



Test Report - FCC Part 1.1310/ MPE
Simultaneous Transmission
Applicant: Aclara Technologies LLC

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 11/6/2024

Signature:

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

Name & Title: Kristoffer Costa, EMC Technician

Date of Signature 11/6/2024

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.

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1. Applicant Information

Applicant: Aclara Technologies LLC
Address: 77 Westport Plaza Drive
Suite 500
St. Louis, Missouri, 63146, 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: 5/21/2024

Dates of Testing: 5/23/2024 – 5/29/2024

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.

400MHz data

Identification	
FCC ID:	LLB2022002
Brief Description	Ultrasonic Gas Meter
Model(s) #	3511-066-LCW
Firmware version	N/A
Software version	N/A
Serial Number	N/A

Technical Characteristics	
Frequency Range	450 MHz- 470 MHz
RF O/P Power (Max.)	1W
Modulation	FM
Bandwidth & Emission Class	F1D
Number of Channels	N/A
Duty Cycle	50%
Antenna Connector	N/A
Voltage Rating (AC or Batt.)	3.4 VDC

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 the manufacturer and cannot be validated by the test lab.

2GHz data

Identification	
FCC ID:	LLB2022002
Brief Description	Ultrasonic Gas Meter
Model(s) #	3511-066-LCW
Firmware version	N/A
Software version	N/A
Serial Number	N/A

Technical Characteristics	
Frequency Range	2400 MHz- 2483.5 MHz
RF O/P Power (Max.)	1W
Modulation	FM
Bandwidth & Emission Class	F1D
Number of Channels	N/A
Duty Cycle	50%
Antenna Connector	N/A
Voltage Rating (AC or Batt.)	3.4 VDC

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 the manufacturer and cannot be validated by the test lab.

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

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/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

5. RF Exposure Results

400MHz data

MPE

Frequency Band	Evaluation Distance (cm)	Max Power + Tolerance (dBm)	Antenna Gain (dBi)	Duty Cycle (%)	EIRP (W)	Power Density	Limit for Uncontrolled Exposure	Limit for Controlled Exposure	Distance Required to meet Uncontrolled Exposure Limit (cm)
450-470 MHz	20	35.50	5.00	100%	3.5481	0.706 mW/cm ²	0.3 mW/cm ²	1.5 mW/cm ²	30.68

RESULT: Pass at DISTANCE 30.68 cm

2G data

MPE

Frequency Band	Evaluation Distance (cm)	Max Power + Tolerance (dBm)	Antenna Gain (dBi)	Duty Cycle (%)	EIRP (W)	Power Density	Limit for Uncontrolled Exposure	Limit for Controlled Exposure	Distance Required to meet Uncontrolled Exposure Limit (cm)
2400-2483.5 MHz	30.68	7.43	1.50	100%	0.0055	0.001 mW/cm ²	1 mW/cm ²	5 mW/cm ²	30.68

RESULT: Pass at DISTANCE 20 cm

Per KDB 447498 D01 General RF Exposure Guidance v06 Sec 7.2.

Equation: (TX1 MPE/MPE Limit 1 + TX2MPE/MPE Limit 2)

Frequency	Power Density at separation distance	Limit	MPE Ratio	Limit
400MHz	0.706 mW/cm ²	0.3 mW/cm ²	1	≤1
2GHz	0.001 mW/cm ²	1 mW/cm ²		

6. History of Test Report Changes

Test Report #	Revision #	Description	Date of Issue
TR_13810-24_FCC 1.1310/ MPE_Simultaneous Transmission_	1	Initial release	11/6/2024
	2	Updated page 8	11/15/2024

END OF TEST REPORT
