

# TEST REPORT

**Applicant:** Jiangsu Niu Electric Technology Co., Ltd  
**Address:** No.387 Changting Road, West Taihu Science and Technology Industrial Park, Changzhou City, Jiangsu P.R. China  
**Equipment Type:** NIU Kick Scooter  
**Model Name:** KQi Air(refer to section 2.4)  
**Brand Name:** NIU  
**FCC ID:** 2AZ6G-KAYC3121  
**Test Standard:** 47 CFR Part 2.1093  
KDB 447498 D01 v06  
**Sample Arrival Date:** Aug. 28, 2023  
**Test Date:** Aug. 28, 2023 – Sep. 05, 2023  
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**ISSUED BY:**

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<b>Revision History</b>		
<u>Version</u>	<u>Issue Date</u>	<u>Revisions Content</u>
<u>Rev. 01</u>	<u>Sep. 25, 2023</u>	<u>Initial Issue</u>
<u>Rev. 02</u>	<u>Oct. 08, 2023</u>	<u>Update Section 5 ASSESSMENT RESULT.</u> <u>The original report is invalid.</u>

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# 1 GENERAL INFORMATION

## 1.1 Test Laboratory

Name	Kunshan Balun Communications Technology Co., Ltd.
Address	Room 101, Building 5, No. 1689, Zizhu Road, Yushan, Kunshan, Jiangsu, China

## 1.2 Test Location

Name	Kunshan Balun Communications Technology Co., Ltd.
Location	Room 101, Building 5, No. 1689, Zizhu Road, Yushan, Kunshan, Jiangsu, China
Accreditation Certificate	The laboratory is a testing organization accredited by FCC as an accredited testing laboratory. The designation number is CN1352.

## 2 PRODUCT INFORMATION

### 2.1 Applicant Information

Applicant	Jiangsu Niu Electric Technology Co., Ltd
Address	No.387 Changting Road, West Taihu Science and Technology Industrial Park, Changzhou City, Jiangsu P.R. China

### 2.2 Manufacturer Information

Manufacturer	Jiangsu Niu Electric Technology Co., Ltd
Address	No.387 Changting Road, West Taihu Science and Technology Industrial Park, Changzhou City, Jiangsu P.R. China

### 2.3 Factory Information

Factory	Jiangsu Niu Electric Technology Co., Ltd
Address	No.387 Changting Road, West Taihu Science and Technology Industrial Park, Changzhou City, Jiangsu P.R. China

### 2.4 General Description for Equipment under Test (EUT)

EUT Name	NIU Kick Scooter
Model Name Under Test	KQi Air
Series Model Name	KQi Air X
Description of Model name differentiation	All models are same with electrical parameters and internal circuit structure, but only differ in material. Details please refer to the difference declaration file.
Sample No.	SC-EC2380220-S06
Hardware Version	N/A
Software Version	N/A

### 2.5 Ancillary Equipment

N/A

### Technical Information

All Network and Wireless connectivity for EUT	Bluetooth (BLE) RFID
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The requirement for the following technical information of the EUT was tested in this report:

Operating Mode	Bluetooth; RFID	
Frequency Range	RFID	13.56 MHz
Antenna Type	RFID	Coil Antenna
Exposure Category	General Population/Uncontrolled Exposure	
EUT Type	Portable Device	

### 3 SUMMARY OF TEST RESULT

#### 3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 2.1093	Radiofrequency radiation exposure evaluation: portable devices
2	KDB 447498 D01 v06	KDB 447498 General RF Exposure Guidance D01 v06

## 4 DEVICE CATEGORY AND LEVELS LIMITS

### Portable Derives:

CFR Title 47 §2.1093(b)

(b) For purposes of this section, a portable device is defined as a transmitting device designed to be used so that the radiating structure(s) of the device is/are within 20 centimeters of the body of the user.

### FCC KDB 447498 D01 General RF Exposure Guidance v06 Limit

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 Test Exclusion Threshold condition, listed below, is satisfied. These test exclusion conditions are based on source-based time-averaged maximum conducted output power of the RF channel requiring evaluation, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions. The minimum test separation distance is determined by the smallest distance from the antenna and radiating structures or outer surface of the device, according to the host form factor, exposure conditions and platform requirements, to any part of the body or extremity of a user or bystander.

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances

$\leq 50$  mm are determined by:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR}$$

Where

- $f$  (GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is  $\leq 50$  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.

a) For 100 MHz to 6 GHz and test separation distances  $\leq 50$  mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0 \text{ for 1-g SAR, and } \leq 7.5 \text{ for 10-g extremity SAR, where}$$

- $f$ (GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- The values 3.0 and 7.5 are referred to as numeric thresholds in step b) below

The test exclusions are applicable only when the minimum test separation distance is  $\leq 50$  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 according to 4.1 f) is applied to determine SAR test exclusion.

b) For 100 MHz to 6 GHz and test separation distances > 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following (also illustrated in Appendix B):

