RF Exposure Report

Report No.: SA200106C21 R2

FCC ID: UJH-R1LOW-SB

Test Model: R1LOW-SB-M

Received Date: Jan. 06, 2020

Test Date: Jan. 08 ~ Mar. 03, 2020

Issued Date: Jun. 20, 2020

Applicant: Mitsubishi Electric Corporation Sanda Works

Address: 2-3-33 Miwa, Sanda-City, Hyogo 669-1513, Japan

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

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

FCC Registration / Designation Number: 788550 / TW0003

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Release Control Record

Issue No.	Description	Date Issued
SA200106C21	Original release	Mar. 05, 2020
SA200106C21 R1	Revised brand	Mar. 31, 2020
SA200106C21 R2	Revised model	Jun. 20, 2020

1 Certificate of Conformity

Product:	Display Audio
Brand:	Mitsubishi Electric
Test Model:	R1LOW-SB-M
Sample Status:	DV
Applicant:	Mitsubishi Electric Corporation Sanda Works
Test Date:	Jan. 08 ~ Mar. 03, 2020
Standards:	FCC Part 2 (Section 2.1093)
	IEEE C95.3 -2002
References Test Guidance:	KDB 447498 D01 General RF Exposure Guidance v06

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 RF characteristics under the conditions specified in this report.

Prepared by : _Pettie Chen_ , **Date:** Jun. 20, 2020

Pettie Chen / Senior Specialist

Approved by : _Bruce Chen_ , **Date:** Jun. 20, 2020

Bruce Chen / Senior Project Engineer

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				
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f^2)*	30
30-300	27.5	0.073	0.2	30
300-1500	…	…	f/1500	30
1500-100,000	…	…	1.0	30

f = Frequency in MHz; *Plane-wave equivalent power density

2.2   MPE Calculation Formula

Pd = (Pout*G) / (4*pi*r^2)
where
Pd = power density in mW/cm^2
Pout = 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

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)	Max Average Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
Module 1					
WLAN 2412~2462	14.22	4.76	20	0.0157	1
WLAN 5180~5240	5.61	3.69	20	0.0017	1
WLAN 5260~5320	5.51	3.86	20	0.0017	1
WLAN 5500~5700	4.85	3.76	20	0.0014	1
WLAN 5745~5825	2.96	3.76	20	0.0009	1
BT EDR 2402~2480	-0.19	1.85	20	0.0003	1
BT LE 2402~2480	-0.10	1.85	20	0.0003	1
Module 2					
BT LE 2402~2480	5.08	1.85	20	0.0010	1

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

WLAN 2.4GHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2]$ = 4.76dBi
WLAN 5.0GHz UNII-1: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2]$ = 3.69dBi
WLAN 5.0GHz UNII-2A: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2]$ = 3.86dBi
WLAN 5.0GHz UNII-2C, UNII-3: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2]$ = 3.76dBi

Conclusion:

Module 1:5GHz Band & Module 2: BT LE can transmit at same time.

The formula of calculated the MPE is:

CPD1 / LPD1 + CPD2 / LPD2 + ……etc. < 1

CPD = Calculation power density

LPD = Limit of power density

Module 1: WLAN 5GHz Band + Module 2: BT LE = 0.0017 / 1 + 0.0010 / 1 = 0.0027

Therefore the maximum calculations of above situations are less than the "1" limit.

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