

2019.09.24

RA-N1909-10

APPROVAL SHEET

MODEL :BCM-LA100-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				
4				
5				
6				
7				
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10				
11				
12				
13				

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2. Product Information

2.1 General Features

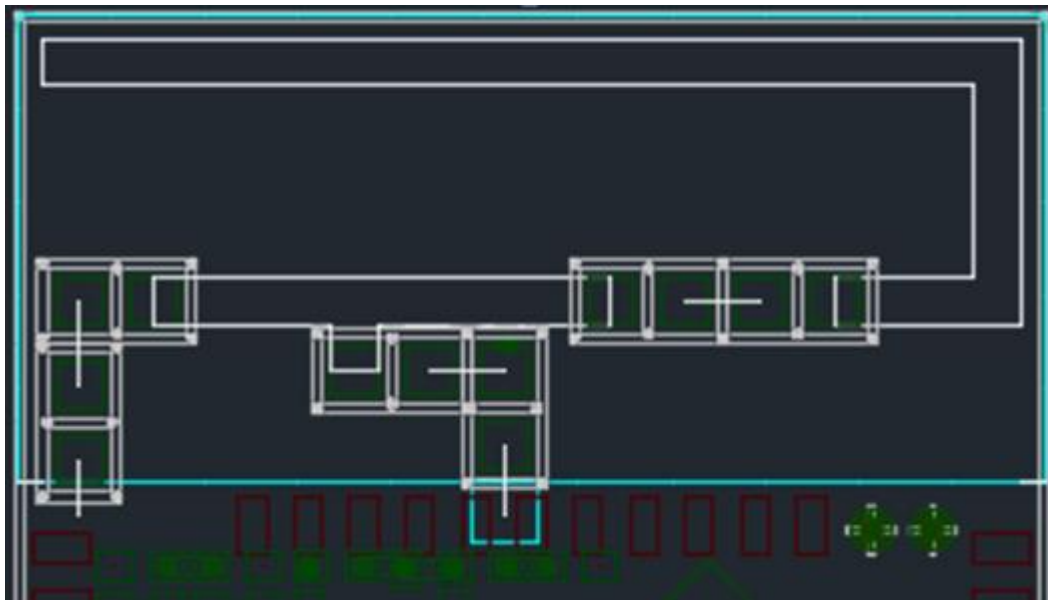
PART NUMBER	GradiANT
ANTENNA TYPE	PCB Pattern Antenna
APPLICATIONS	Bluetooth

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	

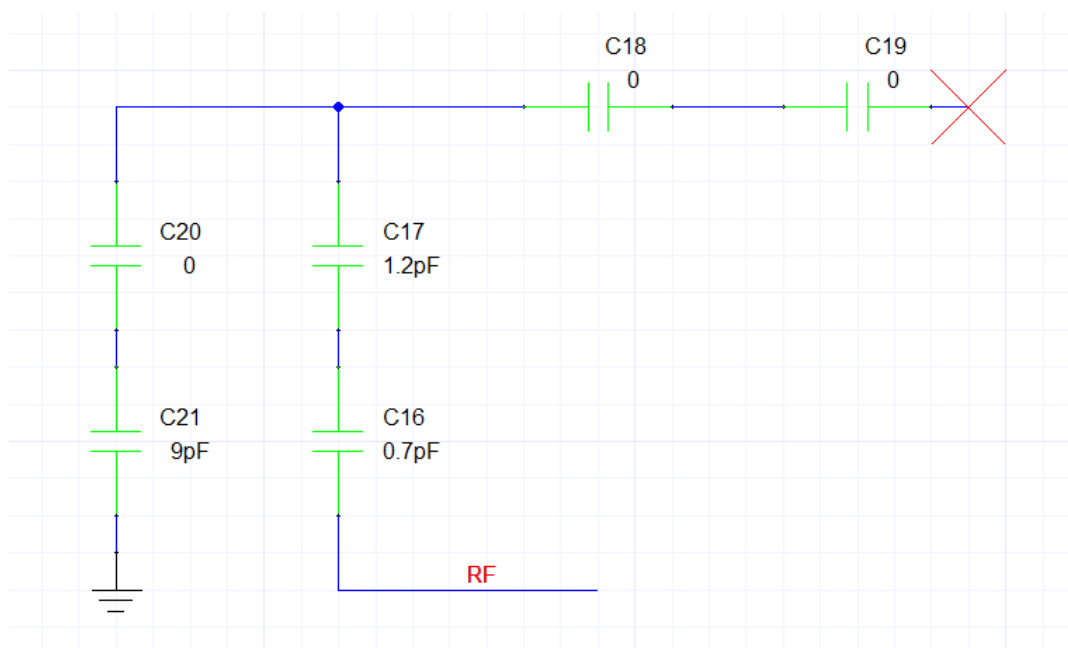
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3. Pattern Specifications



