FCC
Electromagnetic Compatibility
Test Report

For

3M™ Document Reader
Model PV33

3M Security Systems Division
St. Paul, MN 55144-1000

20 December 2005

Report Number: F1105002

Prepared By:

3M Corporate Research Laboratories
SEMS Product Safety - EMC Laboratory
Building 76-1-01
410 East Fillmore Avenue
St. Paul, Minnesota 55144-1000

3M Product Safety SEMS Technology Center Building 76-1-01 St. Paul, MN 55144-1000	Phone: 651-778-6279 FAX: 651-778-6252	3M EMC Laboratory

CERTIFICATE OF COMPLIANCE

USA STANDARD 47 CODE OF FEDERAL REGULATIONS

Radiated Emissions (FCC Part 15, Subpart B, Class A)
Conducted Emissions (FCC Part 15, Subpart B, Class A)
Radiated Emissions (FCC Part 15, Subpart C)
Conducted Emissions (FCC Part 15, Subpart C)

MANUFACTURER'S NAME	3M Company
NAME OF EQUIPMENT	3M™ Document Reader PV33
MODEL NUMBER	PV33
SERIAL NUMBER	PV331011
DESCRIPTION	Passport Reader with RFID
TEST REPORT NUMBER	F1105002
DATE	20 December 2005

As the responsible EMC Project Engineer, I hereby declare that the equipment tested, as specified in the test report, at the 3M Product Safety EMC Laboratory is in compliance with 47 CFR, Part 15, Subpart B and Subpart C. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical characteristics.

Robert E. Heller
Senior EMC Engineer

TABLE OF CONTENTS

1.0 TEST SUMMARY

Test Report Number:	F1105002
Requester:	Stephan Bernard
Company:	3M Security Systems Division St. Paul, MN 55144
Telephone Number:	(613) 725-1485 x 1555
Test Dates:	December 2, 5, 12, 15, 16, 19, 2005
Equipment Under Test	3M™ Document Reader Model PV33
Date Of Receipt:	November 7, 2005
Test Environment	Temperature: 21 degrees C Relative Humidity: 43 % RH
Test Results:	Passed the following tests: Conducted Emissions: FCC Part 15 Subpart B Class A Radiated Emissions: FCC Part 15 Subpart B Class A Conducted Emissions: FCC Part 15 Subpart C Radiated Emissions: FCC Part 15 Subpart C
Modifications:	2 (two) modifications required. See section 2.5 for details
Test Location:	3M Corporate Research Laboratories SEMS Product Safety - EMC Laboratory Building 76-1-01 410 East Fillmore Avenue St. Paul, Minnesota 55144-1000

2.0 INTRODUCTION

2.1 Scope

This report contains results describing the conformance of the Equipment Under Test (EUT) to FCC Part 15, Subpart B, "Class A" rules for unintentional radiators and FCC Part 15, Subpart C rules for intentional radiators.

This report is the confidential property of the client and applies only to the specific item tested under the stated test conditions. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical characteristics. This report shall not be reproduced without the written approval of the testing laboratory. When approval has been granted, the report shall be reproduced in its entirety.

The appropriate testing standards and references are contained in Section 3.0. The worst case test data, test configuration, and photographs (worst case configuration) are provided in Sections 4.0 and 5.0. Test equipment and EUT labeling information is contained in Sections 6.0 and 7.0.

Subsequent tests of the EUT are necessary from time to time on equipment taken at random from production. A retest is also required when the EMC profile has been changed or is suspected of being changed.

The 3M Product Safety EMC Laboratory is recognized under the United States Department of Commerce National Institute of Standards and Technology's National Voluntary Laboratory Program (NVLAP) for satisfactory compliance with criteria established in Title 15, Part 285 Code of Federal Regulations. These criteria encompass the requirements of ISO/IEC Guide 25 and the relevant requirements of ISO 9002 (ANSI/ASQ Q92-1987) as suppliers of test results. Accreditation by the National Voluntary Laboratory Accreditation Program is awarded for specific services, listed on the Scope of Accreditation for: Electromagnetic Compatibility and Telecommunications, FCC, under Lab Code 200033. A complete copy of the Scope of Accreditation is available upon request. The FCC Site Registration Number is 93334.

The NVLAP accreditation or this test report does not in any way constitute or imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.

2.2 EUT Descriptions and Operation

The Equipment Under Test (EUT) is the 3M™ Document Reader Model PV33.

The reader has a transmit frequency of 13.56 MHz and a measured power output level of 0.650W (28.13dBm) as measured into a 50-ohm load. This maximum output is factory preset.

The EUT contains 1 antenna with a dimension of 14.0 x 14.5 cm. The antenna is located on the top of the unit surrounding the document access window. The antenna is cabled to the RFID reader board via coax cable utilizing a MMCX connector at the antenna end and a direct solder connection on the low pass filter PCB.

The EUT was tested utilizing PC based testing software through a USB cable connection. The software exercised the reader and imaging functions. The reader was set to the fastest read time and was reading tags throughout the tests except for the digital portions.

All tests were made using an input of 120 V RMS, 60 Hz, and single-phase power.

2.3 Block Diagram

Block Diagram submitted as separate file under Letter of Confidentiality

2.4 Parts List

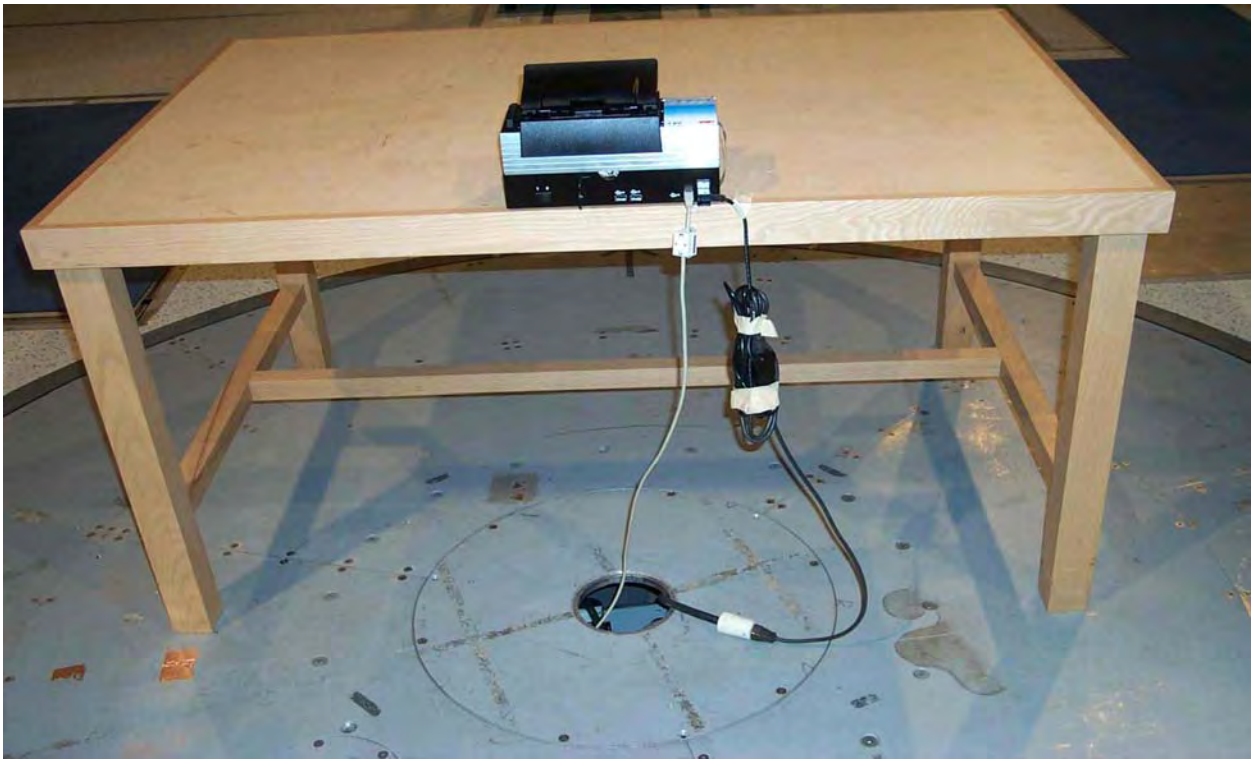
Parts List submitted as separate file under Letter of Confidentiality

2.5 Modifications to the EUT

The following modifications were required for this device:

1. Low Pass Filter mounted between the receiver board and the antenna lead 3M part number 78-8121-0995-3 or equivalent.

2. Ferrite – Steward #28A2025 (or equivalent) – 1 turn – located on USB cable at CPU end.



2.6 Measurement Uncertainty

The data and test results referenced in this report are true and accurate. However, there may be deviations within the calibration limits of the test equipment and facilities that can account for a nominal measurement deviation of ± 2 dB. Furthermore, EUT component and manufacturing process variables may result in additional deviation. The calculated confidence level is 95 %.

