

FCC RF Exposure

Applicant : Keystone Technologies, LLC
Address : 2750 Morris Rd Building E Lansdale Pennsylvania United States
Product Name : SmartLoop
Brand Mark : Keystone Technologies
Model : KTSL-FC5-12V-IM
Series model : N/A
FCC ID : 2AV9KKTSL14
Report Number : BLA-EMC-202601-A12702
Date of Receipt : Jan. 29, 2026
Date of Test : Jan. 29, 2026 to Feb. 10, 2026
47 CFR Part 15, Part1.1307
Test Standard : 47 CFR Part 15, Part2.1091
KDB447498D04 General RF Exposure Guidance v01
Test Result : Pass

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Review by: Xavier

Approved by:

Issued Date: Apr. 27, 2026



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Table of Contents

1 General information	4
1.1 General information	4
1.2 General description of EUT	4
2 RF Exposure Compliance Requirement	5
2.1 Standard Requirement	5
2.2 Limits	5
2.3 Result	6

Revise Record

Version No.	Date	Description
01	Apr. 27, 2026	Original

1 General information

1.1 General information

Applicant	Keystone Technologies, LLC
Address	2750 Morris Rd Building E Lansdale Pennsylvania United States
Manufacturer	Keystone Technologies, LLC
Address	2750 Morris Rd Building E Lansdale Pennsylvania United States
Factory	Keystone Technologies, LLC
Address	2750 Morris Rd Building E Lansdale Pennsylvania United States

1.2 General description of EUT

Product name	SmartLoop
Model no.	KTSL-FC5-12V-IM
Operation Frequency	2402MHz-2480MHz
Modulation Type	GFSK
Rate data	1Mbps, 2Mbps
Channel Spacing	2MHz
Number of Channels	40
Antenna Type	Spring antenna
Antenna Gain	3.86dBi(Provided by customer)
Power supply	DC 12V
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 Exclusion Threshold condition, listed below, is satisfied.

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,

d = measurement distance in meters (m)

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

Separation distance = 20cm

For BLE 2M(Worst case) :

Max Output power = 1.393dBm @ 2480MHz

$$\text{EIRP} = 1.393\text{dBm} + 3.86\text{dBi} = 5.253\text{dBm},$$

$$\text{So, ERP} = 5.253 - 2.15 = 3.103\text{dBm} = 2.043\text{mW} < 3060 \text{ mW}$$

Comply with RF exposure exemption limit.

----END OF REPORT----

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