

Compliance test report ID

180612-1TRFWL

Date of issue
August 25, 11

FCC 47 CFR Part 15 Subpart C, §15.249

Operation in the 902–928 MHz, 2400–2483.5 MHz, 5725–5875 MHz and 24.0–24.25 GHz

Applicant **Standard Innovation Corporation**
Product **Personal Massager Remote Control**
Model **1500**
FCC ID **ZUE1500**

Nemko Canada Inc., a testing laboratory, is accredited by the Standards Council of Canada. The tests included in this report are within the scope of this accreditation




Test location

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August 25, 2011

Date

Limits of responsibility

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

This test report has been completed in accordance with the requirements of ISO/IEC 17025. All results contain in this report are within Nemko Canada's ISO/IEC 17025 accreditation.

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Section 1: Report summary

1.1 Applicant

Standard Innovation Corporation
 1130 Morrison Drive, Suite 330
 Ottawa, Ontario, Canada
 K2H 9N6

1.2 Manufacturer

Standard Innovation Corporation
 1130 Morrison Drive, Suite 330
 Ottawa, Ontario, Canada
 K2H 9N6

1.3 Test specifications

FCC 47 CFR Part 15 Subpart C, §15.249

Operation in the 902–928 MHz, 2400–2483.5 MHz, 5725–5875 MHz and 24.0–24.25 GHz

1.4 Statement of compliance

In the configuration tested, the EUT was found compliant.

Testing was completed against all relevant requirements of the test standard. Results obtained indicate that the product under test complies in full with the requirements tested. The test results relate only to the items tested.

See “Summary of test results” for full details.

1.5 Exclusions

None

1.6 Test report revision history

Revision #	Details of changes made to test report
TRF	Original report issued

Section 2: Summary of test results

2.1 FCC Part 15 general requirements' test results

Part	Test description	Verdict
§15.207(a)	Conducted limits	NA ¹
§15.215(c)	20 dB bandwidth	Pass
Notes: ¹ the device is a DC powered Device		

2.2 FCC Part 15 Subpart C, 15.249 test results

Part	Test description	Verdict
§15.249(a)	Radiated emissions not in restricted bands	Pass
§15.249(d)	Spurious emissions (except harmonics)	Pass

Section 3: Equipment under test (EUT) details

3.1 Sample information

Receipt date July 22, 2011
Nemko sample ID number 1

3.2 EUT information

Product name Personal Massager Remote Control
Model 1500
Serial number none
FCC ID ZUE1500

3.3 Technical information

Operating band 2.4–2.4835 GHz
Operating frequency 2.404, 2.456 and 2.477 GHz
Modulation type GFSK
Occupied bandwidth 1.995 MHz
Emission designator F1D
Power requirements 3 Vdc (All tests were performed with new battery.)
Antenna information Integral antenna

3.4 Product description and theory of operation

The We-Vibe-3 (WV-3) is a battery-operated portable personal massager device intended for couples to use together during intercourse. It is inductively charged by means of an accessory battery charger cradle. Also included is a simple 1-button RF Remote Control that uses the 2.4 GHz ISM band to control the WV-3.

Two vibration motors with offset weights are controlled by means of a microcontroller that causes several vibration modes to be executed. The inductive charger also features a micro that controls the battery charging process by limiting the maximum charge time when the WV-3 sits in the charge cradle.

3.5 EUT exercise details

The EUT was controlled by remote computer for continuous transmission on desired channel.

3.6 EUT setup diagram

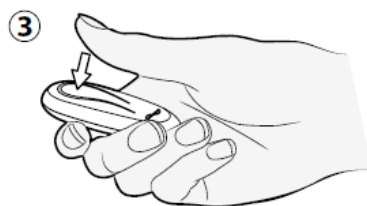


Diagram 3.6-1: Setup diagram

3.7 EUT sub assemblies NONE

Description	Brand name	Model/Part number	Serial number	Rev.
Remote Control	We-Vibe-3	1500	Not assigned.	

Section 4: Engineering considerations

4.1 Modifications incorporated in the EUT

There were no modifications performed to the EUT during this assessment.

4.2 Technical judgment

None

4.3 Deviations from laboratory tests procedures

No deviations were made from laboratory test procedures.

Section 5: Test conditions

5.1 Atmospheric conditions

Temperature: 15–30 °C
Relative humidity: 20–75 %
Air pressure: 86–106 kPa

When it is impracticable to carry out tests under these conditions, a note to this effect stating the ambient temperature and relative humidity during the tests shall be recorded and stated.

