TITLE

ACTIVE GNSS ANTENNA MODULE

TABLE OF CONTENTS

ACTIVE GNSS ANTENNA MODULE

1.0 SCOPE

This product specification covers the mechanical, electrical and environmental performances specification for Active GNSS Antenna Module.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBER (S)

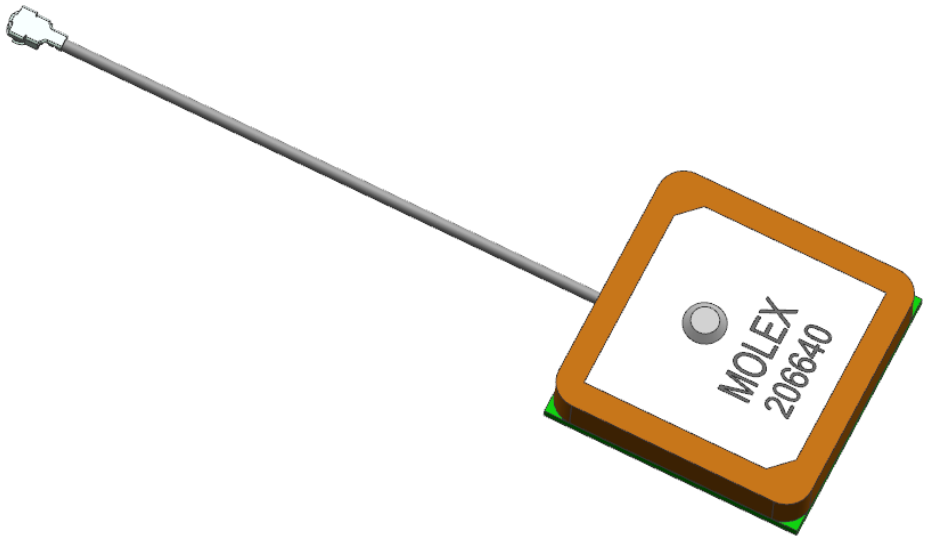
Product name: Active GNSS Antenna Module
Series Number: 206640

2.2 DESCRIPTION

Series 206640 is an internal GNSS (GPS/Beidou/Glonass/Galileo) active patch antenna with 1.13mm cable and U.FL connector. The patch, ground plane, LNA and filter all components are integrated in a small form 25x25x6.5mm and extend to 60mm long coax cable.

2.3 FEATURES.

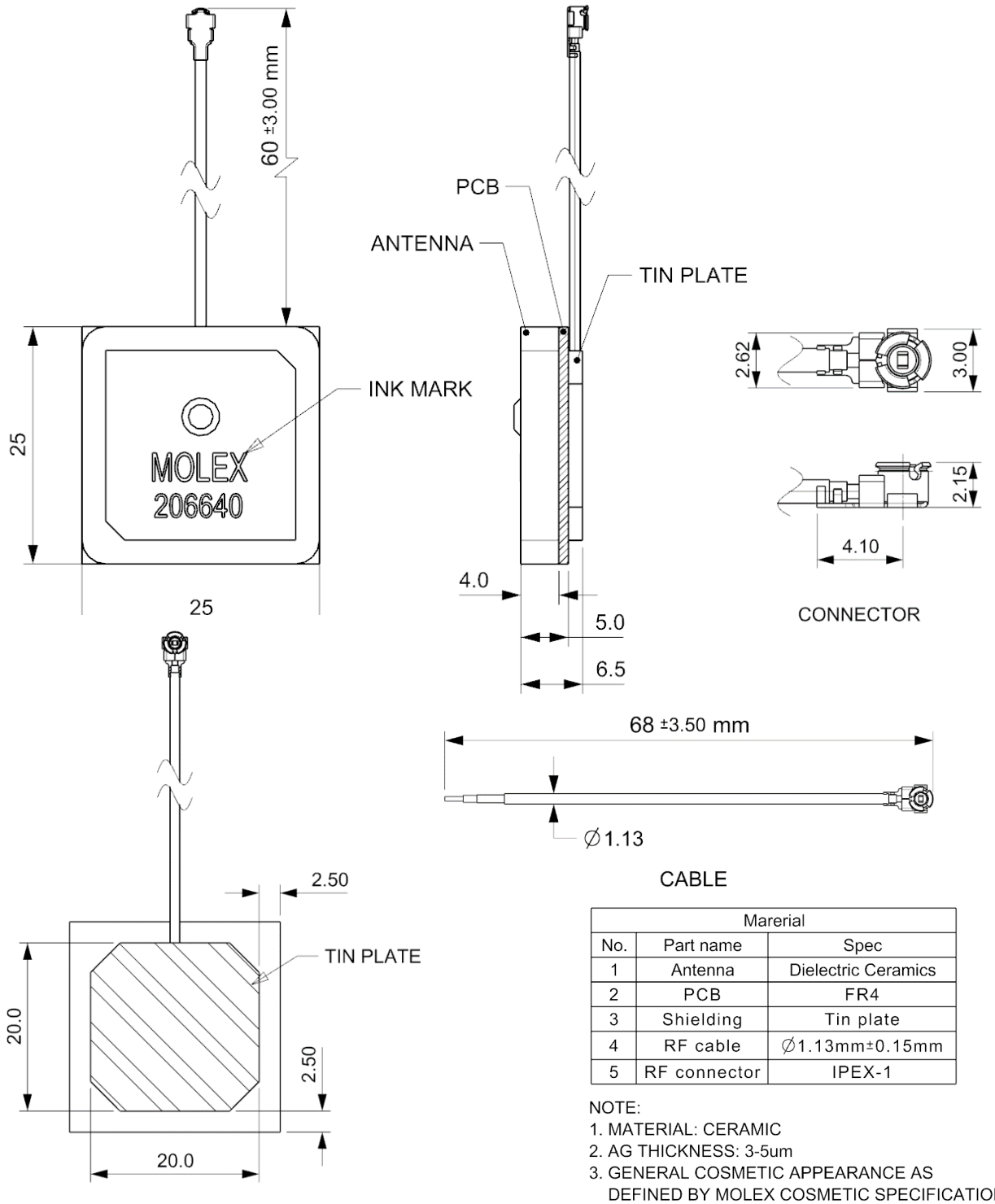
- Full GNSS bands coverage
- Ceramic patch, 28dB two stage LNA
- Dimension 25mmx25mmx6.5mm, connecting 60mm long coax cable and U.FL connector
- RoHS Compliant



