ATTACHMENT E

LOW/HIGH TEMPERATURE THERMAL CIRCULAR CHARTS

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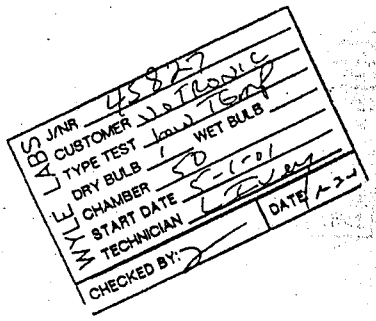
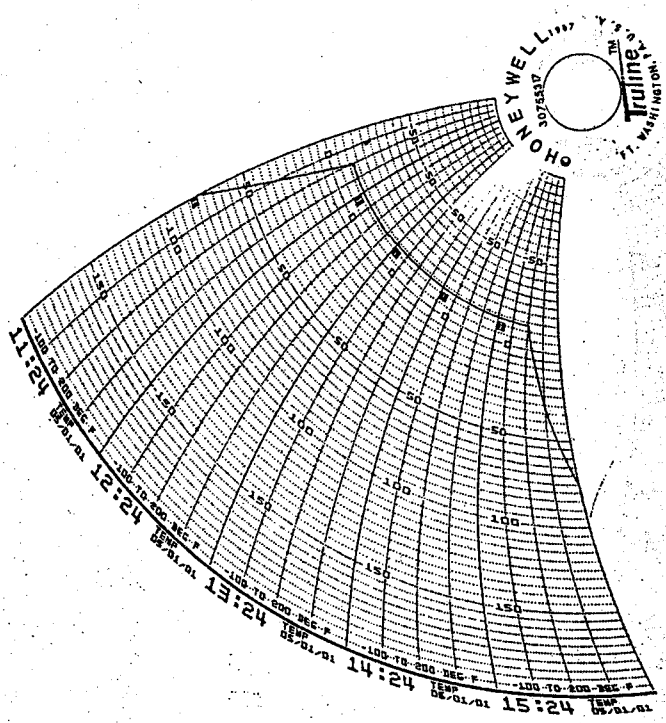
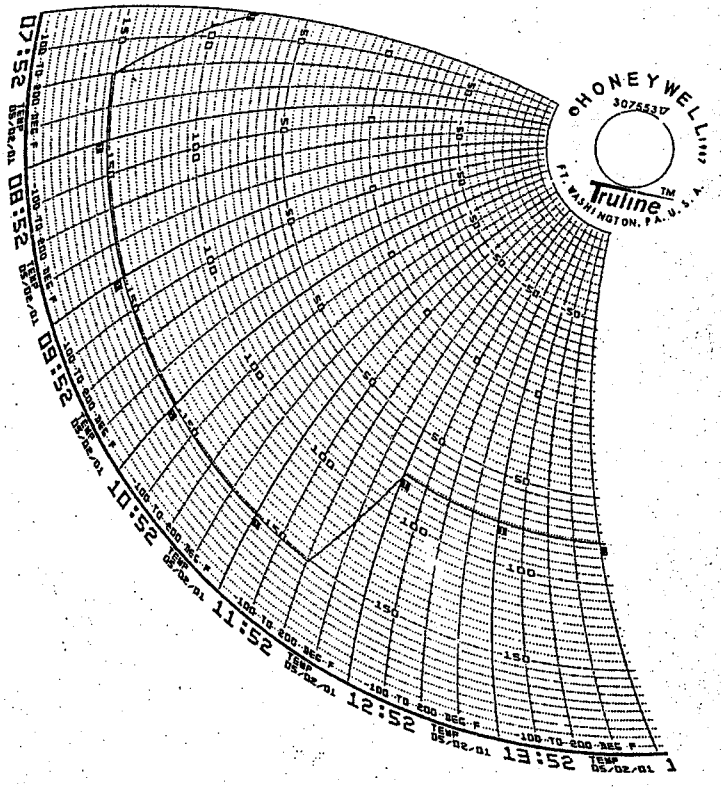

J/NR 45827
CUSTOMER WYLE TEMP
TYPE TEST
WET BULB
DRY BULB 50
CHAMBER
START DATE 5-1-01
TECHNICIAN
DATE 5-2-01
CHECKED BY:


PHONEYWELL
Truline
FT. WASHINGTON, PA.
11:24
12:24
13:24
14:24
15:24
-100 TO 200 DEG. F

WYLE LABS
J/NR 45827
CUSTOMER SOTTONIC
TYPE TEST High Temp Stg.
DRY BULB ____ WET BULB ____
CHAMBER 5
START DATE 5-2-01
TECHNICIAN [illegible]
CHECKED BY ____ DATE 5-7-01



ATTACHMENT F

VIBRATION TEST DATA

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VIBRATION TEST DATA SHEET

Customer ESS | Spec. MIL-STD-810D | Specimen DRE COATING MACHINE

Job No. 45827 | Method 514.4 | Part No. iVOTRONIC 2000 | Specimen Temp. AMB.

GSI Yes ☐ No ☑ | Procedure — | S/N 0010003 - Vibration Machine, 200181 - Comm Box | Photo Yes ☐ No ☑

Test Title TRANSIT VIBRATION

Date	Time	Axis	Temp (F)	SINUSOIDAL Freq. (cps)	SINUSOIDAL Disp. ("da)	SINUSOIDAL Accel. (±g)	RANDOM Freq. (cps)	RANDOM PSD (g²/cps)	RANDOM Slope dB/oct	TOTAL Accel. (grms)	Test Time (min)	COMMENTS	NAME
												TEST REQUIREMENT	
5/1/01	1157	TRANS Verse	AMB				10-40	.015				Run #1 2 specimens	
							500	.00015		1.04	30		
5/1/01	1231	LONG	AMB				10-40	.015				Run #2 2 specimens	
							500	.00015		1.04	30		
5/1/01	1335	VERT	AMB				10-40	.015				Run #3 SOFT CASE ONLY	
							500	.00015		1.03	30		
5/1/01	1412	VERT	AMB				10-40	.015				Run #4 HARD CASE ONLY	
							500	.00015		1.04	30		

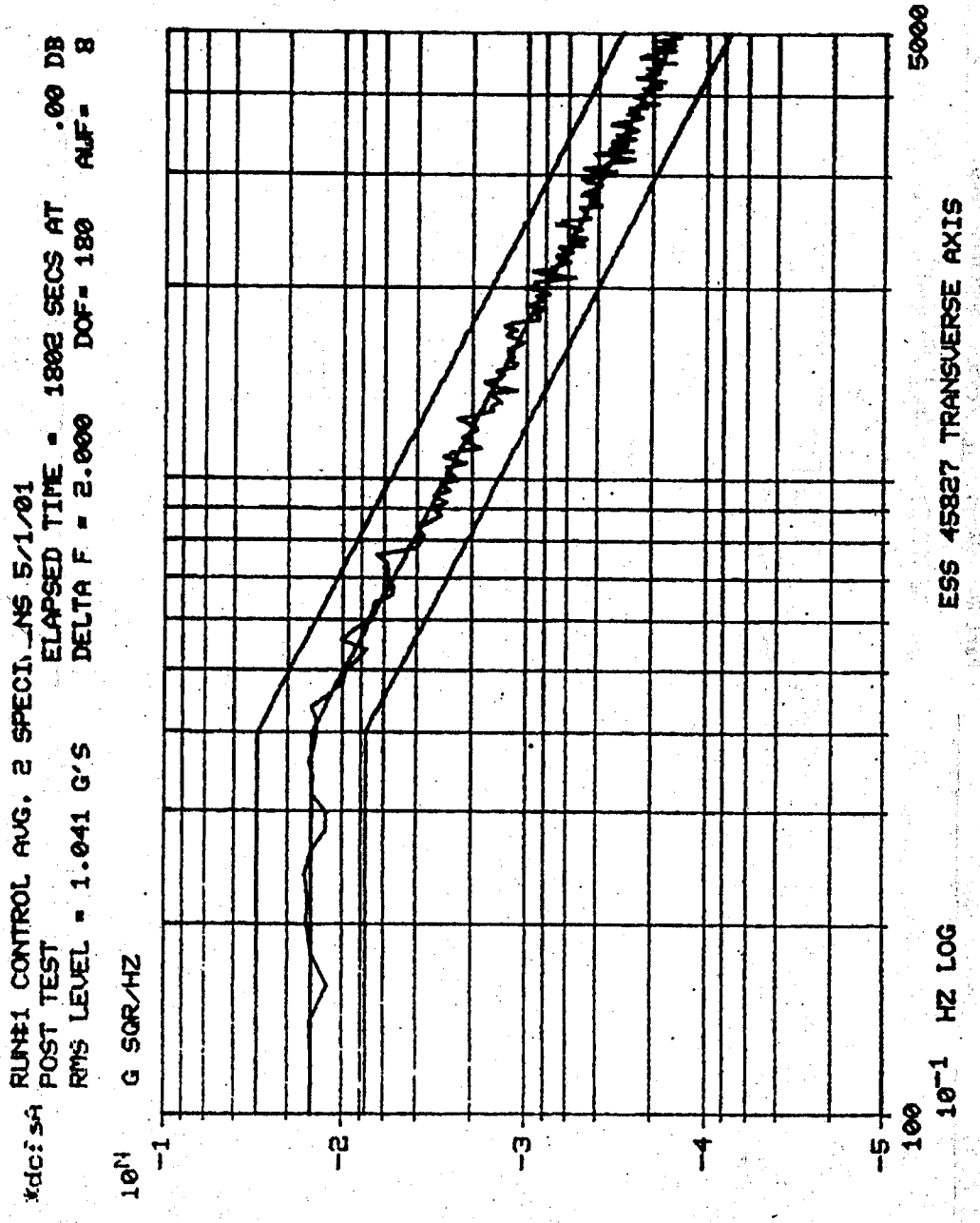
Job No. 45827
Report No. 45827-01
Date 5/1/01
Page 1 of 1

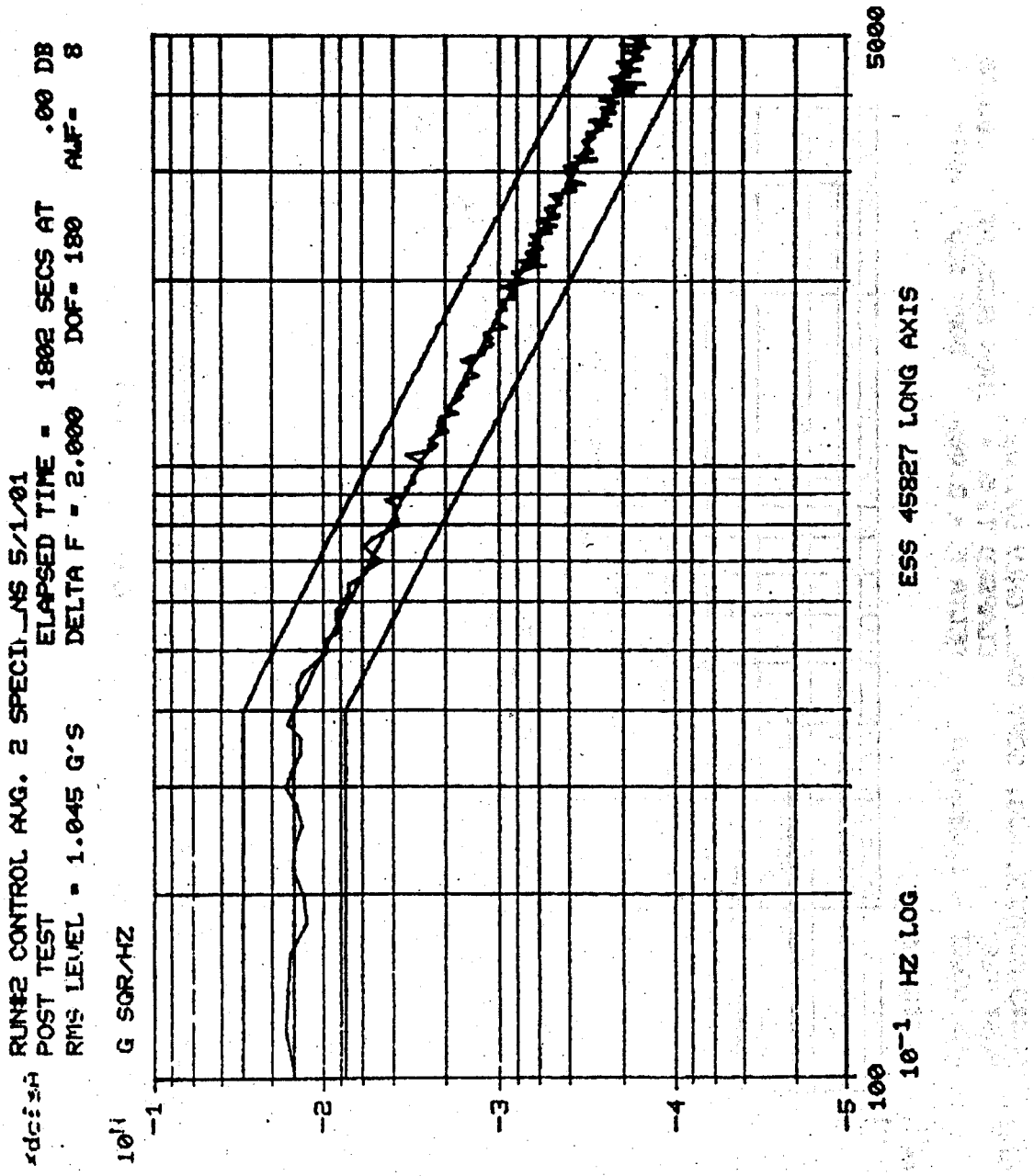
WH-1028A

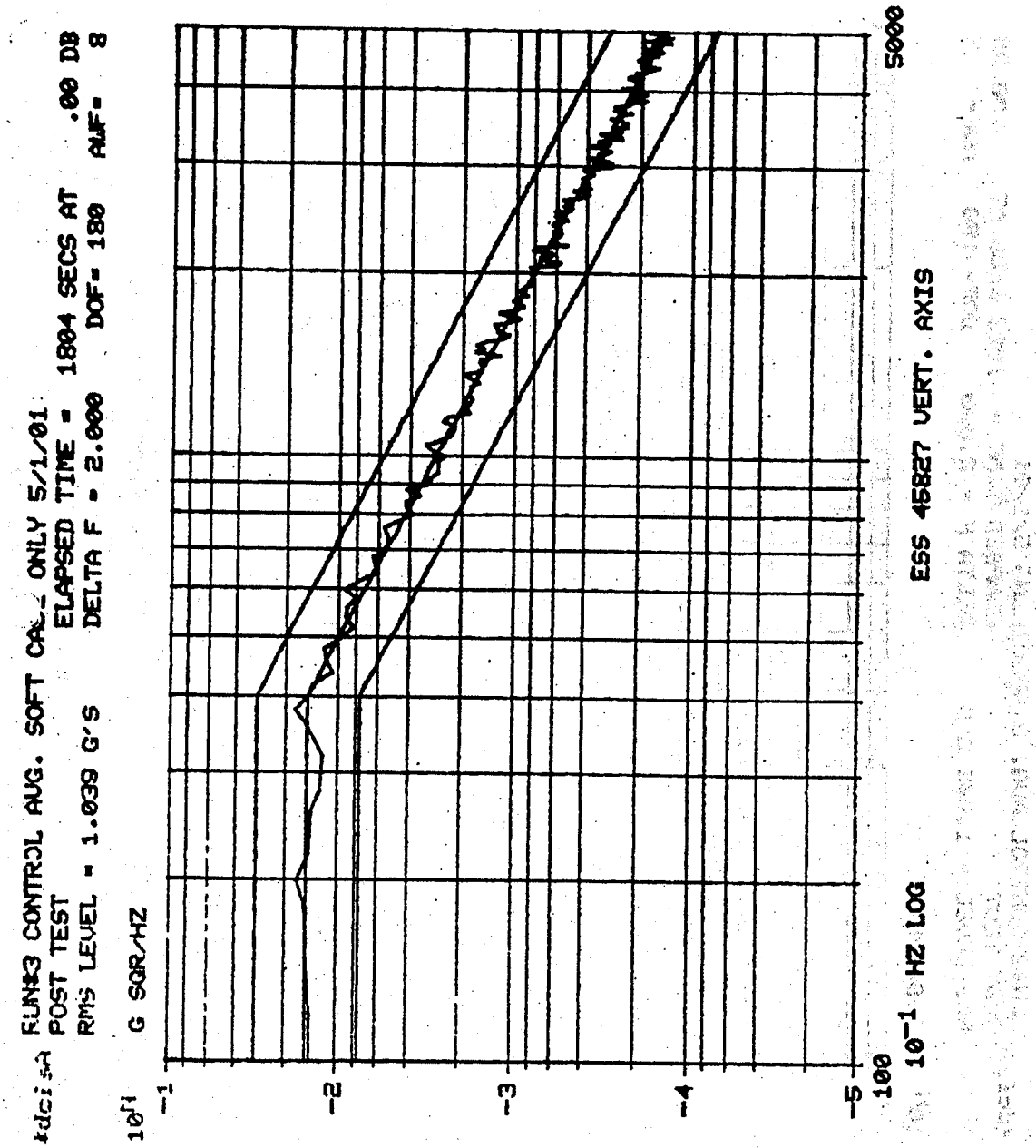
Signed [signature] 5/1/01 LEONARD MATHIS

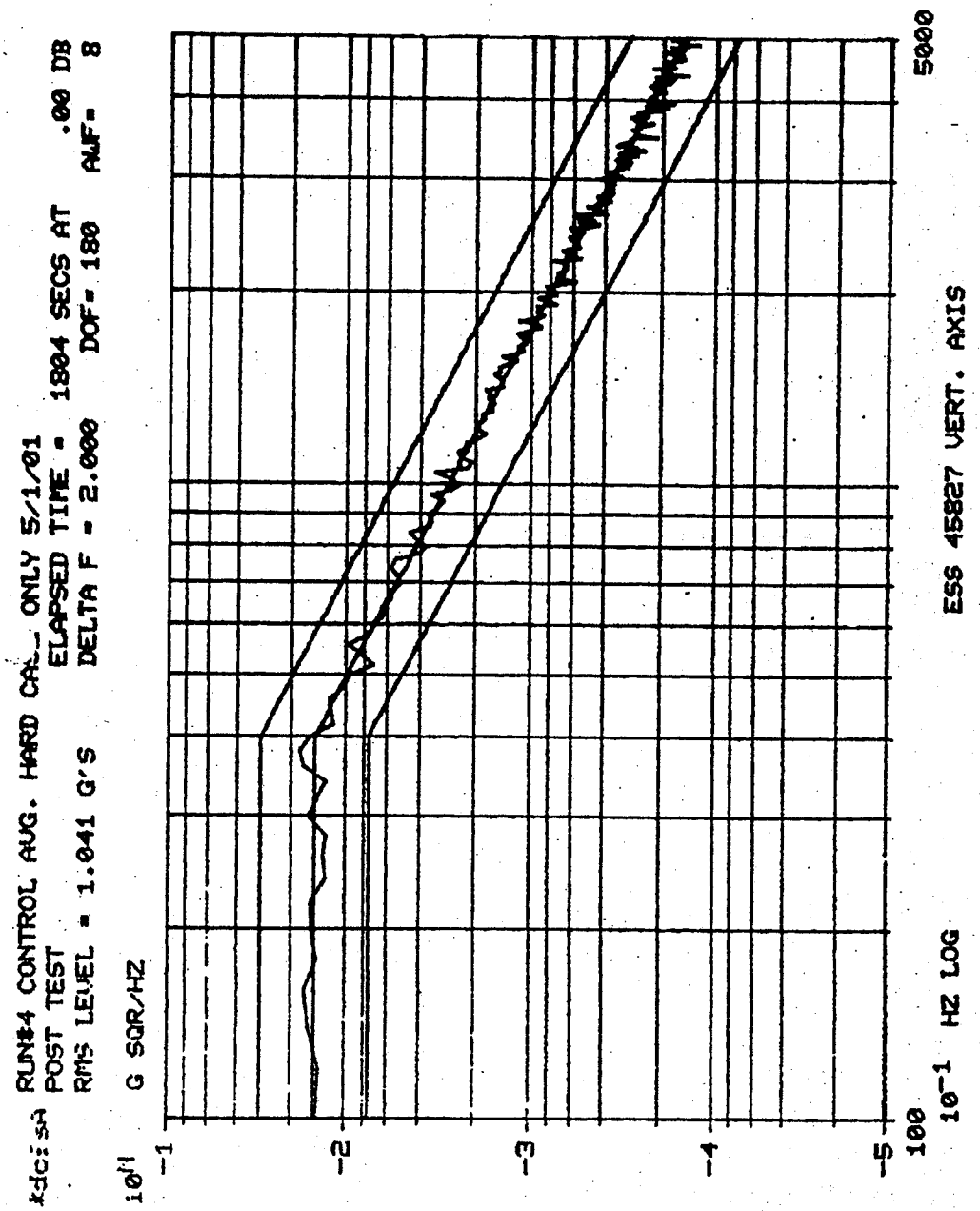
Approved [signature] 5.11.01

WYLE LABORATORIES
Huntsville Facility


RUN#1 CONTROL AVG. 2 SPECTRUMS 5/1/01
POST TEST
RMS LEVEL = 1.041 G'S
ELAPSED TIME = 1802 SECS AT .00 DB
DELTA F = 2.000 DOF= 180 AVF= 8
G SQR/HZ
10^N
-1
-2
-3
-4
-5
100
10^-1 HZ LOG
5000
ESS 45827 TRANSVERSE AXIS


RUN#2 CONTROL AVG. 2 SPECTRUMS 5/1/01
POST TEST
ELAPSED TIME = 1802 SECS AT .00 DB
RMS LEVEL = 1.045 G'S
DELTA F = 2.000
DOF= 180
ALF= 8
G SQR/HZ
10^1
-1
-2
-3
-4
-5
100
10^-1 HZ LOG
5000
ESS 45827 LONG AXIS


RUN#3 CONTROL AVG. SOFT CAL ONLY 5/1/01
POST TEST
RMS LEVEL = 1.039 G'S
ELAPSED TIME = 1804 SECS AT .00 DB
DELTA F = 2.000 DOF= 180 AVF= 8
G SQR/HZ
10^n
-1
-2
-3
-4
-5
100
10^-1 HZ LOG
5000
ESS 45827 VERT. AXIS


RUN#4 CONTROL AVG. HARD CAL ONLY 5/1/01
POST TEST
RMS LEVEL = 1.041 G'S
ELAPSED TIME = 1804 SECS AT .00 DB
DELTA F = 2.000 DOF= 180 AVF= 8
G SQR/HZ
10^n
-1
-2
-3
-4
-5
5000
100
10^-1 HZ LOG
ESS 45827 VERT. AXIS

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ATTACHMENT G

BENCH HANDLING DATA SHEET

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DATA SHEET

Customer ES&S
Specimen DRE Voting Machine
Part No. iVotronic 2000 Amb. Temp. ~74°F
Spec. FEC Standard Photo –
Para. 7.3.2.3 Test Med. –
S/N 10065 Specimen Temp. ~74°F
GSI No

WYLE LABORATORIES

Job No. 45587
Report No. 45587-01
Start Date 5.7.01

Test Title Bench Handling

Criteria: Using one edge (base of machine) as a pivot, the opposite edge shall be raised to a height of four inches above the surface and allowed to drop freely for six drops. Each of the remaining base edges shall be similarly dropped.
Edge 1: Drops 1 - 6 ✓
Edge 2: Drops 7 – 12 ✓
Edge 3: Drops 13 – 18 ✓
Edge 4: Drops 19 – 24 ✓
Post-Test Inspection: No degradation/damage observed. Unit remained fully functional.

