

RF Exposure Report

Report No.: SA170713D01

FCC ID: 2ALJ3AP24X

Test Model: AP241, AP241e

Received Date: Jul. 13, 2017

Test Date: Jul. 17 ~ Nov. 10, 2017

Issued Date: Nov. 14, 2017

Applicant: HAN Networks Co., Ltd.

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Release Control Record

Issue No.	Description	Date Issued
SA170713D01	Original release.	Nov. 14, 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: Jul. 17 ~ Nov. 10, 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 EMC characteristics under the conditions specified in this report.

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Date:

Nov. 14, 2017

Approved by :



Rex Lai / Associate Technical Manager

Date:

Nov. 14, 2017

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/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 37cm away from the body of the user.

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

2.4 Calculation Result Of Maximum Conducted Power

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	37	0.4003	1
5180-5240	18.44	10.49	37	0.0454	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 = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / 4] = 10.02\text{dBi}$

5.0GHz Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / 4] = 10.49\text{dBi}$

The Max Power = Max tune up power

As client's request, the maximum gain is chosen for final tests.

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 + Bluetooth EDR = $0.4003 + 0.5853 + 0.0006 = 0.9862$

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

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