



**ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT
INTENTIONAL RADIATOR CERTIFICATION TO
FCC PART 15 SUBPART C REQUIREMENT
FOR**

EAS SYSTEM

MODEL NAME: WGPRG58; WGUNG58

FCC ID: P9I-WG58PUG

Prepared For
**WG SECURITY PRODUCTS, INC
3031 TISCH WAY, STE 602
SAN JOSE, CA 95128
USA**

Prepared By
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USA**

**Report No.: 03U2265-1
Revision A
Date: April 19, 2004**



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Verification Of Compliance

COMPANY NAME: WG SECURITY PRODUCTS, INC.
3031 TISCH WAY, STE 602
SAN JOSE, CA 95128, USA

CONTACT PERSON: Graham Handyside / Vice President

TELEPHONE NO: (408) 241-8070

MODEL NAME: WGPRG58; WGUNG58

MODEL DIFFERENCE: WGPRG58 is a dual pedestal Electronic Article Surveillance system and WGUNG58 is a single pedestal Electronic Article Surveillance system. Electronically they are identical. Their RF sections are the same as well as their enclosures.

DATE TESTED: April 6-7, 2004

LIMIT APPLY TO : FCC PART 15 SECTION 15.209

TECHNICAL LIMITS	TEST RESULT
Radiated Emission	No non-compliance noted

LIMIT APPLY TO : FCC PART 15 SECTION 15.207

AC Line Conducted Emission	No non-compliance noted
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The above equipment was tested by Compliance Engineering Services Inc. for compliance with the requirement set forth in the requirements of CFR 47 PART 15 SUBPART C. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

Tested By:

Approved & Released For CCS By:


FRANK IBRAHIM
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES


THU CHAN
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

SECTION 1 LABORATORY INFORMATION

1.1 General Condition:

This report contains an assessment of an apparatus against Electromagnetic Interference Technical Requirements based upon tests carried out on the samples submitted.

With regard to this assessment, the following points should be noted:

- a) The results of testing in this report apply to the product/system which was tested only. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties. And reports conditions under which testing was conducted and results of tests performed. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section.
- b) The apparatus was set up and exercised using the configurations, modes of operation and arrangements defined in this report only.
- c) Where relevant, the apparatus was only assessed using the susceptibility criteria defined in this report.
- d) All testing was performed under the following environmental conditions:
 - Temperature 15°C to 35°C (54°F to 95°F)
 - Atmospheric Pressure 860mbar to 1060mbar (25.4" to 31.3")
 - Humidity 10% to 75%

1.2 Measurement Facilities

Compliance Certification Services
561F Monterey Road
Morgan Hill CA 95037
USA
Tel: (408)463-0885, Fax: (408)463-0888

1.3 Laboratory Accreditations and Listings

The open area test sites and conducted measurement facilities used to collect data are located at 561F Monterey Road, Morgan Hill, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsemc.com>.



No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government.

1.4 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Radiated Emission	
30MHz – 200 MHz	+/- 3.3dB
200MHz – 1000MHz	+4.5/-2.9dB
> 1000MHz	+3.5/-2.2dB
Power Line Conducted Emission	
150kHz – 30MHz	+/-2.9

Any results falling within the above values are deemed to be marginal.

1.5 Deviation from measurement specification

Not Applicable

1.6 Measurement Instrument Calibration

The measuring equipment which were utilized in performing the tests documented herein has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment which is traceable to recognized national standards.

SECTION 2 PRODUCT INFORMATION

2.1 Product Description:

The label and tag checker is an Electronic Article Surveillance system that works with any 58kHz tags or labels. The system transmits 1.6mS wide modulated signal of 58kHz, then open a 1.6mS wide listening window to detect the rings from labels in the detection zones, two or more times validations will trigger system alarm. The whole cycle is 60mS.

2.2 Power Requirements

AC	N/A
DC	N/A
Battery Power	N/A
AC-DC Adaptor	Input: 110VAC, 60Hz / 220VAC, 50Hz Output: 2 X 10 VDC

2.3 Local Osc. Or Crystal:

Board Name	Local Osc. / Crystal (MHz)
Main	22.11 MHz, 3.712 MHz
Communication	N/A

2.4 Serial Number

Not Applicable

SECTION 3 TEST SUMMARY

3.1 Applicable Electromagnetic Interference Requirements:

Radiated Emission Technical Requirements 15.209		
Frequency (MHz)	Field strength (microvolts/meter)	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

Conducted Emission Technical Requirements 15.207		
Frequency Range	FCC limits Quasi-Peak (dBuV)	FCC limits Average (dBuV)
150kHz – 0.5 MHz	66 to 56*	56 to 46*
0.5MHz – 5MHz	56	46
5MHz – 30MHz	60	50

* Decreases with logarithm of frequency

3.2 Sample received date and Test Period

Sample received date	April 6, 2004
Test Period	April 6-7, 2004

3.3 Modifications

N/A.

SECTION 4 ELECTROMAGNETIC INTERFERENCE TEST

Ambient Conditions:

	Temperature	Humidity
Radiated Emission	25 ° C	60 %
Conducted Emission	25 ° C	60 %

Test Configuration:

Software Used During The Tests	
File Name	☐ EMCTEST ☐ Pinging ☐ Read & Write ☐ Terminal ☐ Music ☐ Joy-Stick ☒ Other:
Program Sequence	EUT transmitting a 58kHz signal and alarming with presence of a tag.

