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TEST REPORT No: P4736-2/FCC

Issue 3

Customer/Applicant:	Dream Link Ltd
Address:	Room 1207 Peninsula Centre 67 Mody Road Tsim Sha Tsui East Kowloon Hong Kong
Subject:	**RADIO FREQUENCY DEVICES**
Customer Ref:	Nixon Wu
Manufacturer:	Dream link
Product:	Radio Controlled RC Car
Model/Trade Name:	Transmitter (27.145 MHz)
Model No/Type:	USB RC Mini Car
Serial No	-
Tests Carried Out:	FCC rules CFR 47 Part 15.109 Un-Intentional Radiator CFR 47 Part 15.227 Intentional Radiator (NUA)
Date Of Test	17-20th Aug 07 Location Ringwood

This Report applies only to the above referenced EQUIPMENT and details the tests applied using test equipment calibrated to traceable National Standards and is not indicative of the qualities of identical or similar products

Report Author: F Barkas **Checked By:** M.J.Wood
Title: (Planning Co-ordinator Radio) **Title:** (Managing and Technical Director)

Signature **Signature**

Issue Date: 3rd March 2008

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Report Summary

Report Number:	P4736-2/FCC Issue 3
Project Number:	P4736
Test Dates:	17-20th, Aug 2007
Test Engineer:	Mr Frank Barkas
In Attendance:	-
Product Use:	Radio Control
Model/Type Tested	USB RC Mini Car
Operating Frequency	27.145 MHz
Channel Spacing	-
Number of Channels	1
Antenna Type	Integral
Alternative Antenna Type	-
Power Supply	Rechargeable dc Battery in Receiver 5 V dc from USB port of operating PC

Summary of Results:

The equipment was assessed to the requirements of the following tests:-

Rule Part	Test Description	Result / Class	Pass/Fail Margin	Levels/Comments Limits
15.227	Intentional Emission Frequency	Pass	27.147325 MHz	26.96 – 27.28 MHz
15.227(e)	Intentional Emission Field Strength	Pass	49.56 dBµV/m	30.44 dB Below Limit
15.231(e)	Spurious emissions transmitter operating – radiated	Pass	Maximum level 21.16 dBµV/ m	19.74 dB Below Limit
15.109	Unintentional Emitters	Pass	Maximum level >20 dBµV/ m	>20 dB Below Limit
15.203	Antenna Arrangements Integral	Pass	-	-
15.204	Antenna Arrangements External Connector	N/A	-	-
15.205	Restricted Bands	-	-	-
15.31(f)	Extrapolation Factor > 30 MHz	-	-	20dB/decade
15.31(f)	Extrapolation Factor < 30 MHz	-	-	40/decadedB

For full details of pass level/criteria/class etc. see individual test results

Table 1

Distribution:-

Dream Link Ltd	Copy No 1
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TRL Compliance Services	Copy No. 3

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History Sheet

Issue	Date	Reason For Issue	Author
Issue 1	Sept 2007	First Issue	F. Barkas
Issue 2	03 Jan 2007	First Issue	F. Barkas
Admt 1	21 Jan 2007	Changes to table in 8.6	F. Barkas

Applicants Summary/Declarations

1	Duty Cycle		
2	Equipment Category	Yes	Single Channel
		No	Two Channel
		No	Multi-Channel
3	Channel Spacing	Yes	Narrowband
		-	Wideband
4	Frequency Generation	-	SAW Resonator
		Yes	Crystal
		-	Synthesiser
5	Modulation Method	-	Amplitude
		-	Digital
		Yes	Phase
		-	Angle
6	Applicants Contact Person		Nixon Wu
		e-mail	info@dreamlink.info
		Tel	85225150832
		Fax	85225059916
7	Applicants Category		Manufacturer

1. List Of Measurements

The list of measured parameters called for in FCC Rules CFR Part 15 is given below.

Rule Part	Transmitter parameters	Applied	Comments
15.227	Intentional Emission Frequency	Yes	Peak Detector
15.227 (a)	Intentional Emission Field Strength	Yes	Average Detector
15.227(b)	Spurious emissions transmitter operating – radiated	Yes	Quasi Peak Detector
15.109	Unintentional Emitters	Yes	Quasi Peak Detector
15.203	Antenna Arrangements Integral	Yes	-
15.204	Antenna Arrangements External Connector	No	-
15.205	Restricted Bands	-	-
15.31(f)	Extrapolation Factor >30 MHz	Yes	20 dB/decade
15.31(f)	Extrapolation Factor <30 MHz	Yes	40 dB/decade

2. Modes of operation

For the duration of the testing the EUT (Equipment Under Test) was operated in the following modes:-

1. Test 8.1, 8.2, 8.3 & 9.1 The transmitter in the transmit condition
2. Test 9.1 The transmitter in standby condition The ancillary equipment in standby (transmitter not in communications with the receiver)
3. Test 10.1 The ancillary equipment operating (transmitter in communications with the ancillary equipment)

The full operational mode required is detailed on a test-by-test basis.

