

RF Exposure Report

(Portable mode)

Report No.: SA190408C21A

FCC ID: QOQGM210P

Test Model: MGM210P32A, MGM210P22A

Series Model: BGM210P32A, BGM210P22A

Received Date: Apr. 08, 2019

Test Date: Apr. 13 ~ Jun. 17, 2019

Issued Date: Jul. 26, 2019

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,
R.O.C.

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

**FCC Registration /
Designation Number:** 788550 / TW0003



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Release Control Record

Issue No.	Description	Date Issued
SA190408C21A	Original release	Jul. 26, 2019

1 Certificate of Conformity

Product: Bluetooth Low Energy and ZigBee wireless radio modules

Brand: Silicon Labs

Test Model: MGM210P32A, MGM210P22A

Series Model: BGM210P32A, BGM210P22A

Sample Status: Engineering sample

Applicant: Silicon Laboratories Finland Oy

Test Date: Apr. 13 ~ Jun. 17, 2019

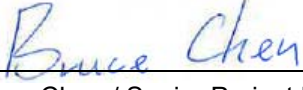
Standards: FCC Part 2 (Section 2.1093)

KDB 447498 D01 General RF Exposure Guidance v06

IEEE C95.1-1992

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:** Jul. 26, 2019
Polly Chien / Specialist

Approved by :  , **Date:** Jul. 26, 2019
Bruce Chen / Senior Project Engineer

2 Evaluation Result

Following FCC KDB 447498 D01 "General SAR test exclusion guidance"

The corresponding SAR Exclusion Threshold condition, listed below:

- 1) The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:
$$\frac{[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot \sqrt{f(\text{GHz})}}{\leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR, 16 where}}$$
 - $f(\text{GHz})$ is the RF channel transmit frequency in GHz.
 - Power and distance are rounded to the nearest mW and mm before calculation.
 - The result is rounded to one decimal place for comparison. The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.
- 2) At 100 MHz to 6 GHz and for test separation distances > 50 mm, the SAR test exclusion threshold is determined according to the following:
 - a) [Threshold at 50 mm in step 1) + (test separation distance - 50mm) · (f(MHz)/150)] mW, at 100MHz to 1500 MHz
 - b) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm) · 10] mW at > 1500 MHz and ≤ 6 GHz
- 3) At frequencies below 100 MHz, the following may be considered for SAR test exclusion.
 - a) The threshold at the corresponding test separation distance at 100 MHz in step 2) is multiplied by $[1 + \log(100/f(\text{MHz}))]$ for test separation distances > 50 mm and < 200 mm.
 - b) The threshold determined by the equation in a) for 50 mm and 100 MHz is multiplied by $\frac{1}{2}$ for test separation distances ≤ 50 mm.
 - c) SAR measurement procedures are not established below 100 MHz. When SAR test exclusion cannot be applied, a KDB inquiry is required to determine SAR evaluation requirements for any test results to be acceptable.

3 SAR Test Exclusion Thresholds

For Body

FCC		Power	Duty Cycle	Calculated Power	SAR exemption minimum distances (mm)	Min. test separation distance (mm)
High Power	BT	19.96dBm	84.30%	$19.96-0.74=19.22\text{dBm}$	44.03	5.0
	Zigbee	20.18dBm	66%	$20.18-1.8=18.38\text{dBm}$	36.17	5.0
Low Power	BT	10.83dBm	84.30%	$10.83-0.74=10.09\text{dBm}$	5.3	5.0
	Zigbee	10.89dBm	66%	$10.89-1.8=9.09\text{dBm}$	5	5.0

For Extremity

FCC		Power	Duty Cycle	Calculated Power	SAR exemption minimum distances (mm)	Min. test separation distance (mm)
High Power	BT	19.96dBm	84.30%	$19.96-0.74=19.22\text{dBm}$	17.28	5.0
	Zigbee	20.18dBm	66%	$20.18-1.8=18.38\text{dBm}$	14.25	5.0
Low Power	BT	10.83dBm	84.30%	$10.83-0.74=10.09\text{dBm}$	5	5.0
	Zigbee	10.89dBm	66%	$10.89-1.8=9.09\text{dBm}$	5	5.0

Note:

- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
- The Dipole antenna with 2.14dBi gain.
The Chip antenna with 1.86dBi gain.
- Min separation distance for High power BT = 44.03 mm and Zigbee = 36.17 mm with Portable-body device.
Min separation distance for Low power BT = 5.3 mm and Zigbee = 5.0 mm with Portable-body device.
- Min separation distance for High power BT = 17.28 mm and Zigbee = 14.25 mm with Portable-extremity device. Min separation distance for Low power BT = 5.0 mm and Zigbee = 5.0 mm with Portable-extremity device.
- Calculate SAR test exclusion thresholds from condition "1" formulas.

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