

2024.12.17

RA-N2412-12

APPROVAL SHEET

MODEL :
BCM-SR100-AS
Antenna layout

Review	Consent	Approval

Messrs. BnCOM Co.,Ltd



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1. Revision History

NO.	Before	After	Reason	Date
1				
2				
3				
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2.Product Information

2.1 General Features

PART NUMBER	GradiANT
ANTENNA TYPE	PCB Pattern Antenna
APPLICATIONS	Bluetooth

2.2 Electrical Specifications

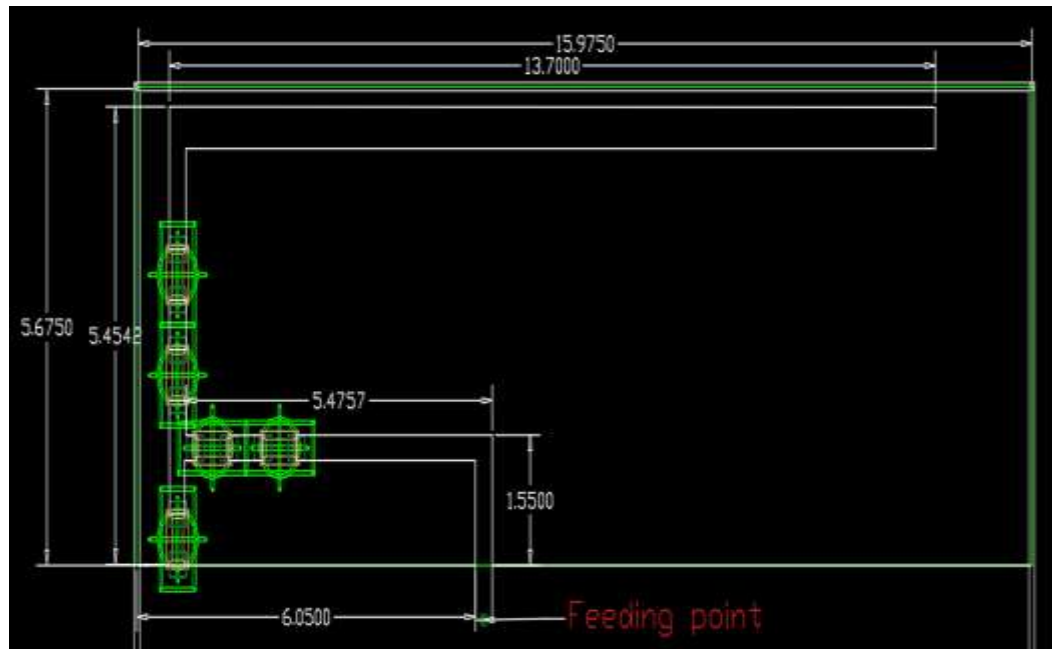
Frequency Range1 (TX)		2400MHz~2485MHz	
Frequency Range1 (RX)		2400MHz~2485MHz	
IMPEDANCE		50 Ω	
V.S.W.R	TX	2400MHz	2485MHz
		5 ↓	5 ↓
	RX	2400MHz	2485MHz
		5 ↓	5 ↓
RADIATION PATTERN		Omni-directional	
POLARIZATION		Linear	

