FCC
Electromagnetic Compatibility
Test Report

For

3M™ ePassport Reader Model PV 35

FCC ID: DGFSSDPV35

IC: 458A-SSDPV35

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

17 December 2007

Report Number F1007001

Prepared By:

CR-SEMS Product Safety
Building 76-1-01
410 East Fillmore Avenue
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3M Product Safety SEMS Technology Center Building 76-1-01 St. Paul, MN 55144-1000	Phone: 651-778-4577 FAX: 651-778-6252	3M EMC Laboratory

CERTIFICATE OF COMPLIANCE

USA STANDARD 47 CODE OF FEDERAL REGULATIONS
Industry Canada

Radiated Emissions **(FCC Part 15, Subpart B, Class A)**
(IC, ICES-003)

Conducted Emissions **(FCC Part 15, Subpart B, Class A)**
(IC, ICES-003)

Radiated Emissions **(FCC Part 15, Subpart C)**
(IC, RSS-210, RSS-GEN)

Conducted Emissions **(FCC Part 15, Subpart C)**
(IC, RSS-210, RSS-GEN)

MANUFACTURER'S NAME	3M Company
NAME OF EQUIPMENT	3M™ ePassport Reader Model PV 35
DESCRIPTION	Passport Reader with RFID
FCC ID IC	DGFSSDPV35 458A-SSDPV35
TEST REPORT NUMBER	F1007001
DATE	17 December 2007

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, and Industry Canada RSS & ICES Standards. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical characteristics.

Bruce R. Jungwirth

Bruce Jungwirth
EMC Engineer

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1.0 TEST SUMMARY

Test Report Number:	F1007001
Requester:	Stephen Bernard, 3M-AIT Canada
Company:	3M Safety and Security Systems Division Building 209 St. Paul, MN 55144
Telephone Number:	(613) 725-1485 x 1555
Test Dates:	Nov 21 – 29 & Dec 11 2007
Equipment Under Test	3M™ Model PV 35 ePassport Reader FCC ID: DGFSSDPV35 IC: 458A-SSDPV35
Date Of Receipt:	Nov 07, 2007
Test Environment	Temperature: 23 degrees C Relative Humidity: 20 % RH
Test Results:	Passed the following tests: Conducted Emissions: FCC Part 15, ICES-003 Class A Radiated Emissions: FCC Part 15, ICES-003 Class A Conducted Emissions: FCC Part 15 Subpart C, IC RSS Radiated Emissions: FCC Part 15 Subpart C, IC RSS
Modifications:	See section 2.5 for details
Test Location:	3M Product Safety EMC Laboratory Building 76 410 Fillmore Ave. St. Paul, MN 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", & IC ICES-003 rules for unintentional radiators and FCC Part 15, Subpart C, & IC RSS 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 that were used 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. Equipment and documentation labeling information is contained in Sections 6.0 and 7.0.

Subsequent tests are necessary from time to time on equipment taken at random from production. Re-testing of the EUT 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 Industry Canada Site Registration Number is 458A-1.

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™ Model PV 35 Kiosk ePassport System.
The 3M™ Model PV 35 optically scans passports, ID cards, and other travel documents, as well as reading Contactless Integrated Circuit chips integrated into travel documents. The reader reads ISO 14443 Type A and Type B ICs. The system is designed to be installed within a self-service kiosk, and has not been evaluated for other uses, such as stand-alone desktop. The PV 35 is intended to be used only in an indoor environment and has not been evaluated for other environmental conditions.

The reader has a transmit frequency of 13.56 MHz. And a measured power output level of 236 milliwatt (23.72 dBm) as measured into a 50-ohm load. This maximum output is factory preset.

The EUT contains 1 antenna with area of 9.0 square inches. The antenna completely surrounds the document window and tray. The antenna is cabled to the reader via coax cable and SMB connectors. The reader is located under the top cover.

All tests were made using an input of 120 V RMS, 60 Hz, and single-phase power. The EUT was tested while exercising all functions. The EUT was set to read tags and optically scan documents during testing.

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

No modifications were required:

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	2005
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 Part 1: Radio disturbance and immunity measuring apparatus	1998
CISPR 16-2	Specification for radio disturbance and immunity measuring apparatus and methods Part 2: Methods of measurements of disturbances and immunity	1996
ICES-003	Industry Canada, Interference-Causing Equipment Standard Issue 4	2004
RSS-210	Industry Canada, Radio Standards Specification Issue 7	2007
RSS-GEN	Industry Canada, Radio Standards Specification Issue 2	2007

4.0 CONDUCTED EMISSIONS

Testing of conducted emissions 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.

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 'A' 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	79	66
0.50 to 30.0	73	60

4.3 Test Results

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

3M™ ePassport Model PV 35				
Frequency (MHz)	Limit (dBμV)	L1 (dBμV)	L2 (dBμV)	Passing Margin (dB)
0.511	73	41.5	42.1	30.9

