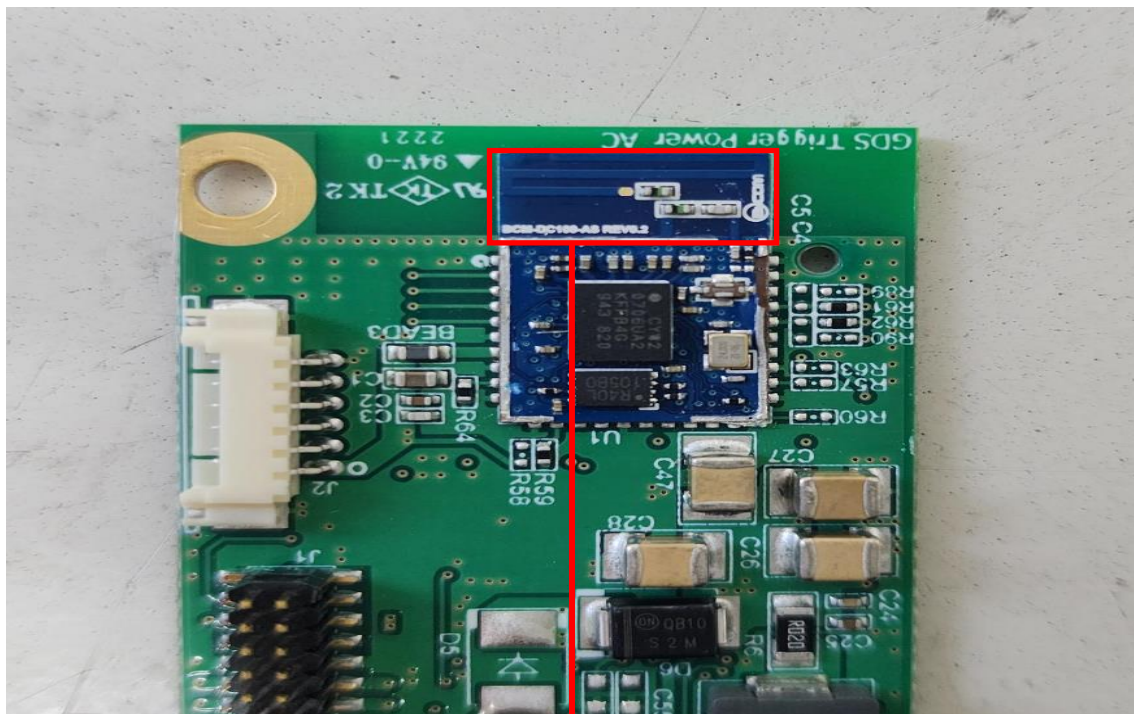


Antenna Information

Item	Contents
Antenna Type	PCB Pattern Antenna
Antenna peak gain	1.33 dB i
Manufacturer / Model name	BnCOM Co., Ltd. / BCM-DC100-AS
Test laboratory	RADINA. Co., Ltd



PCB
Pattern Antenna

2021.05.18

RA-N2105-59

APPROVAL SHEET

MODEL :
BCM-DC100-AS
Antenna layout

Review	Consent	Approval

Messrs. BnCOM Co.,Ltd



RadiNa Co. ,Ltd

TEL : +82-2-463-0373

FAX : +82-2-463-0374

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	MODEL NAME	BCM-DC100-AS	REV.	1.0	Page	2 / 10

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7. Measurement Process

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	MODEL NAME	BCM-DC100-AS	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				

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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

