

Antenna Test Report

September 26th, 2022

FCC ID:	SBVRM041
IC:	5373A-RM041
Model:	S41
Product Description:	802.11 a/b/g/n/ac/ax 2x2 Client Device with BT and BLE

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1. Measurement Method

Antenna Measurements in Anechoic Chambers

The influence of atmospheric conditions and surrounding objects are non-ideal for accurate antenna measurements. An anechoic chamber offers a non-reflective, no-echo room for performing the antenna measurements. The anechoic chamber can simulate outer space, which is the most ideal location for antenna measurements. All gain measurements were performed in accordance with IEEE Std. 149 (IEEE Standard Procedures for Antenna Measurements). Losses of any test cables were calibrated out post-measurement. Please refer to Figure 1 as the measurement chamber diagram

1. Perform chamber calibration using reference antennas
2. Center the EUT in the chamber using the laser alignment system.
3. Connect the antenna micro-coax cable to the mast cable.
4. Capture antenna gain pattern using the automated measurement software.
5. Export the measurement data.
6. De-embed any additional cable losses in the setup (i.e., losses of any test cables that are not present in the actual product assembly).
7. Post-process the measured data to extract the peak gain.

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Antenna peak gain values for S41 are shown below:

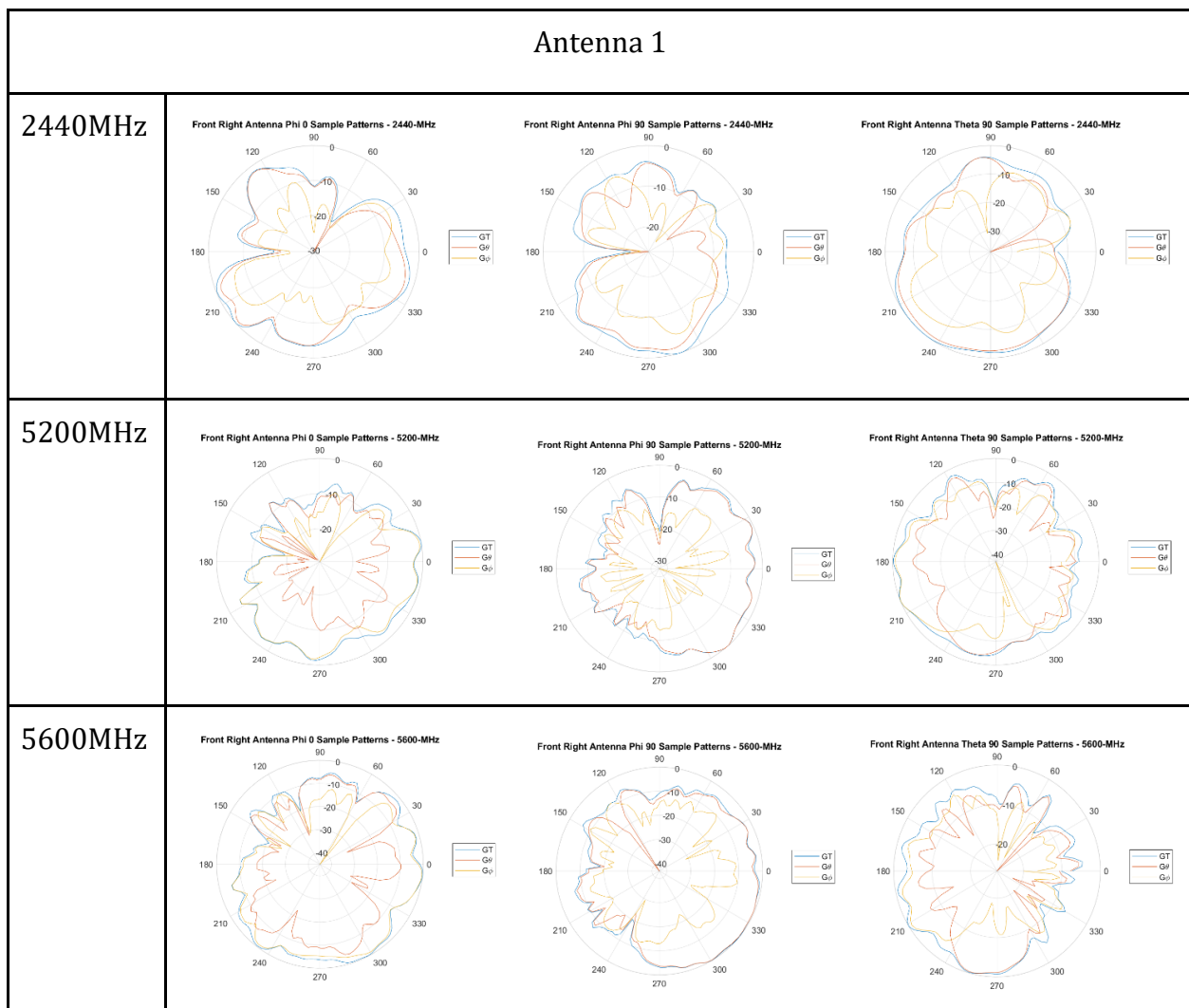
WiFi Antennas:

