



TEST REPORT

Product Trade mark Model/Type reference Serial Number Report Number FCC ID Date of Issue Test Standards Test result : Ion Pro RT

BONTRAGER

- : 552373
- : N/A
 - EED32M00014301
- : 2AHXD-552373
- : Apr. 13, 2020
- : 47 CFR Part 15 Subpart C
- : PASS

Prepared for:

Trek Bicycle Corporation 801 West Madison Street, Waterloo WI 53594

Prepared by:

Centre Testing International Group Co., Ltd. Hongwei Industrial Zone, Bao'an 70 District, Shenzhen, Guangdong, China TEL: +86-755-3368 3668 FAX: +86-755-3368 3385

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2 Version

| | Version No. | | Date | | Descriptio | on 🔊 | |
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3 Test Summary

| | Test Here | | 6 | | | | | |
|--|---|--|--|--|--|---|------------------------------------|-------------|
| | Test Item Radiated Spurious | | 47 CFI | 47 CFR Part 15 Subpart C Section | | | | |
| | Emiss | sions | | 15.205/15 | 5.209 | ANSI | C63.10-2013 | PASS |
| Rem Test The This EED Revi Ther tests | hark: t according to tested sample test report (R 032K0014120 iew this report refore in this r s data please | ANSI C63.4-2 e(s) and the s Ref. No.:EED3 1). t and original eport the Rac refer to origin | 2014 & ANSI ample inform 2M00014301 report, this re liated spuriou al report No.I | C63.10-2013 nation are pro I) is only valic eport only rep is below 1G v EED32k0014 | 3. vided by the clie d with the origina laces the batter vere retested ar 1201. | ent. al test repor y nd shown th | rt (Ref. No.: ne data in this r | eport, othe |
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5.1.3 For Conducted Emissions test setup





5.2 Test Environment

| | - | | | | |
|------------------------|----------|----|-------|------|---|
| Operating Environment: | | S | S | | C |
| Temperature: | 23 °C | | | | |
| Humidity: | 54 % RH | | 10000 | 1000 | |
| Atmospheric Pressure: | 1010mbar | 6 | 12 | | |
| | 100.00 | 12 | | | |

5.3 Test Condition

Test channel:

| 12 | Tost Modo | Tu/Du | RF Channel | | | | | |
|----|--------------------|---|------------|------------|------------|--|--|--|
| 2 | Test Mode | IX/KX | Low(L) | Middle(M) | High(H) | | | |
| V | OFOK | | Channel 1 | Channel 20 | Channel 40 | | | |
| | GFSK | 2402MHz ~2480 MHz | 2402MHz | 2440MHz | 2480MHz | | | |
| | Transmitting mode: | The EUT transmitted the continuous signal at the specific channel(s). | | | | | | |





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6 General Information

6.1 Client Information

| Applicant: | Trek Bicycle Corporation | |
|--------------------------|--|----|
| Address of Applicant: | 801 West Madison Street, Waterloo WI 53594 | |
| Manufacturer: | Trek Bicycle Corporation | - |
| Address of Manufacturer: | 801 West Madison Street, Waterloo WI 53594 | |
| Factory: | EISO ENTERPRISE CO., LTD. | 57 |
| Address of Factory: | NO.2, JHONGHUA LANE, SHANYING RD., GUEISHAN DIST., | |
| | TAOYUAN CITY 333, TAIWAN | |

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6.2 General Description of EUT

| Product Name: | Ion Pro RT |
|----------------------------------|---|
| Model No.(EUT): | 552373 |
| Trade mark: | BONTRAGER |
| EUT Supports Radios application: | BT 4.0 single mode, 2402-2480MHz |
| Power Supply: | Rechargeable Li-ion Battery Pack 21700 3.63V 4900mAh 17.787Wh DC 5V and AC 120V/60Hz |
| Sample Received Date: | Jan. 16, 2020 |
| Sample tested Date: | Jan. 16, 2020 to Mar. 29, 2020 |







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6.3 Product Specification subjective to this standard

