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Report On

FCC and Industry Canada Testing of the
Park Air Systems Ltd T6-TRV
In accordance with FCC 47 CFR Part 15B and ICES-003

COMMERCIAL-IN-CONFIDENCE

FCC ID: C8LT6-TRV
IC: 2137AT6TRV

Document 75934311 Report 02 Issue 1 May 2016

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REPORT ON

FCC and Industry Canada Testing of the
Park Air Systems Ltd T6-TRV
In accordance with FCC 47 CFR Part 15B and ICES-003

Document 75934311 Report 02 Issue 1

May 2016

PREPARED FOR

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PREPARED BY

Natalie Bennett
Senior Administrator, Project Support

APPROVED BY

Nic Forsyth
Authorised Signatory

DATED 31 May 2016

ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC 47 CFR Part 15B and ICES-003. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

J Tuckwell

UKAS TESTING 0141

Product Service

CONTENTS

Product Service

SECTION 1

REPORT SUMMARY

FCC and Industry Canada Testing of the
Park Air Systems Ltd T6-TRV
In accordance with FCC 47 CFR Part 15B and ICES-003

1.1 INTRODUCTION

The information contained in this report is intended to show the verification of FCC and Industry Canada Testing of the Park Air Systems Ltd T6-TRV to the requirements of FCC 47 CFR Part 15B and ICES-003.

Objective	To perform FCC and Industry Canada Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.
Manufacturer	Park Air Systems Ltd
Model Number(s)	T6-TRV
Serial Number(s)	140356
Number of Samples Tested	1
Test Specification/Issue/Date	FCC 47 CFR Part 15B (2015) ICES-003 (2016)
Incoming Release Date	Declaration of Build Status 3 May 2016
Disposal Reference Number Date	Held Pending Disposal Not Applicable Not Applicable
Order Number Date	55210 21 March 2016
Start of Test	16 May 2016
Finish of Test	17 May 2016
Name of Engineer(s)	J Tuckwell
Related Document(s)	ANSI C63.4 (2014)

Product Service

1.2 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out in accordance with FCC 47 CFR Part 15B and ICES-003 is shown below.

Section	Specification Clause		Test Description	Result	Comments/Base Standard
	Part 15B	ICES-003			
Idle					
2.1	15.107	6.1	AC Line Conducted Emissions	Pass	
2.2	15.109	6.2	Radiated Emissions	Pass	

Product Service

1.3 DECLARATION OF BUILD STATUS

MAIN EUT			
MANUFACTURING DESCRIPTION	VHF Transceiver		
MANUFACTURER	Park Air Systems Ltd		
MODEL NAME/NUMBER	T6-TRV		
PART NUMBER	24-05655031		
SERIAL NUMBER	140356		
HARDWARE VERSION	1		
SOFTWARE VERSION	V01P11		
TRANSMITTER FREQUENCY OPERATING RANGE (MHz)	118 - 136.975 MHz		
RECEIVER FREQUENCY OPERATING RANGE (MHz)	118 - 136.975 MHz		
COUNTRY OF ORIGIN	UK		
INTERMEDIATE FREQUENCIES	70MHz		
EMISSION DESIGNATOR(S): (i.e. G1D, GXW)	6K80A3EJN, 5K00A3EJN		
MODULATION TYPES: (i.e. GMSK, QPSK)	AM		
HIGHEST INTERNALLY GENERATED FREQUENCY	206.975MHz		
OUTPUT POWER (W or dBm)	50W carrier		
FCC ID	C8LT6-TRV		
INDUSTRY CANADA ID	2137AT6TRV		
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	Ground to air transceiver for use in the VHF aeronautical band using 25/8.33kHz channel spacing		
BATTERY/POWER SUPPLY			
MANUFACTURING DESCRIPTION			
MANUFACTURER			
TYPE			
PART NUMBER			
VOLTAGE			
COUNTRY OF ORIGIN			
MODULES (if applicable)			
MANUFACTURING DESCRIPTION			
MANUFACTURER			
TYPE			
POWER			
FCC ID			
COUNTRY OF ORIGIN			
INDUSTRY CANADA ID			
EMISSION DESIGNATOR			
DHSS/FHSS/COMBINED OR OTHER			
ANCILLARIES (if applicable)			
MANUFACTURING DESCRIPTION			
MANUFACTURER			
TYPE			
PART NUMBER			
SERIAL NUMBER			
COUNTRY OF ORIGIN			

I hereby declare that that the information supplied is correct and complete.

