

Antenna Information

- 1 Manufacturer's name: KDT R&D Center
- 2 Manufacture Address: 413ho, Dongtan-daero 23-gil, Hwaseong-si, Gyeonggi-do, Republic of Korea
- 3 Antenna model name: S20
- 4 Antenna type: PIFA
- 5 Antenna Gain: Only radiated measurements are used to show compliance with FCC limits for fundamental and spurious emissions.

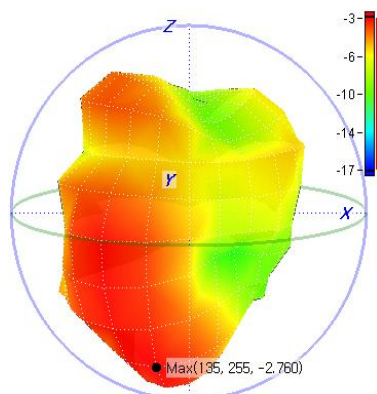
5.1 2.4G +5G WIFI 3D Radiation Pattern Measurement Results

Ant1

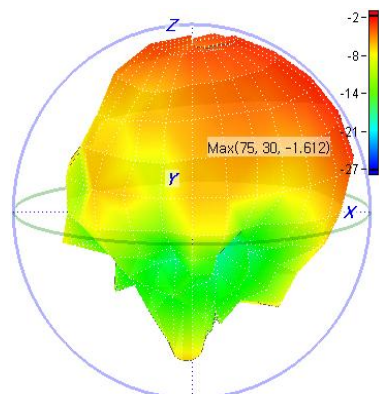
No	Frequency	Peak Value		Minimum Value		Avg. Gain	Efficiency
	[MHz]	Value[dBi]	Degree	Value[dBi]	Degree	[dBi]	[%]
1	2400	-1.58	150 / 255	-17.47	105 / 60	-6.06	24.80
2	2450	-2.76	135 / 255	-17.44	120 / 75	-7.18	19.16
3	2485	-2.75	135 / 255	-16.68	120 / 75	-7.36	18.38
4	5150	0.88	60 / 30	-27.10	165 / 225	-4.93	32.08
5	5500	1.92	90 / 45	-21.76	180 / 300	-3.93	40.44
6	5875	-1.61	75 / 30	-27.28	180 / 270	-6.88	20.53

3D Radiation Pattern

2.4G WIFI



5G WIFI

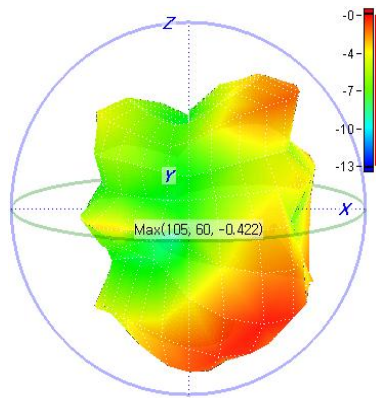


AN2

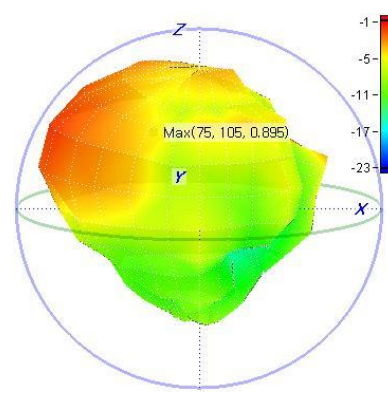
No	Frequency	Peak Value		Minimum Value		Avg. Gain	Efficiency
	[MHz]	Value[dBi]	Degree	Value[dBi]	Degree	[dBi]	[%]
1	2400	-0.05	105 / 45	-15.151	105 / 120	-3.89	40.80
2	2450	-0.42	105 / 60	-12.924	150 / 0	-4.22	37.86
3	2485	-0.31	135 / 75	-16.776	150 / 0	-4.45	35.86
4	5150	0.34	90 / 150	-20.083	120 / 0	-6.36	23.12
5	5500	-0.36	75 / 135	-24.170	180 / 315	-6.22	23.87
6	5875	-0.90	75 / 105	-22.597	105 / 345	-5.08	31.04

3D Radiation Pattern

2.4G WIFI



5G WIFI



5.2 6e WIFI 3D Radiation Pattern Measurement Results

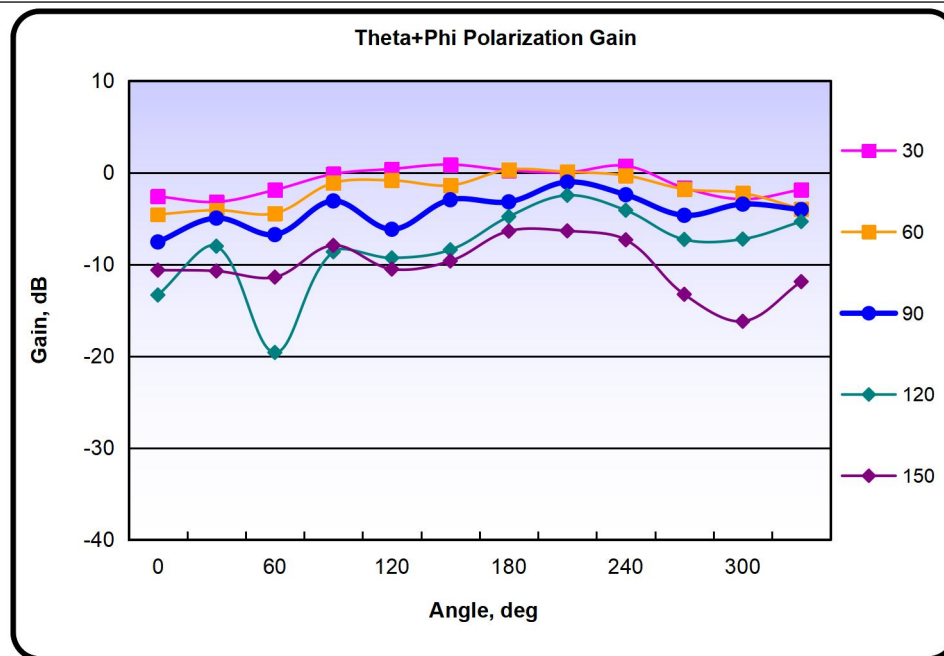
AN1

	1	2	3	4	5	6	7	8
Frequency [MHz]	5955	6115	6275	6435	6595	6755	6915	7075
Efficiency [dB]	-3.62	-3.09	-2.73	-3.92	-3.42	-5.80	-5.73	-4.45
Efficiency [%]	43.5	49.0	53.4	40.6	45.5	26.3	26.7	35.9
Peak Gain [dB]	0.87	1.84	2.47	1.29	1.41	-1.09	-1.13	-0.56
Directivity [dB]	4.49	4.94	5.20	5.21	4.83	4.71	4.60	3.90
Minimum Gain [dB]	-19.60	-16.89	-18.35	-20.58	-16.87	-22.03	-13.10	-15.79