5.2 Power supply range

The normal test voltage for equipment to be connected to the mains shall be the nominal mains voltage. For the purpose of the present document, the nominal voltage shall be the declared voltage, or any of the declared voltages $\pm 5\%$, for which the equipment was designed.

Section 6: Measurement uncertainty

6.1 Uncertainty of measurement

Nemko Canada Inc. has calculated measurement uncertainty and is documented in EMC/MUC/001 "Uncertainty in EMC measurements." Measurement uncertainty was calculated using the methods described in CISPR 16-4 Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC measurements; as well as described in UKAS LAB34: The expression of Uncertainty in EMC Testing. Measurement uncertainty calculations assume a coverage factor of $K=2$ with 95% certainty.

Section 7: Test equipment

7.1 Test equipment list

Equipment	Manufacturer	Model no.	Asset no.	Cal cycle	Next cal.
3 m EMI test chamber	TDK	SAC-3	FA002047	1 year	Mar. 09/12
Bilog antenna	Sunol	JB3	FA002108	1 year	Jan. 31/12
Horn antenna #2	EMCO	3115	FA000825	1 year	Feb. 04/12
1–18 GHz pre-amplifier	JCA	JCA118-503	FA002091	1 year	Sept. 23/11
Multimeter	Fluke	16	FA001831	1 year	Jan. 26/12
Receiver/spectrum analyzer	Rohde & Schwarz	ESU 26	FA002043	1 year	April 27/12
50 Coax cable	HUBER + SUHNER	None	FA002015	1 year	Sept. 1/11
Horn antenna 18–26.5 GHz	Electro-metrics	SH-50/60-1	FA000479	—	VOU
18–26 GHz pre-amplifier	Narda	BBS-1826N612	FA001550	—	VOU
Note: VOU = Verify on use					

Section 8: Testing data

8.1 Clause 15.215(c) Emission bandwidth

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80 % of the permitted band in order to minimize the possibility of out-of-band operation.

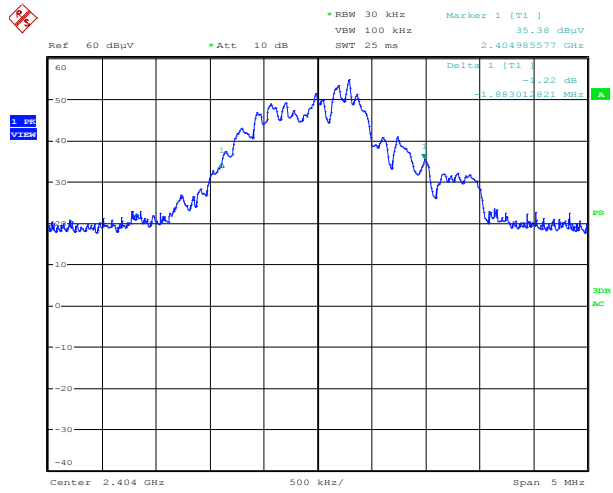
8.1.1 Test summary

Test date	Aug 2, 2011	Test engineer	Kevin Rose	Verdict	Pass
Temperature	23 °C	Air pressure	1002 mbar	Relative humidity	45 %

8.1.2 Observations/special notes

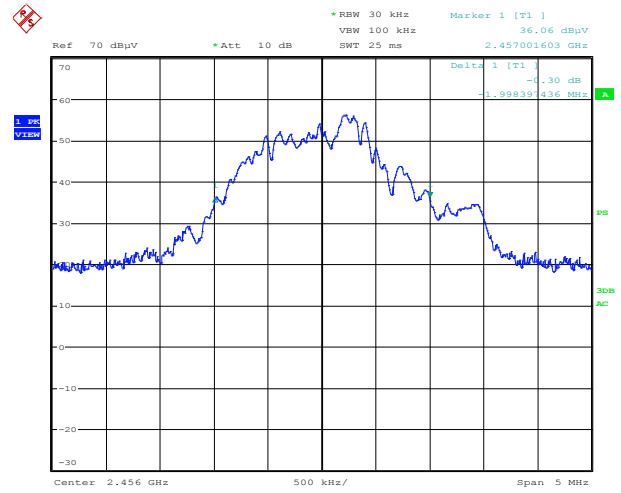
The test was performed using peak detector of the spectrum analyzer with RBW no narrower than 1 % of the emission bandwidth.

