TITLE

3IN1 (4G/GPS/WiFi)

TABLE OF CONTENTS

3IN1 (4G/GPS/WIFI)

1.0 SCOPE

This specification describes the antenna application. The information in this document is for reference and benchmark purposes only. The user is responsible for validating antenna RF performance based on 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: 3in1 (GPS/4G/WIFI)
Series Number: 2068663000

2.2 DESCRIPTION

206866 is 4G/GPS/WiFi 3in1 external antenna for use in Automotive Telematics, Transportation and remote monitoring applications.

2.3 PRODUCT STRUCTURE INFORMATION

Please refer to PS-2068663000 for full information.

FIGURE 2.3.1 DIMENSION OF THE 3IN1 (4G/GPS/WiFi)

3.0 APPLICABLE DOCUMENTS

DOCUMENT	NUMBER	DESCRIPTION
Sale Drawing(SD)	SD-2068663000	Mechanical Dimension of the product
Product Specification (PS)	PS-2068663000	Product Specification
Packing Drawing(PK)	PK-2068663000	Product packaging specifications

4.0 ANTENNA PERFORMANCE

4.1 RF TEST CONDITIONS

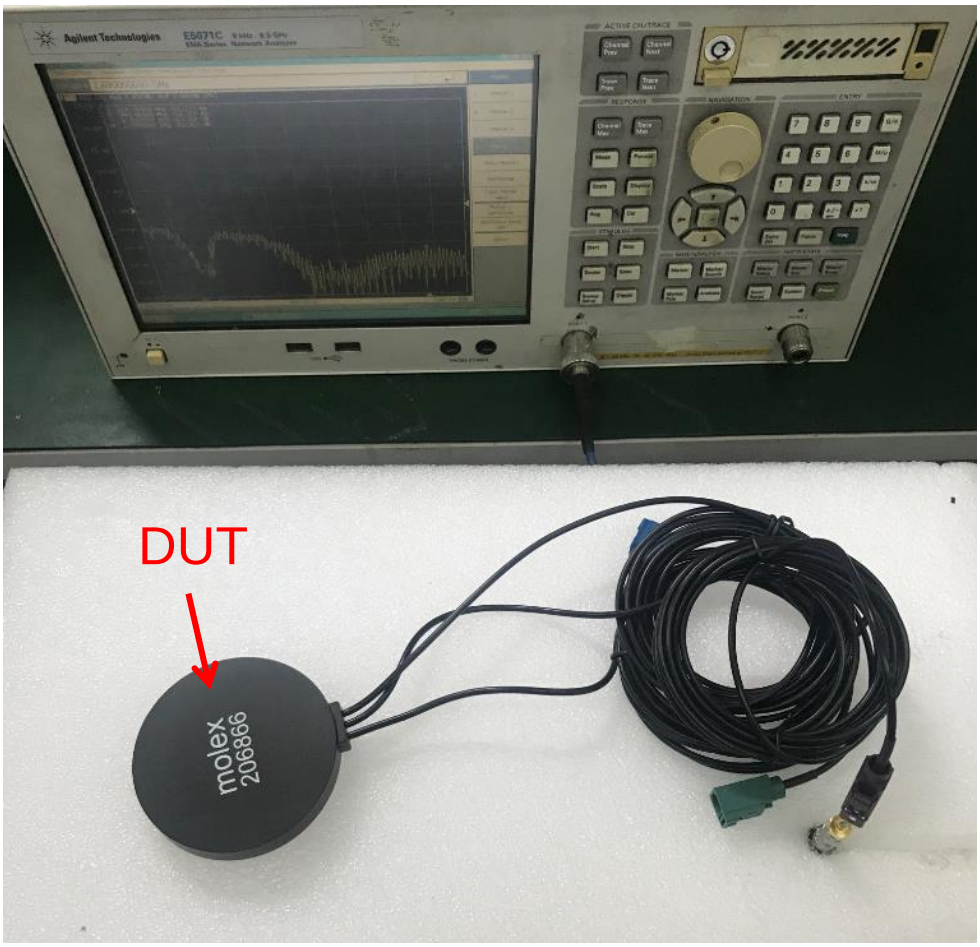


FIGURE4.1.1 ANTENNA TESTED WITH VNA E5071C

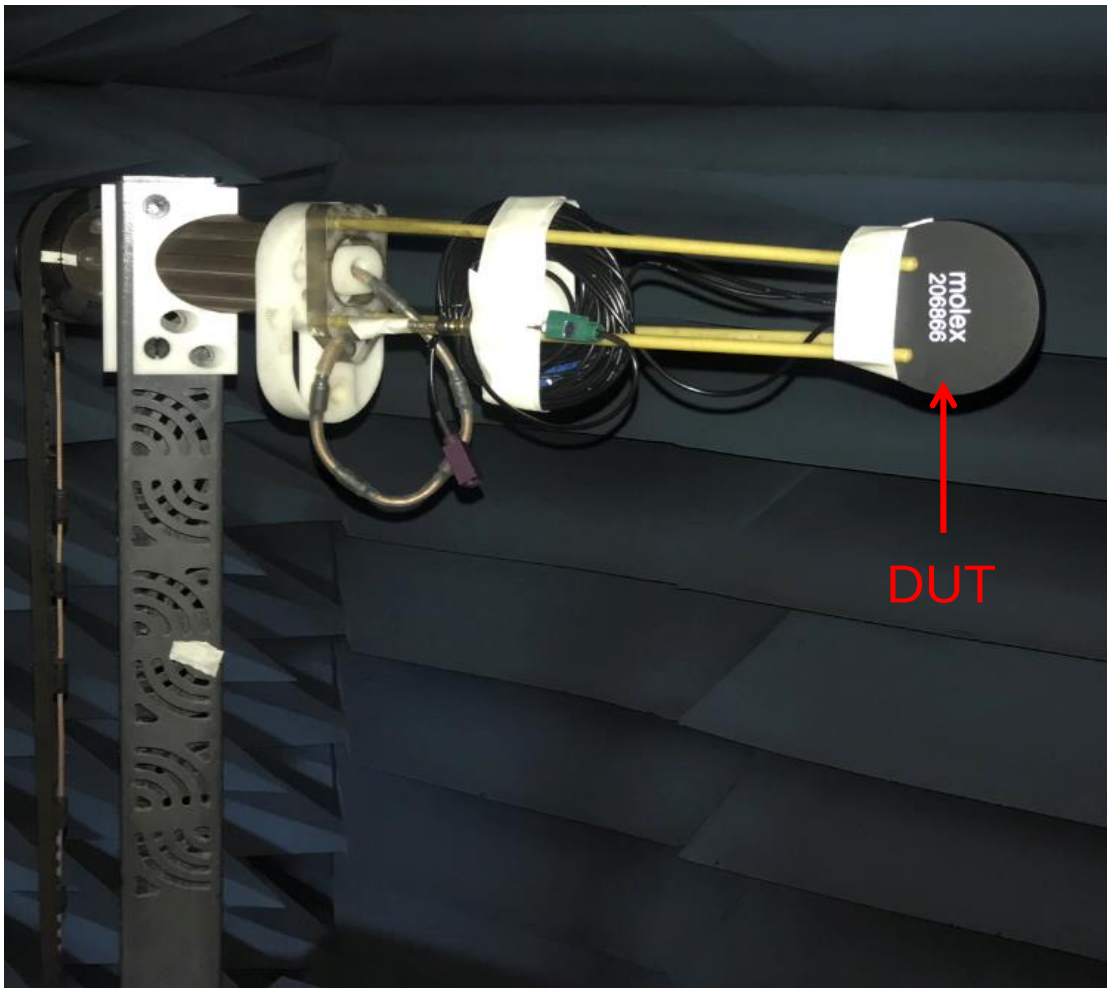


FIGURE4.1.2 ANTENNA TESTED WITH OTA CHAMBER

4.2 ANTENNA PERFORMANCE

4.2.1 GPS ANTENNA		
DESCRIPTION	**EQUIPMENT**	**REQUIREMENT**
Frequency Range	VNA E5071C	1575.42±1.023 MHz
VSWR	VNA E5071C	≤2.0
Average Total Efficiency	OTA Chamber	26.2%
Peak Gain (Max)	OTA Chamber	3dBic Based on 70*70mm ground plane
Polarization	OTA Chamber	RHCP
Input Impedance	VNA E5071C	50 ohms
4.2.2 GPS LNA		
DESCRIPTION	**EQUIPMENT**	**REQUIREMENT**
Frequency Range	VNA E5071C	1575.42±1.023 MHz
DC Voltage	DC Supplier	3-5V
Gain	VNA E5071C	28±3dB
VSWR	VNA E5071C	≤2.0
Noise Figure	VNA E5071C	≤1.5dB
DC Current	DC Supplier	11±3m A (at 3.3V)