3.0 APPLICABLE DOCUMENTS

The following documents were used as reference for the limits and test procedures specified herein.

CFR 47	Part 15 Radio Frequency Devices	2004
ANSI C63.4	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 KHz to 40 GHz.	2003
CISPR 16-1	Specification for radio disturbance and immunity measuring apparatus and methods	
	-1 Measuring Apparatus	2003
	-2 Ancillary Equipment – Conducted Disturbance	2004
	-3 Ancillary Equipment – Disturbance Power	2004
	-4 Ancillary Equipment – Radiated Disturbance	2004
CISPR 16-2	Specification for radio disturbance and immunity measuring apparatus and methods	
	-1 Conducted Disturbance Measurements	2003
	-2 Measurements of Disturbance Power	2004
	-3 Radiated Disturbance Measurements	2003
CISPR 16-4	-1 Uncertainties in Standardized EMC Tests	2005

4.0 CONDUCTED EMISSIONS

A conducted emissions test was performed in accordance with ANSI C63.4. The limits are prescribed in FCC Part 15, Subpart B and in FCC Part 15, Subpart C. Conducted emissions tests were made to determine the level of electromagnetic noise that is conducted onto the power mains from the EUT.

4.1 Test Procedure

A Line Impedance Stabilization Network (LISN) with 50Ω/50μH characteristic was used to isolate the EUT and give accurate and repeatable readings. An EMI test receiver was used for the emissions measurements in the range from 150kHz to 30MHz. Initial measurements were taken with the receiver in continuous frequency overview mode utilizing peak level signal detection. Initial results were measured at discrete frequencies utilizing quasi-peak detection. Measurement results were automatically calculated via software running the EMI receiver. The final quasi-peak and average measurements recorded were determined by the following:

Result (dBμV) = receiver reading (μV) + LISN (dB) + cable loss (dB)

4.2 Test Criteria

The FCC Class 'B' conducted limits are given below. The lower limit shall apply at the transition frequency.

Mains Terminal Disturbance Limits		
Frequency (MHz)	Quasi-Peak (dBμV)	Average (dBμV)
0.15 to 0.50	66 to 56 decreases with log(f)	56 to 46 decreases with log(f)
0.50 to 5.0	56	46
5.0 to 30.0	60	50

4.3 Test Results

The EUT met the FCC Class 'B' conducted emission requirements. The worst-case quasi-peak emission was as follows:

3M™ PV33				
Frequency (MHz)	QP Limit (dBμV)	QP L1 (dBμV)	QP L2 (dBμV)	Passing Margin (dB)
3.6793	56.00	38.19	37.86	17.81

CONDUCTED EMISSIONS

3M EMC Laboratory

TEST REPORT # F1105002 SHEET 1 OF 1

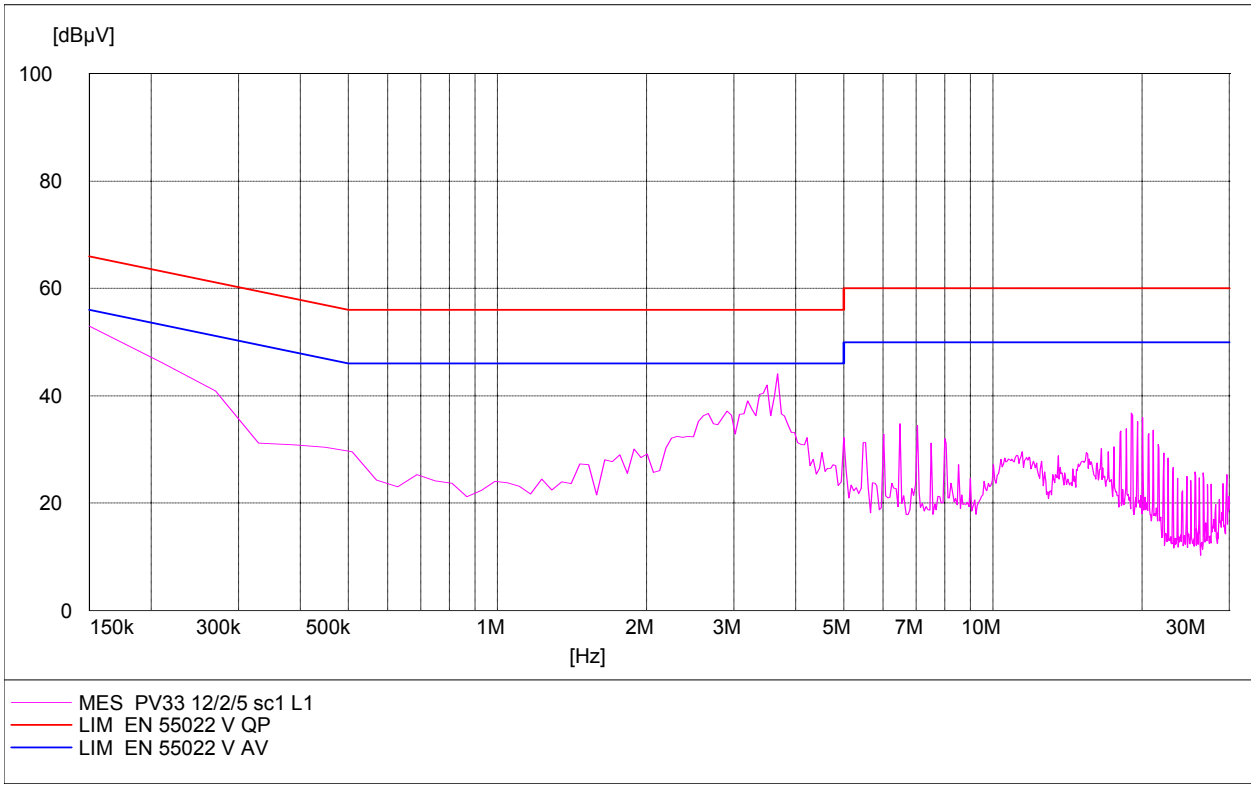
EUT MODEL # 3M™ PV33 EUT SERIAL # PV331011

