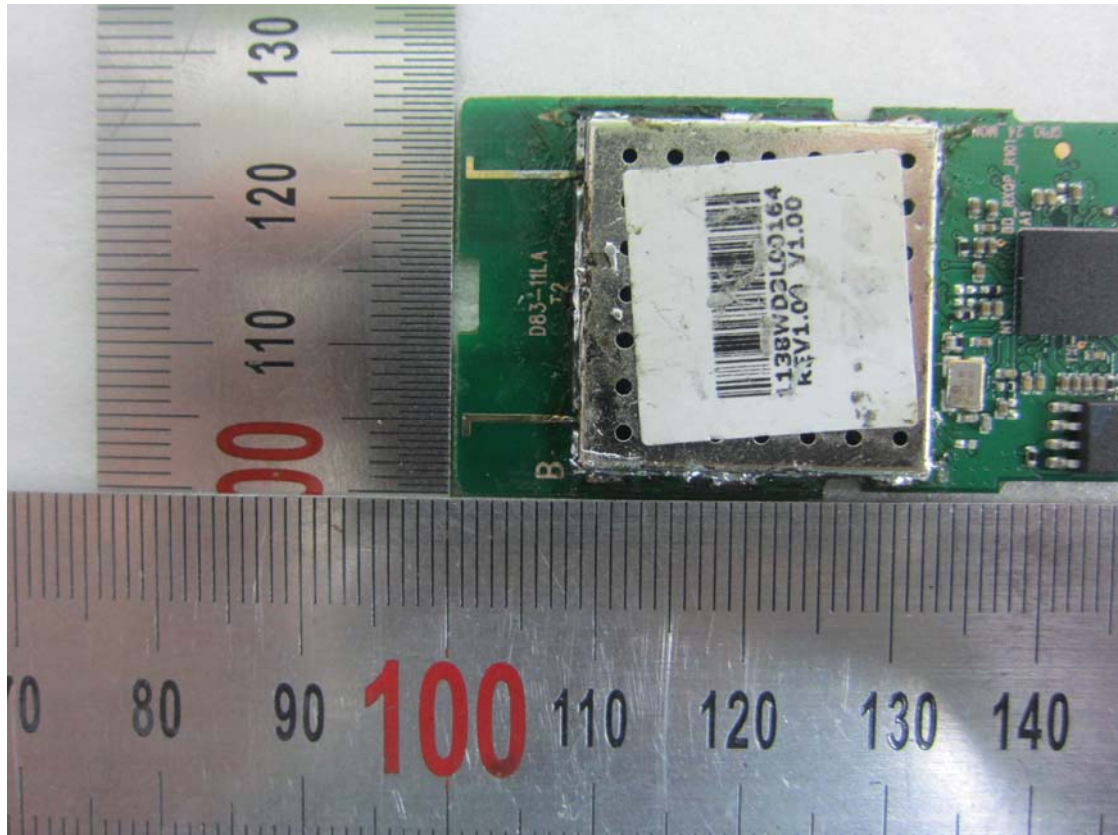


안테나 특성 확인 결과

항 목	결 과
공중선의 종류 및 형태	PCB Antenna
공중선의 이득 및 지향특성	4.6 dBi / Omni-directional
공중선의 편파특성	Linear
송신장치와의 접속형태	내장형
공중선의 제작자 및 모델명	NAMUGA / Home theater wifi Module
이득 측정기관명	Amotech

<안테나사진>



Customized

Application Report

Customer	<i>NAMUGA</i>
Model	<i>Home theater WiFi Module</i>
Application	<i>BT & WiFi</i>
Antenna type	<i>Pattern</i>
Report No.	<i>1st-1</i>
Date	<i>2011. 10. 18</i>



Amotech / Antenna Gr.

1. Summary of the antenna test

1) Test Condition

Test No	Antenna Type	Condition
#1-1	PIFA	Set Matching(series=default)
#1-2	PIFA	Set Matching(series=default)
#1-3	PIFA	Set Matching(series=default)
#1-4	PIFA	Set Matching(series=default)

→ NAM - WD3L (T2)

→ NAM - WM3L (R2)

