

SPECIFICATION

Unimaxcomm

35F, HBC HuiLong Center Building-II Minzhi Street, Longhua, Shenzhen, P.R. China 518110

C6R Antenna

Product approval sheet

Customer	Rhino Mobility LLC	Band	LTE Band 2/4/5/7/12/13/14/17/18/19/25/26/ 29/30/41/66/71 WCDMA B2/4/5 GSM 850/1900
FCC ID	2AUOUC6R	Colour	Black

Customer check:

Reach requirement of customer: OK NG

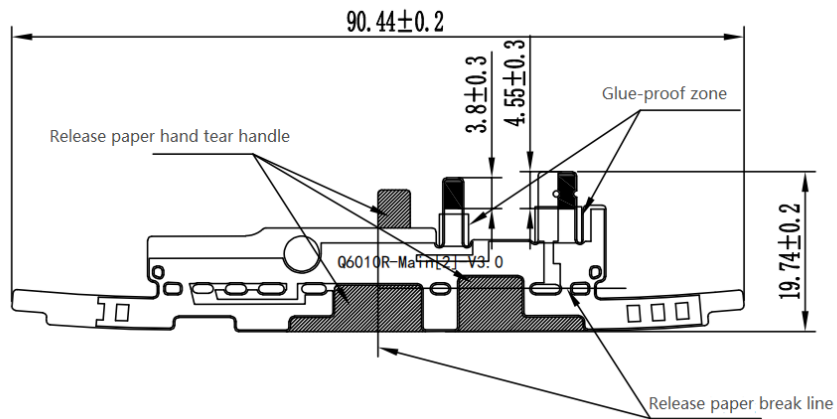
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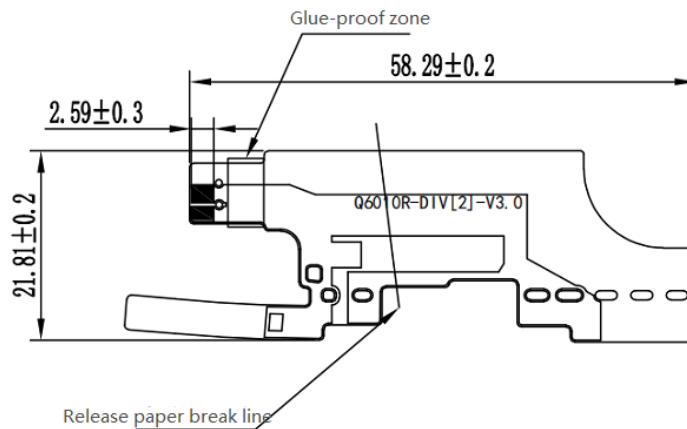
1 General description

1.1 Antenna appearing diagram

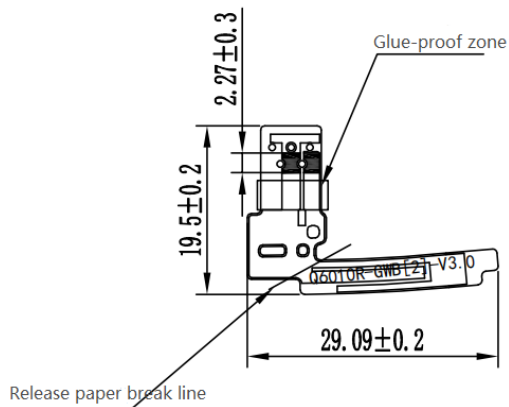
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1.2 Antenna Matching circuits

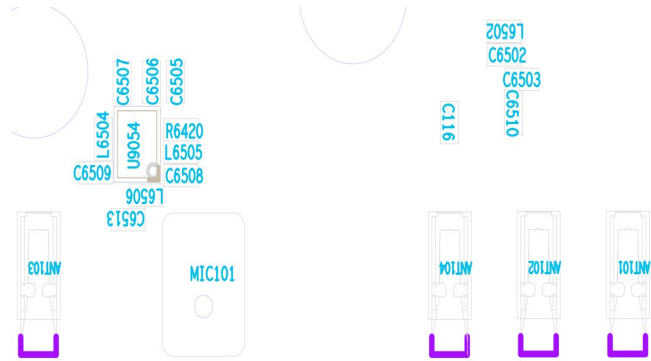
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The main antenna switch configuration:

RF1: GSM850/900+W5/8+LTE B5/18/19/20/26+ALL 2/3/4G medium and high frequency bands
 RF2: LTE B13/B14
 RF3: LTE B12/17/28/29
 RF4: LTE B71

Main antenna matches the main route	
BIT	VALUE
C6510	0Ω
C6503	0.5pF
C6502	2nH
L6502	15nH

main antenna switch matches	
C6513	0Ω
L6506	NC
L6505	1.2nH
L6504	5.6nH
C6509	7.5nH
C6508	15nH



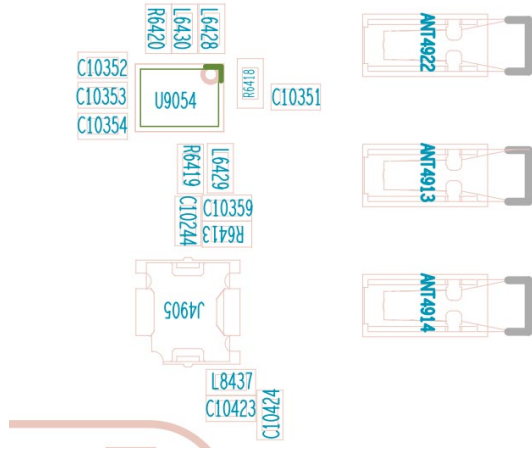
ANT1

The diversity antenna switch configuration:

RF1: GSM850/900+W5/8+LTE B5/18/19/20/26+ALL 2/3/4G medium and high frequency bands
 RF2: LTE B13/B14
 RF3: LTE B12/17/28/29
 RF4: LTE B71

Diversity antenna matches the main route	
BIT	VALUE
C10359	1pF
R6413	2.7nH
C10244	10nH

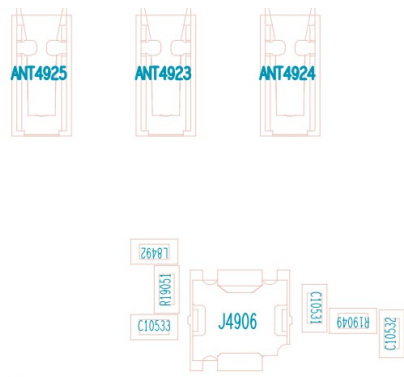
Diversity antenna switch matches	
C10351	0Ω
R6418	NC
L6430	0Ω
R6419	6.2nH
L6429	8.2nH
L6428	22nH



