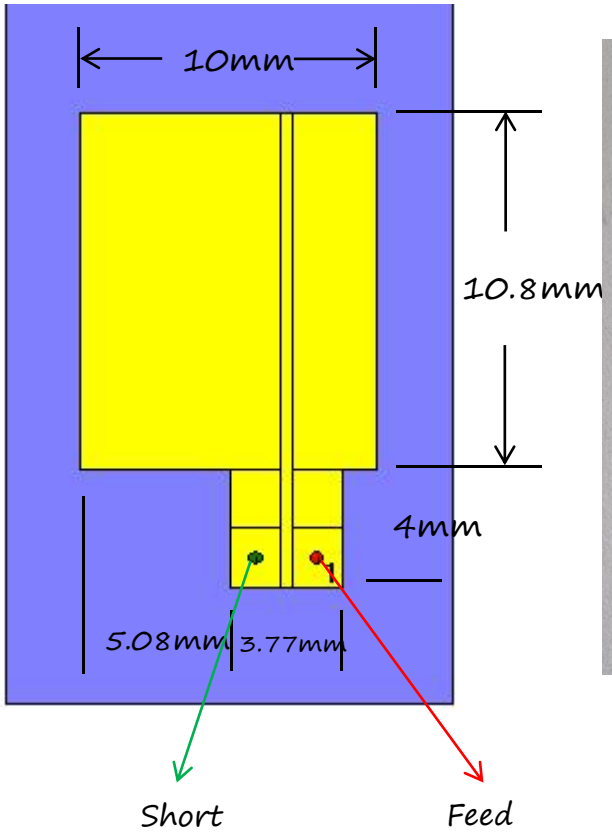
ANTENNA ENGINE

Development Completion Report

[Electric Characteristic Of A3 BT Antenna]

2024. 10. 30.