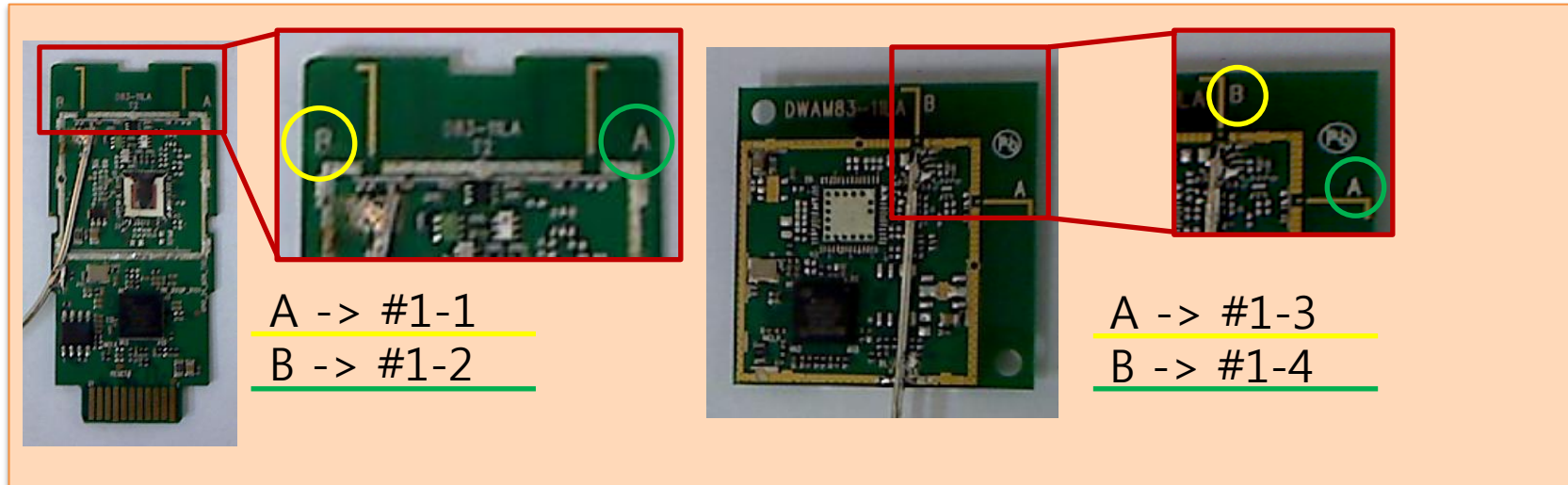
2) Radiation Gain Table

Test No	Freq (GHz)	Efficiency (%)	Avg. Gain (dBi)	Peak Gain (dBi)
#1-1	2400 MHz	42.9%	-3.7 dBi	0.2 dBi
	2442 MHz	56.0%	-2.5 dBi	1.3 dBi
	2485 Mhz	65.4%	-1.8 dBi	2.5 dBi
	5150MHz	29.7%	-5.3 dBi	0.0 dBi
	5250MHz	20.3%	-6.9 dBi	-1.5 dBi
	5350MHz	15.8%	-8.0 dBi	-2.4 dBi
	5500MHz	24.2%	-6.2 dBi	-0.7 dBi
	5600MHz	43.5%	-3.6 dBi	2.1 dBi
	5725MHz	69.9%	-1.6 dBi	4.1 dBi
	5775MHz	75.7%	-1.2 dBi	4.6 dBi
	5825MHz	81.0%	-0.9 dBi	4.9 dBi

Test No	Freq (GHz)	Efficiency (%)	Avg. Gain (dBi)	Peak Gain (dBi)
#1-2	2400 MHz	42.2 %	-3.7 dBi	0.0 dBi
	2442 MHz	59.9 %	-2.2 dBi	1.6 dBi
	2485 Mhz	72.8 %	-1.4 dBi	2.6 dBi
	5150MHz	41.8 %	-3.8 dBi	1.8 dBi
	5250MHz	29.0 %	-5.4 dBi	0.7 dBi
	5350MHz	20.8 %	-6.8 dBi	-1.0 dBi
	5500MHz	20.5 %	-6.9 dBi	-0.6 dBi
	5600MHz	30.4 %	-5.2 dBi	0.7 dBi
	5725MHz	55.9 %	-2.5 dBi	3.8 dBi
	5775MHz	62.4 %	-2.1 dBi	4.4 dBi
	5825MHz	72.6 %	-1.4 dBi	5.1 dBi
#1-3	2400 MHz	55.5 %	-2.6 dBi	2.4 dBi
	2442 MHz	58.8 %	-2.3 dBi	2.6 dBi
	2485 Mhz	61.8 %	-2.1 dBi	2.8 dBi
	5150MHz	50.0 %	-3.0 dBi	2.1 dBi
	5250MHz	70.8 %	-1.5 dBi	3.3 dBi
	5350MHz	73.4 %	-1.4 dBi	3.8 dBi
	5500MHz	89.6 %	-0.5 dBi	4.0 dBi
	5600MHz	92.5 %	-0.3dBi	4.1 dBi
	5725MHz	88.7 %	-0.5 dBi	3.3 dBi
	5775MHz	107.0 %	-0.6 dBi	3.1 dBi
	5825MHz	99.7 %	-1.4 dBi	4.1 dBi

