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Test Report No. T59087.01-02
Appendix A.2

ES&S VOTING SYSTEM 5.0.0.0 (EVS 5.0.0.0)

HARDWARE TEST REPORT
FOR
ELECTION SYSTEMS & SOFTWARE

Approved by:

3/26/2013
Ryan Chambers, Project Engineer

3/26/13
Michael Walker, Senior Project Engineer

3/26/13
Frank Padilla, Voting System Manager

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1.0 INTRODUCTION

1.1 Scope

This report documents the test procedures followed and the results obtained during Hardware Testing performed on the ES&S Voting System (EVS) 5.0.0.0 for Election Systems & Software. Upon receipt by Wyle Laboratories, the system was inspected and subjected to a Physical Configuration Audit (PCA). The receiving inspection revealed the systems to be in good condition. All testing was performed at Wyle Laboratories' Huntsville, Alabama, Test Facility.

1.2 Objective

The objective of this test program was to ensure that the EVS 5.0.0.0 devices complied with the applicable hardware requirements of the Election Assistance Commission (EAC) 2005 Voluntary Voting System Guidelines (VVSG) as described in this report.

The scope and detail of the test program was tailored to the design and complexity of the hardware submitted for testing. The tests were designed to evaluate system compliance with the requirements of the 2005 VVSG. The examination included hardware tests verifying system performance and function under normal and abnormal conditions.

1.3 References

- EAC 2005 Voluntary Voting System Guidelines, Volume I, Version 1.0, "Voting System Performance Guidelines", and Volume II, Version 1.0, "National Certification Testing Guidelines"
- United States Election Assistance Commission, "Testing and Certification Program Manual 2006, Ver. 1, January 1, 2007"
- MIL-STD-810D "Military Standard Environmental Test Methods and Engineering Guidelines"
- ISO-9001:2008, "Quality Management Systems – Requirements," Edition 4
- ANSI/NCSL Z540-1, "Calibration Laboratories and Measuring and Test Equipment, General Requirements"
- ISO 10012-1, "Quality Assurance Requirements for Measuring Equipment"
- Wyle Laboratories' Quality Assurance Program Manual, Revision 4
- ISO/IEC 17025:2005, "General Requirements for the Competence of Testing and Calibration Laboratories"
- Wyle Laboratories Certification Test Plan No. T57381.01-01, Rev. B, dated October 21, 2011, Certification Test Plan EAC Application Number DVS1001
- UL Standard for Safety for Information Technology Equipment, UL 60950-1, Second Edition dated March 27, 2007

1.4 Test Specimen Description

The test specimen is an ES&S Voting System 5.0.0.0, hereinafter referred to as the EVS 5000. The EVS 5000 is a paper based digital scan voting system. The components of the EVS 5000 that were subjected to the hardware tests included the following: AutoMARK Voter Assist Terminal with audio voting and ballot marking capabilities, DS200 precinct-level digital scanner and tabulator, DS850 high speed central digital scanner and tabulator, and Ballot Boxes. The serial numbers tested are listed in Table 1-1. Photographs of the EVS 5000 components taken during the PCA are included in Attachment B.

Table 1-1 EVS 5000 Test Component Identification

EQUIPMENT	DESCRIPTION	UNIT/BALLOT BOX S/N
AutoMARK	Precinct Voter Assist Terminal (VAT)	AM0208470626, AM0106431648, AM0106431724, AM0208470644, AM0106431956
DS200	Precinct Count Digital Scanner	DS0110340034, ES0107390482, ES0108330100, DS0110340480, ES0108340085, ES0108330201
DS200 Plastic Ballot Box	Externally Secure Ballot Box	T59087_BOX5
DS200 Metal Ballot Box	Externally Secure Ballot Box with diverter	T59087_Metal Box12
DS850	High Speed Central Count Digital Scanner	DS8510090037, DS8511080075

1.5 Test Program Summary

The EVS 5000 components were subjected to Non-Operating and Operating Environmental Testing, Electrical Testing, and Product Safety Evaluation in accordance with the hardware requirements set forth in the EAC 2005 VVSG. When operation was required during test performance, the EVS 5000 System components were configured as they would be for use in an election precinct.

The AutoMARK's (A100 & A200), DS200 and DS850 had been previously tested and that test program consisted of earlier versions of the units. Wyle researched this test campaign (See Attachment I, J, and K) as well as a previous Wyle test program and performed a comparison between the versions tested in the provided reports and the versions submitted as part of the EVS 5000 test campaign and concluded that some hardware tests could be accepted. Any test not accepted would be included as part of the EVS 5000 test campaign. Table 1-2 outlines the tests accepted from the previous test campaign (See Attachment I, J, and K) as well as those tests performed in this campaign.

The test components listed in Table 1-1 were subjected to hardware tests as summarized in Table 1-2. Tests that were accepted for the EVS 5000 from previous campaigns are noted in Table 1-2. The previous reports for which acceptance was made is appended in Attachment I, J, and K.

Table 1-2 Test Program Requirements

VVSG Vol. II Section	Test Description	Applicability			Results		
		AM	DS200	DS850	AM	DS200	DS850
4.6.2	Bench Handling Test	X	X	NA	1	1	NA
4.6.3	Vibration Test	X	X	NA	1	1	NA
4.6.4	Low Temperature Test	X	X	NA	1	1	NA
4.6.5	High Temperature Test	X	X	NA	1	1	NA
4.6.6	Humidity Test	X	X	NA	1	1	NA
4.7.1 4.7.3	Temperature/Power Variation Test* Reliability Test*	X	X	X	1	1	1

Table 1-2 Test Program Requirements (Continued)

VVSG Vol. II Section	Test Description	Applicability			Results		
		AM	DS200	DS850	AM	DS200	DS850
4.7.2	Maintainability Test	X	X	X	1	1	1
4.7.4	Availability Test	X	X	X	1	1	1
4.8.1	Electrical Power Disturbance Test	X	X	X	2	3	4
4.8.2	Electromagnetic Radiation Test	X	X	X	2	3	4
4.8.3	Electrostatic Disruption Test	X	X	X	2	3	4
4.8.4	Electromagnetic Susceptibility Test	X	X	X	2	3	4
4.8.5	Electrical Fast Transient Test	X	X	X	2	3	4
4.8.6	Lightning Surge Test	X	X	X	2	3	4
4.8.7	Conducted RF Immunity Test	X	X	X	2	3	4
4.8.8	Magnetic Fields Immunity Test	X	X	X	2	3	4
4.3.8 **(VVSG Vol. I)**	Product Safety Review	X	X	X	1	1	5
3.2.2.2 **(VVSG Vol. I)**	Audio Testing	X	NA	NA	1	NA	NA
4.1.2.4 **(VVSG Vol. I)**	Electrical Supply	X	X	X	1	1	1

1 Successful test results are documented in Wyle Test Report No. T59087-01.
2 Successful test results are documented in Wyle Test Report No. T57936.01-01 (See Attachment I).
3 Successful test results are documented in 091130-1503R Criterion DS200 HW report (See Attachment J).
4 Successful test results are documented in Criterion DS850 Report 091014-1481 (See Attachment K).
5 Successful test results are documented in iBETA Product Safety Test Report T57213-01 (See Attachment G).
NA – Not Applicable

* Performed concurrently.

2.0 TEST PROCEDURES AND RESULTS

2.1 Non-Operating Environmental Tests

The AutoMARK's and the DS200s were subjected to various Non-Operating Environmental Tests. Prior to and immediately following each test environment, the units were powered and subjected to operability functional checks to verify continued proper operation.

The units were not powered during the performance of any of the non-operating tests.

2.1.1 Low Temperature Test

The AutoMARK's and the DS200s were subjected to a Low Temperature Test in accordance with Section 4.6.2 of Volume II of the VVSG. The purpose of this test is to simulate stresses associated with the storage of voting machines and ballot counters. This test is equivalent to the procedure of MIL-STD-810D, Method 502.2, Procedure I-Storage, with a minimum temperature of -4°F.

Prior to test initiation, the EUTs were subjected to a baseline operability checkout to verify system readiness. The EUTs were placed in an environmental test chamber and the chamber temperature was lowered to -4°F and allowed to stabilize. Upon temperature stabilization, the temperature was maintained for an additional four hours. The temperature was then returned to standard laboratory ambient conditions at a rate not exceeding 10°F per minute.

The EUTs were removed from the chamber and inspected for any obvious signs of degradation and/or damage. None were observed. The EUTs were successfully subjected to a post-test operability checkout.

The EUTs successfully completed the requirements of the Low Temperature Test. A photograph of the test setup is presented in Attachment B. The Low Temperature Test Chamber Circular Chart is presented in Attachment C. The Instrumentation Equipment Sheet for the test is contained in Attachment G.

2.1.2 High Temperature Test

The AutoMARK's and the DS200s were subjected to a High Temperature Test in accordance with Section 4.6.5 of Volume II of the VVSG. The purpose of this test is to simulate stresses associated with the storage of voting machines and ballot counters. This test is equivalent to the procedure of MIL-STD-810D, Method 501.2, Procedure I-Storage, with a maximum temperature of 140°F.

Prior to test initiation, the EUTs were subjected to a baseline operability checkout to verify system readiness. The EUTs were then placed in an environmental test chamber where the temperature was raised to 140°F and allowed to stabilize. Upon temperature stabilization, the temperature was maintained for an additional four hours. The temperature was then returned to standard laboratory ambient conditions at a rate not exceeding 10°F per minute.

The EUTs were removed from the chamber and inspected for any obvious signs of degradation and/or damage. None were observed. The EUTs were successfully subjected to a post-test operability checkout.

The EUTs successfully completed the requirements of the High Temperature Test. A photograph of the test setup is presented in Attachment B. The High Temperature Test Chamber Circular Chart is presented in Attachment C. The Instrumentation Equipment Sheet for the test is contained in Attachment G.

2.1.3 Vibration Test

The AutoMARK's and the DS200s were subjected to a Vibration Test in accordance with Section 4.6.3 of Volume II of the VVSG. The purpose of this test is to simulate stresses faced during transport of voting machines and ballot counters between storage locations and polling places. This test is equivalent to the procedure of MIL-STD-810D, Method 514.3, Category 1- Basic Transportation, Common Carrier.

Prior to test initiation, the EUTs were subjected to a baseline operability checkout to verify system readiness. Upon completion, the EUTs were secured to an electrodynamics shaker. One control accelerometer was affixed to the shaker table. The EUTs were subjected to the Basic Transportation, Common Carrier profile as depicted in MIL-STD-810D, Method 514.3, Category I, with a frequency range from 10 Hz to 500 Hz and an overall rms level of 1.04, 0.74, and 0.20 G for duration of 30 minutes in each orthogonal axis.

The vibration test for the DS200 was repeated four times. Upon each test completion, the DS200 was inspected for any obvious signs of degradation and/or damage. Inspections after the first three runs revealed parts that had become loose or were freely moving. No issues were identified on the AutoMARK's, ES&S addressed these issues from a hardware prospective. One additional anomaly occurred due to tester error. For further details see Notice of Anomalies No. 1, 2, 3, and 4 located in Attachment A of this report. The EUTs were successfully subjected to a post-test operability checkout.

The EUTs successfully completed the requirements of the Vibration Test. A photograph of the test setup is presented in Attachment B. The Vibration Test Data Sheets/Plots are included in Attachment C. The Instrumentation Equipment Sheet for the test is contained in Attachment G.

2.1.4 Bench Handling Test

The AutoMARK's and the DS200s were subjected to a Bench Handling Test in accordance with Section 4.6.2 of Volume II of the VVSG. The purpose of this test is to simulate stresses faced during maintenance and repair of voting machines and ballot counters. This test is equivalent to the procedure of MIL-STD-810D, Method 516.3, Procedure VI.

Prior to performance of the test, the EUTs were subjected to a baseline operability checkout. Following the checkout, each edge of the base of the machine was raised to a height of four inches above the surface and allowed to drop freely. This was performed six times per edge, for a total of 24 drops.

2.1.4 Bench Handling Test (continued)

Upon test completion, the EUTs were inspected for any obvious signs of degradation and/or damage. None were observed. The EUTs were subjected to a post-test operability checkout and continued operability was verified.

The EUTs successfully completed the requirements of the Bench Handling Test. Photographs of the test setup are presented in Attachment B. The Bench Handling Test Data Sheet is included in Attachment C. The Instrumentation Equipment Sheet for the test is contained in Attachment G.

2.1.5 Humidity Test

The AutoMARK's and the DS200s were subjected to a Humidity Test in accordance with Section 4.6.6 of Volume II of the VVSG. The purpose of the test is to simulate stresses encountered during storage of voting machines and ballot counters. This test is similar to the procedure of MIL-STD-810D, Method 507.2, Procedure I-Natural Hot-Humid.

The EUTs were subjected to a baseline operability checkout to verify system readiness. Upon completion, the EUTs were placed in an environmental test chamber and were subjected to a 10-day humidity cycle in accordance with the 24-hour cycle values found in MIL-STD-810D, Method 507.2, Procedure-Natural Hot Humid, as shown in Table 2-1.

Table 2-1 Humidity Test Cycle Values

Time	Hot-Humid (Cycle 1)			Time	Hot-Humid (Cycle 1)		
	Temperature		RH		Temperature		RH
	ºF	ºC	%		ºF	ºC	%
0000	88	31	88	1200	104	40	62
0100	88	31	88	1300	105	41	59
0200	88	31	88	1400	105	41	59
0300	88	31	88	1500	105	41	59
0400	88	31	88	1600	105	41	59
0500	88	31	88	1700	102	39	65
0600	90	32	85	1800	99	37	69
0700	93	34	80	1900	97	36	73
0800	96	36	76	2000	94	34	76
0900	98	37	73	2100	97	33	85
1000	100	38	69	2200	90	32	85
1100	102	39	65	2300	89	32	88

Upon test completion, the EUTs were inspected for any obvious signs of degradation and/or damage. None were observed on the DS200s and the AutoMARK A200, but one anomaly was identified on the AutoMARK A100. ES&S addressed these issues from a hardware prospective. Two additional anomalies occurred due to failures of the test chamber. For further details see Notice of Anomalies No. 5, 6, and 13 located in Attachment A of this report. The EUTs were successfully subjected to a post-test operability checkout.

The EUTs successfully completed the requirements of the Humidity Test. A photograph of the test setup is presented in Attachment B. The Chamber Circular Charts are included in Attachment C. The Instrumentation Equipment Sheet for the test is contained in Attachment G.

2.2 ELECTRICAL TEST

2.2.1 Electrical Supply Test

Electrical Supply Testing was performed in accordance with Section 4.1.2.4 of Volume I of the VVSG. This test was performed to ensure that the AutoMARK's, DS200s, and DS850s will continue to provide the capability for any voter who is voting at the time of a failure of the main power supply external to the voting system to complete the casting of a ballot. Additionally, it is required that the voting system perform a successful shutdown without loss or degradation of the voting and audit data, and allow voters to resume voting once the voting system has reverted to back-up power.

To perform the test, the EUTs were configured as for normal operation. The EUTs were then operated as designed for fifteen minutes prior to the removal of the AC input power. Once AC power was interrupted, the AutoMARK's and DS200s were continuously operated for a minimum period of two hours until backup power was exhausted. Following the exhaustion of backup power the AC power was restored and the system was operated for an additional fifteen minutes. For testing of the DS850, it was verified that a graceful shutdown was performed following loss of power with no loss of data.

The AutoMARK's and the DS850 successfully completed the requirements of the Electrical Supply Test. However, the DS200s did not meet the 2 hour minimum requirement. Two anomalies (1 per each DS200) were identified. For further details see Notice of Anomalies No. 7 and 8 located in Attachment A of this report. The test was repeated successfully on the DS200s after ES&S addressed these issues from a firmware prospective. Photographs of the test setup are presented in Attachment B. The test data sheets are included in Attachment D. The Instrumentation Equipment Sheet for the test is contained in Attachment G Operating Environmental Tests.

2.3 OPERATING ENVIRONMENTAL TESTS

2.3.1 Temperature/Power Variation Test/Data Accuracy/Reliability Test

The AutoMARK's, DS200s, and DS850s were subjected to a Temperature and Power Variation Test in accordance with Section 4.7.1 of Volume II of the VVSG. Reliability Testing (per Section 4.7.3, respectively, of Volume II of the VVSG) were performed in conjunction with the Temperature/Power Variation Test. The purpose of these tests is to evaluate the EUTs operation under various environmental conditions. The total cumulative duration of the test is at least 163 hours, with 48 hours in the environmental test chamber. For the remaining hours, the equipment may be operated at room temperature. This test is similar to the low temperature and high temperature tests of MIL-STD-810-D, Method 502.2 and Method 501.2.

To perform the test, the EUTs were placed inside an environmental walk-in test chamber and connected to a variable voltage power source. Two DS200 units were configured to scan 100 ballots per hour, while two AutoMARK units were configured to mark 1 ballot per hour. Additionally, two DS850 units were configured to scan 300 ballots per hour. The temperature inside the chamber and the voltage supplied to the hardware varied from 50°F to 95°F and from 105 VAC to 129 VAC (as depicted in Figures 2-1 through 2-4). During test performance, the operational functions were continuously exercised by the scanning of ballots and the marking of ballots via audio voting.

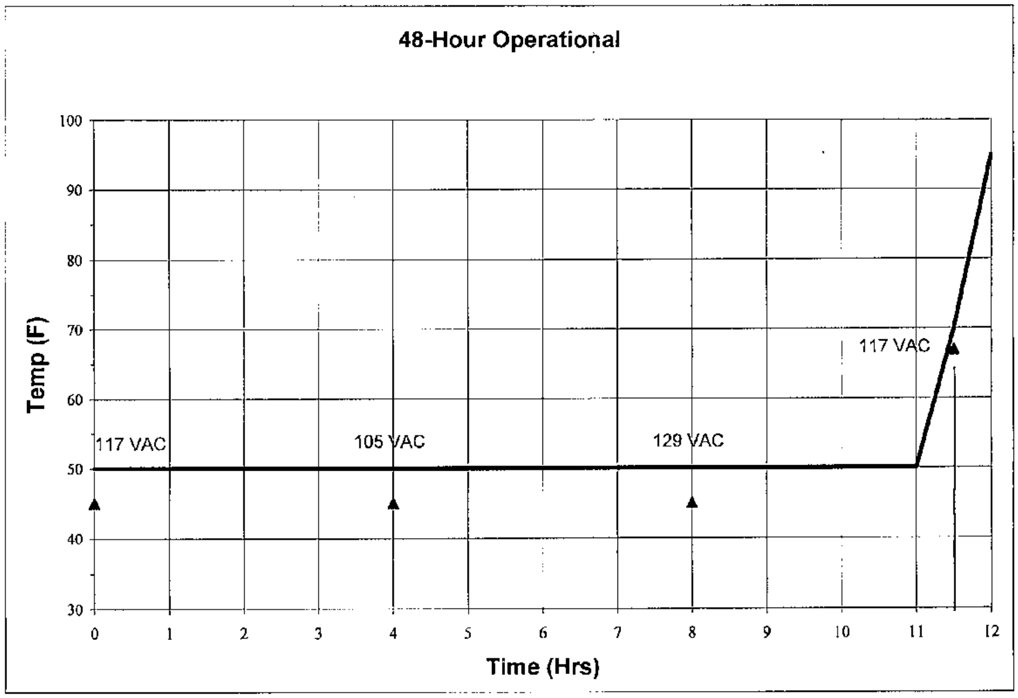

Figure 2-1 Temperature/Power Variation Profile Hours 0-12

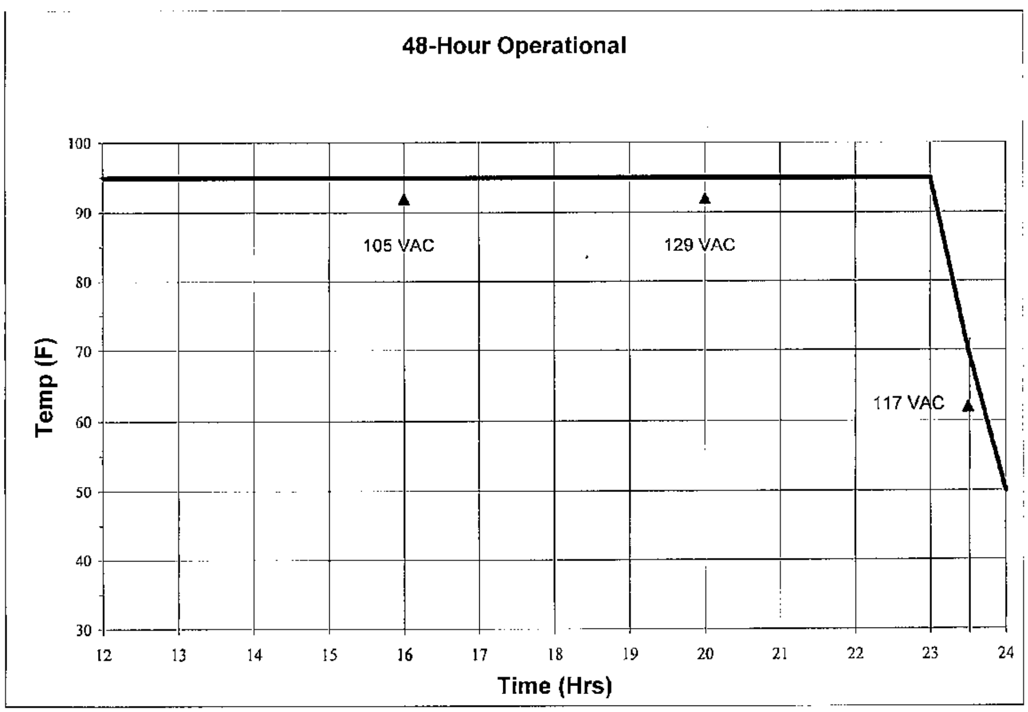

Figure 2-2 Temperature/Power Variation Profile Hours 12-24

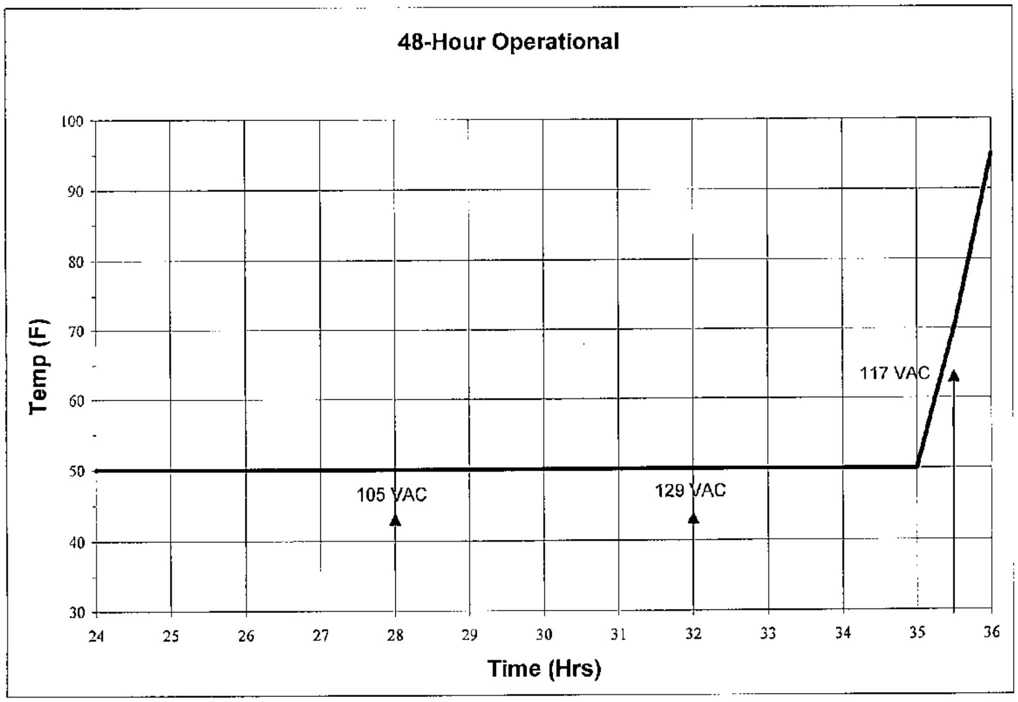

Figure 2-3 Temperature/Power Variation Profile Hours 24-36

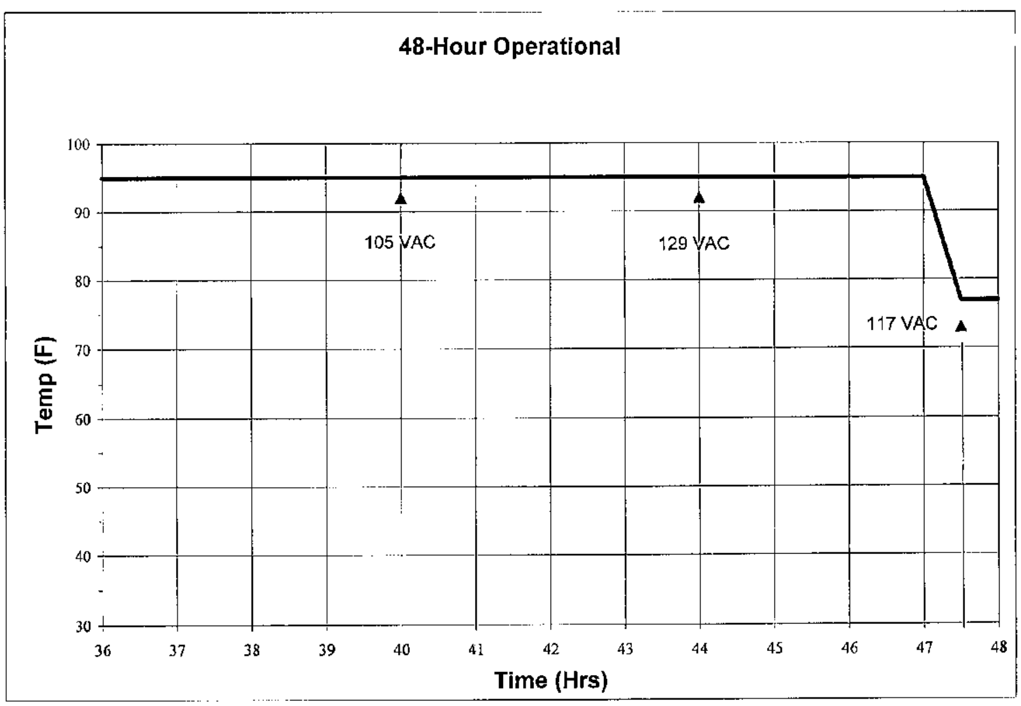

Figure 2-4 Temperature/Power Variation Profile Hours 36-48

2.3.1 Temperature/Power Variation Test/Data Accuracy/Reliability Test (continued)

The Temperature/Power Variation Test was restarted a total of three times. Three anomalies were identified during this test and ES&S addressed these issues from a hardware prospective. Descriptions of each anomaly are provided in Notice of Anomalies No. 11, 12, and 14, located in Attachment A of this report. At the conclusion of the successful run, operational status checks were performed resulting in the EUTs successfully completing the requirements of the Temperature/Power Variation, Data Accuracy, and Reliability Tests.

The Environmental Test Data which consists of the Chamber Thermal Circular Charts are included in Attachment E. Test setup photographs are included in Attachment B. The Instrumentation Equipment Sheet for the test is presented in Attachment G.

2.3.2 Maintainability Test

Maintainability Testing was performed in accordance with Section 4.7.2 of Volume II of the VVSG. This test was performed to evaluate the ease with which preventive and corrective maintenance actions can be performed based on the design characteristics of equipment and software and the processes the vendor and election officials have in place for preventing failures and for reacting to failures. It includes the ability of equipment and software to self-diagnose problems and make non-technical election workers aware of a problem and addresses all scheduled and unscheduled events which are performed to determine operational status and make component adjustments or repairs.

The AutoMARK’s, DS200s, and DS850 were evaluated with the appropriate vendor documentation, and maintainability was determined based on the presence of specific physical attributes that aid system maintenance activities, and the ease with which system maintenance tasks were able to be performed.

Any difficulties in performing maintenance activities as described in the system maintenance procedures were noted. A listing of all impediments or difficulties encountered were compiled as findings and delivered to ES&S for resolution.

2.3.3 Audio Test (Acoustic Level and Hearing Aid Compatibility)

Audio Testing was performed to verify that the amount of noise emitted by the voting machine under normal operating conditions does not interfere with the duties of the election inspectors or voting public and that the voting system achieves at least an ANSI C63.19 category T4 rating for a wireless T-coil coupling for assistive hearing devices. To meet these requirements, the machine shall provide an adjustable volume control from 20 to 100 dB SPL in 10 dB increments with the initial volume level set between 40 to 50 dB, and shall reproduce frequencies over the audible speech range of 315 Hz to 10 KHz.

To perform the test, the AutoMARK’s (A100 and A200) were placed inside a semi-anechoic test chamber and configured as would be for normal operation. One side of the system’s headphones was placed at the specified positions and orientations from the T-coil probe. Electromagnetic Coupling and interference from the headphones was measured and recorded. Sound Pressure Level (SPL) was then measured with microphones placed 1.2 meters above the floor and 2 meters from the voting system with the voting system operating. The initial available volume and the adjustable volume level from the headphones were also measured.

Two anomalies were identified during this test. Both the A100 and A200 failed to reach the maximum 100 dB SPL and ES&S addressed these issues from a firmware prospective. Descriptions of each anomaly are provided in Notice of Anomalies No. 9 and 10 located in Attachment A of this report. The test was repeated successfully for only the maximum dB SPL levels for both the A100 and A200.

Photographs of the test setup are presented in Attachment B. The Test data sheet is included in Attachment E. The Instrumentation Equipment Sheet for the test is presented in Attachment G.

2.3.4 Availability Test

The availability of a voting system is defined as the probability that the equipment (and supporting software) needed to perform designated voting functions will respond to operational commands and accomplish the function. System availability is measured as the ratio of the time during which the system is operational (up time) to the total time period of operation (up time plus down time). Inherent availability (Ai) is the fraction of time a system is functional, based upon Mean Time Between Failure (MTBF) and Mean Time To Repair (MTTR), that is: Ai = (MTBF)/(MTBF + MTTR)

The adequacy of the AutoMARK's, DS200s, and DS850s availability was assessed during the performance of the following voting functions:

a. For all paper-based systems:
   i. Recording voter selections (such as by ballot marking)
   ii. Scanning the marks on paper ballots and converting them into digital data
b. For all DRE systems, recording and storing voter ballot selections
c. For precinct count systems (paper-based and DRE), consolidation of vote selection data from multiple precinct based systems to generate jurisdiction-wide vote counts, including storage and reporting of the consolidated vote data
d. For central-count systems (paper-based and DRE), consolidation of vote selection data from multiple counting devices to generate jurisdiction-wide vote counts, including storage and reporting of the consolidated vote data

During the EVS 5000 hardware testing, there were fourteen anomalies encountered. Eleven anomalies were caused by EUTs, and three anomalies were caused by tester error or test equipment failures (reference Notices of Anomaly No.'s 1-14 in Attachment A). None of these anomalies constituted a non-recoverable hardware failure, nor resulted in a loss of voting data.

It was determined that all three hardware components of the EVS 5000 system achieved at least 98 percent availability during normal operation for the applicable functions of the system during the test campaign.

2.4 PRODUCT SAFETY REVIEW

The VVSG states that all voting systems shall meet the following requirements for safety:

a. All voting systems and their components shall be designed to eliminate hazards to personnel or to the equipment itself.
b. Defects in design and construction that can result in personal injury or equipment damage must be detected and corrected before voting systems and components are placed into service.
c. Equipment design for personnel safety shall be equal to or better than the appropriate requirements of the Occupational Safety and Health Act, Code of Federal Regulations, Title 29, Part 1910.

To satisfy these requirements, two AutoMARK's (A100 and A200) units and two DS200 units were subjected to a Product Safety Review in accordance with the applicable requirements of "UL Standard for Safety for Information Technology Equipment, UL 60950-1, Second Edition.

Non-performance evaluation of the accompanying documentation and unit construction were also performed. No anomalies were discovered during these evaluations.

2.4 PRODUCT SAFETY REVIEW (continued)

The AutoMARK's and DS200s were found to be in compliance with the applicable requirements of the Standard for Safety for Information Technology Equipment UL 60950-1, 2nd Edition. The Product Safety Certificate of Compliance is presented in Attachment F.

The DS850 Product Safety review was performed during a previous testing campaign. The DS850 was found to be in compliance with the applicable requirements of the Standard for Safety for Information Technology Equipment UL 60950-1, 2nd Edition. The Product Safety Report (iBETA Product Safety Test Report T57213) is presented in Attachment G.

3.0 TEST RESULTS AND RECOMMENDATION

It was demonstrated that the EVS 5000, as tested, successfully met the hardware test requirements of the EAC 2005 VVSG.

This evaluation report/recommendation is valid only for the items listed in Section 1.4 of this report. Any changes, revisions, or corrections made to the product after this evaluation shall be reevaluated, and a revised report/recommendation will be issued.

All anomalies encountered during qualification testing were successfully resolved prior to test completion. All Notice of Anomalies generated during testing are presented in Attachment A.

Due to the varying requirements of individual jurisdictions, it is recommended by the VVSG that local jurisdictions perform pre-election logic and accuracy tests on all systems prior to their use in an election within their jurisdiction.

4.0 TEST EQUIPMENT AND INSTRUMENTATION

All instrumentation, measuring, and test equipment used in the performance of this test program shall be calibrated in accordance with Wyle Laboratories' Quality Assurance Program which complies with the requirements of ANSI/NCSL Z540-1, ISO 10012-1, and ISO/IEC 17025. Standards used in performing all calibrations are traceable to the National Institute of Standards and Technology (NIST) by report number and date. When no national standards exist, the standards are traceable to international standards or the basis for calibration is otherwise documented.

5.0 QUALITY ASSURANCE PROGRAM

All work performed on this program was in accordance with Wyle Laboratories' Quality Assurance Program and Wyle Laboratories' Quality Program Manual, which conforms to the applicable portions of International Standard Organization (ISO) Guide 17025.

The Wyle Laboratories, Huntsville Facility, Quality Management System is registered in compliance with the ISO-9001 International Quality Standard. Registration has been completed by Quality Management Institute (QMI), a Division of Canadian Standards Association (CSA).

Wyle Laboratories is accredited (Certificate No. 845.01) by the American Association for Laboratory Accreditation (A2LA).

ATTACHMENT A
NOTICES OF ANOMALY

wyle laboratories ORIGINAL

NOTICE OF ANOMALY

DATE: 05/10/2012

NOTICE NO: 1 P.O. NUMBER: ES&S-MSA-TA017 CONTRACT NO: N/A

CUSTOMER: ES&S WYLE JOB NO: T59087

NOTIFICATION MADE TO: Ben Swartz NOTIFICATION DATE: 05/07/2012

NOTIFICATION MADE BY: Stephen Han VIA: In person

CATEGORY: [X] SPECIMEN [ ] PROCEDURE [ ] TEST EQUIPMENT DATE OF ANOMALY: 05/04/2012

PART NAME: ES&S DS200 w/landline modem PART NO. DS200

TEST: Vibration Test IAW 2005 VVSG Volume I Section 4.1.2.14 I.D. NO. ES0108330201

SPECIFICATION: MIL-STD-810D, Basic Transportation, Common Carrier PARA. NO. Method 514.3, Category 1

REQUIREMENTS: 2005 VVSG Volume I Section 4.1.2.14

Test item shall be capable of simulated vibration that would be encountered in normal handling and transportation by surface and air common carriers using a vibration environment equivalent to the procedure in MIL-STD-810D, Method 514.3, Category 1, Basic Transportation, Common Carrier.

DESCRIPTION OF ANOMALY:

Following the vibration test performed on May 4, 2012, the Unit Under Test was examined for anomalies that may have occurred during testing. It was discovered, upon opening the door that covers the USB ports and power switch, that parts from the lock for the door had become loose and had fallen into the area surrounding the USB ports. Photographs were taken of the anomaly and the remainder of the examination revealed no further issues.

DISPOSITION • COMMENTS • RECOMMENDATIONS:

The final disposition is pending a root cause analysis to be presented by the client.

Potential 10 CFR Part 21 ☐ YES ☒ NO

RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR PART 21: ☒ CUSTOMER ☐ WYLE

CAR Required: ☐ YES ☒ NO CAR No.

VERIFICATION: PROJECT ENGINEER: [signature] 5/10/12

TEST WITNESS: PROJECT MANAGER: [signature] 5/10/12

REPRESENTING: ES&S INTERDEPARTMENTAL COORDINATION: N/A

QUALITY ASSURANCE: [signature] 5/10/12

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wyle laboratories ORIGINAL

NOTICE OF ANOMALY	DATE: 05/10/2012

NOTICE NO: 2 P.O. NUMBER: ES&S-MSA-TA017 CONTRACT NO: N/A
CUSTOMER: ES&S WYLE JOB NO: T59087
NOTIFICATION MADE TO: Ben Swartz NOTIFICATION DATE: 05/07/2012
NOTIFICATION MADE BY: Stephen Han VIA: In person

CATEGORY: [X] SPECIMEN [ ] PROCEDURE [ ] TEST EQUIPMENT DATE OF ANOMALY: 05/04/2012
PART NAME: ES&S DS200 w/wireless modem PART NO. DS200
TEST: Vibration Test IAW 2005 VVSG Volume I Section 4.1.2.14 I.D. NO. ES107390482
SPECIFICATION: MIL-STD-810D, Basic Transportation, Common Carrier PARA. NO. Method 514.3, Category 1

REQUIREMENTS: 2005 VVSG Volume I Section 4.1.2.14

Test item shall be capable of simulated vibration that would be encountered in normal handling and transportation by surface and air common carriers using a vibration environment equivalent to the procedure in MIL-STD-810D, Method 514.3, Category 1, Basic Transportation, Common Carrier.

DESCRIPTION OF ANOMALY:

Following the vibration test performed on May 4, 2012, the Unit Under Test was examined for anomalies that may have occurred during testing. It was discovered, upon opening the exterior cover, that covers a screw with a captive washer had become loose and fallen into the bottom area adjacent to a large connector assembly on a metal tray. Photographs were taken of the anomaly and the remainder of the examination revealed no further issues.

DISPOSITION • COMMENTS • RECOMMENDATIONS:

The final disposition is pending a root cause analysis to be presented by the client.

Potential 10 CFR Part 21 ☐ YES ☒ NO
RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR PART 21: ☒ CUSTOMER ☐ WYLE
CAR Required: ☐ YES ☒ NO CAR No.

VERIFICATION: PROJECT ENGINEER: Stephen Han 5/10/12
TEST WITNESS: PROJECT MANAGER: Frank Padilla 5/10/12
REPRESENTING: ES&S INTERDEPARTMENTAL COORDINATION: N/A
QUALITY ASSURANCE: Patrick Brewster 5/10/12

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NOTICE OF ANOMALY	DATE: 05/17/2012

NOTICE NO: 3 P.O. NUMBER: ES&S-MSA-TA017 CONTRACT NO: N/A
CUSTOMER: ES&S WYLE JOB NO: T59087
NOTIFICATION MADE TO: Sue McKay NOTIFICATION DATE: 05/16/2012
NOTIFICATION MADE BY: Stephen Han VIA: Email

CATEGORY: [X] SPECIMEN [ ] PROCEDURE [ ] TEST EQUIPMENT DATE OF ANOMALY: 05/16/2012
PART NAME: ES&S DS200 w/landline modem PART NO. DS200
TEST: Vibration Test IAW 2005 VVSG Volume I Section 4.1.2.14 I.D. NO. ES0108330201
SPECIFICATION: MIL-STD-810D, Basic Transportation, Common Carrier PARA. NO. Method 514.3, Category 1

REQUIREMENTS: 2005 VVSG Volume I Section 4.1.2.14

Test item shall be capable of simulated vibration that would be encountered in normal handling and transportation by surface and air common carriers using a vibration environment equivalent to the procedure in MIL-STD-810D, Method 514.3, Category 1, Basic Transportation, Common Carrier.

DESCRIPTION OF ANOMALY:

During the setup of the vibration test, the UUT was dropped on its side causing the whole carrying case with the DS200 in it to come apart from the lower part of ballot box. The DS200 and carrying case dropped from the vibration table to the concrete floor. The carrying case and the DS200 were damaged. The UUT was examined and a determination was made that the UUT needed to be replaced. The serial number of the new UUT is ES0108340579.

DISPOSITION • COMMENTS • RECOMMENDATIONS:

The client requested that the UUT be replaced with another unit so the testing can continue. The damaged UUT will be sent back to the client.

Potential 10 CFR Part 21 ☐ YES ☒ NO

RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR PART 21: ☒ CUSTOMER ☐ WYLE

CAR Required: ☐ YES ☒ NO CAR No.

VERIFICATION:	PROJECT ENGINEER: Lynn Chuk 5/17/12
TEST WITNESS: ______	PROJECT MANAGER: Stephen Ha 5/17/12
REPRESENTING: ES&S	INTERDEPARTMENTAL COORDINATION: N/A
QUALITY ASSURANCE: Bueno 5/17/12	

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wyle laboratories ORIGINAL

NOTICE OF ANOMALY	DATE: 05/17/2012

NOTICE NO: 4 P.O. NUMBER: ES&S-MSA-TA017 CONTRACT NO: N/A
CUSTOMER: ES&S WYLE JOB NO: T59087
NOTIFICATION MADE TO: Adam Krajicek NOTIFICATION DATE: 05/17/2012
NOTIFICATION MADE BY: Stephen Han VIA: In person

CATEGORY: [X] SPECIMEN [ ] PROCEDURE [ ] TEST EQUIPMENT DATE OF ANOMALY: 05/16/2012
PART NAME: ES&S DS200 w/wireless modem PART NO. DS200
TEST: Vibration Test IAW 2005 VVSG Volume I Section 4.1.2.14 I.D. NO. ES107390482
SPECIFICATION: MIL-STD-810D, Basic Transportation, Common Carrier PARA. NO. Method 514.3, Category 1

REQUIREMENTS: 2005 VVSG Volume I Section 4.1.2.14

Test item shall be capable of simulated vibration that would be encountered in normal handling and transportation by surface and air common carriers using a vibration environment equivalent to the procedure in MIL-STD-810D, Method 514.3, Category 1, Basic Transportation, Common Carrier.

DESCRIPTION OF ANOMALY:

Following the vibration test performed on May 16, 2012, the Unit Under Test was examined for anomalies that may have occurred during testing. Initially a component was heard to be loose inside the LCD case. It was discovered, upon opening the exterior cover of the LCD, that a screw had become loose inside of the LCD case of the DS200. The like screw on the opposing side of the LCD bezel mount was found to be loose as well, but still attached. Photographs were taken of the anomaly and the remainder of the examination revealed some wear through 3 layers of material, exposing metal of the Li-ion Rechargable Battery.

DISPOSITION • COMMENTS • RECOMMENDATIONS:

The final disposition is pending a root cause analysis to be presented by the client.

Potential 10 CFR Part 21 ☐ YES ☒ NO

RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR PART 21: ☒ CUSTOMER ☐ WYLE

CAR Required: ☐ YES ☒ NO CAR No.

VERIFICATION: PROJECT ENGINEER: [signature] 05/17/2012

TEST WITNESS: PROJECT MANAGER: Stephen Han 5/17/12

REPRESENTING: ES&S INTERDEPARTMENTAL COORDINATION: N/A

QUALITY ASSURANCE: [signature] 5/17/12

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NOTICE OF ANOMALY

IMAGE DOCUMENATION:

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NOTICE OF ANOMALY

DATE: 05/30/2012

NOTICE NO: 5 P.O. NUMBER: ES&S-MSA-TA017 CONTRACT NO: N/A
CUSTOMER: ES&S WYLE JOB NO: T59087
NOTIFICATION MADE TO: Ben Swartz NOTIFICATION DATE: 05/30/2012
NOTIFICATION MADE BY: Ryan Chambers VIA: In person

CATEGORY: [] SPECIMEN [ ] PROCEDURE [X] TEST EQUIPMENT DATE OF ANOMALY: 05/29/2012
PART NAME: Thermotron PART NO. FM-96-CHM-15-15-810C
TEST: Humidity Test IAW 2005 VVSG Volume I Section 4.1.2.14 I.D. NO. 50 / SN# 27-9643
SPECIFICATION: MIL-STD-810D, Basic Transportation, Common Carrier
PARA. NO. Method 507.2, Procedure I-Natural Hot-Humid

REQUIREMENTS: 2005 VVSG Volume I Section 4.1.2.14

The system hardware shall continue to operate anomaly free prior to and following the application of this test environment. Integrity measures the physical stability and function of the vote recording and counting processes. To ensure system integrity, all systems shall: d. Protect against ambient temperature and humidity fluctuations.

DESCRIPTION OF ANOMALY:

During the Humidity test being performed between May 25, 2012 – June 04, 2012, the Humidity Chamber suffered a controller failure on May 29, 2012. When the it was observed that the required environment could not be maintained, the test was halted and the units where removed from the failing chamber. A post-operational test was performed on all 4 UUT that where being tested in the humidity chamber at the time of said failure. Photographs were taken of the testing site. Testing was rescheduled to be performed between June 01, 2012 – June 11, 2012 in a alternate humidity chamber.

DISPOSITION • COMMENTS • RECOMMENDATIONS:

A final disposition is not required by the client, due to the categorization of this failure as Test Equipment. Wyle comments that the humidity chamber failure will be investigated and rectified prior to future testing with said chamber.

Potential 10 CFR Part 21 ☐ YES ☒ NO

RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR PART 21: ☐ CUSTOMER ☒ WYLE

CAR Required: ☐ YES ☒ NO CAR No.

VERIFICATION: PROJECT ENGINEER: Stephen He 1/3/13

TEST WITNESS: PROJECT MANAGER: Frank Padelt 1/3/13

REPRESENTING: ES&S INTERDEPARTMENTAL COORDINATION: N/A

QUALITY ASSURANCE: Brenda Moss 1/4/13

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NOTICE OF ANOMALY

IMAGE DOCUMENATION:

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NOTICE OF ANOMALY

DATE: 06/12/2012

NOTICE NO: 6 P.O. NUMBER: ES&S-MSA-TA017 CONTRACT NO: N/A
CUSTOMER: ES&S WYLE JOB NO: T59087.01
NOTIFICATION MADE TO: Ben Swartz NOTIFICATION DATE: 06/12/2012
NOTIFICATION MADE BY: Ryan Chambers VIA: In person

CATEGORY: [X] SPECIMEN [ ] PROCEDURE [] TEST EQUIPMENT DATE OF ANOMALY: 06/12/2012
PART NAME: AutoMark PART NO. A100
TEST: Humidity Test IAW 2005 VVSG Volume I Section 4.1.2.14 I.D. NO. AM0106431724
SPECIFICATION: MIL-STD-810D, Basic Transportation, Common Carrier
PARA. NO. Method 507.2, Procedure I-Natural Hot-Humid

REQUIREMENTS: 2005 VVSG Volume I: Section 4.1.2.14

The system hardware shall continue to operate anomaly free prior to and following the application of this test environment. Integrity measures the physical stability and function of the vote recording and counting processes. To ensure system integrity, all systems shall: d. Protect against ambient temperature and humidity fluctuations.

DESCRIPTION OF ANOMALY:

After the being subjected to the Humidity test being performed between June 01, 2012 – June 11, 2012, the A100 failed to function properly during the Post Operating Status Check. When the it was observed that the UUT could not successfully mark 5 consecutive ballots, it was at that time that the A100 portion of the Humidity test was idenfied as a failure. Photographs were taken of the testing site. The reoccurring message during the failure was "Alert! A problem has occurred. Please notify an election official. There was an error while printing".

DISPOSITION • COMMENTS • RECOMMENDATIONS:

The final disposition is pending a root cause analysis to be presented by the client.

Potential 10 CFR Part 21 ☐ YES ☒ NO

RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR PART 21: ☒ CUSTOMER ☐ WYLE

CAR Required: ☐ YES ☒ NO CAR No.

VERIFICATION: PROJECT ENGINEER: Stephen [illegible] 1/3/13
TEST WITNESS: PROJECT MANAGER: Frank Padilla 1/3/13
REPRESENTING: ES&S INTERDEPARTMENTAL COORDINATION: N/A
QUALITY ASSURANCE: Benda Mass 1/4/13

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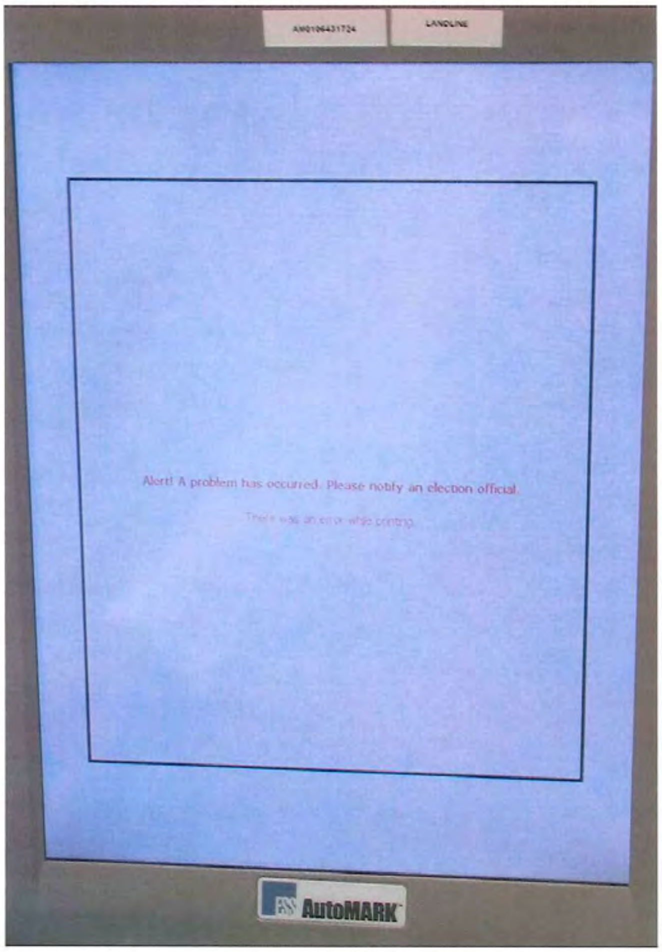
NOTICE OF ANOMALY

IMAGE DOCUMENATION:



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ORIGINAL

NOTICE OF ANOMALY

DATE: 06/19/2012

NOTICE NO: 7 P.O. NUMBER: ES&S-MSA-TA017 CONTRACT NO: N/A
CUSTOMER: ES&S WYLE JOB NO: T59087.01
NOTIFICATION MADE TO: Ben Swartz NOTIFICATION DATE: 06/19/2012
NOTIFICATION MADE BY: Ryan Chambers VIA: In person

CATEGORY: [X] SPECIMEN [ ] PROCEDURE [] TEST EQUIPMENT DATE OF ANOMALY: 06/19/2012
PART NAME: DS200 PART NO. DS200
TEST: Electrical Supply Test I.D. NO. ES0107390482
SPECIFICATION: VVSG Volume I
PARA. NO. Section 4.1.2.4

REQUIREMENTS: 2005 VVSG Volume I: Section 4.1.2.4

The system hardware shall operate with the electrical supply ordinarily found in polling places (Nominal 120 Vac/60Hz/1 phase) and shall also be capable of operating for a period of at least 2 hours on backup power, such that no voting data is lost or corrupted nor normal operations interrupted. When backup power is exhausted the voting machine shall retain the contents of all memories intact.

DESCRIPTION OF ANOMALY:

After the being subjected to the Electrical Supply test being performed on June 19, 2012 the DS200's battery was depleted after only 1 hour, 37 minutes and 20 seconds. When the it was observed that the UUT shutdown prior to completing the 2 hour requirement, the Electrical Supply Test of the DS200 was idenfied as a failure. Photographs were taken of the testing site.

DISPOSITION • COMMENTS • RECOMMENDATIONS:
The final disposition is pending a root cause analysis to be presented by the client.

Potential 10 CFR Part 21 ☐ YES ☒ NO

RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR PART 21: ☒ CUSTOMER ☐ WYLE

CAR Required: ☐ YES ☒ NO CAR No.

VERIFICATION: PROJECT ENGINEER: Steph [signature] 1/3/13

TEST WITNESS: PROJECT MANAGER: [signature] 1/3/13

REPRESENTING: ES&S INTERDEPARTMENTAL COORDINATION: N/A

QUALITY ASSURANCE: Brenda Moses 1/4/13

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NOTICE OF ANOMALY

IMAGE DOCUMENATION:

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NOTICE OF ANOMALY

DATE: 06/19/2012

NOTICE NO: 8 P.O. NUMBER: ES&S-MSA-TA017 CONTRACT NO: N/A
CUSTOMER: ES&S WYLE JOB NO: T59087.01
NOTIFICATION MADE TO: Ben Swartz NOTIFICATION DATE: 06/19/2012
NOTIFICATION MADE BY: Ryan Chambers VIA: In person

CATEGORY: [X] SPECIMEN [ ] PROCEDURE [] TEST EQUIPMENT DATE OF ANOMALY: 06/19/2012
PART NAME: DS200 PART NO. DS200
TEST: Electrical Supply Test I.D. NO. ES0108340579
SPECIFICATION: VVSG Volume I
PARA. NO. Section 4.1.2.4

REQUIREMENTS: 2005 VVSG Volume I: Section 4.1.2.4

The system hardware shall operate with the electrical supply ordinarily found in polling places (Nominal 120 Vac/60Hz/1 phase) and shall also be capable of operating for a period of at least 2 hours on backup power, such that no voting data is lost or corrupted nor normal operations interrupted. When backup power is exhausted the voting machine shall retain the contents of all memories intact.

DESCRIPTION OF ANOMALY:

After the being subjected to the Electrical Supply test being performed on June 19, 2012 the DS200's battery was depleted after only 1 hour, 43 minutes and 6 seconds. When the it was observed that the UUT shutdown prior to completing the 2 hour requirement, the Electrical Supply Test of the DS200 was idenfied as a failure. Photographs were taken of the testing site.

DISPOSITION • COMMENTS • RECOMMENDATIONS:
The final disposition is pending a root cause analysis to be presented by the client.

Potential 10 CFR Part 21 ☐ YES ☒ NO

RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR PART 21: ☒ CUSTOMER ☐ WYLE

CAR Required: ☐ YES ☒ NO CAR No.

VERIFICATION: PROJECT ENGINEER: Stephen K 1/3/13
TEST WITNESS: PROJECT MANAGER: Frank Padilla 1/3/13
REPRESENTING: ES&S INTERDEPARTMENTAL COORDINATION: N/A
QUALITY ASSURANCE: Brenda Moss 1/4/13

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NOTICE OF ANOMALY

IMAGE DOCUMENATION:

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ORIGINAL

NOTICE OF ANOMALY

DATE: 06/12/2012

NOTICE NO: 9 P.O. NUMBER: ES&S-MSA-TA017 CONTRACT NO: N/A
CUSTOMER: ES&S WYLE JOB NO: T59087.01
NOTIFICATION MADE TO: Ben Swartz NOTIFICATION DATE: 06/12/2012
NOTIFICATION MADE BY: Ryan Chambers VIA: In person

CATEGORY: [X] SPECIMEN [ ] PROCEDURE [] TEST EQUIPMENT DATE OF ANOMALY: 06/12/2012
PART NAME: AutoMark PART NO. A100
TEST: Acoustic Noise Level Test and Hearing Aid Compatibility I.D. NO. AM0106431724
SPECIFICATION: 2005 VVSG Volume I
PARA. NO. Section 3.2.2.2

REQUIREMENTS: 2005 VVSG Volume I: Section 3.2.2.2; Section 3.1.7.1; RFI 2009-05

The system hardware shall set the initial volume for each voter between 40 and 50 dB SPL. The voting machine shall provide a volume control with an adjustable volume from a minimum of 20 dB SPL up to a maximum of 100 dB SPL, in increments no greater than 10 dB.

DESCRIPTION OF ANOMALY:

After the being subjected to the Acoustic Noise Level Test and Hearing Aid Compatibility as performed on June 19, 2012. When it was observed that the A100 failed to achieve the required 100 dB SPL, it was at that time that the A100 portion of the Acoustic Noise Level Test and Hearing Aid Compatibility was identified as a failure. The highest volume produced by the UUT was 75 dB. Photographs were taken of the testing site.

DISPOSITION • COMMENTS • RECOMMENDATIONS:

The final disposition is pending a root cause analysis to be presented by the client.

Potential 10 CFR Part 21 ☐ YES ☒ NO

RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR PART 21: ☒ CUSTOMER ☐ WYLE

CAR Required: ☐ YES ☒ NO CAR No.

VERIFICATION: PROJECT ENGINEER: Steph W 1/3/13
TEST WITNESS: PROJECT MANAGER: Frank Padd 1/3/13
REPRESENTING: ES&S INTERDEPARTMENTAL COORDINATION: N/A
QUALITY ASSURANCE: Brenda Moss 1/4/13

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NOTICE OF ANOMALY

IMAGE DOCUMENATION:

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ORIGINAL

NOTICE OF ANOMALY

DATE: 06/12/2012

NOTICE NO: 10 P.O. NUMBER: ES&S-MSA-TA017 CONTRACT NO: N/A
CUSTOMER: ES&S WYLE JOB NO: T59087.01
NOTIFICATION MADE TO: Ben Swartz NOTIFICATION DATE: 06/12/2012
NOTIFICATION MADE BY: Ryan Chambers VIA: In person

CATEGORY: [X] SPECIMEN [ ] PROCEDURE [] TEST EQUIPMENT DATE OF ANOMALY: 06/12/2012
PART NAME: AutoMark PART NO. A200
TEST: Acoustic Noise Level Test and Hearing Aid Compatibility I.D. NO. AM0208470626
SPECIFICATION: 2005 VVSG Volume I
PARA. NO. Section 3.2.2.2

REQUIREMENTS: 2005 VVSG Volume I: Section 3.2.2.2; Section 3.1.7.1; RFI 2009-05

The system hardware shall set the initial volume for each voter between 40 and 50 dB SPL. The voting machine shall provide a volume control with an adjustable volume from a minimum of 20 dB SPL put to a maximum of 100 dB SPL, in increments no greater than 10 dB.

DESCRIPTION OF ANOMALY:

After the being subjected to the Acoustic Noise Level Test and Hearing Aid Compatibility as performed on June 19, 2012. When it was observed that the A200 failed to achieve the required 100 dB SPL, it was at that time that the A200 portion of the Acoustic Noise Level Test and Hearing Aid Compatibility was identified as a failure. The highest volume produced by the UUT was 75 dB. Photographs were taken of the testing site.

DISPOSITION • COMMENTS • RECOMMENDATIONS:

The final disposition is pending a root cause analysis to be presented by the client.

Potential 10 CFR Part 21 ☐ YES ☒ NO

RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR PART 21: ☒ CUSTOMER ☐ WYLE

CAR Required: ☐ YES ☒ NO CAR No.

VERIFICATION: PROJECT ENGINEER: Steph [signature] 1/3/13
TEST WITNESS: PROJECT MANAGER: Frank Padgett 1/3/13
REPRESENTING: ES&S INTERDEPARTMENTAL COORDINATION: N/A
QUALITY ASSURANCE:

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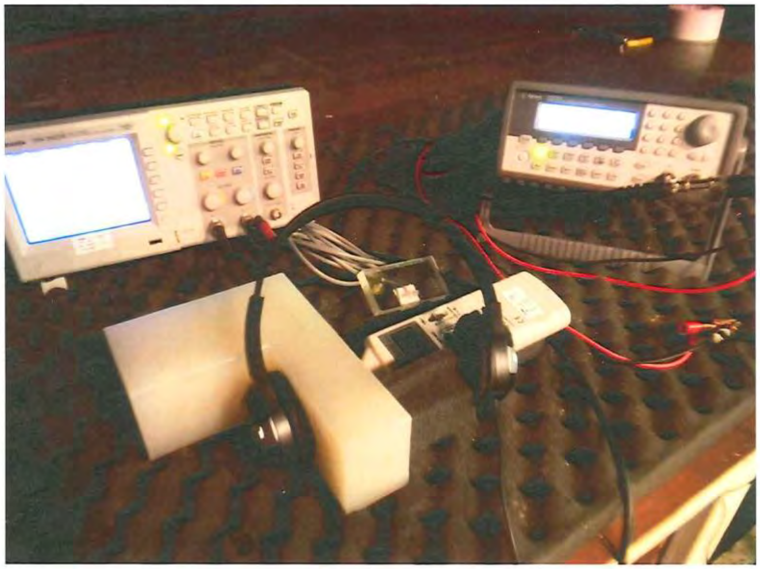
NOTICE OF ANOMALY

IMAGE DOCUMENATION:



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NOTICE OF ANOMALY DATE: 06/26/2012

NOTICE NO: 11 P.O. NUMBER: ES&S-MSA-TA017 CONTRACT NO: N/A
CUSTOMER: ES&S WYLE JOB NO: T59087.01
NOTIFICATION MADE TO: Sue McKay NOTIFICATION DATE: 06/26/2012
NOTIFICATION MADE BY: Ryan Chambers VIA: In person

CATEGORY: [X] SPECIMEN [ ] PROCEDURE [ ] TEST EQUIPMENT DATE OF ANOMALY: 06/26/2012
PART NAME: ES&S D850 PART NO. DS850
TEST: Environmental Control – Operating Environment Test (Temperature and Power Variation Tests) 2005 VVSG Volume I Section 4.1.2.13: Volume II Section 4.7.1 I.D. NO. 8511090074
SPECIFICATION: MIL-STD-810D PARA. NO. Method 502.2 and 501.2

REQUIREMENTS: 2005 VVSG Volume I Section 4.1.2.14

Test item shall be capable of simulated temperature and power variation that would be encountered in normal opearating environments for voting systems using a environmental chambers and an adjustable power supply equivalent to the procedure in MIL-STD-810D, Method 502.2 and Method 501.2.

DESCRIPTION OF ANOMALY:

Following the Operating Environmental Test performed on June 26, 2012, the Unit Under Test was examined for anomalies that may have occurred during testing. After completing 18 hours of the scheduled 85 hours of testing, 6 ballot jams had occurred on the UUT and the testing was halted due to the quantity and frequency of failures achieved during the test. It was discovered, by the vendor during a root cause analysis phase that the UUT required a metal shim to be installed in the UUT. Digital images where taken of the test site and UUT.

DISPOSITION • COMMENTS • RECOMMENDATIONS:

The final disposition is pending a root cause analysis to be presented by the client.

Potential 10 CFR Part 21 ☐ YES ☒ NO
RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR PART 21: ☒ CUSTOMER ☐ WYLE
CAR Required: ☐ YES ☒ NO CAR No.

VERIFICATION: PROJECT ENGINEER: Stephen [signature] 1/3/13
TEST WITNESS: PROJECT MANAGER: Paul [signature] 1/3/13
REPRESENTING: ES&S INTERDEPARTMENTAL COORDINATION: N/A
QUALITY ASSURANCE: Brenda Moss 1/4/13

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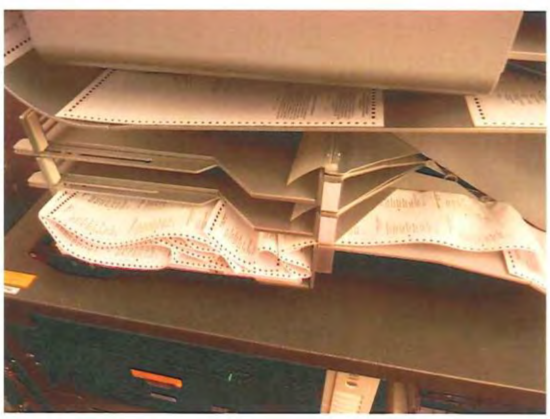
NOTICE OF ANOMALY

IMAGE DOCUMENATION:



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ORIGINAL

NOTICE OF ANOMALY

DATE: 06/29/2012

NOTICE NO: 12 P.O. NUMBER: ES&S-MSA-TA017 CONTRACT NO: N/A
CUSTOMER: ES&S WYLE JOB NO: T59087.01
NOTIFICATION MADE TO: Sue McKay NOTIFICATION DATE: 06/29/2012
NOTIFICATION MADE BY: Ryan Chambers VIA: In person

CATEGORY: [X] SPECIMEN [ ] PROCEDURE [ ] TEST EQUIPMENT DATE OF ANOMALY: 06/29/2012
PART NAME: ES&S D850 PART NO. DS850
TEST: Environmental Control – Operating Environment Test (Temperature and Power Variation Tests) 2005 VVSG Volume I Section 4.1.2.13; Volume II Section 4.7.1 I.D. NO. 8511090074
SPECIFICATION: MIL-STD-810D PARA. NO. Method 502.2 and 501.2

REQUIREMENTS: 2005 VVSG Volume I Section 4.1.2.14

Test item shall be capable of simulated temperature and power variation that would be encountered in normal opearating environments for voting systems using a environmental chambers and an adjustable power supply equivalent to the procedure in MIL-STD-810D, Method 502.2 and Method 501.2.

DESCRIPTION OF ANOMALY:

Following the Operating Environmental Test performed on June 29, 2012, the Unit Under Test was examined for anomalies that may have occurred during testing. After completing 18 hours of the scheduled 85 hours of testing, "Camera Interface Error" had occurred on the UUT. Following the System Operating Procedure, the UUT was Shutdown and restarted. Upon logging into the UUT, it was observed that "Camera Interface Error" occurred again. It was at this time that testing was halted due to the inability to proceed with the UUT, after it was determined that the UUT suffered "degradation of performance such that the device is unable to perform its intended function for longer than 10 seconds" as identified in VVSG Volume 1, 4.3.3 Reliability. ES&S personnel advised, Wyle Personnel to take note that the Image Processing Board possessed one blinking green light and 2 solid green lights. Digital images where taken of the test site and UUT.

DISPOSITION • COMMENTS • RECOMMENDATIONS:

The final disposition is pending a root cause analysis to be presented by the client.

Potential 10 CFR Part 21 ☐ YES ☒ NO

RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR PART 21: ☒ CUSTOMER ☐ WYLE

CAR Required: ☐ YES ☒ NO CAR No.

VERIFICATION: PROJECT ENGINEER: Steph K 1/3/13
TEST WITNESS: PROJECT MANAGER: Fred Pratt 1/3/13
REPRESENTING: ES&S INTERDEPARTMENTAL COORDINATION: N/A
QUALITY ASSURANCE: Bonds Moss 1/4/13

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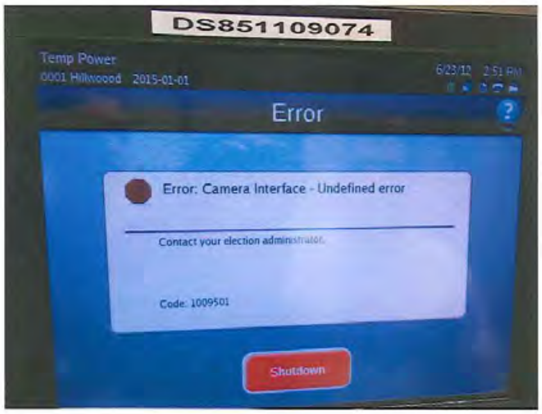
NOTICE OF ANOMALY

IMAGE DOCUMENATION:



Error: Camera Interface

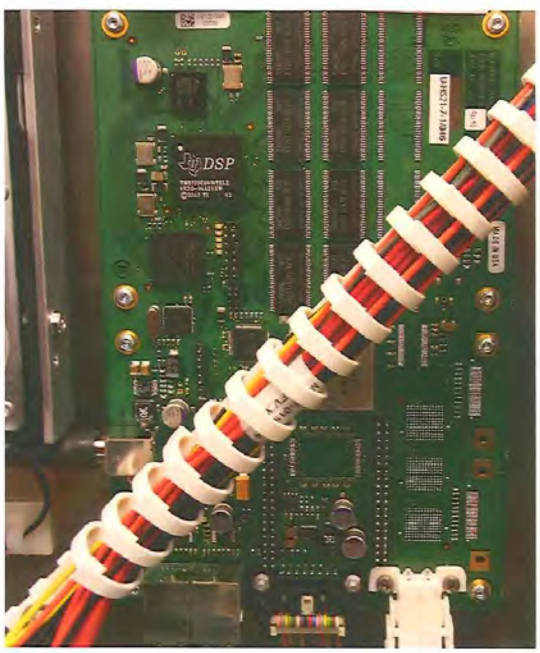


Image processig board

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USB board – circled in Red.

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ORIGINAL

NOTICE OF ANOMALY

DATE: 11/16/12

NOTICE NO: 13 P.O. NUMBER: ES&S-MSA-TA017 CONTRACT NO: N/A
CUSTOMER: ES&S WYLE JOB NO: T59087
NOTIFICATION MADE TO: Ben Swartz NOTIFICATION DATE: 11/26/2012
NOTIFICATION MADE BY: Stephen Han VIA: In person

CATEGORY: [] SPECIMEN [ ] PROCEDURE [X] TEST EQUIPMENT DATE OF ANOMALY: 11/16/12
PART NAME: Automark A100 PART NO.
TEST: Humidity Test IAW 2005 VVSG Volume I Section 4.1.2.14 I.D. NO.
SPECIFICATION: MIL-STD-810D, Basic Transportation, Common Carrier
PARA. NO. Method 507.2, Procedure I-Natural Hot-Humid

REQUIREMENTS: 2005 VVSG Volume I Section 4.1.2.14

The system hardware shall continue to operate anomaly free prior to and following the application of this test environment. Integrity measures the physical stability and function of the vote recording and counting processes. To ensure system integrity, all systems shall: d. Protect against ambient temperature and humidity fluctuations.

DESCRIPTION OF ANOMALY:

During the Humidity test being performed between Nov 16, 2012 – Nov 26, 2012, There was an air pocket affecting the water supply of the test chamber, which caused the test chamber not to reach the required humidity levels. This was found on Saturday Nov 17th. The test was extended one day to accomidate the delay. The test was completed without any issues. The UUT performed a post-operational status check without issues.

DISPOSITION • COMMENTS • RECOMMENDATIONS:

A final disposition is not required by the client, due to the categorization of this issue as Test Equipment. Wyle comments that the humidity chamber will be investigated and rectified prior to future testing with said chamber.

Potential 10 CFR Part 21 ☐ YES ☒ NO

RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR PART 21: ☐ CUSTOMER ☒ WYLE

CAR Required: ☐ YES ☒ NO CAR No.

VERIFICATION: PROJECT ENGINEER: Stephen Han 1/2/13
TEST WITNESS: N/A PROJECT MANAGER: [signature] 1/2/13
REPRESENTING: N/A INTERDEPARTMENTAL COORDINATION: N/A
QUALITY ASSURANCE: [signature] 01/02/2013

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wyle laboratories

ORIGINAL **NOTICE OF ANOMALY** DATE: 12/21/12

NOTICE NO: 14 P.O. NUMBER: ES&S-MSA-TA017 CONTRACT NO: N/A
CUSTOMER: ES&S WYLE JOB NO: T59087.01
NOTIFICATION MADE TO: Ben Swartz NOTIFICATION DATE: 12/11/12
NOTIFICATION MADE BY: Stephen Han VIA: In person

CATEGORY: [X] SPECIMEN [ ] PROCEDURE [ ] TEST EQUIPMENT DATE OF ANOMALY: 12/11/12
PART NAME: ES&S DS850 PART NO. DS850
TEST: Environmental Control – Operating Environment Test (Temperature and Power Variation Tests) 2005 VVSG Volume I Section 4.1.2.13; Volume II Section 4.7.1 I.D. NO. DS8510090037
SPECIFICATION: MIL-STD-810D PARA. NO. Method 502.2 and 501.2

REQUIREMENTS: 2005 VVSG Volume I Section 4.1.2.14

Test item shall be capable of simulated temperature and power variation that would be encountered in normal opearating environments for voting systems using a environmental chambers and an adjustable power supply equivalent to the procedure in MIL-STD-810D, Method 502.2 and Method 501.2.

DESCRIPTION OF ANOMALY:

After completing 15 hours of the scheduled 85 hours of testing, switching from 50 deg F to 95 deg F and running for 3 hours (300 ballots every hour) DS850 serial number 37, started outstacking all ballots to the top tray for "decision late". The unit was rebooted and ballots could be scanned normally. On the next hours of scanning 300 ballots again, all ballots were sent to the top tray for "decision late", and rebooting again allowed ballots to be scanned normally.
It was suspected that the bottom camera was causing the error. After the test was halted, the suspect camera was removed from unit #37 and a new camera was placed into that unit. The suspect camera was installed on the other DS850 #75 in the test chamber at 95 degress F and after 30 minutes unit # 75 exhibited the same error. And unit # 37 with the new camera performed with no issues. The bad camera was removed and sent to DataWin for a root cause analysis.

DISPOSITION • COMMENTS • RECOMMENDATIONS:

The final disposition is pending a root cause analysis to be presented by the client.

Potential 10 CFR Part 21 ☐ YES ☒ NO
RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR PART 21: ☒ CUSTOMER ☐ WYLE
CAR Required: ☐ YES ☒ NO CAR No.

