

TEST REPORT

Report No.: HK09071024-1

Kids Station Toys International Ltd.

Application
For
Certification
(Original Grant)

(FCC ID: R55KS723)

Transceiver

Prepared and Checked by:



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Approved by:



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Date: August 8, 2009

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GENERAL INFORMATION

Kids Station Toys International Ltd.
MODEL: KS723

FCC ID: R55KS723

Grantee:	Kids Station Toys International Ltd.
Grantee Address:	Rm. 804, 8/F., Empire Ctr., No. 68 Mody Rd., Tsim Sha Tsui East, Kowloon, Hong Kong.
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Manufacturer:	N/A
Manufacturer Address:	N/A
Brand Name:	N/A
Model:	KS723
Type of EUT:	Transciever
Description of EUT:	Kids Station Chit Chat "Two Way Communication Phone"
Serial Number:	N/A
FCC ID :	R55KS723
Date of Sample Submitted:	July 20, 2009
Date of Test:	July 24, 2009 to August 6, 2009
Report No.:	HK09071024-1
Report Date:	August 8, 2009
Environmental Conidtions:	Temperature: +10 to 40°C Humidity: 10 to 90%

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SUMMARY OF TEST RESULT

Kids Station Toys International Ltd.

MODEL: KS723

FCC ID: R55KS723

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
Antennas 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	Pass
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	N/A
Receiver / Digital Device Radiated Emissions	15.109 / ICES-003	N/A
Digital Device Conducted Emissions	15.107 / ICES-003	N/A

- Note: 1. The EUT uses a permanently attached antenna which, in accordance to section 15.203, is considered sufficient to comply with the provisions 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 expected variations in temperature and supply voltage were considered.

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INTERTEK TESTING SERVICES

1.0 General Description

1.1 Product Description

The equipment under test (EUT) is a transmitter for a full duplex walkie talkie phone operating at 26.995 / 27.195 MHz which is controlled by a crystal. The EUT is powered by a 9V battery or 9V DC adaptor. The EUT has an ON/OFF/VOLUME switch, 4 sound buttons (Keypad), a control switch and a DC jack. After switch ON the EUT and pick up the handset (release the control switch), the user can transmit voice and receive voice simultaneously. The 4 sound buttons are used to ring the other unit when release the control switch.

Antenna Type : External, Integral

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

1.2 Related Submittal(s) Grants

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

1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were 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.

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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 EUT was powered by a 9V battery or 9V DC Adaptor during test.

For maximizing emissions 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 at and 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 report 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 Kids Station Toys International 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.

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2.6 Support Equipment List and Description

AC-DC adaptor, Model: NA-7, Input: A.C. 120V 60Hz, Output: D.C. 9V 200mA (provided by Intertek)

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 dB μ V/m
 RA = Receiver Amplitude (including preamplifier) in dB μ V
 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 dB μ V/m
 $RR = RA - AG - AV$ in dB μ V
 $LF = CF + AF$ in dB

Assume a receiver reading of 52.0 dB μ V 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 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

$$RA = 52.0 \text{ dB}\mu\text{V/m}$$

$$AF = 7.4 \text{ dB}$$

$$CF = 1.6 \text{ dB}$$

$$AG = 29.0 \text{ dB}$$

$$AV = 5.0 \text{ dB}$$

$$FS = RR + LF$$

$$FS = 18 + 9 = 27 \text{ dB}\mu\text{V/m}$$

$$RR = 18.0 \text{ dB}\mu\text{V}$$

$$LF = 9.0 \text{ dB}$$

$$\text{Level in } \mu\text{V/m} = \text{Common Antilogarithm } [(27 \text{ dB}\mu\text{V/m})/20] = 22.4 \mu\text{V/m}$$

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3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission at 53.990 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 7.5 dB

3.4 Conducted Emission Configuration Photograph

Worst Case Line Conducted Configuration at 26.997 MHz

For electronic filing, the worst case line-conducted configuration photographs are saved with filename: conducted photos.pdf.

3.5 Conducted Emission Data

For electronic filing, the graph and data table of conducted emission is saved with filename: conducted.pdf.

Judgment: Passed by 13.87 dB

INTERTEK TESTING SERVICES

Applicant: Kids Station Toys International Ltd.
Model: KS723 (27.195 MHz)
Mode: TX (with adaptor)
Sample: 1/2

Date of Test: August 6, 2009

Table 1

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp (dB)	Antenna Factor (dB)	Average Factor (-dB)	Net at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
V	27.195	61.6	0	9.5	0.0	71.1	80.0	-8.9
V	54.390	37.0	16	11.0	-	32.0	40.0	-8.0
H	81.585	39.0	16	7.0	-	30.0	40.0	-10.0
H	108.780	36.0	16	14.0	-	34.0	43.5	-9.5
H	135.975	35.1	16	14.0	-	33.1	43.5	-10.4
H	163.170	31.5	16	17.0	-	32.5	43.5	-11.0
H	190.365	31.7	16	16.0	-	31.7	43.5	-11.8
H	217.560	30.0	16	17.0	-	31.0	46.0	-15.0
H	244.755	26.8	16	20.0	-	30.8	46.0	-15.2
H	271.950	23.6	16	22.0	-	29.6	46.0	-16.4

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 emissions below 30 MHz.
5. Horn antenna is used for the emissions over 1000MHz.