Frequency (MHz)	CH0				CH1			
	ANT1 (dBi)	Polarization	ANT2 (dBi)	Polarization	ANT3 (dBi)	Polarization	ANT4 (dBi)	Polarization
2400-2483.5	4.4	V	2.1	V	3.4	V	3.1	V
5180-5240	4.1	V	4.3	H	4.8	V	4.9	V
5260-5320	3.5	V	4.9	H	4.7	V	5.6	V
5500-5700	4.4	V	4.7	H	5.1	H	6.2	V
5725-5850	4.8	V	4.6	H	4.4	H	5.7	V
5925-6425	6.1	V	4.8	H	4.9	H	5.9	V
6425-6525	5.7	V	3.5	H	4.3	H	4.3	H
6525-6875	5.5	V	3.6	H	4.4	H	4.7	H
6875-7125	6.3	V	3.6	H	3.6	H	4.5	H

BT and BLE antenna :

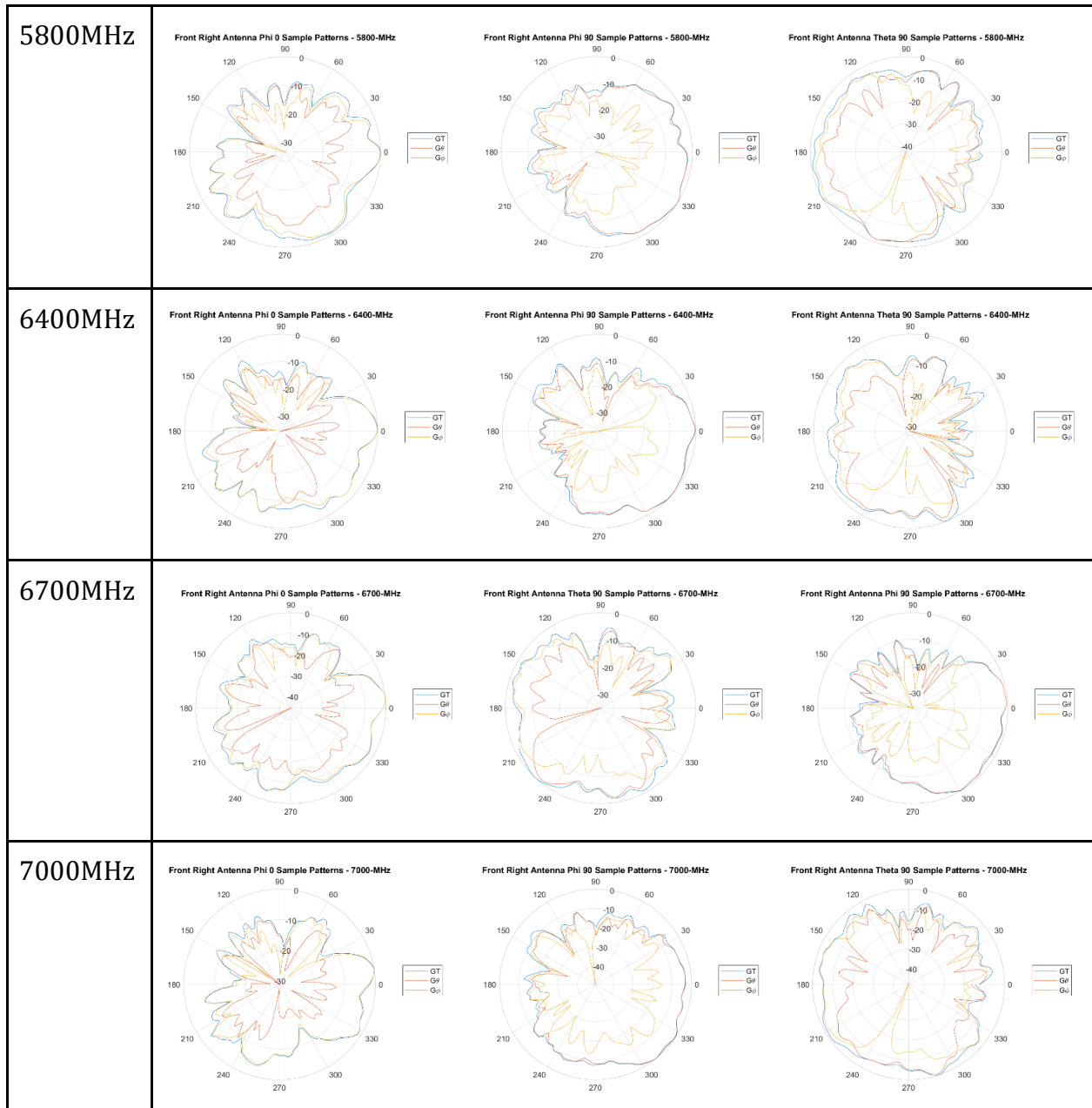
Frequency (MHz)	ANT (dBi)	Polarization
2400-2483.5	4	V

