

**FCC
Electromagnetic Compatibility
Test Report**

For

3M™ SelfCheck™ Model 7410

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

28 July 2005

Report Number F1204004

Prepared By:

**CR-SEMS Product Safety
Building 76-1-01
410 East Fillmore Avenue
St. Paul, Minnesota 55144-1000**

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|--|--|-----------------------------|
| 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™ SelfCheck™ Model 7410 |
| DESCRIPTION | Book Check with RFID |
| TEST REPORT NUMBER | F1204004 |
| DATE | 28 July 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

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|----------------|--------------------------|---------------------------|--------------|
| 3M | SelfCheck™ Model 7410 | Report Number F1204004 | 3M |
| EMC Laboratory | Product Safety | July 28, 2005 | Page 3 of 31 |

TABLE OF CONTENTS

Title Page

Certificate of Compliance

Table of Contents

1.0 Test Summary

2.0 Introduction

2.1 Scope

2.2 EUT Description and Operation

2.3 Block Diagram

2.4 Parts List

2.5 Modifications to EUT

2.6 Measurement Uncertainty

3.0 Applicable Documents

4.0 Conducted Emissions

4.1 Test Procedure

4.2 Test Criteria

4.3 Test Results

4.4 Test Setup Photo

5.0 Radiated Emissions

5.1 Frequency Stability

5.1.1 Test Procedure

5.1.2 Test Criteria

5.1.3 Test Results

5.1.4 Test Setup Photo

5.2 Emissions Bandwidth

5.2.1 Test Procedure

5.2.2 Test Criteria

5.2.3 Test Results

5.2.4 Test Setup Photo

5.3 Spurious Emissions (12.5 to 30 MHz)

5.3.1 Test Procedure

5.3.2 Test Criteria

5.3.3 Test Results

5.3.4 Test Setup Photo

5.4 Spurious Emissions (30 MHz to 1000 MHz)

5.4.1 Test Procedure

5.4.2 Test Criteria

5.4.3 Test Results

5.5 Radiated Emissions (30 MHz - 18 GHz)

5.5.1 Test Procedure

5.5.2 Test Criteria

5.5.3 Test Results

5.5.4 Test Setup photo

6.0 List of Test Equipment

7.0 Labeling Information

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|----------------|--------------------------|---------------------------|--------------|
| 3M | SelfCheck™ Model 7410 | Report Number F1204004 | 3M |
| EMC Laboratory | Product Safety | July 28, 2005 | Page 4 of 31 |

1.0 TEST SUMMARY

Test Report Number: F1204004

Requester: Dean Dowdle

Company: 3M
Safety and Security Systems Division
Library Systems
Building 209
St. Paul, MN 55144

Telephone Number: (651) 733-8399

Test Dates: May 4 – 5, 2005

Equipment Under Test 3M™ Model 7410 SelfCheck™

Date Of Receipt: January 5, 2005

Test Environment Temperature: 22 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: 8 (eight) modifications required. See section 2.5 for details

Test Location: 3M Product Safety EMC Laboratory
Building 76
410 Fillmore Ave.
St. Paul, MN 55144-1000

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|----------------|--------------------------|---------------------------|--------------|
| 3M | SelfCheck™ Model 7410 | Report Number F1204004 | 3M |
| EMC Laboratory | Product Safety | July 28, 2005 | Page 5 of 31 |

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 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 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.

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|----------------|--------------------------|---------------------------|--------------|
| 3M | SelfCheck™ Model 7410 | Report Number F1204004 | 3M |
| EMC Laboratory | Product Safety | July 28, 2005 | Page 6 of 31 |

2.2 EUT Descriptions and Operation

The Equipment Under Test (EUT) is the 3M™ Model 7410 SelfCheck™ System.

The 3M™ Model 7410 SelfCheck™ enables library customers to check library materials in and out by themselves. The system emulates the check-in and check-out procedures performed by library staff.

The system can be purchased as a modular unit or as a fully assembled kiosk unit.

The system is designed for use in an indoor library environment and has not been evaluated for other locations or uses.

The reader has a transmit frequency of 13.56 MHz. And a power output level of 1.0 watts (30 dBm) as measured into a 50-ohm load. This maximum output of 1.0 watt (30 dBm) is factory preset.

The EUT contains 1 antenna with area of 102.0 square inches. The antenna is located in the V-Box. The antenna is cabled to the reader via coax cable and SMA connectors. The reader is located in the Common Box.

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 Reader was set to the fastest read time and was reading tags during all testing.

| | | | |
|----------------|--------------------------|---------------------------|--------------|
| 3M | SelfCheck™ Model 7410 | Report Number F1204004 | 3M |
| EMC Laboratory | Product Safety | July 28, 2005 | Page 7 of 31 |

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. (Modular and Kiosk) - Ferrite – Steward #28A2025 (or equivalent) – 1 turn – located on RS232 cable (COM1) to Common box at Common Box end.
2. (Modular and Kiosk) - Ferrite – Steward #28A2025 (or equivalent) – 1 turn – located on USB cable to keyboard at CPU end.
3. (Modular and Kiosk) - Ferrite – Steward #28A2025 (or equivalent) – 2 turns – located on USB cable to mouse at CPU end.
4. (Modular and Kiosk) - Ferrite – Steward #28A03920A0 (or equivalent) – 1 turn – located on +12VDC power to monitor at monitor end.
5. (Kiosk only) - Ferrite – Steward #28A2024 (or equivalent) – 1 turn – located on coil output cable at Driver box end.
6. (Kiosk only) - Ferrite – Steward #28A2029 (or equivalent) – 2 turns – located on printer power cable at Common box end.
7. (Kiosk only) – Ground Driver Box to Common Box with minimum ½ inch wide grounding braid or 1 inch copper tape.
8. (Kiosk only) - Ground Common Box to CPU chassis with minimum ½ inch wide grounding braid.

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 %.

