

2023.10.19

RA-N3210-51

APPROVAL SHEET

MODEL : X-COM3 PRO
Main ANT
Antenna layout

Review	Consent	Approval

Messrs. SENA Technology Co.,Ltd



RadiNa Co. ,Ltd

TEL:+82-2-463-0373

FAX:+82-2-463-0374

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1. Revision History

NO.	Before	After	Reason	Date
1				
2				
3				
4				
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13				

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2.Product Information

2.1 General Features

PART NUMBER	GRSN23108MS41
ANTENNA TYPE	Dipole Antenna
APPLICATIONS	Mesh

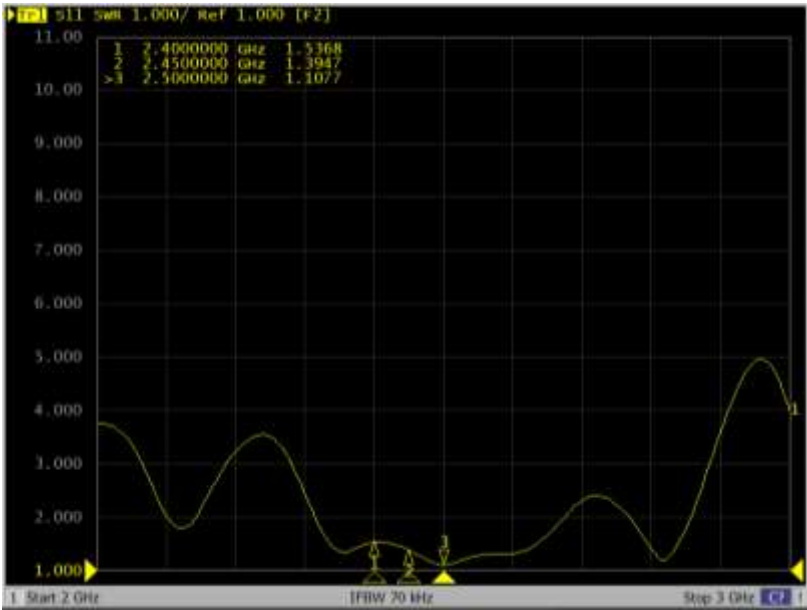
2.2 Electrical Specifications

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. Electrical Characterristics