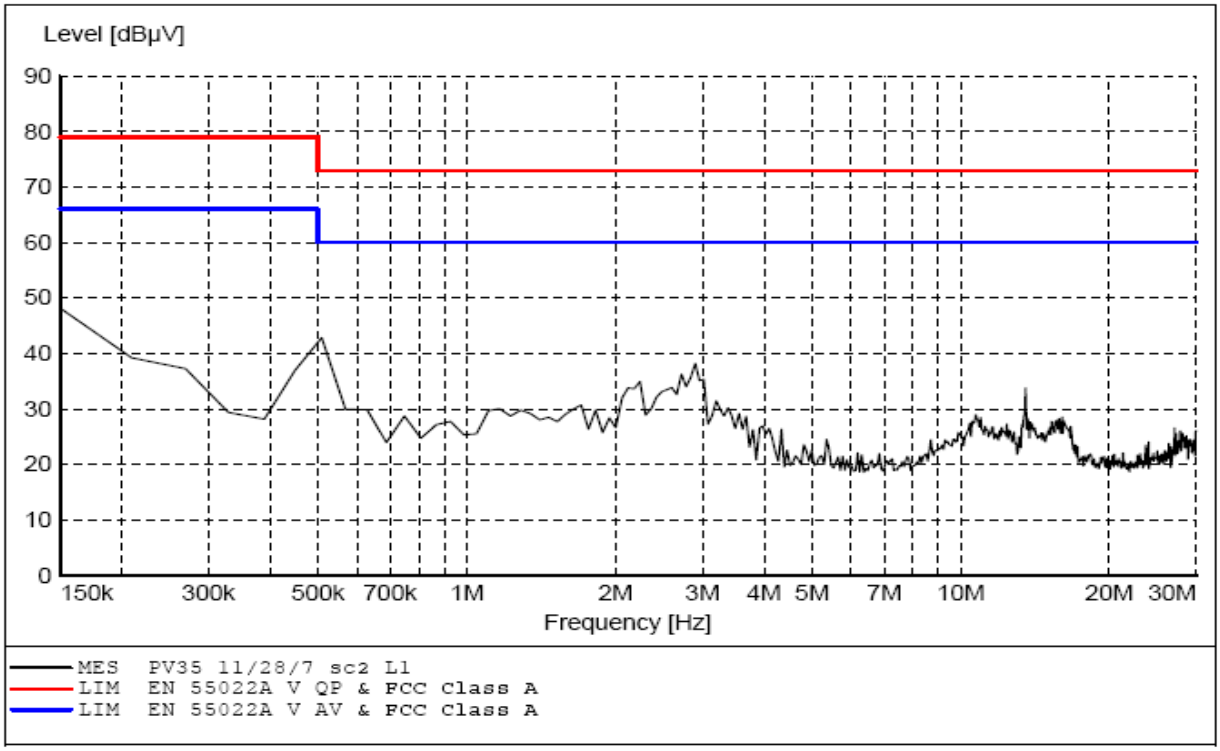
3M Conducted Emissions

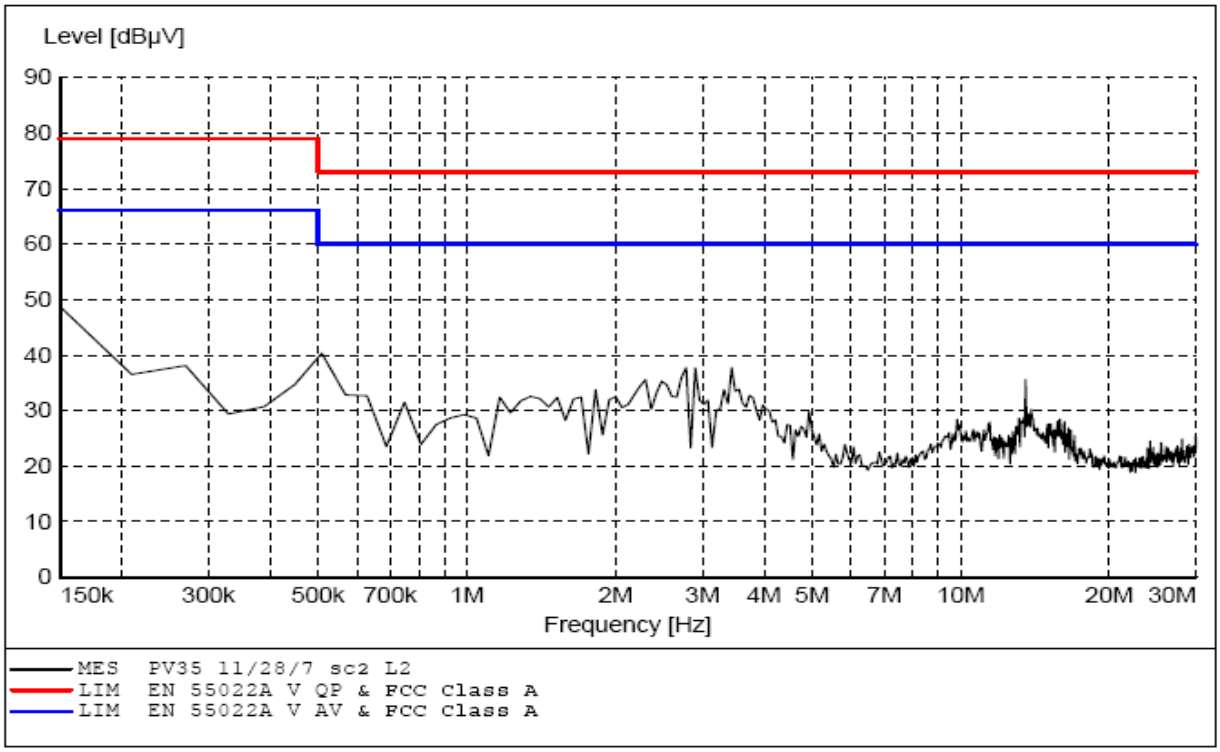
Report Number	F1007001	**Date**	28 Nov 2007
EUT Name	3M Kiosk ePassport Reader	**EUT Power**	120 / 60
EUT Model	PV35	**Test Std**	
EUT Serial #		Temperature (°C)	
EUT Description	Travel document reader with RFID	Humidity (%)	
		Air Pressure (kPa)	

MAXIMIZED FILES PV35 11/28/7 sc2 L1, L2 VOLTAGE/HERTZ 120/60

	PEAK (dBµV)		QUASI-PEAK (dBµV)				AVERAGE (dBµV)			
FREQUENCY (MHz)	L1 Line	L2 N	L1 Line	L2 N	Limit	Passing Margin	L1 Line	L2 N	Limit	Passing Margin
.151			42.8	45.5	79	33.5	30.4	30.2	66	35.6
.266			31.8	32.1	79	46.9	18.6	16.3	66	47.4
.511			41.5	42.1	73	30.9	40.0	41.0	60	19.0
2.799			31.2	31.2	73	41.8	19.1	18.6	60	40.9
3.459			27.8	25.9	73	45.2	7.8	12.8	60	47.2
13.5601			33.5	34.0	73	39.0	32.2	32.6	60	27.4

Test Engineer: Bruce Jungwirth	Date: 28 Nov 2007

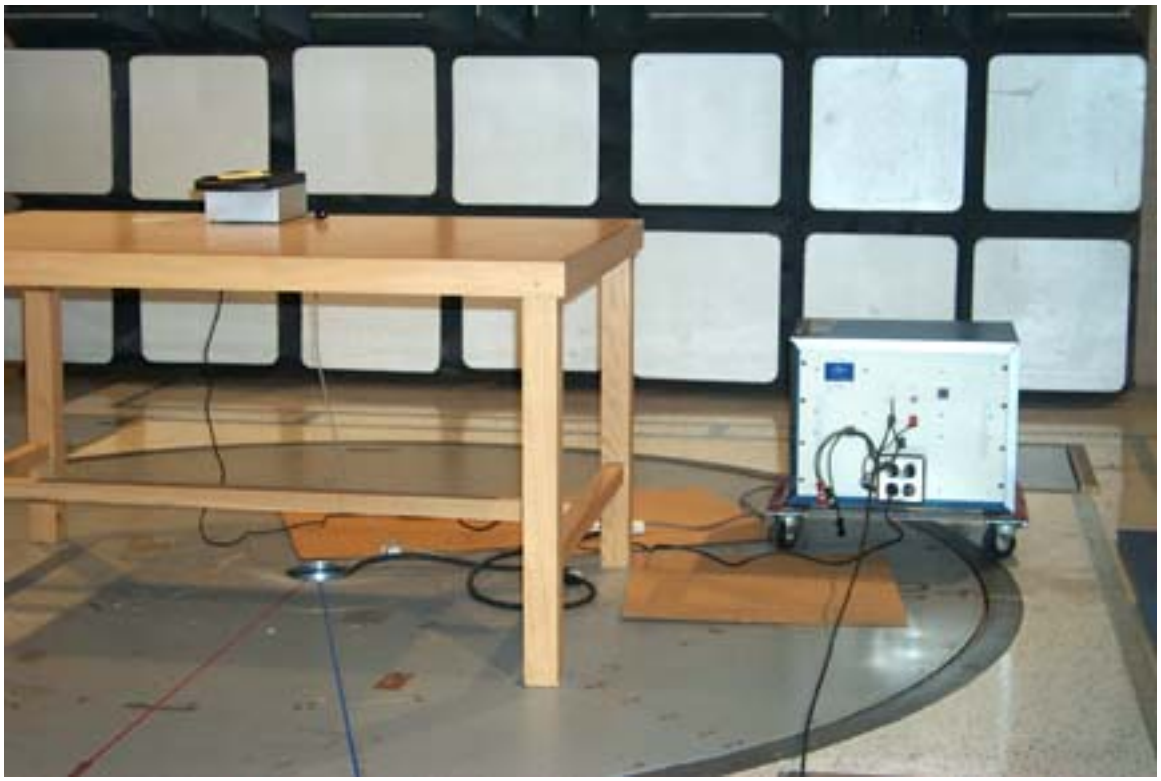




Conducted Emissions

NOTE: Plots show Max Peak values only

4.4 Test Setup Photo



Conducted Emissions

5.0 RADIATED EMISSIONS

Testing of radiated emissions 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.

