



# Test Report - FCC PART 1.1310 / MPE

## Applicant: KM3KM Electronics LLC

Approved for Release By:

Signature: Bruno Clavier

Name & Title: Bruno Clavier, General Manager

Date of Signature 2/11/2022

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

Applicant: KM3KM Electronics LLC  
Address: 5330 SW 3rd Street  
Miami Florida, 33134, 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: 1/11/2022 – 1/17/2022

Signature:

Sr. EMC Engineer  
EMC-003838-NE



Name & Title:

Tim Royer, EMC Engineer

Date of Signature

2/11/2022

Signature:

Name & Title:

Terri Allen, Lab Assistant

Date of Signature

2/11/2022



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

The test sample was received: 1/11/2022

#### 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:           | 2A3P6MERCURYIIIS |
| Brief Description | Linear Amplifier |
| Model(s) #        | MERCURYIIIS      |
| Firmware version  | 4.3              |
| Software version  | 1.0              |
| Serial Number     | MC 000001        |

| Technical Characteristics    |                                                    |
|------------------------------|----------------------------------------------------|
| Technology                   | Linear Amplifier                                   |
| Frequency Range              | 1.8 - 54 MHz (split as appropriate to FCC Part 97) |
| RF O/P Power (Max.)          | 1200W SSB/CW, 700W DIGI                            |
| Bandwidth & Emission Class   | A1A, A3A, A3E, F1D, F3E, J1D, J3C, J3E, J3F        |
| Duty Cycle                   | 100%                                               |
| Antenna Connector            | UHF                                                |
| Voltage Rating (AC or Batt.) | 120-240 V AC Autosensing                           |

| Antenna Characteristics |                 |              |            |              |
|-------------------------|-----------------|--------------|------------|--------------|
| Antenna Name            | Frequency Range | Antenna Type | Dimensions | Antenna Gain |
| n/a                     | n/a             | n/a          | n/a        | n/a          |

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

**Note:** This EUT does not include antenna(s).



#### 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 <sup>2</sup> ) | 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 <sup>2</sup> )              | <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 <sup>2</sup> )              | <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/cm<sup>2</sup>

EIRP = Equivalent Isotropic Radiated Power, in mW

D = Separation distance in cm

Power density is converted from units of mW/cm<sup>2</sup> to units of W/m<sup>2</sup> 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/cm<sup>2</sup>

**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

### *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) |
|----------------|--------------------------|-----------------------------|--------------------|----------------|----------|----------------------------|---------------------------------|-------------------------------|------------------------------------------------------------|
| 1.8-54 MHz     | 20                       | 60.79                       | N/A                | 100%           | 1199.50  | 238.633 mW/cm <sup>2</sup> | 0.2 mW/cm <sup>2</sup>          | 0.516 mW/cm <sup>2</sup>      | 690.84                                                     |

RESULT: Pass at DISTANCE 690.84 cm



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## 6. History of Test Report Changes

| Test Report #                  | Revision # | Description     | Date of Issue |
|--------------------------------|------------|-----------------|---------------|
| TR_0112-22_FCC PT 1.1310/ MPE_ | 1          | Initial release | 2/7/2022      |
|                                | 2          | Updated page 8  | 2/11/2022     |
|                                |            |                 |               |



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END OF TEST REPORT

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