

1. Project Overview

2. Antenna Evaluation Performance



Project Overview

- Project Name: QDM083-EA
- Device Dimensions: 142mm*110mm*36mm
- Mainboard Dimensions: 125mm*70mm*1.6mm
- Antenna Number: 4
- Antenna Network Type & Frequency Band:
 - LTE/NTN*1: 698-960MHz & 1710-2690MHz / S-band 1518-1675MHz & L-band 1980-2200MHz
 - SUB-GHz*1: 868-924MHz
 - GNSS*1: 1575.42MHz
 - WIFI/BLE*1: 2400-2500MHz

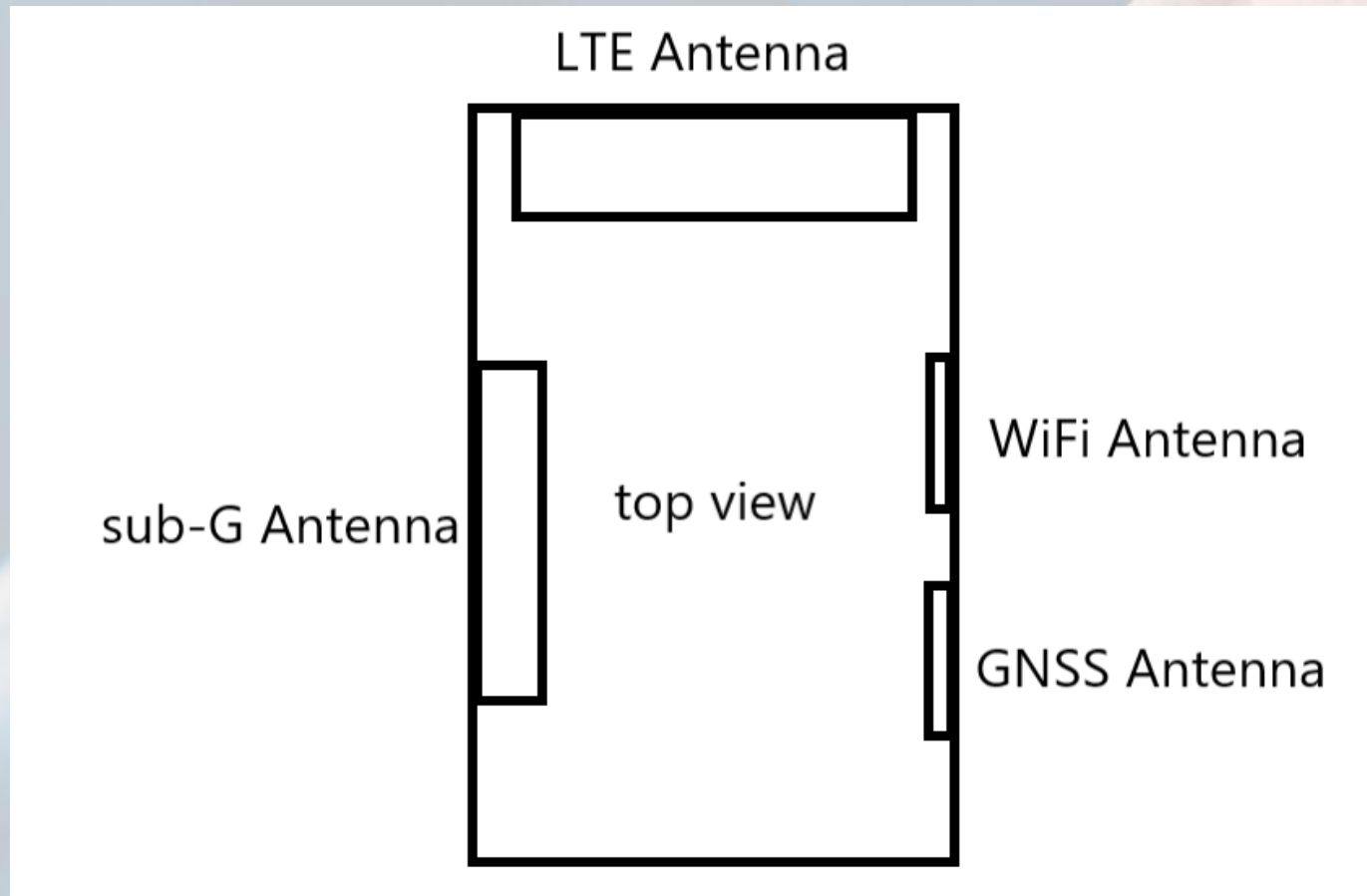


1. Project Overview

2. Antenna Evaluation Performance

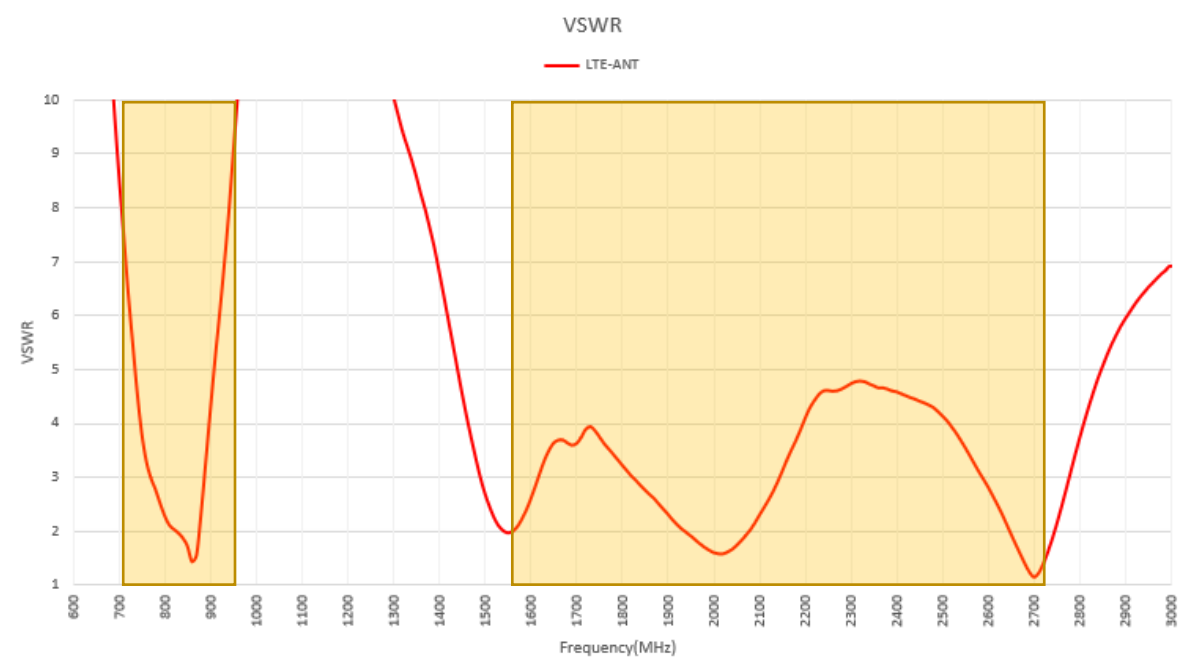


Antenna Placement

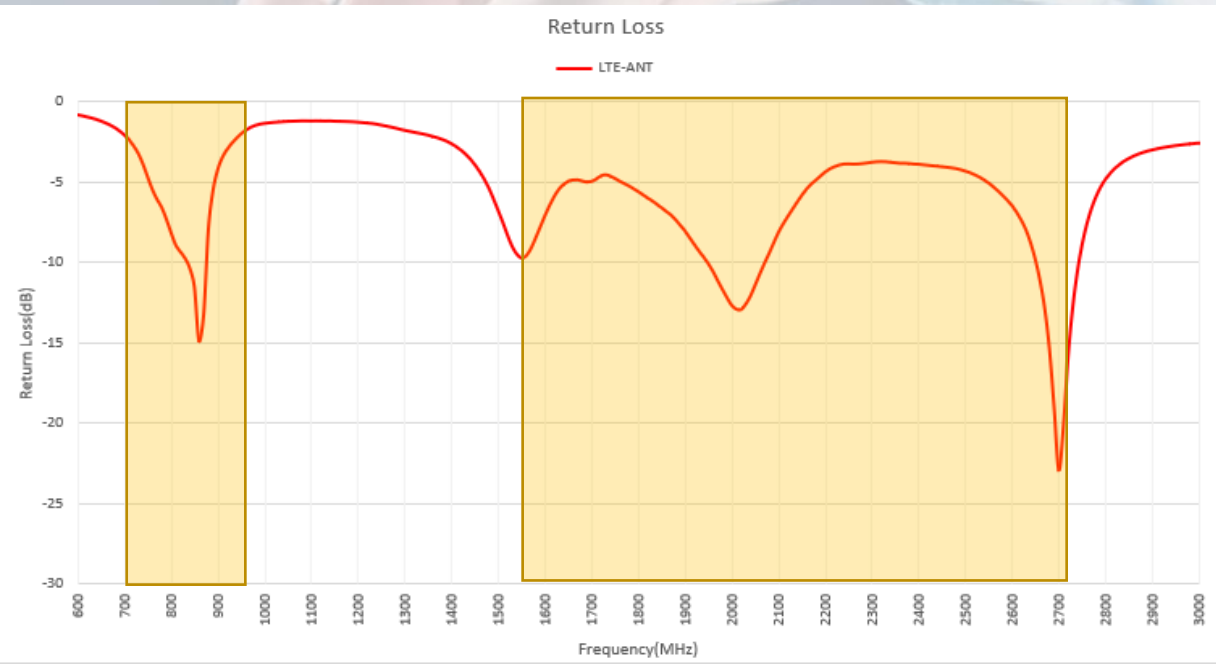


Antenna Performance--LTE Antenna

VSWR



S11



Antenna Performance--LTE Antenna

Efficiency & Gain

Frequency (MHz)	Efficiency (dB)	Gain (dBi)	Efficiency (%)
700	-7.44	-4.03	18.03
710	-6.85	-3.24	20.66
720	-6.21	-2.31	23.91
730	-5.44	-1.56	28.56
740	-4.9	-0.79	32.35
750	-4.43	-0.2	36.1
760	-4.06	0.21	39.28
770	-3.65	0.56	43.18
780	-3.43	0.96	45.41
790	-3.18	1.51	48.03
800	-3.01	1.68	50
810	-2.96	1.74	50.54
820	-2.94	1.54	50.87
830	-2.91	1.36	51.11
840	-3.02	1.12	49.93
850	-3.07	1.12	49.34
860	-3.13	1.09	48.62
870	-3.47	0.75	45
880	-3.91	0.45	40.65
890	-4.48	0.08	35.62
900	-5.28	-0.63	29.65
910	-6.24	-1.62	23.79
920	-7.31	-2.46	18.59
930	-8.53	-3.55	14.04
940	-9.6	-4.53	10.97
950	-10.59	-5.37	8.72
960	-11.48	-6.31	7.1

Frequency (MHz)	Efficiency (dB)	Gain (dBi)	Efficiency (%)
1440	-6.7	-0.33	21.39
1450	-6.28	0.13	23.55
1460	-5.81	0.56	26.24
1470	-5.38	0.85	28.97
1480	-4.97	1.04	31.86
1490	-4.56	1.18	35.01
1500	-4.07	1.48	39.15
1510	-3.77	1.63	41.97
1520	-3.49	1.76	44.77
1530	-3.18	2.06	48.09
1540	-2.92	2.34	51.05