Antenna Pattern Plots for S41 are shown below:



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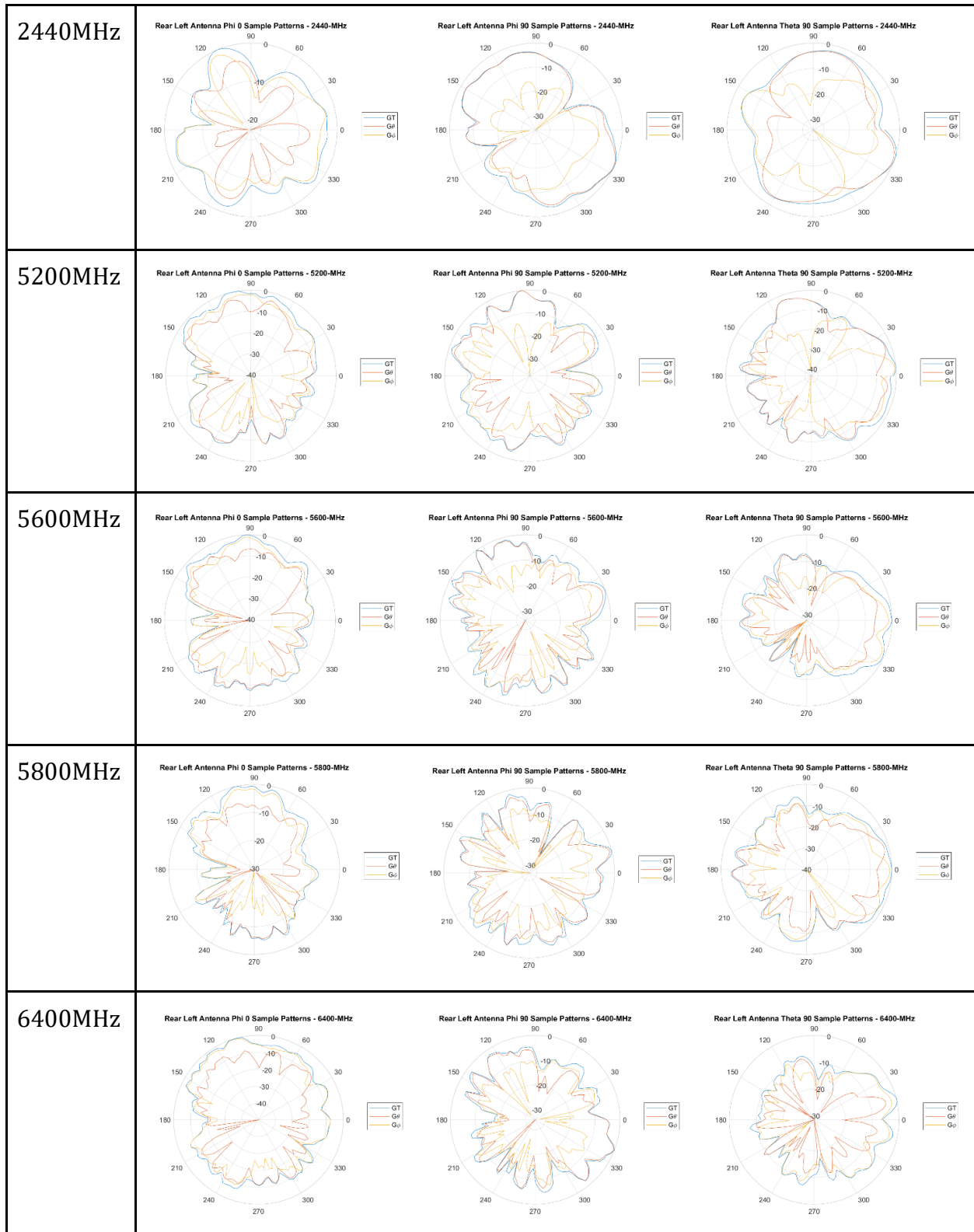


