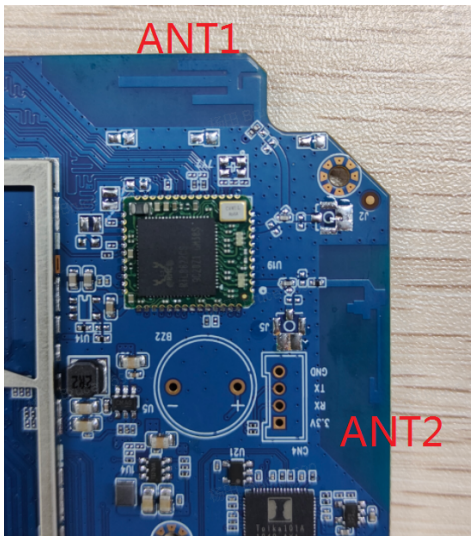
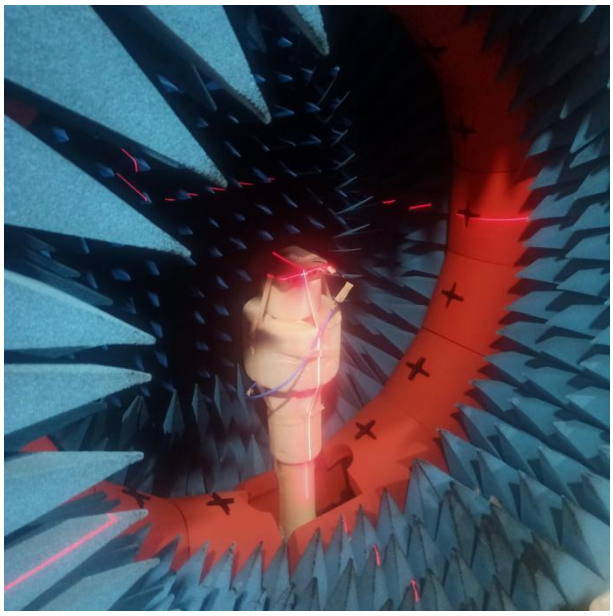
Sensation boxWiFiOnboard Antenna Test Data Report

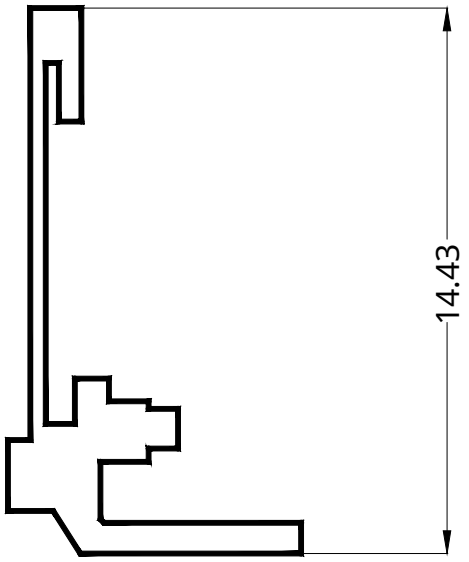
1. Antenna and test environment diagram



antenna



test environment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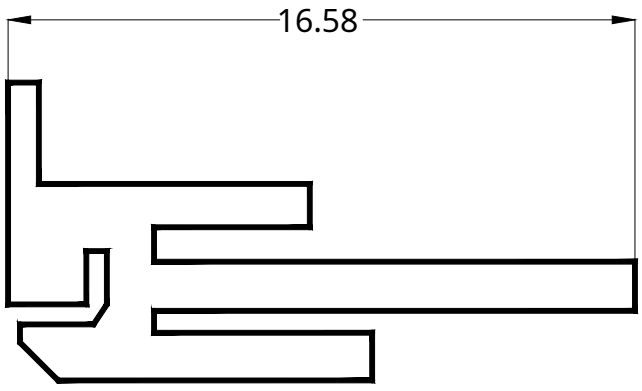
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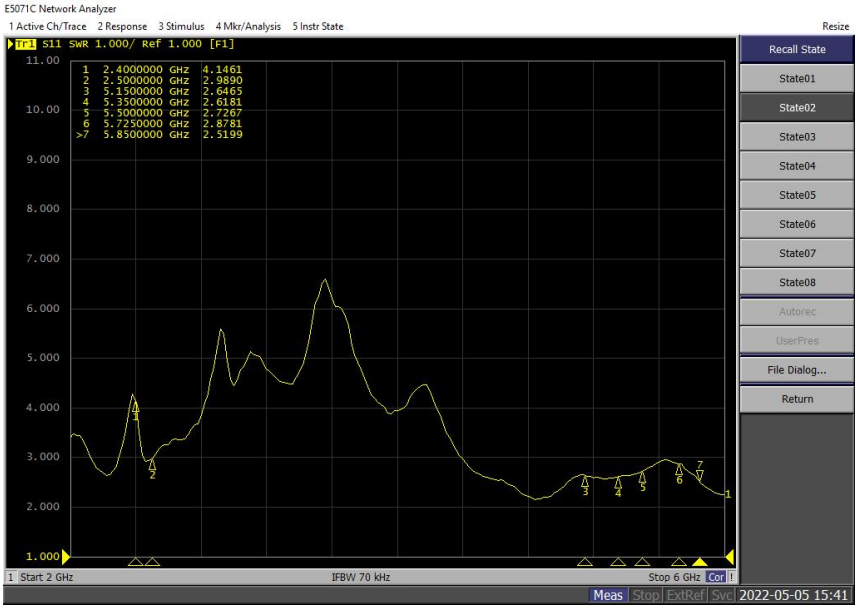
2. Antenna standing wave ratio and isolation between two adjacent antennas

