



ANTENNA COMPARISON REPORT

Rational

May 05 2025

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2. Performance of Antennas in Customer Device

The performance of following antennas was measured in all three devices:

- 2JF1224P-030MC137-UFL
- 2JF0102P-030MC137-UFL

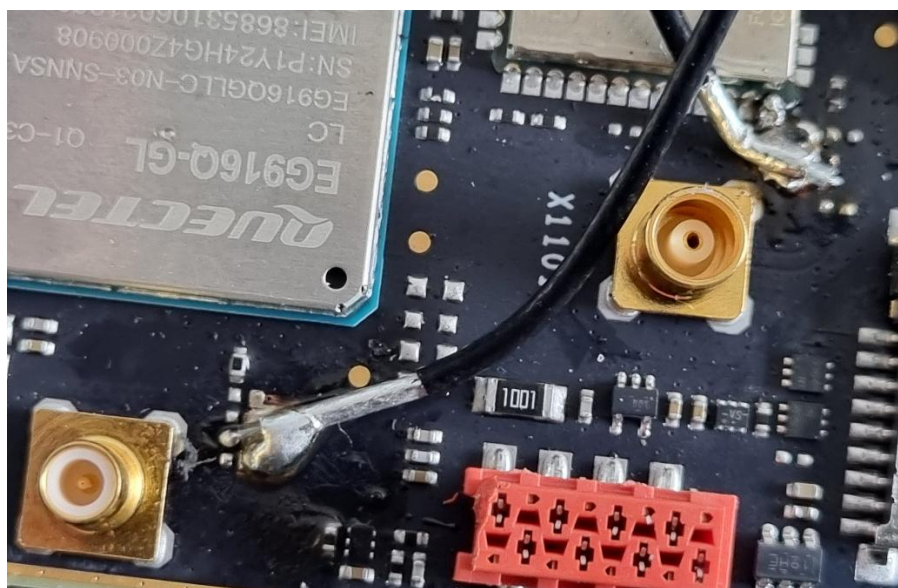


2JF0102P & 2JF1224P

2.1. Modification to customer devices

The customer's device was modified by drilling hole into the plastic case. This was necessary for testing purposes because the cables needed to be as short as possible.

Cable soldering to customers new PCB was done as well. This was done by soldering 10cm MC137 cable to RF trace and GND, while 0Ω resistor was desoldered for this purpose.



Cables soldered to board

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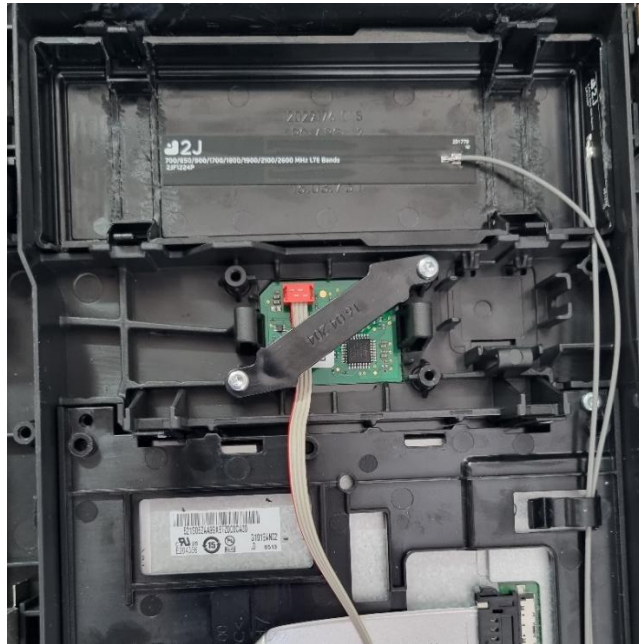
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2.1.1. Antenna mounting in customer device 1

Antennas were measured in positions shown in picture below.



Antenna mounting in device 1

2.1.2. Antenna mounting in customer device 2

Antennas were measured in positions shown in picture below.



Antenna mounting in device 2

2.1.1. Antenna mounting in customer device 3

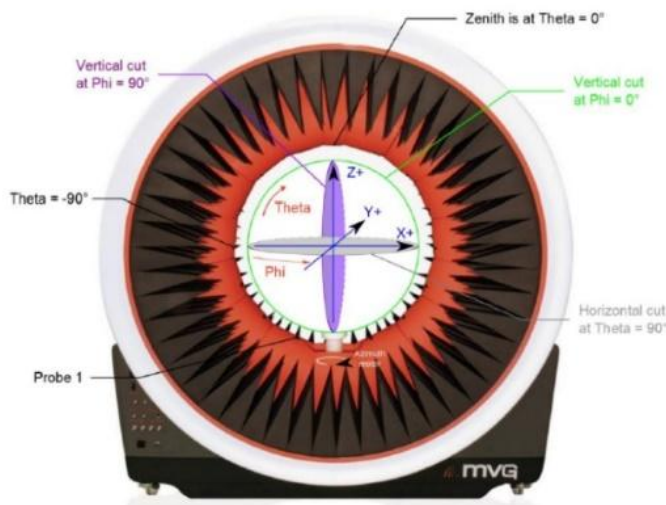
Antennas were measured in positions shown in picture below.



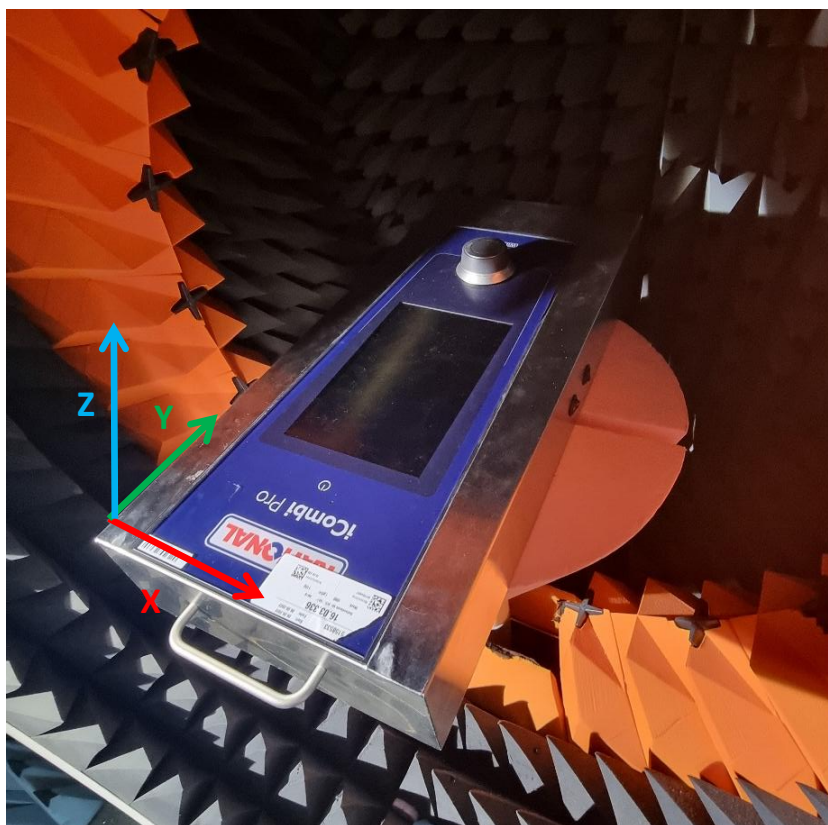
Antenna mounting in customer device 3

3. Measurement Setup

Both of antennas were connected to each device and measured inside a Certified CTIA 3D Anechoic Chamber in free space.



