Standards Council of Canada
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Scope of Accreditation 75

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Portée d'accréditation 75

TM

Test Report:	6W62153
Applicant:	Ingrid Inc. 920 Cassatt Rd., Suite 220 Berwyn, PA 19312
Apparatus:	Ingrid Door Window Sensor IS440
FCC ID:	S9PIS440
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:	Jason Nixon, Telecom Specialist
Date:	April 4, 2006
Total Number of Pages:	19

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:	Ingrid Door Window Sensor IS440
Specification:	FCC Part 15 Subpart C, 15.231
Compliance Status:	Complies
Exclusions:	None
Non-compliances:	None
Report Release History:	Original Release

Author: Xu Jin, Wireless 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.

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Section 1 : Equipment Under Test

1.1 Product Identification

The Equipment Under Test was identified as follows:

Ingrid Door Window Sensor IS440

1.2 Samples Submitted for Assessment

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

Sample No.	Description	Serial No.
1	Ingrid Door Window Sensor IS440	N/A

The first samples were received on: Mar 15, 2006

1.3 Technical Specifications of the EUT

Manufacturer:	Ingrid Inc.
Operating Frequency:	345MHz
Emission Designator:	K1D
Modulation:	ASK
Antenna Data:	Integral
Power Source:	Internal battery operated

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.
Spectrum Analyzer	Rohde & Schwarz	FSU	FA001877	May 17/06
Spectrum Analyzer	Hewlett-Packard	8565E	FA000981	Sept. 15/06
Spectrum Analyzer Display	Hewlett-Packard	85662A	FA001309	May 18/06
Horn Antenna #2	EMCO	3115	FA000825	Dec. 16/06
Biconical (1) Antenna	EMCO	3109	FA000805	April 22/06
Log Periodic Antenna #1	EMCO	LPA-25	FA000477	Aug. 29/06
1.0 – 2.0 GHz Amplifier	JCA	12-400	FA001498	July 14/06
2.0 – 4.0 GHz Amplifier	JCA	24-600	FA001496	July 14/06

Section 3 : Observations

3.1 Modifications Performed During Assessment

No modifications were performed during assessment.

3.2 Record Of Technical Judgements

No technical judgements were made during the assessment.

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.

FCC Part 15 Subpart C: Test Results

Part 15	Test Description	Required	Result
15.207(a)	Powerline Conducted Emissions	N (1)	
15.209(a)	Radiated Emissions within Restricted Bands	Y	PASS
15.231(a)(1)	Manually operated transmitter	N	
15.231(a)(2)	Automatically activated transmitter	Y	PASS
15.231(a)(3)	Periodic transmissions at regular predetermined intervals	Y	PASS
15.231(a)(4)	Radiators used in cases of emergency	Y	PASS
15.231(a)(5)	Set-up information for security systems	N	
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	
15.231(e)	Radiated emissions for Periodic radiators	N	

Notes:
(1) The EUT is internal battery operated.

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:**	10°C
Date:	Mar 31, 2006	**Humidity:**	46%
Modification State:	0	**Tester:**	Xu Jin
		Laboratory:	OATS

Test Results:

See Attached Table for Results

Additional Observations:

The Spectrum was searched from 30MHz to the 4GHz.

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

The EUT was measured on three orthogonal axis. The EUT was tested using fresh new batteries.

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.

Only worst case data were reported.

Frequency (MHz)	Antenna	Polarity	RCVD Signal (dBuV)	Ant. Factor (dB)	Amp. Gain (dB)	Duty Cycle Corr.	Cable Loss (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1035.0000	Horn2	H	78.6	25.1	47.4	-19.6	2.9	59.2	74.0	14.8	Peak
								39.6	54.0	14.4	Average
1035.0000	Horn2	V	69.4	25.2	47.4	-19.6	2.9	50.1	74.0	23.9	Peak
								30.5	54.0	23.5	Average
1380.0000	Horn2	H	62.3	25.4	47.9	-19.6	3.5	43.3	74.0	30.7	Peak
								23.7	54.0	30.3	Average
1380.0000	Horn2	V	75.1	25.4	47.9	-19.6	3.5	56.1	74.0	17.9	Peak
								36.5	54.0	17.5	Average
2760.0000	Horn2	V	72.5	29.9	59.2	-19.6	5.5	48.7	74.0	25.3	Peak
								29.1	54.0	24.9	Average
2760.0000	Horn2	H	79.2	29.9	59.2	-19.6	5.5	55.4	74.0	18.6	Peak
								35.8	54.0	18.2	Average

Note 1: Antenna Legend: BC = Biconical, BL = Bilog, LP = Log-Periodic, Horn = Horn, ED = EMCO Dipole

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:**	23°C
Date:	Mar 28, 2006	**Humidity:**	50%
Modification State:	0	**Tester:**	Xu Jin
		Laboratory:	Wireless

Test Results:

(1) The EUT is not manual activated.

