



Test Report of
Radiated and Conducted Emissions
Testing
Performed on ExpressVote Hdw v2.1.2

Issue Date: 18 April 2018

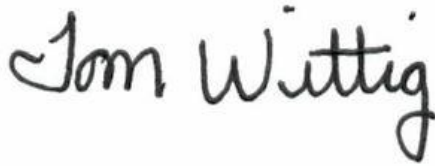
Prepared for: **Pro V&V**
700 Boulevard South, Suite 102
Huntsville, AL 35802

Prepared by: **National Technical Systems**
NTS Longmont
1736 Vista View Drive
Longmont, Colorado 80504



Certificate Number: 0214.43

This report and the information contained herein represents the results of testing of only those articles/products identified in this document and selected by the client. The tests were performed to specifications and/or procedures approved by the client. National Technical Systems ("NTS") makes no representations expressed or implied that such testing fully demonstrates efficiency, performance, reliability, or any other characteristic of the articles being tested, or similar products. This report should not be relied upon as an endorsement or certification by NTS of the equipment tested, nor does it present any statement whatsoever as to the merchantability or fitness of the test article or similar products for a particular purpose. This document shall not be reproduced except in full without written approval from NTS.

SIGNATURES

Prepared by:

Preparer, Tom WittigDate: 04/18/2018Reviewed &
Approved by:

Technical Reviewer, John RadmanDate: 04/19/2018

REVISIONS

Revision	Reason for Revision	Date
NR	Initial Release	18 April 2018

TABLE OF CONTENTS

	<u>PAGE NO.</u>
ADMINISTRATIVE DATA	6
TEST SUMMARY	10
FACTUAL DATA.....	11
1.0 RADIATED EMISSIONS TEST.....	ERROR! BOOKMARK NOT DEFINED.
2.0 CONDUCTED EMISSIONS TEST	ERROR! BOOKMARK NOT DEFINED.
APPENDICIES	
A. Radiated Emissions Test Data	
B. Conducted Emissions Test Data	
C. Product Data Sheet	
D. EMI Test Log	
E. Laboratory Accreditation	

LIST OF TABLES**PAGE NO.**

Table 1: Standards Table	6
Table 2: Measurement Uncertainty	9

ADMINISTRATIVE DATA

A. PURPOSE OF TESTS

This report documents the test efforts performed on the product name to verify compliance to the Class B limits of FCC Part 15 and ICES-003. This was a formal qualification test and was conducted on 06 thru 13 March 2018.

The normative references of this standard define the test methods used for the emissions testing. These standards are contained in Table 1.

Table 1. Standards Table	
CFR Title 47 FCC Part 15	ICES-003, Issue 6, 2016
ANSI C63.4: 2014	VVSG 1.0

B. DESCRIPTION OF TEST ITEM

These products are: a Precinct Tabulator and a ballot marking device designed for use in commercial and office environments. The products were continually exercised during testing, as documented in the “configuration” field of the test data sheets.

C. MANUFACTURER

Election Systems & Software
 11208 John Galt Blvd
 Omaha, NE
 68137

D. REFERENCES

1. Customer’s Product Data Sheet – 07 March 2018
2. ISO 17025:2005

E. QUANTITY OF ITEMS TESTED

Quantity	Test Item Description	Part Number	Serial Number
1	ExpressVote/Kiosk	AUO_G150XTN06.0	EV0217390509
1	Kiosk	Kiosk	K0117373359
1	ExpressVote/Kiosk	AUO_G150XTN06.4	EV0217390517
1	Kiosk	Kiosk	K0115421526
1	ExpressVote/Kiosk	AUO_G150XTN06.8	EV0217390587
1	Kiosk	Kiosk	K0115421501

F. SECURITY CLASSIFICATION

Unclassified

G. TESTS CONDUCTED BY

National Technical Systems
NTS Longmont
1736 Vista View Drive
Longmont, Colorado 80504

H. DISPOSITION OF TEST ITEMS

Returned to:

Election Systems & Software
11208 John Galt Blvd
Omaha, NE
68137

I. TEST ENVIRONMENT

Radiated Emissions Test Site

Radiated emissions testing was performed at a distance of 10-meters in a semi-anechoic 10-meter chamber. This chamber is calibrated annually and meets the volumetric site attenuation requirements of CISPR 16 at a distance of 10 meters. For measurements from 30 MHz to 1 GHz, a biconilog antenna is used in conjunction with a high-gain, low-noise preamplifier. This is connected to an HP 8566B spectrum analyzer with an HP 85650A Quasi-Peak (QP) Adapter, via an HP 85685 RF Preselector.

Radiated emissions testing is broken into two parts: pre-scan and QP/maximization. Pre-scanning a product from 30 MHz to 1 GHz consists of measuring peak emissions from eight radials (every 45 degrees), at four antenna heights (1 m, 2 m, 3 m and 4 m) for both antenna polarities. Data is recorded in a graph showing amplitude vs. frequency of the emissions, and frequencies for QP/maximization are chosen based on this graph. The procedure for maximizing emissions is as follows:

1. The analyzer is tuned to the frequency associated with the emissions having the least margin.
2. The turntable and antenna mast are moved to the location where the maximum emission was measured during the pre-scan.
3. Both are then oriented such that the maximum emission is obtained.
4. Cables on the UUT are manually manipulated to achieve the maximum emission.
5. The turntable and antenna mast are then re-adjusted to ensure a maximum reading.
6. If the signal in question is less than 1 GHz, quasi-peak detection is performed on the signal for a minimum of 10 seconds. For signals greater than 1 GHz, video averaging is performed.
7. Turntable/antenna mast maximization and QP detection are performed on all other signals within 6 dB of the limit. In the event that there are not six signals within 6 dB of the limit, the highest six signals are maximized. This ensures that a minimum of six signals are maximized and appear in the final data table.

In the event that emission measurements are required above 1 GHz, the antenna is changed to a double-ridged horn equipped with a preamplifier and run directly into the spectrum analyzer. The QP adapter and RF pre-selector are not used above 1 GHz.

Pre-scanning a product from 1-18 GHz is performed similarly, except that 16 radials (every 22.5 degrees) and three antenna heights (1 m, 1.5 m and 2 m) are used. A similar maximization process is used as for the lower frequency range, except that average measurements are performed, rather than QP measurements.

J. Measurement Uncertainty

The measurement uncertainty for NTS's emissions test facility complies with the requirements defined in CISPR 16. The complete calculation of NTS's measurement uncertainty is contained in an NTS memo, which is available upon request. However, a summary of NTS's measurement uncertainty is given in Table 2-1.

Table 2-1

Test	Requirement	Actual
Radiated Emissions – Horizontal Polarity	5.20 dB	4.67 dB
Radiated Emissions – Vertical Polarity	5.20 dB	5.01 dB

K. TEST APPARATUS

The instrumentation used in the performance of these tests is periodically calibrated and standardized within manufacturer's rated accuracies and are traceable to the National Institute of Standards and Technology. The calibration procedures and practices are in accordance with ISO 17025:2005. Certification of calibration is on file subject to inspection by authorized personnel.

L. SOURCE INSPECTION

NTS QA

**M. PURCHASE ORDER NUMBER
PO# 2018-003**

TEST SUMMARY

The test program may be chronologically summarized as follows:

Paragraph	Test Title	Specification	Test Dates	Results
1.0	Radiated Emissions Test	CFR Title 47 FCC Part 15	06 thru 13 March 2018	Pass
2.0	Conducted Emissions	CFR Title 47 FCC Part 15	06 thru 13 March 2018	Pass

FACTUAL DATA**1.0 RADIATED EMISSIONS TEST**

References and Requirements

CFR Title 47 FCC Part 15

Serial Numbers (S/N's)

AUO_G150XTN06.0	EV0217390509
Kiosk	K0117373359
AUO_G150XTN06.4	EV0217390517
Kiosk	K0115421526
AUO_G150XTN06.8	EV0217390587
Kiosk	K0115421501

1.1 Test Requirements

- 1.1.1 The UUT(s) shall be subjected to Radiated Emissions Test in accordance with the referenced documents.

1.2 Test Procedure

The emission limits applied to the product tested are defined in CFR Title 47, FCC Parts 15.107 and 15.109. This is the U.S. document which governs electromagnetic emissions from computing devices for conducted and radiated emissions, respectively. The UUT was set up as specified in ANSI C63.4: 2014.

- 1.2.1 **Special Configurations:** N/A

1.3 Test Results

- 1.3.1 Radiated electric field emissions were measured on the UUT over the frequency range from 30 MHz to 1 GHz. The UUT was powered from 120Vac/60Hz, configured in its normal operating mode, and exercised continually during testing. Cables were oriented such that the maximum emission was achieved and quasi-peak detection was performed on all signals (minimum of six) used in the final data table.

Test Input Voltage	Test Result	Margin dB	Frequency MHz
120Vac/60Hz AUO_G150XTN06.0	Compliant	5.54	520.010
120Vac/60Hz AUO_G150XTN06.4	Compliant	5.13	840.011
120Vac/60Hz AUO_G150XTN06.8	Compliant	0.28	480.011

1.3.2 The Radiated Emissions Test Data is presented in Appendix A.

2.0 CONDUCTED EMISSIONS TEST

References and Requirements

CFR Title 47 FCC Part 15

Serial Numbers (S/N's)

AUO_G150XTN06.0	EV0217390509
Kiosk	K0117373359
AUO_G150XTN06.4	EV0217390517
Kiosk	K0115421526
AUO_G150XTN06.8	EV0217390587
Kiosk	K0115421501

2.1 Test Requirements

2.1.1 The UUT(s) shall be subjected to the Conducted Emissions Test accordance with the referenced document.

2.2 Test Procedure

The UUT was set up in accordance with ANSI C63.4 and tested to the Class A limits specified in FCC 15.107.

2.2.1 **Special Configurations:** N/A

2.3 Test Results

Conducted emissions were measured on the AC power input of the UUT over the frequency range from 150 kHz to 30 MHz. With the UUT configured in its normal operating mode, testing was performed with UUT powered from 120Vac/60Hz. The input power to both the UUT and the support equipment was run through standard 50 Ω/50 μH line impedance stabilization networks (LISNs) which complied with the requirements of ANSI C63.4. Emissions were compared to both quasi-peak (QP) and average limits, with QP detection and averaging performed on the six highest signals.

Test Input Voltage	Test Result	Margin dB	Frequency MHz
120 Vac/60 Hz AUO_G150XTN06.0	Compliant	6.98	0.151
120 Vac/60 Hz AUO_G150XTN06.4	Compliant	0.44	0.555
120 Vac/60 Hz AUO_G150XTN06.8	Compliant	3.44	0.540

2.3.1 The visual inspections revealed no anomalies.

2.3.2 The Conducted Emissions Test Data is presented in Appendix B.

APPENDIX A
Radiated Emissions Test Data



Radiated Emissions, FCC Part 15

Manufacturer:	Election Systems & Software	Project Number:	PR075829
Customer Representative:	Michael Walker	Test Area:	10M #1
Model:	AUO_G150XTN06.0 with Kiosk	S/N:	EV0217390509 K0117373359
Standard Referenced:	FCC Part 15 Class B	Date:	March 6, 2018
Temperature:	24°C	Humidity:	30%
Input Voltage:	120Vac/60Hz	Pressure:	840 mb
Configuration of Unit:	ExpressVote w/ Kiosk, Counting Ballots		
Test Engineer:	Mike Tidquist		

PR075829-22-RE.doc

FR0100

Type	Frequency (MHz)	Level (dBuV)	Transducer (dB/m)	Gain / Loss (dB)	Final (dBuV/m)	Azm(deg)/Pol/Hgt(m)	Margin: FCC Class B QP (dB)
QP	47.931	40.3	8.6	-31.0	18.0	32/V-Pole/1.30	11.57
QP	119.998	39.1	14.0	-30.8	22.3	278/V-Pole/1.95	10.74
QP	250.023	42.2	11.6	-30.3	23.6	1/H-Pole/2.63	11.99
QP	264.005	44.1	12.7	-30.3	26.6	312/V-Pole/1.48	8.97
QP	500.046	39.6	17.8	-29.6	27.8	117/H-Pole/1.83	7.76
QP	520.010	41.5	18.1	-29.6	30.0	2/H-Pole/1.32	5.54
QP	760.014	35.2	20.7	-28.4	27.5	41/H-Pole/2.47	8.06
QP	840.016	36.8	21.1	-28.1	29.8	273/H-Pole/3.79	5.73



Radiated Emissions, FCC Part 15

Manufacturer:	Election Systems & Software	Project Number:	PR075829
Customer Representative:	Michael Walker	Test Area:	10M #1
Model:	AUO_G150XTN06.0 with Kiosk	S/N:	EV0217390509 K0117373359
Standard Referenced:	FCC Part 15 Class B	Date:	March 6, 2018
Temperature:	24°C	Humidity:	30%
Input Voltage:	120Vac/60Hz	Pressure:	840 mb
Configuration of Unit:	ExpressVote w/ Kiosk, Counting Ballots		
Test Engineer:	Mike Tidquist		

PR075829-22-RE.doc

FR0100

Type	Frequency (MHz)	Level (dBuV)	Transducer (dB/m)	Gain / Loss (dB)	Final (dBuV/m)	Azm(deg)/Pol/Hgt(m)	Margin: FCC Class B >1GHz PK (dB)	Margin: FCC Class B >1GHz AV (dB)
AV	1919.963	80.8	27.1	-70.7	37.1	346/V-Pole/1.25	-	16.87
PK	1919.963	87.5	27.1	-70.7	43.8	346/V-Pole/1.25	30.12	-
AV	3928.460	70.9	32.4	-72.5	30.8	180/V-Pole/4.00	-	23.12
PK	3928.460	83.5	32.4	-72.5	43.4	180/V-Pole/4.00	30.52	-
AV	8038.864	62.7	37.2	-70.0	29.9	0/H-Pole/3.97	-	24.02
PK	8038.864	75.5	37.2	-70.0	42.7	0/H-Pole/3.97	31.22	-
AV	10273.909	58.1	38.8	-67.1	29.8	300/H-Pole/1.06	-	24.16
PK	10273.909	71.0	38.8	-67.1	42.7	300/H-Pole/1.06	31.26	-
AV	12675.920	64.5	39.5	-70.2	33.8	266/H-Pole/3.62	-	20.21
PK	12675.920	77.4	39.5	-70.2	46.6	266/H-Pole/3.62	27.36	-
AV	17964.450	41.8	45.5	-57.6	29.6	225/V-Pole/2.50	-	24.33
PK	17964.450	55.1	45.5	-57.6	43.0	225/V-Pole/2.50	30.98	-

The highest emission measured was at **520.010 MHz**, which was **5.54 dB** below the limit.

- “Type” refers to the type of measurement performed. The type of measurement made is based on the requirements of the particular standard:
 - PK = Peak Measurement: RBW is 120kHz, VBW is 3 MHz
 - QP = Quasi-Peak Measurement: RBW is 120kHz, VBW is 3 MHz, and QP Detection is ENABLED
 - AV = Video Average Measurement: RBW is 1 MHz, VBW is 10 Hz
- The “Final” emissions level is attained by taking the “Level” and adding the “Transducer” factor and the “Gain/Loss” factor. Final measurements are made with the Azimuth, Polarity, Height, and EUT Cables positioned for maximum radiation. If applicable, cables positions are noted in the test log. (Sample Calculation: 49.6 dBuV + 11.4 dB/m – 28.8 dB = 32.2 dBuV/m. **Important Note:** This is a sample calculation only for the purpose of demonstration, and does not reflect data in this report.)
- The “Azm/Pol/Hgt” indicates the turn-table *azimuth*, the antenna *polarity*, and the antenna *height* where the maximum emissions level was measured.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.
- The PRESCAN is a peak measurement and is performed with the RBW set to 120 kHz, VBW set to 3 MHz (30 MHz to 1 GHz), and the RBW set to 1 MHz, VBW set to 100 kHz (> 1 GHz)



Radiated Emissions, FCC Part 15

Manufacturer:	Election Systems & Software	Project Number:	PR075829
Customer Representative:	Michael Walker	Test Area:	10M #1
Model:	AUO_G150XTN06.0 with Kiosk	S/N:	EV0217390509 K0117373359
Standard Referenced:	FCC Part 15 Class B	Date:	March 6, 2018

PR075829-22-RE.doc FR0100

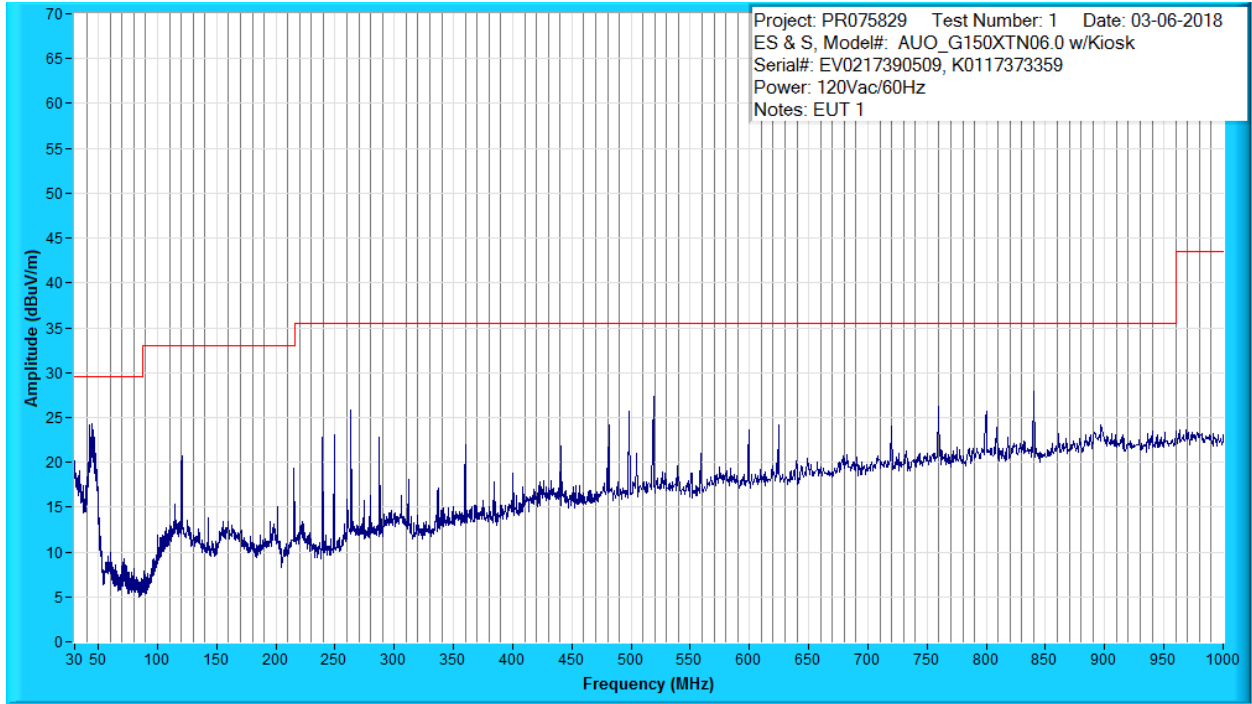


Figure A1: Radiated Emissions Prescan, 30MHz to 1000MHz, Peak Measurements at 10m Distance



Radiated Emissions, FCC Part 15

Manufacturer:	Election Systems & Software	Project Number:	PR075829
Customer Representative:	Michael Walker	Test Area:	10M #1
Model:	AUO_G150XTN06.0 with Kiosk	S/N:	EV0217390509 K0117373359
Standard Referenced:	FCC Part 15 Class B	Date:	March 6, 2018