Name: Phil Ackerman Position held: Consultant Engineer
Date: 3rd May 2016

Product Service

1.4 PRODUCT INFORMATION

1.4.1 Technical Description

The Equipment Under Test (EUT) was a Park Air Systems Ltd T6-TRV. A full technical description can be found in the manufacturer's documentation.

1.5 TEST CONDITIONS

For all tests the EUT was set up in accordance with the relevant test standard and to represent typical operating conditions. Tests were applied with the EUT situated in a shielded enclosure.

The EUT was powered from a 110 V AC supply.

FCC Measurement Facility Registration Number
90987 Octagon House, Fareham Test Laboratory

Industry Canada Company Address Code
IC2932B-1 Octagon House, Fareham Test Laboratory

1.6 DEVIATIONS FROM THE STANDARD

No deviations from the applicable test standard were made during testing.

1.7 MODIFICATION RECORD

Modification 0 - No modifications were made to the test sample during testing.

Product Service

SECTION 2

TEST DETAILS

FCC and Industry Canada Testing of the
Park Air Systems Ltd T6-TRV
In accordance with FCC 47 CFR Part 15B and ICES-003

2.1 AC LINE CONDUCTED EMISSIONS

2.1.1 Specification Reference

FCC 47 CFR Part 15B, Clause 15.107
ICES-003, Clause 6.1

2.1.2 Equipment Under Test and Modification State

T6-TRV S/N: 140356 - Modification State 0

2.1.3 Date of Test

17 May 2016

2.1.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.1.5 Test Procedure

The test was performed in accordance with ANSI C63.4, Clause 7 and ICES-003, Clause 6.1.

A mains supply cable of 1 m length was used to supply mains power to the EUT from the LISN.

All final measurements were assessed against the Class B emission limits in FCC 47 CFR Part 15, Clause 15.107 and ICES-003, Clause 6.1.

