



## **Compliance Testing, LLC**

Previously Flom Test Lab

EMI, EMC, RF Testing Experts Since 1963

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### **Test Report**

**Prepared for: G-Way Incorporated**

**Model: 900MHz Industrial Booster**

**Description: DL/896-901 MHz UL/935-940 MHz, DL/901-902MHz UL/940-941 MHz**

**Serial Number: 16051002**

**FCC ID: Q8KPS93790N**

**To**

**FCC Part 1.1310**

**Date of Issue: August 8, 2016**

**On the behalf of the applicant:**

**G-Way Incorporated  
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**Attention of:**

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**Greg Corbin  
Project Test Engineer**

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### Test Report Revision History

| Revision | Date               | Revised By  | Reason for Revision                                           |
|----------|--------------------|-------------|---------------------------------------------------------------|
| 1.0      | August 3, 2016     | Greg Corbin | Original Document                                             |
| 2.0      | September 21, 2016 | Greg Corbin | Removed frequency range 901 – 902, 940 – 941 MHz from Table 1 |
|          |                    |             |                                                               |
|          |                    |             |                                                               |



### ILAC / A2LA

Compliance Testing, LLC, has been accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer joint ISO-ILAC-IAF Communiqué dated January 2009)

The tests results contained within this test report all fall within our scope of accreditation, unless below

Please refer to <http://www.compliancetesting.com/labscope.html> for current scope of accreditation.

Testing Certificate Number: **2152.01**



FCC Site Reg. #349717

IC Site Reg. #2044A-2

Non-accredited tests contained in this report:

N/A



#### **EUT Description**

**Model:** 900MHz Industrial Booster

**Description:** DL/896-901 MHz UL/935-940 MHz, DL/901-902MHz UL/940-941 MHz

**Serial Number:** 16051002

#### **Additional Information:**

The EUT is classified as a Part 90 PS **Class B** industrial signal booster.

The EUT is a Bi-directional Amplifier that operates in the Frequency ranges listed in Table 1.

System Power is 120 VAC @ 60 Hz.

**Table 1**

| <b>Frequency (MHz)</b> |                       |
|------------------------|-----------------------|
| <b>Base to Mobile</b>  | <b>Mobile to Base</b> |
| 935 - 940              | 896 - 901             |

#### **Antennas specified for the EUT:**

| <b>Antenna type</b>                | <b>Model</b>   | <b>Gain - dBi</b> |
|------------------------------------|----------------|-------------------|
| Wideband High Gain Ceiling Antenna | TQI-4FC-5      | 2                 |
| Full Band Directional Antenna      | TDJ-700/2500YG | 8.5               |

#### **EUT Operation during Tests**

The EUT was tested under normal operating conditions with the front panel attenuators set to 0 dB for all measurements.

30 dB, 50 watt attenuators were installed on both RF ports for all tests.

MPE calculations were performed at the manufacturer's rated output of +37 dBm using an antenna with 8.5 dBi gain.

MPE calculations were performed at the manufacturer's rated output of +37 dBm +20% using an antenna with 8.5 dBi gain.



### MPE Evaluation

This is a Fixed device used in Uncontrolled Exposure environment.

### Limits Uncontrolled Exposure 47 CFR 1.1310 Table 1, (B)

|                  |                                                     |
|------------------|-----------------------------------------------------|
| 0.3-1.234 MHz:   | Limit [mW/cm <sup>2</sup> ] = 100                   |
| 1.34-30 MHz:     | Limit [mW/cm <sup>2</sup> ] = (180/f <sup>2</sup> ) |
| 30-300 MHz:      | Limit [mW/cm <sup>2</sup> ] = 0.2                   |
| 300-1500 MHz:    | Limit [mW/cm <sup>2</sup> ] = f/1500                |
| 1500-100,000 MHz | Limit [mW/cm <sup>2</sup> ] = 1.0                   |