CTI 华观检测 CENTRE TESTING INTERNATIONAL

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| Operation | Frequency: | 2402MHz | z~2480MHz | 0 |) | 6 | |
|-------------|---------------|-------------|-----------------|--------------|-----------|---------|-----------|
| Bluetooth \ | /ersion: | 4.0 | | | | | |
| Modulation | Technique: | DSSS | | | | | |
| Modulation | Туре: | GFSK | (2) | | | | 13 |
| Number of | Channel: | 40 | 6 | | (3) | | 6 |
| Test Powe | r Grade: | N/A(man | ufacturer decla | are) | \sim | | \sim |
| Test Softwa | are of EUT: | nRFgo S | tudio.exe(mar | ufacturer de | clare) | | |
| Antenna Ty | /pe: | Integral A | Antenna | 12 | | 13 | |
| Antenna G | ain: | -1.52 dBi |) | (5) |) | (2) |) |
| Test Voltag | je: | AC 120V | , 60Hz | U | | J | e |
| Operation I | Frequency eac | h of channe | I | | | | - |
| Channel | Frequency | Channel | Frequency | Channel | Frequency | Channel | Frequency |
| 1 | 2402MHz | 11 | 2422MHz | 21 | 2442MHz | 31 | 2462MHz |
| 2 | 2404MHz | 12 | 2424MHz | 22 | 2444MHz | 32 | 2464MHz |
| 3 | 2406MHz | 13 | 2426MHz | 23 | 2446MHz | 33 | 2466MHz |
| 4 | 2408MHz | 14 | 2428MHz | 24 | 2448MHz | 34 | 2468MHz |
| 5 | 2410MHz | 15 | 2430MHz | 25 | 2450MHz | 35 | 2470MHz |
| 6 | 2412MHz | 16 | 2432MHz | 26 | 2452MHz | 36 | 2472MHz |
| 7 | 2414MHz | 17 | 2434MHz | 27 | 2454MHz | 37 | 2474MHz |
| 8 | 2416MHz | 18 | 2436MHz | 28 | 2456MHz | 38 | 2476MHz |
| 9 | 2418MHz | 19 | 2438MHz | 29 | 2458MHz | 39 | 2478MHz |
| 10 | 2420MHz | 20 | 2440MHz | 30 | 2460MHz | 40 | 2480MHz |









6.4 Description of Support Units

The EUT has been tested with associated equipment below.

| Associated equipment name | | Manufacture | model | Serial number | Supplied by Certification | |
|---------------------------|------------|--|-----------|------------------|---------------------------|-----|
| AE1 | AC adapter | Dongguan Aohai Power Technology Co.,Ltd | MDY-09-EB | -/15 | СТІ | FCC |

6.5 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 3368 3668 Fax:+86 (0) 755 3368 3385 No tests were sub-contracted. FCC Designation No.: CN1164

6.6 Deviation from Standards

None.

6.7 Abnormalities from Standard Conditions

None.

6.8 Other Information Requested by the Customer

None.

6.9 Measurement Uncertainty (95% confidence levels, k=2)

| No. | Item | Measurement Uncertainty |
|-----|-----------------------------------|-------------------------|
| 1 | Radio Frequency | 7.9 x 10 ⁻⁸ |
| 2 | | 0.31dB (30MHz-1GHz) |
| 2 | RF power, conducted | 0.57dB (1GHz-18GHz) |
| | Dedicted Courieurs ensistien test | 4.5dB (30MHz-1GHz) |
| 3 | Radiated Spurious emission test | 4.8dB (1GHz-12.75GHz) |
| 4 | Conduction emission | 3.6dB (9kHz to 150kHz) |
| 4 | Conduction emission | 3.2dB (150kHz to 30MHz) |
| 5 | Temperature test | 0.64°C |
| 6 | Humidity test | 2.8% |
| 7 | DC power voltages | 0.025% |



