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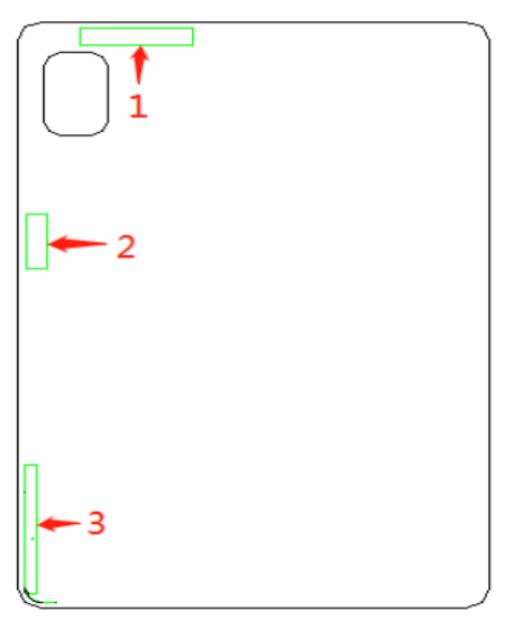
Antenna Performance Test Report									
Customer Name	Tianruixiang Company	RF Engineer	Xiao Long						
Project Name	P1005-310A	Structural engineer	Li ang Kunrong						
Antenna frequency band	GSM+WCDMA+LTE+GPS/WIFI/BT								
Report version	Date	Content Summary							
V1. 0	2023-4-13	Antenna Performance Test Report							

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### Test report directory

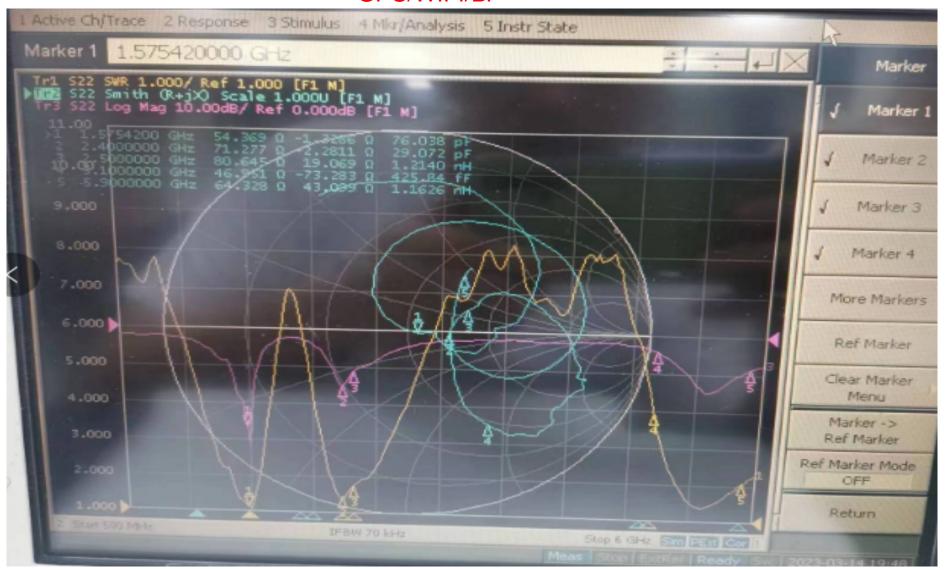
- ✓ I. Passive Standing Wave Graph, Smith Circle Graph, and Apple Graph
- ✓ III. Antenna test data
- ▼ VI. remarks