Tested By [signature] Date: 5/7/01
Witness – Date: –
Sheet No. 1 of 1
Notice of Anomaly: – Approved [signature] 5.7.01

Wyle Form WH 614A. Rev. APR '84

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ATTACHMENT H

24-HOUR HUMIDITY THERMAL CIRCULAR CHARTS

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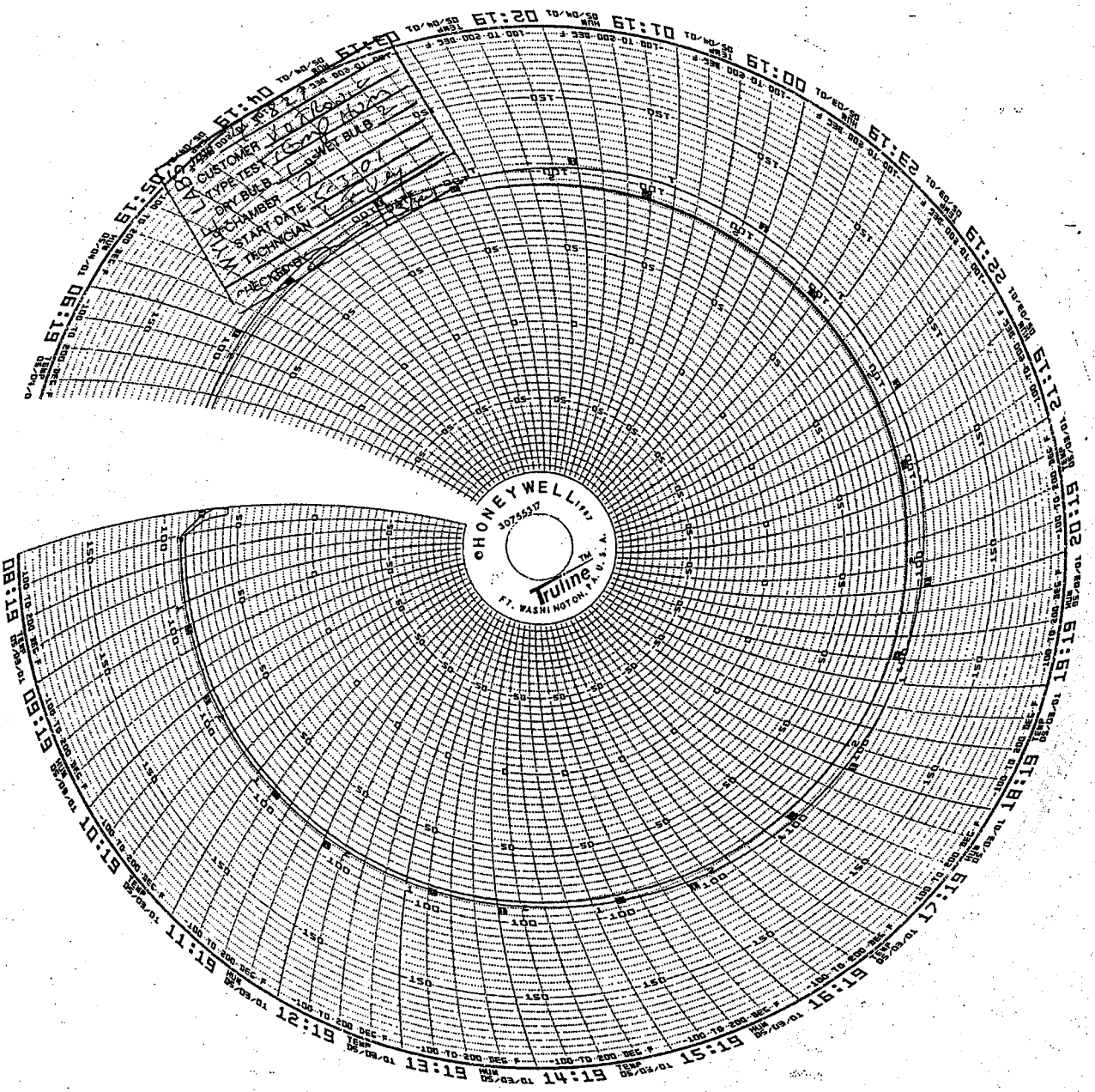
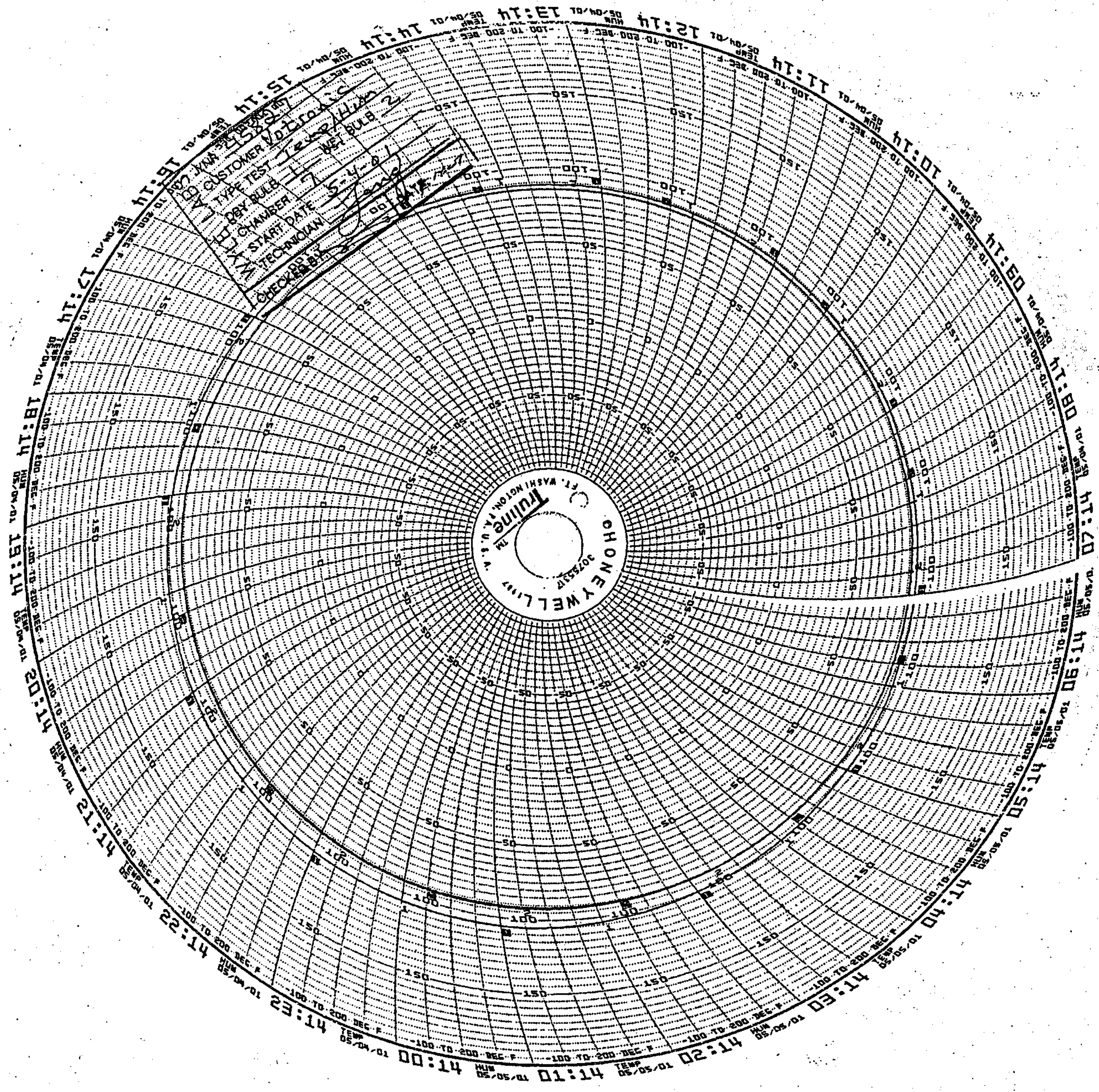

CUSTOMER
TYPE TEST
DRY BULB
WET BULB
CHAMBER
START DATE
TECHNICIAN
HONEYWELL
Truline
FT. WASHINGTON, PA. U.S.A.


CUSTOMER
TYPE TEST
DRY BULB
WET BULB
CHAMBER
START DATE
TECHNICIAN
CHECKED BY
HONEYWELL
Truline
19:14
20:14
21:14
22:14
23:14
00:14
01:14
02:14
03:14
04:14
05:14
06:14
07:14
08:14
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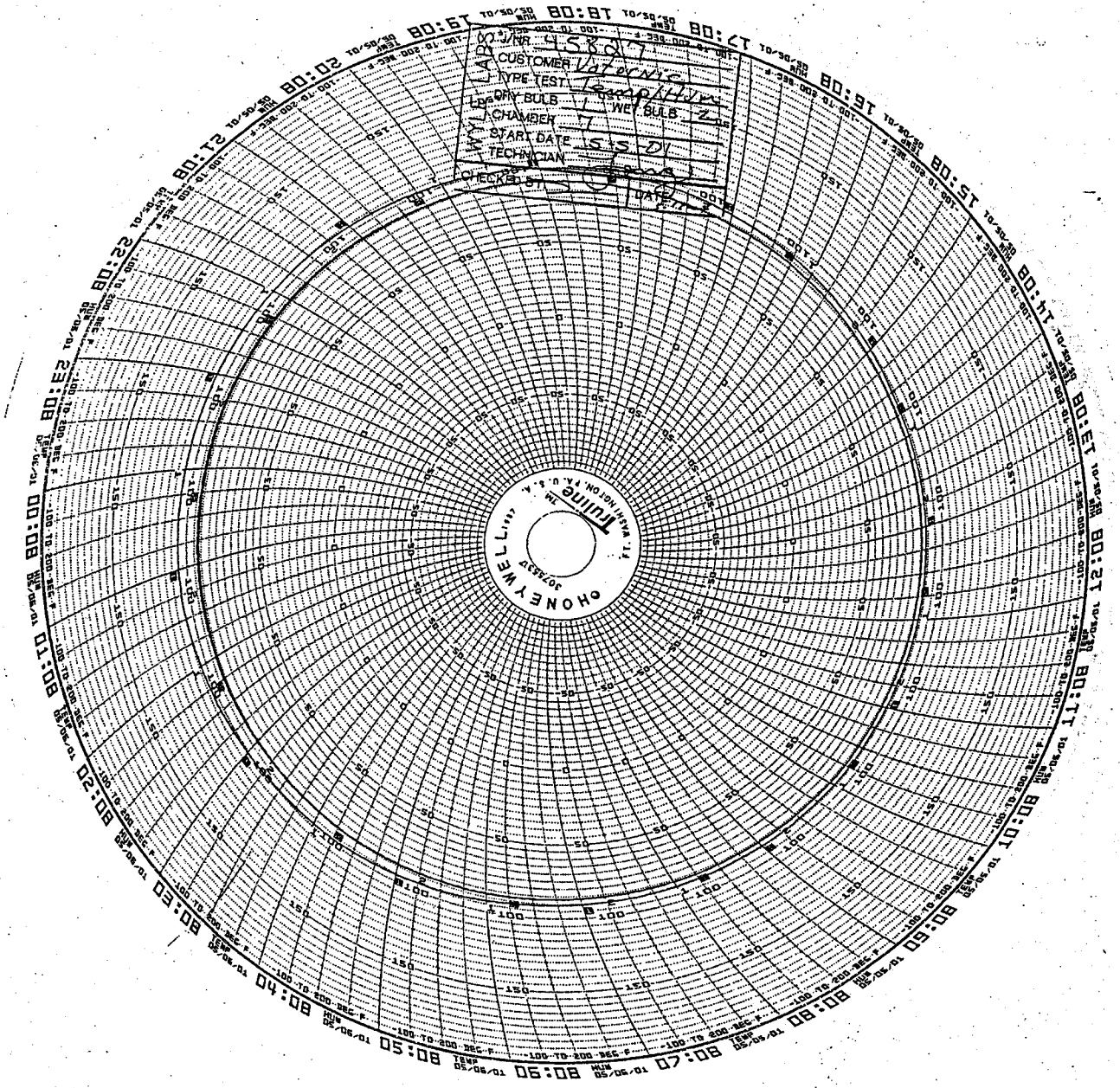
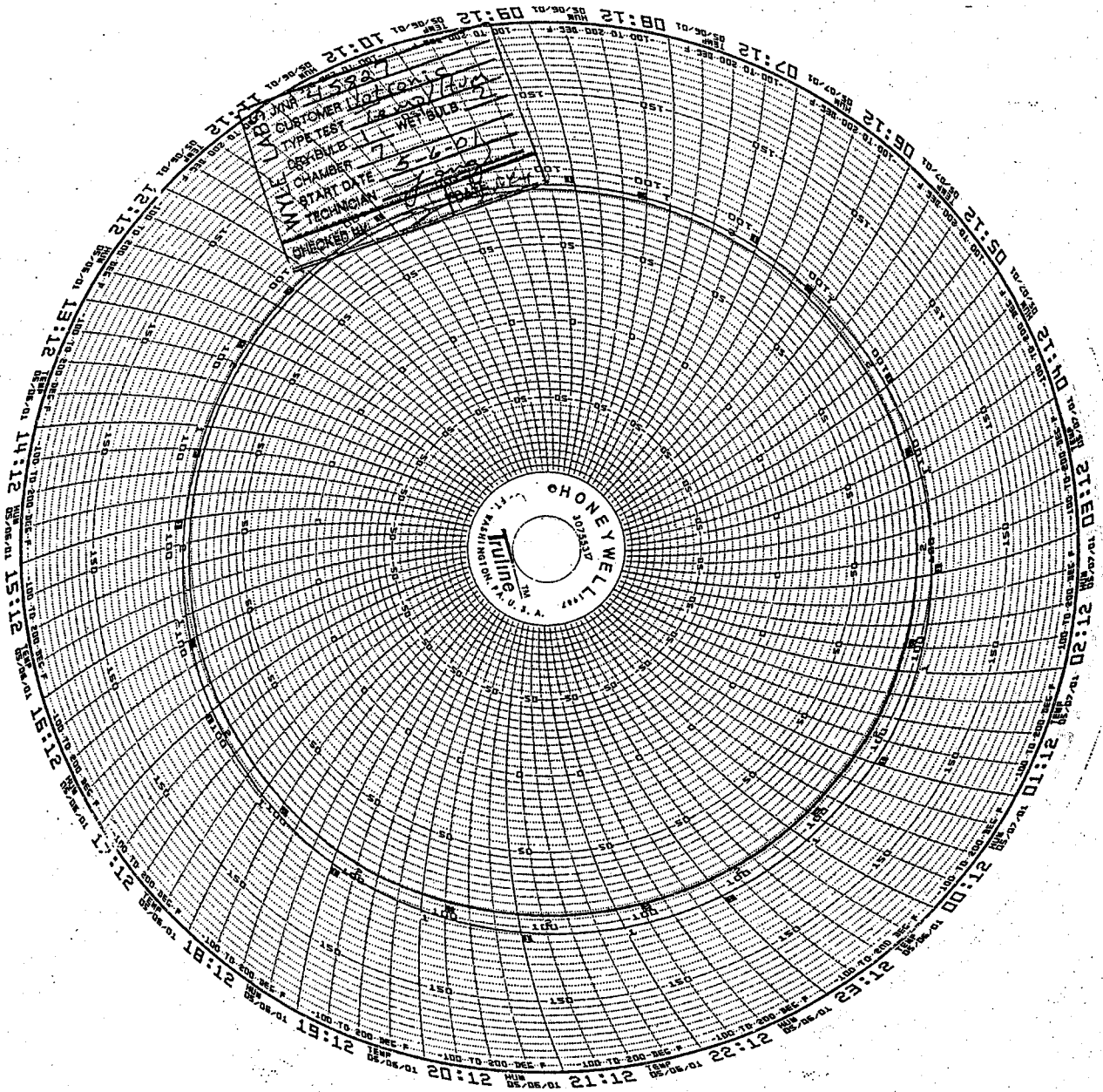
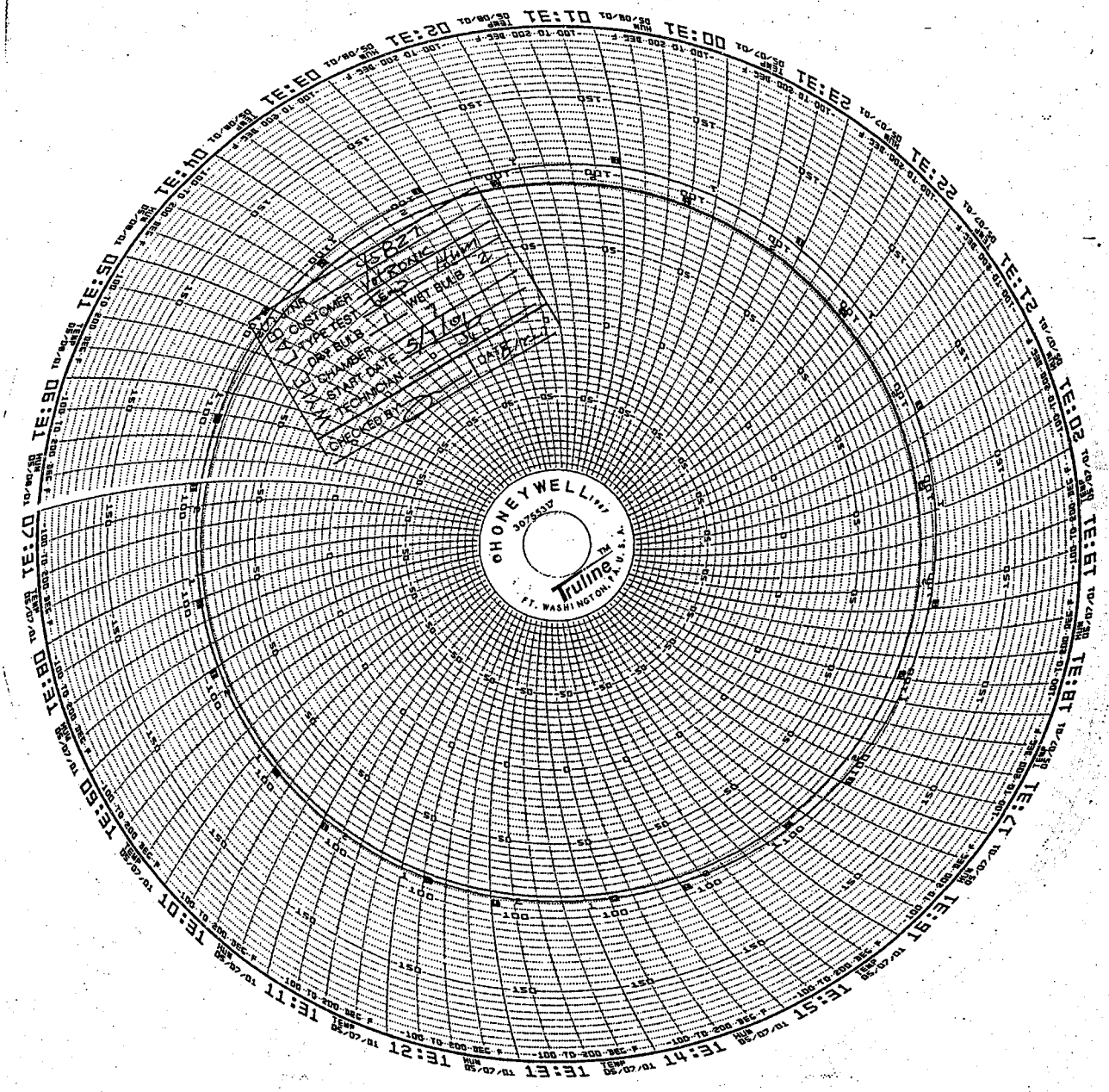
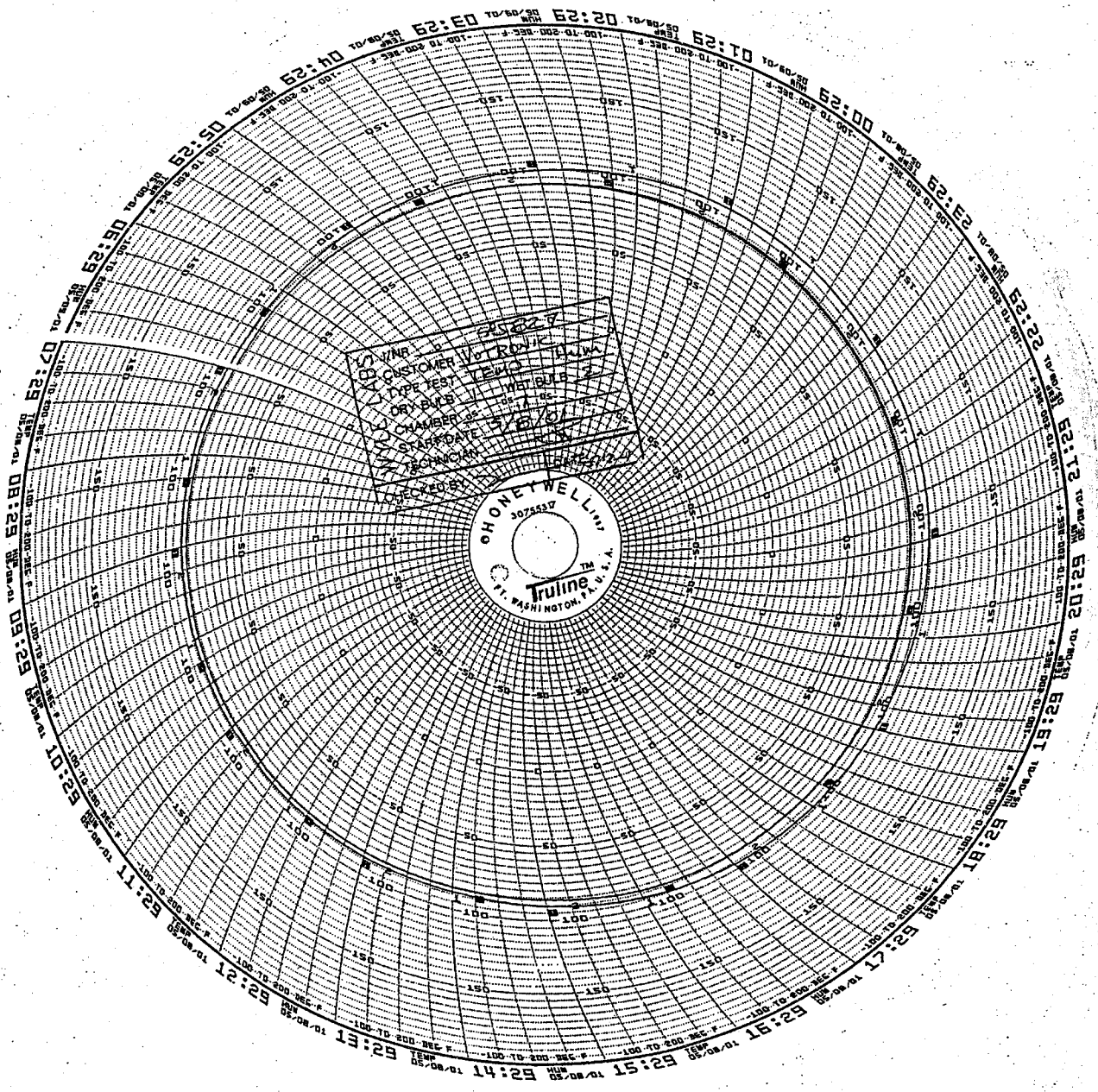
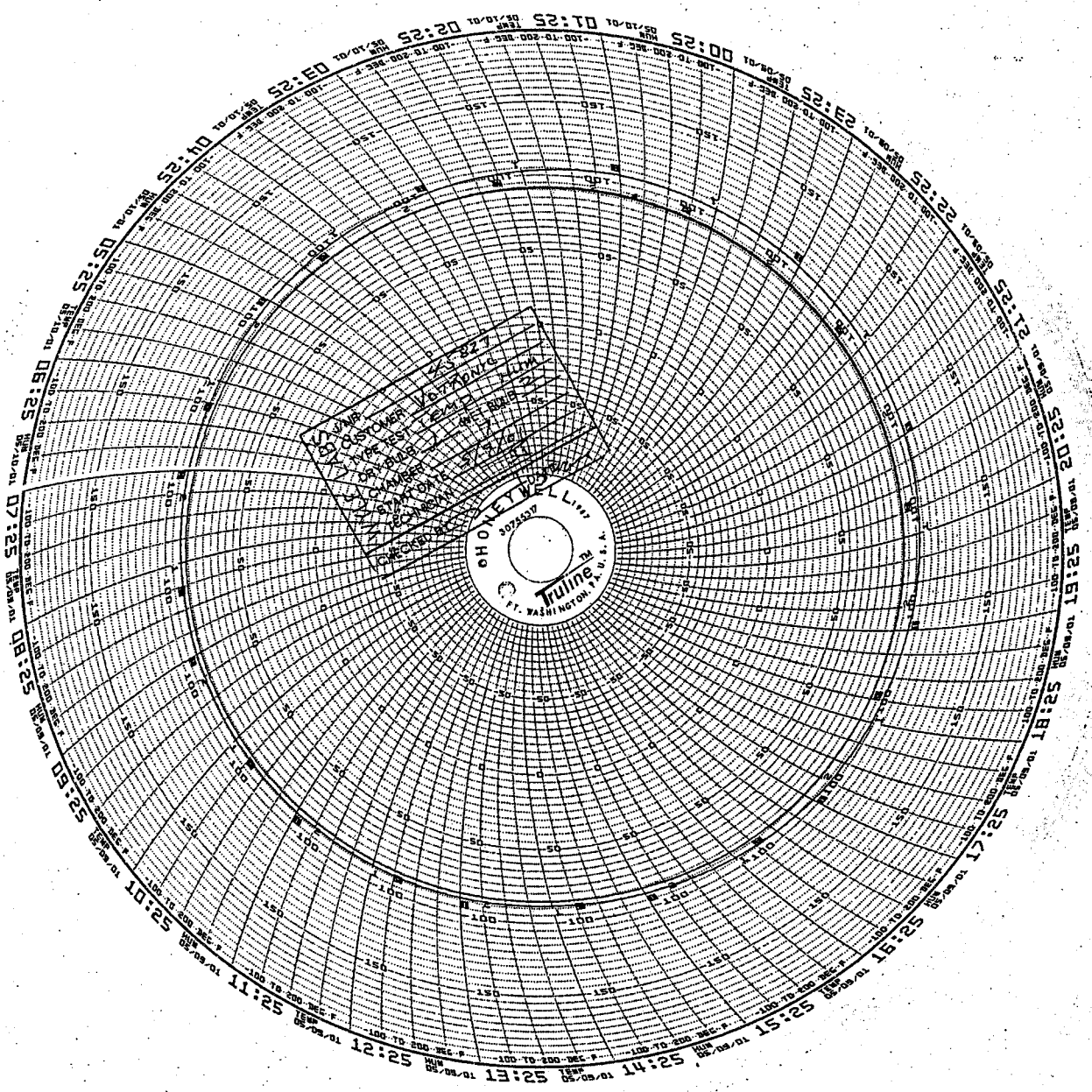
13:14
14:14
15:14
16:14
17:14
18:14

