

Winmate Inc.

AntennaSpecification

Project :M101MDT-AX210

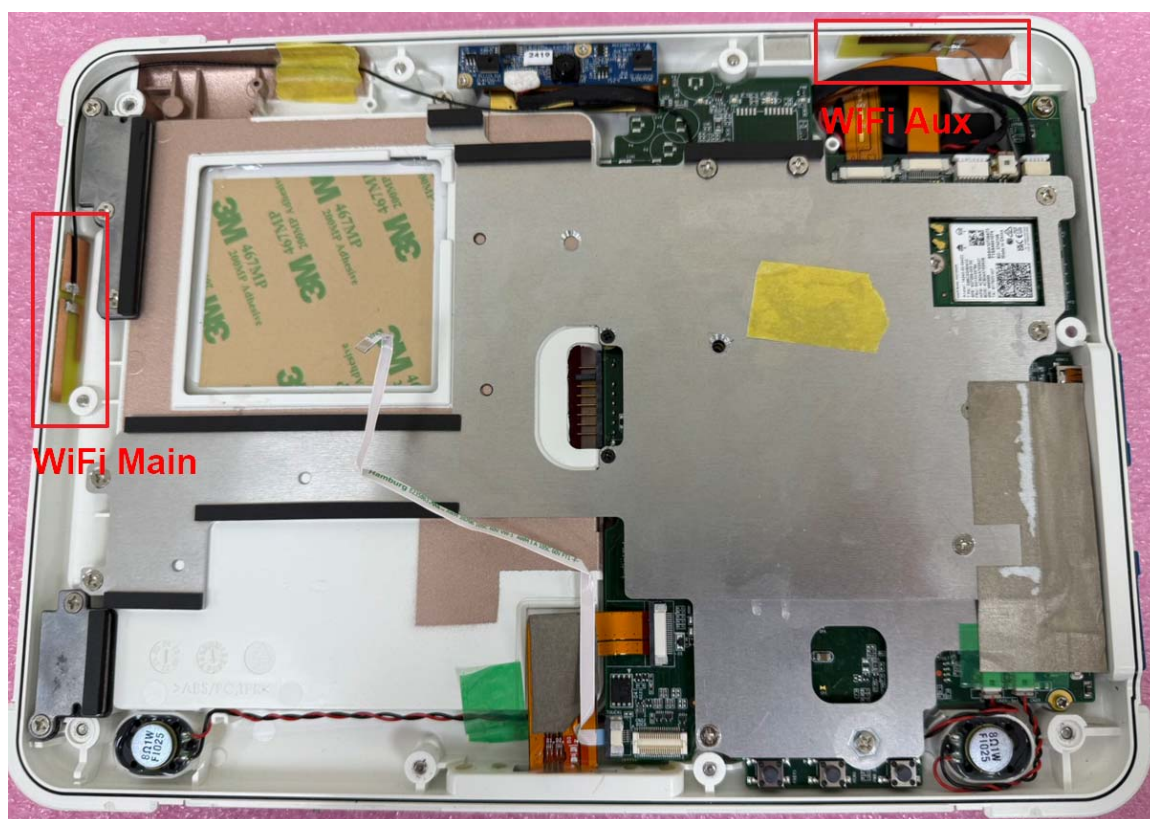
Version :20250310

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1. Antenna Placement



2. Wi-Fi Main Antenna Specification

Winmate Part Number: 90RF0500002X

2.1. Electrical Characteristics

Frequency(MHz): 2400-2500 / 5150-5850 / 5925-7150

SWR: $\leq 1.63@2400-2500\text{MHz}$

$\leq 1.72@5150-5850\text{MHz}$

$\leq 1.55@5925-7150\text{MHz}$

Return Loss: $\leq -11.4\text{dB}@2400-2500\text{MHz}$

$\leq -22.7\text{dB}@5150-5850\text{MHz}$

$\leq -36.3\text{dB}@5925-7150\text{MHz}$

Peak Gain: $1.56\text{dBi}@2400-2500\text{MHz}$

$3.50\text{dBi}@5150-5850\text{MHz}$

$1.90\text{dBi}@5925-7150\text{MHz}$

Impedance: 50ohm

Polarization: Linear

2.2. Mechanical Characteristics

Connector: MHF 4

PCB: FPCB /Thickness 0.4mm

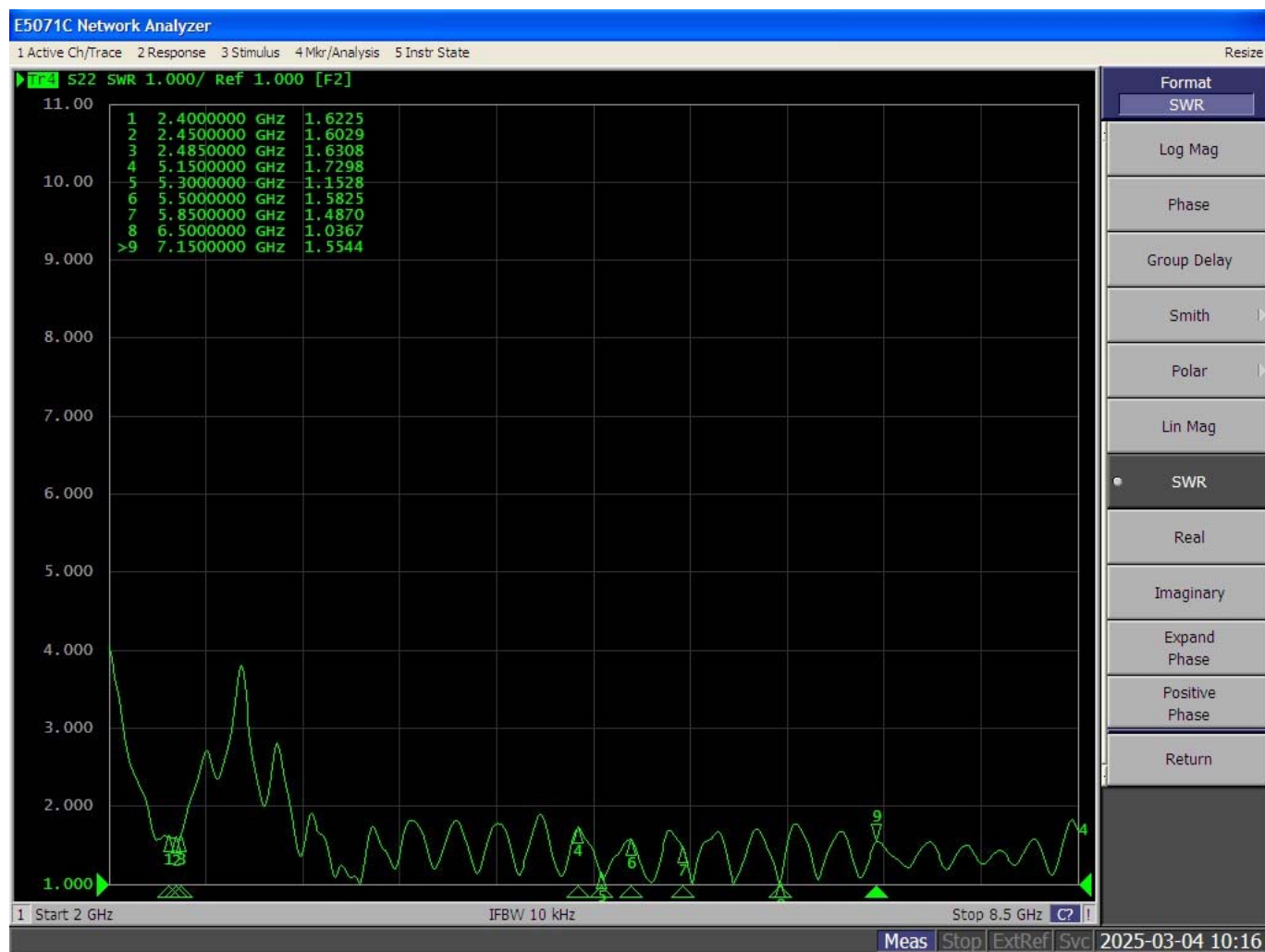
Type: Monopole

2.3. Environmental Characteristics

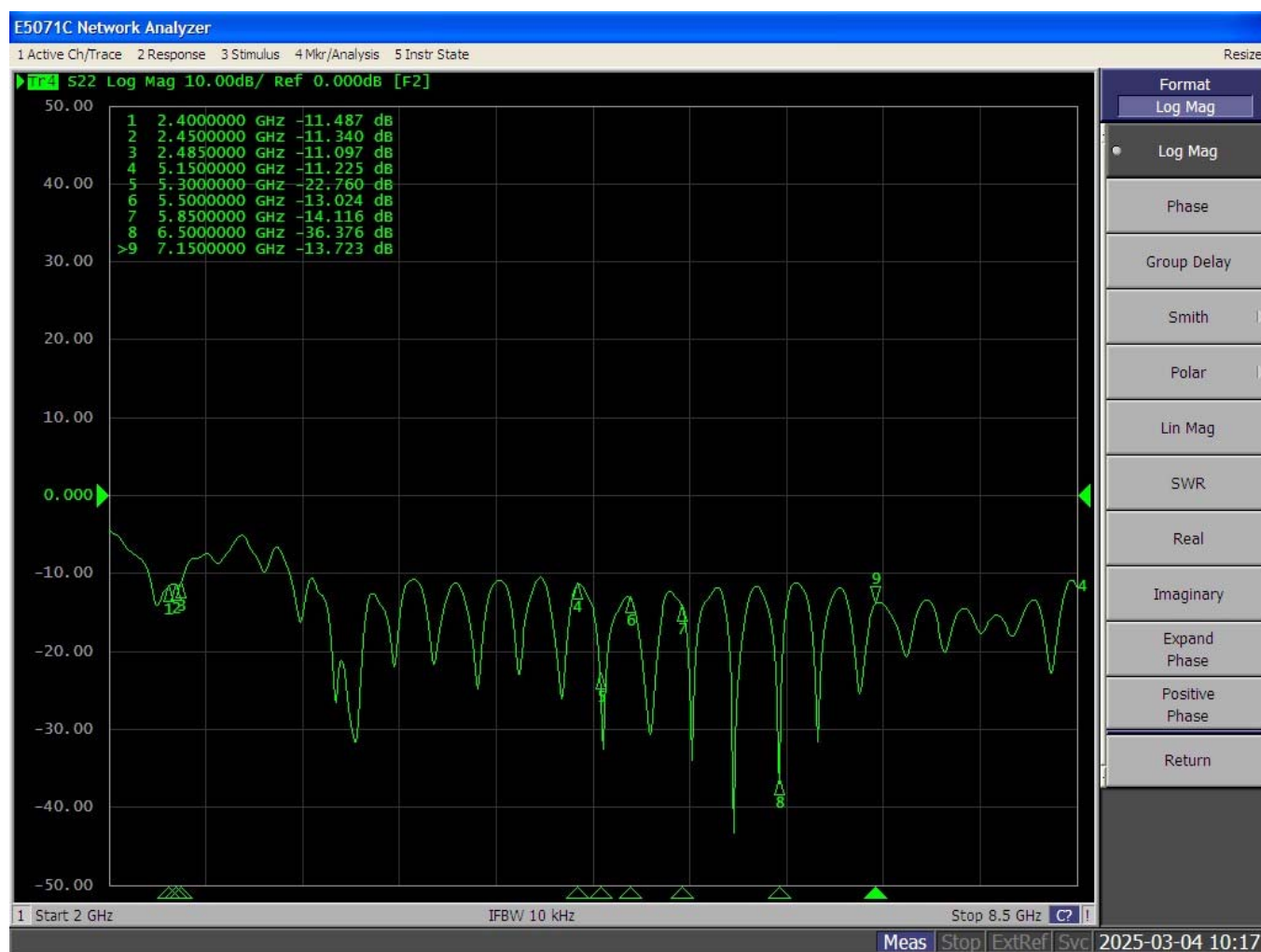
Operating Temperature: -30°C to 80°C

2.4. RF Performance Characteristics

