

FCC RF Exposure Report

FCC ID : MXF-WMDS183
Equipment : LoRa RF Board
Model No. : WMDS-183
Brand Name : Gemtek
Applicant : Gemtek Technology Co., Ltd.
Address : No.15-1 Zhoughua Rd, Hsinchu Industrial
Park, Hukou, Hsinchu, Taiwan, R.O.C
Standard : 47 CFR FCC Part 2.1091
Received Date : Sep. 12, 2018
Tested Date : Sep. 18 ~ Nov. 06, 2018

We, International Certification Corp., 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:



Along Chen / Assistant Manager

Approved by:



Gary Chang / Manager



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Release Record

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1 MPE EVALUATION OF MOBILE DEVICES

Human exposure to RF emissions from mobile devices (47 CFR §2.1091) may be evaluated based on the MPE limits adopted by the FCC for electric and magnetic field strength and/or power density, as appropriate, since exposures are assumed to occur at distances of 20 cm or more from persons.

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

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

Where

Pd= Power density in mW/cm²
Pt= EIRP in mW
Pi= 3.1416
R= Measurement distance

1.3 MPE EVALUATION RESULTS

WCDMA

Mode	Rated Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)	Ratio
WCDMA Band II	23.5	4.49	20	0.125	1	0.125
WCDMA Band IV	23.5	3.59	20	0.102	1	0.102
WCDMA Band V	23.5	2.35	20	0.077	0.551	0.139

LTE

Frequency range (MHz)	Rated Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)	Ratio
1850~1910 LTE Band 2	24	4.49	20	0.141	1	0.141
1710~1755 LTE Band 4	24	3.59	20	0.114	1	0.114
699~ 716 LTE Band 12	24	2.35	20	0.086	0.466	0.184

Mode	Maximum Conducted Power (dBm)	Rated Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)	Ratio
LoRa	26.64	26.7	0.96	20	0.116	0.616	0.188

MPE Evaluation of Simultaneous Transmission

WWAN and LoRa can transmit at the same time, MPE evaluation is as below formula

$PD1 / \text{Limit}1 + PD2 / \text{Limit} 2 + \dots < 1$, PD = Power density

MPE Evaluation = Maximum MPE of WWAN+ Maximum MPE of LoRa
 $= 0.086 / 0.466 + 0.116 / 0.616 = 0.372 < 1$

Conclusion

MPE evaluations of single and simultaneous transmission meet the requirement of standard.

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 Corp (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>.

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