

Model : MH7110

ANTENNA DATASHEET

2025

PEGATRON

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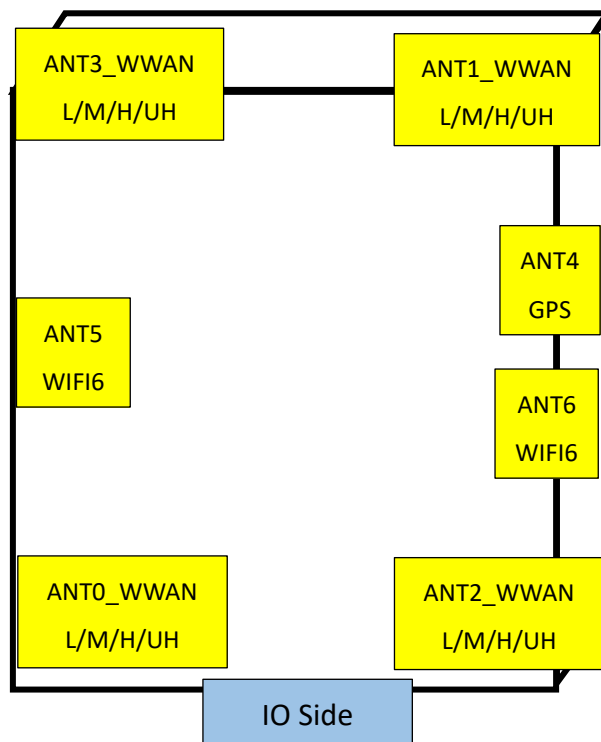
4.3 DUT test setup

1. Specifications

Description	
Antenna type WWAN_ANT0 L/M/H/UH band Antenna	Monopole with coupler
Antenna type WWAN_ANT1 L/M/H/UH band Antenna	Monopole
Antenna type WWAN_ANT2 L/M/H/UH band Antenna	Monopole
Antenna type WWAN_ANT3 L/M/H/UH band Antenna	Monopole with coupler
Antenna type ANT4 GPS Antenna	PIFA
Antenna type ANT5 WIFI Antenna	PIFA
Antenna type ANT6 WIFI Antenna	PIFA
Peak Gain WWAN_ANT0 L/M/H/UH band Antenna	See the table 3.2.1
Peak Gain WWAN_ANT1 L/M/H/UH band Antenna	See the table 3.2.2
Peak Gain WWAN_ANT2 L/M/H/UH band Antenna	See the table 3.2.3
Peak Gain WWAN_ANT3 L/M/H/HU band Antenna	See the table 3.2.4
Peak Gain ANT5 WIFI Antenna	See the table 3.2.5
Peak Gain ANT6 WIFI Antenna	See the table 3.2.6

