RF Exposure Considerations for FCC ID: 2AS9Y-INEBOX544

1- MPE evaluation for device used as mobile (BLE and WIFI when device is charging)

The calculation of the MPE is as following:

Prediction of MPE limit at a prediction distance:

$$S=\frac{P.G}{4.\prod.R^2}=\frac{E.I.R.P}{4.\prod.R^2}$$

S: Power density (mW/cm²)
P: Peak output power at antenna terminal (mW)
G: Numerical Antenna gain
R: Distance of radiation to antenna (cm)

MPE calculation

Frequency (MHz)	*Maximum E.I.R.P. (mW)*	*R (cm)*	*Power Density S (mW/cm²)*	*MPE limit (mW/cm²)*	*% of limit*	*Limit (%)*	*Verdict*
2402 / 2480 (BLE mode)	*1.0 (*)*	*20*	*0.0002*	*1.0*	*0.02*	-	*Below MPE limit for uncontrolled exposure*
2412 / 2462 (WIFI mode)	*236.0*	*20*	*0.04695*	*1.0*	*4.69*	-	
Simultaneous transmissions				***SUM =***	***4.715***	***100%***	

(*): Rated output power including tolerance. (Converted to EIRP)

Conclusion: Therefore the device complies with FCC's RF radiation exposure limits for general population for a mobile device.

COORDONNEES
SMEE
Rue de Taille – ZI Des Blanchisseries
38500 VOIRON - France
TEL : 04 76 65 76 50
FAX : 04 76 66 18 30
SAS au capital de 50 000 € / RC Grenoble B534 796 453 / SIRET 534 796 453 00015 / code APE 7490B / n° TVA : FR 59 534 796 453

2- SAR Test exclusion evaluation for device used as portable (BLE mode)

Per FCC 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 (Eq.1) below:

$$SAR = \frac{MaxPower(mW)}{d(mm)} \times \sqrt{f(GHz)} \quad (Eq.\ 1)$$

Where:

- *SAR* is the calculation for test exclusion threshold;
- *MaxPower* is the maximum power of channel, including tune-up tolerance, in mW;
- *d* is the minimum test separation distance, in mm;
- *f* 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.

If result of Eq.1 is less than or equal to the exemption limits below, then corresponding SAR test is not required.

SAR Test Configuration	Exemption limit
1-g SAR	Result of Eq.1 ≤ 3.0
10-g extremity SAR	Result of Eq.1 ≤ 7.5

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.

For the device, the parameters for consideration are as follows:

Frequency (MHz)	*Maximum source-based time averaged conducted output power including tune-up tolerance*	*Minimum separation distance (mm)*	*Result of Eq. 1*	*Limit for 1-g SAR*	*Limit for 10-g extremity SAR*	*Verdict*
2402 / 2480	*1mW*	*5*	*0.31*	*3.0*	*7.5*	*Exempt from SAR*

Conclusion: Therefore the device complies with FCC's RF radiation exposure limits for general population without SAR evaluation.

Prepared By
Laurent CHAPUS (Agent for this device)
SMEE
Rue de Taille
ZI des Blanchisseries
38500 Voiron - France
laurent.chapus@smee.fr
FCC Registration Number: 0020356952 (FRN)

Applicant for this device:
In&Motion
178 route de Cran Gevrier
74650 Chavanod
Vincent Bannelier
Embedded system engineer
vincent.bannelier@inemotion.com
+33 4 50 60 07 99
FRN: 0028466415