1. Structure Of Antenna

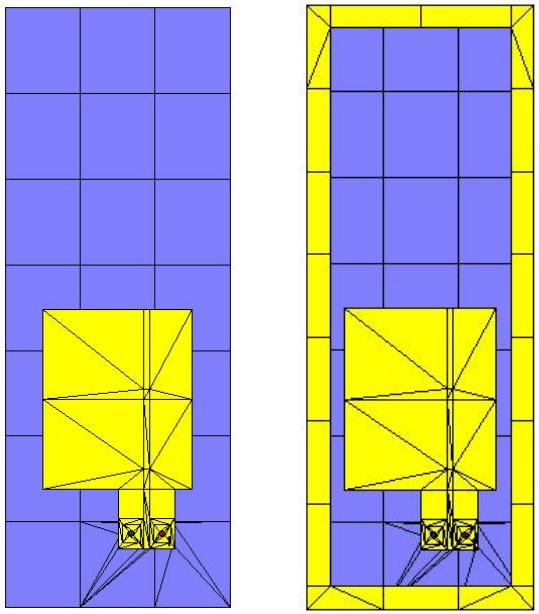


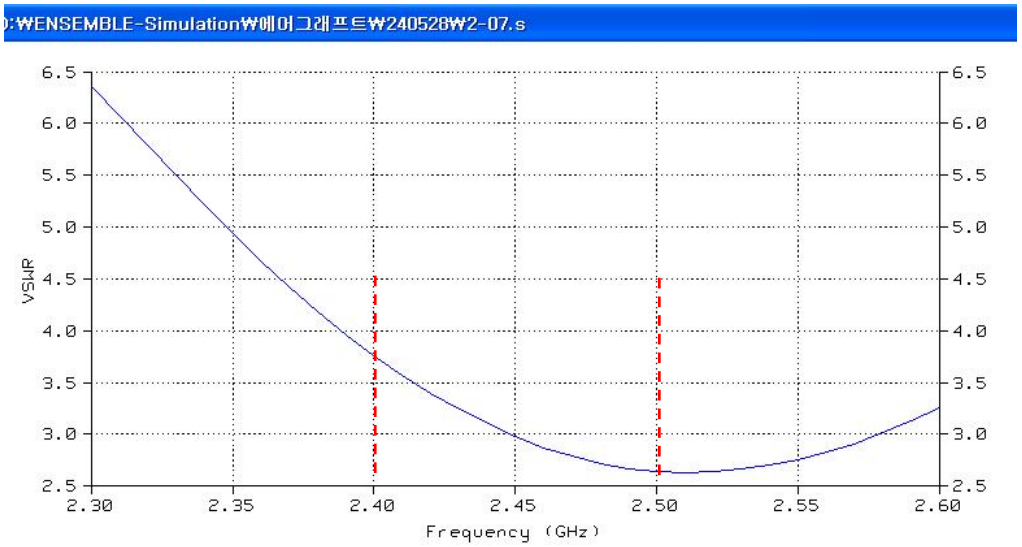
This antenna is a patch antenna with a short structure.
(Shorted Patch Antenna) is a small antenna like an Intenna.

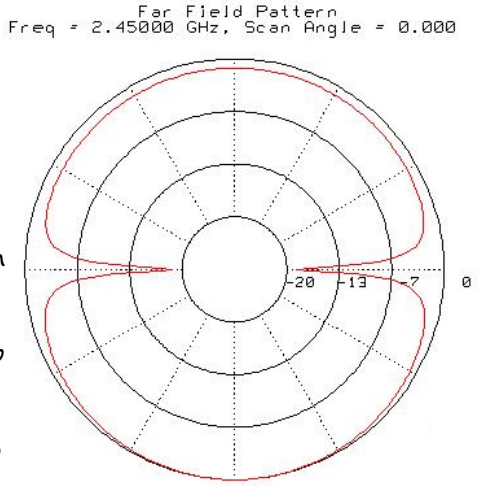
This antenna is suitable for structures that are difficult
to implement. Antenna by implementing a short structure
in a general patch antenna Area can be minimized and
antenna impedance matching Flexible tuning.

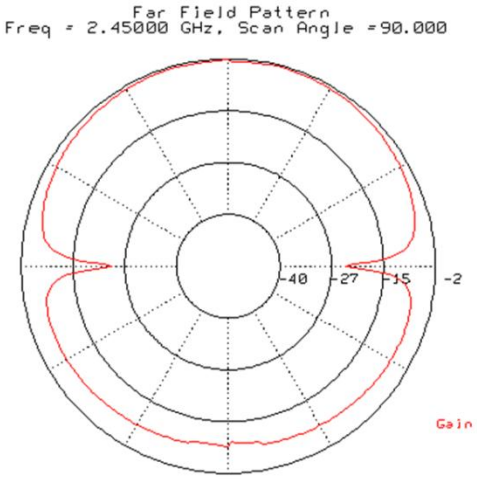
Material: FPCB (Poly Imide)

2. Simulation









Simulation of Shorted Patch Antenna with 'Ensemble' Proceeded.