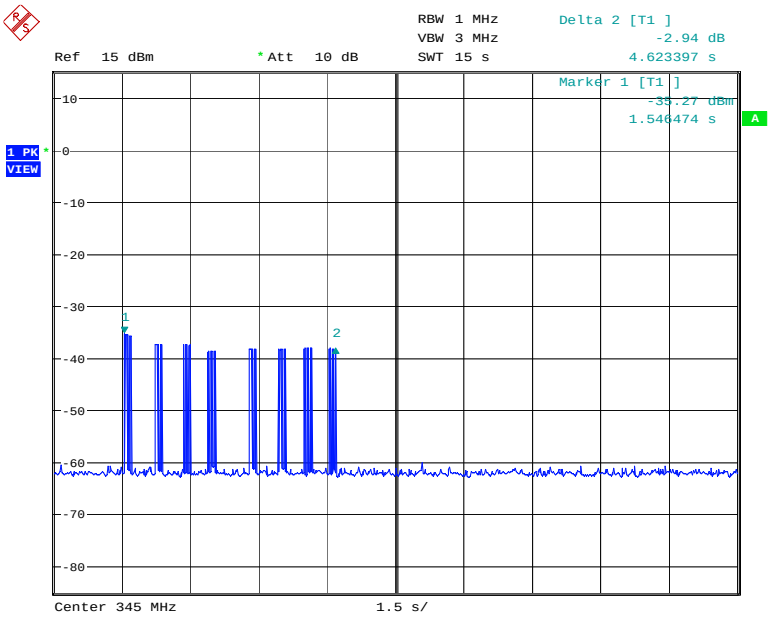
(2) See attached plot for the time for transmission.

(3) The complete supervisory transmission is less than 2 seconds.
A supervisory message occurs once per hour.

(4) The EUT is used in a security system but the transmission of packets does not occur for the entire alarm condition.

(5) The transmission time does not exceed the timings of (a)(1) or (a)(2).

Total Transmission time



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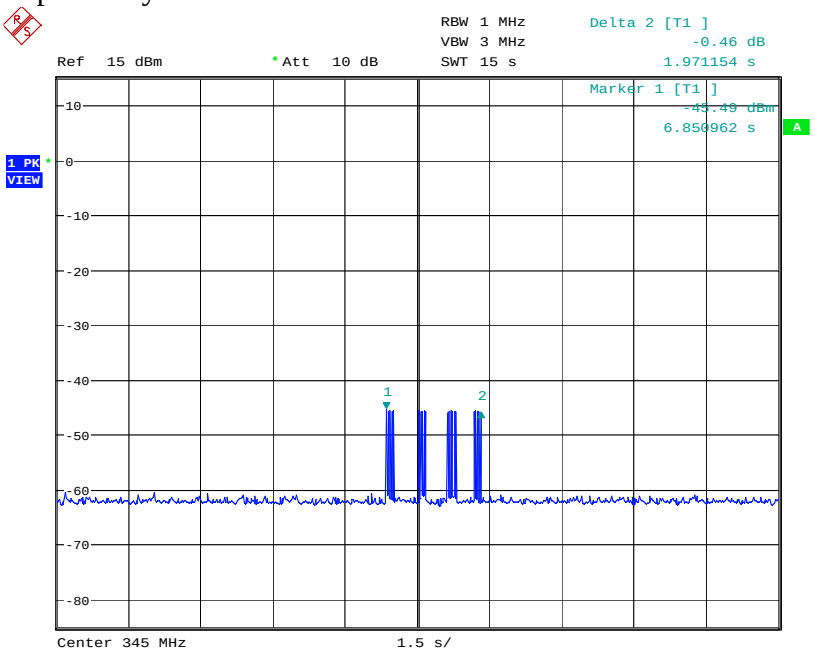
Supervisory Transmission Time



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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:**	10°C
Date:	Mar 31, 2006	**Humidity:**	46%
Modification State:	0	**Tester:**	Xu Jin
		Laboratory:	OATS

Test Results:

See Attached Table for Results

Additional Observations:

The Spectrum was searched from 30MHz to 4GHz.

