

Electromagnetic Compatibility

Test Report for the

Vibration Sensor Test Set Model #

AT-2040

(Inclusive of AT-2050, AT-2035, and AT-2030)

Test Report Number RV78081A-001

Prepared For:

Agate Technology
31805 Temecula Pkwy, Ste 157
Temecula, CA 92592

Prepared by:

DNB Engineering, Inc.
5969 Robinson Avenue
Riverside, CA 92503

NIST

NVLAP[®]
Lab Code: 200851-0



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18 May 2017
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DOCUMENT HISTORY

Revision	Number of Pages	Revised Pages	Description	Date
-001	All	All	Report Release	18 May 2017



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CERTIFICATION OF TEST DATA

This report, containing electromagnetic immunity and emissions test data and evaluations, has been prepared by an independent electromagnetic compatibility laboratory, DNB ENGINEERING, in accordance with the applicable specifications and instructions required per the Introduction. DNB Engineering has received accreditation to perform these tests by the following authorizations:

NIST / NVLAP: Lab Code No: 200851-0

The data evaluation and equipment configuration presented herein are a true and accurate representation of the measurements of the test sample's electromagnetic immunity and emissions characteristics as of the dates and at the times of the test under the conditions herein specified.

This report shall not be reproduced, except in full, without the written approval of DNB ENGINEERING, INC. Results contained in this report relate only to the item tested.

Disclaimer: This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Report Prepared by: Maridee Winans *Maridee Winans* 18 May 2017
Administrative Assistant Date

Report Reviewed by: Thomas Elders *Thomas Elders* 18 May 2017
Facility Manager Date



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Electromagnetic Compatibility Test Completion Record for:

Agate Technology: **Vibration Sensor Test Set**
 Model # AT-2040

Test Start Date: 15 May 2017

Test Completion Date: 17 May 2017

The EUT was tested in accordance with the requirements of the specifications and standards listed below and found to be fully compliant:

European Union EN61326-1: 2013 EN55011 Class A Group 1

Conducted Emissions:	Pass <input checked="" type="checkbox"/>	Fail <input type="checkbox"/>	N/A <input type="checkbox"/>
Radiated Emissions:	Pass <input checked="" type="checkbox"/>	Fail <input type="checkbox"/>	N/A <input type="checkbox"/>
Harmonics:	Pass <input type="checkbox"/>	Fail <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
Flicker:	Pass <input type="checkbox"/>	Fail <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
Electrostatic Discharge:	Pass <input checked="" type="checkbox"/>	Fail <input type="checkbox"/>	N/A <input type="checkbox"/>
Radiated RF Susceptibility:	Pass <input checked="" type="checkbox"/>	Fail <input type="checkbox"/>	N/A <input type="checkbox"/>
Electrical Fast Transient:	Pass <input checked="" type="checkbox"/>	Fail <input type="checkbox"/>	N/A <input type="checkbox"/>
Conducted Susceptibility:	Pass <input checked="" type="checkbox"/>	Fail <input type="checkbox"/>	N/A <input type="checkbox"/>
Surge Immunity:	Pass <input checked="" type="checkbox"/>	Fail <input type="checkbox"/>	N/A <input type="checkbox"/>
Magnetic Field Immunity:	Pass <input checked="" type="checkbox"/>	Fail <input type="checkbox"/>	N/A <input type="checkbox"/>
Voltage Dips & Variations:	Pass <input checked="" type="checkbox"/>	Fail <input type="checkbox"/>	N/A <input type="checkbox"/>



