


# Technical Data Sheet for BLE Measurement result(3D)

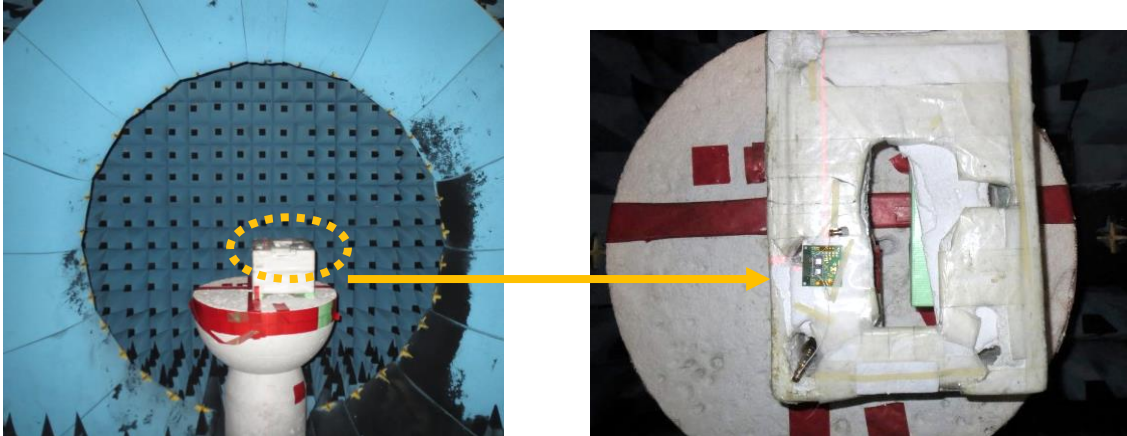
Kanazawa Murata Mfg. Co., Ltd  
Antenna Technical Support Section



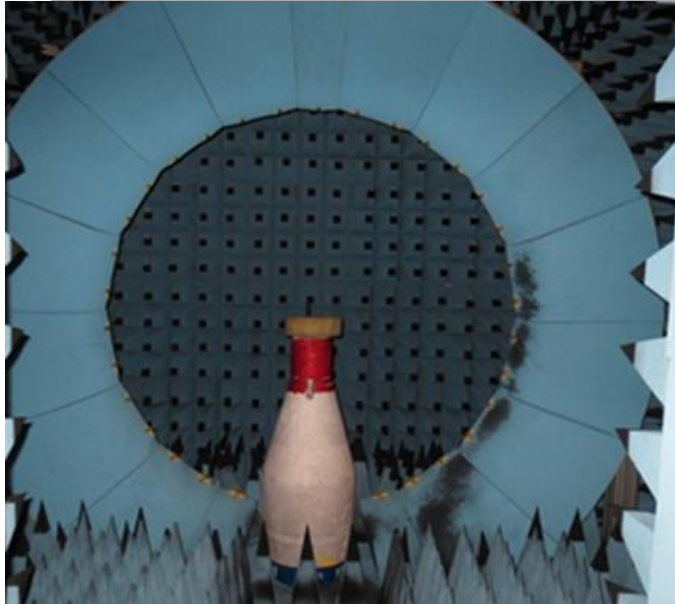
# Test method for antenna gain measurement

Model Name	Type2DK_BLE_ANT
Frequency Range	2400~2484MHz
Antenna type	$\lambda/4$ Monopole Antenna
Antenna gain(dBi)	BLE: -4.8
External photo	

# Test method for antenna gain measurement

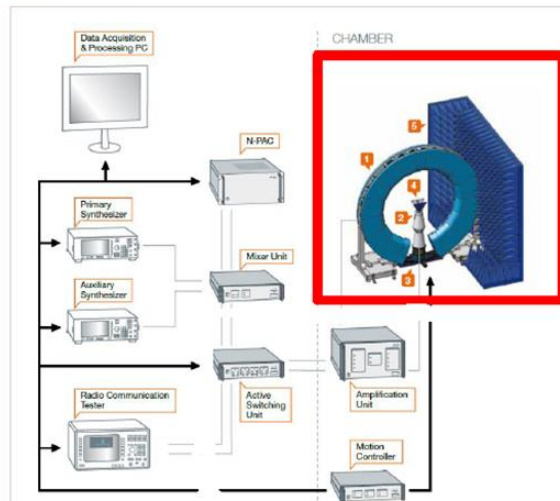
Test method	Standard antenna method (comparative method) * Comparing a measured antenna to a standard antenna with a known gain factor	
Equipment used for antenna gain measurement	Model name	Measurement system : Microwave Vision Group (former SATIMO) SG32 (details next page) Equipment PAC E4438C E4428C
	Serial number	PAC : MW 000021H-0068 E4438C : MY45090139 E4428C : MY45280466
	Calibration date	October 18, 2022
Antenna gain measurement date	December 13, 2022	
Measurement person	Harumi Matsuoka	
Setup photo		

# Details of SG32



Anechoic chamber size		Approximately 3.5m x 3.5m x 3m (H)			
Frequency band		800~6000MHz (18~40GHz compatible with Option)			
Measurement time	Elevation 1 cut	Real time			
	Global surface measurement	< Approx. 20 seconds (when measuring 10 frequencies)			
Measurement uncertainty	Peak gain	< +/-0.75dB (1.0~6.0GHz)			
	Low gain	< +/-1.0dB (0.8~1.0GHz)			
Dynamic range		70dB			
Cross Polar Isolation		> 45dB			
DUT size	0.8 GHz	1.8 GHz	2.5 GHz	6 GHz	
	75 cm	75 cm	65 cm	30 cm	

## System overview



Peak gain variation is secured within  $\pm 0.75$  dB by system calibration.

