

RF Exposure Report

Report No.: SABHQC-WTW-P20110629

FCC ID: UID-G36

Test Model: G36

Series Model: G34

Received Date: Nov. 19, 2020

Test Date: Dec. 07, 2020

Issued Date: Jan. 13, 2021

Applicant: ARRIS

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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**FCC Registration /
Designation Number:** 723255 / TW2022

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Release Control Record

Issue No.	Description	Date Issued
SABHQC-WTW-P20110629	Original release.	Jan. 13, 2021

1 Certificate of Conformity

Product: DOCSIS 3.1 Wireless Cable Modem

Brand: ARRIS

Test Model: G36

Series Model: G34

Sample Status: Engineering sample

Applicant: ARRIS

Test Date: Dec. 07, 2020

Standards: FCC Part 2 (Section 2.1091)

IEEE C95.3 -2002

References Test Guidance KDB 447498 D01 General RF Exposure Guidance v06

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.

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Approved by : Clark Lin , **Date:** Jan. 13, 2021
Clark Lin / Technical 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				
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

f = Frequency in MHz ; *Plane-wave equivalent power density

2.2 MPE Calculation Formula

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

where

Pd = power density in mW/cm²

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 28cm away from the body of the user.

So, this device is classified as **Mobile Device**.

2.4 Antenna Gain

Antenna NO.	RF Chain NO	Brand	Antenna Net Gain(dBi)	Frequency range	Antenna Type	Connector Type	Cable Length
ANT1	Chain0	2G	2.82	2.4~2.4835GHz	Dipole	i-pex(MHF)	40mm
		5G	3.88	5.15~5.25GHz			
			3.88	5.25~5.35GHz			
			4.3	5.47~5.725GHz			
			4.42	5.725~5.85GHz			
ANT2	Chain1	2G	2.84	2.4~2.4835GHz	Dipole	i-pex(MHF)	130mm
		5G	3.85	5.15~5.25GHz			
			4.33	5.25~5.35GHz			
			4.3	5.47~5.725GHz			
			4.38	5.725~5.85GHz			

*The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

2.5 Calculation Result

Operation Mode	Evaluation Frequency (MHz)	Max AV Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/m ²)
WiFi 2.4G	2412-2462	893.433	5.84	28	0.34797	1
WiFi 5G (U-NII-1)	5180-5240	737.061	6.88	28	0.36474	1
WiFi 5G (U-NII-2A)	5250-5320	246.604	7.12	28	0.11781	1
WiFi 5G (U-NII-2C)	5500-5720	233.538	7.31	28	0.12759	1
WiFi 5G (U-NII-3)	5745-5825	952.044	7.41	28	0.53227	1

Note:

- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
- 2.4GHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 5.84$ dBi
 5GHz U-NII-1: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 6.88$ dBi
 5GHz U-NII-2A: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 7.12$ dBi
 5GHz U-NII-2C: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 7.31$ dBi
 5GHz U-NII-3: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 7.41$ dBi

Conclusion:

The formula of calculated the MPE is:

$$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$$

CPD = Calculation power density

LPD = Limit of power density

$$WLAN 2.4GHz + WLAN 5GHz = 0.34797 / 1 + 0.53227 / 1 = 0.88024$$

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

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