4.2.3 4G ANTENNA

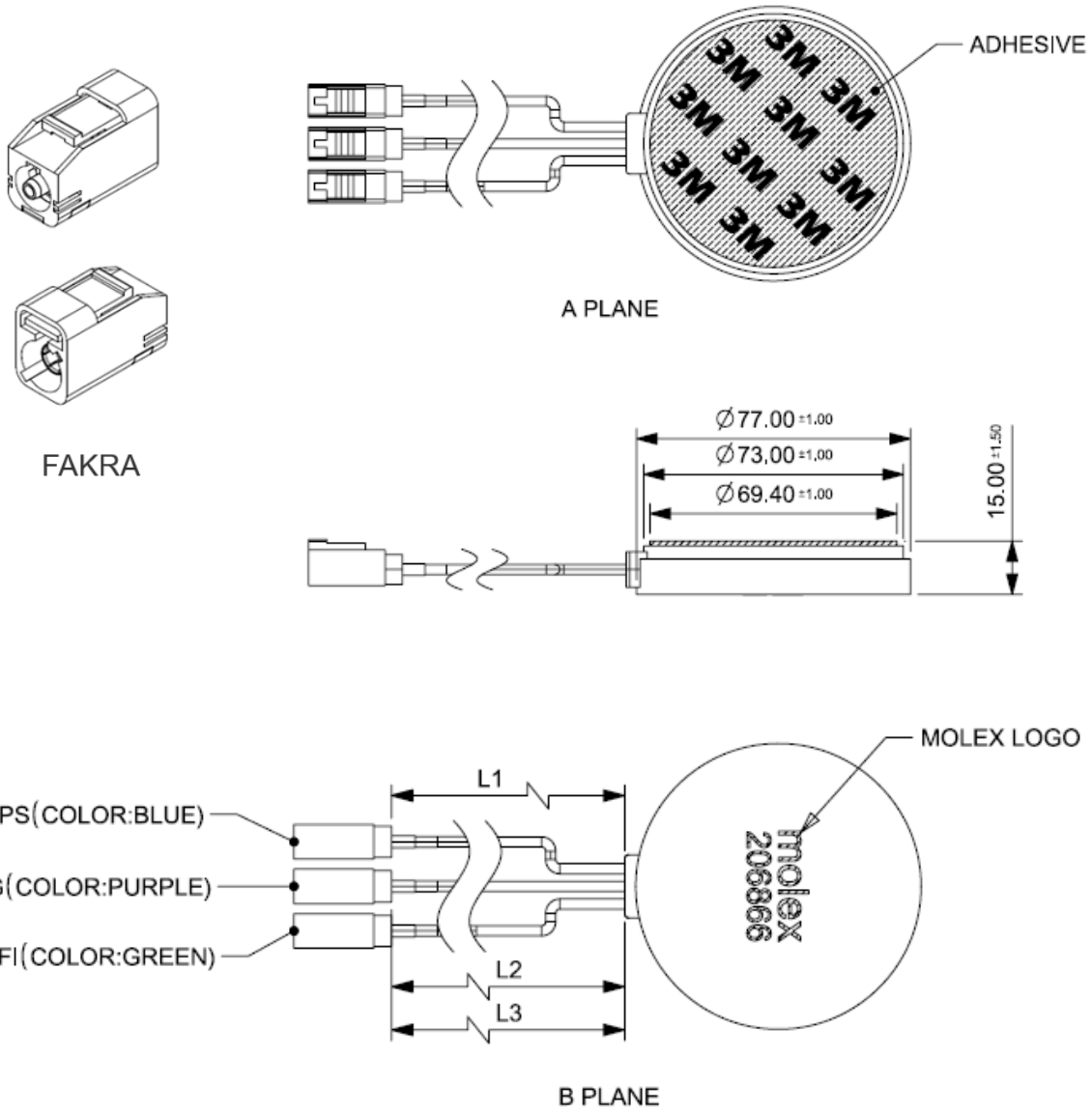
DESCRIPTION	EQUIPMENT	REQUIREMENT	
Frequency Range	VNA E5071C	824-960MHz	1710-2690MHz
Average Total Efficiency	OTA Chamber	21.6%	27.2%
Peak Gain (Max)	OTA Chamber	-0.5dBi type	0dBi type
Polarization	OTA Chamber	Linear	
VSWR	VNA E5071C	≤3.0	
Input Impedance	VNA E5071C	50 ohms	

4.2.4 WIFI&BT ANTENNA

DESCRIPTION	EQUIPMENT	REQUIREMENT
Frequency Range	VNA E5071C	2.4-2.5GHz
VSWR	VNA E5071C	≤2.0
Average Total Efficiency	OTA Chamber	23.3%
Peak Gain (Max)	OTA Chamber	-2.7dBi
Polarization	OTA Chamber	Linear
Input Impedance	VNA E5071C	50 ohms

5.0 PRODUCT STRUCTURE INFORMATION

P/N	2068663000



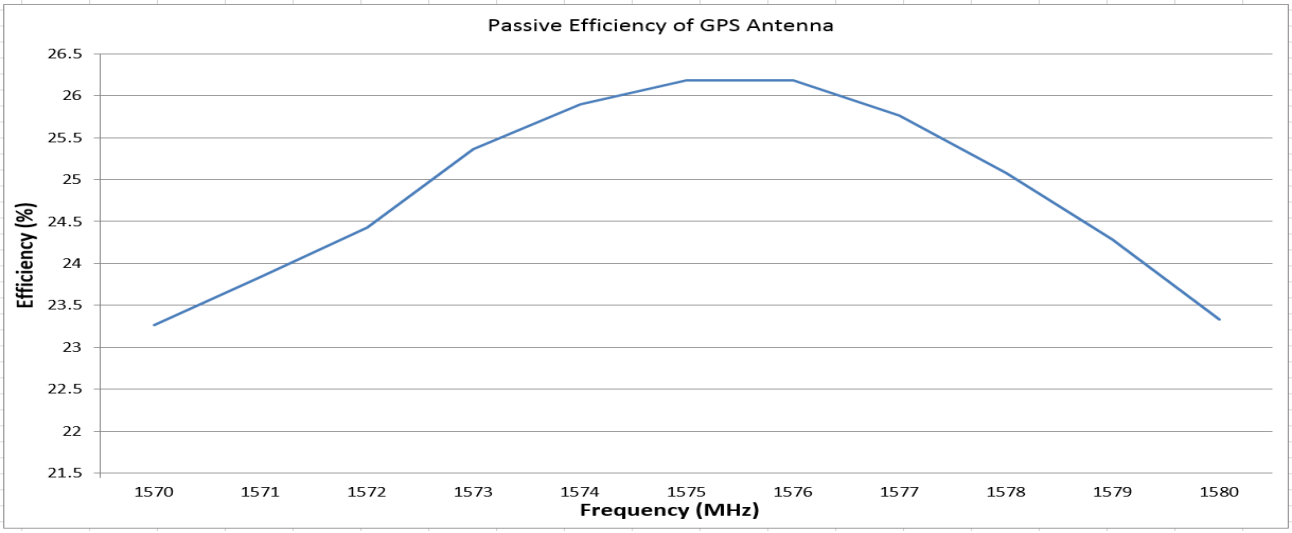
NOTE:
1. CABLE LENGTH:L1=3000±100mm;L2=3000±100mm;
L3=3000±100mm
2. FOAM GLUE FIXED ON THE A SIDE, B SIDE UP WHEN USED.
3. MATERIAL PLEAES REFER TO TABLE A.

