



# RF Exposure Evaluation Report

APPLICANT : Wistron NeWeb Corporation  
EQUIPMENT : 3G SEP EVDO LGA MODULE  
BRAND NAME : WNC  
MODEL NAME : 3G SEP EVDO LGA MODULE  
FCC ID : NKR96E1  
FILING TYPE : Certification  
STANDARD : OET Bulletin 65 Supplement C (Edition 01-01)

We, SPORTON INTERNATIONAL INC., would like to declare that the device has been evaluated in accordance with FCC OET Bulletin 65 Supplement C (Edition 01-01), and pass the limit. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by: Eric Huang / Deputy Manager

Approved by: Jones Tsai / Manager



Testing Laboratory  
1190

## SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1<sup>st</sup> Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.



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**1. Administration Data**

**1.1. Testing Laboratory**

<b>Test Site</b>	SPORTON INTERNATIONAL INC.
<b>Test Site Location</b>	No. 52, Hwa Ya 1 <sup>st</sup> Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978

**1.2. Applicant**

<b>Company Name</b>	Wistron NeWeb Corporation
<b>Address</b>	20 Park Avenue II, Hsinchu Science Park, Hsinchu 308, Taiwan, R.O.C

**1.3. Manufacturer**

<b>Company Name</b>	Wistron NeWeb Corporation (KUNSHAN)
<b>Address</b>	No. 88, Central Avenue, Area B Kunshan Export Processing Zone KUNSHAN JIANGSU, CHINA



## 2. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	3G SEP EVDO LGA MODULE
Brand Name	WNC
Model Name	3G SEP EVDO LGA MODULE
FCC ID	NKR96E1
IMEI Code	1000021930021
Tx Frequency	CDMA2000 BC0: 824.70 MHz ~ 848.31 MHz CDMA2000 BC1: 1851.25 MHz ~ 1908.75 MHz
Antenna Type	Monopole Antenna
Uplink Modulation	CDMA2000 : QPSK CDMA2000 1xEV-DO : 8PSK
EUT Stage	Production Unit

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

### **3. RF Exposure Limit Introduction**

The FCC categorizes the RF exposure limit based on the intended usage of the device and the user's awareness and ability to exercise control over his or her exposure. This is a consumer product to be used in the home, hence this device was evaluated by mobile device with general population/uncontrolled exposure condition. The definition of these category are shown as follows:

▪ **Mobile Devices:**

A mobile device is defined as a transmitting device designed to be used in other than fixed locations and to be generally used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitters' radiating structures and the body of the user or nearby persons. Transmitters designed to be used by consumers or workers that can be easily re-located are considered mobile devices if they meet the 20 centimeter separation requirement. The FCC rules for evaluating mobile devices for RF compliance are found in 47 CFR 2.1091.

▪ **General Population/Uncontrolled Exposure:**

The general population / uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity. Warning labels placed on low-power consumer devices such as cellular telephones are not considered sufficient to allow the device to be considered under the occupational/controlled category and the general population/uncontrolled exposure limits apply to these devices.

Per OET Bulletin 65, the power density limit for General Population/Uncontrolled Exposure summary here:

**Table:** Limits for General Population/Uncontrolled Exposure

<b>Frequency Range (MHz)</b>	<b>Power Density (S) (mW/cm<sup>2</sup>)</b>
0.3–1.34	*(100)
1.34–30	*(180/f <sup>2</sup> )
30–300	0.2
300–1500	f/1500
1500–100,000	1.0

f = frequency in MHz

\* = Plane-wave equivalent power density



**4. Maximum RF average output power among production units**

Mode	Average Power (dBm)	
	CDMA BC0	CDMA BC1
1xRTT RC1 SO55	24.5	24.5
1xRTT RC3 SO55	24.5	24.5
1xRTT RC3 SO32	24.5	24.5
1xEV-DO Rev 0 (RTAP 153.6kbps)	24.5	24.5
1xEV-DO Rev A (RETAP 4096 bits)	24.5	24.5

**5. Conducted RF Output Power (Unit: dBm)**

**<CDMA Conducted Power>**

Band TX Channel	CDMA2000 BC0			CDMA2000 BC1		
	1013	384	777	25	600	1175
Frequency (MHz)	824.7	836.52	848.31	1851.25	1880	1908.75
1xRTT RC1 SO55	23.83	23.77	23.54	23.14	23.39	23.14
1xRTT RC3 SO55	23.94	23.82	23.56	23.12	23.40	23.16
1xRTT RC3 SO32(+ F-SCH)	23.84	23.82	23.55	23.08	23.34	23.12
1xRTT RC3 SO32(+SCH)	23.82	23.80	23.51	23.03	23.25	23.08
1xEVDO RTAP 153.6Kbps	23.89	23.75	23.50	23.00	23.23	23.06
1xEVDO RETAP 4096Bits	23.85	23.76	23.50	23.00	23.23	23.06



### 6. Radio Frequency Radiation Exposure Evaluation

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$S = \frac{PG}{4\pi R^2}$$

Where:

S = Power Density

P = Output Power at Antenna Terminals

G = Gain of Transmit Antenna (linear gain)

R = Distance from Transmitting Antenna

For this device, the calculation is as follows:

#### WWAN Operating frequency ≤ 1.5GHz

Mode	Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Average Power (dBm)	Average Power (mW)	Average ERP (mW)	Calculated RF Exposure (mW/cm2)	Limit (mW/cm2)
CDMA2000 BC0	824.70	2.00	1.58	24.50	281.84	272.27	0.09	0.55

#### WWAN Operating frequency > 1.5GHz

Mode	Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Average Power (dBm)	Average Power (mW)	Average EIRP (mW)	Calculated RF Exposure (mW/cm2)	Limit (mW/cm2)
CDMA2000 BC1	1851.25	2.00	1.58	24.50	281.84	446.68	0.09	1.00

### Conclusion:

Per part 2.1091(c), EUT source-based time-averaged ERP < 1.5W for RF operating frequency ≤ 1.5GHz, EUT source-based time-averaged EIRP < 3W for RF operating frequency > 1.5GHz, routine evaluation of MPE is not required; MPE calculation is sufficient to show compliance. The MPE calculation results indicate that the EUT complies with the RF exposure limit of FCC OET Bulletin 65 Supplement C (Edition 01-01).