5.1 Frequency Stability

The Frequency Stability testing was preformed 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. A spectrum analyzer 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 power to the EUT 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, 1 minute, and 10 minutes).

5.1.2 Test Criteria

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

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

Frequency Stability versus Supply Voltage			
Carrier Frequency (MHz)	Lowest Frequency (MHz)	Highest Frequency (MHz)	Max.Frequency Change (%)
13.5602	13.5602	13.5604	+/- 0.0015

Frequency Stability versus Temperature			
Carrier Frequency (MHz)	Lowest Frequency (MHz)	Highest Frequency (MHz)	Max.Frequency Change (%)
13.5602	13.5602	13.5604	+/- 0.0015

Frequency Stability versus Temperature Test Results			
Temperature	Time		
	Startup	1 Minute	10 Minute
-20° C	13.5604	13.5604	13.5604
0° C	13.5604	13.5604	13.5604
23° C	13.5602	13.5602	13.5602
50° C	13.5604	13.5604	13.5602

Test Engineer: Bruce Jungwirth

Date: 11 Dec 2007

5.2 Emission Bandwidth

The EUT was placed in a semi-anechoic chamber and the Emission Bandwidth testing 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, Paragraph 15.225 Carrier Frequency Limits are given as:

Lower Band Edge: 13.553 MHz
Upper Band Edge: 13.567 MHz

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

Frequency (MHz)	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.

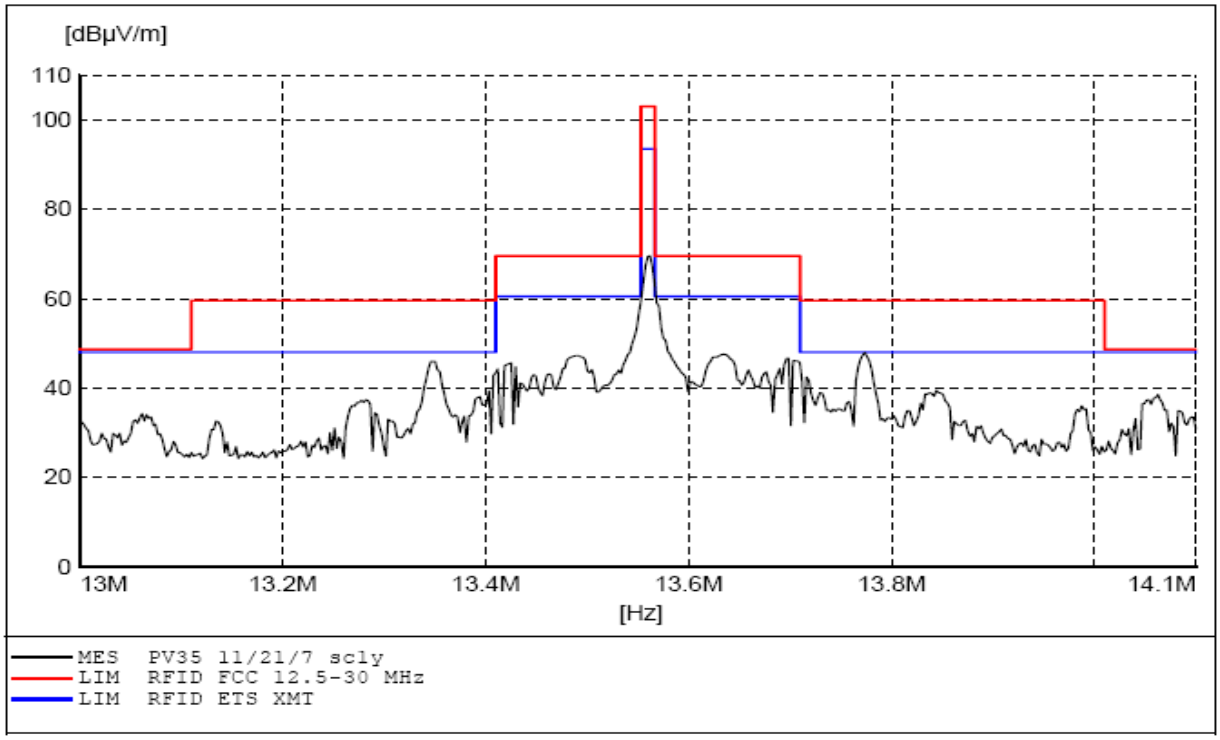
5.2.3 Test Results

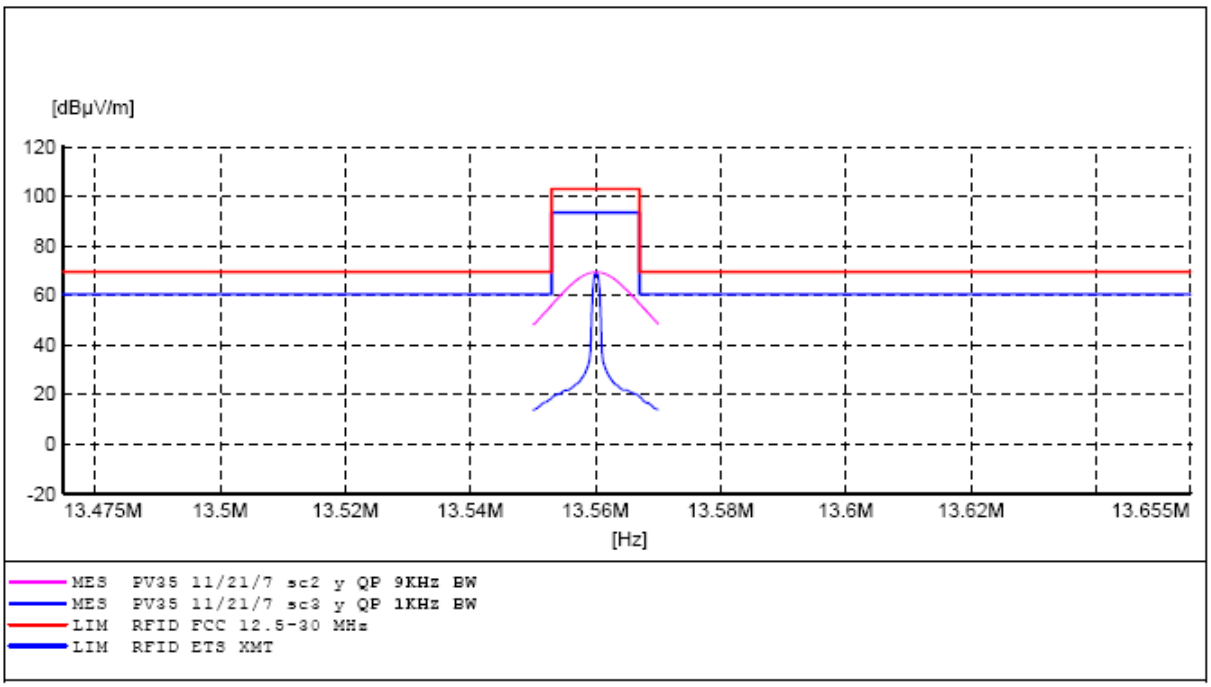
The EUT met the FCC Part 15, Subpart C Emission Bandwidth requirements. The intentional radiator frequency was within the allowed band and all maximized quasi-peak measurements for the EUT were below the quasi-peak limits.

