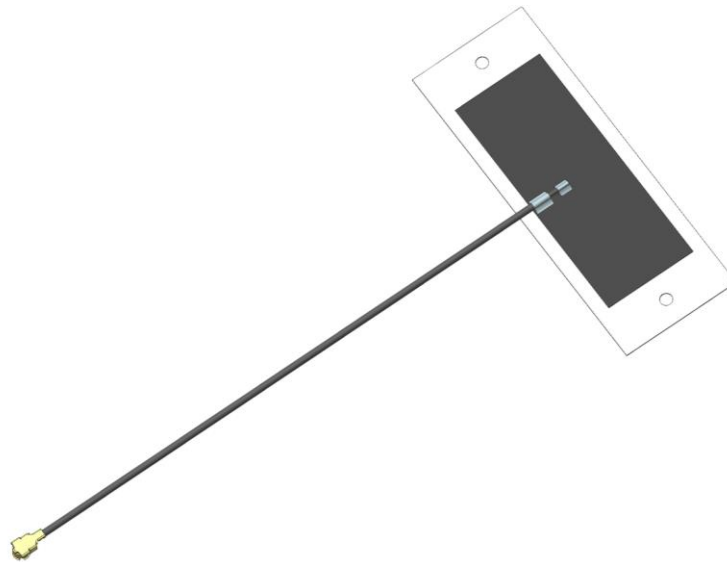
Product name: 1558-1610MHz GNSS Flex Antenna  
Series Number: 206560

#### 2.2 DESCRIPTION

This is a balanced wide band high performance antenna implemented using flex with various cable length option to meet the customer needs. It is designed to cover the various frequency bands from 1558-1610MHz.

#### 2.3 FEATURES.

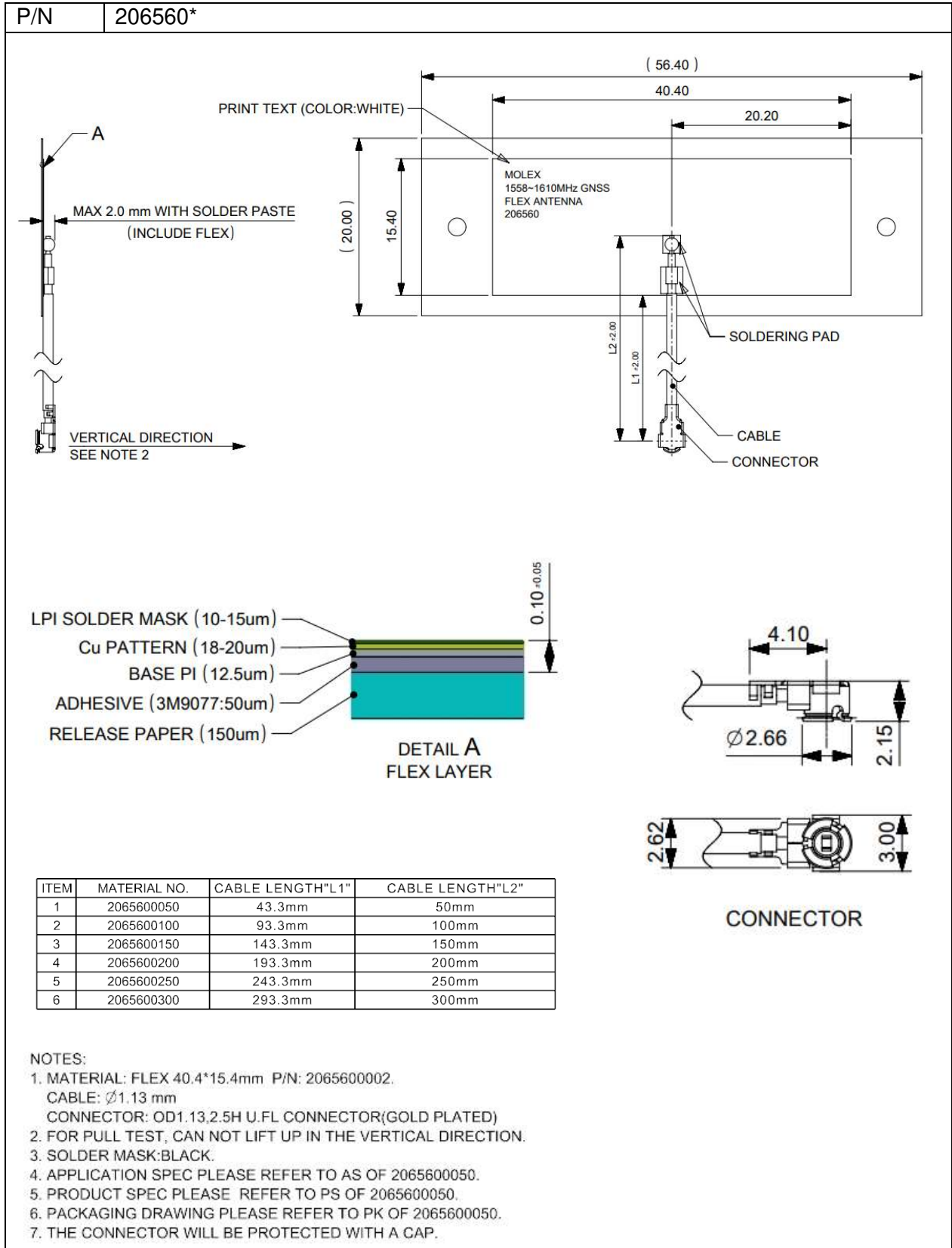
- Ground plane independent, balanced antenna
- 1558-1610 MHz, Linear polarization, high efficiency over 70% on all bands (cable 100mm)
- 40.4x15.4x0.1mm FPC size
- MHF (U.FL compatible) connector
- Cable OD1.13mm, 6 standard length options (50-300mm)
- Cable and connector can be customized
- RoHS Compliant



