

RF Exposure Report

Report No.: SA181120C09G

FCC ID: XPYNINAB30

Test Model: NINA-B3

Received Date: Mar. 29, 2019

Test Date: Sep. 02, 2019

Issued Date: Sep. 20, 2019

Applicant: u-blox-AG

Address: Zuercherstrasse 68 8800 Thalwil, Switzerland

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Hsin Chu Laboratory

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Taiwan R.O.C.

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Taiwan R.O.C.

**FCC Registration /
Designation Number:** 723255 / TW2022

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Release Control Record

Issue No.	Description	Date Issued
SA181120C09G	Original release.	Sep. 20, 2019

1 Certificate of Conformity

Product: Stand-alone radio module

Brand: u-blox-AG

Test Model: NINA-B3

Sample Status: ENGINEERING SAMPLE

Applicant: U-blox-AG

Test Date: Sep. 02, 2019

Standards: FCC Part 2 (Section 2.1091)

KDB 447498 D01 General RF Exposure Guidance v06

IEEE C95.1-1992

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by :

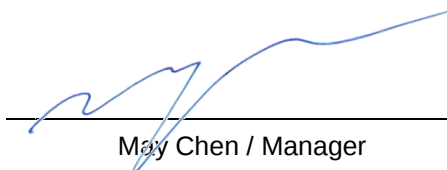


Date:

Sep. 20, 2019

Claire Kuan / Specialist

Approved by :



Date:

Sep. 20, 2019

May Chen / Manager

2 RF Exposure

2.1 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)
Limits For General Population / Uncontrolled Exposure				
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
300-1500	...	...	f/1500	30
1500-100,000	...	...	1.0	30

f = Frequency in MHz ; *Plane-wave equivalent power density

2.2 MPE Calculation Formula

$$P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$$

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

2.3 Classification

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user.
So, this device is classified as **Mobile Device**.

2.4 Calculation Result

The Max. Power data was copied from the original FCC ID: XPYNINAB30.

Operation Mode	Evaluation Frequency (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
Bluetooth	2402	6.166	3.20	20	0.00256	1

The Max. Power data was copied from the original FCC ID: XPY2AGQN4NNN.

Operation Mode	Evaluation Frequency (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
LTE B2	1860	179.887	2.7	20	0.06664	1
LTE B4	1720	171.791	3	20	0.06819	1
LTE Band12	713.5	180.717	2	20	0.05698	0.4757*

Note: *Limit of Power Density = F/1500

Conclusion:

The formula of calculated the MPE is:

$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$

CPD = Calculation power density

LPD = Limit of power density

Bluetooth + LTE Band12 = $0.00256 / 1 + 0.05698 / 0.4757 = 0.12235$

Therefore the maximum calculations of above situations are less than the “1” limit.

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