



深圳市海德门电子有限公司

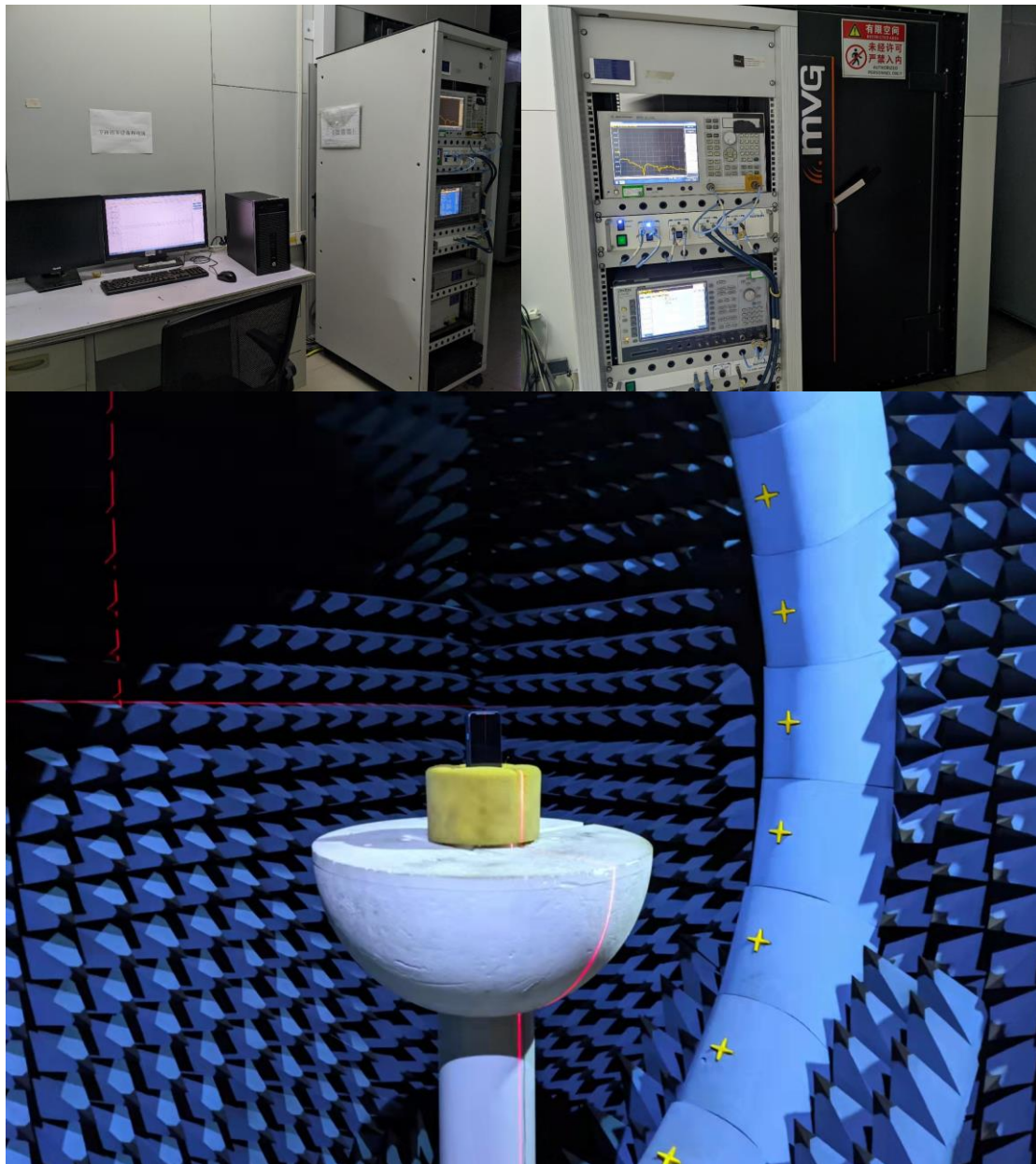
ShenZhen Deman Electronics Technology Co., Ltd

P5L Antenna Test Report

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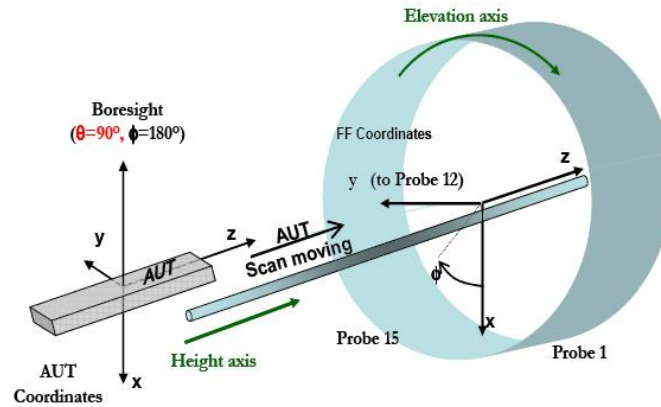
1.TEST INSTRUMENTATION

CHAMBER	SATIMO Chamber
Wireless Networking Test Set	Agilent 8960 5515C
NETWORK ANALYZER	Agilent 5072AD
COMPREHENSIVE TESTER	R&S CMW500
TEMPERATURE	20±2℃
HUMIDITY	50±20%rh

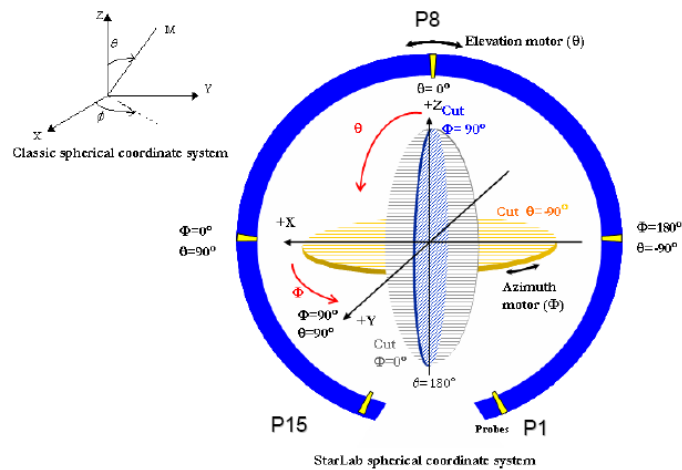


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Coordinate system – Cylindrical geometry



Coordinate system – Spherical geometry

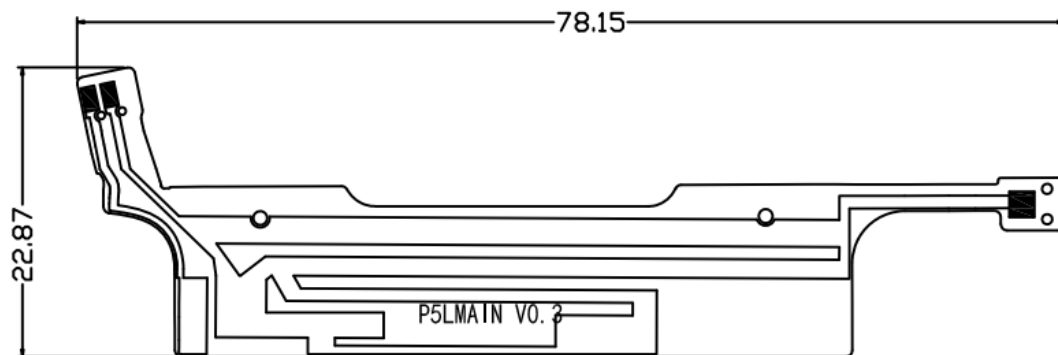


2. ANTENNA Name

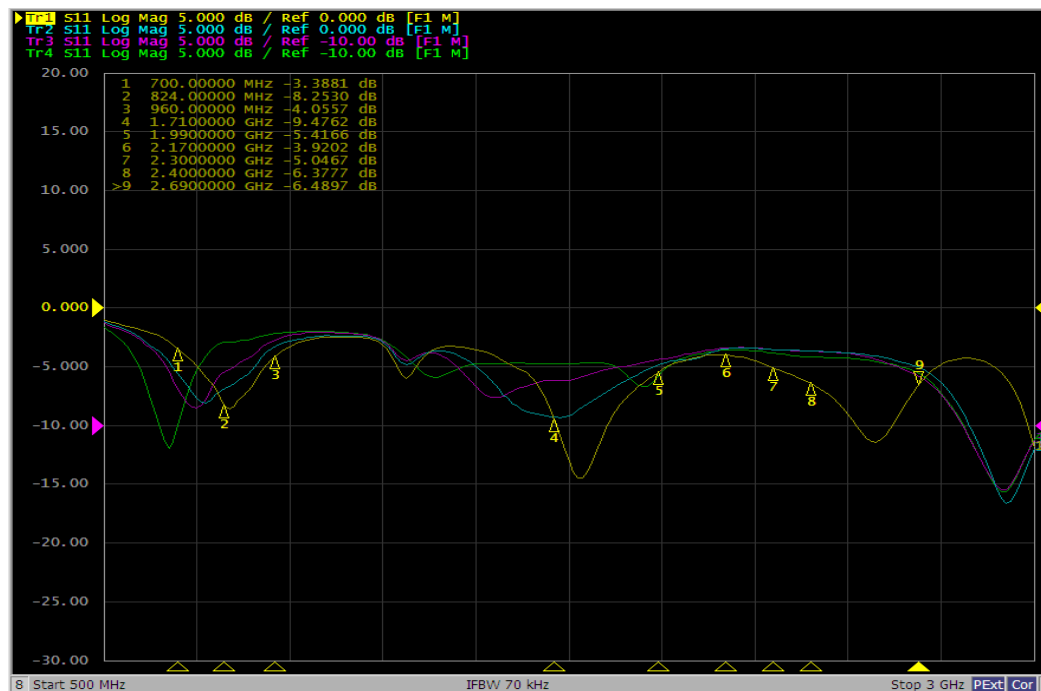
2.1 Model: P5L_main

Maximum Gain: 0.57dBi

Measurement: 78.2*22.9mm



VSWR: Voltage Standing Wave Rate



TRP: total radiated power

LTE:

Band	Channel	TRP	Band	Channel	TRP	Band	Channel	TRP
B1	18050	18.39	B28	27260	17.24	B20	24200	17.85

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	18300	17.7		27410	16.25		24300	18
	18550	17.64		27610	17.03		24400	17.95
B3	19250	17.56	B38	37850	16.85	B18	23900	连不上
	19575	18.11		38000	17.37		23925	
	19900	18.64		38150	16.99		23950	
B5	20450	18.09	B40	38750	16.74	B19	24050	
	20525	17.93		39150	16.65		24075	
	20600	18.12		39550	15.53		24100	
B7	20850	16.56	B41	39750	16.49	B26(5M)	26715	
	21100	16.83		40620	17.13		16865	
	21350	16.62		41490	16.73		27015	
B8	21500	17.34	B66	132022	17.66			
	21625	16.81		132322	18.49			
	21750	16.77		132622	19.18			

WCDMA:

Band	Channel	TRP	Band	Channel	TRP	Band	Channel	TRP
B1	9612	19.27	B8	2712	18.82	B9	8762	19.81
	9750	18.89		2788	18.47		8837	20.22
	9888	19.04		2863	18.05		8912	20.52
B6	4162	18.97	B2	9262	19.92	B3	937	19.17
	4175	19		9400	19.58		1075	19.56
	4188	19.09		9538	19.33		1213	20.21
B4	1312	18.77						
	1413	19.32						
	1513	19.82						

TIS: total isotropic sensitivity

LTE:

