



# Radio Frequency Exposure Evaluation Report

**FOR:**  
Ibeat, Inc.

**Brand:**  
100Plus

**Model Name:**  
G1

**Product Description:**  
Relays data from certain Bluetooth devices to our physician portal over LTE.

**FCC ID:** 2AP3M-G1

**Per:**  
CFR Part1 (1.1307 & 1.1310), Part 2 (2.1091),  
FCC KDB 447498 D01 General RF Exposure Guidance v06

**Report number:** EMC\_IBEAT\_006\_20001\_FCC\_MPE

**DATE:** 9/14/2020



**CETECOM Inc.**

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## 1 Assessment

This RF Exposure evaluation report, provides evidence for compliance of the below identified device, with the RF Exposure limits for mobile devices, as defined in FCC CFR Part1 (1.1307 &1.1310), Part 2 (2.1091), under worst case conditions (measured or rated RF output power, antenna gain, distance towards human body. Multiple transmitter information as presented by the applicant).

In addition, maximum antenna gain, or minimum distance towards the human body calculated respectively where relevant.

The device meets the limits as stipulated by the above given FCC rule parts based on available specifications, for worst-case conditions at 20cm distance to the body.

Company	Description	Model Name
Ibeat, Inc.	Relays data from certain Bluetooth devices to our physician portal over LTE.	G1

### Report reviewed by: TCB Evaluator

9/14/2020	Compliance	Cindy Li (Lab Manager)	
Date	Section	Name	Signature

### Responsible for the Report:

9/14/2020	Compliance	Issa Ghanma (EMC Engineer)	
Date	Section	Name	Signature

## 2 Administrative Data

### 2.1 Identification of the Testing Laboratory Issuing the Test Report

<b>Company Name:</b>	CETECOM Inc.
<b>Department:</b>	Compliance
<b>Street Address:</b>	411 Dixon Landing Road
<b>City/Zip Code</b>	Milpitas, CA 95035
<b>Country</b>	USA
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<b>Lab Manager:</b>	Li, Cindy
<b>Responsible Project Leader:</b>	Palacios, Cathy

### 2.2 Identification of the Client / Manufacturer

<b>Applicant's Name:</b>	Ibeat, Inc.
<b>Street Address:</b>	430 Main St
<b>City/Zip Code</b>	San Francisco, CA 94105
<b>Country</b>	USA

### 2.3 Identification of the Manufacturer

<b>Manufacturer's Name:</b>	Same as client.
<b>Manufacturers Address:</b>	-----
<b>City/Zip Code</b>	-----
<b>Country</b>	-----

## 3 Equipment under Assessment

<b>Model name:</b>	G1
<b>FCC ID:</b>	2AP3M-G1
<b>Power Supply/ Rated Operating Voltage Range:</b>	Low 4 V DC, Nominal 5 V DC, High 6 V DC
<b>H.W Version:</b>	1.8.0
<b>S.W Version:</b>	0.7.25
<b>Integrated Module Info:</b>	<ul style="list-style-type: none"> <li>❖ <b>Cellular:</b> <ul style="list-style-type: none"> <li>▪ Model number : BG96</li> <li>▪ FCC ID : XMR201707BG96</li> </ul> </li> <li>❖ <b>WLAN (Wi-Fi), BT, BLE:</b> <ul style="list-style-type: none"> <li>▪ Module FCC ID : QQQBGM13P</li> <li>▪ Module name / number : BGM13P</li> </ul> </li> </ul>
<b>Regulatory Band:</b>	<ul style="list-style-type: none"> <li>❖ <b>Cellular :</b> <ul style="list-style-type: none"> <li>• LTE Band 2 : 1850 ~ 1910 MHz</li> <li>• LTE Band 4 : 1710 ~ 1755 MHz</li> <li>• LTE Band 12 : 699 ~ 716 MHz</li> <li>• LTE Band 13 : 777 ~ 787 MHz</li> </ul> </li> <li>❖ <b>Bluetooth LE:</b> <ul style="list-style-type: none"> <li>• Center to center: 2402 MHz (ch 0) – 2480 MHz (ch 39), 40 channels.</li> </ul> </li> </ul>
<b>Antenna Type and Peak gain [dBi]:</b>	<ul style="list-style-type: none"> <li>❖ <b>Cellular:</b> <ul style="list-style-type: none"> <li>• 698~803 : -0.21</li> <li>• 824~894 : 0.77</li> <li>• 880~960 : 0.61</li> <li>• 1710~1880 : 3.05</li> <li>• 1850~1990 : 2.92</li> <li>• 1920~2170 : 3.17</li> <li>• 2500~2690 : 3.72</li> </ul> </li> <li>❖ <b>Bluetooth LE:</b> <ul style="list-style-type: none"> <li>• 2.4 – 2.48 GHz : 1.0 dBi <b>See Note 1</b></li> </ul> </li> </ul>
<b>Maximum Conducted Output Power based on module certification reports [Watt]:</b>	<ul style="list-style-type: none"> <li>❖ <b>Cellular:</b> <ul style="list-style-type: none"> <li>• LTE Band 2 : 0.247</li> <li>• LTE Band 4 : 0.174</li> <li>• LTE Band 12 : 0.219</li> <li>• LTE Band 13 : 0.240</li> </ul> </li> <li>❖ <b>Bluetooth LE:</b> <ul style="list-style-type: none"> <li>• BLE : 0.091</li> </ul> </li> </ul>
<b>Output power based on Product “Operational Description”</b>	<ul style="list-style-type: none"> <li>❖ The LTE maximum conducted power is + 23 dBm ± 2 dB</li> <li>❖ The BTLE maximum transmit power is + 10 dBm ± 1.9 dB</li> </ul>
<b>Sample Revision:</b>	<input type="checkbox"/> Prototype Unit; <input type="checkbox"/> Production Unit; <input checked="" type="checkbox"/> Pre-Production