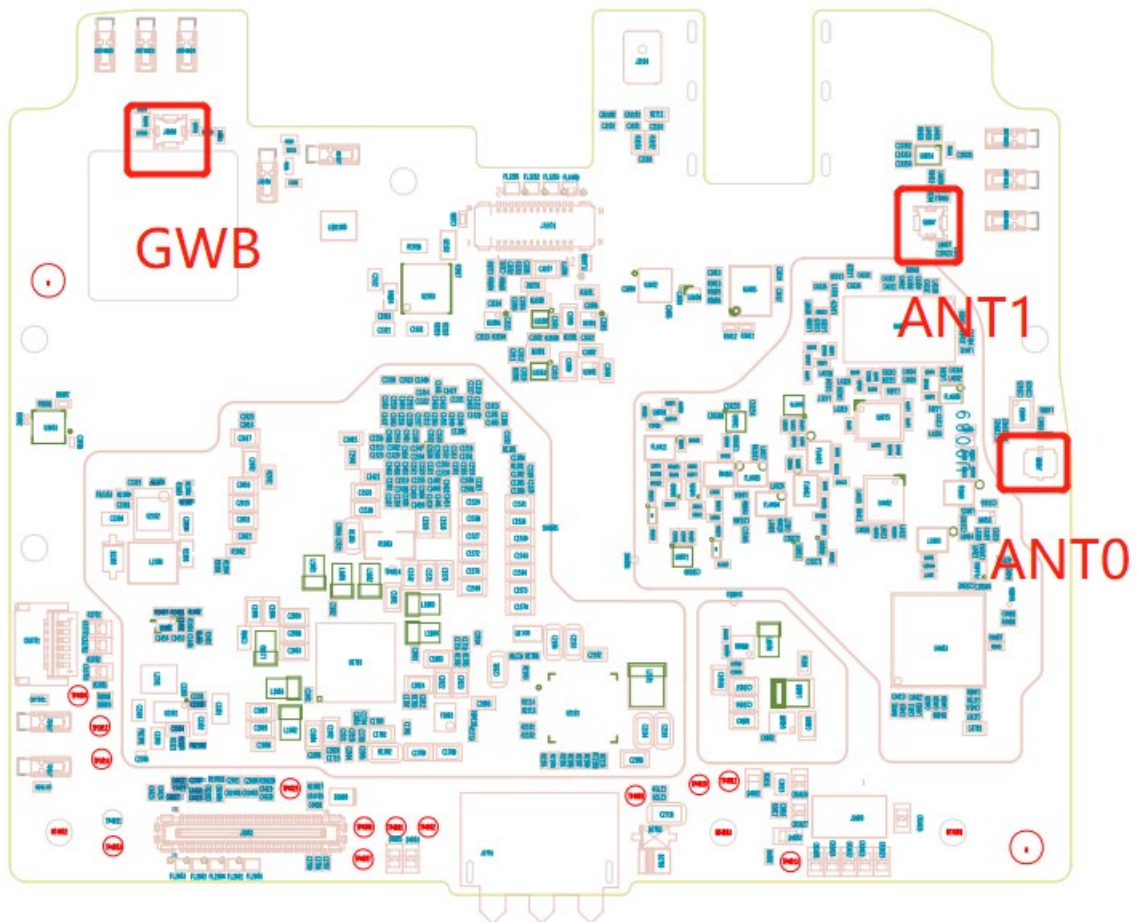
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Three-in-one antenna matching

BIT	VALUE
L8492	0.5pF
R19051	0Ω
C10533	NC

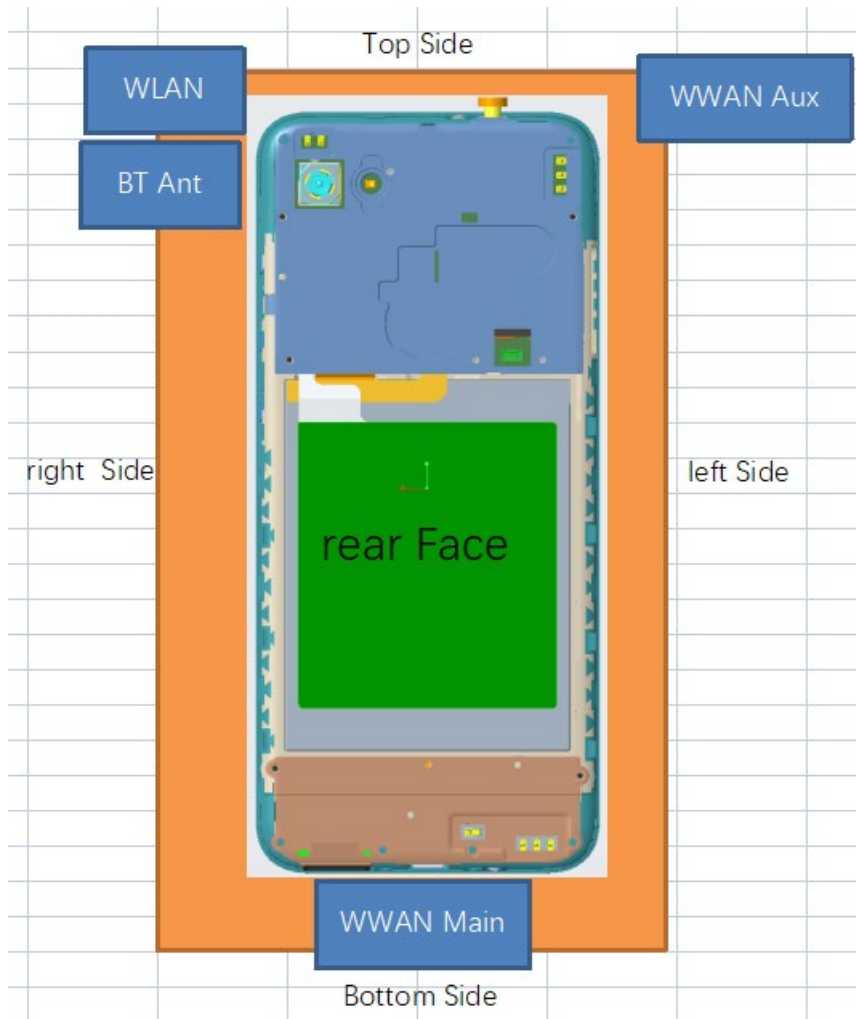


1.3 Antenna PORT



	LTE	WCDMA	GSM	GPS	WiFi	BT
ANT 0	Band 1/2/3/4/5/7/12/13/14/17/ 18/19/20/25/26/29/30/41/ 66/71 TRX	Band 1/2/4/5	GSM 850/900/ 1800/ 1900			
ANT 1	Band 1/2/3/4/5/7/12/13/14/17/ 18/19/20/25/26/29/30/41/ 66/71 DRX					
GWB				L1	2.4G WiFi 5G WiFi	BT