OTA measurement coordinate system



Chamber Setup of device 1

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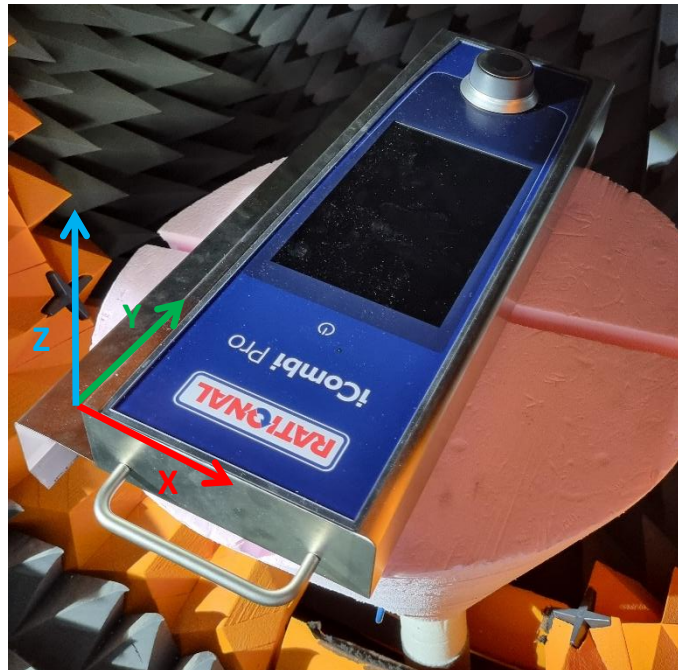
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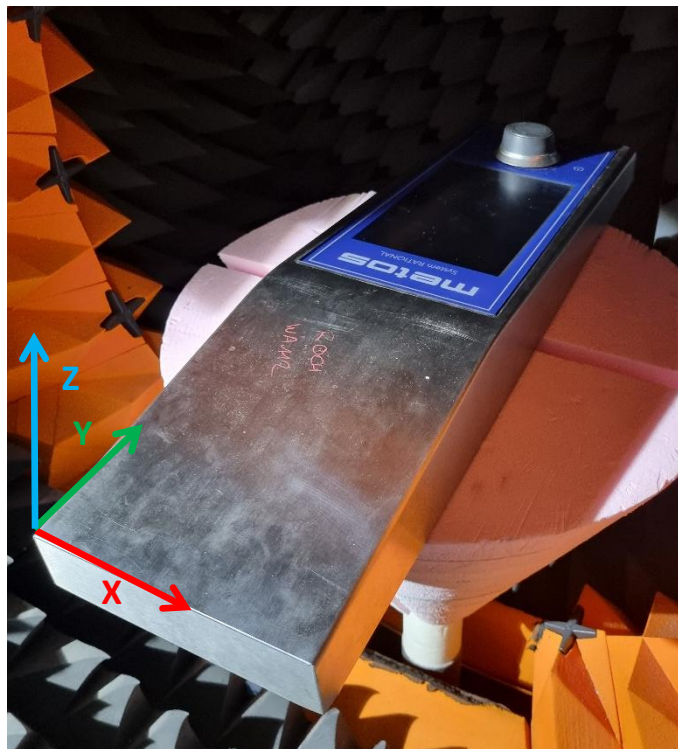
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Chamber Setup of device 2



Chamber Setup of device 3

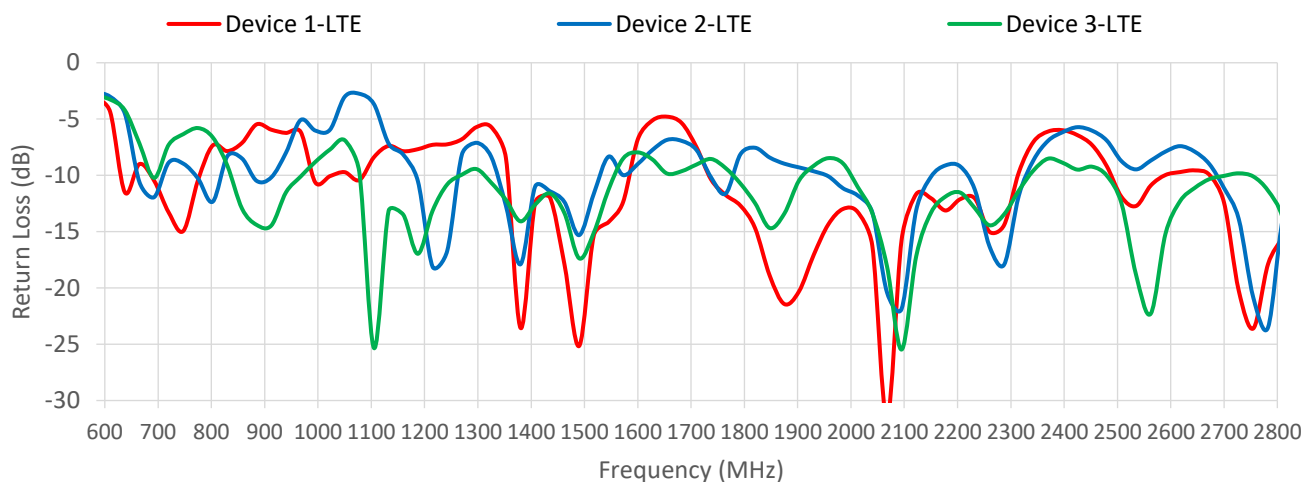
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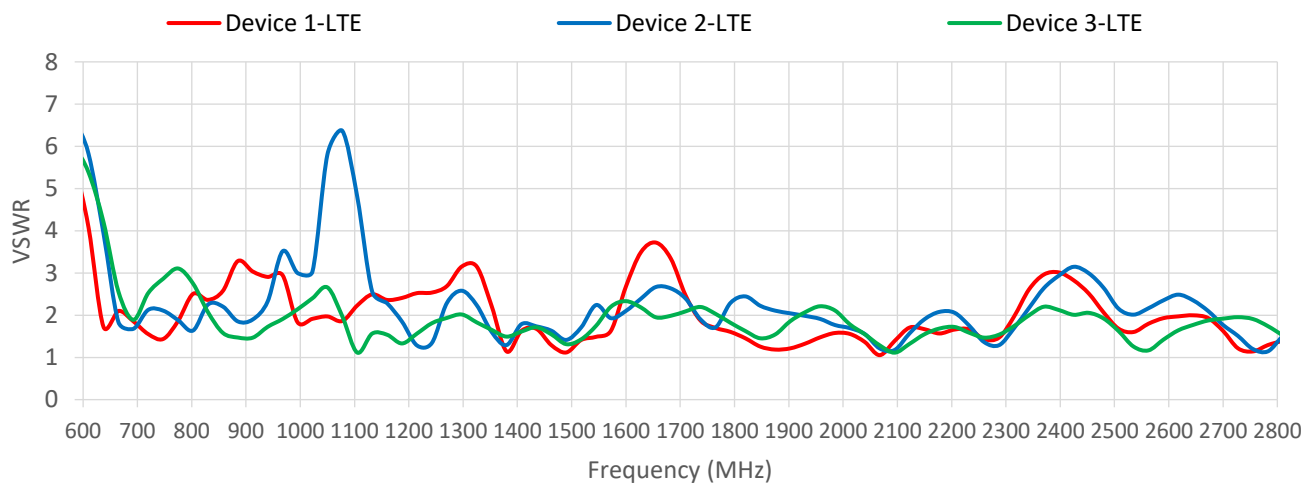
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3.1. Main Antenna Performance Comparison - LTE

