RERC22085-SE
27 Jun. 2022

CONFIDENTIAL

Technical Data Sheet for BLE Type2EG Measurement result

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Antenna Technical Support Section

Summary

<Content>
EVB for Type2EG is measured.

Condition	Memo
1	Default
2	Optimized matching circuit from Condition 1

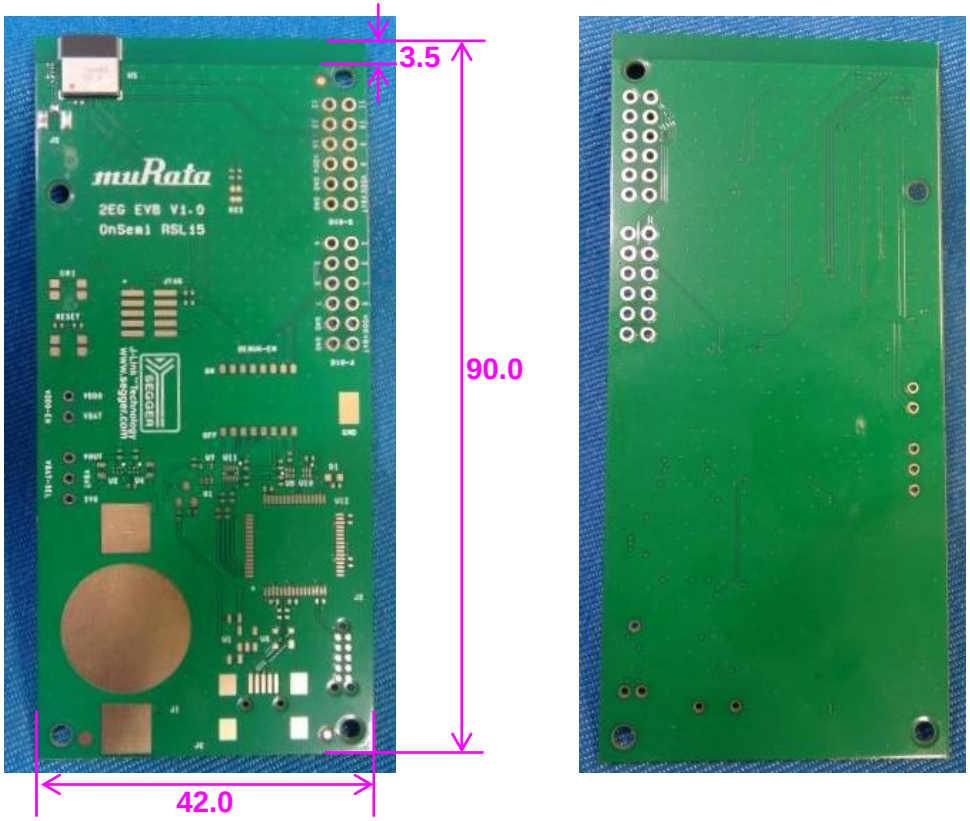
Condition	Comment	Total efficiency [dB] Average	Peak gain [dBi] Max.
1	Impedance of antenna doesn’t match for BLE band.	-9.3	-3.9
2	Antenna efficiency is improved by optimizing matching circuit.	-6.9	-3.0

<Comment>
In Condition 1, it is confirmed that impedance of antenna has room for improvement. Therefore, we optimized matching circuit and confirmed that antenna efficiency is improved in Condition 2.

