



# RF EXPOSURE REPORT

**REPORT NO.:** SA140120C29  
**MODEL NO.:** HEOS Extend  
**FCC ID:** U2M-MBRIDGEDM  
**RECEIVED:** Jan. 20, 2014  
**TESTED:** Feb. 17 ~ Mar. 19, 2014  
**ISSUED:** Mar. 27, 2014

**APPLICANT:** Senao Networks, Inc.

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**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 Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
SA140120C29	Original release	Mar. 27, 2014



# 1. CERTIFICATION

**PRODUCT:** 802.11 abgn device

**MODEL:** HEOS Extend

**BRAND:** DENON

**APPLICANT:** Senao Networks, Inc.

**TESTED:** Feb. 17 ~ Mar. 19, 2014

**TEST SAMPLE:** ENGINEERING SAMPLE

**STANDARDS: FCC Part 2 (Section 2.1091)**

**FCC OET Bulletin 65, Supplement C (01-01)**

IEEE C95.1

The above equipment (model: HEOS Extend) 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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Wen Lin / Specialist

**APPROVED BY:** *Ken Liu*, **DATE:** Mar. 27, 2014  
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)
<b>LIMITS FOR GENERAL POPULATION / UNCONTROLLED EXPOSURE</b>				
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 28cm 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 <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
2412-2462	29.95	6.51	28	0.449	1
5180-5240	16.62	8.51	28	0.033	1
5745-5825	28.82	8.51	28	0.549	1

**NOTE:**

**2.4GHz:** Directional gain = 3.5dBi + 10log(2) = 6.51dBi

**5GHz:** Directional gain = 5.5dBi + 10log(2) = 8.51dBi

**CONCLUSION:**

Both of the WLAN 2.4G & WLAN 5G 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

WLAN 2.4G + WLAN 5.0G = 0.449 + 0.549 = 0.998

Therefore, the maximum calculation of this situation is 0.998, which is less than the "1" limit.

**---END---**