3. Test Setup

The EUT was set-up for the individual tests in accordance with the test specification requirements as shown in the test section. An ACER Lap top computer was connected via its USB port and loaded with the customer supplied software to the EUT. This was used to control and power the EUT's operation.

4. Deviations from Standard

No deviations from the applied standards were carried out unless stated in the individual test results

5. Test Procedures

Procedures and methods of test employed were in accordance with the requirements of the specifications applied, using accredited in-house test procedures. During testing the ambient conditions required were measured and found to be satisfactory.

6. Modification

No modifications were carried out in order for the equipment to comply with the requirements of the standard applied: -

7. Part 15.227 - Transmitter Intentional Emissions – Radiated

7.1. Intentional Emission Frequency
7.2. Intentional Emission Field Strength
7.3. Intentional Emission Bandwidth

Ambient temperature °C	20	Measurement Distance	3 m
Relative humidity %	57	Extrapolated Distance	-
Supply Voltage V	5	Detector function – 8.1	Peak
Channel No	1	Detector function – 8.2	Peak

Graphs & Plots Figure 1 & 2 as representative sample - intentional emission

Freq (MHz)	Antenna, Conversion and Correction (dB)	3 meter Field Strength (dBµv/m)	Extrapolation Factor (dB)	3m Corrected Field Strength (dBµV/m)	Limit (dBµV/m)
27.147325	36.2	13.1	-	49.3	80 @ 3 m
26.96	36.2	-25	-	-11.2	29.5 @ 30 m
27.27	36.2	-25	-	-11.2	29.5 @ 30 m

7.4. Test Method

Part 15.227

1. As per Radio-Noise Emissions, ANSI C63.4:2004
2. An initial assessment was carried out on a indoor test site, to obtain the position and setup of the EUT which gave maximum emission levels, The emission levels recorded made measurements on the Open Area Test Site (OATS) in practical.
3. The EUT was placed at a height of 0.8 metres above the ground plane
4. Emissions maximised:-
    a. by rotation of the EUT, on a automatic turntable.
    b. receiving antenna when required was raised and lowered between 1-4 m above the ground plane
    c. using both the horizontal & vertical polarisations of the receiving antenna
    d. orientation of the EUT in 3 orthogonal planes.
    e. the maximum-recorded emissions recorded.
5. Receiver Bandwidth – 9 kHz using a Quasi Peak 10 kHz using a Peak /Average Detector
6. For Battery operated equipment final measurements were carried out with a new or fully charged battery as part 15.31e

7.5. Test Equipment Used:

LHR1	EMC 70	PA1	CT1	GS1

7.6. Transmitter Spurious Emissions <30 MHz

Ambient Temperature °C	20	Measurement Distance	10 M
Relative Humidity %	55	Extrapolated Distance	From 10 To 3 M
Supply Voltage V	5	Detector Function	Quasi Peak
Channel No	1	Antenna Polarisation	Vertical unless stated otherwise

Graphs & Plots Figure 2 as representative sample – Spurious emission

Emissions within 20dB of the limit are listed

Frequency Range (MHz)	Freq (MHz)	Antenna, Conversion and Correction (dB)	3 m Field Strength (dBµV/m)	Extrapolation Factor (dB)	300m Field Strength (dBµV/m)	300 m Limit (dBµV/m)
0.009 -0.49	0.22	50.6	10	80	-19.4	10.9