2.1.6 Environmental Conditions

Ambient Temperature	22.5°C
Relative Humidity	32.0%

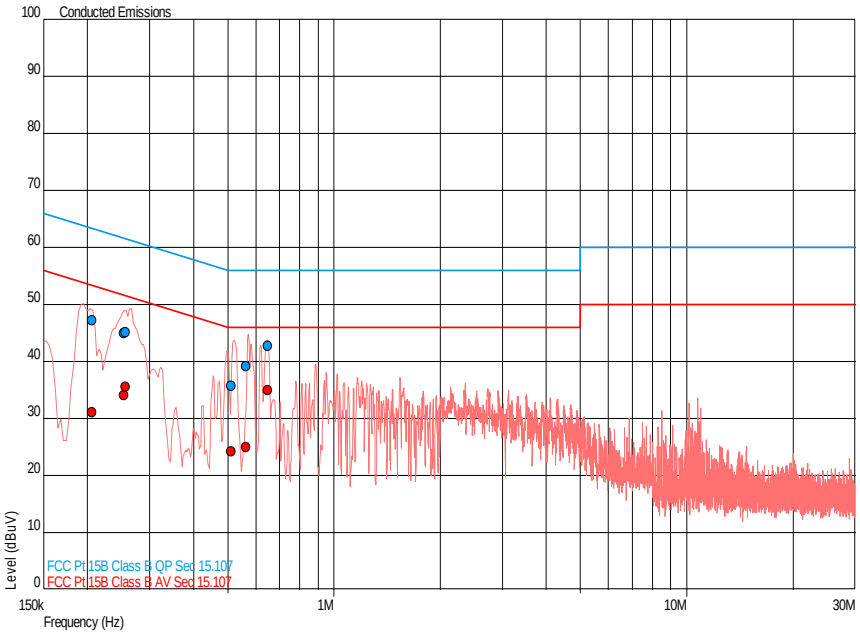
Product Service

2.1.7 Test Results

Idle, Live Line Results

Frequency (MHz)	QP Level (dBµV)	QP Limit (dBµV)	QP Margin (µV/m)	AV Level (dBµV)	AV Limit (dBµV)	AV Margin (dBµV)
0.206	47.3	63.3	-16.0	31.2	53.3	-22.2
0.254	44.9	61.6	-16.7	34.0	51.6	-17.6
0.256	45.1	61.6	-16.4	35.6	51.6	-16.0
0.512	35.8	56.0	-20.2	24.3	46.0	-21.7
0.564	39.2	56.0	-16.8	25.0	46.0	-21.0
0.648	42.7	56.0	-13.3	35.1	46.0	-10.9

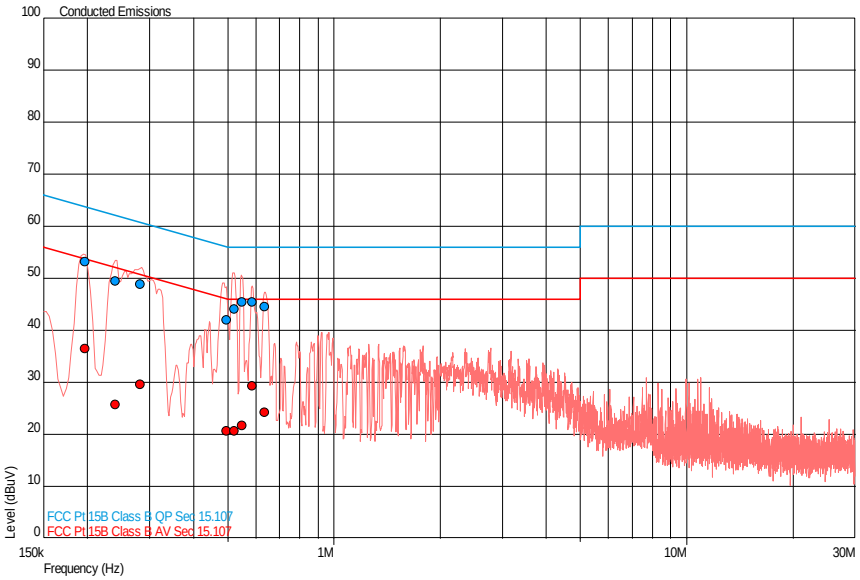
Idle, Live Line Plot



Idle, Neutral Line Results

Frequency (MHz)	QP Level (dBµV)	QP Limit (dBµV)	QP Margin (µV/m)	AV Level (dBµV)	AV Limit (dBµV)	AV Margin (dBµV)
0.197	53.2	63.7	-10.5	36.5	53.7	-17.2
0.240	49.5	62.1	-12.6	25.8	52.1	-26.3
0.282	48.9	60.8	-11.8	29.7	50.8	-21.1
0.497	41.9	56.1	-14.1	20.7	46.1	-25.4
0.521	44.1	56.0	-11.9	20.7	46.0	-25.3
0.547	45.4	56.0	-10.6	21.7	46.0	-24.3
0.586	45.4	56.0	-10.6	29.3	46.0	-16.7
0.636	44.6	56.0	-11.4	24.3	46.0	-21.7

Idle, Neutral Line Plot



FCC 47 CFR Part 15, Limit Clause 15.107 and ICES-003, Limit Clause 6.1

Class B

Frequency of Emission (MHz)	Conducted Limit (dBµV)	
	Quasi-Peak	Average
0.15 to 0.5	66 to 56*	56 to 46*
0.5 to 5	56	46
5 to 30	60	50

*Decreases with the logarithm of the frequency.

2.2 RADIATED EMISSIONS

2.2.1 Specification Reference

FCC 47 CFR Part 15B, Clause 15.109
ICES-003, Clause 6.2

2.2.2 Equipment Under Test and Modification State

T6-TRV S/N: 140356 - Modification State 0

2.2.3 Date of Test

16 May 2016

2.2.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.2.5 Test Procedure

The test was performed in accordance with ANSI C63.4, Clause 8 and ICES-003, Clause 6.2.

