



APPLICATION SPECIFICATION

ACTIVE GNSS ANTENNA MODULE

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DOCUMENT NUMBER: AS-2066400001	CREATED / REVISED BY: Benson Liu 2018/03/06	CHECKED BY: Kang Cheng 2018/03/06	APPROVED BY: Chris Zhong 2018/03/06

ACTIVE GNSS ANTENNA MODULE

1.0 SCOPE

This specification describes the antenna application and surrounding. The information in this document is for reference and benchmark purposes only. The user is responsible for validating antenna RF performance based on the user's actual implementation.

Antenna illustrations in this document are generic representations. They are not intended to be an image of any antenna listed in the scope.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBER (S)

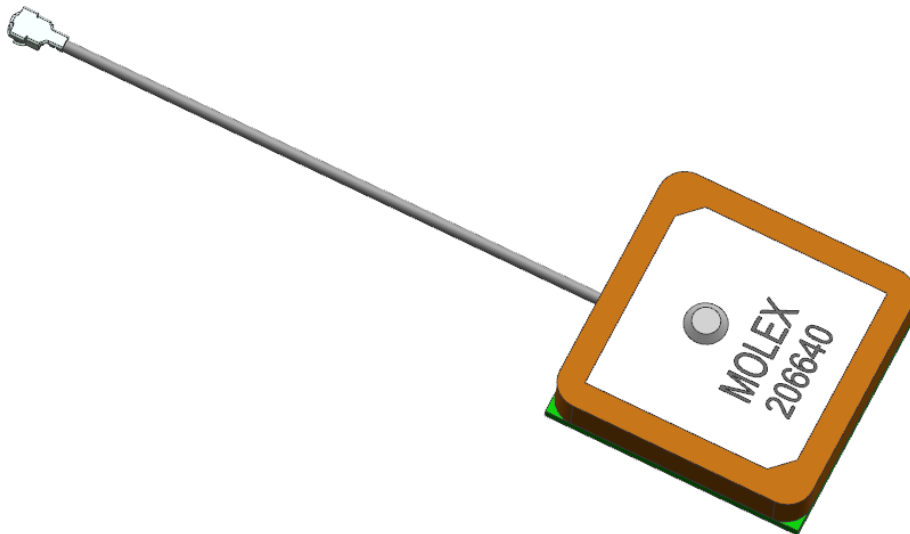
Product name: Active GNSS Antenna Module
Series Number: 206440

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 PRODUCT STRUCTURE INFORMATION

Please refer to PS-2066400001 for full information.



Molex 2066400001 Active GNSS Antenna Module 3D View

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3.0 APPLICABLE DOCUMENTS

Document	Number	Description
Sale Drawing(SD)	SD-2066400001	Mechanical Dimension of the product
Product Specification (PS)	PS-2066400001	Product Specification
Packing Drawing(PK)	PK-2066400001	Product packaging specifications

4.0 ANTENNA PERFORMANCE

4.1 RF TEST CONDITIONS

All measurements are done of the antenna mounted on a PCB which the size is 25*25*6.5mm with VNA Agilent 5071C and Over-The-Air (OTA) chamber. This module combines a ceramic patch antenna with two stages LNA with a thin coaxial cable.