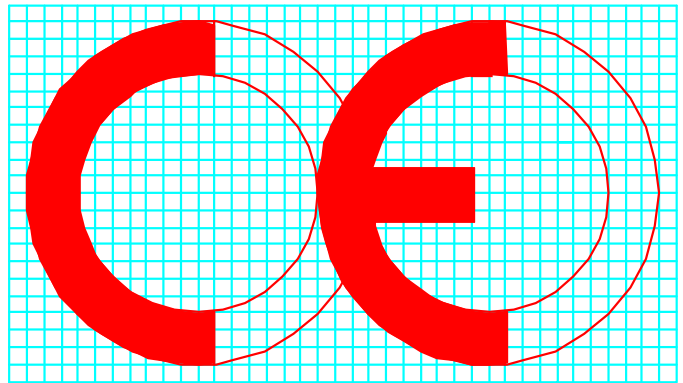
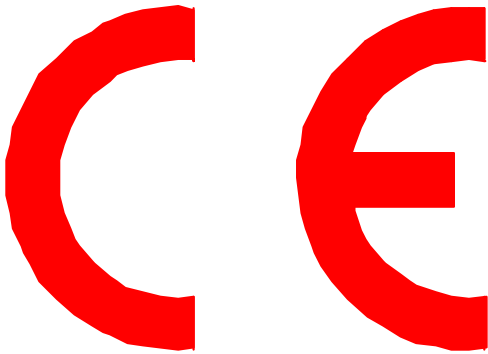
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CE Mark Information

DNB Job Number:	RV78081A-001	Date: 18 May 2017	Council Directive 2014/30/EU
Customer:	Agate Technology		
Model Number:	AT-2040	Serial Number: N/A	
Description:	Vibration Sensor Test Set		

The following Mark must appear on the body of each product shipped in a visible location. The only requirement is that it must have the same shape as depicted below and cannot be less than 5mm in height. The Mark to the left is how it should appear on your product. The Mark to the right has been provided for your assistance in developing artwork. If the CE Mark is reduced or enlarged the proportions given in the graduated drawing must be respected.



In addition to the Mark above the following **Declaration of Conformity** is to be supplied with each product shipped. This information can be applied to each unit in the form of a label, or placed in supporting documentation shipped with each product, (e.g., Owner's Manual, Instruction Manual, etc.)

- Description of the apparatus to which it refers.
- Reference to the specifications, standards, directives, that it conforms with.
- Identification of the signatory empowered to bind the manufacturer or his authorized representative.
- Where one or more Directives apply (during a transitional period) only those Directives to which conformity has been demonstrated may be applied. Failure to list actual Directives implies compliance with all applicable Directives.
- Where appropriate, reference to the EC Type-examination certificate issued by a notified body. Not required on most manufacturers self declaration products.



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**The below sample Declaration of Conformity has been provided to assist you.
The final draft should be signed by a representative of your company.**

Declaration of Conformity

Application of Council Directive: 2014/30/EU

**Standards To Which
Conformity Is Declared:** EN61326-1: 2013
EN55011 Class A Group 1

EN61000-4-2
EN61000-4-3
EN61000-4-4
EN61000-4-5
EN61000-4-6
EN61000-4-8
EN61000-4-11

Manufacturer's Name: Agate Technology

Manufacturer's Address: 31805 Temecula Pkwy, Ste 157
Temecula, CA 92592
760-215-9670

Equipment Description: Vibration Sensor Test Set

Equipment Class: Electrical Equipment Measurement,
Control & Laboratory Use - Industrial

Model Numbers: AT-2040

*I the undersigned, hereby declare that the equipment specified above, conforms to the above
Directive(s) and Standard(s).*

Place:

Signature:

Full Name:

Position:



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1.0

INTRODUCTION

Electromagnetic Compatibility (EMC) tests were performed on a representative sample(s) of Agate Technology, **Vibration Sensor Test Set**, Model # AT-2040. The purpose of this test was to demonstrate compliance of the EUT with the applicable limits. The test results have been summarized herein, and all data sheets have been incorporated in Appendix C.

Where applicable, cables were routed consistent with the typical application by varying the configuration of the test sample. The effect of varying the position of cables was investigated to find the configuration that produced maximum emissions and susceptibility.

The EUT was evaluated to determine the “worst case” positioning of both cables and axis. Once the “worst case” configuration was determined care was used to maintain this configuration throughout the test.

2.0

DEVIATIONS

Deviations/Modifications to the EUT

NONE

Deviations/Modifications from the Test Standards

Ferrite #ZCAT1325-0530A-BK used on A/C input to battery charger.



