

2024.09.23

RA-N2409-01

APPROVAL SHEET

MODEL : KANE6
Antenna layout

Review	Consent	Approval

Messrs. 同時 TECH INC.



RadiNa Co. ,Ltd

TEL:+82-2-463-0373

FAX:+82-2-463-0374

	PRODUCT APPROVAL SHEET		GRDS23094BT01			
	MODEL NAME	KANE6	REV.	1.0	Page	2 / 10

Table of contents

1. Revision History

2. Product Information

2.1 General Features

2.2 Electrical Specifications

3. Pattern Specifications

4. Matching Network

5. Electrical Characteristics

5.1 VSWR

5.2 Smith Chart

5.3 3D-PLOT

5.4 2D-GAIN

6. Passive Measurement

7. Measurement Process

	PRODUCT APPROVAL SHEET		GRDS23094BT01			
	MODEL NAME	KANE6	REV.	1.0	Page	3 / 10

1. Revision History

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

	PRODUCT APPROVAL SHEET		GRDS23094BT01			
	MODEL NAME	KANE6	REV.	1.0	Page	4 / 10

2.Product Information

2.1 General Features

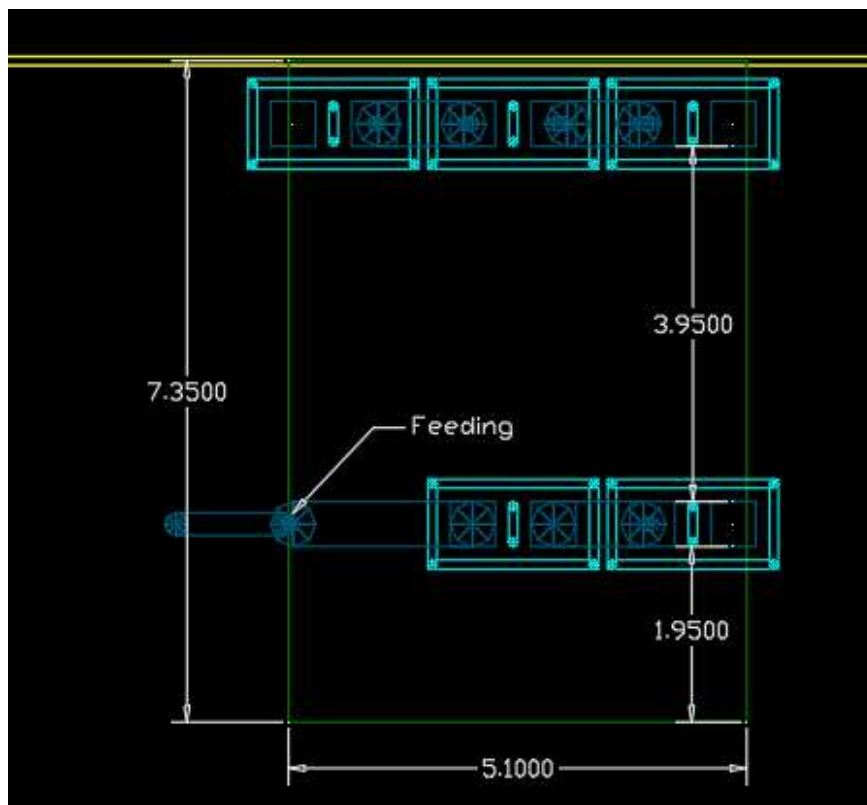
PART NUMBER	GRDS23094BT01
ANTENNA TYPE	PCB Pattern Antenna
APPLICATIONS	Bluetooth

