

RF EXPOSURE EVALUATION REPORT

Report No.: SHE24120030-01BE

Date: 2024-12-23

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Applicant : Hangzhou Rock Machinery Manufacture Co., Ltd.
Address of Applicant : No.1, 1st Road, Dongzhou Industrial Zone,
Fuyang 311400, Hangzhou, China

Product Name : wireless winch remote control
Brand Name : BADLAND
Model Name : 71280(193175542595)
Sample No. : E24120030-01#01

FCC ID : 2ANRDFEWL-13
Standards : FCC Part 2.1093

Date of Receipt : 2024-12-13
Date of Test : 2024-12-18~2024-12-20
Date of Issue : 2024-12-23

Remark:

This report details the results of the testing carried out on one sample, the results contained in this report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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Reviewed by: Jennifer Zhou (Jennifer Zhou)
Approved by: Echo Mu (Authorized signatory: Echo Mu)

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1 General Information

1.1 Testing Laboratory

Company Name	ICAS Testing Technology Services (Shanghai) Co., Ltd.
Address	No.1298, Pingan Road, Minhang District, Shanghai, China
Telephone	0086 21-51682999
Fax	0086 21-54711112
Homepage	www.icasiso.com

1.2 Environmental conditions

Temperature (°C)	15-35
Humidity (%RH)	30-60
Barometric Pressure (mbar)	860-1060

1.3 Details of Application

Applicant Company Name	Hangzhou Rock Machinery Manufacture Co., Ltd.
Address	No.1, 1st Road, Dongzhou Industrial Zone, Fuyang 311400, Hangzhou, China
Contact Person	Chunhong Jiang
Telephone	0086-571-87191226
Email	rockwinch@gmail.com
Manufacturer Company Name	Hangzhou Rock Machinery Manufacture Co., Ltd.
Address	No.1, 1st Road, Dongzhou Industrial Zone, Fuyang 311400, Hangzhou, China
Factory Company Name	Hangzhou Rock Machinery Manufacture Co., Ltd.
Address	No.1, 1st Road, Dongzhou Industrial Zone, Fuyang 311400, Hangzhou, China

1.4 Details of EUT

Product Name	wireless winch remote control
Brand Name	BADLAND
Test Model Name	71280(193175542595)
FCC ID	2ANRDFEWL-13
Operation Frequency	315MHz
Modulation Type	ASK
Antenna Type	Integral Antenna
Antenna Gain	0dBi
Hardware version	V1.3
Software version	V1.0

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2 Assessment methods

According to KDB 447498 D04 Interim General RF Exposure Guidance v01

Appendix B

Exemptions for Single RF Sources

SAR-based thresholds are derived based on frequency, power, and separation distance of the RF source. The formula defines the thresholds in general for either available maximum time-averaged power or maximum time-averaged ERP, whichever is greater.

If the ERP of a device is not easily determined, such as for a portable device with a small form factor, the applicant may use the available maximum time-averaged power exclusively if the device antenna or radiating structure does not exceed an electrical length of $\lambda/4$.

As for devices with antennas of length greater than $\lambda/4$ where the gain is not well defined, but always less than that of a half-wave dipole (length $\lambda/2$), the available maximum time-averaged power generated by the device may be used in place of the maximum time-averaged ERP, where that value is not known.

The separation distance is the smallest distance from any part of the antenna or radiating structure for all persons, during operation at the applicable ERP. In the case of mobile or portable devices, the separation distance is from the outer housing of the device where it is closest to the antenna.

The SAR-based exemption formula of § 1.1307(b)(3)(i)(B), repeated here as Formula (B.2), applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power or effective radiated power (ERP), whichever is greater, of less than or equal to the threshold P_{th} (mW).

This method shall only be used at separation distances from 0.5 cm to 40 cm and at frequencies from 0.3 GHz to 6 GHz (inclusive). P_{th} is given by Formula (B.2).