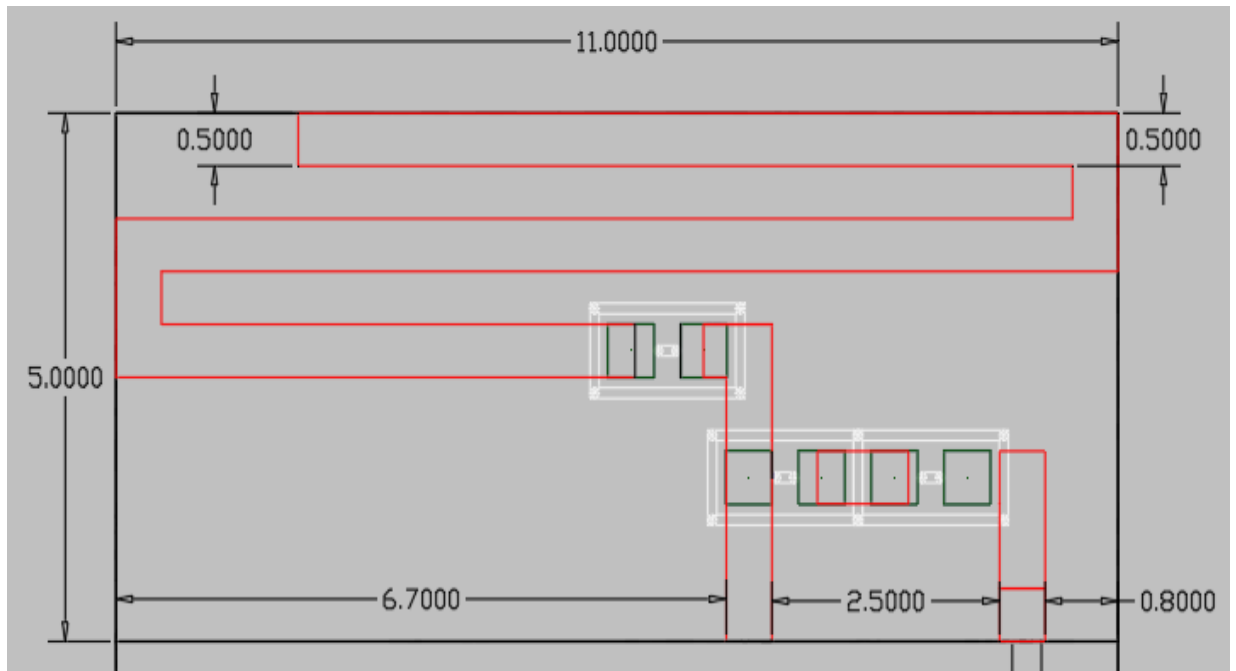
Frequency Range1 (TX)		2400MHz~2485MHz	
Frequency Range1 (RX)		2400MHz~2485MHz	
IMPEDANCE		50 Ω	
V.S.W.R	TX	2400MHz	2485MHz
		5 ↓	5 ↓
	RX	2400MHz	2485MHz
		5 ↓	5 ↓
RADIATION PATTERN		Omni-directional	
POLARIZATION		Linear	

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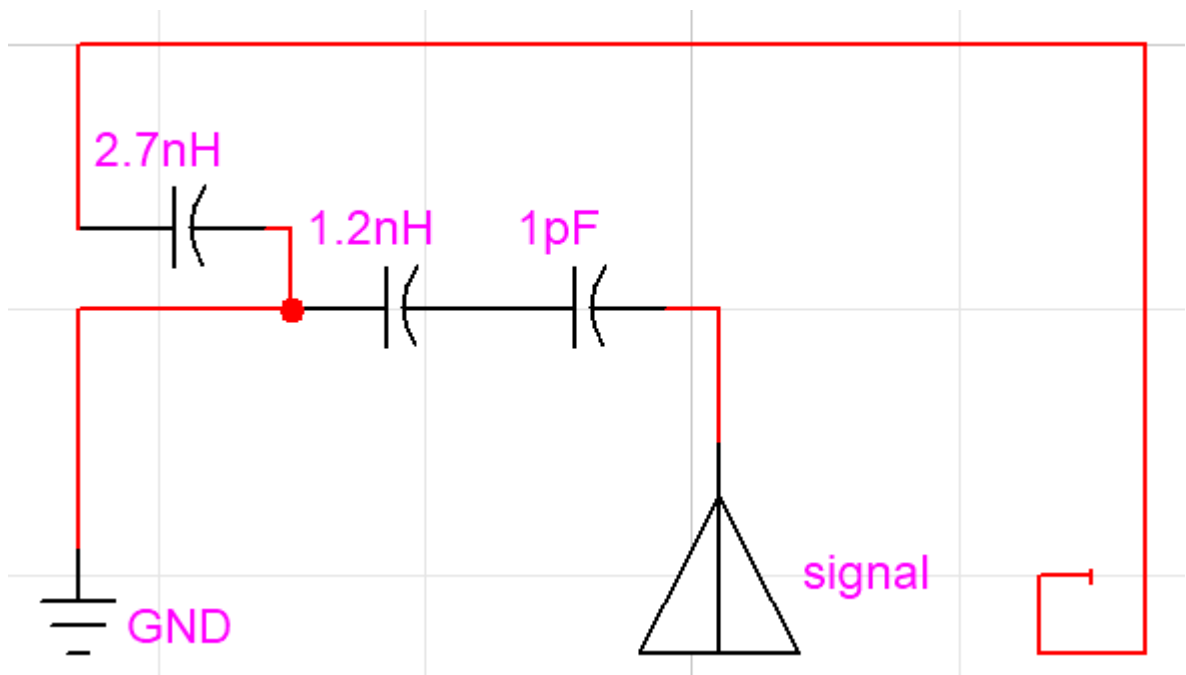
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3. Pattern Specifications [Unit : mm]



