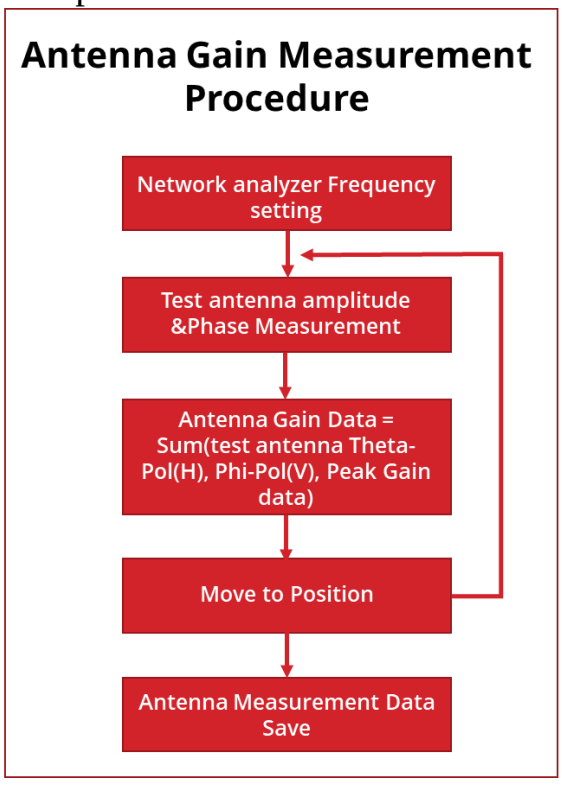
A3LSMA236V BT/WiFi Antenna Specification

BT/WiFi Ant
- Antenna Type : MFA
- Antenna Manufacturer : Galtronics
- Antenna Part number : GH42-06934A(#7763)
- Galtronics of test LAB information
  - ➔ 1. Antenna expertise over 43 years(founded in 1978)
  - ➔ 2. Global Reach : 4 R&D, 8 Sales offices, 3 Manufacturing site
  - ➔ 3. Expert in mobile, network and automotive antenna solution
  - ➔ 4. Introduced industry 1st MIMO DAS antenna(2012)
  - ➔ 5. Introduced 5G Massive MIMO antenna(2018)
  - ➔ 6. Top tier supplier to Samsung mobile(leading 5G solution)
- Test procedure



Test engineer & signature : Blom.song(Galtronics)
Test data : 23/11/2022

Gain value is measured by Galtronics
Gain Value is measured in active call & Antenna Selection

Antenna gain is measured in MTG Chamber.

* MTG Chamer

Anechoic chamber is available for Over The Air Test per CTIA, WiFi and WiMAX RPT Test. Also it is available for antenna pattern measurement for design and development. It's important to RF shielding, absorbing material, absorber layout, precision mechanical alignment and positioner accuracy, when anechoic chamber is designed and installed. MTG can provide the design and construction of anechoic chamber for customer requirements. MTG has a series of positioners, microwave transmit and receive instruments and measurement data acquisition and analysis software. We have the experience to offer anechoic chamber of any size; from the smallest unit for simple RF test to the largest and most complex custom-build for a research and development laboratory.

