



UMR Antenna Report

2022/08/02

DUT and Test Environment



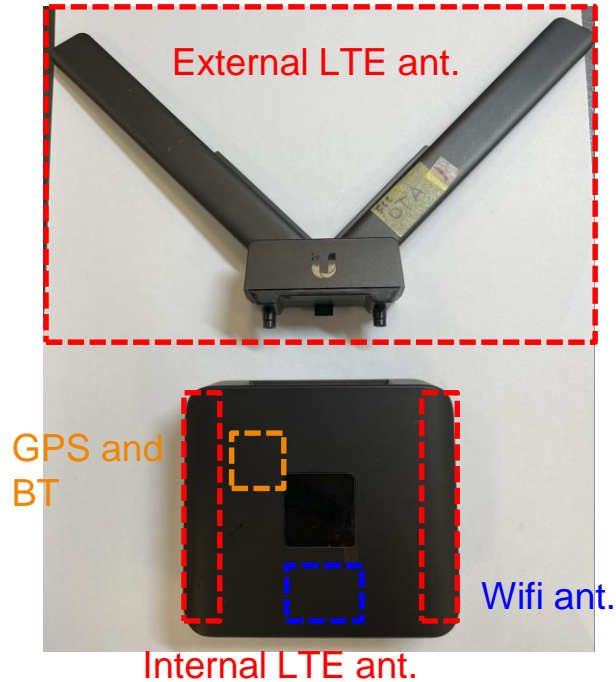
- DUT: UMR, SRT10

- Internal Antenna

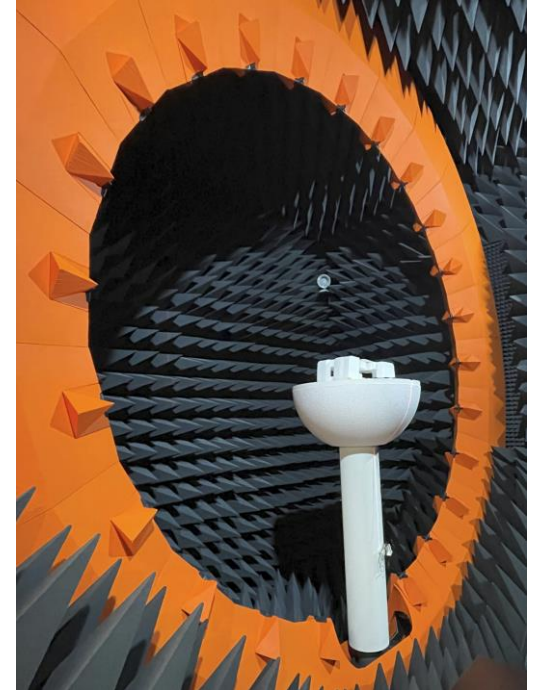
- ◆ LETx2
- ◆ Wifi
- ◆ BT
- ◆ GPS

- External Antenna

- ◆ LETx2



- Chamber: UI SATIMO



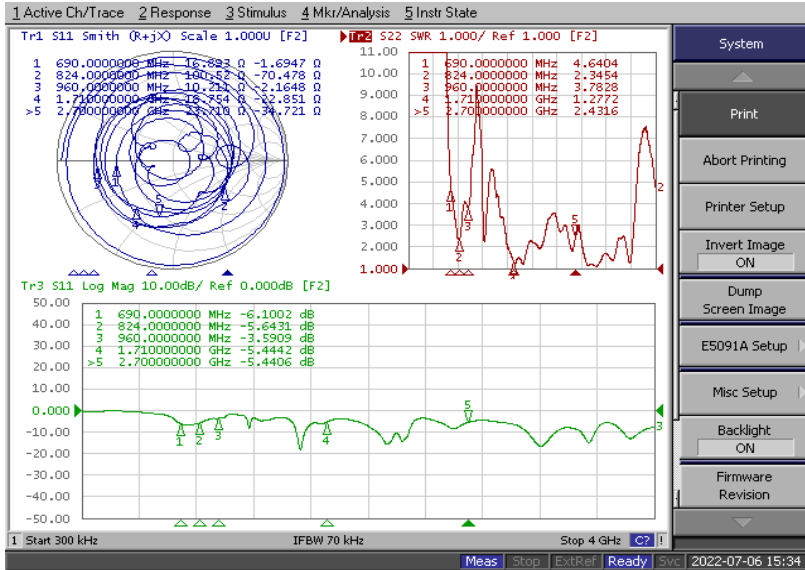
Mark Hung

- Approver: Mark Hung

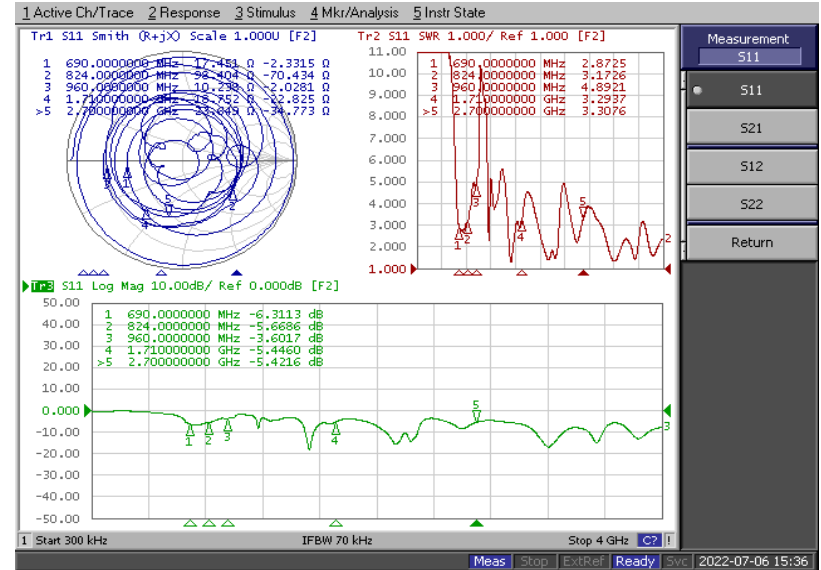
Internal LTE Antenna_S Parameters



- Main



- Aux



Internal LTE Antenna_Efficiency and Gain



Frequency (MHz)	Main Efficiency (dB)	Aux Efficiency (dB)	Main Efficiency (%)	Aux Efficiency (%)	Main Gain (dBi)	Aux Gain (dBi)
690	-4.276	-4.832	37.356	32.873	0.668	-0.209
700	-4.351	-4.792	36.718	33.174	0.796	-0.155
710	-4.02	-4.757	39.628	33.44	1.051	-1.81
720	-3.962	-4.712	40.163	33.792	0.96	-2.055
730	-4.152	-4.727	38.439	33.677	-0.394	-1.905
740	-3.949	-4.729	40.279	33.656	-0.269	-1.808
750	-4.008	-4.768	39.735	33.356	0.983	-0.199
760	-4.015	-5.005	39.672	31.589	1.13	-0.331
