Elliott Laboratories Inc.
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408-245-7800 Phone
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May 12, 2004

Mark Morrissey
Unigen
45388 Warm Springs Blvd
Fremont, CA 94539

Subject: EMC Test Report, UGWR2USxxxx

Dear Mr. Morrissey:

A report has been created detailing the results of the electromagnetic compatibility testing performed on the UGWR2USxxxx. Please find this report enclosed. Please file the test report with the other documents contained in your technical file.

These actions will bring the EN 301 489-17 project on the UGWR2USxxxx to a close. In the future, if you intend to make any changes to the UGWR2USxxxx, please call us prior to making these changes to discuss the possible impact to the EN 301 489-17 status.

If you have any questions, please don't hesitate to call us at 408-245-7800.

Sincerely,

Mark Briggs

Mark Briggs
Vice President of Engineering

MB/dmg
Enclosure: Test Report

File: R55570

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Electromagnetic Compatibility Test Report For EN 301 489-17 V1.1.1 (2000-09) ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Wideband data and HIPERLAN equipment on the Unigen Model: UGWR2USxxxx

MANUFACTURER:	Unigen 45388 Warm Springs Blvd Fremont, CA 94539
TEST SITE:	Elliott Laboratories, Inc. 684 W. Maude Ave Sunnyvale, CA 94086
REPORT DATE:	May 12, 2004
FINAL TEST DATE:	May 6 and May 7, 2004
AUTHORIZED SIGNATORY:	Mark Briggs Vice President of Engineering

ACCREDITED

TABLE OF CONTENTS

SCOPE

The European Committee for Electrotechnical Standardization (CENELEC), the European Telecommunications Standards Institute (ETSI) and the International Electrotechnical Commission (IEC) publish standards regarding the electromagnetic compatibility of electronic devices. Electromagnetic compatibility tests have been performed on the Unigen Corporation model UGWR2USxxxx in accordance with these standards.

Electromagnetic compatibility test data has been taken pursuant to the relevant requirements of EN 301 489-01 V1.4.1, "Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements" and EN 301 489-17 V1.2.1 "ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Wideband data and HIPERLAN equipment."

Tests were performed in accordance with the current, published versions of the basic standards referenced in EN 301 489-17 and EN 301 489-1 V1.4.1 as outlined in Elliott Laboratories test procedures. The test data has been provided as an appendix to this report for reference.

The test results recorded herein are based on a single type test of the Unigen Corporation model UGWR2USxxxx and therefore apply only to the tested sample. The sample was selected and prepared by Mark Morrissey of Unigen

OBJECTIVE

The objective of the manufacturer is to comply with EN 301 489-17 V1.2.1 (2000-09). In the case of most equipment, this document requires testing to other EN specifications using the criteria contained in EN 301 489-17 and EN 301 489-1

In order to demonstrate compliance, the manufacturer or a contracted laboratory makes measurements and takes the necessary steps to ensure that the equipment complies with the appropriate technical standards.

STATEMENT OF COMPLIANCE

The tested sample of Unigen Corporation model UGWR2USxxxx complied with the requirements of EN 301 489-17 V1.1.1 (2000-09) given the performance criteria as specified by the manufacturer.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product that could result in increased emissions should be checked to ensure compliance has been maintained (i.e., printed circuit board layout changes, different enclosure, different line filter or power supply, harnessing and/or interface cable changes, etc.).

DEVIATIONS FROM THE STANDARD

No deviations were made from the EN 301 489-1 V1.4.and EN 301 489-17 V1.2.1 standards.

TEST RESULTS

The following tests were performed on the Unigen Corporation model UGWR2USxxxx. The results are based upon performance criteria defined by the manufacturer. The actual test results and associated performance criteria are contained within an appendix of this report.

EMISSIONS TESTING

Test	Port	Basic Standard	Level	Compliance Status
Radiated Emissions	Enclosure	EN 55022 :1998	N/A	N/A – note 1
Conducted Emissions	AC Power	EN 55022 :1998	N/A	N/A – note 2
Conducted Emissions	DC Power	EN 55022 :1998	N/A	N/A – note 3
Harmonic Current Emissions	AC Power	EN 61000-3-2	N/A	N/A – note 2
Voltage Fluctuations	AC Power	EN 61000-3-3	N/A	N/A – note 2

Note 1 – This test is only applicable to ancillary equipment. The radiated emissions requirements for radio equipment are covered under the Radio standard.
Note 2 – The EUT does not have an AC power port.
Note 3 – The EUT does not have a DC power port that would connect to a cable longer than 3m.