3M™ ePassport Model PV 35						
Frequency (MHz)	BW (kHz)	QP Level (dBµV/m)	QP Limit (dBµV/m)	Passing Margin (dB)	Turntable (degrees)	Antenna Orientation/Angle (Polarity/degrees)
13.5602[1]	9	69.57	103	33.43	265	Y - 5° counterclockwise
13.553[2]	1	17.68	69.6	51.92	265	Y - 5° counterclockwise
13.567[2]	1	18.17	69.6	52.43	265	Y - 5° counterclockwise
13.5485	9	44.05	69.6	25.55	265	Y - 5° counterclockwise
13.5715	9	44.85	69.6	24.75	265	Y - 5° counterclockwise
13.41	1	3.25	59.6	56.35	265	Y - 5° counterclockwise
13.71	1	3.61	59.6	55.99	265	Y - 5° counterclockwise
13.4055	9	22.34	59.6	37.26	265	Y - 5° counterclockwise
13.7141	9	23.66	59.6	35.94	265	Y - 5° counterclockwise
13.11	1	0.93	48.6	47.67	265	Y - 5° counterclockwise
14.01	1	0.41	48.6	48.19	265	Y - 5° counterclockwise
13.1055	9	14.91	48.6	33.69	265	Y - 5° counterclockwise
14.0145	9	15.22	48.6	33.38	265	Y - 5° counterclockwise

