




# TEST REPORT

page : (1) / Total (11)

Report No.	ICRT-TR-E241039-0A	
Client	Name	AISOLUTION CO., LTD
	Address	28-4, Samyang-ro 29gil, Gangbuk-gu, Seoul, 01194, Republic of Korea
Product name	Bluetooth Barcode Scanner Sled	
Model name	KDC1000	
Voltages	DC 3.7 V	
Place of test	■ Inside test    □ Field test Address: 112, 113 Hwanggeum 3-ro 7beon-gil, Hagun-ri, Yangchon-eup, Gimpo-si, Gyeonggi-do, Korea	
Date of test	03. Apr. 2024 ~ 04. Apr. 2024	
Test Method/Item	FCC rule part 2.1093	
Test Results	Refer to 4. RF Exposure	
Affirmation	Tested by	Technical Manager
	Si-Yeon, Hawng (Signature)	Tae-Yang, Yoon (Signature)
<input type="checkbox"/> The above test report is certified that the above mentioned products have been tested for the sample. <input type="checkbox"/> The above test report is not related to accreditation by KS Q ISO/IEC 17025 and Korea Laboratory Accreditation scheme. <input type="checkbox"/> The test report is prohibited for some reproduction without the approval of the ICR.		
<b>2024. 04. 05</b> <b>INTERNATIONAL CERTIFICATION REGISTRAR</b> 		

The authenticity of the test report can be checked on the G4B or ICR website.

112, Hwanggeum3-ro 7beon-gil, Yangchon-eup, Gimpo-si, Gyeonggi-do, Korea / Tel: 02-6351-9001 ~ 6

## Contents

<b>1. Applicant &amp; Manufacturer &amp; Test Laboratory Information</b>	<b>4</b>
<b>2. Equipment under Test(EUT) Information</b>	<b>5</b>
<b>3. Test Summary</b>	<b>6</b>
<b>4. Result</b>	<b>7</b>

## Revision History

Issued Report No.	Issued Date	Revisions	Effect Section
ICRT-TR-E241039-0A	2024. 04. 05	Initial Issue	All

## **1. Applicant & Manufacturer & Test Laboratory Information**

### **1.1 Applicant information**

Applicant	AISOLUTION CO., LTD
Address	28-4, Samyang-ro 29gil, Gangbuk-gu, Seoul, 01194, Republic of Korea
Contact Person	Raegun Jung
Telephone No.	+82-70-4352-4122
Fax No.	-
E-mail	rgjung@koamtac.com

### **1.2 Manufacturer Information**

Applicant	AISOLUTION CO., LTD
Address	28-4, Samyang-ro 29gil, Gangbuk-gu, Seoul, 01194, Republic of Korea

### **1.3 Test Laboratory Information**

Laboratory	ICR Co., Ltd.
Address	112, Hwanggeum 3-ro 7beon-gil, Hagun-ri, Yangchon-eup, Gimpo-si, Gyeonggi-do, Korea
Telephone No.	+82-2-6351-9002
Fax No.	+82-2-6351-9007
KOLAS No.	KT652
KC & FCC	KR0165

### **1.4 Measurement Uncertainty**

Parameter	Uncertainty for ICR	Limit
Occupied Channel Bandwidth	0.19%	±5 %
RF output power, conducted	0.90 dB	±1.5 dB
Power Spectral Density, conducted	1.51 dB	±3 dB
Unwanted Emissions, conducted	1.36 dB	±3 dB
Supply voltages	0.02%	±3 %
Time	0.58%	±5 %
All emissions, radiated (Under the 1 GHz)	3.22 dB	±6 dB
All emissions, radiated (Above the 1 GHz)	3.67 dB	±6 dB

## 2. Equipment under Test(EUT) Information

### 2.1 General Information

Product Name	Bluetooth Barcode Scanner Sled
Model Name	KDC1000
Additional Model Name	KDC1100
FCC ID	VH9-KDC1000
Power Supply	DC 3.7 V

### 2.2 Additional Information

Equipment Class	DTS-Digital Transmission System	
Device Type	Stand-alone	
Adaptive/Non-Adaptive	Non-Adaptive Equipment	
Operating Frequency	2 402 MHz ~ 2 480 MHz	
RF Output Power	Bluetooth LE 1 Mbps	0.81 dBm
	Bluetooth LE 2 Mbps	0.78 dBm
	Bluetooth LE 125 Kbps	0.80 dBm
	Bluetooth LE 500 Kbps	0.76 dBm
Modulation Type	GFSK	
Antenna Type	Chip Antenna	
Antenna Gain	3.14 dBi	
Operating Mode	The EUT is continuous transmission mode during the test	

### 2.3 Product Type

A Type	C Type Connector
B Type	Lightning Connector

\* The internal circuitry of type A and type B is the same.

### 2.4 Reason of Additional Model Name

NO	Family Model Name	Difference
1	KDC1100	Only the outer case has been modified. Same electrical specifications, structure and circuit as the basic model

### 3. Test Summary

---

#### 3.1 Test standards and results

FCC rule part 1.1310			
Clause	Test items	Applied	Results
FCC rule part 1.1310	Radiofrequency radiation exposure.	■	PASS

## 4. Result

---

### 4.1 RF Exposure

#### 4.1.1 Regulation

FCC rule part 2.1093(d)

(1) Applications for equipment authorization of portable RF sources subject to routine environmental evaluation must contain a statement confirming compliance with the limits specified in § 1.1310 of this chapter as part of their application. Technical information showing the basis for this statement must be submitted to the Commission upon request. The SAR limits specified in § 1.1310(a) through (c) of this chapter shall be used for evaluation of portable devices transmitting in the frequency range from 100 kHz to 6 GHz. Portable devices that transmit at frequencies above 6 GHz shall be evaluated in terms of the MPE limits specified in Table 1 to § 1.1310(e)(1) of this chapter. A minimum separation distance applicable to the operating configurations and exposure conditions of the device shall be used for the evaluation. In general, maximum time-averaged power levels must be used for evaluation. All unlicensed personal communications service (PCS) devices and unlicensed NII devices shall be subject to the limits for general population/uncontrolled exposure.