Antenna 2

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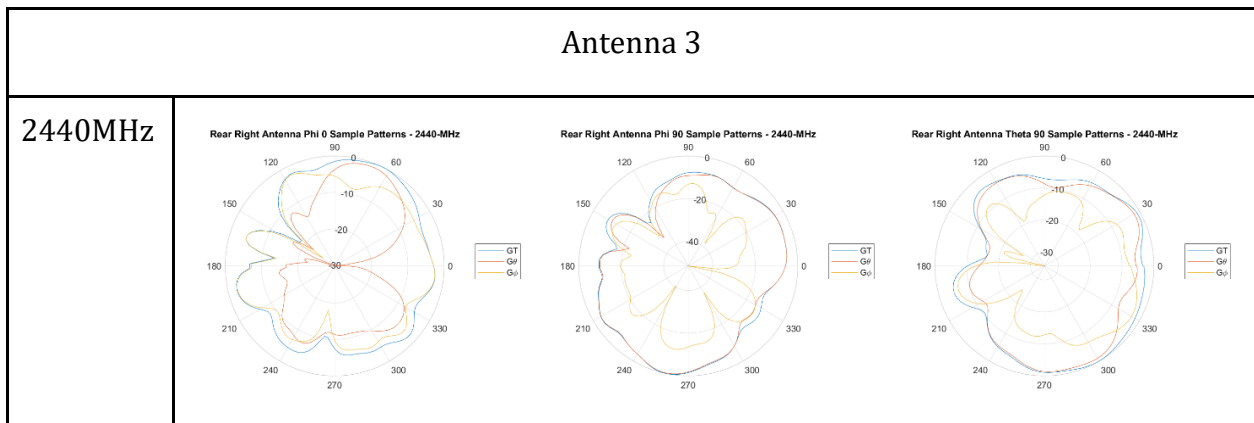
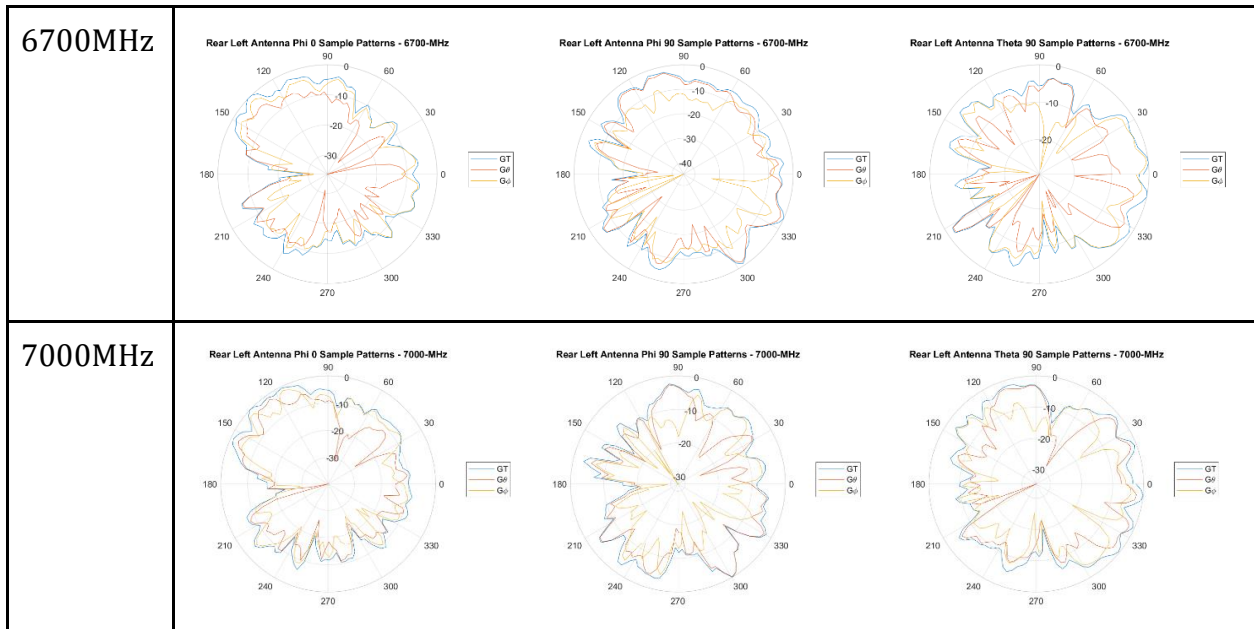
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