



# RF EXPOSURE REPORT

**REPORT NO.:** SA131024C22

**MODEL NO.:** PA-MR03LN

**FCC ID:** 2AA5WPAMR03LN

**RECEIVED:** Oct. 24, 2013

**TESTED:** Dec. 14 ~ Dec. 29, 2013

**ISSUED:** Jan. 14, 2014

**APPLICANT:** NEC Access Technica, Ltd.

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

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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
SA131024C22	Original release.	Jan. 14, 2014



## 1. CERTIFICATION

**PRODUCT:** PA MR03LN  
**MODEL:** PA-MR03LN  
**BRAND:** NEC  
**APPLICANT:** NEC Access Technica, Ltd.  
**TESTED:** Dec. 14 ~ Dec. 29, 2013  
**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: PA-MR03LN) 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 :** Jan. 14, 2014  
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**APPROVED BY :**  , **DATE :** Jan. 14, 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 <sup>2</sup> )	AVERAGE TIME (minutes)
<b>LIMITS FOR GENERAL POPULATION / UNCONTROLLED EXPOSURE</b>				
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/cm<sup>2</sup>

$P_{out}$  = 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 20cm away from the body of the user. So, this device is classified as **Mobile Device**.

## 2.4 CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

FREQUENCY BAND (MHz)	MAX POWER (dBm)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
2412-2462	24.78	-3.06	20	0.03	1

**NOTE:** Directional gain =  $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2 / N_{ANT}] = -3.06$

FREQUENCY BAND (MHz)	ERP (dBm)	EIRP (dBm)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
GPRS 824.2 ~ 848.8MHz	28.55	30.70	20	0.234	0.549
WCDMA 826.4 ~ 846.6MHz	20.27	22.42	20	0.035	0.551

**NOTE:** ERP=EIRP-2.15

FREQUENCY BAND (MHz)	EIRP (dBm)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
GPRS 1851.25~1908.75 MHz	28.46	20	0.140	1

### CONCLUSION:

Both of the WLAN 2.4G & LTE can transmit simultaneously, 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 2.4G + GPRS 850 =  $0.03/1 + 0.234/0.549 = 0.456$

Therefore, the maximum calculation of this situation is 0.456, which is less than the "1" limit.

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