



RF EXPOSURE EVALUATION REPORT

Application No.: GZCR2109021158AT
Applicant: BlueCollars BV
Address of Applicant: Beemdheuvel 28 Best 5685AE Netherlands
Manufacturer: BlueCollars BV
Address of Manufacturer: Beemdheuvel 28 Best 5685AE Netherlands
Factory: BlueCollars BV
Address of Factory: Beemdheuvel 28 Best 5685AE Netherlands
Equipment Under Test (EUT):
EUT Name: GK Wireless System
Model No.: GKWS052
Trade Mark: GKWS
Standard(s) : 47 CFR PART 1, Subpart I, Section 1.1310
47 CFR PART 2, Subpart J, Section 2.1093
KDB447498D01 General RF Exposure Guidance v06
Date of Receipt: 2021-09-29
Date of Evaluation: 2021-09-29 to 2021-10-09
Date of Issue: 2021-10-11

| | |
|---------------------------|--------------|
| Evaluation Result: | Pass* |
|---------------------------|--------------|

* In the configuration evaluated, the EUT complied with the standards specified above.

Kobe Jian
EMC Laboratory Manager



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Guangzhou Branch

EMC-TRF-03 Rev 1.0

Report No.: GZCR210902115802

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| Revision Record | | | | |
|------------------------|----------------|-------------|-----------------|---------------|
| Version | Chapter | Date | Modifier | Remark |
| 01 | | 2021-09-29 | | Original |
| | | | | |
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|--------------------------------|--|----------------------------------|--|
| Authorized for issue by | | | |
| Tested By | | Curry Wu/Project Engineer | |
| Reviewed By | | Ricky Liu/Reviewer | |



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2 Evaluation Summary

Note:

E.U.T./EUT means Equipment Under Test.

Pass means the test result passed the test standard requirement, please find the detailed decision rule in the report relative section.



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4 General Information

4.1 Details of E.U.T.

| | |
|----------------------|--------------------------|
| Power supply: | DC 3.7V 3100mAh*2 |
| Operation Frequency: | 2406MHz-2474MHz |
| Modulation Type: | DSSS (CCK, DQPSK, DBPSK) |
| Channel Spacing: | 4MHz |
| Number of Channels: | 18 |
| Antenna Type: | PCB Antenna |
| Antenna Gain: | 3dBi |

4.2 Evaluating Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,
198 Kezhu Road, Scientech Park, Guangzhou Economic & Technology Development District,
Guangzhou, China 510663

Tel: +86 20 82155555 Fax: +86 20 82075059

No tests were sub-contracted.

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4.3 Facility

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

- **NVLAP (Lab Code: 200611-0)**

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

- **ACMA**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian/New Zealand Regulatory Compliance Mark (RCM).

- **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

- **CNAS (Lab Code: L0167)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2018 accreditation criteria for testing laboratories (identical to

ISO/IEC 17025:2017 General Requirements) for the Competence of Testing Laboratories.

- **FCC Recognized Accredited Test Firm(Registration No.: 486818)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: CN5016, Test Firm Registration Number: 486818.

- **ISED (Registration No.: 4620B, CAB identifier: CN0052)**

SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Innovation Science and Economic Development Canada for Wireless Device Testing laboratories to test to Canadian radio equipment requirements. Registration No. 4620B, CAB identifier: CN0052.

- **VCCI (Registration No.: R-12460, C-12584, G-20107 and T-11179)**

The 10m Semi-anechoic chamber, 966 Anechoic Chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-12460, C-12584, G-20107 and T-11179 respectively.

- **CBTL (Lab Code: TL129)**

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2017, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.

4.4 Deviation from Standards

None

4.5 Abnormalities from Standard Conditions

None

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5 Technical Requirements Specification

5.1 RF Exposure Evaluation

5.1.1 Limit & Test Method

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:

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

5.1.2 Conclusion

Remark:

EUT has two antennas, but cannot transmit at the same time

Antenna 1

The Max. power (including tune-up tolerance) is 0.42 dBm on the lowest channel 2.406 GHz (*)
0.42 dBm logarithmic terms convert to numeric result is nearly 1.10 mW

According to the formula. calculate the test exclusion thresholds:

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

$$\text{General RF Exposure} = (1.10 \text{ mW} / 5 \text{ mm}) \times \sqrt{2.406 \text{ GHz}} = 0.34 \quad (1)$$

SAR requirement:

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

$$(1) < (2)$$

So the SAR report is not required.

(*) Max. power refer to Report No.:GZCR210902115801

Antenna 2

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The Max. power (including tune-up tolerance) is 1.48 dBm on the lowest channel 2.406 GHz (*). 1.48 dBm logarithmic terms convert to numeric result is nearly 1.41 mW

According to the formula, calculate the test exclusion thresholds:

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

$[\sqrt{f(\text{GHz})}]$

$\text{General RF Exposure} = (1.41 \text{ mW} / 5 \text{ mm}) \times \sqrt{2.406 \text{ GHz}} = 0.44$ (1)

SAR requirement:

$S = 3.0$

(1) < (2)

So the SAR report is not required.

(*) Max. power refer to Report No.:GZCR210902115801

6 EUT Constructional Details (EUT Photos)

Refer to appendix - external and internal photos for GZCR2109021158AT

- End of the Report -



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