Project:	**03RT2075**
File:	**MC1324**
Report:	**030113**
Date:	**January 24, 2003**
Model:	**84757**

Test Report

On

Electromagnetic Compatibility Testing

Hunter Fan Company

Memphis, TN USA

Test Report Details:

Tests Performed By:	**Underwriters Laboratories Inc.** **12 Laboratory Drive** **Research Triangle Park, NC 27709**
Tests Performed For:	**Hunter Fan Company** **2500 Frisco Avenue** **Memphis, TN 38114 USA**
Applicant Contact:	**Mr. Chris Williams** **Safety and Test Engineer** **(901) 248-2342** **(901) 248-2382 - FAX**
Test Report Number:	**030113**
Test Report Date:	**January 24, 2003**
Product Type:	**Ceiling Fan/Lamp Remote**
Model Number:	**84757**
Sample Serial Number:	**Non-serialized sample**
Sample Tag Number:	**S0452503-001**
EUT Category:	**Transmitter - Low Power**
EUT Type:	**Hand Held**
Sample Receive Date:	**December 12, 2002**
Testing Start Date:	**January 02, 2003**
Date Testing Complete:	**January 23, 2003**

Underwriters Laboratories Inc. reports apply only to the specific samples tested under stated test conditions. All samples tested were in good operating condition throughout the entire test program. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. Underwriters Laboratories Inc. shall have no liability for any deductions, inferences or generalizations drawn by the client or others from Underwriters Laboratories Inc. issued reports. This report shall not be used to claim, constitute or imply product certification, approval, or endorsement by NVLAP, A2LA, or any agency of the US government.

This report may contain test results that are not covered by the NVLAP or A2LA accreditation. The scope of accreditation is limited to the specific tests that are listed on the NVLAP and/or A2LA certificates provided at the end of this report.

Summary of Testing:

Test #	Test Name Test Requirement/Specification	Comply	Does Not Comply	See Remark
1	Radiated Disturbance Emissions - 30 MHz to 1000 MHz 47 CFR Part 15, Subpart C / 47 CFR Part 15, Subpart C, Section 15.209 and 15.231	X	-	
2	Radiated Disturbance Emissions - Above 1 GHz 47 CFR Part 15, Subpart C / 47 CFR Part 15, Subpart C, Section 15.209 and 15.231	X	-	
3	Radiated Disturbance Emissions - Peak-to-Average Ratio 47 CFR Part 15, Subpart C / 47 CFR Part 15, Subpart C, Section 15.231	N/A	N/A	
4	Radiated Disturbance Emissions - Occupied Bandwidth 47 CFR Part 15, Subpart C / 47 CFR Part 15, Subpart C, Section 15.231	X	-	
5	Radiated Disturbance Emissions - Restricted Bands 47 CFR Part 15, Subpart C / 47 CFR Part 15, Subpart C, Section 15.205	X	-	

Remarks:

1) Data can be applied to Canadian RSS-210 Section 6.1.

2) Device contains an integrated, non-removable antenna.

3) Device is exempt from routine exposure testing per FCC Part 2.1093(c).

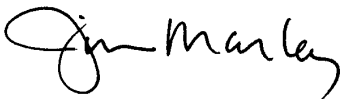
4) Device was observed to cease transmission immediately upon release of button.

5) Canadian Designation of Emissions: 56K0L1D.

Conclusion:

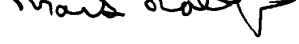
The tests listed in the Summary of Testing section of this report have been performed and the results recorded by Underwriters Laboratories Inc. in accordance with the procedures stated in each test requirement and specification. The test list was determined by the Applicant as being applicable to the Equipment Under Test. As a result, the subject product has been verified to comply or not comply as noted in the Summary of Testing with each test specification. The test results relate only to the items tested.

Prepared By:



Jim Marley
NARTE Certified EMC Engineer
EMC-002278-NE
(919) 549-1408

Reviewed By:



Mark Nolting
NARTE Certified EMC Test Lab Engineer
ATL-0340-E
(919) 549-1584

Test Facilities:

Test Location A) 10-Meter Anechoic Chamber (Industry Canada - IC 2953, NVLAP - 200246-0, VCCI - R-722)

Constructed by Lindgren RF Enclosures, this room consists of a 17.9 by 12 by 8.3 m (inside clearance) shielded room lined with TDK absorber material. The walls, floor (conducting ground plane) and ceiling are constructed of double sided galvanized sheet steel supported by 19 mm thick particle board. The interior walls and ceiling are covered with 10 by 10 cm, 4.6 mm thick ferrite tiles and partially covered with polystyrene absorber cones. Removable floor tiles and cones covering the floor between the EUT and antenna are provided when RF immunity testing is performed.

Room is provided with a 4.0 m diameter embedded turntable and a 1.2 by 2.1 m and 2.4 by 2.4 m double knife edge doors for access. Also, the room is fed electrical EUT power via permanently installed filters and is provided with a permanently mounted video surveillance camera. A remotely controllable antenna mast is located in the room for positioning the measuring antenna from 1 to 4 m above the ground plane.

Test Location B) Compact Anechoic Chamber

Constructed by Lindgren RF Enclosures, this room consists of a 6 by 3 by 2.9 m (inside clearance) shielded room lined with TDK absorber material. The walls, floor (conducting ground plane) and ceiling are constructed of double sided galvanized sheet steel supported by 19 mm thick particle board. The interior walls and ceiling are covered with 10 by 10 cm, 4.6 mm thick ferrite tiles and partially covered with polystyrene absorber cones. Removable floor tiles and cones covering the floor between the EUT and antenna are provided when RF immunity testing is performed.

Room is provided with a 1.5 m diameter embedded turntable and a 1.2 by 2.1 m double knife edge door for access. Also, the room is fed electrical EUT power via permanently installed filters and is provided with a video camera.

Test Location C) RF Shielded Room (VCCI - C-744, NVLAP - 200246-0)

Constructed by Lindgren RF Enclosures, this room consists of a 7.3 by 4.3 by 2.7 m (inside clearance) shielded room. The walls, floor (conducting ground plane) and ceiling are constructed of double sided galvanized sheet steel supported by 19 mm thick particle board. Room is provided with a 1.2 by 2.1m double knife edge door for access. Also, the room is fed electrical EUT power via permanently installed filters and is provided with a portable video surveillance camera.

Test Location D) Ground Reference Plane # 1 (VCCI - C-742, NVLAP - 200246-0)

Horizontal floor ground reference plane constructed of double sided galvanized sheet steel supported by 19 mm particle board and measures 3.6 by 3.0 m. It is located and bonded next to one vertical wall of the Control Room and is, therefore, provided with a 3.0 by 3.6 m vertical ground reference plane constructed of the same material. Power filters and LISNs, when required, are placed on top of and bonded to the horizontal floor ground reference plane.

Test Location E) Ground Reference Plane # 2 (VCCI - C-743, NVLAP - 200246-0)

Horizontal floor ground reference plane constructed of double sided galvanized sheet steel supported by 19 mm particle board and measures 4.3 by 5.2 m. It is located and bonded next to one vertical wall of the RFD Shielded Room and is, therefore, provided with a 4.3 by 2.8 m vertical ground reference plane constructed of the same material. Power filters and LISNs, when required, are placed on top of and bonded to the horizontal floor ground reference plane.

Test Location F) Ground Reference Plane # 3

Horizontal floor ground reference plane constructed of galvanized sheet steel measuring 3.0 by 3.6 m x 2.5mm thick. CDNs, when required, are placed on top of and bonded to the horizontal floor ground reference plane.

Test Location G) Ground Reference Plane # 4 (Automotive)

Horizontal floor ground reference plane constructed of double-sided galvanized sheet steel supported by 19 mm particle board and measures 3.6 by 3.0 m.

Test Location I) Harmonic Current Test Area - Located in front of Standard Source Impedance Power Supply.

Test Location J) Magnetic Field Ground Reference Plane

Horizontal floor ground reference plane constructed of 1.5 mm thick aluminum measuring 3.6 by 2.4 m.

Test Location P) Ground Reference Plane # 5

Horizontal floor ground reference plane constructed of double-sided galvanized sheet steel supported by 19 mm particle board and measures 3.6 by 3.0 m.

Test Location R) Ground Reference Plane # 6

Ground reference plane constructed of galvanized sheet steel measuring 3.0 m x 3.6 m x 2.5 mm thick. CDNs, when required, are placed on top of and bonded to the horizontal floor ground reference plane.

Test Location X) Other - As described in the Comments Section of Test Results.

EUT Information:

Equipment Used During Test:

Use*	Product Type	Manufacturer	Model	Comments
EUT	Transmitter	Hunter Fan Co.	84757	

* Use = EUT - Equipment Under Test, ACC - Accessory (Not Subjected to Test), or SIM - Simulator (Not Subjected to Test)

Input/Output Ports:

Port #	Name	Type*	Cable Max. >3m	Cable Shielded	Comments
0	Enclosure	N/E	No	No	

* AC = AC Power Port DC = DC Power Port N/E = Non-Electrical
I/O = Signal Input or Output Port (Not Involved in Process Control)
PMC = Process Measurement and Control Port

EUT Internal Operating Frequencies:

Frequency (MHz)*	Description
303.8	Operating Frequency.

Power Interface:

Mode #	Voltage (V)	Current (A)	Power (W)	Frequency (DC/AC-Hz)	Phases (#)	Comments
Rated	12	-	-	DC	1	
1	12	-	-	DC	1	Operating with a fresh A23 12 Volt battery installed

EUT Operation Modes:

Mode #	Description
1	Operating with one button continuously depressed.

EUT Configuration Modes:

Mode #	Description
1	Located in the center of a 1.5m x 1.0m x 0.8m (high) non-conductive table. Positioned flat.
2	Located in the center of a 1.5m x 1.0m x 0.8m (high) non-conductive table. Positioned on side edge.
3	Located in the center of a 1.5m x 1.0m x 0.8m (high) non-conductive table. Positioned on end pointed upward.

Test 1: Radiated Disturbance Emissions - 30 MHz to 1000 MHz

Test Requirement: 47 CFR Part 15, Subpart C

Test Specification: 47 CFR Part 15, Subpart C, Section 15.209 and 15.231

Test Procedure:

The test was performed in accordance with the Test Requirement and Specification and configured as noted in the Test Setup. The EUT was placed inside the anechoic chamber with a fresh battery installed. A peak measurement was first made by scanning the entire test frequency range and maximizing the EUT emissions by rotating the EUT and raising the antenna height from 1 to 4 meters above the ground reference plane. Then, a measurement was taken for all peak emissions to verify each were below the Test Limits.

Radiated Disturbance Limits for Manually Operated Transmitters - Section 15.231
at a measurement distance of 3 meters

Fundamental Frequency (MHz)	Field Strength of Fundamental		Field Strength of Spurious	
	(μV/m)	(dBμV/m)	(μV/m)	(dBμV/m)
40.66 to 40.70	2250	67.04	225	47.04
70 to 130	1250	61.94	125	41.94
130 to 174	1250 to 3750	61.94 to 71.48	125 to 375	41.94 to 51.48
174 to 260	3750	71.48	375	51.48
260 to 470	3750 to 12,500	71.48 to 81.93	375 to 1250	51.48 to 61.93
above 470	12,500	81.93	1250	61.93

** Linear Interpolations

Test Clarifications (Specific Limits for this transmit frequency):

At fundamental frequency, 303 MHz, Average field strength limit = 5542 μV/m (74.9 dBμV/m).
Harmonic field strength limit = 554.2 μV/m (54.9 dBμV/m).
Per 15.35(b) peak limit is 20 dB above average limit for each frequency.

Test Deviations:

None

Test Setup: Only the following ports were tested. See EUT Information for details.

Test Item	Port #	Port Name	EUT Operation Mode	EUT Configuration	Power Interface
A	0	Enclosure	1	1 (Flat)	1
B	0	Enclosure	1	2 (On Side)	1
C	0	Enclosure	1	3 (On End)	1

Test 1 - Results: Radiated Disturbance Emissions - 30 MHz to 1000 MHz

Test Results Summary:

Test Item	Test Location	Humidity (%)	Temperature (ºC)	Pressure (kPa)	Pass/Fail (P/F)	Date Completed	Comment #
A	A	36	22.5	100	P	1/23/03	
B	A	36	22.5	100	P	1/23/03	1
C	A	36	22.5	100	P	1/23/03	1

The EUT was considered to **Pass** the Requirements.

Comments:

Comment #	Description
1	Data below 200 MHz was recorded with the Equipment Under Test in flat orientation only. It was determined that no significant emissions are present in this band.

