

RF Exposure Estimation Report

Applicant:	LINEAR DMS SOLUTIONS SDN BHD.
Address:	135, JALAN UTARA, 11700 GELUGOR, PENANG, MALAYSIA
Product name :	BGMS Bluetooth LE GPIO Module
FCC-ID	2AIACLDMSB1
Model No.:	BGMS_P1
RF report #	NTS160425015R

1. Limit and Guidelines on Exposure to Electromagnetic Fields

According to §15.247(e)(i) and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

According to KDB 447498 D01 Mobile Portable RF Exposure v05r02, no SAR required if power is lower than the flowing threshold:

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 ≤ 7.5 for 10-g extremity SAR, 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
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

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 according to 5) in section 4.1 is applied to determine SAR test exclusion.

2. Calculation method

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$

Tune up tolerance : +/- 0.0 dB

Antenna gain = 5.3 dB

BT4.0 BLE : Conducted Power + antenna gain + tune up tolerance =

$0.02 + 5.3 + 0.0 = 5.32 \text{ dBm} = 3 \text{ mW}$

Distance = 5 mm

f = 2.48 GHz

$1.072 \leq 3.0$

According the KDB447498 D01 General RF Exposure Guidance Appendix A

SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and $\leq 5 \text{ mm}$

Using frequency 2450 MHz , distance < 5mm, for the RF Power < 10mW,
therefore, excluded from SAR testing.

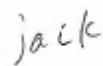
Reviewed by:



Ben Huang /Technical Manager

Date: 2016-08-08

Prepared By:



Jack Wu /Testing Engineer

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