2D Radiation Pattern

6E WIFI_5955

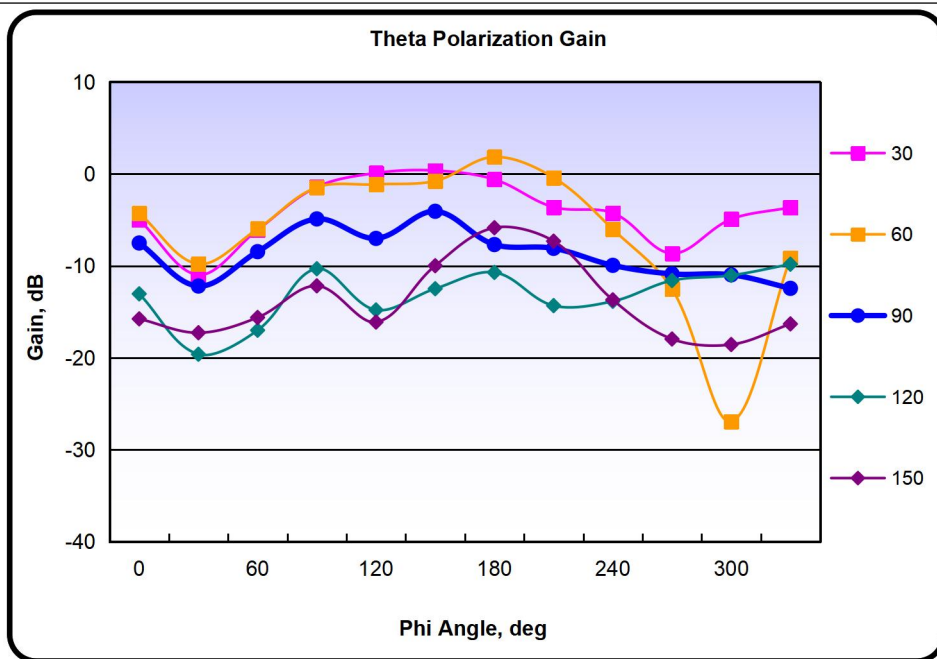
Theta-Polarization + Phi-Polarization(dB)												
Theta Angle	Phi Angle											
	0	30	60	90	120	150	180	210	240	270	300	330
0	0.09	0.30	-0.32	0.69	0.59	-0.23	-0.83	-0.76	0.17	-0.49	-2.77	-0.54
30	-2.60	-3.20	-1.89	-0.16	0.39	0.87	0.24	0.03	0.73	-1.66	-2.91	-1.86
60	-4.57	-4.10	-4.43	-1.13	-0.85	-1.39	0.31	0.07	-0.32	-1.80	-2.24	-3.96
90	-7.56	-4.96	-6.76	-3.09	-6.18	-2.96	-3.19	-1.03	-2.41	-4.66	-3.44	-4.04
120	-13.34	-8.02	-19.60	-8.63	-9.30	-8.42	-4.80	-2.48	-4.11	-7.29	-7.25	-5.34
150	-10.63	-10.73	-11.39	-7.94	-10.51	-9.63	-6.38	-6.35	-7.33	-13.26	-16.21	-11.88
180	-15.04	-13.52	-13.40	-10.83	-11.14	-12.56	-13.56	-14.25	-15.02	-15.03	-14.38	-16.38



2D Radiation Pattern

6E WIFI_6115

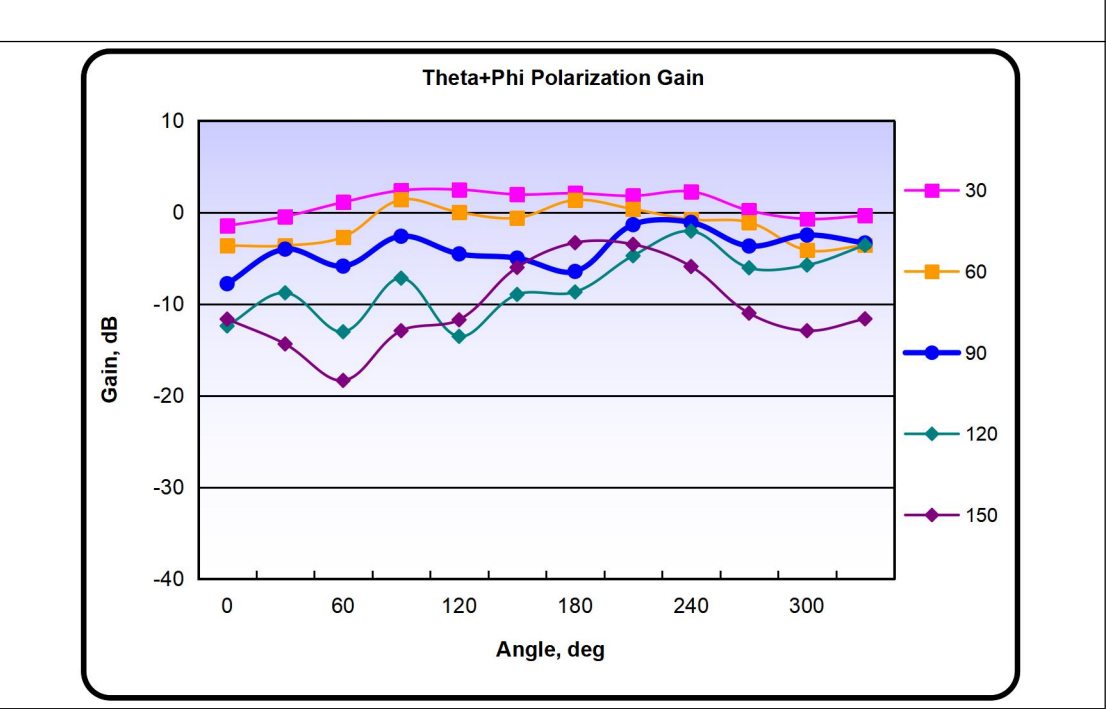
Theta-Polarization Gain(dB)												
Theta Angle	Phi Angle											
	0	30	60	90	120	150	180	210	240	270	300	330
0	-1.84	-5.20	-6.64	-3.32	-0.58	-0.25	-2.06	-2.54	-6.03	-3.46	-2.95	-0.16
30	-5.00	-10.98	-6.10	-1.43	0.09	0.36	-0.61	-3.62	-4.25	-8.65	-4.93	-3.65
60	-4.28	-9.80	-5.98	-1.47	-1.14	-0.77	1.84	-0.41	-6.02	-12.51	-26.93	-9.16
90	-7.52	-12.20	-8.46	-4.90	-7.02	-4.07	-7.69	-8.10	-9.95	-10.88	-10.98	-12.45
120	-13.05	-19.62	-17.01	-10.32	-14.80	-12.49	-10.72	-14.33	-13.86	-11.60	-11.04	-9.83
150	-15.77	-17.28	-15.62	-12.18	-16.12	-9.99	-5.86	-7.32	-13.70	-17.96	-18.56	-16.32
180	-19.31	-24.82	-38.37	-23.62	-20.67	-20.26	-18.46	-19.11	-23.53	-26.02	-23.62	-19.62