7.7. Test Method

Part 15.227

1. As per Radio-Noise Emissions, ANSI C63.4:2004
2. Emissions were searched to 30 MHz inclusive as required by part 15.33a
3. An initial assessment was carried out on a indoor test site, to obtain the position and setup of the EUT which gave maximum emission levels, were required the results of this assessment was used during final calibrated measurement on a Open Area Test Site (OATS)
4. The EUT was placed at a height of 0.8 metres above the ground plane
5. Emissions maximised:-
    a. by rotation of the EUT, on a automatic turntable.
    b. receiving antenna when required was raised and lowered between 1-4 m above the ground plane
    c. using both the horizontal & vertical polarisations of the receiving antenna
    d. orientation of the EUT in 3 orthogonal planes.
    e. the maximum-recorded emissions recorded.
6. Extrapolation factor 40 dB from 3-30m as part 15.31f
7. Receiver Bandwidth 9-150 kHz – (0.2 kHz using a Quasi Peak 0.3kHz using a Peak/Average Detector
8. Receiver Bandwidth 150 kHz –30 MHz – 9 kHz using a Quasi Peak 10 kHz using a Peak/Average Detector
9. For Battery operated equipment final measurements were carried out with a new or fully charged battery as part 15.31e

7.8. Test Equipment Used:

SA8	PA1		
Rx 20	EMC70	Room 2	

8. Part 15.227 - Transmitter Spurious Emissions – Radiated

8.1. Transmitter Spurious Emissions 30-1000 MHz

Ambient Temperature °C	20	Measurement Distance	10 M
Relative Humidity %	55	Extrapolated Distance	From 10 To 3 M
Supply Voltage V	5	Detector Function	Quasi Peak
Channel No	1	Antenna Polarisation	Vertical unless stated otherwise

Graphs & Plots Figure 3 as representative sample – Spurious emission

Only Emissions within 20dB of the limit are listed

Frequency Range (MHz)	Freq (MHz)	OATS Reading (dBµV)	Antenna Correc. (dB)	Cable Correc. (dB)	10m Field Strength (dBµV/m)	Extrapolation Factor (dB)	3m Field Strength (dBµV/m)	Limit (dBµV/m)
30-88	54.3	3	6.1	1.0	10.1	10.46	20.56	40
30-88	81.45	2	7.4	1.3	10.7	10.46	21.16	40

8.2. Test Method

Part 15.227

10. As per Radio-Noise Emissions, ANSI C63.4:2004
11. Emissions were searched to 1000 MHz inclusive as required by part 15.33a
12. An initial assessment was carried out on a indoor test site, to obtain the position and setup of the EUT which gave maximum emission levels, the results of this assessment was used during final calibrated measurement on a Open Area Test Site (OATS)
13. The EUT was placed at a height of 0.8 metres above the ground plane
14. Emissions maximised:-
    f. by rotation of the EUT, on a automatic turntable.
    g. receiving antenna was raised and lowered between 1-4 m above the ground plane
    h. using both the horizontal & vertical polarisations of the receiving antenna
    i. orientation of the EUT in 3 orthogonal planes.
    j. the maximum-recorded emissions recorded.
15. Extrapolation factor 10.46 dB from 3-10m as part 15.31f
16. Receiver Bandwidth – 120 kHz using a Quasi Peak 100 kHz using a Peak/Average Detector
17. For Battery operated equipment final measurements were carried out with a new or fully charged battery as part 15.31e

8.3. Test Equipment Used:

SA8	GS1	PA2	
OATS2	RX11	BA3	

9. Part 15.109 - Ancillary Spurious Emissions – Radiated

9.1. Spurious Emissions 30-1000MHz

Ambient Temperature °C	20	Measurement Distance	10 M
Relative Humidity %	55	Extrapolated Distance	From 10 To 3 M
Supply Voltage V	9	Detector Function	Quasi Peak
Channel No	1	Antenna Polarisation	-

Graphs & Plots Figure 4 & 5 as representative sample – Spurious emission

Only Emissions within 20dB of the limit are listed

Frequency Range (MHz)	Freq (MHz)	OATS Reading (dBµV)	Antenna Correc. (dB)	Cable Correc. (dB)	10m Field Strength (dBµV/m)	Extrapolation Factor (dB)	3m Field Strength (dBµV/m)	Limit (dBµV/m)
30-88	-							
88-216	-							
216-960	-							

