

# Radio Frequency Exposure Report

On Behalf of

## BUNCH UP TECHNOLOGY CORP LIMITED

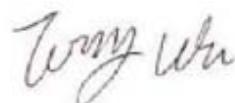
Room 1205, 12/F., No.345 Nathan Road, Kowloon Hong Kong

Product Name:	<b>Trolley Bluetooth speaker</b>
Model/Type No.:	<b>IK802TF, BASS CRUZER, BASS CRUZER ST, PA-8 DC07L, NYNE J50</b>
FCC ID:	<b>2AKZW-IK802TF</b>
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Report Number:	<b>HCT17AR002E-2</b>
Tested Date:	<b>January 9~17, 2017</b>
Issued Date:	<b>January 17, 2017</b>
Tested By:	<b>Jerry Zhao</b> 

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## 1 - GENERAL INFORMATION

### 1.1 Product Description for Equipment Under Test (EUT)

Applicant:	<b>BUNCH UP TECHNOLOGY CORP LIMITED</b>
Address of Applicant:	Room 1205, 12/F., No.345 Nathan Road, Kowloon Hong Kong
Manufacturer 1:	<b>BUNCH UP TECHNOLOGY CORP LIMITED</b>
Address of manufacturer:	Room 1205, 12/F., No.345 Nathan Road, Kowloon Hong Kong

General Description of E.U.T

Items	Description
EUT Description:	Trolley Bluetooth speaker
Model No.:	IK802TF
Supplementary model:	BASS CRUZER, BASS CRUZER ST, PA-8 DC07L, NYNE J50
Trade Mark:	NYNE, SDIGITAL, SANKEY
BT Module	3.0
Frequency Band:	2402~2480MHz
Number of Channels:	79
Type of Modulation:	GFSK, Pi/4 DQPSK, 8-DPSK
Antenna Gain	0 dBi
Antenna Type:	PCB Antenna
Rated Voltage:	Adapter 1: JDA0301502000WUS Input: AC100~240V, 50/60Hz, 0.8A Output: DC 15V, 2A Adapter 2: HB40-1502000SPA Input: AC100~240V, 50/60Hz, 0.8A Output: DC 15V, 2A

Remark: \* The test data gathered are from the production sample provided by the manufacturer.

\*Supplementary models have the same circuit, only the appearance different.

\*We test all modes and adapter, but we chose the worst data for the report.

## 1.2 Objective

The objective of the following report is used to demonstrate that EUT operated in a manner that ensures the public is not exposed to radio frequency energy levels in excess of the relative provisions of FCC 47CFR Part 1.1307

## 1.3 General Description of Test

Items	Description
EUT Frequency band	<input checked="" type="checkbox"/> FHSS: 2.400GHz ~ 2.483GHz <input type="checkbox"/> WLAN: 2.400GHz ~ 2.483GHz <input type="checkbox"/> WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz <input type="checkbox"/> WLAN: 5.745GHz ~ 5825GHz <input type="checkbox"/> Others: _____
Device category	<input type="checkbox"/> Portable (<20cm separation) <input checked="" type="checkbox"/> Mobile (>20cm separation) <input type="checkbox"/> Others _____
Exposure classification	<input type="checkbox"/> Occupational/Controlled exposure (S = 5mW/cm <sup>2</sup> ) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm <sup>2</sup> ) <input type="checkbox"/> Others: _____
Antenna diversity	<input checked="" type="checkbox"/> Single antenna <input type="checkbox"/> Multiple antennas: <ul style="list-style-type: none"> <li><input type="checkbox"/> Tx diversity</li> <li><input type="checkbox"/> Rx diversity</li> <li><input type="checkbox"/> Tx/Rx diversity</li> </ul>
Max. output power	2.15dBm (0.0016W)
Antenna gain (Max)	0dBi (Numeric gain:1)
Evaluation applied	<input checked="" type="checkbox"/> MPE Evaluation <input type="checkbox"/> SAR Evaluation
<b>Note:</b> <ol style="list-style-type: none"> <li>1. The maximum output power is 2.15dBm (0.0016W) at 2441MHz (with 1 numeric antenna gain.)</li> <li>2. For mobile or fixed location transmitters, no SAR consideration applied. The minimum separation generally be used is at least 20 cm, even if the calculations indicate that the MPE distance would be lesser.</li> </ol>	

## 1.4 Human Exposure Assessment Results

### Calculation

Given  $E = \frac{\sqrt{30 \times P \times G}}{d}$  &  $S = \frac{E^2}{3770}$

Where  $E$  = Field Strength in Volts / meter

$P$  = Power in Watts

$G$  = Numeric antenna gain

$d$  = Distance in meters

$S$  = Power Density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{3770 d^2}$$

Changing to units of mW and cm, using:

$$P \text{ (mW)} = P \text{ (W)} / 1000 \text{ and}$$

$$d \text{ (cm)} = 100 * d \text{ (m)}$$

Yields

$$S = \frac{30 \times (P/1000) \times G}{3770 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2} \quad \text{Equation 1}$$

Where  $d$  = distance in cm

$P$  = Power in mW

$G$  = Numeric antenna gain

$S$  = Power Density in mW/cm<sup>2</sup>

<b>EUT parameter (data from the separate report)</b>	
Given	Where G: numerical gain of transmitting antenna; TP: Transmitted power in watt; d: distance from the transmitting antenna in meter
$E = \frac{\sqrt{30 \times P \times G}}{d}$ & $S = \frac{E^2}{3770}$	
Max average output power in Watt (TP)	2.15dBm (0.0016W)
Antenna gain (G)	0 dBi (Numeric gain: 1)
Exposure classification	$S = 1 \text{ mW/cm}^2$
Minimum distance in meter (d) (from transmitting structure to the human body)	20cm (0.2m)

Yields

$$S = \frac{30xPxG}{3770d^2}, \quad P=0.0016W, G=1, d=0.2$$

$$S=0.0003\text{mW/cm}^2$$

Or

$$d = \sqrt{\frac{30xPxG}{3770S}}, \quad S=0.0003, P=0.0016W, G=1$$

$$d=0.0424\text{m}$$

Conclusion:

$S=0.0003\text{mW/cm}^2$  is significant lower than the General Population Exposure Power Density Limit  $1\text{mW/cm}^2$  or except the distance when human body proximity to the antenna is less than 4.24cm then will reach the General Population Exposure Power Density Limit

(For mobile or fixed location transmitters, the maximum power density is  $1.0\text{ mW / cm}^2$  even if the calculation indicates that the power density would be larger.)