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases} \quad (\text{B.2})$$

where

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right)$$

and f is in GHz, d is the separation distance (cm), and $ERP_{20 \text{ cm}}$ is per Formula (B.1).

$$P_{th} \text{ (mW)} = ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases} \quad (\text{B.1})$$

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The example values shown in Table B.2 are for illustration only.

Table B.2—Example Power Thresholds (mW)

Frequency (MHz)	Distance (mm)										
		5	10	15	20	25	30	35	40	45	50
	300	39	65	88	110	129	148	166	184	201	217
	450	22	44	67	89	112	135	158	180	203	226
	835	9	25	44	66	90	116	145	175	207	240
	1900	3	12	26	44	66	92	122	157	195	236
	2450	3	10	22	38	59	83	111	143	179	219
	3600	2	8	18	32	49	71	96	125	158	195
	5800	1	6	14	25	40	58	80	106	136	169

Test Data

Mode	315MHz
	ASK
Field strength (dBuV/m)	84.86dBuV/m(peak)@3m
Peak Power (dBm)	-10.34
Note: This report listed the worst case value, please refer to RF test Report No. SHE24120030-01AE Test Result Radiated Emission 4.1.4.	

3 Conclusion

Per KDB 447498 D04 Interim General RF Exposure Guidance v01 Appendix B, when the minimum test separation distance is 5mm, a distance of 5mm is applied to determine SAR test exclusion. The test exclusion threshold is <36.31mW(f=0.315GHz).

RF Maximum Output Power is -10.34dBm; ERP =0.09mW<36.31mW

So SAR testing is not required. RF exposure Evaluation Results: Compliance

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4 Appendixes

4.1 Sample Photograph

All view of EUT



Top view of EUT



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Bottom view of EUT



Front view of EUT



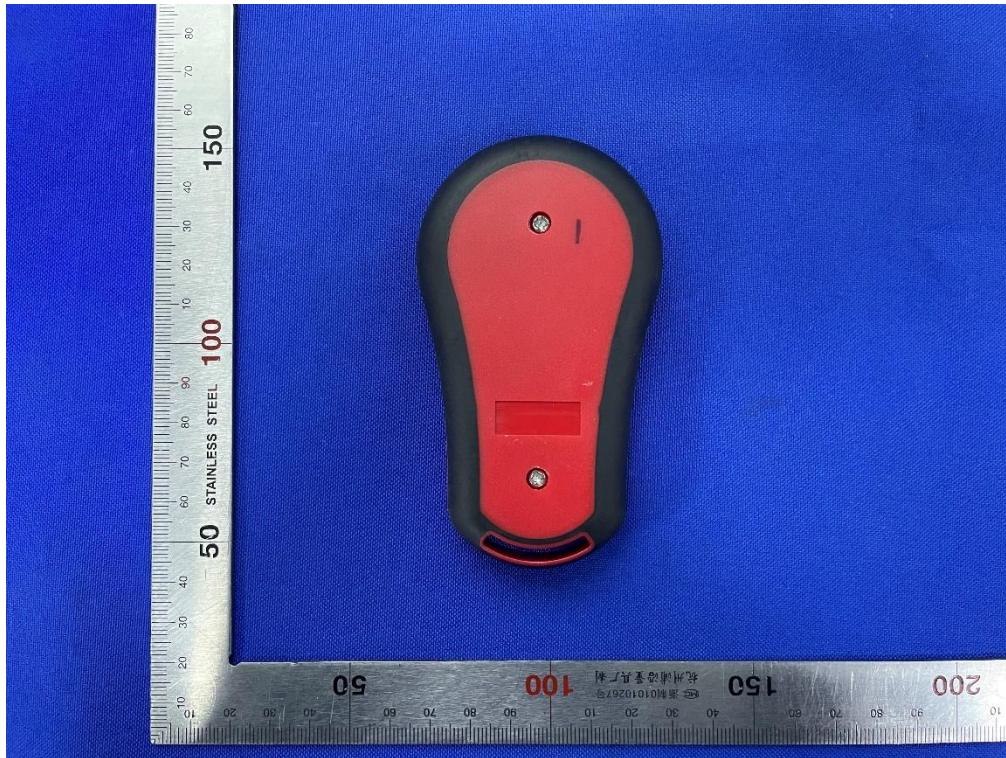
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Back view of EUT