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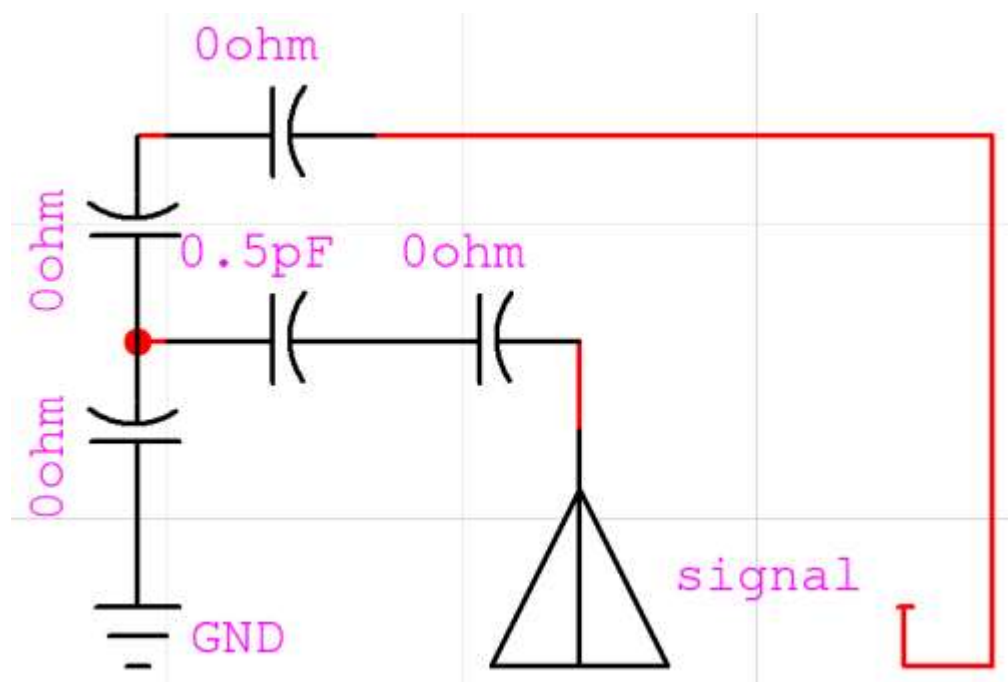
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3. Pattern Specifications



4. Matching Network

Capacitor value can be changed depending on different situation



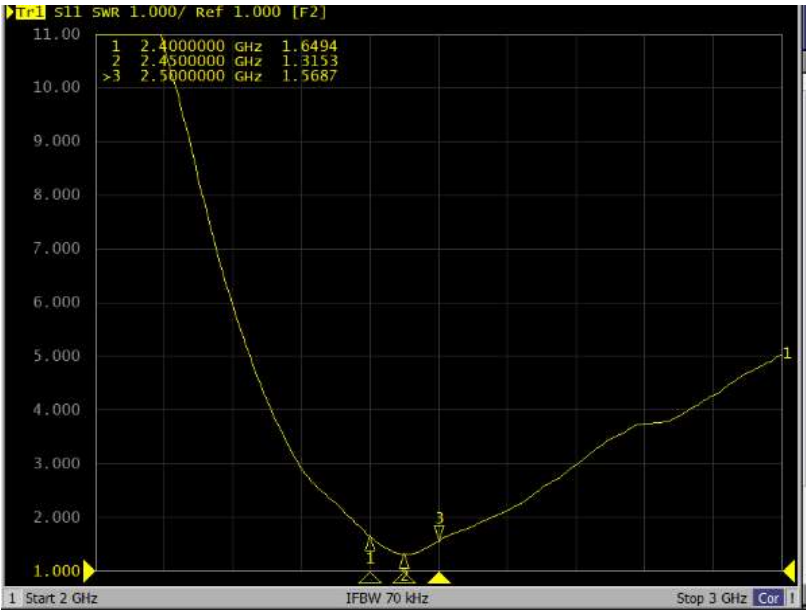
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5. Electrical Characterristics

