

Antenna Measurement System Information

● Measurement OTA Chamber

- MVG SG 24-S 3D fully anechoic chamber, also known as Satimo chamber.

● Test Equipment

- Annual calibration by an ISO 17025 accredited laboratory is performed on all test equipment. The following test equipment is typically used:

Call Box	MT8000A / MT8821C / MT8862A / CMW500
Network Analyzer	ENA E5063A
Signal Generator	SMBV100B

● Test Software

- The test equipment operates under the control of commercial test software. For OTA chambers sold by MVG, WaveStudio 22.5.6 is used.

● Test Method

- EIRP measurement is based on industry-standard method described in CTIA OTA Test Plan (current version 3.9.4). Peak gain (Horizontal and Vertical Polarization) 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

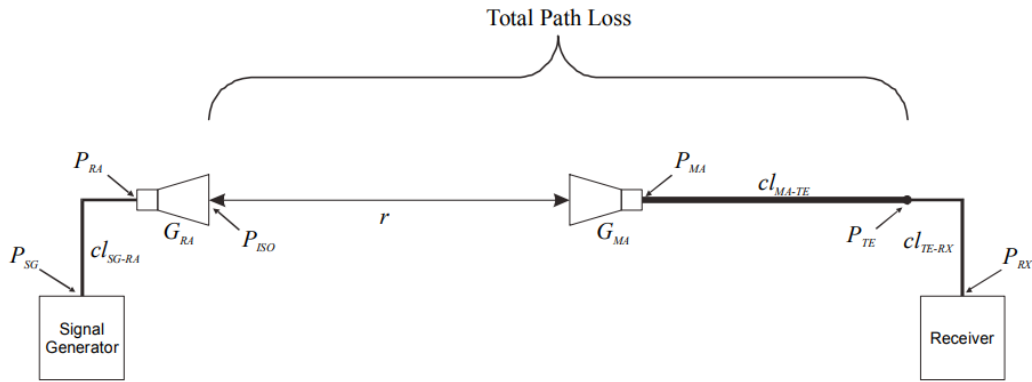
$$P_{ISO} = P_{RA} + G_{RA}$$

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

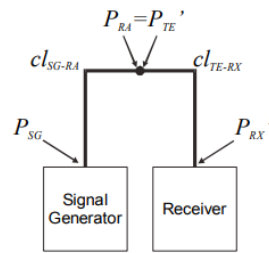
$$PL = P_{RA} + G_{RA} - P_{TE}$$

FIGURE 4-2 TYPICAL CONFIGURATION FOR MEASURING PATH LOSS



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

FIGURE 4-3 CABLE REFERENCE CALIBRATION CONFIGURATION



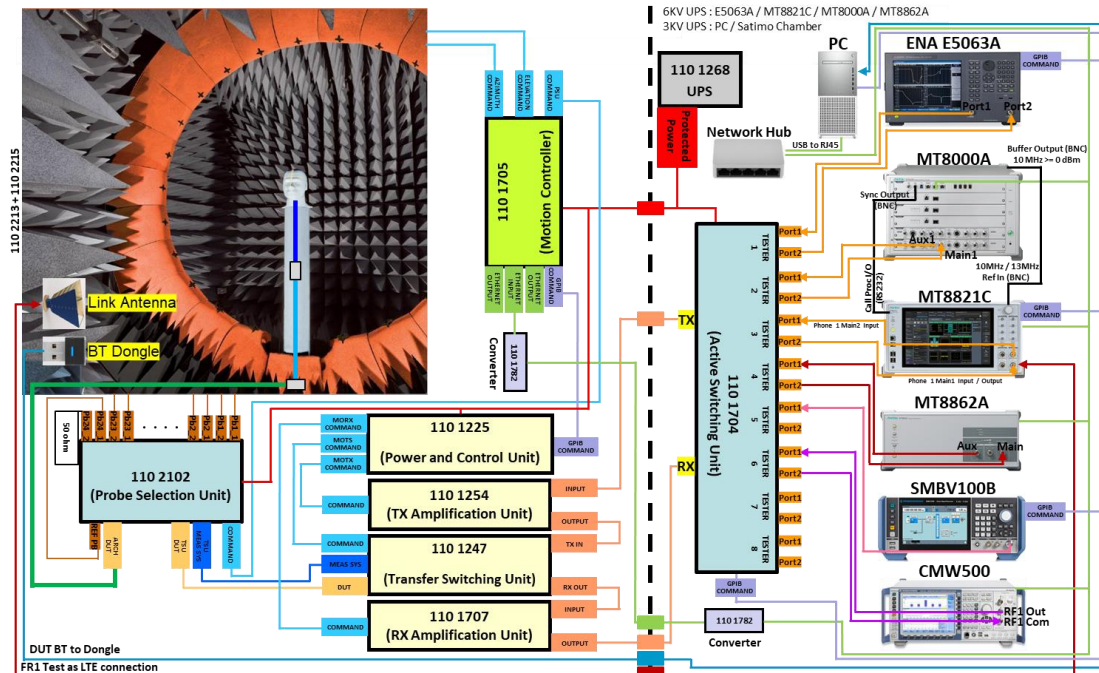
where P_{RX}' is the power measured at the receiver during the cable reference test, and P_{RX} is the power measured at the receiver during the range path loss measurement in Figure 4-2. Note that this formulation assumes that the effects of the reference antenna VSWR are accounted for in the gain of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