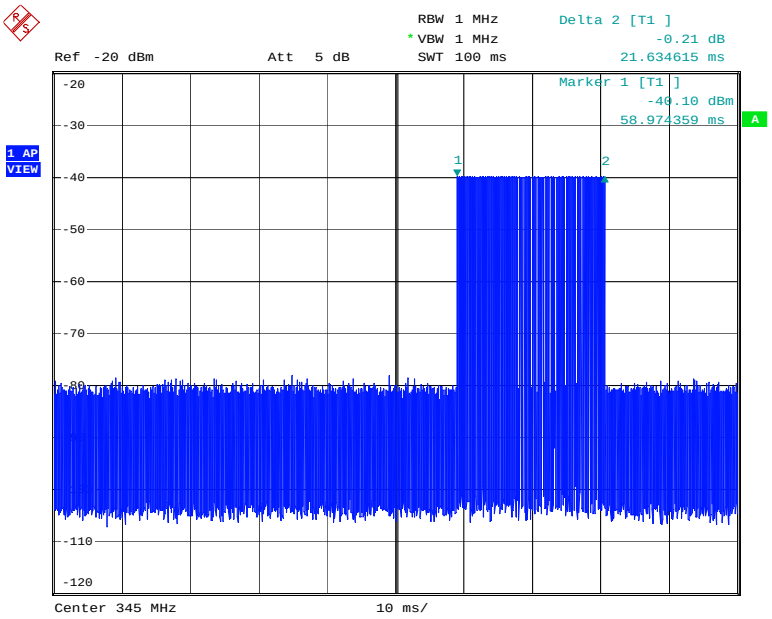
The EUT was measured on three orthogonal axis. The EUT was tested with fresh new batteries.

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.

Only worst case data were reported.

Freq. (MHz)	Ant	Pol. V/H	RCVD Signal (dBµV)	Ant. Factor (dB)	Amp. Gain (dB)	Duty Cycle Corr. (dB)	Cable Loss (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)
345	LP1	H	68.9	15.3	N/A	-19.6	2.7	67.3	77.26	9.96
345	LP1	V	59.5	14.8	N/A	-19.6	2.7	57.4	77.26	19.86
1725	Horn2	H	63.9	27.6	47.8	-19.6	4	28.1	57.26	29.16
1725	Horn2	V	64.5	27.5	47.8	-19.6	4	28.6	57.26	28.66
2070	Horn2	V	76.8	28.3	57.3	-19.6	4.5	32.7	57.26	24.56
2070	Horn2	H	74.1	28.3	57.3	-19.6	4.5	30	57.26	27.26
3105	Horn2	V	75.2	31	59	-19.6	5.1	32.7	57.26	24.56
3105	Horn2	H	79.6	30.9	59	-19.6	5.1	37	57.26	20.26
3450	Horn2	V	65.8	31.1	58.5	-19.6	6.4	25.2	57.26	32.06
3450	Horn2	H	78	31	58.5	-19.6	6.4	37.3	57.26	19.96
3795	Horn2	V	70.2	32.5	57.8	-19.6	6.7	32	57.26	25.26
3795	Horn2	H	69.5	32.3	57.8	-19.6	6.7	31.1	57.26	26.16

Note 1: Antenna Legend: BC = Biconical, BL = Bilog, LP = Log-Periodic, Horn = Horn, ED = EMCO Dipole



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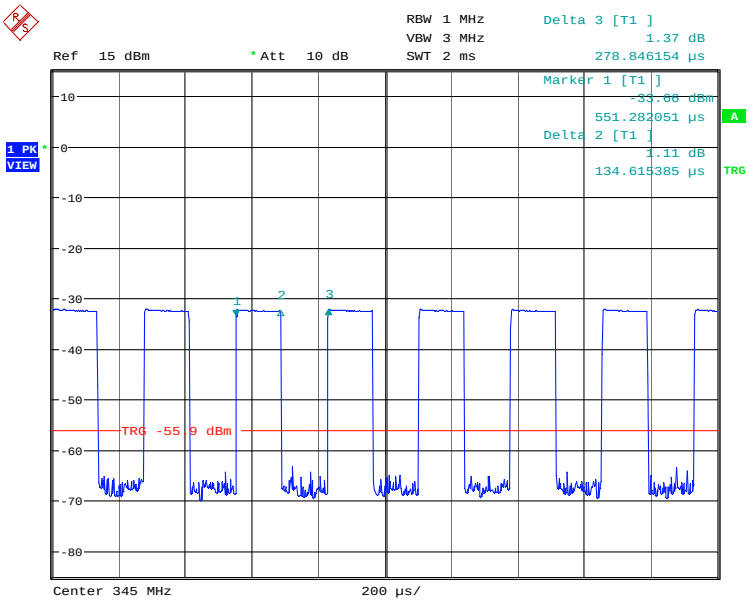

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Duty Cycle Correction Factor
= 20log((21.63msec × (134.6usec/278.8usec)*100%) /100msec)
=-19.6dB

