

2024.09.23

RA-N2409-01

APPROVAL SHEET

MODEL : KANE6
Antenna layout

Review	Consent	Approval

Messrs. 同時 TECH INC.



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1. Revision History

NO.	Before	After	Reason	Date
1				
2				
3				
4				
5				
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12				
13				

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2.Product Information

2.1 General Features

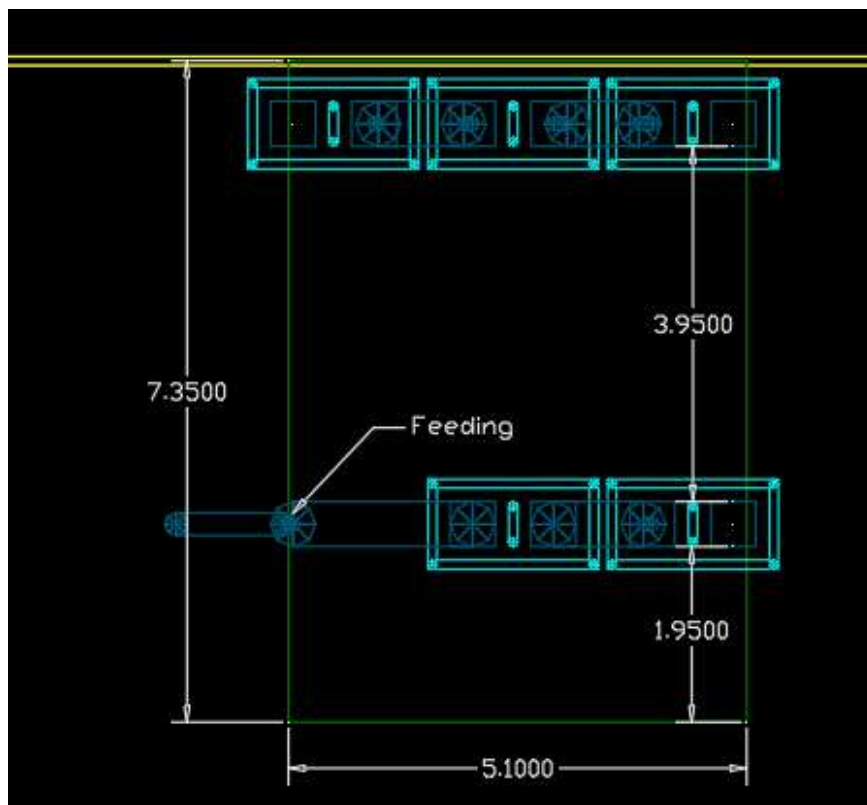
PART NUMBER	GRDS23094BT01
ANTENNA TYPE	PCB Pattern Antenna
APPLICATIONS	Bluetooth

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	

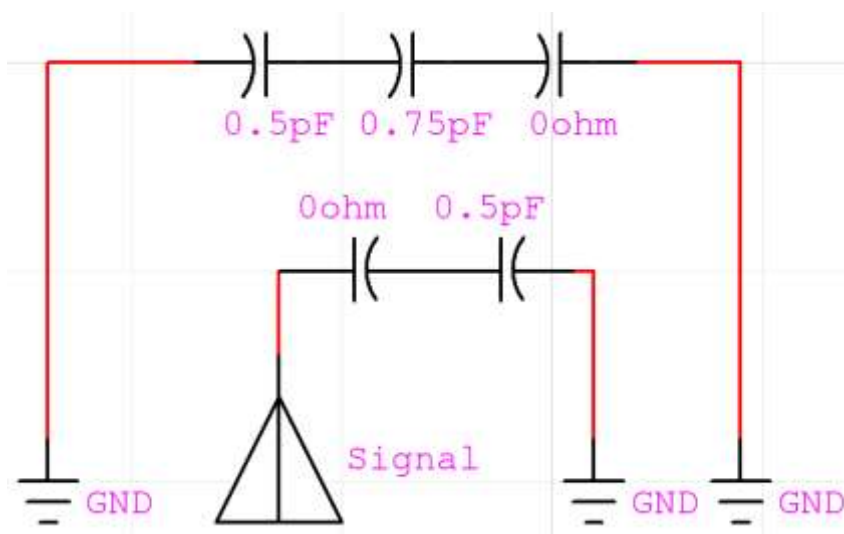
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3. Pattern Specifications



