

RF Exposure Report

Report No.: SA151111D09

FCC ID: P27NA502

Test Model: NA502

Series Model: NA502xxxxxxx, G450xxxxx, VeraPlusxxxxx (The "x" in model name can be 0 to 9, A to Z, blank or "-", for marking purpose)

Received Date: Nov. 11, 2015

Test Date: Nov. 16 ~ Dec. 18, 2015

Issued Date: Dec. 25, 2015

Applicant: Sercomm Corp.

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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. | Description | Date Issued |
|-------------|-------------------|---------------|
| SA151111D09 | Original release. | Dec. 25, 2015 |

1 Certificate of Conformity

Product: Multiple RF Home Gateway

Brand: Sercomm, MiOS

Test Model: NA502

Series Model: NA502xxxxxxx, G450xxxxx, VeraPlusxxxxx (The "x" in model name can be 0 to 9, A to Z, blank or "-", for marking purpose)

Sample Status: Engineering sample

Applicant: Sercomm Corp.

Test Date: Nov. 16 ~ Dec. 18, 2015

Standards: FCC Part 2 (Section 2.1091)

KDB 447498 D03

KDB 447498 D01

IEEE C95.1

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 : Annie Chang , **Date:** Dec. 25, 2015
Annie Chang / Senior Specialist

Approved by : Rex Lai , **Date:** Dec. 25, 2015
Rex Lai / Assistant 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 20cm away from the body of the user.

So, this device is classified as **Mobile Device**.

3 Calculation Result Of Maximum Conducted Power

| Function | Frequency Band | Max Power (dBm) | Antenna Gain (dBi) | Distance (cm) | Power Density (mW/cm ²) | Limit (mW/cm ²) |
|----------|----------------|-----------------|--------------------|---------------|-------------------------------------|-----------------------------|
| WLAN | 2412 ~ 2462MHz | 28.27 | 7.11 | 20 | 0.6866 | 1 |
| WLAN | 5180 ~ 5240MHz | 19.99 | 7.01 | 20 | 0.0997 | 1 |
| WLAN | 5475 ~ 5825MHz | 18.82 | 7.01 | 20 | 0.0762 | 1 |
| BT LE | 2402 ~ 2480MHz | -2.17 | 3.6 | 20 | 0.0003 | 1 |
| Zigbee | 2405 ~ 2480MHz | 18.89 | 4 | 20 | 0.0387 | 1 |
| Z-Wave | 908.40MHz | -12.83 | 0 | 20 | 0.0000104 | 0.61 |

NOTE:

2.4GHz: Directional gain = 4.1dBi + 10log(2) = 7.11dBi

5.0GHz: Directional gain = 4.0dBi + 10log(2) = 7.01dBi

Z-Wave: 82.4dBuV/m=-12.83dBm

Conclusion:

The formula of calculated the MPE is:

CPD1 / LPD1 + CPD2 / LPD2 +etc. < 1

CPD = Calculation power density

LPD = Limit of power density

WLAN 2.4GHz + WLAN 5GHz + BE LE + Zigbee + Z-Wave

= 0.6866 + 0.0997 + 0.0003 + 0.0387 + 0.000017= 0.825317

Therefore the maximum calculation of this situation is 0.825317, which is less than the “1” limit.

| FREQUENCY BAND (MHz) | MAX POWER (dBm) | | | | | TOTAL POWER (dBm) | POWER LIMIT (dBm) |
|----------------------|-----------------|-------------|-------|--------|--------|-------------------|-------------------|
| | WIFI (5.0G) | WIFI (2.4G) | BT LE | Zigbee | Z-Wave | | |
| | - | - | - | - | -12.83 | -12.83 | 30 |
| 2400 | - | 28.27 | -2.17 | 18.89 | - | 28.75 | 30 |
| 5180 ~ 5240 | 19.99 | - | - | - | - | 19.99 | 30 |
| 5745 ~ 5825 | 18.82 | - | - | - | - | 18.82 | 30 |

--- END ---