

RF Exposure Report

Test Report Number HID-24050731-LC-FCC-IC-MPE

FCC ID JQ6-BLUFAC01
IC ID 2236B-BLUFAC01

Applicant HID Global Corporation

Applicant Address 611 Center Ridge Drive, Austin, TX, 78753, USA

Product Name BLE and WiFi Gateway

Model Number BluFi-AC01

Date of Receipt 06/21/2024

Date of Test 06/21/2024- 07/10/2024

Report Issue Date 07/17/2024

Test Standards 47 CFR §1.1307(b), 47 CFR §1.1310

RSS-102 Issue 6 Dec 2023

Test Result **PASS**



Issued by:

Vista Compliance Laboratories

1261 Puerta Del Sol, San Clemente, CA 92673 USA

www.vista-compliance.com

Lining

Lining Li (Test Engineer)

David Zhang

David Zhang (Technical Manager)

This report is for the exclusive use of the applicant. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. Note that the results contained in this report pertain only to the test samples identified herein, and the results relate only to the items tested and the results that were obtained in the period between the date of initial receipt of samples and the date of issue of the report. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested and the results thereof based upon the information provided to us. The applicant has 60 days from date of issuance of this report to notify us of any material error or omission. Failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification. The report must not be used by the client to claim product certification, approval, or endorsement by any government agencies. This report is not to be reproduced by any means except in full and in any case not without the written approval of Vista Laboratories.

REVISION HISTORY

Report Number	Version	Description	Issued Date
HID-24050731-LC-FCC-IC-MPE	01	Initial report	07/17/2024

TABLE OF CONTENTS

1	GENERAL INFORMATION.....	4
1.1	Applicant	4
1.2	Product information	4
1.3	Test standard and method.....	5
2	TEST SITE INFORMATION.....	5
3	FCC RF EXPOSURE EVALUATION.....	6
3.1	Limits for Maximum Permissible Exposure (MPE)	6
3.2	MPE Calculation Formula	6
3.3	Classification	6
3.4	Antenna Gain	6
3.5	FCC RF Exposure Evaluation Results	7
4	ISED RF EXPOSURE EVALUATION	8
4.1	Limits for Maximum Permissible Exposure (MPE)	8
4.2	MPE Calculation Formula	9
4.3	Classification	9
4.4	Antenna Gain	9
4.5	ISED RF Exposure Evaluation Results	10

1 General Information

1.1 Applicant

Applicant	HID Global Corporation
Applicant Address	611 Center Ridge Drive, Austin, TX, 78753, USA
Manufacturer	HID Global Corporation
Manufacturer Address	611 Center Ridge Drive, Austin, TX, 78753, USA

1.2 Product information

Product Name	BLE and WiFi Gateway
Product Description	BluFi-ACUS BLE and WiFi Gateway
Model Number	BluFi-AC01
Family Models	N/A
Serial Number	HID-21050342-LC-E004 (BLE RF conducted test sample) HID-21050342-LC-E005 (BLE RF Radiated test sample)
Frequency Band	BLE: 2402-2480MHz 2.4G: 2412-2462MHz 5G: U-NII-1: 5150-5250MHz U-NII-2A: 5250-5350MHz U-NII-2C: 5470-5725MHz U-NII-3: 5725-5850MHz
Type of modulation	BT_LE: GFSK 2.4G 11b/g/n: CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 5G 11a/n/ac: 256QAM, 64QAM, 16QAM, QPSK, BPSK
Equipment Class	DTS
Antenna Information	PCB trace antenna, Antenna Gain: 2.4GHz, 3 dBi 5GHz, 2.5dBi
Clock Frequencies	N/A
Input Power	120VAC, 60Hz
Power Adapter Manufacturer/Model	N/A
Power Adapter SN	N/A
Hardware version	N/A
Software version	N/A
Additional Info	Test sample is modified with external SMA connector for direct RF conducted measurement.

