시 험 성 적 서
TEST REPORT

성적서 번호 Report No.		ICRT-TR-E222145-0A
신청자 Client	기관명 Name	MaxiEcu sp. z o.o. sp. k.
	주 소 Address	Stanislawy Fleszarowej-Muskat 7, 81-589 Gdynia, POLAND
시험대상품목 Sample description		IV generation MaxiEcu interface
모델명 Type designation		4GENBTM
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		13. Jul. 2022 ~ 28. Jul. 2022
시험방법/항목 Test Method/Item		FCC rule §1.1310
시험결과 Test Results		Refer to 3. Maximum Permissible Exposure
확 인 Affirmation	작성자 Tested by 성 명 (서 명) Name Yeong-Hwan, Hong (Signature)	기술책임자 Technical Manager 성 명 (서 명) Name Min-Gi, Son (Signature)

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The above test report is certified that the above mentioned products have been tested for the sample.

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2022. 08. 22

주식회사 아이씨알 대표이사

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Revision History

Issued Report No.	Issued Date	Revisions	Effect Section
ICRT-TR-E222145-0A	2022.08.22	Initial Issue	All

1. Applicant & Manufacturer & Test Laboratory Information

1.1 Applicant information

Applicant	MaxiEcu sp. z o.o. sp. k.
Address	Stanislawy Fleszarowej-Muskat 7, 81-589 Gdynia, POLAND
Contact Person	Marcin Popow
Telephone No.	48-586-760-267
Fax No.	-
E-mail	marcin@maxiecu.com

1.2 Manufacturer Information

Manufacturer	MaxiEcu sp. z o.o. sp. k.
Address	Stanislawy Fleszarowej-Muskat 7, 81-589 Gdynia, POLAND

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
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RRA No.	KR0165
KOLAS No.	KT652

2. Equipment under Test(EUT) Information

2.1 General Information

Product Name	IV generation MaxiEcu interface
Brand Name	-
Model Name	4GENBTM
Additional Model Name	-
FCC ID	2A3CS4GENBTM

2.2 Additional Information

Equipment Class	DSS - Frequency Hopping Spread Spectrum system DTS - Digital Transmission System	
Device Type	Stand-alone	
Operating Frequency	Bluetooth BDR/EDR/LE	2 402 ㎒ ~ 2 480 ㎒
	802.11b/g/n(HT20)	2 412 ㎒ ~ 2 462 ㎒
	802.11n(HT40)	2 422 ㎒ ~ 2 452 ㎒
RF Output Power	Bluetooth BDR	2.33 ㏈m
	Bluetooth EDR	3.52 ㏈m
	Bluetooth LE	2.60 ㏈m
	802.11b	10.97 ㏈m
	802.11g	9.48 ㏈m
	802.11n(HT20)	9.97 ㏈m
	802.11n(HT40)	6.59 ㏈m
Number of Channel	Bluetooth BDR/EDR	79
	Bluetooth LE	40
	802.11b/g/n(HT20)	11
	802.11n(HT40)	7
Modulation Type	Bluetooth BDR/EDR : FHSS Bluetooth LE, 802.11b: DSSS 802.11g/n(HT20/HT40) : OFDM	
Antenna Type	Chip Antenna	
Antenna Gain	2 ㏈i	
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 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 ㎽/㎠ for the device operating 1 500 ㎒ ~ 100 000 ㎒.

Kind of EUT	IV generation MaxiEcu interface
Operating Frequency Band	■ WLAN(802.11b/g/n(HT20)): 2 412 ㎒ ~ 2 462 ㎒ ■ WLAN(802.11n(HT40)): 2 422 ㎒ ~ 2 452 ㎒ □ WLAN: 5 180 ㎒ ~ 5 320 ㎒ / 5 500 ㎒ ~ 5 700 ㎒ □ WLAN: 5 745 ㎒ ~ 5 825 ㎒ ■ Bluetooth: 2 402 ㎒ ~ 2 480 ㎒
Max. Output Power	10.97 dBm
Exposure Evaluation Applied	■ MPE □ SAR □ N/A

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 (㎝)	Power Density (㎽/㎠) @ 20 ㎝ Separation	Limit (㎽/㎠)
		(dBm)	(㎽)	Log	Linear			
802.11b	10.97 ± 1.0	11.97	15.74	2	1.58	1.42	0.0050	1.00
802.11g	9.48 ± 1.0	10.48	11.17			1.19	0.0035	
802.11n(HT20)	9.97 ± 1.0	10.97	12.50			1.26	0.0039	
802.11n(HT40)	6.59 ± 1.0	7.59	5.74			0.86	0.0018	
Blutooth BDR	2.33 ± 1.0	3.33	2.15			0.52	0.0007	
Blutooth EDR	3.52 ± 1.0	4.52	2.83			0.60	0.0009	
Blutooth LE	2.6 ± 1.0	3.6	2.29			0.54	0.0007	

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

D = 0.282 * $\sqrt{}$ (15.74 * 1.58)/1.00 = 1.42 ㎝.

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

S = P * G / (4π * R²) = 15.74 * 1.58 / (4 * π * 20^2) = 0.005 0

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

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