3.1.1. Return Loss



3.1.2. VSWR



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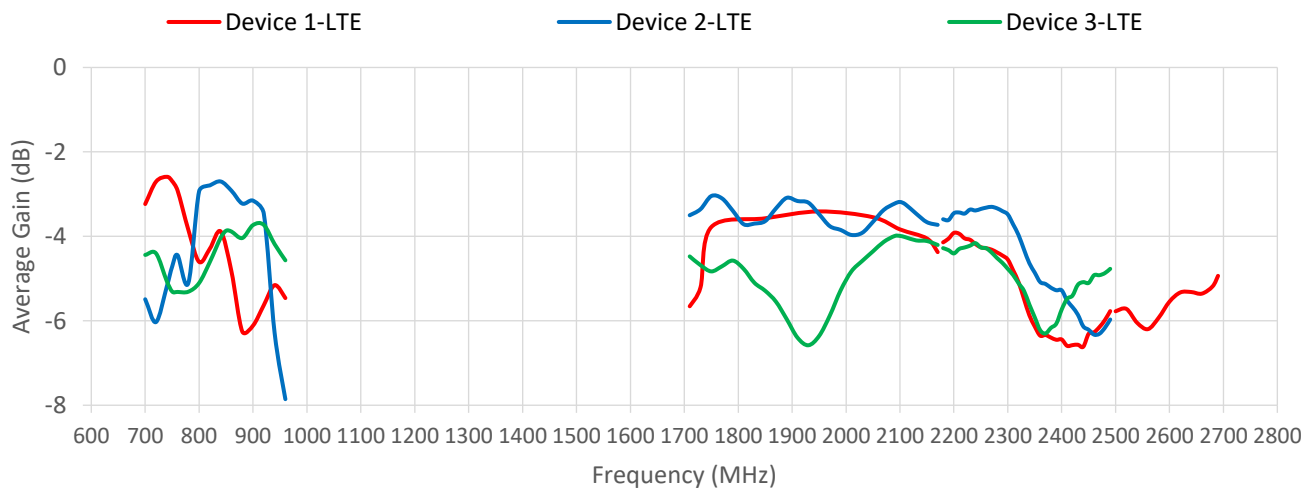
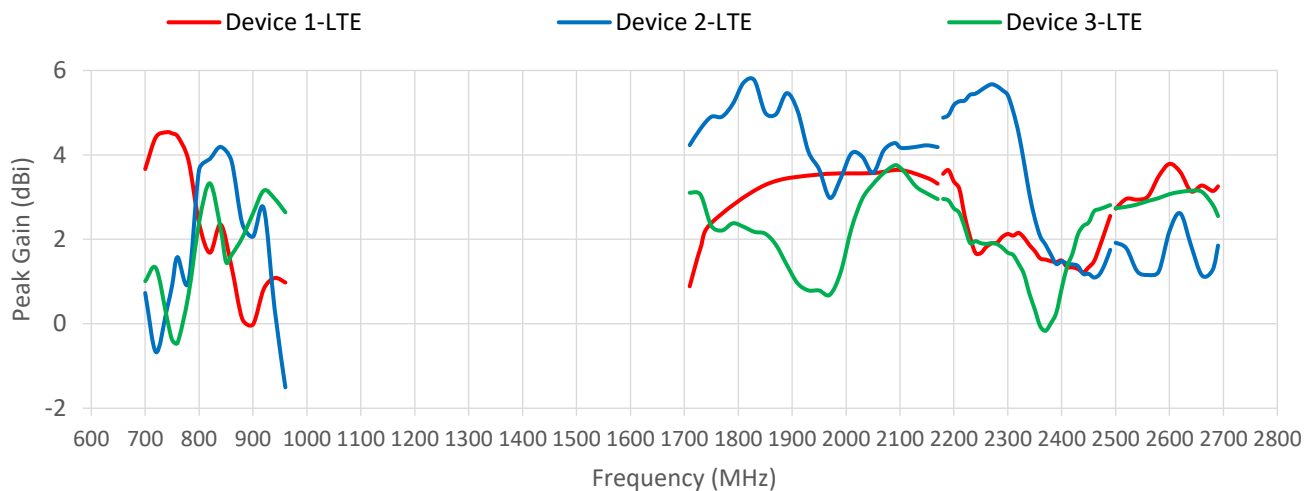
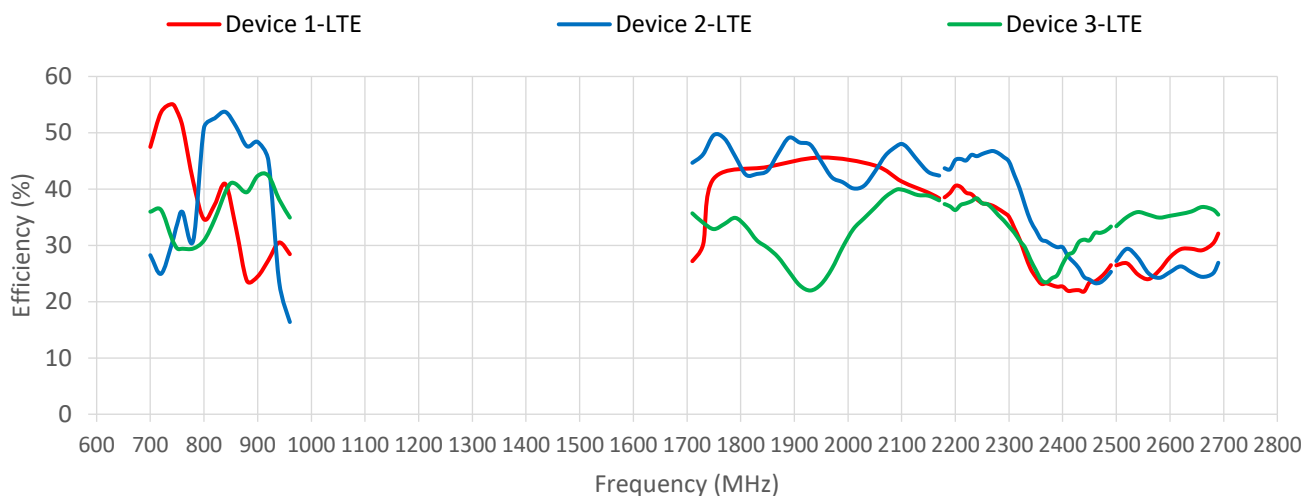
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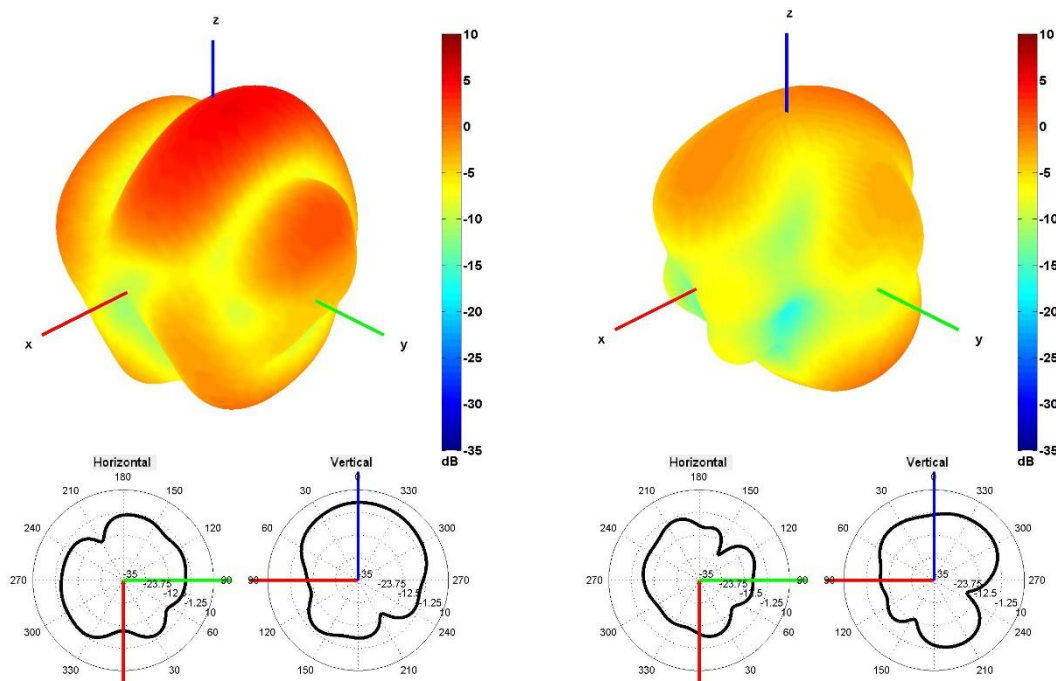
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3.1.3. OTA Performance

