



中国认可
国际互认
检测
TESTING
CNAS L5313



DEKRA

RF Exposure Evaluation Declaration

Product Name : UWB device
Model No. : X4M05
FCC ID : 2AD9QX4M05
IC : 22782-X4M05

Applicant : Novelda AS
Address : Garverivegen 2, NO-3850 Kviteseid, Norway

Date of Receipt : Jul. 05th, 2017
Test Date : Jun. 29th, 2017~ Jun. 30th, 2017
Issued Date : Jul. 12th, 2017
Report No. : 1772023R-RF-US-P20V01
Report Version : V1.0

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by CNAS, TAF or any agency of the government.

The test report shall not be reproduced without the written approval of DEKRA Testing & Certification (Suzhou) Co., Ltd.


Test Report Certification

Issued Date : Jul. 12th, 2017


Report No. : 1772023R-RF-US-P20V01



Product Name : UWB device
Applicant : Novelda AS
Address : Garverivegen 2, NO-3850 Kviteseid, Norway
Manufacturer : Novelda AS
Address : Garverivegen 2, NO-3850 Kviteseid, Norway
Model No. : X4M05
FCC ID : 2AD9QX4M05
IC : 22782-X4M02
EUT Voltage : DC 3V~5.5V
Applicable Standard : KDB 447498D01V06
FCC Part1.1310
RSS-102: Issue 5, 2015
Test Result : Complied
Performed Location : DEKRA Testing & Certification (Suzhou) Co., Ltd.
No.99 Hongye Rd., Suzhou Industrial Park, Suzhou, 215006,
Jiangsu, China
TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098
FCC Registration Number: 800392; IC Lab Code: 4075B

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1. RF Exposure Evaluation

1.1. Limits

For FCC:

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				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	F/1500	6
1500-100,000	--	--	1	30

For ISD:

According to RSS 102 Issue 5: 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 RSS 102 Clause 4

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m ²)	Reference Period (minutes)
0.003-10 ²¹	83	90	-	Instantaneous*
0.1-10	-	0.73/ f	-	6**
1.1-10	87/ $f^{0.5}$	-	-	6**
10-20	27.46	0.0728	2	6
20-48	58.07/ $f^{0.25}$	0.1540/ $f^{0.25}$	8.944/ $f^{0.5}$	6
48-300	22.06	0.05852	1.291	6
300-6000	3.142 $f^{0.3417}$	0.008335 $f^{0.3417}$	0.02619 $f^{0.6834}$	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	616000/ $f^{1.2}$
150000-300000	0.158 $f^{0.5}$	4.21 x 10 ⁻⁴ $f^{0.5}$	6.67 x 10 ⁻⁵ f	616000/ $f^{1.2}$
Note: f is frequency in MHz. *Based on nerve stimulation (NS). ** Based on specific absorption rate (SAR).				

F= Frequency in MHz

Friis Formula

Friis transmission 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

P_d is the limit of MPE, 1 mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

1.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

The temperature and related humidity: 18°C and 78% RH.

1.3. Test Result of RF Exposure Evaluation

Product	:	UWB device
Test Item	:	RF Exposure Evaluation
Test Site	:	AC-6

- **Power Density**

Standalone modes:

The EIRP of RB=3MHz is -31.554dBm, which convert to RBW 50MHz the EIRP is -19.335dBm.

Test Mode	Frequency Band (MHz)	EIRP (dBm)	Power Density at R = 0.5 cm (mW/cm ²)	Limit of Power Density S(mW/cm ²)
UWB	6000 ~ 8500	-19.335	0.00371	1

Note1: The limit for ISED/FCC is same for Frequency of 6~8.5GHz.

2: The standalone transmission power density is 0.00371 mW/cm² for UWB device without any other radio equipment.

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