EQUATION 4.5

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

● Typical Setup for MVG SG 24-S

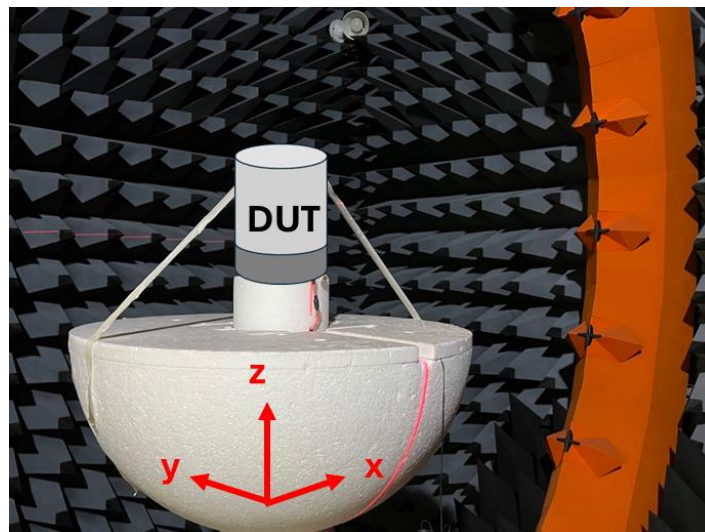
Satimo 3D Chamber Equipment Setup



- Chamber calibration date: 2024/12/17

- **DUT Test Setup**

- The device containing the integral antenna is placed on the styrofoam pylon (inside the OTA chamber) as pictured below.



