

2024.02.02

RA-N2402-42

APPROVAL SHEET

MODEL : U1
BT ANT
Antenna layout

Review	Consent	Approval

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1. Revision History

NO.	Before	After	Reason	Date
1				
2				
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2. Product Information

2.1 General Features

PART NUMBER	GradiANT
ANTENNA TYPE	PCB Pattern Antenna
APPLICATIONS	Bluetooth

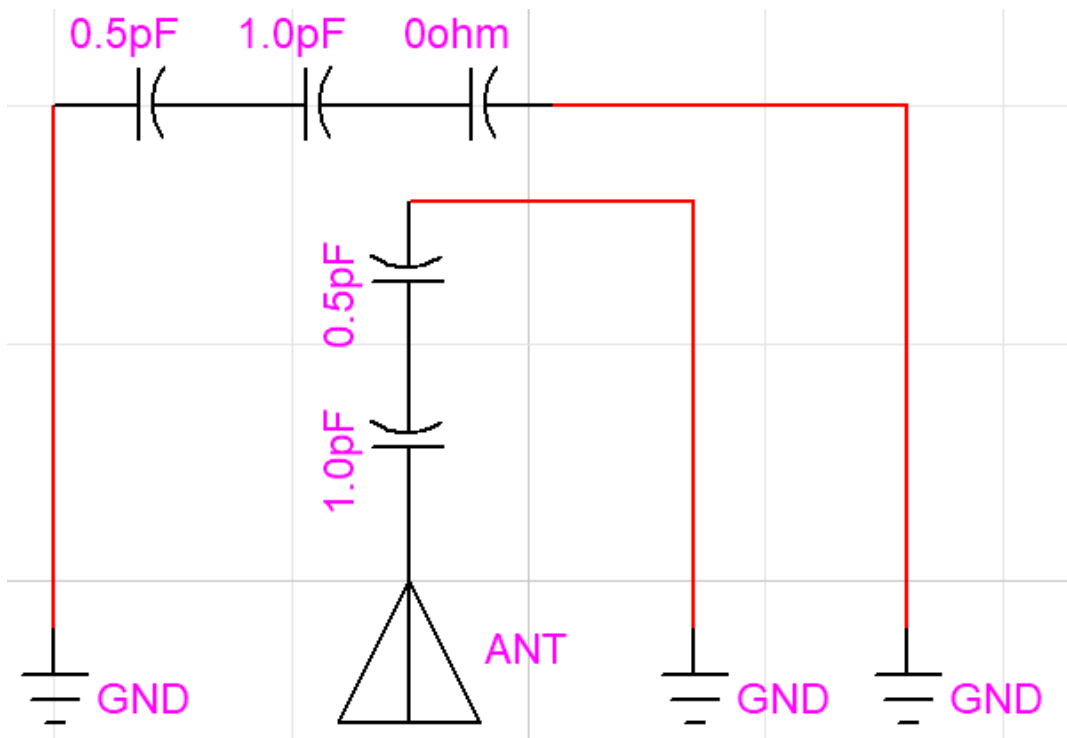
2.2 Electrical Specifications


Frequency Range1 (TX)		2400MHz~2485MHz	
Frequency Range1 (RX)		2400MHz~2485MHz	
IMPEDANCE		50 Ω	
V.S.W.R	TX	2400MHz	2485MHz
		3 ↓	3 ↓
	RX	2400MHz	2485MHz
		3 ↓	3 ↓
RADIATION PATTERN		Omni-directional	
POLARIZATION		Linear	

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4. Matching Network

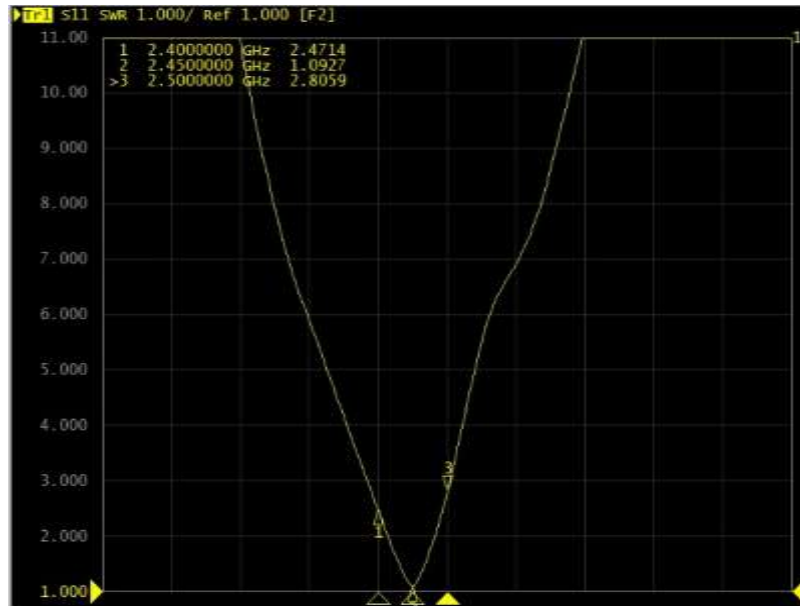
Capacitor value can be changed depending on different situation



