

RF Exposure

Applicant : Keystone Technologies, LLC
Address : 2750 Morris Rd, Building E, Lansdale, Pennsylvania 19446, United States
Product Name : BLUETOOTH WIRELESS KEYPAD
Brand Mark : 
Model : KTSW-WS1-UV-SG
FCC ID : 2AV9KKTSW10
Report Number : BLA-EMC-202504-A10503
Date of Receipt : Apr. 28, 2025
Date of Test : Apr. 28, 2025 to May 28, 2025
Test Standard : KDB447498D04 General RF Exposure Guidance v01
Test Result : Pass

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Review by: *Xavier*

Approved by: *Blue Zheng*

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Revise Record

Version No.	Date	Description
01	May 28, 2025	Original

BlueAsia

1 General information

1.1 General information

Applicant	Keystone Technologies, LLC
Address	2750 Morris Rd, Building E, Lansdale, Pennsylvania 19446, United States
Manufacturer	Wenzhou MTLC Electric Appliances Co.,Ltd.
Address	No. 6, Yangtian Road, Yueqing Bay Port Economic Development Zone, Yueqing, Wenzhou, Zhejiang
Factory	N/A
Address	N/A

1.2 General description of EUT

Product name	BLUETOOTH WIRELESS KEYPAD
Model no.	KTSW-WS1-UV-SG
Series model	N/A
Operation Frequency:	2402MHz-2480MHz
Modulation Type:	GFSK
Rate data:	1Mbps; 2Mbps
Channel Spacing:	2MHz
Number of Channels:	40
Antenna Type:	PCB antenna
Antenna Gain:	-1.37dBi(Provided by customer)
Power supply or adapter information	AC120V
Hardware Version	N/A
Software Version	N/A

Note: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

2 RF Exposure Compliance Requirement

2.1 Standard Requirement

According to 447498 D04 Interim General RF Exposure Guidance v01

Standalone SAR test exclusion considerations

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 condition, listed below, is satisfied.

Exclusion Threshold

2.2 Limits

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}}(d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases} \quad (\text{B.2})$$

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 $ERP_{20\text{cm}}$ is per Formula (B.1).

Example values shown in Table B.2 are for illustration only.

Table B.2—Example Power Thresholds (mW)

Frequency (MHz)	Distance (mm)									
	5	10	15	20	25	30	35	40	45	50
300	39	65	88	110	129	148	166	184	201	217
450	22	44	67	89	112	135	158	180	203	226
835	9	25	44	66	90	116	145	175	207	240
1900	3	12	26	44	66	92	122	157	195	236
2450	3	10	22	38	59	83	111	143	179	219
3600	2	8	18	32	49	71	96	125	158	195
5800	1	6	14	25	40	58	80	106	136	169

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

2.3 Result

$$\text{EIRP} = \text{pt} \times \text{gt} = (\text{E} \times \text{d})^2/30$$

Where:

pt = transmitter output power in watts,

gt = numeric gain of the transmitting antenna (unitless),

E = electric field strength in V/m, --- $10((\text{dBuV/m})/20)/106$

d = measurement distance in meters (m) ---3m

$$\text{Spot} = (\text{Exd})^2/30 \times \text{gt}$$

$$\text{Ant gain} = -1.37 \text{ dBi}$$

So

ERP is worse case

$$10^{0.042} = 1.102 \text{ mW} < 3060 \text{ mW}$$

Comply with RF exposure exemption limit.

----END OF REPORT----

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