Band	Channel	TRP	Band	Channel	TRP	Band	Channel	TRP
B1	550	-94.48	B28	9610	-92.13	B20	6400	-91.82
B3	1900	-94.62	B38	38150	-93.42	B18	5950	-92.04
B5	2600	-92.02	B40	39550	-90.62	B19	6100	-92.00
B7	3350	-95.19	B41	41490	-93.43	B26	9015	-91.98
B8	3750	-91.05	B66	67086	-94.62			

WCDMA:

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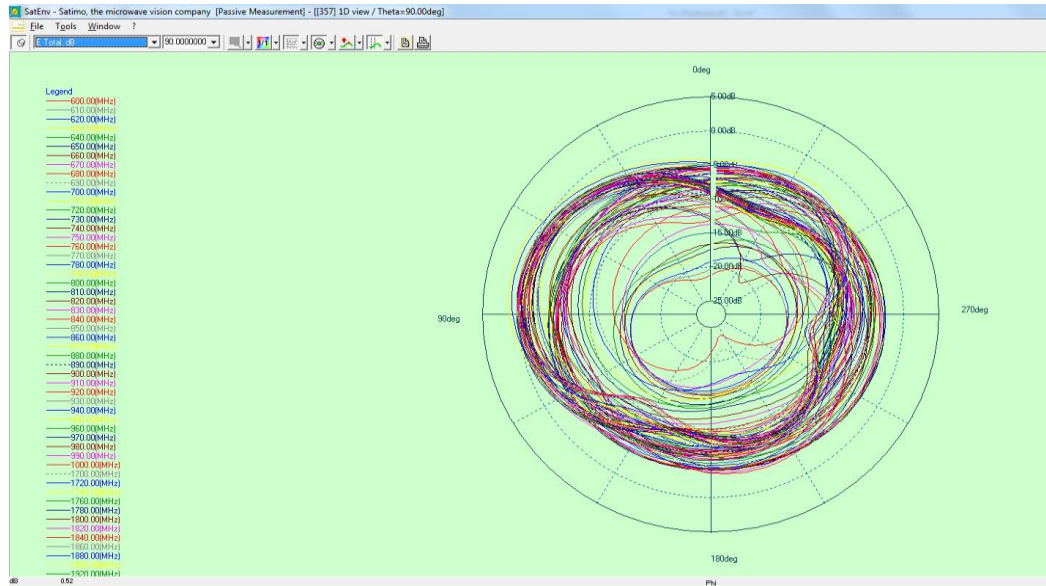


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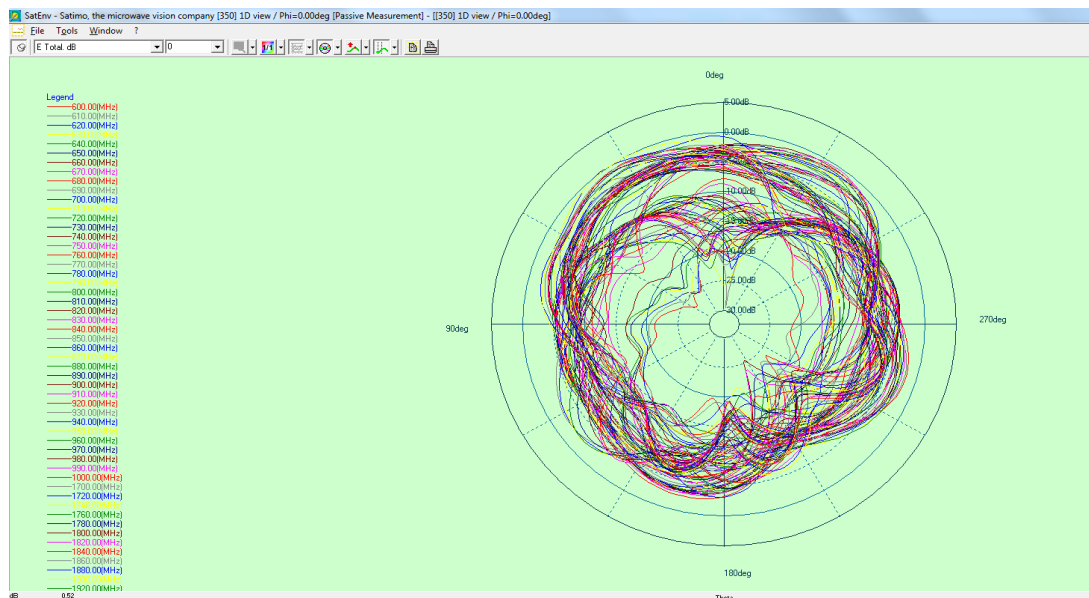
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Band	Channel	TRP	Band	Channel	TRP	Band	Channel	TRP
B1	10838	-99.57	B8	3088	-101.86	B9	9387	-106.19
B6	4413	-97.33	B2	9938	-106.11	B3	1438	-106.28
B4	1738	-101.44						

1D view:



Theta = 90



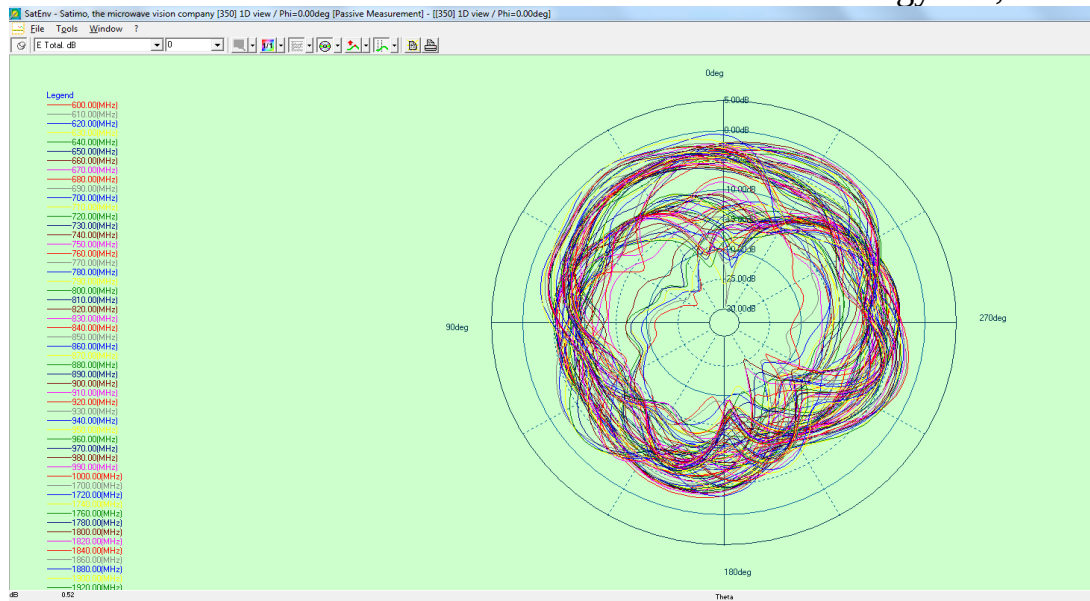
Theta = 0

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Phi = 90

Efficiency test results

	RF1			RF2			RF3			RF4		
Frequ ency	Effici ency (%)	Efficie ncy (dB)	Gain	Effic iency (%)	Efficie ncy (dB)	Gain	Effici ency (%)	Efficie ncy (dB)	Gain	Effici ency (%)	Efficie ncy (dB)	Gain
600	4%	-13.81	-9.75	6%	-12.13	-8.05	7%	-11.43	-7.27	12%	-9.05	-4.84
610	5%	-12.72	-8.57	8%	-11.05	-6.78	9%	-10.33	-6.05	16%	-8.01	-3.74
620	6%	-12.54	-8.03	8%	-10.85	-6.22	10%	-10.09	-5.47	17%	-7.80	-3.16
630	7%	-11.28	-6.94	11%	-9.56	-5.23	13%	-8.79	-4.50	22%	-6.56	-2.27
640	9%	-10.36	-6.10	14%	-8.61	-4.42	16%	-7.85	-3.71	27%	-5.62	-1.55
650	9%	-10.49	-6.55	13%	-8.71	-4.82	16%	-7.97	-4.12	26%	-5.87	-2.11
660	10%	-10.00	-6.10	15%	-8.31	-4.45	17%	-7.63	-3.84	26%	-5.81	-2.02
670	12%	-9.16	-5.26	18%	-7.48	-3.51	21%	-6.80	-2.78	30%	-5.19	-1.14
680	14%	-8.60	-4.53	20%	-6.97	-2.97	23%	-6.34	-2.43	31%	-5.03	-1.25
690	17%	-7.66	-3.51	25%	-6.01	-1.90	29%	-5.40	-1.37	37%	-4.29	-0.29
700	18%	-7.37	-3.13	26%	-5.79	-1.58	30%	-5.27	-1.13	34%	-4.71	-0.67
710	19%	-7.15	-2.90	27%	-5.65	-1.37	30%	-5.19	-0.97	32%	-5.00	-0.92
720	20%	-6.95	-2.70	28%	-5.56	-1.23	31%	-5.13	-0.88	29%	-5.44	-1.24
730	20%	-6.98	-2.75	27%	-5.74	-1.37	29%	-5.35	-0.94	26%	-5.86	-1.40
740	21%	-6.70	-2.57	28%	-5.51	-1.21	30%	-5.18	-0.74	25%	-5.99	-1.48
750	23%	-6.29	-2.12	29%	-5.31	-1.04	31%	-5.08	-0.70	24%	-6.17	-1.69