2.4.1. SWR



2.4.2. Return Loss



2.4.3. Gain / Efficiency

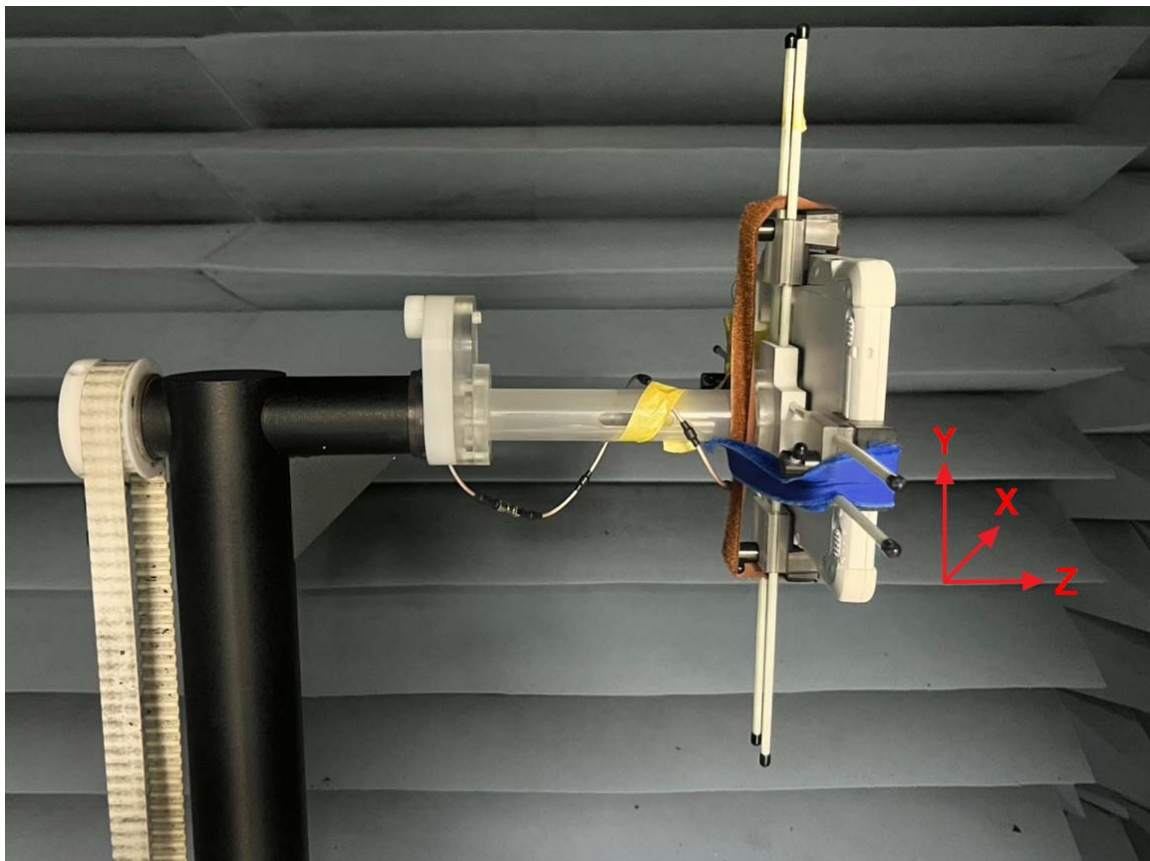
Frequency	2400	2450	2484	2500	5150	5250	5350	5470	5600	5725
Directivity (dBi)	5.81	5.71	5.24	5.44	7.47	7.41	7.30	6.91	6.24	6.18
Efficiency (dB)	-4.24	-4.40	-4.27	-4.22	-4.19	-3.91	-4.18	-4.21	-4.08	-4.44
Efficiency (%)	41.37	54.1	47.44	43.39	45.15	43.63	43.31	44.54	42.54	48.53
Peak Gain (dBi)	1.56	1.31	0.96	1.22	3.28	3.50	3.12	2.70	2.17	1.74

Frequency	5785	5850	5895	5925	6000	6125	6225	6325	6425	6525
Directivity (dBi)	5.78	5.52	5.42	5.18	5.37	5.36	5.47	6.18	6.77	6.41
Efficiency (dB)	-4.74	-4.53	-4.44	-4.55	-4.12	-4.26	-4.54	-4.78	-4.88	-5.02
Efficiency (%)	40.69	41.77	41.49	45.87	42.65	40.89	43.58	40.74	41.59	43.92
Peak Gain (dBi)	1.04	0.99	0.98	0.63	1.25	1.10	0.93	1.40	1.90	1.39

Frequency	6625	6725	6875	6925	7000	7125				
Directivity (dBi)	5.81	5.43	5.46	5.38	5.35	6.65				
Efficiency (dB)	-4.19	-4.60	-4.50	-5.30	-4.66	-4.92				
Efficiency (%)	43.26	47.36	46.79	44.71	42.93	43.24				
Peak Gain (dBi)	1.63	0.83	0.96	0.08	0.69	1.73				