4. Matching Network

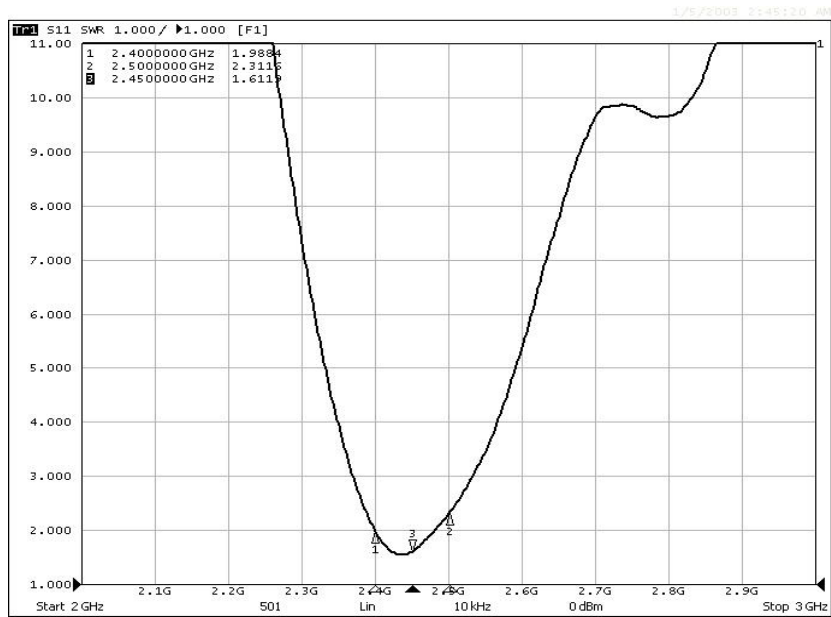
Capacitor value can be changed depending on different situation



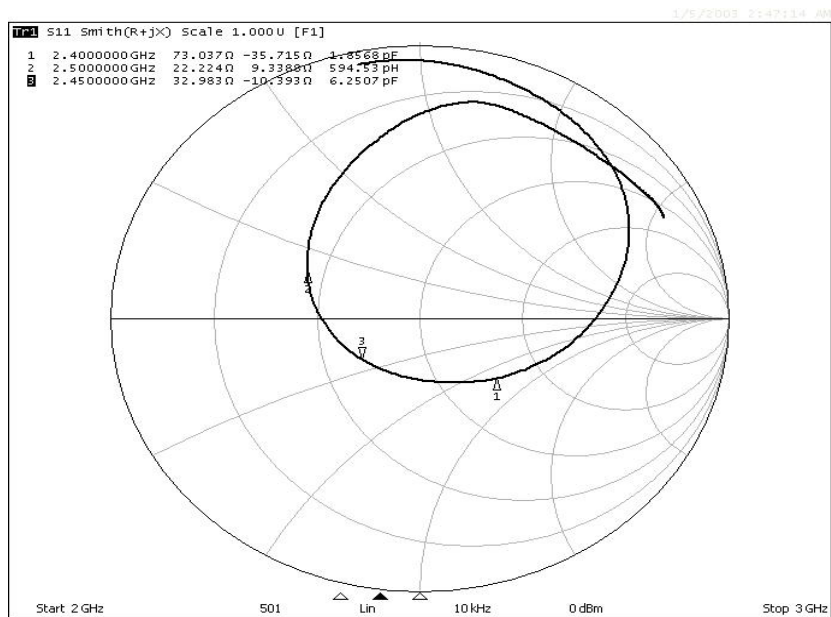
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5. Electrical Characterristics