Molex 2066400001 Active GNSS Antenna Module 3D View

2.4 PRODUCT STRUCTURE INFORMATION

P/N	2066400001



Marerial		
No.	Part name	Spec
1	Antenna	Dielectric Ceramics
2	PCB	FR4
3	Shielding	Tin plate
4	RF cable	∅1.13mm±0.15mm
5	RF connector	IPEX-1

NOTE:
1. MATERIAL: CERAMIC
2. AG THICKNESS: 3-5um
3. GENERAL COSMETIC APPEARANCE AS DEFINED BY MOLEX COSMETIC SPECIFICATION

Mechanical Structure Information for 2066400001

3.0 APPLICABLE DOCUMENTS

Document	Number	Description
Sale Drawing(SD)	SD-2066400001	Mechanical Dimension of the product
Application Guide(AS)	AS-2066400001	Antenna Application and surrounding
Packing Drawing(PK)	PK-2066400001	Product packaging specifications

4.0 GENERAL SPECIFICATION

4.2.1 Antenna

Description	Equipment	Requirement
Frequency Range	VNA E5071C	BD: 1561.098±2.046MHz; GPS: 1575.42±1.023MHz; GLONASS: 1602±5MHz.
VSWR	VNA E5071C	≤2.5
Peak Gain	OTA Chamber	4.5dBic Based on 7*7cm ground plane
Polarization	OTA Chamber	RHCP
Input Impedance	VNA E5071C	50 ohms

4.2.2 LNA

Description	Equipment	Requirement
Frequency Range	VNA E5071C	BD: 1561.098±2.046MHz; GPS: 1575.42±1.023MHz; GLONASS: 1602±5MHz.
DC Voltage	DC Supplier	3±0.3V
Gain	VNA E5071C	28±3dB
VSWR	VNA E5071C	≤2.5
Noise Figure	VNA E5071C	≤2.0dB
DC Current	DC Supplier	8.5±3m A (at 3.0V)

4.2.2Overall (Complete Module including RF connector)

Description	Equipment	Requirement
Frequency Range	VNA E5071C	BD: 1561.098±2.046MHz; GPS: 1575.42±1.023MHz; GLONASS: 1602±5MHz.

Output VSWR	VNA E5071C	≤2.5
Input Impedance	VNA E5071C	50 ohms

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.

