



시험 성적서

TEST REPORT

페이지(page) : (1) / (총(Total) 6)

성적서 번호 Report No.		ICRT-TR-E231002-0A	
신청자 Client	기관명 Name	TRUEN Co., Ltd.	
	주 소 Address	Office 1309, Woolim e-Biz Center 1, 28, Digital-ro 33-gil, Guro-gu, Seoul, Republic of Korea	
시험대상품목 Sample description		Wireless Home Camera	
모델명 Type designation		TSC-421P	
정 격 Ratings		DC 5.0 V	
시험장소 Place of test		☒ 고정시험(Inside test) ☐ 현장시험(Field test) 주소지(Address): 112, Hwanggeum 3-ro 7beon-gil, Hagun-ri, Yangchon-eup, Gimpo-si, Gyeonggi-do, Korea	
시험기간 Date of test		02. May. 2023 ~ 03. May. 2023	
시험방법/항목 Test Method/Item		FCC rule §1.1310	
시험결과 Test Results		Refer to 3. Maximum Permissible Exposure	
확 인 Affirmation	작성자 Tested by	기술책임자 Technical Manager	
	성 명 Name Eun-Hye, Gwak (Signature)	성 명 Name Tae Yang, Yoon (Signature)	
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Revision History

Issued Report No.	Issued Date	Revisions	Effect Section
ICRT-TR-E231002-0A	2023.05.04	Initial Issue	All



1. Applicant & Manufacturer & Test Laboratory Information

1.1 Applicant information

Applicant	TRUEN Co., Ltd.
Address	Office 1309, Woolim e-Biz Center 1, 28, Digital-ro 33-gil, Guro-gu, Seoul, Republic of Korea
Contact Person	Sunguk Lee
Telephone No.	-
Fax No.	-
E-mail	leesg@truen.co.kr

1.2 Manufacturer Information

Manufacturer	TRUEN Co., Ltd.
Address	Office 1309, Woolim e-Biz Center 1, 28, Digital-ro 33-gil, Guro-gu, Seoul, Republic of Korea

1.3 Test Laboratory Information

Conducted tests were performed at	
Laboratory	ICR Co., Ltd.
Address	112, Hwanggeum 3-ro 7beon-gil, Hagun-ri, Yangchon-eup, Gimpo-si, Gyeonggi-do, Korea
Telephone No.	+82-2-6351-9002
Fax No.	+82-2-6351-9007
RRA No.	KR0165
KOLAS No.	KT652



2. Equipment under Test(EUT) Information

2.1 General Information

Product Name	Wireless Home Camera
Brand Name	-
Model Name	TSC-421P
Additional Model Name	-
FCC ID	2AZK3-TSC-421P
Power Supply	DC 5.0 V

2.2 Additional Information

Equipment Class	DTS-Digital Transmission System	
Device Type	Stand-alone	
Operating Frequency	2.4 GHz WLAN (802.11b/g/n(HT20))	2 412 MHz ~ 2 462 MHz
RF Output Power	2.4 GHz WLAN 802.11b	11.84 dBm
	2.4 GHz WLAN 802.11g	13.31 dBm
	2.4 GHz WLAN 802.11n20	14.42 dBm
Number of Channel	2.4 GHz WLAN (802.11b/g/n(HT20))	11
Modulation Type	2.4 GHz WLAN 802.11b	DSSS
	2.4 GHz WLAN 802.11g/n20	OFDM
Antenna Type	FPCB Antenna	
Antenna Gain	1.85 dBi	
Antenna Operating Mode	Single antenna exists for each mode	

2.3 Mode of operation during the test

- The EUT is continuous transmission mode during the test with set at Low Channel, Middle Channel, and High Channel.
To get a maximum radiated emission levels from the EUT, the EUT was moved throughout the XY, YZ, XZ planes.

2.4 Modifications of EUT

- None



3. Maximum Permissible Exposure

3.1 RF Exposure calculation

According to the FCC rule §1.1310 the limit for General Population/Uncontrolled exposure is 1 mW/cm² for the device operating 1 500 MHz ~ 100 000 MHz.

The electric field generated for a 1 mW/cm² exposure is calculated as follows:

$$E = \sqrt{(30 * P * G)} / D, \text{ and } S = E^2 / Z = E^2 / 377, \text{ because } 1 \text{ mW/cm}^2 = 10 \text{ W/m}^2$$

S = Power density in mW/cm², Z = Impedance of free space, 377 Ω

P = Power input to the external antenna

(Output power from the EUT antenna port (dBm) – cable loss (dB)),

E = Electric field strength in V/m, G = Numeric antenna gain, and D = distance in meter

Combining equations and rearranging the terms to express the distance as a function of the remaining variable

$$D = \sqrt{(30 * P * G)} / (377 * 10 S)$$

Changing to units of mW and cm, using P (mW) = P (W) / 1 000, d (cm) = 0.01 * d (m)

$$D = 0.282 * \sqrt{(P * G)} / S$$



3.2 Result

According to above equation, the following result was obtained.

Operating Mode	Target Power W / tolerance	Max tune up power		Antenna Gain		Safe Distance (cm)	Power Density (mW/cm ²) @ 20 cm Separation	Limit (mW/cm ²)
		(dBm)	(mW)	Log	Linear			
802.11b	11.84. ± 1.0	12.84	19.23	1.85	1.53	1.53	0.0058 6	1.00
802.11g	13.31. ± 1.0	14.31	26.98			1.81	0.0082 2	
802.11 n20	14.42 ± 1.0	15.42	34.83			2.06	0.0106 2	

According to above table, for Band(802.11b), safe distance,

$$D = 0.282 * \sqrt{(34.83 * 1.53)/1.00} = 2.06 \text{ cm.}$$

For getting power density at 20 cm separation in above table, following formula was used.

$$S = P * G / (4\pi * R^2) = (34.83 * 1.53 / (4 * \pi * 20^2)) = 0.0106 2$$

- END -