PR075829-22-RE.doc FR0100

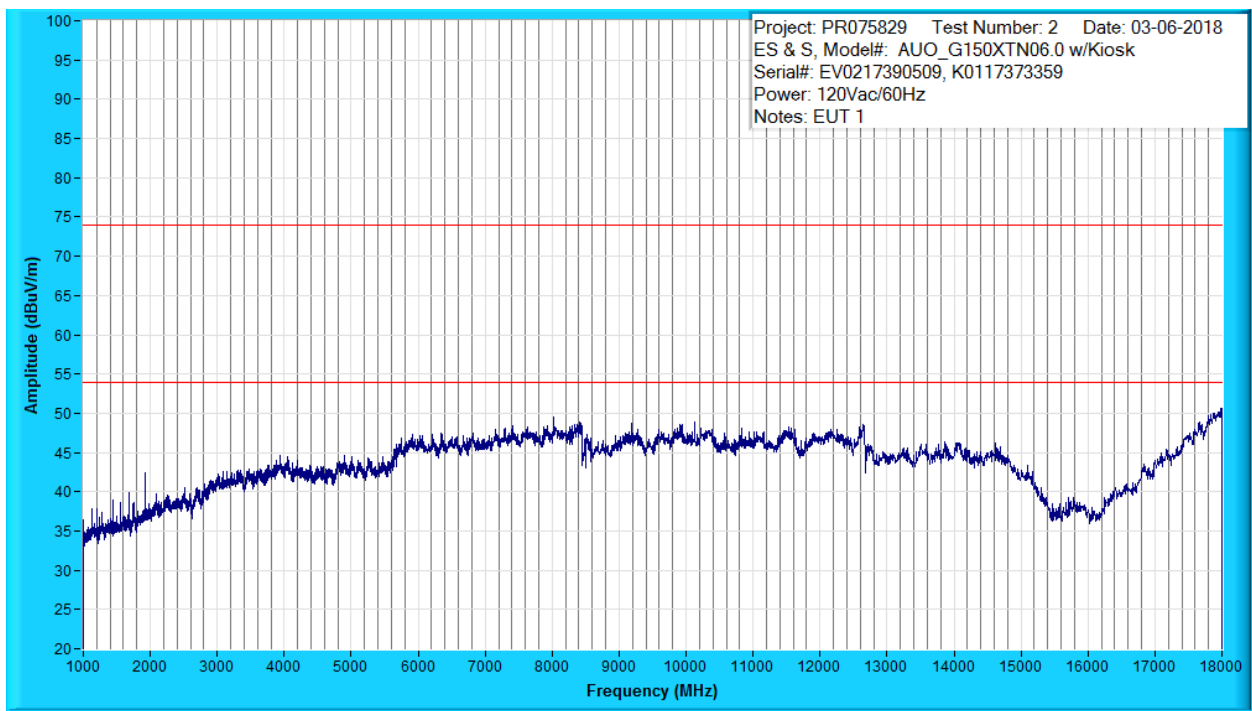


Figure A2: Radiated Emissions Prescan, 1GHz to 18GHz, Peak Measurements at 3m Distance



Radiated Emissions, FCC Part 15

Manufacturer:	<u>Election Systems & Software</u>	Project Number:	<u>PR075829</u>
Customer Representative:	<u>Michael Walker</u>	Test Area:	<u>10M #1</u>
Model:	<u>AUO_G150XTN06.0 with Kiosk</u>	S/N:	<u>EV0217390509</u> <u>K0117373359</u>
Standard Referenced:	<u>FCC Part 15 Class B</u>	Date:	<u>March 6, 2018</u>

PR075829-22-RE.doc FR0100



Figure A3: Radiated Emissions Test Setup – Front Side



Radiated Emissions, FCC Part 15

Manufacturer:	<u>Election Systems & Software</u>	Project Number:	<u>PR075829</u>
Customer Representative:	<u>Michael Walker</u>	Test Area:	<u>10M #1</u>
Model:	<u>AUO_G150XTN06.0 with Kiosk</u>	S/N:	<u>EV0217390509</u> <u>K0117373359</u>
Standard Referenced:	<u>FCC Part 15 Class B</u>	Date:	<u>March 6, 2018</u>

PR075829-22-RE.doc FR0100



Figure A4: Radiated Emissions Test Setup – Right Side



Radiated Emissions, FCC Part 15

Manufacturer:	<u>Election Systems & Software</u>	Project Number:	<u>PR075829</u>
Customer Representative:	<u>Michael Walker</u>	Test Area:	<u>10M #1</u>
Model:	<u>AUO_G150XTN06.0 with Kiosk</u>	S/N:	<u>EV0217390509</u> <u>K0117373359</u>
Standard Referenced:	<u>FCC Part 15 Class B</u>	Date:	<u>March 6, 2018</u>

PR075829-22-RE.doc FR0100



Figure A5: Radiated Emissions Test Setup – Back Side



Radiated Emissions, FCC Part 15

Manufacturer:	<u>Election Systems & Software</u>	Project Number:	<u>PR075829</u>
Customer Representative:	<u>Michael Walker</u>	Test Area:	<u>10M #1</u>
Model:	<u>AUO_G150XTN06.0 with Kiosk</u>	S/N:	<u>EV0217390509</u> <u>K0117373359</u>
Standard Referenced:	<u>FCC Part 15 Class B</u>	Date:	<u>March 6, 2018</u>

PR075829-22-RE.doc FR0100



Figure A6: Radiated Emissions Test Setup – Left Side



Radiated Emissions, FCC Part 15

Manufacturer:	Election Systems & Software	Project Number:	PR075829
Customer Representative:	Michael Walker	Test Area:	10M #1
Model:	AUO_G150XTN06.0 with Kiosk	S/N:	EV0217390509 K0117373359
Standard Referenced:	FCC Part 15 Class B	Date:	March 6, 2018

PR075829-22-RE.doc FR0100

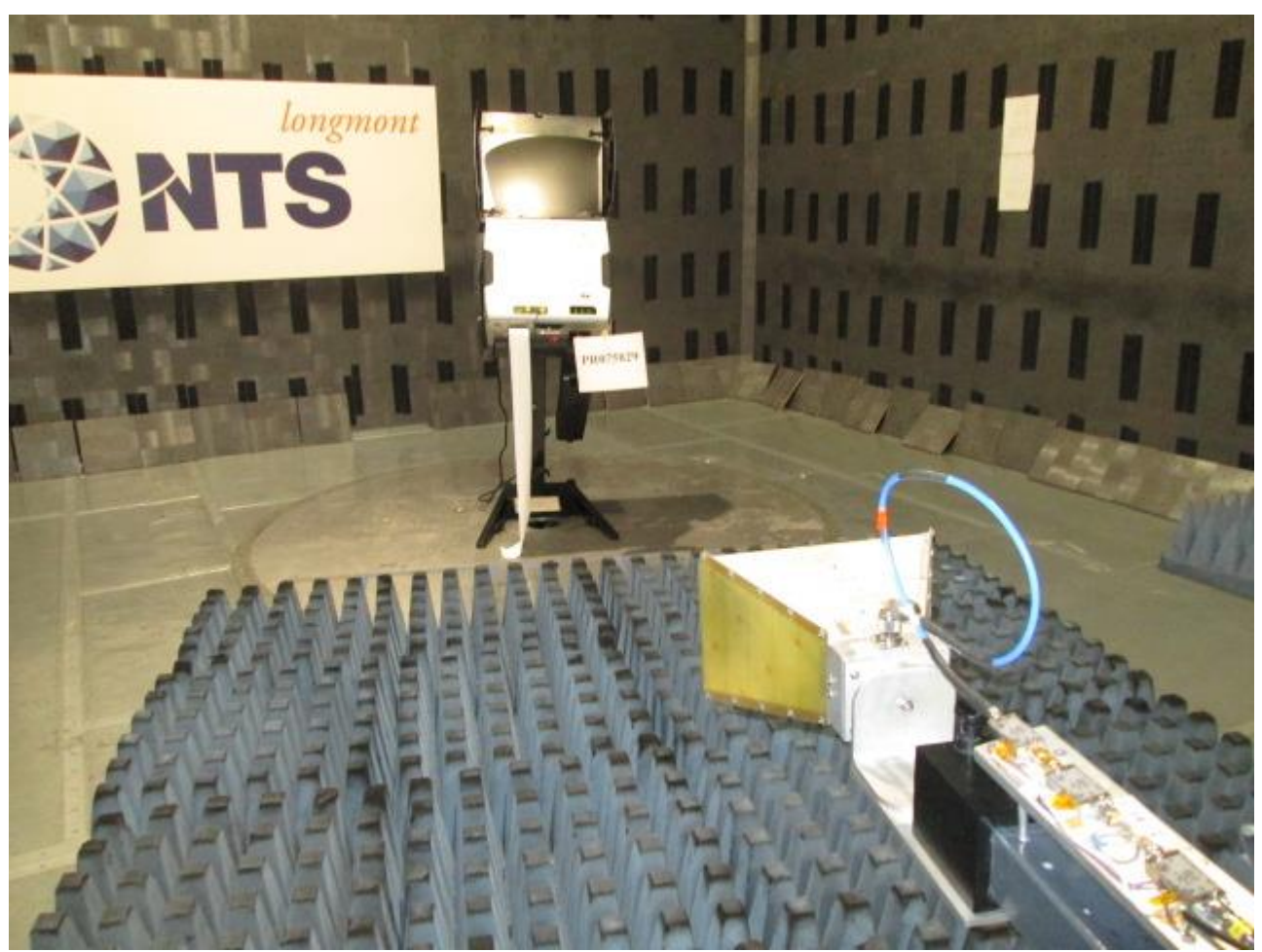


Figure A7: Radiated Emissions Test Setup – Front Side @ 3M



Radiated Emissions, FCC Part 15

Manufacturer:	Election Systems & Software	Project Number:	PR075829
Customer Representative:	Michael Walker	Test Area:	10M #1
Model:	AUO_G150XTN06.0 with Kiosk	S/N:	EV0217390509 K0117373359
Standard Referenced:	FCC Part 15 Class B	Date:	March 6, 2018
PR075829-22-RE.doc			FR0100

Test Equipment List

ID Number	Manufacturer	Model #	Serial #	Description	Cal Date	Cal Due
1030	EMCO	3115	9906-5816	Double-ridged Horn (1 - 18 GHz)	04/05/2017	04/05/2018
1040	Fluke	83-3	69811230	Multimeter/Frequency Meter	06/23/2017	06/23/2018
1045	Hewlett Packard	8566B	2403A08106	Spectrum Analyzer with Display SN 2403A08106	10/12/2017	10/12/2018
1046	Hewlett Packard	8566B	2403A08106	Spectrum Analyzer Display	10/12/2017	10/12/2018
1093	Hewlett Packard	85650A	2811A01231	Quasi-Peak Adapter	10/15/2017	10/15/2018
1219	Mini-Circuits	ZKL-2	062905	Preamp, 10 - 2000 MHz, 30 dB	03/02/2018	03/02/2019
1232	Sunol Sciences	JB1	A071605-2	Bilog Antenna, 30 MHz to 2.0 GHz	06/20/2017	06/20/2018
1233	Sunol Sciences	SC104V	110305-1	Positioning Controller	NA	NA
1234	CIR Enterprises	10m Chamber	001	10m Chamber with 2.5m turntable	04/10/2017	04/10/2018
1238	Sunol Sciences	TWR95-4	110305-3	Antenna Mast	NA	NA
1239	Sunol Sciences	FM2522VS	110305-2	Turn Table, 2.5m Diameter	01/26/2018	01/26/2019
1266	California Instruments	MX15-1	57961	AC Power Source, 0 - 300 VAC / 16 - 819 Hz / 15kVA	NA	NA
1276	Ciao Wireless	CA118-3010	116, 117 and 118	1GHz to 18GHz Preamplifier, 70dB gain nominal	10/09/2017	10/09/2018
1337	Hewlett Packard	85685A	2833A00775	RF Preselector	08/09/2017	08/09/2018
1538	Extech Instruments	445715	Z315812	Hygro-Thermometer	05/09/2017	05/09/2018
1555	Com-Power	CGO - 505	301314	5 MHz Step Comb Generator	NA	NA
1591	EMCI	CEAS	V4.1.1	Commercial Emissions Automation Software - 10 M#1	NA	NA



Radiated Emissions, FCC Part 15

Manufacturer:	Election Systems & Software	Project Number:	PR075829
Customer Representative:	Michael Walker	Test Area:	10M #1
Model:	AUO_G150XTN06.4 with Kiosk	S/N:	EV0217390517 K0115421526
Standard Referenced:	FCC Part 15 Class B	Date:	March 6, 2018 and March 7, 2018
Temperature:	24°C	Humidity:	30%
Input Voltage:	120Vac/60Hz	Pressure:	840 mb
Configuration of Unit:	ExpressVote w/ Kiosk, Counting Ballots		
Test Engineer:	Mike Tidquist		

PR075829-22-RE.doc

FR0100

Type	Frequency (MHz)	Level (dBuV)	Transducer (dB/m)	Gain / Loss (dB)	Final (dBuV/m)	Azm(deg)/Pol/Hgt(m)	Margin: FCC Class B QP (dB)
QP	44.258	38.4	10.7	-31.1	18.0	90/V-Pole/1.00	11.52
QP	119.999	39.0	14.0	-30.8	22.2	312/V-Pole/1.59	10.83
QP	312.004	41.7	13.6	-30.2	25.1	170/H-Pole/2.08	10.40
QP	360.004	43.1	14.9	-30.1	28.0	73/H-Pole/1.82	7.55
QP	500.054	41.7	17.8	-29.6	29.9	325/H-Pole/1.46	5.62
QP	520.059	38.6	18.1	-29.6	27.1	0/H-Pole/1.00	8.43
QP	625.067	39.5	19.1	-29.2	29.4	270/H-Pole/1.15	6.14
QP	840.011	37.4	21.1	-28.1	30.4	285/H-Pole/3.80	5.13



Radiated Emissions, FCC Part 15

Manufacturer:	Election Systems & Software	Project Number:	PR075829
Customer Representative:	Michael Walker	Test Area:	10M #1
Model:	AUO_G150XTN06.4 with Kiosk	S/N:	EV0217390517 K0115421526
Standard Referenced:	FCC Part 15 Class B	Date:	March 6, 2018 and March 7, 2018
Temperature:	24°C	Humidity:	30%
Input Voltage:	120Vac/60Hz	Pressure:	840 mb
Configuration of Unit:	ExpressVote w/ Kiosk, Counting Ballots		
Test Engineer:	Mike Tidquist		

PR075829-22-RE.doc

FR0100

Type	Frequency (MHz)	Level (dBuV)	Transducer (dB/m)	Gain / Loss (dB)	Final (dBuV/m)	Azm(deg)/Pol/Hgt(m)	Margin: FCC Class B >1GHz PK (dB)	Margin: FCC Class B >1GHz AV (dB)
AV	1919.975	79.8	27.1	-70.7	36.2	8/V-Pole/1.00	-	17.77
PK	1919.975	88.5	27.1	-70.7	44.8	8/V-Pole/1.00	29.12	-
AV	3934.317	71.3	32.5	-72.5	31.2	22/V-Pole/1.00	-	22.74
PK	3934.317	83.9	32.5	-72.5	43.8	22/V-Pole/1.00	30.14	-
AV	8388.564	59.2	37.6	-68.6	28.2	4/V-Pole/1.02	-	25.73
PK	8388.564	72.4	37.6	-68.6	41.4	4/V-Pole/1.02	32.58	-
AV	10339.870	56.8	38.7	-66.5	29.0	338/H-Pole/2.49	-	24.99
PK	10339.870	70.5	38.7	-66.5	42.7	338/H-Pole/2.49	31.24	-
AV	12684.924	65.8	39.5	-70.2	35.1	305/H-Pole/1.19	-	18.88
PK	12684.924	77.7	39.5	-70.2	46.9	305/H-Pole/1.19	27.03	-
AV	17997.523	41.5	45.6	-57.6	29.5	291/V-Pole/1.00	-	24.46
PK	17997.523	54.7	45.6	-57.6	42.8	291/V-Pole/1.00	31.21	-

The highest emission measured was at **840.011 MHz**, which was **5.13 dB** below the limit.

- “Type” refers to the type of measurement performed. The type of measurement made is based on the requirements of the particular standard:
 - PK = Peak Measurement: RBW is 120kHz, VBW is 3 MHz
 - QP = Quasi-Peak Measurement: RBW is 120kHz, VBW is 3 MHz, and QP Detection is ENABLED
 - AV = Video Average Measurement: RBW is 1 MHz, VBW is 10 Hz
- The “Final” emissions level is attained by taking the “Level” and adding the “Transducer” factor and the “Gain/Loss” factor. Final measurements are made with the Azimuth, Polarity, Height, and EUT Cables positioned for maximum radiation. If applicable, cables positions are noted in the test log. (Sample Calculation: 49.6 dBuV + 11.4 dB/m – 28.8 dB = 32.2 dBuV/m. **Important Note:** This is a sample calculation only for the purpose of demonstration, and does not reflect data in this report.)
- The “Azm/Pol/Hgt” indicates the turn-table *azimuth*, the antenna *polarity*, and the antenna *height* where the maximum emissions level was measured.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.
- The PRESCAN is a peak measurement and is performed with the RBW set to 120 kHz, VBW set to 3 MHz (30 MHz to 1 GHz), and the RBW set to 1 MHz, VBW set to 100 kHz (> 1 GHz)



Radiated Emissions, FCC Part 15

Manufacturer: Election Systems & Software
Customer Representative: Michael Walker
Model: AUO_G150XTN06.4 with Kiosk
Standard Referenced: FCC Part 15 Class B

Project Number: PR075829
Test Area: 10M #1
S/N: EV0217390517
K0115421526
Date: March 6, 2018 and
March 7, 2018

PR075829-22-RE.doc

FR0100

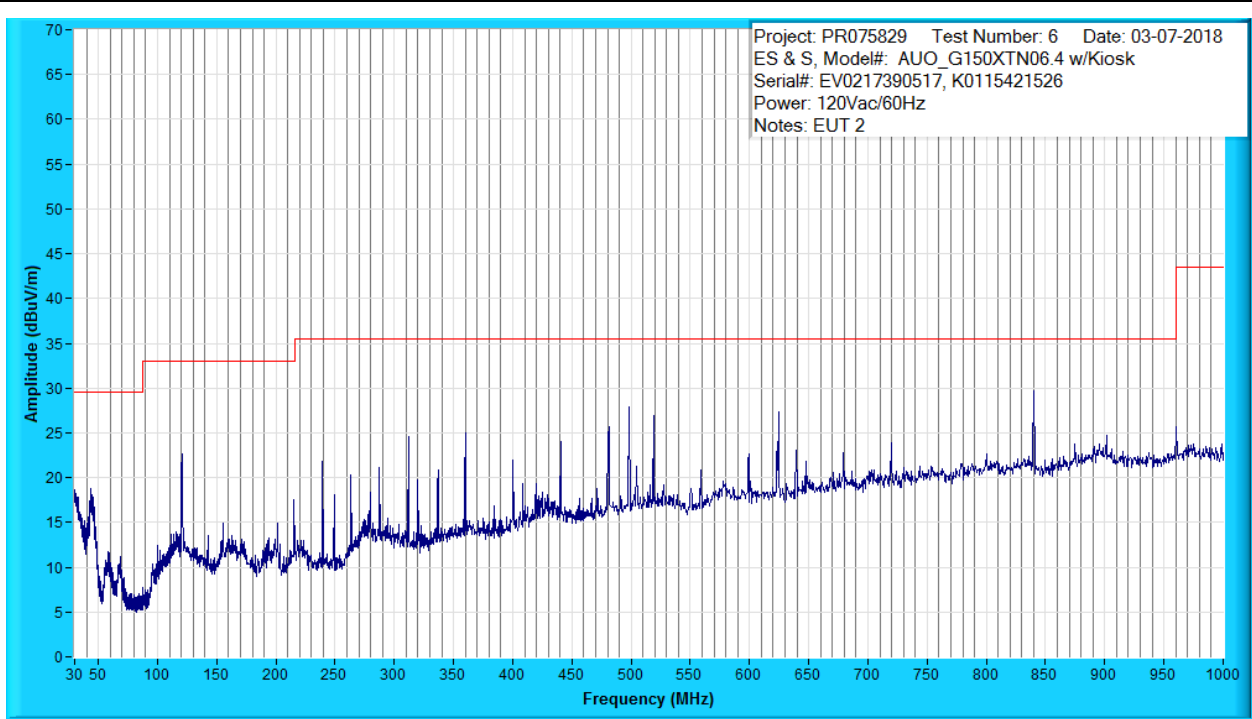


Figure A1: Radiated Emissions Prescan, 30MHz to 1000MHz, Peak Measurements at 10m Distance



Radiated Emissions, FCC Part 15

Manufacturer: Election Systems & Software
Customer Representative: Michael Walker
Model: AUO_G150XTN06.4 with Kiosk
Standard Referenced: FCC Part 15 Class B

Project Number: PR075829
Test Area: 10M #1
S/N: EV0217390517
K0115421526
Date: March 6, 2018 and
March 7, 2018

