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1596



DEKRA

## RF Exposure Evaluation Declaration

Product Name : AP

Model No. : WA748

FCC ID : 2ALQDDCWA748

Applicant : Hangzhou Dunchong Technologies Inc

Address : No.307, Liuhe Road, Binjiang District, Hangzhou,  
Zhejiang, China

Date of Receipt : Mar. 23, 2017

Test Date Mar. 23, 2017~ May. 12, 2017

Issued Date : Jun. 15, 2017

Report No. : 1732120R-RF-US-P20V01

Report Version : V1.0

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by TAF, CNAS or any agency of the government.

The test report shall not be reproduced without the written approval of DEKRA Testing and Certification (Suzhou) Co., Ltd.

## Test Report Certification

Issued Date : Jun. 15, 2017

Report No. : 1732120R-RF-US-P20V01



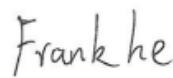
Product Name : AP  
Applicant : Hangzhou Dunchong Technologies Inc  
Address : No.307, Liuhe Road, Binjiang District, Hangzhou, Zhejiang, China  
Manufacturer : Hangzhou Dunchong Technologies Inc  
Address : No.307, Liuhe Road, Binjiang District, Hangzhou, Zhejiang, China  
Model No. : WA748  
FCC ID : 2ALQDDCWA748  
Brand Name : Dunchong  
EUT Voltage : DC 48V,0.6A  
Applicable Standard : KDB 447498D01V06  
FCC Part1.1310  
Test Result : Complied  
Performed Location : DEKRA Testing and Certification (Suzhou) Co., Ltd.  
No.99 Hongye Rd., Suzhou Industrial Park, Suzhou,  
215006, Jiangsu, China  
TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098  
FCC Registration Number: 800392

Documented By :



(Adm. Specialist: Kitty Li )

Reviewed By :



(Senior Engineer: Frank He )

Approved By :



(Engineering Manager : Harry Zhao )

## 1. RF Exposure Evaluation

### 1.1. Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

#### 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>(A) Limits for Occupational/ Control Exposures</b>				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
<b>(B) Limits for General Population/ Uncontrolled Exposures</b>				
300-1500	--	--	F/1500	6
1500-100,000	--	--	1	30

F= Frequency in MHz

Friis Formula

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

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

$P_d$  is the limit of MPE, 1 mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance  $r$  where the MPE limit is reached.

## 1.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

The temperature and related humidity: 18 °C and 78% RH.

## 1.3. Test Result of RF Exposure Evaluation

Product	:	AP
Test Item	:	RF Exposure Evaluation
Test Site	:	AC-6

Antenna Information:

### 2.4G:

Antenna manufacturer		N/A									
Antenna Delivery		<input checked="" type="checkbox"/>	1*TX+1*RX		<input checked="" type="checkbox"/>	2*TX+2*RX		<input type="checkbox"/>	3*TX+3*RX		
Antenna technology		<input checked="" type="checkbox"/>	SISO								
			<input checked="" type="checkbox"/>	Basic							
			<input type="checkbox"/>	Sectorized antenna systems							
		<input checked="" type="checkbox"/>	Cross-polarized antennas								
			<input type="checkbox"/>	Unequal antenna gains, with equal transmit powers							
			<input type="checkbox"/>	Spatial Multiplexing							
			<input type="checkbox"/>	CDD							
			<input type="checkbox"/>	Beam-forming							
Antenna Type		<input checked="" type="checkbox"/>	External	<input checked="" type="checkbox"/>	Dipole						
		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	Panel						
			<input type="checkbox"/>	PIFA							
			<input type="checkbox"/>	PCB							
		<input type="checkbox"/>	Internal	<input type="checkbox"/>	Ceramic Chip Antenna						
			<input type="checkbox"/>	Metal plate type F antenna							
			<input type="checkbox"/>	Cross-polarize Antenna							
Dipole	Antenna Gain #1	8dBi									
Antenna	Antenna Gain #2	8dBi									
Panel	Antenna Gain #1	12dBi									
Antenna	Antenna Gain #2	12dBi									

## 5G :

## Configuration #1

Antenna Model No.	EXO-515912V-NM-P					
Antenna manufacturer	Exceltek Electronics Technology(DG) Co., Ltd					
Antenna Delivery	<input type="checkbox"/>	1*TX+1*RX	<input checked="" type="checkbox"/>	2*TX+2*RX	<input type="checkbox"/>	3*TX+3*RX
Antenna technology	<input type="checkbox"/>	SISO				
			<input checked="" type="checkbox"/>	Basic		
			<input type="checkbox"/>	Sectorized antenna systems		
			<input type="checkbox"/>	Cross-polarized antennas		
			<input type="checkbox"/>	Unequal antenna gains, with equal transmit powers		
			<input type="checkbox"/>	Spatial Multiplexing		
			<input type="checkbox"/>	CDD		
			<input type="checkbox"/>	Beam-forming		
Antenna Type	<input checked="" type="checkbox"/>	External	<input checked="" type="checkbox"/>	Dipole		
			<input type="checkbox"/>	Cross-polarize Antenna		
	<input type="checkbox"/>	Internal	<input type="checkbox"/>	PIFA		
			<input type="checkbox"/>	PCB		
			<input type="checkbox"/>	Ceramic Chip Antenna		
			<input type="checkbox"/>	Metal plate type F antenna		
			<input type="checkbox"/>	Cross-polarize Antenna		
Antenna Gain #1	12 dBi					
Antenna Gain #2	12 dBi					
Antenna Gain #0*(Note1)	-3 dBi					
Antenna Gain #1*(Note1)	-3 dBi					
Note1: The antenna gain show above is the highest gain which has highest radiation pattern between 30 ° and 90 ° according to KDB 789033D02v01r04.						