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	

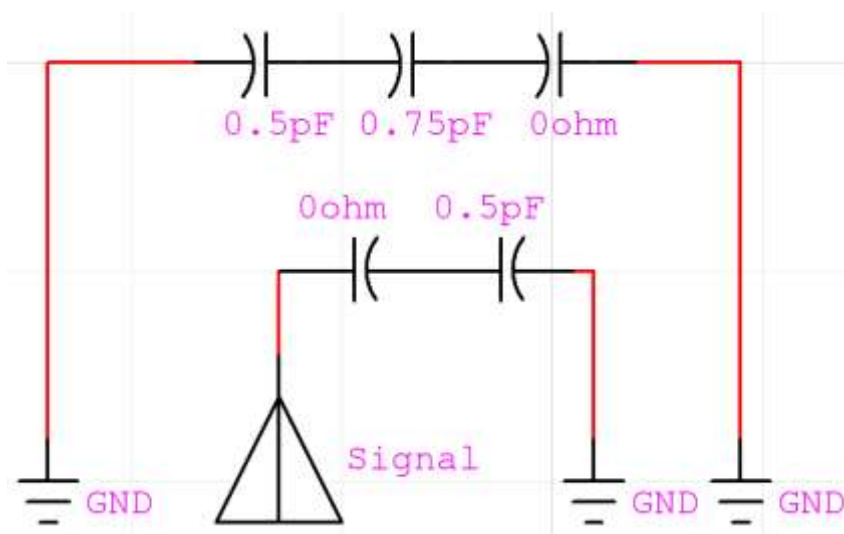
	PRODUCT APPROVAL SHEET		GRDS23094BT01			
	MODEL NAME	KANE6	REV.	1.0	Page	5 / 10

3. Pattern Specifications



4. Matching Network

Capacitor value can be changed depending on different situation

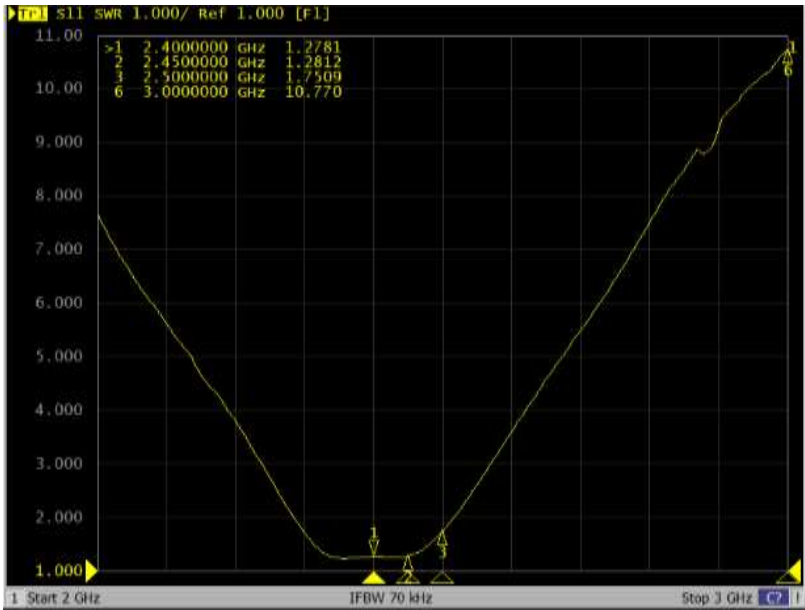


RADINA. Co., LTD

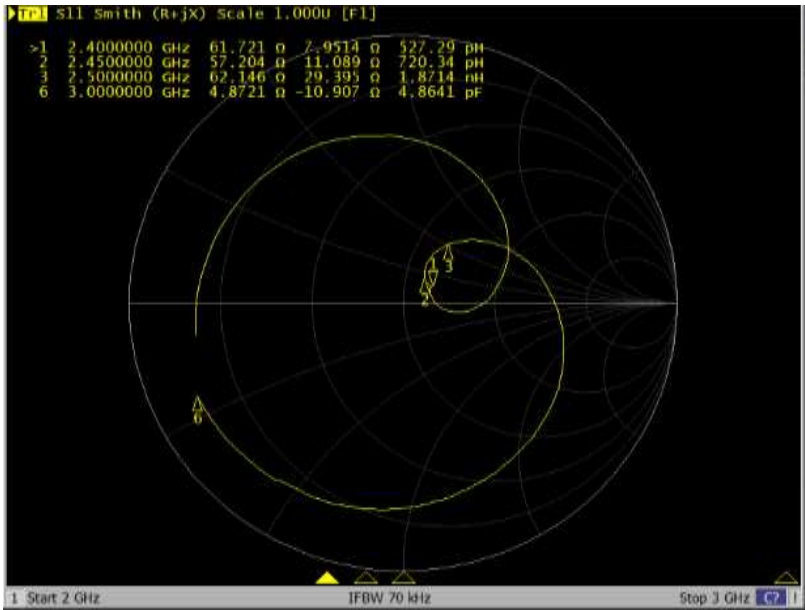
	PRODUCT APPROVAL SHEET		GRDS23094BT01			
	MODEL NAME	KANE6	REV.	1.0	Page	6 / 10

