

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

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FCC Registration / 788550 / TW0003
Designation Number:



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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

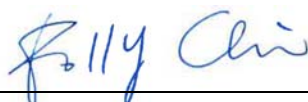
Standards: FCC Part 2 (Section 2.1093)

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 :



Polly Chien / Specialist

, Date:

Jul. 26, 2019

Approved by :



Bruce Chen / Senior Project Engineer

, Date:

Jul. 26, 2019

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:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}]$$

$$\leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR, 16 where}$$
 - $f(\text{GHz})$ 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) · ($f(\text{MHz})/150$)] 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:

1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. The Dipole antenna with 2.14dBi gain.
The Chip antenna with 1.86dBi gain.
3. 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.
4. 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.
5. Calculate SAR test exclusion thresholds from condition "1" formulas.

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