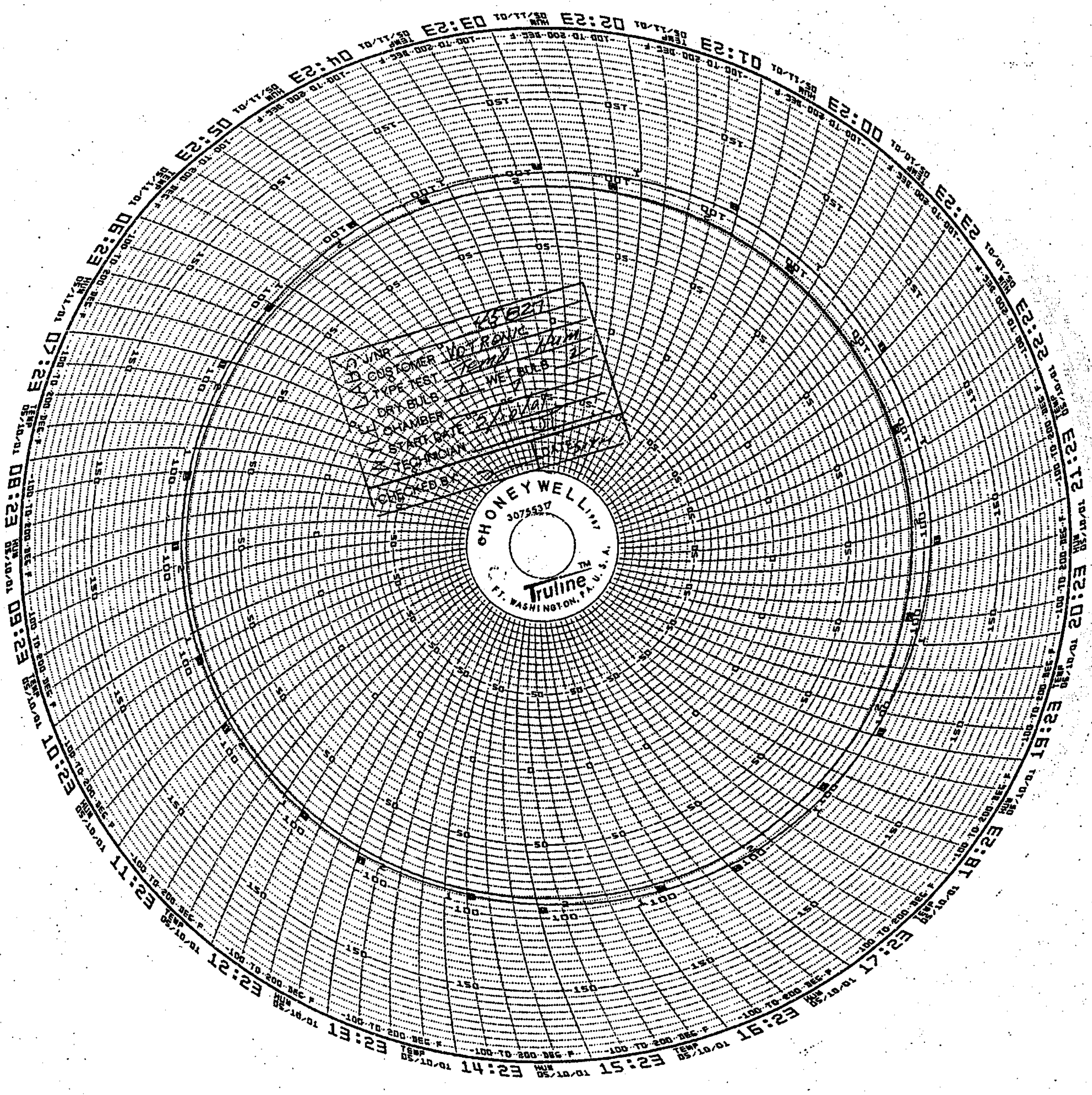

WYLE LABS
J/NR 45827
CUSTOMER Varonis
TYPE TEST Temp/Hum
DRY BULB 77 WET BULB 71
CHAMBER
START DATE 5.5.01
TECHNICIAN
CHECKED BY
DATE 5.7.01
HONEYWELL
Futura

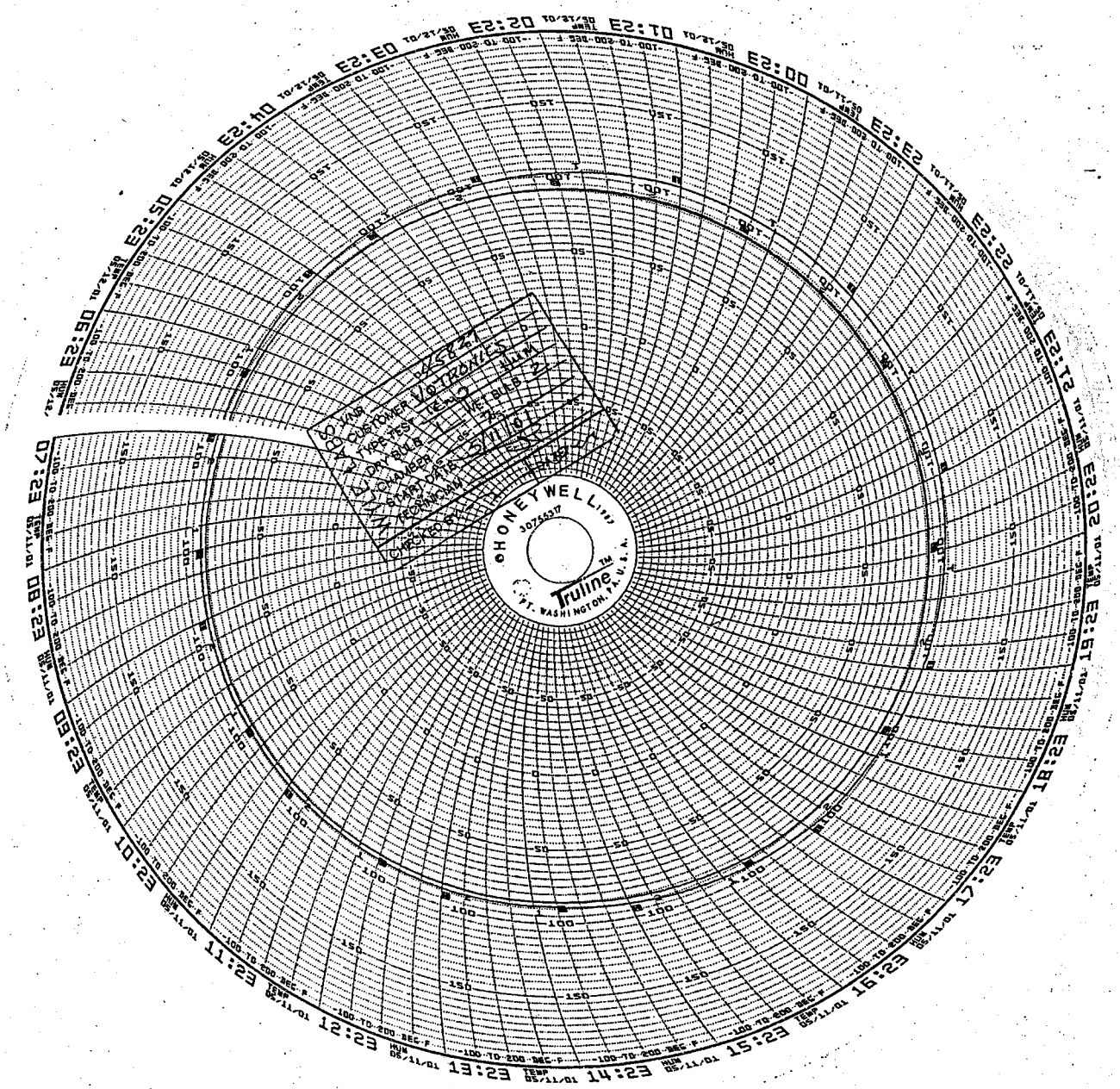

WYLE JOB JWA 45827
CUSTOMER Honeywell
TYPE TEST Temp Humidity
DRY BULB 71 WET BULB 71
CHAMBER
START DATE 5-6-01
TECHNICIAN
CHECKED BY
HONEYWELL
Trilline
MADE IN U.S.A.

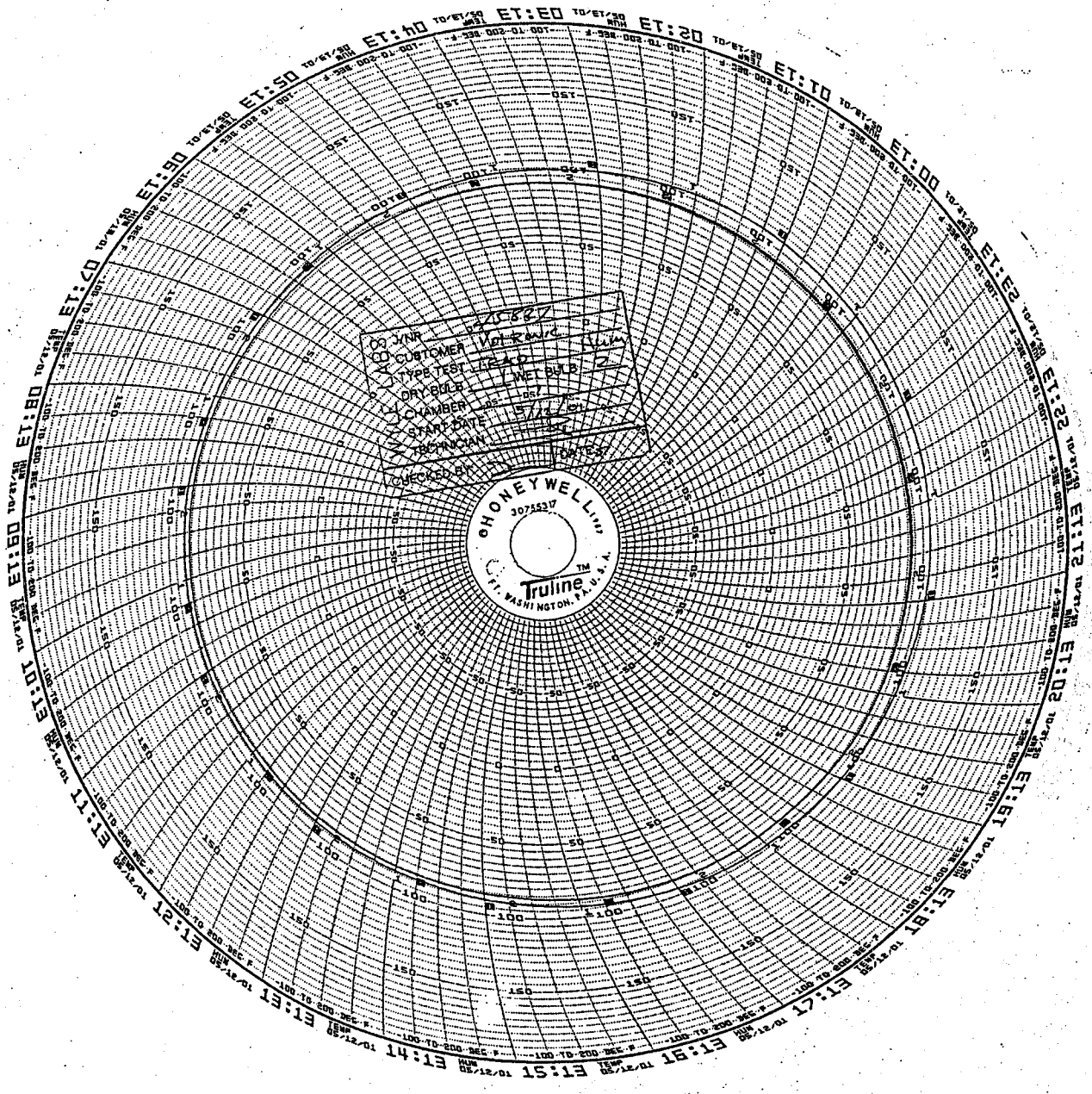

HONEYWELL
Truline
FT. WASHINGTON, PA. U.S.A.
CUSTOMER
TYPE TEST
DRY BULB
WET BULB
CHAMBER
START DATE
TECHNICIAN
CHECKED BY
DATE

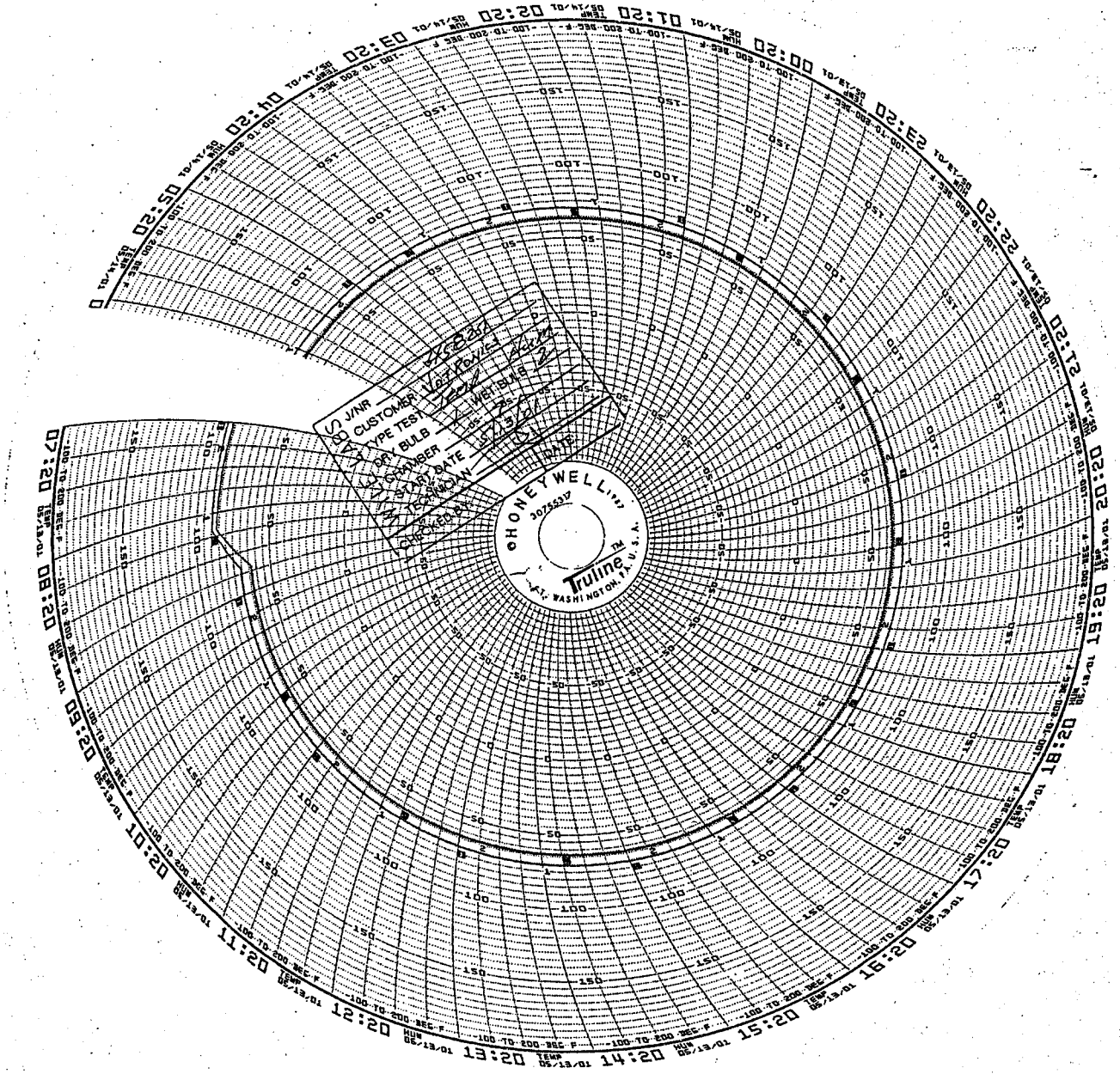

W/NR 45827
CUSTOMER VOLVO
TYPE TEST TEMP
DRY BULB WET BULB
CHAMBER
START DATE 5/8/01
TECHNICIAN
SPECIFICATION
ONE WELL
Truline
FT. WASHINGTON, PA. U.S.A.