Left view of EUT



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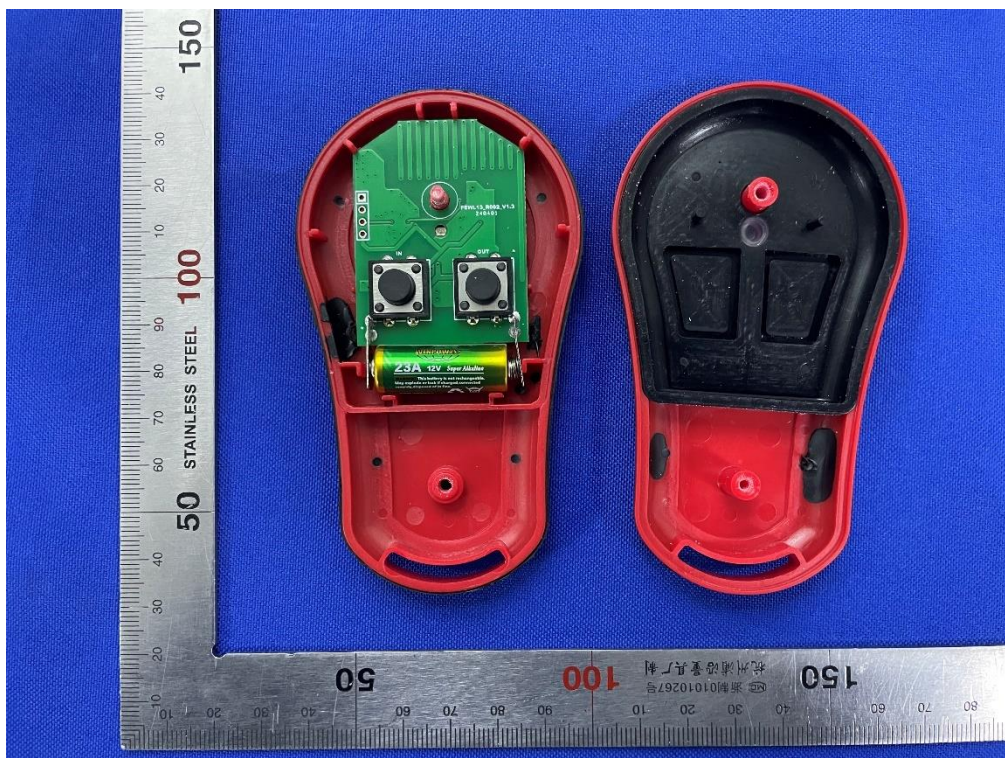
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Right view of EUT