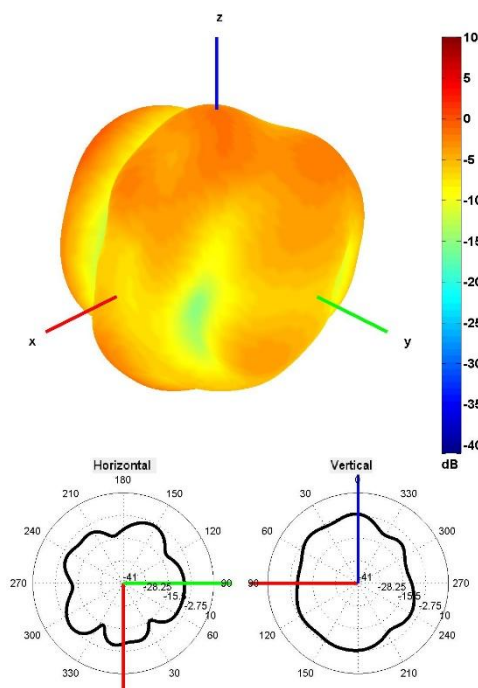


3.1.4. Radiation Patterns



Device 1

Device 2



Device 3

Radiation pattern 750 MHz

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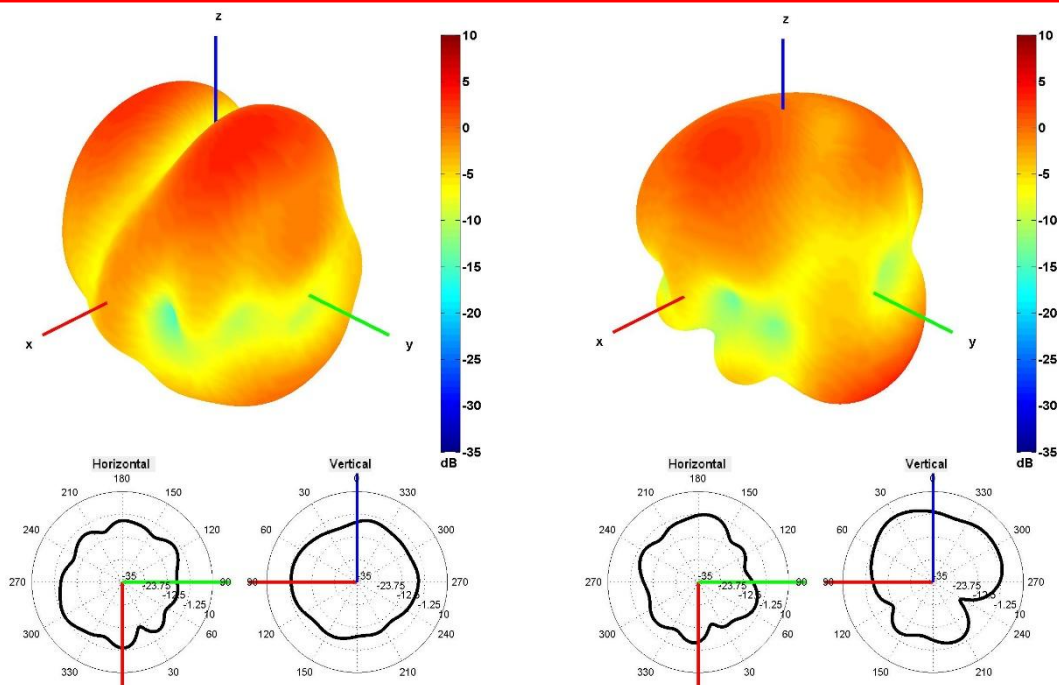
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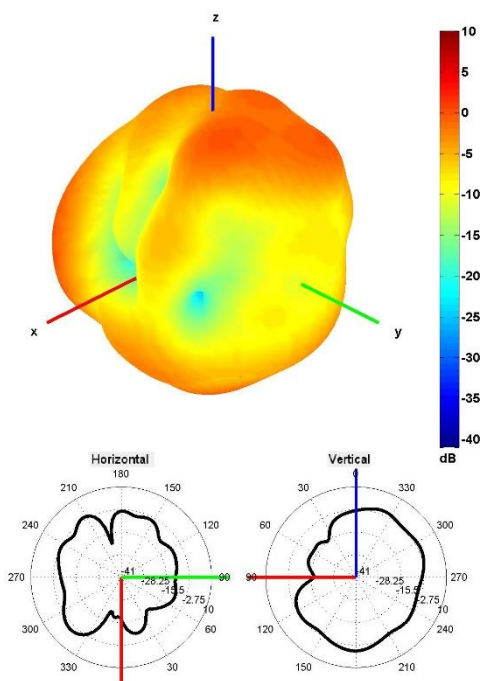
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Device 1

Device 2



Device 3

Radiation pattern 850 MHz

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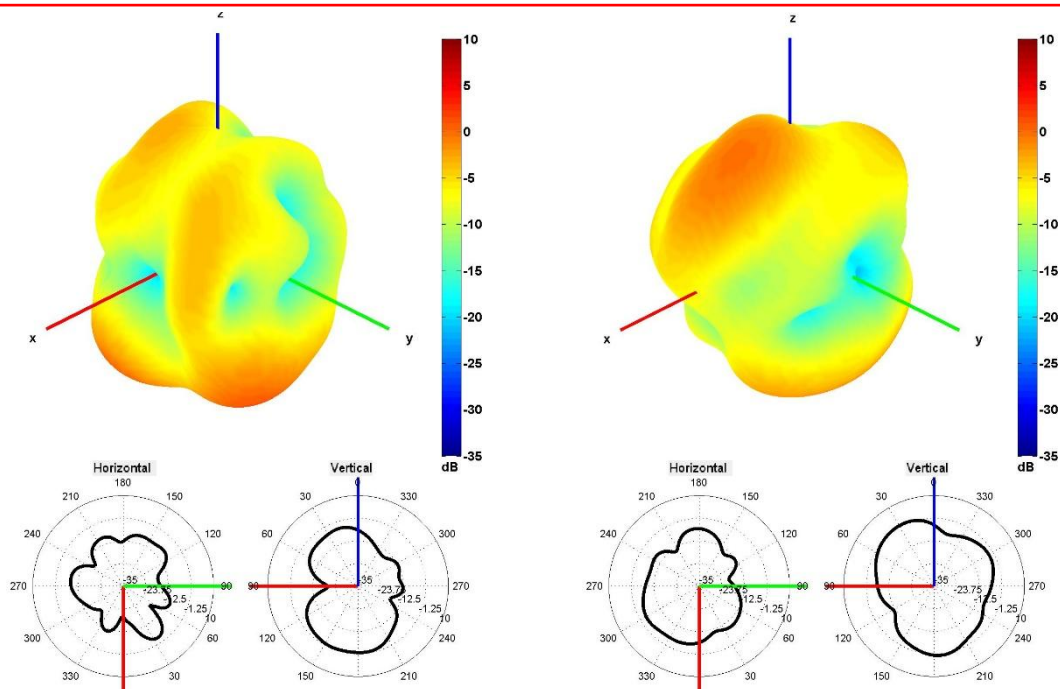
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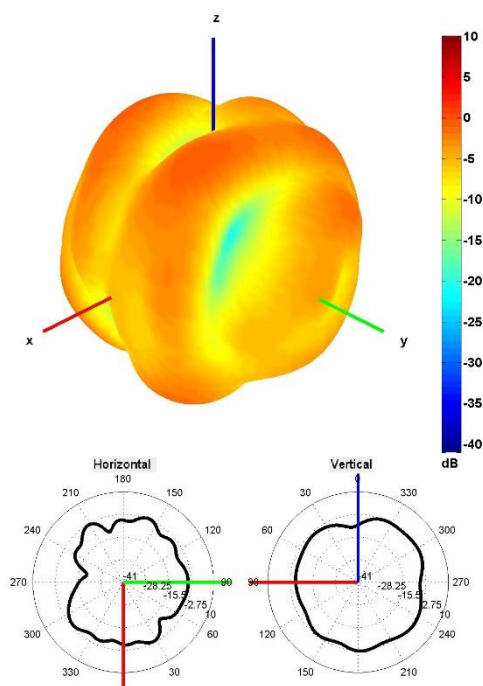
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Device 1

Device 2



Device 3

Radiation pattern 950 MHz

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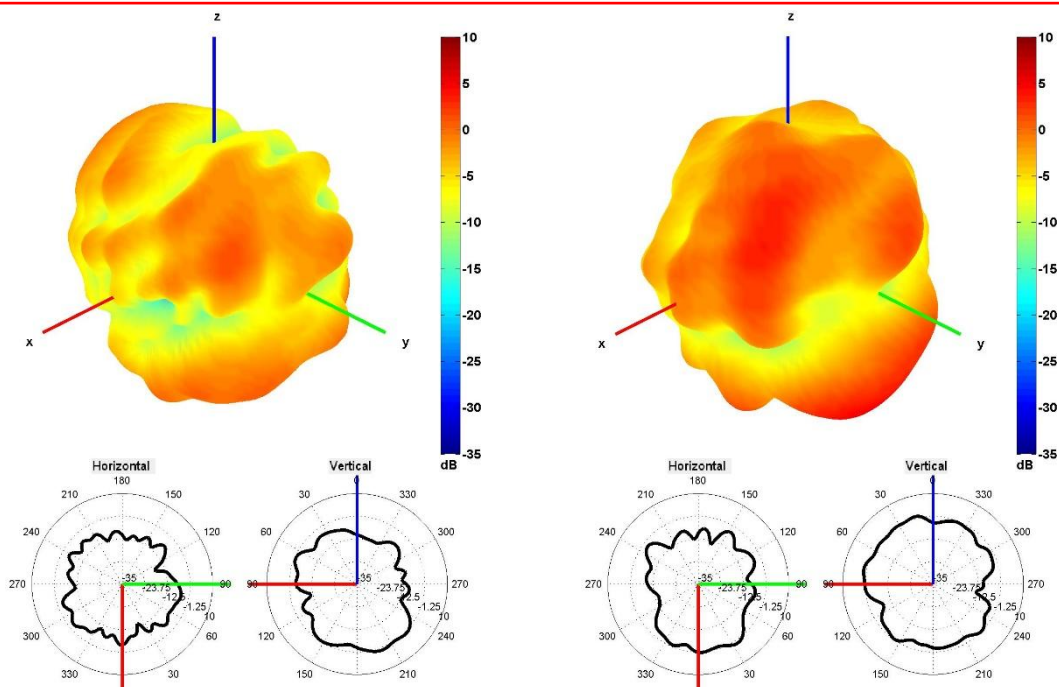
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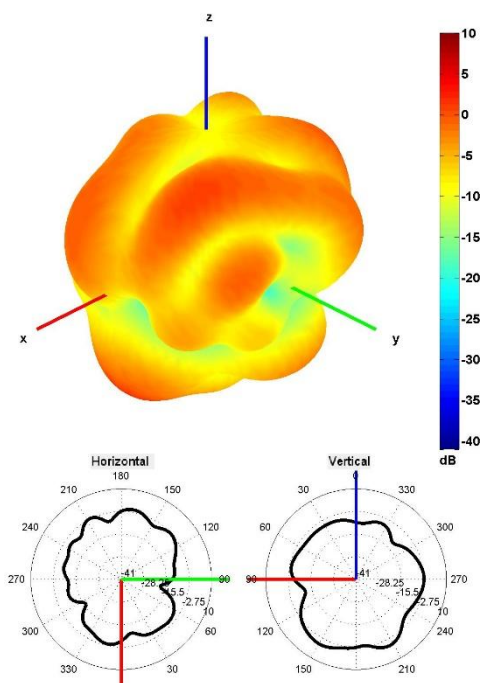
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Device 1