1550	-2.83	2.64	52.18
1560	-2.78	2.9	52.76
1570	-2.78	3.02	52.71
1580	-2.93	3.05	50.99
1590	-3.05	3.05	49.6
1600	-3.12	3	48.77
1610	-3.3	2.76	46.79
1620	-3.4	2.74	45.7
1630	-3.56	2.38	44.08
1640	-3.74	1.99	42.31
1650	-3.89	1.82	40.8
1660	-3.9	1.84	40.76
1670	-3.88	1.92	40.93
1680	-3.97	1.95	40.05
1690	-4.09	2.05	38.96
1700	-4.4	1.71	36.28

Frequency (MHz)	Efficiency (dB)	Gain (dBi)	Efficiency (%)
1710	-4.72	1.29	33.73
1720	-4.83	1.1	32.88
1730	-4.77	0.97	33.31
1740	-4.75	0.9	33.53
1750	-4.67	0.96	34.09
1760	-4.67	1.12	34.12
1770	-4.63	1.28	34.4
1780	-4.65	1.21	34.26
1790	-4.56	1.36	34.97
1800	-4.53	1.57	35.24
1810	-4.57	1.52	34.93
1820	-4.51	1.59	35.41
1830	-4.61	1.62	34.63
1840	-4.66	1.58	34.2
1850	-4.68	1.5	34.02
1860	-4.66	1.58	34.2
1870	-4.69	1.42	33.93
1880	-4.68	1.23	34.07
1890	-4.58	1.23	34.79
1900	-4.49	1.2	35.56
1910	-4.3	1.25	37.12
1920	-4.21	1.34	37.91
1930	-4.05	1.56	39.32
1940	-3.95	1.64	40.26
1950	-3.77	1.91	42
1960	-3.54	2.21	44.31
1970	-3.36	2.34	46.13

Frequency (MHz)	Efficiency (dB)	Gain (dBi)	Efficiency (%)
1980	-3.27	2.42	47.13
1990	-3.14	2.5	48.5
2000	-2.93	2.54	50.93
2010	-2.79	2.51	52.59
2020	-2.63	2.46	54.53
2030	-2.49	2.25	56.35
2040	-2.42	2.07	57.31
2050	-2.44	2.01	57.01
2060	-2.48	2.12	56.51
2070	-2.49	2.1	56.3
2080	-2.56	2.17	55.47
2090	-2.64	2.17	54.4
2100	-2.64	2.23	54.46
2110	-2.64	2.27	54.4
2120	-2.59	2.48	55.14
2130	-2.5	2.77	56.27
2140	-2.48	2.94	56.52
2150	-2.48	3.13	56.52
2160	-2.61	2.98	54.78
2170	-2.72	2.92	53.49
2180	-2.93	2.74	50.88
2190	-3.12	2.69	48.79
2200	-3.33	2.55	46.46
2210	-3.6	2.22	43.67
2220	-3.87	1.82	40.99
2230	-4.19	1.31	38.15
2240	-4.41	0.74	36.18

