

Dorel Juvenile Group

Application
For
Certification

2.4GHz Frequency Hopping Spread Spectrum Parent Unit

(FCC ID: MNJ08028R)

HK09080342-2
MN/cl
September 16, 2009

- The test report only allows to be revised within the retention period unless further standard or the requirement was noticed.
- This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

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

INTERTEK TESTING SERVICES

MEASUREMENT/TECHNICAL REPORT

Dorel Juvenile Group - Model: 08028R
FCC ID: MNJ08028R

This report concerns (check one:)		Original Grant <input checked="" type="checkbox"/>	Class II Change <input type="checkbox"/>
Equipment Type : <u>DXX - Lower Power Transmitter</u>			
Deferred grant requested per 47 CFR 0.457(d)(1)(ii)?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
		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 <input type="checkbox"/>	No <input checked="" type="checkbox"/>
If no, assumed Part 15, Subpart C for intentional radiator - the new 47 CFR [10-01-08 Edition] Provision.			
Report prepared by:	Nip Ming Fung, Melvin Intertek Testing Services Hong Kong Ltd. 2/F., Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong. Phone : 852-2173-8535 Fax: 852-2741-1693		

INTERTEK TESTING SERVICES

Table of Contents

1.0 General Description	4
1.1 Product Description	4
1.2 Test Methodology	4
1.3 Test Facility	4
2.0 System Test Configuration	6
2.1 Justification	6
2.2 EUT Exercising Software	6
2.3 Details of EUT and Description of Peripherals	7
2.4 Measurement Uncertainty	8
2.5 Equipment Modification	8
3.0 Emission Results	10
3.1 Field Strength Calculation	11
3.2 Radiated Emission Configuration Photograph	12
3.3 Radiated Emission Data	12
3.4 Radiated Emission on the Bandedge	17
3.5 Line Conducted Configuration Photograph	18
3.6 Line Conducted Emission Data	18
3.7 Transmitter Duty Cycle Calculation	20
4.0 Equipment List	22
Appendix - Exhibits of Application for Certification	

INTERTEK TESTING SERVICES

EXHIBIT 1 GENERAL DESCRIPTION

INTERTEK TESTING SERVICES

1.0 General Description

1.1 Product Description

The 08028R is a 2.4GHz Frequency Hopping Spread Spectrum Parent Unit of Baby monitor operating at frequency range of 2402MHz to 2480MHz with 40 physical hopping channels and 20 logical hopping channels. The EUT is powered by a 100-240VAC to 9.0VDC 500mA adaptor. It has a power button, and other 5 buttons to control the brightness, volume, and turn the screen on or off. It receives video and audio signals from the corresponding baby unit, and display the baby unit's camera vision to the screen. It also transmits synchronization signals.

The antenna used in unit is integral, and the tested sample is a prototype.

The circuit description is saved with filename: descri.pdf

1.2 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2003). Preliminary radiated scans were performed in the Open Area Test Site only to determine worst case modes. All radiated measurements were performed in Open Area Test Sites. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application.

1.3 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data and conducted data are 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.

INTERTEK TESTING SERVICES

**EXHIBIT 2
SYSTEM TEST CONFIGURATION**

INTERTEK TESTING SERVICES

2.0 System Test Configuration

2.1 Justification

For emissions testing, the equipment under test (EUT) was setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, all cables (if any) were manipulated to produce worst case emissions.

For the measurements, the EUT is attached to a plastic stand if necessary and placed on the wooden turntable. If the Parent Unit attaches to peripherals, they are connected and operational (as typical as possible).

The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance.

Measurements of the radiated signal level of the fundamental frequency component of the emission was performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage.

Analyzer resolution is 100 kHz or greater for frequencies below 1000 MHz. The resolution is 1 MHz or greater for frequencies above 1000 MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

Radiated emission measurement were performed 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 to 40 GHz, whichever is lower.

Determination of pulse desensitization was made according to *Hewlett Packard Application Note 150-2, Spectrum Analysis... Pulsed RF*. The effective period (τ_{eff}) was referred to $txon.pdf$. With the resolution bandwidth 1MHz and spectrum analyzer IF bandwidth 3 dB, the pulse desensitization factor was 0 dB.

2.2 EUT Exercising Software

The EUT exercise program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use.

INTERTEK TESTING SERVICES

2.3 Details of EUT and Description of Peripherals

Details of EUT:

An AC adaptor and/or a battery (provided with the unit) were used to power the device. Their description are listed below.

