

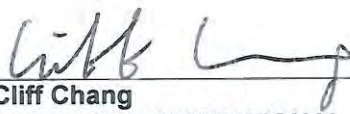


# RF Exposure Evaluation Report

**Equipment** : DBDC ROUTER  
**Brand Name** : Charter  
**Model No.** : RAC2V1K  
**FCC ID** : H8NRAC2V1K  
**Standard** : 47 CFR Part 2.1091  
**Applicant** : Askey Computer Corp.  
10F, NO.119, JIANKANG RD., ZHONGHE DIST., NEW  
TAIPEI CITY 23585, TAIWAN  
**Manufacturer** : Askey Computer Corp.  
10F, NO.119, JIANKANG RD., ZHONGHE DIST., NEW  
TAIPEI CITY 23585, TAIWAN

The product sample received on Feb. 15, 2017 and completely tested on May 11, 2017. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with 47 CFR Part 2.1091, and pass the limit.

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Cliff Chang  
SPORTON INTERNATIONAL INC.





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## REVISION HISTORY

[illegible]

# 1 General Description

## 1.1 EUT General Information

| RF General Information |                                                  |                                                  |                                                                                                 |
|------------------------|--------------------------------------------------|--------------------------------------------------|-------------------------------------------------------------------------------------------------|
| Evaluation Mode        | Frequency Range (MHz)                            | Operating Frequency (MHz)                        | Modulation Type                                                                                 |
| 2.4GHz WLAN            | 2400-2483.5                                      | 2412-2462                                        | 802.11b: DSSS (DBPSK, DQPSK, CCK)<br>802.11g/n: OFDM (BPSK, QPSK, 16QAM, 64QAM)                 |
| 5GHz WLAN              | 5150-5250<br>5250-5350<br>5470-5725<br>5725-5850 | 5180-5240<br>5260-5320<br>5500-5720<br>5745-5825 | 802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM)<br>802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM) |

## 1.2 Table for Class II Change

This product is an extension of original one reported under Sporton project number: FA711935-02

Below is the table for the change of the product with respect to the original one.

| Modifications                                                                                                                                                                       | Performance Checking                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| 1. Revising the Ant. Gain of 2.4GHz to 1dBi.<br>2. Revising the Ant. Gain of 5GHz band 1/band 4 to 1.2dBi.<br>3. Removing Capacitor*3:(1000 pF: C1170 (bottom), C1173, C1176 (Top). | After evaluating, it is verified for 2.4G and 5G B1 / B4 maximum permissible exposure. |

Note: RF Exposure Evaluation of 5GHz Band 2, 3 are based on original test report

## 1.3 Testing Location

| Testing Location                    |        |                                                                                                                               |
|-------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/>            | HWA YA | ADD : No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.<br>TEL : 886-3-327-3456 FAX : 886-3-327-0973   |
| <input checked="" type="checkbox"/> | JHUBEI | ADD : No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C.<br>TEL : 886-3-656-9065 FAX : 886-3-656-9085 |

## 2 Maximum Permissible Exposure

### 2.1 Limit of Maximum Permissible Exposure

(A) Limits for Occupational / Controlled Exposure

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/ cm <sup>2</sup> ) | Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> or S (minutes) |
|-----------------------|-----------------------------------|-----------------------------------|------------------------------------------|------------------------------------------------------------------|
| 0.3-3.0               | 614                               | 1.63                              | (100)*                                   | 6                                                                |
| 3.0-30                | 1842 / f                          | 4.89 / f                          | (900 / f)*                               | 6                                                                |
| 30-300                | 61.4                              | 0.163                             | 1.0                                      | 6                                                                |
| 300-1500              |                                   |                                   | F/300                                    | 6                                                                |
| 1500-100,000          |                                   |                                   | 5                                        | 6                                                                |

(B) Limits for General Population / Uncontrolled Exposure

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/ cm <sup>2</sup> ) | Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> or S (minutes) |
|-----------------------|-----------------------------------|-----------------------------------|------------------------------------------|------------------------------------------------------------------|
| 0.3-1.34              | 614                               | 1.63                              | (100)*                                   | 30                                                               |
| 1.34-30               | 824/f                             | 2.19/f                            | (180/f)*                                 | 30                                                               |
| 30-300                | 27.5                              | 0.073                             | 0.2                                      | 30                                                               |
| 300-1500              |                                   |                                   | F/1500                                   | 30                                                               |
| 1500-100,000          |                                   |                                   | 1.0                                      | 30                                                               |

Note: f = frequency in MHz ; \*Plane-wave equivalent power density

### 2.2 MPE Calculation Method

The MPE was calculated at 25 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \quad \text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

**E** = Electric field (V/m)

**P** = RF output power (W)

**G** = EUT Antenna numeric gain (numeric)

**d** = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$



## 2.3 Calculated Result and Limit

### Exposure Environment: General Population / Uncontrolled Exposure

| Mode     | DG<br>(dBi) | Power<br>(dBm) | EIRP<br>(dBm) | EIRP<br>(W) | Distance<br>(cm) | S<br>(mW/cm <sup>2</sup> ) | S Limit<br>(mW/cm <sup>2</sup> ) | Ratio<br>(S/Limit) |
|----------|-------------|----------------|---------------|-------------|------------------|----------------------------|----------------------------------|--------------------|
| 5.2G;D1D | 7.22        | 25.73          | 32.95         | 1.97242     | 25               | 0.25126                    | 1.00000                          | 0.25126            |
| 5.3G;D1D | 10.84       | 18.84          | 29.68         | 0.92897     | 25               | 0.11828                    | 1.00000                          | 0.11828            |
| 5.6G;D1D | 10.84       | 19.12          | 29.96         | 0.99083     | 25               | 0.12616                    | 1.00000                          | 0.12616            |
| 2.4G;G1D | 1.00        | 29.52          | 30.52         | 1.12720     | 25               | 0.14359                    | 1.00000                          | 0.14359            |
|          |             |                |               |             |                  |                            | Sum Ratio                        | 0.63929            |
|          |             |                |               |             |                  |                            | Ratio Limit                      | 1                  |