**Molex 2065600050 GNSS FLEX/CABLE DIPOLE ANTENNA MODULE 3D VIEW**

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## 2.4 PRODUCT STRUCTURE INFORMATION



Mechanical Structure Information for 2065600050

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# PRODUCT SPECIFICATION

## 3.0 APPLICABLE DOCUMENTS

Document	Number	Description
Sale Drawing(SD)	SD-2065600050	Mechanical Dimension of the product
Application Guide(AS)	AS-2065600050	Antenna Application and surrounding
Packing Drawing(PK)	PK-2065600050	Product packaging specifications

## 4.0 GENERAL SPECIFICATION

Product name	1558-1610MHz GNSS Flex Antenna
Part number	206560
Frequency	1561±3MHz
	1575±3MHz
	1602±3MHz
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
Antenna type	Flex
Connector type	MHF
User Implementation type	Adhesive 3M9077
Cable	Ø1.13mm

## 5.0 ANTENNA SPECIFICATION.

### 5.1 ELECTRICAL REQUIREMENT

5.1.1 ELECTRICAL REQUIREMENTS FOR CABLE LENGTH 50mm			
P/N	2065600050		
Frequency Range	1561 ±3MHz	1575 ±3MHz	1602 ±3MHz
Peak Gain(Max)	1.1 dBi	1.2 dBi	1.5 dBi
Total efficiency	>74%	>74%	>75%
Return Loss	< -8 dB		

5.1.2 ELECTRICAL REQUIREMENTS FOR CABLE LENGTH 100mm			
P/N	2065600100		
Frequency Range	1561 ±3MHz	1575 ±3MHz	1602 ±3MHz
Peak Gain(Max)	0.9 dBi	1 dBi	1.37 dBi
Total efficiency	>72%	>72%	>73%
Return Loss	< -8 dB		

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5.1.3 ELECTRICAL REQUIREMENTS FOR CABLE LENGTHH 150mm			
P/N	2065600150		
Frequency Range	1561 ±3MHz	1575 ±3MHz	1602 ±3MHz
Peak Gain(Max)	0.8 dBi	0.9 dBi	1.3 dBi
Total efficiency	>70%	>70%	>71%
Return Loss	< -8 dB		

5.1.4 ELECTRICAL REQUIREMENTS FOR CABLE LENGTHH 200mm			
P/N	2065600200		
Frequency Range	1561 ±3MHz	1575 ±3MHz	1602 ±3MHz
Peak Gain(Max)	0.7 dBi	0.8 dBi	1.1 dBi
Total efficiency	>68%	>68%	>69%
Return Loss	< -8 dB		

5.1.5 ELECTRICAL REQUIREMENTS FOR CABLE LENGTHH 250mm			
P/N	2065600250		
Frequency Range	1561 ±3MHz	1575 ±3MHz	1602 ±3MHz
Peak Gain(Max)	0.6 dBi	0.7 dBi	1 dBi
Total efficiency	>66%	>66%	>67%
Return Loss	< -8 dB		

5.1.6 ELECTRICAL REQUIREMENTS FOR CABLE LENGTHH 300mm			
P/N	2065600300		
Frequency Range	1561 ±3MHz	1575 ±3MHz	1602 ±3MHz
Peak Gain(Max)	0.5 dBi	0.5 dBi	0.9 dBi
Total efficiency	>64%	>64%	>65%
Return Loss	< -8 dB		

Note that the above antenna performance is measured under stand-alone condition. When implement into the system, the frequency resonant might be off-tune due to the loading of surrounding components especially metal plane. 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 assistance to choose the best location and best tuning in order for you to meet this peak gain requirement.