Device 2



Device 3

Radiation pattern 1750 MHz

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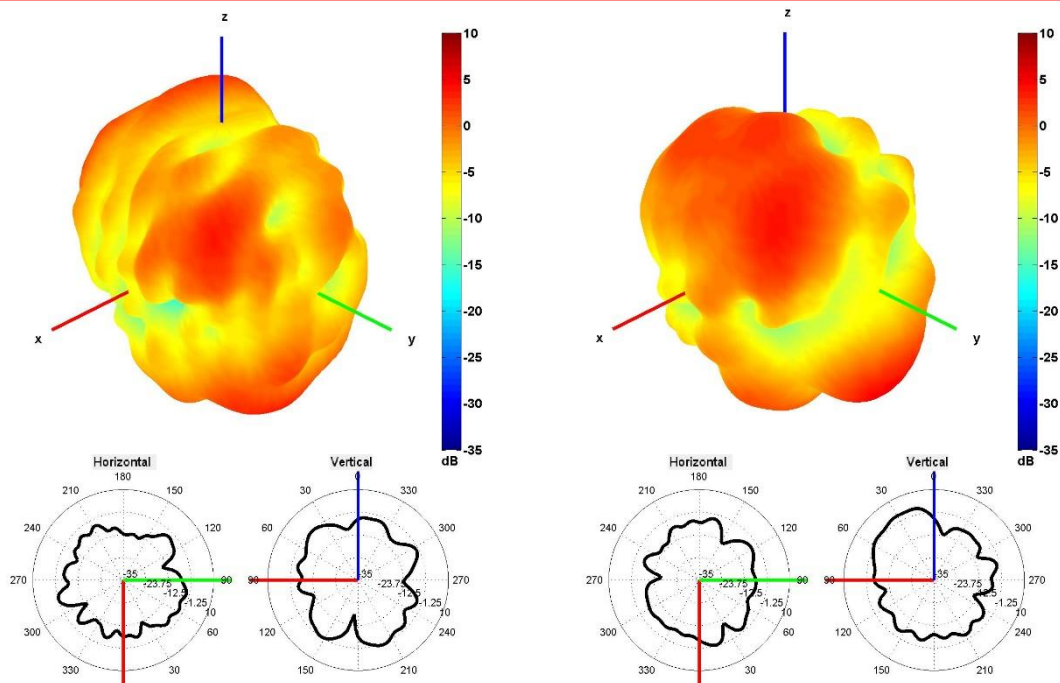
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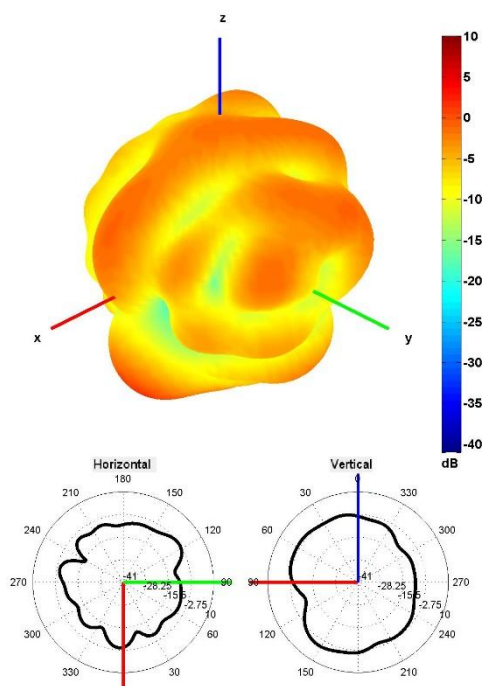
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Device 1

Device 2



Device 3

Radiation pattern 1850 MHz

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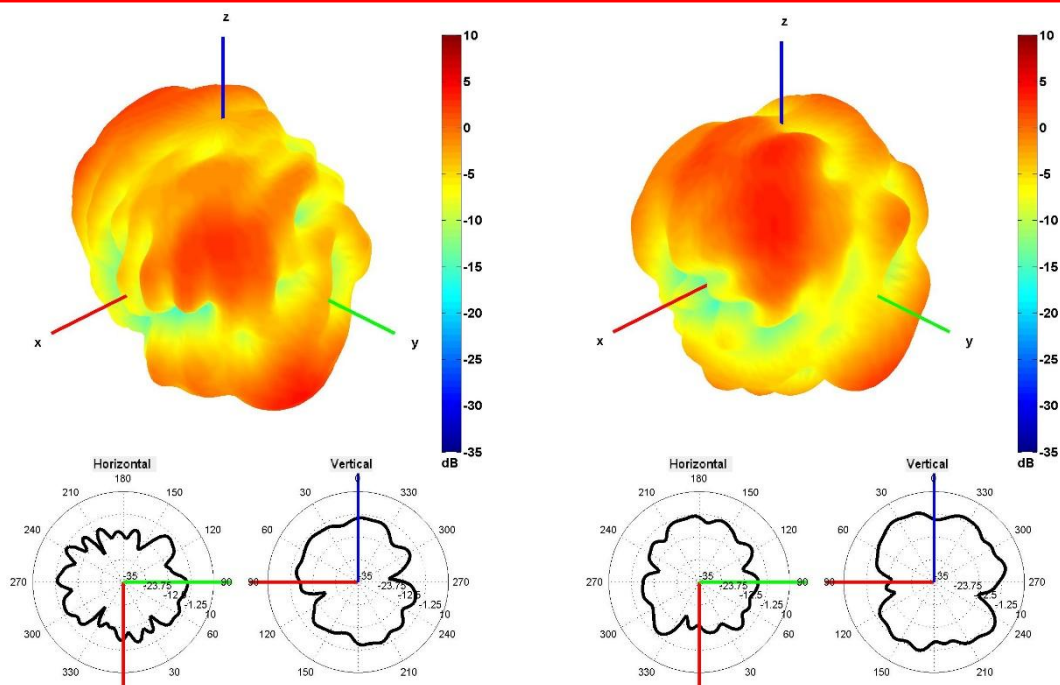
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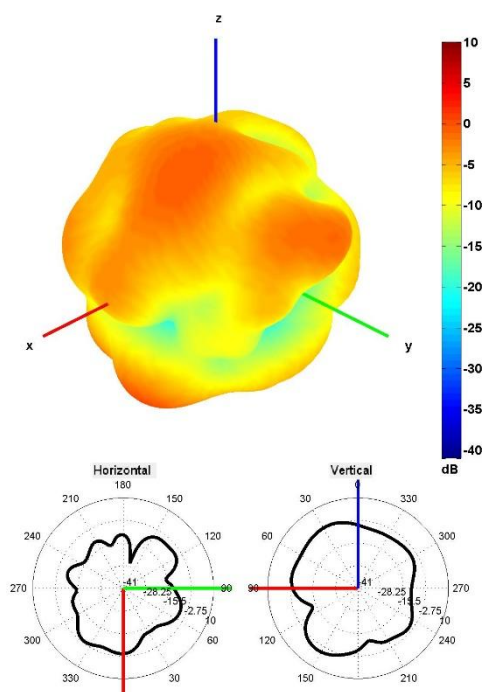
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Device 1