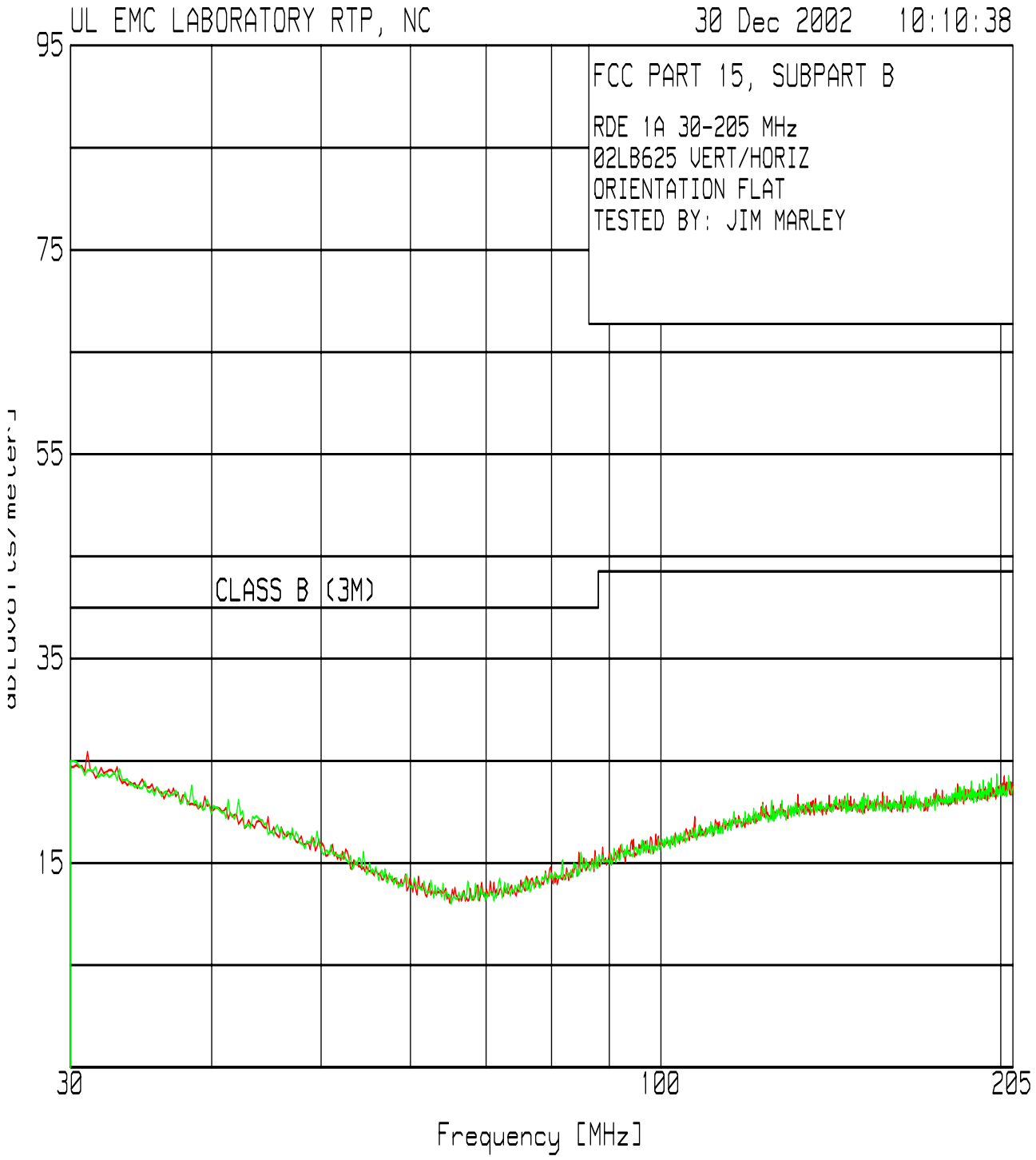
Test 1 - Test Equipment Used: Radiated Disturbance Emissions - 30 MHz to 1000 MHz

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
AT0022	Log Periodic Antenna, 200 to 1000 MHz	Chase	UPA6109	7/22/02	7/31/03
AT0025	Biconical Antenna, 30 to 300 MHz	Schaffner, EMC	VBA6106A	3/23/02	3/31/03
ATA084	Attenuator 6 dB, 2 GHz	Pasternack	PE7002-6	4/26/02	4/30/03
ATA085	Attenuator 6 dB, 2 GHz	Pasternack	PE7002-6	4/26/02	4/30/03
ATA096	50 ft, N male - N male	Micro-Coax	Coaxial Cable	10/31/02	4/30/03
ATA108	10 m, N male - N male	UL	RG214	4/26/02	4/30/03
ATA110	RF Amplifier, 1 to 1000 MHz	Miteq	AM-3A-000110-N	4/30/02	4/30/03
ATA118	10m, N male - N male	EMC Eupen	RG 214, Ferrite Cable	4/26/02	4/30/03
ATA143	6ft., N-male to N-male	Microcoax	Coaxial Cable	10/31/02	4/30/03
HI0034	Environmental Indicator	Cole-Palmer	99760-00	10/2/02	10/31/03
SAR002	Spectrum Analyzer / Receiver	Hewlett-Packard	8566B	11/21/02	11/30/03

The above equipment has been calibrated and is within the manufacturer's published limit of error. Calibration is traceable to the National Institute of Standards & Technology(NIST) and conforms to ANSI/NCSL Z540-1-1994.

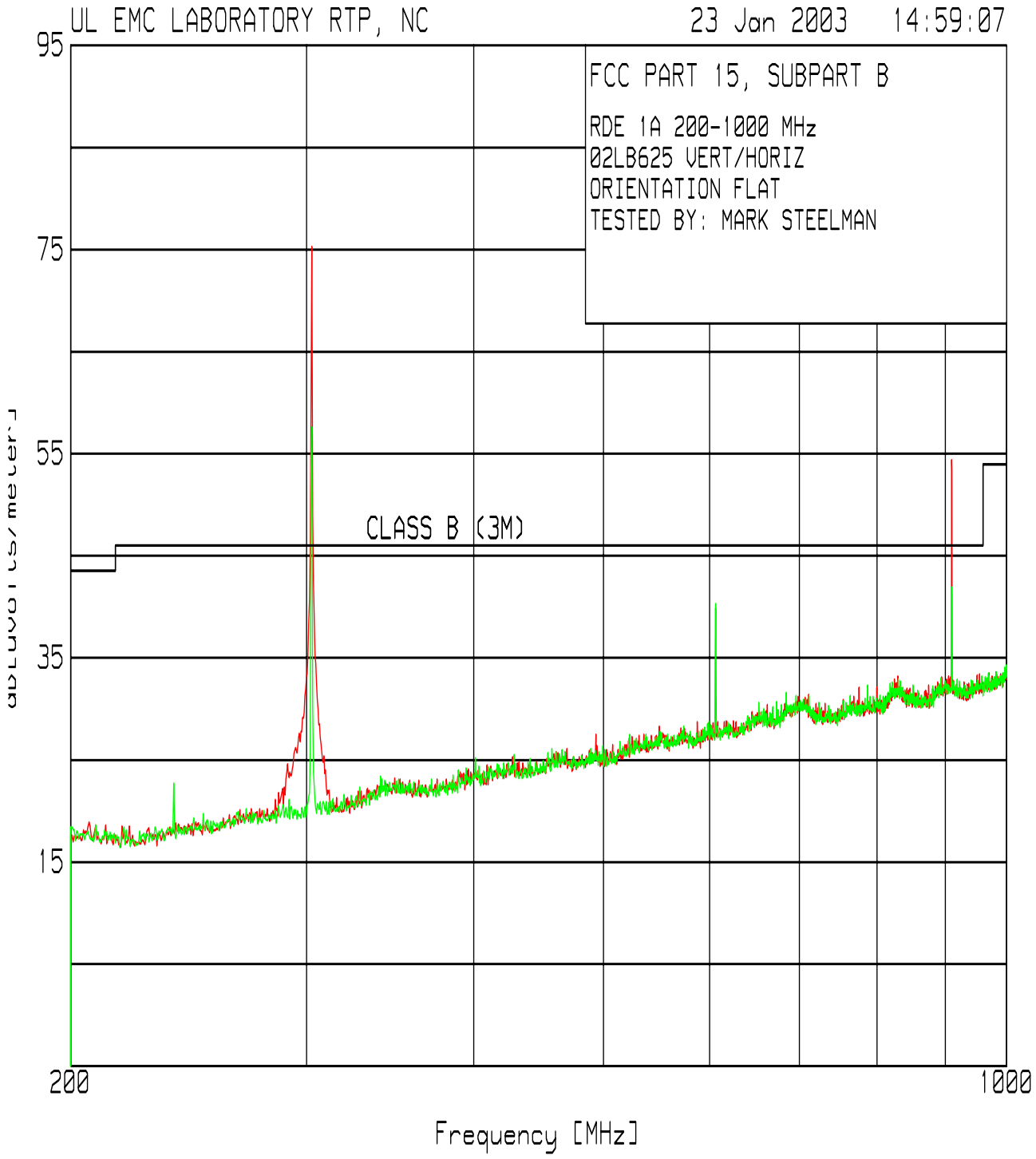
Test 1, Item A (Flat) - Peak Plot (Amplitude in dBuV/m):

Radiated Disturbance Emissions - 30 MHz to 1000 MHz



Test 1, Item A (Flat) - Peak Plot (Amplitude in dBuV/m):

Radiated Disturbance Emissions - 30 MHz to 1000 MHz



Test 1, Item A - Discrete Data: Radiated Disturbance Emissions - 30 MHz to 1000 MHz

Test Item (A-Z)	Detector Type* (P/Q/A)	Antenna Polarity (H/V)	Antenna Distance (m)	Measured Frequency (MHz)	Measured Value (dBuV)	Equip Correction (dB/m)	Corrected Value (dBuV/m)	Specified Limit** (dBuV/m)	Spec Margin (dB)	See Comment (#)***
A	P	V	3	303.1	72.0	-14.4	57.6	94.8	-37.2	
A	A	V	3	303.1	-	-	46.2	74.8	-28.6	
A	P	V	3	606.2	46.6	-6.3	40.3	74.8	-34.5	
A	A	V	3	606.2	-	-	28.9	54.8	-25.9	
A	P	V	3	909.6	43.6	-1.7	41.9	74.8	-32.9	
A	A	V	3	909.6	-	-	30.5	54.8	-24.3	
A	P	H	3	303.1	89.7	-14.4	75.3	94.8	-19.5	
A	A	H	3	303.1	-	-	63.9	74.8	-10.9	
A	P	H	3	606.2	46.2	-6.3	39.9	74.8	-34.9	
A	A	H	3	606.2	-	-	28.5	54.8	-26.3	
A	P	H	3	909.6	56.1	-1.7	54.4	74.8	-20.4	
A	A	H	3	909.6	-	-	43.0	54.8	-11.8	

** The Specified Limit is for the type measurement indicated. When Peak data is indicated, the tightest limit applicable is indicated.