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7 Equipment List

| | 3M 3 | Semi/full-anecho | ic Chamber | | |
|--|---------------------|----------------------|------------------|---------------------------|-------------------------------|
| Equipment | Manufacturer | Model No. | Serial Number | Cal. date (mm-dd-yyyy) | Cal. Due date (mm-dd-yyyy) |
| 3M Chamber & Accessory Equipment | ТDК | SAC-3 | | 05-24-2019 | 05-23-2022 |
| TRILOG Broadband Antenna | Schwarzbeck | VULB9163 | 9163-618 | 07-26-2019 | 07-25-2020 |
| Loop Antenna | Schwarzbeck | FMZB 1519B | 1519B- 076 | 04-25-2018 | 04-24-2021 |
| Receiver | R&S | ESCI7 | 100938- 003 | 10-21-2019 | 10-20-2020 |
| Multi device Controller | maturo | NCD/070/107 11112 | \odot | (| 9 |
| Temperature/ Humidity Indicator | Shanghai qixiang | HM10 | 1804298 | 07-26-2019 | 07-25-2020 |
| Cable line | Fulai(7M) | SF106 | 5219/6A | | |
| Cable line | Fulai(6M) | SF106 | 5220/6A | | () () |
| Cable line | Fulai(3M) | SF106 | 5216/6A | 1237 | 6 |
| Cable line | Fulai(3M) | SF106 | 5217/6A | <u> </u> | |



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8 Radio Technical Requirements Specification

Reference documents for testing:

| FCC Part150 ANSI C63.10-20 sults List: t Requirement | 2 013 Test n | Subpart (American Devices | C-Intentional Radia National Standarc | itors I for Testing Ur | ilicesed W | /ireless | | |
|--|-------------------------------|--|---|---|---|--|------|---|
| ANSI C63.10-20 sults List: t Requirement | 013 Test n | American Devices | National Standard | d for Testing Ur | nlicesed W | /ireless | | |
| sults List: | Test n | | 5 | (Cor) | | | | |
| t Requirement | Test n | | | | | G | | |
| | | nethod | Test i | tem | Verdict | Note | | |
| Part15C Section 15.205/15.209 Part15C Section 15.205/15.209 | | Part15C Section 15.205/15.209 ANSI C6 | | C63.10 | Restricted ba fundamenta (Radiated | nds around I frequency Emission) | PASS |) |
| | | C63.10 | Radiated Spurious Emissions | | PASS | Appendix A) | | |
| | | | | | | | | |
| | | | | | | | | |
| | rt15C Section 5.205/15.209 | rt15C Section 5.205/15.209 ANSI | rt15C Section 5.205/15.209 ANSI C63.10 | rt15C Section 5.205/15.209 ANSI C63.10 Radiated Spurio | rt15C Section 5.205/15.209 ANSI C63.10 Radiated Spurious Emissions | rt15C Section ANSI C63.10 Radiated Spurious Emissions PASS | | |



















Appendix A): Radiated Spurious Emissions

| Receiver Setup: | Frequency | Detector | RBW | VBW | Remark | | |
|-----------------|-------------------|------------|--------|--------|------------|------------------|--|
| | 0.009MHz-0.090MHz | Peak | 10kHz | 30kHz | Peak | | |
| | 0.009MHz-0.090MHz | Average | 10kHz | 30kHz | Average | 1 | |
| e") | 0.090MHz-0.110MHz | Quasi-peak | 10kHz | 30kHz | Quasi-peak | (\mathfrak{S}) | |
| | 0.110MHz-0.490MHz | Peak | 10kHz | 30kHz | Peak | \sim | |
| | 0.110MHz-0.490MHz | Average | 10kHz | 30kHz | Average | | |
| | 0.490MHz -30MHz | Quasi-peak | 10kHz | 30kHz | Quasi-peak | | |
| (\mathcal{A}) | 30MHz-1GHz | Quasi-peak | 120kHz | 300kHz | Quasi-peak | | |
| | | Peak | 1MHz | 3MHz | Peak | | |
| | Above IGHZ | Peak | 1MHz | 10Hz | Average | | |

Test Procedure:

L

Below 1GHz test procedure as below:

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Above 1GHz test procedure as below:

- g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter).
 h. Test the EUT in the lowest channel ,the middle channel ,the Highest channel
- i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case.
- j. Repeat above procedures until all frequencies measured was complete.

