



do the **MAGIC+**

LTE antenna report

Rev B

04 Oct-2021

Revision History

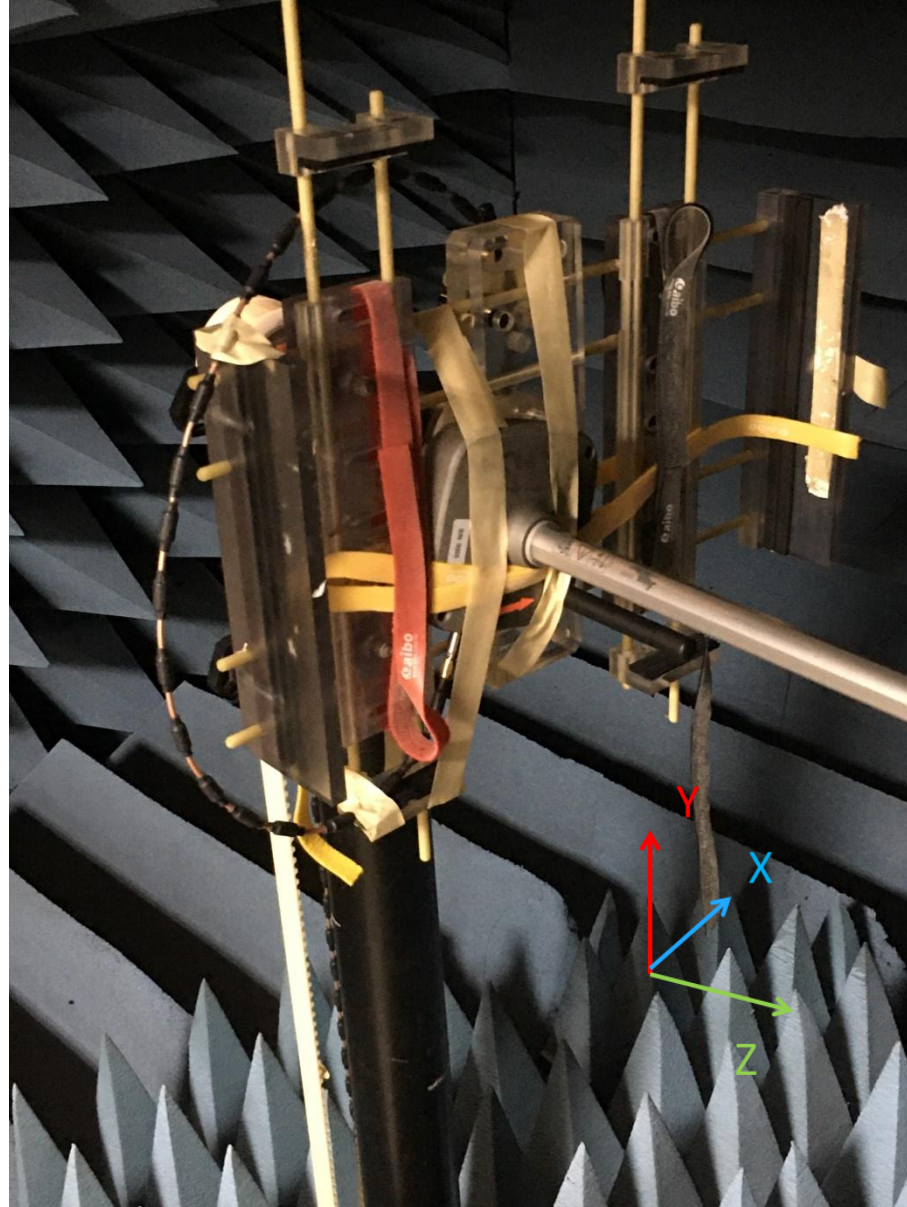
Revision	Date	Description of changes
A	17 Sep-2021	Initial report.
B	01 Oct-2021	Fine-tuning the LTE antenna.

