



An IIA Company

Test Report - FCC PART 1.1310 / MPE

Prepared For: BEI Electronics, LLC

Approved for Release By:

Signature: Bruno Clavier

Name & Title: Bruno Clavier, General Manager

Date of Signature

(YYYY-MM-DD): 2020-12-29

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Timco Engineering, Inc., an IIA Company
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1. Customer Information

Customer: BEI Electronics, LLC
Address: 4100 N 24TH STREET
QUINCY IL 62305

2. Location of Testing

2.1 Test Laboratory

Timco Engineering Inc. is a subsidiary of Industrial Inspection & Analysis, Inc. ("IIA"). Testing was performed at Timco's permanent laboratory located at 849 NW State Road 45, Newberry, Florida 32669

FCC test firm # 578780
FCC Designation # US1070
FCC site registration is under A2LA certificate # 0955.01
ISED Canada test site registration # 2056A
EU Notified Body # 1177
For all designations see A2LA scope # 0955.01



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2.2 Testing was performed, reviewed by

Dates of Testing: 12/22/2020– 12/29/2020

Signature:

A handwritten signature in black ink, appearing to read "Franklin Rose".

Name & Title:

Franklin Rose, RF Test Engineer

Date of Signature

12/29/2020

Signature:

A handwritten signature in black ink, appearing to read "Tim Royer".

Sr. EMC Engineer
EMC-003838-NE
The logo for iMARIE (International Association of EMC Test Engineers) features the word "iMARIE" in a stylized, italicized font. "CERTIFIED" is written in a smaller font above the "i", and "ENGINEER" is written below the "E". A circular graphic with horizontal lines is positioned behind the text.

Name & Title:

Tim Royer, EMC Engineer

Date of Signature

12/29/2020



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3. Test Sample(s) (EUT/DUT)

The test sample was received: October 14, 2020

3.1 Description of the EUT

A description as well as unambiguous identification of the EUT(s) tested. Where more than one sample is required for technical reasons (such as the use of connected units for the purpose of conducted output power testing where the product units will have integral antennas), each specific test shall identify which unit was tested.

Identification	
FCC ID:	DDE-GTX900
Brief Description	STL Transmitter
Type of Modular	N/A
Model(s) #	GTX-900
Firmware version	N/A
Software version	2.00
Serial Number	E20-9-515

Technical Characteristics	
Technology	STL Transmitter
Frequency Range	941.0-960 MHz
RF O/P Power (Max.)	42.23 dBm (16.71 W)
Modulation	FM
Bandwidth & Emission Class	180KF3E
Duty Cycle	N/A
Antenna Connector	N-Type
Voltage Rating (AC or Batt.)	AC
Technology	STL Transmitter

Antenna Characteristics		
Frequency Range	Mode / BW	Antenna Gain
n/a	n/a	0 dBi



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4. Test methods & Applicable Regulatory Limits

4.1 Test methods/Standards/Guidance:

The following guidance FCC KDB 447498 D01 General RF Exposure Guidance v06 was used for RF exposure evaluation as per FCC Part 1.1310 and FCC Part 2.1091 and part 2.1093. Full test results are available in this report.

4.1.1 FCC Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging Time (minutes)
A Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*(100)	≤6
3.0-30	1842/f	4.89/f	*(900/f ²)	<6
30-300	61.4	0.163	1.0	<6
300-1,500			f/300	<6
1,500-100,000			5	<6
B Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	<30
1.34-30	824/f	2.19/f	*(180/f ²)	<30
30-300	27.5	0.073	0.2	<30
300-1,500			f/1500	<30
1,500-100,000			1.0	<30



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4.2 Equations

POWER DENSITY

$$E(V/m) = \text{SQRT} (30 * P * G) / d$$

$$Pd(W/m^2) = E^2 / 377$$

$$S = \text{EIRP} / (4 * \text{Pi} * D^2)$$

Where:

S = Power density, in mW/cm^2

EIRP = Equivalent Isotropic Radiated Power, in mW

D = Separation distance in cm

Power density is converted from units of mW/cm^2 to units of W/m^2 by multiplying by 10.

DISTANCE

$$D = \text{SQRT} (\text{EIRP} / (4 * \text{Pi} * S))$$

Where:

D = Separation distance in cm

EIRP = Equivalent Isotropic Radiated Power, in mW

S = Power density in mW/cm^2

SOURCE-BASED DUTY CYCLE (When applicable (for example, multi-slot mobile phone applications) A duty cycle factor may be applied.)

$$\text{Source-based time-average EIRP} = (DC / 100) * \text{EIRP}$$

Where:

DC = Duty Cycle in % as applicable.

EIRP = Equivalent Isotropic radiated Power, in mW



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5. RF Exposure Results

Operational

Frequency Band	Evaluation Distance (cm)	Max Power + Tolerance (dBm)	Antenna Gain (dBi)	Duty Cycle (%)	EIRP (W)	Power Density	Limit for Uncontrolled Exposure	Limit for Controlled Exposure	Distance Required to meet Uncontrolled Exposure Limit (cm)
941-960 MHz	20	42.23	0.00	100%	16.71	3.325 mW/cm ²	0.627 mW/cm ²	3.137 mW/cm ²	46.05

RESULT: Passes Limit at Distance: 46.05 cm



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6. History of Test Report Changes

Test Report #	Revision #	Description	Date of Issue
TR_4986-20_FCC_MPE	1	Initial release	January 29, 2021
TR_4986-20_FCC_MPE	2	Corrected frequency range	May 24, 2021



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END OF TEST REPORT