770	-4.226	-5.167	37.792	30.427	0.922	-1.912
780	-4.367	-5.306	36.589	29.473	0.673	-2.312
790	-4.282	-5.49	37.31	28.246	0.714	-1.242
800	-4.271	-5.417	37.406	28.727	0.746	-2.188
810	-4.188	-5.538	38.123	27.938	0.751	-2.486
820	-4.127	-5.733	38.667	26.715	-0.719	-2.536
830	-4.115	-5.893	38.767	25.746	-0.81	-2.635
840	-4.122	-6.263	38.71	23.641	-0.8	-2.003
850	-4.075	-6.467	39.125	22.556	0.59	-2.085
860	-4.157	-6.753	38.397	21.119	0.785	-2.307
870	-4.123	-6.961	38.696	20.133	0.784	-3.995
880	-4.046	-7.057	39.391	19.693	-0.662	-4.334
890	-4.143	-7.42	38.525	18.114	-1.118	-4.662
900	-4.186	-7.475	38.141	17.883	-1.016	-4.682
910	-4.334	-7.615	36.861	17.319	0.222	-3.273
920	-4.496	-7.931	35.514	16.101	0.238	-3.476
930	-4.769	-8.146	33.348	15.325	0.003	-4.27
940	-5.006	-8.167	31.582	15.252	-0.394	-4.418
950	-5.067	-8.002	31.139	15.841	-1.774	-5.151
960	-5.17	-7.983	30.412	15.91	-0.395	-5.037
970	-5.125	-7.832	30.727	16.474	-0.107	-3.686
980	-5.135	-7.742	30.653	16.821	0.036	-3.469