All final measurements were assessed against the Class B emission limits in FCC 47 CFR Part 15, Clause 15.109 and ICES-003, Clause 6.2.

2.2.6 Environmental Conditions

Ambient Temperature	21.6°C
Relative Humidity	32.0%

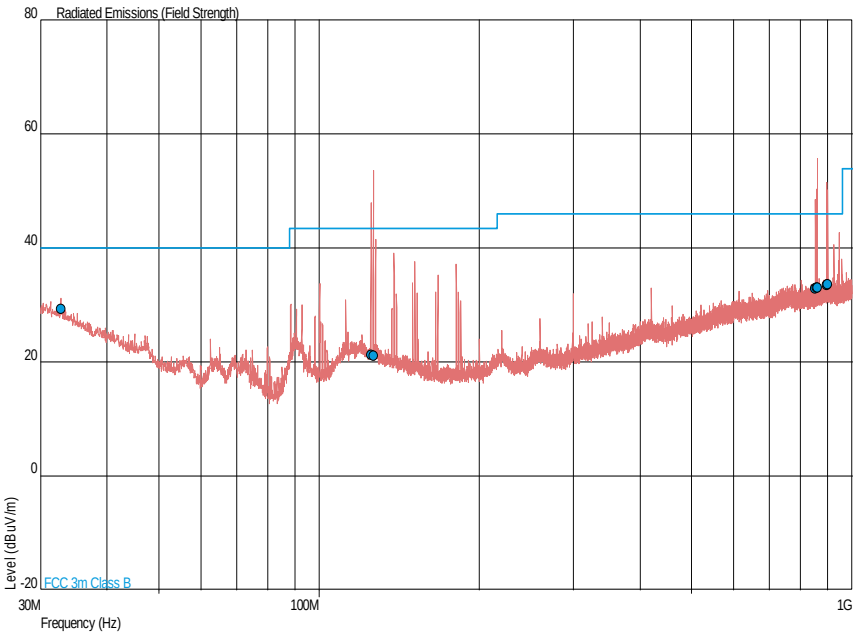
Product Service

2.2.7 Test Results

Idle, 30 MHz to 1 GHz Results

Frequency (MHz)	Quasi-Peak Level (dBµV/m)	Quasi-Peak Level (µV/m)	Quasi-Peak Margin (dµV/m)	Quasi-Peak Margin (µV/m)	Angle (°)	Height (m)	Polarisation
32.762	29.4	29.5	-10.6	-70.5	293	1.00	Vertical
125.095	21.3	11.6	-22.2	-138.4	128	2.67	Horizontal
126.371	21.2	11.5	-22.3	-138.5	18	1.00	Horizontal
853.806	33.0	44.7	-13.0	-155.3	129	1.00	Horizontal
858.477	33.1	45.2	-12.9	-154.8	284	1.00	Horizontal
861.512	33.1	45.2	-12.9	-154.8	8	1.00	Horizontal
895.870	33.6	47.9	-12.4	-152.1	54	1.00	Horizontal
899.867	33.6	47.9	-12.4	-152.1	136	1.00	Vertical