4. Matching Network

Capacitor value can be changed depending on different situation



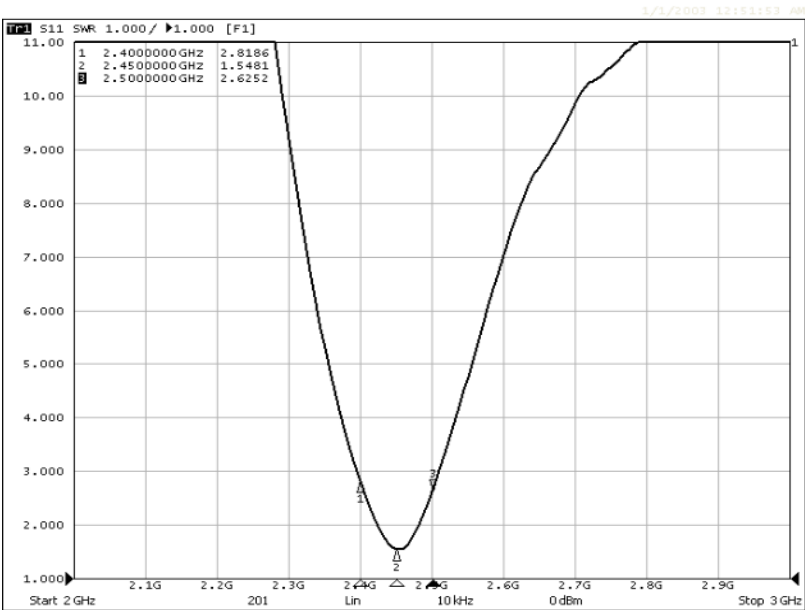
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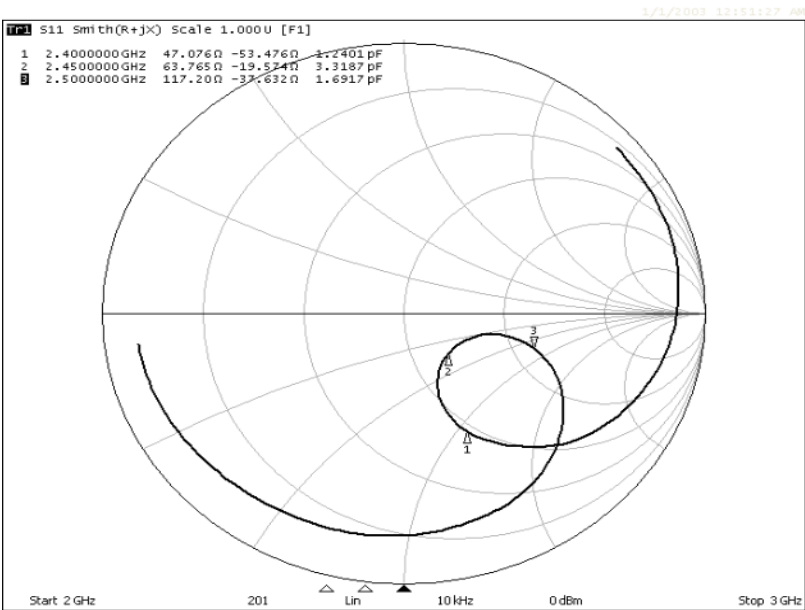
	PRODUCT APPROVAL SHEET		GRBC21052BT58			
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5. Electrical Characterristics

