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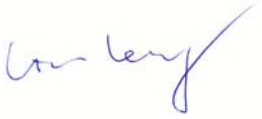
Test Report:	104318-1TRFWL
Applicant:	Prastel Spa Via del Vetraio, 7 40138 Bologna Italia
Apparatus:	T4PR02
FCC ID:	ON3TXPR02
In Accordance With:	FCC Part 15 Subpart C, 15.231 Periodic operation in the band 40.66-40.70MHz and above 70 MHz.
Tested By:	Nemko Canada Inc. 303 River Road Ottawa, Ontario K1V 1H2
Authorized By:	 Heng Lin, EMC/Wireless Specialist
Date:	April 03, 2008
Total Number of Pages:	18

Report Summary

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15, Subpart C. Radiated tests were conducted in accordance with ANSI C63.4-2003. Radiated emissions are made on an open area test site. A description of the test facility is on file with the FCC.

The assessment summary is as follows:

Apparatus Assessed: T4PR02

Specification: FCC Part 15 Subpart C, 15.231

Compliance Status: Complies

Exclusions: None

Non-compliances: None

Report Release History: Original Release

Author: David Duchesne, Senior EMC Specialist

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.

TABLE OF CONTENTS

Section 1 : Equipment Under Test

1.1 Product Identification

The Equipment Under Test was identified as follows:
Radio Transmitter – Garage door opener (MN# T4PR02)

1.2 Samples Submitted for Assessment

The following samples of the apparatus have been submitted for type assessment:

Sample No.	Description	Serial No.
1	Garage door opener	None

The first samples were received on: March 25, 2008

1.3 Theory of Operation

The T4PR02 4 channel and the T2PR02 2 channel transmitter transmits the rolling security code at 433MHz and is fitted with a remote self-learning function on the receiver. They are powered by a lithium 3V battery. The T2PR02 and T4PR02 utilize the same printed circuit board. (the only difference is that T2PR02 has only 2 pushbuttons)

1.4 Technical Specifications of the EUT

Operating Frequency: 433.920MHz

Emission Designator: K1D

Modulation: OOK

Antenna Data: Integral Antenna

Power Source: 3VDC Battery

Section 2 : Test Conditions

2.1 Specifications

The apparatus was assessed against the following specifications:

FCC Part 15 Subpart C, 15.231

Periodic operation in the band 40.66-40.70 MHz and above 70 MHz.

2.2 Deviations From Laboratory Test Procedures

No deviations were made from laboratory test procedures.

2.3 Test Environment

All tests were performed under the following environmental conditions:

Temperature range	:	15 – 30 ^{o}C
Humidity range	:	20 - 75 %
Pressure range	:	86 - 106 kPa
Power supply range	:	+/- 5% of rated voltages

2.4 Test Equipment

Equipment	Manufacturer	Model No.	Asset/Serial No.	Next Cal.
Bilog	Sunol	JB3	FA002108	Jan. 21/09
Receiver/Spectrum Analyzer	Rohde & Schwarz	ESU 26	FA002043	Dec. 07/08
50 Coax cable	HUBER + SUHNER	None	FA002074	July 03/08
Horn Antenna #2	EMCO	3115	FA000825	Jan. 15/09
1.0 – 2.0 GHz Amplifier	JCA	12-400	FA001498	Aug. 21/08
2.0 – 4.0 GHz Amplifier	JCA	24-600	FA001496	Aug. 21/08
4.0 – 8.0 GHz Amplifier	JCA	48-600	FA001497	Aug. 21/08
Spectrum Analyzer	Rohde & Schwarz	FSP	FA001920	June 19/08

2.5 Measurement Uncertainty

Nemko Canada measurement uncertainty has been calculated using guidance of UKAS LAB 34:2003 and TIA-603-B Nov 7, 2002. All calculations have been performed to provide a confidence level of 95% and can be found in Nemko Canada document MU-003.

Section 3 : Observations

3.1 Modifications Performed During Assessment

No modifications were performed during assessment.

