



RF EXPOSURE REPORT

REPORT NO.: SA130529C21B

MODEL NO.: E362

FCC ID: PKRNVWE362

RECEIVED: May 20, 2013

TESTED: May 20, 2013 ~ Mar. 12, 2014

ISSUED: Apr. 29, 2014

APPLICANT: Novatel Wireless Inc.

ADDRESS: 9645 Scranton Road, Suite 205 San Diego, CA
92121-3030, United States

ISSUED BY: Bureau Veritas Consumer Products Services
(H.K.) Ltd., Taoyuan Branch

LAB ADDRESS: No. 47, 14th Ling, Chia Pau Vil., Lin Kou Dist.,
New Taipei City, Taiwan, R.O.C.

TEST LOCATION: No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei
Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

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.



TABLE OF CONTENTS

RELEASE CONTROL RECORD	3
1. CERTIFICATION	4
2. RF EXPOSURE.....	5
2.1 LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE).....	5
2.2 MPE CALCULATION FORMULA	5
2.3 CLASSIFICATION	5
2.4 CALCULATION RESULT OF MAXIMUM CONDUCTED POWER.....	6



A D T

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
SA130529C21B	Original release.	Apr. 29, 2014

1. CERTIFICATION

PRODUCT: 850/1900 GSM/GPRS/EDGE/WCDMA/CDMA/EvDO and
700MHz LTE Module

MODEL: E362

BRAND: Novatel

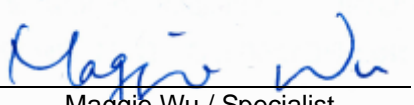
APPLICANT: Novatel Wireless Inc.


TESTED: May 20, 2013 ~ Mar. 12, 2014

TEST SAMPLE: ENGINEERING SAMPLE

STANDARDS: **FCC Part 2 (Section 2.1091)**
FCC OET Bulletin 65, Supplement C (01-01)
IEEE C95.1

The above equipment (model: E362) 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 :  , **DATE :** Apr. 29, 2014
Maggie Wu / Specialist

APPROVED BY :  , **DATE :** Apr. 29, 2014
Ken Liu / Senior 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				
300-1500	F/1500	30
1500-100,000	1.0	30

F = Frequency in MHz

2.2 MPE CALCULATION FORMULA

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

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

2.3 CLASSIFICATION

The antenna of this product, under normal use condition, is at least 22cm away from the body of the user. So, this device is classified as **Mobile Device**.

2.4 CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

Module:

FREQUENCY BAND	ERP (dBm)	EIRP (dBm)	DISTANCE (cm)	POWER DENSITY (mW/cm ²)	LIMIT (mW/cm ²)
WCDMA 826.4MHz~846.6MHz	25.28	27.43	22	0.091	0.551
CDMA 824.7MHz~848.31MHz	26.04	28.19	22	0.108	0.550
LTE 782MHz	26.45	28.60	22	0.119	0.521

FREQUENCY BAND	EIRP (dBm)	DISTANCE (cm)	POWER DENSITY (mW/cm ²)	LIMIT (mW/cm ²)
WCDMA 1852.4~1907.6MHz	26.97	22	0.082	1
CDMA 1851.25~1908.75MHz	28.68	22	0.121	1



A D T

Host device (Brand: Aerohive, Model: BR200-LTE-VZ):

MODE	MAX POWER (dBm)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm ²)	LIMIT (mW/cm ²)
WLAN 2.4GHz					
802.11b	21.30	2.94	22	0.044	1
802.11g	24.70	2.94	22	0.095	1
802.11n (20MHz)	27.99	8.76	22	0.778	1
WLAN 5GHz Band 1					
802.11a	15.10	5.99	22	0.021	1
802.11n (20MHz)	11.24	11.20	22	0.029	1
802.11n (40MHz)	14.00	11.20	22	0.054	1
WLAN 5GHz Band 4					
802.11a	22.60	6.16	22	0.124	1
802.11n (20MHz)	26.15	10.85	22	0.824	1
802.11n (40MHz)	23.07	10.85	22	0.405	1

Note:

WLAN 2.4GHz

802.11n Directional gain = $10 \log[(10^{G^1/20} + 10^{G^2/20} + \dots + 10^{G^N/20})^2 / N_{ANT}] = 8.76\text{dBi}$

WLAN 5GHz Band 1

802.11n Directional gain = $10 \log[(10^{G^1/20} + 10^{G^2/20} + \dots + 10^{G^N/20})^2 / N_{ANT}] = 11.20\text{dBi}$

WLAN 5GHz Band 4

802.11n Directional gain = $10 \log[(10^{G^1/20} + 10^{G^2/20} + \dots + 10^{G^N/20})^2 / N_{ANT}] = 10.85\text{dBi}$

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

$$\text{WLAN 2.4GHz} + \text{WCDMA (826.4MHz~846.6MHz)} = 0.778 + 0.091 = 0.869$$

$$\text{WLAN 2.4GHz} + \text{CDMA (824.7MHz~848.31MHz)} = 0.778 + 0.108 = 0.886$$

$$\text{WLAN 2.4GHz} + \text{WCDMA (1852.4~1907.6MHz)} = 0.778 + 0.082 = 0.860$$

$$\text{WLAN 2.4GHz} + \text{CDMA (1851.25~1908.75MHz)} = 0.778 + 0.121 = 0.899$$

$$\text{WLAN 2.4GHz} + \text{LTE Band 13} = 0.778 + 0.119 = 0.897$$

$$\text{WLAN 5GHz Band 1} + \text{WCDMA (826.4MHz~846.6MHz)} = 0.054 + 0.091 = 0.145$$

$$\text{WLAN 5GHz Band 1} + \text{CDMA (824.7MHz~848.31MHz)} = 0.054 + 0.108 = 0.162$$

$$\text{WLAN 5GHz Band 1} + \text{WCDMA (1852.4~1907.6MHz)} = 0.054 + 0.082 = 0.136$$

$$\text{WLAN 5GHz Band 1} + \text{CDMA (1851.25~1908.75MHz)} = 0.054 + 0.121 = 0.175$$

$$\text{WLAN 5GHz Band 1} + \text{LTE Band 13} = 0.054 + 0.119 = 0.173$$

$$\text{WLAN 5GHz Band 4} + \text{WCDMA (826.4MHz~846.6MHz)} = 0.824 + 0.091 = 0.915$$

$$\text{WLAN 5GHz Band 4} + \text{CDMA (824.7MHz~848.31MHz)} = 0.824 + 0.108 = 0.932$$

$$\text{WLAN 5GHz Band 4} + \text{WCDMA (1852.4~1907.6MHz)} = 0.824 + 0.082 = 0.906$$

$$\text{WLAN 5GHz Band 4} + \text{CDMA (1851.25~1908.75MHz)} = 0.824 + 0.121 = 0.945$$

$$\text{WLAN 5GHz Band 4} + \text{LTE Band 13} = 0.824 + 0.119 = 0.943$$

Therefore all the maximum calculations of above situations are less than the “1” limit.

---END---