



Test report No.: 2350302R-RFUSV17S-A

RF Exposure Report

Product Name	Host-based multiradio modules with WiFi, Bluetooth and NFC
Trademark	u-blox
Model and /or type reference	EMMY-W163
FCC ID	XPYEMMYW163
Applicant's name / address	u-blox AG Zürcherstrasse 68. Thalwil, 8800. Switzerland
Manufacturer's name	u-blox AG
Test method requested, standard	KDB 447498 D01 v06 <input checked="" type="checkbox"/> Minimum test separation distance ≥ 20 cm <input type="checkbox"/> For low power devices
Verdict Summary	IN COMPLIANCE
Documented By (Senior Project Specialist / Genie Chang)	<i>Genie Chang</i>
Tested By (Senior Engineer / Jack Hsu)	<i>Jack Hsu</i>
Approved By (Manager / Tim Sung)	<i>Tim Sung</i>
Date of Receipt	2022/11/07
Date of Issue	2023/06/26
Report Version	V1.0

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DEKRA is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, DEKRA has a calibration and maintenance program for its measurement equipment.

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5. Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Revision History

Report No.	Version	Description	Issued Date
2350302R-RFUSV17S-A	V1.0	Initial issue of report.	2023/06/26

1. General Information

1.1. EUT Description

Product Name	Host-based multiradio modules with WiFi, Bluetooth and NFC
Trademark	u-blox
Model and /or type reference	EMMY-W163
Blockchain verified QR code	

Note: For more detailed information please refer to report No.: 2350302R-RFUSV01S-A, 2350302R-RFUSV01S-B and 2350302R-RFUSV03S-A.

2. Test Facility

USA	FCC Registration Number: TW0033
Canada	CAB Identifier Number: TW3023 / Company Number: 26930

Site Description	Accredited by TAF
	Accredited Number: 3023

Test Laboratory	DEKRA Testing and Certification Co., Ltd.
	Linkou Laboratory
Address	No.5-22, Ruishukeng Linkou District, New Taipei City, 24451, Taiwan, R.O.C
Performed Location	No. 26, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan, R.O.C.
Phone Number	+886-3-275-7255
Fax Number	+886-3-327-8031

3. RF Exposure Evaluation

3.1. Standard Applicable

According to KDB 447498 D01 (7.1), A minimum test separation distance ≥ 20 cm is required between the antenna and radiating structures of the device and nearby persons to apply mobile device exposure limits.

3.2. Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
(B) Limits for General Population/ Uncontrolled Exposures				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

F= Frequency in MHz

Friis Formula

Friis transmission formula: $P_d = (P_{out} * G) / (4 * \pi * r^2)$

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneously transmitting antennas incorporated in a host device is ≤ 1.0

3.3. Test Result of RF Exposure Evaluation

Product	Host-based multiradio modules with WiFi, Bluetooth and NFC
Test Item	RF Exposure Evaluation

Band	Frequency (MHz)	E.I.R.P (dBm)	E.I.R.P (mW)	Power Density at R = 20 cm (mW/cm ²)	Limit (mW/cm ²)
BT	2441	4.970	3.141	0.0006	1
2.4GHz	2437	23.830	241.546	0.0481	1
5GHz	5220	18.670	73.621	0.0146	1

Note: The conducted output power is refer to report No.: 2350302R-RFUSV01S-A, 2350302R-RFUSV01S-B and 2350302R-RFUSV03S-A from the DEKRA.

Results	PASS
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