1.4 Antenna location



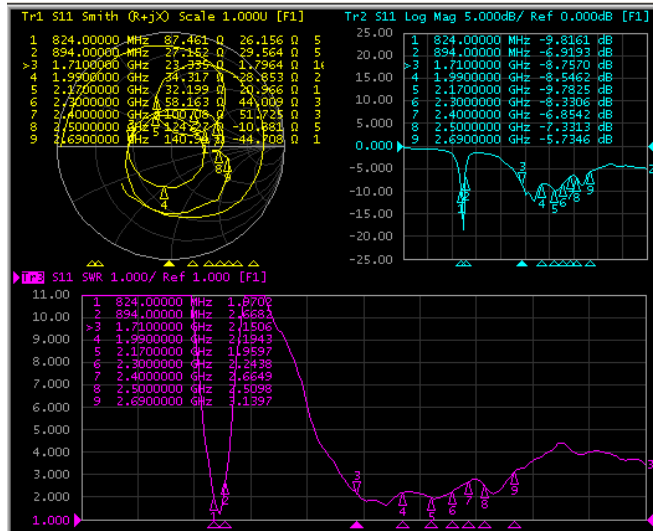
Antenna Location	Support Function	Top Side(mm)	Bottom Side(mm)	Left Side(mm)	Right Side(mm)
WWAN Main Antenna	TX/RX	149	1.1	1.1	1.1
WWAN Aux Antenna	DRX	1.1	142	1.1	16.5
WLAN Main Antenna	TX/RX	1.1	141.5	54	1.1
BT Antenna	follow WLAN Main ANT				

2 Electrical performance

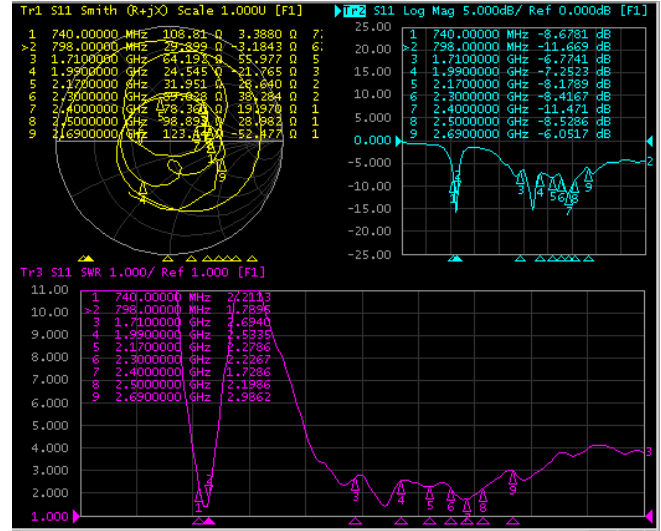
2.1 VSWR

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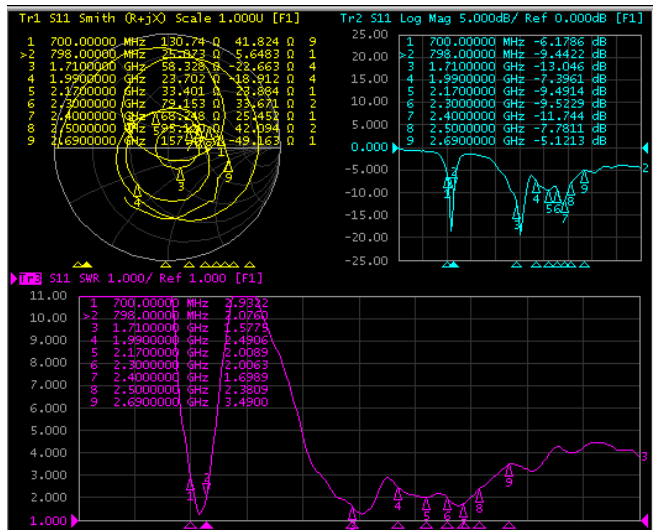
RF1



