# RF Exposure Evaluation Declaration

| | |
|---|---|
| **FCC ID:** | TV7D53G-5ACD2ND |
| **Applicant:** | Mikrotikls SIA |
| **Application Type:** | Certification |
| **Product:** | Chateau LTE6-US |
| **Model No.:** | D53G-5HacD2HnD-TC&EG06-A |
| **Brand Name:** | MikroTik |
| **FCC Classification:** | Digital Transmission System (DTS)<br>Unlicensed National Information Infrastructure (NII)<br>PCS Licensed Transmitter (PCB) |
| **FCC Rule Part(s):** | FCC Part 2.1091 |
| **Test Procedure(s):** | KDB 447498 D01v06 |

**Reviewed By:** Vincent Yu

**Approved By:** Robin Wu

## Revision History

| Report No. | Version | Description | Issue Date | Note |
|---|---|---|---|---|
| 2112RSU086-U4 | Rev. 01 | Initial Report | 02-23-2022 | Valid |
| | | | | |

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# 1. General Information

## 1.1. Applicant

Mikrotikls SIA

Brivibas gatve 214i, Riga, LV-1039 LATVIA

## 1.2. Manufacturer

Mikrotikls SIA

Brivibas gatve 214i, Riga, LV-1039 LATVIA

## 1.3. Testing Facility

| | | | | | |
|---|---|---|---|---|---|
| ☒ | **Test Site – MRT Suzhou Laboratory** | | | | |
| | **Laboratory Location (Suzhou - Wuzhong)**<br>D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China<br>**Laboratory Location (Suzhou - SIP)**<br>4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, China | | | | |
| | **Laboratory Accreditations** | | | | |
| | A2LA: 3628.01 | | CNAS: L10551 | | |
| | FCC: CN1166 | | ISED: CN0001 | | |
| | VCCI: | ☐R-20025 | ☐G-20034 | ☐C-20020 | ☐T-20020 |
| | | ☐R-20141 | ☐G-20134 | ☐C-20103 | ☐T-20104 |
| ☐ | **Test Site – MRT Shenzhen Laboratory** | | | | |
| | **Laboratory Location (Shenzhen)**<br>1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China | | | | |
| | **Laboratory Accreditations** | | | | |
| | A2LA: 3628.02 | | CNAS: L10551 | | |
| | FCC: CN1284 | | ISED: CN0105 | | |
| ☐ | **Test Site – MRT Taiwan Laboratory** | | | | |
| | **Laboratory Location (Taiwan)**<br>No. 38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) | | | | |
| | **Laboratory Accreditations** | | | | |
| | TAF: L3261-190725 | | | | |
| | FCC: 291082, TW3261 | | ISED: TW3261 | | |

### 1.4. Product Information

| | |
|---|---|
| Product Name | Chateau LTE6-US |
| Model No. | D53G-5HacD2HnD-TC&EG06-A |
| Serial No. | F6E80FB4EDA7/137 |
| Wi-Fi Specification | 802.11a/b/g/n/ac |
| LTE Specification | B2/B4/B5/B7/B12/B13/B25/B26/B30/B66 |
| WCDMA Specification | B2/B4/B5 |
| Working Voltage | 12-28VDC (Nominal Voltage: 24VDC) |
| Operating Temp. | 0~70°C |
| Power Supply | AC/DC Adapter |
| Accessories | |
| Adapter | Model No.: SAW30-240-1200U<br>Input Power: 100 - 240V ~ 50/60Hz, 0.8A<br>Output Power: 24V dc 1.2A |
| Remark:<br>1. This device contains a certified WCDMA/LTE module (FCC ID: XMR201807EG06A).<br>2. The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer. | |

# 2. RF Exposure Evaluation

## 2.1. Test Limits

According to FCC 1.1310: 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 1.1307(b)

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

| Frequency Range (MHz) | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density ($mW/cm^2$) | Average Time (Minutes) |
|---|---|---|---|---|
| (A) Limits for Occupational/ Control Exposures | | | | |
| 300-1500 | -- | -- | f/300 | 6 |
| 1500-100,000 | -- | -- | 5 | 6 |
| (B) Limits for General Population/ Uncontrolled Exposures | | | | |
| 300-1500 | -- | -- | f/1500 | 6 |
| 1500-100,000 | -- | -- | 1 | 30 |

f= Frequency in MHz

Calculation Formula: $Pd = (Pout*G)/(4*pi*r^2)$

Where

Pd = power density in $mW/cm^2$

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 is the limit of MPE, $1mW/cm^2$. 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.

