



# RF Exposure Evaluation Report

|                             |                                                                        |
|-----------------------------|------------------------------------------------------------------------|
| <b>APPLICANT</b>            | BEI ELECTRONICS, LLC                                                   |
| <b>ADDRESS</b>              | 4100 N 24TH STREET P.O. BOX 3606<br>QUINCY, IL 62305                   |
| <b>FCC ID</b>               | DDEETG1000                                                             |
| <b>IC</b>                   | 131A-ETG1000                                                           |
| <b>MODEL NUMBER</b>         | ETG1000                                                                |
| <b>PRODUCT DESCRIPTION</b>  | FM BROADCAST TRANSMITTER                                               |
| <b>DATE SAMPLE RECEIVED</b> | 11/21/2019                                                             |
| <b>FINAL TEST DATE</b>      | 11/21/2019                                                             |
| <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 |
|---------------------------|----------------|---------------|------------|
| 213UT20<br>MPETestReport_ | Rev1           | Initial Issue | 3/5/2020   |

**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:**

A blue ink signature of Tim Royer is written over a circular purple stamp. The stamp contains the text "TIMCO ENGINEERING, INC." around the perimeter and "US1070" in the center.

**Name and Title** Tim Royer, Project Manager / EMC Engineer

**Date** 11/25/2019

Applicant: BEI ELECTRONICS, LLC  
FCC ID: DDEETG1000  
IC: 131A-ETG1000  
Report: 213UT20 MPE\_TestReport\_Rev1

## GENERAL INFORMATION

|                                |                                                                                              |                                                    |                                           |
|--------------------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------|-------------------------------------------|
| <b>EUT Description</b>         | FM BROADCAST TRANSMITTER                                                                     |                                                    |                                           |
| <b>Model Number</b>            | ETG1000                                                                                      |                                                    |                                           |
| <b>EUT Power Source</b>        | <input checked="" type="checkbox"/> 110–120Vac, 50–60Hz                                      | <input type="checkbox"/> DC Power (13.8 VDC)       | <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>       | External, N 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

| Antenna is Provided | Type | Max Gain (dBi) |
|---------------------|------|----------------|
| No                  | n/a  | 0.0            |

## RF POWER OUTPUT

| Frequency (MHz) | Stable over Input Voltage Variation (+/- %) | Output Power (dBm) | Output Power (W) | Grant Output Power (W) |
|-----------------|---------------------------------------------|--------------------|------------------|------------------------|
| 88.0            | 5%                                          | 60.28              | 1066.6           | 1067                   |
| 98.0            | 5%                                          | 60.75              | 1188.5           | 1189                   |
| 108.0           | 5%                                          | 60.84              | 1213.4           | 1214                   |

**Maximum Power Output: 1214 W.**

## MPE CALCULATION

The minimum separation distance is calculated as follows:

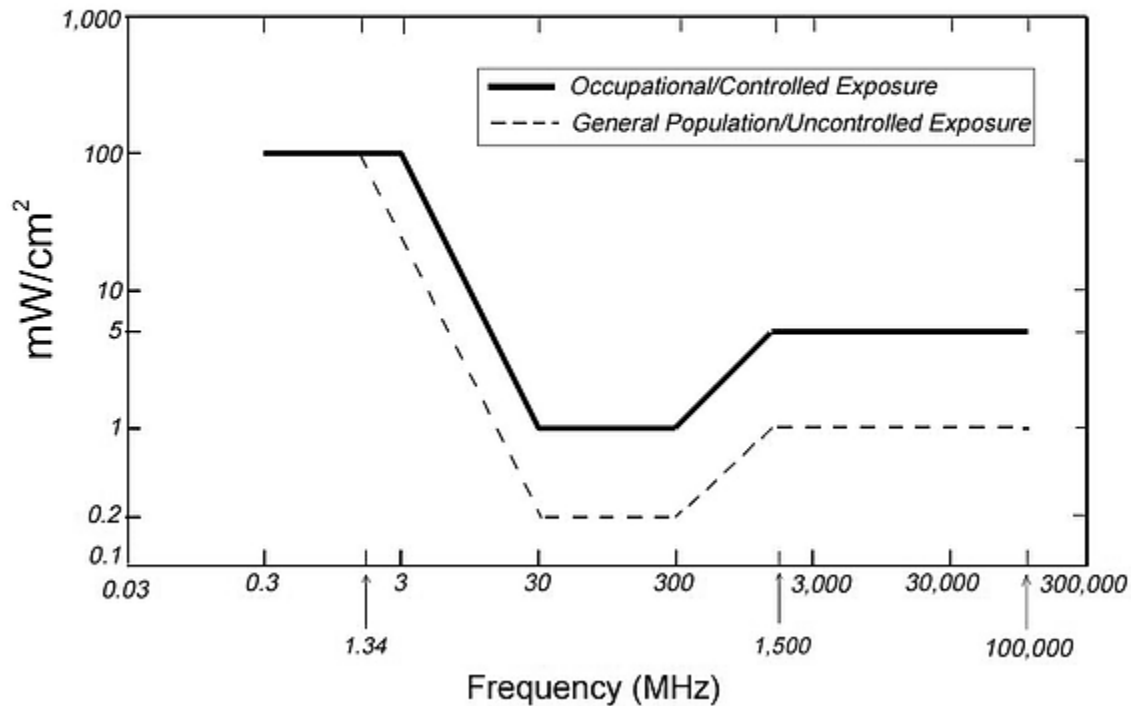
$$E(V/m) = \frac{\sqrt{30 \times P \times G}}{d}$$