Antenna Performance--LTE Antenna

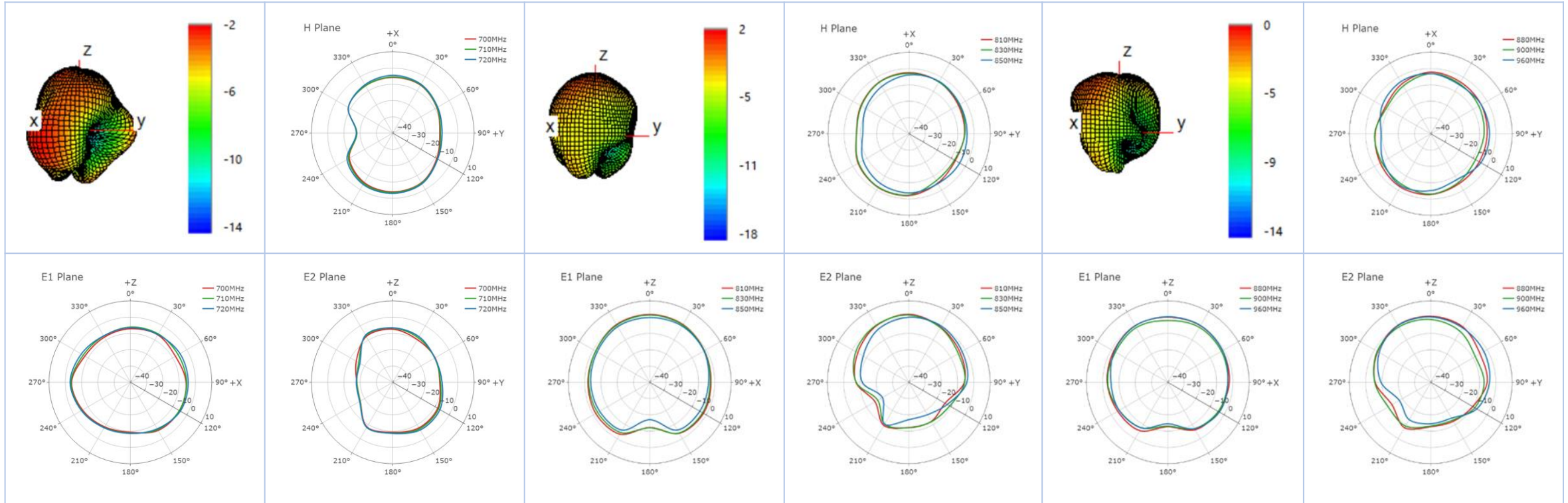
Efficiency & Gain

Frequency (MHz)	Efficiency (dB)	Gain (dBi)	Efficiency (%)
2250	-4.7	0.56	33.89
2260	-4.9	0.58	32.38
2270	-5.15	0.54	30.56
2280	-5.38	0.29	28.99
2290	-5.61	-0.01	27.47
2300	-5.86	-0.19	25.95
2310	-6.05	-0.17	24.84
2320	-6.31	-0.45	23.41
2330	-6.42	-0.49	22.83
2340	-6.6	-0.6	21.86
2350	-6.49	-0.48	22.45
2360	-6.64	-0.78	21.65
2370	-6.77	-1.01	21.02
2380	-6.9	-1.21	20.42
2390	-7.11	-1.57	19.45
2400	-7.32	-1.97	18.53
2410	-7.49	-2.38	17.83
2420	-7.47	-2.5	17.91
2430	-7.66	-2.86	17.15
2440	-7.75	-3.17	16.77
2450	-7.87	-3.45	16.32
2460	-7.98	-3.76	15.94
2470	-7.99	-3.96	15.89
2480	-7.99	-4.19	15.88
2490	-7.87	-4.34	16.33
2500	-7.84	-4.45	16.44
2510	-7.79	-4.42	16.62

Frequency (MHz)	Efficiency (dB)	Gain (dBi)	Efficiency (%)
2520	-7.79	-4.28	16.62
2530	-7.71	-4.06	16.95
2540	-7.62	-3.9	17.29
2550	-7.52	-3.66	17.7
2560	-7.36	-3.26	18.38
2570	-7.15	-3	19.27
2580	-6.97	-2.79	20.07
2590	-6.8	-2.51	20.89
2600	-6.59	-2.36	21.94
2610	-6.28	-2.08	23.58
2620	-5.92	-1.67	25.6
2630	-5.72	-1.41	26.78
2640	-5.43	-1.06	28.66
2650	-5.19	-0.69	30.25
2660	-5.09	-0.59	30.97
2670	-5.01	-0.51	31.55
2680	-4.95	-0.41	31.97
2690	-4.95	-0.45	31.98
2700	-5.09	-0.75	30.95

