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

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Test Report Certification

Issued Date : Mar. 09, 2017
Report No. : 1712082R-RF-US-P20V01

![DEKRA logo]

Product Name	:	Smart Open-Closed Sensor
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.	:	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 TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098 FCC Registration Number: 800392

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(Senior Engineer: Frank He)

Approved By   :   *Harry zhao*

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

● Antenna Information

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

● 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/cm2)
Zigbee	2405 ~ 2480 MHz	5.53	1.84	0.0011	1.0

Note: The simultaneous transmission power density is 0.0011mW/cm2 for without Smart Open-Closed Sensor any other radio equipment.

———————————— The End ————————————