1.0		Summary
2.0		Test fixture
3.0		Test setup (Network Analyzer)
	3.1	ETS Chamber - AMS-8500
4.0		Return Loss
	4.1	VSWR
	4.2	Efficiency/ Peak Gain
5.0		Conclusion

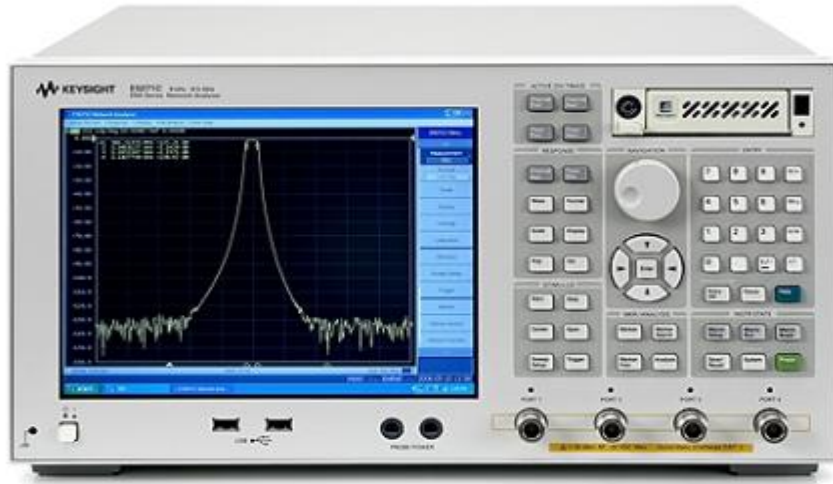
1.0 Summary

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- A large, light blue decorative circle is partially visible on the left side of the slide.
- ◆ This report SINBON provide the antenna test result.
 - ◆ Test result are shown in section 4.