2D Radiation Pattern

6E WIFI_6275

Theta-Polarization + Phi-Polarization(dB)												
Theta Angle	Phi Angle											
	0	30	60	90	120	150	180	210	240	270	300	330
0	1.42	1.44	1.14	1.77	1.76	1.73	1.49	1.44	1.67	1.35	0.16	1.36
30	-1.48	-0.46	1.10	2.38	2.47	1.95	2.07	1.79	2.25	0.20	-0.73	-0.37
60	-3.64	-3.64	-2.70	1.37	0.00	-0.61	1.33	0.35	-0.79	-1.10	-4.14	-3.60
90	-7.80	-4.02	-5.88	-2.62	-4.54	-5.00	-6.46	-1.35	-1.11	-3.68	-2.49	-3.35
120	-12.41	-8.79	-13.04	-7.19	-13.54	-8.97	-8.70	-4.75	-2.06	-6.06	-5.76	-3.59
150	-11.66	-14.37	-18.35	-12.93	-11.73	-6.02	-3.32	-3.50	-5.92	-11.01	-12.93	-11.63
180	-12.83	-12.72	-12.59	-10.51	-10.86	-13.11	-17.27	-19.73	-21.35	-19.07	-15.76	-13.15

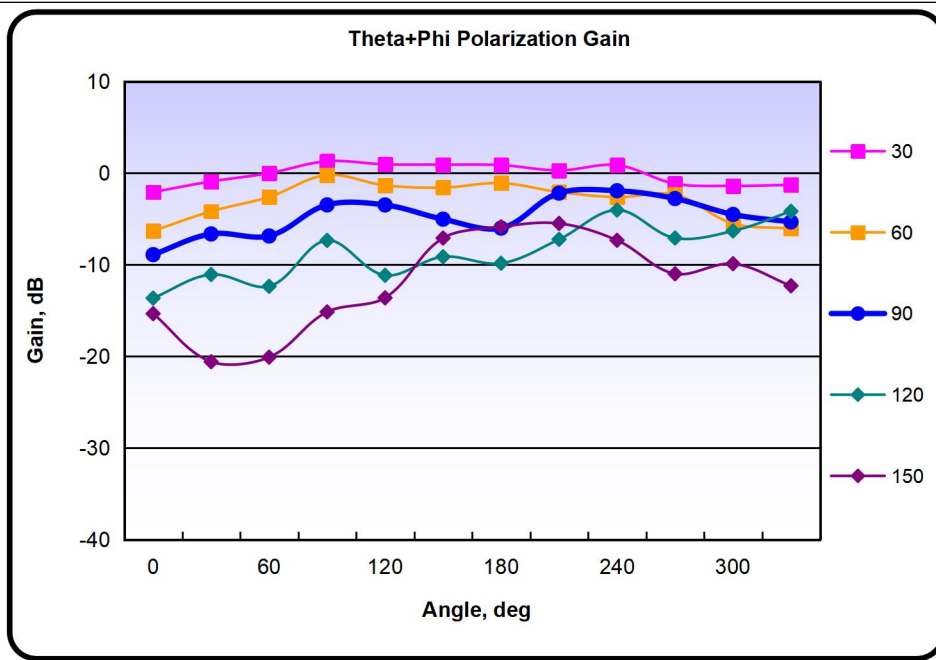


2D Radiation Pattern

6E WIFI_6435

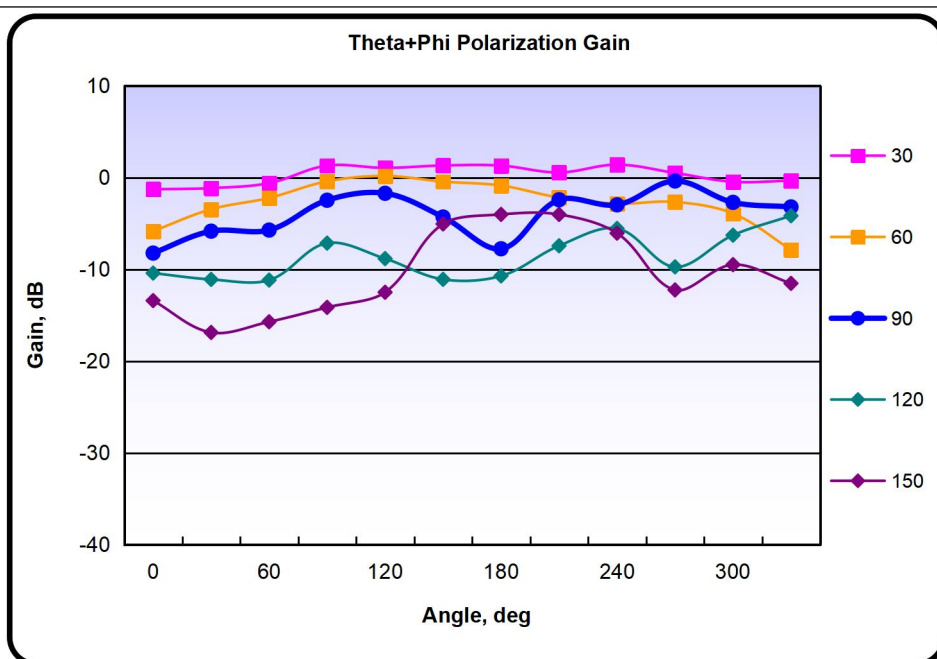
Theta-Polarization + Phi-Polarization(dB)

Theta Angle	Phi Angle											
	0	30	60	90	120	150	180	210	240	270	300	330
0	1.09	1.24	0.93	1.43	1.39	1.38	1.28	1.25	1.44	1.07	-0.41	1.24
30	-2.08	-0.91	-0.01	1.29	0.95	0.92	0.87	0.30	0.87	-1.15	-1.40	-1.28
60	-6.32	-4.17	-2.60	-0.22	-1.34	-1.58	-1.09	-2.06	-2.62	-2.35	-5.51	-6.04
90	-8.90	-6.64	-6.86	-3.47	-3.48	-5.03	-6.00	-2.18	-1.92	-2.77	-4.51	-5.33
120	-13.64	-11.07	-12.36	-7.35	-11.15	-9.13	-9.84	-7.23	-4.03	-7.09	-6.32	-4.17
150	-15.34	-20.58	-20.09	-15.15	-13.61	-7.09	-5.86	-5.50	-7.34	-10.98	-9.89	-12.30
180	-13.57	-12.70	-13.11	-11.47	-12.23	-14.46	-16.94	-22.15	-21.23	-18.32	-16.40	-15.24