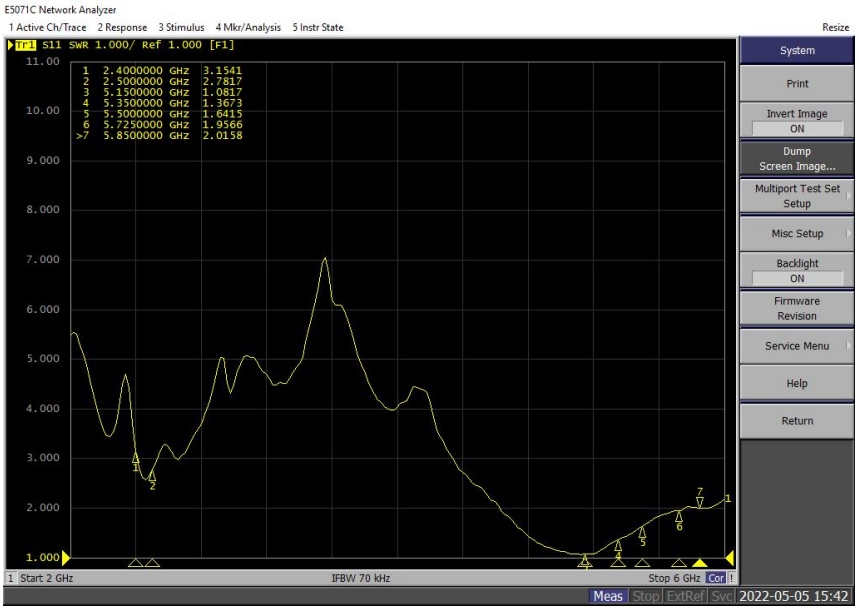
1#Antenna standing wave ratio diagram



1#Antenna VSWR

frequency(MHZ)	2400	2500	5150	5350	5500	5725	5850
VSWR	4.1	2.98	2.64	2.61	2.72	2.87	2.51

2#Antenna standing wave ratio diagram



2#Antenna VSWR

frequency(MHZ)	2400	2500	5150	5350	5500	5725	5850
VSWR	3.15	2.78	1.08	1.36	1.64	1.95	2.01

Antenna Isolation Diagram

Antenna isolation value

frequency(MHZ)	2400	2500	5150	5350	5500	5725	5850
isolation (DBI)	- 15.7	- 14.6	- 19.7	- 21.6	- 21.9	- 24.2	- 28.6

3. Antenna gain and antenna efficiency

1#antenna

Gain&Efficiency gain and efficiency						
frequency frequency(MHz)	gain Gain (dBi)	mingain minimum gain (dBi)	CP Gain cross polarized most large gain (dBi)	CO Gain main polarization maximum Gain (dBi)	efficiency efficiency(dB)	efficiency efficiency(%)
2400	- 0.35	- 23.79	/	/	- 4.96	31.94
2410	- 0.66	- 19.26	/	/	- 4.89	32.41
2420	- 0.76	- 17.43	/	/	- 4.63	34.45
2430	-0.67	- 17.79	/	/	- 4.36	36.66
2440	- 0.37	- 17.02	/	/	- 4	39.78
2450	0.08	- 16.38	/	/	- 3.67	42.96
2460	0.68	- 16.5	/	/	- 3.32	46.53
2470	1.13	- 15.21	/	/	- 3.13	48.66

2480	1.44	- 15.54	/	/	- 3.03	49.74
2490	1.7	- 15.97	/	/	- 2.96	50.57
2500	1.67	- 18.08	/	/	- 3.13	48.63
5150	2.45	- 22.86	/	/	- 3.42	45.54
5160	2.55	- 22.98	/	/	- 3.53	44.39
5170	2.76	- 20.71	/	/	- 3.44	45.29
5180	2.86	- 18.85	/	/	- 3.46	45.13
5190	2.89	- 19.61	/	/	- 3.49	44.76
5200	2.86	- 20.19	/	/	- 3.52	44.43
5210	2.71	- 21.24	/	/	- 3.65	43.2
5220	2.47	- 21.26	/	/	- 3.84	41.33
5230	2.47	- 22.86	/	/	- 3.78	41.86
5240	2.37	- 24.3	/	/	- 3.84	41.33
5250	2.32	- 23.39	/	/	- 3.9	40.75
5260	2.15	- 22.79	/	/	- 4.08	39.12
5270	2.11	- 20.74	/	/	- 4.18	38.2
5280	1.91	- 21.72	/	/	- 4.43	36.09
5290	1.66	- 22.62	/	/	- 4.72	33.76
5300	1.33	- 23.12	/	/	- 5.03	31.42
5310	1.3	- 25.07	/	/	- 5.03	31.37
5320	1.14	- 26.22	/	/	- 5.1	30.94
5330	0.91	- 25.76	/	/	- 5.22	30.08
5340	0.9	- 27.3	/	/	- 5.11	30.82
5350	0.88	- 27.27	/	/	- 5.07	31.12
5360	0.82	- 27.31	/	/	- 5.09	30.95
5370	0.93	- 27.5	/	/	- 4.99	31.68
5380	1.06	- 27.2	/	/	- 4.92	32.22
5390	1.24	- 27.9	/	/	- 4.79	33.19
5400	1.5	- 28.73	/	/	- 4.57	34.91
5410	1.63	- 28.86	/	/	- 4.46	35.79
5420	1.77	- 27.68	/	/	- 4.34	36.82
5430	1.76	- 26.59	/	/	- 4.35	36.75
5440	1.76	- 26.21	/	/	- 4.38	36.49

5450	1.6	- 25.07	/	/	- 4.55	35.11
5460	1.61	- 25.67	/	/	- 4.59	34.78
5470	1.59	- 23.71	/	/	- 4.65	34.29
5480	1.64	- 24.16	/	/	- 4.66	34.16
5490	1.77	- 22.33	/	/	- 4.59	34.75
5500	1.96	- 22.96	/	/	- 4.47	35.7
5510	2.11	- 21.66	/	/	- 4.38	36.49
5520	2.25	- 21.8	/	/	- 4.29	37.25
5530	2.43	- 20.93	/	/	- 4.14	38.51
5540	2.66	- 21.09	/	/	- 3.97	40.13
5550	2.8	- 20.82	/	/	- 3.85	41.21
5560	2.9	- 20.95	/	/	- 3.79	41.82
5570	3.09	- 21.66	/	/	- 3.63	43.38
5580	3.23	- 23.37	/	/	- 3.52	44.44
5590	3.33	- 23.87	/	/	- 3.46	45.09
5600	3.39	- 26.46	/	/	- 3.43	45.4
5610	3.6	- 26.21	/	/	- 3.25	47.36
5620	3.63	- 27.07	/	/	- 3.23	47.58
5630	3.61	- 24.89	/	/	- 3.26	47.19
5640	3.63	- 25.68	/	/	- 3.23	47.54
5650	3.75	- 29.21	/	/	- 3.13	48.68
5660	3.71	- 28.43	/	/	- 3.17	48.21
5670	3.72	- 28.34	/	/	- 3.17	48.18
5680	3.92	- 24.9	/	/	- 2.97	50.42
5690	4.17	- 24.77	/	/	- 2.74	53.23
5700	4.25	- 22.79	/	/	- 2.66	54.25
5710	4.36	- 21.63	/	/	- 2.54	55.77
5720	4.57	- 22.47	/	/	- 2.32	58.66
5730	4.53	- 21.96	/	/	- 2.34	58.4
5740	4.36	- 21.03	/	/	- 2.49	56.33
5750	4.17	- 21.47	/	/	- 2.66	54.19
5760	4.01	- 20.42	/	/	- 2.8	52.46
5770	3.77	- 22.7	/	/	- 3.02	49.85
5780	3.69	- 22.3	/	/	- 3.08	49.19

