



APPENDIX J

: ANTENNA SPECIFICATION

	PRODUCT APPROVAL SHEET		GROS051125WF41			
	MODEL NAME	C507-GGR-NTA-F-W	REV.	1.0	Page	4 / 10

2. Product Information

2.1 General Features

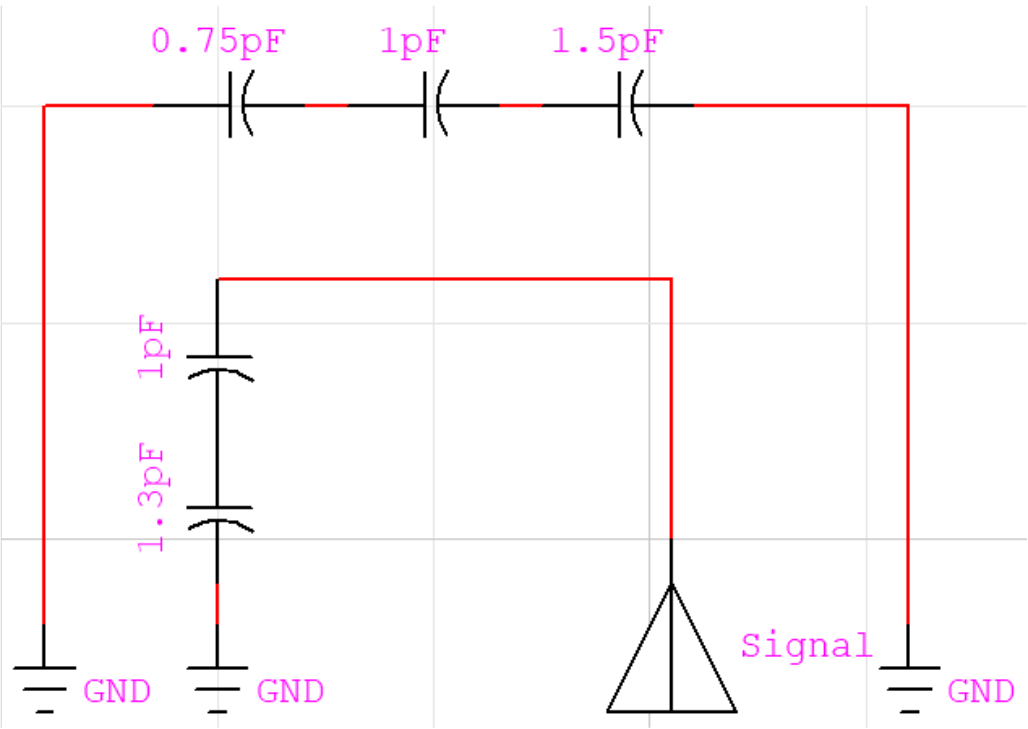
Model Name	C507-GGR-NTA-F-W
ANTENNA TYPE	PCB Pattern Antenna (GradiANT)
APPLICATIONS	BLE
Measurement Date	2025.09.21
Measurement Manager	Lee Dong-Youl, Director of Research

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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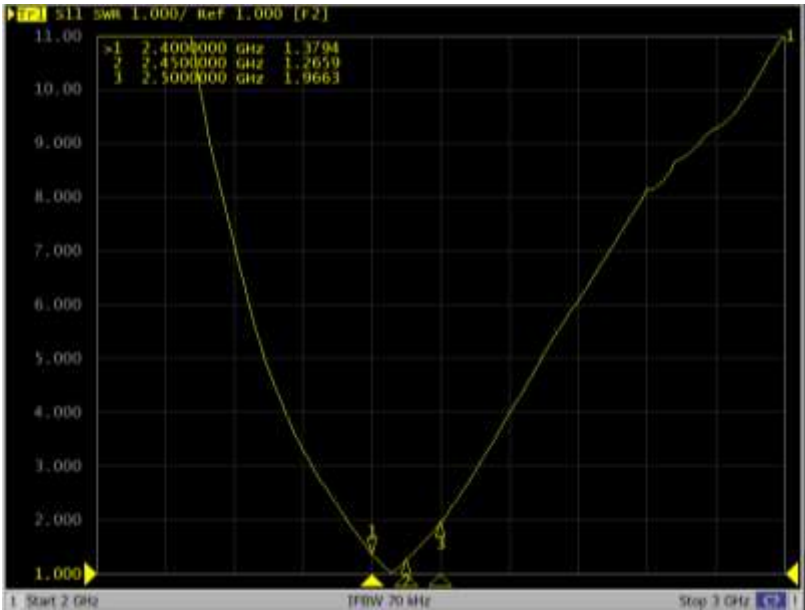
3. Matching Network