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3.0

TEST SITE AND EQUIPMENT

The test equipment utilized in the performance of this test, along with current calibration information, is listed in the Test Equipment Log of Appendix A.

UNCERTAINTY TOLERANCE

Uncertainty Budget CISPR 11, 22 Conducted Emissions per CISPR 16-4-2

Contribution	Prob Dist	dB	Probability distribution function	Factor	Probability Distribution Type
1) Receiver reading		0.055	1	0.06	k=1
2) Attenuation: AMN-receiver		0.095	2	0.05	k=2
3) AMN voltage division factor		0.44	2	0.22	k=2
4) Rec: Sine wave voltage		0.014	2	0.01	Rectangular
5) Rec: Pulse amplitude response		0.25	1.732051	0.14	Rectangular
6) Rec: Pulse repetition rate response		0.25	1.732051	0.14	Rectangular
7) Rec: Noise floor proximity		0		0.00	
8) AMN VDF frequency interpolation		0.05	1.732051	0.03	Rectangular
9) Mismatch: AMN-receiver		0.07	1.414214	0.05	U-shaped
10) AMN impedance		-2.7	2.44949	-1.10	Triangular
11) Effect of mains disturbance		0		0.00	
12) Effect of the environment		-	-	-	
Combined standard uncertainty $u(y)$	normal		1.15		
Expanded uncertainty U	normal	2	2.29		



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Uncertainty Budget CISPR 11, 22 radiated emissions biconical antenna horizontal polarity per CISPR 16-4-2

Contribution	Prob Dist	dB	Probability distribution function	Factor	Probability Distribution Type
1) Receiver reading		0.055	1	0.06	k=1
2) Attenuation: Ant-rec		0.056	2	0.03	k=2
3) Bic Ant Fact		0.93	2	0.47	k=2
4) Rec: Sine Wave Volt		0.014	2	0.01	k=2
5) Rec: Pulse Amp Resp		0.25	1.732051	0.14	Rectangular
6) Rec: Pulse Rep Rate Resp		0.25	1.732051	0.14	Rectangular
7) Noise Flr Prox		0	1.732051	0.00	Rectangular
8) Mismatch: Ant-pre-amp		-0.71	1.414214	-0.50	U-shaped
9) Mismatch: Pre-amp-receiver		-0.23	1.414214	-0.16	U-shaped
10) Bic: AF freq Int		0.3	1.732051	0.17	Rectangular
11) Bic: AF var w/ height		1	1.732051	0.58	Rectangular
12) Bic: Dir diff, 3m		0	-	-	
13) Bic: Dir diff, 10m		0	-	-	
14) Phase center loc: 3m		0	-	-	
15) Phase center loc: 10m		0	-	-	
16) Cross pol		0	-	-	
17) Balance		0.4	1.732051	0.23	Rectangular
18) Site: imperfections		3.4	2.44949	1.39	Triangular
19) Sep distance at 3m		0.3	1.732051	0.17	Rectangular
20) Sep distance at 10m		0.1	1.732051	0.06	Rectangular
21) Table materials		0	-	-	
22) Table height; 3m		0.1	2	0.05	k=2
23) Table height: 10m		0.1	2	0.05	k=2
Combined stand uncert $u(y)$; 3m	normal		1.71		
Expanded uncertainty U ; 3m	normal	2	3.42		
Combined stand uncert $u(y)$; 10m	normal		1.70		
Expanded uncertainty U ; 10m	normal	2	3.40		



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Uncertainty Budget CISPR 11, 22 radiated emissions biconical antenna vertical polarity per CISPR 16-4-2