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|----------------|--------------------------|---------------------------|--------------|
| 3M | SelfCheck™ Model 7410 | Report Number F1204004 | 3M |
| EMC Laboratory | Product Safety | July 28, 2005 | Page 8 of 31 |

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 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 |

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|----------------|--------------------------|---------------------------|--------------|
| 3M | SelfCheck™ Model 7410 | Report Number F1204004 | 3M |
| EMC Laboratory | Product Safety | July 28, 2005 | Page 9 of 31 |

4.0 CONDUCTED EMISSIONS

Conducted emissions testing 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™ SelfCheck™ Model 7410 | | | | |
|---------------------------|-----------------|--------------|--------------|------------------------|
| Frequency (MHz) | Limit (dBμV) | L1 (dBμV) | L2 (dBμV) | Passing Margin (dB) |
| 9.0480 | 73.00 | 43.85 | 43.91 | 29.09 |

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|----------------|--------------------------|---------------------------|---------------|
| 3M | SelfCheck™ Model 7410 | Report Number F1204004 | 3M |
| EMC Laboratory | Product Safety | July 28, 2005 | Page 10 of 31 |

CONDUCTED EMISSIONS

3M EMC Lab

TEST REPORT # F1204004 SHEET 1 OF 1
 EUT MODEL # 3M™ SelfCheck™ Model 7410 EUT SERIAL # N/A
 DESCRIPTION self service book check system

| 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 |
| 0.1560 | 52.55 | 52.87 | 45.34 | 45.56 | 79.00 | 33.44 | - | - | 66 | - |
| 0.2092 | 54.05 | 53.85 | 46.85 | 46.67 | 79.00 | 32.15 | - | - | 66 | - |
| 0.4481 | 53.29 | 52.66 | 38.38 | 38.10 | 79.00 | 40.62 | - | - | 66 | - |
| 2.3040 | 55.21 | 55.59 | 40.03 | 40.32 | 73.00 | 32.68 | - | - | 60 | - |
| 5.0290 | 52.82 | 52.84 | 38.04 | 38.15 | 73.00 | 34.85 | - | - | 60 | - |
| 9.0480 | 62.03 | 62.31 | 43.85 | 43.91 | 73.00 | 29.09 | - | - | 60 | - |
| 14.010 | 44.20 | 45.20 | 30.58 | 31.37 | 73.00 | 41.63 | - | - | 60 | - |
| 20.113 | 30.67 | 31.36 | 23.00 | 19.66 | 73.00 | 50.00 | - | - | 60 | - |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

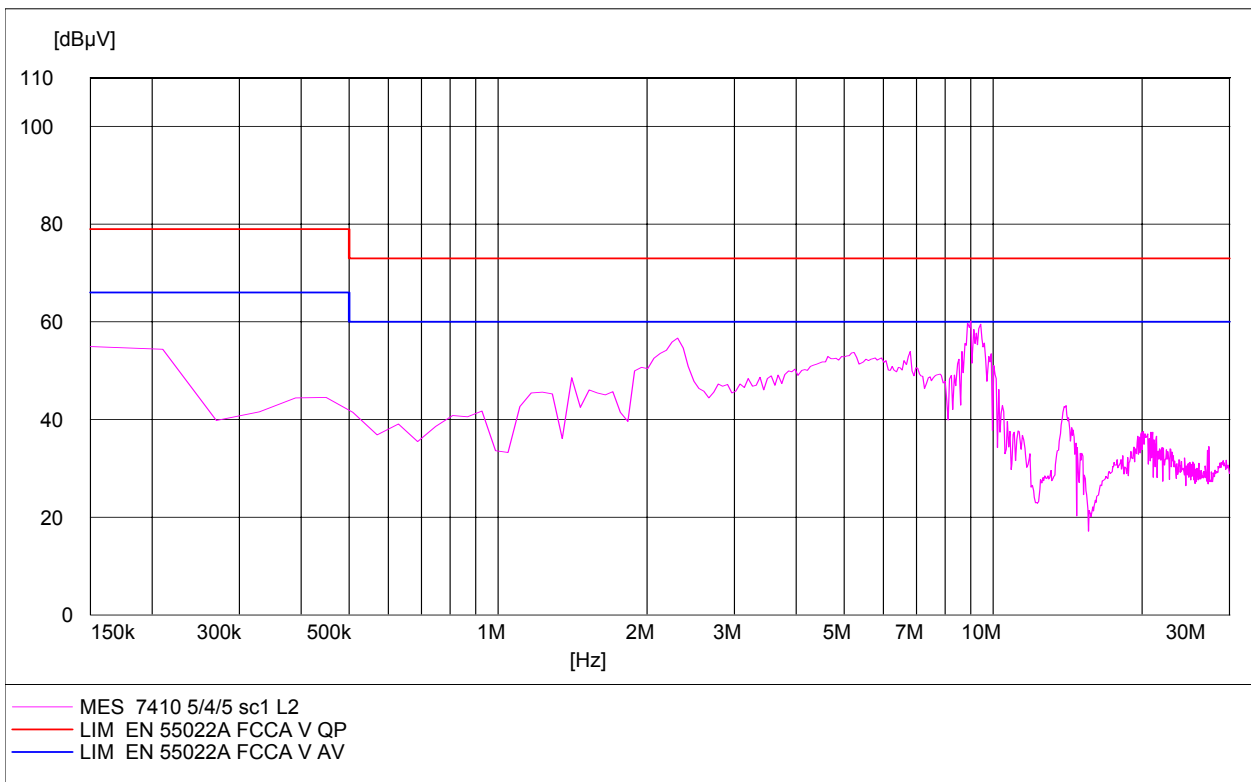
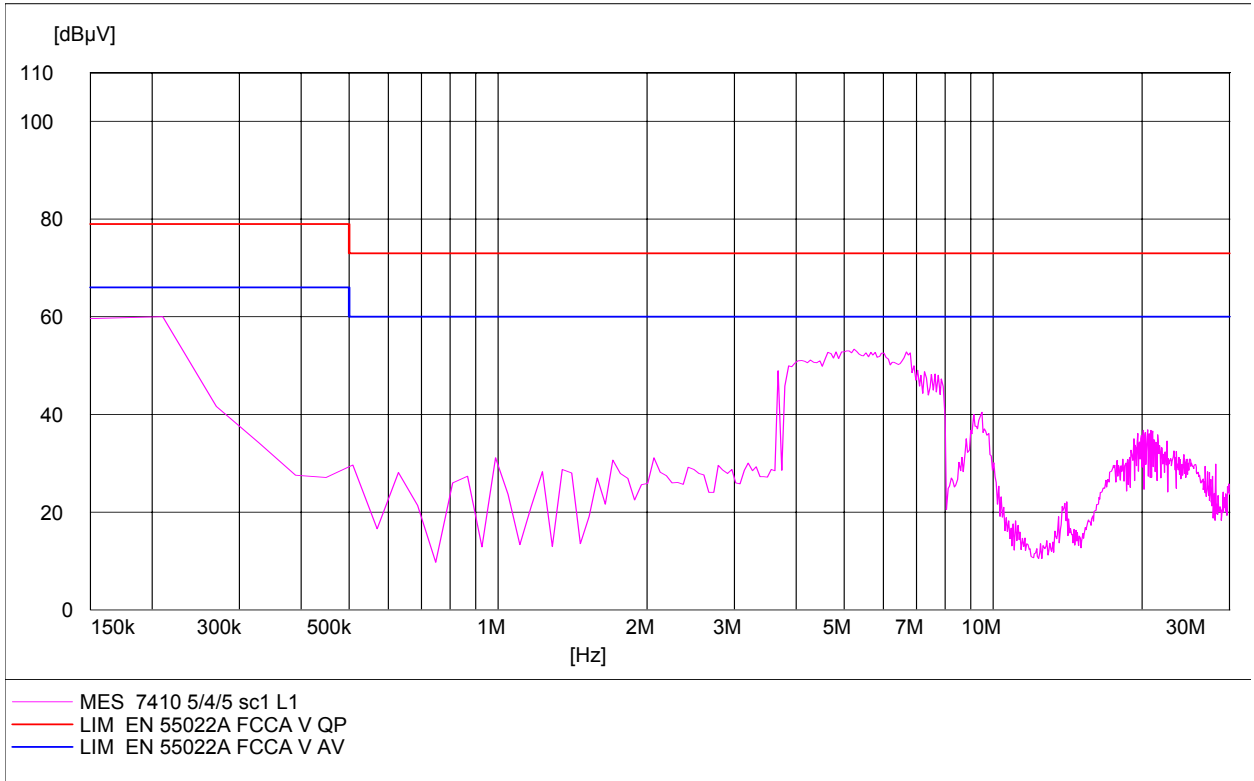
Test Engineer: _____