5.1 VSWR

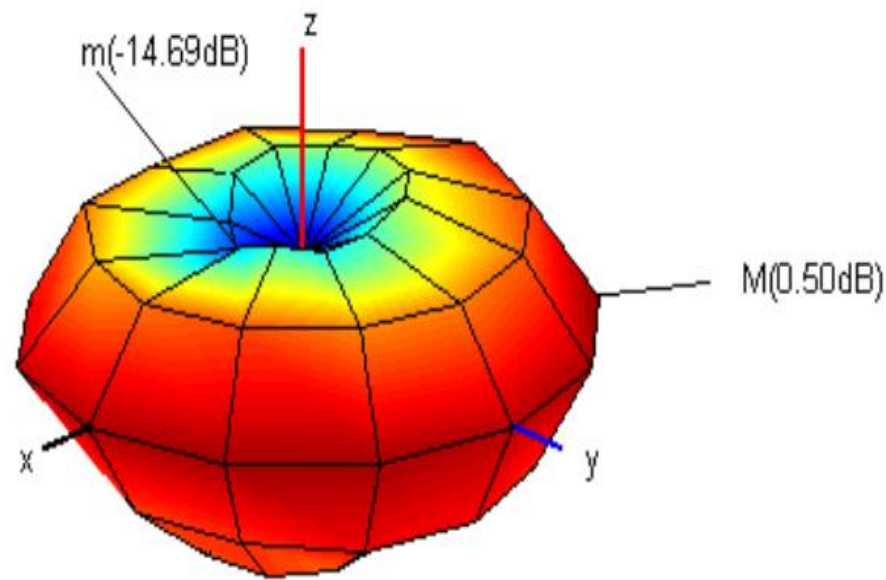


5.2 SMITH CHART

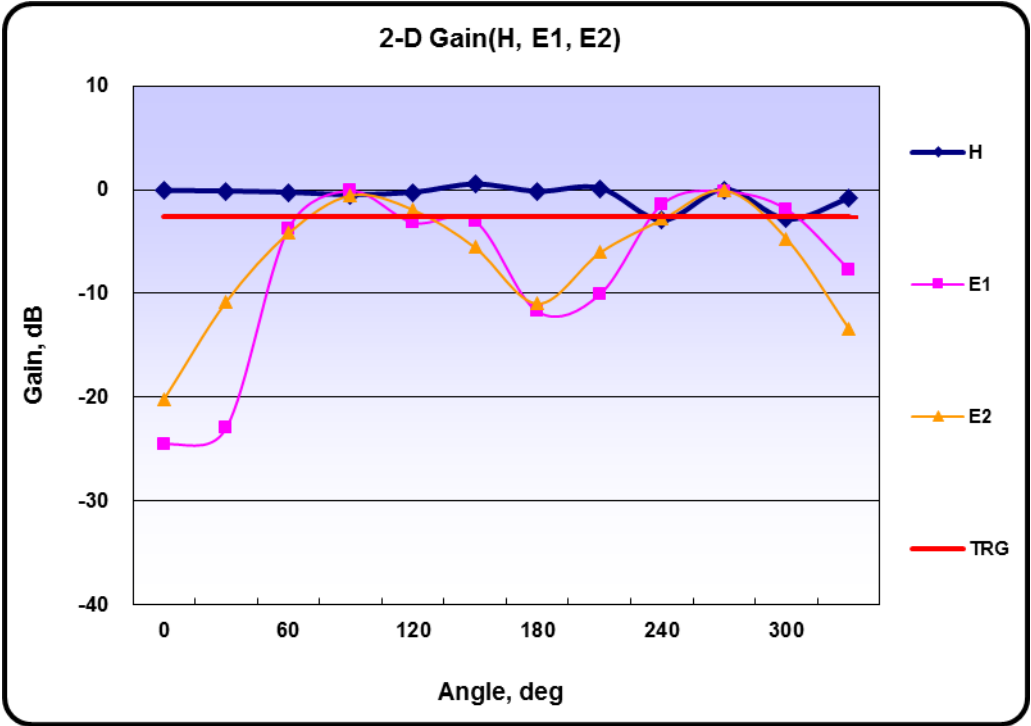


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5.3 3D-PLOTs



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)	-3.27	-3.27	-3.17	-3.12	-3.26	-3.21	-2.97	-2.69	-2.56	-2.66
Efficiency(%)	47.07	47.15	48.15	48.80	47.19	47.75	50.43	53.78	55.44	54.25
TRG(dB)	-3.27	-3.27	-3.17	-3.12	-3.26	-3.21	-2.97	-2.69	-2.56	-2.66
TRG _{Theta} (dB)	-3.62	-3.61	-3.52	-3.46	-3.60	-3.56	-3.31	-3.03	-2.90	-2.99
TRG _{Phi} (dB)	-14.36	-14.39	-14.36	-14.35	-14.47	-14.32	-14.30	-14.02	-13.86	-13.97
UHRG(dB)	-6.76	-6.74	-6.64	-6.59	-6.73	-6.69	-6.47	-6.20	-6.08	-6.20
UHRG/TRG(%)	44.83	44.92	44.97	44.96	44.96	44.83	44.75	44.63	44.48	44.26
H-Plane	-1.76	-1.64	-1.43	-1.26	-1.32	-1.19	-0.88	-0.57	-0.42	-0.51
E1-Plane, AVG(dB)	-4.39	-4.39	-4.32	-4.25	-4.40	-4.37	-4.11	-3.82	-3.69	-3.76
E2-Plane, AVG(dB)	-4.89	-4.87	-4.77	-4.71	-4.86	-4.81	-4.57	-4.29	-4.13	-4.23
Peak Gain(dB)	-0.93	-0.80	-0.59	-0.42	-0.49	-0.30	0.02	0.36	0.56	0.50
Directivity(dB)	2.35	2.47	2.58	2.70	2.77	2.91	3.00	3.06	3.13	3.16
Minimum Gain(dB)	-18.20	-17.71	-17.21	-16.87	-16.57	-16.00	-15.70	-15.30	-14.95	-14.70

