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COMMERCIAL-IN-CONFIDENCE

# SAR EXCLUSION DOCUMENT (PORTABLE)

Document 75947809-06 Issue 01

FCC Standalone SAR Test Exclusion Considerations (KDB 447498 D01) Section 4.3.1 a)

100 MHz – 6 GHz – Separation Distance ≤50 mm

The 1g SAR Test exclusion thresholds for 100 MHz to 6 GHz test separation distances ≤ 50 mm are determined by:

$[(\text{max power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] [\sqrt{f} (\text{GHz})] \leq 3.0$  for 1g SAR and  $\leq 7.5$  for 10g extremity SAR.

- f (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
- When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied. (Exclusion is also valid at distances less than 5 mm.)

SAR Exclusion Result:

Frequency (GHz)	Power Output mW	Duty Cycle %	Maximum Power (Tune up Value) * (mW)	Test Separation Distance (mm)	SAR Test Exclusion Threshold	Limit**	SAR Test Exclusion (Yes/No)
2.480	1	98	0.98	5	0.3	3.0	Yes
2.402	1	98	0.98	5	0.3	3.0	Yes

\* Maximum power including tolerance of the time averaged declared conducted output power of the device.

\*\* Select ≤ 3.0 for 1g SAR and ≤ 7.5 for 10g extremity SAR.

The SAR exclusion threshold has been evaluated using the formula described above from information supplied by the manufacturer below. Based on the calculation above, the EUT is categorically excluded from SAR testing in stand alone operation. However SAR evaluation may be required for the end product incorporating the module, where simultaneous transmission and co located antennas are used.

Approved by   
 .....  
**Jon Kenny**  
 Authorised Signatory

Date 09 April 2020  
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Manufacturer's Declaration of Product Information:

**Equipment Description**

Technical Description: <i>(Please provide a brief description of the intended use of the equipment)</i>	Unshielded wireless radio SiP (System-in-Package) module implementing the Bluetooth Low Energy (BLE) technology according to the 5.2 specification. The BLE stack implements the 1 and 2 Msym/s PHYs, but not the Coded PHYs, and has no direction-finding capabilities. The module comes with an RF pin meant to route the RF signal to either an external antenna or to an adjacent pin for making use of the integral antenna
Manufacturer:	Silicon Laboratories Finland Oy
Model:	BGM220S12A
Part Number:	

If more than one frequency band is supported, please confirm which combinations of bands are capable of Simultaneous Transmit.	
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**Frequency Band 1: Please detail (one entry for each band), e.g GSM 900 / WCDMA FDD I etc .**

Antenna Model:	Integral, discrete / Reference external dipole	
Antenna length:	- / 14.2	cm
Bottom frequency:	2402	MHz
Middle frequency:	2440	MHz
Top frequency:	2480	MHz

Maximum power (input to the antenna including a tolerance):	-0.5	dBm
Antenna gain (or maximum gain allowed):	Integral: +1.5 External: +3.2	dBi

Or

Field Strength Measurement:		dBμA/M
Measurement Distance:		cm

Separation distance from antenna to the user/bystander	20 for Mobile case. To be determined for Portable case.	cm
Transmitter Duty Cycle:	98 or 4.88 depending on the mode of operation, connection or advertisements	%

**Frequency Band 2: Please detail (one entry for each band), e.g GSM 900 / WCDMA FDD I etc**

Antenna Model:	Integral, discrete / Reference external dipole	
Antenna length:	- / 14.2	cm
Bottom frequency:	2401	MHz
Middle frequency:	Only two channels in this optional use case	MHz
Top frequency:	2481	MHz



Maximum power (input to the antenna including a tolerance):	-0.5	dBm
Antenna gain (or maximum gain allowed):	Integral: +1.5 External: +3.2	dBi

Or

Field Strength Measurement:		dB $\mu$ VM
Measurement Distance:		cm

Separation distance from antenna to the user/bystander	20 for Mobile case. To be determined for Portable case.	cm
Transmitter Duty Cycle:	3.6	%

I hereby declare that the information supplied is correct and complete.

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