Mode of Operational Investigated:

Worse Case Emission Levels			
Mode of Operation		Radiated Emission	Conducted Emission
1	EUT transmitting a 58kHz signal and alarming with presence of a tag	☒	☒
2		☐	☐

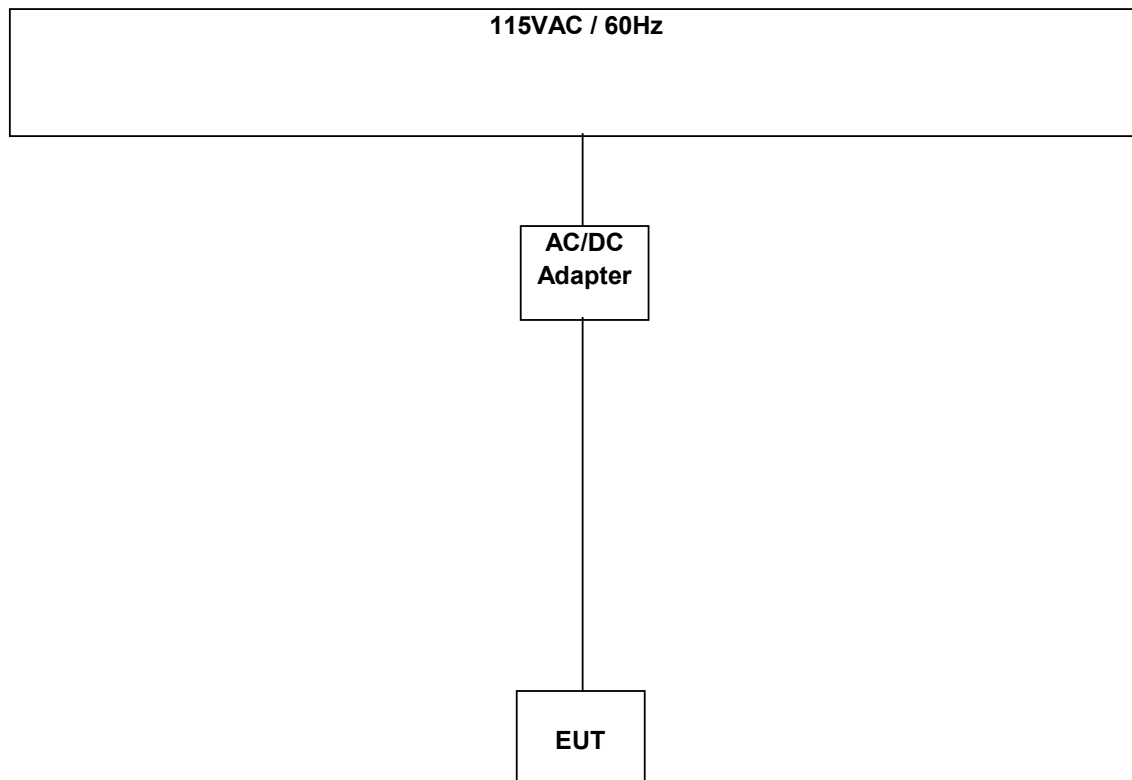
Frequency Range Investigated:

	From	To
Radiated Emissions	9kHz	1GHz
Conducted Emissions	0.15MHz	30MHz

Test Peripherals

No support equipment was used.

Test Configuration Diagram



4.1 Radiated Emission Test Procedures

The EUT was placed on a wooden table 80 cm above the ground screen. The antenna to EUT distance was 10 meters for frequencies below 30MHz, and 3 meters for frequencies above 30MHz. During the test, the table was rotated 360 degrees to maximize emissions and the antenna was positioned from 1 to 4 meters above the ground screen to further maximize emissions. Measurements were made with the antenna polarized in both the vertical and the horizontal positions.

The EUT test configuration was according to Section 8 of ANSI C63.4/2001

The following procedure was used to make the measurements: The frequency range of interest was monitored at a fixed antenna height and EUT azimuth. The Frequency span was set small enough to easily differentiate between broadcast stations, intermittent ambient signals and EUT emissions. The EUT was rotated through 360 degrees to maximize emissions received. During the rotation if emission increased by more than 1 dB, or if another emission appeared that was greater by 1 dB, the EUT was returned to the azimuth where the maximum occurred, and additional cable manipulation was performed to further maximize received emissions.