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760	22%	-6.51	-2.30	27%	-5.63	-1.44	29%	-5.42	-1.17	21%	-6.68	-2.35
770	22%	-6.52	-2.38	25%	-5.94	-1.82	26%	-5.80	-1.67	18%	-7.37	-3.17
780	21%	-6.86	-3.06	22%	-6.51	-2.74	23%	-6.36	-2.66	16%	-8.03	-4.03
790	20%	-7.05	-3.16	20%	-6.97	-3.02	20%	-7.02	-3.11	13%	-8.95	-5.03
800	18%	-7.33	-3.23	19%	-7.11	-3.02	17%	-7.63	-3.46	11%	-9.57	-5.61
810	19%	-7.18	-3.19	21%	-6.74	-2.74	17%	-7.80	-3.71	10%	-10.17	-6.26
820	22%	-6.51	-2.23	23%	-6.29	-1.93	18%	-7.40	-3.29	10%	-9.99	-6.16
830	26%	-5.80	-1.20	26%	-5.86	-1.31	21%	-6.81	-2.65	11%	-9.53	-5.62
840	28%	-5.49	-0.96	26%	-5.90	-1.46	21%	-6.76	-2.80	11%	-9.54	-5.81
850	28%	-5.59	-1.71	25%	-6.10	-2.14	21%	-6.87	-3.09	11%	-9.58	-5.84
860	29%	-5.44	-1.51	24%	-6.14	-2.06	20%	-6.91	-2.95	11%	-9.74	-5.70
870	28%	-5.57	-1.58	23%	-6.33	-2.47	20%	-7.07	-3.22	10%	-9.89	-6.11
880	27%	-5.65	-1.51	22%	-6.58	-2.37	18%	-7.36	-3.11	9%	-10.33	-6.51
890	25%	-5.99	-1.44	20%	-6.99	-2.42	17%	-7.76	-3.34	9%	-10.65	-6.40
900	23%	-6.36	-1.50	18%	-7.40	-2.56	15%	-8.15	-3.31	8%	-11.07	-6.48
910	21%	-6.73	-1.65	16%	-7.95	-2.91	14%	-8.68	-3.66	7%	-11.72	-6.98
920	19%	-7.24	-2.33	14%	-8.65	-3.78	12%	-9.34	-4.47	6%	-12.53	-7.98
930	16%	-7.87	-3.26	11%	-9.54	-4.92	9%	-10.29	-5.72	4%	-13.68	-9.45
940	15%	-8.29	-3.91	11%	-9.76	-5.32	8%	-10.73	-6.43	4%	-13.97	-9.97
950	15%	-8.32	-4.13	11%	-9.77	-5.52	8%	-10.83	-6.73	4%	-14.01	-10.25
960	14%	-8.53	-4.51	10%	-9.98	-5.94	8%	-10.95	-7.07	4%	-14.08	-10.50
970	14%	-8.47	-4.47	10%	-9.98	-6.06	8%	-10.95	-7.17	4%	-14.14	-10.43
980	13%	-8.87	-4.77	9%	-10.44	-6.39	7%	-11.41	-7.38	3%	-14.56	-10.64
990	12%	-9.14	-5.16	9%	-10.66	-6.74	7%	-11.58	-7.66	3%	-14.67	-10.50
1000	13%	-8.97	-5.29	9%	-10.53	-6.84	7%	-11.46	-7.82	4%	-14.55	-10.16
1700	24%	-6.19	-1.34	22%	-6.65	-2.19	15%	-8.27	-3.94	8%	-10.79	-6.80
1720	28%	-5.49	-0.95	22%	-6.58	-2.26	15%	-8.30	-4.12	8%	-10.74	-6.97
1740	30%	-5.23	-0.98	21%	-6.70	-2.34	14%	-8.41	-4.21	8%	-10.84	-6.79
1760	33%	-4.83	-0.47	23%	-6.35	-2.30	15%	-8.13	-3.97	8%	-10.78	-6.59
1780	38%	-4.20	-0.10	26%	-5.92	-1.58	16%	-7.85	-3.54	8%	-10.94	-6.86
1800	40%	-3.97	0.35	26%	-5.77	-1.34	16%	-7.83	-3.68	8%	-11.20	-6.70
1820	39%	-4.05	0.27	26%	-5.89	-1.28	16%	-8.03	-3.66	7%	-11.63	-7.22
1840	40%	-3.99	0.21	25%	-5.94	-1.51	15%	-8.22	-3.96	6%	-11.93	-7.99
1860	38%	-4.20	-0.06	24%	-6.21	-1.92	14%	-8.62	-4.30	6%	-12.06	-8.10
1880	36%	-4.45	-0.30	23%	-6.43	-1.98	13%	-8.99	-4.37	7%	-11.38	-7.41
1900	32%	-4.91	-0.44	21%	-6.79	-2.10	11%	-9.44	-4.61	10%	-10.03	-5.93
1920	30%	-5.23	-0.53	20%	-6.98	-2.14	11%	-9.69	-4.74	15%	-8.36	-4.19
1940	26%	-5.92	-1.31	18%	-7.56	-2.76	9%	-10.41	-5.41	18%	-7.49	-3.12
1960	25%	-5.99	-1.60	18%	-7.53	-3.02	9%	-10.51	-5.46	22%	-6.59	-2.17
1980	25%	-5.95	-1.53	18%	-7.34	-2.72	9%	-10.22	-5.13	23%	-6.31	-1.79

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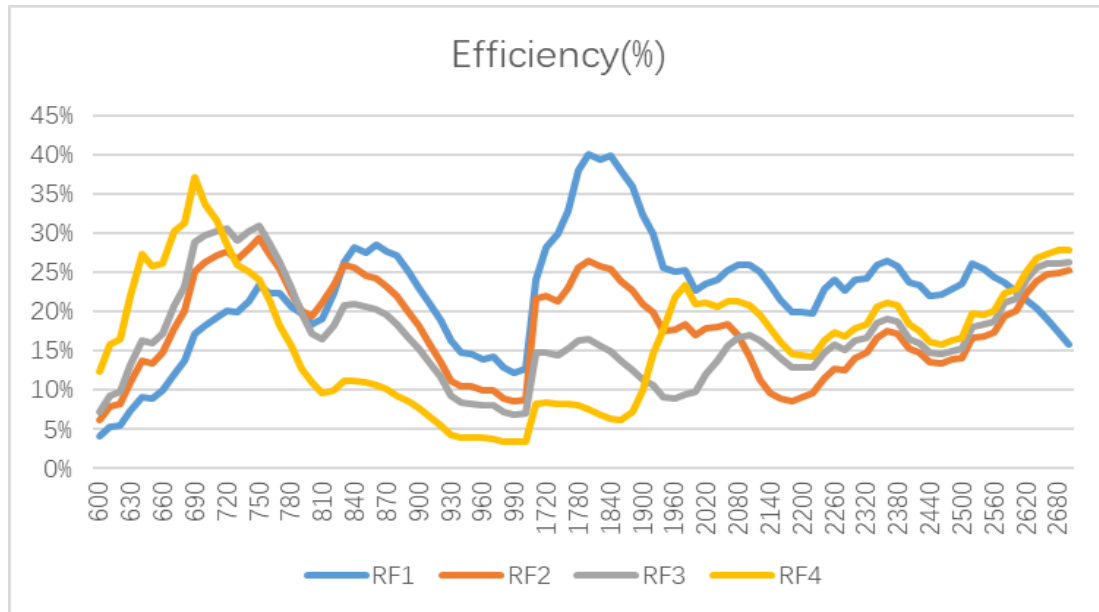


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2000	23%	-6.43	-1.87	17%	-7.70	-2.91	10%	-10.10	-5.09	21%	-6.76	-2.05
2020	24%	-6.27	-1.85	18%	-7.47	-2.79	12%	-9.21	-4.40	21%	-6.75	-2.37
2040	24%	-6.19	-2.50	18%	-7.43	-3.15	14%	-8.58	-4.38	21%	-6.84	-2.74
2060	25%	-5.95	-2.36	18%	-7.35	-3.21	16%	-8.04	-4.20	21%	-6.72	-2.83
2080	26%	-5.84	-2.04	17%	-7.69	-3.49	17%	-7.76	-3.98	21%	-6.70	-2.93
2100	26%	-5.85	-1.76	14%	-8.44	-3.90	17%	-7.68	-3.70	21%	-6.80	-2.95
2120	25%	-6.00	-1.33	11%	-9.47	-4.31	16%	-7.88	-3.61	20%	-7.06	-2.99
2140	23%	-6.31	-1.32	10%	-10.18	-5.39	15%	-8.16	-3.67	18%	-7.47	-3.40
2160	22%	-6.66	-1.61	9%	-10.50	-5.49	14%	-8.50	-3.81	16%	-7.89	-3.70
2180	20%	-6.99	-2.10	9%	-10.67	-5.61	13%	-8.88	-4.28	15%	-8.35	-3.98
2200	20%	-7.00	-1.97	9%	-10.42	-5.48	13%	-8.88	-4.51	14%	-8.39	-3.85
2220	20%	-7.02	-1.83	10%	-10.18	-5.25	13%	-8.87	-4.39	14%	-8.43	-3.86
2240	23%	-6.40	-0.86	11%	-9.41	-4.01	15%	-8.29	-3.54	16%	-7.85	-2.98
2260	24%	-6.19	-0.58	13%	-8.96	-3.40	16%	-8.02	-3.00	17%	-7.60	-2.59
2280	23%	-6.43	-0.79	13%	-8.99	-3.43	15%	-8.20	-3.21	17%	-7.74	-2.60
2300	24%	-6.18	-0.29	14%	-8.51	-2.67	16%	-7.88	-2.59	18%	-7.45	-2.12
2320	24%	-6.16	-0.12	15%	-8.30	-2.35	17%	-7.76	-2.33	18%	-7.35	-1.96
2340	26%	-5.85	0.20	17%	-7.77	-1.85	19%	-7.31	-1.93	21%	-6.86	-1.51
2360	26%	-5.78	0.42	18%	-7.56	-1.61	19%	-7.20	-1.71	21%	-6.73	-1.27
2380	26%	-5.87	0.23	17%	-7.62	-1.75	19%	-7.27	-1.96	21%	-6.83	-1.29
2400	24%	-6.25	-0.02	15%	-8.17	-2.22	17%	-7.82	-2.45	18%	-7.36	-1.69
2420	23%	-6.32	-0.04	15%	-8.29	-2.17	16%	-7.97	-2.04	18%	-7.54	-1.85
2440	22%	-6.56	-0.22	14%	-8.66	-2.55	15%	-8.32	-2.44	16%	-7.91	-1.95
2460	22%	-6.53	-0.13	13%	-8.73	-2.64	15%	-8.36	-2.87	16%	-8.00	-2.38
2480	23%	-6.40	0.21	14%	-8.58	-2.32	15%	-8.22	-2.49	16%	-7.88	-2.11
2500	24%	-6.28	0.28	14%	-8.48	-2.26	15%	-8.13	-2.21	17%	-7.78	-1.55
2520	26%	-5.83	0.57	17%	-7.76	-1.62	18%	-7.42	-1.57	20%	-7.04	-0.86
2540	25%	-5.94	0.47	17%	-7.73	-1.50	18%	-7.35	-1.48	20%	-7.06	-0.89
2560	24%	-6.13	0.08	17%	-7.61	-1.25	19%	-7.25	-1.21	20%	-6.96	-0.72
2580	24%	-6.23	-0.38	19%	-7.11	-0.87	21%	-6.74	-0.75	22%	-6.50	-0.10
2600	23%	-6.47	-0.84	20%	-6.97	-0.61	22%	-6.62	-0.66	23%	-6.39	-0.02
2620	22%	-6.66	-1.29	22%	-6.50	0.02	24%	-6.18	-0.11	25%	-6.00	0.24
2640	20%	-6.90	-1.66	24%	-6.21	0.14	26%	-5.92	-0.01	27%	-5.70	0.47
2660	19%	-7.19	-1.63	25%	-6.07	0.36	26%	-5.82	0.21	27%	-5.62	0.57
2680	17%	-7.59	-1.80	25%	-6.01	0.39	26%	-5.83	0.09	28%	-5.56	0.76
2700	16%	-8.02	-2.27	25%	-5.96	0.53	26%	-5.80	0.07	28%	-5.53	1.07

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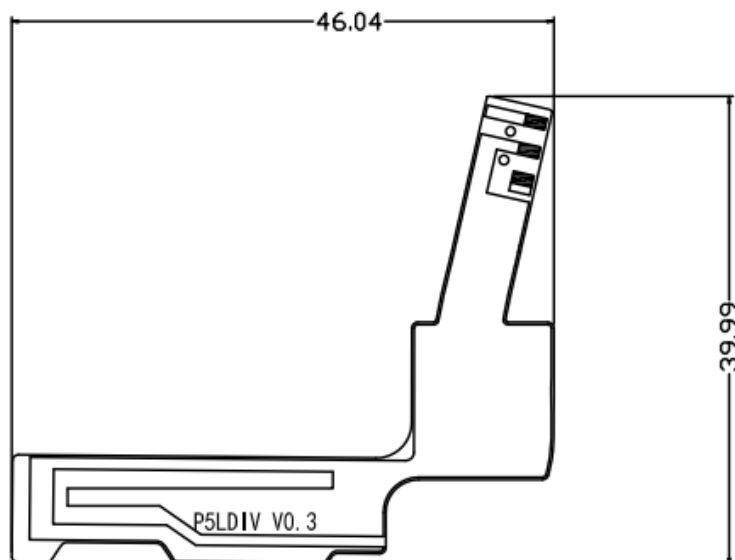
2.2 Diversity antenna