9.2. Test Method

Part 15.109

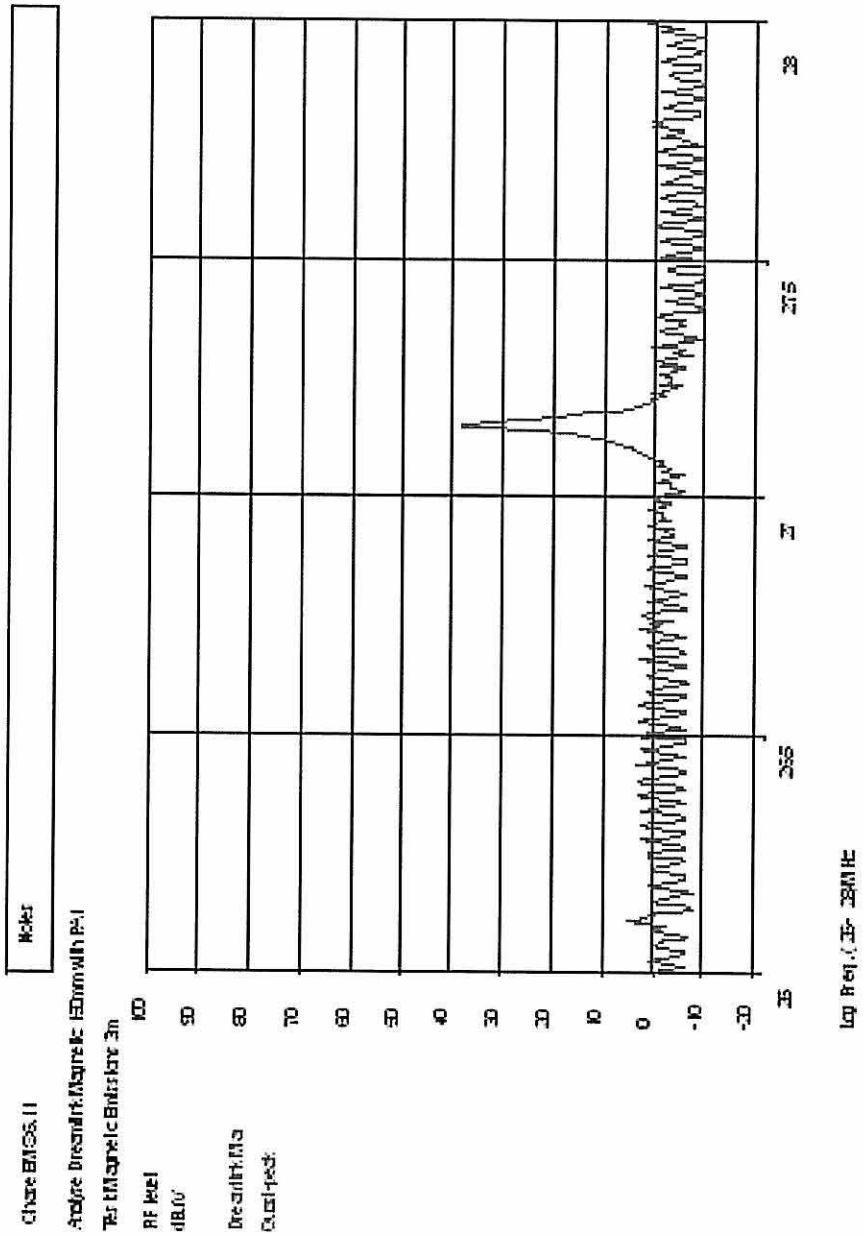
18. As per Radio-Noise Emissions, ANSI C63.4:2004
19. Emissions were searched to 1000 MHz inclusive as required by part 15.33a
20. An initial assessment was carried out on a indoor test site, to obtain the position and setup of the EUT which gave maximum emission levels, the results of this assessment was used during final calibrated measurement on a Open Area Test Site (OATS)
21. The EUT was placed at a height of 0.8 metres above the ground plane
22. Emissions maximised:-
    - k. by rotation of the EUT, on a automatic turntable.
    - l. receiving antenna was raised and lowered between 1-4 m above the ground plane
    - m. using both the horizontal & vertical polarisations of the receiving antenna
    - n. orientation of the EUT in 3 orthogonal planes.
    - o. the maximum-recorded emissions recorded.
23. Extrapolation factor 10.46 dB from 3-10m as part 15.31f
24. Receiver Bandwidth 30-1000 MHz – 120 kHz using a Quasi Peak, 100 kHz using a Peak/ Average Detector
25. For Battery operated equipment final measurements were carried out with a new or fully charged battery as part 15.31e

9.3. Test Equipment Used:

Pre Scan	SA8	GS1	PA2	
OATS	OATS2	RX11	BA3	

10. Graphs

10.1. Figure 1-Radiated Emissions -Transmitter On Fundamental
(Un-corrected Screened Enclosure Emission Measurements)



10.2. Figure 2-Magnetic Emissions - Transmitter On Spurious

(Un-corrected Screened Enclosure Emission Measurements)