REPORT ON

FCC CFR 47: Parts 15 B Testing in support of an
Application for Grant of Equipment Authorisation
of a Park Air Systems T6R VHF Receiver

FCC ID: C8LB6100-S2

Report No OR613603/01 Issue 3 September 2005

TÜV PRODUCT SERVICE

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DATED 29th September 2005

DISTRIBUTION

Park Air Systems Limited	Copy 1
BABT	Copy 2

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 CFR 47: Parts 15B. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineers;

S C Hartley

G Lawler

UKAS TESTING 0141

CONTENTS

SECTION 1

REPORT SUMMARY

FCC CFR 47: Parts 15 B Testing in support of an Application for Grant of Equipment Authorisation of a Park Air Systems T6R VHF Receiver

1.1 STATUS

EQUIPMENT UNDER TEST	Park Air Systems T6R VHF Receiver
OBJECTIVE	To undertake measurements to determine the Equipment Under Test's (EUT's) compliance with the specification.
NAME AND ADDRESS OF CLIENT	Park Air Systems Limited Northfields Ind Estate Market Deeping Peterborough PE6 8UE United Kingdom
TYPE / MODEL NUMBER	T6R
SERIAL NUMBER	2J0001
DECLARED VARIANTS	None
TEST SPECIFICATION / ISSUE / DATE	FCC CFR 47: Part 15, Subpart B: 2003
NUMBER OF ITEMS TESTED	One
SECURITY CLASSIFICATION OF EUT	Commercial In Confidence
INCOMING RELEASE DATE	Not formally released
DISPOSAL REFERENCE NUMBER DATE	Held pending disposal Not Applicable Not Applicable
ORDER NUMBER DATE	90324 30th November 2004
START OF TEST	4th October 2003
FINISH OF TEST	11th January 2005
RELATED DOCUMENTS	ANSI C63.4 2001. Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

1.2 INTRODUCTION

The information contained within this report is intended to show limited verification of compliance of the Park Air Systems T6R VHF Receiver to the requirements of FCC Specification Parts 15 B.

Testing was carried out in support of an application for Grant of Equipment Authorisation in the name of Park Air Systems.

1.3 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out is shown below.

Test	Spec Clause	Test Description	Result	Levels/Comments
2.1	15.109	Spurious Radiated Emissions	Pass	
2.2	15.107	Conducted Emissions on Power Lines	Pass	

1.4 PRODUCT INFORMATION

1.4.1 Technical Description

The Equipment Under Test (EUT) was a T6R VHF multi-mode air traffic control receiver A full technical description can be found in the T6R Receiver User Guide.

1.4.2 Modes of Operation

Modes of operation of the EUT during testing were as follows:

Mode 1

The EUT operates between 118.00MHz – 136.975MHz, and for all testing was set to continuous receive mode, on the middle channel of 127.5MHz

1.5 TEST CONDITIONS

The EUT was set-up simulating a typical user installation on the Alternative Open Field Test Site identified in Appendix A and tested in accordance with the applicable specification.

The EUT was operated powered by a 120V, 60Hz mains supply.

The EUT's alternative DC input supply cable was connected but was left unterminated.

1.6 DEVIATIONS FROM THE STANDARD

Not Applicable

1.7 MODIFICATION RECORD

Not Applicable

1.8 ALTERNATIVE TEST SITE

No alternative Test Site was utilised.

SECTION 2

TEST DETAILS

FCC CFR 47: Parts 15 B Testing in support of an
Application for Grant of Equipment Authorisation
of a Park Air Systems T6R VHF Receiver

2.1 SPURIOUS RADIATED EMISSIONS

2.1.1 Specification Reference

FCC CFR 47: Part 15 Subpart B, Section 15.109

2.1.2 Equipment Under Test

T6R

2.1.3 Date of Test

4th October 2003

2.1.4 Test Equipment Used

The major items of test equipment used for the above tests are identified as “Section 2.1” within the Test Equipment Used table shown in Section 3.1.