TABLE A

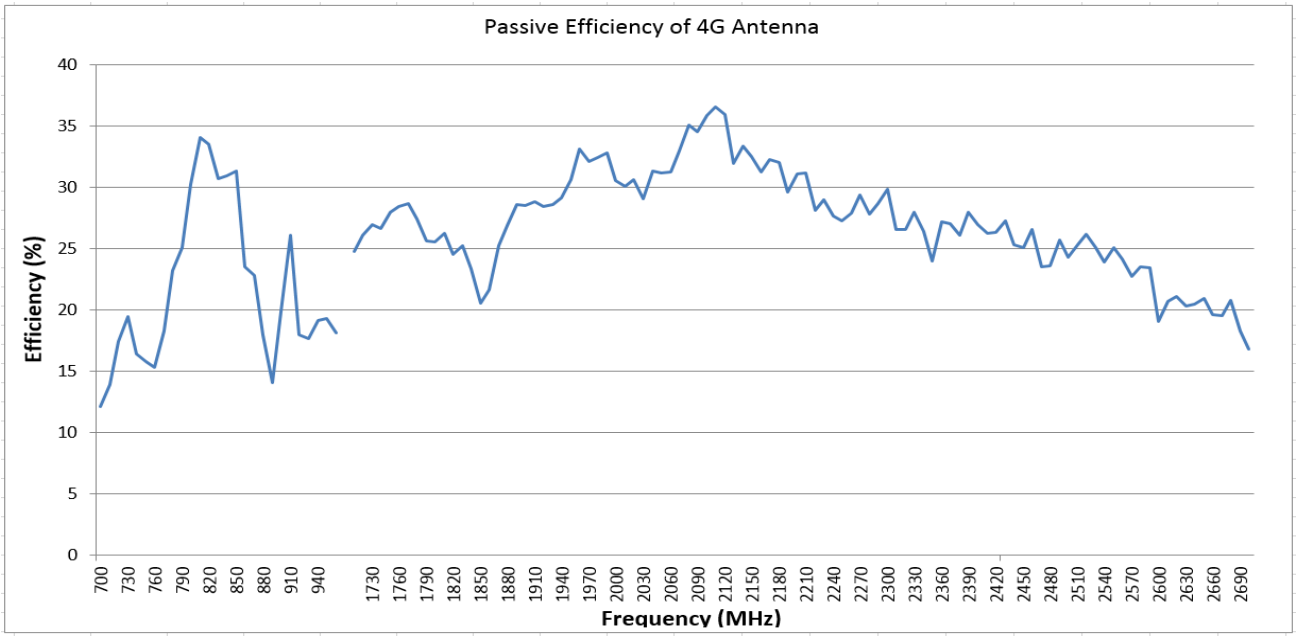
ITE	MATERIAL	DESCRIPTION
1	ANTENNA	DIELECTRIC CERAMIC
2	PLASTIC CASE	ABS
3	PCB	FR4
4	SHIELDING CASE	TINPLATE
5	CABLE	RG174
6	GPS CONNECTOR	FAKRA-C
7	GSM CONNECTOR	FAKRA-D
8	WIFI CONNECTOR	FAKRA-E
9	ADHSIVE	3M