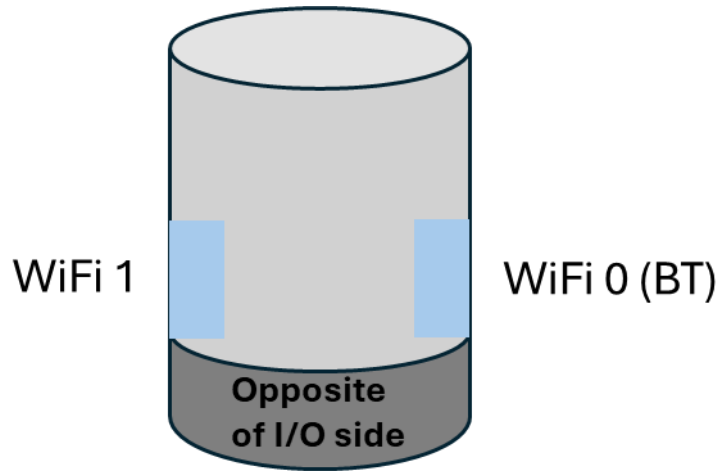
Test date: 2025/03/28

Pegatron test engineer: William1_Lin

Pegatron test engineer: Ken6_Lin

- **Antenna Description**

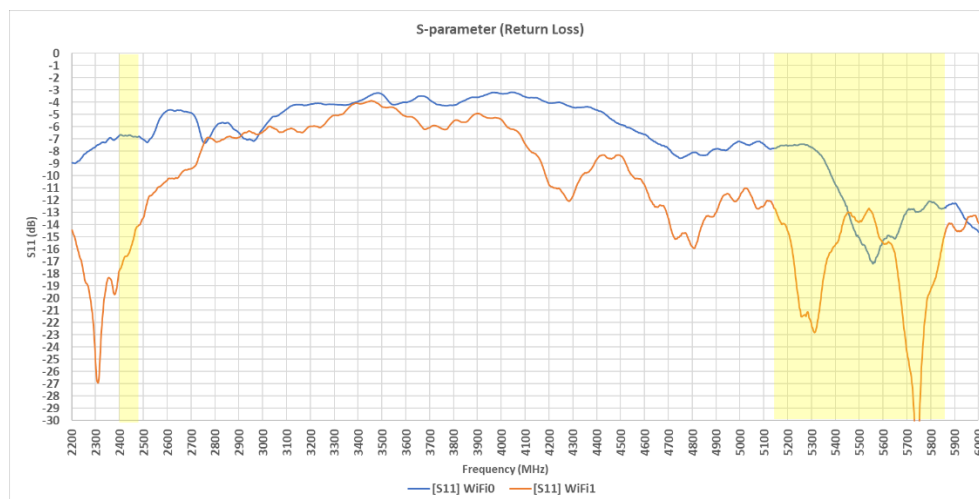
- **Antenna Architecture:**



- **Supporting Technique and Frequency:**

Wi-Fi 0 / BT (TRX): 2400MHz – 2500MHz / 5150MHz – 5850MHz

Wi-Fi 1 (TRX): 2400MHz – 2500MHz / 5150MHz – 5850MHz



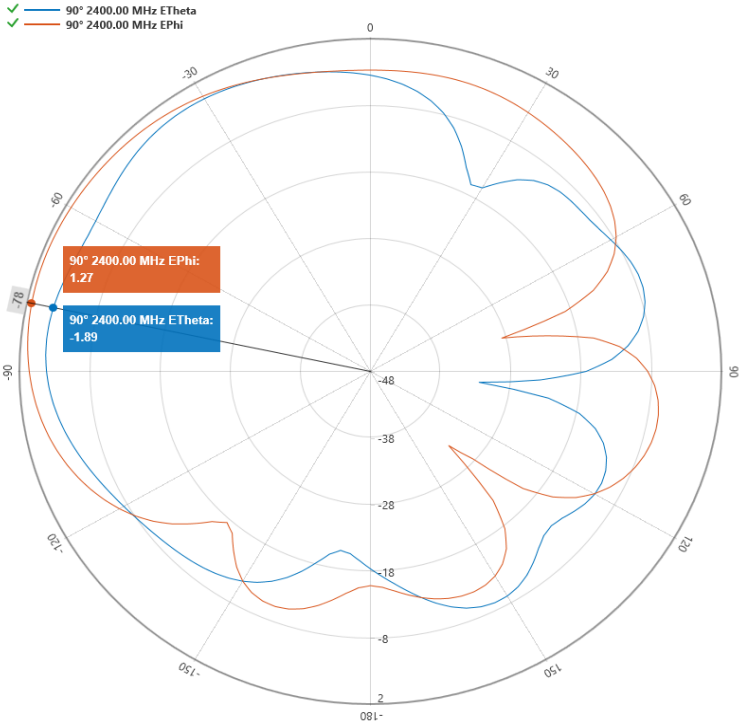
(Return Loss for antenna)