PR075829-22-RE.doc

FR0100

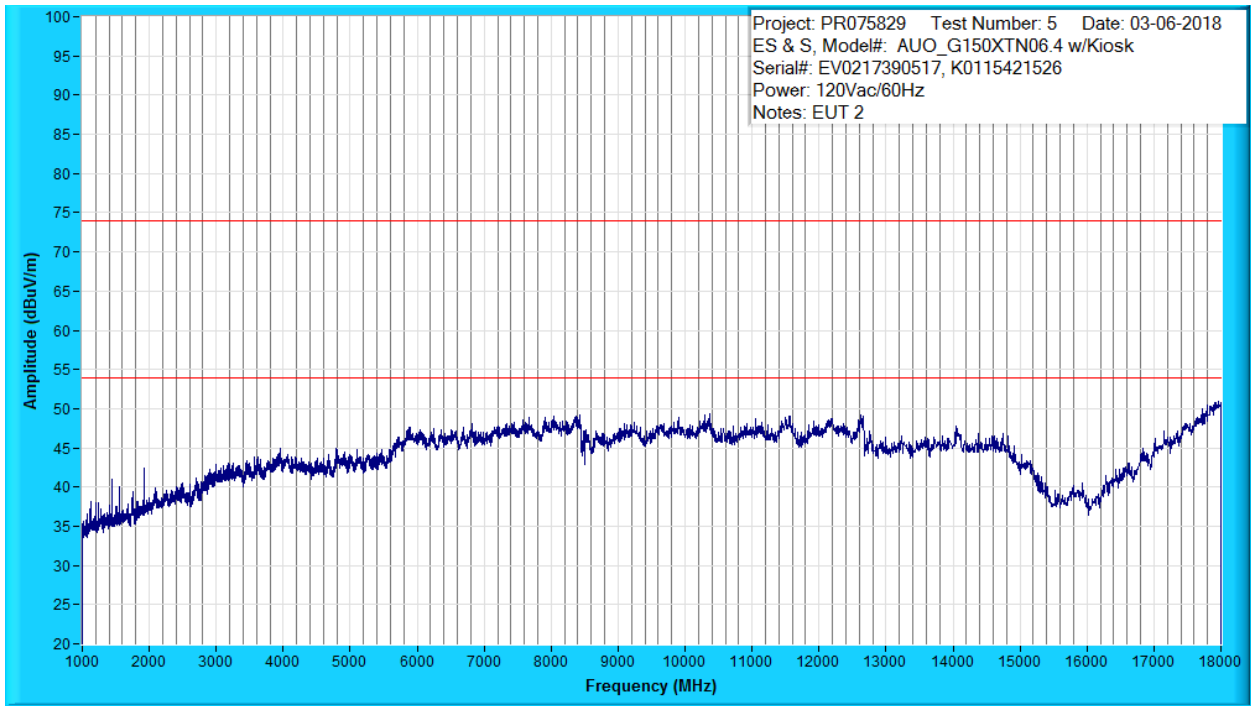


Figure A2: Radiated Emissions Prescan, 1GHz to 18GHz, Peak Measurements at 3m Distance



Radiated Emissions, FCC Part 15

Manufacturer: Election Systems & Software
Customer Representative: Michael Walker
Model: AUO_G150XTN06.4 with Kiosk
Standard Referenced: FCC Part 15 Class B

Project Number: PR075829
Test Area: 10M #1
S/N: EV0217390517
K0115421526
Date: March 6, 2018 and
March 7, 2018

PR075829-22-RE.doc

FR0100



Figure A3: Radiated Emissions Test Setup – Front Side



Radiated Emissions, FCC Part 15

Manufacturer: Election Systems & Software
Customer Representative: Michael Walker
Model: AUO_G150XTN06.4 with Kiosk

Standard Referenced: FCC Part 15 Class B

Project Number: PR075829
Test Area: 10M #1
S/N: EV0217390517
K0115421526
Date: March 6, 2018 and
March 7, 2018

PR075829-22-RE.doc

FR0100



Figure A4: Radiated Emissions Test Setup – Right Side



Radiated Emissions, FCC Part 15

Manufacturer: Election Systems & Software
Customer Representative: Michael Walker
Model: AUO_G150XTN06.4 with Kiosk

Standard Referenced: FCC Part 15 Class B

Project Number: PR075829
Test Area: 10M #1
S/N: EV0217390517
K0115421526
Date: March 6, 2018 and
March 7, 2018

PR075829-22-RE.doc

FR0100



Figure A5: Radiated Emissions Test Setup – Back Side



Radiated Emissions, FCC Part 15

Manufacturer: Election Systems & Software
Customer Representative: Michael Walker
Model: AUO_G150XTN06.4 with Kiosk
Standard Referenced: FCC Part 15 Class B

Project Number: PR075829
Test Area: 10M #1
S/N: EV0217390517
K0115421526
Date: March 6, 2018 and
March 7, 2018

PR075829-22-RE.doc

FR0100



Figure A6: Radiated Emissions Test Setup – Left Side



Radiated Emissions, FCC Part 15

Manufacturer: Election Systems & Software
Customer Representative: Michael Walker
Model: AUO_G150XTN06.4 with Kiosk
Standard Referenced: FCC Part 15 Class B

Project Number: PR075829
Test Area: 10M #1
S/N: EV0217390517
K0115421526
Date: March 6, 2018 and
March 7, 2018

PR075829-22-RE.doc

FR0100

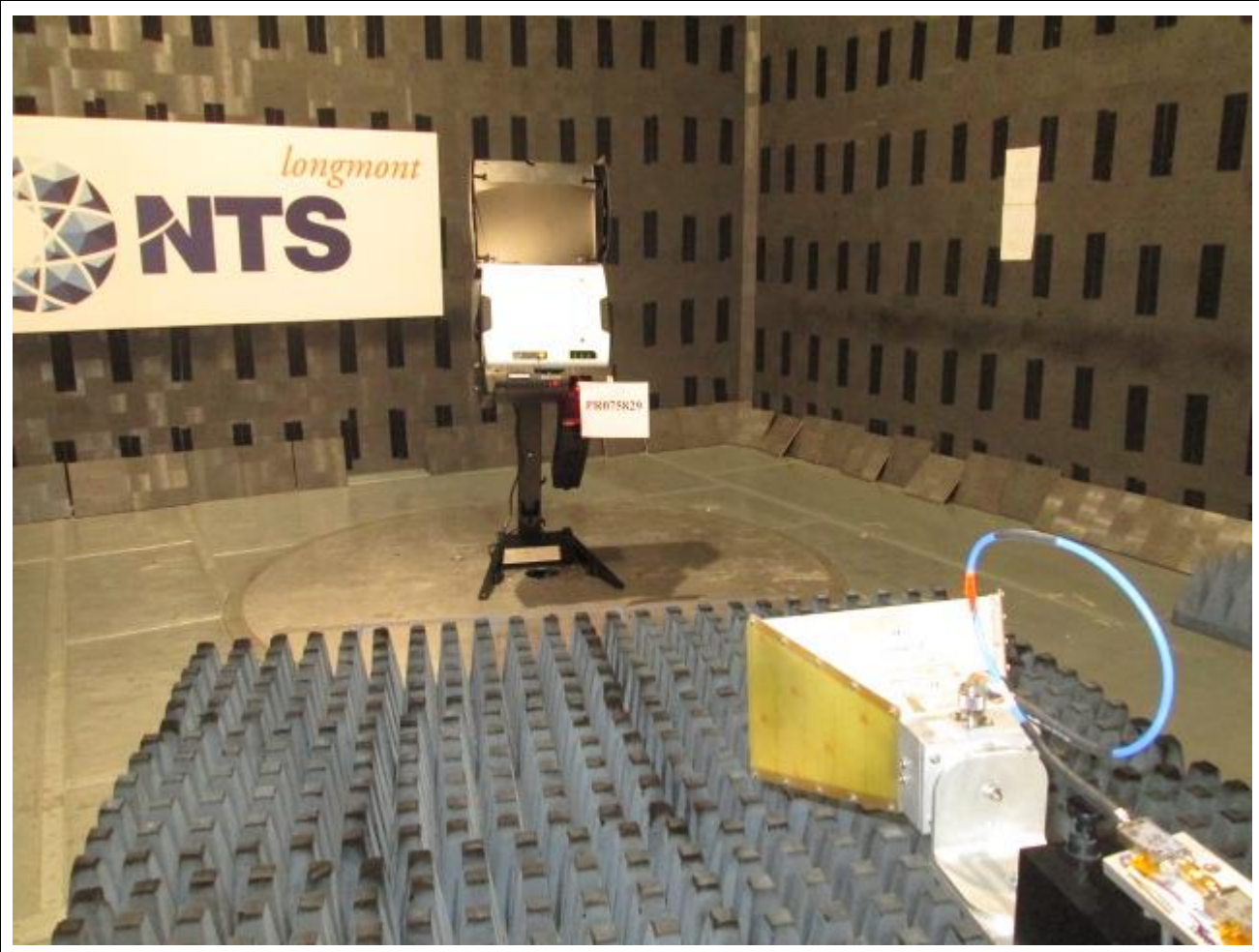


Figure A7: Radiated Emissions Test Setup – Front Side @ 3M



Radiated Emissions, FCC Part 15

Manufacturer: Election Systems & Software
 Customer Representative: Michael Walker
 Model: AUO_G150XTN06.4 with Kiosk

Project Number: PR075829
 Test Area: 10M #1
 S/N: EV0217390517
K0115421526
 Date: March 6, 2018 and
March 7, 2018

Standard Referenced: FCC Part 15 Class B

PR075829-22-RE.doc

FR0100

Test Equipment List

ID Number	Manufacturer	Model #	Serial #	Description	Cal Date	Cal Due
1030	EMCO	3115	9906-5816	Double-ridged Horn (1 - 18 GHz)	04/05/2017	04/05/2018
1040	Fluke	83-3	69811230	Multimeter/Frequency Meter	06/23/2017	06/23/2018
1045	Hewlett Packard	8566B	2403A08106	Spectrum Analyzer with Display SN 2403A08106	10/12/2017	10/12/2018
1046	Hewlett Packard	8566B	2403A08106	Spectrum Analyzer Display	10/12/2017	10/12/2018
1093	Hewlett Packard	85650A	2811A01231	Quasi-Peak Adapter	10/15/2017	10/15/2018
1219	Mini-Circuits	ZKL-2	062905	Preamp, 10 - 2000 MHz, 30 dB	03/02/2018	03/02/2019
1232	Sunol Sciences	JB1	A071605-2	Bilog Antenna, 30 MHz to 2.0 GHz	06/20/2017	06/20/2018
1233	Sunol Sciences	SC104V	110305-1	Positioning Controller	NA	NA
1234	CIR Enterprises	10m Chamber	001	10m Chamber with 2.5m turntable	04/10/2017	04/10/2018
1238	Sunol Sciences	TWR95-4	110305-3	Antenna Mast	NA	NA
1239	Sunol Sciences	FM2522VS	110305-2	Turn Table, 2.5m Diameter	01/26/2018	01/26/2019
1266	California Instruments	MX15-1	57961	AC Power Source, 0 - 300 VAC / 16 - 819 Hz / 15kVA	NA	NA
1276	Ciao Wireless	CA118-3010	116, 117 and 118	1GHz to 18GHz Preamplifier, 70dB gain nominal	10/09/2017	10/09/2018
1337	Hewlett Packard	85685A	2833A00775	RF Preselector	08/09/2017	08/09/2018
1538	Extech Instruments	445715	Z315812	Hygro-Thermometer	05/09/2017	05/09/2018
1555	Com-Power	CGO - 505	301314	5 MHz Step Comb Generator	NA	NA
1591	EMCI	CEAS	V4.1.1	Commercial Emissions Automation Software - 10 M#1	NA	NA



Radiated Emissions, FCC Part 15

Manufacturer:	Election Systems & Software	Project Number:	PR075829
Customer Representative:	Michael Walker	Test Area:	10M #1
Model:	AUO_G150XTN06.8 with Kiosk	S/N:	EV0217390587 K0115421501
Standard Referenced:	FCC Part 15 Class B	Date:	March 7, 2018
Temperature:	24°C	Humidity:	30%
Input Voltage:	120Vac/60Hz	Pressure:	840 mb
Configuration of Unit:	ExpressVote w/ Kiosk, Counting Ballots		
Test Engineer:	Mike Tidquist		

PR075829-22-RE.doc

FR0100

Type	Frequency (MHz)	Level (dBuV)	Transducer (dB/m)	Gain / Loss (dB)	Final (dBuV/m)	Azm(deg)/Pol/Hgt(m)	Margin: FCC Class B QP (dB)
QP	47.552	38.7	8.9	-31.0	16.6	4/V-Pole/1.25	12.98
QP	119.997	36.9	14.0	-30.8	20.1	8/V-Pole/2.23	12.90
QP	320.007	46.1	13.9	-30.1	29.9	38/H-Pole/2.12	5.67
QP	359.993	43.4	14.9	-30.1	28.2	294/H-Pole/1.88	7.32
QP	440.010	44.2	16.9	-29.8	31.3	340/H-Pole/1.59	4.20
QP	480.011	47.5	17.5	-29.7	35.3	3/H-Pole/1.31	0.28
QP	500.053	43.2	17.8	-29.6	31.4	35/H-Pole/1.44	4.13
QP	840.018	36.7	21.1	-28.1	29.7	94/H-Pole/1.00	5.81



Radiated Emissions, FCC Part 15

Manufacturer:	Election Systems & Software	Project Number:	PR075829
Customer Representative:	Michael Walker	Test Area:	10M #1
Model:	AUO_G150XTN06.8 with Kiosk	S/N:	EV0217390587 K0115421501
Standard Referenced:	FCC Part 15 Class B	Date:	March 7, 2018
Temperature:	24°C	Humidity:	30%
Input Voltage:	120Vac/60Hz	Pressure:	840 mb
Configuration of Unit:	ExpressVote w/ Kiosk, Counting Ballots		
Test Engineer:	Mike Tidquist		

PR075829-22-RE.doc

FR0100

Type	Frequency (MHz)	Level (dBuV)	Transducer (dB/m)	Gain / Loss (dB)	Final (dBuV/m)	Azm(deg)/Pol/Hgt(m)	Margin: FCC Class B >1GHz PK (dB)	Margin: FCC Class B >1GHz AV (dB)
AV	1919.967	82.6	27.1	-70.7	38.9	359/V-Pole/1.00	-	15.02
PK	1919.967	88.3	27.1	-70.7	44.6	359/V-Pole/1.00	29.32	-
AV	4067.712	71.9	32.6	-73.5	30.9	45/V-Pole/1.00	-	23.00
PK	4067.712	86.1	32.6	-73.5	45.1	45/V-Pole/1.00	28.80	-
AV	7580.355	64.9	37.0	-71.9	30.0	250/H-Pole/1.01	-	23.95
PK	7580.355	77.3	37.0	-71.9	42.4	250/H-Pole/1.01	31.55	-
AV	10310.376	56.5	38.8	-66.8	28.4	292/H-Pole/1.05	-	25.52
PK	10310.376	68.7	38.8	-66.8	40.7	292/H-Pole/1.05	33.27	-
AV	12678.190	64.2	39.5	-70.2	33.4	45/V-Pole/2.50	-	20.55
PK	12678.190	78.8	39.5	-70.2	48.0	45/V-Pole/2.50	25.95	-
AV	17989.240	41.1	45.6	-57.6	29.1	180/H-Pole/1.00	-	24.80
PK	17989.240	54.1	45.6	-57.6	42.1	180/H-Pole/1.00	31.85	-

The highest emission measured was at **480.011 MHz**, which was **0.28 dB** below the limit.

- “Type” refers to the type of measurement performed. The type of measurement made is based on the requirements of the particular standard:
 - PK = Peak Measurement: RBW is 120kHz, VBW is 3 MHz
 - QP = Quasi-Peak Measurement: RBW is 120kHz, VBW is 3 MHz, and QP Detection is ENABLED
 - AV = Video Average Measurement: RBW is 1 MHz, VBW is 10 Hz
- The “Final” emissions level is attained by taking the “Level” and adding the “Transducer” factor and the “Gain/Loss” factor. Final measurements are made with the Azimuth, Polarity, Height, and EUT Cables positioned for maximum radiation. If applicable, cables positions are noted in the test log. (Sample Calculation: 49.6 dBuV + 11.4 dB/m – 28.8 dB = 32.2 dBuV/m. **Important Note:** This is a sample calculation only for the purpose of demonstration, and does not reflect data in this report.)
- The “Azm/Pol/Hgt” indicates the turn-table *azimuth*, the antenna *polarity*, and the antenna *height* where the maximum emissions level was measured.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.
- The PRESCAN is a peak measurement and is performed with the RBW set to 120 kHz, VBW set to 3 MHz (30 MHz to 1 GHz), and the RBW set to 1 MHz, VBW set to 100 kHz (> 1 GHz)



Radiated Emissions, FCC Part 15

Manufacturer:	Election Systems & Software	Project Number:	PR075829
Customer Representative:	Michael Walker	Test Area:	10M #1
Model:	AUO_G150XTN06.8 with Kiosk	S/N:	EV0217390587 K0115421501
Standard Referenced:	FCC Part 15 Class B	Date:	March 7, 2018

PR075829-22-RE.doc FR0100

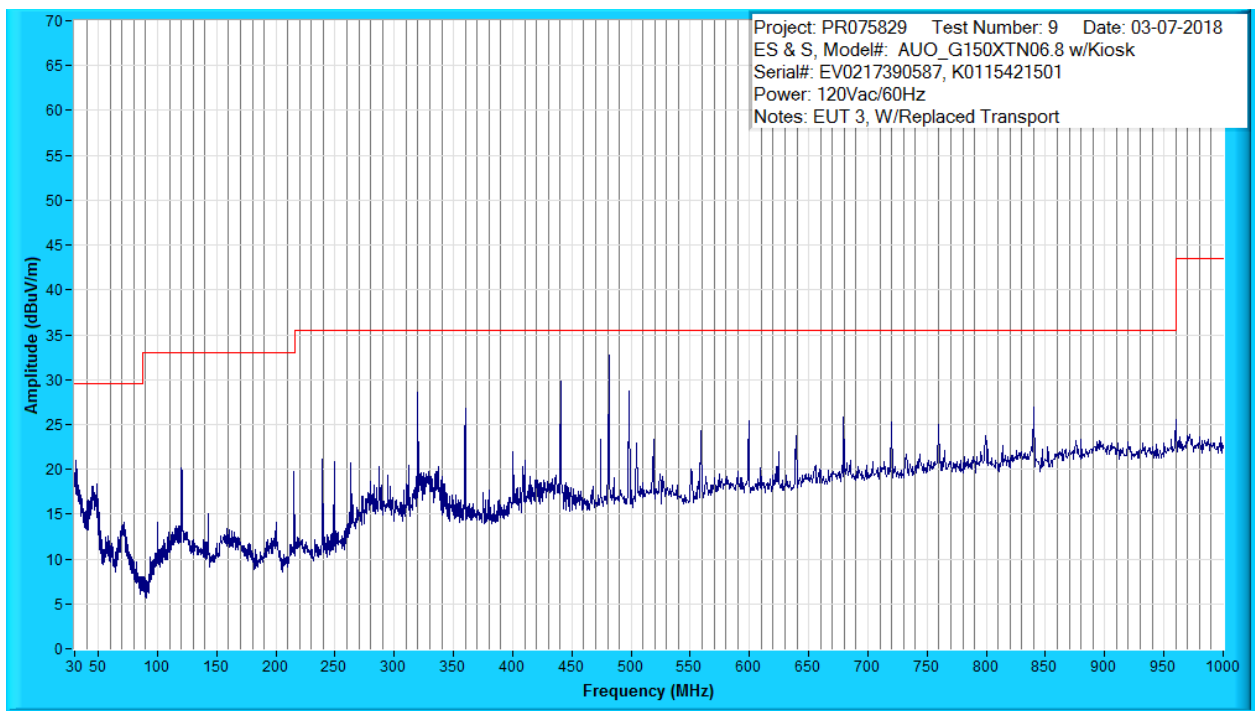


Figure A1: Radiated Emissions Prescan, 30MHz to 1000MHz, Peak Measurements at 10m Distance



Radiated Emissions, FCC Part 15

Manufacturer:	Election Systems & Software	Project Number:	PR075829
Customer Representative:	Michael Walker	Test Area:	10M #1
Model:	AUO_G150XTN06.8 with Kiosk	S/N:	EV0217390587 K0115421501
Standard Referenced:	FCC Part 15 Class B	Date:	March 7, 2018

PR075829-22-RE.doc FR0100

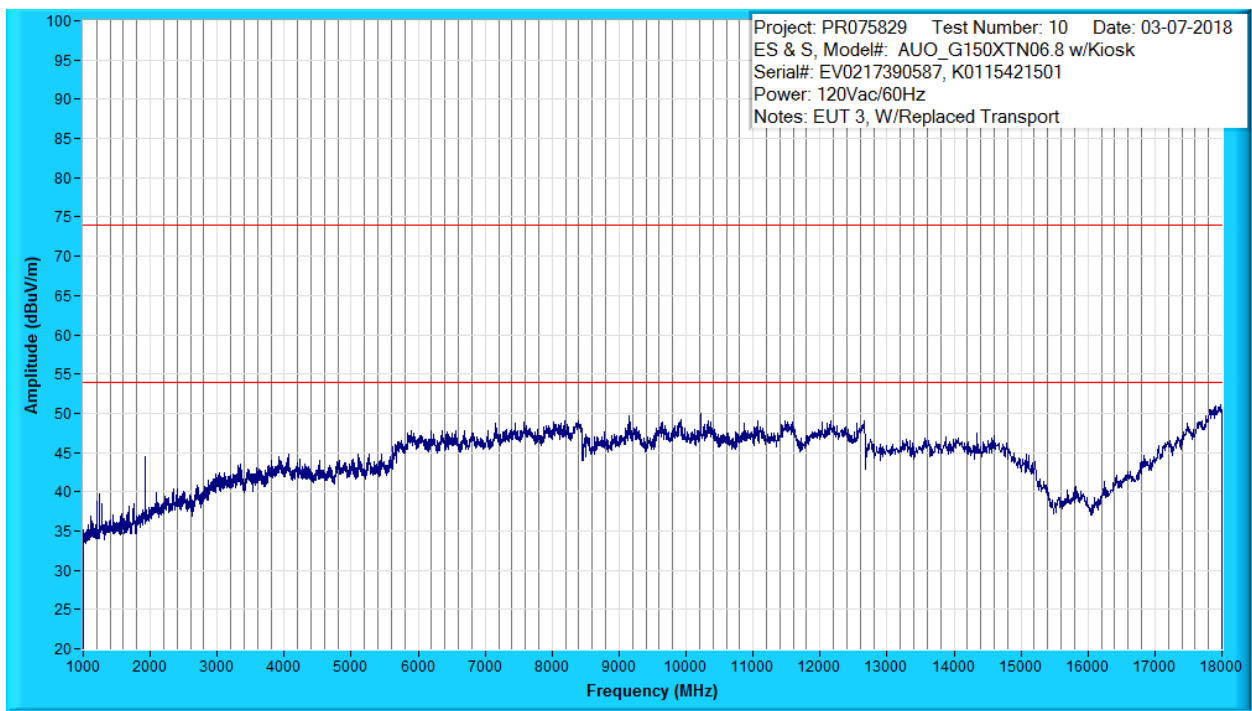


Figure A2: Radiated Emissions Prescan, 1GHz to 18GHz, Peak Measurements at 3m Distance