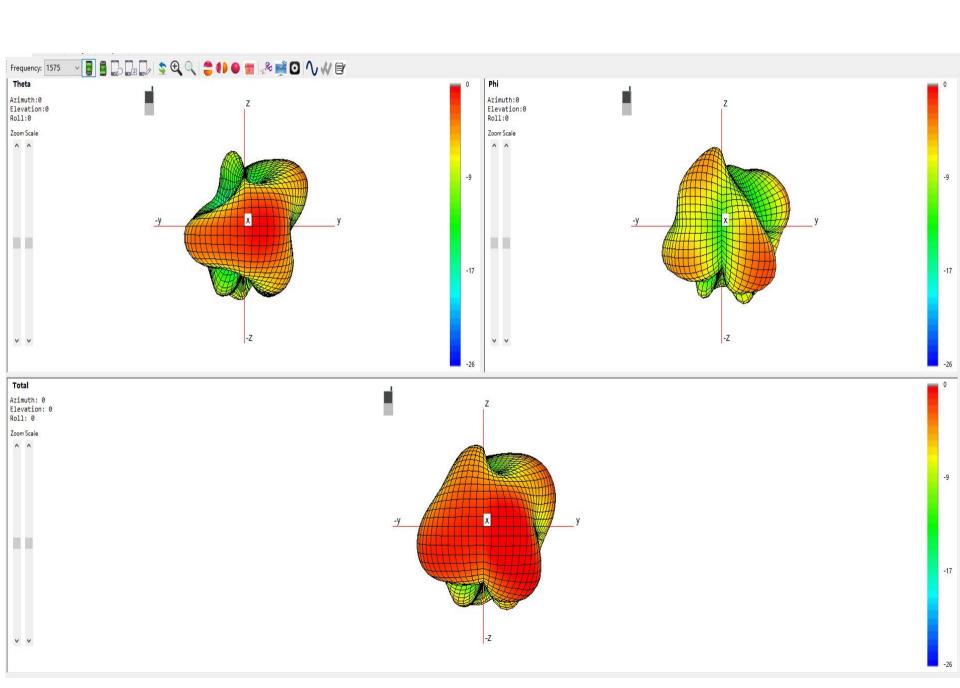
### Antenna Placement

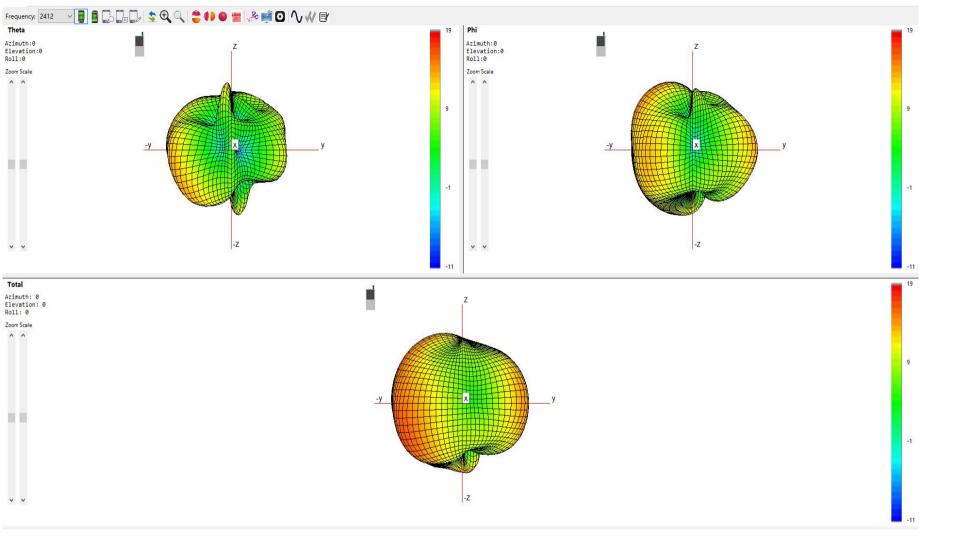


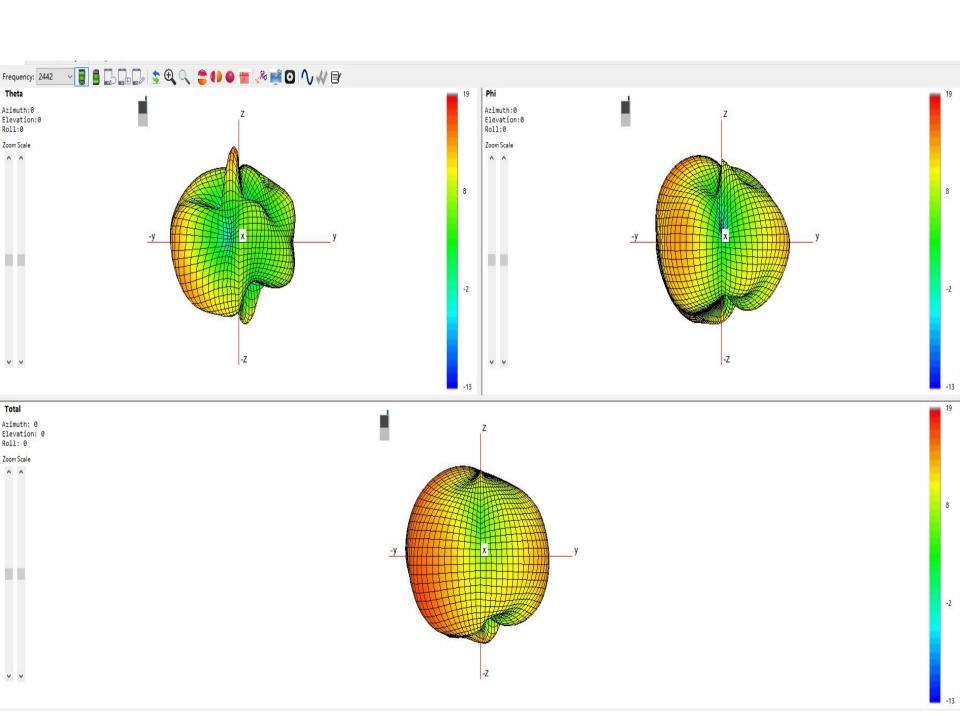
Antenna:1:WIFI/BT/GPS

