

RF Exposure Report

Report No.: SA160421C16

FCC ID: GZ5NVG4XX

Test Model: NVG448B

Series Model: NVG443B

Received Date: Apr. 21, 2016

Test Date: Apr. 23 ~ May 25, 2016

Issued Date: Jun. 01, 2016

Applicant: ARRIS GROUP, INC.

Address: 2500 Walsh Ave. Santa Clara, CA 95051, United State

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

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Test Location(2): E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.



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Release Control Record

Issue No.	Description	Date Issued
SA160421C16	Original release	Jun. 01, 2016

1 Certificate of Conformity

Product: ARRIS Gateway

Brand: ARRIS

Test Model: NVG448B

Series Model: NVG443B

Sample Status: Engineering sample

Applicant: ARRIS GROUP, INC.

Test Date: Apr. 23 ~ May 25, 2016

Standards: FCC Part 2 (Section 2.1091)
KDB 447498 D01 (October 23, 2015)
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 : Ivy Lin , **Date:** Jun. 01, 2016
Ivy Lin / Specialist

Approved by : Ken Liu , **Date:** Jun. 01, 2016
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 21cm away from the body of the user. So, this device is classified as **Mobile Device**.

3 Calculation Result Of Maximum Conducted Power

Frequency Band (MHz)	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
(CDD Mode)					
2412-2462	28.27	6.57	21	0.550	1
5180-5240	24.03	8.69	21	0.338	1
5745-5825	24.28	8.69	21	0.358	1
(Beamforming Mode)					
5180-5240	23.36	8.69	21	0.289	1
5745-5825	23.68	8.69	21	0.311	1

Note:

2.4GHz:

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2/2] = 6.57 \text{ dBi}$

5.0GHz:

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/3] = 8.69 \text{ dBi}$

CONCLUSION:

Both of the WLAN 2.4G & WLAN 5G 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

$WLAN 2.4G + WLAN 5.0G = 0.550 + 0.358 = 0.908$

Therefore, the maximum calculation of this situation is 0.908, which is less than the "1" limit.

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