

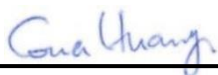
RF EXPOSURE EVALUATION REPORT

FCC ID : GZ5NVG558HX
Equipment : Fixed Broadband Gateway
Brand Name : ARRIS
Model Name : NVG558HX
Applicant : Arris
2500 Walsh Ave. Santa Clara, California
95051, United States
Standard : 47 CFR Part 2.1091

We, SPORTON INTERNATIONAL INC has been evaluated this product in accordance with 47 CFR Part 2.1091 and it complies with applicable limit.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.



Approved by: Cona Huang / Deputy Manager

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History of this test report

Report No.	Version	Description	Issued Date
FA190926002-04	Rev. 01	Initial issue of report	Oct. 7, 2020

**1. Description of Equipment Under Test (EUT)**

Product Feature & Specification	
EUT Type	Fixed Broadband Gateway
Brand Name	ARRIS
Model Name	NVG558HX
FCC ID	GZ5NVG558HX
Integrated WWAN Module	Brand Name: Quectel Model Name: EM12-G
Integrated WLAN Module	Brand Name: ARRIS Model Name: NVG5XDBAC
Wireless Technology and Frequency Range	LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 14: 788 MHz ~ 798 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 66: 1710.7 MHz ~ 1779.3 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5700 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz
Mode	LTE: QPSK, 16QAM WLAN: 802.11a/b/g/n/ac HT20 / HT40 / VHT20 / VHT40 / VHT80 / VHT160
EUT Stage	Identical Prototype

Reviewed by: Jason Wang**Report Producer: Daisy Peng**

**2. Maximum RF average output power among production units**

Mode		Maximum Average power(dBm)
LTE	Band 2	23.06
	Band 4	23.14
	Band 5	23.01
	Band 12	23.11
	Band 13	23.11
	Band 14	23.25
	Band 17	22.93
	Band 25	22.96
	Band 26	23.37
	Band 66	23.08

3. RF Exposure Limit Introduction

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500			f/1500	30
1500-100,000			1.0	30

The MPE was calculated at 30 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$S = \frac{PG}{4\pi R^2}$$

Where:

S = Power Density

P = Output Power at Antenna Terminals

G = Gain of Transmit Antenna (linear gain)

R = Distance from Transmitting Antenna

4. Radio Frequency Radiation Exposure Evaluation

4.1. Power Density Calculation

Note

1. For conservativeness, the lowest uplink frequency of each band is used to determine the MPE limit of that band.
2. WLAN module (Brand Name: ARRIS, Model Name: NVG5XDBAC, FCC ID: PGR-NVG5XDBAC) is integrated into this host and the rated output power and the antenna gain were consider in this report for MPE calculation, which can be referred to TUV Rheinland Precisely Right Report, Report No: MPE Calculation and theresults are used simultaneous transmission analysis.

<Non-Beamforming Mode>

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 30cm (mW/cm ²)	Limit (mW/cm ²)	Power Density / Limit
LTE Band 2	1850.7	6.60	23.06	29.660	0.925	924.698	0.082	1.000	0.082
LTE Band 4	1710.7	4.20	23.14	27.340	0.542	542.001	0.048	1.000	0.048
LTE Band 5	824.7	3.30	23.01	26.310	0.428	427.563	0.038	0.549	0.069
LTE Band 12	699.7	4.80	23.11	27.910	0.618	618.016	0.055	0.466	0.118
LTE Band 13	779.5	3.90	23.11	27.010	0.502	502.343	0.044	0.518	0.085
LTE Band 14	788.0	3.90	23.25	27.150	0.519	518.800	0.046	0.525	0.088
LTE Band 17	706.5	4.80	22.93	27.730	0.593	592.925	0.052	0.469	0.111
LTE Band 25	1850.7	6.60	22.96	29.560	0.904	903.649	0.080	1.000	0.080
LTE Band 26	814.7	3.30	23.37	26.670	0.465	464.515	0.041	0.543	0.076
LTE Band 66	1710.7	4.20	23.08	27.280	0.535	534.564	0.047	1.000	0.047
2.4GHz WLAN	2412.0	3.80	28.39	32.190	1.656	1655.770	0.146	1.000	0.146
5GHz WLAN	5180.0	4.60	25.80	30.400	1.096	1096.478	0.097	1.000	0.097

Note: For conservativeness, the lowest frequency of each band is used to determine the MPE limit of that band

<Beamforming Mode>

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 30cm (mW/cm ²)	Limit (mW/cm ²)	Power Density / Limit
5GHz WLAN	5180.0	8.80	27.15	35.950	3.936	3935.501	0.348	1.000	0.348

**4.2. Collocated Power Density Calculation**

WWAN Power Density / Limit	2.4GHz WLAN Power Density / Limit	5GHz WLAN Power Density / Limit	Σ (Power Density / Limit) of WWAN+ 2.4GHz WLAN+5GHz WLAN
0.118	0.146	0.348	0.612

Note:

1. For collocation analysis, LTE Band 12 is chosen for summation due to the highest (power density/limit) among all WWAN wireless modes.
2. Σ (Power Density / Limit): This is a summation of [(power density for each transmitter/antenna included in the simultaneous transmission)/ (corresponding MPE limit)], for WWAN + 2.4GHz WLAN + 5GHz WLAN.
3. Considering the WWAN module collocation with the 2.4GHz WLAN and 5GHz WLAN transmitter of the EIRP performance listed in the table above, the aggregated (power density /limit) is smaller than 1, and MPE of 3 collocated transmitters is compliant

Conclusion:

According to 47 CFR §2.1091, the RF exposure analysis concludes that the RF Exposure is FCC compliant.