Antenna Performance--LTE Antenna

- Radiation Pattern



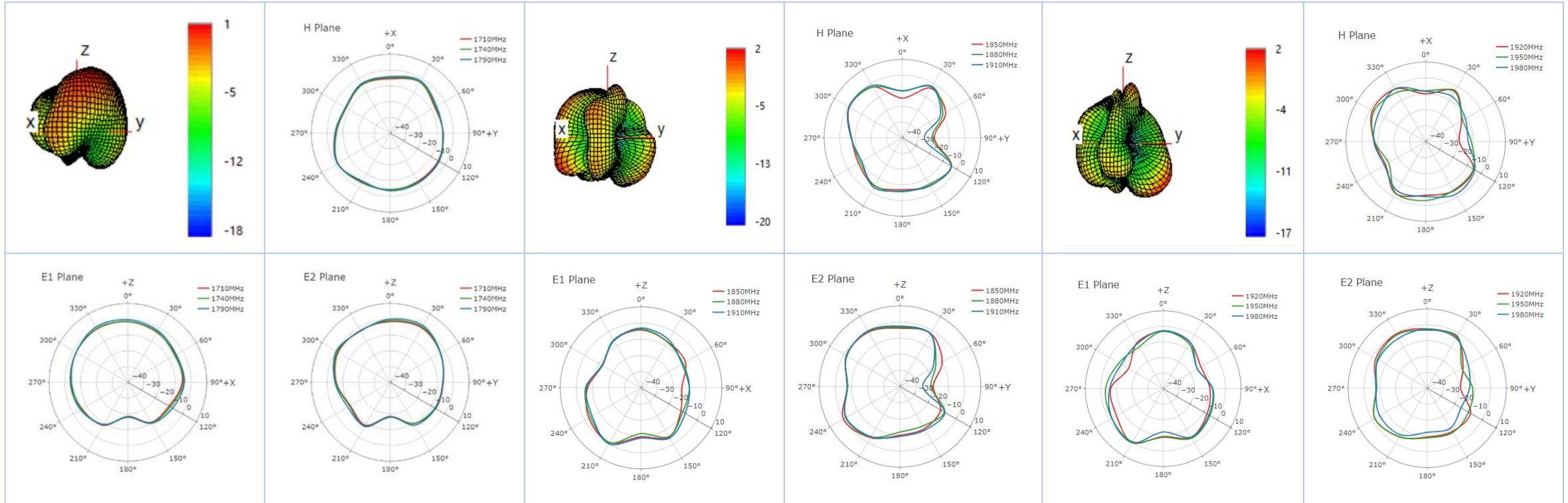
730MHz

830MHz

900MHz

Antenna Performance--LTE Antenna

- Radiation Pattern



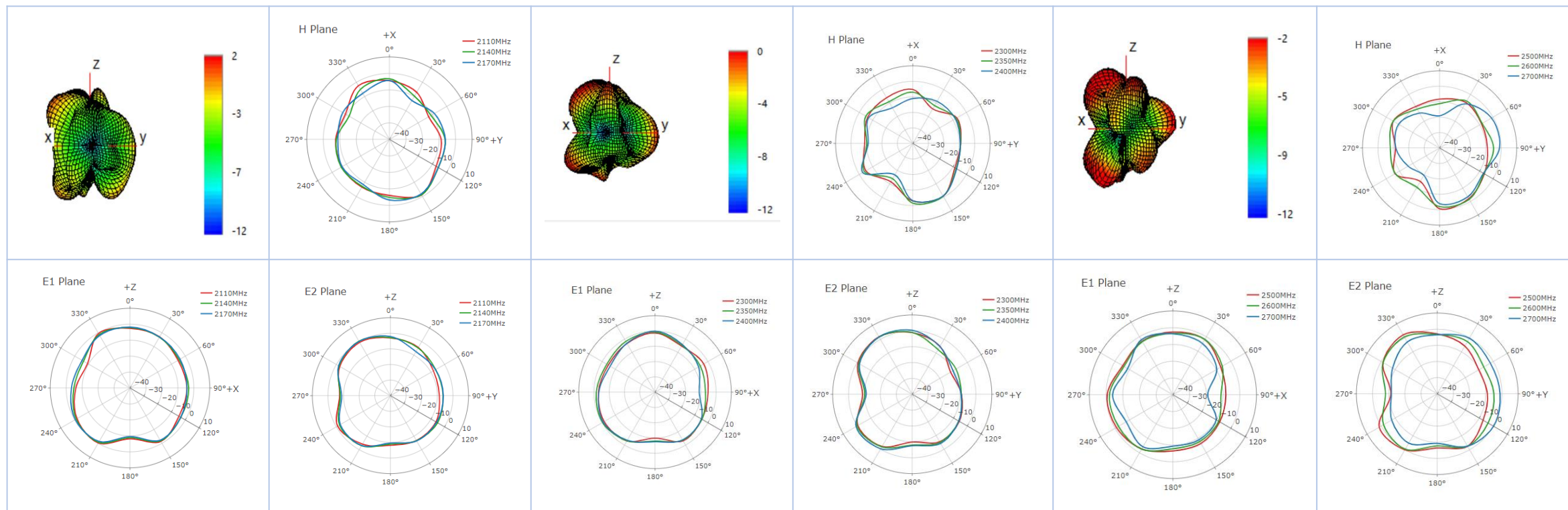
1710MHz

1850MHz

1950MHz

Antenna Performance--LTE Antenna

- Radiation Pattern



2140MHz

2350MHz

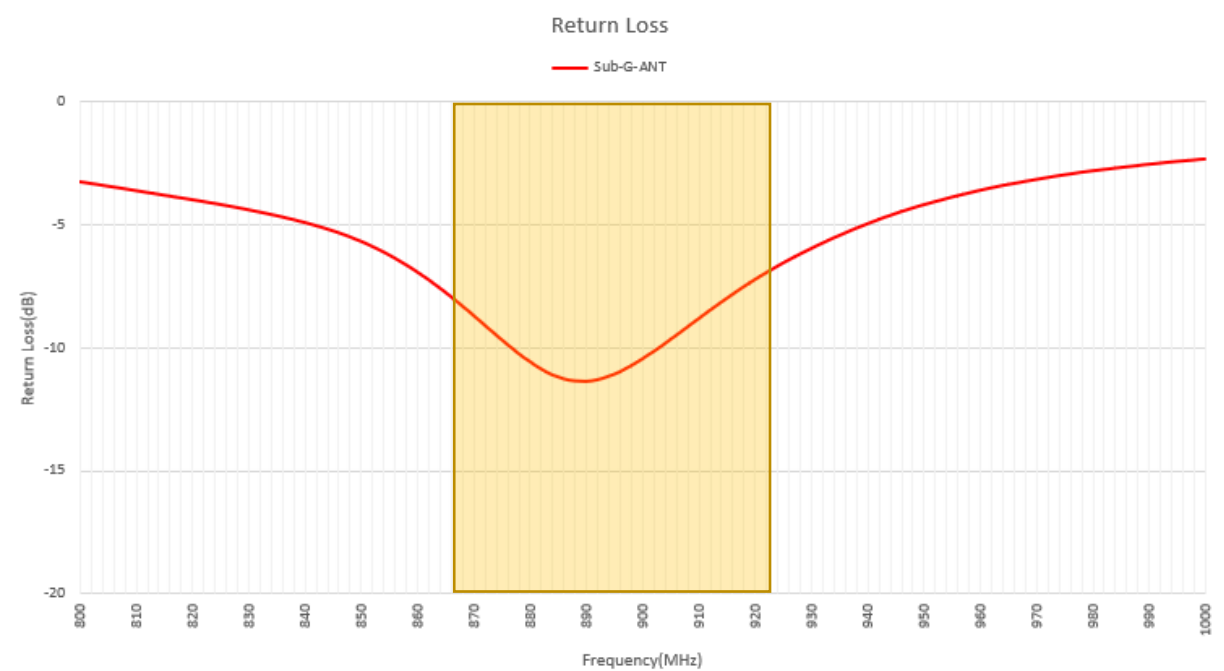
2600MHz

Antenna Performance—Sub-G Antenna

VSWR



S11



Antenna Performance—Sub-G Antenna

Efficiency & Gain

Frequency (MHz)	Efficiency (dB)	Gain (dBi)	Efficiency (%)
800	-6.53	-2.98	22.23
801	-6.38	-2.8	23.03
802	-6.36	-2.77	23.14
803	-6.33	-2.75	23.27
804	-6.32	-2.77	23.31
805	-6.33	-2.8	23.27
806	-6.33	-2.77	23.31
807	-6.31	-2.72	23.4
808	-6.29	-2.7	23.51
809	-6.25	-2.65	23.71
810	-6.21	-2.62	23.91
811	-6.18	-2.58	24.11
812	-6.15	-2.56	24.29
813	-6.12	-2.52	24.42
814	-6.1	-2.49	24.52
815	-6.08	-2.45	24.64
816	-6.08	-2.43	24.64
817	-6.08	-2.42	24.65
818	-6.1	-2.44	24.53
819	-6.13	-2.47	24.38
820	-6.16	-2.5	24.24
821	-6.17	-2.51	24.17
822	-6.18	-2.53	24.09
823	-6.16	-2.48	24.23
824	-6.14	-2.46	24.31
825	-6.13	-2.46	24.37
826	-6.1	-2.43	24.54

Frequency (MHz)	Efficiency (dB)	Gain (dBi)	Efficiency (%)
827	-6.08	-2.43	24.64
828	-6.07	-2.44	24.72
829	-6.04	-2.41	24.88
830	-6.02	-2.41	25
831	-6.01	-2.41	25.08
832	-6	-2.42	25.12
833	-6	-2.42	25.1
834	-6.01	-2.43	25.07
835	-6.02	-2.45	25.01
836	-6.01	-2.45	25.08
837	-5.98	-2.49	25.25
838	-5.93	-2.45	25.55
839	-5.89	-2.42	25.78
840	-5.84	-2.38	26.07
841	-5.79	-2.34	26.36
842	-5.74	-2.3	26.65
843	-5.69	-2.25	26.96
844	-5.65	-2.21	27.23
845	-5.6	-2.17	27.51
846	-5.56	-2.12	27.77
847	-5.51	-2	28.12
848	-5.49	-1.92	28.28
849	-5.44	-1.81	28.55
850	-5.39	-1.71	28.89
851	-5.33	-1.6	29.34
852	-5.24	-1.46	29.93
853	-5.14	-1.3	30.62

Frequency (MHz)	Efficiency (dB)	Gain (dBi)	Efficiency (%)
854	-5.06	-1.17	31.18
855	-4.97	-1.04	31.82
856	-4.89	-0.92	32.46
857	-4.81	-0.8	33.02
858	-4.75	-0.7	33.53
859	-4.67	-0.63	34.08
860	-4.62	-0.57	34.48
861	-4.58	-0.51	34.83
862	-4.54	-0.44	35.16
863	-4.51	-0.37	35.4
864	-4.49	-0.31	35.6
865	-4.43	-0.22	36.04
866	-4.38	-0.13	36.48
867	-4.3	-0.01	37.19
868	-4.23	0.1	37.76
869	-4.17	0.21	38.3
870	-4.12	0.29	38.72
871	-4.07	0.36	39.14
872	-4.03	0.41	39.58
873	-3.99	0.44	39.91
874	-3.94	0.43	40.32
875	-3.92	0.41	40.59
876	-3.89	0.4	40.82
877	-3.87	0.41	41.03
878	-3.86	0.41	41.07
879	-3.85	0.44	41.19
880	-3.83	0.47	41.37