3.2 Record Of Technical Judgements

Two model variants are provided to end user: MM# T4PR02, and MN# T2PR02. The difference is related to the number of pushbuttons (2 instead of 4). The two model variants have the same printed circuit.

3.3 EUT Parameters Affecting Compliance

The user of the apparatus could not alter parameters that would affect compliance.

3.4 Test Deleted

No Tests were deleted from this assessment.

3.5 Additional Observations

There were no additional observations made during this assessment.

Section 4 : Results Summary

This section contains the following:

FCC Part 15 Subpart C : Test Results

The column headed 'Required' indicates whether the associated clauses were invoked for the apparatus under test. The following abbreviations are used:

N	No: not applicable / not relevant.
Y	Yes: Mandatory i.e. the apparatus shall conform to these tests.
N/T	Not Tested, mandatory but not assessed. (See section 3.4 Test deleted)

The results contained in this section are representative of the operation of the apparatus as originally submitted.

4.1 FCC Part 15 Subpart C : Test Results

Part 15	Test Description	Required	Result
15.31(e)	Variation of Power source	N	N/A
15.207(a)	Powerline Conducted Emissions	N	N/A
15.209(a)	Radiated Emissions within Restricted Bands	Y	PASS
15.231(a)(1)	Manually operated transmitter	Y	PASS
15.231(a)(2)	Automatically activated transmitter	N	N/A
15.231(a)(3)	Periodic transmissions at regular predetermined intervals	N	N/A
15.231(a)(4)	Radiators used in cases of emergency	N	N/A
15.231(a)(5)	Set-up information for security systems	N	N/A
15.231(b)	Radiated Emissions	Y	PASS
15.231(c)	20dB Bandwidth	Y	PASS
15.231(d)	Devices operating within the frequency band 40.66-40.70 MHz	N	N/A
15.231(e)	Radiated emissions for Periodic radiators	N	N/A

Appendix A : Test Results

Clause 15.209(a) Radiated Emissions within Restricted Bands

Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvoltsmeter)	Measurement Distance (meters)
0.009-0.490	2400/F (kHz)	300
0.490-1.705	24000/F (kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Conditions:

Sample Number:	1	**Temperature (°C):**	21
Date:	March 26, 2008	**Humidity (%):**	60
Modification State:	0	**Tester:**	David Duchesne
		Laboratory:	3m Chamber

Test Results:

Freq. (MHz)	Peak Level Vert. (dBuV)	Peak Level Hor. (dBuV)	Transducer (dB) Vert.	Transducer (dB) Hor.	Peak Vert. Level (dBuV/m)	Peak Hor. Level (dBuV/m)	Limit (dBuV/m)	Margin Vert. (dB)	Margin Hor. (dB)
1301.634	68.5	67	-20.9	-20.8	47.6	46.2	54	6.4	7.8
3904.902	70.6	72	-18.8	-18.9	51.8	53.1	54	2.2	0.9
4338.78	67.1	69	-16.9	-16.8	50.2	52.2	54	3.8	1.8

- Transducer value includes: antennas factor, cable loss, amplifiers, and attenuators.
- All measurements were performed using a Peak Detector with 100kHz RBW/VBW below 1GHz and a 1MHz RBW/VBW above 1GHz at a distance of 3 meters.
- The Spectrum was searched from 30MHz to the 10th Harmonic.
- The EUT was measured on three orthogonal axis, with fresh battery.

Additional Observations:

These results apply to emissions found in the restricted bands defined in FCC Part 15 Subpart C, 15.205.

Clause 15.231(a) Conditions for intentional radiators to comply with periodic operation

The provisions of this section are restricted to periodic operation within the band 40.66-40.70 MHz and above 70 MHz. Except as shown in paragraph (e) of this section, the intentional radiator is restricted to the transmission of a control signal such as those used with alarm systems, door openers, remote switches, etc. Continuous transmissions, voice, video and the radio control of toys are not permitted. Data is permitted to be sent with a control signal. The following conditions shall be met to comply with the provisions for this periodic operation:

(1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

(2) A transmitter activated automatically shall cease transmission within 5 seconds after activation.

