

FCC PART 15.247

TEST REPORT

For

SVAT Electronics

4080 Montrose Road, Niagara Falls, ON, Canada

FCC ID: SMH-LVTW502B

Report Type: Original Report	Product Name: Levana Twinkle502 Product Type: 2.4 GHz Digital Video Baby Monitor
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Report Number: RSZ110608001-00	
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* This report contains data that are not covered by the NVLAP accreditation and are marked with an asterisk "★" (Rev.2)

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *SVAT Electronics's* product, model number: *LV-TW502B (FCC ID: SMH-LVTW502B)* (the "EUT") in this report is a baby unit of *Levana Twinkle502*, which was measured approximately: 8.9 cm (L) x 7.6 cm (W) x 13.4 cm (H), rated input voltage: DC 1.5V *4 AAA battery or DC 6.0 V adapter.

Adapter information:

Model: GPE060A-060080-1;

Input: AC 100-240V, 50/60 Hz, 0.2A;

Output: DC 6.0V, 800 mA, 4.8W

All measurement and test data in this report was gathered from production sample serial number: 1106005 (Assigned by BACL, Shenzhen). The EUT was received on 2010-10-08.

Objective

This report is prepared on behalf of *SVAT Electronics* in accordance with Part 2-Subpart J, Part 15-Subparts A, B and C of the Federal Communication Commissions rules.

The tests were performed in order to determine the compliance of the EUT with FCC Part 15-Subpart C section 15.203, 15.205, 15.207, 15.209 and 15.247 rules.

Related Submittal(s)/Grant(s)

Submitted with the Part of a system FCC ID: SMH-LVTW502P

FCC ID: SMHLVTW501B

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on December 06, 2010. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is an ISO/IEC 17025 accredited laboratory, and is accredited by National Voluntary Laboratory Accredited Program (Lab Code 200707-0).



The current scope of accreditations can be found at <http://ts.nist.gov/Standards/scopes/2007070.htm>

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in engineering mode which was selected by manufacturer.

Equipment Modifications

No modification was made to the unit tested.

EUT Exercise Software

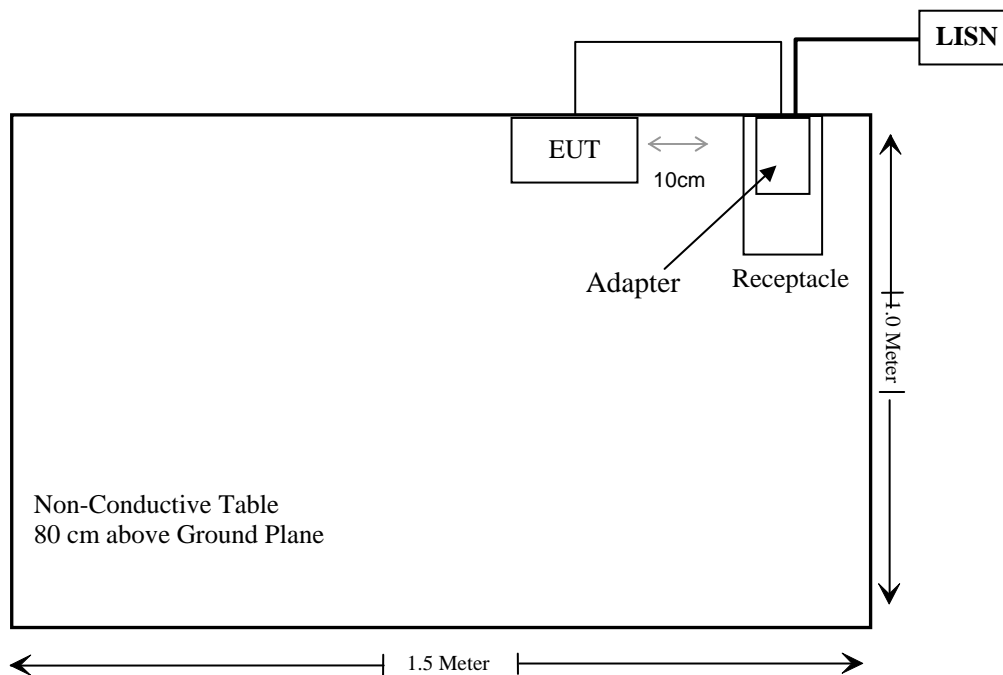
N/A

External I/O Cable

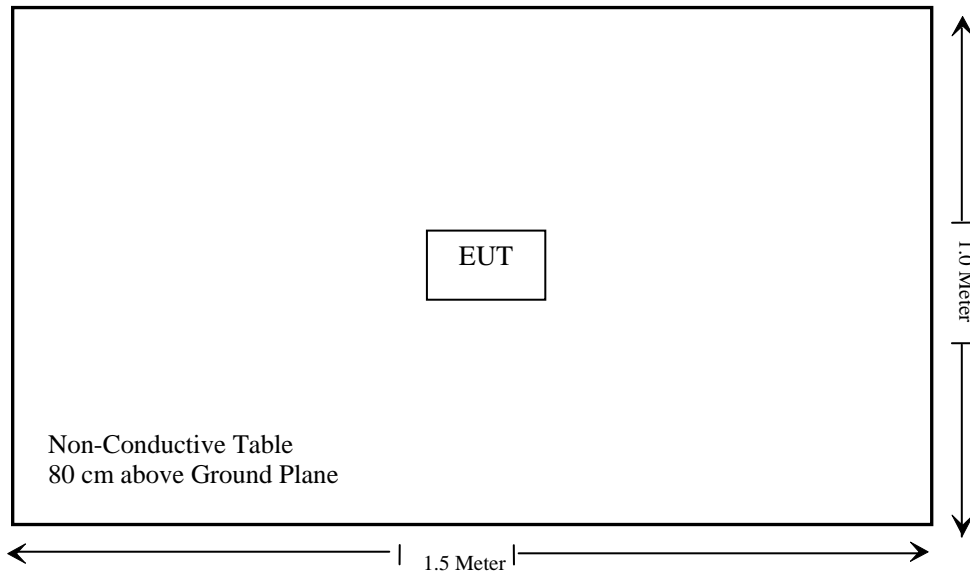
Cable Description	Length(m)	From/Port	To
Unshielded Detachable USB Cable	1.9	Adapter	EUT