Frequency (MHz)	Efficiency (dB)	Gain (dBi)	Efficiency (%)
881	-3.81	0.51	41.61
882	-3.76	0.56	42.07
883	-3.73	0.6	42.34
884	-3.72	0.64	42.49
885	-3.72	0.65	42.5
886	-3.7	0.67	42.68
887	-3.69	0.66	42.76
888	-3.7	0.62	42.69
889	-3.7	0.57	42.68
890	-3.69	0.52	42.72
891	-3.7	0.47	42.61
892	-3.71	0.44	42.6
893	-3.72	0.42	42.49
894	-3.73	0.41	42.41
895	-3.73	0.4	42.4
896	-3.71	0.41	42.57
897	-3.71	0.4	42.59
898	-3.71	0.4	42.59
899	-3.73	0.37	42.39
900	-3.75	0.34	42.13
901	-3.76	0.31	42.04
902	-3.79	0.27	41.81
903	-3.83	0.2	41.42
904	-3.86	0.13	41.13
905	-3.89	0.11	40.88
906	-3.91	0.1	40.63
907	-3.94	0.08	40.38

Antenna Performance—Sub-G Antenna

Efficiency & Gain

Frequency (MHz)	Efficiency (dB)	Gain (dBi)	Efficiency (%)
908	-3.97	0.05	40.08
909	-3.99	0.02	39.94
910	-4	0.01	39.82
911	-4	0	39.8
912	-4	0.01	39.77
913	-4.01	0.02	39.71
914	-4.04	0.01	39.45
915	-4.07	-0.03	39.16
916	-4.11	-0.06	38.86
917	-4.15	-0.1	38.44
918	-4.19	-0.14	38.11
919	-4.24	-0.17	37.7
920	-4.27	-0.2	37.37
921	-4.31	-0.22	37.05
922	-4.35	-0.23	36.73
923	-4.4	-0.27	36.29
924	-4.46	-0.32	35.81
925	-4.51	-0.37	35.42
926	-4.55	-0.41	35.07
927	-4.59	-0.43	34.77
928	-4.64	-0.48	34.38
929	-4.68	-0.52	34.04
930	-4.73	-0.59	33.66
931	-4.76	-0.64	33.4
932	-4.81	-0.71	33
933	-4.84	-0.75	32.79
934	-4.89	-0.8	32.45

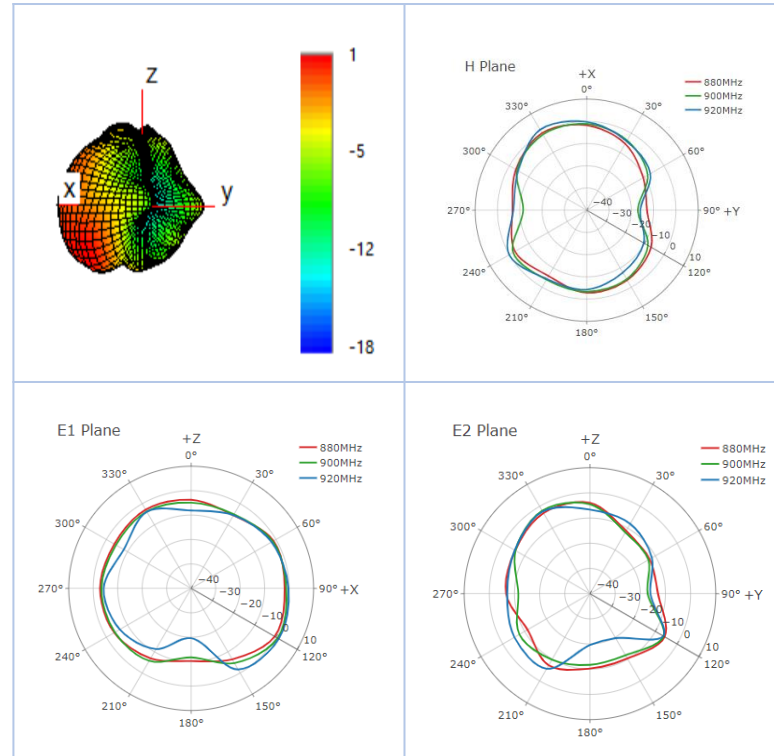
Frequency (MHz)	Efficiency (dB)	Gain (dBi)	Efficiency (%)
935	-4.92	-0.83	32.21
936	-4.95	-0.85	31.96
937	-4.99	-0.88	31.72
938	-5.03	-0.9	31.41
939	-5.08	-0.94	31.07
940	-5.14	-0.99	30.63
941	-5.19	-1.03	30.26
942	-5.25	-1.07	29.84
943	-5.31	-1.12	29.46
944	-5.38	-1.2	28.97
945	-5.42	-1.26	28.69
946	-5.48	-1.33	28.34
947	-5.5	-1.38	28.2
948	-5.52	-1.42	28.03
949	-5.55	-1.46	27.88
950	-5.57	-1.49	27.75
951	-5.6	-1.53	27.54
952	-5.63	-1.56	27.36
953	-5.67	-1.59	27.13
954	-5.72	-1.65	26.77
955	-5.78	-1.71	26.42
956	-5.84	-1.76	26.05
957	-5.92	-1.83	25.59
958	-5.98	-1.91	25.21
959	-6.04	-1.98	24.87
960	-6.1	-2.05	24.53
961	-6.15	-2.12	24.29

Frequency (MHz)	Efficiency (dB)	Gain (dBi)	Efficiency (%)
962	-6.19	-2.18	24.07
963	-6.23	-2.25	23.82
964	-6.26	-2.3	23.64
965	-6.31	-2.37	23.39
966	-6.36	-2.44	23.1
967	-6.42	-2.5	22.82
968	-6.49	-2.56	22.45
969	-6.56	-2.6	22.08
970	-6.63	-2.64	21.75
971	-6.71	-2.68	21.35
972	-6.77	-2.73	21.03
973	-6.82	-2.79	20.79
974	-6.86	-2.85	20.59
975	-6.89	-2.9	20.45
976	-6.92	-2.93	20.34
977	-6.93	-2.95	20.28
978	-6.96	-3	20.12
979	-7	-3.03	19.94
980	-7.04	-3.06	19.75
981	-7.09	-3.08	19.53
982	-7.14	-3.1	19.31
983	-7.18	-3.12	19.12
984	-7.23	-3.12	18.92
985	-7.27	-3.14	18.74
986	-7.32	-3.17	18.54
987	-7.36	-3.25	18.37
988	-7.41	-3.33	18.18

Frequency (MHz)	Efficiency (dB)	Gain (dBi)	Efficiency (%)
989	-7.43	-3.39	18.08
990	-7.45	-3.45	18
991	-7.48	-3.5	17.88
992	-7.49	-3.5	17.84
993	-7.53	-3.54	17.67
994	-7.57	-3.56	17.49
995	-7.61	-3.58	17.33
996	-7.67	-3.61	17.12
997	-7.72	-3.66	16.9
998	-7.77	-3.7	16.71
999	-7.81	-3.74	16.58
1000	-7.49	-3.44	17.83
989	-7.43	-3.39	18.08
990	-7.45	-3.45	18
991	-7.48	-3.5	17.88
992	-7.49	-3.5	17.84
993	-7.53	-3.54	17.67
994	-7.57	-3.56	17.49
995	-7.61	-3.58	17.33
996	-7.67	-3.61	17.12
997	-7.72	-3.66	16.9
998	-7.77	-3.7	16.71
999	-7.81	-3.74	16.58
1000	-7.49	-3.44	17.83

