

## RF Exposure Report

**Report No.:** SA161031E01

**FCC ID:** 2ABTEIPSTB1200

**Test Model:** IPSTB1200

**Received Date:** Oct. 31, 2016

**Test Date:** Nov. 18, 2016

**Issued Date:** Nov. 24, 2016

**Applicant:** Verizon Online LLC

**Address:** 1300 I Street NW, Room 400W, Washington, District of Columbia, 20005, United State

**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
Hsin Chu Laboratory

**Lab Address:** E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.

This report is for your exclusive use. 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. 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 by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A 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.

## Table of Contents

<b>Release Control Record .....</b>	<b>3</b>
<b>1      Certificate of Conformity.....</b>	<b>4</b>
<b>2      RF Exposure.....</b>	<b>5</b>
2.1    Limits For Maximum Permissible Exposure (MPE).....	5
2.2    MPE Calculation Formula .....	5
2.3    Classification .....	5
2.4    Antenna Gain .....	6
2.5    Calculation Result Of Maximum Conducted Power .....	7

### Release Control Record

Issue No.	Description	Date Issued
SA161031E01	Original release.	Nov. 24, 2016

## 1 Certificate of Conformity

**Product:** IPSTB1200 tv box

**Brand:** Verizon

**Test Model:** IPSTB1200

**Sample Status:** ENGINEERING SAMPLE

**Applicant:** Verizon Online LLC

**Test Date:** Nov. 18, 2016

**Standards:** FCC Part 2 (Section 2.1091)

KDB 447498 D01 General RF Exposure Guidance v06

IEEE C95.1-1992

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**Prepared by :**  , **Date:** Nov. 24, 2016

Claire Kuan / Specialist

**Approved by :**  , **Date:** Nov. 24, 2016

May Chen / Manager

## 2 RF Exposure

### 2.1 Limits For Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time (minutes)
Limits For General Population / Uncontrolled Exposure				
300-1500	...	...	F/1500	30
1500-100,000	...	...	1.0	30

F = Frequency in MHz

### 2.2 MPE Calculation Formula

$$Pd = (Pout * G) / (4 * \pi * r^2)$$

where

Pd = power density in mW/cm<sup>2</sup>

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

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

### 2.3 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**.

## 2.4 Antenna Gain

The antennas provided to the EUT, please refer to the following table:

5GHz						
Antenna No	Brand	Antenna Net Gain(dBi)	Frequency range (GHz~GHz)	Antenna Type	Connector type	Cable Length (mm)
Antenna 1 (TX/RX)	WNC	4.1	5.15~5.25	Dipole	i-pex(MHF)	100
		4.84	5.25~5.35			
		5.4	5.47~5.725			
		5	5.725~5.85			
Antenna 2 (TX/RX)	WNC	3.39	5.15~5.25	Dipole	i-pex(MHF)	65
		3.41	5.25~5.35			
		3.75	5.47~5.725			
		3.92	5.725~5.85			
Antenna 3 (RX)	WNC	2.77	5.15~5.25	Dipole	i-pex(MHF)	116
		3.71	5.25~5.35			
		3.94	5.47~5.725			
		3.94	5.725~5.85			
Antenna 4 (RX)	WNC	6.54	5.15~5.25	PIFA	i-pex(MHF)	155.5
		5.49	5.25~5.35			
		4.8	5.47~5.725			
		4.78	5.725~5.85			
Bluetooth						
Antenna No	Brand	Antenna Net Gain(dBi)	Frequency range (GHz~GHz)	Antenna Type	Connector type	
Antenna 1	WNC	3.62	2.4~2.4835	Monopole	NA	

The directional gain as below table:

Frequency	Max Gain (dBi)
5GHz	4.93

Note:

1. Non-TxBF mode & TxBF mode antenna gain refer to KDB 662911 F 2) f) (ii)

$$DirectionalGain = 10 \cdot \log \left[ \sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2 \right] / N_{ANT}$$

where

Each antenna is driven by no more than one spatial stream;

$N_{SS}$  = the number of independent spatial streams of data;

$N_{ANT}$  = the total number of antennas

$g_{j,k} = 10^{G_k/20}$  if the  $k$ th antenna is being fed by spatial stream  $j$ , or zero if it is not;  
 $G_k$  is the gain in dBi of the  $k$ th antenna.

## 2.5 Calculation Result of Maximum Conducted Power

### WLAN

Frequency (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
5180-5240	248.906	4.93	20	0.15409	1
5260-5320	247.19	4.93	20	0.15302	1
5500-5720	248.022	4.93	20	0.15354	1
5745-5825	267.205	4.93	20	0.16541	1

NOTE:

WLAN: Directional gain = 4.93dBi

### BT-EDR

Frequency (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
2400-2480	15.136	3.62	20	0.00693	1

### BT-LE

Frequency (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
2402-2480	14.322	3.62	20	0.00656	1

### Conclusion:

The formula of calculated the MPE is:

CPD1 / LPD1 + CPD2 / LPD2 + .....etc. < 1

CPD = Calculation power density

LPD = Limit of power density

Simultaneously transmission condition.

Technology	
WLAN (5GHz)	Bluetooth

Therefore, the worst-case situation is  $0.16541/1 + 0.00693/1 = 0.17234$  which is less than "1".

This confirmed that the device comply with FCC 1.1310 MPE limit.

--- END ---