(3) Periodic transmissions at regular predetermined intervals are not permitted. However, polling or supervision transmissions, including data, to determine system integrity of transmitters used in security or safety applications are allowed if the total duration of transmissions does not exceed more than two seconds per hour for each transmitter. There is no limit on the number of individual transmissions, provided the total transmission time does not exceed two seconds per hour.

(4) Intentional radiators, which are employed for radio control purposes during emergencies involving fire, security, and safety of life, when activated to signal an alarm, may operate during the pendency of the alarm condition.

(5) Transmission of set-up information for security systems may exceed the transmission duration limits in paragraphs (a)(1) and (a)(2) of this section, provided such transmissions are under the control of a professional installer and do not exceed ten seconds after a manually operated switch is released or a transmitter is activated automatically. Such set-up information may include data.

Test Conditions:

Sample Number:	1	**Temperature (°C):**	21
Date:	March 26, 2008	**Humidity (%):**	60
Modification State:	0	**Tester:**	David Duchesne
		Laboratory:	Wireless

1) The EUT is manually triggered. See attached plot for the timing of manually trigger event

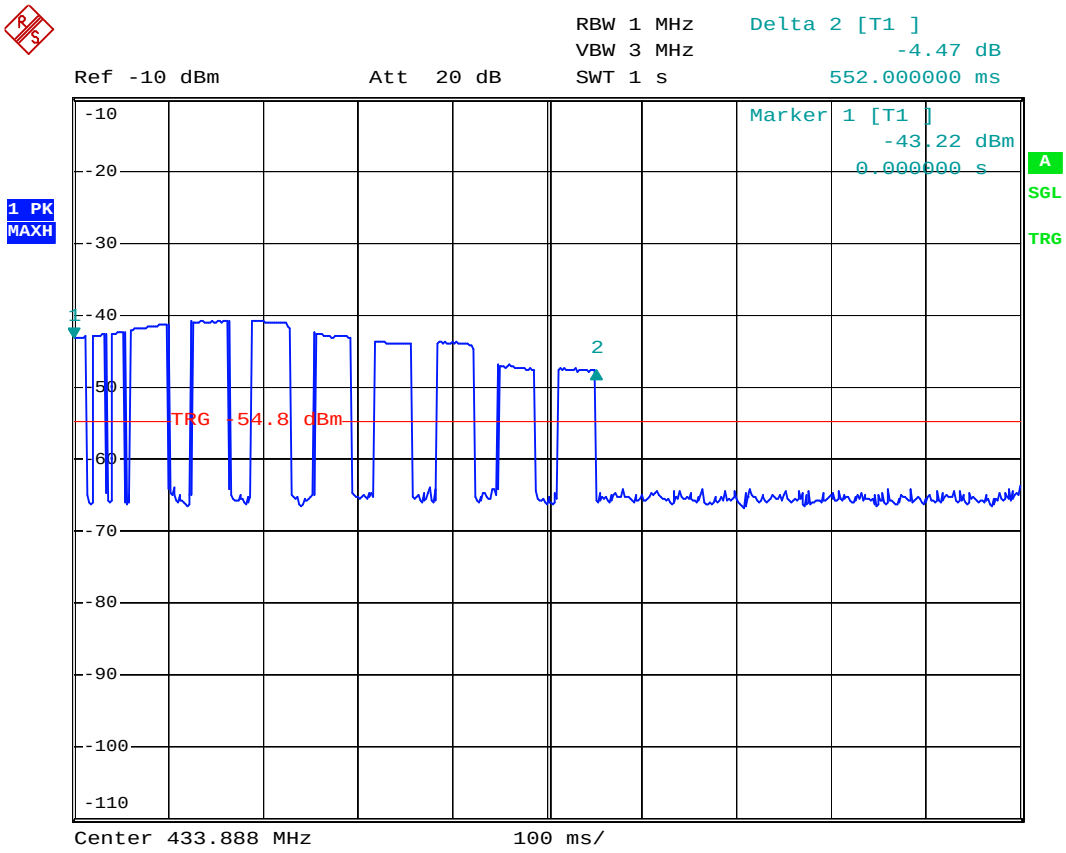
2) The EUT is not a automatic transmitter.