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

Test Engineer: Bruce Jungwirth
Date: 21 Nov. 2007





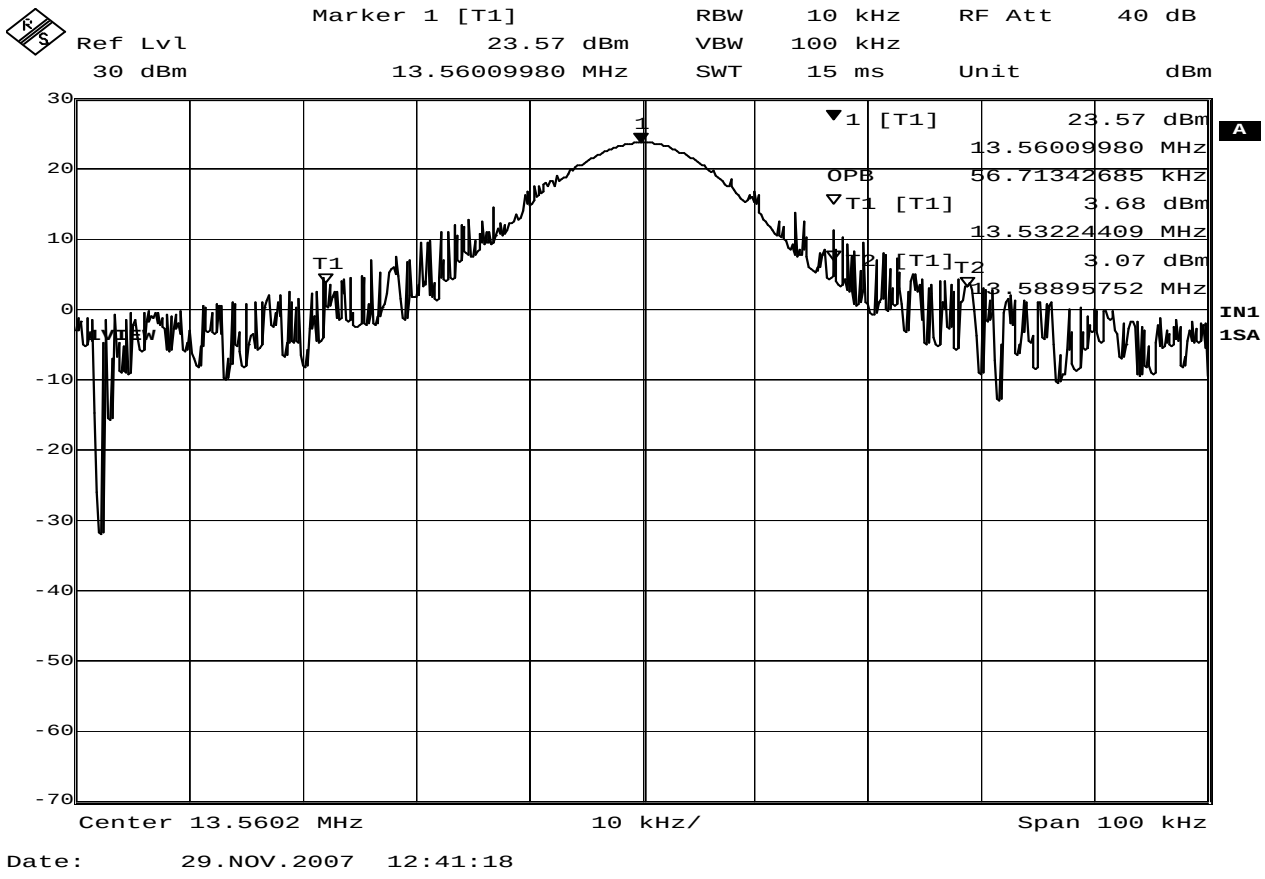
Emissions Bandwidth

5.2.4 Test Setup Photo – (Setup used for Emissions Bandwidth and Spurious Emissions below 30 MHz)

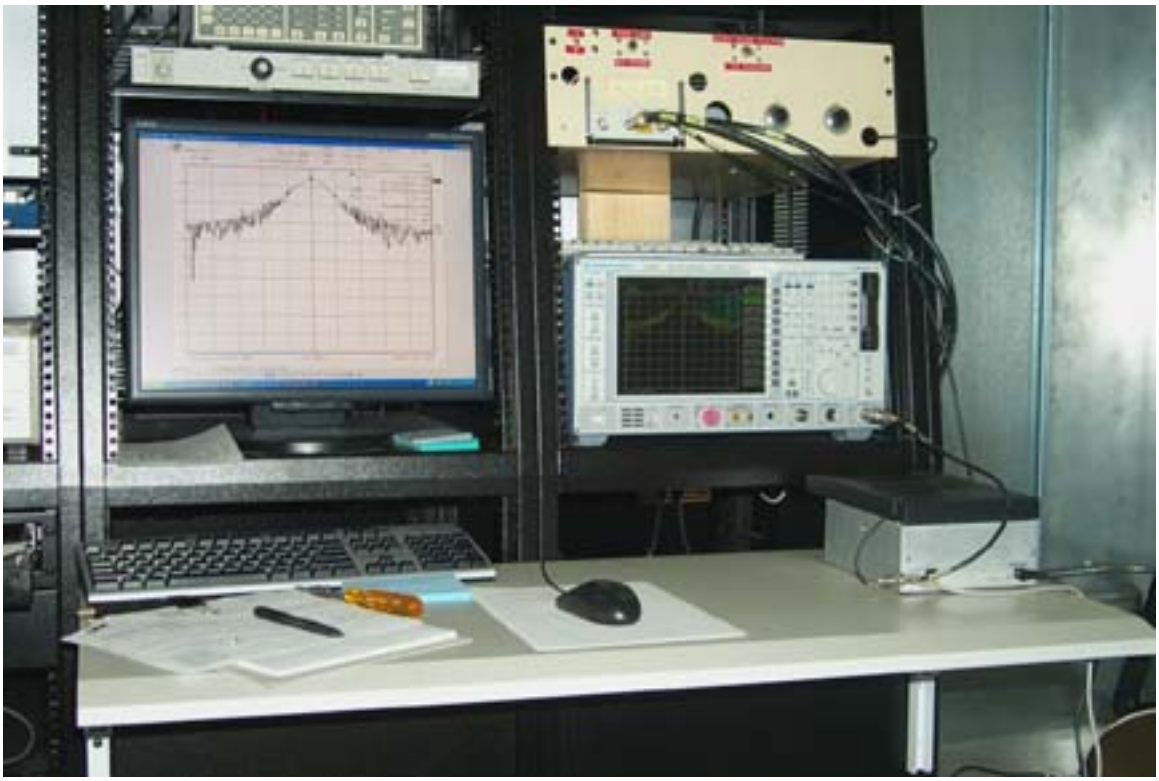
5.2.5 99% Occupied Bandwidth

The EUT was placed in a shielded room and connected directly to the input of an EMI Receiver. The receiver was operated in the analyzer mode with a center frequency of 13.56 MHz. The transmitter was operated at its maximum carrier output with modulation applied under normal test conditions. The receiver's span and bandwidths were set in accordance with Industry Canada RSS-GEN (section4.6.1).

The EUT had a measured bandwidth of 56.71 KHz.



Test Engineer: Bruce Jungwirth
Date: 29 November 2007



Occupied Power Bandwidth Test Setup

5.3 Spurious Emissions (12.5 to 30 MHz.)

The EUT was placed in an semi-anechoic chamber and the Spurious Emissions testing was preformed 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)	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

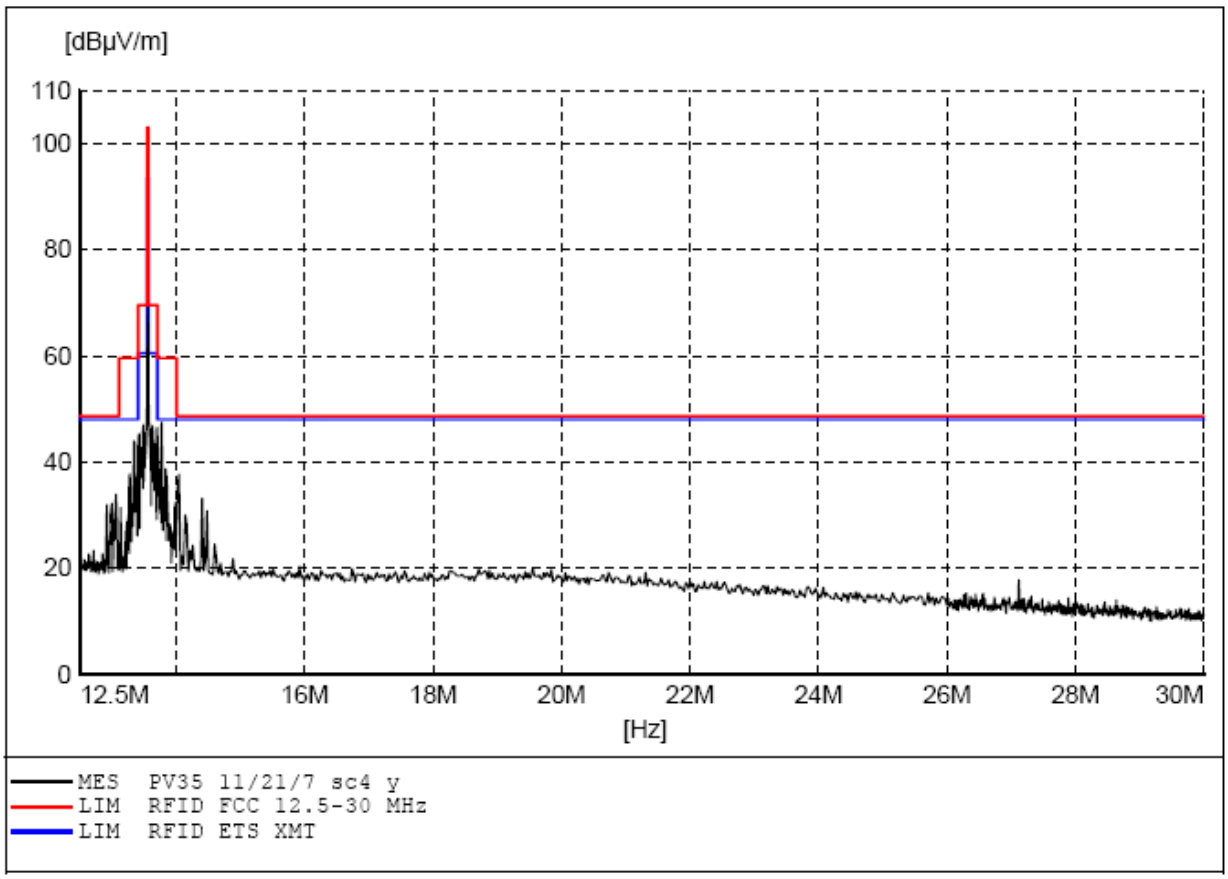
Note: A 40 dB/decade extrapolation factor was used per 15.31.

5.3.3 Test Results

No spurious emissions were detected below 12.5 MHz. The EUT met the FCC Part 15, Subpart C Spurious Emissions (12.5 to 30 MHz.) requirements. The worst-case emission was as follows:

3M™ ePassport Model PV 35			
Frequency (MHz)	Limit (dBμV)	Maximized QP Signal (dBμV)	Passing Margin (dB)
27.1202[1]	48.6	14.79	33.81

1. 2nd Harmonic of Intentional Radiator



5.3.4 Test Setup Photo

See Section 5.2.4 Emissions Bandwidth

5.4 Spurious Emissions (30 to 1000 MHz.)

The EUT was placed in a semi-anechoic chamber for spurious emissions testing 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.

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

Frequency (MHz)	Distance (Meters)	Field Strength (dBμV/m)
30 - 88	10	29.54
88 - 216	10	33.06
216 - 960	10	35.56
960 and higher	10	43.52

5.4.3 Test Results

The EUT met the FCC Part 15, Subpart C Spurious Emissions (30 to 1000 MHz.) requirements.