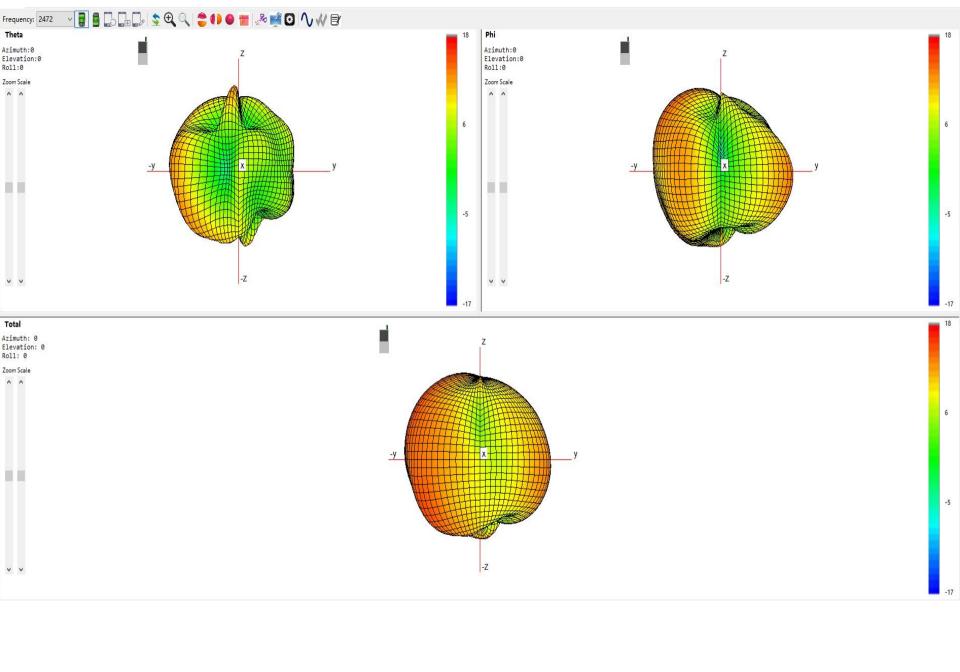
Antenna :2:2G/3G/4G DIV ANT Antenna :3:2G/3G/4G Main ANT I Passive standing waves mith circle diagram The PS / WIFI / BT