3) The EUT is not a periodic transmitter.

4) The EUT is not used to transmit alarm signals.

5) The EUT does not transmit set-up information.

Test Results:



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Clause 15.231(b) Radiated Emissions

In addition to the provisions of 15.205, the field strength of emissions from intentional radiators operated under this section shall not exceed the following:

Fundamental Frequency (MHz)	Field Strength of Fundamental (microvolts/meter)	Field Strength of Spurious Emissions (microvolts/meter)
40.66-40.70	2,250	225
70-130	1,250	125
130-174	1,250 to 3,750	125 to 375
174-260	3,750	375
260-470	3,750 to 12,500	375 to 1,250
Above 470	12,500	1,250

Test Conditions:

Sample Number:	1	**Temperature (°C):**	21
Date:	March 27, 2008	**Humidity (%):**	60
Modification State:	0	**Tester:**	David Duchesne
		Laboratory:	3m Chamber

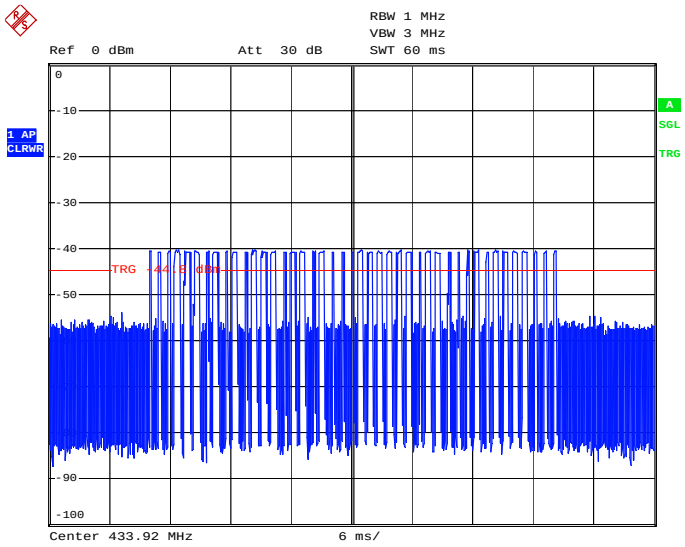
Test Results:

Freq. (MHz)	Peak Level Vert. (dBuV)	Peak Level Hor. (dBuV)	Transducer (dB) Vert.	Transducer (dB) Hor.	Peak Vert. Level (dBuV/m)	Peak Hor. Level (dBuV/m)	Peak Limit (dBuV/m)	Margin Vert. (dB)	Margin Hor. (dB)
433.878	52.3	50.5	18.2	18.7	70.5	69.2	100.8	30.3	31.6
867.756	21.5	20.3	24.4	24.9	45.9	45.2	80.8	34.9	35.6
1301.634	68.5	67	-20.9	-20.8	47.6	46.2	80.8	33.2	34.6
1735.512	68	67.7	-18.8	-18.8	49.2	48.9	80.8	31.6	31.9
2169.39	83.7	83	-26.1	-26	57.6	57	80.8	23.2	23.8
2603.268	86.7	85.2	-26	-25.9	60.7	59.3	80.8	20.1	21.5
3037.146	86.9	88.3	-24.1	-23.8	62.8	64.5	80.8	18	16.3
3471.024	86.7	86.7	-21.9	-21.8	64.8	64.9	80.8	16	15.9
3904.902	70.6	72	-18.8	-18.9	51.8	53.1	80.8	29	27.7
4338.78	67.1	69	-16.9	-16.8	50.2	52.2	80.8	30.6	28.6

