RF Exposure Requirements

Product Description: Bluetooth / NFC Reader
Model No.: BTH122-8K, REAKBLENFCV2-LB-SG, REABLENFCV2-LB-SG, BTH122-8N, BTH122-9N, BTH122-9K
FCC ID: 2ASPO-BTH122-8K

According to the KDB 447498 D01 v06 section 4.3.1 a), for 100 MHz to 6 GHz and test separation distances ≤ 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:
[(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

According to the KDB 447498 D01 V06, 4.3.1 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 1/2
3) SAR measurement procedures are not established below 100MHz.
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

Calculation Result:

Bluetooth
Tx frequency range: 2402-2480MHz
Min. test separation distance: 5mm
Maximum Conducted Output Power: 3.44dBm
Tune-Up output power: 4.0dBm
RF channel transmit frequency: 2402MHz
Result: 0.0195
Limit: 3.0

NFC

Tx frequency range: 13.56MHz
Min. test separation distance: 5mm
Max. Field Strength: 62.16dBuV/m @3m
EIRP=E-104.8+20logD=62.16-104.8+20log3=-33.09dBm
Maximum Conducted Output Power: -33.09 dBm
Tune-Up output power: -33.0dBm
RF channel transmit frequency: 13.56MHz
Max. Power (mW): 0.0005
Limit(mW): 237

SRD

Tx frequency range: 125kHz
Min. test separation distance: 5mm
Max. Field Strength: 82.58dBuV/m @3m
EIRP=E-104.8+20logD=82.58-104.8+20log3=-12.68dBm
Maximum Conducted Output Power: -12.68 dBm
Tune-Up output power: -12.0dBm
RF channel transmit frequency: 125kHz
Max. Power (mW): 0.0540
Limit(mW): 474

Mode for Simultaneous Multi-band Transmission
The worst case is Bluetooth + NFC + SRD
Evaluation Result: 0.0195/3+0.0005/237+0.0540/474=0.0066
Limit: 1
Result: Pass

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