RF Exposure Report

Report No.:	SA160726C12F
FCC ID:	U2M-IAP8350AG
Test Model:	IAP8351AG
Series Model:	IAP8350AG
Received Date:	Jul. 26, 2016
Test Date:	Jul. 29 ~ Sep. 09, 2016 Jun. 21 ~ Jul. 05, 2017
Issued Date:	Jul. 10, 2017
Applicant:	Senao Networks, Inc.
Address:	3F, No. 529, Chung Cheng Rd., Hsintien, Taipei, R.O.C.
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan, R.O.C.
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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The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.

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Release Control Record

Issue No.	Description	Date Issued
SA160726C12F	Original release	Jul. 10, 2017

1 Certificate of Conformity

Product:	AP-Indoor
Brand:	EnGenius
Test Model:	IAP8351AG
Series Model:	IAP8350AG
Sample Status:	Engineering sample
Applicant:	Senao Networks, Inc.
Test Date:	Jul. 29 ~ Sep. 09, 2016 Jun. 21 ~ Jul. 05, 2017
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:** Jul. 10, 2017

Polly Chien / Specialist

Approved by : _____ , **Date:** Jul. 10, 2017

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^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

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**.

3 Calculation Result of Maximum Conducted Power

Internal antenna

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	24.99	9.78	28	0.304	1
WLAN: Beamforming mode					
2412-2462	18.77	9.78	28	0.073	1
Radio 2					
WLAN: CDD mode					
5180-5240	24.28	11.73	28	0.405	1
5745-5825	25.46	11.73	28	0.531	1
WLAN: Beamforming mode					
5180-5240	18.26	11.73	28	0.101	1
5745-5825	19.44	11.73	28	0.133	1
Radio 3					
WLAN: CDD mode					
2412-2462	19.82	2.9	28	0.019	1
5180-5240	16.47	5.1	28	0.015	1
5745-5825	16.26	5.1	28	0.014	1
Radio 4					
BT LE					
2402-2480	0.11	3.93	28	0.0003	1

Note:
Radio 1: 2.4GHz Band: Directional gain = 10 $\log[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2/4]$= 9.78dBi
Radio 2: 5GHz Band: Directional gain = 10 $\log[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2/4]$= 11.73dBi
Radio 3: 2.4GHz Band: Directional gain = 2.9dBi
Radio 3: 5GHz Band: Directional gain = 5.1dBi

External antenna

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	24.99	10.68	28	0.375	1
WLAN: Beamforming mode					
2412-2462	18.77	10.68	28	0.089	1
Radio 2					
WLAN: CDD mode					
5180-5240	24.28	10.69	28	0.319	1
5745-5825	25.46	10.69	28	0.418	1
WLAN: Beamforming mode					
5180-5240	18.26	10.69	28	0.080	1
5745-5825	19.44	10.69	28	0.105	1
Radio 3					
WLAN: CDD mode					
2412-2462	19.82	2.9	28	0.019	1
5180-5240	16.47	5.1	28	0.015	1
5745-5825	16.26	5.1	28	0.014	1
Radio 4					
BT LE					
2402-2480	0.11	3.81	28	0.0003	1

Note:
Radio 1: 2.4GHz Band: Directional gain = 4.66dBi + 10log(4) = 10.68dBi
Radio 2: 5GHz Band: Directional gain = 4.67dBi + 10log(4) = 10.69dBi
Radio 3: 2.4GHz Band: Directional gain = 2.9dBi
Radio 3: 5GHz Band: Directional gain = 5.1dBi

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 + ……etc. < 1

CPD = Calculation power density

LPD = Limit of power density

Frequency Band	Max. Power (dBm)			Total Power (dBm)	Power Limit (dBm)
	WLAN 2.4GHz		BT LE		
	Radio 1	Radio 3	Radio 4		
2.4GHz	24.99	19.82	0.11	26.15	30

* For 802.11ac (VHT80+ VHT80), only radio 2 is enabled and radio 3 is disabled.
* For 802.11ac (VHT80) or below, radio 2 and radio 3 operate on different band.
*The EUT transmit simultaneously parameter can't share a common antenna.

Internal antenna:

Radio 1 + Radio 2 + Radio 3 + Radio 4

= 0.304+0.531+0.019+0.0003=0.854

External antenna:

Radio 1 + Radio 2 + Radio 3 + Radio 4

= 0.375+0.418+0.019+0.0003=0.812

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

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