FCC RF Exposure

EUT Description:Smart Lock
Test type.:Bolt-N
Series model:Bolt-N-Matter, Bolt-N-W-Matter, Bolt-F, Bolt-F-Matter, Bolt-F-W-Matter
FCC ID: 2BKHH-BOLT-N
Equipment type: Portable Device

1. Test Procedure
   According to KDB 447498 D01 General RF Exposure Guidance v06

   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,

   where
   f(GHz) is the RF channel transmit frequency in GHz
   Power and distance are rounded to the nearest mW and mm before calculation
   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 6GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

2. Test Result of RF Exposure Evaluation

BLE

Mode	Channel Freq. (MHz)	Maximum Conducted Output Power(PK) (dBm)	Antenna Gain (dBi)	Antenna gain numeric (mw)	Max power (W)
GFSK	2402	-2.86	3.30	0.874	0.000517606
	2440	-1.95	3.30	0.874	0.00063826
	2480	-2.68	3.30	0.874	0.000539510

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance,mm)] · [√f(GHz)]=0.63826/5*√2.440=0.19938≤3.0 Threshold at which no SAR required is and ≤ 3.0 for 1-g SAR, Separation distance is 5mm.

NFC:
Equipment type: Portable Device

Refer to KDB 447498 D01 section 4.3 (c) and Annex C

c) For frequencies below 100 MHz, the following may be considered for SAR test exclusion (also illustrated in
Appendix C):
1) For test separation distances > 50 mm and < 200 mm, the power threshold at the corresponding test
separation distance at 100 MHz in step b) is multiplied by [1 + log(100/f
(MHz)
)]
2) For test separation distances ≤ 50 mm, the power threshold determined by the equation in c) 1) for 50
mm and 100 MHz is multiplied by ½
For operation below 100 MHz, paragraph c applies

When the transmitted signal is measured as a field strength value (dBµV/m), this value is converted to a power
level using the following derivation:
Step 1 – Per ANSI C63.10:2013 section 10.3.9 equation (34), the relationship between EIRP and field strength

$$EIRP_{meas} = E_{meas} - 95.3$$

is as follows:

EIRP=EMeas+20log(dmeas)-104.7
EIRP is the equivalent isotropically radiated power,
EMeas in dBmis the field strength of the emission at the measurement distance, in dB u V/m
dMeas is the measurement distance, in m

Field strength(dBuV/m)	EIRP(dBm)	(mW)	Frequency(MHz)	Min. distance(mm)	limit
62.45	-32.71	0.000536	13.56	5	236.7

Simultaneous transmission calculation

Band	Mode	Result calculation	1g SARtest exclusionthreshold	Fraction of limit(%)
2402-2480MHZ	BLE	0.19938	3	6.64
Band	Mode	Exempted powerResult(mw)	Exempted powerlimit(mW)	Fraction of limit(%)
13.56MHZ	NFC	0.000536	236.7	0.000226
Sum of Fraction (%)			6.640226	

Conclusion: No SAR required