



# RF Exposure Evaluation Report

|                             |                                                                        |
|-----------------------------|------------------------------------------------------------------------|
| <b>APPLICANT</b>            | FIPLEX COMMUNICATIONS INC.                                             |
| <b>ADDRESS</b>              | 2101 NW 79th Ave.<br>MIAMI FL 33122 USA                                |
| <b>FCC ID</b>               | P3TDH7X                                                                |
| <b>MODEL NUMBER</b>         | DH7X                                                                   |
| <b>PRODUCT DESCRIPTION</b>  | 700MHZ BAND INDUSTRIAL BOOSTER                                         |
| <b>DATE SAMPLE RECEIVED</b> | 01/02/2019                                                             |
| <b>FINAL TEST DATE</b>      | 04/19/2019                                                             |
| <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 |
|--------------------------|----------------|----------------------|------------|
| 6AUT19<br>MPE_TestReport | Rev1           | Initial Issue        | 04/19/2019 |
| 6AUT19<br>MPE_TestReport | Rev2           | Updated Output Power | 06/04/2019 |

**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:



|                       |                                                 |
|-----------------------|-------------------------------------------------|
| <b>Name and Title</b> | Franklin Rose, Project Manager / EMC Specialist |
| <b>Date</b>           | 04/19/2019                                      |

## GENERAL INFORMATION

|                                |                                                                                              |                                                    |                                           |
|--------------------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------|-------------------------------------------|
| <b>EUT Description</b>         | 700 BAND INDUSTRIAL BOOSTER                                                                  |                                                    |                                           |
| <b>Model Number</b>            | DH7X                                                                                         |                                                    |                                           |
| <b>EUT Power Source</b>        | <input checked="" type="checkbox"/> 110–120Vac, 50–60Hz                                      | <input type="checkbox"/> DC Power                  | <input type="checkbox"/> Battery Operated |
| <b>Test Item</b>               | <input type="checkbox"/> Engineering Prototype                                               | <input checked="" type="checkbox"/> Pre-Production | <input type="checkbox"/> Production       |
| <b>Type of Equipment</b>       | <input checked="" type="checkbox"/> Fixed                                                    | <input type="checkbox"/> Mobile                    | <input type="checkbox"/> Portable         |
| <b>Antenna Connector</b>       | 3 external N Type                                                                            |                                                    |                                           |
| <b>Test Conditions</b>         | The temperature was 26°C<br>Relative humidity of 50%.                                        |                                                    |                                           |
| <b>Modification to the EUT</b> | No Modification to EUT.                                                                      |                                                    |                                           |
| <b>Applicable Standards</b>    | FCC CFR 47 Part 2.1091                                                                       |                                                    |                                           |
| <b>Test Facility</b>           | Timco Engineering Inc. at 849 NW State Road 45 Newberry, FL 32669 USA. Designation #: US1070 |                                                    |                                           |

## ANTENNA INFORMATION

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

### SISO Statement

This equipment has two separate outputs meant to be used as SISO for different service areas. For such equipment, FCC KDB 935210 D02 asks for the following grant condition to be used:

**“This filing has compliance demonstration information and test data only for SISO (single-input single-output) booster system configurations; additional equipment authorization is required to allow this device to be used in MIMO (multiple-input multiple-output) industrial booster systems.”**

## POWER OUTPUT OF EUT

| <b>Uplink Maximum Rated Output Power (dBm)</b> | <b>Downlink Maximum Rated Output Power (dBm)</b> | <b>Tune Up Tolerance (+/-dB)</b> | <b>Antenna Gain (dB)</b> | <b>Power Output (W)</b> |
|------------------------------------------------|--------------------------------------------------|----------------------------------|--------------------------|-------------------------|
| 23.80                                          | 33.00                                            | 2.00                             | 0.00                     | 3.54                    |

The output power levels of the Uplink and Downlink of this Distributed Antenna System Industrial Signal Booster have been evaluated together for a worst-case MPE Safety Distance.

## MPE CALCULATION

The minimum separation distance is calculated as follows:

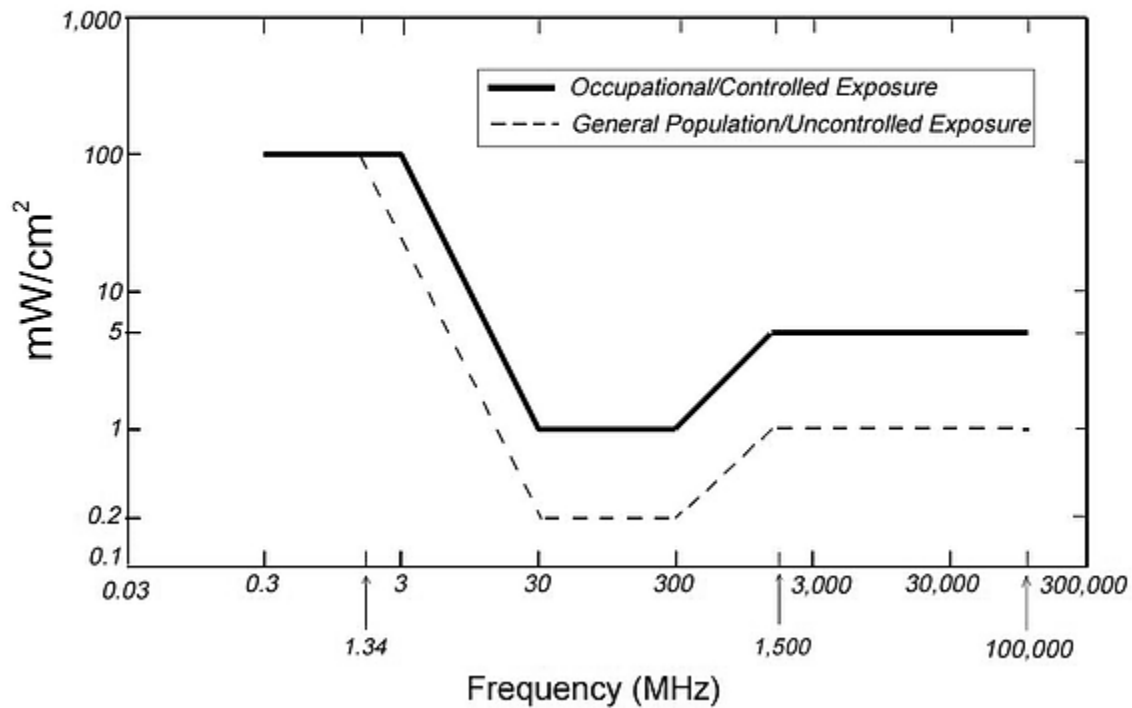
$$E(V/m) = \frac{\sqrt{30 \times P \times G}}{d}$$