### Test Data

**Uplink Output Power set to manufacturer's (Mfr) rated output power (+37 dBm) using an antenna with 8.5 dBi gain**

|                                      |         |
|--------------------------------------|---------|
| Test Frequency, MHz                  | 896     |
| Power, Conducted, mW (P)             | 5011    |
| Antenna Gain Isotropic               | 8.5 dBi |
| Antenna Gain Numeric (G)             | 7.08    |
| Distance (R)                         | 20 cm   |
| $S = \frac{P * G}{4\pi r^2}$         |         |
| Power Density (S) mw/cm <sup>2</sup> | 7.058   |

|                                                      |
|------------------------------------------------------|
| Power Density (S) = 7.058 mw/cm <sup>2</sup>         |
| Limit =(from above table) = 0.597 mw/cm <sup>2</sup> |

With the output power set to **manufacturer rated output power (+37 dBm)** using a 8.5 dBi antenna, the EUT does not meet the power density requirements at 20 cm, so the minimum safe distance was calculated below.

### Minimum Safe Distance Evaluation

This is a Fixed device used in Uncontrolled Exposure environment.

### Test Data

**Uplink Output Power set to manufacturer's (Mfr) rated output power (+37 dBm) using an antenna with 8.5 dBi gain**

|                          |         |
|--------------------------|---------|
| Test Frequency, MHz      | 896     |
| Power, Conducted, mW (P) | 5011    |
| Antenna Gain Isotropic   | 8.5 dBi |
| Antenna Gain Numeric (G) | 7.08    |
| Limit (L)                | 0.597   |

|                          |              |                  |           |
|--------------------------|--------------|------------------|-----------|
| $R = \sqrt{(PG/4\pi L)}$ |              |                  |           |
| Distance (R) cm          | Power mW (P) | Numeric Gain (G) | Limit (L) |
| 68.8 cm                  | 5011         | 7.08             | 0.597     |

With the output power set to the manufacturer's (Mfr) rated output power (+37 dBm) using an antenna with 8.5 dBi gain, the minimum safe distance is 68.8 cm.



## Test Data

**Uplink Output Power set to manufacturer's (Mfr) rated output power (+37 dBm) + 20% using an antenna with 8.5 dBi gain**

|                                      |                       |
|--------------------------------------|-----------------------|
| Test Frequency, MHz                  | 896                   |
| Power, Conducted, mW (P)             | 6013.2 (37 dBm + 20%) |
| Antenna Gain Isotropic               | 8.5 dBi               |
| Antenna Gain Numeric (G)             | 7.08                  |
| Distance (R)                         | 20 cm                 |
| $S = \frac{P * G}{4\pi r^2}$         |                       |
| Power Density (S) mw/cm <sup>2</sup> |                       |
|                                      | 8.469                 |

|                                                     |
|-----------------------------------------------------|
| Power Density (S) = 8.469 mw/cm <sup>2</sup>        |
| Limit =(from above table) = 0.597mw/cm <sup>2</sup> |

With the output power set to **manufacturer rated output power (+37 dBm)** using a 8.5 dBi antenna, the EUT does not meet the power density requirements at 20 cm, so the minimum safe distance was calculated below.

## Minimum Safe Distance Evaluation

### Test Data

**Uplink Output Power set to manufacturer's (Mfr) rated output power (+37 dBm) + 20% using an antenna with 8.5 dBi gain**

|                          |                       |
|--------------------------|-----------------------|
| Test Frequency, MHz      | 896                   |
| Power, Conducted, mW (P) | 6013.2 (37 dBm + 20%) |
| Antenna Gain Isotropic   | 8.5 dBi               |
| Antenna Gain Numeric (G) | 7.08                  |
| Limit (L)                | 0.597                 |

|                          |              |                  |           |
|--------------------------|--------------|------------------|-----------|
| $R = \sqrt{(PG/4\pi L)}$ |              |                  |           |
| Distance (R) cm          | Power mW (P) | Numeric Gain (G) | Limit (L) |
| 75.4 cm                  | 6013.2       | 7.08             | 0.597     |

With the output power set to the manufacturer's (Mfr) rated output power (+37 dBm) using an antenna with 8.5 dBi gain, the minimum safe distance is 75.4 cm.

END OF TEST REPORT