Contribution	Prob Dist	dB	Probability distribution function	Factor	Probability Distribution Type
Receiver reading		0.055	1	0.06	k=1
Attenuation: Ant-rec		0.056	2	0.03	k=2
Bic Ant Fact		0.93	2	0.47	k=2
Rec: Sine Wave Volt		0.014	2	0.01	k=2
Rec: Pulse Amp Resp		0.25	1.732051	0.14	Rectangular
Rec: Pulse Rep Rate Resp		0.25	1.732051	0.14	Rectangular
Noise Flr Prox		0	1.732051	0.00	Rectangular
Mismatch: Ant-pre-amp		-0.71	1.414214	-0.50	U-shaped
Mismatch: Pre-amp-receiver		-0.23	1.414214	-0.16	U-shaped
Bic: AF freq Int		0.276	1.732051	0.16	Rectangular
Bic: AF var w/ height		0.3	1.732051	0.17	Rectangular
Bic: Dir diff, 3m		1	-	-	
Bic: Dir diff, 10m		0.25	-	-	
Phase center loc: 3m		0	-	-	
Phase center loc: 10m		0	-	-	
Cross pol		0	-	-	
Balance		0.9	1.732051	0.52	Rectangular
Site: imperfections		3.4	2.44949	1.39	Triangular
Sep distance at 3m		0.3	1.732051	0.17	Rectangular
Sep distance at 10m		0.1	1.732051	0.06	Rectangular
Table materials		0	-	-	
Table height; 3m		0.1	2	0.05	k=2
Table height: 10m		0.1	2	0.05	k=2
Combined stand uncert $u(y)$; 3m	normal		1.68		
Expanded uncertainty U ; 3m	normal	2	3.36		
Combined stand uncert $u(y)$; 10m	normal		1.67		
Expanded uncertainty U ; 10m	normal	2	3.35		



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Uncertainty Budget CISPR 11, 22 radiated emissions Log Periodic antenna horizontal polarity per CISPR 16-4-2

Contribution	Prob Dist	dB	Probability distribution function	Factor	Probability Distribution Type
Receiver reading		0.055	1	0.06	k=1
Attenuation: Ant-rec		0.056	2	0.03	k=2
LPDA Ant Fact		0.6	2	0.30	k=2
Rec: Sine Wave Volt		0.014	2	0.01	k=2
Rec: Pulse Amp Resp		0.25	1.732051	0.14	Rectangular
Rec: Pulse Rep Rate Resp		0.25	1.732051	0.14	Rectangular
Noise Flr Prox		0	1.732051	0.00	Rectangular
Mismatch: Ant-pre-amp		-0.65	1.414214	-0.46	U-shaped
Mismatch: Pre-amp-receiver		-0.44	1.414214	-0.31	U-shaped
LPDA: AF freq Int		0.3	1.732051	0.17	Rectangular
LPDA: AF var w/ height		0.3	1.732051	0.17	Rectangular
LPDA: Dir diff, 3m		1	1.732051	0.58	Rectangular
LPDA: Dir diff, 10m		0.2	1.732051	0.12	Rectangular
Phase center loc: 3m		1	1.732051	0.58	Rectangular
Phase center loc: 10m		0.3	1.732051	0.17	Rectangular
Cross pol		0.9	1.732051	0.52	Rectangular
Balance		0			
Site: imperfections		3.4	2.44949	1.39	Triangular
Sep distance at 3m		0.3	1.732051	0.17	Rectangular
Sep distance at 10m		0.1	1.732051	0.06	Rectangular
Table materials		0.096	1.732051	0.06	Rectangular
Table height; 3m		0.1	2	0.05	k=2
Table height: 10m		0.1	2	0.05	k=2



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Uncertainty Budget CISPR 11, 22 radiated emissions Log Periodic antenna vertical polarity per CISPR 16-4-2