2.2.1 Without scan coder version div antenna

Model: P5L_div

Maximum Gain: 2.28dBi

Measurement: 46*40mm



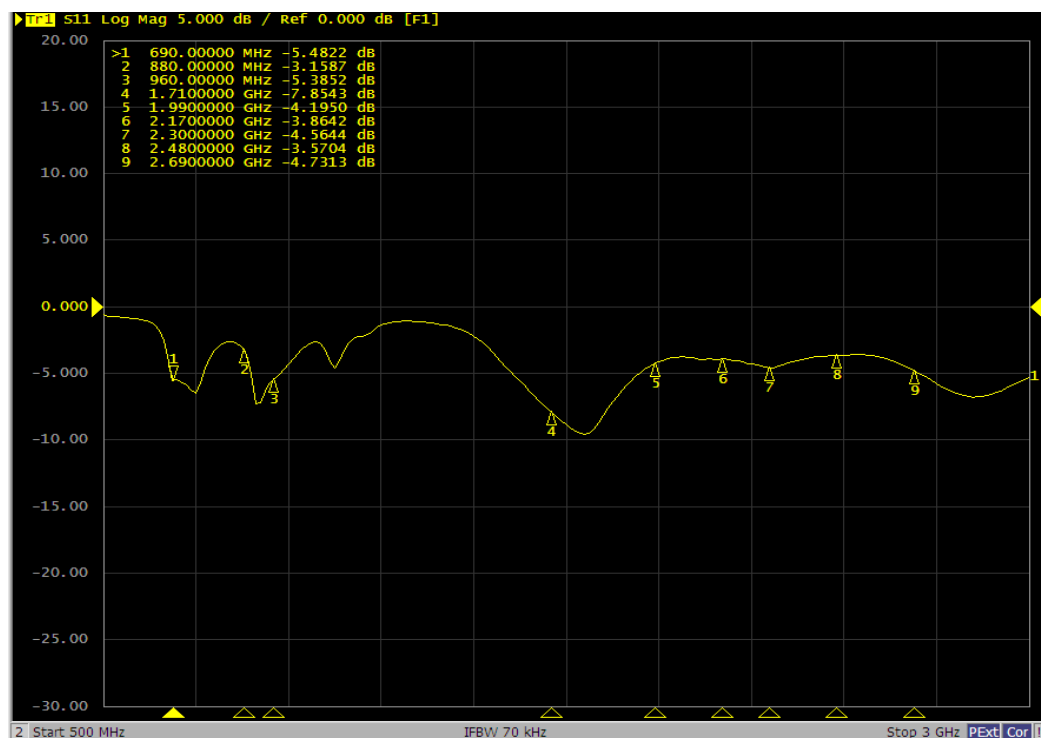
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VSWR: Voltage Standing Wave Rate



Efficiency test results

Frequency	Efficiency (%)	Efficiency (dB)	Gain (dB)	Frequency	Efficiency (%)	Efficiency (dB)	Gain (dB)
600	2%	-16.47	-13.00	1800	40%	-3.99	0.42
610	2%	-16.33	-12.88	1820	39%	-4.09	-0.19
620	2%	-16.20	-12.94	1840	39%	-4.05	-0.26
630	3%	-15.14	-12.20	1860	40%	-4.00	0.19
640	4%	-13.90	-10.83	1880	39%	-4.07	-0.10
650	4%	-14.54	-10.74	1900	39%	-4.13	-0.08
660	3%	-14.72	-9.70	1920	38%	-4.22	-0.31
670	4%	-14.08	-8.39	1940	34%	-4.67	-0.22
680	5%	-13.36	-7.85	1960	36%	-4.41	0.43
690	7%	-11.66	-6.92	1980	37%	-4.32	0.41
700	7%	-11.54	-7.25	2000	34%	-4.70	-0.44
710	8%	-10.83	-6.51	2020	35%	-4.51	0.01
720	9%	-10.51	-5.88	2040	30%	-5.19	-0.35
730	10%	-10.01	-5.71	2060	27%	-5.73	-0.69
740	13%	-8.99	-5.21	2080	25%	-5.97	-0.95
750	15%	-8.18	-5.08	2100	26%	-5.93	-1.30

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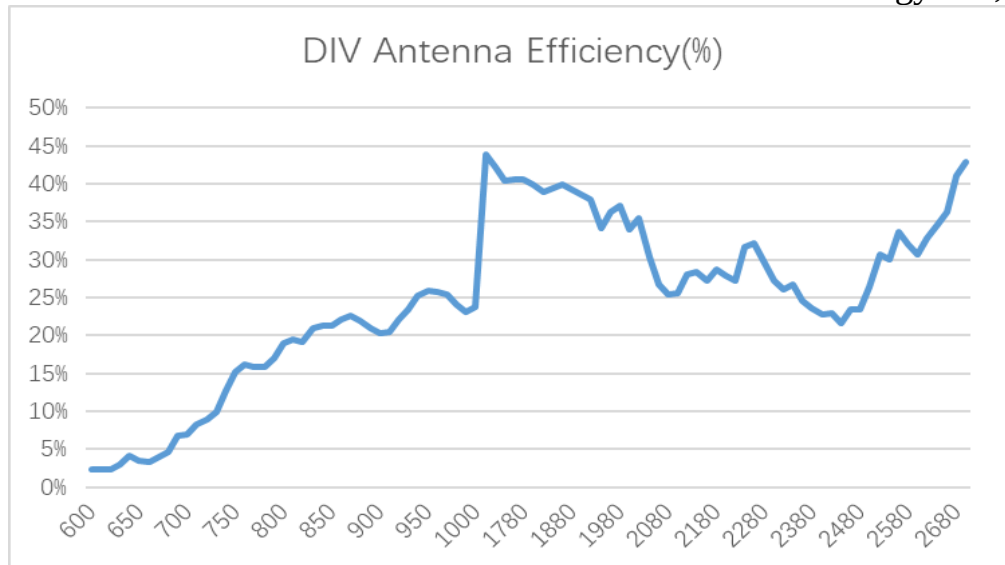
760	16%	-7.91	-5.09	2120	28%	-5.52	-0.75
770	16%	-8.01	-5.25	2140	28%	-5.47	-0.40
780	16%	-8.00	-5.02	2160	27%	-5.66	-0.34
790	17%	-7.69	-4.56	2180	29%	-5.43	-0.31
800	19%	-7.22	-4.04	2200	28%	-5.56	-0.43
810	19%	-7.11	-4.07	2220	27%	-5.66	-0.47
820	19%	-7.17	-4.19	2240	32%	-5.00	0.19
830	21%	-6.78	-3.79	2260	32%	-4.92	0.24
840	21%	-6.74	-3.84	2280	30%	-5.30	-0.18
850	21%	-6.72	-3.95	2300	27%	-5.65	-0.73
860	22%	-6.56	-3.61	2320	26%	-5.85	-0.98
870	23%	-6.47	-3.49	2340	27%	-5.74	-0.72
880	22%	-6.60	-3.63	2360	25%	-6.10	-1.35
890	21%	-6.80	-3.64	2380	24%	-6.29	-1.65
900	20%	-6.92	-3.45	2400	23%	-6.42	-1.79
910	20%	-6.90	-3.16	2420	23%	-6.41	-1.72
920	22%	-6.55	-3.50	2440	22%	-6.65	-1.67
930	23%	-6.30	-3.14	2460	23%	-6.30	-1.11
940	25%	-5.98	-2.62	2480	23%	-6.32	-1.13
950	26%	-5.86	-2.47	2500	26%	-5.78	-1.01
960	26%	-5.90	-2.45	2520	31%	-5.13	-0.30
970	25%	-5.94	-2.43	2540	30%	-5.22	-0.22
980	24%	-6.19	-2.67	2560	34%	-4.74	0.43
990	23%	-6.38	-2.95	2580	32%	-4.96	0.22
1000	24%	-6.25	-2.68	2600	31%	-5.13	0.21
1700	44%	-3.58	0.40	2620	33%	-4.85	0.60
1720	42%	-3.75	0.57	2640	35%	-4.61	1.03
1740	40%	-3.94	0.71	2660	36%	-4.40	1.47
1760	41%	-3.92	0.86	2680	41%	-3.87	2.16
1780	41%	-3.92	0.93	2700	43%	-3.68	2.28

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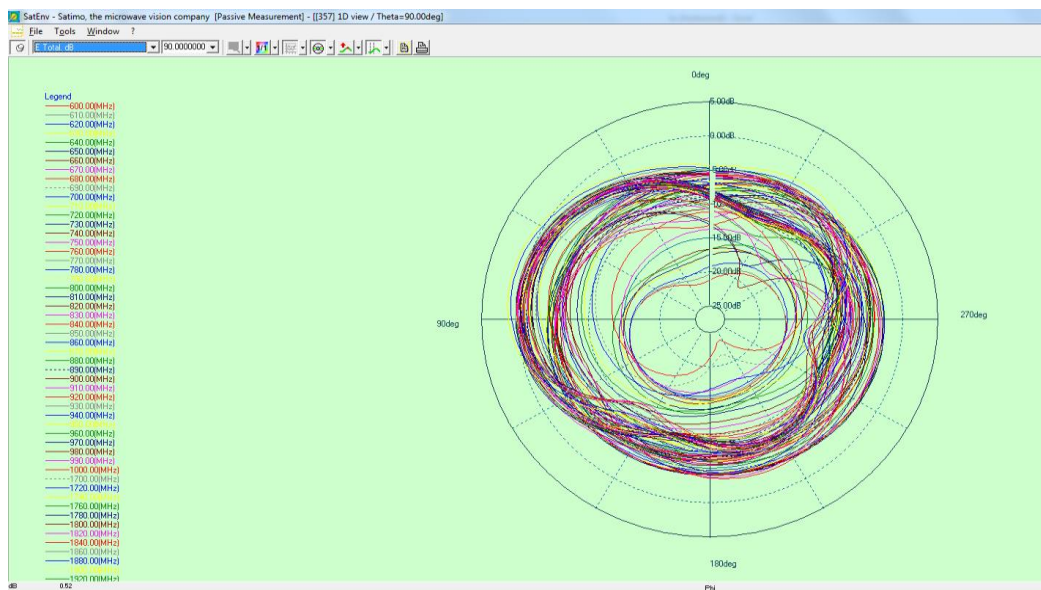


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1D view:



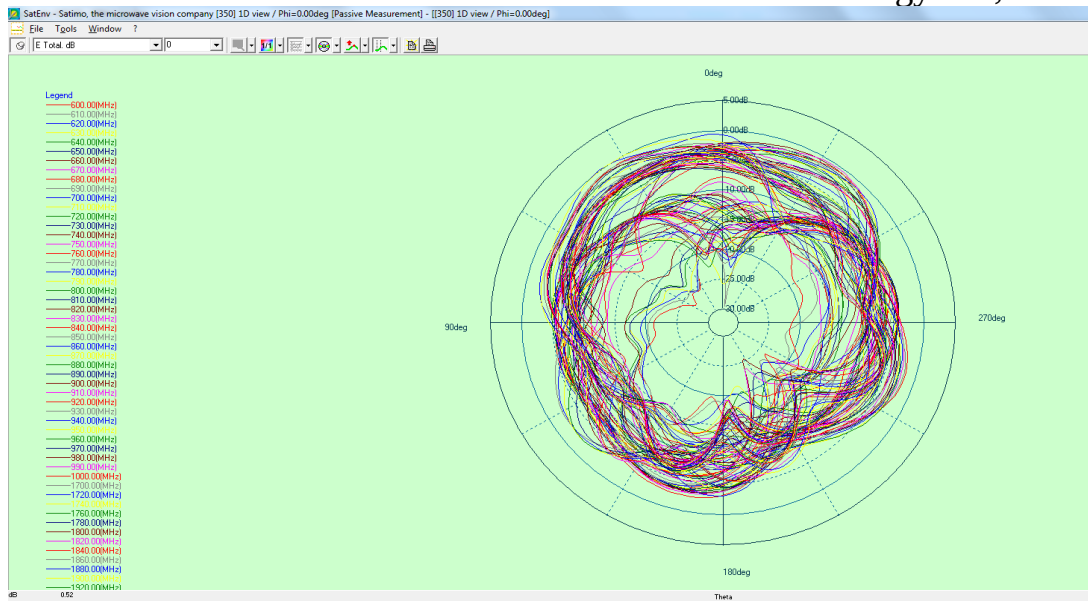
Theta = 90

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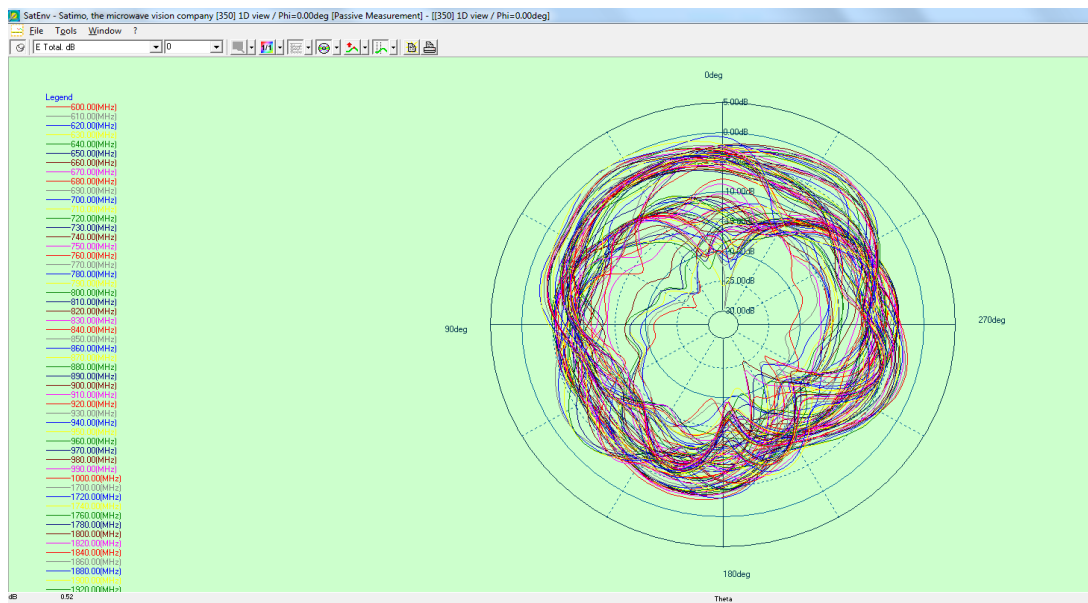


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Theta = 0



Phi = 90

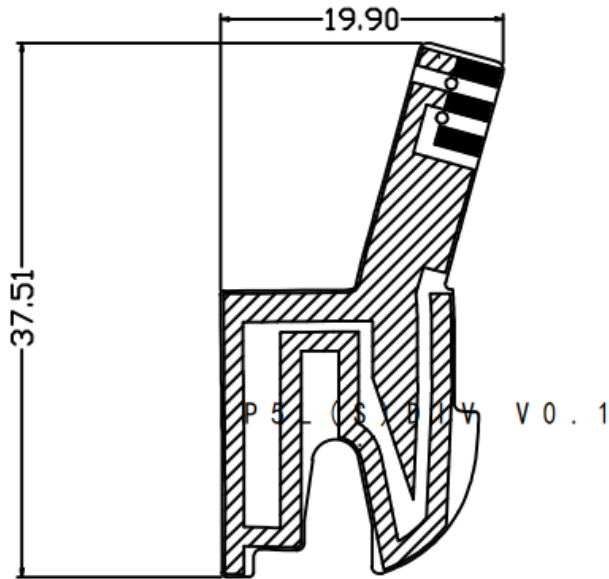
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2.2.2 With scan coder version div antenna

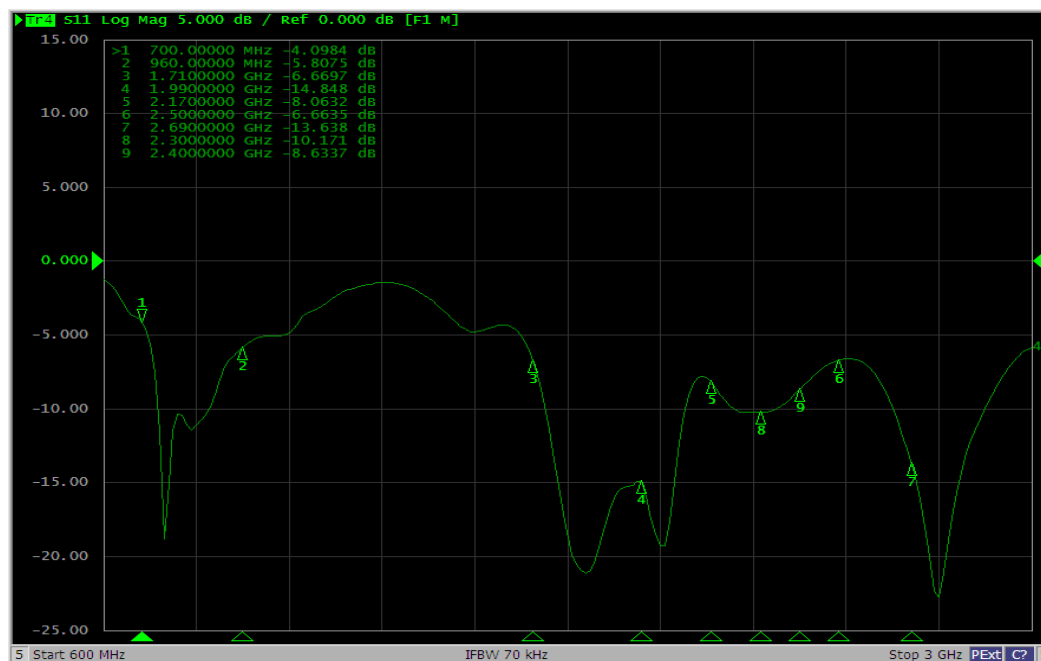
Model: P5L_div_scan

Maximum Gain: 2.28dBi

Measurement: 37.5*19.9mm



VSWR: Voltage Standing Wave Rate



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Efficiency test results

Frequency	Efficiency (%)	Efficiency (dB)	Gain (dB)	Frequency	Efficiency (%)	Efficiency (dB)	Gain (dB)
600	2%	-16.40	-14.08	1800	53%	-2.77	2.95
610	3%	-15.47	-13.19	1820	53%	-2.74	2.99
620	3%	-14.98	-12.37	1840	58%	-2.37	3.53
630	4%	-13.92	-11.21	1860	60%	-2.23	3.49
640	5%	-13.01	-9.39	1880	61%	-2.15	3.27
650	4%	-14.05	-8.68	1900	60%	-2.21	3.01
660	4%	-14.45	-8.95	1920	60%	-2.25	3.02
670	4%	-14.20	-10.10	1940	51%	-2.93	1.65
680	4%	-14.16	-11.43	1960	49%	-3.10	1.64
690	5%	-13.31	-10.64	1980	41%	-3.86	1.12
700	5%	-13.14	-10.04	2000	34%	-4.69	0.00
710	6%	-12.16	-8.31	2020	37%	-4.36	0.60
720	7%	-11.48	-7.28	2040	36%	-4.48	1.24
730	8%	-11.11	-6.80	2060	33%	-4.88	0.99
740	8%	-10.81	-6.49	2080	28%	-5.56	-0.37
750	11%	-9.69	-5.71	2100	23%	-6.29	-1.45
760	14%	-8.51	-5.07	2120	25%	-6.10	-1.33
770	18%	-7.55	-4.65	2140	25%	-5.97	-1.21
780	21%	-6.76	-4.20	2160	27%	-5.62	-0.08
790	25%	-6.10	-3.47	2180	29%	-5.41	0.02
800	30%	-5.27	-2.38	2200	33%	-4.87	0.05
810	32%	-4.95	-1.93	2220	36%	-4.46	0.60
820	34%	-4.64	-1.53	2240	43%	-3.62	1.19
830	36%	-4.46	-1.35	2260	46%	-3.39	1.04
840	37%	-4.37	-1.36	2280	44%	-3.55	0.83
850	35%	-4.54	-1.39	2300	44%	-3.60	0.95
860	34%	-4.64	-1.58	2320	44%	-3.57	0.89
870	32%	-4.96	-2.24	2340	47%	-3.26	1.14
880	28%	-5.50	-2.59	2360	47%	-3.25	1.17
890	26%	-5.82	-2.74	2380	46%	-3.40	1.31
900	23%	-6.36	-3.29	2400	44%	-3.54	0.81
910	23%	-6.46	-3.40	2420	44%	-3.61	0.59
920	21%	-6.77	-3.78	2440	40%	-3.96	0.66
930	21%	-6.77	-3.56	2460	41%	-3.88	0.70
940	21%	-6.75	-3.42	2480	41%	-3.90	0.23
950	20%	-6.89	-3.50	2500	43%	-3.62	0.63

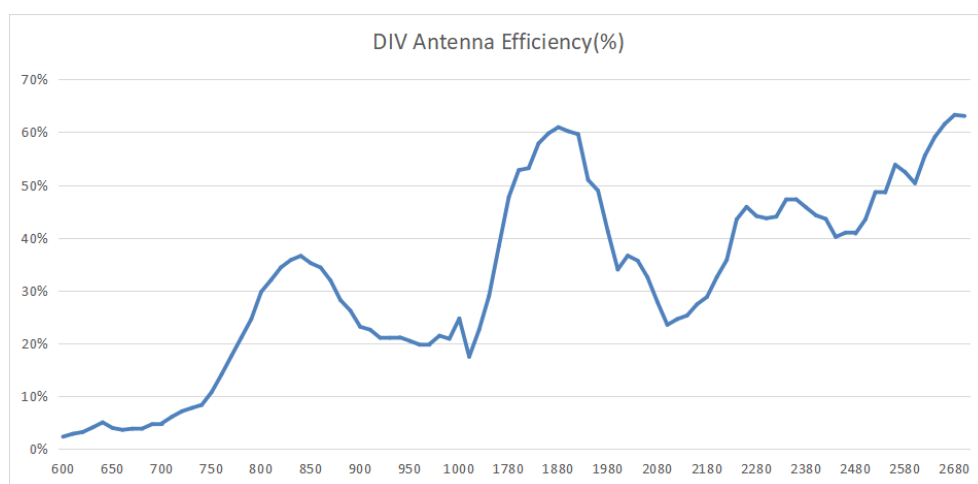
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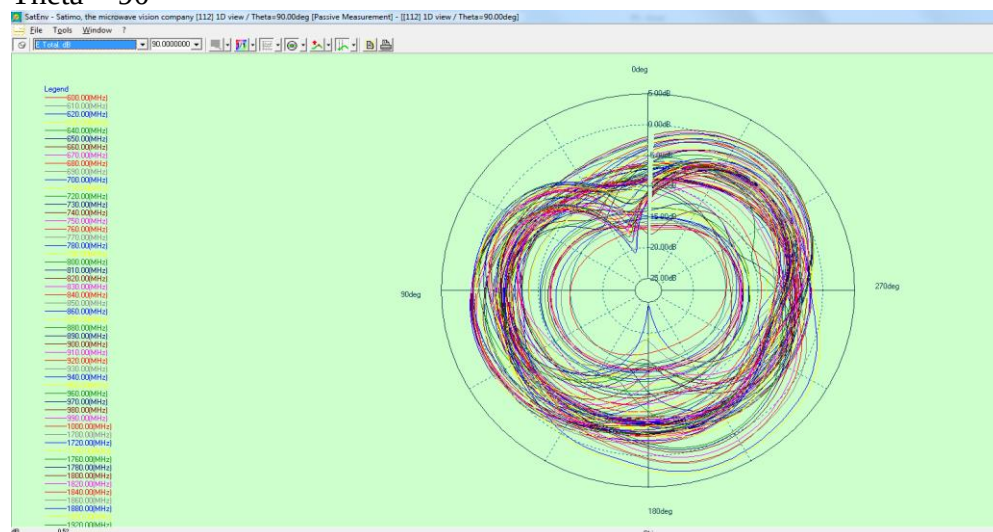
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960	20%	-7.05	-3.70	2520	49%	-3.13	1.63
970	20%	-7.02	-3.63	2540	49%	-3.13	2.16
980	21%	-6.69	-3.23	2560	54%	-2.69	3.40
990	21%	-6.81	-3.21	2580	52%	-2.80	3.56
1000	25%	-6.07	-2.39	2600	50%	-2.98	3.86
1700	17%	-7.58	-1.91	2620	56%	-2.55	4.50
1720	23%	-6.47	-0.43	2640	59%	-2.28	4.84
1740	29%	-5.38	1.08	2660	62%	-2.11	5.04
1760	38%	-4.15	2.24	2680	63%	-1.99	5.43
1780	48%	-3.21	2.60	2700	63%	-2.00	5.51