Content

1. Appearance

<DUT>

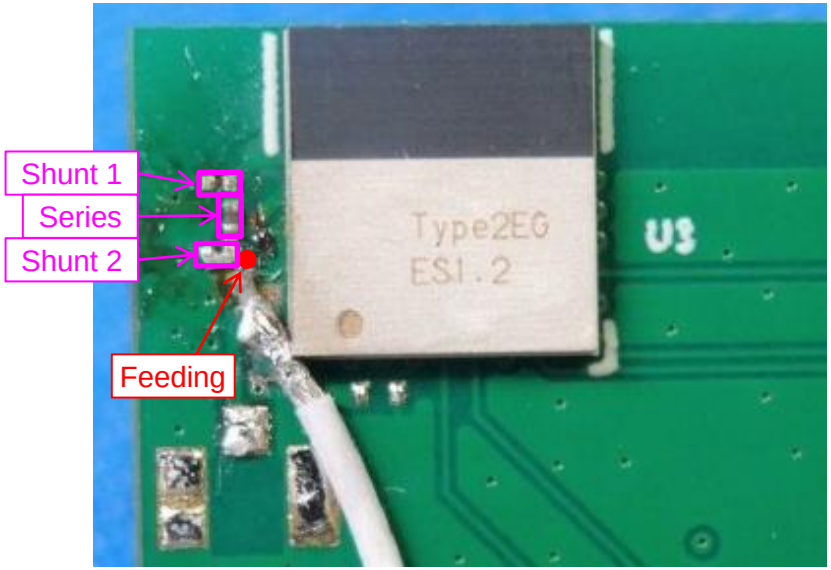


UNIT : mm

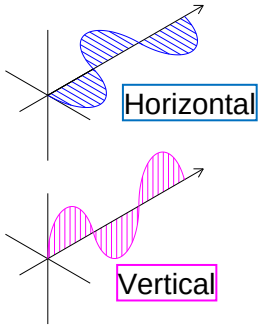
2. Measurement condition

Condition	Memo	Matching circuit(EVB)		
		Shunt 1	Series	Shunt 2
Condition 1	Default	None	0ohm	None
Condition 2	Optimized matching circuit from Condition 1	None	1.6pF	1.2pF