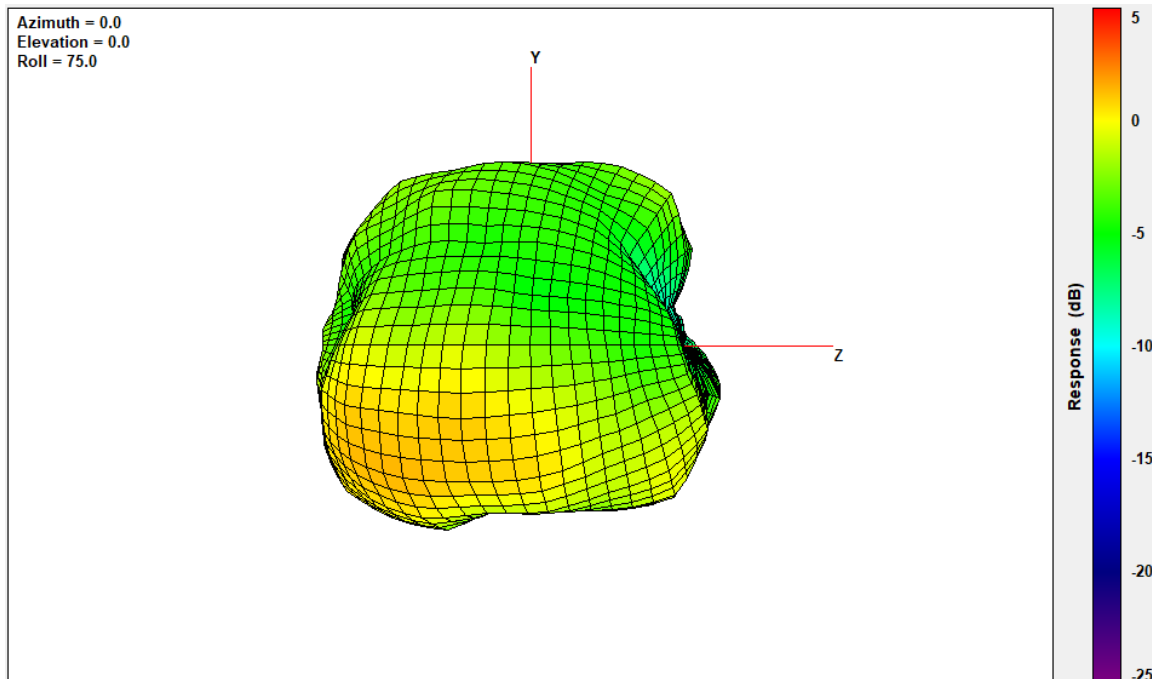
2.4.4. Radiation Patterns

2.4.4.1. Tets Setup

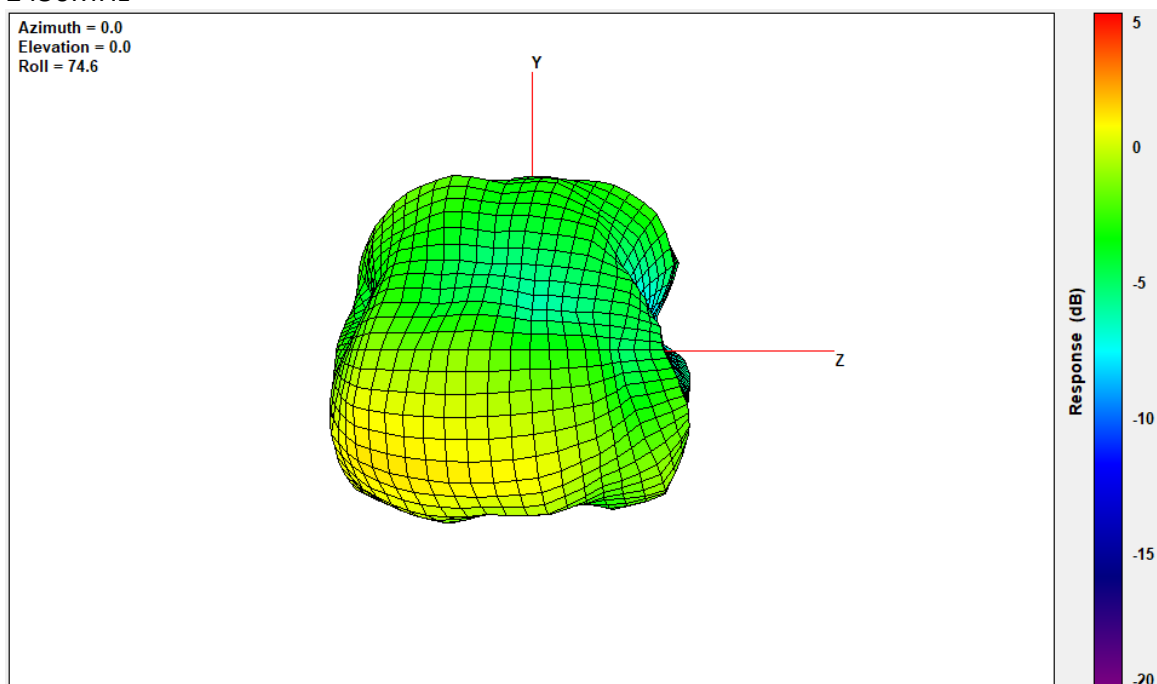


2.4.4.2. Straight Radiation Patterns

2400MHz

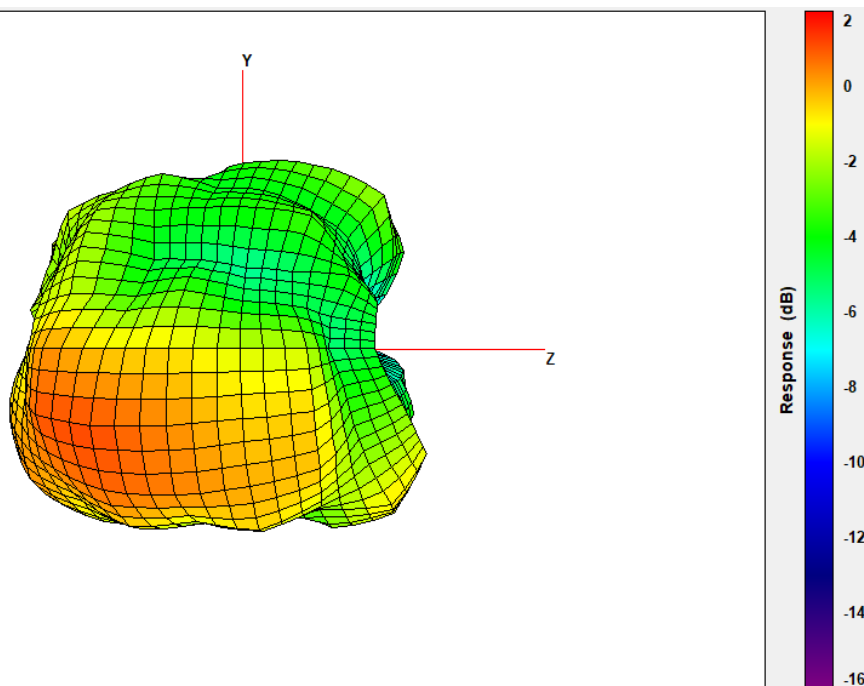


2450MHz



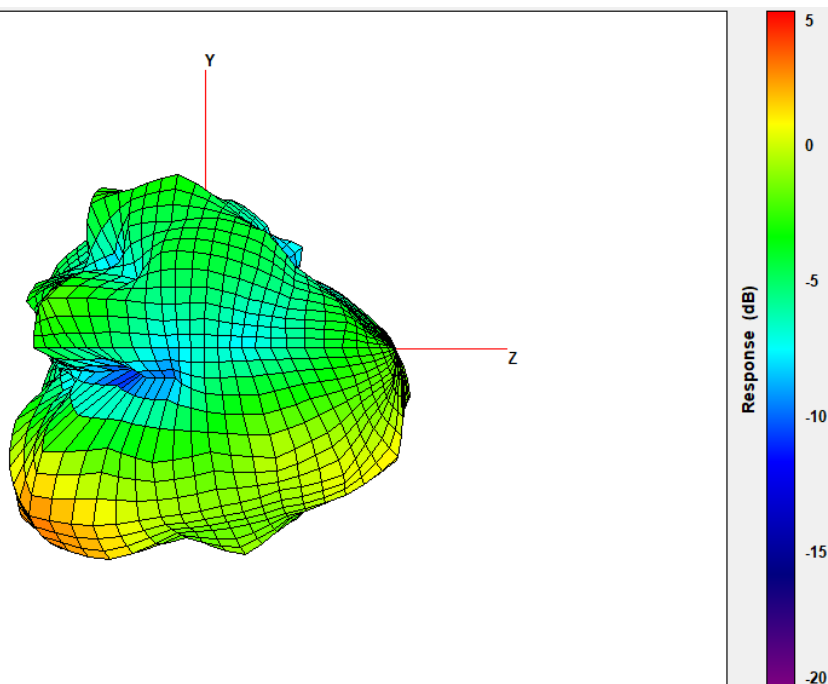
2500MHz

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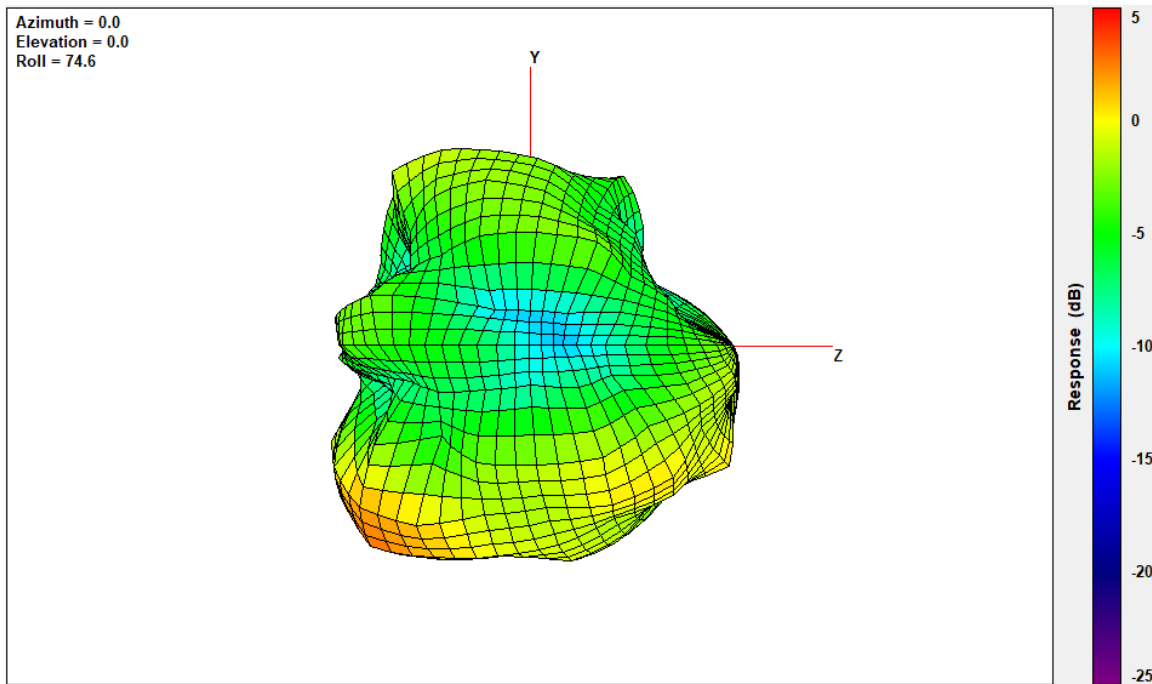


5150MHz

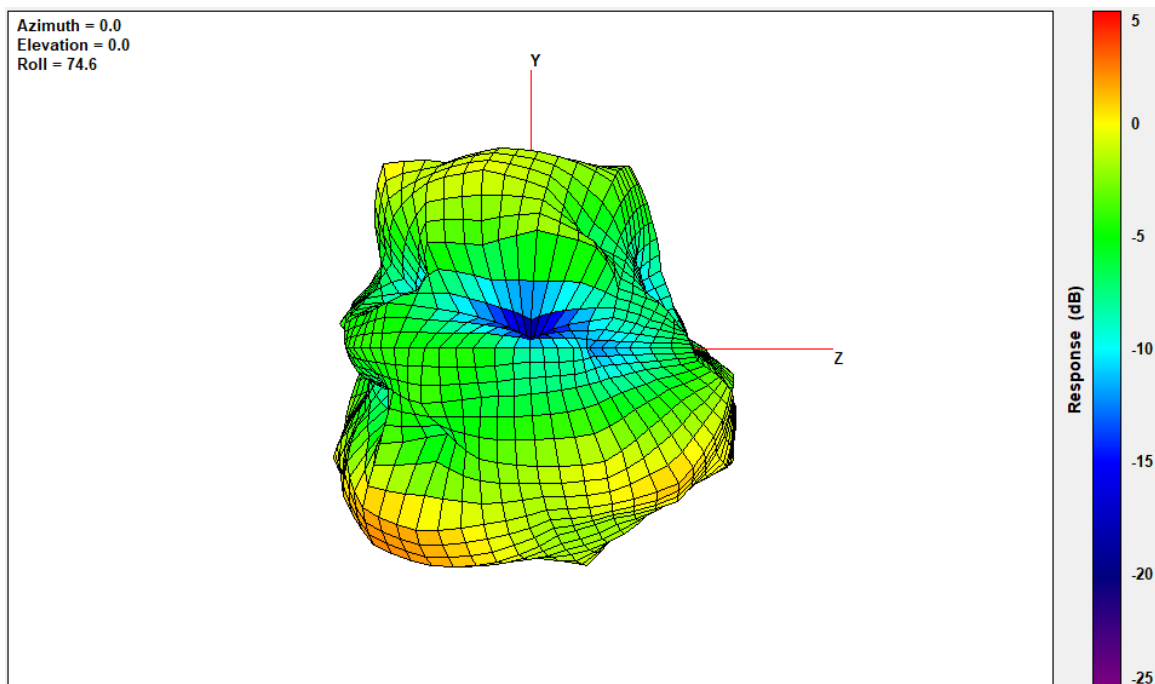
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5350MHz