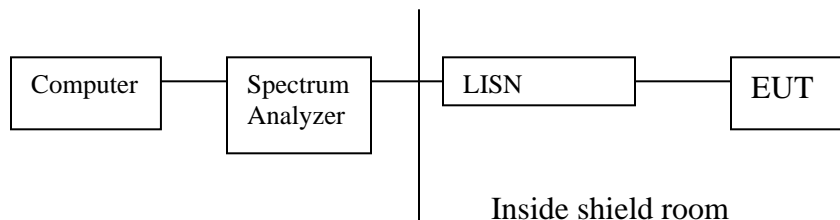
Contribution	Prob Dist	dB	Probability distribution function	Factor	Probability Distribution Type
Receiver reading		0.055	1	0.06	k=1
Attenuation: Ant-rec		0.454	2	0.23	k=2
LPDA Ant Fact		0.6	2	0.30	k=2
Rec: Sine Wave Volt		0.014	2	0.01	k=2
Rec: Pulse Amp Resp		0.25	1.732051	0.14	Rectangular
Rec: Pulse Rep Rate Resp		0.25	1.732051	0.14	Rectangular
Noise Flr Prox		0	1.732051	0.00	Rectangular
Mismatch: Ant-pre-amp		-0.65	1.414214	-0.46	U-shaped
Mismatch: Pre-amp-receiver		-0.44	1.414214	-0.31	U-shaped
LPDA: AF freq Int		0.3	1.732051	0.17	Rectangular
LPDA: AF var w/ height		0.1	1.732051	0.06	Rectangular
LPDA: Dir diff, 3m		3.2	1.732051	1.85	Rectangular
LPDA: Dir diff, 10m		0.5	1.732051	0.29	Rectangular
Phase center loc: 3m		1	1.732051	0.58	Rectangular
Phase center loc: 10m		0.3	1.732051	0.17	Rectangular
Cross pol		0.9	1.732051	0.52	Rectangular
Balance		0.9	1.732051	0.52	Rectangular
Site: imperfections		3.4	2.44949	1.39	Triangular
Sep distance at 3m		0.3	1.732051	0.17	Rectangular
Sep distance at 10m		0.1	1.732051	0.06	Rectangular
Table materials		0.096	1.732051	0.06	Rectangular
Table height; 3m		0.1	2	0.05	k=2
Table height: 10m		0.1	2	0.05	k=2
Combined stand uncert $u(y)$; 3m	normal		2.60		
Expanded uncertainty U ; 3m	normal	2	5.21		
Combined stand uncert $u(y)$; 10m	normal		1.77		
Expanded uncertainty U ; 10m	normal	2	3.53		



4.0 **TEST DESCRIPTION**

4.1 **Conducted RF Emissions (EN55011)**

To measure conducted emissions, the EUT was set upon a wooden table in the shielded enclosure. AC power was fed into the EUT from the Artificial Mains Network (LISN). With the Artificial Mains Network connected to an HP 8568B Spectrum Analyzer, and using A Computer/Controller and the HP 85864B EMI Measurement Software, the spectrum was searched from 0.15 - 30 MHz for emissions emanating from the EUT. A list of the equipment used in this test is included in Appendix A. A photograph of this test set up is included in Appendix B.





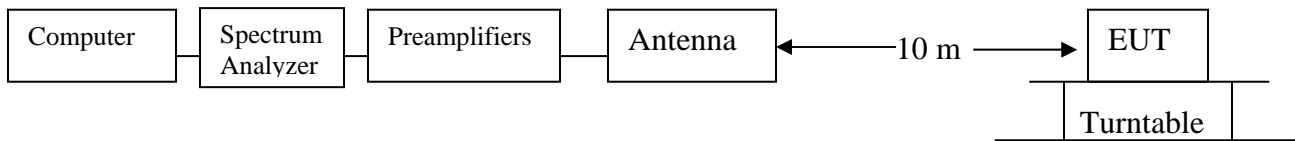
4.0 TEST DESCRIPTION

4.2 **Radiated RF Emissions (EN55011)**

To measure radiated emissions, the EUT was set up on the 3 or 10-meter open air test site. The EUT is placed on a wooden table, which rests on a wooden turntable. The top of the table is one meter above the ground, and the turntable can be rotated 360 degrees. For each frequency measured, the antenna is raised and lowered for both horizontal and vertical polarities to obtain the maximum reading on the analyzer. The turntable is also rotated throughout the 360 degrees in azimuth to determine the position of the maximum emissions. The applicable frequency range is searched using the antennas listed below. The respective antenna and preamplifier were connected to an HP 8568B Spectrum Analyzer. Preamplifiers were used for all ranges to achieve the needed dynamic range. A list of the equipment used in this test is included in Appendix A. Photographs of this test set up are included in Appendix B.