5.1 VSWR

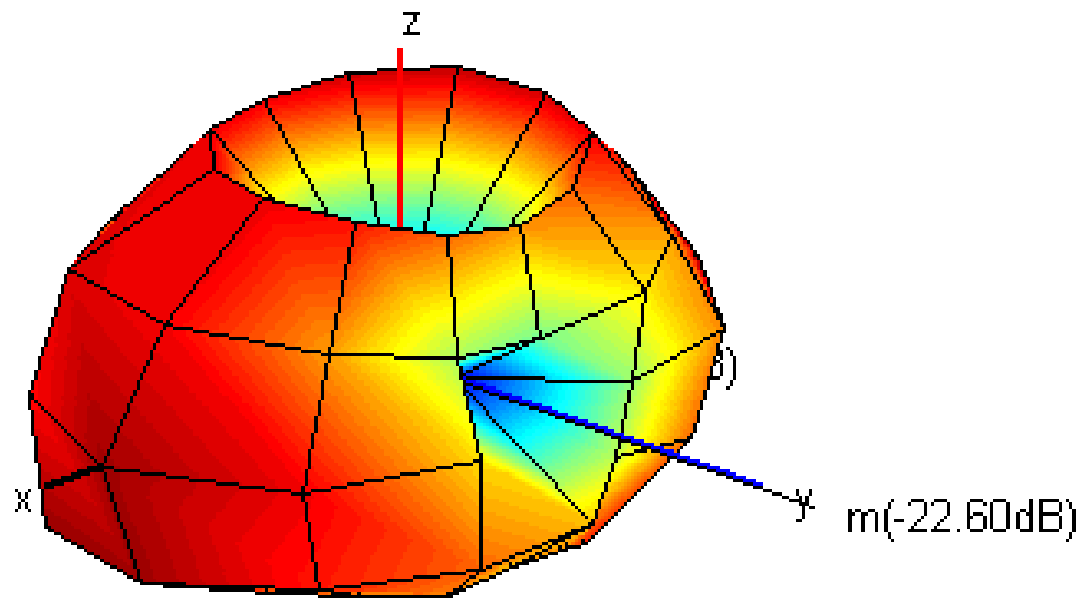


5.2 SMITH CHART

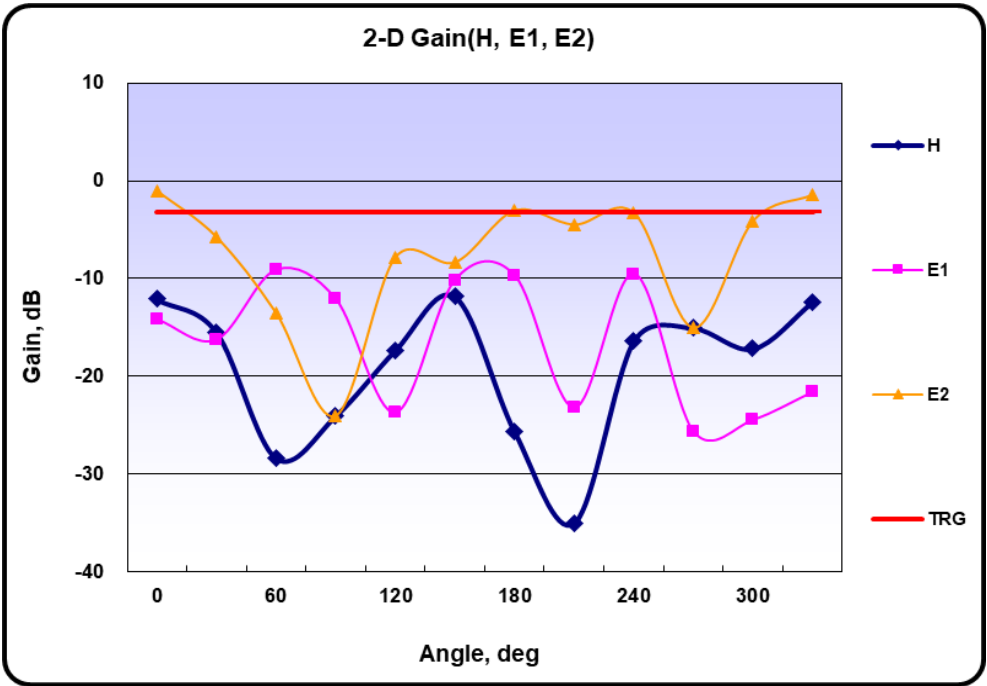


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5.3 3D-PLOTs



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)	-4.37	-4.34	-4.04	-3.73	-3.61	-3.58	-3.50	-3.40	-3.26	-3.15
Efficiency(%)	36.60	36.78	39.47	42.36	43.60	43.84	44.70	45.73	47.23	48.38
TRG(dB)	-4.37	-4.34	-4.04	-3.73	-3.61	-3.58	-3.50	-3.40	-3.26	-3.15
TRG _{Theta} (dB)	-10.13	-10.09	-9.75	-9.42	-9.30	-9.48	-9.13	-9.06	-8.93	-8.77
TRG _{Phi} (dB)	-5.70	-5.69	-5.39	-5.09	-4.97	-4.87	-4.88	-4.77	-4.63	-4.54
UHRG(dB)	-7.53	-7.43	-7.21	-6.88	-6.80	-6.86	-6.72	-6.71	-6.57	-6.44
UHRG/TRG(%)	48.28	49.11	48.16	48.42	47.91	47.05	47.56	46.66	46.65	46.88
H-Plane	-17.25	-17.89	-17.33	-17.18	-16.89	-16.80	-16.66	-17.32	-15.66	-15.82
E1-Plane, AVG(dB)	-14.99	-14.90	-14.46	-14.25	-14.00	-13.79	-13.43	-13.72	-12.96	-13.14
E2-Plane, AVG(dB)	-6.74	-6.24	-5.04	-5.66	-5.68	-5.31	-4.99	-5.51	-5.23	-4.93
Peak Gain(dB)	0.15	0.24	0.25	0.73	0.81	1.13	0.84	0.90	1.33	1.23
Directivity(dB)	4.51	4.58	4.28	4.46	4.41	4.71	4.34	4.30	4.58	4.38
