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K'NEX Industries Inc.

Application
For Certification
Receiver Model Dragster RC Car

(FCC ID:P6O15128R49MHZ)

April 25, 2002

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TABLE OF CONTENTS

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1.0 GENERAL DESCRIPTION

1.1 Related Submittals Grants

This is single application for Class II Permissive Change of the Superregenerative Receiver *Dragster RC Car* for Certification under Part 15 Subpart B.

1.2 Product Description

Purpose of the Dragster RC Car Receiver

The *Dragster RC Car* is a Superregenerative Receiver for Radio Controller operating at 49.860MHz. The *Dragster RC Car* powered at 12VDC from eight internal AA-size batteries.

The Dragster RC Car Antenna

Non detachable 13cm monopole antenna is used to receive RF signal.

1.3 Test Methodology

Emission measurements were performed according to the procedures in ANSI C63.4-1992. All field strength radiated emissions measurements were performed in the semi-anechoic chamber, and for each scan, the procedure for maximizing emissions in Appendices D and E were followed. All field strength radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application.

1.4 Test Facility

The test site facility used to collect the radiated and conducted measurement data is located at 7250 Hudson Blvd., Suite 100, Oakdale, Minnesota. This test facility has been fully described in a report dated on January 2000 submitted to your office. Please reference the site registration number: 90706, dated May 19, 2000.

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2.0 SYSTEM TEST CONFIGURATION

2.1 Justification

The EUT was tested for FCC Part 15.109 according to the procedures in ANSI C63.4-1992 with no deviation from mentioned above standard and procedures.

2.2 EUT Exercising Software

There was no software to exercise the EUT.

2.3 Special Accessories

There are no special accessories necessary for compliance of these products.

2.4 Equipment Modification

No modifications were installed during the testing.

2.5 Support Equipment List and Description

Rhode&Schwarz Signal Generator SMY 02

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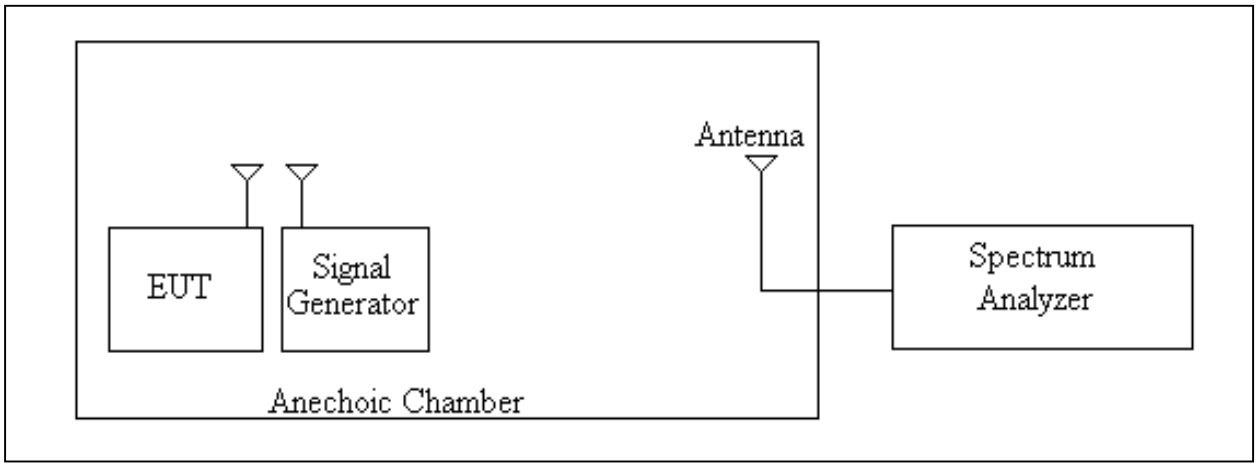
2.6 Test Configuration, Field Strength Measurements Block Diagram

The EUT was powered at 12VDC from 8 fresh AA-size batteries. The EUT was set up as tabletop equipment. The Signal Generator was placed in close proximity to radiate an unmodulated CW signal to the EUT.