1.3 Test standard and method

Test standard	47 CFR §1.1307(b), 47 CFR §1.1310 RSS-102 Issue 6 Dec 2023
Test method	47 CFR §1.1307(b), 47 CFR §1.1310 RSS-102 Issue 6 Dec 2023

2 Test Site Information

Lab performing tests	Vista Laboratories, Inc.
Lab Address	1261 Puerta Del Sol, San Clemente, CA 92673 USA
Phone Number	+1 (949) 393-1123
Website	www.vista-compliance.com

3 FCC RF Exposure Evaluation

3.1 Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (minutes)
Limits For General Population / Uncontrolled Exposure				
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f ²)*	30
30-300	27.5	0.073	0.2	30
300-1500	f/1500	30
1500-100,000	1.0	30

f = Frequency in MHz; *Plane-wave equivalent power density

3.2 MPE Calculation Formula

Equation: $S = PG / 4\pi R^2$ or $R = \sqrt{PG / 4\pi S}$

Where, S = Power Density

P = Power Input to Antenna

G = Antenna Gain

R = distance to the center of radiated antenna in cm

3.3 Classification

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. So, this device is classified as Mobile Device.

3.4 Antenna Gain

Please see section 1.2 product information for antenna gain details.

3.5 FCC RF Exposure Evaluation Results

Band (MHz)	Max Output Power (dBm)	Antenna Gain (dBi)	Separation distance (cm)	Power Density (mW/ cm ²)	MPE Limit (mW/ cm ²)
BT LE	3.28	3	20	0.0008	1
WLAN 2.4G	16.83	3	20	0.0191	1
WLAN 5G	16.702	2.5	20	0.0166	1

The above results show that the device complies with the FCC MPE requirement.

4 ISED RF Exposure Evaluation

4.1 Limits for Maximum Permissible Exposure (MPE)

Per RSS-102 issue 5, section 2.5.2 as reproduced below:

2.5.2 Exemption from Routine Evaluation Limits – RF Exposure Evaluation

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

- Below 20 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);
- At or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $22.48/f^{0.5}W$ (adjusted for tune-up tolerance), where f is in MHz;
- At or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
- At or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2} f^{0.6834} W$ (adjusted for tune-up tolerance), where f is in MHz;
- At or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the e.i.r.p. was derived.

Frequency Range (MHz)	Electric Field Strength (V/m rms)	Magnetic Field Strength (A/m rms)	Power Density (W/m ²)	Reference Period (minutes)
Limits For General Population / Uncontrolled Exposure				
0.003-10 ²¹	83	90	-	Instantaneous*
0.1-10	-	0.73/ f	-	6**
1.1-10	87/ $f^{0.5}$	-	-	6**
10-20	27.46	0.0728	2	6
20-48	58.07/ $f^{0.25}$	0.1540/ $f^{0.25}$	8.944/ $f^{0.5}$	6
48-300	22.06	0.05852	1.291	6
300-6000	3.142 $f^{0.3417}$	0.008335 $f^{0.3417}$	0.02619 $f^{0.6834}$	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	616000/ $f^{1.2}$
150000-300000	0.158 $f^{0.5}$	4.21 $\times 10^{-4} f^{0.5}$	6.67 $\times 10^{-5} f$	616000/ $f^{1.2}$
Note: f is frequency in MHz. *Based on nerve stimulation (NS). ** Based on specific absorption rate (SAR).				

4.2 MPE Calculation Formula

$$P_d = (P_{out} * G) / (4 * \pi * r^2)$$

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

Exemption limit for Routine Evaluation:

$1.31 \times 10^{-2} \text{ f0.6834 W}$

4.3 Classification

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. So, this device is classified as Mobile Device.

4.4 Antenna Gain

Please see section 1.2 product information for antenna gain details.

4.5 ISED RF Exposure Exemption Evaluation Results

Band (MHz)	Max Output Power (dBm)	Antenna Gain (dBi)	Higher of Max E.I.R.P and Conducted Power (W)	Exemption limit (W)
BT LE	3.28	3	0.004	2.68
WLAN 2.4G	16.83	3	0.096	2.68
WLAN 5G	16.702	2.5	0.083	4.53

The above results show that the device is exempted from ISED RF exposure requirement.

---END---