



# RF Exposure Evaluation Report

<b>APPLICANT</b>	Radio Solutions, Inc.
<b>ADDRESS</b>	55 Accord Park Drive Norwell MA 2061
<b>FCC ID</b>	2AHVPSB800M3A, 2AHVPSB800M3B
<b>IC</b>	21503-SB800M3
<b>PRODUCT DESCRIPTION</b>	800 MHz Industrial Booster
<b>DATE SAMPLE RECEIVED</b>	07/21/2020
<b>FINAL TEST DATE</b>	08/03/2020
<b>PREPARED BY</b>	Franklin Rose
<b>TEST RESULTS</b>	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL

Report Number	Report Version	Description	Issue Date
2707-20 MPE_TestReport_	Rev1	Initial Issue	08/24/2020
2707-20 MPE_TestReport_	Rev2	Updated MPE Distance	08/25/2020

**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:



<b>Name and Title</b>	Franklin Rose, Project Manager / EMC Specialist
<b>Date</b>	08/18/2020

## EUT INFORMATION



<b>EUT Description</b>	800 MHz Industrial Booster		
<b>Modified for Testing</b>	<input type="checkbox"/>		
<b>Modification</b>			
<b>Antenna Connector</b>	<input type="checkbox"/> UHF	<input type="checkbox"/> BNC	<input checked="" type="checkbox"/> N
	<input type="checkbox"/> TNC	<input type="checkbox"/> SMA	<input type="checkbox"/> Other
<b>EUT Power Source</b>	<input type="checkbox"/> AC Power (110-120 V)	<input checked="" type="checkbox"/> DC Power (28 V)	<input type="checkbox"/> DC Battery (7.4 V)
<b>Test Item</b>	<input type="checkbox"/> Engineering Prototype	<input checked="" type="checkbox"/> Pre-Production	<input type="checkbox"/> Post-Production
<b>Type of Equipment</b>	<input checked="" type="checkbox"/> Fixed	<input type="checkbox"/> Mobile	<input type="checkbox"/> Portable

## ANTENNA INFORMATION

<b>Manufacturer Provides Antenna</b>	<b>Type</b>	<b>Max Gain (dBi)</b>
No	Unspecified	<b>0 dBi</b>

## FCC MPE SEPARATION

<i>EUT Parameters</i>		
<i>Parameter</i>	<i>Value</i>	<i>Unit</i>
<i>EUT Form Factor</i>	Fixed	
<i>Lowest Frequency</i>	806.000	MHz
<i>Highest Frequency</i>	862.000	MHz
<i>Maximum Power</i>	5.000	W
<i>Tune Up Tolerance</i>	0.500	+/- dBm
<i>Duty Cycle</i>	100%	%
<i>Antenna Gain</i>	2.150	dB
<i>Coax Loss</i>	0.000	dB
<i>EIRP</i>	9.204	W

<i>Uncontrolled Public RF Exposure/MPE Guideline</i>	
Separation Distance (cm)	36.92 cm
Power Density (mW/cm <sup>2</sup> )	0.537 mW/cm <sup>2</sup>
<i>Controlled Occupational RF Exposure/MPE Guideline</i>	
Separation Distance (cm)	20 cm
Power Density (mW/cm <sup>2</sup> )	1.831 mW/cm <sup>2</sup>

**Note:** 2.15 dB of gain has been added to convert Maximum Power ERP to total power EIRP.

## FCC MPE CALCULATION

### Calculations

#### RF Exposure Field Strength Limits

Public Persons may be exposed up to:

Worst-Case RF Field Strength Limit for the General Public (Uncontrolled Environment)	<b>0.537 mW/cm<sup>2</sup></b>
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Occupational Persons may be exposed up to:

Worst-Case RF Field Strength Limit for Controlled Use (Controlled Environment)	<b>2.687 mW/cm<sup>2</sup></b>
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#### Separation Distance

Mandatory distance from radiating element:

Calculation Method	Distance from Radiating Element (cm) = SQRT (P(mW) / 4π S(mW/cm <sup>2</sup> ))
Uncontrolled Sep. Distance @ 0.537 mW/cm <sup>2</sup>	<b>36.92 cm</b>
Controlled Sep. Distance @ 2.687 mW/cm <sup>2</sup>	<b>16.51 cm</b>

#### EUT Power Density at 20 cm

Calculation Method	Power Density (mW/cm <sup>2</sup> ) = P(mW) / 4π R(cm) <sup>2</sup>
EUT Power Density @ 20 cm	<b>1.831 mW/cm<sup>2</sup></b>

## ISED MPE SEPARATION

<i>EUT Parameters</i>		
<i>Parameter</i>	<i>Value</i>	<i>Unit</i>
<i>EUT Form Factor</i>	Fixed	
<i>Lowest Frequency</i>	806.000	MHz
<i>Highest Frequency</i>	862.000	MHz
<i>Maximum Power</i>	5.000	W
<i>Tune Up Tolerance</i>	0.500	+/- dBm
<i>Duty Cycle</i>	100%	%
<i>Antenna Gain</i>	2.150	dB
<i>Coax Loss</i>	0.000	dB
<i>EIRP</i>	9.204	W

<i>Uncontrolled Public RF Exposure/MPE Guideline</i>	
Separation Distance (cm)	53.73 cm
Power Density (W/m <sup>2</sup> )	2.537 W/m <sup>2</sup>
<i>Controlled Occupational RF Exposure/MPE Guideline</i>	
Separation Distance (cm)	20 cm
Power Density (W/m <sup>2</sup> )	18.31 W/m <sup>2</sup>

**Note:** 2.15 dB of gain has been added to convert Maximum Power ERP to total power EIRP.

## ISED MPE CALCULATION

### Calculations

#### RF Exposure Field Strength Limits

Public Persons may be exposed up to:

Worst-Case RF Field Strength Limit for the General Public (Uncontrolled Environment)	<b>2.537 W/m<sup>2</sup></b>
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Occupational Persons may be exposed up to:

Worst-Case RF Field Strength Limit for Controlled Use (Controlled Environment)	<b>18.33 W/m<sup>2</sup></b>
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#### Separation Distance

Mandatory distance from radiating element:

Calculation Method	Distance from Radiating Element (cm) = SQRT (P(mW) / 4π S(mW/cm <sup>2</sup> ))
Uncontrolled Sep. Distance @ 2.537 W/m <sup>2</sup>	<b>53.73 cm</b>
Controlled Sep. Distance @ 18.33 W/m <sup>2</sup>	<b>19.99 cm</b>

#### EUT Power Density at 20 cm

Calculation Method	Power Density (mW/cm <sup>2</sup> ) = P(mW) / 4π R(cm) <sup>2</sup>
EUT Power Density @ 20 cm	<b>18.31 W/m<sup>2</sup></b>

## END OF REPORT