SPURIOUS EMISSIONS
30 - 1000 MHz

3M

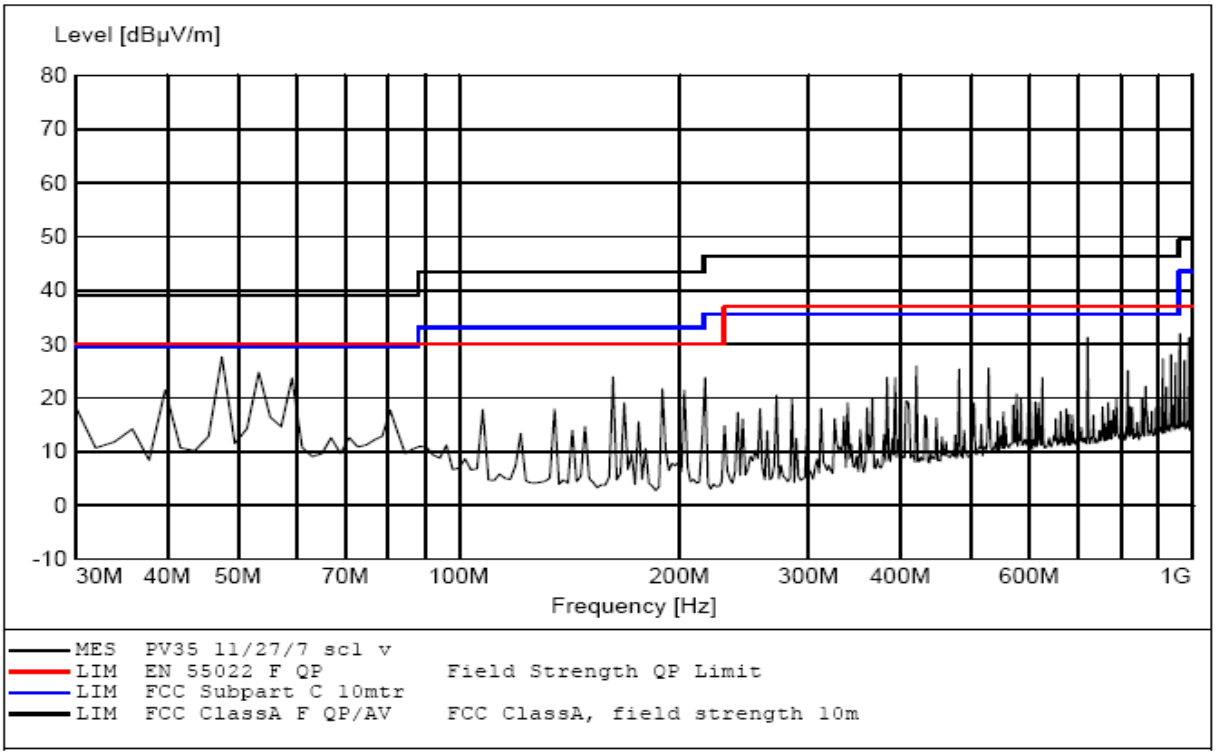
TEST REPORT # F1007001 SHEET 1 OF 1

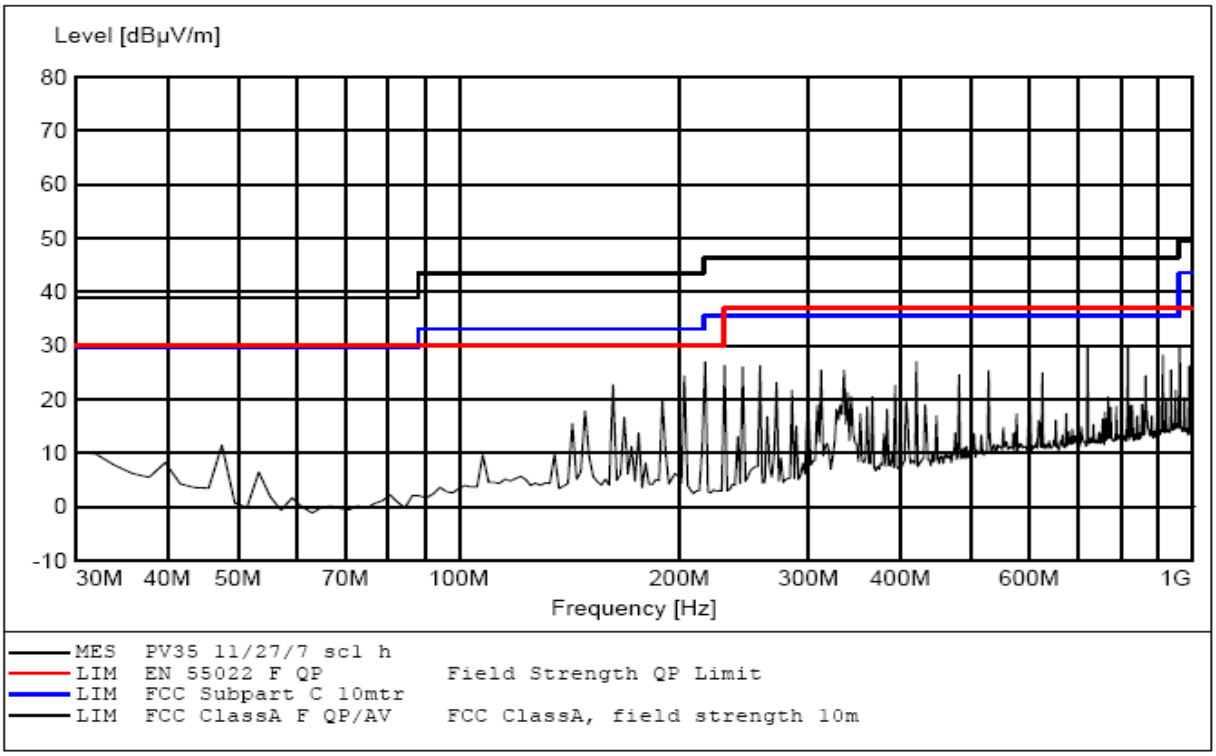
EUT MODEL # 3M™ ePassport Model PV 35 EUT SERIAL # N/A

DESCRIPTION Travel 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)	
40.6855	V	20.57	29.54	8.97	98	1.0	Harmonic
54.242	V	20.12	29.54	9.42	110	1.0	Harmonic
162.71	V	25.31	33.06	7.75	312	1.0	Harmonic
216.96	H	29.31	35.56	6.25	260	1.4	Harmonic
230.515	H	25.98	35.56	9.58	231	1.18	Harmonic
244.078	H	26.29	35.56	9.27	225	1.28	Harmonic
257.635	H	25.65	35.56	9.91	210	1.09	Harmonic
420.356	H	24.50	35.56	11.06	262	1.0	Harmonic
962.761	V	31.66	43.52	11.86	193	1.0	Harmonic