2D Radiation Pattern
6E WIFI_6595

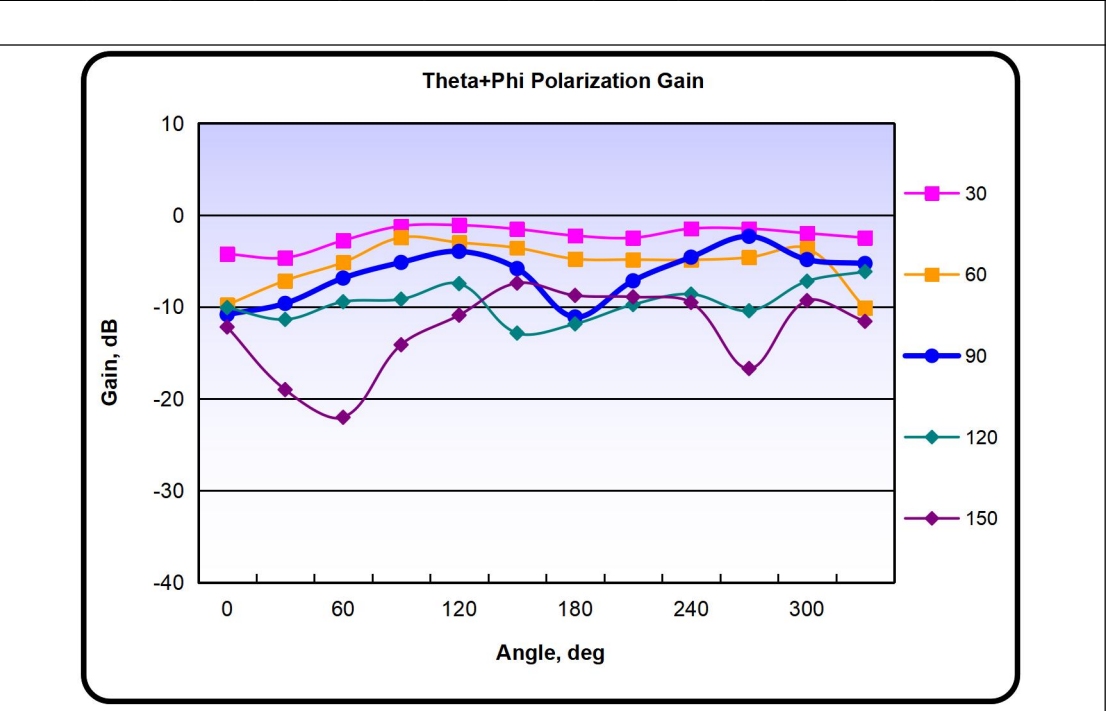
Theta-Polarization + Phi-Polarization(dB)												
Theta Angle	Phi Angle											
	0	30	60	90	120	150	180	210	240	270	300	330
0	0.56	0.75	0.53	0.78	0.67	0.62	0.67	0.65	0.92	0.69	-0.84	0.69
30	-1.28	-1.15	-0.60	1.30	1.05	1.32	1.30	0.56	1.41	0.51	-0.46	-0.33
60	-5.84	-3.45	-2.21	-0.41	0.18	-0.44	-0.87	-2.18	-2.84	-2.66	-3.92	-7.86
90	-8.23	-5.84	-5.72	-2.47	-1.71	-4.30	-7.75	-2.42	-2.97	-0.37	-2.70	-3.20
120	-10.41	-11.10	-11.17	-7.14	-8.83	-11.09	-10.71	-7.43	-5.54	-9.73	-6.28	-4.16
150	-13.40	-16.87	-15.71	-14.14	-12.49	-5.05	-4.01	-4.02	-6.06	-12.24	-9.49	-11.53
180	-12.48	-10.97	-11.51	-8.72	-9.26	-11.45	-13.86	-14.24	-16.43	-17.52	-15.49	-15.46



2D Radiation Pattern

6E WIFI_6755

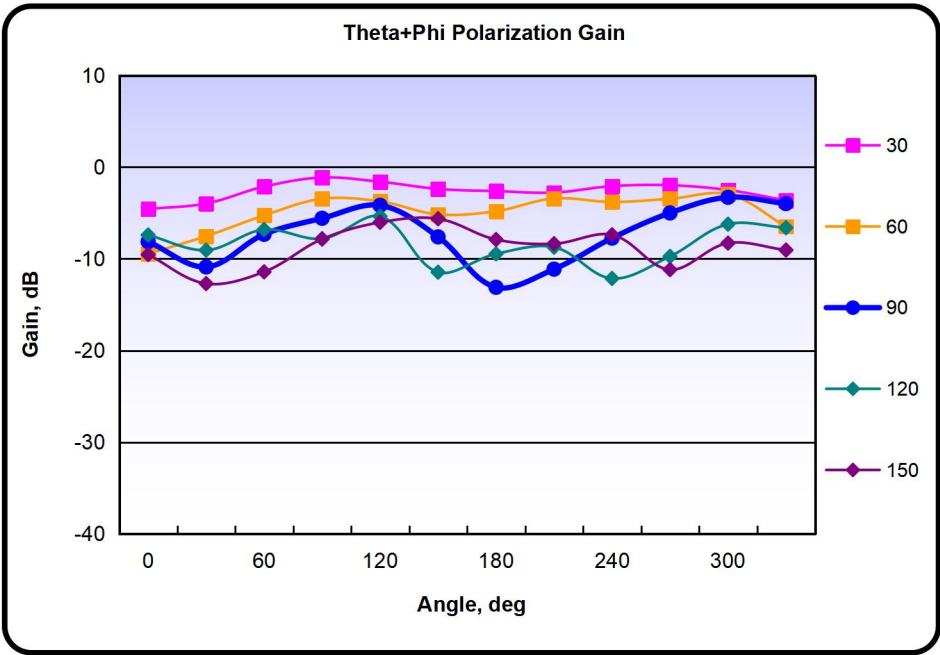
Theta-Polarization + Phi-Polarization(dB)												
Theta Angle	Phi Angle											
	0	30	60	90	120	150	180	210	240	270	300	330
0	-1.19	-1.01	-0.60	-0.68	-0.59	-0.66	-0.83	-0.87	-1.58	-1.10	-2.40	-0.98
30	-4.23	-4.64	-2.76	-1.19	-1.09	-1.52	-2.24	-2.46	-1.47	-1.47	-1.97	-2.46
60	-9.78	-7.14	-5.15	-2.44	-2.98	-3.57	-4.77	-4.84	-4.87	-4.60	-3.62	-10.10
90	-10.83	-9.62	-6.86	-5.15	-3.95	-5.82	-11.10	-7.16	-4.58	-2.31	-4.84	-5.27
120	-10.07	-11.36	-9.44	-9.16	-7.47	-12.85	-11.85	-9.75	-8.60	-10.42	-7.20	-6.16
150	-12.19	-19.01	-22.03	-14.12	-10.90	-7.40	-8.75	-8.91	-9.52	-16.71	-9.31	-11.57
180	-14.45	-11.40	-11.32	-8.23	-8.70	-10.67	-13.72	-13.62	-18.84	-22.92	-23.04	-18.86



