

MPE Report

| | |
|---|---|
| Test Report Number | EEI-22061661-LG-FCC-IRXPO-MPE |
| FCC ID | 2ANAC-IRXPO |
| Applicant | Essex Electronics, Inc. |
| Applicant Address | 1130 Mark Ave. Carpinteria, CA 93013 |
| Product Name | iRox RFID Turnstile Reader |
| Model (s) | IRXPO-2S |
| Date of Receipt | 12/07/2022 |
| Date of Test | 12/07/2022 – 03/02/2023 |
| Report Issue Date | 03/02/2023 |
| Test Standards | 47 CFR §1.1307(b), 47 CFR §1.1310 |
| Test Result | PASS |
|  | Issued by: Vista Compliance Laboratories 1261 Puerta Del Sol, San Clemente, CA 92673 USA www.vista-compliance.com |
|  |  |
| Devin Tai (Test Engineer) | David Zhang (Technical Manager) |

This report is for the exclusive use of the applicant. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. Note that the results contained in this report pertain only to the test samples identified herein, and the results relate only to the items tested and the results that were obtained in the period between the date of initial receipt of samples and the date of issue of the report. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested and the results thereof based upon the information provided to us. The applicant has 60 days from date of issuance of this report to notify us of any material error or omission. Failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification. The report must not be used by the client to claim product certification, approval, or endorsement by any government agencies. This report is not to be reproduced by any means except in full and in any case not without the written approval of Vista Laboratories.

Report#

EEI-22061661-LG-FCC-IRXPO-MPE

REVISION HISTORY

| Report Number | Version | Description | Issued Date |
|-------------------------------|---------|----------------|-------------|
| EEI-22061661-LG-FCC-IRXPO-MPE | 01 | Initial report | 03/02/2023 |
| | | | |
| | | | |
| | | | |
| | | | |

TABLE OF CONTENTS

| | | |
|----------|---|----------|
| 1 | GENERAL INFORMATION | 4 |
| 1.1 | Applicant | 4 |
| 1.2 | Product information | 4 |
| 1.3 | Test standard and method | 5 |
| 2 | TEST SITE INFORMATION | 5 |
| 3 | RF EXPOSURE | 6 |
| 3.1 | Limits for Maximum Permissible Exposure (MPE) | 6 |
| 3.2 | MPE Calculation Formula | 6 |
| 3.3 | Classification | 6 |
| 3.4 | Antenna Gain | 6 |
| 4 | TEST RESULTS | 7 |

1 General Information

1.1 Applicant

| | |
|-----------------------------|--------------------------------------|
| Applicant | Essex Electronics, Inc. |
| Applicant address | 1130 Mark Ave. Carpinteria, CA 93013 |
| Manufacturer | Essex Electronics, Inc. |
| Manufacturer Address | 1130 Mark Ave. Carpinteria, CA 93013 |

1.2 Product information

| | |
|----------------------------------|---|
| Product Name | iRox RFID Turnstile Reader |
| Model Number | IRXPO-2S |
| Family Models | N/A |
| Serial Number | N/A |
| Frequency Band | RFID: 125KHz, 13.56MHz Bluetooth BLE: 2402-2480MHz |
| Type of modulation | RFID: ASK Bluetooth BLE: GFSK |
| Equipment Class | DCD, DXX, DTS |
| Antenna Information | 125KHz: Internal coil antenna 13.56MHz: Internal PCB trace coil antenna BLE: Chip antenna, 0.5 dBi peak gain |
| Type of modulation | RFID: ASK Bluetooth BLE: GFSK |
| Clock Frequencies | N/A |
| Port/Connectors | Wire connection port |
| Input Power | 5V DC +/-10% or 12 VDC +/-10%, 250mA, Max (3W) |
| Power Adapter Manu/Model | N/A |
| Power Adapter SN | N/A |
| Hardware version | N/A |
| Software version | N/A |
| Simultaneous Transmission | RFID and BLE can transmit simultaneously. The simultaneous transmission has been evaluated in the testing. The RFID remains active during the operation with BLE. |
| Additional Info | Input voltage is 12VDC during testing |

Report#

EEI-22061661-LG-FCC-IRXPO-MPE

1.3 Test standard and method

| | |
|----------------------|---|
| Test standard | 47 CFR §1.1307(b), 47 CFR §1.1310 47 CFR §2.1093 |
| Test method | 47 CFR §1.1307(b), 47 CFR §1.1310 47 CFR §2.1093 |

2 Test Site Information

| | |
|-----------------------------|--|
| Lab performing tests | Vista Laboratories, Inc. |
| Lab Address | 1261 Puerta Del Sol, San Clemente, CA 92673 USA |
| Phone Number | +1 (949) 393-1123 |
| Website | www.vista-compliance.com |

| Test Condition | Temperature | Humidity | Atmospheric Pressure |
|---------------------------|--------------------|-----------------|-----------------------------|
| RF Testing | 23.2°C | 57.5% | 996 mbar |
| Radiated Emission Testing | 23.2°C | 57.5% | 996 mbar |

3 RF Exposure

3.1 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) |
|---|-------------------------------|-------------------------------|-------------------------------------|------------------------|
| 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 |
| 300-1500 | ... | ... | f/1500 | 30 |
| 1500-100,000 | ... | ... | 1.0 | 30 |

f = Frequency in MHz; *Plane-wave equivalent power density

3.2 MPE Calculation Formula

$$Pd = (Pout * G) / (4 * \pi * r^2)$$

Where

Pd = power density in mW/cm²

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in cm

3.3 Classification

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. So, this device is classified as Mobile Device.

3.4 Antenna Gain

The antenna type is Chip antenna with 0.5 dBi peak gain.

Report#

EEI-22061661-LG-FCC-IRXPO-MPE

4 Test Results

| Mode | Max Power (dBm) | Max Power (mW) | Max Antenna Gain (dBi) | Distance (cm) | Power Density (mW/cm ²) | Limit (mW/cm ²) |
|------|-----------------|----------------|------------------------|---------------|-------------------------------------|-----------------------------|
| BLE | -1.09 | 0.778 | 0.5 | 20 | 0.00017 | 1 |

Conclusion:

The worst-case ratio = 0.00017 < 1

The above results show that the device complies with the MPE requirement.

---END---