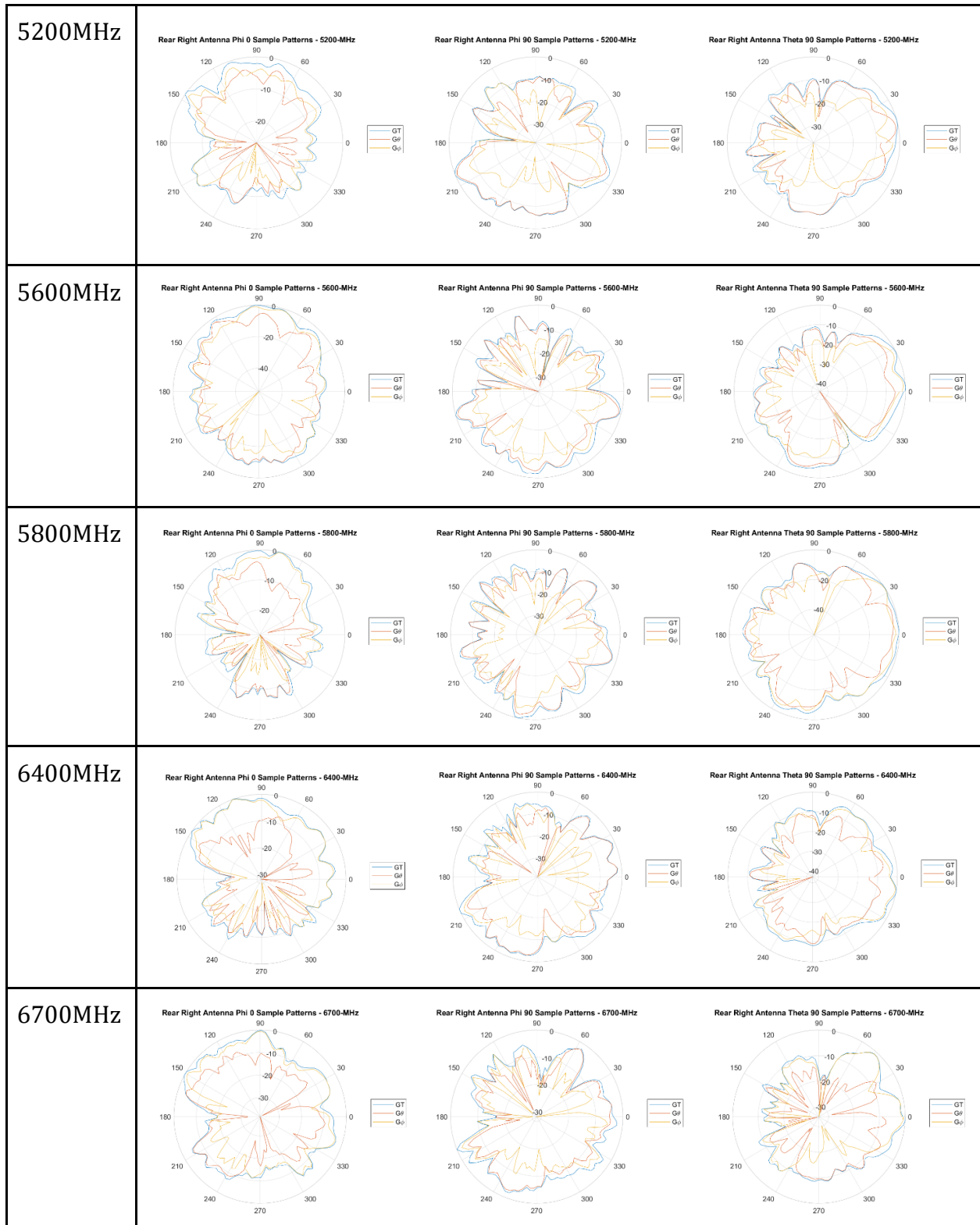
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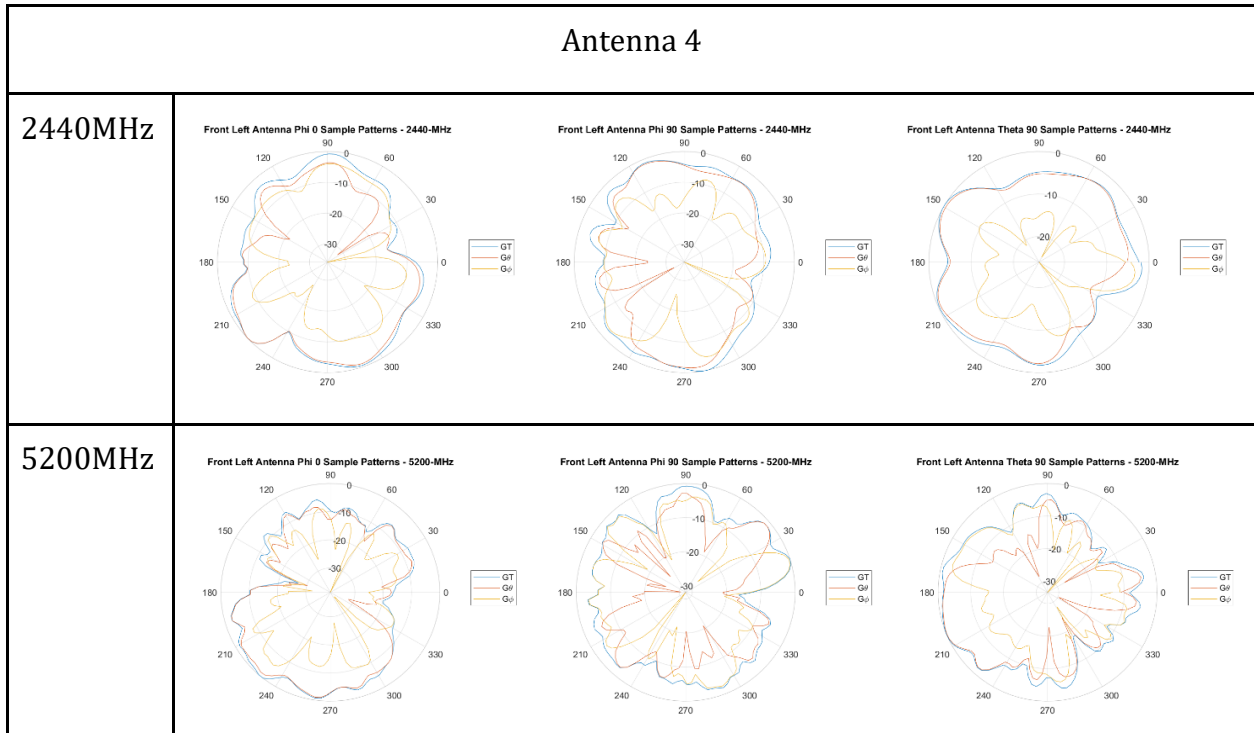
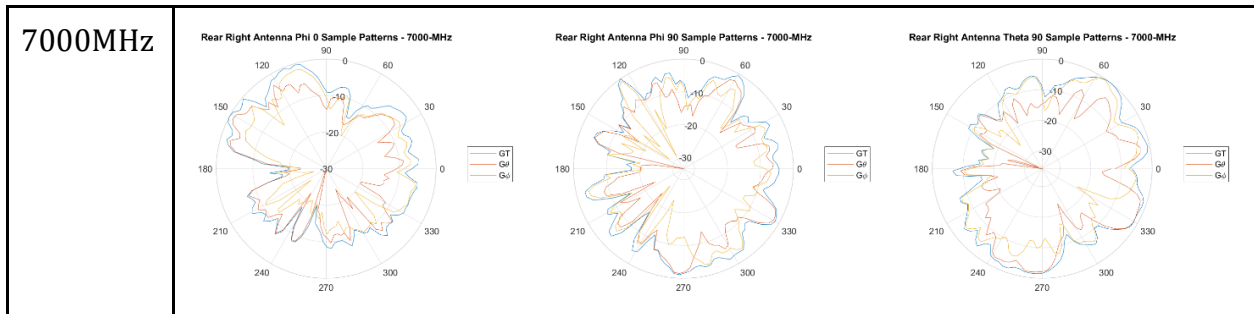