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## 5.2 CABLE LOSS

DESCRIPTION	TEST CONDITION	REQUIREMENTS
Frequency Range	1550-1610MHz	1550-1610MHz
Attenuation	1m cable measured by VNA5071C	≤2.5dB/m

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

## 6.0 MECHANICAL SPECIFICATION

DESCRIPTION	SPECIFICATION
Pull Test	<ol style="list-style-type: none"> <li>1. Test machine: Max intelligent load tester</li> <li>2. Stick the flex antenna on a plastic board, pull cable in axial direction.</li> <li>3. Pull force &gt;8N</li> </ol>
Un-mating force	<ol style="list-style-type: none"> <li>1. Mating/un-mating the receptacle (soldered on PCB) and plug at a speed of 25±3mm/minutes.</li> <li>2. Un-mating force (total): initial 8N Min. after 30 cycles 5N Min.</li> <li>3. Un-mating force (inner contact): initial 0.15N Min. after 30 cycles 0.1N Min.</li> </ol>

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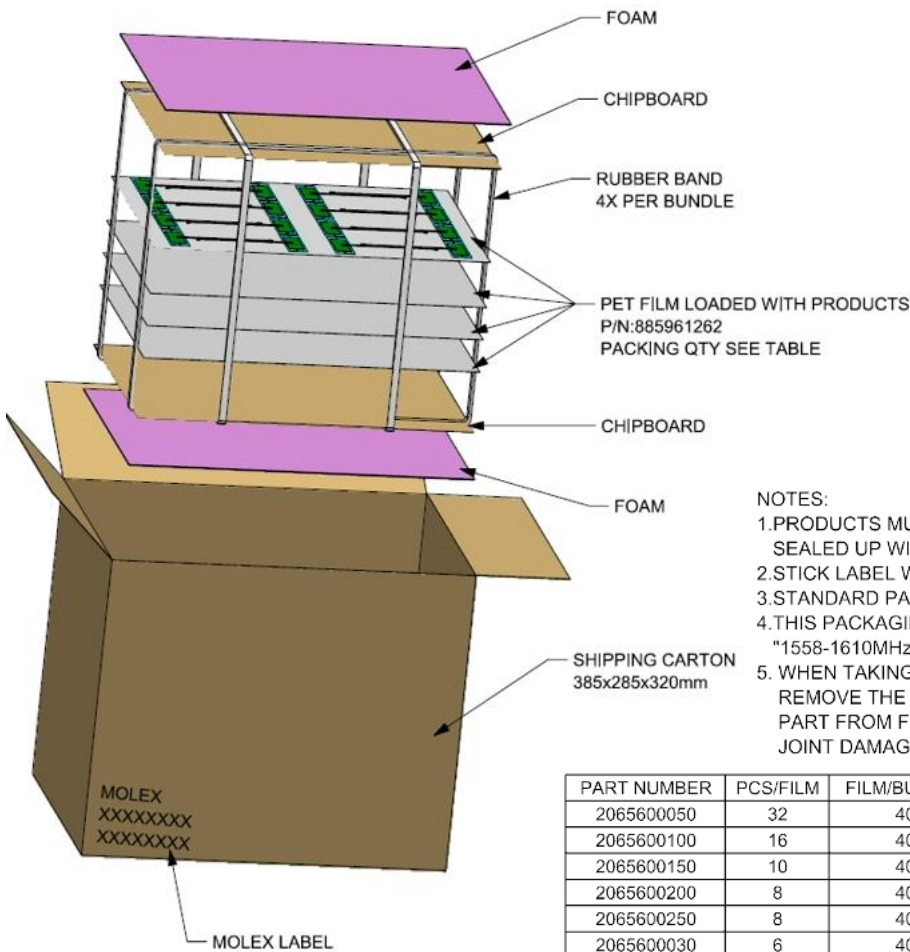
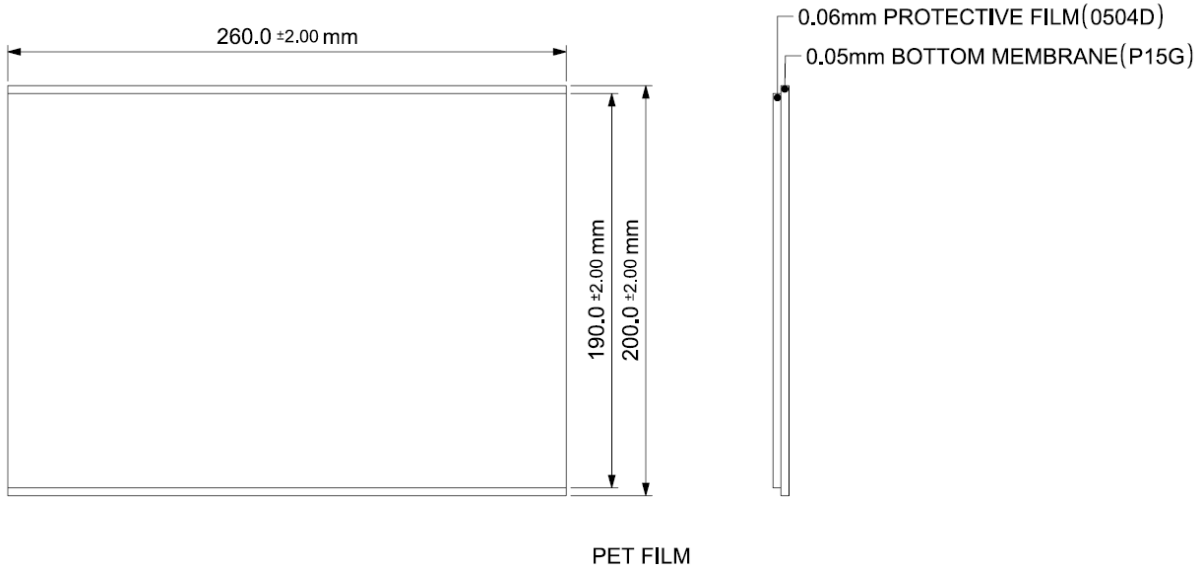
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## 7.0 ENVIRONMENTAL SPECIFICATION