*Test Equipment list

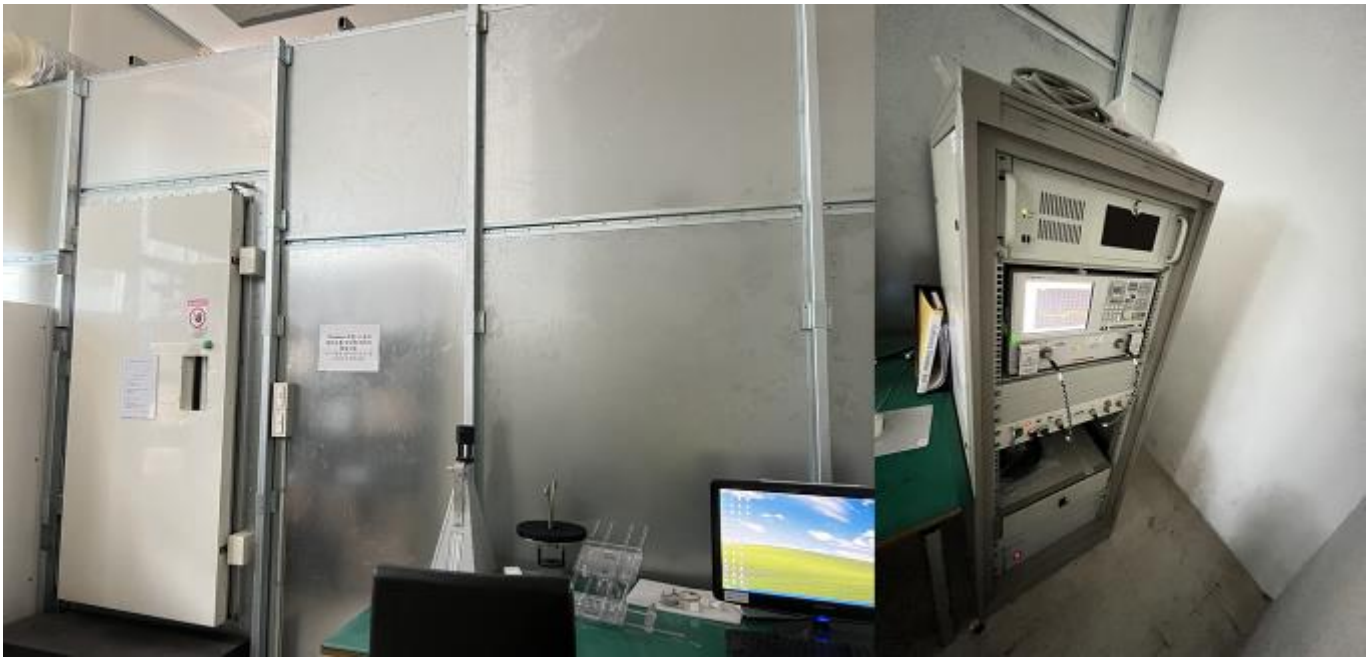
Description	Manufacturer	Model	Range	S/N	Cal Due
Network Analyzer	Agilent Technologies	N5230A	300kHz~13.5GHz	MY45000186	2022.02.11.

*Chamber specification

- Size : 6m(L) x 3m(W) x 3m(H), Rectangular type
- Shield Performance : Better than 100dB @ 400~3GHz & 80dB 3GHz ~ 8GHz
- Measurement Antenna : Dual-Polarization Horn Antenna
  - ➔ Frequency : 0.4 ~ 8GHz
  - ➔ Normal Gain : 10dBi
  - ➔ VSWR : 2.3 Max
- Power Line Filter : 220V 1P, 20A
- Isolation Transformer : 220V 1P, 3kW

- Return Loss & VSWR Test

The VSWR measurement of antennas assembled into a fully operating SM-A236V phone handset is measured on the Network Analyzer. The handset is set up with a 50ohm coaxial cable connected to the 50ohm point. Calibration is done at the end of the 50ohm coaxial cable connection. The other end of the 50ohm coaxial cable is connected to a network analyzer. The handset is positioned on a non-conductive table for free space measurements.



