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HOKLAS 005
TEST

TEST REPORT

Report No.: 14050776HKG-001

IMC Toys Hong Kong Ltd.

Application
For
Certification
(Original Grant)
(FCC ID: RCPIMC1404000014)

Transceiver

Prepared and Checked by:

Tse Ying, Cathy
Senior Lead Engineer

Approved by:

Ng Mei Nar, Chris
Lead Engineer
Date: June 12, 2014

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GENERAL INFORMATION

Grantee:	IMC Toys Hong Kong Ltd.
Grantee Address:	Room 805B-808B1, 8/F., Empire Centre, 68 Mody Road, Tsim Sha Tsui East, Kowloon, Hong Kong.
Contact Person:	Jack Cheung
Tel:	3107 2020
Fax:	3107 0707
e-mail:	jack.cheung@imc-hk.net
Manufacturer:	IMC TOYS S.A.
Manufacturer Address:	Pare Llaurador, 172-08224, Terrassa, Barcelona, Spain
Brand Name:	N/A
Model:	140400
Type of EUT:	Transceiver
Description of EUT:	TOY STORY WT BUZZ & WOODY
Serial Number:	N/A
FCC ID:	RCPIMC1404000014
Date of Sample Submitted:	May 14, 2014
Date of Test:	May 14, 2014 to June 05, 2014
Report No.:	14050776HKG-001
Report Date:	June 12, 2014
Environmental Conditions:	Temperature: +10 to 40°C Humidity: 10 to 90%

Intertek Testing Services Hong Kong Ltd.
2/F., Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong.
Tel: (852) 2173 8888 Fax: (852) 2785 5487 Website: www.hk.intertek-etlsemko.com

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HOKLAS 005 TEST

SUMMARY OF TEST RESULT

TEST SPECIFICATION	REFERENCE	RESULTS
Transmitter Field Strength and Bandwidth Requirement	15.235	Pass

The equipment under test is found to be complying with the following standards:
FCC Part 15, October 1, 2012 Edition

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.

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1.0 General Description

1.1 Product Description

The Equipment Under Test (EUT) is a transceiver for a toy Push-to-Talk (PTT) type Walkie-Talkie operating at 49.860MHz governed by a crystal. The EUT is powered by a 9V battery. After switched ON the EUT, the user can transmit voice to other transceiver by pressing the PTT button and speaking to the integrated speaker-microphone, while release the PTT button to listen voice of other transceiver from the loudspeaker.

Antenna Type: Internal, Integral

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 portion.

The receiver for this transceiver is authorized by Verification procedure 15.101(b).

1.3 Test Methodology

Radiated emission measurements was performed according to the procedures in ANSI C63.4 (2009). 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 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 (2009).

The device 140400 (Woody) was powered by new 1 x 9.0V Alkaline battery.

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.

The circuit, PCB layout and electrical parts of 140400 (Buzz) are identical to 140400 (Woody), they are only different in non-conductive outer casing. The worst case data has been presented.

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 Measurement Uncertainty

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

2.5 Support Equipment List and Description

N/A.

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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 32 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
FS = RR + LF
FS = 18 + 9 = 27 dBµV/m

RR = 18.0 dBµV
LF = 9.0 dB

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

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3.2 Radiated Emission Configuration Photograph

The worst case in radiated emission was found at 99.27 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 7.3 dB

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Applicant: IMC Toys Hong Kong Ltd. Date of Test: June 05, 2014
Model: 140400 (Woody)
Worst-Case Operating Mode: Transmitting

Table 1

Radiated Emissions
Pursuant to FCC Part 15 Section 15.235 Requirement

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	49.860	55.6	16	11.0	0.0	50.6	80.0	-29.4
V	99.270	40.2	16	12.0	-	36.2	43.5	-7.3
H	149.580	35.8	16	14.0	-	33.8	43.5	-9.7
H	199.440	34.1	16	16.0	-	34.1	43.5	-9.4
H	249.300	31.0	16	20.0	-	35.0	46.0	-11.0
H	299.160	28.8	16	22.0	-	34.8	46.0	-11.2
H	349.020	26.4	16	24.0	-	34.4	46.0	-11.6
H	398.880	24.9	16	25.0	-	33.9	46.0	-12.1
H	448.740	23.8	16	26.0	-	33.8	46.0	-12.2
H	498.600	23.5	16	26.0	-	33.5	46.0	-12.5

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

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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.

