

## RF Exposure Report

**Report No.:** MFBCKS-WTW-P22080716A

**FCC ID:** NKR-WNXL11BWL

**Test Model:** WNXL11BWL

**Received Date:** 2022/8/24

**Test Date:** 2022/9/19

**Issued Date:** 2023/1/11

**Applicant:** Wistron NeWeb Corp.

**Address:** 20 Park Avenue II, Hsinchu Science Park, Hsinchu 308, Taiwan, R.O.C.

**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



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### Release Control Record

Issue No.	Description	Date Issued
MFBCKS-WTW-P22080716A	Original release.	2023/1/11

## 1 Certificate of Conformity

**Product:** AP

**Brand:** WNC, Comcast, Cox, Charter

**Test Model:** WNXL11BWL

**Sample Status:** Engineering sample

**Applicant:** Wistron NeWeb Corp.

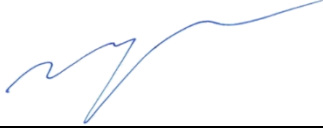
**Test Date:** 2022/9/19

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

**Standard:** KDB 447498 D01 General RF Exposure Guidance v06

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 :**                     Vito Lung                    , **Date:**                     2023/1/11                      
Vito Lung / Specialist

**Approved by :**                                         , **Date:**                     2023/1/11                      
May Chen / Manager

## 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

### 2.2 MPE Calculation Formula

$$Pd = (Pout * G) / (4 * \pi * r^2)$$

where

Pd = power density in mW/cm<sup>2</sup>

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

### 2.3 Classification

The antenna of this product, under normal use condition, is at least 26 cm away from the body of the user. So, this device is classified as **Mobile Device**.

## 2.4 Antenna Gain

Antenna NO.	RF Chain NO.	Brand	Model	Antenna Net Gain(dBi)	Frequency range (GHz)	Antenna Type	Connector Type
2G ANT	Chain 0	WNC	XLE	4.00	2.4~2.4835	Dipole	ipex(MHF)
	Chain 1	WNC	XLE	3.20	2.4~2.4835	Dipole	ipex(MHF)
5GL ANT	Chain 0	WNC	XLE	4.60	5.15~5.35	Dipole	ipex(MHF)
	Chain 1	WNC	XLE	4.70	5.15~5.35	Dipole	ipex(MHF)
5GH ANT	Chain 0	WNC	XLE	4.90	5.47~5850	Dipole	ipex(MHF)
	Chain 1	WNC	XLE	4.50	5.47~5850	Dipole	ipex(MHF)
	Chain 2	WNC	XLE	5.00	5.47~5850	Dipole	ipex(MHF)
	Chain 3	WNC	XLE	4.80	5.47~5850	Dipole	ipex(MHF)
BLE ANT	Chain 0	WNC	XLE	4.10	2.4~2.4835	PCB	ipex(MHF)

Antenna NO.	Antenna Net Gain(dBi)	Frequency range	Antenna Type	Connector Type
WWAN	2.00	1.850~1.915 GHz	Dipole	ipex(MHF)
	2.00	1.710~1.780 GHz	Dipole	ipex(MHF)
	3.00	814~849 MHz	Dipole	ipex(MHF)
	2.00	2.496~2.690 GHz	Dipole	ipex(MHF)
	3.00	699-716 MHz	Dipole	ipex(MHF)
	3.00	777-787 MHz	Dipole	ipex(MHF)
	0.00	2.305~2.315 GHz	Dipole	ipex(MHF)

\* Detail antenna specification please refer to antenna datasheet and/or antenna measurement report.

The directional antenna gain, please refer to the following table:

Frequency Range (GHz)	Directional Antenna Gain (dBi)	Antenna Type	Antenna Connector
2.4~2.4835	3.63	Dipole	i-pex(MHF)
5.15~5.25	5.68		
5.25~5.35	5.59		
5.47~5.725	4.19		
5.725~5.85	4.89		

Note: More detailed information, please refer to antenna specification.