Mechanical Structure Information for 2068663000

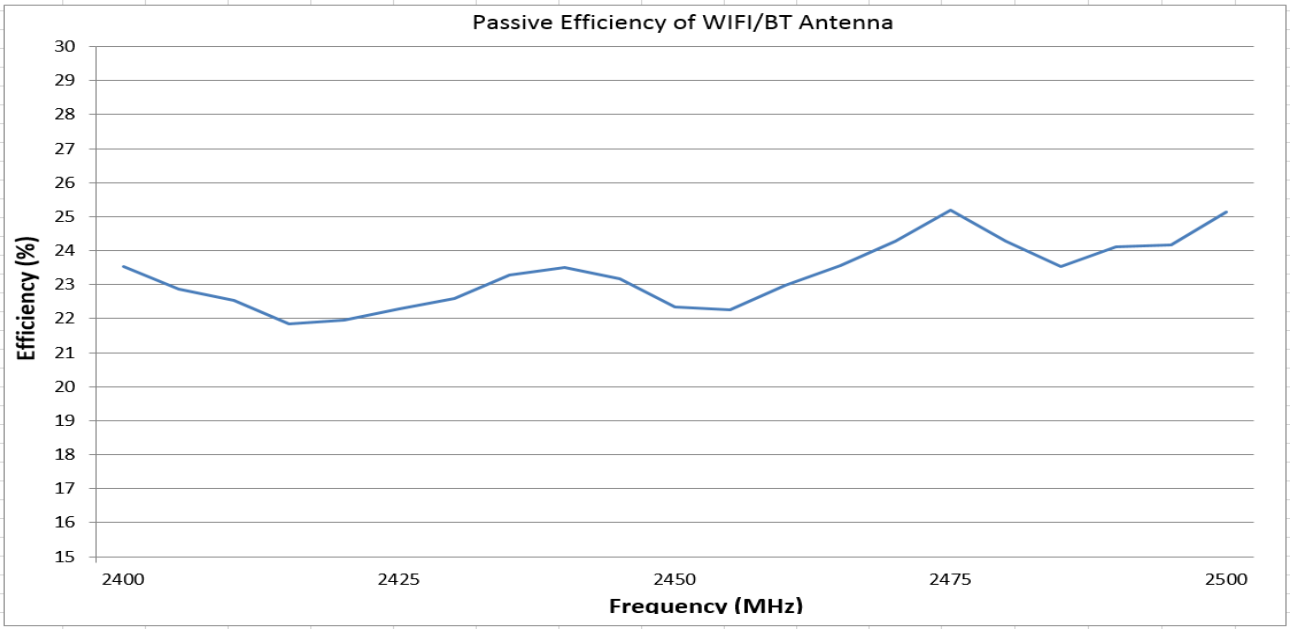
6.0 ANTENNA EFFICIENCY



6.1 ANTENNA PASSIVE EFFICIENCY AT GPS BAND IN FREE SPACE



6.2 ANTENNA PASSIVE EFFICIENCY AT 4G BAND IN FREE SPACE



6.3 ANTENNA PASSIVE EFFICIENCY AT WIFI&BT BAND IN FREE SPACE

7.0 RADIATION PATTERN

7.1 MAIN ANTENNA 2D RADIATION PATTERN

