SAR Exemption Evaluation

Applicant	Honor Device Co., Ltd.
FCC ID	2AYGCFLA-B19
Product	Smart Band
Model	FLA-B19
Report No.	R2211A1038-S1
Issue Date	November 30 , 2022

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1 Test Laboratory

1.1 Notes of the Test Report

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1.2 Test facility

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform measurements.

1.3 Testing Location

Company:	TA Technology (Shanghai) Co., Ltd.
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1.4 Laboratory Environment

Temperature	Min. = 18°C, Max. = 25 °C
Relative humidity	Min. = 30%, Max. = 70%
Ground system resistance	< 0.5 Ω
Ambient noise is checked and found very low and in compliance with requirement of standards. Reflection of surrounding objects is minimized and in compliance with requirement of standards.	

2 Description of Equipment under Test

Client Information

Applicant	Honor Device Co., Ltd.
Applicant address	Shum Yip Sky Park, No. 8089, Hongli West Road, Shenzhen, China
Manufacturer	Honor Device Co., Ltd.
Manufacturer address	Shum Yip Sky Park, No. 8089, Hongli West Road, Shenzhen, China

General Technologies

Application Purpose	Original Grant
EUT Stage	Identical Prototype
Model	FLA-B19
SN	ARWBCP2A25405
Hardware Version	LTAM230
Software Version	17.0.0.10
Antenna Type	Internal Antenna
Date of Testing	November 15, 2022~November 22, 2022
Date of Sample Received	November 14, 2022
Note: The EUT is sent from the applicant to TA and the information of the EUT is declared by the applicant.	

Wireless Technology and Frequency Range

Wireless Technology		Modulation	Operating mode	Tx (MHz)
Bluetooth LE	2.4G	Version 5.0 LE		2402 ~2480

3 Test Specification, Methods and Procedures

Reference Standards

KDB 447498 D04 Interim General RF Exposure Guidance v01

4 Three Options to Determine Exemption

Per KDB 447498 D04

Per § 1.1307(b)(3)(i),details three options to determine exemption from routine evaluation.

• 1.1307(b)(3)(i)(A): Available maximum time-averaged power is no more than 1 mW;
• 1.1307(b)(3)(i)(B): Device operates between 300 MHz and 6 GHz and the maximum time-averaged power or effective radiated power (ERP), whichever is greater, <= Pth;
• 1.1307(b)(3)(i)(C): ERP is below a threshold calculated based on the distance.
R between the person and the antenna / radiating structure, where R > λ / 2 π;

(1) Option A

Applies to all frequencies and all distances.
•Could be considered SAR-based and MPE-based exclusions
• P < 1mW
• Limitation – when there are simultaneously operating transmitters this exclusion only applies when ALL simultaneously operating transmitters meet this exemption
• Refer 1.1307(b)(3)(i)(A) and 1.1307(b)(3)(ii)(A)

(2) Option B

Frequency range 300 MHz - 6 GHz, 5mm ≤ distance ≤ 40cm.
• SAR-based exclusion
• The maximum time-averaged power or effective radiated power (ERP), whichever is greater, ≤ Pth, Pth is calculated based on separation distance d cm from transmitter to person for the device operating at f GHz

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

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

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

$ERP_{dBm} = EIRP_{dBm} – 2.15$ dB (log units)
ERP = EIRP / 1.64 (linear units)

• Pth is for head / body exposure
• Pth can be scaled by x 2.5 when addressing extremity exposure
• FCC working on options to address the 5mm minimum distance to allow use of the formula for e.g. tablets, extremity use where the separation distance to the device is 0mm.

(3) Option C

Frequencies above 300 kHz but at distances R > λ / 2 π, R is the antenna-person separation distance

- Primarily MPE-based exemptions
- As this exemption requires R > λ / 2 π the lowest frequency versus distance at which they can be used are:
- 20cm @ > 239 MHz;
- 50cm @ > 96 MHz; 1m @ > 48 MHz, among them
- λ = wavelength of transmitted signal .It can calculate from the frequency of operation using v = f λ
- v = speed of light = 3 x 10^8 m/s
- f = frequency (Hz)

- Primarily an MPE-based exclusion but also SAR-based where λ / 2 π is < 20cm
- The rules do allow you to use the maximum conducted power and not the ERP when antenna is shorter than λ / 4

Single RF Sources Subject to Routine Environmental Evaluation under MPE-Based Exemptions, R≥λ / 2

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	19.2R^2.
Note: Transmitter Frequency is in MHz, Threshold ERP is in watts, R is in meters, f is in MHz.	

5 Exemption Procedure

6.1 MAX Power for DUT

Bluetooth LE	Tune-up (dBm)			Gain (dB)
	Channel/Frequency(MHz)			
	Ch 0/2402 MHz	Ch 19/2440 MHz	Ch 39/2480 MHz	
GFSK	4.0	4.0	4.0	1.2

6.2 Exemption Evaluation

Per KDB 447498 D04, when the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

Band	Frequency (MHz)	R (m)	Power (W)	EIRP (W)	ERP (W)	Option B P_{th} (W)	Evaluation
Bluetooth LE	2402	0.005	0.0025	0.0033	0.0020	0.003	No
Note: EIRP = Max power (including tune-up) + Gain = 4.0 + 1.2 = 5.2 dBm ERP = EIRP - 2.15							

******END OF REPORT ******

ANNEX A: The EUT Appearance

The EUT Appearance are submitted separately.