Report No.: GZ10091303-1

TEST REPORT

(Application for Certification)
FCC ID : YYC-662910

Applicant Name & Address	:	Innvo Labs Limited Jetta House, 19 On Kui Street, On Lok Tsuen, Fanling, Hong kong
Manufacturing Site		JETTA(CHINA) INDUSTRIES, CO., LTD. 333 CAI XIN LU, LAN HE ZHEN, PAN YU QU, GUANGZHOU, CHINA.
Sample Description		
Product	:	Electronic toy
Model No.	:	662910
Electrical Rating	:	7.4VDC Battery
Date Received	:	03 November 2010
Date Test Conducted	:	03 November 2010 to 18 November 2010
Test standards	:	**FCC Part 15.225**
Test Result	:	Pass
Conclusion	:	The submitted samples complied with the above rules/standards.
Remark		None.

**********End of Page**********

Prepared and Check By:

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Approved By:

Signature

Carrie Chen
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09 May 2011 *Date*

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1 General Description

1.1 Product Description

The equipment under test (EUT) is a transmitter for an Electronic toy (tag reader) operating at 13.56 MHz which is controlled by a crystal. The EUT is powered by 7.4VDC batteries. This toy consists of a toy PELO (tag reader on the head) and 20 toy leaning and food items (passive type powered tags) when the corresponding Tags (passive Type powered tags) closed to the reader, the EUT will make different action and sound effects.

Antenna Type: internal, Integral

For electronic filing, the brief circuit description is saved with filename: description .pdf.

1.2 Related Submittal(s) Grants

The receiver for this transmitter is exempted form the Part 15 technical rules per 15.101(b).

1.3 Test Methodology

Radiated emission measurements were performed according to the procedures in ANSI C63.4 (2003). Radiated Emission measurement was performed in a Semi-anechoic chamber. Preliminary scans were performed in the Semi-anechoic chamber only to determine worst case modes. All 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 Semi-Anechoic Chamber facility used to collect the radiated data and Shielding Room facility used to collect the conducteded data are Intertek Testing Services Shenzhen ltd. Kejiyuan Branch and located at 6F, Block D, Huahan Building, Langshan Road, Nanshan District Shenzhen, P.R.China. This test facility and site measurement data have been fully placed on file with File Number 242492.

2 System Test Configuration

2.1 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it), and in the confines as outlined in ANSI C63.4 (2003).

The EUT was powered by a charged DC 7.4V batteries.

For maximizing emission below 30 MHz, the EUT was rotated through 360°, the centre of the loop antenna was placed 1 meter above the ground, and the antenna polarization was changed. For maximizing emission above 30 MHz, the EUT was rotated through 360°, the antenna height was varied from 1 meter to 4 meters above the ground plane, and the antenna polarization was changed. This step by step procedure for maximizing emissions led to the data reported in Exhibit 3.3

The unit was operated standalone and placed in the center of the turntable.

The equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). The EUT was placed on the turntable and rotate through 360°, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

The EUT transmit continuously on testing when it is switched on and set the test mode.

2.2 EUT Exercising Software

Once the unit is powered up, it transmits the RF signal continuously, for such function there was no special software to exercise the device.

2.3 Special Accessories

There are no special accessories necessary for compliance of this product.

2.4 Equipment Modification

No modification.

2.5 Measurement Uncertainty

When determining the test conclusion, the Measurement Uncertainty of test has been considered.

2.6 Support Equipment List and Description

N/A

3 Emission Results

Data is included worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included.

3.1 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any), Average Factor (optional) from the measured reading. The basic equation with a sample calculation is as follows:
FS = RA + AF + CF - AG - AV
where FS = Field Strength in dBµV/m
RA = Receiver Amplitude (including preamplifier) in dBµV
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB
AG = Amplifier Gain in dB
AV = Average Factor in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows:
FS = RR + LF
where FS = Field Strength in dBµV/m
RR = RA - AG - AV in dBµV
LF = CF + AF in dB

Assume a receiver reading of 52.0 dBµV is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB are added. The amplifier gain of 29 dB and average factor of 5 dB are subtracted, giving a field strength of 27 dBµV/m. This value in dBµV/m was converted to its corresponding level in µV/m.