5790	3.65	- 23.26	/	/	- 3.1	49.03
5800	3.72	- 22.94	/	/	- 2.99	50.2
5810	3.64	- 23.34	/	/	- 3.03	49.74
5820	3.5	- 23.46	/	/	- 3.12	48.73
5830	3.35	- 24.23	/	/	- 3.22	47.7
5840	3.02	- 26.53	/	/	- 3.48	44.89
5850	2.8	- 28.66	/	/	- 3.62	43.44

2#antenna

Gain&Efficiency gain and efficiency						
frequency frequency(MHz)	gain Gain (dBi)	mingain minimum gain (dBi)	CP Gain The maximum increase in cross-polarization beneficial(dBi)	CO Gain Gain (dBi)	efficiency efficiency(dB)	efficiency efficiency(%)
2400	- 0.26	- 17.17	/	/	- 4	39.85
2410	- 0.38	- 16.8	/	/	- 4.09	38.97
2420	-0.39	- 15.08	/	/	- 4.03	39.55
2430	- 0.36	- 14.34	/	/	- 3.9	40.74
2440	- 0.26	- 13.97	/	/	- 3.76	42.05
2450	- 0.13	- 16.13	/	/	- 3.61	43.56
2460	0.11	- 20.15	/	/	- 3.43	45.4
2470	0.28	- 20.52	/	/	- 3.31	46.64
2480	0.45	- 18.23	/	/	- 3.31	46.69
2490	0.66	- 14.57	/	/	- 3.24	47.46
2500	0.71	- 13.35	/	/	- 3.33	46.43
5150	2.55	- 16.69	/	/	- 1.52	70.54
5160	2.68	- 17.02	/	/	- 1.47	71.34
5170	2.68	- 16.54	/	/	- 1.54	70.21
5180	2.63	- 17.78	/	/	- 1.61	69.09
5190	2.6	- 18.52	/	/	- 1.65	68.37
5200	2.41	- 19.92	/	/	- 1.76	66.75
5210	2.27	- 20.57	/	/	- 1.81	65.92
5220	2.11	- 21.12	/	/	- 1.88	64.9

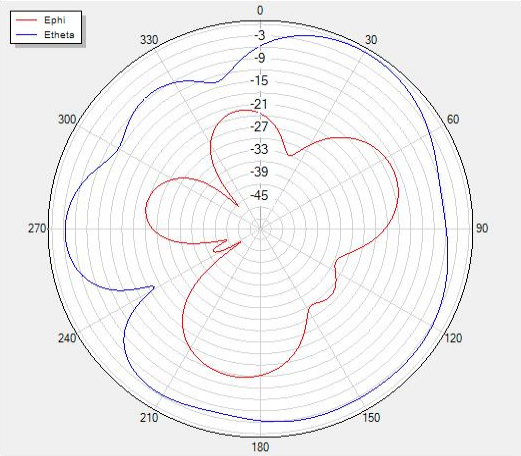
5230	2.19	- 21.2	/	/	- 1.76	66.64
5240	2.19	- 20.71	/	/	- 1.76	66.7
5250	2.34	- 18.8	/	/	- 1.73	67.21
5260	2.43	- 18.4	/	/	- 1.72	67.29
5270	2.6	- 16.7	/	/	- 1.72	67.3
5280	2.67	- 16.34	/	/	- 1.76	66.66
5290	2.74	- 15.97	/	/	- 1.8	66.1
5300	2.65	- 15.11	/	/	- 1.9	64.54
5310	2.79	- 15.88	/	/	- 1.8	66.13
5320	2.77	- 15.9	/	/	- 1.76	66.67
5330	2.64	- 15.6	/	/	- 1.82	65.78
5340	2.61	- 16.1	/	/	- 1.77	66.55
5350	2.53	- 16.67	/	/	- 1.78	66.4
5360	2.47	- 16.87	/	/	- 1.79	66.21
5370	2.52	- 17.63	/	/	- 1.72	67.33
5380	2.64	- 17	/	/	- 1.65	68.41
5390	2.82	- 16.94	/	/	- 1.51	70.66
5400	3.16	- 16.33	/	/	- 1.27	74.67
5410	3.35	- 15.65	/	/	- 1.14	76.98
5420	3.52	- 15.06	/	/	- 1.03	78.94
5430	3.56	- 14.95	/	/	- 0.99	79.63
5440	3.58	- 15.48	/	/	- 0.99	79.66
5450	3.42	- 16.26	/	/	- 1.1	77.61
5460	3.36	- 16.46	/	/	- 1.14	76.88
5470	3.25	- 16.89	/	/	- 1.19	75.95
5480	3.16	- 16.52	/	/	- 1.25	75.02
5490	3.03	- 16.78	/	/	- 1.29	74.31
5500	2.96	- 17.17	/	/	- 1.33	73.69
5510	2.83	- 16.98	/	/	- 1.4	72.51
5520	2.71	- 17.24	/	/	- 1.5	70.85
5530	2.7	- 16.7	/	/	- 1.53	70.24
5540	2.75	- 16.55	/	/	- 1.51	70.65
5550	2.82	- 16.59	/	/	- 1.5	70.8
5560	2.83	- 15.73	/	/	- 1.52	70.51