2.1.5 Test Procedure

Test Performed in accordance with ANSI C63.4.

A preliminary profile of the Spurious Radiated Emissions was obtained by operating the EUT on a remotely controlled turntable within a semi-anechoic chamber. Measurements of emissions from the EUT were obtained with the Measurement Antenna in both Horizontal and Vertical Polarisations. The profiling produced a list of the worst-case emissions together with the EUT azimuth and antenna polarisation.

Using the information from the preliminary profiling of the EUT. The list of emissions was then confirmed or updated under Alternative Open Site conditions. Emission levels were maximised by adjusting the antenna height, antenna polarisation and turntable azimuth.

Emissions identified within the range 30MHz – 1GHz were then formally measured using a CISPR Quasi-Peak detector.

The measurements were performed at a 3m distance unless otherwise stated.

2.1 SPURIOUS RADIATED EMISSIONS - continued

2.1.6 Test Results

Equipment Designation: Unintentional Radiator.

The EUT met the requirements of FCC CFR 47: Part 15 Subpart B, Section 15.109 for Spurious Radiated Emissions (30MHz – 1GHz).

Measurements were made with the EUT in Mode 1.

The levels of the six highest emissions measured in accordance with the specification are presented below:

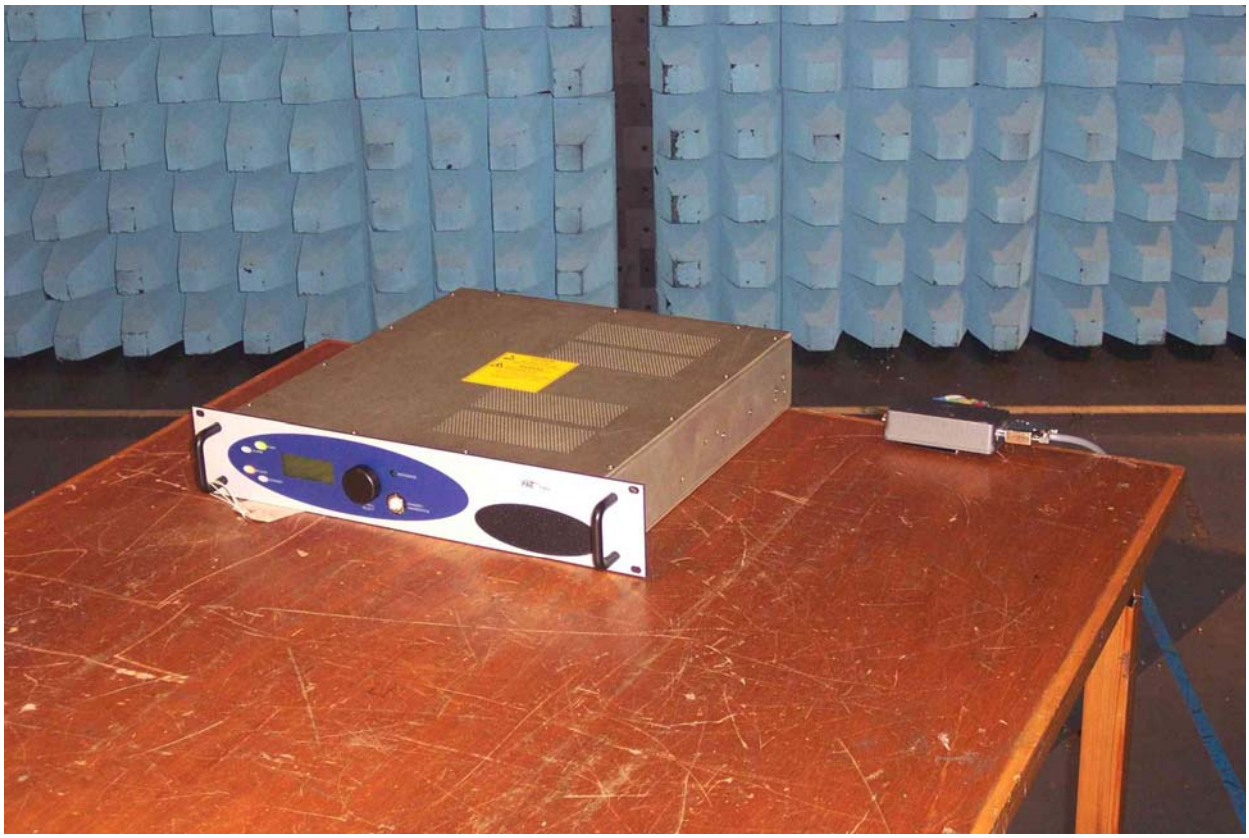
Emission Frequency	Polarity	Height	Azimuth	Field Strength at 3m		Specification Limit	
MHz		cm	degrees	dBµV/m	µV/m	dBµV/m	µV/m
30.10	Vertical	100	0	18.9	8.8	40.0	100
30.12	Horizontal	100	0	18.9	8.8	40.0	100
111.90	Horizontal	281	65	18.0	7.9	43.5	150
291.50	Vertical	100	333	17.3	7.3	46.0	200
307.20	Horizontal	100	150	23.4	14.8	46.0	200
446.70	Vertical	126	6	33.8	49.0	46.0	200