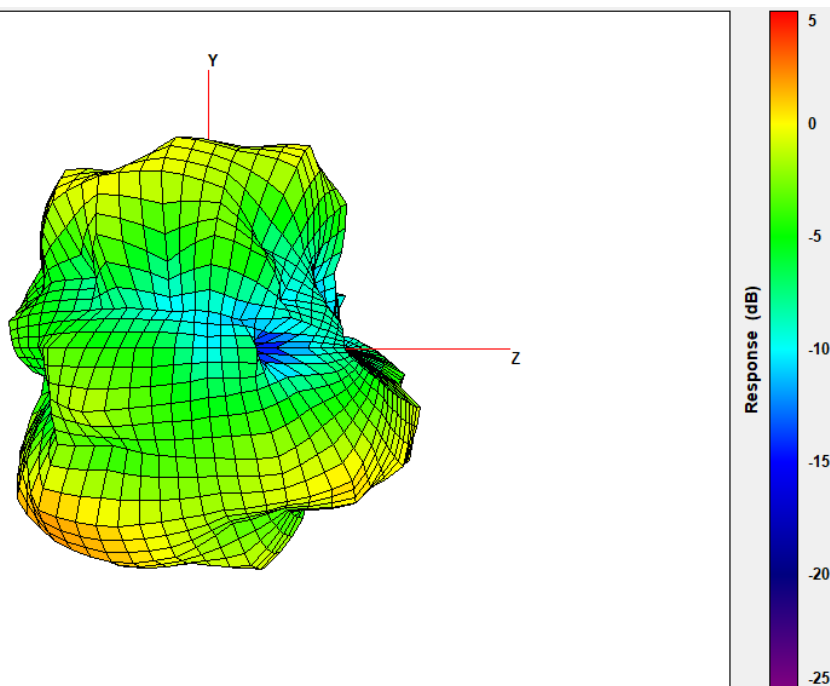


5470MHz



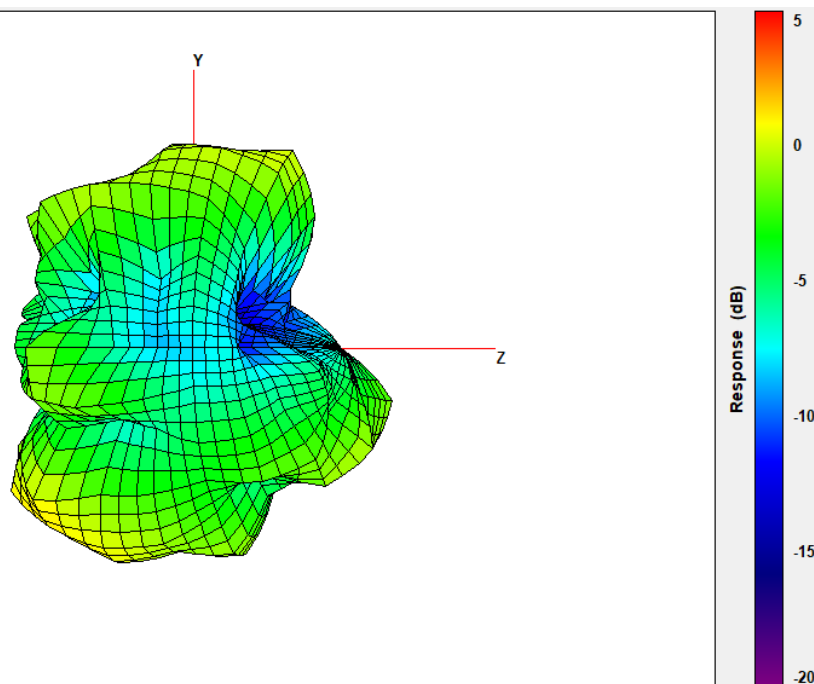
5600MHz

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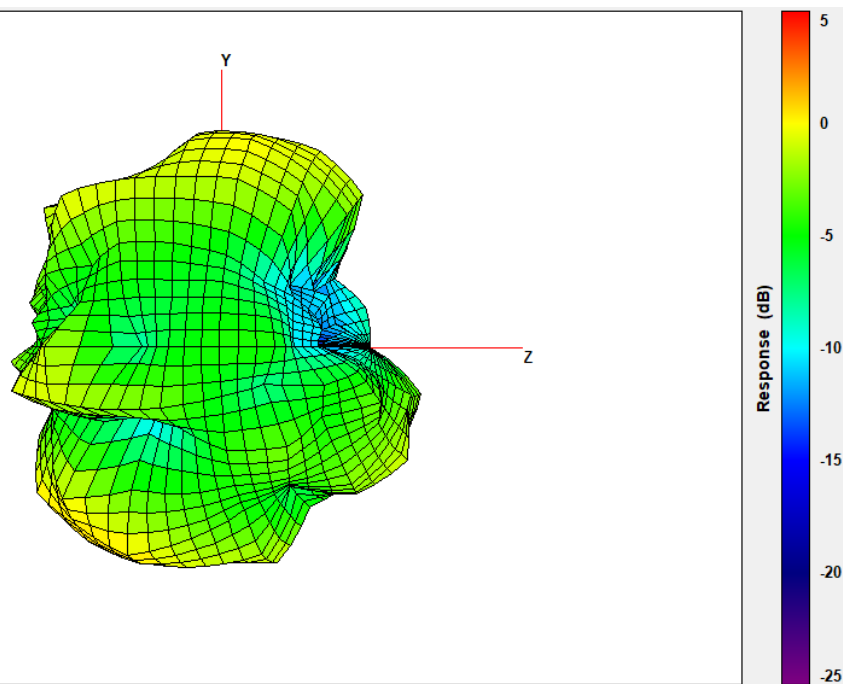
5725MHz

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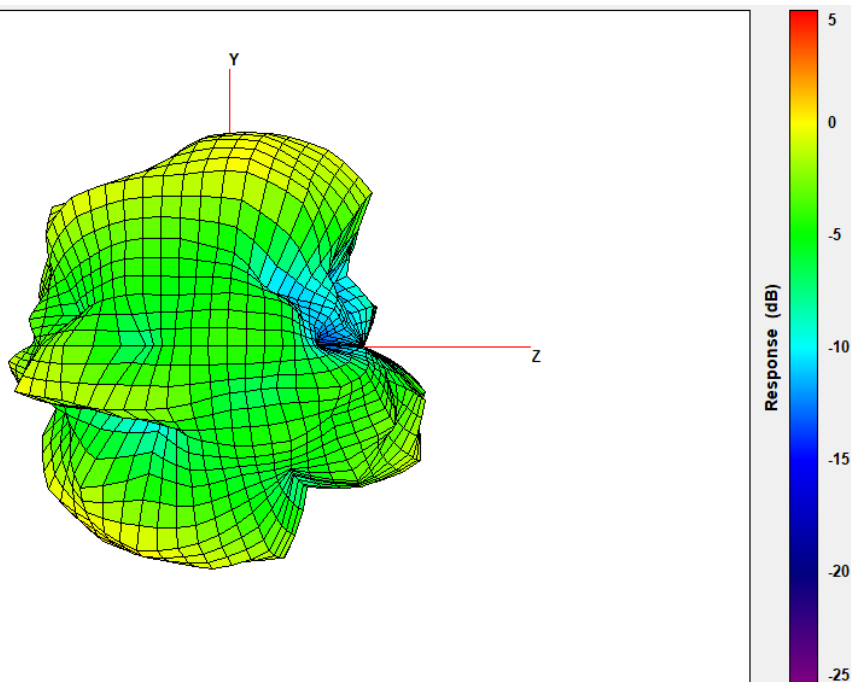
5850MHz

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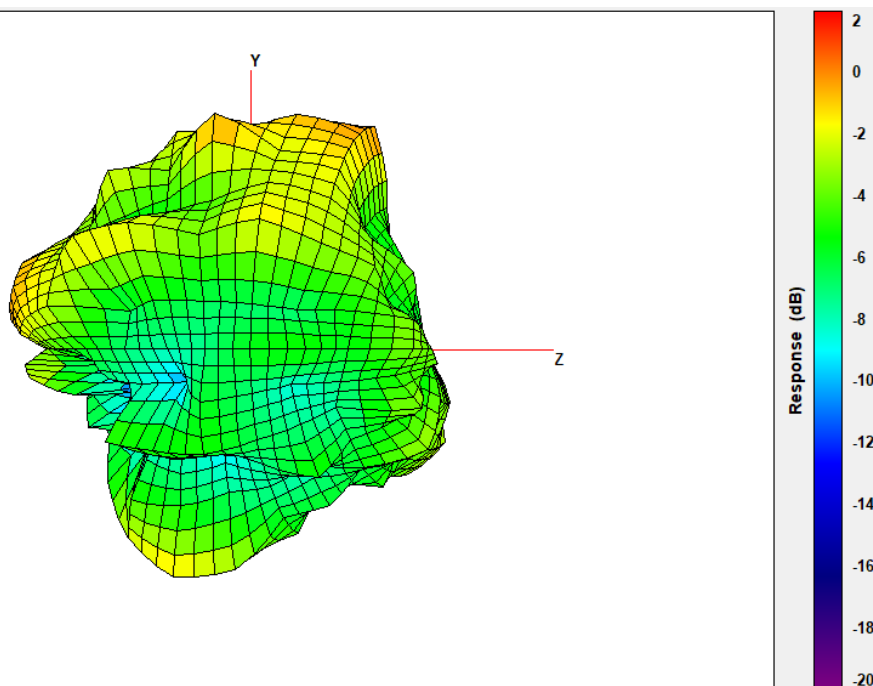
5925MHz

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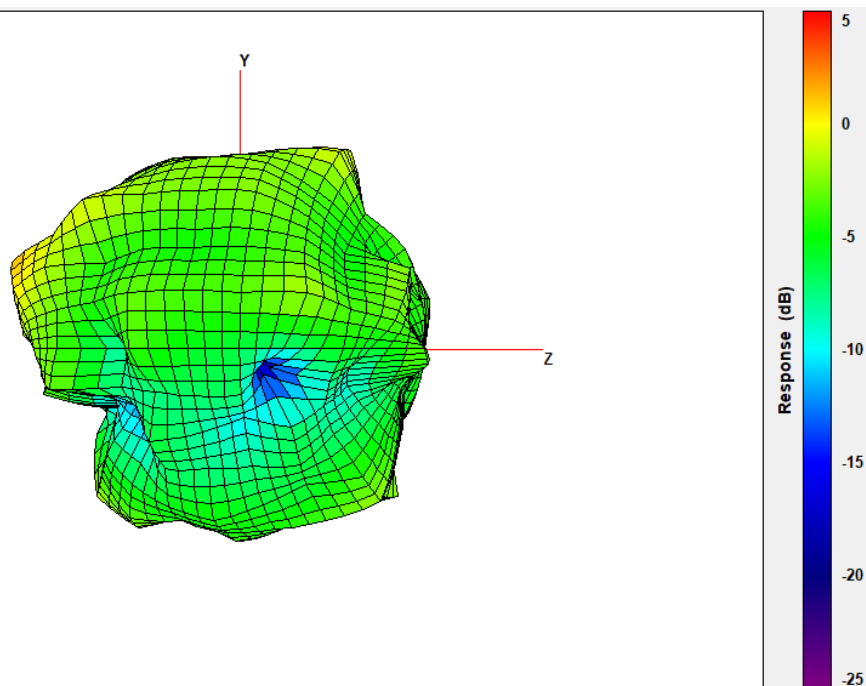
6525MHz