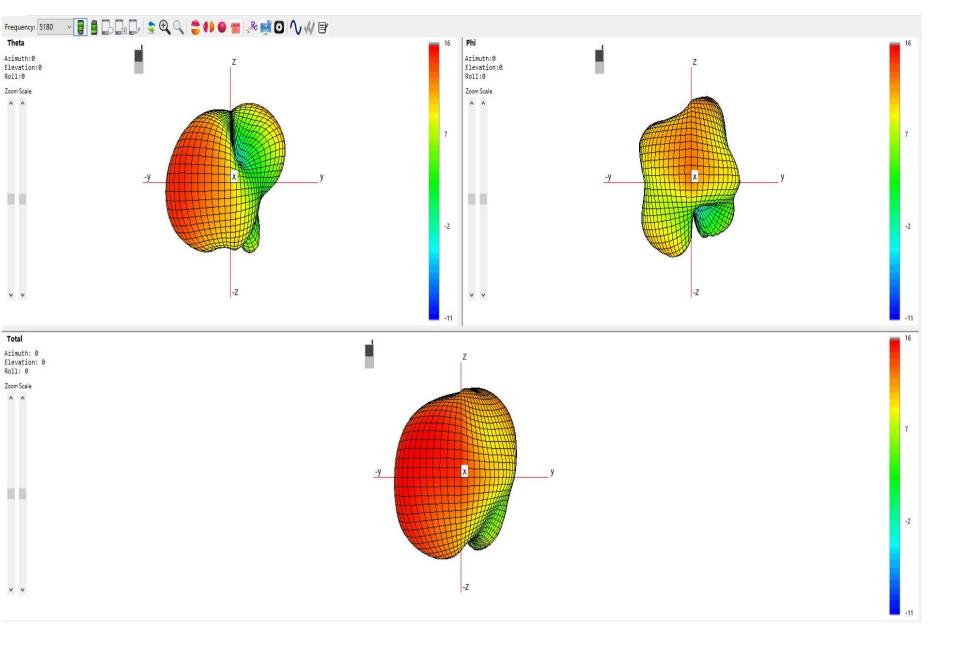


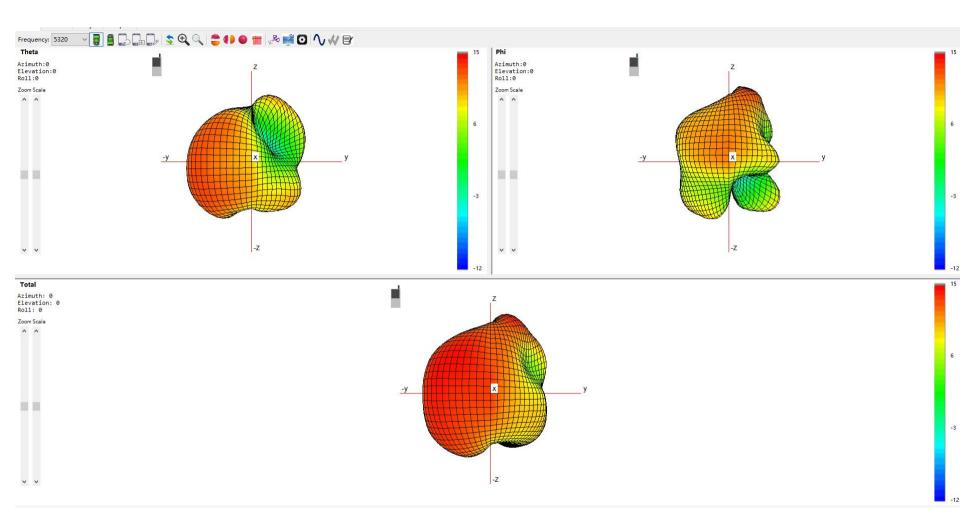


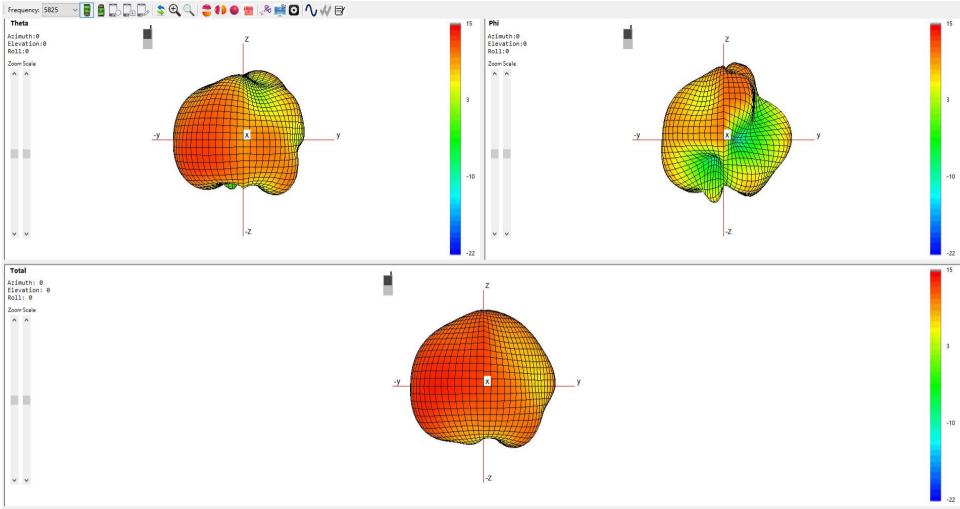












## high-quality resource around you Antenna passive gain efficiency:

The GPS / WIFI / BT antenna

Passive Test For GPS		Freq	Gain	Effi	Effi	Freq	Gain	Effi	Effi		
Freq	Gain	Effi	Effi	$(\mathtt{MHz})$	(dBi)	(dB)	(%)	$(\mathtt{MHz})$	(dBi)	(dB)	(%)
(MHz)	(dBi)	(dB)	(%)	5160	0.98	-4.07	39.20	5520	-1.17	-5.81	26.24
1550	-0.20	-4.53	35. 22	5180	0.94	-4.06	39.26	5540	-1.29	-5.82	26.19
1555	-0.11	-4.44	35.94	5200	0.92	-3.97	40.12	5560	-1.18	-5.76	26.54
1560	-0.07	-4.37	36.59	5220	1.01	-3.90	40.73	5580	-1.09	-5.63	27.34
1565	-0.05	-4.34	36.79	5240	0.98	-4.00	39.80	5600	-1.22	-5.76	26.55
1570	-0.10	-4.36	36.60	5260	0.82	-4.18	38.16	5620	-1.42	-6.06	24.75
1575	-0.20	-4.44	35.98	5280	0.80	-4.29	37.22	5640	-1.42	-6.24	23.76
1580	-0.42	-4.59	34.72	5300	0.93	-4.31	37.07	5660	-1.19	-6.17	24.16
1585	-0.63	-4.76	33.42	5320	0.98	-4.38	36.48	5680	-1.05	-6.16	24.19