● **Antenna Specifications**

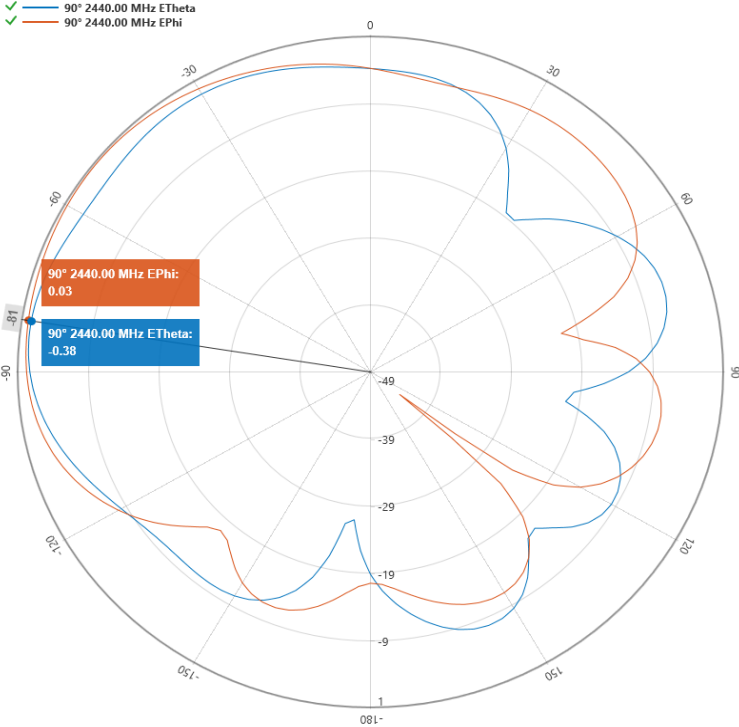
Item	Description	
Antenna Type (Wi-Fi 0 / BT)	Monopole	
Antenna Type (Wi-Fi 1)	PIFA	
Brand	Pegatron	
Model Name (Wi-Fi 0)	C1335-510497-A (Manufacturer: WHAYU)	
Model Name (Wi-Fi 1)	C1335-510498-A (Manufacturer: WHAYU)	
Peak Gain (dBi) (Wi-Fi 0 / BT)	2400 MHz = 2.98 2440 MHz = 2.84 2480 MHz = 2.29	5200 MHz = 3.64 5300 MHz = 5.73 5600 MHz = 5.65 5800 MHz = 4.87
Peak Gain (dBi) (Wi-Fi 1)	2400 MHz = 2.8 2440 MHz = 2.51 2480 MHz = 2.55	5200 MHz = 4.62 5300 MHz = 3.52 5600 MHz = 5.41 5800 MHz = 5.06
Cable Loss (Wi-Fi 0)	with cable	
Cable Loss (Wi-Fi 1)	with cable	
Connector	IPEX	

