RF Exposure Report

Report No.: SA170713D01A

FCC ID: 2ALJ3AP24X

Test Model: AP241, AP241e

Received Date: Jul. 20, 2017

Test Date: Sep. 13 ~ Oct. 27, 2017

Issued Date: Nov. 3, 2017

Applicant: HAN Networks Co., Ltd.

Address: 5/F, Building 37, No.8 Dongbeiwang West Road, HaiDian District, Beijing, China

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

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Release Control Record

Issue No.	Description	Date Issued
SA170713D01A	Original release.	Nov. 3, 2017

1 Certificate of Conformity

Product:	HAN Access Point
Brand:	HAN
Test Model:	AP241, AP241e
Sample Status:	Engineering sample
Applicant:	HAN Networks Co., Ltd.
Test Date:	Sep. 13 ~ Oct. 27, 2017
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 RF characteristics under the conditions specified in this report.

Prepared by : Jessica Cheng , **Date:** Nov. 3, 2017

Jessica Cheng / Senior Specialist

Approved by : Rex. Lai , **Date:** Nov. 3, 2017

Rex Lai / Associate 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				
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

AP241 (with internal antenna):

The antenna of this product, under normal use condition, is at least 37cm away from the body of the user. So, this device is classified as **Mobile Device**.

AP241e (with External antenna):

The antenna of this product, under normal use condition, is at least 39cm away from the body of the user. So, this device is classified as **Mobile Device**.

2.4 Calculation Result Of Maximum Conducted Power

AP241 (with internal antenna):

Frequency Band (MHz)	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
2412-2462	27.42	10.4	37	0.3519	1
5180-5240	18.44	10.49	37	0.0454	1
5260-5320	18.39	10.49	37	0.0449	1
5500-5700	23.31	10.49	37	0.1394	1
5745-5825	29.54	10.49	37	0.5853	1
2402-2480 Bluetooth EDR	4.91	4.89	37	0.0006	1
2402-2480 Bluetooth LE	4.52	4.89	37	0.0005	1

NOTE:
2.4GHz Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2$ / 4] = 10.4dBi
5.0GHz Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2$ / 4] = 10.49dBi
The Max Power = Max tune up power

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 + Bluetooth EDR =0.3519 + 0.5853 +0.0006 = 0.9378

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

AP241e (with External antenna):

Frequency Band (MHz)	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
2412-2462	28.36	10.02	39	0.3603	1
5180-5240	16.93	12.02	39	0.0411	1
5260-5320	16.88	12.02	39	0.0406	1
5500-5700	22.32	12.02	39	0.1421	1
5745-5825	28.62	12.02	39	0.6063	1
2402-2480 Bluetooth EDR	4.91	3.42	39	0.0004	1
2402-2480 Bluetooth LE	4.52	3.42	39	0.0003	1

NOTE:
2.4GHz Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2$ / 4] = 10.02dBi
5.0GHz Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2$ / 4] = 12.02dBi
The Max Power = Max tune up power

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 + Bluetooth EDR =0.3603 +0.6063 + 0.0004 = 0.967

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

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