

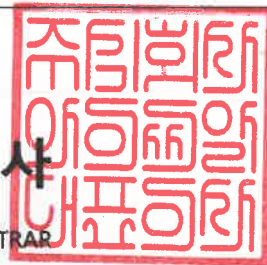


시험 성적서

TEST REPORT

페이지(page) : (1) / (총(Total) 8)

성적서 번호 Report No.		ICRT-TR-E230927-0A	
신청자 Client	기관명 Name	POSBANK CO., LTD	
	주 소 Address	ROOM 805-808, NEW T CASTLE B/D, 108, Gasan digital 2-ro, Geumcheon-gu, Seoul, Republic of Korea	
시험대상품목 Sample description		POS SYSTEM	
모델명 Type designation		ACT 1560	
정 격 Ratings		DC 12 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		06. Apr. 2023 ~ 25. Apr. 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)	Tae Yang, Yoon (Signature)
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Revision History

Issued Report No.	Issued Date	Revisions	Effect Section
ICRT-TR-E230927-0A	2023.04.25	Initial Issue	All



1. Applicant & Manufacturer & Test Laboratory Information

1.1 Applicant information

Applicant	POSBANK CO.,LTD
Address	ROOM 805-808, NEW T CASTLE B/D, 108, Gasan digital 2-ro, Geumcheon-gu, Seoul, Republic of Korea
Contact Person	Sungho Jang
Telephone No.	+82-10-7383-3797
Fax No.	-
E-mail	insa@posbank.com

1.2 Manufacturer Information

Manufacturer	POSBANK CO.,LTD
Address	ROOM 805-808, NEW T CASTLE B/D, 108, Gasan digital 2-ro, Geumcheon-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	POS SYSTEM
Brand Name	-
Model Name	ACT 1560
Additional Model Name	ACT A-1560, ACT-1560
FCC ID	2BASH-ACT1560
Power Supply	DC 12 V

2.2 Additional Information

Equipment Class	DTS-Digital Transmission System/ NII – National Information Infrastructure	
Device Type	Stand-alone	
Operating Frequency	Bluetooth LE	2 402 MHz ~ 2 480 MHz
	2.4 GHz WLAN (802.11n(HT20))	2 412 MHz ~ 2 462 MHz
	2.4 GHz WLAN (802.11n(HT40))	2 422 MHz ~ 2 452 MHz
	5 GHz WLAN (802.11n(HT20))	5 180 MHz ~ 5 240 MHz/ 5 745 MHz ~ 5 825 MHz
	5 GHz WLAN (802.11n(HT40))	5 190 MHz ~ 5 230 MHz/ 5 755 MHz ~ 5 795 MHz
RF Output Power	Bluetooth LE	1.93 dBm
	2.4 GHz WLAN (802.11n(HT20))	20.18 dBm
	2.4 GHz WLAN (802.11n(HT40))	22.78 dBm
	5 GHz WLAN (802.11n(HT20))	14.04 dBm
	5 GHz WLAN (802.11n(HT40))	14.02 dBm
Number of Channel	Bluetooth LE	40
	2.4 GHz WLAN (802.11n(HT20))	9
	2.4 GHz WLAN (802.11n(HT40))	7
	5 GHz WLAN (802.11n(HT20))	9
	5 GHz WLAN (802.11n(HT40))	4
Modulation Type	Bluetooth LE	GFSK
	802.11n20	OFDM
Antenna Type	Dipole Antenna	
Antenna Gain	2.4 GHz	3.17 dBi
	5 GHz	2.61 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			
Bluetooth LE	1.93. ± 1.0	2.93	1.96	3.17	2.07	0.57	0.000 81	1.00
802.11 n20	20.18. ± 1.0	21.18	131.22			4.65	0.054 19	
802.11n 40	22.78. ± 1.0	23.78	238.78			6.28	0.098 62	
802.11 n20	14.04. ± 1.0	15.04	31.92	2.61	1.82	2.15	0.011 59	
802.11n 40	14.02 ± 1.0	15.02	31.77			2.15	0.011 53	

According to above table, for Band(802.11n20), safe distance,

$$D = 0.282 * \sqrt{(238.78 * 2.07)/1.00} = 6.28 \text{ cm.}$$

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

$$S = P * G / (4\pi * R^2) = (238.78 * 2.07 / (4 * \pi * 20^2)) = 0.098 62$$



3.3 Conclusion of Simultaneous Transmitter

Operating Freq. Band	Operating Mode	Max tune up power		Antenna Gain		Power Density (mW/cm ²) @ 20 cm Separation	Conclusion MPE	Limit
		(dBm)	(mW)	Log	Linear			
Bluetooth + WLAN	Bluetooth LE	2.93	1.96	3.17	2.07	0.000 81	0.099 43	1.00
	WLAN 802.11n20	23.78	238.78	3.17	2.07	0.098 62		

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