All measurements in this document are done with cable length of 3000mm

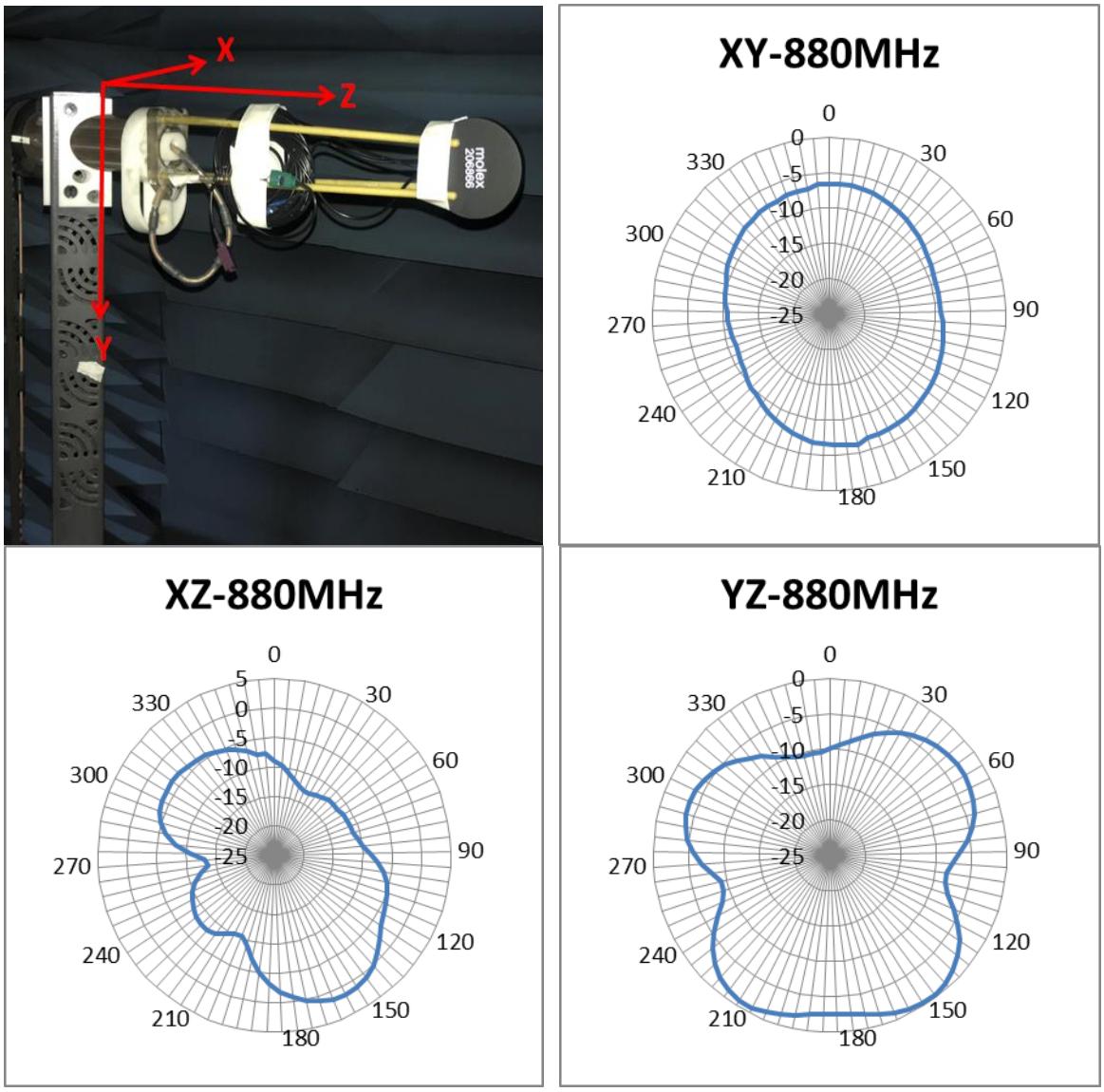


FIGURE 7.1.1 2D RADIATION PATTERN OF ANTENNA AT 880MHZ IN FREE SPACE

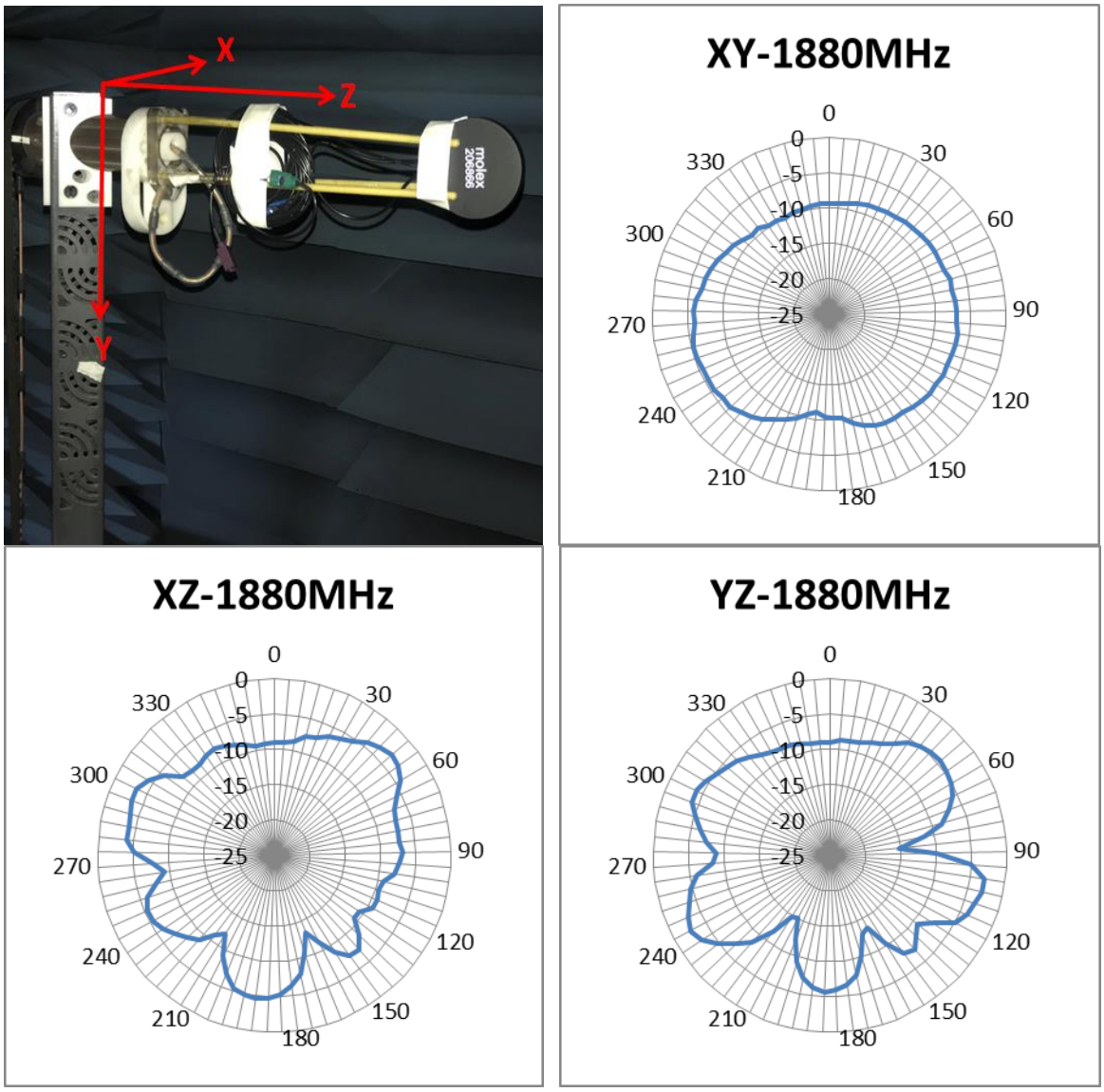


FIGURE 7.1.2 2D RADIATION PATTERN OF ANTENNA AT 1880MHZ IN FREE SPACE

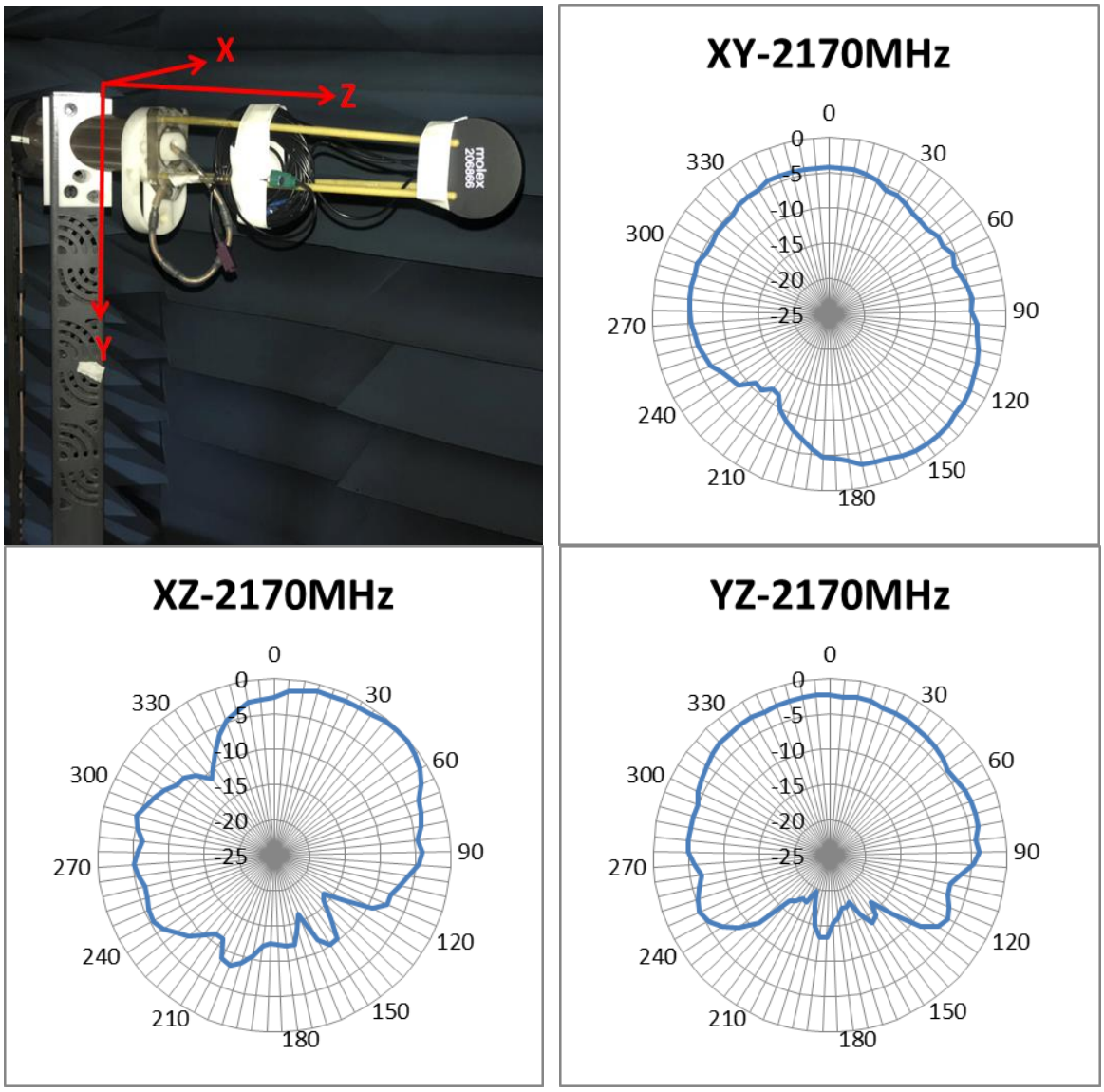


FIGURE 7.1.3 2D RADIATION PATTERN OF ANTENNA AT 2170MHZ IN FREE SPACE