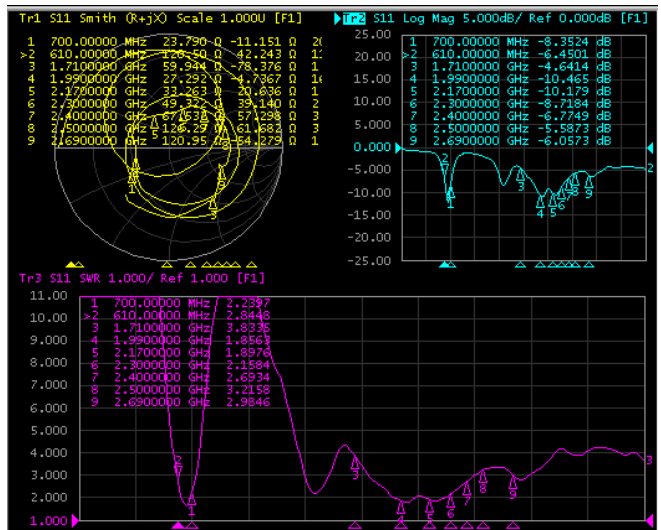
RF2



RF3

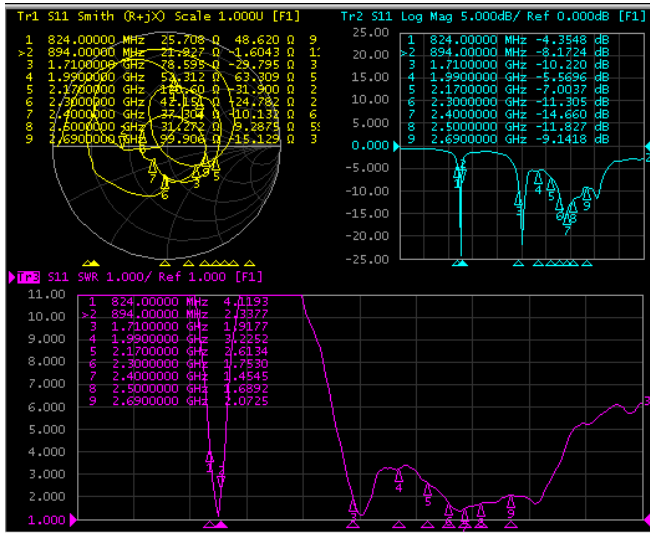


RF4

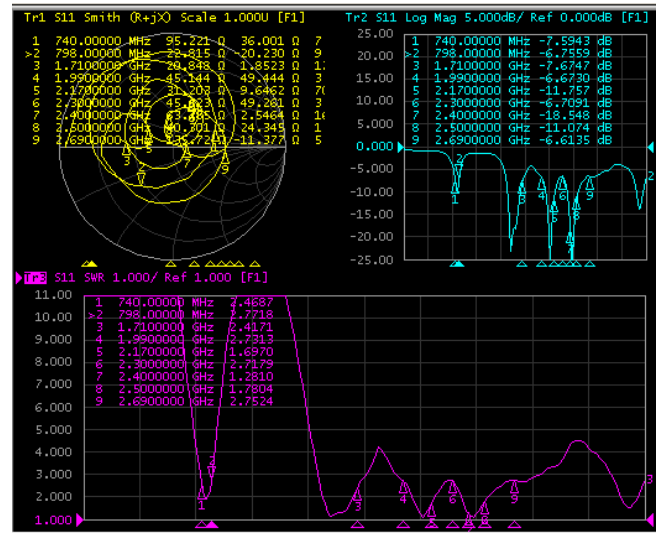


ANT1

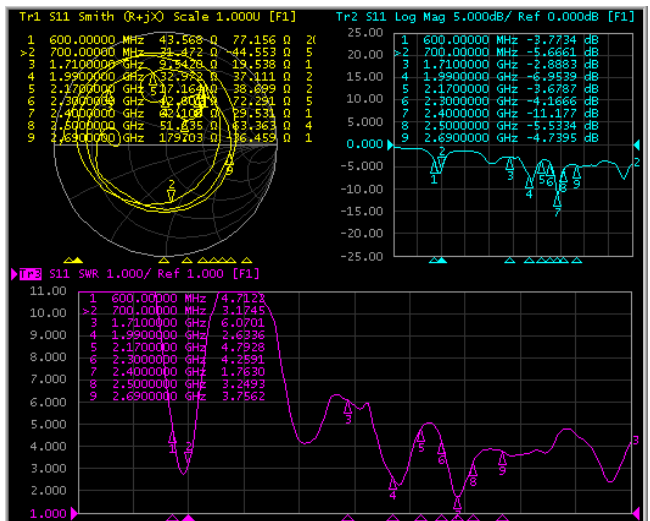
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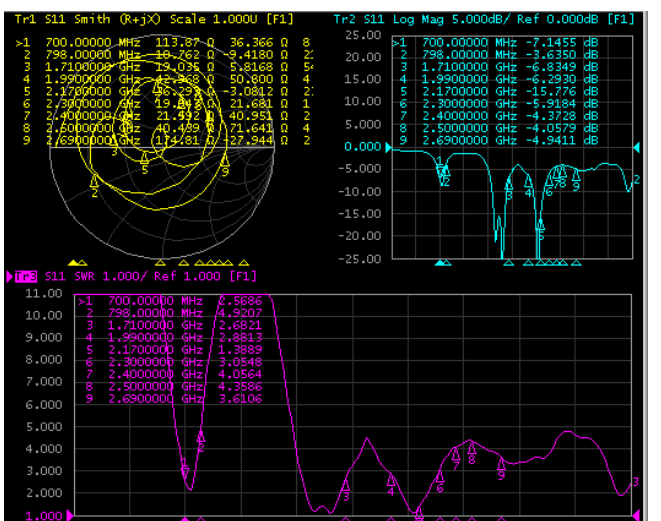
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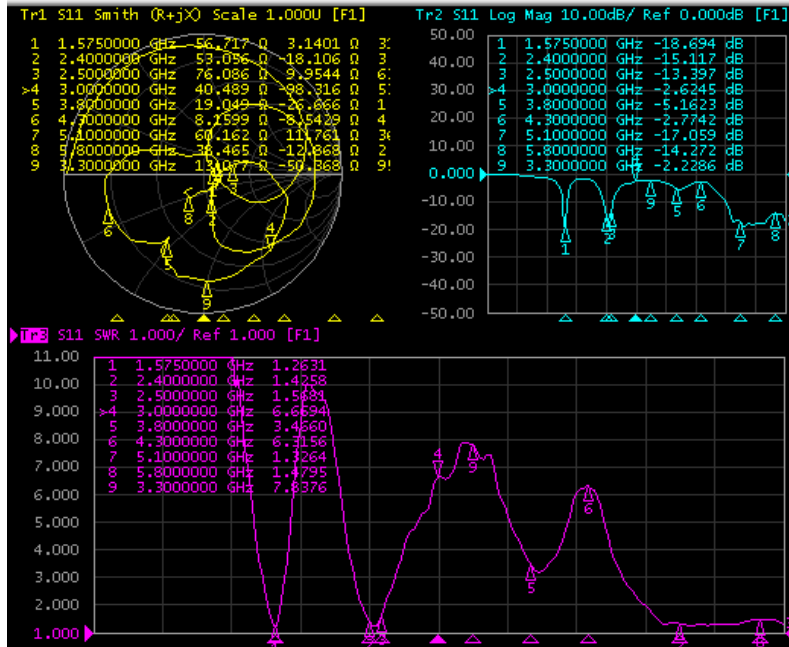
RF3



RF4



GWB



2.2 Efficiency & Gain

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B5

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
800	34.43	-4.63	-2.28
810	35.42	-4.51	-1.99
820	35.58	-4.49	-1.65
830	35.8	-4.46	-1.13
840	36.36	-4.39	-0.55
850	37.48	-4.26	-0.05
860	39.1	-4.08	0.14
870	39.52	-4.03	0.22
880	40.76	-3.9	0.26
890	40.92	-3.88	0.3
900	39.83	-4	0.2
910	36.32	-4.4	-0.07
920	30.11	-5.21	-0.91

B12

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
700	17.42	-7.59	-3.97
710	25.1	-6	-2.47
720	26.2	-5.82	-2.52
730	26.97	-5.69	-2.37
740	27.43	-5.62	-2.64
750	31.3	-5.04	-2
760	32.61	-4.87	-2.21
770	27.52	-5.6	-3.05
780	26.33	-5.8	-3.44
790	29.78	-5.26	-2.72
800	37.22	-4.29	-1.51
810	32.7	-4.85	-1.78
820	30.53	-5.15	-1.64
830	26.95	-5.69	-1.61

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B13

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
700	29.52	-5.3	-1.74
710	37.64	-4.24	-0.61
720	36.2	-4.41	-1.18
730	35.75	-4.47	-1.08
740	35.94	-4.44	-1.3
750	37.92	-4.21	-0.98
760	36.84	-4.34	-1.48
770	29.24	-5.34	-2.59
780	28.23	-5.49	-2.89
790	31.23	-5.05	-2.36
800	37.86	-4.22	-1.44
810	31.64	-5	-2.04
820	28.62	-5.43	-2.11
830	24.72	-6.07	-2.16

B71

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
600	15.52	-8.09	-5.23
610	14.88	-8.27	-5.78
620	15.41	-8.12	-5.76
630	15.2	-8.18	-5.07
640	15.44	-8.11	-4.91
650	19.9	-7.01	-3.46
660	23.67	-6.26	-2.8
670	27.46	-5.61	-2.66
680	31.28	-5.05	-1.67
690	33.94	-4.69	-0.87
700	33.4	-4.76	-1.07
710	36.19	-4.41	-0.67
720	31.16	-5.06	-1.7
730	26.34	-5.79	-2.43

