TEST REPORT

Report No.: HK09050815-1

MGA Entertainment (HK) Ltd.

Application
For
Certification
(Original Grant)

(FCC ID: LU94225)

Transmitter

Prepared and Checked by:

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Approved by:

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Date: June 12, 2009

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GENERAL INFORMATION

MGA Entertainment (HK) Ltd.
BRAND NAME: Little Tikes, MODEL: 814225200

FCC ID: LU94225

Grantee:	MGA Entertainment(HK) Ltd.
Grantee Address:	9/F., Tower 6, The Gateway, Harbour City, Tsim Sha Tsui, Kowloon, Hong Kong.
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Manufacturer:	N/A
Manufacturer Address:	N/A
Brand Name:	Little Tikes
Model:	814225200
Type of EUT:	Transmitter
Description of EUT:	HPK ORNT Faucet/Burners Pastel (Parts)
Serial Number:	N/A
FCC ID:	LU94225
Date of Sample Submitted:	May 15, 2009
Date of Test:	May 26, 2009
Report No.:	HK09050815-1
Report Date:	June 12, 2009
Environmental Conidtions:	Temperature: +10 to 40°C Humidity: 10 to 90%

SUMMARY OF TEST RESULT

MGA Entertainment (HK) Ltd.
BRAND NAME: Little Tikes, MODEL: 814225200

FCC ID: LU94225

TEST SPECIFICATION	REFERENCE	RESULTS
Maximum Peak Output Power	15.247(b), (c) / RSS-210 A8.4	N/A
Hopping Channel Carrier Frequencies Separation	15.247(e) / RSS-210 A8.1	N/A
20dB Bandwidth of the Hopping Channel	15.247(a) / RSS-210 A8.1	N/A
Number of Hopping Frequencies	15.247(e) / RSS-210 A8.1	N/A
Average Time of Occupancy of Hopping Frequency	15.247(e) / RSS-210 A8.1	N/A
Anteann Conducted Spurious Emissions	15.247(d) / RSS-210 A8.5	N/A
Radiated Spurious Emissions	15.247(d) / RSS-210 A8.5	N/A
RF Exposure Compliance	15.247(i) / RSS-Gen 5.5	N/A
Transmitter Power Line Conducted Emissions	15.207 / RSS-Gen 7.2.2	N/A
Transmitter Field Strength	15.227 / RSS-310 3.8	N/A
Transmitter Field Strength	15.229 / RSS-210 A2.7	N/A
Transmitter Field Strength, Bandwidth and Timing Requirement	15.231(a) / RSS-210 A1.1.1	N/A
Transmitter Field Strength, Bandwidth and Timing Requirement	15.231(e) / RSS-210 A1.1.5	N/A
Transmitter Field Strength and Bandwidth Requirement	15.239 / RSS-210 A2.8	N/A
Transmitter Field Strength and Bandwidth Requirement	15.249 / RSS-210 A2.9	N/A
Transmitter Field Strength and Bandwidth Requirement	15.235 / RSS-310 3.9	Pass
Receiver / Digital Device Radiated Eissions	15.109 / ICES-003	Pass

Note: 1. The EUT uses a permanently attached antenna which, in accordance to section 15.203, is considered sufficient to comply with the pervisions of this section.
2. Pursuant to FCC part 15 Section 15.215(c), the 20 dB 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.

Table of Contents

1.0 General Description

1.1 Product Description

The equipment under test (EUT) is a transmitter for an inductive toy kitchen (tag reader) operating at 13.56 MHz which is controlled by a crystal. The EUT is powered by 2 x AA batteries. The EUT has a RF tag sensor, 2 switchs and 2 buttons. The RF sensor is located on the burner of the EUT. After switched ON by the switchs, the EUT will give instructions to player and ask the player to scan the toy food items over the burner in each game mode.

Antenna Type : Internal, Loop Antenna

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

1.2 Related Submittal(s) Grants

This is a single application for certification of a transmitter.

1.3 Test Methodology

Radiated emission measurements was performed according to the procedures in ANSI C63.4 (2003). All radiated measurements were performed in an Open Area Test Site. Preliminary scans were performed in the Open Area Test Site 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 open area test site and conducted measurement facility used to collect the radiated data is located at Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong. This test facility and site measurement data have been placed on file with the FCC.

2.0 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 device was powered from 2 new AA batteries during test.

For maximizing emissions, 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 3.0.

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 mounted to a plastic stand if necessary and placed on the wooden turntable, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

2.2 EUT Exercising Software

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

2.3 Special Accessories

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

2.4 Equipment Modification

Any modifications installed previous to testing by MGA Entertainment (HK) Ltd. will be incorporated in each production model sold/leased in the United States.

No modifications were installed by Intertek Testing Services Hong Kong Ltd.

2.5 Measurement Uncertainty

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

2.6 Support Equipment List and Description

N/A.

3.0 **Emission Results**

Data is included of the 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
CF = 1.6 dB
AG = 29.0 dB
AV = 5.0 dB
RR = 18.0 dBµV
LF = 9.0 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 81.360 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.