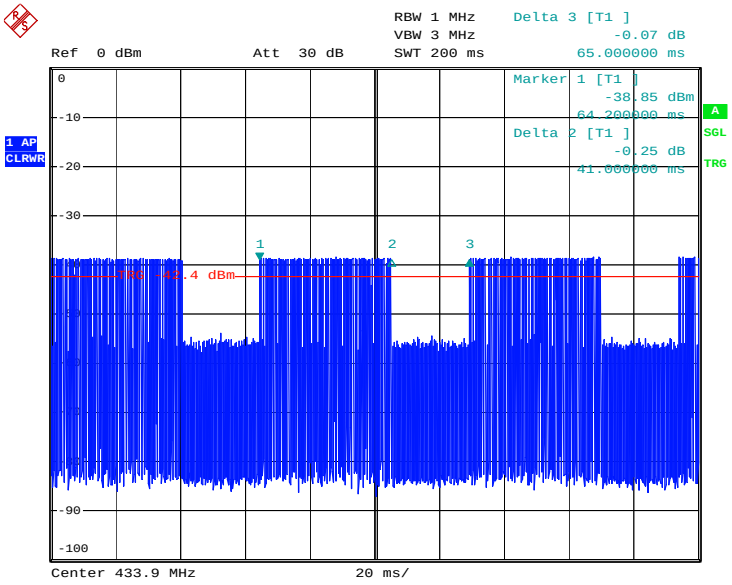
Freq. (MHz)	Peak Level Vert. (dBuV)	Peak Level Hor. (dBuV)	Transducer (dB) Vert.	Transducer (dB) Hor.	Duty Cycle Cor. (dB)	Average Vert. Level (dBuV/m)	Average Hor. Level (dBuV/m)	Average Limit (dBuV/m)	Margin Vert. (dB)	Margin Hor. (dB)
433.878	52.3	50.5	18.2	18.7	8.1	62.4	61.1	80.8	18.4	19.7
867.756	21.5	20.3	24.4	24.9	8.1	37.8	37.1	60.8	23	23.7
1301.634	68.5	67	-20.9	-20.8	8.1	39.5	38.1	60.8	21.3	22.7
1735.512	68	67.7	-18.8	-18.8	8.1	41.1	40.8	60.8	19.7	20
2169.39	83.7	83	-26.1	-26	8.1	49.5	48.9	60.8	11.3	11.9
2603.268	86.7	85.2	-26	-25.9	8.1	52.6	51.2	60.8	8.2	9.6
3037.146	86.9	88.3	-24.1	-23.8	8.1	54.7	56.4	60.8	6.1	4.4
3471.024	86.7	86.7	-21.9	-21.8	8.1	56.7	56.8	60.8	4.1	4
3904.902	70.6	72	-18.8	-18.9	8.1	43.7	45	60.8	17.1	15.8
4338.78	67.1	69	-16.9	-16.8	8.1	42.1	44.1	60.8	18.7	16.7

- Transducer value includes: antennas factor, cable loss, amplifiers, and attenuators.
- All measurements were performed using a Peak Detector with 100kHz RBW/VBW below 1GHz and a 1MHz RBW/VBW above 1GHz at a distance of 3 meters.
- The Spectrum was searched from 30MHz to the 10th Harmonic.
- The EUT was measured on three orthogonal axis, with fresh battery.

Duty Cycle:

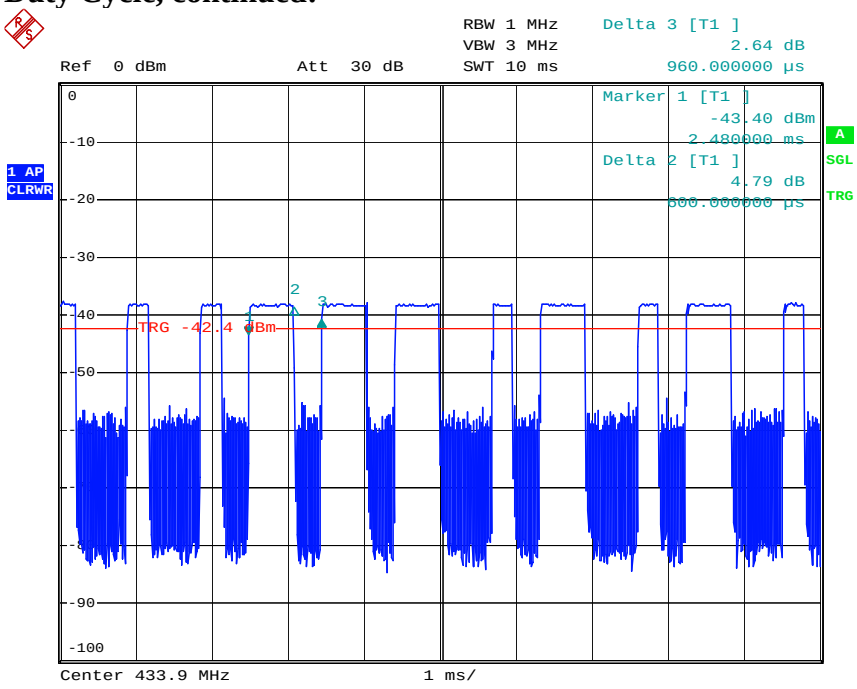


43 pulses per frame



Frame repeat time = 65msec
Therefore 1.53 frames in 100msec

Duty Cycle, continued:



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Digit time = 0.96msec
Digit on time = 0.6msec (time for long pulse)

Frame on-time assuming all long pulses = 0.6*43 = 25.8msec
On-time in 100msec = 1.53*25.8=39.474msec

Duty cycle correction = 20log(39.474/100) = -8.1dB

Clause 15.231(c) 20dB Bandwidth

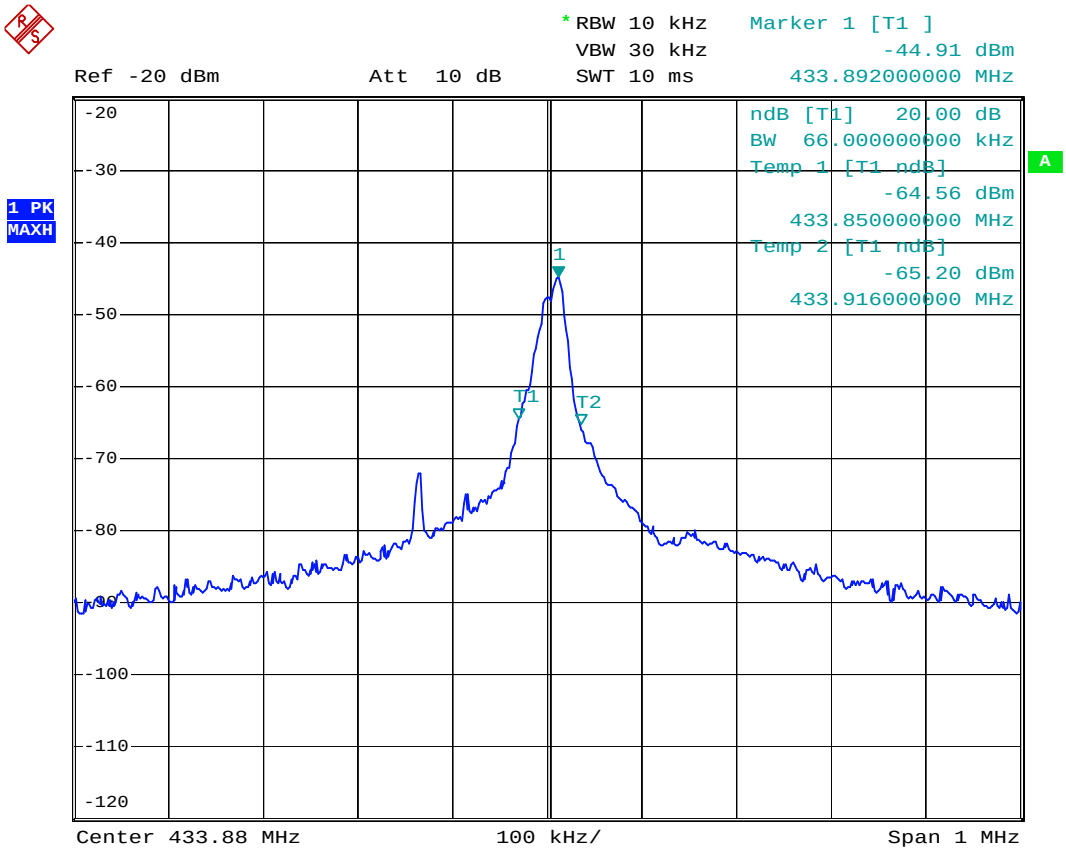
The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