● **Antenna Radiation Pattern: Wi-Fi 0 / BT**

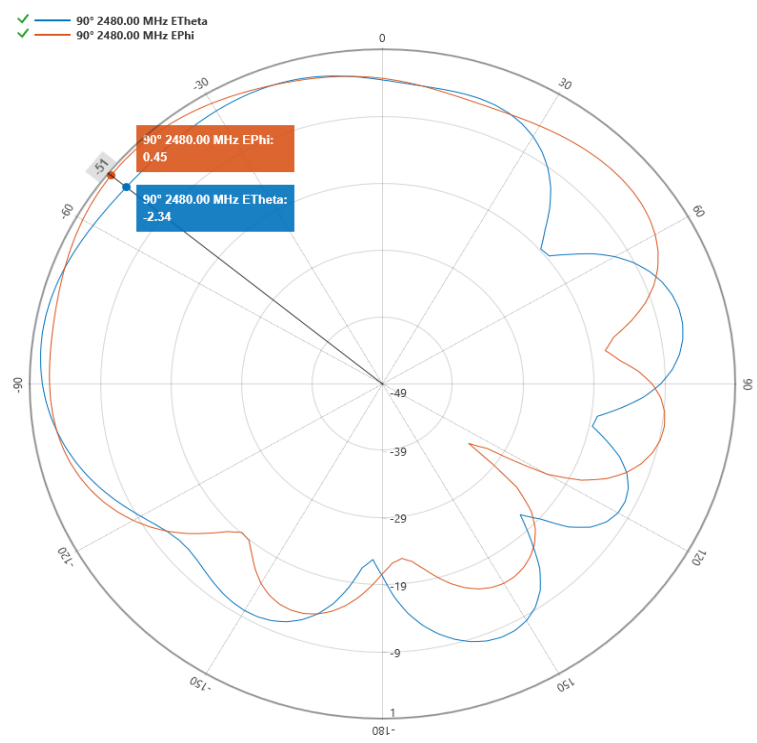
2400 MHz



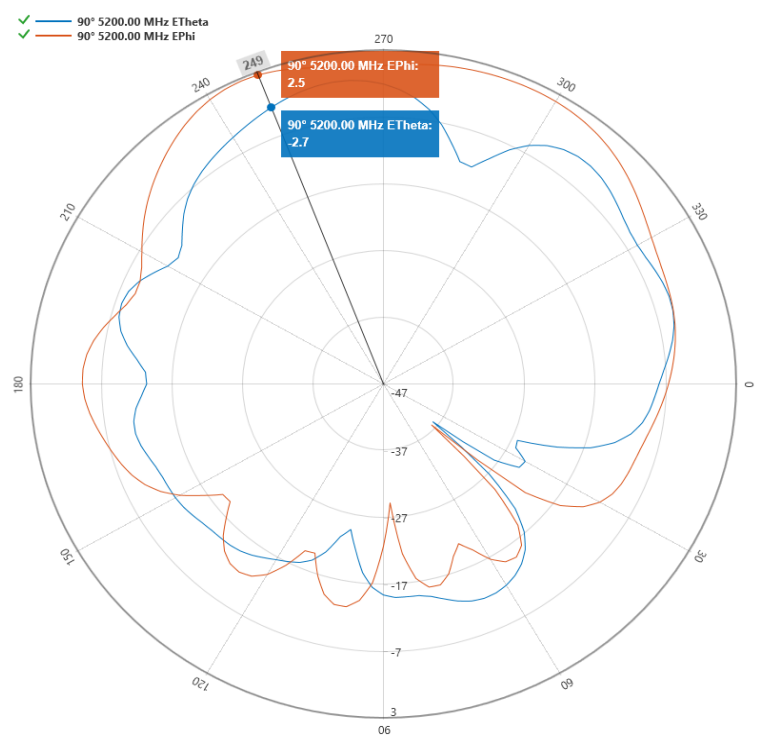
2440 MHz



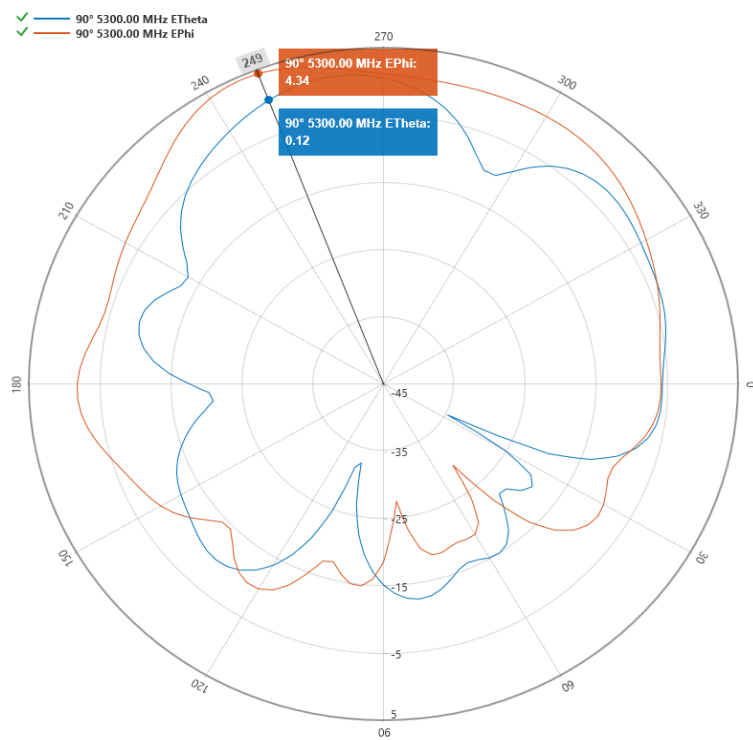