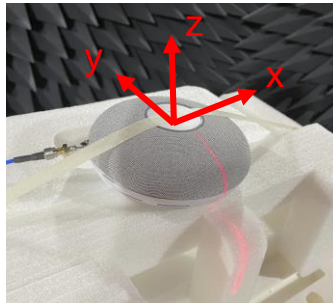
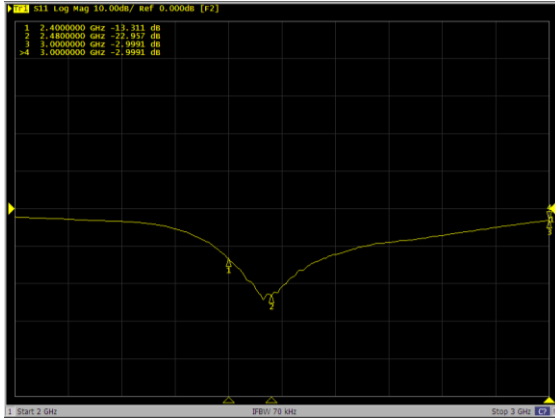
Frequency (MHz)	Main Efficiency (dB)	Aux Efficiency (dB)	Main Efficiency (%)	Aux Efficiency (%)	Main Gain (dBi)	Aux Gain (dBi)
1690	-4.682	-6.038	34.024	24.898	1.493	-1.749
1710	-4.858	-6.415	32.676	22.828	1.088	-2.141
1730	-4.632	-6.375	34.416	23.039	0.612	-1.933
1750	-4.399	-6.171	36.316	24.148	0.553	-1.553
1770	-4.396	-5.981	36.345	25.226	1.107	-1.479
1790	-4.704	-5.948	33.852	25.424	0.881	-1.74
1810	-4.981	-5.818	31.763	26.191	0.625	-1.844
1830	-5.197	-5.678	30.218	27.054	0.609	-1.963
1850	-5.389	-5.656	28.915	27.192	0.229	-1.927
1870	-5.38	-5.35	28.973	29.174	0.326	-1.57
1890	-5.451	-5.305	28.504	29.48	0.198	-1.735
1910	-5.439	-5.065	28.58	31.151	0.063	-1.563
1930	-5.356	-4.938	29.135	32.08	-0.314	-1.363
1950	-5.231	-4.578	29.988	34.851	-0.799	-0.874
1970	-5.06	-4.404	31.187	36.272	-0.932	-0.761
1990	-4.834	-4.268	32.858	37.43	-0.803	-0.649
2010	-4.776	-4.285	33.3	37.281	-1.009	-0.759
2030	-4.648	-4.352	34.293	36.715	-1.23	-0.198
2050	-4.479	-4.452	35.654	35.879	-1.64	-0.405
2070	-4.356	-4.594	36.673	34.723	-1.751	-1.092
2090	-4.407	-4.96	36.248	31.915	-1.539	-1.624
2110	-4.79	-5.324	33.19	29.35	-2.062	-1.986
2130	-4.815	-5.501	32.995	28.176	-1.607	-2.359
2150	-4.709	-5.29	33.814	29.582	-1.262	-2.517
2170	-4.736	-5.034	33.606	31.377	-0.837	-1.668
2190	-4.756	-4.695	33.453	33.925	-0.449	-0.483

