Toys Family Company Limited

Application
For
Certification
(FCC ID: P9ELF57)

Transmitter, Model : PP237833 <A4306>

We hereby certify that the sample of the above item is considered to comply with the requirements of FCC Part 15, Subpart C for Intentional Radiator,
mention 47 CFR [24-5-2001]

WO# 0203088
WN/at
March 18, 2002

- The test results reported in this report shall refer only to the sample actually tested and shall not refer or be deemed to refer to bulk from which such a sample may be said to have been obtained.
- This report shall not be reproduced except in full without prior authorization from Intertek Testing Services Hong Kong Limited

FCC ID : P9ELF57

LIST OF EXHIBITS

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MEASUREMENT/TECHNICAL REPORT

Toys Family Company Limited - MODEL: PP237833 <A4306>
FCC ID: P9ELF57

March 18, 2002

This report concerns (check one:) Original Grant__X__ Class II Change__

Equipment Type: Low Power Transmitter (example: computer, printer, modem, etc.)

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes___ No_X__

If yes, defer until: _____
date

Company Name agrees to notify the Commission by: _____
date

of the intended date of announcement of the product so that the grant can be issued on that date.

Transition Rules Request per 15.37? Yes____ No_X__

If no, assumed Part 15, Subpart C for intentional radiator - the new 47 CFR [24-5-2001 Edition] provision.

Report prepared by:

Wilbur Ng
Intertek Testing Services
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List of attached file

Exhibit type	File Description	filename
Test Report	Test Report	Test Report.pdf
Operation Description	Technical Description	Technical Description.pdf
Test Setup Photo	Radiated Emission	Test Setup Photographs.pdf
Test Report	Bandwidth Plot	Bandwidth.pdf
External Photo	External Photo	External Photographs.pdf
Internal Photo	Internal Photo	Internal Photographs.pdf
Block Diagram	Block Diagram	Block Diagram.pdf
Schematics	Circuit Diagram	Circuit Diagram.pdf
ID Label/Location	Label Artwork and Location	Label Artwork & Location.pdf
User Manual	User Manual	Manual.pdf

EXHIBIT 1

GENERAL DESCRIPTION

1.0 General Description

1.1 Product Description

The equipment under test (EUT) is a transmitter for RFID equipment operating at 13.562 MHz which is controlled by a crystal. The EUT is powered by 3 AA size Battery. There is a ON/OFF switch on the Battery Box of the product, once turn on the switch, it will transmit a RF signal to the transponder, when the transponder close on the EUT, the EUT will receive the ID signal of the transponder and indentify the transponder. And then, voice out a speech depending on different transponder such as small bear, stick, Flag and pumpkin. And there is a button to trigger the EUT during sleep mode.

The brief circuit description is saved with filename : Technical Description.pdf

1.2 Related Submittal(s) Grants

This is a single application for certification of a transmitter.

1.3 Test Methodology

The radiated emission measurements were performed according to the procedures in ANSI C63.4 (1992). All measurements were performed in Open Area Test Sites. Preliminary scans were performed in the Open Area Test Sites only to determine worst case modes. For each scan, the procedure for maximizing emissions in Appendices D and E were followed. 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 emission data is located at Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong. This test facility and site measurement data have been fully placed on file with the FCC.

EXHIBIT 2

SYSTEM TEST CONFIGURATION

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 (1992.)

The EUT was powered by new a 3 AA size Batteries during test.

For maximizing emissions, the EUT was rotated through 360°, the loop antenna height was 1 meter above the ground plane, and the antenna polarization was changed.

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 a turn table, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

For simplicity of testing, the unit was wired to transmit continuously.

2.2 EUT Exercising Software

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

Any modifications installed previous to testing by Toys Family Company Limited will be incorporated in each production model sold/leased in the United States.

No modifications were installed by Intertek Testing Services.

2.5 Support Equipment List and Description

This product was tested with a transponder (stick).

All the items listed under section 2.0 of this report are

Confirmed by:

Wilbur Ng
Manager
Intertek Testing Services
Agent for Toys Family Company Limited

_____Signature

March 18, 2002 _____Date

EXHIBIT 3

EMISSION RESULTS

3.0 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 reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

FS = RA + AF + CF - AG + PD + 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
PD = Pulse Desensitization in dB
AV = Average Factor in -dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

FS = RA + AF + CF - AG + PD + AV

3.1 Field Strength Calculation (cont'd)

Example

Assume a receiver reading of 62.0 dBμV is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted. The pulse desensitization factor of the spectrum analyzer was 0 dB, and the resultant average factor was -10 dB. The net field strength for comparison to the appropriate emission limit is 32 dBμV/m. This value in dBμV/m was converted to its corresponding level in μV/m.