5. Electrical Characterristics

5.1 VSWR

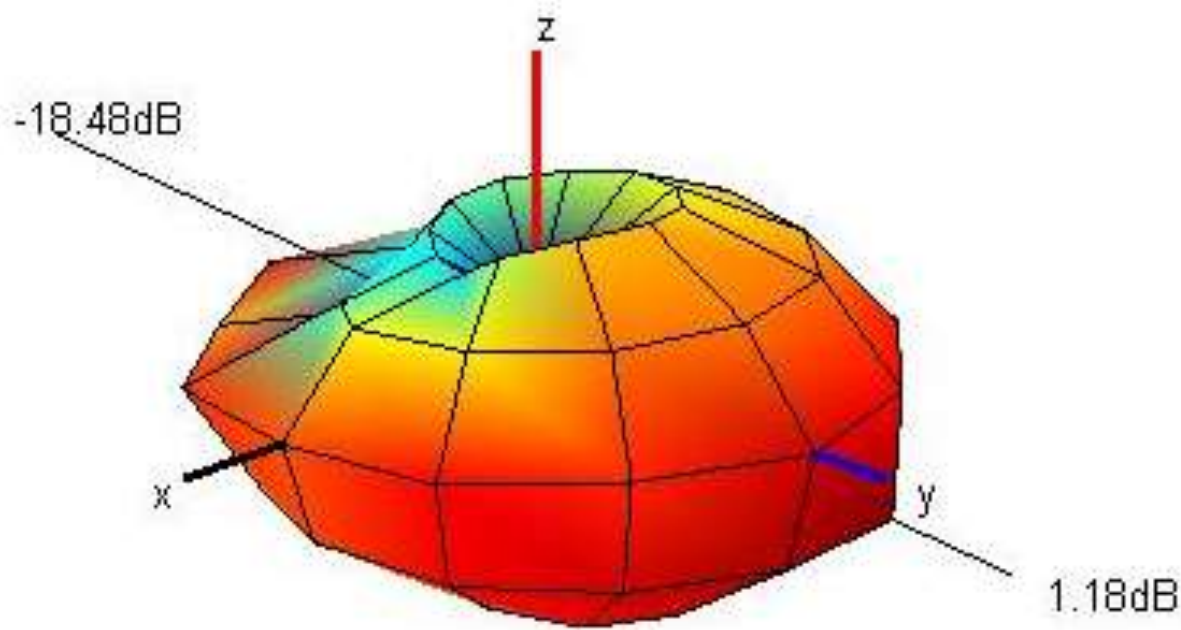


5.2 SMITH CHART

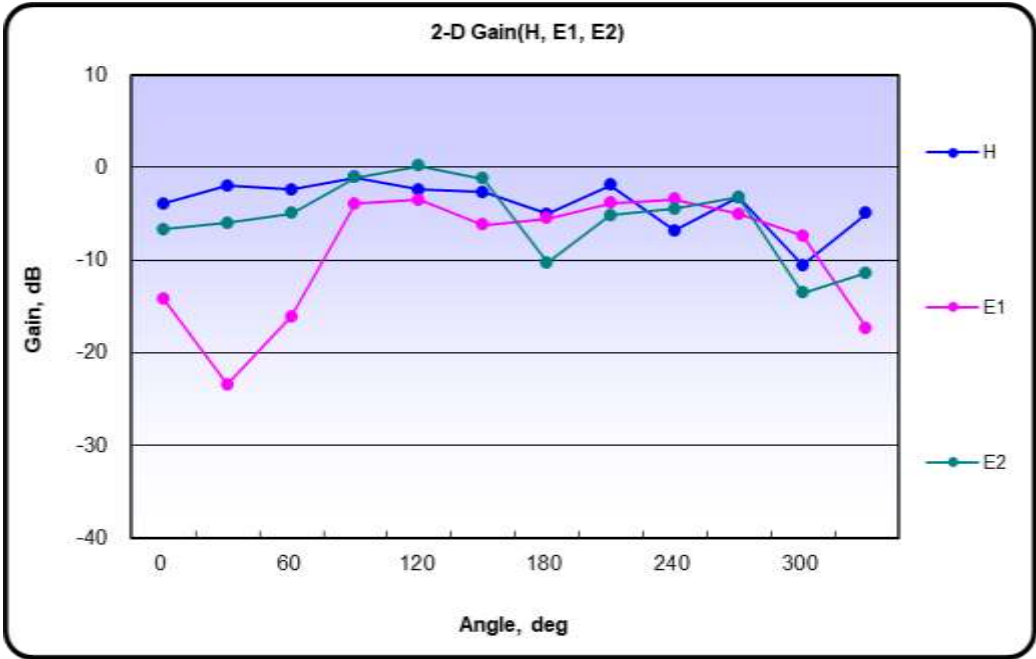


	PRODUCT APPROVAL SHEET		GRDS23094BT01			
	MODEL NAME	KANE6	REV.	1.0	Page	7 / 10

5.3 3D-PLOTs



5.4 2D-GAIN



	PRODUCT APPROVAL SHEET				GRDS23094BT01		
	MODEL NAME	KANE6			REV.	1.0	Page 8 / 10

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	