ANT0 1710~2690MHz

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
1700	28.88	-5.39	1.77	1960	29.71	-5.27	-0.76	2300	32.16	-4.93	1.54	2500	31.99	-4.95	0.54
1710	29.97	-5.23	2.06	1970	29.76	-5.26	-0.38	2310	32.83	-4.84	1.69	2510	33.05	-4.81	0.7
1720	31.59	-5	2.2	1980	29.74	-5.27	-0.21	2320	34.61	-4.61	1.88	2520	33.04	-4.81	0.84
1730	32.77	-4.85	2.23	1990	28.87	-5.4	-0.21	2330	36.95	-4.32	2.17	2530	36.05	-4.43	1.12
1740	33.08	-4.8	2.11	2000	29.54	-5.3	-0.13	2340	40.13	-3.97	2.44	2540	35.89	-4.45	1.12
1750	32.88	-4.83	1.85	2010	28.6	-5.44	-0.39	2350	39.49	-4.04	2.43	2550	38.02	-4.2	1.25
1760	35.66	-4.48	1.94	2020	27.94	-5.54	-0.57	2360	40.44	-3.93	2.47	2560	39	-4.09	1.38
1770	38.55	-4.14	2.01	2030	29.34	-5.33	-0.53	2370	38.38	-4.16	2.37	2570	41.08	-3.86	1.58
1780	44.06	-3.56	2.27	2040	30.06	-5.22	-0.75	2380	38.54	-4.14	2.35	2580	40.63	-3.91	1.47
1790	46.15	-3.36	2.17	2050	32.15	-4.93	-0.8	2390	37.45	-4.27	2.27	2590	41.53	-3.82	1.66
1800	46.98	-3.28	1.97	2060	35.67	-4.48	-0.58	2400	37.43	-4.27	2.08	2600	42.06	-3.76	1.72
1810	45.75	-3.4	1.78	2070	37.8	-4.22	-0.28					2610	43.41	-3.62	1.91
1820	45.17	-3.45	1.69	2080	39.02	-4.09	0.1					2620	41.29	-3.84	1.57
1830	43.74	-3.59	1.66	2090	40.82	-3.89	0.45					2630	41.67	-3.8	1.6
1840	43.13	-3.65	1.65	2100	42.4	-3.73	0.67					2640	43.22	-3.64	1.69
1850	42.74	-3.69	1.62	2110	40.42	-3.93	0.47					2650	43.64	-3.6	1.76
1860	40.93	-3.88	1.27	2120	41.18	-3.85	0.49					2660	43.68	-3.6	1.84
1870	39.28	-4.06	0.97	2130	43.23	-3.64	0.7					2670	43.94	-3.57	1.76
1880	39.94	-3.99	0.79	2140	45.15	-3.45	1.01					2680	41.96	-3.77	1.5
1890	38.35	-4.16	0.45	2150	45.24	-3.45	1.1					2690	40.63	-3.91	1.37
1900	36.95	-4.32	0.11	2160	44.07	-3.56	1.08					2700	39.37	-4.05	1.21
1910	36.23	-4.41	-0.21	2170	43.65	-3.6	1.12								
1920	35.29	-4.52	-0.64	2180	41.79	-3.79	1.03								
1930	34.67	-4.6	-1.21	2190	39.56	-4.03	0.95								
1940	33.01	-4.81	-1.12	2200	37.48	-4.26	0.81								
1950	31.21	-5.06	-0.84												

ANT1

B5

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
800	12.58	-9	-6.2
810	13.77	-8.61	-5.65
820	14.54	-8.37	-5.17
830	15.52	-8.09	-4.33
840	17.99	-7.45	-3.35
850	20.66	-6.85	-2.81
860	23.28	-6.33	-2.5
870	25.14	-6	-2.4
880	24.98	-6.02	-2.61
890	23.72	-6.25	-2.92
900	18.99	-7.22	-4.02
910	15.09	-8.21	-5.01
920	11.58	-9.36	-6.45

B12

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
700	12.9	-8.89	-5.26
710	15.18	-8.19	-4.55
720	13.23	-8.78	-4.64
730	13.24	-8.78	-4.64
740	13.12	-8.82	-5.13
750	12.92	-8.89	-6.07
760	12.07	-9.18	-6.45
770	9.66	-10.15	-7.41
780	10.24	-9.9	-6.86
790	12.4	-9.07	-6.8
800	16.46	-7.83	-5.57
810	15.38	-8.13	-5.3
820	15.12	-8.2	-4.84
830	14.98	-8.24	-4.55

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B13

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
700	8.61	-10.65	-7.37
710	12.81	-8.92	-5.61
720	14.17	-8.49	-5.47
730	14.87	-8.28	-5.16
740	15.42	-8.12	-5.07
750	15.24	-8.17	-5.41
760	15.3	-8.15	-5.38
770	13.58	-8.67	-6.1
780	14.37	-8.43	-5.75
790	15.19	-8.18	-5.42
800	17.54	-7.56	-4.44
810	15.17	-8.19	-4.7
820	13.93	-8.56	-4.73
830	13.13	-8.82	-4.85

B71

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
600	2.33	-16.32	-13.31
610	2.19	-16.59	-13.45
620	2.9	-15.38	-11.8
630	4.42	-13.54	-9.51
640	6.34	-11.98	-7.84
650	9.2	-10.36	-6.58
660	13.1	-8.83	-5.18
670	17.38	-7.6	-3.68
680	20.58	-6.87	-2.84
690	21.68	-6.64	-2.83
700	20.2	-6.95	-3.21
710	21.54	-6.67	-3.05
720	18.32	-7.37	-3.63
730	14.59	-8.36	-4.72

ANT 1 1710~2690MHz

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
1700	21.6	-6.66	-2.13	1960	31.91	-4.96	-1.69	2300	28.63	-5.43	-1.12	2500	47.24	-3.26	0.54
1710	26.54	-5.76	-1.2	1970	30.47	-5.16	-1.76	2310	27.8	-5.56	-1.25	2510	45.31	-3.44	0.7
1720	32.87	-4.83	-0.35	1980	30.52	-5.15	-1.69	2320	27.72	-5.57	-1.26	2520	44.86	-3.48	0.84
1730	36.01	-4.44	-0.04	1990	30.46	-5.16	-1.6	2330	28.15	-5.5	-1.17	2530	42.85	-3.68	1.12
1740	37.97	-4.21	0.06	2000	29.93	-5.24	-1.67	2340	28.09	-5.51	-1.01	2540	41.39	-3.83	1.12
1750	40.94	-3.88	0.2	2010	29.82	-5.26	-1.98	2350	29.05	-5.37	-0.65	2550	41.8	-3.79	1.25
1760	44.67	-3.5	0.49	2020	27.41	-5.62	-2.33	2360	29.38	-5.32	-0.37	2560	41.95	-3.77	1.38
1770	47.62	-3.22	0.66	2030	27.67	-5.58	-2.4	2370	30.18	-5.2	-0.2	2570	41.57	-3.81	1.55
1780	50.24	-2.99	0.83	2040	29.76	-5.26	-2.16	2380	32.39	-4.9	0.2	2580	40.04	-3.98	1.47
1790	49.37	-3.06	0.73	2050	32.86	-4.83	-1.01	2390	35.21	-4.53	0.53	2590	38.44	-4.15	1.66
1800	48.2	-3.17	0.68	2060	36.86	-4.33	0.25	2400	36.97	-4.32	0.7	2600	37.83	-4.22	1.72
1810	47.67	-3.22	0.59	2070	38.51	-4.14	0.98					2610	37.06	-4.31	1.91
1820	46	-3.37	0.42	2080	36.4	-4.39	1.24					2620	34	-4.69	1.57
1830	43.83	-3.58	0.24	2090	36.55	-4.37	1.61					2630	32.72	-4.85	1.6
1840	44.37	-3.53	0.27	2100	37.6	-4.25	1.98					2640	32.7	-4.85	1.69
1850	45.25	-3.44	0.34	2110	31.55	-5.01	1.51					2650	31.5	-5.02	1.76
1860	45.29	-3.44	0.34	2120	31.55	-5.01	1.46					2660	30.17	-5.2	1.84
1870	43.16	-3.65	0.41	2130	32.62	-4.87	1.53					2670	28.72	-5.42	1.76
1880	41.72	-3.8	0.68	2140	34.28	-4.65	1.51					2680	27.08	-5.67	1.5
1890	41.65	-3.8	0.76	2150	34.22	-4.66	1.17					2690	25.43	-5.95	1.37
1900	41.91	-3.78	0.8	2160	34.25	-4.65	0.83					2700	24.5	-6.11	1.21
1910	39.34	-4.05	0.53	2170	32.19	-4.92	0.35								
1920	36.37	-4.39	-0.03	2180	32.62	-4.86	0.08								
1930	35.26	-4.53	-0.53	2190	32.66	-4.86	-0.17								
1940	32.55	-4.87	-1.3	2200	33.33	-4.77	-0.5								
1950	33.19	-4.79	-1.71												