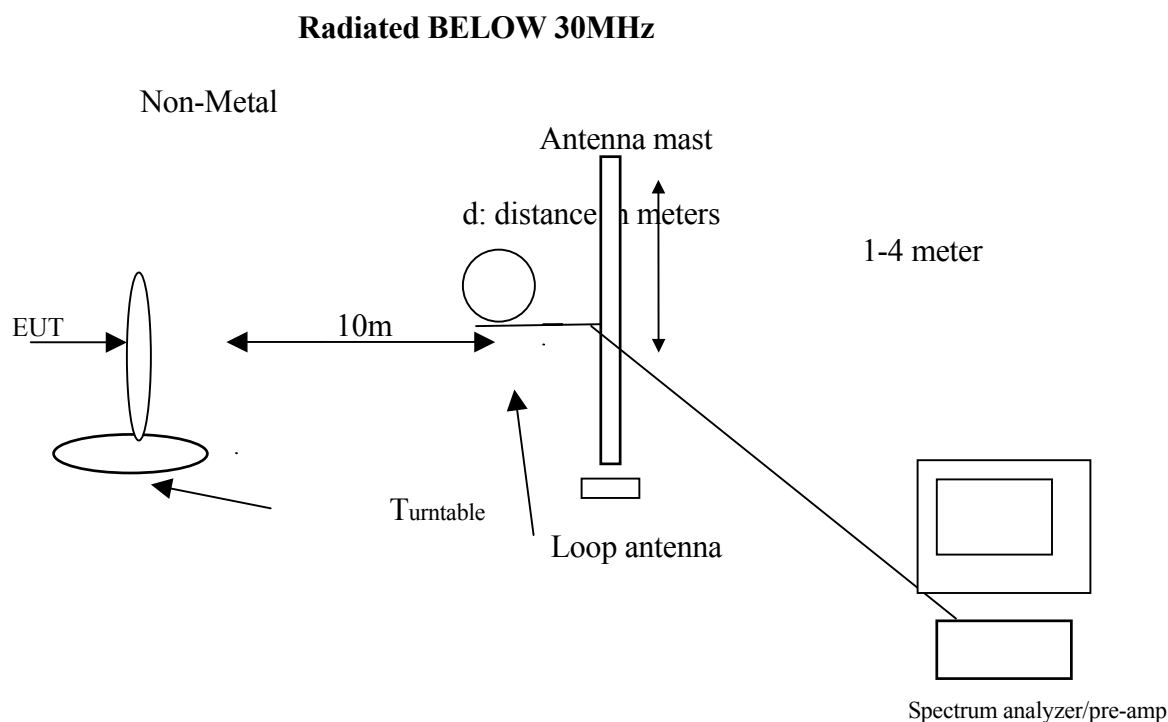
The antenna was moved up and down to further maximize the suspected highest amplitude signal. If the emission increased by 1 dB or more, or if another emission appeared that was greater by 1dB or more, the antenna was returned to the height where maximum signal was observed, and, cables were manipulated to produce highest emissions, noting frequency and amplitude.

4.2 Radiated Emissions (below 30MHz)

4.2.1 Instrument Settings

Frequency Range	Instrument	Detector Function	Resolution Bandwidth	Video Bandwidth
9kHz - 150 kHz	EMI Receiver	Quasi-Peak	3kHz	3kHz
150kHz –30 MHz	EMI Receiver	Quasi-Peak	100kHz	100kHz
9kHz - 150 kHz	Spectrum Analyzer	Peak	100Hz	100Hz
150kHz– 30 MHz	Spectrum Analyzer	Peak	9kHz	9kHz

4.2.2 Measurement Instrument Configuration



4.2.3 Measurement Equipment Used

TEST EQUIPMENT LIST				
Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
RF Filter Section	HP	85420E	3705A00256	11/21/04
EMI Receiver, 9 kHz ~ 2.9 GHz	HP	8542E	3942A00286	11/21/04
30MHz---- 2Ghz	Sunol Sciences	JB1 Antenna	A121003	12/22/04
EMI Receiver	R&S	ESHS 20	827129/006	7/17/04
LISN, 10 kHz ~ 30 MHz	FCC	LISN-50/250-25-2	2023	10/13/04
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	8379443	10/13/04
Loop Antenna	EMCO	6502	9202-2722	4/23/04

4.2.4 Below 30MHz Emission Test Setup photos



4.2.5 Below 30MHz Emission Test Results

WG Security Products ,INC. 03U2265-1 FCC Part 15, Subpart C 10 meter measurement EAS System, model: WGUNG58 (Uniguard) (New Shipped) Tester: Ben Du Date: 04/06/2004												
Frequency (MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	AF dB/m	Distance Correction (dB)	PK Corrected Reading (dBuV/m)	AV Corrected Reading (dBuV/m)	PK Limit (dBuV/m)	AV Limit (dBuV/m)	PK Margin (dB)	AV Margin (dB)	Notes
Loop Antenna Face On Worst Case:												
0.058	89.6		68.3	12	-59.08	42.52	21.22	52.34	32.34	-9.8	-11.1	Fundamental, 10m distance
0.116	49.2		41.3	11.5	-59.08	1.62	-6.28	46.32	26.32	-44.7	-32.6	10m distance
0.174	48.2		40.2	11	-59.08	0.12	-7.88	42.79	22.79	-42.7	-30.7	10m distance
0.232	49.6		41.3	11	-59.08	1.52	-6.78	40.29	20.29	-38.8	-27.1	10m distance
0.29	55.7		44.1	11	-59.08	7.62	-3.98	38.36	18.36	-30.7	-22.3	10m distance
0.348	53.6		46.5	11	-59.08	5.52	-1.58	36.77	16.77	-31.3	-18.4	10m distance
0.406	55.2		44	11	-59.08	7.12	-4.08	35.43	15.43	-28.3	-19.5	10m distance
0.464	49.7		43.8	11	-59.08	1.62	-4.28	34.27	14.27	-32.7	-18.6	10m distance
Frequency (MHz)	PK (dBuV)	QP (dBuV)		AF dB/m	Distance Correction (dB)	QK Corrected Reading (dBuV/m)		QP Limit (dBuV/m)		QP Margin (dB)		Notes
0.522	45.5	39.5		10.9	-19.08	31.32		33.25		-1.9		10m distance
0.638	39.1	36.9		10.8	-19.08	28.62		31.51		-2.9		10m distance
0.87	36.7	34.1		10.8	-19.08	25.82		28.81		-3.0		10m distance
0.928	37.2	34.1		10.8	-19.08	25.82		28.25		-2.4		10m distance
0.986	38.2	34.2		10.8	-19.08	25.92		27.73		-1.8		10m distance
1.334	36.9	31.7		10.8	-19.08	23.42		25.10		-1.7		10m distance
* No more emissions were found up to 30MHz												
Q.P. = Quasi Peak Readings												
A.F. = Antenna factor												

