RF Exposure Report

Report No.: SABDWR-WTW-P20110623

FCC ID: 2AHKM-CODA4589

Test Model: CODA-4589

Received Date: June 13, 2017

Test Date: July 15, 2017

Issued Date: Mar. 26, 2021

Applicant: HitronTechnologies

Address: NO. 1-8, LISING 1ST RD., HSINCHU SCIENCE PARK, HSINCHU, 300, TAIWAN.

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

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Table of Contents

Release Control Record

Issue No.	Description	Date Issued
SABDWR-WTW-P20110623	Original release.	Mar. 26, 2021

1   Certificate of Conformity

Product: DOCSIS 3.1 WiFi Emta

Brand: Hitron

Test Model: CODA-4589

Sample Status: ENGINEERING SAMPLE

Applicant: HitronTechnologies

Test Date: July 15, 2017

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.

Prepared by : _____ , **Date:** _____ Mar. 26, 2021 _____

Claire Kuan / Specialist

Approved by : _____ , **Date:** _____ Mar. 26, 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/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 40cm away from the body of the user. So, this device is classified as **Mobile Device**.

2.4   Antenna Gain

Antenna Set.	Transmitter Circuit	Brand	Model	Antenna Net. Gain(dBi)	Frequency range (GHz)	Antenna Type	Connecter Type	Cable Length
A1	Chain (2)	AirGain	M2420SL0	3.69	2.4~2.4835	Dipole	i-pex(MHF)	50
A2	Chain (0)	AirGain	M2410CM	3.23	2.4~2.4835	Dipole	i-pex(MHF)	115
A3	Chain (1)	AirGain	M2420SL0	4.28	2.4~2.4835	Dipole	i-pex(MHF)	85
A4	Chain (2)	AirGain	M5X05C	4.51	5.15~5.85	Dipole	i-pex(MHF)	120
A5	Chain (1)	AirGain	M5X05C	6.1	5.15~5.85	Dipole	i-pex(MHF)	110
A6	Chain (0)	AirGain	M5X05C	4.94	5.15~5.85	Dipole	i-pex(MHF)	40
A7	Chain (3)	AirGain	M5X05C	4.83	5.15~5.85	Dipole	i-pex(MHF)	60

Note: 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 of Maximum Conducted Power

All the data was copied from the original test report (Report No.: SA170503E08A)

Frequency (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
2412-2462	628.703	8.52	40	0.22239	1
5180-5240	548.147	11.14	40	0.35446	1
5260-5320	178.546	11.14	40	0.11546	1
5500-5720	243.396	11.14	40	0.15739	1
5745-5825	965.11	11.14	40	0.62409	1

NOTE:
1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. 2.4GHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 8.52$dBi
3. 5GHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20} + 10^{G4/20})^2 / 4] = 11.14$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 = 0.22239/1 + 0.62409/1 = 0.84648
Therefore the maximum calculations of above situations are less than the "1" limit.

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