

RF Exposure Report

Report No.: MFBCKS-WTW-P22080716

FCC ID: NKR-WNXL11BWL

Test Model: WNXL11BWL

Received Date: 2022/8/24

Test Date: 2022/9/19

Issued Date: 2022/10/3

Applicant: Wistron NeWeb Corp.

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

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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-P22080716	Original release.	2022/10/3

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 : Cherry Chuo , **Date:** 2022/10/3
Cherry Chuo / Specialist

Approved by : May Chen , **Date:** 2022/10/3
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 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

2.2 MPE Calculation Formula

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

where

Pd = power density in mW/cm²

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)
5.15~5.24	5.68		
5.725~5.85	4.89		

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

2.5 Calculation Result

CDD Mode

For WLAN & Bluetooth

Operation Mode	Evaluation Frequency (MHz)	Max Avg. Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)	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-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 ²)	Limit (mW/cm ²)	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 ²)	Limit (mW/cm ²)	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-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 ²)	Limit (mW/cm ²)	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

WLAN 2.4GHz + WLAN 5GHz (U-NII-1) + WLAN 5GHz (U-NII-3) + Bluetooth + LTE

$$= 0.14960 / 1 + 0.23231 / 1 + 0.37059 / 1 + 0.00340 / 1 + 0.05900 / 0.46647 = 0.88238$$

Beamforming Mode

WLAN 2.4GHz + WLAN 5GHz (U-NII-1) + WLAN 5GHz (U-NII-3) + Bluetooth + LTE

$$= 0.08808 / 1 + 0.27352 / 1 + 0.27407 / 1 + 0.00340 / 1 + 0.05900 / 0.46647 = 0.76555$$

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 ²)		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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