

2018.04.17

RA-N0211-13

APPROVAL SHEET

MODEL :
Antenna layout

Review	Consent	Approval

Messrs. SENA Technology Co.,Ltd



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1. Revision History

NO.	Before	After	Reason	Date
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				

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2. Product Information

2.1 General Features

PART NUMBER	GradiANT
ANTENNA TYPE	PCB Pattern Antenna
APPLICATIONS	Bluetooth

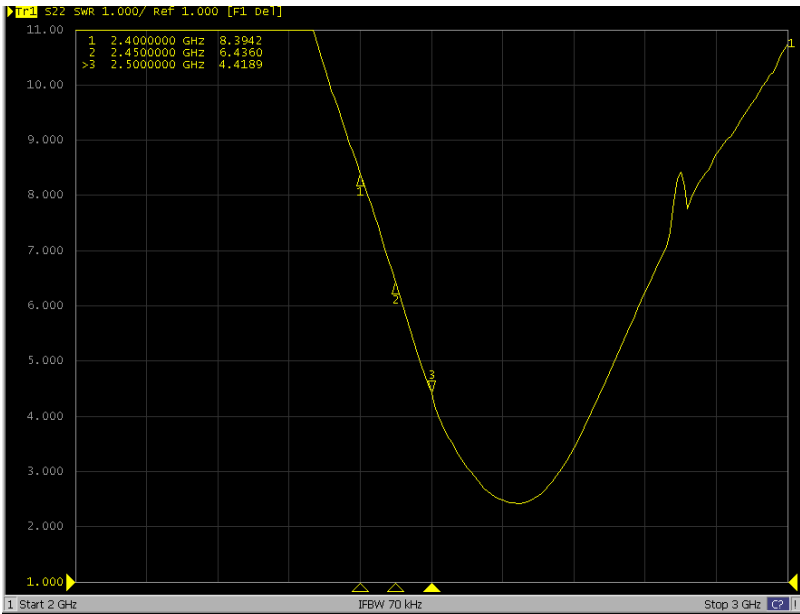
2.2 Electrical Specifications

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	

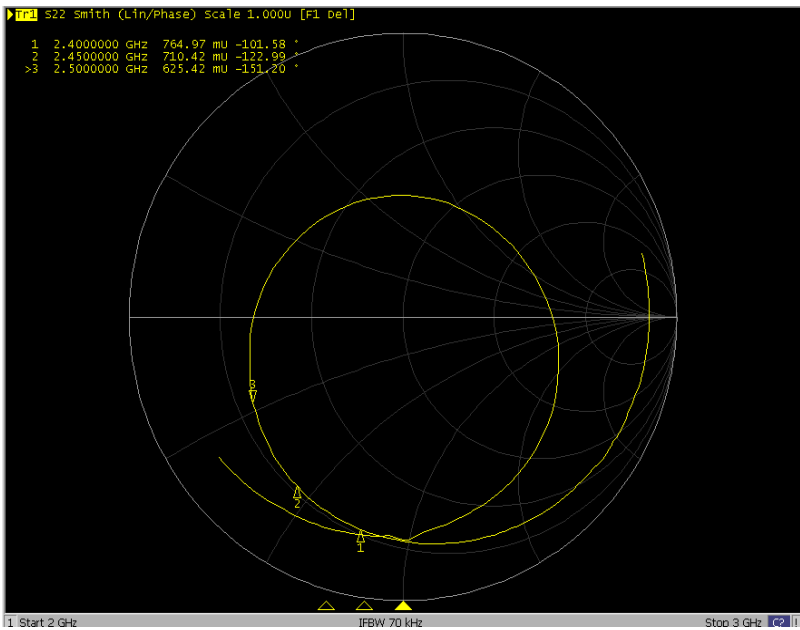
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4. Electrical Characteristics