5570	2.99	- 16.26	/	/	- 1.43	72
5580	3.02	- 16.08	/	/	- 1.37	72.97
5590	3.07	- 16.25	/	/	- 1.35	73.21
5600	3.1	- 16.64	/	/	- 1.3	74.1
5610	3.24	- 16.98	/	/	- 1.18	76.27
5620	3.24	- 16.95	/	/	- 1.15	76.74
5630	3.25	- 16.61	/	/	- 1.17	76.45
5640	3.25	- 16.79	/	/	- 1.18	76.24
5650	3.3	- 17.28	/	/	- 1.17	76.32
5660	3.23	- 16.59	/	/	- 1.29	74.35
5670	3.2	- 16.89	/	/	- 1.38	72.73
5680	3.31	- 17.22	/	/	- 1.35	73.29
5690	3.54	- 18.37	/	/	- 1.2	75.8
5700	3.7	- 19.13	/	/	- 1.12	77.25
5710	3.87	- 18.8	/	/	- 1.03	78.96
5720	4.16	- 19.74	/	/	- 0.81	83.01
5730	4.24	- 19.57	/	/	- 0.76	83.9
5740	4.19	- 19.06	/	/	- 0.85	82.29
5750	4.01	- 20.17	/	/	- 1	79.36
5760	3.88	- 19.67	/	/	- 1.11	77.39
5770	3.66	- 19.86	/	/	- 1.24	75.18
5780	3.57	- 18.95	/	/	- 1.26	74.77
5790	3.49	- 17.51	/	/	- 1.23	75.32
5800	3.56	- 18.27	/	/	- 1.1	77.7
5810	3.49	- 19.46	/	/	- 1.08	78.01
5820	3.37	- 21.39	/	/	- 1.18	76.18
5830	3.19	- 23.58	/	/	- 1.33	73.55
5840	2.9	- 24.9	/	/	- 1.64	68.57
5850	2.59	- 26.83	/	/	- 1.99	63.2

4. Antenna pattern

1#antenna

Theta=90 freq=2400MHz



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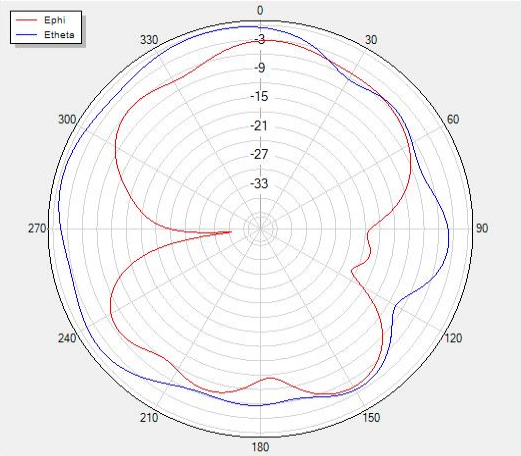

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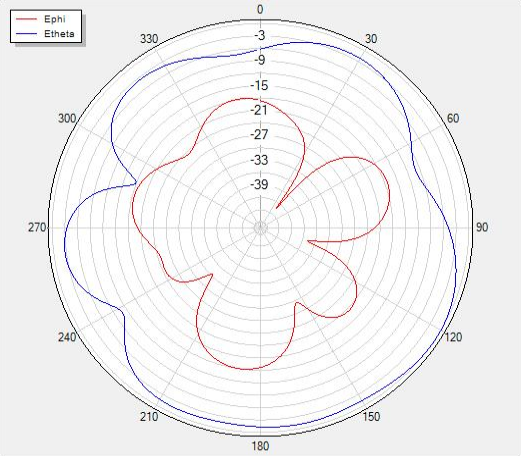

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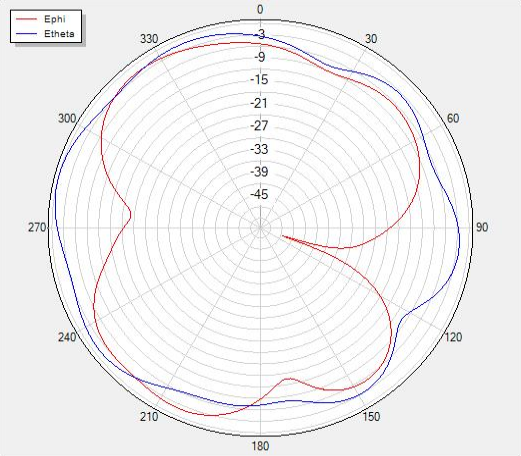

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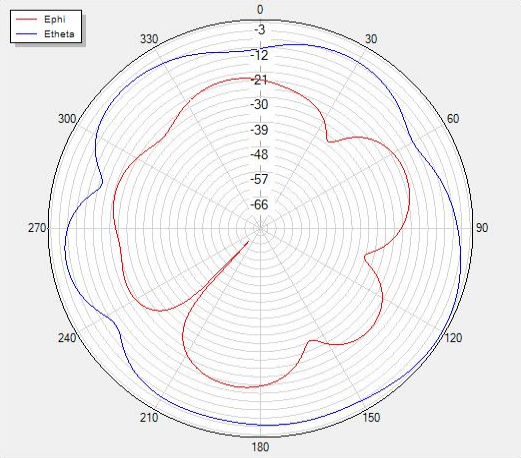

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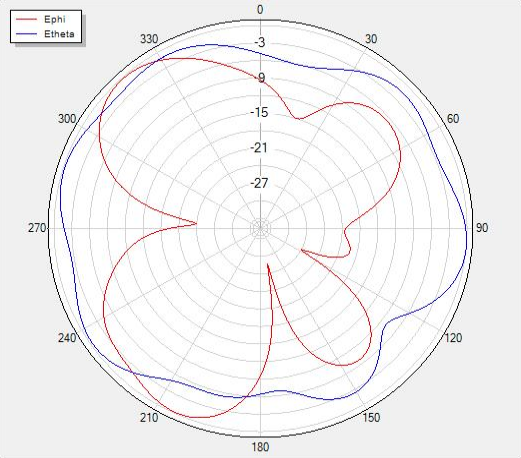