		11	12	13	14	15	16	17	18	19	20
Frequency(MHz)		2450	2455	2460	2465	2470	2475	2480	2485	2490	2497
Efficiency(dB)		-2.80	-2.71	-2.51	-2.55	-2.69	-2.80	-2.99	-3.08	-2.95	-3.05
Efficiency(%)		52.43	53.63	56.08	55.58	53.81	52.47	50.23	49.17	50.72	49.60
TRG(dB)		-2.80	-2.71	-2.51	-2.55	-2.69	-2.80	-2.99	-3.08	-2.95	-3.05
TRG _{Theta} (dB)		-3.13	-3.03	-2.84	-2.88	-3.02	-3.13	-3.33	-3.42	-3.29	-3.39
TRG _{Phi} (dB)		-14.18	-14.10	-13.88	-13.92	-14.11	-14.17	-14.27	-14.33	-14.17	-14.17
UHRG(dB)		-6.35	-6.28	-6.10	-6.16	-6.32	-6.46	-6.67	-6.77	-6.66	-6.78
UHRG/TRG(%)		44.15	43.92	43.78	43.58	43.36	43.10	42.89	42.76	42.57	42.31
H-Plane		-0.67	-0.61	-0.46	-0.55	-0.74	-0.90	-1.16	-1.34	-1.29	-1.53
E1-Plane, AVG(dB)		-3.89	-3.78	-3.58	-3.59	-3.73	-3.83	-3.99	-4.07	-3.92	-3.97
E2-Plane, AVG(dB)		-4.38	-4.26	-4.08	-4.12	-4.25	-4.37	-4.57	-4.66	-4.52	-4.61
Peak Gain(dB)		0.38	0.44	0.65	0.56	0.37	0.22	0.00	-0.19	-0.13	-0.38
Directivity(dB)		3.18	3.14	3.16	3.11	3.06	3.02	2.99	2.89	2.82	2.66
Minimum Gain(dB)		-14.89	-14.95	-14.82	-14.93	-15.29	-15.55	-16.15	-16.57	-16.41	-16.95
Average Efficiency				-2.91dBi,				51.19%			
Peak Gain				0.65 dBi							

