

Manufacturer: AINA Wireless Finland Oy
Address: Joensuunkatu 7 G, FI-24100 Salo, Finland
Model: Multifunction button
Type: Aina MB
FCC ID: -

Test laboratory: SGS Fimko Oy
Address: Karakaarenkuja 4, FI-02610 Espoo, Finland
Accreditation body: FINAS
Designation number: FI0002

REFERENCE DOCUMENTS

KDB 447498 D04 Interim General RF Exposure Guidance v01
47 CFR §1.1307(b)(3) Determination of exemption
47 CFR §2.1093 Radiofrequency radiation exposure evaluation: portable devices
Test Report HELEM2304000201-1 (v1.0)

EUT SPECIFICATION

The equipment under test is a push-to-talk button with Bluetooth Low Energy connection.

Operating frequency range:	2402 – 2480 MHz
Channels:	40
Channel width:	2 MHz
Channel separation:	2 MHz
Spectrum access technique:	DSSS
Modulation:	GFSK
Maximum peak conducted output power	4.9 dBm
Maximum Duty cycle of the BLE protocol	86.6%
Antenna model:	-
Antenna gain:	0.5 dBi
Maximum effective radiated power (calculated):	3.25 dBm (2.1 mW)
Device category:	Portable
Environment:	General Population/Uncontrolled
Separation distance:	not known, 0.5 cm assumed for assessment

ASSESSMENT**Exemption limits:**

A single RF source is exempt if the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold P_{th} (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). P_{th} is given by:

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$

Where

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$$

d = the separation distance (cm);

Assessment results:

f [GHz]	d [cm]	$ERP_{20 \text{ cm}}$ [mW]	x	P_{th} [mW]
2.402	0.5	3060	1.898	2.788
2.440	0.5	3060	1.901	2.753
2.480	0.5	3060	1.905	2.717

The maximum time averaged effective radiated power of the EUT (2.1 mW) is below the exemption threshold. The maximum time averaged conducted power of the EUT (2.68 mW) is below the exemption threshold.

CONCLUSION

The assessment shows that the device qualifies for SAR-based exemption in portable use at separation distance of 0.5 cm.

Date: July 24, 2024



Henri Mäki
Testing Engineer