IMMUNITY TESTING

Test	Basic Standard	Level Required	Level Tested	Criterion Required	Criterion Met	Status
Radio frequency Electromagnetic Field	EN 61000-4-3	80-1000 MHz, 1400-2000 MHz 3 V/m, 80% 1 KHz AM		A / CT/CR	A / CT/CR	Complied
ElectroStatic Discharge	EN 61000-4-2	4 kV CD, 8 kV AD		B / TT/TR	A / TT/TR	Complied
Fast Transients Common Mode – AC Power Ports	EN 61000-4-4	N/A – The EUT is a module that will be installed in products. It is not intended to connect to a dc-power cable longer than 3m and all signal/interface ports are intended to connect to cables shorter than 3m. It does not have a dc power port and is not intended to be operated from an AC-DC adapter.				
Fast Transients Common Mode DC Power Ports	EN 61000-4-4					
Fast Transients Common Mode - Signal, Control, and Telecommunications Ports	EN 61000-4-4					
Radio frequency Common Mode,, AC Power Port	EN 61000-4-6					
Radio frequency Common Mode, DC Power Ports	EN 61000-4-6					
Radio frequency Common Mode, Signal, Control, and Telecommunications Ports	EN 61000-4-6					
Vehicular Surges	ISO 7637-1, ISO 7637-2					
Voltage Dips and Interrupts	EN 61000-4-11					
Surge, AC Power Port	EN 61000-4-5					
Surge, Telecommunications ports	EN 61000-4-5					

MEASUREMENT UNCERTAINTIES

ISO Guide 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level and were calculated in accordance with NAMAS document NIS 81.

Measurement Type	Measurement Unit	Frequency Range	Expanded Uncertainty
Conducted Emissions	dBuV	0.15 to 30 MHz	± 2.4 dB
Radiated Emissions	dBuV/m	30 to 1000 MHz	± 3.6 dB
AC Current Harmonics	Amps	50 to 2,000 Hz	± 0.12 %
AC Voltage Flicker	Voltage	N/A	± 0.12 %
	Pst, Plt	N/A	± 3.46 %
Radiated Immunity	V/m	80 – 2000 MHz	- 26.3%, + 29.97%
ESD	KV	N/A	± 8.6%
Fast Transients	Voltage	N/A	± 5.98 %
	Timing	N/A	± 8.60 %
Surge	Voltage	N/A	± 4.92 %
RF Common Mode (CDN method)	Vrms	0.15 –80 MHz	-12.64 %, +13.33 %
RF Common Mode (BCI method)	Vrms	0.15 –80 MHz	-13.45 %, +15.32 %
Voltage Dips	Voltage	N/A	± 2.32 %
	Timing	N/A	± 0.08mS

EQUIPMENT UNDER TEST (EUT) DETAILS

GENERAL

The Unigen Corporation model UGWR2USxxxx is a 2.4GHz wireless module which is designed to be integrated in various OEM products. The EUT was placed in a test fixture and the test fixture was treated as table-top equipment during testing. The electrical rating of the test fixture with the module installed is 4.7 Vdc, 0.23 Amps. The electrical rating for the module is 3.3Vdc ±0.3Vdc, 0.16 Amps

The sample was received on May 4, 2004 and tested on May 6 and May 7, 2004. The EUT consisted of the following component(s):

Manufacturer	Model	Description	Serial Number
Unigen	Cypress Wireless USB	Modular	N/A

EUT CLASSIFICATION

The EUT is a class 2 receiver.

ENCLOSURE

The EUT does not have an enclosure as it is designed to be installed within the enclosure of the final product.

MODIFICATIONS

The EUT did not require modifications during testing in order to comply with the immunity specification.

SUPPORT EQUIPMENT

The following equipment was used as local support equipment for immunity testing:

Manufacturer	Model	Description	Serial Number	FCC ID
Topward	3603D	Power Supply	N/A	N/A
IBM	2647	Lapotp	78-7PX8M	DoC

No remote support equipment was required for immunity testing.