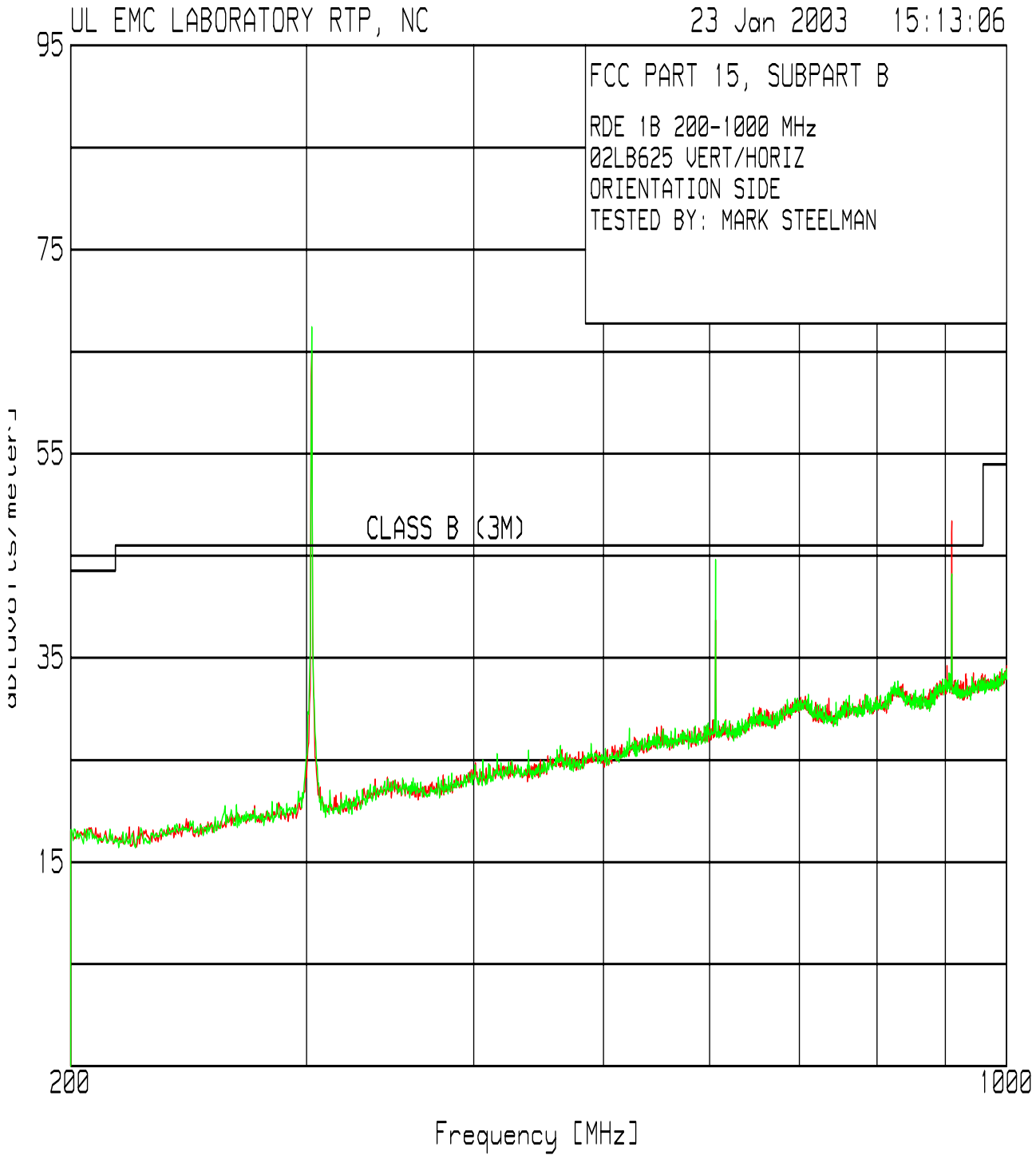
*** # = See Comment Number Under This Test's Comments Section.

Sample Calculation: Corrected Value = Measured Value + Equip Correction

Sample Calculation: Equip Correction = Antenna Factor (dB/m) + Cable Loss (dB) - Amplifier Gain (dB, if used)

Test 1, Item B (Side) - Peak Plot (Amplitude in dBuV/m):

Radiated Disturbance Emissions - 30 MHz to 1000 MHz



Test 1, Item B (Side) - Discrete Data: Radiated Disturbance Emissions - 30 MHz to 1000 MHz

Test Item (A-Z)	Detector Type* (P/Q/A)	Antenna Polarity (H/V)	Antenna Distance (m)	Measured Frequency (MHz)	Measured Value (dBuV)	Equip Correction (dB/m)	Corrected Value (dBuV/m)	Specified Limit** (dBuV/m)	Spec Margin (dB)	See Comment (#)***
B	P	V	3	303.1	81.8	-14.4	67.4	94.8	-27.4	
B	A	V	3	303.1	-	-	56.0	74.8	-18.8	
B	P	V	3	606.2	50.9	-6.3	44.6	74.8	-30.2	
B	A	V	3	606.2	-	-	33.2	54.8	-21.6	
B	P	V	3	909.6	44.9	-1.7	43.2	74.8	-31.6	
B	A	V	3	909.6	-	-	31.8	54.8	-23.0	
B	P	H	3	303.1	79.2	-14.4	64.8	94.8	-30.0	
B	A	H	3	303.1	-	-	53.4	74.8	-21.4	
B	P	H	3	606.2	45.0	-6.3	38.7	74.8	-36.1	
B	A	H	3	606.2	-	-	27.3	54.8	-27.5	
B	P	H	3	909.6	50.1	-1.7	48.4	74.8	-26.4	
B	A	H	3	909.6	-	-	37.0	54.8	-17.8	

** The Specified Limit is for the type measurement indicated. When Peak data is indicated, the tightest limit applicable is indicated.

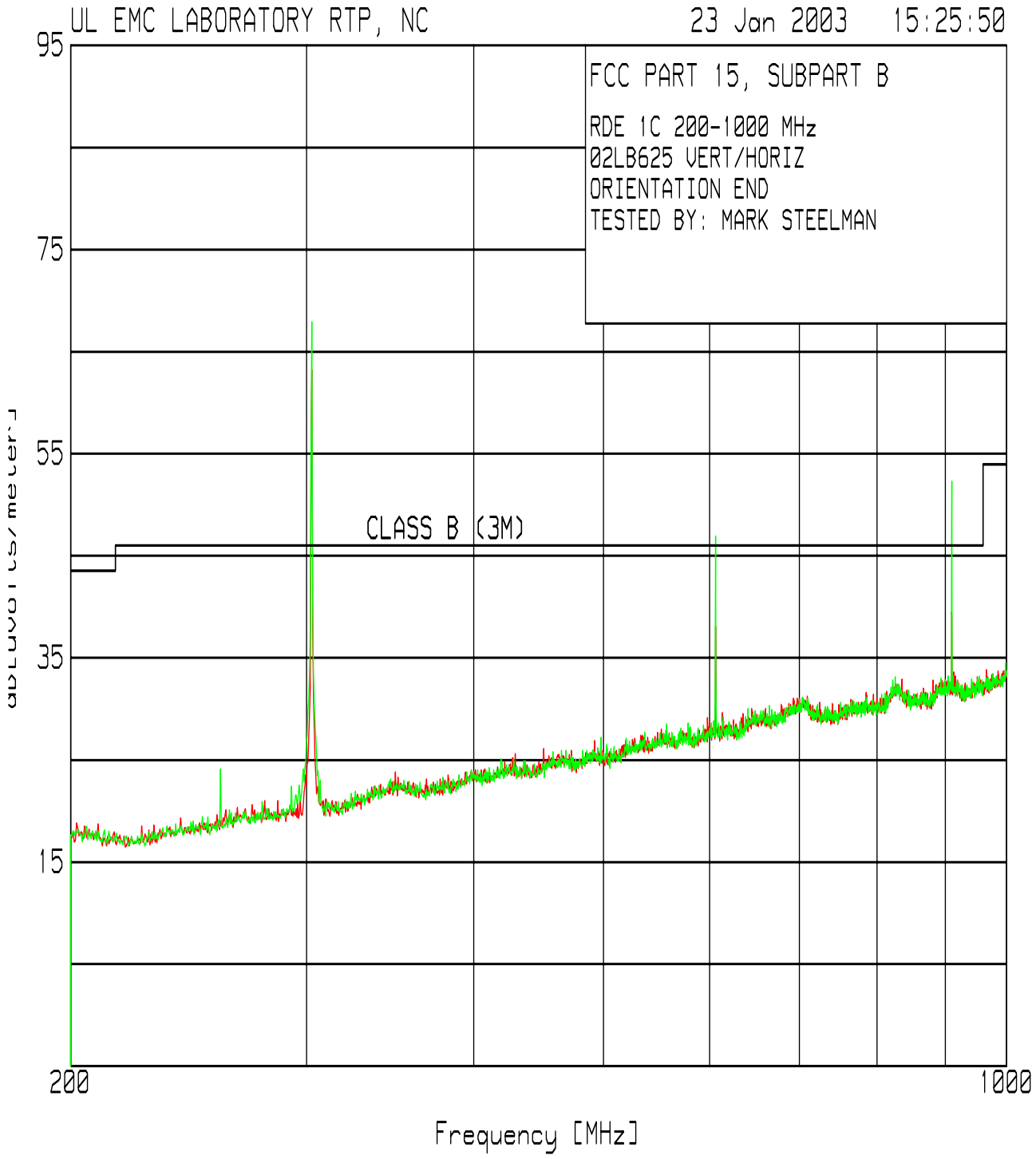
*** # = See Comment Number Under This Test's Comments Section.

Sample Calculation: Corrected Value = Measured Value + Equip Correction

Sample Calculation: Equip Correction = Antenna Factor (dB/m) + Cable Loss (dB) - Amplifier Gain (dB, if used)

Test 1, Item C (End) - Peak Plot (Amplitude in dBuV/m):

Radiated Disturbance Emissions - 30 MHz to 1000 MHz



Test 1, Item C (End) - Discrete Data: Radiated Disturbance Emissions - 30 MHz to 1000 MHz

Test Item (A-Z)	Detector Type* (P/Q/A)	Antenna Polarity (H/V)	Antenna Distance (m)	Measured Frequency (MHz)	Measured Value (dBuV)	Equip Correction (dB/m)	Corrected Value (dBuV/m)	Specified Limit** (dBuV/m)	Spec Margin (dB)	See Comment (#)***
C	P	V	3	303.1	82.3	-14.4	67.9	94.8	-26.9	
C	A	V	3	303.1	-	-	56.5	74.8	-18.3	
C	P	V	3	606.2	53.2	-6.3	46.9	74.8	-27.9	
C	A	V	3	606.2	-	-	35.5	54.8	-19.3	
C	P	V	3	909.6	54.0	-1.7	52.3	74.8	-22.5	
C	A	V	3	909.6	-	-	40.9	54.8	-13.9	
C	P	H	3	303.1	77.6	-14.4	63.2	94.8	-31.6	
C	A	H	3	303.1	-	-	51.8	74.8	-23.0	
C	P	H	3	606.2	44.4	-6.3	38.1	74.8	-36.7	
C	A	H	3	606.2	-	-	26.7	54.8	-28.1	
C	P	H	3	909.6	41.2	-1.7	39.5	74.8	-35.3	
C	A	H	3	909.6	-	-	28.1	54.8	-26.7	

** The Specified Limit is for the type measurement indicated. When Peak data is indicated, the tightest limit applicable is indicated.

*** # = See Comment Number Under This Test's Comments Section.

Sample Calculation: Corrected Value = Measured Value + Equip Correction

Sample Calculation: Equip Correction = Antenna Factor (dB/m) + Cable Loss (dB) - Amplifier Gain (dB, if used)

Test 2: Radiated Disturbance Emissions - Above 1 GHz

Test Requirement: 47 CFR Part 15, Subpart C

Test Specification: 47 CFR Part 15, Subpart C, Section 15.209 and 15.231

Test Procedure:

The test was performed in accordance with the Test Requirement and Specification and configured as noted in the Test Setup. The EUT was placed inside the anechoic chamber with a fresh battery installed. A peak measurement was first made by scanning the entire test frequency range and maximizing the EUT emissions by rotating the EUT and raising the antenna height from 1 to 4 meters above the ground reference plane. Then, a measurement was taken for all peak emissions to verify each were below the Test Limits.

Radiated Disturbance Limits for Manually Operated Transmitters - Section 15.231
at a measurement distance of 3 meters

Frequency Range MHz	Field Strength of Fundamental μV/m	(dBμV/m)	Field Strength of Fundamental μV/m	(dBμV/m)
40.66 to 40.70	2250	67.04	225	47.04
70 to 130	1250	61.94	125	41.94
130 to 174	1250 to 3750	61.94 to 71.48	125 to 375	41.94 to 51.48
174 to 260	3750	71.48	375	51.48
260 to 470	3750 to 12,500	71.48 to 81.93	375 to 1250	51.48 to 61.93
above 470	12,500	81.93	1250	61.93

** Linear Interpolations

Test Clarifications (Specific Limits for this Transmit Frequency):

At fundamental frequency, 303 MHz, Average field strength limit = 5542 μV/m (74.9 dBμV/m).
Harmonic field strength limit = 554.2 μV/m (54.9 dBμV/m).
Per 15.35(b) peak limit is 20 dB above average limit for each frequency.

Test Deviations:

None

Test Setup: Only the following ports were tested. See EUT Information for details.

Test Item	Port #	Port Name	EUT Operation Mode	EUT Configuration	Power Interface
A	0	Enclosure	1	1 (Flat)	1
B	0	Enclosure	1	2 (On Side)	1
C	0	Enclosure	1	3 (On End)	1

Test 2 - Results: Radiated Disturbance Emissions - Above 1 GHz

Test Results Summary:

Test Item	Test Location	Humidity (%)	Temperature (ºC)	Pressure (kPa)	Pass/Fail (P/F)	Date Completed	Comment #
A	A	36	22.5	100	P	1/23/03	
B	A	36	22.5	100	P	1/23/03	
C	A	36	22.5	100	P	1/23/03	

The EUT was considered to **Pass** the Requirements.