Field Strength Measurements



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3.0 TEST RESULTS

The EUT is intended for operation under the requirements of Part 15 Subpart B. Specific test requirements include the following:

47 CFR 15.109	Radiated Emissions Limits

3.1 Field Strength of Radiated Emissions, FCC 15.109

Field Strength of Radiated Emissions measurements for FCC 15.109, Class B was made in the frequency range from 30 to 1000MHz. Table # 3-1-1 shows the test result.

The Tables and Graphs below show the Field Strength of Radiated Emissions.
The emission at the Signal Generator operating frequency of 49.860MHz was excluded from the Table. The worst case radiated emissions were measured at third harmonic (149.87MHz) with margin 0.6dB below limit.

Note: Emission level shown in the Graphs includes the Antenna and Cable correction factors. These factors are shown in the tables as the Total Correction Factor (Total CF).

Test Procedure

The EUT was placed on a non-conductive table 0.8m above the ground plane inside the Anechoic Chamber. The Signal Generator was placed in close proximity and used to generate unmodulated CW signal to the EUT at the EUT operating frequency of 49.860MHz. The table was centered on a motorized turntable, which allows 360-degree rotation. The measurement antenna was positioned at distance 3m. The radiated emissions were maximized by configuring the EUT, by rotating the EUT, by changing antenna polarization, and by changing antenna height from 1 to 4m. Field strength was measured and calculated (See Section 3.2).

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TILE Instrument Control System EMI Measurement Software

Radiated Emissions	Date: 04-24-2002
Company:	K"NEX Industries Inc.
Model:	Drogster RC Car
Test Engineer:	Norman Shpilsher
Special Info:	
Standard:	FCC Part 15.109, Class B
Test Site:	3m Anechoic Chamber, 3m measurement distance
Note:	The table shows the worst case radiated emissions
	All measurements were taken using a Peak detector

Table # 3-1-1

Frequency	Ant. Polarity	Reading dBµV	Total CF dB(1/m)	Total at 3m dBµV/m	QP Limit dBµV/m	Margin dB
51.539 MHz	V	23.4	9.3	32.6	40.0	-7.4
97.637 MHz	V	22.0	11.1	33.1	43.5	-10.4
99.852 MHz	V	23.2	11.6	34.8	43.5	-8.7
149.87 MHz	V	30.7	12.3	42.9	43.5	-0.6
150.61 MHz	V	23.5	12.2	35.8	43.5	-7.8
932.08 MHz	H	15.5	24.9	40.4	46.0	-5.6

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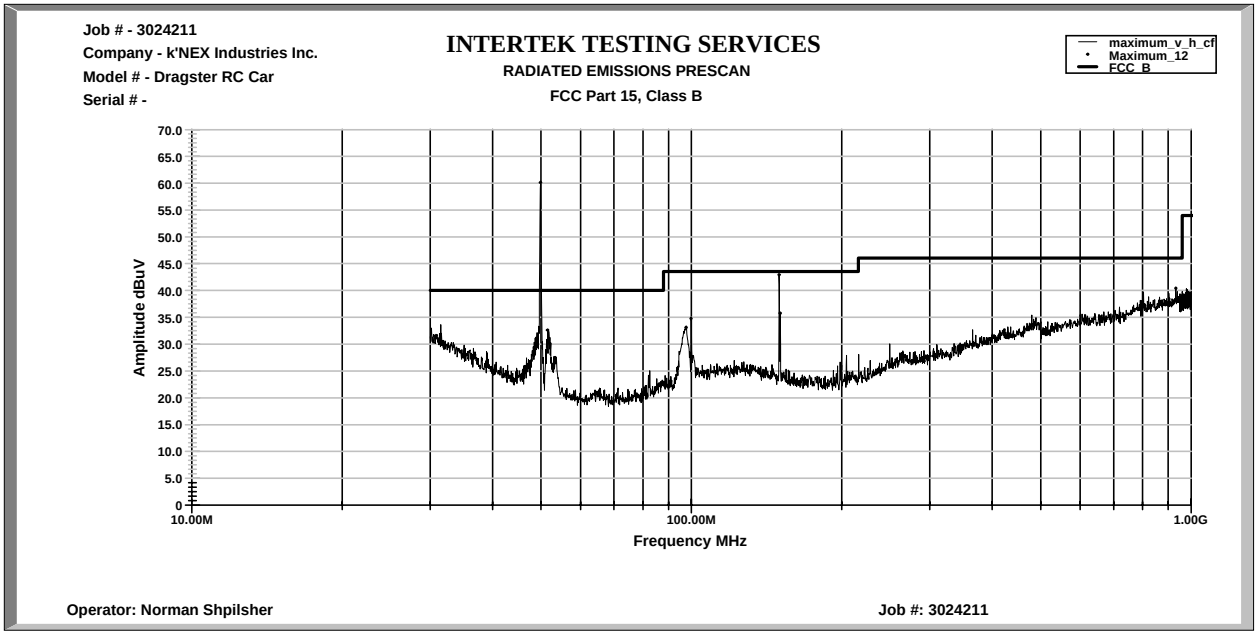
Graph # 3-1-1