4. Matching Network

Capacitor value can be changed depending on different situation

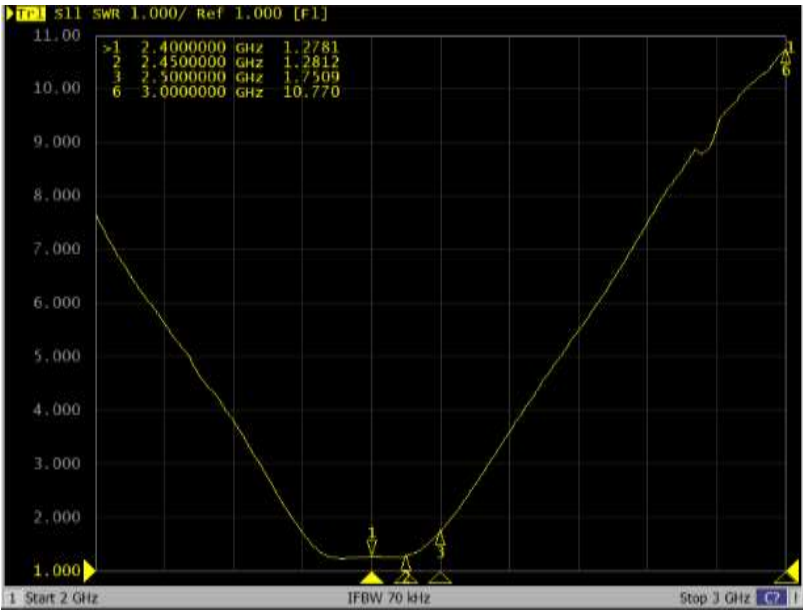


RADINA. Co., LTD

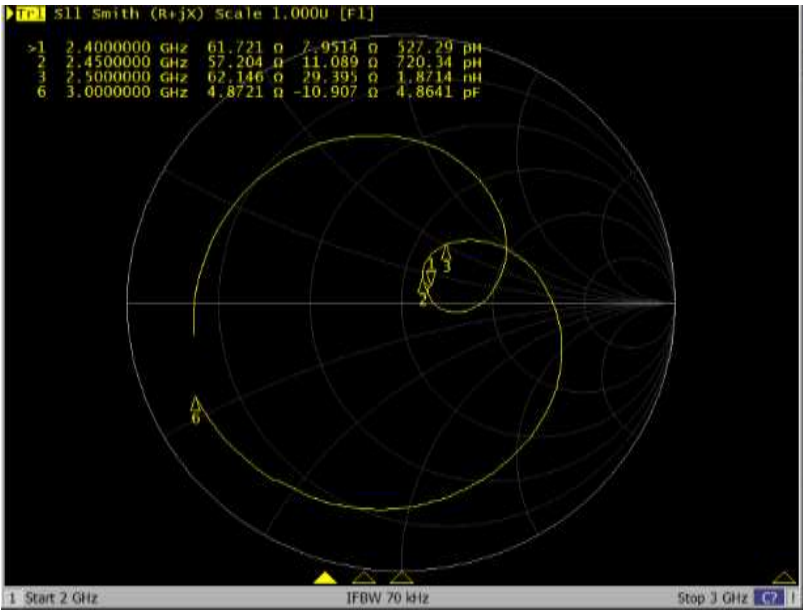
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5. Electrical Characterristics