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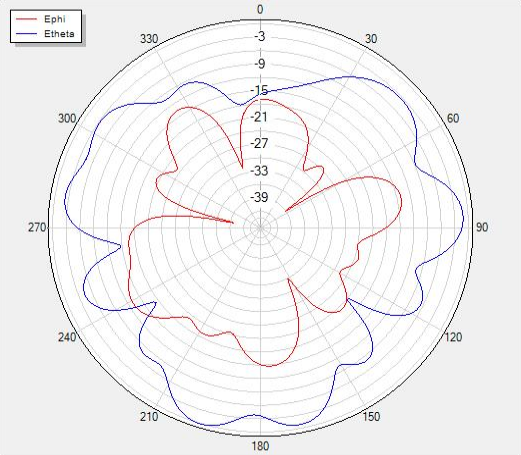

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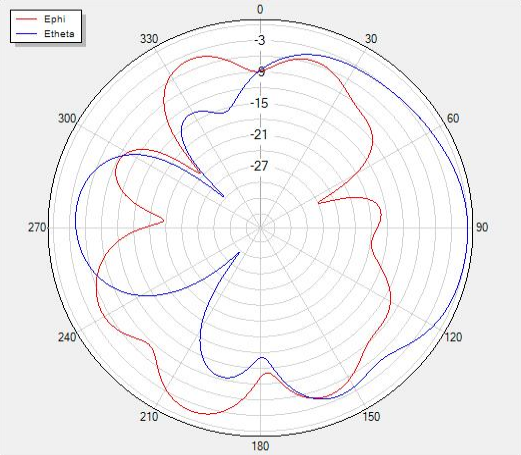

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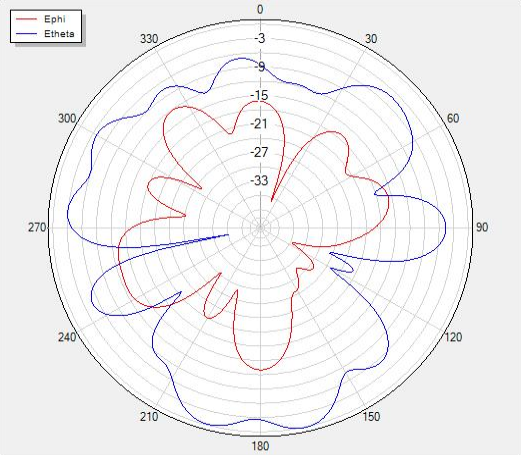

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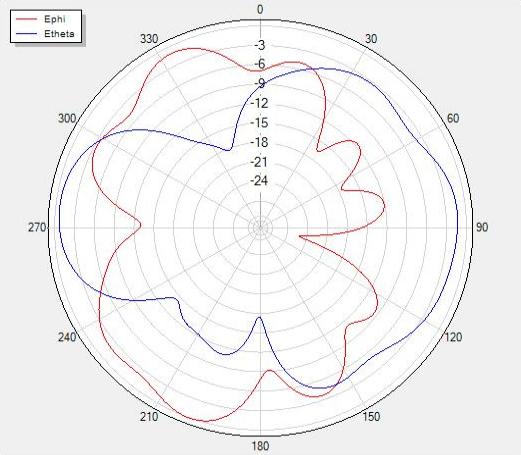

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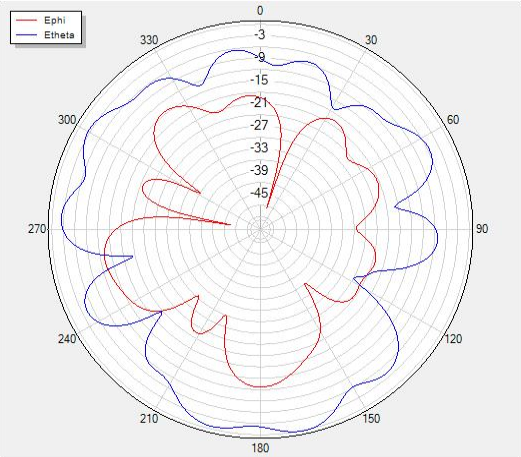

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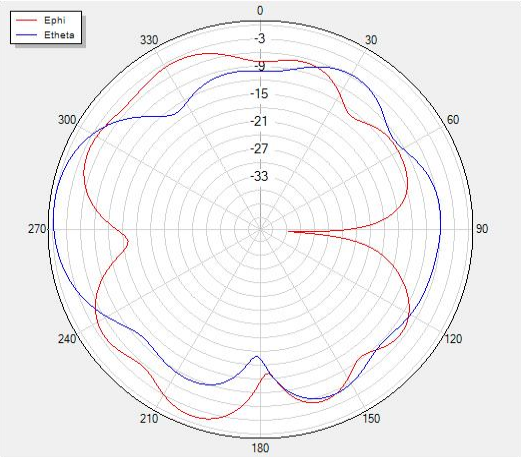

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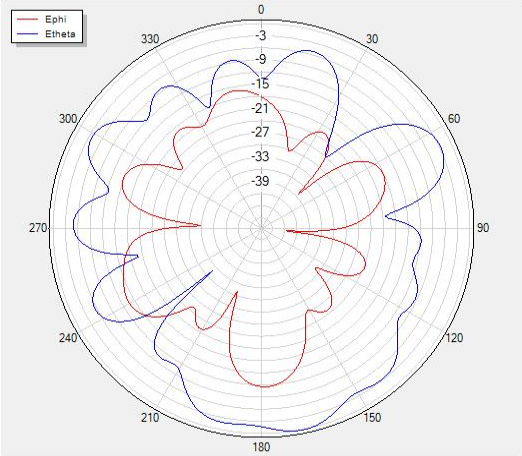

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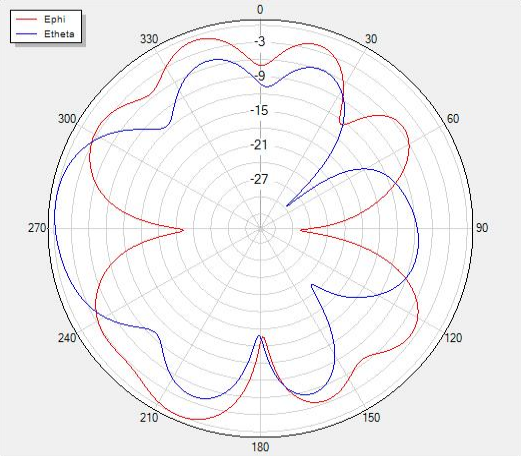