VERIFICATION: PROJECT ENGINEER: Stephen Han 12/21/12
TEST WITNESS: Mike Dvorak PROJECT MANAGER: Frank Padilla 12/28/12
REPRESENTING: ES&S INTERDEPARTMENTAL COORDINATION: N/A
QUALITY ASSURANCE: Michael [signature] 01/02/2013

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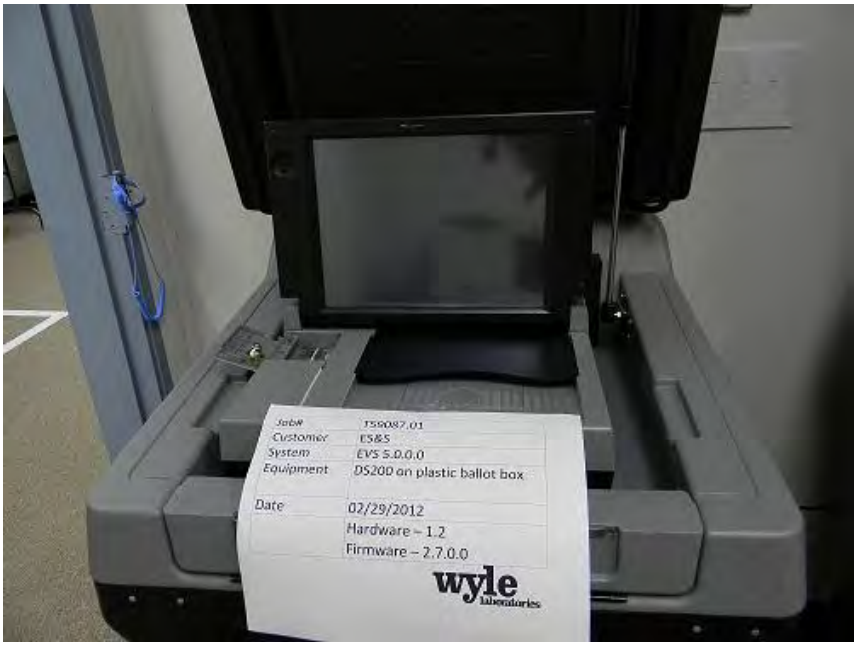
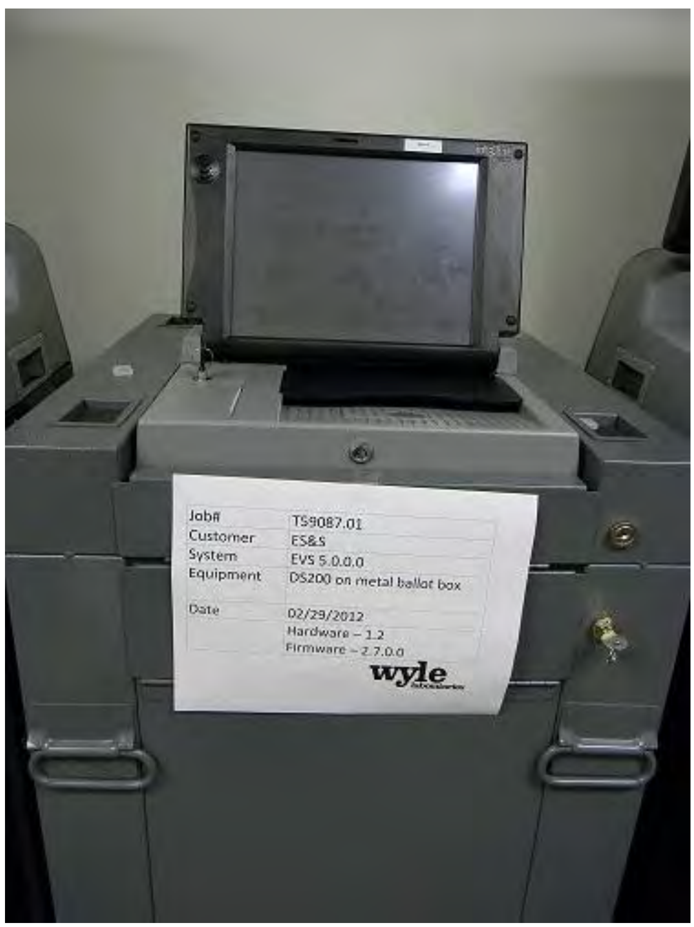
ATTACHMENT B
PHOTOGRAPHS

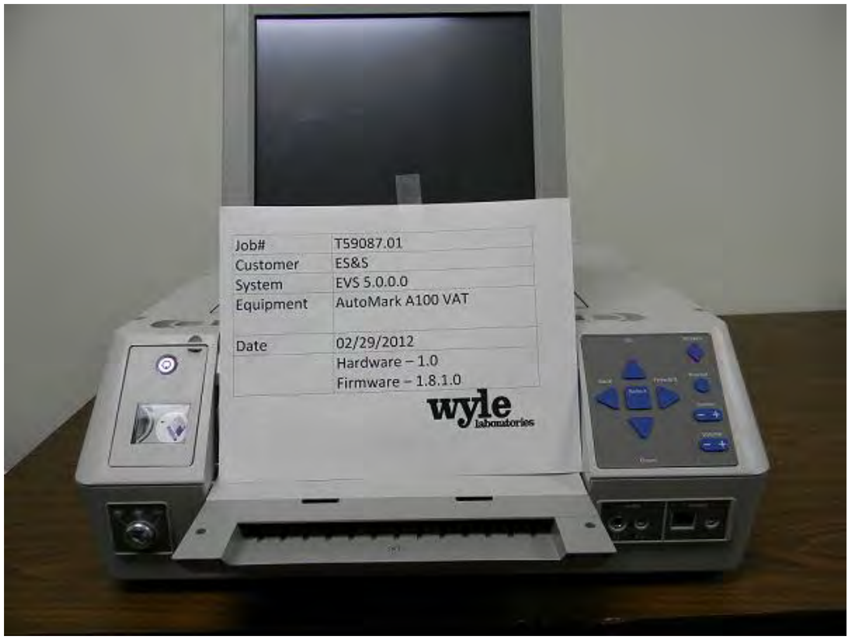


Photograph No. 1
DS200 on Plastic Ballot Box



Photograph No. 2
DS200 on Metal Ballot Box

Photograph No. 3
DS850



Photograph No. 4
AutoMARK A100

Photograph No. 5
AutoMARK A200

Photograph No. 6
AutoMARK Low Temperature and High Temperature

Photograph No. 7
DS200 Low Temperature and High Temperature

Photograph No. 8
AutoMARK A100 Vibration

Photograph No. 9
AutoMARK A200 Vibration

Photograph No. 10
DS200 Metal Ballot Box Vibration

Photograph No. 11
DS200 Plastic Ballot Box Vibration

Photograph No. 12
DS200 Caring Case Vibration

Photograph No. 13
DS200 Plastic Ballot Box Bench Handling

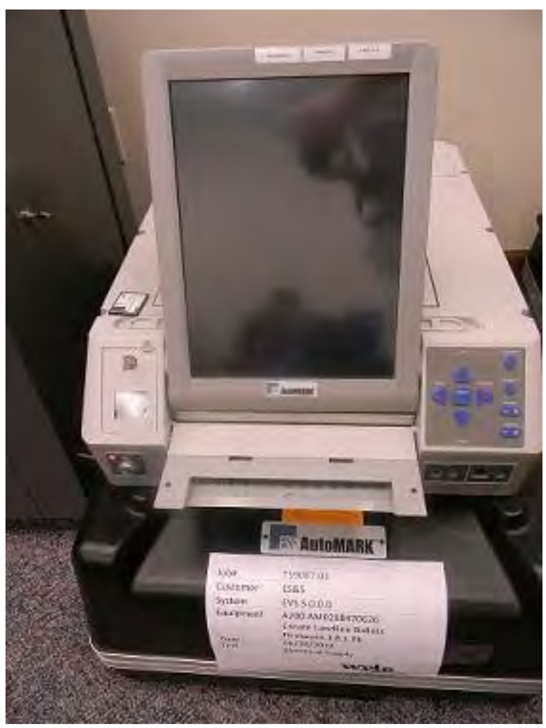
Photograph No. 14
DS200 Metal Ballot Box Bench Handling

Photograph No. 15
AutoMARK A100 Bench Handling

Photograph No. 16
AutoMARK A200 Bench Handling

Photograph No. 17
Humidity

Photograph No. 18
AutoMARK A100 Electrical Supply



Photograph No. 19
AutoMARK A200 Electrical Supply

Photograph No. 20
DS200 Plastic Ballot Box Electrical Supply

Photograph No. 21
DS200 Metal Ballot Box Electrical Supply

Photograph No. 22
DS850 Electrical Supply

Photograph No. 23
AutoMARK Temperature/Power

Photograph No. 24
DS200 Temperature/Power

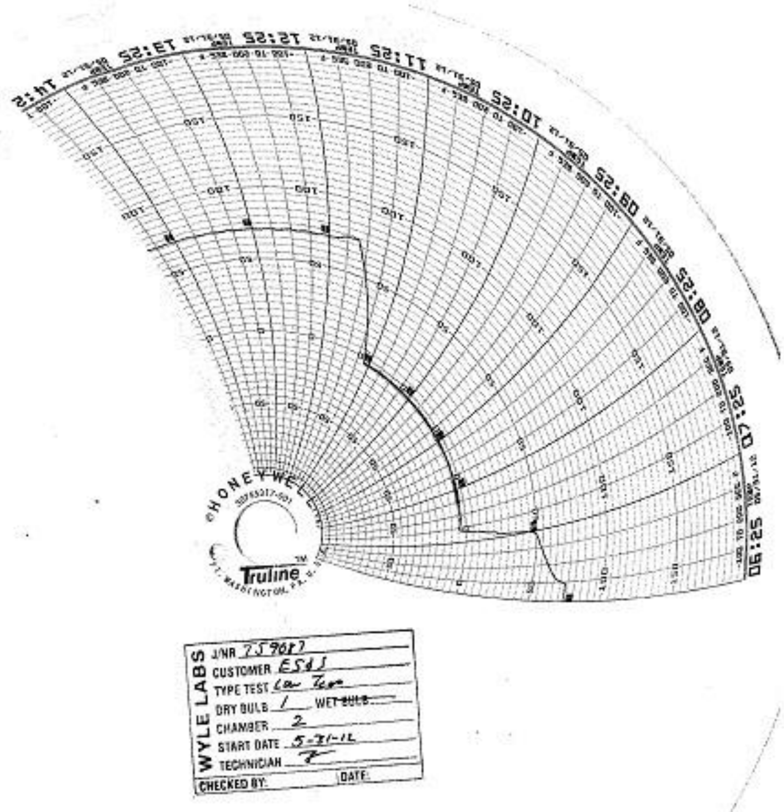
Photograph No. 25
DS850 Temperature/Power

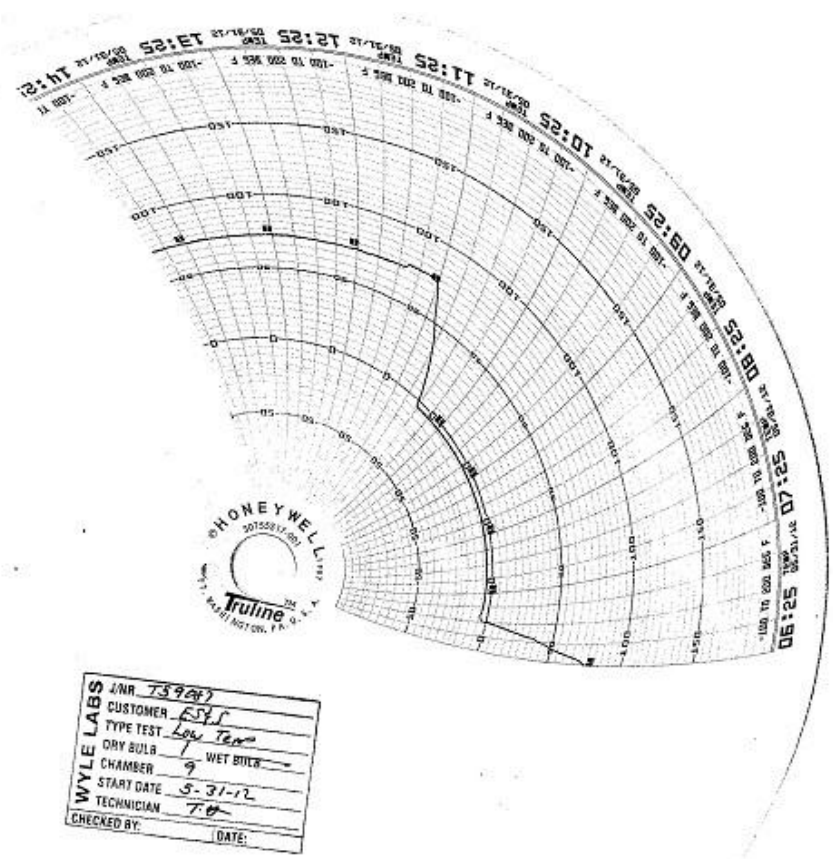
Photograph No. 26
AutoMARK A100 Acoustic

Photograph No. 27
AutoMARK A200 Acoustic

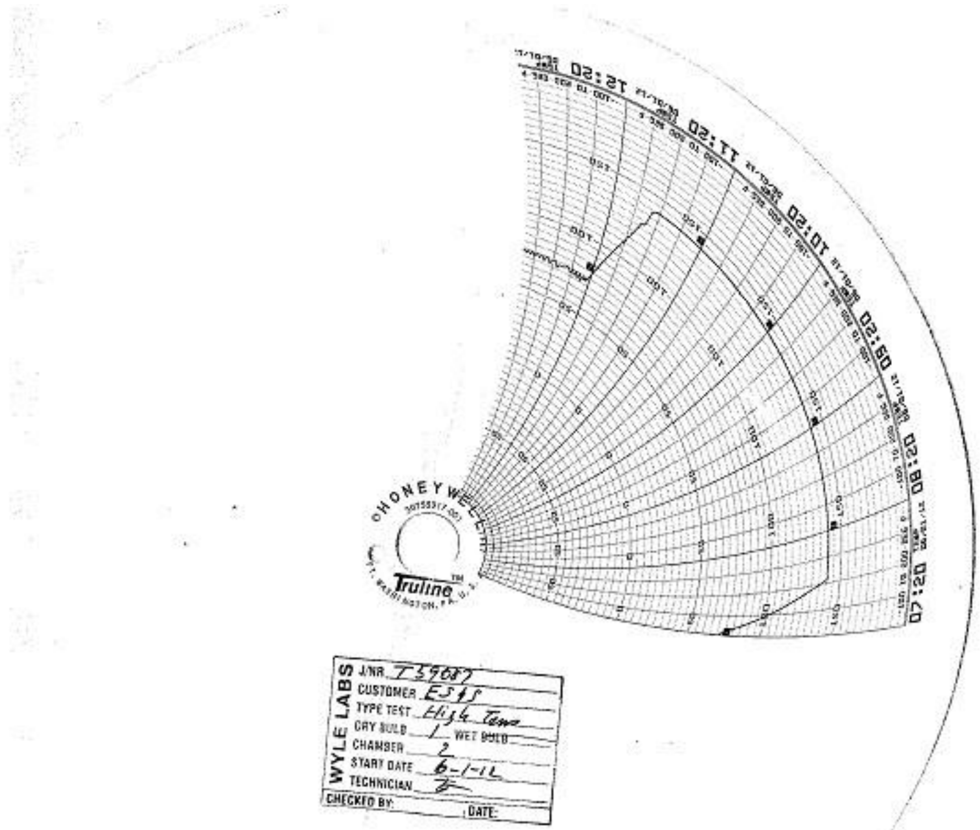
ATTACHMENT C
NON-OPERATING ENVIRONMENTAL TEST DATA

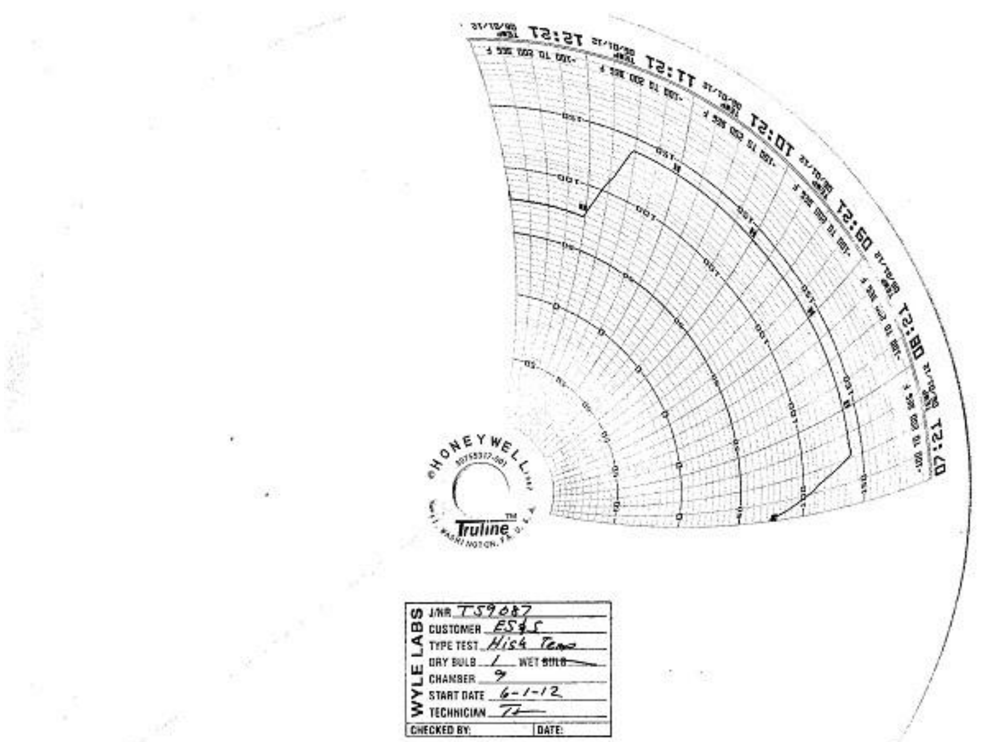
LOW TEMPERATURE TEST DATA


HONEYWELL
Truline
WYLE LABS
J/NR T59087
CUSTOMER
TYPE TEST Low Temp
DRY BULB 1
WET BULB
CHAMBER 2
START DATE 5-31-12
TECHNICIAN
CHECKED BY:
DATE:


HONEYWELL
Truline
WYLE LABS
J/NR T59087
CUSTOMER
TYPE TEST Low Temp
DRY BULB 1
WET BULB
CHAMBER 9
START DATE 5-31-12
TECHNICIAN
CHECKED BY:
DATE:

HIGH TEMPERATURE TEST DATA


HONEYWELL
Truline
WYLE LABS
J/NR T59087
CUSTOMER ES&S
TYPE TEST High Temp
DRY BULB 1 WET BULB
CHAMBER 2
START DATE 6-1-12
TECHNICIAN
CHECKED BY: DATE:


HONEYWELL
Truline
WYLE LABS
J/NR T59087
CUSTOMER ES&S
TYPE TEST High Temp
DRY BULB 1 WET BULB
CHAMBER 9
START DATE 6-1-12
TECHNICIAN TJ
CHECKED BY: DATE:

VIBRATION TEST DATA

VIBRATION TEST DATA SHEET

Customer: ES&S Spec.: MIL-STD-810D Specimen: DS200w/Metal Box, DS200w/Plastic Box, AutoMARK A100, AutoMARK A200

Job No.: T59087 Method: 514.3-1, -2 ,-3 Part No.: Many Specimen Temp.: Ambient

GSI Yes ☐ No ☐ Procedure: 2005 VVSG 4.63 S/N: Many Photo Yes ☒ No ☐

Test Title:

Date	Time	Axis	Temp (F)	SINUSOIDAL Freq. (cps)	SINUSOIDAL Disp. ("da)	SINUSOIDAL Accel. (±g)	RANDOM Freq. (cps)	RANDOM PSD (g2/Hz)	RANDOM Slope (dB/Oct)	TOTAL Accel. (grms)	Test Time (min:sec)	COMMENTS	NAME
												TEST REQUIREMENT	
5/3/12	0931	Vert	Amb				10.0	0.015				Run 1 Random Vibration	JR
							40.0	0.015				UUT: Metal Box Vert Axis	
							500.0	0.00015		1.0738	30:00		
5/3/12	1041	Vert	Amb				10.0	0.015				Run 2 Random Vibration	JR
							40.0	0.015				UUT: Plastic Box Vert Axis	
							500.0	0.00015		1.0589	30:00		
5/3/12	1243	Vert	Amb				10.0	0.015				Run 3 Random Vibration JR	
							40.0	0.015				UUT: A 100 Vert Axis	
							500.0	0.00015		1.0812	30:00		

Job No. T59087 Report No. Date Page No. 1 of 6

WH-1028A Signed: *[signature]* 5/7/12 Approved: *[signature]* 5/7/12

VIBRATION TEST DATA SHEET

I D No.

Date	Time	Axis	Temp (F)	SINUSOIDAL Freq. (cps)	SINUSOIDAL Disp. ("da)	SINUSOIDAL Accel. (±g)	RANDOM Freq. (cps)	RANDOM PSD (g2/Hz)	RANDOM Slope (dB/Oct)	TOTAL Accel. (grms)	Test Time (min:sec)	COMMENTS	NAME
												TEST REQUIREMENT	
5/3/12	1343	Vert	Amb				10.0	0.015				Run 4 Random Vibration	JR
							40.0	0.015				UUT: A 200 Vert Axis	
							500.0	0.00015		1.1080	30:00		
5/4/12	1336	Long	Amb				10.0	0.0065				Run 5 Random Vibration	JR
							20.0	0.0065				UUT: A 200 Long Axis	
							120.0	0.0002					
							121.0	0.003					
							200.0	0.003					
							240.0	0.0015					
							340.0	0.00003					
							500.0	0.00015		0.7394	30:00		

Job No. T59087 Report No. Date Page No. 2 of 6

WH-1028 Signed: *[signature]* 5/7/12 Approved: *[signature]* 5/7/12

VIBRATION TEST DATA SHEET

I D No.

Date	Time	Axis	Temp (F)	SINUSOIDAL Freq. (cps)	SINUSOIDAL Disp. ("da)	SINUSOIDAL Accel. (±g)	RANDOM Freq. (cps)	RANDOM PSD (g2/Hz)	RANDOM Slope (dB/Oct)	TOTAL Accel. (grms)	Test Time (min:sec)	COMMENTS	NAME
												TEST REQUIREMENT	
5/4/12	1424	Long	Amb				10.0	0.0065				Run 6 Random Vibration	JA
							20.0	0.0065				UUT: A 100 Long Axis	
							120.0	0.0002					
							121.0	0.003					
							200.0	0.003					
							240.0	0.0015					
							340.0	0.00003					
							500.0	0.00015		0.7536	30:00		
5/5/12	0651	Long	Amb				10.0	0.0065				Run 7 Random Vibration	JA
							20.0	0.0065				UUT: Plastic Box Long Axis	
							120.0	0.0002					
							121.0	0.003					
							200.0	0.003					
							240.0	0.0015					
							340.0	0.00003					
							500.0	0.00015		0.7445	30:00		

Job No. T59087
Report No.
Date
Page No. 3 of 6

WH-1028 Signed [illegible] 5/7/12 Approved [illegible] 5/7/12

VIBRATION TEST DATA SHEET

I D No.

Date	Time	Axis	Temp (F)	SINUSOIDAL Freq. (cps)	SINUSOIDAL Disp. ("da)	SINUSOIDAL Accel. (±g)	RANDOM Freq. (cps)	RANDOM PSD (g2/Hz)	RANDOM Slope (dB/Oct)	TOTAL Accel. (grms)	Test Time (min:sec)	COMMENTS	NAME
												TEST REQUIREMENT	
5/5/12	0736	Long	Amb				10.0	0.0065				Run 8 Random Vibration	JA
							20.0	0.0065				UUT: Metal Box Long Axis	
							120.0	0.0002					
							121.0	0.003					
							200.0	0.003					
							240.0	0.0015					
							340.0	0.00003					
							500.0	0.00015		0.7397	30:00		
5/5/12	0854	Trans	Amb				10.0	0.00013				Run 9 Random Vibration	JA
							20.0	0.00065				UUT: Metal Box Trans Axis	
							30.0	0.00065					
							78.0	0.00002					
							79.0	0.00019					
							120.0	0.00019					
							500.0	0.00001		0.2050	30:00		

Job No. T59087
Report No.
Date
Page No. 4 of 6

WH-1028 Signed [illegible] 5/7/12 Approved [illegible] 5/7/12

VIBRATION TEST DATA SHEET

I D No.

Date	Time	Axis	Temp (F)	SINUSOIDAL Freq. (cps)	SINUSOIDAL Disp. ("da)	SINUSOIDAL Accel. (±g)	RANDOM Freq. (cps)	RANDOM PSD (g2/Hz)	RANDOM Slope (dB/Oct)	TOTAL Accel. (grms)	Test Time (min:sec)	COMMENTS	NAME
												TEST REQUIREMENT	
5/5/12	0944	Trans	Amb				10.0	0.00013				Run 10 Random Vibration	JA
							20.0	0.00065				UUT: Plastic Box Trans Axis	
							30.0	0.00065					
							78.0	0.00002					
							79.0	0.00019					
							120.0	0.00019					
							500.0	0.00001		0.2048	30:00		
5/5/12	1035	Trans	Amb				10.0	0.00013				Run 11 Random Vibration	JA
							20.0	0.00065				UUT: A 100 Trans Axis	
							30.0	0.00065					
							78.0	0.00002					
							79.0	0.00019					
							120.0	0.00019					
							500.0	0.00001		0.2045	30:00		

Job No. T59087
Report No.
Date
Page No. 5 of 6

WH-1028 Signed 5/7/12 Approved 5/7/12

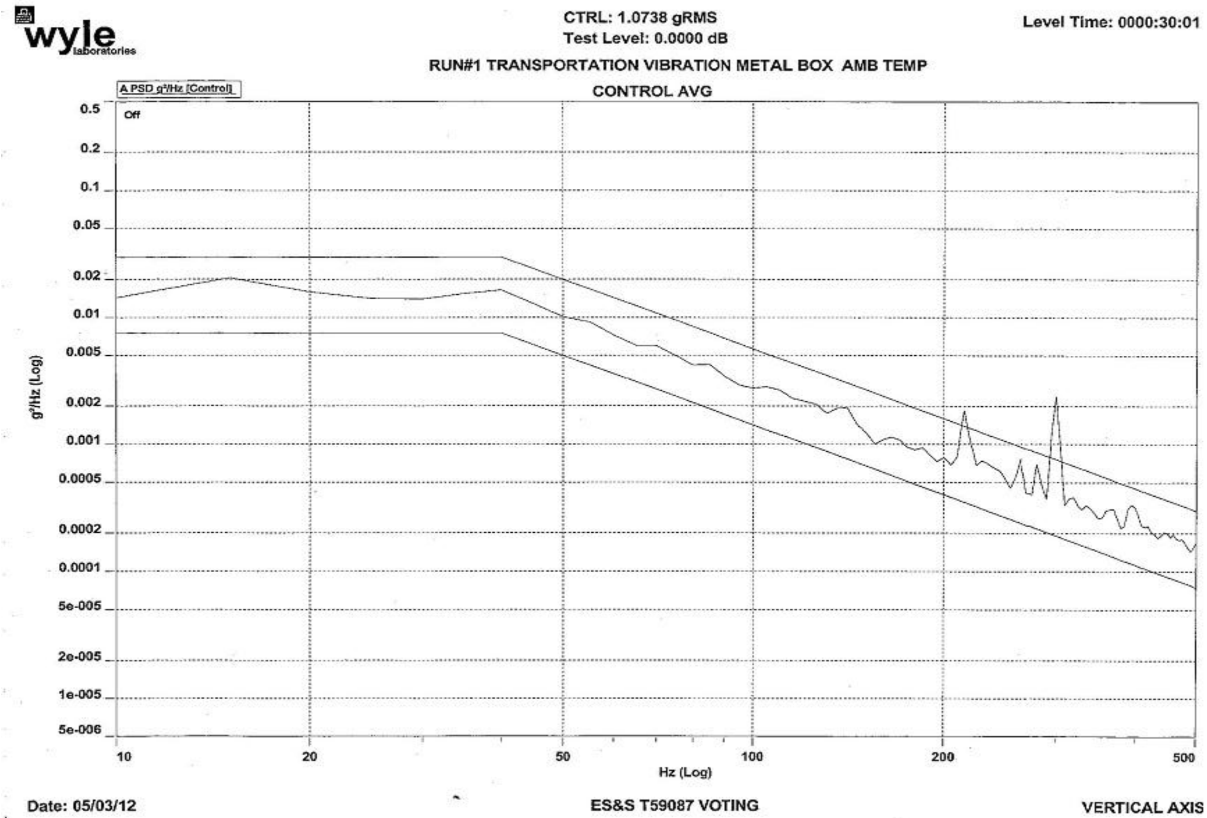
VIBRATION TEST DATA SHEET

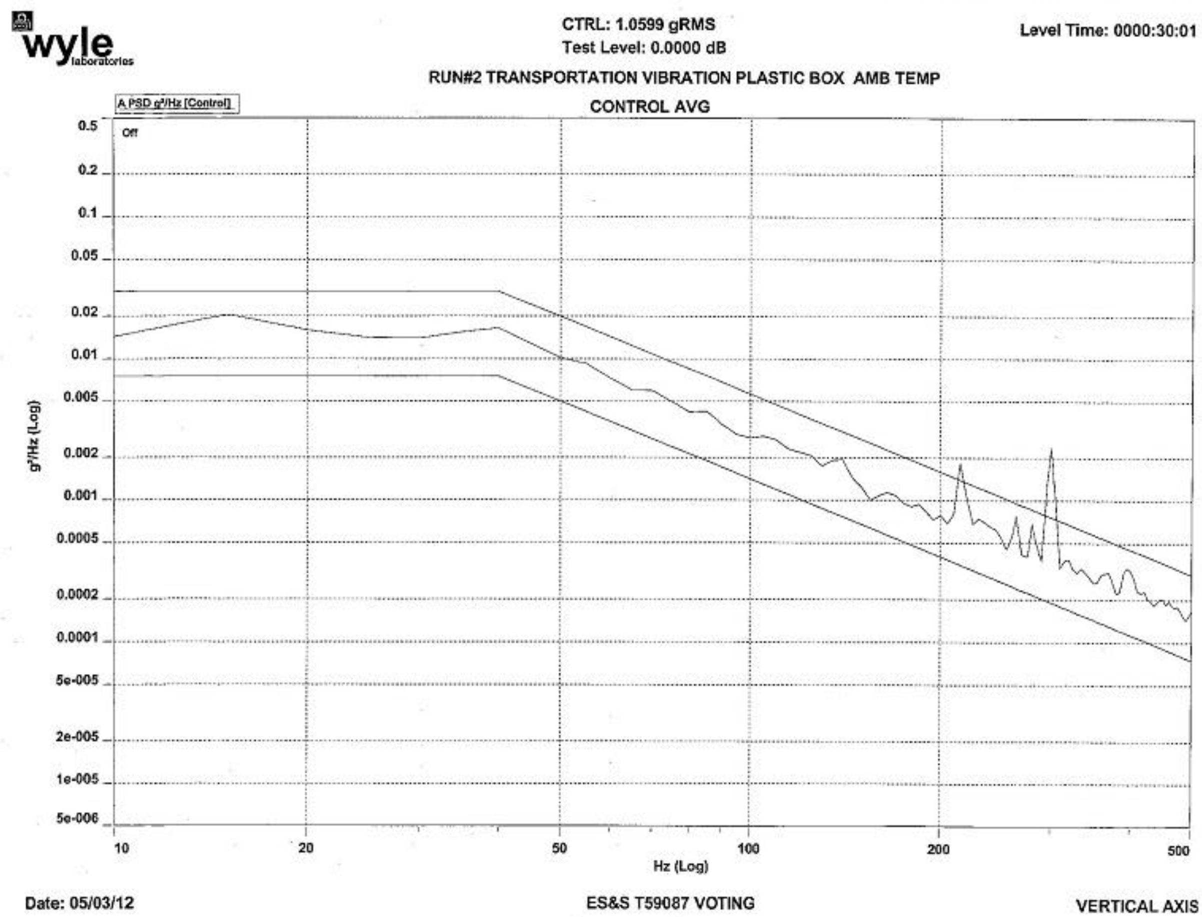
I D No.

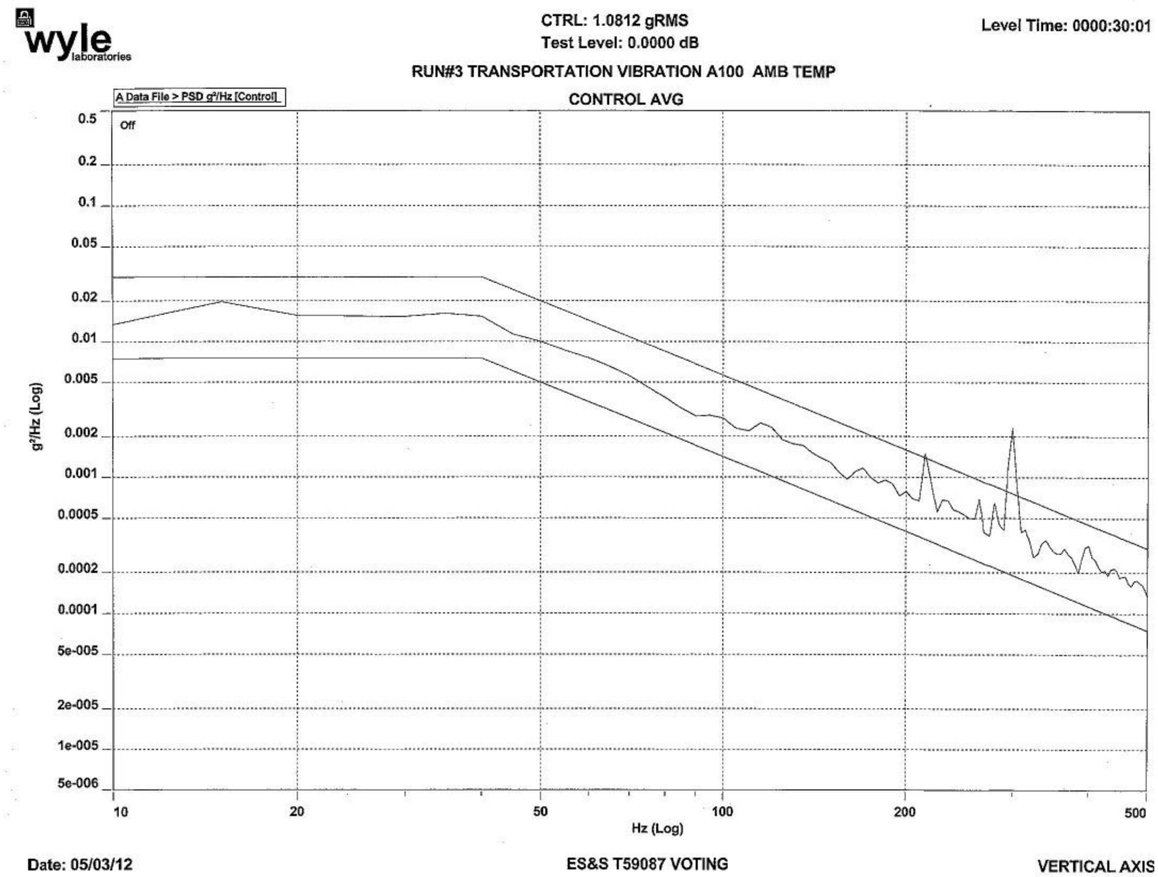
Date	Time	Axis	Temp (F)	SINUSOIDAL Freq. (cps)	SINUSOIDAL Disp. ("da)	SINUSOIDAL Accel. (±g)	RANDOM Freq. (cps)	RANDOM PSD (g2/Hz)	RANDOM Slope (dB/Oct)	TOTAL Accel. (grms)	Test Time (min:sec)	COMMENTS	NAME
												TEST REQUIREMENT	
5/5/12	1113	Trans	Amb				10.0	0.00013				Run 12 Random Vibration	JA
							20.0	0.00065				UUT: A 200 Trans Axis	
							30.0	0.00065					
							78.0	0.00002					
							79.0	0.00019					
							120.0	0.00019					
							500.0	0.00001		0.2043	30:00		

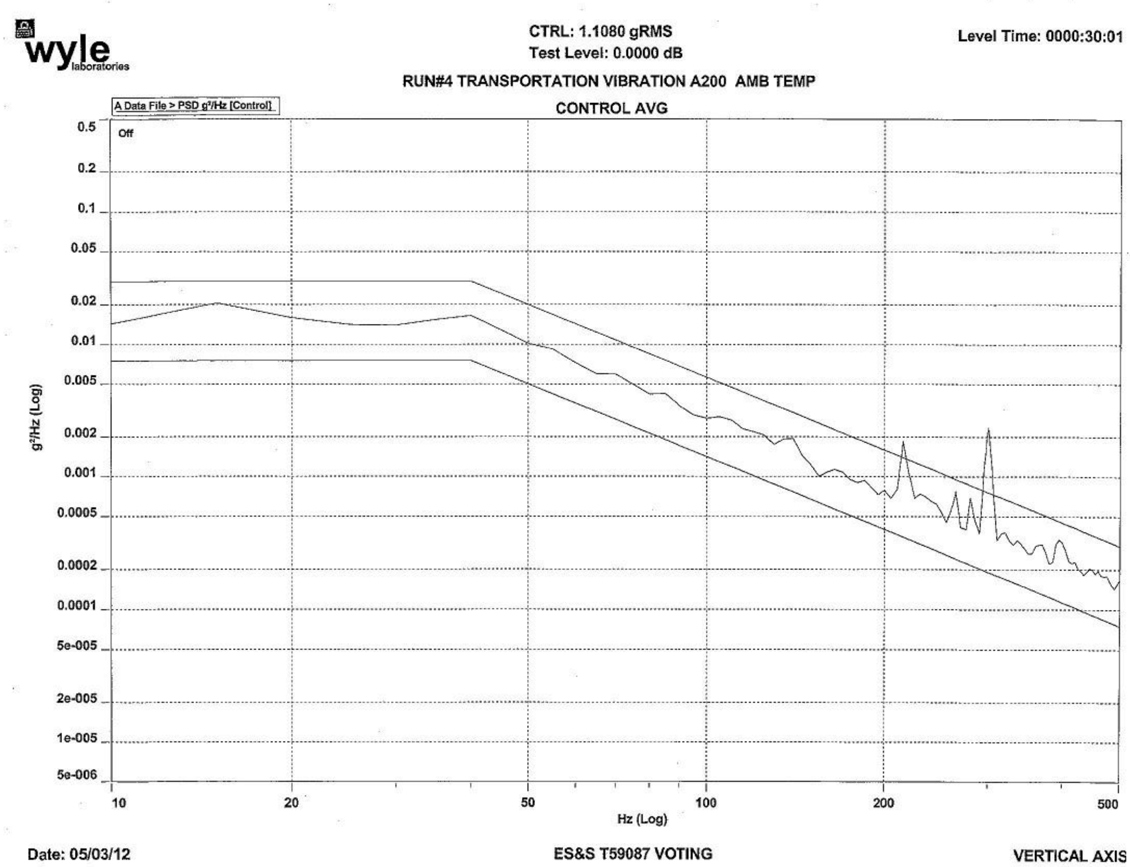
Job No. T59087
Report No.
Date
Page No. 6 of 6

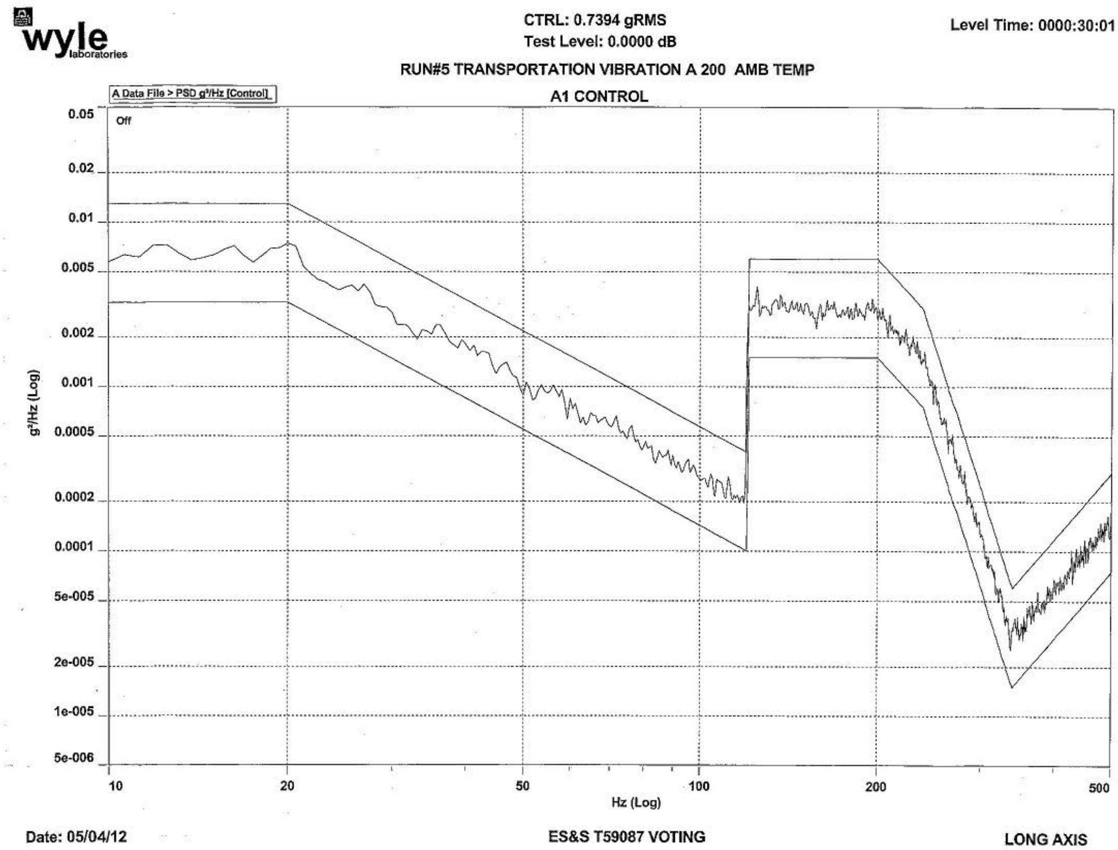
WH-1028 Signed 5/7/12 Approved 5/7/12

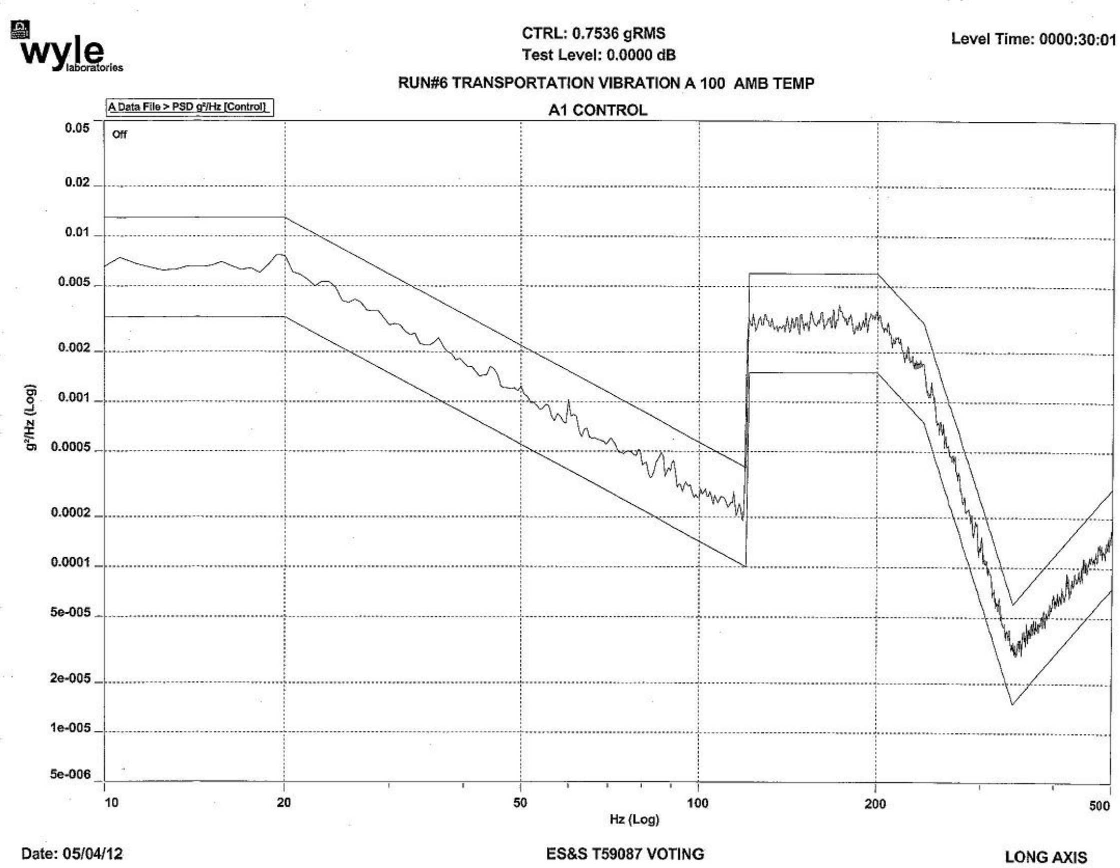

wyle laboratories
CTRL: 1.0738 gRMS
Test Level: 0.0000 dB
Level Time: 0000:30:01
RUN#1 TRANSPORTATION VIBRATION METAL BOX AMB TEMP
CONTROL AVG
A PSD g²/Hz [Control]
Off
g²/Hz (Log)
0.5
0.2
0.1
0.05
0.02
0.01
0.005
0.002
0.001
0.0005
0.0002
0.0001
5e-005
2e-005
1e-005
5e-006
10
20
50
100
200
500
Hz (Log)
Date: 05/03/12
ES&S T59087 VOTING
VERTICAL AXIS

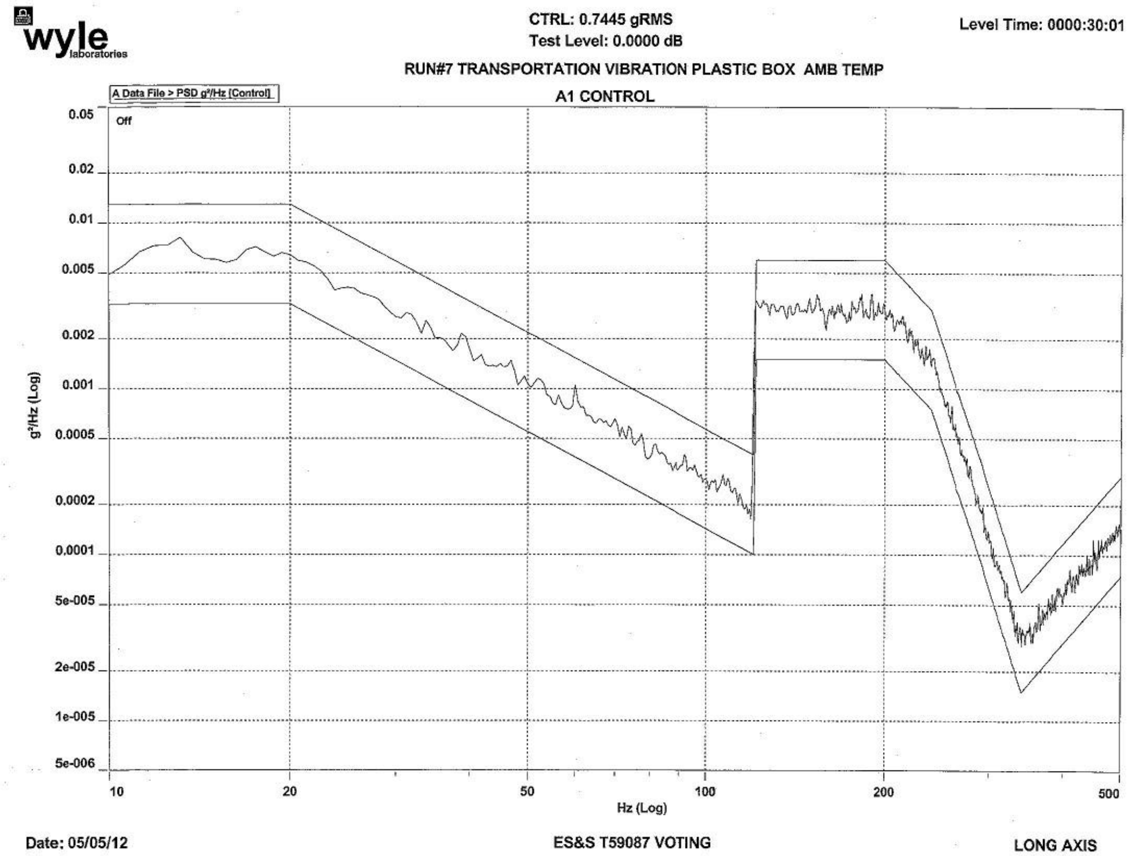

wyle laboratories
CTRL: 1.0599 gRMS
Test Level: 0.0000 dB
Level Time: 0000:30:01
RUN#2 TRANSPORTATION VIBRATION PLASTIC BOX AMB TEMP
CONTROL AVG
A PSD g²/Hz [Control]
Off
g²/Hz (Log)
0.5
0.2
0.1
0.05
0.02
0.01
0.005
0.002
0.001
0.0005
0.0002
0.0001
5e-005
2e-005
1e-005
5e-006
10
20
50
100
200
500
Hz (Log)
Date: 05/03/12
ES&S T59087 VOTING
VERTICAL AXIS

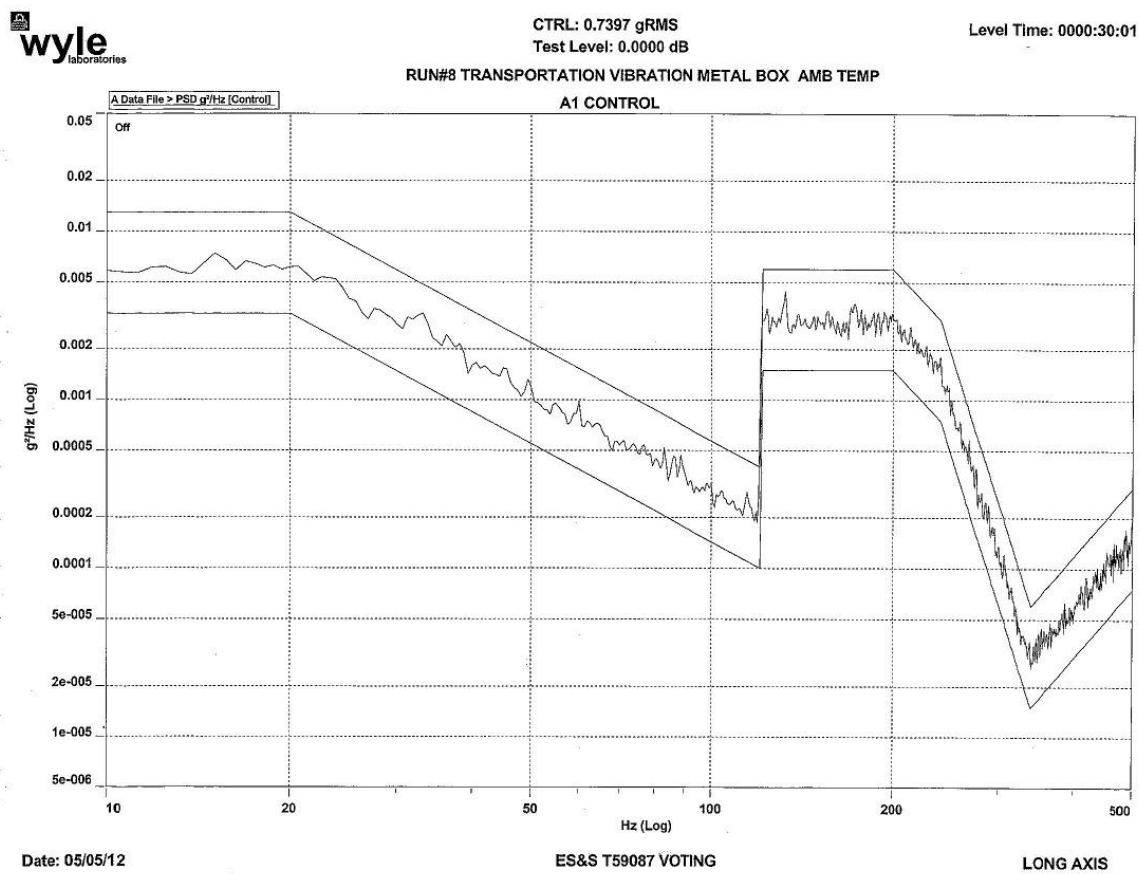

wyle laboratories
CTRL: 1.0812 gRMS
Test Level: 0.0000 dB
Level Time: 0000:30:01
RUN#3 TRANSPORTATION VIBRATION A100 AMB TEMP
CONTROL AVG
A Data File > PSD g²/Hz [Control]
Off
g²/Hz (Log)
Hz (Log)
Date: 05/03/12
ES&S T59087 VOTING
VERTICAL AXIS

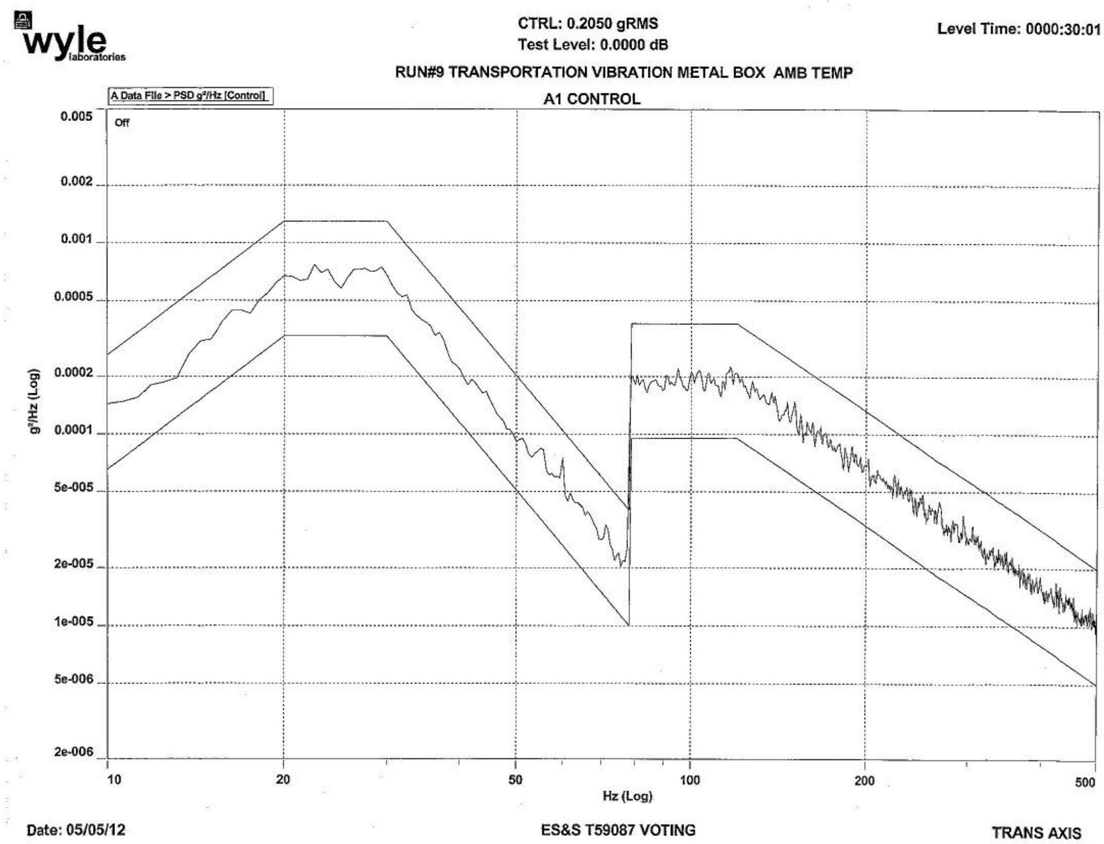

wyle laboratories
CTRL: 1.1080 gRMS
Test Level: 0.0000 dB
Level Time: 0000:30:01
RUN#4 TRANSPORTATION VIBRATION A200 AMB TEMP
CONTROL AVG
A Data File > PSD g²/Hz [Control]
Off
g²/Hz (Log)
Hz (Log)
Date: 05/03/12
ES&S T59087 VOTING
VERTICAL AXIS

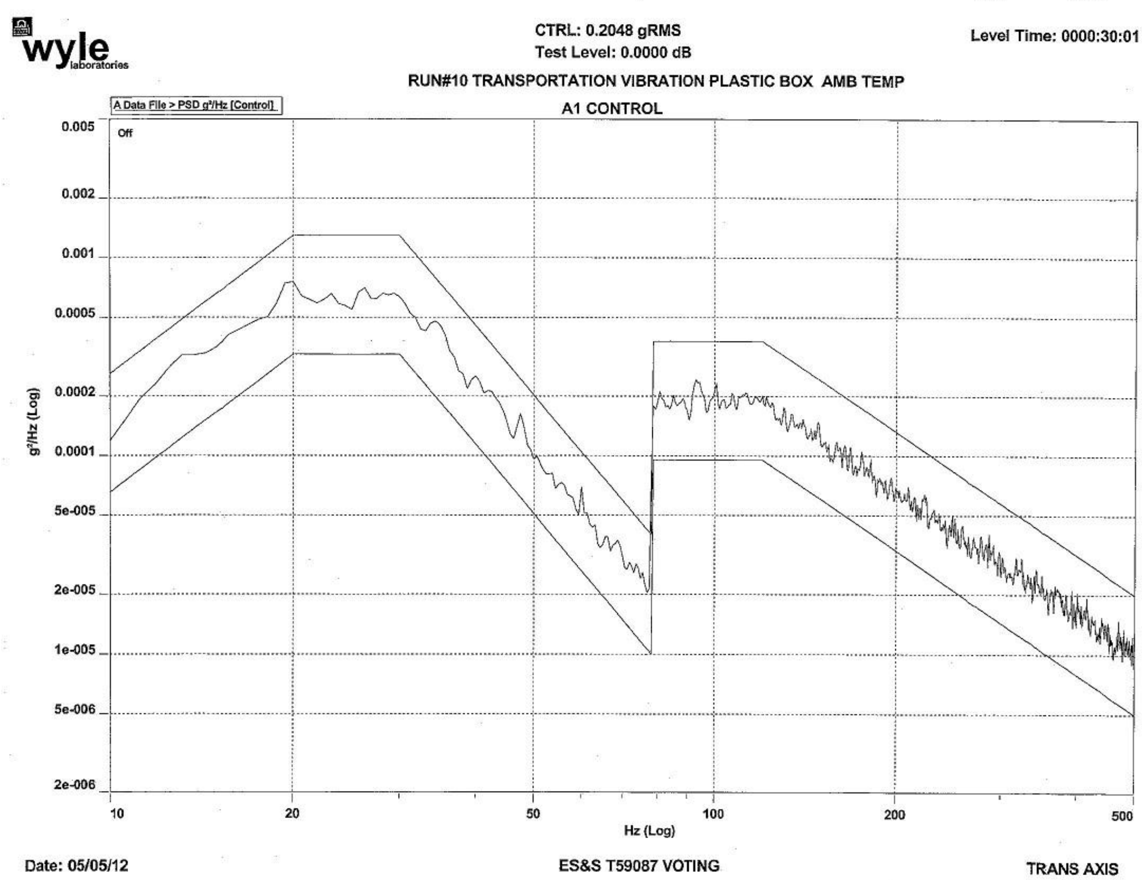

wyle laboratories
CTRL: 0.7394 gRMS
Test Level: 0.0000 dB
Level Time: 0000:30:01
RUN#5 TRANSPORTATION VIBRATION A 200 AMB TEMP
A Data File > PSD g²/Hz [Control]
A1 CONTROL
Off
g²/Hz (Log)
0.05
0.02
0.01
0.005
0.002
0.001
0.0005
0.0002
0.0001
5e-005
2e-005
1e-005
5e-006
10
20
50
100
200
500
Hz (Log)
Date: 05/04/12
ES&S T59087 VOTING
LONG AXIS

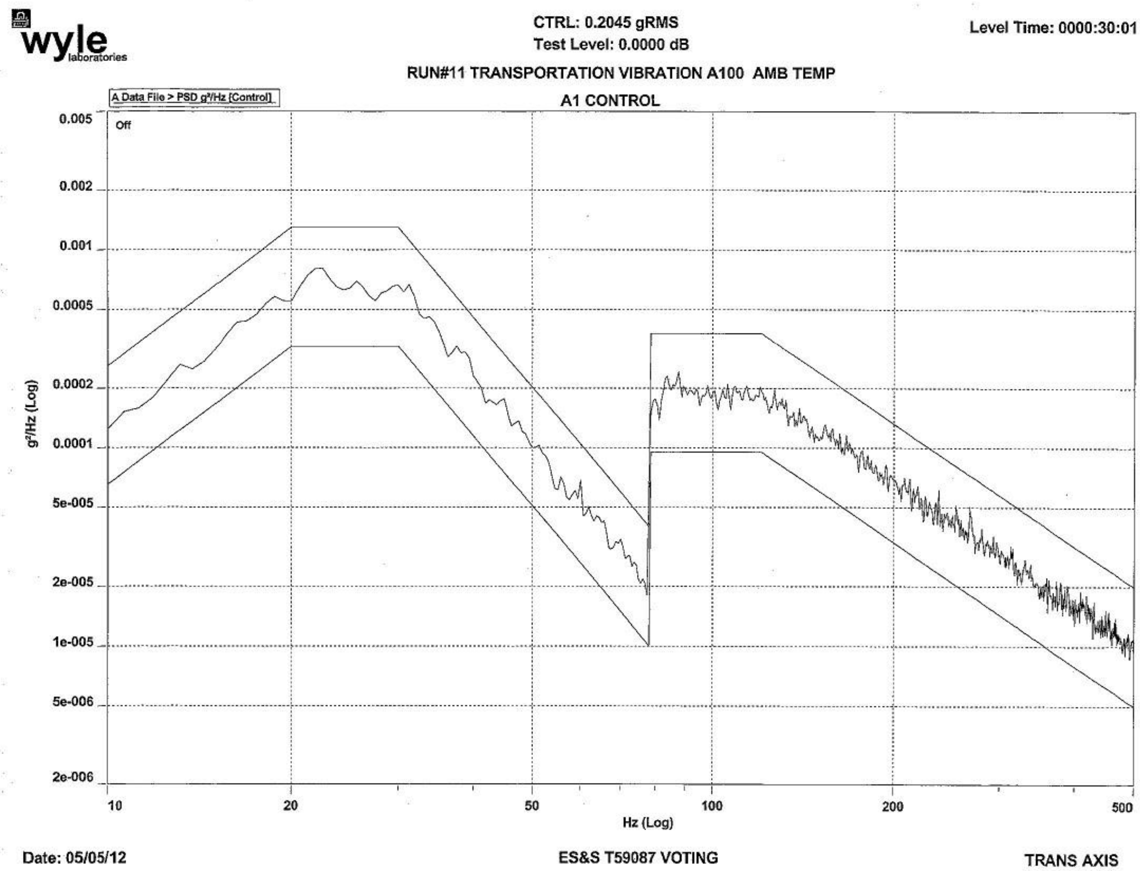

wyle laboratories
CTRL: 0.7536 gRMS
Test Level: 0.0000 dB
Level Time: 0000:30:01
RUN#6 TRANSPORTATION VIBRATION A 100 AMB TEMP
A Data File > PSD g²/Hz [Control]
A1 CONTROL
Off
g²/Hz (Log)
0.05
0.02
0.01
0.005
0.002
0.001
0.0005
0.0002
0.0001
5e-005
2e-005
1e-005
5e-006
10
20
50
100
200
500
Hz (Log)
Date: 05/04/12
ES&S T59087 VOTING
LONG AXIS

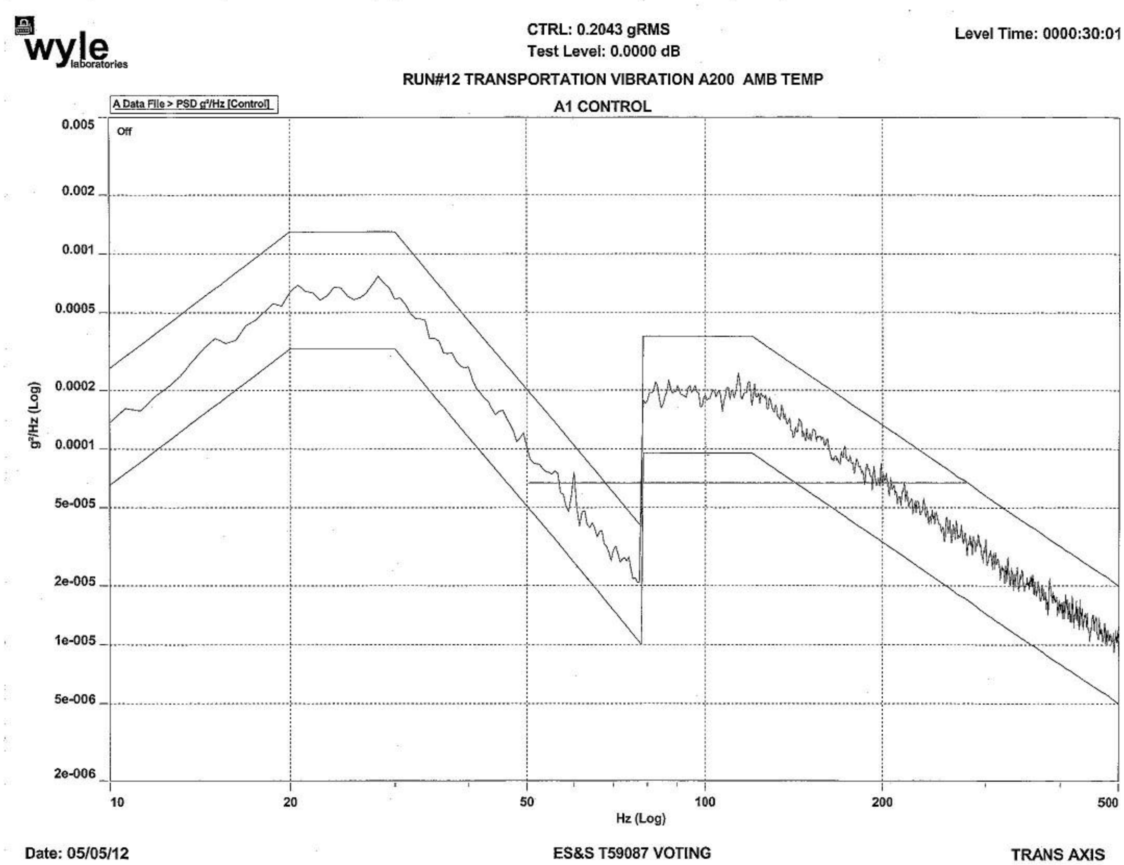

wyle laboratories
CTRL: 0.7445 gRMS
Test Level: 0.0000 dB
Level Time: 0000:30:01
RUN#7 TRANSPORTATION VIBRATION PLASTIC BOX AMB TEMP
A1 CONTROL
A Data File > PSD g²/Hz [Control]
Off
0.05
0.02
0.01
0.005
0.002
0.001
0.0005
0.0002
0.0001
5e-005
2e-005
1e-005
5e-006
g²/Hz (Log)
10
20
50
100
200
500
Hz (Log)
Date: 05/05/12
ES&S T59087 VOTING
LONG AXIS


wyle laboratories
CTRL: 0.7397 gRMS
Test Level: 0.0000 dB
Level Time: 0000:30:01
RUN#8 TRANSPORTATION VIBRATION METAL BOX AMB TEMP
A1 CONTROL
A Data File > PSD g²/Hz [Control]
Off
0.05
0.02
0.01
0.005
0.002
0.001
0.0005
0.0002
0.0001
5e-005
2e-005
1e-005
5e-006
g²/Hz (Log)
10
20
50
100
200
500
Hz (Log)
Date: 05/05/12
ES&S T59087 VOTING
LONG AXIS


wyle laboratories
CTRL: 0.2050 gRMS
Test Level: 0.0000 dB
Level Time: 0000:30:01
RUN#9 TRANSPORTATION VIBRATION METAL BOX AMB TEMP
A1 CONTROL
A Data File > PSD g²/Hz [Control]
Off
g²/Hz (Log)
0.005
0.002
0.001
0.0005
0.0002
0.0001
5e-005
2e-005
1e-005
5e-006
2e-006
10
20
50
100
200
500
Hz (Log)
Date: 05/05/12
ES&S T59087 VOTING
TRANS AXIS


wyle laboratories
CTRL: 0.2048 gRMS
Test Level: 0.0000 dB
Level Time: 0000:30:01
RUN#10 TRANSPORTATION VIBRATION PLASTIC BOX AMB TEMP
A1 CONTROL
A Data File > PSD g²/Hz [Control]
Off
g²/Hz (Log)
0.005
0.002
0.001
0.0005
0.0002
0.0001
5e-005
2e-005
1e-005
5e-006
2e-006
10
20
50
100
200
500
Hz (Log)
Date: 05/05/12
ES&S T59087 VOTING
TRANS AXIS


wyle laboratories
CTRL: 0.2045 gRMS
Test Level: 0.0000 dB
Level Time: 0000:30:01
RUN#11 TRANSPORTATION VIBRATION A100 AMB TEMP
A Data File > PSD g²/Hz [Control]
A1 CONTROL
Off
0.005
0.002
0.001
0.0005
0.0002
0.0001
5e-005
2e-005
1e-005
5e-006
2e-006
g²/Hz (Log)
10
20
50
100
200
500
Hz (Log)
Date: 05/05/12
ES&S T59087 VOTING
TRANS AXIS


wyle laboratories
CTRL: 0.2043 gRMS
Test Level: 0.0000 dB
Level Time: 0000:30:01
RUN#12 TRANSPORTATION VIBRATION A200 AMB TEMP
A Data File > PSD g²/Hz [Control]
A1 CONTROL
Off
0.005
0.002
0.001
0.0005
0.0002
0.0001
5e-005
2e-005
1e-005
5e-006
2e-006
g²/Hz (Log)
10
20
50
100
200
500
Hz (Log)
Date: 05/05/12
ES&S T59087 VOTING
TRANS AXIS

VIBRATION TEST DATA SHEET

Customer: ES&S | Spec.: MIL-STD-810D | Specimen: DS200w/Metal Box, DS200w/Plastic Box,

Job No.: T59087 | Method: 514.3-1, -2 ,-3 | Part No.: Many | Specimen Temp.: Ambient

GSI Yes [ ] No [X] | Procedure: 2005 VVSG 4.63 | S/N: Many | Photo Yes [X] No [ ]

Test Title:

Date	Time	Axis	Temp (F)	SINUSOIDAL Freq. (cps)	SINUSOIDAL Disp. ("da)	SINUSOIDAL Accel. (±g)	RANDOM Freq. (cps)	RANDOM PSD (g2/Hz)	RANDOM Slope (dB/Oct)	TOTAL Accel. (grms)	Test Time (min:sec)	COMMENTS	NAME
												TEST REQUIREMENT	
5/16/12	1001	Trans	Amb				10.0	0.00013				Run 13 Random Vibration	JA
							20.0	0.00065				UUT: Metal Box Trans Axis	
							30.0	0.00065					
							78.0	0.00002					
							79.0	0.00019					
							120.0	0.00019					
							500.0	0.00001		0.2062	30:00		

Job No. T59087
Report No.
Date
Page No. 1 of 3

WH-1028A

Signed 5/17/12 Approved 5/17/12

VIBRATION TEST DATA SHEET

I D No.

Date	Time	Axis	Temp (F)	SINUSOIDAL Freq. (cps)	SINUSOIDAL Disp. ("da)	SINUSOIDAL Accel. (±g)	RANDOM Freq. (cps)	RANDOM PSD (g2/Hz)	RANDOM Slope (dB/Oct)	TOTAL Accel. (grms)	Test Time (min:sec)	COMMENTS	NAME
												TEST REQUIREMENT	
5/16/12	1243	Long	Amb				10.0	0.0065				Run 14 Random Vibration	JA
							20.0	0.0065				UUT: Metal Box Long Axis	
							120.0	0.0002					
							121.0	0.003					
							200.0	0.003					
							240.0	0.0015					
							340.0	0.00003					
							500.0	0.00015		0.7488	30:00		
5/16/12	1409	Vert	Amb				10.0	0.015				Run 15 Random Vibration	JA
							40.0	0.015				UUT: Metal Box Vert Axis	
							500.0	0.00015		1.0567	30:00		
5/16/12	1516	Vert	Amb				10.0	0.015				Run 16 Random Vibration	JA
							40.0	0.015				UUT: Plastic Box Vert Axis	
							500.0	0.00015		1.0552	30:00		

Job No. T59087
Report No.
Date
Page No. 2 of 3

WH-1028

Signed 5/17/12 Approved 5/17/12

VIBRATION TEST DATA SHEET

I D No.

Date	Time	Axis	Temp (F)	SINUSOIDAL Freq. (cps)	SINUSOIDAL Disp. ("da)	SINUSOIDAL Accel. (±g)	RANDOM Freq. (cps)	RANDOM PSD (g2/Hz)	RANDOM Slope (dB/Oct)	TOTAL Accel. (grms)	Test Time (min:sec)	COMMENTS	NAME
												TEST REQUIREMENT	
5/17/12	0832	Trans	Amb				10.0	0.00013				Run 17 Random Vibration	JR
							20.0	0.00065				UUT: Plastic Box Trans Axis	
							30.0	0.00065					
							78.0	0.00002					
							79.0	0.00019					
							120.0	0.00019					
							500.0	0.00001		0.2045	30:00		
5/17/12	0954	Long	Amb				10.0	0.0065				Run 18 Random Vibration	JR
							20.0	0.0065				UUT: Plastic Box Long Axis	
							120.0	0.0002					
							121.0	0.003					
							200.0	0.003					
							240.0	0.0015					
							340.0	0.00003					
							500.0	0.00015		0.7507	30:00		

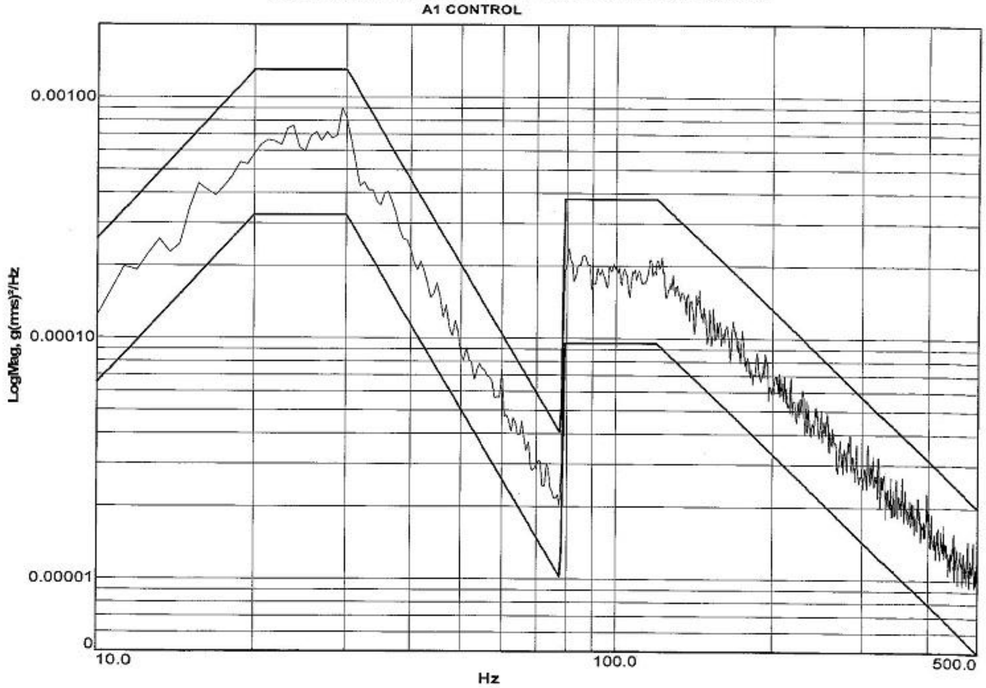
Job No. T59087
Report No.
Date
Page No. 3 of 3

WH-1028 Signed Jon Rege 5/17/12 Approved Steph H 5/17/12

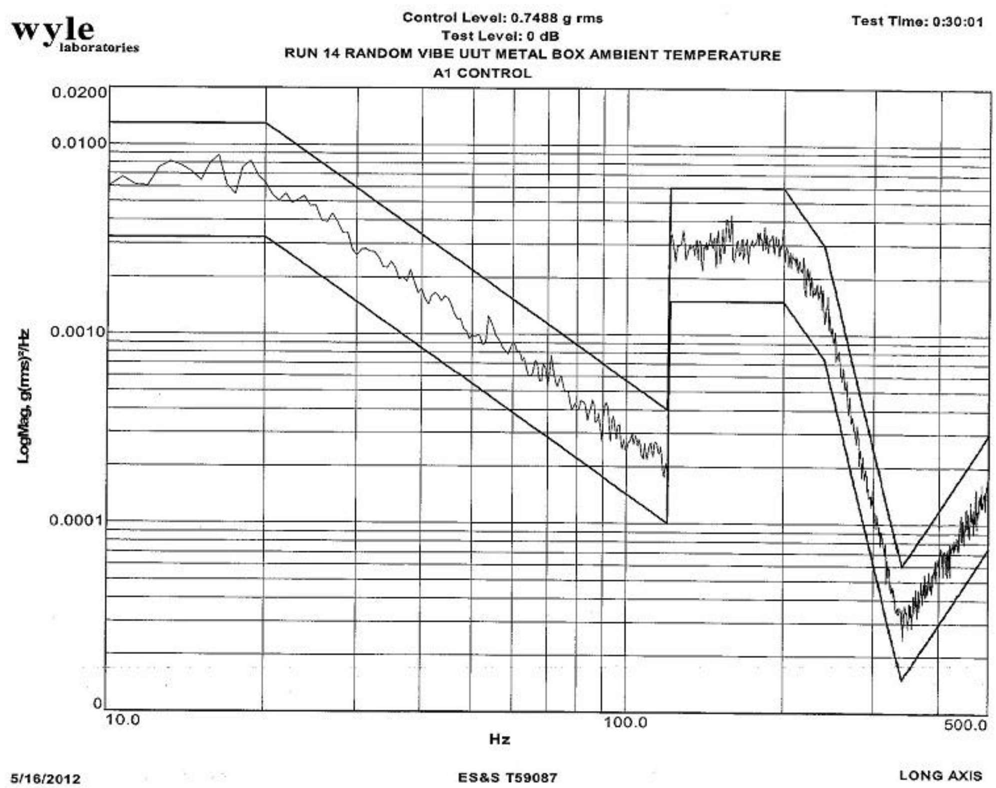
wyle laboratories

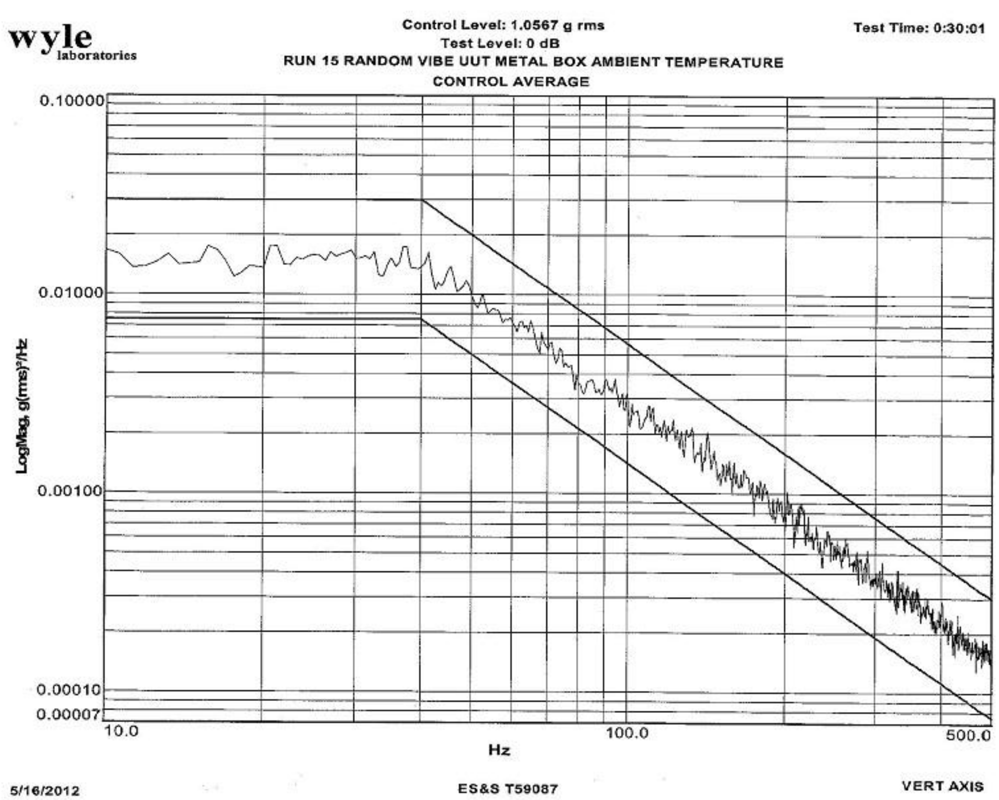
Control Level: 0.2063 g rms
Test Level: 0 dB
RUN 13 RANDOM VIBE UUT METAL BOX AMBIENT TEMPERATURE
A1 CONTROL

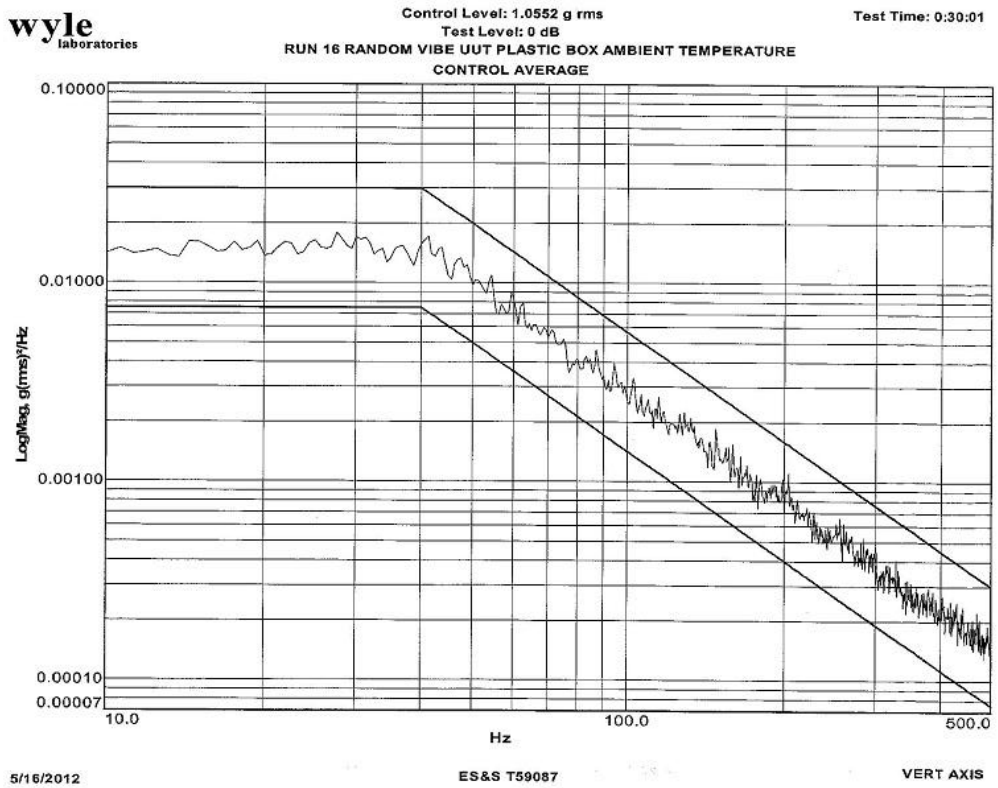
Test Time: 0:30:01

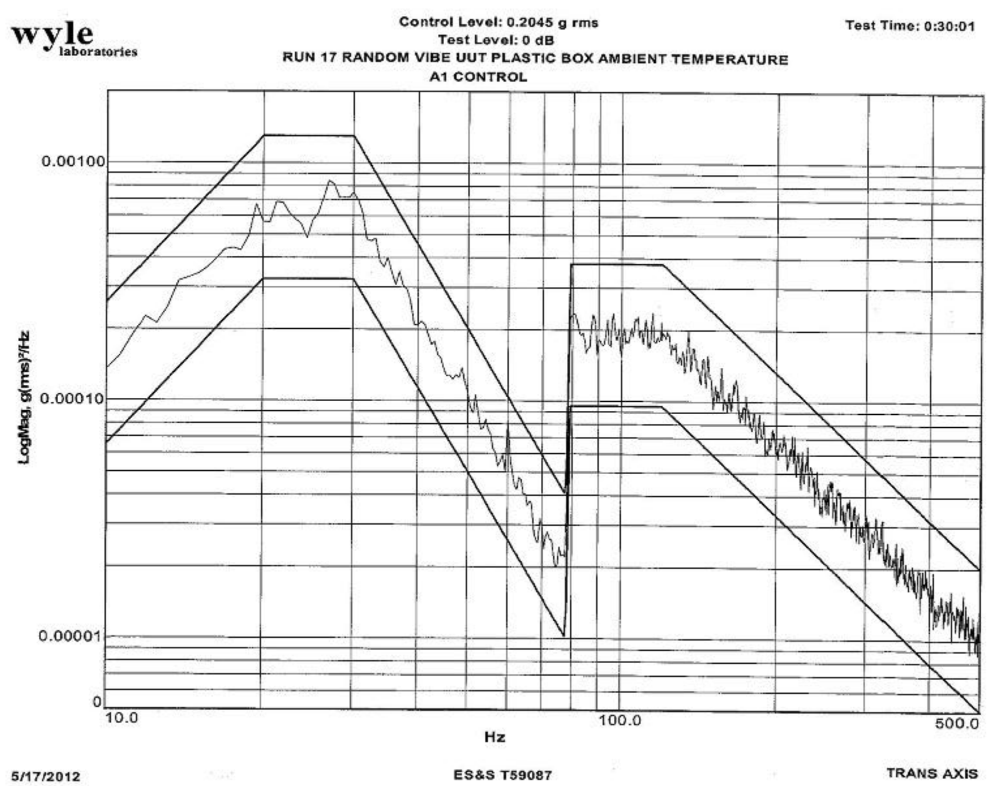


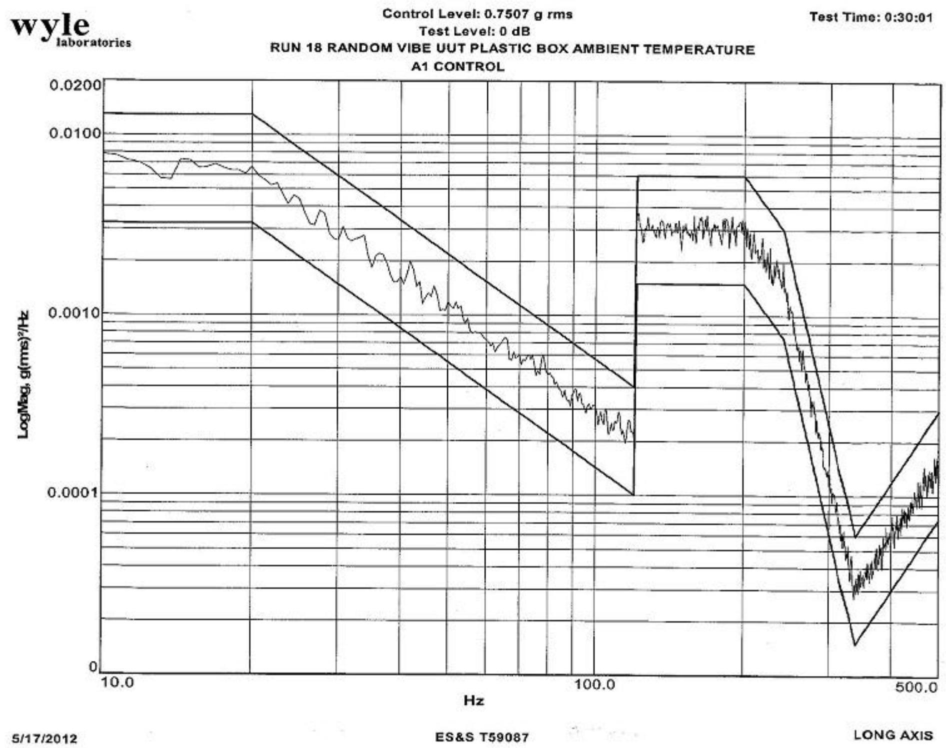
5/16/2012 ES&S T59087 TRANS AXIS


wyle laboratories
Control Level: 0.7488 g rms
Test Level: 0 dB
RUN 14 RANDOM VIBE UUT METAL BOX AMBIENT TEMPERATURE
A1 CONTROL
Test Time: 0:30:01
LogMag, g(rms)²/Hz
0.0200
0.0100
0.0010
0.0001
0
10.0
100.0
500.0
Hz
5/16/2012
ES&S T59087
LONG AXIS


wyle laboratories
Control Level: 1.0567 g rms
Test Level: 0 dB
RUN 15 RANDOM VIBE UUT METAL BOX AMBIENT TEMPERATURE
CONTROL AVERAGE
Test Time: 0:30:01
LogMag, g(rms)²/Hz
0.10000
0.01000
0.00100
0.00010
0.00007
10.0
100.0
500.0
Hz
5/16/2012
ES&S T59087
VERT AXIS


wyle laboratories
Control Level: 1.0552 g rms
Test Level: 0 dB
RUN 16 RANDOM VIBE UUT PLASTIC BOX AMBIENT TEMPERATURE
CONTROL AVERAGE
Test Time: 0:30:01
LogMag, g(rms)²/Hz
0.10000
0.01000
0.00100
0.00010
0.00007
10.0
100.0
500.0
Hz
5/16/2012
ES&S T59087
VERT AXIS


wyle laboratories
Control Level: 0.2045 g rms
Test Level: 0 dB
RUN 17 RANDOM VIBE UUT PLASTIC BOX AMBIENT TEMPERATURE
A1 CONTROL
Test Time: 0:30:01
LogMag, g(rms)²/Hz
0.00100
0.00010
0.00001
0
10.0
100.0
500.0
Hz
5/17/2012
ES&S T59087
TRANS AXIS



VIBRATION TEST DATA SHEET

Customer ES&S Spec. Mil-STD-810D Specimen DS200

Job No. T59087.01 Method 514.3-1, -2, -3 Part No. Specimen Temp. Ambient

GSI Yes [ ] No [X] Procedure 2005 VVSG S/N Photo Yes [X] No [ ]