5.1 VSWR

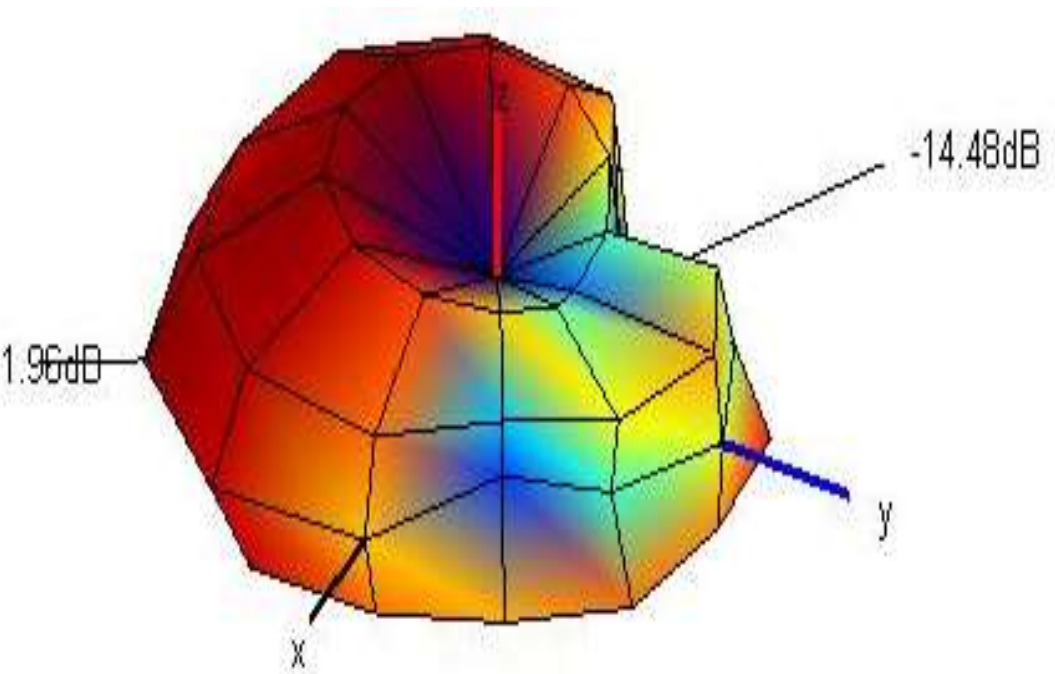


5.2 SMITH CHART



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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]	-2.49	-2.50	-2.39	-2.33	-2.31	-2.45	-2.25	-2.12	-2.09	-1.92
Efficiency [%]	56.4	56.2	57.6	58.4	58.7	56.9	59.6	61.4	61.7	64.2
TRG _θ [dB]	-4.80	-4.78	-4.62	-4.54	-4.47	-4.71	-4.43	-4.30	-4.32	-4.13
Gain _{θ Peak} [dB]	1.00	0.97	1.11	1.24	1.23	1.40	1.49	1.76	1.64	1.48
Gain _{θ Min} [dB]	-19.05	-18.58	-18.39	-19.15	-17.40	-16.01	-17.35	-18.24	-19.94	-17.40
TRG _φ [dB]	-6.33	-6.38	-6.36	-6.33	-6.38	-6.37	-6.28	-6.16	-6.06	-5.91
Gain _{φ Peak} [dB]	-0.91	-0.66	-1.00	-0.82	-1.06	-1.09	-0.53	-1.01	-0.65	-0.68
Gain _{φ Min} [dB]	-24.89	-33.08	-25.72	-29.27	-28.77	-29.16	-28.58	-28.89	-22.74	-32.50
UHRG [dB]	-5.43	-5.42	-5.36	-5.26	-5.20	-5.34	-5.12	-4.99	-5.04	-4.80
UHRG/TRG [%]	50.8	51.0	50.5	50.9	51.4	51.4	51.6	51.6	50.7	51.5
H-Plane	-4.93	-5.05	-4.87	-4.76	-4.70	-5.06	-4.97	-4.74	-4.72	-4.52
E1-Plane, AVG [dB]	-10.56	-10.71	-10.38	-10.79	-10.76	-11.00	-10.35	-10.72	-10.45	-10.76
E2-Plane, AVG [dB]	-2.50	-2.45	-2.28	-2.21	-2.21	-2.27	-2.07	-1.81	-1.78	-1.79
Peak Gain [dB]	1.10	1.06	1.18	1.33	1.45	1.48	1.53	1.78	1.66	1.96
Directivity [dB]	3.59	3.56	3.57	3.66	3.76	3.93	3.77	3.90	3.75	3.88
Minimum Gain [dB]	-17.75	-18.43	-17.28	-17.78	-16.24	-15.27	-14.79	-15.67	-16.64	-14.48