EUT INTERFACE PORTS

The I/O cabling configuration during immunity testing was as follows:

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
RS-232	Laptop	Multiwire	Shielded	5
DC	DC Supply	2 wire	unshielded	1

EUT OPERATION DURING EMISSIONS TESTING

Transmitting at full power on low, middle, and high channels. It was also receiving on low and high channels.

EUT OPERATION DURING IMMUNITY TESTING

During testing in Stand-by Mode: In receive mode.
During testing in transceiver mode: Continuously transmitting on the lowest channel.

EUT PERFORMANCE CRITERIA

Criterion A /CT / CR:
During and after the test, the apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed below a permissible performance level specified by the manufacturer when the apparatus is used as intended. In some cases this permissible performance level may be replaced by a permissible loss of performance. During the test the EUT shall not unintentionally transmit or change its operating state and stored data.

Criterion B / TT / TR:
Degradation of performance or loss of function is allowed during the test. During the test the EUT shall not unintentionally transmit or change its operating state and stored data. The EUT shall recover wihtout operator intervention if functionality is lost during the test.

IMMUNITY TEST DESCRIPTIONS

GENERAL INFORMATION

Final test measurements were taken on May 6 and May 7, 2004 at the Elliott Laboratories Test Site located at 684 West Maude Avenue, Sunnyvale, California. Considerable engineering effort has been expended to ensure that the facilities conform to all pertinent CENELEC and IEC standards.

IMMUNITY MEASUREMENT INSTRUMENTATION

ELECTROSTATIC DISCHARGE TEST SYSTEM

An ESD simulator is used for all testing. It is capable of applying electrostatic discharges in both contact discharge mode to 8 kV and air discharge mode to 15 kV in both positive and negative polarities in accordance with the EN 61000-4-2:1995 basic EMC publication.

ELECTROMAGNETIC FIELD TEST SYSTEM

A signal generator and power amplifiers are used to provide a signal at the appropriate power and frequency to an antenna to obtain the required electromagnetic field at the position of the EUT in accordance with the EN61000-4-3:1996 basic EMC publication.

INSTRUMENT CALIBRATION

All test equipment is regularly checked to ensure that performance is maintained in accordance with the manufacturer's specifications. An appendix of this report contains the list of test equipment used and calibration information.

EUT PLACEMENT – IMMUNITY TESTING

EN 61000-4-2 specifies that the EUT shall be placed above a ground reference plane. For tabletop equipment, the standard specifies that a 1.6 by 0.8 meter metal sheet, connected to the reference ground plane via a metal strap with two 470 kΩ resistors in series, shall be placed on a 0.8m high, non-conductive table. The EUT and attached cables are isolated from this metal sheet by 0.5 millimeter thick insulating material. EN61000-4-2 states that floor mounted equipment shall be placed on insulating supports so that the equipment and associated interface cables are 10 centimeters above the reference ground plane. During the tests, the EUT was positioned over a ground reference plane in conformance with these requirements.

EN61000-4-3 specifies that the test be performed in a shielded chamber meeting the field uniformity requirements described in this basic EMC publication. Tabletop EUTs are to be placed on an 80 cm high, non-conducting table and floor mounted equipment shall be positioned 10 cm above the floor of the chamber. During the EN61000-4-3 test, the EUT was positioned in a shielded, anechoic test chamber in conformance with this requirement.

IMMUNITY TEST PROCEDURES

EUT AND CABLE PLACEMENT

The EUT and any peripherals are located at the center of the table for tabletop devices and in the center of the ground plane with the insulating support for floor-standing devices. The standards require that interconnecting cables be connected to the available ports of the unit and that the placement of the unit and the attached cables simulate a typical installation, so far as practicable.

APPLICATION OF ELECTROSTATIC DISCHARGES

The points of application of the test discharges directly to the EUT are determined after consideration of the parts of the EUT that are accessible to the operator during normal operation. Contact and air discharges are applied to the EUT. Contact discharges are also applied to the coupling planes to simulate nearby ESD events.

APPLICATION OF ELECTROMAGNETIC FIELD

The electromagnetic field is established at the front edge of the EUT.

The frequency range is swept from 80 to 1000 MHz using a power level necessary to obtain the required field strength at the EUT. The field is amplitude modulated using a 1KHz sine wave to a depth of 80% for the swept frequency test in accordance with EN 61000-4-3.

The test is repeated with each of the four sides of the EUT facing the field generating antenna. For small, portable products the test is also performed with the top and bottom sides of the EUT facing the antenna.