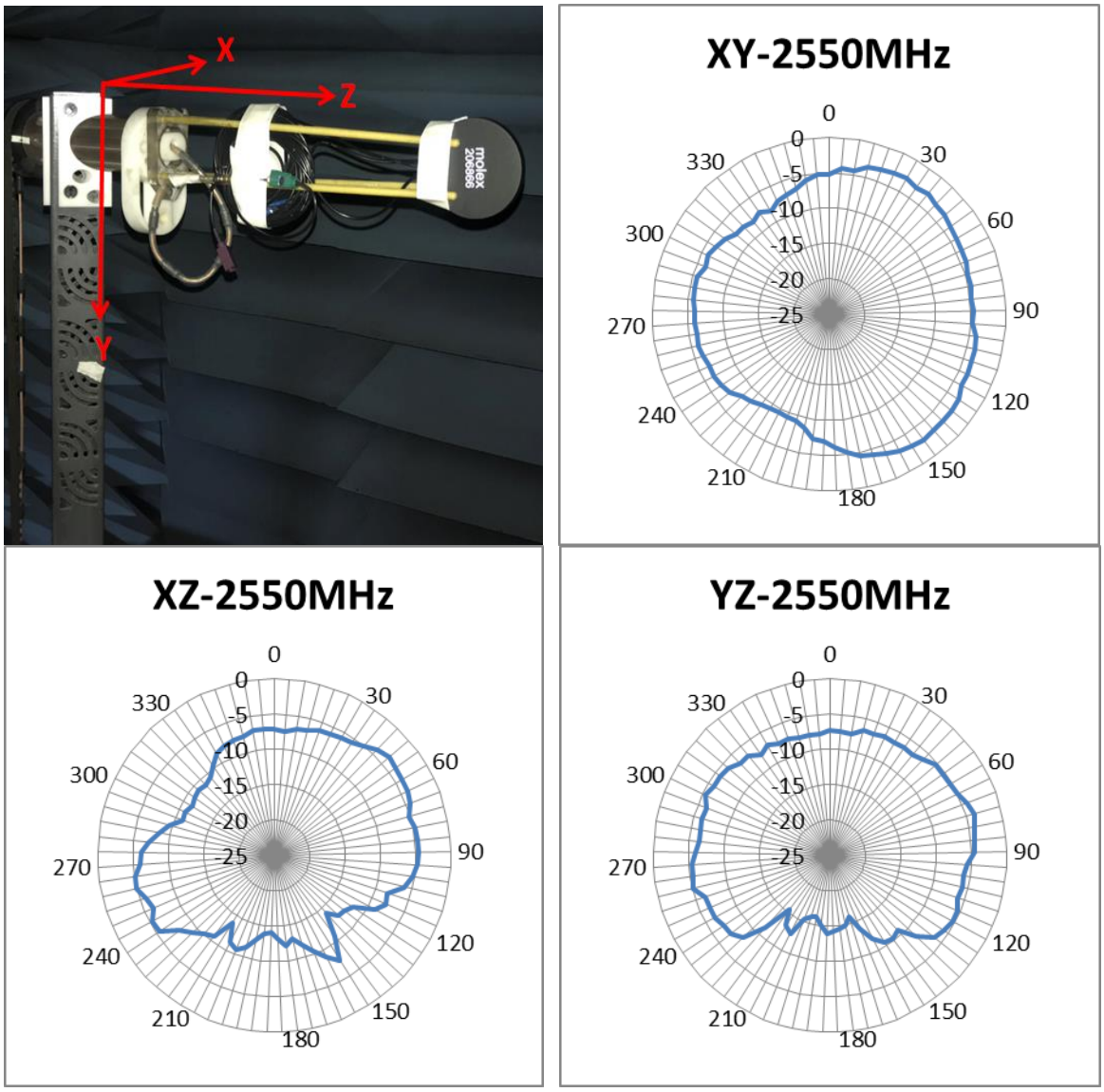


FIGURE 7.1.4 2D RADIATION PATTERN OF ANTENNA AT 2550MHZ IN FREE SPACE

7.2 3D RADIATION PATTERN

All measurements in this document are done with cable length of 3000mm

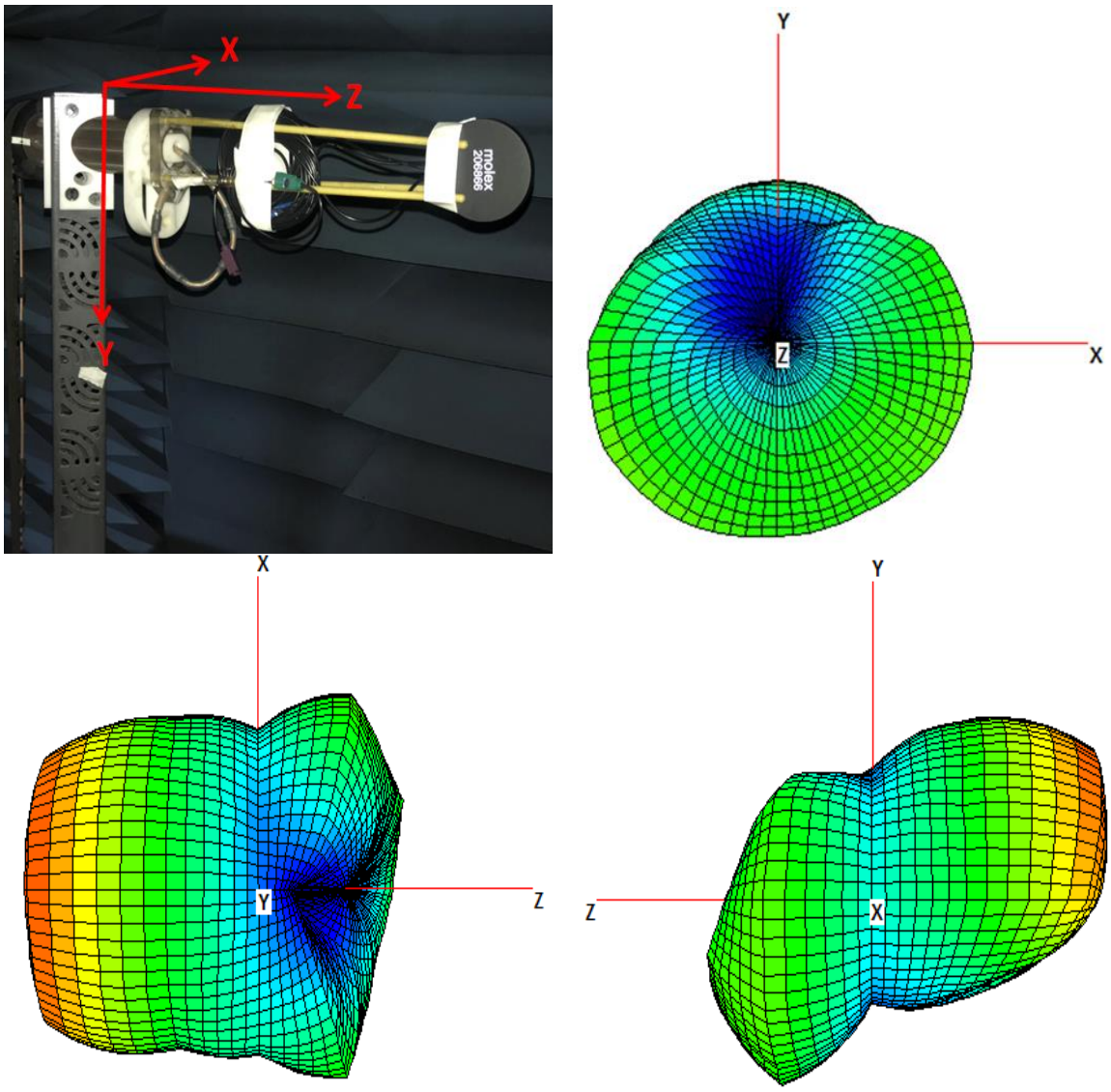


FIGURE 7.2.1 3D RADIATION PATTERN OF ANTENNA AT 880MHZ IN FREE SPACE

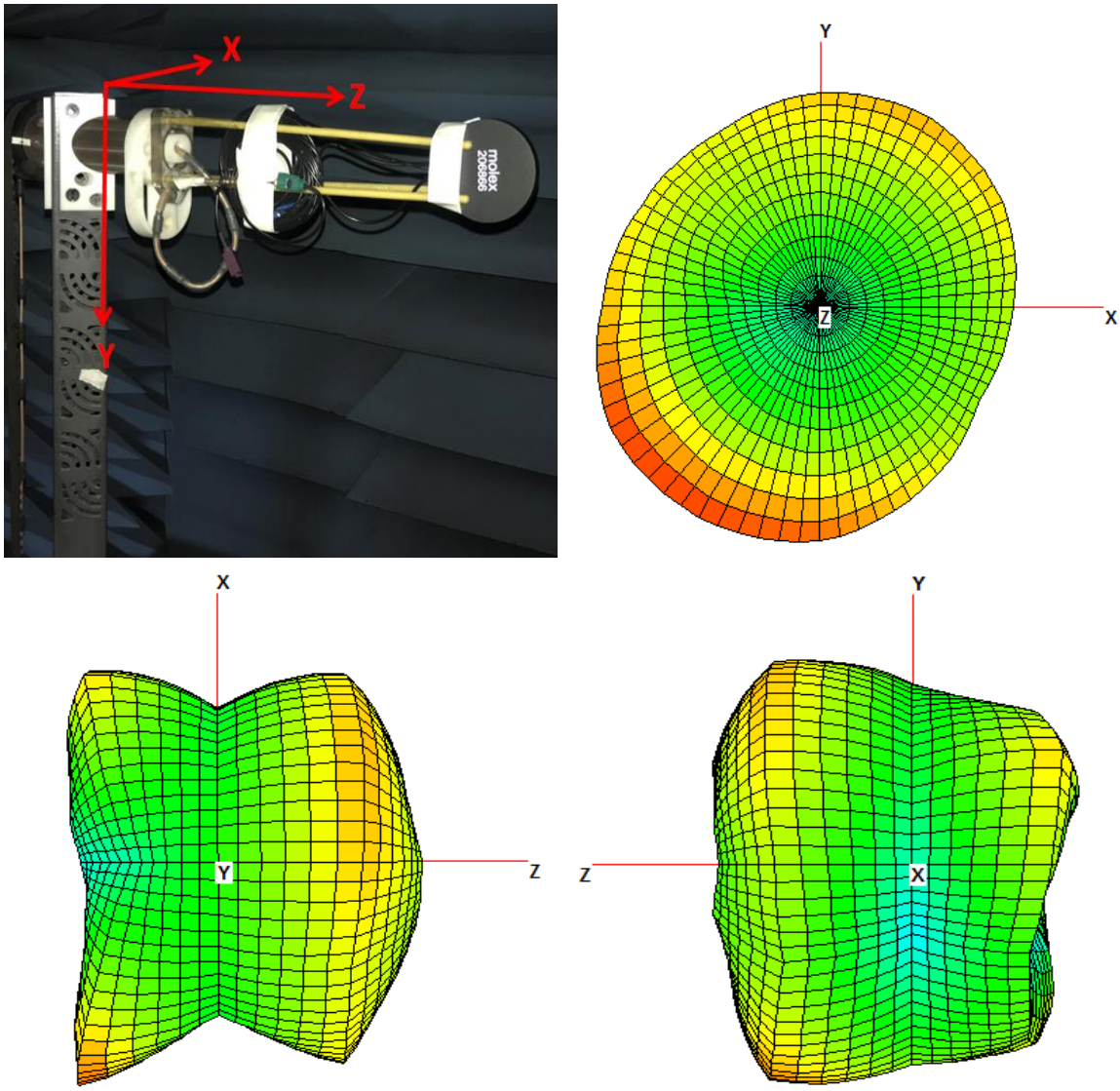