DESCRIPTION	SPECIFICATION
Temperature /Humidity cycling	<ol style="list-style-type: none"> <li>The device under test is kept for 30 mins in an environment with a temperature of -40 °C.</li> <li>Kept for 4 Hours in an environment with a temperature of 8cthe conditions are stabilized at room temperature.</li> <li>Parts should meet RF spec before and after test.</li> <li>No cosmetic problem (No soldering problem; No adhesion problem of glue) .</li> </ol>
Temperature Shock	<ol style="list-style-type: none"> <li>The device under test at -40 °C⇔125 °C by 100 cycles, Dwell of 30 mins, transition time between Dwell 30 secs (~ 61 mins / cycle) and each item should be measured after exposing them in normal temperature and humidity for 24 h.</li> <li>Parts should meet RF spec before and after test.</li> <li>No cosmetic problem (No soldering problem; No adhesion problem of glue) .</li> </ol>
High Temperature	<ol style="list-style-type: none"> <li>Temperature:125°C, time:1008 hours</li> <li>There is no substantial obstruction to air flow across and around the samples, and the samples are not touching each other</li> <li>Parts should meet RF spec before and after test.</li> <li>No cosmetic problem (No soldering problem; No adhesion problem of glue) .</li> </ol>
Salt mist test	<ol style="list-style-type: none"> <li>The device under test is exposed to a spray of a 5% (by volume) resolution of NAACL 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.</li> <li>Parts should meet RF spec before and after test.</li> <li>No visible corrosion. Discoloration accept.</li> </ol>

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## 8.0 PACKING



- 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 "1558-1610MHz GNSS FLEX ANTENNA".
  5. WHEN TAKING PRODUCT FROM PET FILM, PLEASE REMOVE THE COVER TAPE FIRST, THEN PICK UP THE PART FROM FLEX NOT THE CABLE, TO AVOID SOLDER JOINT DAMAGE.

PART NUMBER	PCS/FILM	FILM/BUNDLE	BUNDLE/CARTON	PCS/CARTON
2065600050	32	40	4	5120PCS
2065600100	16	40	5	3200PCS
2065600150	10	40	5	2000PCS
2065600200	8	40	5	1600PCS
2065600250	8	40	5	1600PCS
2065600030	6	40	5	1200PCS

### Packaging information for 2065600050

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## 9.0 CHANGED HISTORY

REV	DATE	DESCRIPTION
A2	2022/04/08	Update 4.0 general specification description

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