

2023.11.10

RA-N2311-08

APPROVAL SHEET

MODEL : T305
Antenna layout

Review	Consent	Approval

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1. Revision History

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

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2. Product Information

2.1 General Features


PART NUMBER	GradiANT
ANTENNA TYPE	PCB Pattern Antenna
APPLICATIONS	Wi-Fi

2.2 Electrical Specifications

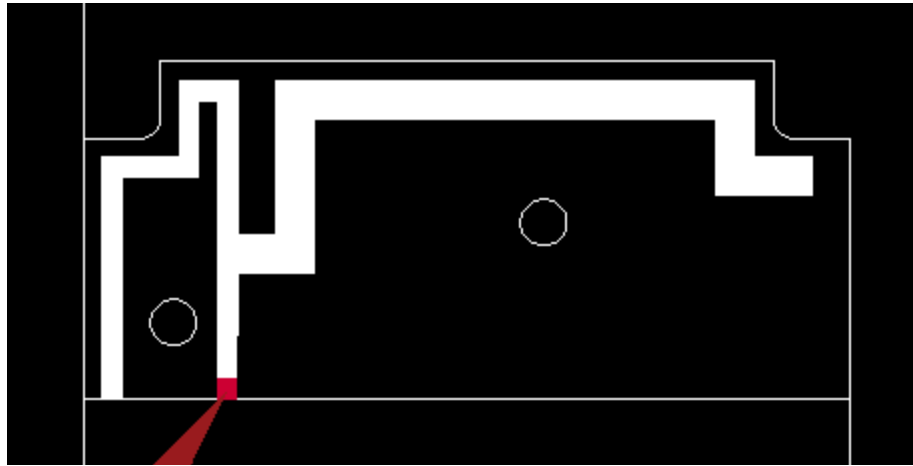
Frequency Range1 (TX)		2400MHz~2485MHz	
Frequency Range1 (RX)		2400MHz~2485MHz	
IMPEDANCE		50 Ω	
V.S.W.R	TX	2400MHz	2485MHz
		3 ↓	3 ↓
	RX	2400MHz	2485MHz
		3 ↓	3 ↓
RADIATION PATTERN		Omni-directional	
POLARIZATION		Linear	
Measurement		RADINA. Co., LTD	

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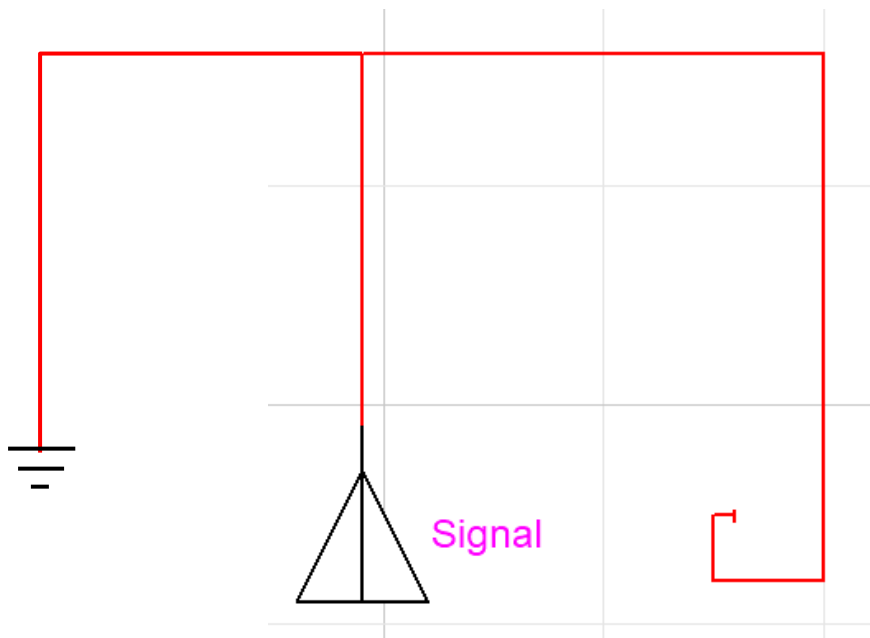
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3. Pattern Specifications