FIGURE 7.2.2 3D RADIATION PATTERN OF ANTENNA AT 1880MHZ IN FREE SPACE

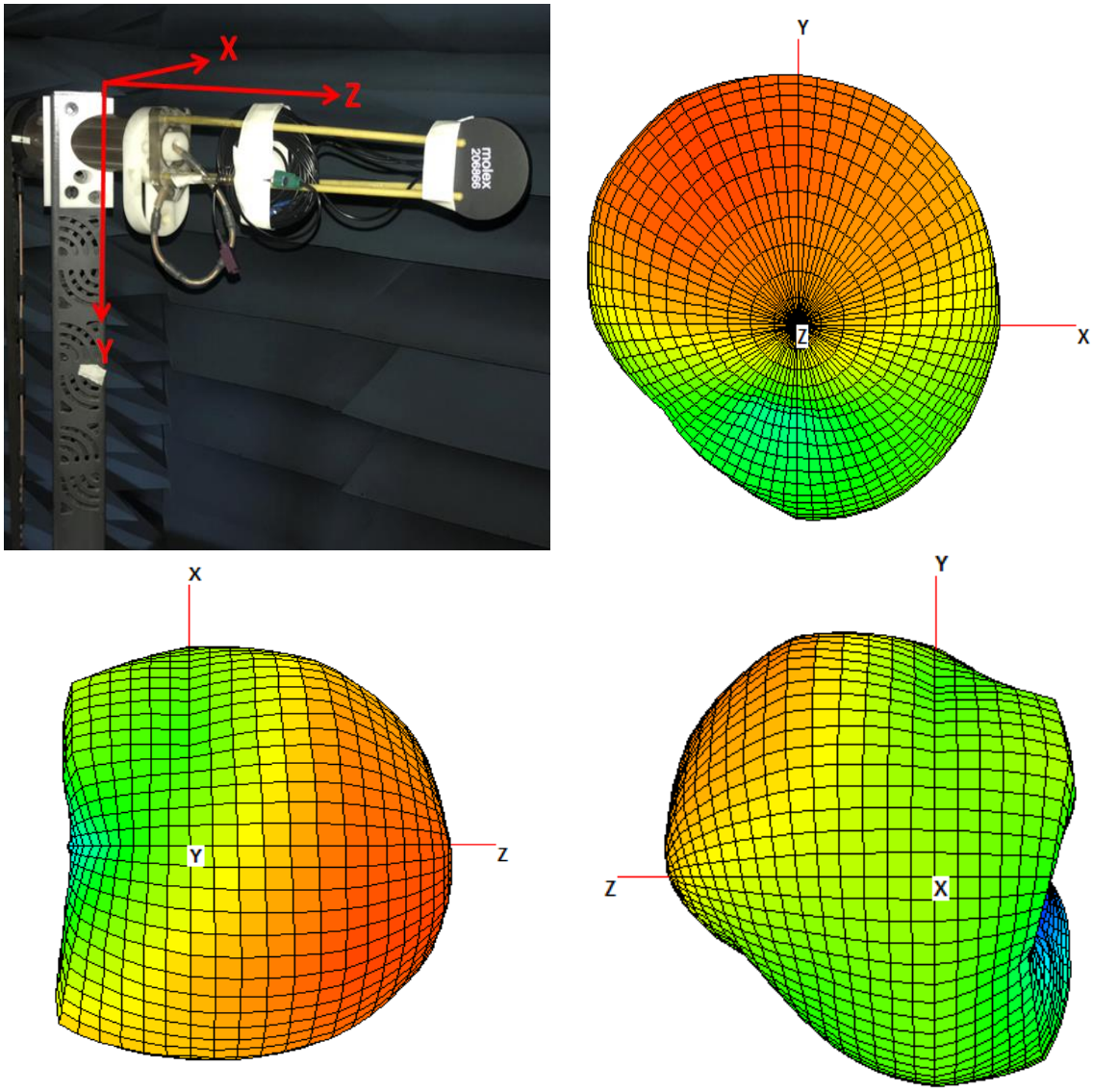


FIGURE 7.2.3 3D RADIATION PATTERN OF ANTENNA AT 2170MHZ IN FREE SPACE

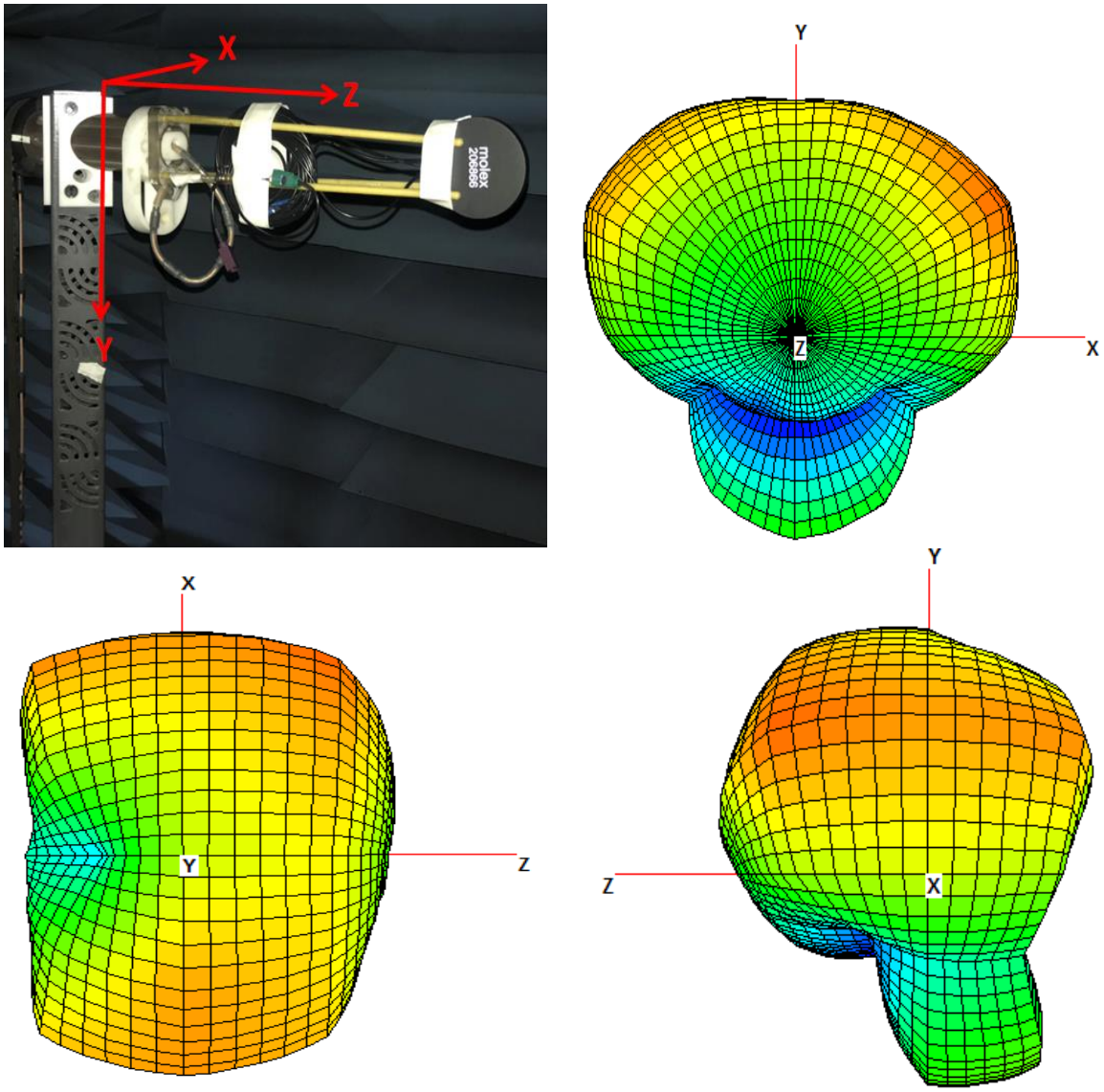


FIGURE 7.2.3 3D RADIATION PATTERN OF ANTENNA AT 2170MHZ IN FREE SPACE

7.3 WIFI ANTENNA 2D RADIATION PATTERN