Radiated Emissions, FCC Part 15

Manufacturer:	<u>Election Systems & Software</u>	Project Number:	<u>PR075829</u>
Customer Representative:	<u>Michael Walker</u>	Test Area:	<u>10M #1</u>
Model:	<u>AUO_G150XTN06.8 with Kiosk</u>	S/N:	<u>EV0217390587</u> <u>K0115421501</u>
Standard Referenced:	<u>FCC Part 15 Class B</u>	Date:	<u>March 7, 2018</u>

PR075829-22-RE.doc FR0100



Figure A3: Radiated Emissions Test Setup – Front Side



Radiated Emissions, FCC Part 15

Manufacturer:	<u>Election Systems & Software</u>	Project Number:	<u>PR075829</u>
Customer Representative:	<u>Michael Walker</u>	Test Area:	<u>10M #1</u>
Model:	<u>AUO_G150XTN06.8 with Kiosk</u>	S/N:	<u>EV0217390587</u> <u>K0115421501</u>
Standard Referenced:	<u>FCC Part 15 Class B</u>	Date:	<u>March 7, 2018</u>

PR075829-22-RE.doc FR0100



Figure A4: Radiated Emissions Test Setup – Right Side



Radiated Emissions, FCC Part 15

Manufacturer:	<u>Election Systems & Software</u>	Project Number:	<u>PR075829</u>
Customer Representative:	<u>Michael Walker</u>	Test Area:	<u>10M #1</u>
Model:	<u>AUO_G150XTN06.8 with Kiosk</u>	S/N:	<u>EV0217390587</u> <u>K0115421501</u>
Standard Referenced:	<u>FCC Part 15 Class B</u>	Date:	<u>March 7, 2018</u>

PR075829-22-RE.doc FR0100



Figure A5: Radiated Emissions Test Setup – Back Side



Radiated Emissions, FCC Part 15

Manufacturer:	<u>Election Systems & Software</u>	Project Number:	<u>PR075829</u>
Customer Representative:	<u>Michael Walker</u>	Test Area:	<u>10M #1</u>
Model:	<u>AUO_G150XTN06.8 with Kiosk</u>	S/N:	<u>EV0217390587</u> <u>K0115421501</u>
Standard Referenced:	<u>FCC Part 15 Class B</u>	Date:	<u>March 7, 2018</u>

PR075829-22-RE.doc FR0100



Figure A6: Radiated Emissions Test Setup – Left Side



Radiated Emissions, FCC Part 15

Manufacturer:	Election Systems & Software	Project Number:	PR075829
Customer Representative:	Michael Walker	Test Area:	10M #1
Model:	AUO_G150XTN06.8 with Kiosk	S/N:	EV0217390587 K0115421501
Standard Referenced:	FCC Part 15 Class B	Date:	March 7, 2018

PR075829-22-RE.doc FR0100

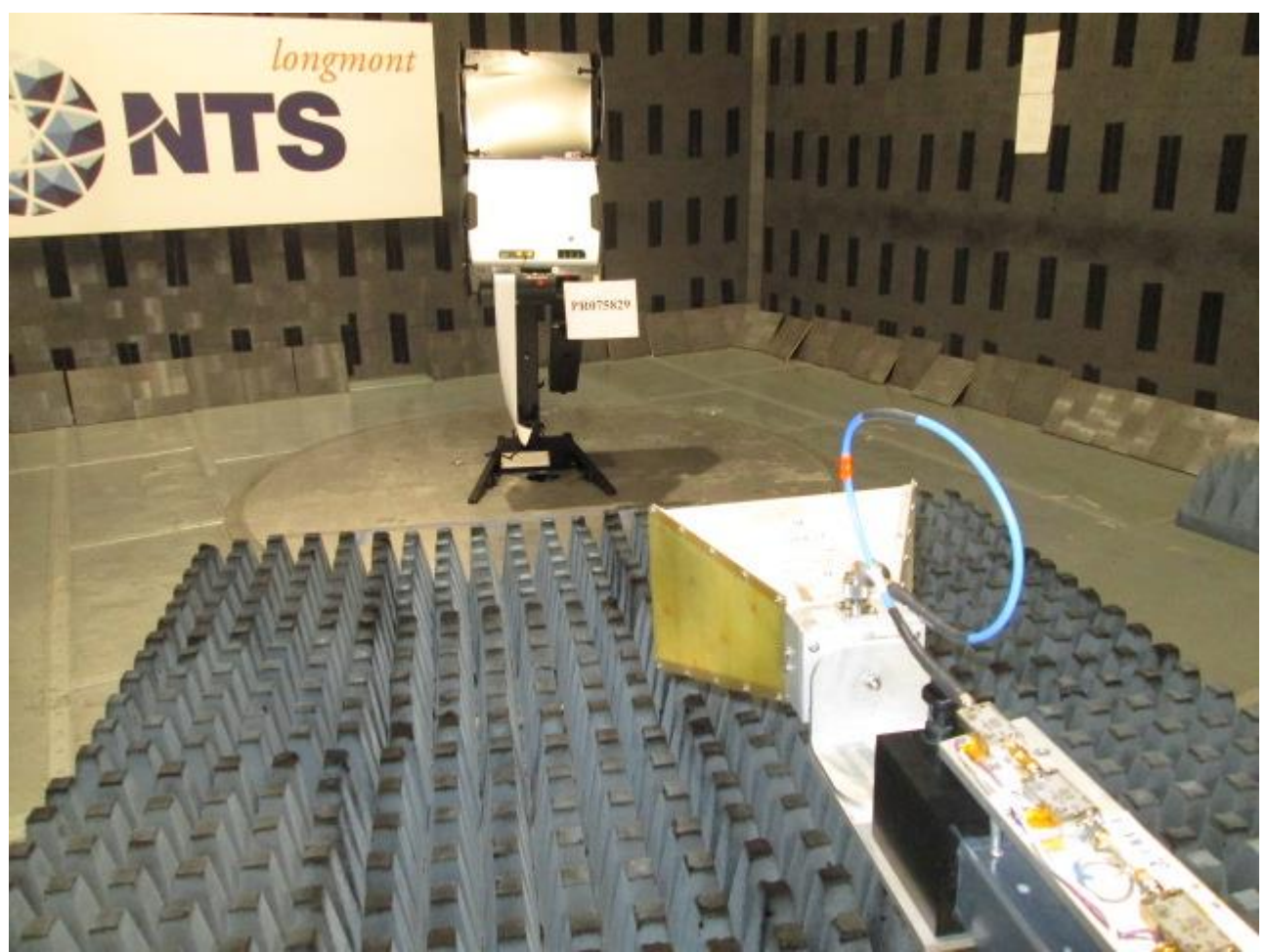


Figure A7: Radiated Emissions Test Setup – Front Side @ 3M



Radiated Emissions, FCC Part 15

Manufacturer:	Election Systems & Software	Project Number:	PR075829
Customer Representative:	Michael Walker	Test Area:	10M #1
Model:	AUO_G150XTN06.8 with Kiosk	S/N:	EV0217390587 K0115421501
Standard Referenced:	FCC Part 15 Class B	Date:	March 7, 2018
PR075829-22-RE.doc		FR0100	

Test Equipment List

ID Number	Manufacturer	Model #	Serial #	Description	Cal Date	Cal Due
1030	EMCO	3115	9906-5816	Double-ridged Horn (1 - 18 GHz)	04/05/2017	04/05/2018
1040	Fluke	83-3	69811230	Multimeter/Frequency Meter	06/23/2017	06/23/2018
1045	Hewlett Packard	8566B	2403A08106	Spectrum Analyzer with Display SN 2403A08106	10/12/2017	10/12/2018
1046	Hewlett Packard	8566B	2403A08106	Spectrum Analyzer Display	10/12/2017	10/12/2018
1093	Hewlett Packard	85650A	2811A01231	Quasi-Peak Adapter	10/15/2017	10/15/2018
1219	Mini-Circuits	ZKL-2	062905	Preamp, 10 - 2000 MHz, 30 dB	03/02/2018	03/02/2019
1232	Sunol Sciences	JB1	A071605-2	Bilog Antenna, 30 MHz to 2.0 GHz	06/20/2017	06/20/2018
1233	Sunol Sciences	SC104V	110305-1	Positioning Controller	NA	NA
1234	CIR Enterprises	10m Chamber	001	10m Chamber with 2.5m turntable	04/10/2017	04/10/2018
1238	Sunol Sciences	TWR95-4	110305-3	Antenna Mast	NA	NA
1239	Sunol Sciences	FM2522VS	110305-2	Turn Table, 2.5m Diameter	01/26/2018	01/26/2019
1266	California Instruments	MX15-1	57961	AC Power Source, 0 - 300 VAC / 16 - 819 Hz / 15kVA	NA	NA
1276	Ciao Wireless	CA118-3010	116, 117 and 118	1GHz to 18GHz Preamplifier, 70dB gain nominal	10/09/2017	10/09/2018
1337	Hewlett Packard	85685A	2833A00775	RF Preselector	08/09/2017	08/09/2018
1538	Extech Instruments	445715	Z315812	Hygro-Thermometer	05/09/2017	05/09/2018
1555	Com-Power	CGO - 505	301314	5 MHz Step Comb Generator	NA	NA
1591	EMCI	CEAS	V4.1.1	Commercial Emissions Automation Software - 10 M#1	NA	NA

APPENDIX B
Conducted Emissions Test Data



Conducted Emissions, FCC Part 15

Manufacturer:	Election Systems & Software	Project Number:	PR075829
Customer Representative:	Michael Walker	Test Area:	10M #1
Model:	AUO_G150XTN06.0 with Kiosk	S/N:	EV0217390509 K0117373359
Standard Referenced:	FCC Part 15 Class B	Date:	March 6, 2018
Temperature:	24°C	Humidity:	30%
Input Voltage:	120Vac/60Hz	Pressure:	840 mb
Configuration of Unit:	ExpressVote w/ Kiosk, Counting Ballots		
Test Engineer:	Mike Tidquist		

PR075829-22-CE.doc

FR0100

Type	Frequency (MHz)	Level (dBuV)	Transducer (dB)	Gain / Loss (dB)	Final (dBuV)	Test Point	Margin: FCC Class B AV (dB)	Margin: FCC Class B QP (dB)
AV	0.175	14.2	-1.2	16.1	29.1	Line 1	26.19	-
QP	0.175	33.7	-1.2	16.1	48.5	Line 1	-	16.74
AV	0.226	13.2	-0.9	16.1	28.4	Line 1	25.40	-
QP	0.226	30.9	-0.9	16.1	46.1	Line 1	-	17.75
AV	0.366	14.3	-0.6	16.1	29.8	Line 1	20.03	-
QP	0.366	17.4	-0.6	16.1	32.9	Line 1	-	26.89
AV	0.638	12.3	-0.4	16.1	28.0	Line 1	17.96	-
QP	0.638	28.8	-0.4	16.1	44.5	Line 1	-	11.47
AV	0.715	8.9	-0.4	16.1	24.7	Line 1	21.33	-
QP	0.715	22.8	-0.4	16.1	38.6	Line 1	-	17.45
AV	1.051	9.8	-0.3	16.1	25.5	Line 1	20.47	-
QP	1.051	15.6	-0.3	16.1	31.3	Line 1	-	24.66
AV	23.714	2.6	-0.4	16.0	18.2	Line 1	31.77	-
QP	23.714	9.4	-0.4	16.0	25.0	Line 1	-	34.97
AV	0.151	20.4	-1.4	16.0	35.0	Neutral	20.98	-
QP	0.151	44.4	-1.4	16.0	59.0	Neutral	-	6.98
AV	0.175	17.9	-1.2	16.0	32.7	Neutral	22.62	-
QP	0.175	40.1	-1.2	16.0	55.0	Neutral	-	10.32
AV	0.209	17.8	-1.0	16.1	32.8	Neutral	21.47	-
QP	0.209	41.5	-1.0	16.1	56.6	Neutral	-	7.72
AV	0.293	11.4	-0.7	16.1	26.8	Neutral	25.14	-
QP	0.293	37.1	-0.7	16.1	52.5	Neutral	-	9.41
AV	0.638	15.7	-0.4	16.1	31.4	Neutral	14.61	-
QP	0.638	31.3	-0.4	16.1	47.0	Neutral	-	9.00
AV	1.363	2.4	-0.3	16.1	18.2	Neutral	27.83	-
QP	1.363	8.8	-0.3	16.1	24.6	Neutral	-	31.39
AV	23.170	2.2	-0.4	16.0	17.8	Neutral	32.17	-
QP	23.170	8.3	-0.4	16.0	23.9	Neutral	-	36.07

The highest emission measured was at **0.151 MHz**, which was **6.98 dB** below the limit.

- “Type” refers to the type of measurement performed. The type of measurement made is based on the requirements of the particular standard:
 - PK = Peak Measurement: RBW is 9 kHz, VBW is 3 MHz
 - QP = Quasi-Peak Measurement: RBW is 9 kHz, VBW is 3 MHz, and QP Detection is ENABLED
 - AV = Video Average Measurement: RBW is 9 kHz, VBW is 10 Hz
- The “Final” emissions level is attained by taking the “Level” and adding the “Transducer” factor and the “Gain/Loss” factor. (Sample Calculation: $40.2 \text{ dBuV} + 1.6 \text{ dB} + 16.3 \text{ dB} = 58.1 \text{ dBuV}$. **Important Note:** This is a sample calculation only for the purpose of demonstration, and does not reflect data in this report.)
- The “TestPoint” indicates which AC or DC input power line or which I/O cable the measurement was made on.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.
- The PRESCAN is a peak measurement and is performed with the RBW set to 9 kHz, and the VBW set to 3 MHz



Conducted Emissions, FCC Part 15

Manufacturer: Election Systems & Software
Customer Representative: Michael Walker
Model: AUO_G150XTN06.0 with Kiosk
Standard Referenced: FCC Part 15 Class B

Project Number: PR075829
Test Area: 10M #1
S/N: EV0217390509
K0117373359
Date: March 6, 2018

PR075829-22-CE.doc

FR0100

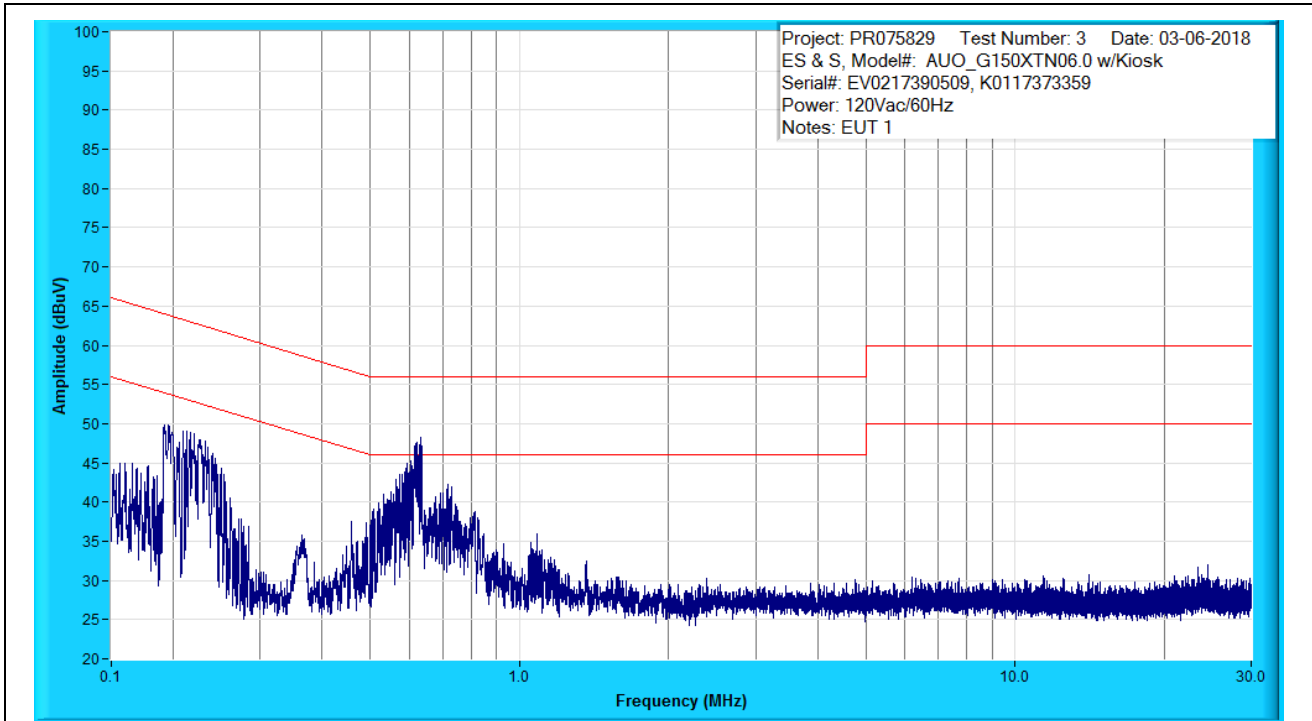


Figure B1: Conducted Emissions Prescan, Line 1, 0.150MHz to 30MHz, Peak Measurements



Conducted Emissions, FCC Part 15

Manufacturer:	Election Systems & Software	Project Number:	PR075829
Customer Representative:	Michael Walker	Test Area:	10M #1
Model:	AUO_G150XTN06.0 with Kiosk	S/N:	EV0217390509 K0117373359
Standard Referenced:	FCC Part 15 Class B	Date:	March 6, 2018

PR075829-22-CE.doc FR0100

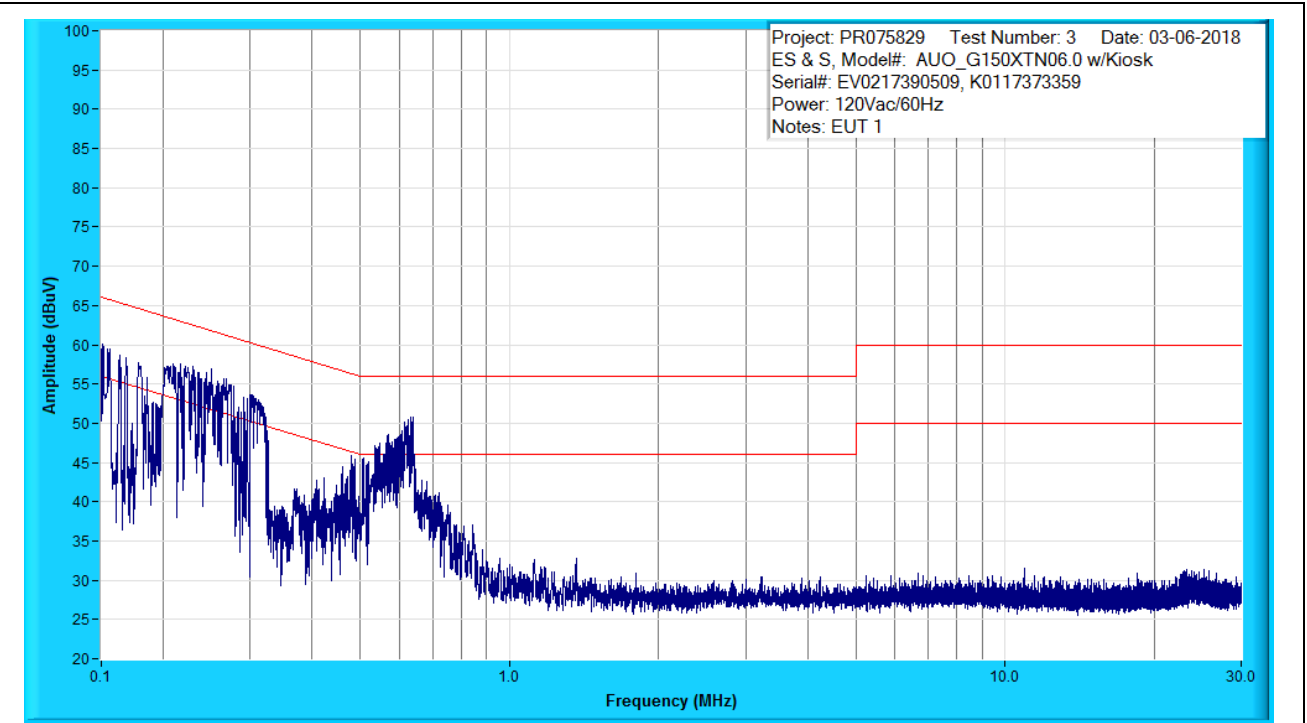


Figure B2: Conducted Emissions Prescan, Neutral, 0.150MHz to 30MHz, Peak Measurements



