



RF Exposure Evaluation Report

APPLICANT	CATTRON NORTH AMERICA INC.
ADDRESS	655 N. RIVER ROAD NW SUITE A WARREN, OH 44483-2254 USA
FCC ID	Cn290275
IC	1007A-90275
MODEL NUMBER	90275 TRX
PRODUCT DESCRIPTION	IR LRMII 900 MHZ/2400MHZ MODULE
FINAL TEST DATE	3/13/2020
PREPARED BY	Tim Royer
TEST RESULTS	☒ PASS ☐ FAIL

Report Number	Report Version	Description	Issue Date
519BUT20 MPETestReport_	Rev1	Initial Issue	4/29/2020

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

TABLE OF CONTENTS

GENERAL REMARKS	2
GENERAL INFORMATION	3
ANTENNA INFORMATION	3
MPE CALCULATION.....	4
MPE LIMITS.....	4
MPE TABLE	5
GENERAL UNCONTROLLED EXPOSURE	5
GENERAL CONTROLLED EXPOSURE	6
IC MPE CALCULATION:.....	7

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	4/29/2020

Applicant: CATTRON NORTH AMERICA INC.
FCC ID: CN290275
IC: 1007A-90275
Report: 519BUT20 MPE_TestReport_Rev1

GENERAL INFORMATION

EUT Description	IR LRMII 900 MHZ/2400MHZ MODULE		
Model Number	90275 TRX		
EUT Power Source	☒ 110-120Vac, 50-60Hz	☒ DC Power (3.3 VDC)	☐ Battery Operated
Test Item	☐ Engineering Prototype	☒ Pre-Production	☐ Production
Type of Equipment	☒ Fixed	☐ Mobile	☐ Portable
Antenna Connector	Internal		
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

Tuned Frequency (MHz)	Power Output (dBm)
2402	16.49
2440	16.35
2480	15.81

Maximum Power Output: 16.49 dBm.

MPE CALCULATION

The minimum separation distance is calculated as follows:

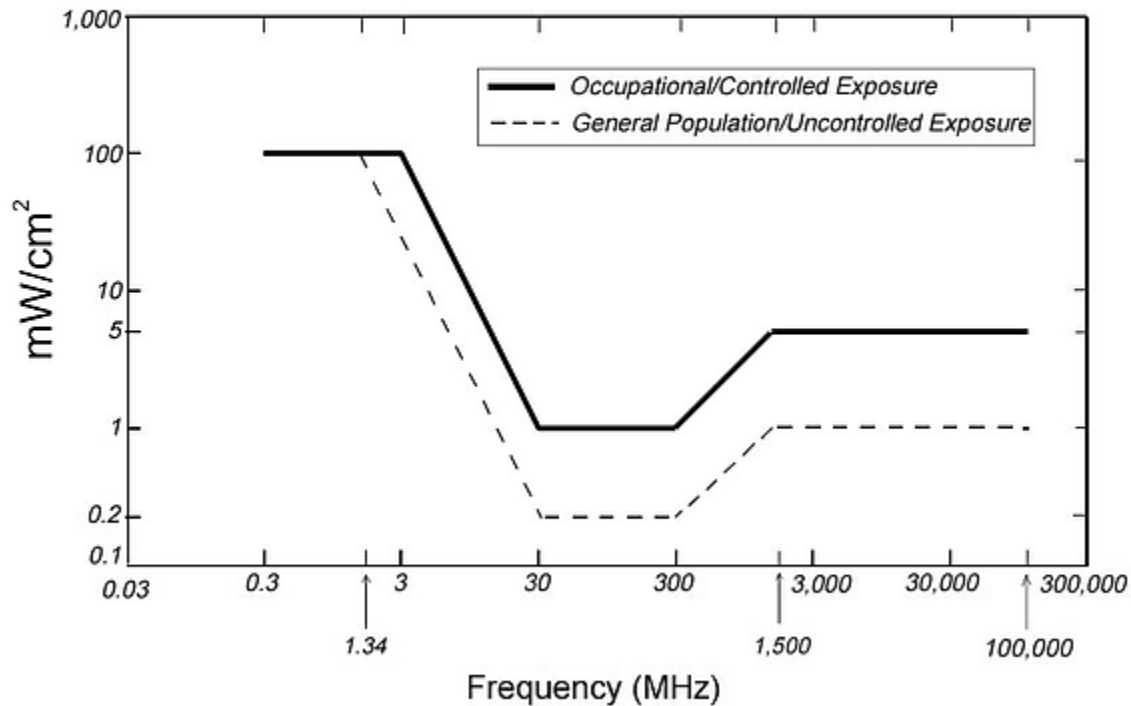
$$E(V/m) = \frac{\sqrt{30 \times P \times G}}{d}$$