3.1 VSWR

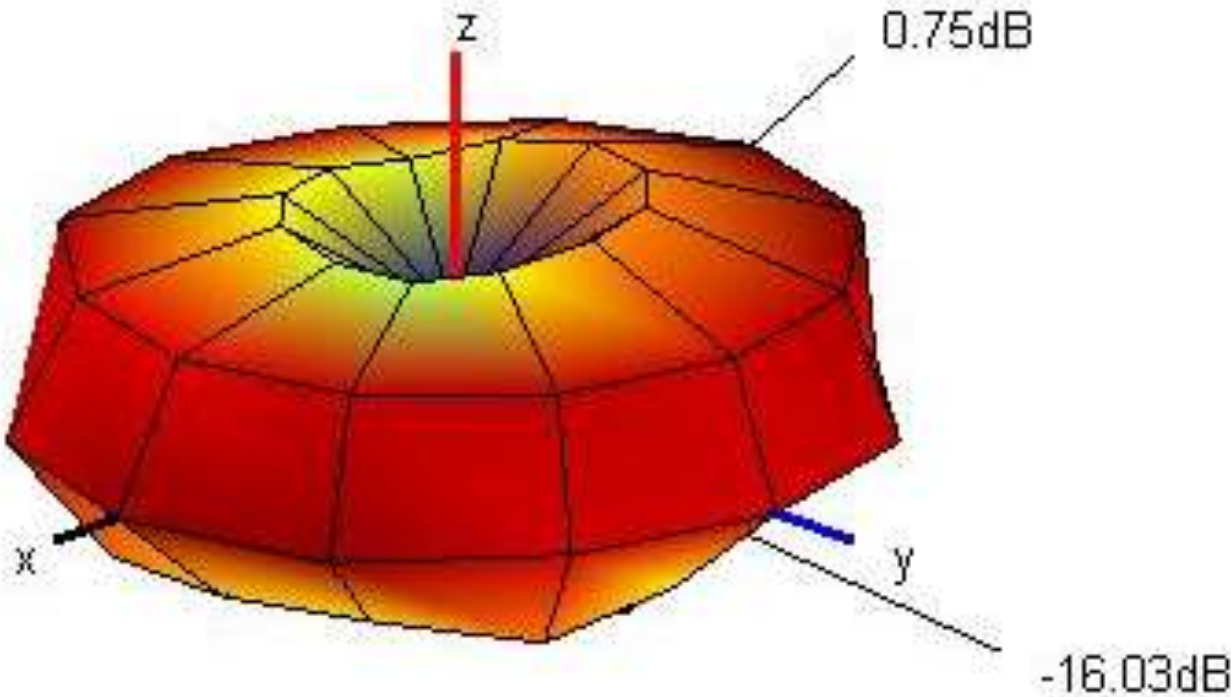


3.2 SMITH CHART

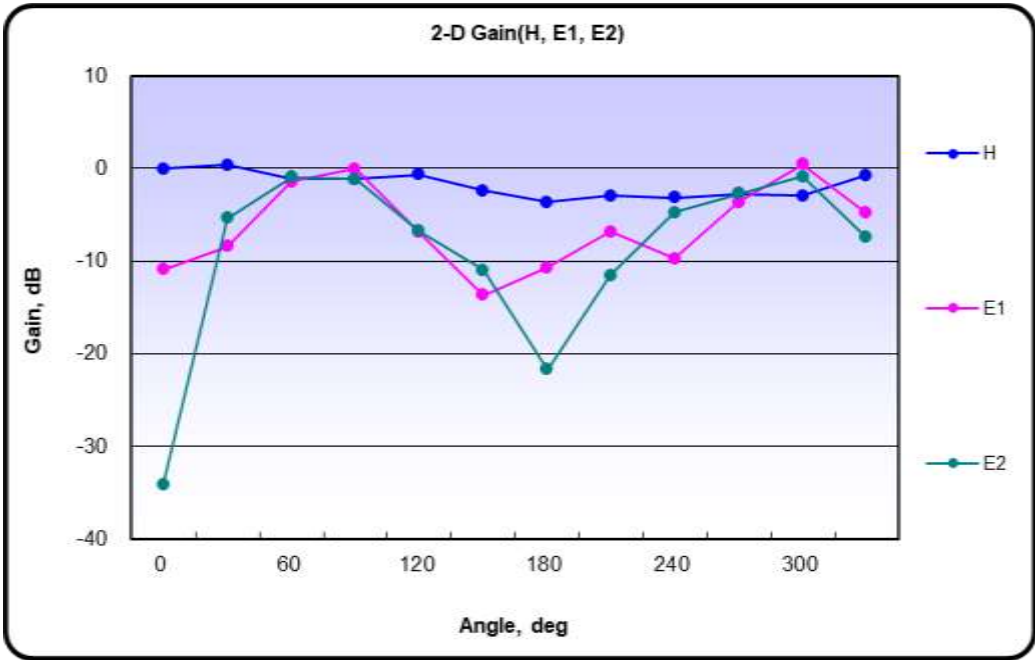


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3.3
 3D-PLOT



3.4
 2D-GAIN



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4. 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]	-3.71	-3.60	-3.43	-3.48	-3.56	-3.58	-3.19	-3.08	-3.00	-2.91
Efficiency [%]	42.6	43.7	45.4	44.9	44.1	43.9	47.9	49.2	50.1	51.2
TRG _θ [dB]	-4.37	-4.21	-4.03	-4.01	-4.06	-4.04	-3.61	-3.45	-3.36	-3.24
Gain _{θ Peak} [dB]	-0.71	-0.52	-0.42	-0.09	-0.03	-0.39	-0.05	0.14	0.57	0.70
Gain _{θ Min} [dB]	-27.94	-21.39	-33.83	-27.87	-23.47	-23.15	-19.20	-15.38	-18.96	-17.89
TRG _φ [dB]	-12.21	-12.40	-12.35	-12.92	-13.17	-13.54	-13.61	-13.90	-14.04	-14.28
Gain _{φ Peak} [dB]	-5.76	-5.41	-5.45	-6.93	-6.97	-6.35	-7.26	-6.81	-7.65	-8.53
Gain _{φ Min} [dB]	-29.06	-29.37	-33.71	-37.71	-32.29	-27.45	-23.37	-33.68	-37.82	-32.22
UHRG [dB]	-5.48	-5.44	-5.22	-5.27	-5.32	-5.39	-5.02	-4.91	-4.85	-4.77
UHRG/TRG [%]	66.5	65.4	66.2	66.3	66.6	65.8	65.6	65.5	65.4	65.1
H-Plane	-4.02	-3.58	-3.43	-3.15	-2.99	-2.90	-2.25	-1.98	-1.82	-1.58
E1-Plane, AVG [dB]	-4.90	-4.82	-4.76	-5.10	-4.94	-5.08	-4.79	-4.55	-4.36	-4.31
E2-Plane, AVG [dB]	-5.53	-5.53	-5.42	-5.14	-5.57	-5.45	-5.01	-5.08	-4.76	-4.68
Peak Gain [dB]	-0.55	-0.44	-0.10	-0.03	0.04	-0.33	0.13	0.34	0.64	0.75
Directivity [dB]	3.16	3.16	3.33	3.45	3.59	3.25	3.33	3.42	3.64	3.66
Minimum Gain [dB]	-19.33	-18.10	-22.75	-18.71	-17.72	-20.80	-16.49	-14.05	-18.90	-16.03
	12	13	14	15	16	17	18	19	20	12
Frequency [MHz]	2450	2455	2460	2465	2470	2475	2480	2485	2490	2497
Efficiency [dB]	-2.92	-2.93	-3.02	-2.92	-2.71	-2.67	-2.72	-3.27	-3.29	-3.13
Efficiency [%]	51.0	50.9	49.9	51.1	53.6	54.1	53.4	47.1	46.8	48.7
TRG _θ [dB]	-3.22	-3.21	-3.28	-3.18	-2.94	-2.89	-2.93	-3.46	-3.48	-3.28
Gain _{θ Peak} [dB]	0.43	0.75	0.35	0.42	0.82	0.83	0.94	0.01	0.37	-0.04
Gain _{θ Min} [dB]	-20.72	-18.56	-19.04	-19.07	-19.77	-19.34	-18.56	-28.68	-22.50	-21.36
TRG _φ [dB]	-14.66	-14.97	-15.47	-15.20	-15.65	-15.70	-16.13	-16.98	-17.16	-17.71
Gain _{φ Peak} [dB]	-9.00	-9.32	-8.83	-9.62	-9.48	-9.93	-11.39	-12.55	-10.55	-11.46
Gain _{φ Min} [dB]	-35.65	-52.84	-35.43	-37.16	-31.94	-30.91	-36.20	-35.08	-34.87	-39.94
UHRG [dB]	-4.81	-4.87	-4.95	-4.88	-4.73	-4.69	-4.75	-5.35	-5.41	-5.27
UHRG/TRG [%]	64.7	64.1	64.2	63.7	62.8	62.7	62.8	62.0	61.5	61.1
H-Plane	-1.47	-1.42	-1.44	-1.26	-0.93	-0.86	-0.94	-1.41	-1.42	-1.30
E1-Plane, AVG [dB]	-4.41	-4.37	-4.40	-4.56	-4.22	-4.15	-4.36	-4.65	-4.89	-4.56
E2-Plane, AVG [dB]	-4.94	-4.68	-4.91	-4.60	-4.36	-4.34	-4.50	-4.82	-5.04	-4.68
Peak Gain [dB]	0.57	0.80	0.42	0.47	0.83	0.88	0.94	0.04	0.37	-0.03
Directivity [dB]	3.49	3.73	3.44	3.39	3.54	3.54	3.67	3.31	3.67	3.10
Minimum Gain [dB]	-18.72	-16.94	-18.37	-18.38	-18.75	-18.35	-18.34	-24.40	-19.75	-20.45

