# FCC RF Exposure Report

| | | |
|---|---|---|
| **FCC ID** | : | **MXF-C4500MG** |
| **Equipment** | : | **C4500 MG Multi-Dwelling Unit Gateway Product** |
| **Model No.** | : | **C4500MG** |
| **Brand Name** | : | **CenturyLink** |
| **Applicant** | : | **Gemtek Technology Co., Ltd.** |
| **Address** | : | **No. 15-1 Zhonghua Road, Hsinchu Industrial Park, Hukou, Hsinchu, Taiwan, 30352.** |
| **Standard** | : | **47 CFR FCC Part 2.1091** |
| **Received Date** | : | **Dec. 16, 2020** |
| **Tested Date** | : | **Dec. 21, 2020 ~ Jan. 19, 2021** |

**We, International Certification Corporation, would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It may be duplicated completely for legal use with the approval of the applicant. It shall not be reproduced except in full without the written approval of our laboratory.**

**Reviewed by:** **Approved by:**

**Along Chen / Assistant Manager** **Gary Chang / Manager**

Testing Laboratory 2732

# Table of Contents

# Release Record

| Report No. | Version | Description | Issued Date |
|---|---|---|---|
| FA0D1601-01 | Rev. 01 | Initial issue | Mar. 18, 2021 |

# 1 MPE EVALUATION OF MOBILE DEVICES

## 1.1 LIMITS FOR GENERAL POPULATION/UNCONTROLLED EXPOSURE

| Frequency Range (MHz) | Power Density (mW /cm$^2$) | Averaging Time (minutes) |
|---|---|---|
| 300~1500 | F/1500 | 30 |
| 1500~100000 | 1.0 | 30 |

## 1.2 MPE EVALUATION FORMULA

$$\textbf{Pd} = \frac{Pt}{4 * Pi * R^2}$$

Where

Pd= Power density in mW/cm$^2$
Pt= EIRP in mW
Pi= 3.1416
R= Measurement distance

## 1.3 DEVIATION FROM TEST STANDARD AND MEASUREMENT PROCEDURE

None

## 1.4 MEASUREMENT UNCERTAINTY

The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)).

| Parameters | Uncertainty |
|---|---|
| Conducted power | ±0.808 dB |

| **Declaration of Conformity:** |
|---|
| The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers. |
| **Comments and Explanations:** |
| The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification. |

## 1.5 MPE EVALUATION RESULTS

| Frequency Range (MHz) | Maximum Conducted Power (dBm) | Rated Power (dBm) | Antenna Gain (dBi) | Distance (cm) | Power Density ($mW/cm^2$) | *Ratio | Limit ($mW/cm^2$) |
|---|---|---|---|---|---|---|---|
| ***Non-beamforming mode*** | | | | | | | |
| 2412~2462[Note] | 29.65 | 30 | 3.4 | 26 | 0.258 | 0.258 | 1 |
| 5180~5240[Note] | 29.13 | 29.5 | 4 | 26 | 0.264 | 0.264 | 1 |
| 5745~5825[Note] | 29.61 | 30 | 4.5 | 26 | 0.332 | 0.332 | 1 |
| 5260~5320 | 23.54 | 24 | 4 | 26 | 0.074 | 0.074 | 1 |
| 5500~5700 | 23.62 | 24 | 4.3 | 26 | 0.080 | 0.080 | 1 |
| ***Beamforming mode*** | | | | | | | |
| 2412~2462[Note] | 29.50 | 30 | 5.88 | 26 | 0.456 | 0.456 | 1 |
| 5180~5240[Note] | 28.71 | 29 | 6.91 | 26 | 0.459 | 0.459 | 1 |
| 5745~5825[Note] | 28.57 | 29 | 7.31 | 26 | 0.503 | 0.503 | 1 |
| 5260~5320 | 23.08 | 23.5 | 6.81 | 26 | 0.126 | 0.126 | 1 |
| 5500~5700 | 22.93 | 23 | 6.97 | 26 | 0.117 | 0.117 | 1 |

*Ratio = Power density / Limit.

**Note:**

1. These 3 frequency bands are certified for original grant.
2. For beamforming mode:
   2412-2462MHz: Directional gain = $10 * \log((10^{3.4/20}+10^{2.3/20})^2/2) = 5.88$ dBi
   5150-5250MHz: Directional gain = $10 * \log((10^{3.8/20}+10^{4/20})^2/2) = 6.91$ dBi
   5725-5850MHz: Directional gain = $10 * \log((10^{4.5/20}+10^{4.1/20})^2/2) = 7.31$ dBi
   5250-5350MHz: Directional gain = $10 * \log((10^{4/20}+10^{3.6/20})^2/2) = 6.81$ dBi
   5470-5725MHz: Directional gain = $10 * \log((10^{3.6/20}+10^{4.3/20})^2/2) = 6.97$ dBi

## 1.6 MPE EVALUATION OF SIMULTANEOUS TRANSMISSION

| Mode | Max Ratio of Each Mode | |
|---|---|---|
| | ***Non-beamforming*** | ***Beamforming mode*** |
| Wi-Fi 2.4 GHz | 0.258 | 0.456 |
| Wi-Fi 5 GHz | 0.332 | 0.503 |
| Sum (Wi-Fi 2.4 GHz+ Wi-Fi 5 GHz) | 0.59 | 0.959 |
| Limit | 1 | 1 |
| Pass / Fail | Pass | Pass |

# 2 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corporation (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan District. Location map can be found on our website http://www.icertifi.com.tw.

| **Linkou** | **Kwei Shan** | **Kwei Shan Site II** |
|---|---|---|
| Tel: 886-2-2601-1640 | Tel: 886-3-271-8666 | Tel: 886-3-271-8640 |
| No.30-2, Ding Fwu Tsuen, Lin Kou District, New Taipei City, Taiwan (R.O.C.) | No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.) | No.14-1, Lane 19, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 333, Taiwan (R.O.C.) |

If you have any suggestion, please feel free to contact us as below information.

Tel: 886-3-271-8666
Fax: 886-3-318-0155
Email: ICC_Service@icertifi.com.tw

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