4.3 Radiated Emissions (above 30MHz)

4.3.1 Instrument Setting

Frequency Range	Instrument	Detector Function	Resolution Bandwidth	Video Bandwidth
30 - 1000 MHz	EMI Receiver	Quasi-Peak	120kHz	N/A
30 – 1000 MHz	Spectrum Analyzer	Peak	100kHz	100kHz
Above 1000 MHz	Spectrum Analyzer	Peak	1 MHz	1 MHz

4.3.2 Measurement Instrument Configuration

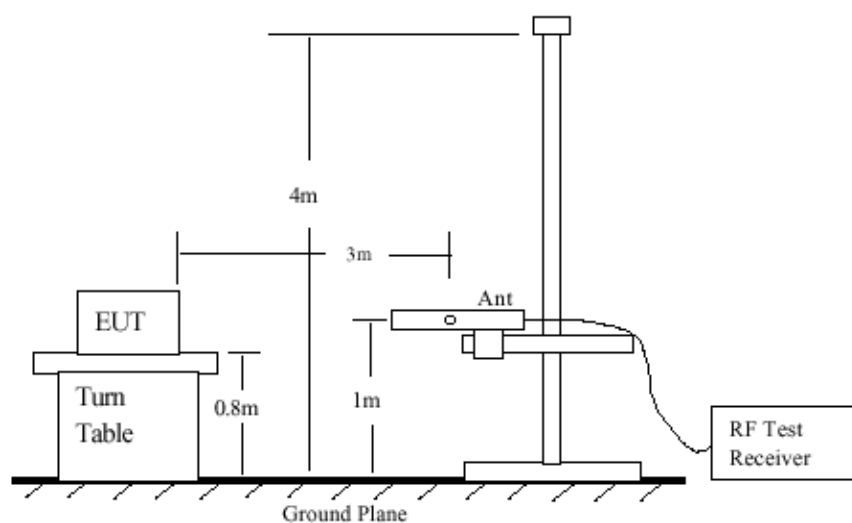


Fig 1: Radiated Emission Measurement 30 to 1000 MHz

4.3.3 Measurement Equipment Used

TEST EQUIPMENT LIST				
Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
RF Filter Section	HP	85420E	3705A00256	11/21/04
EMI Receiver, 9 kHz ~ 2.9 GHz	HP	8542E	3942A00286	11/21/04
30MHz---- 2Ghz	Sunol Sciences	JB1 Antenna	A121003	12/22/04
EMI Receiver	R&S	ESHS 20	827129/006	7/17/04
LISN, 10 kHz ~ 30 MHz	FCC	LISN-50/250-25-2	2023	10/13/04
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	8379443	10/13/04
Loop Antenna	EMCO	6502	9202-2722	4/23/04

4.3.4 Radiated Emission Test Setup Photos

FRONT VIEW



REAR VIEW

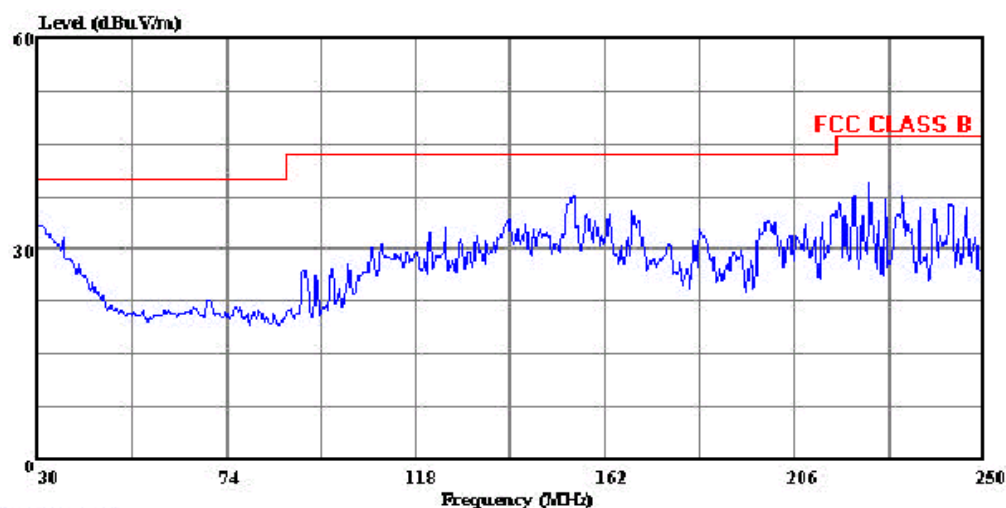


4.3.5 Radiated Emission Test Result



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Data#: 34 File#: WG-Jan9.EMI Date: 04-07-2004 Time: 08:46:56