	PRODUCT APPROVAL SHEET		GRDS23094BT01			
	MODEL NAME	KANE6	REV.	1.0	Page	9 / 10

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.

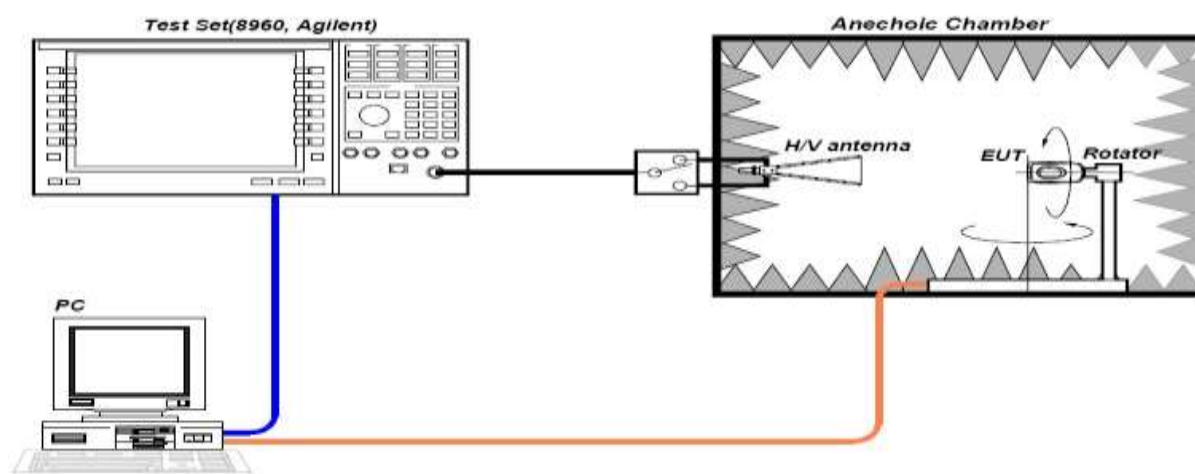
Anechoic Chamber for Antenna Gain Measurement	
	
	

	PRODUCT APPROVAL SHEET		GRDS23094BT01			
	MODEL NAME	KANE6	REV.	1.0	Page	10 / 10

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