* Antenna gain data were measured by UI chamber

Antenna Performance



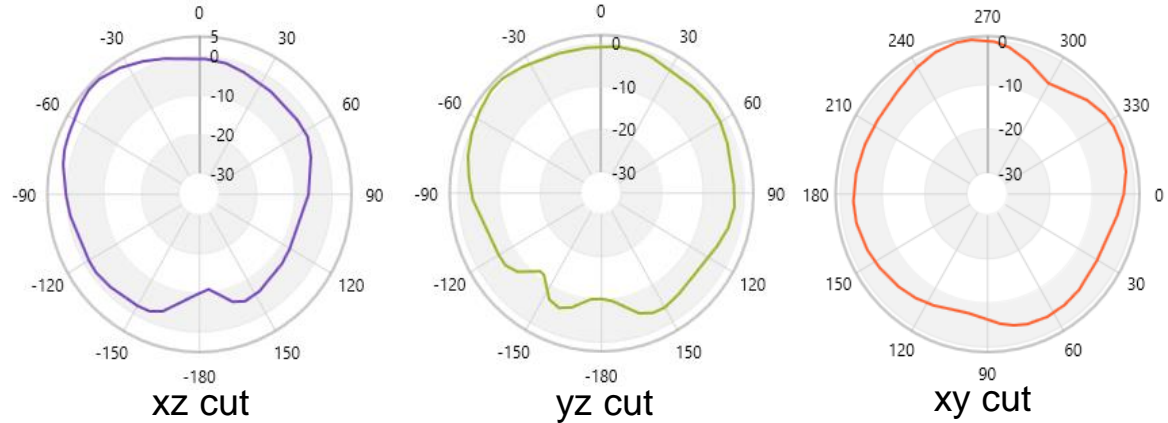
- Return loss



- Gain and Efficiency

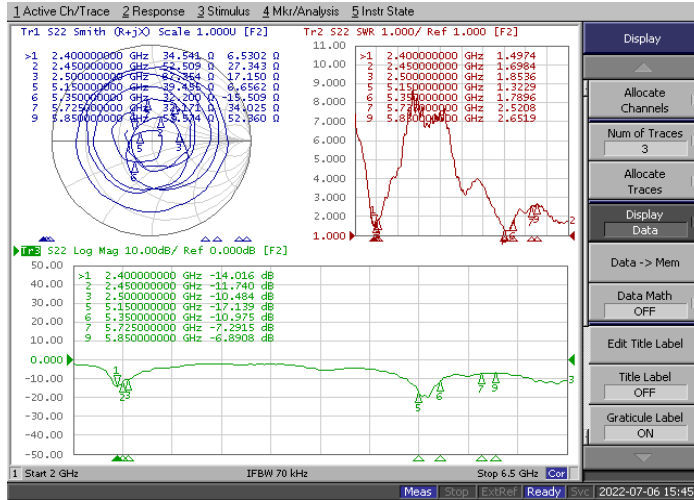
Frequency	Gain (dBi)	Efficiency (%)
2400 MHz	4.66	58
2420 MHz	4.78	59
2440 MHz	4.96	62
2450 MHz	5.04	62
2480 MHz	5.11	62
2500 MHz	5.32	64

