



시험 성적서

TEST REPORT

페이지(page) : (1) / (총(Total) 8)

성적서 번호 Report No.		ICRT-TR-E222084-0A	
신청자 Client	기관명 Name	PITTASOFT CO.,LTD.	
	주 소 Address	A4th floor, ABN Tower, 331, Pangyo-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea	
시험대상품목 Sample description		Car Dashcam	
모델명 Type designation		DR970X LTE	
정 격 Ratings		DC 12.0 V / DC 24.0 V	
시험장소 Place of test		☒ 고정시험(Inside test) ☐ 현장시험(Field test) 주소지(Address): 112, 113 Hwanggeum 3-ro 7beon-gil, Hagun-ri, Yangchon-eup, Gimpo-si, Gyeonggi-do, Korea	
시험기간 Date of test		31.May. 2022 ~ 08. Aug. 2022	
시험방법/항목 Test Method/Item		FCC rule §1.1310	
시험결과 Test Results		Refer to 3. Test Summary	
확 인 Affirmation	작성자 Tested by	기술책임자 Technical Manager	
	성 명 Name Yeong-Hwan, Hong (Signature)	성 명 Name Min-Gi, Son (Signature)	
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Revision History

Issued Report No.	Issued Date	Revisions	Effect Section
ICRT-TR-E222084-0A	10-Aug-2022	Initial Issue	All



1. Applicant & Manufacturer & Test Laboratory Information

1.1 Applicant information

Applicant	PITTASOFT CO.,LTD.
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Contact Person	MINHO SHIN
Telephone No.	+ 82-31-8039-7789
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1.2 Manufacturer Information

Manufacturer 1	PITTASOFT CO.,LTD.
Address	A4th floor, ABN Tower, 331, Pangyo-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, 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
Test Firm Registration Number	490614



2. Equipment under Test(EUT) Information

2.1 General Information

Product Name	Car Dashcam
Brand Name	-
Model Name	DR970X LTE
Additional Model Name	DR970X-1CH LTE, DR970X-2CH LTE, DR970X-2CH IR LTE, DR970X-2CH DMS LTE, DR970X-2CH Truck LTE, DR970X-2CH ELD LTE
FCC ID	YCK- DR970XLTE
Power Supply	DC 12.0 V / DC 24.0 V

2.2 Additional Information

Equipment Class	DTS-Digital Transmission System DSS - Frequency Hopping Spread Spectrum systems	
Device Type	Stand-alone	
Operating Frequency	802.11b/g/n(HT20)	2 412 MHz ~ 2 462 MHz
	802.11n(HT40)	2 422 MHz ~ 2 452 MHz
	802.11a	5 180 MHz ~ 5 240 MHz / 5 260 MHz ~ 5 320 MHz 5 500 MHz ~ 5 700 MHz / 5 745 MHz ~ 5 825 MHz
	802.11n(HT20)/ac(VHT20)	
	802.11n(HT40)/ac(VHT40)	
	802.11ac(VHT80)	
	Bluetooth BDR/EDR/LE	2 402 MHz ~ 2 480 MHz
RF Output Power	802.11b	11.52 dBm
	802.11g	15.61 dBm
	802.11n(HT20)	14.65 dBm
	802.11n(HT40)	14.45 dBm
	Bluetooth BDR	8.67 dBm
	Bluetooth EDR	11.58 dBm
	Bluetooth LE	6.34 dBm
	802.11a	2.59 dBm
	802.11n(HT20)	2.68 dBm
	802.11n(HT40)	1.03 dBm
	802.11ac(VHT20)	2.73 dBm
	802.11ac(VHT40)	1.06 dBm
	802.11ac(VHT80)	-0.17 dBm



Number of Channel	802.11b/g/n(HT20)	11
	802.11n(HT40)	7
	Bluetooth BDR/EDR	79
	Bluetooth LE	40
	802.11a/n(HT20)/ac(VHT20)	25
	802.11n(HT40)/ac(VHT20)	12
	802.11ac(VHT80)	6
Modulation Type	802.11b: DSSS Modulation 802.11g/n(HT20/HT40)/ac(VHT20/VHT40/VHT80): OFDM Modulation	
Antenna Type	Chip Antenna	
Antenna Gain	2.4 GHz	1.88 dBi
	5 GHz	3.60 dBi
Antenna Operating Mode	Single Antenna Equipment with only one antenna	

2.3 Mode of operation during the test

- The EUT is continuous transmission mode during the test with set to each of the Low Channel, Middle Channel, and High Channel at the worst case data rate. The worst case data rate for each modulation is determined WLAN & Bluetooth.