## 2.5 Calculation Result

For 2.4GHz, 5GHz (U-NII-1 & UNII-3 band), WWAN, Bluetooth data was copied from the original test report (Report No.: MFBCKS-WTW-P22080716)

### CDD Mode

#### For WLAN & Bluetooth

Operation Mode	Evaluation Frequency (MHz)	Max Avg. Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Result
WLAN 2.4GHz	2412-2462	505.925	4.00	26	0.14960	1	Pass
WLAN 5GHz (U-NII-1)	5180-5240	668.69	4.70	26	0.23231	1	Pass
WLAN 5GHz U-NII-2A	5260-5320	249.441	4.70	26	0.08666	1	Pass
WLAN 5GHz U-NII-2C	5500-5720	247.587	5.00	26	0.09217	1	Pass
WLAN 5GHz (U-NII-3)	5745-5825	995.527	5.00	26	0.37059	1	Pass
Bluetooth	2402-2480	11.246	4.10	26	0.00340	1	Pass

#### NOTE:

- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

#### For WWAN module <Worst case> (FCC ID: XMR201906EM06A)

Operation Mode	Evaluation Frequency (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Pass / Fail
LTE B12	699.7-715.3	251.1886	3.00	26	0.05900	0.46647	Pass

#### NOTE:

- LTE: Limit of Power Density = F/1500

### Beamforming Mode For WLAN & Bluetooth

Operation Mode	Evaluation Frequency (MHz)	Max Avg. Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Result
WLAN 2.4GHz	2412-2462	324.365	3.63	26	0.08808	1	Pass
WLAN 5GHz (U-NII-1)	5180-5240	628.268	5.68	26	0.27352	1	Pass
WLAN 5GHz U-NII-2A	5260-5320	246.341	5.59	26	0.10505	1	Pass
WLAN 5GHz U-NII-2C	5500-5720	187.907	4.19	26	0.05805	1	Pass
WLAN 5GHz (U-NII-3)	5745-5825	755.118	4.89	26	0.27407	1	Pass
Bluetooth	2402-2480	11.246	4.10	26	0.00340	1	Pass

**NOTE:**

- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

### For WWAN module <Worst case> (FCC ID: XMR201906EM06A)

Operation Mode	Evaluation Frequency (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Pass / Fail
LTE B12	699.7-715.3	251.1886	3.00	26	0.05900	0.46647	Pass

**NOTE:**

- LTE: Limit of Power Density = F/1500

**Conclusion:**

The formula of calculated the MPE is:

$$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$$

CPD = Calculation power density

LPD = Limit of power density

**CDD Mode**

$$\text{WLAN 2.4GHz} + \text{WLAN 5GHz (U-NII-1)} + \text{WLAN 5GHz (U-NII-3)} + \text{Bluetooth} + \text{LTE} \\ = 0.14960 / 1 + 0.23231 / 1 + 0.37059 / 1 + 0.00340 / 1 + 0.05900 / 0.46647 = 0.88238$$

**Beamforming Mode**

$$\text{WLAN 2.4GHz} + \text{WLAN 5GHz (U-NII-1)} + \text{WLAN 5GHz (U-NII-3)} + \text{Bluetooth} + \text{LTE} \\ = 0.12356 / 1 + 0.23933 / 1 + 0.46651 / 1 + 0.00340 / 1 + 0.05900 / 0.46647 = 0.95928$$

**Therefore the maximum calculations of above situations are less than the "1" limit.**



## Appendix

WWAN module

MPE Evaluation for FCC ID: XMR201906EM06A

Operation Mode	Transmitter Range (MHz)		Maximum Power		Antenna Gain (dBi)	Power Density (mW/cm <sup>2</sup> )		Ratio
	Start	Stop	mW	dBm		Value	Limit	
WCDMA II	1852.4	1907.6	251.1886	24.00	2.00	0.04686	1	0.04686
WCDMA IV	1712.4	1752.6	251.1886	24.00	2.00	0.04686	1	0.04686
WCDMA V	826.4	846.6	251.1886	24.00	3.00	0.05900	0.55093	0.10709
LTE B2	1850.7	1909.3	251.1886	24.00	2.00	0.04686	1	0.04686
LTE B4	1710.7	1754.3	251.1886	24.00	2.00	0.04686	1	0.04686
LTE B5	824.7	848.3	251.1886	24.00	3.00	0.05900	0.5498	0.10731
LTE B7	2502.5	2567.5	251.1886	24.00	2.00	0.04686	1	0.04686
LTE B12	699.7	715.3	251.1886	24.00	3.00	0.05900	0.46647	0.12648
LTE B13	779.5	784.5	251.1886	24.00	3.00	0.05900	0.51967	0.11353
LTE B25	1850.7	1914.3	251.1886	24.00	2.00	0.04686	1	0.04686
LTE B26	814.7	823.3	251.1886	24.00	3.00	0.05900	0.54313	0.10863
LTE B26	824.7	848.3	251.1886	24.00	3.00	0.05900	0.5498	0.10731
LTE B30	2307.5	2312.5	251.1886	24.00	0.00	0.02957	1	0.02957
LTE B41	2502.5	2687.5	251.1886	24.00	2.00	0.04686	1	0.04686
LTE B66	1710.7	1779.3	251.1886	24.00	2.00	0.04686	1	0.04686

Distance = 26 cm

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