



# RF Exposure Evaluation Report

<b>APPLICANT</b>	BEI ELECTRONICS LLC
<b>ADDRESS</b>	4100 N 24TH STREET P.O. BOX 3606 QUINCY, IL 32305
<b>FCC ID</b>	DDEETG2000
<b>IC</b>	131A-ETG2000
<b>MODEL NUMBER</b>	ETG2000
<b>PRODUCT DESCRIPTION</b>	FM BROADCAST TRANSMITTER
<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
300UT19 MPETestReport_	Rev1	Initial Issue	11/26/2019
	Rev2	Updated Company Name and corrected safety distance	12/11/2019

**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:**



<b>Name and Title</b>	Tim Royer, Project Manager / EMC Engineer
<b>Date</b>	12/04/2019

Applicant: BEI Electronics LLC  
FCC ID: DDEETG2000  
IC: 131A-ETG2000  
Report: 300UT19 MPE\_TestReport\_Rev2

## GENERAL INFORMATION

<b>EUT Description</b>	FM BROADCAST TRANSMITTER		
<b>Model Number</b>	ETG2000		
<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 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%	60.35	1083.9	1084
98.0	5%	59.55	901.57	902
108.0	5%	59.09	810.96	811

**Maximum Power Output: 1084 W.**

## MPE CALCULATION

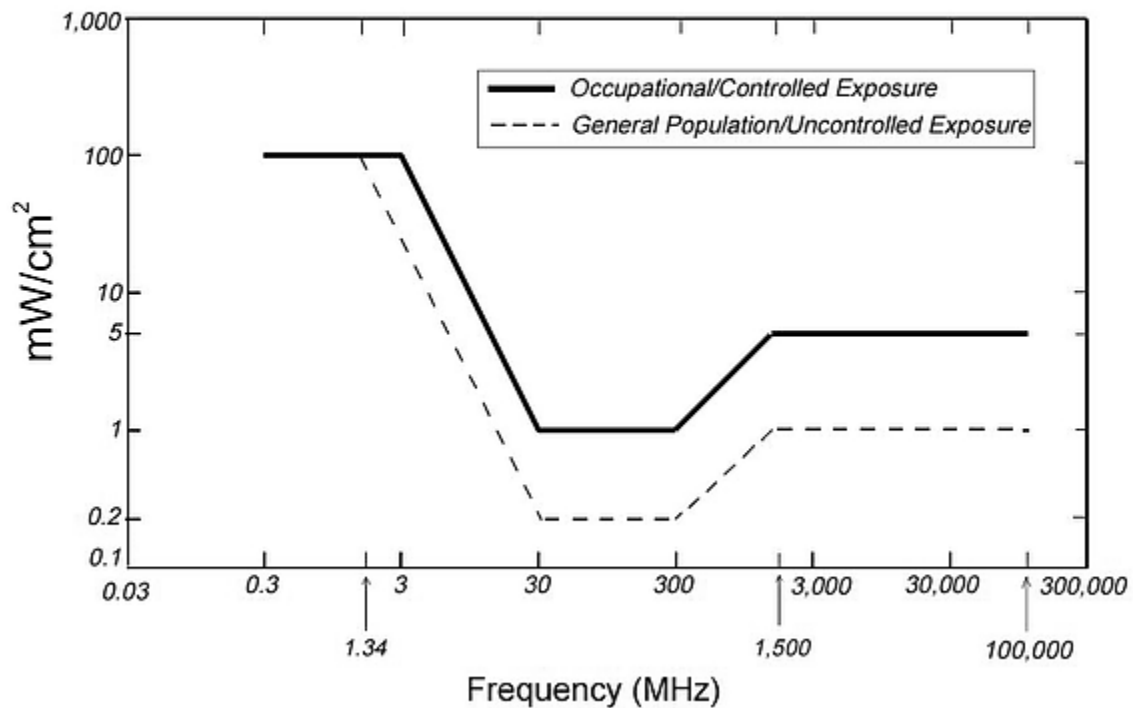
The minimum separation distance is calculated as follows:

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

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

## MPE LIMITS

*Figure 1. FCC Limits for Maximum Permissible Exposure (MPE)  
Plane-wave Equivalent Power Density*

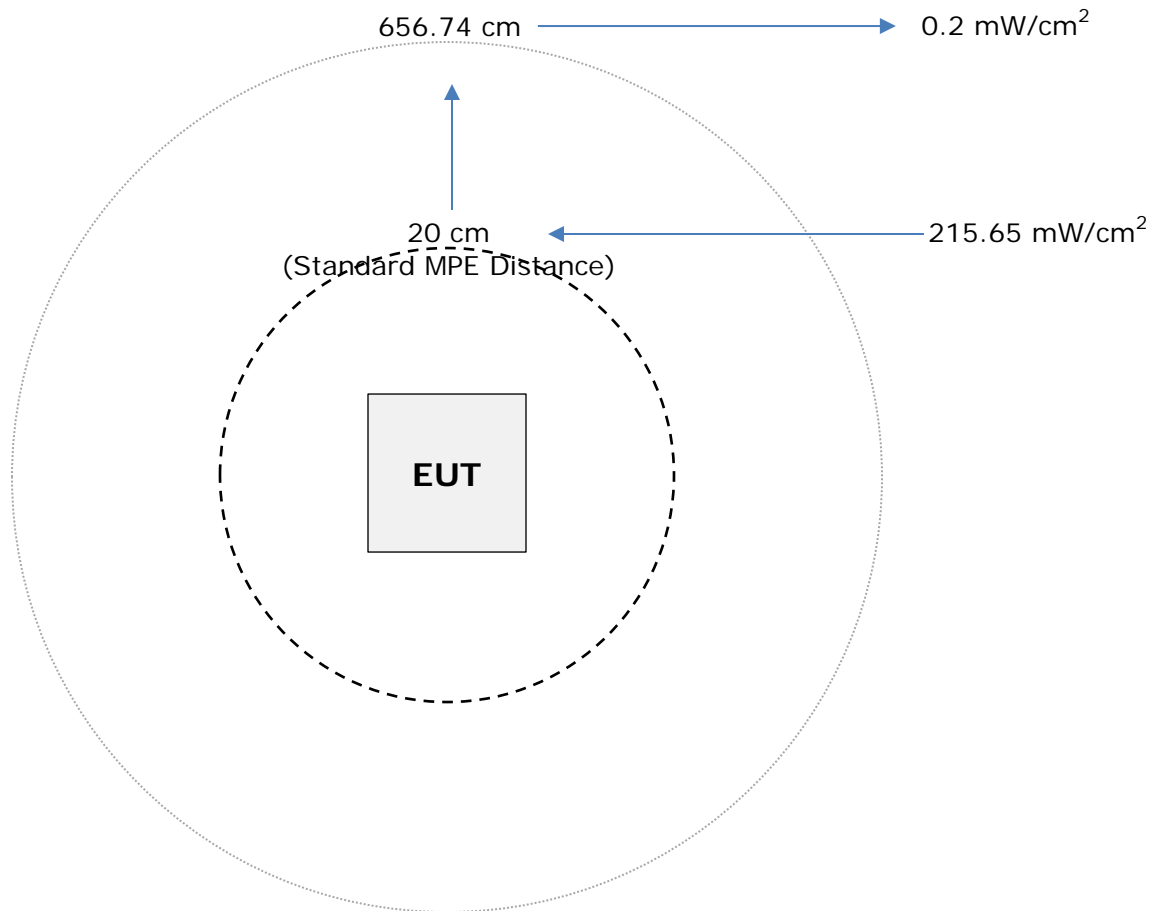