(Auxiliary ATC)

Trace:

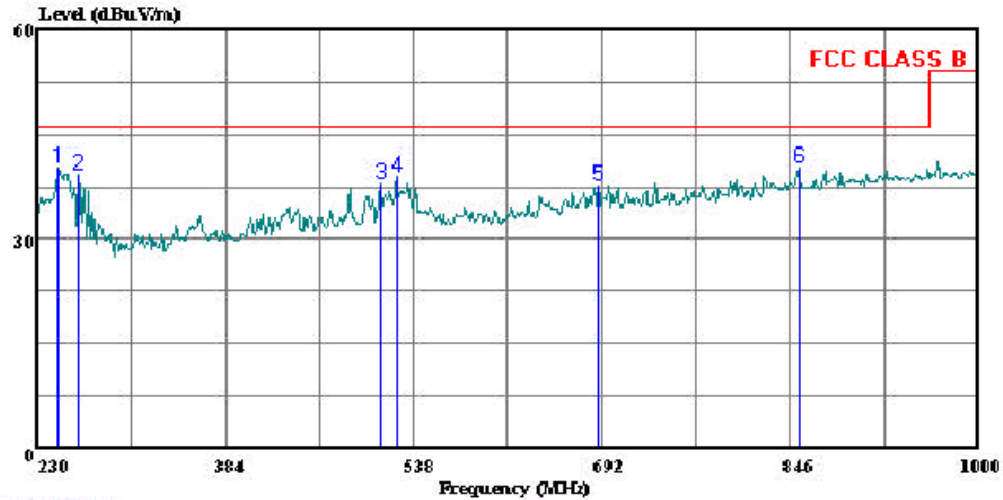
Ref Trace:

Condition: FCC CLASS B SUNOL BILOG 12/22/04 HORIZONTAL
Test Eng: : ben
Project #: : 03U2265
Company: : W G
EUT: : Pro Guard
: 4/5/04 new set
Model No: : UniGuard
Configuration: : EUT Only
Target of Test: : FCC CLASS B
Mode of Operation: Alarming Continously ON W/ TWO Antennas
: Connected and RJ45



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Data#: 53 File#: WG-Jan9.EMI Date: 04-07-2004 Time: 20:47:54



(Auxiliary ATC)

Trace: 52

Ref Trace:

Condition: FCC CLASS B SUNOL BILOG 12/22/04 HORIZONTAL
Test Eng: : Chin Pang
Project #: : 03U2265
Company: : WG
EUT: : Pro Guard
Model No: : UniGuard
Configuration: : EUT Only
Target of Test: : FCC Class B
Mode of Operation: Alarm on

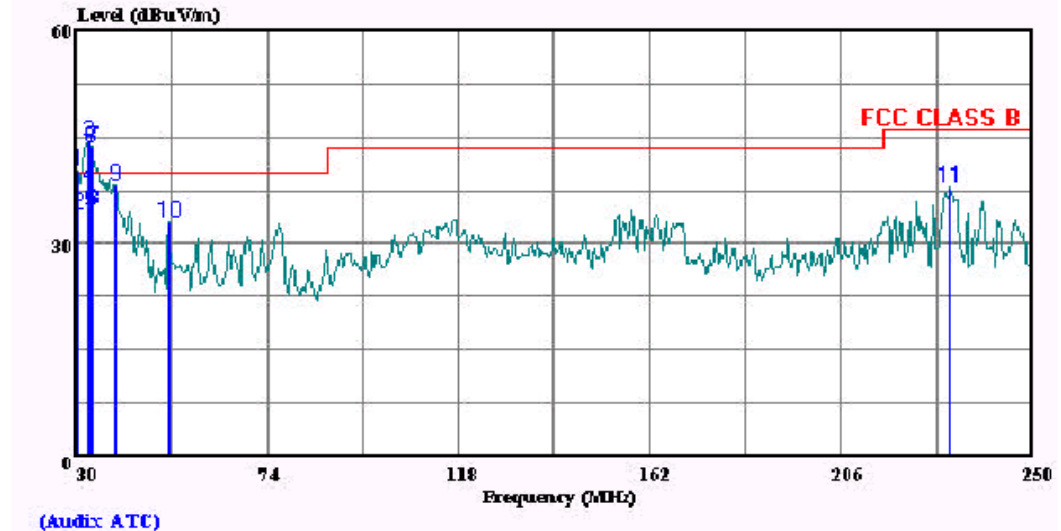
Page: 1

			Read		Limit	Over
Freq	Remark	Level	Factor	Level	Line	Limit
MHz		dBuV	dB	dBuV/m	dBuV/m	dB
1	246.940 Peak	26.22	13.96	40.18	46.00	-5.82
2	263.880 Peak	24.36	14.78	39.14	46.00	-6.86
3	510.280 Peak	17.07	20.75	37.82	46.00	-8.19
4	524.140 Peak	17.95	20.93	38.88	46.00	-7.12
5	689.690 Peak	14.15	23.46	37.61	46.00	-8.39
6	852.930 Peak	14.66	25.53	40.19	46.00	-5.81