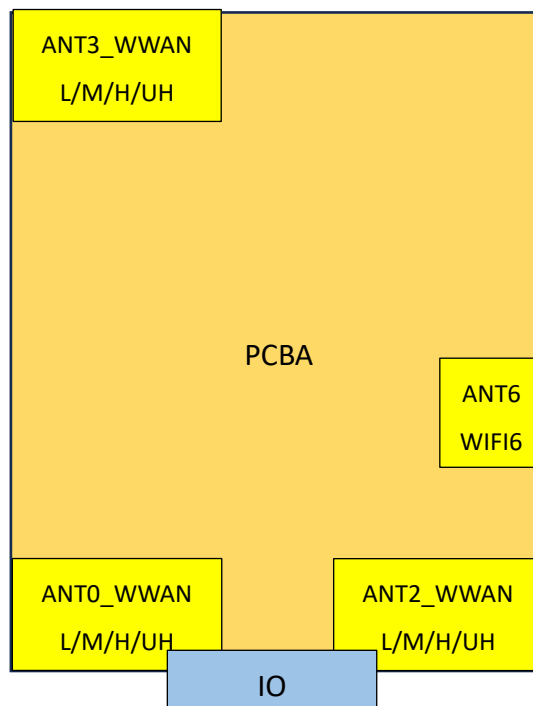
2. Antenna Placement

2.1 ANT0 ~ ANT6 on DUT



Overview

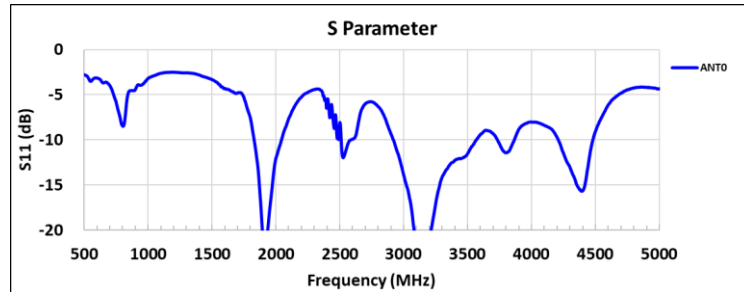
2.2 ANT0/2/3/6 on PCBA



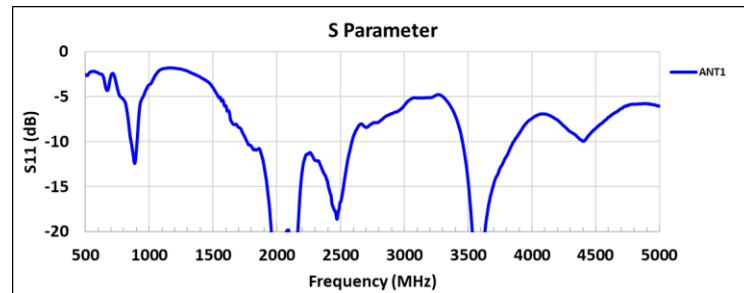
3. Performance Data

3.1 Return Loss

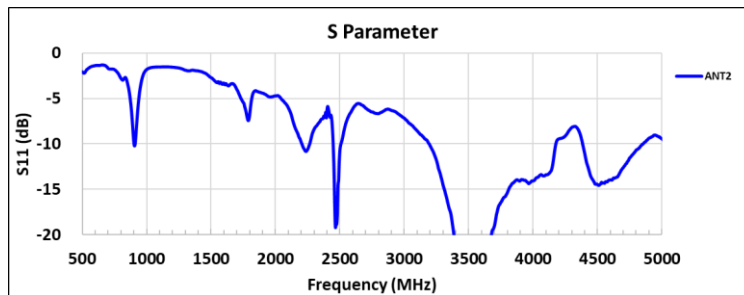
3.1.1 ANT0_WWAN_LMH&UH band Antenna



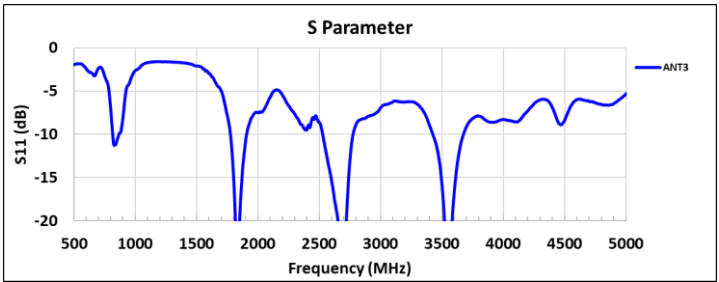
3.1.2 ANT1_WWAN_LMH&UH band Antenna



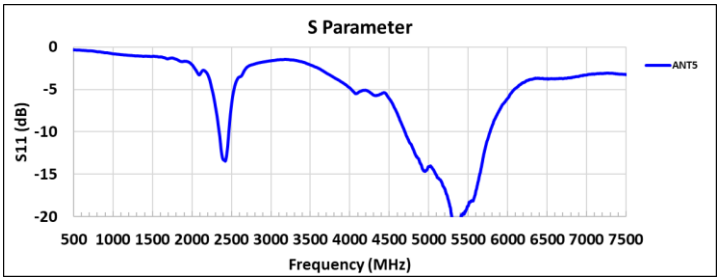
3.1.3 ANT2_WWAN_LMH&UH band Antenna



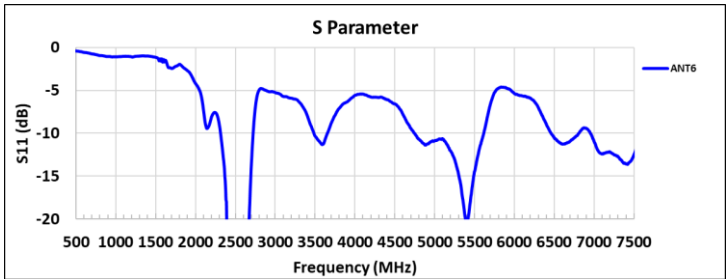
3.1.4 ANT3_WWAN_LMH&UH band Antenna



3.1.5 ANT5_WIFI Antenna



3.1.6 ANT6_WIFI Antenna



3.2 Peak Gain summary

L/M/H/UH band	
Polarization	Linear
ANT0	Gain (dBi)
Frequency (MHz)	
698 - 716	-0.26
703 - 748	-0.26
704 - 716	-0.26
777 - 787	-0.26
788 - 798	-0.26
814 - 849	-3.63
815 - 830	-3.63
824 - 849	-3.63
830 - 845	-3.63
832 - 862	-3.63
1710 - 1755	1.5
1710 - 1780	1.5
1850 - 1910	1.27
1850 - 1915	1.27
1920 - 1980	0.74
2300 - 2400	1.46
2305 - 2315	1.12
2496 - 2690	1.52
2500 - 2570	1.52
2570 - 2620	1.52
3300 - 4200	4
3300 - 3800	4
3400 - 3600	2.05
3550 - 3700	1.18
3600 - 3800	1.16

Table 3.2.1

L/M/H/UH band	
Polarization	Linear
ANT1	Gain (dBi)
Frequency (MHz)	
2496 - 2690	2.22
3300 - 4200	1.88
3300 - 3800	1.88

Table 3.2.2

L/M/H/UH band	
Polarization	Linear
ANT2	Gain (dBi)
Frequency (MHz)	
2496 - 2690	2.58
3300 - 4200	4
3300 - 3800	4

Table 3.2.3

L/M/H/UH band	
Polarization	Linear
ANT3	Gain (dBi)
Frequency (MHz)	
663 - 698	-2.86
703 - 748	-1.36
814 - 849	-0.98
824 - 849	-0.98
880 - 915	-0.63
1710 - 1755	3.5
1710 - 1780	3.5
1850 - 1910	2.76
1850 - 1915	2.76
1920 - 1980	1.82
2300 - 2400	1.15
2305 - 2315	1.15
2496 - 2690	3
2500 - 2570	3
2570 - 2620	3
3300 - 4200	3.09
3300 - 3800	3.09
3400 - 3600	2.9
3550 - 3700	2
3600 - 3800	3.09

Table 3.2.4

WIFI band	
Polarization	Linear
ANT5	Gain (dBi)
Frequency (MHz)	
2402	2.86
2440	3.39
2478	3.4
2483.5	2.63
5160	-0.48
5250	0.18
5550	-0.52
5620	-0.82
5800	-0.03

