



中国认可
国际互认
检测
TESTING
CNAS L5313



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

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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 ²)	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
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/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

P_d is the limit of MPE, 1 mW/cm². 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		☒	1*TX+1*RX		☒	2*TX+2*RX		☐	3*TX+3*RX	
Antenna technology		☒	SISO							
		☒	MIMO	☒	Basic					
				☐	Sectorized antenna systems					
				☒	Cross-polarized antennas					
				☐	Unequal antenna gains, with equal transmit powers					
				☐	Spatial Multiplexing					
				☐	CDD					
☐	Beam-forming									
Antenna Type		☒	External	☒	Dipole					
				☒	Panel					
		☐	Internal	☐	PIFA					
				☐	PCB					
				☐	Ceramic Chip Antenna					
				☐	Metal plate type F antenna					
				☐	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	☐ 1*TX+1*RX	☒ 2*TX+2*RX	☐ 3*TX+3*RX															
Antenna technology	☐ SISO ☒ MIMO <table border="1" style="margin-left: 20px;"> <tr><td>☒</td><td>Basic</td></tr> <tr><td>☐</td><td>Sectorized antenna systems</td></tr> <tr><td>☐</td><td>Cross-polarized antennas</td></tr> <tr><td>☐</td><td>Unequal antenna gains, with equal transmit powers</td></tr> <tr><td>☐</td><td>Spatial Multiplexing</td></tr> <tr><td>☐</td><td>CDD</td></tr> <tr><td>☐</td><td>Beam-forming</td></tr> </table>				☒	Basic	☐	Sectorized antenna systems	☐	Cross-polarized antennas	☐	Unequal antenna gains, with equal transmit powers	☐	Spatial Multiplexing	☐	CDD	☐	Beam-forming
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Antenna Type	☒ External <table border="1" style="margin-left: 20px;"> <tr><td>☒</td><td>Dipole</td></tr> <tr><td>☐</td><td>Cross-polarize Antenna</td></tr> </table> ☐ Internal <table border="1" style="margin-left: 20px;"> <tr><td>☐</td><td>PIFA</td></tr> <tr><td>☐</td><td>PCB</td></tr> <tr><td>☐</td><td>Ceramic Chip Antenna</td></tr> <tr><td>☐</td><td>Metal plate type F antenna</td></tr> <tr><td>☐</td><td>Cross-polarize Antenna</td></tr> </table>				☒	Dipole	☐	Cross-polarize Antenna	☐	PIFA	☐	PCB	☐	Ceramic Chip Antenna	☐	Metal plate type F antenna	☐	Cross-polarize Antenna
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☐	Metal plate type F antenna																	
☐	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	☐	1*TX+1*RX	☒	2*TX+2*RX	☐ 3*TX+3*RX
Antenna technology	☐	SISO			
	☒	MIMO	☐	Basic	
			☐	Sectorized antenna systems	
			☒	Cross-polarized antennas	
			☐	Unequal antenna gains, with equal transmit powers	
			☐	Spatial Multiplexing	
			☐	CDD	
			☐	Beam-forming	
Antenna Type	☒	External	☐	Dipole	
			☒	Cross-polarize Antenna	
	☐	Internal	☐	PIFA	
			☐	PCB	
			☐	Ceramic Chip Antenna	
			☐	Metal plate type F antenna	
			☐	Cross-polarize Antenna	
Antenna Gain #1	14 dBi				
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 ²)	Power Density Limit at R = 20 cm (mW/cm ²)
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 ²)	Power Density Limit at R = 20 cm (mW/cm ²)
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 ²)	Power Density Limit at R = 20 cm (mW/cm ²)
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 ²)	Power Density Limit at R = 20 cm (mW/cm ²)
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/cm² for AP without any other radio equipment.

_____ The End _____