1. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

1.1 Client Information

Client Information

Applicant:	Wuhu Youfan E-Commerce Co.,Ltd.
Address of applicant:	No. 369 industrial Road, Anhui Xinwu Economic Development Zone (In Fulong E-commerce Industrial Park), Wuhu County
Manufacturer:	Wuhu Youfan E-Commerce Co.,Ltd.
Address of manufacturer:	No. 369 industrial Road, Anhui Xinwu Economic Development Zone (In Fulong E-commerce Industrial Park), Wuhu County

General Description of EUT

Product Name:	Bluetooth Battery Kill Switch
Trade Name:	/
Model No.:	BBKS-2023-250A
Adding Model(s):	BBKS-2023-200A, BBKS-2023-120A
Rated Voltage:	DC 12V
Power Adapter Model:	/
Serial number:	/
FCC ID:	2BBQ9-BBKS

Technical Characteristics of EUT	
Bluetooth Version:	V5.0 BLE
Frequency Range:	2402-2480MHz
RF Output Power:	-4.15dBm
Data Rate:	1Mbps
Modulation:	GFSK
Quantity of Channels:	40
Channel Separation:	2MHz
Type of Antenna:	PCB
Antenna Gain:	1.9dBi

1.2 Standard Applicable

According to §1.1307(b)(1) and KDB 447498 D01 General RF Exposure Guidance v06, system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

(a) Limits for Occupational / Controlled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Times $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	F/300	6
1500-100000	/	/	5	6

(b) Limits for General Population / Uncontrolled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Times $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	F/1500	30
1500-100000	/	/	1	30

Note: f = frequency in MHz: * = Plane-wave equivalents power density

1.3 MPE Calculation Method

$S = (30*P*G) / (377*R^2)$

S = power density (in appropriate units, e.g., mw/cm^2)

P = power input to the antenna (in appropriate units, e.g., mw)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor is normally numeric gain.

R = distance to the center of radiation of the antenna (in appropriate units, e.g., cm)

1.4 MPE Calculation Result

Maximum peak output power: -4.15(dBm)
Tune-Up output power: -4(dBm), 0.3981(mW)
Prediction distance: >20(cm)
Prediction frequency: 2440 (MHz)
Antenna gain: 1.9 (dBi)
Directional gain: 1.48 (numeric)
The worst case is power density at prediction frequency at 20cm: 0.00012(mw/cm^2)
MPE limit for general population exposure at prediction frequency: 1 (mw/cm^2)

0.00012(mw/cm^2) < 1 (mw/cm^2)

So the transmitter complies with the RF exposure requirements and the SAR is not required.