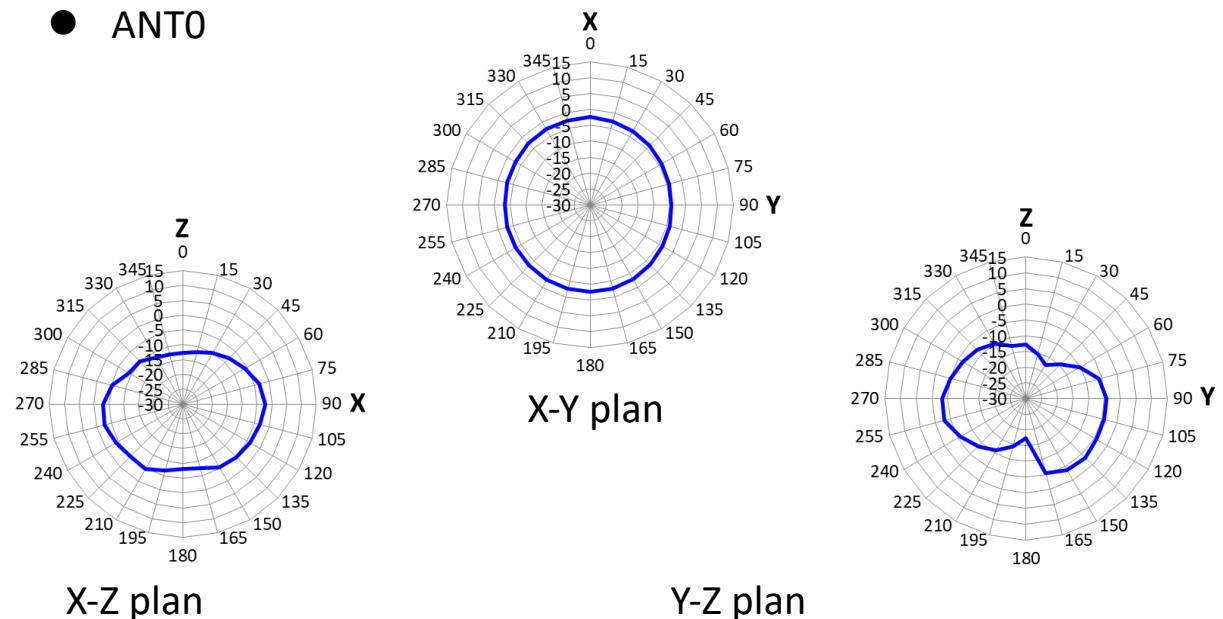
Table 3.2.5

WIFI band	
Polarization	Linear
ANT6	Gain (dBi)
Frequency (MHz)	
2402	1.61
2440	2.65
2478	2.61
2483.5	2.36
5160	1.27
5250	1.41
5550	0.91
5620	1.18
5800	0.73