Idle, 30 MHz to 1 GHz Plot

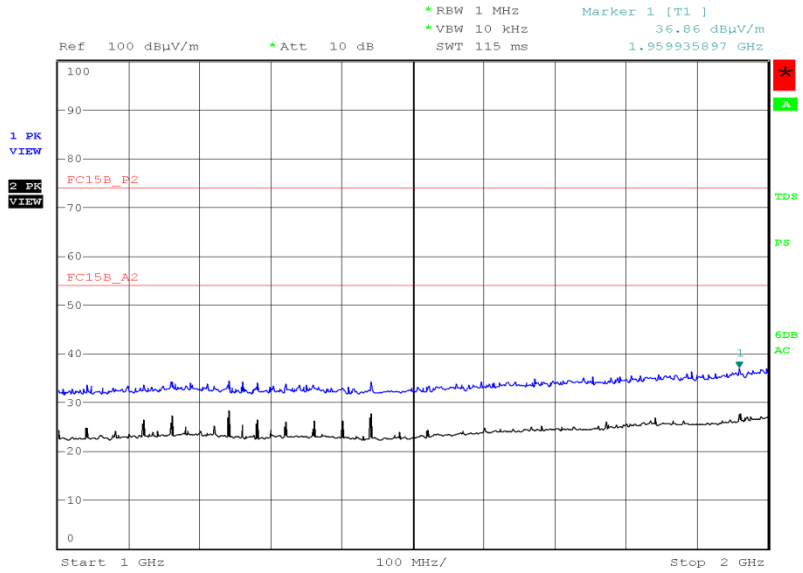


Idle, 1 GHz to 2 GHz Results

Frequency (MHz)	Average Level (dBµV/m)	Peak Level (dBµV/m)	Average Level (µV/m)	Peak Level (µV/m)	Angle (deg)	Height (m)	Polarisation
*							

*No emissions were detected within 20 dB of the limit.

Idle, 1 GHz to 2 GHz Plot



FCC 47 CFR Part 15, Limit Clause 15.109

Class B

Frequency of Emission (MHz)	Field Strength (µV/m)
30 to 88	100.0
88 to 216	150.0
216 to 960	200.0
Above 960	500.0

ICES-003, Limit Clause 6.2

Class B

Frequency of Emission (MHz)	Quasi-Peak (dBµV/m)
30 to 88	40.0
88 to 216	43.5
216 to 960	46.0
960 to 1000	54.0

Frequency of Emission (MHz)	Field Strength (dBµV/m)	
	Linear Average Detector	Peak Detector
Above 1000	54.0	74.0

Product Service

SECTION 3

TEST EQUIPMENT USED

Product Service

3.1 TEST EQUIPMENT USED

List of absolute measuring and other principal items of test equipment.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Section 2.1 - AC Line Conducted Emissions					
LISN	Rohde & Schwarz	ESH2-Z5	17	12	11-Feb-2017
3 phase LISN	Rohde & Schwarz	ESH2-Z5	323	12	7-Apr-2017
Transient Limiter	Hewlett Packard	11947A	2377	12	16-Feb-2017
Multimeter	Iso-tech	IDM101	2417	12	29-Sep-2016
Compliance 5 Emissions	Schaffner	C5e Software V.5.00.00	3275	-	N/A - Software
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	2-Nov-2016
Hygropalm Temperature and Humidity Meter	Rotronic	HP21	4410	12	27-Apr-2017
Section 2.2 - Radiated Emissions					
Screened Room (5)	Rainford	Rainford	1545	36	20-Dec-2017
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Multimeter	Iso-tech	IDM101	2417	12	29-Sep-2016
Antenna (Bilog)	Chase	CBL6143	2904	24	11-Jun-2017
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	2-Nov-2016
Tilt Antenna Mast	maturo Gmbh	TAM 4.0-P	3916	-	TU
Mast Controller	maturo Gmbh	NCD	3917	-	TU
1GHz to 8GHz Low Noise Amplifier	Wright Technologies	APS04-0085	4365	12	6-Oct-2016
Hygropalm Temperature and Humidity Meter	Rotronic	HP21	4410	12	27-Apr-2017
Double Ridged Waveguide Horn Antenna	ETS-Lindgren	3117	4722	12	29-Dec-2016

TU – Traceability Unscheduled

3.2 MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement uncertainties for defined systems are:-

Test Discipline	MU
AC Line Conducted Emissions	± 3.2 dB
Radiated Emissions	30 MHz to 1 GHz: ± 5.1 dB 1 GHz to 40 GHz: ± 6.3 dB

SECTION 4

ACCREDITATION, DISCLAIMERS AND COPYRIGHT

4.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT

This report relates only to the actual item/items tested.

Our UKAS Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our UKAS Accreditation.

Results of tests not covered by our UKAS Accreditation Schedule are marked NUA (Not UKAS Accredited).