Confidential Information

GWB

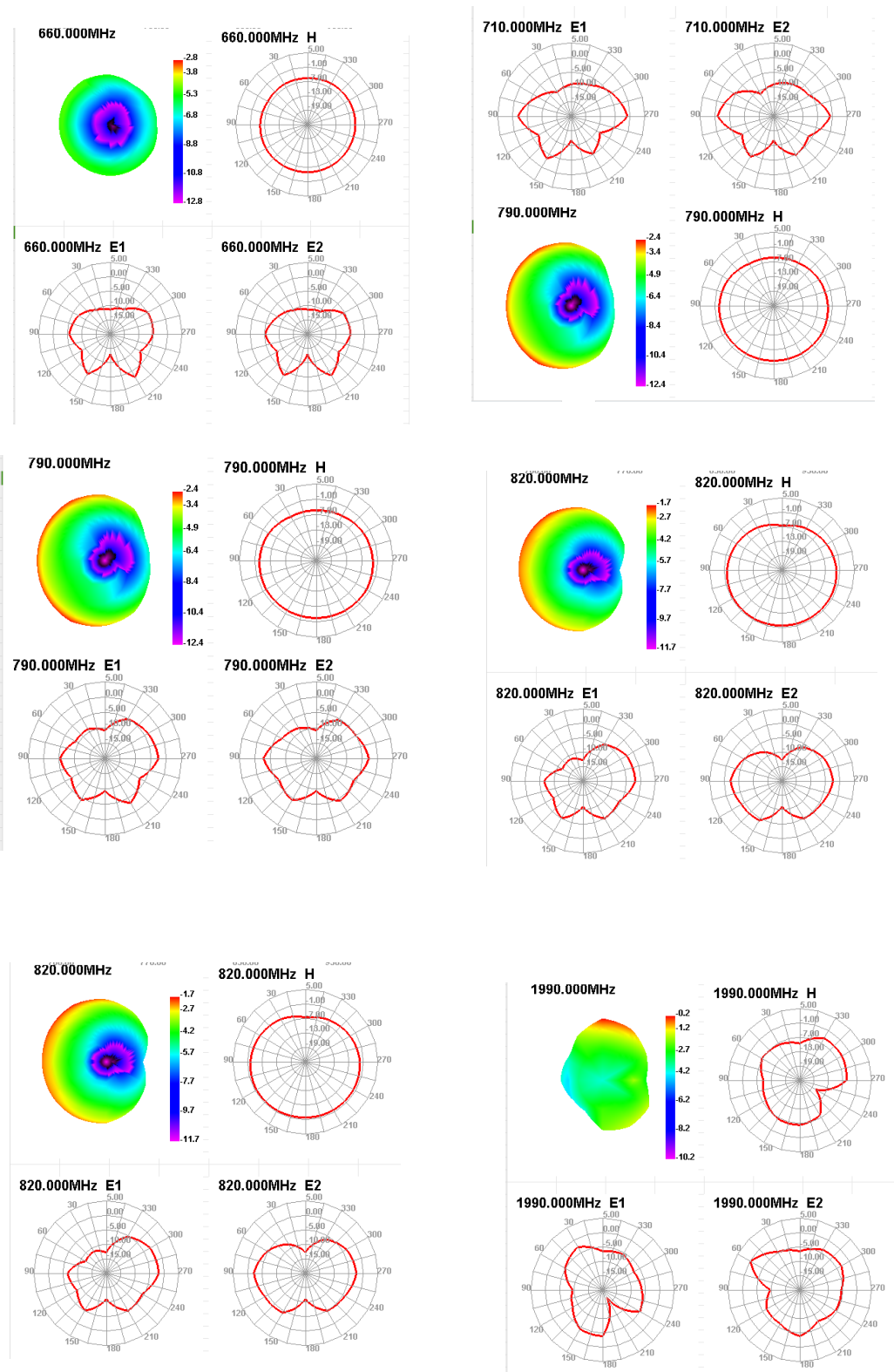
GPS			
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
1500	38.5	-4.15	2.82
1505	39.58	-4.03	3.01
1510	39.36	-4.05	3.11
1515	39.53	-4.03	3.23
1520	40.26	-3.95	3.34
1525	40.85	-3.89	3.47
1530	41.1	-3.86	3.53
1535	41.94	-3.77	3.58
1540	42.16	-3.75	3.66
1545	43.2	-3.65	3.81
1550	45.16	-3.45	4.03
1555	45.07	-3.46	4.07
1560	46.63	-3.31	4.21
1565	46.88	-3.29	4.27
1570	47.02	-3.28	4.27
1575	47.03	-3.28	4.28
1580	46.97	-3.28	4.31
1585	47.28	-3.25	4.24
1590	47.34	-3.25	4.19
1595	48.17	-3.17	4.23
1600	47.31	-3.25	4.14