APPENDIX A: Test Equipment Calibration Data

1 Page

80 - 2000MHz, 07-May-04
Engineer: Ed Pavlu

Manufacturer	Description	Model #	Asset #	Cal Due
EMCO	Antenna, Biconilog Transmitting	3143	180	N/A
Holaday Industries	Field Probe 200KHz - 40GHz	HI-4455	910	18-May-04
Werlatone	Coupler, 80-1000 MHz, 40dB, 200w	C3910	917	N/A
Rohde & Schwarz	Power Sensor, 1uW-100mW, DC-18 GHz, 50ohm	NRV-Z51	1069	18-Mar-05
Rohde & Schwarz	Power Meter, Dual Channel	NRVD	1071	28-Aug-04
Dorado International Corp	Horn Antenna, 1 - 12 GHz	GH1-12N	1258	N/A
Rohde & Schwarz	Signal Generator, 9 kHz-2.080 GHz	SMY02	1302	17-Oct-04
Werlatone	Coupler, 800-2800 MHz, 30dB, 100w	C6529	1402	N/A
Amplifier Research	Amplifier, 0.8-4.2GHz, 50Watts	50S1G4A	1493	N/A
Instruments For Industry	Amplifier 0.01 - 250 MHz (500W), 200 - 1000 MHz (100W)	CMX-5001	637, (F318)	N/A

Radiated Immunity, 80 - 2000 MHz, 07-May-04
Engineer: Ed Pavlu

Manufacturer	Description	Model #	Asset #	Cal Due
Hewlett Packard	EMC Spectrum Analyzer 9kHz - 6.5GHz	8595EM	780	26-Feb-05

ESD, 11-May-04
Engineer: Juan Martinez

Manufacturer	Description	Model #	Asset #	Cal Due
Schaffner	ESD Gun	NSG-435	1491	06-Feb-05

APPENDIX B: Test Data Log Sheets

ELECTROMAGNETIC COMPATABILITY

TEST LOGS

T55453 9 Pages

Elliott

EMC Test Data

Client:	Unigen Corporation	Job Number:	J55447
Model:	UGWR2USxxxx	T-Log Number:	T55453
		Account Manager:	Susan Pelzl
Contact:	Mark Morrissey		
Emissions Spec:	FCC 15.247, RSS-210 , EN 300	Class:	Radio
Immunity Spec:	EN 301 489-17	Environment:	-

EMC Test Data

For The

Unigen Corporation

Model

UGWR2USxxxx

Date of Last Test: 5/7/2004

Client:	Unigen Corporation	Job Number:	J55447
Model:	UGWR2USxxxx	T-Log Number:	T55453
		Account Manger:	Susan Pelzl
Contact:	Mark Morrissey		
Emissions Spec:	FCC 15.247, RSS-210 , EN 300 32	Class:	Radio
Immunity Spec:	EN 301 489-17	Environment:	-

EUT INFORMATION

General Description

The EUT is a 2.4GHz wireless module which is designed to be integrated in various OEM products. The EUT was placed in a test fixture and the test fixture was treated as table-top equipment during testing. The electrical rating of the test fixture with the module installed is 4.7 Vdc, 0.23 Amps. The electrical rating for the module is 3.3Vdc ±0.3Vdc, 0.16 Amps

Equipment Under Test

Manufacturer	Model	Description	Serial Number	FCC ID
Unigen	UGWR2USxxxx	Modular	N/A	R8KUGWR2USXXXX

EUT Enclosure

The EUT does not have an enclosure as it is designed to be installed within the enclosure of the final product.

Modification History

Mod. #	Test	Date	Modification
1			

Modifications applied are assumed to be used on subsequent tests unless otherwise stated as a further modification.

Client:	Unigen Corporation	Job Number:	J55447
Model:	UGWR2USxxxx	T-Log Number:	T55453
		Account Manger:	Susan Pelzl
Contact:	Mark Morrissey		
Emissions Spec:	FCC 15.247, RSS-210 , EN 300 32	Class:	Radio
Immunity Spec:	EN 301 489-17	Environment:	-

Test Configuration #1

Local Support Equipment

Manufacturer	Model	Description	Serial Number	FCC ID
Topward	3603D	Power Supply	N/A	N/A
IBM	2647	Lapotp	78-7PX8M	DoC

Remote Support Equipment

Manufacturer	Model	Description	Serial Number	FCC ID
None				

EUT Interface Ports

EUT Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length (m)
RS-232	Laptop	Multiwire	Shielded	5
DC	DC Supply	2 wire	unshielded	1

EUT Operation During Radio Emissions

Transmitting at full power on low, middle, and high channels. It was also Receiving on low and high channels.