4.1 VSWR



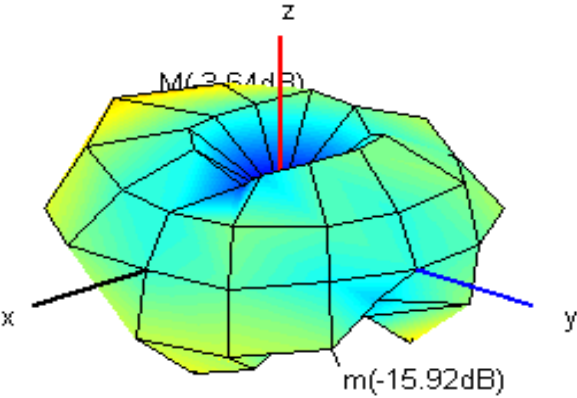
4.2 SMITH CHART



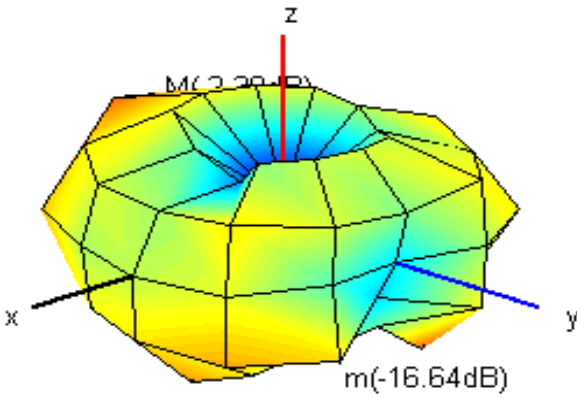
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4.3 3D-PLOTs

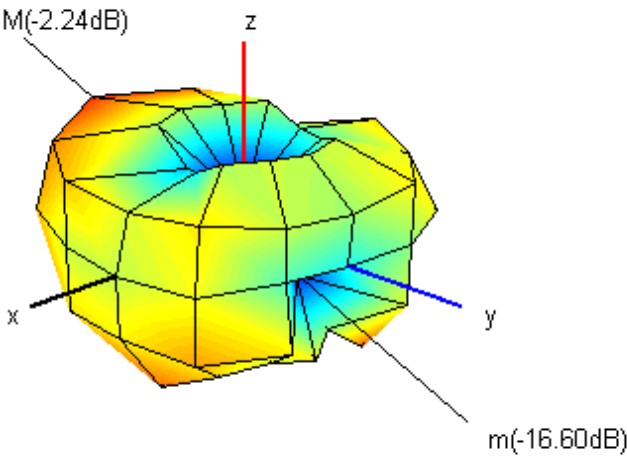
2400MHZ



2445MHZ



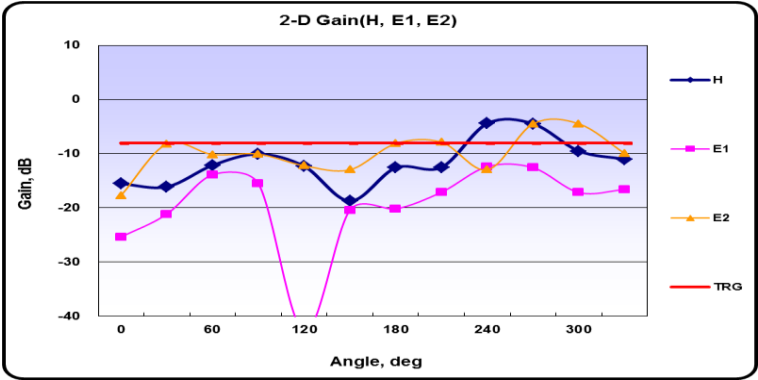
2485MHZ



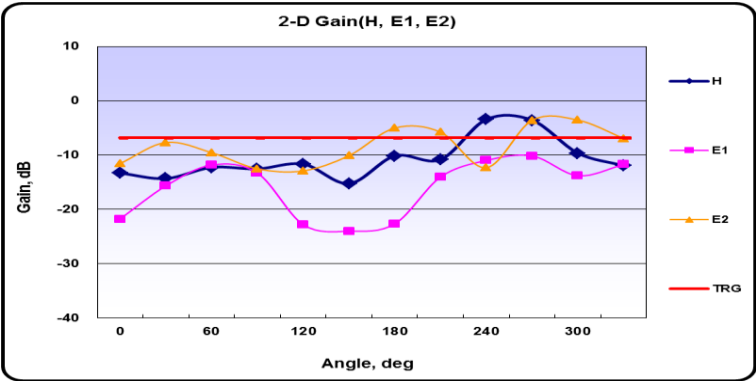
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4.4 2D-GAIN