2D Radiation Pattern

6E WIFI_6915

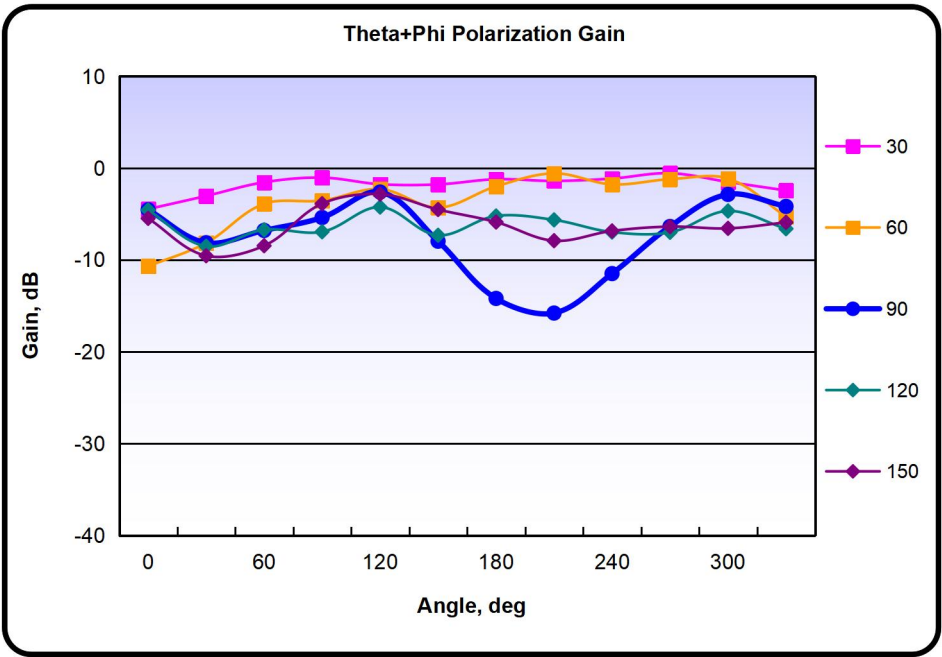
Theta-Polarization + Phi-Polarization(dB)												
Theta Angle	Phi Angle											
	0	30	60	90	120	150	180	210	240	270	300	330
0	-1.31	-1.23	-0.49	-1.39	-1.37	-1.42	-1.48	-1.48	-2.19	-1.19	-1.76	-1.34
30	-4.56	-3.96	-2.12	-1.13	-1.58	-2.37	-2.61	-2.77	-2.07	-1.97	-2.49	-3.63
60	-9.45	-7.53	-5.26	-3.45	-3.73	-5.15	-4.80	-3.41	-3.79	-3.45	-2.94	-6.47
90	-8.12	-10.88	-7.32	-5.57	-4.16	-7.60	-13.10	-11.12	-7.74	-4.99	-3.28	-3.97
120	-7.40	-9.05	-6.81	-7.80	-5.36	-11.46	-9.46	-8.73	-12.14	-9.73	-6.22	-6.61
150	-9.53	-12.70	-11.42	-7.84	-6.02	-5.63	-7.89	-8.35	-7.38	-11.17	-8.28	-9.04
180	-12.49	-9.06	-8.56	-7.11	-7.34	-8.50	-11.50	-10.35	-13.19	-14.58	-18.03	-16.56



2D Radiation Pattern

6E WIFI_7075

Theta-Polarization + Phi-Polarization(dB)												
Theta Angle	Phi Angle											
	0	30	60	90	120	150	180	210	240	270	300	330
0	-0.40	-0.19	0.79	-0.90	-0.95	-0.85	-0.52	-0.54	-2.22	-0.50	0.10	-0.35
30	-4.46	-3.03	-1.54	-1.04	-1.75	-1.77	-1.21	-1.40	-1.14	-0.56	-1.51	-2.44
60	-10.70	-8.16	-3.89	-3.53	-2.29	-4.29	-1.99	-0.57	-1.77	-1.21	-1.14	-5.28
90	-4.53	-8.13	-6.79	-5.38	-2.61	-7.96	-14.20	-15.79	-11.49	-6.36	-2.86	-4.17
120	-4.57	-8.51	-6.72	-6.94	-4.24	-7.32	-5.21	-5.64	-6.96	-6.99	-4.67	-6.60
150	-5.48	-9.55	-8.45	-3.87	-2.83	-4.51	-5.88	-7.91	-6.84	-6.37	-6.56	-5.91
180	-8.87	-6.93	-5.86	-5.36	-5.85	-6.01	-9.03	-6.54	-7.44	-7.83	-10.70	-10.01



ANT2

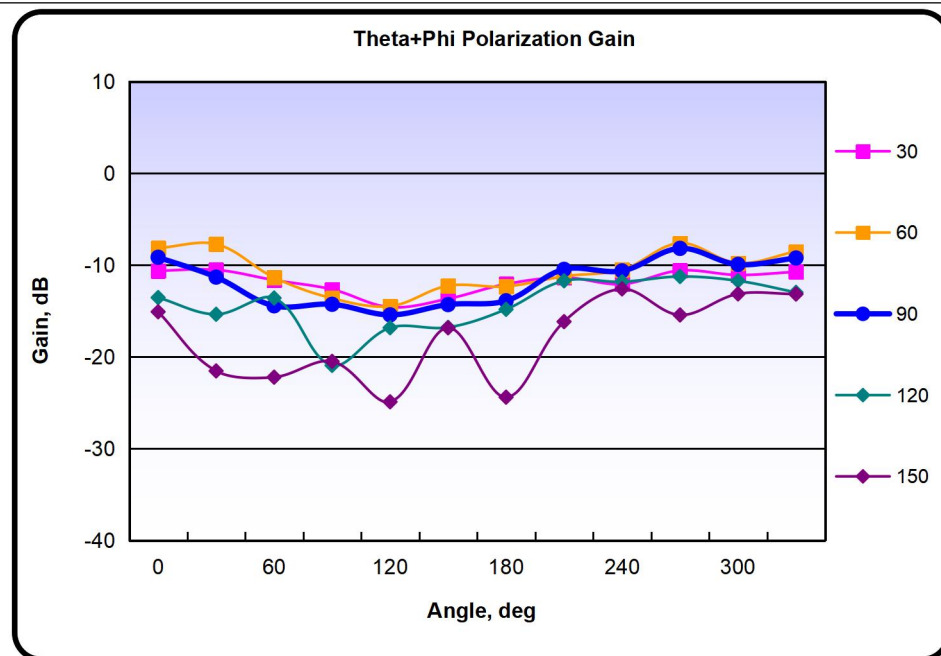
	1	2	3	4	5	6	7	8
Frequency [MHz]	5955	6115	6275	6435	6595	6755	6915	7075
Efficiency [dB]	-11.92	-10.24	-4.70	-8.39	-8.58	-7.78	-10.70	-10.89
Efficiency [%]	6.4	9.5	33.9	14.5	13.9	16.7	8.5	8.1
Peak Gain [dB]	-7.62	-4.44	0.19	-4.23	-4.11	-3.15	-6.15	-6.75
Directivity [dB]	4.30	5.80	4.89	4.16	4.47	4.63	4.55	4.14
Minimum Gain [dB]	-24.91	-24.93	-13.32	-20.68	-25.27	-19.49	-24.78	-25.78

2D Radiation Pattern

6E WIFI_5955

Theta-Polarization + Phi-Polarization(dB)