Device 2



Device 3

Radiation pattern 1950 MHz

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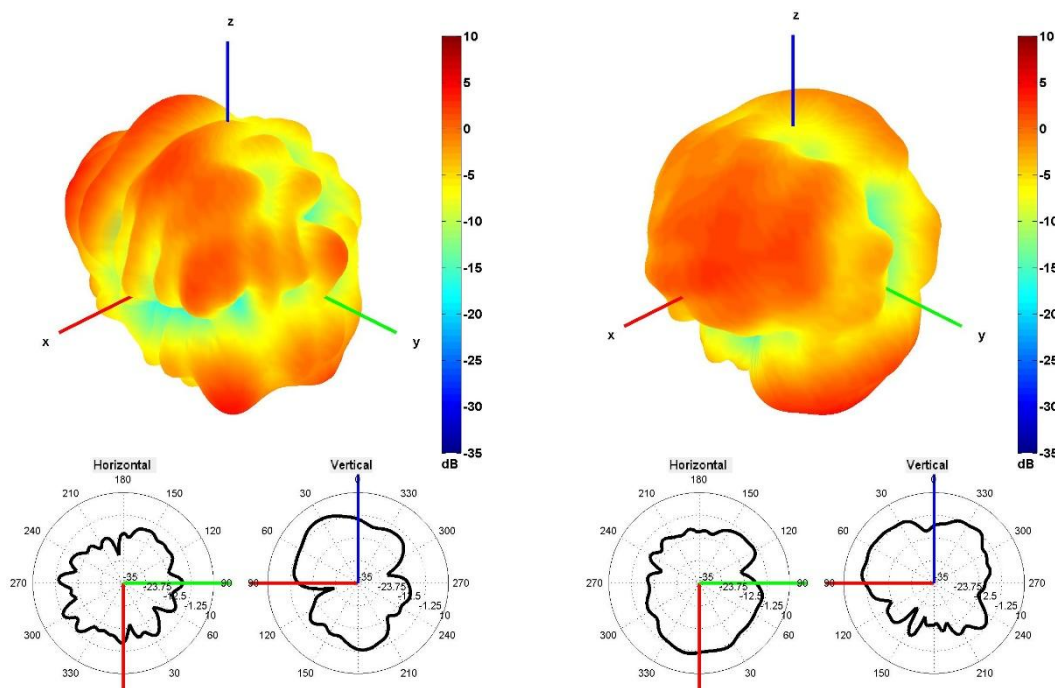
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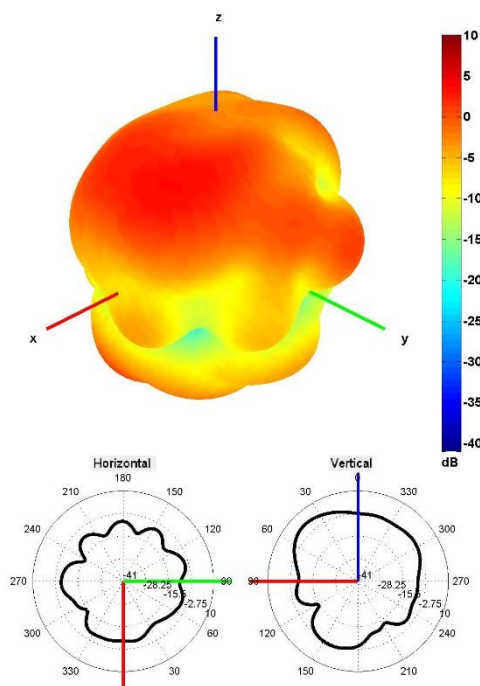
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Device 1

Device 2



Device 3

Radiation pattern 2100 MHz

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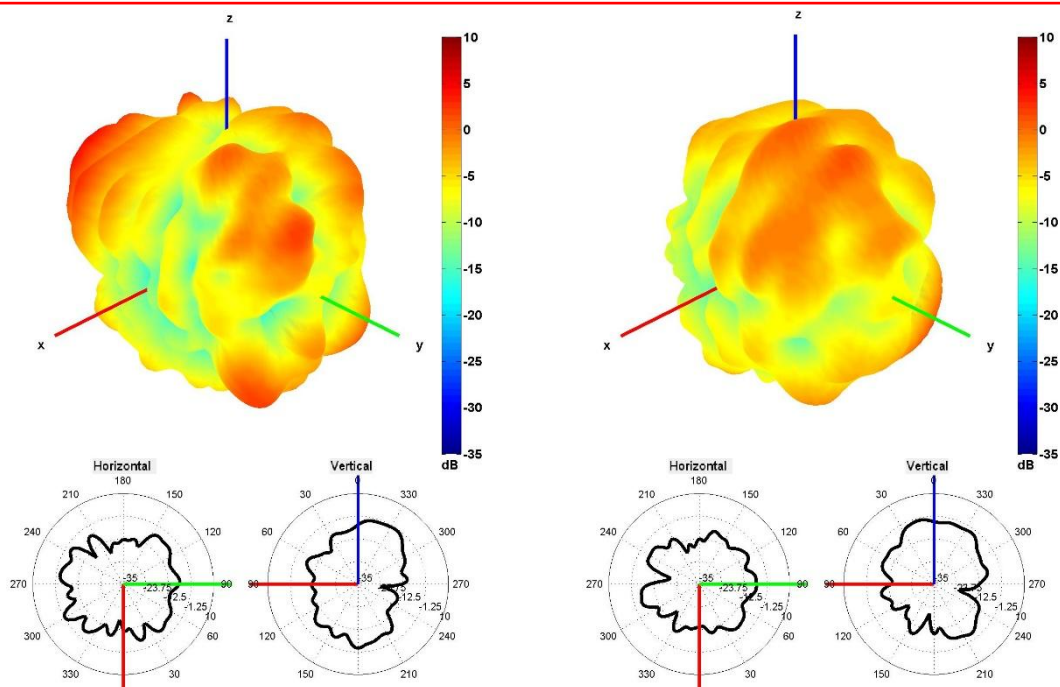
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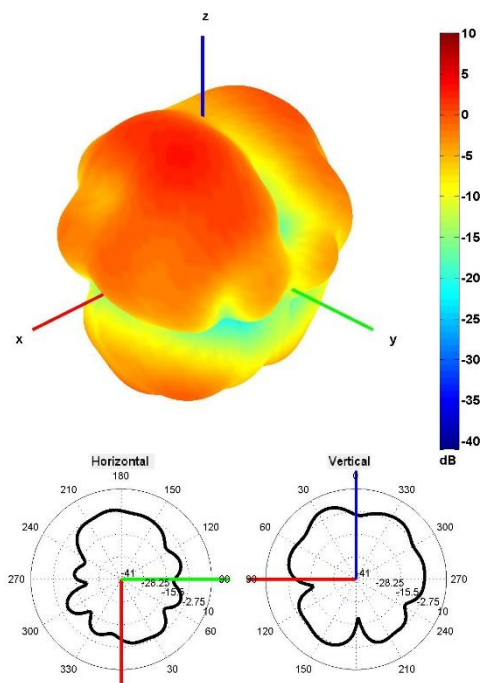
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Device 1