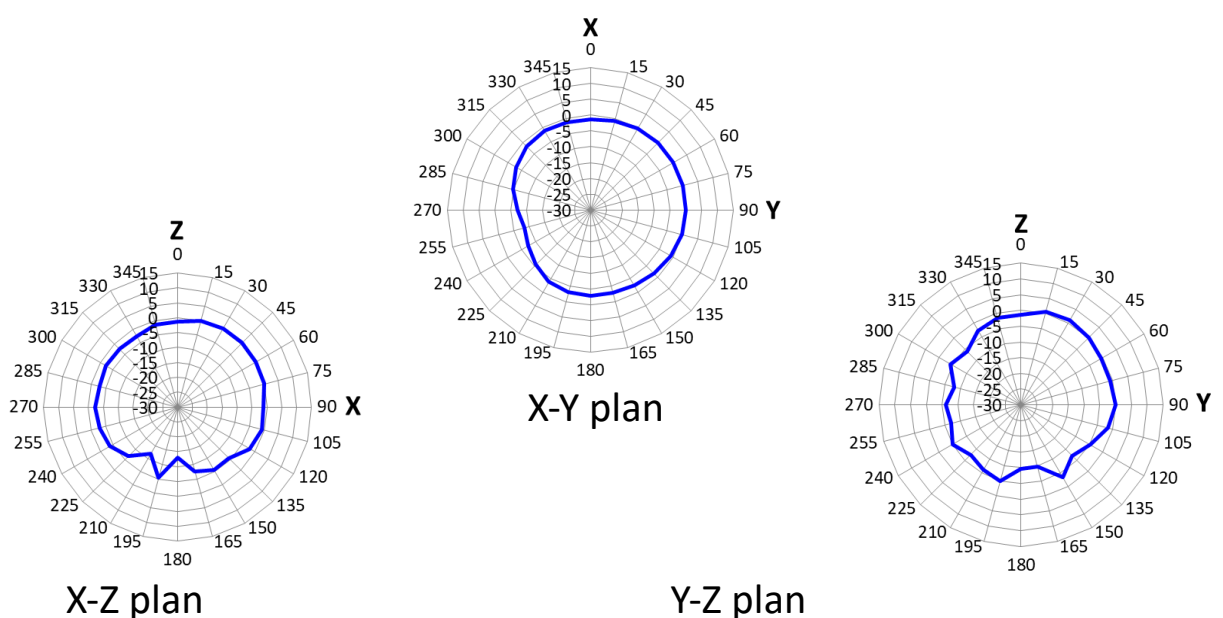
Table 3.2.6

3.3 Max 2D Radiation Pattern Plane

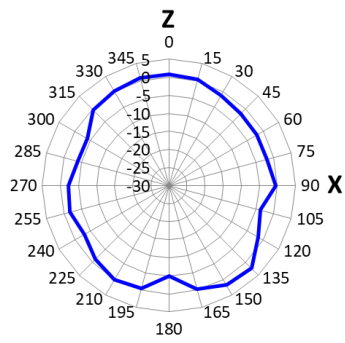
● ANT0



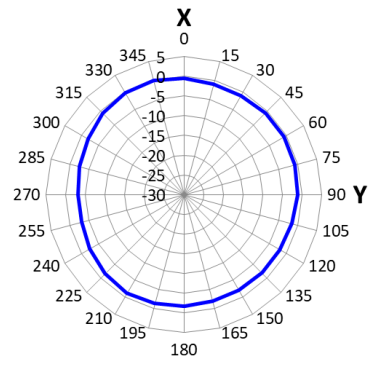
LB highest value : 700 MHz



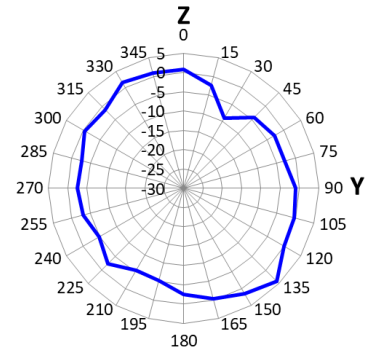
MHB highest value : 2550 MHz



X-Z plan



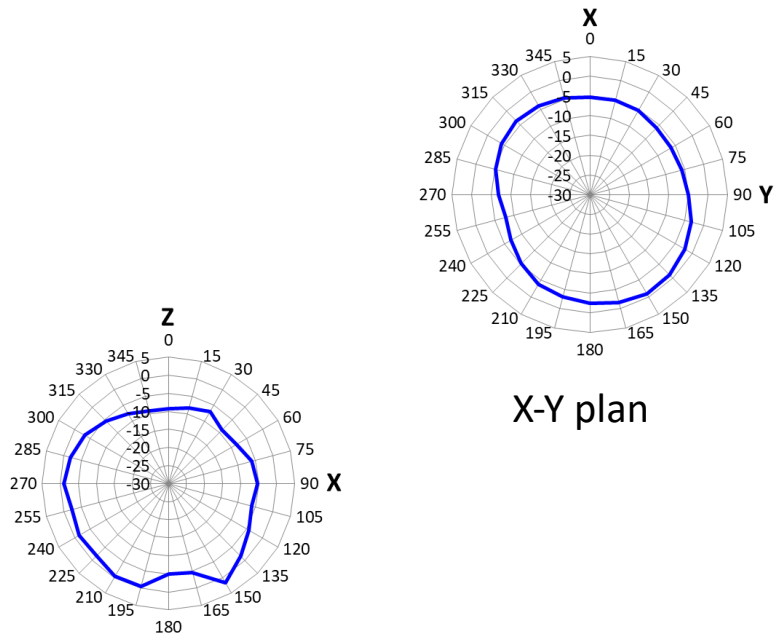
X-Y plan



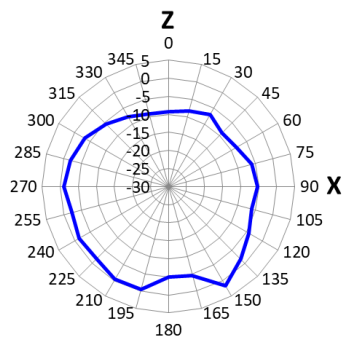
Y-Z plan

UHB highest value : 3300 MHz

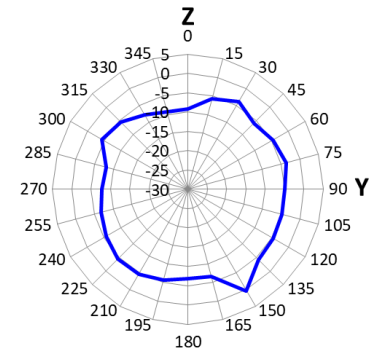
● ANT1



X-Y plan

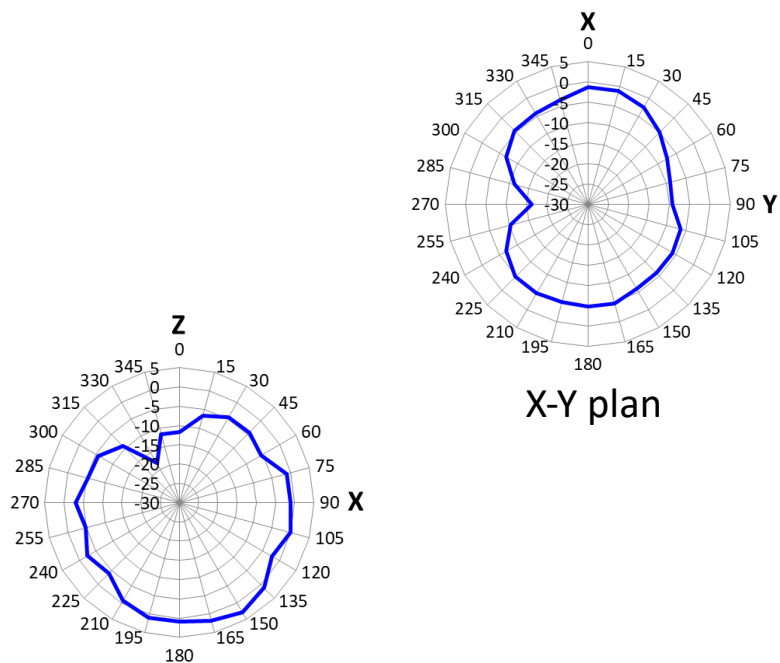


X-Z plan

