



Test Report - FCC PART 1.1310 / MPE

Applicant: Fiplex Communications Inc.

Approved for Release By:

Signature: *Bruno Clavier*

Name & Title: Bruno Clavier, General Manager

Date of Signature 5/12/2022

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

Applicant: Fiplex Communications Inc.
Address: 2101 NW 79th Avenue
Miami Florida, 33122, United States

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: 4/5/2022 – 5/11/2022

Signature:

A handwritten signature of Tim Royer.



Name & Title: Tim Royer, EMC Engineer

Date of Signature 5/12/2022

Signature:

A handwritten signature of Terri Allen.

Name & Title: Terri Allen, Lab Assistant

Date of Signature 5/12/2022



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

The test sample was received: 4/4/2022

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: | P3TDH437-3X |
| Brief Description | Digital Signal Booster |
| Type of Modular | n/a |
| Model(s) # | DH437 |
| Firmware version | 3.01-00 |
| Software version | 1.02 |
| Serial Number | 20101178FU |

| Technical Characteristics | |
|------------------------------|---|
| Technology | Bi-Directional Industrial Signal Booster |
| Frequency Range | 410 – 415 MHz- Uplink/ Downlink 417 – 422 MHz- Uplink/ Downlink 425 - 430 MHz- Uplink/ Downlink |
| RF O/P Power (Max.) | UL: 23.85 dBm (0.24 W) DL: 37.96 dBm (6.25 W) |
| Modulation | n/a |
| Bandwidth & Emission Class | 11K3F3E, 8K10F1D, 8K10F1E, 8K10F1W, 9K80F1D, 9K80F1E, 9K80D7W |
| Number of Channels | Variable |
| Duty Cycle | 100% |
| Antenna Connector | N Type |
| Voltage Rating (AC or Batt.) | 28 V DC (internally) |

| Antenna Characteristics | | |
|-------------------------|-----------|--------------|
| Frequency Range | Mode / BW | Antenna Gain |
| 410 – 430 MHz | n/a | 3 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

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

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

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

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

Separation Distance: 20 cm

| MPE | | | | | | | | | |
|----------------|--------------------------|-----------------------------|--------------------|----------------|----------|--------------------------|---------------------------------|-------------------------------|--|
| 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) |
| 410-430 MHz | 20 | 28.85 | 3.00 | 100% | 0.77 | 0.153 mW/cm ² | 0.273 mW/cm ² | 1.367 mW/cm ² | 20.00 |

RESULT: Pass at DISTANCE 20 cm



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6. History of Test Report Changes

| Test Report # | Revision # | Description | Date of Issue |
|--|------------|-----------------|---------------|
| TR_1654-22_Uplink_FCC PT 1.1310/ MPE_ | 1 | Initial release | 5/11/2022 |
| | | | |
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END OF TEST REPORT
