

SAR Exclusion Report (Portable Device)

FCC Rule Part : CFR §2.1093

Standards : IEEE Std 1528:2013, KDB 865664 D01 v01r04, KDB 865664 D02 v01r02,
KDB 447498 D04 Interim General RF Exposure Guidance v01

Report No. : SFCDBM-WTW-P24100096

Applicant : Silicon Laboratories Finland Oy

Address : Alberga Business Park, Bertel Jungin aukio 3, FI-02600 Espoo, Finland

Product : Bluetooth Low Energy and 802.15.4 wireless radio module, Bluetooth Low Energy wireless
radio module (refer to item 2 for more details)

Brand : SILICON LABS

Model No. : MGM260P22A, MGM260P32A, MGM260P32N

Series Model : BGM260P22A, BGM260P32A, BGM260P32N (refer to item 2 for more details)

FCC ID : QOQ-GM260P

Sample Received Date : Oct. 07, 2024

Date of Evaluation : Dec. 06, 2024

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, Taiwan

FCC Accredited No. : TW0003

CERTIFICATION: The above equipment have been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch – Lin Kou Laboratories**, 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 SAR characteristics under the conditions specified in this report. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product certification, approval, or endorsement by TAF or any government agencies.

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Release Control Record

Issue No.	Reason for Change	Date Issued
SFCDBM-WTW-P24100096	Initial release	Feb. 07, 2025

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1. Summary of Maximum SAR Value

Equipment Class	Mode	Highest Reported SAR _{1g} (W/kg)
DTS	Bluetooth_DTS (MGM260P22A, BGM260P22A)	Not Required
DTS	802.15.4 (MGM260P22A)	Not Required

Equipment Class	Mode	Highest Reported SAR _{1g} (W/kg)
DTS	Bluetooth_DTS (MGM260P32A, BGM260P32A)	Not Required
FHSS	Bluetooth_FHSS (MGM260P32A, BGM260P32A)	Not Required
DTS	802.15.4 (MGM260P32A)	Not Required

Equipment Class	Mode	Highest Reported SAR _{1g} (W/kg)
DTS	Bluetooth_DTS (MGM260P32N, BGM260P32N)	Not Required
FHSS	Bluetooth_FHSS (MGM260P32N, BGM260P32N)	Not Required
DTS	802.15.4 (MGM260P32N)	Not Required

Note:

- The SAR limit (**Head & Body: SAR_{1g} 1.6 W/kg**) for general population / uncontrolled exposure is specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992.

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2. Description of Equipment Under Test

EUT Type	Bluetooth Low Energy and 802.15.4 wireless radio module (for MGM260P22A, MGM260P32A, MGM260P32N) Bluetooth Low Energy wireless radio module (for BGM260P22A, BGM260P32A, BGM260P32N)
Brand Name	SILICON LABS
Model Name	MGM260P22A, MGM260P32A, MGM260P32N
Series Model	BGM260P22A, BGM260P32A, BGM260P32N
Model Difference	Refer to Note as below
FCC ID	QOQ-GM260P
Tx Frequency Bands	BT LE_FHSS: 2402 ~ 2480 MHz BT LE_DTS: 2402 ~ 2480 MHz 802.15.4: 2405 ~ 2480 MHz
Uplink Modulations	BT LE_FHSS: GFSK BT LE_DTS: GFSK 802.15.4: O-QPSK
Maximum Tune-up Conducted Power (Unit: dBm)	Please refer to Appendix A
Antenna Type	Refer to Note
EUT Stage	Engineering samples fully representing the production models

Note:

- The model difference is listed as below.

