RF Exposure Report

Report No.:	SA151111D09
FCC ID:	P27NA502
Test Model:	NA502
Series Model:	NA502xxxxxxxx, 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.
Address:	8F, No. 3-1, YuangQu St., NanKang, Taipei 115, Taiwan, R.O.C. (NanKang Software Park)
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C.)

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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:	NA502xxxxxxxx, 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

$Pd = (Pout*G) / (4*pi*r^2)$

where

Pd = power density in mW/cm^2

Pout = 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**.

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

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