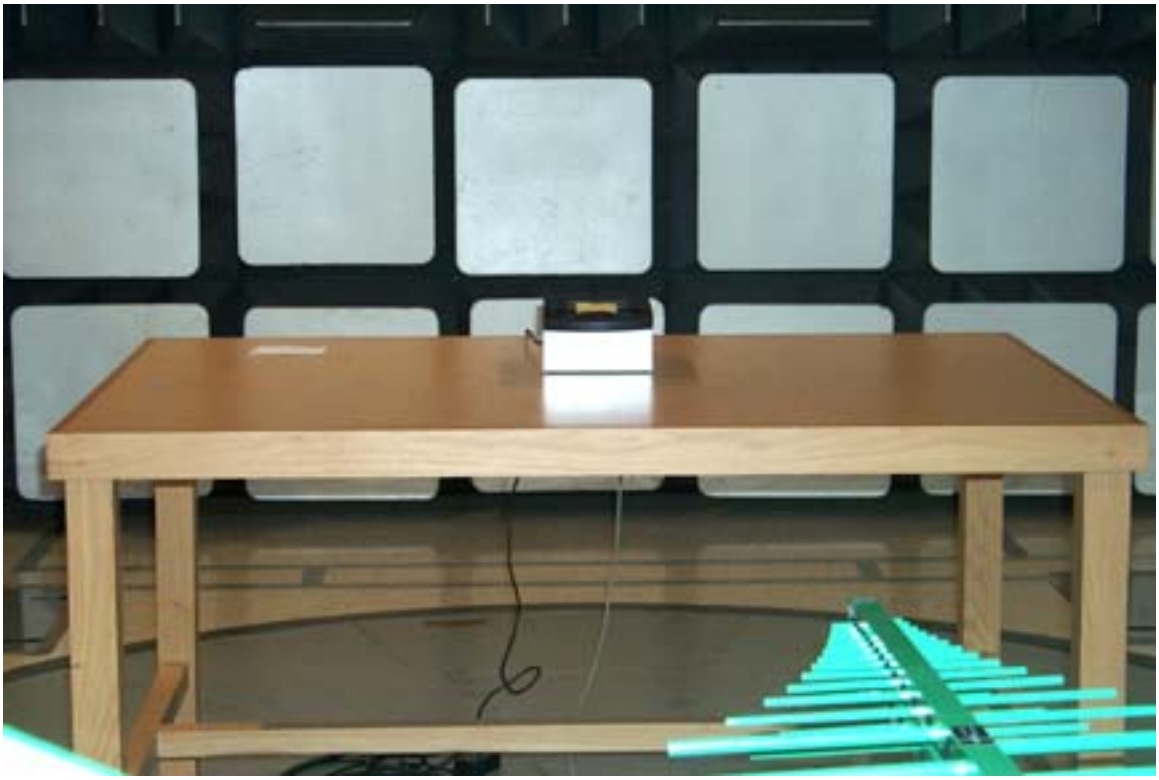
Test Engineer: Bruce Jungwirth
Date: 27 Nov. 2007





Spurious Emissions 30 to 1000 MHz

NOTE: Plots show Max Peak values



Spurious Emissions 30 to 1000 MHz

5.5 Radiated Emissions (30 MHz - 1 GHz)

The EUT was placed in a semi-anechoic chamber for radiated emissions testing in accordance with ANSI C63.4 and FCC Part 15. Radiated emissions measurements were made to determine the level of electromagnetic energy radiating from the EUT.

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 1 GHz (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 are given below. The lower limit shall apply at the transition frequency.

Frequency (MHz)	Distance (Meters)	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 testing was required 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™ePassport Model PV 35					
Frequency (MHz)	Level (dBμV /m)	Limit (dBμV /m)	Passing Margin (dB)	Turntable (degrees)	Antenna (m/polarity)
48.0	24.53	39.08	14.55	48	1.0/vertical

RADIATED EMISSIONS
30 - 1000 MHz

3M

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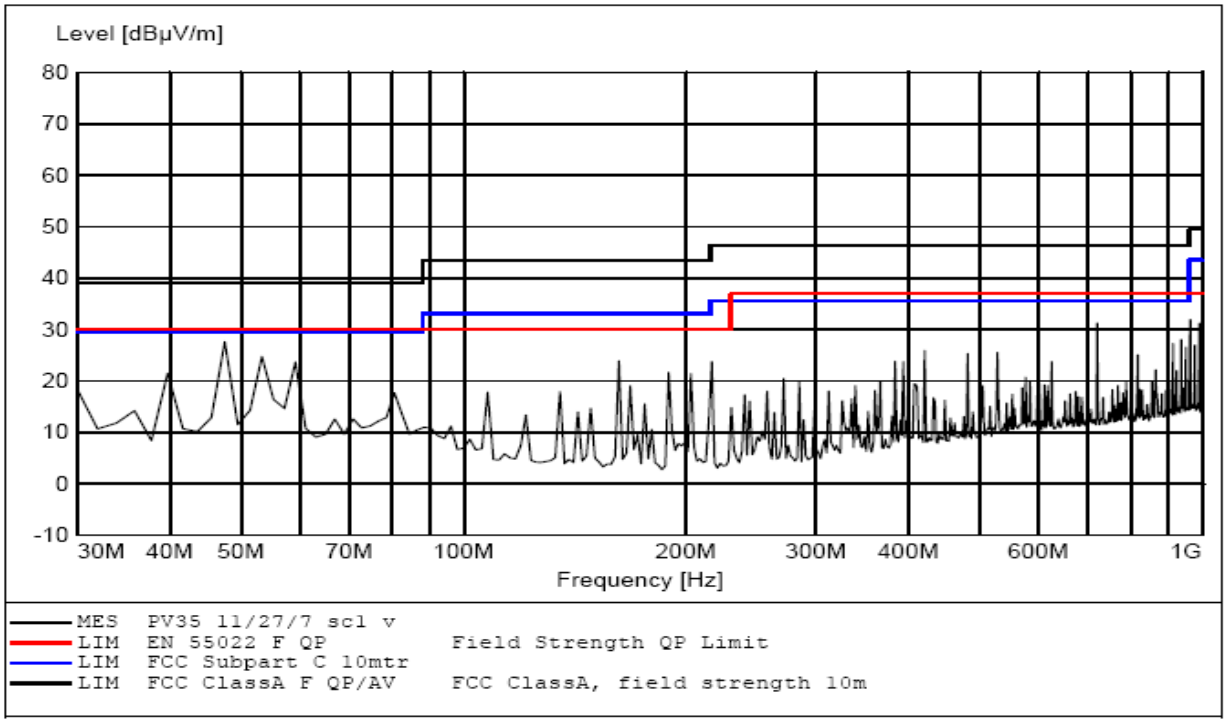
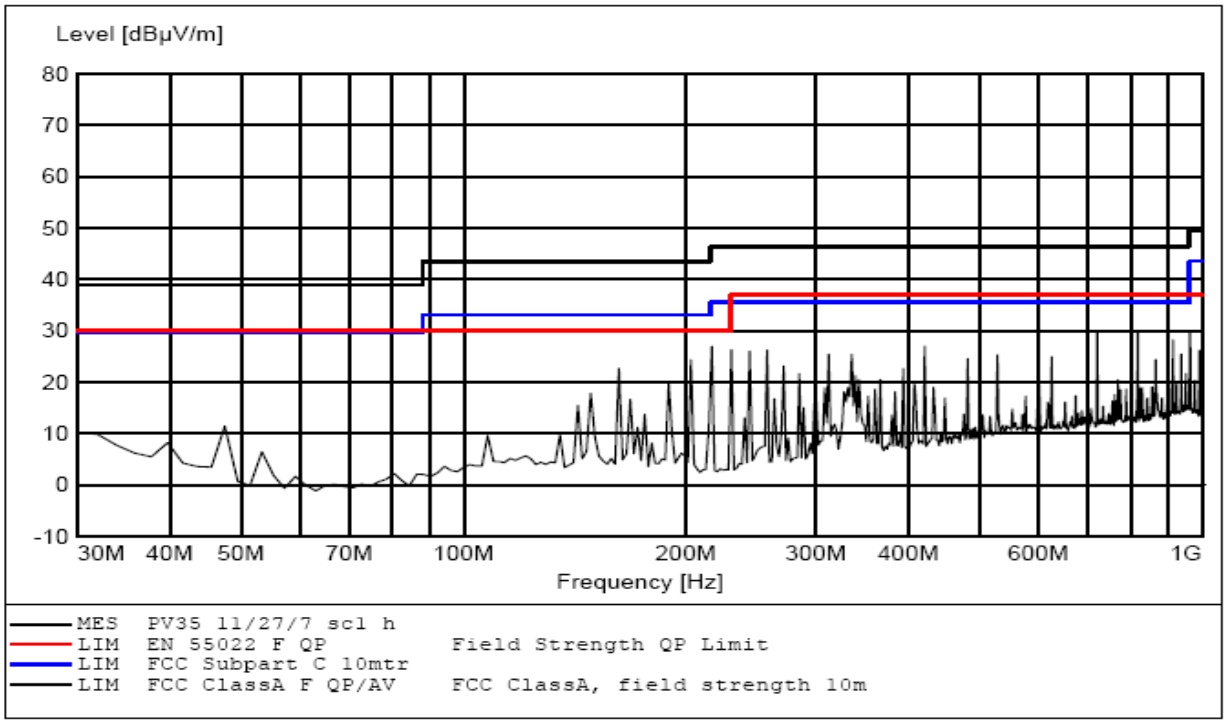
EUT MODEL # 3M™ ePassport Model PV 35 EUT SERIAL # N/A