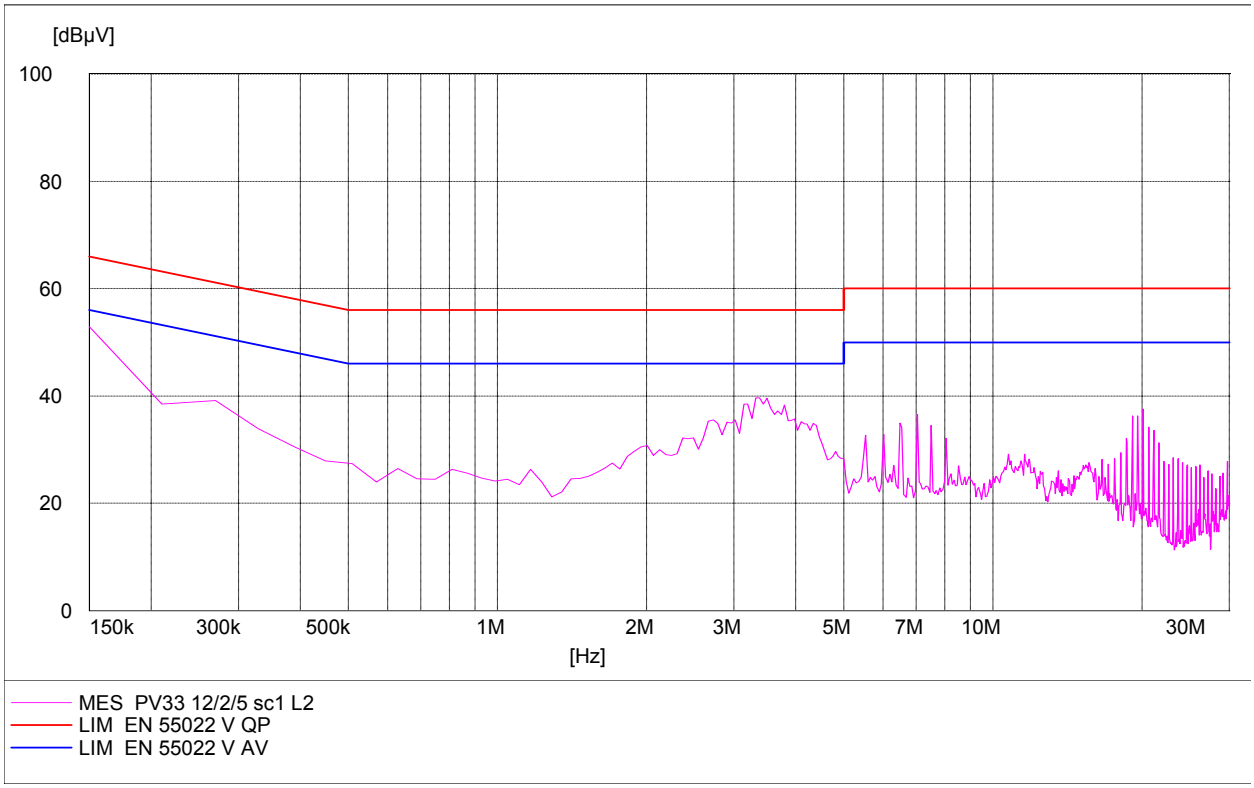
DESCRIPTION Document Reader with RFID

FREQUENCY (MHz)	PEAK (dBµV)		QUASI-PEAK (dBµV)				AVERAGE (dBµV)			
	L1 Line	L2 N	L1 Line	L2 N	Limit	Pass Margin	L1 Line	L2 N	Limit	Pass Margin
0.1565	54.42	54.21	46.51	46.33	65.65	19.14	-	-	-	-
0.2696	40.90	39.91	31.87	30.95	61.13	29.26	-	-	-	-
0.4491	30.44	28.96	22.15	20.01	56.89	34.74	-	-	-	-
3.6793	44.11	42.73	38.19	37.86	56.00	17.81	-	-	-	-
7.0292	34.48	36.59	27.54	29.57	60.00	30.43	-	-	-	-
20.1297	35.17	37.55	26.19	27.87	60.00	32.13	-	-	-	-

Test Engineer: Steve Wytaske

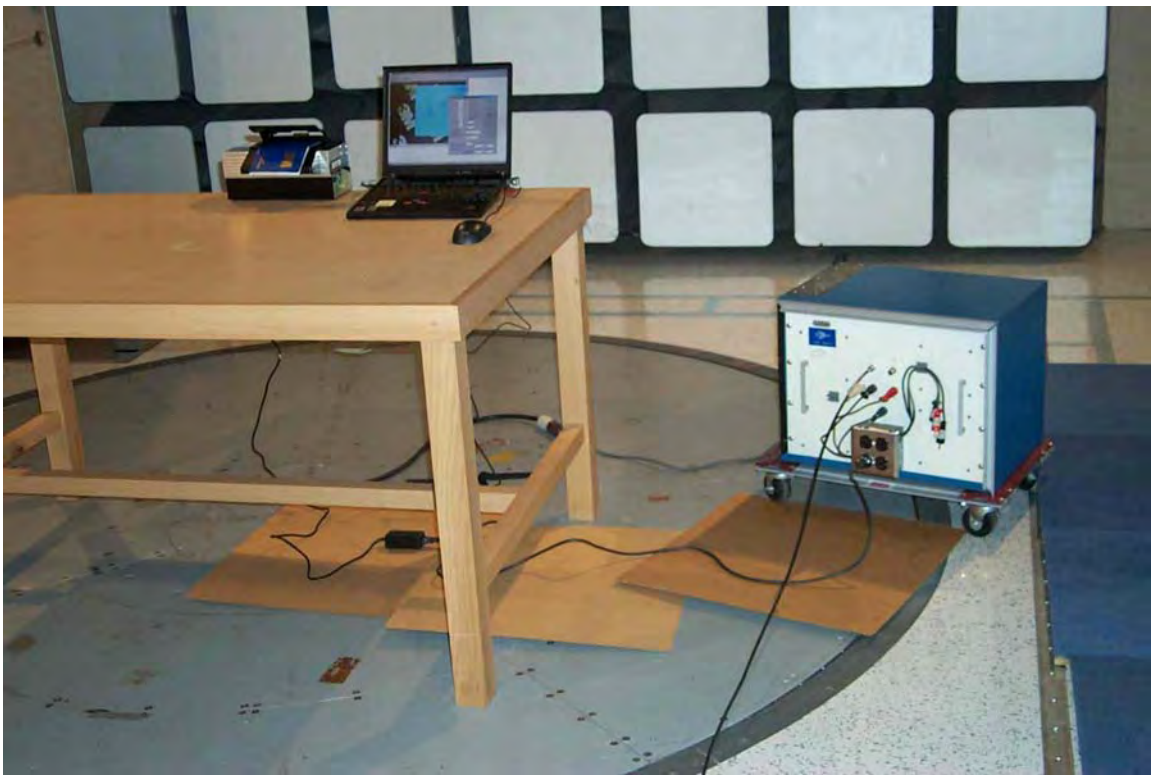
Date: 12-02-2005





NOTE: Plots show Max Peak values only

4.4 Test Setup Photo



5.0 RADIATED EMISSIONS

Radiated emission testing is performed in accordance with ANSI C63.4. The limits are prescribed in FCC Part 15, Subpart B and in FCC Part 15, Subpart C. Radiated emissions measurements were made to determine the level of electromagnetic energy radiating from the EUT.

5.1 Frequency Stability

The frequency stability test was performed in accordance with ANSI C63.4 and FCC Part 15 to insure that the intentional radiator frequency stability was within the allowable limits for input power and temperature variations.

5.1.1 Test Procedure

The frequency stability was measured using the radiated signals from the EUT so that the measurement equipment would not load the radio frequency circuits. An EMI receiver was used for the frequency stability measurements. The Reader was put into a continuous output mode through instructions from the host computer (test mode of operation). 1) The frequency was measured while the input AC power to the external power supply was varied over the required input voltage range. 2) The frequency was also measured while the ambient air temperature was varied over the required ambient temperature range (at startup, 2 minutes, 5 minutes, and 10 minutes).

5.1.2 Test Criteria

The FCC Part 15, Subpart C for Frequency Stability Limits versus Supply Voltage are given as:

Carrier Frequency (MHz)	Voltage Range % of Nominal Supply (85 % to 115 %)	Max.Frequency Change (%)
13.56	102 to 138 V RMS	+/- 0.01 %

The FCC Part 15, Subpart C for Frequency Stability Limits versus Temperature is given as:

Carrier Frequency (MHz)	Temperature Range (degrees C)	Max.Frequency Change (%)
13.56	-20 to +50	+/- 0.01 %

5.1.3 Test Results

The EUT met all FCC Part 15, Subpart C Frequency Stability requirements.

Carrier Frequency Stability versus Supply Voltage			
Voltage (60Hz)	115 VAC	97.75 VAC	132.25 VAC
Frequency (MHz)	13.560379	13.560373	13.560373

Carrier Frequency Stability versus Temperature			
Temperature Interval	At Temperature Stabilization	+10 Minutes	+30 Minutes
-20C	13.560465	13.560473	13.560476
-10C	13.560476	13.560472	n/a
0C	13.560467	13.560457	n/a
+10C	13.560447	13.560433	n/a
+20C	13.560408	13.560420	n/a
+30C	13.560408	13.560434	n/a
+40C	13.560372	13.560377	n/a
+55C	13.560366	13.560366	13.560374

Carrier Frequency Stability MIN/MAX		
	Measured Value	Limit
Lowest Frequency (MHz)	13.560366	13.553000
Highest Frequency (MHz)	13.560476	13.567000

Test Engineer: Bob Heller
Date: 07-28-2005

5.2 Emission Bandwidth

The EUT was placed in a semi-anechoic chamber and a emission bandwidth test was performed in accordance with ANSI C63.4 and FCC Part 15, Paragraph 15.225. The emission bandwidth measurements were made to determine the intentional radiator frequency and determine the level of electromagnetic energy radiated at that frequency and at the band edges from the EUT.