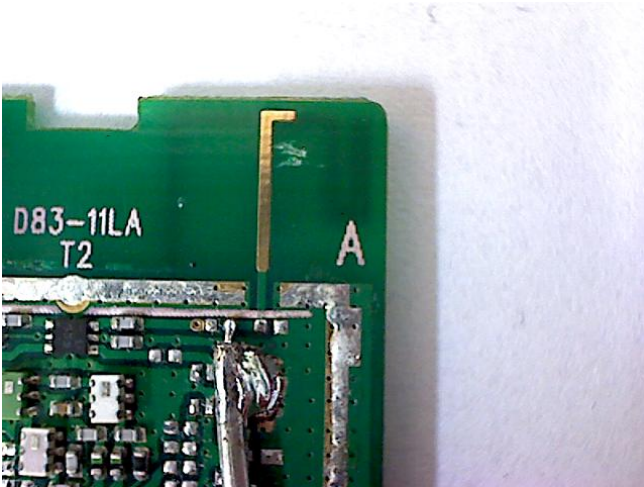
Test No	Freq (GHz)	Efficiency (%)	Avg. Gain (dBi)	Peak Gain (dBi)
#1-4	2400 MHz	48.2 %	-3.2 dBi	1.8 dBi
	2442 MHz	49.3 %	-3.1 dBi	0.8 dBi
	2485 Mhz	55.4 %	-2.6 dBi	1.5 dBi
	5150MHz	76.3 %	-1.2 dBi	3.8 dBi
	5250MHz	92.0 %	-0.4 dBi	4.0 dBi
	5350MHz	89.6 %	-0.5 dBi	4.0 dBi
	5500MHz	100.1 %	0.0 dBi	4.2 dBi
	5600MHz	108.0 %	0.3 dBi	4.4 dBi
	5725MHz	107.0 %	0.3 dBi	4.2 dBi
	5775MHz	110.4 %	0.4 dBi	4.5 dBi
	5825MHz	130.5 %	1.2 dBi	5.4 dBi

3) Remark

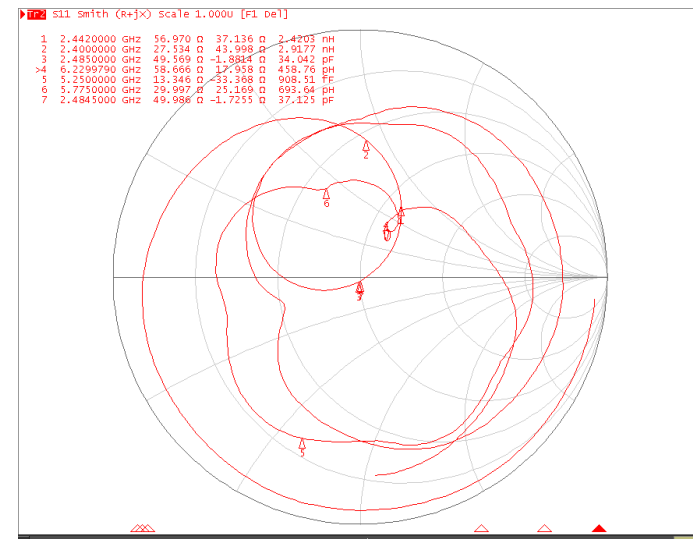
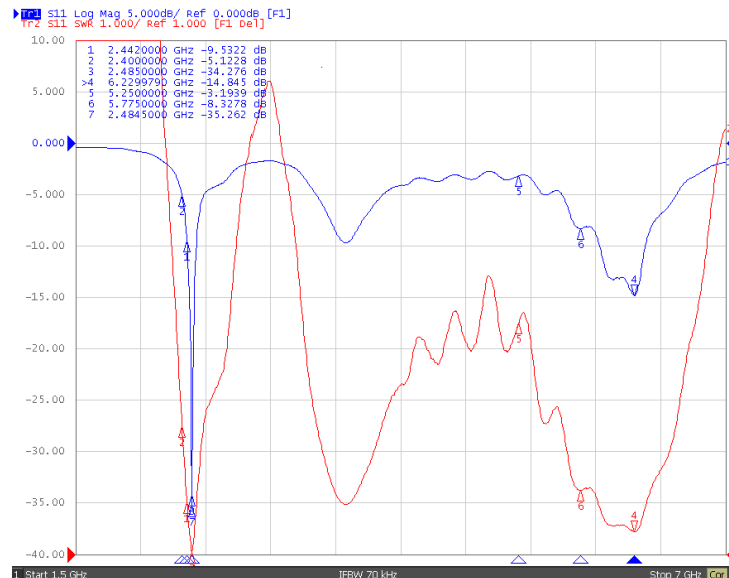