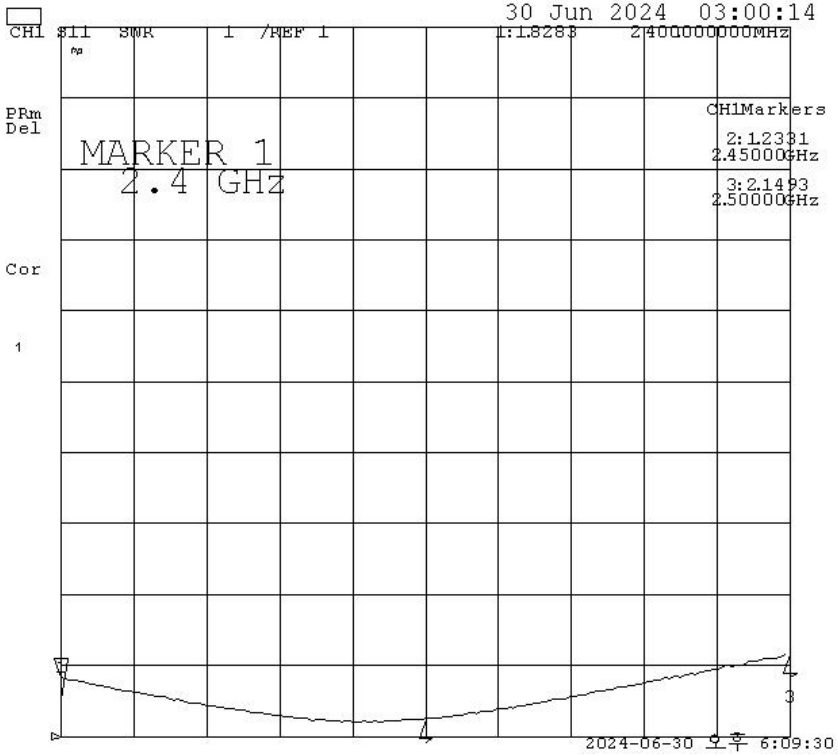
The resonant frequency is designed to be slightly higher than the center frequency. It was done. The reason is that the environment in which this antenna is placed is in the bag, If it is on a desk, on metal, or if there is a dielectric or metal nearby This is because the resonance frequency goes down to low frequencies.

3. Specification

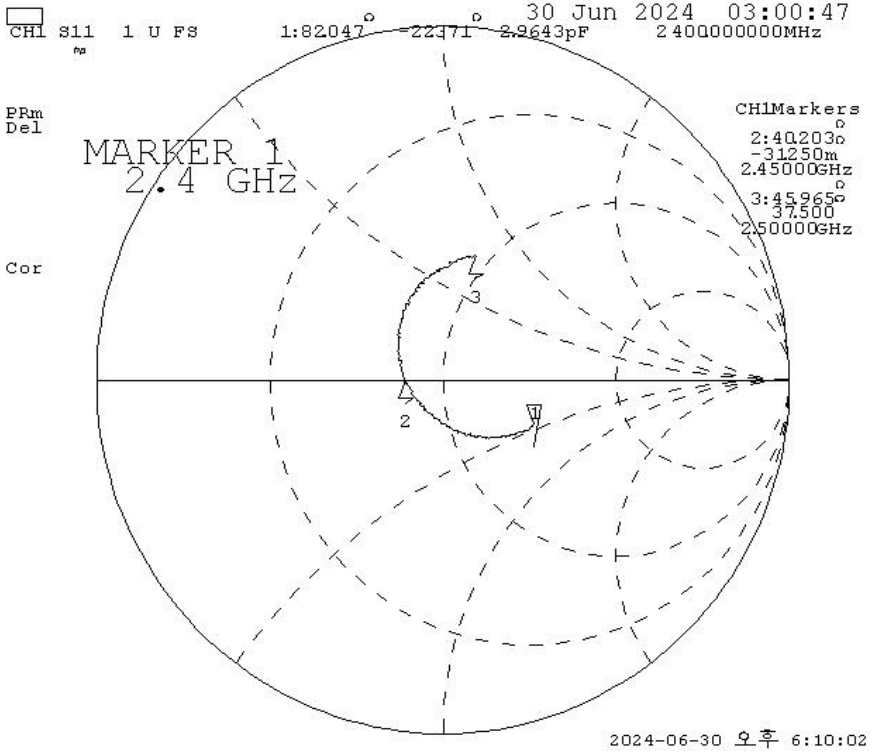
ELECTRICAL SPECIFICATIONS	
MODEL NAME	A3 BT ANT_V1.0
FREQUENCY RANGE	2400~2500 [MHz]
V.S.W.R	2.5 : 1
GAIN	0 [dBi] (Nominal)
FRONT TO BACK RATIO(dB)	N/A
Input Power(Max)	1[W]
Radiate Structure	Shorted Patch Antenna Type
IMPEDANCE	50Ω
POLARIZATION	Linear