Average Efficiency	-3.14dBi	48.47%
Average Efficiency	0.94dBi	

RADINA. Co., LTD

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5.Measurement Process

5.1 SWR / Return loss

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

5.2 Gain

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

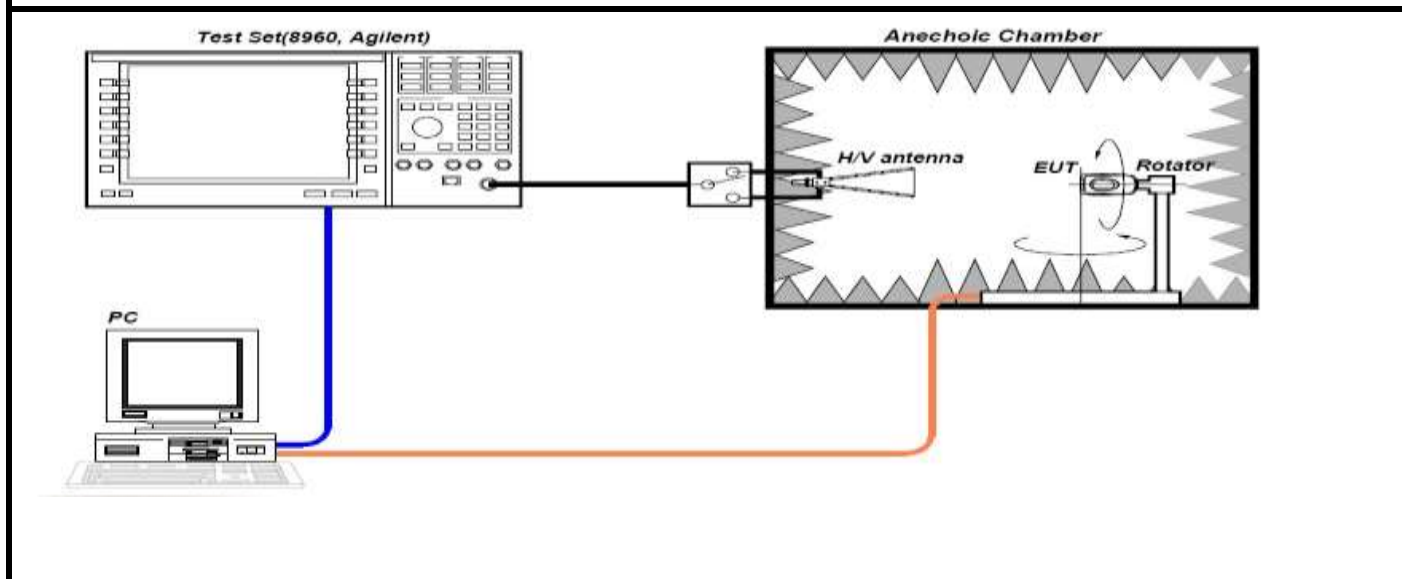
Anechoic Chamber for Antenna Gain Measurement	
	
	

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5.3 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

