

# RF Exposure Evaluation Report

**Product** : UWB Kbeacon  
**Trade mark** : Kbeacon  
**Model/Type reference** : K4W,K5W,K7W,K9W  
**Serial Number** : N/A  
**Report Number** : EED32Q80116703  
**FCC ID** : 2AXZL-K4W  
**Date of Issue** : Mar. 21, 2024  
**Test Standards** : 47 CFR Part 1.1307  
47 CFR Part 1.1310  
47 CFR Part 2.1091  
47 CFR Part 2.1093  
KDB 447498 D04 Interim General RF  
Exposure Guidance v01  
**Test result** : PASS

Prepared for:

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Date:

Mar. 21, 2024



Check No.: 5128240124

## 2 Version

Version No.	Date	Description
00	Mar. 21, 2024	Original

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## 4 General Information

### 4.1 Client Information

Applicant:	KKM Company Limited
Address of Applicant:	3CDE, Building6, Baoneng Science&Technology Park, Qingxiang Rd, Longhua Street, Longhua District,Shenzhen City,Guangdong Province, China
Manufacturer:	KKM Company Limited
Address of Manufacturer:	3CDE, Building6, Baoneng Science&Technology Park, Qingxiang Rd, Longhua Street, Longhua District,Shenzhen City,Guangdong Province, China
Factory:	KKM Company Limited
Address of Factory:	3CDE, Building6, Baoneng Science&Technology Park, Qingxiang Rd, Longhua Street, Longhua District,Shenzhen City,Guangdong Province, China

### 4.2 General Description of EUT

Product Name:	UWB Kbeacon
Model No.:	K4W,K5W,K7W,K9W
Test Model No.:	K4W
Trade Mark:	Kbeacon

### 4.3 Product Specification subjective to this standard

Frequency Range:	Bluetooth LE:2402MHz~2480MHz, UWB:6489.6MHz
Modulation Type:	Bluetooth LE:GFSK UWB:BPM
Test Power Grade:	Default
Test Software of EUT:	Bluetooth LE:Direct Test Mode Tool, UWB:RF test
Antenna Type:	Bluetooth LE:Chip Antenna, UWB:Chip Antenna
Antenna Gain:	Bluetooth LE:0.5 dBi, UWB:4.16dBi
Power Supply:	Battery DC 3V
Sample Received Date:	Jan. 24, 2024
Sample tested Date:	Jan. 24, 2024 to Mar. 14, 2024
Remark:	<p>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.</p> <p>Model No.:K4W,K5W,K7W,K9W Only the model K4W was tested, their electrical circuit design,layout,components used and internal wiring are identical.Only the case design is different.</p>

## 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

For Bluetooth LE:

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<sub>th</sub> (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<sub>th</sub> is given by Formula

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

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<sub>20cm</sub> is per Formula (B.1).

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

For UWB:

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

**For Stand alone:**

**For Bluetooth LE:**

Frequency (MHz)	Max. Conducted Output power (dBm)	Antenna Gain (dBi)	ERP (dBm)	ERP (dBm)	ERP (mW)	Limit (mW)	MPE Ratio1	Result
2402	1.39	0.5	1.89	-0.26	0.942	≤3060	0.0003	PASS

**For UWB:**

Frequency (MHz)	Field strength of the fundamental signal (dBuV/m@3m)	EIRP (dBm)	EIRP (mW)	Limit (mW)	MPE Ratio2	Result
6489.6	77.58	-17.65	0.0172	1.00	0.0172	PASS

**Note:**

- ① EIRP=conducted power+antenna gain;
- ② ERP=EIRP-2.15;
- ③ EIRP(dBm) = Field strength of the fundamental signal(dBuV/m@3m) – 95.23;
- ④  $ERP(mW) = 10^{(ERP(dBm)/10)}$ ;
- ⑤ The estimation distance is 20cm;
- ⑥ The test data please refer to the report of EED32Q80116701 and EED32Q80116702, and only the worst case data was recorded in the report.

**For co-launch:**

Simultaneous launch is not supported.

The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CTI, this report can't be reproduced except in full.

\*\*\* End of Report \*\*\*