Date: 05-05-2005

Reviewed by: _____

Date: 07-28-2005

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| 3M | SelfCheck™ Model 7410 | Report Number F1204004 | 3M |
| EMC Laboratory | Product Safety | July 28, 2005 | Page 11 of 31 |



NOTE: Plots show Max Peak values only

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|----------------|--------------------------|---------------------------|---------------|
| 3M | SelfCheck™ Model 7410 | Report Number F1204004 | 3M |
| EMC Laboratory | Product Safety | July 28, 2005 | Page 12 of 31 |

4.4 Test Setup Photo



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|----------------|--------------------------|---------------------------|---------------|
| 3M | SelfCheck™ Model 7410 | Report Number F1204004 | 3M |
| EMC Laboratory | Product Safety | July 28, 2005 | Page 13 of 31 |

5.0 RADIATED EMISSIONS

Radiated emissions testing 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 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 % |

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|----------------|--------------------------|---------------------------|---------------|
| 3M | SelfCheck™ Model 7410 | Report Number F1204004 | 3M |
| EMC Laboratory | Product Safety | July 28, 2005 | Page 14 of 31 |

5.1.3 Test Results

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

| Carrier Frequency Stability versus Supply Voltage | | | |
|---|------------------------|-------------------------|--------------------------|
| Carrier Frequency (MHz) | Lowest Frequency (MHz) | Highest Frequency (MHz) | Max.Frequency Change (%) |
| 13.5601 | 13.5599 | 13.5602 | +/- 0.0015 |

| Carrier Frequency Stability versus Temperature | | | |
|--|------------------------|-------------------------|--------------------------|
| Carrier Frequency (MHz) | Lowest Frequency (MHz) | Highest Frequency (MHz) | Max.Frequency Change (%) |
| 13.5601 | 13.5599 | 13.5602 | +/- 0.0015 |

| Frequency Stability Test Results | | | |
|----------------------------------|---------------|----------|----------|
| Temperature | Input Voltage | | |
| | 10.8 VDC | 12.0 VDC | 13.2 VDC |
| -20° C | 13.5601 | 13.5601 | 13.5601 |
| 0° C | 13.5602 | 13.5602 | 13.5602 |
| 23° C | 13.5601 | 13.5601 | 13.5601 |
| 50° C | 13.5601 | 13.5599 | 13.5601 |
| 55° C | 13.5599 | 13.5599 | 13.5599 |

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|----------------|--------------------------|---------------------------|---------------|
| 3M | SelfCheck™ Model 7410 | Report Number F1204004 | 3M |
| EMC Laboratory | Product Safety | July 28, 2005 | Page 15 of 31 |

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) | 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.

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|----------------|--------------------------|---------------------------|---------------|
| 3M | SelfCheck™ Model 7410 | Report Number F1204004 | 3M |
| EMC Laboratory | Product Safety | July 28, 2005 | Page 16 of 31 |

5.2.3 Test Results

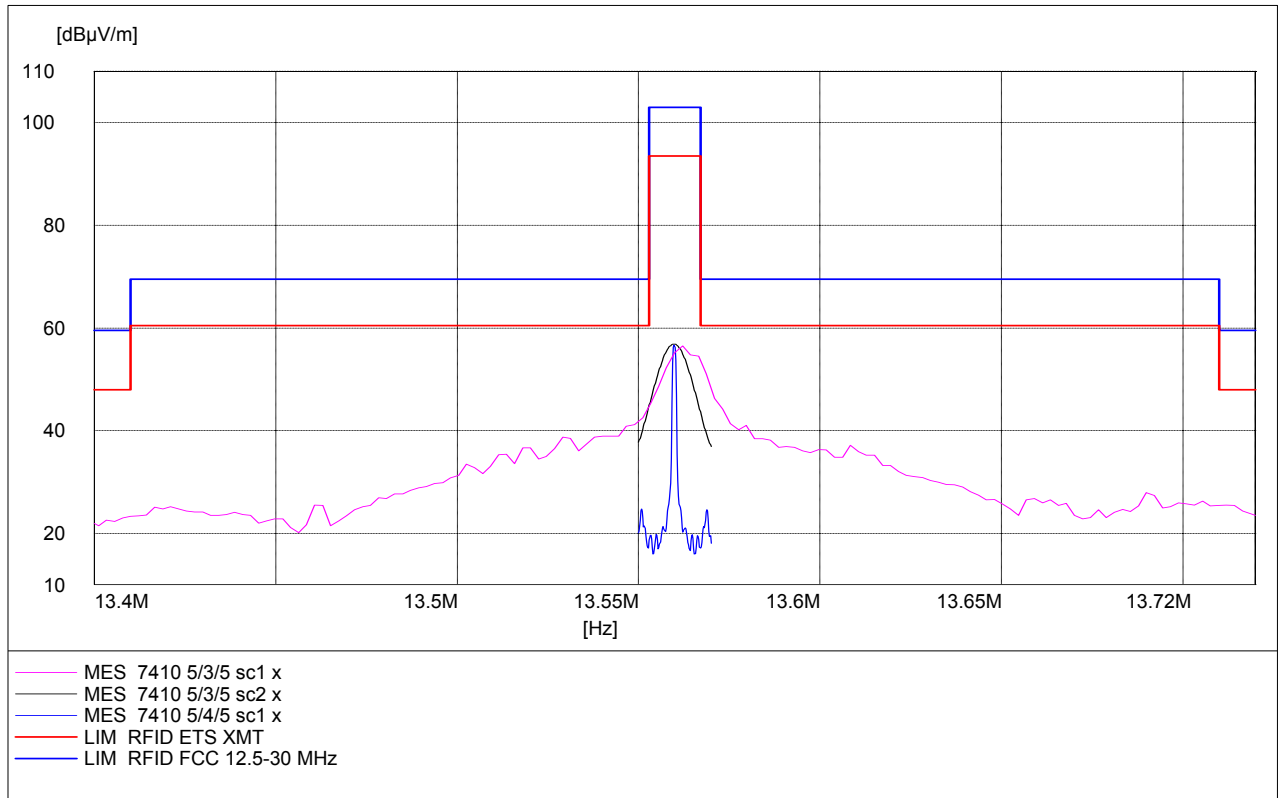
The EUT met the FCC Part 15, Subpart C Emission Bandwidth requirements. The intentional radiator frequency was within the allowed band and all maximized quasi-peak measurements for the EUT were below the quasi-peak limits.

