SUPPLEMENTARY RF EXPOSURE REPORT

REPORT NO.:	SA140702E01C R1
MODEL NO.:	AP-7502
FCC ID:	UZ7AP7502
RECEIVED:	Sep. 16, 2014
TESTED:	Oct. 31, 2014
ISSUED:	June 05, 2015
APPLICANT:	Zebra Technologies Corporation
ADDRESS:	1 Zebra Plaza, Holtsville, NY 11742
MANUFACTURER:	Accton Technology Corporation
ADDRESS:	1, Creation 3rd Rd., Science-based Industrial Park, Hsinchu 300, Taiwan, R.O.C.
ISSUED BY:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
LAB ADDRESS :	No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan, R.O.C.
TEST LOCATION (1):	No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan, R.O.C.
TEST LOCATION (2):	No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan, R.O.C.

This report should not be used by the client to claim product certification, approval, or endorsement by any government agencies.

TABLE OF CONTENTS

REPORT ISSUE HISTORY RECORD OF EUT (AP-7502)

ATTACHMENT NO.	ISSUE DATE	DESCRIPTION
140702E01	Aug. 12, 2014	Original release
140702E01C	June 05, 2015	Add DFS band <5250~5350MHz & 5500~5700MHz>

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
SA140702E01C	Original release	June 04, 2015
SA140702E01C R1	Modified the information of applicant & address	June 05, 2015

1. CERTIFICATION

PRODUCT:	Dual Radio Wallplate AP
BRAND NAME:	Motorola
MODEL NO.:	AP-7502
TEST SAMPLE:	ENGINEERING SAMPLE
APPLICANT:	Zebra Technologies Corporation
TESTED:	Oct. 31, 2014
STANDARDS:	FCC Part 2 (Section 2.1091)
	KDB 447498 D03
	IEEE C95.1

The above equipment (Model: AP-7502) 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:** June 05, 2015
(Midoli Peng, Specialist)

Approved by : _____, **Date:** June 05, 2015
(May Chen, Manager)

2. RF EXPOSURE LIMIT

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

3. 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

4. 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**.

5. ANTENNA GAIN

The antennas provided to the EUT, please refer to the following table:

WLAN (2.4GHz)					
Transmitter Circuit	PCB Chain NO.	Antenna Type	Antenna Gain(dBi) Including cable loss	Connector type	Frequency range (GHz to GHz)
Chain (0)	ALA140-051025	PCB-Dipole	5.81	I-Pex	2400~2483.5
Chain (1)	ALA140-051024	PCB-Dipole	4.52	I-Pex	2400~2483.5
WLAN (5GHz)					
Transmitter Circuit	PCB Chain NO.	Antenna Type	Antenna Gain(dBi) Including cable loss	Connector type	Frequency range (GHz to GHz)
Chain (0)	ALA140-091020	PCB-Dipole	7.22	I-Pex	5150~5850
Chain (1)	ALA140-091020	PCB-Dipole	7.3	I-Pex	5150~5850
BT					
Transmitter Circuit	PCB Chain NO.	Antenna Type	Antenna Gain(dBi) Including cable loss	Connector type	Frequency range (GHz to GHz)
Chain (0)	ALC140-051020	PCB-Dipole	4.74	I-Pex	2400~2483.5

6. CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

For 15.247 and 15.407(U-NII-1 & U-NII-3) data was copied from the original test report (Report No.: SA140702E01).

For WLAN: 15.247(2.4GHz)

802.11b

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm^2)	LIMIT (mW/cm^2)
2412 - 2462	185.368	8.20	20	0.24365	1.00

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 8.20dBi.

802.11g

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm^2)	LIMIT (mW/cm^2)
2412 - 2462	342.766	8.20	20	0.45053	1.00

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 8.20dBi.

802.11n (HT20)

FREQUENCY BAND (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm^2)	LIMIT (mW/cm^2)
2412 - 2462	341.779	8.20	20	0.44924	1.00

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 8.20dBi.

802.11n (HT40)

FREQUENCY BAND (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm^2)	LIMIT (mW/cm^2)
2422 - 2452	152.641	8.20	20	0.20063	1.00

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 8.20dBi.

For WLAN: 15.407(5GHz)

802.11a

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm^2)	LIMIT (mW/cm^2)
5180 - 5240, 5745 - 5825	77.907	10.27	20	0.16493	1.00
5260 - 5320, 5500 - 5700	61.255	10.27	20	0.12968	1.00

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 10.27dBi.

802.11n (HT20)

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm^2)	LIMIT (mW/cm^2)
5180 – 5240, 5745 - 5825	79.398	10.27	20	0.16809	1.00
5260 - 5320, 5500 - 5700	61.751	10.27	20	0.13073	1.00

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 10.27dBi.

802.11n (HT40)

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm^2)	LIMIT (mW/cm^2)
5190 - 5230, 5755 - 5795	56.579	10.27	20	0.11978	1.00
5270 - 5310, 5510 - 5670	52.758	10.27	20	0.11169	1.00

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 10.27dBi.

802.11ac (VHT20)

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm^2)	LIMIT (mW/cm^2)
5180 – 5240, 5745 - 5825	80.513	10.27	20	0.17045	1.00
5260 - 5320, 5500 - 5700	63.532	10.27	20	0.13450	1.00

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 10.27dBi.

802.11ac (VHT40)

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm^2)	LIMIT (mW/cm^2)
5190 - 5230, 5755 - 5795	57.373	10.27	20	0.12146	1.00
5270 - 5310, 5510 - 5670	53.782	10.27	20	0.11386	1.00

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] =10.27dBi.

802.11ac (VHT80)

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm^2)	LIMIT (mW/cm^2)
5210 - 5290, 155	6.498	10.27	20	0.01376	1.00
5290, 5530 - 5610	41.169	10.27	20	0.08716	1.00

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 10.27dBi.

For Bluetooth:

GFSK

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm^2)	LIMIT (mW/cm^2)
2402-2480	2.118	4.74	20	0.00126	1.00

CONCLUSION:

Both of the Bluetooth and WLAN can transmit simultaneously, the formula of calculated the MPE is:

$CPD_1 / LPD_1 + CPD_2 / LPD_2$ + ……etc. < 1

CPD = Calculation power density

LPD = Limit of power density

For WLAN (2.4GHz/ 5GHz) and Bluetooth:

Therefore, the worst-case situation is 0.45053 / 1 + 0.17045 / 1+ 0.00126 / 1 = 0.622, which is less than “1”. This confirmed that the device comply with FCC 1.1310 MPE limit.

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