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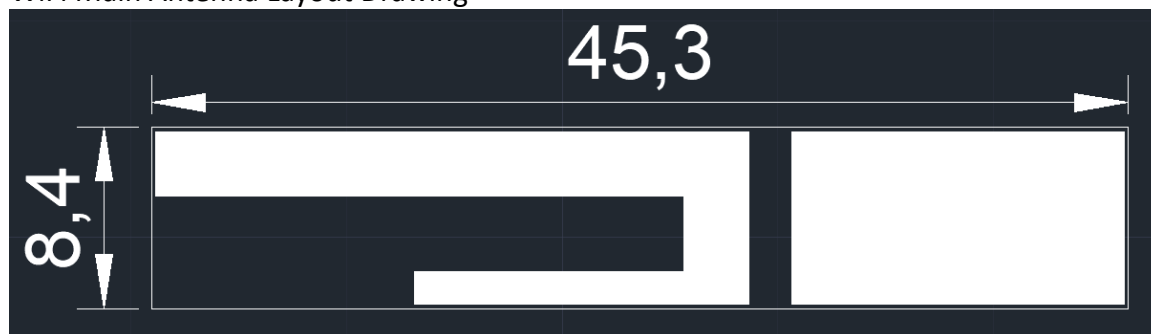
7125MHz

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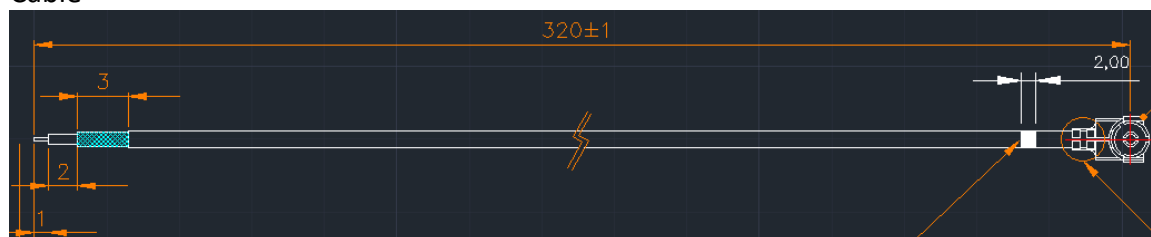