5.0 ENVIRONMENTAL SPECIFICATION

DESCRIPTION	SPECIFICATION
Sine vibration	1. Vibration frequency: 10 Hz~1000 Hz. Vibration direction: X、Y、Z. Vibration acceleration: 27.8m/s^2. Time: 8 hours. 2. Antenna in non-working state, all the experimental samples were fixed on the shaking table. 3. Parts should meet RF spec before and after test. 4. No cosmetic problem (No bubble issue、No plating peeling off issue、 No mechanical damage.)
Low Temperature	1. Temperature:-40℃±2℃, time:24 hours. 2. There is no substantial obstruction to air flow across and around the samples, and the samples are not touching each other 3. Parts should meet RF spec before and after test. 4. No cosmetic problem (No bubble issue、No plating peeling off issue、 No mechanical damage.)
High Temperature	1. Temperature:85℃±2℃, time:96 hours. 2. There is no substantial obstruction to air flow across and around the samples, and the samples are not touching each other 3. Parts should meet RF spec before and after test. 4. No cosmetic problem (No bubble issue、No plating peeling off issue、 No mechanical damage.)

Pull Test	1. The antenna is fixed on the fixture, the cable pulled to the axial direction. Pull force≥15N
Electrostatic ESD	1. Antenna in working condition, ± 8KV Air discharge test: Plastic shell surface height of 15 mm at any position, the discharge interval is greater than 5s, the number of positive and negative 3 times; ± 6KV Contact Experiment: Metal connector shell contact discharge, discharge interval greater than 5s, the number of positive and negative 3 times 2. Parts should meet RF spec before and after test. 3. No cosmetic problem (No bubble issue、No plating peeling off issue、 No mechanical damage.)
Connector Salt mist test	1. Concentration of salt solution: 5%±1%, Temperature range: 35±2°C, PH value range: 6.5-7.2, Settling amount of salt fog: 1-2ml/(80cm2•h), Test time: 48h 2. Parts should meet RF spec before and after test. 3. No visible corrosion. Discoloration is acceptable.
temperature cycle	1. In an environment of 20 ° C, the temperature reached -40 ° C within 60 min, and the test device was stored for 90 min. 2. The temperature reached 20°C in 60 minutes. 3. In an environment of 20 ° C, the temperature reached 85 ° C within 90 min, and the test device was stored for 110 min. 4. The temperature reached 20°C in 70 minutes. 5. The cycle is repeated until a total of 40 cycles have been completed. Cycle time: 8 hours 6. Parts should meet RF spec before and after test. 7. No visible corrosion. Discoloration is acceptable.
Temperature Shock	1. 1.The device under test at -30 ℃⇔70 ℃ by 100 cycles, Dwell of 2. 30 mins, transition time between Dwell 10 secs (45 mins / cycle) 3. Parts should meet RF spec before and after test. 4. No cosmetic problem（No soldering problem；No adhesion problem of glue）
Constant damp heat	1. Test temperature: 40±2°C, test humidity: 95%, storage time: 504h 2. Parts should meet RF spec before and after test. 3. No cosmetic problem（No soldering problem；No adhesion problem of glue）
Mechanical shock	1. Impact acceleration: a=500±10% m/S2, 2. Enter the time: t = 6 m/s, each space axis (six axis) each test 10 times.。 3. Parts should meet RF spec before and after test. 4. No cosmetic problem（No soldering problem；No adhesion problem of glue）

6.0 ASSEMBLY PRECAUTIONS

During the assembly of the antenna in a device, the cable needs to be positioned away from the antenna flex to achieve best performance. The cable must be away from the pattern at least 5mm as shown in figure 6-1. If the cable crosses into the antenna flex, the antenna performance will be degraded.