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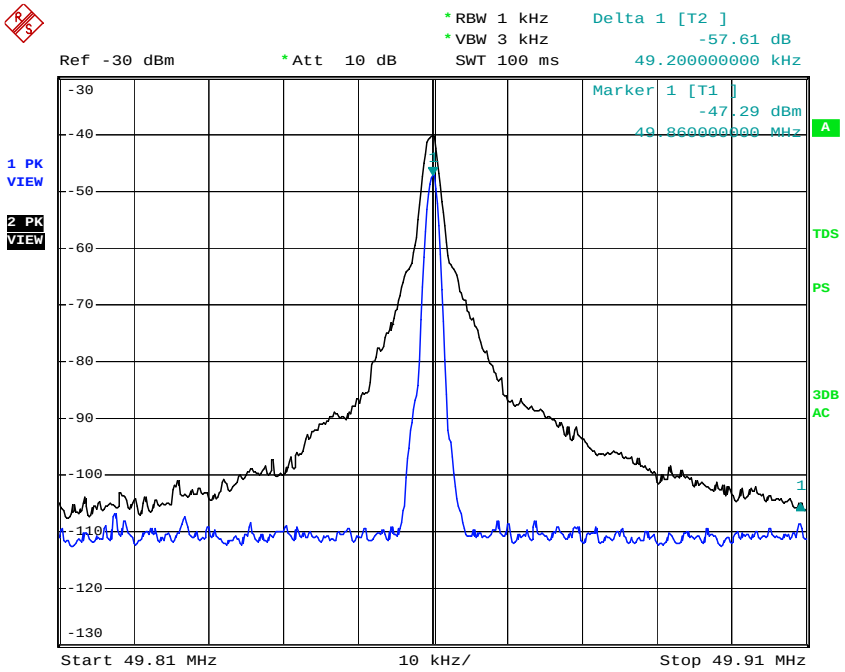
8.0 Miscellaneous Information

The miscellaneous information includes details of the test procedure and measured bandwidth / calculation of factor such as pulse desensitization and averaging factor.

8.1 Measured Bandwidth

The plot shows the fundamental emission is confined in the specified band. The field strength of any emission appearing between the band edges and up to 10kHz above and below the band edges (49.81 and 49.91 MHz) is at least 26 dB below the carrier level. And at 49.81 & 49.91 MHz, there are at least 57.6 dB below the carrier level. It meets requirement of Section 15.235(b).

For the below plot shows the fundamental emission when modulated with 1 kHz and 100 dBSPL, 10 cm from the Microphone of EUT and unmodulated, which is shown on below plot.



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8.2 Discussion of Pulse Desensitization

Pulse desensitivity is not applicable for this device. Since the transmitter transmits the RF signal continuously.

8.3 Calculation of Average Factor

The average factor is not applicable for this device as the transmitted signal is a continuously signal.

8.4 Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services Hong Kong Ltd. in the measurements of transmitter operating under the Part 15, Subpart C rules.

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 adjusted through all three orthogonal axis to obtain maximum emission levels. The antenna height and polarization are also varied during the testing to search for maximum signal levels. The height of the antenna is varied from one to four meters.

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. A detailed description for the calculation of the average factor can be found in Exhibit 8.3.

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.

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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 were made as described in ANSI C63.4 (2009).

The IF bandwidth used for measurement of radiated signal strength was 100 kHz or greater when frequency is below 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. A discussion of whether pulse desensitivity is applicable to this unit is included in this report (See Exhibit 8.1). 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 forbidden 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, unless otherwise reported. Measurements taken at a closer distance are so marked.

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9.0 **Equipment List**

1) Radiated Emissions Test

Equipment	EMI Test Receiver	Spectrum Analyzer
Registration No.	EW-2666	EW-2188
Manufacturer	R&S	AGILENTTECH
Model No.	ESCI7	E4407B
Calibration Date	Jun. 20, 2013	Apr. 16, 2014
Calibration Due Date	Jun. 20, 2014	Apr. 16, 2015

Equipment	Log Periodic Antenna	Biconical Antenna
Registration No.	EW-0447	EW-2512
Manufacturer	EMCO	EMCO
Model No.	3146	3104C
Calibration Date	Aug. 19, 2013	Jun. 25, 2013
Calibration Due Date	Feb. 19, 2015	Dec. 25, 2014

2) Bandedge Measurement

Equipment	Communication Service Monitor (Radio)	Sound Level Meter	Spectrum Analyzer
Registration No.	EW-1775	EW-0341	EW-2249
Manufacturer	R&S	BK	R&S
Model No.	CMS54	2232	FSP30
Calibration Date	Dec. 06, 2013	Sep. 18, 2013	Oct. 28, 2013
Calibration Due Date	Nov. 22, 2014	Apr. 18, 2015	Oct. 28, 2014

END OF TEST REPORT

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