5.2.1 Test Procedure

A measurement antenna (loop) was positioned at a distance of 5 meters (to insure far field measurements) from the center of the EUT. An EMI receiver was used for the emissions measurements. Initial sweep measurements were taken with the receiver in continuous frequency overview mode utilizing peak level signal detection. The intentional radiator frequency and band edge frequencies utilizing quasi-peak detection were then maximized. Maximizing a frequency involves finding the angle of the highest emission levels by rotating the EUT 360 degrees (sampling at least every 4 degrees). Then the antenna, which was fixed at 1-meter height, was rotated until the highest emissions levels found. Measurement results were automatically calculated via software running the EMI receiver. The final quasi-peak measurements recorded were determined by the following formula:

Result (dBμV/m) = receiver level (μV) + antenna factor (dB/m) + cable loss (dB) - preamp gain (dB) + lineal conversion (dB).

5.2.2 Test Criteria

The FCC Part 15 Subpart C, Section 15.225 Carrier Frequency Limits are given as:

Lower Band Edge:	13.5586 MHz
Upper Band Edge:	13.5615 MHz

The FCC Part 15, Subpart C radiated limits are given as:

Frequency (MHz)	Test Distance (Meters)	Field Strength (dBμV/m)
1.705 to 13.110	10	48.62
13.110 to 13.410	10	59.58
13.410 to 13.553	10	69.55
13.553 to 13.567	10	103.00
13.567 to 13.710	10	69.55
13.710 to 14.010	10	59.58
14.010 to 30.000	10	48.62

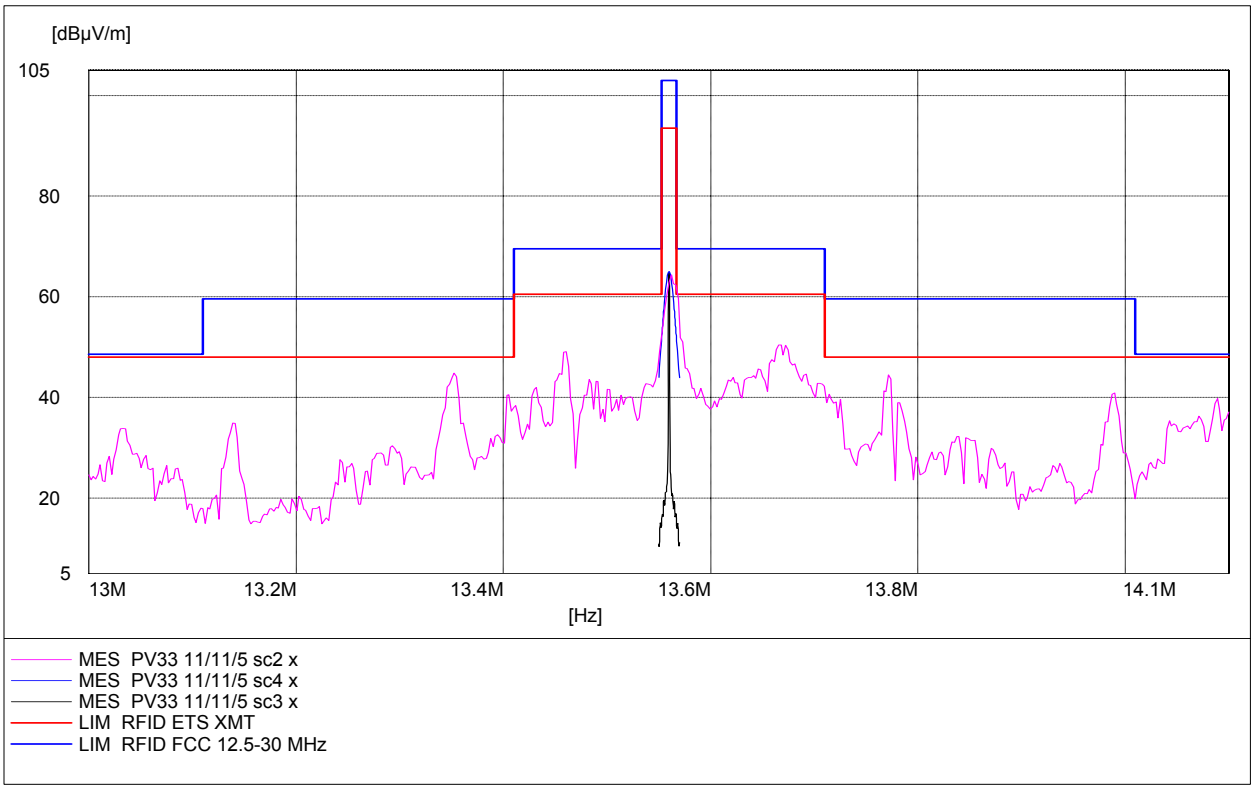
Note: A 40 dB/decade extrapolation factor was used per 15.31.

5.2.3 Test Results

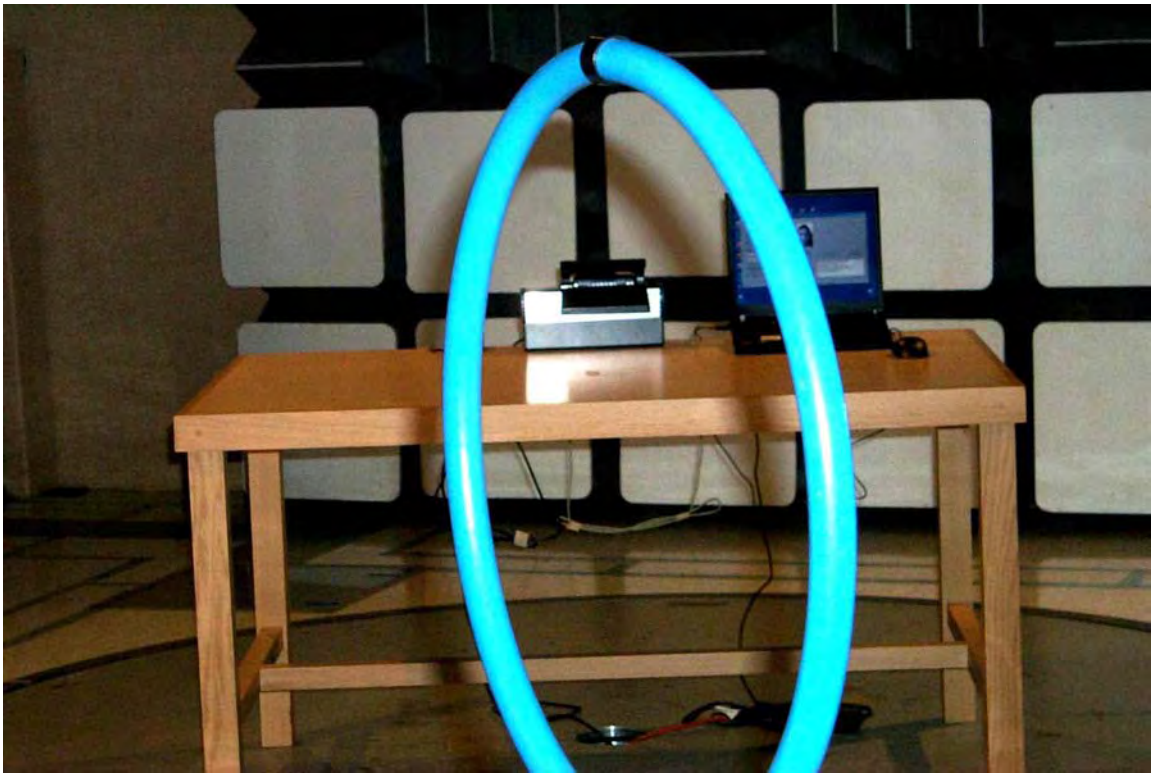
The EUT met the FCC Part 15, Subpart C Emission Bandwidth requirements. The intentional radiator frequency was within the allowed band and all maximized quasi-peak measurements for the EUT were below the quasi-peak limits.

