

RF Exposure Report

Report No.: SA160726C12B

FCC ID: 2AGMRAP12I360

Test Model: AP12I360

Received Date: Jul. 26, 2016

Test Date: Jul. 29 ~ Sep. 09, 2016

Issued Date: Nov. 10, 2016

Applicant: Tembo 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
SA160726C12B	Original release	Nov. 10, 2016

1 Certificate of Conformity

Product: AP1002Oi 2-Radio Omni-Directional Indoor Access Point

Brand: EVEREST™ Network Solutions

Test Model: AP12I360

Sample Status: Engineering sample

Applicant: Tembo Systems, Inc.

Test Date: Jul. 29 ~ Sep. 09, 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 : Rolly Chien, **Date:** Nov. 10, 2016
Rolly Chien / Specialist

Approved by : Ken Liu, **Date:** Nov. 10, 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 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

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

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 28cm 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	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	13.03	2.9	28	0.004	1
Radio 4					
BT LE					
2402-2480	0.11	3.93	28	0.0003	1

Note:

Radio 1: 2.4GHz Band: $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/4] = 9.78\text{dBi}$

Radio 2: 5GHz Band: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/4] = 11.73\text{dBi}$

Radio 3: 2.4GHz Band: Directional gain = 2.9dBi

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

Frequency Band	Max. Power (dBm)			Total Power (dBm)	Power Limit (dBm)
	WLAN 2.4GHz		BT EDR		
	Radio 1	Radio 3	Radio 4		
2.4GHz	24.99	13.03	0.11	25.27	30

$$\begin{aligned} &\text{Radio 1} + \text{Radio 2} + \text{Radio 3 (2.4G)} + \text{Radio 4} \\ &= 0.304 + 0.531 + 0.004 + 0.0003 = 0.839 \end{aligned}$$

Therefore, the maximum calculation of this situation is 0.839, which is less than the "1" limit.

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