5.1 VSWR

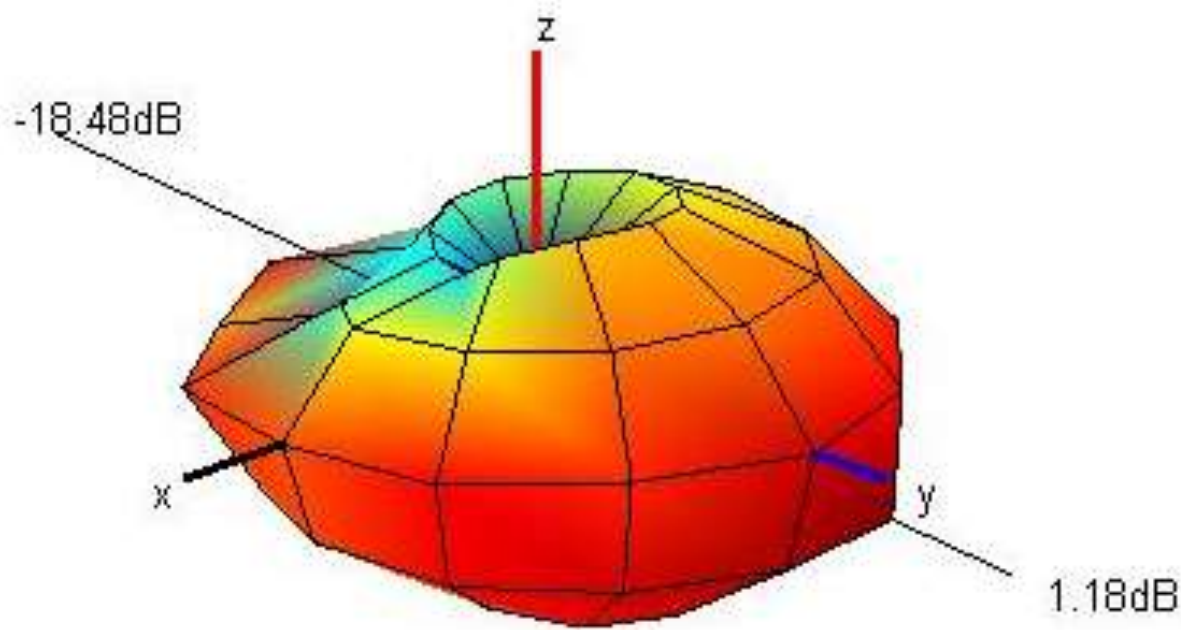


5.2 SMITH CHART

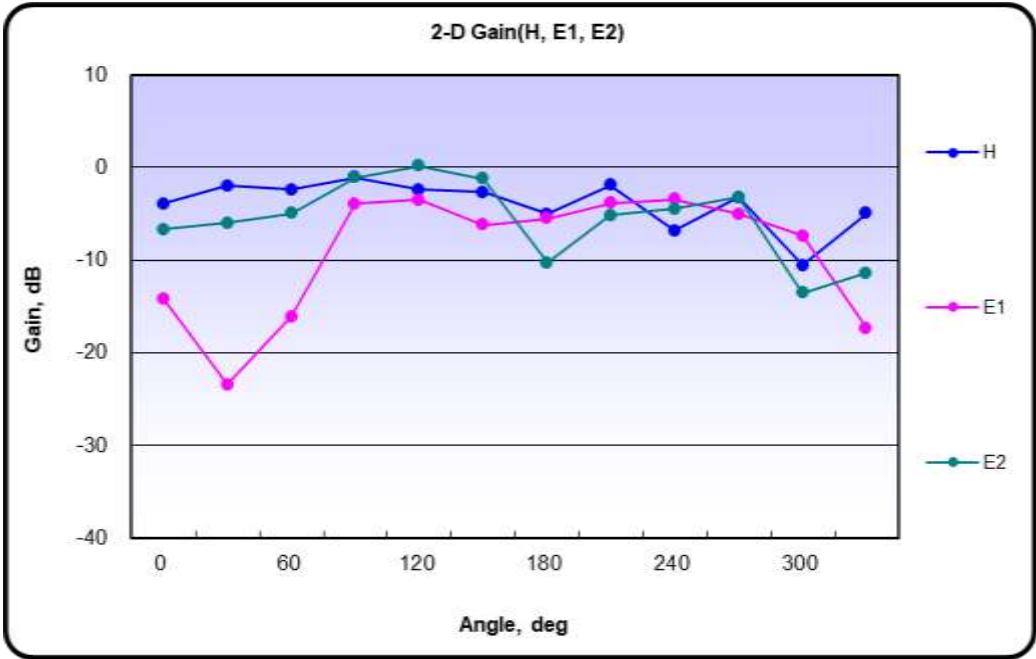


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5.3 3D-PLOTs



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]	-3.67	-3.66	-3.74	-3.81	-3.91	-3.94	-3.71	-3.59	-3.64	-3.56
Efficiency [%]	42.9	43.0	42.3	41.6	40.7	40.4	42.6	43.8	43.3	44.0
TRG _θ [dB]	-4.70	-4.66	-4.70	-4.75	-4.84	-4.87	-4.59	-4.44	-4.50	-4.41
Gain _{θ Peak} [dB]	1.22	1.23	1.11	1.00	0.84	0.70	0.89	0.98	0.85	0.81
Gain _{θ Min} [dB]	-31.91	-31.29	-31.46	-31.03	-29.83	-29.56	-27.82	-26.89	-27.75	-30.63
TRG _φ [dB]	-10.43	-10.54	-10.74	-10.91	-11.07	-11.09	-11.07	-11.07	-11.07	-11.07