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4. Electrical Characteristics

4.1 VSWR

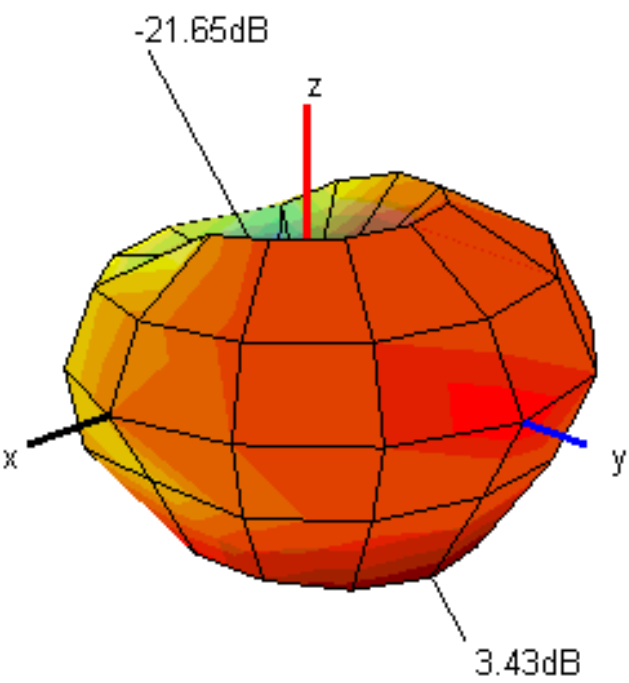


4.2 SMITH CHART

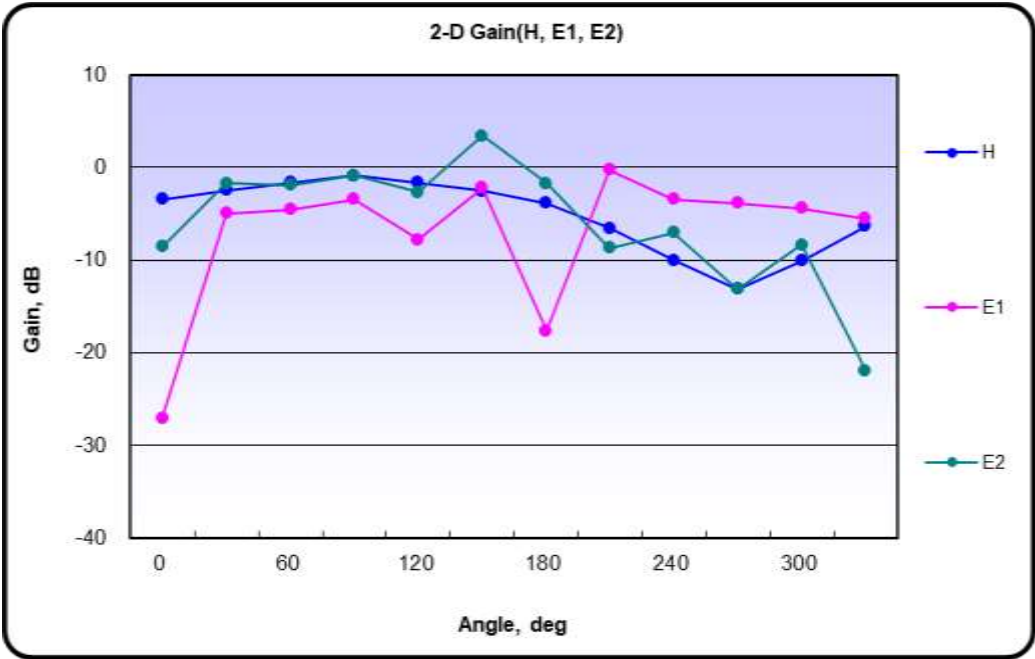


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4.3 3D-PLOTs



4.4 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]	-3.14	-3.10	-3.24	-3.19	-3.19	-3.05	-2.88	-2.88	-2.99	-2.88
Efficiency [%]	48.5	48.9	47.5	48.0	48.0	49.6	51.5	51.5	50.2	51.6
TRG _θ [dB]	-3.62	-3.60	-3.73	-3.69	-3.71	-3.57	-3.41	-3.44	-3.57	-3.44
Gain _{θ Peak} [dB]	2.87	3.03	2.98	2.88	3.35	3.27	3.13	3.27	3.33	3.42
Gain _{θ Min} [dB]	-18.22	-19.11	-20.88	-19.94	-17.06	-19.82	-18.39	-20.29	-20.10	-21.97
TRG _φ [dB]	-12.91	-12.81	-12.95	-12.77	-12.62	-12.47	-12.28	-12.06	-12.05	-11.99
Gain _{φ Peak} [dB]	-3.15	-3.19	-3.30	-2.77	-2.90	-2.71	-2.69	-2.60	-2.24	-2.41
Gain _{φ Min} [dB]	-36.31	-43.35	-33.19	-35.79	-37.69	-37.81	-31.56	-35.50	-34.04	-37.96
UHRG [dB]	-7.42	-7.42	-7.44	-7.48	-7.53	-7.27	-7.07	-7.04	-7.27	-7.12
UHRG/TRG [%]	37.3	37.0	38.0	37.2	36.8	37.8	38.1	38.4	37.3	37.6
H-Plane	-4.13	-3.94	-4.26	-4.03	-4.31	-4.10	-3.77	-3.83	-4.08	-3.92
E1-Plane, AVG [dB]	-4.55	-4.54	-4.53	-4.55	-4.47	-4.53	-4.49	-4.34	-4.54	-4.40
E2-Plane, AVG [dB]	-3.41	-3.12	-3.44	-3.35	-3.20	-3.00	-2.90	-2.87	-2.91	-2.86
Peak Gain [dB]	2.87	3.03	3.13	3.14	3.35	3.28	3.29	3.27	3.41	3.43
Directivity [dB]	6.01	6.14	6.36	6.33	6.54	6.33	6.17	6.16	6.40	6.31