2480 MHz



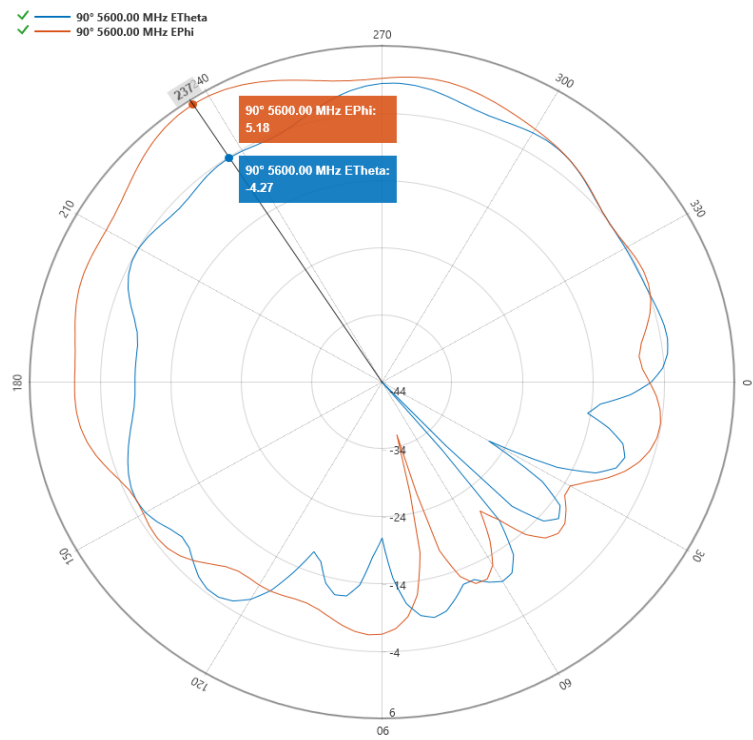
5200 MHz



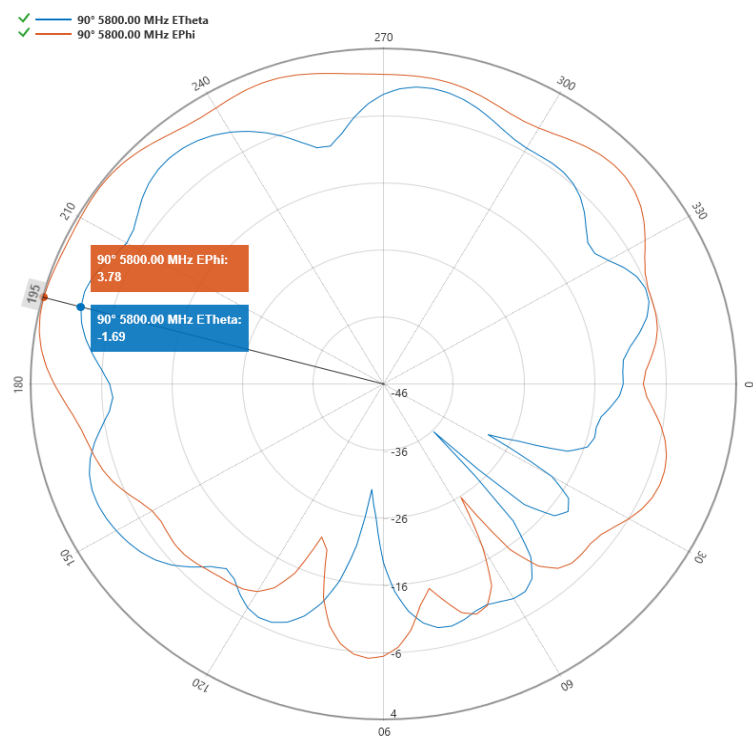
5300 MHz



5600 MHz

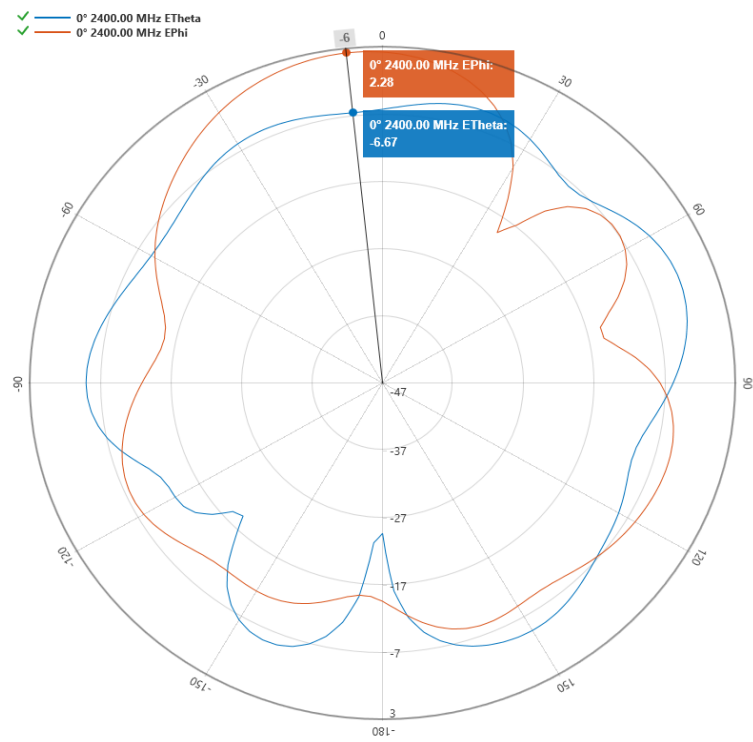