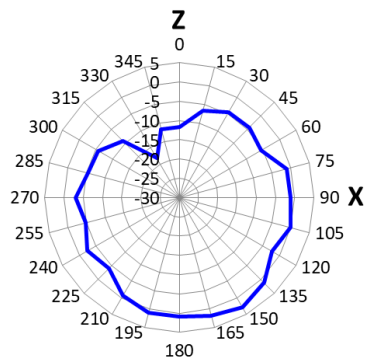


Y-Z plan

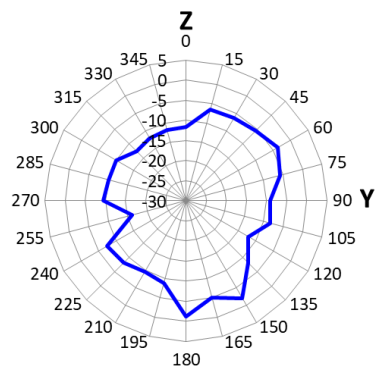
MHB highest value : 2550 MHz



X-Y plan



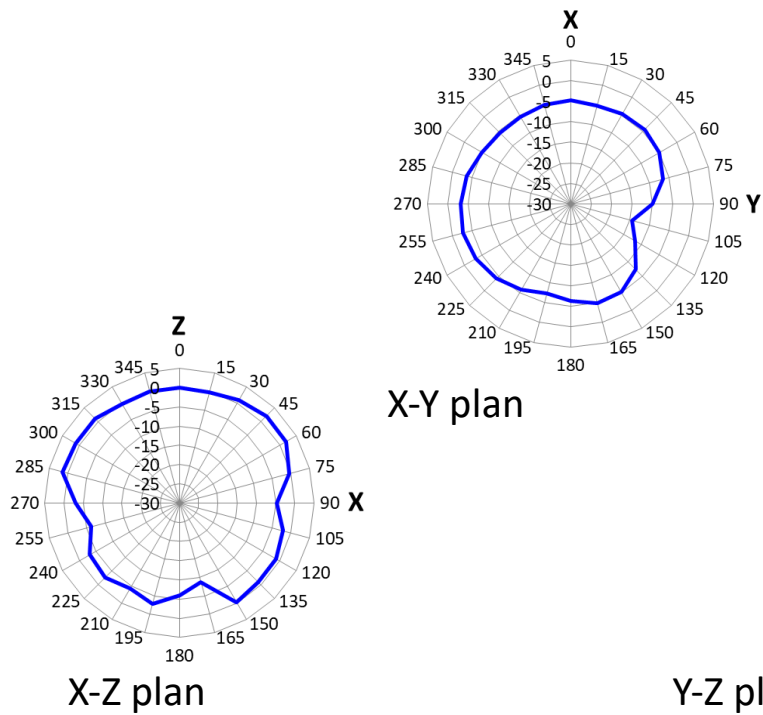
X-Z plan



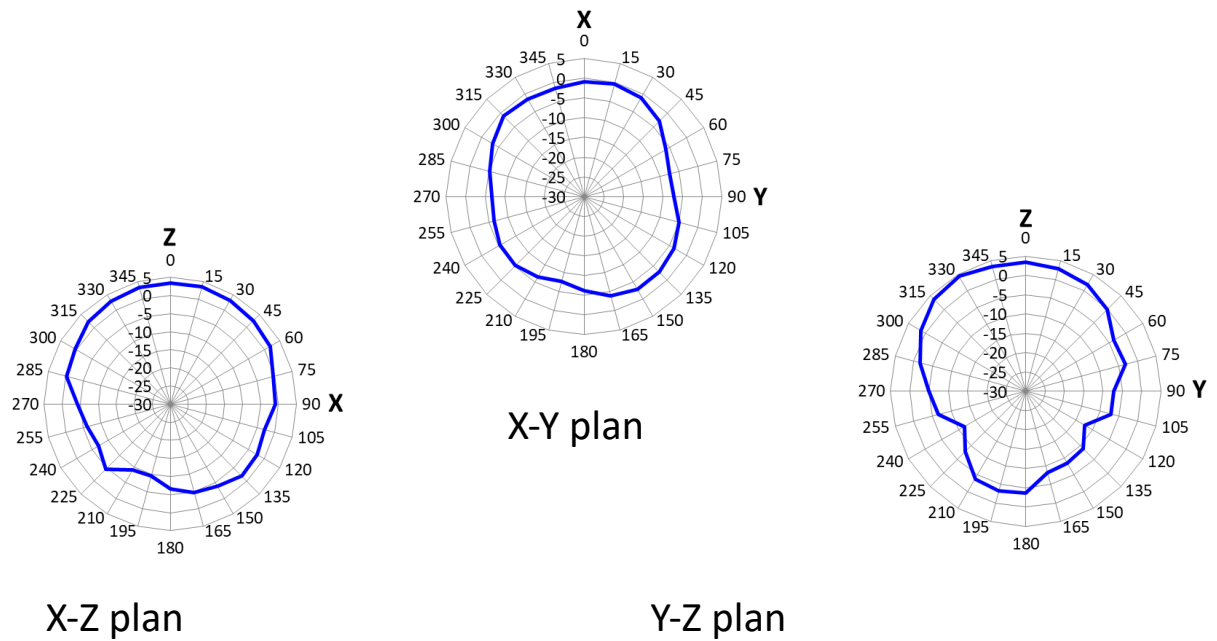
Y-Z plan

UHB highest value : 3800 MHz

● ANT2

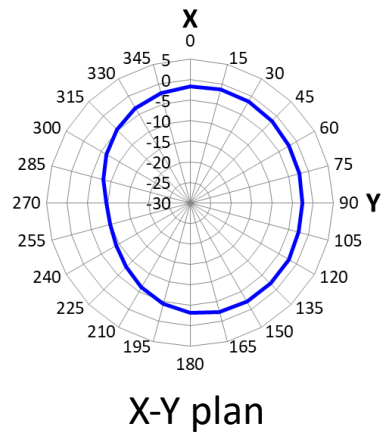


MHB highest value : 2600 MHz

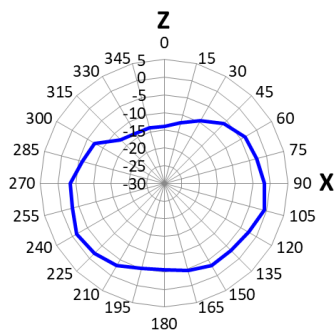


UHB highest value : 3800 MHz

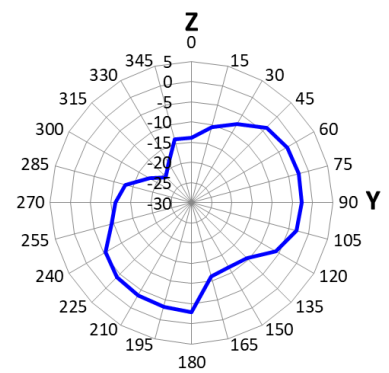
● ANT3



X-Y plan

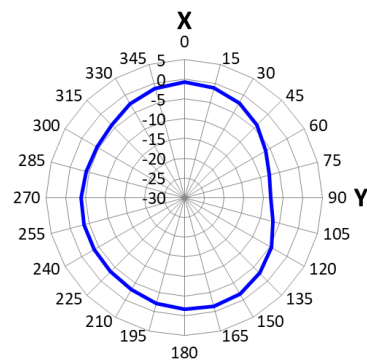


X-Z plan