3M™ Document Reader Model PV33						
Frequency (MHz)	BW (kHz)	QP Level (dBµV/m)	QP Limit (dBµV/m)	Passing Margin (dB)	Turntable (degrees)	Antenna Orientation/Angle (Polarity/degrees)
13.56003[1]	9	65.86	103	37.14	100	-30 degrees from Y-axis
13.5530[2]	1	15.49	69.55	54.06	100	-30 degrees from Y-axis
13.5670[2]	1	15.42	69.55	54.13	100	-30 degrees from Y-axis
13.5485	9	40.35	69.55	29.2	100	-30 degrees from Y-axis
13.5715	9	40.35	69.55	29.2	100	-30 degrees from Y-axis
13.4100	1	15.42	59.58	44.16	100	-30 degrees from Y-axis
13.7100	1	4.42	59.58	55.16	100	-30 degrees from Y-axis
13.4055	9	25.72	59.58	33.86	100	-30 degrees from Y-axis
13.7141	9	28.16	59.58	31.42	100	-30 degrees from Y-axis

1 - Intentional Radiator Frequency
2 - Band edges measured with a receiver bandwidth setting of 1 KHz. Per ANSI C63.4 Paragraph 13.1.7.



5.2.4 Test Setup Photo – (Setup also used for Spurious Emissions)



5.3 Spurious Emissions (12.5 to 30 MHz.)

The EUT was placed in a semi-anechoic chamber and a spurious emissions test was performed in accordance with ANSI C63.4 and FCC Part 15, Subpart C. The spurious emission measurements were made to determine the level of spurious electromagnetic energy radiated from the EUT.

5.3.1 Test Procedure

A measurement antenna (loop) was positioned at a distance of 5 meters (to insure far field measurements) from the center of the EUT. An EMI receiver was used for the emissions measurements. Initial sweep measurements were taken with the receiver in continuous frequency overview mode utilizing peak level signal detection. Acceptance analysis of these sweeps was used to determine which discrete frequencies, other than the intentional radiator frequency and band edge frequencies, were to be maximized. Maximizing a frequency involves finding the angle of the highest emission levels by rotating the EUT 360 degrees (sampling at least every 4 degrees). Then the antenna, which was fixed at 1-meter height, was rotated until the highest emissions levels found. Final measurements were taken utilizing quasi-peak detection. Measurement results were automatically calculated via software running the EMI receiver. The final measurements recorded were determined by the following formula:

Result (dBμV/m) = receiver level (μV) + antenna factor (dB/m) + cable loss (dB) - preamp gain (dB) + lineal conversion (dB).

5.3.2 Test Criteria

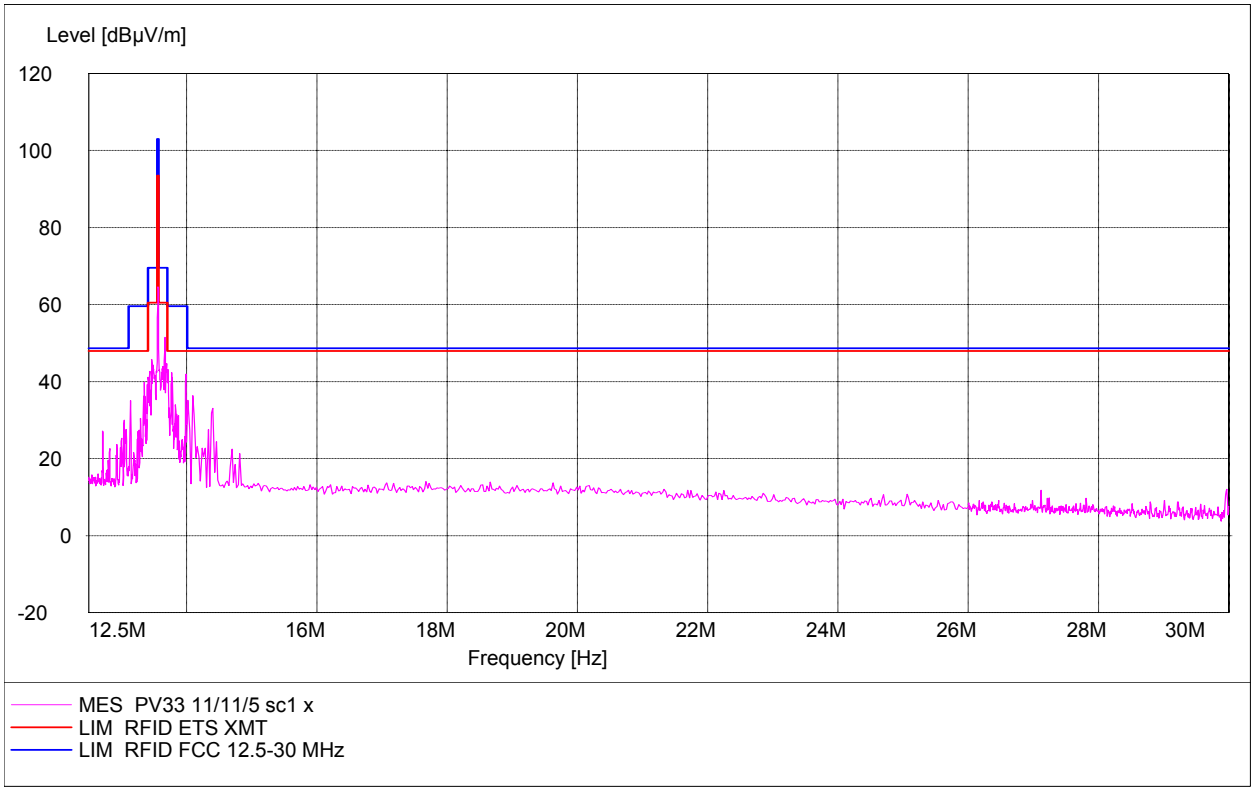
The FCC Part 15, Subpart C radiated limits are given below.

Frequency (MHz)	Test Distance (Meters)	Field Strength (dBμV/m)
1.705 to 13.110	10	48.62
13.110 to 13.410	10	59.58
13.410 to 13.553	10	69.55
13.553 to 13.567	10	103.00
13.567 to 13.710	10	69.55
13.710 to 14.010	10	59.58
14.010 to 30.000	10	48.62

Note: A 40 dB/decade extrapolation factor was used per 15.31.

5.3.3 Test Results

The EUT met the FCC Part 15, Subpart C Spurious Emissions (12.5 to 30 MHz.) requirements. No significant frequencies were observed. No maximized data was recorded.



5.3.4 Test Setup Photo

See photo for Emission Bandwidth (5.2.4)

5.4 Spurious Emissions (30 to 1000 MHz.)

The EUT was placed in a semi-anechoic chamber and a spurious emissions test was performed in accordance with ANSI C63.4 and FCC Part 15, Subpart C. The spurious emission measurements were made to determine the level of spurious electromagnetic energy radiated from the EUT with the RFID portion turned ON.

5.4.1 Test Procedure

The EUT was placed on a 0.80-meter high wooden table in the center of a turntable. An EMI receiver was used for the emissions measurements in the range of 30MHz to 1000MHz. Initial measurements were taken with the receiver in continuous frequency overview mode utilizing peak level signal detection. Peak results were maximized at discrete frequencies utilizing quasi-peak detection. Maximizing a frequency involves finding the angle of the highest emission levels by rotating the EUT 360 degrees (sampling every 4 degrees) and varying the antenna height between 1 and 4 meters at the angles of the highest emissions levels found. Measurements were taken in both vertical and horizontal antenna polarization. The final measurements recorded were determined by the following formula:

Result (dBμV/m) = receiver level (μV) + antenna factor (dB/m) + cable loss (dB) - preamp gain (dB) + lineal conversion (dB)

5.4.2 Test Criteria

The radiated limits and frequency ranges shown in the table below are based on CFR47 Part 15.209. The lower limit shall apply at the transition frequency.