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

MPE LIMITS

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

Plane-wave Equivalent Power Density

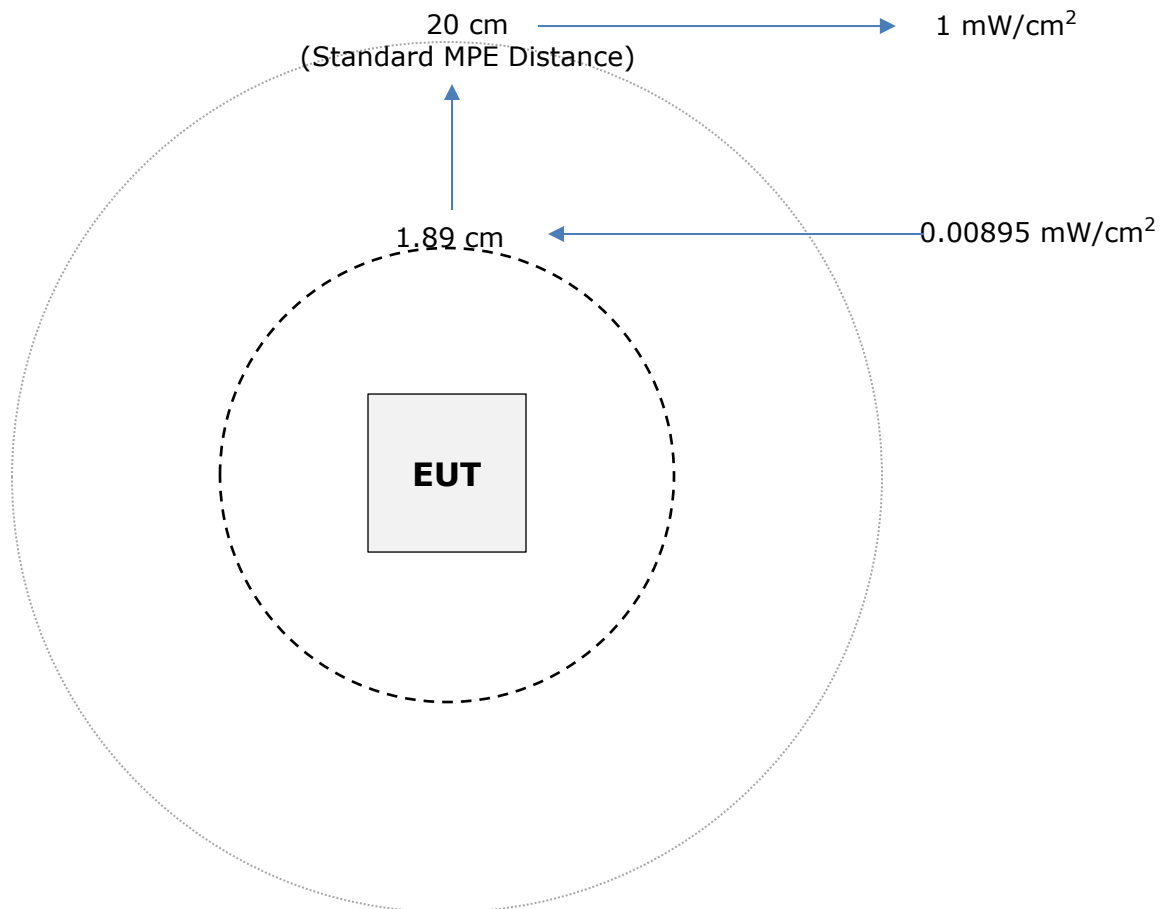


MPE Table

General Uncontrolled Exposure