Table of Results for Radiated Emissions

The margin between the specification requirements and all other emissions was 17.8dB or more below the specification limit.

2.1 SPURIOUS RADIATED EMISSIONS - continued

2.1.7 Setup Photograph



Setup Photograph

2.2 CONDUCTED EMISSIONS ON POWER LINES

2.2.1 Specification Reference

FCC CFR 47: Part 15 Subpart B, Section 15.107

2.2.2 Equipment Under Test

T6R

2.2.3 Date of Test

11th January 2005

2.2.4 Test Equipment Used

The major items of test equipment used for the above tests are identified as “Section 2.3” within the Test Equipment Used table shown in Section 3.1.

2.2.5 Test Procedure

Test performed in accordance with ANSI C63.4.

Conducted Emission Measurements were undertaken within the semi-anechoic chamber. Emissions were measured on the Live and Neutral Lines in turn.

Emissions were formally measured using a Quasi-Peak and Average Detectors, which meet the CISPR requirements. The details of the worst-case emissions for the Live and Neutral Lines are presented in the tables in Section 2.3.6.

The EUT was supplied from a 120V, 60Hz supply.

2.2 CONDUCTED EMISSIONS ON POWER LINES - continued

2.2.6 Test Results

The EUT met the requirements of FCC CFR 47: Part 15 Subpart B, Section 15.107 for Conducted Emissions on the Live and Neutral Lines.

Live Line Measurements were made with the EUT in Mode 1.

Emission Frequency MHz	Quasi-Peak Level dBµV	Quasi-Peak Limit dBµV	Average Level dBµV	Average Limit dBµV
0.1508	52.5	66.0	32.7	56.0
0.1572	52.3	65.6	32.6	55.6
0.1697	53.6	65.0	49.2	55.0
0.1772	60.7	64.6	50.7	54.6
0.2037	50.7	63.5	31.9	53.6
0.2135	48.2	64.2	25.1	54.2

The margin between the specification requirements and all other emissions were 18dB or more below the specified Quasi-Peak limit and 22dB or more below the Average limit.