2.0 Test fixtures pictures

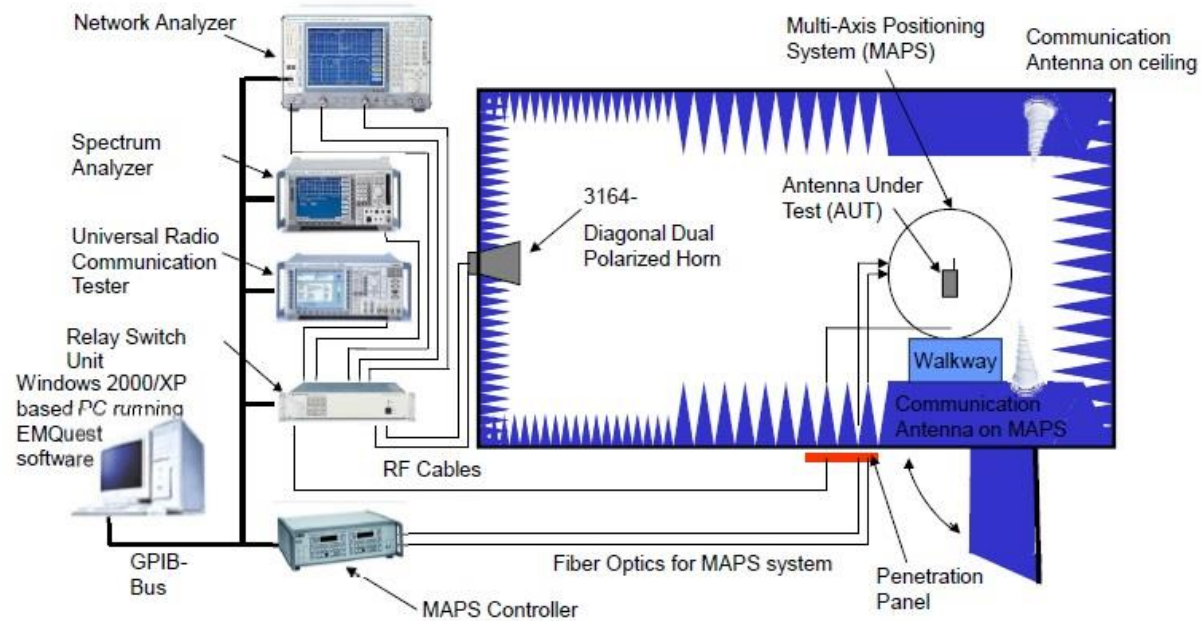


3.0 Test setup (Network Analyzer)

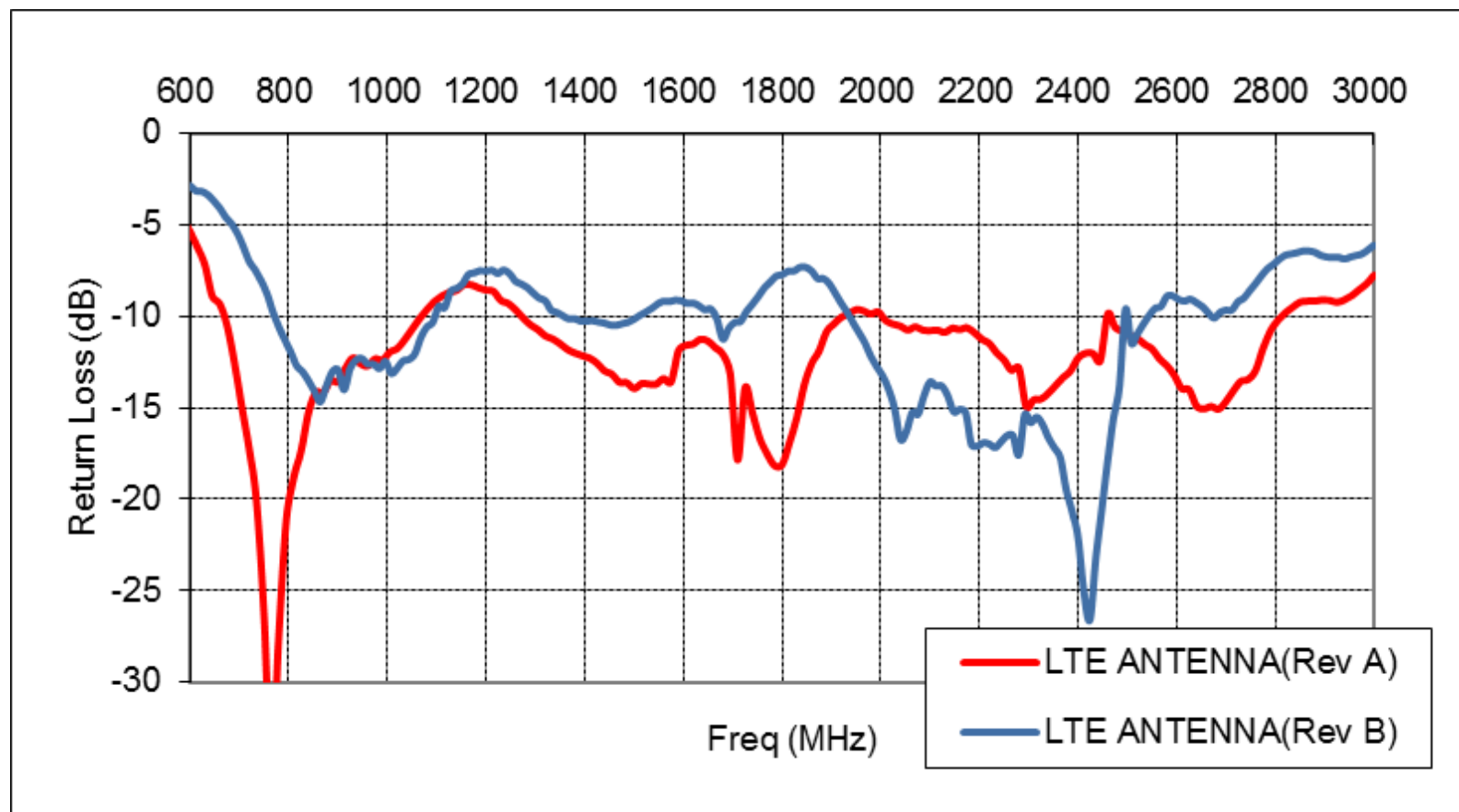


VSWR / Return Loss measurements were performed using an Agilent E5071C Network Analyzer and the test fixture shown in section 2. The testing was performed in free space. The complete VSWR and Return Loss plots are provided in section 4.0.