- (1) Parent Unit: An AC adaptor (100-240VAC to 9.0VDC 500mA, Model: ZDA090050US) (Supplied by Client)
- (2) Parent Unit battery: A "Ni-MH" type rechargeable battery pack 3.6V, 850mAh

Description of Peripherals:

- (1) Baby Unit backup battery: 4 "AA" size 1.5VDC battery (Supplied by Intertek)
- (2) Baby Unit: Model: 08028T, FCC ID: MNJ08028T (Supplied by Client)
- (3) Baby Unit: An AC adaptor (100-240VAC to 9.0VDC 500mA, Model: ZDA090050US) (Supplied by Client)

INTERTEK TESTING SERVICES

2.4 Measurement Uncertainty

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

2.5 Equipment Modification

Any modifications installed previous to testing by Dorel Juvenile Group will be incorporated in each production model sold/leased in the United States.

No modifications were installed by Commercial & Electrical Division, Intertek Testing Services Hong Kong Ltd.

All the items listed under section 2.0 of this report are confirmed by:

Confirmed by:

*Nip Ming Fung, Melvin
Supervisor
Intertek Testing Services
Agent for Dorel Juvenile Group*



Signature

September 16, 2009 Date

INTERTEK TESTING SERVICES

**EXHIBIT 3
EMISSION RESULTS**

INTERTEK TESTING SERVICES

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.

INTERTEK TESTING SERVICES

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) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

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

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 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 is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

RA = 52.0 dB μ V
AF = 7.4 dB
CF = 1.6 dB
AG = 29.0 dB
FS = RR + LF
FS = 23 + 9 = 32 dB μ V/m

RR = 23.0 dB μ V
LF = 9.0 dB

Level in μ V/m = Common Antilogarithm [(32 dB μ V/m)/20] = 39.8 μ V/m

INTERTEK TESTING SERVICES

3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission

at 72.025 MHz

The worst case radiated emission configuration photographs are saved with filename: config photos.pdf

3.3 Radiated Emission Data

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

Judgement : Passed by 5.9 dB margin

TEST PERSONNEL:



Tester Signature

Koo Wai Ip, Engineer
Typed/Printed Name

September 16, 2009
Date

INTERTEK TESTING SERVICES

Company: Dorel Juvenile Group
 Model: 08028R
 Mode : TX-Channel 1

Date of Test: August 12-18, 2009

Table 1, Parent Unit

Radiated Emissions Pursuant to FCC Part 15 Section 15.249(a) Requirements

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Average Factor (dB)	Calculated at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
V	2402.000	108.0	33	29.4	41.8	62.6	94.0	-31.4
V	*4804.000	50.7	33	34.9	41.8	10.8	54.0	-43.2
H	7206.000	45.5	33	37.9	41.8	8.6	54.0	-45.4
H	9608.000	42.5	33	40.4	41.8	8.1	54.0	-45.9
H	*12010.000	41.7	33	40.5	41.8	7.4	54.0	-46.6
H	14412.000	41.2	33	40.0	41.8	6.4	54.0	-47.6

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
V	2402.000	108.0	33	29.4	104.4	114.0	-9.6
V	*4804.000	50.7	33	34.9	52.6	74.0	-21.4
H	7206.000	45.5	33	37.9	50.4	74.0	-23.6
H	9608.000	42.5	33	40.4	49.9	74.0	-24.1
H	*12010.000	41.7	33	40.5	49.2	74.0	-24.8
H	14412.000	41.2	33	40.0	48.2	74.0	-25.8

- NOTES:
1. Peak detector is used for the emission measurement.
 2. All measurements were made at 3 meters. Radiated 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 radiated 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 is used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of part 15.205.

Test Engineer: Koo Wai Ip

Test Report Number: HK09080342-2
 FCC ID: MNJ08028R

INTERTEK TESTING SERVICES

Company: Dorel Juvenile Group
 Model: 08028R
 Mode : TX-Channel 20

Date of Test: August 12-18, 2009

Table 2, Parent Unit

Radiated Emissions Pursuant to FCC Part 15 Section 15.249(a) Requirements

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Average Factor (dB)	Calculated at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
V	2440.000	107.8	33	29.4	41.8	62.4	94.0	-31.6
V	*4880.000	50.4	33	34.9	41.8	10.5	54.0	-43.5
H	*7320.000	45.3	33	37.9	41.8	8.4	54.0	-45.6
H	9760.000	42.2	33	40.4	41.8	7.8	54.0	-46.2
H	*12200.000	41.7	33	40.5	41.8	7.4	54.0	-46.6
H	14640.000	43.0	33	38.4	41.8	6.6	54.0	-47.4

