

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

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

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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

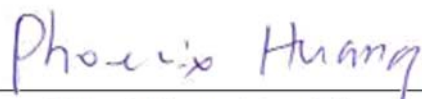
Standards: FCC Part 2 (Section 2.1091)

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 ²)	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 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 ; *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/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 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 ²)	Limit (mW/cm ²)
		(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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