RF Exposure Evaluation Declaration

Product Name	:	5GHz 300Mbps 13dBi Outdoor CPE
Model No.	:	CPE510
FCC ID	:	TE7CPE510V2

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	:	Feb. 06th, 2017
Test Date		Feb. 06th, 2017~ Mar. 24th, 2017
Issued Date	:	Mar. 28th, 2017
Report No.	:	1722006R-RF-US-P20V01
Report Version	:	V1.0

Test Report Certification

Issued Date : Mar. 28th, 2017
Report No. : 1722006R-RF-US-P20V01

Product Name	:	5GHz 300Mbps 13dBi Outdoor CPE
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
Manufacturer	:	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
Model No.	:	CPE510
FCC ID	:	TE7CPE510V2
Brand Name	:	TP-Link
EUT Voltage	:	DC 24V
Applicable Standard	:	KDB 447498D01V06 FCC Part1.1310
Test Result	:	Complied
Performed Location	:	DEKRA Testing and Certification (Suzhou) Co., Ltd. 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 : Kitty Li

(Adm. Specialist: Kitty Li)

Reviewed By : Frank he

(Senior Engineer: Frank He)

Approved By : Harry Zhao

(Engineering Manager : Harry Zhao)

History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
1722006R-RF-US-P20V01	V1.0	Initial Issued Report	Mar. 28th, 2017

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/cm2)	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: Pd = (Pout*G)/(4*pi*r2)

Where

Pd = power density in mW/cm2

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

Pd 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℃and 78% RH.

1.3. Test Result of RF Exposure Evaluation

Product	:	5GHz 300Mbps 13dBi Outdoor CPE
Test Item	:	RF Exposure Evaluation
Test Site	:	AC-6

Antenna Information:

Antenna Model No.	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		
	☒	Internal	☐	PIFA		
			☐	PCB		
			☐	Ceramic Chip Antenna		
			☐	Metal plate type F antenna		
			☒	Cross-polarize Antenna		
Antenna Gain #0	13dBi					
Antenna Gain #1	13dBi					

- Output Power into Antenna & RF Exposure Evaluation Distance:

Standlone modes

Test Mode	Frequency Band (MHz)	Maximum Output Power to Antenna (dBm)	Directional Gain (dBi)	Power Density at R = 20 cm (mW/cm2)	Power Density Limit at R = 20 cm (mW/cm^2)
802.11n(5MHz) with CDD	5180-5240MHz 5745-5825 MHz	23.02	13.00	0.7957	1.0
802.11n(10MHz) with CDD	5180-5240MHz 5745-5825 MHz	23.06	13.00	0.8030	1.0
802.11a/n/ (20MHz) with CDD	5180-5240MHz 5745-5825 MHz	23.24	13.00	0.8370	1.0
802.11n (40MHz) with CDD	5190-5230MHz 5755-5795 MHz	23.07	13.00	0.8049	1.0

Note: The simultaneous transmission power density is 0.8370mW/cm^2 for 5GHz 300Mbps 13dBi Outdoor CPE without any other radio equipment.

The End