SGS-CSTC Standards Technical Services Co., Ltd.

No. 1 Workshop, M-10, Middle section, Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China 518057
Telephone: +86 (0) 755 2601 2053
Fax: +86 (0) 755 2671 0594
Email: ee.shenzhen@sgs.com



# RF Exposure Evaluation Report

| | |
|---|---|
| **Application No.:** | SZEM1212006829RF |
| **Applicant:** | Create New Technology (HK) Limited |
| **Manufacturer:** | Create New Technology (HK) Limited |
| **Product Name:** | Tvpad |
| **Model No.(EUT):** | M233 |
| **Add Model No.:** | M235, M236 |
| **FCC ID:** | RPSGC452768 |
| **Standards:** | 47 CFR Part 1.1307(2011)<br>47 CFR Part 1.1310(2011) |
| **Date of Receipt:** | 2012-12-19 |
| **Date of Test:** | 2012-12-28 to 2013-03-06 |
| **Date of Issue:** | 2013-03-20 |
| **Test Result :** | **PASS*** |

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:


Jack Zhang
EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.
If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.
The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

# 2 Contents

# 3 General Information

## 3.1 Client Information

| | |
|---|---|
| Applicant: | Create New Technology (HK) Limited |
| Address of Applicant: | FLAT/RM 704 7/F BRIGHT WAY TOWER 33 MONG KOK ROAD<br>Hong Kong |
| Manufacturer: | Create New Technology (HK) Limited |
| Address of Manufacturer: | FLAT/RM 704 7/F BRIGHT WAY TOWER 33 MONG KOK ROAD<br>Hong Kong |

## 3.2 General Description of EUT

| | |
|---|---|
| Name: | Tvpad |
| Model No. | M233, M235, M236<br>Only the model M233 was tested, since the electrical circuit design, layout, components used and internal wiring were identical for the above models, with difference being item number and shape. |
| Operation Frequency: | IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz<br>IEEE 802.11n(HT40): 2422MHz to 2452MHz |
| Modulation Type: | IEEE for 802.11b: DSSS(CCK,DQPSK,DBPSK)<br>IEEE for 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK)<br>IEEE for 802.11n(T20 and T40) : OFDM<br>(64QAM, 16QAM, QPSK,BPSK) |
| Number of Channel: | IEEE 802.11b/g, IEEE 802.11n HT20: 11 Channels<br>IEEE 802.11n HT40: 7 Channels |
| Sample Type: | mobile production |
| Antenna Type: | Integral |
| Antenna Gain: | 1.42dBi |

| | | |
|---|---|---|
| Power Supply: | Adapter: | SPPS<br>Power Supply<br>Model: SA/12PA/05FEU050200<br>Input:100-240v~50/60HZ<br>Output:5.0V ⎓ 2A |
| | | KPTEC<br>AC ADAPTER<br>MODEL:K15S050200U<br>INPUT:100-240V~50/60Hz 0.5A<br>OUTPUT:5.0V ⎓ 2.0A |
| | Battery: | Remote control DC 3V 2*1.5V batteries “AAA” |
| Test Voltage: | 120V~60Hz | |
| HDMI Cable: | 140 cm | |
| AV Cable: | 145 cm | |
| DC Cable: | 145 cm | |

## 3.3 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch E&E Lab

No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China 518057

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No tests were sub-contracted.

## 3.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L2929)**
  CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.
- **VCCI**
  The 3m Semi-anechoic chamber, Full-anechoic Chamber and Shielded Room (7.5m x 4.0m x 3.0m) of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2197, G-416, T-1153 and C-2383 respectively.
- **FCC – Registration No.: 556682**
  SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 556682.
- **Industry Canada (IC)**
  The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1.

## 3.5 Deviation from Standards

None.

## 3.6 Abnormalities from Standard Conditions

None.

## 3.7 Other Information Requested by the Customer

None.

# 4 RF Exposure Evaluation

## 4.1 RF Exposure Compliance Requirement

### 4.1.1 Limits

According to FCC Part1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in part1.1307(b)

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

| Frequency range (MHz) | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density ($mW/cm^2$) | Averaging time (minutes) |
|---|---|---|---|---|
| **(A) Limits for Occupational/Controlled Exposures** | | | | |
| 0.3–3.0 | 614 | 1.63 | *(100) | 6 |
| 3.0–30 | 1842/f | 4.89/f | *(900/$f^2$) | 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** | | | | |
| 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

Friis Formula

Friis transmission formula: Pd = (Pout*G)/(4* Pi * R 2)

Where

Pd = power density in mW/cm2

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

Pd id the limit of MPE, 1 mW/cm2 . If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

### 4.1.2 Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

### 4.1.3 EUT RF Exposure Evaluation

Antenna Gain: 1.42dBi
Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1.387 in linear scale.
Output Power Into Antenna & RF Exposure Evaluation Distance:

| Channel | Frequency (MHz) | Max Conducted Peak Output Power (dBm) | Output Power to Antenna (mW) | Power Density at R = 20 cm ($mW/cm^2$) | Limit | Result |
|---|---|---|---|---|---|---|
| Lowest | 2412 | 18.87 | 77.0904 | 0.0213 | 1.0 | PASS |

Note: Refer to report No. SZEM121200682901 for EUT test Max Conducted Peak Output Power value.
The distance r (4th column) calculated from the Fries transmission formula is far greater than 20 cm separation requirement.