HONEYWELL
Truline
FT. WASHINGTON, PA. U.S.A.


HONEYWELL
Truline
FT. WASHINGTON, PA. U.S.A.
CUSTOMER
TYPE TEST
DRY BULB
WET BULB
CHAMBER
START DATE
TECHNICIAN
CHECKED BY
DATE
-100 TO 200 DEG F
05/10/01 14:23
05/10/01 15:23
05/10/01 16:23
05/10/01 13:23
05/10/01 12:23


HONEYWELL
Truline
FT. WASHINGTON, PA. U.S.A.


JOB NO. 45827
CUSTOMER
TYPE TEST LEAD
DRY BULB
WET BULB
CHAMBER
START DATE
TECHNICIAN
CHECKED BY
DATES
HONEYWELL
Truline
FT. WASHINGTON, PA., U.S.A.


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

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ATTACHMENT I

DUST TEST DATA SHEET AND THERMAL CIRCULAR CHARTS

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DATA SHEET

Customer	ES&S			WYLE LABORATORIES	
Specimen	DRE Voting Machine				
Part No.	iVotronic 2000	Amb. Temp.	~74°F	Job No.	45827
Spec.	FEC Standard	Photo	--	Report No.	45827-01
Para.	7.3.2.9	Test Med.	--	Start Date	5.10.01
S/N	00100063	Specimen Temp.	~74°F		
GSI	No				

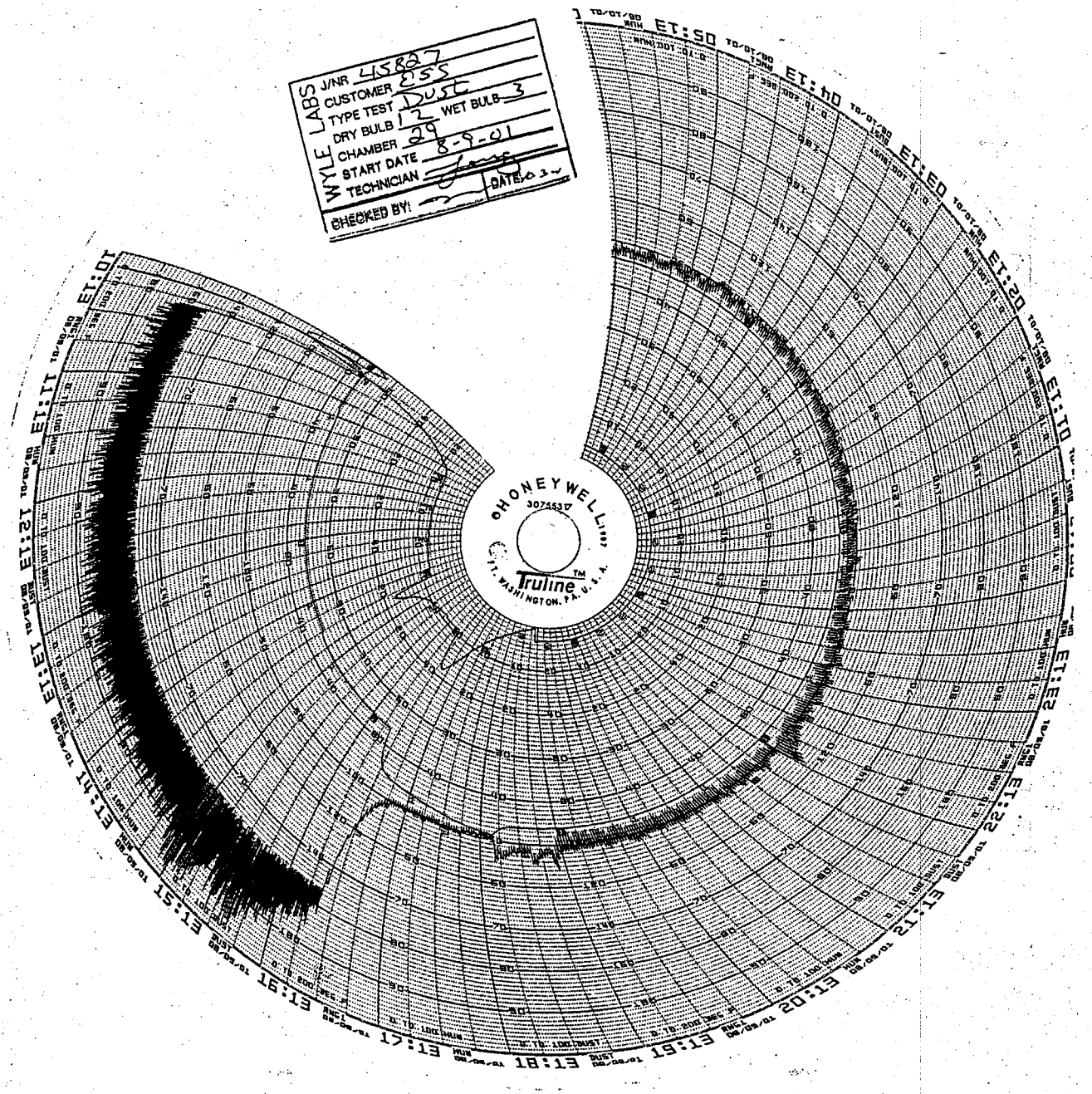
Test Title: Sand & Dust Exposure

Sand & Dust Exposure Testing shall be performed on the iVotronic while stowed within a black nylon canvas carrying case and also with the iVotronic stowed within an ES&S provided voting booth. Additionally, the Communications Pack (S/N 200089) shall be tested while stowed in a hard-shell carrying case.
Each unit was subjected to the Sand & Dust exposure in accordance with Mil-Std-810D, Section II-1.1.1.
iVotronic Post-test inspection (Canvas Carrying Case): Very minor traces of dust intrusion were observed within the iVotronic carrying case. Continued post-test functionality was verified. The iVotronic remained fully functional.
iVotronic Post-test inspection (Voting Booth): Very minor traces of dust intrusion were observed within the iVotronic voting booth. Continued post-test functionality was verified. The iVotronic remained fully functional.
Communications Pack (Hard-shell Case): Dust intrusion into the hard-shell case was observed. The dust was blown clear of the printer. The printer was powered and remained fully functional.

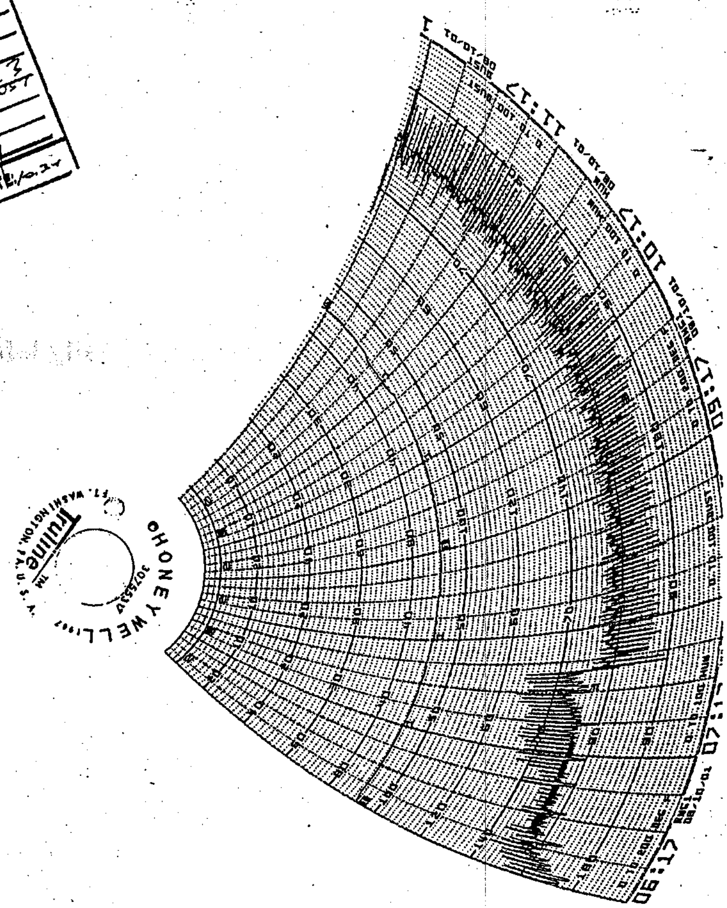
Tested By: Jan Lafferson Date: 10-3-01
Witness: - Date: -
Sheet No. 1 of 1
Approved: 10.3.01

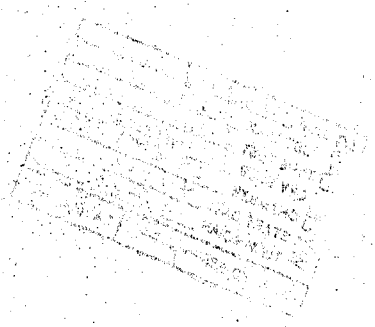
Notice of Anomaly: -

Wyle Form WH 614A. Rev. APR '84


WYLE LABS
J/NR 45827
CUSTOMER ESS
TYPE TEST Dust
DRY BULB 72 WET BULB 53
CHAMBER 29
START DATE 8-9-01
TECHNICIAN
CHECKED BY:
DATE
HONEYWELL
Truline
FT. WASHINGTON, PA. U.S.A.

WYLE LABS
J/NR 45827
CUSTOMER GSS
TYPE TEST Dust
DRY BULB 1 WET BULB 23
29 Hum post
CHAMBER
START DATE 8-10-01
TECHNICIAN
CHECKED BY
DATE





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ATTACHMENT J

RAIN (DRIP) TEST DATA SHEET

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DATA SHEET

Customer	ES&S			WYLE LABORATORIES	
Specimen	DRE Voting Machine				
Part No.	iVotronic 2000	Amb. Temp.	~74°F	Job No.	45827
Spec.	FEC Standard	Photo	--	Report No.	45827-01
Para.	7.3.2.8	Test Med.	--	Start Date	5.10.01
S/N	00100063	Specimen Temp.	~74°F		
GSI	No				

Test Title Rain (Drip) Exposure

Rain (Drip)Testing shall be performed on the iVotronic while stowed within a black nylon canvas carrying case and also with the iVotronic stowed within an ES&S provided voting booth. Additionally, the Communications Pack (S/N 200089) shall be tested while stowed in a hard-shell carrying case.
Each unit was subjected to a drip rate of 7 gallons/sq.ft./hr for 15 minutes with a drip height of 3 feet. Upon completion, each unit shall be inspected for obvious signs of water intrusion.
iVotronic Post-test inspection (Canvas Carrying Case): Slight traces of water intrusion were observed within the iVotronic carrying case. However, the iVotronic remained fully functional. Continued post-test functionality was verified. There was no visible evidence to suggest that any water had penetrated the iVotronic.
iVotronic Post-test inspection (Voting Booth): Slight traces of water intrusion were observed within the iVotronic voting booth. However, the iVotronic remained fully functional. Continued post-test functionality was verified. There was no visible evidence to suggest that any water had penetrated the iVotronic.
Communications Pack (Hard-shell Case): Some water intrusion was present within the hard-shell case and on the printer. The printer was wiped and powered and remained fully functional.

Tested By Jan Lofton Date: 10-3-01
Witness - Date: -
Sheet No. 1 of 1
Notice of Anomaly: - Approved [signature] 10.3.01

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ATTACHMENT K

INSTRUMENTATION EQUIPMENT SHEETS

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wyle laboratories

INSTRUMENTATION EQUIPMENT SHEET

DATE: 5/ 1/01 JOB NUMBER: 45827 TEST AREA: DYN LAB 1
TECHNICIAN: L.MATHIS CUSTOMER: ESS TYPE TEST: VIB

NO.	INSTRUMENT	MANUFACTURER	MODEL #	SERIAL #	WYLE #	RANGE	ACCURACY	CAL DATE	CAL DUE
1	OSCOPE	TEKTRONIX	2213	N/A	101036	60MHZ	4%	4/10/01	10/ 5/01
2	HARD COPY UNIT	TEKTRONIX	4631	B187407	113330	MULTI	MFG	3/23/01	9/19/01
3	TERMINAL	TEKTRONIX	4612	N/A	100589	MULTI	MFG	1/16/01	1/16/02
4	VIB CONTROL	HP	5427A366	2120A00409	100291	MULTI	MFG	11/22/00	11/22/01
5	DMM	KEITHLEY	179A	196804	101203	MULTI	MFG	9/28/00	9/28/01
6	OSCOPE	TEKTRONIX	2213A	B013724	101481	60MHZ	3%	4/10/01	10/ 5/01
7	ACCEL	BRUEL & KJAER	4366	1104817	101774	2KGSV/5KGSK	5%	4/16/01	7/16/01
8	CHARGE AMP	ENDEVCO	2775A	ED75	112653	GAIN	1.5%	1/31/01	7/30/01
9	ACCEL	BRUEL & KJAER	4366	1104831	101814	2KGSV/5KGSK	5%	4/16/01	7/16/01
10	CHARGE AMP	ENDEVCO	2775A	EE30	112651	GAIN	1.5%	1/31/01	7/30/01

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 5/1/01 CHECKED & RECEIVED BY 5.1.01

Q.A. Brenda Mann 5-11-01

WH-1029A, REV, APR '99

wyle laboratories

INSTRUMENTATION EQUIPMENT SHEET

DATE: 5/ 1/01 JOB NUMBER: 45827 TEST AREA: ENV CH 50
TECHNICIAN: L.IVEY CUSTOMER: VOTRONIC TYPE TEST: TEMPERATURE

NO.	INSTRUMENT	MANUFACTURER	MODEL #	SERIAL #	WYLE #	RANGE	ACCURACY	CAL DATE	CAL DUE
1	TEMP RECORDER	HONEYWELL	DR4500	9634Y6268573	112982	-200-600°F	.4°F	3/ 7/01	6/ 5/01
2	TEMP CONTROLLE	THERMOTRON	6800	N/A	105286	-148 to 437°F	±.25%	12/ 4/00	6/ 1/01
3	TEMP ALARM	THERMOTRON	12005	263002	094751	-125-375°F	.25%	12/ 4/00	6/ 1/01

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 5-1-01 CHECKED & RECEIVED BY 5.01.01

Q.A. 5/1/01

WH-1029A, REV. APR '99

wyle laboratories

INSTRUMENTATION EQUIPMENT SHEET

DATE: 5/2/01 JOB NUMBER: 45827 TEST AREA: ENV CH 7 1
TECHNICIAN: L.IVEY CUSTOMER: VOTRONIC/ESS TYPE TEST: HUMIDITY

NO.	INSTRUMENT	MANUFACTURER	MODEL #	SERIAL #	WYLE #	RANGE	ACCURACY	CAL DATE	CAL DUE
1	TEMP ALARM	THERMOTRON	012005	N/A	092490	-125 to 375°F	.25%	3/16/01	9/12/01
2	MICROCOMPUTER	THERMOTRON	3038	7626-TP	114130	-125 - 375°F	.25%	3/16/01	9/12/01
3	TEMP RECORDER	HONEYWELL	DR4500	9628Y6262947	112722	-200-600°F	.4°F	3/16/01	6/14/01

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] 5-3-01 CHECKED & RECEIVED BY [signature] 5.3.01

Q.A. [signature] 5-3-01

WH-1029A, REV, APR '99

wyle laboratories

INSTRUMENTATION EQUIPMENT SHEET

DATE: 5/14/01 JOB NUMBER: 45827 TEST AREA: ENV CH 51- 1
TECHNICIAN: J.LAXSON CUSTOMER: ESS TYPE TEST: TEMP CYCLING

NO.	INSTRUMENT	MANUFACTURER	MODEL #	SERIAL #	WYLE #	RANGE	ACCURACY	CAL DATE	CAL DUE
1	DMM	FLUKE	87	60530991	112224	MULTI	MFG	4/ 3/01	4/ 3/02
2	ALARM LIMIT	NEWPORT	Q2001TC	N/A	105433	-184 - -59°C	1.5%FS	12/ 7/00	6/ 5/01
3	TEMP RECORDER	HONEYWELL	DR450T	9244885050000	109830	-200-600°F	.4°F	3/30/01	6/28/01
4	TEMP CONTROLLE	RESEARCH	828-B11	10033	108416	-400-700°F	.1%FS	12/ 7/00	6/ 5/01

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 Jon A. Laxson 5-14-01 CHECKED & RECEIVED BY S.M.A

Q.A. Bonda Noa 5.14.01

WH-1029A, REV. APR '99

wyle laboratories

INSTRUMENTATION EQUIPMENT SHEET

DATE: 5/18/01 JOB NUMBER: 45827.00 TEST AREA: PACK TECH 1
TECHNICIAN: T.BATES CUSTOMER: ESS TYPE TEST: DROP *

NO.	INSTRUMENT	MANUFACTURER	MODEL #	SERIAL #	WYLE #	RANGE	ACCURACY	CAL DATE	CAL DUE
1	SCALE	OHAUS	CD11	00082316GA	116051	0-50LBS	+/-.01 LBS	3/14/01	3/14/02
2	SCALE	HOWE RICHARDSON	5402	79-08130	101917	2KLB	.5LB	10/27/00	10/26/01

*Fiberboard Package

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] 5-21-01 CHECKED & RECEIVED BY [signature] 5-21-01

Q.A. Brenda Mann 5.21.01

WH-1029A, REV. APR '99

wyle laboratories

INSTRUMENTATION EQUIPMENT SHEET

DATE: 8/9/01 JOB NUMBER: 45827 TEST AREA: ENV CH 29
TECHNICIAN: L.IVEY CUSTOMER: ESS TYPE TEST: DUST

NO.	INSTRUMENT	MANUFACTURER	MODEL #	SERIAL #	WYLE #	RANGE	ACCURACY	CAL DATE	CAL DUE
1	CONTR DUST	PHOTOMATION	DSMIPB	246438	101480	5G/CU FT 0-10	2%	5/1/01	5/1/02
2	HUM XMITTER	HYCAL	CT-829AR	112055	112055	20-80%RH	MFG	7/17/01	1/11/02
3	TEMP ALARM	RESEARCH	61034	31524-01-49	094525	-175 - 375°F	±0.5%	4/2/01	9/28/01
4	TEMP CONTROLLE	RESEARCH	61011		000717	-175-325°F	±.5%	4/18/01	10/15/01
5	TEMP RECORDER	HONEYWELL	DR450T	920284912600	109510	-200-600°F	.4°F	8/9/01	11/7/01

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 Troy Long 8-9-01 CHECKED & RECEIVED BY 8.9.01

Q.A. Brenda Mann 8.9.01

WH-1029A, REV, APR '99

wyle laboratories

INSTRUMENTATION EQUIPMENT SHEET

DATE: 8/10/01 JOB NUMBER: 45827 TEST AREA: PACK TECH 1
TECHNICIAN: T.BATES CUSTOMER: ESS TYPE TEST: DROP *

NO.	INSTRUMENT	MANUFACTURER	MODEL #	SERIAL #	WYLE #	RANGE	ACCURACY	CAL DATE	CAL DUE
1	SCALE	OHAUS	CD11	00082316GA	116051	0-50LBS	+/-.01 LBS	3/14/01	3/14/02

* Nylon carrying bag & viewing booth

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 Titus Bates 8/13/01 CHECKED & RECEIVED BY 8/13/01

Q.A. 8/13/2001

WH-1029A, REV, APR '99

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INSTRUMENTATION EQUIPMENT SHEET

DATE: 8/10/01 JOB NUMBER: 45872 TEST AREA: ENV. LAB
TECHNICIAN: J.MCDERMOTT CUSTOMER: EGS TYPE TEST: RAIN - DRIP

NO.	INSTRUMENT	MANUFACTURER	MODEL #	SERIAL #	WYLE #	RANGE	ACCURACY	CAL DATE	CAL DUE
1	STOP WATCH	CRONUS	603	NA	115808	10HR	0.5 SEC	6/29/01	9/27/01

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] 8.10.01 CHECKED & RECEIVED BY [signature] 8.10.01

Q.A. Brenda Mabe 8.10.01

WH-1029A, REV, APR '99

ATTACHMENT L

iVOTRONIC PRODUCT SAFETY REPORT

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Report No.: 45827-02
E S & S

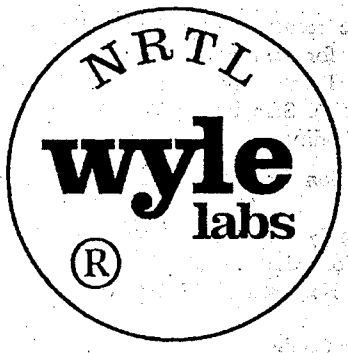
Issued: 9/11/2001

REPORT NO. 45827-02

INSPECTION, TEST AND EVALUATION
OF THE
IVOTRONIC VOTING MACHINE

SUBMITTED TO

ELECTION SYSTEMS AND SOFTWARE
11208 JOHN GALT BOULEVARD
OMAHA, NEBRASKA 68137 - 2364



WYLE LABORATORIES, INC.