MECHANICAL SPECIFICATIONS	
DIMENSION(mm)	10 x 14.8 x 0.1 mm
Cable Ass'y	N/A
MATERIAL	FPCB
CONNECTOR TYPE	N/A
OPERATING TEMPERATURE(℃)	-20° ~ +70°

4. Measurement Of Input Impedance

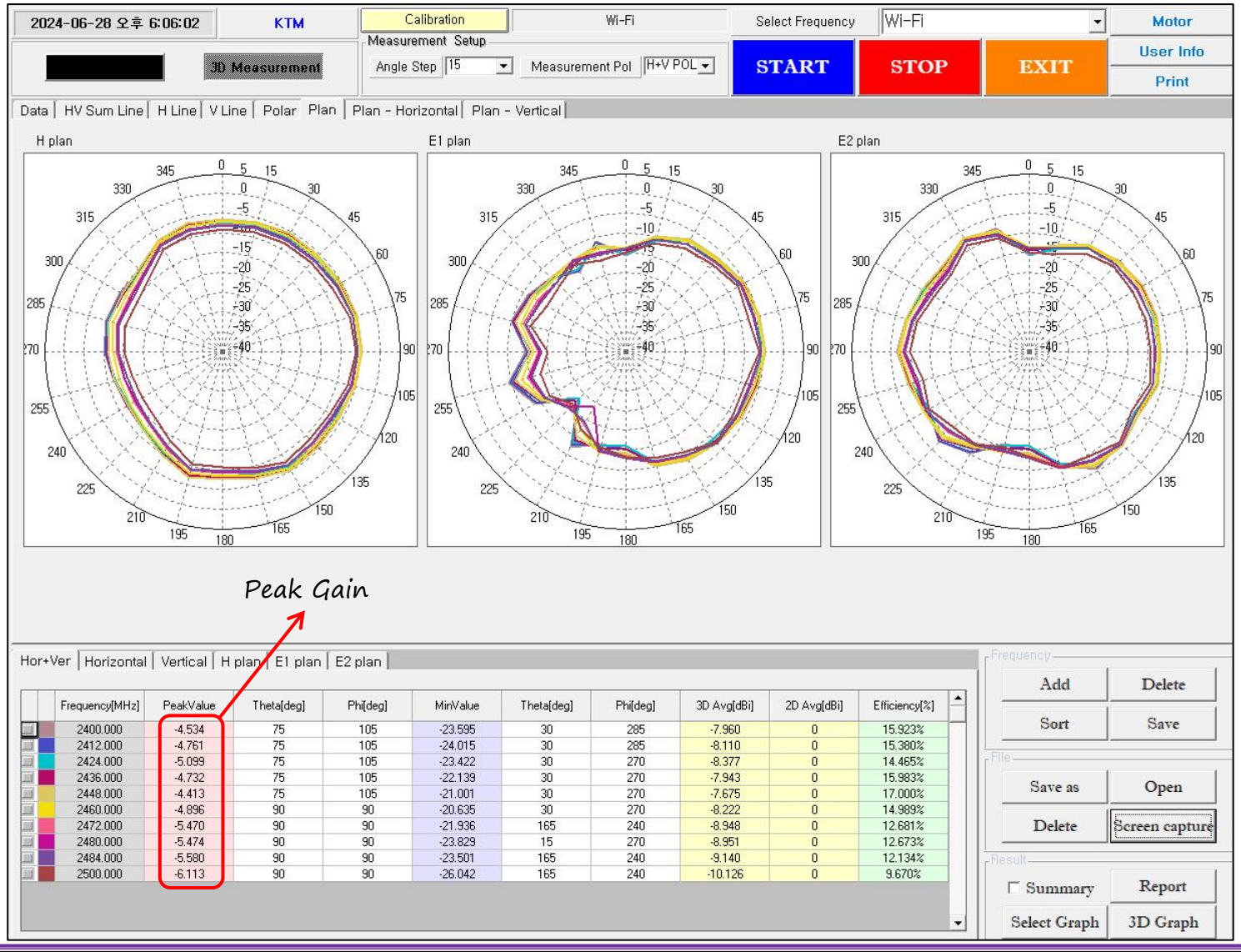


VSWR



Smith Chart

5. Radiation Pattern

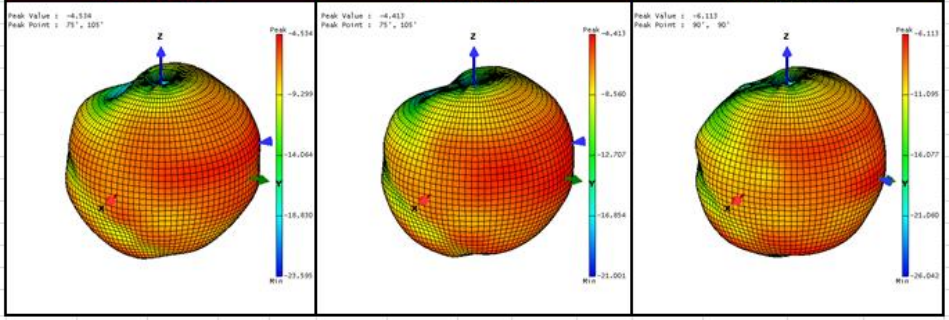


Frequency[MHz]	PeakValue	Theta[deg]	Phi[deg]	MinValue	Theta[deg]	Phi[deg]	3D Avg[dBi]	2D Avg[dBi]	Efficiency[%]
2400.000	-4.534	75	105	-23.595	30	285	-7.960	0	15.923%
2412.000	-4.761	75	105	-24.015	30	285	-8.110	0	15.380%
2424.000	-5.099	75	105	-23.422	30	270	-8.377	0	14.465%