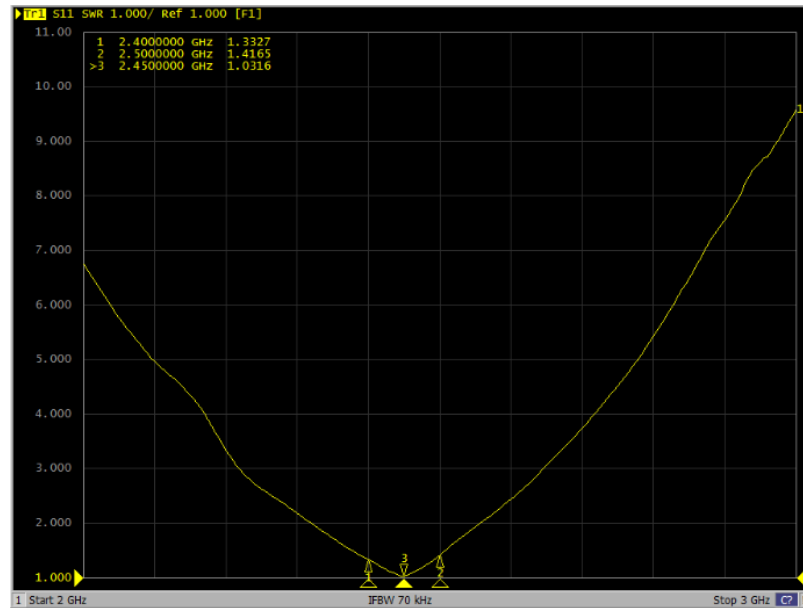
4. Matching Network



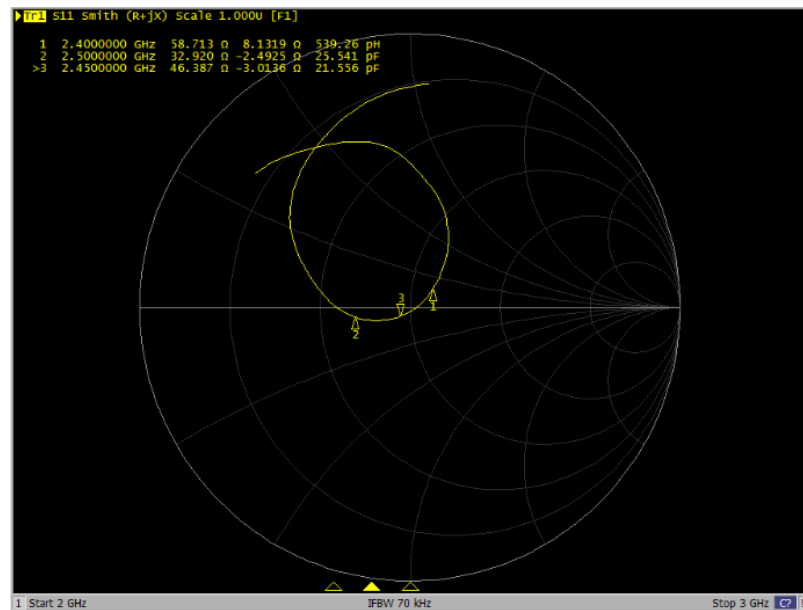
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5. Electrical Characteristics