WYLE is a Nationally Recognized Testing Laboratory (NRTL)

LISTING REPORT
WYLE LABORATORIES, INC.

7800 Highway 20 West, PO Box 077777, Huntsville, Alabama 35807

Purchase Order No. 512395-00

REPORT NO. 45827-02
INSPECTION, TEST AND EVALUATION
OF THE

IVOTRONIC VOTING MACHINE

SUBMITTED TO
ELECTION SYSTEMS AND SOFTWARE
11208 JOHN GALT BOULEVARD
OMAHA, NEBRASKA 68137-2364

GENERAL: This Report gives the results of the inspection, test and evaluation of the IVOTRONIC VOTING MACHINE for compliance with the applicable requirements of the "Standard for Safety of Information Technology Equipment," UL 60950, Third Edition. Mr. Tim Cordes authorized this investigation. Samples in good condition were provided by the client and tested at Wyle Labs' Huntsville facility.

Safety of Information Technology Equipment, UL 60950

Applicant:	Election Systems and Software 11208 John Galt Boulevard Omaha, Nebraska 68137-2364
Contact:	Mr. Tim Cordes
Telephone:	(800) 247-8683
Fax:	(403) 593-8107
Manufacturer:	Pivot International 14125 West 95th Street Lenexa, Kansas 66215
Contact:	Mr. Shawn Thompson
Telephone:	(913) 438-5210, ext. 1219
Fax:	(913) 438-5201

WYLE LABORATORIES, INC.
Page 3

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E S & S

Issued: 9/11/2001

Revisions

wyle laboratories

REVISION _____
REPORT NO. _____
DATE _____

REV.	DATE	PAGE OR PARAGRAPH AFFECTED	BY	APP'L	DESCRIPTION OF CHANGES

Report No.: 45827-02
E S & S

Issued: 9/11/2001

PRODUCT DESCRIPTION

PRODUCTS COVERED:

Ivotronic Voting Machine

PRODUCT DESCRIPTION:

The products covered by this report are an Ivotronic Voting Machine. The Ivotronic is a system used for collecting and tallying of votes. The total weight of the Ivotronic Voting Machine is approximately 4.5 kg and is considered moveable equipment. The Ivotronic Voting Machine is intended to be operated in an office environment. The Ivotronic Voting Machine is Class II equipment and is intended for use in a Pollution Degree 2 environment. Each unit has been evaluated to the requirements of UL 60950, Third Edition.

ELECTRICAL RATINGS:

120/ 240 Vac, 0.8A, 50 - 60 Hz – Ivotronic Voting Machine

TEST PERFORMANCE

A representative sample of the product was tested in accordance with the "Standard for Safety of Information Technology Equipment, Including Electrical Business Equipment," UL 60950; Third Edition.

The following tests were performed:

Description	Clause
Power Interface (Input) Test	1.6
Permanence of Markings Test	1.7.13
Accessibility Test	2.1.2
Mechanical Strength and Stress Relief	4.2.2, 4.2.3, 4.2.4 & 4.2.7
Heating Test	4.5
Electric Strength	5.2

Results of the tests indicate the specimen conforms to the applicable test criteria.

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CONCLUSION

A representative sample of the product covered by this report has been evaluated and found to comply with the applicable requirements of the "Standard for Safety of Information Technology Equipment," UL 60950, Third Edition.

STATE OF ALABAMA
COUNTY OF MADISON }

James R. Dearman, 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.

SUBSCRIBED and sworn to before me this 11 day of Sept 2001

Notary Public in and for the State of Alabama at Large

My Commission expires April 6, 2002

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: Barbara A. Brooks 11 Sept 01
Barbara A. Brooks, Lead Test Specialist Date

APPROVED BY: Robert R. Loop 11 Sep 01
Robert R. Loop, Project Engineer Date

(jct)

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GENERAL INFORMATION:

The Applicant and Manufacturer have agreed to produce and test Wyle tested products in accordance with the requirements of this report. The Manufacturer should notify Wyle to request authorization prior to using alternate parts, components, or materials.

COMPONENTS:

Components used shall be those shown in the Wyle report covering the products specified in the index including any amendments and/ or revisions.

Symbol Authorization

Based on the data presented in this report, the Ivotronic Voting Machine is authorized to display the Wyle Nationally Recognized Test Laboratory symbol below. The system should bear the symbol shown as evidence of compliance with the appropriate standard for safety.

Listing File Number

This product will be listed under Wyle Laboratories' File Number 45827 as long as the periodic site inspections demonstrate conformance to the mechanical and electrical configuration as delineated in this document. Revocation of the listing voids the authorization above.

LISTING MARK:

The Wyle listing mark applied to the products shall either be separable in form, such as labels purchased from Wyle Laboratories, or on a product nameplate or other media only as specifically authorized by Wyle Laboratories. Use of the listing mark is subject to the control of Wyle Laboratories.

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E S & S

MANUFACTURING AND PRODUCTION TESTS:

Manufacturing and Production Tests shall be performed as required in this Report.

Electric Strength (High-potential) – Dielectric Strength at 1000 Vac (or Peak DC Equivalent) for one second.

FOLLOW-UP SERVICE:

Wyle Laboratories shall conduct random, quarterly, unannounced inspections to ensure conformance with the test and evaluation report, test standards, and field inspections, and to monitor and ensure proper use of the Wyle Product Safety Mark. Special attention will be given to the following:

1. Conformance of the manufactured product to the descriptions in this Report.
2. Conformance of the use of the Wyle mark with the requirements of this Report and the Listing, Labeling, and Follow-up Service Agreement.
3. In-plant quality control procedures and personnel.
4. Manufacturing changes.
5. Performance of specified Manufacturing and Production Tests.

In the event that the Wyle representative identifies non-conformance(s) to any provision of this Report, the Applicant shall take one or more of the following actions:

1. Correct the non-conformance.
2. Remove the Wyle Listing Mark from non-conforming product.
3. Contact the issuing product safety evaluation center for instructions.

GENERAL REQUIREMENTS AND DEFINITIONS:

Recognized – Identifies any component, part or subassembly covered under the recognition service of an NRTL (US) or a CO (Canada) and intended for use in Listed, Certified, or Recognized products.

Listed – Identifies any product covered under the Listing or Certification service of an NRTL or a CO.

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GENERAL REQUIREMENTS AND DEFINITIONS (Continued)

Construction Details – For specific construction details, reference should be made to the following photographs and descriptions. All dimensions are approximate unless specified as exact or within a tolerance. In addition to the specific construction details described in this Report, the following general requirements also apply.

1. **Mechanical Assembly** – components such as switches and wiring terminals are reliably mounted and prevented from shifting or rotating by screws or the mounting format.
2. **Corrosion Protection** – All ferrous metal parts are suitably protected against corrosion by painting, plating or the equivalent.
3. **Internal Wiring** – Internal wiring is reliably routed away from sharp or moving parts. Internal wiring leads terminate in soldered connections made mechanically secure prior to soldering.
4. **Current Carrying Parts** – All current carrying parts are of silver, copper, or a copper base alloy.
5. **Accessibility of Live Parts** – All uninsulated live parts are housed within an enclosure and are adequately protected from contact by the articulated finger probe.
6. **Over-Voltage/Overload Protection** – The models are all protected against overvoltage by a overcurrent protection inherent in the power supply.
7. **Markings** – The unit is marked with the manufacturer's name, model number, electrical ratings, and cautionary markings where required.
8. **Instruction Manual** – An instruction manual is provided with each unit that is shipped from the factory. The instruction may be in the form of a separate booklet, or sheet, or may be part of the instruction manual, but in any case, they shall be separated in format from other instructions and shall appear before any operating instructions. The letters in text and illustrations in the instructions shall be clearly legible. "IMPORTANT SAFETY INSTRUCTIONS" and "SAVE THESE INSTRUCTIONS" shall be emphasized and clearly distinguishable from the rest of the text.
9. **Definitions** – Unless specifically stated otherwise, the following general definitions, terminology, and construction details apply:
   a) **Dimensions** – All dimensions specified are approximate and are within plus or minus one-tenth of the base unit, unless stated otherwise.
   b) **Listed** – Listed or certified by an accredited Certification Organization.
   c) **Component** – Accepted by an accredited Certification Organization with certain restrictions, and appears in that organization's list of accepted components.
   d) **Unlisted components** – No recognized third-party certification.

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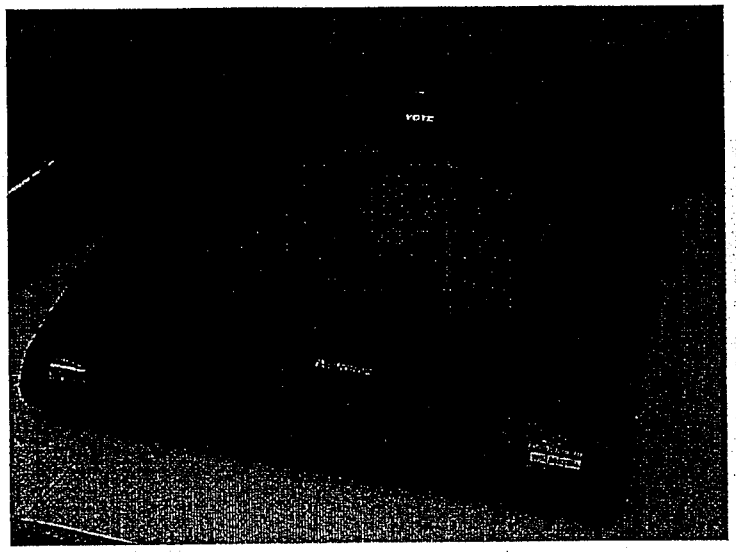

Figure 1
Ivotronic Voting Machine

General – Figure 1 shows the front and top view of the Ivotronic The product measures approximately 50 mm high by 394 mm wide by 328 mm deep by 3 mm thick, with a weight of approximately 4.5 kg. The unit is considered moveable equipment.

1. Unit Enclosure (Bottom Cover) – Recognized Component Plastic (UL). ABS Resin, Grand Pacific Petrochemical Corp., D–100, approximately 3 mm thick, rated minimum 94HB. The bottom cover consists of the bottom and half of the sides, front and rear faces of the enclosure. The bottom cover measures approximately 25 mm high by 394 mm wide by 328 mm deep. Provided with various shaped and style cut–outs for connectors. Secured by screws.

2. Unit Enclosure (Top Cover) – Recognized Component Plastic (UL). ABS Resin, Grand Pacific Petrochemical Corp., D–100, approximately 3 mm thick, rated minimum 94HB. The top cover measures approximately 25 mm high by 394 mm wide by 328 mm deep. Provides with an opening measuring approximately 198 mm high by 256 mm wide for the LCD display. Secured by screws.

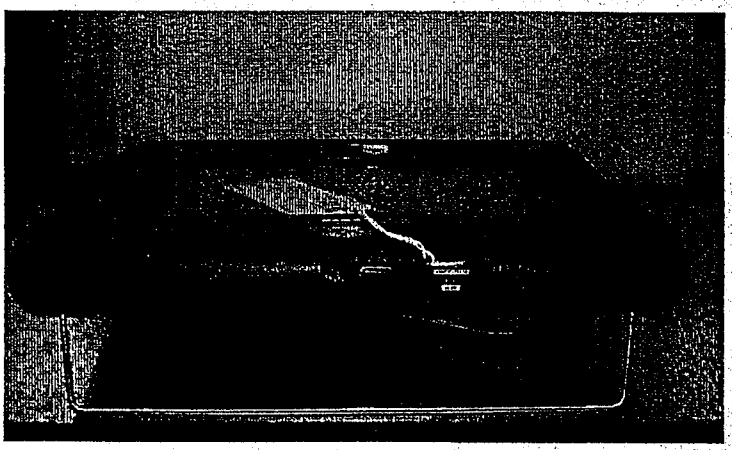

Figure 2
Ivotronic Voting Machine

General – Figure 2 shows the back and top view of the Ivotronic Voting Machine. The Ivotronic Voting Machine measures approximately 50 mm high by 394 mm wide by 328 mm deep by 3 mm thick, with a weight of approximately 4.5 kg. The unit is considered moveable equipment.

1. Unit Enclosure (Display Enclosure) – See Figure 1, Item 1 for details.

2. Unit Enclosure (Bottom Cover) – See Figure 1, Item 2 for details.

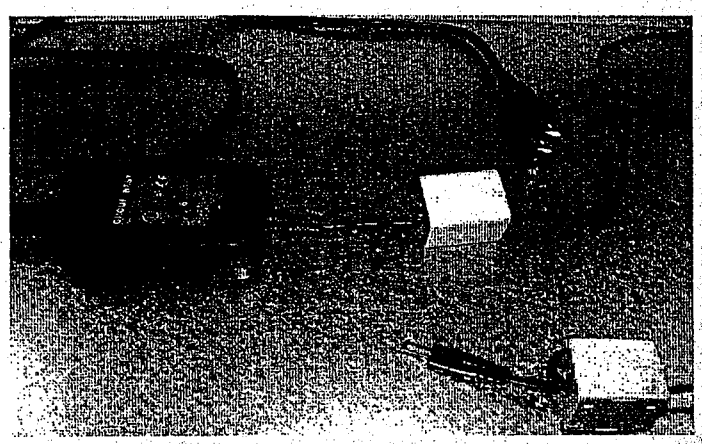

Figure 3
Power Source

General – Figure 3 shows the Ivotronic Voting Machine Power Supply.

1. Power Source – Located in Primary Circuit. Listed Component (UL). Group West, Part No. BUT–09–2770, Rated 9 Vdc, 2770 mA, 24.93 W. Provided with a non-detachable power cord, Type VW - 1SC. Provided with barrel-type connector at one end and a detachable cord set Type SPT-1, 18 AWG/ 2 C. Provided with non–industrial style NEMA 1-15P, attachment plug at one end rated 300 V, 15 A and non–industrial style IEC-320-C7, appliance connector at the other end rated 300 V, 15 A.

Figure 4
Printed Wiring Board and Battery Back-up

General – Figure 4 shows the printed wiring board and the DC Battery back–up.

1. Internal Wiring – Provided in SELV circuits. Suitable for the application and voltages applied. See General Requirements.
2. Lithium Battery – Provided in SELV circuit. Recognized Component (UL). Tadrian Lithium Batteries, Model Number TL-2155, Rated 3.6 Vdc, 1.45 Ah, 85°C. Secured by soldering.
3. Inverter – Provided in SELV circuit. TDK, Part Number CXA–M10A–L. Rated Input 6 Vdc, 1.5 A, 60°C, Rated Output 1200 Vac, 12A, 60°C. Secured by soldering.
4. Fuses – Provided in SELV circuit. Recognized Component (UL). Littelfuse, Part Number R459 003, Rated 125 V, 3A, 125°C. Secured by soldering.

   Alternate – Same as above except Bussman, Part Number SFT-3, Rated 125 V, 3A. Secured by soldering.
5. Back-up Battery Pack – Six provided in series. Provided in SELV circuit. Panasonic, Part Number HHR6550D, Rated 1.2 Vdc, 6800mAh, 60°C.
6. Printed Wiring Boards - Recognized Component (UL). Rated minimum 94-V1, secured by screws.

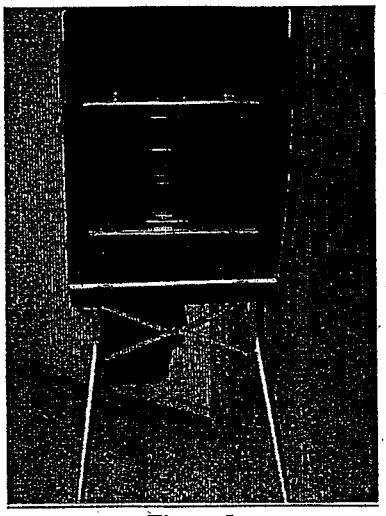

Figure 5
Ivotronic Machine and Floor Stand

General – Figure 5 shows the Ivotronic Machine and Floor Stand. The Floor Stand measures approximately 147 mm high by 614 mm wide by 462 deep by 5.9 mm thick, with a weight of approximately 7.2 kg. The unit is considered moveable equipment.

1. Enclosure (Top) –Recognized Component Plastic (UL). ABS Resin, Grand Pacific Petrochemical Corp., D–100, approximately 3 mm thick, rated minimum 94HB. The top cover consists of the top and half of the sides, front and rear faces of the enclosure. The top cover measures approximately 72 mm high by 614 mm wide by 462 mm deep. Secured by screws.

2. Enclosure (Bottom) – Recognized Component Plastic (UL). ABS Resin, Grand Pacific Petrochemical Corp., D–100, approximately 3 mm thick, rated minimum 94HB. The bottom cover consists of the bottom and half of the sides, front and rear faces of the enclosure. The bottom cover measures approximately 72 mm high by 614 mm wide by 462 mm deep. Provided with oblong, angled openings measuring approximately 67 mm in diameter by 64 mm long for Item 3. Secured by screws.

3. Leg – Four provided. Brushed of Aluminum, approximately 1.9 mm thick. Each leg measures approximately 254 mm in diameter by 1002 mm long. Secured by rivets.

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E S & S

Issued: 9/11/2001

ATTACHMENT A
USER SAFETY WARNINGS

Chapter 2: Warning Messages

When used properly, the iVotronic is safe and effective. The following symbols are used throughout this manual to indicate when hazards may occur during normal operation of the iVotronic. Please read the warnings and proceed with caution when carrying out iVotronic operations that are potentially hazardous.

Electrical Shock Danger: This symbol indicates a danger of electric shock. There are high voltages present inside the enclosure of the iVotronic. To reduce the risk of fire or electric shock, do not attempt to open the enclosure or gain access to areas for which you have not received training. Only ES&S qualified personnel should open the enclosure of the iVotronic.

User Caution: This user caution symbol indicates that damage to the iVotronic or injury to the user could occur if the proper procedures are not followed. Carefully follow all instructions and proceed with caution when this symbol is associated with a set of instructions.

Important Safety Instructions

Important: Carefully read and follow these safety instructions.

Read the User's Guide

Read the user's guide carefully before operating the iVotronic. Carefully follow all instructions and read all warnings.

Power Sources

This product should be operated only from the type of power source indicated in the ID label. Installation should be in compliance with applicable sections of the National Electric Code. Consult your local building code before installing.

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Water and Moisture

Caution: Do not place containers with liquids such as coffee, water or soda on or around the iVotronic. Do not operate the iVotronic in an excessively wet environment. Store the iVotronic in a cool dry place.

Cleaning

Follow instructions in the operator's manual for cleaning the iVotronic. Only use cleaning solutions approved by ES&S in the operator's manual.

Heating

Do not install this product near heat sources such as radiators, air ducts, areas subject to direct sunlight or other products that produce excessive heat.

Power Cord Protection

The power supply cord for this product should be routed or installed in such a manner to protect it from being walked over or pinched. The unit should be powered down completely before connecting or disconnecting the power cord. The power cord should be removed before moving the unit. Only plug the power cord in to an easily accessible unobstructed wall socket.

Servicing

Do not attempt to service the iVotronic unless specifically instructed to do so by ES&S. Do not attempt to gain access to areas of the unit where dangerous voltages are present. Only qualified ES&S technicians should service the iVotronic.

7

Damage Requiring Service

Unplug the iVotronic and call ES&S to consult a qualified service technician under the following conditions:

- When the power cord is damaged.
- If liquid has been spilled into the iVotronic casing.
- Consult a technician if the iVotronic does not function normally while following instructions in the operator's manual. Adjust only the controls specified in the operator's manual. Improper adjustment of other controls may result in damage to the iVotronic and will often require work by an ES&S technician to restore the iVotronic to normal operating condition.
- If the product is damaged in any way.
- When the iVotronic displays a negative change in performance.

Battery Replacement Warning

Caution: Danger of explosion if battery is incorrectly replaced. Replace only with same or equivalent type battery recommended by ES&S. Dispose of used batteries properly.