2436.000	-4.732	75	105	-22.139	30	270	-7.943	0	15.983%
2448.000	-4.413	75	105	-21.001	30	270	-7.675	0	17.000%
2460.000	-4.896	90	90	-20.635	30	270	-8.222	0	14.989%
2472.000	-5.470	90	90	-21.936	165	240	-8.948	0	12.681%
2480.000	-5.474	90	90	-23.829	15	270	-8.951	0	12.673%
2484.000	-5.580	90	90	-23.501	165	240	-9.140	0	12.134%
2500.000	-6.113	90	90	-26.042	165	240	-10.126	0	9.670%

1. Informations

Date		Test Engineer	
Customer		Antenna Version	
Model / Revision			
Test Condition			

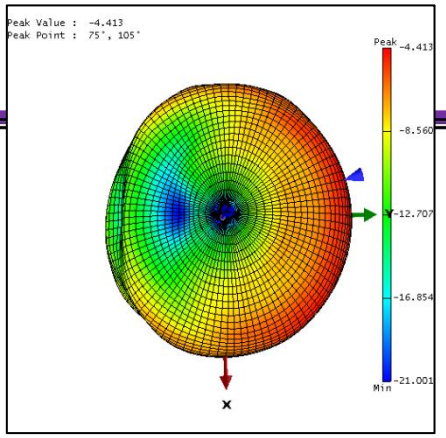
Frequency		
2400.000Mhz	2448.000Mhz	2500.000Mhz