	11	12	13	14	15	16	17	18	19	20
Frequency [MHz]	2450	2455	2460	2465	2470	2475	2480	2485	2490	2497
Efficiency [dB]	-1.94	-1.97	-2.09	-2.02	-1.79	-1.88	-1.98	-2.33	-2.57	-2.53
Efficiency [%]	64.0	63.5	61.9	62.8	66.2	64.9	63.3	58.5	55.3	55.8
TRG _θ [dB]	-4.17	-4.18	-4.36	-4.27	-4.00	-4.15	-4.16	-4.58	-4.80	-4.67
Gain _{θ Peak} [dB]	1.77	2.13	1.59	1.92	1.69	1.69	2.08	1.65	1.09	1.05
Gain _{θ Min} [dB]	-22.42	-19.40	-18.93	-25.30	-21.20	-26.54	-25.68	-27.31	-39.55	-25.52
TRG _φ [dB]	-5.89	-5.96	-5.98	-5.96	-5.79	-5.79	-6.03	-6.25	-6.54	-6.64
Gain _{φ Peak} [dB]	-0.38	-0.37	-0.38	-0.39	-0.12	-0.28	-0.39	-0.74	-1.06	-1.24
Gain _{φ Min} [dB]	-27.12	-29.48	-30.12	-24.79	-24.04	-26.01	-36.33	-27.30	-42.22	-24.44
UHRG [dB]	-4.84	-4.84	-4.97	-4.87	-4.70	-4.80	-4.82	-5.21	-5.42	-5.45
UHRG/TRG [%]	51.2	51.6	51.5	51.8	51.3	51.0	52.1	51.5	52.0	51.1
H-Plane	-4.63	-4.79	-4.88	-4.62	-4.43	-4.46	-4.57	-4.90	-5.19	-4.88
E1-Plane, AVG [dB]	-10.89	-10.28	-10.66	-10.70	-10.30	-10.64	-10.78	-10.66	-11.16	-11.13
E2-Plane, AVG [dB]	-1.67	-1.74	-1.86	-1.80	-1.54	-1.56	-1.56	-2.02	-2.17	-2.30
Peak Gain [dB]	1.94	2.13	1.61	1.97	2.04	1.77	2.11	1.67	1.24	1.35
Directivity [dB]	3.88	4.10	3.70	3.99	3.84	3.65	4.09	4.00	3.81	3.89
Minimum Gain [dB]	-19.76	-17.36	-17.36	-17.42	-15.82	-18.41	-19.10	-14.51	-19.74	-15.60

Average Efficiency	-2.19dBi	60.37%
Peak Gain	2.13dBi	

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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.

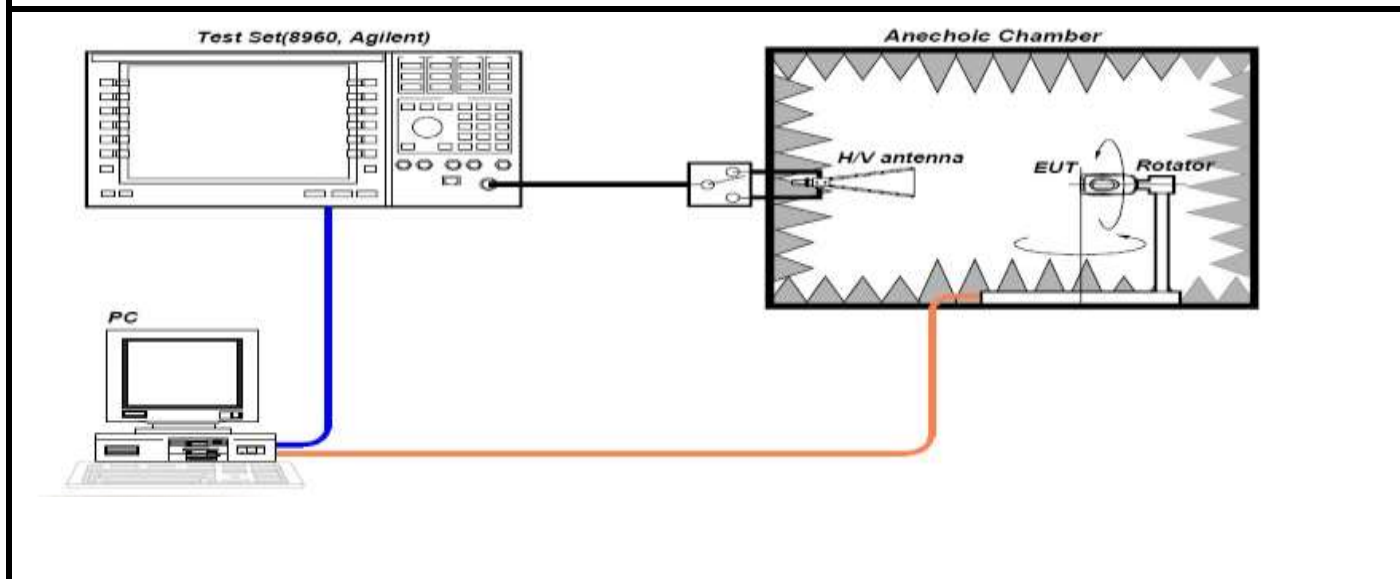
Anechoic Chamber for Antenna Gain Measurement	
	