Antenna(s):

- Electro-Metrics 6505-A (.009 - 30 MHz) []
- SAS 200/540 BICONICAL (20 - 200 MHz) [X]
- EMCO 3146 LOG PERIODIC (200 - 1000 MHz) [X]
- Schwarzbeck Mess-Elektronik Model MDS-21 []
- OTHER (See Equipment Log in Appendix B) [X]

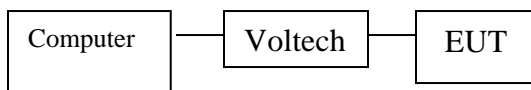




4.0 **TEST DESCRIPTION** (Continued)

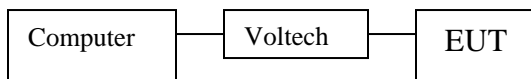
4.3 **Harmonics**

The EUT was subjected to Power Supply Harmonics testing. Harmonics measurements were taken using the Voltech PM3000A Power Measurement System and tabulated on the data sheet in Appendix C. A list of the equipment used in this test is included in Appendix B.



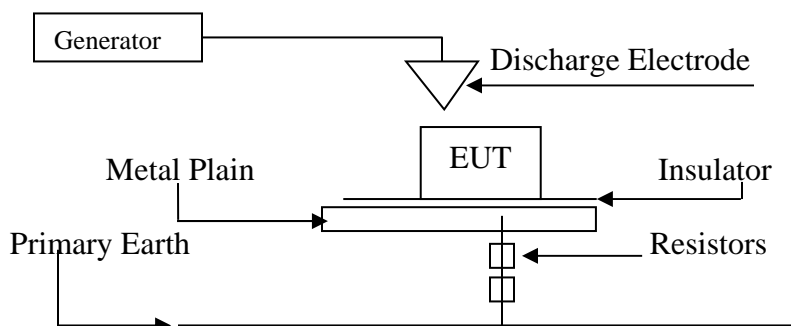
4.4 **Flicker**

The EUT was subjected to a Flicker in Low - Voltage testing. Flicker measurements were taken and converted to percentages using the Voltech PM3000A Power Measurement System. They were then recorded on the data sheet in Appendix C. The Evaluation Results include: Maximum relative voltage change (dmax), Maximum relative steady state voltage (dc), Duration of $d(t) > 3\%$ (t), Short term flicker severity (Pst), and Long term flicker severity (Plt). A list of the equipment used in this test is included in Appendix A.



4.5 **Electrostatic Discharge Test**

The EUT was placed upon a thin insulator, which in turn was placed upon a metal plane. The plane was connected to Primary Earth through two 470 k Ω resistors. The Haefely ESD Generator discharges from a 150 pfd Capacitor was applied through a 5K Resistor at the test point with the Haefely Discharge Electrode. The EUT was pulsed on the test points listed on the data sheets in Appendix B 10 times at each level in both polarities. A list of the equipment used in this test is included in Appendix A. A photograph of the test setup is included in Appendix B.

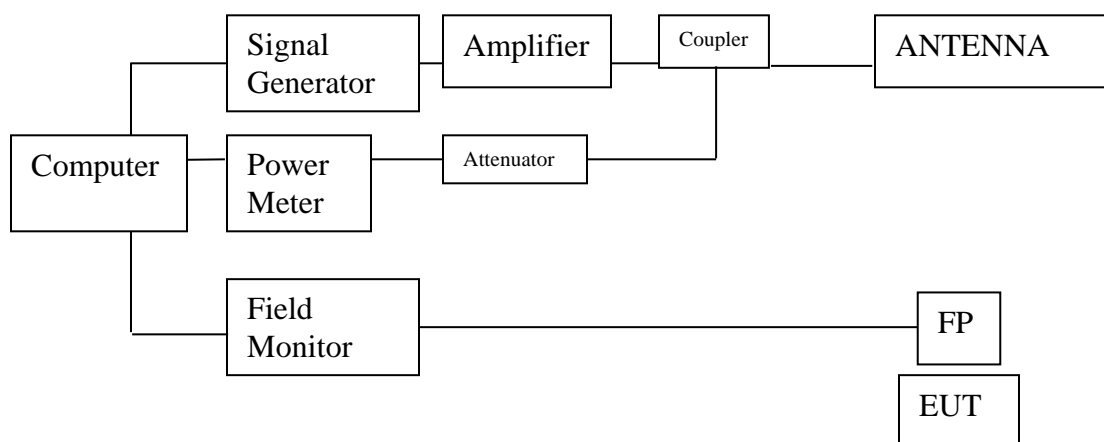




4.0 **TEST DESCRIPTION** (Continued)