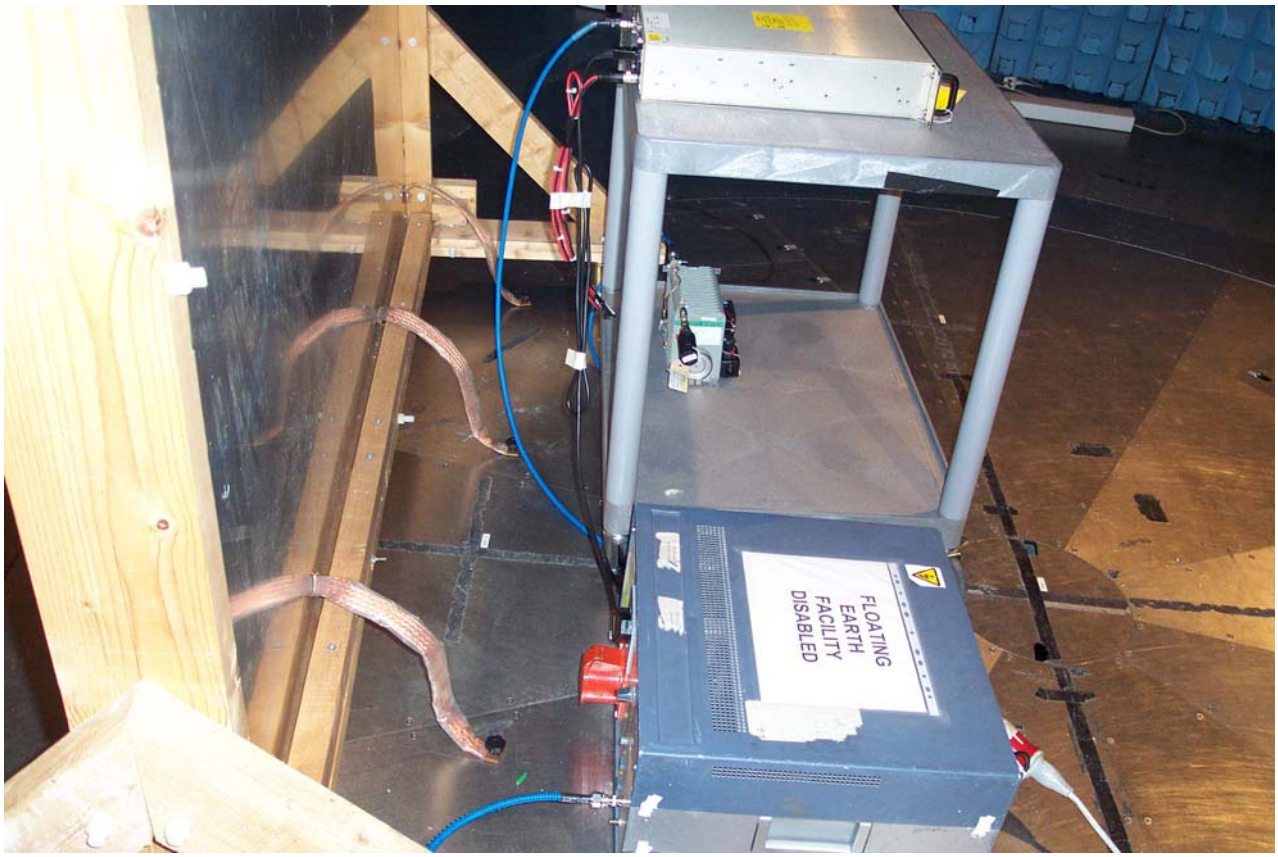
Neutral Line Measurements were made with the EUT in Mode 1.

Emission Frequency MHz	Quasi-Peak Level dBµV	Quasi-Peak Limit dBµV	Average Level dBµV	Average Limit dBµV
0.1526	53.2	65.8	32.7	55.8
0.1774	62.7	64.6	52.4	54.6
0.2001	51.9	63.6	32.4	53.6
0.2122	49.3	63.1	26.2	53.1
0.2255	44.8	62.6	30.2	52.6
0.2662	40.0	61.2	31.9	51.2

The margin between the specification requirements and all other emissions were 22dB or more below the specified Quasi-Peak limit and 27dB or more below the Average limit.