8.1.3 Test data



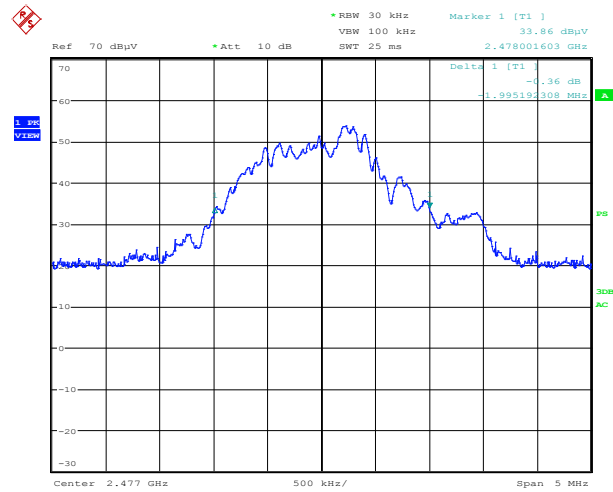
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Plot 8.2-1: 20 dB bandwidth Low channel



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Plot 8.2-2: 20 dB bandwidth Mid channel



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Plot 8.2-3: 20 dB bandwidth High channel

Table 8.1-1: 20 dB bandwidth results

Channel/Frequency, (MHz)	20 dB bandwidth, (MHz)
2404	1.883
2456	1.998
2477	1.995

8.2 Clause 15.249(a) Field strength of radiated emissions not in restricted bands

(a) Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Table 8.2-1: Field strength limits

Fundamental frequency (MHz)	Field strength of fundamental		Field strength of spurious emissions	
	(mV/m)	(dBµV/m)	(µV/m)	(dBµV/m)
2400–2483.5	50	94	500	54

(e) As shown in §15.35(b), for frequencies above 1000 MHz, the field strength limits in paragraphs (a) and (b) of this section are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For point-to-point operation under paragraph (b) of this section, the peak field strength shall not exceed 2500 millivolts/meter (128 dBµV/m) at 3 meters along the antenna azimuth.

8.2.1 Test summary

Test date	July 25 2011	Test engineer	Kevin Rose	Verdict	Pass
Temperature	22 °C	Air pressure	1002 mbar	Relative humidity	45 %

8.2.2 Observations/special notes

- The spectrum was searched from 30 MHz to the 10th harmonic.
- The EUT was measured on three orthogonal axis.
- All measurements were performed at a distance of 3 m.
- All measurements were performed:
 - within 30–1000 MHz range: using a peak detector with 100 kHz/300 kHz RBW/VBW,
 - above 1 GHz: using peak detector with 1 MHz/3 MHz RBW/VBW for peak results and using a duty cycle/average factor for average results calculations.

8.2.3 Test data

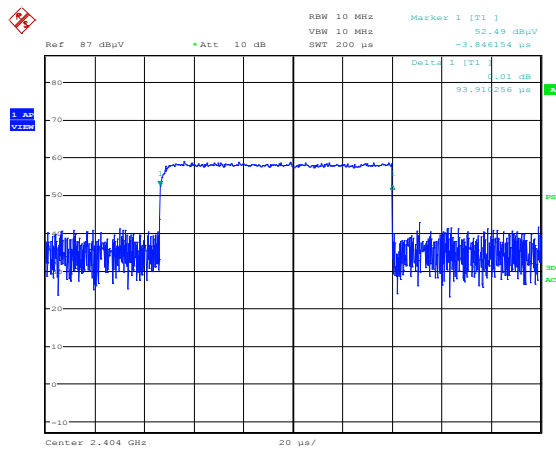
Duty cycle/average factor calculations

§15.35(c) When the radiated emission limits are expressed in terms of the average value of the emission, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds.