- Radiation pattern



* Antenna gain data were measured by UI chamber

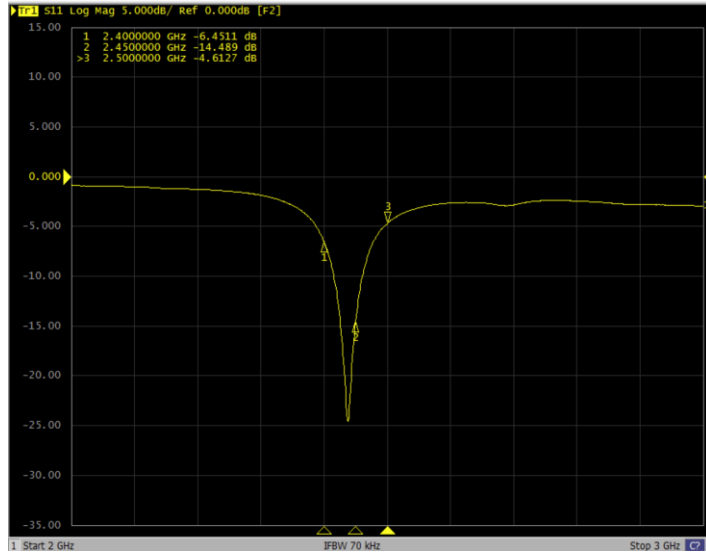
Internal wifi Antenna



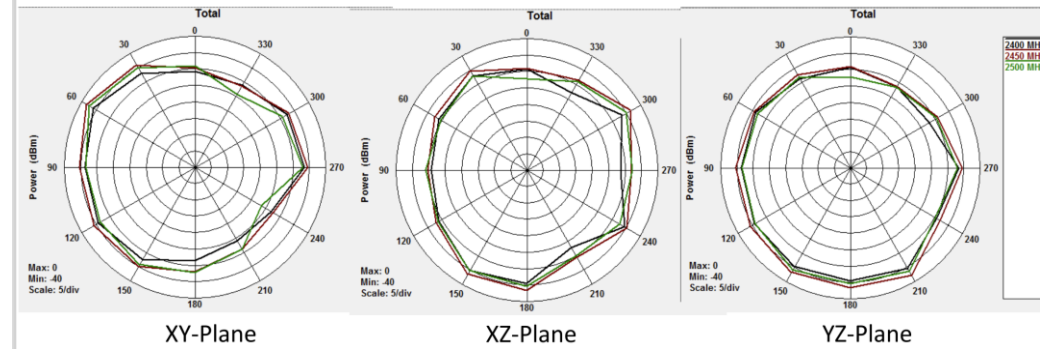
Frequency (MHz)	Efficiency (dB)	Efficiency (%)	Gain (dBi)
2400	-5.2	30.0	2.6
2410	-5.1	30.7	2.7
2420	-5.1	30.7	2.7
2430	-5.1	30.6	2.7
2440	-5.2	30.0	2.7
2450	-5.2	30.0	2.7
2460	-5.1	30.6	2.7
2470	-5.0	31.4	2.6
2480	-5.0	31.7	2.5
2490	-5.0	31.3	2.4
2500	-5.1	30.7	2.3

