

## RF Exposure Report

**Report No.:** SA190819E05

**FCC ID:** NKRM18QF

**Test Model:** M18QF, M18QA

**Series Model:** M14QF, M14QA

**Received Date:** Aug. 19, 2019

**Test Date:** Sep. 18, 2019

**Issued Date:** Oct. 19, 2019

**Applicant:** Wistron NeWeb Corporation

**Address:** 20 Park Ave. II, Hsinchu Science Park, Hsinchu 308, Taiwan

**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
Hsin Chu Laboratory

**Lab Address:** E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,  
Taiwan

**Test Location:** E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,  
Taiwan

**FCC Registration /  
Designation Number:** 723255 / TW2022

This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification. The report must not be used by the client to claim product certification, approval, or endorsement by any government agencies.--

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### Release Control Record

Issue No.	Description	Date Issued
SA190819E05	Original release.	Oct. 19, 2019

## 1 Certificate of Conformity

**Product:** M2M DATA MODULE

**Brand:** Wistron NeWeb Corporation

**Test Model:** M18QF, M18QA

**Series Model:** M14QF, M14QA

**Sample Status:** ENGINEERING SAMPLE

**Applicant:** Wistron NeWeb Corporation

**Test Date:** Sep. 18, 2019

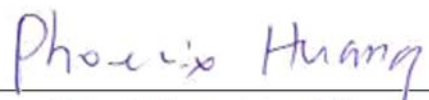
**Standards:** FCC Part 2 (Section 2.1091)

KDB 447498 D01 General RF Exposure Guidance v06

IEEE C95.3 -2002

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

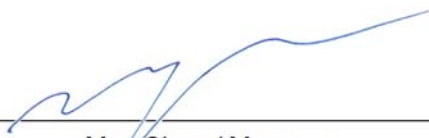
Prepared by :

  
Phoenix Huang / Specialist

Date:

Oct. 19, 2019

Approved by :

  
May Chen / Manager

Date:

Oct. 19, 2019

## 2 RF Exposure

### 2.1 Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time (minutes)
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 <sup>2</sup> )*	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 ; \*Plane-wave equivalent power density

### 2.1 MPE Calculation Formula

$$P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$$

where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = 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

### 2.2 Classification

The antenna of this product, under normal use condition, is at least 20 cm away from the body of the user. So, this device is classified as **Mobile Device**.

## 2.3 Antenna Gain

For GPS							
Antenna No.	Brand		Model	Antenna Net Gain (dBi)	Frequency Range (MHz)	Antenna Type	Connector Type
GPS	Master		98619ZSAX029	2.24	1559~1606	Dipole	SMA
For WWAN							
Antenna No.	RF Chain No.	Brand	Model	Antenna Net Gain (dBi)	Frequency Range (MHz)	Antenna Type	Connector Type
1	Main	Wieson	GY115	Please refer to below table	Please refer to below table	Dipole	SMA
2	Aux	Wieson	GY115	Please refer to below table	Please refer to below table	Dipole	SMA

Antenna gain list			
Band	Freq. Range (MHz)	Gain (dBi)	
		Ant 1 (Main)	Ant 2 (Aux)
WCDMA II (B2)	1850~1910	1.56	1.56
WCDMA V (B5)	824~849	3.2	3.2
LTE Band (2)	1850~1910	1.56	1.56
LTE Band (4)	1710~1755	1.62	1.62
LTE Band (5)	824~849	3.2	3.2
LTE Band (12)	698~716	1.49	1.49
LTE Band (13)	777~787	1.66	1.66
LTE Band (14)	788~798	1.60	1.60

## 2.4 Calculation Result

Operation Mode	Evaluation Frequency (MHz)	Max. Conducted Power		Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
		(mW)	(dBm)				
WCDMA B2	1852.4	283.792	24.53	1.56	20	0.08086	1
WCDMA B5	826.4	335.738	25.26	3.20	20	0.13955	0.55093
LTE B2	1908.5	198.153	22.97	1.56	20	0.05646	1
LTE B4	1720	200.447	23.02	1.62	20	0.05791	1
LTE B5	836.5	266.073	24.25	3.20	20	0.11059	0.55767
LTE B12	704	281.19	24.49	1.49	20	0.07884	0.46933
LTE B13	779.5	283.792	24.53	1.66	20	0.08274	0.51967
LTE B14	795.5	275.423	24.40	1.60	20	0.07920	0.53033

Note: Limit of Power Density =  $f/1500$  (For frequency below 1500MHz)

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