Product Spec.	Model		
	MGM260P22A (covers BGM260P22A)	MGM260P32A (covers BGM260P32A)	MGM260P32N (covers BGM260P32N)
	Low-Power Bluetooth Low Energy and 802.15.4 (802.15.4 being disabled for BGM260P22A)	High-Power Bluetooth Low Energy and 802.15.4 (802.15.4 being disabled for BGM260P32A)	High-Power Bluetooth Low Energy and 802.15.4 (802.15.4 being disabled for BGM260P32N)
Max nominal RF TX power, as declared by manufacturer	10dBm	20dBm	20dBm
Antenna type	integral antenna	integral antenna	RF pin
Hardware	MGM260P22A (and BGM260P22A) --> hardware variants with integral antenna and 10dBm max power, to be tested as DTS for both 802.15.4 and Bluetooth Low Energy MGM260P32A (and BGM260P32A) --> hardware variants with integral antenna and 20dBm max power, to be tested as DTS for 802.15.4 and DTS + FHSS for Bluetooth Low Energy MGM260P32N (and BGM260P32N) --> hardware variants with RF pin and 20dBm max power, to be tested as DTS for 802.15.4 and DTS + FHSS for Bluetooth Low Energy MGM modules are the supersets under testing as they support both 802.15.4 and Bluetooth Low Energy, whereas the BGM modules are the series models because they are exactly the same except for the 802.15.4 being disabled for marketing differentiation.		

- The EUT has DTS and Hopping functions.
- The antenna information is listed as below.

No.	Type	Connector	Gain (dBi)	Remark
1	Integral antenna	NA	2.87	For model: MGM260P22A, BGM260P22A, MGM260P32A, BGM260P32A,
2	External reference dipole antenna**	RP-SMA	2.80	For model: MGM260P32N, BGM260P32N

**The dipole antenna is not sold with the EUT, but is used during testing as a reference antenna for radiated measurements of the parts with the RF pin.

- The above EUT information is declared by manufacturer and for more detailed features description please refers to the manufacturer's specifications or User's Manual.

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3. SAR Measurement Evaluation

3.1 Maximum Output Power

Refer to Appendix A.

3.2 SAR Testing Exclusions

According to KDB 447498 D04 Interim General RF Exposure Guidance v01, the SAR test exclusion condition is based on either available maximum time-averaged power or maximum time-averaged ERP, whichever is greater, and the minimum test separation distance required for the exposure conditions. The SAR exclusion threshold is determined by the following formula.

1. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequency from 0.3 GHz to 6 GHz (inclusive).

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$

Where

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$$

d = the separation distance (cm);

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Mode	Frequency (MHz)	Max. Tune-up Power or ERP (dBm)	Max. Tune-up Power or ERP (mW)	Minimum distance of SAR exemption applied		
				Ant. to Surface (mm)	Power Threshold (mW)	Require SAR Testing?
Bluetooth_DTS (MGM260P22A, BGM260P22A)	2480	11.27	13.397	11.6	13.5	NO
802.15.4 (MGM260P22A)	2480	11.12	12.942	11.4	13.06	NO
Bluetooth_DTS (MGM260P32A, BGM260P32A)	2480	20.46	111.173	35.1	111.23	NO
Bluetooth_FHSS (MGM260P32A, BGM260P32A)	2480	20.17	103.992	33.9	104.1	NO
802.15.4 (MGM260P32A)	2480	20.47	111.429	35.2	111.83	NO
Bluetooth_DTS (MGM260P32N, BGM260P32N)	2480	20.47	111.429	35.2	111.83	NO
Bluetooth_FHSS (MGM260P32N, BGM260P32N)	2480	20.26	106.170	34.3	106.45	NO
802.15.4 (MGM260P32N)	2480	20.62	115.345	35.8	115.49	NO

Note:

1. When the device output power is less than the power threshold shown in above table, the SAR testing exclusion is applied at the corresponding minimum distance in mm from the human body, as shown in the above table.
2. The Calculated Result is scaling x2.5 for extremity exclusion threshold.
3. The table above demonstrated the minimum separation distance that SAR exemption applied for each configuration.
4. The evaluations were specified by clients in this report.

Summary:

Since the SAR testing for all device orientations apply SAR test exclusion per KDB 447498, SAR testing for this device is not required.

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4. Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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The address and road map of all our labs can be found in our web site also.

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