



RF Exposure Evaluation Report

APPLICANT	BEI ELECTRONICS LLC
ADDRESS	4100 N 24TH STREET P.O. BOX 3606 QUINCY, IL 32305
FCC ID	DDEETG2000
IC	131A-ETG2000
MODEL NUMBER	ETG2000
PRODUCT DESCRIPTION	FM BROADCAST TRANSMITTER
FINAL TEST DATE	11/21/2019
PREPARED BY	Tim Royer
TEST RESULTS	☒ PASS ☐ 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:



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

Applicant: BEI Electronics LLC
FCC ID: DDEETG2000
IC: 131A-ETG2000
Report: 300UT19 MPE_TestReport_Rev2

GENERAL INFORMATION

EUT Description	FM BROADCAST TRANSMITTER		
Model Number	ETG2000		
EUT Power Source	☒ 110–120Vac, 50–60Hz	☐ DC Power (13.8 VDC)	☐ Battery Operated
Test Item	☐ Engineering Prototype	☒ Pre-Production	☐ Production
Type of Equipment	☒ Fixed	☐ Mobile	☐ Portable
Antenna Connector	External, N Type		
Test Conditions	The temperature was 26°C Relative humidity of 50%.		
Modification to the EUT	No Modification to EUT.		
Applicable Standards	FCC CFR 47 Part 2.1091		
Test Facility	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:

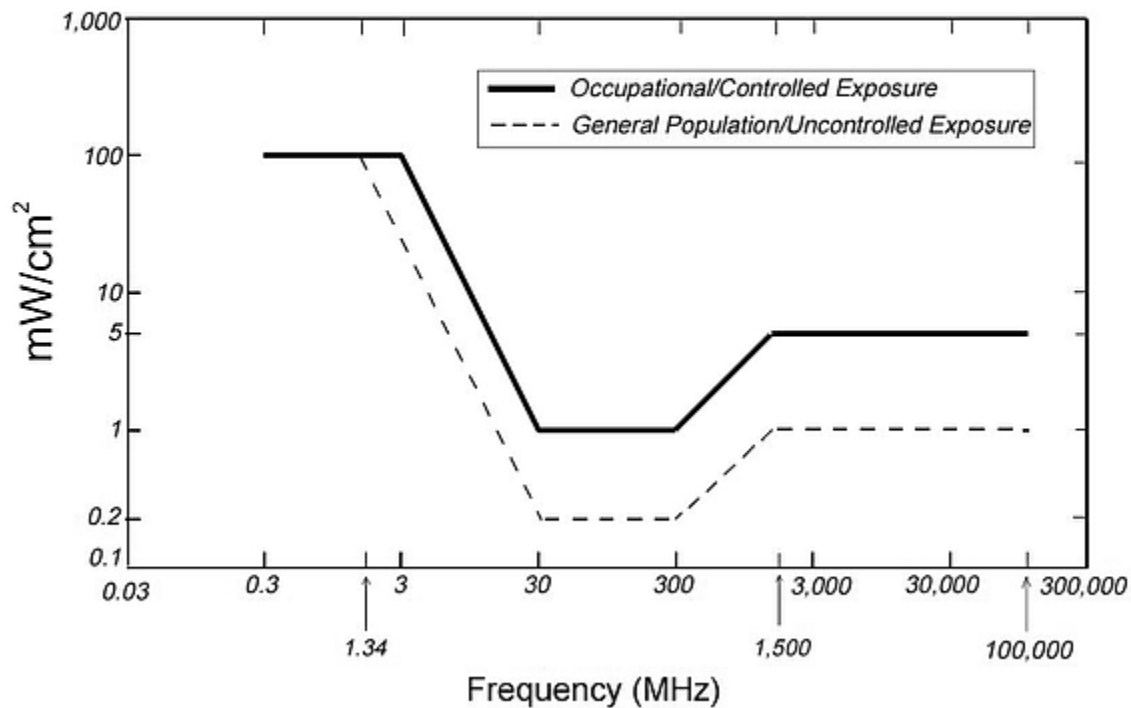
$$E(V/m) = \frac{\sqrt{30 \times P \times G}}{d}$$

