

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.

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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



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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

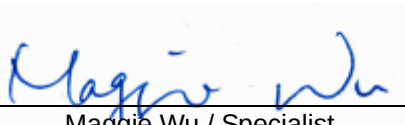
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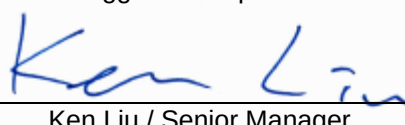
TEST SAMPLE: ENGINEERING SAMPLE

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

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

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

2.3 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

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

WLAN 2.4GHz + WCDMA (826.4MHz~846.6MHz) = 0.778 + 0.091 = 0.869

WLAN 2.4GHz + CDMA (824.7MHz~848.31MHz) = 0.778 + 0.108 = 0.886

WLAN 2.4GHz + WCDMA (1852.4~1907.6MHz) = 0.778 + 0.082 = 0.860

WLAN 2.4GHz + CDMA (1851.25~1908.75MHz) = 0.778 + 0.121 = 0.899

WLAN 2.4GHz + LTE Band 13 = 0.778 + 0.119 = 0.897

WLAN 5GHz Band 1 + WCDMA (826.4MHz~846.6MHz) = 0.054 + 0.091 = 0.145

WLAN 5GHz Band 1 + CDMA (824.7MHz~848.31MHz) = 0.054 + 0.108 = 0.162

WLAN 5GHz Band 1 + WCDMA (1852.4~1907.6MHz) = 0.054 + 0.082 = 0.136

WLAN 5GHz Band 1 + CDMA (1851.25~1908.75MHz) = 0.054 + 0.121 = 0.175

WLAN 5GHz Band 1 + LTE Band 13 = 0.054 + 0.119 = 0.173

WLAN 5GHz Band 4 + WCDMA (826.4MHz~846.6MHz) = 0.824 + 0.091 = 0.915

WLAN 5GHz Band 4 + CDMA (824.7MHz~848.31MHz) = 0.824 + 0.108 = 0.932

WLAN 5GHz Band 4 + WCDMA (1852.4~1907.6MHz) = 0.824 + 0.082 = 0.906

WLAN 5GHz Band 4 + CDMA (1851.25~1908.75MHz) = 0.824 + 0.121 = 0.945

WLAN 5GHz Band 4 + LTE Band 13 = 0.824 + 0.119 = 0.943

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

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