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

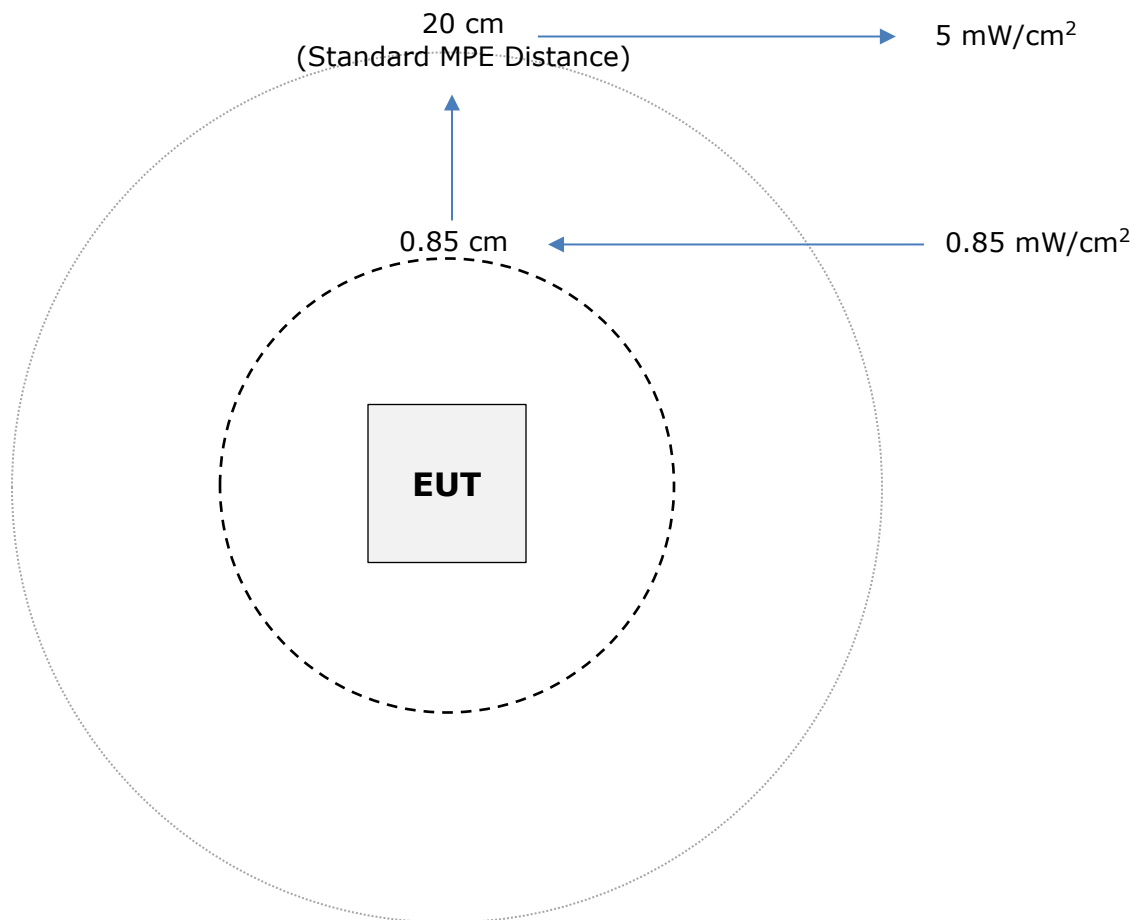
Variable	Value
Max Power	0.045 W
Frequency Range	2400 – 2483.5 MHz
Duty Cycle (at full power)	100%
Max Antenna Gain	0 dBi
Coax Loss	0 dB
Power Density	1 mW/cm ²
Minimum Separation Distance	1.89 cm