Client:	Unigen Corporation	Job Number:	J55447
Model:	UGWR2USxxxx	T-Log Number:	T55453
		Account Manger:	Susan Pelzl
Contact:	Mark Morrissey		
Emissions Spec:	FCC 15.247, RSS-210 , EN 300 32	Class:	Radio
Immunity Spec:	EN 301 489-17	Environment:	-

EUT Operation During Immunity

Transmitting at full power on low, middle, and high channels. It was also Receiving on low and high channels.

Performance Criteria for Immunity

Criterion A:

During and after the test, the apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed below a permissible performance level specified by the manufacgturer when the apparagtus is used as intended. In some cases this permissible performance level may be replaced by a permissible loss of performance. During the test the EUT shall not unintentionally transmit or change its operating state and stored data.

In the EUT's Transmit Mode, the 2400MHz carrier frequency was monitored on Elliott's remote Spectrum Analyzer for any carrier dropouts. In the EUT's Receive Mode the spectrum of 2000 to 2900 MHz was being monitored for the presence of any carrier, which would indicate the EUT going into a transmit mode.

Criterion B:

Degradation of performance or loss of function is allowed during the test. During the test the EUT shall not unintentionally transmit or change its operating state and stored data. The EUT shall recover wihtout operator intervention if functionality is lost during the test.

In the EUT's Transmit Mode, the 2400MHz carrier frequency was monitored on Elliott's remote Spectrum Analyzer for any carrier dropouts. In the EUT's Receive Mode the spectrum of 2000 to 2900 MHz was being monitored for the presence of any carrier, which would indicate the EUT going into a transmit mode.

Client:	Unigen Corporation	Job Number:	J55447
Model:	Cypress Wireless USB	T-Log Number:	T55453
		Account Manager:	Susan Pelzl
Contact:	Mark Morrissey		
Immunity Spec:	EN301 489-17	Class:	Radio

ElectroStatic Discharge (EN 61000-4-2)

Test Specifics

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 5/6/2004
Test Engineer: Rod Wong
Test Location: ESD Lab
Config. Used: #1
Config Change: None
EUT Voltage: Battery

General Test Configuration

For table-top equipment, the EUT and all local support equipment were located on a 0.5-mm thick insulating layer above a horizontal coupling plane, 80 cm above a ground reference plane.

Unless otherwise stated, ten discharges at each voltage, and polarity, were applied to each test point listed.

The determination as to the test point being a part of a conductive or non-conductive surface was based on the manufacturer's declaration.

Ambient Conditions:

Temperature: 24 °C
Rel. Humidity: 39 %
Pressure: 1012 mb

Summary of Results

Run #	Test Performed	Level	Criteria/Result	Comments
1,2	ESD - Enclosure	4kV indirect Contact	A/Pass	Only Indirect contact

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

EMC Test Data

Client:	Unigen Corporation	Job Number:	J55447
Model:	Cypress Wireless USB	T-Log Number:	T55453
		Account Manager:	Susan Pelzl
Contact:	Mark Morrissey		
Immunity Spec:	EN301 489-17	Class:	Radio

Run #1: Electrostatic Discharge
Transmit mode

Discharge Location	Positive Polarity (kV)				Negative Polarity (kV)			
Contact	Level 1	Level 2	Level 3	Level 4	Level 1	Level 2	Level 3	Level 4
Mode	2	4	6	8	2	4	6	8
Vertical Coupling Plane (VCP)								
Front	x	x			x	x		
Left	x	x			x	x		
Rear	x	x			x	x		
Right	x	x			x	x		
Horizontal Coupling Plane (HCP)								
Front	x	x			x	x		
Left	x	x			x	x		
Rear	x	x			x	x		
Right	x	x			x	x		

Note:	An "X" indicates that the unit continued to operate as intended. A Spectrum Analyzer was used to verify that the EUT was transmitting as intended when in Transmit mode.
Note:	No Direct Contact and Air Discharge was preformed due to the EUT been a module.