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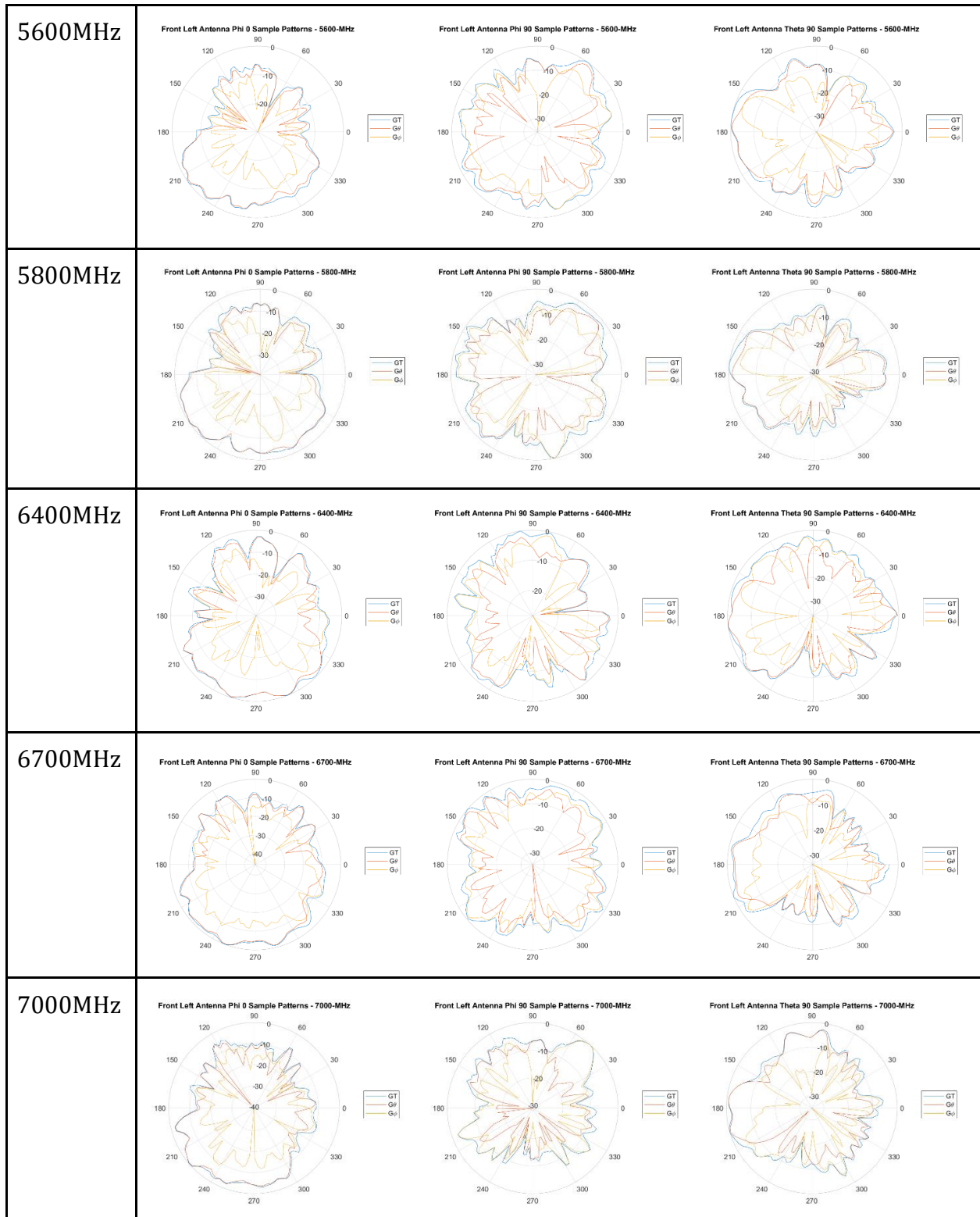
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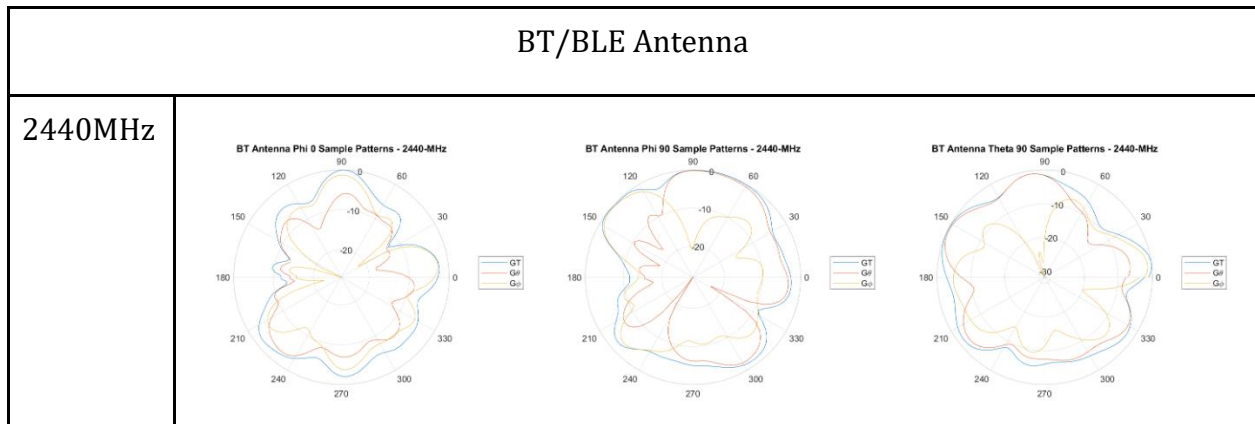




