



SAR Evaluation Report

Application No.: SZEM1911020127CR
Applicant: Bitcraze AB
Address of Applicant: Sodra Bulltoftavagen 46 Malmo Sweden 212 22
Manufacturer: SEEED Technology Co., Ltd.
Address of Manufacturer: South 1F, Building 2, (Shangshui Building), Yungu Innovation Industry Park, Liuxian Ave, Xili Street, Nanshan District, Shenzhen, Guangdong, P.R.China
Factory: SEEED Technology Co., Ltd.
Address of Factory: South 1F, Building 2, (Shangshui Building), Yungu Innovation Industry Park, Liuxian Ave, Xili Street, Nanshan District, Shenzhen, Guangdong, P.R.China
Equipment Under Test (EUT):
EUT Name: CRAZYFLIE 2.1
Model No.: CF21KIT
Trade mark: BITCRAZE
FCC ID: 2AUV3CF21KIT
Standards: 47 CFR Part 1.1307
47 CFR Part 2.1093
KDB447498D01 General RF Exposure Guidance v06
Date of Receipt: 2019-11-13
Date of Test: 2019-11-22 to 2019-11-25
Date of Issue: 2019-11-27

Test Result :	PASS*
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* In the configuration tested, the EUT complied with the standards specified above.

Kenx. Xu

Keny Xu
EMC Laboratory Manager



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Shenzhen Branch EMC Laboratory

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2 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2019-11-27		Original

Authorized for issue by:				
				
		Harry Wu /Project Engineer		
				
		Eric Fu /Reviewer		



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4 General Information

4.1 General Description of EUT

Power Supply:	DC 3.7V Rechargeable Battery which can be charged by Micro USB port
Operation Frequency:	2402MHz to 2480MHz
Bluetooth Version:	V4.0
Modulation Type:	GFSK
Number of Channels:	40
Channel Spacing:	2MHz
Antenna Type:	Chip Antenna
Antenna Gain:	0.5dBi



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4.2 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China
518057

Telephone: +86 (0) 755 2601 2053 Fax: +86 (0) 755 2671 0594

No tests were sub-contracted.

4.3 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

• **VCCI**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

• **FCC –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

• **Innovation, Science and Economic Development Canada**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

4.4 Deviation from Standards

None.

4.5 Abnormalities from Standard Conditions

None.

4.6 Other Information Requested by the Customer

None.



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5 SAR Evaluation

5.1 RF Exposure Compliance Requirement

5.1.1 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.

5.1.2 Limits

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:

$$\left[\frac{\text{max. power of channel, including tune-up tolerance, mW}}{\text{min. test separation distance, mm}} \right] \cdot \sqrt{f(\text{GHz})} \leq 3.0$$
 for 1-g SAR and ≤ 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 calculation¹⁷

The result is rounded to one decimal place for comparison

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 is applied to determine SAR test exclusion

5.1.3 EUT RF Exposure

The Max. power (including tune-up tolerance) is -3.09 dBm on the highest channel 2.48 GHz (*)
 -3.09 dBm logarithmic terms convert to numeric result is nearly 0.49 mW

According to the formula. calculate the test exclusion thresholds:

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

$$\text{General RF Exposure} = (0.49 \text{ mW} / 5 \text{ mm}) \times \sqrt{2.48 \text{ GHz}} = 0.15 \quad (1)$$

SAR requirement:

$$S = 3.0 \quad (2)$$

$(1) < (2)$

So the SAR report is not required.

(*) Max. power refer to Report No.:SZEM191102012702

- End of the Report -