General Controlled Exposure

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

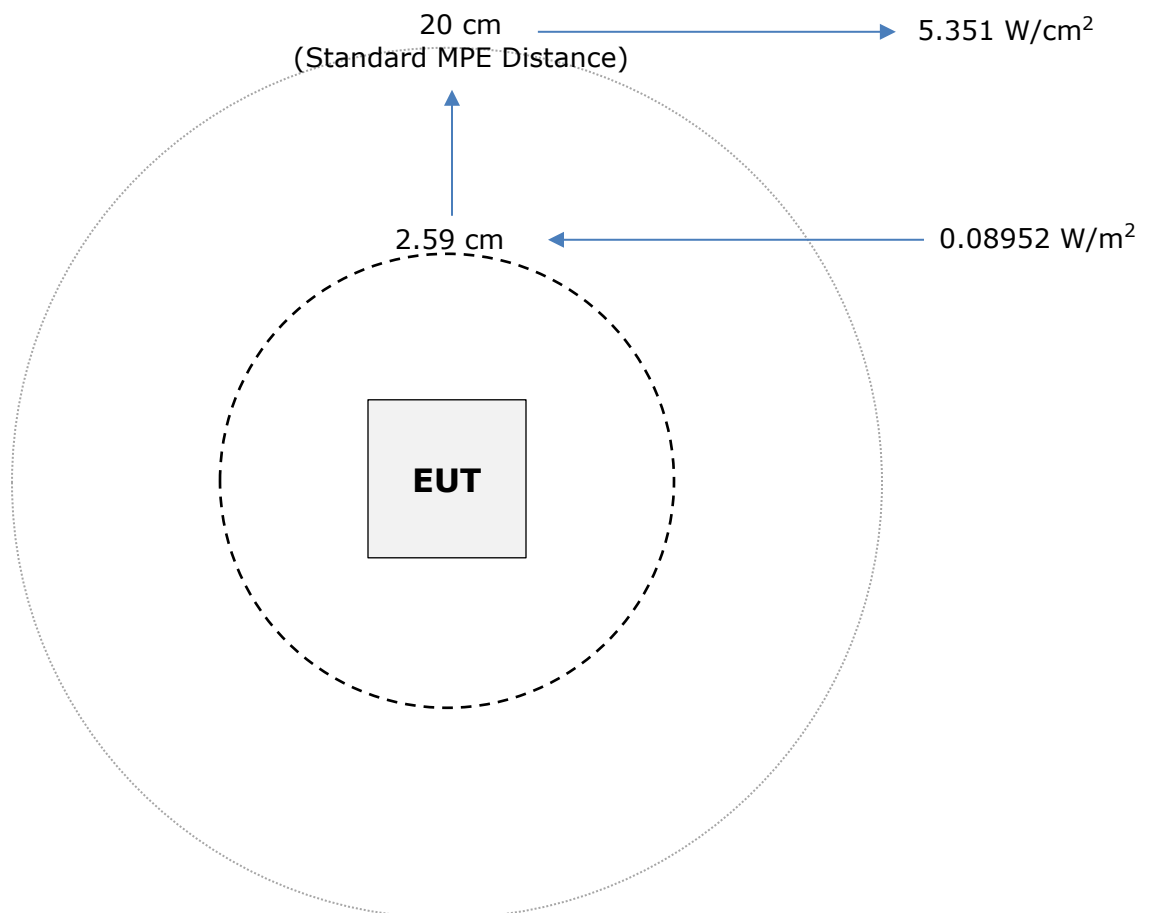
Variable	Value
Max Power	0.045 W
Frequency Range	2400 – 2483.5 MHz
Duty Cycle (at full power)	100%
Max Antenna Gain	0 dBi
Coax Loss	0 dB
Power Density	5 mW/cm ²
Minimum Separation Distance	0.85 cm



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	0.045 W
Duty Cycle	100%
Max Antenna Gain	0 dBi
Coax Loss	0 dB
Transmit Frequency	2400 – 2483.5 MHz
Power Density	5.351 W/m ²
Minimum Separation Distance	2.59cm



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

Variable	Value
Max Power	0.045 W
Duty Cycle (at full power)	100%
Max Antenna Gain	0 dBi
Coax Loss	0 dB
Maximum Transmit Frequency	2400 – 2483.5 MHz
Power Density	31.636 W/m ²
Minimum Separation Distance	1.06cm