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Fax: (408) 463-0885

Data#: 49 File#: WG-Jan9.EMI Date: 04-07-2004 Time: 17:46:12



Condition: FCC CLASS B SUNOL BILOG 12/22/04 VERTICAL
Test Eng: : ben
Project #: : 03U2265
Company: : W G
EUT: : Pro Guard
: 4/5/04 new set
Model No: : UniGuard
Configuration: : EUT Only
Target of Test: : FCC CLASS B
Mode of Operation: Alarming Continouly ON W/ TWO Antennas
: Connected and RJ45

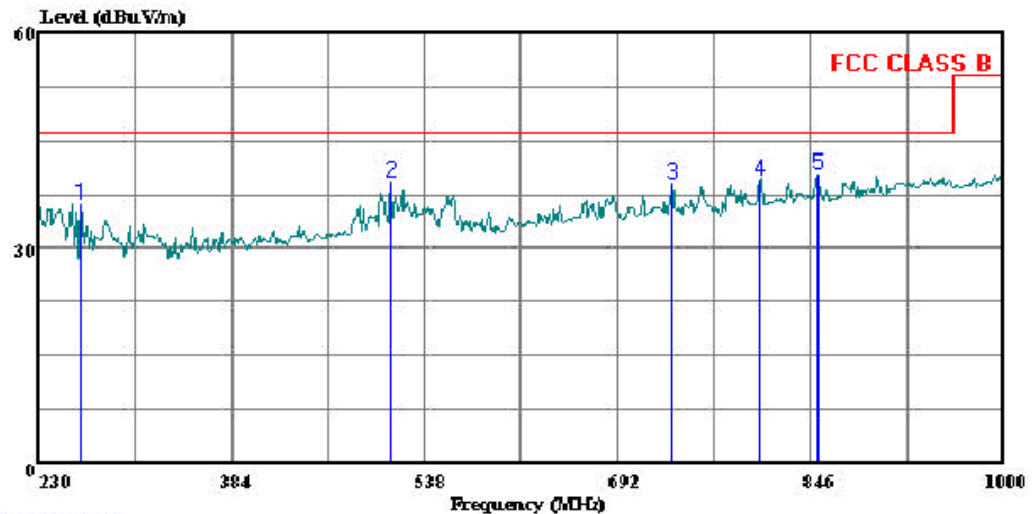
Page: 1

			Read		Limit	Over
	Freq	Remark	Level	Factor	Level	Line
	MHz		dBuV	dB	dBuV/m	dBuV/m
1 *	30.440	Peak	17.68	22.65	40.33	40.00
2	30.440	QP	11.63	22.65	34.28	40.00
3 *	32.640	Peak	23.19	21.18	44.37	40.00
4	32.640	QP	17.06	21.18	38.23	40.00
5	33.300	QP	13.81	20.69	34.50	40.00
6 *	33.300	Peak	22.88	20.69	43.57	40.00
						dB



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Data#: 51 File#: WG-Jan9.EMI Date: 04-07-2004 Time: 20:41:05



(Audix ATC)

Trace: 50

Ref Trace:

Condition: FCC CLASS B SUNOL BILOG 12/22/04 VERTICAL
Test Eng: : Chin Pang
Project #: : 03U2265
Company: : WG
EUT: : ProGuard
Model No: : UniGuard
Configuration: : EUT Only
Target of Test: : FCC Class B
Mode of Operation: Alarm on

Page: 1

	Freq	Remark	Read Level	Factor	Level	Limit Line	Over Limit
	MHz		dBuV	dB	dBuV/m	dBuV/m	dB
1	263.880	Peak	21.36	14.78	36.14	46.00	-9.86
2	510.280	Peak	18.48	20.75	39.23	46.00	-6.78
3	735.890	Peak	14.60	24.30	38.90	46.00	-7.10
4	805.960	Peak	14.52	25.06	39.58	46.00	-6.42
5	851.390	Peak	14.77	25.52	40.29	46.00	-5.71

4.4 Conducted Emission Test Procedures

The EUT was setup and located so that the distance between the boundary of the EUT and the closest surface to the LISN was 0.8m or more.

EUT test configuration was according to Section 7 of ANSI C63.4/2001.

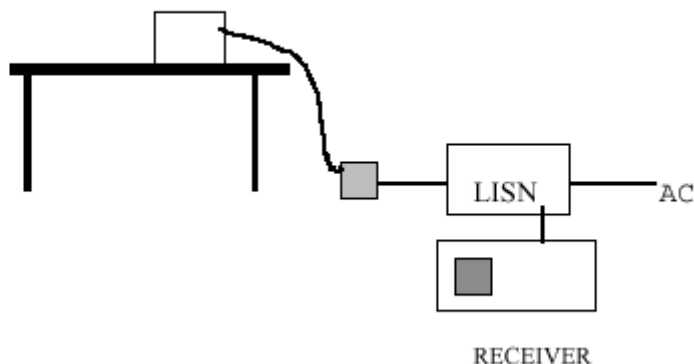
Conducted disturbance was measured between the phase lead and the ground, and between the neutral lead and the ground. The frequency range of (0.150 – 30) MHz was investigated.

The EMI receiver was set to PEAK detector setting, and swept continuously over the frequency range to be investigated. The resolution bandwidth was set to 9kHz minimum. The EMI receiver input cable was connected to LINE 1 RF measurement connection on the LISN. A 50ohm terminator was connected to the unused RF port on the LISN. For each mode of EUT operation, emissions readings were maximized by manipulating cable and wire positions. The configuration for each EUT power cord which produced emissions closest to the limit was recorded. The same procedure was repeated for LINE 2 of each EUT power cord.