| 3M™ SelfCheck™ Model 7410 | | | | | | |
|---------------------------|-------------|----------------------|----------------------|---------------------------|------------------------|--|
| Frequency (MHz) | BW (kHz) | QP Level (dBμV/m) | QP Limit (dBμV/m) | Passing Margin (dB) | Turntable (degrees) | Antenna Orientation/Angle (Polarity/degrees) |
| 13.5601 ¹ | 9 | 56.96 | 103 | 46.04 | 74 | -15 degrees from X-axis |
| 13.553 ² | 1 | 18.94 | 69.55 | 50.61 | 74 | -15 degrees from X-axis |
| 13.567 ² | 1 | 17.02 | 69.55 | 52.53 | 74 | -15 degrees from X-axis |
| 13.5485 | 9 | 35.44 | 69.55 | 34.11 | 74 | -15 degrees from X-axis |
| 13.5715 | 9 | 34.96 | 69.55 | 34.59 | 74 | -15 degrees from X-axis |
| 13.41 | 1 | 0.41 | 59.58 | 59.17 | 74 | -15 degrees from X-axis |
| 13.71 | 1 | 3.43 | 59.58 | 56.15 | 74 | -15 degrees from X-axis |
| 13.4055 | 9 | 18.53 | 59.58 | 41.05 | 74 | -15 degrees from X-axis |
| 13.7141 | 9 | 19.26 | 59.58 | 40.32 | 74 | -15 degrees from X-axis |

1 - Intentional Radiator Frequency

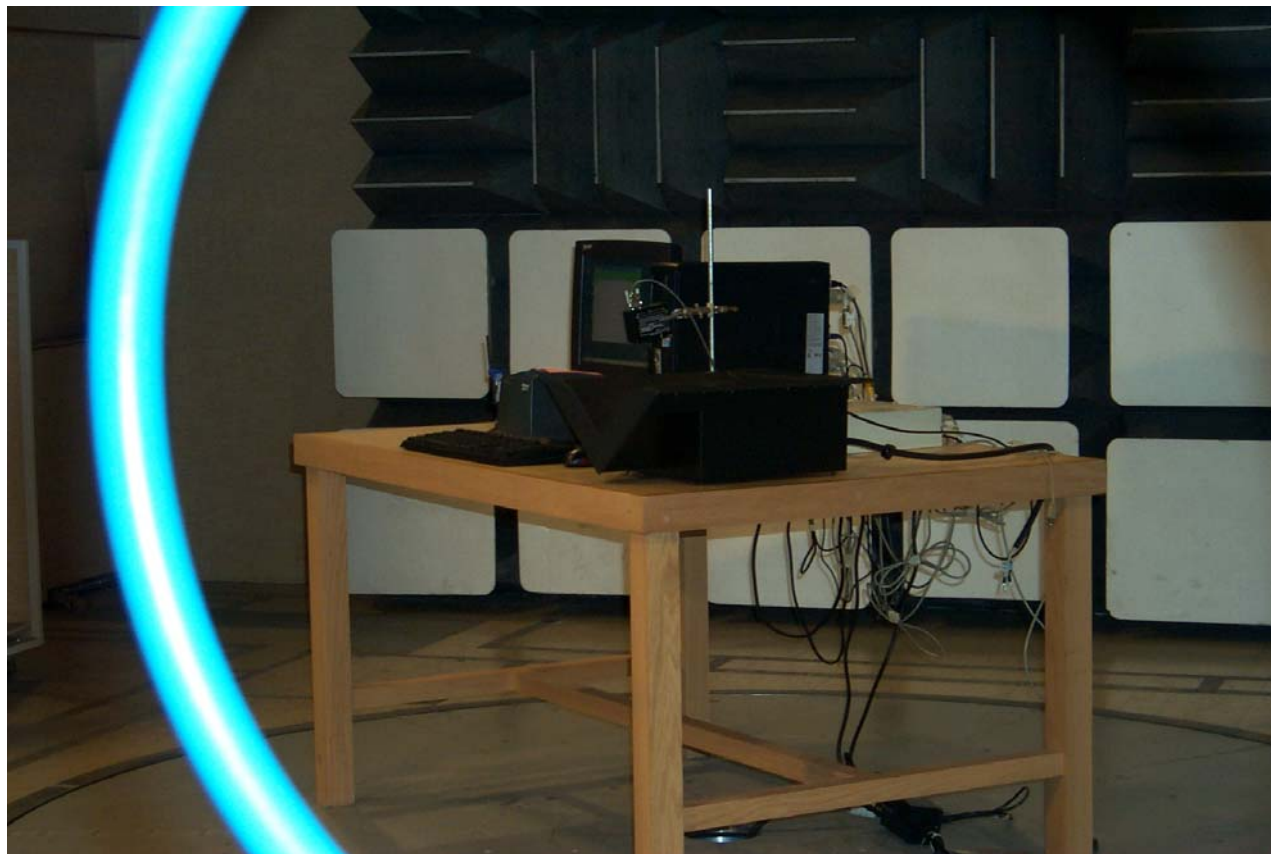
2 - Band edges measured with a receiver bandwidth setting of 1 KHz. Per ANSI C63.4 Paragraph 13.1.7.

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|----------------|--------------------------|---------------------------|---------------|
| 3M | SelfCheck™ Model 7410 | Report Number F1204004 | 3M |
| EMC Laboratory | Product Safety | July 28, 2005 | Page 17 of 31 |



| | | | |
|----------------|--------------------------|---------------------------|---------------|
| 3M | SelfCheck™ Model 7410 | Report Number F1204004 | 3M |
| EMC Laboratory | Product Safety | July 28, 2005 | Page 18 of 31 |

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



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|----------------|--------------------------|---------------------------|---------------|
| 3M | SelfCheck™ Model 7410 | Report Number F1204004 | 3M |
| EMC Laboratory | Product Safety | July 28, 2005 | Page 19 of 31 |

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.