* Antenna gain data were measured by UI chamber

Internal BT Antenna

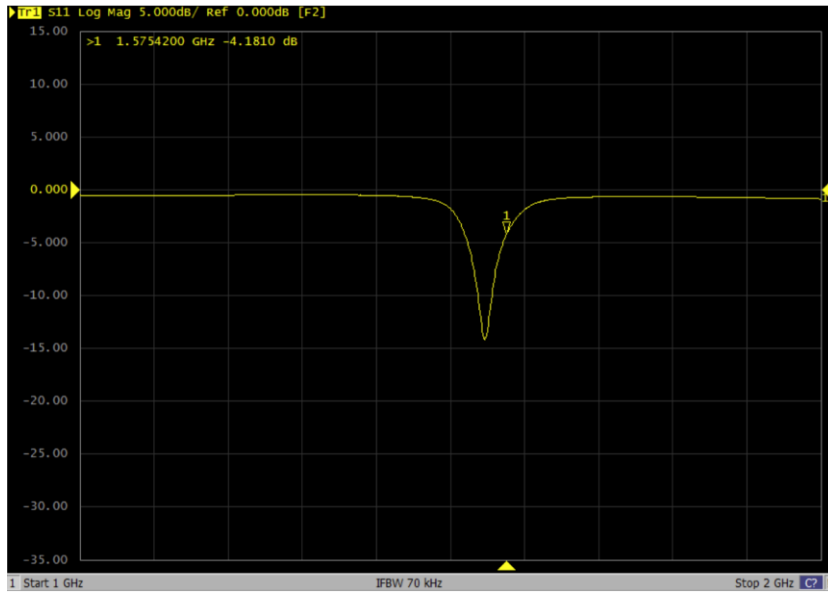


Frequency (MHz)	Efficiency (%)	Gain (dBi)
2400	16	-3.43
2450	24	-1.08
2500	18	-2.61

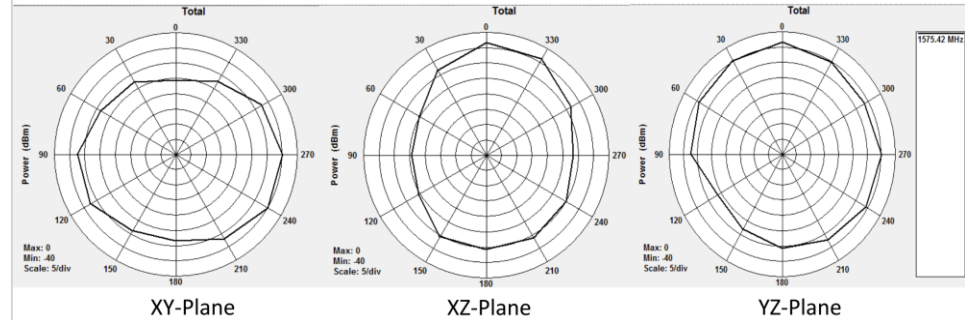


* Antenna gain data were measured by UI chamber

Internal GPS Antenna

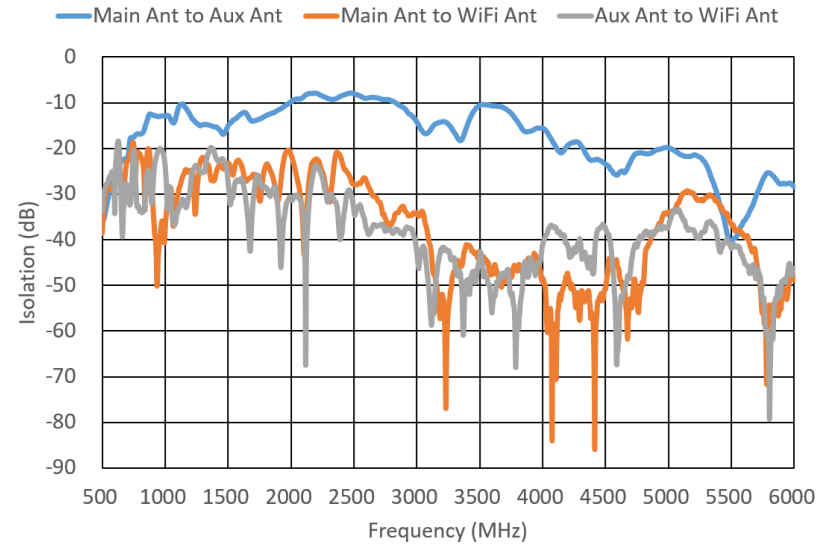
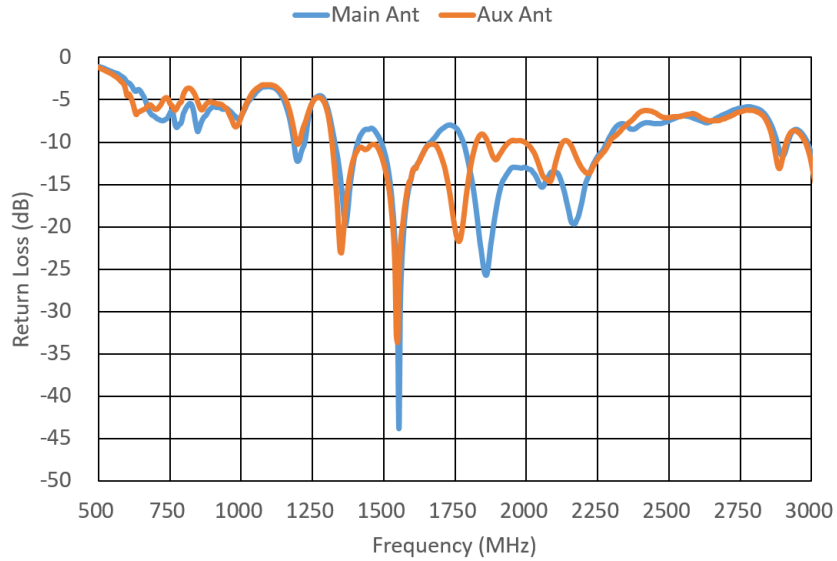