2. TEST #1-1

1) 안테나 Layout 및 S-Parameter

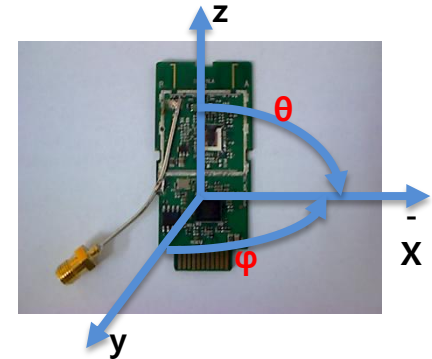
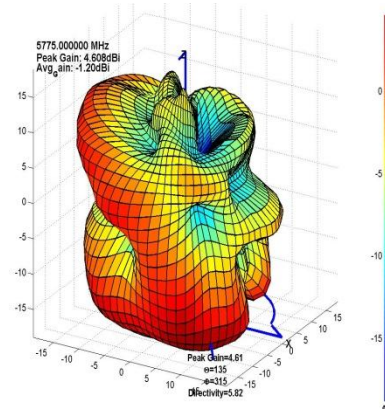
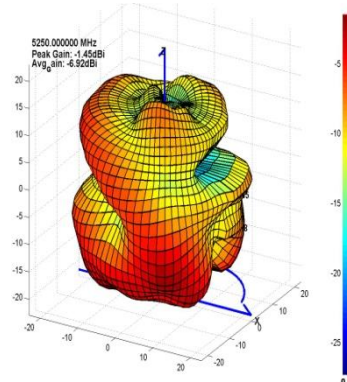
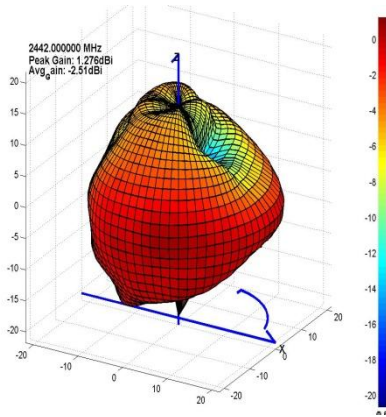


Test No.	#1-1
Series	default



2. TEST #1-1

2) Radiation Gain

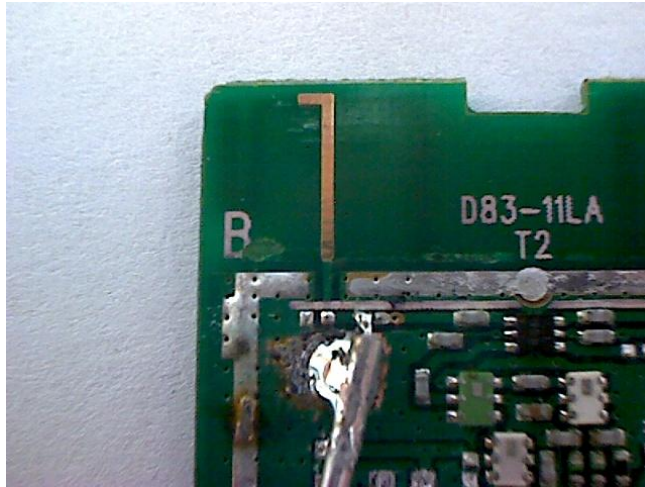


Test No	Freq (GHz)	Efficiency (%)	Avg. Gain (dBi)	Peak Gain (dBi)
#1-1	2400 MHz	42.9%	-3.7 dBi	0.2 dBi
	2442 MHz	56.0%	-2.5 dBi	1.3 dBi
	2485 Mhz	65.4%	-1.8 dBi	2.5 dBi
	5150MHz	29.7%	-5.3 dBi	0.0 dBi
	5250MHz	20.3%	-6.9 dBi	-1.5 dBi
	5350MHz	15.8%	-8.0 dBi	-2.4 dBi
	5500MHz	24.2%	-6.2 dBi	-0.7 dBi
	5600MHz	43.5%	-3.6 dBi	2.1 dBi
	5725MHz	69.9%	-1.6 dBi	4.1 dBi
	5775MHz	75.7%	-1.2 dBi	4.6 dBi
	5825MHz	81.0%	-0.9 dBi	4.9 dBi