Conducted Emissions, FCC Part 15

Manufacturer:	<u>Election Systems & Software</u>	Project Number:	<u>PR075829</u>
Customer Representative:	<u>Michael Walker</u>	Test Area:	<u>10M #1</u>
Model:	<u>AUO_G150XTN06.0 with Kiosk</u>	S/N:	<u>EV0217390509</u> <u>K0117373359</u>
Standard Referenced:	<u>FCC Part 15 Class B</u>	Date:	<u>March 6, 2018</u>

PR075829-22-CE.doc FR0100



Figure B3: Conducted Emissions Test Setup – Front Side



Conducted Emissions, FCC Part 15

Manufacturer:	<u>Election Systems & Software</u>	Project Number:	<u>PR075829</u>
Customer Representative:	<u>Michael Walker</u>	Test Area:	<u>10M #1</u>
Model:	<u>AUO_G150XTN06.0 with Kiosk</u>	S/N:	<u>EV0217390509</u> <u>K0117373359</u>
Standard Referenced:	<u>FCC Part 15 Class B</u>	Date:	<u>March 6, 2018</u>

PR075829-22-CE.doc FR0100



Figure B4: Conducted Emissions Test Setup – Right Side



Conducted Emissions, FCC Part 15

Manufacturer:	<u>Election Systems & Software</u>	Project Number:	<u>PR075829</u>
Customer Representative:	<u>Michael Walker</u>	Test Area:	<u>10M #1</u>
Model:	<u>AUO_G150XTN06.0 with Kiosk</u>	S/N:	<u>EV0217390509</u> <u>K0117373359</u>
Standard Referenced:	<u>FCC Part 15 Class B</u>	Date:	<u>March 6, 2018</u>

PR075829-22-CE.doc FR0100



Figure B5: Conducted Emissions Test Setup – Back Side



Conducted Emissions, FCC Part 15

Manufacturer:	<u>Election Systems & Software</u>	Project Number:	<u>PR075829</u>
Customer Representative:	<u>Michael Walker</u>	Test Area:	<u>10M #1</u>
Model:	<u>AUO_G150XTN06.0 with Kiosk</u>	S/N:	<u>EV0217390509</u> <u>K0117373359</u>
Standard Referenced:	<u>FCC Part 15 Class B</u>	Date:	<u>March 6, 2018</u>

PR075829-22-CE.doc FR0100



Figure B6: Conducted Emissions Test Setup – Left Side



Conducted Emissions, FCC Part 15

Manufacturer:	Election Systems & Software	Project Number:	PR075829
Customer Representative:	Michael Walker	Test Area:	10M #1
Model:	AUO_G150XTN06.0 with Kiosk	S/N:	EV0217390509 K0117373359
Standard Referenced:	FCC Part 15 Class B	Date:	March 6, 2018
PR075829-22-CE.doc			FR0100

Test Equipment List

ID Number	Manufacturer	Model #	Serial #	Description	Cal Date	Cal Due
1017	Pacific Power	TMX 140	0256	4 kVA, 50 Hz Power Source	NA	NA
1040	Fluke	83-3	69811230	Multimeter/Frequency Meter	06/23/2017	06/23/2018
1045	Hewlett Packard	8566B	2403A08106	Spectrum Analyzer with Display SN 2403A08106	10/12/2017	10/12/2018
1046	Hewlett Packard	8566B	2403A08106	Spectrum Analyzer Display	10/12/2017	10/12/2018
1093	Hewlett Packard	85650A	2811A01231	Quasi-Peak Adapter	10/15/2017	10/15/2018
1200	Agilent Technology	11947A	3107A03807	Transient Limiter, 9 kHz to 200 MHz	11/27/2017	11/27/2018
1213	Solar	7930-100	885210	High Pass Filter, fc: 100kHz, -100dB @ 33kHz	02/07/2018	02/07/2019
1332	Com-Power	CGC-510	311636	Conducted Comb Generator	NA	NA
1337	Hewlett Packard	85685A	2833A00775	RF Preselector	08/09/2017	08/09/2018
1538	Extech Instruments	445715	Z315812	Hygro-Thermometer	05/09/2017	05/09/2018
1559	EMCI	EMCI, 2 Phase LISN	13	150 kHz to 30 MHz, 277 Vac/400 Vdc, 50/60 Hz, 16 A	02/22/2018	02/22/2019
1591	EMCI	CEAS	V4.1.1	Commercial Emissions Automation Software - 10 M#1	NA	NA



Conducted Emissions, FCC Part 15

Manufacturer:	Election Systems & Software	Project Number:	PR075829
Customer Representative:	Michael Walker	Test Area:	10M #1
Model:	AUO_G150XTN06.4 with Kiosk	S/N:	EV0217390517 K0115421526
Standard Referenced:	FCC Part 15 Class B	Date:	March 6, 2018
Temperature:	24°C	Humidity:	30%
Input Voltage:	120Vac/60Hz	Pressure:	840 mb
Configuration of Unit:	ExpressVote w/ Kiosk, Counting Ballots		
Test Engineer:	Mike Tidquist		

PR075829-22-CE.doc

FR0100

Type	Frequency (MHz)	Level (dBuV)	Transducer (dB)	Gain / Loss (dB)	Final (dBuV)	Test Point	Margin: FCC Class B AV (dB)	Margin: FCC Class B QP (dB)
AV	0.219	22.4	-0.9	16.1	37.5	Line 1	16.53	-
QP	0.219	32.2	-0.9	16.1	47.3	Line 1	-	16.69
AV	0.331	29.1	-0.7	16.1	44.5	Line 1	6.29	-
QP	0.331	31.2	-0.7	16.1	46.6	Line 1	-	14.18
AV	0.555	28.8	-0.4	16.1	44.4	Line 1	1.59	-
QP	0.555	35.2	-0.4	16.1	50.9	Line 1	-	5.15
AV	0.771	23.2	-0.4	16.2	39.0	Line 1	6.96	-
QP	0.771	29.5	-0.4	16.2	45.3	Line 1	-	10.72
AV	1.001	9.8	-0.3	16.1	25.6	Line 1	20.44	-
QP	1.001	18.0	-0.3	16.1	33.7	Line 1	-	22.27
AV	7.330	1.3	-0.3	16.1	17.1	Line 1	32.91	-
QP	7.330	10.1	-0.3	16.1	25.9	Line 1	-	34.13
AV	28.912	1.3	-0.5	16.3	17.1	Line 1	32.87	-
QP	28.912	7.6	-0.5	16.3	23.4	Line 1	-	36.58
AV	0.211	21.1	-1.0	16.1	36.2	Neutral	18.11	-
QP	0.211	32.6	-1.0	16.1	47.7	Neutral	-	16.54
AV	0.336	25.6	-0.7	16.1	41.0	Neutral	9.68	-
QP	0.336	33.3	-0.7	16.1	48.8	Neutral	-	11.92
AV	0.427	11.6	-0.5	16.1	27.1	Neutral	20.98	-
QP	0.427	29.2	-0.5	16.1	44.8	Neutral	-	13.30
AV	0.555	29.9	-0.4	16.1	45.6	Neutral	0.44	-
QP	0.555	36.2	-0.4	16.1	51.9	Neutral	-	4.15
AV	0.729	16.8	-0.4	16.1	32.5	Neutral	13.46	-
QP	0.729	30.5	-0.4	16.1	46.3	Neutral	-	9.72
AV	0.976	7.3	-0.3	16.1	23.1	Neutral	22.95	-
QP	0.976	12.7	-0.3	16.1	28.5	Neutral	-	27.51
AV	29.562	1.2	-0.5	16.4	17.1	Neutral	32.86	-
QP	29.562	7.2	-0.5	16.4	23.1	Neutral	-	36.86

The highest emission measured was at **0.555 MHz**, which was **0.44 dB** below the limit.

- “Type” refers to the type of measurement performed. The type of measurement made is based on the requirements of the particular standard:
 - PK = Peak Measurement: RBW is 9 kHz, VBW is 3 MHz
 - QP = Quasi-Peak Measurement: RBW is 9 kHz, VBW is 3 MHz, and QP Detection is ENABLED
 - AV = Video Average Measurement: RBW is 9 kHz, VBW is 10 Hz
- The “Final” emissions level is attained by taking the “Level” and adding the “Transducer” factor and the “Gain/Loss” factor. (Sample Calculation: $40.2 \text{ dBuV} + 1.6 \text{ dB} + 16.3 \text{ dB} = 58.1 \text{ dBuV}$. **Important Note:** This is a sample calculation only for the purpose of demonstration, and does not reflect data in this report.)
- The “TestPoint” indicates which AC or DC input power line or which I/O cable the measurement was made on.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.
- The PRESCAN is a peak measurement and is performed with the RBW set to 9 kHz, and the VBW set to 3 MHz



Conducted Emissions, FCC Part 15

Manufacturer: Election Systems & Software
Customer Representative: Michael Walker
Model: AUO_G150XTN06.4 with Kiosk
Standard Referenced: FCC Part 15 Class B

Project Number: PR075829
Test Area: 10M #1
S/N: EV0217390517
K0115421526
Date: March 6, 2018

PR075829-22-CE.doc

FR0100

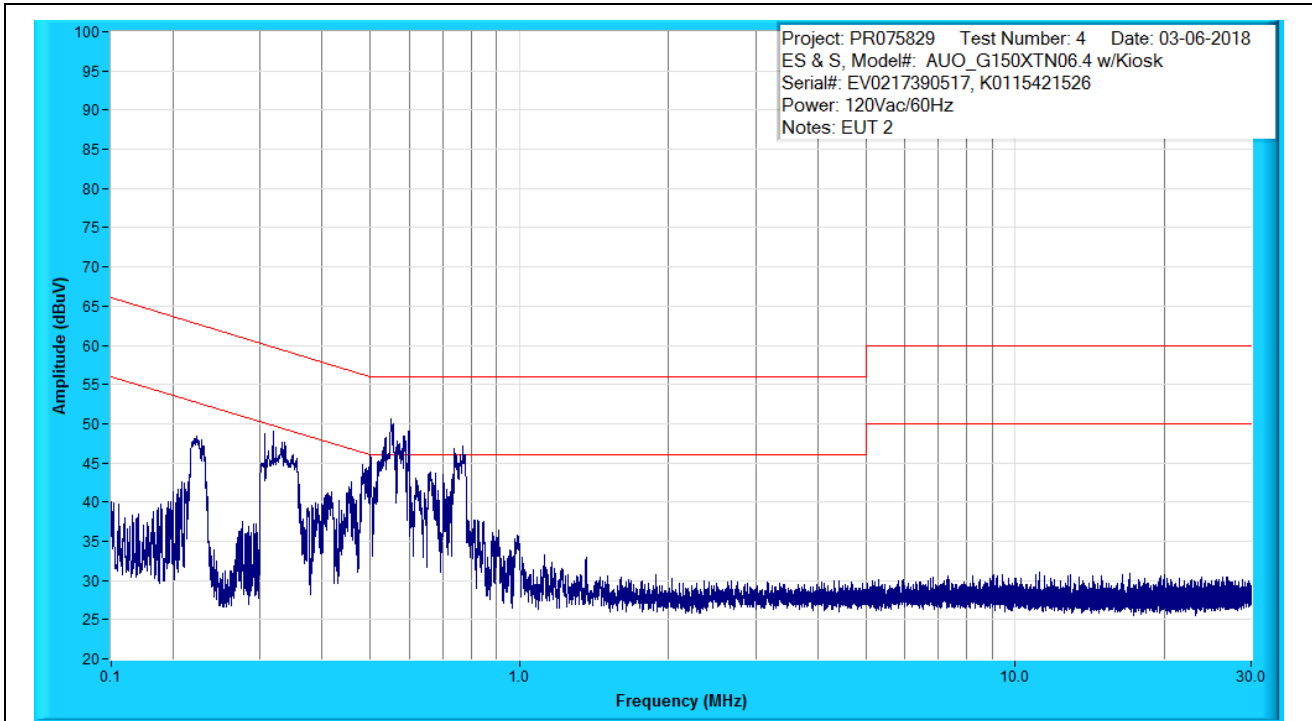


Figure B1: Conducted Emissions Prescan, Line 1, 0.150MHz to 30MHz, Peak Measurements



Conducted Emissions, FCC Part 15

Manufacturer:	Election Systems & Software	Project Number:	PR075829
Customer Representative:	Michael Walker	Test Area:	10M #1
Model:	AUO_G150XTN06.4 with Kiosk	S/N:	EV0217390517 K0115421526
Standard Referenced:	FCC Part 15 Class B	Date:	March 6, 2018

PR075829-22-CE.doc FR0100

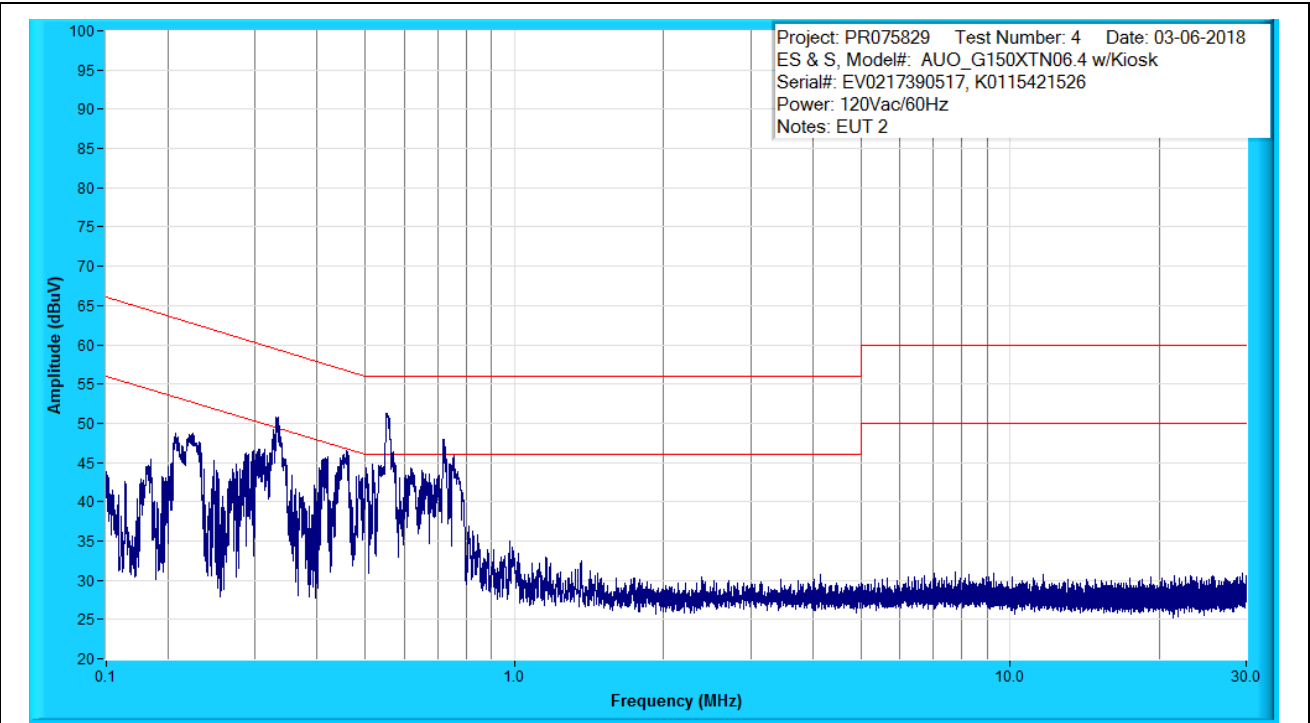


Figure B2: Conducted Emissions Prescan, Neutral, 0.150MHz to 30MHz, Peak Measurements



Conducted Emissions, FCC Part 15

Manufacturer:	<u>Election Systems & Software</u>	Project Number:	<u>PR075829</u>
Customer Representative:	<u>Michael Walker</u>	Test Area:	<u>10M #1</u>
Model:	<u>AUO_G150XTN06.4 with Kiosk</u>	S/N:	<u>EV0217390517</u> <u>K0115421526</u>
Standard Referenced:	<u>FCC Part 15 Class B</u>	Date:	<u>March 6, 2018</u>

PR075829-22-CE.doc FR0100



Figure B3: Conducted Emissions



Conducted Emissions, FCC Part 15

Manufacturer:	<u>Election Systems & Software</u>	Project Number:	<u>PR075829</u>
Customer Representative:	<u>Michael Walker</u>	Test Area:	<u>10M #1</u>
Model:	<u>AUO_G150XTN06.4 with Kiosk</u>	S/N:	<u>EV0217390517</u> <u>K0115421526</u>
Standard Referenced:	<u>FCC Part 15 Class B</u>	Date:	<u>March 6, 2018</u>

PR075829-22-CE.doc FR0100



Figure B4: Conducted Emissions



Conducted Emissions, FCC Part 15

Manufacturer:	<u>Election Systems & Software</u>	Project Number:	<u>PR075829</u>
Customer Representative:	<u>Michael Walker</u>	Test Area:	<u>10M #1</u>
Model:	<u>AUO_G150XTN06.4 with Kiosk</u>	S/N:	<u>EV0217390517</u> <u>K0115421526</u>
Standard Referenced:	<u>FCC Part 15 Class B</u>	Date:	<u>March 6, 2018</u>

PR075829-22-CE.doc FR0100



Figure B5: Conducted Emissions



Conducted Emissions, FCC Part 15

Manufacturer:	<u>Election Systems & Software</u>	Project Number:	<u>PR075829</u>
Customer Representative:	<u>Michael Walker</u>	Test Area:	<u>10M #1</u>
Model:	<u>AUO_G150XTN06.4 with Kiosk</u>	S/N:	<u>EV0217390517</u> <u>K0115421526</u>
Standard Referenced:	<u>FCC Part 15 Class B</u>	Date:	<u>March 6, 2018</u>

PR075829-22-CE.doc FR0100



Figure B6: Conducted Emissions



Conducted Emissions, FCC Part 15

Manufacturer:	Election Systems & Software	Project Number:	PR075829
Customer Representative:	Michael Walker	Test Area:	10M #1
Model:	AUO_G150XTN06.4 with Kiosk	S/N:	EV0217390517 K0115421526
Standard Referenced:	FCC Part 15 Class B	Date:	March 6, 2018
PR075829-22-CE.doc			FR0100

Test Equipment List

ID Number	Manufacturer	Model #	Serial #	Description	Cal Date	Cal Due
1017	Pacific Power	TMX 140	0256	4 kVA, 50 Hz Power Source	NA	NA
1040	Fluke	83-3	69811230	Multimeter/Frequency Meter	06/23/2017	06/23/2018
1045	Hewlett Packard	8566B	2403A08106	Spectrum Analyzer with Display SN 2403A08106	10/12/2017	10/12/2018
1046	Hewlett Packard	8566B	2403A08106	Spectrum Analyzer Display	10/12/2017	10/12/2018
1093	Hewlett Packard	85650A	2811A01231	Quasi-Peak Adapter	10/15/2017	10/15/2018
1200	Agilent Technology	11947A	3107A03807	Transient Limiter, 9 kHz to 200 MHz	11/27/2017	11/27/2018
1213	Solar	7930-100	885210	High Pass Filter, fc: 100kHz, -100dB @ 33kHz	02/07/2018	02/07/2019
1332	Com-Power	CGC-510	311636	Conducted Comb Generator	NA	NA
1337	Hewlett Packard	85685A	2833A00775	RF Preselector	08/09/2017	08/09/2018
1538	Extech Instruments	445715	Z315812	Hygro-Thermometer	05/09/2017	05/09/2018
1559	EMCI	EMCI, 2 Phase LISN	13	150 kHz to 30 MHz, 277 Vac/400 Vdc, 50/60 Hz, 16 A	02/22/2018	02/22/2019
1591	EMCI	CEAS	V4.1.1	Commercial Emissions Automation Software - 10 M#1	NA	NA



Conducted Emissions, FCC Part 15

Manufacturer:	Election Systems & Software	Project Number:	PR075829
Customer Representative:	Michael Walker	Test Area:	10M #1
Model:	AUO_G150XTN06.8 with Kiosk	S/N:	EV0217390587 K0115421501
Standard Referenced:	FCC Part 15 Class B	Date:	March 13, 2018
Temperature:	24°C	Humidity:	30%
Input Voltage:	120Vac/60Hz	Pressure:	840 mb
Configuration of Unit:	ExpressVote w/ Kiosk, Counting Ballots		
Test Engineer:	Mike Tidquist		

PR075829-22-CE.doc

FR0100

Type	Frequency (MHz)	Level (dBuV)	Transducer (dB)	Gain / Loss (dB)	Final (dBuV)	Test Point	Margin: FCC Class B AV (dB)	Margin: FCC Class B QP (dB)
AV	0.154	13.8	-1.3	16.0	28.5	Line 1	27.36	-
QP	0.154	31.4	-1.3	16.0	46.1	Line 1	-	19.80
AV	0.196	11.7	-1.1	16.1	26.7	Line 1	28.04	-
QP	0.196	26.4	-1.1	16.1	41.4	Line 1	-	23.33
AV	0.326	28.1	-0.7	16.1	43.6	Line 1	7.40	-
QP	0.326	29.3	-0.7	16.1	44.7	Line 1	-	16.23
AV	0.550	19.6	-0.4	16.1	35.3	Line 1	10.74	-
QP	0.550	28.7	-0.4	16.1	44.4	Line 1	-	11.63
AV	0.697	15.8	-0.4	16.1	31.5	Line 1	14.50	-
QP	0.697	30.2	-0.4	16.1	45.9	Line 1	-	10.08
AV	0.970	8.3	-0.4	16.1	24.0	Line 1	21.95	-
QP	0.970	15.0	-0.4	16.1	30.8	Line 1	-	25.22
AV	26.700	1.2	-0.4	16.2	17.0	Line 1	33.04	-
QP	26.700	7.4	-0.4	16.2	23.2	Line 1	-	36.83
AV	0.224	20.8	-0.9	16.1	36.0	Neutral	17.92	-
QP	0.224	30.9	-0.9	16.1	46.1	Neutral	-	17.79
AV	0.328	25.4	-0.7	16.1	40.8	Neutral	10.10	-
QP	0.328	29.2	-0.7	16.1	44.6	Neutral	-	16.31
AV	0.540	26.9	-0.4	16.1	42.6	Neutral	3.44	-
QP	0.540	30.0	-0.4	16.1	45.7	Neutral	-	10.31
AV	0.723	16.9	-0.4	16.1	32.6	Neutral	13.42	-
QP	0.723	28.9	-0.4	16.1	44.6	Neutral	-	11.36
AV	0.968	8.1	-0.4	16.1	23.8	Neutral	22.15	-
QP	0.968	15.5	-0.4	16.1	31.3	Neutral	-	24.72
AV	6.680	1.2	-0.3	16.1	17.0	Neutral	32.99	-
QP	6.680	10.3	-0.3	16.1	26.1	Neutral	-	33.93

The highest emission measured was at **0.540 MHz**, which was **3.44 dB** below the limit.