Device 2



Device 3

Radiation pattern 2600 MHz

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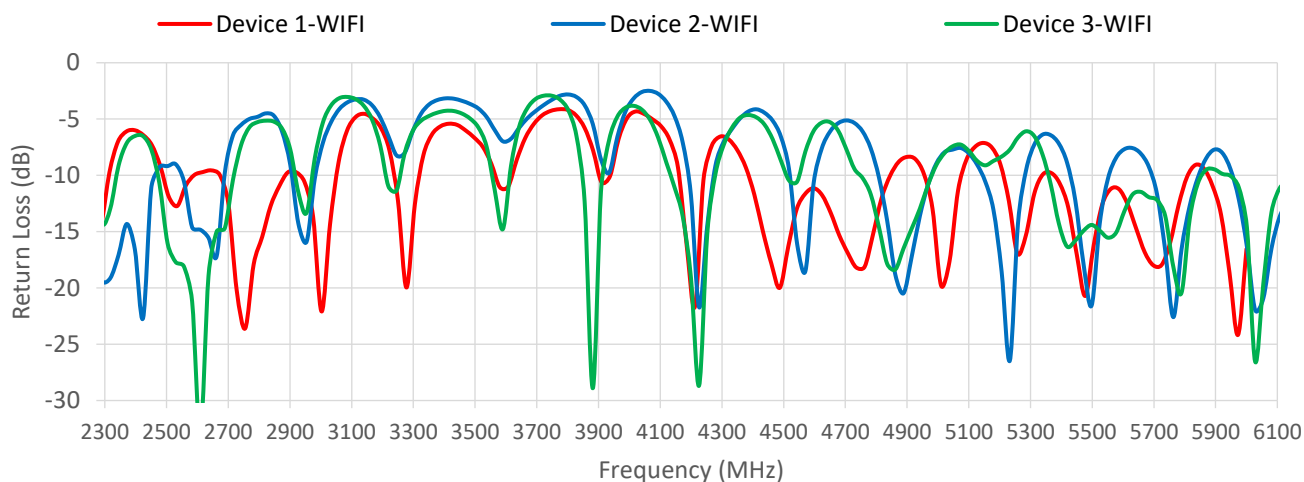
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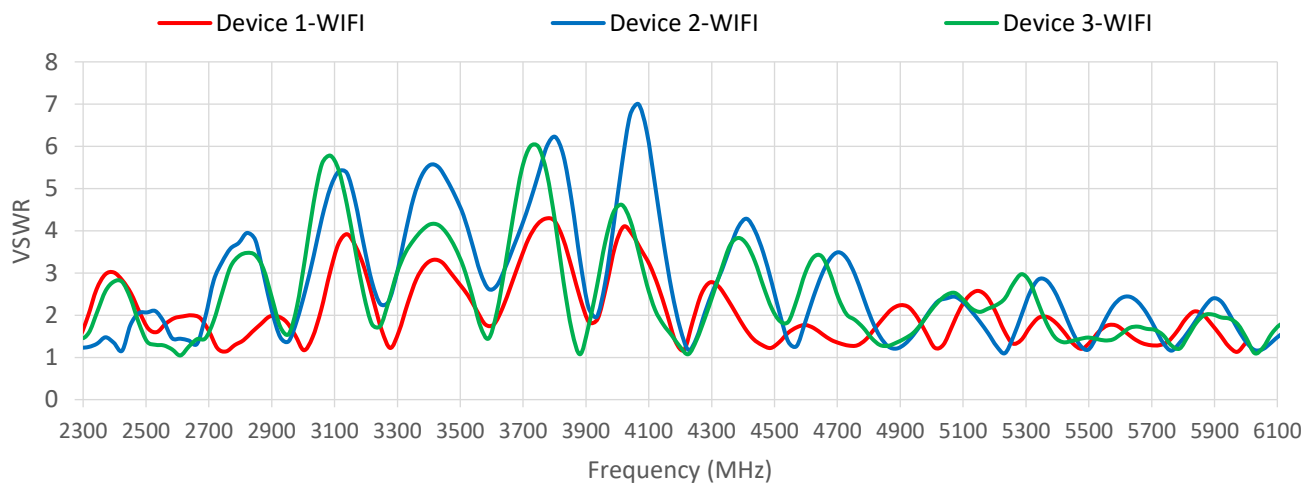
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3.2. Main Antenna Performance Comparison - WIFI

3.2.1. Return Loss



3.2.2. VSWR



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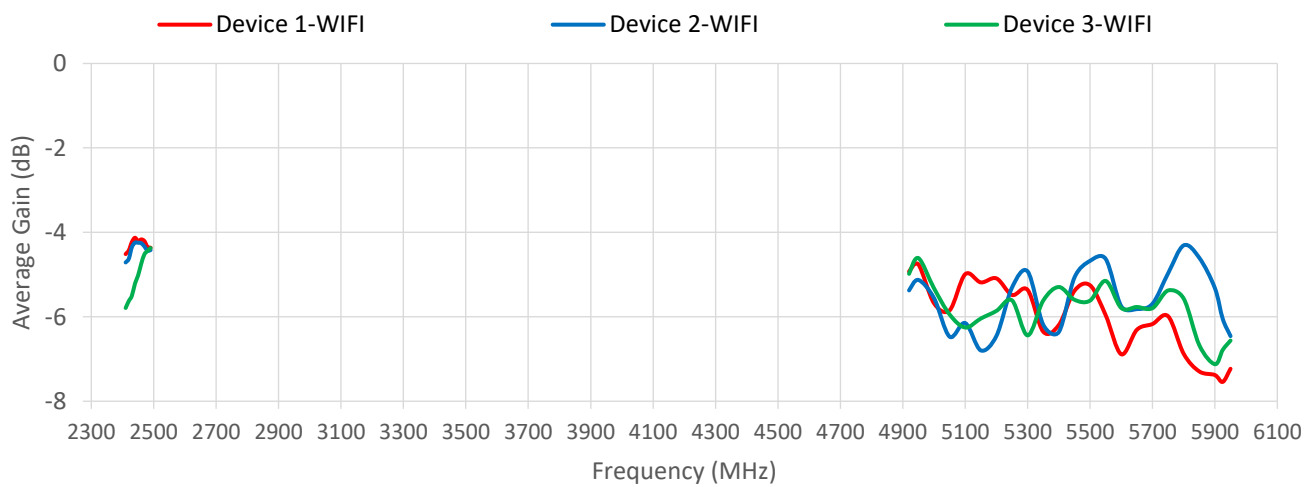
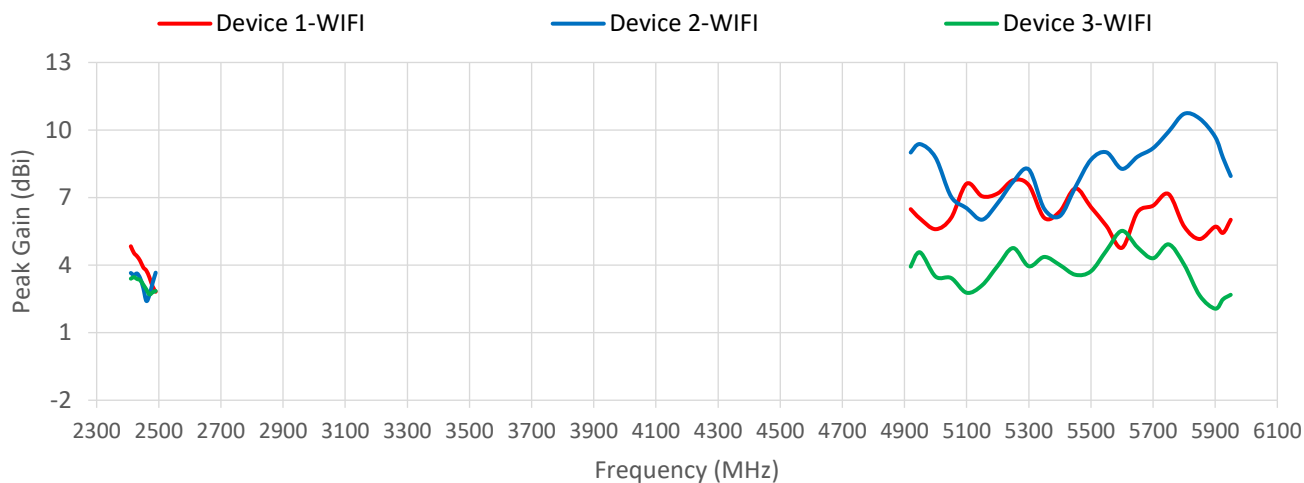
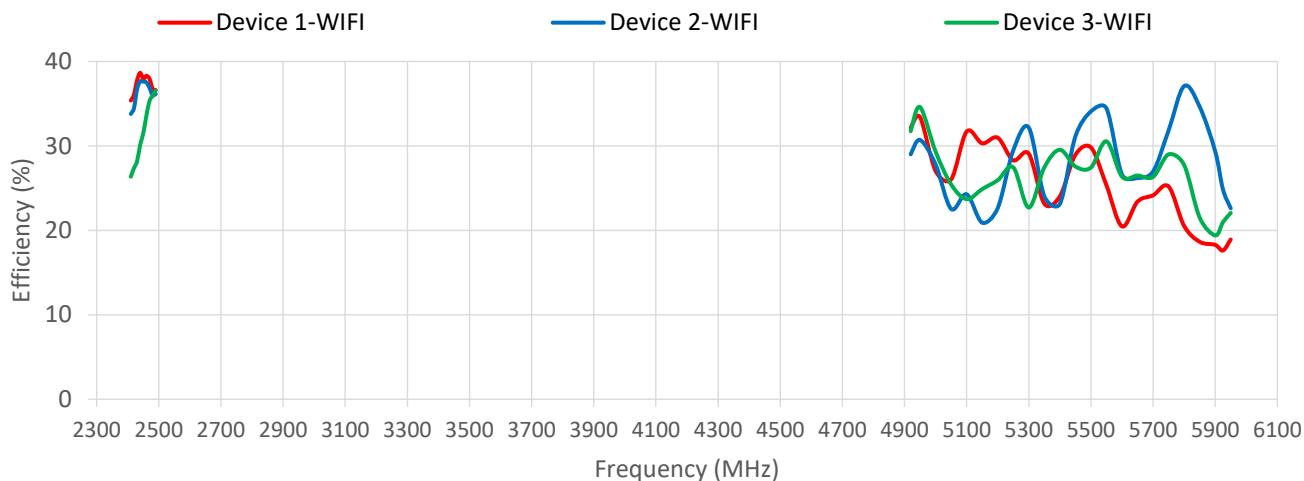
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3.2.3. OTA Performance