Frequency (MHz)	Test Distance (Meters)	QP Field Strength (dBμV/m)
30 - 88	10	29.54
88 - 216	10	33.06
216 - 960	10	35.56
960 - 1000	10	43.52
1000 - 40000	10	43.52 AVG 63.52 PEAK

5.4.3 Test Results

The EUT met the FCC Part 15, Subpart C Spurious Emissions (30 to 1000 MHz.) requirements. All maximized quasi-peak measurements for the EUT were below the quasi-peak limit. The worst-case quasi-peak emission was as follows:

3M™ PV33					
Frequency (MHz)	QP Level (dBµV/m)	Limit (dBµV/m)	Passing Margin (dB)	Turntable (degrees)	Antenna (m/polarity)
40.680	27.43	29.54	2.11	37	1.0/vertical

SPURIOUS EMISSIONS 30 – 1000 MHz

3M EMC Laboratory

TEST REPORT # F1105002 SHEET 1 OF 1

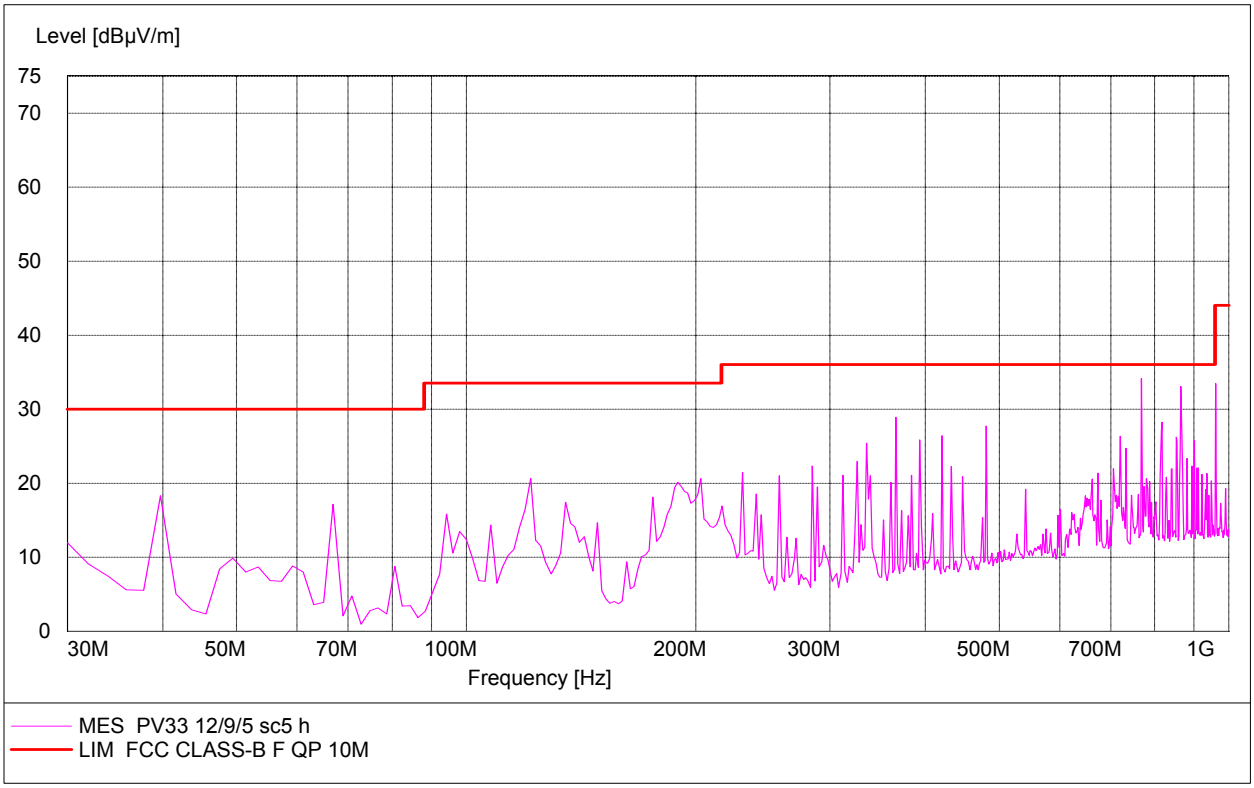
EUT MODEL # 3M™ PV33 EUT SERIAL # PV331011

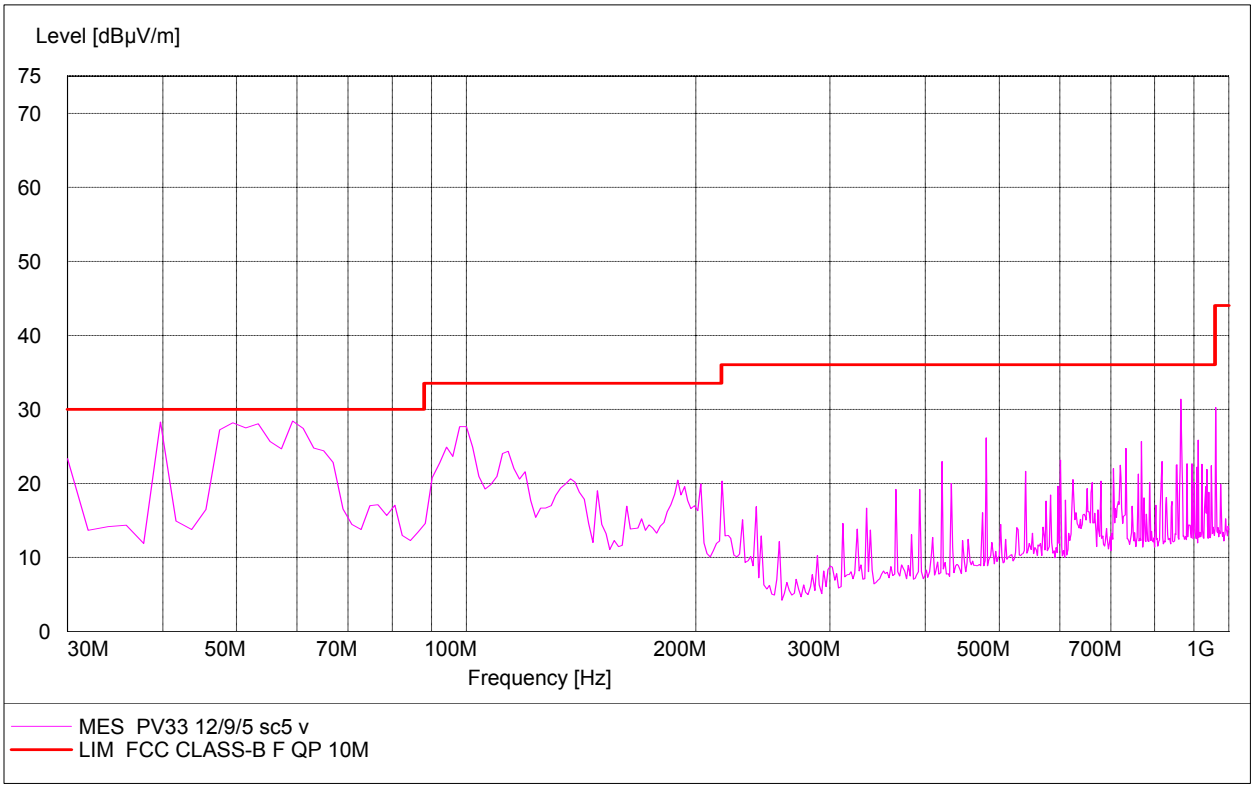
DESCRIPTION Document Reader with RFID

FREQ. (MHz)	MAXIMIZED QP SIGNAL		LIMIT LINE	PASSING MARGIN	MAXIMIZED POSITION		REMARKS
	H/V	(dBµV/m)	(dBµV/m)	(dB)	TURNTABLE (degrees)	ANTENNA (meters)	
40.680	V	27.43	29.54	2.11	37	1.0	Spurious
58.948	V	26.87	29.54	2.67	290	1.0	Spurious

Test Engineer: Steve Wytaske

Date: 12-09-2005





NOTE: Plots show Max Peak values only

5.5 Radiated Emissions (30 MHz – 1 GHz)

The EUT was placed in a semi-anechoic chamber and a radiated emissions test was performed in accordance with ANSI C63.4 and FCC Part15. Radiated emissions measurements were made to determine the level of electromagnetic energy radiating from the EUT with the RFID portion turned OFF.

