Aktiia SA

RF Exposure Exemption Report

SCOPE OF WORK
RF Exposure Exemption Evaluation – Aktiia Blood Pressure Monitor Bracelet, Model: Bracelet G1

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RF Exposure Exemption Evaluation Report

(FULL COMPLIANCE)

Report Number: 104933346MPK-017
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Report Issue Date: March 31, 2022
Revision Date: November 30, 2022

Product Designation: Blood Pressure Monitor Bracelet
Model(s) Tested: Bracelet G1

FCC ID: 2AUVE-AKTIIAG1

Standards: 47CFR 1.1307(b)(3)
RSS-102 Issue 5

for

Aktiia SA

Tested by:	**Client:**
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Revision 1.0

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Revision 2.0

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1 Introduction and Conclusion

The evaluation indicated in section 2.0 were performed on the product constructed as described in section 4.0. The remaining sections are the verbatim text from the actual evaluation during the investigation. These sections include the evaluation name, the specified Method, and Results. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product evaluated **complies** with the requirements of the standard(s) indicated. The results obtained in this report pertain only to the item(s) evaluated. Intertek does not make any claims of compliance for samples or variants which were not evaluated.

2 Evaluation Summary

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3 Client Information

This EUT was evaluated at the request of:

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4 Description of Equipment Under Test and Variant Models

Description of Equipment Under Test (provided by client)

The equipment under test (EUT), Blood Pressure Monitor Bracelet, Model: Bracelet G1.

Aktiia Bracelet G1 is a non-invasive blood pressure (BP) monitor wearable bracelet intended to measure optical photoplethysmography (PPG) signals on the user's wrist and to calculate blood pressure values using a Pulse Wave Analysis (PWA) technique, following a calibration process using an oscillometric blood pressure monitor.

Aktiia Bracelet is the smart way to track user's blood pressure 24/7. Bluetooth connectivity allows the bracelet to be connected to the Aktiia mobile app.

Variant Models:

The following variant models have been identified by the manufacturer as being electrically identical models, depopulated models, or with reasonable similarity to the model(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

- None

5 RF Exposure Exemption Evaluation (FCC)

5.1 Determination of exemption [FCC 1.1307(b)(3)]

(i) For single RF sources (i.e., any single fixed RF source, mobile device, or portable device, as defined in paragraph (b)(2) of this section): A single RF source is exempt if:

(A) The available maximum time-averaged power is no more than 1 mW, regardless of separation distance. This exemption may not be used in conjunction with other exemption criteria other than those in paragraph (b)(3)(ii)(A) of this section. Medical implant devices may only use this exemption and that in paragraph (b)(3)(ii)(A);

(B) Or 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;

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

Where

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

and

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

d = the separation distance (cm);

(C) Or using Table 1 and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in Table 1 to apply, R must be at least λ/2π, where λ is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of λ/4 or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

Table 1 to § 1.1307(b)(3)(i)(C) - Single RF Sources Subject to Routine Environmental Evaluation	
RF Source frequency (MHz)	Threshold ERP (watts)
0.3 – 1.34	1,920 R^2
1.34 – 30	3,450 R^2/f^2
30 – 300	3.83 R^2
300 – 1,500	0.0128 R^2f
1,500 – 100,000	19.2 R^2

(ii) For multiple RF sources: Multiple RF sources are exempt if:

(A) The available maximum time-averaged power of each source is no more than 1 mW and there is a separation distance of two centimeters between any portion of a radiating structure operating and the nearest portion of any other radiating structure in the same device, except if the sum of multiple sources is less than 1 mW during the time-averaging period, in which case they may be treated as a single source (separation is not required). This exemption may not be used in conjunction with other exemption criteria other than those is paragraph (b)(3)(i)(A) of this section. Medical implant devices may only use this exemption and that in paragraph (b)(3)(i)(A).

(B) In the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation.

$$\sum_{i=1}^{a} \frac{P_i}{P_{th,i}} + \sum_{j=1}^{b} \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^{c} \frac{Evaluated_k}{Exposure\ Limit_k} \leq 1$$

Where:

a = number of fixed, mobile, or portable RF sources claiming exemption using paragraph (b)(3)(i)(B) of this section for Pth, including existing exempt transmitters and those being added.

b = number of fixed, mobile, or portable RF sources claiming exemption using paragraph (b)(3)(i)(C) of this section for Threshold ERP, including existing exempt transmitters and those being added.

c = number of existing fixed, mobile, or portable RF sources with known evaluation for the specified minimum distance including existing evaluated transmitters.