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

MPE LIMITS

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

Plane-wave Equivalent Power Density

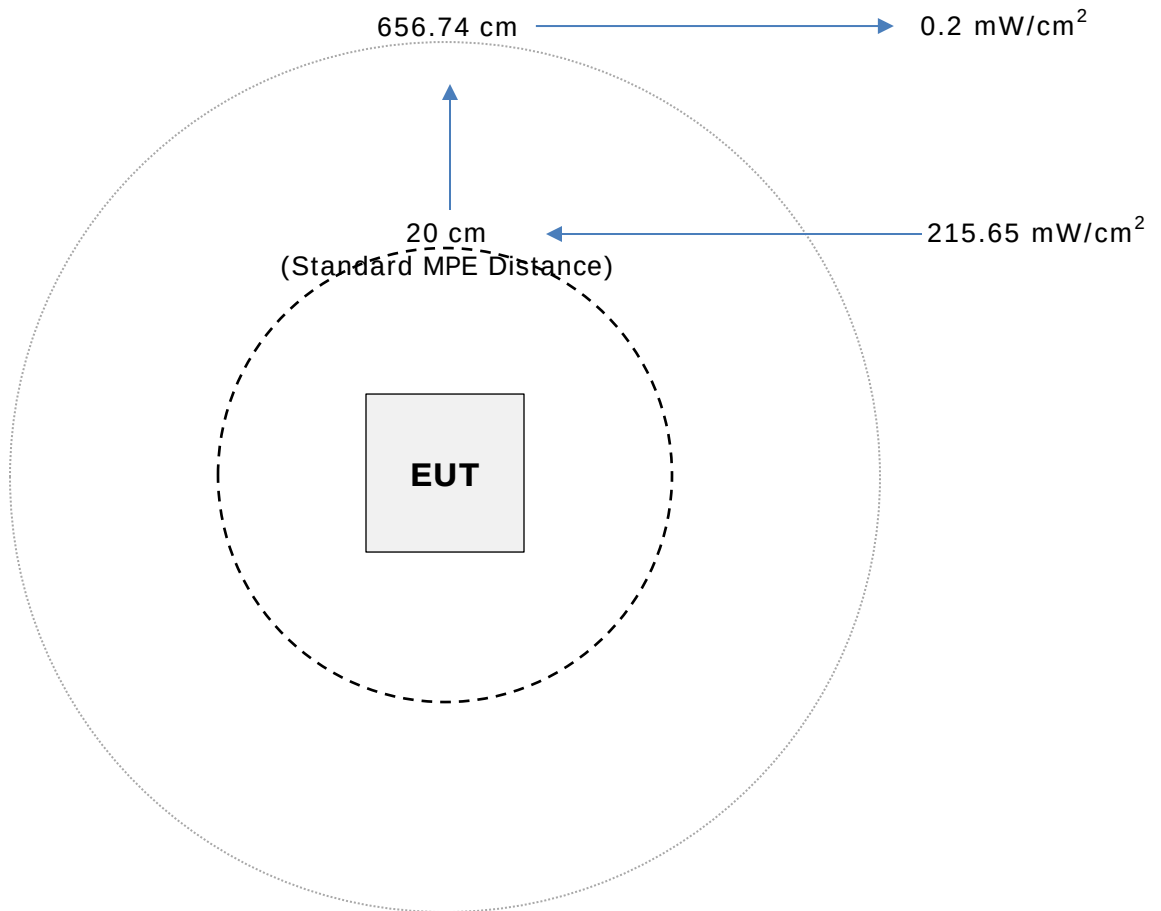


MPE Table

General Uncontrolled Exposure

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

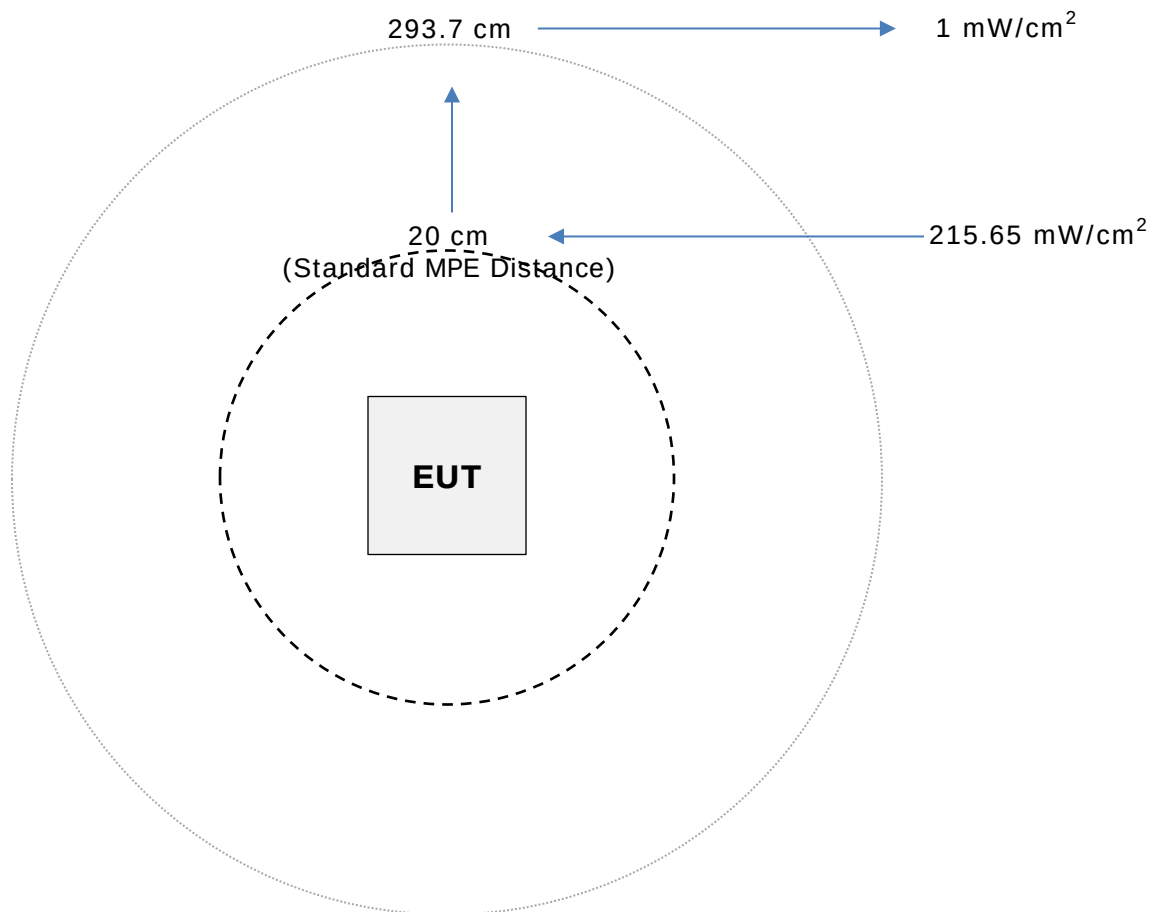
Variable	Value
Max Power	1084 W
Frequency Range	88-108 MHz
Duty Cycle (at full power)	100%
Max Antenna Gain	0 dBi
Coax Loss	0 dB
Power Density	0.2 W/cm ²
Minimum Separation Distance	656.74 cm