RA = 62.0 dBμV
AF = 7.4 dB
CF = 1.6 dB
AG = 29.0 dB
PD = 0 dB

AV = -10 dB

FS = 62 + 7.4 + 1.6 - 29 + 0 + (-10) = 32 dBμV/m

Level in mV/m = Common Antilogarithm [(32 dBμV/m)/20] = 39.8 μV/m

3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission

230.548 MHz

For electronic filing, the worst case radiated emission configuration photograph is saved with filename: Test Setup Photographs.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 1.4 dB

TEST PERSONNEL:

Signature

Ivan Y. M. Wong, Compliance Engineer
Typed/Printed Name

March 18, 2002
Date

Company: Toys Family Company Limited
Model: PP237833 <A4306>

Date of Test: March 14, 2002

Table 1

Radiated Emissions (Transmitter Portion)

Polarity	Frequency (MHz)	Reading (dBµV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Distance Factor (dB)	Net at 3m (dBµV/m)	Calculated at 30m (dBµV/m)	Limit at 30m (dBµV/m)	Margin (dB)
V	13.562	56.3	9.0	--	-20	65.3	45.3	80.0	-34.7
V	27.124	29.0	6.3	--	-20	35.3	15.5	29.5	-14.0

Test Engineer: Ivan Y. M. Wong

Company: Toys Family Company Limited Date of Test: March 14, 2002
Model: PP237833 <A4306>

Table 2

Radiated Emissions (Transmitter Portion)

Polarity	Frequency (MHz)	Reading (dBµV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Net at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
V	40.684	41.3	10	16	35.3	40.0	-4.7
V	54.247	41.0	11	16	36.0	40.0	-4.0
H	67.809	36.0	8	16	28.0	40.0	-12.0
H	81.366	43.2	7	16	34.2	40.0	-5.8
H	94.928	46.4	10	16	40.4	43.5	-3.1
H	108.490	35.1	13	16	32.1	43.5	-11.4
H	122.053	38.6	13	16	35.6	43.5	-7.9
H	135.615	37.2	13	16	34.2	43.5	-9.3
H	149.177	31.9	13	16	28.9	43.5	-14.6
H	189.863	34.4	16	16	34.4	43.5	-9.1
H	203.424	36.3	16	16	36.3	43.5	-7.2
H	216.986	37.3	17	16	38.3	46.0	-7.7
H	230.548	42.6	18	16	44.6	46.0	-1.4
H	244.110	33.7	20	16	37.7	46.0	-8.3
H	271.234	35.7	22	16	41.7	46.0	-4.3

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

*Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak detector data for frequencies below 1000 MHz and peak detector data with average factor for frequencies over 1000 MHz.

Test Engineer: Ivan Y. M. Wong

Company: Toys Family Company Limited Date of Test: March 14, 2002
Model: PP237833 <A4306>

Table 2 (Cont'd)

Radiated Emissions (Transmitter Portion)

Polarity	Frequency (MHz)	Reading (dBµV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Net at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
H	284.796	32.7	22	16	38.7	46.0	-7.3
H	298.359	37.4	22	16	43.4	46.0	-2.6
H	311.921	35.6	23	16	42.6	46.0	-3.4
H	325.480	32.6	24	16	40.6	46.0	-5.4
H	352.605	34.2	24	16	42.2	46.0	-3.8
H	393.291	33.5	25	16	42.5	46.0	-3.5
H	406.853	36.0	24	16	44.0	46.0	-2.0
H	420.415	34.3	25	16	43.3	46.0	-2.7
H	433.978	32.7	25	16	41.7	46.0	-4.3
H	447.540	32.2	26	16	42.2	46.0	-3.8
H	461.102	29.3	26	16	39.3	46.0	-6.7
H	488.226	28.8	26	16	38.8	46.0	-7.2
H	528.913	28.6	27	16	39.6	46.0	-6.4
H	569.599	26.6	28	16	38.6	46.0	-7.4
H	637.410	23.5	28	16	35.5	46.0	-10.5

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

*Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak detector data for frequencies below 1000 MHz and peak detector data with average factor for frequencies over 1000 MHz.

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Table 3

Frequency Tolerance (Operating frequency : 13.562 MHz)

Test Voltage	Limit	Measured Frequency (MHz)		
		-20°C	20°C	50°C
4.5V	±0.01%	-0.006%	-0.006%	-0.007%

Test Engineer: Ivan Y. M. Wong

EXHIBIT 4

EQUIPMENT PHOTOGRAPHS

4.0 Equipment Photographs

For electronic filing, the photographs are saved with filename:
External Photographs.pdf and Internal Photographs.pdf

EXHIBIT 5

PRODUCT LABELLING

5.0 Product Labelling

For electronic filing, the FCC ID label artwork and the label location are saved with filename: Label Artwork & Location.pdf

EXHIBIT 6

TECHNICAL SPECIFICATIONS

6.0 Technical Specifications

For electronic filing, the block diagram and schematics are saved with filename: Block Diagram.pdf and Circuit Diagram.pdf respectively.

EXHIBIT 7

INSTRUCTION MANUAL

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.

EXHIBIT 8

MISCELLANEOUS INFORMATION

8.0 Miscellaneous Information

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

8.1 Measured Bandwidth

The plot on saved in Bandwidth.pdf shows the fundamental emission is confined in the specified band of 13.553 - 15.567 MHz.

Figure 8.1 Bandwidth

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 - 1992.

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.

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 450 kHz to 30 MHz.

8.2 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 - 1992.

The IF bandwidth used for measurement of radiated signal strength was 100 kHz or greater 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. 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.

The resolution bandwidth for spurious radiated emission measuring is 120kHz.