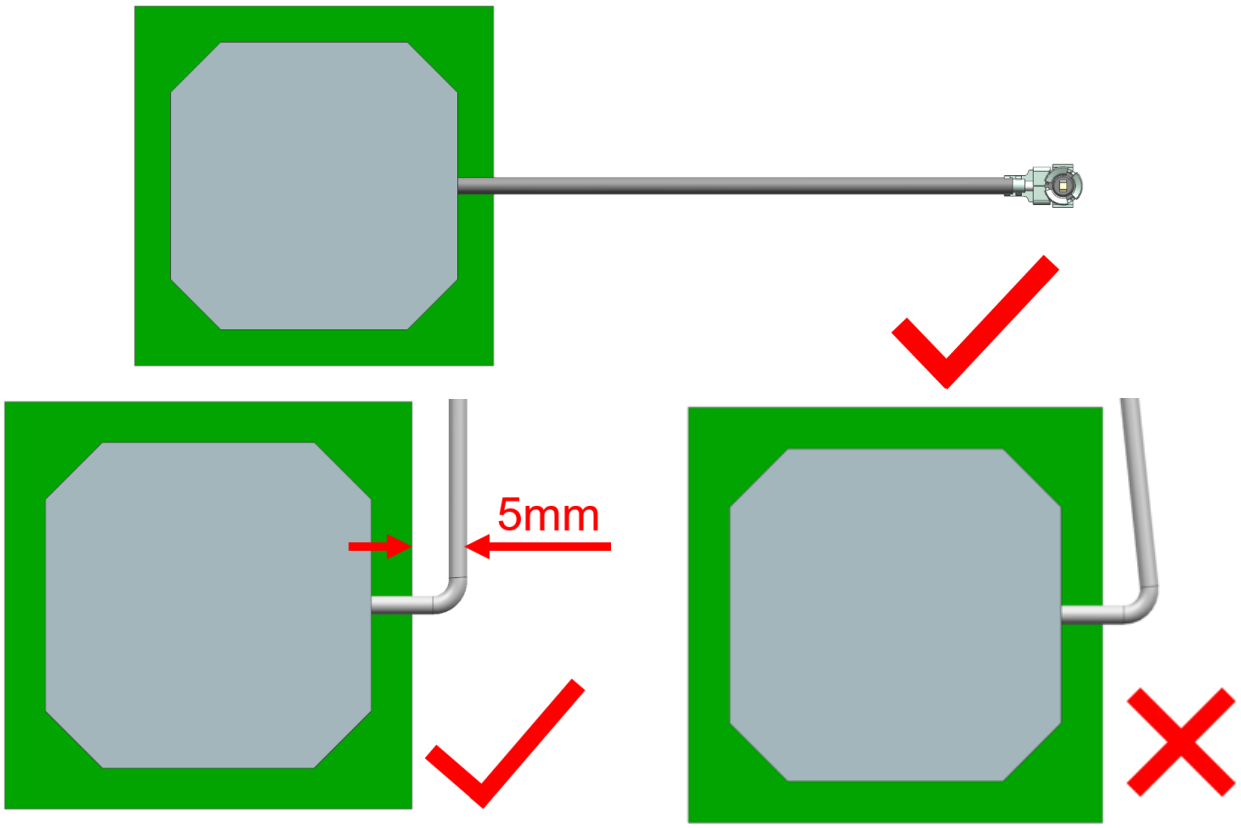
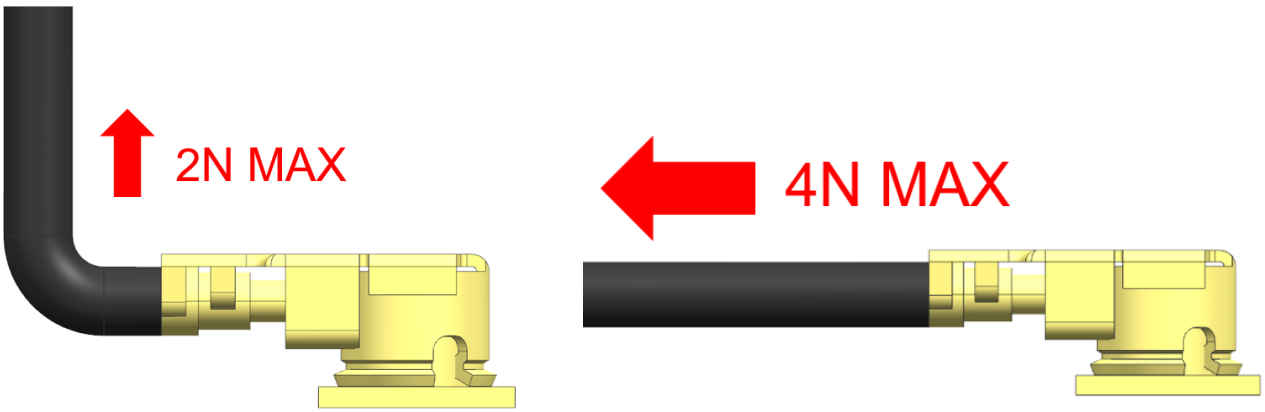
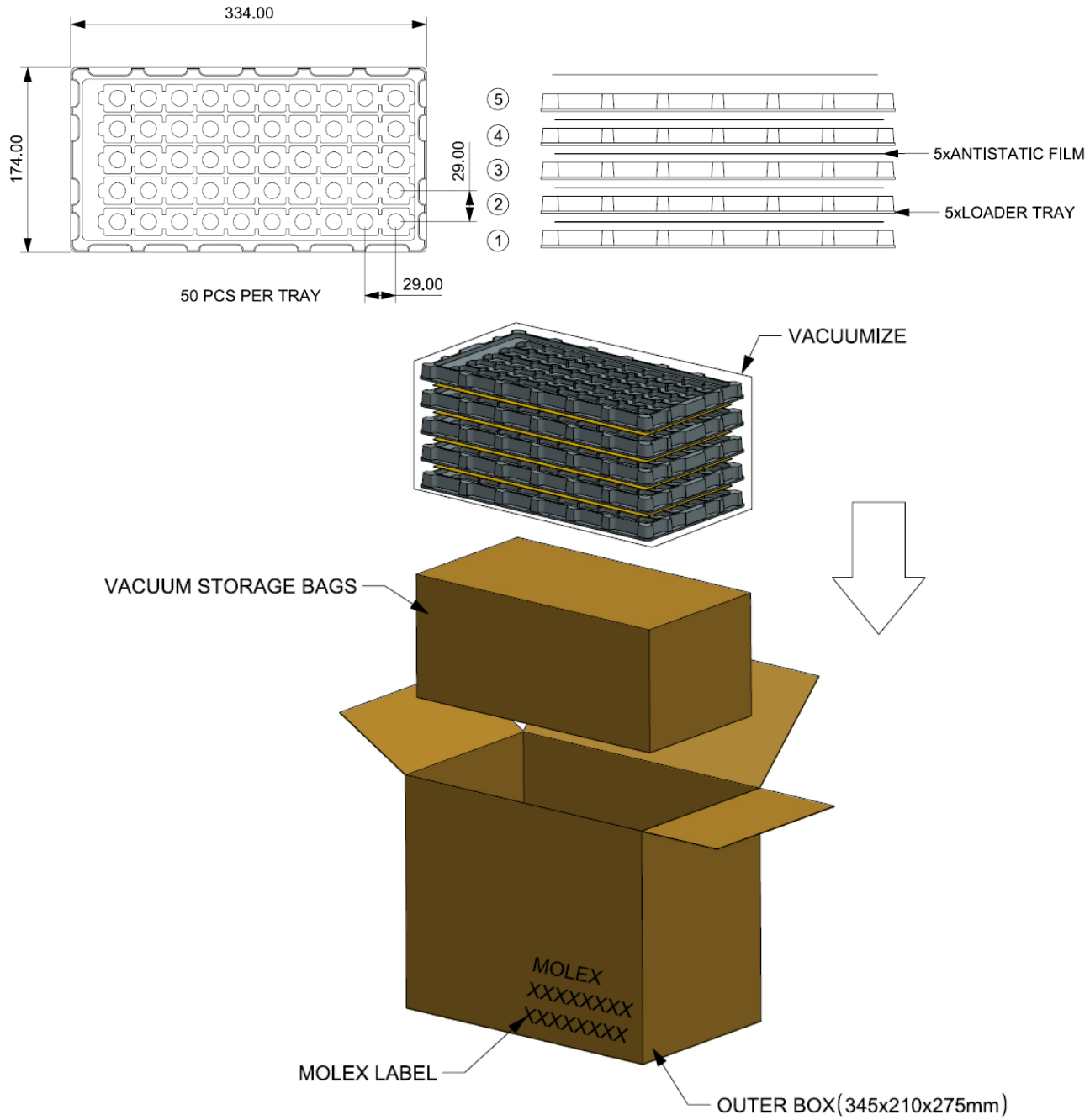


FIGURE 6-1 CABLE BENDING

After the connectors are mated, do not apply a load to the cable in excess of the values indicated in the diagram below.



7.0 PACKING



P/N	PCS/TRAY	TRAY/VACUUM BAG	VACUUM BAG/OUTER BOX	PCS/OUTER BOX
2066400001	50	5	4	1000 PCS

NOTES:
1. PRODUCTS MUST BE PACKED IN CARTONS AND SEALED UP WITH TAPE.
2. STICK LABEL WITH PART NUMBER AND DATE CODE
3. AFTER EACH TRAY IS FILLED WITH ANTI-STATIC FILM
4. THIS PACKAGING SPECIFICATION TO BE USED WITH
   "ACTIVE GNSS ANTENNA MODULE" (P/N:2066400001).

Packaging information for 2066400001