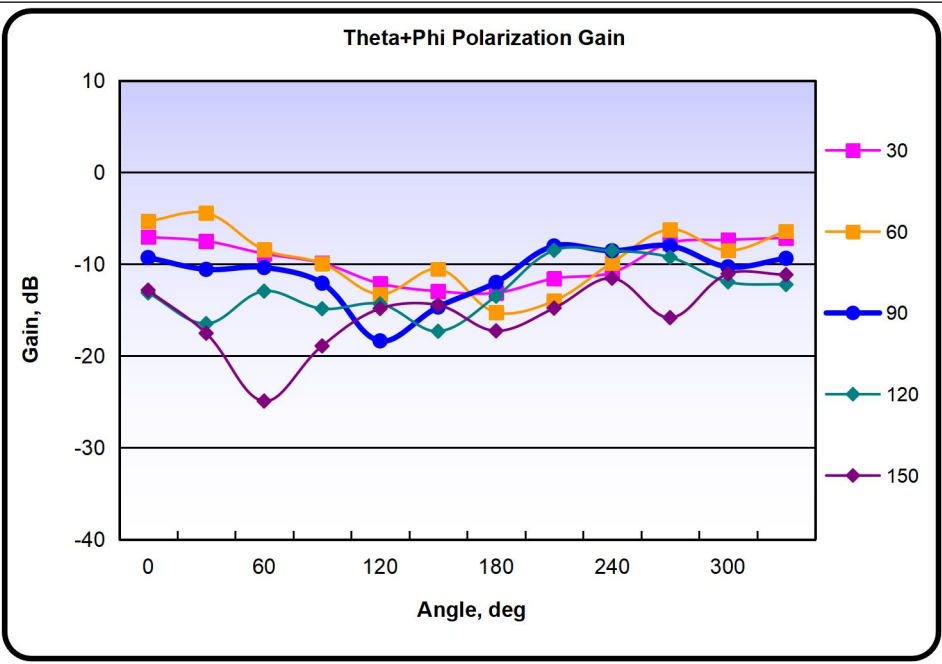
Theta Angle	Phi Angle											
	0	30	60	90	120	150	180	210	240	270	300	330
0	-12.09	-12.64	-12.60	-12.79	-15.28	-13.97	-13.73	-12.89	-12.48	-12.29	-12.51	-12.61
30	-10.63	-10.54	-11.65	-12.67	-14.60	-13.69	-12.09	-11.38	-12.09	-10.61	-11.09	-10.75
60	-8.17	-7.74	-11.37	-13.63	-14.49	-12.27	-12.34	-11.24	-10.52	-7.62	-9.79	-8.53
90	-9.17	-11.33	-14.45	-14.29	-15.44	-14.32	-13.91	-10.48	-10.65	-8.19	-9.95	-9.24
120	-13.56	-15.38	-13.61	-20.95	-16.84	-16.81	-14.84	-11.73	-11.83	-11.26	-11.73	-12.99
150	-15.10	-21.55	-22.23	-20.51	-24.91	-16.85	-24.41	-16.18	-12.61	-15.45	-13.16	-13.18
180	-21.14	-21.37	-21.67	-21.81	-23.28	-26.63	-28.17	-25.63	-24.19	-22.54	-22.06	-20.29



2D Radiation Pattern

6E WIFI_6115

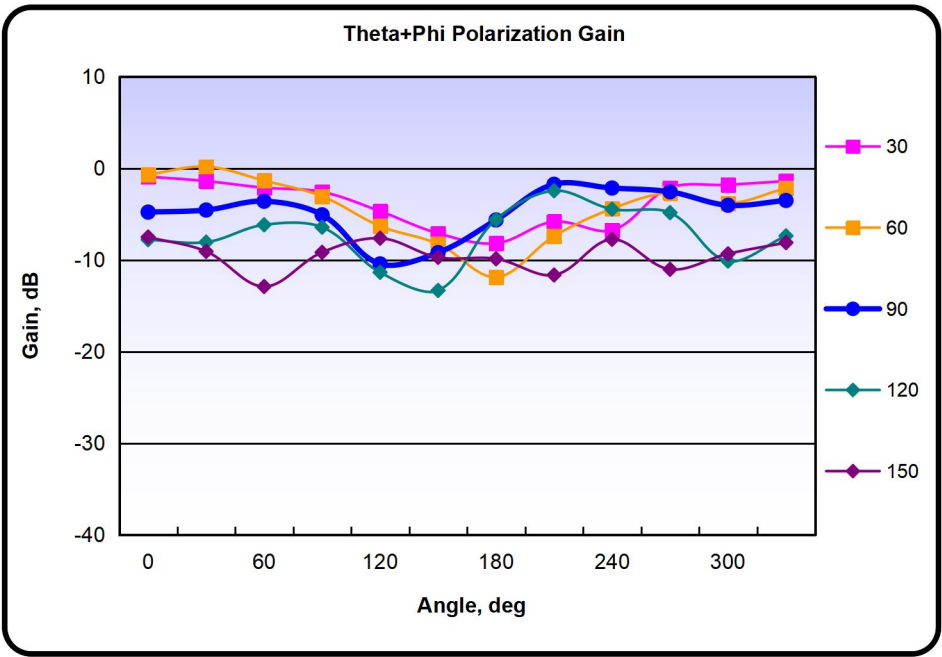
Theta-Polarization + Phi-Polarization(dB)												
Theta Angle	Phi Angle											
	0	30	60	90	120	150	180	210	240	270	300	330
0	-8.09	-8.42	-8.50	-8.72	-9.16	-9.39	-9.21	-8.76	-7.98	-7.83	-7.76	-7.58
30	-7.05	-7.50	-8.87	-9.89	-12.12	-12.96	-13.14	-11.58	-10.93	-7.71	-7.36	-7.15
60	-5.33	-4.44	-8.44	-9.92	-13.29	-10.55	-15.26	-14.01	-9.85	-6.23	-8.52	-6.42
90	-9.29	-10.58	-10.37	-12.09	-18.37	-14.68	-12.00	-8.03	-8.55	-8.01	-10.30	-9.37
120	-13.14	-16.49	-12.95	-14.87	-14.35	-17.33	-13.51	-8.51	-8.54	-9.27	-11.94	-12.23
150	-12.85	-17.54	-24.93	-18.92	-14.85	-14.47	-17.28	-14.81	-11.55	-15.85	-11.06	-11.16
180	-18.19	-18.51	-19.10	-21.20	-25.76	-24.48	-21.62	-19.01	-18.82	-18.86	-18.05	-17.37



2D Radiation Pattern

6E WIFI_6275

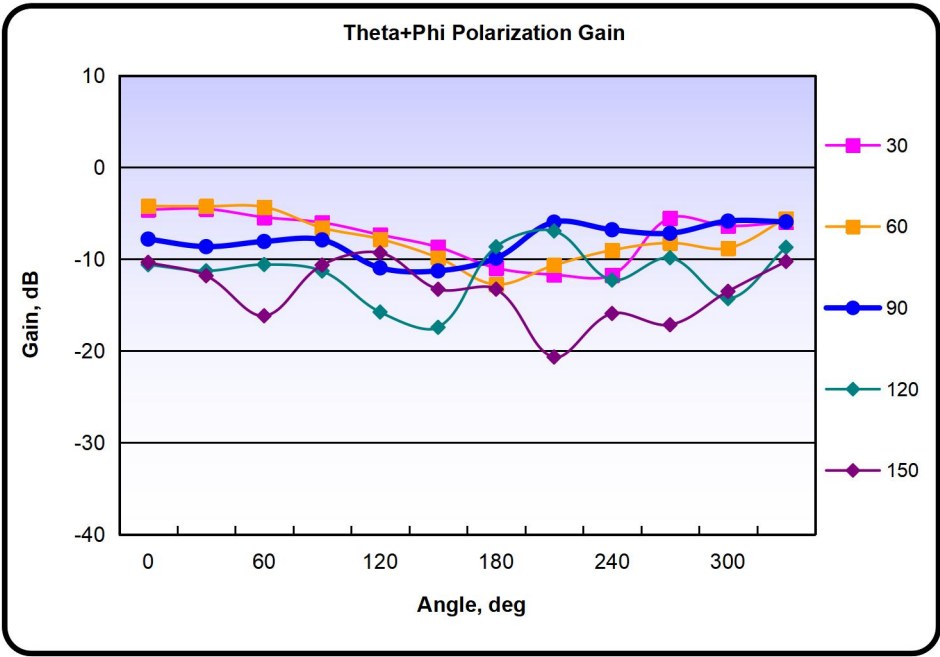
Theta-Polarization + Phi-Polarization(dB)												
Theta Angle	Phi Angle											
	0	30	60	90	120	150	180	210	240	270	300	330
0	-2.54	-2.59	-2.82	-2.69	-2.45	-2.69	-2.78	-2.39	-2.50	-2.31	-2.08	-2.48
30	-0.90	-1.39	-2.11	-2.57	-4.68	-7.08	-8.18	-5.82	-6.75	-2.12	-1.79	-1.39
60	-0.68	0.19	-1.34	-3.05	-6.30	-8.25	-11.86	-7.41	-4.40	-2.68	-3.82	-2.15
90	-4.77	-4.55	-3.58	-5.07	-10.42	-9.19	-5.63	-1.74	-2.15	-2.56	-4.02	-3.50
120	-7.78	-8.05	-6.16	-6.43	-11.35	-13.32	-5.60	-2.44	-4.45	-4.83	-10.12	-7.37
150	-7.49	-9.07	-12.89	-9.16	-7.62	-9.71	-9.87	-11.64	-7.75	-11.02	-9.32	-8.10
180	-13.27	-12.10	-12.36	-14.66	-17.63	-19.51	-20.14	-20.00	-19.67	-20.11	-17.74	-15.17



