

RF Exposure Report

Report No.: SA160720C36

FCC ID: UDX-60051010

Test Model: MR30H-HW

Received Date: Jul. 11, 2016

Test Date: Jul. 11 ~ Aug. 31, 2016

Issued Date: Sep. 08, 2016

Applicant: Cisco Systems, Inc.

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

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Release Control Record

Issue No.	Description	Date Issued
SA160720C36	Original release.	Sep. 08, 2016

1 Certificate of Conformity

Product: Wireless 802.11 abgn/ac indoor AP

Brand: Cisco

Test Model: MR30H-HW

Sample Status: Engineering sample

Applicant: Cisco Systems, Inc.

Test Date: Jul. 11 ~ Aug. 31, 2016

Standards: FCC Part 2 (Section 2.1091)
KDB 447498 D01 General RF Exposure Guidance v06
IEEE C95.1

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:** Sep. 08, 2016
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Approved by :  , **Date:** Sep. 08, 2016
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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

$$P_d = (P_{out} * G) / (4 * \pi * r^2)$$

where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 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 20cm away from the body of the user. So, this device is classified as **Mobile Device**.

3 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)
Radio 1					
WLAN: CDD mode					
2412-2462	23.71	6.72	20	0.220	1
WLAN: Beamforming mode					
2412-2462	22.44	6.72	20	0.164	1
Radio 2					
WLAN: CDD mode					
5180-5240	22.03	7.87	20	0.194	1
5745-5825	23.24	7.87	20	0.257	1
WLAN: Beamforming mode					
5180-5240	22.12	7.87	20	0.198	1
5745-5825	23.69	7.87	20	0.285	1
Radio 3					
WLAN: CDD mode					
2412-2462	23.91	2.27	20	0.083	1
5180-5240	18.88	5.18	20	0.051	1
5745-5825	17.97	5.18	20	0.041	1
Radio 4					
BT LE					
2412-2462	5.10	2.66	20	0.001	1

Note:

*Radio 1: 2.4GHz Band: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 6.72\text{dBi}$

Radio 2: 5GHz Band: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 7.87\text{dBi}$

*All radio technologies can transmit simultaneously, but Radio 1 ~4 will not simultaneously in the same sub-band.

CONCLUSION:

Both of the WLAN 2.4G & WLAN 5G & BT LE can transmit simultaneously, the formula of calculated the MPE is:

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

CPD = Calculation power density

LPD = Limit of power density

Radio 1 + Radio 2 + Radio 3 (2.4G) + Radio 3 (5G) + Radio 4

$$= 0.220 + 0.285 + 0.083 + 0.051 + 0.001 = 0.639$$

Therefore, the maximum calculation of this situation is 0.639, which is less than the "1" limit.

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