- 1) {[Power allowed at numeric threshold for 50 mm in step a)] + [(test separation distance – 50 mm)·(f(MHz)/150)]} mW, for 100 MHz to 1500 MHz
- 2) {[Power allowed at numeric threshold for 50 mm in step a)] + [(test separation distance – 50 mm)·10]} mW, for > 1500 MHz and ≤ 6 GHz

c) For frequencies below 100 MHz, the following may be considered for SAR test exclusion (also illustrated in Appendix C):

- 1) For test separation distances > 50 mm and < 200 mm, the power threshold at the corresponding test separation distance at 100 MHz in step b) is multiplied by [1 + log(100/f(MHz))]
- 2) For test separation distances ≤ 50 mm, the power threshold determined by the equation in c) 1) for 50 mm and 100 MHz is multiplied by ½
- 3) SAR measurement procedures are not established below 100 MHz.

When SAR test exclusion cannot be applied, a KDB inquiry is required to determine SAR evaluation requirements for any SAR test results below 100 MHz to be acceptable.

### Appendix C

#### ***SAR Test Exclusion Thresholds for < 100 MHz and < 200 mm***

Approximate SAR test exclusion power thresholds at selected frequencies and test separation distances are illustrated in the following table. The equation and threshold in 4.3.1 must be applied to determine SAR test exclusion.

MHz	< 50	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	mm
100	237	474	481	487	494	501	507	514	521	527	534	541	547	554	561	567	mW
50	308	617	625	634	643	651	660	669	677	686	695	703	712	721	729	738	
10	474	948	961	975	988	1001	1015	1028	1041	1055	1068	1081	1095	1108	1121	1135	
1	711	1422	1442	1462	1482	1502	1522	1542	1562	1582	1602	1622	1642	1662	1682	1702	
0.1	948	1896	1923	1949	1976	2003	2029	2056	2083	2109	2136	2163	2189	2216	2243	2269	
0.05	1019	2039	2067	2096	2125	2153	2182	2211	2239	2268	2297	2325	2354	2383	2411	2440	
0.01	1185	2370	2403	2437	2470	2503	2537	2570	2603	2637	2670	2703	2737	2770	2803	2837	



## 5 ASSESSMENT RESULT

### 5.1 SAR Test Exclusion Thresholds

Frequency (MHz)	Field Strength (dBuV/m@3m)	ERP power (mw)
13.56	38.60	-58.75

Note<sup>1</sup>: The EIRP is calculated according to the formula  $E(\text{dBuV/m}) = \text{EIRP}(\text{dBm}) - 20\log D + 104.8$

Note<sup>2</sup>:  $\text{ERP} = \text{EIRP} - 2.15 \text{ dB}$

Note<sup>3</sup>: This report listed the worst case Field Strength value, please refer to BL-EC2380297-401 report for more details.

### 5.2 Turn-up power

Mode	ERP Power Range (dBm)
RFID	[-60.00,-58.00]

### 5.3 RF Exposure Evaluation Result

Mode	Tune-up limit power (dBm)	Maximum power (mw)	Distance (mm)	Calculation Frequency (MHz)	Calculation Results	Threshold Value	Calculation Results /Threshold Value	Verdict
RFID	-58.00	0.0000	5	13.56	0.0000	229.61	0.0000	Pass

Note<sup>1</sup>: Calculate SAR test exclusion thresholds from condition "c" formulas.

Note<sup>2</sup>: According to the table in Appendix C of KDB 447498 D01v06, the higher the frequency, the lower the threshold power when the interval distance is less than 50mm. The frequency of RFID function is 13.56MHz.

## 5.4 Collocated Power Density Calculation

Evolution mode	Frequency(MHz)	Calculation Results /Threshold Value	$\Sigma$ (Calculation Results /Threshold Value) of Bluetooth + RFID	Verdict
Bluetooth	2400MHz ~ 2483.5MHz	0.1322	<b>0.1322</b>	Pass
RFID	13.56MHz	0.0000		

### Note:

1.  $\Sigma$ (Calculation Results /Threshold Value): This is a summation of [(Calculation Results for each transmitter/ antenna included in the simultaneous transmission)/ (corresponding MPE limit)], for Bluetooth + RFID.
2. Both of the RFID/Bluetooth can transmit simultaneously, the formula of calculated the MPE is  $CPD1 / LPD1 + CPD2 / LPD2 + \dots$  etc.  $< 1$   
 CPD = Calculation power  
 LPD = Limit of power
3. The worst-case situation is 0.1322, which is less than "1". This confirmed that the device comply with FCC 1.1310 MPE limit.
4. The DUT work frequency range used is 2400 MHz ~ 2483.5 MHz and 13.56 MHz the result close to the limit by the above formula, so we select worst case power to calculate the exclusion power threshold.
5. More power list please refer to BL-EC2380297-401 test report.
6. Bluetooth RF Exposure Evaluation Result test result please refer to BL-EC2380297-701 test report.

## 5.5 Conclusion

This EUT is deemed to comply with the reference level limits , therefore the basic restrictions are compliant with human exposure limits.

## Statement

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--END OF REPORT--