



APPENDIX J

: ANTENNA SPECIFICATION

ANTENNA SPECIFICATIONS

Product Name	BLE Antenna
Model Name	UR2-ST01 Antenna
Date Test Completed	4 July 2023

OHSUNG ELECTRONICS CO.,LTD

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1. Features

- BLE Antenna

- Frequency range : 2.4GHz ~ 2.5GHz
- PCB Pattern Antenna

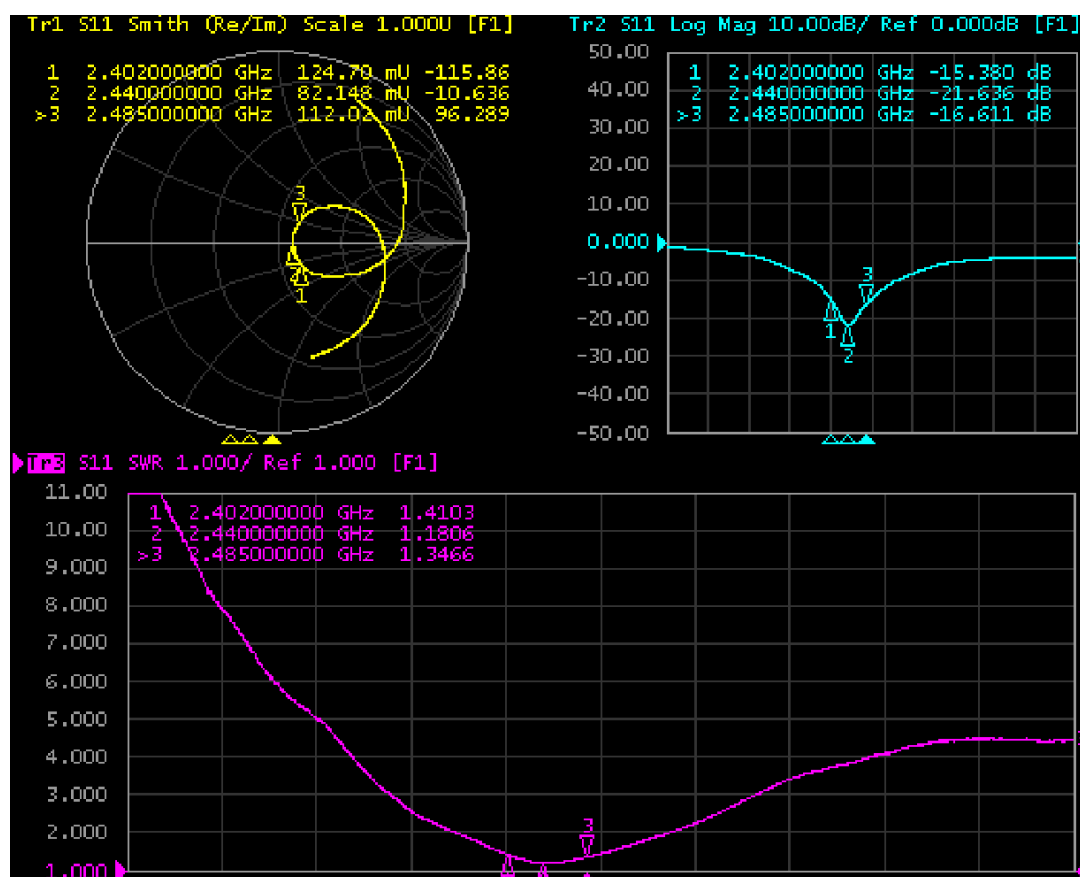
2. Antenna Characteristics

2.1 Antenna Performance

Parameter	Min.	Typ.	Max.	Unit
Frequency Range	2400	2450	2500	MHz
Directivity		Omni		-
Polarization		Linear		-
VSWR	3:1			Under
Impedance		50		Ohm