RA = 52.0 dBµV/m
AF = 7.4 dB RR = 18.0 dBµV
CF = 1.6 dB LF = 9.0 dB
AG = 29.0 dB
AV = 5.0 dB
FS = RR + LF
FS = 18 + 9 = 27 dBµV/m

Level in µV/m = Common Antilogarithm [(27 dBµV/m)/20] = 22.4 µV/m

3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission at 1973 MHz
For electronic filing, the worst case radiated emission configuration photographs are saved with filename: radiated photos.pdf.

3.3 Radiated Emission Data

The data on the following page lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Judgement: Passed by 13.5 dB for radiated emission

Applicant: Innvo Labs Limited. Date of test: 10 November 2010
Model: 662910
Test Mode: TX

Table 1
Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m dBµV/m	Distance Factor (-dB)	Calculated at 30m (dBµV/m)	Limit at 30m (dBµV/m)	Margin (dB)
Vertical	13.562	40.8	0.0	13.8	54.6	40.0	14.6	84.0	-69.4
Vertical	27.119	13.8	0.0	18.8	32.6	40.0	-7.4	29.5	-36.9

Table 2
Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
H	95.96	25.7	20	9.9	15.6	43.5	-27.9
H	127.97	32.7	20	8.5	21.2	43.5	-22.3
H	143.49	37.6	20	8.7	26.3	43.5	-17.2
H	159.98	34.3	20	9.4	23.7	43.5	-19.8
H	176.47	33.2	20	11.3	24.5	43.5	-19.0
H	191.99	37.4	20	11.9	29.3	43.5	-14.2
V	40.67	28.8	20	13.2	22	40.0	-18.0
V	54.25	36.9	20	9.2	26.1	40.0	-13.9
V	62.01	35.4	20	8.1	23.5	40.0	-16.5
V	95.96	29.4	20	9.9	19.3	43.5	-24.2
V	127.97	33.6	20	8.5	22.1	43.5	-21.4
V	191.02	32.4	20	11.9	24.3	43.5	-19.2

Applicant: Innvo Labs Limited. Date of test: 16 November 2010
Model: 662910
Test Mode: TX

Table 3
Radiated Emissions (1GHz-2GHz)
Pursuant to FCC 15.209: Emissions Requirement

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net(PK) at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
H	1493	44.2	20	30.9	55.1	74	-18.9
H	1637	44.0	20	33.2	57.2	74	-16.8
H	1973	45.0	20	35.5	60.5	74	-13.5
V	1135	40.2	20	29.5	49.7	74	-24.3
V	1270	41.9	20	30.0	51.9	74	-22.1
V	1369	43.5	20	31.5	55.0	74	-19.0

Table 4
Radiated Emissions (1GHz-2GHz)
Pursuant to FCC 15.209: Emissions Requirement

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net(AV) at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
H	1493	18.0	20	30.9	28.9	54	-25.1
H	1637	17.8	20	33.2	31.0	54	-23.0
H	1973	18.1	20	35.5	33.6	54	-20.4
V	1135	18.7	20	29.5	28.2	54	-25.8
V	1270	18.1	20	30.0	28.1	54	-25.9
V	1369	18.6	20	31.5	30.1	54	-23.9

Notes:
1. Peak Detector Data unless otherwise stated.
2. All measurements were made at 3 meter. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative value in the margin column shows emission below limit.
4. Loop antenna is used for the emissions below 30MHz
5. Worst case emissions were measured.

3.4 Frequency Tolerance

FCC Part 15 Section 15.225(e)

Data Table
Frequency tolerance of Transmitter
(Temperature Variation: -20°C to +50°C)

Operating frequency			13.56119MHz	
Test Voltage (V)	Temperature (°C)	Measured frequency (MHz)	Frequency shift (%)	Limit (%)
7.4	50	13.56171	0.00383	±0.01
7.4	40	13.56153	0.00251	±0.01
7.4	30	13.56125	0.00044	±0.01
7.4	20	13.56119	0.00000	±0.01
7.4	10	13.56110	-0.00066	±0.01
7.4	0	13.56105	-0.00103	±0.01
7.4	-10	13.56090	-0.00214	±0.01
7.4	-20	13.56063	-0.00413	±0.01

We found that the EUT met the requirement of FCC Part 15 Section 15.225(e).