Comments:

Comment #	Description

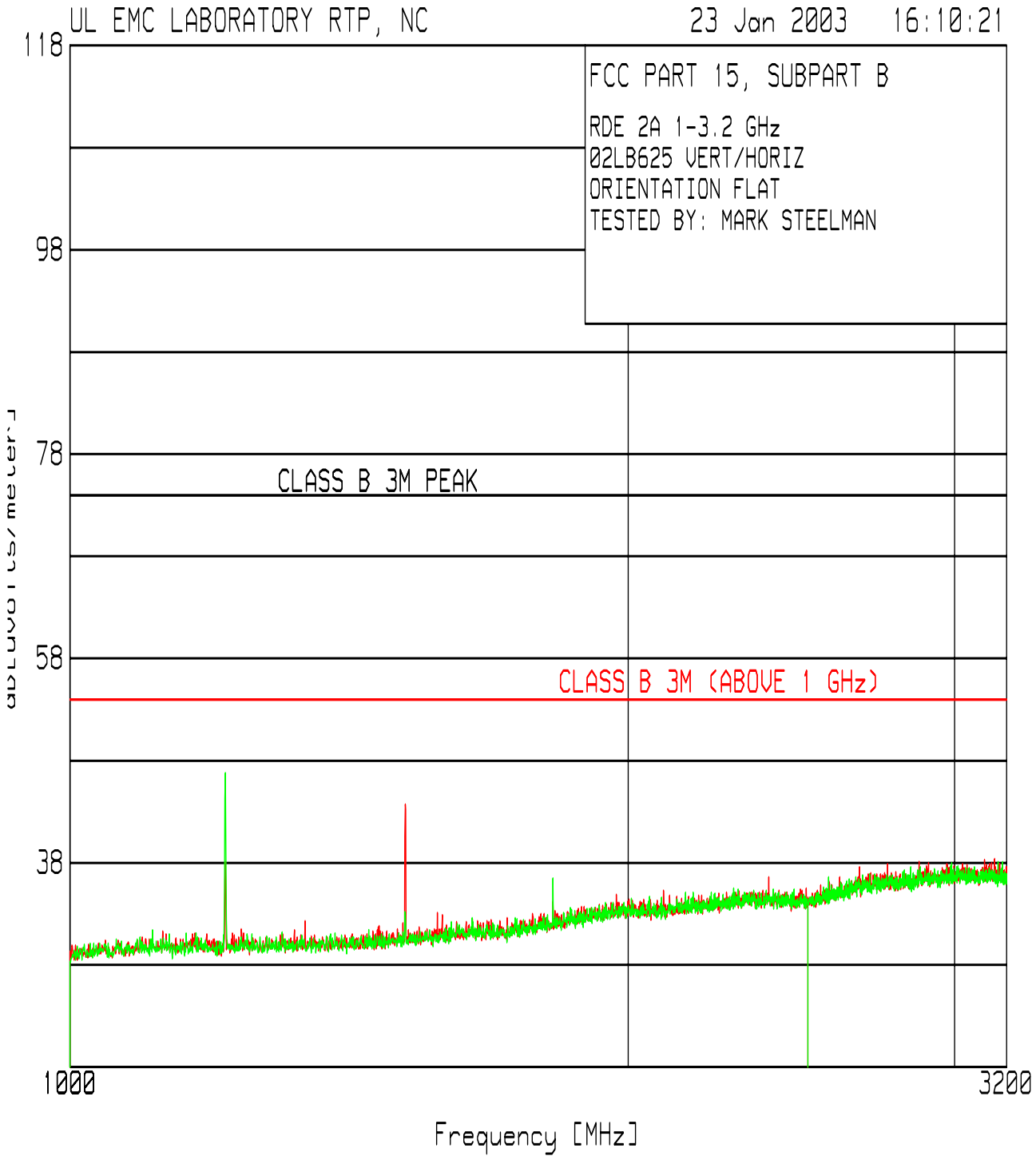
Test 2 - Test Equipment Used: Radiated Disturbance Emissions - Above 1 GHz

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
AT0032	Horn Antenna 1 to 18 GHz	EMC Test Systems	3115	5/01/02	5/31/03
ATA096	50 ft, N male - N male	Micro-Coax	Coaxial Cable	10/31/02	4/30/03
ATA142	Cable 27 ft. N male to N male, 0.5 to 18 GHz	Micro-coax	UFB293C-0-31490-504504	10/31/02	4/30/03
ATA143	6ft., N-male to N-male	Microcoax	Coaxial Cable	10/31/02	4/30/03
ATA144	Amplifier, 0.1 to 18 GHz	Miteq	AFS42-00101800-2	4/29/02	4/30/03
HI0034	Environmental Indicator	Cole-Palmer	99760-00	10/2/02	10/31/03
SAR002	Spectrum Analyzer / Receiver	Hewlett-Packard	8566B	11/21/02	11/30/03

The above equipment has been calibrated and is within the manufacturer's published limit of error. Calibration is traceable to the National Institute of Standards & Technology(NIST) and conforms to ANSI/NCSL Z540-1-1994.

Test 2, Item A (Flat) - Peak Plot (Amplitude in dBuV/m):

Radiated Disturbance Emissions - Above 1 GHz



Test 2, Item A (Flat) - Discrete Data: Radiated Disturbance Emissions - Above 1 GHz

Test Item (A-Z)	Detector Type* (P/Q/A)	Antenna Polarity (H/V)	Antenna Distance (m)	Measured Frequency (MHz)	Measured Value (dBuV)	Equip Correction (dB/m)	Corrected Value (dBuV/m)	Specified Limit** (dBuV/m)	Spec Margin (dB)	See Comment (#)***
A	P	V	3	1212.9	45.5	-7.4	38.1	74.8	-36.7	
A	A	V	3	1212.9	-	-	26.7	54.8	-28.1	
A	P	V	3	1516.5	49.5	-5.8	43.7	74.8	-31.1	
A	A	V	3	1516.5	-	-	32.3	54.8	-22.5	
A	P	V	3	1821.6	38.4	-4.2	34.2	74.8	-40.6	
A	A	V	3	1821.6	-	-	22.8	54.8	-32.0	
A	P	V	3	2124.4	37.6	-2.9	34.7	74.8	-40.1	
A	A	V	3	2124.4	-	-	23.3	54.8	-31.5	
A	P	V	3	2428.5	36.7	-1.6	35.1	74.8	-39.7	
A	A	V	3	2428.5	-	-	23.7	54.8	-31.1	
A	P	V	3	2731.7	37.7	-0.8	36.9	74.8	-37.9	
A	A	V	3	2731.7	-	-	25.5	54.8	-29.3	
A	P	V	3	3035.0	37.8	0.1	37.9	74.8	-36.9	
A	A	V	3	3035.0	-	-	26.5	54.8	-28.3	
A	P	H	3	1212.9	54.2	-7.4	46.8	74.8	-28.0	
A	A	H	3	1212.9	-	-	35.4	54.8	-19.4	
A	P	H	3	1516.5	39.0	-5.8	33.2	74.8	-41.6	
A	A	H	3	1516.5	-	-	21.8	54.8	-33.0	
A	P	H	3	1821.6	40.7	-4.2	36.5	74.8	-38.3	
A	A	H	3	1821.6	-	-	25.1	54.8	-29.7	
A	P	H	3	2124.4	37.3	-2.9	34.4	74.8	-40.4	
A	A	H	3	2124.4	-	-	23.0	54.8	-31.8	
A	P	H	3	2428.5	36.7	-1.6	35.1	74.8	-39.7	
A	A	H	3	2428.5	-	-	23.7	54.8	-31.1	
A	P	H	3	2731.7	37.3	-0.8	36.5	74.8	-38.3	
A	A	H	3	2731.7	-	-	25.1	54.8	-29.7	
A	P	H	3	3035.0	37.1	0.1	37.2	74.8	-37.6	
A	A	H	3	3035.0	-	-	25.8	54.8	-29.0	

* P = Peak, Q = Quasi-Peak, A = Average.

** The Specified Limit is for the type measurement indicated. When Peak data is indicated, the tightest limit applicable is indicated.

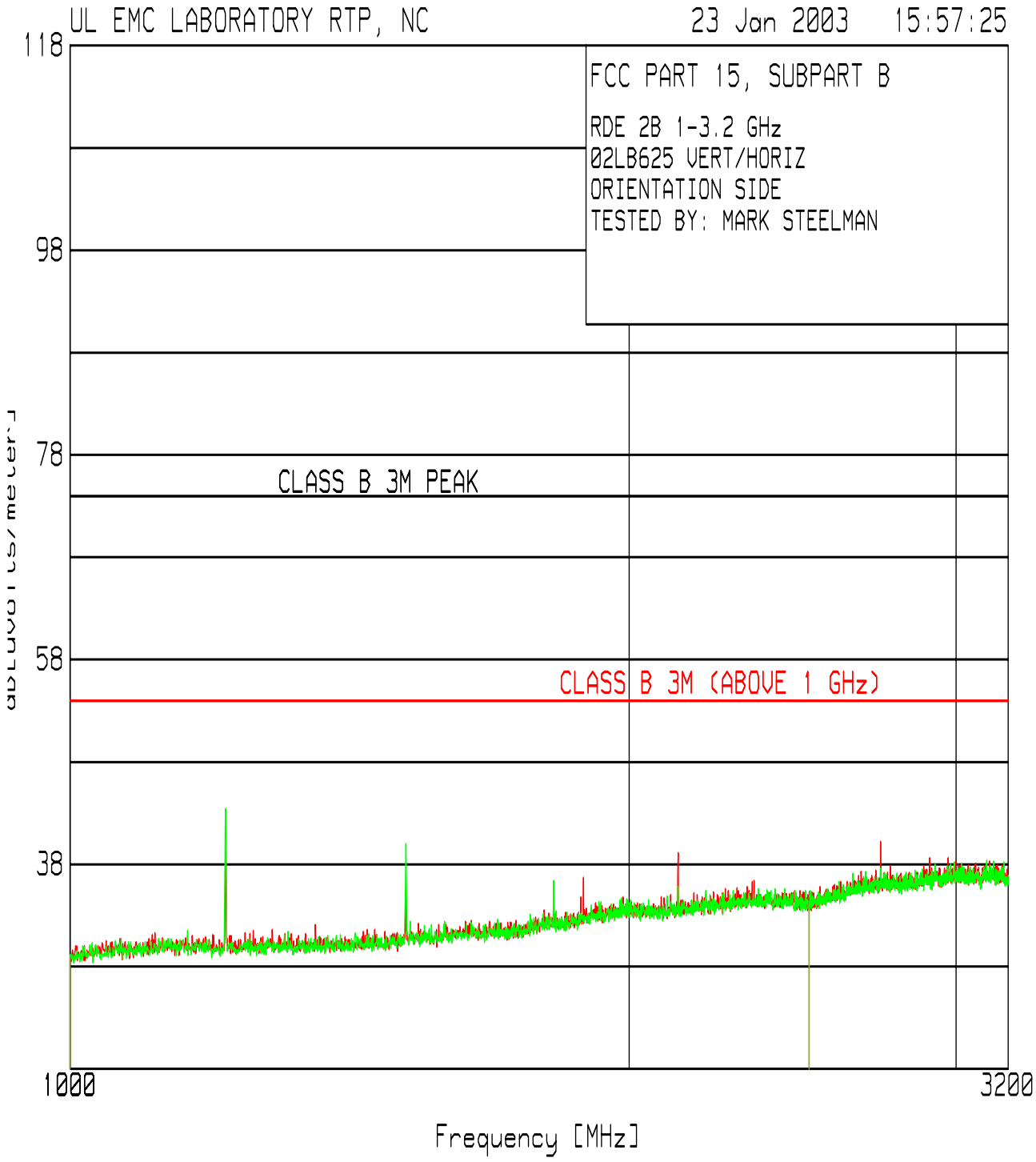
*** # = See Comment Number Under This Test's Comments Section.

