

RF Exposure Evaluation Declaration

Product Name : 2.4GHz 300Mbps 9dBi Outdoor CPE

Model No. : CPE210

FCC ID : TE7CPE210V2

Applicant : TP-Link Technologies Co.,Ltd.

Address : Building 24(floors1,3,4,5) and 28(floors1-4) Central
Science and Technology Park, Shennan Rd, Nanshan,
Shenzhen, China

Date of Receipt : Oct. 09, 2016

Test Date : Oct. 09, 2016~ Oct. 31, 2016

Issued Date : Nov. 04, 2016

Report No. : 16A2003R-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.

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Test Report Certification

Issued Date : Nov. 04, 2016
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Science and Technology Park, Shennan Rd, Nanshan,
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Manufacturer : TP-Link Technologies Co.,Ltd.
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Science and Technology Park, Shennan Rd, Nanshan,
Shenzhen, China
Model No. : CPE210
FCC ID : TE7CPE210V2
EUT Voltage : POE(24V)
Applicable Standard : KDB 447498D01V06
FCC Part1.1310(b)
Test Result : Complied
Performed Location : Quietek Corporation - Suzhou EMC Laboratory
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: Kathy Feng)

Reviewed By : 

(Senior Engineer: Frank He)

Approved By : 

(Engineering Manager: Harry Zhao)

Laboratory Information

We, **QuieTek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted(audited or listed) by the following related bodies in compliance with ISO 17025, EN 45001 and specified testing scope:

Taiwan R.O.C.	:	BSMI, NCC, TAF
USA	:	FCC
Japan	:	VCCI
China	:	CNAS

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site : <http://www.quietek.com/english/about/certificates.aspx?bval=5>
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site :
http://www.quietek.com/index_en.aspx

If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

HsinChu Testing Laboratory :

No.75-2, 3rd Lin, Wangye Keng, Yonghxing Tsuen, Qiongliong Shiang, Hsinchu County 307, Taiwan, R.O.C.
TEL:+886-3-592-8858 / FAX:+886-3-592-8859 E-Mail : service@quietek.com

LinKou Testing Laboratory :

No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan, R.O.C.
TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789 E-Mail : service@quietek.com

Suzhou Testing Laboratory :

No.99 Hongye Rd., Suzhou Industrial Park, Suzhou, 215006, Jiangsu, China
TEL : +86-512-6251-5088 / FAX : 86-512-6251-5098 E-Mail : service@quietek.com

History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
16A2003R-RF-US-P20V01	V1.0	Initial Issued Report	Nov. 04, 2016

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	:	2.4GHz 300Mbps 9dBi Outdoor CPE
Test Item	:	RF Exposure Evaluation
Test Site	:	AC-6

- Antenna Gain:

Antenna manufacturer	TP-Link					
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 type="checkbox"/>	<input type="checkbox"/>	Basic			
	<input type="checkbox"/>	<input type="checkbox"/>	Sectorized antenna systems			
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Cross-polarized antennas			
	<input type="checkbox"/>	<input type="checkbox"/>	Unequal antenna gains, with equal transmit powers			
	<input type="checkbox"/>	<input type="checkbox"/>	Spatial Multiplexing			
	<input type="checkbox"/>	<input type="checkbox"/>	CDD			
	<input type="checkbox"/>	<input type="checkbox"/>	Beam-forming			
Antenna Type	<input type="checkbox"/>	External	<input type="checkbox"/>	Dipole		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	PIFA		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	PCB		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ceramic Chip Antenna		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Metal plate type F antenna		
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Cross-polarize Antenna		
Antenna Gain #0	9dBi					
Antenna Gain #1	9dBi					
Antenna Technology	Directional Gain (dBi)					
	For Power		For PSD			
<input checked="" type="checkbox"/> Cross-polarize Antenna	9		9			

- Output Power into Antenna & RF Exposure Evaluation Distance:

Test Mode	Frequency Band (MHz)	Maximum Output Power to Antenna (dBm)	Directional Gain (dBi)	Power Density at R = 22 cm (mW/cm ²)	Limit of Power Density S(mW/cm ²)
802.11b/g/n(20MHz)	2412 ~ 2462	28.81	9	0.993	1.0
802.11n(40MHz)	2422 ~ 2422	24.65	9	0.381	1.0

Note: The power density is 0.993mW/cm² for 2.4GHz 300Mbps 9dBi Outdoor CPE without any other radio equipment. And the safety distance is 22cm without any other radio equipment.

————— The End —————