P_i = the available maximum time-averaged power or the ERP, whichever is greater, for fixed, mobile, or portable RF source i at a distance between 0.5 cm and 40 cm (inclusive).

$P_{th,i}$ = the exemption threshold power (Pth) according to paragraph (b)(3)(i)(B) of this section for fixed, mobile, or portable RF source i.

ERP_j = the ERP of fixed, mobile, or portable RF source j.

$ERP_{th,j}$ = exemption threshold ERP for fixed, mobile, or portable RF source j, at a distance of at least $\lambda/2\pi$ according to the applicable formula of paragraph (b)(3)(i)(C) of this section.

$Evaluated_k$ = the maximum reported SAR or MPE of fixed, mobile, or portable RF source k either in the device or at the transmitter site from an existing evaluation at the location of exposure.

$Exposure\ Limit_k$ = either the general population/uncontrolled maximum permissible exposure (MPE) or specific absorption rate (SAR) limit for each fixed, mobile, or portable RF source k, as applicable from § 1.1310 of this chapter.

5.2 Exemption Evaluation

Frequency (MHz)	Peak RF Power (dBm)	Peak RF Power (mW)	Antenna Gain (dBi)	Note
2402-2480	-0.98	0.798	+1	Conducted power measurements were taken from Report# 104933346MPK-014

[1] Antenna gain was provided by Aktiia SA. Intertek takes no responsibility for the accuracy of the antenna gain.
[2] Antenna gains below 0 are considered as 0dBi.

5.3 Evaluation Results

The sample evaluated was found to Comply.

The Maximum conducted power is less than 1 mW.

According to FCC 1.1307(b)(3)(i)(A) the device is exempt in fixed, mobile, or portable exposure conditions.

6 RF Exposure Exemption Evaluation (ISED)

6.1 Determination of exemption [RSS-102 Section 2.5.1]

According to RSS-102 Section 2.5.1, at frequency 2450 MHz and separation distance of ≤ 5 mm SAR Exemption limit is 4 mW (see table below).

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of ≤ 5 mm	At separation distance of 10 mm	At separation distance of 15 mm	At separation distance of 20 mm	At separation distance of 25 mm
≤ 300	71 mW	101 mW	132 mW	162 mW	192 mW
450	52 mW	70 mW	88 mW	106 mW	123 mW
835	17 mW	30 mW	42 mW	55 mW	67 mW
1900	7 mW	10 mW	18 mW	34 mW	60 mW
2450	4 mW	7 mW	15 mW	30 mW	52 mW
3500	2 mW	6 mW	16 mW	32 mW	55 mW
5800	1 mW	6 mW	15 mW	27 mW	41 mW

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of 30 mm	At separation distance of 35 mm	At separation distance of 40 mm	At separation distance of 45 mm	At separation distance of ≥ 50 mm
≤ 300	223 mW	254 mW	284 mW	315 mW	345 mW
450	141 mW	159 mW	177 mW	195 mW	213 mW
835	80 mW	92 mW	105 mW	117 mW	130 mW
1900	99 mW	153 mW	225 mW	316 mW	431 mW
2450	83 mW	123 mW	173 mW	235 mW	309 mW
3500	86 mW	124 mW	170 mW	225 mW	290 mW
5800	56 mW	71 mW	85 mW	97 mW	106 mW

6.2 Exemption Evaluation

Frequency (MHz)	Peak RF Power (dBm)	Antenna Gain[1] (dBi)	EIRP (dBm)	EIRP (mW)	Note
2402-2480	-0.98	+1	0.02	1.005	Conducted power measurements were taken from Report# 104933346MPK-014

[1] Antenna gain was provided by Aktiia SA. Intertek takes no responsibility for the accuracy of the antenna gain.
[2] Antenna gains below 0 are considered as 0dBi.

The maximum EIRP of -0.98 dBm (1.005mW) is less than 4 mW.

According to RSS-102 Section 2.5.1, the device is exempt in fixed, mobile, or portable device exposure conditions

6.3 Evaluation Results

The sample evaluated was found to Comply. The maximum conducted power is less than 4 mW.

7 Revision History

Revision Level	Date	Project Number	Prepared By	Reviewed By	Notes
1.0	March 31, 2022	G104933346	KR	KV	Original Issue
2.0	November 30, 2022	G104933346	AK	AS	Updated antenna gain information from "-1.5dBi" to "+1dBi" as provided by the manufacturer.