Minimum Gain(dB)	-16.49	-18.30	-16.41	-17.87	-21.08	-18.41	-20.95	-18.14	-22.59	-22.60

	11	12	13	14	15	16	17	18	19	20
Frequency(MHz)	2450	2455	2460	2465	2470	2475	2480	2485	2490	2497
Efficiency(dB)	-3.30	-3.39	-3.28	-3.35	-3.45	-3.43	-3.76	-4.16	-4.35	-4.52
Efficiency(%)	46.82	45.82	47.01	46.24	45.20	45.35	42.11	38.40	36.74	35.32
TRG(dB)	-3.30	-3.39	-3.28	-3.35	-3.45	-3.43	-3.76	-4.16	-4.35	-4.52
TRG _{Theta} (dB)	-8.87	-8.87	-8.77	-8.78	-8.72	-8.70	-9.17	-9.47	-9.61	-9.92
TRG _{Phi} (dB)	-4.71	-4.83	-4.72	-4.82	-4.98	-4.97	-5.23	-5.67	-5.88	-6.00
UHRG(dB)	-6.54	-6.74	-6.55	-6.68	-6.81	-6.81	-7.15	-7.56	-7.69	-7.90
UHRG/TRG(%)	47.37	46.18	47.13	46.49	46.10	46.00	45.78	45.65	46.37	45.88
H-Plane	-16.71	-16.24	-16.09	-15.85	-16.39	-16.04	-16.31	-16.87	-16.62	-17.65
E1-Plane, AVG(dB)	-13.24	-12.82	-12.87	-13.18	-13.26	-13.11	-13.63	-14.10	-13.89	-14.22
E2-Plane, AVG(dB)	-4.99	-5.38	-5.29	-4.86	-4.77	-5.41	-5.62	-4.76	-5.93	-6.05
Peak Gain(dB)	1.08	0.81	1.00	0.94	0.83	0.79	0.53	0.04	0.05	-0.22
Directivity(dB)	4.38	4.20	4.28	4.29	4.28	4.22	4.28	4.20	4.40	4.30
Minimum Gain(dB)	-21.31	-18.20	-20.12	-17.89	-16.26	-15.25	-15.80	-16.77	-18.15	-18.79