1590	-0.96	-4.92	32. 23	5340	0.95	-4.45	35.91	5700	-1.18	-6.30	23.47
1595	-1.30	-5.11	30.82	5360	0.74	-4.57	34.92	5720	-1.10	-6.36	23.12
1600	-1.62	-5.26	29.82	5380	0.30	-4.83	32.86	5740	-1.00	-6.41	22.83
1605	-1.96	-5.41	28.77	5400	-0.15	-5.12	30.79	5760	-0.94	-6.51	22.33
1610	-2.16	-5.57	27.76	5420	-0.30	-5.20	30.23	5780	-0.75	-6.54	22.17
1615	-2.05	-5.68	27.06	5440	-0.36	-5.18	30.32	5800	-0.39	-6.43	22.75
Passi	ve Test F	or 2.4GWI	FI/BT	5460	-0.68	-5.39	28.88	5820	0.01	-6.30	23.43
Freq	Gain	Effi	Effi	5480	-0.86	-5.66	27.19	5840	0.19	-6.39	22.94
(MHz)	(dBi)	(dB)	(%)	5500	-0.98	-5.77	26.47	5860	0.32	-6.57	22.03
2400	-0.55	-4.82	32.96								
2410	0.11	-4.69	33.94								
2420	0.66	-4.54	35.19								
2430	0.96	-4.41	36.25								
2440	1.06	-4.27	37.41								
2450	0.85	-4.25	37.61								
2460	0.51	-4.23	37.77								
2470	-0.13	-4.27	37.43								
2480	-0.17	-4.31	37.11								
2490	0.32	-4.37	36.57								
2500	0.73	-4.38	36.45								