General Controlled Exposure

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

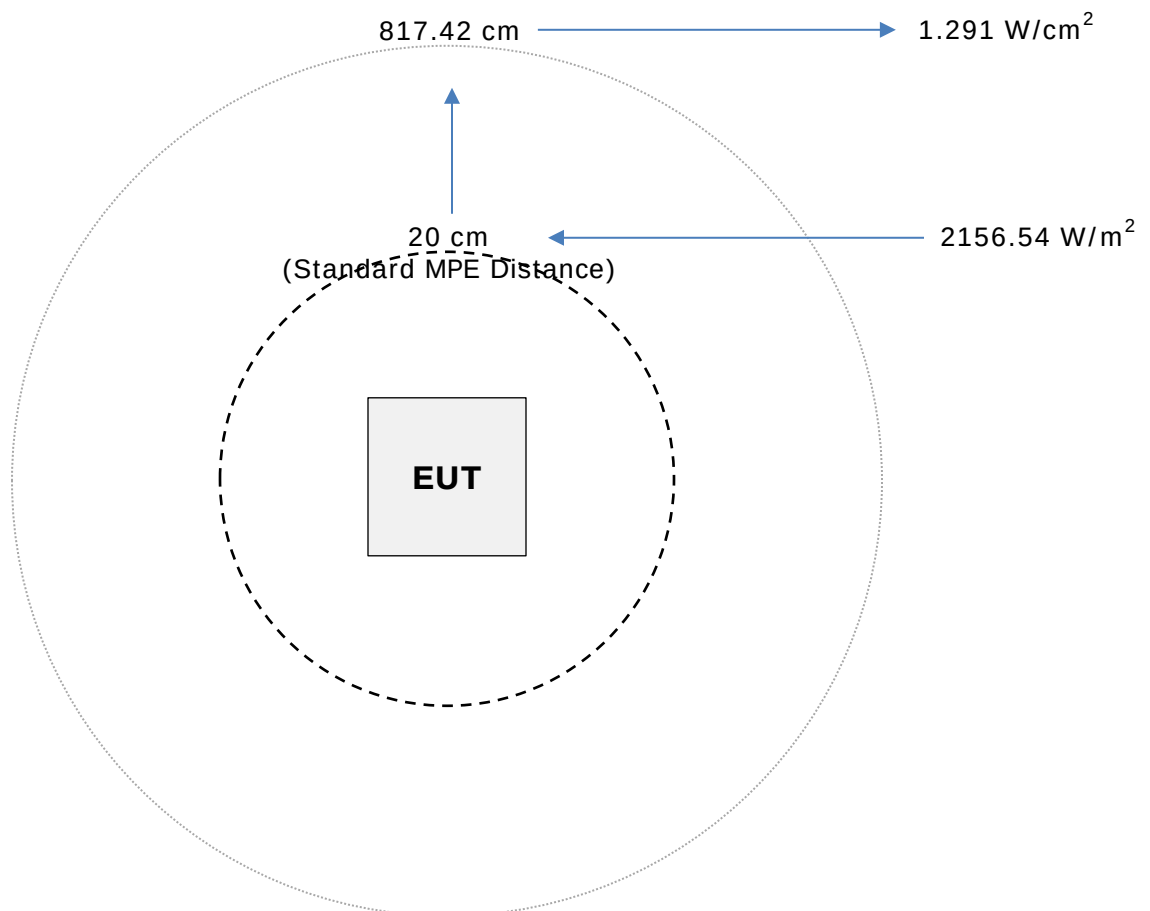
Variable	Value
Max Power	1084 W
Frequency Range	88-108 MHz
Duty Cycle (at full power)	100%
Max Antenna Gain	0 dBi
Coax Loss	0 dB
Power Density	1 mW/cm ²
Minimum Separation Distance	293.7 cm



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 ²
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^2
Minimum Separation Distance	358.6 cm