4.4.1 Instrument Settings

Frequency Range	Peak	Quasi-Peak	Average
0.150 – 30 MHz	10 kHz	9 kHz	10 kHz

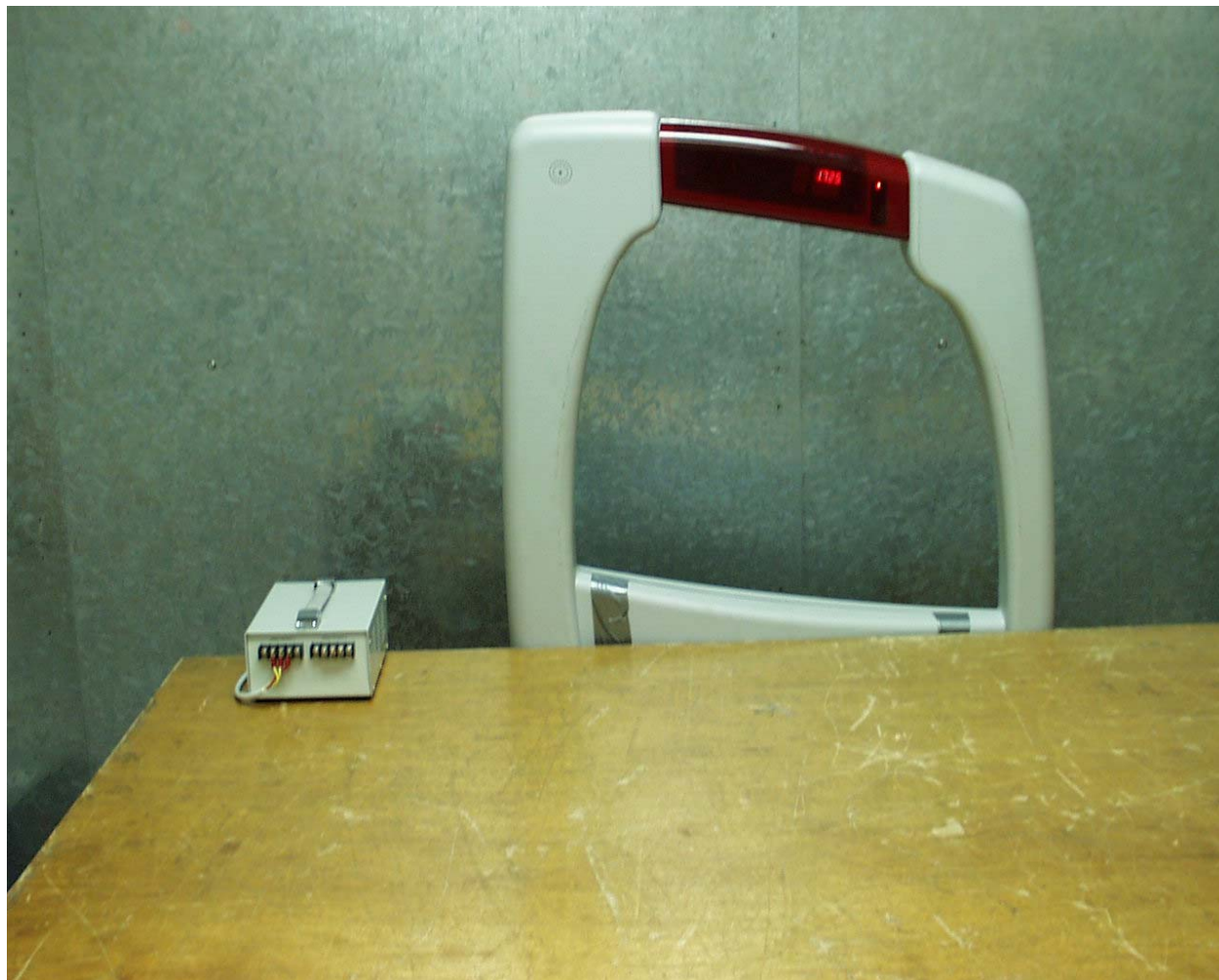
4.4.2 Measurement Instrument Configuration



4.4.3 Measurement Equipment Used

Refer to Radiated Emissions section for test equipment.