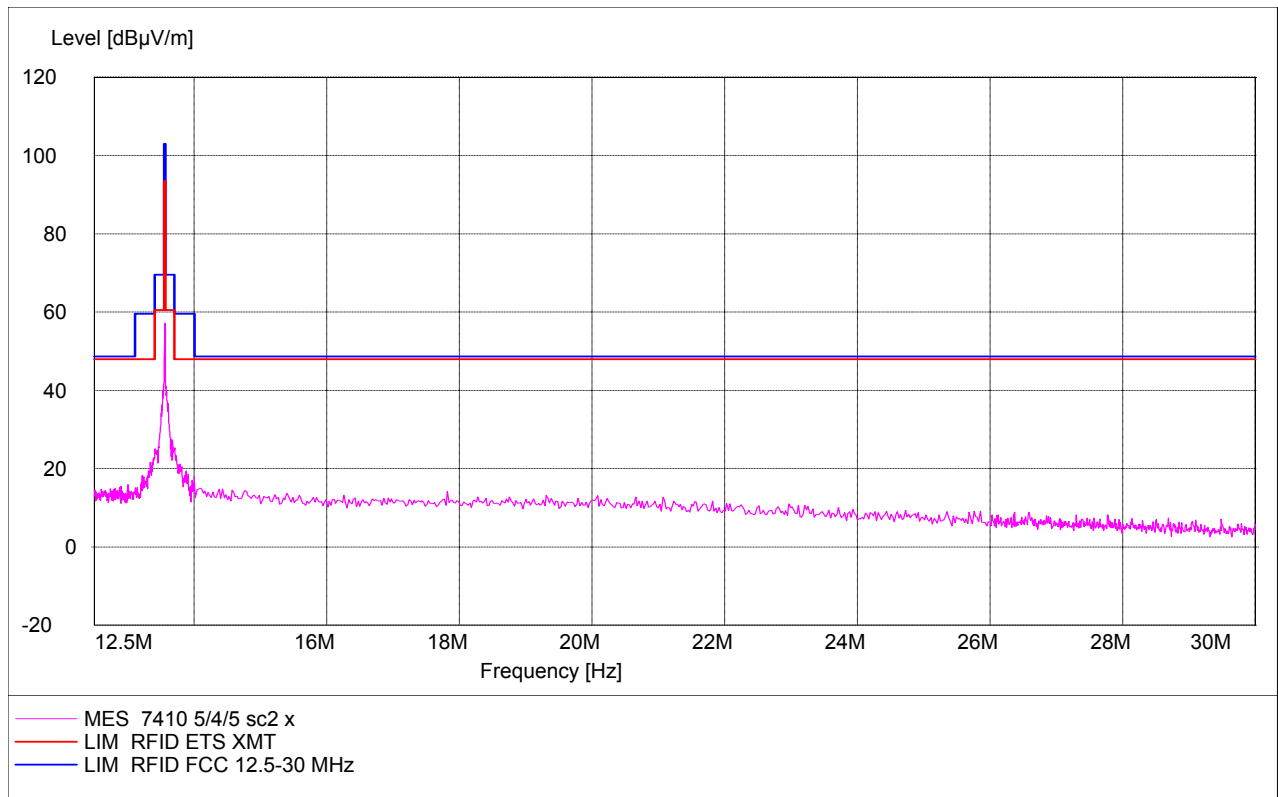
| Frequency (MHz) | Test Distance (Meters) | Field Strength (dBμV/m) |
|------------------|------------------------|-------------------------|
| 1.705 to 13.110 | 10 | 48.62 |
| 13.110 to 13.410 | 10 | 59.58 |
| 13.410 to 13.553 | 10 | 69.55 |
| 13.553 to 13.567 | 10 | 103.00 |
| 13.567 to 13.710 | 10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

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|----------------|--------------------------|---------------------------|---------------|
| 3M | SelfCheck™ Model 7410 | Report Number F1204004 | 3M |
| EMC Laboratory | Product Safety | July 28, 2005 | Page 20 of 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)

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|----------------|--------------------------|---------------------------|---------------|
| 3M | SelfCheck™ Model 7410 | Report Number F1204004 | 3M |
| EMC Laboratory | Product Safety | July 28, 2005 | Page 21 of 31 |

5.4 Spurious Emissions (30 to 1000 MHz.)

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

5.4.1 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 (dB μ V /m) = receiver level (μ V) + 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) | Test Distance (Meters) | Field Strength (dB μ V/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. No significant frequencies were observed. No emissions detected within 10dB of limit. No maximized data was recorded.

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|----------------|--------------------------|---------------------------|---------------|
| 3M | SelfCheck™ Model 7410 | Report Number F1204004 | 3M |
| EMC Laboratory | Product Safety | July 28, 2005 | Page 22 of 31 |

5.5 Radiated Emissions (30 MHz - 18 GHz)

The EUT was placed in an semi-anechoic chamber and radiated emissions testing was performed 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 18GHz (the upper limit of measurement is determined by the 5th 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) | Test 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 |

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|----------------|--------------------------|---------------------------|---------------|
| 3M | SelfCheck™ Model 7410 | Report Number F1204004 | 3M |
| EMC Laboratory | Product Safety | July 28, 2005 | Page 23 of 31 |

5.5.3 Test Results

The EUT met the FCC Class 'A' radiated emission requirements. No signals were detected above 5 GHz in either the horizontal or vertical polarization. All maximized quasi-peak measurements for the EUT were below the quasi-peak limit. The worst-case quasi-peak emission was as follows:

| 3M™ SelfCheck™ Model 7410 | | | | | |
|---------------------------|--------------------|--------------------|------------------------|------------------------|-------------------------|
| Frequency (MHz) | Level (dBμV /m) | Limit (dBμV /m) | Passing Margin (dB) | Turntable (degrees) | Antenna (m/polarity) |
| 35.992 | 27.12 | 39.08 | 11.96 | 87 | 1.0/vertical |

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|----------------|--------------------------|---------------------------|---------------|
| 3M | SelfCheck™ Model 7410 | Report Number F1204004 | 3M |
| EMC Laboratory | Product Safety | July 28, 2005 | Page 24 of 31 |