5.1 VSWR



5.2 SMITH CHART

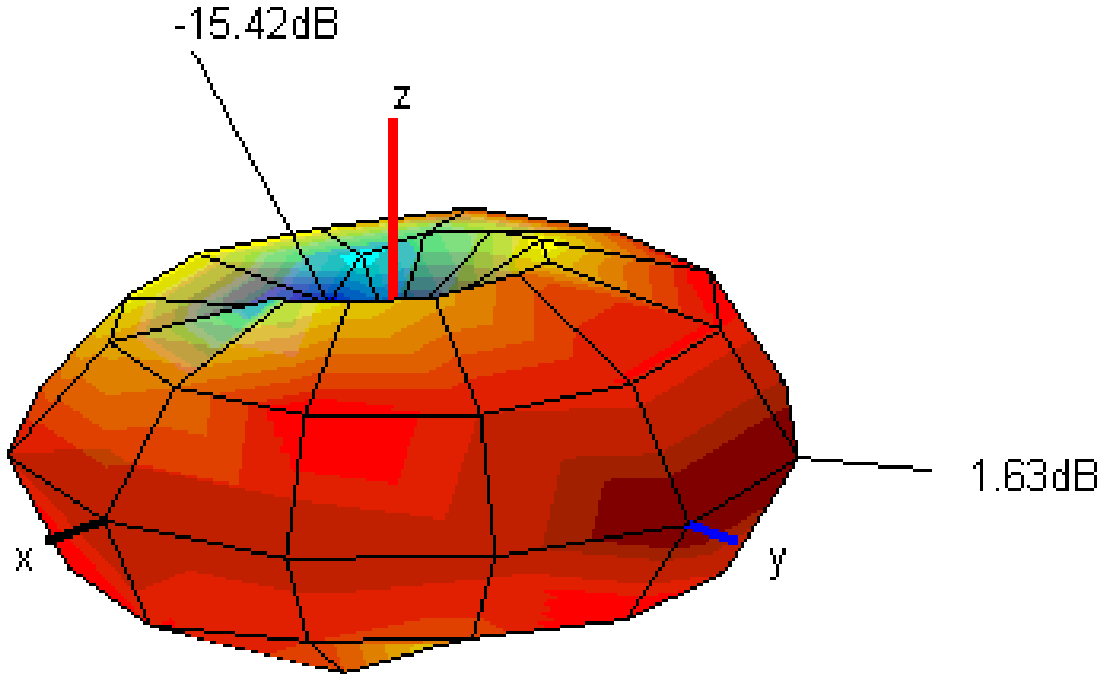


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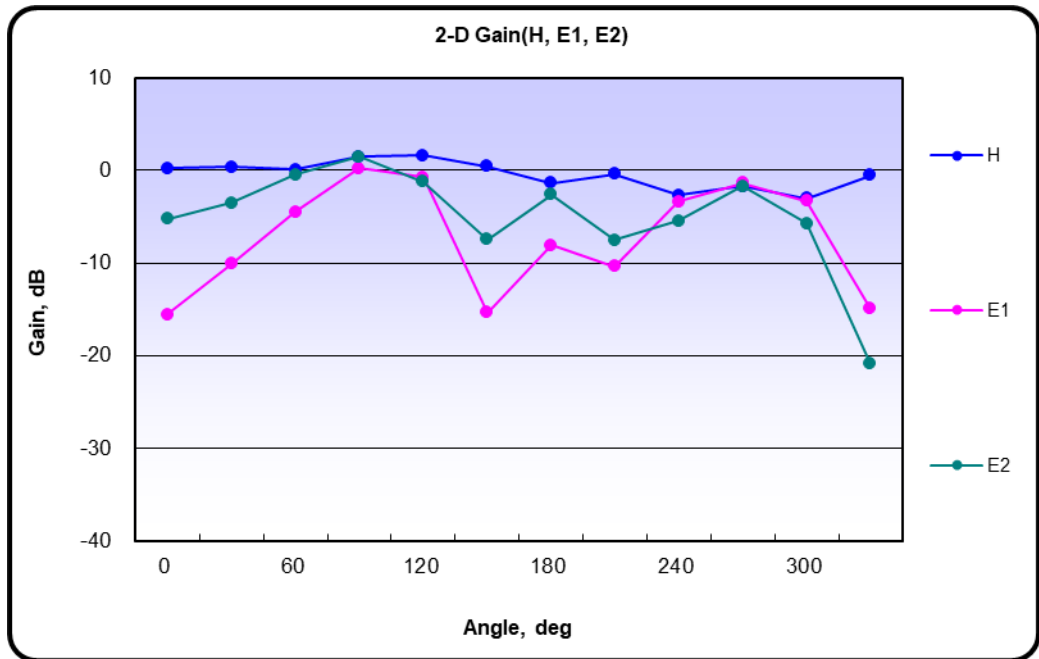
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5.3 3D-PLOTs



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]	-1.75	-1.87	-1.82	-1.91	-1.94	-2.13	-2.07	-2.09	-2.19	-2.00
Efficiency [%]	66.8	65.0	65.7	64.4	64.0	61.3	62.1	61.8	60.4	63.1
TRG _θ [dB]	-2.34	-2.45	-2.40	-2.47	-2.52	-2.68	-2.60	-2.63	-2.76	-2.55
Gain _{θ Peak} [dB]	2.07	1.77	1.95	1.74	1.64	1.49	1.53	1.55	1.31	1.62
Gain _{θ Min} [dB]	-17.08	-17.81	-16.63	-19.96	-18.76	-19.66	-20.22	-24.27	-26.78	-24.04
TRG _φ [dB]	-10.72	-10.87	-10.91	-11.11	-10.98	-11.33	-11.41	-11.43	-11.24	-11.25
Gain _{φ Peak} [dB]	-2.58	-2.55	-2.99	-2.93	-3.14	-3.04	-3.65	-3.22	-3.58	-3.09
Gain _{φ Min} [dB]	-29.06	-24.58	-23.63	-29.79	-29.09	-25.18	-29.52	-24.10	-26.83	-25.43
UHRG [dB]	-5.11	-5.23	-5.14	-5.28	-5.27	-5.50	-5.39	-5.44	-5.56	-5.35
UHRG/TRG [%]	46.2	46.1	46.6	46.0	46.5	46.0	46.5	46.3	46.0	46.2
H-Plane	0.00	-0.11	-0.09	-0.17	-0.23	-0.49	-0.33	-0.39	-0.45	-0.23
E1-Plane, AVG [dB]	-4.29	-4.20	-4.14	-4.32	-4.43	-4.50	-4.42	-4.59	-4.80	-4.42
E2-Plane, AVG [dB]	-2.95	-3.05	-3.01	-3.04	-3.23	-3.40	-3.24	-3.24	-3.41	-3.05
Peak Gain [dB]	2.07	1.78	2.03	1.80	1.64	1.50	1.53	1.57	1.32	1.63
Directivity [dB]	3.83	3.65	3.85	3.71	3.59	3.63	3.60	3.66	3.51	3.63
Minimum Gain [dB]	-14.69	-15.23	-15.37	-16.89	-16.48	-17.86	-17.70	-17.96	-17.60	-15.42