4 Equipment photo

For electronic filing, the photographs are saved with filename: external photos.pdf and internal photos.pdf.

5 Product Labelling

For electronics filing, the FCC ID label artwork and the label location are saved with filename: label.pdf.

6 Technical Specifications

For electronic filing, the block diagram and schematic of the tested EUT are saved with filename: block.pdf and circuit.pdf respectively.

7 Instruction Manual

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.
This manual will be provided to the end-user with each unit sold/leased in the United States

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8 Miscellaneous Information

This miscellaneous information includes details of the measured bandwidth, the test procedure

8.1 Bandwidth Plot

The plot saved in bw.pdf which shows the fundamental emission is confined in the specified band. The emission of the fundamental is 14.6 dBµV/m at 30m, and it is below the carrier level at the band edge (13.110 and 14.010 MHz). It meets the requirement of Section 15.225(a), (b), (c), & (d).

Pursuant to FCC part 15 Section 15.215(c), the 20dB bandwidth of the emission was contained within the frequency band designated (mentioned as above) which the EUT operated. The effects, if any, from frequency sweeping, frequency hopping, other modulation techniques and frequency stability over excepted variations in temperature and supply voltage were considered.

8.2 Discussion of Pulse Desensitization

N/A

8.3 Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services in the measurements of transmitters operating under Part 15, Subpart C rules.
The test set-up and procedures described below are designed to meet the requirements of ANSI C63.4 - 2003.
The transmitting equipment under test (EUT) is placed on a wooden turntable which is four feet in diameter and approximately one meter in height above the ground plane. During the radiated emissions test, the turntable is rotated and any cables leaving the EUT are manipulated to find the configuration resulting in maximum emissions. The EUT is adjust through all three orthogonal axes to obtain maximum emission levels. The antenna height and polarization are varied during the testing to search for maximum signal levels.
Detector function for radiated emissions is in peak mode. Average readings, when

required, are taken by measuring the duty cycle of the equipment under test and subtracting the corresponding amount in dB from the measured peak readings. The frequency range scanned is from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or 40 GHz, whichever is lower. For line conducted emissions, the range scanned is 150 kHz to 30 MHz.

8.4 Emissions Test Procedures (cont'd)

The EUT is warmed up for 15 minutes prior to the test.

AC power to the unit is varied from 85% to 115% nominal and variation in the fundamental emission field strength is recorded. If battery powered, a new, fully charged battery is used.

Conducted measurements are made as described in ANSI C63.4 - 2003.

The IF bandwidth used for measurement of radiated signal strength was 10 kHz for emission below 30 MHz and 120 KHz for emission from 30 MHz to 1000 MHz. Where transmissions of short enough pulse duration warrant, a greater bandwidth is selected according to the recommendations of Hewlett Packard Application Note 150-2. Above 1000 MHz, a resolution bandwidth of 1 MHz is used.

Transmitter measurements are normally conducted at a measurement distance of three meters. However, to assure low enough noise floor in the restricted bands and above 1 GHz, signals are acquired at a distance of one meter or less. All measurements are extrapolated to three meters using inverse scaling, but those measurements taken at a closer distance are so marked.

9 Equipment list

1) Radiated Emission test

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
SZ061-06	Active Loop Antenna	Electro-Metrics	EM-6876	217	27-Nov-09	27-May-11
SZ061-03	BiConiLog Antenna	ETS	3142C	00066460	25-Nov-09	25-May-11
SZ185-01	EMI Receiver	R&S	ESCI	100547	08-Mar-10	08-Mar-11
SZ061-08	Horn Antenna	ETS	3115	00092346	17-Jul-08	17-Jan-11
SZ056-03	Spectrum Analyzer	R&S	FSP 30	101148	18-Mar-10	18-Mar-11
SZ188-01	Anechoic Chamber	ETS	RFD-F/A-100	4102	10-Jul-10	10-Jan-11
SZ062-04	RF Cable	RADIALL	RG 213U	--	30-Sep-10	30-Mar-11
SZ062-06	RF Cable	RADIALL	0.04-26.5GHz	--	17-Aug-10	17-Aug-11