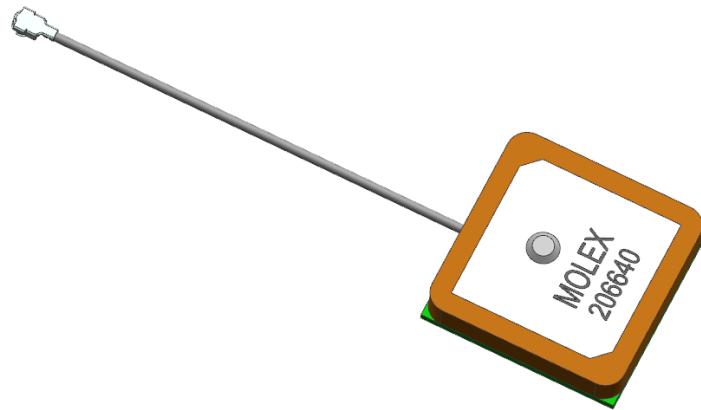


FIGURE4.1.1 ANTENNA LOADED WITH PCB

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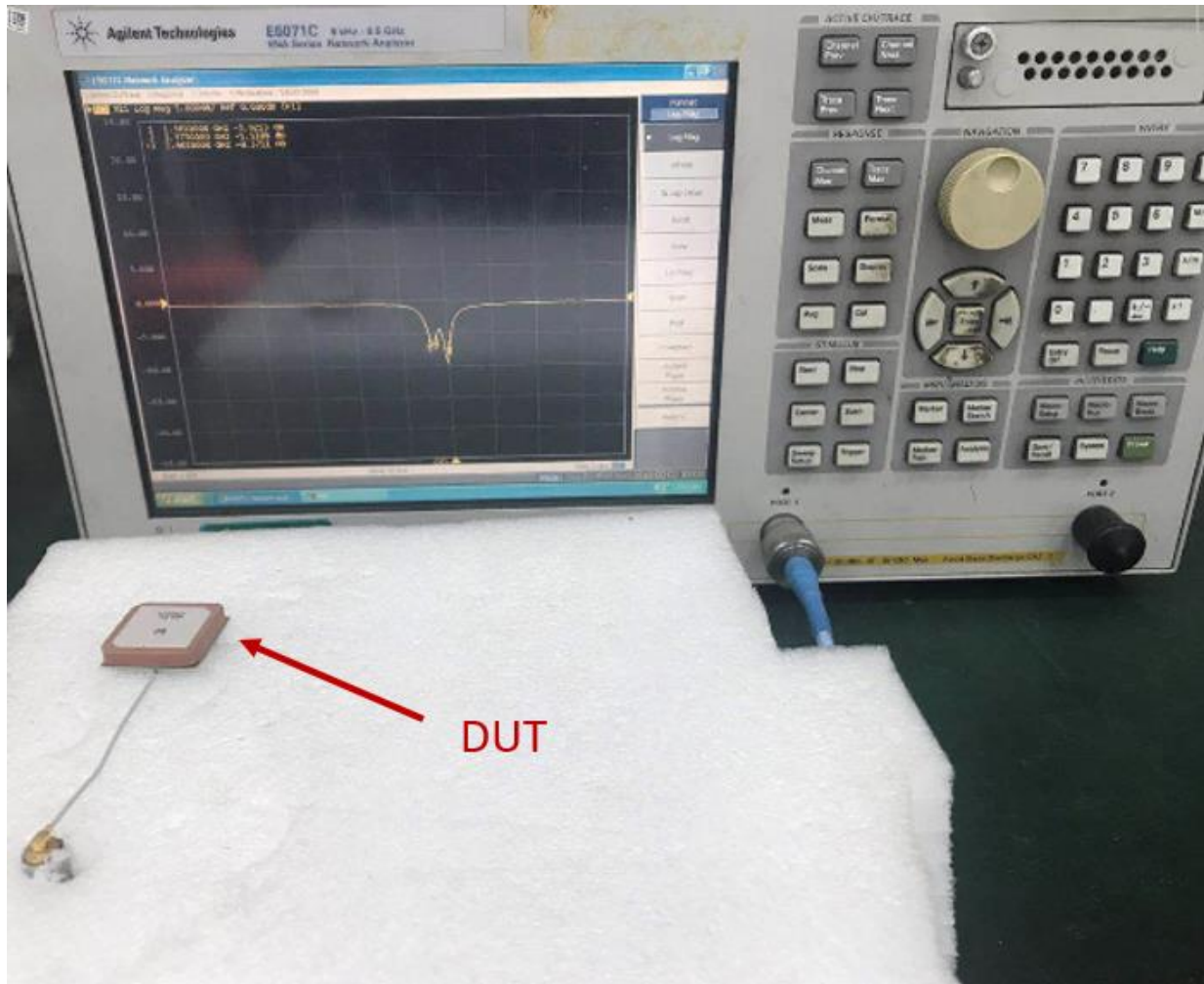


