



Test Report - FCC PART 1.1310 / MPE

Prepared For: Fiplex Communications Inc.

Approved for Release By:

Signature: Bruno Clavier

Name & Title: Bruno Clavier, General Manager

Date of Signature

(YYYY-MM-DD): 2020-10-30

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1. Customer Information

Applicant: Fiplex Communications Inc.
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MIAMI FL 33122

Contact: Mr. Fernando Sommariva
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Email address: fernando.sommariva@fiplex.com

2. Location of Testing

2.1 Test Laboratory

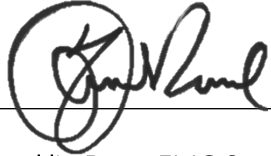
Timco Engineering Inc. is a subsidiary of Industrial Inspection & Analysis, Inc. ("IIA"). Testing was performed at Timco's permanent laboratory located at 849 NW State Road 45, Newberry, Florida 32669

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

2.2 Testing was performed, reviewed by

Dates of Testing: October 6, 2020 – October 21, 2020

Signature:



Name & Title: Franklin Rose, EMC Specialist

Date of Signature

(YYYY-MM-DD): 2020-10-30

Signature:



Sr. EMC Engineer
EMC-003838-NE



Name & Title: Tim Royer, EMC Engineer

Date of Signature

(YYYY-MM-DD): 2020-10-30

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

The test sample was received: October 15, 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: | P3TA14A, P3TA14B |
| Brief Description | VHF/UHF Remote, Class A and Class B |
| Type of Modular | n/a |
| Model(s) # | A14 |
| Trade name | n/a |
| Firmware version | 1.0.0 |
| Software version | 3.22.9.225 |
| Serial Number | 20096065FU |

| Technical Characteristics | |
|------------------------------|---|
| Technology | Bi-Directional Industrial Signal Booster |
| Frequency Range | 150.8 – 173.4 MHz; and 450 – 512 MHz |
| RF O/P Power (Max.) | 30 dBm (1 W) |
| Modulation | n/a |
| Bandwidth & Emission Class | 16K0F3E, 11K3F3E, 4K00F1E, 8K10F1D, 8K10F1E, 8K10F1W, 9K80F1D, 9K80F1E, 9K80D7W |
| Number of Channels | Variable. |
| Duty Cycle | 100% |
| Antenna Type | n/a |
| Antenna Gain (for each ant.) | 0 dBi |
| Antenna Connector | N |
| Voltage Rating (AC or Batt.) | 120 V AC or 28 V DC (internally) |

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

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 |

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/cm²

EIRP = Equivalent Isotropic Radiated Power, in mW

D = Separation distance in cm

Power density is converted from units of mW/cm² to units of W/m² 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/cm²

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

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

Where:

DC = Duty Cycle in % as applicable.

EIRP = Equivalent Isotropic radiated Power, in mW

5. RF Exposure Results

Transmitter Type: Fixed Mount, MIMO, Co-located TX
 (2 possible simultaneous RF pathways)

Evaluation Distance: 20 cm (minimum)

VHF Co-located MPE

| Frequency band | Mode | Evaluation Distance (cm) | Output Power (dBm) | Antenna Gain (dBi) | Duty Cycle (%) | EIRP (W) | Power Density (mW/cm ²) | LIMIT (mW/cm ²) |
|----------------|----------|--------------------------|--------------------|--------------------|----------------|----------|-------------------------------------|-----------------------------|
| 150 - 173 MHz | Downlink | 20 | 26.0 | 7.0 | 100 | 2.00 | 0.40 | 0.2 |

Scale Exposure Distance to Meet Limit

| | | | | | | | | |
|---------------|----------|-------|------|-----|-----|------|------|-----|
| 150 - 173 MHz | Downlink | 28.18 | 26.0 | 7.0 | 100 | 2.00 | 0.20 | 0.2 |
|---------------|----------|-------|------|-----|-----|------|------|-----|

UHF Co-located MPE

| Frequency band | Mode | Evaluation Distance (cm) | Output Power (dBm) | Antenna Gain (dBi) | Duty Cycle (%) | EIRP (W) | Power Density (mW/cm ²) | LIMIT (mW/cm ²) |
|----------------|----------|--------------------------|--------------------|--------------------|----------------|----------|-------------------------------------|-----------------------------|
| 450 - 512 MHz | Downlink | 20 | 32.0 | 7.0 | 100 | 7.94 | 1.58 | 0.3 |

Scale Exposure Distance to Meet Limit

| | | | | | | | | |
|---------------|----------|-------|------|-----|-----|------|-----|-----|
| 450 - 512 MHz | Downlink | 45.90 | 32.0 | 7.0 | 100 | 7.94 | 0.3 | 0.3 |
|---------------|----------|-------|------|-----|-----|------|-----|-----|

RESULT: Passes Limits at Distance: 45.9 cm

6. History of Test Report Changes

| Test Report # | Revision # | Description | Date of Issue |
|----------------------|------------|---|-------------------|
| TR_3741-20_FCC_MPE_1 | 1 | Initial release | October 30, 2020 |
| TR_3741-20_FCC_MPE_2 | 2 | Corrected Antenna Gain and calculations and model numbers | November 12, 2020 |
| | | | |
| | | | |
| | | | |

END OF TEST REPORT