Antenna Performance—Sub-G Antenna

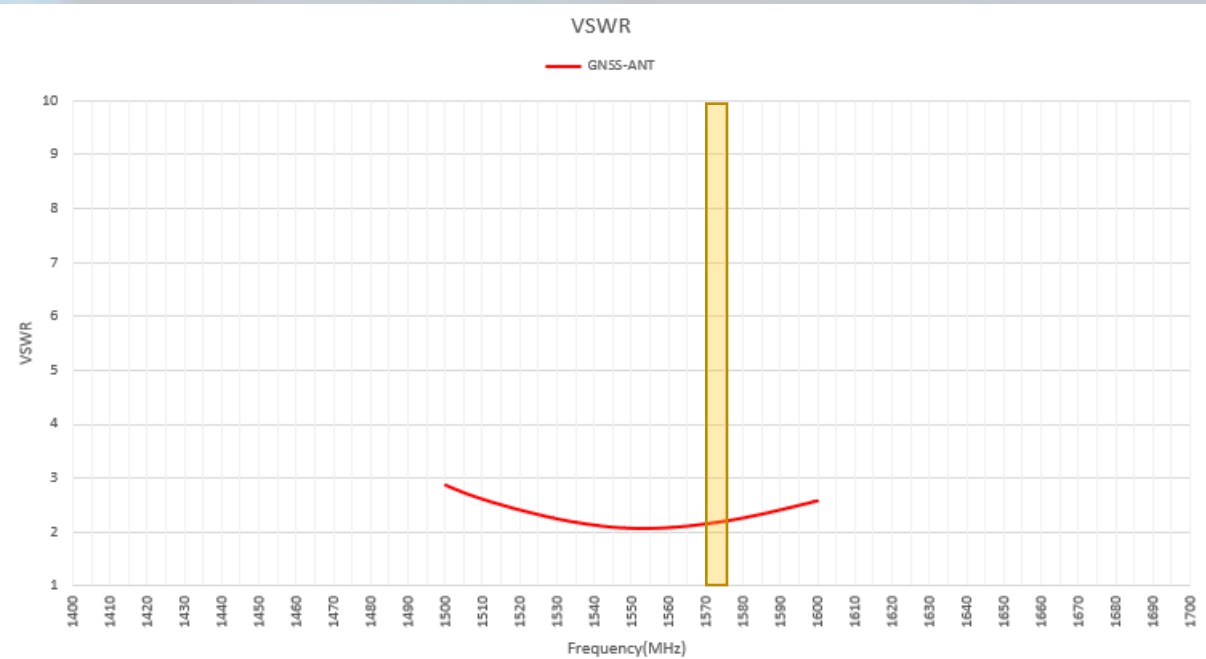
- Radiation Pattern



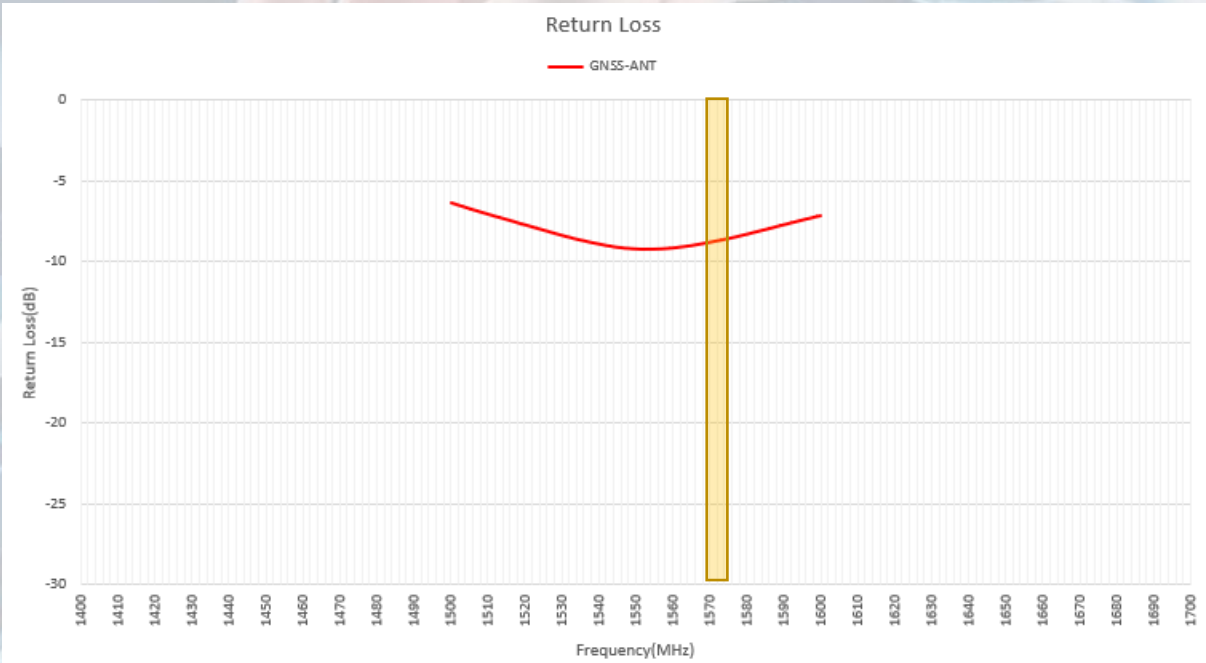
900MHz

Antenna Performance--GNSS Antenna

VSWR



S11



Antenna Performance—GNSS Antenna

Efficiency & Gain

Frequency (MHz)	Efficiency (dB)	Gain (dBi)	Efficiency (%)
1500	-4.76	-1.42	33.42
1501	-4.72	-1.39	33.74
1502	-4.68	-1.36	34.02
1503	-4.65	-1.34	34.28
1504	-4.62	-1.32	34.53
1505	-4.59	-1.3	34.77
1506	-4.56	-1.3	35
1507	-4.51	-1.26	35.37
1508	-4.47	-1.2	35.73
1509	-4.44	-1.17	35.95
1510	-4.42	-1.13	36.17
1511	-4.38	-1.09	36.44
1512	-4.35	-1.06	36.69
1513	-4.33	-1.03	36.91
1514	-4.3	-1.01	37.14
1515	-4.28	-0.99	37.35
1516	-4.25	-0.97	37.55
1517	-4.22	-0.95	37.85
1518	-4.19	-0.93	38.11
1519	-4.17	-0.92	38.32
1520	-4.15	-0.91	38.5
1521	-4.12	-0.92	38.75
1522	-4.09	-0.92	38.99
1523	-4.07	-0.9	39.2
1524	-4.05	-0.89	39.38
1525	-4.02	-0.86	39.6
1526	-4	-0.85	39.78