Test Title

Date	Time	Axis	Temp (F)	Sinusoidal Freq. (cps)	Sinusoidal Disp. ("da)	Sinusoidal Accel. (±g)	Random Freq. (cps)	Random PSD (g2/Hz)	Random Slope (dB/Oct)	Total Accel. (grms)	Test Time (min)	Comments	Name
												TEST REQUIREMENT	
05/24/12	10:20	Long	Amb				10-20	.00550				Run#1 Transportation Vibration	
							120	.00020				DS200	Dm
							121-200	.00300					
							240	.00150					
							340	.00003					
							500	.00015		.745	30		
05/24/12	11:30	Trans	Amb				10	.00013				Run#2 Transportation Vibration	
							20-30	.00065				DS200	Dm
							78	.00002					
							79-120	.00019					
							500	.00001		.204	30		

Job No. T59087.01
Report No.
Date 05/25/12
Page 1 of 2

WH-1028A Signed D. McNelly 5/24/12 Approved Stephen 5/24/12

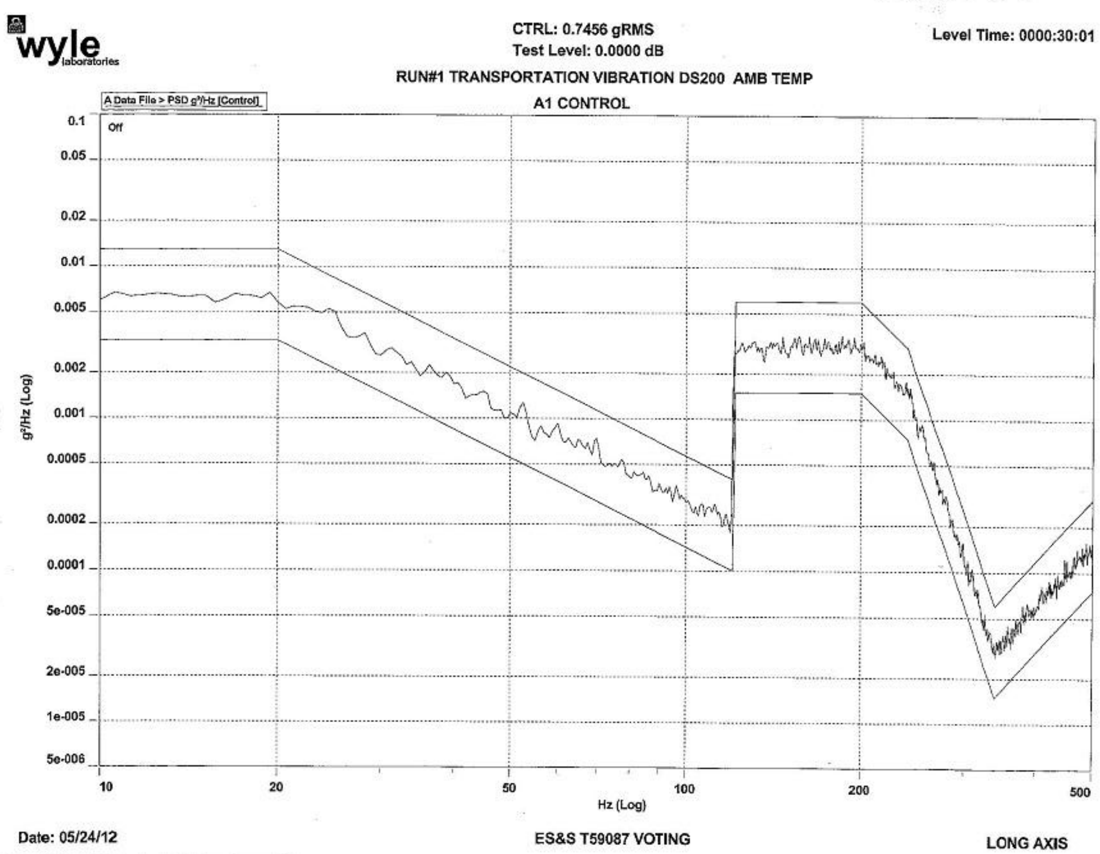
VIBRATION TEST DATA SHEET

I D No. ______

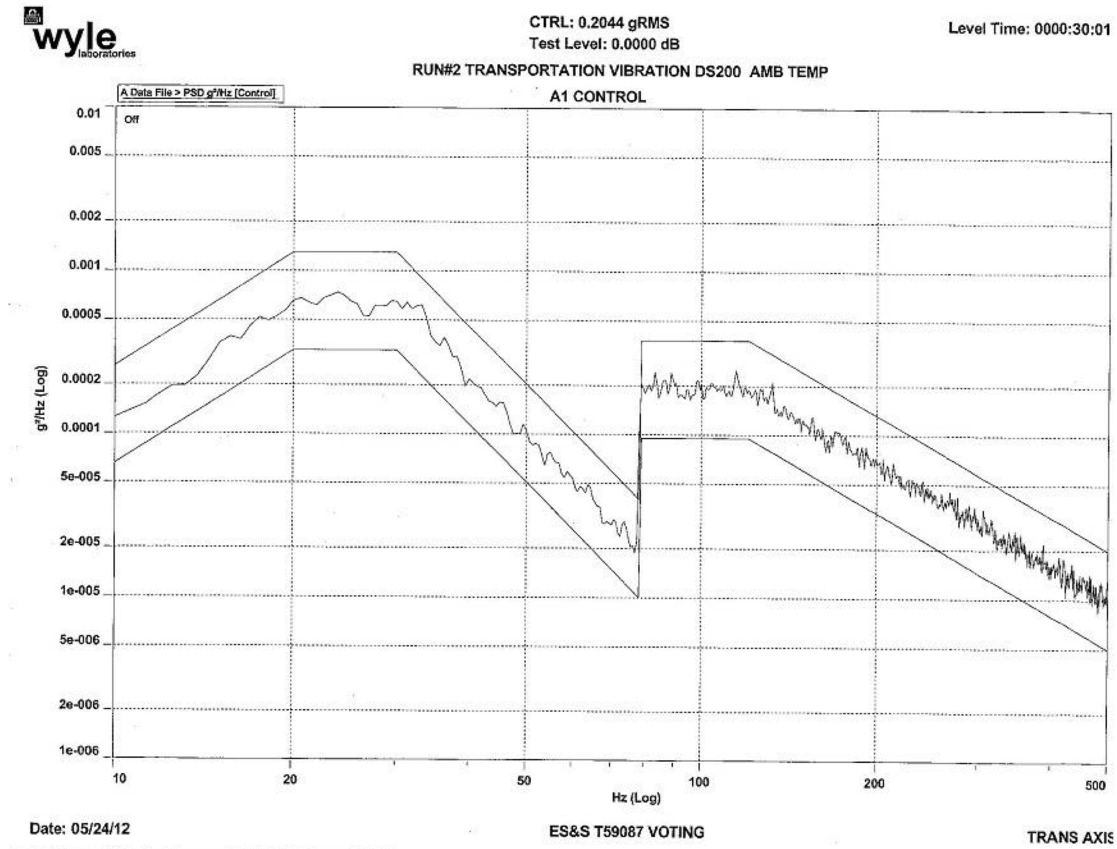
Date	Time	Axis	Temp (F)	SINUSOIDAL Freq. (cps)	SINUSOIDAL Disp. ("da)	SINUSOIDAL Accel. (±g)	RANDOM Freq. (cps)	RANDOM PSD (g2/Hz)	RANDOM Slope (dB/Oct)	TOTAL Accel. (grms)	Test Time (min)	COMMENTS	NAME
												TEST REQUIREMENT	
05/24/12	13:23	Vert	Amb				10-40	.01500				Run#3 Transportation Vibration	
							500	.00015		1.05	30	DS200	Dm

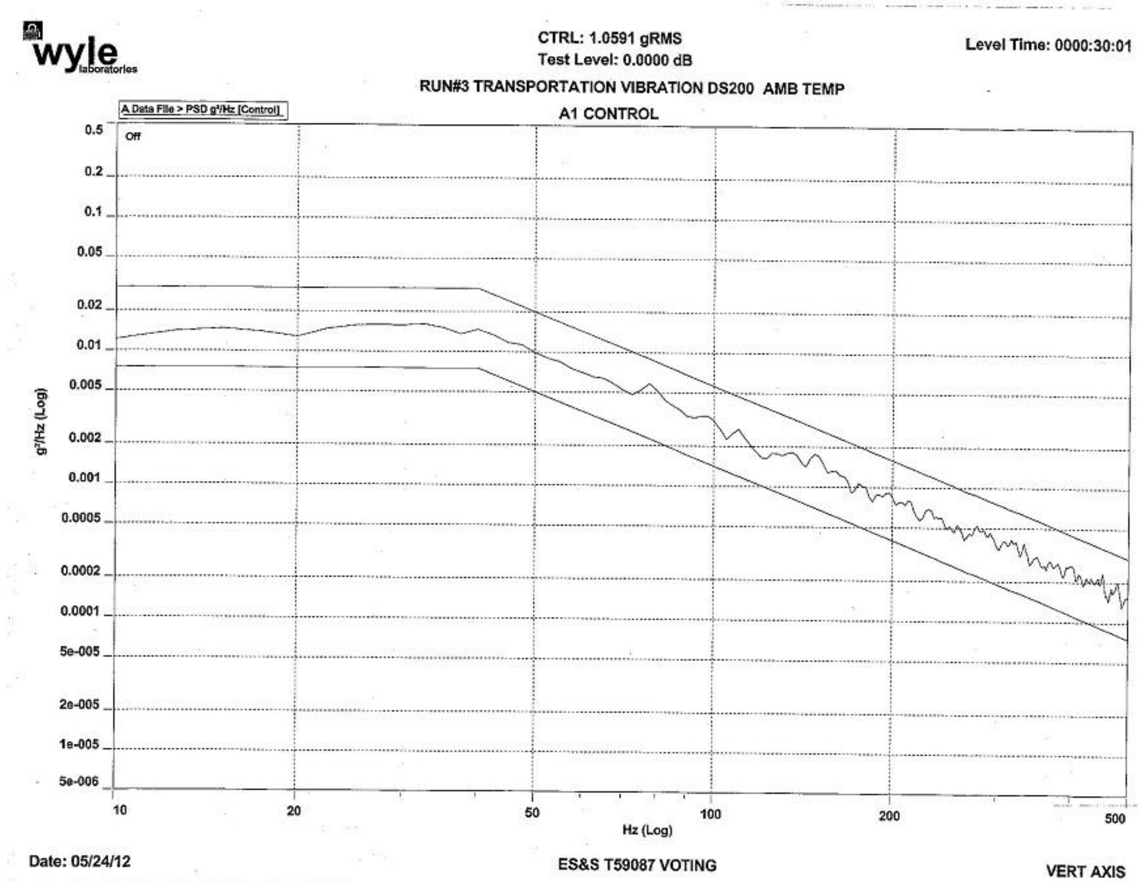
Job No. T59087.01
Report No. ______
Date 05/25/12
Page 1 of 2

WH-1028 Signed D. J. Mally 5/24/12 Approved Steph ___ 5/24/12



Date: 05/24/12 ES&S T59087 VOTING LONG AXIS


wyle laboratories
CTRL: 0.2044 gRMS
Test Level: 0.0000 dB
Level Time: 0000:30:01
RUN#2 TRANSPORTATION VIBRATION DS200 AMB TEMP
A1 CONTROL
A Data File > PSD g²/Hz [Control]
Off
g²/Hz (Log)
Hz (Log)
Date: 05/24/12
ES&S T59087 VOTING
TRANS AXIS


wyle laboratories
CTRL: 1.0591 gRMS
Test Level: 0.0000 dB
Level Time: 0000:30:01
RUN#3 TRANSPORTATION VIBRATION DS200 AMB TEMP
A1 CONTROL
A Data File > PSD g²/Hz [Control]
Off
g²/Hz (Log)
Hz (Log)
Date: 05/24/12
ES&S T59087 VOTING
VERT AXIS

VIBRATION TEST DATA SHEET

Customer **ES&S** Spec. Mil-STD-810D Specimen DS200

Job No. T59087.01 Method 514.3-1, -2, -3 Part No. ______ Specimen Temp. **Ambient**

GSI Yes [ ] No [X] Procedure 2005 VVSG S/N ______ Photo Yes [X] No [ ]

Test Title

Date	Time	Axis	Temp (F)	SINUSOIDAL Freq. (cps)	SINUSOIDAL Disp. ("da)	SINUSOIDAL Accel. (±g)	RANDOM Freq. (cps)	RANDOM PSD (g2/Hz)	RANDOM Slope (dB/Oct)	TOTAL Accel. (grms)	Test Time (min)	COMMENTS	NAME
												TEST REQUIREMENT	
05/25/12	08:37	Vert	Amb				10-40	.01500				Run#1 Transportation Vibration	
							500	.00015		1.05	30	DS200	Dm
05/25/12	09:59	Trans	Amb				10	.00013				Run#2 Transportation Vibration	
							20-30	.00065				DS200	Dm
							78	.00002					
							79-120	.00019					
							500	.00001		.204	30		
05/25/12	11:00	Long	Amb				10-20	.00650				Run#3 Transportation Vibration	
							120	.00020				DS200 Dm	
							121-200	.00300					
							240	.00150					
							340	.00003					

Job No. T59087.01
Report No. ______
Date 05/25/12
Page 1 of 2

WH-1028A

Signed D. McNally 5/25/12 Approved Stephen [illegible] 5/25/12

INSTRUMENTATION EQUIPMENT SHEET

DATE: 6/1/2012 JOB NUMBER: T59087 TYPE OF TEST TEMP-HUM

TECHNICIAN: T.J.PARCUS CUSTOMER: ES&S VOTING SYSTEMS TEST AREA: CH 101

No.	Description	Manufacturer	Model	Serial #	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
1	HUMIDITY\TEMP	VAISALA	HMT315	H0430013	01501	MULTI	MFG	2/3/2012	8/3/2012
2	TEMP CONTR	THERMOTRON	7800	983044	03350	TYPE T	±1°C	2/27/2012	2/27/2013
3	TEMP RECORDER	HONEYWELL	DR45AT	0433Y464009	110441	-200 to 600 F TY	MFG	2/27/2012	2/27/2013

This is to certify that the above instruments were calibrated using state-of-the-art techniques with standards whose calibration is traceable to the National Institute of Standards and Technology.

INSTRUMENTATION: Joy Pam 6-1-12 CHECKED & RECEIVED BY: Ryan D Clark 6/1/12

Q.A.: Patrick 6/1/12

WH-1029A,REV,APR'99

Page 1 of 1

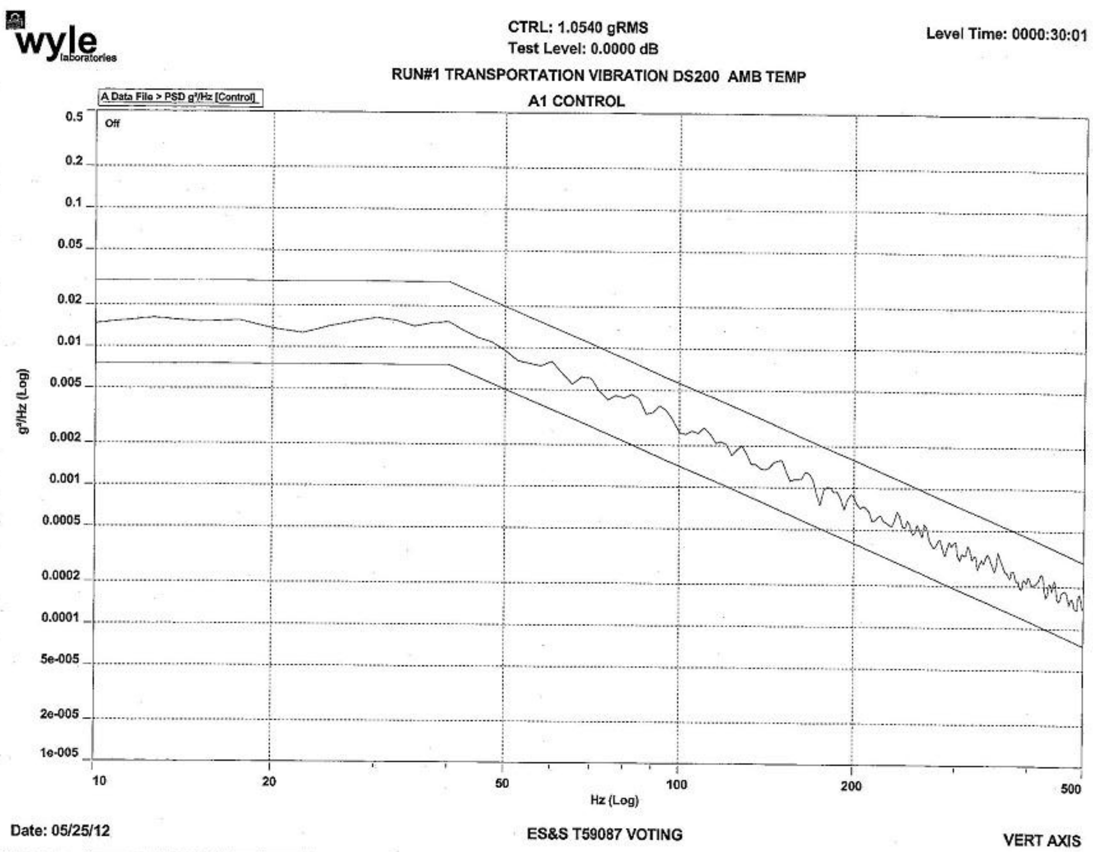
VIBRATION TEST DATA SHEET

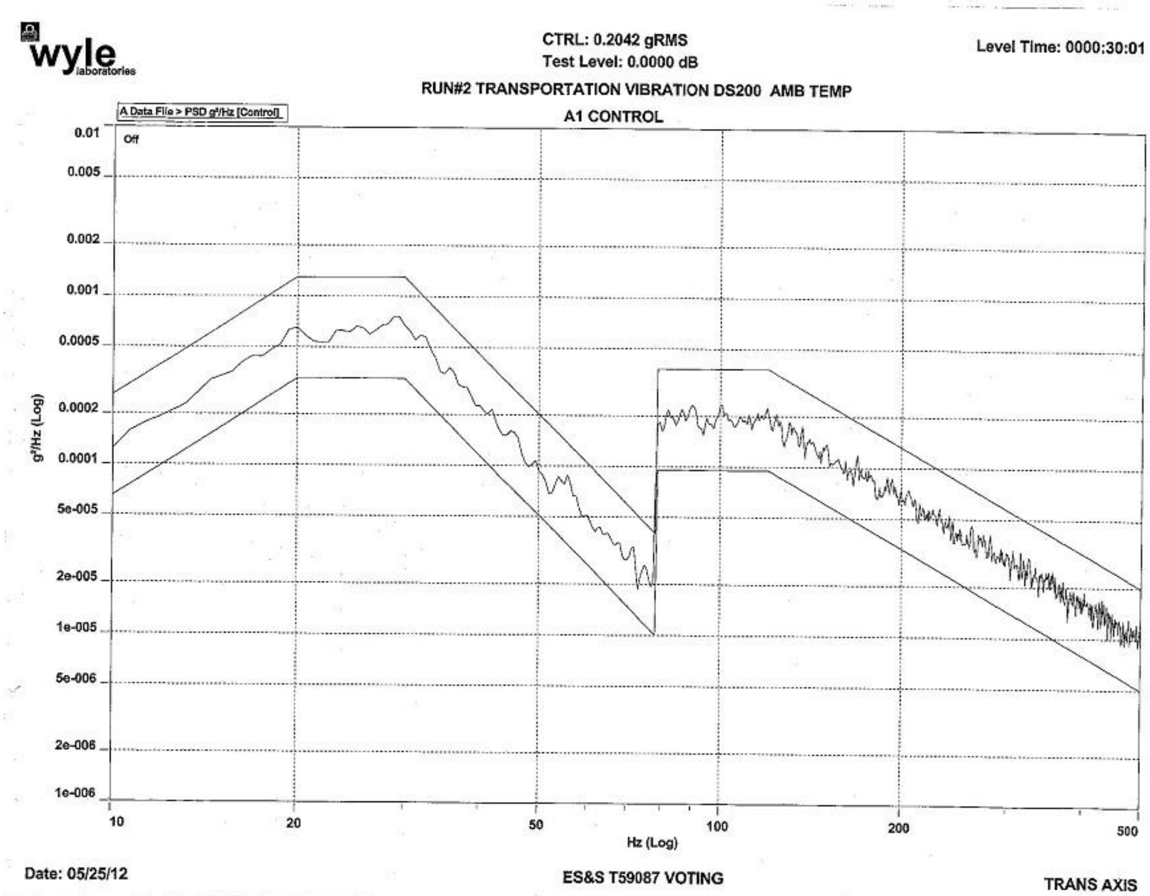
I D No. ______

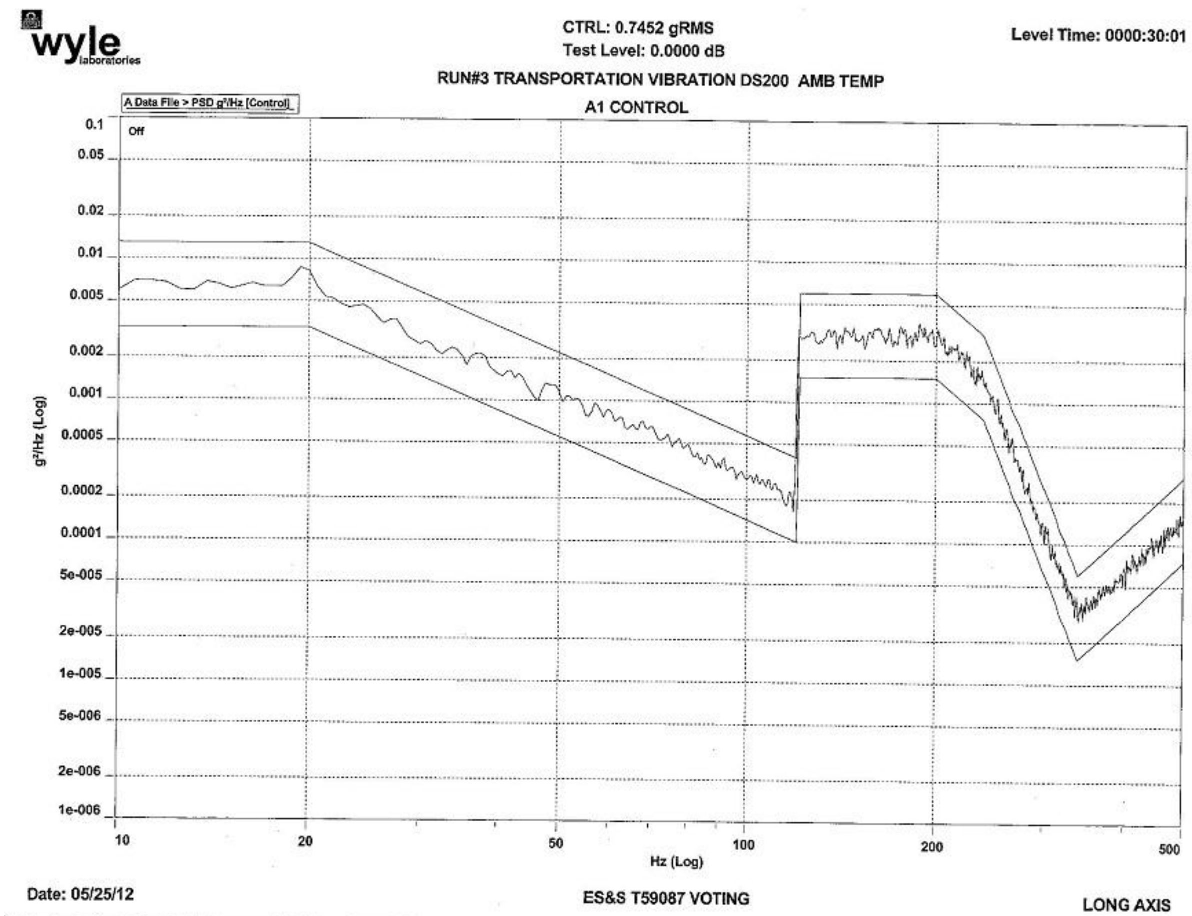
Date	Time	Axis	Temp (F)	SINUSOIDAL Freq. (cps)	SINUSOIDAL Disp. ("da)	SINUSOIDAL Accel. (±g)	RANDOM Freq. (cps)	RANDOM PSD (g2/Hz)	RANDOM Slope (dB/Oct)	TOTAL Accel. (grms)	Test Time (min)	COMMENTS	NAME
												TEST REQUIREMENT	
05/25/12							500	.00015		.745	30	Continue Run#3	Dm

Job No. T59087.01
Report No. ______
Date 05/25/12
Page 1 of 2

WH-1028 Signed D. McElz 5/25/12 Approved Steph V 5/25/12




wyle laboratories
CTRL: 0.2042 gRMS
Test Level: 0.0000 dB
Level Time: 0000:30:01
RUN#2 TRANSPORTATION VIBRATION DS200 AMB TEMP
A1 CONTROL
A Data File > PSD g²/Hz [Control]
Off
0.01
0.005
0.002
0.001
0.0005
0.0002
0.0001
5e-005
2e-005
1e-005
5e-006
2e-006
1e-006
g²/Hz (Log)
10
20
50
100
200
500
Hz (Log)
Date: 05/25/12
ES&S T59087 VOTING
TRANS AXIS


wyle laboratories
CTRL: 0.7452 gRMS
Test Level: 0.0000 dB
Level Time: 0000:30:01
RUN#3 TRANSPORTATION VIBRATION DS200 AMB TEMP
A1 CONTROL
A Data File > PSD g²/Hz [Control]
Off
0.1
0.05
0.02
0.01
0.005
0.002
0.001
0.0005
0.0002
0.0001
5e-005
2e-005
1e-005
5e-006
2e-006
1e-006
g²/Hz (Log)
10
20
50
100
200
500
Hz (Log)
Date: 05/25/12
ES&S T59087 VOTING
LONG AXIS

BENCH HANDLING TEST DATA

DROP TEST DATA SHEET

Customer ES&S Job No. T59087 Specimen AutoMARK A100

Spec. MIL-STD-810D Method 516.3 Procedure VI

Part No. ________ S/N ______ Specimen Temp. Amb Photo-Yes [X] No [ ]

Test Title Bench Handling DCMC-Yes [ ] No [X]

Date	Time	Temp	Drop Height	Side No	Comments	Initials
5/2/12	1043	Amb	4 inchs	1	Drop 1 UUT: A 100 Front	JA
5/2/12	1043	Amb	4 inchs	1	Drop 2 UUT: A 100 Front	
5/2/12	1043	Amb	4 inchs	1	Drop 3 UUT: A 100 Front	
5/2/12	1044	Amb	4 inchs	1	Drop 4 UUT: A 100 Front	
5/2/12	1044	Amb	4 inchs	1	Drop 5 UUT: A 100 Front	
5/2/12	1044	Amb	4 inchs	1	Drop 6 UUT: A 100 Front	
5/2/12	1044	Amb	4 inchs	2	Drop 7 UUT: A 100 Back	
5/2/12	1045	Amb	4 inchs	2	Drop 8 UUT: A 100 Back	
5/2/12	1045	Amb	4 inchs	2	Drop 9 UUT: A 100 Back	
5/2/12	1045	Amb	4 inchs	2	Drop 10 UUT:A 100 Back	
5/2/12	1045	Amb	4 inchs	2	Drop 11 UUT:A 100 Back	
5/2/12	1045	Amb	4 inchs	2	Drop 12 UUTA 100 Back	
5/2/12	1046	Amb	4 inchs	3	Drop 13 UUT:A 100 Right	
5/2/12	1046	Amb	4 inchs	3	Drop 14 UUT:A 100 Right	
5/2/12	1047	Amb	4 inchs	3	Drop 15 UUT:A 100 Right	
5/2/12	1047	Amb	4 inchs	3	Drop 16 UUT:A 100 Right	
5/2/12	1047	Amb	4 inchs	3	Drop 17 UUT:A 100 Right	
5/2/12	1047	Amb	4 inchs	3	Drop 18 UUT:A 100 Right	
5/2/12	1048	Amb	4 inchs	4	Drop 19 UUT:A 100 Left	
5/2/12	1048	Amb	4 inchs	4	Drop 20 UUT:A 100 Left	
5/2/12	1048	Amb	4 inchs	4	Drop 21 UUT:A 100 Left	
5/2/12	1048	Amb	4 inchs	4	Drop 22 UUT:A 100 Left	
5/2/12	1049	Amb	4 inchs	4	Drop 23 UUT:A 100 Left	
5/2/12	1049	Amb	4 inchs	4	Drop 24 UUT:A 100 Left	JA

Signed [signature] 5/17/12 Approved [signature] 5/17/12

DROP TEST DATA SHEET

Customer ES&S Job No. T59087 Specimen AutoMARK A200

Spec. MIL-STD-810D Method 516.3 Procedure VI

Part No. ________ S/N ______ Specimen Temp. Amb Photo-Yes [X] No [ ]

Test Title Bench Handling DCMC-Yes [ ] No [X]

Date	Time	Temp	Drop Height	Side No	Comments	Initials
5/2/12	1051	Amb	4 inchs	1	Drop 1 UUT: A 200 Front	SA
5/2/12	1052	Amb	4 inchs	1	Drop 2 UUT: A 200 Front	
5/2/12	1052	Amb	4 inchs	1	Drop 3 UUT: A 200 Front	
5/2/12	1052	Amb	4 inchs	1	Drop 4 UUT: A 200 Front	
5/2/12	1052	Amb	4 inchs	1	Drop 5 UUT: A 200 Front	
5/2/12	1052	Amb	4 inchs	1	Drop 6 UUT: A 200 Front	
5/2/12	1053	Amb	4 inchs	2	Drop 7 UUT: A 200 Back	
5/2/12	1053	Amb	4 inchs	2	Drop 8 UUT: A 200 Back	
5/2/12	1053	Amb	4 inchs	2	Drop 9 UUT: A 200 Back	
5/2/12	1053	Amb	4 inchs	2	Drop 10 UUT:A 200 Back	
5/2/12	1054	Amb	4 inchs	2	Drop 11 UUT:A 200 Back	
5/2/12	1054	Amb	4 inchs	2	Drop 12 UUTA 200 Back	
5/2/12	1054	Amb	4 inchs	3	Drop 13 UUT:A 200 Right	
5/2/12	1054	Amb	4 inchs	3	Drop 14 UUT:A 200 Right	
5/2/12	1055	Amb	4 inchs	3	Drop 15 UUT:A 200 Right	
5/2/12	1055	Amb	4 inchs	3	Drop 16 UUT:A 200 Right	
5/2/12	1055	Amb	4 inchs	3	Drop 17 UUT:A 200 Right	
5/2/12	1055	Amb	4 inchs	3	Drop 18 UUT:A 200 Right	
5/2/12	1056	Amb	4 inchs	4	Drop 19 UUT:A 200 Left	
5/2/12	1056	Amb	4 inchs	4	Drop 20 UUT:A 200 Left	
5/2/12	1056	Amb	4 inchs	4	Drop 21 UUT:A 200 Left	
5/2/12	1056	Amb	4 inchs	4	Drop 22 UUT:A 200 Left	
5/2/12	1056	Amb	4 inchs	4	Drop 23 UUT:A 200 Left	
5/2/12	1057	Amb	4 inchs	4	Drop 24 UUT:A 200 Left	SA

Signed [signature] 5/17/12 Approved [signature] 5/17/12

DROP TEST DATA SHEET

Customer ES&S Job No. T59087 Specimen DS200 w/Plastic Box

Spec. MIL-STD-810D Method 516.3 Procedure VI

Part No. ________ S/N ______ Specimen Temp. Amb Photo-Yes [X] No [ ]

Test Title Bench Handling DCMC-Yes [ ] No [X]

Date	Time	Temp	Drop Height	Side No	Comments	Initials
5/2/12	1010	Amb	4 inchs	1	Drop 1 UUT: Plastic Box Front	JA
5/2/12	1011	Amb	4 inchs	1	Drop 2 UUT: Plastic Box Front	
5/2/12	1013	Amb	4 inchs	1	Drop 3 UUT: Plastic Box Front	
5/2/12	1014	Amb	4 inchs	1	Drop 4 UUT: Plastic Box Front	
5/2/12	1015	Amb	4 inchs	1	Drop 5 UUT: Plastic Box Front	
5/2/12	1016	Amb	4 inchs	1	Drop 6 UUT: Plastic Box Front	
5/2/12	1018	Amb	4 inchs	2	Drop 7 UUT: Plastic Box Back	
5/2/12	1019	Amb	4 inchs	2	Drop 8 UUT: Plastic Box Back	
5/2/12	1020	Amb	4 inchs	2	Drop 9 UUT: Plastic Box Back	
5/2/12	1021	Amb	4 inchs	2	Drop 10 UUT: Plastic Box Back	
5/2/12	1022	Amb	4 inchs	2	Drop 11 UUT: Plastic Box Back	
5/2/12	1023	Amb	4 inchs	2	Drop 12 UUT: Plastic Box Back	
5/2/12	1025	Amb	4 inchs	3	Drop 13 UUT: Plastic Box Right	
5/2/12	1026	Amb	4 inchs	3	Drop 14 UUT: Plastic Box Right	
5/2/12	1027	Amb	4 inchs	3	Drop 15 UUT: Plastic Box Right	
5/2/12	1028	Amb	4 inchs	3	Drop 16 UUT: Plastic Box Right	
5/2/12	1030	Amb	4 inchs	3	Drop 17 UUT: Plastic Box Right	
5/2/12	1031	Amb	4 inchs	3	Drop 18 UUT: Plastic Box Right	
5/2/12	1033	Amb	4 inchs	4	Drop 19 UUT: Plastic Box Left	
5/2/12	1035	Amb	4 inchs	4	Drop 20 UUT: Plastic Box Left	
5/2/12	1036	Amb	4 inchs	4	Drop 21 UUT: Plastic Box Left	
5/2/12	1037	Amb	4 inchs	4	Drop 22 UUT: Plastic Box Left	
5/2/12	1038	Amb	4 inchs	4	Drop 23 UUT: Plastic Box Left	
5/2/12	1039	Amb	4 inchs	4	Drop 24 UUT: Plastic Box Left	JA

Signed Jason Reyes 5/17/12 Approved Steph K 5/17/12

DROP TEST DATA SHEET

Customer ES&S Job No. T59087 Specimen DS200 w/Metal Box

Spec. MIL-STD-810D Method 516.3 Procedure VI

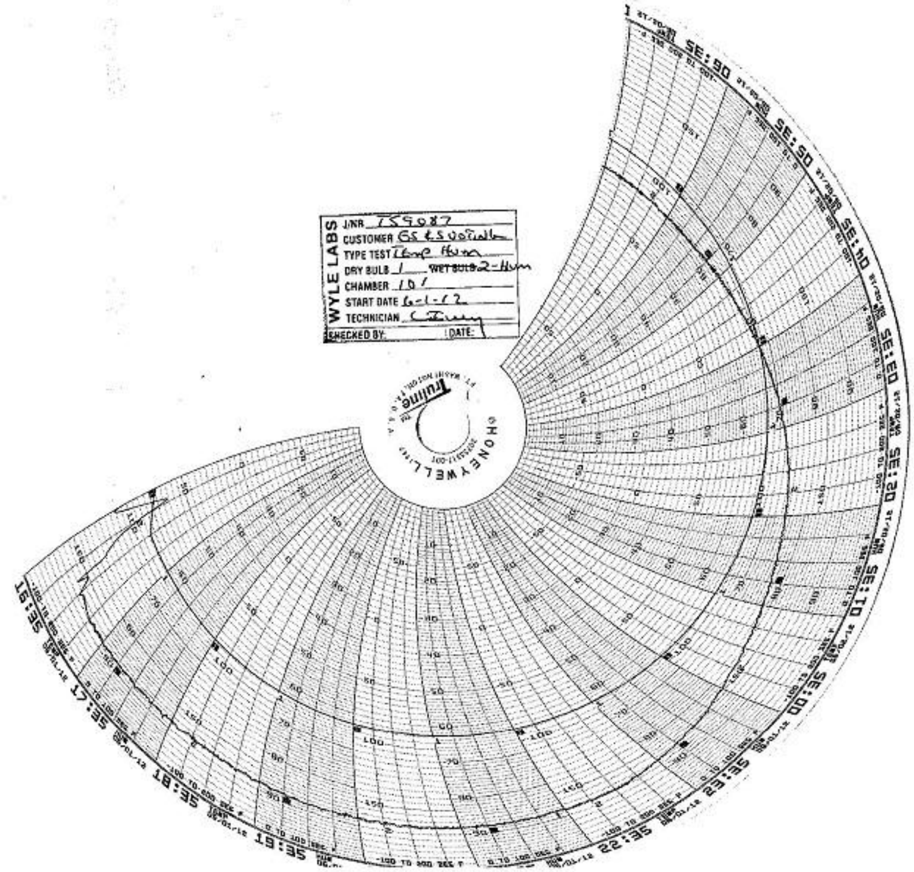
Part No. ________ S/N ______ Specimen Temp. Amb Photo-Yes [X] No [ ]

Test Title Bench Handling DCMC-Yes [ ] No [X]

Date	Time	Temp	Drop Height	Side No	Comments	Initials
5/2/12	0941	Amb	4 inchs	1	Drop 1 UUT: Metal Box Front	JR
5/2/12	0942	Amb	4 inchs	1	Drop 2 UUT: Metal Box Front	
5/2/12	0943	Amb	4 inchs	1	Drop 3 UUT: Metal Box Front	
5/2/12	0944	Amb	4 inchs	1	Drop 4 UUT: Metal Box Front	
5/2/12	0945	Amb	4 inchs	1	Drop 5 UUT: Metal Box Front	
5/2/12	0946	Amb	4 inchs	1	Drop 6 UUT: Metal Box Front	
5/2/12	0947	Amb	4 inchs	2	Drop 7 UUT: Metal Box Back	
5/2/12	0948	Amb	4 inchs	2	Drop 8 UUT: Metal Box Back	
5/2/12	0949	Amb	4 inchs	2	Drop 9 UUT: Metal Box Back	
5/2/12	0950	Amb	4 inchs	2	Drop 10 UUT: Metal Box Back	
5/2/12	0951	Amb	4 inchs	2	Drop 11 UUT: Metal Box Back	
5/2/12	0952	Amb	4 inchs	2	Drop 12 UUT: Metal Box Back	
5/2/12	0954	Amb	4 inchs	3	Drop 13 UUT: Metal Box Right	
5/2/12	0956	Amb	4 inchs	3	Drop 14 UUT: Metal Box Right	
5/2/12	0957	Amb	4 inchs	3	Drop 15 UUT: Metal Box Right	
5/2/12	0958	Amb	4 inchs	3	Drop 16 UUT: Metal Box Right	
5/2/12	0959	Amb	4 inchs	3	Drop 17 UUT: Metal Box Right	
5/2/12	1000	Amb	4 inchs	3	Drop 18 UUT: Metal Box Right	
5/2/12	1001	Amb	4 inchs	4	Drop 19 UUT: Metal Box Left	
5/2/12	1003	Amb	4 inchs	4	Drop 20 UUT: Metal Box Left	
5/2/12	1004	Amb	4 inchs	4	Drop 21 UUT: Metal Box Left	
5/2/12	1005	Amb	4 inchs	4	Drop 22 UUT: Metal Box Left	
5/2/12	1006	Amb	4 inchs	4	Drop 23 UUT: Metal Box Left	
5/2/12	1007	Amb	4 inchs	4	Drop 24 UUT: Metal Box Left	JR

Signed Jason Rose 5/17/12 Approved Stephen [illegible] 5/17/12

HUMIDITY TEST DATA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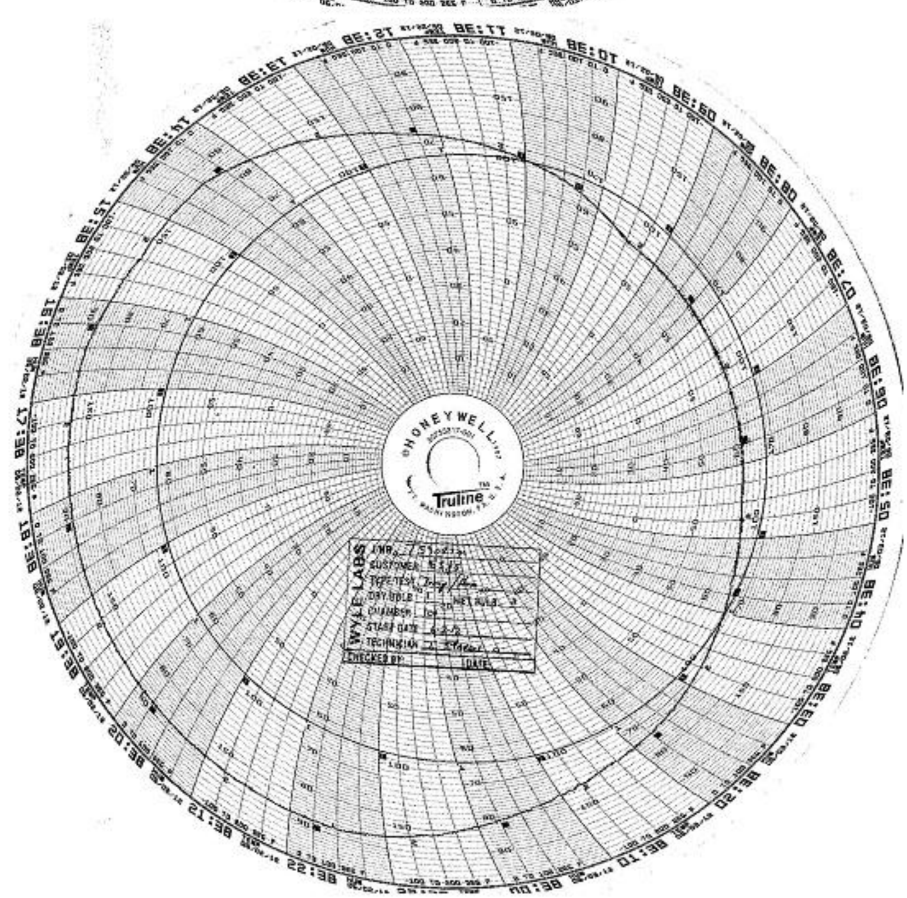
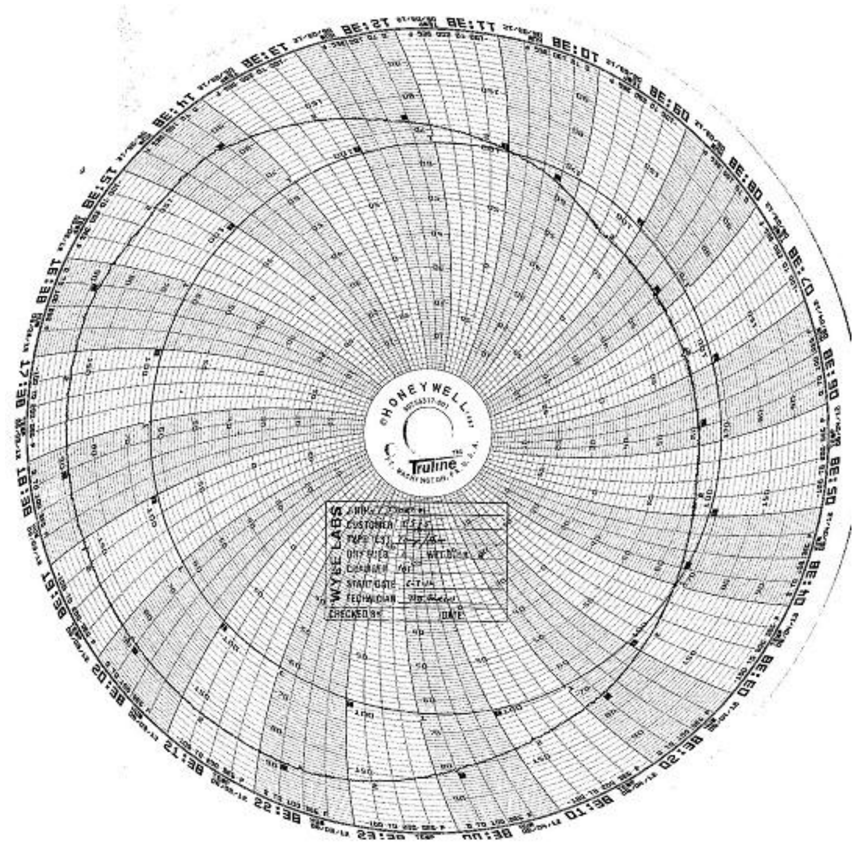
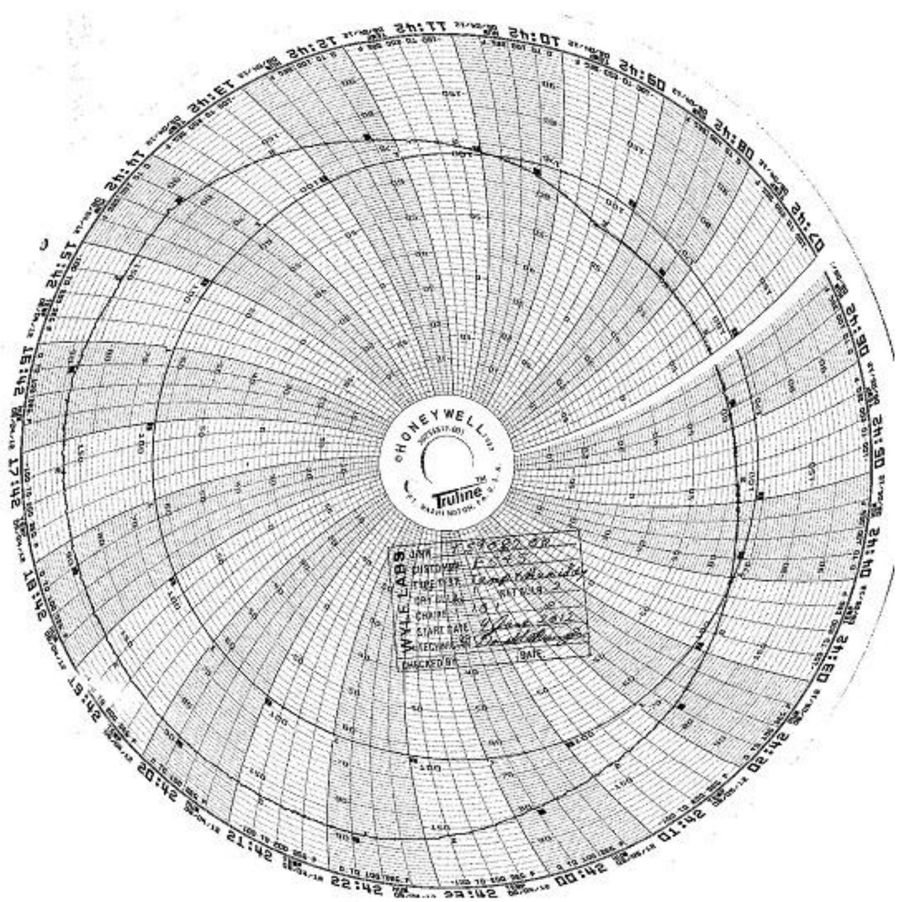
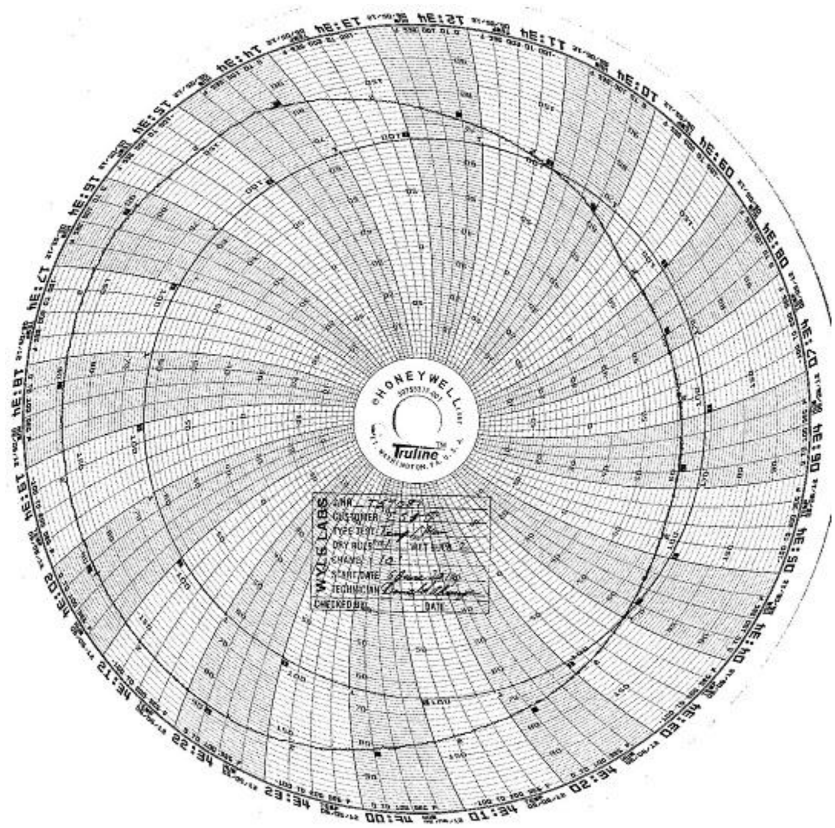
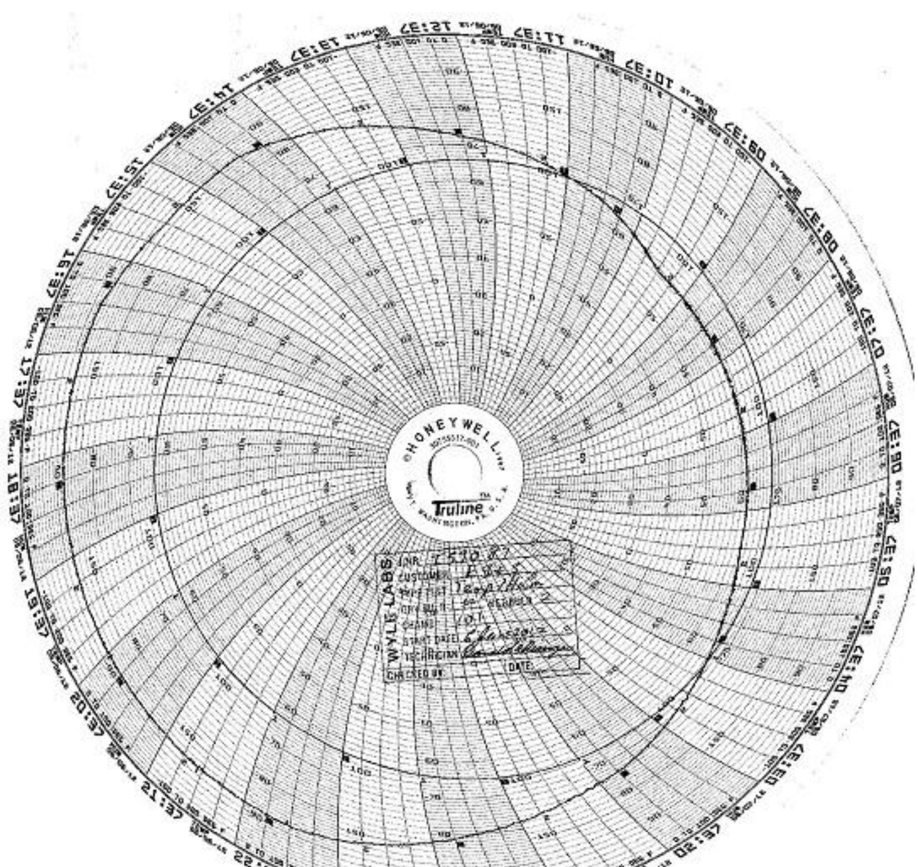
J/NR T59087
CUSTOMER
TYPE TEST
DRY BULB 1
WET BULB 2-Hum
CHAMBER 101
START DATE 6-1-12
TECHNICIAN
CHECKED BY:
DATE:
Truline
HONEYWELL

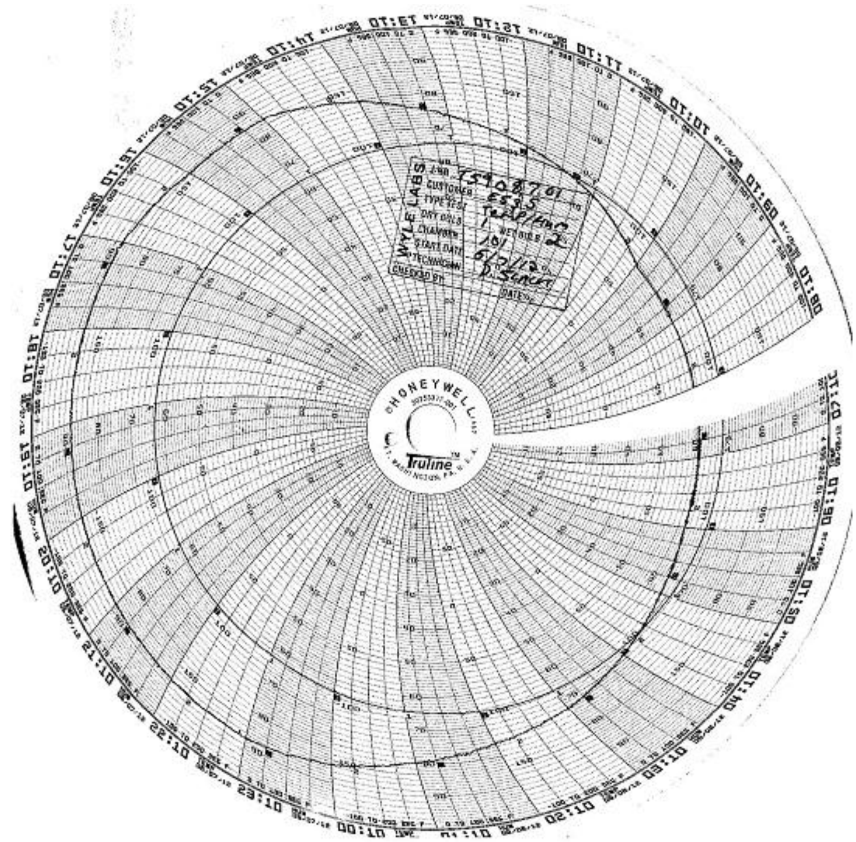

HONEYWELL
Truline
WYLE LABS
J/NR
CUSTOMER
TYPE TEST
DRY BULB
WET BULB
CHAMBER
START DATE
TECHNICIAN
CHECKED BY
DATE

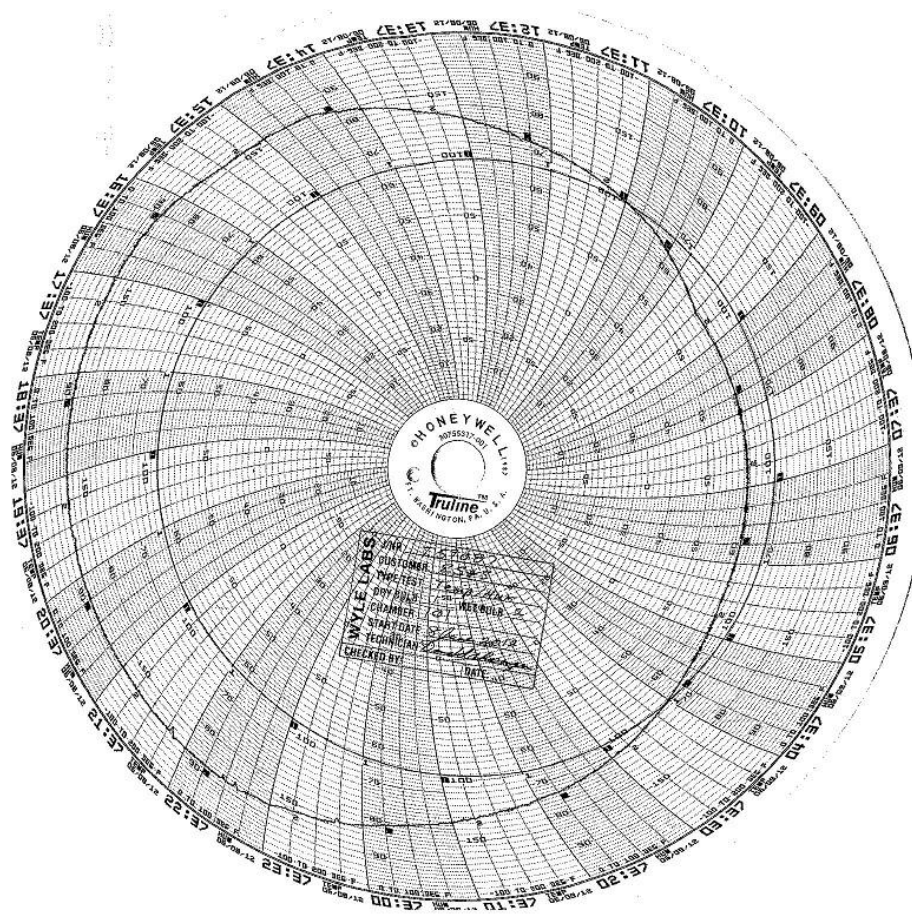









WYLE LABS
JOB
CUSTOMER
TYPE TEST
DRY BULB
WET BULB
CHAMBER
START DATE
TECHNICIAN
CHECKED BY
DATE
HONEYWELL
Truline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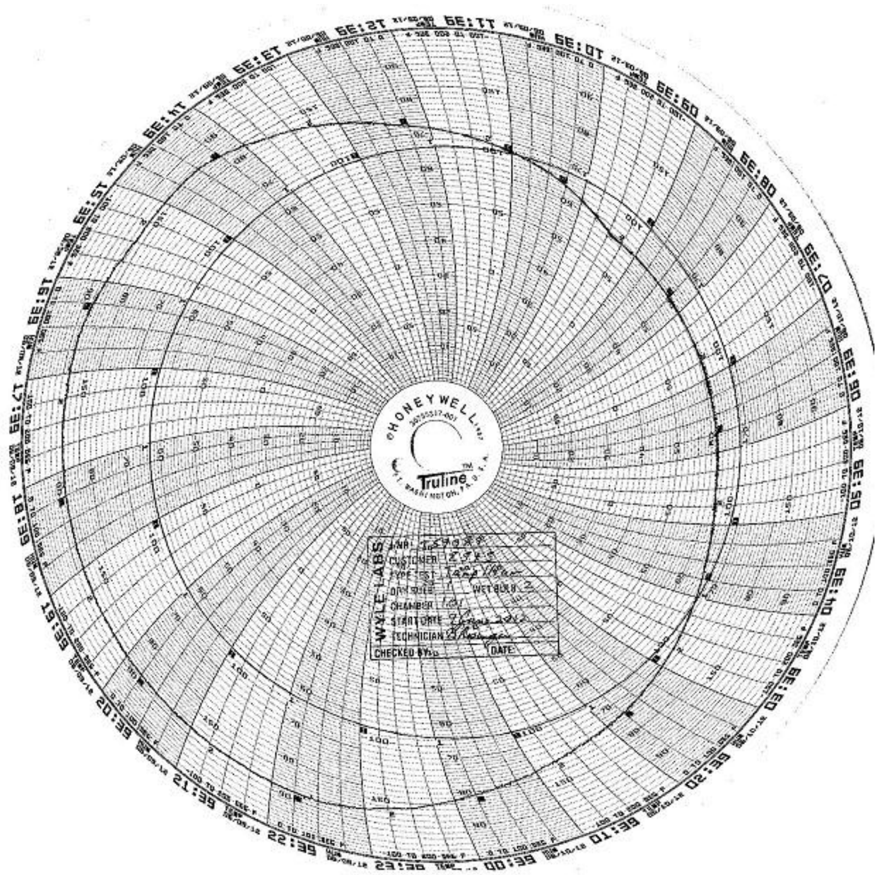
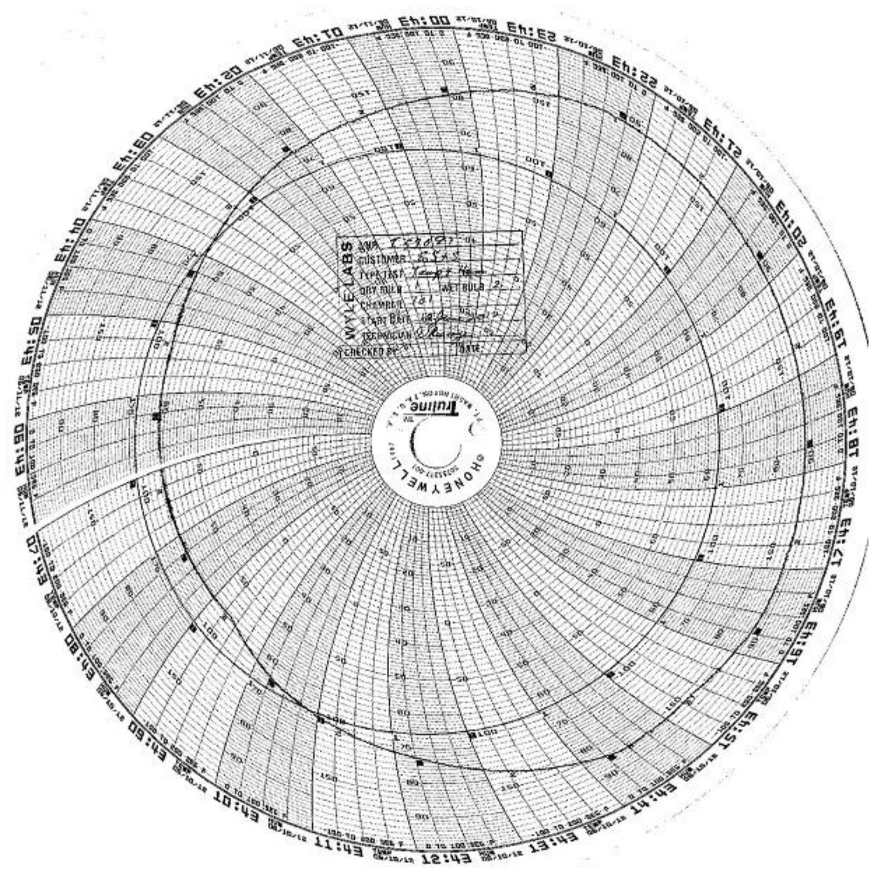
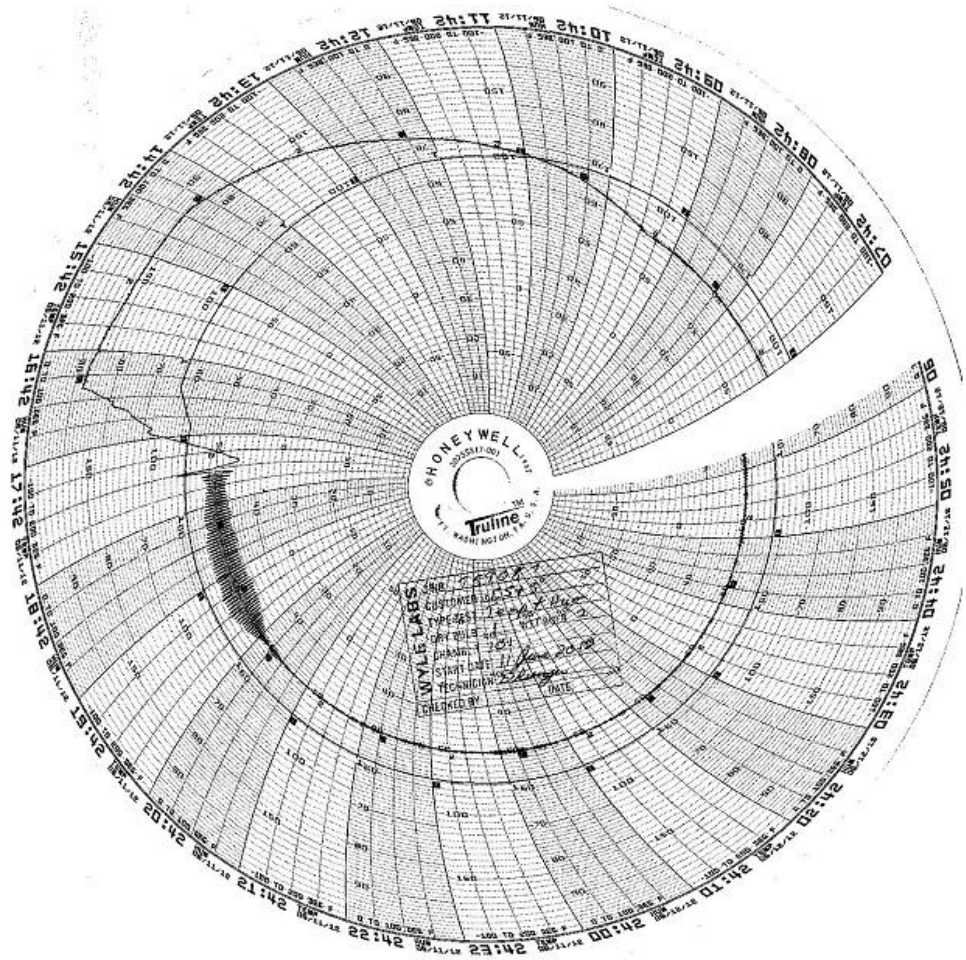
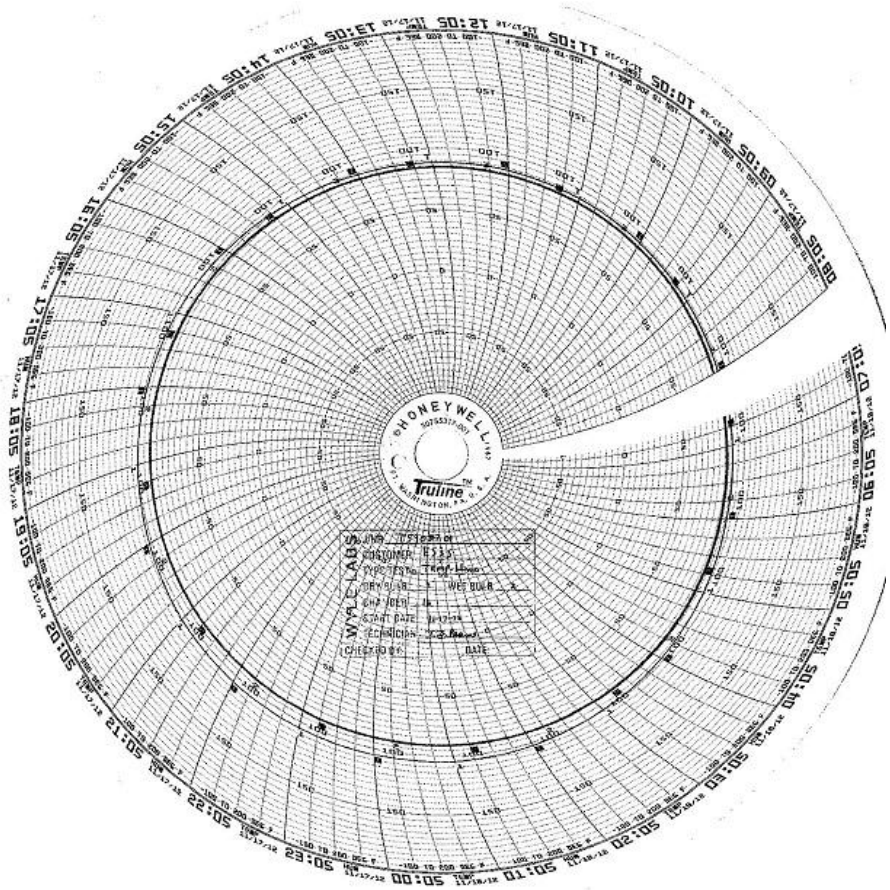
JOB
CUSTOMER
TYPE TEST
DRY BULB
WET BULB
CHAMBER
START DATE
TECHNICIAN
CHECKED BY
DATE
HONEYWELL
Truline





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Truline
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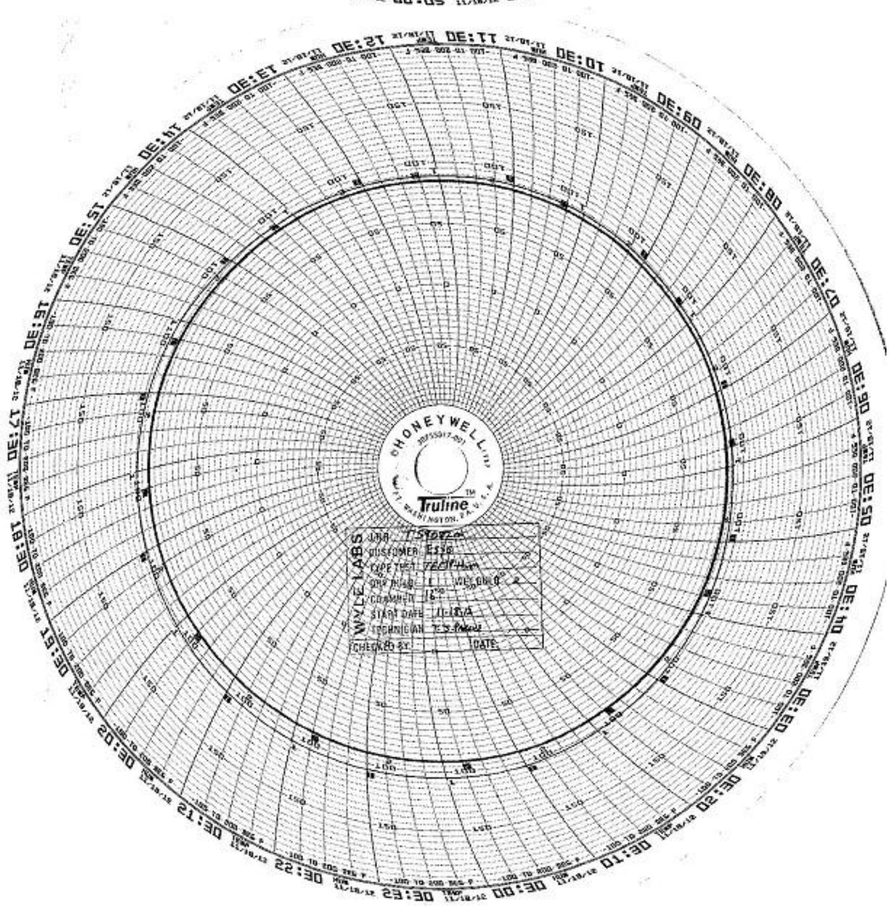
JOB
CUSTOMER
TYPE TEST
DRY BULB
WET BULB
CHAMBER
START DATE
TECHNICIAN
CHECKED BY
DATE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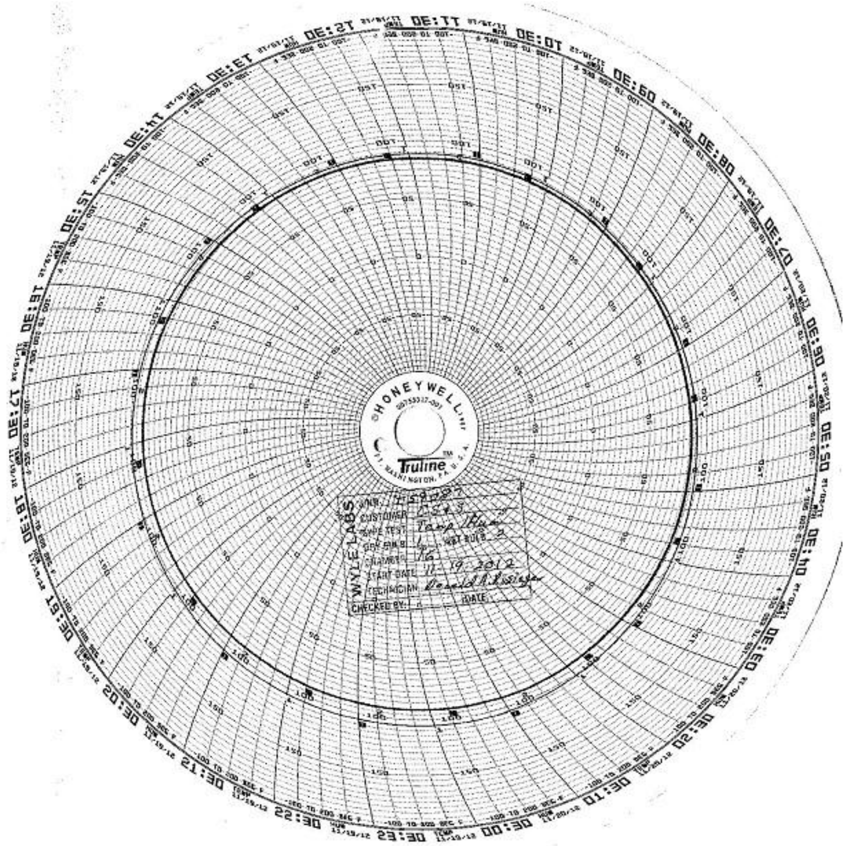
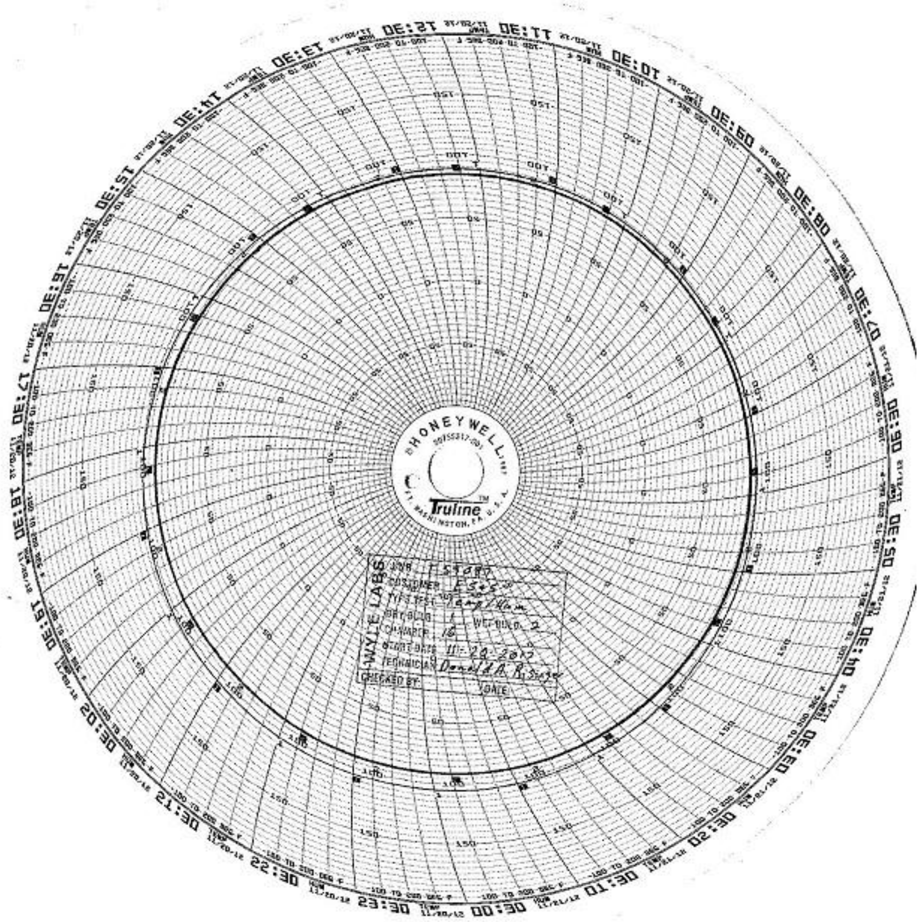
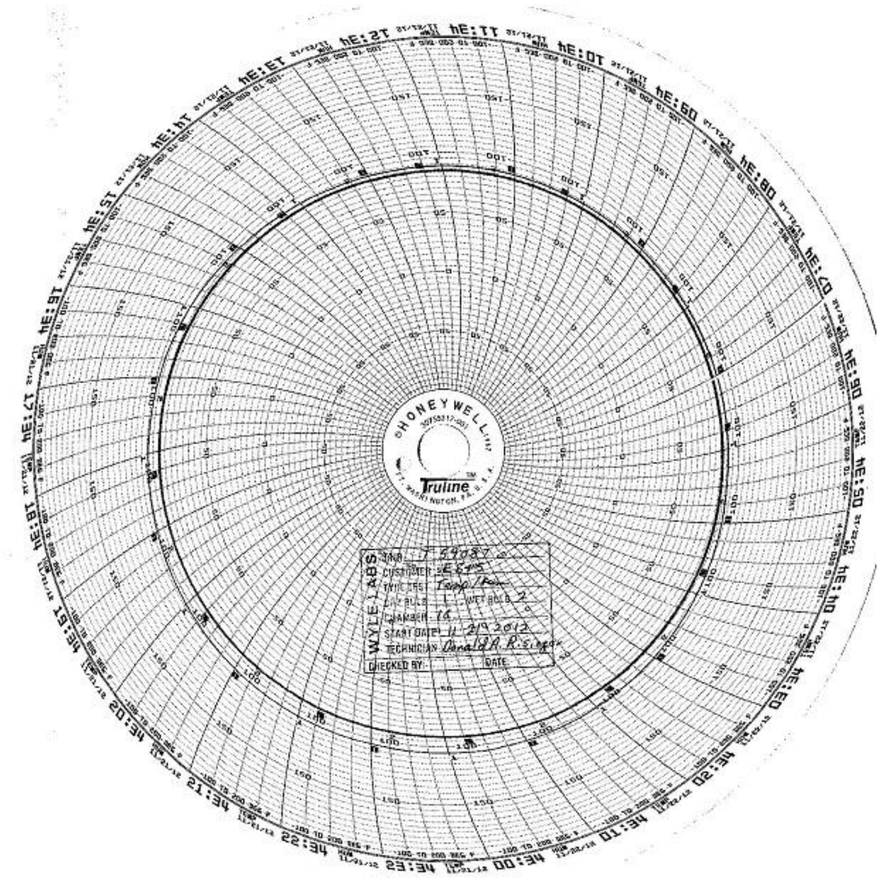
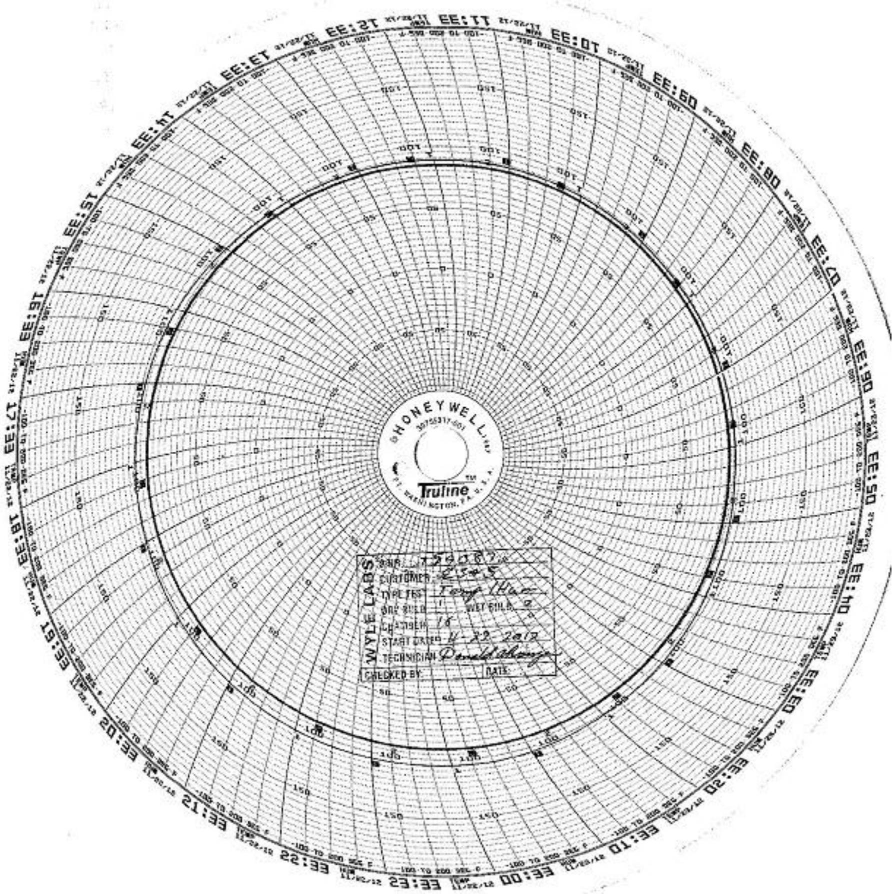
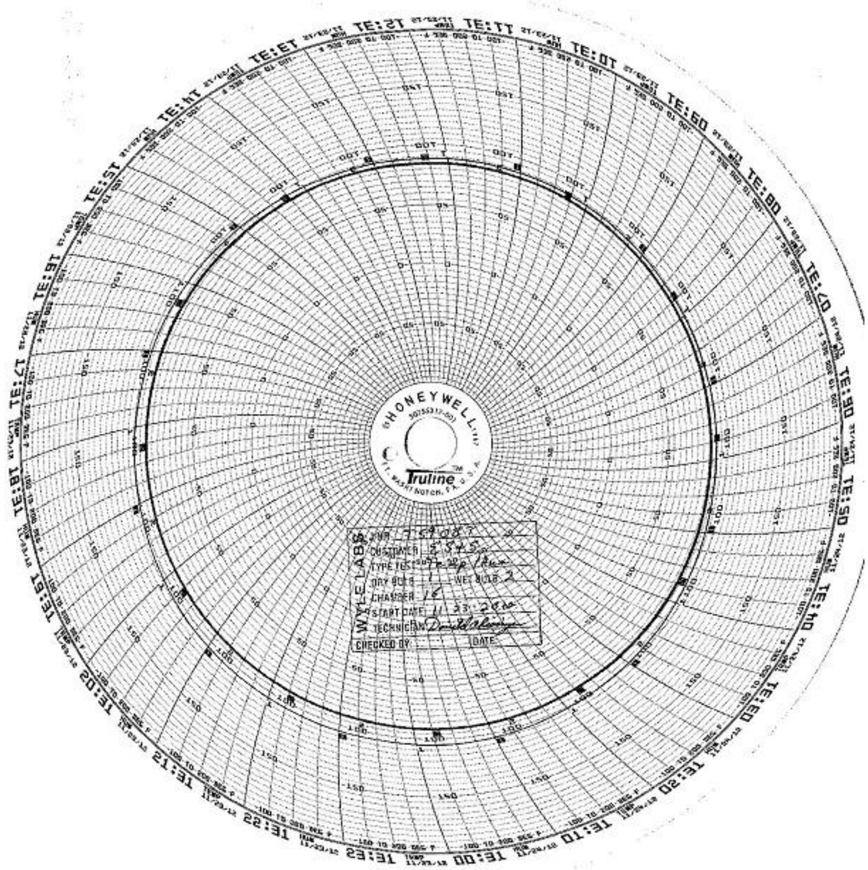
Truline
WYLE LABS
JOB
CUSTOMER
TYPE TEST
DRY BULB
WET BULB
CHAMBER
START DATE
TECHNICIAN
CHECKED BY
DATE

