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# RF Exposure Evaluation Report

**Report No. :** CQASZ20190800734E-02  
**Applicant:** Serafim Technologies Inc  
**Address of Applicant:** 5F.No.6, Aly. 9, Ln. 45, Baoxing Rd., Xindian Dist., New Taipei City 231, Taiwan  
**Equipment Under Test (EUT):**  
**EUT Name:** Serafim Bluetooth module  
**Model No.:** Serafim BT1  
**Brand Name:** Serafim  
**FCC ID:** 2AOERSGKR-01A  
**Standards:** 47 CFR Part 1.1307  
47 CFR Part 1.1310  
KDB447498D01 General RF Exposure Guidance v06  
**Date of Receipt:** 2019-08-15  
**Date of Test:** 2019-08-15 to 2019-09-05  
**Date of Issue:** 2019-09-05  
**Test Result :** **PASS\***

\*In the configuration tested, the EUT complied with the standards specified above

**Tested By:**

*Tom Chen*

(Tom chen)

**Reviewed By:**

*Sheek Luo*

(Sheek Luo)

**Approved By:**

*Jack Ai*  
( Jack Ai)



## 1 Version

### Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20190800734E-02	Rev.01	Initial report	2019-09-05

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### 3 General Information

#### 3.1 Client Information

Applicant:	Shenzhen Leaderment Technology Co.,Ltd
Address of Applicant:	Floor 20 Building A, GongCun Village New Business Center(Huihai Square), No.19 Sanlian Chuangye Road, Sanlian Community, Longhua Street, Longhua District, Shenzhen, China
Manufacturer:	Shenzhen Leaderment Technology Co.,Ltd
Address of Manufacturer:	Floor 20 Building A, GongCun Village New Business Center(Huihai Square), No.19 Sanlian Chuangye Road, Sanlian Community, Longhua Street, Longhua District, Shenzhen, China

#### 3.2 General Description of EUT

Product Name:	Serafim Bluetooth module
Test Model No.:	Serafim BT1
Trade Mark:	Serafim
Hardware Version:	Serafim A1
Software Version:	Serafim 1.0.1
Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	V4.0
Modulation Type:	GFSK
Transfer Rate:	1Mbps
Number of Channel:	40
Product Type:	<input type="checkbox"/> Mobile <input checked="" type="checkbox"/> Portable <input type="checkbox"/> Fix Location
Test Software of EUT:	BTool - Bluetooth Low Energy PC Application – v1.40.5 (manufacturer declare )
Antenna Type:	Ceramic antenna
Antenna Gain:	2.13dBi
EUT Power Supply:	DC4.5V (No3 AA battery)

## 4 SAR Evaluation

### 4.1 RF Exposure Compliance Requirement

#### 4.1.1 Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v06

##### 4.3.1. Standalone SAR test exclusion considerations

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

#### 4.1.2 Limits

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances  $\leq 50$  mm are determined by:

$$\left[ \frac{\text{max. power of channel, including tune-up tolerance, mW}}{\text{min. test separation distance, mm}} \right] \cdot \sqrt{f(\text{GHz})} \leq 3.0$$
 for 1-g SAR and  $\leq 7.5$  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<sup>17</sup>

The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is  $\leq 50$  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

### 4.1.3 EUT RF Exposure

#### Measurement Data

GFSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-8.08	-8±1	-7	0.200
Middle(2440MHz)	-10.02	-10±1	-9	0.126
Highest(2480MHz)	-11.48	-11±1	-10	0.100

Worst case: GFSK						
Channel	Maximum Peak Conducted Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune- up Power		Calculated value	Exclusion threshold
			(dBm)	(mW)		
Lowest (2402MHz)	-8.08	-8±1	-7	0.200	0.06	3.0
Middle (2440MHz)	-10.02	-10±1	-9	0.126	0.04	
Highest (2480MHz)	-11.48	-11±1	-10	0.100	0.03	
Conclusion: the calculated value ≤3.0, SAR is exempted.						

Remark: The Max Conducted Peak Output Power data refer to report Report No.: CQASZ20190800734E-01