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E S & S

Issued: 9/11/2001

ATTACHMENT B
TEST DATA

WYLE LABORATORIES, INC.
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Report No.: 45827-02
E S & S

Issued: 9/11/2001

Job No.: 45827 **Date:** 5/24/2001
Specimen ID: IVO tronic **S/N:** V0010062
Customer: ES&S

wyle laboratories

Power Interface (Input) Test Data Sheet	Clause	CSA 60950 (00)/UL 60950	EN 60950
		1.6	1.6

Acceptance Criteria (or Maximum Allowable Limits): Maximum 10% Deviation

Compliance: ☒ Yes ☐ No

Tested by: [signature] Date: 5/24/01
Approved by: [signature] Date: 22 Aug 01

Test No.	Input			
	Volts	Hz	Amps	Watts
1	120	60	.116 mA	13.92
2				
3				
4				
5				
6				

	Test Conditions
1	Power supply is a listed power source
2	
3	
4	
5	
6	

*For power supply outputs and/or convenience outlet receptacle.

WH-1481, Rev. May '01 (-H)

WYLE LABORATORIES, INC.
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Report No.: 45827-02
E S & S

Issued: 9/11/2001

Job No.: 45827 **Date:** 5/24/2001
Specimen ID: IVO tronic **S/N:** V0010062
Customer: ES&S

wyle laboratories

Permanence of Marking Test	Standard	CSA 60950 (00) /UL 60950	EN 60950	EN 61010-1
	Clause	1.7.13	1.7.13	5.3

Compliance: ☒ Yes ☐ No

Tested by: [signature] Date: 5/24/01
Approved by: [signature] Date: 5/24/01

Method:

A sample of the marking label was subjected to the following test. The surface of each marking as noted below was rubbed by hand for a period of 15 seconds with a water soaked cloth and again for a period of 15 seconds with a petroleum spirit (Hexane) soaked cloth. The results are listed below.

Test Conditions		
Use of marking?	Compliant	
Material?	Mylar	
Held By?	Pressure sensitive adhesive	
Applied surface material	Plastic Enclosure	
Observations:	Water	Hexane
Any Damage?	NO	NO
Legible?	Yes	Yes
Curled?	NO	NO
Edges Lifted?	Compliant	Compliant
Easily removed intact?	NO	NO

Comments:

WH-L528, Rev. May '01 (bab)

Report No.: 45827-02
E S & S

Issued: 9/11/2001

Job No.: 45827 **Date:** 5/24/2001
Specimen ID: IVO tronic **S/N:** V0010062
Customer: ES&S

Accessibility Test	Standard	CSA 60950 (00)/UL 60950	EN 60950
	Clause(s)	2.1.2 & 2.8.3	2.1.2 & 2.8.3

Acceptance Criteria (or Maximum Allowable Limits):

Compliance: ☒Yes ☐ No

Tested by: Jimmie Jones Date: 5/24/01
Approved by: Richard Brooks Date: 5/24/01

The EUT with all operator access covers removed was subjected to this test. A test finger was applied without appreciable force to all apertures, in an attempt to contact hazardous parts. Operator detachable connectors were tested in an attempt to contact hazardous parts. Operator detachable connectors were tested during and after disconnections. Openings preventing the entry of the test finger were further tested by means of a straight unjointed version of the test finger, which was applied with a force of 30 N (6.75 lbs). If entry of the unjointed finger was possible, the test with the articulated test finger was repeated with the finger being pushed through the aperture, if necessary.

Results: Compliant No operator accessible parts

The EUT with all operator detachable parts, including fuse holders and lamps were left in place and operator access doors and covers closed, was subjected to this test. A test pin was applied to all apertures located in electrical enclosures, in an attempt to contact hazardous parts.

Results: Compliant No hazardous accessible parts/ voltages

The EUT employing a safety interlock was subjected to this test. The test finger was applied to all covers, guards, doors, etc., to determine that if inadvertent reactivation of the interlock circuit did occur.

Results: Compliant No accessible hazardous parts/ voltages

WH-1529, Rev. May '01 (bab)

WYLE LABORATORIES, INC.
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Report No.: 45827-02
E S & S

Issued: 9/11/2001

wyle laboratories

MECHANICAL STRENGTH AND STRESS RELIEF

Job No.: 45827 **Date:** 5/25/2001
Specimen ID: IVQtronic **S/N:** V0010062
Customer: ES&S

These measurements were taken in accordance with the following standards:

☒ Underwriters Laboratories 60950; ☐ Canadian Standard C22.2 #60950; ☐ European Standard EN 60950;
☐ European Standard 61010-1; ☐ Other: _____

Section 4.2.2 – Steady Force 10N

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

Results: Compliant

Section 4.2. 3 – Steady Force 30N

The EUT was placed on a suitable surface. A steady force of 30N ± 3N was applied for a period of 5 seconds on four surfaces by means of a straight unjointed test finger.

Results: Compliant

Section 4.2. 4 – Steady Force 250N

The EUT was placed on a suitable surface. A steady force of 250N ± 10 N was 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: Compliant

Section 4.2. 5 – Steel Ball Test

With the sample 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, 1300 mm required to cause the sphere to strike the sample in three different locations.

Results: Compliant

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 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: Compliant

Technician: Jennifer Thomas **Date:** 5/25/01
Engineer: Barbara A Brooks **Date:** 30 May 01

WH-1519, Rev. May '01

Sheet No. 1 of 1

WYLE LABORATORIES, INC.
Page B-6

Report No.: 45827-02
E S & S

Issued: 9/11/2001

wyle laboratories

NORMAL TEMPERATURE TEST DATA SHEET

Job No.: 45827 **Date:** 6/13/01

Specimen ID: IVOtronic **S/N:** V0010062

Customer: ES &S

These measurements were taken in accordance with the following standards:

☒ Underwriters Laboratories 60950; ☐ Canadian Standard C22.2 #60950; ☐ European Standard EN 60950;
☐ European Standard 61010-1; ☐ Other: _____

TC No.	TC Location	Readings ☒°C/☐ °F					
1.	T- 1	56.3					
2.	U- 8	43.2					
3.	L- 10	47.0					
4.	C- 1	43.8					
5.	U- 4	34.7					
6.	U- 15	30.6					
7.	U- 1	33.2					
8.	Battery	29.0					
9.	U- 1 Epson	36.8					
10.	Battery Pk	49.1					

Voltage Input to E.U.T.: 120 VAC

Ambient Temperature: 24°C **Relative Humidity:** 43 %

Thermocouple Meter: 115683

Notes on Data: _____

Remarks: _____

Technician: Jennifer Thompson **Date:** 6/13/01

Engineer: Barbara J Brooks **Date:** 29 Aug 01

WH-1437 Rev. May 01

Sheet No. 1 of 2

WYLE LABORATORIES, INC.
Page B-7

Report No.: 45827-02
E S & S

Issued: 9/11/2001

wyle laboratories

NORMAL TEMPERATURE TEST DATA SHEET

Job No.: 45827 **Date:** 6/13/2001

Specimen ID: IVOtronic Acces box **S/N:** V0010062

Customer: ES&S

These measurements were taken in accordance with the following standards:

☒ Underwriters Laboratories 60950; ☐ Canadian Standard C22.2 #60950; ☐ European Standard EN 60950; ☐ European Standard 61010-1; ☐ Other: _____

TC No.	TC Location	Readings ☒ °C/☐ °F					
1.	Not Used	N/A					
2.	F-2	26.3					
3.	U-2	26.2					
4.	U-3	26.3					
5.	Not Used	N/A					
6.	Not Used	N/A					
7.	Not Used	N/A					
8.	Not Used	N/A					
9.	Not Used	N/A					
10.	C-4	26.1					

Voltage Input to E.U.T.: 120 VAC

Ambient Temperature: 24°C **Relative Humidity:** 43%

Thermocouple Meter: 115683

Notes on Data: _____

Remarks: _____

Technician: Jennifer Thomas **Date:** 6/13/01

Engineer: Barbara A Brooks **Date:** 30 Aug 01

WH-1437 Rev. May 01

Sheet No. 2 **of** 2

WYLE LABORATORIES, INC.
Page B-8

Report No.: 45827-02
E S & S

Issued: 9/11/2001

Job No.: 45827 **Date:** 5/24/2001
Specimen ID: IVOtronic **S/N:** V0010062
Customer: ES&S

wyle laboratories

Electric Strength Test Data Sheet	Standard	CSA 60950(00)/UL 60950	EN 60950
	Clause	5.2	5.2

Acceptance Criteria (or Maximum Allowable Limits): No insulation breakdown during test.

Compliance: ☒ Yes ☐ No

Tested by: Daniel Stoner Date: 5/24/01
Approved by: Robert Parker Date: 24 Aug 01

Location	Test Voltage	Result
(A) ON COMPLETE SYSTEM:	1414	Pass
Primary and Earth		
Primary and SELV Secondary		
Primary and SELV Secondary		
Primary and ___ V Secondary		
Primary and ___ V Secondary		
SELV Secondary and Earth		
SELV Secondary and Earth		
___ V Secondary and Earth		
___ V Secondary and Earth		
(B) ON SAFETY ISOLATING TRANSFORMER:		
Primary and SELV Secondary		
Primary and Core/Screen		
Primary and ELV Secondary		
Secondary and Core		
Between SELV and Secondaries		
Between ELV and SELV Secondaries		
(C) ON TNV CIRCUITS: (Including alternative optical isolators and relays)		
Telephone Ringing Circuit and Earth		
Telephone Ringing Circuit and Secondary Circuits		

Comments:

WH-1473, Rev. May 01 (rtf)

Report No.: 45827-02
E S & S

Issued: 9/11/2001

ATTACHMENT C
INSTRUMENTATION EQUIPMENT SHEET

WYLE LABORATORIES, INC.
Page C-2

Report No.: 45827-02
E S & S

Issued: 9/11/2001

wyle laboratories

INSTRUMENTATION EQUIPMENT SHEET

DATE: 6/12/01 JOB NUMBER: 45827 TEST AREA: PRODUCT SA I
TECHNICIAN: J.STONER CUSTOMER: ES&S TYPE TEST: UL 60950

NO.	INSTRUMENT	MANUFACTURER	MODEL #	SERIAL #	WYLE #	RANGE	ACCURACY	CAL DATE	CAL DUE
1	SCALE	SETRA	SUPER COUNT	15864	113735	27LBS	±.0005LBS	4/25/01	4/25/02

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 Jenni Stoner 6/12/01 CHECKED & RECEIVED BY Barbara Brooks 6/12/01

Q.A. Ronda Mann 6/13/01

WH-1029A, REV, APR.'99

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

REPORT NO.: 46229-01
WYLE JOB NO.: 46229
CLIENT P.O. NO.: 720556
CONTRACT: N/A
TOTAL PAGES (INCLUDING COVER): 16
DATE: September 19, 2001

TEST REPORT

47 CFR PART 15, SUBPART B,
CLASS B TESTING
ON THE
IVOTRONIC VOTING MACHINE
(15-INCH VERSION)

For
Pivot International
14125 West 95th Street
Lenexa, KS 66215

STATE OF ALABAMA
COUNTY OF MADISON

James R. Dearman, 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.

SUBSCRIBED and sworn to before me this 21 day of Sept 2001

Notary Public in and for the State of Alabama at Large SEAL

My Commission expires April 6, 2002

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.

TESTED BY: 21 SEPT 01
Tim Yancy, Test Specialist Date

REVIEWED BY: 21 Sept 01
Barbara Brooks, Lead Test Specialist Date

(dsc)

ACCREDITED
Cert. # 845.01

WH-1404, Rev. Feb '97

1.0 INTRODUCTION

1.1 Scope

This report documents conformance with the FCC Rules, Part 15, as listed below, and details the results of the testing performed on one Pivot International iVotronic Voting Machine (15-inch version), at Wyle Laboratories' Huntsville, Alabama, Test Facility. The specimen was received in good condition on August 13, 2001

1.2 Product Description

The iVotronic Voting Machine is utilized for collecting and tallying votes. The iVotronic is provided with a 15-inch LCD.

A detailed description of the test specimen (iVotronic) and the support equipment is provided in Section 2.1.

1.3 References

- Pivot International's Purchase Order No. 720556
- Wyle Laboratories' Request for Quotation No. 545/011638
- ANSI C63.4-1992, "Methods of Measurement of Radio Noise From Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GH
- Code of Federal Regulations (CFR) Title 47, "Telecommunications"
- Wyle Laboratories' Quality Assurance Program Manual, Revision 1
- ANSI/NCSL Z540-1, "Calibration Laboratories and Measuring and Test Equipment, General Requirements"
- ISO 10012-1, "Quality Assurance Requirements for Measuring Equipment"
- MIL-STD-45662A, "Calibration System Requirements"

1.0 INTRODUCTION (Continued)

1.4 Quality Assurance

1.4.1 Quality Assurance Program

All work performed on this test program was completed in accordance with Wyle Laboratories' Quality Assurance Program. 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).

1.4.2 Test Equipment and Instrumentation

All instrumentation, measuring, and test equipment used in the performance of this test program were calibrated in accordance with Wyle Laboratories' Quality Assurance Program, which complies with the requirements of ANSI/NCSL Z540-1, ISO 10012-1, and Military Specification MIL-STD-45662A. 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.

Attachment C contains a list of the instrumentation, measuring, and test equipment that was used to perform the tests.

2.0 SYSTEM TEST CONFIGURATION

2.1 Details of Tested System

The identifiers for the test specimen, support devices, and cables used in the tested system are:

- **Test Specimen**

Item	Part No.	Serial No.	Quantity
iVotronic	15-inch Version	V0100690A	1
Auto Vote Cartridge	Not Provided	PV 0101717-A	1
Power Supply	BUT-09-2770	001*	1

*Assigned by Wyle Laboratories.

- **Support Test Equipment**

  No support equipment was used in the testing of the iVotronic.

2.2 Input Power

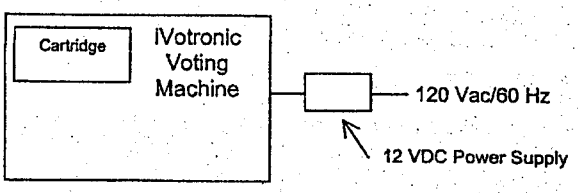
The FCC Part 15 testing was performed using 120 VAC/60 Hz input power.

2.0 SYSTEM TEST CONFIGURATION (Continued)

2.3 Modifications

No modifications were required to achieve compliance.

2.4 iVotronic Test Configuration



3.0 EMISSIONS TESTING

3.1 Test Facility

The Open-Area Test Site facility used to collect the data in this report is located on the grounds of Wyle Laboratories' Huntsville, Alabama Test Facility. This site is fully described in reports provided to the FCC, Commission Reference 31040/SIT1300B3. This site was tested and complies with the requirements of ANSI C63.4-1992.

3.0 EMISSIONS TESTING

3.2 Test Procedure

Radiated emissions from the iVotronic shall be measured in accordance with the procedure outlined in ANSI C63.4-1992. Compliance of the test specimen shall be based on comparison with the Class B limits that are specified in FCC Rules, Part 15. The test shall determine radiated emissions levels from 30 MHz to 1000 MHz and be obtained at an antenna-to-test specimen distance of 3 meters. The iVotronic shall not generate radiated emissions that exceed these specified limits.

Conducted emissions from the iVotronic shall be measured in accordance with the procedure outlined in FCC Rules, Part 15. Compliance of the iVotronic will be based on comparison with the limits that are specified above. The iVotronic shall not generate conducted emissions that exceed these specified limits.

3.0 EMISSIONS TESTING (Continued)

3.2 Test Procedure (Continued)

3.2.1 Field Strength Calculations

The field strength emissions are calculated by adding the Antenna Factor and the Cable Factor and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows.

$$FS = RA + AF + CF - AG + DC$$

where: *FS* = Field Strength
RA = Received Amplitude
AF = Antenna Factor
CF = Cable Attenuation Factor
AG = Amplifier Gain
DC = Distance Correction

For example: assume a receiver input reading of 52.5 dBµV is obtained. The Antenna Factor, 7.4 dB, and Cable Factor, 1.1 dB, are added and the amplifier gain, 29 dB, is subtracted.

$$FS = 52.5 + 7.4 + 1.1 - 29$$

$$FS = 32.0 \text{ dBµV/}m$$

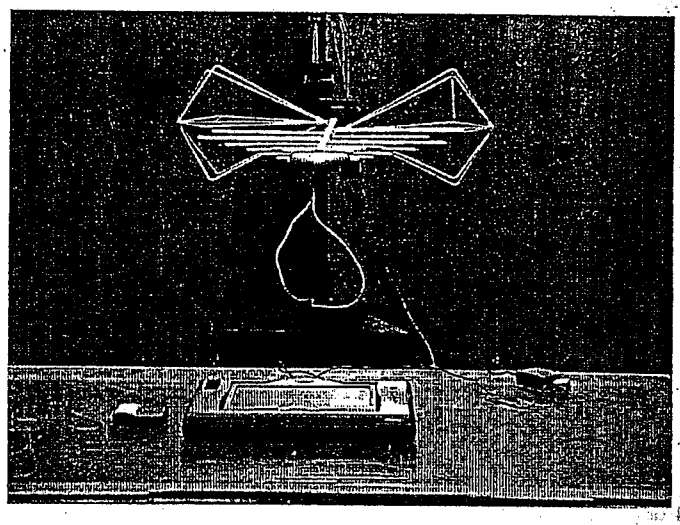
Correction for measurement distance from 3 meters to 30 meters (if necessary) would add the distance correction factor of -20.0 dB to the value of *FS*.

$$FS \text{ (3 meters)} = 32.0 \text{ dBµV/}m - 20.0$$

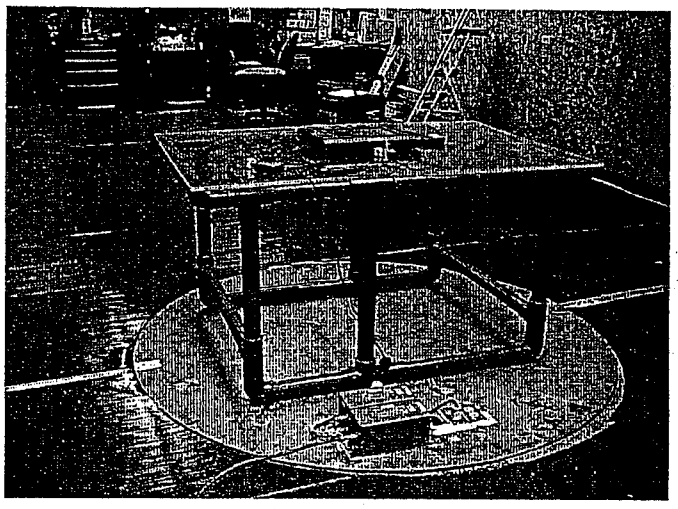
$$FS \text{ (30 meters)} = 12.0 \text{ dBµV/}m$$

3.3 Test Results

The radiated and conducted emissions from the iVotronic complied with FCC Part 15, Class B, limits. No anomalies were noted. The test data is presented in Attachment B.