All measurements in this document are done with cable length of 3000mm

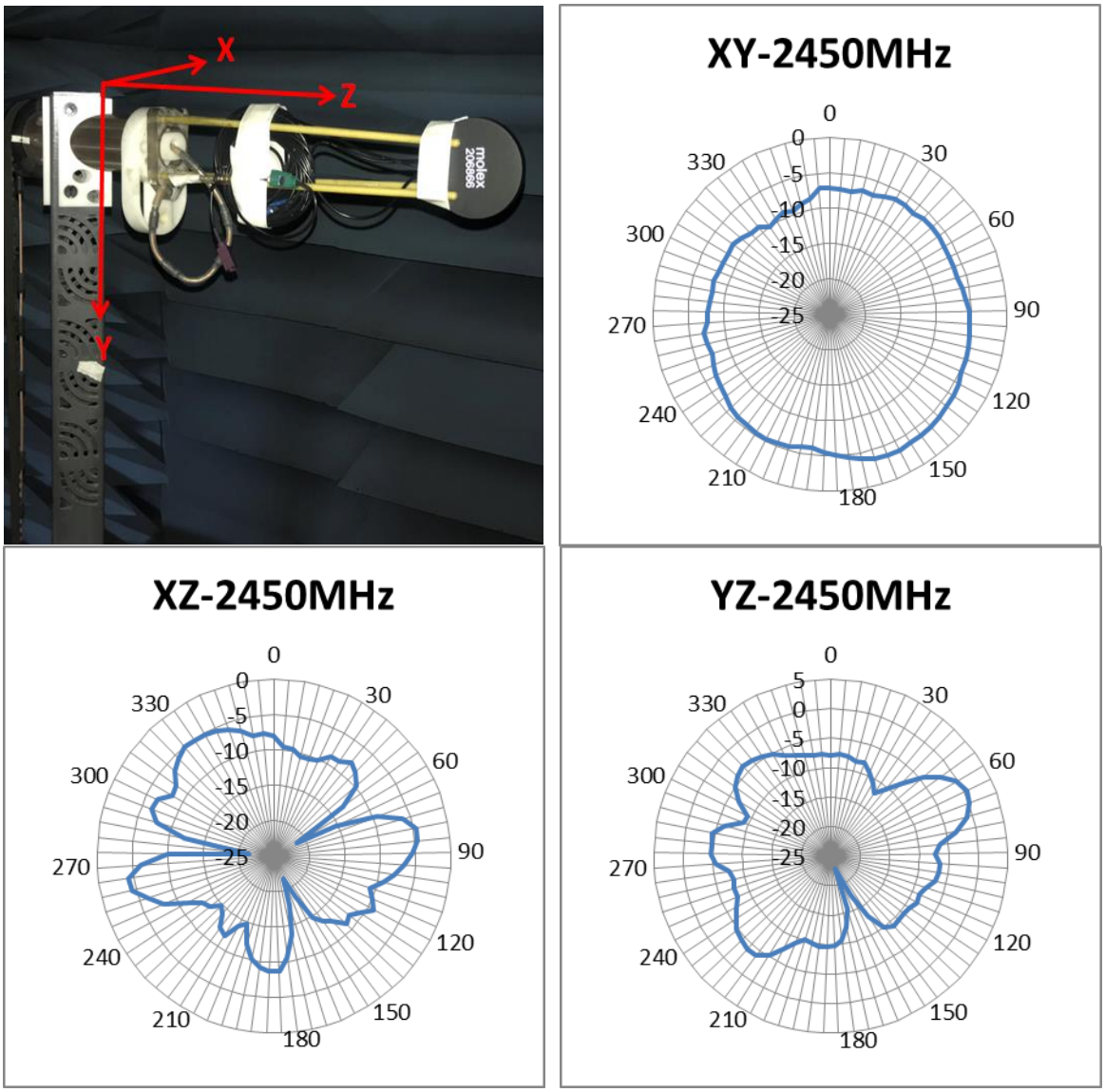


FIGURE 7.3.1 2D RADIATION PATTERN OF ANTENNA AT 2450MHZ IN FREE SPACE

7.4 WIFI ANTENNA 3D RADIATION PATTERN

All measurements in this document are done with cable length of 3000mm

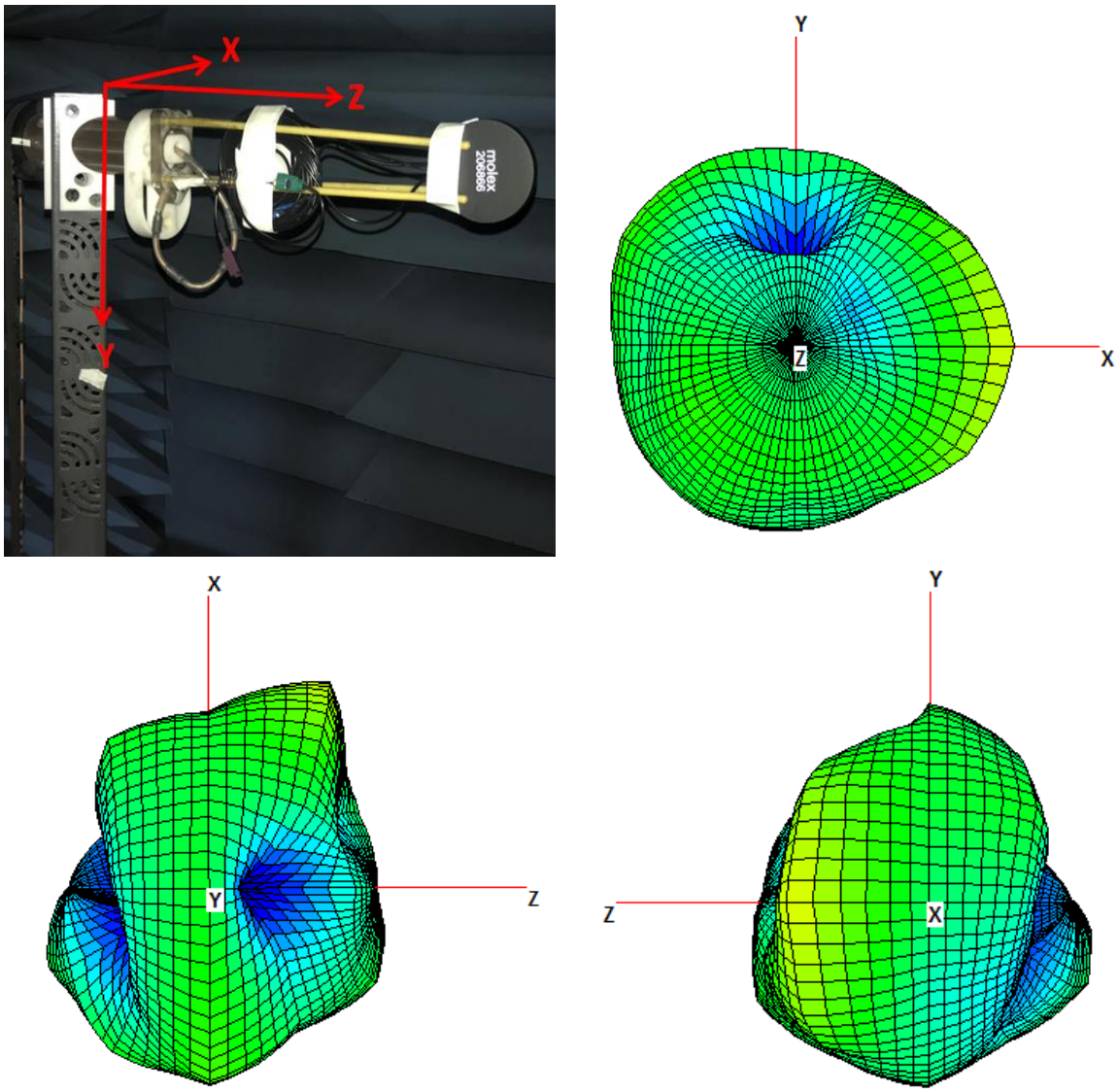


FIGURE 7.4.1 3D RADIATION PATTERN OF ANTENNA AT 2450MHZ IN FREE SPACE