5.5.1 Test Procedure

The EUT was placed on a 0.80-meter high wooden table in the center of a turntable. An EMI receiver was used for the emissions measurements in the range of 30MHz to 1GHz (the upper limit of measurement is determined by the 5^{th} harmonic of the highest frequency generated in the device or 40 GHz whichever is lower). Initial measurements were taken with the receiver in continuous frequency overview mode utilizing peak level signal detection. Peak results were maximized at discrete frequencies utilizing quasi-peak detection. Maximizing a frequency involves finding the angle of the highest emission levels by rotating the EUT 360 degrees (sampling every 4 degrees) and varying the antenna height between 1 and 4 meters at the angles of the highest emissions levels found. Measurements were taken in both vertical and horizontal antenna polarization. The final quasi-peak measurements recorded were determined by the following (the detector used above 1000 MHz is both average and peak):

Result (dBμV /m) = receiver level (μV) + antenna factor (dB/m) + cable loss (dB) - preamp gain (dB) + lineal conversion (dB)

5.5.2 Test Criteria

The FCC Class 'A' radiated limits and frequency ranges shown in the table below are based on CFR47 Parts 15.33, 15.35 and 15.109. The lower limit shall apply at the transition frequency.

Frequency (MHz)	Test Distance (Meters)	QP Field Strength (dBμV/m)
30 - 88	10	39.08
88 - 216	10	43.52
216 - 960	10	46.44
960 - 1000	10	49.54
1000 - 40000	10	49.54 AVG 69.54 PEAK

5.5.3 Test Results

The EUT met the FCC Class 'A' radiated emission requirements. No signals were measured above 1 GHz. All maximized quasi-peak measurements for the EUT were below the quasi-peak limit. The worst-case quasi-peak emission was as follows:

3M™ PV33					
Frequency (MHz)	QP Level (dBμV/m)	Limit (dBμV/m)	Passing Margin (dB)	Turntable (degrees)	Antenna (m/polarity)
49.488	26.24	39.08	12.84	294	1.0/vertical

RADIATED EMISSIONS
30 – 1000 MHz

3M
EMC Laboratory

TEST REPORT # F1105002 SHEET 1 OF 1

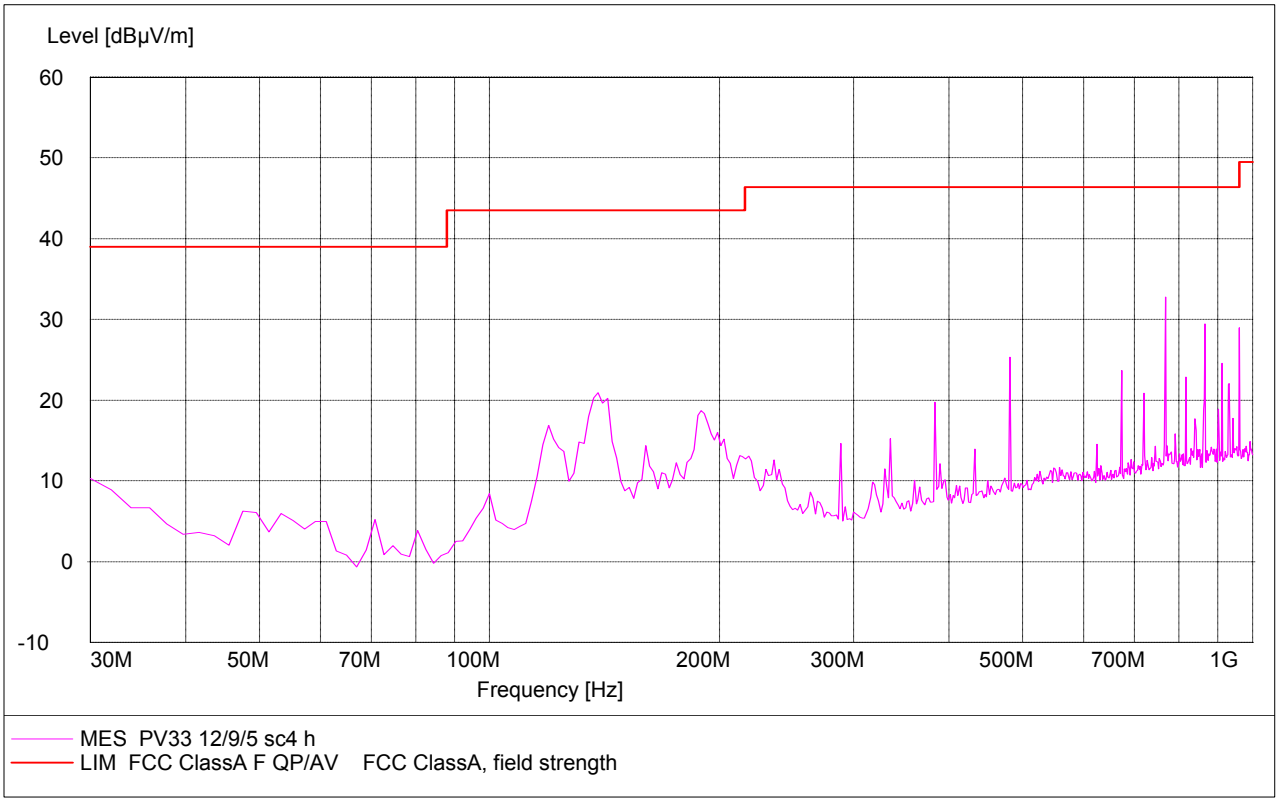
EUT MODEL # 3M™ PV33 EUT SERIAL # PV331011