RADIATED EMISSIONS

30 - 1000 MHz

3M EMC Lab

TEST REPORT # F1204004 SHEET 1 OF 1

EUT MODEL # 3M™ SelfCheck™ Model 7410 EUT SERIAL # N/A

DESCRIPTION self service book check system

| FREQ. (MHz) | MAXIMIZED QP SIGNAL | | LIMIT LINE | PASSING MARGIN | MAXIMIZED POSITION | | REMARKS |
|----------------|------------------------|----------|---------------|-------------------|------------------------|---------------------|--------------------|
| | H/V | (dBμV/m) | (dBμV/m) | (dB) | TURNTABLE (degrees) | ANTENNA (meters) | |
| 35.992 | V | 27.12 | 39.08 | 11.96 | 87 | 1.0 | Broadband Noise |
| 48.016 | V | 26.56 | 39.08 | 12.52 | 347 | 1.0 | |
| 144.028 | H | 28.76 | 43.52 | 14.76 | 329 | 1.73 | |
| 144.028 | V | 29.73 | 43.52 | 13.79 | 51 | 1.0 | |
| 288.353 | V | 26.69 | 46.44 | 19.75 | 0 | 1.27 | |
| 666.002 | H | 31.32 | 46.44 | 15.12 | 33 | 1.0 | |
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| | | | | | | | |

Test Engineer: _____

Date: 05-04-2005

Reviewed by: _____

Date: 07-28-2005

| | | | |
|----------------|--------------------------|---------------------------|---------------|
| 3M | SelfCheck™ Model 7410 | Report Number F1204004 | 3M |
| EMC Laboratory | Product Safety | July 28, 2005 | Page 25 of 31 |

RADIATED EMISSIONS 1 - 5 GHz

3M EMC Lab

TEST REPORT # F1204004 SHEET 1 OF 1
EUT MODEL # 3M™ SelfCheck™ Model 7410 EUT SERIAL # N/A
DESCRIPTION self service book check system

| FREQ. (GHz) | MAXIMIZED AVG SIGNAL | | LIMIT LINE | PASSING MARGIN | MAXIMIZED PEAK SIGNAL | | LIMIT LINE | PASSING MARGIN | Turn table | Antenna Height |
|----------------|-------------------------|----------|---------------|-------------------|--------------------------|----------|---------------|-------------------|---------------|-------------------|
| | H/ V | (dBμV/m) | (dBμV/m) | (dB) | H/ V | (dBμV/m) | (dBμV/m) | (dB) | (deg.) | (m) |
| 1.3288 | H | 24.31 | 49.54 | 25.23 | H | 43.05 | 69.54 | 26.49 | 0 | 1.0 |
| 1.9939 | H | 26.81 | 49.54 | 22.73 | H | 49.11 | 69.54 | 20.43 | 0 | 1.0 |
| 2.3306 | H | 37.64 | 49.54 | 11.90 | H | 46.31 | 69.54 | 23.23 | 240 | 1.52 |
| 3.0061 | H | 32.67 | 49.54 | 16.87 | H | 47.21 | 69.54 | 22.33 | 330 | 1.0 |
| 3.1322 | V | * | 49.54 | | V | * | 69.54 | | | |
| 3.3166 | H | 26.87 | 49.54 | 22.67 | H | 49.64 | 69.54 | 19.9 | 36 | 1.0 |
| | | | | | | | | | | |
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* Transient signal not found during maximization

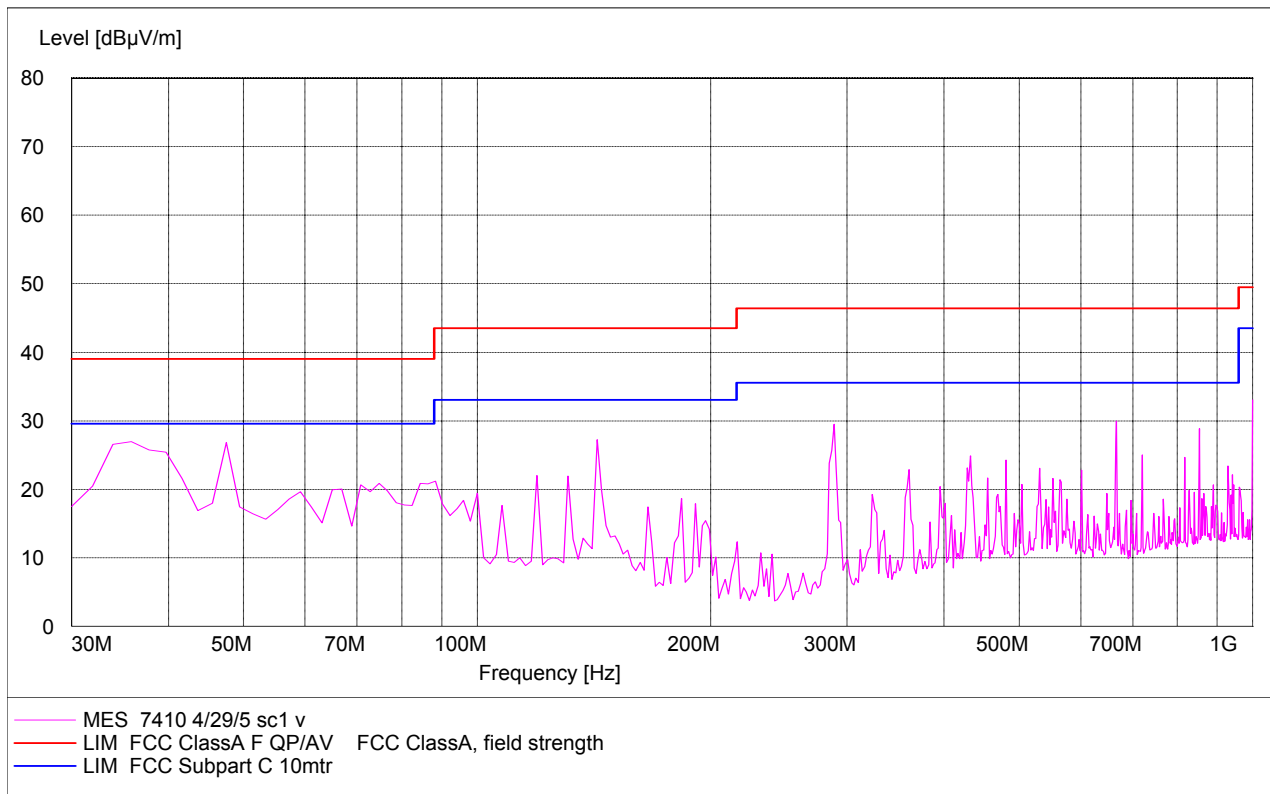
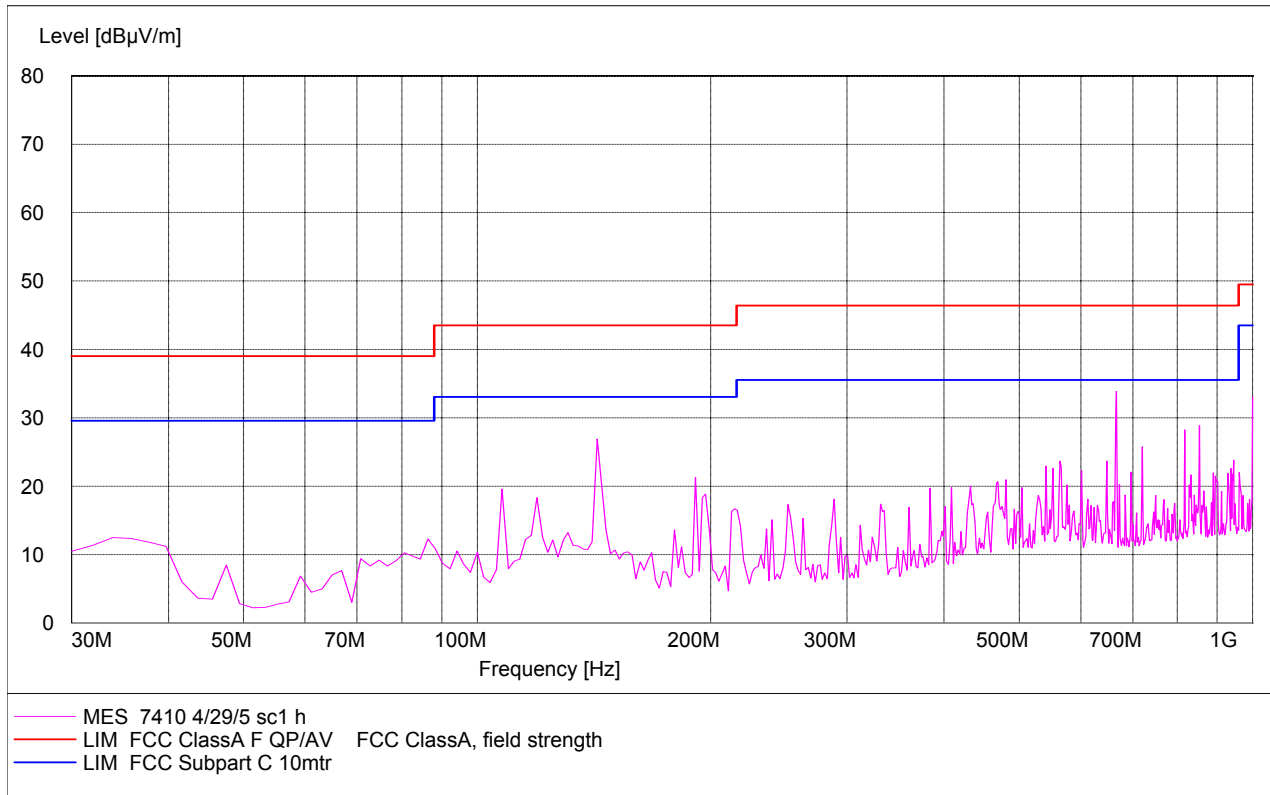
Test Engineer: _____