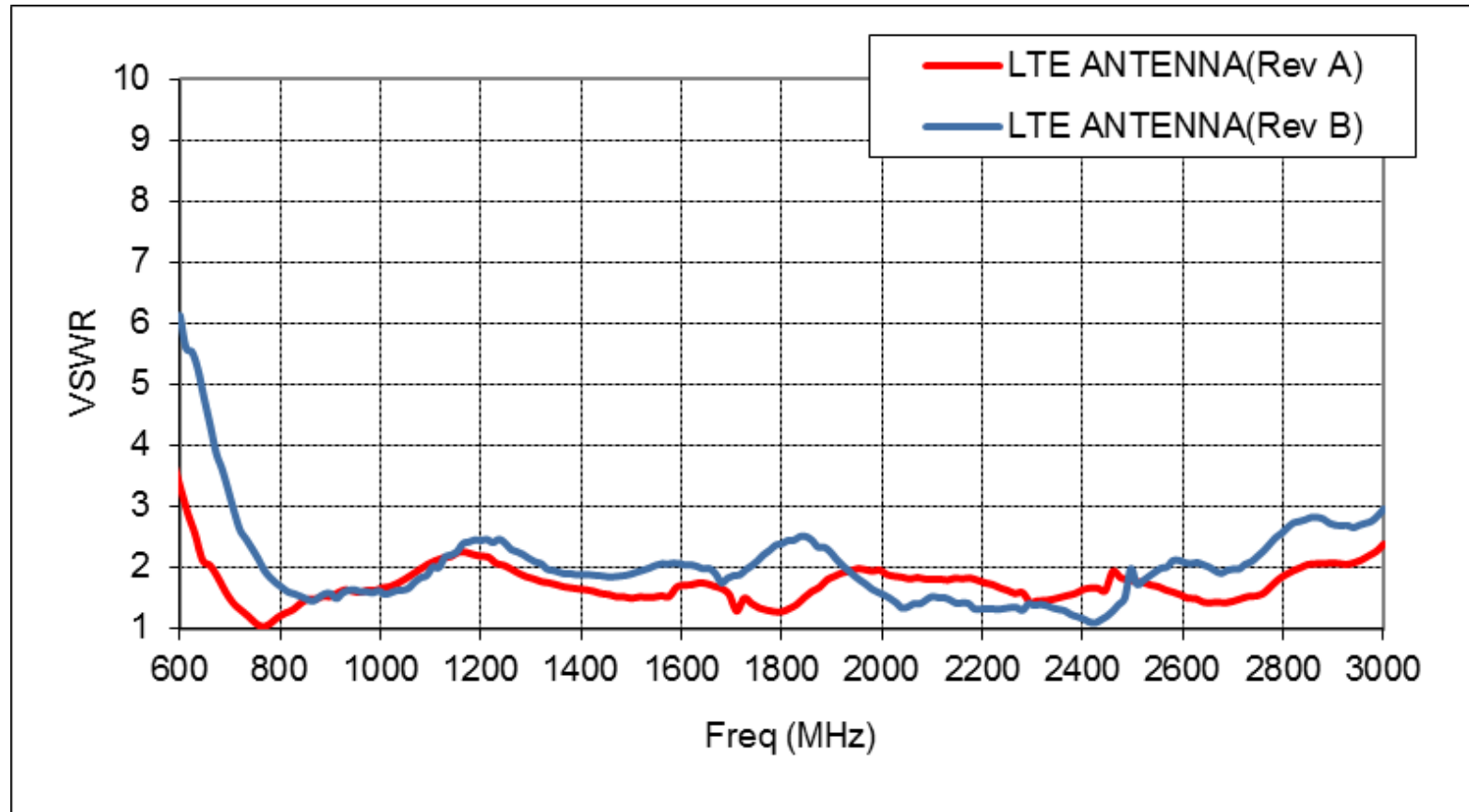
3.1 ETS Chamber - AMS-8500



4.0 Return Loss



4.1 VSWR



4.2 Efficiency/Peak Gain

Frequency (MHz)	LTE(Rov B)			LTE(Rov A)		
	Efficiency (dB)	Efficiency (%)	Peak Gain (dBi)	Efficiency (dB)	Efficiency (%)	Peak Gain (dBi)
698	-4.8	33.2	-2.0	-5.5	27.9	-3.0
704	-4.9	32.3	-2.2	-5.7	26.8	-3.0
710	-4.9	32.3	-2.0	-5.8	26.4	-3.0
716	-4.6	34.8	-1.6	-5.6	27.6	-2.7
720	-4.5	35.9	-1.5	-5.5	28.0	-2.6
725	-4.3	37.1	-1.3	-5.5	28.3	-2.5
730	-4.3	37.4	-1.3	-5.6	27.8	-2.6
734	-4.3	37.5	-1.4	-5.6	27.5	-2.7
740	-4.2	38.3	-1.4	-5.6	27.5	-2.8
746	-3.9	41.2	-1.2	-5.4	28.8	-2.6
756	-3.7	42.9	-1.2	-5.3	29.3	-2.6
765	-3.7	43.1	-1.3	-5.4	28.9	-2.8
772	-3.6	44.1	-1.0	-5.4	29.1	-2.8
777	-3.4	45.9	-0.8	-5.2	30.0	-2.7
782	-3.4	45.8	-0.7	-5.2	30.2	-2.6
787	-3.4	46.0	-0.4	-5.2	30.1	-2.6
791	-3.4	46.2	-0.5	-5.3	29.4	-2.8
806	-2.3	58.3	0.4	-4.4	36.4	-2.0
821	-2.7	53.8	0.0	-4.8	33.5	-2.4
824	-2.7	53.2	0.0	-4.8	33.3	-2.5
836	-2.7	54.0	0.0	-4.7	33.6	-2.5
849	-2.8	52.7	0.0	-4.8	32.7	-2.6

