



Test Report - RF Exposure Evaluation Report for SAR Exclusion Applicant: Ciholas Inc.

Signature:

A handwritten signature in black ink, appearing to read "Tim Royer".

Sr. EMC Engineer
EMC-003838-NE



Name & Title: Tim Royer, EMC Engineer

Date of Signature 9/5/2024

Signature:

A handwritten signature in black ink, appearing to read "Kristoffer Costa".

Name & Title: Kristoffer Costa, EMC Technician

Date of Signature 9/5/2024

This test report relates only to the items tested as identified and is not valid for any subsequent changes or modifications made to the equipment under test.

Table of Contents

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

1. Applicant Information

Applicant: Ciholas Inc.
Address: 3700 Bell Rd
Newburgh, Indiana, 47630, United States

2. Location of Testing

2.1 Test Laboratory

Timco Engineering Inc. is a subsidiary of Industrial Inspection & Analysis, Inc. ("IIA"). Testing was performed at IIA's permanent laboratory located at 13146 NW 86th Drive, Suite 400, Alachua, Florida 32615.

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

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

The test sample was received: 8/27/2024

Dates of Testing: 8/27/2024 – 8/29/2024

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:	2ALIR-LP203
Brief Description	UWB System
Model(s) #	LP203
Firmware version	N/A
Software version	N/A
Serial Number	N/A

Technical Characteristics	
Frequency Range	3100 MHz- 10600 MHz
Modulation	BPSK
Number of Channels	N/A
Duty Cycle	100%
Antenna Connector	N/A
Voltage Rating (AC or Batt.)	DC

Antenna Characteristics			
Antenna	Frequency Range	Mode / BW	Antenna Gain
1	n/a	n/a	0 dBi

- Note: Information such as antenna gain, firmware/software numbers are provided by manufacturer and cannot be validated by the test lab.

1. Test methods & Applicable Regulatory Limits

1.1 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.

1.1.1 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

1.2 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/cm²

EIRP = Equivalent Isotropic Radiated Power, in mW

D = Separation distance in cm

Power density is converted from units of mW/cm² to units of W/m² 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/cm²

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

2. RF Exposure Results

Radiated fundamental measurements

Tuned Frequency (MHz)	Detector	Meter Reading (dBuV)	Coax Loss (dB)	Antenna Correction Factor (dB/m)	Distance (m)	Field Strength (dBuV/m)	ERP (dBm)	Spurious Limit (dBm)	Margin (dB)
6489.60	PK	43.90	0.84	35.84	3.00	80.58	-16.80	-14.00	2.80
7987.20	PK	44.89	0.84	36.13	3.00	81.86	-15.51	-14.00	1.51

MPE

Frequency Band	Separation Distance (mm)	Max Power + Tolerance (dBm)	Max Power + Tolerance (mW)	SAR Exclusion Value	Limit for 1-g SAR	Limit for 10-g SAR (Extremities)	SAR Exclusion
3100-10600 MHz	5	-16.80	0.02	0.01	3.0	7.5	SAR EXEMPT

Conclusion: SAR testing is not required

3. History of Test Report Changes

Test Report #	Revision #	Description	Date of Issue
TR_15757-24_ RF Exp SAR Exclusion _	1	Initial release	10/15/2024
	2	Updated Pages 5&6	12/10/2024

END OF TEST REPORT