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

## MPE LIMITS

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

*Plane-wave Equivalent Power Density*

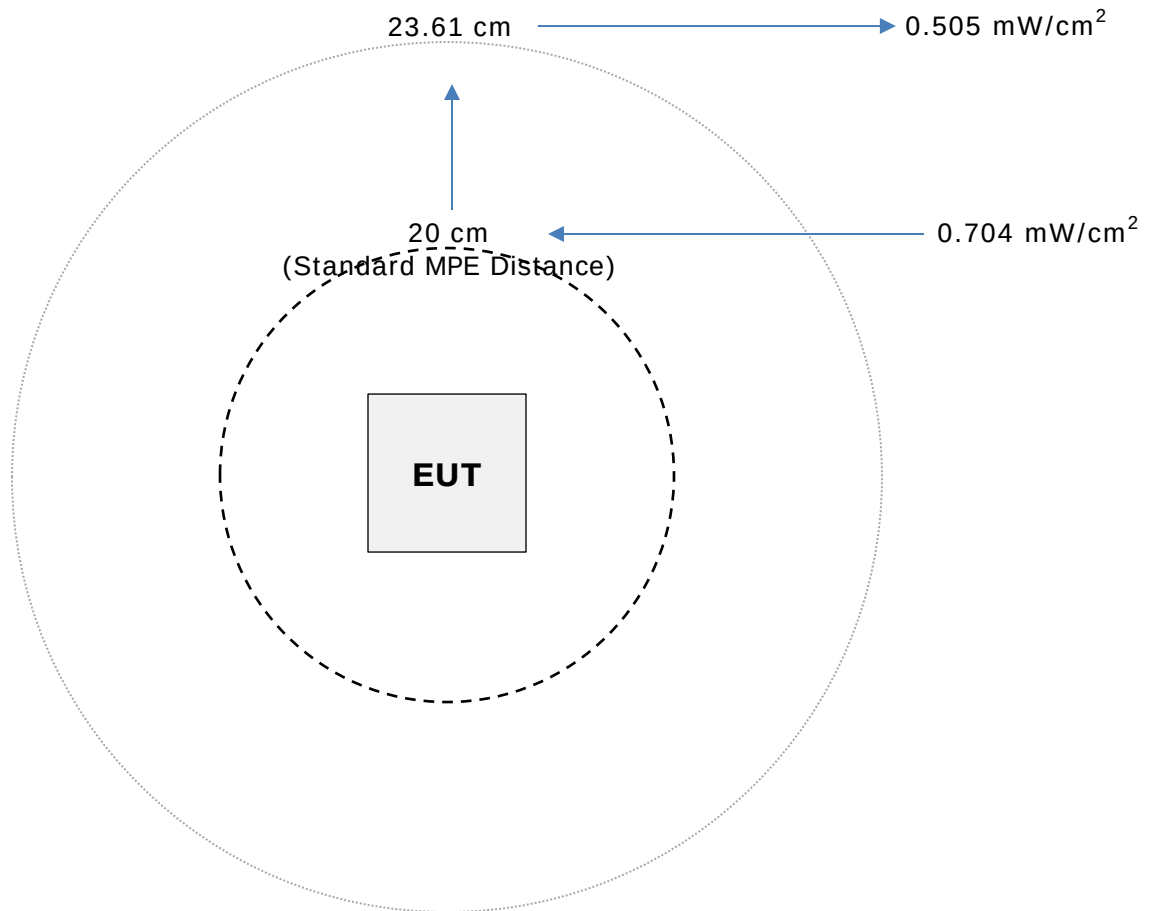


## MPE Table

### 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                   | 3.54 W                   |
| Frequency Range             | 758 – 805 MHz            |
| Duty Cycle (at full power)  | 100%                     |
| Max Antenna Gain            | 0 dB                     |
| Coax Loss                   | 0 dB                     |
| Power Density               | 0.505 mW/cm <sup>2</sup> |
| Minimum Separation Distance | 23.61 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                   | 3.54 W                   |
| Frequency Range             | 758 – 805 MHz            |
| Duty Cycle (at full power)  | 100%                     |
| Max Antenna Gain            | 0 dBi                    |
| Coax Loss                   | 0 dB                     |
| Power Density               | 0.704 mW/cm <sup>2</sup> |
| Minimum Separation Distance | 20 cm                    |