2D Radiation Pattern

6E WIFI_6435

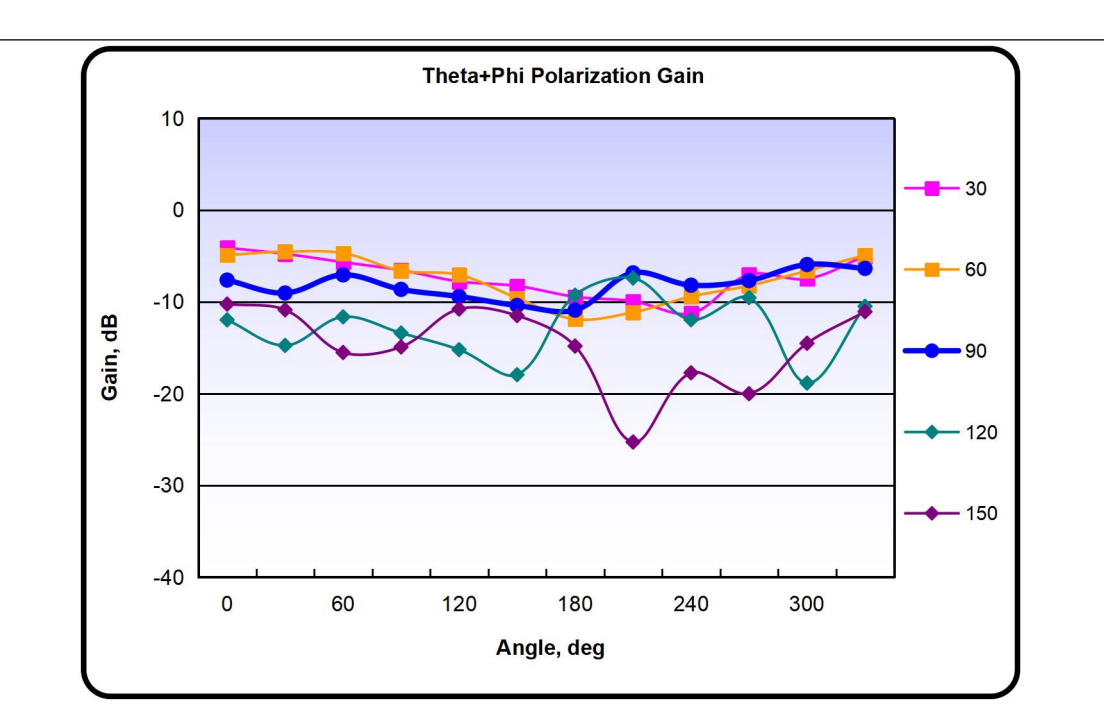
Theta-Polarization + Phi-Polarization(dB)												
Theta Angle	Phi Angle											
	0	30	60	90	120	150	180	210	240	270	300	330
0	-6.75	-6.89	-6.70	-6.61	-6.85	-6.90	-6.93	-7.00	-6.79	-6.38	-6.52	-6.50
30	-4.61	-4.55	-5.45	-6.03	-7.36	-8.70	-10.97	-11.71	-11.74	-5.53	-6.38	-6.00
60	-4.23	-4.25	-4.34	-6.60	-7.83	-9.86	-12.77	-10.69	-9.04	-8.25	-8.81	-5.59
90	-7.83	-8.65	-8.09	-7.92	-10.96	-11.29	-9.91	-5.98	-6.81	-7.19	-5.87	-5.95
120	-10.62	-11.29	-10.61	-11.31	-15.78	-17.44	-8.67	-6.95	-12.30	-9.87	-14.32	-8.73
150	-10.36	-11.83	-16.19	-10.66	-9.33	-13.30	-13.29	-20.68	-15.94	-17.17	-13.52	-10.27
180	-19.26	-17.95	-17.23	-18.75	-21.28	-22.59	-23.26	-24.92	-23.53	-22.23	-20.07	-20.84



