

RF Exposure Report

Report No.: SA160428C07 R1

FCC ID: VPYLB1FD

Test Model: LBEE6ZZ1FD

Received Date: Apr. 28, 2016

Test Date: May 19 ~ Jul. 13, 2016

Issued Date: Jul. 25, 2016

Applicant: Murata Manufacturing Co., Ltd.

Address: 10-1, Higashikotari 1-chome, Nagaokakyo-shi, Kyoto 617-8555, Japan

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

Lab Address: No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan

Test Location: No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City
33383, TAIWAN (R.O.C.)



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Release Control Record

Issue No.	Description	Date Issued
SA160428C07	Original release.	May 27, 2016
SA160428C07 R1	1. Revised product name 2. BT EDR/LE function: Added Bluetooth Config File (hcd file) : BCM4349B1_002.002.014.0077.0091.hcd test, the RF exposure was re-calculation	Jul. 25, 2016

1 Certificate of Conformity

Product: Communication Module

Brand: MURATA

Test Model: LBEE6ZZ1FD

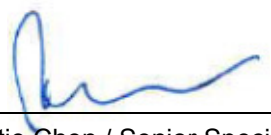
Sample Status: Engineering sample

Applicant: Murata Manufacturing Co., Ltd.

Test Date: May 19 ~ Jul. 13, 2016

Standards: FCC Part 2 (Section 2.1091)
KDB 447498 D01 (October 23, 2015)
IEEE C95.1

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by :  , **Date:** Jul. 25, 2016
Pettie Chen / Senior Specialist

Approved by :  , **Date:** Jul. 25, 2016
Ken Liu / Senior Manager

2 RF Exposure

2.1 Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (minutes)
Limits For General Population / Uncontrolled Exposure				
300-1500	...	...	F/1500	30
1500-100,000	...	...	1.0	30

F = Frequency in MHz

2.2 MPE Calculation Formula

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

where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

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

2.3 Classification

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. So, this device is classified as **Mobile Device**.

3 Calculation Result of Maximum Conducted Power

Frequency Band (MHz)	TX Function	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
2412-2462	1TX	22.65	2.37	20	0.0632	1
5180-5240	1TX	9.36	2.93	20	0.0034	1
	2TX	12.15	5.94	20	0.0128	1
5260-5320	1TX	9.39	2.93	20	0.0034	1
	2TX	12.14	5.94	20	0.0128	1
5500-5720	1TX	9.82	2.93	20	0.0037	1
	2TX	12.95	5.94	20	0.0154	1
5745-5825	1TX	10.12	2.93	20	0.0040	1
	2TX	12.73	5.94	20	0.0146	1
BT EDR	-	8.18	2.37	20	0.0023	1
BT LE	-	5.78	2.37	20	0.0013	1

Note:

WLAN: 5GHz Band: 2TX: Directional gain = 2.93dBi + 10log(2) = 5.94dBi

CONCLUSION:

Only WLAN 2.4G (1TX) & WLAN 5G (1TX) can transmit simultaneously (declared by client), the formula of calculated the MPE is:

$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$

CPD = Calculation power density

LPD = Limit of power density

WLAN 2.4G (1TX) + WLAN 5G (1TX) = 0.0632 + 0.0154 = 0.00786

Therefore, the maximum calculation of this situation is 0.00786, which is less than the "1" limit.

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