4.2 Efficiency/Peak Gain

Frequency (MHz)	LTE(Rov B)			LTE(Rov A)		
	Efficiency (dB)	Efficiency (%)	Peak Gain (dBi)	Efficiency (dB)	Efficiency (%)	Peak Gain (dBi)
862	-3.0	50.6	-0.2	-5.0	31.5	-2.7
869	-2.9	51.6	-0.1	-4.9	32.1	-2.6
880	-3.1	49.4	-0.2	-5.1	30.9	-2.8
894	-3.1	48.6	-0.4	-5.1	30.7	-2.8
900	-3.0	50.5	-0.2	-5.0	31.9	-2.6
915	-3.2	47.6	-0.4	-5.1	31.1	-2.6
925	-3.0	50.3	-0.2	-4.9	32.5	-2.5
940	-2.9	51.1	-0.1	-4.8	33.2	-2.4
960	-3.0	50.4	-0.3	-4.8	33.1	-2.4
1710	-3.8	41.7	-0.1	-4.6	34.3	0.0
1730	-3.7	42.6	-0.1	-4.6	34.6	0.0
1750	-3.7	43.1	-0.1	-4.6	35.1	-0.1
1770	-3.6	43.9	-0.1	-4.5	35.6	-0.2
1785	-3.6	43.9	-0.1	-4.5	35.6	-0.2
1805	-3.5	45.0	0.1	-4.5	35.7	-0.1
1840	-3.2	47.9	0.6	-4.4	36.2	0.0
1850	-3.1	49.0	0.8	-4.4	36.1	0.1
1880	-2.7	53.9	1.5	-4.3	36.8	0.5
1910	-2.4	57.2	1.9	-4.4	36.2	0.4
1920	-2.3	58.3	2.0	-4.5	35.8	0.4
1930	-2.2	60.0	2.1	-4.5	35.8	0.4
1950	-2.1	61.9	2.2	-4.5	35.6	0.2

4.2 Efficiency/Peak Gain

Frequency (MHz)	LTE(Rcv B)			LTE(Rcv A)		
	Efficiency (dB)	Efficiency (%)	Peak Gain (dBi)	Efficiency (dB)	Efficiency (%)	Peak Gain (dBi)
1960	-2.1	62.4	2.2	-4.6	34.8	0.1
1980	-2.0	63.3	2.2	-4.6	34.3	-0.1
1995	-2.0	63.4	2.1	-4.7	33.9	0.0
2110	-2.1	62.4	2.3	-4.8	33.1	0.4
2140	-2.3	59.3	2.1	-5.0	31.9	0.4
2170	-2.4	57.0	2.0	-5.0	31.6	0.3
2300	-2.0	63.3	1.8	-4.1	38.8	1.0
2325	-2.0	63.8	2.1	-4.1	39.1	1.3
2350	-2.0	63.4	2.2	-4.2	38.2	1.5
2375	-2.0	63.0	2.1	-4.3	37.1	1.6
2400	-2.0	63.7	2.2	-4.4	36.6	1.6
2500	-3.5	44.4	0.5	-4.4	36.3	1.7
2515	-2.5	56.8	1.4	-4.3	36.8	1.7
2535	-2.7	53.1	0.8	-4.4	36.5	1.5
2555	-2.9	51.1	0.6	-4.4	36.4	1.5
2570	-3.1	49.0	0.7	-4.5	35.8	1.5
2595	-3.3	47.1	0.9	-4.4	36.0	1.5
2620	-3.3	46.9	0.9	-4.3	37.0	1.6
2630	-3.3	46.3	1.1	-4.3	37.6	1.7
2655	-3.4	45.4	0.9	-4.3	37.2	1.7
2680	-3.4	45.6	0.9	-4.3	37.5	1.6
2690	-3.4	45.3	1.0	-4.3	37.4	1.4

5.0 Conclusion

- ◆ Regarding antenna;
 - Low band(698-960MHz) average efficiency:45%
 - High band(1710-2200MHz) average efficiency:53%

- ◆ If you have any question, please feel free to contact us.



thank you

danke děkuji ありがとう merci gracias
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