- “Type” refers to the type of measurement performed. The type of measurement made is based on the requirements of the particular standard:
 - PK = Peak Measurement: RBW is 9 kHz, VBW is 3 MHz
 - QP = Quasi-Peak Measurement: RBW is 9 kHz, VBW is 3 MHz, and QP Detection is ENABLED
 - AV = Video Average Measurement: RBW is 9 kHz, VBW is 10 Hz
- The “Final” emissions level is attained by taking the “Level” and adding the “Transducer” factor and the “Gain/Loss” factor. (Sample Calculation: $40.2 \text{ dBuV} + 1.6 \text{ dB} + 16.3 \text{ dB} = 58.1 \text{ dBuV}$. **Important Note:** This is a sample calculation only for the purpose of demonstration, and does not reflect data in this report.)
- The “TestPoint” indicates which AC or DC input power line or which I/O cable the measurement was made on.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.
- The PRESCAN is a peak measurement and is performed with the RBW set to 9 kHz, and the VBW set to 3 MHz



Conducted Emissions, FCC Part 15

Manufacturer: Election Systems & Software
Customer Representative: Michael Walker
Model: AUO_G150XTN06.8 with Kiosk
Standard Referenced: FCC Part 15 Class B

Project Number: PR075829
Test Area: 10M #1
S/N: EV0217390587
K0115421501
Date: March 13, 2018

PR075829-22-CE.doc

FR0100

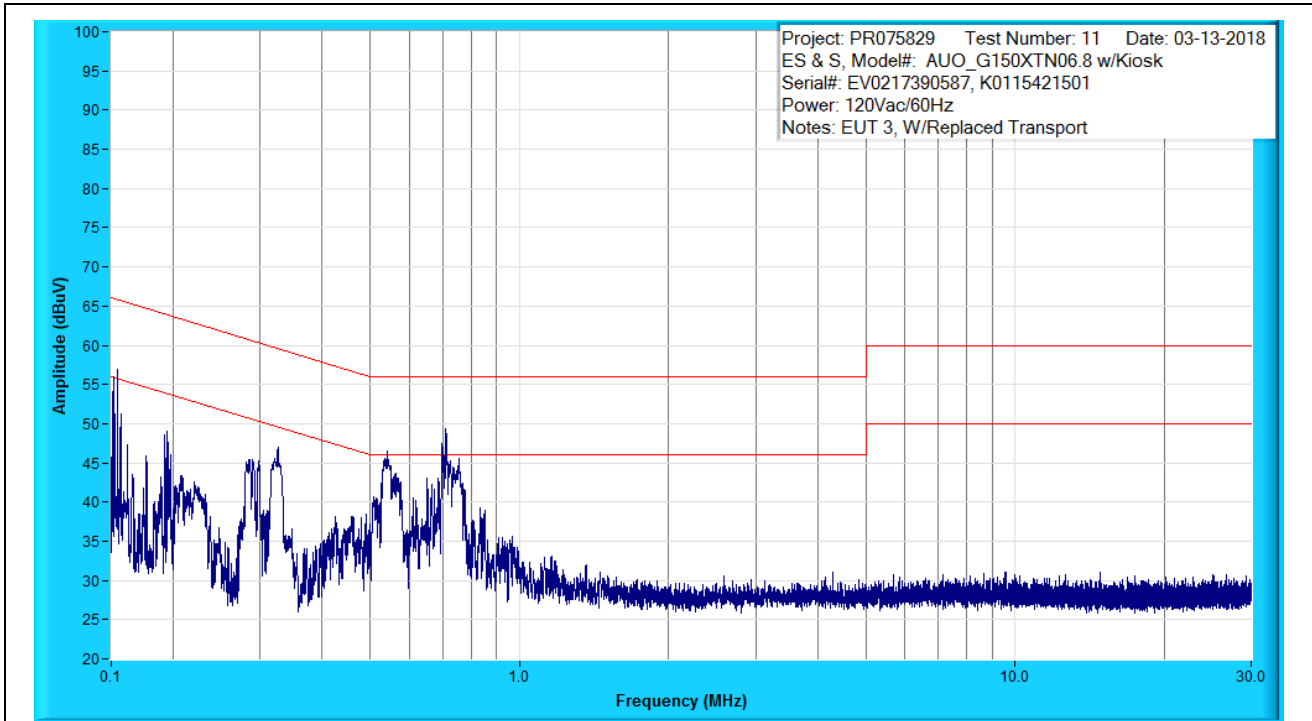


Figure B1: Conducted Emissions Prescan, Line 1, 0.150MHz to 30MHz, Peak Measurements



Conducted Emissions, FCC Part 15

Manufacturer:	Election Systems & Software	Project Number:	PR075829
Customer Representative:	Michael Walker	Test Area:	10M #1
Model:	AUO_G150XTN06.8 with Kiosk	S/N:	EV0217390587 K0115421501
Standard Referenced:	FCC Part 15 Class B	Date:	March 13, 2018

PR075829-22-CE.doc FR0100

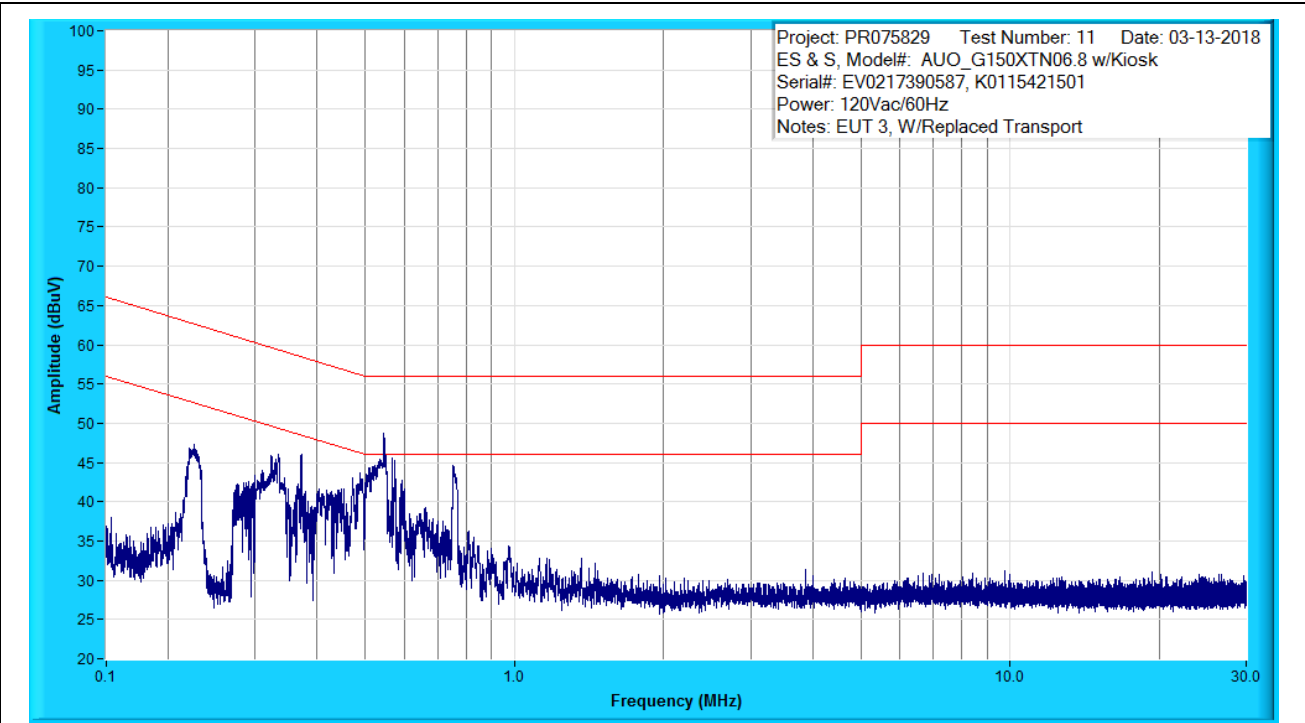


Figure B2: Conducted Emissions Prescan, Neutral, 0.150MHz to 30MHz, Peak Measurements



Conducted Emissions, FCC Part 15

Manufacturer:	<u>Election Systems & Software</u>	Project Number:	<u>PR075829</u>
Customer Representative:	<u>Michael Walker</u>	Test Area:	<u>10M #1</u>
Model:	<u>AUO_G150XTN06.8 with Kiosk</u>	S/N:	<u>EV0217390587</u> <u>K0115421501</u>
Standard Referenced:	<u>FCC Part 15 Class B</u>	Date:	<u>March 13, 2018</u>

PR075829-22-CE.doc FR0100



Figure B3: Conducted Emissions Test Setup – Front Side



Conducted Emissions, FCC Part 15

Manufacturer:	<u>Election Systems & Software</u>	Project Number:	<u>PR075829</u>
Customer Representative:	<u>Michael Walker</u>	Test Area:	<u>10M #1</u>
Model:	<u>AUO_G150XTN06.8 with Kiosk</u>	S/N:	<u>EV0217390587</u> <u>K0115421501</u>
Standard Referenced:	<u>FCC Part 15 Class B</u>	Date:	<u>March 13, 2018</u>

PR075829-22-CE.doc FR0100



Figure B4: Conducted Emissions Test Setup – Right Side



Conducted Emissions, FCC Part 15

Manufacturer:	<u>Election Systems & Software</u>	Project Number:	<u>PR075829</u>
Customer Representative:	<u>Michael Walker</u>	Test Area:	<u>10M #1</u>
Model:	<u>AUO_G150XTN06.8 with Kiosk</u>	S/N:	<u>EV0217390587</u> <u>K0115421501</u>
Standard Referenced:	<u>FCC Part 15 Class B</u>	Date:	<u>March 13, 2018</u>

PR075829-22-CE.doc FR0100



Figure B5: Conducted Emissions Test Setup – Back Side



Conducted Emissions, FCC Part 15

Manufacturer:	<u>Election Systems & Software</u>	Project Number:	<u>PR075829</u>
Customer Representative:	<u>Michael Walker</u>	Test Area:	<u>10M #1</u>
Model:	<u>AUO_G150XTN06.8 with Kiosk</u>	S/N:	<u>EV0217390587</u> <u>K0115421501</u>
Standard Referenced:	<u>FCC Part 15 Class B</u>	Date:	<u>March 13, 2018</u>

PR075829-22-CE.doc FR0100



Figure B6: Conducted Emissions Test Setup – Left Side



Conducted Emissions, FCC Part 15

Manufacturer:	Election Systems & Software	Project Number:	PR075829
Customer Representative:	Michael Walker	Test Area:	10M #1
Model:	AUO_G150XTN06.8 with Kiosk	S/N:	EV0217390587 K0115421501
Standard Referenced:	FCC Part 15 Class B	Date:	March 13, 2018
PR075829-22-CE.doc			FR0100

Test Equipment List

ID Number	Manufacturer	Model #	Serial #	Description	Cal Date	Cal Due
1017	Pacific Power	TMX 140	0256	4 kVA, 50 Hz Power Source	NA	NA
1040	Fluke	83-3	69811230	Multimeter/Frequency Meter	06/23/2017	06/23/2018
1045	Hewlett Packard	8566B	2403A08106	Spectrum Analyzer with Display SN 2403A08106	10/12/2017	10/12/2018
1046	Hewlett Packard	8566B	2403A08106	Spectrum Analyzer Display	10/12/2017	10/12/2018
1093	Hewlett Packard	85650A	2811A01231	Quasi-Peak Adapter	10/15/2017	10/15/2018
1200	Agilent Technology	11947A	3107A03807	Transient Limiter, 9 kHz to 200 MHz	11/27/2017	11/27/2018
1213	Solar	7930-100	885210	High Pass Filter, fc: 100kHz, -100dB @ 33kHz	02/07/2018	02/07/2019
1332	Com-Power	CGC-510	311636	Conducted Comb Generator	NA	NA
1337	Hewlett Packard	85685A	2833A00775	RF Preselector	08/09/2017	08/09/2018
1538	Extech Instruments	445715	Z315812	Hygro-Thermometer	05/09/2017	05/09/2018
1559	EMCI	EMCI, 2 Phase LISN	13	150 kHz to 30 MHz, 277 Vac/400 Vdc, 50/60 Hz, 16 A	02/22/2018	02/22/2019
1591	EMCI	CEAS	V4.1.1	Commercial Emissions Automation Software - 10 M#1	NA	NA

APPENDIX C
Product Data Sheet



1.0 Client Information

Client Information	
Manufacturer Name	Election Systems & Software
Address	11208 John Galt Blvd
City	Omaha
State	NE
Zip Code	68137
Client Representative	Michael Walker
Title	
Phone	
Fax	
Email	michael.walker@provandv.com

2.0 Product Information - General

Product Information	
Product Name (as it should appear on test report)	ExpressVote Hdw v2.1.2
Model Number (of UUT to be tested)	ExpressVote Tabulator w/ Kiosk
Functional description of product (what is it, what does it do, etc.)	Precinct Tabulator
List all modes of operation	Ballot Marking Device, Tabulator, Admin
Can modes be operated simultaneously? If so, explain.	No
What mode(s) will be used for testing?	Admin
Product type (IT, Medical, Scientific, Industrial, etc.)	Industrial
Is the product an intentional radiator	No
Product Dimensions	ExpressVote/Kiosk: 29.5”L x 23.75”W x 70.5”H
Product Weight	ExpressVote/Kiosk: 76lb
Will fork lift be required	No
Applicable Standards, if known	Per VVSG 1.0: <ul style="list-style-type: none"> • FCC Class B radiated and conducted emissions per ANSI C63.4. • IEC 61000-4-2 • IEC 61000-4-3 • IEC 61000-4-4

	<ul style="list-style-type: none"> • IEC 61000-4-5 • IEC 61000-4-6 • IEC 61000-4-8 • IEC 61000-4-11 					
Describe all environment(s) where product will be used (residential, commercial, industrial, etc.)	Commercial, Office					
Does product consist of multiple components? (If yes, please describe each system component)	ExpressVote Tabulator, ExpressVote Kiosk					
Cycle time > 3 seconds? (If yes, how long?)	11 seconds + voting time					
Highest internally generated frequency	48MHz					
Product Set-up Time	< 10 min					
Boot up time in the event of an unintentional power down	3 min					
Identify ALL I/O connections on the unit(s) under test, as well as MAXIMUM associated cable lengths below						
Model No.	Description	I/O Type		Length (m)	Patient Connect? (See Note)	QTY
		UUT-UUT	UUT-SE			
<i>Note: "Patient Connect" column applies only to medical devices.</i>						



3.0 Power

Power Requirements	
Does/can product connect to AC mains? (If so, can the UUT function when connected to AC?)	Yes
Input Voltage Rating as it appears on unit, power supply, or power brick	100-240VAC
Input Current (specify @ 230 Vac/50 Hz)	2.2A Max
Single or Multi-Phase (If multi-phase, specify delta or wye)	Single
Is input power connector two-prong (Hot & Neutral) or 3-prong (H, N, Ground)	3 prong
Does UUT have more than 1 power cord? (If yes, explain.)	No

4.0 Unit Under Test (UUT) – Detailed Information

UUT Hardware			
Condition	New		
Configuration During Test	ExpressVote w/ Kiosk, Counting Ballots		
Input Power	120VAC		
UUT Components			
Name	Model No.	Serial No.	Description
ExpressVote/Kiosk	AUO_G150XTN06.0	EV0217390509	ExpressVote mounted on kiosk
Kiosk	Kiosk	K0117373359	Kiosk with scanner and report printer
I/O Cabling			
See Section 2.0 for details			
UUT Software/Firmware			
Name	Version/Revision	Functionality	

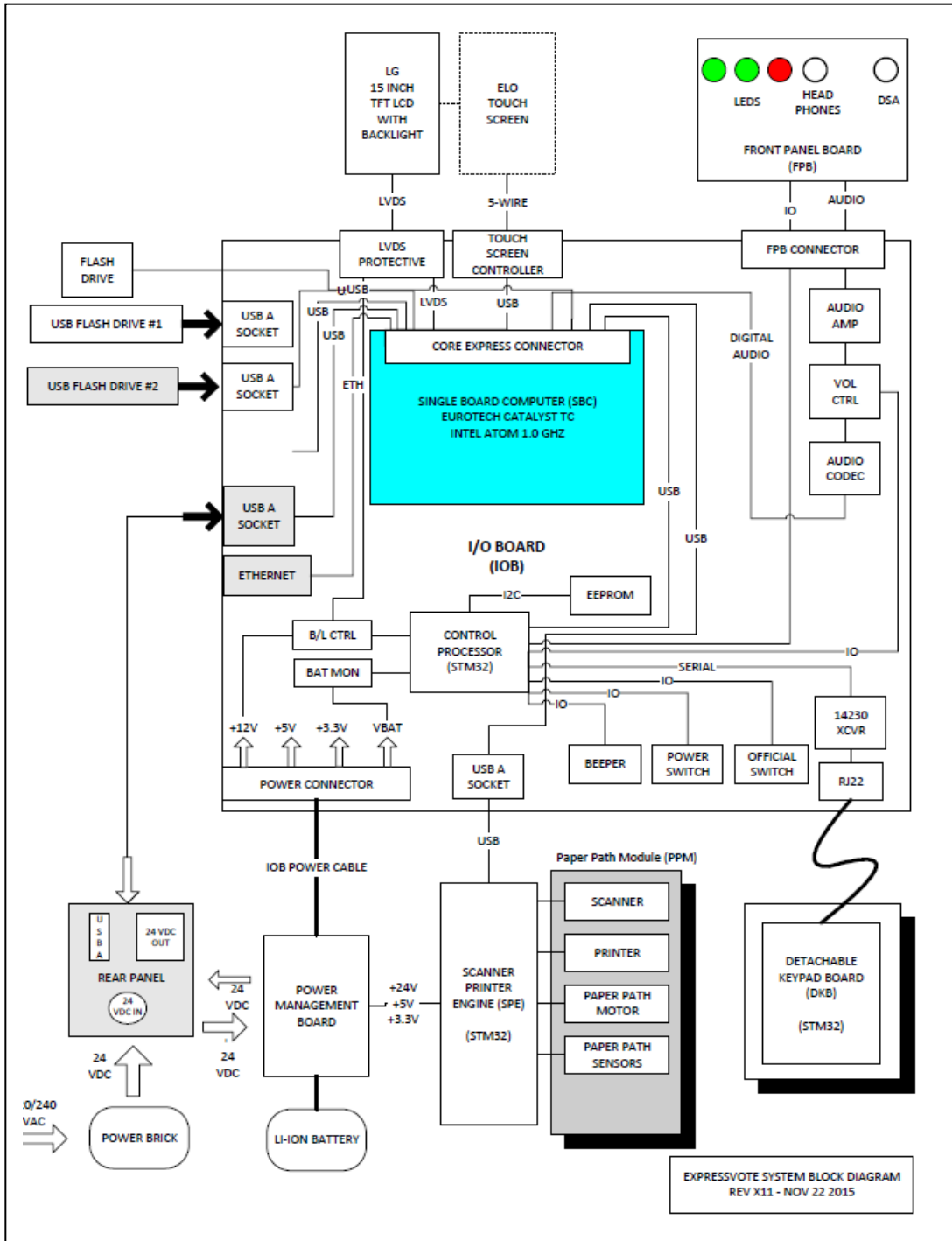
UUT Operating Conditions		
List all frequencies generated/used by the product.	Controller 14.7456MHz Generator 25MHz USB Hub 24MHz 32.768MHz USB 48MHz Port 1.8432MHz	Clock RTC Serial
How will product be exercised during test?	Admin Print mode	
How will product be monitored during test?	Check for continual operation	
What are the product's critical parameters?	See test plan	
Specify tolerance of all critical parameters.	See test plan	



5.0 Support Equipment (SE) – Detailed Information

Support Equipment (SE)					
Name	Model No.	Serial No.	Description		
N/A	N/A	N/A	N/A		
SE I/O Cabling					
Model No.	Description		Shielded?	Length	Quantity
N/A	N/A		N/A	N/A	N/A
SE Software/Firmware					
Name	Version/Revision	Functionality			
N/A	N/A	N/A			

6.0 Block Diagram



Important note: The product data sheet is a critical piece of documentation which is used as the basis

for any test reports that EMCI will generate; it must be completed *prior* to testing. It should be reviewed carefully by the client. If incorrect information is provided resulting in revisions to test reports, the client will be subject to report revision fees.