2.4 Modifications of EUT

- None

2.5 Reason of Additional Model Name

- The basic model, electrical specifications, structure, and circuit are the same, but simple wave life is added due to the seller.



3. Maximum Permissible Exposure

3.1 RF Exposure calculation

According to the FCC rule 1.1310 table 1B, the limit for the maximum permissible RF exposure for an uncontrolled environment are $f/1500 \text{ mW/cm}^2$ for the frequency range between 300 MHz and 1 500 MHz and 1.0 mW/cm^2 for the frequency range between 1 500 MHz and 100 000 MHz.

The electric field generated for a 1 mW/cm^2 exposure is calculated as follows:

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

Where

S = Power density in mW/cm^2 , Z = Impedance of free space, 377Ω

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 $P (\text{mW}) = P (\text{W}) / 1 000$, $d (\text{cm}) = 0.01 * d (\text{m})$

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

Where

d = distance in cm , P = Power in mW , G = Numeric antenna gain, and S = Power density in mW/cm^2



3.1 Result

According to above equation, the following result was obtained.

Operating Mode	Frequency (MHz)	Target Power W / tolerance	Max tune up power		Antenna Gain		E.I.R.P (W)	Limit (W)
			(dBm)	(mW)	Log	Linear		
802.11b	2 462 MHz	11.52 ± 1.0	12.52	17.86	1.88	1.54	0.0275	2.72
802.11g	2 462 MHz	15.61 ± 1.0	16.61	45.81			0.0706	2.72
802.11n(HT20)	2 462 MHz	14.65 ± 1.0	15.65	36.73			0.0566	2.72
802.11n(HT40)	2 452 MHz	14.45 ± 1.0	15.45	35.08			0.0541	2.71
Bluetooth BDR	2 480 MHz	8.67 ± 1.0	9.67	9.27			0.0143	2.74
Bluetooth EDR	2 480 MHz	11.58 ± 1.0	12.58	18.11			0.0279	2.74
Bluetooth LE	2 440 MHz	6.34 ± 1.0	7.34	5.42			0.0084	2.71
802.11a	5 280 MHz	2.68 ± 1.0	3.68	2.33	3.6	2.29	0.0052	2.72
802.11n(HT20)	5 190 MHz	1.03 ± 1.0	2.03	1.60			0.0053	4.58
802.11n(HT40)	5 200 MHz	2.73 ± 1.0	3.73	2.36			0.0037	4.53
802.11ac(VHT20)	5 190 MHz	1.06 ± 1.0	2.06	1.61			0.0054	4.54
802.11ac(VHT40)	5 210 MHz	-1.17 ± 1.0	0.83	1.21			0.0037	4.53
802.11ac(VHT80)	5 280 MHz	2.68 ± 1.0	3.68	2.33			0.0028	4.54
LTE Band 2	1 850 MHz	22. ± 1.0	23.0	199.53	4.00	2.51	0.5012	2.24
LTE Band 4	2 755 MHz	22. ± 1.0	23.0	199.53			0.5012	2.94
LTE Band 12	699 MHz	22. ± 1.0	23.0	199.53			0.5012	1.15

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

$$S = P * G / (4\pi * R^2) = 199.53 * 17.38 / (4 * \pi * 20^2) = 0.6902$$

Where:

S = Power Density,

P = Power input to the external antenna (Output power from the EUT antenna port (dBm) – cable loss (dB)),

G = Gain of Transmit Antenna (linear gain), R = Distance from Transmitting Antenna



- Conclusion of Simultaneous Transmitter

Operating Freq. Band	Operating Mode	Frequency (MHz)	Max tune up power		Antenna Gain		MPE (Ratio)	Calculated MPE	Limit
			(dBm)	(mW)	Log	Linear			
WLAN + Bluetooth + LTE	802.11g	2 462 MHz	16.61	45.81	1.88	1.54	0.0260	0.472	1.00
	Bluetooth EDR	2 480 MHz	12.58	18.11			0.0102		
	LTE Band 2	1 850 MHz	23.00	199.53	4.00	2.51	0.4358		

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