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5. Electrical Characteristics

5.1 VSWR

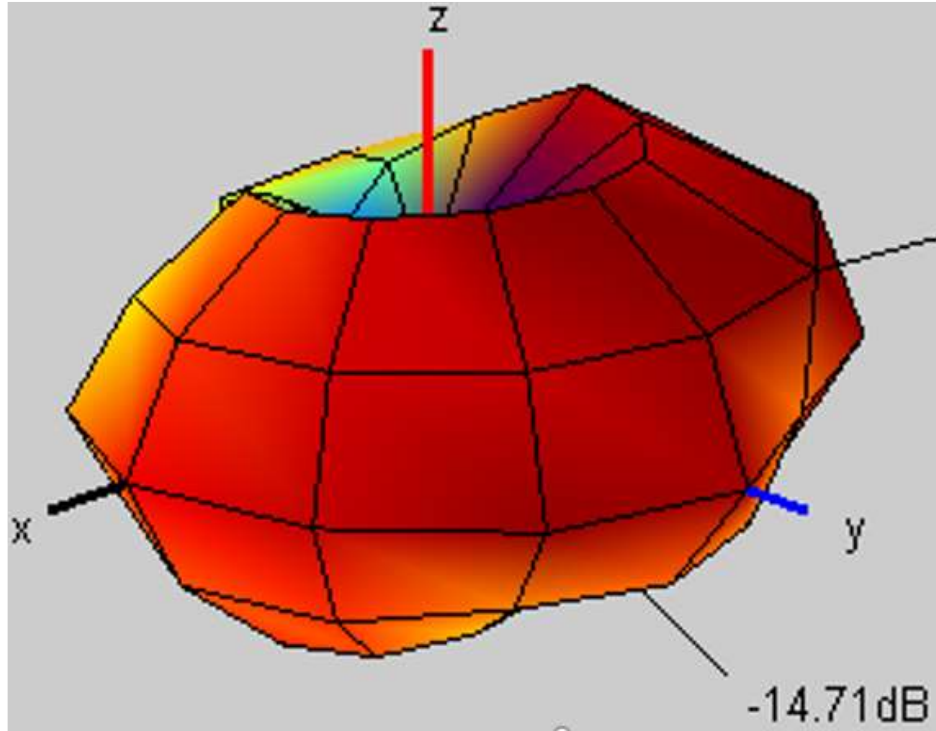


5.2 SMITH CHART

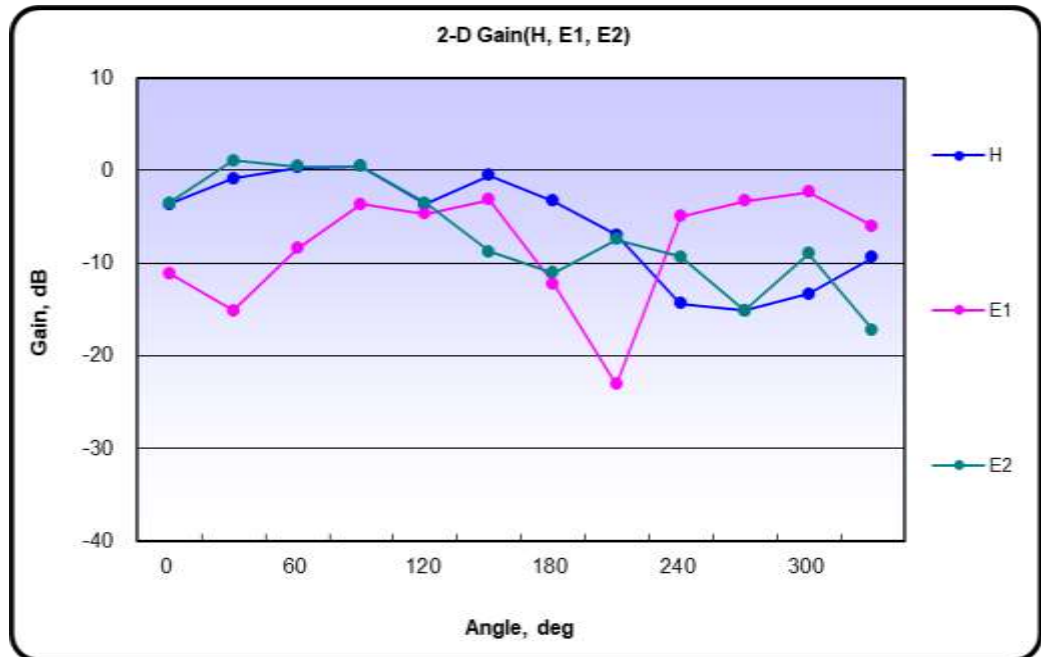




5.3 3D-PLOTs



5.4 2D-GAIN





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6. Passive Measurement

	1	2	3	4	5	6	7	8	9	10
Frequency [MHz]	2400	2405	2410	2415	2420	2425	2430	2435	2440	2445
Efficiency [dB]	-3.55	-3.49	-3.39	-3.13	-3.08	-2.85	-2.82	-2.76	-2.88	-2.59
Efficiency [%]	44.2	44.8	45.8	48.6	49.3	51.9	52.2	53.0	51.6	55.1
TRG _θ [dB]	-5.19	-5.11	-5.04	-4.79	-4.73	-4.55	-4.44	-4.36	-4.45	-4.19
Gain _{θ Peak} [dB]	-0.17	-0.12	0.38	0.49	0.26	0.78	0.82	1.14	0.92	1.07
Gain _{θ Min} [dB]	-26.49	-26.04	-32.31	-28.89	-23.66	-23.92	-24.96	-24.72	-22.77	-24.15
TRG _φ [dB]	-8.57	-8.56	-8.39	-8.12	-8.07	-7.73	-7.91	-7.89	-8.04	-7.69
Gain _{φ Peak} [dB]	-3.10	-2.46	-2.70	-1.90	-1.48	-1.49	-1.45	-1.63	-1.71	-1.38
Gain _{φ Min} [dB]	-24.19	-24.42	-23.59	-19.01	-26.38	-22.15	-21.44	-22.85	-24.31	-21.39
UHRG [dB]	-5.60	-5.59	-5.46	-5.19	-5.09	-4.89	-4.88	-4.84	-4.93	-4.68
UHRG/TRG [%]	62.3	61.6	62.2	62.2	62.8	62.5	62.2	61.9	62.3	61.8
H-Plane	-4.59	-4.30	-4.33	-4.12	-3.93	-3.95	-3.59	-3.55	-3.64	-3.29
E1-Plane, AVG [dB]	-6.69	-6.78	-6.51	-6.50	-6.24	-6.14	-6.13	-5.93	-6.17	-5.75
E2-Plane, AVG [dB]	-4.69	-4.72	-4.61	-4.23	-4.14	-4.15	-4.21	-3.91	-3.81	-3.76
Peak Gain [dB]	-1.41	-1.51	-0.97	-0.89	-0.99	-0.51	-0.48	-0.29	-0.48	-0.26