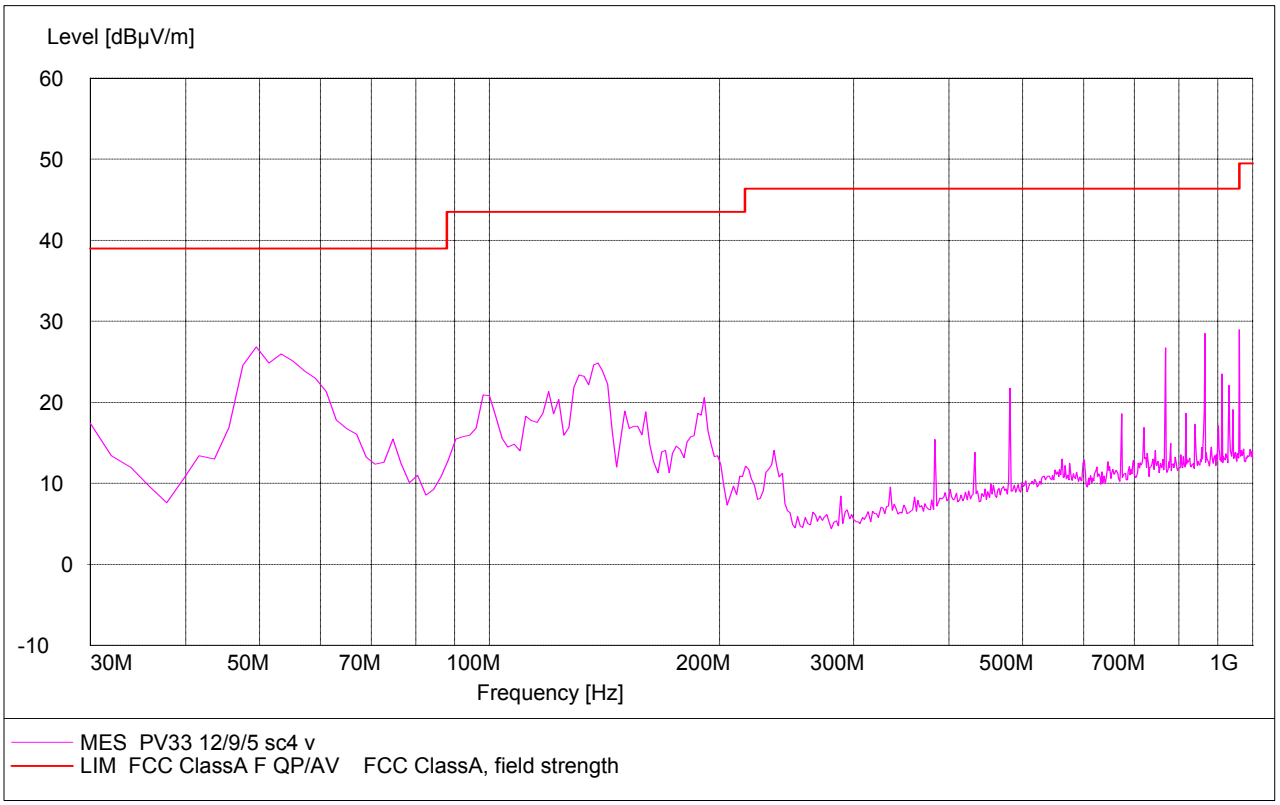
DESCRIPTION Document Reader with RFID

FREQ. (MHz)	MAXIMIZED QP SIGNAL		LIMIT LINE	PASSING MARGIN	MAXIMIZED POSITION		REMARKS
	H/V	(dBμV/m)	(dBμV/m)	(dB)	TURNTABLE (degrees)	ANTENNA (meters)	
49.488	V	26.24	39.08	12.84	294	1.0	Digital
98.988	V	25.55	43.52	17.97	89	1.0	Digital
366.13	H	26.96	46.44	19.48	71	1.0	Digital
768.09	H	32.53	46.44	13.91	281	1.2	Digital
864.11	H	33.55	46.44	12.89	321	1.0	Digital
960.50	H	30.84	49.54	18.70	319	1.0	Digital

Test Engineer: Steve Wytaske

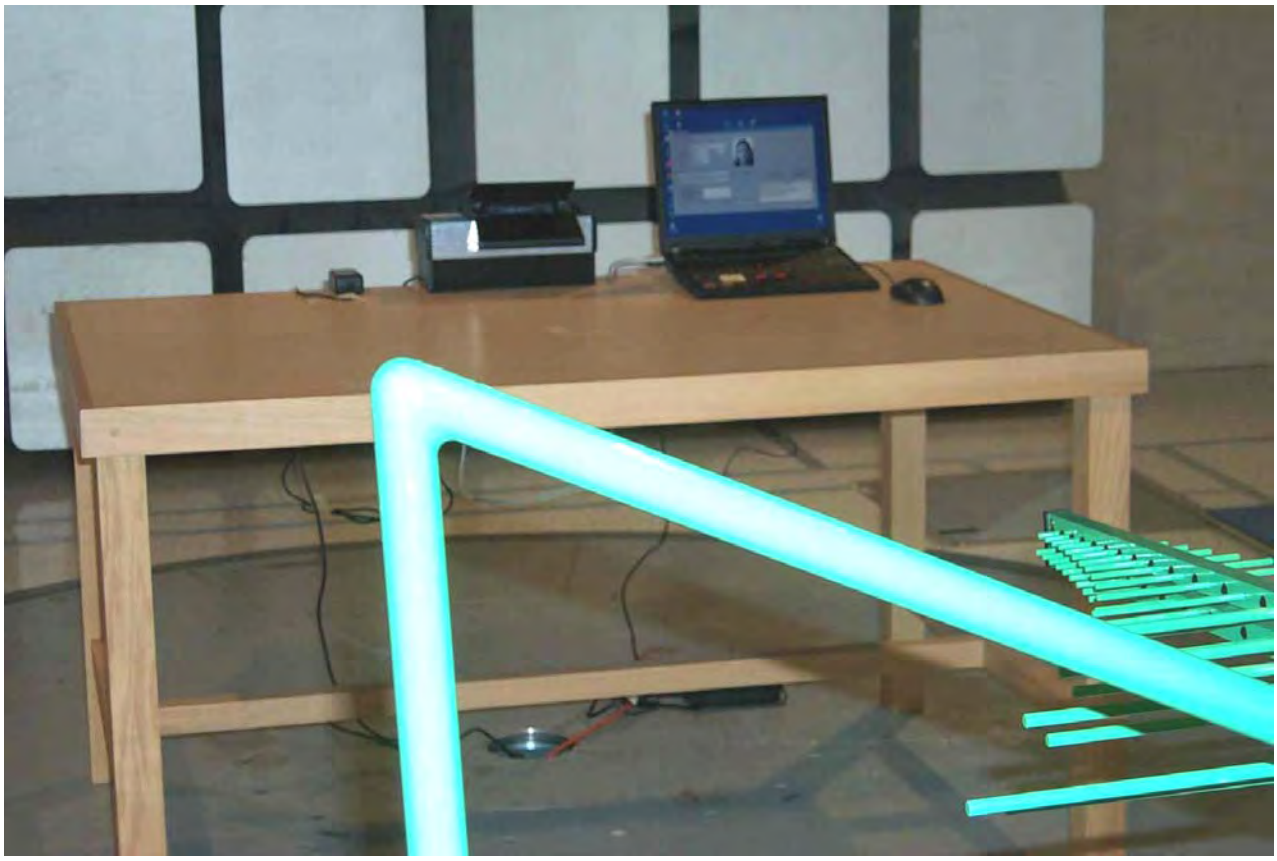
Date: 12-09-2005





NOTE: Plots show Max Peak values only

5.5.4 Test Setup Photo (Spurious and Radiated Emissions)



6.0 LIST OF TEST EQUIPMENT

The following test equipment was used to perform the indicated tests. All of the test equipment was calibrated by an accredited calibration laboratory or by the manufacturer. All calibration intervals are one year. All equipment calibrations, test procedures, and the test facility are traceable to the standards of the National Institute of Standards and Technology (NIST). The test facility site attenuation verification results fall within the normalized site attenuation (NSA) criteria for open area test sites using volumetric measurements.

FREQUENCY STABILITY – (test date 28-July-05)

Agilent Frequency Counter, Model 53131A, s/n MY40012264 (cal due date: 15 Sep 05)
Pacific Power Source, Model 140-TMX, s/n 838761 (cal not required)
EMCO Loop Probe, Model 7405-901, s/n none, (cal not required)
Environtronics Chamber, Model FLX900-2-6-wc-h, s/n 08046208 (cal date 4 Apr 06)

RADIATED EMISSIONS

ElectroMetrics Large Loop Antenna. Model ALR25M, Serial No. 603 (cal due date: 12 Sep 06)
Schaffner Biconilog Antenna, Model CBL6112B, Serial No. 27491 (cal due date: 12 Sep 06)
HP Pre-Amplifier, Model 8447D, Serial No. 2944A08064 (cal due date: 12 Sep 06)
Rohde & Schwarz EMI Receiver, Model ESIB 40, S/N 100235 (cal due date: 14 Nov 06)
Rohde & Schwarz ESIB 40 Firmware Version 4.32.3

CONDUCTED EMISSIONS

EMCO LISN, Model 3825-2, Serial No. 1039 (cal due date: 12 Sep 06)
Solar High Pass Filter, Model 8131 - 5.0 (cal due date: 30 Jun 06)
Rohde & Schwarz EMI Receiver, Model ESIB 40, S/N 100235 (cal due date: 14 Nov 06)
Rohde & Schwarz ESIB 40 Firmware Version 4.32.3

TEST FACILITY

Lindgren Semi-Anechoic Chamber, Model 11867A, serial No. 01211 (verification due date: 29 Aug 06)

The radiated and conducted emission measurements were performed in a semi-anechoic chamber located at 3M Building 76, 410 Fillmore Street, St. Paul, MN. Details concerning this site are on file with the FCC laboratory Division in Columbia Maryland.

The Facility Registration Number is 93334, 31 March 2003.

7.0 LABELING INFORMATION

The FCC (Federal Communications Commission) requires the following labeling information. Since the equipment has intentional and unintentional radiators, it must be labeled as a digital device and as an intentional radiator.

Labels on the Product

The following statement shall be placed in a conspicuous location on the device:

> This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
>
> FCC ID: DGFSSDPV30

Labels in the Manuals

The following statements shall be placed in a prominent location in the text of the user manual:

> NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide a reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.
>
> FCC ID: DGFSSDPV30
>
> NO MODIFICATIONS. Modifications to this device shall not be made without the written consent of 3M Company. Unauthorized modifications may void the authority granted under Federal Communications Commission Rules permitting the operation of this device.

End of Report