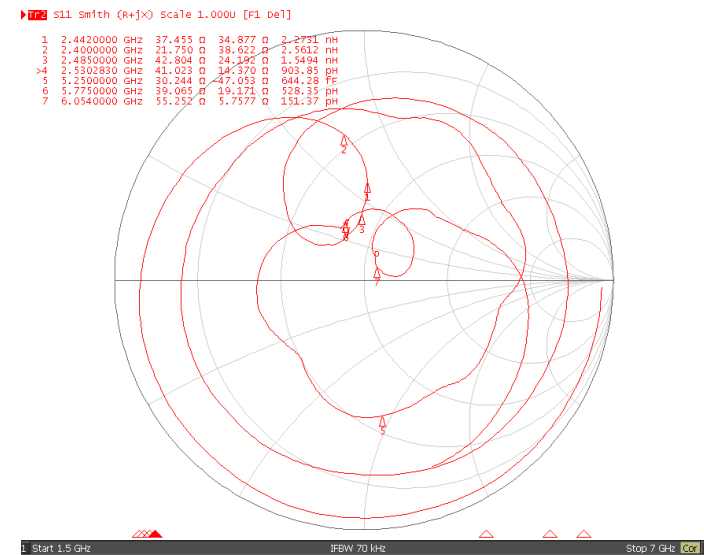
※ Anechoic Chamber : 2.8*1.6*1.8 m³

2. TEST #1-2

1) 안테나 Layout 및 S-Parameter

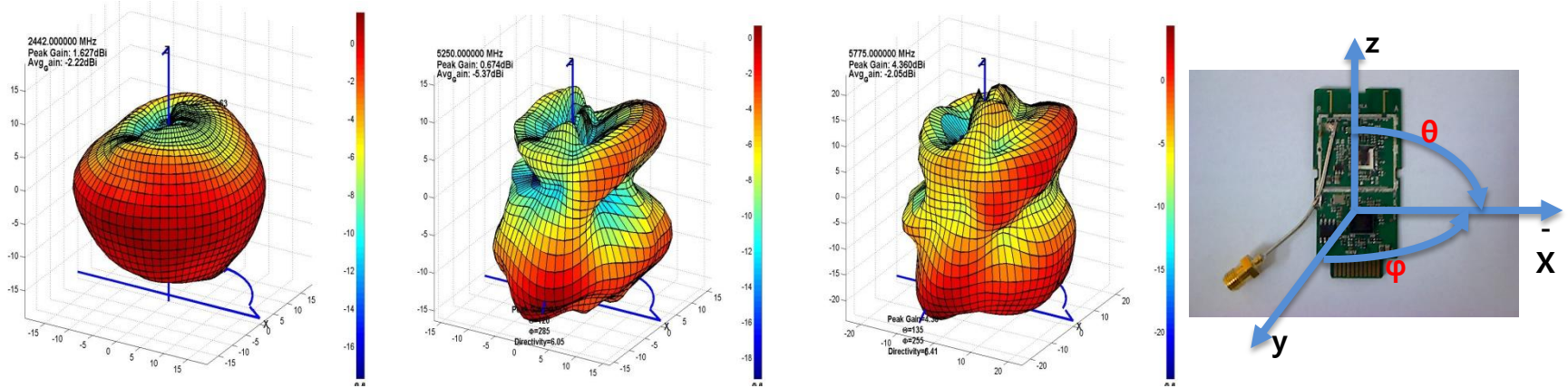


Test No.	#1-2
Series	default



2. TEST #1-2

2) Radiation Gain

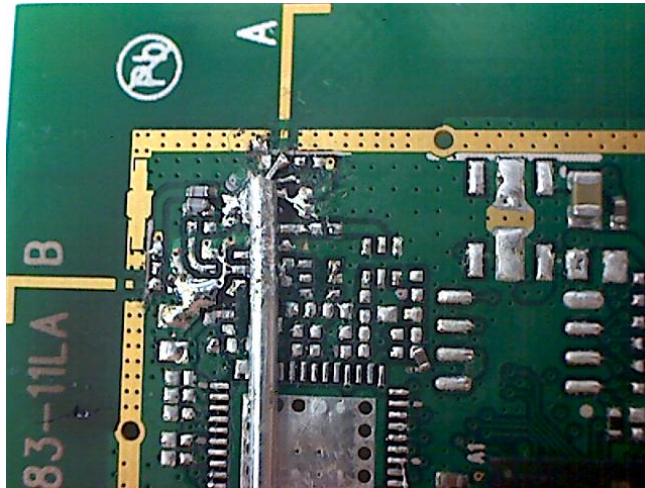


Test No	Freq (GHz)	Efficiency (%)	Avg. Gain (dBi)	Peak Gain (dBi)
#1-2	2400 MHz	42.2 %	-3.7 dBi	0.0 dBi
	2442 MHz	59.9 %	-2.2 dBi	1.6 dBi