### 2.2. Test Result

| | |
|---|---|
| Product | Chateau LTE6-US |
| Test Item | RF Exposure Evaluation |

| Test Mode | Frequency Band (MHz) | Max. Conducted Power (dBm) | Antenna Gain (dBi) | EIRP (dBm) | Power Density at R = 20 cm ($mW/cm^2$) | Limit ($mW/cm^2$) |
|---|---|---|---|---|---|---|
| 802.11b/g/n | 2412 ~ 2462 | 23.34 | 3 | 26.34 | 0.0857 | 1 |
| 802.11a/n/ac | 5180 ~ 5240 | 25.25 | 5.5 | 30.75 | 0.2364 | 1 |
| | 5260 ~ 5320 | 20.75 | 5.5 | 26.25 | 0.0839 | 1 |
| | 5500 ~ 5720 | 20.54 | 5.5 | 26.04 | 0.0799 | 1 |
| | 5745 ~ 5825 | 22.46 | 5.5 | 27.96 | 0.1244 | 1 |
| WCDMA Band 2 | 1852.4 ~ 1907.6 | 24 | 6 | 30.00 | 0.1989 | 1 |
| WCDMA Band 4 | 1712.4 ~ 1752.6 | 24 | 6 | 30.00 | 0.1989 | 1 |
| WCDMA Band 5 | 826.4 ~ 846.6 | 24 | 6 | 30.00 | 0.1989 | 0.5509 |
| LTE Band 2 | 1850.7 ~ 1909.3 | 24 | 6 | 30.00 | 0.1989 | 1 |
| LTE Band 4 | 1710.7 ~ 1754.3 | 24 | 6 | 30.00 | 0.1989 | 1 |
| LTE Band 5 | 824.7 ~ 848.3 | 24 | 6 | 30.00 | 0.1989 | 0.5498 |
| LTE Band 7 | 2502.5 ~ 2567.5 | 24 | 6 | 30.00 | 0.1989 | 1 |
| LTE Band 12 | 699.7 ~ 715.3 | 24 | 6 | 30.00 | 0.1989 | 0.4664 |
| LTE Band 13 | 779.5 ~ 784.5 | 24 | 6 | 30.00 | 0.1989 | 0.5197 |
| LTE Band 25 | 1850.7 ~ 1914.3 | 24 | 6 | 30.00 | 0.1989 | 1 |
| LTE Band 26 | 814.7 ~ 848.3 | 24 | 6 | 30.00 | 0.1989 | 0.5431 |
| LTE Band 30 | 2307.5 ~ 2312.5 | 18 | 6 | 24.00 | 0.0500 | 1 |
| LTE Band 66 | 1710.7 ~ 1779.3 | 24 | 6 | 30.00 | 0.1989 | 1 |

**CONCULISON:**

The calculations of above situations as below table

| Configuration | Power Density ($mW/cm^2$) | Limit of Power Density ($mW/cm^2$) | CPD1/LPD1 + CPD2/LPD2 + CPD3/LPD3 | Limit (%) | Result |
|---|---|---|---|---|---|
| 802.11b/g/n | 0.0857 | 1 | 0.7486 | 1 | Pass |
| 802.11a/n/ac | 0.2364 | 1 | | | |
| GSM850 | 0.1989 | 0.4664 | | | |

Note: CPD = Calculation Power Density; LPD = Limit of Power Density

Therefore, the compliance distance is 20cm.

The End