Judgment: Passed by 5.8 dB

Applicant: MGA Entertainment (HK) Ltd. Date of Test: May 26, 2009
Model: 814225200
Mode: TX
Sample: 9/16

Table 1

Radiated Emissions

Polari-zation	Frequency (MHz)	Reading (dBµV)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Distance Factor (-dB)	Calculated at 30m (dBµV/m)	Limit at 30m (dBµV/m)	Margin (dB)
V	13.560	58.9	9.3	68.2	40.0	28.2	84.0	-55.8
V	27.120	18.4	15.4	33.8	40.0	-6.2	29.5	-35.7

Table 2

Radiated Emissions

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp (dB)	Antenna Factor (dB)	Average Factor (dB)	Net at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
V	40.680	39.6	16	10.0	-	33.6	40.0	-6.4
V	54.240	38.9	16	11.0	-	33.9	40.0	-6.1
H	67.800	42.1	16	8.0	-	34.1	40.0	-5.9
H	81.360	43.2	16	7.0	-	34.2	40.0	-5.8
H	94.920	38.9	16	11.0	-	33.9	43.5	-9.6
H	108.480	36.1	16	14.0	-	34.1	43.5	-9.4
H	122.040	36.0	16	14.0	-	34.0	43.5	-9.5
H	135.600	34.8	16	14.0	-	32.8	43.5	-10.7

NOTES: 1. Peak Detector Data unless otherwise stated.

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances 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 sign in the column shows value below limit.

4. Loop antenna is used for the emission below 30MHz

5. Horn antenna is used for the emission over 1000MHz.

Applicant: MGA Entertainment (HK) Ltd. Date of Test: May 26, 2009
Model: 814225200
Mode: On (Sound)
Sample: 9/16

Table 3

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
V	38.796	35.6	16	10.0	29.6	40.0	-10.4
V	45.672	36.4	16	10.0	30.4	40.0	-9.6
V	53.705	35.9	16	11.0	30.9	40.0	-9.1
V	64.386	38.6	16	9.0	31.6	40.0	-8.4
V	72.596	41.3	16	7.0	32.3	40.0	-7.7
V	83.428	41.0	16	7.0	32.0	40.0	-8.0

Notes: Negative signs (-) in the margin column signify levels below the limit.

3.4 Frequency Tolerance

FCC Part 15 Section 15.225(e)

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

Test Voltage (V)	Temperature (°C)	Startup	2 mins	5 mins	10 mins
3	+50	13.566586	13.566586	13.566586	13.566586
	+40	13.566726	13.566726	13.566726	13.566722
	+30	13.566962	13.566962	13.566966	13.566966
	+20	13.567330	13.567326	13.567322	13.567322
	+10	13.567494	13.567490	13.567490	13.567486
	0	13.567706	13.567702	13.567702	13.567702
	-10	13.567790	13.567790	13.567794	13.567794
	-20	13.567826	13.567830	13.567834	13.567838

Operating frequency			13.567322 MHz	
Test Voltage (V)	Temperature (°C)	Measured frequency (MHz)	Frequency shift (%)	Limit (%)
3	+50	13.566586	-0.005425	±0.01
	+40	13.566722	-0.004422	±0.01
	+30	13.566962	-0.002653	±0.01
	+20	13.567322	0	±0.01
	+10	13.567494	0.001268	±0.01
	0	13.567706	0.002830	±0.01
	-10	13.567794	0.003479	±0.01
	-20	13.567838	0.003803	±0.01

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

4.0 Equipment Photographs

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

5.0 Product Labelling

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

6.0 Technical Specifications

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

7.0 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.

8.0 Miscellaneous Information

This miscellaneous information includes details of the measured bandwidth and the test procedure.

8.1 Measured Bandwidth

The plot saved in bw.pdf which shows the fundamental emission is confined in the specified band. The emission of the fundamental is 28.2 dBµV/m and it is below the limit of 50.5 dBµV/m in the range of (13.410 – 13.553 MHz) and (13.710 - 14.010 MHz) and the limit of 40.5 dBµV/m in the frequency range of (13.110 – 14.410 MHz) and (13.710 – 14.010 MHz). In the frequency range from 13.110 – 14.010 MHz, we cannot find any emission higher than the fundamental emission. Therefore they meet the requirement of Section 15.225(a), (b), (c), & (d).

8.2 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.

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 pulsed 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.

9.0 **Equipment List**

1) Radiated Emissions Test

Equipment	EMI Test Receiver	Biconical Antenna	Log Periodic Antenna	Active H-field Loop Antenna
Registration No.	EW-0016	EW-0954	EW-0446	EW-0191
Manufacturer	R&S	EMCO	EMCO	EMCO
Model No.	ESVS30	3104C	3146	6502
Calibration Date	Apr. 14, 2009	Sep. 30, 2008	Oct. 02, 2008	Jun. 26, 2008
Calibration Due Date	Apr. 14, 2010	Mar. 30, 2010	Apr. 02, 2010	Dec. 26, 2010

Equipment	Spectrum Analyzer	Double Ridged Guide Antenna	Double Ridged Guide Antenna
Registration No.	EW-2188	EW-0194	EW-1015
Manufacturer	AGILENTTECH	EMCO	EMCO
Model No.	E4407B	3160-09	3115
Calibration Date	Dec. 18, 2008	Dec. 24, 2008	Jul. 28, 2008
Calibration Due Date	Dec. 18, 2009	Jun. 24, 2010	Jan. 28, 2010

Equipment	Temperature & Humidity Chamber	Frequency Counter
Registration No.	EW-2134	EW-2288
Manufacturer	GIANT FORCE	Agilent
Model No.	GTH-750-40-CP-SD	53181A
Calibration Date	Sep. 04, 2008	Jul. 29, 2008
Calibration Due Date	Aug. 29, 2009	Jul. 29, 2009