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SAR EXCLUSION DOCUMENT

Document 75947809-09 Issue 01

2402-2480 MHz BT Transmitters:

ISED RSS-102 Issue 5: Exemption Limits for Routine Evaluation – SAR Evaluation (RSS-102 Section 2.5.1)

Up to 6 GHz – Separation Distance \leq 200 mm

The SAR evaluation exemption is determined by comparison of the output power level (adjusted for tune-up tolerance) for the specified comparison distance to the limit given in RSS-102 Table 1.

SAR Exclusion Result – Portable And Mobile (External Antenna):

Frequency (MHz)	Power Output mW	Antenna Gain Ratio	Duty Cycle %	Maximum Power (Tune up value) * (mW)	Test Separation Distance (mm) **	Exemption Limit *** (mW)	SAR Test Exclusion (Yes/No)
2480	0.89	2.09	98	1.823	0	4	Yes
2402	0.89	2.09	98	1.823	0	4	Yes
2480	0.89	2.09	98	1.823	200	308	Yes
2402	0.89	2.09	98	1.823	200	320	Yes

SAR Exclusion Result - Portable And Mobile (Integral Antenna):

Frequency (MHz)	Power Output mW	Antenna Gain Ratio	Duty Cycle %	Maximum Power (Tune up value) * (mW)	Test Separation Distance (mm) **	Exemption Limit *** (mW)	SAR Test Exclusion (Yes/No)
2480	0.89	1.41	98	1.230	0	4	Yes
2402	0.89	1.41	98	1.230	0	4	Yes
2480	0.89	1.41	98	1.230	200	308	Yes
2402	0.89	1.41	98	1.230	200	320	Yes

* Maximum power tune up value including tolerance and is the higher of the maximum conducted or equivalent isotropically radiated power (EIRP) source-based, time-averaged output power of the device derived from FCC Determination of the EIRP given in the measurement and calculations overleaf.

**Test separation distance refers to the minimum test separation distance based on the smallest distance between the antenna and radiating structures or the outer surface of the device, according to

Approved by 

Jon Kenny
 Authorised Signatory

Date 09 April 2020



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the most conservative exposure condition for the applicable module or host platform test procedure requirements, to any part of the body or extremity of a user or bystander.

*** Select power from RSS-102 Table 1 for the applicable frequency and separation distance. For controlled use devices where the 8 W/kg for 1 gram of tissue applies, the exemption limits for routine evaluation in Table 1 are multiplied by a factor of 5. For limb-worn devices where the 10 gram value applies, the exemption limits for routine evaluation in Table 1 are multiplied by a factor of 2.5. If the operating frequency of the device is between two frequencies located in Table 1, linear interpolation shall be applied for the applicable separation distance.

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

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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:		dB μ A/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 μ 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.

Name: Tom Nordman

Position held: Marketing Director of IoT Wireless Products at Silicon Laboratories Finland Oy,
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Date: 18 March 2020