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
V	2440.000	107.8	33	29.4	104.2	114.0	-9.8
V	*4880.000	50.4	33	34.9	52.3	74.0	-21.7
H	*7320.000	45.3	33	37.9	50.2	74.0	-23.8
H	9760.000	42.2	33	40.4	49.6	74.0	-24.4
H	*12200.000	41.7	33	40.5	49.2	74.0	-24.8
H	14640.000	43.0	33	38.4	48.4	74.0	-25.6

- NOTES:
1. Peak detector is used for the emission measurement.
 2. All measurements were made at 3 meters. Radiated 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 radiated 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 is used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of part 15.205.

Test Engineer: Koo Wai Ip

Test Report Number: HK09080342-2
 FCC ID: MNJ08028R

INTERTEK TESTING SERVICES

Company: Dorel Juvenile Group
 Model: 08028R
 Mode : TX-Channel 40

Date of Test: August 12-18, 2009

Table 3, Parent Unit

Radiated Emissions Pursuant to FCC Part 15 Section 15.249(a) Requirements

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Average Factor (dB)	Calculated at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
V	2480.000	107.8	33	29.4	41.8	62.4	94.0	-31.6
V	*4960.000	50.5	33	34.9	41.8	10.6	54.0	-43.4
H	*7440.000	45.5	33	37.9	41.8	8.6	54.0	-45.4
H	9920.000	42.2	33	40.4	41.8	7.8	54.0	-46.2
H	*12400.000	41.7	33	40.5	41.8	7.4	54.0	-46.6
H	14880.000	43.2	33	38.4	41.8	6.8	54.0	-47.2

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
V	2480.000	107.8	33	29.4	104.2	114.0	-9.8
V	*4960.000	50.5	33	34.9	52.4	74.0	-21.6
H	*7440.000	45.5	33	37.9	50.4	74.0	-23.6
H	9920.000	42.2	33	40.4	49.6	74.0	-24.4
H	*12400.000	41.7	33	40.5	49.2	74.0	-24.8
H	14880.000	43.2	33	38.4	48.6	74.0	-25.4

- NOTES:
1. Peak detector is used for the emission measurement.
 2. All measurements were made at 3 meters. Radiated 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 radiated 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 is used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of part 15.205.

Test Engineer: Koo Wai Ip

Test Report Number: HK09080342-2
 FCC ID: MNJ08028R

INTERTEK TESTING SERVICES

Company: Dorel Juvenile Group
Model: 08028R
Mode : Talk

Date of Test: August 12-18, 2009

Table 4, Parent Unit

**Radiated Emissions
Pursuant to FCC Part 15 Section 15.209 Requirements**

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
V	36.012	39.6	16	10.0	33.6	40.0	-6.4
V	72.025	43.1	16	7.0	34.1	40.0	-5.9
H	180.062	29.8	16	20.0	33.8	43.5	-9.7
H	216.075	32.2	16	17.0	33.2	46.0	-12.8
H	336.025	28.4	16	24.0	36.4	46.0	-9.6
H	*408.025	27.9	16	24.0	35.9	46.0	-10.1
H	456.025	25.0	16	26.0	35.0	46.0	-11.0
H	504.025	24.8	16	26.0	34.8	46.0	-11.2

- NOTES: 1. Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters. Radiated 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 radiated 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.
- * Emission within the restricted band meets the requirement of part 15.205.

Test Engineer: Koo Wai Ip

INTERTEK TESTING SERVICES

3.4 Radiated Emission on the Bandedge, FCC Rule 15.249(d)

From the following plots, they show that the fundamental emissions are confined in the specified band (2400MHz to 2483.5MHz). In case of the fundamental emissions are within two standard bandwidths from the bandedge, the delta measurement technique is used for determining bandedge compliance. Standard bandwidth is the bandwidth specified by ANSI C63.4 (2003) for frequency being measured.

Emissions radiated outside of the specified frequency bands, except harmonics, are attenuated by 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation, which meet the requirement of part 15.249(d).

Radiated emission on bandedge plots are saved with filename: emission.pdf

Bandedge compliance is determined by applying marker-delta method, i.e.