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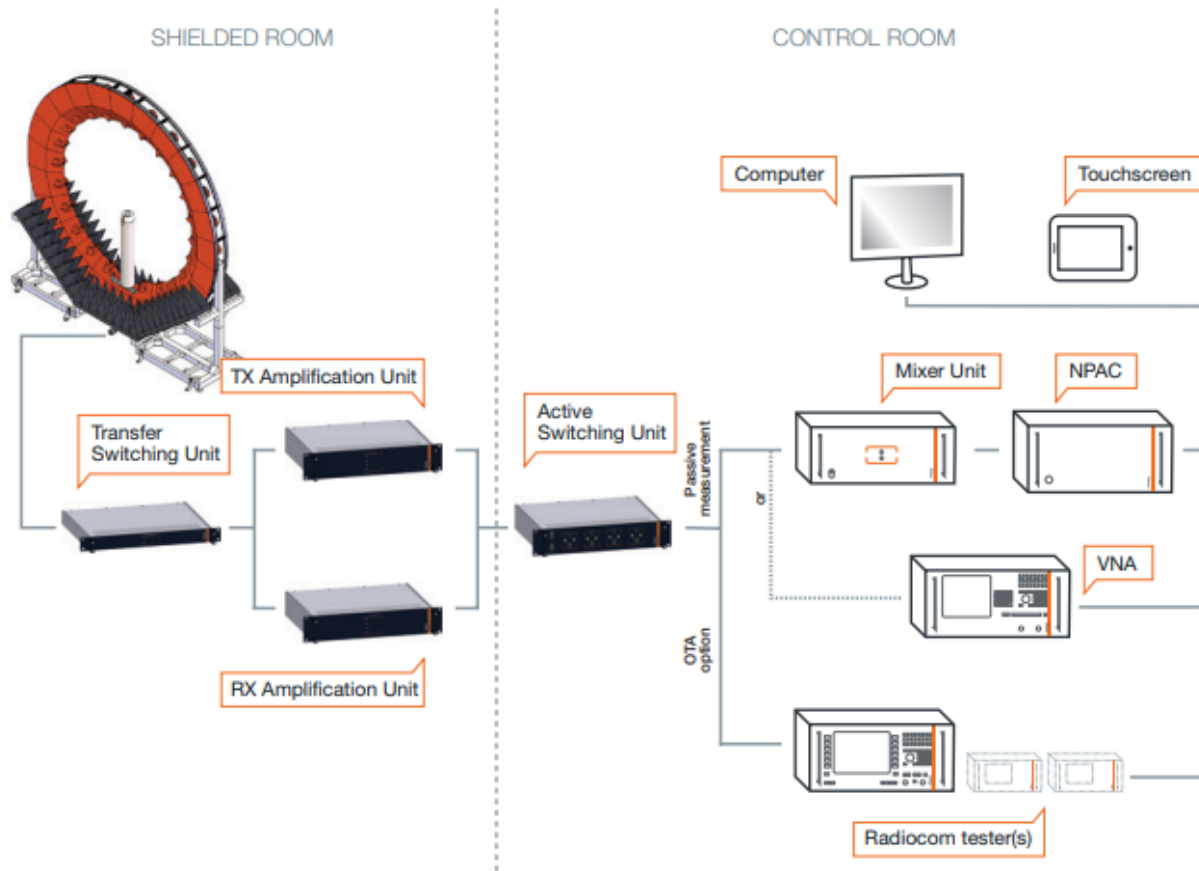