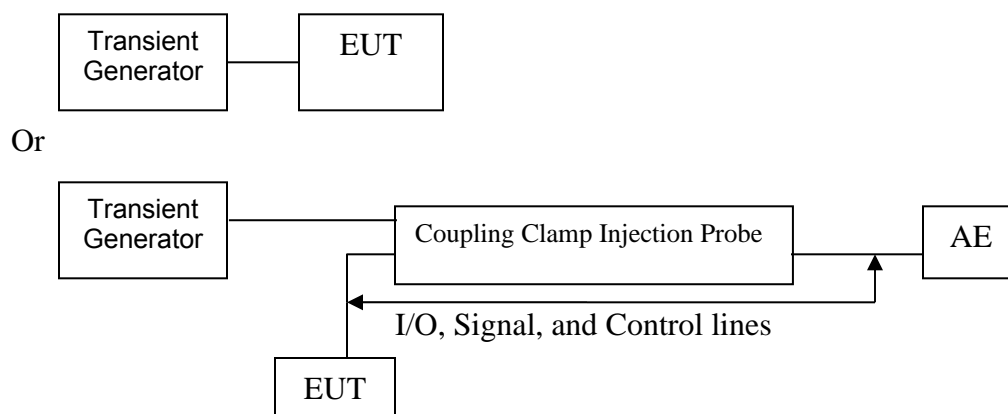
4.6 **Radiated RF Susceptibility**

The EUT was subjected to a radiated E-field while being monitored for signs of susceptibility. To generate the required level of field strength in the appropriate frequency range a Power Amplifier and the appropriate antenna for the frequency range were used. The required field strength was monitored with Isotropic Field Probes along with an Isotropic Field Monitor. A list of the equipment used in this test is included in Appendix A.



4.7 **Electrical Fast Transient/Burst**

The Haefely 093 204.1 Transient Generator supplied the Electrical Fast Transient/Burst waveforms injected into the EUT. The pulses were capacitively injected onto the I/O, Signal, and Control lines using a Coupling Clamp injection probe. The pulses were directly injected into the power lines. A list of the equipment used in this test is included in Appendix A. Photographs of this test set up are included in Appendix B.

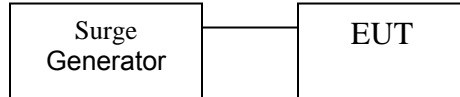




4.0 **TEST DESCRIPTION** (Continued)