	2485 Mhz	72.8 %	-1.4 dBi	2.6 dBi
	5150MHz	41.8 %	-3.8 dBi	1.8 dBi
	5250MHz	29.0 %	-5.4 dBi	0.7 dBi
	5350MHz	20.8 %	-6.8 dBi	-1.0 dBi
	5500MHz	20.5 %	-6.9 dBi	-0.6 dBi
	5600MHz	30.4 %	-5.2 dBi	0.7 dBi
	5725MHz	55.9 %	-2.5 dBi	3.8 dBi
	5775MHz	62.4 %	-2.1 dBi	4.4 dBi
	5825MHz	72.6 %	-1.4 dBi	5.1 dBi

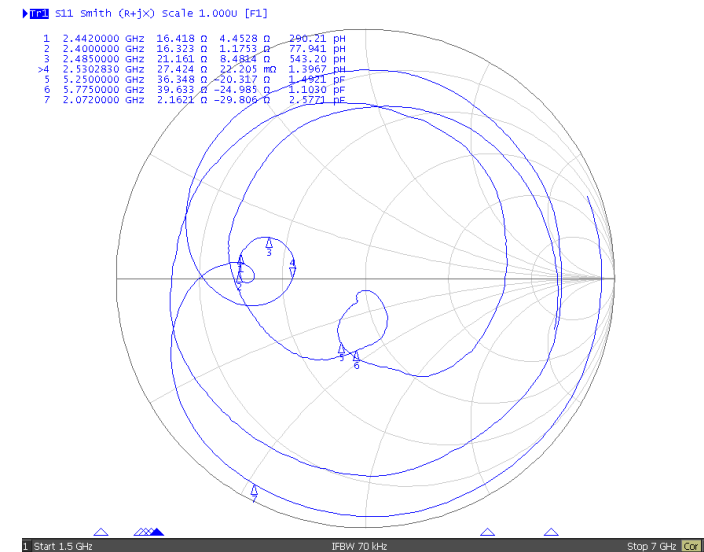
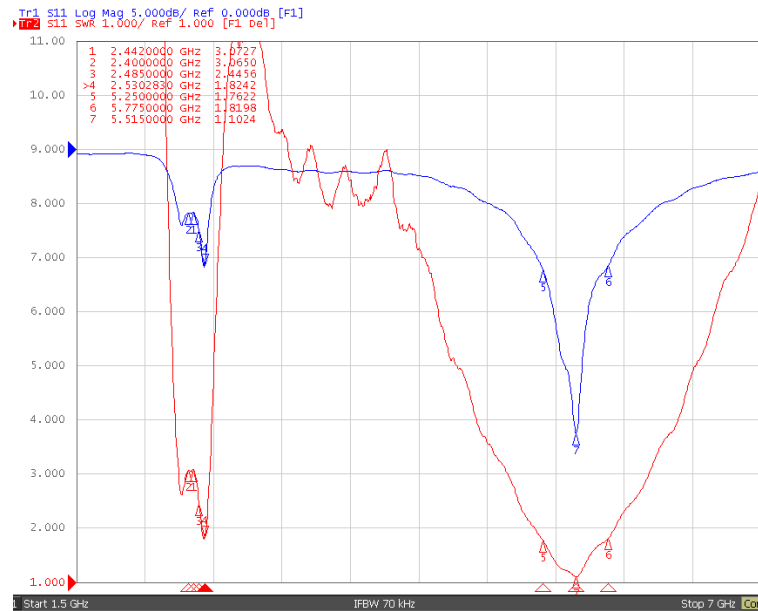
※ Anechoic Chamber : 2.8*1.6*1.8 m³

