

TEST REPORT

of

FCC CFR 47 part 1, 1.1307(b), 1.1310

FCC ID: YZP-RNTDST01A

Equipment Under Test : IP Camera
Model Name : RNTD-ST01A
Applicant : LG INNOTEK CO., LTD.
Manufacturer : LG INNOTEK CO., LTD.
Date of Test(s) : 2016.03.18 ~ 2016.04.29
Date of Issue : 2016.05.12

In the configuration tested, the EUT complied with the standards specified above.

Tested By:



Youngmin Park

Date:

2016.05.12

Approved By:



Hyunhae You

Date:

2016.05.12

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INDEX

<u>Table of Contents</u>	Page
1. General Information -----	3
2. RF Exposure Evaluation -----	4

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1. General Information

1.1. Testing Laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)

-Wireless Div. 2FL, 10-2, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 435-837

All SGS services are rendered in accordance with the applicable SGS conditions of service available on request and accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>.

Telephone : + 82 31 688 0901

FAX : + 82 31 688 0921

1.2. Details of applicant

Applicant : LG INNOTEK CO., LTD.

Address : 26, Hanamsandan 5beon-ro, Gwangsan-gu, Gwangju, 62229, Korea

Contact Person : Jeong, In-Chang

Phone No. : +82 10 2326 9972

1.3. Description of EUT

Kind of Product		IP Camera
Model Name		RNTD-ST01A
Power Supply		DC 5 V
Frequency Range		2 412 MHz ~ 2 462 MHz (11b/g/n_HT20)
Modulation Technique		DSSS, OFDM
Number of Channels		11 channels (11b/g/n_HT20)
Antenna Type		PCB Antenna (MIMO)
Antenna Gain	Port#1	1.81 dB i
	Port#2	1.76 dB i

1.4. Declaration by the manufacturer

- The device supports 11b mode with single transmission at only Antenna 1 port and 11g,11n_HT20 mode with multi transmission at the same time.

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1.5. Test report revision

Revision	Report number	Date of Issue	Description
0	F690501/RF-RTL009779	2016.05.02	Initial
1	F690501/RF-RTL009779-1	2016.05.12	Added correlated gain for calculation

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2. RF Exposure Evaluation

2.1. Environmental evaluation and exposure limit according to FCC CFR 47 part 1, 1.1307(b), 1.1310

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
(A) Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	*100	6
3.0 – 30	1842/f	4.89/f	*900/f ²	6
30 - 300	61.4	0.163	1.0	6
300 – 1 500	-	-	f/300	6
1 500 – 100 000	-	-	5	6
(B) Limits for General Population/Uncontrolled Exposure				
<u>0.3 – 1.34</u>	614	1.63	*100	30
<u>1.34 – 30</u>	824/f	2.19/f	*180/f ²	30
<u>30 - 300</u>	27.5	0.073	0.2	30
300 – 1 500	-	-	f/1500	30
<u>1 500 – 100 000</u>	-	-	<u>1.0</u>	<u>30</u>

2.1.1. 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 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 where the MPE limit is reached.

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2.1.2. Test Result of RF Exposure Evaluation

Test Item : RF Exposure Evaluation Data

2.1.3. Output Power into Antenna & RF Exposure Evaluation Distance

WLAN (2.4G)

- Maximum tune up tolerance

Channel	Channel Frequency (MHz)	Output Average Power to Antenna (dB m)	Antenna Gain (dB i)	Duty Cycle (%)	Power Density at 20 cm (mW/cm ²)	Limits (mW/cm ²)
1	2 412	18.5	4.80	100	0.042 533	1

Note :

1. The power density Pd (5th column) at a distance of 20 cm calculated from the friis transmission formula is far below the limit of 1 mW/cm².
2. The worst case was only reported in each operating mode.
3. Unequal antenna gains, with equal transmit powers. For antenna gains given by G₁, G₂, ..., G_N dB i
 - (i) If transmit signals are correlated, then
 Directional gain = $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2 / N_{ANT}]$ dB i [Note the "20"s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]

Directional Gain = 4.80 dB i

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