	11	12	13	14	15	16	17	18	19	20
Frequency [MHz]	2450	2455	2460	2465	2470	2475	2480	2485	2490	2497
Efficiency [dB]	-1.99	-1.89	-2.13	-2.28	-2.26	-2.14	-1.94	-2.31	-2.48	-2.30
Efficiency [%]	63.2	64.6	61.2	59.1	59.4	61.1	64.0	58.8	56.5	58.8
TRG _θ [dB]	-2.55	-2.45	-2.67	-2.83	-2.84	-2.70	-2.49	-2.90	-3.04	-2.85
Gain _{θ Peak} [dB]	1.55	1.40	1.42	1.11	1.08	1.21	1.50	1.21	0.86	1.12
Gain _{θ Min} [dB]	-23.40	-28.73	-31.19	-37.44	-30.22	-29.63	-37.72	-27.98	-28.43	-33.82
TRG _φ [dB]	-11.18	-11.11	-11.43	-11.50	-11.29	-11.32	-11.20	-11.29	-11.65	-11.54
Gain _{φ Peak} [dB]	-2.62	-3.26	-3.26	-3.45	-3.75	-2.92	-2.67	-3.73	-3.58	-3.27
Gain _{φ Min} [dB]	-21.95	-32.21	-28.70	-26.98	-24.34	-20.86	-25.81	-22.72	-25.62	-27.31
UHRG [dB]	-5.38	-5.31	-5.53	-5.60	-5.60	-5.50	-5.25	-5.67	-5.84	-5.59
UHRG/TRG [%]	45.8	45.5	45.8	46.6	46.4	46.1	46.7	46.1	46.2	47.0
H-Plane	-0.25	-0.17	-0.47	-0.57	-0.61	-0.53	-0.23	-0.66	-1.00	-0.72
E1-Plane, AVG [dB]	-4.36	-4.32	-4.45	-4.68	-4.68	-4.40	-4.07	-4.68	-4.79	-4.42
E2-Plane, AVG [dB]	-3.06	-3.15	-3.29	-3.43	-3.45	-3.18	-3.21	-3.57	-3.73	-3.63
Peak Gain [dB]	1.59	1.52	1.44	1.16	1.11	1.25	1.55	1.24	0.87	1.17
Directivity [dB]	3.58	3.42	3.57	3.44	3.38	3.39	3.49	3.55	3.35	3.47
Minimum Gain [dB]	-14.92	-22.21	-17.26	-18.32	-13.99	-17.77	-18.63	-21.59	-17.71	-21.19