2. TEST #1-3

1) 안테나 Layout 및 S-Parameter

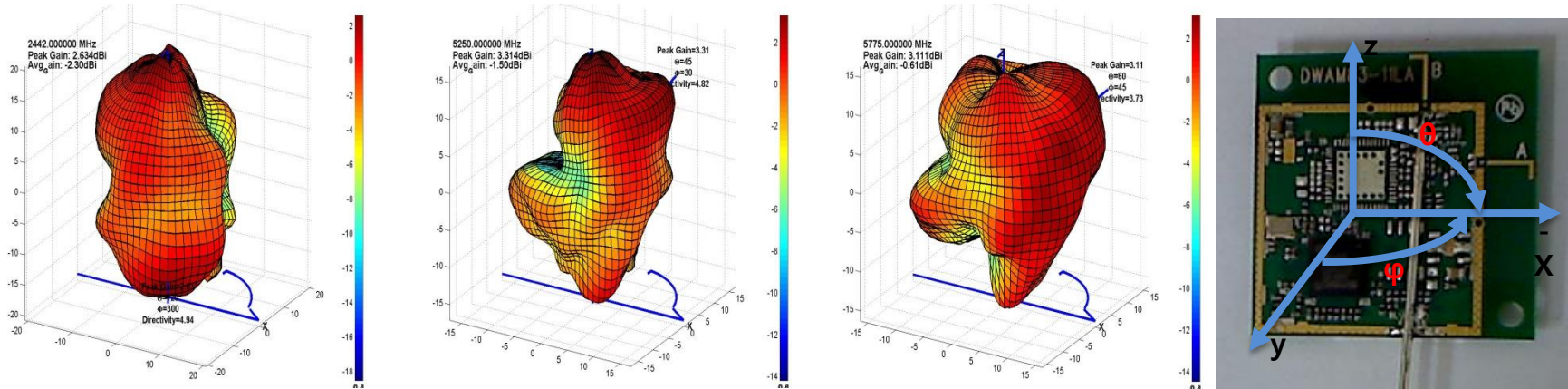


Test No.	#1-3
Series	default



2. TEST #1-3

2) Radiation Gain



Test No	Freq (GHz)	Efficiency (%)	Avg. Gain (dBi)	Peak Gain (dBi)
#1-3	2400 MHz	55.5 %	-2.6 dBi	2.4 dBi
	2442 MHz	58.8 %	-2.3 dBi	2.6 dBi
	2485 Mhz	61.8 %	-2.1 dBi	2.8 dBi
	5150MHz	50.0 %	-3.0 dBi	2.1 dBi
	5250MHz	70.8 %	-1.5 dBi	3.3 dBi
	5350MHz	73.4 %	-1.4 dBi	3.8 dBi
	5500MHz	89.6 %	-0.5 dBi	4.0 dBi
	5600MHz	92.5 %	-0.3dBi	4.1 dBi
	5725MHz	88.7 %	-0.5 dBi	3.3 dBi
	5775MHz	107.0 %	-0.6 dBi	3.1 dBi
	5825MHz	99.7 %	-1.4 dBi	4.1 dBi

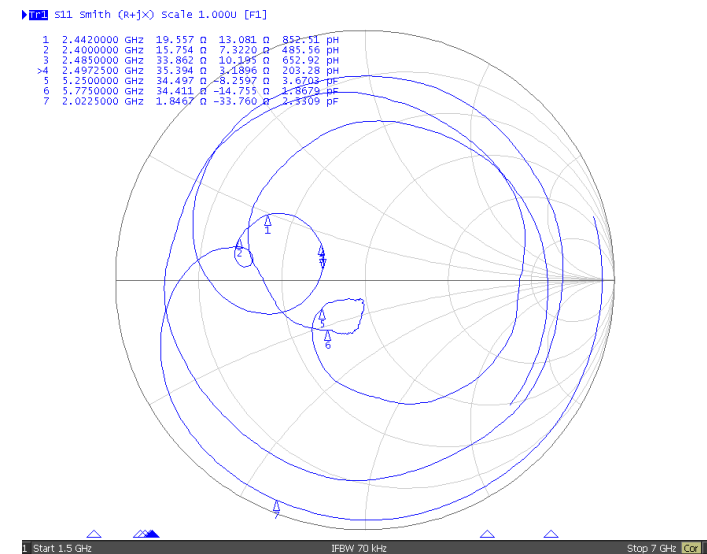
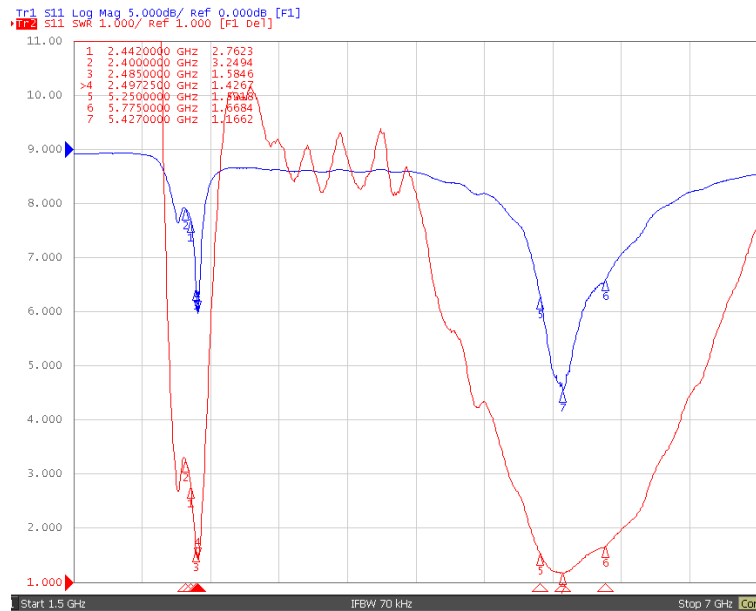
※ Anechoic Chamber : 2.8*1.6*1.8 m³