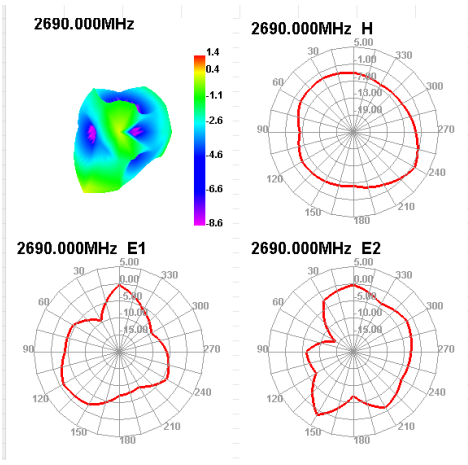
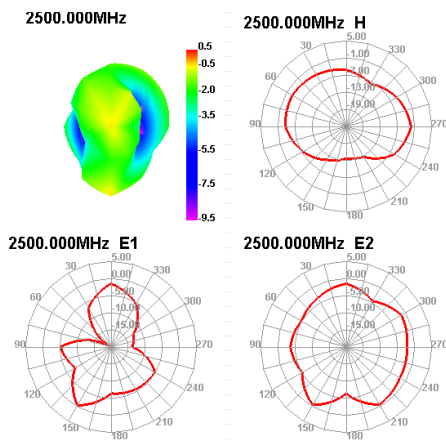
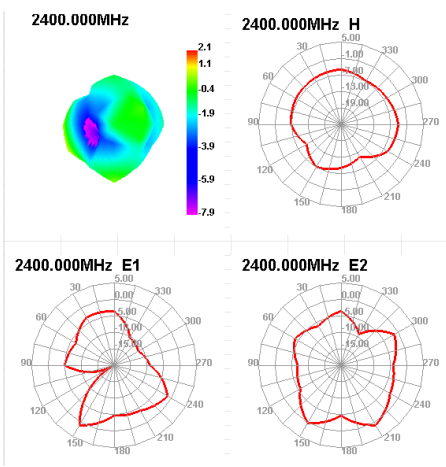
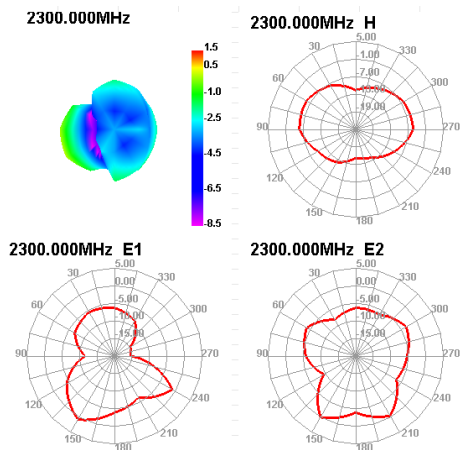
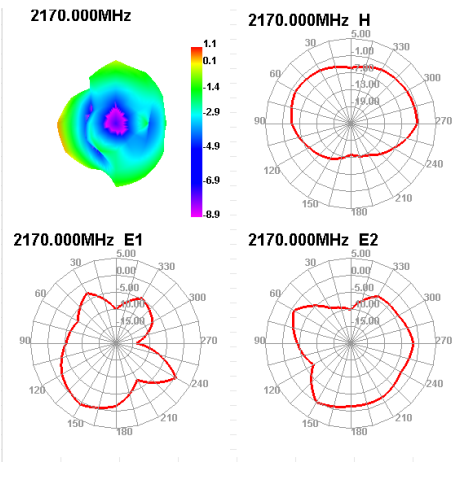
2.4G WIFI			
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
2400	34.78	-4.59	0.81
2410	33.55	-4.74	0.75
2420	33.44	-4.76	0.81
2430	33.58	-4.74	0.82
2440	34.05	-4.68	0.88
2450	36.08	-4.43	1.2
2460	37.33	-4.28	1.31
2470	37.93	-4.21	1.4
2480	39.49	-4.03	1.64
2490	42.46	-3.72	2.1
2500	42.6	-3.71	2.14

5G WIFI							
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
5150	28.26	-5.49	-1.18	5510	31.3	-5.04	-1.35
5160	27.69	-5.58	-1.25	5520	31.74	-4.98	-1.14
5170	27.41	-5.62	-1.47	5530	32.14	-4.93	-1.07
5180	26.24	-5.81	-1.63	5540	32.48	-4.88	-0.75
5190	25.63	-5.91	-1.44	5550	32.6	-4.87	-0.56
5200	25.11	-6	-1.56	5560	32.89	-4.83	-0.6
5210	25.97	-5.85	-1.43	5570	33.21	-4.79	-0.43
5220	25.77	-5.89	-1.29	5580	32.8	-4.84	-0.15
5230	26.94	-5.7	-1.18	5590	32.53	-4.88	-0.11
5240	26.11	-5.83	-1.32	5600	32.6	-4.87	-0.41
5250	25.14	-6	-1.47	5610	31.72	-4.99	-0.35
5260	25.46	-5.94	-1.63	5620	31.45	-5.02	-0.5
5270	25.28	-5.97	-1.72	5630	31.07	-5.08	-0.68
5280	25.74	-5.89	-1.81	5640	29.8	-5.26	-0.62
5290	27.59	-5.59	-1.71	5650	29.83	-5.25	-0.88
5300	26.06	-5.84	-2.05	5660	29.37	-5.32	-1.26
5310	26.5	-5.77	-1.92	5670	28.4	-5.47	-1.52
5320	28.13	-5.51	-1.55	5680	27.64	-5.58	-1.53
5330	27.71	-5.57	-1.8	5690	27.41	-5.62	-1.82
5340	28.84	-5.4	-1.65	5700	27.61	-5.59	-1.86
5350	30.26	-5.19	-1.55	5710	27.05	-5.68	-2.09
5360	29.43	-5.31	-1.73	5720	26.39	-5.79	-2.07
5370	29.31	-5.33	-1.84	5730	25.96	-5.86	-1.99
5380	29.58	-5.29	-1.79	5740	27.48	-5.61	-1.79
5390	27.7	-5.57	-2.12	5750	28.83	-5.4	-1.68
5400	32.1	-4.94	-1.47	5760	29.04	-5.37	-1.76
5410	31.88	-4.96	-1.42	5770	28.89	-5.39	-1.89
5420	31.28	-5.05	-1.53	5780	27.54	-5.6	-1.99
5430	30.95	-5.09	-1.71	5790	28.12	-5.51	-1.82
5440	30.76	-5.12	-1.69	5800	27.68	-5.58	-2.07
5450	29.88	-5.25	-1.84	5810	28.61	-5.43	-1.83
5460	30.74	-5.12	-1.7	5820	29.68	-5.27	-1.85
5470	29.79	-5.26	-1.83	5830	29.78	-5.26	-1.23
5480	29.98	-5.23	-1.78	5840	29.72	-5.27	-1.44
5490	30.49	-5.16	-1.72	5850	30.41	-5.17	-1.13
5500	30.84	-5.11	-1.43				