5800 MHz

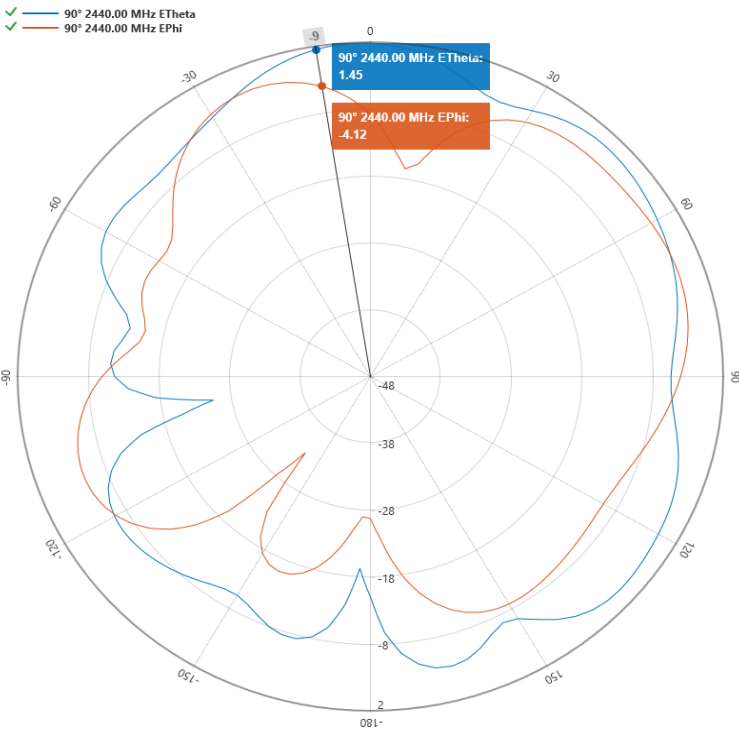


● **Antenna Radiation Pattern: Wi-Fi 1**

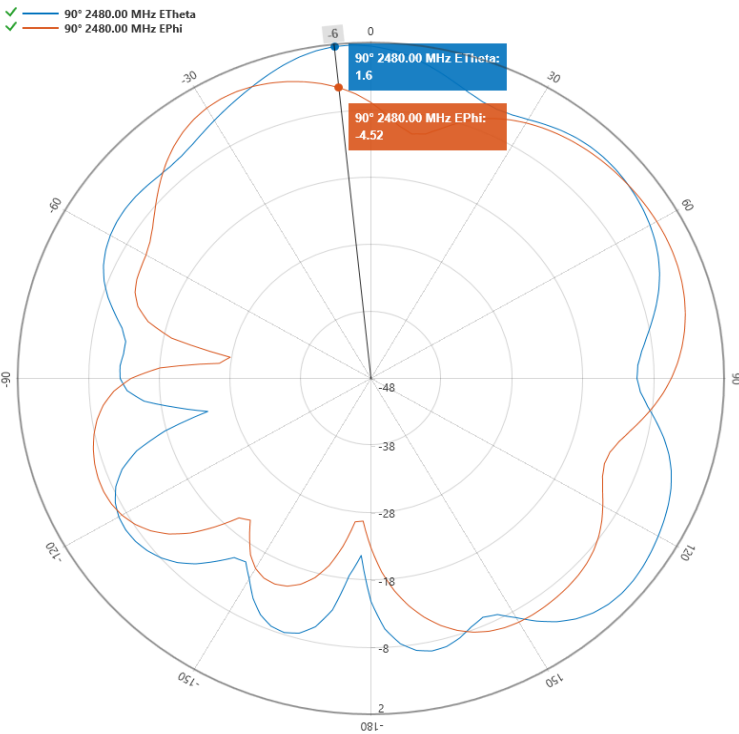
2400 MHz