FIGURE 4.1.2 ANTENNA LOADED WITH PCB TESTED WITH VNA E5071C

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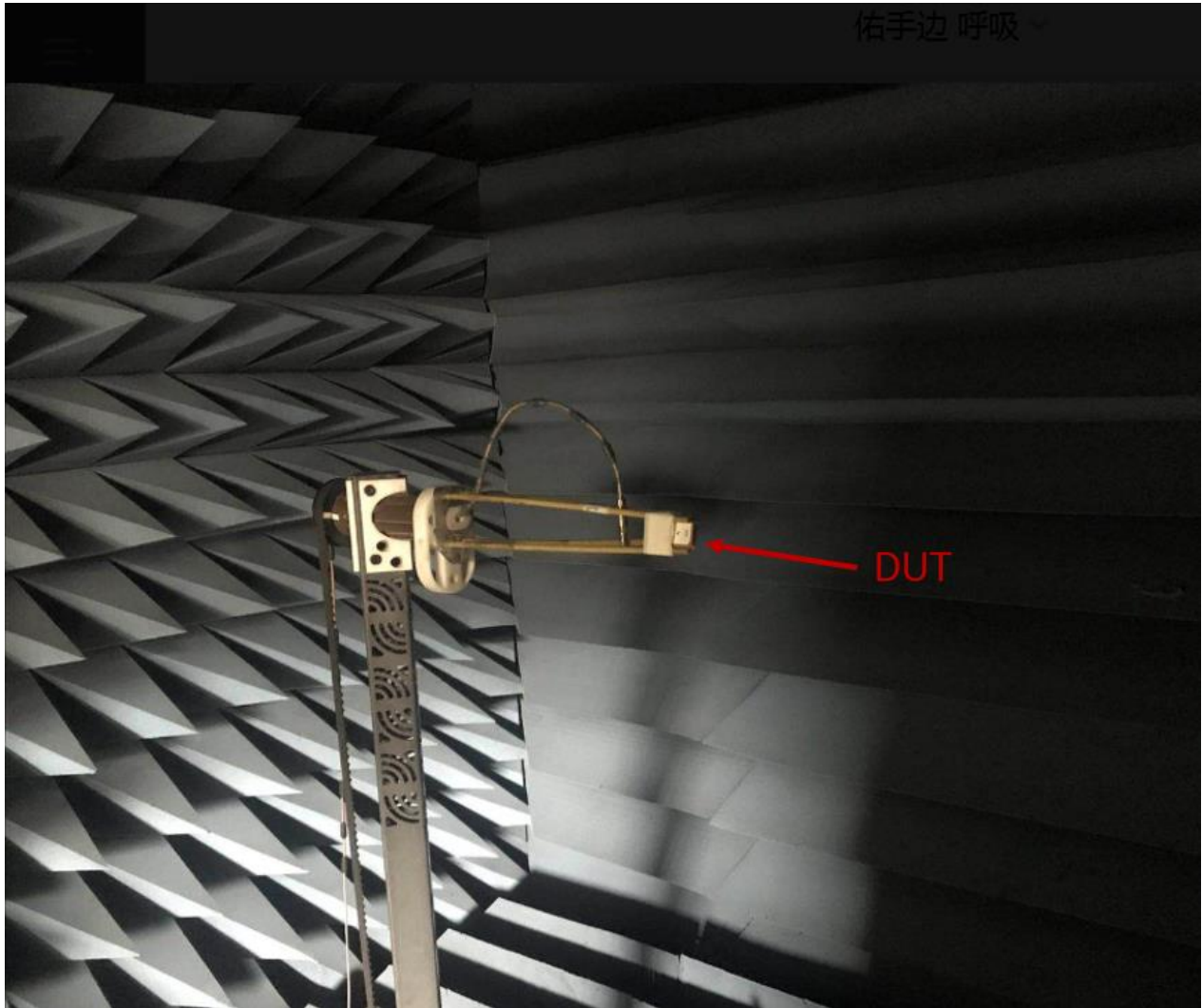
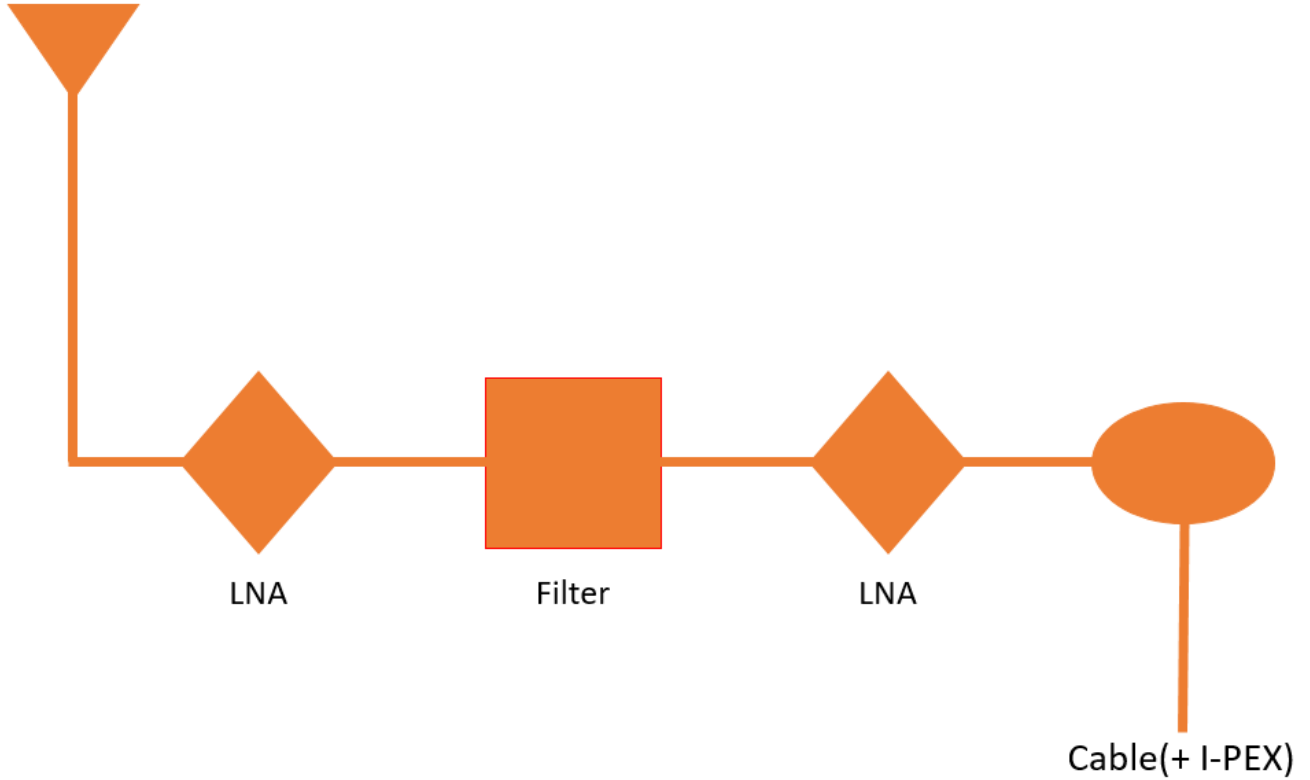


