



An IIA Company

Test Report - FCC PART 1.1310 / MPE

Prepared For: ALOXY nv

Approved for Release By:

Signature: Bruno Clavier

Name & Title: Bruno Clavier, General Manager

Date of Signature

(YYYY-MM-DD): 2020-10-02

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Timco Engineering, Inc., an IIA Company
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Table of Contents

1. CUSTOMER INFORMATION.....	3
2. LOCATION OF TESTING.....	3
2.1 TEST LABORATORY	3
2.2 TESTING WAS PERFORMED, REVIEWED BY	4
3. TEST SAMPLE(S) (EUT/DUT).....	5
3.1 DESCRIPTION OF THE EUT.....	5
4. TEST METHODS & APPLICABLE REGULATORY LIMITS.....	6
4.1 TEST METHODS/STANDARDS/GUIDANCE:	6
4.1.1 FCC Limits for Maximum Permissible Exposure (MPE).....	6
4.2 EQUATIONS.....	7
5. RF EXPOSURE RESULTS	8
6. HISTORY OF TEST REPORT CHANGES.....	9



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1. Customer Information

Applicant: ALOXY nv
Address: Sint Pietersvliet 7
Antwerp 2000 Belgium

Contact: Carl Stevens
Telephone: +32 474 73 64 03
Email address: carl.stevens@aloxy.io

2. Location of Testing

2.1 Test Laboratory

Timco Engineering Inc. is a subsidiary of Industrial Inspection & Analysis, Inc. ("IIA"). Testing was performed at Timco's permanent laboratory located at 849 NW State Road 45, Newberry, Florida 32669

FCC test firm # 578780
FCC Designation # US1070
FCC site registration is under A2LA certificate # 0955.01
ISED Canada test site registration # 2056A
EU Notified Body # 1177
For all designations see A2LA scope # 0955.01



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2.2 Testing was performed, reviewed by

Dates of Testing: June 12 – September 18, 2020

Signature:

A handwritten signature of Franklin Rose in black ink.

Name & Title: Franklin Rose, EMC Specialist

Date of Signature

(YYYY-MM-DD): 2020-09-25

A handwritten signature of Tim Royer in black ink.

Sr. EMC Engineer
EMC-003838-NE

A circular logo for "iMARIE ENGINEER" with "CERTIFIED" at the top and "iMARIE" in the center.

Signature:

Name & Title: Tim Royer, EMC Engineer

Date of Signature

(YYYY-MM-DD): 2020-09-25



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3. Test Sample(s) (EUT/DUT)

The test sample was received: June 12, 2020

3.1 Description of the EUT

A description as well as unambiguous identification of the EUT(s) tested. Where more than one sample is required for technical reasons (such as the use of connected units for the purpose of conducted output power testing where the product units will have integral antennas), each specific test shall identify which unit was tested.

Identification	
FCC ID:	2AXF4-APS-001
Brief Description	Aloxy Pulse Wireless IOT Sensor
Type of Modular	BA
Model(s) #	ALOXY Pulse V01
Trade name	ALOXY
Firmware version	NA
Software version	NA
Serial Number	NA

Technical Characteristics	
Technology	Hybrid System requirements
Frequency Range	902-928
RF O/P Power (Max.)	16.94 dBm
Modulation	GFSK
Bandwidth & Emission Class	615.38 kHz
Number of Channels	64
Duty Cycle	10%
Antenna Type	Integrated
Antenna Gain (for each ant.)	1 dBi
Antenna Connector	N/A
Voltage Rating (AC or Batt.)	DC

Antenna Characteristics		
Frequency Range	Mode / BW	Antenna Gain
902-928	n/a	1 dBi



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4. Test methods & Applicable Regulatory Limits

4.1 Test methods/Standards/Guidance:

The following guidance FCC KDB 447498 D01 General RF Exposure Guidance v06 was used for RF exposure evaluation as per FCC Part 1.1310 and FCC Part 2.1091 and part 2.1093. Full test results are available in this report.

4.1.1 FCC Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging Time (minutes)
A Limits for Occupational/Controlled Exposure				
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 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
300-1,500			f/1500	<30
1,500-100,000			1.0	<30



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4.2 Equations

POWER DENSITY

$$E(V/m) = \text{SQRT} (30 * P * G) / d$$

$$Pd(W/m^2) = E^2 / 377$$

$$S = \text{EIRP} / (4 * \text{Pi} * D^{2v})$$

Where:

S = Power density, in mW/cm^2

EIRP = Equivalent Isotropic Radiated Power, in mW

D = Separation distance in cm

Power density is converted from units of mW/cm^2 to units of W/m^2 by multiplying by 10.

DISTANCE

$$D = \text{SQRT} (\text{EIRP} / (4 * \text{Pi} * S))$$

Where:

D = Separation distance in cm

EIRP = Equivalent Isotropic Radiated Power, in mW

S = Power density in mW/cm^2

SOURCE-BASED DUTY CYCLE (When applicable (for example, multi-slot mobile phone applications) A duty cycle factor may be applied.)

$$\text{Source-based time-average EIRP} = (DC / 100) * \text{EIRP}$$

Where:

DC = Duty Cycle in % as applicable.

EIRP = Equivalent Isotropic radiated Power, in mW



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5. RF Exposure Results

Transmitter Type: Low power 900 MHz TX

Separation Distance: 20 cm

General Population/Uncontrolled Exposure

Freq. band	Separation Distance (cm)	O/P (dBm)	Antenna Gain (dBi)	Duty Cycle (%)	EIRP (mW)	PD (mW/cm ²)	LIMIT mW/cm ²)
903 MHz	20	16.94	1	100	50	0.00995	0.602

Occupational/Controlled Exposure

Freq. band	Separation Distance (cm)	O/P (dBm)	Antenna Gain (dBi)	Duty Cycle (%)	EIRP (mW)	PD (mW/cm ²)	LIMIT mW/cm ²)
903 MHz	20	16.94	1	100	50	0.00995	3.01

RESULT: Pass at DISTANCE 20cm



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6. History of Test Report Changes

Test Report #	Revision #	Description	Date of Issue
TR_2993-20_FCC_MPE_1	1	Initial release	October 29, 2020
	2	Revised Page 8	October 30, 2020



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END OF TEST REPORT