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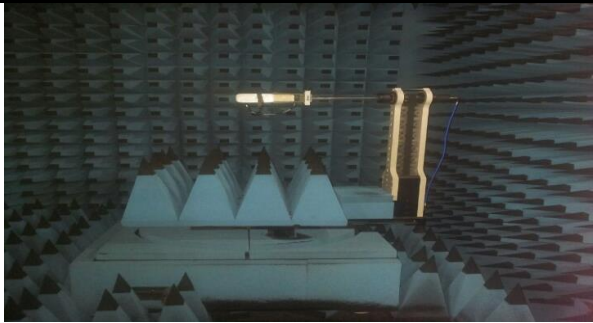
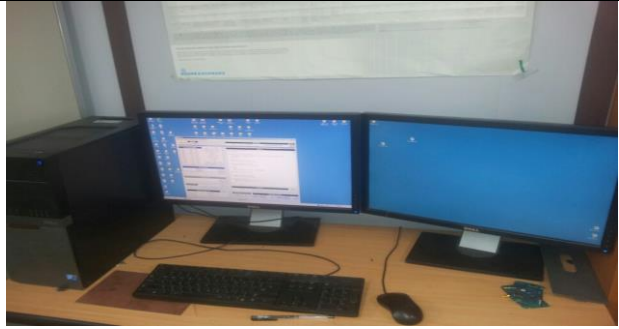
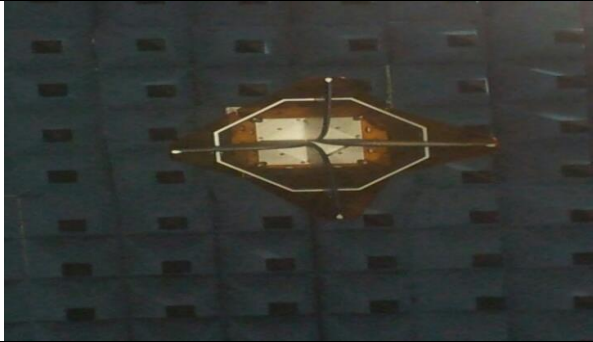
7.Measurement Process

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.

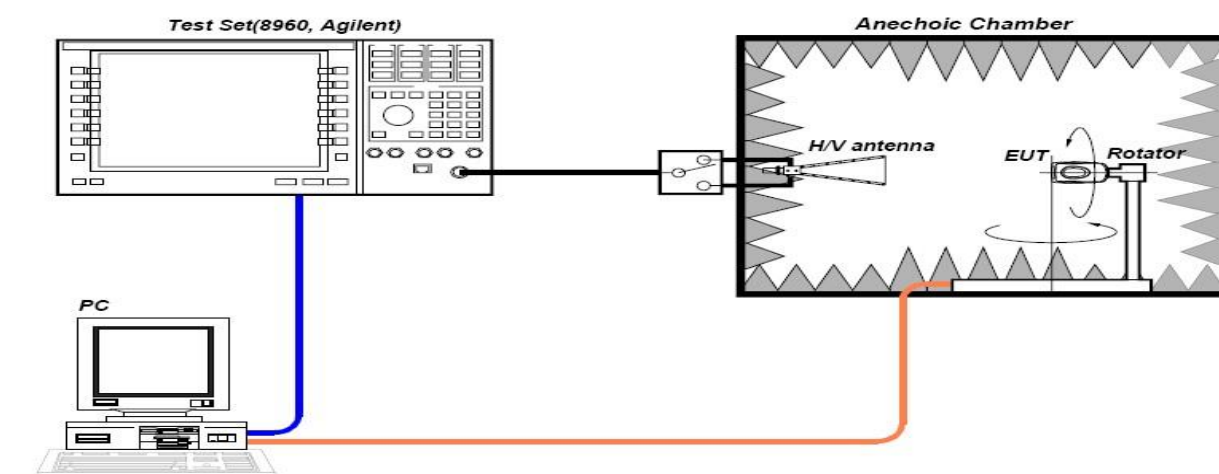
Anechoic Chamber for Antenna Gain Measurement	
	
	

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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