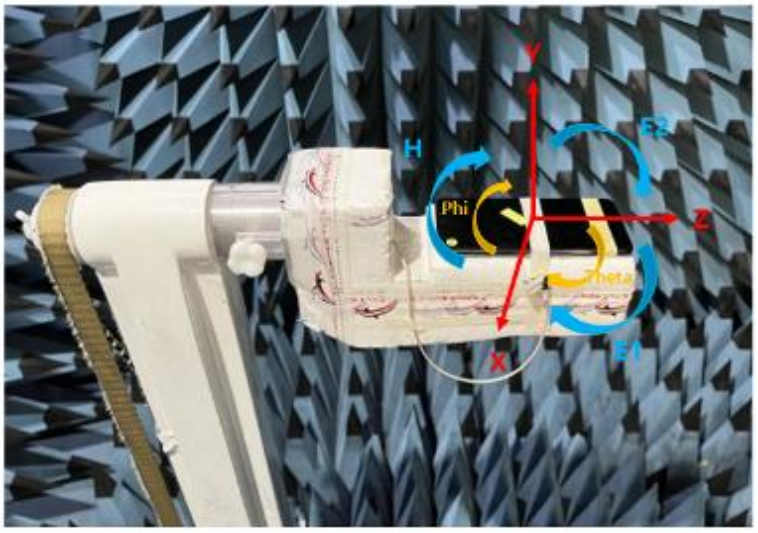
- Return Loss & VSWR Test

Galtronics has a system that can measure VSWR using MTG chamber and E5071B network analyzer for passive measurement. In order to measure the VSWR of each antenna, the lab connects the coaxial cable to the point in contact with the antenna on the main board. The VSWR is measured through the coaxial cable connected in the set. At this time, SM-A236V is assembled in the same state as the user environment.

Refer to test set up photographs for images

- Radiation Pattern Test

Antennas tested for Gain and Efficiency must be assembled into the enclosure and tested in the fully assembled and operating SM-A236V handset. The antenna is tested in free space in the anechoic chamber in the H, E1 and, E2 planes. The radiation patterns are measured at the center of transmit and receive bands.



- Test Method (Manufacturing)
  All measurements are done with SM-A236V fully assembled. Measure in consideration of the Customer's usage environment. Use a fully shielded chamber environment to prevent any noise - induced errors. Typically, the electrical properties of antenna are measured using a jig that can hold the set.

SM-A236V

BT/WiFi Antenna Gain

Antenna (BT/WiFi)

-MFA

-Manufacturer : Galtronics.

BT/WiFi Antenna	Freq.(MHz)	2400	2412	2437	2442	2450	2462
	Ave. gain (dBi)	-6.71	-6.61	-6.54	-6.54	-6.57	-6.67
	Peak gain (dBi)	-4.68	-4.57	-4.51	-4.60	-4.59	-4.81

BT/WiFi Antenna	Freq.(MHz)	2472	2484	2500	5150	5200	5220
	Ave. gain (dBi)	-6.80	-7.16	-7.24	-5.53	-5.28	-5.26
	Peak gain (dBi)	-4.97	-5.15	-5.26	-4.38	-3.95	-4.01

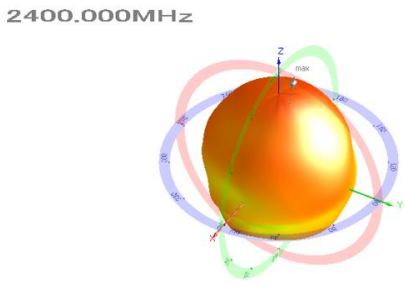
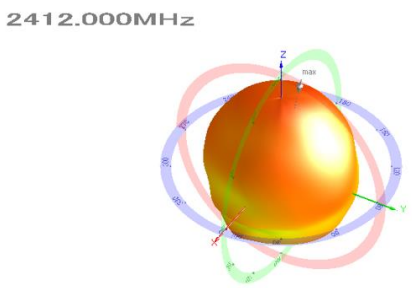
BT/WiFi Antenna	Freq.(MHz)	5250	5280	5300	5350	5400	5500
	Ave. gain (dBi)	-4.81	-4.23	-4.03	-3.77	-3.75	-3.55
	Peak gain (dBi)	-3.38	-2.79	-2.57	-2.16	-2.45	-2.27

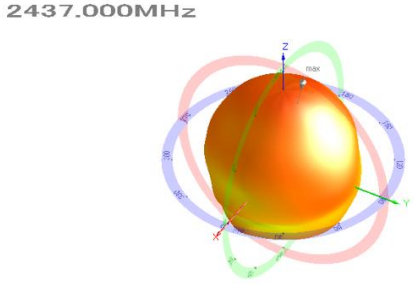
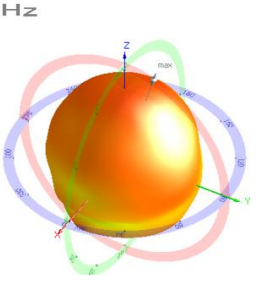
BT/WiFi Antenna	Freq.(MHz)	5600	5700	5785	5800	5805	5850
	Ave. gain (dBi)	-4.50	-4.46	-5.27	-4.88	-4.61	-4.97
	Peak gain (dBi)	-2.89	-2.85	-3.96	-3.58	-3.08	-3.49