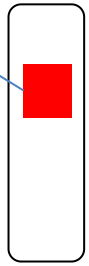
2. Test Results

Frequency	Peak Value		Minimum Value		Avg. Gain	Efficiency
[MHz]	Value[dBi]	Degree	Value[dBi]	Degree	[dBi]	[%]
2400	-4.534	075 / 105	-23.595	030 / 285	-7.96	15.92%
2412	-4.761	075 / 105	-24.015	030 / 285	-8.11	15.38%
2424	-5.099	075 / 105	-23.422	030 / 270	-8.377	14.47%
2436	-4.732	075 / 105	-22.139	030 / 270	-7.943	15.98%
2448	-4.413	075 / 105	-21.001	030 / 270	-7.675	17.00%
2460	-4.896	090 / 090	-20.635	030 / 270	-8.222	14.99%
2472	-5.47	090 / 090	-21.936	165 / 240	-8.948	12.68%
2480	-5.474	090 / 090	-23.829	015 / 270	-8.951	12.67%
2484	-5.58	090 / 090	-23.501	165 / 240	-9.14	12.13%
2500	-6.113	090 / 090	-26.042	165 / 240	-10.126	9.67%

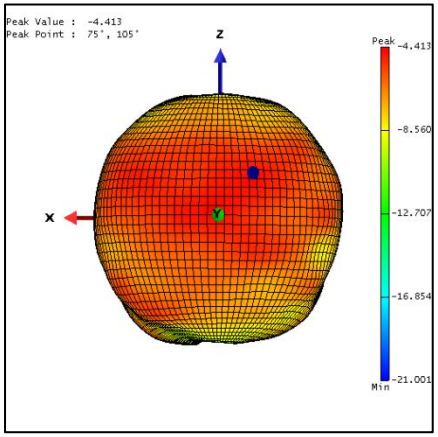
Top

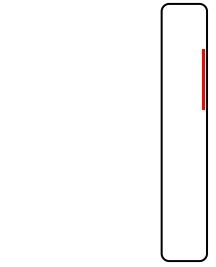


Antenna

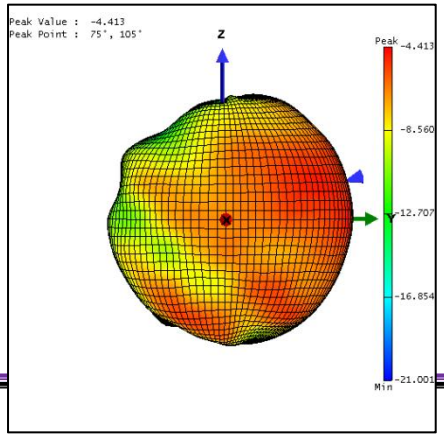


Front

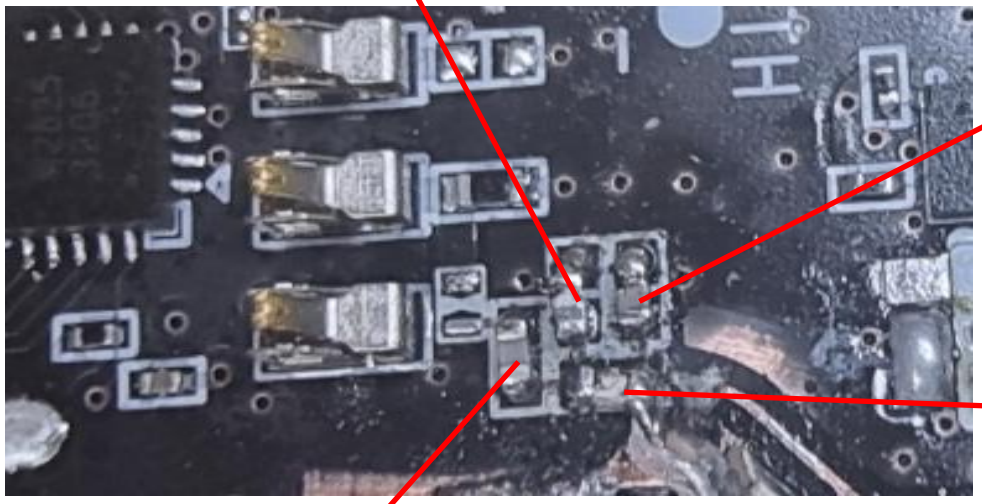




Side



6. Circuit Of Impedance Matching



7. Measurement Of Radiation Pattern(Anechoic Chamber Room)