FIGURE4.1.3 ANTENNA LOADED WITH PCB TESTED IN OTA CHAMBER

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4.2 ACTIVE CIRCUIT DIAGRAM

ANTENNA



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APPLICATION SPECIFICATION

4.3 ANTENNA PERFORMANCE

4.3.1 Antenna

Description	Equipment	Requirement
Frequency Range	VNA E5071C	BD: 1561.098±2.046MHz; GPS: 1575.42±1.023MHz; GLONASS: 1602±5MHz.
VSWR	VNA E5071C	≤3
Peak Gain	OTA Chamber	4.5dBic Based on 7*7cm ground plane
Polarization	OTA Chamber	RHCP
Input Impedance	VNA E5071C	50 ohms

4.3.2 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±3mA (at 3.0V)

4.3.3 Overall (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

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4.4 ANTENNA TEST RESULT – RETURN LOSS

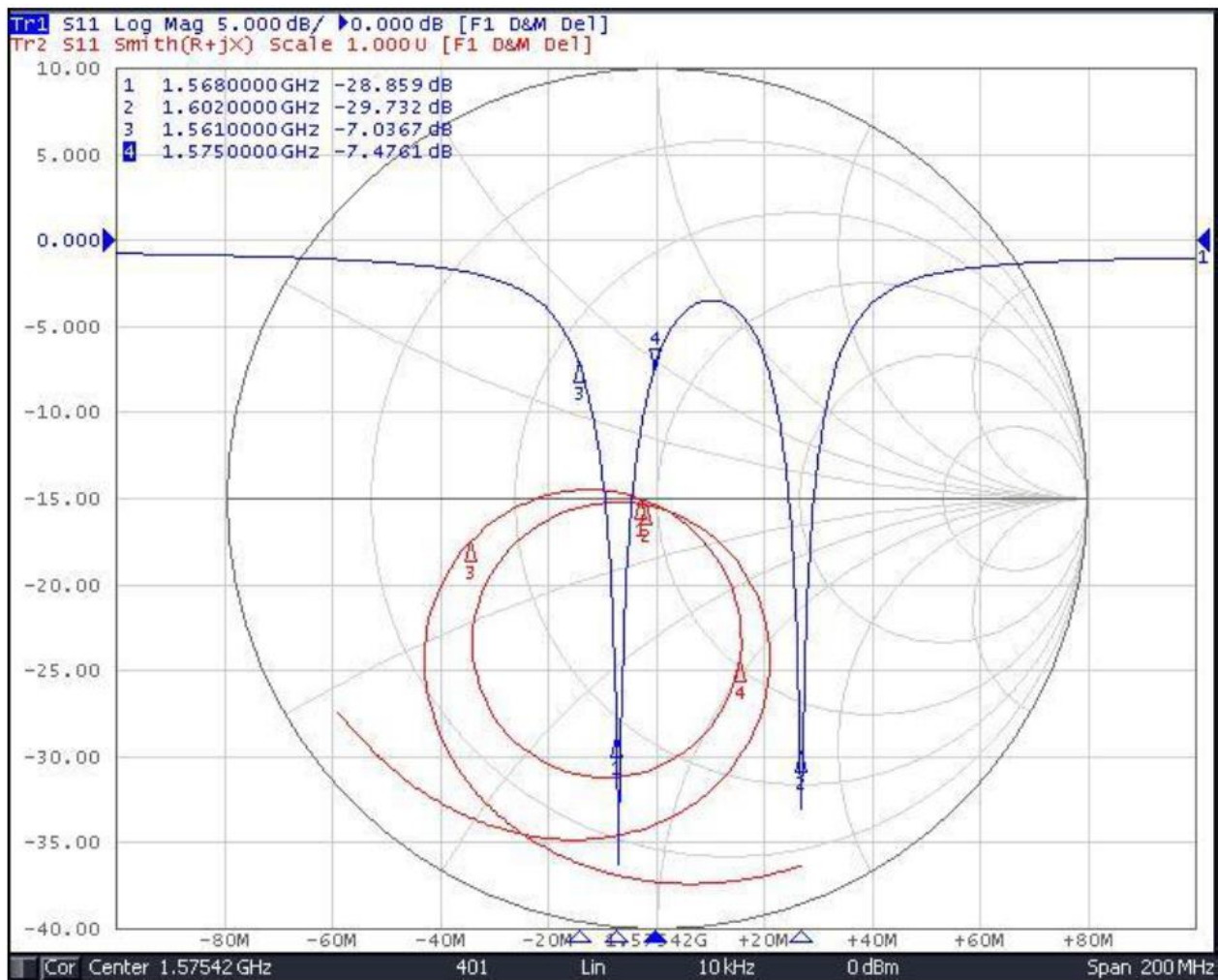


FIGURE 4.4 RETURN LOSS OF ANTENNA AT GNSS BAND IN FREE SPACE

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4.5 LNA- GAIN AND NOISE FIGURE

