



中国认可  
国际互认  
检测  
TESTING  
CNAS L5313



DEKRA

## RF Exposure Evaluation Declaration

Product Name : Smart Open-Closed Sensor

Model No. : CS100

FCC ID : TE7CS100

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 : Jan. 17, 2017

Test Date : Jan. 17, 2017~ Feb. 20, 2017

Issued Date : Mar. 09, 2017

Report No. : 1712082R-RF-US-P20V01

Report Version : V2.0

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 : Mar. 09, 2017

Report No. : 1712082R-RF-US-P20V01



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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. : CS100

FCC ID : TE7CS100

EUT Voltage : DC 1.5V

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  
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FCC Registration Number: 800392

Documented By :



(Adm. Specialist: Kitty Li )

Reviewed By :



(Senior Engineer: Frank He )

Approved By :



(Engineering Manager : Harry Zhao )

## History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
1712082R-RF-US-P20V01	V1.0	Initial Issued Report	Mar. 02, 2017
1712082R-RF-US-P06V01	V2.0	Modified Product Name	Mar. 09, 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/cm <sup>2</sup> )	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/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 and 78% RH.

## 1.3. Test Result of RF Exposure Evaluation

Product	:	Smart Open-Closed Sensor
Test Item	:	RF Exposure Evaluation
Test Site	:	AC-6

### ● Antenna Information

Model No.	CS100				
Antenna manufacturer	TP-LINK				
Antenna Delivery	<input checked="" type="checkbox"/>	1*TX+1*RX	<input type="checkbox"/>	2*TX+2*RX	<input type="checkbox"/> 3*TX+3*RX
Antenna technology	<input checked="" type="checkbox"/>	SISO			
	<input type="checkbox"/>	MIMO	<input type="checkbox"/>	Basic	
			<input type="checkbox"/>	CDD	
			<input type="checkbox"/>	Beam-forming	
Antenna Type	<input type="checkbox"/>	External	<input type="checkbox"/>	Dipole	
	<input checked="" type="checkbox"/>	Internal	<input checked="" type="checkbox"/>	PIFA	
			<input type="checkbox"/>	PCB	
			<input type="checkbox"/>	Ceramic Chip Antenna	
			<input type="checkbox"/>	Metal plate type F antenna	
Antenna Gain	1.84dBi				

### ● Output Power into Antenna & RF Exposure Evaluation Distance:

#### Standalone modes

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> )
Zigbee	2405 ~ 2480 MHz	5.53	1.84	0.0011	1.0

Note: The simultaneous transmission power density is 0.0011mW/cm<sup>2</sup> for without Smart Open-Closed Sensor any other radio equipment.

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