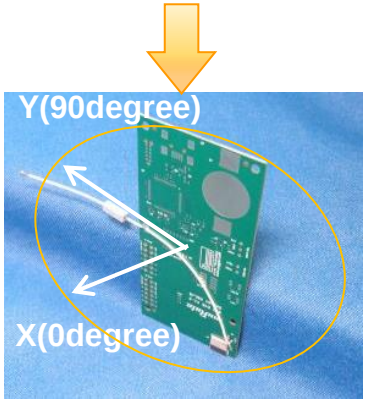
Size:0603 LQP03 / GRM03 / Resistor



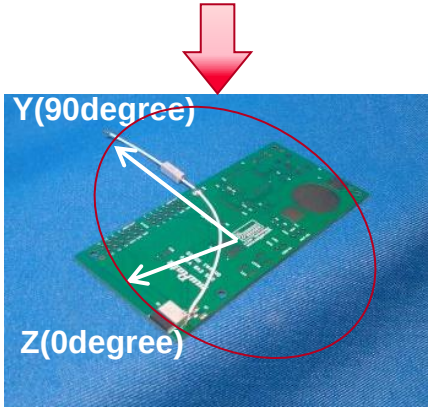
3. Measurement direction



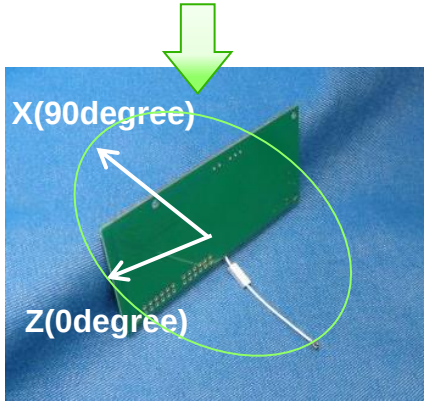
XY plane View



YZ plane View

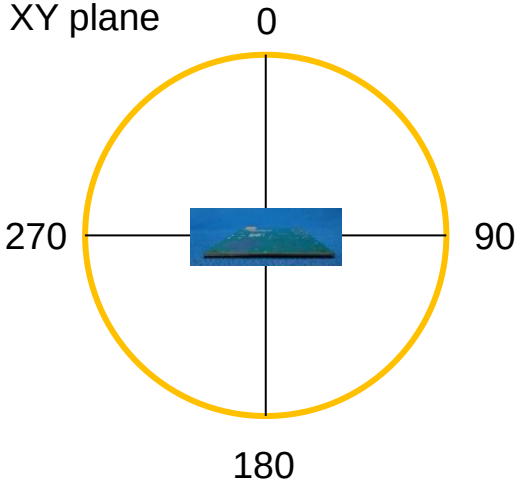


ZX plane View

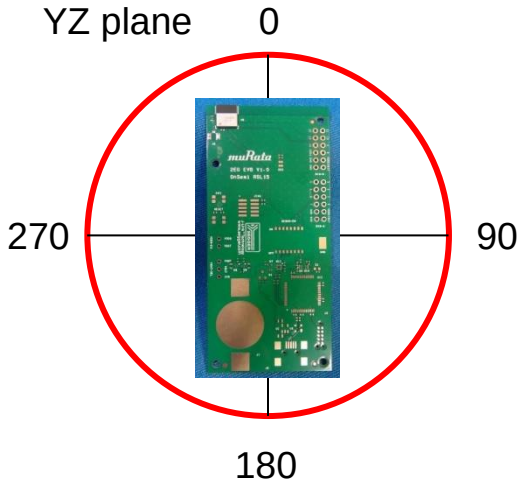


2D Directional indication

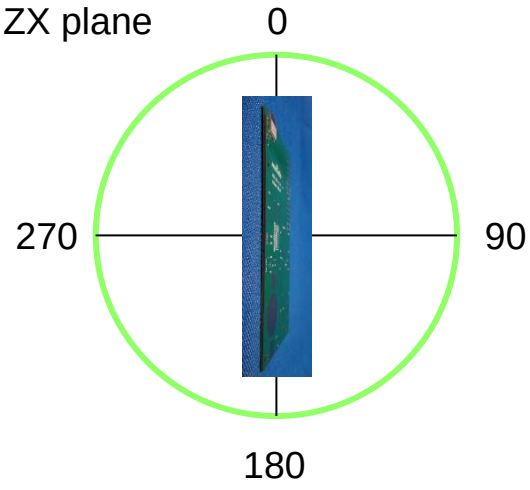
XY plane



YZ plane



ZX plane



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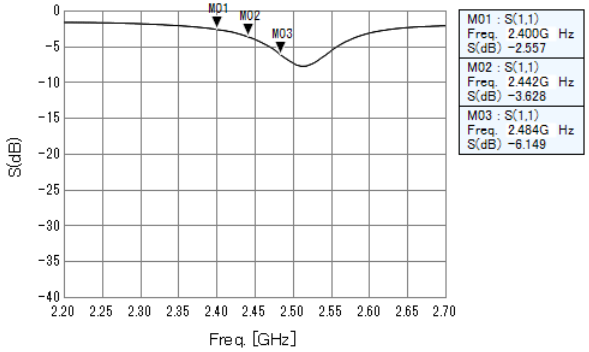
4. Measurement result

Condition 1: Default

<Return Loss>



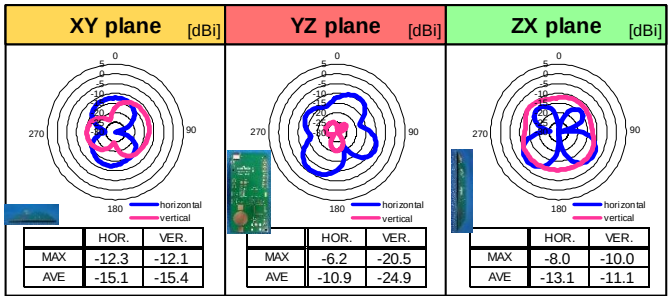
<Efficiency>

*Red color shows peak gain

[dBi] [dB]

LINEAR POLARIZATION		XY-plane hor.	XY-plane ver.	YZ-plane hor.	YZ-plane ver.	ZX-plane hor.	ZX-plane ver.	Total Efficiency
2400 MHz	MAX.	-14.8	-14.5	-9.0	-24.3	-11.2	-13.0	
	AVE.	-18.1	-18.2	-13.8	-28.8	-16.3	-14.0	-12.6
2442 MHz	**MAX.**	**-12.3**	**-12.1**	**-6.2**	**-20.5**	**-8.0**	**-10.0**	
	AVE.	**-15.1**	**-15.4**	**-10.9**	**-24.9**	**-13.1**	**-11.1**	**-9.7**
2484 MHz	MAX.	-9.8	-9.7	**-3.9**	-17.3	-5.5	-7.4	
	AVE.	-12.6	-13.0	-8.5	-21.9	-10.6	-8.6	-7.3