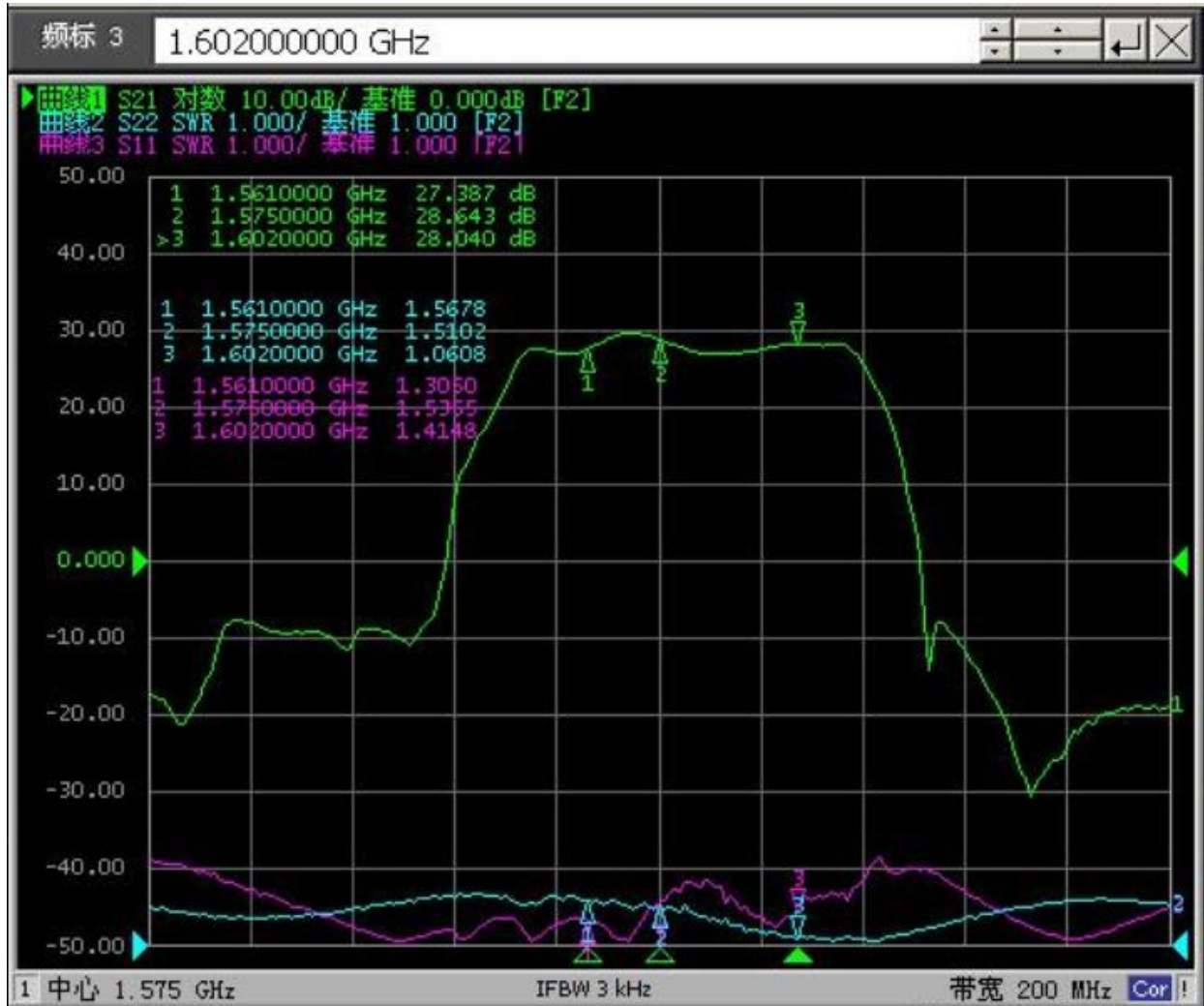


FIGURE 4.5 GAIN AND NOISE FIGURE OF LNA

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5.0 ASSEMBLY GUIDELINE

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 5-1. If the cable crosses into the antenna flex, the antenna performance will be degraded.