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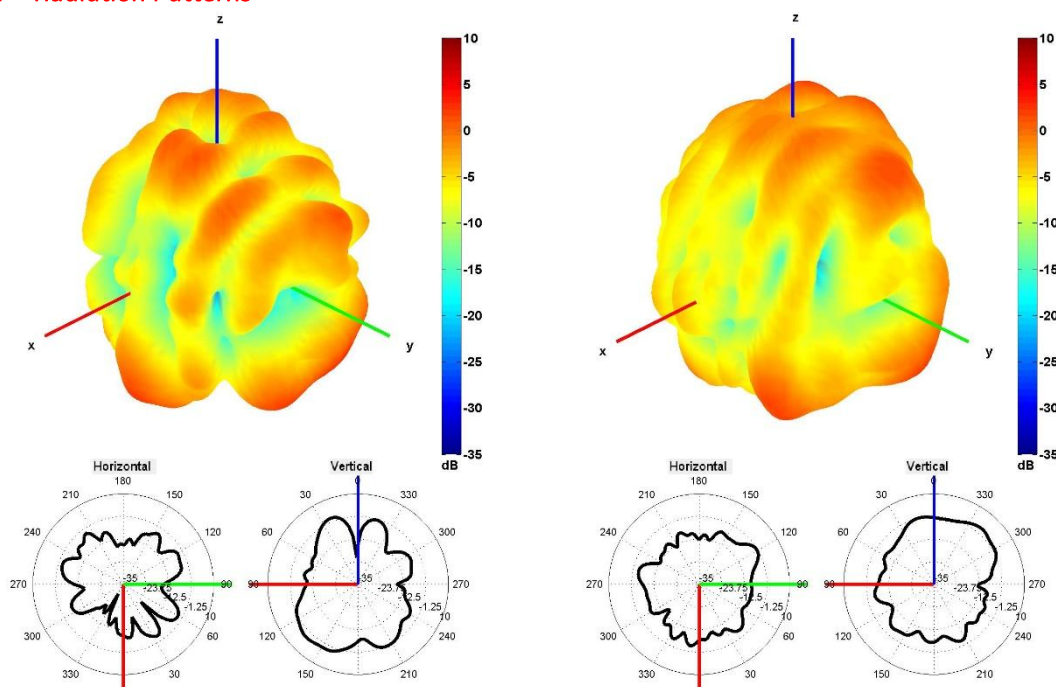
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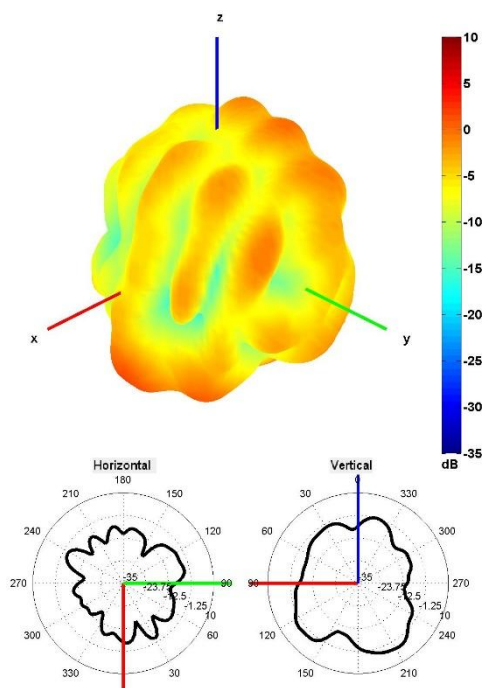
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3.2.4. Radiation Patterns



Device 1

Device 2



Device 3

Radiation pattern 2450 MHz

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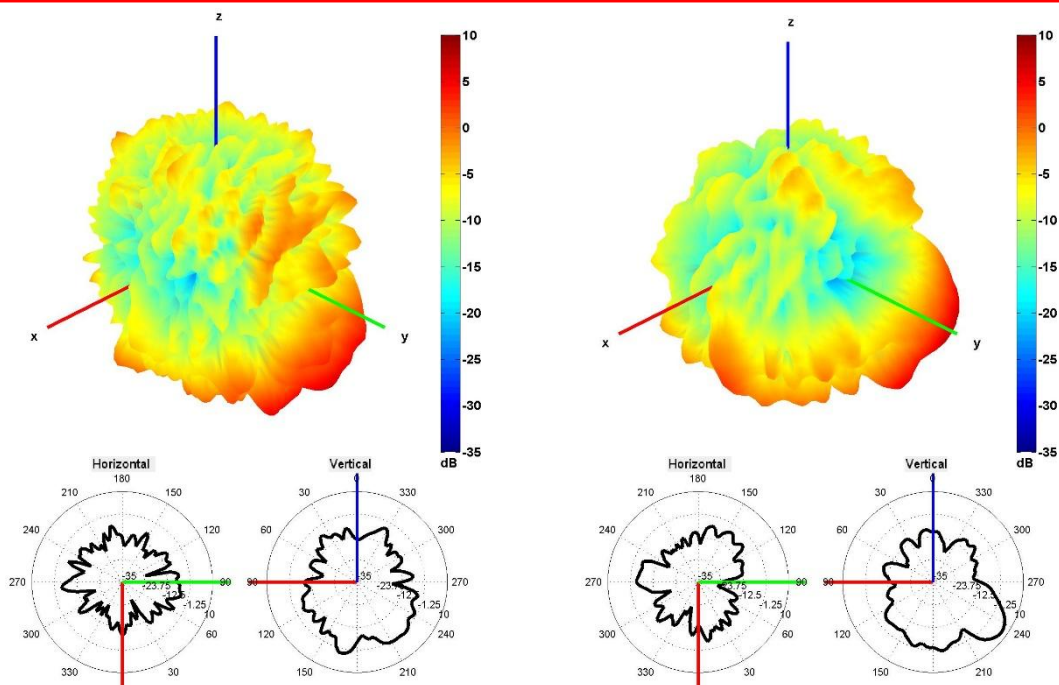
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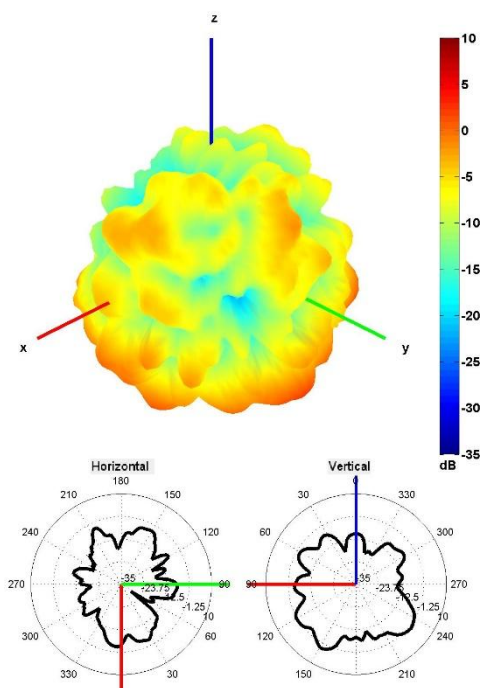
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Device 1

Device 2



Device 3

Radiation pattern 5500 MHz

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Peak Gain values

Frequency	Device 1	Device 2	Device 3
2410	4.836615	3.650832	3.398192
2420	4.54102	3.555714	3.467015
2430	4.393293	3.62703	3.384219
2440	4.194947	3.420375	3.332641
2450	3.900765	2.98866	3.131837
2460	3.754731	2.407383	2.919055
2470	3.453645	2.683882	2.698764
2480	3.054757	3.200685	2.790635
2490	2.817756	3.664836	2.851342
4920	6.48464	8.999939	3.933005
4950	6.067333	9.374994	4.567877
5000	5.595307	8.777	3.492133
5050	6.095576	7.044074	3.427083
5100	7.617579	6.530247	2.773061
5150	7.057441	6.01837	3.108524
5200	7.183598	6.75538	3.967146
5250	7.772558	7.708999	4.758791
5300	7.552733	8.247767	3.950043
5350	6.098052	6.494259	4.364037
5400	6.382083	6.176161	4.003483
5450	7.407847	7.464282	3.571966
5500	6.578313	8.679175	3.726069
5550	5.7364	9.00974	4.648535
5600	4.769272	8.274068	5.521567
5650	6.352369	8.815474	4.789787
5700	6.639797	9.192661	4.30443
5750	7.15666	9.926866	4.922798
5800	5.717956	10.71955	4.021631
5850	5.159037	10.50741	2.650527
5900	5.705173	9.692881	2.066661
5925	5.43263	8.769055	2.479744
5950	6.015187	7.955465	2.682818

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