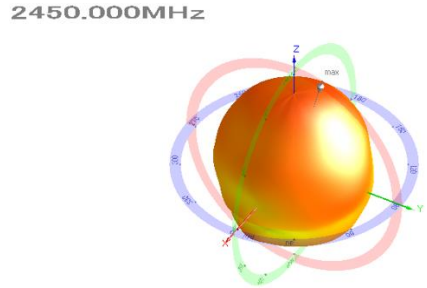
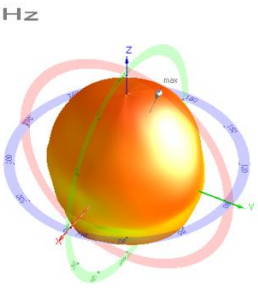
● Radiation Pattern

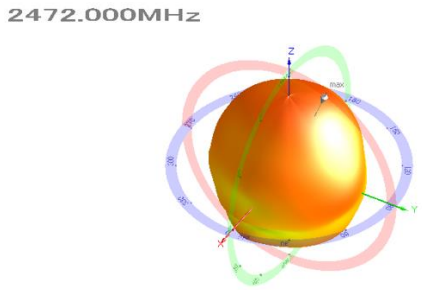
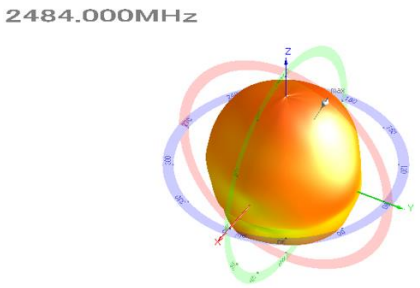
There is Radiation Pattern due to passive measurement with MTG chamber.

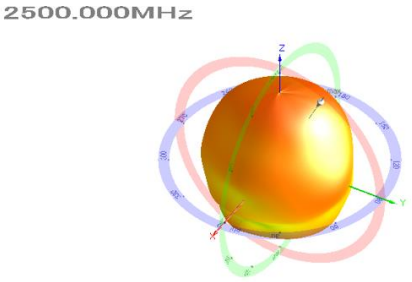
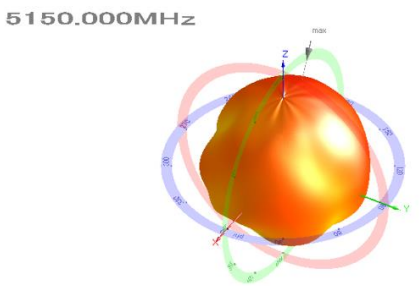
Antenna (BT/WiFi)

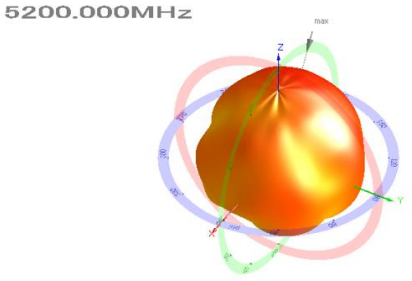
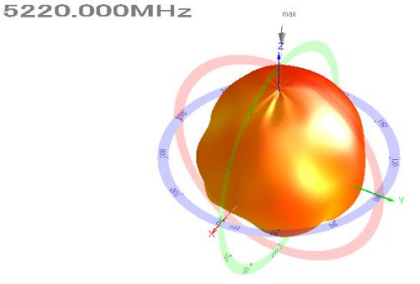
주파수 대역	BT/WiFi	
(Frequency Band)	2400MHz	2412MHz
3D Radiation Pattern		
Avg Gain [dBi]	-6.71	-6.61
Efficiency[%]	21.33	21.82
Peak Gain [dBi]	-4.68	-4.57