2D Radiation Pattern

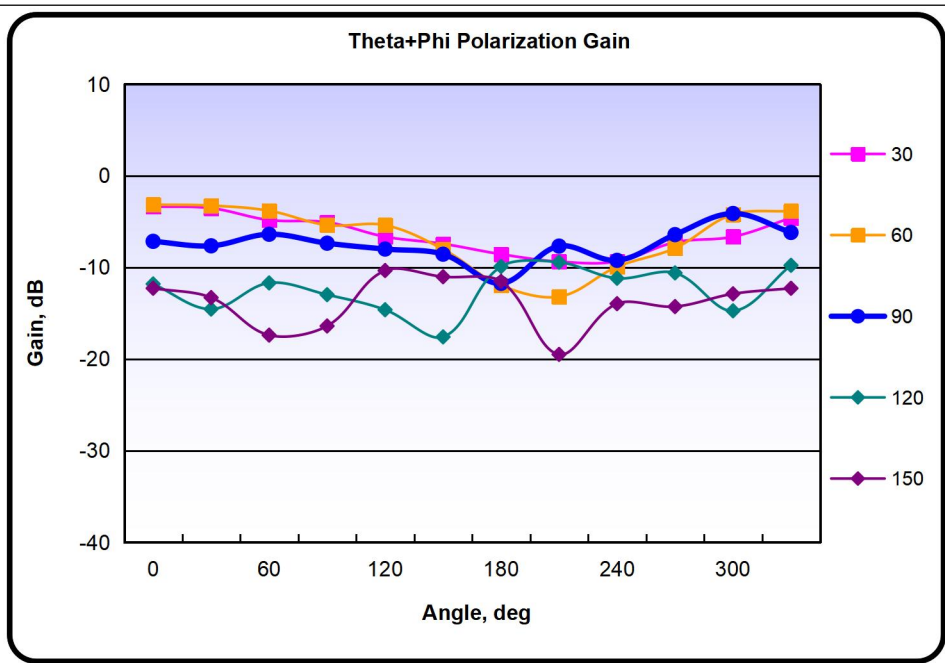
6E WIFI_6595

Theta-Polarization + Phi-Polarization(dB)												
Theta Angle	Phi Angle											
	0	30	60	90	120	150	180	210	240	270	300	330
0	-7.77	-7.51	-7.43	-7.26	-7.64	-7.42	-7.53	-7.63	-7.59	-7.48	-7.43	-7.68
30	-4.11	-4.77	-5.67	-6.56	-7.77	-8.27	-9.45	-9.94	-11.25	-7.02	-7.49	-5.01
60	-4.90	-4.53	-4.70	-6.61	-7.06	-9.59	-11.89	-11.14	-9.42	-8.24	-6.62	-4.91
90	-7.63	-9.04	-7.06	-8.64	-9.41	-10.39	-10.89	-6.84	-8.19	-7.68	-5.93	-6.35
120	-11.96	-14.75	-11.63	-13.40	-15.21	-17.94	-9.28	-7.40	-11.95	-9.54	-18.84	-10.48
150	-10.25	-10.87	-15.52	-14.91	-10.78	-11.50	-14.82	-25.27	-17.73	-20.01	-14.52	-11.07
180	-19.22	-18.43	-19.79	-25.08	-29.84	-30.69	-27.36	-24.05	-21.90	-23.30	-21.63	-21.38



2D Radiation Pattern
6E WIFI_6755

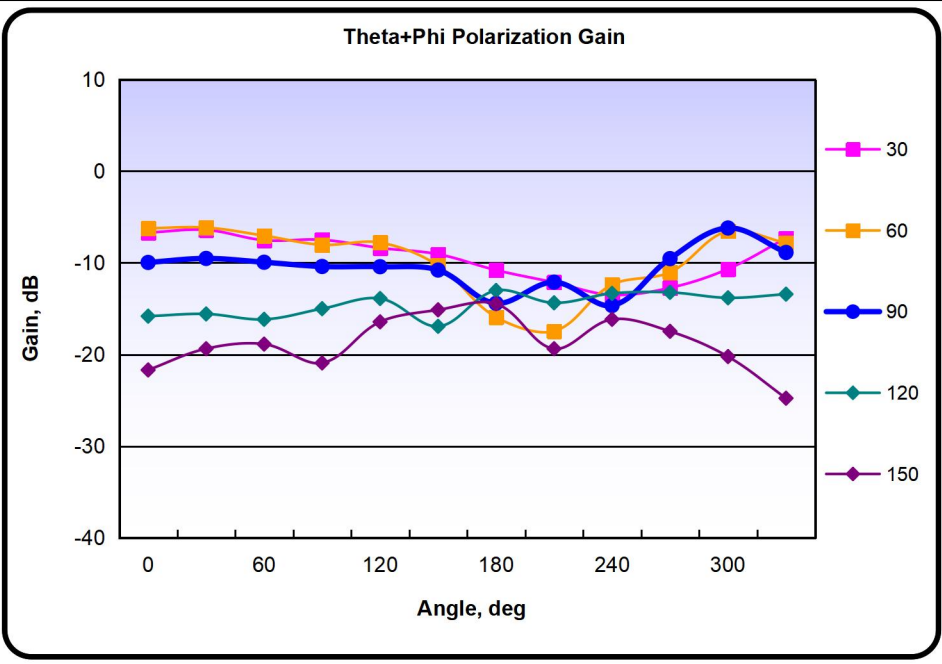
Theta-Polarization + Phi-Polarization(dB)												
Theta Angle	Phi Angle											
	0	30	60	90	120	150	180	210	240	270	300	330
0	-6.83	-6.86	-6.90	-7.21	-8.45	-7.41	-7.47	-7.32	-7.31	-7.50	-7.37	-7.03
30	-3.36	-3.53	-4.83	-5.07	-6.65	-7.42	-8.56	-9.36	-9.36	-7.26	-6.65	-4.60
60	-3.15	-3.25	-3.81	-5.38	-5.39	-8.01	-11.96	-13.19	-9.93	-7.89	-4.21	-3.84
90	-7.15	-7.64	-6.38	-7.35	-7.99	-8.55	-11.74	-7.67	-9.23	-6.42	-4.11	-6.18
120	-11.80	-14.55	-11.69	-12.97	-14.62	-17.58	-9.90	-9.43	-11.18	-10.60	-14.73	-9.77
150	-12.27	-13.29	-17.39	-16.39	-10.34	-11.02	-11.52	-19.49	-13.96	-14.27	-12.88	-12.28
180	-21.37	-19.26	-21.08	-27.99	-29.92	-21.39	-18.11	-16.46	-15.26	-17.18	-19.28	-22.16



2D Radiation Pattern

6E WIFI_6915

Theta-Polarization + Phi-Polarization(dB)												
Theta Angle	Phi Angle											
	0	30	60	90	120	150	180	210	240	270	300	330
0	-10.52	-10.34	-10.11	-10.18	-11.82	-10.16	-10.35	-10.50	-10.87	-10.69	-10.59	-10.46
30	-6.70	-6.41	-7.53	-7.48	-8.38	-9.06	-10.79	-12.13	-13.49	-12.73	-10.67	-7.31
60	-6.23	-6.15	-7.03	-8.03	-7.79	-10.29	-15.91	-17.45	-12.38	-11.03	-6.53	-7.82
90	-9.96	-9.52	-9.93	-10.40	-10.42	-10.79	-14.41	-12.10	-14.65	-9.54	-6.20	-8.87
120	-15.82	-15.58	-16.17	-15.00	-13.89	-16.93	-13.02	-14.36	-13.33	-13.22	-13.82	-13.42
150	-21.69	-19.37	-18.87	-20.92	-16.44	-15.13	-14.46	-19.37	-16.16	-17.47	-20.23	-24.78
180	-25.03	-24.40	-24.43	-28.62	-25.66	-20.16	-17.21	-16.26	-15.86	-17.16	-19.44	-22.12



2D Radiation Pattern

6E WIFI_7075

Theta-Polarization + Phi-Polarization(dB)												
Theta Angle	Phi Angle											
	0	30	60	90	120	150	180	210	240	270	300	330
0	-10.15	-10.31	-10.07	-9.89	-11.60	-9.97	-10.03	-10.24	-10.22	-10.20	-10.30	-10.26
30	-7.25	-6.75	-7.32	-8.40	-8.92	-8.11	-9.53	-11.29	-11.86	-12.72	-10.10	-7.86
60	-8.02	-7.17	-6.95	-8.19	-7.17	-9.33	-15.26	-18.76	-11.61	-9.90	-8.25	-9.36
90	-10.80	-10.00	-9.45	-9.42	-9.44	-11.11	-14.88	-14.31	-12.49	-10.19	-7.02	-10.34
120	-18.85	-16.31	-14.86	-14.72	-13.21	-18.04	-11.38	-12.35	-12.28	-12.63	-13.94	-19.00
150	-19.73	-25.78	-19.07	-16.58	-15.24	-15.16	-12.38	-17.99	-14.68	-14.85	-17.45	-20.72
180	-24.34	-29.35	-27.25	-26.98	-23.35	-19.01	-17.72	-17.63	-17.53	-17.87	-20.86	-20.66