Minimum Gain [dB]	-18.15	-18.96	-20.21	-18.79	-16.32	-19.75	-18.19	-16.63	-19.84	-21.65

	11	12	13	14	15	16	17	18	19	20
Frequency [MHz]	2450	2455	2460	2465	2470	2475	2480	2485	2490	2497
Efficiency [dB]	-3.02	-3.05	-3.14	-3.21	-2.99	-3.09	-3.26	-3.70	-4.03	-4.02
Efficiency [%]	49.9	49.5	48.5	47.8	50.3	49.1	47.2	42.7	39.6	39.6
TRG _θ [dB]	-3.59	-3.61	-3.74	-3.84	-3.58	-3.68	-3.89	-4.35	-4.66	-4.66
Gain _{θ Peak} [dB]	3.09	3.45	2.95	3.09	3.30	3.40	3.10	2.42	2.50	2.14
Gain _{θ Min} [dB]	-23.58	-26.22	-19.42	-22.01	-23.26	-20.23	-20.56	-18.92	-18.32	-21.77
TRG _φ [dB]	-12.18	-12.19	-12.04	-11.92	-11.94	-12.00	-11.97	-12.26	-12.69	-12.67
Gain _{φ Peak} [dB]	-2.59	-2.38	-1.86	-2.14	-2.32	-2.62	-2.19	-2.88	-3.01	-3.03
Gain _{φ Min} [dB]	-42.29	-42.92	-35.95	-60.55	-49.36	-33.62	-32.91	-35.56	-35.13	-37.15
UHRG [dB]	-7.21	-7.32	-7.29	-7.25	-7.01	-7.11	-7.25	-7.77	-7.94	-7.96
UHRG/TRG [%]	38.1	37.4	38.5	39.5	39.6	39.6	39.9	39.2	40.7	40.3
H-Plane	-4.16	-4.32	-4.49	-4.69	-4.41	-4.50	-4.90	-5.36	-5.86	-5.98
E1-Plane, AVG [dB]	-4.48	-4.41	-4.53	-4.68	-4.43	-4.55	-4.63	-5.12	-5.44	-5.47
E2-Plane, AVG [dB]	-3.08	-3.11	-3.33	-3.12	-2.86	-3.08	-3.18	-3.73	-3.83	-3.95
Peak Gain [dB]	3.21	3.46	3.08	3.09	3.44	3.41	3.10	2.61	2.65	2.28
Directivity [dB]	6.24	6.51	6.23	6.30	6.43	6.50	6.36	6.31	6.67	6.30
Minimum Gain [dB]	-22.84	-22.46	-18.18	-21.36	-23.14	-20.04	-20.02	-18.83	-16.48	-19.65