| nit: | Frequency | Field strength (microvolt/meter) | Limit (dBµV/m) | Remark | Measurement distance (m) | | | | | |
|------|---|---|-------------------|------------|-----------------------------|--|--|--|--|--|
| | 0.009MHz-0.490MHz | 2400/F(kHz) | - | | 300 | | | | | |
| | 0.490MHz-1.705MHz | 24000/F(kHz) | - | | 30 | | | | | |
| | 1.705MHz-30MHz | 30 | - | - | 30 | | | | | |
| | 30MHz-88MHz | 100 | 40.0 | Quasi-peak | 3 | | | | | |
| (SI) | 88MHz-216MHz | 150 | 43.5 | Quasi-peak | 3 | | | | | |
| | 216MHz-960MHz | 200 | 46.0 | Quasi-peak | 3 | | | | | |
| | 960MHz-1GHz | 500 | 54.0 | Quasi-peak | 3 | | | | | |
| | Above 1GHz | 500 | 54.0 | Average | 3 | | | | | |
| | Note: 15.35(b), Unless emissions is 20dE applicable to the peak emission lev | Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device | | | | | | | | |







Radiated Spurious Emissions test Data:

Radiated Emission below 1GHz

| Mode |): | BLE GFSK Transmitting | | | | | Channel: | | 2440 | | |
|------|----------------|-----------------------|-----------------------|-----------------------|-------------------|-------------------|-------------------|----------------|--------|----------|--------|
| NO | Freq. [MHz] | Ant Factor [dB] | Cable loss [dB] | Pream gain [dB] | Reading [dBµV] | Level [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Result | Polarity | Remark |
| 1 | 36.5967 | 11.21 | 0.67 | -31.38 | 35.34 | 15.84 | 40.00 | 24.16 | Pass | Н | PK |
| 2 | 71.3261 | 8.75 | 0.97 | -32.04 | 34.42 | 12.10 | 40.00 | 27.90 | Pass | Н | PK |
| 3 | 208.8859 | 11.13 | 1.71 | -31.94 | 41.98 | 22.88 | 43.50 | 20.62 | Pass | Н | PK |
| 4 | 360.0270 | 14.52 | 2.27 | -31.84 | 41.91 | 26.86 | 46.00 | 19.14 | Pass | Н | PK |
| 5 | 649.9890 | 19.40 | 3.10 | -32.07 | 39.77 | 30.20 | 46.00 | 15.80 | Pass | Н | PK |
| 6 | 974.9715 | 22.55 | 3.75 | -30.95 | 36.43 | 31.78 | 54.00 | 22.22 | Pass | Н | PK |

| Mode |): | BLE GFSK Transmitting | | | | | Channel: | | 2440 | | |
|------|----------------|-----------------------|-----------------------|-----------------------|-------------------|-------------------|-------------------|----------------|--------|----------|--------|
| NO | Freq. [MHz] | Ant Factor [dB] | Cable loss [dB] | Pream gain [dB] | Reading [dBµV] | Level [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Result | Polarity | Remark |
| 1 | 35.2385 | 10.78 | 0.65 | -31.42 | 47.30 | 27.31 | 40.00 | 12.69 | Pass | V | PK |
| 2 | 53.2823 | 12.67 | 0.83 | -32.01 | 38.94 | 20.43 | 40.00 | 19.57 | Pass | V | PK |
| 3 | 150.0010 | 7.55 | 1.45 | -32.01 | 48.44 | 25.43 | 43.50 | 18.07 | Pass | V | PK |
| 4 | 195.0135 | 10.43 | 1.64 | -31.94 | 44.87 | 25.00 | 43.50 | 18.50 | Pass | V | PK |
| 5 | 360.0270 | 14.52 | 2.27 | -31.84 | 40.55 | 25.50 | 46.00 | 20.50 | Pass | V | PK |
| 6 | 974.9715 | 22.55 | 3.75 | -30.95 | 36.93 | 32.28 | 54.00 | 21.72 | Pass | V | PK |

Note:

1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading -Correct Factor

Correct Factor = Preamplifier Factor – Antenna Factor – Cable Factor

2) Scan from 9kHz to 25GHz, the disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