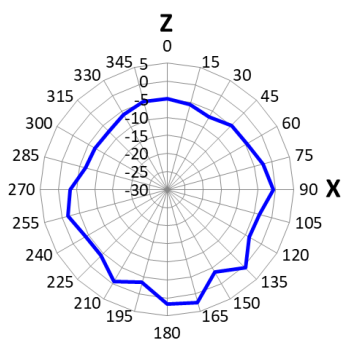


Y-Z plan

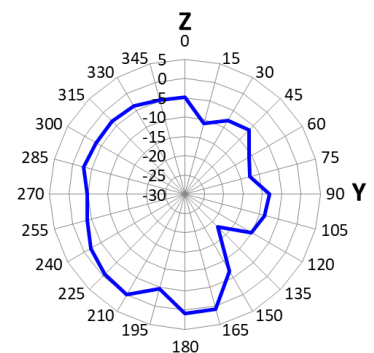
LB highest value : 837 MHz



X-Y plan

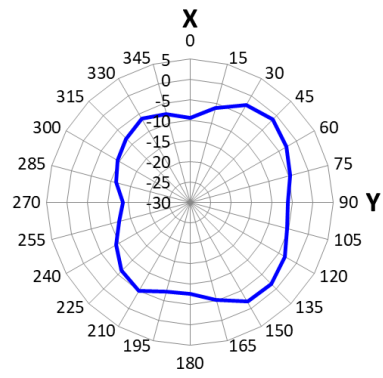


X-Z plan

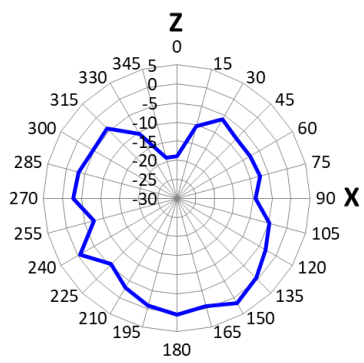


Y-Z plan

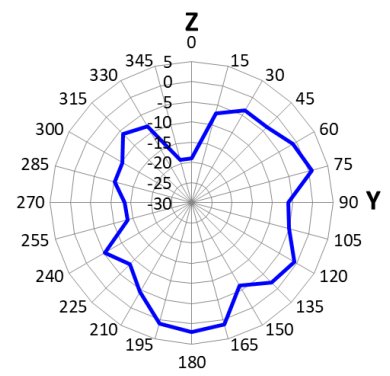
MHB highest value : 1760 MHz



X-Y plan



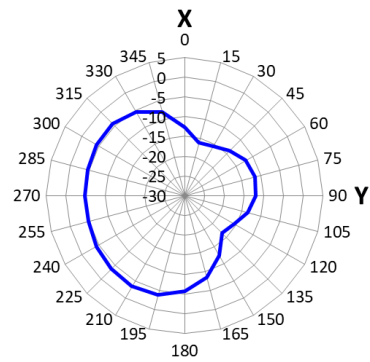
X-Z plan



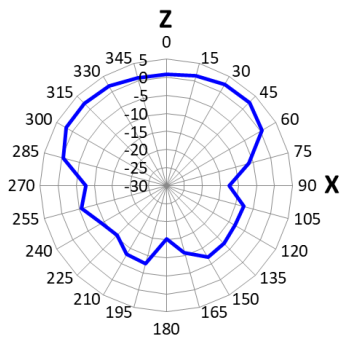
Y-Z plan

UHB highest value : 3800 MHz

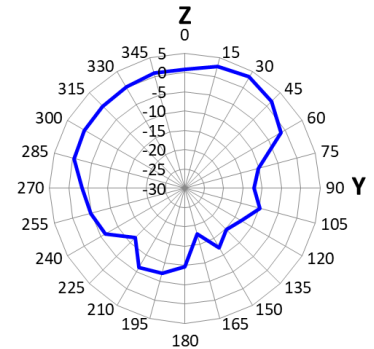
● ANT5



X-Y plan