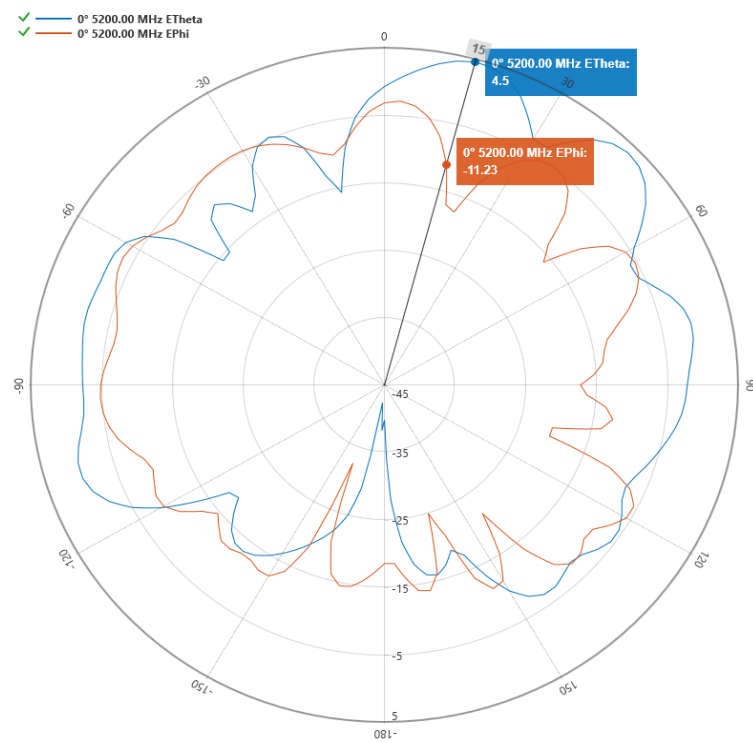
2440 MHz



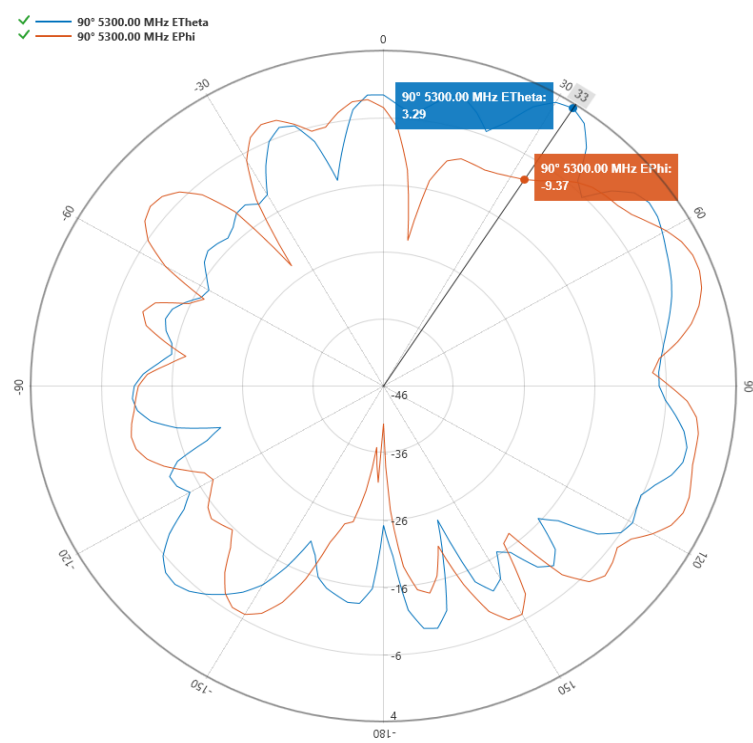
2480 MHz



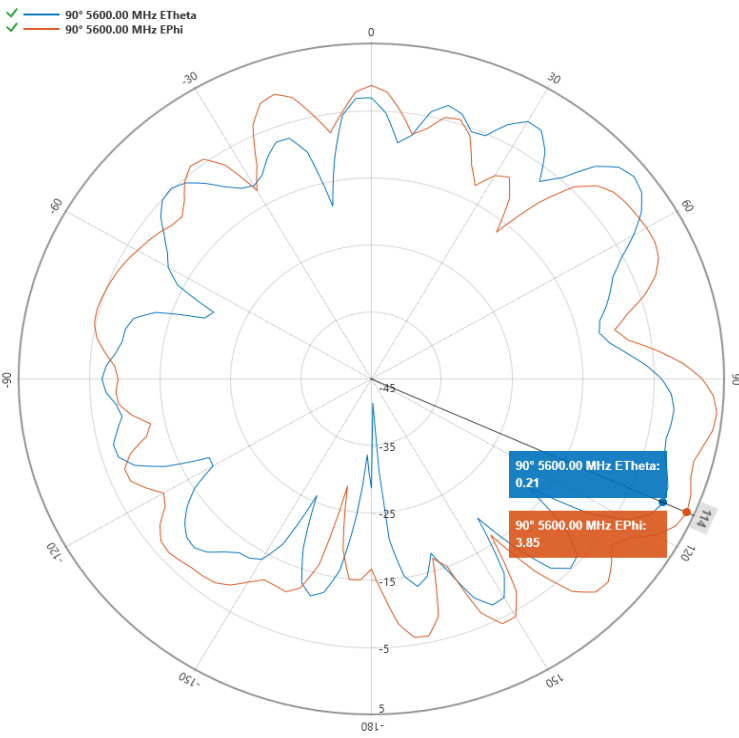
5200 MHz



5300 MHz



5600 MHz



5800 MHz