Theta = 90



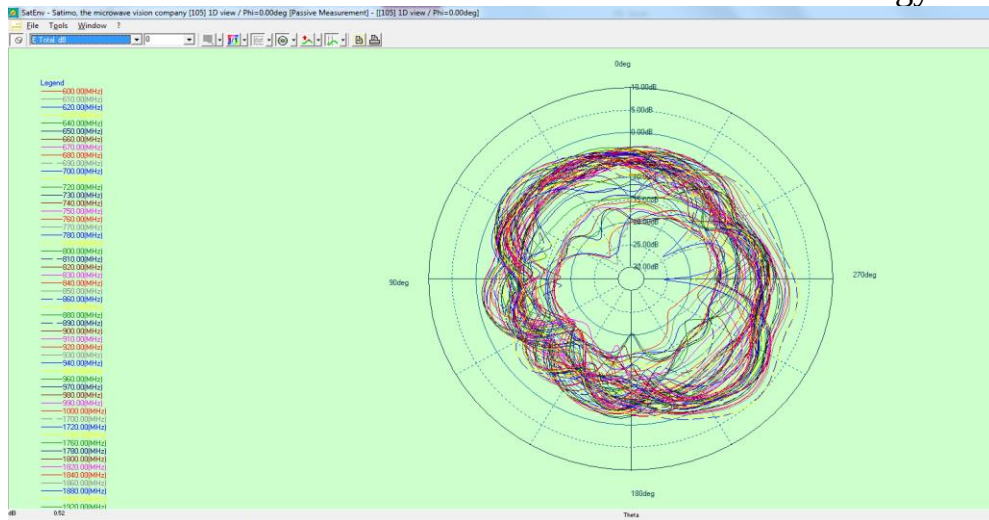
Theta = 0

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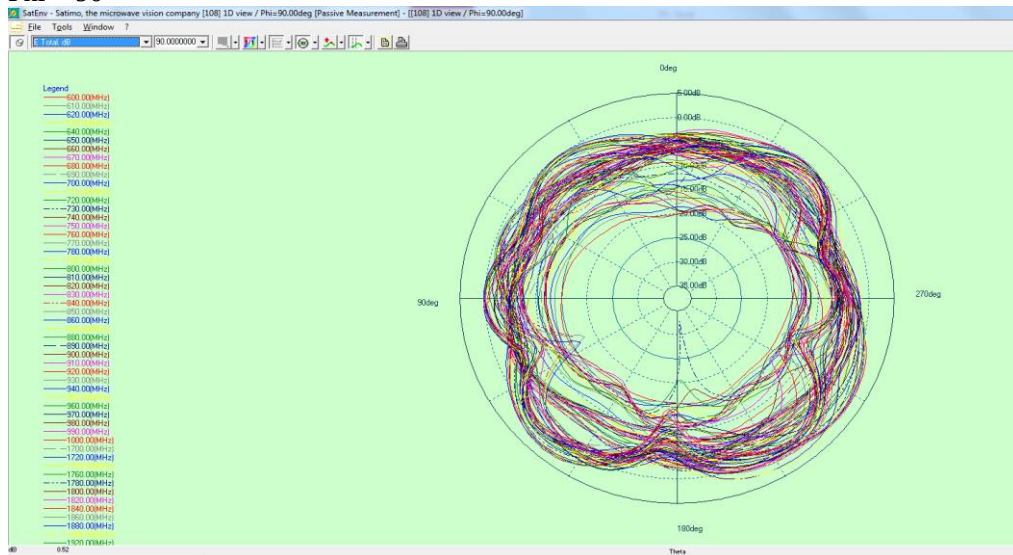


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Phi = 90



2.3 Three in one antenna

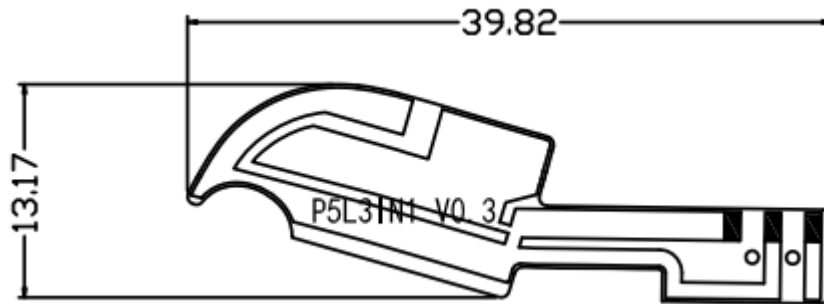
2.3.1 Without scan coder version div antenna

Model: P5L_3in1

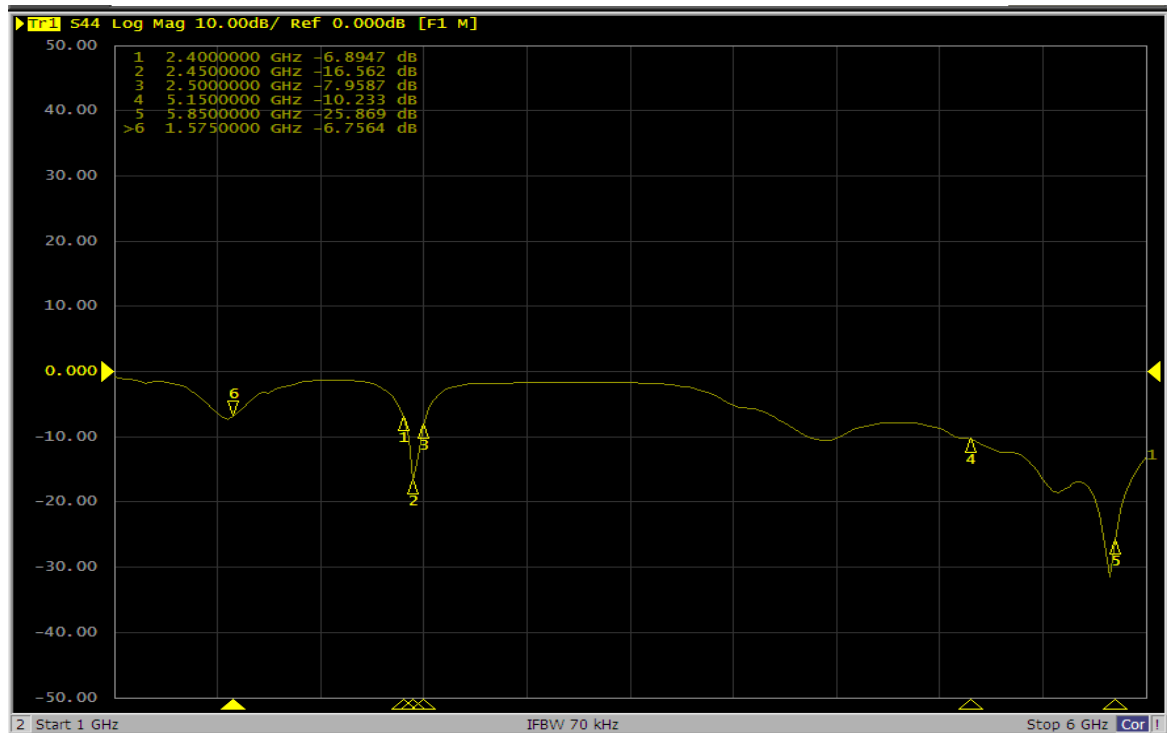
Maximum Gain: 1.11dBi

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Measurement: 39.8*13.2mm



VSWR: Voltage Standing Wave Rate



WiFi:

TRP & TIS

Total radiated power & Total isotropic sensitivity

Band	DATA RATE	CHANNEL	TRP	TIS
11b	11	1	11.53	-83.64
		7	11.81	-84.01
		13	13.01	-82.86

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11b	1	1	11.8	-92.1
		7	11.95	-91.5
		13	13.06	-90.19
11a	6	36	8.21	-87.61
		149	9.32	-89.8
		165	10.76	-90.11
11a	54	36	8.31	-69.64
		149	9.45	-72.1
		165	10.29	-72.05
11g	6	1	10.52	-87.41
		7	10.51	-87.42
		13	11.68	-84.64
11g	54	1	10.63	-69.67
		7	10.5	-70.53
		13	11.5	-66.75
11gn	MC1	1	11.86	-83.58
		7	11.87	-84.07
		13	12.82	-82.87
11gn	MC7	1	12.02	-66.13
		7	11.98	-67.46
		13	12.94	-65.64
11an	MC1	36	8.38	-83.57
		149	9.03	-85.15
		165	10.36	-85.75
11an	MC7	36	8.34	-67.15
		149	9.13	-69.27
		165	10.6	-69.96
11ac	MC7	36	9.52	-67.51
		149	10.29	-69.89
		165	11.19	-70.21

GPS :