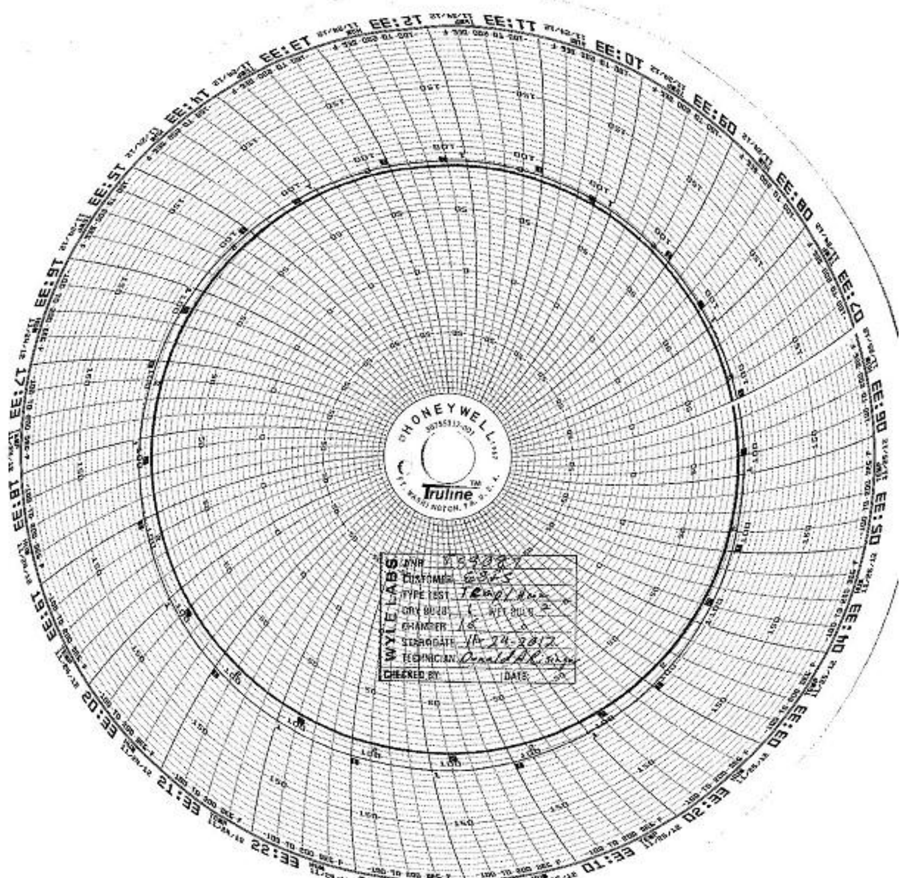









HONEYWELL
Truline
WYLE LABS
CUSTOMER
TYPE TEST
DRY BULB
WET BULB
CHAMBER
START DATE
TECHNICIAN
CHECKED BY
DATE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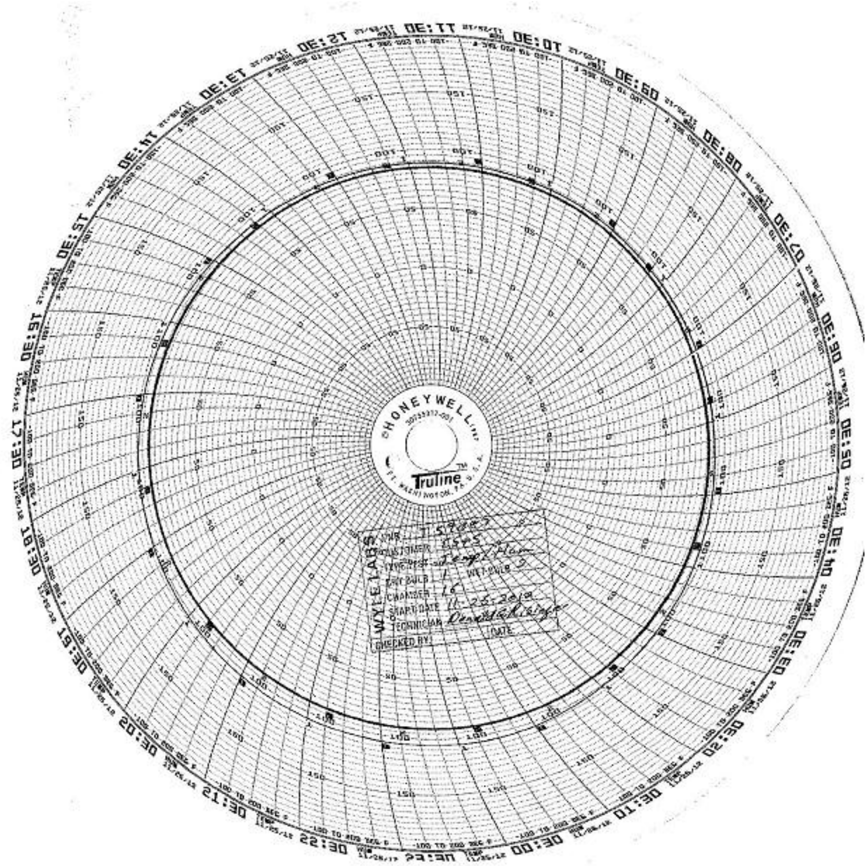
Truline
WYLE LABS
CUSTOMER
TYPE TEST
DRY BULB
WET BULB
CHAMBER
START DATE
TECHNICIAN
CHECKED BY
DATE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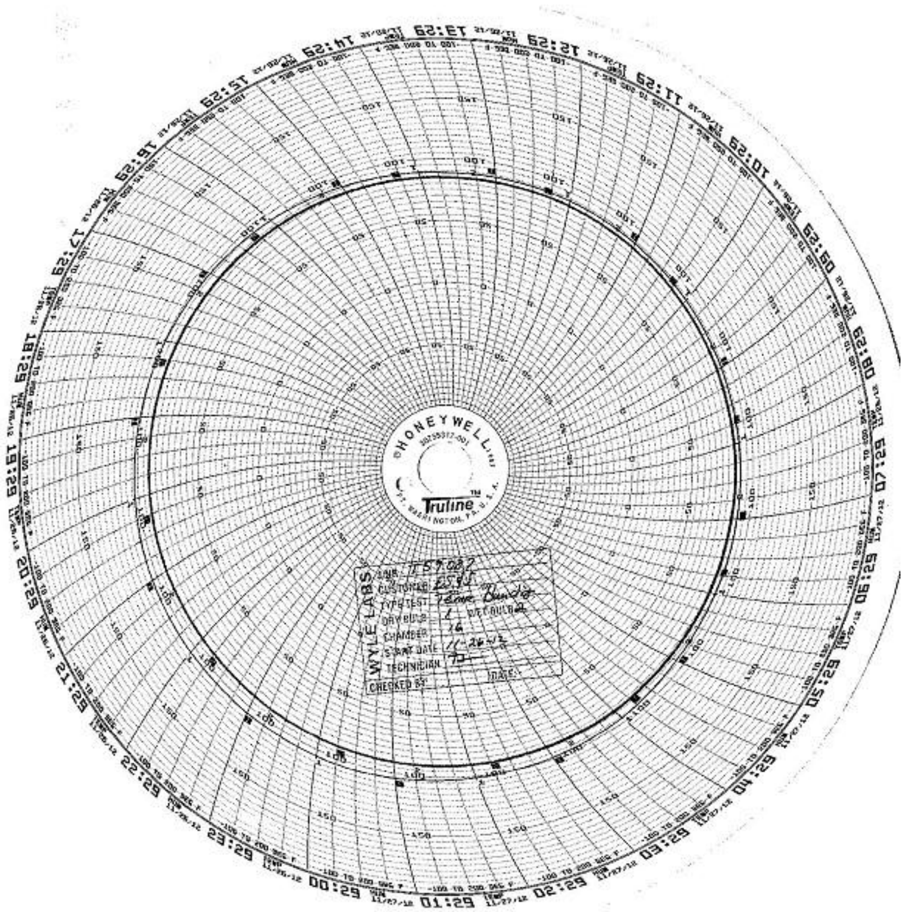
Truline
WYLE LABS
CUSTOMER
TYPE TEST
DRY BULB
WET BULB
CHAMBER
START DATE
TECHNICIAN
CHECKED BY
DATE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Truline
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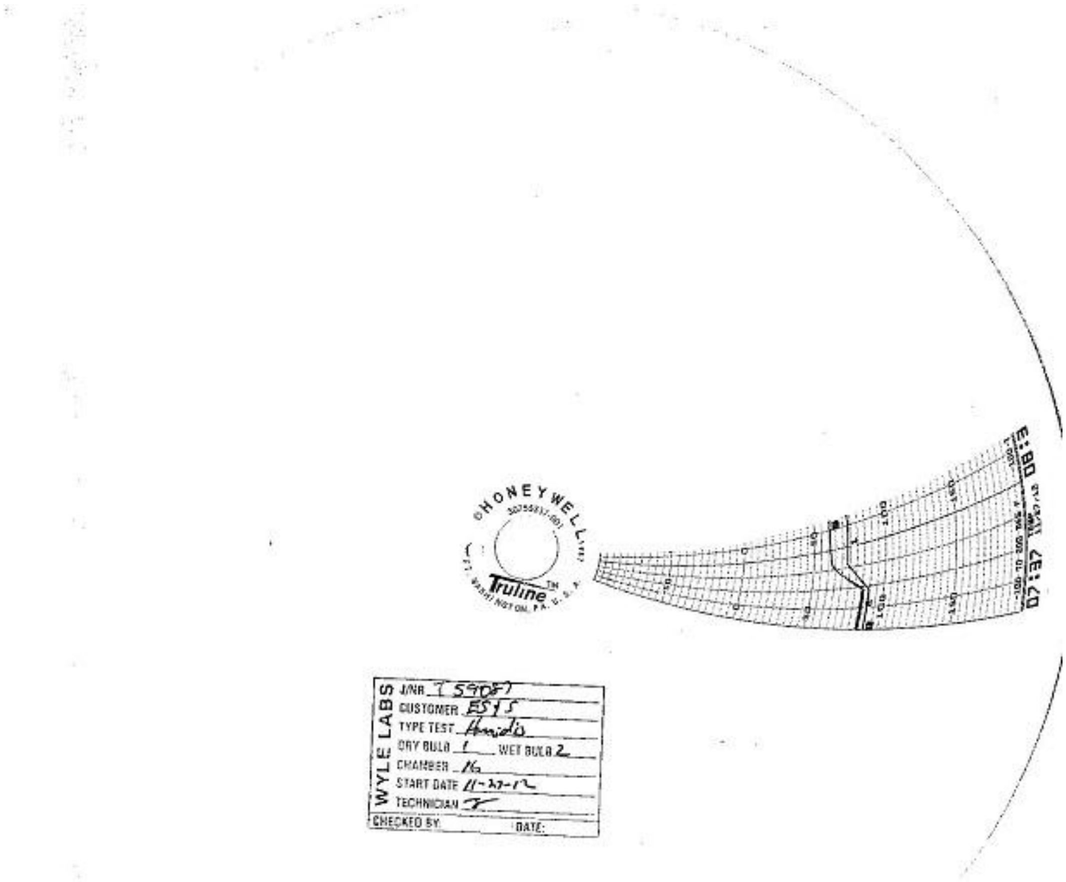
CUSTOMER
TYPE TEST
DRY BULB
WET BULB
CHAMBER
START DATE
TECHNICIAN
CHECKED BY
DATE


HONEYWELL
Truline
WYLE LABS
J/NR
CUSTOMER
TYPE TEST
DRY BULB
WET BULB
CHAMBER
START DATE
TECHNICIAN
CHECKED BY:
DATE:

ATTACHMENT D
ELECTRICAL TEST DATA

ELECTRICAL SUPPLY TEST DATA

wyle

DATA SHEET

Date: 6/18/12

Customer: ES&S Job No: T59087.01 Report No: T59087-01 Specimen: EVS 5.0.0.0
Part No: NA Temperature: amb Humidity: amb
Spec: EAC 2005 VVSG Test Method: NA
Para: Volume I, Section 2.1.4 b, 2.1.5.1 a.vi, 2.1.5.1 a.vi, 2.3.3.1e, 4.1.2.4. RFI 2008-02, RFI 2008-06, RFI 2009-03
S/N: AM0106431724, AM020847626, ES0108340579, ES0107390482, DS8511090075

Test Title: Electrical Supply Test

Test Parameters

The purpose of this test is ensure that the voting system will continue to provide the capability for any voter who is voting at the time of a failure of the main power external to the voting system to complete the casting of a ballot; to perform a successful shutdown without loss or degradation of the voting and audit data; and to allow voters to resume once the voting system has reverted to back-up power.
The test shall be performed per the following steps:

Step 1: Configure the system for normal operation per the TDP
Step 2: Charge UUT battery for at least 24 hours with an AC power source, to ensure battery is fully charged.
Step 3: Perform an operational status check
Step 4: Operate system as designed for 15 minutes
Step 5: Remove AC power
Step 6: Verify the system provides notification for loss of input power and is on battery back-up
Step 7: Operate the voting system as designed for at least 2 hours

Note: Central count devices do not require the 2 hour minimum but it must perform a graceful shutdown without loss of data.

Step 8: Restore AC power and resume operations for an additional 15 minutes
Step 9: Perform operation status check
Step 10: Verify election data and ensure all results are accurate and all events were recorded properly

Note:
For testing of the AutoMarks:
- It was verified that the audio was active throughout the 2 hour period
- A total of 5 ballots were marked

For testing of the DS200s
- The test procedure was performed as required

For testing of the DS850
- The unit performed a graceful shutdown with no loss of data

Test by [signature] Date 6/18/12
Witness — Date —
Sheet 1 of 1
Approved [signature] Date 6/19/12

Notice of Anomaly: NOAs #7 and #8

wyle

DATA SHEET

Date: 7/11/12

Customer: ES&S   Job No: T59087.01   Report No: T59087-01   Specimen: EVS 5.0.0.0
Part No: NA   Temperature: amb   Humidity: amb
Spec: EAC 2005 VVSG   Test Method: NA
Para: Volume I, Section 2.1.4 b, 2.1.5.1 a.vi, 2.1.5.1 a.vi, 2.3.3.1e, 4.1.2.4. RFI 2008-02, RFI 2008-06, RFI 2009-03
S/N: ES0108340579, ES0107390482

Test Title: Electrical Supply Test

Test Parameters

The purpose of this test is ensure that the voting system will continue to provide the capability for any voter who is voting at the time of a failure of the main power external to the voting system to complete the casting of a ballot; to perform a successful shutdown without loss or degradation of the voting and audit data; and to allow voters to resume once the voting system has reverted to back-up power.
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Step 4: Operate system as designed for 15 minutes
Step 5: Remove AC power
Step 6: Verify the system provides notification for loss of input power and is on battery back-up
Step 7: Operate the voting system as designed for at least 2 hours
Note: Central count devices do not require the 2 hour minimum but it must perform a graceful shutdown without loss of data.
Step 8: Restore AC power and resume operations for an additional 15 minutes
Step 9: Perform operation status check
Step 10: Verify election data and ensure all results are accurate and all events were recorded properly

Note:
For testing of the AutoMarks:
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For testing of the DS200s
- The test procedure was performed as required

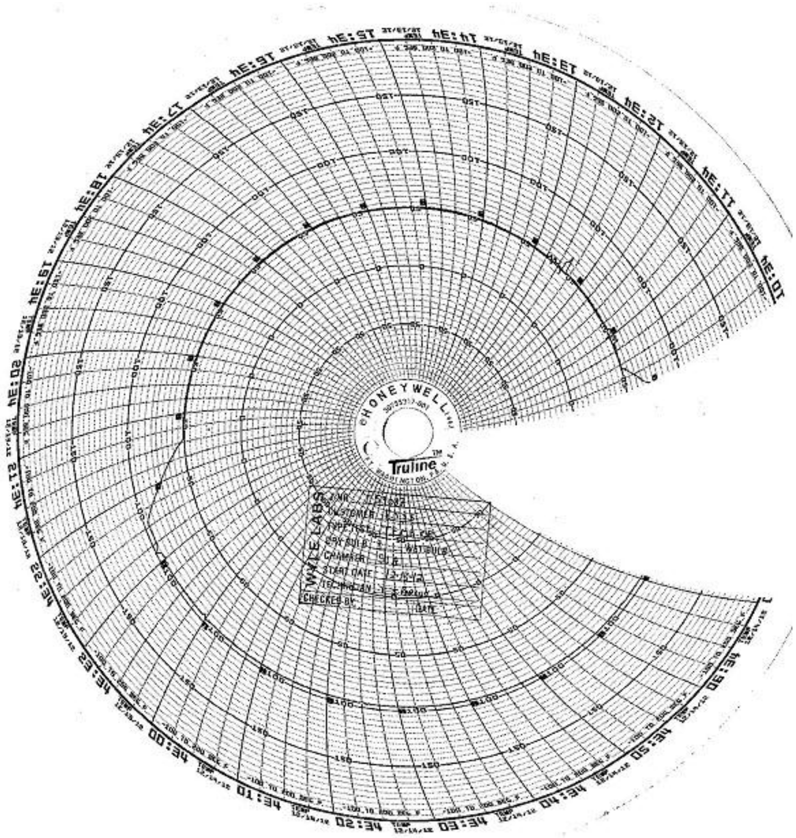
For testing of the DS850
- The unit performed a graceful shutdown with no loss of data

Test by [signature] Date 7/11/12
Witness — Date —
Sheet 1 of 1
Approved [signature] Date 7/12/12

Notice of Anomaly: None

ATTACHMENT E
OPERATING ENVIRONMENTAL TEST DATA

TEMPERATURE/POWER VARIATION TEST DATA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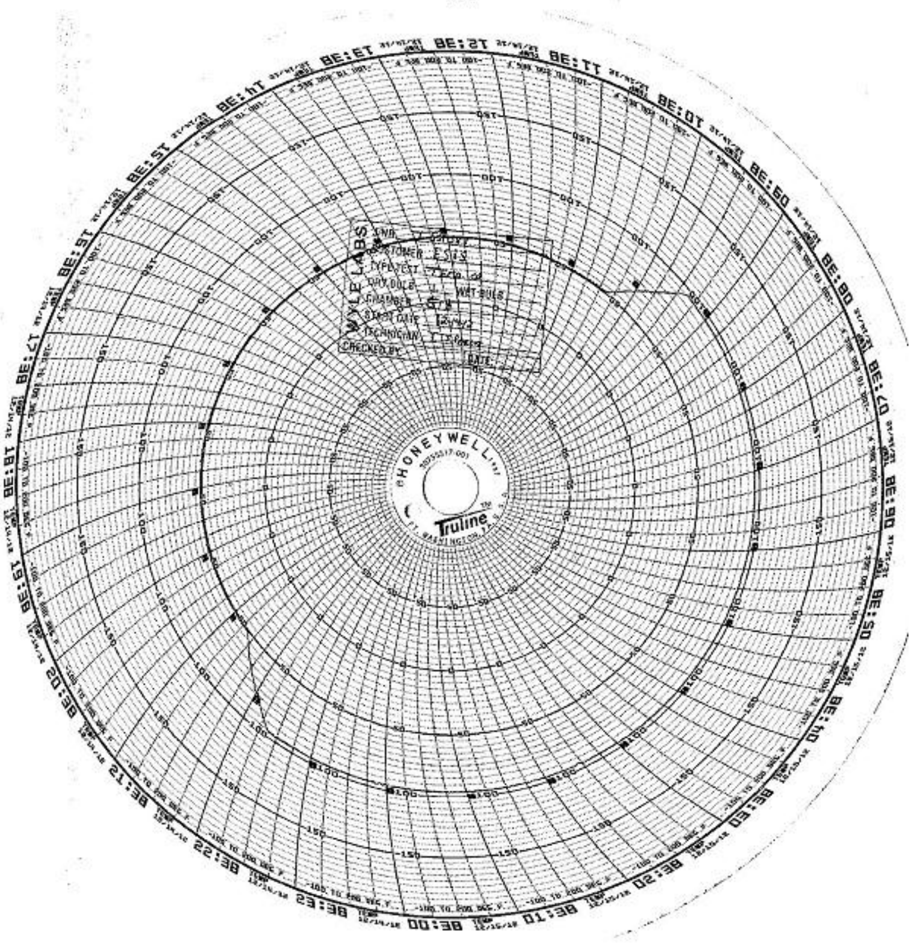
Truline
WYLE LABS
CHECKED BY
DATE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WYLE LABS
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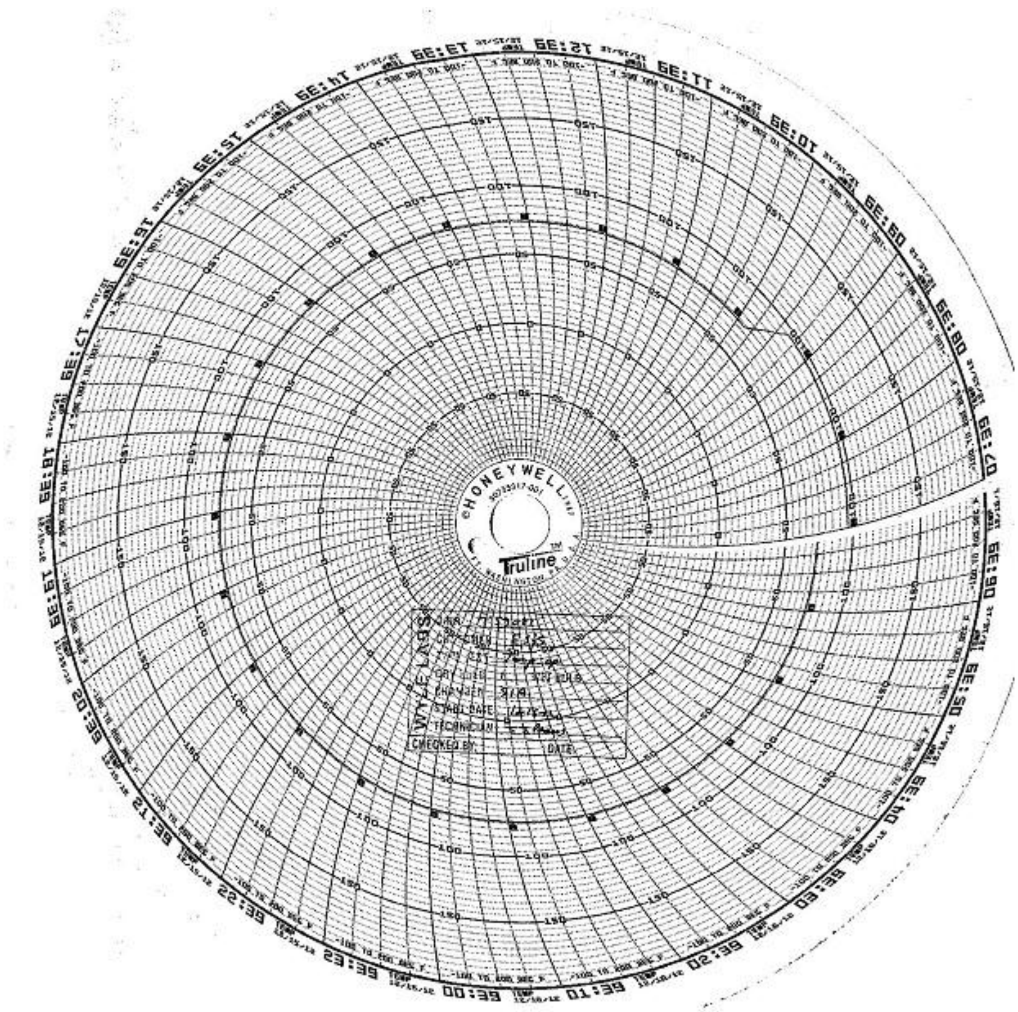

HONEYWELL
Truline
WYLE LABS
CHECKED BY
DATE

AUDIO TEST DATA

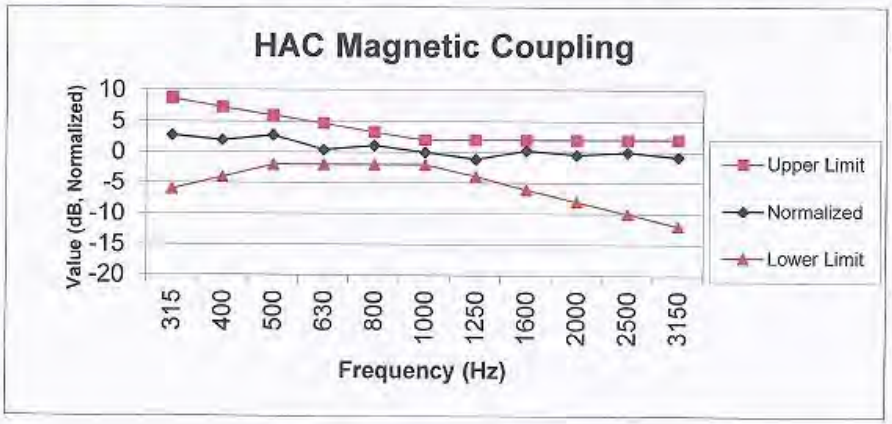
Magnetic Field for Hearing Aid Compatibility (HAC)

Wyle Task No.: T59087.01 **Customer:** ES&S **Make/Model:** A100/A200 Headset HP-59087.01-1

Do NOT enter data on this sheet--it is automatically inserted when the data is entered on the "Hi {> -15 dB (A/m)}" sheet. Use this sheet if Axial 1000 Hz Corrected Reading (green cell) is lower than or equal to -15 dB re: 1 A/m.

Magnetic Field for Hearing Aid Compatibility (HAC) per ANSI C63.19-2007, Section 7.3 **94 dB SPL** Gen. Output 300 mVp-p
Measured 246 mVp-p

Axial Measurement (dBV)		dB	dB	dB re: 1 A/m	dB	dB	dB
Frequency (Hz)	Measured Level	Calib. Factor	Probe Correction	Corrected Reading	Normalized	Upper Limit	Lower Limit
315	-81	-57.68	10	-13.32	2.8	8.7	-6
400	-79.8	-57.68	8	-14.12	2	7.3	-4
500	-77	-57.68	6	-13.32	2.8	6	-2
630	-77.4	-57.68	4	-15.72	0.4	4.7	-2
800	-74.6	-57.68	1.9	-15.02	1.1	3.3	-2
1000	-73.8	-57.68	0	-16.12	0	2	-2
1250	-73	-57.68	-1.9	-17.22	-1.1	2	-3.9
1600	-69.4	-57.68	-4.1	-15.82	0.3	2	-6.1
2000	-68.2	-57.68	-6	-16.52	-0.4	2	-8
2500	-65.8	-57.68	-8	-16.12	0	2	-10
3150	-64.6	-57.68	-10	-16.92	-0.8	2	-12



Radial Measurement (dBV)		dB	dB	dB re: 1 A/m
Frequency (Hz)	Measured Level	Calib. Factor	Corrected Reading	Max. Corrected
1000	-79.8	-57.68	-22.12	-22.12
1000	-81	-57.68	-23.32	
1000	-80.6	-57.68	-22.92	
1000	-79.8	-57.68	-22.12	

Prepared By: Dmindee 06/19/12

Reviewed By: Steph H 6/20/12

Rev. JUN '12 HAC-mag_cpl_C63.19-2007_Jun12_061912 - Lo {<= -15 dB (A|m)}

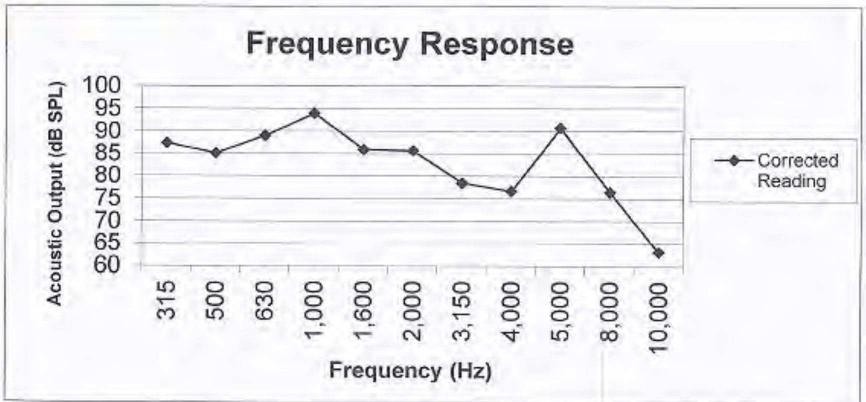
Frequency Response Measurement

Wyle Task No.: T59087.01 **Customer:** ES&S **Make/Model:** A100/A200 Headset HP-59087.01-1

Enter data in yellow highlighted cells (Sound Level Meter measurements using dBA = SPL using A weighting).

94 dB SPL Gen. Output 300 mVp-p
Measured 246 mVp-p
= 85.5 mVrms

Axial Measurement (dBV)		Correction, dB	Output, dB SPL
Frequency (Hz)	Measured dBA	A wtg to Flat	Corrected Reading
315	80.8	-6.6	87.4
500	82	-3.2	85.2
630	87.2	-1.9	89.1
1,000	94	0	94
1,600	87	1	86
2,000	86.9	1.2	85.7
3,150	79.7	1.2	78.5
4,000	77.7	1	76.7
5,000	91.3	0.5	90.8
8,000	75.4	-1.1	76.5
10,000	60.6	-2.5	63.1



Prepared By: Darin Lee 06/19/12

Reviewed By: Steph [signature] 6/20/12

Rev. JUN '12 Freq_Resp_A_to_Flat_Jun12_061912 - Corrected

ATTACHMENT F
PRODUCT SAFETY CERTIFICATES OF COMPLIANCE

MET Laboratories, Inc. Safety Certifications - EMI - Telecom - Environmental Simulation - NRTL/NVLAP
901 Sheldon Drive · Cary, North Carolina 27513 · Ph: (919) 481-9319 or (800) 321-4655 · Fax: (919) 481-6716

Certificate of Compliance

Mr. Brian Coppock
Wyle Laboratories
7800 Highway 20 West
Huntsville, AL 35806

July 12, 2012

Our Reference: Job Number SAFN6995
Your Reference: P.O.# HSV0060401
Initial Review Date: July 13, 2012
Final Review Date: July 13, 2012

Dear Mr. Coppock,

We have completed our referenced inspection in accordance with our Labeling program. The inspection included 4 total pieces of equipment (units) as noted below:

	Unit 1	Unit 2	Unit 3
Description	Table Top Voting Machine	Table Top Voting Machine	Voting Machine
Model	A200-00	A200-00	DS200
Serial #	AM0208470644	AM0106431956	DS0110340480
Manufacturer	AUTOMARK	AUTOMARK	ES & S
Ratings	120V 60HZ 1.5A	120V 60HZ 1.5A	24V 3.34A 80W
Standard(s)	UL 60950	UL 60950	UL 60950
Field Label #	173999	173982	173997

	Unit 4
Description	Voting Machine
Model	DS200
Serial #	E50108340085
Manufacturer	ES & S
Ratings	24V 3.34A 80W
Standard(s)	UL 60950
Field Label #	173998

The Nation's First Licensed Nationally Recognized Testing Laboratory

MET Laboratories, Inc. Safety Certifications - EMI - Telecom - Environmental Simulation - NRTL/NVLAP
901 Sheldon Drive · Cary, North Carolina 27513 · Ph: (919) 481-9319 or (800) 321-4655· Fax: (919) 481-6716

The equipment was evaluated in accordance with the applicable sections of UL 60950-1, 2nd Edition, and the Recommended Practice and Procedures for Unlabeled Electrical Equipment Evaluation, 1st Edition (ACES & ACIL). This evaluation is not intended as an endorsement of the equipment or approval of similar equipment.

This completes the work anticipated under our Evaluation Program. If you should have any questions, please do not hesitate to contact us.

Sincerely,

Ryan Schlabaugh
Associate Project Engineer
MET Southeast

Reviewed By,

Brad Collison
Managing Engineer
MET Southeast

The Nation's First Licensed Nationally Recognized Testing Laboratory

MET Laboratories, Inc. Safety Certifications - EMI - Telecom - Environmental Simulation - NRTL
901 Sheldon Drive · Cary, North Carolina 27513 · Ph: (919) 481-9319 or (800) 321-4655 · Fax: (919) 481-6715

Mr. Brian Coppock
Wyle Laboratories
7800 Highway 20 West
Huntsville, AL 35806
Email: brian.coppock@wyle.com

January 18, 2013

Reference:	Job Number SAFN6995 (Revised 1/18/13)
Initial Review Date:	7/13/12
Final Review Date:	7/13/12
Final Installation Facility Name:	TBD by customer
Final Installation Facility Address:	TBD by customer

Dear Mr. Coppock,

We have completed our referenced field inspection in accordance with our Field Labeling program. The inspection included 4 total pieces of equipment (units) as noted on page 2.

The equipment was evaluated in accordance with the applicable sections of the National Electrical Code (NEC), the Recommended Practice and Procedures for Unlabeled Electrical Equipment Evaluation 1st edition (ACES & ACIL), and the US Standard(s) as noted with each piece of equipment (units) on page 2.

This test report contains only findings and results regarding the indicated equipment for installation at the particular final installation location. Any modifications other than normal maintenance items will require re-inspection before being placed back into service. This equipment was evaluated as extensively as possible in the field with respect to electrical fire and electrical shock hazards only. This evaluation is not intended as an endorsement of the equipment or approval of similar or identical equipment at this or any other location.

This completes the work anticipated under our Field-Labeling program. If you should have any questions, please do not hesitate to contact us.

Sincerely,

Ryan Schlabaugh
Associate Project Engineer
MET Southeast

Reviewed By,

Brad Collison
Managing Engineer
MET Southeast

The Nation's First Licensed Nationally Recognized Testing Laboratory

MET Laboratories, Inc. Safety Certifications - EMI - Telecom - Environmental Simulation - NRTL
901 Sheldon Drive · Cary, North Carolina 27513 · Ph: (919) 481-9319 or (800) 321-4655 Fax: (919) 481-6716

	Unit 1	Unit 2	Unit 3
Description	Table Top Voting Machine	Table Top Voting Machine	Voting Machine
Model	A200-00	A100-00	DS200
Serial #	AM0208470644	AM0106431956	DS0110340480
Manufacturer	ES & S	ES & S	ES & S
Ratings	120V 60HZ 1.5A	120V 60HZ 1.5A	24V 3.34A 80W
Standard(s)	UL 60950	UL 60950	UL 60950
Field Label #	173999	173982	173997

	Unit 4
Description	Voting Machine
Model	DS200
Serial #	E50108340085
Manufacturer	ES & S
Ratings	24V 3.34A 80W
Standard(s)	UL 60950
Field Label #	173998

The Nation's First Licensed Nationally Recognized Testing Laboratory

ATTACHMENT G
iBETA Product Safety Test Report T57213

wyle laboratories

Wyle Laboratories, Inc.
7800 Highway 20 West
Huntsville, Alabama 35806
Phone (256) 837-4411 • Fax (256) 830-2109
www.wyle.com

TEST REPORT

REPORT NO.: T57213-01
WYLE JOB NO.: T57213
CLIENT P.O. NO.: 102809
CONTRACT: N/A
TOTAL PAGES (INCLUDING COVER): 25
DATE: November 24, 2009

PRODUCT SAFETY TEST & EVALUATION OF THE ES&S DS850 VOTE TABULATION SYSTEM

For
iBeta Quality Assurance
3131 S. Vaughn Way,
Suite 650
Aurora, CO 80014

STATE OF ALABAMA
COUNTY OF MADISON }

Robert D. Hardy, Department Manager, being duly sworn, deposes and says: The information contained in this report is the result of complete and carefully conducted testing and is to the best of his knowledge true and correct in all respects.

Robert Hardy

SUBSCRIBED and sworn to before me this 24 day of Nov 20 09

Sandra A. Daniel

Notary Public in and for the State of Alabama at Large

My Commission expires June 5, 2011

Wyle shall have no liability for damages of any kind to person or property, including special or consequential damages, resulting from Wyle's providing the services covered by this report.

TEST BY: for Jimmy Smith, Senior Engineering Specialist 11/24/09 Date

APPROVED BY: Wendy Owens 11/24/09
Wendy Owens, Project Engineer Date

WYLE Q.A.: 11/24/09
Raul F. Terceno, Q. A. Manager Date

(sd)

TABLE OF CONTENTS

1.0 GENERAL

This report outlines the result of the inspection, test, and evaluation of the ES&S Model DS850 Digital Scan Central-Count Vote Tabulation System for compliance with the applicable requirements of the UL Standard "Safety for Information Technology Equipment", UL 60950-1:2007, Second Edition. The EUT was tested at Wyle Laboratories' Huntsville, Alabama facility during the week of November 2, 2009.

Applicant: IBETA QUALITY ASSURANCE
3131 S. VAUGHN WAY
SUITE 650
AURORA, CO 80014

Contact: Carolyn Coggins
Telephone: 303-627-1110, ext. 122
Fax: 303-627-1221
Email: CCoggins@ibeta.com

2.0 PRODUCT DESCRIPTION

The ES&S Model DS850(i) Digital Scan Central-Count Vote Tabulation System, hereinafter referred to as the Equipment Under Test (EUT), is a high-speed image-based scanner that provides for the sorting of physical ballots based on configurable sort criteria into three (3) separate output trays and is designed to process a wide variety of ballot types and sizes, including folded ballots.

3.0 PRODUCT IDENTIFICATION

Wyle Laboratories received one (1) test sample of the EUT as identified in Table 3-1.

Table 3-1 EUT Identification

Items	Part Numbers	Serial Numbers	Quantity
ES&S Digital Scan Central-Count Vote Tabulation System	DS850(i)	DS8509420013	One (1) each
OKI Printer	N22115A	AF97052471A0	One (1) each
OKI Printer	D2200A	AE72029845C0	One (1) each
APC UPS	BR1500	8B0848R49197	One (1) each

4.0 REFERENCES

- Wyle Quote No. 545/049809/DB
- Customer P.O. No. 102809
- UL Standard "Safety for Information Technology Equipment", UL 60950-1:2007, Second Edition
- ANSI/NCSL Z540-1, "Calibration Laboratories and Measuring and Test Equipment, General Requirements"
- ISO 10012-1, "Quality Assurance Requirements for Measuring Equipment"
- Wyle Laboratories' Quality Assurance Program Manual, Revision 4

5.0 ELECTRICAL RATINGS

- 120/240-VAC, 50/60 Hz, 8.0-amperes

6.0 TEST PERFORMANCE

One representative sample of the EUT was tested in accordance with the UL Standard "Safety for Information Technology Equipment", UL 60950-1:2007, Second Edition.

The following performance tests were conducted in addition to construction evaluation and evaluation for protection against injury to persons.

Table 6-1 Performance Tests

Test Description	Clause	Result
Input Current	1.6.2	Compliant
Durability	1.7.13	Compliant
Access to Energized Parts	2.1.1.1	Compliant
Bonding Resistance	2.6.3.3	Compliant
Mechanical Strength and Stress Relief	4.2	Compliant
Temperature Tests	4.5.1	Compliant
Touch Current	5.1	Compliant
Electric Strength	5.2	Compliant

Non-performance evaluation of the accompanying documentation and unit construction were also performed. No anomalies were discovered during these evaluations.

A representative sample of the EUT detailed in this report has been tested and evaluated and found to comply with the applicable requirements of the UL Standard "Safety for Information Technology Equipment", UL 60950-1:2007, Second Edition. Raw data is maintained on file at Wyle Laboratories.

7.0 QUALITY ASSURANCE

All work performed on this program was in accordance with Wyle Laboratories' Quality Assurance Program and Wyle Laboratories' Quality Program Manual, which conforms to the applicable portions of International Standard Organization (ISO) Guide 17025.

The Wyle Laboratories, Huntsville Facility, Quality Management System is registered in compliance with the ISO-9001 International Quality Standard. Registration has been completed by Quality Management Institute (QMI), a Division of Canadian Standards Association (CSA).

Wyle Laboratories is accredited (Certificate No. 845.01 and 845.02) by the American Association for Laboratory Accreditation (A2LA), and the results documented in this test report have been determined in accordance with Wyle's scope of accreditation unless otherwise stated in the report.

8.0 TEST EQUIPMENT AND INSTRUMENTATION

All instrumentation, measuring, and test equipment used in the performance of this test program was calibrated in accordance with Wyle Laboratories' Quality Assurance Program which complies with the requirements of ANSI/NCSL Z540-1, ISO 10012-1, and ISO/IEC 17025. Standards used in performing all calibrations are traceable to the National Institute of Standards and Technology (NIST) by report number and date. When no national standards exist, the standards are traceable to international standards or the basis for calibration is otherwise documented.

WYLE LABORATORIES, INC.
Huntsville Facility

ATTACHMENT A
PHOTOGRAPHS

Photograph No. 1
Central-Count Vote Tabulation System

Photograph No. 2
Printer

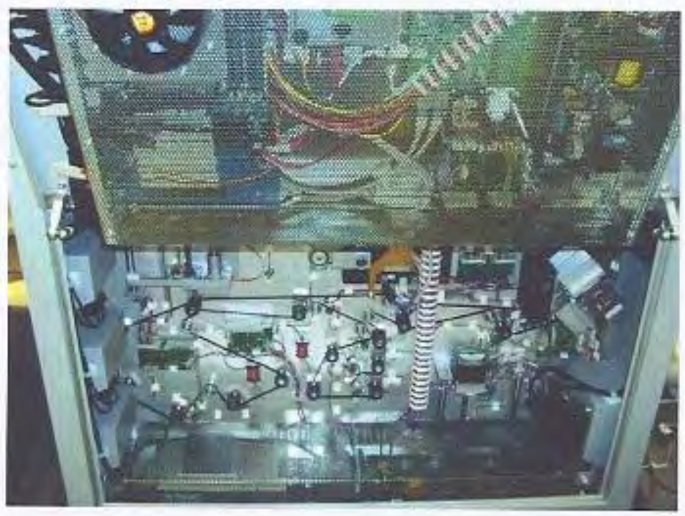
Photograph No. 3
Printer

Photograph No. 4
Input Current Test Set-up

Photograph No. 5
Touch Current Test Set-up

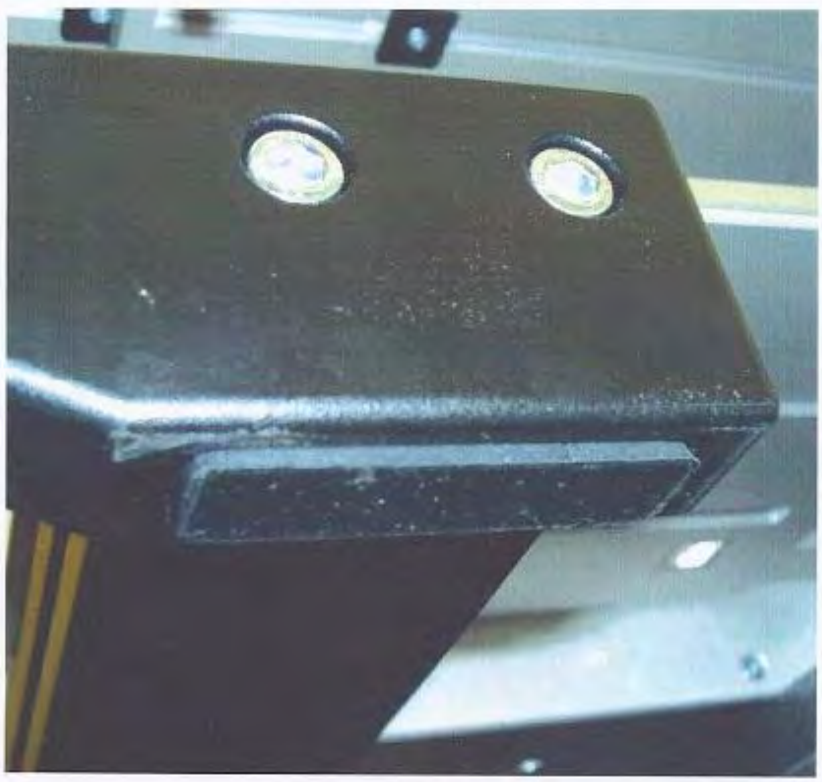
Photograph No. 6
Bonding Resistance Test Set-up

Photograph No. 7
Electric Strength Test Set-up



Photograph No. 8
Central-Count Vote Tabulation System Interior

Photograph 9
EUT Stabilizing Feet



Photograph No. 10
EUT Stabilizing Feet

Photograph No. 11
Central-Count Vote Tabulation System Warning Label

WYLE LABORATORIES, INC.
Huntsville Facility

ATTACHMENT B

SAFETY CRITICAL COMPONENTS

Safety Critical Components

Object/Device	Manufacturer	Type/Model	Technical Data	Marks of Conformity
Main Power Supply	ASTEC	LPQ252	Input: 100-250 VAC, 50/60/440 Hz Output: 120-300 VDC @ 3.4 Amps Maximum	UL Recognized, CE, CSA
Power Supply	Cosel	PBA150F	Input: 85-264 VAC, 47/63 Hz Output: Adjustable	UL Recognized, CE, TUV
Step Motor Power Supply	RTA PAVIA	NDC52HM	24 – 75 VDC	CE
Ventilation Fan	TRACO	D06T12HWSGN	12 VDC	UL Recognized, CE, CSA

ATTACHMENT C

TEST DATA SHEETS

LABORATORY TEST DATA SHEET

wyle laboratories

Customer: IBETA
Specimen: Central-Count Vote Tabulation System

Model Number	DS850(i)	Amb. Temp.	25° C	Job. No.	T57213
Serial Number	DS8509420013	Photo	N	Report No.	T57213-01
Spec.	UL 60950-1 2nd Ed.	Test Med.	N/A	Start Date	11/02/2009
Para.	1.6.2	Specimen Temp.	N/A		

Test Title: Input Current

REQUIREMENT

"The steady state input current of the equipment shall not exceed the rated current by more than 10% under normal load."

Test Performance

The equipment has an input rating of 120/240 VAC, 50/60 Hz, 8.0 Amperes. The equipment was allowed to run until steady state current had stabilized. The current was then recorded at the rated voltage range per Section 1.6.2.

Test Voltage (AC)	Test Frequency (Hz)	Measured Current (A)	Rated Current (A)
120	60	3.12	8.0

Result:

The input current of the EUT was within the manufacturer's published current rating.

Tested By [signature] Date Nov 2, 2009
Witness N/A Date NA
Sheet No. 1 of 1

Notice of Anomaly None

Approved Wendy Owens 11/10/09

Wyle Form WH614A, Rev. APR '84

LABORATORY TEST DATA SHEET

wyle laboratories

Customer: IBETA
Specimen: Central-Count Vote Tabulation System

Model Number	DS850(i)	Amb. Temp.	25° C	Job. No.	T57213
Serial Number	DS8509420013	Photo	N	Report No.	T57213-01
Spec.	UL 60950-1 2nd Ed.	Test Med.	N/A	Start Date	11/02/2009
Para.	1.7.13	Specimen Temp.	N/A		

Test Title: Durability

REQUIREMENT

"Any marking required by this standard shall be durable and legible. In considering the durability of the marking, the effect of normal use shall be taken into account.."

Test Performance:

All labels and markings on the external enclosure were rubbed first by hand with a rag soaked with water for 15 seconds, followed by rubbing by hand with a rag soaked with a petroleum spirit for 15 seconds.

Result:

All labels and markings remained legible, were not easily removable, and showed no signs of curling at the edges which meets the acceptance criteria.

Tested By [signature] Date Nov 2, 2009
Witness N/A Date NA
Sheet No. 1 of 1

Notice of Anomaly None

Approved Wendy Owens 11/10/09

Wyle Form WH814A, Rev. APR '84

LABORATORY TEST DATA SHEET

wyle laboratories

Customer: iBETA
Specimen: Central-Count Vote Tabulation System

Model Number	DS850(i)	Amb. Temp.	25° C	Job. No.	T57213
Serial Number	DS8509420013	Photo	N	Report No.	T57213-01
Spec.	UL 60950-1 2nd Ed.	Test Med.	N/A	Start Date	11/02/2009
Para.	2.1.1.1	Specimen Temp.	N/A		

Test Title: Access to Energized Parts

REQUIREMENT
"The equipment shall be so constructed that in operator access areas there is adequate protection against contact with energized parts or parts that have the potential to become energized as specified in 2.1.1.1."

Test Performance:
There are no access openings in the enclosure of the Vote Tabulation System which would allow access to any energized parts.

Result:
No contact could be made with hazardous parts, hazardous voltages, or parts that have the potential to become hazardous as a result of a fault condition using the test finger and test pin on the enclosure.

Tested By: Jay Smith Date: Nov 2, 2009
Witness: N/A Date: NA
Sheet No. 1 of 1
Approved: Wendy Owens 11/10/09

Notice of Anomaly: None

Wyle Form WH614A, Rev. APR '84

LABORATORY TEST DATA SHEET

wyle laboratories

Customer: IBETA
Specimen: Central-Count Vote Tabulation System

Model Number	DS850(I)	Amb. Temp.	25° C	Job. No.	T57213
Serial Number	DS8509420013	Photo	Y	Report No.	T57213-01
Spec.	UL 60950-1 2nd Ed.	Test Med.	N/A	Start Date	11/02/2009
Para.	2.6.3.3	Specimen Temp.	N/A		

Test Title: Bonding Resistance of Earthing Conductors and Terminals

REQUIREMENT:

"If the current rating of the circuit under test is 16 A or less, the test current, test voltage and the duration of the test are determined as follows:
– the test current is at least two times the current rating of the circuit under test; and
– the test voltage is not to exceed 12 V; and
– the duration of the test is 60-120 s;
and the resistance of the PROTECTIVE BONDING CONDUCTOR, calculated from the voltage drop, shall not exceed 0.1 ohm."

Location	Test Current	Voltage Drop	Results
Ground Pin Of Cord Set To Bonding Screw Terminal At The Rear Access Panel Door.	16 Amps	0.82 volts	Pass: (0.05 ohm)

Result:
Measured resistance is within the standard's limits.

Tested By [signature] Date Nov 3, 2009
Witness N/A Date NA
Sheet No. 1 of 1
Notice of Anomaly: None
Approved Wendy Owens 11/10/09

Wyle Form WH614A, Rev. APR '84

LABORATORY TEST DATA SHEET

wyle laboratories

Customer: iBETA
Specimen: Central-Count Vote Tabulation System

Model Number	DS850(i)	Amb. Temp.	25° C	Job. No.	T57213
Serial Number	DS8509420013	Photo	N	Report No.	T57213-01
Spec.	UL 60950-1 2nd Ed.	Test Med.	N/A	Start Date	11/02/2009
Para.	4.2	Specimen Temp.	N/A		

Test Title: Mechanical Strength and Stress Relief

REQUIREMENT and Procedures:

Section 4.2.2 – Steady Force 10N

A steady force of 10N ± 1N is applied to components and parts, other than parts serving as an Enclosure.

Results: Pass

Section 4.2.3 – Steady Force 30N

The EUT is placed on a suitable surface. A steady force of 30N ± 3N is to be applied for a period of 5 seconds on four surfaces by means of a straight un-jointed test finger.

Results: Pass

Section 4.2.4 – Steady Force 250N

The EUT is placed on a suitable surface. A steady force of 250N ± 10 N is to be applied for a period of 5 seconds on four surfaces by means of a suitable tool which provided contact over a circular plane surface 30 mm in diameter.

Results: Pass

Section 4.2.5 – Steel Ball Test

With the EUT held in a fixed position, a smooth sphere, approximately 50 mm in diameter and weighing 500 g ± 25 g, was allowed to fall horizontally from rest through the distance of 1300 mm and allowed to strike the EUT in three different locations.

Results: No Test: Enclosure is constructed of sheet metal.

Section 4.2.7 – Mold Stress Relief

A sample consisting of the complete equipment, or of the complete enclosure, together with any supporting framework, is to be subjected to a circulating air oven to a temperature 10 K higher than the maximum temperature observed during the test of 5.1, but not less than 70 °C, for a period of 7 hours, then permitted to cool to room temperature.

Results: No Test: Enclosure is constructed of sheet metal.

Tested By [signature] Date Nov 3, 2009
Witness N/A Date NA
Sheet No. 1 of 1

Notice of Anomaly: None

Approved Wendy Owens 11/10/09

Wyle Form WH614A, Rev. APR '94

LABORATORY TEST DATA SHEET

wyle laboratories

Customer: iBETA
Specimen: Central-Count Vote Tabulation System

Model Number	DS850(i)	Amb. Temp.	25° C	Job. No.	T57213
Serial Number	DS8509420013	Photo	N	Report No.	T57213-01
Spec.	UL 60950-1 2nd Ed.	Test Med.	N/A	Start Date	11/02/2009
Para.	4.5.1	Specimen Temp.	N/A		

Test Title: Temperature Tests

REQUIREMENT

"Materials used in components and in the construction of the equipment shall be selected so that under normal load, temperatures do not exceed safe values in the meaning of this standard."

Test Performance:

Both units were powered in normal operational mode and remained powered for time indicated in table below. Temperature measurements were recorded at the locations indicated in the following table.

Start date/time	11/04/09, 15:00	Ambient Temperature and Humidity
Stop date/time	11/05/09, 08:00	25° C, 35% RH
Voltage/Freq.	120 VAC/60Hz	
Position	**Recorded temp. (°C)**	**Maximum Temperature Rise (°C)**
Touch Screen	30.3	45
Ballot Tray	27.2	
Top of Ballot Reader	25.8	
Right Side Enclosure	26.2	
Left Side Enclosure	25.7	
On/Off Switch Assembly	27.1	
Rear Access Cover	27.2	
PC Power Supply	29.6	
Hard Drive	31.2	
Step Motor Power Supply	33.3	
Main Power Supply	35.7	

Tested By [signature] Date Nov 5, 2009
Witness N/A Date NA
Sheet No. 1 of 1

Notice of Anomaly None

Approved Wendy Owens 11/10/09

Wyle Form WH814A, Rev. APR '84

LABORATORY TEST DATA SHEET

wyle laboratories

Customer: iBETA
Specimen: Central-Count Vote Tabulation System

Model Number DS850(i) | Amb. Temp. 25° C | Job. No. T57213
Serial Number DS8509420013 | Photo Y | Report No. T57213-01
Spec. UL 60950-1 2nd Ed. | Test Med. N/A | Start Date 11/02/2009
Para. 5.1 | Specimen Temp. N/A

Test Title: Touch Current and Protective Conductor Current

REQUIREMENT:

"Equipment shall be so designed and constructed that neither touch current nor protective conductor current is likely to create an electric shock hazard."

Test Performance:

Using circuit specified in D1 of Appendix D the following leakage current measurements were recorded:

Polarity	Ground	Conductor	Reading (mA)
Forward	Open	Line	0.089
Forward	Open	Neutral	0.083
Reverse	Open	Line	0.089
Reverse	Open	Neutral	0.082

Result:

Current leakage was measured to be less than maximum level of 3.5 mA for stationary equipment per Table 5A in Section 5.1.6.

Tested By [signature] Date Nov 9, 2009
Witness N/A Date NA
Sheet No. 1 of 1

Notice of Anomaly None

Approved Wendy Owens 11/10/09

Wyle Form WH614A, Rev. APR '84

LABORATORY TEST DATA SHEET

wyle laboratories

Customer: IBETA
Specimen: Central-Count Vote Tabulation System

Model Number	DS850(i)	Amb. Temp.	25° C	Job. No.	T57213
Serial Number	DS8509420013	Photo	Y	Report No.	T57213-01
Spec.	UL 60950-1 2nd Ed.	Test Med.	N/A	Start Date	11/02/2009
Para.	5.2	Specimen Temp.	N/A		

Test Title: Electric Strength (Hi-pot)

REQUIREMENT:

"There shall be no insulation breakdown during test."

Test Performance:

Gradually apply 1000 VAC in accordance with Table 5B and hold for a duration of 60 seconds.

Location	Test Voltage	Results
Voltage Applied Across Grounding Pin Of The Cord Set And Line/Neutral Shorted Together	1000 VAC	Pass

Result:

No insulation breakdown during test

Tested By [signature] Date Nov 5, 2009
Witness N/A Date NA
Sheet No. 1 of 1

Notice of Anomaly None

Approved Wendy Owens 11/10/09

Wyle Form WH614A, Rev. APR '84

ATTACHMENT D

INSTRUMENTATION EQUIPMENT SHEET

wyle laboratories

INSTRUMENTATION EQUIPMENT SHEET

DATE: 11/2/2009 JOB NUMBER: T57213 TYPE OF TEST PRODUCT SAFETY

TECHNICIAN: J. SMITH CUSTOMER: IBETA TEST AREA: PRODUCT SAFETY

No.	Description	Manufacturer	Model	Serial #	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
1	CALIPER	CHINA	150	109918	109918	150mm/6in	.001"	9/28/2009	12/28/2009
2	HIPOT TSTR	BIDDLE	230425	254666	110745	5 KV	MFG	8/19/2009	8/19/2010
3	IMP MTR	PSC INC	30D	3166	112726	50AMP	1%	9/9/2009	9/9/2010
4	LEAKAGE TSTR	ED&D	LT-15	B05260061	112404	2mA	1%	6/24/2009	6/24/2010
5	LEAKAGE TSTR	ED&D	LT-952	09980109	114812	2mA	1%	12/23/2008	12/23/2009
6	SCOPEMETER	FLUKE	124	DM9260098	04609	MULTI	CERT	1/8/2009	1/8/2010
7	STOP WATCH	HANHART	STRATOS1	110132	110132	10HR	±0.5sec	3/27/2009	3/27/2010
8	TAPE MEASURER	LUFKIN	HI-VIZ	NSN	04604	26'	±1/32"	2/13/2009	2/13/2010
9	TEMP IND	OMEGA	MDSS41.TC	4203D6	116000	MULTI	±0.2°	9/28/2009	9/28/2010
10	TEMP RECORDER	DICKSON	THDX	6348805	113410	-20-120°F	1.8°F	12/23/2008	12/23/2009
11	THERMOMETER	FLUKE	68	2667260601-0	110762	-25 TO +1400°F	±2°F	8/19/2009	8/19/2010

This is to certify that the above instruments were calibrated using state-of-the-art techniques with standards whose calibration is traceable to the National Institute of Standards and Technology.

INSTRUMENTATION: Jim Smith 11-2-09 CHECKED & RECEIVED BY: Wendy Owens 11/2/09

Q.A.: 11/2/09

WH-1029A,REV.APR'99

ATTACHMENT H
INSTRUMENTATION EQUIPMENT SHEETS

wyle laboratories

INSTRUMENTATION EQUIPMENT SHEET

DATE: 5/2/2012 JOB NUMBER: T59087 TYPE OF TEST VIBRATION

TECHNICIAN: D MEDLEY CUSTOMER: ES&E TEST AREA: DYN LAB

No.	Description	Manufacturer	Model	Serial #	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
1	ACCELEROMETER	ENDEVCO	7704A-50	13071	02572	50pC/g	±5%	1/6/2012	7/6/2012
2	ACCELEROMETER	ENDEVCO	7704A-50	13064	02573	50pC/g	±5%	1/6/2012	7/6/2012
3	CHARGE	ENDEVCO	2775	AL43	102281	GAIN	1.55	1/30/2012	7/30/2012
4	CHARGE	ENDEVCO	2775A	EE42	112650	GAIN	1.5%	12/16/2011	6/13/2012
5	DMM	FLUKE	45	5095170	114297	MULTI	CERT	5/18/2011	5/18/2012
6	VIB CONTROL	SPECTRAL DYN	2432-9700-1	2400-1656	116778	MFG	MFG	2/1/2012	2/1/2013

This is to certify that the above instruments were calibrated using state-of-the-art techniques with standards whose calibration is traceable to the National Institute of Standards and Technology.

INSTRUMENTATION: Jorm Rega 5/2/12 CHECKED & RECEIVED BY: [illegible] 5/2/12

Q.A.: Rahil Relinger 5/2/12

WH-1029A,REV,APR'99

Page 1 of 1

wyle laboratories

INSTRUMENTATION EQUIPMENT SHEET

DATE: 5/16/2012 JOB NUMBER: T59087 TYPE OF TEST VIBRATION

TECHNICIAN: J REYER CUSTOMER: ES&S TEST AREA: DYN LAB

No.	Description	Manufacturer	Model	Serial #	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
1	ACCELEROMETER	ENDEVCO	7704A-50	13071	02572	50pC/g	±5%	1/6/2012	7/6/2012
2	ACCELEROMETER	ENDEVCO	7704A-50	12608	04868	50pC/g	±5%	2/16/2012	8/16/2012
3	ACCELEROMETER	ENDEVCO	7708-200	AD11	096605	200 pC/g / 20-5k	±5%	1/30/2012	7/28/2012
4	CHARGE	ENDEVCO	2775	AL09	102282	GAIN	±1.5%	1/3/2012	7/3/2012
5	CHARGE	ENDEVCO	2775A	EE30	112651	GAIN	1.5%	1/27/2012	7/27/2012
6	DMM	FLUKE	45	5095170	114297	MULTI	CERT	5/18/2011	5/18/2012
7	VIB CONTROL	SPECTRAL DYNAI	2400	1657	116969	MFG	MFG	3/5/2012	3/5/2013

This is to certify that the above instruments were calibrated using state-of-the-art techniques with standards whose calibration is traceable to the National Institute of Standards and Technology.

INSTRUMENTATION: [illegible] 5/16/12 CHECKED & RECEIVED BY: [illegible] 5/16/12

Q.A.: [illegible] 5/16/12

WH-1029A,REV,APR'99

Page 1 of 1

wyle laboratories

INSTRUMENTATION EQUIPMENT SHEET

DATE: 5/24/2012 JOB NUMBER: T59087 TYPE OF TEST VIBRATION

TECHNICIAN: DAVID MEDLEY CUSTOMER: ES&S TEST AREA: DYNAMICS LABORATORY

No.	Description	Manufacturer	Model	Serial #	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
1	ACCELEROMETER	ENDEVCO	7704A-50	12608	04868	50pC/g	±5%	2/16/2012	8/16/2012
2	ACCELEROMETER	ENDEVCO	7704A-50	12607	04869	50pC/g	±5%	2/2/2012	8/2/2012
3	CHARGE	ENDEVCO	2775	AL09	102282	GAIN	±1.5%	1/3/2012	7/3/2012
4	CHARGE	ENDEVCO	2775A	EE30	112651	GAIN	1.5%	1/27/2012	7/27/2012
5	DMM	KEITHLEY	179A	196804	101203	1200VDC	±.04%DC	3/5/2012	3/5/2013
6	VIB CONTROL	SPECTRAL DYN	2432-9700-1	2400-1656	116778	MFG	MFG	2/1/2012	2/1/2013

This is to certify that the above instruments were calibrated using state-of-the-art techniques with standards whose calibration is traceable to the National Institute of Standards and Technology.

INSTRUMENTATION: David Medley 5/24/12 CHECKED & RECEIVED BY: [signature] 5/24/12

Q.A.: [signature] 5-24-12

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wyle laboratories

INSTRUMENTATION EQUIPMENT SHEET

DATE: 5/25/2012 JOB NUMBER: T59087.01 TYPE OF TEST VIBRATION

TECHNICIAN: D.MEDLEY CUSTOMER: ES&S TEST AREA: DYN LAB

No.	Description	Manufacturer	Model	Serial #	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
1	ACCELEROMETER	ENDEVCO	7704A-50	12608	04868	50pC/g	±5%	2/16/2012	8/16/2012
2	ACCELEROMETER	ENDEVCO	7704A-50	12607	04869	50pC/g	±5%	2/2/2012	8/2/2012
3	CHARGE	ENDEVCO	2775	AL09	102282	GAIN	±1.5%	1/3/2012	7/3/2012
4	CHARGE	ENDEVCO	2775A	EE30	112651	GAIN	1.5%	1/27/2012	7/27/2012
5	DMM	KEITHLEY	179A	196804	101203	1200VDC	±.04%DC	3/5/2012	3/5/2013
6	VIB CONTROL	SPECTRAL DYN	2432-9700-1	2400-1656	116778	MFG	MFG	2/1/2012	2/1/2013

This is to certify that the above instruments were calibrated using state-of-the-art techniques with standards whose calibration is traceable to the National Institute of Standards and Technology.

INSTRUMENTATION: D Medley 5/25/12 CHECKED & RECEIVED BY: [signature] 5/25/12

Q.A.: [signature] 5/25/12

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INSTRUMENTATION EQUIPMENT SHEET

DATE: 6/1/2012 JOB NUMBER: T59087 TYPE OF TEST TEMP-HUM

TECHNICIAN: T.J.PARCUS CUSTOMER: ES&S VOTING SYSTEMS TEST AREA: CH 101

No.	Description	Manufacturer	Model	Serial #	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
1	HUMIDITY\TEMP	VAISALA	HMT315	H0430013	01501	MULTI	MFG	2/3/2012	8/3/2012
2	TEMP CONTR	THERMOTRON	7800	983044	03350	TYPE T	±1°C	2/27/2012	2/27/2013
3	TEMP RECORDER	HONEYWELL	DR45AT	0433Y464009	110441	-200 to 600 F TY	MFG	2/27/2012	2/27/2013

This is to certify that the above instruments were calibrated using state-of-the-art techniques with standards whose calibration is traceable to the National Institute of Standards and Technology.

INSTRUMENTATION: 6-1-12 CHECKED & RECEIVED BY: 6/1/12

Q.A.: 6/1/12

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INSTRUMENTATION EQUIPMENT SHEET

DATE: 11/16/2012 JOB NUMBER: T59087.01 TYPE OF TEST TEMP-HUM

TECHNICIAN: T.J.PARCUS CUSTOMER: ES&S TEST AREA: CHAMBER 16

No.	Description	Manufacturer	Model	Serial #	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
1	CHART RECORDER	HONEYWELL	DRT45AT-1111	0549Y568906(	110980	32 TO 131°F	0.5% FS	6/25/2012	6/25/2013
2	TEMP ALARM	THERMOTRON	THERM-ALARM	nsn	03379	TYPE T	±1°C	6/25/2012	6/25/2013
3	TEMP	THERMOTRON	4800	nsn	03378	-125-375°F	.25%	6/25/2012	6/25/2013

This is to certify that the above instruments were calibrated using state-of-the-art techniques with standards whose calibration is traceable to the National Institute of Standards and Technology.

INSTRUMENTATION: [signature] 11/16/12 CHECKED & RECEIVED BY: [signature] 11/16/12

Q.A.: [signature]

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INSTRUMENTATION EQUIPMENT SHEET

DATE: 6/18/2012 JOB NUMBER: T59087.01 TYPE OF TEST ELECTRICAL SUPPLY

TECHNICIAN: RYAN CHAMBER CUSTOMER: ES&S TEST AREA: VOTING SYSTEMS

No.	Description	Manufacturer	Model	Serial #	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
1	STOP WATCH	EXTECH	365510	NSN	02334	24 HR	5 sec/day	8/4/2011	8/4/2012

This is to certify that the above instruments were calibrated using state-of-the-art techniques with standards whose calibration is traceable to the National Institute of Standards and Technology.

INSTRUMENTATION: Brian Coffield 6/18/12 CHECKED & RECEIVED BY: Ryan D. Chamber 6/18/12

Q.A.: [illegible] 6/18/12

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INSTRUMENTATION EQUIPMENT SHEET

DATE: 12/13/2012 JOB NUMBER: T59087 TYPE OF TEST TEMP OP

TECHNICIAN: T.J.PARCUS CUSTOMER: ES-S TEST AREA: CHAMBER 51A

No.	Description	Manufacturer	Model	Serial #	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
1	DMM	FLUKE	87 III	80250197	116939	4VDC,AC,Ohms	.05%,1%,.2%	6/21/2012	6/21/2013
2	TEMP	MICRISTAR	828-B11	10033	108416	-400-700°F	.1%FS	12/5/2012	12/5/2013
3	TEMP IND	NEWPORT	Q2001TC	N/A	116533	TYPE T	±1.5%	12/5/2012	12/5/2013
4	TEMP RECORDER	HONEYWELL	DR450T	924488505000	109830	-200-600°F	.4°F	12/5/2012	12/5/2013

This is to certify that the above instruments were calibrated using state-of-the-art techniques with standards whose calibration is traceable to the National Institute of Standards and Technology.

INSTRUMENTATION: Tony Parcus 12/13/12 CHECKED & RECEIVED BY: Steph 12/13/12

Q.A.: Michael Cooper 12/13/2012

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INSTRUMENTATION EQUIPMENT SHEET

DATE: 6/19/2012 JOB NUMBER: T59087.01 TYPE OF TEST ACOUSTIC/HAC

TECHNICIAN: D. LEE CUSTOMER: ES&S TEST AREA: EMI LAB CHAM. 1

No.	Description	Manufacturer	Model	Serial #	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
1	DRIVING CIRCUIT	COMPLIANCE DE!	HAP100	003957	114360	20kH	±1%	10/20/2011	10/20/2014
2	OSCILLOSCOPE	TEKTRONIX	TDS2022B	C010280	04614	MULTI	CERT	4/9/2012	4/9/2013
3	SOUND LVL MTR	EXTECH	407736	010305516	116831	35-130 dB	±1.5dB	7/27/2011	7/27/2012
4	TAPE MEASURER	LUFKIN	HV1048CME	NSN	02242	26'/8m	MFG	8/3/2011	8/3/2012
5	WAVE GEN	AGILENT	33250A	MY40014181	014181	MULTI	CERT	6/29/2011	6/29/2012

This is to certify that the above instruments were calibrated using state-of-the-art techniques with standards whose calibration is traceable to the National Institute of Standards and Technology.

INSTRUMENTATION: Darin Lee 06/19/12 CHECKED & RECEIVED BY: Steph [illegible] 6/19/12

Q.A.: [illegible] 6/19/12

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INSTRUMENTATION EQUIPMENT SHEET

DATE: 11/20/2012 JOB NUMBER: T59087.01 TYPE OF TEST ACOUSTIC

TECHNICIAN: DAVIN LEE CUSTOMER: ES&S TEST AREA: EMI CHAMBER 3

No.	Description	Manufacturer	Model	Serial #	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
1	SOUND LVL MTR	EXTECH	407736	010305516	116831	35-130 dB	±1.5dB	10/1/2012	10/1/2013

This is to certify that the above instruments were calibrated using state-of-the-art techniques with standards whose calibration is traceable to the National Institute of Standards and Technology.

INSTRUMENTATION: Davin Lee 11/20/12 CHECKED & RECEIVED BY: [signature] 11/20/12

Q.A.: Bonda Mao 11/20/12

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ATTACHMENT I
Wyle Test Report No. T57936.01-01

wyle laboratories

Wyle Laboratories, Inc.
7800 Highway 20 West
Huntsville, Alabama 35806
Phone (256) 837-4411 Fax (256) 830-2109
www.wyle.com

TEST REPORT

REPORT NO.: T57936.01-01
WYLE JOB NO.: T57936.01
CLIENT P.O. NO.: ES&S-MSA-TA001
CONTRACT: N/A
TOTAL PAGES (INCLUDING COVER): 75
DATE: April 26, 2012

ELECTRICAL AND EMI HARDWARE TESTING ON THE ES&S UNITY 5.0.0.0 AUTOMARK A100 & A200 VOTING ASSIST TERMINALS

For

Election Systems and Software
11208 John Galt Blvd.
Omaha, NE 68137

STATE OF ALABAMA }
COUNTY OF MADISON }

Robert D. Hardy, Department Manager, being duly sworn, deposes and says: The information contained in this report is the result of complete and carefully conducted testing and is to the best of his knowledge true and correct in all respects.

Robert Hardy

SUBSCRIBED and sworn to before me this 9 day of Jan 2013

Sandra A. Daniel
Notary Public in and for the State of Alabama at Large

My Commission expires June 2, 2015

Wyle shall have no liability for damages of any kind to person or property, including special or consequential damages, resulting from Wyle's providing the services covered by this report.

PREPARED BY: Brian Coppock 1-9-13
Brian Coppock, NCT, Test Supervisor Date

APPROVED BY: Frank Padilla 1-9-13
Frank Padilla, Voting Systems Manager Date

WYLE Q.A.: R.F. Tereeno 1-9-13
R.F. Tereeno, Q.A. Manager Date

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 Scope

This report documents the test procedures followed and the results obtained during Electrical Testing performed on the Unity 5.0.0.0 AutoMARK A100 and AutoMARK A200 Voting System Tabulators. Upon receipt by Wyle Laboratories, the systems under test were subjected to a receiving inspection. The receiving inspection revealed the systems to be in good condition. All testing was performed at Wyle Laboratories' Huntsville, Alabama, Test Facility. The devices were tested between December 6, 2010 and August 5, 2011.

1.2 Objective

The objective of this test program was to ensure that the Unity 5.0.0.0. AutoMARK A100 and AutoMARK A200 Voting Tabulators complied with the applicable hardware requirements of the Election Assistance Commission (EAC) 2005 Voluntary Voting System Guidelines (VVSG) as described in this report.

The scope and detail of the test program was tailored to the design and complexity of the hardware submitted for testing. Only results for the required non-operating environmental tests and electrical tests are included in this report.

The tests were designed to evaluate system compliance with the electrical and electromagnetic requirements of the VVSG. The examination included hardware tests verifying system performance and function under normal and abnormal conditions.

1.3 References

- EAC 2005 Voluntary Voting System Guidelines, Volume I, Version 1.0, "Voting System Performance Guidelines", and Volume II, Version 1.0, "National Certification Testing Guidelines"
- United States Election Assistance Commission, "Testing and Certification Program Manual 2006, Version 1, January 1, 2007"
- ISO-9001:2008, "Quality Management Systems – Requirements," Edition 4
- ANSI/NCSL Z540-1, "Calibration Laboratories and Measuring and Test Equipment, General Requirements"
- ISO 10012-1, "Quality Assurance Requirements for Measuring Equipment"
- Wyle Laboratories' Quality Assurance Program Manual, Current Revision
- ISO/IEC 17025:2005, "General Requirements for the Competence of Testing and Calibration Laboratories"
- Wyle Laboratories Certification Test Plan No. T56285-01, Rev. B, dated August 10, 2009, Certification Test Plan EAC Application Number UNS0801
- IEC 61000-4-11:2004: Electromagnetic Compatibility (EMC) Part 4.11: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity tests.
- Title 47 CFR Chapter 1, Subchapter A, Part 15 "Radio Frequency Devices"
- IEC 61000-4-2:2008: Electromagnetic Compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test
- IEC 61000-4-3:2010: Electromagnetic Compatibility (EMC) – Part 4.3: Testing and measurement techniques – Radiated, radio frequency, electromagnetic field immunity test

1.3 References (Continued)

- IEC 61000-4-4:2011: Electromagnetic Compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test
- IEC 61000-4-6:2005: Electromagnetic Compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test
- IEC 61000-4-4:2008: Electromagnetic Compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio frequency fields
- IEC 61000-4-8:2009: Electromagnetic Compatibility (EMC) – Part 4-8: Testing and measurement techniques – Power frequency magnetic field immunity test

1.4 Test Specimen Description

The units under test are the AutoMARK A100 and AutoMARK A200 which are components of the ES&S Unity 5.0.0.0 Voting System.

The electronic ballot marking device component is the ES&S AutoMARK Voter Assist Terminal (VAT)

The AutoMARK VAT assists voters with disabilities by marking optical scan ballots.

The AutoMARK VAT includes two user interfaces to accommodate voters who are visually or physically impaired or voters who are more comfortable reading or hearing instructions and choices in an alternative language.

The AutoMARK is equipped with a touch screen, and keypad. The touch screen interface includes various colors and effects to prompt and guide the voter through the ballot marking process. Each key has both Braille and printed text labels designed to indicate function and a related shape to help the voter determine its use.

Regardless whether the voter uses the touch screen or other audio interface, changes can easily be made throughout the voting process by simply navigating back to the appropriate screen and selecting the change or altering selections at the mandatory vote summary screen that closes the ballot marking session.

Table 1-1 Test Specimens

Specimen	Serial Number
AutoMARK A100	AM0106431724
AutoMARK A200	AM02006430569
AutoMARK A200 (Audio Mode)	AM02006430569

1.5 Test Program Summary

The AutoMARK A100, A200 and A200 operating in the audio mode were subjected to Electrical Testing, in accordance with the hardware requirements set forth in the EAC 2005 VVSG Section 4.1.2. When operation was required during test performance, the AutoMARK devices were configured as they would be for use in an election precinct. The AutoMARK devices were subjected to hardware tests as summarized in Table 1-2.

Table 1-2 Test Program Requirements

VVSG Vol. I Section	Test Description	Result		
		A100	A200	A200 Audio Mode
4.1.2.5	Electrical Power Disturbance	Pass	Pass	Pass
4.1.2.9	Electromagnetic Radiation (FCC Part 15)	Pass	Pass	Pass
4.1.2.8	Electrostatic Disruption	Pass[1]	Pass	Pass
4.1.2.10	Electromagnetic Susceptibility	Pass	Pass	Pass
4.1.2.6	Electrical Fast Transients	Pass	Pass	Pass
4.1.2.7	Lightning Surge	Pass	Pass	Pass
4.1.2.11	Conducted RF Immunity	Pass	Pass	Pass
4.1.2.12	Magnetic Fields Immunity	Pass	Pass	Pass

1) Notice of Anomaly No. 1: 01/20/2011

2.0 TEST PROCEDURES AND RESULTS

2.1 Electrical Tests

The AutoMARK A100 and A200 Voter Assist Terminals were subjected to various electrical tests to ensure continued system operation and reliability in the presence of abnormal electrical events.

The AutoMARK A100 and A200 Voter Assist Terminals were powered and actively scanning ballots via an automated ballot count test mode during all electrical tests, allowing for continual ballot processing. Prior to and immediately following each electrical test, an operational status check was performed.

2.1.1 Electrical Power Disturbance Test

Electrostatic Discharge testing was performed in accordance with Section 4.1.2.5 of Volume I of the EAC 2005 VVSG. This testing was performed to ensure that the AutoMARK Voter Assist Terminals would be able to withstand electrical power disturbances likely to be encountered in normal operation without disruption of normal operation or loss of data.

The AutoMARK A100 and A200 Voter Assist Terminals were configured to run in an automated ballot printing test mode, where continual ballot printing would occur during the testing without operator intervention. The AutoMARK A100 and A200 Voter Assist Terminals were subjected to the test levels in Table 2-1.

Table 2-1 Electrical Power Disturbance Levels and Durations

Specified nominal power: 120 VAC		
Disturbance	Duration (s)	Applied Voltage (VAC)
Voltage dip of 30% of nominal	0.010	84.0
Voltage dip of 60% of nominal	0.100	48.0
Voltage dip of 60% of nominal	1.000	48.0
Voltage dip of >95% interrupt	5.000	6.0
Surge of +15% line variations of nominal line voltage	1.000	138.0
Surge of -15% line variations of nominal line voltage	1.000	102.0
Electric power increase of 7.5% of nominal specified power	144,000	129.0
Electric power decrease of 12.5% of nominal specified power	144,000	105.0

2.1.1 Electrical Power Disturbance Test (Continued)

Pre-operational and post-operational functional verification checks were conducted for this test. There was no loss of normal operation or loss of data as a result of the applied electrical power disturbances.

The AutoMARK A100 and A200 Voter Assist Terminals successfully completed the requirements of the Electric Power Disturbance Test. Photographs of the test setup are presented in Attachment B. The test data sheet is included in Attachment C. The Instrumentation Equipment Sheet for the test is contained in Attachment D.

2.1.2 Electromagnetic Radiation Test (FCC Part 15 Emissions)

Electromagnetic Radiation emissions measurements were performed in accordance with Section 4.1.2.9 of Volume I of the EAC 2005 VVSG. This testing was performed to ensure that emissions emanating from the unit do not exceed the limits of 47 CFR Part 15, Subpart B, Class B Limits.

The AutoMARK A100 and A200 Voter Assist Terminals were configured to run in an automated ballot count test mode, where continual ballot processing would occur during the testing. The AutoMARK A100 and A200 Voter Assist Terminals were subjected to the test requirements detailed in Table 2-2.

Table 2-2 Conducted and Radiated Emissions Requirements

Conducted Emissions			Radiated Emissions	
Frequency Range (MHz)	Limits (dBµV)		Frequency Range (MHz)	3 Meter Test Limit (dBµV)
	Quasi-peak	Average		
0.15 to 0.50	66 to 56	56 to 46	30 to 88	40.0
0.50 to 5.0	56	46	88 to 216	43.5
5.0 to 30.0	60	50	216 to 960	46.0
			960 to 1000	54.0

Testing was performed at the Wyle Laboratories' Open Air Test Site 2 (OATS-2) located on the Intergraph Complex in Huntsville, AL. The OATS-2 is fully described in reports provided to the Federal Communication Commission (FCC) (FCC Reference 98597). The site was tested and complies with the requirements of ANSI C63.4-2003.

To perform the Conducted Emissions portion of the test, the AutoMARK A100 and A200 Voter Assist Terminals were set up as depicted in Figure 2-1.