2.2 CONDUCTED EMISSIONS ON POWER LINES - continued

2.2.7 Setup Photograph - continued



Conducted Emissions Setup Photograph

SECTION 3

TEST EQUIPMENT USED

3.1 TEST EQUIPMENT USED

Instrument	Manufacturer	Type No	EMC / INV No	Cal. Due
Section 2.1 (test performed 04/10/2003)				
Bilog Antenna	Chase	CBL 6143	2860	11/04/2004
EMI Test Receiver	Hewlett Packard	8542E	2286	03/12/2003
Turntable & Controller	HD Gmbh	HD 050	2528	TU
Antenna Mast	EMCO	1051	2182	TU
Antenna Mast Controller	EMCO	2090	-	TU50
Screened Enclosure	Siemens	EAC 54300	2533	TU
Section 2.2 (test performed 11/01/2005)				
Test Receiver	Rohde & Schwarz	ESH3	1020	24/09/2005
Spectrum Monitor	Rohde & Schwarz	EZM	1416	TU
LISN	Rohde & Schwarz	ESH2-Z5	1915	28/04/2005
Transient Limiter	Hewlett Packard	11947A	2271	19/08/2005

3.2 MEASUREMENT UNCERTAINTY

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

Test Discipline	Frequency / Parameter	MU
Radiated Emissions, Bilog Antenna, AOATS	30MHz to 1GHz Amplitude	5.1dB*
Radiated Emissions, Horn Antenna, AOATS	1GHz to 40GHz Amplitude	6.3dB*
Conducted Emissions, LISN	150kHz to 30MHz Amplitude	3.2dB*
Substitution Antenna, Radiated Field	30MHz to 18GHz Amplitude	2.6dB
Discontinuous Interference	150kHz to 30MHz Amplitude	3.0dB*
Interference Power	30MHz to 300MHz Amplitude	3.0dB*
Radiated E-Field Susceptibility	26MHz to 2.5GHz Test Amplitude	1.4dB†
Conducted Susceptibility	100kHz to 250MHz Amplitude	1.8dB†
Power Frequency Magnetic Field	50Hz/60Hz Amplitude	0.45%
Magnetic Emissions	9kHz to 30MHz Amplitude	3.8dB*
Harmonics and Flicker	The test was applied using proprietary equipment that meets the requirements of EN 61000-3-2 and EN 61000-3-3	—
Mains Voltage Variations and Interrupts	The test was applied using proprietary equipment that meets the requirements of EN 61000-4-11	—
Fast Transient Burst	The test was applied using proprietary equipment that meets the requirements of EN 61000-4-4	—
Electrostatic Discharge	The test was applied using proprietary equipment that meets the requirements of EN 61000-4-2	—
Surge	The test was applied using proprietary equipment that meets the requirements of EN 61000-4-5	—
Vehicle Transients	The test was applied using proprietary equipment that meets the requirements of ISO 7637-1 and 2	—

Worst case error for both Time and Frequency measurement 12 parts in 10^6.

* In accordance with CISPR 16-4
† In accordance with UKAS Lab 34

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).

APPENDIX A

TITCHFIELD FCC SITE COMPLIANCE LETTER

APPENDIX A TITCHFIELD COMPLIANCE LETTER

FEDERAL COMMUNICATIONS COMMISSION

Laboratory Division
7435 Oakland Mills Road
Columbia, MD 21046

October 18, 2002

Registration Number: 90987

TUV Product Service Ltd
Segensworth Road
Titchfield
Fareham, Hampshire, PO15 5RH
United Kingdom
Attention: Kevan Adsetts

Re: Measurement facility located at Titchfield
Anechoic chamber (3 meters) and 3 & 10 meter OATS
Date of Listing: October 18, 2002

Gentlemen:

Your request for registration of the subject measurement facility has been reviewed and found to be in compliance with the requirements of Section 2.948 of the FCC rules. The information has, therefore, been placed on file and the name of your organization added to the list of facilities whose measurement data will be accepted in conjunction with applications for Certification under Parts 15 or 18 of the Commission's Rules. Please note that the file must be updated for any changes made to the facility and the registration must be renewed at least every three years.

Measurement facilities that have indicated that they are available to the public to perform measurement services on a fee basis may be found on the FCC website www.fcc.gov under E-Filing, OET Equipment Authorization Electronic Filing, Test Firms.

Sincerely,

Thomas W. Phillips

Thomas W Phillips
Electronics Engineer