Duty cycle/average factor calculations:

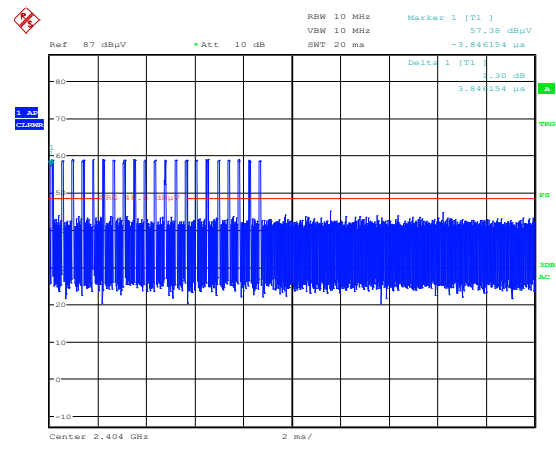
$$\text{Duty cycle / average factor} = 20 \times \log_{10} \left(\frac{T_{x100ms}}{100ms} \right)$$

Width of Pulse ms:	0.09391	Tx _{100 ms}	1.9721154
Number of Pulses:	21		
Duty Cycle Correction dB:	-34.1014		



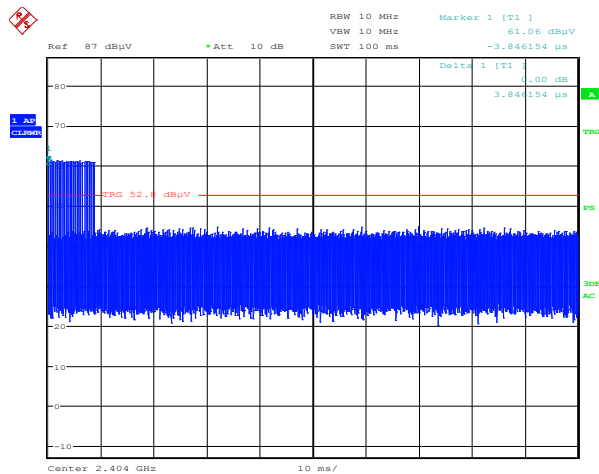
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Plot 8.2-1: Pulse width



Date: 25.JUL.2011 22:40:32

Plot 8.2-2: Number of pulses



Date: 25.JUL.2011 22:36:25

Plot 8.2-3: Tx within 100 ms

8.2.3 Test data, continued

Table 8.2-2: Field strength results

Frequency (MHz)	Polarization V/H	Peak Field strength (dBµV/m)	Peak limit (dBµV/m)	Margin (dB)	Duty cycle factor (dB)	Peak Field strength (dBµV/m)	Avg. limit (dBµV/m)	Margin (dB)
<i>Fundamental</i>								
2404	V	94.222	114	19.778	34.1	60.122	94	33.878
2456	V	95.016	114	18.984	34.1	60.916	94	33.084
2477	V	94.421	114	19.579	34.1	60.321	94	33.679
2404	H	101.023	114	12.977	34.1	66.923	94	27.077
2456	H	101.176	114	12.824	34.1	67.076	94	26.924
2477	H	101.434	114	12.566	34.1	67.334	94	26.666
<i>Harmonics</i>								
4808	V	50.57	74	23.43	34.1	16.47	54	37.53
	H	49.47	74	24.53	34.1	15.37	54	38.63
4912	V	49.74	74	24.26	34.1	15.64	54	38.36
	H	49.63	74	24.37	34.1	15.53	54	38.47
4954	V	50.44	74	23.56	34.1	16.34	54	37.66
	H	48.45	74	25.55	34.1	14.35	54	39.65
7212	V	57.17	74	16.83	34.1	23.07	54	30.93
	H	55.56	74	18.44	34.1	21.46	54	32.54
7368	V	59.31	74	14.69	34.1	25.21	54	28.79
	H	60.05	74	13.95	34.1	25.95	54	28.05
7431	V	60.05	74	13.95	34.1	25.95	54	28.05
	H	59.93	74	14.07	34.1	25.83	54	28.17
9616	V	60.97	74	13.03	34.1	26.87	54	27.13
	H	62.88	74	11.12	34.1	28.78	54	25.22
9824	V	61.31	74	12.69	34.1	27.21	54	26.79
	H	60.9	74	13.1	34.1	26.8	54	27.2
9908	V	62.44	74	11.56	34.1	28.34	54	25.66
	H	62.02	74	11.98	34.1	27.92	54	26.08
Note: Field strength includes correction factor of antenna, cable loss, amplifier, and attenuators where applicable.								

8.3 Clause 15.249(d) Spurious emissions (except for harmonics)

(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

Table 8.5-1: Field strength limits

Frequency (MHz)	Field strength		Measurement distance (m)
	($\mu\text{V/m}$)	($\text{dB}\mu\text{V/m}$)	
0.009–0.490	2400/F	$67.6-20 \times \log_{10}(F)$	300
0.490–1.705	24000/F	$87.6-20 \times \log_{10}(F)$	30
1.705–30.0	30	29.5	30
30–88	100	40.0	3
88–216	150	43.5	3
216–960	200	46.0	3
above 960	500	54.0	3

Notes:

- F = fundamental frequency in kHz
- In the emission table above, the tighter limit applies at the band edges.
- For frequencies above 1 GHz the limit on peak RF emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test.