Sample Calculation: Corrected Value = Measured Value + Equip Correction

Sample Calculation: Equip Correction = Antenna Factor (dB/m) + Cable Loss (dB) - Amplifier Gain (dB, if used)

Test 2, Item B (Side) - Peak Plot (Amplitude in dBuV/m):

Radiated Disturbance Emissions - Above 1 GHz



Test 2, Item B (Side) - Discrete Data: Radiated Disturbance Emissions - Above 1 GHz

Test Item (A-Z)	Detector Type* (P/Q/A)	Antenna Polarity (H/V)	Antenna Distance (m)	Measured Frequency (MHz)	Measured Value (dBuV)	Equip Correction (dB/m)	Corrected Value (dBuV/m)	Specified Limit** (dBuV/m)	Spec Margin (dB)	See Comment (#)***
B	P	V	3	1212.9	48.8	-7.4	41.4	74.8	-33.4	
B	A	V	3	1212.9	-	-	30.0	54.8	-24.8	
B	P	V	3	1516.5	41.4	-5.8	35.6	74.8	-39.2	
B	A	V	3	1516.5	-	-	24.2	54.8	-30.6	
B	P	V	3	1821.6	40.6	-4.2	36.4	74.8	-38.4	
B	A	V	3	1821.6	-	-	25.0	54.8	-29.8	
B	P	V	3	2124.4	42.0	-2.9	39.1	74.8	-35.7	
B	A	V	3	2124.4	-	-	27.7	54.8	-27.1	
B	P	V	3	2427.3	36.8	-1.6	35.2	74.8	-39.6	
B	A	V	3	2427.3	-	-	23.8	54.8	-31.0	
B	P	V	3	2731.7	41.0	-0.8	40.2	74.8	-34.6	
B	A	V	3	2731.7	-	-	28.8	54.8	-26.0	
B	P	V	3	3035.0	37.4	0.1	37.5	74.8	-37.3	
B	A	V	3	3035.0	-	-	26.1	54.8	-28.7	
B	P	H	3	1212.9	50.8	-7.4	43.4	74.8	-31.4	
B	A	H	3	1212.9	-	-	32.0	54.8	-22.8	
B	P	H	3	1519.5	45.8	-5.8	40.0	74.8	-34.8	
B	A	H	3	1519.5	-	-	28.6	54.8	-26.2	
B	P	H	3	1823.1	40.6	-4.2	36.4	74.8	-38.4	
B	A	H	3	1823.1	-	-	25.0	54.8	-29.8	
B	P	H	3	2127.4	38.7	-2.9	35.8	74.8	-39.0	
B	A	H	3	2127.4	-	-	24.4	54.8	-30.4	
B	P	H	3	2427.3	37.3	-1.6	35.7	74.8	-39.1	
B	A	H	3	2427.3	-	-	24.3	54.8	-30.5	
B	P	H	3	2731.7	38.4	-0.8	37.6	74.8	-37.2	
B	A	H	3	2731.7	-	-	26.2	54.8	-28.6	
B	P	H	3	3035.0	37.6	0.1	37.7	74.8	-37.1	
B	A	H	3	3035.0	-	-	26.3	54.8	-28.5	

* P = Peak, Q = Quasi-Peak, A = Average.

** The Specified Limit is for the type measurement indicated. When Peak data is indicated, the tightest limit applicable is indicated.

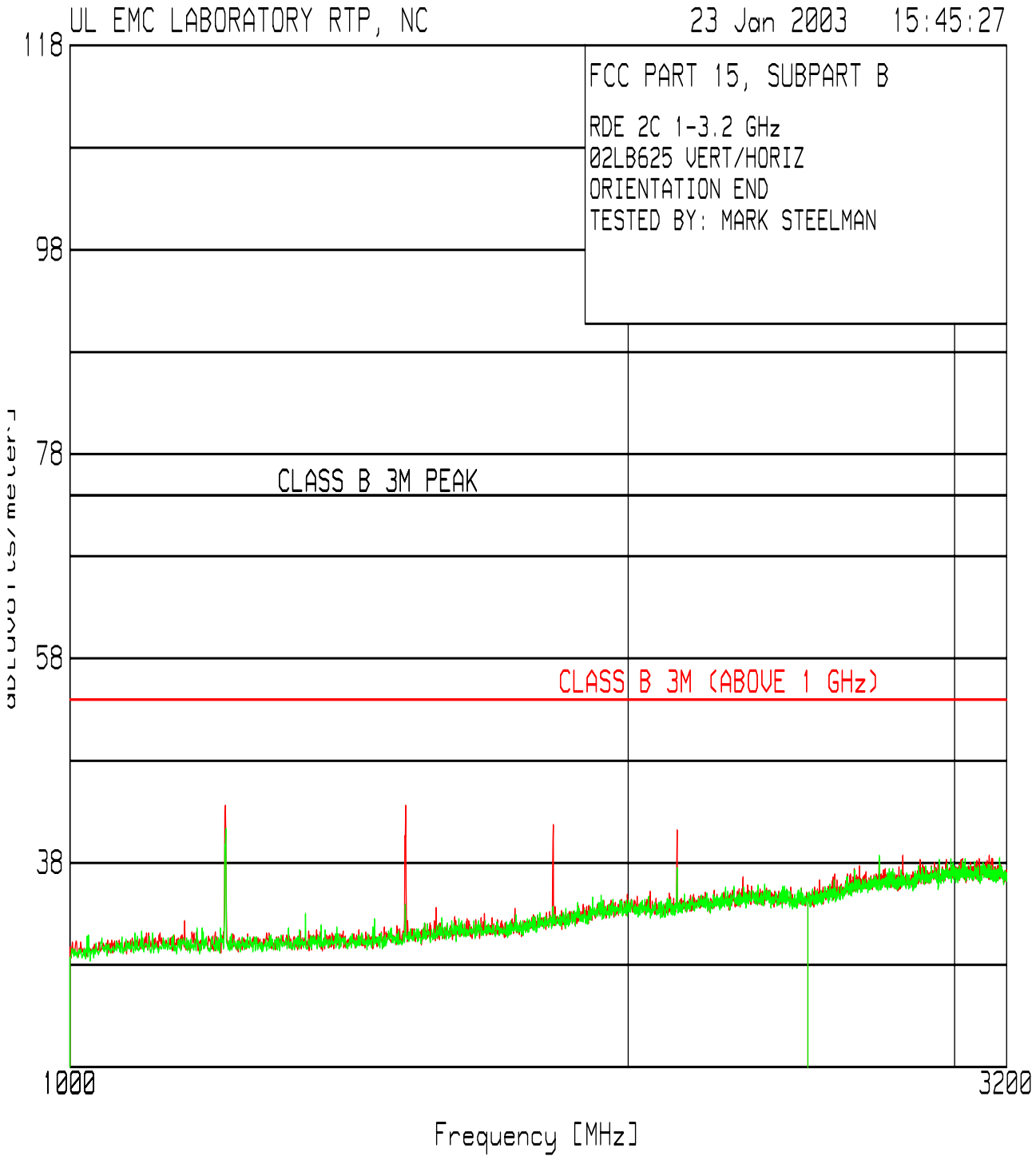
*** # = See Comment Number Under This Test's Comments Section.

Sample Calculation: Corrected Value = Measured Value + Equip Correction

Sample Calculation: Equip Correction = Antenna Factor (dB/m) + Cable Loss (dB) - Amplifier Gain (dB, if used)

Test 2, Item C (End) - Peak Plot (Amplitude in dBuV/m):

Radiated Disturbance Emissions - Above 1 GHz



Test 2, Item C (End) - Discrete Data: Radiated Disturbance Emissions - Above 1 GHz

Test Item (A-Z)	Detector Type* (P/Q/A)	Antenna Polarity (H/V)	Antenna Distance (m)	Measured Frequency (MHz)	Measured Value (dBuV)	Equip Correction (dB/m)	Corrected Value (dBuV/m)	Specified Limit** (dBuV/m)	Spec Margin (dB)	See Comment (#)***
A	P	V	3	1212.9	51.0	-7.4	43.6	74.8	-31.2	
A	A	V	3	1212.9	-	-	32.2	54.8	-22.6	
A	P	V	3	1516.5	49.4	-5.8	43.6	74.8	-31.2	
A	A	V	3	1516.5	-	-	32.2	54.8	-22.6	
A	P	V	3	1821.6	45.9	-4.2	41.7	74.8	-33.1	
A	A	V	3	1821.6	-	-	30.3	54.8	-24.5	
A	P	V	3	2124.4	55.1	-2.9	52.2	74.8	-22.6	
A	A	V	3	2124.4	-	-	40.8	54.8	-14.0	
A	P	V	3	2427.3	36.9	-1.6	35.3	74.8	-39.5	
A	A	V	3	2427.3	-	-	23.9	54.8	-30.9	
A	P	V	3	2731.7	39.2	-0.8	38.4	74.8	-36.4	
A	A	V	3	2731.7	-	-	27.0	54.8	-27.8	
A	P	V	3	3035.0	38.3	0.1	38.4	74.8	-36.4	
A	A	V	3	3035.0	-	-	27.0	54.8	-27.8	
A	P	H	3	1215.1	48.7	-7.4	41.3	74.8	-33.5	
A	A	H	3	1215.1	-	-	29.9	54.8	-24.9	
A	P	H	3	1519.5	39.7	-5.8	33.9	74.8	-40.9	
A	A	H	3	1519.5	-	-	22.5	54.8	-32.3	
A	P	H	3	1823.1	37.9	-4.2	33.7	74.8	-41.1	
A	A	H	3	1823.1	-	-	22.3	54.8	-32.5	
A	P	H	3	2127.4	40.4	-2.9	37.5	74.8	-37.3	
A	A	H	3	2127.4		-	26.1	54.8	-28.7	
A	P	H	3	2427.3	37.3	-1.6	35.7	74.8	-39.1	
A	A	H	3	2427.3	-	-	24.3	54.8	-30.5	
A	P	H	3	2731.7	37.2	-0.8	36.4	74.8	-38.4	
A	A	H	3	2731.7	-	-	25.0	54.8	-29.8	
A	P	H	3	3035.0	37.3	0.1	37.4	74.8	-37.4	
A	A	H	3	3035.0	-	-	26.0	54.8	-28.8	

* P = Peak, Q = Quasi-Peak, A = Average.

** The Specified Limit is for the type measurement indicated. When Peak data is indicated, the tightest limit applicable is indicated.

*** # = See Comment Number Under This Test's Comments Section.

Sample Calculation: Corrected Value = Measured Value + Equip Correction

Sample Calculation: Equip Correction = Antenna Factor (dB/m) + Cable Loss (dB) - Amplifier Gain (dB, if used)

Test 3: Radiated Disturbance Emissions - Peak-to-Average Ratio

Test Requirement: 47 CFR Part 15, Subpart C

Test Specification: 47 CFR Part 15, Subpart C, Section 15.231

Test Procedure:

The test was performed in accordance with the Test Requirement and Specification and configured as noted in the Test Setup. The EUT was placed inside the anechoic chamber on connected to the proper power supply source. A peak measurement was first made by scanning the entire test frequency range and maximizing the EUT emissions by rotating the EUT and raising the antenna height from 1 to 4 meters above the ground reference plane.

The measurement spectrum analyzer is centered on the EUT's transmit frequency and span is reduced to 0 Hz to obtain a time domain measurement. The period of one complete transmit cycle is recorded. Next each button on the transmitter is depressed in sequence to determine which button produces the largest duty cycle. The duration of each pulse in the cycle is recorded and the percentage of time the EUT is transmitting is calculated.

No limit is expressed in Section 15.231 for this test, however the result of this test is used to calculate average values for the remaining measurements.

Test Deviations:

None

Test Setup: Only the following ports were tested. See EUT Information for details.

Test Item	Port #	Port Name	EUT Operation Mode	EUT Configuration	Power Interface
A	0	Enclosure	1	1	1

Test 3 - Results: Radiated Disturbance Emissions - Peak-to-Average Ratio

Test Results Summary:

Test Item	Test Location	Humidity (%)	Temperature (ºC)	Pressure (kPa)	Pass/Fail (P/F)	Date Completed	Comment #
A	D	36	22	100.4	P	12/14/02	

The EUT was considered to **Pass** the Requirements.