INTERTEK TESTING SERVICES

Applicant: Kids Station Toys International Ltd.
Model: KS723 (27.195 MHz)
Mode: TX (B/O)
Sample: 1/2

Date of Test: August 6, 2009

Table 2

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp (dB)	Antenna Factor (dB)	Average Factor (-dB)	Net at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
V	27.195	52.0	0	9.5	0.0	61.5	80.0	-18.5
V	54.390	35.0	16	11.0	-	30.0	40.0	-10.0
H	81.585	38.6	16	7.0	-	29.6	40.0	-10.4
H	108.780	33.1	16	14.0	-	31.1	43.5	-12.4
H	135.975	33.0	16	14.0	-	31.0	43.5	-12.5
H	163.170	29.8	16	17.0	-	30.8	43.5	-12.7
H	190.365	30.5	16	16.0	-	30.5	43.5	-13.0
H	217.560	28.6	16	17.0	-	29.6	46.0	-16.4
H	244.755	25.0	16	20.0	-	29.0	46.0	-17.0
H	271.950	22.5	16	22.0	-	28.5	46.0	-17.5

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. Loop antenna is used for the emissions below 30 MHz.
5. Horn antenna is used for the emissions over 1000MHz.

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Applicant: Kids Station Toys International Ltd.
Model: KS723 (26.995 MHz)
Mode: TX (with adaptor)
Sample: 1/2

Date of Test: August 6, 2009

Table 3

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp (dB)	Antenna Factor (dB)	Average Factor (-dB)	Net at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
V	26.995	62.5	0	9.5	0.0	72.0	80.0	-8.0
V	53.990	37.5	16	11.0	-	32.5	40.0	-7.5
V	80.985	40.4	16	6.0	-	30.4	40.0	-9.6
H	107.980	32.3	16	14.0	-	30.3	43.5	-13.2
H	134.975	35.0	16	14.0	-	33.0	43.5	-10.5
H	161.970	31.0	16	16.0	-	31.0	43.5	-12.5
H	188.965	32.0	16	16.0	-	32.0	43.5	-11.5
H	215.960	30.0	16	17.0	-	31.0	43.5	-12.5
H	242.955	27.0	16	19.0	-	30.0	46.0	-16.0
H	269.950	23.6	16	22.0	-	29.6	46.0	-16.4

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 emissions below 30 MHz.
5. Horn antenna is used for the emissions over 1000MHz.

INTERTEK TESTING SERVICES

Applicant: Kids Station Toys International Ltd.
Model: KS723 (26.995 MHz)
Mode: TX (B/O)
Sample: 1/2

Date of Test: August 6, 2009

Table 4

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp (dB)	Antenna Factor (dB)	Average Factor (-dB)	Net at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
V	26.995	52.0	0	9.5	0.0	61.5	80.0	-18.5
V	53.990	36.0	16	11.0	-	31.0	40.0	-9.0
V	80.985	39.5	16	6.0	-	29.5	40.0	-10.5
H	107.980	31.0	16	14.0	-	29.0	43.5	-14.5
H	134.975	33.5	16	14.0	-	31.5	43.5	-12.0
H	161.970	29.6	16	16.0	-	29.6	43.5	-13.9
H	188.965	31.1	16	16.0	-	31.1	43.5	-12.4
H	215.960	29.0	16	17.0	-	30.0	43.5	-13.5
H	242.955	27.0	16	19.0	-	30.0	46.0	-16.0
H	269.950	23.0	16	22.0	-	29.0	46.0	-17.0

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 emissions below 30 MHz.
5. Horn antenna is used for the emissions 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.

8.0 **Miscellaneous Information**

This miscellaneous information includes details of the measured bandwidth.

8.1 **Measured Bandwidth**

For electronic filing, the plot shows the fundamental emission when modulated with 1 kHz and 100 dBSPL, 10 cm from the Microphone of EUT and unmodulated are saved with filename: bw.pdf

The plot saved in bw.pdf which shows the fundamental emission is confined in the specified band. And it also shows that the emission is at least 27 dB below the carrier level at the band edge (26.96 and 27.28 MHz). It meets the requirement of Section 15.227(b).

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.

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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 adjusted 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.

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8.2 Emissions Test Procedures (cont'd)

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.

For a device with a permanent antenna operating at or below 30 MHz, the FCC will accept measurements done with a suitable dummy load, in lieu of the permanent antenna under the following conditions :

- (1) perform the AC line conducted tests with the permanent antenna to determine compliance with the Section 15.207 limits outside the transmitter's fundamental emission band;
- (2) retest with a dummy load in lieu of the permanent antenna to determine compliance with the Section 15.207 limits within the transmitter's fundamental emission band.

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	3115	3115
Calibration Date	Dec. 18, 2008	Dec. 24, 2008	Jul. 28, 2008
Calibration Due Date	Dec. 18, 2009	Jun 24, 2010	Jan. 28, 2010

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2) Conducted Emissions Test

Equipment	EMI Test Receiver	LISN	Signal Generator
Registration No.	EW-2251	EW-0090	EW-0423
Manufacturer	R&S	ROHDESCHWARZ	IFR
Model No.	ESCI	ESH3-Z5	2023B
Calibration Date	Oct. 28, 2008	Jan. 20, 2009	Apr. 15, 2009
Calibration Due Date	Oct. 28, 2009	Jan. 20, 2010	Apr. 15, 2010

Equipment	Pulse Limiter
Registration No.	EW-0698
Manufacturer	R&S
Model No.	ESH3-Z2
Calibration Date	Feb. 03, 2009
Calibration Due Date	Feb. 03, 2010