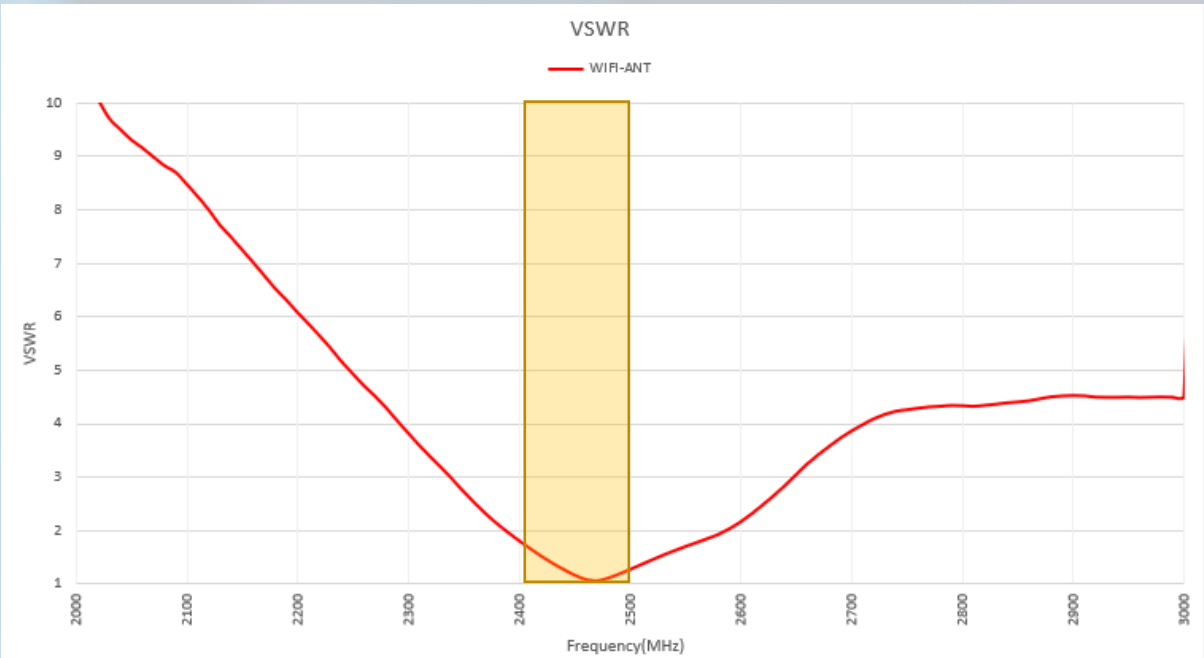
Frequency (MHz)	Efficiency (dB)	Gain (dBi)	Efficiency (%)
1527	-3.98	-0.84	39.96
1528	-3.96	-0.82	40.14
1529	-3.95	-0.82	40.26
1530	-3.94	-0.82	40.39
1531	-3.93	-0.82	40.47
1532	-3.92	-0.83	40.56
1533	-3.91	-0.85	40.64
1534	-3.9	-0.87	40.7
1535	-3.88	-0.89	40.9
1536	-3.86	-0.91	41.08
1537	-3.85	-0.88	41.24
1538	-3.83	-0.84	41.42
1539	-3.8	-0.79	41.67
1540	-3.78	-0.73	41.88
1541	-3.77	-0.7	41.95
1542	-3.77	-0.67	41.98
1543	-3.76	-0.66	42.07
1544	-3.75	-0.64	42.14
1545	-3.76	-0.64	42.08
1546	-3.77	-0.65	42
1547	-3.76	-0.64	42.05
1548	-3.76	-0.64	42.07
1549	-3.75	-0.63	42.15
1550	-3.74	-0.63	42.24
1551	-3.74	-0.62	42.26
1552	-3.74	-0.62	42.26
1553	-3.74	-0.62	42.28

Frequency (MHz)	Efficiency (dB)	Gain (dBi)	Efficiency (%)
1554	-3.74	-0.6	42.27
1555	-3.76	-0.6	42.11
1556	-3.77	-0.61	41.94
1557	-3.79	-0.61	41.77
1558	-3.81	-0.6	41.6
1559	-3.83	-0.61	41.42
1560	-3.84	-0.61	41.29
1561	-3.85	-0.62	41.16
1562	-3.87	-0.62	41.06
1563	-3.87	-0.64	41.02
1564	-3.87	-0.64	41.01
1565	-3.88	-0.64	40.96
1566	-3.88	-0.65	40.89
1567	-3.89	-0.65	40.8
1568	-3.9	-0.64	40.73
1569	-3.91	-0.61	40.67
1570	-3.91	-0.58	40.61
1571	-3.93	-0.56	40.5
1572	-3.94	-0.55	40.36
1573	-3.96	-0.53	40.2
1574	-3.98	-0.54	40.01
1575	-4	-0.55	39.84
1576	-4.01	-0.56	39.68
1577	-4.03	-0.57	39.57
1578	-4.03	-0.59	39.5
1579	-4.04	-0.59	39.43
1580	-4.05	-0.59	39.39

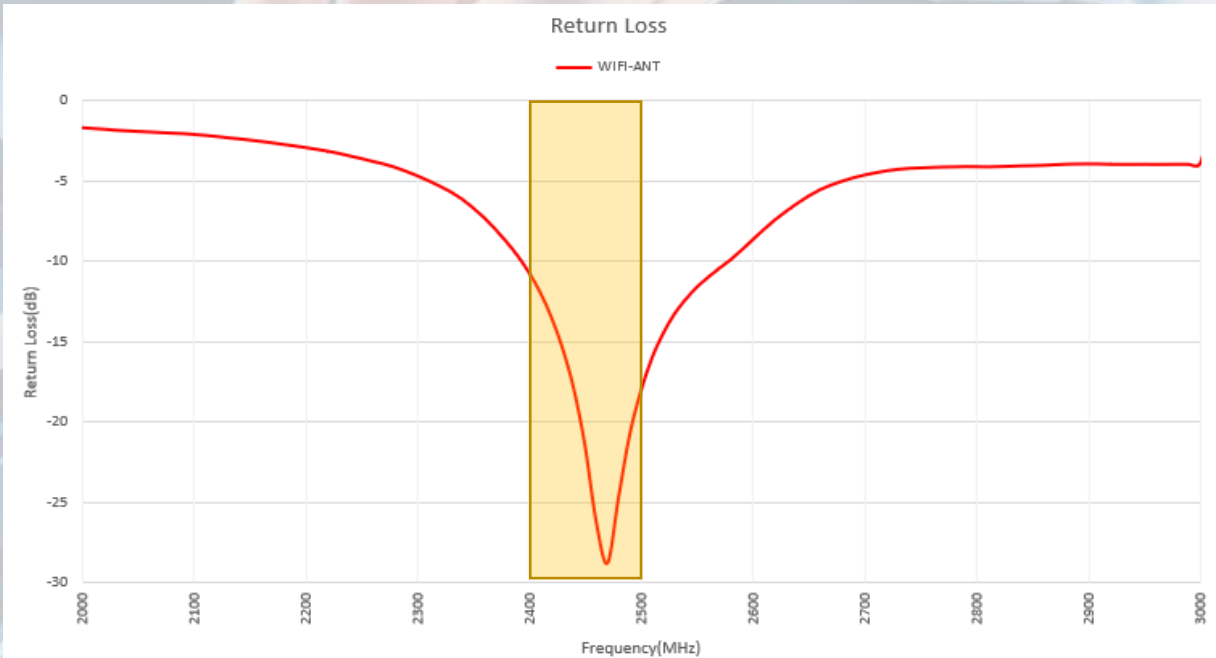
Frequency (MHz)	Efficiency (dB)	Gain (dBi)	Efficiency (%)
1581	-4.06	-0.57	39.22
1582	-4.08	-0.56	39.07
1583	-4.1	-0.55	38.92
1584	-4.12	-0.54	38.75
1585	-4.14	-0.56	38.52
1586	-4.17	-0.56	38.28
1587	-4.19	-0.57	38.12
1588	-4.21	-0.59	37.94
1589	-4.24	-0.61	37.71
1590	-4.26	-0.63	37.48
1591	-4.29	-0.67	37.23
1592	-4.32	-0.68	36.96
1593	-4.35	-0.69	36.69
1594	-4.39	-0.7	36.43
1595	-4.41	-0.7	36.21
1596	-4.44	-0.69	36.01
1597	-4.47	-0.69	35.71
1598	-4.51	-0.7	35.44
1599	-4.53	-0.71	35.21
1600	-4.56	-0.72	34.97
1601	-4.58	-0.71	34.81
1602	-4.6	-0.7	34.69
1603	-4.61	-0.71	34.56
1604	-4.63	-0.7	34.47
1605	-4.63	-0.69	34.45
1606	-4.63	-0.69	34.42
1607	-4.65	-0.7	34.26