1.0 Client Information

Client Information	
Manufacturer Name	Election Systems & Software
Address	11208 John Galt Blvd
City	Omaha
State	NE
Zip Code	68137
Client Representative	Michael Walker
Title	
Phone	
Fax	
Email	michael.walker@provandv.com

2.0 Product Information - General

Product Information	
Product Name (as it should appear on test report)	ExpressVote Hdw v2.1.2
Model Number (of UUT to be tested)	ExpressVote Tabulator w/ Kiosk
Functional description of product (what is it, what does it do, etc.)	Precinct Tabulator
List all modes of operation	Ballot Marking Device, Tabulator, Admin
Can modes be operated simultaneously? If so, explain.	No
What mode(s) will be used for testing?	Admin
Product type (IT, Medical, Scientific, Industrial, etc.)	Industrial
Is the product an intentional radiator	No
Product Dimensions	ExpressVote/Kiosk: 29.5”L x 23.75”W x 70.5”H
Product Weight	ExpressVote/Kiosk: 76lb
Will fork lift be required	No
Applicable Standards, if known	Per VVSG 1.0: <ul style="list-style-type: none"> • FCC Class B radiated and conducted emissions per ANSI C63.4. • IEC 61000-4-2 • IEC 61000-4-3 • IEC 61000-4-4

	<ul style="list-style-type: none"> • IEC 61000-4-5 • IEC 61000-4-6 • IEC 61000-4-8 • IEC 61000-4-11 					
Describe all environment(s) where product will be used (residential, commercial, industrial, etc.)	Commercial, Office					
Does product consist of multiple components? (If yes, please describe each system component)	ExpressVote Tabulator, ExpressVote Kiosk					
Cycle time > 3 seconds? (If yes, how long?)	11 seconds + voting time					
Highest internally generated frequency	48MHz					
Product Set-up Time	< 10 min					
Boot up time in the event of an unintentional power down	3 min					
Identify ALL I/O connections on the unit(s) under test, as well as MAXIMUM associated cable lengths below						
Model No.	Description	I/O Type		Length (m)	Patient Connect? (See Note)	QTY
		UUT-UUT	UUT-SE			
<i>Note: "Patient Connect" column applies only to medical devices.</i>						



3.0 Power

Power Requirements	
Does/can product connect to AC mains? (If so, can the UUT function when connected to AC?)	Yes
Input Voltage Rating as it appears on unit, power supply, or power brick	100-240VAC
Input Current (specify @ 230 Vac/50 Hz)	2.2A Max
Single or Multi-Phase (If multi-phase, specify delta or wye)	Single
Is input power connector two-prong (Hot & Neutral) or 3-prong (H, N, Ground)	3 prong
Does UUT have more than 1 power cord? (If yes, explain.)	No

4.0 Unit Under Test (UUT) – Detailed Information

UUT Hardware			
Condition	New		
Configuration During Test	ExpressVote w/ Kiosk, Counting Ballots		
Input Power	120VAC		
UUT Components			
Name	Model No.	Serial No.	Description
ExpressVote/Kiosk	AUO_G150XTN06.0	EV0217390509	ExpressVote mounted on kiosk
Kiosk	Kiosk	K0117373359	Kiosk with scanner and report printer
I/O Cabling			
See Section 2.0 for details			
UUT Software/Firmware			
Name	Version/Revision	Functionality	

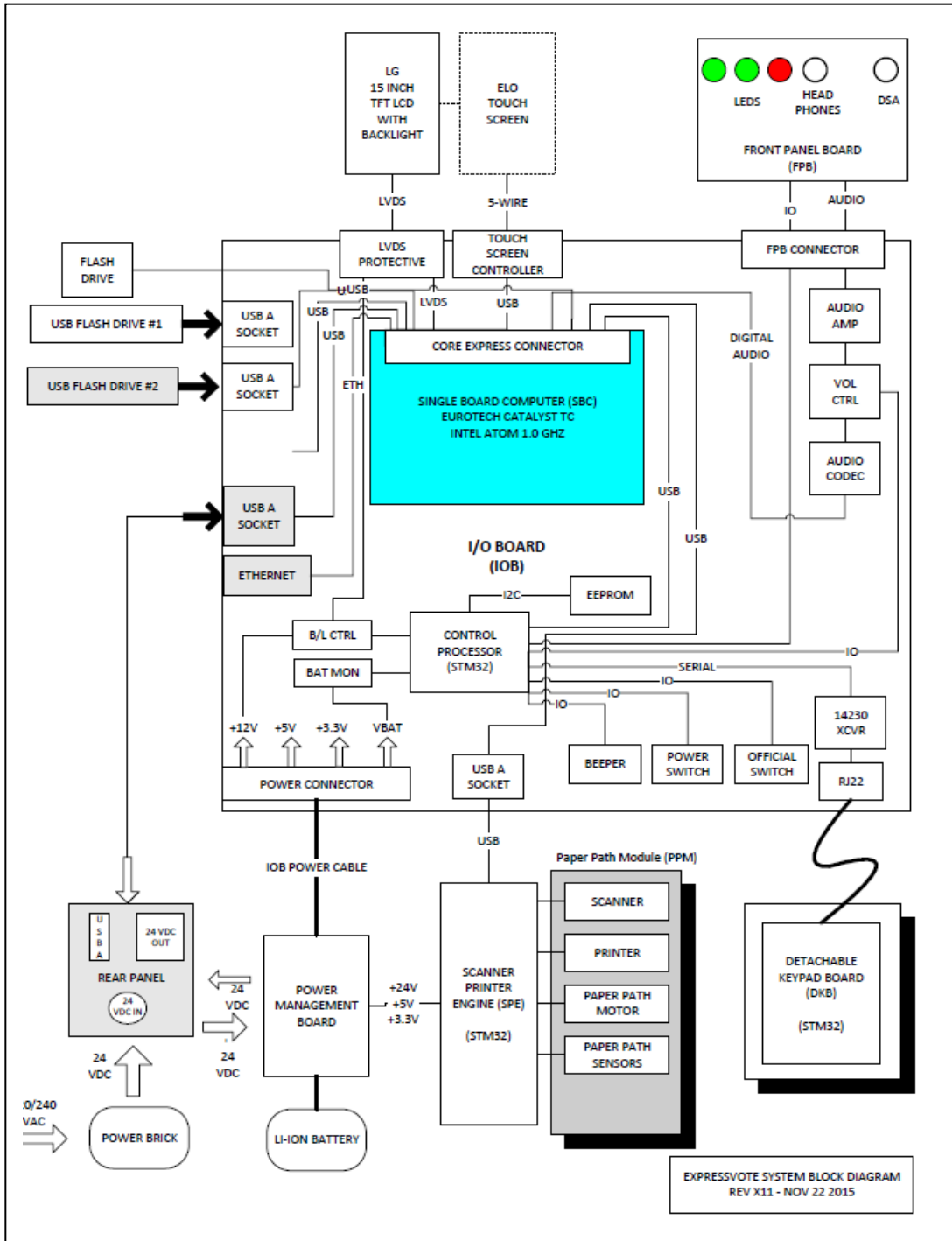
UUT Operating Conditions		
List all frequencies generated/used by the product.	Controller 14.7456MHz Generator 25MHz USB Hub 24MHz 32.768MHz USB 48MHz Port 1.8432MHz	Clock RTC Serial
How will product be exercised during test?	Admin Print mode	
How will product be monitored during test?	Check for continual operation	
What are the product's critical parameters?	See test plan	
Specify tolerance of all critical parameters.	See test plan	



5.0 Support Equipment (SE) – Detailed Information

Support Equipment (SE)					
Name	Model No.	Serial No.	Description		
N/A	N/A	N/A	N/A		
SE I/O Cabling					
Model No.	Description		Shielded?	Length	Quantity
N/A	N/A		N/A	N/A	N/A
SE Software/Firmware					
Name	Version/Revision	Functionality			
N/A	N/A	N/A			

6.0 Block Diagram



Important note: The product data sheet is a critical piece of documentation which is used as the basis

for any test reports that EMCI will generate; it must be completed *prior* to testing. It should be reviewed carefully by the client. If incorrect information is provided resulting in revisions to test reports, the client will be subject to report revision fees.



1.0 Client Information

Client Information	
Manufacturer Name	Election Systems & Software
Address	11208 John Galt Blvd
City	Omaha
State	NE
Zip Code	68137
Client Representative	Michael Walker
Title	
Phone	
Fax	
Email	michael.walker@provandv.com

2.0 Product Information - General

Product Information	
Product Name (as it should appear on test report)	ExpressVote Hdw v2.1.2
Model Number (of UUT to be tested)	ExpressVote Tabulator w/ Kiosk
Functional description of product (what is it, what does it do, etc.)	Precinct Tabulator
List all modes of operation	Ballot Marking Device, Tabulator, Admin
Can modes be operated simultaneously? If so, explain.	No
What mode(s) will be used for testing?	Admin
Product type (IT, Medical, Scientific, Industrial, etc.)	Industrial
Is the product an intentional radiator	No
Product Dimensions	ExpressVote/Kiosk: 29.5”L x 23.75”W x 70.5”H
Product Weight	ExpressVote/Kiosk: 76lb
Will fork lift be required	No
Applicable Standards, if known	Per VVSG 1.0: <ul style="list-style-type: none"> • FCC Class B radiated and conducted emissions per ANSI C63.4. • IEC 61000-4-2 • IEC 61000-4-3 • IEC 61000-4-4

	<ul style="list-style-type: none"> • IEC 61000-4-5 • IEC 61000-4-6 • IEC 61000-4-8 • IEC 61000-4-11 					
Describe all environment(s) where product will be used (residential, commercial, industrial, etc.)	Commercial, Office					
Does product consist of multiple components? (If yes, please describe each system component)	ExpressVote Tabulator, ExpressVote Kiosk					
Cycle time > 3 seconds? (If yes, how long?)	11 seconds + voting time					
Highest internally generated frequency	48MHz					
Product Set-up Time	< 10 min					
Boot up time in the event of an unintentional power down	3 min					
Identify ALL I/O connections on the unit(s) under test, as well as MAXIMUM associated cable lengths below						
Model No.	Description	I/O Type		Length (m)	Patient Connect? (See Note)	QTY
		UUT-UUT	UUT-SE			
<i>Note: "Patient Connect" column applies only to medical devices.</i>						



3.0 Power

Power Requirements	
Does/can product connect to AC mains? (If so, can the UUT function when connected to AC?)	Yes
Input Voltage Rating as it appears on unit, power supply, or power brick	100-240VAC
Input Current (specify @ 230 Vac/50 Hz)	2.2A Max
Single or Multi-Phase (If multi-phase, specify delta or wye)	Single
Is input power connector two-prong (Hot & Neutral) or 3-prong (H, N, Ground)	3 prong
Does UUT have more than 1 power cord? (If yes, explain.)	No

4.0 Unit Under Test (UUT) – Detailed Information

UUT Hardware			
Condition	New		
Configuration During Test	ExpressVote w/ Kiosk, Counting Ballots		
Input Power	120VAC		
UUT Components			
Name	Model No.	Serial No.	Description
ExpressVote/Kiosk	AUO_G150XTN06.0	EV0217390509	ExpressVote mounted on kiosk
Kiosk	Kiosk	K0117373359	Kiosk with scanner and report printer
I/O Cabling			
See Section 2.0 for details			
UUT Software/Firmware			
Name	Version/Revision	Functionality	

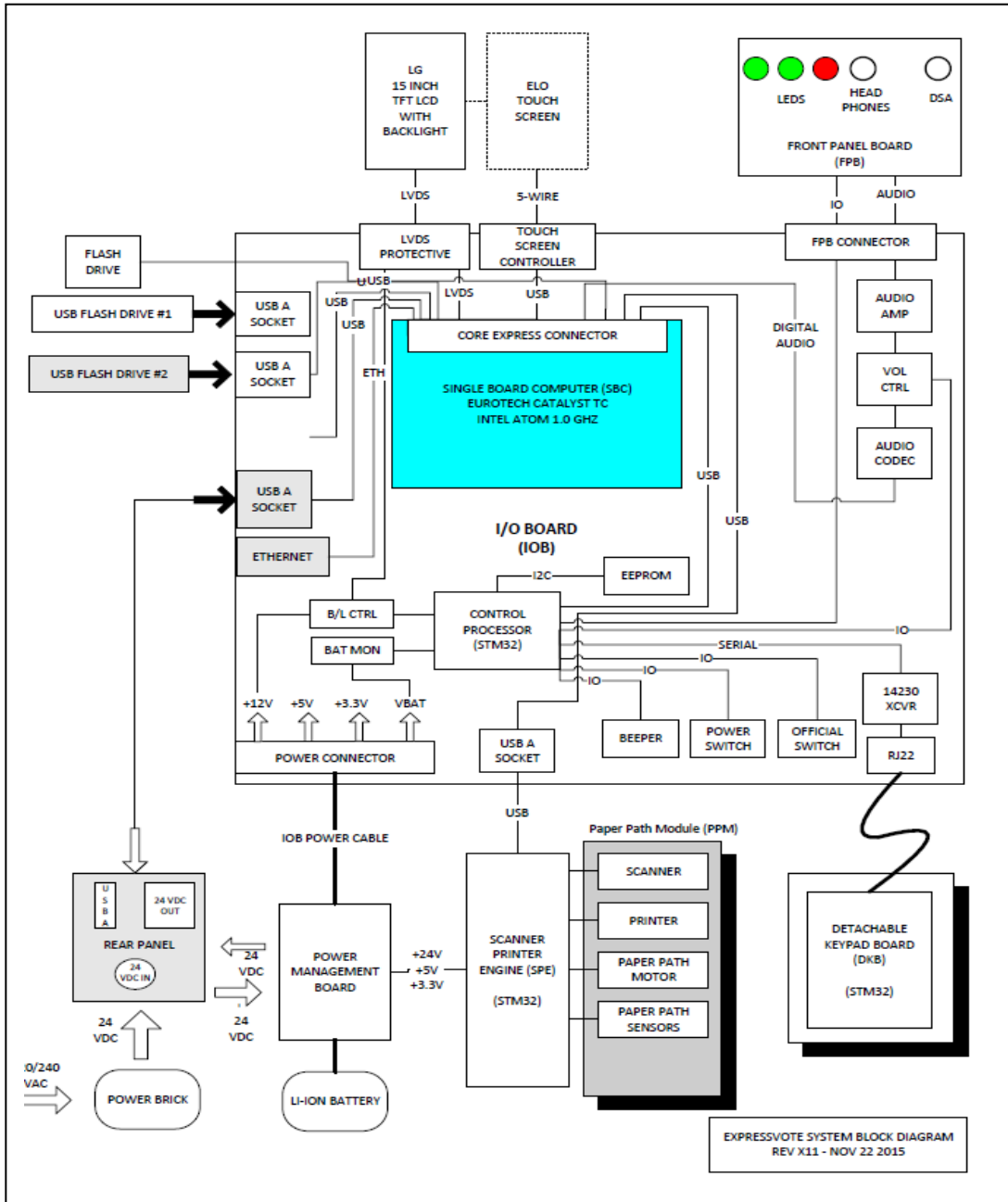
UUT Operating Conditions		
List all frequencies generated/used by the product.	Controller 14.7456MHz Generator 25MHz USB Hub 24MHz 32.768MHz USB 48MHz Port 1.8432MHz	Clock RTC Serial
How will product be exercised during test?	Admin Print mode	
How will product be monitored during test?	Check for continual operation	
What are the product's critical parameters?	See test plan	
Specify tolerance of all critical parameters.	See test plan	



5.0 Support Equipment (SE) – Detailed Information

Support Equipment (SE)					
Name	Model No.	Serial No.	Description		
N/A	N/A	N/A	N/A		
SE I/O Cabling					
Model No.	Description		Shielded?	Length	Quantity
N/A	N/A		N/A	N/A	N/A
SE Software/Firmware					
Name	Version/Revision	Functionality			
N/A	N/A	N/A			

6.0 Block Diagram



Important note: The product data sheet is a critical piece of documentation which is used as the basis for any test reports that EMCI will generate; it must be completed *prior* to testing. It should be reviewed carefully by the client. If incorrect information is provided resulting in revisions to test reports, the client will be subject to report revision fees.

