

## RF Exposure Report

**Report No.:** SA150112C13B

**FCC ID:** TE7NC230

**IC:** 8853A-NC230

**Test Model:** NC230

**Received Date:** Jan. 12, 2015

**Test Date:** Jan. 15 ~ Jul. 29, 2015

**Issued Date:** Nov. 03, 2015

**Applicant:** TP-LINK TECHNOLOGIES CO., LTD.

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**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

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**Test Location:** No.19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN (R.O.C.)



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**Release Control Record**

Issue No.	Description	Date Issued
SA150112C13B	Original release	Nov. 03, 2015

## 1 Certificate of Conformity

**Product:** HD Day/Night Wi-Fi Cloud Camera

**Brand:** TP-LINK

**Test Model:** NC230

**Sample Status:** Prototype

**Applicant:** TP-LINK TECHNOLOGIES CO., LTD.

**Test Date:** Jan. 15 ~ Jul. 29, 2015

**Standards:** FCC Part 2 (Section 2.1091)

KDB 447498 D03

IEEE C95.1

RSS-102 Issue 5 (2015-03)

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**Prepared by :** Suntee Liu, **Date:** Nov. 03, 2015

Suntee Liu / Specialist

**Approved by :** Ken Liu, **Date:** Nov. 03, 2015

Ken Liu / Senior Manager

## 2 RF Exposure

### 2.1 Limits for Maximum Permissible Exposure (MPE)

#### FCC:

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time (minutes)
Limits For General Population / Uncontrolled Exposure				
300-1500	...	...	F/1500	30
1500-100,000	...	...	1.0	30

F = Frequency in MHz

#### IC:

Per RSS-102 issue 5, section 2.5.2 as reproduced below:

#### 2.5.2 Exemption from Routine Evaluation Limits – RF Exposure Evaluation

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

- below 20 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than  $22.48/f^{0.5}$  W (adjusted for tune-up tolerance), where  $f$  is in MHz;
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than  $1.31 \times 10^{-2} f^{0.6834}$  W (adjusted for tune-up tolerance), where  $f$  is in MHz;
- at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the e.i.r.p. was derived.

Frequency Range (MHz)	Electric Field Strength (V/m rms)	Magnetic Field Strength (A/m rms)	Power Density (W/m <sup>2</sup> )	Reference Period (minutes)
Limits For General Population / Uncontrolled Exposure				
0.003-10 <sup>21</sup>	83	90	-	Instantaneous*
0.1-10	-	0.73/f	-	6**
1.1-10	87/f <sup>0.5</sup>	-	-	6**
10-20	27.46	0.0728	2	6
20-48	58.07/f <sup>0.25</sup>	0.1540/f <sup>0.25</sup>	8.944/f <sup>0.5</sup>	6
48-300	22.06	0.05852	1.291	6
300-6000	3.142 f <sup>0.3417</sup>	0.008335 f <sup>0.3417</sup>	0.02619 f <sup>0.6834</sup>	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	616000/f <sup>1.2</sup>
150000-300000	0.158 f <sup>0.5</sup>	4.21 x 10 <sup>-4</sup> f <sup>0.5</sup>	6.67 x 10 <sup>-5</sup> f	616000/f <sup>1.2</sup>

Note:  $f$  is frequency in MHz.

\*Based on nerve stimulation (NS).

\*\* Based on specific absorption rate (SAR).

## 2.2 MPE Calculation Formula

### FCC:

$$Pd = (Pout*G) / (4*pi*r^2)$$

where

Pd = power density in mW/cm<sup>2</sup>

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

### IC:

$$Pd = (Pout*G) / (4*pi*r^2)$$

where

Pd = power density in W/m<sup>2</sup>

Pout = output power to antenna in W

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in m

## 2.3 Classification

### FCC:

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. So, this device is classified as Mobile Device.

### IC:

The antenna of this product, under normal use condition, is at least 0.2m away from the body of the user. So, this device is classified as Mobile Device.

### 3 Calculation Result of Maximum Conducted Power

#### FCC:

Frequency Band (MHz)	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
2412-2462	23.47	5.87	20	0.171	1

Note: 2412-2462MHz Directional gain = 2.86dBi + 10log(2) = 5.87dBi

#### IC:

Frequency Band (MHz)	Max Power (dBm)	Antenna Gain (dBi)	Distance (m)	Power Density (W/m <sup>2</sup> )	Limit (W/m <sup>2</sup> )
2412-2462	23.47	5.87	0.2	1.709	5.366

Note: 2412-2462MHz Directional gain = 2.86dBi + 10log(2) = 5.87dBi

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