2.5. Drawing

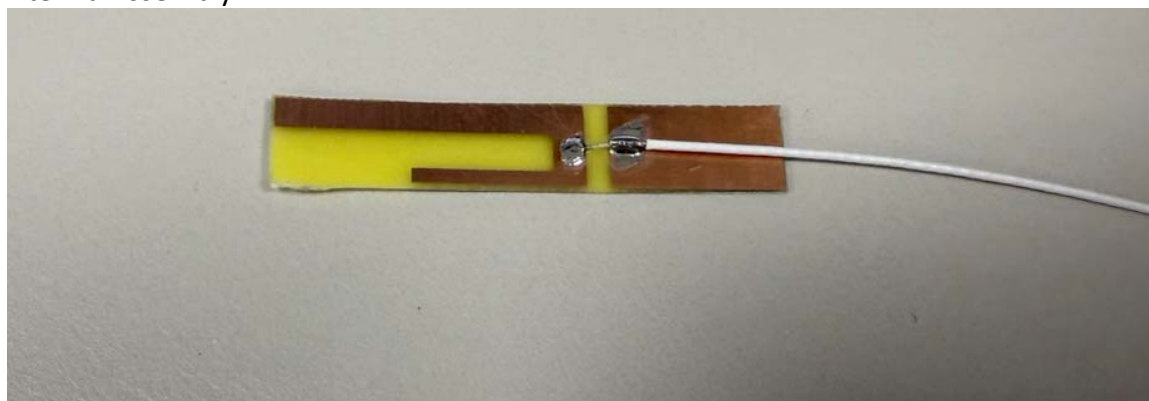
WiFi Main Antenna Layout Drawing



Cable



Antenna Assembly



Winmate Part Number: 90RF0500002X

3. Wi-Fi Aux Antenna Specification

Winmate Part Number: 90RF0600002M

3.1. Electrical Characteristics

Frequency(MHz): 2400-2500 / 5150-5850 / 5925-7150

SWR: $\leq 1.85@2400-2500\text{MHz}$

$\leq 1.96@5150-5850\text{MHz}$

$\leq 1.96@5925-7150\text{MHz}$

Return Loss: $\leq -18.6\text{dB}@2400-2500\text{MHz}$

$\leq -13.4\text{dB}@5150-5850\text{MHz}$

$\leq -15.6\text{dB}@5925-7150\text{MHz}$

Peak Gain: $3.89\text{dBi}@2400-2500\text{MHz}$

$3.38\text{dBi}@5150-5850\text{MHz}$

$3.64\text{dBi}@5925-7150\text{MHz}$

Impedance: 50ohm

Polarization: Linear

3.2. Mechanical Characteristics

Cable: 50 Ω $\phi 0.81$ RF cable

Connector: MHF 4

PCB: FPCB /Thickness 0.4mm

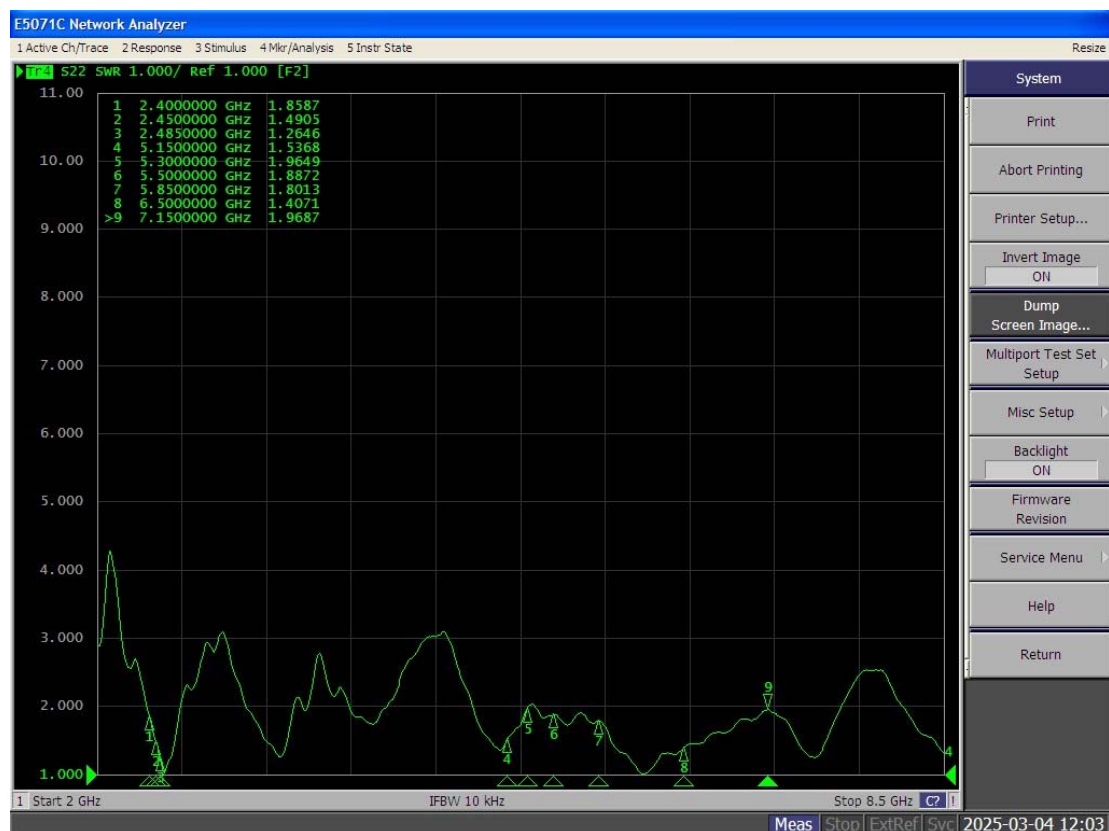
Type: Monopole

3.3. Environmental Characteristics

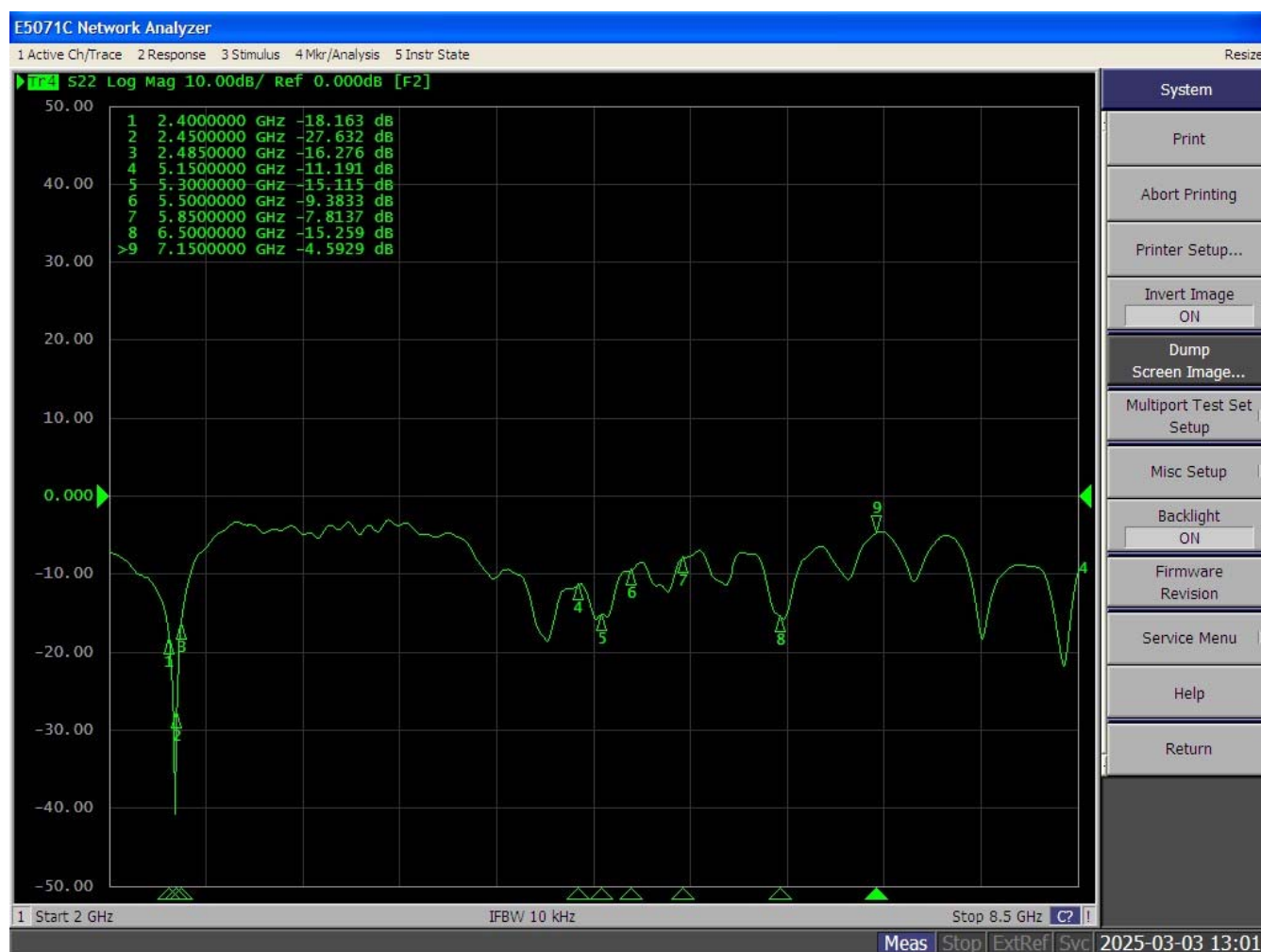
Operating Temperature: -30°C to 80°C

3.4. RF Performance Characteristics

3.4.1. SWR



3.4.2. Return Loss



3.4.3. Gain / Efficiency

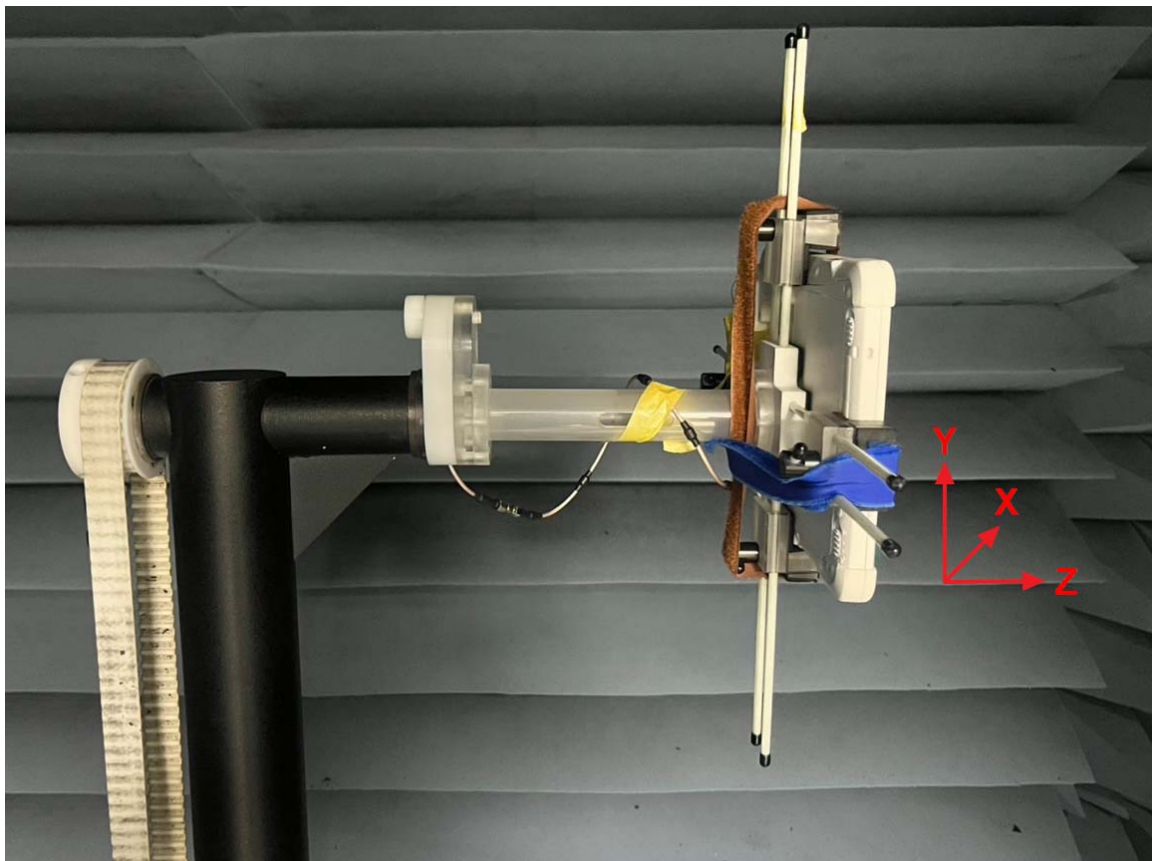
Frequency	2400	2450	2484	2500	5150	5250	5350	5470	5600	5725
Directivity (dBi)	7.06	7.13	6.47	6.47	5.99	5.74	5.87	6.14	6.46	6.36
Efficiency (dB)	-2.71	-2.24	-1.80	-1.70	-2.92	-2.52	-2.39	-2.12	-2.08	-2.20
Efficiency (%)	53.56	59.64	66.12	67.57	51.11	55.99	57.69	61.44	61.98	60.27
Peak Gain (dBi)	3.35	3.89	3.68	3.77	3.07	3.22	3.48	3.03	3.38	3.16

Frequency	5785	5850	5895	5925	6000	6125	6225	6325	6425	6525
Directivity (dBi)	6.14	5.77	6.04	5.96	6.27	6.40	6.74	6.50	5.91	5.46
Efficiency (dB)	-2.45	-2.19	-2.18	-2.30	-1.75	-1.76	-1.84	-2.04	-2.25	-2.38
Efficiency (%)	56.84	60.43	60.58	58.86	66.89	66.68	65.45	62.54	59.60	57.79
Peak Gain (dBi)	3.68	3.59	3.86	3.65	3.52	3.64	3.90	3.46	3.66	3.08

Frequency	6625	6725	6875	6925	7000	7125				
Directivity (dBi)	5.52	5.67	5.97	6.00	6.11	5.39				
Efficiency (dB)	-1.42	-1.83	-1.60	-2.54	-1.97	-2.13				
Efficiency (%)	72.08	65.56	69.16	55.74	63.58	61.19				
Peak Gain (dBi)	3.10	3.83	3.37	3.46	3.15	3.26				

