



# RF Exposure Evaluation Declaration

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**FCC ID:** VPYLBEE59B1LV

**APPLICANT:** Murata Manufacturing Co., Ltd.

**Application Type:** Certification

**Product:** Communication Module

**Model No.:** Type1LV

**FCC Classification:** FCC Part 15 Spread Spectrum Transmitter(DSS)

Digital Transmission System (DTS)

Unlicensed National Information Infrastructure (NII)

**Test Procedure(s):** KDB 447498 D01v06

**Test Date:** March 28, 2019

Reviewed By:

*Kevin Guo*

( Kevin Guo )

Approved By:

*Robin Wu*

( Robin Wu )



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standards through the calibration of the equipment and evaluated measurement uncertainty herein.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

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## Revision History

Report No.	Version	Description	Issue Date	Note
1901WSU002-U6	Rev. 01	Initial report	03-28-2019	Valid

## 1. PRODUCT INFORMATION

### 1.1. Equipment Description

Product Name:	Communication Module
Model No.:	Type1LV
Brand Name:	MURATA
Work Voltage:	DC 3.3V
Wi-Fi Specification:	802.11 a/b/g/n/ac
Bluetooth Specification:	BR / EDR / LE 1Mbps / LE 2Mbps

Note: Work voltage for test fixture is DV 5V.

## 2. RF Exposure Evaluation

### 2.1. Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

#### LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	f/1500	6
1500-100,000	--	--	1	30

f= Frequency in MHz

Calculation Formula:  $P_d = (P_{out} * G) / (4 * \pi * r^2)$

Where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

G = gain of antenna in linear scale

$\pi$  = 3.1416

r = distance between observation point and center of the radiator in cm

$P_d$  is the limit of MPE, 1mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

## 2.2. Test Result of RF Exposure Evaluation

Product	Communication Module
Test Item	RF Exposure Evaluation

Test Mode	Frequency Band (MHz)	Maximum EIRP (dBm)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
Bluetooth	2402 ~ 2480	10.83	0.0024	1
802.11b/g/n/ac	2412 ~ 2462	19.83	0.0191	1
802.11a/n/ac	5180 ~ 5825	19.92	0.0195	1

### CONCLUSION:

The max Power Density at R (20 cm) =  $0.0024 \text{ mW/cm}^2 < 1 \text{ mW/cm}^2$  for Bluetooth.

The max Power Density at R (20 cm) =  $0.0191 \text{ mW/cm}^2 < 1 \text{ mW/cm}^2$  for 2.4G WLAN.

The max Power Density at R (20 cm) =  $0.0195 \text{ mW/cm}^2 < 1 \text{ mW/cm}^2$  for 5G WLAN.

Therefore, the Min Safety Distance is 20cm.

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## **Appendix A – Test Setup Photograph**

Refer to “1901WSU002-UT” file.

## **Appendix B – EUT Photograph**

Refer to “1901WSU002-UE” file.