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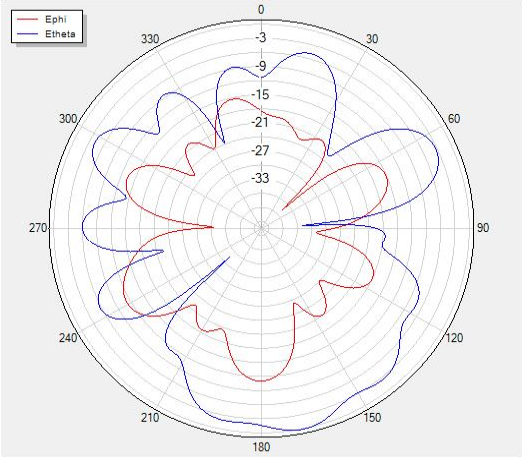

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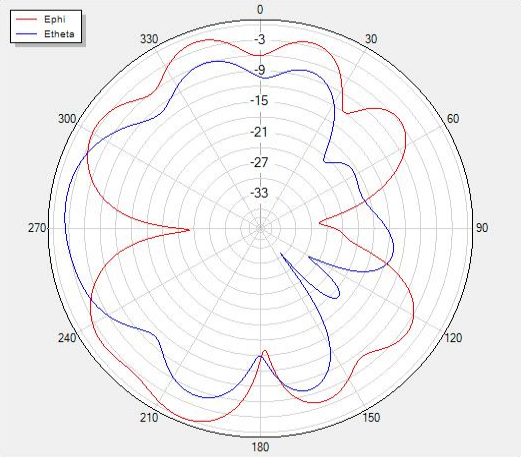

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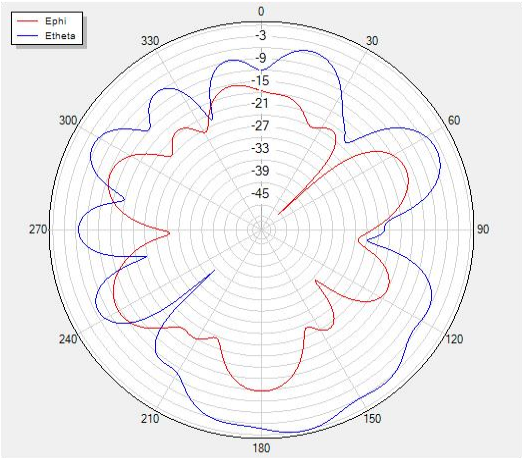

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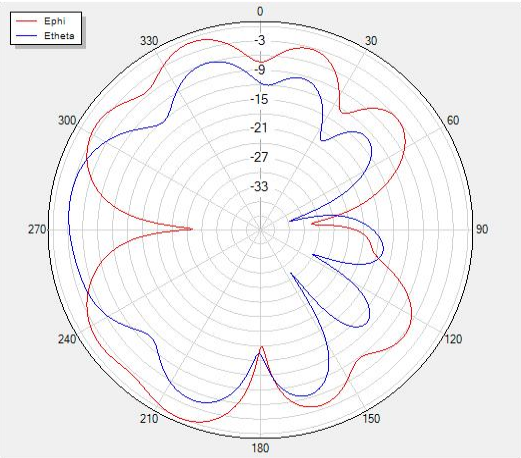
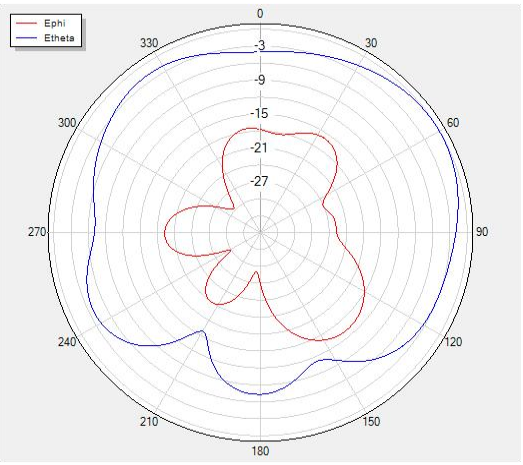
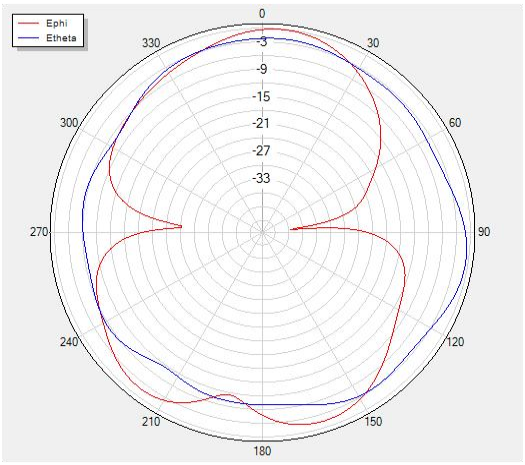