APPENDIX D
EMI Test Log



EMI/ENV Test Log

Manufacturer:	Election Systems & Software	Project Number:	PR075829
Model:	EUT 1: AUO_G150XTN06.0 Kiosk	S/N:	1: EV0217390509 1: K0117373359
	EUT 2: AUO_G150XTN06.4 Kiosk		2: EV0217390517 2: K0115421526
	EUT 3: AUO_G150XTN06.8 Kiosk		3: EV0217390587 3: K0115421501
Customer Representative:	Michael Walker		
Standard Referenced:	FCC Part 15, Class B, EAC 2005 VVSG		

FR0105

10m Emissions

Test	Test Code	Date	Event	O T	Time (hrs)	Result	Initials
---	6003	March 6, 2018 0800-0830	Initial Product setup time EUT 1		0.5	Complete	MT
RE	1346	0830-1030	Test #1: Radiated Emissions, 30 MHz - 1 GHz, 8 Rads, 4 Heights, 3 sec. dwell, ref. level = 80 dBuV, 10 meter distance (4.1.2.9) 120 VAC / 60 Hz EUT 1		2.0	Pass	MT
RE	1353	1030-1130	Test #2: Radiated Emissions, 1 GHz - 18 GHz, 16 Rads, 3 Heights, 3 sec. dwell, ref. level = 107 dBuV, 3 meter distance (4.1.2.9) 120 VAC / 60 Hz EUT 1		1.0	Pass	MT
CE	2342	1130-1200	Test #3: Conducted Emissions, 150 kHz - 30 MHz (4.1.2.9) 120 VAC / 60 Hz EUT 1		0.5	---	MT
		1200-1230	Lunch		---	---	MT
CE		1230-1300	Continue: Test #3: Conducted Emissions, 150 kHz - 30 MHz (4.1.2.9) 120 VAC / 60 Hz EUT 1		0.5	Pass	MT
---		1300-1330	Initial Product setup time EUT 2		0.5	Complete	MT
CE		1330-1430	Test #4: Conducted Emissions, 150 kHz - 30 MHz (4.1.2.9) 120 VAC / 60 Hz EUT 2		1.0	Pass	MT

10m Emissions

Test	Test Code	Date	Event	O T	Time (hrs)	Result	Initials
RE		1430-1530	Test #5: Radiated Emissions, 1 GHz - 18 GHz, 16 Rads, 3 Heights, 3 sec. dwell, ref. level = 107 dBuV, 3 meter distance (4.1.2.9) 120 VAC / 60 Hz EUT 2		1.0	Pass	MT
---		1530-1630	Client Running Post Test Verification		1.0	Complete	MT
RE		March 7, 2018 0800-0930	Test #6: Radiated Emissions, 30 MHz - 1 GHz, 8 Rads, 4 Heights, 3 sec. dwell, ref. level = 80 dBuV, 10 meter distance (4.1.2.9) 120 VAC / 60 Hz EUT 2		1.5	Pass	MT
---		0930-1000	Initial Product setup time EUT 3		0.5	Complete	MT
RE		1000-1100	Test #7: Radiated Emissions, 30 MHz - 1 GHz, 8 Rads, 4 Heights, 3 sec. dwell, ref. level = 80 dBuV, 10 meter distance (4.1.2.9) 120 VAC / 60 Hz EUT 3 EUT Stopped Running (Ballot Jammed), Will Rerun Scan		1.0	---	MT
RE		1100-1200	Test #8: Radiated Emissions, 30 MHz - 1 GHz, 8 Rads, 4 Heights, 3 sec. dwell, ref. level = 80 dBuV, 10 meter distance (4.1.2.9) 120 VAC / 60 Hz EUT 3 EUT Jammed Again, Client is Cleaning EUT will rerun scan, EUT Jammed again, Client is Replacing Transport (Same Model and Make) will rerun scan		1.0	---	MT
		1200-1230	Lunch		---	---	MT
---		1230-1330	Fixing EUT		1.0	Complete	MT
RE		1330-1500	Test #9: Radiated Emissions, 30 MHz - 1 GHz, 8 Rads, 4 Heights, 3 sec. dwell, ref. level = 80 dBuV, 10 meter distance (4.1.2.9) 120 VAC / 60 Hz EUT 3 With Replaced Transport		1.5	Pass	MT
RE		1500-1600	Test #10: Radiated Emissions, 1 GHz - 18 GHz, 16 Rads, 3 Heights, 3 sec. dwell, ref. level = 107 dBuV, 3 meter distance (4.1.2.9) 120 VAC / 60 Hz EUT 3		1.0	Pass	MT
			Done For The Day, Client will need to reschedule more time for Conducted Emissions		---	---	MT
CE		March 13, 2018 1300-1400	Test #11: Conducted Emissions, 150 kHz - 30 MHz (4.1.2.9) 120 VAC / 60 Hz EUT 3		1.0	Pass	MT

Ground Planes / CALC

Test	Test Code	Date	Event	O T	Time (hrs)	Result	Initials
4-3	43918	Wednesday, March 07, 2018 0800 - 1200	Radiated RF Immunity – EUT1 (4.1.2.10) 10V/m, 80 - 1000 MHz, 1% Step, 80% AM, 1kHz sine, 3s dwell 120 VAC / 60 Hz		4	Pass	SC
---	---	1200 -- 1230	lunch		---	---	SC
---	---	1230 - 1330	continue		1	---	SC
---	---	1330 - 1630	Radiated RF Immunity – EUT2 (4.1.2.10) 10V/m, 80 - 1000 MHz, 1% Step, 80% AM, 1kHz sine, 3s dwell 120 VAC / 60 Hz		3	Pass	SC
---	---	Thursday, March 08, 2018 0800 - 1000	continue		2	---	SC
---	---	1000 - 1200	Radiated RF Immunity – EUT3 (4.1.2.10) 10V/m, 80 - 1000 MHz, 1% Step, 80% AM, 1kHz sine, 3s dwell 120 VAC / 60 Hz		2	Pass	SC
---	---	1200 - 1230	lunch		---	---	SC
---	---	1230 - 1530	continue		3	---	SC
4-6	4626	March 8, 2018 0800-1000	Setup for Conducted RF Immunity (4.1.2.11) 10Vrms, 0.15 - 80 MHz, 1% Step, 80% AM, 1kHz sine, 3s dwell 120 VAC / 60 Hz AC mains on EUT #1		2.0	Pass	TW
4-6	4626	1000-1130	Setup for Conducted RF Immunity (4.1.2.11) 10Vrms, 0.15 - 80 MHz, 1% Step, 80% AM, 1kHz sine, 3s dwell 120 VAC / 60 Hz AC mains on EUT #2		2.0	Pass	TW
4-4	4413	1130-1200	Electrical Fast Transient / Burst (4.1.2.6) Mains: +/- 2kV 120 VAC / 60 Hz AC mains on EUT #2		0.5	Pass	TW
4-4	---	1230-1330	Electrical Fast Transient / Burst (4.1.2.6) Mains: +/- 2kV 120 VAC / 60 Hz AC mains on EUT #1		0.5	Pass	TW
4-11	41918	1300-1600	Voltage Dips and Interruptions (Inc./Red. of Nom. Voltage) (4.1.2.5) Electric power increases of 7.5% and reductions of 12.5% of nominal specified power. (See Protocol) 120 VAC / 60 Hz Electric power increases of 7.5% EUT #1		3.0	Pass	TW

Ground Planes / CALC

Test	Test Code	Date	Event	O T	Time (hrs)	Result	Initials
4-11	---	March 9, 2018 0802-1102	Voltage Dips and Interruptions (Inc./Red. of Nom. Voltage) (4.1.2.5) Electric power increases of 7.5% and reductions of 12.5% of nominal specified power. (See Protocol) 120 VAC / 60 Hz Electric power reductions of 12.5% EUT #1		3.0	Pass	TW
4-11	--	1104-1206	Line variation test, +/- 15% on EUT #1		1.0	Pass	TW
4-11	---	1208-1230	Voltage Dips and Interruptions (4.1.2.5) 70% nom, 0.6 cycles / 40% nom, 6 cycles & 1 sec. / 0% nom, 300 cycles 120 VAC / 60 Hz EUT #1, EUT went into battery back-up during testing		0.5	Pass	TW
			Note: Client started setup EUT #2, unit would not power on at 120Vac, only battery, client will be troubleshooting EUT #2, Client swapped out power supply , moved on to EUT #3				
4-11	---	1230-1330	Voltage Dips and Interruptions (Inc./Red. of Nom. Voltage) (4.1.2.5) Electric power increases of 7.5% and reductions of 12.5% of nominal specified power. (See Protocol) 120 VAC / 60 Hz Electric power increases of 7.5% EUT #3		3.0	Pass	TW
		1600	Done for the day		---	---	TW
4-11	---	March 12, 2018 0800-1100	Voltage Dips and Interruptions (Inc./Red. of Nom. Voltage) (4.1.2.5) Electric power increases of 7.5% and reductions of 12.5% of nominal specified power. (See Protocol) 120 VAC / 60 Hz Electric power reductions of 12.5% EUT #3		3.0	Pass	TW
4-5	45918	1130-1630	Surge Immunity (4.1.2.7) Mains: +/- 2kV CM, +/- 2kV DM, (0, 90, 180, 270) 120 VAC / 60 Hz, EUT #3		5.0	Pass	TW
4-11	---	March 13, 2018 0800-0830	Voltage Dips and Interruptions (4.1.2.5) 70% nom, 0.6 cycles / 40% nom, 6 cycles & 1 sec. / 0% nom, 300 cycles 120 VAC / 60 Hz, EUT #3 EUT went into battery back-up during testing		0.5	Pass	TW
4-4	---	0830-0900	Electrical Fast Transient / Burst (4.1.2.6) Mains: +/- 2kV 120 VAC / 60 Hz, EUT #3		0.5	Pass	TW
4-11	---	0900-1000	Line variation test, +/- 15% on EUT #3		1.0	Pass	TW
4-6	---	1000-1200	Conducted RF Immunity (4.1.2.11) 10Vrms, 0.15 - 80 MHz, 1% Step, 80% AM, 1kHz sine, 3s dwell 120 VAC / 60 Hz on EUT #3		2.0	Pass	TW

Ground Planes / CALC

Test	Test Code	Date	Event	O T	Time (hrs)	Result	Initials
4-11	---	1300-1600	Voltage Dips and Interruptions (Inc./Red. of Nom. Voltage) (4.1.2.5) Electric power increases of 7.5% and reductions of 12.5% of nominal specified power. (See Protocol) 120 VAC / 60 Hz Electric power increases of 7.5% EUT #2		3.0	--	TW
4-5	---	March 14, 2018 0800-1300	Surge Immunity (4.1.2.7) Mains: +/- 2kV CM, +/- 2kV DM, (0, 90, 180, 270) 120 VAC / 60 Hz, EUT #2		5.0	Pass	TW
4-11	---	1300-1330	Voltage Dips and Interruptions (4.1.2.5) 70% nom, 0.6 cycles / 40% nom, 6 cycles & 1 sec. / 0% nom, 300 cycles 120 VAC / 60 Hz on EUT #2		0.5	Pass	TW
4-11	---	1330-1430	Line variation test, +/- 15% on EUT #2		1.0	Pass	TW
		1600	Done for the day		---	---	TW
4-5	---	March 15, 2018 0800-1300	Surge Immunity (4.1.2.7) Mains: +/- 2kV CM, +/- 2kV DM, (0, 90, 180, 270) 120 VAC / 60 Hz, EUT #1		5.0	Pass	TW
4-11	---	1300-1600	Voltage Dips and Interruptions (Inc./Red. of Nom. Voltage) (4.1.2.5) Electric power increases of 7.5% and reductions of 12.5% of nominal specified power. (See Protocol) 120 VAC / 60 Hz Electric power reductions of 12.5% EUT #2		3.0	Pass	TW
		1600	Done for the day		---	---	TW
4-4	4833	March 16, 2018 0900-1000	Power Frequency H-Field Immunity (4.1.2.12) 30A/m, 50 / 60 Hz, 3 axes 120 VAC / 60 Hz EUT #1, #2 and #3 were tested		3.0	Pass	TW
4-2	42512	March 19, 2018 0800-1200	Electrostatic Discharge (4.1.2.8) +/- 8kV Contact, +/-2, 4, 8, 15kV Air 120 VAC / 60 Hz EUT #3		4.0	Pass	TW
			Performed ESD pre-test prior to testing Bleed-off cables are 936k ohms and 935k ohms		---	---	TW
4-2	---	1230	Electrostatic Discharge (4.1.2.8) +/- 8kV Contact, +/-2, 4, 8, 15kV Air 120 VAC / 60 Hz EUT #2		4.0	Pass	TW
4-2	---	March 20, 2018 0900	Electrostatic Discharge (4.1.2.8) +/- 8kV Contact, +/-2, 4, 8, 15kV Air 120 VAC / 60 Hz, EUT #1		4.0	Pass	TW
			Performed ESD pre-test prior to testing Bleed-off cables are 935k ohms and 934k ohms		---	---	TW
---	---	1200	ESD on 3 EUT's are completed		---	---	Pass

APPENDIX E
Laboratory Accreditations



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

NATIONAL TECHNICAL SYSTEMS (NTS) - LONGMONT
 1736 Vista View Drive
 Longmont, CO 80504-5242
 Mr. Eric Loucks Phone: 303 776 7249

ELECTRICAL

Valid To: February 28, 2018

Certificate Number: 0214.43

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following Electromagnetic Compatibility/Interference (EMC/EMI), Lightning, Transient, Surge, and Product Safety tests:

Test Technology:

Test Method(s)^{1,2:}

Emissions

Radiated and Conducted

CFR 47 FCC, Parts 15B (using ANSI C63.4: 2014), 15C (using ANSI C63.10:2013), and 18 (using MP-5:1986); CISPR 32, Ed. 1 (2012-01); EN 55032:2012/AC:2013; AS/NZS CISPR 22 (2002); AS/NZS 3548 (1997); AS/NZS CISPR 14-1 (2003); IEC/CISPR 14-1, Ed. 4 (2003); IEC 61000-3-12, Ed. 2.0 (2011); EN 61000-3-12 (2011); IEC 61000-6-1, Ed. 2 (2005-03); IEC 61000-6-2, Ed. 2.0 (2005-01); IEC 61000-6-3 (1996); EN 61000-6-3 (2001) + A1 (2004); EN 61000-6-4 (2007); KN 32:2015 (Annex 11); KN 22; KN 11

Harmonics

IEC 61000-3-2, Ed. 2.2 (2004-11); IEC 61000-3-2, Ed. 3.0 (2005) + A1 (2008) + A2 (2009); IEC 61000-3-2, Ed. 4.0 (2014-05)

Flicker

IEC 61000-3-3, Ed. 1.1 (2002-03); EN 61000-3-3 + A1 (2001); IEC 61000-3-3, Ed. 1.1 (2003) + A2 (2005); IEC 61000-3-3, Ed. 3.0 (2013-05)

Immunity

Electrostatic Discharge (ESD)

IEC 61000-4-2 (2001); EN 61000-4-2 (2001) + A2 (2001); EN 61000-4-2 + A1 (1998) + A2 (2001); IEC 61000-4-2, Ed. 2.0 (2008-12); EN 61000-4-2 (2009-05); KN 61000-4-2; KN 61000-4-2 (2008-5); KN 61000-4-2 (Annex 1-1)

Radiated

IEC/EN 61000-4-3, Ed. 2.1 (2002) + A1 (2002); EN 61000-4-3; IEC 61000-4-3 (1995) + A1 (1998) + A2 (2000); EN 61000-4-3 (2002) + A1 (2002); IEC 61000-4-3, Ed. 3.0 (2006-02) + A1 (2007) + A2 (2010); EN 61000-4-3 (2006) + A1 (2008) + A2 (2010); KN 61000-4-3; KN 61000-4-3 (2008-5); KN 61000-4-3 (Annex 1-2)

(A2LA Cert. No. 0214.43) Revised 11/17/2017

Page 1 of 4

Test Technology:**Test Method(s)^{1,2:}*****Immunity (cont'd)***

Electrical Fast Transient/Burst	IEC 61000-4-4, Ed. 2.0 (2004-07); EN 61000-4-4 (2004); EN 61000-4-4:2012; IEC 61000-4-4 (2012-04); KN 61000-4-4; KN 61000-4-4 (2008-5); KN 61000-4-4 (Annex 1-3)
Surge	IEC 61000-4-5, Ed. 2.0 (2005-11); EN 61000-4-5; IEC 61000-4-5, Ed. 3.0 (May 2014); BS EN 61000-4-5 (2006); EN 61000-4-5: 2014; KN 61000-4-5; KN 61000-4-5 (2008-5); KN 61000-4-5 (Annex 1-4); IEEE C62.41.1 (2002); IEEE C62.41.2 (2002); IEEE C62.25 (2002)
Conducted	IEC 61000-4-6, Ed. 2.1 (2004); EN 61000-4-6; EN 61000-4-6 (1996) + A1 (2001); IEC 61000-4-6, Ed. 2.2 (2006-05); IEC 61000-4-6, Ed. 3.0 (2008); IEC 61000-4-6, Ed. 4.0 (2013); EN 61000-4-6 (2009); EN 61000-4-6 (2014); KN 61000-4-6; KN 61000-4-6 (2008-5); KN 61000-4-6 (Annex 1-5)
Power Frequency Magnetic Field	IEC 61000-4-8 (2001) + A1 (2000); EN 61000-4-8 (2001) + A1 (2000); EN 61000-4-8 (1993) + A1 (2001); IEC 61000-4-8 (2009); EN 61000-4-8:2010; KN 61000-4-8; KN 61000-4-8 (2008-5); KN 61000-4-8 (Annex 1-6)
Voltage Dips, Short Interruptions, and Voltage Variations	IEC 61000-4-11, Ed. 2 (2004-03); EN 61000-4-11; EN 61000-4-11 (1994) + A1 (2001); EN 61000-4-11 (2004); KN 61000-4-11; KN 61000-4-11 (2008-5); KN 61000-4-11 (Annex 1-7)

Product Safety

Medical Electrical Equipment	IEC 60601-1-2, Ed. 3.0 (2007); KN 60601-1-2 (2008-5); IEC 60601-1-2, Ed. 4, (2014-02); EN 60601-1-2 (2007); EN 60601-1-2 (2015)
---------------------------------	---

***Generic/Product Family Standards
and Industry Standards***

Generic Standards	EN 61326-1: 2013; KN 35: 2015
Information Technology Equipment	IEC/CISPR 22 (1997); EN 55022 (1998) + A1 (2000); IEC/CISPR 22 (1993); EN 55022 (1994); IEC/CISPR 22 (1993); EN 55022 (1994) + A1 (1995) + A2 (1997); CNS 13438 (1997); IEC/CISPR 22, Ed. 4 (2003-04); EN 55022 (1998); IEC/CISPR 22, Ed. 5 (2005); EN 55022 (1998); IEC/CISPR 22, Ed. 5 (2005) + A1 (2005); EN 55022 (1998) + A1 (2000) + A2 (2003);

Test Technology:**Test Method(s)^{1,2}:*****Generic/Product Family Standards and Industry Standards (cont'd)***

Information Technology Equipment (cont'd)

CNS 13438 (2006) (up to 6GHz);
IEC/CISPR 22, Edition 5.2 (2006-03); EN 55022 (2006);
EN 55022 (2006) + A1 (2007); EN 55022:2010; IEC/CISPR 22 (2008-09); AS/NZS CISPR 22 (2009);
TCVN 7189:2009 (CISPR 22:2006);
VCCI V-3 (2009.04, 2011.04, 2013.04, 2014.04, 2015.04) (up to 6 GHz); VCCI-CISPR 32:2016;
CISPR 24 Ed 2.0 (2010-08); EN 55024 (2010);
KN 24

Industrial, Scientific, and Medical (ISM) Equipment

AS/NZS CISPR 11 (2002); IEC/CISPR 11, Ed. 4.1 (2004-06);
AS/NZS CISPR 11 (2004);
IEC/CISPR 11, Ed. 4.1 (2004-06) + A1 (2004);
EN 55011 (1998) + A1 (1999) + A2 (2002);
IEC/CISPR 11 (2003); EN 55011 (1998) + A2(2002);
EN 55011 (2009) + A1 (2010); IEC/CISPR 11 Ed. 5 (2009-05);
CISPR 11 Ed. 5.1 (2010)

Measure

IEC 61326-1 Ed. 2.0 (2012)

Military/Defense

MIL-STD-461F Method CE101 (30 Hz to 10 kHz);
MIL-STD-461F Method CE102 (10 kHz to 10 MHz);
MIL-STD-461F Method CE106 (10 kHz to 40 GHz);
MIL-STD-461F Method CS101 (30 Hz to 150 kHz);
MIL-STD-461F Method CS106;
MIL-STD-461F Method CS114 (10 kHz to 200 MHz);
MIL-STD-461F Method CS116 (10 kHz to 100 MHz);
MIL-STD-461F Method RE101 (30 Hz to 100 kHz);
MIL-STD-461F Method RE102 (10 kHz to 18 GHz);
MIL-STD-461F Method RE103 (10 kHz to 40 GHz);
MIL-STD-461F Method RS101 (30 Hz to 100 kHz);
MIL-STD-461F Method RS103 (2 MHz to 40 GHz)

¹ When the date, revision or edition of a test method standard is not identified on the scope of accreditation, the laboratory is required to be using the current version within one year of the date of publication, per part C., Section 1 of A2LA R101 - *General Requirements- Accreditation of ISO-IEC 17025 Laboratories*. If a specifier/regulator imposes a different transition period, this will supersede the A2LA one-year implementation period.

² The laboratory is only accredited for testing activities outlined within the test methods listed above. Reference to any other activity within these standards, such as risk management or risk assessment, does not fall within the laboratory's accredited capabilities.

On the following types of products:

Telecommunication Equipment, Network Equipment, Industrial and Commercial Equipment, Electronic (Digital) Equipment, Medical, Aerospace, Military. Information Technology Equipment, Multimedia Equipment, Scientific Equipment

(A2LA Cert. No. 0214.43) Revised 11/17/2017



Page 3 of 4

Testing Activities Performed in Support of FCC Declaration of Conformity and Certification in Accordance with 47 Code of Federal Regulations and FCC KDB 974614, Appendix A, Table A.1³

Rule Subpart/Technology	Test Method	Maximum Frequency (MHz)
<u>Unintentional Radiators</u> Part 15B	ANSI C63.4:2014	40000
<u>Industrial, Scientific, and Medical Equipment</u> Part 18	FCC MP-5 (February 1986)	40000
<u>Intentional Radiators</u> Part 15C	ANSI C63.10:2013	40000

³Accreditation does not imply acceptance to the FCC equipment authorization program. Please see the FCC website (<https://apps.fcc.gov/oetcf/eas/>) for a listing of FCC approved laboratories.





Accredited Laboratory

A2LA has accredited

NATIONAL TECHNICAL SYSTEMS (NTS) - LONGMONT

Longmont, CO

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009).



Presented this 28th day of October 2016.

A handwritten signature in black ink, appearing to be 'L. J. ...', written over a horizontal line.

President and CEO
For the Accreditation Council
Certificate Number 0214.43
Valid to February 28, 2018
Revised June 5, 2017

For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.

END OF REPORT