Comments:

Comment #	Description

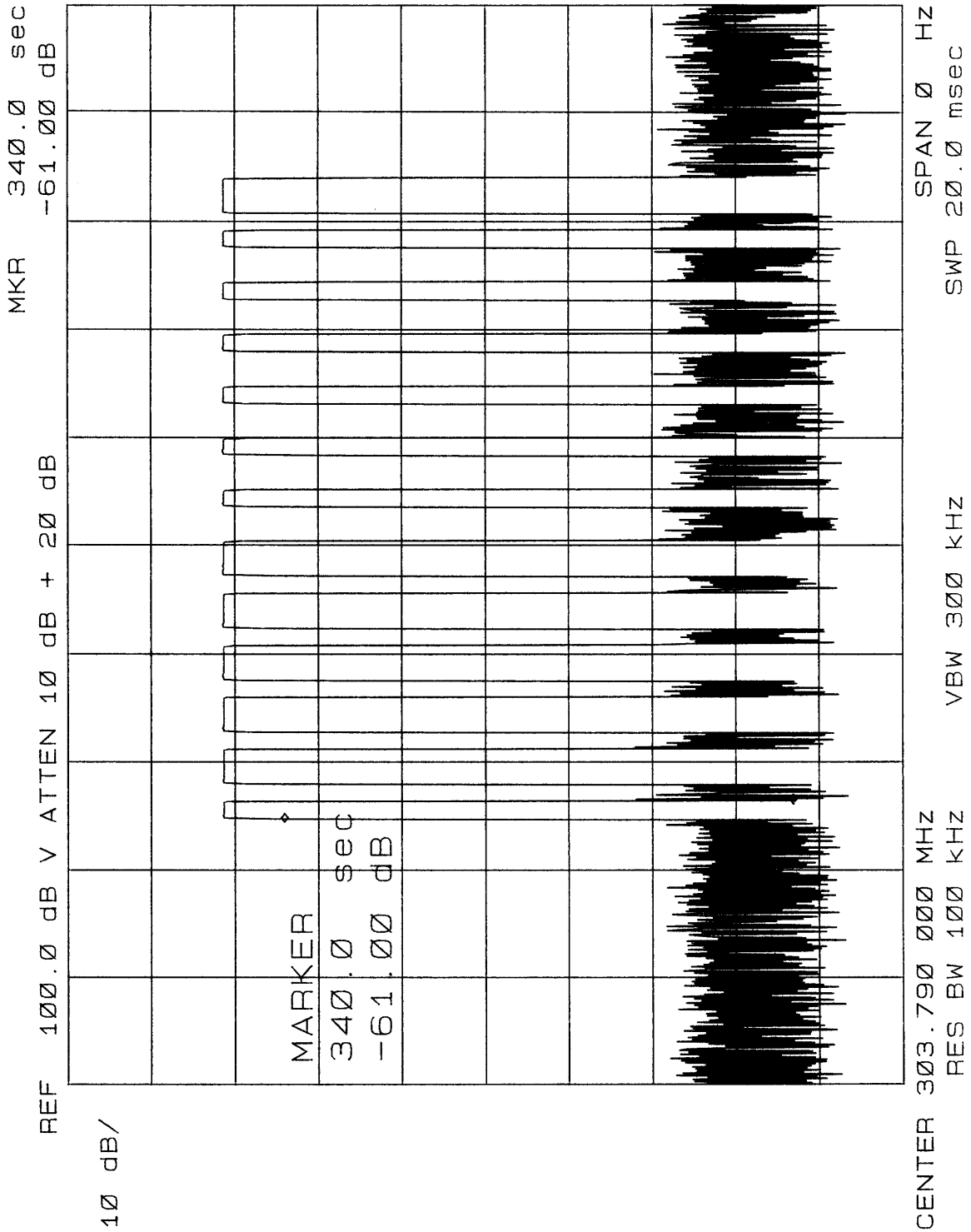
Test 3 - Test Equipment Used: Radiated Disturbance Emissions - Peak-to-Average Ratio

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
SAR002	Spectrum Analyzer / Receiver	Hewlett-Packard	8566B	11/21/02	11/30/03
ZAT016	22cm fixed length rod antenna, N-Male connector	EMCO	N/A	N/A	N/A

The above equipment has been calibrated and is within the manufacturer's published limit of error. Calibration is traceable to the National Institute of Standards & Technology(NIST) and conforms to ANSI/NCSL Z540-1-1994.

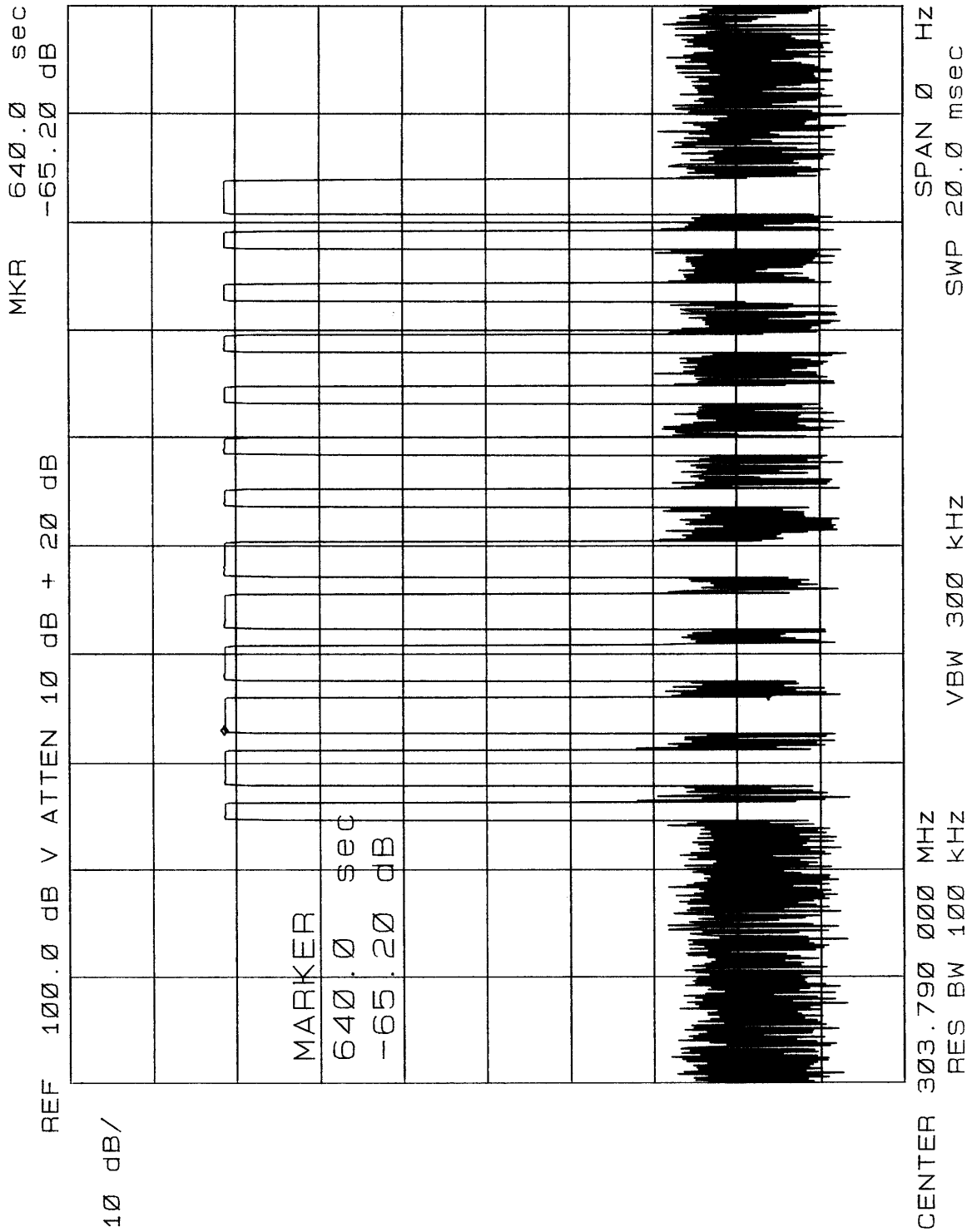
Test 3, Item A (Short Pulse) - Peak Plot (Amplitude in dBuV/m):

Radiated Disturbance Emissions - Peak-to-Average Ratio



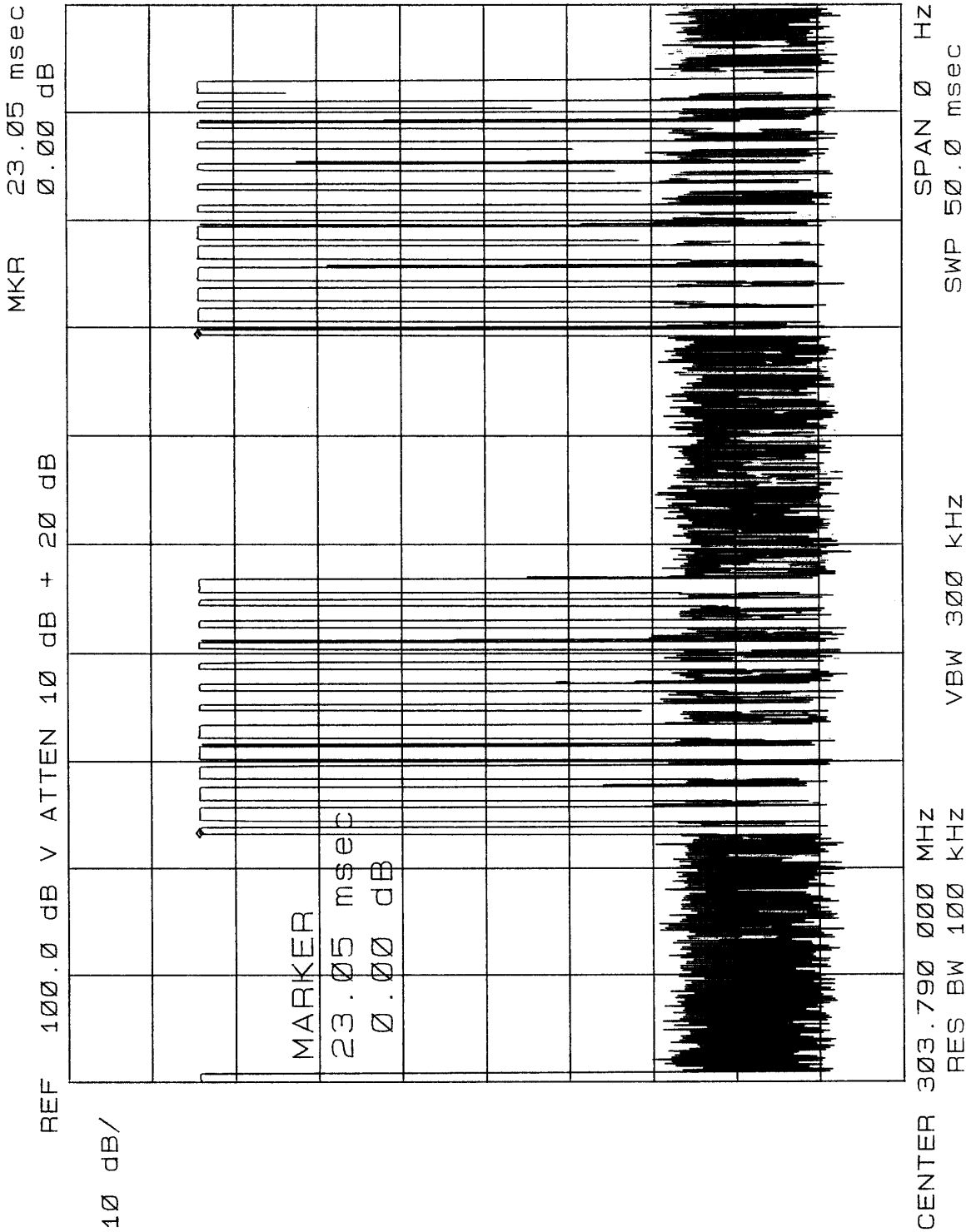
Test 3, Item A (Long Pulse) - Peak Plot (Amplitude in dBuV/m):

Radiated Disturbance Emissions - Peak-to-Average Ratio



Test 3, Item A (Period) - Peak Plot (Amplitude in dBuV/m):

Radiated Disturbance Emissions - Peak-to-Average Ratio



Test 3, Item A - Discrete Data: Radiated Disturbance Emissions - Peak-to-Average Ratio

Test Item (A-Z)	Total ON time per transmission (mS)	Total Period of transmission (mS)*	Duty Cycle (ON time / total period)	Peak-to-Average Ratio (dB)**	See Comment (#)***
A	6.22	23.05	0.2698	-11.4	

* Or 100 milliseconds, whichever is less

** Peak-to-Average Ratio = 20 * log (Duty Cycle)

*** # = See Comment Number Under The Preceeding Test Comments Section.

Short Cycles = 7 x 0.34 ms = 2.38 ms per cycle
Long Cycles = 6 x 0.64 ms = 3.83 ms per cycle
Total = 6.22 ms per cycle

Test 4: Radiated Disturbance Emissions - Occupied Bandwidth

Test Requirement: 47 CFR Part 15, Subpart C

Test Specification: 47 CFR Part 15, Subpart C, Section 15.231

Test Procedure:

All testing was performed in UL's 10 meter semi-anechoic chamber. The chamber meets the FCC's site attenuation criteria for use as an alternative measurement site. The EUT was tested per ANSI C63.4:1992 test method placed on a non-conductive 1m x 1.5m table 80 cm above the ground plane. The receive antenna used was a log-periodic antenna mounted on an antenna mast. The turntable was rotated from 0° to 360° to determine the worst-case emissions angle for the transmit frequency. The antenna mast was raised and lowered between 1 and 4 meters above the ground plane to determine the worst-case height.

The spectrum analyzer Resolution Bandwidth and Video Bandwidth were set to 10 kHz for the measurement. A plot of the spectrum analyzer display screen is produced with marker points displaying the center frequency and the left and right side points that are 20 dB below the field strength at the center frequency.

