RF EXPOSURE EVALUATION

EUT Specification

EUT	UNIVERSAL SMART KEY
Model Name	IKEYTY004AL, IKEYTY003AL, IKEYTY003BL
Frequency band (Operating)	☐WLAN: 2.412GHz ~ 2.462GHz ☐WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz ☐WLAN: 5.745GHz ~ 5825GHz ☒Others(315MHz&433.92MHz)
Device category	☒Portable (<20cm separation) ☐Mobile (>20cm separation) ☐Others ___
Antenna diversity	☒Single antenna ☐Multiple antennas ☐Tx diversity ☐Rx diversity ☐Tx/Rx diversity
Max. output power	315 MHz: 76.10 dBuV/m (-19.16 dBm)(0.0153mW) 433.92 MHz: 77.25 dBuV/m (-18.01dBm)(0.0199mW)
Antenna gain	315 MHz: -4.83 dBi 433.92 MHz: -13.83 dBi
Evaluation applied	☐MPE Evaluation ☒SAR Evaluation

Standard Requirement

Portable Device

According to §15.247(i) and §1.1307b(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See KDB 447498 D01 General RF Exposure Guidance V06, section 4.3.1.

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] • [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR,[16] where

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation17
- The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is ≤ 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 is applied to determine SAR test exclusion.

Measurement Result

Worst Case:

Channel Frequency (MHz)	Max Output power (dBm)	Max tune-up tolerance Output power (dBm)	Max Output power (dBm)	Max Output power (mW)	Calculation Value (Note 1)	Threshold Value
315(FSK)	-19.16	-19.16 ±1	-18.16	0.0153	0.0017	3
433.92(ASK)	-18.01	-18.01 ±1	-17.01	0.0199	0.0026	3

$$E = EIRP - 20\log D + 104.8$$

where:

E = electric field strength in dBμV/m,

EIRP = equivalent isotropic radiated power in dBm

D = specified measurement distance in meters.

315MHz

EIRP=E-104.8+20logD= 76.10 -104.8+20log3= -19.16 dBm

Note 1: Calculation Value =[(max. power of channel, mW)/(min. test separation distance, mm)] • [√f(GHz)].

Fox example: 0.0153/5* √0.315= 0.0017 ≤3.0

433.92MHz

EIRP=E-104.8+20logD= 77.25 -104.8+20log3= -18.01 dBm

Note 1: Calculation Value =[(max. power of channel, mW)/(min. test separation distance, mm)] • [√f(GHz)].

Fox example: 0.0199/5* √0.43392= 0.0026 ≤3.0

According to KDB447498 D01 V06, threshold at which no SAR required is ≤3.0 for 1-g SAR, separation distance is 5mm, and no simultaneous SAR measurement is required. Routine SAR evaluation refers to that specifically required by §2.1093, using measurements or computer simulation. When routine SAR evaluation is not required, portable transmitters with output power greater than the applicable low threshold require SAR evaluation to qualify for TCB approval.

The SAR measurement is not necessary.