2#antenna

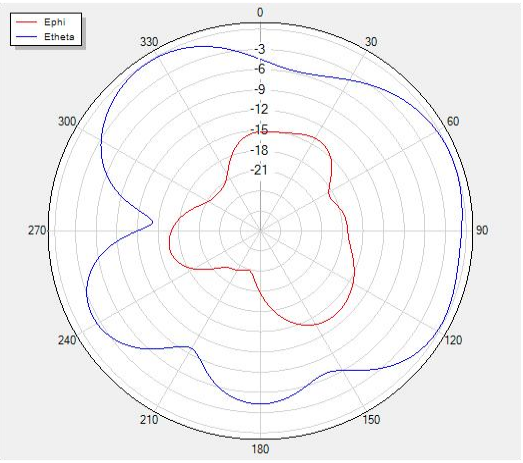
Theta=90 freq=2400MHz



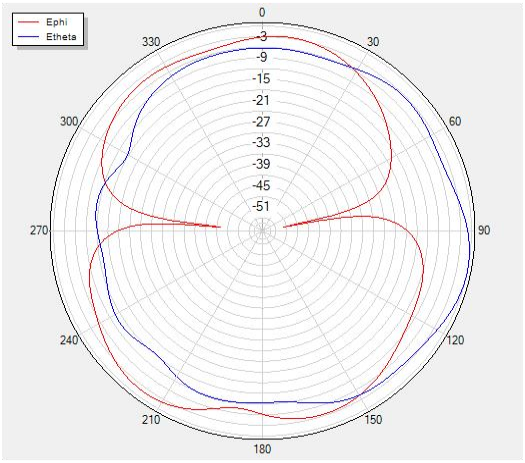
Phi=90 freq=2400MHz



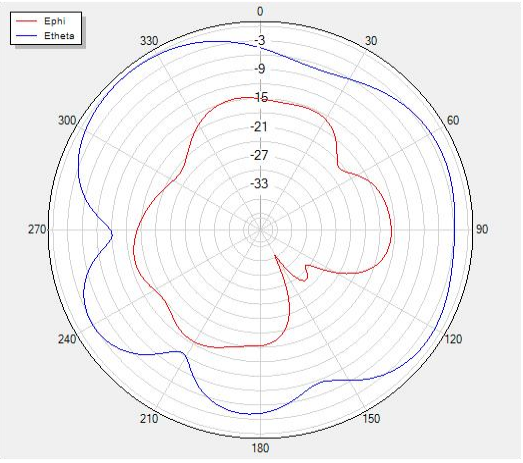
Theta=90 freq=2450MHz



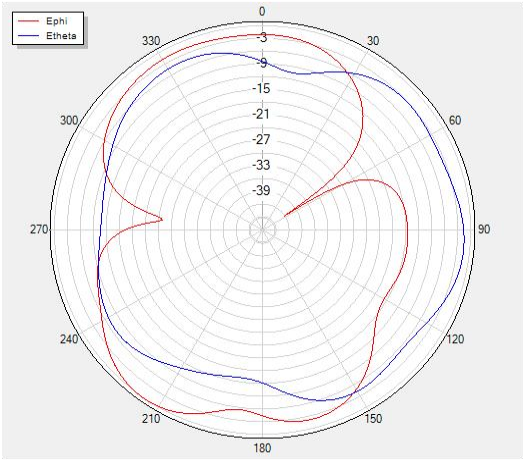
Phi=90 freq=2450MHz



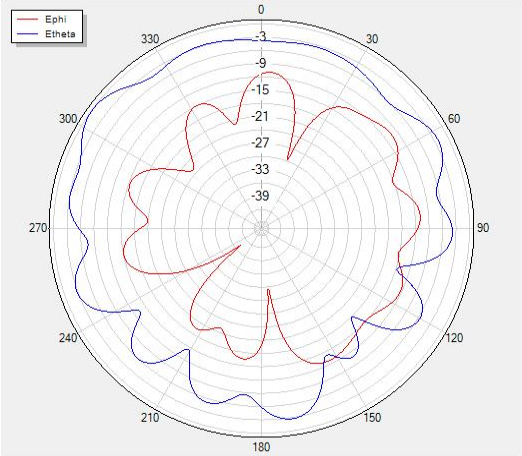
Theta=90 freq=2500MHz



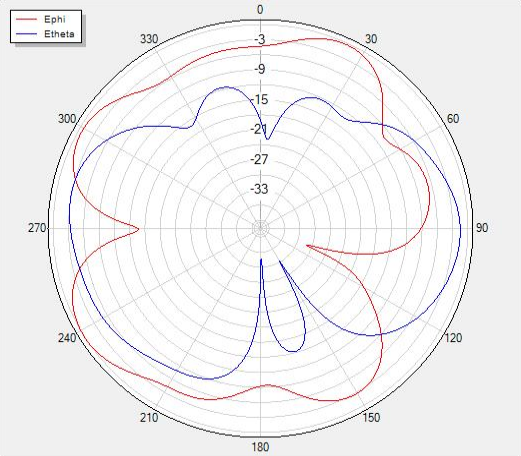
Phi=90 freq=2500MHz



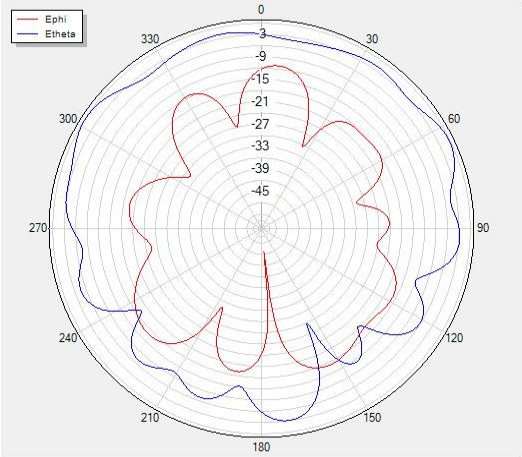
Theta=90 freq=5150MHz



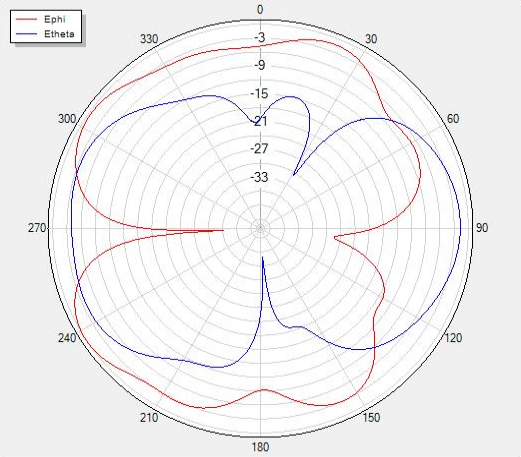
Phi=90 freq=5150MHz



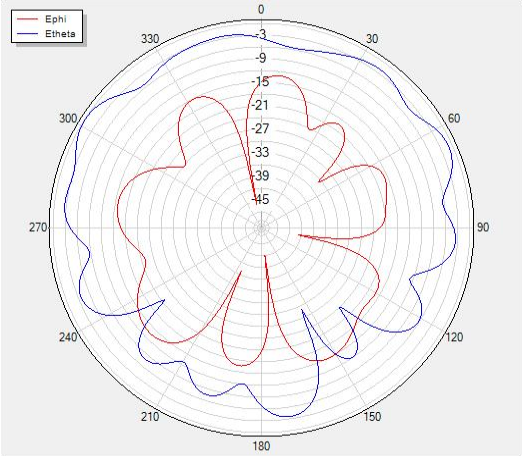