# III Antenna passive gain efficie ncy:

main antenna

Freq	Effi	Gain	Effi	Freo	Effi	Gain	Effi
(MHz)	(dB)	(dBi)	(%)	(MHz)	(dB)	(dBi)	(%)
700	-4. 95	-1.06	31. 97	1940	-2.06	1.32	62. 28
710	-4. 57	-1. 25	34. 88	1960	-2. 13	1. 43	61.3
720	-4. 55	-1.01	35. 05	1980	-2. 1	1. 74	61.67
730	-4. 53	-1.43	35. 23	2000	-2. 25	1.61	59. 52
740	-4. 13	-1.62	38. 65	2020	-2.64	1. 26	54. 45
750	-3. 78	-1.10	41. 92	2040	-2. 49	2. 03	56. 34
760	-3. 55	-0.49	44. 15	2060	-2.48	2. 22	56. 47
770	-3.62	-0.41	43. 42	2080	-2. 75	1.81	53. 09
780	-3. 76	-0. 50	42.11	2100	-2. 92	1. 6	51.06
790	-4. 08	-1.41	39. 13	2120	-3.01	1.53	50. 05
800	-3. 89	0. 27	40, 82	2140	-3.16	1.47	48. 35
810	-3.41	0.68	45, 57	2160	-3. 2	1. 57	47.86
820	-3. 34	0.73	46, 32	2180	-3. 3	1. 6	46, 81
830	-3. 16	0. 89	48, 26	2200	-3.48	1. 34	44. 85
840	-3. 27	0. 73	47. 06	2220	-3, 5	1. 34	44. 65
850	-3. 21	0. 63	47, 79	2240	-3, 63	1.11	43, 36
860	-3. 53	0. 32	44. 39	2260	-3. 66	1. 21	43. 03
870	-3. 47	0. 23	44. 79	2280	-3. 67	1. 42	42. 94
880	-3. 74	-0. 1	42, 28	2300	-3. 7	1. 48	42, 63
890	-4. 09	-0. 53	38. 98	2320	-3.84	1. 43	41. 28
900	-3. 37	-0.54	45. 99	2340	-3, 79	1. 55	41. 75
910	-3	-0.21	50, 12	2360	-3, 89	1. 47	40, 83
920	-3.06	-0.41	49. 44	2380	-4. 28	1. 06	37. 32
930	-3. 13	-0. 7	48. 68	2400	-4. 52	0. 56	35, 31
940	-3. 4.3	-0.96	45, 44	2420	-4. 72	-0.01	33, 71
950	-4.01	-1.32	39. 69	2440	-4. 85	-0. 64	32. 74
960	-4. 73	-1. 99	33. 64	2460	-4. 7	-0. 95	33, 86
970	-5. 46	-2.84	28. 47	2480	-4. 34	-0.91	36, 77
980	-6.4	-3.71	22. 9	2500	-4. 15	-0. 79	38. 48
1680	-1. 67	2.71	68.06	2520	-4. 15	-0. 6	38. 45
1.700	-1.89	2.06	64. 65	2540	-4. 05	-0. 22	39. 36
1.720	-2. 13	1. 43	61. 28	2560	-4. 18	0. 31	38. 16
1740	-1. 96	1. 49	63. 69	2580	-4. 1	0. 85	38. 89
1.760	-2	1. 47	63. 08	2600	-3. 92	1. 39	40. 6
1780	-2. 1	1. 47	61. 7	2620	-3. 82	1. 72	41. 47
1800	-2. 08	1. 26	61.87	2640	-4. 06	1. 33	39. 29
1820	-2.11	1. 21	61. 5	2660	-4. 08	1. 48	39. 1
1840	-2. 34	1. 51	58. 31	2680	-4. 17	1. 69	38. 29
1860	-2. 64	1. 75	54. 47	2700	-4. 18	1. 64	38. 19
1880	-3. 03	1. 31	49. 79	2720	-4. 17	1. 69	38. 3
1900	-2.73	1.44	53. 37	2740	-4. 16	1. 51	38. 37
1920	<del>2</del> _4 _	1_38	<u> 57. 58</u> l	2750		1_46	<u>3869</u>