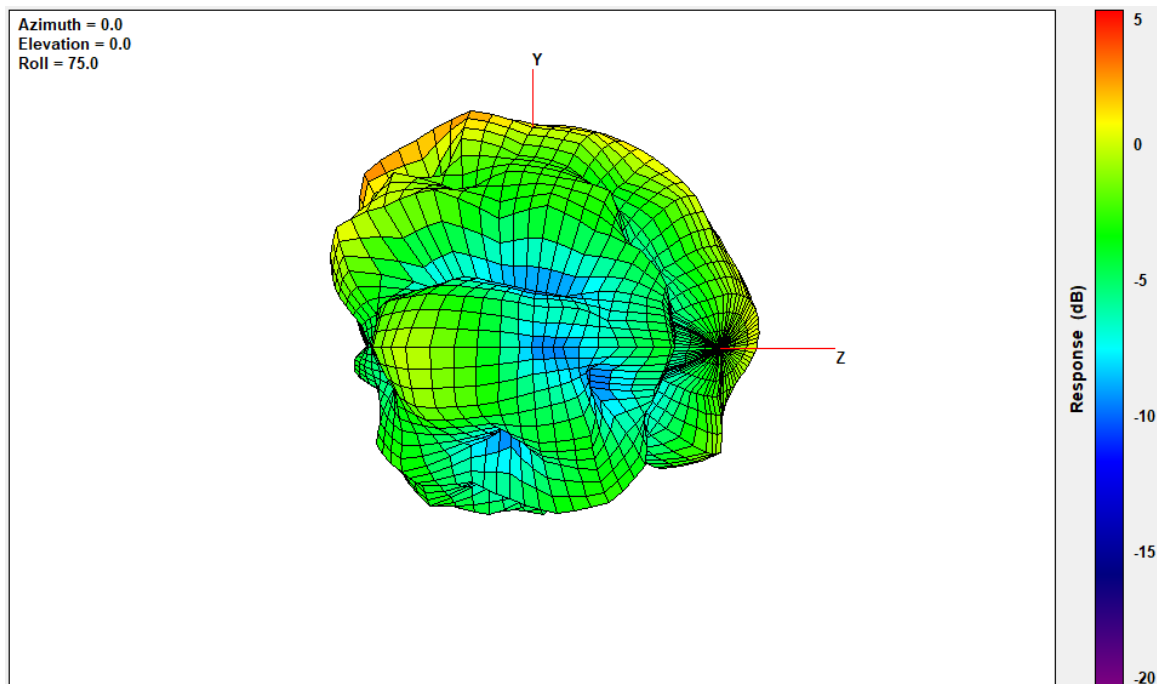
3.4.4. Radiation Patterns

3.4.4.1. Tets Setup

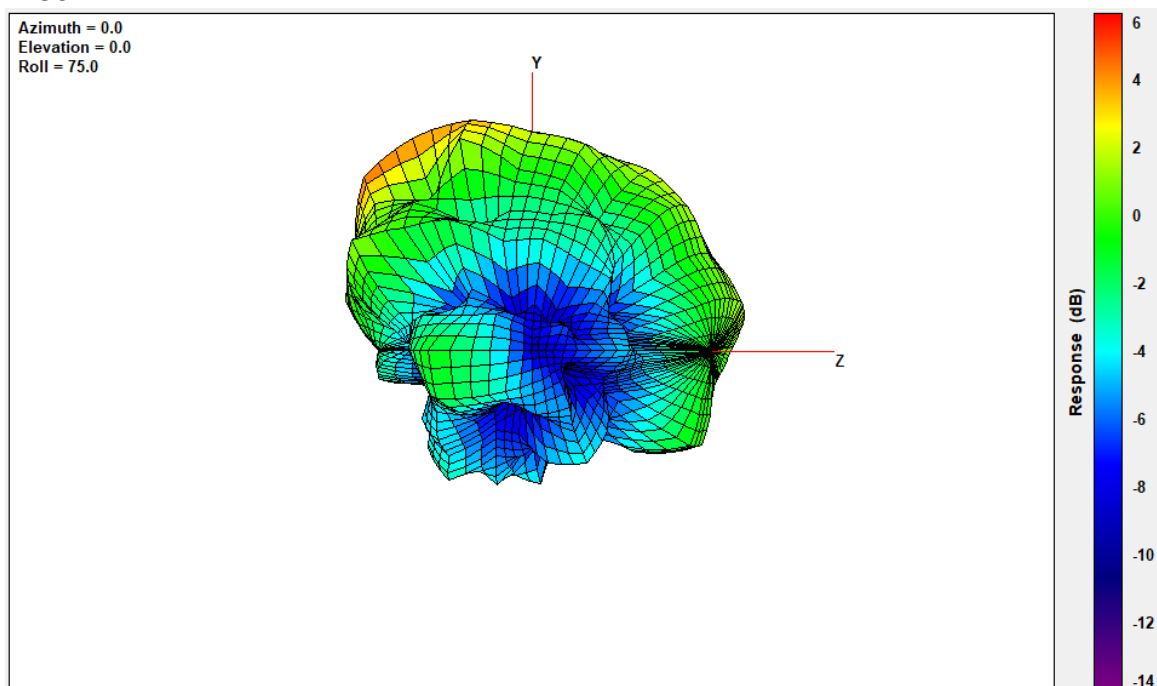


3.4.4.2. Straight Radiation Patterns

2400MHz

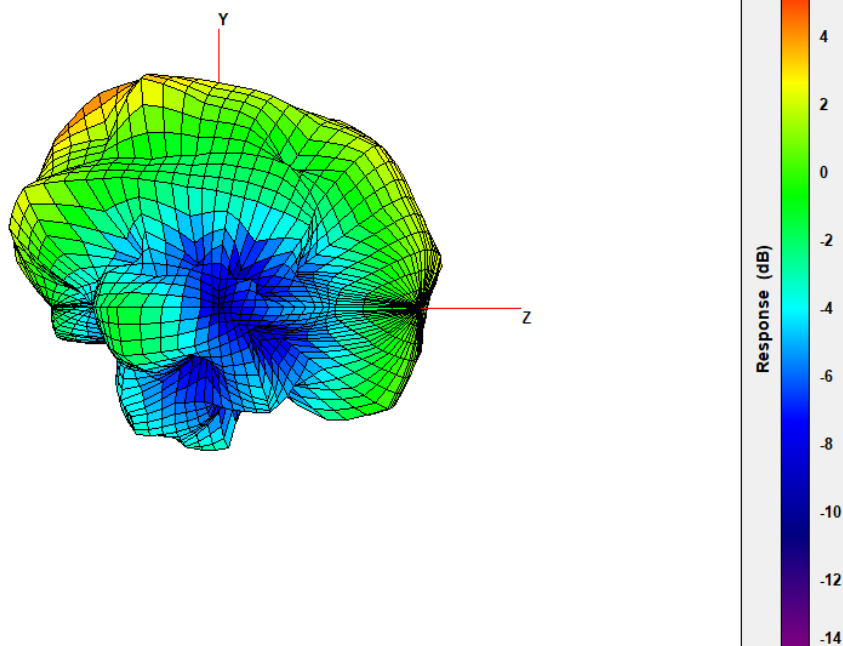


2450MHz



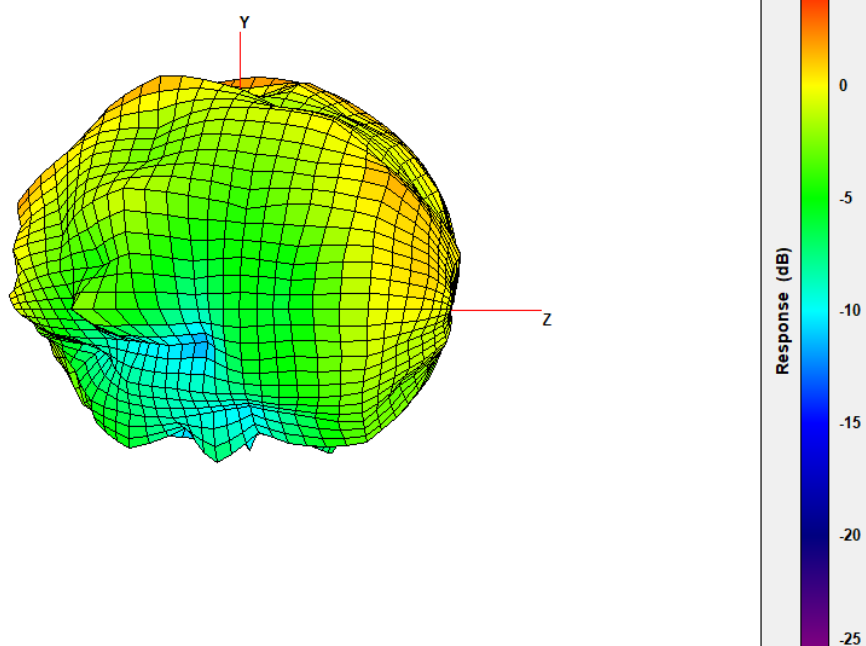
2500MHz

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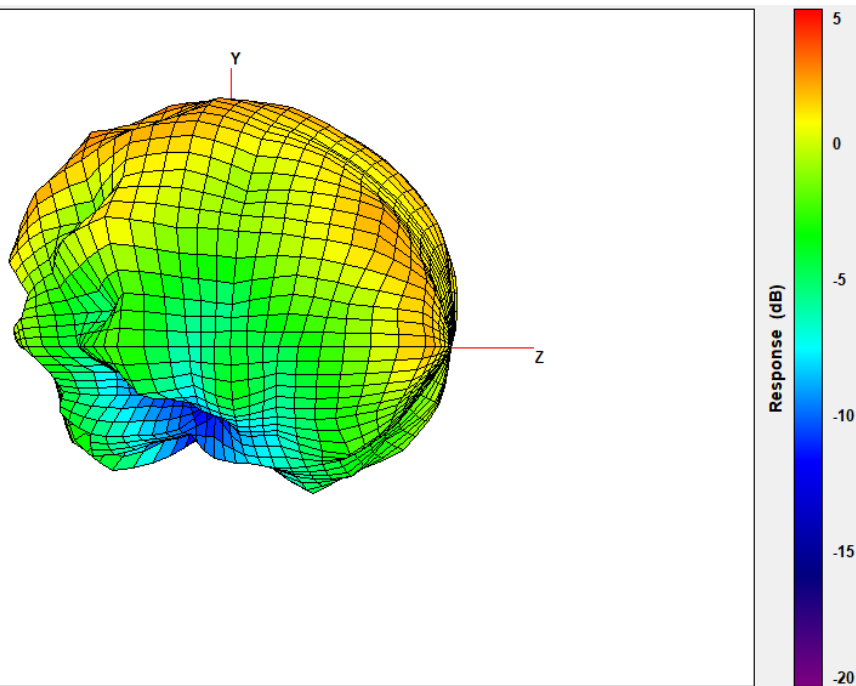
5150MHz