Gain _{φ Peak} [dB]	-2.68	-2.74	-2.92	-3.08	-3.19	-3.20	-3.17	-3.20	-3.23	-3.24
Gain _{φ Min} [dB]	-33.55	-34.67	-36.61	-35.00	-35.09	-33.03	-33.20	-35.22	-41.70	-40.85
UHRG [dB]	-9.14	-9.12	-9.16	-9.21	-9.28	-9.28	-9.05	-8.92	-8.95	-8.87
UHRG/TRG [%]	28.4	28.5	28.7	28.8	29.0	29.2	29.2	29.3	29.5	29.5
H-Plane	-4.40	-4.31	-4.26	-4.20	-4.20	-4.13	-3.77	-3.55	-3.52	-3.34
E1-Plane, AVG [dB]	-6.51	-6.50	-6.57	-6.61	-6.72	-6.76	-6.47	-6.33	-6.40	-6.30
E2-Plane, AVG [dB]	-4.19	-4.18	-4.21	-4.29	-4.39	-4.44	-4.19	-4.07	-4.14	-4.07
Peak Gain [dB]	1.68	1.66	1.53	1.41	1.24	1.11	1.28	1.35	1.23	1.18
Directivity [dB]	5.35	5.33	5.27	5.22	5.15	5.05	4.99	4.94	4.86	4.74
Minimum Gain [dB]	-13.32	-13.97	-14.60	-14.97	-15.58	-16.19	-16.84	-17.26	-17.86	-18.48