EMC Test Data

Client:	Unigen Corporation	Job Number:	J55447
Model:	Cypress Wireless USB	T-Log Number:	T55453
		Account Manager:	Susan Pelzl
Contact:	Mark Morrissey		
Immunity Spec:	EN301 489-17	Class:	Radio

Run #2: Electrostatic Discharge
Standby mode

Discharge Location	Positive Polarity (kV)				Negative Polarity (kV)			
Contact	Level 1	Level 2	Level 3	Level 4	Level 1	Level 2	Level 3	Level 4
Mode	2	4	6	8	2	4	6	8
Vertical Coupling Plane (VCP)								
Front	x	x			x	x		
Left	x	x			x	x		
Rear	x	x			x	x		
Right	x	x			x	x		
Horizontal Coupling Plane (HCP)								
Front	x	x			x	x		
Left	x	x			x	x		
Rear	x	x			x	x		
Right	x	x			x	x		

Note:	An "X" indicates that the unit continued to operate as intended. A spectrum analzyer was used to verify that the EUT was not transmitting when in received mode. Unit was also verify to be funtional by setting it into transmit mode after testing.

Client:	Unigen Corporation	Job Number:	J55447
Model:	UGWR2USxxxx	T-Log Number:	T55453
		Account Manager:	Susan Pelzl
Contact:	Mark Morrissey		
Immunity Spec:	EN 301 489-17	Environment:	-

Radiated Immunity (EN 61000-4-3)

Test Specifics

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 5/7/2004 Config. Used: 1
Test Engineer: Ed Pavlu Config Change: None
Test Location: Chamber #1 EUT Voltage: 4.7Vdc

General Test Configuration

The EUT and all local support equipment were located on a turntable in an anechoic chamber. All remote support equipment was located outside the chamber. Interface cabling to the remote support equipment was routed along the floor and, where possible, passed through ferrite clamps at the exit point from the chamber.

The transmitting antenna was located 3 meters from the EUT, unless otherwise noted.

Ambient Conditions:

Temperature: 19 °C
Rel. Humidity: 46 %

Summary of Results

Run #	Test Performed	Level	Criteria/Result	Comments
1	RI 80 - 1000 MHz, 1kHz 80% AM	3 V/m	A / Pass	
2	RI 1400 - 2000 MHz, 1kHz 80% AM	3 V/m	A / Pass	

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

EMC Test Data

Client:	Unigen Corporation	Job Number:	J55447
Model:	UGWR2USxxxx	T-Log Number:	T55453
		Account Manager:	Susan Pelzl
Contact:	Mark Morrissey		
Immunity Spec:	EN 301 489-17	Environment:	-

Run #1: Radiated Immunity, 80 - 1000 MHz (EN61000-4-3)

Test Level:	3 V/m
Step Size:	1 %
Dwell time:	2874 ms
Uniformity:	16 point

Modulation Details	
Modulating Frequency:	1kHz
Modulation:	AM
Depth / Deviation:	80%

Frequency Range MHz	Front		Left Side		Rear		Right		Top		Bottom	
	Vert.	Horiz.	Vert.	Horiz.	Vert.	Horiz.	Vert.	Horiz.	Vert.	Horiz.	Vert.	Horiz.
80 - 200 (Xmit)	X	X	Note 1	Note 1	Note 1	Note 1	X	X	N/A	N/A	N/A	N.A
200 - 1000 (Xmit)	X	X	Note 1	Note 1	Note 1	Note 1	X	X	N/A	N/A	N/A	N.A
1400 - 2000 (Xmit)	X	X	Note 1	Note 1	Note 1	Note 1	X	X	N/A	N/A	N/A	N.A
80 - 200 (Rec)	X	X	X	X	X	X	Note 1	Note 1	N/A	N/A	N/A	N.A
200 - 1000 (Rec)	X	X	X	X	X	X	Note 1	Note 1	N/A	N/A	N/A	N.A
1400 - 2000 (Rec)	X	X	X	X	X	X	Note 1	Note 1	N/A	N/A	N/A	N.A