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Roll = 75.0



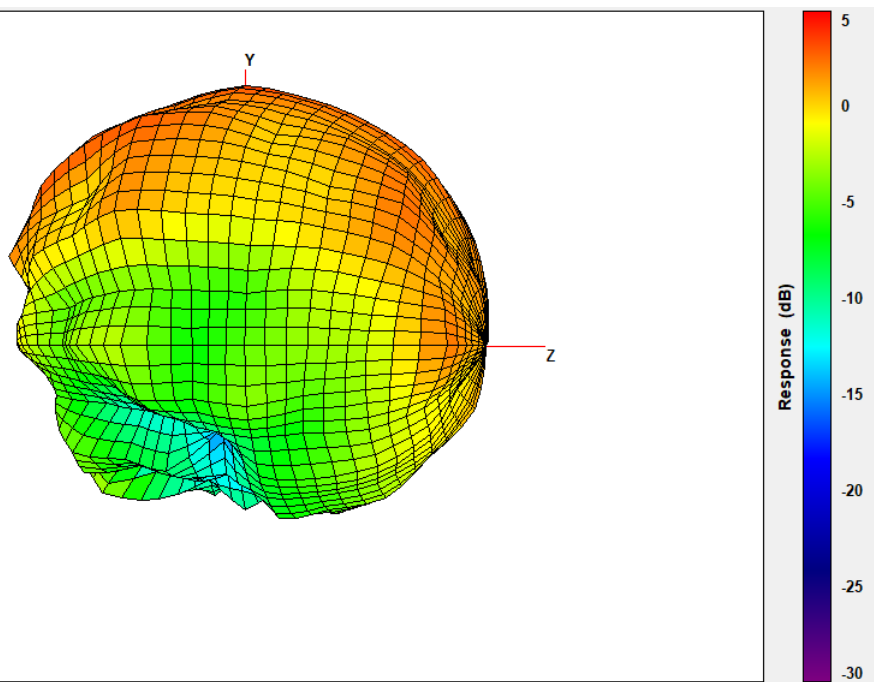
5350MHz

Azimuth = 0.0
Elevation = 0.0
Roll = 75.0



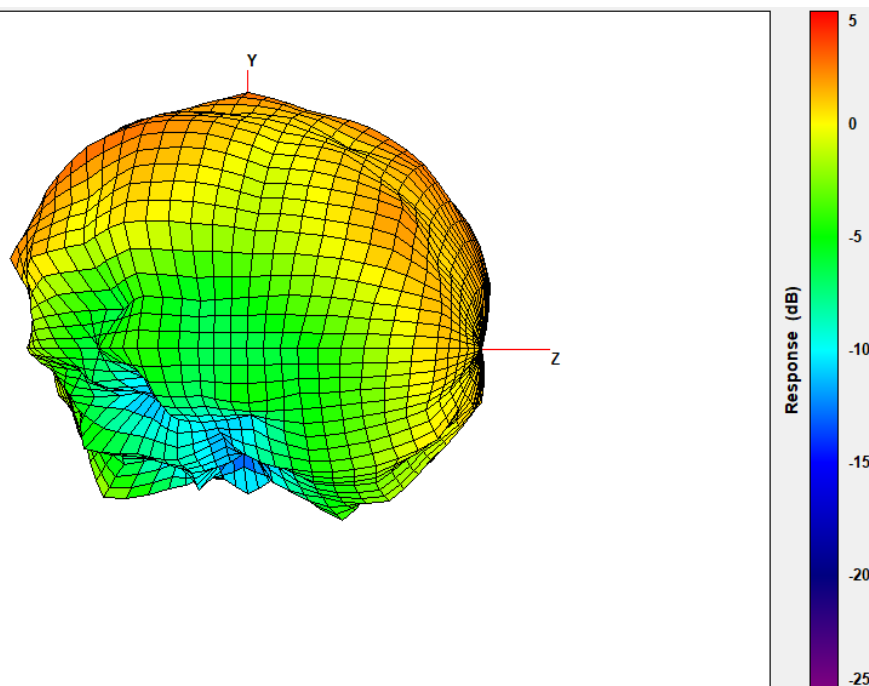
5470MHz

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Elevation = 0.0
Roll = 75.0



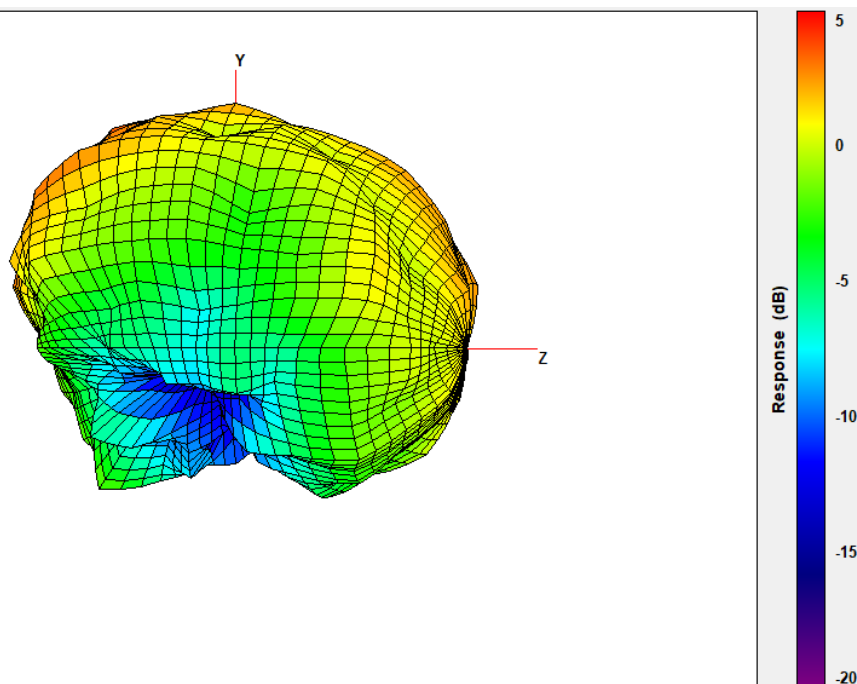
5600MHz

Azimuth = 0.0
Elevation = 0.0
Roll = 75.0



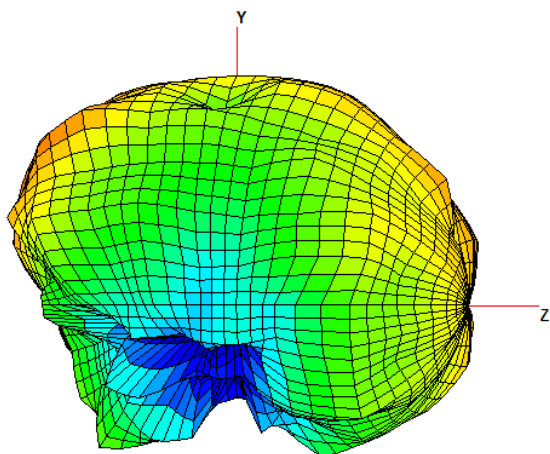
5725MHz

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Elevation = 0.0
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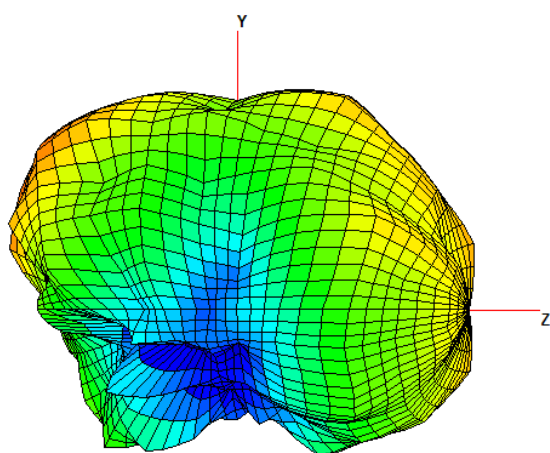
5850MHz

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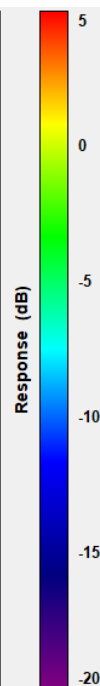
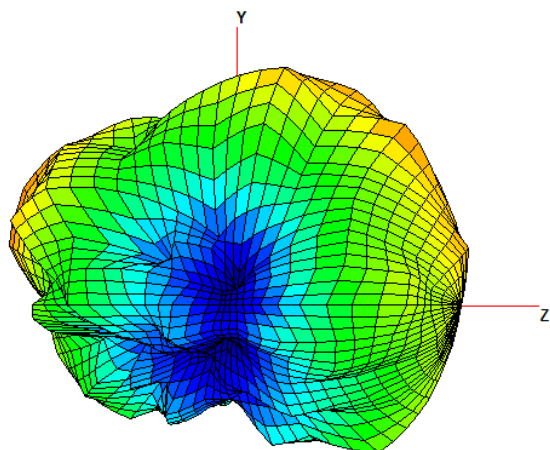
5925MHz

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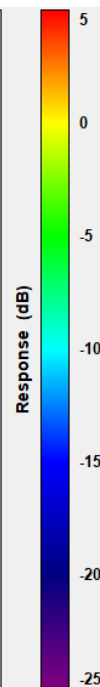
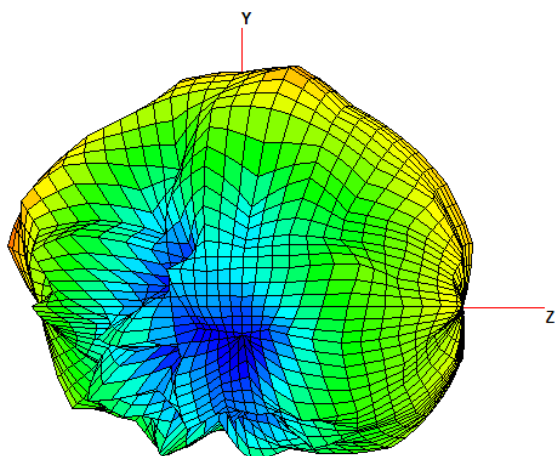
6525MHz

Azimuth = 0.0
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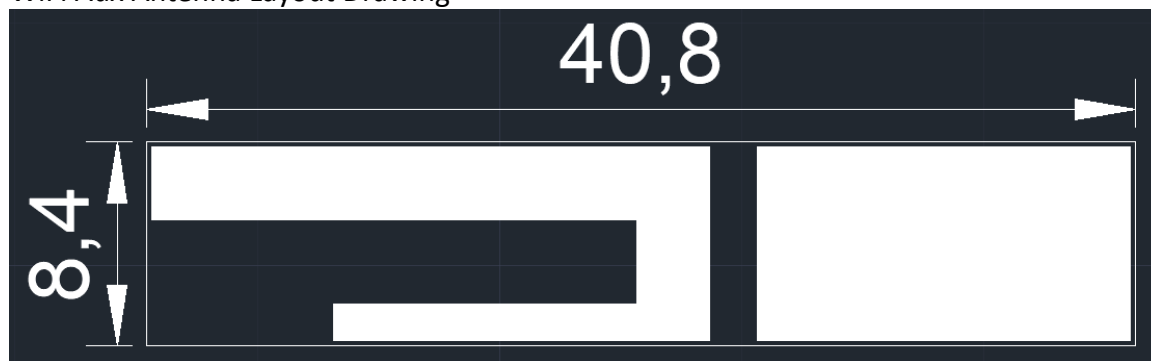
7125MHz

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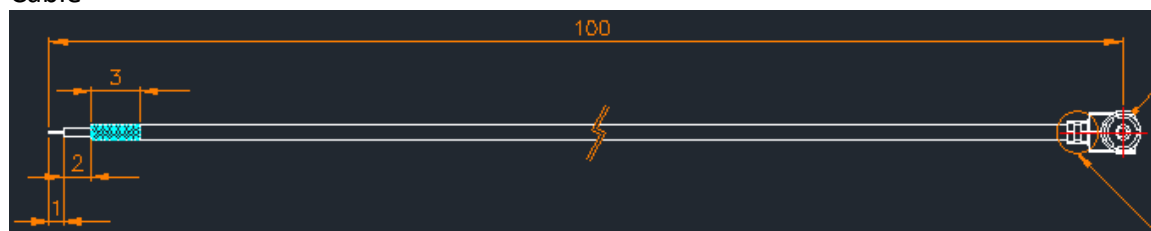


3.5. Drawing

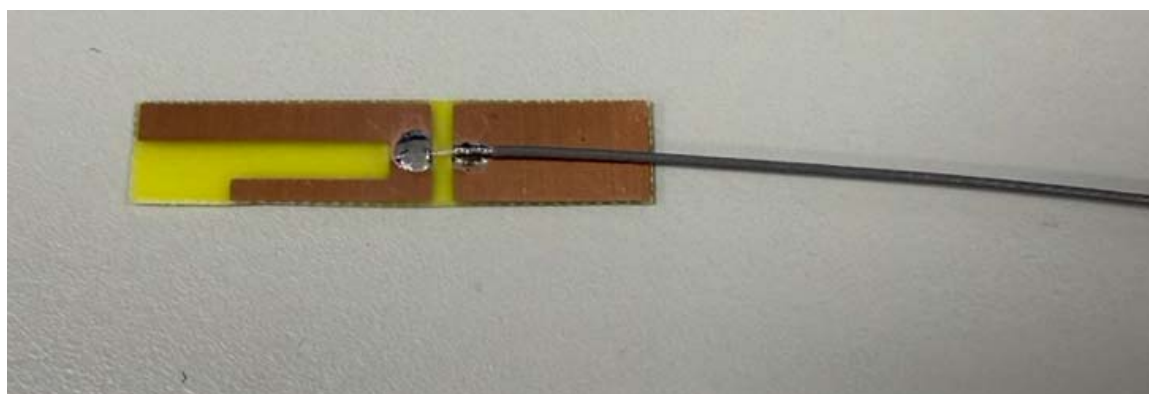
WiFi Aux Antenna Layout Drawing



Cable



Antenna Assembly



Winmate Part Number: 90RF0600002M