



Test Report - FCC PART 1.1310 / MPE

Prepared For: RF TECHNOLOGY PTY. LTD.

Approved for Release By:

Signature: Bruno Clavier

Name & Title: Bruno Clavier, General Manager

Date of Signature

(YYYY-MM-DD): 2020-12-02

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Timco Engineering, Inc., an IIA Company
849 NW State Road 45, Newberry, Florida 32669
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1. Customer Information

Applicant: RF TECHNOLOGY PTY. LTD.
Address: ABN 14 131 764 148
Unit 46, Thornleigh Technology Park
7 Sefton Road Thornleigh NEW SOUTH WALES 2120 AUSTRALIA

Contact: Mr. Frank Romanin
Telephone: 1161294841
Email address: frank.romanin@me.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



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2.2 Testing was performed, reviewed by

Dates of Testing: November 21, 2019 – November 26, 2019

Signature:

Name & Title: Franklin Rose, EMC Specialist

Date of Signature

(YYYY-MM-DD): 2020-12-02

Signature:

Sr. EMC Engineer
EMC-003838-NE



Name & Title: Tim Royer, EMC Engineer

Date of Signature

(YYYY-MM-DD): 2020-12-02



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

The test sample was received: November 21, 2019

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:	KRE-E2-IP-PA500AH
Brief Description	ECLIPSE IP POWER AMPLIFIER
Type of Modular	n/a
Model(s) #	E2-IP-PA 500AH
Hardware version	1.0.0
Firmware/Software version	IP Commander v6.14.2
Serial Number	2376

Technical Characteristics	
Technology	Amplifier/Industrial Signal Booster
Frequency Range	406.1 – 420 MHz
RF O/P Power (Max.)	50 dBm (100 W)
Modulation	n/a
Bandwidth & Emission Class	11K3F3E, 16K0F3E, 8K10F1D, 8K10F1E
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.)	13.8 V DC

Antenna Characteristics		
Frequency Range	Mode / BW	Antenna Gain
n/a	n/a	3 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.)

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

Where:

DC = Duty Cycle in % as applicable.

EIRP = Equivalent Isotropic radiated Power, in mW



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5. RF Exposure Results

Transmitter Type: Fixed Mount, SISO, Non-colocated TX
(1 possible RF pathway)

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)
406.1-420 MHz	20	47.80	3.00	100%	120.23	23.918 mW/cm ²	0.271 mW/cm ²	1.354 mW/cm ²	187.89

RESULT: Passes Limit at Distance: 188 cm



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6. History of Test Report Changes

Test Report #	Revision #	Description	Date of Issue
TR_3167UT19_FCC_MPE_1	1	Initial release	December 2, 2020
TR_3167UT19_FCC_MPE_2	2	Updated Antenna Gain	July 23, 2021



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END OF TEST REPORT