(2) Evaluation of compliance with the SAR limits can be demonstrated by either laboratory measurement techniques or by computational modeling. The latter must be supported by adequate documentation showing that the numerical method as implemented in the computational software has been fully validated; in addition, the equipment under test and exposure conditions must be modeled according to protocols established by FCC-accepted numerical computation standards or available FCC procedures for the specific computational method. Guidance regarding SAR measurement techniques can be found in the Office of Engineering and Technology (OET) Laboratory Division Knowledge Database (KDB). The staff guidance provided in the KDB does not necessarily represent the only acceptable methods for measuring RF exposure or RF emissions, and is not binding on the Commission or any interested party.

(3) For purposes of analyzing portable RF sources under the occupational/controlled SAR criteria specified in § 1.1310 of this chapter, time averaging provisions of the limits may be used in conjunction with the maximum duty factor to determine maximum time-averaged exposure levels under normal operating conditions.

(4) The time averaging provisions for occupational/controlled SAR criteria, based on maximum duty factor, may not be used in determining typical exposure levels for portable devices intended for use by consumers, such as cellular telephones, that are considered to operate in general population/uncontrolled environments as defined in § 1.1310 of this chapter. However, "source-based" time averaging based on an inherent property of the RF source is allowed over a time period not to exceed 30 minutes. An example of this would be the determination of exposure from a device that uses digital technology such as a time-division multiple-access (TDMA) scheme for transmission of a signal.

(5) Visual advisories (such as labeling, embossing, or on an equivalent electronic display) on portable devices designed only for occupational use can be used as part of an applicant's evidence of the device user's awareness of occupational/controlled exposure limits. Such visual advisories shall be legible and clearly visible to the user from the exterior of the device. Visual advisories must indicate that the device is for occupational use only, refer the user to specific information on RF exposure, such as that provided in a user manual and note that the advisory and its information is required for FCC RF exposure compliance. Such instructional material must provide users with information on how to use the device and to ensure users are fully aware of and able to exercise control over their exposure to satisfy compliance with the occupational/controlled exposure limits. A sample of the visual advisory, illustrating its location on the device, and any instructional material intended to accompany the device when marketed, shall be filed with the Commission along with the application for equipment authorization. Details of any special training requirements pertinent to mitigating and limiting RF exposure should also be submitted. Holders of grants for portable devices to be used in occupational settings are encouraged, but not required, to coordinate with end-user organizations to ensure appropriate RF safety training.

(6) General population/uncontrolled exposure limits defined in § 1.1310 of this chapter apply to portable devices intended for use by consumers or persons who are exposed as a consequence of their

employment and may not be fully aware of the potential for exposure or cannot exercise control over their exposure. No communication with the consumer including either visual advisories or manual instructions will be considered sufficient to allow consumer portable devices to be evaluated subject to limits for occupational/controlled exposure specified in § 1.1310 of this chapter.



#### 4.1.2 SAR test exclusion guidance

KDB 447498 D01 V06 4.3. General SAR test exclusion guidance

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(s), listed below, is (are) 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.<sup>28</sup> The minimum test separation distance defined in 4.1 f) 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. To qualify for SAR test exclusion, the test separation distances applied must be fully explained and justified, typically in the SAR measurement or SAR analysis report, by the operating configurations and exposure conditions of the transmitter and applicable host platform requirements, according to the required published RF exposure KDB procedures. When no other RF exposure testing or reporting are required, a statement of justification and compliance must be included in the equipment approval, in lieu of the SAR report, to qualify for SAR test exclusion. When required, the device specific conditions described in the other published RF exposure KDB procedures must be satisfied before applying these SAR test exclusion provisions; for example, handheld PTT two-way radios, handsets, laptops and tablets, etc.

### 4.1.3 Limit

#### KDB 447498 D01 V06 4.3. General SAR test exclusion guidance

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:

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

- $f(\text{GHz})$  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)  $\{[\text{Power allowed at numeric threshold for 50 mm in step a)}] + [(\text{test separation distance} - 50 \text{ mm}) \cdot (f(\text{MHz})/150)]\}$  mW, for 100 MHz to 1500 MHz
- 2)  $\{[\text{Power allowed at numeric threshold for 50 mm in step a)}] + [(\text{test separation distance} - 50 \text{ mm}) \cdot 10]\}$  mW, for  $> 1500$  MHz and  $\leq 6$  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  $[1 + \log(100/f(\text{MHz}))]$
- 2) For test separation distances  $\leq 50$  mm, the power threshold determined by the equation in c) 1) for 50 mm and 100 MHz is multiplied by  $\frac{1}{2}$
- 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.

**4.1.4 Result**

Mode	Frequency [MHz]	Max Power / tolerance [dBm]	Max Tune-up Power [dBm]	Min. test separation distance [mm]	SAR test exclusion thresholds	for 10-g SAR
LE 1M	2 480	0.81 ± 1.0	1.81	5.00	0.48	≤ 7.5
LE 2M	2 480	0.78 ± 1.0	1.78	5.00	0.47	≤ 7.5
LE 125K	2 480	0.80 ± 1.0	1.80	5.00	0.48	≤ 7.5
LE 500K	2 480	0.76 ± 1.0	1.76	5.00	0.47	≤ 7.5

SAR test exclusion thresholds = [(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] · [√f(GHz)]

**END OF REPORT.**