Date: 05-04-2005

Reviewed by: _____

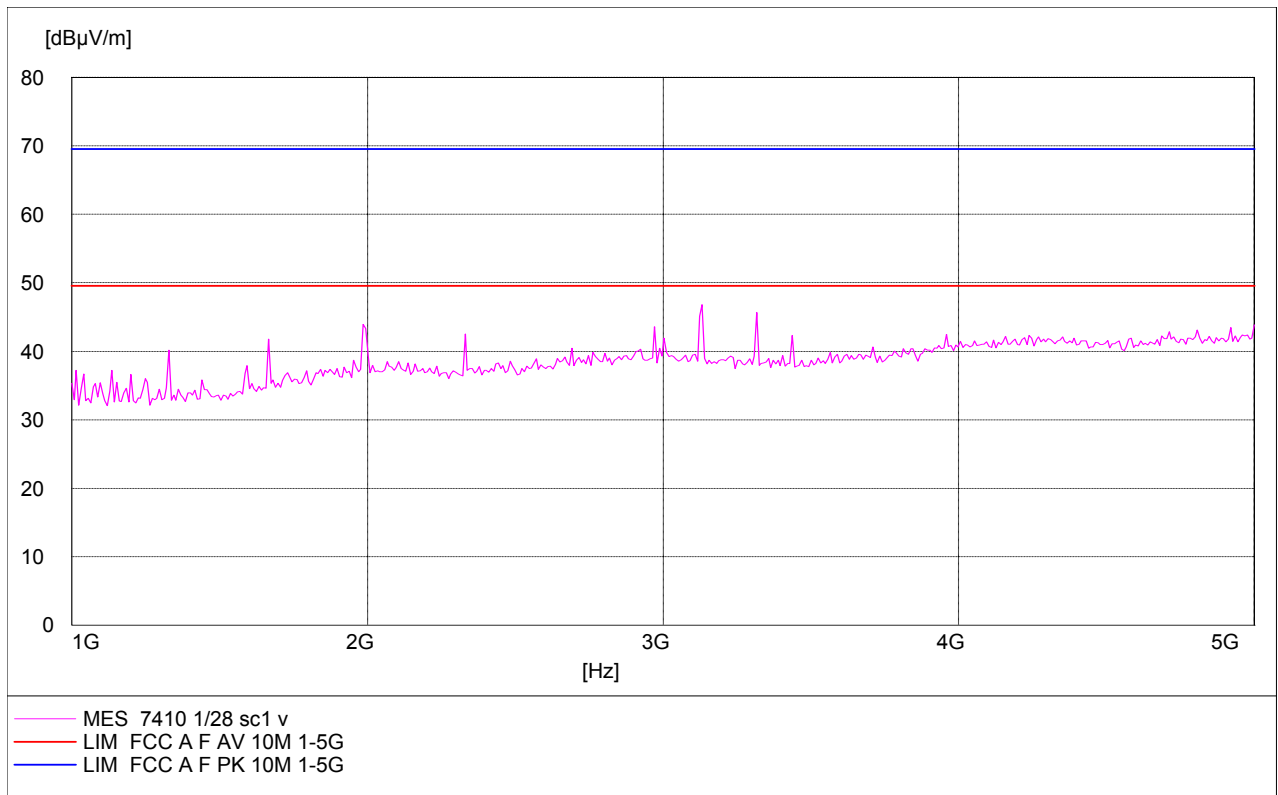
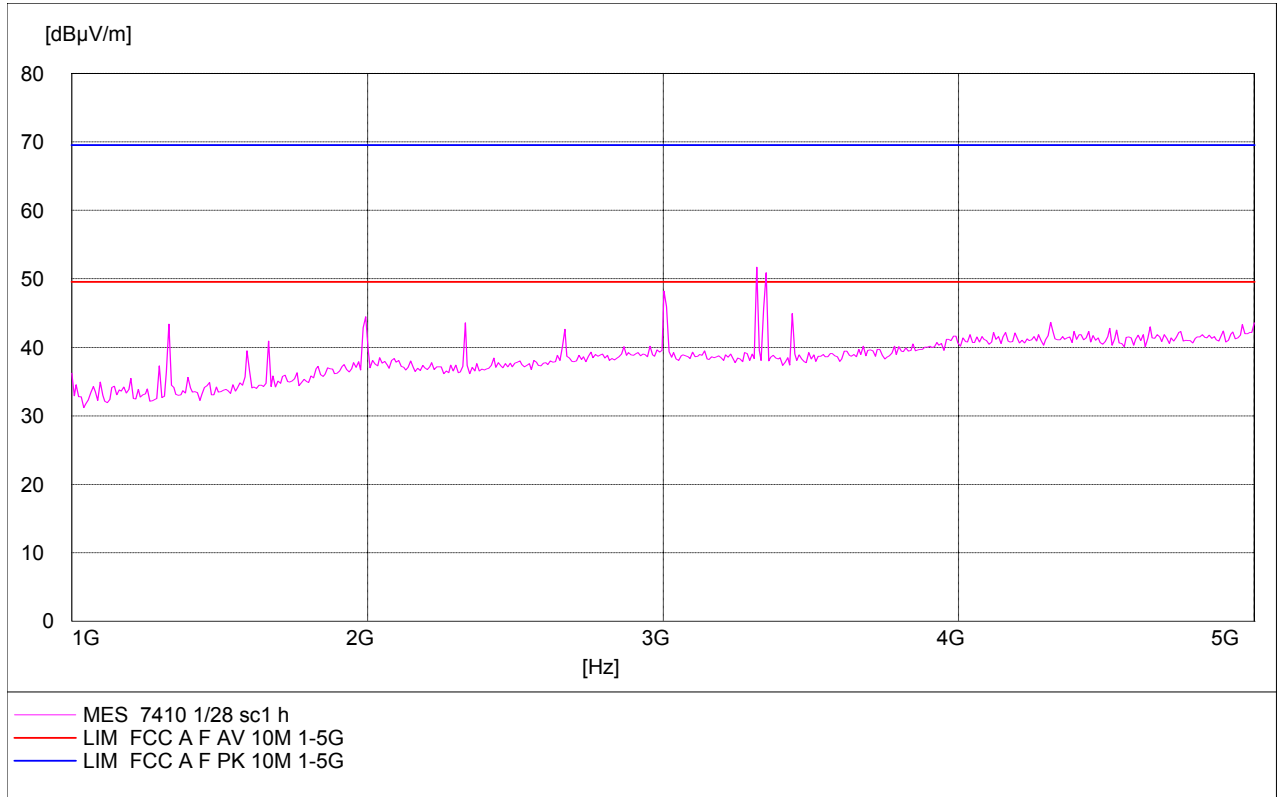
Date: 07-28-2005

