RF Exposure Report

Report No.: SA160421C16A

FCC ID: GZ5NVG4XX

Test Model: NVG448B

Series Model: NVG443B

Received Date: July 01, 2016

Test Date: Aug. 05, 2016

Issued Date: Dec. 14, 2016

Applicant: ARRIS GROUP, INC.

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

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

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Release Control Record

Issue No.	Description	Date Issued
SA160421C16A	Original release.	Dec. 14, 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: Aug. 05, 2016

Standards: FCC Part 2 (Section 2.1091)
KDB 447498 D01 General RF Exposure Guidance v06
IEEE C95.1-1992

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 : _____ , **Date:** Dec. 14, 2016
Midoli Peng / Specialist

Approved by : _____ , **Date:** Dec. 14, 2016
May Chen / 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 21cm away from the body of the user. So, this device is classified as **Mobile Device**.

2.4 Antenna Gain

The following antennas were provided to the EUT.

Antenna Type	Dipole	
Antenna Connector	i-pex (MHF)	
Gain (dBi)	Frequency (MHz)	
	2400-2500	5150-5850
Ant. 1	4.48	-
Ant. 2	2.52	-
Ant. 3	-	3.97
Ant. 4	-	3.18
Ant. 5	-	4.56

2.5 Calculation Result of Maximum Conducted Power

For 15.247 and 15.407 (U-NII-1 band and U-NII-3 band) data was refer from the original test report (Report No.: SA160421C16)

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
2412-2462	671.866	6.57	21	0.55034	1
5180-5240	252.836	8.69	21	0.33743	1
5260-5320	245.004	8.69	21	0.32698	1
5500-5720	242.986	8.69	21	0.32429	1
5745-5825	268.049	8.69	21	0.35774	1

NOTE:
2.4GHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 6.57dBi$
5GHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 8.69dBi$

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 = 0.55034/1 + 0.35774/1 = 0.90808
Therefore the maximum calculations of above situations are less than the "1" limit.

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