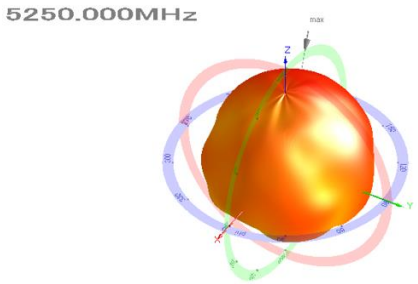
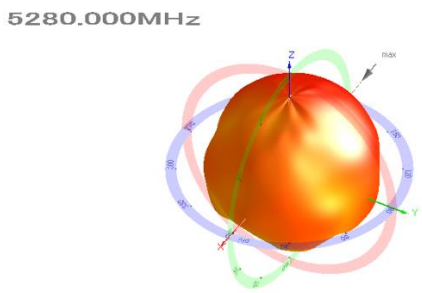
주파수 대역	BT/WiFi	
(Frequency Band)	2437MHz	2442MHz
3D Radiation Pattern		
Avg Gain [dBi]	-6.54	-6.54
Efficiency[%]	22.18	22.18
Peak Gain [dBi]	-4.51	-4.6

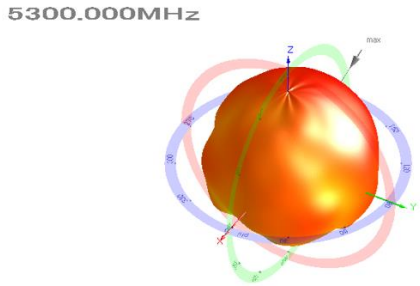
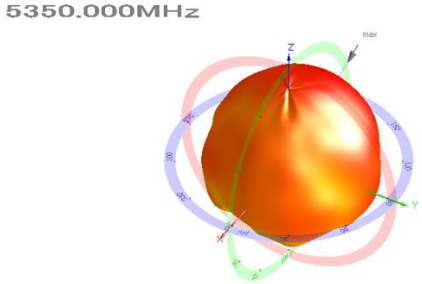
주파수 대역	BT/WiFi	
(Frequency Band)	2450MHz	2462MHz
3D Radiation Pattern		
Avg Gain [dBi]	-6.57	-6.67
Efficiency[%]	22.02	21.52
Peak Gain [dBi]	-4.59	-4.81

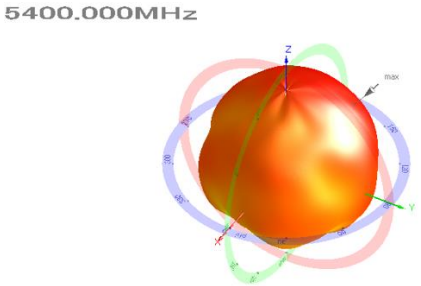
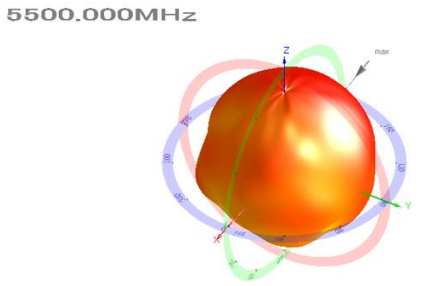
주파수 대역	BT/WiFi	
(Frequency Band)	2472MHz	2484MHz
3D Radiation Pattern		
Avg Gain [dBi]	-6.8	-7.16
Efficiency[%]	20.89	19.23
Peak Gain [dBi]	-4.97	-5.15

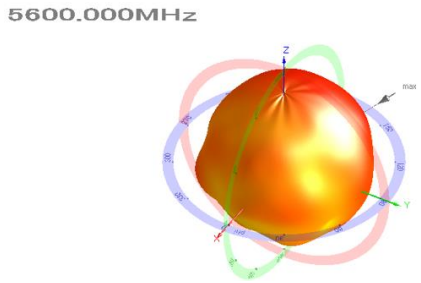
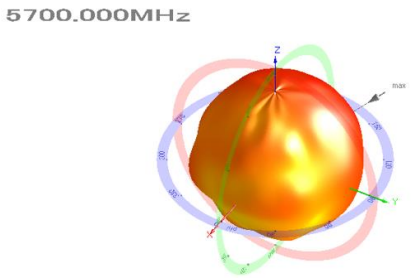
주파수 대역	BT/WiFi	
(Frequency Band)	2500MHz	5150MHz
3D Radiation Pattern		
Avg Gain [dBi]	-7.24	-5.53
Efficiency[%]	18.87	27.98
Peak Gain [dBi]	-5.26	-4.38