Occupied Bandwidth Limit - Manually Operated Transmitter Section 15.231

Transmit Frequency MHz	Bandwidth Limit (% of fundamental)
70 to 900	.25%
Above 900	.50%

Test Deviations:

None

Test Setup: Only the following ports were tested. See EUT Information for details.

Test Item	Port #	Port Name	EUT Operation Mode	EUT Configuration	Power Interface
A	0	Enclosure	1	1	1

Test 4 - Results: Radiated Disturbance Emissions - Occupied Bandwidth

Test Results Summary:

Test Item	Test Location	Humidity (%)	Temperature (ºC)	Pressure (kPa)	Pass/Fail (P/F)	Date Completed	Comment #
A	D	36	22	100.4	P	12/14/02	

The EUT was considered to **Pass** the Requirements.

Comments:

Comment #	Description

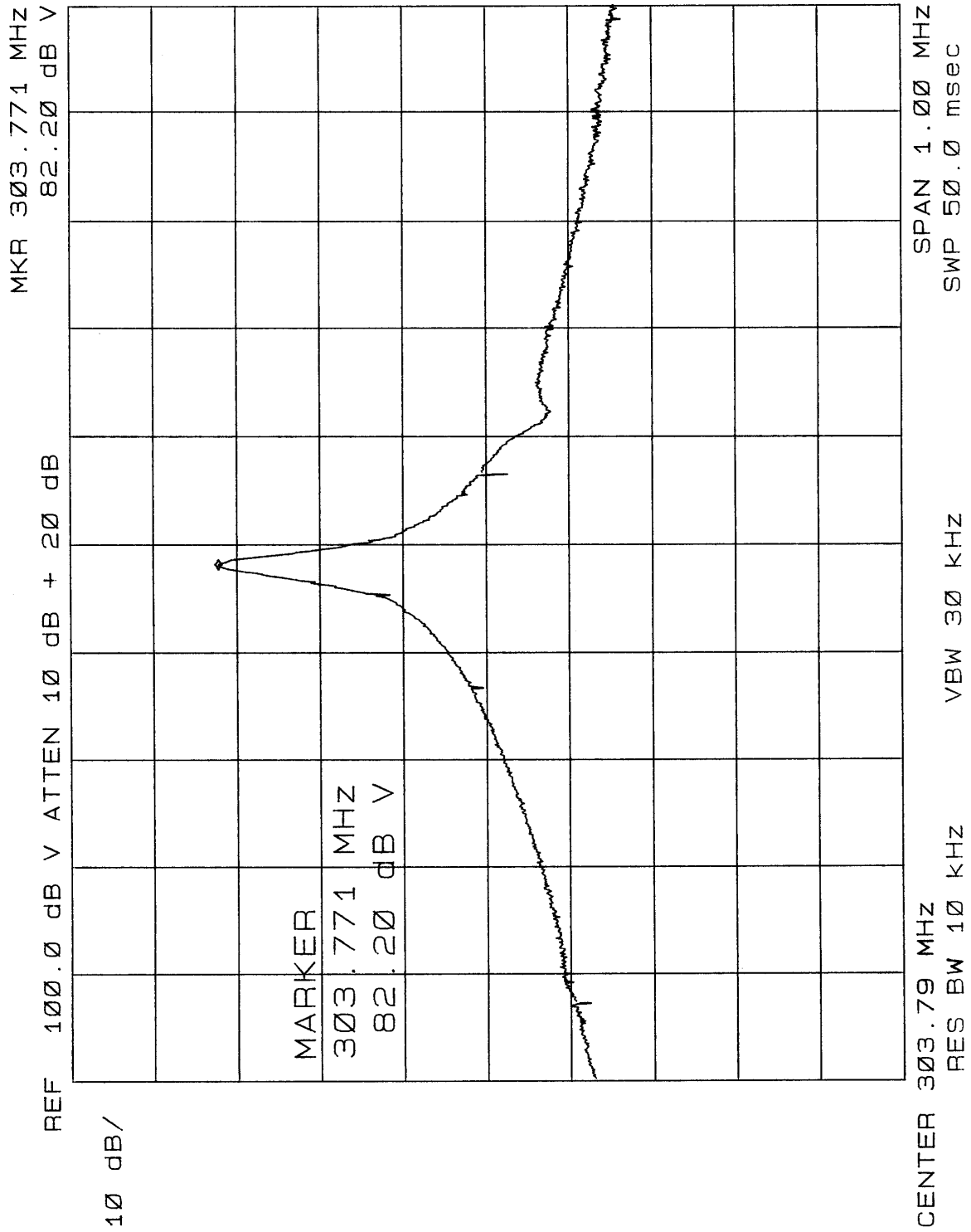
Test Equipment Used:

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
SAR002	Spectrum Analyzer / Receiver	Hewlett-Packard	8566B	11/21/02	11/30/03
ZAT016	22cm fixed length rod antenna, N-Male connector	EMCO	N/A	N/A	N/A

The above equipment has been calibrated and is within the manufacturer's published limit of error. Calibration is traceable to the National Institute of Standards & Technology(NIST) and conforms to ANSI/NCSL Z540-1-1994.

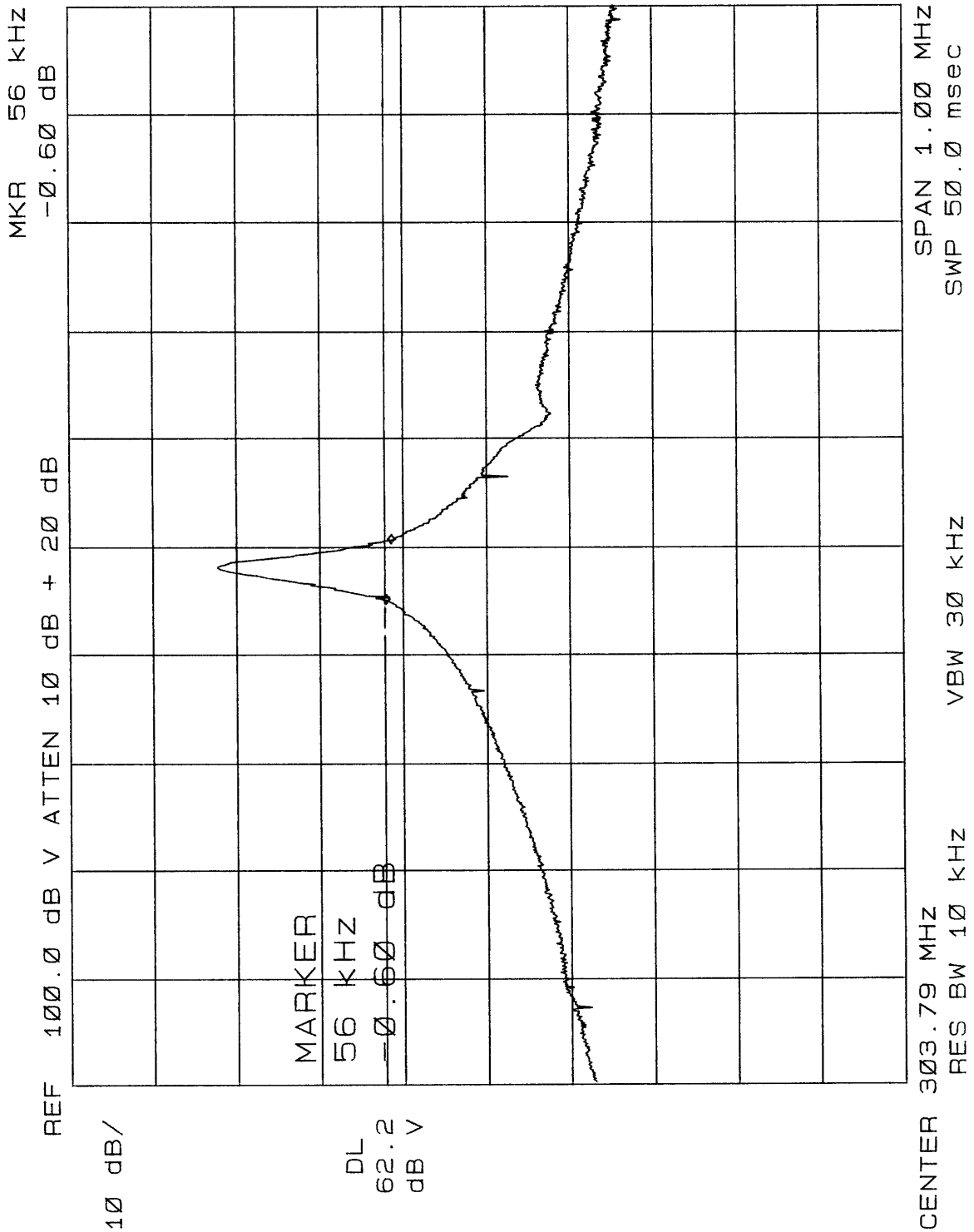
Test 4, Item A (Center Frequency) - Peak Plot (Amplitude in dBuV/m):

Radiated Disturbance Emissions - Occupied Bandwidth



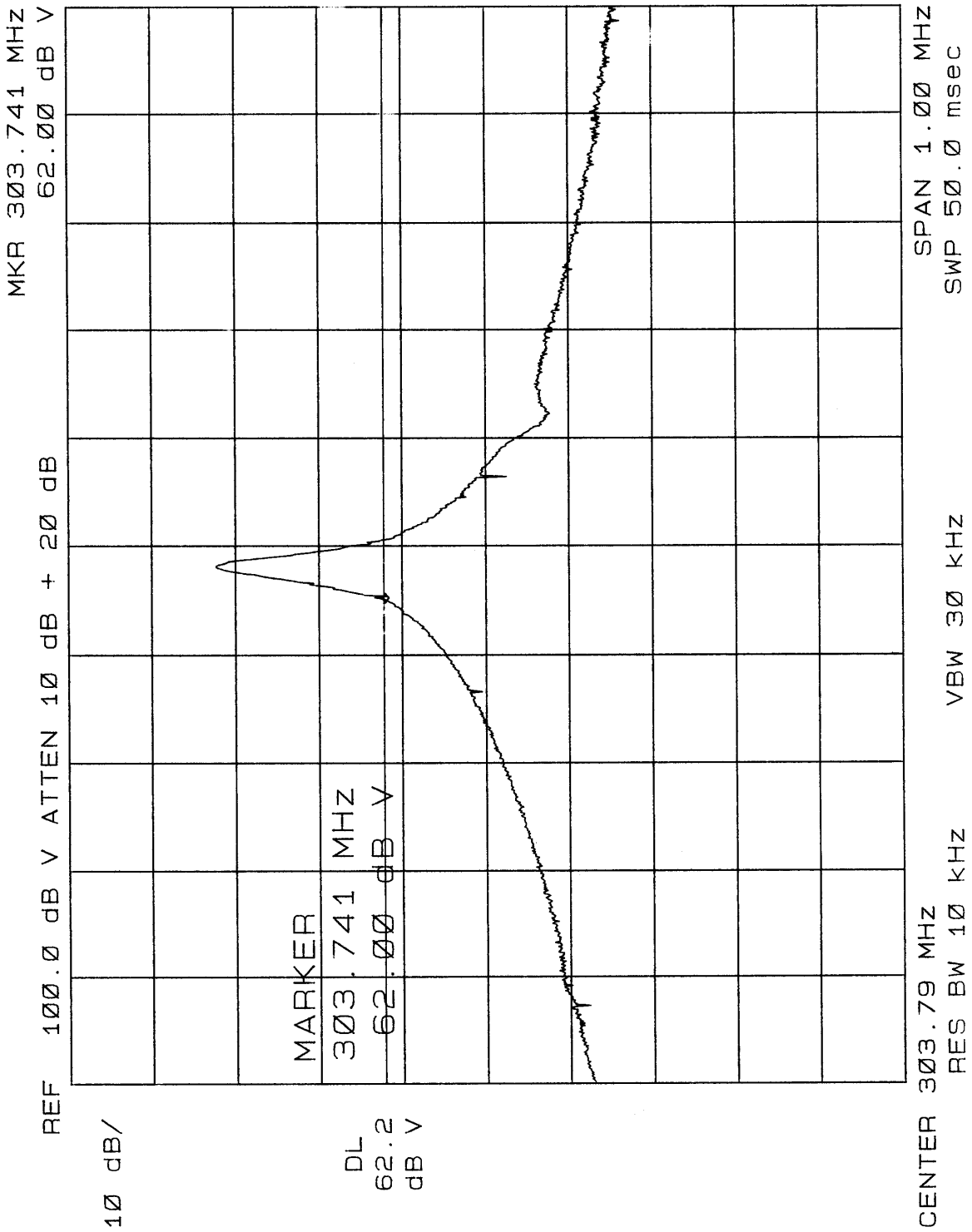
Test 4, Item A (Bandwidth) - Peak Plot (Amplitude in dBuV/m):