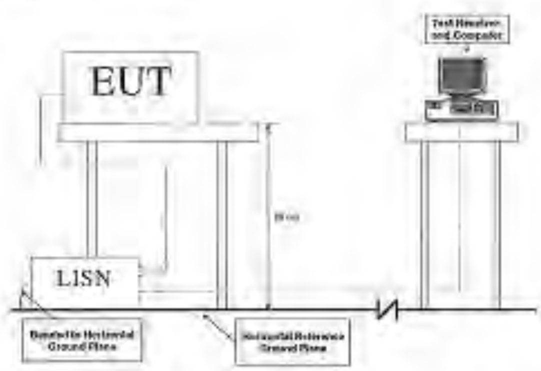

Figure 2-1 Conducted Emissions Test Setup

2.1.2 Electromagnetic Radiation Test (FCC Part 15 Emissions) (Continued)

The AutoMARK A100 and A200 Voter Assist Terminals were then subjected to the following test procedure:

1) The AutoMARK A100 and A200 Voter Assist Terminals were placed on a non-metallic table 0.8 meters above the turntable and reference ground plane at the Open-Area Test Site.
2) The AutoMARK A100 and A200 Voter Assist Terminals AC/DC Power Adapter were connected to the power mains through a Line Impedance Stabilization Network (LISN). The LISN provided 50 ohm/50 µH of coupling impedance for the measuring instrument.
3) The AutoMARK A100 and A200 Voter Assist Terminals were placed in an active state and monitored for functionality throughout testing.
4) Both Line and Neutral of the power mains connected to the AutoMARK A100 and A200 Voter Assist Terminals were checked for maximum conducted interference.
5) The frequency range from 150 kHz to 30 MHz was evaluated and recorded. Emissions levels below – 20 dB were not recorded.

To perform the Radiated Emissions portion of the test, the AutoMARK A100 and A200 Voter Assist Terminals were set up as depicted in Figure 2-2.

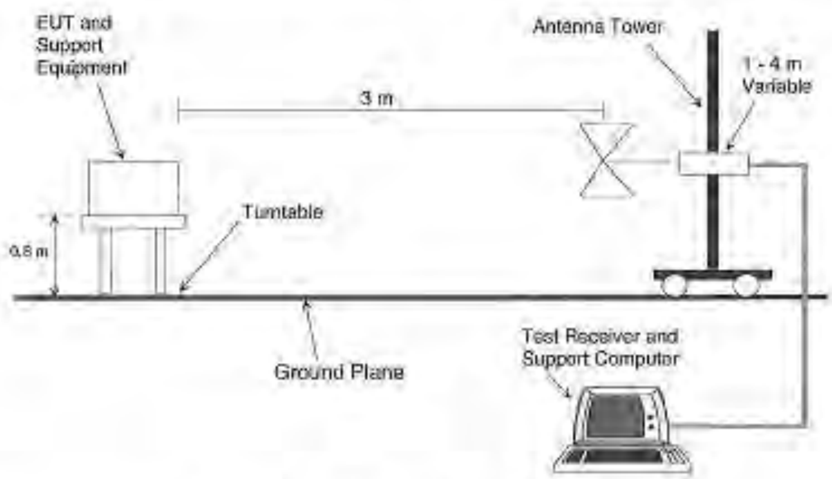

Figure 2-2 Radiated Emissions Test Setup

The AutoMARK A100 and A200 Voter Assist Terminals were then subjected to the following test procedure:

1) The AutoMARK A100 and A200 Voter Assist Terminals were placed on a non-metallic turn-table 0.8 meters above the reference ground plane at the Open-Area Test Site.
2) The AutoMARK A100 and A200 Voter Assist Terminals were placed 3 meters away from the interference-receiving antenna, which was mounted on a variable-height antenna tower. The interference-receiving antennas used were a combination of Bicon and Log Periodic antennas.
3) For each suspected emissions point, the AutoMARK A100 and A200 Voter Assist Terminals were arranged in a worst case configuration. The table was rotated from 0 to 360 degrees and the antenna height was varied from one (1) to four (4) meters to identify the maximum reading.

2.1.2 Electromagnetic Radiation Test (FCC Part 15 Emissions) (Continued)

4) All emissions points identified within 20 dB of the specified limit were tested individually using the quasi-peak method as specified and then reported in the tabular data.

The AutoMARK A100 and A200 Voter Assist Terminals were found to comply with the required emissions limits. Photographs of the test setup are presented in Attachment B. The test data sheets are included in Attachment C. The Instrumentation Equipment Sheets for the tests are contained in Attachment D.

2.1.3 Electrostatic Disruption Test

Electrostatic Disruption testing was performed in accordance with Section 4.1.2.8 of Volume I of the EAC 2005 VVSG. This testing was performed to ensure that the AutoMARK Voter Assist Terminals would be able to withstand electrostatic discharge events (static electricity discharges) likely to be encountered from operators directly or from personnel to adjacent objects in typical operation without disruption of normal operations or loss of data.

The AutoMARK A100 and A200 Voter Assist Terminals were configured to run in an automated ballot printing test mode, where continual ballot printing would occur during the testing without operator intervention. The AutoMARK A100 and A200 Voter Assist Terminals were subjected to the test levels in Table 2-3.

Table 2-3 ESD Test Levels

Specimen	Air Discharge	Contact Discharge
AutoMARK A100	±2 kV, ±4 kV, ±8 kV, ±15 kV[1]	±2 kV, ±4 kV, ±8 kV[2]
AutoMARK A200	±2 kV, ±4 kV, ±8 kV, ±15 kV	±2 kV, ±4 kV, ±8 kV
AutoMARK A200 Audio Mode	±2 kV, ±4 kV, ±8 kV, ±15 kV	±2 kV, ±4 kV, ±8 kV
1) Anomaly noted at 4 kV contact discharge application (See NOA #1). 2) Anomaly noted at 15 kV air discharge application (See NOA #1).		

Pre-operational and post-operational functional verification checks were conducted for this test. There was no loss of normal operation or loss of data as a result of the applied electrostatic discharges. Notice of Anomaly number 1 indicated two anomalies on the A100 at one of the 4 kV contact and one of the 15 kV air test points. The unit was retested with no further anomalies noted (See Notice of Anomaly #1, Attachment A)

The AutoMARK A100 and A200 Voter Assist Terminals successfully completed the requirements of the Electrostatic Discharge Test. Photographs of the test setup are presented in Attachment B. The Instrumentation Equipment Sheet for the test is contained in Attachment G.

2.1.4 Electromagnetic Susceptibility Test

Electromagnetic Susceptibility testing was performed in accordance with Section 4.1.2.10 of Volume I of the EAC 2005 VVSG. This testing was performed to ensure that the AutoMARK A100 and A200 Voter Assist Terminals would be able to withstand a moderate level of ambient electromagnetic fields without disruption of normal operation or loss of data.

The AutoMARK A100 and A200 Voter Assist Terminals were configured to run in an automated ballot printing test mode, where continual ballot printing would occur during the testing without operator intervention. The AutoMARK A100 and A200 Voter Assist Terminals were then subjected to ambient electromagnetic fields at 10 V/m over a range of 80 MHz to 1000 MHz, as shown in Figure 2-3. Testing was conducted utilizing both horizontally and vertically polarized waves. The limits were measured with a maximum scan rate of 1% of the fundamental frequency and the dwell duration was three seconds.

2.1.4 Electromagnetic Susceptibility Test (Continued)

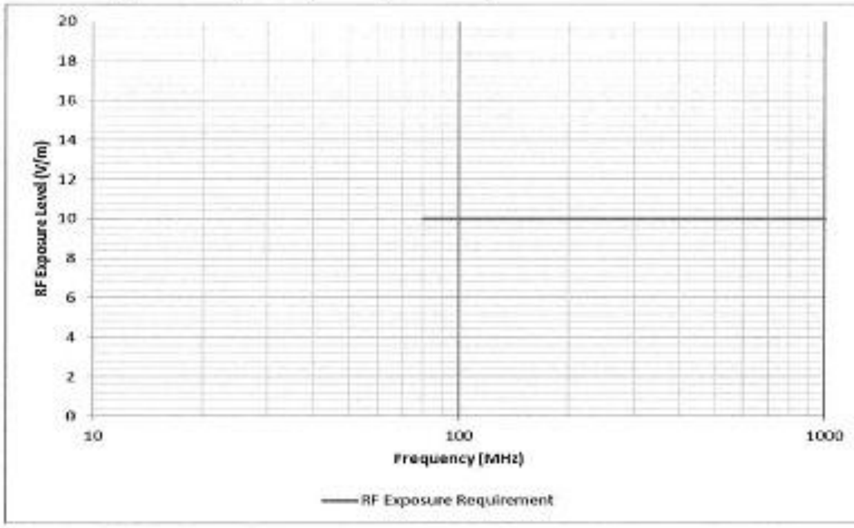

Figure 2-3 Radiated Susceptibility Limit

Pre-operational and post-operational functional verification checks were conducted for this test. There was no loss of normal operation or loss of data as a result of the applied electromagnetic fields.

The AutoMARK A100 and A200 Voter Assist Terminals successfully completed the requirements of the Electromagnetic Susceptibility Test. Photographs of the test setup are presented in Attachment B. The test data sheets are included in Attachment C. The Instrumentation Equipment Sheet for the test is contained in Attachment D.

2.1.5 Electrical Fast Transients Test

Electrical Fast Transients testing was performed in accordance with Section 4.1.2.6 of Volume I of the EAC 2005 VVSG. This testing was performed to ensure that the AutoMARK A100 and A200 Voter Assist Terminals are immune to electrical fast transients/bursts on supply, signal, control and earth ports without disruption of normal operation or loss of data.

The AutoMARK A100 and A200 Voter Assist Terminals were configured to run in an automated ballot printing test mode, where continual ballot printing would occur during the testing without operator intervention. The AutoMARK A100 and A200 Voter Assist Terminals were subjected to the test levels in Table 2-4.

Table 2-4 EFT Test Levels

Test Level	Position	AutoMARK A100	AutoMARK A200	AutoMARK A200 Audio Mode
+2.0 kV	External Power Lines (AC)	X	X	X
-2.0 kV		X	X	X
Repetition rate for all transient pulses was 100 kHz				

Pre-operational and post-operational functional verification checks were conducted for this test. There was no loss of normal operation or loss of data as a result of the applied electrical fast transients.

2.1.5 Electrical Fast Transients Test (Continued)

The AutoMARK A100 and A200 Voter Assist Terminals successfully completed the requirements of the Electrical Fast Transient Test. Photographs of the test setup are presented in Attachment B. The test data sheets are included in Attachment C. The Instrumentation Equipment Sheet for the test is contained in Attachment D.

2.1.6 Lightning Surge Test

Lightning Surge testing was performed in accordance with Section 4.1.2.7 of Volume I of the EAC 2005 VVSG. This testing was performed to ensure that the AutoMARK A100 and A200 Voter Assist Terminals are immune to power line lightning surges without disruption of normal operation or loss of data.

The AutoMARK A100 and A200 Voter Assist Terminals were configured to run in an automated ballot printing test mode, where continual ballot printing would occur during the testing without operator intervention. The AutoMARK A100 and A200 Voter Assist Terminals were subjected to the test levels in Table 2-5.

Table 2-5 Lightning Surge Test Levels

Position	Test Level	AutoMARK A100	AutoMARK A200	AutoMARK A200 Audio Mode
Line – Line	±0.5 kV	X	X	X
	±1.0 kV	X	X	X
	±2.0 kV	X	X	X
Line - Earth	±0.5 kV	X	X	X
	±1.0 kV	X	X	X
	±2.0 kV	X	X	X

Pre-operational and post-operational functional verification checks were conducted for this test. There was no loss of normal operation or loss of data as a result of the applied surges.

The AutoMARK A100 and A200 Voter Assist Terminals successfully completed the requirements of the Lightning Surge Test. Photographs of the test setup are presented in Attachment B. The test data sheet is included in Attachment C. The Instrumentation Equipment Sheet for the test is contained in Attachment D.

2.1.7 Conducted RF Immunity Test

Conducted RF Immunity testing was performed in accordance with Section 4.1.2.11 of Volume I of the EAC 2005 VVSG. This testing was performed to ensure that the AutoMARK A100 and A200 Voter Assist Terminals are immune to RF interference appearing on supply, signal, control and earth ports without disruption of normal operation or loss of data. The applied test level was 10 Vrms over the frequency range of 150 kHz to 80 MHz with an 80 % amplitude modulation with a 1 kHz AC sine wave.

The AutoMARK A100 and A200 Voter Assist Terminals were configured to run in an automated ballot printing test mode, where continual ballot printing would occur during the testing without operator intervention. The AutoMARK A100 and A200 Voter Assist Terminals were subjected to the test level in Figure 2-4.

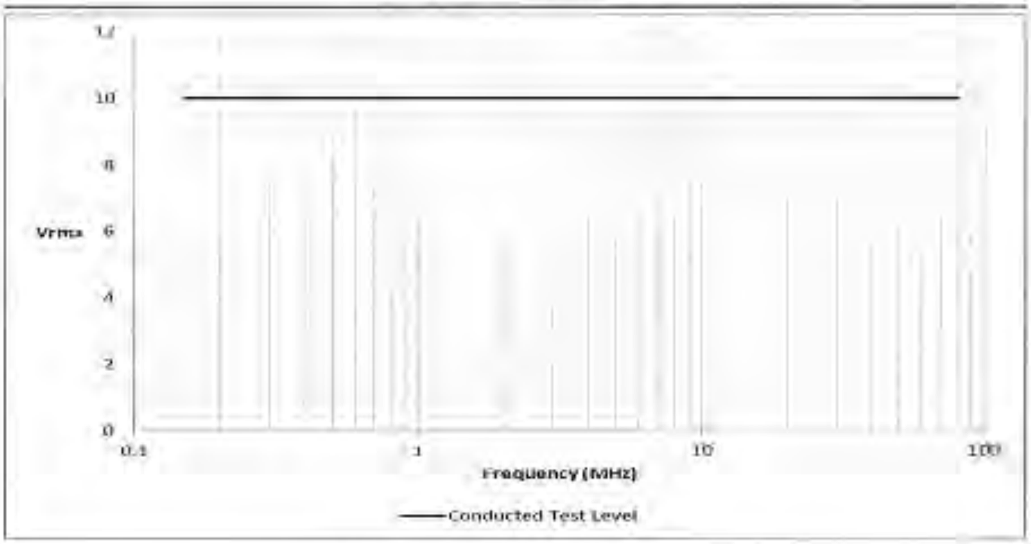

Figure 2-4 Conducted RF Test Level

Pre-operational and post-operational functional verification checks were conducted for this test. There was no loss of normal operation or loss of data as a result of the applied electrical fast transients.

The AutoMARK A100 and A200 Voter Assist Terminals successfully completed the requirements of the Conducted RF Immunity Test. Photographs of the test setup are presented in Attachment B. The test data sheets are included in Attachment C. The Instrumentation Equipment Sheet for the test is contained in Attachment D.

2.1.8 Magnetic Fields Immunity

Magnetic Fields Immunity testing was performed in accordance with Section 4.1.2.12 of Volume I of the EAC 2005 VVSG. This testing was performed to ensure that the AutoMARK A100 and A200 Voter Assist Terminals is immune to AC magnetic fields, at the levels shown below, without disruption of normal operation or loss of data.

The AutoMARK A100 and A200 Voter Assist Terminals were configured to run in an automated ballot printing test mode, where continual ballot printing would occur during the testing without operator intervention. The AutoMARK A100 and A200 Voter Assist Terminals were subjected to magnetic fields of 30 A/m at 60 Hz.

Pre-operational and post-operational functional verification checks were conducted for this test. There was no loss of normal operation or loss of data as a result of the applied electrical fast transients.

The AutoMARK A100 and A200 Voter Assist Terminals successfully completed the requirements of the Magnetic Fields Immunity Test. Photographs of the test setup are presented in Attachment B. The Instrumentation Equipment Sheet for the test is contained in Attachment D.

3.0 TEST PROGRAM SUMMARY

It was demonstrated that the AutoMARK A100 and A200 Voter Assist Terminals, as tested, successfully met the hardware test requirements outlined in Section 4.8 of the EAC 2005 VVSG, Volume II. Any anomalies encountered during qualification testing were successfully resolved prior to test completion.

3.0 TEST PROGRAM SUMMARY (Continued)

This evaluation report/recommendation is valid only for the specific models and serial numbers listed in Section 1.4 of this report. Any changes, revisions, or corrections made to the product after this evaluation shall be reevaluated, and a revised report/recommendation will be issued.

4.0 TEST EQUIPMENT AND INSTRUMENTATION

All instrumentation, measuring, and test equipment used in the performance of this test program was calibrated in accordance with Wyle Laboratories' Quality Assurance Program which complies with the requirements of ANSI/NCSL Z540-1, ISO 10012-1, and ISO/IEC 17025. Standards used in performing all calibrations are traceable to the National Institute of Standards and Technology (NIST) by report number and date. When no national standards exist, the standards are traceable to international standards or the basis for calibration is otherwise documented.

5.0 QUALITY ASSURANCE PROGRAM

All work performed on this program was in accordance with Wyle Laboratories' Quality Assurance Program and Wyle Laboratories' Quality Program Manual, which conforms to the applicable portions of International Standard Organization (ISO) Guide 17025.

The Wyle Laboratories, Huntsville Facility, Quality Management System is registered in compliance with the ISO-9001 International Quality Standard. Registration has been completed by Quality Management Institute (QMI), a Division of Canadian Standards Association (CSA).

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ATTACHMENT A
NOTICE OF ANOMALY NO. 1

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ORIGINAL **NOTICE OF ANOMALY** DATE: 1/20/11

NOTICE NO: 1 P.O. NUMBER: TA ES&S-MSA-TA001	CONTRACT NO: N/A
CUSTOMER: ES&S	WYLE JOB NO: 57936.01
NOTIFICATION MADE TO: John Lenio	NOTIFICATION DATE: 12/21/10
NOTIFICATION MADE BY: Frank Padilla	VIA: Verbal
CATEGORY: [X] SPECIMEN [ ] PROCEDURE [ ] TEST EQUIPMENT	DATE OF ANOMALY: 12/21/10
PART NAME: A100 AutoMark	PART NO. AM10543172
TEST: ESD	I.D. NO. —
SPECIFICATION: 2005 VVSG	PARA. NO. 4.1.2.8

REQUIREMENTS:

Vote scanning and counting equipment for paper-based systems, and all DRE equipment, shall be able to withstand ±15 kV air discharge and ±8 kV contact discharge without damage or loss of data. The equipment may reset or have momentary interruption so long as normal operation is resumed without human intervention or loss of data. Loss of data means votes that have been completed and confirmed to the voter.

Note: The system hardware shall be operational and processing data, e.g., casting of ballots throughout all testing. The use of an autovote test script is recommended.

DESCRIPTION OF ANOMALY:

Anomalies were noted at two test points:

- 4 kV contact at the lock assembly
- 15 kV air discharge at the top of CF card door

DISPOSITION • COMMENTS • RECOMMENDATIONS:

Vendor on-site representative performed maintenance on the EUT and configured the EUT to factory specifications. The test was then repeated with no anomalies noted.

Safety Related ☐ YES ☒ NO   Potential 10 CFR Part 21 ☐ YES ☐ NO ☒ N/A

RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR PART 21: ☐ CUSTOMER ☐ WYLE

CAR Required: ☐ YES ☒ NO   CAR No.

VERIFICATION: PROJECT ENGINEER: Greg Smott 1-20-11

TEST WITNESS: N/A   PROJECT MANAGER: Frank Padilla 1-20-11

REPRESENTING: N/A   INTERDEPARTMENTAL COORDINATION:

QUALITY ASSURANCE: [signature] 1/20/11

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ATTACHMENT B
PHOTOGRAPHS

Photograph No. 1
AutoMARK A100

Photograph No. 2
AutoMARK A200

Photograph No. 3
AutoMARK A100 Electrical Power Disturbance Test Setup

Photograph No. 4
AutoMARK A200 Electrical Power Disturbance Test Setup (Normal Mode)

Photograph No. 5
AutoMARK A200 Electrical Power Disturbance Test Setup (Audio Mode)

Photograph No. 6
Electromagnetic Radiation Test Setup (Typical Radiated Measurement)

Photograph No. 7
Electromagnetic Radiation Test Setup (Typical Radiated Measurement)

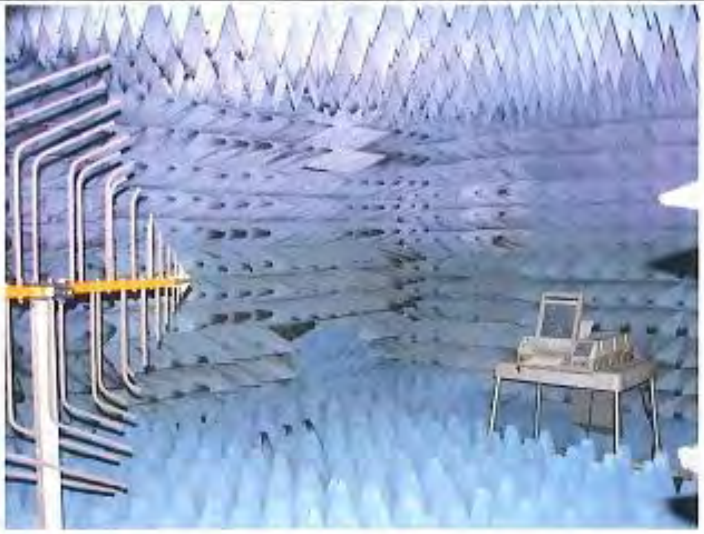
Photograph No. 8
Electromagnetic Radiation Test Setup (Typical Conducted Measurement)

Photograph No. 9
AutoMARK A100 Electrostatic Disruption Test Setup

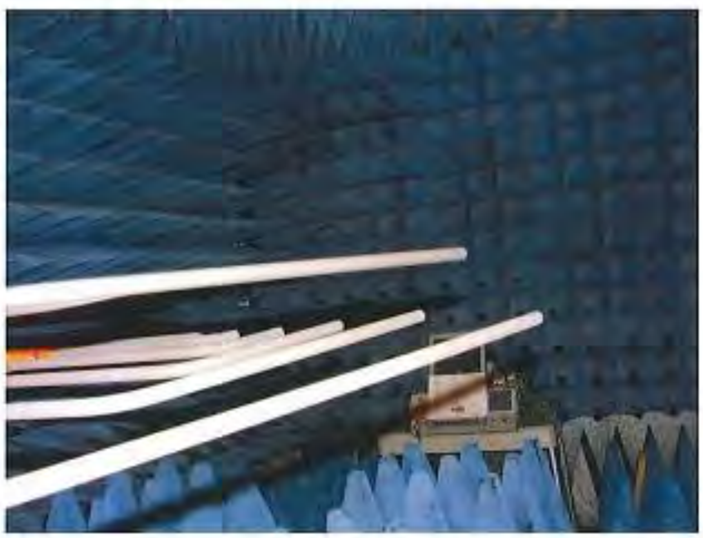
Photograph No. 10
AutoMARK A100 Points of Anomaly (See Notice of Anomaly No. 1)

Photograph No. 11
AutoMARK A200 Electrostatic Disruption Test Setup (Normal Mode)

Photograph No. 12
AutoMARK A200 Electrostatic Disruption Test Setup (Audio Mode)



Photograph No. 13
AutoMARK A100 Electromagnetic Susceptibility Test Setup



Photograph No. 14
AutoMARK A200 Electromagnetic Susceptibility Test Setup (Typical Normal & Audio Mode)

Photograph No. 15
AutoMARK A100 Electrical Fast Transients Test Setup

Photograph No. 16
AutoMARK A200 Electrical Fast Transients Test Setup (Typical Normal & Audio Mode)

Photograph No. 17
AutoMARK A100 Lightning Surge Test Setup

Photograph No. 18
AutoMARK A200 Lightning Surge Test Setup (Typical Normal & Audio Mode)

Photograph No. 19
AutoMARK A100 Conducted Immunity Test Setup

Photograph No. 20
AutoMARK A200 Conducted Immunity Test Setup (Typical Normal & Audio Mode)

Photograph No. 21
AutoMARK A100 Magnetic Fields Immunity Test Setup

Photograph No. 22
AutoMARK A200 Magnetic Fields Immunity Test Setup (Typical Normal & Audio Mode)

ATTACHMENT C
TEST DATA

California Instruments Corp.
Data entry mode: Absolute

No.	Type	Time (s)	Volt
1	V Step	60.000	120.0
2	V Step	0.020	84.0
3	V Step	60.000	120.0
4	V Step	0.100	48.0
5	V Step	60.000	120.0
6	V Step	1.000	48.0
7	V Step	60.000	120.0
8	V Step	5.000	6.0
9	V Step	60.000	120.0
10	V Step	1.000	102.0
11	V Step	60.000	120.0
12	V Step	1.000	138.0
13	V Step	60.000	120.0
14	V Step	14400.000	129.0
15	V Step	60.000	120.0
16	V Step	14400.000	105.0
17	V Step	60.000	120.0
18	Empty		

California Instruments Corp.
Data entry mode: Absolute NORMAL A2VV

No.	Type	Time (s)	Volt
1	V Step	60.000	120.0
2	V Step	0.020	84.0
3	V Step	60.000	120.0
4	V Step	0.100	48.0
5	V Step	60.000	120.0
6	V Step	1.000	48.0
7	V Step	60.000	120.0
8	V Step	5.000	6.0
9	V Step	60.000	120.0
10	V Step	1.000	102.0
11	V Step	60.000	120.0
12	V Step	1.000	138.0
13	V Step	60.000	120.0
14	V Step	14400.000	120.0
15	V Step	60.000	120.0
16	V Step	14400.000	105.0
17	V Step	60.000	120.0
18	Empty		

California Instruments Corp.
Data entry mode: Absolute

Audio Azo

No.	Type	Time (s)	Volt
1	V Step	60.000	120.0
2	V Step	0.020	84.0
3	V Step	60.000	120.0
4	V Step	0.100	48.0
5	V Step	60.000	120.0
6	V Step	1.000	48.0
7	V Step	60.000	120.0
8	V Step	5.000	6.0
9	V Step	60.000	120.0
10	V Step	1.000	102.0
11	V Step	60.000	120.0
12	V Step	1.000	138.0
13	V Step	60.000	120.0
14	V Step	14400.000	129.0
15	V Step	60.000	120.0
16	V Step	14400.000	105.0
17	V Step	60.000	120.0
18	Empty		

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DATA SHEET

Job No.: T57936.01
Start Date: 12/13/2010

Customer: ES&S
Temperature: ~73°F
Humidity: N/A
EUT: AutoMARK
Measurement Point: EUT @ All Four Sides
Model No.: A100
Interference Signal: 1Khz @ 80% AM
Serial No.: AM106431724
Frequency Range: 80Mhz to 1Ghz

Test Title: EN 61000-4-3 Radiated Susceptibility

Test Frequency	Meets Limit		Susceptibility Threshold Level	Maximum Signal Applied	Comments
()kHz (X)MHz ()GHz	Yes	No	()A ()V ()kV (X)V/m ()Vrms ()dBµA ()dBµV ()dBµV/m ()dBpT		
80	X		>3	3	Vertical and Horizontal
↓	↓		↓	↓	↓
1,000	X		>3	3	Vertical and Horizontal

Notice of Anomaly: None
Witness: N/A

Tested By: [signature] Technician Date: 12/13/10
Approved: W. Beale Project Engineer Date: 12/13/10

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DATA SHEET

Job No.: T57936.01
Start Date: 06/14/2011

Customer: ES&S
Temperature: ~73°F
Humidity: N/A
EUT: AutoMARK
Measurement Point: EUT @ All Four Sides
Model No.: A200
Interference Signal: 1Khz @ 80% AM
Serial No.: AM02006430569
Frequency Range: 80Mhz to 1Ghz

Test Title: EN 61000-4-3 Radiated Susceptibility

Test Frequency	Meets Limit		Susceptibility Threshold Level	Maximum Signal Applied	Comments
( )kHz (X)MHz ( )GHz	Yes	No	( )A ( )V ( )kV (X)V/m ( )Vrms ( )dBμA ( )dBμV ( )dBμV/m ( )dBpT		
80	X		>3	3	Vertical and Horizontal
↓	↓		↓	↓	↓
1,000	X		>3	3	Vertical and Horizontal

Notice of Anomaly: None
Witness: N/A

Tested By: [signature] Technician Date: 06/14/11
Approved: W. Bauer Project Engineer Date: 6/14/11

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WH-1432, Rev. Dec. 2004

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DATA SHEET

Job No.: T57936.01
Start Date: 06/14/2011

Customer: ES&S
Temperature: ~73°F
Humidity: N/A
EUT: AutoMARK
Measurement Point: EUT @ All Four Sides
Model No.: A200 (Audio Mode)
Interference Signal: 1Khz @ 80% AM
Serial No.: AM02006430569
Frequency Range: 80Mhz to 1Ghz

Test Title EN 61000-4-3 Radiated Susceptibility

Test Frequency	Meets Limit		Susceptibility Threshold Level	Maximum Signal Applied	Comments
()kHz (X)MHz ()GHz	Yes	No	()A ()V ()kV (X)V/m ()Vrms ()dBµA ()dBµV ()dBµV/m ()dBpT		
80	X		>3	3	Vertical and Horizontal
↓	↓		↓	↓	↓
1,000	X		>3	3	Vertical and Horizontal

Notice of Anomaly: None
Witness: N/A

Tested By: [signature] Technician Date: 06/14/11
Approved: W. Bush Project Engineer Date: 6/14/11

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DATA SHEET

Job No.: T57936.01
Start Date: 12/13/2010

Customer: ES&S
Temperature: ~73°F
Humidity: N/A
EUT: AutoMARK
Measurement Point: See Comments Below
Model No.: A100
Interference Signal: 1Khz @ 80% AM
Serial No.: AM10643I724
Frequency Range: 150Khz to 80Mhz

Test Title EN 61000-4-6 Conducted Immunity

Test Frequency	Meets Limit		Susceptibility Threshold Level	Maximum Signal Applied	Comments
( )kHz (X)MHz ( )GHz	Yes	No	( )A (X)V ( )kV ( )V/m ( )Vrms ( )dBµA ( )dBµV ( )dBµV/m ( )dBpT		
.150	X		>3	3	List of all Cables Tested
↓	↓		↓	↓	↓
80	X		>3	3	List of all Cables Tested

Notice of Anomaly: None
Tested By: [signature] Technician Date: 12/13/10
Witness: N/A
Approved: W. Beale Project Engineer Date: 12/13/10

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DATA SHEET

Job No.: T57936.01
Start Date: 08/05/2011

Customer: ES&S
Temperature: ~73°F
Humidity: N/A
EUT: AutoMARK
Measurement Point: See Comments Below
Model No.: A200
Interference Signal: 1Khz @ 80% AM
Serial No.: AM02006430569
Frequency Range: 150Khz to 80Mhz

Test Title: EN 61000-4-6 Conducted Immunity

Test Frequency	Meets Limit		Susceptibility Threshold Level	Maximum Signal Applied	Comments
( )kHz (X)MHz ( )GHz	Yes	No	( )A (X)V ( )kV ( )V/m ( )Vrms ( )dBµA ( )dBµV ( )dBµV/m ( )dBpT		
.150	X		>3	3	List of all Cables Tested
↓	↓		↓	↓	↓
80	X		>3	3	List of all Cables Tested

Notice of Anomaly: None
Witness: N/A

Tested By: [signature] Technician Date: 08/5/11
Approved: W. Boole Project Engineer Date: 8/5/11

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DATA SHEET

Job No.: T57936.01
Start Date: 08/05/2011

Customer: ES&S
Temperature: ~73°F
Humidity: N/A
EUT: AutoMARK
Measurement Point: See Comments Below
Model No.: A200 (Audio Mode)
Interference Signal: 1Khz @ 80% AM
Serial No.: AM02006430569
Frequency Range: 150Khz to 80Mhz

Test Title EN 61000-4-6 Conducted Immunity

Test Frequency	Meets Limit		Susceptibility Threshold Level	Maximum Signal Applied	Comments
()kHz (X)MHz ()GHz	Yes	No	()A (X)V ()kV ()V/m ()Vrms ()dBµA ()dBµV ()dBµV/m ()dBpT		
.150	X		>3	3	List of all Cables Tested
↓	↓		↓	↓	↓
80	X		>3	3	List of all Cables Tested

Notice of Anomaly: None
Witness: N/A

Tested By: [signature] Technician Date: 08/05/11
Approved: W. Bush Project Engineer Date: 8/5/11

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WH-1632, Rev. Dec. 2004

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DATA SHEET

Job No.: T57936.01
Start Date: 12/14/2010

Customer: ES&S
Temperature: ~73°F
Humidity: N/A
EUT: AutoMARK
Measurement Point: See Comments Below
Model No.: A100 Voter Assist Terminal
Interference Signal: Test Signal Applied @ 5/50nS
Serial No.: AM106431724
Frequency Range: See Test Frequencies Below

Test Title: EN 61000-4-4 Electrical Fast Transients

Test Frequency	Meets Limit		Susceptibility Threshold Level	Maximum Signal Applied	Comments
(X)kHz ()MHz ()GHz	Yes	No	()A ()V (X)kV ()V/m ()Vrms ()dBμA ()dBμV ()dBμV/m ()dBpT		
.060	X		>1	1	Line to Neutral
.060	↓		↓	↓	Line to Ground
.060	X		>1	1	Neutral to Ground

Notice of Anomaly: None
Witness: N/A

Tested By: W. Buck (Technician) Date: 12/14/10
Approved: Ralph Hauck (Project Engineer) Date: 12/14/10

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DATA SHEET

Job No.: T57936.01
Start Date: 05/27/2011

Customer: ES&S
Temperature: ~73°F
Humidity: N/A
EUT: AutoMARK
Measurement Point: See Comments Below
Model No.: A200 Voter Assist Terminal
Interference Signal: Test Signal Applied @ 5/50nS
Serial No.: AM02006430569
Frequency Range: See Test Frequencies Below

Test Title: EN 61000-4-4 Electrical Fast Transients

Test Frequency	Meets Limit		Susceptibility Threshold Level	Maximum Signal Applied	Comments
(X)kHz ()MHz ()GHz	Yes	No	()A ()V (X)kV ()V/m ()Vrms ()dBμA ()dBμV ()dBμV/m ()dBpT		
.060	X		>1	1	Line to Neutral
.060	↓		↓	↓	Line to Ground
.060	X		>1	1	Neutral to Ground

Notice of Anomaly: None
Witness: N/A

Tested By: [signature] Technician Date: 05-27-11
Approved: W. Bush Project Engineer Date: 5/27/11

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DATA SHEET

Job No.: T57936.01
Start Date: 05/27/2011

Customer: ES&S Temperature: ~73°F Humidity: N/A
EUT: AutoMARK Measurement Point: See Comments Below
Model No.: A200 (Audio Mode) Interference Signal: Test Signal Applied @ 5/50nS
Serial No.: AM02006430569 Frequency Range: See Test Frequencies Below

Test Title EN 61000-4-4 Electrical Fast Transients

Test Frequency	Meets Limit		Susceptibility Threshold Level	Maximum Signal Applied	Comments
(X)KHz ()MHz ()GHz	Yes	No	()A ()V (X)KV ()V/m ()Vrms ()dBμA ()dBμV ()dBμV/m ()dBpT		
.060	X		>1	1	Line to Neutral
.060	↓		↓	↓	Line to Ground
.060	X		>1	1	Neutral to Ground

Notice of Anomaly: None
Witness: N/A

Tested By: [signature] Technician Date: 05/27/11
Approved: W. [signature] Project Engineer Date: 5/27/11

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Wyle Laboratories

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Customer: ES&S
Specification: FCC Class B Radiated

Work Order #:	57936.01	Date:	Mon Dec-06-2010
Test Type:	Radiated Scan	Time:	10:51:30 AM
Equipment:	Voting System	Sequence:	2
Manufacturer:	ES&S	Tested By:	J. Smith
Model:	Automark A100		
S/N:	AM0106431724		

Equipment Under Test (= EUT):*

Function	Manufacturer	Model#	S/N
*Voting System	ES&S	Automark A100	AM0106431724

Support Devices:

Function	Manufacturer	Model#	S/N
None			

Test Conditions / Notes:

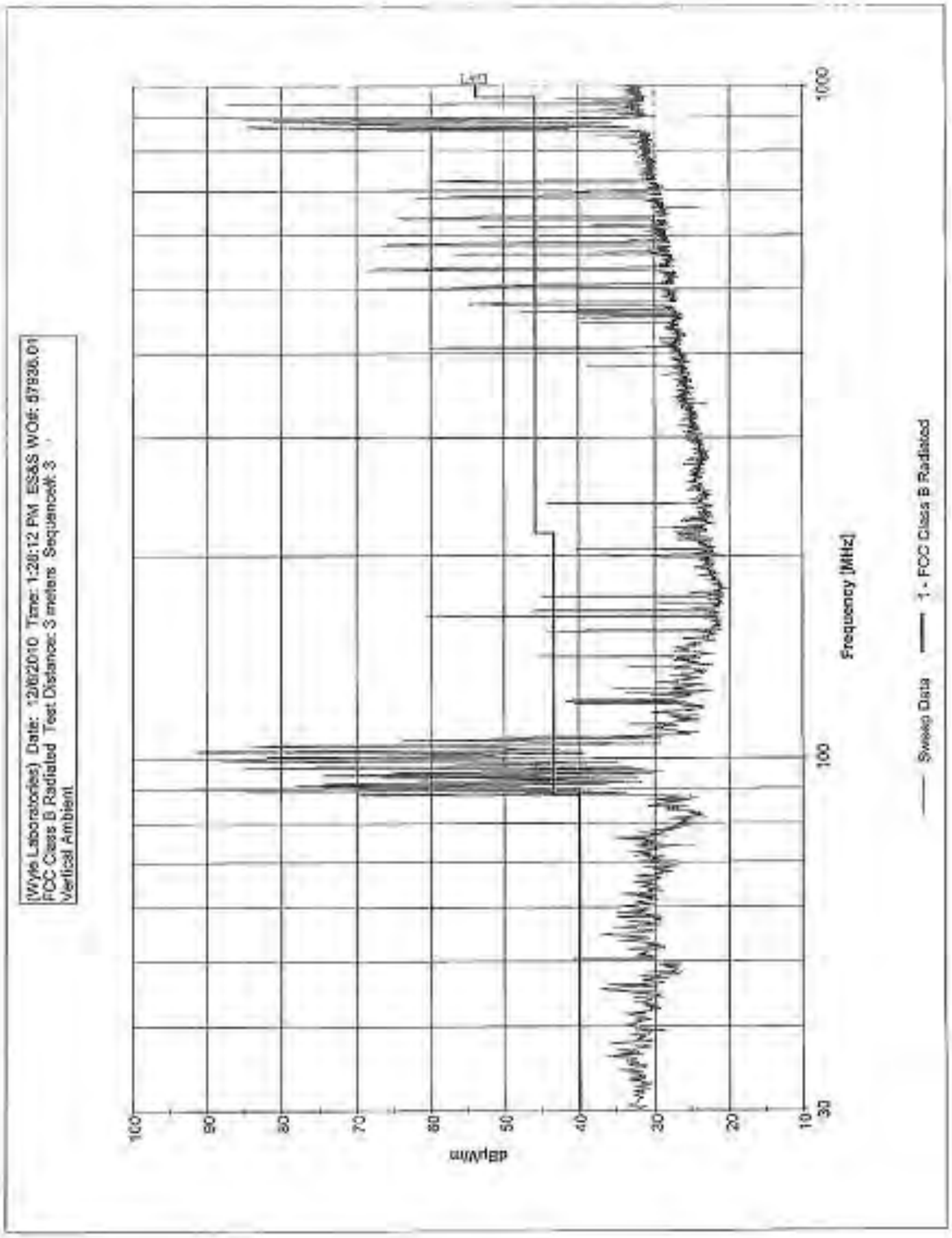
Vertical Active

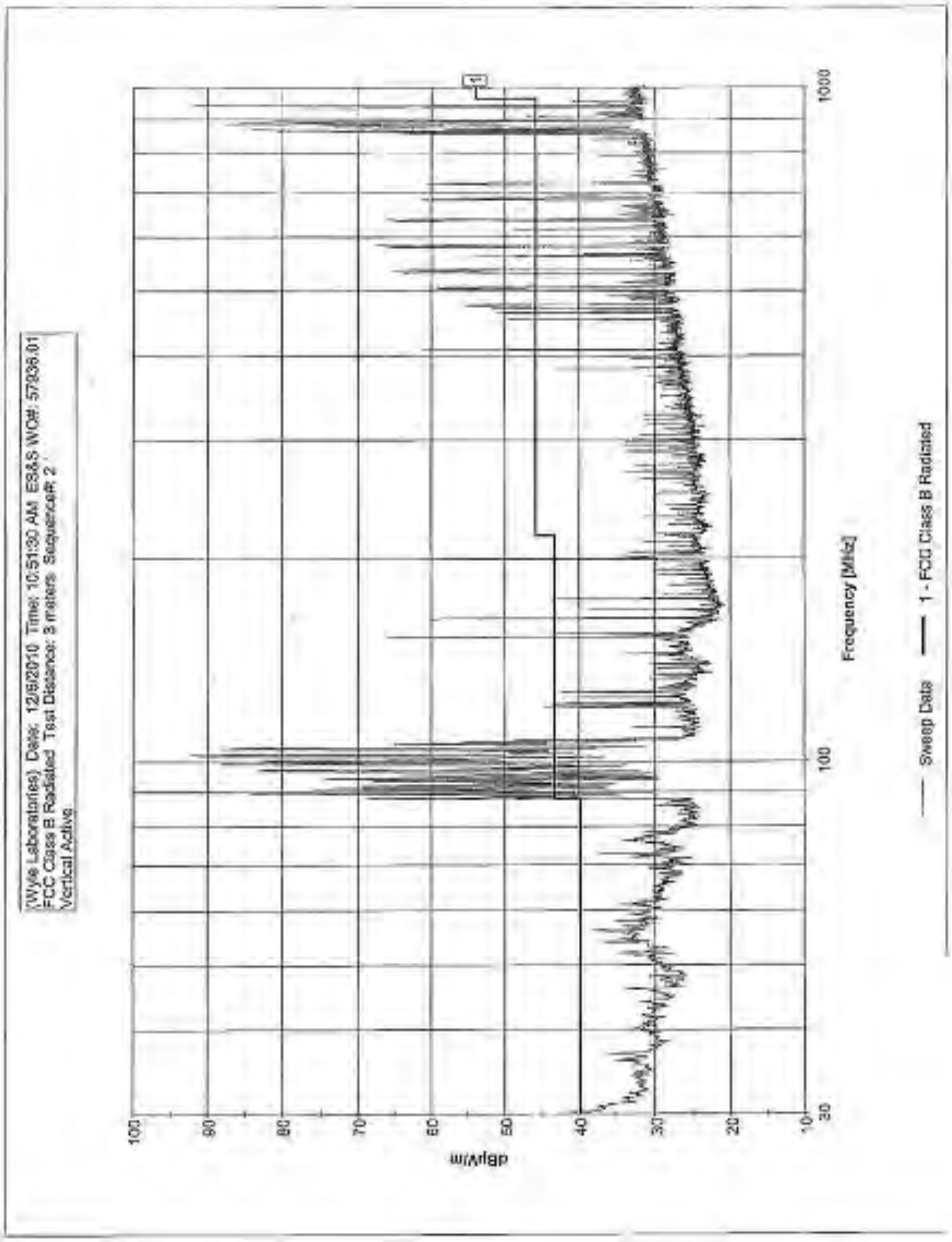
Transducer Legend:

T1=Cable Wyle# 110111	T2=Wyle #114415 3M Vert

Measurement Data: Readings listed by frequency. Test Distance: 3 meters

#	Freq MHz	Rdng dBµV	T1	T2			Dist	Corr dBµV/m	Spec dBµV/m			Polar	Type	Margin
1	124.123	31.0	+0.2	+8.6			+0.0	39.8	43.5			Vert	Peak	-3.7
2	124.187	13.8	+0.2	+8.6			+0.0	22.6	43.5			Vert	QP	-20.9
3	125.405	33.7	+0.2	+8.6			+0.0	42.5	43.5			Vert	Peak	-1.0
4	126.420	19.7	+0.2	+8.6			+0.0	28.5	43.5			Vert	QP	-15.0
5	127.988	21.1	+0.2	+8.5			+0.0	29.8	43.5			Vert	Peak	-13.7
6	127.998	17.2	+0.2	+8.5			+0.0	25.9	43.5			Vert	QP	-17.6


[Wyle Laboratories] Date: 12/6/2010 Time: 1:28:12 PM ES&S WO#: 57936.01
FCC Class B Radiated Test Distance: 3 meters Sequence#: 3
Vertical Ambient
dBµV/m
Frequency [MHz]
Sweep Data
1 - FCC Class B Radiated


(Wyle Laboratories) Date: 12/6/2010 Time: 10:51:30 AM ES&S WO#: 57936.01
FCC Class B Radiated Test Distance: 3 meters Sequence#: 2
Vertical Active
dBµV/m
Frequency [MHz]
Sweep Data
1 - FCC Class B Radiated

Wyle Laboratories

wyle laboratories

Customer: ES&S
Specification: FCC Class B Radiated

Work Order #:	57936.01	Date:	Mon Dec-06-2010
Test Type:	Radiated Scan	Time:	10:41:15 AM
Equipment:	Voting System	Sequence#:	1
Manufacturer:	ES&S	Tested By:	J. Smith
Model:	Automark A100		
S/N:	AM0106431724		

Equipment Under Test (= EUT):*

Function	Manufacturer	Model#	S/N
*Voting System	ES&S	Automark A100	AM0106431721

Support Devices:

Function	Manufacturer	Model#	S/N
None			

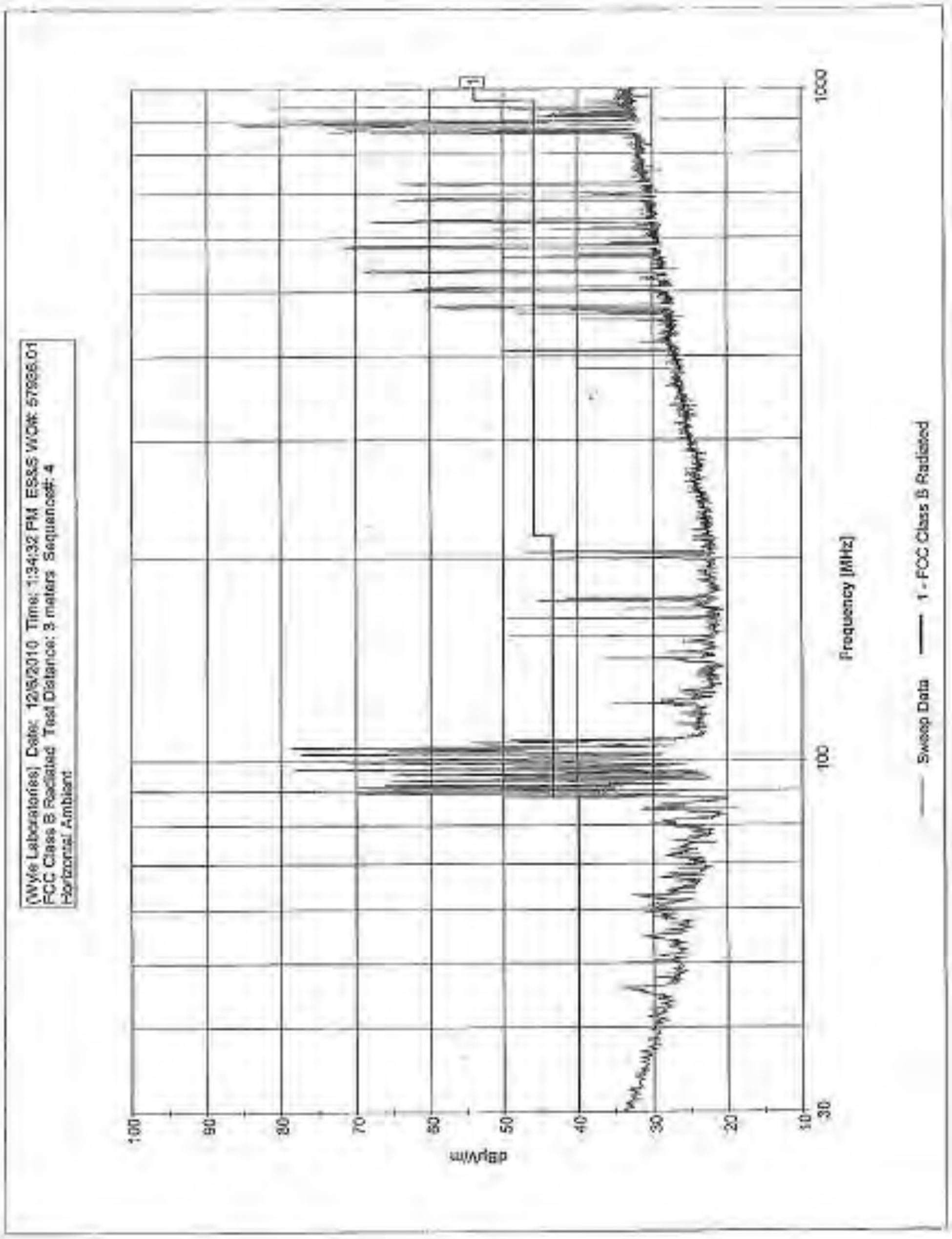
Test Conditions / Notes:
Horizontal Active

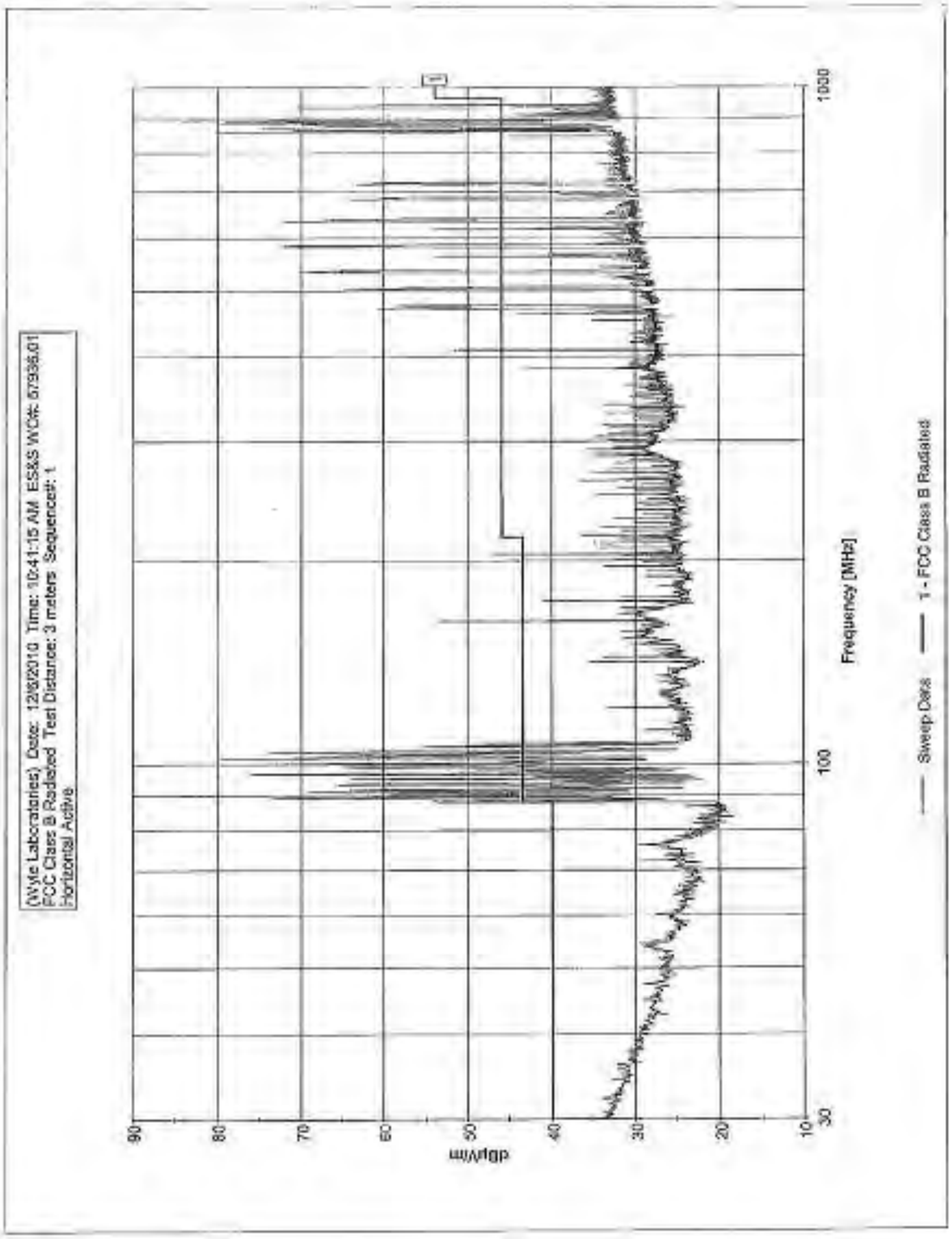
Transducer Legend:

T1=Cable Wyle# 110111	T2=Wyle #114415 3M Horz

Measurement Data: Readings listed by frequency. Test Distance: 3 meters

#	Freq MHz	Rdng dBµV	T1	T2			Dist	Corr dBµV/m	Spec dBµV/m			Polar	Type	Margin
1	32.106	15.0	-0.4	+18.6			+0.0	34.2	40.0			Horiz	Peak	-5.8
2	54.384	17.7	-0.6	+12.5			+0.0	29.6	40.0			Horiz	Peak	-10.4
3	71.987	21.7	-0.7	+8.5			+0.0	29.5	40.0			Horiz	Peak	-10.5
4	76.112	22.9	-0.8	+7.7			+0.0	29.8	40.0			Horiz	Peak	-10.2
5	87.056	45.2	-0.8	+7.2			+0.0	51.6	40.0			Horiz	Peak	+11.6
6	88.488	32.0	-0.8	+7.3			+0.0	38.5	43.5			Horiz	Peak	-5.0
7	88.954	66.9	-0.8	+7.3			+0.0	73.4	43.5			Horiz	Peak	+29.9
8	89.085	31.3	-0.8	+7.4			+0.0	37.9	43.5			Horiz	Peak	-5.6
9	89.085	59.2	-0.8	+7.4			+0.0	65.8	43.5			Horiz	Peak	+22.3
10	90.851	62.1	-0.6	+7.6			+0.0	69.1	43.5			Horiz	Peak	+25.6
11	91.283	28.3	-0.6	+7.6			+0.0	35.3	43.5			Horiz	Peak	-8.2
12	91.749	57.0	-0.5	+7.7			+0.0	64.2	43.5			Horiz	Peak	+20.7
13	92.646	32.7	-0.3	+7.8			+0.0	40.3	43.5			Horiz	Peak	-3.2
14	92.880	31.5	-0.3	+7.9			+0.0	39.1	43.5			Horiz	Peak	-4.4
15	93.280	57.7	-0.2	+8.0			+0.0	65.5	43.5			Horiz	Peak	+22.0
16	94.145	32.2	-0.1	+8.1			+0.0	40.2	43.5			Horiz	Peak	-3.3
17	95.143	55.5	+0.1	+8.3			+0.0	63.9	43.5			Horiz	Peak	+20.4
18	95.941	33.6	+0.2	+8.4			+0.0	42.4	43.5			Horiz	Peak	-1.1
19	96.740	67.1	+0.4	+8.5			+0.0	76.0	43.5			Horiz	Peak	+32.5
20	97.551	39.8	+0.5	+8.7			+0.0	49.0	43.5			Horiz	Peak	+5.5
21	98.151	28.4	+0.6	+8.7			+0.0	37.7	43.5			Horiz	Peak	-5.8
22	99.142	56.4	+0.8	+8.9			+0.0	65.1	43.5			Horiz	Peak	+21.6
23	100.223	57.0	+0.9	+9.0			+0.0	66.9	43.5			Horiz	Peak	+23.4
24	101.084	36.0	+0.9	+9.1			+0.0	46.0	43.5			Horiz	Peak	+2.5
25	102.025	69.9	+0.5	+9.1			+0.0	79.5	43.5			Horiz	Peak	+36.0
26	103.486	55.6	+0.8	+9.2			+0.0	65.6	43.5			Horiz	Peak	+22.1
27	104.588	63.6	+0.8	+9.3			+0.0	73.7	43.5			Horiz	Peak	+30.2
28	105.486	45.3	+0.7	+9.3			+0.0	55.3	43.5			Horiz	Peak	+11.8
29	106.458	40.4	+0.7	+9.3			+0.0	50.4	43.5			Horiz	Peak	+6.9
30	107.189	37.7	+0.7	+9.3			+0.0	47.7	43.5			Horiz	Peak	+4.2
31	121.241	24.1	+0.3	+9.0			+0.0	33.4	43.5			Horiz	Peak	-10.1
32	141.417	27.0	-0.1	+8.6			+0.0	35.5	43.5			Horiz	Peak	-8.0
33	143.940	25.2	-0.2	+9.0			+0.0	34.0	43.5			Horiz	Peak	-9.5
34	150.425	21.5	-0.3	+9.3			+0.0	30.5	43.5			Horiz	Peak	-13.0
35	156.910	23.3	-0.5	+8.9			+0.0	31.7	43.5			Horiz	Peak	-11.8
36	162.435	45.3	-0.6	+8.8			+0.0	53.5	43.5			Horiz	Peak	+10.0
37	166.318	23.7	-0.6	+8.9			+0.0	32.0	43.5			Horiz	Peak	-11.5
38	169.841	23.6	-0.7	+9.0			+0.0	31.9	43.5			Horiz	Peak	-11.6


(Wyle Laboratories) Date: 12/6/2010 Time: 1:34:32 PM ES&S WO#: 57936.01
FCC Class B Radiated Test Distance: 3 meters Sequence#: 4
Horizontal Ambient
dBµV/m
Frequency [MHz]
Sweep Data
1 - FCC Class B Radiated


(Wyle Laboratories) Date: 12/6/2010 Time: 10:41:15 AM ES&S WO#: 57936.01
FCC Class B Radiated Test Distance: 3 meters Sequence#: 1
Horizontal Active
dBµV/m
90
80
70
60
50
40
30
20
10
30
100
1000
Frequency [MHz]
Sweep Data
1 - FCC Class B Radiated

Wyle Laboratories

wyle laboratories

Customer: ES&S
Specification: FCC Class B Conducted AM

Work Order #:	T57936.01	Date:	Mon Dec-06-2010
Test Type:	Conducted Emissions	Time:	11:43:53 AM
Equipment:	Voting System	Sequence:	2
Manufacturer:	ES&S	Tested By:	J. Smith
Model:	Automark A100		
S/N:	AM0108431724		
Voltage:	120V 60Hz		

Equipment Under Test (= EUT):*

Function	Manufacturer	Model#	S/N
*Voting System	ES&S	Automark A100	AM0108431724

Support Devices:

Function	Manufacturer	Model#	S/N
None			

Test Conditions / Notes:

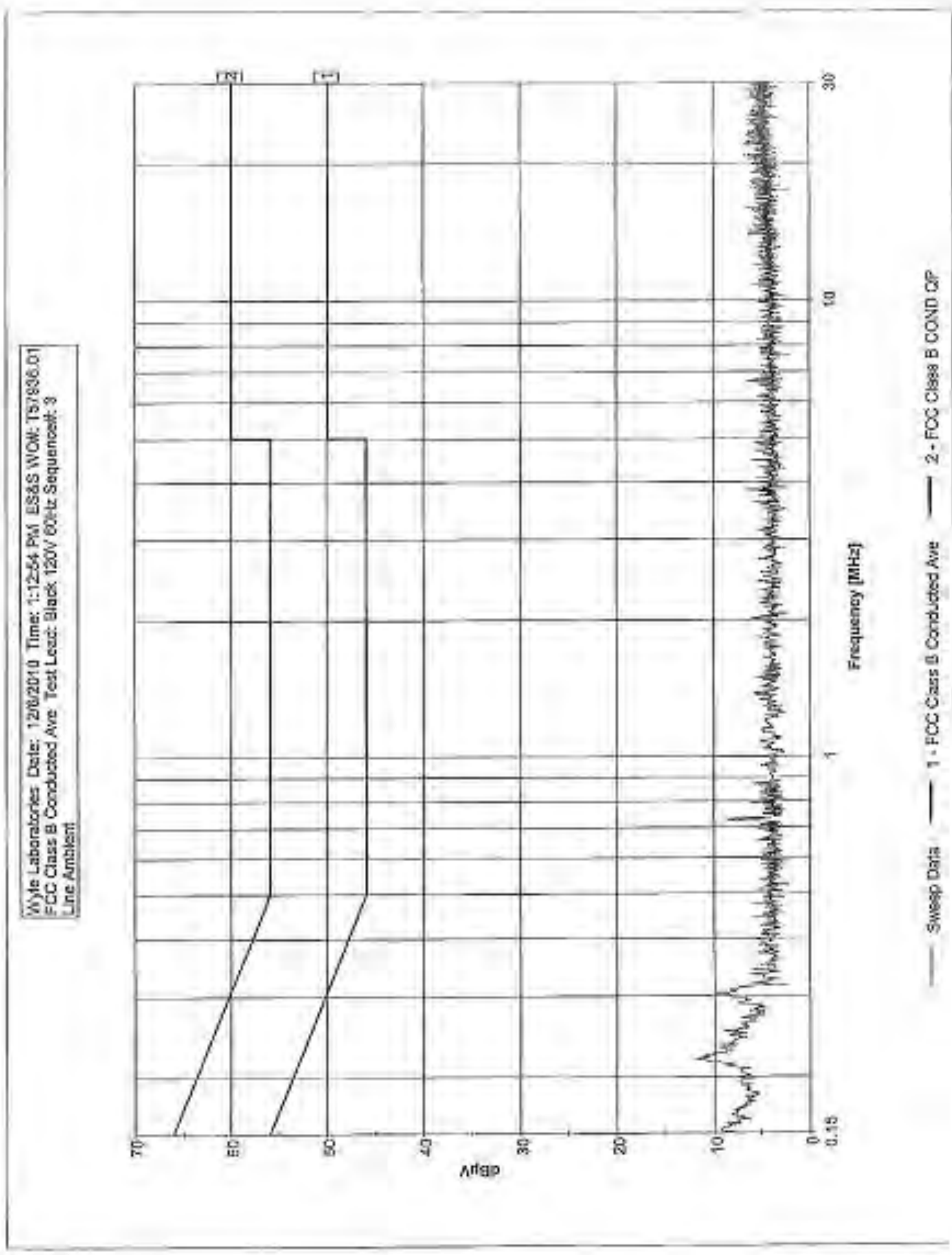
Line Active

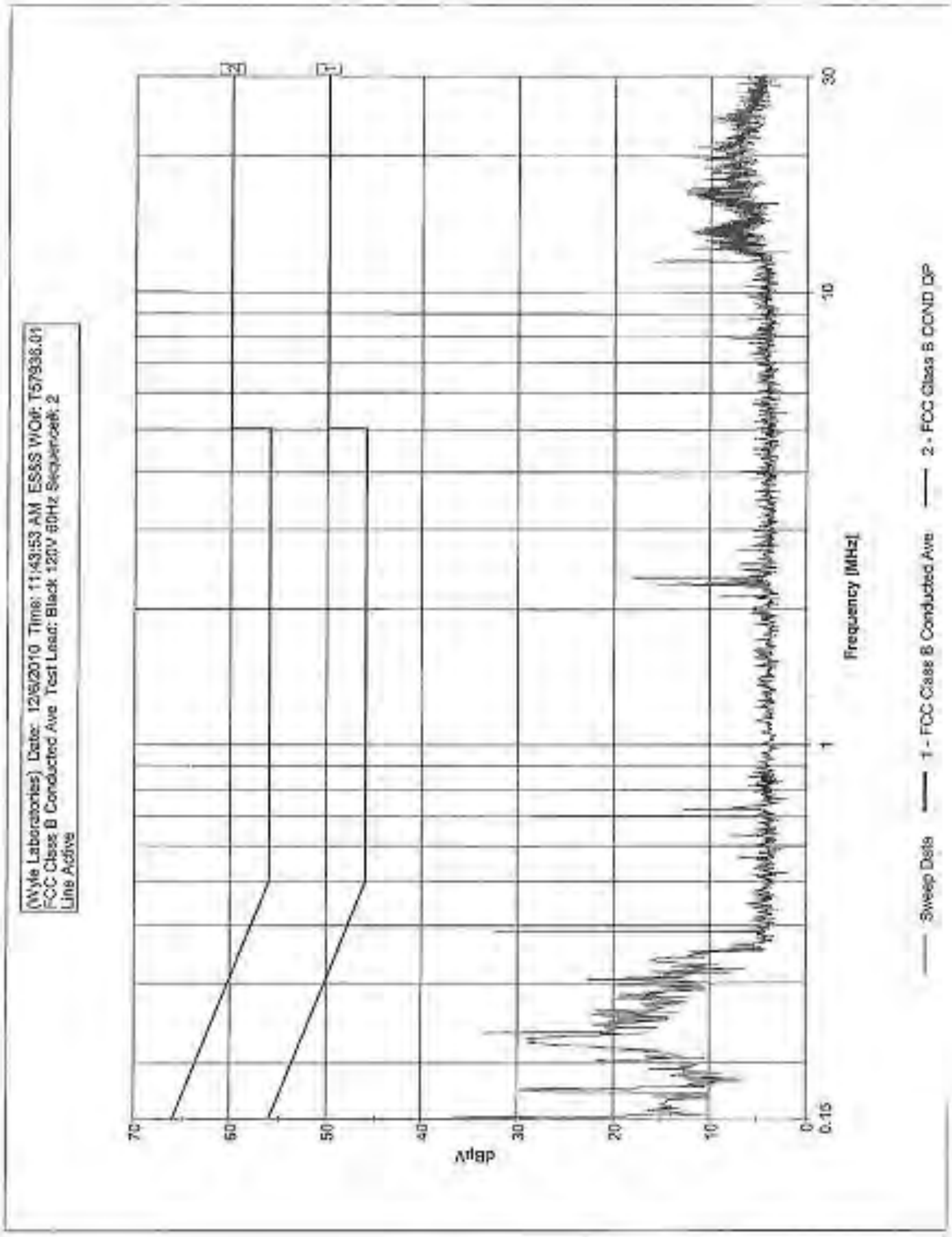
Transducer Legend:

T1=LISN Wyle #110228 L

Measurement Data: Readings listed by frequency. Test Lead: Black

#	Freq	Rdng dBµV	T1					Corr dBµV	Spec dBµV			Polar	Type	Margin
1	224.400k	27.4	+0.1					27.5	52.7			Black	QP	-25.2
2	232.901k	33.4	+0.1					33.5	52.3			Black	Peak	-18.8
3	387.067k	32.3	+0.1					32.4	48.1			Black	Peak	-15.7
4	388.970k	-1.9	+0.1					-1.8	47.9			Black	QP	-49.7
5	605.400k	28.4	+0.1					28.5	46.0			Black	Peak	-17.5
6	700.620k	4.4	+0.1					4.5	46.0			Black	QP	-41.5


Wyle Laboratories Date: 12/6/2010 Time: 1:12:54 PM ES&S WO#: T57936.01
FCC Class B Conducted Ave Test Lead: Black 120V 60Hz Sequence#: 3
Line Ambient
70
60
50
40
30
20
10
0
dBµV
0.15
1
10
30
Frequency [MHz]
Sweep Data
1 - FCC Class B Conducted Ave
2 - FCC Class B COND QP


(Wyle Laboratories) Date: 12/6/2010 Time: 11:43:53 AM ES&S WO#: T57936.01
FCC Class B Conducted Ave Test Lead: Black 120V 60Hz Sequence#: 2
Line Active
dBµV
Frequency [MHz]
Sweep Data
1 - FCC Class B Conducted Ave
2 - FCC Class B COND QP

Wyle Laboratories

wyle laboratories

Customer: ES&S
Specification: FCC Class B Conducted Ave

Work Order #:	T57936.01	Date:	Mon Dec-06-2010
Test Type:	Conducted Emissions	Time:	11:35:39 AM
Equipment:	Voting System	Sequence:	1
Manufacturer:	ES&S	Tested By:	J. Smith
Model:	Automark A100		
S/N:	AM0108431724		
Voltage:	120V 60Hz		

Equipment Under Test (= EUT):*

Function	Manufacturer	Model#	S/N
*Voting System	ES&S	Automark A100	AM0108431724

Support Devices:

Function	Manufacturer	Model#	S/N
None			

Test Conditions / Notes:

Neutral Active

Transducer Legend:

T1=LISN Wyle #110238 N

Measurement Data: Readings listed by frequency. Test Lead: White

#	Freq	Rdng dBµV	T1					Corr dBµV	Spec dBµV			Polar	Type	Margin
1	324.528k	36.9	+0.2					37.1	49.6			White	Peak	-12.5
2	334.530k	13.1	+0.2					13.3	49.3			White	QP	-36.0
3	470.460k	1.9	+0.2					2.1	46.5			White	QP	-44.4
4	477.957k	32.3	+0.2					32.5	46.4			White	Peak	-13.9
5	663.403k	32.3	+0.2					32.5	46.0			White	Peak	-13.5
6	672.690k	-3.0	+0.2					-2.8	46.0			White	QP	-48.8

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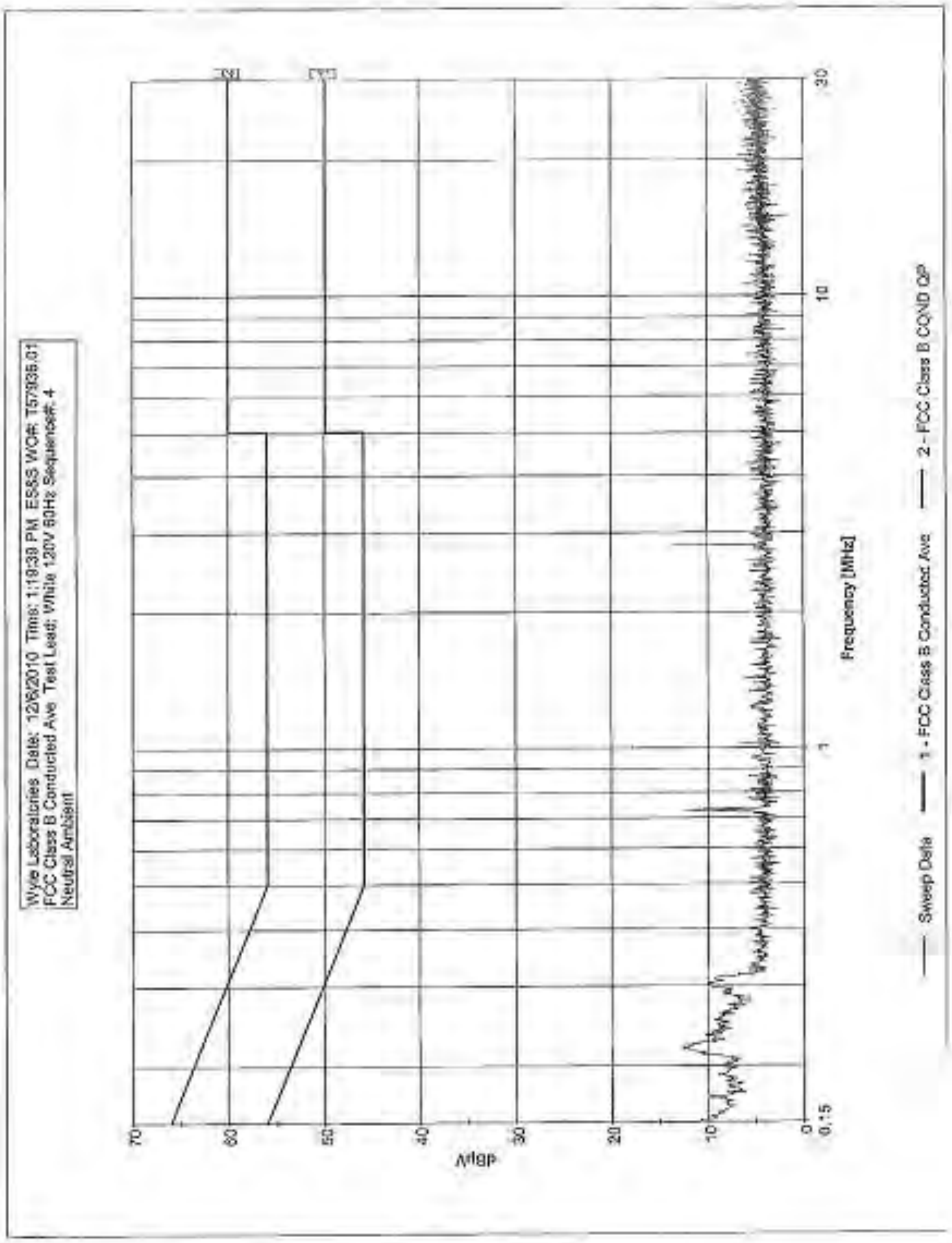
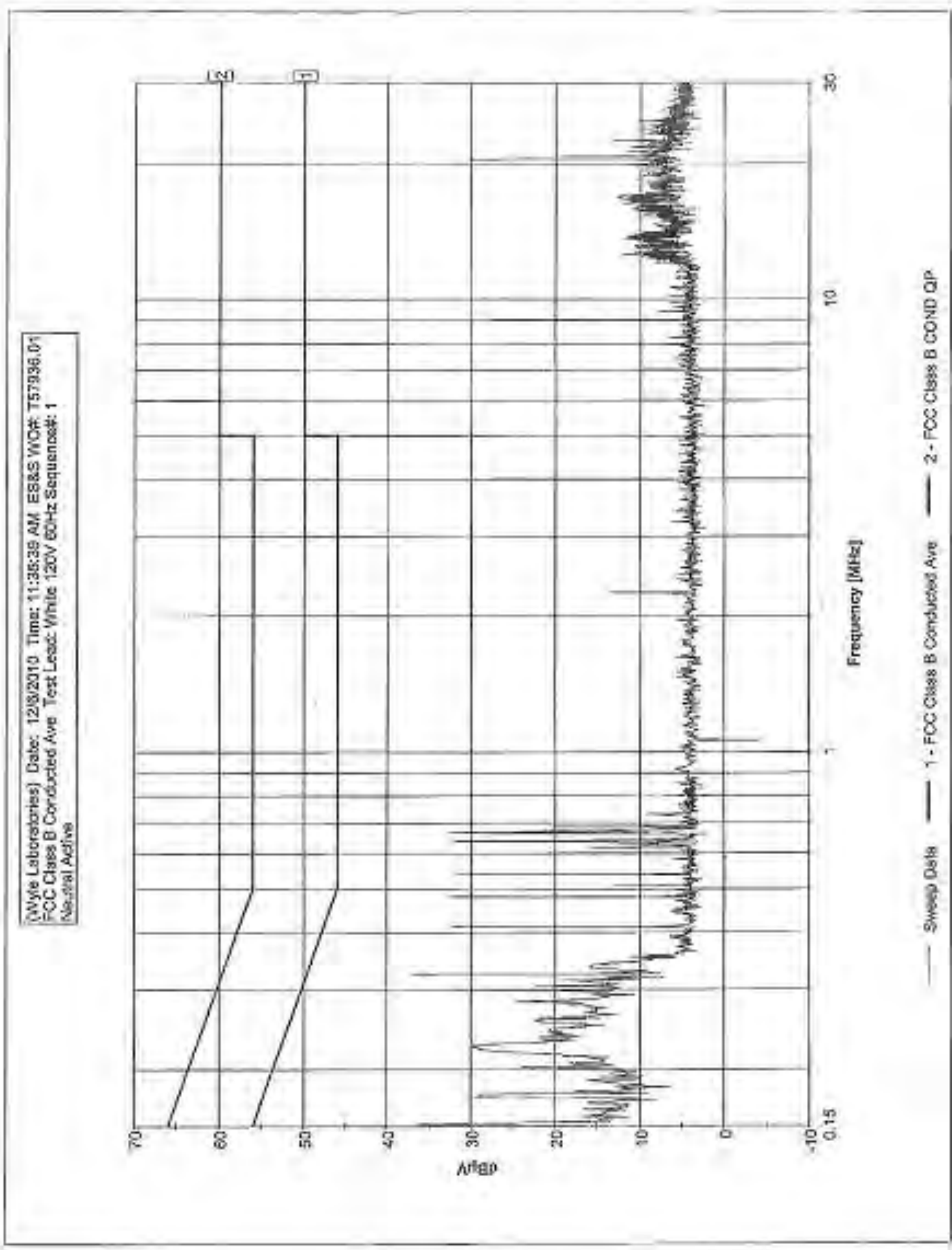

Wyle Laboratories Date: 12/6/2010 Time: 1:19:39 PM ES&S WO#: T57936.01
FCC Class B Conducted Ave Test Lead: White 120V 60Hz Sequence#: 4
Neutral Ambient
dBµV
Frequency [MHz]
Sweep Data
1 - FCC Class B Conducted Ave
2 - FCC Class B COND QP


(Wyle Laboratories) Date: 12/8/2010 Time: 11:36:39 AM ES&S WO#: T57936.01
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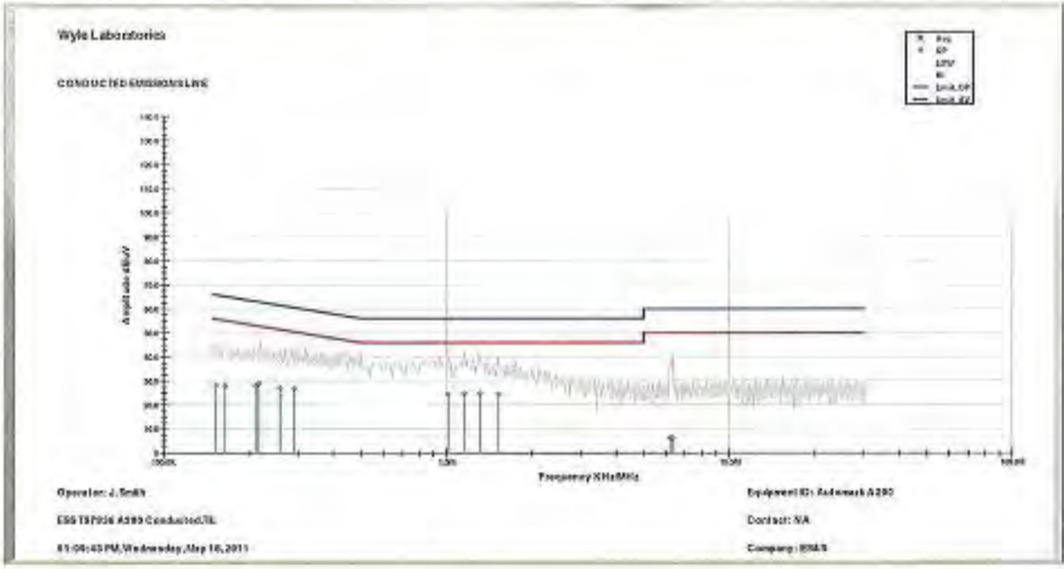
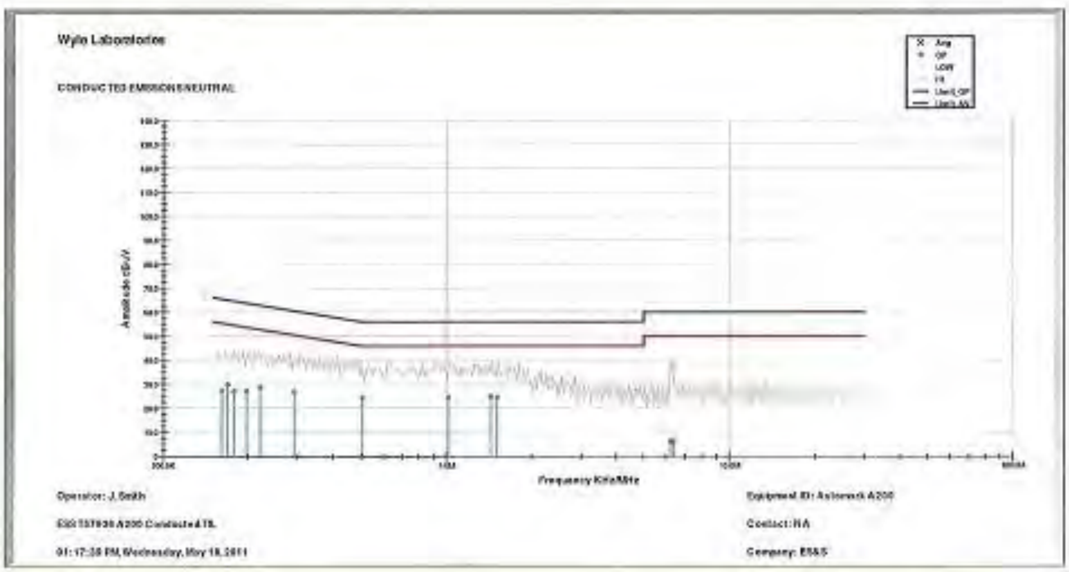
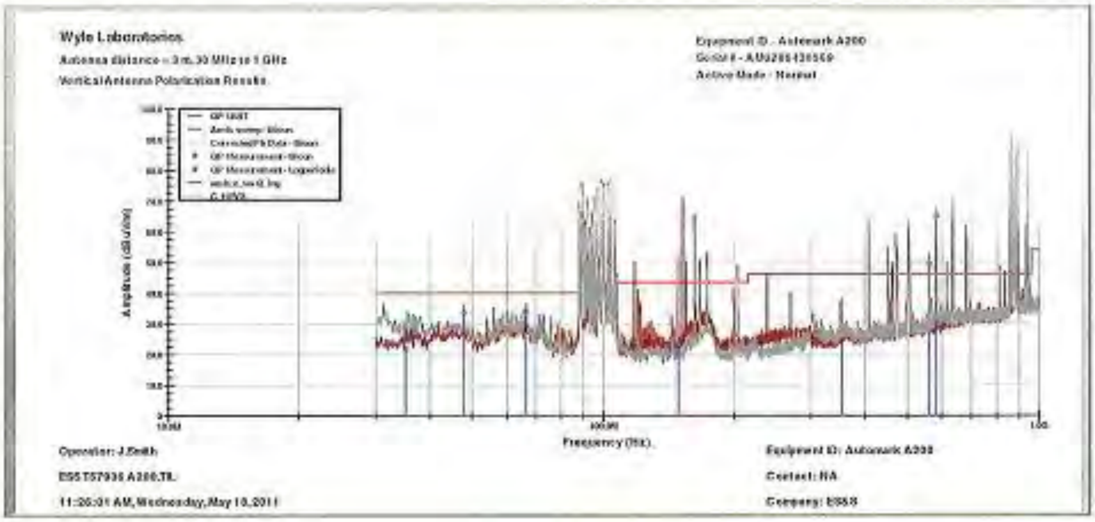
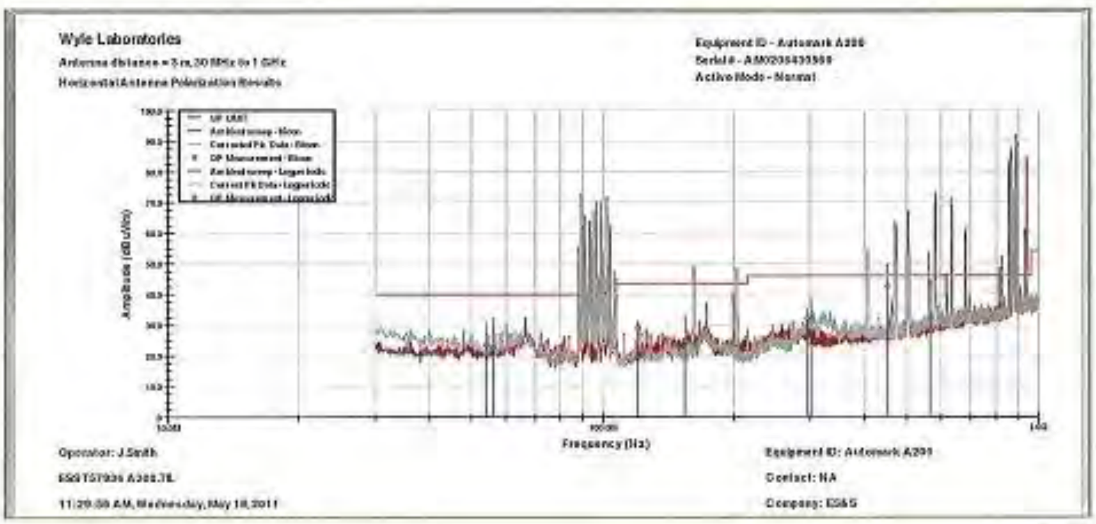
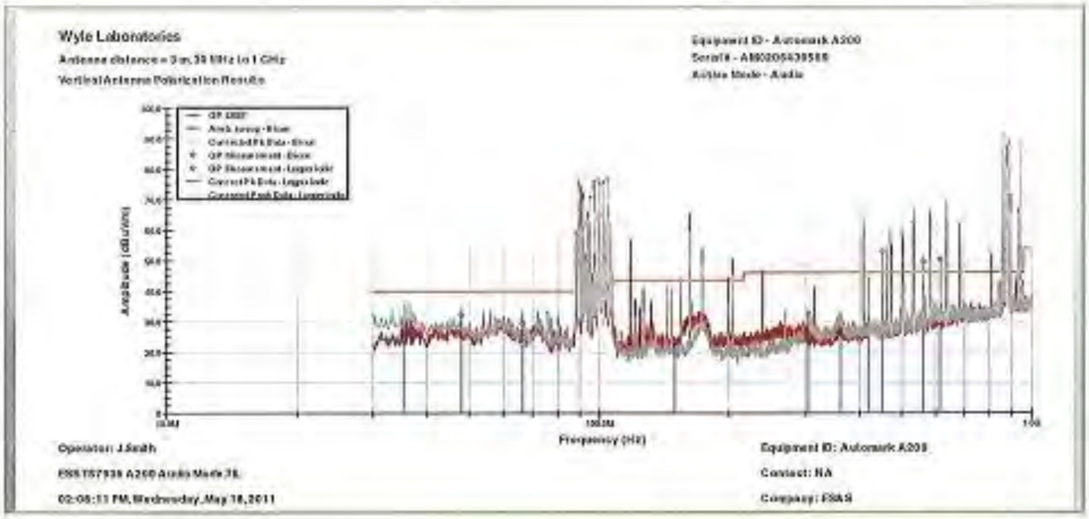
Neutral Active
dBuV
Frequency [MHz]
Sweep Data
1 - FCC Class B Conducted Ave
2 - FCC Class B COND QP

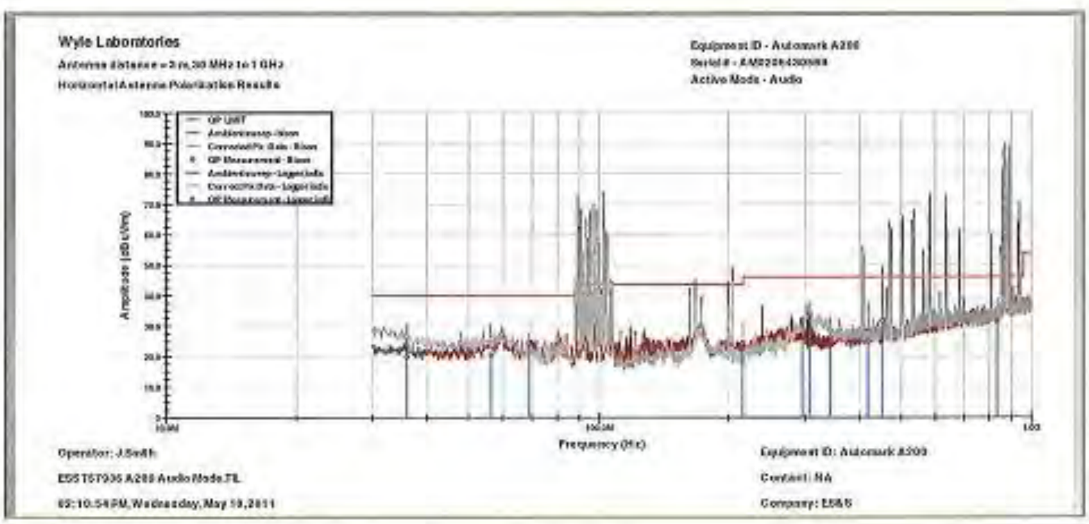

Wyle Laboratories
CONDUCTED EMISSIONS LINE
Amplitude dBuV
Frequency KHz/MHz
Operator: J. Smith
ESS T57936 A200 Conducted.TIL
01:09:43 PM, Wednesday, May 18, 2011
Equipment ID: Automark A200
Contact: NA
Company: ES&S


Wyle Laboratories
CONDUCTED EMISSIONS NEUTRAL
Avg
QP
LOW
Limit_QP
Limit_AV
Amplitude dBuV
Frequency KHz/MHz
Operator: J. Smith
ESS T57936 A200 Conducted.TIL
01:17:38 PM, Wednesday, May 18, 2011
Equipment ID: Automark A200
Contact: NA
Company: ES&S


Wyle Laboratories
Antenna distance = 3 m, 30 MHz to 1 GHz
Vertical Antenna Polarization Results
Equipment ID - Automark A200
Active Mode - Normal
Amplitude (dBuV/m)
Frequency (Hz)
Operator: J.Smith
Equipment ID: Automark A200
Contact: NA
Company: ES&S


Wyle Laboratories
Antenna distance = 3 m, 30 MHz to 1 GHz
Horizontal Antenna Polarization Results
Equipment ID - Automark A200
Active Mode - Normal
Amplitude (dBuV/m)
Frequency (Hz)
Operator: J.Smith
Equipment ID: Automark A200
Contact: NA
Company: ES&S


Wyle Laboratories
Antenna distance = 3 m, 30 MHz to 1 GHz
Vertical Antenna Polarization Results
Equipment ID - Automark A200
Active Mode - Audio
Amplitude (dBuV/m)
Frequency (Hz)
Operator: J.Smith
02:08:11 PM, Wednesday, May 18, 2011
Equipment ID: Automark A200
Contact: NA
Company: ES&S


Wyle Laboratories
Antenna distance = 3 m, 30 MHz to 1 GHz
Horizontal Antenna Polarization Results
Equipment ID - Automark A200
Active Mode - Audio
Amplitude (dBuV/m)
Frequency (Hz)
Operator: J.Smith
Equipment ID: Automark A200
Contact: NA
Company: ES&S

ATTACHMENT D
INSTRUMENTATION EQUIPMENT SHEETS

wyle laboratories

INSTRUMENTATION EQUIPMENT SHEET

DATE: 12/14/2010 JOB NUMBER: T57936 TYPE OF TEST: POWER DISTURB.

