

RF Exposure Report

(Mobile mode)

Report No.: SA191225C12

FCC ID: QOQ-GM220P

Test Model: MGM220P22A

Series Model: BGM220P22A, BGX220P22A

Received Date: Dec. 25, 2019

Test Date: Jan. 17 ~ Mar. 02, 2020

Issued Date: Mar. 05, 2020

Applicant: Silicon Laboratories Finland Oy

Address: Alberga Business Park - Bldg D/Floor 5, Bertel Jungin aukio 3, 02600
ESPOO, FINLAND

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
SA191225C12	Original release	Mar. 05, 2020

1 Certificate of Conformity

Product: Zigbee and Bluetooth Low Energy wireless radio modules, Bluetooth Low Energy wireless radio modules

Brand: Silicon Labs

Test Model: MGM220P22A

Series Model: BGM220P22A, BGX220P22A

Sample Status: Engineering sample fully representing the production model

Applicant: Silicon Laboratories Finland Oy

Test Date: Jan. 17 ~ Mar. 02, 2020

Standards: FCC Part 2 (Section 2.1091)

References Test KDB 447498 D01 General RF Exposure Guidance v06

Guidance: IEEE C95.3 -2002

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 :  , **Date:** Mar. 05, 2020
Polly Chien / Specialist

Approved by :  , **Date:** Mar. 05, 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

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

where

Pd = power density in mW/cm²

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

Mode	Frequency Band (MHz)	Max. AV Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
BT LE						
Hopping						
LE 1M	2402~2480	8.82	1.86	20	0.002	1
LE 2M		8.78	1.86	20	0.002	1
DTS						
LE 1M	2402~2480	8.82	1.86	20	0.002	1
LE 2M		8.78	1.86	20	0.002	1
SRD						
-	2401 & 2481	8.76	1.86	20	0.002	1
Zigbee						
-	2405 ~ 2480	8.66	1.86	20	0.002	1

Note:

1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. The EUT is capable of running the Zigbee and Bluetooth Low Energy protocols, and an additional custom protocol. However, in no circumstance the module will transmit using two or more protocols at the same time.

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