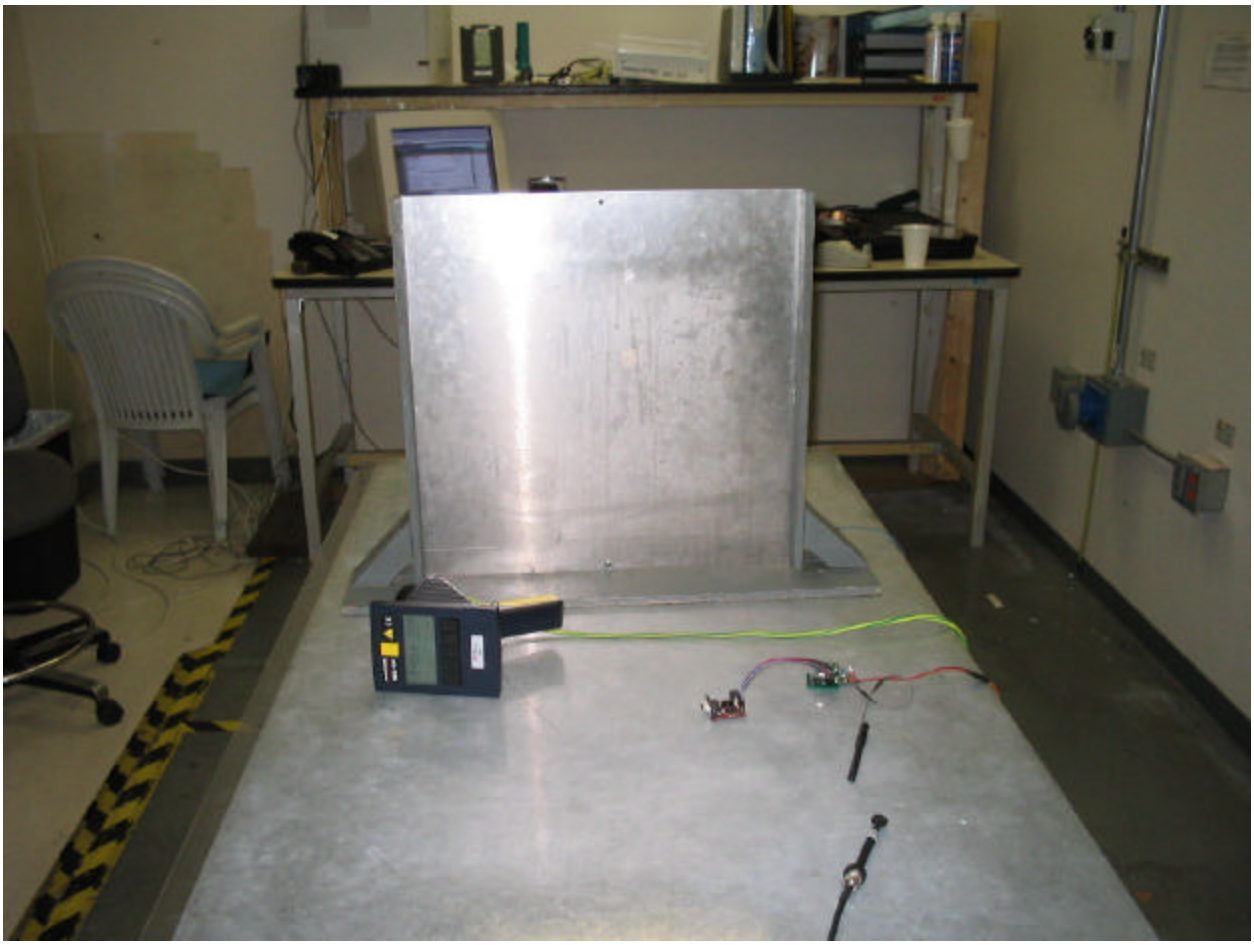
Test files used for this run:

September 2003\ Position A 80 - 1000 MHz V 3V/m.crf
September 2003\ Position A 80 - 1000 MHz H 3V/m.crf
September 2003\ Position B, height is 1.4m from Middle of Horn Antenna 1000 - 3000 V 3V/m.crf
September 2003\ Position B, height is 1.4m from Middle of Horn Antenna 1000 - 3000 H 3V/m.crf