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|----------------|--------------------------|---------------------------|---------------|
| 3M | SelfCheck™ Model 7410 | Report Number F1204004 | 3M |
| EMC Laboratory | Product Safety | July 28, 2005 | Page 26 of 31 |



NOTE: Plots show Max Peak values only

| | | | |
|----------------|--------------------------|---------------------------|---------------|
| 3M | SelfCheck™ Model 7410 | Report Number F1204004 | 3M |
| EMC Laboratory | Product Safety | July 28, 2005 | Page 27 of 31 |



NOTE: Plots show Max Peak values only

| | | | |
|----------------|--------------------------|---------------------------|---------------|
| 3M | SelfCheck™ Model 7410 | Report Number F1204004 | 3M |
| EMC Laboratory | Product Safety | July 28, 2005 | Page 28 of 31 |

5.5.4 Test Setup Photo: 30-1000MHz (top) 1-5GHz (bottom)



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|----------------|--------------------------|---------------------------|---------------|
| 3M | SelfCheck™ Model 7410 | Report Number F1204004 | 3M |
| EMC Laboratory | Product Safety | July 28, 2005 | Page 29 of 31 |

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 – (test date 06 June 04)

Advantest Spectrum Analyzer, Model R3272A, Serial No. J00233 (cal due date: 09 Sep 04)
Thermotron Environmental Chamber, Model SM-3SS, SN: 19972-S (cal due date: 17 June 04)

RADIATED EMISSIONS

ElectroMetrics Large Loop Antenna, Model ALR25M, Serial No. 603 (cal due date: 28 Sep 05)
Schaffner Biconilog Antenna, Model CBL6112B, Serial No. 27491 (cal due date: 28 Sep 05)
A. H Systems Horn Antenna, Model SAS_200/571 Serial No: 234 (cal due date: 28 Sep 05)
HP Pre-Amplifier, Model 8447D, Serial No. 2944A08064 (cal due date: 29 Sep 05)
HP Pre-Amplifier, Model 83017A, (cal due date: 29 Sep 05)
Rohde & Schwarz EMI Receiver, Model ESIB 40, S/N 100235 (cal due date: 11 Nov 05)
Rohde & Schwarz ESIB 40 Firmware Version 4.32.3

CONDUCTED EMISSIONS

EMCO LISN, Model 3825-2, Serial No. 1039 (cal due date: 27 Sep 05)
Solar High Pass Filter, Model 8131 - 5.0 (cal due date: 28 Sep 05)
Rohde & Schwarz EMI Receiver, Model ESIB 40, S/N 100235 (cal due date: 11 Nov 05)
Rohde & Schwarz ESIB 40 Firmware Version 4.32.3

TEST FACILITY

Lindgren Semi-Anechoic Chamber, Model 11867A, serial No. 01211 (verification due date: 28 Sep 05)

The radiated and conducted emission measurements were performed in our 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.

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|----------------|--------------------------|---------------------------|---------------|
| 3M | SelfCheck™ Model 7410 | Report Number F1204004 | 3M |
| EMC Laboratory | Product Safety | July 28, 2005 | Page 30 of 31 |

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: DGF-SSD7410

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 own expense.

FCC ID: DGF-SSD7410

NO MODIFICATIONS. Modifications to this device shall not be made without the written consent of 3M, Incorporated. Unauthorized modifications may void the authority granted under Federal Communications Commission Rules permitting the operation of this device.

| | | | |
|----------------|--------------------------|---------------------------|---------------|
| 3M | SelfCheck™ Model 7410 | Report Number F1204004 | 3M |
| EMC Laboratory | Product Safety | July 28, 2005 | Page 31 of 31 |

End of Report