Clause 15.231(c) 20dB Bandwidth

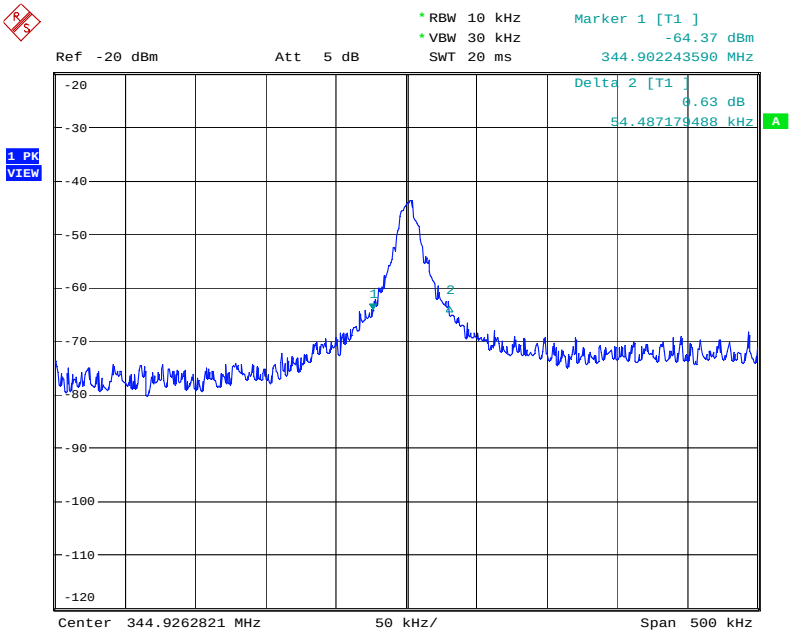
The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated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

Test Conditions:

Sample Number:	1	**Temperature:**	23°
Date:	Mar 22, 2006	**Humidity:**	50%
Modification State:	0	**Tester:**	Xu Jin
		Laboratory:	Wireless

Test Results: Pass

20dB Bandwidth: 54.49KHz



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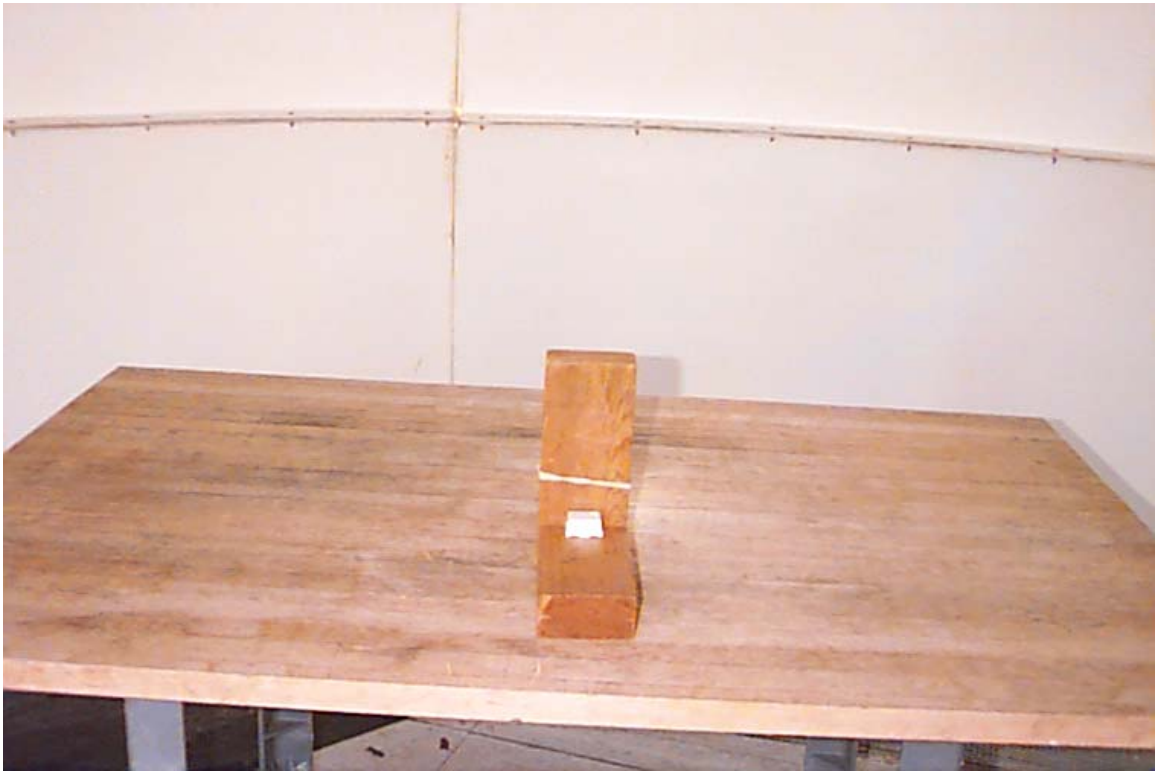
Appendix B : Setup Photographs

Spurious Emissions Setup:



Appendix C: Block Diagram of Test Setups

Test Site For Radiated Emissions