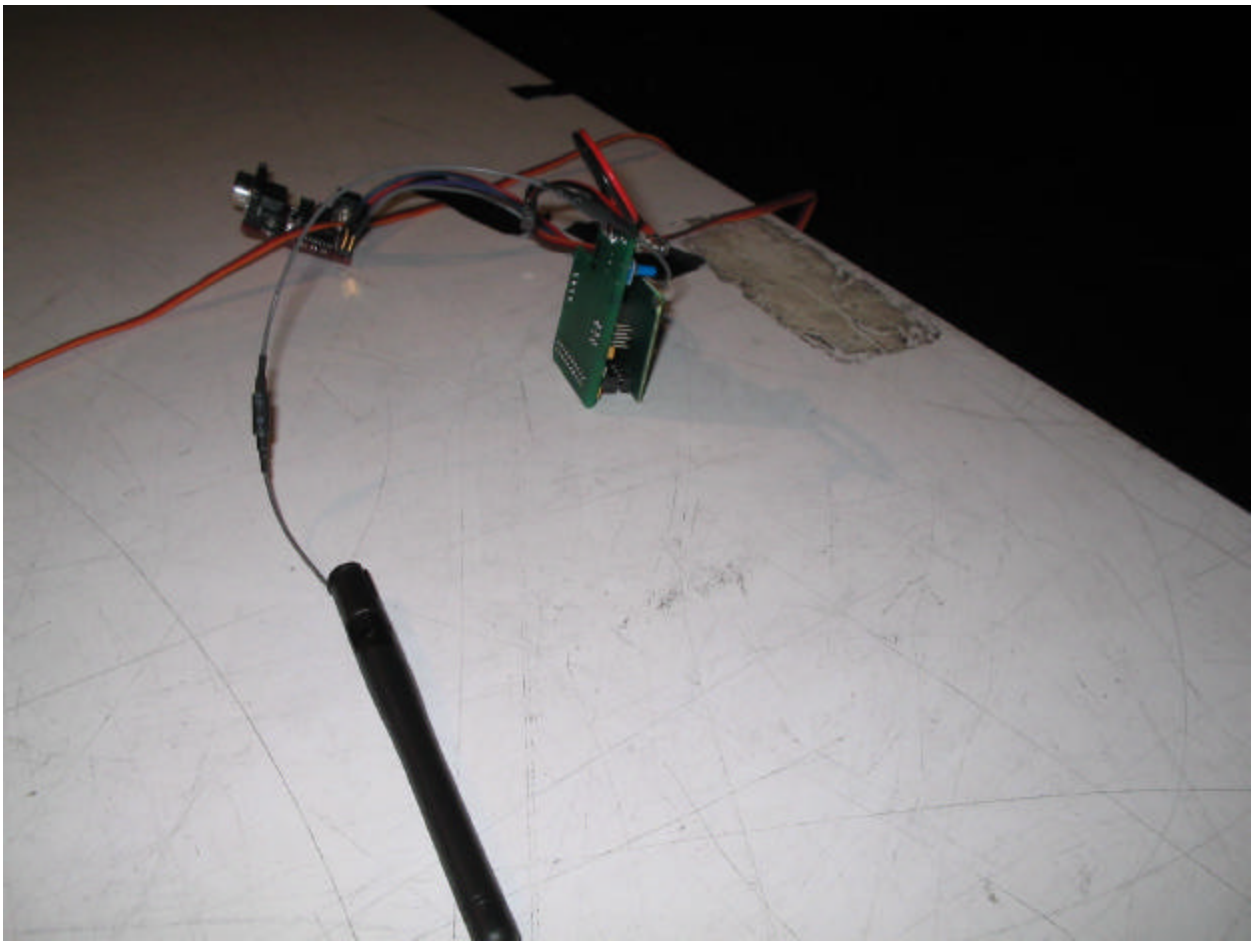
Note:	An "X" indicates that the unit continued to operate as intended. In the EUT's Transmit Mode (Xmit), the 2400MHz carrier frequency was monitored on Elliott's remote Spectrum Analyzer for any carrier dropouts, which would indicate the EUT going into a receive mode. In the EUT's Receive Mode (Rec), the spectrum of 2000 to 2900 MHz was being monitored for the presence of any carrier, which would indicate the EUT going into a transmit mode.
Note 1:	Due to the dimensions of the EUT, the field strength on this side would be the same as the Front side, so the EUT was not tested to this side.

APPENDIX C: ESD Test Configuration Photographs

APPENDIX C: ESD Test Configuration Photographs



APPENDIX D: Radiated Immunity Test Configuration Photographs



APPENDIX D: Radiated Immunity Test Configuration Photographs