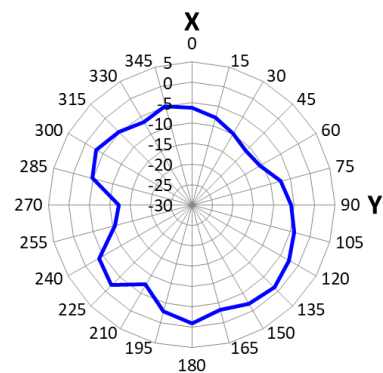


X-Z plan

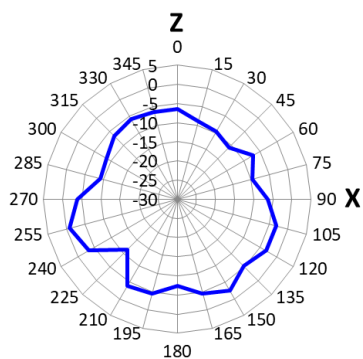


Y-Z plan

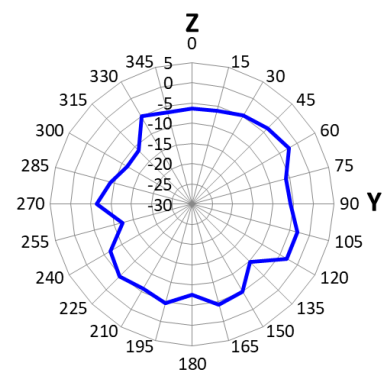
2.4G highest value : 2478 MHz



X-Y plan



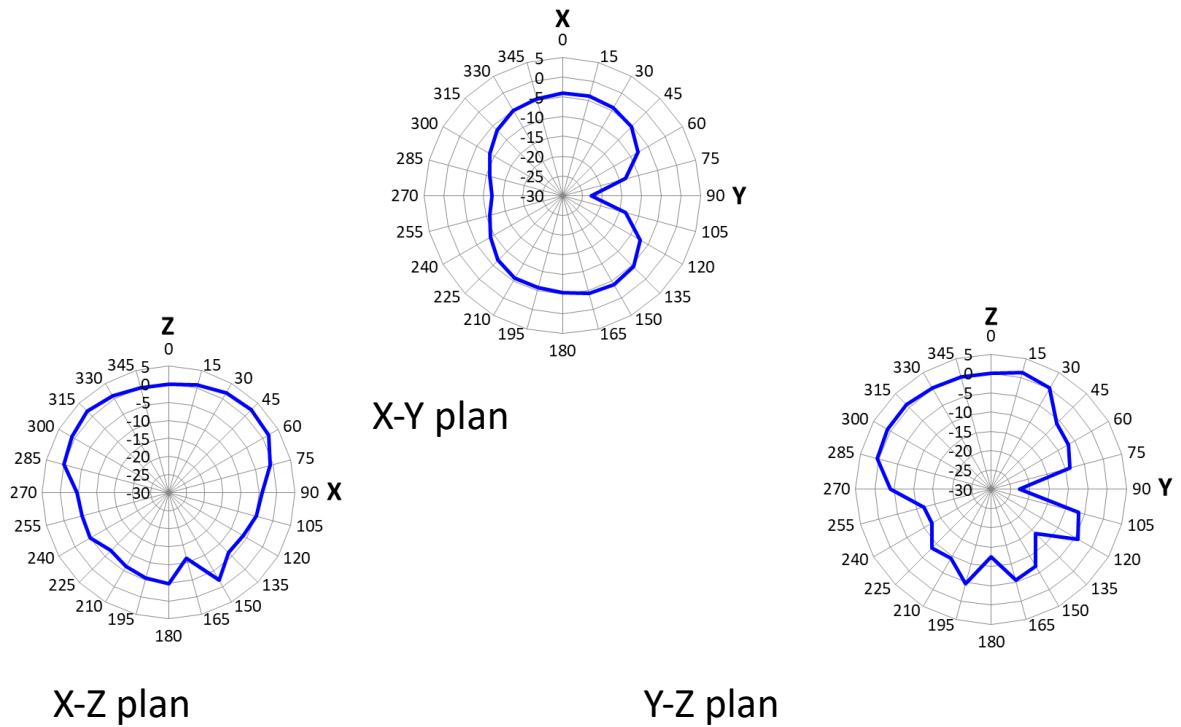
X-Z plan



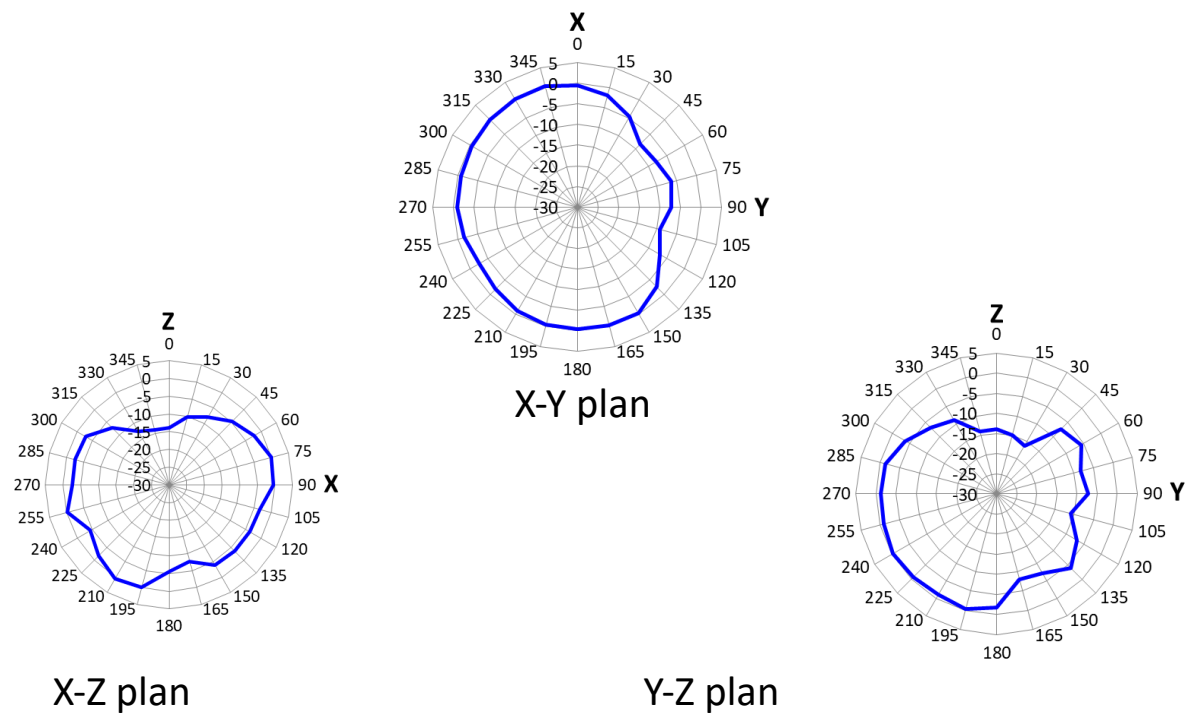
Y-Z plan

5G highest value : 5250 MHz

● ANT6



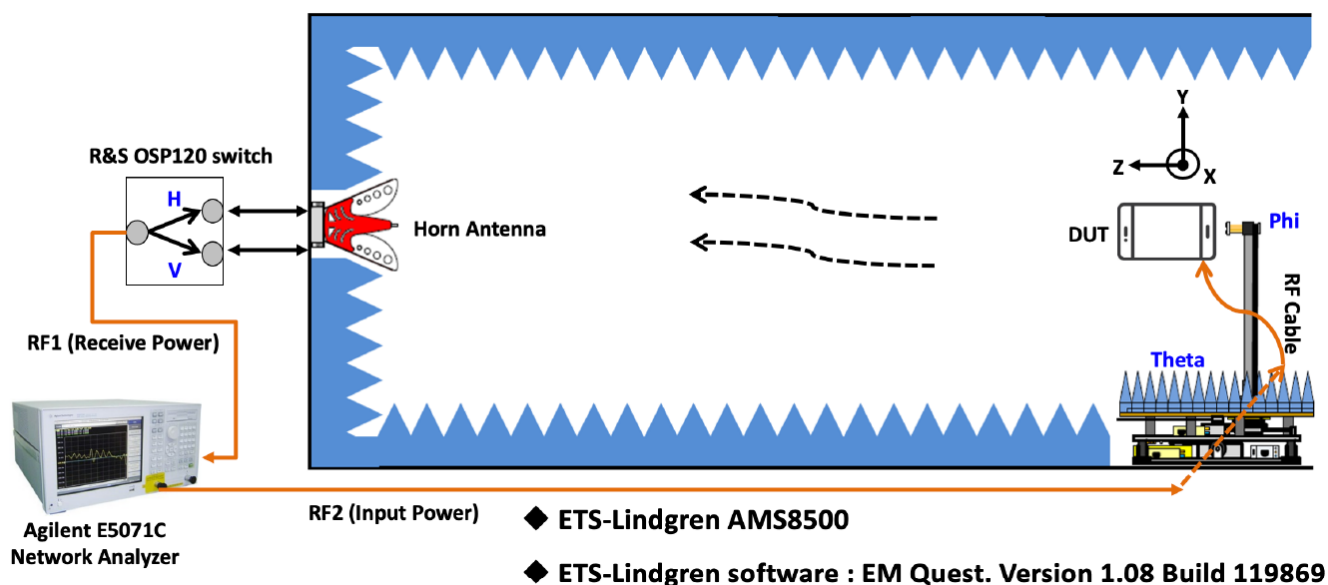
2.4G highest value : 2440 MHz



5G highest value : 5250 MHz

4. Antenna Gain Measurement Setting

4.1 Test Equipment



The list of test equipment and software used are as follows :