Photograph A-1
Radiated Emissions Test Setup



Photograph A-2
Conducted Emissions Test Setup

wyle laboratories

Wyle Labs
7800 Highway 20 West

256-837-4411

Customer: PIVOT
Specification: FCC B RADIATED

Work Order #:	46229	Date:	Mon Aug-13-2001
Test Type:	Radiated Scan	Time:	09:54:34
Equipment:	VOTING MACHINE	Sequence:	9
Manufacturer:	ES&S	Tested By:	T.Yancy
Model:	1700		
S/N:	V0100590A		

Equipment Under Test (= EUT):*

Function	Manufacturer	Model	S/N
*VOTING	ES&S	1700	V0100590A

Support Devices:

Function	Manufacturer	Model	S/N
None			

Test Conditions / Notes:
ACTIVE VERTICAL/HORIZONTAL

Transducer Legend:

T1=3meterscables	T3=3meter ant fac

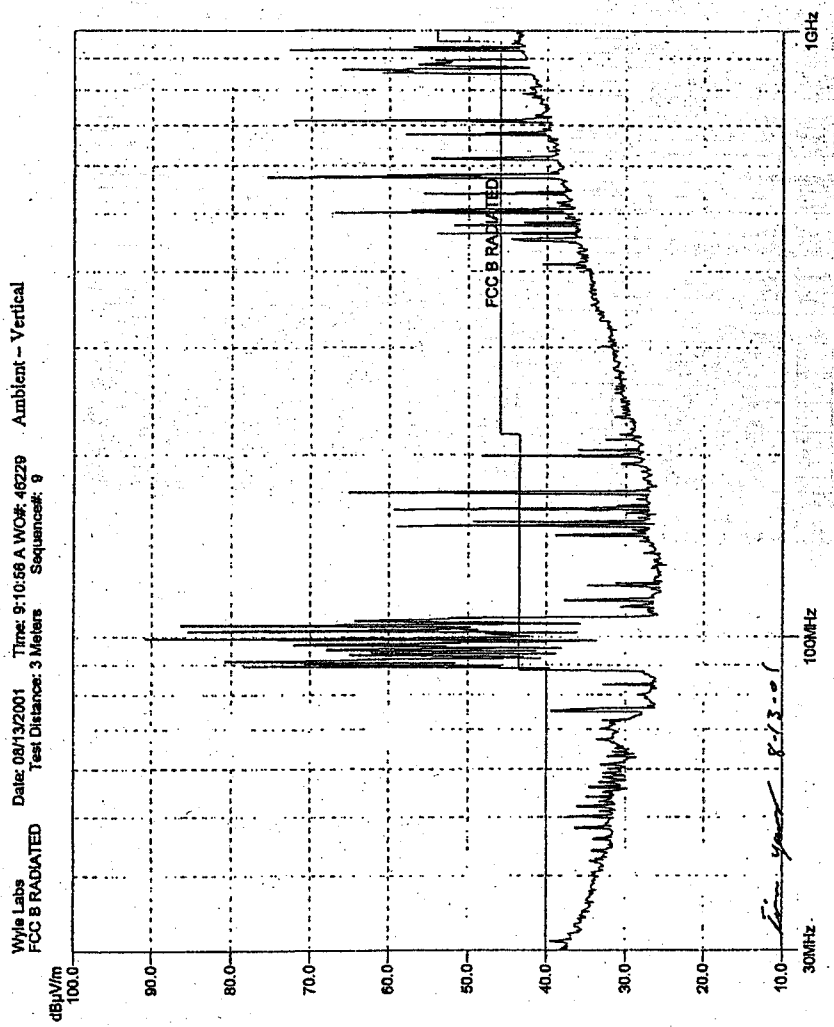
Measurement Data: Readings listed by frequency. Test Distance: 3 Meters

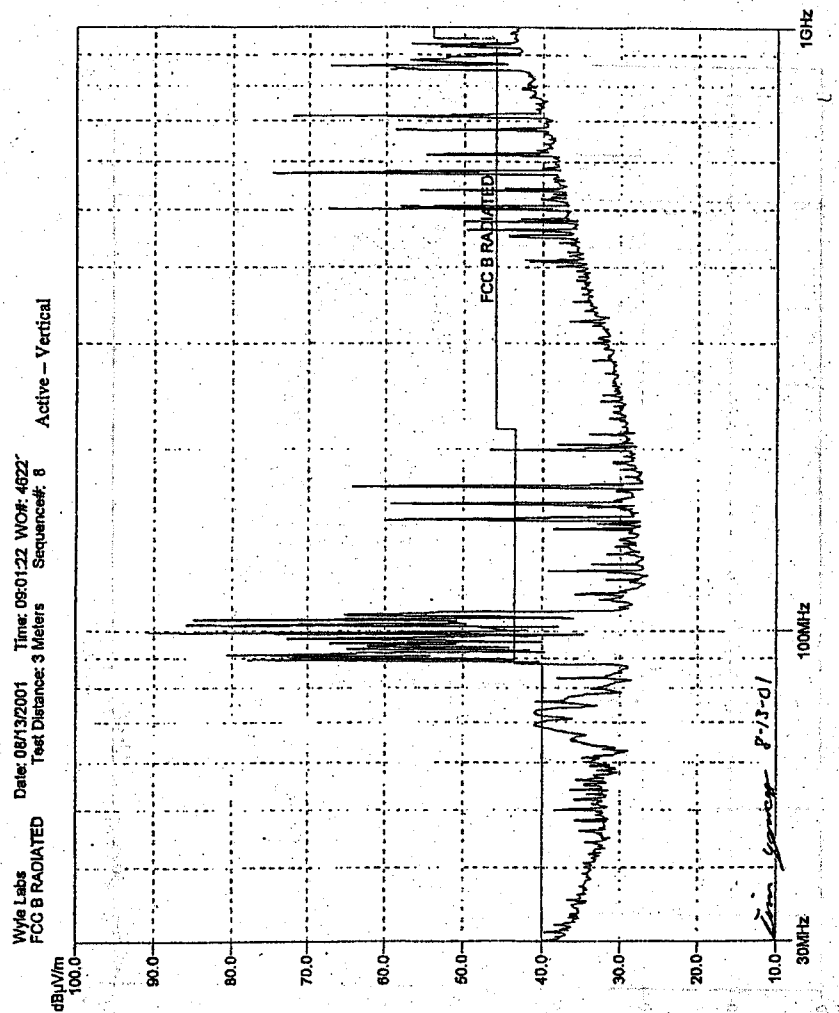
#	Freq MHz	Rdng dBuV	T1	T2	T3	Dist	Corr dBuV/m	Spec dBuV/m	Polar	Type	Margin
1	69.320	27.5	+1.0		+9.4		+0.0	37.9	40.0	Vert	Quasi Peak	-2.1
2	72.711	27.7	+1.1		+8.9		+0.0	37.7	40.0	Vert	Quasi Peak	-2.3
3	75.984	28.8	+1.1		+8.5		+0.0	38.4	40.0	Vert	Quasi Peak	-1.6
4	240.031	20.8	+2.0		+11.6		+0.0	34.2	46.0	Horiz	Quasi Peak	-11.8
5	280.029	22.1	+2.1		+12.7		+0.0	36.9	46.0	Horiz	Quasi Peak	-9.1
6	300.026	19.0	+2.2		+13.2		+0.0	34.4	46.0	Horiz	Quasi Peak	-11.6
7	325.033	22.9	+2.3		+13.7		+0.0	38.9	46.0	Horiz	Quasi Peak	-7.1
8	375.024	19.3	+2.4		+15.1		+0.0	36.8	46.0	Horiz	Quasi Peak	-9.2

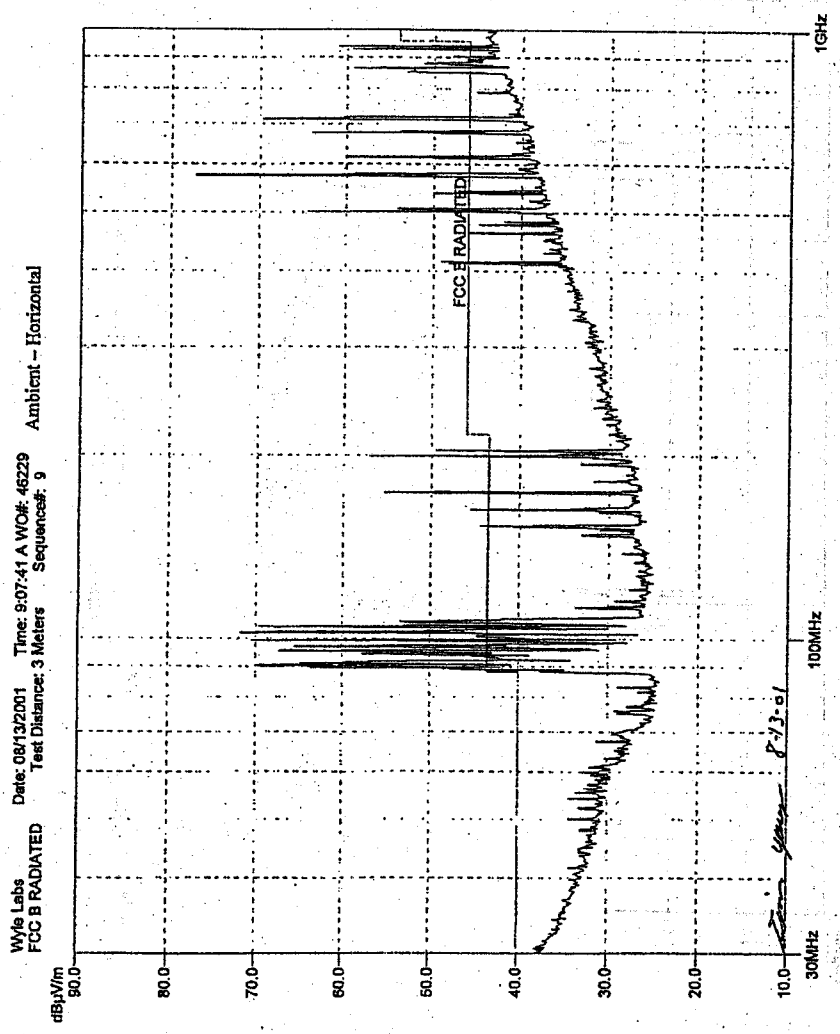
Tim Yancy 8-13-01
Barbara A Brooks 6 Sept 01

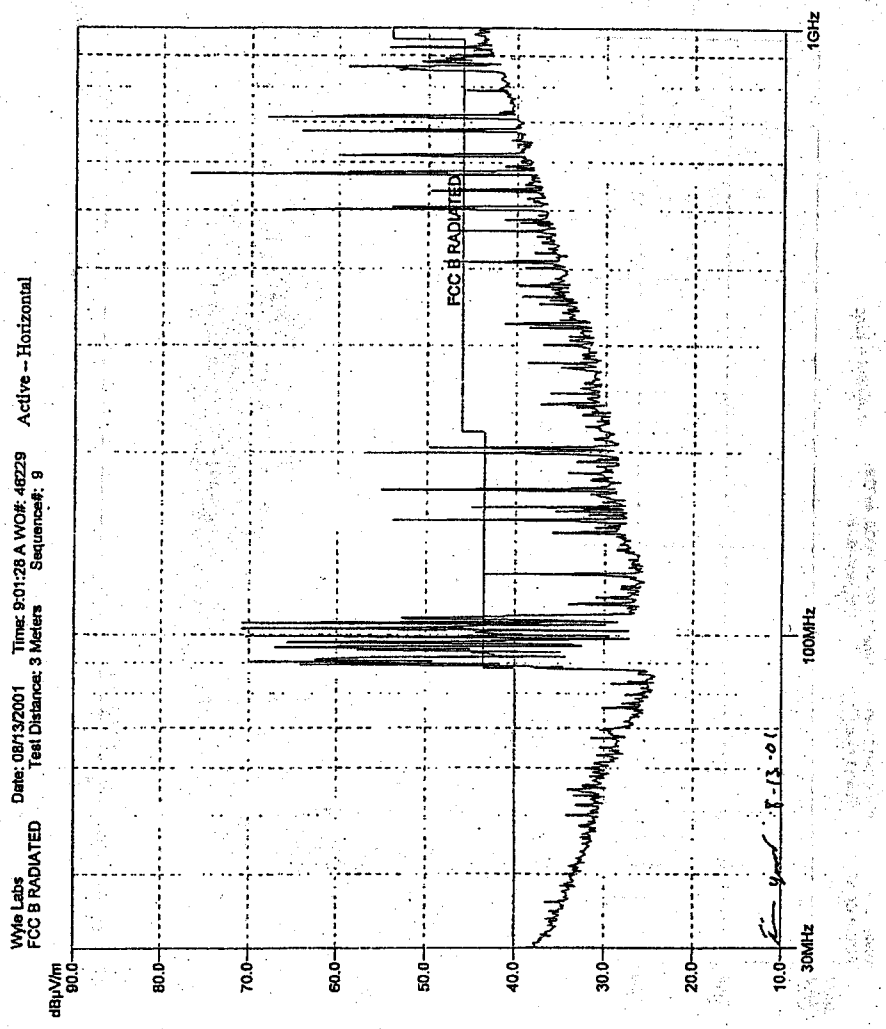
Page 1 of 1

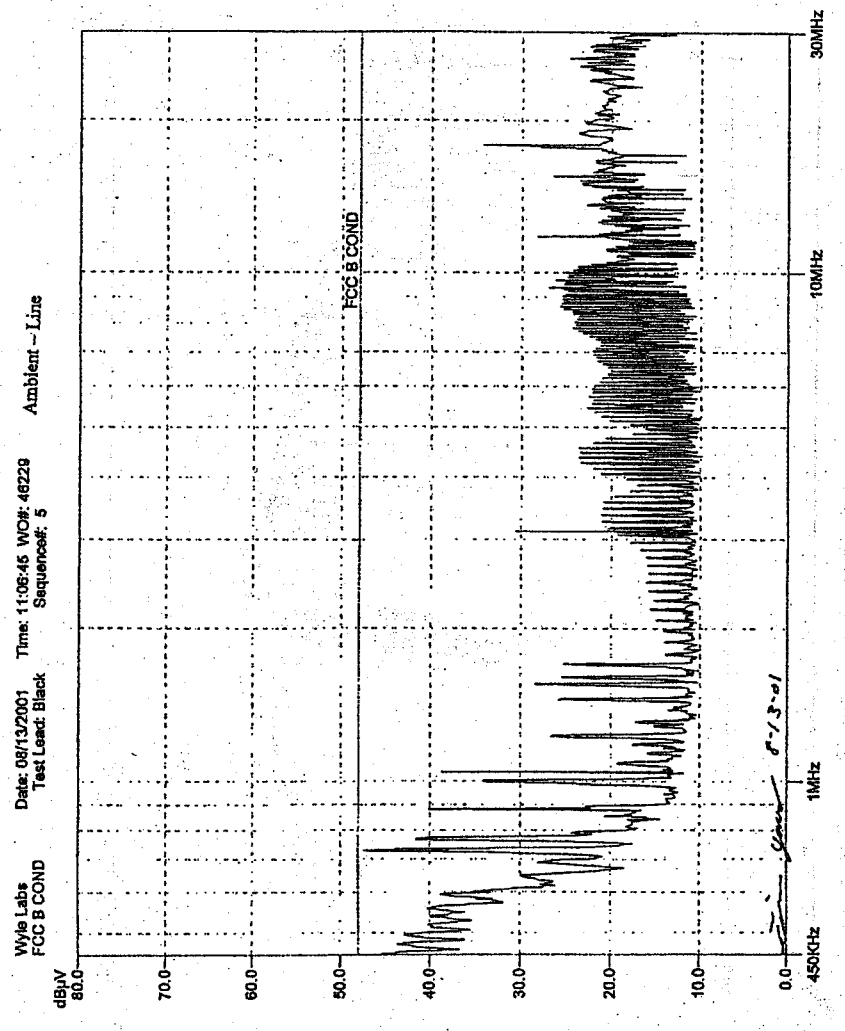
WYLE LABORATORIES
Huntsville Facility

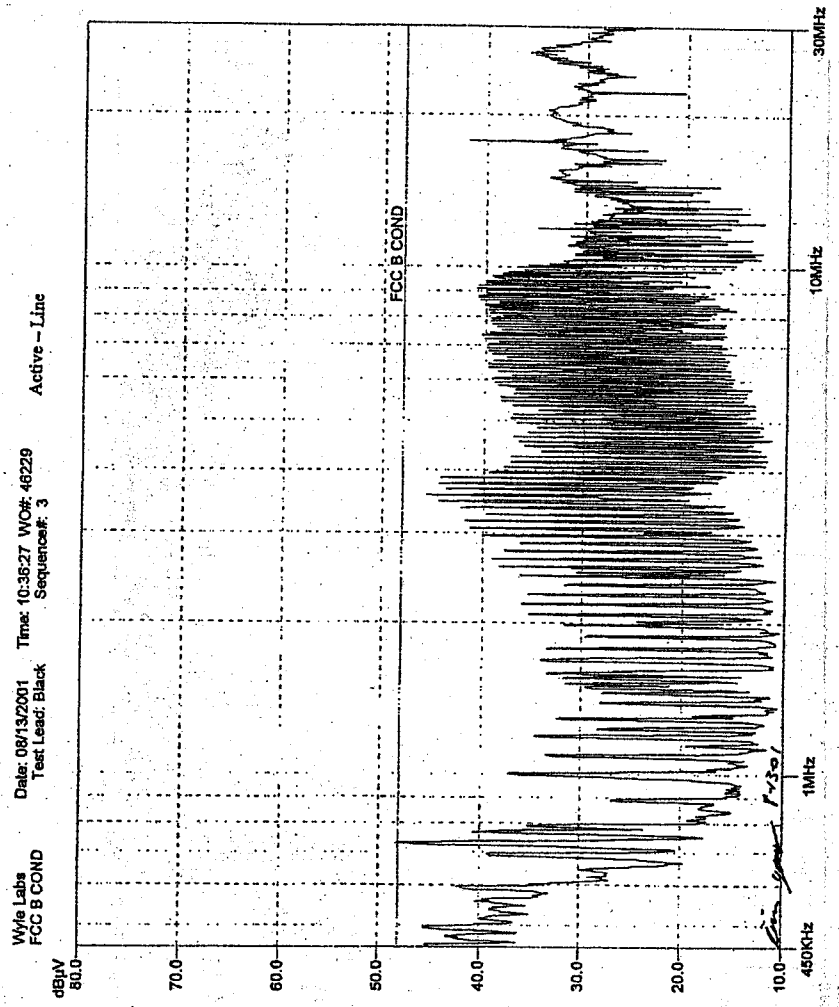

Wyle Labs
FCC B RADIATED
Date: 08/13/2001 Time: 9:10:56 A WO#: 46229 Ambient – Vertical
Test Distance: 3 Meters Sequence#: 9
dBµV/m
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
30MHz
100MHz
1GHz
FCC B RADIATED

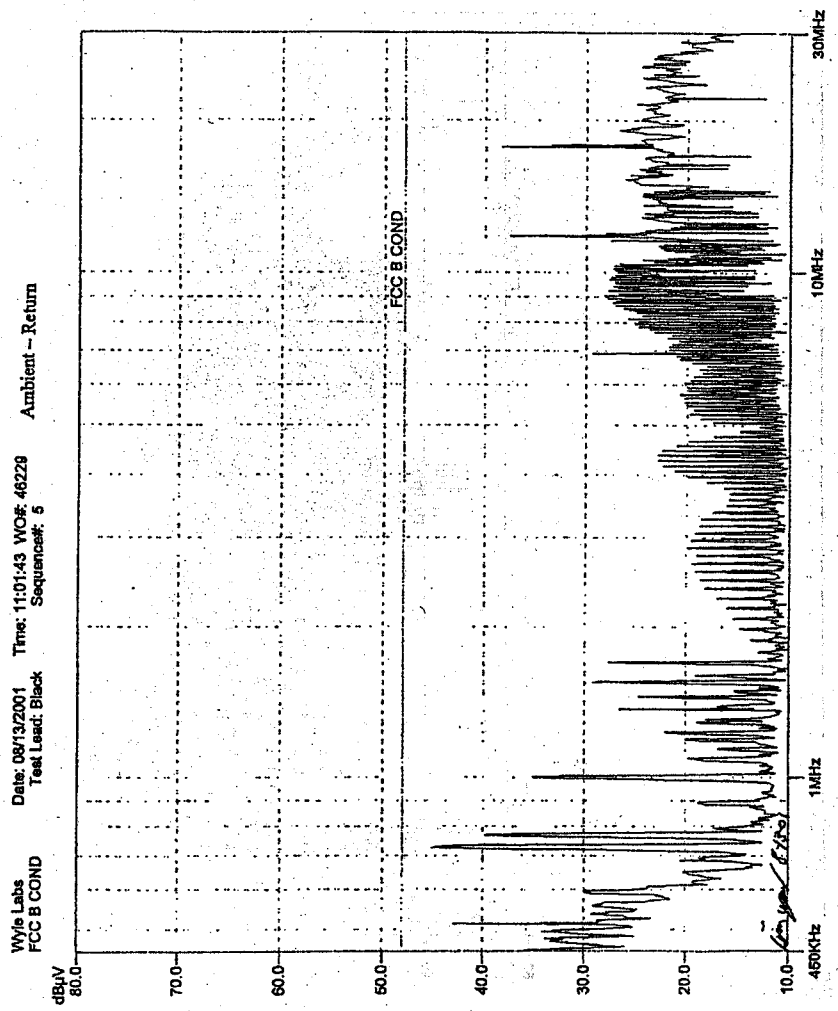

Wyle Labs
FCC B RADIATED
Date: 08/13/2001 Time: 09:01:22 WO#: 4622'
Test Distance: 3 Meters Sequence#: 8
Active – Vertical
FCC B RADIATED
dBµV/m
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
1GHz
100MHz
30MHz

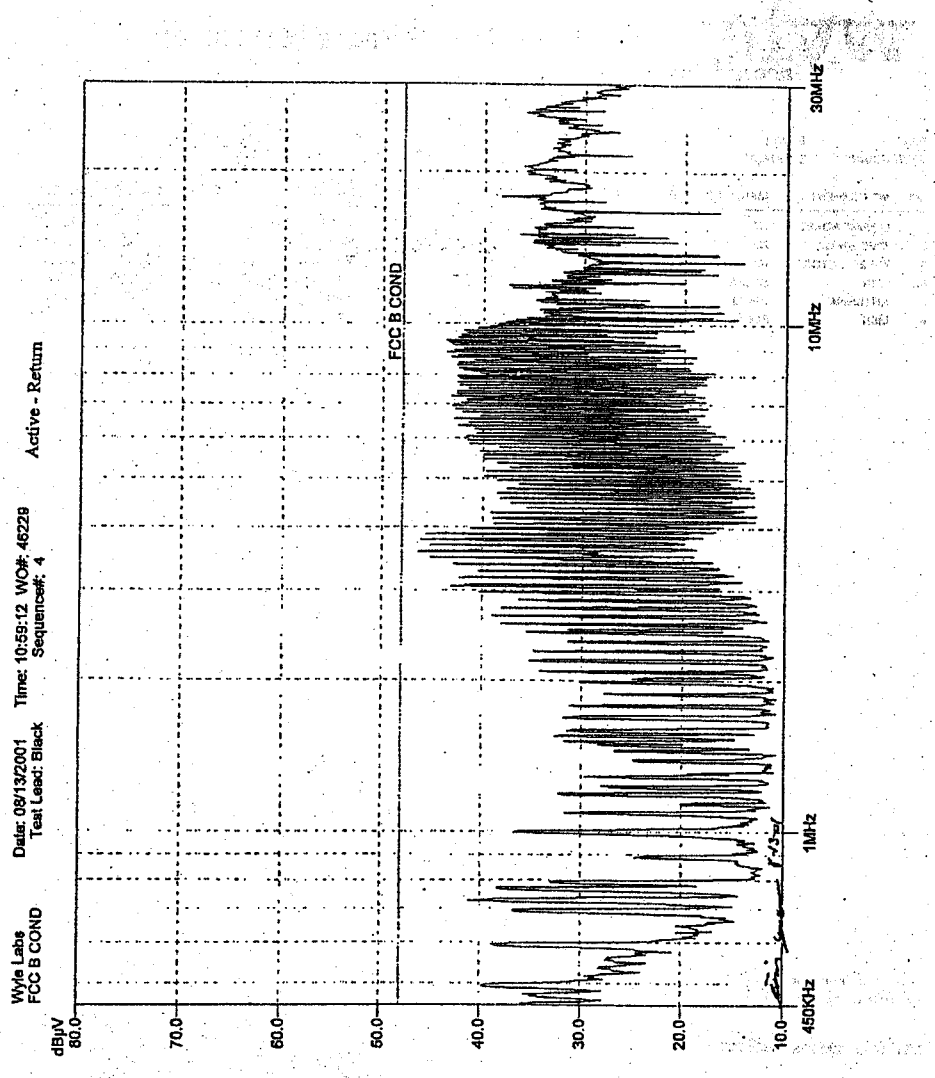

Wyle Labs
FCC B RADIATED
Date: 08/13/2001 Time: 9:07:41 A WO#: 46229
Test Distance: 3 Meters Sequence#: 9
Ambient – Horizontal
FCC B RADIATED
dBµV/m
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
1GHz
100MHz
30MHz