Test Conditions:

Sample Number:	1	**Temperature (°C):**	21
Date:	March 26, 2008	**Humidity (%):**	60
Modification State:	0	**Tester:**	David Duchesne
		Laboratory:	Wireless

Test Results:

20dB Bandwidth:



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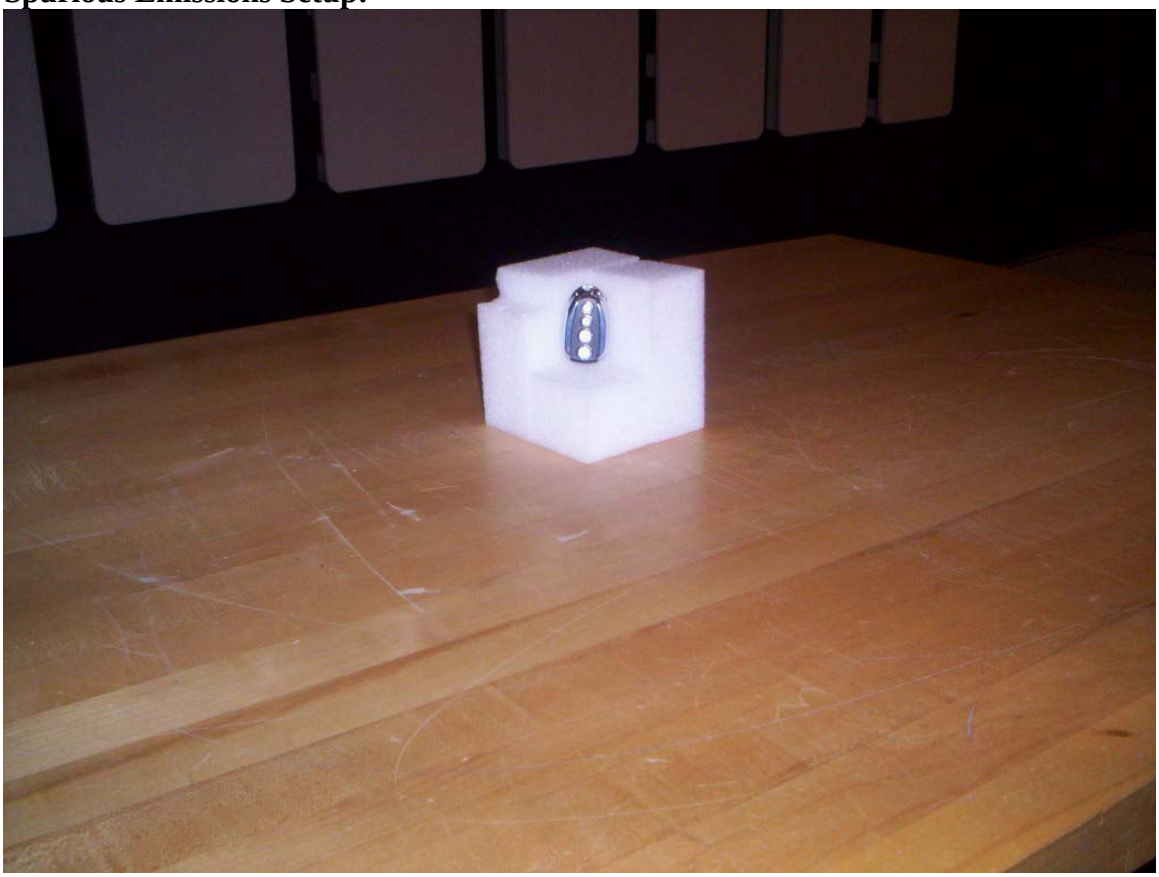
Appendix B : Setup Photographs

Spurious Emissions Setup:



Appendix C : Block Diagram of Test Setups

Test Site For Radiated Emissions