

## RF Exposure Report

**Report No.:** SA160720C36B

**FCC ID:** UDX-60051010

**Test Model:** MR30H-HW

**Received Date:** Jul. 11, 2016

**Test Date:** Jul. 11 ~ Sep. 13, 2016

**Issued Date:** Sep. 14, 2016

**Applicant:** Cisco Systems, Inc.

**Address:** 170 West Tasman Drive, San Jose, CA 95134

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

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**Test Location:** No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN (R.O.C.)



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### Release Control Record

Issue No.	Description	Date Issued
SA160720C36B	Original release.	Sep. 14, 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 ~ Sep. 13, 2016

**Standards:** FCC Part 2 (Section 2.1091)  
KDB 447498 D03 (January 17, 2014)  
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. 14, 2016  
Pettie Chen / Senior Specialist

**Approved by :**  , **Date:** Sep. 14, 2016  
Ken Liu / Senior 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 <sup>2</sup> )	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<sup>2</sup>

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 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 <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
<b>Radio 1</b>					
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
<b>Radio 2</b>					
WLAN: CDD mode					
5180-5240	22.03	7.87	20	0.194	1
5260-5320	22.75	7.87	20	0.229	1
5500-5700	22.44	7.87	20	0.214	1
5745-5825	23.24	7.87	20	0.257	1
WLAN: Beamforming mode					
5180-5240	22.12	7.87	20	0.198	1
5260-5320	21.90	7.87	20	0.189	1
5500-5700	21.94	7.87	20	0.190	1
5745-5825	23.69	7.87	20	0.285	1
<b>Radio 3</b>					
WLAN: CDD mode					
2412-2462	23.91	2.27	20	0.083	1
5180-5240	18.88	5.18	20	0.051	1
5260-5320	18.44	5.18	20	0.046	1
5500-5700	17.58	5.18	20	0.038	1
5745-5825	17.97	5.18	20	0.041	1
<b>Radio 4</b>					
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:

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

CPD = Calculation power density

LPD = Limit of power density

$$\text{Radio 1} + \text{Radio 2} + \text{Radio 3 (2.4G)} + \text{Radio 3 (5G)} + \text{Radio 4} \\ = 0.220 + 0.285 + 0.083 + 0.051 + 0.001 = 0.639$$

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

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