



Test Report - FCC PART 1.1310 / MPE

Applicant: TowerIQ Inc.

Approved for Release By:

Signature: Bruno Clavier

Name & Title: Bruno Clavier, General Manager

Date of Signature 11/11/2021

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Timco Engineering, Inc., an IIA Company
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1. Customer Information

Applicant: TowerIQ Inc.
Address: 13723 Riverport Drive
c/o Potter Electric Signal Company
Saint Louis Missouri, 63043, 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 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: 8/2/2021 – 8/2/2021

Signature:

A handwritten signature in black ink, appearing to read "Tim Royer", is written over a horizontal line.

Sr. EMC Engineer
EMC-003838-NE



Name & Title:

Tim Royer, EMC Engineer

Date of Signature

11/11/2021



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

The test sample was received: 8/2/2021

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: | 2AXVJ4500407 |
| Brief Description | Distributed Activity Auxiliary Radio Communication System |
| Type of Modular | n/a |
| Model(s) # | n/a |
| Firmware version | n/a |
| Software version | n/a |
| Serial Number | n/a |

| Technical Characteristics | |
|------------------------------|---|
| Technology | Distributed Activity Auxiliary Radio Communication System |
| Frequency Range | 450 MHz- 512 MHz |
| RF O/P Power (Max.) | 20.96 dBm, 0.125 W |
| Modulation | n/a |
| Bandwidth & Emission Class | n/a |
| Number of Channels | 2 |
| Duty Cycle | 100% |
| Antenna Connector | N Type |
| Voltage Rating (AC or Batt.) | DC, 24V |

| Antenna Characteristics | | | |
|-------------------------|-----------------|-------------|--------------|
| Antenna | Frequency Range | Mode / BW | Antenna Gain |
| 1 | 200 MHz-1G | Operational | 0 dB |
| 2 | 1G-12.5G | Operational | 0 dB |



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

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

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

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

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.)

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

Where:

DC = Duty Cycle in % as applicable.

EIRP = Equivalent Isotropic radiated Power, in mW



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5. RF Exposure Results

Separation Distance: 20 cm

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) |
|----------------|--------------------------|-----------------------------|--------------------|----------------|----------|--------------------------|---------------------------------|-------------------------------|--|
| 450-512 MHz | 20 | 21.46 | 0.00 | 100% | 0.14 | 0.028 mW/cm ² | 0.3 mW/cm ² | 1.5 mW/cm ² | 20.00 |

RESULT: Pass at DISTANCE 20 cm



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6. History of Test Report Changes

| Test Report # | Revision # | Description | Date of Issue |
|--------------------------------|------------|------------------|---------------|
| TR_3889-21_FCC PT 1.1310/ MPE_ | 1 | Initial release | 10/22/2021 |
| | 2 | Corrected page 5 | 10/26/2021 |
| | 3 | Updated page 5 | 11/11/2021 |



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END OF TEST REPORT