# Content

---



1. Appearance
2. Measurement condition
3. Measurement result

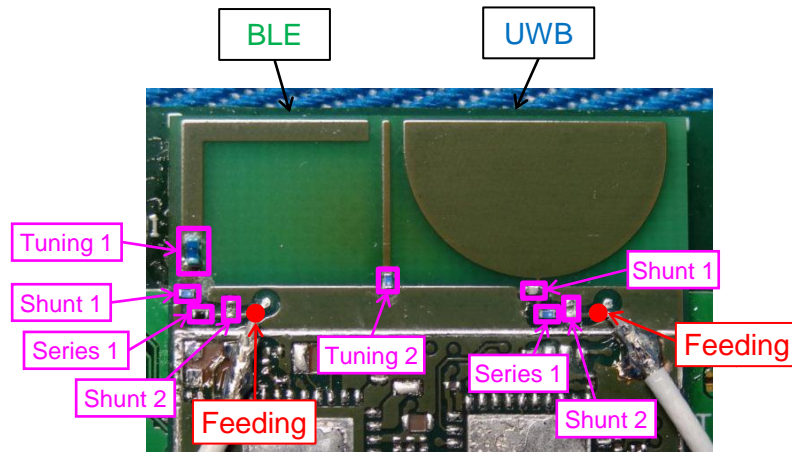


## 2. Measurement condition

Condition	Memo	Antenna	Tuning 1	Tuning 2	Matching circuit		
					Shunt 1	Series 1	Shunt 2
Condition 1	Optimized matching	BLE	2.9nH	8.2nH	2.4nH	0ohm	None
		UWB			0.1pF	0.6nH	None

Size:1005 LQW15AN

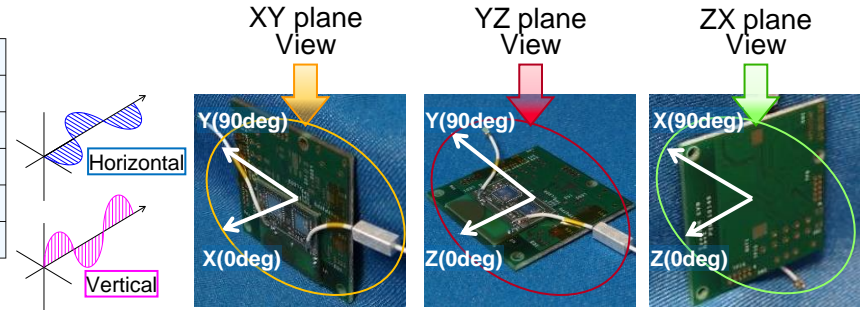
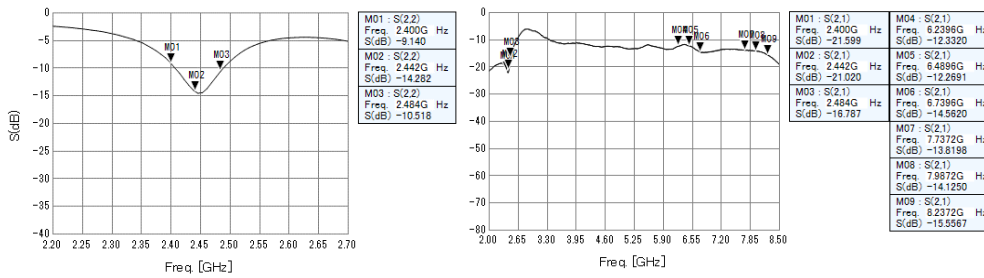
Size:0603 LQP03 / GRM03 / Resistor



# 3. Measurement result

## Condition 1: Optimized matching(BLE)

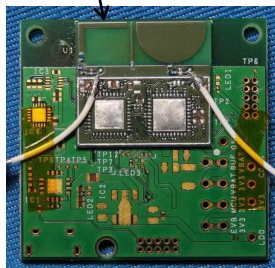
### <Return Loss>



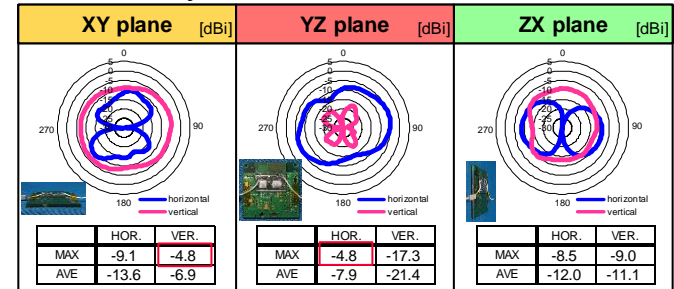
### <Efficiency>

LINEAR POLARIZATION		XY-plane		YZ-plane		ZX-plane		Total Efficiency
		hor.	ver.	hor.	ver.	hor.	ver.	
2400 MHz	MAX.	-11.2	-5.0	-5.2	-19.2	-8.7	-9.3	-7.6
	AVE.	-14.3	-7.1	-8.2	-23.0	-12.1	-11.2	
2442 MHz	MAX.	<b>-9.1</b>	<b>-4.8</b>	<b>-4.8</b>	<b>-17.3</b>	<b>-8.5</b>	<b>-9.0</b>	-7.4
	AVE.	<b>-13.6</b>	<b>-6.9</b>	<b>-7.9</b>	<b>-21.4</b>	<b>-12.0</b>	<b>-11.1</b>	
2484 MHz	MAX.	-9.2	-5.7	-5.7	-16.9	-9.5	-9.0	-8.0
	AVE.	-13.3	-7.9	-8.4	-20.7	-13.0	-11.1	

BLE



### <Directivity>



2442MHz