



# RF Exposure Evaluation Report

|                             |                                                                        |
|-----------------------------|------------------------------------------------------------------------|
| <b>APPLICANT</b>            | KP ELECTRONIC SYSTEMS LTD.                                             |
| <b>ADDRESS</b>              | P.O. BOX 42<br>TEFEN INDUSTRIAL PARK, 24959 ISRAEL                     |
| <b>FCC ID</b>               | H78KPMATUDI                                                            |
| <b>MODEL NUMBER</b>         | MATU-DI                                                                |
| <b>PRODUCT DESCRIPTION</b>  | MINI ALARM TRANSMITTER                                                 |
| <b>DATE SAMPLE RECEIVED</b> | 08/09/2019                                                             |
| <b>FINAL TEST DATE</b>      | 08/09/2019                                                             |
| <b>PREPARED BY</b>          | Tim Royer                                                              |
| <b>TEST RESULTS</b>         | <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL |

| Report Number  | Report Version | Description           | Issue Date |
|----------------|----------------|-----------------------|------------|
| 2050AUT19 MPE_ | Rev1           | Initial Issue         | 08/09/2019 |
|                | Rev2           | Updated antenna gain  | 09/10/2019 |
|                | Rev3           | Updated Power Density | 09/18/2019 |

**THE ATTACHED REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT THE WRITTEN APPROVAL OF TIMCO ENGINEERING, INC.**

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## GENERAL REMARKS

### Summary

The device under test does:

- ☒ Fulfill the general approval requirements as identified in this test report and was selected by the customer.
- ☐ Not fulfill the general approval requirements as identified in this test report

### Attestations

This equipment has been tested in accordance with the standards identified in this test report. To the best of my knowledge and belief, these tests were performed using the measurement procedures described in this report.

All instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 17025 requirements.

I attest that the necessary measurements were made at:

**Timco Engineering Inc.**  
**849 NW State Road 45**  
**Newberry, FL 32669**  
**Designation #: US1070**

**Prepared by:**



Sr. EMC Engineer  
EMC-003838-NE



|                       |                                             |
|-----------------------|---------------------------------------------|
| <b>Name and Title</b> | Tim Royer, Project Manager/Testing Engineer |
| <b>Date</b>           | 08/09/2019                                  |

## General Information

|                                |                                                                                              |                                                    |                                           |
|--------------------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------|-------------------------------------------|
| <b>EUT Description</b>         | MINI ALARM TRANSMITTER                                                                       |                                                    |                                           |
| <b>Model Number</b>            | MATU-DI                                                                                      |                                                    |                                           |
| <b>EUT Power Source</b>        | <input type="checkbox"/> 110–120Vac, 50–60Hz                                                 | <input checked="" type="checkbox"/> DC Power       | <input type="checkbox"/> Battery Operated |
| <b>Test Item</b>               | <input type="checkbox"/> Engineering Prototype                                               | <input checked="" type="checkbox"/> Pre-Production | <input type="checkbox"/> Production       |
| <b>Type of Equipment</b>       | <input checked="" type="checkbox"/> Fixed                                                    | <input type="checkbox"/> Mobile                    | <input type="checkbox"/> Portable         |
| <b>Antenna Connector</b>       | SMA Type                                                                                     |                                                    |                                           |
| <b>Test Conditions</b>         | The temperature was 26°C<br>Relative humidity of 50%.                                        |                                                    |                                           |
| <b>Modification to the EUT</b> | No Modification to EUT.                                                                      |                                                    |                                           |
| <b>Applicable Standards</b>    | FCC CFR 47 Part 2.1091                                                                       |                                                    |                                           |
| <b>Test Facility</b>           | Timco Engineering Inc. at 849 NW State Road 45 Newberry, FL 32669 USA. Designation #: US1070 |                                                    |                                           |

## Antenna Information

| <b>Manufacturer Provides Antenna</b> | <b>Type</b> | <b>Max Gain (dBi)</b> |
|--------------------------------------|-------------|-----------------------|
| No                                   | Unspecified | 0                     |

## Output Power

| <b>Frequency</b> | <b>Max Power Output (W)</b> |
|------------------|-----------------------------|
| 470.275          | 3.01                        |

**Note:** The EUT will be deployed per FCC 47 CFR 90.219(d) “Deployment Rules”, which requires output power be limited to 5 W in system installation.

