

Prüfbericht-Nr.: <i>Test report no.:</i>	JP23NXRH (FCC-RFEXP) 001	Auftrags-Nr.: <i>Order no.:</i>	48221795	Seite 1 von 8 Page 1 of 8
Kunden-Referenz-Nr.: <i>Client reference no.:</i>	N/A	Auftragsdatum: <i>Order date:</i>	2023-07-20	
Auftraggeber: <i>Client:</i>	KAGA FEI Co., Ltd. Gunseisha ANNEX Building 5th floor, 382-1 Kaminamie-machi, Takasaki, Gunma, 370-0801, Japan			
Prüfgegenstand: <i>Test item:</i>	Bluetooth low energy/ANT/802.15.4 Module			
Bezeichnung / Typ-Nr.: <i>Identification / Type no.:</i>	EC2811			
Auftrags-Inhalt: <i>Order content:</i>	FCC Certification			
Prüfgrundlage: <i>Test specification:</i>	IEEE Std C95.1 47 CFR §2.1093 47 CFR §1.1310			
Wareneingangsdatum: <i>Date of sample receipt:</i>	2023-07-12			
Prüfmuster-Nr.: <i>Test sample no.:</i>	A003515610-001			
Prüfzeitraum: <i>Testing period:</i>	2023-07-27 - 2023-08-01			
Ort der Prüfung: <i>Place of testing:</i>	EMC/RF Taipei Testing Site			
Prüflaboratorium: <i>Testing laboratory:</i>	Taipei Testing Laboratories			
Prüfergebnis*: <i>Test result*:</i>	Pass			
überprüft von: <i>compiled by:</i>	genehmigt von: <i>authorized by:</i>			
Datum: <i>Date:</i> 2023-08-30	 Anderson Chiu	Ausstellungsdatum: <i>Issue date:</i> 2023-08-30	 Brenda Chen	
Stellung / Position:	Senior Project Manager	Stellung / Position:	Senior Project Manager	
Sonstiges / Other:				
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>		Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>		
* Legende:	1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	3 = befriedigend N/A = nicht anwendbar	4 = ausreichend N/T = nicht getestet
* Legend:	1 = very good P(ass) = passed a.m. test specification(s)	2 = good F(ail) = failed a.m. test specification(s)	3 = satisfactory N/A = not applicable	4 = sufficient N/T = not tested
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>				

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APPENDIX EP - PHOTOGRAPHS OF EUT

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HISTORY OF THIS TEST REPORT

Report No.	Description	Date Issued
JP23NXRH (FCC-RFEXP) 001	Original Release	2023-08-30

1 General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:
Appendix EP - Photographs of EUT

1.2 Decision Rule of Conformity

The decision rule of conformity of this test report is following the requirements of the requested standard in the quotation, and agreed among testing laboratory and manufacturer (applicant) to exclude the consideration of Measurement Uncertainty, unless it is required by the specific standard.

2 Test Sites

2.1 Test Facilities

Taipei Testing Laboratories

11F. No.758, Sec. 4, Bade Rd., Songshan Dist.
Taipei City 105
Taiwan (R.O.C.)

2.2 Test Facility

Taipei Testing Laboratories

No.458-18, Sec. 2, Fenliao Rd., Linkou Dist.,
New Taipei City 244
Taiwan (R.O.C.)
FCC Registration No.: 180491
ISED Registration No.: 25563

3 General Product Information

3.1 Product Function and Intended Use

The EUT is Bluetooth low energy/ANT/802.15.4 Module. It contains Bluetooth & IEEE802.15.4 compatible module enabling the user to communicate data through Wireless interface.
For details refer to the User Guide, Data Sheet and Circuit Diagram.

3.2 Ratings and System Details

Basic Information of EUT

Item	EUT Information
Kind of Equipment/Test Item	Bluetooth low energy/ANT/802.15.4 Module
Type Identification	EC2811
FCC ID	2A6NFEC2811

Technical Specification of EUT

Item	EUT Information
Operating Frequency	Bluetooth / ANT / Nordic Original: 2402 ~ 2480 MHz IEEE802.15.4: 2405 ~ 2480 MHz
Modulation	Bluetooth / ANT / Nordic Original: GFSK IEEE802.15.4: O-QPSK
Operation Voltage	3 Vdc
Antenna Type	PCB Antenna
Antenna Gain	-2.6 dBi

4 RF Exposure Evaluation

4.1 SAR test exclusion

Following FCC KDB 447498 D04 "Interim General RF Exposure Guidance v01"

The corresponding SAR Test Exclusion Threshold condition(s), listed below:

- 1) $P_{th}(mW) = ERP_{20cm}(d / 20)^x$ x for distance $d \leq 20cm$
- 2) $P_{th}(mW) = ERP_{20cm}$ for distance $20cm < d \leq 40cm$

$$x = -\log_{10} \left(\frac{60}{ERP_{20cm}\sqrt{f}} \right)$$

$P_{th}(mW) = ERP_{20cm} =$ 0.3 GHz $\leq f <$ 1.5 GHz: 2040 f
1.5 GHz $\leq f \leq$ 6 GHz: 3060

Note:

The maximum time-averaged power or effective radiated power (ERP), whichever is greater, $\leq P_{th}$
 P_{th} is calculated based on separation distance d cm from transmitter to person for the device operating at f GHz

5 Test Results

5.1 SAR Test Exclusion Threshold

Band	Freq (MHz)	Peak Power (dBm)	Ant Gain (dBi)	Distances (mm)	Duty (%)	Peak Power (mW)	ERP (mW)
Bluetooth	2402	4.19	-2.6	5	100%	2.62	0.88
ANT	2402	4.18	-2.6	5	100%	2.62	0.88
Nordic Original	2402	4.18	-2.6	5	100%	2.62	0.88
IEEE802.15.4	2405	4.17	-2.6	5	100%	2.61	0.87

Band	Freq (MHz)	Pth (mW)	X	ERP 20cm (mW)	Ratio	Result
Bluetooth	2402	2.80	1.898	3060	0.937	exempt
ANT	2402	2.80	1.898	3060	0.935	exempt
Nordic Original	2402	2.80	1.898	3060	0.935	exempt
IEEE802.15.4	2405	2.80	1.898	3060	0.933	exempt