Directivity [dB]	2.14	1.98	2.42	2.25	1.99	2.34	2.45	2.47	2.40	2.33
Minimum Gain [dB]	-14.02	-12.72	-14.08	-12.61	-12.88	-13.26	-14.63	-13.87	-14.31	-14.71

	11	12	13	14	15	16	17	18	19	20
Frequency [MHz]	2450	2455	2460	2465	2470	2475	2480	2485	2490	2497
Efficiency [dB]	-2.54	-2.38	-2.41	-2.44	-2.34	-2.34	-2.30	-2.85	-3.04	-2.97
Efficiency [%]	55.8	57.9	57.4	57.0	58.4	58.3	58.8	51.9	49.6	50.5
TRG _θ [dB]	-4.15	-3.92	-3.97	-4.00	-3.92	-3.85	-3.72	-4.38	-4.46	-4.33
Gain _{θ Peak} [dB]	1.10	1.70	1.39	1.74	1.61	1.45	1.75	1.05	1.03	1.00
Gain _{θ Min} [dB]	-27.76	-25.36	-25.95	-36.97	-30.06	-30.19	-31.09	-32.62	-27.43	-25.19
TRG _φ [dB]	-7.62	-7.61	-7.61	-7.65	-7.47	-7.66	-7.85	-8.11	-8.59	-8.68
Gain _{φ Peak} [dB]	-1.32	-1.43	-1.40	-1.30	-1.03	-1.23	-1.16	-1.68	-1.92	-2.62
Gain _{φ Min} [dB]	-23.38	-29.60	-26.63	-28.31	-22.19	-23.74	-51.56	-28.60	-23.88	-29.53
UHRG [dB]	-4.63	-4.42	-4.44	-4.53	-4.45	-4.41	-4.40	-4.97	-5.17	-5.14
UHRG/TRG [%]	61.7	62.5	62.6	61.8	61.5	62.1	61.7	61.3	61.3	60.7
H-Plane	-3.07	-3.04	-2.84	-2.96	-3.07	-2.89	-2.52	-3.27	-3.25	-3.24
E1-Plane, AVG [dB]	-5.85	-5.65	-5.64	-5.82	-5.70	-5.84	-5.42	-6.16	-6.50	-6.22
E2-Plane, AVG [dB]	-3.74	-3.59	-3.55	-3.44	-3.37	-3.27	-3.34	-3.91	-3.92	-3.92
Peak Gain [dB]	-0.20	0.43	0.09	0.41	0.30	0.15	0.43	-0.23	-0.29	-0.25
Directivity [dB]	2.33	2.80	2.50	2.85	2.64	2.49	2.73	2.61	2.75	2.72
Minimum Gain [dB]	-12.30	-13.05	-13.61	-13.87	-13.10	-13.15	-12.66	-14.23	-14.77	-12.49

Average Efficiency	-2.79dBi	52.60%
Peak Gain	0.43dBi	