2.2 Network Analyzer Data

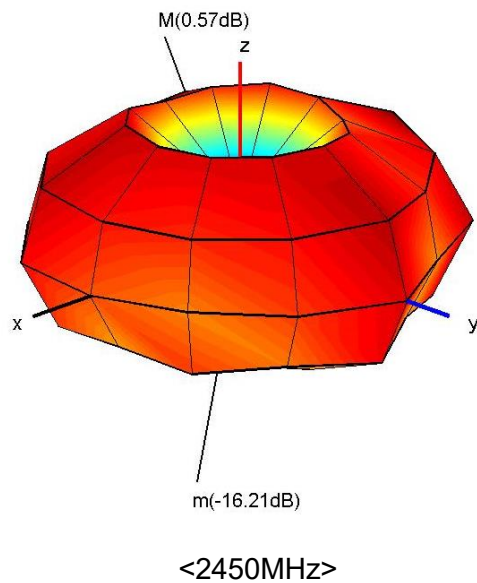
- S11 SWR & SMITH CHART



2.3 Efficiency

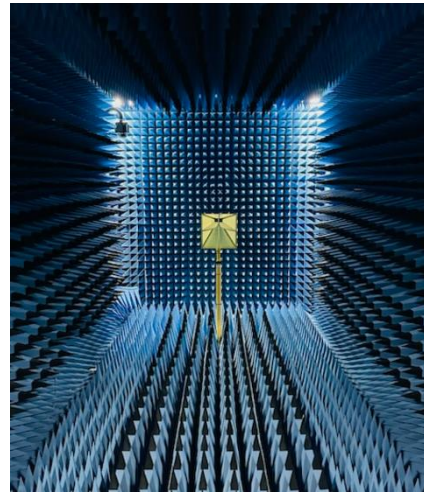
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Frequency [MHz]	2400	2405	2410	2415	2420	2425	2430	2435	2440	2445	2450	2455	2460	2465	2470	2475	2480	2485	2490	2500
Efficiency [dB]	-2.68	-2.69	-2.68	-2.59	-2.58	-2.59	-2.50	-2.43	-2.47	-2.40	-2.34	-2.49	-2.35	-2.50	-2.35	-2.39	-2.36	-2.48	-2.43	-2.62
Efficiency [%]	53.95	53.88	54.01	55.05	55.19	55.09	56.17	57.17	56.65	57.50	58.34	56.37	58.27	56.27	58.16	57.70	58.08	56.47	57.11	54.70
TRG [dB]	-2.68	-2.69	-2.68	-2.59	-2.58	-2.59	-2.50	-2.43	-2.47	-2.40	-2.34	-2.49	-2.35	-2.50	-2.35	-2.39	-2.36	-2.48	-2.43	-2.62
TRG ₂ [dB]	-5.58	-5.61	-5.60	-5.55	-5.55	-5.45	-5.52	-5.44	-5.52	-5.47	-5.41	-5.56	-5.42	-5.57	-5.43	-5.45	-5.44	-5.59	-5.51	-5.66
Gain ₂ Peak [dB]	0.52	0.54	0.49	0.51	0.50	0.57	0.56	0.53	0.46	0.48	0.52	0.43	0.50	0.35	0.49	0.46	0.46	0.25	0.34	0.17
Gain ₂ Min [dB]	-28.78	-28.70	-28.47	-28.14	-27.44	-27.25	-27.03	-26.99	-27.40	-27.83	-27.70	-28.99	-29.74	-30.81	-31.56	-32.27	-32.68	-32.62	-31.44	-31.08
TRG ₂ [dB]	-5.80	-5.78	-5.77	-5.66	-5.63	-5.75	-5.51	-5.43	-5.44	-5.35	-5.29	-5.44	-5.29	-5.45	-5.30	-5.35	-5.30	-5.40	-5.38	-5.60
Gain ₂ Peak [dB]	-1.57	-1.59	-1.61	-1.46	-1.46	-1.63	-1.36	-1.25	-1.30	-1.17	-1.11	-1.17	-1.00	-1.18	-0.96	-1.08	-1.07	-1.26	-1.30	-1.61
Gain ₂ Min [dB]	-32.09	-31.82	-31.46	-32.69	-34.63	-36.75	-39.21	-41.18	-41.12	-38.21	-35.79	-33.83	-32.00	-30.62	-29.34	-28.45	-28.61	-29.26	-30.02	-31.72
UHRG [dB]	-4.69	-4.69	-4.69	-4.63	-4.62	-4.63	-4.55	-4.49	-4.54	-4.49	-4.44	-4.59	-4.46	-4.62	-4.47	-4.52	-4.50	-4.63	-4.59	-4.79
UHRG/TRG [%]	62.96	62.99	62.84	62.59	62.58	62.54	62.42	62.23	62.04	61.81	61.59	61.61	61.43	61.36	61.38	61.19	61.12	60.94	60.89	60.65
H-Plane	-4.79	-4.85	-4.84	-4.76	-4.76	-4.64	-4.75	-4.63	-4.70	-4.65	-4.57	-4.78	-4.61	-4.79	-4.70	-4.70	-4.71	-4.86	-4.76	-4.89
E1-Plane, AVG [dB]	-4.04	-4.08	-4.07	-3.99	-4.02	-3.91	-3.95	-3.88	-3.93	-3.87	-3.81	-3.96	-3.82	-3.95	-3.84	-3.86	-3.87	-4.01	-3.90	-4.04
E2-Plane, AVG [dB]	-9.51	-9.57	-9.47	-9.46	-9.48	-9.33	-9.50	-9.38	-9.54	-9.52	-9.47	-9.70	-9.52	-9.74	-9.54	-9.55	-9.57	-9.72	-9.67	-9.97
Peak Gain [dB]	0.57	0.61	0.56	0.67	0.66	0.67	0.69	0.64	0.63	0.57	0.58	0.44	0.52	0.36	0.57	0.51	0.51	0.38	0.46	0.22
Directivity [dB]	3.25	3.29	3.24	3.26	3.24	3.26	3.19	3.07	3.10	2.97	2.92	2.93	2.86	2.86	2.92	2.90	2.87	2.86	2.89	2.84
Minimum Gain [dB]	-14.94	-14.96	-15.03	-15.03	-15.19	-15.17	-15.17	-15.24	-15.52	-15.82	-16.21	-17.04	-17.54	-18.40	-18.86	-19.43	-19.67	-19.81	-19.68	-19.23
Test Condition	FS																			
Antenna Type																				
pe Space, BHR=Beside Head Right Side, BHL=Beside Head Left Side, HR=Hand Right, HL=Hand Left, BHR=Beside Head and Hand Right Side, BHL=Beside Head and Hand Left Side, NB=Notebook																				
Average Efficiency	-2.49 dB, 56.31 %																			