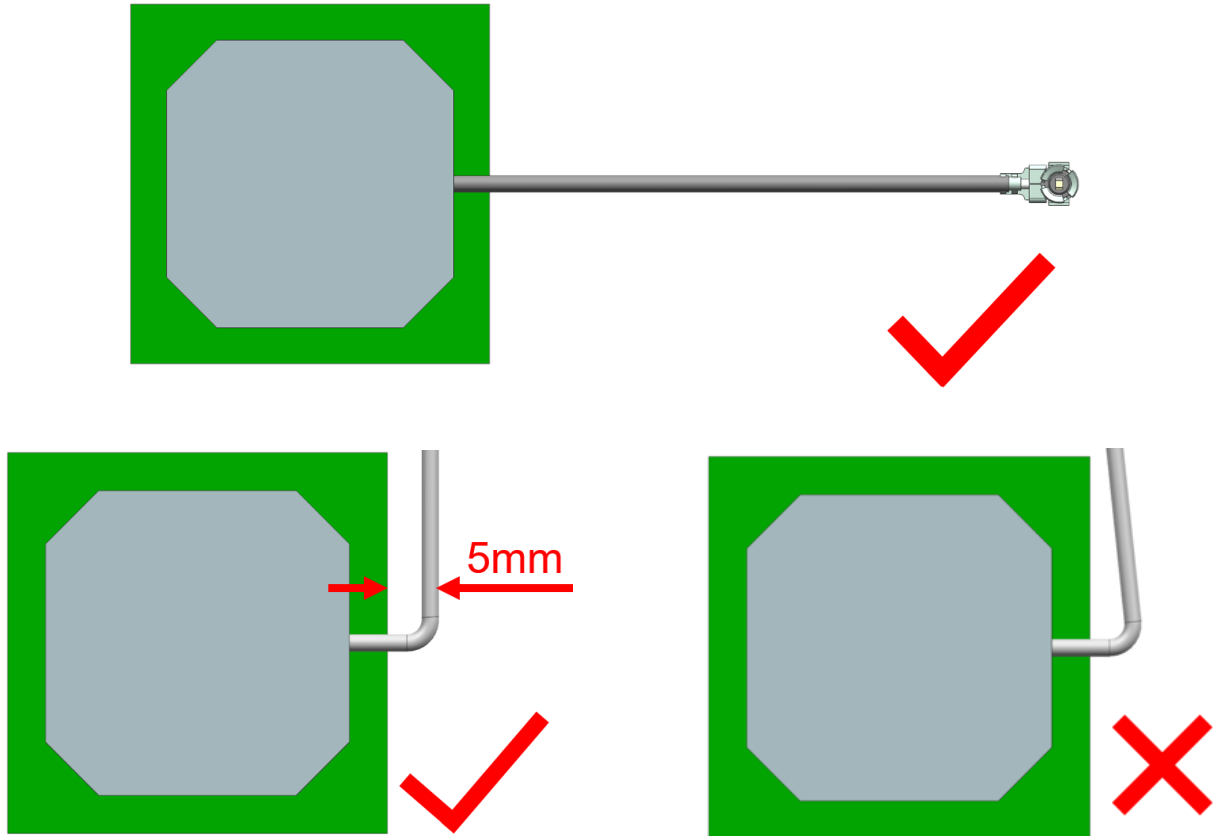
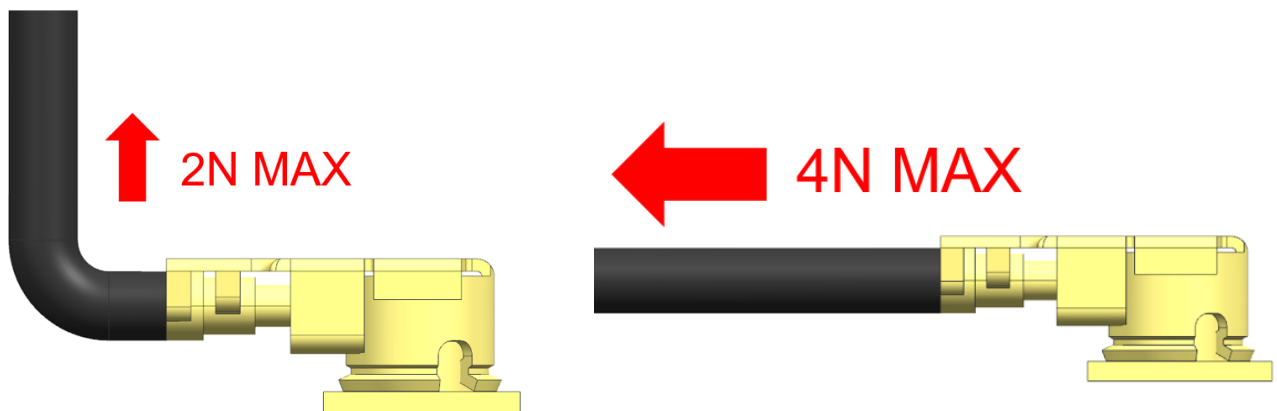


FIGURE 5-1 CABLE BENDING

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



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