## MPE CALCULATION

The minimum separation distance is calculated as follows:

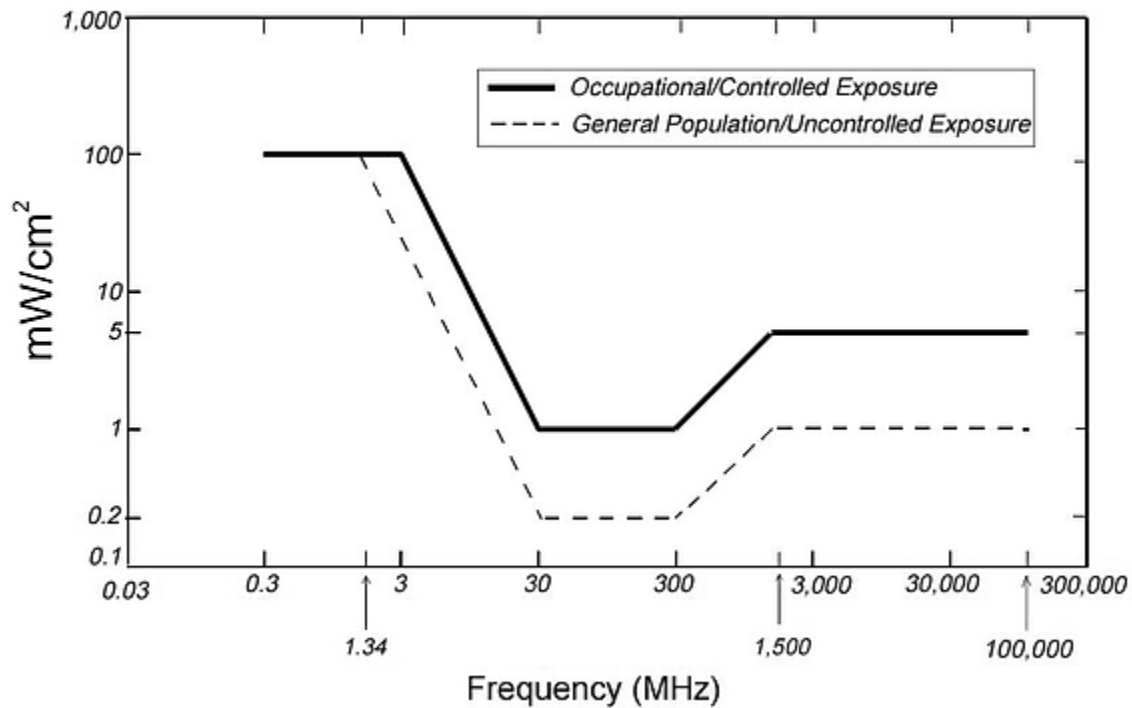
$$E(V/m) = \frac{\sqrt{30 \times P \times G}}{d}$$

$$\text{Power density: } P_d(mW/cm^2) = \frac{E^2}{3770}$$

## MPE LIMITS

**Figure 1. FCC Limits for Maximum Permissible Exposure (MPE)**

*Plane-wave Equivalent Power Density*



## MPE Table

### General Uncontrolled Exposure

The limit for General Uncontrolled Exposure Environment is calculated as shown in FCC Pt. 1.1310, Table B:

| Variable                    | Value                         |
|-----------------------------|-------------------------------|
| Max Power                   | 3.01 W                        |
| Frequency Range             | 430 – 470.275 MHz             |
| Worst-case Frequency        | 470.275 MHz                   |
| Duty Cycle (at full power)  | 100%                          |
| Power Density               | 0.31351667 mW/cm <sup>2</sup> |
| Minimum Separation Distance | 27.65 cm                      |