TECHNICIAN: W. BUSH CUSTOMER: ES&S TEST AREA: EMI LAB

No.	Description	Manufacturer	Model	Serial #	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
1	POWER SOURCE	CALIFORNIA INST	1251RP/IF	L06561	113567	0-135VAC RMS	1%	10/19/2010	10/19/2011

This is to certify that the above instruments were calibrated using state-of-the-art techniques with standards whose calibration is traceable to the National Institute of Standards and Technology.

INSTRUMENTATION: W. Bush 12/14/10 CHECKED & RECEIVED BY: W. Bush 12/14/10

Q.A.: [signature] 12/15/10

WH-1029A,REV,APR'99 Page 1 of 1

wyle laboratories

INSTRUMENTATION EQUIPMENT SHEET

DATE: 12/17/2010 JOB NUMBER: T57936.02 TYPE OF TEST: ESD

TECHNICIAN: J. GALHONE CUSTOMER: ES&S TEST AREA: EMI LAB

No.	Description	Manufacturer	Model	Serial #	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
1	DISCHARGE	EMC-PARTNER	ESD3000DM1	049	03229	150pF	330Ω	12/17/2010	12/17/2011
2	ESD GUN	EMC-PARTNER	ESD3000	089	04446	16.5 KV	±10%	12/17/2010	12/17/2011
3	ESD TARGET	HAEFELY TRENCH	2520311	152461	110798	15KV	±5%	11/13/2009	11/13/2011
4	OSCILLOSCOPE	TEKTRONIX	TDS684C	B020598	116832	1GHz BW	<20ps@5GS/s	11/18/2010	11/18/2011
5	TEMP/HUM IND	EXTECH	445703	N/A	116425	T:14-140°F H:10	T:±1.8°F H:±5%	2/23/2010	2/23/2011

This is to certify that the above instruments were calibrated using state-of-the-art techniques with standards whose calibration is traceable to the National Institute of Standards and Technology.

INSTRUMENTATION: 17 Dec 10 CHECKED & RECEIVED BY: 20Dec10

Q.A.: 12/21/10

WH-1029A REV APR99

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wyle laboratories

INSTRUMENTATION EQUIPMENT SHEET

DATE: 12/6/2010 JOB NUMBER: T57936.01 TYPE OF TEST: VVSG PARA 4.8B

TECHNICIAN: J. SMITH CUSTOMER: ES&S TEST AREA: OATS 2

No.	Description	Manufacturer	Model	Serial #	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
1	ANTENNA	ELECTROMETRIC	EM-6917A-1	124116	114115	30MHZ - 3GHZ	SEE DATA	4/1/2010	4/1/2012
2	LISN	FISHER CC	FCC-LISN-50-15-1-01	02067	117145	10KHz to 100MH	±0.7dB	8/20/2010	8/20/2012
3	LISN	FISHER CC	FCC-LISN-50-15-1-01	02068	117146	10KHz to 100MH	±0.7dB	8/20/2010	8/20/2012
4	LISN	FISHER CC	FCC-LISN-50/250-15-	04001	110238	kHz to 30MHz	±0.7dB+5%	6/28/2010	6/28/2011
5	PRESELECTOR	HP	85685A	2648A00417	113353	20HZ-2GHZ	±2dB	2/23/2010	2/23/2011
6	Q-PEAK ADAPTER	HP	85650A	2811A01189	112169	BY PASS MODE	.3db	2/23/2010	2/23/2011
7	SPEC ANAL	HP	8568B	3014A06704	112001	100HZ-22GHZ	CERT	2/23/2010	2/23/2011

This is to certify that the above instruments were calibrated using state-of-the-art techniques with standards whose calibration is traceable to the National Institute of Standards and Technology.

INSTRUMENTATION: J Smith 12-6-10 CHECKED & RECEIVED BY: W. Beal 12/6/10

Q.A.: [signature] 12/6/10

WH-1029A,REV,APR'99

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wyle laboratories

INSTRUMENTATION EQUIPMENT SHEET

DATE: 12/13/2010 JOB NUMBER: T57936 TYPE OF TEST: COND. IMMUNITY

TECHNICIAN: W. BUSH CUSTOMER: ES&S TEST AREA: EMI LAB

No.	Description	Manufacturer	Model	Serial #	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
1	ATTENUATOR	NARDA	769-6	03180	04860	DC to 6GHz	MFG	1/21/2010	1/21/2011
2	DIR COUPLER	AMP RESEARCH	DC3010	304022	117206	.01-1000MHz	±0.8dB	4/7/2010	4/7/2011
3	LOAD	BIRD	8280	22438	04678	50ohm/25watt	mfg.	4/8/2010	4/8/2012
4	PASSIVE	FISHER CC	FCC-801-150-50-CDN	04049/04050	110405	150KHZ - 230M	MFG	5/18/2009	5/18/2011
5	SIGNAL	AGILENT	8648D	3847M00935	R00935	MULTI	MFG	4/26/2010	4/26/2012
6	SPEC ANAL	HP	E4446A	US44020311	04845	44GHz	MFG	6/17/2010	6/17/2011
7	SPEC ANAL	ROHDE SCHWARZ	FSP30	100882	117604	9kHz to 30GHz	MFG	5/10/2010	5/10/2011

This is to certify that the above instruments were calibrated using state-of-the-art techniques with standards whose calibration is traceable to the National Institute of Standards and Technology.

INSTRUMENTATION: W. Bush 12/13/10 CHECKED & RECEIVED BY: Michael R. Walker 12/13/10

Q.A.: Brenda Moore 12/13/10

WH-1029A,REV.APR'99

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WYLE LABORATORIES, INC.
Huntsville, Alabama Facility

wyle laboratories

INSTRUMENTATION EQUIPMENT SHEET

DATE: 12/16/2010 JOB NUMBER: T57936 TYPE OF TEST: MAG FEILD IMM
TECHNICIAN: J. GALEONE CUSTOMER: ES&S TEST AREA: EMI LAB

No.	Description	Manufacturer	Model	Serial #	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
1	AMPLIFIER	TECHRON	7560	015075	08565	600W	NCR	7/8/2008	7/8/2020
2	FUNC GEN	TOPWARD	TPG-8114	839190	108386	.02 TO 2 MHz	±5%	3/30/2010	3/30/2011
3	METER	HOLADAY	HOL-HI3604	76285	117549	30-2KHz	MFG	1/21/2010	1/21/2012
4	STOP WATCH	HANHART	STRATOS1	110132	110132	10HR	5 sec/day	6/1/2010	6/1/2011

This is to certify that the above instruments were calibrated using state-of-the-art techniques with standards whose calibration is traceable to the National Institute of Standards and Technology.

INSTRUMENTATION: [signature] CHECKED & RECEIVED BY: W. Bush 12/16/10

16 Dec 10 Brenda Moore 12.16.10

WH-1029A,REV,APR.99

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wyle laboratories

INSTRUMENTATION EQUIPMENT SHEET

DATE: 6/8/2011 JOB NUMBER: T57936 TYPE OF TEST: EMS PER 4.1.2.10

TECHNICIAN: G. NEELEY CUSTOMER: ES & S TEST AREA: EMI RM #1

No.	Description	Manufacturer	Model	Serial #	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
1	AMPLIFIER	AMP RESEARCH	250W1000A	0324738	04819	80-1000MHz	NCR	2/1/2011	2/1/2012
2	ANTENNA	AR	AT6080	0330329	02267	80-6000MHz	NCR	3/28/2011	3/28/2020
3	DIR COUPLER	AMP RESEARCH	DC6080	21207	113988	80-1000MHZ	.5db	5/17/2011	5/17/2012
4	ISOTROPIC PROBE	AMP RESEARCH	FP2000	13657	L17627	10 KHz - 1 GHz	±0.7 dB	10/4/2010	10/4/2011
5	SIG GEN	AEROFLEX	2023A	202006/068	R20230	9KHz-1.2GHz	MFG	9/22/2010	3/22/2011
6	SPEC ANAL	HP	8566B	2747A05517/2	R37633	100HZ-22GHZ	MFG	8/13/2010	8/13/2011

This is to certify that the above instruments were calibrated using state-of-the-art techniques with standards whose calibration is traceable to the National Institute of Standards and Technology.

INSTRUMENTATION: [signature] 06-08-11 CHECKED & RECEIVED BY: W. Bake 6/8/11

Q.A.: Brenda Moore 6/10/11

WH-1029A,REV.APR'99 Page 1 of 1

wyle laboratories

INSTRUMENTATION EQUIPMENT SHEET

DATE: 6/9/2011 JOB NUMBER: T57936.01 TYPE OF TEST EMS PER 4.1.2.10 AUDIO

TECHNICIAN: G. NEELEY CUSTOMER: ES & S TEST AREA: EMI RM #1

No.	Description	Manufacturer	Model	Serial #	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
1	AMPLIFIER	AMP RESEARCH	250W1000A	0328738	04819	80-1000MHz	NCR	2/1/2011	2/1/2012
2	ANTENNA	AR	AT6080	0330329	02247	80-6000MHz	NCR	3/28/2011	3/28/2020
3	DIR COUPLER	AMP RESEARCH	DC6080	21207	113788	80-1000MHZ	.5db	5/17/2011	5/17/2012
4	ISOTROPIC PROBE	AMP RESEARCH	FP2500	13657	L17657	10 KHz - 1 GHz	±0.7 dB	10/6/2010	10/6/2011
5	SIG GEN	AEROFLEX	2023A	202306/068	R20220	9KHz-1.2GHz	MFG	9/22/2010	9/22/2011
6	SPEC ANAL	HP	8566B	2347A05517/2	R27633	100HZ-22GHZ	MFG	8/13/2010	8/13/2011

This is to certify that the above instruments were calibrated using state-of-the-art techniques with standards whose calibration is traceable to the National Institute of Standards and Technology.

INSTRUMENTATION: [signature] CHECKED & RECEIVED BY: W. Beale 6/9/11

Q.A.: [signature] 6/9/11

WH-1029A,REV,APR'95 Page 1 of 1

wyle laboratories

INSTRUMENTATION EQUIPMENT SHEET

DATE: 6/14/2011 JOB NUMBER: T57936 TYPE OF TEST: ESD PER 4.1.2.8

TECHNICIAN: G. NEELEY CUSTOMER: ES & S TEST AREA: PRODUCT SAFETY

No.	Description	Manufacturer	Model	Serial #	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
1	DISCHARGE	EMC-PARTNER	ESD3000DM1	049	03229	150pF	MFR	12/17/2010	12/17/2011
2	ESD GUN	EMC-PARTNER	ESD3000	059	04461	16.5 KV	±10%	12/17/2010	12/17/2011
3	ESD TARGET	HAEFELY TRENCH	2520311	152861	110794	15KV	±5%	11/13/2009	12/13/2011
4	OSCILLOSCOPE	TEKTRONIX	TDS684C	B020598	116832	1GHz BW	<50ps@50Ω	11/18/2010	11/18/2011
5	TAPE MEASURER	LUFKIN	HV1048CME	NSN	02708	8meters	±1mm	4/14/2010	4/14/2012

This is to certify that the above instruments were calibrated using state-of-the-art techniques with standards whose calibration is traceable to the National Institute of Standards and Technology.

INSTRUMENTATION: 6-14-11 CHECKED & RECEIVED BY: 6/14/11

Q.A.: 6/14/11

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WYLE LABORATORIES, INC.
Huntsville, Alabama Facility

wyle laboratories

INSTRUMENTATION EQUIPMENT SHEET

DATE: 12/14/2010 JOB NUMBER: T57936 TYPE OF TEST: FAST TRANSIENTS

TECHNICIAN: W. BUSH CUSTOMER: ES&S TEST AREA: EMI LAB

No.	Description	Manufacturer	Model	Serial #	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
1	ATTEN	HAEFELY TRENCI	2520111/50	153823 153801	04590	MFD	MFD	2/26/2010	2/26/2012
2	EFT JUNIOR TSTR	HAEFELY TRENCI	093206.1	83762-14	112575	5NS/50NS	10%	12/3/2010	12/3/2012
3	OSCILLOSCOPE	TEKTRONIX	TDS684C	B020598	116833	1GHz BW	<50ps@50%	11/18/2010	11/18/2011

This is to certify that the above instruments were calibrated using state-of-the-art techniques with standards whose calibration is traceable to the National Institute of Standards and Technology.

INSTRUMENTATION: W. Bush 12/14/10 CHECKED & RECEIVED BY: TMF [illegible] 14 Dec 10

Q.A.: [illegible] 12/14/10

WH-1029A,REV,APR'99

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wyle laboratories

INSTRUMENTATION EQUIPMENT SHEET

DATE: 12/9/2010 JOB NUMBER: T57936 TYPE OF TEST: ELECTRO. SUSCEPT.

TECHNICIAN: W. BUSH CUSTOMER: ES&S TEST AREA: EMI LAB

No.	Description	Manufacturer	Model	Serial #	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
1	AMPLIFIER	AMP RESEARCH	500W1000A	25361	03141	80MHz to 1GHz	NCR	7/8/2008	7/8/2020
2	ANTENNA	AR	AT6080	0330579	02247	80-6000MHz	MFG	12/10/2008	12/10/2010
3	DIR COUPLER	AMP RESEARCH	DC6080	21207	113783	80-1000MHZ	5db	4/1/2010	4/1/2011
4	ISOTROPIC PROBE	AMP RESEARCH	FP2000	17657	L17657	10 KHz - 1 GHz	±0.7 dB	10/4/2010	10/4/2011
5	SIGNAL	AGILENT	8648D	3847M00935	800035	MULTI	MFG	4/26/2010	4/26/2012
6	SPEC ANAL	ROHDE SCHWARZ	FSP30	100882	117884	9kHz to 30GHz	MFG	5/10/2010	5/10/2011
7	TAPE MEASURER	LUFKIN	HV1048CME	NSN	00244	26/8m	MFG	12/14/2009	12/14/2010

This is to certify that the above instruments were calibrated using state-of-the-art techniques with standards whose calibration is traceable to the National Institute of Standards and Technology.

INSTRUMENTATION: W. Bush 12/9/10 CHECKED & RECEIVED BY: Michael R Walter 12-9-10

Q.A.: [signature] 12-9-10

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wyle laboratories

INSTRUMENTATION EQUIPMENT SHEET

DATE: 12/8/2010 JOB NUMBER: T57936 TYPE OF TEST: LIGHTNING SURGE

TECHNICIAN: W. BUSH CUSTOMER: ES&S TEST AREA: EMI LAB

No.	Description	Manufacturer	Model	Serial #	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
1	COUPL NETWK	HAEFELY TRENCI	PCD100	149860	890540	MFG	MFG	6/8/2010	6/8/2011
2	IMPULSE MODULE	HAEFELY TRENCI	PIM100	1103	890538	6kV	MFG	6/8/2010	6/8/2011
3	OSCILLOSCOPE	TEKTRONIX	TDS584C	B02058K	116832	1GHz BW	<10ps@5GS/s	11/18/2010	11/18/2011
4	SURGE TSTR	HAEFELY TRENCI	PSURGE8000	150270	890537	MULTI	MFG	6/8/2010	6/8/2011

This is to certify that the above instruments were calibrated using state-of-the-art techniques with standards whose calibration is traceable to the National Institute of Standards and Technology.

INSTRUMENTATION: W. Bush 12/8/10 CHECKED & RECEIVED BY: Michael R. Walker 12/8/10

Q.A.: Brandi Mario 12/8/10

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INSTRUMENTATION EQUIPMENT SHEET

DATE: 8/5/2011 JOB NUMBER: T57936 TYPE OF TEST: EN61000-4-6

TECHNICIAN: G. NEELEY CUSTOMER: ES&S TEST AREA: EMI RM #2

No.	Description	Manufacturer	Model	Serial #	WYLS #	RANGE	ACCURACY	Cal Date	Cal Due
1	AMPLIFIER	AMP RESEARCH	500A100A	0324951	04816	10kHz-100MHz	NCR	4/8/2011	4/8/2012
2	ATTEN	BIRD	25-T-MN	0129	03142	50 OHMS 25 W.	MFG	5/23/2011	5/23/2012
3	ATTENUATOR	NARDA	769-6	05180	04860	DC to 6GHz	MFG	3/16/2011	3/16/2012
4	COUPL NETWK	FISHER CC	FCC-801-M3-25A	06056	04606	.15-230MHz	±4dB	7/15/2011	7/15/2012
5	DIR COUPLER	AMP RESEARCH	DC3010	304022	117208	.01-1000MHz	±0.8dB	4/13/2011	4/13/2012
6	EMI TEST RCVR	ROHDE SCHWARZ	ESCI	100386	117803	MULTI	MFG	12/8/2010	12/8/2011
7	PASS IMP ADAPT	FISHER CC	FCC-801-150-50-CDN	9785	116853	150KHz-230MHz	MFG	7/15/2011	7/15/2012
8	PASS IMP ADAPT	FISHER CC	FCC-801-150-50-CDN	9784	116854	150KHz-230MHz	MFG	7/15/2011	7/15/2012
9	SIG GEN	MARCONI	2023	112224/092	L12224	9kHz-1.2GHz	±0.4dB	1/4/2011	1/4/2012
10	SPEC ANAL	HP	E4446a	US44020311	04447	44GHz	MFG	7/27/2011	7/27/2012
11	TAPE MEASURES	LUFKIN	HV1048CME	NSN	02709	8meters	±1mm	4/14/2010	4/14/2012

This is to certify that the above instruments were calibrated using state-of-the-art techniques with standards whose calibration is traceable to the National Institute of Standards and Technology.

INSTRUMENTATION: [signature] 08-05-11 CHECKED & RECEIVED BY: W. Bush 8/5/11

Q.A.: [signature] 8/5/11

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wyle laboratories

INSTRUMENTATION EQUIPMENT SHEET

DATE: 5/23/2011 JOB NUMBER: T57936 TYPE OF TEST: EFT

TECHNICIAN: G. NEELEY CUSTOMER: ES & S TEST AREA: EMI RM #1

No.	Description	Manufacturer	Model	Serial #	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
1	ATTEN	HAEFELY TRENCI	2520111/00	153823 153801	04990	MFG	MFG	2/29/2010	2/28/2012
2	EFT JUNIOR TSTR	HAEFELY TRENCI	093201.1	83762-14	112575	5NS/50NS	30%	12/3/2010	12/3/2012
3	OSCILLOSCOPE	TEKTRONIX	TDS684C	B020598	116832	1GHz BW	<2Nsec@5GS/s	11/18/2010	11/18/2011

This is to certify that the above instruments were calibrated using state-of-the-art techniques with standards whose calibration is traceable to the National Institute of Standards and Technology.

INSTRUMENTATION: 05-27-11 CHECKED & RECEIVED BY: W. Bush 5/27/11

Q.A.: Branda Moon 5/27/11

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wyle laboratories

INSTRUMENTATION EQUIPMENT SHEET

DATE: 6/13/2011 JOB NUMBER: T57936 TYPE OF TEST: MAG FIELD PER 4.1.2.12

TECHNICIAN: G. NEELEY CUSTOMER: ES & S TEST AREA: PRODUCT SAFETY

No.	Description	Manufacturer	Model	Serial #	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
1	AC SOURCE	POWERTRON	250S-HF	22527	112583	MFG	NCR	12/19/2008	12/19/2020
2	FUNC GEN	AGILENT	33120A	MY40007922	110432	15 MHz	MFG	5/27/2011	5/27/2012
3	METER	HOLADAY	HOL-HI3604	76285	112540	30-2KHz	MFG	1/21/2010	1/21/2012
4	STOP WATCH	HANHART	STRATOS1	110132	110132	10HR	.5 sec/day	4/5/2011	4/5/2012
5	TAPE MEASURER	LUFKIN	HV1048CME	NSN	02710	26' Reaches	±1in / ±1mm	5/4/2011	5/4/2013

This is to certify that the above instruments were calibrated using state-of-the-art techniques with standards whose calibration is traceable to the National Institute of Standards and Technology.

INSTRUMENTATION: [signature] 6-13-11 CHECKED & RECEIVED BY: [signature] 13JUN11

Q.A.: Brandee Moore 6/13/11

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INSTRUMENTATION EQUIPMENT SHEET

DATE: 5/25/2011 JOB NUMBER: T57936 TYPE OF TEST: LIGHTNING SEC. 4.1.2.7

TECHNICIAN: G. NEELEY CUSTOMER: ES & S TEST AREA: EMI WORKBENCH

No.	Description	Manufacturer	Model	Serial #	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
1	COUPL NETWK	HAEFELY TRENCI	PCD100	149869	R90540	MFG	MFG	6/8/2010	6/8/2011
2	IMPULSE MODULE	HAEFELY TRENCI	PIM100	1109	R90538	6kV	MFG	6/8/2010	6/8/2011
3	OSCILLOSCOPE	TEKTRONIX	TDS684C	B020998	116832	1GHz BW	<50ps@5GS/s	11/18/2010	11/18/2011
4	SURGE TSTR	HAEFELY TRENCI	PSURGE8000	150270	R90537	MULTI	MFG	6/8/2010	6/8/2011

This is to certify that the above instruments were calibrated using state-of-the-art techniques with standards whose calibration is traceable to the National Institute of Standards and Technology.

INSTRUMENTATION: 05-25-11 CHECKED & RECEIVED BY: W. Bush 5/24/11

Q.A.: Brandi Moss 5/25/11

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wyle laboratories

INSTRUMENTATION EQUIPMENT SHEET

DATE: 6/9/2011 JOB NUMBER: T57936.01 TYPE OF TEST EMS PER 4.1.2.10 AUDIO

TECHNICIAN: G. NEELEY CUSTOMER: ES & S TEST AREA: EMI RM #1

No.	Description	Manufacturer	Model	Serial #	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
1	AMPLIFIER	AMP RESEARCH	250W1000A	0324738	04819	80-1000MHz	NCR	2/1/2011	2/1/2012
2	ANTENNA	AR	AT6080	0330329	02267	80-6000MHz	NCR	3/28/2011	3/28/2010
3	DIR COUPLER	AMP RESEARCH	DC6080	21207	113788	80-1000MHZ	?db	5/17/2011	5/17/2012
4	ISOTROPIC PROBE	AMP RESEARCH	FP2000	17657	L17657	10 KHz - 1 GHz	±0.7 dB	10/4/2010	10/4/2011
5	SIG GEN	AEROFLEX	2023A	202306/068	R20230	9KHz 1.2GHz	MFG	9/22/2010	9/22/2011
6	SPEC ANAL	HP	8566B	2743A05517/2	R27633	100HZ-22GHZ	MFG	8/13/2010	8/13/2011

This is to certify that the above instruments were calibrated using state-of-the-art techniques with standards whose calibration is traceable to the National Institute of Standards and Technology.

INSTRUMENTATION: [signature] 6-9-11 CHECKED & RECEIVED BY: W. Bath 6/9/11

Q.A.: [signature] 6/9/11

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INSTRUMENTATION EQUIPMENT SHEET

DATE: 6/8/2011 JOB NUMBER: T57936 TYPE OF TEST: EMS PER 4.1.2.10

TECHNICIAN: G. NEELEY CUSTOMER: ES & S TEST AREA: EMI RM #1

No.	Description	Manufacturer	Model	Serial #	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
1	AMPLIFIER	AMP RESEARCH	250W1000A	0324735	04819	80-1000MHz	NCR	2/1/2011	2/1/2012
2	ANTENNA	AR	AT6080	0330929	02247	80-6000MHz	NCR	3/28/2011	3/28/2020
3	DIR COUPLER	AMP RESEARCH	DC6080	21207	113784	80-1000MHZ	.5db	5/17/2011	5/17/2012
4	ISOTRONIC PROBE	AMP RESEARCH	FP2000	11657	L17057	10 KHz - 1 GHz	40.7 dB	10/4/2010	10/4/2011
5	SIG GEN	AEROFLEX	2023A	202006068	320230	9KHz-1.2GHz	MFG	9/22/2010	9/22/2011
6	SPEC ANAL	HP	8566B	2747A051362	327633	100HZ-22GHZ	MFG	8/13/2010	8/13/2011

This is to certify that the above instruments were calibrated using state-of-the-art techniques with standards whose calibration is traceable to the National Institute of Standards and Technology.

INSTRUMENTATION: 06-08-11 CHECKED & RECEIVED BY: W. Bl 6/8/11

Q.A.: Brenda Means 6/8/11

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wyle laboratories

INSTRUMENTATION EQUIPMENT SHEET

DATE: 6/1/2011 JOB NUMBER: T57936 TYPE OF TEST: EPDT AUDIO MODE

TECHNICIAN: G. NEELEY CUSTOMER: ES & S TEST AREA: EMI WORKBENCH

No.	Description	Manufacturer	Model	Serial #	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
1	POWER SOURCE	CALIFORNIA INST	1251RP/P	L08361	117347	0-135VAC RMS	1%	10/19/2010	10/19/2011

This is to certify that the above instruments were calibrated using state-of-the-art techniques with standards whose calibration is traceable to the National Institute of Standards and Technology.

INSTRUMENTATION: 6-1-2011 CHECKED & RECEIVED BY: 6/1/11

Q.A.: 6/1/11

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INSTRUMENTATION EQUIPMENT SHEET

DATE: 5/31/2011 JOB NUMBER: T57936 TYPE OF TEST: EPDT

TECHNICIAN: G. NEELEY CUSTOMER: ES & S TEST AREA: EMI RM # 1

No.	Description	Manufacturer	Model	Serial #	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
1	POWER SOURCE	CALIFORNIA INST	1251RP/IF	L06061	117347	0-135VAC RMS	1%	10/19/2010	10/19/2011

This is to certify that the above instruments were calibrated using state-of-the-art techniques with standards whose calibration is traceable to the National Institute of Standards and Technology.

INSTRUMENTATION: 05-31-11 CHECKED & RECEIVED BY: 5/31/11

Q.A.: 5/31/11

WH-1029A,REV,APR'99

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ATTACHMENT J
091130-1503R Criterion DS200 HW Report

CRITERION
TECHNOLOGY

NVLAP
Accredited Since 1993

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• P.O. Box 489 • 1350 Tolland Road • Rollinsville, CO 80474 • Phone: (303) 258-0100 • FAX: (303) 258-0775 •
• www.criteriontech.com •

EMC QUALIFICATION TEST REPORT

ELECTION SYSTEMS AND SOFTWARE

INTELELECT PRECINCT BALLOT COUNTER, DS200 HW REV. 1.2.1

TESTED TO CONFORM WITH:

VOTING SYSTEM STANDARDS 2002
AND
VOLUNTARY VOTING SYSTEM GUIDELINES 2005

FOR

Voting Systems

Test Report Number:	091130-1503R
Date of Issue:	March 31, 2010
Date of Test Completion:	March 25, 2010
Manufacturer's Address:	11208 John Galt Blvd.
	Omaha, NE 68137
Phone:	(800) 247-8683

Approved by:

Laboratory Director

CONFIDENTIAL AND PROPRIETARY

DISCLAIMERS

This report is the confidential property of the client. For the protection of our clients and ourselves, extracts from this test report cannot be produced without prior written approval from Criterion Technology. Reproduction of the complete report can be performed at the client's discretion.

The client is aware that Criterion Technology has performed testing in accordance with the applicable standard(s). Test data is accurate within ANSI parameters for Emissions testing, unless a specific level of accuracy has been defined in writing prior to testing by Criterion Technology and the client.

Criterion Technology reports apply only to the specific Equipment Under Test (EUT) sample(s) tested under the test conditions described in this report. If the manufacturer intends to use this report as a document demonstrating compliance of this model, additional models of this product must have electrical and mechanical characteristics identical to the device tested for this report. Criterion Technology shall have no liability for any deductions, inferences, or generalizations drawn by the client or others from Criterion Technology issued reports.

Total liability is limited to the amount invoiced for the testing of this EUT and the contents of this report are not warranted.

Compliance with the appropriate governmental standards is the responsibility of the manufacturer.

Any questions regarding this report should be directed to:

Laboratory Director
Criterion Technology Corp.
P.O. Box 489
1350 Tolland Road
Rollinsville, Colorado 80474
Phone: (303) 258-0100
Fax: (303) 258-0775
mailto:laboratory_director@criteriontech.com

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This report may contain data which is not covered by the NVLAP accreditation.

This report must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government.

Criterion Technology has been accredited by the following groups: NVLAP, FCC, BSMI, VCCI, Nemko, NMi (EU Competent Body Accreditation) and Industry Canada. The National Institute for Standards and Technology (NIST) has designated Criterion Technology a Conformity Assessment Body (CAB) for Taiwan (BSMI # SL2-IN-E-007R) and Korea(US0026).

All Criterion Technology instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 9002, ISO 17025, ANSI/NCSL Z540-I-1994 and are traceable to national standards.

TABLE OF CONTENTS

EMC QUALIFICATION TEST REPORT
intelElect Precinct Ballot Counter, DS200 HW Rev. 1.2.1

1.0 EXECUTIVE SUMMARY

1.1 PURPOSE

The purpose of this report is to present EMC test data and demonstrate conformity to the requirements of the prescribed standards for Emissions and/or Immunity.

1.2 CONFORMITY

The test article was tested to the standards listed in Table I with the indicated conformity status. All test methods were performed in accordance to with the standards listed.

TABLE I. EMISSIONS CONFORMITY SUMMARY

TEST TYPE	COMPLIANCE STANDARD	TESTING TECHNIQUE	TEST DESCRIPTION	PRODUCT CLASSIFICATION	CONFORMITY STATUS
EMISSIONS	FCC Part 15 WSG VSS	☒ FCC Part 15	Radiated Emissions	Class B	PASSED
			Conducted Emissions [1]		PASSED

TABLE II. IMMUNITY CONFORMITY SUMMARY

TEST TYPE	COMPLIANCE STANDARD	TESTING TECHNIQUE	TEST DESCRIPTION	MINIMUM PERFORMANCE CRITERIA	CONFORMITY STATUS
IMMUNITY	WSG VSS	☒ 61000-4-2	Electrostatic Disruption	2	PASSED
		☒ 61000-4-3	Electromagnetic Susceptibility, Radiated, RF Electromagnetic Field Amplitude Modulated	1	PASSED
		☒ ENV 50204	Electromagnetic Susceptibility, Radiated, RF Electromagnetic Field Pulse Modulated		PASSED
		☒ 61000-4-4	Electrical Fast Transient/Burst	1	PASSED
		☒ 61000-4-5	Lightening Surge	1	PASSED
		☒ 61000-4-6	Conducted RF Immunity	1	PASSED
		☒ 61000-4-8	Magnetic Fields Immunity [2]	1	PASSED
		☒ 61000-4-11	Power Disturbances, Voltage Dips, Short Interruptions and Voltage Variations	1	PASSED

1.3 EQUIPMENT UNDER TEST (EUT)

EUT NAME: **intelElect Precinct Ballot Counter**
EUT MODEL/PART NUMBER(S): **DS200 HW REV. 1.2.1**
EUT SERIAL NUMBER(S): **DS02093900001**

DOCUMENT REVISION HISTORY

REVISION #	REPORT NUMBER	DESCRIPTION OF REVISION	DATE OF REVISION
0	091130-1503	ORIGINAL REPORT	2010-1-22
1	091130-1503R	ADDED BURST FREQUENCY OF 100 KHZ TO 4-4 TEST DATA	2010-3-31

[1] Measurement of Conducted Emissions do not apply if the EUT is powered by an external DC power source.

2.0 EMISSIONS TEST STANDARDS

FCC Part 15, Subpart B **Class B**

2.1 ☒ RADIATED EMISSIONS – 30 MHZ TO 1000 MHZ

Measurements for *Radiated Emissions* were performed over the frequency range of 30 MHz to 1000 MHz in the horizontal and vertical antenna polarities to the requirements of:

FCC Part 15, Subpart B **Class B**

Testing Conditions

Date of Test:	December 10, 2009
Temperature:	21° C
Relative Humidity:	18 %
Test Voltage:	120 VAC 60 Hz
Test Operator:	LWS

Test Location

Criterion Technology Open Area Test Site

Test Distance

Antenna Distance: **3 meter(s)** **Final Measurement(s)**

Test Equipment

☒ Hewlett-Packard Spectrum Analyzer, HP 8566B
☒ Hewlett-Packard Quasi-Peak Adapter, HP 85650A
☒ Rohde and Schwarz Receiver, ESVS-30
☒ Mini Circuits Pre-Amp #2
☒ Chase BiLog Antenna, Model CB6111

Test Results of Radiated Emissions

Test Status: **PASSED** Frequency Range: **30 MHz to 1000 MHz**

Minimum Margin to Limit: **-2.13** dB at **51.7695** MHz

Remarks

See: **APPENDIX A** for EUT Photographs
APPENDIX B for Data Sheets
APPENDIX D for Test Equipment Calibration Status

2.2 ☒ FCC CONDUCTED EMISSIONS

Measurements for *Conducted Emissions* were performed over the frequency range of 150 kHz to 30 MHz to the requirements of:

FCC Part 15, Subpart B **Class B**

Testing Conditions

Date of Test: Decemebr 11, 2009
Temperature: 18° C
Relative Humidity: 37 %
Test Voltage: 120 VAC 60 Hz
Test Operator: LWS

Test Location

Criterion Technology Shield Room

Test Equipment

Hewlett-Packard Spectrum Analyzer, HP 8566B
Rohde and Schwarz Receiver, ESHS-30 Rohde and Schwarz LISN, ESH2-Z5

Test Results of Conducted Emissions

Test Status: **PASSED** Frequency Range: **150 kHz TO 30 MHz**

Minimum Margin to Limit: **-8.8** dB at **0.52000** MHz

Remarks

See: **APPENDIX A** for EUT Photographs
APPENDIX B for Data Sheets
APPENDIX D for Test Equipment Calibration Status

3.0 IMMUNITY STANDARDS

VVSG VSS

3.1 IMMUNITY TEST STANDARDS.

TABLE II. IMMUNITY TESTS

BASIC STANDARDS	TESTED	ENVIRONMENTAL PHENOMENA	SPECIFICATIONS/UNITS	REQUIRED PERFORMANCE
IEC 61000-4-2	☒	Electrostatic Disruption	±2,4,8,15 kV Air ±2,4,8 kV Contact	Performance Criterion 2
IEC 61000-4-3	☒	Electromagnetic Susceptibility, Radiated, RF Electromagnetic Field Amplitude Modulated	10 V/m (unmodulated, RMS) 80%, 1 kHz AM 80 MHz – 2.7 GHz	Performance Criterion 1
ENV 50204	☒	Electromagnetic Susceptibility, Radiated, RF Electromagnetic Field Pulse Modulated	10 V/m (unmodulated, RMS) 50% duty cycle 200 Hz repetition frequency 900 ±5 MHz	
IEC 61000-4-4	☒	Electrical Fast Transient/Burst	±2 kV CM (AC & DC) Direct	Performance Criterion 1
IEC 61000-4-5	☒	Lightening Surge	☒ ±2 kV CM, ±2 kV DM (AC)	
IEC 61000-4-6	☒	Conducted RF Immunity	10 V_{RMS} (unmodulated, RMS) 80% 1 kHz AM 150 kHz - 80 MHz	Performance Criterion 1
IEC 61000-4-8	☒	Magnetic Fields Immunity [3]	60 Hz, 30.0 A_{RMS}/m	
IEC 61000-4-11	☒	Power Disturbances, Voltage Dips, Short Interruptions and Voltage Variations	☒ 30%reduction/10 msec (AC) ☒ 60%reduction/100 ms (AC) ☒ 60%reduction/1 sec (AC) ☒ 95%reduction/5 sec (AC) ☒ 7.5% Variation/4 hours ☒ 12.5% variation/4 hours ☒ +15% voltage surges	Performance Criterion 1

3.2 PERFORMANCE CRITERIA

3.2.1 Performance Criterion 1

The EUT shall be able to withstand the test without disruption of the normal operation or loss of data.

3.2.2 Performance Criterion 2

The EUT shall be able to withstand the test without damage or loss of data. The equipment may reset or have momentary interruption so long as normal operation is resumed without human intervention or loss of data. Loss of data means votes that have been completed and confirmed to the voter

3.3 ☒ ELECTROSTATIC DISRUPTION (ESD)

Measurements of immunity against *ESD* were performed to the requirements of IEC 61000-4-2.

Testing Conditions

Date of Test:	December 11, 2009
Temperature:	16° C
Relative Humidity:	34 %
Atmospheric Pressure:	554.1 Torr
Test Voltage:	120 VAC 60 Hz
Test Operator:	RMR

Test Location

Criterion Technology Immunity Area

Test Equipment

Haefely Trench PESD, 1600

Test Setup

	Air	Contact
Discharge Type:	☒	☒
Discharge Voltages:	±**2,4,8,15** kV	±**2,4,8** kV
Discharge Polarity:	**Positive/Negative**	**Positive/Negative**
Discharge Factor:	**≥1 second**	**≥1 second**
Discharge Number:	**≥10**	**≥10**
Discharge Impedance:		**330 ohms/150 pF**
Discharge Locations:	☒ Human-Interface Accessible	
	☒ See Photographs APPENDIX A	

Test Results of ESD

Test Status: **PASSED** Performance Criterion **1**

Remarks

See: **APPENDIX A** for EUT Photographs
APPENDIX B for Data Sheets
APPENDIX D for Test Equipment Calibration Status

3.4 ☒ ELECTROMAGNETIC SUSCEPTIBILTY

Measurements of immunity against *Electromagnetic Susceptibilty* were performed to the requirements of:

☒ IEC 61000-4-3 ☒ ENV 50204

Testing Conditions

Date of Test:	December 12, 2009
Temperature:	17° C
Relative Humidity:	32%
Atmospheric Pressure:	564.7 Torr
Test Voltage:	120 VAC 60 Hz
Test Operator:	LWS

Test Location

Criterion Technology Semi-Anechoic Chamber

Test Equipment

- ☒ Amplifier Research Field-Strength Monitoring System, FM2000/FP2000
- ☒ Amplifier Research Power Amplifier, 100W1000M1
- ☒ Amplifier Research Log Periodic Antenna, Model AT1080
- ☒ HP Signal Generator, HP8648D
- ☒ HP Spectrum Analyzer/Display, HP8566B/85662A

Test Specifications

Frequency Range:	☒ **80 MHz to 2.7 GHz**	☒ **900 ±5 MHz**
Field Strength:	☒ **10 V/m**	☒ Other: **10 V/m**
Modulation:	☒ **AM - 1 kHz, 80% sinewave**	☒ **Pulse ON/OFF, 100%, 200 Hz** ☐ **None**
Step:	**1%**	**3.0 second(s) Dwell Time**

Antenna Distance: **3 meter(s)**

Antenna Polarization: ☒ **Horizontal** ☒ **Vertical**

EUT Position:	☒ Front ☒ Back	☒ Left ☒ Right	☐ Top ☐ Bottom

Test Results of Radiated RF EM Field Immunity

Test Status: **PASSED** Performance Criterion **1**

Remarks

See: **APPENDIX A** for EUT Photographs
APPENDIX B for Data Sheets
APPENDIX D for Test Equipment Calibration Status

3.5 ☒ ELECTRICAL FAST TRANSIENTS/BURST (EFT/BURST)

Measurements of immunity against *EFT/Burst* were performed to the requirements of IEC 61000-4-4.

Testing Conditions

Date of Test:	December 12, 2009 & March 25, 2010
Temperature:	16° C
Relative Humidity:	33 %
Atmospheric Pressure:	549.5 Torr
Test Voltage:	120 VAC 60 Hz
Test Operator:	LWS

Test Location

Criterion Technology Immunity Area

Test Equipment

☒ Haefely Trench PEFT Generator
☐ Haefely Trench I/O Injection Clamp
☐ Haefely Trench 3-Phase Injection Network

Test Specifications

	Power Line(s)
Coupling Method:	☒ Coupling Network
Pulse Amplitude/Level:	**2 kV**
Pulse Polarity:	**Positive/Negative**
Burst Frequency:	☒ **5 kHz and 100 kHz**
Coupling Duration:	**≥1 minute**

Cables Coupled

Cable Tested:	Power
Shielding:	None
Type:	AC
Transmission:	Direct

Test Results of EFT/Burst

Test Status: **PASSED** Performance Criterion 1

Remarks

See: **APPENDIX A** for EUT Photographs
APPENDIX B for Data Sheets
APPENDIX D for Test Equipment Calibration Status

3.6 ☒ LIGHTENING SURGE

Measurements of immunity against *Lightening Surge* were performed to the requirements of IEC 61000-4-5.

Testing Conditions

Date of Test:	December 16, 2009
Temperature:	16° C
Relative Humidity:	30 %
Atmospheric Pressure:	563.8Torr
Test Voltage:	120 VAC 60 Hz
Test Operator:	LWS

Test Location

Criterion Technology Surge Test Area

Test Equipment

☒ Haefely Trench P90 Controller, Psurge 6.1
☒ Haefely Trench FP Surge 32.1 Coupling Filter
☐ Haefely Trench 3-Phase Injection Network
☐ I/O Line Discharge Network 42-Ohm Injection (Unshielded Cables)
☐ I/O Line Discharge Network 2/12-Ohm Injection (Shielded Cables)

Test Specifications

	Power Line(s)
Pulse Amplitude:	**2 kV Line-to-Line (L-L)**
	2 kV Line-to-Protective Earth (L-PE)
Pulse Polarity:	**Positive/Negative**
Source Impedance:	**2 Ω (L-L)/12 Ω (L-PE)**

Number of Surges: **10 per phase angle (5 in each polarity), 1 minute between surges.**

Phase Angle(s): ☐ 0° ☒ 90° ☒ 180° ☒ 270°

Cables Coupled

Cable Tested:	Power
Shielding:	None
Type:	AC
Transmission:	Direct

Test Results of Surge

Test Status: **PASSED** Performance Criterion 1

Remarks

See: **APPENDIX A** for EUT Photographs
APPENDIX B for Data Sheets
APPENDIX D for Test Equipment Calibration Status

3.7 ☒ CONDUCTED RF IMMUNITY

Measurements of immunity against *Conducted RF* were performed to the requirements of IEC 61000-4-6.

Testing Conditions

Date of Test:	December 15, 2009
Temperature:	19° C
Relative Humidity:	38 %
Atmospheric Pressure:	553.8 Torr
Test Voltage:	120 VAC 60 Hz
Test Operator:	LWS

Test Location

Criterion Technology Semi-Anechoic Chamber

Test Equipment

- ☒ Amplifier Research Power Amplifier, 150A100A
- ☒ HP Signal Generator, HP8648D
- ☒ Fischer CDN-M3-15
- ☒ Amplifier Research Field-Strength Monitoring System, FM2000/FP2000
- ☒ Gigatronics, 8641 C

Test Specifications

Frequency Range:	**150 kHz to 80 MHz**
Injection Voltage:	☒ **10** V_{RMS}
Modulation:	☒ **AM - 1 kHz, 80% sinewave**
Step:	**1%**
Dwell Time:	**3.0 second(s)**

Cables Coupled

Cable Tested:	AC Power
Shielding:	None
Type:	AC
Transmission:	CDN Direct

Test Results of Conducted RF

Test Status: **PASSED** Performance Criterion **1**

Remarks

See: **APPENDIX A** for EUT Photographs
APPENDIX B for Data Sheets
APPENDIX D for Test Equipment Calibration Status

3.8 ☒ MAGNETIC FIELD IMMUNITY

Measurements of immunity against *Magnetic Field Immunity* were performed to the requirements of IEC 61000-4-8.

Testing Conditions

Date of Test:	December 16, 2009
Temperature:	16° C
Relative Humidity:	30%
Atmospheric Pressure:	563.8 Torr
Test Voltage:	120 VAC 60 Hz
Test Operator:	RMR

Test Location

Criterion Technology Surge Test Area

Test Equipment

☒ Haefely Trench Magnetic Loop Antenna

Test Accessories: See Appendix C for suppoirt equipment details

Test Specifications

Power Frequency: **60 Hz**
Field Strength: **30 A/m**

Test Results of PFMF

Test Status: **PASSED** Performance Criterion **1**

Remarks

See: **APPENDIX A** for EUT Photographs
APPENDIX B for Data Sheets
APPENDIX D for Test Equipment Calibration Status

3.9 ☒ POWER DISTURBANCE - VOLTAGE DIPS, SHORT INTERRUPTIONS AND VOLTAGE VARIATIONS

Measurements of immunity against *Power Disturbance*, *VDIV* were performed to the requirements of IEC 61000-4-11.

Testing Conditions

Date of Test:	December 15, 2009
Temperature:	20° C
Relative Humidity:	30 %
Atmospheric Pressure:	560.2 Torr
Test Voltage:	120 VAC 60 Hz
Test Operator:	LWS

Test Location

Criterion Technology Surge Test Area

Test Equipment

☒ California Instruments, Power Source PACS-1, 5001ix

Test Accessories: See Appendix C for support equipment details

Test Specifications

EUT Line Voltage: **120 VAC, 60 Hz**

U_T Voltages:

☒ 30% reduction 10 msec duration
☒ 60% reduction 100 msec duration
☒ 60% reduction 1 sec duration
☒ 95% reduction 5 sec duration
☒ 7.5% variation = 4 hours
☒ 12.5% variation = 4 hours
☒ ± 15% voltage surges

Number of Dips/Interrupts: ≥3

Test Results of VDIV

Test Status 30% reduction 10 msec duration:	**PASSED**	Test Performance 1
Test Status 60% reduction 100 msec duration:	**PASSED**	Test Performance 1
Test Status 60% reduction 1 second duration:	**PASSED**	Test Performance 1
Test Status 95% reduction for 5.0 seconds:	**PASSED**	Test Performance 1
Test Status 7.5% variation 4 hours:	**PASSED**	Test Performance 1
Test Status 12.5% variation 4 hours :	**PASSED**	Test Performance 1
Test Status ±15% voltage surges:	**PASSED**	Test Performance 1

Test Status: **PASSED** Performance Criterion 1

Remarks

See: **APPENDIX A** for EUT Photographs
APPENDIX B for Data Sheets
APPENDIX D for Test Equipment Calibration Status

4.0 APPENDIX A: EUT PHOTOGRAPHS

4.1 RADIATED EMISSIONS – FRONT VIEW

4.2 RADIATED EMISSIONS – SIDE VIEW

4.3 RADIATED EMISSIONS – REAR VIEW

4.4 CONDUCTED EMISSSIONS – FRONT VIEW

4.5 ELECTROSTATIC DISRUPTION

4.6 ELECTROMAGNETIC SUSCEPTIBILITYY

4.7 ELECTRICAL FAST TRANSIENTS/BURST

4.8 LIGHTENING SURGE

4.9 CONDUCTED RF IMMUNITY

4.10 MAGNETIC FIELDS IMMUNITY

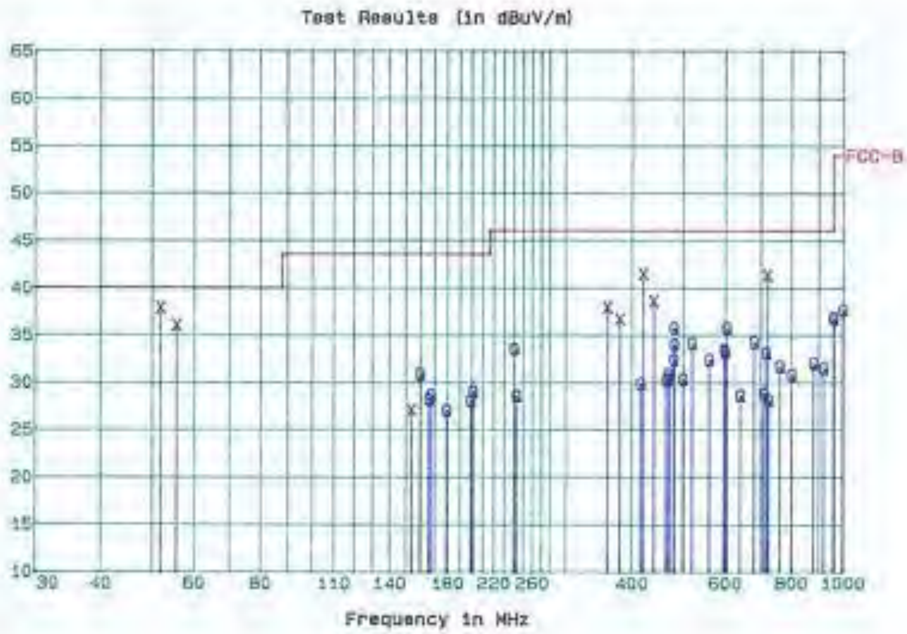
4.11 POWER DISTURBANCE - VOLTAGE DIPS, INTERRUPTIONS & VARIATIONS

5.0 APPENDIX B: DATA SHEETS

5.1 RADIATED EMISSIONS PLOT – 30 MHZ TO 1 GHZ

Criterion Technology
EUT: intelElect Precinct Ballot Counter, DS200 HW Rev. 1.2.1
Manufacturer: Election Systems and Software
Tester: LWS
EUT Level: production unit
Test Information: 3m, 120 VAC 60 Hz, FCC Part 15 Class B
Test Cond: Temp: 21° C

Date: December 10, 2009
S/N: DS02093900001
SpID: 091130-1503
Humidity: 18 %



5.2 RADIATED EMISSIONS TABLE – 30 MHZ TO 1 GHZ

Notes:
The third column below contains alpha characters which pertain to the type of measurements made. The following are the definitions for those characters: q = Quasi Peak, m = Maximized (cable, rotation and antenna height), s = scanned but no data taken, and a = average. For the first character in column four, a '-' indicates that value is below the limit while an '*' indicates that value is above the limit
If the list is sorted using "I-sort", then quasi-peak and average levels are weighted higher than peak levels and are moved to the front of the scan list.
The following keys help to better understand the data:
TT: Turntable position in degrees
Hght: Height of antenna in centimeters
Az: Azimuth, V = Vertical, H= Horizontal

Minimum Margin to Limit: -2.13 dB at 51.7695 MHz

Criterion Technology Thu Dec 10 16:18:00 2009
EUT: intelElect Precinct Ballot Counter, DS200 HW Rev. 1.2.1
S/N: DS02093900001
Manufacturer: Election Systems & Software
Tester: LWS
Special ID: 091130-1503
EUT Level: production unit
Test information: 3 meters, 120 VAC 60 Hz, FCC-Part 15 Class B

Table 1: Scan List, sorted by margin to limit FCC-B, -18.0dB filter

Freq. MHz	Value dBuV/m	Sts	Margin to FCC-B limits (dB)	TT	Hght	Az	Comment
51.7695	37.87	m	-2.13	2	100	V	.
55.5345	36.02	m	-3.98	0	100	V	.
419.7293	41.47	m	-4.55	212	101	V	.
719.5395	41.29	m	-4.73	59	209	V	.
439.7293	38.57	m	-7.45	305	101	V	.
359.7734	37.95	m	-8.07	270	100	V	.
379.7597	36.71	m	-9.31	202	101	V	.
479.7053	35.75	q	-10.27	0	100	V	.
603.6075	35.71	q	-10.31	0	120	V	.
679.5588	34.23	q	-11.79	0	120	V	.
519.6753	34.12	q	-11.90	270	100	V	.
480.0953	34.03	q	-11.99	0	100	V	.
240.0703	33.48	q	-12.54	0	120	V	.
596.5074	33.44	q	-12.58	90	120	V	.
159.9045	30.88	q	-12.64	0	100	V	.
599.5874	33.23	q	-12.79	0	120	V	.
714.9794	33.11	q	-12.91	0	120	V	.
479.6554	32.43	q	-13.59	0	100	V	.
559.6068	32.42	q	-13.60	90	120	V	.
879.4221	32.03	q	-13.99	90	100	V	.
759.5001	31.68	q	-14.34	0	120	H	.
201.0951	29.04	q	-14.48	90	120	V	.
919.3428	31.50	q	-14.52	180	120	V	.
167.5851	28.63	q	-14.89	90	100	V	.
469.3405	30.90	q	-15.12	90	100	V	.
799.4608	30.79	q	-15.23	180	100	V	.
165.7850	28.20	q	-15.32	90	100	V	.
198.9955	28.05	q	-15.47	90	120	V	.
469.3953	30.40	q	-15.62	90	100	V	.

499.6653	30.34	q	-15.68	0	120	H	.
464.0303	30.24	q	-15.78	90	100	V	.
415.2643	29.89	q	-16.13	180	100	V	.
999.3841	37.69	q	-16.29	90	120	V	.
153.9000	27.07	m	-16.45	132	102	V	.
179.2804	27.02	q	-16.50	90	100	V	.
960.0235	36.80	q	-17.18	90	100	V	.
707.3392	28.83	q	-17.19	270	120	V	.
960.2035	36.74	q	-17.24	270	100	V	.
639.5281	28.62	q	-17.40	0	100	H	.
242.5215	28.56	q	-17.46	0	120	V	.
722.4795	28.11	q	-17.91	0	120	V	.

Table 2: Scan List for FCC-B, sorted by Frequency, -18.0dB filter

Freq. MHz	Final Value dBuV/m	Sts	Margin to FCC-B limits (dB)	TT	Hght	Az	Comment
51.7695	37.87	m	-2.13	2	100	V	.
55.5345	36.02	m	-3.98	0	100	V	.
153.9000	27.07	m	-16.45	132	102	V	.
159.9045	30.88	q	-12.64	0	100	V	.
165.7850	28.20	q	-15.32	90	100	V	.
167.5851	28.63	q	-14.89	90	100	V	.
179.2804	27.02	q	-16.50	90	100	V	.
198.9955	28.05	q	-15.47	90	120	V	.
201.0951	29.04	q	-14.48	90	120	V	.
240.0703	33.48	q	-12.54	0	120	V	.
242.5215	28.56	q	-17.46	0	120	V	.
359.7734	37.95	m	-8.07	270	100	V	.
379.7597	36.71	m	-9.31	202	101	V	.
415.2643	29.89	q	-16.13	180	100	V	.
419.7293	41.47	m	-4.55	212	101	V	.
439.7293	38.57	m	-7.45	305	101	V	.
464.0303	30.24	q	-15.78	90	100	V	.
469.3405	30.90	q	-15.12	90	100	V	.
469.3953	30.40	q	-15.62	90	100	V	.
479.6554	32.43	q	-13.59	0	100	V	.
479.7053	35.75	q	-10.27	0	100	V	.
480.0953	34.03	q	-11.99	0	100	V	.
499.6653	30.34	q	-15.68	0	120	H	.
519.6753	34.12	q	-11.90	270	100	V	.
559.6068	32.42	q	-13.60	90	120	V	.
596.5074	33.44	q	-12.58	90	120	V	.
599.5874	33.23	q	-12.79	0	120	V	.
603.6075	35.71	q	-10.31	0	120	V	.
639.5281	28.62	q	-17.40	0	100	H	.
679.5588	34.23	q	-11.79	0	120	V	.
707.3392	28.83	q	-17.19	270	120	V	.
714.9794	33.11	q	-12.91	0	120	V	.
719.5395	41.29	m	-4.73	59	209	V	.
722.4795	28.11	q	-17.91	0	120	V	.
759.5001	31.68	q	-14.34	0	120	H	.
799.4608	30.79	q	-15.23	180	100	V	.
879.4221	32.03	q	-13.99	90	100	V	.
919.3428	31.50	q	-14.52	180	120	V	.
960.0235	36.80	q	-17.18	90	100	V	.
960.2035	36.74	q	-17.24	270	100	V	.
999.3841	37.69	q	-16.29	90	120	V	.

Table 3: Complete Scan List Sorted by Frequency

Freq. MHz	I-val before xducr factors dBuV	Final Value dBuV/m	Sts	TT	Hght	Az	Time	Comment
51.7695	52.66	37.87	m	2	100	V	Thu Dec 10 11:32:55 2009	.
55.5345	51.67	36.02	m	0	100	V	Thu Dec 10 09:28:47 2009	.
134.0145	33.83	24.42	m	90	100	V	Thu Dec 10 09:50:15 2009	.
142.3763	33.98	24.36	m	2	100	V	Thu Dec 10 11:37:00 2009	.
153.9000	37.58	27.07	m	132	102	V	Thu Dec 10 15:31:48 2009	.
159.9045	41.74	30.88	q	0	100	V	Thu Dec 10 09:28:55 2009	.
163.2602	33.10	22.00	q	90	100	V	Thu Dec 10 09:50:22 2009	.
165.7850	39.44	28.20	q	90	100	V	Thu Dec 10 09:50:24 2009	.
167.5851	40.15	28.63	q	90	100	V	Thu Dec 10 09:50:26 2009	.
179.2804	39.07	27.02	q	90	100	V	Thu Dec 10 09:50:30 2009	.
198.9955	39.21	28.05	q	90	120	V	Thu Dec 10 09:41:30 2009	.
201.0951	40.12	29.04	q	90	120	V	Thu Dec 10 09:41:33 2009	.
240.0703	42.68	33.48	q	0	120	V	Thu Dec 10 09:39:09 2009	.
242.5215	37.50	28.56	q	0	120	V	Thu Dec 10 09:39:12 2009	.
266.9719	28.43	20.38	q	270	120	V	Thu Dec 10 10:09:33 2009	.
282.9458	31.16	23.49	q	0	120	V	Thu Dec 10 09:39:18 2009	.
359.7734	43.10	37.95	m	270	100	V	Thu Dec 10 10:17:00 2009	.
379.7597	41.99	36.71	m	202	101	V	Thu Dec 10 15:26:36 2009	.
397.7541	31.09	26.74	q	270	100	V	Thu Dec 10 10:17:05 2009	.
402.3141	31.67	27.61	q	270	100	V	Thu Dec 10 10:17:07 2009	.
415.2643	33.48	29.89	q	180	100	V	Thu Dec 10 09:53:22 2009	.
419.7293	45.06	41.47	m	212	101	V	Thu Dec 10 15:14:26 2009	.
439.7293	41.85	38.57	m	305	101	V	Thu Dec 10 15:38:31 2009	.
464.0303	32.98	30.24	q	90	100	V	Thu Dec 10 09:51:08 2009	.
469.3405	33.50	30.90	q	90	100	V	Thu Dec 10 09:51:10 2009	.
469.3953	33.00	30.40	q	90	100	V	Thu Dec 10 09:51:12 2009	.
479.6554	34.89	32.43	q	0	100	V	Thu Dec 10 09:30:45 2009	.
479.7053	38.21	35.75	q	0	100	V	Thu Dec 10 09:30:47 2009	.
480.0953	36.49	34.03	q	0	100	V	Thu Dec 10 09:30:49 2009	.
499.6653	31.93	30.34	q	0	120	H	Thu Dec 10 09:37:32 2009	.
519.6753	35.75	34.12	q	270	100	V	Thu Dec 10 10:17:32 2009	.
559.6068	33.34	32.42	q	90	120	V	Thu Dec 10 09:44:14 2009	.
596.5074	34.00	33.44	q	90	120	V	Thu Dec 10 09:44:17 2009	.
599.5874	33.61	33.23	q	0	120	V	Thu Dec 10 09:40:00 2009	.
603.6075	36.05	35.71	q	0	120	V	Thu Dec 10 09:40:02 2009	.
639.5281	27.89	28.62	q	0	100	H	Thu Dec 10 09:35:01 2009	.
679.4888	26.59	27.38	q	90	120	V	Thu Dec 1009:44:28 2009	.
679.5588	33.44	34.23	q	0	120	V	Thu Dec 10 09:40:09 2009	.
707.3392	27.65	28.83	q	270	120	V	Thu Dec 10 10:10:28 2009	.
714.9794	31.84	33.11	q	0	120	V	Thu Dec 10 09:40:15 2009	.
719.5395	40.01	41.29	m	59	209	V	Thu Dec 10 15:18:01 2009	.
722.4795	26.76	28.11	q	0	120	V	Thu Dec 10 09:40:20 2009	.
759.5001	29.93	31.68	q	0	120	H	Thu Dec 10 09:38:03 2009	.
799.4608	28.59	30.79	q	180	100	V	Thu Dec 10 09:54:19 2009	.
879.4221	29.31	32.03	q	90	100	V	Thu Dec 10 09:51:57 2009	.
919.3428	28.63	31.50	q	180	120	V	Thu Dec 10 10:03:07 2009	.

960.0235	32.43	36.80	q	90	100	V	Thu Dec 10 09:52:02 2009	,
960.2035	32.35	36.74	q	270	100	V	Thu Dec 10 10:18:11 2009	,
993.9840	31.41	35.51	q	90	120	V	Thu Dec 10 09:44:57 2009	,
999.3841	33.52	37.69	q	90	120	V	Thu Dec 10 09:44:59 2009	.

5.3 FCC CONDUCTED EMISSIONS PLOT

Criterion Technology Inc.
Conducted Emissions

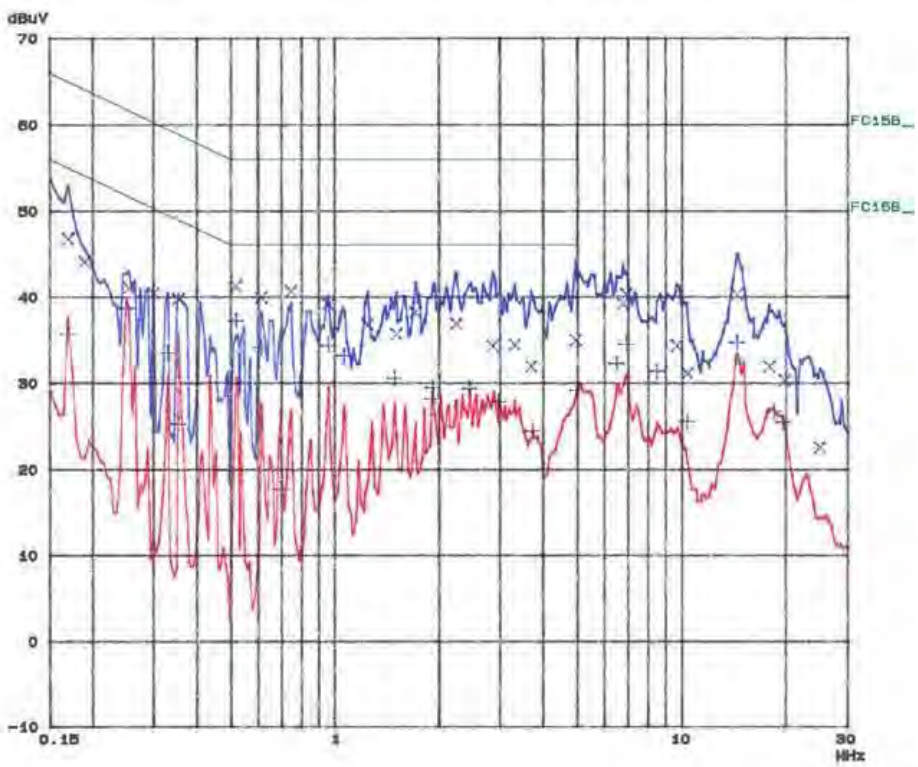
EUT:	IntelElect Precinct Ballot Counter, DS200 HW Rev. 1.2.1	DATE: December 11, 2009
Manuf:	Election Systems and Software	
Op Cond:	Shoe shine mode	
Operator:	LWS	
Test Spec:	FCC Part 15, Class B	
Test Cond:	Temp: 18° C	Humidity: 37 %
Comment:	120 VAC 60 Hz, Li & N on Final	

Scan Settings (1 Range)

Start	Stop	Step	If BW	Detector	M-Time	Atten	Preamp	OpRge
150k	30M	5k	10k	PK+AV	100MS	AUTO LN	OFF	60db

Final Measurement: x QP / + AV
Meas Time: 1 s
Subranges: 25
Acc Margin: 30dB

Transducer No.	Start	Stop	Name
1	10k	30M	R&S_LISN



5.4 FCC CONDUCTED EMISSIONS TABLE

Criterion Technology Inc.
Conducted Emissions

EUT:	IntelElect Precinct Ballot Counter, DS200 HW Rev. 1.2.1	DATE: December 11, 2009
Manuf:	Election Systems and Software	
Op Cond:	Shoe shine mode	
Operator:	LWS	
Test Spec:	FCC Part 15, Class B	
Test Cond:	Temp: 18° C	Humidity: 37 %
Comment:	120 VAC 60 Hz, Li & N on Final	

Scan Settings (1 Range)

---------- Frequencies ----------			---------- Receiver Settings ----------					
Start	Stop	Step	If BW	Detector	M-Time	Atten	Preamp	OpRge
150k	30M	5k	10k	PK+AV	100MS	AUTO LN	OFF	60db

Final Measurement Results:

Indicated Phase/PE shows Configuration of max. Emission

Frequency MHz	QP Level DBuv	QP Limit DBuv	Phase -	PE -
0.17000	46.6	65.0	N	gnd
0.19000	44.1	64.1	N	gnd
0.25500	41.0	61.6	L1	gnd
0.30000	40.4	60.2	N	gnd
0.35500	39.7	58.8	N	gnd
0.52000	41.2	56.0	N	gnd
0.61500	39.9	56.0	N	gnd
0.74500	40.6	56.0	N	gnd
0.95500	39.1	56.0	N	gnd
1.24500	36.8	56.0	N	gnd
1.50000	35.6	56.0	N	gnd
1.71000	38.2	56.0	N	gnd
2.24000	36.9	56.0	N	gnd
2.85000	34.2	56.0	L1	gnd
3.30000	34.4	56.0	L1	gnd
3.67500	31.9	56.0	L1	gnd
4.95500	34.9	56.0	L1	gnd
6.77500	39.1	60.0	N	gnd
6.90500	40.3	60.0	N	gnd
9.67500	34.3	60.0	N	gnd
10.40000	31.1	60.0	N	gnd
14.44500	40.3	60.0	N	gnd
17.85000	31.9	60.0	L1	gnd
19.79500	30.3	60.0	L1	gnd
24.95000	22.5	60.0	L1	gnd

Frequency MHz	AV Level DBuv	AV Limit DBuv	Phase -	PE -
0.17000	35.6	55.0	L1	gnd
0.25000	38.8	51.8	L1	gnd
0.33000	33.5	49.5	N1	gnd
0.35500	25.2	48.8	L1	gnd
0.52000	37.2	46.0	N	gnd
0.61500	34.1	46.0	N	gnd
0.69500	17.7	46.0	N	gnd
0.96000	34.4	46.0	N	gnd
1.05500	33.2	46.0	N	gnd
1.49000	30.5	46.0	N	gnd
1.90500	28.1	46.0	N	gnd
1.91500	29.4	46.0	L1	gnd
2.45000	29.4	46.0	L1	gnd
2.97500	27.8	46.0	L1	gnd
3.73000	24.3	46.0	L1	gnd
4.99500	29.1	46.0	L1	gnd
6.50500	32.3	50.0	N	gnd
6.93000	34.5	50.0	N	gnd
8.49500	31.3	50.0	N	gnd
10.40000	25.5	50.0	N	gnd
14.43000	34.8	50.0	N	gnd
18.36000	26.7	50.0	L1	gnd
19.64000	25.4	50.0	L1	gnd

Minimum Margin to Limit: -8.8 dB at 0.52000 MHz

5.5 ELECTROSTATIC DISRUPTION EN-61000-4-2

TEST NUMBER:	091130-1503	TEST ARTICLE:	intelElect Precinct Ballot Counter
MODEL NUMBER:	DS200 HW Rev. 1.2.1	SERIAL NUMBER:	DS02093900001
TEMPERATURE:	16 °C	HUMIDITY:	34 %
ATMOSPHERIC PRESSURE:	554.1 Torr	TEST PERSONNEL:	RMR
TEST RESULTS:	Complies (X)		Does Not Comply ( )
EUT OPERATING VOLTAGE:	120 VAC 60 Hz	TEST DATE:	12/11/09
DISCHARGE VOLTAGES NEEDED	Air (A), A ±2, 4, 8, 15 kV	Contact (C) C ±2, 4, 8kV	

TEST POINT DESCRIPTION	DISCHARGE VOLTAGES TESTED	DISCHARGE NOTE (A,B,or C)	REQUIRED TEST PERFORMANCE (1 or 2)*	ACTUAL TEST PERFORMANCE (1 or 2)*	PASS/FAIL	OBSERVED RESPONSE OF THE EUT
Ballot Box Front Upper Lock	C ± 2kV	B	2	1	Pass	None
Ballot Box Front Lower Lock	C ± 2kV	B	2	1	Pass	None
Ballot Box Left Side Lock	C ± 2kV	B	2	1	Pass	None
Ballot Box Right Side Lock	C ± 2kV	B	2	1	Pass	None
Ballot Box Top Lock	C ± 2kV	B	2	1	Pass	None
DS200 Front Lock	C ± 2kV	A	2	1	Pass	None
DS200 USB Access Cover Lock	C ± 2kV	A	2	1	Pass	None
DS200 Rear Access Cover Lock	C ± 2kV	A	2	1	Pass	None
Ballot Box Front Upper Lock	C ± 4kV	B	2	1	Pass	None
Ballot Box Front Lower Lock	C ± 4kV	B	2	1	Pass	None
Ballot Box Left Side Lock	C ± 4kV	B	2	1	Pass	None
Ballot Box Right Side Lock	C ± 4kV	B	2	1	Pass	None
Ballot Box Top Lock	C ± 4kV	B	2	1	Pass	None
DS200 Front Lock	C ± 4kV	A	2	1	Pass	None
DS200 USB Access Cover Lock	C ± 4kV	A	2	1	Pass	None
DS200 Rear Access Cover Lock	C ± 4kV	A	2	1	Pass	None
Ballot Box Front Upper Lock	C ± 8kV	B	2	1	Pass	None
Ballot Box Front Lower Lock	C ± 8kV	B	2	1	Pass	None
Ballot Box Left Side Lock	C ± 8kV	B	2	1	Pass	None
Ballot Box Right Side Lock	C ± 8kV	B	2	1	Pass	None
Ballot Box Top Lock	C ± 8kV	B	2	1	Pass	None
DS200 Front Lock	C ± 8kV	A	2	1	Pass	None
DS200 USB Access Cover Lock	C ± 8kV	A	2	1	Pass	None
DS200 Rear Access Cover Lock	C ± 8kV	A	2	1	Pass	None
DS200 LCD Edges (5)	A ± 2kV	A	2	1	Pass	None
DS200 Left & Right LCD Hinge Areas	A ± 2kV	A	2	1	Pass	None
DS200 LCD Speaker	A ± 2kV	A	2	1	Pass	None
DS200 LCD Lock Slot	A ± 2kV	A	2	1	Pass	None
DS200 LCD Top Right Bezel Seam	A ± 2kV	A	2	1	Pass	None
DS200 LCD Head Phone Jack	A ± 2kV	A	2	1	Pass	None
DS200 Rear Access Covers Seam Joint Near Hinge	A ± 2kV	A	2	1	Pass	None
DS200 Rear Access Covers Seam Joint Near Hinge	A ± 2kV	A	2	1	Pass	None
DS200 LCD Edges (5)	A ± 4kV	B	2	1	Pass	None
DS200 Left & Right LCD Hinge Areas	A ± 4kV	A	2	1	Pass	None
DS200 LCD Speaker	A ± 4kV	A	2	1	Pass	None
DS200 LCD Lock Slot	A ± 4kV	A	2	1	Pass	None
DS200 LCD Top Right Bezel Seam	A ± 4kV	A	2	1	Pass	None
DS200 LCD Head Phone Jack	A ± 4kV	A	2	1	Pass	None
DS200 Rear Access Covers Seam Joint Near Hinge	A ± 4kV	A	2	1	Pass	None
DS200 Rear Access Covers Seam Joint Near Hinge	A ± 4kV	A	2	1	Pass	None

TEST POINT DESCRIPTION	DISCHARGE VOLTAGES TESTED	DISCHARGE NOTE (A,B,or C)	REQUIRED TEST PERFORMANCE (1 or 2)*	ACTUAL TEST PERFORMANCE (1 or 2)*	PASS/ FAIL	OBSERVED RESPONSE OF THE EUT
DS200 LCD Edges (5)	A ± 8 kV	B	2	1	Pass	None
DS200 Left & Right LCD Hinge Areas	A ± 8 kV	A	2	1	Pass	None
DS200 LCD Speaker	A ± 8 kV	A	2	1	Pass	None
DS200 LCD Lock Slot	A ± 8 kV	B	2	1	Pass	None
DS200 LCD Top Right Bezel Seam	A ± 8 kV	A	2	1	Pass	None
DS200 LCD Head Phone Jack	A ± 8 kV	A	2	1	Pass	None
DS200 Rear Access Covers Seam Joint Near Hinge	A ± 8 kV	A	2	1	Pass	None
DS200 Rear Access Covers Seam Joint Near Hinge	A ± 8 kV	A	2	1	Pass	None
DS200 LCD Edges (5)	A ± 15 kV	B	2	1	Pass	None
DS200 Left & Right LCD Hinge Areas	A ± 15 kV	B	2	1	Pass	None
DS200 LCD Speaker	A ± 15 kV	B	2	1	Pass	None
DS200 LCD Lock Slot	A ± 15 kV	B	2	1	Pass	None
DS200 LCD Top Right Bezel Seam	A ± 15 kV	B	2	1	Pass	None
DS200 LCD Head Phone Jack	A ± 15 kV	B	2	1	Pass	None
DS200 Rear Access Covers Seam Joint Near Hinge	A ± 15 kV	B	2	1	Pass	None
DS200 Rear Access Covers Seam Joint Near Hinge	A ± 15 kV	C	2	2	Pass	Ballot Error Both polarities affected unit
Horiz Coupling Plane						
EUT Front Left	C ± 8 kV	B	2	1	Pass	None
EUT Front Right	C ± 8 kV	B	2	1	Pass	None
EUT Right Front	C ± 8 kV	B	2	1	Pass	None
EUT Right Back	C ± 8 kV	B	2	1	Pass	None
EUT Rear Left	C ± 8 kV	B	2	1	Pass	None
EUT Rear Right	C ± 8 kV	B	2	1	Pass	None
EUT Left Front	C ± 8 kV	B	2	1	Pass	None
EUT Left Back	C ± 8 kV	B	2	1	Pass	None
Vert. Coupling Plane						
EUT Front Left	C ± 8 kV	B	2	1	Pass	None
EUT Front Right	C ± 8 kV	B	2	1	Pass	None
EUT Right Front	C ± 8 kV	B	2	1	Pass	None
EUT Right Back	C ± 8 kV	B	2	1	Pass	None
EUT Rear Left	C ± 8 kV	B	2	1	Pass	None
EUT Rear Right	C ± 8 kV	B	2	1	Pass	None
EUT Left Front	C ± 8 kV	B	2	1	Pass	None
EUT Left Back	C ± 8 kV	B	2	1	Pass	None

***Performance Criterion 1**
The EUT shall be able to withstand the test without disruption of the normal operation or loss of data.