Figure 1. Measurement Chamber Diagram

2. Test location

Sonos Antenna Chamber

Peak Gain was measured using the Chamber. The antenna was measured in the full product assembly. Please see Figure 2. as a demonstration of EUT in the test chamber.

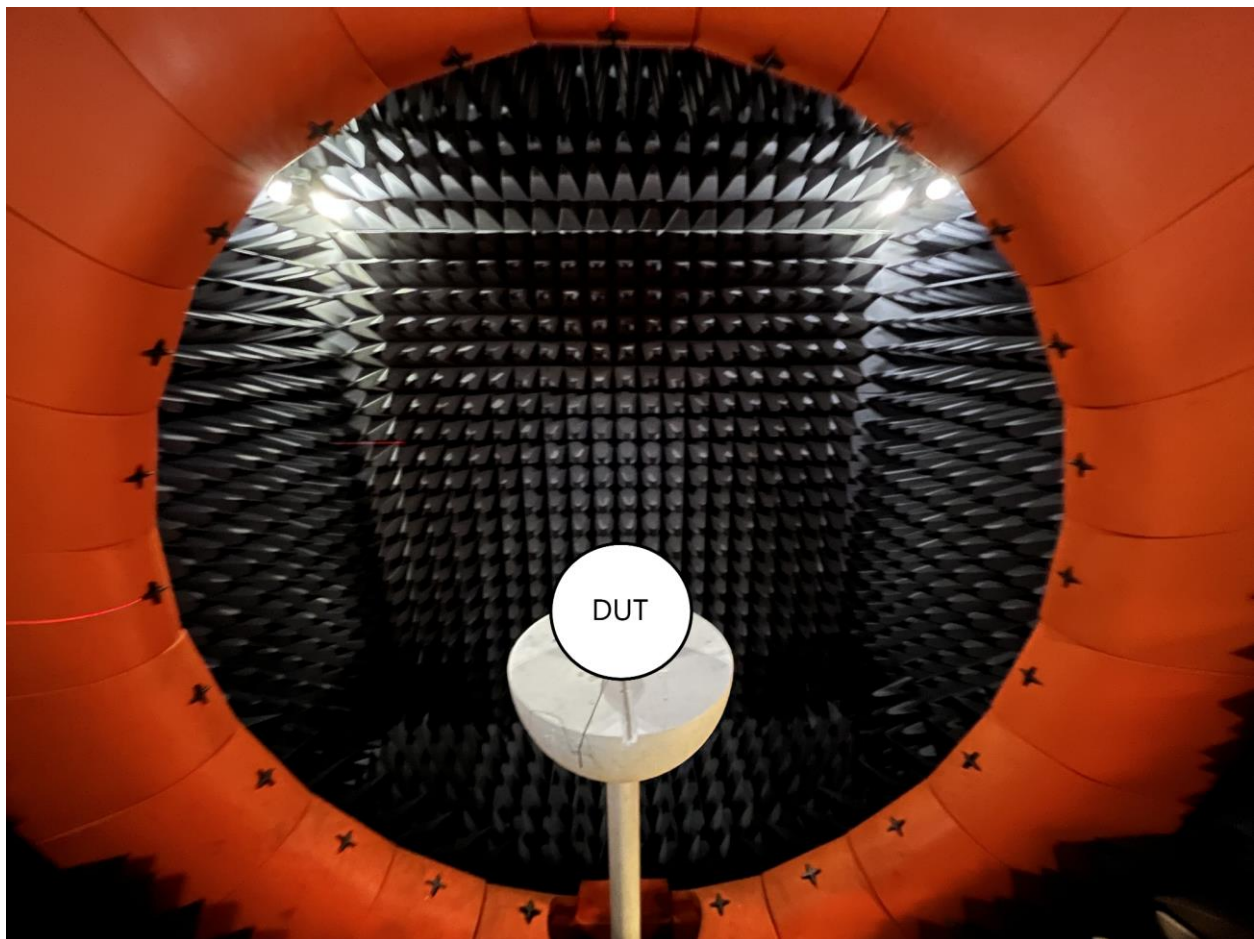


Figure 2. EUT in the test chamber.

3. **Test Equipment list**

Description	Manufacturer	Model Number
Antenna measurement system	MVG	SG24-S

The MVG system is under continuous maintenance by the vendor and gets calibrated on an annual basis.