

# RF EXPOSURE REPORT

**REPORT NO.:** SA140402E02 R1

**MODEL NO.:** ECWO5320, ECWO5320-L, ECWO5320-C,  
ECWO5324, ECWO5324-L, ECWO5324-C

**FCC ID:** YZKECWO5320

**RECEIVED:** Apr. 02, 2014

**TESTED:** Apr. 08 to 10, 2014

**ISSUED:** May 30, 2014

**APPLICANT:** Edgecore Networks Corporation.

**ADDRESS:** No.1, Creation Rd. III, Hsinchu Science  
Park, Hsinchu 30077, 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.

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

This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification

# TABLE OF CONTENTS

RELEASE CONTROL RECORD .....	3
1. CERTIFICATION.....	4
2. RF EXPOSURE LIMIT.....	5
3. MPE CALCULATION FORMULA .....	5
4. CLASSIFICATION.....	5
5. ANTENNA GAIN.....	6
6. CALCULATION RESULT OF MAXIMUM CONDUCTED POWER.....	7

## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
SA140402E02	Original release	May 14, 2014
SA140402E02 R1	Modified the product name	May 30, 2014

## 1. CERTIFICATION

**PRODUCT:** 802.11ac Outdoor Dual Band Access Point

**BRAND NAME:** Edge-corE

**MODEL NO.:** ECWO5320, ECWO5320-L, ECWO5320-C,  
ECWO5324, ECWO5324-L, ECWO5324-C

**TEST SAMPLE:** ENGINEERING SAMPLE

**APPLICANT:** Edgecore Networks Corporation.

**TESTED DATE:** Apr. 08 to 10, 2014

**STANDARDS:** FCC Part 2 (Section 2.1091)  
FCC OET Bulletin 65, Supplement C (01-01)  
IEEE C95.1

The above equipment (Model: ECWO5320, ECWO5324) have 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 :** Midoli Peng , **DATE:** May 30, 2014  
( Midoli Peng, Specialist )

**APPROVED BY :** May Chen , **DATE:** May 30, 2014  
( 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 <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

### 3. MPE CALCULATION FORMULA

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

where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = 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

External antenna								
Transmitter Circuit	Antenna Type	Connector Type	Antenna Gain(dBi) < excluding cable loss>	Inside EUT		Outside EUT		Frequency range (MHz to MHz)
				Cable Loss (dB)	Cable Length (mm)	Cable Loss (dB)	Cable Length (mm)	
Chain (0)	Dipole	RP-SMA	2.65	1	250	1.5	500	2400~2500
			2.7	1.2	250	2.9	500	5150~5850
Chain (1)	Dipole	RP-SMA	2.65	1	250	1.5	500	2400~2500
			2.7	1.2	250	2.9	500	5150~5850
Internal antenna								
Transmitter Circuit	Antenna Type		Connector Type	Antenna Gain(dBi)		Frequency range (MHz to MHz)		
Chain (0)	Patch Array		MMCX	12.5		5150~5850		
Chain (1)	Patch Array		MMCX	12.5		5150~5850		

※For 802.11a/b/g mode will fix transmission on Chain (0)

## 6. CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

For WLAN: 15.247(2.4GHz)

### 802.11b

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
2412 - 2462	137.404	0.15	20	0.02830	1.00

### 802.11g

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
2412 - 2462	146.893	0.15	20	0.03025	1.00

### 802.11n (HT20), 1Tx

FREQUENCY BAND (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
2412 - 2462	148.594	0.15	20	0.03060	1.00

### 802.11n (HT40), 1Tx

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
2422 - 2452	102.802	0.15	20	0.02117	1.00

### 802.11n (HT20), 2Tx

FREQUENCY BAND (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
2412 - 2462	222.389	0.15	20	0.04580	1.00

### 802.11n (HT40), 2Tx

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
2422 - 2452	260.942	0.15	20	0.05374	1.00

**For WLAN: 15.247(5GHz)**

**With External antenna**

**802.11a**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5745 - 5825	253.513	-1.4	20	0.03654	1.00

**802.11ac (VHT20), 1Tx**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5745 - 5825	253.513	-1.4	20	0.03654	1.00

**802.11ac (VHT40), 1Tx**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5755 - 5795	251.768	-1.4	20	0.03629	1.00

**802.11ac (VHT80), 1Tx**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5775	153.109	-1.4	20	0.02207	1.00

**802.11ac (VHT20), 2Tx**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5745 - 5825	224.946	-1.4	20	0.03530	1.00

**802.11ac (VHT40), 2Tx**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5755 - 5795	200.708	-1.4	20	0.02893	1.00

**802.11ac (VHT80), 2Tx**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5775	192.573	-1.4	20	0.02775	1.00



**For WLAN: 15.247(5GHz)**  
**With Internal antenna**  
**802.11a**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5745 - 5825	138.995	12.5	20	0.49173	1.00

**802.11ac (VHT20), 1Tx**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5745 - 5825	211.349	12.5	20	0.74770	1.00

**802.11ac (VHT40), 1Tx**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5755 - 5795	208.449	12.5	20	0.73744	1.00

**802.11ac (VHT80), 1Tx**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5775	153.109	12.5	20	0.54166	1.00

**802.11ac (VHT20), 2Tx**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5745 - 5825	217.548	12.5	20	0.76963	1.00

**802.11ac (VHT40), 2Tx**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5755 - 5795	200.708	12.5	20	0.71006	1.00

**802.11ac (VHT80), 2Tx**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5775	192.573	12.5	20	0.68128	1.00

**For WLAN: 15.407**

**With External antenna**

**802.11a**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5180 - 5240	46.026	-1.4	20	0.00663	1.00

**802.11ac (VHT20), 1Tx**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5180 - 5240	45.082	-1.4	20	0.00650	1.00

**802.11ac (VHT40), 1Tx**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5190 - 5230	49.091	-1.4	20	0.00708	1.00

**802.11ac (VHT80), 1Tx**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5210	49.091	-1.4	20	0.00708	1.00

**802.11ac (VHT20), 2Tx**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5180 - 5240	45.450	-1.4	20	0.00655	1.00

**802.11ac (VHT40), 2Tx**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5190 - 5230	49.095	-1.4	20	0.00708	1.00

**802.11ac (VHT80), 2Tx**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5210	46.776	-1.4	20	0.00674	1.00

**For WLAN: 15.407**  
**With Internal antenna**  
**802.11a**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5180 - 5240	10.423	12.5	20	0.03687	1.00

**802.11ac (VHT20), 1Tx**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5180 - 5240	10.351	12.5	20	0.03662	1.00

**802.11ac (VHT40), 1Tx**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5190 - 5230	10.447	12.5	20	0.03696	1.00

**802.11ac (VHT80), 1Tx**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5210	10.889	12.5	20	0.03852	1.00

**802.11ac (VHT20), 2Tx**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5180 - 5240	10.175	12.5	20	0.03600	1.00

**802.11ac (VHT40), 2Tx**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5190 - 5230	11.048	12.5	20	0.03909	1.00

**802.11ac (VHT80), 2Tx**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5210	10.896	12.5	20	0.03855	1.00

**CONCLUSION:**

Both of the 2.4GHz and 5GHz can transmit simultaneously, the formula of calculated the MPE is:

$$CPD_1 / LPD_1 + CPD_2 / LPD_2 + \dots \text{etc.} < 1$$

**CPD = Calculation power density**

**LPD = Limit of power density**

Therefore, the worst-case situation is  $0.05374 / 1 + 0.76963 / 1 = 0.823$ , which is less than "1". This confirmed that the device comply with FCC 1.1310 MPE limit.

**--- END ---**