TICN	TIS
42.95	-153.09

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Efficiency test results

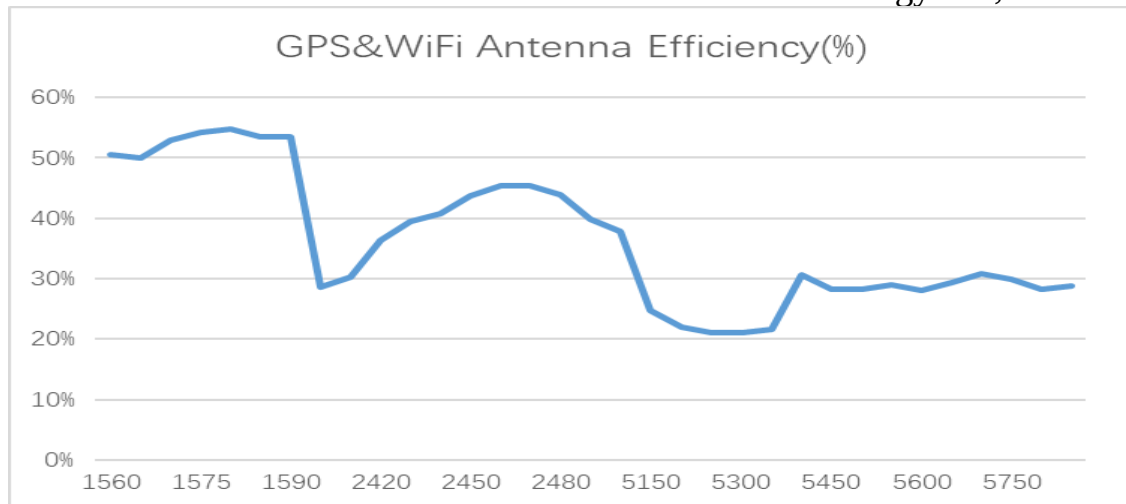
WiFi				GP			
Frequency	Efficiency (%)	Efficiency (dB)	Gain (dB)	Frequency	Efficiency (%)	Efficiency (dB)	Gain (dB)
2400	29%	-5.42	-0.96	1560	51%	-2.96	0.17
2410	30%	-5.19	-0.85	1565	50%	-3.02	-0.17
2420	36%	-4.39	-0.05	1570	53%	-2.76	0.28
2430	39%	-4.04	0.19	1575	54%	-2.66	0.42
2440	41%	-3.90	0.18	1580	55%	-2.61	0.49
2450	44%	-3.59	0.47	1585	53%	-2.72	0.15
2460	45%	-3.42	0.64	1590	54%	-2.71	0.13
2470	45%	-3.44	0.69				
2480	44%	-3.58	0.64				
2490	40%	-4.00	0.30				
2500	38%	-4.22	0.19				
5150	25%	-6.05	0.96				
5200	22%	-6.59	0.38				
5250	21%	-6.78	-0.20				
5300	21%	-6.76	-0.35				
5350	22%	-6.64	-0.66				
5400	31%	-5.14	1.01				
5450	28%	-5.49	0.67				
5500	28%	-5.49	0.74				
5550	29%	-5.38	0.85				
5600	28%	-5.51	0.74				
5650	29%	-5.33	0.72				
5700	31%	-5.11	0.82				
5750	30%	-5.24	0.70				
5800	28%	-5.49	0.84				
5850	29%	-5.41	1.11				

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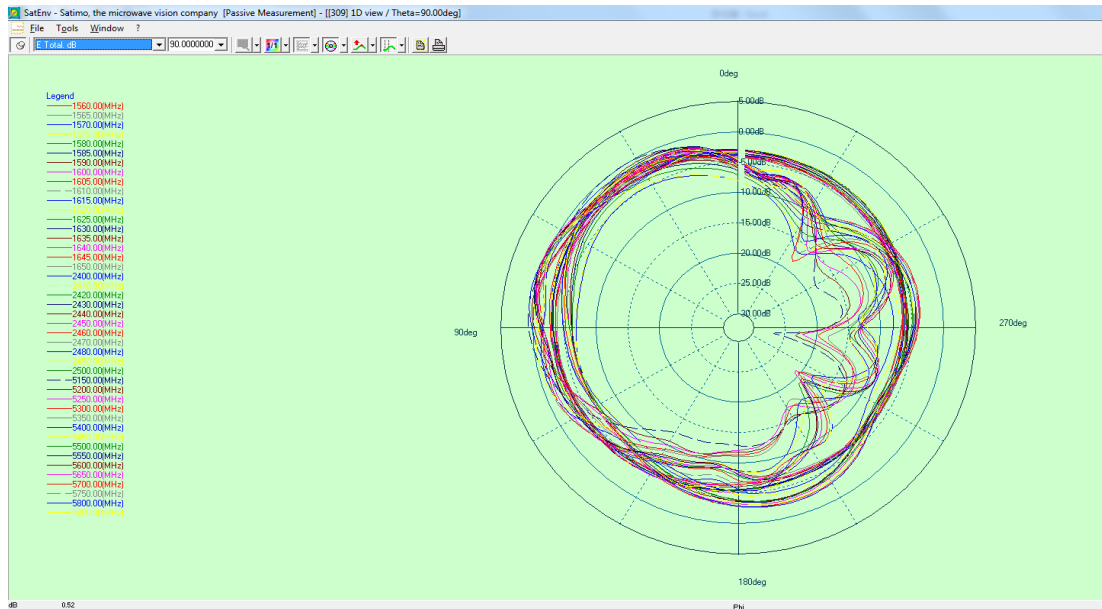


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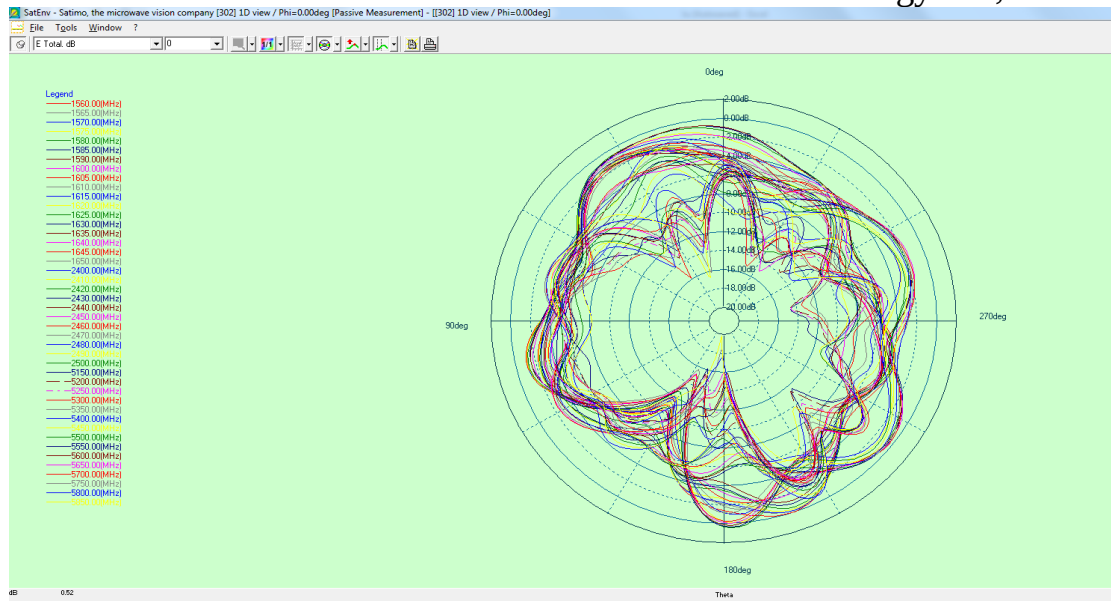


1D view:

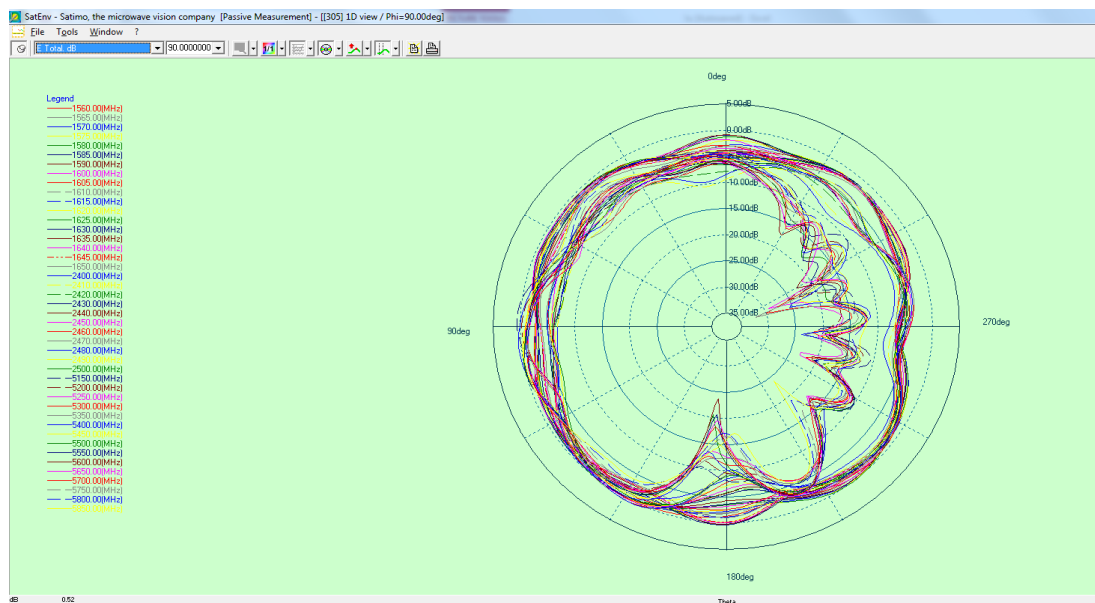


Theta = 90

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Theta = 0

**Phi = 90**

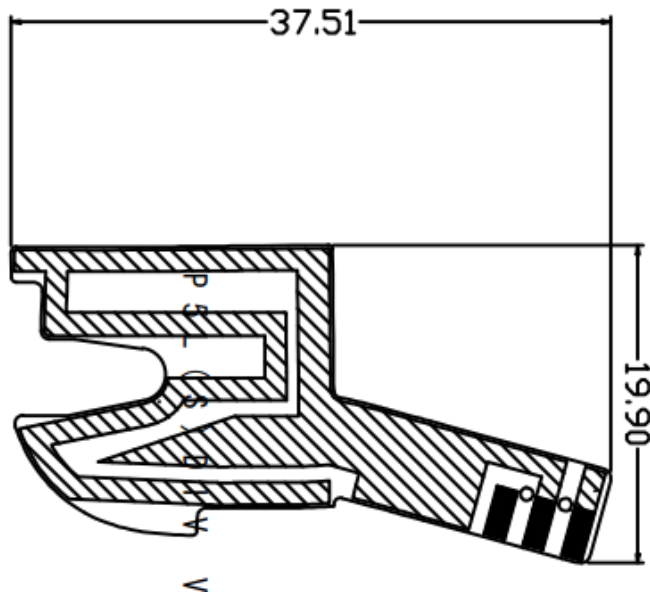
2.3.2 With scan coder version 3in1 antenna

Model: P5L_3in1_scan

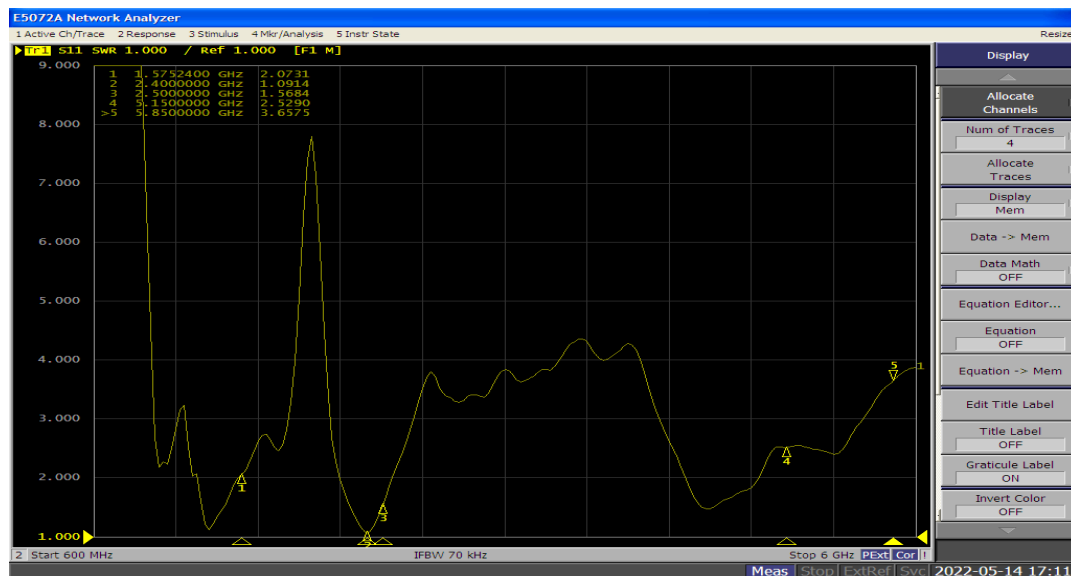
Maximum Gain: 1.11dBi

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Measurement: 37.5*19.9mm



VSWR: Voltage Standing Wave Rate



Efficiency&Gain test dataset

Fre. (Mhz)	Eff. %	Eff. dB	Gain. dB	Fre. (Mhz)	Eff. %	Eff. dB	Gain. dB
1550	50%	-3.02	2.27	5150	29%	-5.37	-0.96
1555	49%	-3.09	2.06	5170	37%	-4.31	-1.29
1560	48%	-3.17	1.93	5190	35%	-4.54	-1.44
1565	48%	-3.22	1.88	5210	34%	-4.63	-1.71