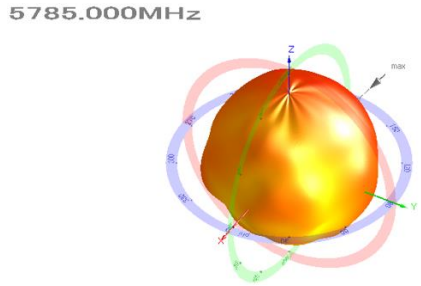
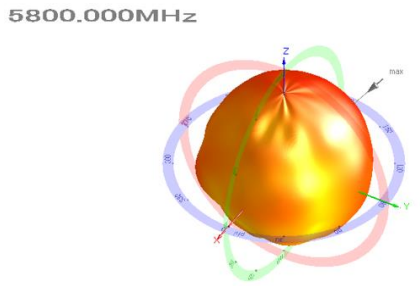
주파수 대역	BT/WiFi	
(Frequency Band)	5200MHz	5220MHz
3D Radiation Pattern		
Avg Gain [dBi]	-5.28	-5.26
Efficiency[%]	29.64	29.78
Peak Gain [dBi]	-3.95	-4.01

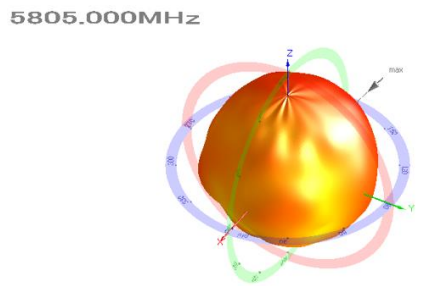
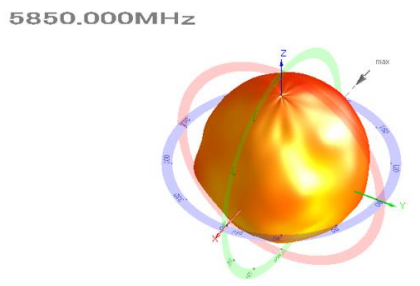
주파수 대역	BT/WiFi	
(Frequency Band)	5250MHz	5280MHz
3D Radiation Pattern		
Avg Gain [dBi]	-4.81	-4.23
Efficiency[%]	33.03	37.75
Peak Gain [dBi]	-3.38	-2.79

주파수 대역	BT/WiFi	
(Frequency Band)	5300MHz	5350MHz
3D Radiation Pattern		
Avg Gain [dBi]	-4.03	-3.77
Efficiency[%]	39.53	41.97
Peak Gain [dBi]	-2.57	-2.16

주파수 대역	BT/WiFi	
(Frequency Band)	5400MHz	5500MHz
3D Radiation Pattern		
Avg Gain [dBi]	-3.75	-3.55
Efficiency[%]	42.16	44.15
Peak Gain [dBi]	-2.45	-2.27

주파수 대역	BT/WiFi	
(Frequency Band)	5600MHz	5700MHz
3D Radiation Pattern		
Avg Gain [dBi]	-4.5	-4.46
Efficiency[%]	35.48	35.8
Peak Gain [dBi]	-2.89	-2.85

주파수 대역	BT/WiFi	
(Frequency Band)	5785MHz	5800MHz
3D Radiation Pattern		
Avg Gain [dBi]	-5.27	-4.88
Efficiency[%]	29.71	32.5
Peak Gain [dBi]	-3.96	-3.58

주파수 대역	BT/WiFi	
(Frequency Band)	5805MHz	5850MHz
3D Radiation Pattern		
Avg Gain [dBi]	-4.61	-4.97
Efficiency[%]	34.59	31.84
Peak Gain [dBi]	-3.08	-3.49