Radiated Disturbance Emissions - Occupied Bandwidth



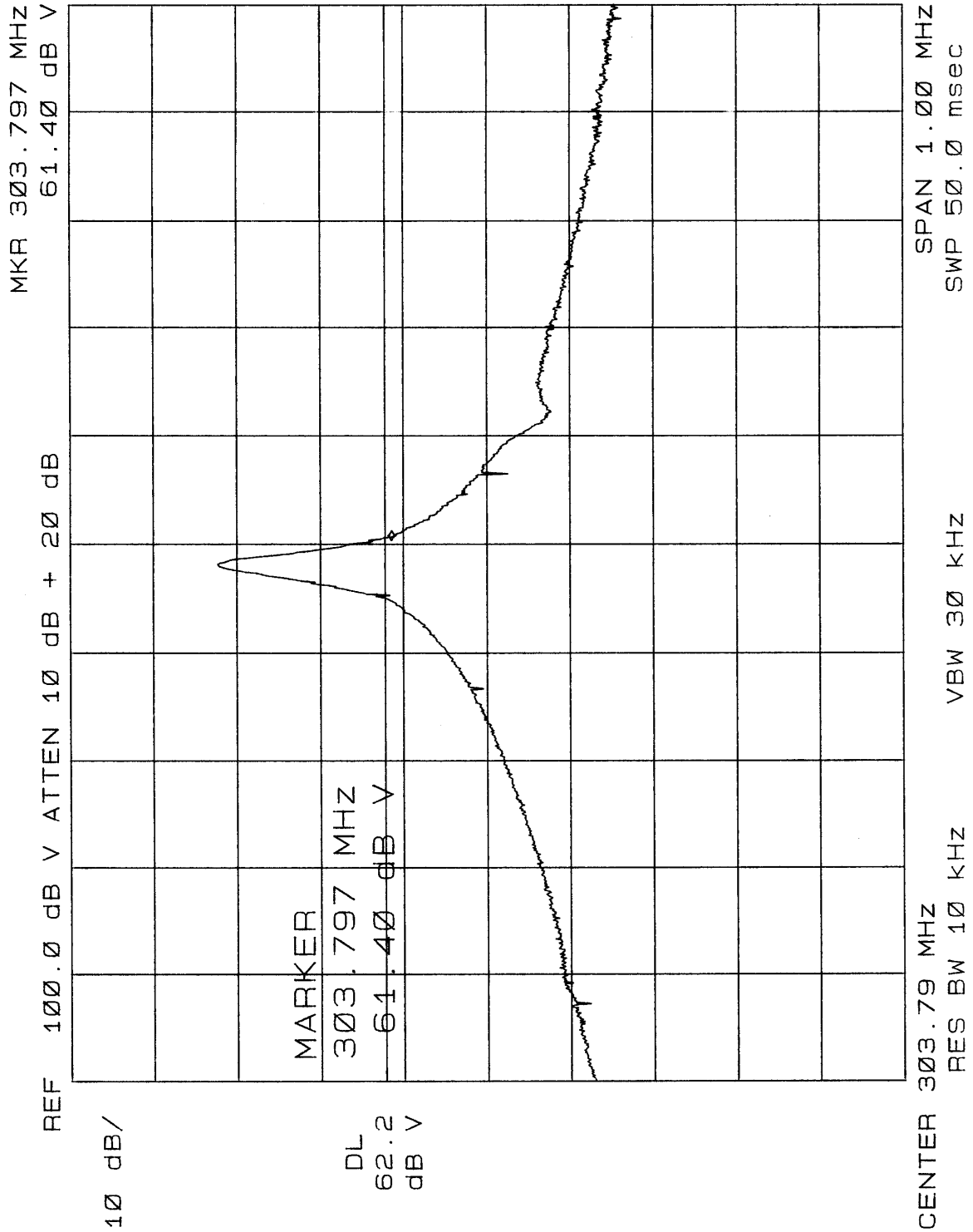
Test 4, Item A (Left Edge) - Peak Plot (Amplitude in dBuV/m):

Radiated Disturbance Emissions - Occupied Bandwidth



Test 4, Item A (Right Edge) - Peak Plot (Amplitude in dBuV/m):

Radiated Disturbance Emissions - Occupied Bandwidth



Test 4, Item A - Discrete Data: Radiated Disturbance Emissions - Occupied Bandwidth

Test Item (A-Z)	Center Frequency (MHz)	Measured Bandwidth (MHz)	Bandwidth (% of Center Frequency)	Maximum Permitted Bandwidth (% of Center Frequency)	Pass/Fail (P/F)	See Comment (#)*
A	303.771	0.056	0.018%	0.25%	P	

* # = See Comment Number Under This Test's Comments Section.

Test 5: Radiated Disturbance Emissions - Restricted Bands

Test Requirement: 47 CFR Part 15, Subpart C

Test Specification: 47 CFR Part 15, Subpart C, Section 15.205

Test Procedure:

The EUT is verified to produce only spurious emissions in the bands listed below. Where spurious emissions exist they must comply with the general limits from 47 CFR Part 15, Section 15.209.

Results from measurements are examined to ensure that no spurious emission in a restricted band (below) exceeds the general limits in Section 15.209. The restricted bands from Section 15.205 are:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	608 - 614	4.5 - 5.15
0.495 - 0.505	16.69475 - 16.69525	960 - 1240	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	1300 - 1427	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1435 - 1626.5	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1645.5 - 1646.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1660 - 1710	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1718.8 - 1722.2	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	2200 - 2300	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2310 - 2390	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2483.5 - 2500	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2655 - 2900	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	3260 - 3267	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3332 -3339	23.6 - 24.0
12.29 - 12.293	127.72 - 167.17	3345.8 - 3358	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3600 - 4400	36.43 - 36.5
12.57675 - 12.57725	332-335.4		Above 38.6
13.36 - 13.41	399.9 - 410		

All spurious emissions, including harmonics falling within restricted bands were observed to meet the general limits of 15.209.

Test Deviations:

None

Test Setup: Only the following ports were tested. See EUT Information for details.

Test Item	Port #	Port Name	EUT Operation Mode	EUT Configuration	Power Interface
A	0	Enclosure	1	1	1

Test 5 - Results: Radiated Disturbance Emissions - Restricted Bands

Test Results Summary:

Test Item	Test Location	Humidity (%)	Temperature (ºC)	Pressure (kPa)	Pass/Fail (P/F)	Date Completed	Comment #
A	A	36	22.5	100	P	1/23/03	1

The EUT was considered to **Pass** the Requirements.

Comments:

Comment #	Description
1	Harmonics falling within restricted bands include 1213, 1518, and 2732 MHz. Test 2 results demonstrate these harmonics comply with the general limits of 15.209.

Accreditation Certificates:

National Institute of Standards and Technology NVLAP® National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

Page: 2 of 3

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS **NVLAP LAB CODE 200246-0**

UNDERWRITERS LABORATORIES, INC.

NVLAP Code	*Designation / Description*
12/F01	FCC Method - 47 CFR Part 15 - Digital Devices
12/F01a	Conducted Emissions, Power Lines, 450 KHz to 30 MHz
12/F01b	Radiated Emissions
12/T51	AS/NZS 3548: Electromagnetic Interference - Limits and Methods of Measurement of Information Technology Equipment
Immunity Test Methods:	
12/I01	IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test
12/I02	IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test
12/I03	IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test
12/I04	IEC 61000-4-5 (1995): Surge Immunity Test
12/I05	IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields
12/I06	IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test

June 30, 2003 — *Effective through*

David F. Alderman — *For the National Institute of Standards and Technology*

NVLAP-01S (06-01)

National Institute of Standards and Technology NVLAP® National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

Page: 1 of 3

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS **NVLAP LAB CODE 200246-0**

UNDERWRITERS LABORATORIES, INC.
12 Laboratory Drive
Research Triangle Park, NC 27709
Mr. Rick A. Titus
Phone: 847-272-8800 x43281 Fax: 847-509-6321
E-Mail: Rick.A.Titus@us.ul.com
URL: http://www.ul.com

NVLAP Code	*Designation / Description*
Emissions Test Methods:	
12/CIS14	CISPR 14-1 (March 30, 2000): Limits and methods of measurement of radio interference characteristics of household electrical appliances, portable tools and similar electrical apparatus - Part 1: Emissions
12/CIS14a	EN 55014-1 (1993) with Amendments A1 (1997) & A2 (1999)
12/CIS14b	AS/NZS 1044 (1995)
12/CIS22	IEC/CISPR 22 (1997) and EN 55022 (1998): Limits and methods of measurement of radio disturbance characteristics of information technology equipment
12/CIS22a	IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.
12/CIS22b	CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment

June 30, 2003 — *Effective through*

David F. Alderman — *For the National Institute of Standards and Technology*

NVLAP-01S (06-01)

National Institute of Standards and Technology NVLAP® National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

Page: 3 of 3

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS **NVLAP LAB CODE 200246-0**

UNDERWRITERS LABORATORIES, INC.

NVLAP Code	*Designation / Description*
12/I07	IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests
Safety Test Methods:	
12/T41	ACA TS-001: Safety Requirements for Customer Equipment
12/T50	AS/NZS 3260: Safety of Information Technology Equipment Including Electrical Business Equipment

June 30, 2003 — *Effective through*

David F. Alderman — *For the National Institute of Standards and Technology*

NVLAP-01S (06-01)

Canadian Site Registration:

Industry Canada Industrie Canada

Certification and Engineering Bureau
1241 Clyde Avenue
Ottawa, Ontario
K2C 1Y3

Tel. No. (613) 952-3650
Fax. No. (613) 952-1088

December 11, 1997

Jodine E. Smyth
Underwriters Laboratory Inc.
333 Pfingsten Road
Northbrook, Illinois 60062-2096

Our File: 46390-2953
Submission: 20309 O

Dear Ms. Smyth,

The Bureau has received your test report for the Alternate Test Site located at Reasearch Triangle Park, North Carolina, dated December 5, 1997. I have reviewed the report and find it complies with RSP 100, Issue 7, section 3.3 Description of Open Area Test Site.

The site is acceptable to Industry Canada for the performance of radiated measurements. Please reference the file number " IC 2953 " in the body of all test reports containing measurements made on this site. This reference number is the indication of Industry Canada's acceptance of your site.

Whenever major construction or repairs to the site are completed, a re-submission of the site attenuation characteristics will be required.

Yours sincerely,

Brian Kasper

Brian Kasper
Head, EMC and Standards
Certification and Engineering Bureau

Canada

Measurement Uncertainty Statement

The limits and test levels used in this report are based on the referenced standards and/or specifications listed without regard to the estimated uncertainty of measurements factors listed below. Any statement in this report related to the compliance or non-compliance with the applicable limits does not include adjustments for the estimates of measurement uncertainty.

1. For those results that remain within the stated limits after the application of the estimate of measurement uncertainty factors, the statement of compliance of items, as tested, is confirmed.

2. For those results that do not remain within the stated limits after the application of the estimate of measurement uncertainty factors, the statement of compliance is **not** changed by UL; however, the manufacturer is advised that the margin of compliance should be improved to ensure that margin of compliance with condition 1 listed above is achieved.

Note: The final determination of compliance or non-compliance with the limits of a particular standard and/or specification may require including the application of the measurement uncertainty factors listed, if required by the standard or specification. Manufacturers are advised to consider this possible requirement in issuing declarations of conformity, certificates of compliance, or the like based on this test report.

The estimate of expanded uncertainty for the UL-RTP EMC laboratory, U_{lab}, is less than U_{cispr}, as defined in CISPR 16-4:2002, Table 1 "Values of U_{cispr}" therefore:

- Compliance is deemed to occur if **no** measured disturbance exceeds the disturbance limit
- Non-compliance is deemed to occur if **any** measured disturbance exceeds the disturbance limit

Test	Expanded Estimate of Uncertainty (k = 2, for 95% of a normal distribution)	Units
Radiated Emissions:		
• 3 and 10 meter measurement distances	+/- 3.1 dB	Volts/meter
• 1 meter measurement distance	+/- 2.5 dB	Volts/meter
Conducted Emissions:	+/- 0.9 dB	Volts
Electrostatic Discharge	+/- 2.2 %	Volts
Radiated RF Immunity:	+/- 2.7 dB	Volts/meter
Electrical Fast Transients/Bursts Immunity	+/- 4.6 %	Volts
Surge Immunity	+/- 4.6 %	Volts
Conducted RF Immunity	+/- 2.8 %	Volts
Power Frequency Magnetic Field Immunity	+/-13.6 %	Amps/meter
Voltage Dips and Short Interrupts	+/-4.2 %	Volts
Radiated RF Immunity (Tri-plate)	+/-3.2 %	Volts/meter