### VI Antenna test data

Band		自由空间测	试						
2G									
	Channel	1	38	124	LTE	Channel	18650	18900	19150
	TRP	30. 82	30. 33	28. 51		TRP	20.01	19.65	19.12
GSM900	EIRP	35. 59	35	33. 13	B2	EIRP	24. 56	24. 28	23.83
	TIS	-101.09	-101.32	-100.53		TIS	-96. 24	-96. 23	-96.11
	Channel	512	698	885		Channel	20000	20525	20350
	TRP	26. 62	27. 1	27. 4	B4	TRP	19. 2	19.49	19.37
DC \$1800	EIRP	30.34	30. 09	30. 96		EIRP	22.66	22. 92	22. 26
	TIS	-104.45	-105.62	-105.09		TIS	-96. 53	-97.54	-95.74
	Channel	128	190	251		Channel	20450	20525	20600
	TRP	30. 73	30. 62	30. 53		TRP	21. 11	20. 58	20.36
G SM850	EIRP	35. 62	35. 56	35. 53	B5	EIRP	26. 27	25.65	25. 48
	TIS	-105. 23	-105.65	-104.38		TIS	-97.66	-94. 33	-93.79
	Channel	512	660	810		Channel	20800	21100	21400
	TRP	26. 96	27. 31	26. 93		TRP	22. 33	20. 99	20. 02
PC \$1900	EIRP	31.88	32. 07	31. 69	B7	EIRP	26. 07	24. 62	23. 5
	TIS	-105. 26	-106.02	-107.57		TIS	-93.86	-96.05	-94.87
3G	Channel	9262	9400	9538		Channel	23060	23095	23130
	TRP	17. 5	17.8	18. 13		TRP	16.82	16. 95	17.03
B2	EIRP	22. 39	22. 57	22. 82	B12	EIRP	20. 69	20. 89	21. 5
	TIS	-105.82	-106.11	-105.74		TIS	-95. 51	-95.45	-95.39
	Channel	1312	1412	1513		Channel	23780	23790	23800
	TRP	17.84	17. 26	17. 2	B17	TRP	17. 17	17.04	17. 56
B4	EIRP	21.38	21. 36	21. 21		EIRP	21.82	21.47	21. 96
	TIS	-105.51	-106.15	-105.13		TIS	-99. 11	-98. 6	-98.37
3G	Channel	4132	4185	4233		Channel	132022	132322	132622
	TRP	20. 32	20, 13	20, 12		TRP	20. 27	20. 99	20, 62
B5	EIRP	25. 38	25. 27	25. 27	B66	EIRP	23. 78	23. 96	23. 75
	TIS	-108.3	-107.51	-107. 29		TIS	-96. 39	-96. 82	-96.46
	Channel	1	7	13		Channel	133172	133297	133422
WIFIB	TRP	12. 4	12. 56	12.63		TRP	16. 79	17. 53	16. 99
	TIS	-83. 24	-82. 98	-83. 01	B71	EIRP	20.84	21. 59	21.02
WIFIA	Channel	36	65	165		TIS	-91.69	-92.34	-91.42
	TRP	9. 33	9. 42	9. 71					
	TIS	70. 35	-70. 89	-70. 9					
		CN	TIS						
GPS		39. 85	-147						

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#### VII.remarks