- ETS-Lindgren fully anechoic antenna test chamber
- Agilent E5071C Network analyzer
- R&S 120 Polarization Switch
- ETS-Lindgren measurement software: EM Quest software version 1.08 Build 119869

The list of test equipment calibration information are as follow :

- ETS-Lindgren AMS8500 calibration date : 2024/ 12 / 09
- ETS-Lindgren AMS8500 expired date : 2026/ 12 / 07
- ETS-Lindgren AMS8500 calibration name of personnel : ETS-Lindgren Leo Hsiao
- Agilent E5071C Network analyzer calibration date : 2025 / 02 / 03
- Agilent E5071C Network analyzer expired date : 2027 / 02 / 02
- Agilent E5071C Network analyzer calibration name of personnel : Keysight Freddy Hsu
- R&S OSP120 Polarization Switch calibration date : 2024/ 12 / 09
- R&S OSP120 Polarization Switch expired date : 2026/ 12 / 07
- R&S OSP120 Polarization Switch calibration name of personnel : ETS-Lindgren Leo Hsiao

4.2 Test Method

EIRP measurement is based on industry-standard method described in CTIA OTA Test Plan (current version 3.9.4). Peak gain is calculated by subtracting Conducted Power from the measured maximum EIRP. Testing is performed with Antenna integrated in the product. Below is the measurement summary from the specification:

Figure 4-2 shows a typical real world configuration for measuring the path loss. In this case, a reference antenna with known gain is used in place of the theoretical isotropic source. The path loss may then be determined from the power into the reference antenna by adding the gain of the reference antenna. That is:

EQUATION 4.2

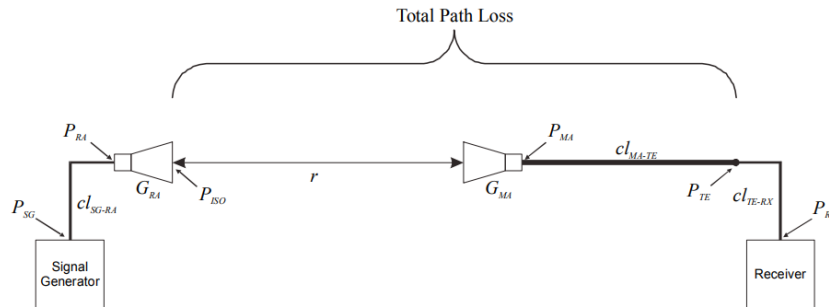
$$P_{ISO} = P_{RA} + G_{RA}$$

where P_{RA} is the power radiated by reference antenna, and G_{RA} is the gain of the reference antenna, so that:

EQUATION 4.3

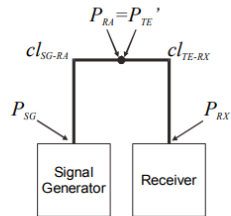
$$PL = P_{RA} + G_{RA} - P_{TE}$$

FIGURE 4-2 TYPICAL CONFIGURATION FOR MEASURING PATH LOSS



$$P_{RA} - P_{TE} = P_{RX}' - P_{RX}$$

FIGURE 4-3 CABLE REFERENCE CALIBRATION CONFIGURATION



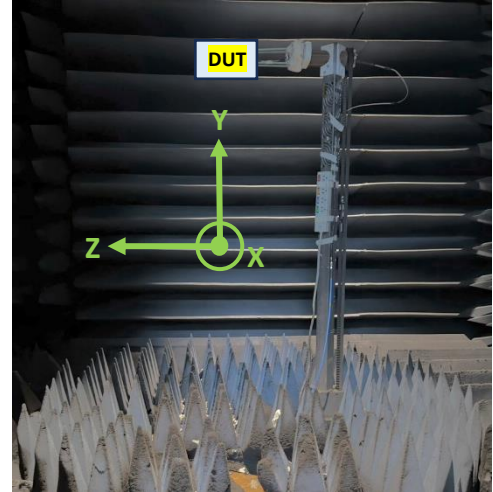
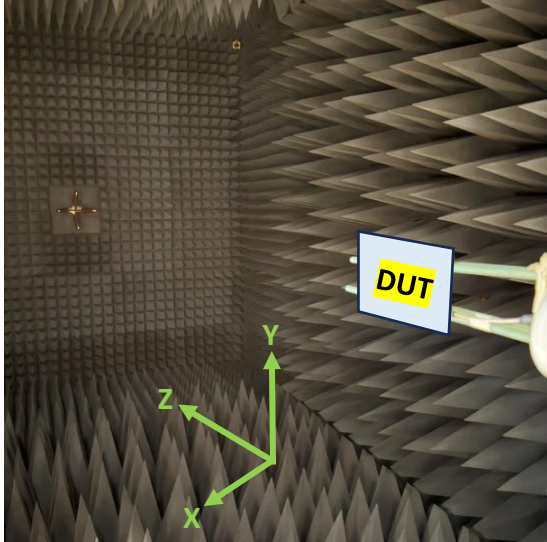
where P_{RX}' is the power measured at the receiver during the cable reference test, and P_{RX} is the power measured at the receiver during the range path loss measurement in Figure 4-2. Note that this formulation assumes that the effects of the reference antenna VSWR are accounted for in the gain of the reference antenna. For more information on this subject, refer to [1]. Thus, the path loss is then just given by:

EQUATION 4.5

$$PL = G_{RA} + P_{RX}' - P_{RX}$$

4.3 DUT Test Setup

The DUT includes the integral antenna is placed on the fixture as pictured below.



Test date : 2025/06/17

The list of antenna engineers performed antenna passive measurement activities :

- Pegatron Aries_Lin
- Pegatron Junwei_Huang