Open view of EUT



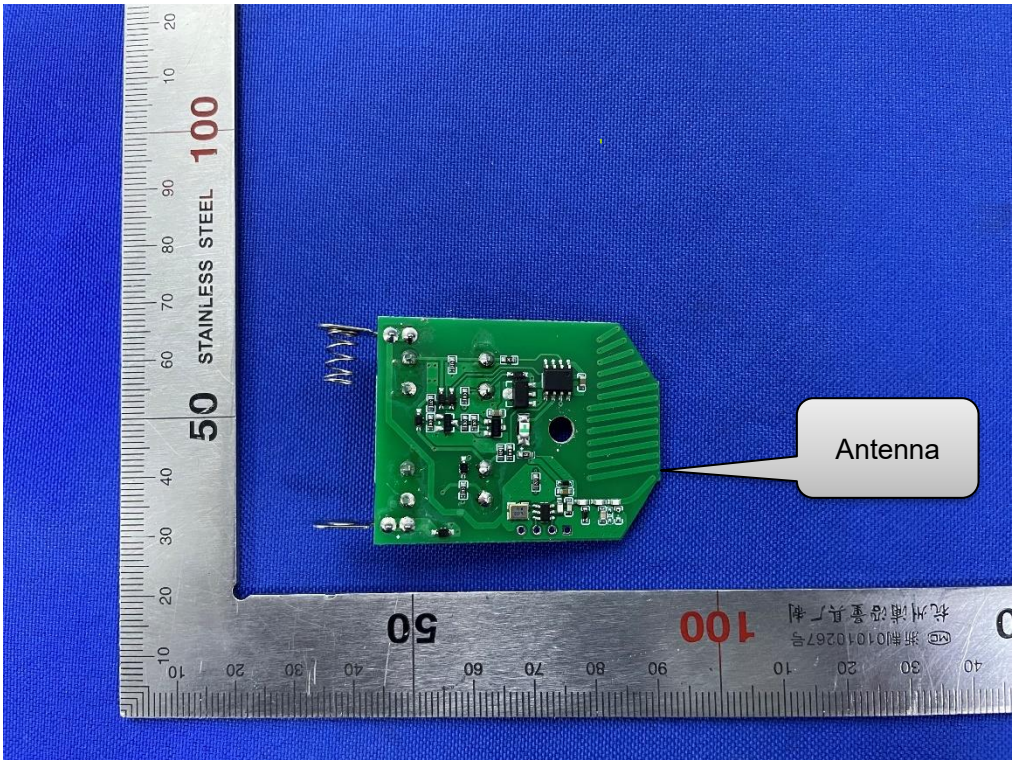
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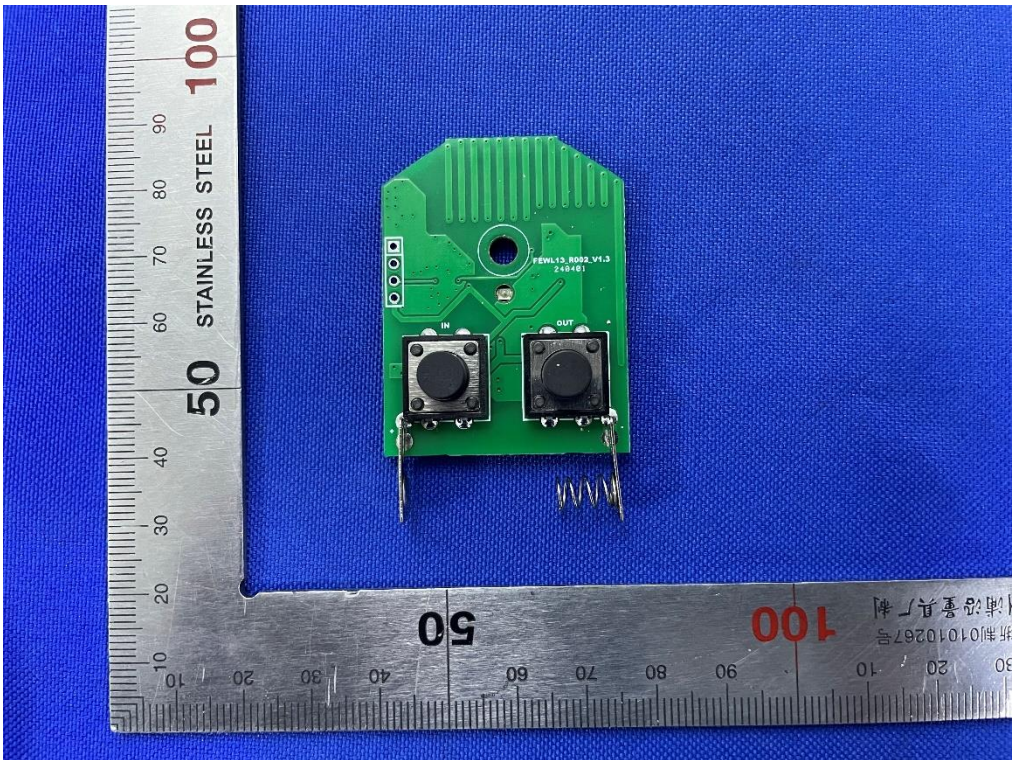
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Internal view of EUT-1



Internal view of EUT-2



End of the report