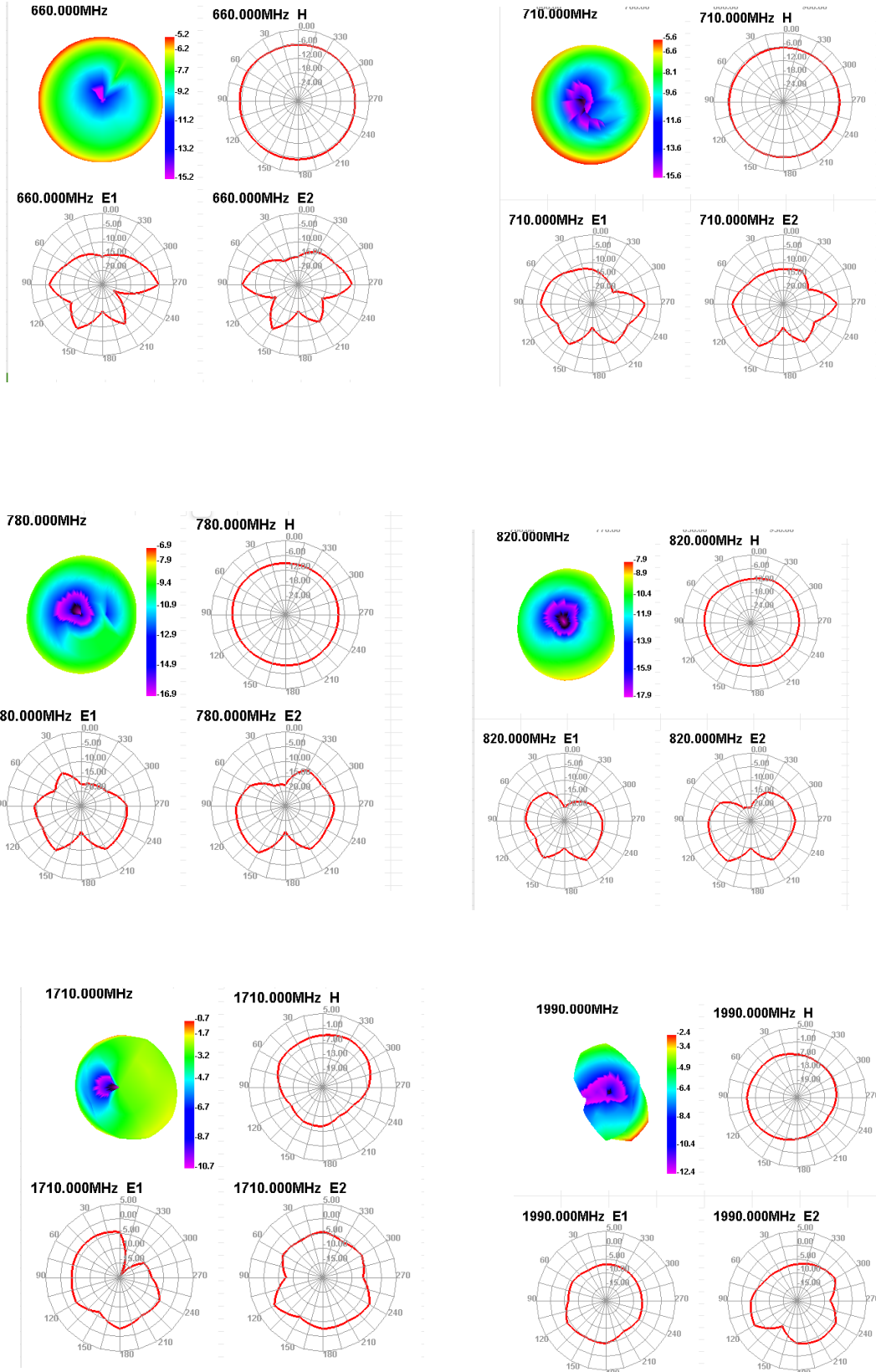
2.3 3D Pattern

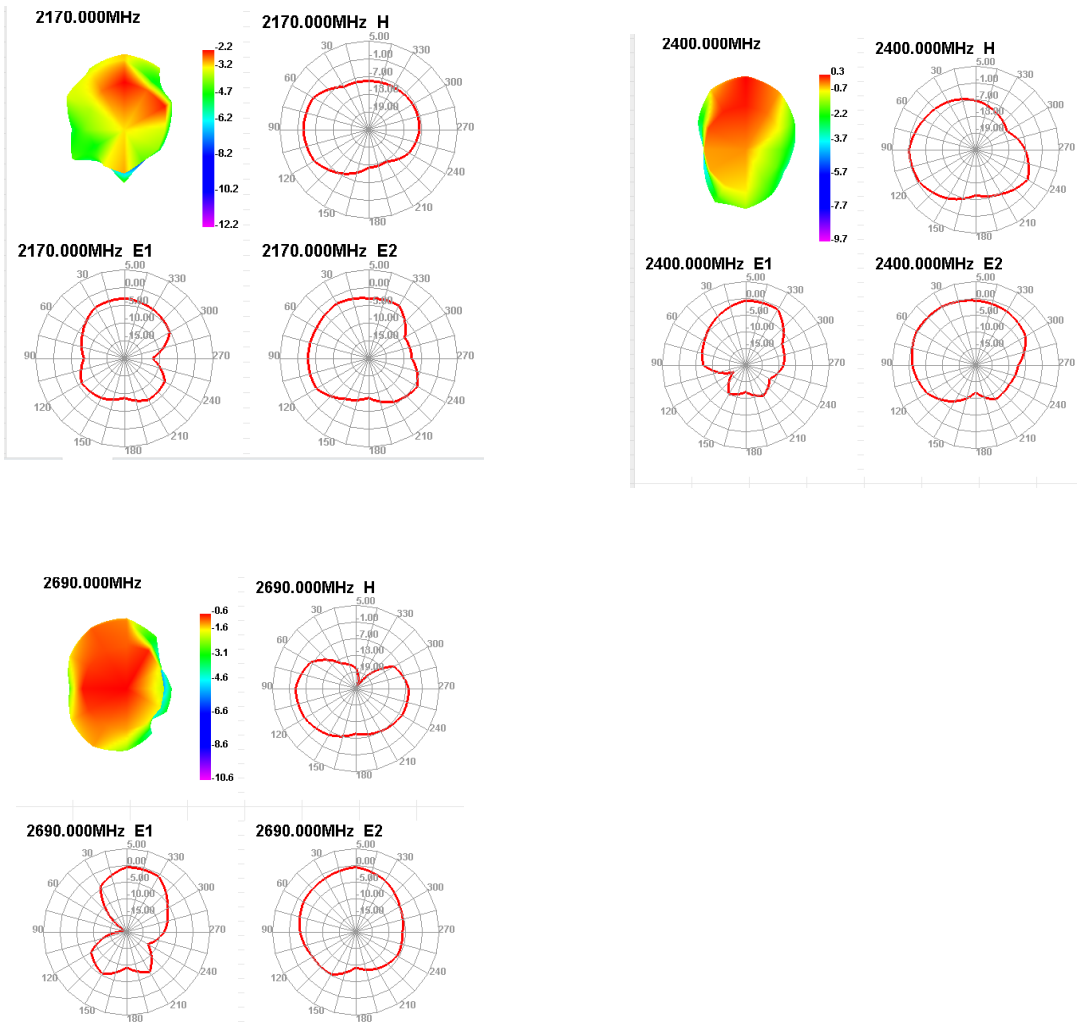
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