<Directivity>

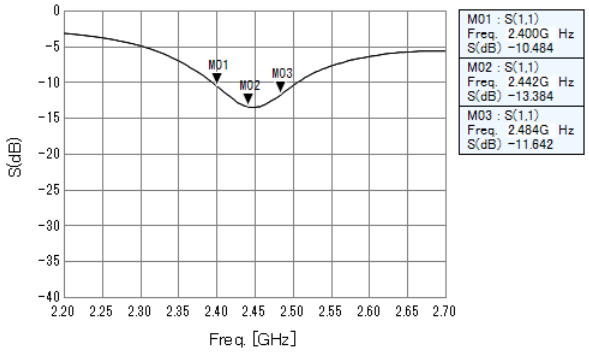


@2442MHz

4. Measurement result

Condition 2: Optimized matching circuit from Condition 1

<Return Loss>



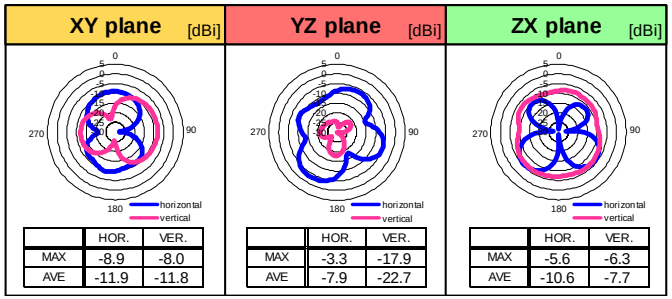
<Efficiency>

*Red color shows peak gain

[dBi] [dB]

LINEAR POLARIZATION		XY-plane hor.	XY-plane ver.	YZ-plane hor.	YZ-plane ver.	ZX-plane hor.	ZX-plane ver.	Total Efficiency
2400 MHz	MAX.	-9.6	-8.8	-4.1	-19.6	-7.0	-7.8	
	AVE.	-13.3	-12.9	-9.0	-24.8	-11.9	-8.9	-7.9
2442 MHz	**MAX.**	**-8.9**	**-8.0**	**-3.3**	**-17.9**	**-5.6**	**-6.3**	
	AVE.	**-11.9**	**-11.8**	**-7.9**	**-22.7**	**-10.6**	**-7.7**	**-6.7**
2484 MHz	MAX.	-8.4	-7.8	**-3.0**	-16.6	-4.9	-5.6	
	AVE.	-11.3	-11.5	-7.4	-21.8	-10.0	-7.3	-6.3

<Directivity>



@2442MHz

4. Measurement result (Comparison)

<Measurement condition>

Condition	Memo
Condition 1	Default
Condition 2	Optimized matching circuit from Condition 1

<Measurement result>

Total efficiency [dB] [%]

Condition	Frequency [MHz]			Average	Average
	2400	2442	2484		
Condition 1	-12.6	-9.7	-7.3	-9.3	11.7
Condition 2	-7.9	-6.7	-6.3	-6.9	20.4

Peak gain [dBi]

Condition	Frequency [MHz]			Max.
	2400	2442	2484	
Condition 1	-9.0	-6.2	-3.9	-3.9
Condition 2	-4.1	-3.3	-3.0	-3.0

<For reference: RERC22066-SE>

Total efficiency [dB] [%]

Condition	Frequency [MHz]			Average	Average
	2400	2442	2484		
Condition 1	-6.8	-6.3	-6.2	-6.4	22.9

Peak gain [dBi]

Condition	Frequency [MHz]			Max.
	2400	2442	2484	
Condition 1	-3.3	-2.8	-2.7	-2.7

*RERC22066-SE is measurement report for last evaluation