Theta=90 freq=5350MHz



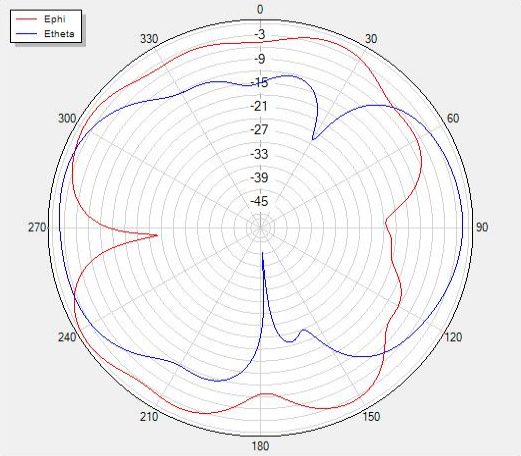
Phi=90 freq=5350MHz



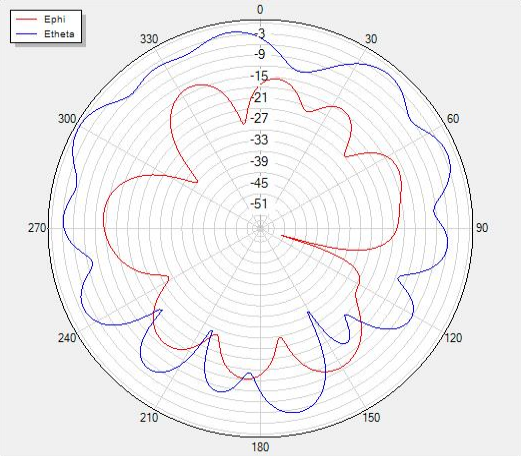
Theta=90 freq=5500MHz



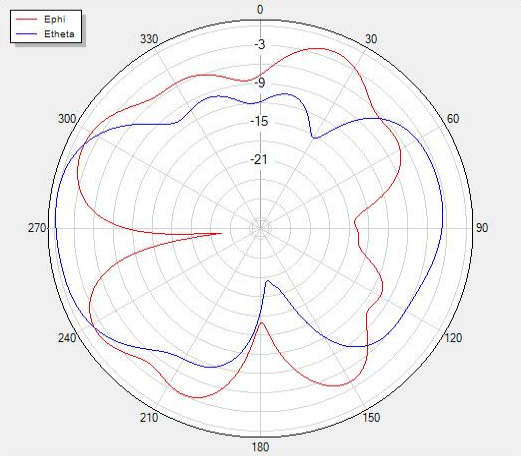
Phi=90 freq=5500MHz



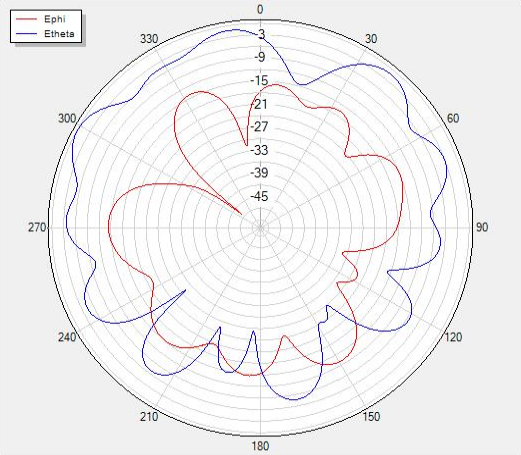
Theta=90 freq=5720MHz



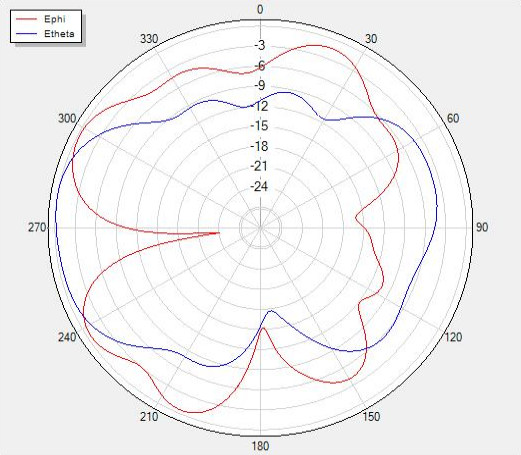
Phi=90 freq=5720MHz



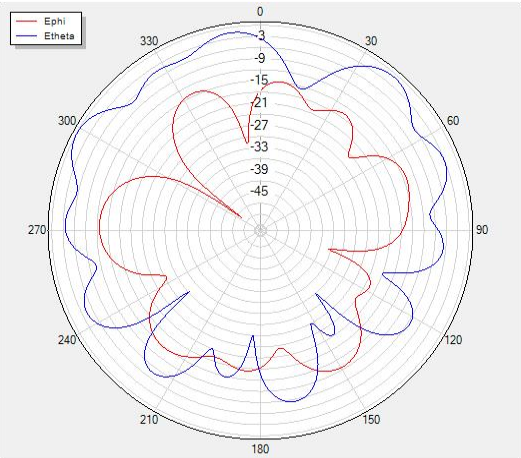
Theta=90 freq=5800MHz



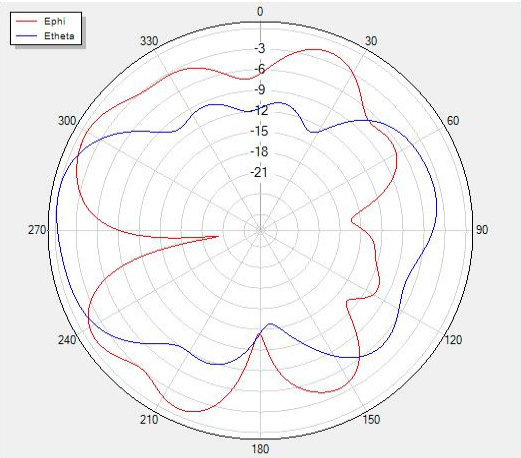
Phi=90 freq=5800MHz



Theta=90 freq=5850MHz



Phi=90 freq=5850MHz



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