Block Diagram of Test Setup

Transmitting mode (adapter)



Transmitting mode (battery)



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.247 (i) & §2.1091	RF Exposure Information (MPE)	Compliance*
§15.203	Antenna Requirement	Compliance*
§15.207(a)	AC Line Conducted Emissions	Compliance*
§15.205, §15.209 & §15.247(d)	Radiated Emissions	Compliance*
§15.247(a)(1)	20 dB Emission Bandwidth	Compliance*
§15.247(a)(1)	Channel Separation Test	Compliance*
§15.247(a)(1)(iii)	Time of Occupancy (Dwell Time)	Compliance*
§15.247(a)(1)(iii)	Quantity of hopping channel Test	Compliance*
§15.247(b)(1)	Peak Output Power Measurement	Compliance*
§15.247(d)	Band Edges	Compliance*

Note: 1) The EUT (The wireless camera of the Baby monitor system) is fully identical to the original certified device with FCC ID: SMHLVTW501B, the difference between them are the model number, product name and the wireless monitor that operates with, see the details in the table hereinafter.

	Original Product	New Product
FCC ID	SMHLVTW501B	SMH-LVTW502B
Model Name	LV-TW501B baby unit	LV-TW502B
Product Name	Levana Twinkle501	Levana Twinkle502
FCC ID of Wireless Monitor	SMHLVTW501P	SMH-LVTW502P

2) Compliance*, based on engineering justification, all data of original filing can be represented for the current product under the new conditions.

FCC §15.247 (i) & §2.1091 – RF EXPOSURE INFORMATION

Applicable Standard

According to FCC §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission’s guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated.

Limits for General Population/Uncontrolled Exposure

Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz
 * = Plane-wave equivalent power density

Test Data

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

Where: S = power density (in appropriate units, e.g. mW/cm²)
 P = power input to the antenna (in appropriate units, e.g., mW).
 G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.
 R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

Maximum peak output power at antenna input terminal: 16.40 (dBm)
 Maximum peak output power at antenna input terminal: 43.65 (mW)
 Prediction distance: 20 (cm)
 Predication frequency: 2404 (MHz)
 Antenna Gain (typical): 2 (dBi)
 Antenna Gain (typical): 1.58 (numeric)
 The worst case is power density at predication frequency at 20 cm: 0.014 (mW/cm²)
 MPE limit for general population exposure at prediction frequency: 1.0 (mW/cm²)

Result: The device meets FCC MPE at 20 cm distance.

FCC §15.203 – ANTENNA REQUIREMENT

Applicable Standard

According to FCC §15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

- a. Antenna must be permanently attached to the unit.
- b. Antenna must use a unique type of connector to attach to the EUT.

Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

And according to FCC §15.247 (b), if the transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Results

The device has the integrated antenna with 2.0 dBi, the end users are not allowed to access it, please refer to the EUT internal photos.

FCC §15.207(a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC §15.207

Results

Please refer to the test report with FCC ID: SMHLVTW501B.

FCC §15.205, §15.209 & §15.247(d) – RADIATED EMISSIONS

Applicable Standard

FCC §15.205; §15.209; §15.247(d)

Results

Please refer to the test report with FCC ID: SMHLVTW501B

FCC §15.247(a) (1)-CHANNEL SEPARATION TEST

Applicable Standard

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater provided the systems operate with an output power no greater than 125 mW.

Results

Please refer to the test report with FCC ID: SMHLVTW501B

FCC §15.247(a) (1) – 20 dB BANDWIDTH TESTING

Applicable Standard

Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

Results

Please refer to the test report with FCC ID: SMHLVTW501B

FCC §15.247(a) (1) (iii) - QUANTITY OF HOPPING CHANNEL TEST

Applicable Standard

Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

Results

Please refer to the test report with FCC ID: SMHLVTW501B

FCC §15.247(a) (1) (iii) - TIME OF OCCUPANCY (DWELL TIME)

Applicable Standard

Frequency hopping systems in the 2400-2483.5 MHz shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

Results

Please refer to the test report with FCC ID: SMHLVTW501B

FCC §15.247(b) (1) - PEAK OUTPUT POWER MEASUREMENT

Applicable Standard

According to §15.247(b) (1), for frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725–5850 MHz band: 1 watt. And for all other frequency hopping systems in the 2400–2483.5 MHz band: 0.125 watts.

Results

Please refer to the test report with FCC ID: SMHLVTW501B

FCC §15.247(d) - BAND EDGES TESTING

Applicable Standard

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Results

Please refer to the test report with FCC ID: SMHLVTW501B

******* END OF REPORT *******