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

## MPE LIMITS

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

*Plane-wave Equivalent Power Density*

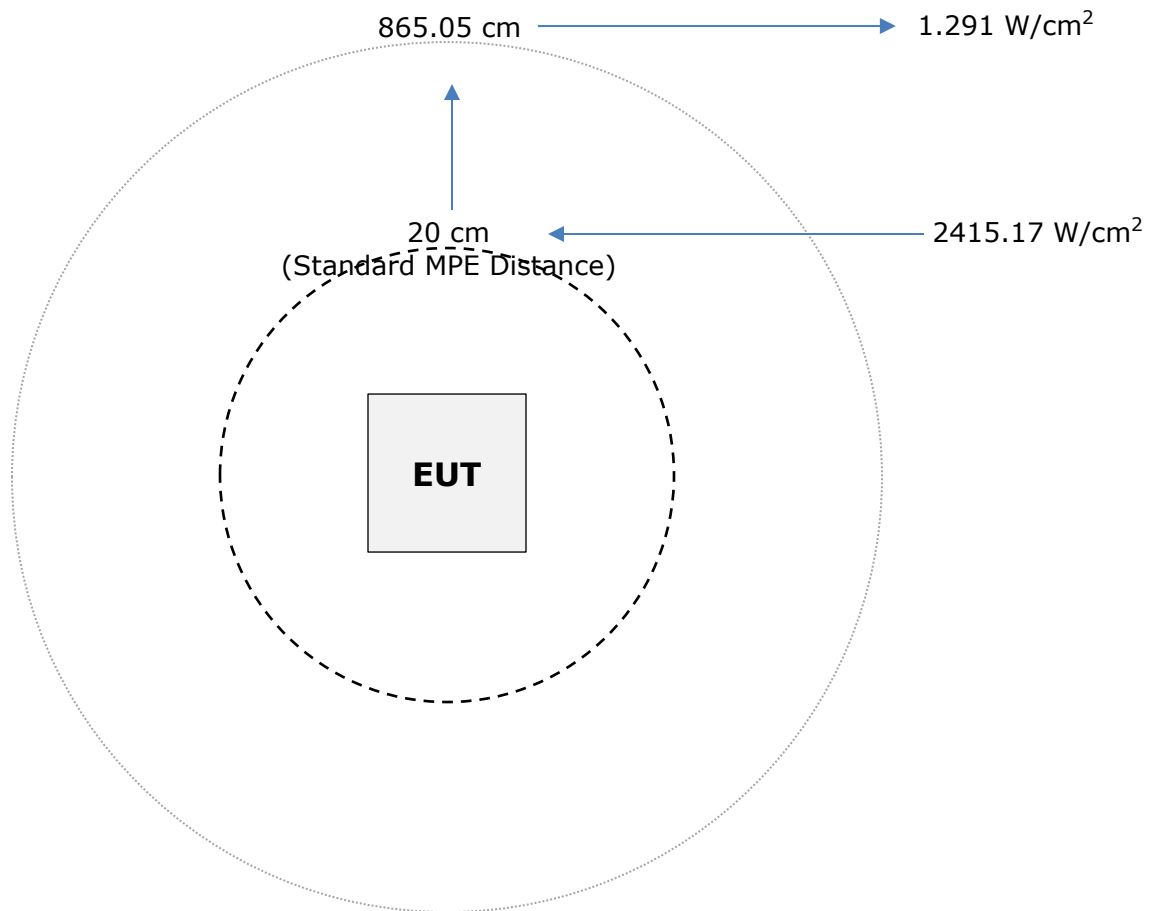


## MPE Table

### 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                   | 1214 W                  |
| Frequency Range             | 88-108 MHz              |
| Duty Cycle (at full power)  | 100%                    |
| Max Antenna Gain            | 0 dBi                   |
| Coax Loss                   | 0 dB                    |
| Power Density               | 1.291 W/cm <sup>2</sup> |
| Minimum Separation Distance | 865.05 cm               |



## General Controlled Exposure

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

| Variable                    | Value                   |
|-----------------------------|-------------------------|
| Max Power                   | 255.27 W                |
| Frequency Range             | 88-108 MHz              |
| Duty Cycle (at full power)  | 100%                    |
| Max Antenna Gain            | 0 dBi                   |
| Coax Loss                   | 0 dB                    |
| Power Density               | 6.455 W/cm <sup>2</sup> |
| Minimum Separation Distance | 386.86 cm               |

