RF Exposure Evaluation Report

Product	:	Gemstone Bike,Gemstone
Trade mark	:	Copenhagen Trackers
Model/Type reference	:	81000,81001
Serial Number	:	N/A
Report Number	:	EED32P81875003
FCC ID	:	2BDTD-CPHTRACKERSG1
Date of Issue	:	Feb. 20, 2024
Test Standards	:	47 CFR Part 1.1307 47 CFR Part 1.1310 KDB 447498 D04 Interim General RF Exposure Guidance v01
Test result	:	PASS

Prepared for:

Copenhagen Trackers ApS
Vibækvej 100,DK-5690 Tommerup, Denmark

Prepared by:

Centre Testing International Group Co., Ltd.
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Check No.:4253201123

2 Version

Version No.	Date	Description
00	Feb. 20, 2024	Original

3 Contents

4 General Information

4.1 Client Information

Applicant:	Copenhagen Trackers ApS
Address of Applicant:	Vibækvej 100, DK-5690 Tommerup, Denmark
Manufacturer:	Copenhagen Trackers ApS
Address of Manufacturer:	Vibækvej 100, DK-5690 Tommerup, Denmark
Factory:	Cre8tek (Shenzhen) Company Limited
Address of Factory:	F4, Building A2, XinJianXing Science and Technology Industrial Park, Fengxin Road, Loucun, Xinhu, GuangMing New District, Shenzhen, Guangdong, China

4.2 General Description of EUT

Product Name:	Gemstone Bike,Gemstone
Model No.(EUT):	81000,81001
Test Model No.:	81000
Trade Mark:	Copenhagen Trackers

4.3 Product Specification subjective to this standard

Frequency Range:	2402MHz~2480MHz GSM 850: TX:824-849MHz, RX:869-894MHz GSM 1900: TX:1850 -1910MHz, RX:1930-1990MHz FDD band 2:UL:1850-1910MHz,DL:1930–1990MHz; FDD band 4:UL:1710–1755MHz,DL:2110–2155MHz; FDD band 5:UL:824 – 849 MHz,DL: 869 – 894MHz; FDD band 12:UL:699–716MHz,DL:729–746MHz; FDD band 13:UL:777–787MHz,DL:746–756MHz; FDD band 25:UL:1850–1915MHz,DL:1930–1995 MHz: FDD band 26:UL: 814–824 MHz,DL: 859–869MHz: & UL: 824 – 849 MHz,DL: 869 – 894MHz; FDD band 66:UL:1710 – 1780 MHz,DL:2110 – 2200MHz； FDD band 85:UL:698-716 MHz,DL:728-746MHz；	
Test Power Grade:	Default	
Test Software of EUT:	BT: EspRFTestTool_v3.6.exe) GSM/LTE: RF test	
Antenna Type:	BT: PCB Antenna GSM/LTE: Ceramic Antenna	
Power Supply:	Battery:	DC 3.60V,4.8Ah
Sample Received Date:	Nov. 24, 2023	
Sample tested Date:	Nov. 24, 2023 to Dec. 06, 2023	
Remark: Company Name and Address shown on Report, the sample(s) and sample Information was/ were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified. Model No.: 81000, 81001 Only the model 81000 was tested. All models have same circuitry, components, PCB and layout, only the model's names, product name and appearance view are different for marketing requirements.		

4.4 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd

Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China

Telephone: +86 (0) 755 33683668 Fax:+86 (0) 755 33683385

No tests were sub-contracted.

FCC Designation No.: CN1164

4.5 Deviation from Standards

None.

4.6 Abnormalities from Standard Conditions

None.

4.7 Other Information Requested by the Customer

None.

5 SAR Evaluation

5.1 RF Exposure Compliance Requirement

5.1.1 Limits

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 Pth (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). Pth is given by Formula

$$P_{\text{th}}\,(\text{mW}) = \begin{cases} ERP_{20\text{ cm}}(d/20\text{ cm})^{x} & d \le 20\text{ cm} \\ ERP_{20\text{ cm}} & 20\text{ cm} < d \le 40\text{ cm} \end{cases}$$

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 ERP20cm is per Formula (B.1).

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

The 1 mW Blanket Exemption of § 1.1307(b)(3)(i)(A) applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power of no more than 1 mW, regardless of separation distance.

5.1.2 Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

5.1.3 EUT RF Exposure Evaluation

(1)For stand alone:

For Bluetooth Classic:

Frequency (MHz)	Max. Conducted Output power (dBm)	Antenna Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (mW)	Ratio	Result
2480	0.81	2.21	0.87	1.222	3060	0.0004	PASS

For GSM:

Mode	Frequency (MHz)	Conducted power (dBm)	Antenna gain (dBi)	ERP (dBm)	ERP (mW)	Limit (mW)	Ratio	Result
GSM 850	848.8	32.86	1.6	32.31	1702.1585	1731.552	0.9830	PASS
GSM 1900	1909.8	29.60	3.5	30.95	1244.5146	3060	0.4067	PASS

For LTE:

Mode	Frequency (MHz)	Conducted power (dBm)	Antenna gain (dBi)	ERP (dBm)	ERP (mW)	Limit (mW)	Ratio	Result
LTE Band 2	1909.3	22.03	3.5	23.38	217.7710	3060	0.0712	PASS
LTE Band 4	1732.5	21.86	3.5	23.21	209.4112	3060	0.0684	PASS
LTE Band 5	836.5	21.75	1.6	21.2	131.8257	1706.46	0.0773	PASS
LTE Band 12	711	22.08	0.4	20.33	107.8947	1450.44	0.0744	PASS
LTE Band 13	782	21.57	0.4	19.82	95.9401	1595.28	0.0601	PASS
LTE Band 25	1910	21.98	3.5	23.33	215.2782	3060	0.0704	PASS
LTE Band 26 (FCC Part 22)	829	22.09	0.4	20.34	108.1434	1691.16	0.0639	PASS
LTE Band 26 (FCC Part 90)	819	22.18	1.6	21.63	145.5459	1670.76	0.0871	PASS
LTE Band 66	1779.3	22.27	3.5	23.62	230.1442	3060	0.0752	PASS
LTE Band 85	700.5	21.44	0.4	30.71	1177.6060	1429.02	0.8241	PASS

Note：

①EIRP=conducted power+antenna gain；

②ERP=EIRP-2.15;

③ERP(mW) = 10^(ERP (dBm)/10);

④Ratio=ERP(mW)/Limit(mW);
⑤The estimation distance is 20cm;
⑥The test data please refer to the report of EED32P81875001 and EED32P81875002. Only the worst case data was recorded in the report.

(2)For Simultaneous Transmission:

As MPE maximum rato for Bluetooth Classic+GSM=0.0004+0.9830=0.9834 < 1,
as MPE maximum rato for Bluetooth Classic+LTE=0.0004+0.8241 =0.8245 < 1,
it's deemed to fulfil the RF exposure requirement.

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*** End of Report ***