Job # - 3024211
Company - k'NEX Industries Inc.
Model # - Dragster RC Car
Serial # -
INTERTEK TESTING SERVICES
RADIATED EMISSIONS PRESCAN
FCC Part 15, Class B
maximum_v_h_cf
Maximum_12
FCC_B
Amplitude dBuV
70.0
65.0
60.0
55.0
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0
10.00M
100.00M
1.00G
Frequency MHz
Operator: Norman Shpilsher
Job #: 3024211

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3.2 Field Strength Calculation

The field strength is calculated by adding the emissions reading on the EMI Receiver to the factors associated with preamplifiers (if any), antennas and cables. A sample calculation is included below.

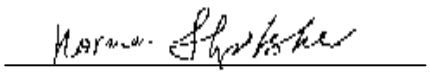
FS = RA – AG + AF + CF

Where: FS = Field Strength in dB(μV/m)
RA = Reading of the Receiver Amplitude (including receiver preamplifier) in dB(μV)
AG = Pre-Amplifier Gain in dBi
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB(m^{-1})

Assume a receiver reading of 47.3 dB(μV) is obtained. The amplifier gain of 28.1 dBi is subtracted. The antenna factor of 27.5 dB(m^{-1})and cable factor of 3.5 dB is added. The amplifiers gain (if used), antenna factor and cable factor combined to the Total Correction Factor (Total CF), and the Total Correction Factor is 2.9 dB(m^{-1}). The net field strength for comparison to the appropriate limit is 50.2 dB(μV/m).

Tested by:

Norman Shpilsher
EMC Project Engineer
Intertek Testing Services NA, Inc.



Signature

Date: April 25, 2002

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4.0 TEST EQUIPMENT

Receivers/Spectrum Analyzers

DESCRIPTION	SERIAL NO.	LAST CAL DATE	CAL DUE	TICK IF USED
HP85462A Receiver RF Section	3325A00106	07/01	07/02	X
HP85460A RF Filter Section	3330A00109	07/01	07/02	X
Advantest Spectrum Analyzer R3271A	55050084	05/01	05/02	
HP 83017A Microwave Amplifier	3123A00475	09/01	09/02	

Antennas

DESCRIPTION	SERIAL NO.	LAST CAL DATE	CAL DUE	TICK IF USED
Schaffner-Chase Bicono-Log Antenna	2468	11/01	11/02	X
EMCO Horn antenna 3115	9507-4513	09/01	09/02	
EMCO Horn antenna 3115	6579	12/01	12/02	

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EXHIBIT I

TEST SET UP PHOTOS

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EXHIBIT II

FCC ID LABEL LOCATION

(See ID Label/Location Info. Attachments)

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EXHIBIT III

EXTERNAL PHOTOS

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EXHIBIT IV

INTERNAL PHOTOS

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EXHIBIT V

ELECTRICAL SCHEMATICS AND BLOCK DIAGRAM

(See Block Diagram and Schematic Attachments)

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EXHIBIT VI

USER MANUAL AND OPERATIONAL DESCRIPTION

(See User Manual and Operational Description Attachments)