## Configuration #2

Antenna Model No.	Exd-5159VH-2N-60P					
Antenna manufacturer	Exceltek Electronics Technology(DG) Co., Ltd					
Antenna Delivery	<input type="checkbox"/>	1*TX+1*RX	<input checked="" type="checkbox"/>	2*TX+2*RX	<input type="checkbox"/>	3*TX+3*RX
Antenna technology	<input type="checkbox"/>	SISO				
Antenna Type			<input type="checkbox"/>	Basic		
			<input type="checkbox"/>	Sectorized antenna systems		
			<input checked="" type="checkbox"/>	Cross-polarized antennas		
			<input type="checkbox"/>	Unequal antenna gains, with equal transmit powers		
			<input type="checkbox"/>	Spatial Multiplexing		
			<input type="checkbox"/>	CDD		
			<input type="checkbox"/>	Beam-forming		
			<input checked="" type="checkbox"/>	Dipole		
Antenna Gain #1			<input checked="" type="checkbox"/>	Cross-polarize Antenna		
			<input type="checkbox"/>	PIFA		
			<input type="checkbox"/>	PCB		
			<input type="checkbox"/>	Ceramic Chip Antenna		
			<input type="checkbox"/>	Metal plate type F antenna		
			<input type="checkbox"/>	Cross-polarize Antenna		
Antenna Gain #2	14 dBi					
Antenna Gain #0*(Note1)	-4 dBi					
Antenna Gain #1*(Note1)	-4 dBi					
Note1: The antenna gain show above is the highest gain which has highest radiation pattern between 30 ° and 90 ° according to KDB 789033D02v01r04.						

- Output Power into Antenna & RF Exposure Evaluation Distance:

### Standalone modes

#### Configuration #1

Test Mode	Frequency Band (MHz)	Maximum Output Power to Antenna (dBm)	Directional Gain (dBi)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )	Power Density Limit at R = 20 cm (mW/cm <sup>2</sup> )
802.11b/g/n(20MHz)	2412 ~ 2462 MHz	20.73	8	0.1485	1.0
802.11n(40MHz)	2422 ~ 2452 MHz	12.17	8	0.0207	1.0
802.11a/n/ac(20MHz)	5180-5240MHz 5745-5825 MHz	22.33	12	0.5392	1.0
802.11n/ac (40MHz)	5190-5230MHz 5755-5795 MHz	19.63	12	0.2896	1.0
802.11ac(80MHz)	5210MHz 5775MHz	19.21	12	0.2629	1.0

#### Configuration #2

Test Mode	Frequency Band (MHz)	Maximum Output Power to Antenna (dBm)	Directional Gain (dBi)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )	Power Density Limit at R = 20 cm (mW/cm <sup>2</sup> )
802.11b/g/n(20MHz)	2412 ~ 2462 MHz	20.73	12	0.3730	1.0
802.11n(40MHz)	2422 ~ 2452 MHz	19.48	12	0.2797	1.0
802.11a/n/ac(20MHz)	5180-5240MHz 5745-5825 MHz	21.72	14	0.7426	1.0
802.11n/ac (40MHz)	5190-5230MHz 5755-5795 MHz	19.78	14	0.4750	1.0
802.11ac(80MHz)	5210MHz 5775MHz	17.32	14	0.2696	1.0

**Simultaneous transmission:**
**Configuration #1**

Frequency Band (MHz)	Maximum Output Power to Antenna (dBm)	Directional Gain (dBi)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )	Power Density Limit at R = 20 cm (mW/cm <sup>2</sup> )
2412 ~ 2462	20.73	8	0.1485	1.0
5180-5240 5745-5825	22.33	12	0.5392	1.0
Simultaneous transmission power density			0.6877	1.0

**Configuration #2**

Frequency Band (MHz)	Maximum Output Power to Antenna (dBm)	Directional Gain (dBi)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )	Power Density Limit at R = 20 cm (mW/cm <sup>2</sup> )
2412 ~ 2462	20.73	12	0.3730	1.0
5180-5240 5745-5825	21.72	14	0.7426	1.0
Simultaneous transmission power density			1.1156	1.0

Note: The simultaneous transmission power density is 1.1156mW/cm<sup>2</sup> for AP without any other radio equipment.

————— The End —————