## MPE Table

### General Uncontrolled Exposure

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

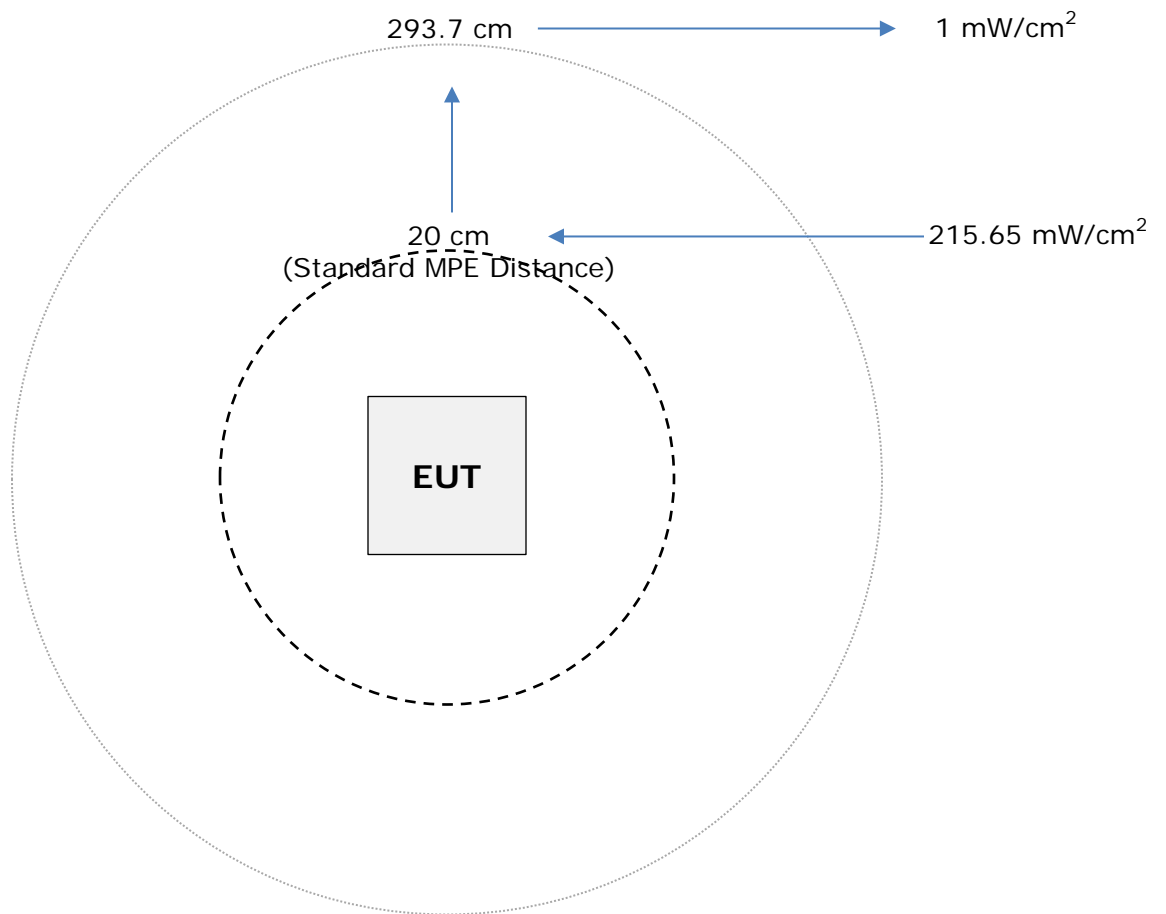
Variable	Value
Max Power	1084 W
Frequency Range	88-108 MHz
Duty Cycle (at full power)	100%
Max Antenna Gain	0 dBi
Coax Loss	0 dB
Power Density	0.2 W/cm <sup>2</sup>
Minimum Separation Distance	656.74 cm