Average Efficiency	-3.68dBi,	42.89%
Peak Gain	1.33dBi,	

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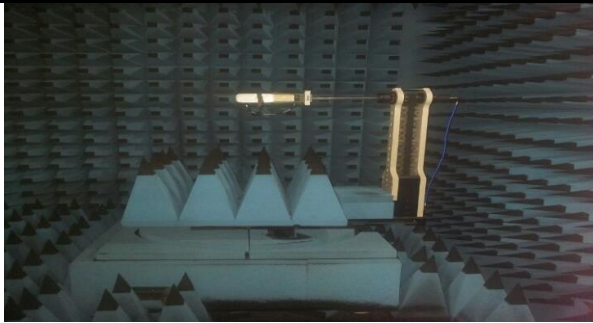
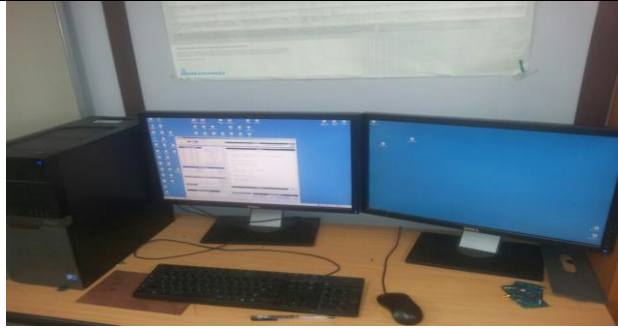
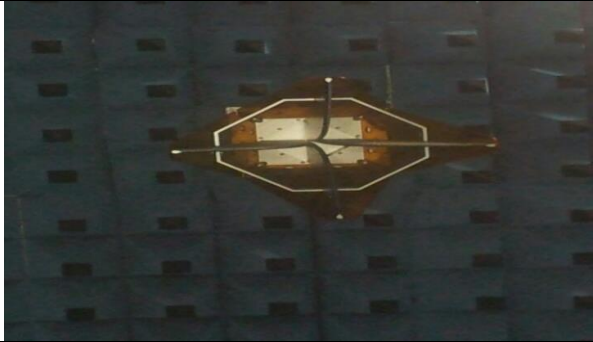
7.Measurement Process

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.

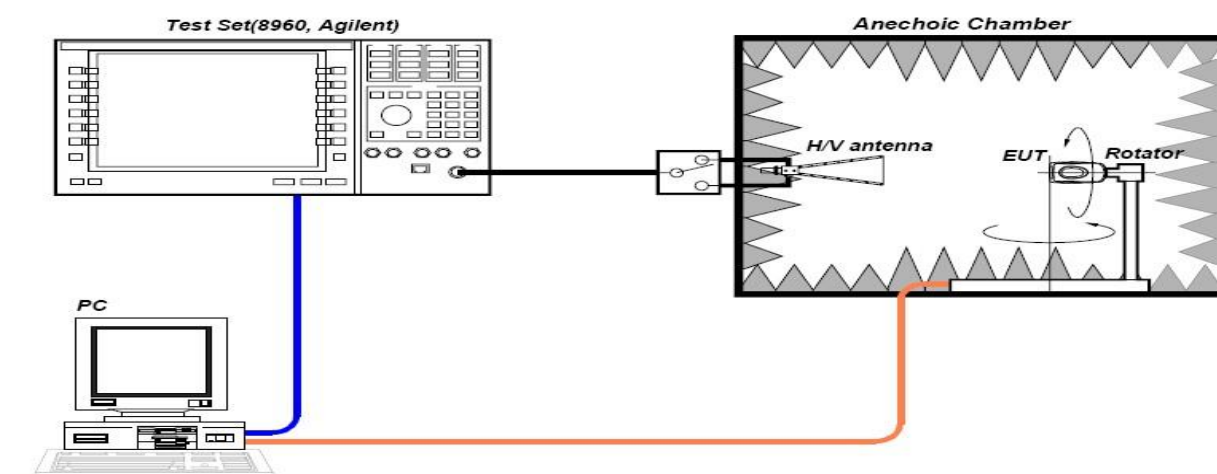
Anechoic Chamber for Antenna Gain Measurement	
	
	

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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