***Performance Criterion 2**
The EUT shall be able to withstand the test without damage or loss of data. The equipment may reset or have momentary interruption so long as normal operation is resumed without human intervention or loss of data. Loss of data means votes that have been completed and confirmed to the voter

DISCHARGE NOTES:

A. No perceived discharge, and no observed response in the EUT.
B. Discharge observed, but no observed response in the EUT.
C. Discharge observed, and the EUT was affected.

5.6 ELECTROMAGNETIC SUSCEPTIBILITY EN-61000-4-3

TEST NUMBER:	091130-1503	TEST ARTICLE:	intelElect Precinct Ballot Counter
MODEL NUMBER:	DS200 HW Rev. 1.2.1	SERIAL NUMBER:	DS02093900001
TEMPERATURE:	17 °C	HUMIDITY:	32 %
ATMOSPHERIC PRESSURE:	564.7 Torr	DWELL TIME:	3 Seconds
TEST DATE:	12-12-09	TEST PERSONNEL:	LWS
EUT OPERATING VOLTAGE:	120 VAC 60 Hz		

TEST FREQ. (MHz)	FIELD STRENGTH (V/m)	MODULATION FREQ. %	FIELD POLARITY	TESTED SIDE OF EUT	TEST PERFORMANCE (1 or 2)*	TEST PERFORMANCE (1 or 2)*	(PASS/ FAIL)	OBSERVED RESPONSE OF THE EUT
80 to 1000	10	1kHz 80%AM	Horizontal	Front (0)	1	1	pass	normal
SPOT	10	1kHz 80%AM	Horizontal	Front (0)	1	1	pass	normal
900	10	200 Hz pulse	Horizontal	Front (0)	1	1	pass	normal
900	10	200 Hz pulse	Horizontal	Left (90)	1	1	pass	normal
SPOT	10	1kHz 80%AM	Horizontal	Left (90)	1	1	pass	normal
80 to 1000	10	1kHz 80%AM	Horizontal	Left (90)	1	1	pass	normal
80 to 1000	10	1kHz 80%AM	Horizontal	Rear (180)	1	1	pass	normal
SPOT	10	1kHz 80%AM	Horizontal	Rear (180)	1	1	pass	normal
900	10	200 Hz pulse	Horizontal	Rear (180)	1	1	pass	normal
900	10	200 Hz pulse	Horizontal	Right (270)	1	1	pass	normal
SPOT	10	1kHz 80%AM	Horizontal	Right (270)	1	1	pass	normal
80 to 1000	10	1kHz 80%AM	Horizontal	Right (270)	1	1	pass	normal
80 to 1000	10	1kHz 80%AM	Vertical	Right (270)	1	1	pass	normal
SPOT	10	1kHz 80%AM	Vertical	Right (270)	1	1	pass	normal
900	10	200 Hz pulse	Vertical	Right (270)	1	1	pass	normal
900	10	200 Hz pulse	Vertical	Rear (180)	1	1	pass	normal
SPOT	10	1kHz 80%AM	Vertical	Rear (180)	1	1	pass	normal
80 to 1000	10	1kHz 80%AM	Vertical	Rear (180)	1	1	pass	normal
80 to 1000	10	1kHz 80%AM	Vertical	Left (90)	1	1	pass	normal
SPOT	10	1kHz 80%AM	Vertical	Left (90)	1	1	pass	normal
900	10	200 Hz pulse	Vertical	Left (90)	1	1	pass	normal
900	10	200 Hz pulse	Vertical	Front (0)	1	1	pass	normal
SPOT	10	1kHz 80%AM	Vertical	Front (0)	1	1	pass	normal
80 to 1000	10	1kHz 80%AM	Vertical	Front (0)	1	1	pass	normal
1 - 2.7 GHz	10	1kHz 80%AM	Horizontal	Front (0)	1	1	pass	normal
1 - 2.7 GHz	10	1kHz 80%AM	Horizontal	Left (90)	1	1	pass	normal
1 - 2.7 GHz	10	1kHz 80%AM	Horizontal	Rear (180)	1	1	pass	normal
1 - 2.7 GHz	10	1kHz 80%AM	Horizontal	Rear (180)	1	1	pass	normal
1 - 2.7 GHz	10	1kHz 80%AM	Horizontal	Right (270)	1	1	pass	normal
1 - 2.7 GHz	10	1kHz 80%AM	Horizontal	Right (270)	1	1	pass	normal
1 - 2.7 GHz	10	1kHz 80%AM	Vertical	Right (270)	1	1	pass	normal
1 - 2.7 GHz	10	1kHz 80%AM	Vertical	Right (270)	1	1	pass	normal
1 - 2.7 GHz	10	1kHz 80%AM	Vertical	Rear (180)	1	1	pass	normal
1 - 2.7 GHz	10	1kHz 80%AM	Vertical	Rear (180)	1	1	pass	normal
1 - 2.7 GHz	10	1kHz 80%AM	Vertical	Left (90)	1	1	pass	normal
1 - 2.7 GHz	10	1kHz 80%AM	Vertical	Left (90)	1	1	pass	normal
1 - 2.7 GHz	10	1kHz 80%AM	Vertical	Front (0)	1	1	pass	normal
1 - 2.7 GHz	10	1kHz 80%AM	Vertical	Front (0)	1	1	pass	normal

***Performance Criterion 1**
The EUT shall be able to withstand the test without disruption of the normal operation or loss of data.

***Performance Criterion 2**

The EUT shall be able to withstand the test without damage or loss of data. The equipment may reset or have momentary interruption so long as normal operation is resumed without human intervention or loss of data. Loss of data means votes that have been completed and confirmed to the voter

5.7 ELECTRICAL FAST TRANSIT EN-61000-4-4

TEST NUMBER:	091130-1503	TEST ARTICLE:	intelElect Precinct Ballot Counter
MODEL NUMBER:	DS200 HW Rev. 1.2.1	SERIAL NUMBER:	DS02093900001
TEMPERATURE:	16° C	HUMIDITY:	33%
ATMOSPHERIC PRESSURE:	549.5 Torr	BURST FREQUENCY:	5kHz & 100 kHz
TEST DATE:	12-12-09	TEST PERSONNEL:	LWS
TEST RESULTS:	Complies (X)		Does Not Comply ( )
EUT OPERATING VOLTAGE:	120 VAC 60 Hz	DWELL TIME:	120 Seconds

TEST VOLTAGE	LINE 1	LINE 2	EARTH GROUND	TEST DURATION	CABLE TESTED	REQUIRED PERFORMANCE (1 or 2) *	TEST PERFORMANCE (1 or 2) *	(PASS/ FAIL)	OBSERVED RESPONSE OF THE EUT
±2kV	X			2 Minutes	Power	1	1	pass	Normal
±2kV		X		2 Minutes	Power	1	1	pass	Normal
±2kV	X	X	X	2 Minutes	Pow er	1	1	pass	Normal
±2kV	X			2 Minutes	Power	1	1	pass	Normal
±2kV		X		2 Minutes	Power	1	1	pass	Normal
±2kV	X	X	X	2 Minutes	Power	1	1	pass	Normal

***Performance Criterion 1**
The EUT shall be able to withstand the test without disruption of the normal operation or loss of data.

***Performance Criterion 2**
The EUT shall be able to withstand the test without damage or loss of data. The equipment may reset or have momentary interruption so long as normal operation is resumed without human intervention or loss of data. Loss of data means votes that have been completed and confirmed to the voter

5.8 LIGHTENING SURGE EN-61000-4-5

TEST NUMBER:	091130-1503	TEST ARTICLE:	intelElect Precinct Ballot Counter
MODEL NUMBER:	DS200 HW Rev. 1.2.1	SERIAL NUMBER:	DS02093900001
TEMPERATURE:	16 °C	HUMIDITY:	30 %
ATMOSPHERIC PRESSURE:	5563.8 Torr	TEST PERSONNEL:	LWS
TEST RESULTS:	Complies (X)		Does Not Comply ( )
EUT OPERATING VOLTAGE:	120 VAC 60 Hz	TEST DATE:	12/16/09

TEST VOLTAGE	LINE 1	LINE 2	EARTH GROUND	CABLE TESTED	REQUIRED PERFORMANCE (1 or 2) *	TEST PERFORMANCE (1 or 2) *	(PASS/ FAIL)	OBSERVED RESPONSE OF THE EUT
+2 kV	X	X		Power	1	1	P	None
-2 kV	X	X		Power	1	1	P	None
+2 kV	X		X	Power	1	1	P	None
+2 kV		X	X	Power	1	1	P	None
-2 kV	X		X	Power	1	1	P	None
-2 kV		X	X	Power	1	1	P	None

Surges were initiated at 90°, 180° and 270° power line phase angles.

*Performance Criterion 1
The EUT shall be able to withstand the test without disruption of the normal operation or loss of data.

*Performance Criterion 2
The EUT shall be able to withstand the test without damage or loss of data. The equipment may reset or have momentary interruption so long as normal operation is resumed without human intervention or loss of data. Loss of data means votes that have been completed and confirmed to the voter

5.9 CONDUCTED RF IMMUNITY EN-61000-4-6

TEST NUMBER:	091130-1503	TEST ARTICLE:	intelElect Precinct Ballot Counter
MODEL NUMBER:	DS200 HW Rev. 1.2.1	SERIAL NUMBER:	DS02093900001
TEMPERATURE:	19 °C	HUMIDITY:	38 %
ATMOSPHERIC PRESSURE:	553.8 Torr		
TEST DATE:	12-12-09	TEST PERSONNEL:	LWS
TEST RESULTS:	Complies (X)		Does Not Comply ( )
EUT OPERATING VOLTAGE:	120 VAC 60 Hz	DWELL TIME:	3 Seconds

TEST FREQ (MHz)	FIELD STRENGTH (V)	MODULATION FREQ %	CABLE TESTED	COUPLING DEVICE	REQUIRED PERFORMANCE (1 or 2) *	TEST PERFORMANCE (1 or 2) *	(PASS/ FAIL)	OBSERVED RESPONSE OF THE EUT
0.15 to 80	10	1kHz 80% AM	POWER	M3 CDN	1	1	pass	Normal Operation

***Performance Criterion 1**
The EUT shall be able to withstand the test without disruption of the normal operation or loss of data.

***Performance Criterion 2**
The EUT shall be able to withstand the test without damage or loss of data. The equipment may reset or have momentary interruption so long as normal operation is resumed without human intervention or loss of data. Loss of data means votes that have been completed and confirmed to the voter

5.10 MAGNETIC FIELDS IMMUNITY EN-61000-4-8

TEST NUMBER:	091130-1503	TEST ARTICLE:	intelElect Precinct Ballot Counter
MODEL NUMBER:	DS200 HW Rev. 1.2.1	SERIAL NUMBER:	DS02093900001
TEMPERATURE:	16 °C	HUMIDITY:	30 %
ATMOSPHERIC PRESSURE:	563.8 Torr	Method:	☒ Immersion ☐ Proximity
TEST DATE:	12-16-2009	TEST PERSONNEL:	RMR
TEST RESULTS:	Complies (X)		Does Not Comply ( )
EUT OPERATING VOLTAGE:	120 VAC 60 Hz	DWELL TIME:	> 1 Minute

MAGNETIC POWER FREQ. (Hz)	H-FIELD STRENGTH (A/m)	LOOP POSITION ON EUT	COUPLING DEVICE	REQUIRED PERFORMANCE (1 or 2) *	TEST PERFORMANCE (1 or 2) *	(PASS/ FAIL)	OBSERVED RESPONSE OF THE EUT
60	30	X	Haefely loop	1	1	P	None
60	30	Y	Haefely loop	1	1	P	None
60	30	Z	Haefely loop	1	1	P	None

*Performance Criterion 1
The EUT shall be able to withstand the test without disruption of the normal operation or loss of data.

*Performance Criterion 2
The EUT shall be able to withstand the test without damage or loss of data. The equipment may reset or have momentary interruption so long as normal operation is resumed without human intervention or loss of data. Loss of data means votes that have been completed and confirmed to the voter

5.11 POWER DISTURBANCE, VOLTAGE DIPS, INTERRUPTIONS & VARIATIONS EN 61000-4-11

TEST NUMBER:	091130-1503	TEST ARTICLE:	intelElect Precinct Ballot Counter
MODEL NUMBER:	DS200 HW Rev. 1.2.1	SERIAL NUMBER:	DS02093900001
TEMPERATURE:	20 °C	HUMIDITY:	30 %
ATMOSPHERIC PRESSURE:	560.2 Torr		
TEST DATE:	12/15/09	TEST PERSONNEL:	LWS
TEST RESULTS:	Complies (X)		Does Not Comply ( )
EUT OPERATING VOLTAGE:	120 VAC 60 Hz	# OF DIPS/INTERRUPTS	= 3

VOLTAGE REDUCTION % & DURATION (Sec.)	NUMBER OF REPETITIONS	POWER SOURCE	REQUIRED PERFORMANCE (1 or 2) *	TEST PERFORMANCE (1 or 2) *	(PASS/ FAIL)	OBSERVED RESPONSE OF THE EUT
30% @ 10 msec.	3	Cal. Instr. 5001ix	1	1	P	Normal Operation
60% @ 100 msec.	3	Cal. Instr. 5001ix	1	1	P	Normal Operation
60% @ 1 sec.	3	Cal. Instr. 5001ix	1	1	P	Normal Operation
95% @ 5 sec.	3	Cal. Instr. 5001ix	1	1	P	Normal Operation
+ 15% & - 15% variations	3	Cal. Instr. 5001ix	1	1	P	Normal Operation
7.5% increase 4 hrs.	3	Cal. Instr. 5001ix	1	1	P	Normal Operation
12.5% reduction 4 hrs.	3	Cal. Instr. 5001ix	1	1	P	Normal Operation

***Performance Criterion 1**
The EUT shall be able to withstand the test without disruption of the normal operation or loss of data.

***Performance Criterion 2**

The EUT shall be able to withstand the test without damage or loss of data. The equipment may reset or have momentary interruption so long as normal operation is resumed without human intervention or loss of data. Loss of data means votes that have been completed and confirmed to the voter

6.0 APPENDIX C: PRODUCT INFORMATION FORM

CRITERION TECHNOLOGY PRODUCT INFORMATION FORM

General Information **Date:** 12-4-09

iBeta Quality Assurance, 3131 S Vaughn Way, Aurora, CO 80014
Contacts:
VSTL Test Observer: Kirby Austin Phone: 303-627-1110 x166 Email: kaustin@ibeta.com
VSTL Test Observer: Jenn Garcia Phone: 303-627-1110 x158 Email: jgarcia@ibeta.com

Company Name: Election Systems and Software
Company Address: 11208 John Galt Blvd Omaha, NE 68137
Contact:
Project Manager: Sue Munguia Phone: 402-537-1125 Email: slmunguia@essvote.com
Design Engineer: Paul Hoffman Phone: 402-970-1127 Email: pahuffman@essvote.com

Test Description:

For the purpose of testing the changes in theDS200 with changes to the plastic and steel (plastic) Ballot Boxes for ECOs

- 841: DS200 #1 Rod Lens Array RA89; #2 Capacitor; #3 Protected power switch
- 843: Steel ballot box diverter cable
- 844: DS200 EOL parts
- 847: DS200 Back light inverter
- 529: DS200 carrying case bracket, cable & switch

MODIFICATION TO THE EAC CERTIFICATION #ESSUNITY3200; RECOMMENDATION FOR TESTING OF THE ENGINEERING CHANGES IS BASED UPON THE ASSESSMENT BY LOU SCHORNACK

De-Bug ______ Formal (Initial) ______ Formal (Re-Verification) __X__

Market Information (Check all that Apply)
USA X Canada ___ Euro. Union ___ Taiwan ___ Japan ___ New Zealand ___ Australia ___
Other ______

Product Information
(Testing of the DS200 is configured with a plastic ballot box/carrying case and steel ballot box)

Name ES&S intelElect DS200 Precinct Ballot Counter
Model Number DS200 HW Rev 1.2.1
Serial Number DS02093900001
Product Dimensions: No change from Criterion report 090601-1417
Weight: No change from Criterion report 090601-1417
Mounted on: Plastic Ballot Box (including the integrated carrying case) and a steel ballot box
Model Number M200 Carry Case HW Rev 1.3.
Serial Number None
Product Dimensions: 41.5" H x 24" W x 26" D
Weight: 58 lbs

Product Power Source:

Battery:

Type : No change from Criterion report 090601-1417.
Redundant Power Supplies ____________
No change from Criterion report 090601-1417.

AC Supply: No change from Criterion report 090601-1417

Input Voltage Range(s)
Phases _____ Delta _____ Wye _____
Current ____________
Frequency__________
Manufacturer ______________________________
Model Number ______________________________

Topology

Linear _____ Switching Mode ______ Switching Frequency __________________

Support Equipment (if used): NA

Operation Software:

Name DS200 Firmware ____________________ Version Number 1.3.10.0

Operating Modes: (Please Include Cycle Time)

Operating in a mock election reporting (auto-scan, als o known as "shoeshine") mode as used in a polling place

Operation Pass/Fail Criteria:

The DS200 shall be able to withstand ±25 kV air discharge and ±8 kV contact discharge without damage or loss of data. The equipment may reset or have momentary interruption so long as normal operation is resumed without human intervention or loss of data.

The DS200 shall be able to withstand, without disruption or normal operation or loss of data, surges of:

a. ±2 kV AC line to line;
b. ±2 kV AC line to earth;
c. ±.5 kV DC line to line > 10m;
d. ±.5 kV DC line to earth > 10m;
e. ±1 kV I/O sig/control > 30m.

The DS200 shall be able to withstand, without disruption or normal operation or loss of data, electrical fast transients of:

a. 2 kV AC & DC external power lines;
b. ±21kV AC all external wires > 3cm no control and;
c. ±2 kV AC all external wires control.

The DS200 shall be able to withstand, without disruption or normal operation or loss of data,

a. Surges of 30% dip @ 10 ms;
b. Surges of 60% dip @100 ms & 1 sec
c. Surges of > 95% interrupt @ 5 sec;
d. Surges of ±15% line variations of nominal line voltage; and
e. Electric power increases of 7.5% and reductions of 12.5% of nominal specified power supply for a period of up to four hours at each power level.

The DS200 shall comply with the Rules and Regulations of the Federal Communications Commission, Part 15, Class B requirements for both radiated and conducted emissions.

The DS200 shall be able to withstand an electromagnetic field of 10 V/m modulated by 1 kHz 80% AM modulation over the frequency range of 80 MHz to 1000 MHz, without disruption of normal operation or loss of data.

The DS200 shall be able to withstand, without disruption or normal operation or loss of data, conducted RF energy of:

a. 10 V AC & DC power, and;
b. 10V, 20 sig/control >3m

The DS200 shall be able to withstand, without disruption or normal operation or loss of data, AC magnetic fields of 30 A/m at 60 Hz.

Test Type – Emissions (Please check all that apply):

Voting System Standards

Class A ____

Class B X___

Oscillator/Clock Frequencies (MHz) No change from Criterion report 090601-1417

Immunity Testing

Test Type (Please check all that apply):

__X__ **VSS** – Voting System Standards

Criterion Technologies laboratory will identify information below prior to testing and incorporate this information into their testing and reporting.

EN 61000-4-2 (ESD):

Number of Metallic test points touchable by equipment operator: ____________

Number of Non-Metallic test points touchable by equipment operator: ____________

Is the product enclosure completely plastic? ____________

Is the product enclosure partly plastic? ____________

Are there any additional ESD voltages required for testing? If so, list herein: ____________

EN 61000-4-4 (Electrical Fast Transients)

How many interfacing cables are greater than 3 meter long? ____________

List each cable by name? ____________

EN 61000-4-3 & ENV 50204 (Radiated Susceptibility Testing, 80 - 1000 MHz)

What is the maximum time necessary for the product to respond? ____________

During normal operations, what parameter will be monitored to determine susceptibility of the product? ____________

EN 61000-4-5 (Surge Testing on Power Lines)

Optional: Are there any long interfacing cables to be tested? ____________

If so, how many? ____________

Note: Cables must be tested at a length of 20 meters.

EN 61000-4-6 (Conducted Disturbance Testing)

How many interfacing cables are greater than 3 meter long? ____________

List each cable by name? ____________

EN 61000-4-8 (Magnetic Field Susceptibility Testing)

Test is applicable to Hall Elements, Electrodynamics Microphones, Magnetic Field Sensors and CRT Monitors. Do any of these apply? ____________

EN 61000-4-11 (Voltage Sag and Interruptions) Comments: ____________

The following are extracts from the iBeta FCA Environmental Test Case Unity 3.2.1.0 (Test Case & Log DS200 and Op Stat DS200), which were provided to Criterion as documentation of their observations. The Operational status checks were prepared and conducted by the iBeta observers before and after test execution.

Assessments of DS200 Engineering Change Orders: 841, 843, 844, 847 and 000529

Electrical Laboratory Assessment: Required

1) Please review the identified ECO and supporting documentation to the identified test standard.
2) Based upon the review please make a recommendation for further action:
   - D- Deminimus no recommendation for testing
   - R- Recommendation for an electrical testing

Date sent: 10/27/09

Provide a copy of the ECO and supporting documents with this form.

ECO Number: ECO 841 **Description of Change:** New DS200 parts include: #1 Rod Lens Array RA89, #2 Capacitor #3 Protected power switch **Reason for Change:** Components have reached their EOL (End of Life) and new parts are being recommended.	Supporting Documents: ECO 841 with supporting drawings & documents (attached)

Electrical Reviewer Name: Louis Schoenack

Identify Qualifications: over 40 years of electronic product design, development, and EMC testing.

Identify Any Laboratory Association: Laboratory Director, Criterion Technology, Inc.

Renew Date: Nov 20, 2009

Reviewer Signature:

(reviewer may insert an electronic image of their signature or print and return a hard copy signature)

[illegible]	Power Disturbance EN-61000-4-11	R
[illegible]	Electromagnet Radiated and Conducted emissions FCC Part 15 Class B	R
[illegible]	Electrostatic Disruption EN-61000-4-2	R
[illegible]	Electromagnetic Susceptibility EN-61000-4-3	R
[illegible]	Electrical Fast Transit EN-61000-4-4	R
[illegible]	Lightening Surge EN-61000-4-5	R
[illegible]	Conducted RF Immunity EN-61000-4-6	R
[illegible]	Magnetic Fields Immunity EN-61000-4-8	D

Evaluation Notes: The Rod Lens Array RA89 and Contact image sensor show evidence in their documentation of complex clocks, sensitivity to high speed signals over connecting cables which are limited to 30 cm in length and also possible latch up of the chip assemblies introducing these new variables into the EUT point to retesting in the following areas.

Radiated and conducted emissions
4-2 ESD
4-3 RF Susceptibility
4-4 EFT
4-5 Surge
4-6 Conducted RF susceptibility

The substitution of the Micrel power switch assembly shows evidence of the introduction of new variables in the areas of undervoltage lockout, thermal shut down, and fault status reporting. The introduction of these variables into the EUT point to retesting in
4-2 ESD
4-4 EFT
4-5 Surge
4-11 Power line voltage dips and interrupts.

Date Returned: Nov. 20, 2009

Electrical Laboratory Assessment: REQUIRED

1) Please review the identified ECO and supporting documentation to the identified test standard.
2) Based upon the review please make a recommendation for further action:

- D- Deminimus no recommendation for testing
- R- Recommendation for an electrical testing

Date sent:

Provide a copy of the ECO and supporting documents with this form.

ECO Number: 000529 **Description of Change** 1) Remove Micro Switch bracket, and switch cable from the DS200 Carry Case, update drawings & BOM 2) Reduce glue usage during production ,update drawings & BOM **Reason for Change**: Previously added washers & rivets are sufficient. Washers & rivets were	Supporting Documents: ECO-000529 with supporting drawings attached to the ECO file

Electrical Reviewer Name: Lou Schornack

Identify Qualifications: Over 40 years of electronic product design and development, and EMC testing

Identify Any Laboratory Association: Laboratory Director, Criterion Technology, Inc.

Review Date: Dec 07, 2009

Reviewer Signature:

(reviewer may insert an electronic image of their signature or print and return a hard copy signature)

v.2:v 2:4.8.1 v.2:v 2:4.8.a	Power Disturbance EN-61000-4-11	D
v.2:4.8.2 v.2:4.8.b	Electromagnet Radiation FCC Part 15 Class B	D
v.2:4.8.3 v.2:4.8.c	Electrostatic Disruption EN-61000-4-2	D
v.2:4.8.4 v.2:4.8.d	Electromagnetic Susceptibility EN-61000-4-3	D
v.2:4.8.5 v.2:4.8.e	Electrical Fast Transit EN-61000-4-4	D
v.2:4.8.6 v.2:4.8.f	Lightening Surge EN-61000-4-5	D
v.2:4.8.7 v.2:4.8.g	Conducted RF Immunity EN-61000-4-6	D
v.2:4.8.8 v.2:4.8.h	Magnetic Fields Immunity EN-61000-4-8	D

Evaluation Notes: After physical examination of the ECO, it is determined that all parts related to the microswitch have been removed and as a result the change does not require additional testing.

Date Returned: Dec 07, 2009

Electrical Laboratory Assessment: Recommended

1) Please review the identified ECO and supporting documentation to the identified test standard.
2) Based upon the review please make a recommendation for further action:
   - D- Deminimus no recommendation for testing
   - R- Recommendation for an electrical testing

Date sent: 10/23/09

Provide a copy of the ECO and supporting documents with this form:

ECO Number: 843 **Description of Change**: A new diverter cable, (change to a 4 conductor cable with less heat shrink and 2" longer) **Reason for Change**: Permit the use of the double bin steel ballot box with the DS200 scanner	Supporting Documents: ECO 843 containing drawings of the diverter cable

Electrical Reviewer Name: Louis Schornack
Identify Qualifications: EMC engineering since 1976, Lab director & President of Criterion Technology, an EMC test laboratory
Identify Any Laboratory Association: NVLAP ACCREDITED
Review Date: Nov 11, 2009

Reviewer Signature:

(reviewer may insert an electronic image of their signature or print and return a hard copy signature)

VSS VVSG	STANDARD	
v.2:v.2:4.8.1 v.2:v.2:4.8.a	Power Disturbance EN-61000-4-11	R
v.2:4.8.2 v.2:4.8.b	Electromagnet Radiation FCC Part 15 Class B	R
v.2:4.8.3 v.2:4.8.c	Electrostatic Disruption EN-61000-4-2	R
v.2:4.8.4 v.2:4.8.d	Electromagnetic Susceptibility EN-61000-4-3	R
v.2:4.8.5 v.2:4.8.e	Electrical Fast Transit EN-61000-4-4	R
v.2:4.8.6 v.2:4.8.f	Lightening Surge EN-61000-4-5	R
v.2:4.8.7 v.2:4.8.g	Conducted RF Immunity EN-61000-4-6	R
v.2:4.8.8 v.2:4.8.h	Magnetic Fields Immunity EN-61000-4-8	R

Evaluation Notes: changing number of cable conductors and length can significantly change the EMC characteristics of the equipment.

Date Returned: Nov 11, 2009

Electrical Laboratory Assessment:

1) Please review the identified ECO and supporting documentation to the identified test standard.
2) Based upon the review please make a recommendation for further action:
   - o D- Deminimus no recommendation for testing
   - o R- Recommendation for an electrical testing

Date sent:

Provide a copy of the ECO and supporting documents with this form:

ECO Number: 844 **Description of Change**: End of Life products being replaced. **Reason for Change**: End of Life. Equivalent replacements/ Alternate parts have been selected.	Supporting Documents: ECO 844 Original Doc and supporting documents (attached to the ECO file)

Electrical Reviewer Name: Louis Schornack
Identify Qualifications: Over 40 years developing electronic products and passing EMC testing.
Identify Any Laboratory Association: Criterion Technology, Inc.
Review Date: Nov. 20, 2009

Reviewer Signature:
(reviewer may insert an electronic image of their signature or print and return a hard copy signature)

[illegible]	[illegible]	
v.2.0/2.4.8.1 v.2.5 2.4.8.a	Power Disturbance EN-61000-4-11	D
v.2.4.8.2 v.2.4.8.b	Electromagnet Radiation FCC Part 15 Class B	D
v.2.4.8.3 v.2.4.8.c	Electrostatic Disruption EN-61000-4-2	R
v.2.4.8.4 v.2.4.8.d	Electromagnetic Susceptibility EN-61000-4-3	D
v.2.4.8.5 v.2.4.8.e	Electrical Fast Transit EN-61000-4-4	D
v.2.4.8.6 v.2.4.8.f	Lightening Surge EN-61000-4-5	D
v.2.4.8.7 v.2.4.8.g	Conducted RF Immunity EN-61000-4-6	D
v.2.4.8.8 v.2.4.8.h	Magnetic Fields Immunity EN-61000-4-8	D

Evaluation Notes: The new substitute parts, especially the diode, can have different ESD performance than the parts presently used. With the values of the new parts being the same as the originals, the other tests should not be affected.

Date Returned: Nov. 20, 2009

Electrical Laboratory Assessment:

1) Please review the identified ECO and supporting documentation to the identified test standard.
2) Based upon the review please make a recommendation for further action:
   - D- Deminimus no recommendation for testing
   - R- Recommendation for an electrical testing

Date sent:

Provide a copy of the ECO and supporting documents with this form:

ECO Number: 000847 **Description of Change**: DS200 - Alternate part with the same form, fit, and function. Assy. PCB COTS 12" TFT CFL Backlight Inverter (5K575302-L) is equivalent to (01-096-00040) **Reason for Change**: Alternate equivalent COTS parts.	Supporting Documents: ECO 847 ORIGINAL DOC[1].pdf drawing are attached to the ECO in the file 5K575302.L.pdf

Electrical Reviewer Name: Louis Schomack
Identify Qualifications: 40 years of leading electronic product design and development and EMC testing
Identify Any Laboratory Association: Laboratory Director, Criterion Technology, Inc.
Review Date: Nov. 20, 2009

Reviewer Signature:
(reviewer may insert an electronic image of their signature or print and return a hard copy signature)

[illegible]	[illegible]	
v.1 = 2.4.8.1 v.2 = 2.4.8.a	Power Disturbance EN-61000-4-11	R
v.2.4.8.2 v.2.4.8.b	Electromagnet Radiated and Conducted Emissions FCC Part 15 Class B	R
v.2.4.8.3 v.2.4.8.c	Electrostatic Disruption EN-61000-4-2	R
v.2.4.8.4 v.2.4.8.d	Electromagnetic Susceptibility EN-61000-4-3	R
v.2.4.8.5 v.2.4.8.e	Electrical Fast Transit EN-61000-4-4	R
v.2.4.8.6 v.2.4.8.f	Lightening Surge EN-61000-4-5	R
v.2.4.8.7 v.2.4.8.g	Conducted RF Immunity EN-61000-4-6	R
v.2.4.8.8 v.2.4.8.h	Magnetic Fields Immunity EN-61000-4-8	R

Evaluation Notes: Even though the electrical ratings are the same with the new COTS backlight inverter, how it reacts to the suite of EMC tests can be entirely different. This critical assembly has shown to be problematic in other similar pieces of equipment, and as such, we should run the complete suite of EMC tests.
Date Returned: Nov. 20, 2009

DS 200 Operational Status Checks and Test Results

The following are extracts from the iBeta FCA Environmental Test Case Unity 3.2.1.0 (Test Case & Log DS200 and Op Stat DS200), which were provided to Criterion as documentation of their observations. The Operational status checks were prepared and conducted by the iBeta observers before and after test execution.

Model DS200	Electromagnetic Radiation Test	Electromagnetic Radiation Test	Electromagnetic Radiation Test	Electrostatic Disruption Test
Op Stat Result	Pass	Pass	Pass	Pass
iBeta Observer	J. Garcia & K. Austin	J. Garcia & K. Austin	J. Garcia	K. Austin
Date & Time	12/10/2009 11:00	12/10/2009 09:00	12/11/2009 12:00	12/11/2009 17:30
Before/After	Before	After	After	After
Serial Number	ds02093900001	ds02093900001	ds02093900001	ds02093900001
Test Election Database	Vol10	Vol10	Vol10	Vol10

Model DS200	Electrical Fast Transient Test	Electromagnetic Susceptibility Test	Conducted RF Immunity Test	Power Disturbance Test
Op Stat Result	Pass	Pass	Pass	Pass
iBeta Observer	K. Austin	K. Austin	K. Austin	K. Austin
Date & Time	12/12/2009 10:00	12/12/2009 17:15	12/15/2009 08:15	12/15/2009 19:06
Before/After	After	After	After	After
Serial Number	ds02093900001	ds02093900001	ds02093900001	ds02093900001
Test Election Database	Vol10	Vol10	Vol10	Vol10

Model DS200	Lightening Surge Test	Magnetic Fields Immunity Test		
Op Stat Result	Pass	Pass		
iBeta Observer	K. Austin	K. Austin		
Date & Time	12/16/2009 10:50	12/16/2009 12:10		
Before/After	After	After		
Serial Number	ds02093900001	ds02093900001		
Test Election Database	Vol10	Vol10		

Vol. 2 Sect. 4	Environmental Hardware Testing Prerequisites		
	List the Equipment being tested; Record the line # from the Equip Received tab		
#2	**DS200 with ECOs 000529, 841, 844, 847, 843**		
4.3	**Test Conditions** (For each test identify the requested information and validation of correct operation of the chamber)		
Standard	Test Chamber, Location, Calibration Date,	Tester/Title	Chamber Operation Verified
4.8.2 (FCC Part 15B)	OATS Criterion Rollinsville -10/13/2009 -Rhodes & Schwarz model ESVS 30 ID# 8863342/014 Due 10/8/2010 -Spectrum Analyzer Model HP8566B ID#3014A18942 Due 3/5/2010 -Quasi-Peak Adapter model HP85650A ID#2430A00441 Due 3/3/2010 Shield Room Criterion Rollinsville - -Rhodes & Schwarz model ESHS 30 ID# 8260031011 Due 10/8/2010 -Netznachbildung artificial mains network ID#828739/001 Due 10/15/5010	S. Pickus - Test Tech, S. Rowe -Test Tech, L. Schornack - Pres	Start 12-09-2009 5:30PM End: 12/10/2009 4:30PM Start: 12/11/2009 I0:10AM End: 12/11/2009 12 noon
4.8.3 (4-2)	Heafeley Trench PESD, 1600 S/N A605100 DUE 4-3-2010	R. Rodriquez - Test Tech	Start: 12/11/09 1:40
4.8.4 (4-3)	HP Signal Generator model 8648D ID# 3642U00145 Due 1/7/2010 Isotropic field probe amplifier research model FP2000 Due 10/19/2011	S. Rowe - Test Tech L. Schornack - Pres	Start: 12/12/09 1:30
4.8.5 (4-4)	Haefely PSurge 6.1 Surge Tester Due May 26 2011 Haefely FpSurge 32.1 CERT#13773868 Due May 26 2011	L. Schornack - Pres	12/12/2009
4.8.6 (4-5)	Haefely PSurge 6.1 Surge Tester Due May 26 2011 Haefely FpSurge 32.1 CERT#13773868 Due May 26 2011	L. Schornack - Pres R. Rodriquez - Test Tech	12/16/2009
4.8.7 (4-6)	HP Signal Generator model 8648D ID# 3642U00145 Due 1/7/2010 Isotropic field probe amplifier research model FP2000 Due 10/19/2011 Giga-tronics 8641C Universal Power Meter ID 1830945 Due: 10/15/10	L. Schornack - Pres	12/15/2009
4.8.8 (4-8)	Haefely Mag 100.1 Magnetic Field Tester Cert# 13773868 Due: May 26, 2011	R. Rodriquez - Test Tech	12/16/2009
4.8.1 (4-11)	California Instruments ID 55637 Due: 24Mar2011	S. Pickus - Test Tech, R. Rodriquez - Test Tech L. Schornack - Pres	12/15/2009

Operational Status Check Run before and after each environmental test to verify that the system operations were not damaged in testing. Provide the requested detail for each execution. Add additional columns if needed.		
Instructions:	Test	Test
Enter Pass if the system completes the operation with no issues.	Electrical Fast Transient (61000-4-4)	Electrical Fast Transient (61000-4-4)
Enter Fail if the system does not complete the operation or issues are detected.	Tester	Tester
If an operation fails:	K Austin & C Coggins	K Austin
Record the actual result.	Date & Time	Date & Time
Access the audit log. Identify the time and date of the last entry.	3/25/2010 8:00	3/25/2010 9:50
Identify if the failure was noted in the log.	Before/After	Before/After
Ensure a copy of the audit log is printed or saved	Before	After
DS200		
Record machine serial number	ds02093900001	ds02093900001
Record Machine type and FW used	DS200 FW: 1.4.3.0 PowerManag FW: 1.2.0.1 Scann FW: 2.20.0.0	DS200 FW: 1.4.3.0 PowerManag FW: 1.2.0.1 Scann FW: 2.20.0.0
Record HPM version	5.7.1.0	5.7.1.0
Record ERM version	7.5.5.0	7.5.5.0
Record election database used	Volume 10 (from Unity 3200)	Volume 10 (from Unity 3200)
Prerequisites: - PC/Laptop computer with Unity 3.2.0.0 and ERM v. 7.5.5.0 installed and Windows XP Professional Version 2002 SP 3 (SP2 changes to SP3 after hardening procedures have been executed) - Election database: FCA Volume 10 - USB coded with the election w/ Polling Place 21 (for Precincts 203 & 205) & ElecData (for ERM) - 2 Ballots (Precinct 203 & 205) Instructions: **For burning media from HPM** - Select Load Memory Device with Parameters/Create Tabulator Parameters window, make sure USB is inserted, and type in 21 to 21 as the Range of Polls. Map the USB in the Copy to Drive dropdown menu, and click OK twice, and then Cancel when the media has been burnt.		
	P/F	P/F
For the non-operating tests examine the packing case and set-up the equipment. (enter NA in operating tests) **Verify** **1) there is no observed physical damage to the case or the equipment** **2) the equipment can be set up for operation**	NA	NA
Open the display door. Do not have the power cord plugged into the DS200. Power on DS200. Verify: 1) A green flashing light on the back of the DS200 for the battery indicator 2) Battery status is displayed (top right hand corner) message: no main power detected: This Unity is running on batter. Please connect external AC Power or Press the Continue Battery Only button. NOTE: battery only mode limits operation time 3) continue battery only button is selected.	Pass	Pass
Press Shutdow n, close the display door and plug in the power cord into the DS200 Verify: 1)The DS200 beeps for connection (battery power indicator) 2) A battery indicator displays on the back of the DS200 (flashing red light)	Pass	Pass
Open the display door: Verify: 1) The power button is orange, then turns green 2) A beep during boot up 3) Screens appear in the following order: VIK Windows boot, ElectDS200, status bar Gray screen with an x - 4) Automatically the Initial State Report prints (FW as above)	Pass	Pass
Go to Admin/Diagnostic Reports: Verify three options are given and each report can be printed: 1) Debug Report: with memory and size info	Pass	Pass

Operational Status Check		
2) Configuration Report: same as Initial State Report except scanning parameter for top and bottom display. 3) System Audit Log - displays: Last Clock Change Last Power On Last Polls Open		
Select Previous button to return to Administration Menu/Printer Diagnostics test. Select Printer Test and Form Feed. Verify: 1) Printer Test: prints a test on the paper with A-Z and 1-0 2) Form Feed: feeds paper	Pass	Pass
Return to the Administration Menu window. Select Ballot Diagnostics/Mark Code: Verify: 1) Alarm sounds 2) No ballot scanned message appears	Pass	Pass
Scan a marked ballot and select Mark Code: Verify: 1) Printing Mark Code Table (message) 2) A V appears detecting a valid voting mark with a number 1-15 indicating darkness of the mark. (larger number the bolder the mark) 3) A date and time are marked on	Pass	Pass
From the Ballot Diagnostics window select Digital Table: Verify: 1) A-F is displayed on the report (this indicates 6 columns) 2) B-F all have no indicators (displays 0000) 3) A has indicators representing the ballot positions used	Pass	Pass
Press and hold the power button: Verify: 1) the power button turns orange then back to green 2) once green a message appears, "System shutdown Warning: Continuing this process will power the unit off!	Pass	Pass
Select Continue Power Down Verify: 1) intElectDS200 Please wait… message appears 2) Power button turns red 3) System shuts down	Pass	Pass
Insert a USB into slot B with an election and press the Power button: 1) The power button is orange then green 2) A beep during boot up 3) Screens appear in the following order: VIK Windows boot, ElectDS200, with status bar Gray screen with X 4) Initial report	Pass	Pass
Select Arrow/Go to Admin/enter password (ds200123)/Election Test/Scan ballots Verify: 1) Electin found	Pass	Pass
Insert a ballot and pull it out prior to a full read of the ballot. Verify: 1) System continuously beeps 2) Error Message ….Please re-insert ballot after beeps.	Pass	Pass
Scan a marked ballot: Verify: 1) Ballot can be scanned and number of ballots are incremented	Pass	Pass
Select Previous 2x to return to the Administration Menu window. Select System Settings/Date & Time: Verify: 1) The time and date can be cleared and re-entered 2) Change time zone/ Previous 3) System will shutdown after applying times zone change	Pass	Pass
Elecction media still in slot B. Power onSelect Arrow/Go to Admin/enter password (dsadmin1)/Administration Menu/System Settings window/Calibrate Scanner: Verify: 1) Calibrate Scanner? appears WARNING - This process will delete previous calibration information/continue 2) Calibrating Scanner Scanner Calibration in Progress This may take up to 2 minutes Please Do not remove power 3) Beeping and verification that scanners have been calibrated	Pass	Pass
Open Polls (selecting previous 2Xs then select the Open Polls) Verify	Pass	Pass

Operational Status Check		
1) Continuously beeps 2) Message: Clear test count to continue/ YES 3) Message: Clearing totals this may take a few minutes 4) Zero report prints 5) Message: Diverter not found		
Scan marked ballot in 4 orientations: 5) Verify ballot can be scanned and number of ballots are incremented	Pass	Pass
Close Polls Verify: 1) Results report prints and totals are correct 2) Audit log reports prints and reflects open & close, error messages 3) Green power button	Pass	Pass
Shut down Verify: 1) USB is flashing 2) Power button turned red until system shuts down	Pass	Pass
Remove the USB and press the Power button: Election Definition Not Found displays Power Off and restart with the USB in Slot C Verify 1) Polls Closed is displayed	Pass	Pass
Remove the USB and press the Power button: Election Definition Not Found displays Power Off and restart with the USB in Slot A Verify 1) Polls Closed is displayed	Pass	Pass
Move the USB to laptop and start up ERM 1) Continue with the current Election (VOL10S1)	Pass	Pass
Update Menu/ Process 100 Cards/200 Memory Sticks 1) Specify the memory stick drive (E:) 2) Leave Specify Pack Drive blank and press OK	Pass	Pass
Process 200 Memory Stick window 1) Click OK 2) If it states that there were no ballots cast in a certain precinct, select Use Results 3) Repeat this for all precincts 4) Press Cancel when finished	Pass	Pass
Reports Menu/Precinct /Summary 1) To View all Precincts, make no selections and press OK 2) To View a specific precinct, select Contest/Precinct radio button, select desired precinct, and select OK twice	Pass	Pass

Vol. 2 Sect. 4	Environmental Hardware Testing Prerequisites		
	List the Equipment being tested; Record the line # from the Equip Received tab		
#2	DS200 with ECOs 529, 841, 844, 847, 843		
4.3	Test Conditions (For each test identify the requested information and validation of correct operation of the chamber)		
Standard	Test Chamber, Location, Calibration Date,	Tester/ Title	Chamber Operation Verified
4.8.5 (4-4)	Haefely PSurge 6.1 Surge Tester Due May 26 2011 Haefely FpSurge 32.1 CERT#13773868 Due May 26 2011	S. Pickus - Test Tech	3/25/2010
4.4	Test Log Data Requirements		
	Test environment conditions shall be noted. **Deviations:** In the Comments field of the specific test, note deviations from the requirements pertaining to the test environment, equipment arrangement and method of operation, the specified test procedure, or the provision of test instrumentation and facilities, the deviation and reason for the deviation.		
4.5	Test Fixtures		
	Simulation devices provided by the vendor are subject to the same performance, reliability, and quality requirements that apply to the voting device itself so as not to contribute errors to the test processes.		

Pass- Meets the requirement
Fail- Does not meet the requirement; document the failure in Comments
NT- Not tested; enter a reason in the Comments

Vol. 1	Environmental Hardware Testing	Test Results	Comments
Vol. 2	Environmental Hardware Testing	Test Results	Comments
4.8	Other Environmental Tests		
e. VVSG	Electrical Fast Transient		
	Document the testing for electrical fast transient protection, conducted in compliance with the test specified in **IEC 61000-4-4** (2004-02) VVSG 4.1.2.6 Vote scanning and counting equipment for paper-based systems, and all DRE equipment, shall be able to withstand, without disruption of normal operation or loss of data, electrical fast transients of: a. +2 kV and -2kV on External Power lines (bothAC & DC); b. +1 kV aand -1kV on External Power Lines on Input/Output lines (signal, data, and control lines) longer than3 meters c. Repetiion Rate for all transient pulses will be 100kHz	**Pass**	

7.0 APPENDIX D: TEST EQUIPMENT AND CALIBRATION STATUS

Manufacturer	Name/Description	Model Number	Serial Number	Cal. Due Date
Hewlett Packard	Signal Generator	HP 8648D	3642000145	1/7/2010
Tegam	Current Probe	925236-1	12588	1/19/2010
Microwave Technologies	Standard Gain Horn & Harmonic Mixer	12A-18 & HP1197OK	19527JE & 2332A01314	1/31/2010
EMCO	Horn	3160-08	1147	1/31/2010
Hewlett Packard	Quasi Peak Adapter	85650A	2403A07322	3/3/2010
Hewlett Packard	Spectrum Analyzer	HP 8566B	2421A00527	3/5/2010
Hewlett Packard	Spectrum Analyzer Display	HP 85662A	2403A07322	3/5/2010
Hewlett Packard	Tracking Generator	HP85645A	3210A00124	3/6/2010
Haefely Trench	ESD Gun	PESD 1600	H605100	4/3/2010
Amplifier Research	Power Amplifier	100W1000M1	20214	6/1/2010
Veratech	Preamp (AMP2)	unknown	N/A	9/18/2010
FCC	EM Clamp	F2031	309	10/2/2010
FCC	CDN	FCC-801-M3-25	9714	10/2/2010
Rohde/ Schwarz	VHF/UHF Receiver	ESVS-30	863342014	10/8/2010
Rohde/ Schwarz	LISN	ESH2-Z5	828739-001	10/8/2010
Rohde/ Schwarz	HF Receiver	ESHS-30	826003/011	10/8/2010
Solar Electronics	LISN	8012-50-R-24-BNC	892310	10/15/2010
Haefely Trench	Test Mag	Mag 100	80162	10/15/2010
Gigatronics	Power Sensor	80301A-410	1831996	10/15/2010
Gigatronics	Power Meter	8541C	1830945	10/15/2010
FCC	LISN	FCC-TLISN-T4-02	20252	11/24/2010
Califorina Instruments	AC Power Source Pacs-1	5001iX-CTS-411	55637/ 72242	3/24/2011
Haefely Trench	Surge Generator	PSURGE 6.1	083-906-07	5/26/2011
Haefely Trench	EFT Tester	PEFT Junior	583-333-51	5/26/2011
Haefely Trench	Surge Coupler	FP-Surge 32.1	083-925-05	5/26/2011
EMCO	Active Loop	6502	2626	5/28/2011
Amplifier Research	E-Field Probe	FP2080	20236	10/16/2011
Amplifier Research	E-Field Probe	FP2000	19682	10/19/2011

8.0 APPENDIX E: TEST DIRECTIVES, STANDARDS AND METHODS

8.1.1 EUROPEAN DIRECTIVES, STANDARDS AND METHODS

89/336/EEC: Council Directive of 03 May 1989 on the Approximation of the Laws of the Member States Relating to Electromagnetic Compatibility, OJEC No. L 139/19-26, Aug 1993.

BS DD ENV 50204 (CENELEC): Testing and Measurement Techniques; Radiated Electromagnetic Field from Digital Radio Telephones - Immunity Test, 1996.

EN 55011 (CENELEC): ISM Radio-Frequency Equipment Radio Disturbance Characteristics - Limits and Methods of Measurement, 2007.

EN 55022 (CENELEC): ITE - Radio-Frequency Equipment Radio Disturbance Characteristics - Limits and Methods of Measurement, 2008.

CISPR 22: Information Technology Equipment – Radio Disturbance Characteristics - Limits and Methods of Measurement, 2009.

EN 55024 (CENELEC): ITE - Immunity Characteristics - Limits and Methods of Measurement, 2008.

EN 60601-1-2 (CENELEC): Medical Electrical Equipment. Part 1. General Requirements for Safety - Section 1.2. Collateral Standard: Electromagnetic Compatibility - Requirements and Tests, Third Edition 2007.

EN 61000-6-1: EMC- Part 6-1, Generic Standard-Immunity for residential, commercial and light-industrial Environments 2007.

EN 61000-6-2: EMC- Part 6-2, Generic Standard-Immunity for Industrial Environments, 2005.

EN 61000-6-3: EMC- Part 6-3, Generic Standard-Emissions for residential, commercial and light-industrial Environments 2007.

EN61000-6-4 (CENELEC): EMC - Generic Emission Standard, Part 6-4: Industrial Environment, 2007.

EN 61000-3-2 (CENELEC): EMC - Part 2. Limits for Harmonic Current Emissions (Equipment Input Current ≤16 A per phase), with Amendment 14, 2006.

EN 61000-3-3 (CENELEC): EMC - Part 3. Limitation of Voltage Fluctuation and Flicker in Low-Voltage Supply Systems for Equipment with Rated Current ≤16 A, 2008.

EN 61000-4-2 (CENELEC): EMC - Part 4. Testing and Measurement Techniques; Section 2. Electrostatic Discharge Immunity Test, 2009.

EN 61000-4-3 (CENELEC): EMC - Part 4. Testing and Measurement Techniques; Section 3. Radiated, Radio-Frequency, Electromagnetic Field Immunity, 2008.

EN 61000-4-4 (CENELEC): EMC - Part 4. Testing and Measurement Techniques; Section 4. Electrical Fast Transient/Burst Immunity Test, 2008.

EN 61000-4-5 (CENELEC): EMC - Part 4. Testing and Measurement Techniques; Section 5. Surge Immunity Test, 2006.

EN 61000-4-6 (CENELEC): EMC - Part 4. Testing and Measurement Techniques; Section 6. Immunity to Conducted Disturbances, Induced by Radio-Frequency Fields, 2009.

EN 61000-4-8 (CENELEC): EMC - Part 4. Testing and Measurement Techniques; Section 8. Power Frequency Magnetic Field Immunity Test, 1993 with the incorporation of amendment A1:2001.

EN 61000-4-11 (CENELEC): EMC - Part 4. Testing and Measurement Techniques; Section 11. Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests, 2004

EN 61326 (CENELEC): Electrical Equipment for Measurement, Control and Laboratory Use - EMC Requirements, 2005.

EN 61326-1 Electrical Equipment for Measurement, Control and Laboratory Use - EMC Requirements, - Part 1: General Requriments, 2008

8.1.2 47 CFR FCC PART 15 RADIO FREQUENCY DEVICES: OCT 2009

Subpart A General.

Subpart B Unintentional Radiators.

Subpart C Intentional Radiators.

Subpart D Unlicensed Personal Communications Service Devices.

8.1.3 47 CFR FCC PART 22 PUBLIC MOBILE SERVICES: OCT 2009

8.1.4 47 CFR FCC PART 24 PERSONAL COMMUNICATIONS SERVICES: OCT 2009

8.1.5 JAPAN

VCCI V-3

8.1.6 CANADA

ICES-001: Interference-Causing Equipment Standard - ISM RF Generators, 2006.

ICES-003: Interference-Causing Equipment Standard - Digital Apparatus, 2004.

8.1.7 AUSTRALIA/NEW ZEALAND

SAA AS/NZ 3548: Limits and Methods of Measurement of Radio Disturbance Characteristics of ITE, 1997.

AS/NZS CISPR22

8.1.8 TAIWAN

CNS13438, 2006

8.1.9 KOREA

KN22, September 29, 2005

KN 24, 1998

8.1 VOTING SYSTEM STANDARDS

Federal Election Commisions Voting System Standards (VSS) Volume 1, Performance Standards, April 2002

Federal Election Commisions Voting System Standards (VSS) Volume 11, Test Standards, April 2002

United States Election Assistance Commission 2005 Voluntary Voting Systems Guidelinse (VVSC) Version 1.0 Volume 1 Voting System Performance Guidlines

United States Election Assistance Commission 2005 Voluntary Voting Systems Guidelinse (VVSC) Version 1.0 Volume 2 National Certification Testing Guidlines

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ATTACHMENT K
Criterion DS850 Report 091014-1481

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EMC QUALIFICATION TEST REPORT

ELECTION SYSTEMS AND SOFTWARE

DIGITAL SCAN CENTRAL- COUNT VOTE TABULATION SYSTEM, DS850(I)

TESTED TO CONFORM WITH:

VOLUNTARY VOTING SYSTEM GUIDLINES

FOR

Voting Systems

Test Report Number: 091014-1481
Date of Test Completion: August 4, 2010
Manufacturer's Address: 11208 John Galt Blvd.
Omaha NE 68137
Phone: (800) 247-8683

Reviewed by:

Compliance Engineer

Approved by:

Laboratory Director

DOCUMENT REVISION HISTORY

REVISION #	REPORT NUMBER	DESCRIPTION OF REVISION	DATE OF REVISION
0	091014-1481	ORIGINAL REPORT	2010-09-01
1	091014-1481	UPDATED EUT NAME	2010-09-07

CONFIDENTIAL AND PROPRIETARY

DISCLAIMERS

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The client is aware that Criterion Technology has performed testing in accordance with the applicable standard(s). Test data is accurate within ANSI parameters for Emissions testing, unless a specific level of accuracy has been defined in writing prior to testing, by Criterion Technology and the client.

Criterion Technology reports apply only to the specific Equipment Under Test (EUT) sample(s) tested under the test conditions described in this report. If the manufacturer intends to use this report as a document demonstrating compliance of this model, additional models of this product must have electrical and mechanical characteristics identical to the device tested for this report. Criterion Technology shall have no liability for any deductions, inferences, or generalizations drawn by the client or others from Criterion Technology issued reports.

Total liability is limited to the amount invoiced for the testing of this EUT and the contents of this report are not warranted.

Compliance with the appropriate governmental standards is the responsibility of the manufacturer.

Any questions regarding this report should be directed to:

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Criterion Technology Corp.
P.O. Box 489
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All Criterion Technology instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 9002, ISO 17025, ANSI/NCSL Z540-I-1994 and are traceable to national standards.

TABLE OF CONTENTS

EMC QUALIFICATION TEST REPORT
Digital Scan Central – Count Vote Tabulation System, DS850(i)

1.0 EXECUTIVE SUMMARY

1.1 PURPOSE

The purpose of this report is to present EMC test data and demonstrate conformity to the requirements of the prescribed standards for Emissions and/or Immunity.

1.2 CONFORMITY

The test article was tested to the standards listed in Table I with the indicated conformity status. All test methods were performed in accordance to with the standards listed.

TABLE I. EMISSIONS CONFORMITY SUMMARY

TEST TYPE	COMPLIANCE STANDARD	TESTING TECHNIQUE	TEST DESCRIPTION	PRODUCT CLASSIFICATION	CONFORMITY STATUS
EMISSIONS	FCC Part 15 VVSG	☒ FCC Part 15	Radiated Emissions	Class B	PASSED
			Conducted Emissions [1]		PASSED

TABLE II. IMMUNITY CONFORMITY SUMMARY

TEST TYPE	COMPLIANCE STANDARD	TESTING TECHNIQUE	TEST DESCRIPTION	MINIMUM PERFORMANCE CRITERIA	CONFORMITY STATUS
IMMUNITY	EN 55024 -	☒ 61000-4-2	Electrostatic Discharge	B	PASSED
		☒ 61000-4-3	Radiated, RF Electromagnetic Field Amplitude Modulated	A	PASSED
		☒ ENV 50204	Radiated, RF Electromagnetic Field Pulse Modulated		PASSED
		☒ 61000-4-4	Electrical Fast Transient/Burst	A	PASSED
		☒ 61000-4-5	Surge	A	PASSED
		☒ 61000-4-6	Conducted Disturbances, Induced by Radio-Frequency Fields	A	PASSED
		☒ 61000-4-8	Power Frequency Magnetic Field [1]	A	PASSED
		☒ 61000-4-11	Voltage Dips, Short Interruptions and Voltage Variations	B/C	PASSED

1.3 EQUIPMENT UNDER TEST (EUT)

EUT NAME: **Digital Scan Central – Count Vote Tabulation System**
EUT MODEL/PART NUMBER(S): **DS850(i)**
EUT SERIAL NUMBER(S): **DS8509420002**

[1] Measurement of Conducted Emissions do not apply if the EUT is powered by an external DC power source.
[2] The requirements of EN 61000-4-8 may be waived if the EUT does not contain magnetically-sensitive devices.

2.0 EMISSIONS TEST STANDARDS

FCC Part 15, Subpart B **Class B**

2.1 ☒ RADIATED EMISSIONS – 30 MHZ TO 1000 MHZ

Measurements for *Radiated Emissions* were performed over the frequency range of 30 MHz to 1000 MHz in the horizontal and vertical antenna polarities to the requirements of:

FCC Part 15, Subpart B **Class B**

Testing Conditions

Date of Test	December 9, 2009
Temperature:	18° C
Relative Humidity:	32 %
Test Voltage:	120 VAC 60 Hz
Test Operator:	SP

Test Location

Criterion Technology Open Area Test Site

Test Distance

Antenna Distance: 3 meter(s) **Final** **Measurement(s)**

Test Equipment

☒ Rohde and Schwarz Receiver, ESVS-30
☒ Mini Circuits Pre-Amp #2
☒ Chase BiLog Antenna, Model CB6111

Test Accessories: See Appendix C for suppoirt equipment details

Test Results of Radiated Emissions

Test Status: **PASSED** Frequency Range: **30 MHz to 1000 MHz**

Minimum Margin to Limit: **-1.75** dB at **570.0004** MHz

Uncerainty Horizontal under 200 MHz:	**4.55**	dB
Uncerainty Horizontal over 200 MHz:	**3.92**	dB
Unceainty Verticle under 200 MHz:	**4.69**	dB
Unceainty Verticle over 200 MHz:	**4.32**	dB

Remarks

See: **APPENDIX A** for EUT Photographs
APPENDIX B for Data Sheets
APPENDIX D for Test Equipment Calibration Status

2.2 ☒ RADIATED EMISSIONS ABOVE 1GHZ

Measurements for *Radiated Emissions* were performed over the frequency range of 1 GHz to 2 GHz in the horizontal and vertical antenna polarities to the requirements of:

FCC CFR 15.31(a)(3) **Class B**

Testing Conditions

Date of Test: December 9, 2009
Temperature: 18° C
Relative Humidity: 32 %
Test Voltage: 120 VAC 60 Hz
Test Operator: SP

Test Location

Criterion Technology Open Area Test Site

Test Distance

Antenna Distance: **3 meter(s)** **Final Measurement(s)**

Test Equipment

- ☒ Hewlett-Packard Spectrum Analyzer, HP 8566B
- ☒ Hewlett-Packard Quasi-Peak Adapter, HP 85650A
- ☐ Hewlett-Packard Tracking Generator, HP 85645A
- ☐ Rohde and Schwarz Receiver, ESHS-30
- ☐ Rohde and Schwarz Receiver, ESVS-30
- ☒ Veratech Pre-Amp #3
- ☒ Antenna Research, Horn Antenna, Model DRG118/A

Test Accessories: See Appendix C for suppoirt equipment details

Test Results of Radiated Emissions

Test Status: **PASSED** Frequency Range: **1 GHz to 2 GHz**

Minimum Margin to Limit: **-0.13** dB at **1740.0000** MHz

Remarks

See: **APPENDIX A** for EUT Photographs
APPENDIX B for Data Sheets
APPENDIX D for Test Equipment Calibration Status

2.3 ☒ FCC CONDUCTED EMISSIONS

Measurements for *Conducted Emissions* were performed over the frequency range of 150 kHz to 30 MHz to the requirements of:

FCC Part 15, Subpart B **Class B**

Testing Conditions

Date of Test:	December 9, 2009
Temperature:	17° C
Relative Humidity:	30 %
Test Voltage:	120 VAC 60 Hz
Test Operator:	LWS

Test Location

Criterion Technology Shield Room

Test Equipment

Hewlett-Packard Spectrum Analyzer, HP 8566B
Rohde and Schwarz Receiver, ESHS-30 Rohde and Schwarz LISN, ESH2-Z5

Test Accessories: See Appendix C for suppoirt equipment details

Test Results of Conducted Emissions

Test Status: **PASSED** Frequency Range: **150 kHz TO 30 MHz**

Minimum Margin to Limit: **-19.5** dB at **6.36000** MHz

Remarks

See: **APPENDIX A** for EUT Photographs
APPENDIX B for Data Sheets
APPENDIX D for Test Equipment Calibration Status

3.0 IMMUNITY STANDARDS

VVSG: Voluntary Voting Systems Guidelines

3.1 IMMUNITY TEST STANDARDS

TABLE I. IMMUNITY TESTS

BASIC STANDARDS	TESTED	ENVIRONMENTAL PHENOMENA	SPECIFICATIONS/UNITS	REQUIRED PERFORMANCE
IEC 61000-4-2	☒	Electrostatic Discharge	2,4,8,15 kV Air 4,8 kV Contact	Performance Criterion 2
IEC 61000-4-3	☒	Radiated, RF Electromagnetic Field -Amplitude Modulated	10 V/m (unmodulated, RMS) 80%, 1 kHz AM 80 MHz – 2.7 GHz	Performance Criterion 1
IEC 61000-4-4	☒	Electrical Fast Transient/Burst	2 kV CM (AC & DC) Direct	Performance Criterion 1
IEC 61000-4-5	☒	Surge	☒ 2 kV CM, 2 kV DM (AC)	
IEC 61000-4-6	☒	Conducted Disturbances, Induced by Radio-Frequency Fields	10 V RMS (unmodulated, RMS) 80% 1 kHz AM 150 kHz - 80 MHz	Performance Criterion 1
IEC 61000-4-8	☒	Power Frequency Magnetic Field	60 Hz, 30.0 ARMS/m	
IEC 61000-4-11	☒	Voltage Dips, Short Interruptions and Voltage Variations	☒ 30%reduction/10 msec (AC) ☒ 60%reduction/100 ms (AC) ☒ 60%reduction/1 sec (AC) ☒ ≥95%reduction/5 sec (AC) ☒ +7.5% Variation/4 hours ☒ -12.5% variation/4 hours ☒ ±15% voltage surges	Performance Criterion 1

3.2 PERFORMANCE CRITERIA

3.2.1 Performance Criterion 1

The EUT shall be able to withstand the test without disruption of the normal operation or loss of data.

3.2.2 Performance Criterion 2

The EUT shall be able to withstand the test without damage or loss of data. The equipment may reset or have momentary interruption so long as normal operation is resumed without human intervention or loss of data. Loss of data means votes that have been completed and confirmed to the voter

3.3 ☒ ELECTROSTATIC DISCHARGE (ESD)

Measurements of immunity against *ESD* were performed to the requirements of IEC 61000-4-2.

Testing Conditions

Date of Test:	August 4, 2010
Temperature:	19° C
Relative Humidity:	48 %
Atmospheric Pressure:	565.7Torr
Test Voltage:	120 VAC 60 Hz
Test Operator:	SP

Test Location

Criterion Technology Immunity Area

Test Equipment

Haefely Trench PESD, 1600

Test Accessories: See Appendix C for suppoirt equipment details

Test Setup

	Air	Contact
Discharge Type:	☒	☒
Discharge Voltages:	2,4,8,15 kV	4,8 kV
Discharge Polarity:	Positive/Negative	Positive/Negative
Discharge Factor:	1 second	1 second
Discharge Number:	10	10
Discharge Impedance:		330 ohms/150 pF
Discharge Locations:	☒ Human-Interface Accessible	
	☒ See Photographs APPENDIX A	

Test Results of ESD

Test Status: **PASSED** Performance Criterion 1

Remarks

See: **APPENDIX A** for EUT Photographs
APPENDIX B for Data Sheets
APPENDIX D for Test Equipment Calibration Status

3.4 ☒ RADIATED RF ELECTROMAGNETIC (EM) FIELD IMMUNITY

Measurements of immunity against *Radiated RF EM Fields* were performed to the requirements of:

☒ IEC 61000-4-3

Testing Conditions

Date of Test:	December 12, 2009
Temperature:	20° C
Relative Humidity:	39 %
Atmospheric Pressure:	564.7Torr
Test Voltage:	120 VAC 60 Hz
Test Operator:	SP

Test Location

Criterion Technology Semi-Anechoic Chamber

Test Equipment

☒ Amplifier Research Field-Strength Monitoring System, FM2000/FP2000
☒ Amplifier Research Power Amplifier, 100W1000M1
☐ Amplifier Research Power Amplifier, 150A100A ☐ Amplifier Research Power Amplifier, 10S1G4
☒ Amplifier Research Log Periodic Antenna, Model AT1080
☐ EMCO Double ridge wave guide horn 3115
☒ HP Signal Generator, HP8648D ☒ HP Spectrum Analyzer/Display, HP8566B/85662A

Test Accessories: See Appendix C for suppoirt equipment details

Test Specifications

Frequency Range: ☒ **80 MHz to 2.7 GHz**
Field Strength: ☒ **10 V/m**
Modulation: ☒ **AM - 1 kHz, 80% sinewave**

Step: **1%**
Dwell time: **3.0 second(s**

Antenna Distance: **1.8 meter(s)**
Antenna Polarization: ☒ **Horizontal** ☒ **Vertical**

EUT Position:			
	☒ Front	☒ Left	☐ Top
	☒ Back	☒ Right	☐ Bottom

Test Results of Radiated RF EM Field Immunity

Test Status: **PASSED** Performance Criterion **1**

Remarks

See: **APPENDIX A** for EUT Photographs
APPENDIX B for Data Sheets
APPENDIX D for Test Equipment Calibration Status

3.5 ☒ ELECTRICAL FAST TRANSIENTS/BURST (EFT/ BURST)

Measurements of immunity against *EFT/Burst* were performed to the requirements of IEC 61000-4-4.

Testing Conditions

Date of Test:	August 4, 2010
Temperature:	19° C
Relative Humidity:	58 %
Atmospheric Pressure:	574.2Torr
Test Voltage:	120 VAC 60 Hz
Test Operator:	SP

Test Location

Criterion Technology Immunity Area

Test Equipment

☒ Haefely Trench PEFT Generator
☐ Haefely Trench I/O Injection Clamp
☐ Haefely Trench 3-Phase Injection Network

Test Accessories: See Appendix C for suppoirt equipment details

Test Specifications

	Power Line(s)
Coupling Method:	☒ Coupling Network
Pulse Amplitude/Level:	**2 kV**
Pulse Polarity:	**Positive/Negative**
Burst Frequency:	☒ **100 kHz**
Coupling Duration:	**1 minute**

Cables Coupled

Cable Tested:	Power
Shielding:	None
Type:	AC
Transmission:	Direct

Test Results of EFT/Burst

Test Status: **PASSED** Performance Criterion **1**

Remarks

See: **APPENDIX A** for EUT Photographs
APPENDIX B for Data Sheets
APPENDIX D for Test Equipment Calibration Status

3.6 ☒ SURGE

Measurements of immunity against *Surge* were performed to the requirements of IEC 61000-4-5.

Testing Conditions

Date of Test:	December 15, 2009
Temperature:	20° C
Relative Humidity:	30 %
Atmospheric Pressure:	560.1Torr
Test Voltage:	120 VAC 60 Hz
Test Operator:	RMR

Test Location

Criterion Technology Immunity Area

Test Equipment

☒ Haefely Trench P90 Controller, Psurge 6.1
☒ Haefely Trench FP Surge 32.1 Coupling Filter
☐ Haefely Trench 3-Phase Injection Network
☐ I/O Line Discharge Network 42-Ohm Injection (Unshielded Cables)
☐ I/O Line Discharge Network 2/12-Ohm Injection (Shielded Cables)

Test Accessories: See Appendix C for suppoirt equipment details

Test Specifications

	Power Line(s)
Pulse Amplitude:	**2 kV Line -to-Line (L-L)**
	2 kV Line -to-Protective Earth (L-PE)
Pulse Polarity:	**Positive1Negative**
Source Impedance:	**2 c (L-L)112 c (L-PE)**

Number of Surges: **1O per phase angle (5 in each polarity), 1 minute between surges.**

Phase Angle(s): ☐ 0 ☒ 90 ☒ 180 ☒ 270

Cables Coupled

Cable Tested:	Power
Shielding:	None
Type:	AC
Transmission:	Direct

Test Results of Surge

Test Status: PASSED Performance Criterion 1

Remarks

See: **APPENDIX A** for EUT Photographs
APPENDIX B for Data Sheets
APPENDIX D for Test Equipment Calibration Status

3.7 ☒ CONDUCTED DISTURBANCES, INDUCED BY RF FIELDS (CONDUCTED RF)

Measurements of immunity against *Conducted RF* were performed to the requirements of IEC 61000-4-6.

Testing Conditions

Date of Test:	December 12, 2009
Temperature:	19° C
Relative Humidity:	38 %
Atmospheric Pressure:	553.8Torr
Test Voltage:	120 VAC 60 Hz
Test Operator:	SP

Test Location

Criterion Technology Semi-Anechoic Chamber

Test Equipment

☒ Amplifier Research Power Amplifier, 150A100A
☒ HP Signal Generator, HP8648D
☐ HP Power Meter, HP437
☒ Fischer CDN-M3-15
☐ Fischer EM-Clamp

Test Accessories: See Appendix C for suppoirt equipment details

Test Specifications

Frequency Range:	150 kHz to 80 MHz
Injection Voltage:	☒ 10 V RMS
Modulation:	☒ AM - 1 kHz, 80% sinewave
Step:	1%
Dwell Time:	3.0 second(s)

Cables Coupled

Cable Tested:	AC Power
Shielding:	None
Type:	AC
Transmission:	CDN Direct

Test Results of Conducted RF

Test Status: **PASSED** Performance Criterion 1

Remarks

See: **APPENDIX A** for EUT Photographs
APPENDIX B for Data Sheets
APPENDIX D for Test Equipment Calibration Status

3.8 ☒ POWER-FREQUENCY MAGNETIC FIELD (PFMF)

Measurements of immunity against *PFMF* were performed to the requirements of IEC 61000-4-8.

Testing Conditions

Date of Test:	November 12, 2009
Temperature:	20° C
Relative Humidity:	40 %
Atmospheric Pressure:	565Torr
Test Voltage:	120 VAC 60 Hz
Test Operator:	SP

Test Location

Criterion Technology Surge Test Area

Test Equipment

☒ Haefely Trench Magnetic Loop Antenna

Test Accessories: See Appendix C for suppoirt equipment details

Test Specifications

Power Frequency: 6O Hz
Field Strength: 3O A1m

Test Results of PFMF

Test Status: **PASSED** Performance Criterion 1

Remarks

See: **APPENDIX A** for EUT Photographs
APPENDIX B for Data Sheets
APPENDIX D for Test Equipment Calibration Status

3.9 ☒ VOLTAGE DIPS, SHORT INTERRUPTIONS AND VOLTAGE VARIATIONS (VDIV)

Measurements of immunity against *VDIV* were performed to the requirements of IEC 61000-4-11.

Testing Conditions

Date of Test:	November 16, 2009
Temperature:	24° C
Relative Humidity:	40 %
Atmospheric Pressure:	566.1Torr
Test Voltage:	120 VAC 60 Hz
Test Operator:	SP

Test Location

Criterion Technology Immunity Area

Test Equipment

☒ Haefely Trench Pline

Test Accessories: See Appendix C for suppoirt equipment details

Test Specifications

EUT Line Voltage: **120 VAC, 60 Hz**

U_T Voltages:

☒ 30% reduction 10 msec duration
☒ 60% reduction 100 msec duration
☒ 60% reduction 1 sec duration
☒ >95% reduction 5 sec duration
☒ +7.5% variation = 4 hours
☒ -12.5% variation = 4 hours
☒ ± 15% voltage surges

Number of Dips/Interrupts: 3

Test Results of VDIV

Test Status 30% reduction 10 msec duration:	PASSED	Test Performance 1
Test Status 60% reduction 100 msec duration:	PASSED	Test Performance 1
Test Status 60% reduction 1 second duration:	PASSED	Test Performance 1
Test Status >95% reduction for 5.0 seconds:	PASSED	Test Performance 1
Test Status +7.5% variation 4 hours:	PASSED	Test Performance 1
Test Status -12.5% variation 4 hours :	PASSED	Test Performance 1
Test Status ±15% voltage surges:	PASSED	Test Performance 1

Test Status: **PASSED** Performance Criterion 1

Remarks

See: **APPENDIX A** for EUT Photographs
APPENDIX B for Data Sheets
APPENDIX D for Test Equipment Calibration Status

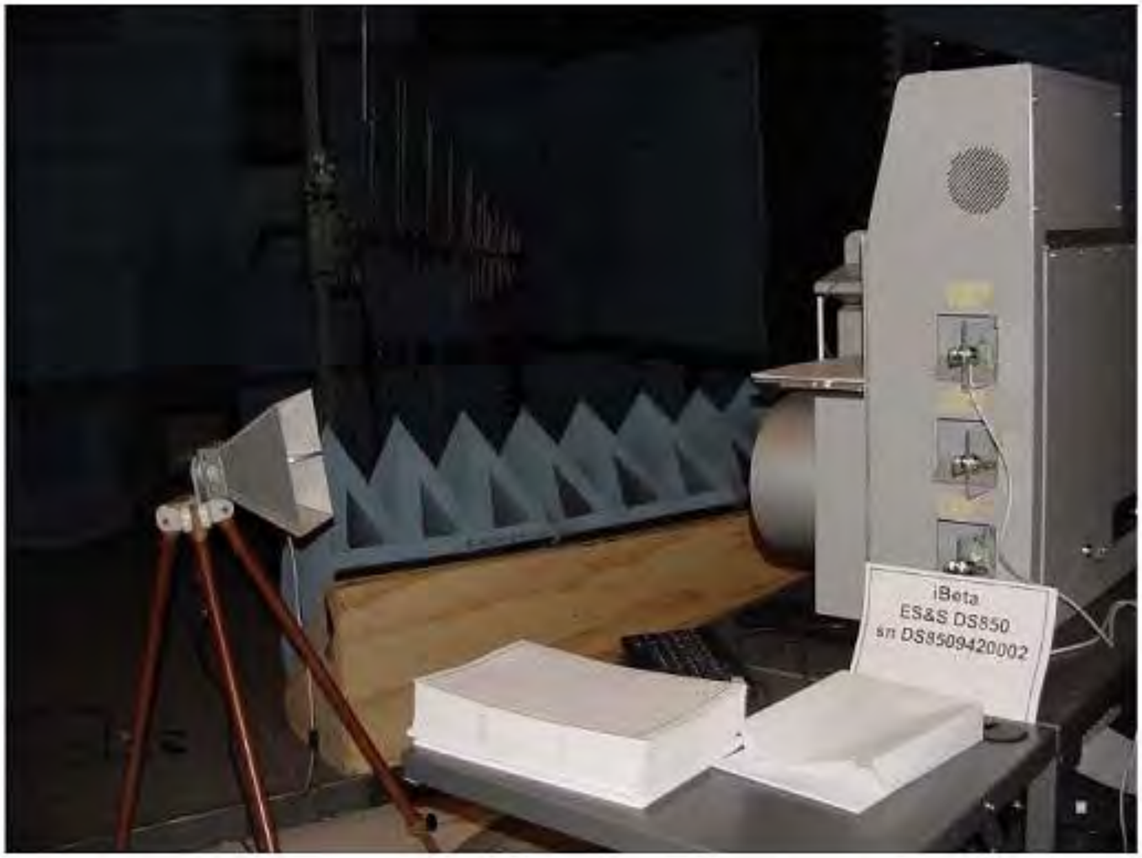
4.0 APPENDIX A: EUT PHOTOGRAPHS

4.1 RADIATED EMISSIONS

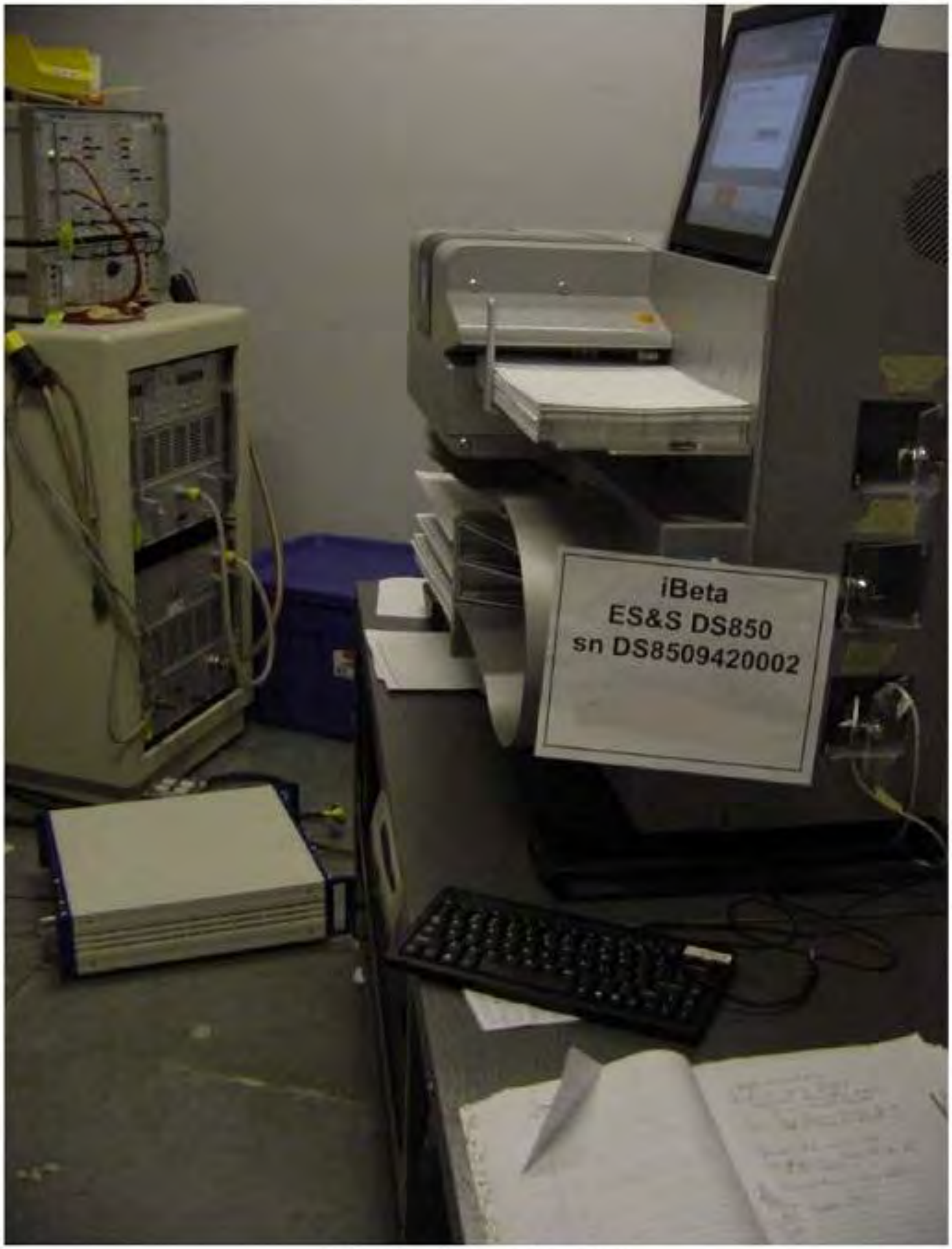
4.2 CONDUCTED EMISSIONS

4.3 ELECTROSTATIC DISCHARGE

4.4 RADIATED RF ELECTROMAGNETIC FIELD IMMUNITY



4.5 ELECTRICAL FAST TRANSIENTS/BURST



4.6 SURGE

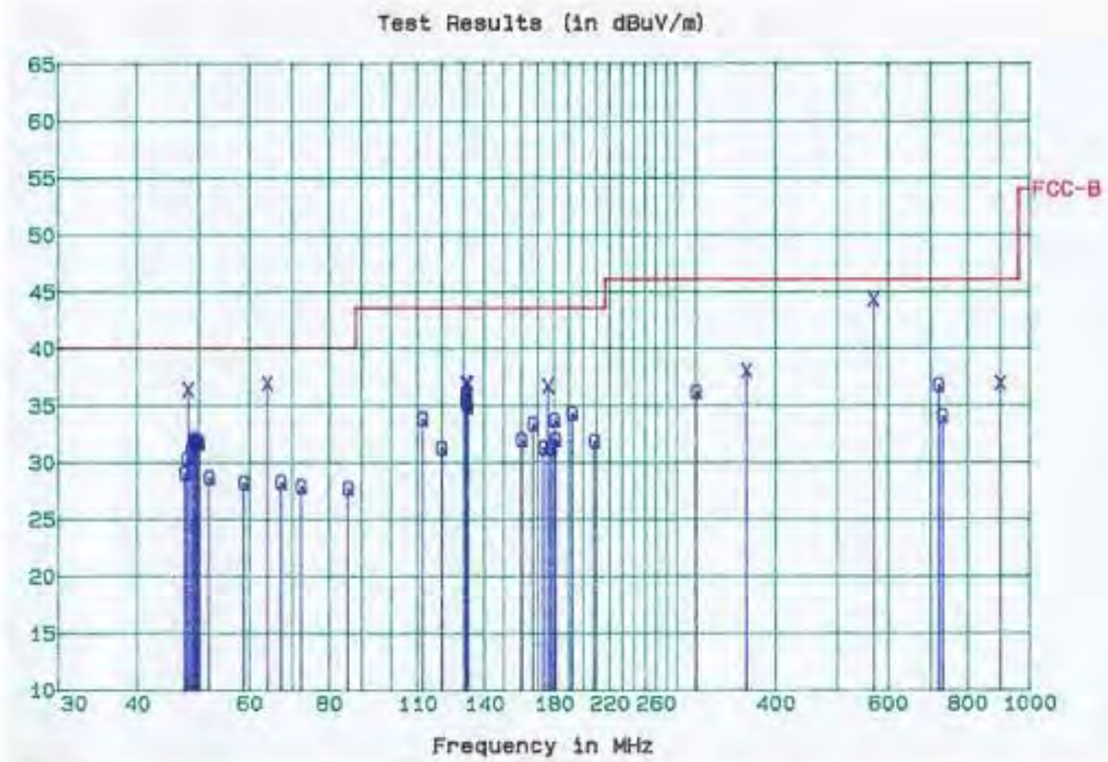
4.7 CONDUCTED DISTURBANCES, INDUCED BY RF FIELDS

4.8 VOLTAGE DIPS, INTERRUPTIONS & VARIATIONS

5.0 APPENDIX B: DATA SHEETS

5.1 RADIATED EMISSIONS PLOT – 30 MHZ TO 1 GHZ

Criterion Technology
Date: December 9, 2009
EUT: Digital Scan Central – Count Vote Tabulation System, DS850(i)
S/N: DS8509120002
Manufacturer: Election Systems and Software
Tester: SP
SpID: 091014-1481
EUT Level: production unit
Test Information: 3m, 120 VAC 60 Hz. FCC Part 15 Class B
Test Cond: Temp: 18° C
Humidity: 32 %



5.2 RADIATED EMISSIONS TABLE– 30 MHZ TO 1 GHZ

Notes:

Fval = Ival + AF + Cable + Pads – Amp

Where:
Fval is the final electric field in dbuv/m
Ival is the initial reading from the EMC receiver or spec an in dbuv.
AF is the antenna factor, a + value is loss
Cable is the cable attenuation in db, a + value is loss
Pads is the total attenuator loss in db, a + value is loss
Amp is the preamplifier gain in db, a + value is amplifier gain

A Sample calculation with Ival, AF, Cable, Pads, & Amp values of 50 dbuv, 18, 4, 3, 32 respectively is:

Fval = 50 + 18 + 4 + 3 – 32 = 43 dbuv/m

Minimum Margin to Limit: -1.75 dB at 570.0004 MHz

Criterion Technology Wed Dec 09 13:49:32 2009
EUT: Digital Scan Central – Count Vote Tabulation System, DS850(i)
S/N: DS8509420002
Manufacturer: Election Systems and Software
Tester: sp
Special ID: 091014- 1481
EUT Level: Production Unit
Test information: 3 meters, 120 VAC 60 Hz, FCC Part 15 Class B

Table 1: Scan List, sorted by margin to limit FCC-B, -12.3dB filter

Freq, MHz	Value dBuV/m	Sts	Margin to FCC-B limits (dB)	TT	Hght	Az	Comment
570.0004	44.27	m	-1.75	295	100	H	.
64.0027	36.91	m	-3.09	64	100	V	.
48.0034	36.36	m	-3.64	357	100	V	.
131.1030	36.94	m	-6.58	355	100	V	.
131.8674	36.90	m	-6.62	180	100	V	.
176.0111	36.66	m	-6.86	0	120	V	.
131.0594	35.93	q	-7.59	0	100	V	.
48.9830	32.06	q	-7.94	0	100	V	.
360.0035	38.02	m	-8.00	351	100	V	.
131.1954	35.52	q	-8.00	180	100	V	.
49.5464	31.82	q	-8.18	0	100	V	.
49.4104	31.77	q	-8.23	0	100	V	.
48.8724	31.77	q	-8.23	0	100	V	.
49.2724	31.74	q	-8.26	0	100	V	.
49.9524	31.74	q	-8.26	0	100	V	.
130.8614	35.26	q	-8.26	0	100	V	.
49.6824	31.70	q	-8.30	0	100	V	.
131.6274	34.92	q	-8.60	0	100	V	.
48.4769	31.14	q	-8.86	0	100	V	.
900.0066	36.91	m	-9.11	351	100	V	.
192.0127	34.29	q	-9.23	180	100	V	.
720.0145	36.75	q	-9.27	0	120	V	.
47.7734	30.32	q	-9.68	0	100	V	.
112.0034	33.83	q	-9.69	90	120	V	.