## General Controlled Exposure

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

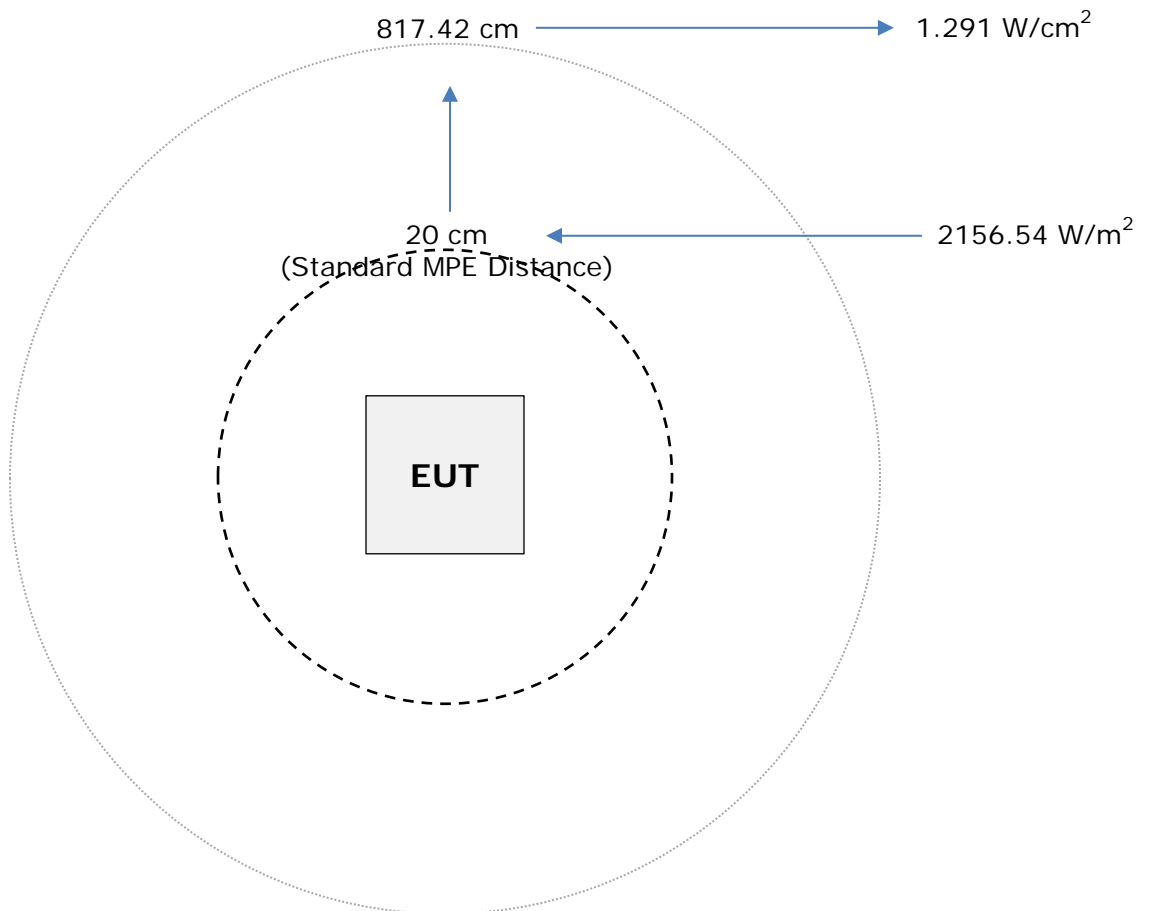
Variable	Value
Max Power	1084 W
Frequency Range	88-108 MHz
Duty Cycle (at full power)	100%
Max Antenna Gain	0 dBi
Coax Loss	0 dB
Power Density	1 mW/cm <sup>2</sup>
Minimum Separation Distance	293.7 cm



**IC MPE Calculation:**

**General Uncontrolled Exposure Environment:** The limit for general uncontrolled exposure environment is shown in RSS-102, Issue 5, Table 4.

Variable	Value
Max Power	1084 W
Duty Cycle	100%
Max Antenna Gain	0 dBi
Coax Loss	0 dB
Transmit Frequency	88 MHz
Power Density	1.291 W/m <sup>2</sup>
Minimum Separation Distance	817.42cm





**General Controlled Exposure Environment:** The limit for controlled exposure environment is shown in RSS-102, Issue 5, Table 6.

Variable	Value
Max Power	1084 W
Duty Cycle (at full power)	100%
Max Antenna Gain	0 dBi
Coax Loss	0 dB
Maximum Transmit Frequency	88 MHz
Power Density	6.708 W/m <sup>2</sup>
Minimum Separation Distance	358.6 cm