Antenna Performance--WIFI Antenna

VSWR



S11



Antenna Performance—WIFI Antenna

Efficiency & Gain

Frequency (MHz)	Efficiency (dB)	Gain (dBi)	Efficiency (%)
2000	-10.01	-5.59	9.99
2010	-9.79	-5.35	10.49
2020	-9.55	-5.01	11.08
2030	-9.17	-4.5	12.1
2040	-8.94	-4.4	12.75
2050	-8.83	-4.28	13.1
2060	-8.92	-4.49	12.83
2070	-8.97	-4.82	12.68
2080	-9.13	-5.22	12.21
2090	-9.26	-5.62	11.85
2100	-9.01	-4.9	12.56
2110	-8.71	-4.39	13.45
2120	-8.4	-4.19	14.46
2130	-8.09	-4.05	15.54
2140	-7.67	-3.86	17.1
2150	-7.35	-3.61	18.42
2160	-7.1	-3.2	19.48
2170	-6.78	-2.61	20.99
2180	-6.56	-2.16	22.09
2190	-6.36	-1.71	23.11
2200	-6.3	-1.22	23.43
2210	-6.23	-0.95	23.83
2220	-6.18	-0.84	24.09
2230	-6.12	-0.63	24.45
2240	-6.04	-0.59	24.9
2250	-5.9	-0.6	25.71
2260	-5.72	-0.45	26.81

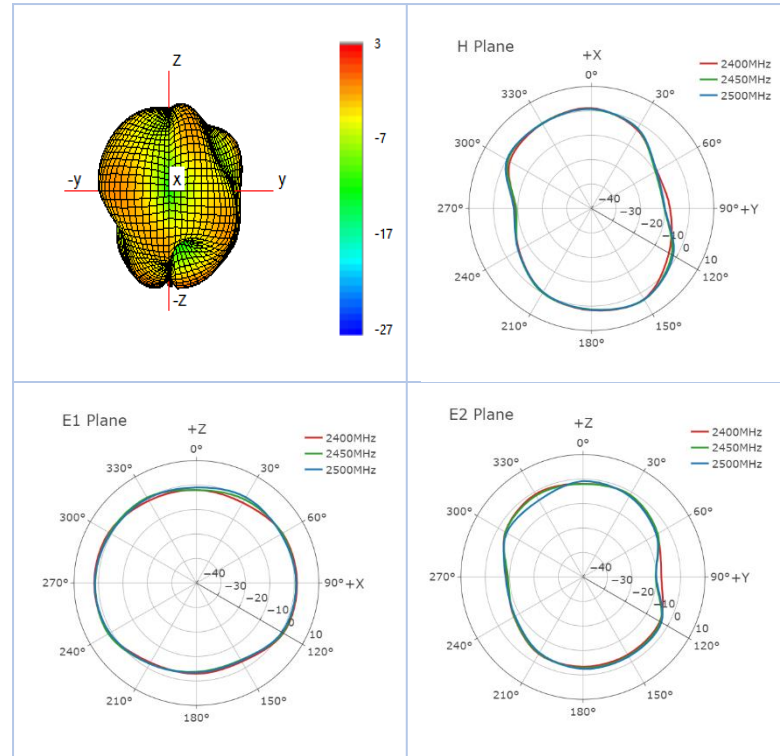
Frequency (MHz)	Efficiency (dB)	Gain (dBi)	Efficiency (%)
2270	-5.59	-0.52	27.62
2280	-5.42	-0.57	28.72
2290	-5.28	-0.45	29.63
2300	-5.12	-0.37	30.78
2310	-4.92	-0.27	32.23
2320	-4.64	0.09	34.33
2330	-4.39	0.35	36.39
2340	-4.16	0.62	38.39
2350	-3.79	1.13	41.8
2360	-3.66	1.27	43.04
2370	-3.53	1.48	44.35
2380	-3.33	1.8	46.5
2390	-3.11	2.04	48.82
2400	-3.07	2.03	49.35
2410	-2.95	2.18	50.76
2420	-2.79	2.06	52.59
2430	-2.74	2.14	53.2
2440	-2.65	2.52	54.37
2450	-2.55	2.73	55.58
2460	-2.48	2.83	56.45
2470	-2.39	3.21	57.71
2480	-2.43	3.31	57.13
2490	-2.45	3.37	56.92
2500	-2.47	3.49	56.67
2510	-2.59	3.3	55.03
2520	-2.68	3.07	53.9
2530	-2.79	2.98	52.57

Frequency (MHz)	Efficiency (dB)	Gain (dBi)	Efficiency (%)
2540	-2.81	2.82	52.35
2550	-2.94	2.59	50.78
2560	-2.95	2.57	50.69
2570	-2.99	2.53	50.22
2580	-3.07	2.37	49.29
2590	-3.16	2.33	48.32
2600	-3.37	2.03	46.07
2610	-3.48	1.79	44.9
2620	-3.66	1.57	43.01
2630	-3.89	1.24	40.86
2640	-4.17	0.89	38.3
2650	-4.35	0.66	36.77
2660	-4.67	0.22	34.15
2670	-4.84	0.2	32.81
2680	-5.05	-0.23	31.27
2690	-5.21	-0.48	30.16
2700	-5.37	-0.7	29.01
2710	-5.45	-0.79	28.48
2720	-5.38	-0.87	28.95
2730	-5.44	-1.04	28.58
2740	-5.28	-0.86	29.62
2750	-5.34	-0.95	29.25
2760	-5.35	-0.85	29.16
2770	-5.53	-0.99	27.96
2780	-5.61	-1.21	27.47
2790	-5.7	-1.34	26.93
2800	-5.8	-1.43	26.32

Frequency (MHz)	Efficiency (dB)	Gain (dBi)	Efficiency (%)
2810	-5.91	-1.94	25.64
2820	-5.97	-2.08	25.3
2830	-6.15	-2.23	24.26
2840	-6.36	-2.35	23.1
2850	-6.26	-2.1	23.66
2860	-6.22	-1.97	23.86
2870	-6.16	-1.88	24.21
2880	-6.11	-1.63	24.49
2890	-5.92	-1.33	25.58
2900	-5.87	-1.15	25.89
2910	-5.79	-1.03	26.39
2920	-5.72	-0.8	26.81
2930	-5.65	-0.67	27.2
2940	-5.63	-0.56	27.37
2950	-5.52	-0.26	28.08
2960	-5.59	-0.22	27.59
2970	-5.53	-0.12	27.98
2980	-5.58	0.02	27.67
2990	-5.54	0.24	27.94
3000	-5.58	0.2	27.69

Antenna Performance--WIFI Antenna

- Radiation Pattern



2450MHz

OTA Test-LTE Antenna

- Test Data (CATM1 POWER3)

Band(10M)	Channel	TRP(dBm)	Channel	TIS(dBm)
1	18050	19.83		
	18300	19.47		
	18550	18.41	550	-108.02
2	18650	20.56		
	18900	20.36		
	19150	20.46	1150	-103.43
3	19250	20.83		
	19575	20.6		
	19900	20.09	1900	-107.18
4	20000	20.05		
	20175	19.98		
	20350	20.12	2350	-107.94

Band(10M)	Channel	TRP(dBm)	Channel	TIS(dBm)
5	20450	19.49		
	20525	19.85		
	20600	19.76	2600	-106.32
8	21500	19.84		
	21625	19.01		
	21750	17.35	3750	-100.67
28	27260	19.07		
	27410	19.13		
	27610	19.08	9610	-105.67
18	23900	19.38		
	23925	19.36		
	23950	19.67	5950	-107.06



OTA Test-LTE Antenna

- Test Data (CATM1 POWER3)

Band(10M)	Channel	TRP(dBm)	Channel	TIS(dBm)
19	24050	19.6		
	24075	19.8		
	24100	19.41	6100	-106.64
20	24200	19.39		
	24300	19.74		
	24400	20.14	6400	-106.55
66	132022	20.15		
	132322	20.42		
	132622	20.75	67086	-107.07
85	134052	16.83		
	134092	16.78		
	134132	17.41	70496	-104.64

Band(10M)	Channel	TRP(dBm)	Channel	TIS(dBm)
13	23230	19.13	5230	-105.07