4.4.4 Conducted Emission Test Setup Photos



Front View



Rear View

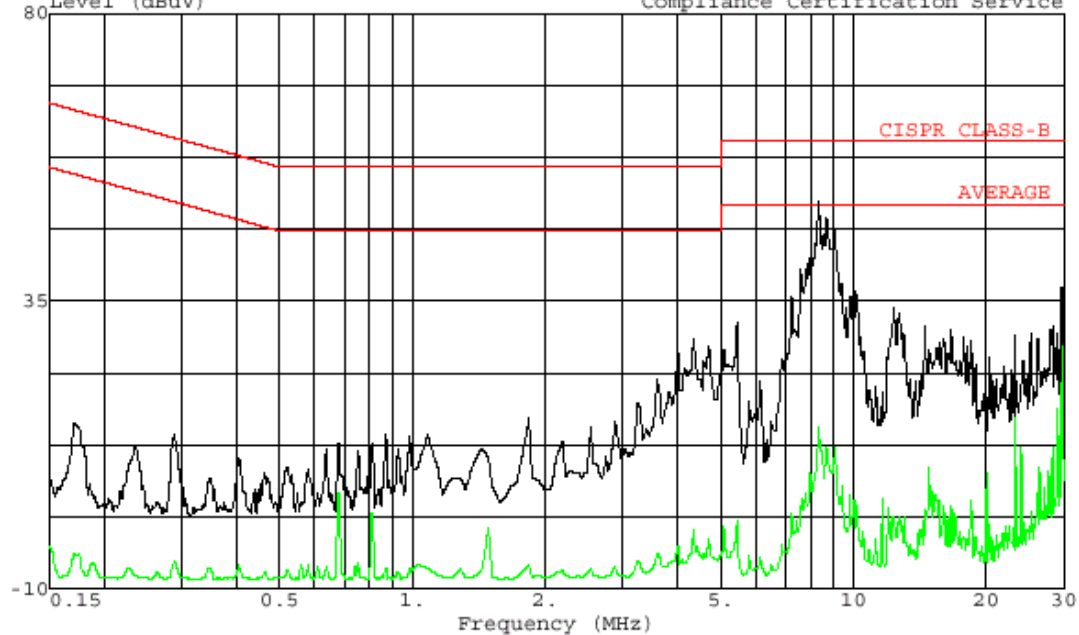
4.4.5 Conducted Emission Test Result

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	EN B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.17	15.86	--	4.98	0.00	65.37	55.37	-49.51	-50.39	L1
5.49	31.84	--	15.42	0.00	60.00	50.00	-28.16	-34.58	L1
8.32	50.50	--	27.35	0.00	60.00	50.00	-9.50	-22.65	L1
0.17	16.62	--	2.89	0.00	65.31	55.31	-48.69	-52.42	L2
5.45	30.88	--	17.39	0.00	60.00	50.00	-29.12	-32.61	L2
8.32	53.02	--	27.17	0.00	60.00	50.00	-6.98	-22.83	L2
6 Worst Data									



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Data#: 14 File#: 03U2265.EMI Date: 04-06-2004 Time: 11:44:37
Level (dBuV) Compliance Certification Service

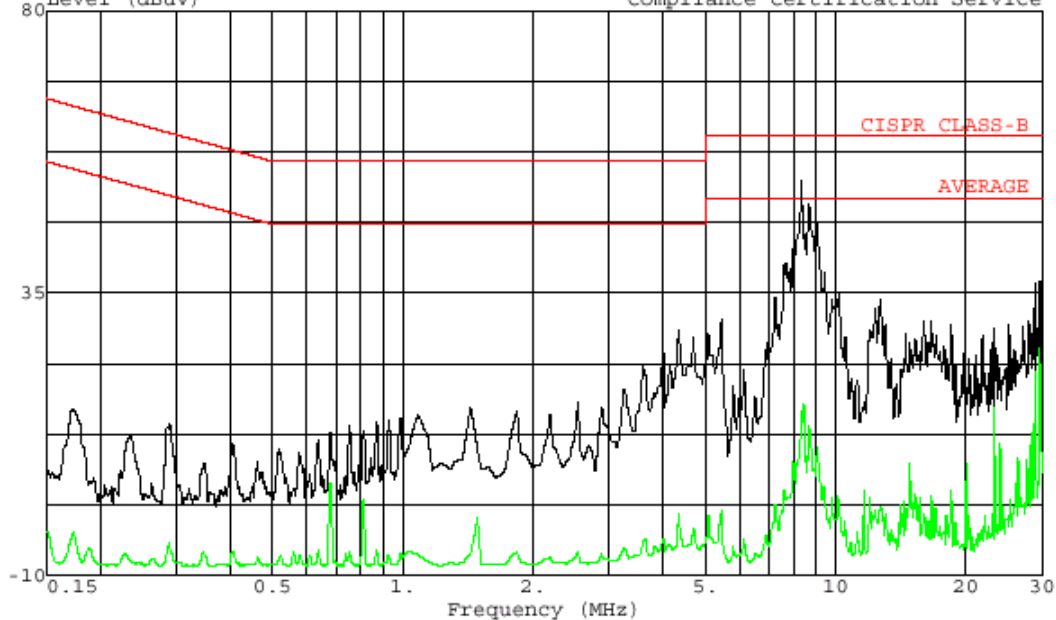


Trace: 12
Project # : 03U2265
Test Operator : Ben Du
Company : W G
EUT : Pro Guard
Model : WGPRG58
Configuration : EUT
Mode of Operation: W/ ALARMING
Target of Test : FCC Class B, use EN22 limit
Voltage : 115Vac, 60Hz.
Lin1: Peak (Black); Average (Green)



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Data#: 21 File#: 03U2265.EMI Date: 04-06-2004 Time: 11:56:44
Level (dBuV) Compliance Certification Service



Trace: 19
Project # : 03U2265
Test Operator : Ben Du
Company : W G
EUT : Pro Guard
Model : WGPRG58
Configuration : EUT
Mode of Operation: W/ ALARMING
Target of Test : FCC Class B, use EN22 limit
Voltage : 115Vac, 60Hz.
Line 2: Peak (Black); Average (Green)

END OF REPORT