Frequency (MHz)	Efficiency (%)	Gain (dBi)
1575.42	10	-5.33



* Antenna gain data were measured by UI chamber

External LTE Antenna_S Parameters



External LTE Antenna_Efficiency and Gain



Frequency (MHz)	Main	Aux	Main	Aux
	Efficiency	Efficiency	Gain (dBi)	Gain (dBi)
690	55%	49%	1.92	1.22
700	52%	41%	0.45	-0.39
710	52%	42%	0.72	-0.30
720	46%	38%	0.35	-0.32
730	45%	38%	0.90	-0.86
740	44%	39%	1.31	0.23
750	44%	39%	1.48	-0.05
760	40%	37%	0.94	-0.58
770	36%	35%	0.34	-0.90
780	32%	33%	-0.58	-1.06
790	23%	29%	-1.72	-1.38
800	17%	27%	-2.49	-0.66
810	18%	28%	-1.38	-0.56
820	25%	30%	0.21	-0.95
830	31%	30%	0.84	-0.90
840	30%	26%	0.82	-1.85
850	29%	25%	0.37	-1.54
860	31%	25%	0.80	-2.03
870	30%	24%	0.78	-2.66
880	31%	24%	0.26	-2.60
890	33%	25%	0.03	-2.29
900	34%	25%	0.41	-1.90
910	35%	24%	0.55	-1.36
920	36%	23%	1.13	-2.54
930	38%	23%	0.73	-2.90
940	37%	20%	0.11	-3.37
950	36%	19%	0.20	-3.18
960	34%	17%	0.35	-4.15
970	32%	15%	-0.18	-4.32
980	32%	14%	-0.49	-4.01

Frequency (MHz)	Efficiency	Efficiency	Gain (dBi)	Gain (dBi)
1690	32%	15%	0.19	-3.00
1710	31%	18%	0.06	-2.11
1730	28%	19%	-0.56	-2.62
1750	27%	20%	-0.81	-2.74
1770	25%	22%	-0.78	-2.27
1790	25%	26%	0.39	-1.50
1810	25%	29%	1.18	-0.94
1830	26%	33%	1.07	-0.48
1850	23%	37%	0.30	-0.29
1870	20%	40%	-0.52	0.46
1890	17%	43%	-1.40	0.91
1910	16%	44%	-1.66	0.87
1930	17%	44%	-1.22	0.81
1950	19%	42%	-0.15	0.60
1970	21%	42%	-1.03	0.56
1990	25%	40%	-0.16	0.38
2010	29%	35%	0.07	-0.68
2030	33%	32%	0.84	-1.28
2050	32%	27%	0.47	-2.51
2070	33%	25%	0.18	-3.12
2090	32%	25%	-0.16	-3.23
2110	29%	24%	-0.32	-3.27
2130	29%	28%	0.30	-2.53
2150	28%	31%	-0.29	-1.96
2170	26%	31%	-1.56	-0.70
2190	26%	33%	-1.72	0.02

* Antenna gain data were measured by UI chamber



UI.COM