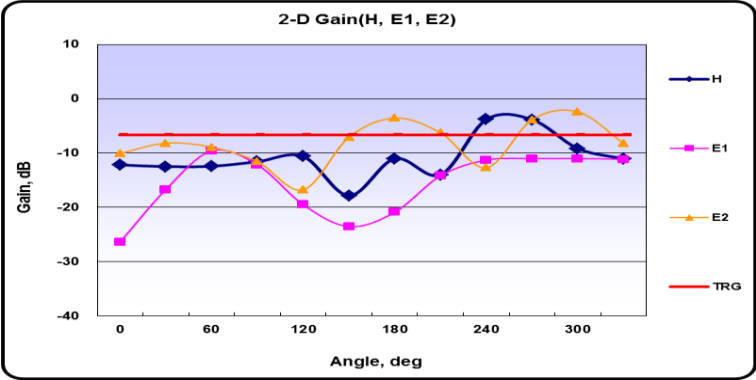
2400MHZ



2445MHZ



2485MHZ



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5. 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)	-3.10	-3.05	-2.79	-2.56	-2.64	-2.59	-2.35	-2.28	-2.19	-2.12
Efficiency(%)	48.94	49.57	52.56	55.44	54.45	55.04	58.20	59.17	60.36	61.41
TRG(dB)	-3.10	-3.05	-2.79	-2.56	-2.64	-2.59	-2.35	-2.28	-2.19	-2.12
TRG _{Theta} (dB)	-3.28	-3.22	-2.96	-2.73	-2.81	-2.76	-2.51	-2.44	-2.36	-2.28
TRG _{Phi} (dB)	-17.05	-17.08	-16.99	-16.79	-16.89	-16.77	-16.84	-16.71	-16.55	-16.47
UHRG(dB)	-6.29	-6.24	-5.99	-5.78	-5.88	-5.84	-5.62	-5.55	-5.48	-5.41
UHRG/TRG(%)	48.04	48.00	47.85	47.64	47.47	47.30	47.12	47.06	46.96	46.81
H-Plane	-1.33	-1.24	-0.96	-0.72	-0.79	-0.75	-0.50	-0.43	-0.35	-0.28
E1-Plane, AVG(dB)	-4.54	-4.46	-4.19	-3.94	-4.00	-3.95	-3.67	-3.59	-3.50	-3.43
E2-Plane, AVG(dB)	-4.61	-4.54	-4.27	-4.03	-4.10	-4.06	-3.81	-3.74	-3.66	-3.59
Peak Gain(dB)	-0.16	-0.05	0.04	0.20	0.12	0.15	0.28	0.35	0.42	0.51
Directivity(dB)	2.94	3.00	2.83	2.76	2.75	2.74	2.63	2.63	2.61	2.63
Minimum Gain(dB)	-9.52	-9.60	-9.61	-9.61	-9.85	-9.80	-9.72	-9.83	-9.91	-9.86

	11	12	13	14	15	16	17	18	19	20
Frequency(MHz)	2450	2455	2460	2465	2470	2475	2480	2485	2490	2497
Efficiency(dB)	-2.12	-2.09	-2.06	-2.21	-2.25	-2.17	-2.37	-2.63	-2.54	-2.56
Efficiency(%)	61.32	61.74	62.28	60.19	59.63	60.71	57.91	54.63	55.70	55.42
TRG(dB)	-2.12	-2.09	-2.06	-2.21	-2.25	-2.17	-2.37	-2.63	-2.54	-2.56
TRG _{Theta} (dB)	-2.28	-2.26	-2.22	-2.38	-2.42	-2.34	-2.56	-2.81	-2.73	-2.75
TRG _{Phi} (dB)	-16.54	-16.48	-16.26	-16.28	-16.32	-16.16	-16.18	-16.36	-16.37	-16.25
UHRG(dB)	-5.44	-5.41	-5.39	-5.56	-5.61	-5.55	-5.77	-6.04	-5.96	-5.99
UHRG/TRG(%)	46.63	46.58	46.38	46.19	46.04	45.90	45.74	45.55	45.49	45.39
H-Plane	-0.30	-0.29	-0.29	-0.47	-0.54	-0.48	-0.72	-0.99	-0.94	-0.99
E1-Plane, AVG(dB)	-3.43	-3.41	-3.39	-3.55	-3.60	-3.53	-3.75	-4.02	-3.94	-3.98
E2-Plane, AVG(dB)	-3.60	-3.58	-3.54	-3.69	-3.70	-3.63	-3.83	-4.09	-4.00	-4.02
Peak Gain(dB)	0.51	0.55	0.56	0.48	0.46	0.46	0.38	0.24	0.24	0.22
Directivity(dB)	2.63	2.64	2.62	2.68	2.71	2.63	2.76	2.86	2.78	2.78
Minimum Gain(dB)	-9.91	-9.71	-9.61	-9.62	-9.63	-9.44	-9.56	-9.72	-9.82	-10.03

Average Efficiency	-2.42dBi,	57.23%
Peak Gain	0.56dBi	