Resultant field strength = Fundamental emissions - delta from the plot

Resultant field strength for the lowest and/or highest channel(s), with corresponding peak and average values are calculated as follows:

Lowest channel (peak) = $104.4\text{dB}\mu\text{V}/\text{m} - 39.68\text{dB} = 64.72\text{dB}\mu\text{V}/\text{m}$

Highest channel (peak) = $104.2\text{dB}\mu\text{V}/\text{m} - 41.92\text{dB} = 62.28\text{dB}\mu\text{V}/\text{m}$

Lowest channel (average) = $62.6\text{dB}\mu\text{V}/\text{m} - 39.68\text{dB} = 22.92\text{dB}\mu\text{V}/\text{m}$

Highest channel (average) = $62.4\text{dB}\mu\text{V}/\text{m} - 41.92\text{dB} = 20.48\text{dB}\mu\text{V}/\text{m}$

Therefore, the resultant field strength meets the general radiated emission limit in section 15.209, which does not exceed $74\text{dB}\mu\text{V}/\text{m}$ and $54\text{dB}\mu\text{V}/\text{m}$ for peak and average limits respectively.

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 expected variations in temperature and supply voltage were considered.

INTERTEK TESTING SERVICES

3.5 Line Conducted Configuration Photograph

Worst Case Line-Conducted Configuration

at 0.1815MHz

The worst case line conducted configuration photographs are saved with filename: config photos.pdf

3.6 Line Conducted Emission Data

The data on the following pages list the significant emission frequencies, the limit, and the margin of compliance.

Judgement : Passed by 7.27 dB margin compared with average limit

TEST PERSONNEL:



Tester Signature

Koo Wai Ip, Engineer
Typed/Printed Name

September 16, 2009
Date

INTERTEK TESTING SERVICES

Company: Dorel Juvenile Group
Model: 08028R

Date of Test: August 12-18, 2009

Conducted Emissions Pursuant to FCC Part 15 Section 15.207 Requirements

The conducted emission test result is saved with filename: conduct.pdf

INTERTEK TESTING SERVICES

3.7 Transmitter Duty Cycle Calculation, FCC Rule 15.35(b, c)

Parent Unit: (When no Baby Unit is detected)

Duty Cycle (DC) = Maximum ON time in 100ms/100ms
= 808us/100ms

Average Factor (AF) = $20 \log (DC)$
= $20 * \log (0.00808)$
= -41.8 dB

The EUT antenna output port was connected to the input of the spectrum analyzer. The analyzer center frequency was set to EUT RF channel carrier. The SPAN function on the analyzer was set to ZERO. The transmitter ON time was determined from the resultant time-amplitude display:

Please refer to the attached plots for more details:

The plots of Transmitter ON Time Measurements are saved as filename: txon.pdf

Please refer to Technical Description (descri.pdf) for more details.

INTERTEK TESTING SERVICES

**EXHIBIT 4
EQUIPMENT LIST**

INTERTEK TESTING SERVICES

4.0 Equipment List

1) Radiated Emissions Test

Equipment	Biconical Antenna	Log Periodic Antenna	EMI Test Receiver
Registration No.	EW-0954	EW-0446	EW-0014
Manufacturer	EMCO	EMCO	R&S
Model No.	3104C	3146	ESVS30
Calibration Date	Jun 01, 2009	Oct. 02, 2008	Jun 01, 2009
Calibration Due Date	Jun 01, 2010	Apr. 02, 2010	Jun 01, 2010

Equipment	Spectrum Analyzer	Broad-Band Horn Antenna with frequency range 14G - 40GHz	Double Ridged Guide Antenna
Registration No.	EW-2188	EW-1679	EW-1015
Manufacturer	AGILENTTECH	SCHWARZBECK	EMCO
Model No.	E4407B	BBHA9170	3115
Calibration Date	Dec. 18, 2008	Feb. 10, 2009	Jul. 28, 2008
Calibration Due Date	Dec. 18, 2009	Feb. 10, 2010	Jan. 28, 2010

Equipment	Digital Multimeter	Spectrum Analyzer 40GHz
Registration No.	EW-1237	EW-2253
Manufacturer	FLUKE	R&S
Model No.	179	FSP40
Calibration Date	Sep. 01, 2008	Aug. 12, 2008
Calibration Due Date	Oct. 01, 2009	Nov. 12, 2009

2) Conducted Emissions Test

Equipment	EMI Test Receiver	Pulse Limiter	Artificial Mains
Registration No.	EW-2251	EW-0698	EW-0192
Manufacturer	R&S	R&S	R&S
Model No.	ESCI	ESH3-Z2	ESH3-Z5
Calibration Date	Oct. 28, 2008	Feb. 03, 2009	Nov. 12, 2008
Calibration Due Date	Oct. 28, 2009	Feb. 03, 2010	Nov. 12, 2009