RF Exposure Report

Report No.:	SA160418C29B
FCC ID:	GZ5NVG4XXQ
Test Model:	NVG468MQ
Series Model:	NVG448BQ, NVG443BQ
Received Date:	June 23, 2016
Test Date:	July 12 to 22, 2016
Issued Date:	Dec. 21, 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
Lab Address:	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
SA160418C29B	Original release.	Dec. 21, 2016

1 Certificate of Conformity

Product:	Ethernet and FTTH Gateway
Brand:	ARRIS
Test Model:	NVG468MQ
Series Model:	NVG448BQ, NVG443BQ
Sample Status:	ENGINEERING SAMPLE
Applicant:	ARRIS GROUP, INC.
Test Date:	July 12 to 22, 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. 21, 2016
Wendy Wu / Specialist

Approved by : _____ , **Date:** Dec. 21, 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 27cm away from the body of the user. So, this device is classified as **Mobile Device**.

2.4 Antenna Gain

Antenna Type	PIFA	
Antenna Connector	i-pex (MHF)	
Gain (dBi)	Frequency (MHz)	
	2400-2500	5150-5850
Ant. 1	4.00	-
Ant. 2	4.48	-
Ant. 3	2.52	-
Ant. 4	-	3.97
Ant. 5	-	3.18
Ant. 6	-	4.56
Ant. 7	-	4.43

2.5 Calculation Result Of Maximum Conducted Power

For 2.4GHz and 5GHz (UNII-1 & UNII-3) data were copied from the original test report (Report No.: SA160418C29)

2.4GHz

Frequency Band (MHz)	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
2412-2462	28.88	8.48	27	0.594	1

5GHz

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
5180-5240	307.49	10.07	27	0.341	1
5260-5320	237.96	10.07	27	0.26398	1
5500-5720	236.868	10.07	27	0.26277	1
5745-5825	299.513	10.07	27	0.332	1

NOTE:
2.4GHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 8.48$dBi
5GHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20} + 10^{G4/20})^2 / 4] = 10.07$dBi

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 = 0.594 / 1 + 0.341 / 1 = 0.935

Therefore the maximum calculations of above situations are less than the "1" limit.

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