Timco Test Report # TR_3693-20_FCC_MPE_2
Revision: 2
Issue Date: October 30, 2020
Final Test Date: October 21, 2020

ACCREDITED
CERT #0955.01

TIMCO ENGINEERING, Inc.
An IIA Company

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

Table of Contents

1. Customer Information

Applicant:	Fiplex Communications Inc.
Address:	2101 NW 79th Ave. MIAMI FL 33122
Contact:	Mr. Fernando Sommariva
Telephone:	305-884-8991
Email address:	fernando.sommariva@fiplex.com

2. Location of Testing

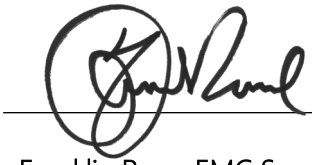
2.1 Test Laboratory

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: 


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:	P3TDH14-1A, P3TDH14-1B, P3TDH14-2A, P3TDH14-2B
Brief Description	VHF/UHF BDA/Master, Class A and Class B
Type of Modular	n/a
Model(s) #	DH14, DH142
Trade name	n/a
Firmware version	3.01-00
Software version	1.02
Serial Number	20096064FU

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) = SQRT (30 * P * G) / d

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

S = EIRP / (4 * 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 = SQRT (EIRP / (4 * 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.)

Source-based time-average EIRP = (DC / 100) * 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
(4 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/cm²)	LIMIT (mW/cm²)
150 - 173 MHz	Uplink	20	26.0	7.0	100	2.00	0.40	0.2
150 - 173 MHz	Downlink	20	26.0	7.0	100	2.00	0.40	0.2

Combined Exposure (VHF)

150 - 173 MHz	Up/Dn	20	29.0	7.0	100	3.98	0.79	0.2

Scale Exposure Distance to Meet Limit

150 - 173 MHz	Up/Dn	39.80	29.0	7.0	100	3.981	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/cm²)	LIMIT (mW/cm²)
450 – 512 MHz	Uplink	20	26.0	7.0	100	2.00	0.40	0.3
450 – 512 MHz	Downlink	20	32.0	7.0	100	7.94	1.58	0.3

Combined Exposure (UHF)

450 – 512 MHz	Up/Dn	20	37.3	7.0	100	27.04	5.38	0.3

Scale Exposure Distance to Meet Limit

450 – 512 MHz	Up/Dn	84.69	37.3	7.0	100	27.04	0.3	0.3

RESULT: Passes Limits at Distance: 84.69 cm

6. History of Test Report Changes

Test Report #	Revision #	Description	Date of Issue
TR_3693-20_FCC_MPE_1	1	Initial release	October 30, 2020
TR_3693-20_FCC_MPE_2	2	Corrected Antenna Gain and calculations and model numbers	November 12, 2020

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END OF TEST REPORT