Average Efficiency	-2.07dBi	62.06%
Peak Gain	2.07dBi	


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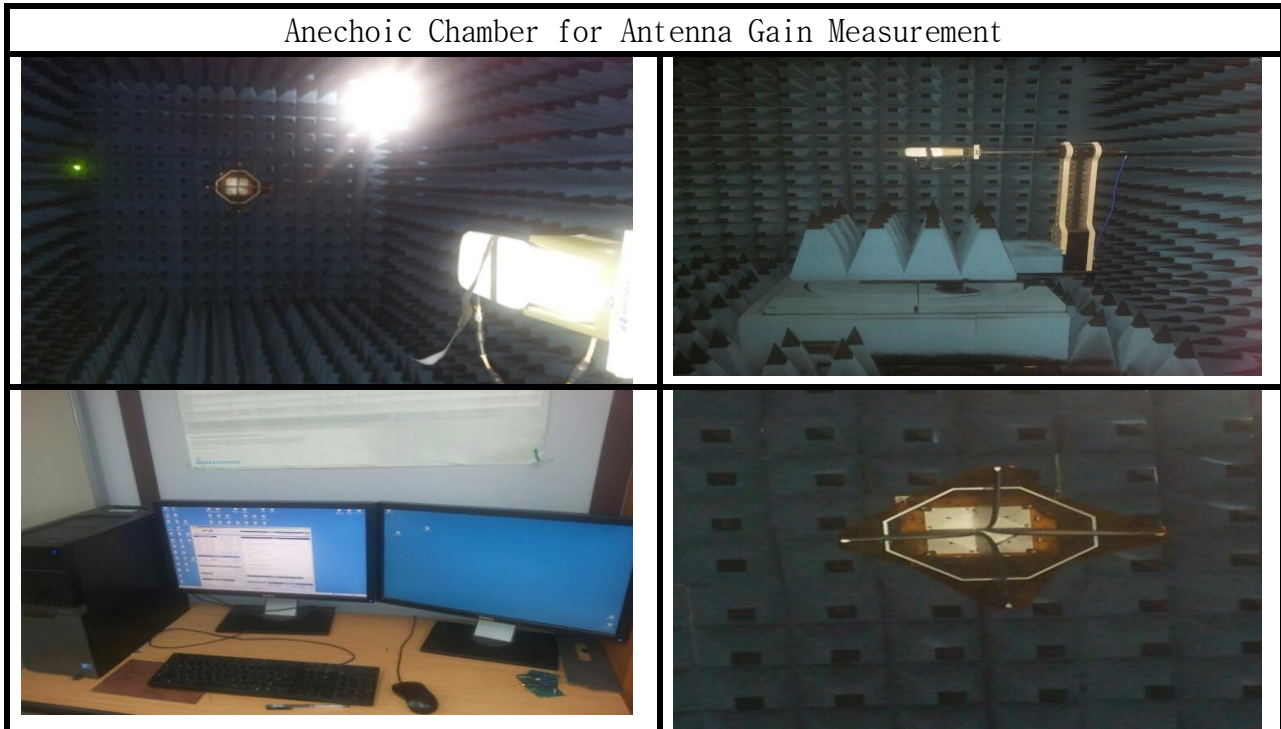
7. Measurement Process

7.1 SWR / Return loss

	Set Condition
Network Analyzer	Agilent 8753ES
Cable	Semi-rigid (40mm, 60mm)
Test condition	

7.2 Gain

Antenna gain is measured in the anechoic chamber of this company.



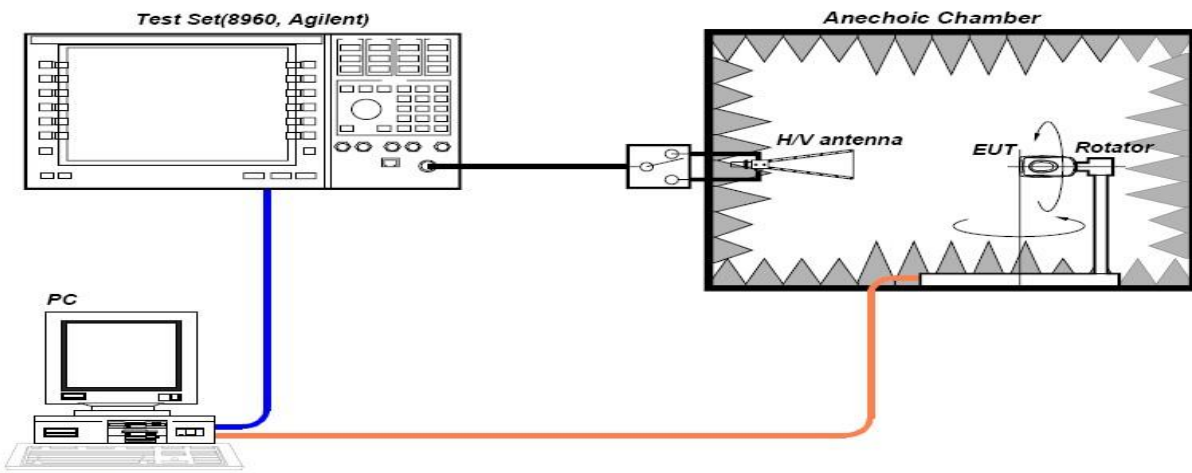
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7.3 Gain test block diagram

Active test Sysetm

- TRP, NHPRP, UHRP
- TIS, NHPIS, UHIS
- Relative Sensitivity



Passiver test Sysetm

- Efficiency
- Peak Gain, Avg, Gain
- Min, Max PWR