8.5.1 Test summary

Test date	July 25 2011	Test engineer	Kevin Rose	Verdict	Pass
Temperature	22 °C	Air pressure	1002 mbar	Relative humidity	45 %

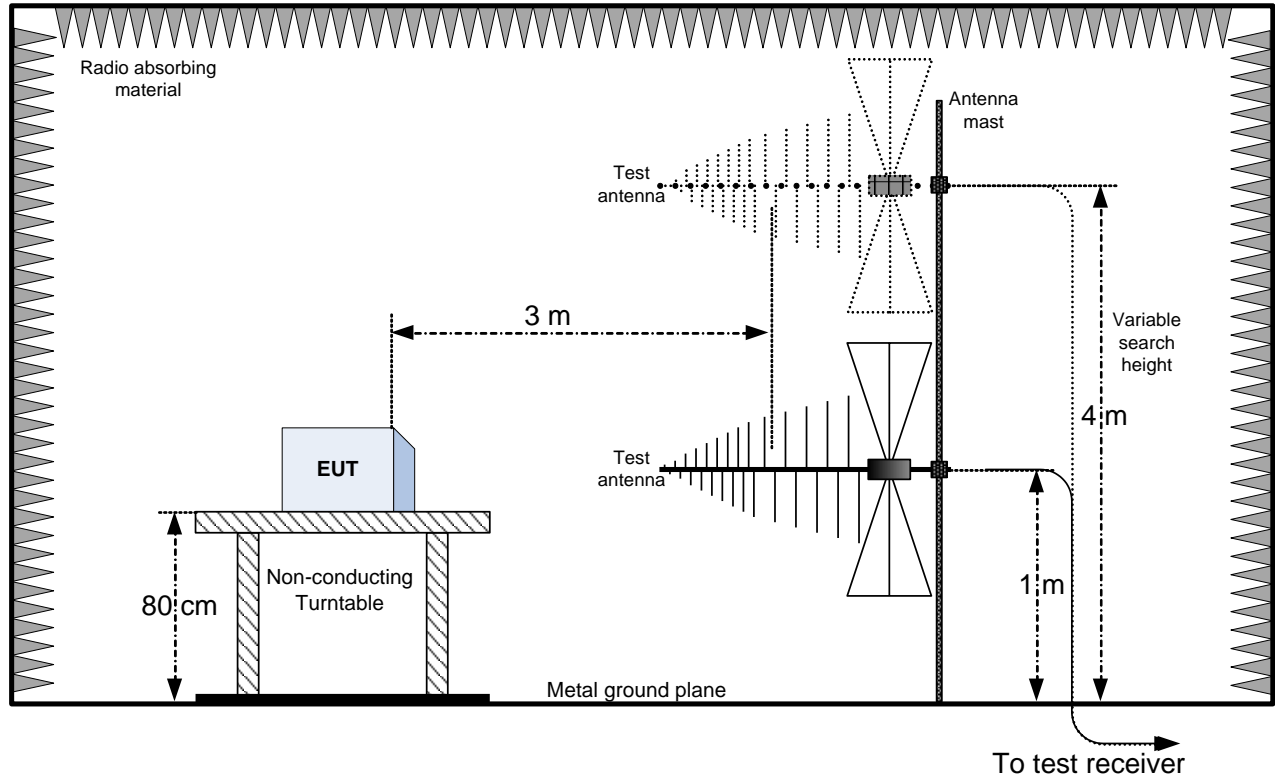
8.5.2 Results/observations/special notes

- The spectrum was searched from 30 MHz to the 10th harmonic.
- The EUT was measured on three orthogonal axis.
- All measurements were performed at a distance of 3 m.
- All measurements were performed:
 - within 30–1000 MHz range: using a peak detector with 100 kHz/300 kHz RBW/VBW,
 - above 1 GHz: using peak detector with 1 MHz/3 MHz RBW/VBW for peak results
 - and
 - using a duty cycle/average factor for average results calculations.

Results: No Emissions were detected within 20dB of the Limit

Section 9: Block diagrams of test set-ups

9.1 Radiated emissions set-up



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