	

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7.3 Gain test block diagram

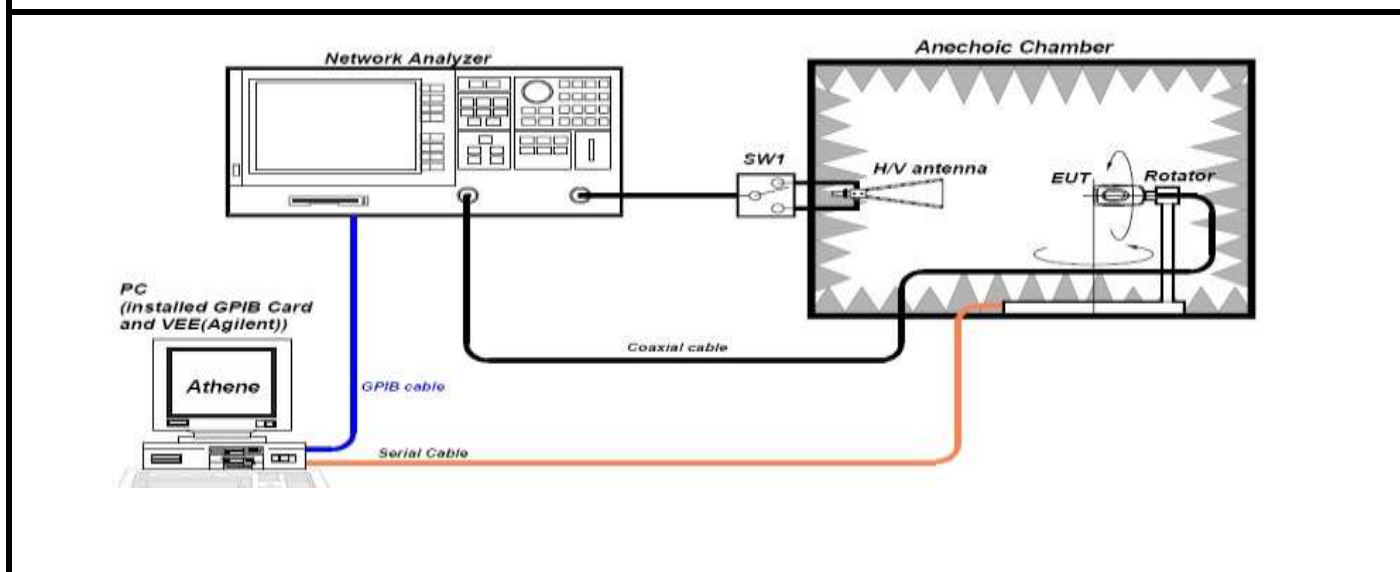
Active test Sysetm

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



Passiver test Sysetm

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



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