2.4 Radiation Pattern

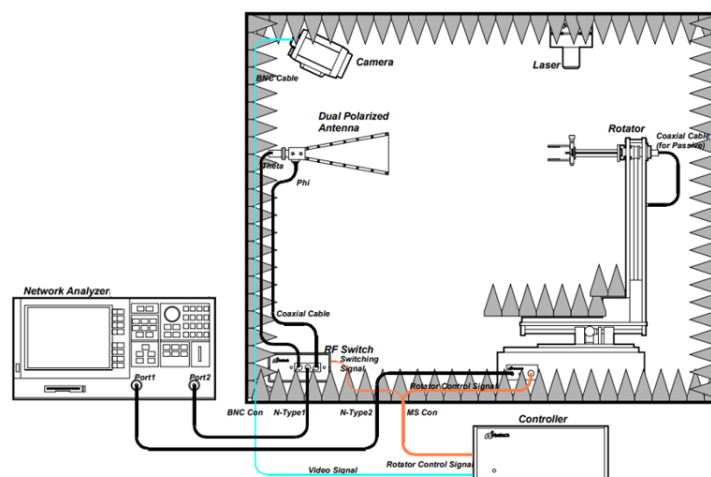


3. Antenna Test Condition

- CTIA OTA Test Chamber : 6.0 x 3.0 x 3.0 m



- Passive Test System



- Active Test System