Note 1: 2 dBi used to determine the EIRP; according to ANSI C63.10.

## RF Exposure Limits and FCC and IC Basic Rules

**For the specific described radio apparatus** the following basic limits and rules apply for FCC.

### 4.1 Power Density Limits acc. to FCC 1.1310€:

FCC

Frequency Range (MHz)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
300 – 1500	f (MHz) /1500	30
1500 – 100.000	1.0	30

### 4.2 Routine Environmental Evaluation Categorical Exclusion Limits acc. to FCC 2.1091(c):

FCC

Operating frequency < 1.5GHz: excluded if ERP < 1.5W / 31.8 dBm (EIRP: 33.9);

Operating frequency > 1.5GHz: excluded if ERP < 3.0W / 34.8 dBm (EIRP: 36.9);

### 4.3 RF Exposure Estimation (MPE Estimation)

Having available the source, based average output power, and peak antenna gain, or the ERP/EIRP of the specified device, and for a known minimum distance of its radiating structures from the body of persons. According to its use cases (at least 20cm) the power density at that distance can be estimated by the following formula for plane-wave equivalent conditions (far-field conditions), when ground reflection is neglected.

$$S = \frac{PG}{4\pi R^2}$$

where: S = power density (mW/cm<sup>2</sup> or W/m<sup>2</sup>)

P = power input to the antenna (mW or W)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna (cm or m)

## Evaluation

### 4.4 Analysis to Exclude Routine RF Exposure evaluation for Stand Alone Operation

Band	Lowest frequency [MHz]	Max.Power [W]	EIRP [W]	Max.Power [dBm]	EIRP [dBm]	FCC EIRP limit [dBm]	Verdict
LTE 2	1855.0	0.316	0.619	25.0	27.92	36.90	Complies
LTE 4	1711.50	0.316	0.638	25.0	28.05	36.90	Complies
LTE 12	700.50	0.316	0.301	25.0	24.79	33.90	Complies
LTE 13	779.50	0.316	0.301	25.0	24.79	33.90	Complies
BLE	2402.0	0.015	0.025	11.9	13.9	36.90	Complies

The single radios are exempt from routine environmental evaluation.

## Analysis of RF Exposure for simultaneous transmission

- Calculation made for 20cm.
- Evaluations are based on EIRP measured or calculated from known gain and conducted output power.
- Cellular can transmit simultaneously with Bluetooth LE.

Band	Lowest frequency [MHz]	Max.Power [W]	EIRP [W]	Actual [W/m2]	FCC [W/m2]	How much of limit is used up [%]
LTE 2	1850	0.316	0.619	1.232	10.00	12.32
LTE 4	1710	0.316	0.638	1.27	10.00	12.70
<b>LTE 12</b>	<b>699</b>	0.316	0.301	<b>0.599</b>	<b>4.67</b>	<b>12.84</b>
LTE 13	777	0.316	0.301	0.599	5.20	11.53
<b>BLE</b>	<b>2402</b>	0.015	0.025	<b>0.029</b>	<b>10.00</b>	<b>0.29</b>

## Conclusion:

- **The worst-case simultaneous transmission is LTE Band 12 simultaneous with Bluetooth LE, which is using 13.12% of a limit of 100 %. The equipment is passing RF exposure requirements for 20cm distance.**



## Revision History

Date	Report Name	Changes to report	Report prepared by
9/14/2020	EMC_IBEAT_006_20001_FCC_MPE	Initial Version	Issa Ghanma

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