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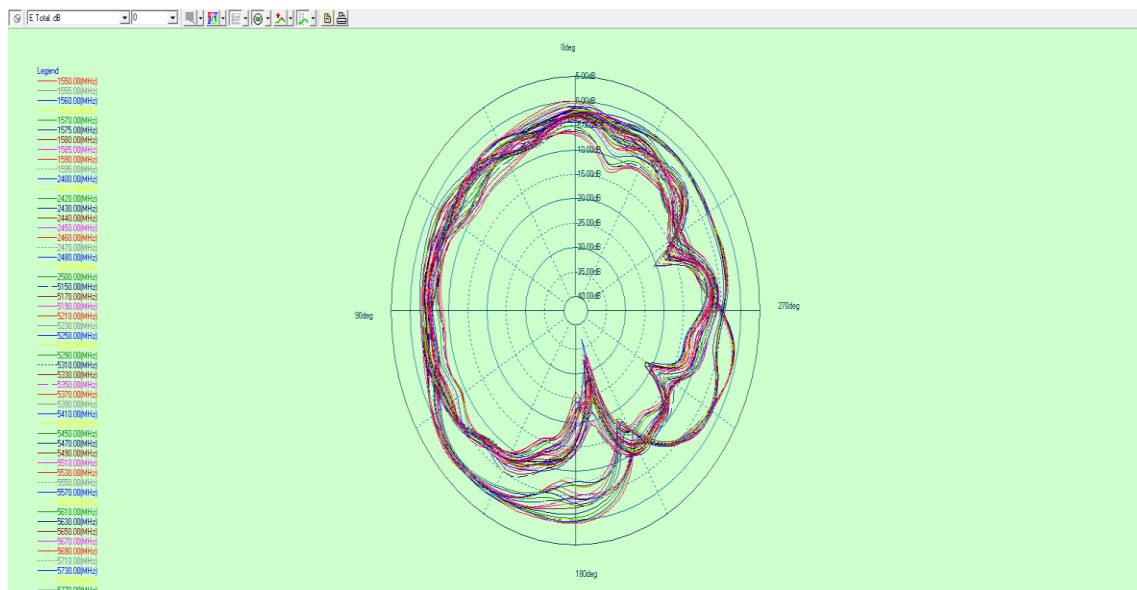
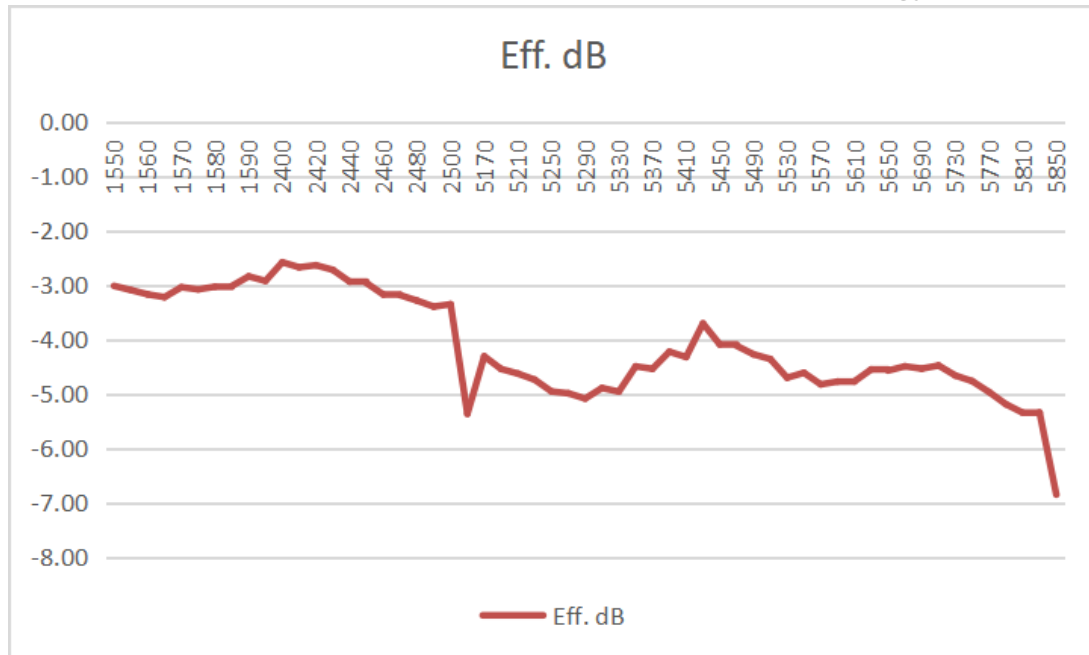
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1570	50%	-3.04	2.03	5230	34%	-4.74	-2.23
1575	49%	-3.08	2.24	5250	32%	-4.96	-2.41
1580	50%	-3.03	2.39	5270	32%	-4.99	-2.51
1585	50%	-3.02	2.57	5290	31%	-5.09	-2.02
1590	52%	-2.84	2.84	5310	32%	-4.89	-2.19
1595	51%	-2.93	2.83	5330	32%	-4.96	-1.18
2400	55%	-2.58	2.96	5350	36%	-4.50	-1.14
2410	54%	-2.68	2.85	5370	35%	-4.54	-0.53
2420	54%	-2.64	2.95	5390	38%	-4.23	-0.71
2430	53%	-2.72	2.61	5410	37%	-4.32	0.27
2440	51%	-2.94	2.15	5430	43%	-3.71	-0.19
2450	51%	-2.96	2.02	5450	39%	-4.09	-0.24
2460	48%	-3.18	1.73	5470	39%	-4.12	-0.61
2470	48%	-3.19	1.65	5490	37%	-4.27	-0.96
2480	47%	-3.29	1.59	5510	37%	-4.36	-1.54
2490	46%	-3.40	1.71	5530	34%	-4.70	-1.41
2500	46%	-3.35	1.80	5550	35%	-4.61	-1.89
				5570	33%	-4.83	-1.96
				5590	33%	-4.78	-2.09
				5610	33%	-4.77	-1.66
				5630	35%	-4.55	-1.83
				5650	35%	-4.57	-1.67
				5670	36%	-4.50	-1.68
				5690	35%	-4.54	-1.64
				5710	36%	-4.48	-1.86
				5730	34%	-4.66	-1.98
				5750	33%	-4.77	-2.22
				5770	32%	-4.97	-2.61
				5790	30%	-5.19	-2.87
				5810	29%	-5.35	-2.67
				5830	29%	-5.34	-2.73
				5850	21%	-6.85	-2.65

Efficiency test results

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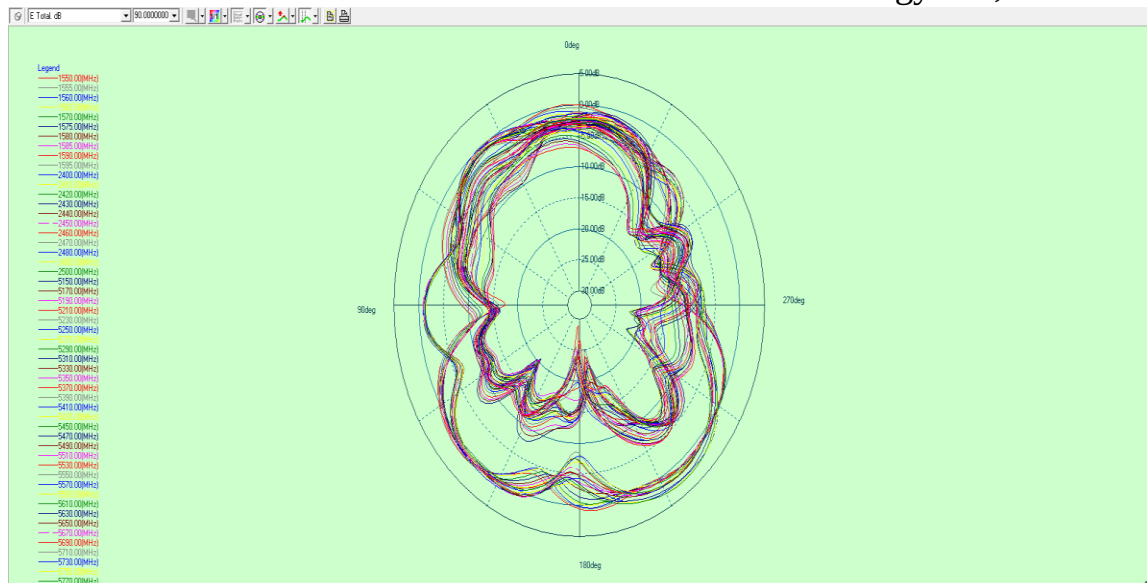
Pi=0

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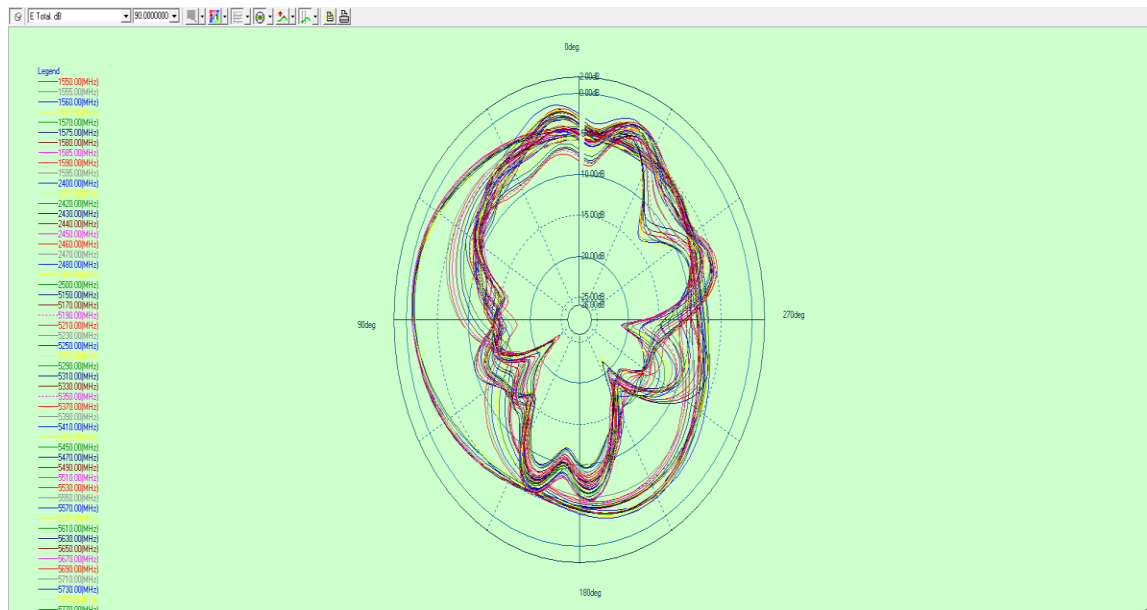


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Pi=90



Theta=90

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