	11	12	13	14	15	16	17	18	19	20
Frequency [MHz]	2450	2455	2460	2465	2470	2475	2480	2485	2490	2497
Efficiency [dB]	-3.67	-3.65	-3.76	-3.75	-3.63	-3.62	-3.58	-4.02	-4.32	-4.27
Efficiency [%]	42.9	43.1	42.1	42.1	43.4	43.5	43.8	39.6	37.0	37.4
TRG _θ [dB]	-4.51	-4.47	-4.59	-4.59	-4.45	-4.44	-4.39	-4.86	-5.16	-5.10
Gain _{θ Peak} [dB]	0.62	0.60	0.46	0.42	0.55	0.56	0.64	0.22	-0.06	0.11
Gain _{θ Min} [dB]	-32.43	-35.03	-38.78	-47.09	-38.24	-38.00	-36.38	-36.02	-32.38	-29.71
TRG _φ [dB]	-11.25	-11.31	-11.35	-11.34	-11.28	-11.26	-11.30	-11.57	-11.86	-11.87
Gain _{φ Peak} [dB]	-3.40	-3.55	-3.66	-3.63	-3.61	-3.59	-3.69	-3.98	-4.36	-4.39
Gain _{φ Min} [dB]	-35.68	-33.32	-35.60	-34.56	-33.45	-32.57	-31.79	-31.93	-30.71	-30.38
UHRG [dB]	-8.96	-8.95	-9.05	-9.06	-8.96	-8.97	-8.97	-9.41	-9.74	-9.73
UHRG/TRG [%]	29.6	29.5	29.5	29.4	29.3	29.2	29.0	28.9	28.7	28.4
H-Plane	-3.35	-3.26	-3.33	-3.29	-3.12	-3.10	-3.03	-3.49	-3.81	-3.77
E1-Plane, AVG [dB]	-6.39	-6.36	-6.47	-6.49	-6.35	-6.35	-6.29	-6.76	-7.07	-7.00
E2-Plane, AVG [dB]	-4.19	-4.15	-4.28	-4.27	-4.14	-4.12	-4.05	-4.53	-4.81	-4.73
Peak Gain [dB]	0.97	0.95	0.80	0.75	0.86	0.85	0.90	0.46	0.16	0.23
Directivity [dB]	4.64	4.60	4.56	4.51	4.49	4.47	4.48	4.48	4.48	4.50
Minimum Gain [dB]	-18.81	-19.29	-19.33	-19.31	-18.83	-18.70	-18.94	-18.98	-18.93	-19.39

Average Efficiency	-3.77dBi	41.97%
Peak Gain	1.68dBi	

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7.Measurement Process

7.1 SWR / Return loss

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

7.2 Gain

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

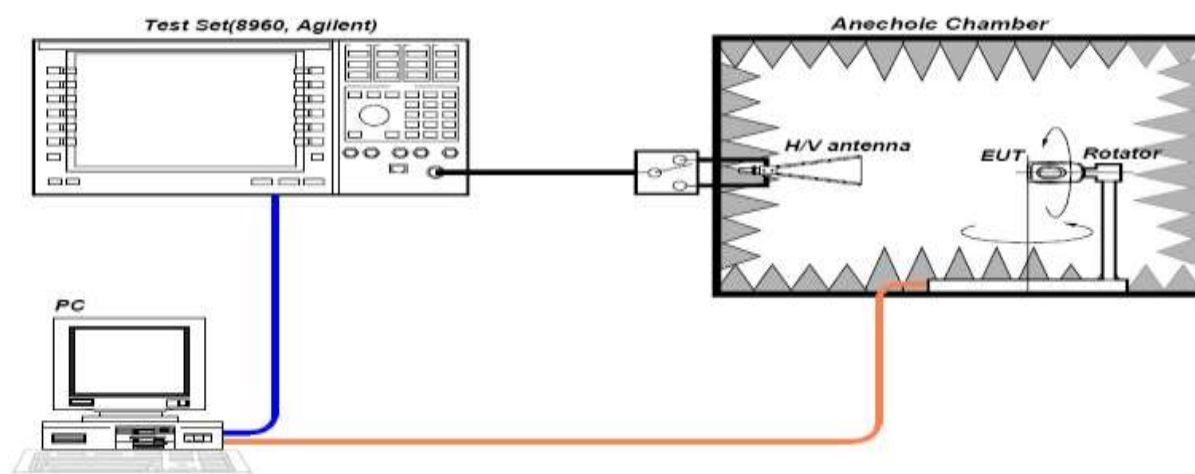
Anechoic Chamber for Antenna Gain Measurement	
	
	

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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