180.0056	33.70	q	-9.82	0	100	V	
299.9789	36.16	q	-9.86	0	100	H	.
166.6429	33.36	q	-10.16	0	120	V	.
47.4135	29.05	q	-10.95	0	100	V	.
51.7505	28.67	q	-11.33	0	100	V	.
180.7374	31.99	q	-11.53	-6	100	V	.
160.0075	31.98	q	-11.54	-6	100	V	.
208.0034	31.83	q	-11.69	179	120	V	.
67.2064	28.27	q	-11.73	89	120	V	.
58.7024	28.19	q	-11.81	0	100	V	.
729.9774	34.03	q	-11.99	0	120	H	.
72.2847	27.88	q	-12.12	89	120	V	.
178.0254	31.28	q	-12.24	0	100	V	.
173.1684	31.28	q	-12.24	-6	100	V	.
120.0105	31.25	q	-12.27	-6	100	V	.
85.6104	27.71	q	-12.29	179	120	V	.

Table 2: Scan List for FCC-B, sorted by Frequency, -12.3dB filter

Freq. MHz	Final Value dBuV/m	Sts	Margin to FCC-B limits (dB)	TT	Hght	Az	Comment
47.4135	29.05	q	-10.95	0	100	V	.
47.7734	30.32	q	-9.68	0	100	V	.
48.0034	36.36	m	-3.64	357	100	V	.
48.4769	31.14	q	-8.86	0	100	V	.
48.8724	31.77	q	-8.23	0	100	V	.
48.9830	32.06	q	-7.94	0	100	V	.
49.2724	31.74	q	-8.26	0	100	V	.
49.4104	31.77	q	-8.23	0	100	V	.
49.5464	31.82	q	-8.18	0	100	V	.
49.6824	31.70	q	-8.30	0	100	V	.
49.9524	31.74	q	-8.26	0	100	V	.
51.7505	28.67	q	-11.33	0	100	V	.
58.7024	28.19	q	-11.81	0	100	V	.
64.0027	36.91	m	-3.09	64	100	V	.
67.2064	28.27	q	-11.73	89	120	V	.
72.2847	27.88	q	-12.12	89	120	V	.
85.6104	27.71	q	-12.29	179	120	V	.
112.0034	33.83	q	-9.69	90	120	V	.
120.0105	31.25	q	-12.27	-6	100	V	.
130.8614	35.26	q	-8.26	0	100	V	.
131.0594	35.93	q	-7.59	0	100	V	.
131.1030	36.94	m	-6.58	355	100	V	.
131.1954	35.52	q	-8.00	180	100	V	.
131.6274	34.92	q	-8.60	0	100	V	.
131.8674	36.90	m	-6.62	180	100	V	.
160.0075	31.98	q	-11.54	-6	100	V	.
166.6429	33.36	q	-10.16	0	120	V	.
173.1684	31.28	q	-12.24	-6	100	V	.
176.0111	36.66	m	-6.86	0	120	V	.
178.0254	31.28	q	-12.24	0	100	V	.
180.0056	33.70	q	-9.82	0	100	V	.
180.7374	31.99	q	-11.53	-6	100	V	.
192.0127	34.29	q	-9.23	180	100	V	.
208.0034	31.83	q	-11.69	179	120	V	.
299.9789	36.16	q	-9.86	0	100	H	.
360.0035	38.02	m	-8.00	351	100	V	.
570.0004	44.27	m	-1.75	295	100	H	.
720.0145	36.75	q	-9.27	0	120	V	.
729.9774	34.03	q	-11.99	0	120	H	.
900.0066	36.91	m	-9.11	351	100	V	.

Table 3: Complete Scan List Sorted by Frequency

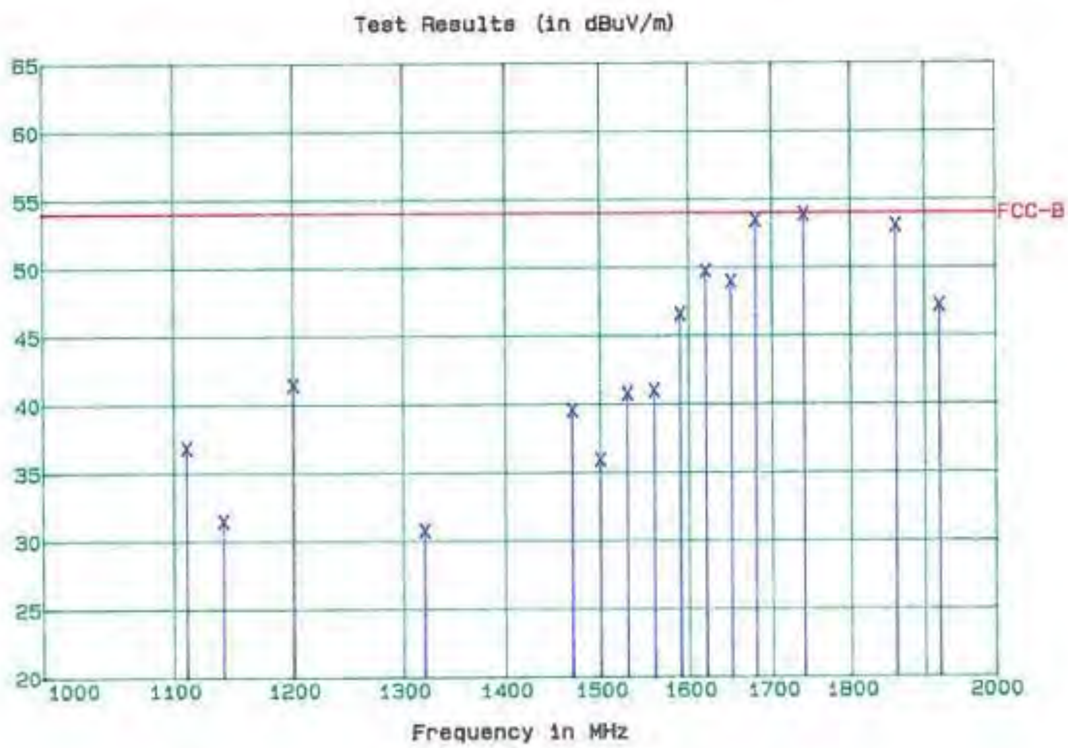
Freq, MHz	I-val before xducr factors dBuV	Final Value dBuV/m	Sts	T T	Hght	Az	Time	Comment
35.1791	28.80	22.30	q	-6	100	V	Tue Dec 08 16:41:54 2009	.
41.6057	32.39	22.64	q	-6	100	V	Tue Dec 08 16:41:58 2009	.
43.3694	37.45	26.83	q	0	100	V	Wed Dec 09 12:20:27 2009	.
47.4135	41.85	29.05	q	0	100	V	Wed Dec 09 12:20:51 2009	.
47.7734	43.32	30.32	q	0	100	V	Wed Dec 09 12:20:37 2009	.
48.0034	49.48	36.36	m	357	100	V	Wed Dec 09 13:24:57 2009	.
48.4769	44.52	31.14	q	0	100	V	Wed Dec 09 12:19:53 2009	.
48.8724	45.36	31.77	q	0	100	V	Wed Dec 09 12:19:41 2009	.
48.9830	45.71	32.06	q	0	100	V	Wed Dec 09 12:19:36 2009	.
49.2724	45.55	31.74	q	0	100	V	Wed Dec 09 12:19:32 2009	.
49.4104	45.65	31.77	q	0	100	V	Wed Dec 09 12:19:34 2009	.
49.5464	45.75	31.82	q	0	100	V	Wed Dec 09 12:19:38 2009	.
49.6824	45.69	31.70	q	0	100	V	Wed Dec 09 12:19:43 2009	.
49.9524	45.83	31.74	q	0	100	V	Wed Dec 09 12:19:45 2009	.
51.7505	43.45	28.67	q	0	100	V	Wed Dec 09 12:20:33 2009	.
57.8284	43.61	27.66	q	0	100	V	Wed Dec 09 12:20:54 2009	.
58.7024	44.31	28.19	q	0	100	V	Wed Dec 09 10:17:09 2009	.
59.1730	42.43	26.23	q	0	100	V	Wed Dec 09 12:20:41 2009	.
59.4224	42.51	26.33	q	0	100	V	Wed Dec 09 12:20:22 2009	.
59.6124	42.73	26.56	q	0	100	V	Wed Dec 09 12:19:50 2009	.
59.6584	42.49	26.32	q	0	100	V	Wed Dec 09 12:20:01 2009	.
59.7184	42.01	25.85	q	0	100	V	Wed Dec 09 12:20:04 2009	.
59.9704	41.85	25.70	q	0	100	V	Wed Dec 09 12:19:57 2009	.
64.0027	53.00	36.91	m	64	100	V	Wed Dec 09 13:28:26 2009	.
67.2064	44.23	28.27	q	89	120	V	Tue Dec 08 18:16:58 2009	.
72.2847	43.32	27.88	q	89	120	V	Tue Dec 08 18:17:00 2009	.
75.8644	42.12	27.16	q	89	120	V	Tue Dec 08 18:27:32 2009	.
77.1044	41.41	26.52	q	89	120	V	Tue Dec 08 18:27:34 2009	.
80.0064	38.33	23.86	q	0	100	V	Wed Dec 09 10:19:07 2009	.
85.0826	34.73	21.03	q	0	100	V	Wed Dec 09 10:18:07 2009	.
85.3464	34.09	20.39	q	0	100	V	Wed Dec 09 10:19:05 2009	.
85.6104	41.40	27.71	q	179	120	V	Tue Dec 08 18:34:02 2009	.
85.8744	40.46	26.79	q	179	120	V	Tue Dec 08 18:34:05 2009	.
86.7204	39.55	26.00	q	0	100	V	Wed Dec 09 12:20:59 2009	.
89.1565	40.44	27.24	q	0	100	V	Wed Dec 09 12:21:01 2009	.
93.2246	42.93	30.27	q	179	120	V	Tue Dec 08 18:34:12 2009	.
111.3684	40.70	30.33	q	271	120	V	Tue Dec 08 18:54:07 2009	.
112.0034	44.17	33.83	q	90	120	V	Wed Dec 09 12:30:32 2009	.
115.1744	39.51	29.10	q	271	120	V	Tue Dec 08 19:01:16 2009	.
117.8866	38.07	28.30	q	271	120	V	Tue Dec 08 19:01:18 2009	.
118.6784	37.79	28.12	q	-6	100	V	Tue Dec 08 16:44:05 2009	.
118.9424	39.43	29.80	q	271	120	V	Tue Dec 08 19:01:23 2009	.
120.0105	40.78	31.25	q	-6	100	V	Tue Dec 08 16:44:09 2009	.
121.9419	36.56	26.97	q	0	100	V	Wed Dec 09 12:21:07 2009	.
122.4694	39.40	29.82	q	-6	100	V	Tue Dec 08 16:44:16 2009	.
122.7454	40.01	30.44	q	-6	100	V	Tue Dec 08 16:44:18 2009	.

123.2734	37.38	27.83	q	-6	100	V	Tue Dec 08 16:44:20 2009	.
125.4574	37.75	28.20	q	-6	100	V	Tue Dec 08 16:44:25 2009	.
125.7214	37.03	27.46	q	-6	100	V	Tue Dec 08 16:44:27 2009	.
129.5374	37.15	27.63	q	0	100	V	Wed Dec 09 10:18:53 2009	.
129.7894	39.04	29.52	q	179	120	V	Tue Dec 08 18:34:47 2009	.
130.5454	39.70	30.15	q	0	100	V	Wed Dec 09 10:18:46 2009	.
130.8614	44.81	35.26	q	0	100	V	Wed Dec 09 12:20:06 2009	.
131.0594	45.49	35.93	q	0	100	V	Wed Dec 09 12:20:13 2009	.
131.1030	46.50	36.94	m	355	100	V	Wed Dec 09 13:35:02 2009	.
131.1954	45.08	35.52	q	180	100	V	Wed Dec 09 12:42:43 2009	.
131.6274	44.50	34.92	q	0	100	V	Wed Dec 09 12:20:11 2009	.
131.8674	46.48	36.90	m	180	100	V	Wed Dec 09 12:42:33 2009	.
143.8804	38.58	28.87	q	179	120	V	Tue Dec 08 18:35:04 2009	.
144.0004	34.68	24.96	q	0	100	V	Wed Dec 09 12:21:05 2009	.
144.5644	38.33	28.56	q	-6	100	V	Tue Dec 08 16:45:22 2009	.
144.6844	38.58	28.80	q	179	120	V	Tue Dec 08 18:35:12 2009	.
152.0044	39.21	28.85	q	-6	100	V	Tue Dec 08 16:45:29 2009	.
156.0594	38.27	27.54	q	-6	100	V	Tue Dec08 16:45:38 2009	.
158.7836	38.80	28.07	q	-6	100	V	Tue Dec 08 16:45:40 2009	.
160.0075	42.85	31.98	q	-6	100	V	Tue Dec 08 16:45:43 2009	.
163.5080	40.99	29.88	q	-6	100	V	Tue Dec 08 16:45:45 2009	.
166.6429	44.73	33.36	q	0	120	V	Wed Dec 09 12:28:44 2009	.
170.1688	40.50	28.80	q	179	120	V	Tue Dec 08 18:35:30 2009	.
173.1684	42.80	31.28	q	-6	100	V	Tue Dec 08 16:45:57 2009	.
173.4804	42.43	30.93	q	0	100	V	Wed Dec 09 10:17:39 2009	.
173.6964	41.17	29.69	q	0	100	V	Wed Dec 09 12:20:43 2009	.
173.9604	41.17	29.71	q	0	100	V	Wed Dec 09 10:18:12 2009	.
174.2244	39.63	28.19	q	0	100	V	Wed Dec 09 10:18:41 2009	.
174.7642	40.37	28.96	q	0	100	V	Wed Dec 09 10:18:14 2009	.
176.0111	48.11	36.66	m	0	120	V	Wed Dec 09 12:27:59 2009	.
176.9462	39.00	27.37	q	0	100	V	Wed D ec 09 10:17:49 2009	.
177.2219	39.18	27.49	q	0	100	V	Wed Dec 09 12:20:57 2009	.
177.4857	41.45	29.71	q	0	100	V	Wed Dec 09 10:17:11 2009	.
177.7614	39.76	27.97	q	0	100	V	Wed Dec 09 10:17:14 2009	.
177.9780	40.95	29.12	q	0	100	V	Wed Dec 09 10:16:57 2009	.
178.0254	43.12	31.28	q	0	100	V	Wed Dec 09 10:16:38 2009	.
180.0056	45.86	33.70	q	0	100	V	Wed Dec 09 12:20:35 2009	.
180.7374	44.22	31.99	q	-6	100	V	Tue Dec 08 16:46:30 2009	.
181.5414	42.85	30.59	q	-6	100	V	Tue Dec 08 16:46:33 2009	.
181.8053	43.37	31.10	q	-6	100	V	Tue Dec 08 16:46:36 2009	.
192.0127	46.14	34.29	q	180	100	V	Wed Dec 09 12:44:21 2009	.
208.0034	43.19	31.83	q	179	120	V	Tue Dec 08 18:36:14 2009	.
228.8534	40.23	30.46	q	0	120	H	Tue Dec 08 17:12:25 2009	.
228.8914	40.27	30.50	q	0	120	H	Tue Dec 08 17:12:28 2009	.
229.1794	40.19	30.44	q	0	120	H	Tue Dec 08 17:12:30 2009	.
229.5134	38.28	28.55	q	0	120	H	Tue Dec 08 17:12:32 2009	.
229.7534	37.78	28.07	q	0	120	H	Tue Dec 08 17:12:34 2009	.
230.5455	38.60	28.94	q	0	120	H	Tue Dec 08 17:12:36 2009	.
231.0835	38.57	28.95	q	0	120	H	Tue Dec 08 17:12:39 2009	.

233.2929	30.85	21.25	q	0	100	V	Wed Dec 09 10:18:20 2009	.
240.0008	40.44	31.23	q	0	100	V	Wed Dec 09 10:18:56 2009	.
288.0149	38.13	30.63	q	271	120	V	Tue Dec 08 18:57:05 2009	.
289.1034	37.41	29.95	q	0	120	H	Tue Dec 08 17:13:10 2009	.
299.9789	43.52	36.16	q	0	100	H	Wed Dec 09 12:22:46 2009	.
337.9596	38.43	32.07	q	-6	100	V	Tue Dec 08 16:49:13 2009	.
360.0035	43.17	38.02	m	351	100	V	Wed Dec 09 13:38:00 2009	.
368.0305	36.62	31.09	q	271	120	H	Tue Dec 08 18:51:08 2009	.
400.0148	37.26	33.09	q	-6	100	V	Tue Dec 08 16:49:47 2009	.
419.2363	36.88	33.27	q	0	120	H	Tue Dec 08 17:14:16 2009	.
434.5225	30.84	27.50	q	0	100	V	Wed Dec 09 10:18:36 2009	.
435.3324	34.87	31.55	q	-6	100	V	Tue Dec 08 16:49:58 2009	.
448.0213	32.34	29.26	q	0	120	H	Tue Dec 08 17:14:25 2009	.
451.4694	33.06	30.00	q	89	120	V	Tue Dec 08 18:31:22 2009	.
466.5960	34.15	31.47	q	271	120	H	Tue Dec 08 18:51:25 2009	.
480.0309	31.97	29.51	q	0	100	V	Wed Dec 09 10:18:10 2009	.
510.0005	34.38	32.49	q	-6	100	V	Tue Dec 08 16:50:19 2009	.
540.0005	34.70	33.18	q	-6	100	V	Tue Dec 08 16:50:24 2009	.
570.0004	44.77	44.27	m	295	100	H	Wed Dec 09 13:10:54 2009	.
600.0005	29.40	29.03	q	0	100	V	Wed Dec 09 10:17:54 2009	.
659.9890	29.60	30.35	q	0	100	V	Wed Dec 09 10:18:34 2009	.
690.0147	32.58	33.68	q	0	120	H	Tue Dec 08 17:15:32 2009	.
720.0145	35.44	36.75	q	0	120	V	Wed Dec 09 12:28:37 2009	.
721.1874	29.72	31.10	q	0	120	H	Tue Dec 08 17:15:46 2009	.
722.1744	27.99	29.35	q	0	120	H	Tue D ec 08 17:15:49 2009	.
725.5044	30.09	31.37	q	0	120	H	Tue Dec 08 17:16:01 2009	.
725.5375	21.76	23.04	q	0	100	V	Wed Dec 09 10:19:13 2009	.
729.9774	32.65	34.03	q	0	120	H	Tue Dec 08 17:16:11 2009	.
749.9829	29.29	30.91	q	271	120	H	Tue Dec 08 18:52:00 2009	.
750.0147	30.44	32.07	q	271	120	H	Tue Dec 08 18:52:02 2009	.
779.9847	29.16	31.38	q	-6	100	V	Tue Dec 08 16:51:56 2009	.
809.9847	30.38	33.09	q	-6	100	V	Tue Dec 08 16:52:01 2009	.
839.9844	29.93	33.22	q	0	100	V	Wed Dec 09 10:19:10 2009	.
843.2464	27.98	31.16	q	-6	100	V	Tue Dec 08 16:52:19 2009	.
844.3564	27.05	30.20	q	-6	100	V	Tue Dec 08 16:52:21 2009	.
900.0066	34.18	36.91	m	351	100	V	Wed Dec 09 13:42:31 2009	.

5.3 RADIATED EMISSIONS PLOT – ABOVE 1 GHZ

Criterion Technology
Date: December 9, 2009
EUT: Digital Scan Central – Count Vote Tabulation System, DS850(i)
S/N: DS8509420002
Manufacturer: Election Systems and Software
Tester: SP
SpID: 091014-1481
EUT Level: production unit
Test Information: 3m, 120 VAC 60 Hz. FCC Part 15 Class B
Test Cond: Temp: 18° C
Humidity: 32 %



5.4 RADIATED EMISSIONS TABLE – ABOVE 1 GHZ

Notes:

Fval = Ival + AF + Cable + Pads – Amp

Where:
Fval is the final electric field in dbuv/m
Ival is the initial reading from the EMC receiver or spec an in dbuv.
AF is the antenna factor, a + value is loss
Cable is the cable attenuation in db, a + value is loss
Pads is the total attenuator loss in db, a + value is loss
Amp is the preamplifier gain in db, a + value is amplifier gain

A Sample calculation with Ival, AF, Cable, Pads, & Amp values of 50 dbuv, 18, 4, 3, 32 respectively is:

Fval = 50 + 18 + 4 + 3 – 32 = 43 dbuv/m

Minimum Margin to Limit: -0.13 dB at 1740.0000 MHz

Criterion Technology Wed Dec 09 16:58:38 2009
EUT: Digital Scan Central – Count Vote Tabulation System, DS850(i)
S/N: DS8509420002
Manufacturer: Election Systems and Software
Tester: sp
Special ID: 091014-1481
EUT Level: Production Unit
Test information: 3 meters, 120 VAC 60 Hz, FCC Part 15 Class B

Table 1: Scan List, sorted by margin to limit FCC-B, -25.0dB filter

Freq. MHz	Value dBuV/m	Sts	Margin to FCC-B limits (dB)	TT	Hght	Az	Comment
1740.0000	53.85	m	-0.13	298	111	H	.
1680.0000	53.42	m	-0.56	30	111	V	....
1860.0000	53.03	m	-0.95	334	111	V	....
1620.0000	49.70	m	-4.28	12	160	H	....
1650.0000	48.92	m	-5.06	29	111	V	....
1920.0000	47.18	m	-6.80	5	111	V	....
1590.0000	46.52	m	-7.46	49	101	V	....
1200.0000	41.37	m	-12.61	17	114	H	....
1560.0000	40.93	m	-13.05	15	101	V	....
1530.0000	40.72	m	-13.26	15	127	V	....
1470.0000	39.51	m	-14.47	26	127	V	....
1110.0000	36.80	m	-17.18	347	103	V	....
1500.0000	35.89	m	-18.09	12	127	V	....
1140.0000	31.42	m	-22.56	335	111	H	....
1320.0000	30.73	m	-23.25	6	120	V	....

Table 2: Scan List for FCC-B, sorted by Frequency, -25.0dB filter

Freq. MHz	Final Value dBuV/m	Sts	Margin to FCC-B limits (dB)	TT	Hght	Az	Comment
1110.0000	36.80	m	-17.18	347	103	V	....
1140.0000	31.42	m	-22.56	335	111	H	....
1200.0000	41.37	m	-12.61	17	114	H	....
1320.0000	30.73	m	-23.25	6	120	V	....
1470.0000	39.51	m	-14.47	26	127	V	....
1500.0000	35.89	m	-18.09	12	127	V	....
1530.0000	40.72	m	-13.26	15	127	V	....
1560.0000	40.93	m	-13.05	15	101	V	....
1590.0000	46.52	m	-7.46	49	101	V	....
1620.0000	49.70	m	-4.28	12	160	H	....
1650.0000	48.92	m	-5.06	29	111	V	....
1680.0000	53.42	m	-0.56	30	111	V	....
1740.0000	53.85	m	-0.13	298	111	H	.
1860.0000	53.03	m	-0.95	334	111	V	....
1920.0000	47.18	m	-6.80	5	111	V	....

Table 3: Complete Scan List Sorted by Frequency

Freq. MHz	I-val before xducr factors dBuV	Final Value dBuV/m	Sts	TT	Hght	Az	Time	Comment
1110.0000	52.46	36.80	m	347	103	V	Wed Dec 09 14:33:28 2009	....
1140.0000	46.90	31.42	m	335	111	H	Wed Dec 09 14:55:22 2009	....
1200.0000	56.41	41.37	m	17	114	H	Wed Dec 09 14:59:56 2009	....
1320.0000	45.04	30.73	m	6	120	V	Wed Dec 09 15:04:22 2009	....
1470.0000	52.91	39.51	m	26	127	V	Wed Dec 09 15:13:52 2009	....
1500.0000	49.09	35.89	m	12	127	V	Wed Dec 09 15:24:11 2009	....
1530.0000	53.63	40.72	m	15	127	V	Wed Dec 09 15:29:26 2009	....
1560.0000	53.54	40.93	m	15	101	V	Wed Dec 09 15:35:33 2009	....
1590.0000	58.92	46.52	m	49	101	V	Wed Dec 09 15:40:13 2009	....
1620.0000	61.78	49.70	m	12	160	H	Wed Dec 09 15:45:56 2009	....
1650.0000	60.63	48.92	m	29	111	V	Wed Dec 09 15:50:27 2009	....
1680.0000	64.73	53.42	m	30	111	V	Wed Dec 09 15:57:34 2009	....
1740.0000	64.63	53.85	m	298	111	H	Wed Dec 09 16:49:20 2009	.
1860.0000	62.33	53.03	m	334	111	V	Wed Dec 09 16:04:33 2009	....
1920.0000	55.36	47.18	m	5	111	V	Wed Dec 09 16:20:43 2009	....

5.5 FCC CONDUCTED EMISSIONS PLOT

Criterion Technology Inc.
Conducted Emissions

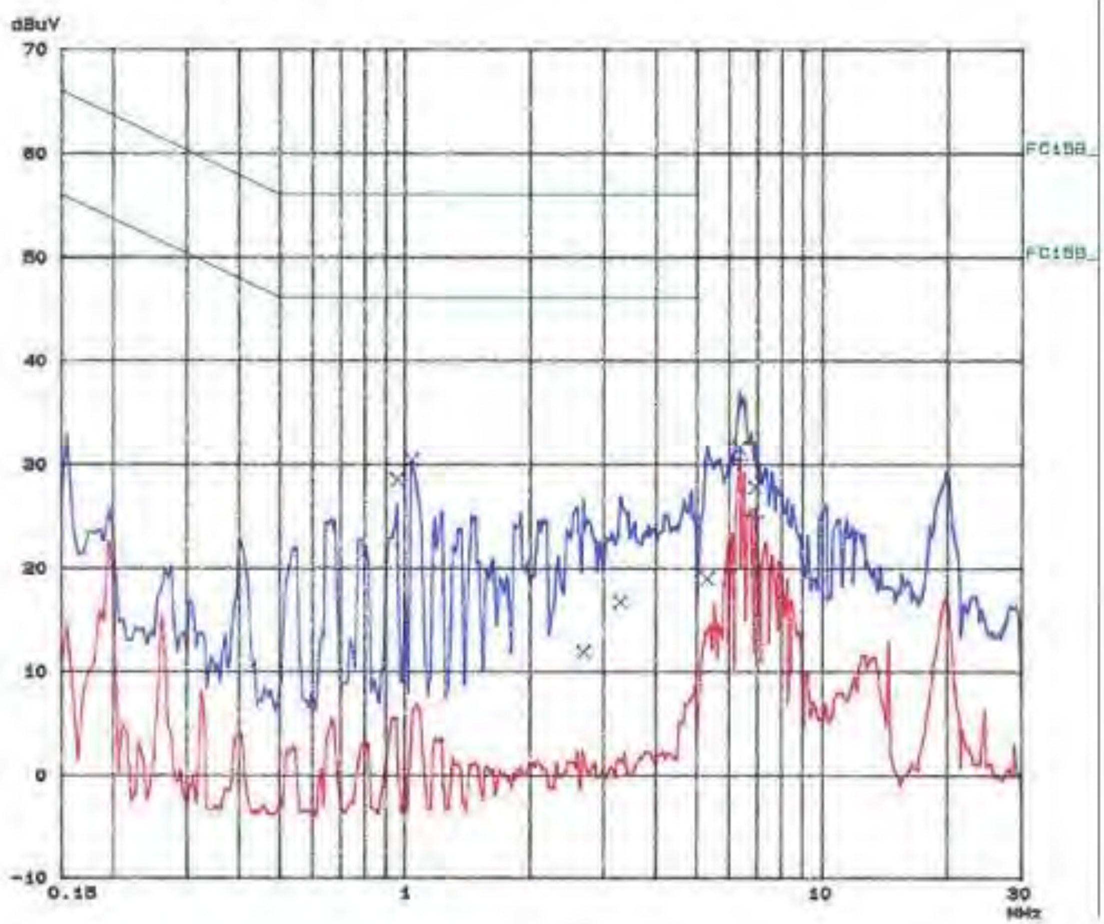
EUT:	Digital Scan Central – Count Vote Tabulation System, DS850(I)	DATE: December 9, 2009
Manuf:	Election Systems and Software	
Op Cond:	Counting ballots	
Operator:	LWS	
Test Spec:	FCC Part 15, Class B	
Test Cond:	Temp: 17° C	Humidity: 10%
Comment:	120 VAC 60 Hz, N on Prescan, Li & N on Final	

Scan Settings (1 Range)

Start	Stop	Step	If BW	Detector	M-Time	Atten	Preamp	OpRge
150k	30M	5k	10k	PK+AV	100MS	AUTO LN	OFF	60db

Final Measurement: x QP 1 + AV
Meas Time: 1s
Subranges: 25
Acc Margin: 30dB

Transducer No.	Start	Stop	Name
1	10k	30M	SR&Z5



5.6 FCC CONDUCTED EMISSIONS TABLE

Criterion Technology Inc.
Conducted Emissions

EUT:	Digital Scan Central – Count Vote Tabulation System, DS850(i)	DATE December 9, 2009
Manuf:	Election Systems and Software	
Op Cond:	Counting ballots	
Operator:	LWS	
Test Spec:	FCC Part 15, Class B	
Test Cond:	Temp: 17° C	Humidity: 30%
Comment:	120 VAC 60 Hz, N on Prescan, Li & N on Final	

Scan Settings (1 Range)

Start	Stop	Step	If BW	Detector	M-Time	Atten	Preamp	OpRge
150k	30M	5k	10k	PK+AV	100MS	AUTO LN	OFF	60db

Final Measurement Results:

Indicated Phase1PE shows Configuration of max. Emission

Frequency MHz	QP Level DBuv	QP Limit DBuv	Phase -	PE -
0.95500	28.5	56.0	N	gnd
1.04000	30.4	56.0	N	gnd
2.68500	11.8	56.0	N	gnd
3.29000	16.6	56.0	L1	gnd
5.31500	18.9	60.0	L1	gnd
6.36500	31.6	60.0	L1	gnd
6.91500	27.8	60.0	N	gnd

Frequency MHz	AV Level DBuv	AV Limit DBuv	Phase -	PE -
6.36000	30.5	50.0	N	gnd
6.91000	25.0	50.0	L1	gnd

Minimum Margin to Limit: -19.5 dB at 6.36000 MHz

5.7 ELECTROSTATIC DISRUPTION EN-61000-4-2

Test Number:	10040Z-1555		
Test Article:	Digital Scan Central – Count Vote Tabulation System		
MODEL NUMBER:	DS850(i)	SERIAL NUMBER DS850: SERIAL NUMBER MOTHERBOARD	DS8509420002 00694095
TEMPERATURE	19° C	HUMIDITY:	48%
ATMOSPHERIC PRESSURE	565.7Torr.	TEST PERSONNEL:	SP
TEST RESULTS:	Complies (X) Does Not Comply ()	ADDED SURGE PROTECTOR MODEL	6828 0110223021 USBSSP
EUT OPERATING VOLTAGE	120 VAC 60 Hz	TEST DATE:	8-4-2010

Test Pt #	CONTACT DISCHARGE TEST POINT DESCRIPTION	± 4 kV ACTUAL PERFORMANCE (1 or 2) *	± 4 kV PASS/ FAILING EUT RESPONSE)	± 8 kV ACTUAL PERFORMANCE (1 or 2) *	± 8 kV PASS/FAILING EUT RESPONSE
1	left side lock			1	Pass – Ops Norm
2	left side lock upper hinge			1	Pass – Ops Norm
3	left side lock lower hinge			1	Pass – Ops Norm
4	Display housing screw (left)	1	Pass – Ops Norm	1	Pass – Ops Norm
5	Display housing screw (middle)	1	Pass – Ops Norm	1	Pass – Ops Norm
6	Display housing screw (right)	1	Pass – Ops Norm	1	Pass – Ops Norm
7	left upper display housing seam front			1	Pass – Ops Norm
8	left upper display housing seam side			1	Pass – Ops Norm
9	right upper display housing seam front			1	Pass – Ops Norm
10	right upper display housing seam side			1	Pass – Ops Norm
11	left lower display housing seam			1	Pass – Ops Norm
12	right lower display housing seam			1	Pass – Ops Norm
13	display housing corner -left upper	1	Pass – Ops Norm	1	Pass – Ops Norm
14	display housing corner-right upper	1	Pass – Ops Norm	1	Pass – Ops Norm
15	display housing corner-left lower	1	Pass – Ops Norm	1	Pass – Ops Norm
16	display housing corner -right lower	1	Pass – Ops Norm	1	Pass – Ops Norm
17	upper housing rear cover top seam #1			1	Pass – Ops Norm
18	upper housing rear cover top seam #2			1	Pass – Ops Norm
19	upper housing rear cover bottom seam #1			1	Pass – Ops Norm
20	upper housing rear cover bottom seam #2			1	Pass – Ops Norm
21	upper housing rear cover left seam #1			1	Pass – Ops Norm
22	upper housing rear cover left seam #2			1	Pass – Ops Norm
23	upper housing rear cover right seam #1			1	Pass – Ops Norm
24	upper housing rear cover right seam #2			1	Pass – Ops Norm
25	upper housing rear cover left upper corner #1			1	Pass – Ops Norm
26	upper housing rear cover left upper corner #2			1	Pass – Ops Norm
27	upper housing rear cover right upper corner #1			1	Pass – Ops Norm
28	upper housing rear cover right upper corner #2			1	Pass – Ops Norm
29	upper housing rear cover left lower corner #1			1	Pass – Ops Norm
30	upper housing rear cover left lower corner #2			1	Pass – Ops Norm
31	upper housing rear cover right lower corner #1			1	Pass – Ops Norm
32	upper housing rear cover right lower corner #2			1	Pass – Ops Norm
33	upper housing rear cover right lower corner #3			1	Pass – Ops Norm
34	upper housing screw upper left			1	Pass – Ops Norm
35	upper housing screw upper right			1	Pass – Ops Norm
36	upper housing screw lower left			1	Pass – Ops Norm
37	upper housing screw lower right			1	Pass – Ops Norm
38	main housing piano hinge #1	1	Pass – Ops Norm	1	Pass – Ops Norm
39	main housing piano hinge #2	1	Pass – Ops Norm	1	Pass – Ops Norm
40	main housing piano hinge #3	1	Pass – Ops Norm	1	Pass – Ops Norm
41	main housing piano hinge screw #1	1	Pass – Ops Norm	1	Pass – Ops Norm
42	main housing piano hinge screw #2	1	Pass – Ops Norm	1	Pass – Ops Norm
43	main housing piano hinge screw #3	1	Pass – Ops Norm	1	Pass – Ops Norm
44	main housing piano hinge screw #4	1	Pass – Ops Norm	1	Pass – Ops Norm
45	main housing piano hinge screw #5	1	Pass – Ops Norm	1	Pass – Ops Norm
46	main housing piano hinge screw #6	1	Pass – Ops Norm	1	Pass – Ops Norm
47	main housing piano hinge screw #7	1	Pass – Ops Norm	1	Pass – Ops Norm
48	main housing top rear seam #1			1	Pass – Ops Norm
49	main housing top rear seam #2			1	Pass – Ops Norm
50	main housing seam upper right #1			1	Pass – Ops Norm
51	main housing seam upper right #2			1	Pass – Ops Norm
52	main housing seam upper right #3			1	Pass – Ops Norm

53	main housing seam upper right #4			1	Pass – Ops Norm
54	main housing corner right upper rear			1	Pass – Ops Norm
55	main housing corner right lower front			1	Pass – Ops Norm
56	main housing corner right lower rear			1	Pass – Ops Norm
57	main housing corner left upper rear			1	Pass – Ops Norm
58	main housing corner left upper front	1	Pass – Ops Norm	1	Pass – Ops Norm
59	main housing corner left lower rear	1	Pass – Ops Norm	1	Pass – Ops Norm
60	main housing corner left lower front	1	Pass – Ops Norm	1	Pass – Ops Norm
61	rear door left seam #1	1	Pass – Ops Norm	1	Pass – Ops Norm
62	rear door left seam #2	1	Pass – Ops Norm	1	Pass – Ops Norm
63	rear door right seam #1	1	Pass – Ops Norm	1	Pass – Ops Norm
64	rear door right seam #2	1	Pass – Ops Norm	1	Pass – Ops Norm
65	rear door lower seam #1	1	Pass – Ops Norm	1	Pass – Ops Norm
66	rear door lower seam #2	1	Pass – Ops Norm	1	Pass – Ops Norm
67	rear door lower left corner			1	Pass – Ops Norm
68	rear door lower right corner			1	Pass – Ops Norm
69	rear door left lock			1	Pass – Ops Norm
70	rear do or right lock			1	Pass – Ops Norm
71	rear door hasp			1	Pass – Ops Norm
72	rear door handle			1	Pass – Ops Norm
73	rear door screw #1	1	Pass – Ops Norm	1	Pass – Ops Norm
74	rear door screw #2	1	Pass – Ops Norm	1	Pass – Ops Norm
75	rear door screw #3	1	Pass – Ops Norm	1	Pass – Ops Norm
76	rear door screw #4	1	Pass – Ops Norm	1	Pass – Ops Norm
77	lift handle screw left front #1			1	Pass – Ops Norm
78	lift handle screw left front #2			1	Pass – Ops Norm
79	lift handle screw left front #3			1	Pass – Ops Norm
80	lift handle screw right front #1			1	Pass – Ops Norm
81	lift handle screw right front #2			1	Pass – Ops Norm
82	lift handle screw right front #3			1	Pass – Ops Norm
83	lift handle screw left rear #1			1	Pass – Ops Norm
84	lift handle screw left rear #2			1	Pass – Ops Norm
85	lift handle screw left rear #3			1	Pass – Ops Norm
86	lift handle screw right rear #1			1	Pass – Ops Norm
87	lift handle screw right rear #2			1	Pass – Ops Norm
88	lift handle screw right rear #3			1	Pass – Ops Norm
89	right side upper lock			1	Pass – Ops Norm
90	right side upper lock upper hinge			1	Pass – Ops Norm
91	right side upper lock lower hinge			1	Pass – Ops Norm
92	right side middle lock			1	Pass – Ops Norm
93	right side middle lock upper hinge			1	Pass – Ops Norm
94	right side middle lock lower hinge			1	Pass – Ops Norm
95	right side lower lock			1	Pass – Ops Norm
96	right side lower lock upper hinge			1	Pass – Ops Norm
97	right side lower lock lower hinge			1	Pass – Ops Norm
98	display enclosure edge #1			1	Pass – Ops Norm
99	display enclosure edge #2			1	Pass – Ops Norm
100	display enclosure edge #3			1	Pass – Ops Norm
101	display enclosure edge #4			1	Pass – Ops Norm
102	main housing panel seam, right #1			1	Pass – Ops Norm
103	main housing panel seam, right #2			1	Pass – Ops Norm
104	main housing panel seam, right #3			1	Pass – Ops Norm
105	main housing panel seam, right #4			1	Pass – Ops Norm
106	upper camera housing hinge #1			1	Pass – Ops Norm
107	upper camera housing hinge #2			1	Pass – Ops Norm
108	upper camera housing screw #1			1	Pass – Ops Norm
109	upper camera housing screw #2			1	Pass – Ops Norm
110	upper camera housing screw #3			1	Pass – Ops Norm
111	upper camera housing screw #4			1	Pass – Ops Norm
112	upper camera housing screw #5			1	Pass – Ops Norm
113	right main housing screw #1			1	Pass – Ops Norm
114	right main housing screw #2			1	Pass – Ops Norm
115	right main housing screw #3			1	Pass – Ops Norm
116	right main housing screw #4			1	Pass – Ops Norm
117	upper camera housing corner	1	Pass – Ops Norm	1	Pass – Ops Norm
118	upper camera housing corner	1	Pass – Ops Norm	1	Pass – Ops Norm
119	upper camera housing corner	1	Pass – Ops Norm	1	Pass – Ops Norm
120	upper camera housing corner	1	Pass – Ops Norm	1	Pass – Ops Norm
121	upper camera housing back seam #1	1	Pass – Ops Norm	1	Pass – Ops Norm
122	upper camera housing back seam #2	1	Pass – Ops Norm	1	Pass – Ops Norm
123	upper camera housing back seam #3	1	Pass – Ops Norm	1	Pass – Ops Norm

124	upper camera housing back seam #4	1	Pass – Ops Norm	1	Pass – Ops Norm
125	main housing right panel seam #1			1	Pass – Ops Norm
126	main housing right panel seam #2			1	Pass – Ops Norm
127	main housing left panel seam #1			1	Pass – Ops Norm
128	main housing left panel seam #2			1	Pass – Ops Norm
129	main housing left panel seam #3			1	Pass – Ops Norm
130	main housing left panel seam #4			1	Pass – Ops Norm
131	main housing left panel seam #5			1	Pass – Ops Norm
132	Camera housing seam #1			1	Pass – Ops Norm
133	Camera housing seam #2			1	Pass – Ops Norm
134	Camera housing seam #3			1	Pass – Ops Norm
135	Camera housing seam #4			1	Pass – Ops Norm
136	Camera housing seam #5			1	Pass – Ops Norm
137	Camera housing seam #6			1	Pass – Ops Norm
138	Camera housing seam #7			1	Pass – Ops Norm
139	Lower camera housing screw #1	1	Pass – Ops Norm	1	Pass – Ops Norm
140	Lower camera housing screw #2	1	Pass – Ops Norm	1	Pass – Ops Norm
141	Lower camera housing screw #3	1	Pass – Ops Norm	1	Pass – Ops Norm
142	Lower camera housing corner #1	1	Pass – Ops Norm	1	Pass – Ops Norm
143	Lower camera housing corner #2	1	Pass – Ops Norm	1	Pass – Ops Norm
144	top right ballot tray screw #1	1	Pass – Ops Norm	1	Pass – Ops Norm
145	top right ballot tray screw #2	1	Pass – Ops Norm	1	Pass – Ops Norm
146	top right ballot tray screw #3	1	Pass – Ops Norm	1	Pass – Ops Norm
147	top right ballot tray screw #4	1	Pass – Ops Norm	1	Pass – Ops Norm
148	top right ballot tray corner #1	1	Pass – Ops Norm	1	Pass – Ops Norm
149	top right ballot tray corner #2	1	Pass – Ops Norm	1	Pass – Ops Norm
150	top right ballot tray corner #3	1	Pass – Ops Norm	1	Pass – Ops Norm
151	top right ballot tray corner #4	1	Pass – Ops Norm	1	Pass – Ops Norm
152	top right ballot tray corner #5	1	Pass – Ops Norm	1	Pass – Ops Norm
153	left curved ballot guide corner #1	1	Pass – Ops Norm	1	Pass – Ops Norm
154	left curved ballot guide corner #2	1	Pass – Ops Norm	1	Pass – Ops Norm
155	left curved ballot guide edge	1	Pass – Ops Norm	1	Pass – Ops Norm
156	middle flat ballot guide corner #1	1	Pass – Ops Norm	1	Pass – Ops Norm
157	middle flat ballot guide corner #2	1	Pass – Ops Norm	1	Pass – Ops Norm
158	middle flat ballot guide edge #1	1	Pass – Ops Norm	1	Pass – Ops Norm
159	middle flat ballot guide edge #2	1	Pass – Ops Norm	1	Pass – Ops Norm
160	right curved ballot guide corner #1	1	Pass – Ops Norm	1	Pass – Ops Norm
161	right curved ballot guide corner #2	1	Pass – Ops Norm	1	Pass – Ops Norm
162	right curved ballot guide edge #1			1	Pass – Ops Norm
163	right curved ballot guide edge #2			1	Pass – Ops Norm
164	lower middle bent ballot guide corner #1	1	Pass – Ops Norm	1	Pass – Ops Norm
165	lower middle bent ballot guide corner #2	1	Pass – Ops Norm	1	Pass – Ops Norm
166	lower middle bent ballot guide edge	1	Pass – Ops Norm	1	Pass – Ops Norm
167	upper ballot deflector corner #1	1	Pass – Ops Norm	1	Pass – Ops Norm
168	upper ballot deflector corner #2	1	Pass – Ops Norm	1	Pass – Ops Norm
169	upper ballot deflector edge	1	Pass – Ops Norm	1	Pass – Ops Norm
170	middle ballot deflector corner #1	1	Pass – Ops Norm	1	Pass – Ops Norm
171	middle ballot deflector corner #2	1	Pass – Ops Norm	1	Pass – Ops Norm
172	middle ballot deflector edge	1	Pass – Ops Norm	1	Pass – Ops Norm
173	lower ballot deflector corner #1	1	Pass – Ops Norm	1	Pass – Ops Norm
174	lower ballot deflector corner #2	1	Pass – Ops Norm	1	Pass – Ops Norm
175	lower ballot deflector edge	1	Pass – Ops Norm	1	Pass – Ops Norm
176	upper/middle ballot deflector spacer			1	Pass – Ops Norm
177	middle/lower ballot deflector spacer			1	Pass – Ops Norm
178	lower middle bent ballot guide support			1	Pass – Ops Norm
179	left upper ballot trays corner #1			1	Pass – Ops Norm
180	left upper ballot trays corner #2			1	Pass – Ops Norm
181	left upper ballot trays corner #3			1	Pass – Ops Norm
182	left upper ballot trays corner #4			1	Pass – Ops Norm
183	left upper ballot trays edge			1	Pass – Ops Norm
184	left upper ballot trays ballot stop			1	Pass – Ops Norm
185	left middle ballot trays corner #1			1	Pass – Ops Norm
186	left middle ballot trays corner #2			1	Pass – Ops Norm
187	left middle ballot trays corner #3			1	Pass – Ops Norm
188	left middle ballot trays corner #4			1	Pass – Ops Norm
189	left middle ballot trays edge			1	Pass – Ops Norm
190	left middle ballot trays ballot stop			1	Pass – Ops Norm
191	left lower ballot trays corner #1	1	Pass – Ops Norm	1	Pass – Ops Norm
192	left lower ballot trays corner #2	1	Pass – Ops Norm	1	Pass – Ops Norm
193	left lower ballot trays corner #3	1	Pass – Ops Norm	1	Pass – Ops Norm
194	left lower ballot trays corner #4	1	Pass – Ops Norm	1	Pass – Ops Norm

195	left lower ballot trays edge	1	Pass – Ops Norm	1	Pass – Ops Norm
196	left lower ballot trays ballot stop			1	Pass – Ops Norm
197	ballot drive mechanism cover edge #1	1	Pass – Ops Norm	1	Pass – Ops Norm
198	ballot drive mechanism cover edge #2	1	Pass – Ops Norm	1	Pass – Ops Norm
199	ballot drive mechanism cover edge #3	1	Pass – Ops Norm	1	Pass – Ops Norm
200	ballot drive mechanism cover edge #4	1	Pass – Ops Norm	1	Pass – Ops Norm
201	ballot drive mechanism cover edge #5	1	Pass – Ops Norm	1	Pass – Ops Norm
202	ballot drive mechanism screw #1	1	Pass – Ops Norm	1	Pass – Ops Norm
203	ballot drive mechanism screw #2	1	Pass – Ops Norm	1	Pass – Ops Norm
204	ballot drive mechanism screw #3	1	Pass – Ops Norm	1	Pass – Ops Norm
205	Rotatable ballot holder			1	Pass – Ops Norm
	Vert. Coupling Plane				
218	EUT Front Left			1	Pass – Ops Norm
219	EUT Front Right			1	Pass – Ops Norm
220	EUT Right Front			1	Pass – Ops Norm
221	EUT Right Back			1	Pass – Ops Norm
222	EUT Rear Left			1	Pass – Ops Norm
223	EUT Rear Right			1	Pass – Ops Norm
224	EUT Left Front			1	Pass – Ops Norm
225	EUT Left Back			1	Pass – Ops Norm

Test Pt #	AIR DISCHARGE TESTPOINT DESCRIPTION	± 2 kV ACTUAL PERFORMANCE (1 or 2) *	± 2 kV PASS / FAILING EUT RESPONSE	± 4 kV ACTUAL PERFORMANCE (1 or 2) *	± 4 kV PASS / FAILING EUT RESPONSE	± 8 kV ACTUAL PERFORMANCE (1 or 2) *	± 8 kV PASS / FAILING EUT RES-PONSE	± 15 kV ACTUAL PERFORMANCE (1 or 2) *	± 15 kV PASS / FAILING EUT RES-PONSE
206	LCD screen corner #1	1	Pass	1	Pass	1	Pass	1	Pass
207	LCD screen corner #2	1	Pass	1	Pass	1	Pass	1	Pass
208	LCD screen corner #3	1	Pass	1	Pass	1	Pass	1	Pass
209	LCD screen corner #4	1	Pass	1	Pass	1	Pass	1	Pass
210	LCD screen edge #1	1	Pass	1	Pass	1	Pass	1	Pass
211	LCD screen edge #2	1	Pass	1	Pass	1	Pass	1	Pass
212	LCD screen edge #3	1	Pass	1	Pass	1	Pass	1	Pass
213	LCD screen edge #4	1	Pass	1	Pass	1	Pass	1	Pass
214	DS850 power cord	1	Pass	1	Pass	1	Pass	1	Pass
215	USB cable #1	1	Pass	1	Pass	1	Pass	1	Pass
216	USB cable #2	1	Pass	1	Pass	1	Pass	1	Pass
217	USB cable #3	1	Pass	1	Pass	1	Pass	1	Pass

EUT Locked up at end of 15 kV run

Mitigation: removed paint from inside metal frame of the display screen bezel, from screen holes, and other joints. Formal test continues. Added USB surge protector (p/n listed above).
Changed the test procedure to perform discharge only between polarity changes

NOTES:

1. Dissipation of the charge between polarity changes shall be conducted in accordance with EN61000-4-2 Sec 7.2.4.1 through a cable with 2 - 470 kohm resistors connected to ground.

2. Process for the "pre-testing investigation" for the possibility of windowing shall be conducted in the following manner:

   Criterion will identify a 40% sampling of the contact test points

   These points will be touched at 4kV

   If during the "pre-testing investigation" any anomaly is observed, the point will touched at 8kV to identify if there is windowing.

   An anomaly is any interruption of normal operation.

   If the anomaly is repeated at 8kV, it will be identified as no windowing and testing at 8kV will begin after the "pre-testing investigation" process is completed.

   If the anomaly is not observed at 8kV, it will be identified as potential windowing.

In this case Criterion will repeat the touch at 4kV in accordance with EN61000-4-2 Annex F Sec F-2 - Variation in test results.

If the anomaly is not repeated at 4kV, no additional lower voltage levels will be added. Testing will be conducted at 8kV.

If the anomaly is repeated at 4kV, Criterion will add touches at 4kV to the test (i.e. 100% of the contact touch points at 4kV and 8kV). Criterion may add touches at 6kV if the "pre-testing investigation" identifies multiple instances of potential windowing. In no instance shall Criterion add contact at 2kV to the test.

If during the "pre-testing investigation" the normal operation is not resumed without human intervention or there is a loss of confirmed votes, ES&S may choose whether or not to go forward with ESD testing. The result of the "pre-testing investigation" will be noted but it shall not be identified as a failure because testing was not started. Information can be provided to ES&S but no discrepancy report will be issued. Failures shall only occur when the unit is formally tested.

.8 ELECTROMAGNETIC SUSCEPTIBILITY EN-61000-4-3

TEST NUMBER: 091014-1481
TEST ARTICLE: Digital Scan Central – Count Vote Tabulation System
MODEL NUMBER: DS850(i)
SERIAL NUMBER: DS8509420002
TEMPERATURE: 20° C
HUMIDITY: 39 %
ATMOSPHERIC PRESSURE: 564.7Torr
DWELL TIME: 1.5 Seconds
TEST DATE: 12-12-09
TEST PERSONNEL: SP
EUT OPERATING VOLTAGE: 120 VAC 60 Hz

TEST FREQ. (MHz)	FIELD STRENGTH	MODULATION FREQ. %	FIELD POLARITY	TESTED SIDE OF EUT	TEST PERFORMANCE (1 or 2) *	TEST PERFORMANCE (1 or 2) *	(PASS/FAIL)	OBSERVED RESPONSE OF THE EUT
80 to 1000	10	1kHz 80%AM	Horizontal	Front (0)	1	1	pass	Norma Operation
SPOT	10	1kHz 80%AM	Horizontal	Front (0)	1	1	pass	Norma Operation
900	10	200 Hz pulse	Horizontal	Front (0)	1	1	pass	Norma Operation
900	10	200 Hz pulse	Horizontal	Left (90)	1	1	pass	Norma Operation
SPOT	10	1kHz 80%AM	Horizontal	Left (90)	1	1	pass	Norma Operation
80 to 1000	10	1kHz 80%AM	Horizontal	Left (90)	1	1	pass	Norma Operation
80 to 1000	10	1kHz 80%AM	Horizontal	Rear (180)	1	1	pass	Norma Operation
SPOT	10	1kHz 80%AM	Horizontal	Rear (180)	1	1	pass	Norma Operation
900	10	200 Hz pulse	Horizontal	Rear (180)	1	1	pass	Norma Operation
900	10	200 Hz pulse	Horizontal	Right (270)	1	1	pass	Norma Operation
SPOT	10	1kHz 80%AM	Horizontal	Right (270)	1	1	pass	Norma Operation
80 to 1000	10	1kHz 80%AM	Horizontal	Right (270)	1	1	pass	Norma Operation
80 to 1000	10	1kHz 80%AM	Vertical	Right (270)	1	1	pass	Norma Operation
SPOT	10	1kHz 80%AM	Vertical	Right (270)	1	1	pass	Norma Operation
900	10	200 Hz pulse	Vertical	Right (270)	1	1	pass	Norma Operation
900	10	200 Hz pulse	Vertical	Rear (180)	1	1	pass	Norma Operation
SPOT	10	1kHz 80%AM	Vertical	Rear (180)	1	1	pass	Norma Operation
80 to 1000	10	1kHz 80%AM	Vertical	Rear (180)	1	1	pass	Norma Operation
80 to 1000	10	1kHz 80%AM	Vertical	Left (90)	1	1	pass	Norma Operation
SPOT	10	1kHz 80%AM	Vertical	Left (90)	1	1	pass	Norma Operation
900	10	200 Hz pulse	Vertical	Left (90)	1	1	pass	Norma Operation
900	10	200 Hz pulse	Vertical	Front (0)	1	1	pass	Norma Operation
SPOT	10	1kHz 80%AM	Vertical	Front (0)	1	1	pass	Norma Operation
80 to 1000	10	1kHz 80%AM	Vertical	Front (0)	1	1	pass	Norma Operation
1 - 2.7 GHz	10	1kHz 80%AM	Horizontal	Front (0)	1	1	pass	Norma Operation
1 - 2.7 GHz	10	1kHz 80%AM	Horizontal	Left (90)	1	1	pass	Norma Operation
1 - 2.7 GHz	10	1kHz 80%AM	Horizontal	Rear (180)	1	1	pass	Norma Operation
SPOT	10	1kHz 80%AM	Horizontal	Rear (180)	1	1	pass	Norma Operation
SPOT	10	1kHz 80%AM	Horizontal	Right (270)	1	1	pass	Norma Operation
1 - 2.7 GHz	10	1kHz 80%AM	Horizontal	Right (270)	1	1	pass	Norma Operation
1 - 2.7 GHz	10	1kHz 80%AM	Vertical	Right (270)	1	1	pass	Norma Operation
SPOT	10	1kHz 80%AM	Vertical	Right (270)	1	1	pass	Norma Operation
SPOT	10	1kHz 80%AM	Vertical	Rear (180)	1	1	pass	Norma Operation
1 - 2.7 GHz	10	1kHz 80%AM	Vertical	Rear (180)	1	1	pass	Norma Operation
1 - 2.7 GHz	10	1kHz 80%AM	Vertical	Left (90)	1	1	pass	Norma Operation
SPOT	10	1kHz 80%AM	Vertical	Left (90)	1	1	pass	Norma Operation
SPOT	10	1kHz 80%AM	Vertical	Front (0)	1	1	pass	Norma Operation
1 - 2.7 GHz	10	1kHz 80%AM	Vertical	Front (0)	1	1	pass	Norma Operation

***Performance Criterion 1**
The EUT shall be able to withstand the test without disruption of the normal operation or loss of data.

***Performance Criterion 2**
The EUT shall be able to withstand the test without damage or loss of data. The equipment may reset or have momentary interruption so long as normal operation is resumed without human intervention or loss of data. Loss of data means votes that have been completed and confirmed to the voter

5.9 ELECTRICAL FAST TRANSIT EN-61000-4-4

Test Number:	091014-1481	TEST ARTICLE	Digital Scan Central – Count Vote Tabulation System
MODEL NUMBER:	DS850(i)	SERIAL NUMBER:	DS8509420002
TEMPERATURE	19°C	HUMIDITY:	58 %
ATMOSPHERIC PRESSURE	574.2Torr		
TEST DATE	8-4-2010	TEST PERSONNEL :	SP
TEST RESULTS :	Complies (X)		Does Not Comply ( )
EUT OPERATING VOLTAGE	120 VAC 60 Hz	DWELL TIME	120 Seconds

TEST VOLTAGE	LINE 1	LINE 2	EARTH GROUND	TEST DURATION	CABLE TESTED	REQUIRED PERFORMANCE (1 or 2) *	TEST PERFORMANCE (1 or 2) *	(PASS/ FAIL)	OBSERVED RESPONSE OF THE EUT
±2kV	X			2 Minutes	Power	1	1	Pass	Ops norm
±2kV		X		2 Minutes	Power	1	1	Pass	Ops norm
±2kV	X	X	X	2 Minutes	Power	1	1	Pass	Ops norm
±2kV	X			2 Minutes	Power	1	1	Pass	Ops norm
±2kV		X		2 Minutes	Power	1	1	Pass	Ops norm
±2kV	X	X	X	2 Minutes	Power	1	1	Pass	Ops norm

***Performance Criterion 1**

The EUT shall be able to withstand the test without disruption of the normal operation or loss of data.

***Performance Criterion 2**

The EUT shall be able to withstand the test without damage or loss of data. The equipment may reset or have momentary interruption so long as normal operation is resumed without human intervention or loss of data. Loss of data means votes that have been completed and confirmed to the voter

5.10 LIGHTENING SURGE EN-61000-4-5

Test Number:	091014-1481	TEST ARTICLE	Digital Scan Central – Count Vote Tabulation System
MODEL NUMBER:	DS850(i)	SERIAL NUMBER:	DS8509420002
TEMPERATURE	20°C	HUMIDITY:	30 %
ATMOSPHERIC PRESSURE	560.1Torr	TEST PERSONNEL:	RMR
TEST RESULTS:	Complies (X)		Does Not Comply ( )
EUT OPERATING VOLTAGE	120 VAC 60 Hz	TEST DATE	12-15-09

TEST VOLTAGE	LINE 1	LINE 2	EARTH GROUND	CABLE TESTED	REQUIRED PERFORMANCE (1 or 2) *	TEST PERFORMANCE (1 or 2) *	(PASS/ FAIL)	OBSERVED RESPONSE OF THE EUT
+2 kV	X	X		Power	1	1	Pass	None
-2 kV	X	X		Power	1	1	Pass	None
+2 kV	X		X	Power	1	1	Pass	None
+2 kV		X	X	Power	1	1	Pass	None
-2 kV	X		X	Power	1	1	Pass	None
-2 kV		X	X	Power	1	1	Pass	None

Surges were initiated at 90°, 180° and 270° power line phase angles.

***Performance Criterion 1**
The EUT shall be able to withstand the test without disruption of the normal operation or loss of data.

***Performance Criterion 2**
The EUT shall be able to withstand the test without damage or loss of data. The equipment may reset or have momentary interruption so long as normal operation is resumed without human intervention or loss of data. Loss of data means votes that have been completed and confirmed to the voter

5.11 CONDUCTED RF IMMUNITY EN-61000-4-6

Test Number:	091014-1481	**Test Article:**	Digital Scan Central – Count Vote Tabulation
MODEL NUMBER:	DS850(i)	**SERIAL NUMBER:**	DS8509420002
TEMPERATURE	19° C	**HUMIDITY:**	38 %
ATMOSPHERIC PRESSURE	553.8 Torr		
TEST DATE	12-12-09	**TEST PERSONNEL:**	SP
TEST RESULTS :	Complies (X)		Does Not Comply ( )
EUT OPERATING VOLTAGE	120 VAC 60 Hz	**DWELL TIME**	3 Seconds

TEST FREQ. (MHz)	FIELD STRENGTH	MODULATION FREQ. %	CABLE TESTED	COUPLING DEVICE	REQUIRED PERFORMANCE (1 or 2) *	TEST PERFORMANCE (1 or 2) *	(PASS/ FAIL)	OBSERVED RESPONSE OF THE EUT
0.15 to 80	10	1kHz 80% AM	POWER	M3 CDN	1	1	Pass	Ops norm

***Performance Criterion 1**
The EUT shall be able to withstand the test without disruption of the normal operation or loss of data.

***Performance Criterion 2**
The EUT shall be able to withstand the test without damage or loss of data. The equipment may reset or have momentary interruption so long as normal operation is resumed without human intervention or loss of data. Loss of data means votes that have been completed and confirmed to the voter

5.12 MAGNETIC FIELDS IMMUNITY EN-61000-4-8

Test Number:	091014-1481	**Test Article:**	Digital Scan Central – Count Vote Tabulation
MODEL NUMBER:	DS850(i)	SERIAL NUMBER:	DS8509420002
TEMPERATURE:	20°C	HUMIDITY:	40%
ATMOSPHERIC PRESSURE:	565Torr	Method:	☒ Immersion ☐ Proximity
TEST DATE:	11-12-09	TEST PERSONNEL:	sp
TEST RESULTS:	Complies (X)		Does Not Comply ( )
EUT OPERATING VOLTAGE	120 VAC 60 Hz	DWELL TIME:	>1 Minute

MAGNETIC POWER FREQ. (Hz)	H-FIELD STRENGTH (A/m)	LOOP POSITION ON EUT	COUPLING DEVICE	REQUIRED PERFORMANCE (1 or 2) *	TEST PERFORMANCE (1 or 2) *	(PASS/FAIL)	OBSERVED RESPONSE OF THE EUT
60	30	X	Haefely loop	1	1	Pass	Ops Normal
60	30	Y	Haefely loop	1	1	Pass	Ops Normal
60	30	Z	Haefely loop	1	1	Pass	Ops Normal

***Performance Criterion 1**
The EUT shall be able to withstand the test without disruption of the normal operation or loss of data.

***Performance Criterion 2**
The EUT shall be able to withstand the test without damage or loss of data. The equipment may reset or have momentary interruption so long as normal operation is resumed without human intervention or loss of data. Loss of data means votes that have been completed and confirmed to the voter

5.13 POWER DISTURBANCE EN-61000-4-11

Test Number:	091014-1481	**Test Article:**	Digital Scan Central – Count Vote Tabulation
MODEL NUMBER:	DS850(i)	SERIAL NUMBER:	DS8509420002
TEMPERATURE	24° C	HUMIDITY:	40 %
ATMOSPHERIC PRESSURE:	566.1 Torr		
TEST DATE:	11-16-09	TEST PERSONNEL:	SP
TEST RESULTS:	Complies (X)		Does Not Comply ( )
EUT OPERATING VOLTAGE	120 VAC 60 Hz	# OF DIPS / INTERRUPTS	≥ 3

VOLTAGE REDUCTION % & DURATION (Sec.)	NUMBER OF REPETITIONS	COUPLING DEVICE	REQUIRED PERFORMANCE (1 or 2) *	TEST PERFORMANCE (1 or 2) *	(PASS/ FAIL)	OBSERVED RESPONSE OF THE EUT
30%reduction/10 msec (AC)	3	PLINE 1610	1	1	Pass	Ops Normal
60%reduction/100 ms (AC)	3	PLINE 1610	1	1	Pass	Ops Normal
60%reduction/1 sec (AC)	3	PLINE 1610	1	1	Pass	Ops Normal
≥95%reduction/5 sec (AC)	3	PLINE 1610	1	1	Pass	Ops Normal
+7.5% Variation/4 hours	1	PLINE 1610	1	1	Pass	Ops Normal
-12.5% variation/4 hours	1	PLINE 1610	1	1	Pass	Ops Normal
±15% voltage surges	5	PHF555	1	1	Pass	Ops Normal

***Performance Criterion 1**
The EUT shall be able to withstand the test without disruption of the normal operation or loss of data.

***Performance Criterion 2**
The EUT shall be able to withstand the test without damage or loss of data. The equipment may reset or have momentary interruption so long as normal operation is resumed without human intervention or loss of data. Loss of data means votes that have been completed and confirmed to the voter

6.0 APPENDIX C: PRODUCT INFORMATION FORM

CRITERION TECHNOLOGY PRODUCT INFORMATION FORM

General Information Date: 01/27/10

iBeta Quality Assurance, 3131 S Vaughn Way, Aurora, CO 80014

Contacts:

VSTL Test Observer: Kirby Austin Phone: 303-627-1110 x166 Email: kaustin@ibeta.com
VSTL Test Observer: Jenn Garcia Phone: 303-627-1110 x158 Email: jgarcia@ibeta.com

Company Name: Election Systems and Software
Company Address: 11208 John Galt Blvd Omaha, NE 68137

Contacts:

Compliance Engineer: Sue Munguia Phone: 402-537-1125 Email: slmunguia@essvote.com
Design Engineer: Mike Dvorak Phone: 402-850-0721 Email: mmdvorak@essvote.com

Test Description
De-Bug ________ Formal (Initial) X ________ Formal (Re-Verification) __

Market Information (Check all that Apply)
USA X

Product Information
Name Digital Scan Central – Count Vote Tabulation
Model Number DS850(i) Serial Number DS8509420002

Product Dimensions: 37" H x 41" W x 18" D Weight: 200 lbs

Product Power Source:

Battery

Type COTS UPS
Redundant Power Supplies COTS UPS

AC Supply

Input Voltage Range(s): 120 VAC or 240 VAC
Phases Single___ Delta ________ Wye ___
Current 8 amps @ 120 VAC
Frequency 60 Hz
Manufacturer Lambda, Cosel, Astec
Model Number ZWX300A1, PBA150F-36, LPQ252

Topology

Linear ________ Switching Mode _ Switching Frequency 120Khz all

Support Equipment (if used):

CPU:
Manufacturer Intel
Model No. HH80557PH0462M
Serial No. TBD

Monitor:
Manufacturer LG
Model No. LB150X02-TL01
Serial No. TBD

I/O Cables – Manufacturer, P/N, Length :
Serial Port ________
Parallel Port ________
SCSI Port ________
Other USB 2 for printers 6 feet each

Operation Software:
Name ESS Linux OS Version Number 1.0.0.1

Operating Modes: (Please Include Cycle Time)
Variable unit cycle time can be increas ed by delayed feed, this will allow for up to 2 hours of continuous run time without user intervention .

Time necessary for EUT to be exercised and able to fully respond 5 minutes **seconds** .

Operation Pass!Fail Criteria:
See the operational status checks procedures.

Test Type – Emissions (Please check all that apply):
Voting System Standards
Class A ____
Class B VVSG 2005, FCC Part 15B
Oscillator/Clock Frequencies (MHz) 30Mhz, 120Mhz, 15Mhz, 12Mhz, 20Mhz, 8Mhz

Immunity Testing

Test Type (Please check all that apply):

X______**VVSG** – Voluntary Voting System Guidelines

EN 61000-4-2 (ESD)

Number of Metallic test points touchable by equipment operator: Unit is mostly metal
Number of Non-Metallic test points touchable by equipment operator: 5
Is the product enclosure completely plastic? No
Is the product enclosure partly plastic? No
Are there any additional ESD voltages required for testing? If so, list herein:
None

EN 61000-4-4 (Electrical Fast Transients)

How many interfacing cables are greater than 3 meter long? 3
List each cable by name? Power cord, Report printer cord, Log printer cord.

EN 61000-4-3 & ENV 50204 (Radiated Susceptibility Testing, 80 - 1000 MHz)

What is the maximum time necessary for the product to respond? 5 minutes for boot up
During normal operations, what parameter will be monitored to determine susceptibility of the product? Ballots will be scanned and results verified, against known test decks.

EN 61000-4-5 (Surge Testing on Power Lines)

Optional: Are there any long interfacing cables to be tested? No
If so, how many?
Note: Cables must be tested at a length of 20 meters.

EN 61000-4-6 (Conducted Disturbance Testing)

How many interfacing cables are greater than 3 meter long? 3
List each cable by name? Power cord, Report printer cord, log printer cord.

EN 61000-4-8 (Magnetic Field Susceptibility Testing)

Test is applicable to Hall Elements, Electrodynamic Microphones, Magnetic Field Sensors and CRT Monitors. Do any of these apply? Yes

EN 61000-4-11 (Voltage Sag and Interruptions)

Comments: Will be done using UPS

TEST CRITERIA ATTACHMENT

EMISSIONS

To be compliant with C63.4-2003 test methodology, for the emissions testing, the equipment must be exercising all of the functionality within the capability of the Equipment under test. In addition, the equipment must be equipped in the configuration of maximum capability which will be offered to customers ,. The test software installed in the Equipment Under Test (EUT) must exercise all of the modules in this maximum capability configuration.

Description of the maximum capability configuration:
We have test software that delays the feeding of the ballots to allow for longer periods of ballot scanning with a 5 second delay between ballots the unit will exercise all hardware for up to 2 hours.

Name and revision # of the test software used for the emissions test:
GateFlipper version 3.0.0.0

IMMUNITY

During the series of immunity tests the EUT is subjected to a series of potentially interfering signals and environments. It is important that for these tests to be valid, that the EUT be configured at its maximum capability and that the software or equipment exercising this EUT have demonstrable output that is easily observed, and preferably transmitted through a cable approximately 20 feet in length during the series of tests. Pass / Fail criteria must be clearly defined and correspond to the equipment specifications received by the customer.

Description of the maximum capability configuration:
We have test software that delays the feeding of the ballots to allow for longer periods of ballot scanning with a 5 second delay between ballots the unit will exercise all hardware for up to 2 hours.

Name of revision # of the test software used for the immunity tests:
GateFlipper version 3.0.0.0

Clearly defined definitive description of the pass / fail criteria:

The DS850i will pass the test if the ballots are successfully counted. The DS850i will fail if there is a hardware failure of the DS850i, if votes are miscounted or lost. The equipment may reset or have momentary interruptions so long as normal operation is resumed without loss of votes.

7.0 APPENDIX D: TEST EQUIPMENT AND CALIBRATION STATUS

Manufacturer	Name/Description	Model Number	Serial Number	Cal. Due Date
Amplifier Research	Power Amplifier	100W1000M1	20214	8/1/2010
Veratech	Preamp (AMP2)	unknown	N/A	9/18/2010
FCC	EM Clamp	F2031	309	10/2/2010
FCC	CDN	FCC-801-M3-25	9714	10/2/2010
Rohde/ Schwarz	VHF/UHF Receiver	ESVS-30	863342014	10/6/2010
Rohde/ Schwarz	LISN	ESH2-Z5	828739-001	10/6/2010
Rohde/ Schwarz	HF Receiver	ESHS-30	826003/011	10/6/2010
Solar Electronics	LISN	8012-50-R-24-BNC	892310	10/15/2010
Haefely Trench	Test Mag	Mag 100	80162	10/15/2010
Gigatronics	Power Sensor	80301A-410	1831996	10/15/2010
Gigatronics	Power Meter	8541C	1830945	10/15/2010
Hewlett Packard	Tracking Generator	HP85645A	3210A00124	10/21/2010
FCC	LISN	FCC-TLISN-T4-02	20252	11/24/2010
Califorina Instruments	AC Power Source Pacs-1	5001iX-CTS-411	55637/ 72242	3/24/2011
Haefely Trench	Surge Generator	PSURGE 6.1	083-906-07	5/26/2011
Haefely Trench	EFT Tester	PEFT Junior	583-333-51	5/26/2011
Haefely Trench	Surge Coupler	FP-Surge 32.1	083-925-05	5/26/2011
EMCO	Active Loop	6502	2626	5/28/2011
Amplifier Research	E-Field Probe	FP2080	20236	10/16/2011
Amplifier Research	E-Field Probe	FP2000	19682	10/19/2011
EMCO	Horn	3160-08	1147	1/19/2012
Hewlett Packard	Signal Generator	HP 8648D	3642000145	3/9/2012
Hewlett Packard	Quasi Peak Adapter	85652A	3014A18942	5/23/2012
Hewlett Packard	Spectrum Analyzer	HP 8566B	2240A01951	5/23/2012
Hewlett Packard	Spectrum Analyzer Display	HP 85662A	2403A07322	5/23/2012
Haefely Trench	ESD Gun	PESD 1600	H605100	6/23/2012

8.0 APPENDIX E: TEST DIRECTIVES, STANDARDS AND METHODS

8.1.1 EUROPEAN DIRECTIVES, STANDARDS AND METHODS

89/336/EEC. Council Directive of 03 May 1989 on the Approximation of the Laws of the Member States Relating to Electromagnetic Compatibility, OJEC No. L139/19-26, Aug 1993.

BS DD ENV 50204 (CENELEC): Testing and Measurement Techniques: Radiated Electromagnetic Field from Digital Radio Telephones - Immunity Test, 1996.

EN 55011 (CENELEC): ISM Radio-Frequency Equipment Radio Disturbance Characteristics - Limits and Methods of Measurement, 2007.

EN 55014-1 (CENELEC): Part 1. Electromagnetic Compatibility Requirements for Household Appliances, Electric Tools and Similar Apparatus - Part 1. Emission - Product Family Standard, 2007.

EN 55022 (CENELEC): ITE - Radio-Frequency Equipment Radio Disturbance Characteristics - Limits and Methods of Measurement, 2008.

EN 55024 (CENELEC): ITE - Immunity Characteristics - Limits and Methods of Measurement, 2008.

EN 55103-1: Product Family standard for audio, video, audio - visual and entertainment lighting control apparatus for professional use. Part 1: Emissions, April 1997.

EN 55103-2: Product Family standard for audio, video, audio - visual and entertainment lighting control apparatus for professional use. Part 2: Immunity, April 1997.

EN 60601-1-2 (CENELEC): Medical Electrical Equipment. Part 1. General Requirements for Safety - Section 1.2. Collateral Standard: Electromagnetic Compatibility - Requirements and Tests, Third Edition 2007.

EN 61000-6-1: EMC-Part 6-1. Generic Standard - Immunity for residential, commercial and light-industrial Environments 2007.

EN 61000-6-2: EMC-Part 6-2. Generic Standard - Immunity for Industrial Environments, 2005.

EN 61000-6-3: EMC-Part 6-3. Generic Standard - Emissions for residential, commercial and light-industrial Environments 2007.

EN61000-6-4 (CENELEC): EMC - Generic Emission Standard, Part 6-4: Industrial Environment, 2007.

EN 61000-3-2 (CENELEC): EMC - Part 2. Limits for Harmonic Current Emissions (Equipment Input Current 16 A per phase), with Amendment 14, 2006.

EN 61000-3-3 (CENELEC): EMC - Part 3. Limitation of Voltage Fluctuation and Flicker in Low-Voltage Supply Systems for Equipment with Rated Current 16 A, 2008.

EN 61000-4-2 (CENELEC): EMC - Part 4. Testing and Measurement Techniques: Section 2. Electrostatic Discharge Immunity Test, 2009.

EN 61000-4-3 (CENELEC): EMC - Part 4. Testing and Measurement Techniques: Section 3. Radiated, Radio-Frequency, Electromagnetic Field Immunity, 2008.

EN 61000-4-4 (CENELEC): EMC - Part 4. Testing and Measurement Techniques: Section 4. Electrical Fast Transient/Burst Immunity Test, 2008.

EN 61000-4-5 (CENELEC): EMC - Part 4. Testing and Measurement Techniques: Section 5. Surge Immunity Test, 2006.

EN 61000-4-6 (CENELEC): EMC - Part 4. Testing and Measurement Techniques: Section 6. Immunity to Conducted Disturbances, Induced by Radio-Frequency Fields, 2009.

EN 61000-4-8 (CENELEC): EMC - Part 4. Testing and Measurement Techniques; Section 8. Power Frequency Magnetic Field Immunity Test, 1993 with the incorporation of amendment A1:2001.

EN 61000-4-11 (CENELEC): EMC - Part 4. Testing and Measurement Techniques; Section 11. Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests, 2004

EN 61326 (CENELEC): Electrical Equipment for Measurement, Control and Laboratory Use - EMC Requirements, 2005.

EN 61326-1 Electrical Equipment for Measurement, Control and Laboratory Use - EMC Requirements, - Part 1: General Requriments , 2008

8.1.2 47 CFR FCC PART 15 RADIO FREQUENCY DEVICES: OCT 2009

Subpart A General.

Subpart B Unintentional Radiators.

Subpart C Intentional Radiators.

Subpart D Unlicensed Personal Communications Service Devices.

8.1.3 47 CFR FCC PART 22 PUBLIC MOBILE SERVICES: OCT 2009

8.1.4 47 CFR FCC PART 24 PERSONAL COMMUNICATIONS SERVICES: OCT 2009

8.1.5 JAPAN

VCCI V-3

8.1.6 CANADA

ICES-001: Interference-Causing Equipment Standard - ISM RF Generators, 2006.

ICES-003: Interference-Causing Equipment Standard - Digital Apparatus, 2004.

8.1.7 AUSTRALIA/NEW ZEALAND

SAA AS/NZ 3548: Limits and Methods of Measurement of Radio Disturbance Characteristics of ITE, 1997.

AS/NZS CISPR22

8.1.8 TAIWAN

CNS13438, 2006.

8.1.9 KOREA

KN22, September 29, 2005

KN24, 1998

8.1.10 VOLUNTARY VOTING SYSTEM GUIDELINES

VVSG-Volume I Version 1.0, 2005

VVSG-Volume II Version 1.0, 2005

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