Wyle Labs
FCC B RADIATED
Date: 08/13/2001 Time: 9:01:28 A WO#: 46229 Active -- Horizontal
Test Distance: 3 Meters Sequence#: 9
FCC B RADIATED
dBµV/m
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
30MHz
100MHz
1GHz


Wyle Labs
FCC B COND
Date: 08/13/2001 Time: 11:06:45 WO#: 46229
Test Lead: Black Sequence#: 5
Ambient - Line
FCC B COND
dBµV
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
450KHz
1MHz
10MHz
30MHz


Wyle Labs
FCC B COND
Date: 08/13/2001
Test Lead: Black
Time: 10:35:27
Sequence#: 3
WO#: 46229
Active – Line
FCC B COND
dBµV
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
450KHz
1MHz
10MHz
30MHz


Wyle Labs
FCC B COND
Date: 08/13/2001
Test Lead: Black
Time: 11:01:43 WO#: 46229
Sequence#: 5
Ambient – Return
FCC B COND
dBµV
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
450KHz
1MHz
10MHz
30MHz


Wyle Labs
FCC B COND
Data: 08/13/2001
Test Lead: Black
Time: 10:59:12 WO#: 46229
Sequence#: 4
Active - Return
FCC B COND
dBµV
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
450KHz
1MHz
10MHz
30MHz

wyle laboratories

INSTRUMENTATION EQUIPMENT SHEET

DATE: 8/14/01 JOB NUMBER: 46229 TEST AREA: FCC SITE 1
TECHNICIAN: T.YANCY CUSTOMER: PIVOT INT. TYPE TEST: EMISSIONS

NO.	INSTRUMENT	MANUFACTURER	MODEL #	SERIAL #	WYLE #	RANGE	ACCURACY	CAL DATE	CAL DUE
1	Q-PEAK ADAPTER	HP	85650A	2811A01189	112109	BY PASS MOD	3db	5/22/01	5/22/02
2	SPEC ANAL	HP	8566B	2637A03750	R03750	MFG	CERT	6/ 6/01	6/ 6/02
3	PRESELECTOR	HP	85685A	3107A01286	109934	20 - 2GHZ	2db	9/21/00	9/21/01
4	LISN	SOLAR	8028-50-TS-24-B	974622	113973	10K-100MHZ	CERT	10/ 6/00	10/ 6/01
5	ANTENNA	EMCO	EM-6917A	124116	114415	30MHZ - 3GHZ	CERT	5/22/01	5/22/02
6	LISN	SOLAR	8028-50-TS-24-B	974623	113974	10K-100MHZ	CERT	10/ 6/00	10/ 6/01

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 8-15-01 CHECKED & RECEIVED BY 8/15/01

Q.A. 8/15/01

WI-1029A, REV. APR '99

WYLE LABORATORIES
Huntsville Facility

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

TEST REPORT

REPORT NO.: 46229-02
WYLE JOB NO.: 46229
CLIENT P.O. NO.: 720556
CONTRACT: N/A
TOTAL PAGES (INCLUDING COVER): 12
DATE: September 19, 2001

47 CFR PART 15, SUBPART B,
CLASS B TESTING
ON THE
IVOTRONIC VOTING MACHINE
(12-INCH VERSION)

For
Pivot International
14125 West 95th Street
Lenexa, KS 66215

STATE OF ALABAMA
COUNTY OF MADISON

James R. Dearman, 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.

SUBSCRIBED and sworn to before me this 21 day of Sept 2001

Notary Public in and for the State of Alabama at Large

My Commission expires April 16, 2002

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.

TESTED BY: 21 SEPT 01
Tim Yancy, Test Specialist — Date

REVIEWED BY: Barbara A. Brooks 21 Sept 01
Barbara Brooks, Lead Test Specialist — Date

(dsc)

ACCREDITED
Cert. # 845.01

WH-1404, Rev. Feb '97

1.0 INTRODUCTION

1.1 Scope

This report documents conformance with the FCC Rules, Part 15, as listed below, and details the results of the testing performed on one Pivot International iVotronic Voting Machine (12-inch version), at Wyle Laboratories' Huntsville, Alabama, Test Facility. The specimen was received in good condition on September 5, 2001.

1.2 Product Description

The iVotronic Voting Machine is utilized for collecting and tallying votes. The iVotronic is provided with a 12-inch LCD.

A detailed description of the test specimens (iVotronic) and the support equipment is provided in Section 2.1.

1.3 References

- Pivot International's Purchase Order No. 720556
- Wyle Laboratories' Request for Quotation No. 545/011638
- ANSI C63.4-1992, "Methods of Measurement of Radio Noise From Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GH
- Code of Federal Regulations (CFR) Title 47, "Telecommunications"
- Wyle Laboratories' Quality Assurance Program Manual, Revision 1
- ANSI/NCSL Z540-1, "Calibration Laboratories and Measuring and Test Equipment, General Requirements"
- ISO 10012-1, "Quality Assurance Requirements for Measuring Equipment"
- MIL-STD-45662A, "Calibration System Requirements"

1.0 INTRODUCTION (Continued)

1.4 Quality Assurance

1.4.1 Quality Assurance Program

All work performed on this test program was completed in accordance with Wyle Laboratories' Quality Assurance Program. 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).

1.4.2 Test Equipment and Instrumentation

All instrumentation, measuring, and test equipment used in the performance of this test program were calibrated in accordance with Wyle Laboratories' Quality Assurance Program, which complies with the requirements of ANSI/NCSL Z540-1, ISO 10012-1, and Military Specification MIL-STD-45662A. 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.

Attachment C contains a list of the instrumentation, measuring, and test equipment that was used to perform the tests.

2.0 SYSTEM TEST CONFIGURATION

2.1 Details of Tested System

The identifiers for the test specimen, support devices, and cables used in the tested system are:

- **Test Specimen**

Item	Part No.	Serial No:	Quantity
iVotronic	12-inch version	100243	1
Auto Vote Cartridge	Not Provided	PV 0101717-A	1
Power Supply	BUT-09-2770	001*	1

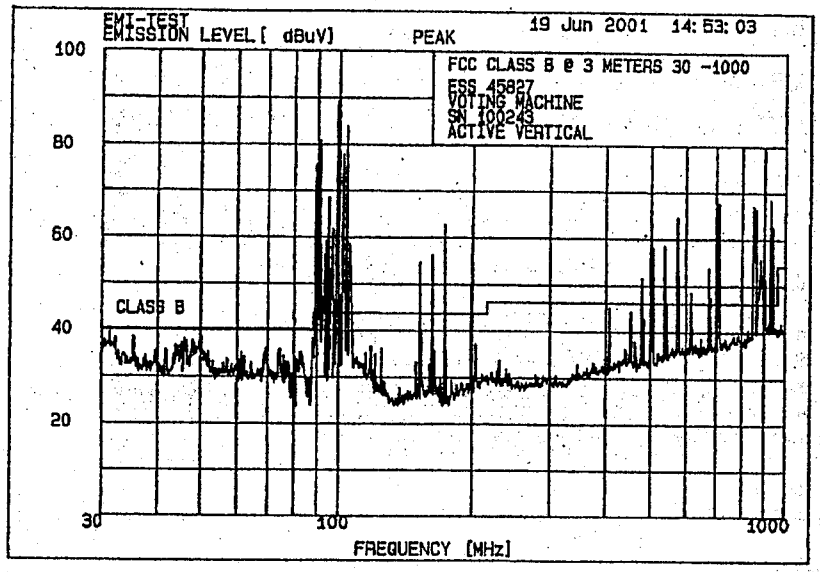
*Assigned by Wyle Laboratories.

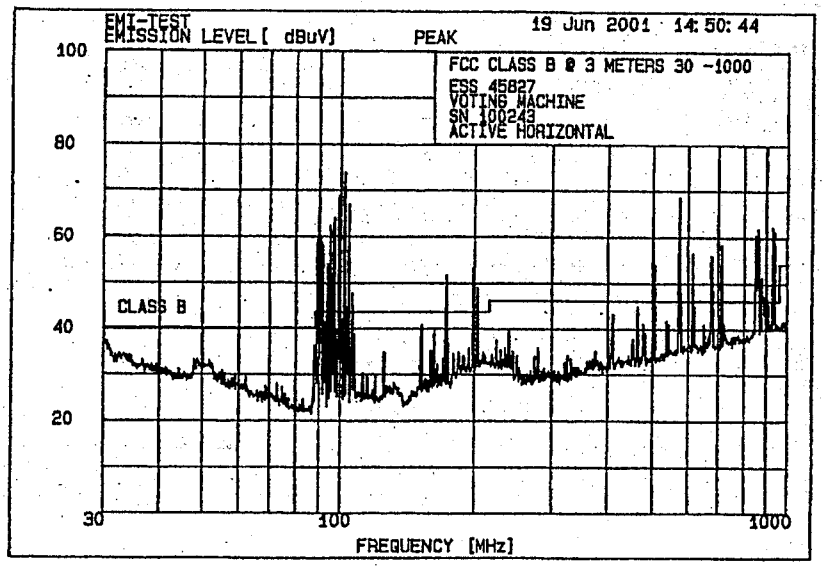
- **Support Test Equipment**

No support equipment was used in the testing of the iVotronic.

2.2 Input Power

The FCC Part 15 testing was performed using 120 VAC/60 Hz input power.


EMI-TEST
EMISSION LEVEL [dBuV)
PEAK
19 Jun 2001 14:53:03
FCC CLASS B @ 3 METERS 30 -1000
ESS 45827
VOTING MACHINE
SN 100243
ACTIVE VERTICAL
CLASS B
100
80
60
40
20
30
100
1000
FREQUENCY [MHz]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CLASS B
100
80
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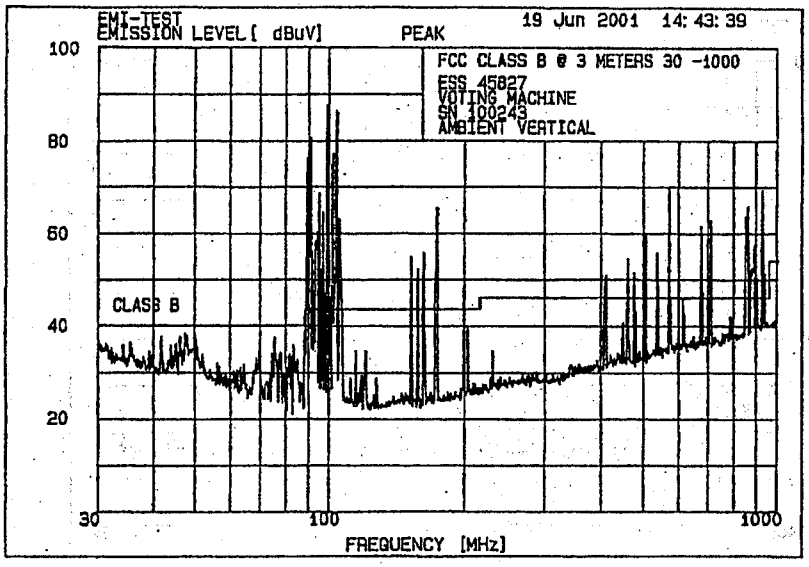
40
20
30
100
1000
FREQUENCY [MHz]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ESS 45827
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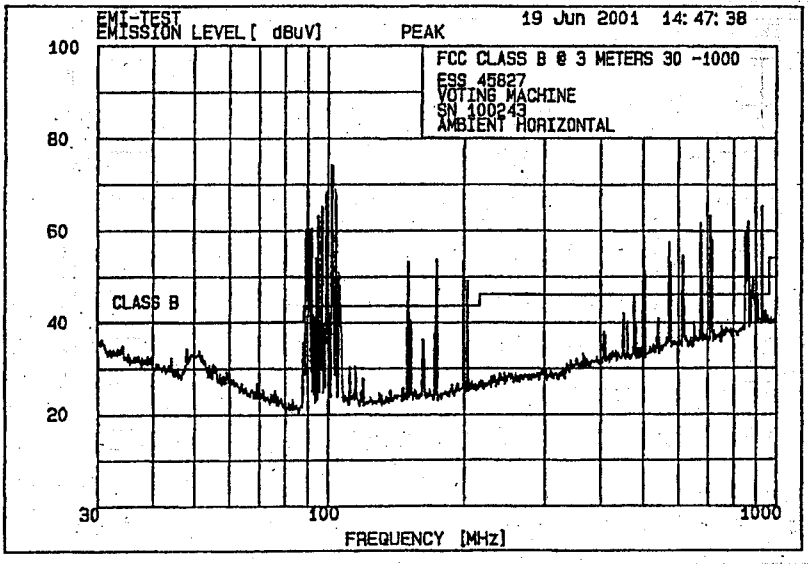
SN 100243
AMBIENT VERTICAL
CLASS B
100
80
60
40
20
30
100
1000
FREQUENCY [MHz]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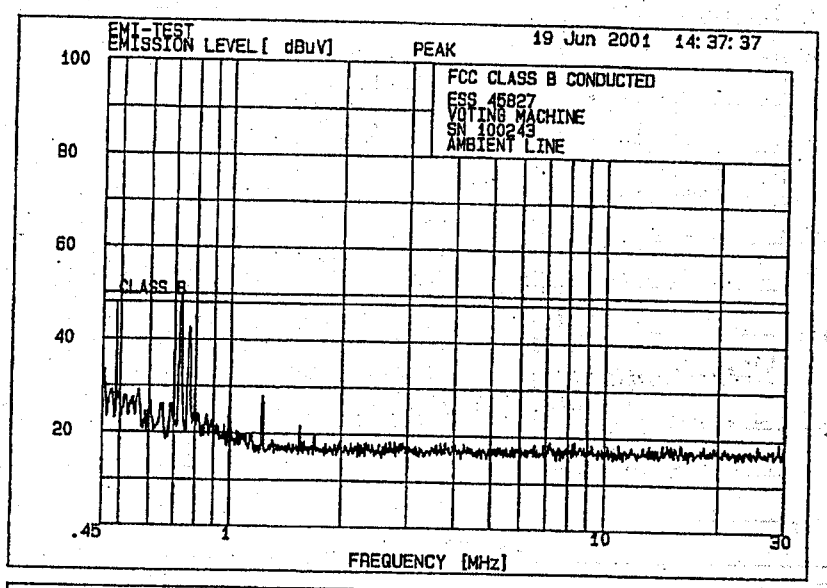
ESS 45827
VOTING MACHINE
SN 100243
AMBIENT HORIZONTAL
CLASS B
100
80
60
40
20
30
100
1000
FREQUENCY [MHz]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PEAK
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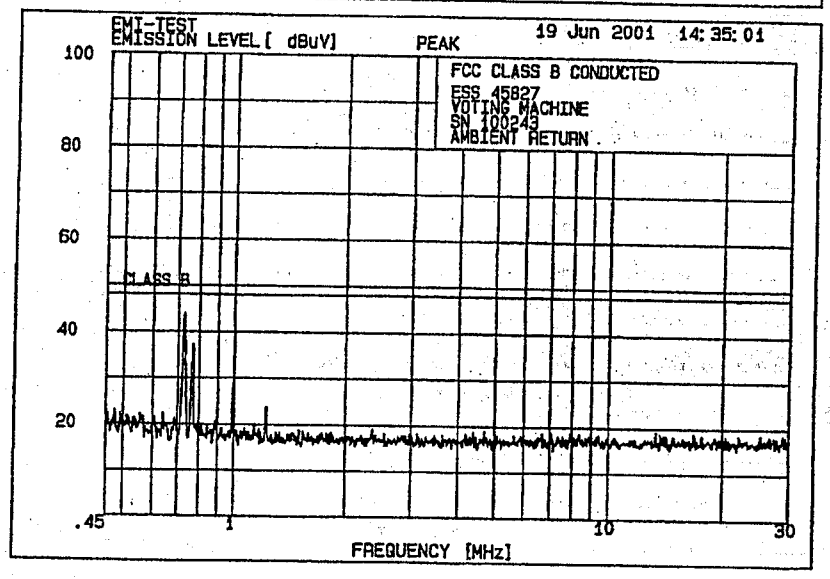
ESS 45827
VOTING MACHINE
SN 100243
AMBIENT LINE
100
80
60
40
20
CLASS B
.45
1
10
30
FREQUENCY [MHz]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ESS 45827
VOTING MACHINE
SN 100243
AMBIENT RETURN
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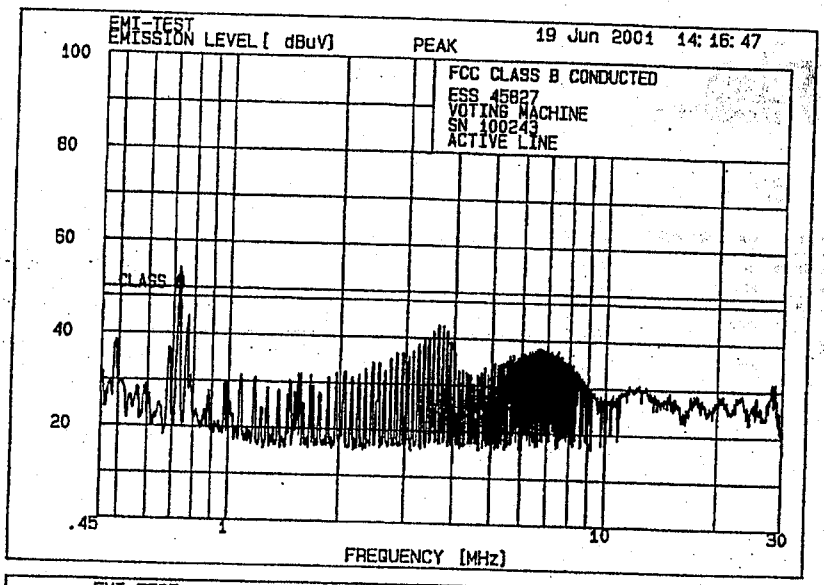
60
40
20
CLASS B
.45
1
10
30
FREQUENCY [MHz]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ESS 45827
VOTING MACHINE
SN 100243
ACTIVE LINE
CLASS B
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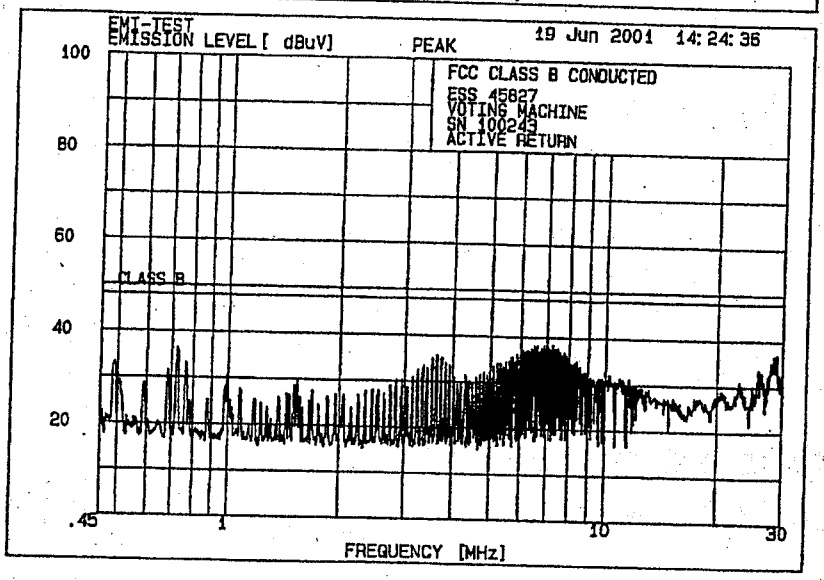
40
20
.45
1
10
30
FREQUENCY [MHz]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PEAK
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ESS 45827
VOTING MACHINE
SN 100243
ACTIVE RETURN
CLASS B
100
80
60
40
20
.45
1
10
30
FREQUENCY [MHz]

wyle laboratories

INSTRUMENTATION EQUIPMENT SHEET

DATE: 8/14/01 JOB NUMBER: 46229 TEST AREA: FCC SITE 1
TECHNICIAN: T.YANCY CUSTOMER: PIVOT INT. TYPE TEST: EMISSIONS

NO.	INSTRUMENT	MANUFACTURER	MODEL #	SERIAL #	WYLE #	RANGE	ACCURACY	CAL DATE	CAL DUE
1	Q-PEAK ADAPTER	HP	85650A	2811A01139	112109	BY PASS MOD	3db	5/22/01	5/22/02
2	SPEC ANAL	HP	8566B	2637A03750	R03750	MFG	CERT	6/ 6/01	6/ 6/02
3	PRESELECTOR	HP	85685A	3107A01286	109934	20 - 2GHZ	2db	9/21/00	9/21/01
4	LISN	SOLAR	8028-50-TS-24-B	974632	113973	10K-100MHZ	CERT	10/ 6/00	10/ 6/01
5	ANTENNA	EMCO	EM-6917A	124116	114415	30MHZ - 3GHZ	CERT	5/22/01	5/22/02
6	LISN	SOLAR	8028-50-TS-24-B	974623	113974	10K-100MHZ	CERT	10/ 6/00	10/ 6/01

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 8-15-01 CHECKED & RECEIVED BY 8/15/01

Q.A. 8/15/01

WH-1029A, REV. APR '99

WYLE LABORATORIES
Huntsville Facility

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