Average Efficiency	-3.19dBi	47.97%
Peak Gain	3.46dBi	

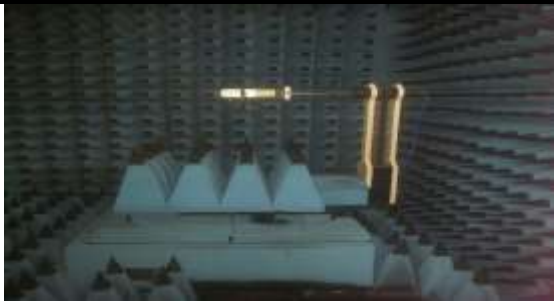
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7. Measurement Process

7.1 SWR / Return loss

	Set Condition
Network Analyzer	Agilent 8753ES Calibration Date : 2025.04.16
Cable	Semi-ridid (40mm, 60mm)
Test condition	

7.2 Gain

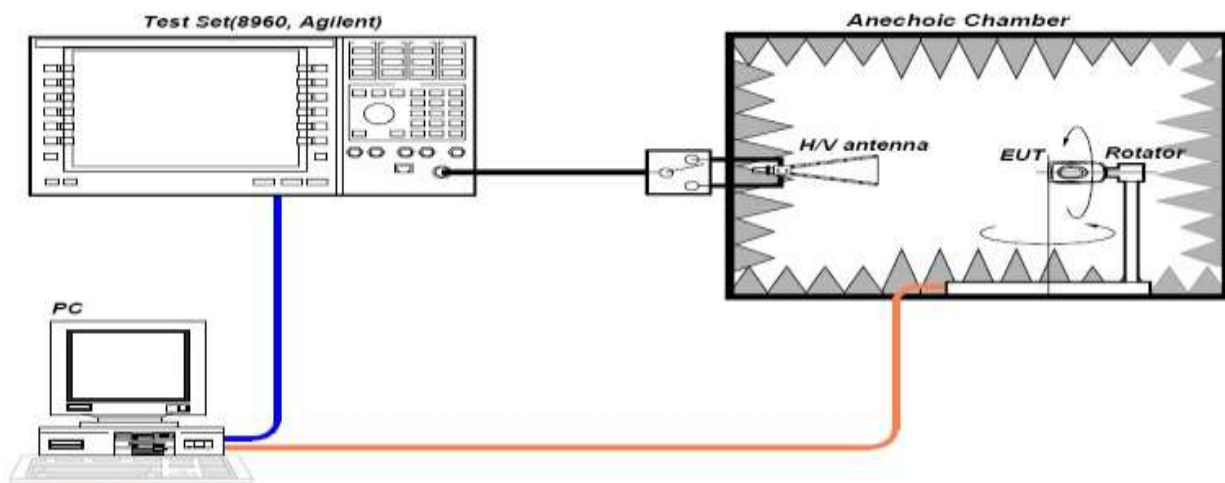
Anechoic Chamber for Antenna Gain Measurement Calibration Date : 2025.04.16	
	
	

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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