DESCRIPTION Travel 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)	
48.0	V	24.53	39.08	14.55	48	1.0	
60.0	V	19.18	39.08	19.9	188	1.0	
719.937	H	28.59	46.44	17.85	236	1.0	
815.929	H	30.56	46.44	15.88	61	1.0	

Test Engineer: Bruce Jungwirth
Date: 27 Nov. 2007

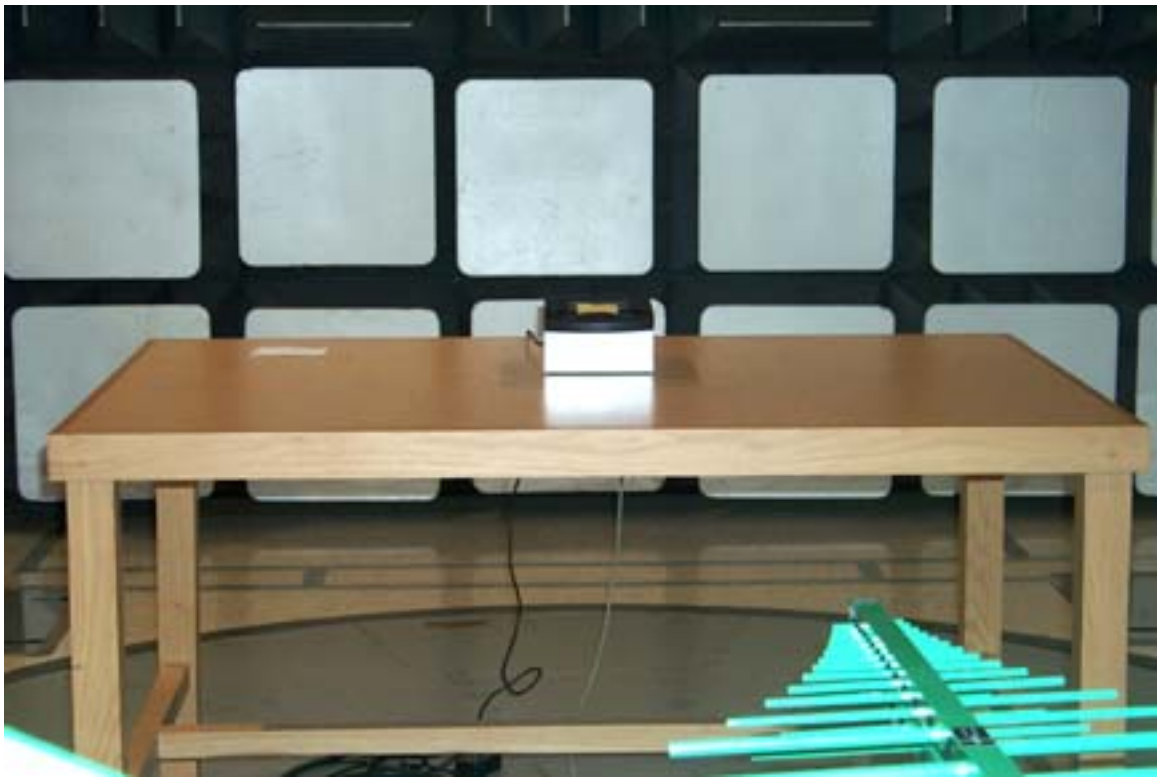




Radiated Emissions 30 to 1000 MHz

NOTE: Plots show Max Peak values

5.5.4 Test Setup Photo: 30-1000 MHz



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 / POWER OUTPUT

HP Spectrum Analyzer Model 8591A, Serial No. 3108A02041 (cal due date: 9 Oct 08)
Envirotronics Environmental Chamber, Model EH16-1-1.5AC, SN: 10066639 (cal due date: 19 Nov 08)

RADIATED EMISSIONS

ElectroMetrics Large Loop Antenna, Model ALR25M, Serial No. 603 (cal due date: 11 Oct 08)
Schaffner Biconilog Antenna, Model CBL6112B, Serial No. 27491 (cal due date: 10 Oct 08)
A. H Systems Horn Antenna, Model SAS_200/571 Serial No: 234 (cal due date: 9 Oct 08)
HP Pre-Amplifier, Model 8447D, Serial No. 1937A03090 (cal due date: 11Oct 08)
HP Pre-Amplifier, Model 83017A, Serial No. 3123A00259 (cal due date: 9 Oct 08)
Rohde & Schwarz EMI Receiver, Model ESIB 40, S/N 100235 (cal due date: 12 Oct 08)
Rohde & Schwarz ESIB 40 Firmware Version 4.34.3

Occupied Bandwidth

Rohde & Schwarz EMI Receiver, Model ESIB 40, S/N 100235 (cal due date: 12 Oct 08)
Rohde & Schwarz ESIB 40 Firmware Version 4.34.3

CONDUCTED EMISSIONS

EMCO LISN, Model 3825-2, Serial No. 1039 (cal due date: 11 Oct 08)
Solar High Pass Filter, Model 8131 - 5.0 (cal due date: 30 Jun 08)
Rohde & Schwarz EMI Receiver, Model ESIB 40, S/N 100235 (cal due date: 12 Oct 08)
Rohde & Schwarz ESIB 40 Firmware Version 4.34.3

TEST FACILITY

Lindgren Semi-Anechoic Chamber, Model 11867A, serial No. 01211 (verification due date: 14 Mar 08)

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 FCC Site Registration Number is 93334.
Industry Canada Site Registration number 458A-1

7.0 LABELING INFORMATION

The FCC (Federal Communications Commission) and Industry Canada require 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 statements 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: DGFSSDPV35
> IC: 458A-SSDPV35
>
> "This Class A digital apparatus complies with Canadian ICES-003."
>
> "Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada."

Labels in the Manuals

The following statement 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/her own expense.
>
> FCC ID: DGFSSDPV35
>
> 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 and Industry Canada Rules permitting the operation of this device.

"This Class A digital apparatus complies with Canadian ICES-003."

"Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada."

IC: 458A-SSDPV35

8.0 SIGNATURES

This page contains the secured digital signatures of the parties deemed responsible for reviewing and approving the contents of this report:

TEST ENGINEER: _____ **DATE: 18 Dec. 2007**

Bruce Jungwirth
3M EMC Laboratory

Robert E. Heller

APPROVER: _____ **DATE: 18 Dec. 2007**

Robert E. Heller
3M EMC Laboratory

This is the last page.