2. TEST #1-4

1) 안테나 Layout 및 S-Parameter

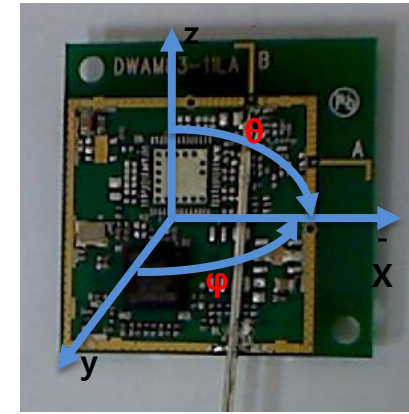
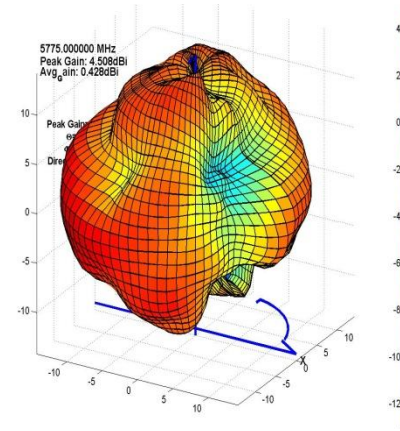
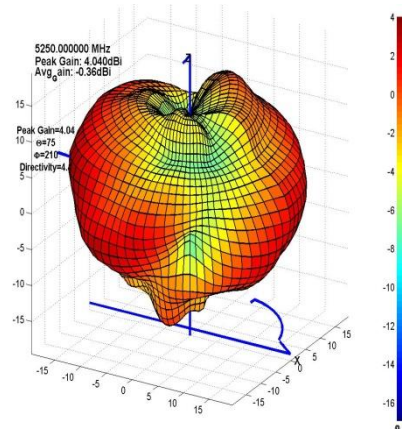
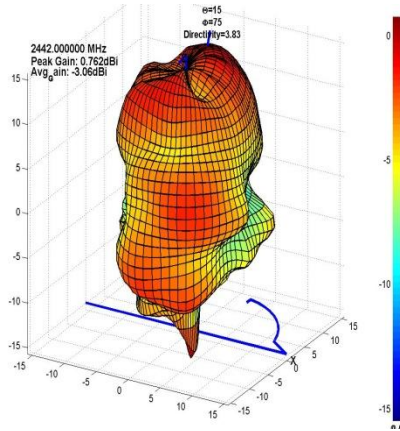


Test No.	#1-4
Series	default



2. TEST #1-4

2) Radiation Gain



Test No	Freq (GHz)	Efficiency (%)	Avg. Gain (dBi)	Peak Gain (dBi)
#1-4	2400 MHz	48.2 %	-3.2 dBi	1.8 dBi
	2442 MHz	49.3 %	-3.1 dBi	0.8 dBi
	2485 Mhz	55.4 %	-2.6 dBi	1.5 dBi
	5150MHz	76.3 %	-1.2 dBi	3.8 dBi
	5250MHz	92.0 %	-0.4 dBi	4.0 dBi
	5350MHz	89.6 %	-0.5 dBi	4.0 dBi
	5500MHz	100.1 %	0.0 dBi	4.2 dBi
	5600MHz	108.0 %	0.3 dBi	4.4 dBi
	5725MHz	107.0 %	0.3 dBi	4.2 dBi
	5775MHz	110.4 %	0.4 dBi	4.5 dBi
	5825MHz	130.5 %	1.2 dBi	5.4 dBi

※ Anechoic Chamber : 2.8*1.6*1.8 m³