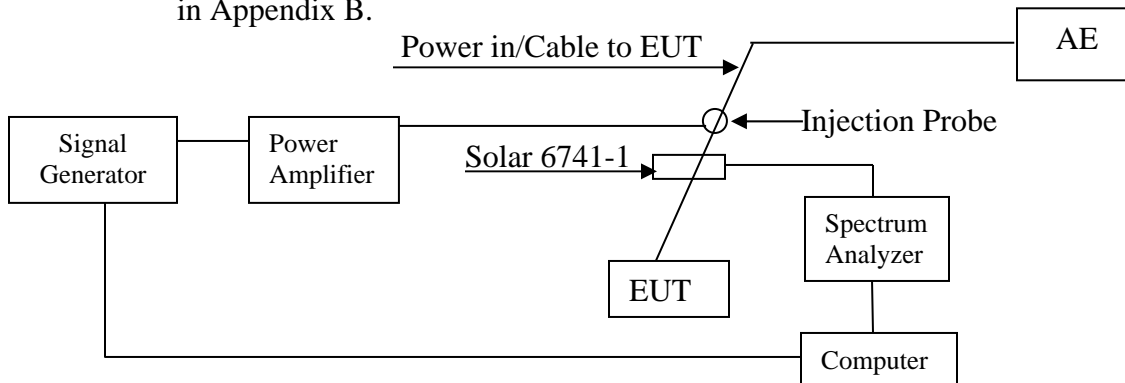
4.8 **Surge Susceptibility**

The Surge Susceptibility Test was performed on the EUT. The Combination Wave Generator (Differential Mode) delivers a 1.2/50 μ s voltage surge into an open circuit and a 8/20 μ s current surge into a short circuit (i.e. the generator has an effective output impedance of 2 Ω) are injected into selected pins of the EUT. Each Pin tested was subjected to 5 pulses each in both the positive and negative polarities. In addition, the EUT was subjected to Voltage phase shifts of 0°, 90°, and 270° in both the positive and negative polarities. The Combination Wave Generator (Common Mode) delivers a 1.2/50 μ s voltage surge into an open circuit and a 8/20 μ s current surge into a short circuit (i.e. the generator has an effective output impedance of 12 Ω) are injected into selected pins of the EUT. Each Pin tested was subjected to 5 pulses each in both the positive and negative polarities. In addition, the EUT was subjected to Voltage phase shifts of 0°, 90°, and 270° in both the positive and negative polarities. A list of the equipment used in this test is included in Appendix A. Photographs of this test set up appear in Appendix B.



4.9 **Conducted RF Susceptibility**

Conducted susceptibility signals were coupled into the input power leads and interconnecting cables using a current probe. Calibrated levels from 150 kHz to 80 MHz were injected while using a second probe to monitor the injected current. The radio frequency signal was supplied by a Marconi 2024 Signal Generator and a Kalmus 100 W Power Amplifier M/N 757LCB-CE. A Fischer Custom Communications Bulk Injection Probe M/N F-120-9B was used to inject the test level and a Solar 6741-1 was used to monitor the injected A list of the equipment used in this test is included in Appendix A. Photographs of this test set up appear in Appendix B.

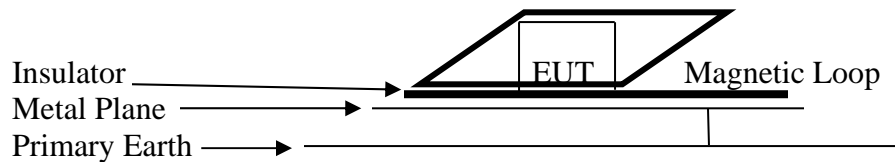




4.0 **TEST DESCRIPTION** (Continued)

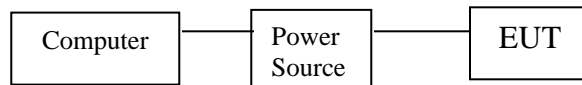
4.10 **Magnetic Field Immunity Test**

The EUT was placed upon a 0.1m insulator, which in turn was placed upon a metal plane. The plane was connected to Primary Earth. A 1m-loop antenna connected to a current transformer supplied from a 50Hz source was then placed around the EUT in the three axis. The applicable A/m was determined by monitoring the loops magnetic field with a Bell 640 Gaussmeter. A list of the equipment used in this test is included in Appendix A. A photograph of the test setup is included in Appendix B.



4.11 **Voltage Dips, Short Interruptions, & Variations**

The EUT was placed as close to the power source as possible with the manufacturer's supplied power cord. If no power cord was supplied the EUT was placed as close to the power source as possible. The power source was controlled via GPIB bus to cause the required voltage dips and variations. The EUT was monitored after each test level. If required the EUT was reset to the applicable configuration. A list of the equipment used in this test is included in Appendix A. A photograph of the test setup is included in Appendix B.





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5.0

CONCLUSIONS

The Agate Technology, **Vibration Sensor Test Set**, Model #AT-2040, was tested in accordance with the requirements listed herein. Pass/Fail status for each test is listed on page 5. At the completion of testing the EUT and support equipment were returned to representatives of Agate Technology



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APPENDIX A

Test Equipment Log



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Asset No	Item	Manufacturer	Model No	Serial No	Calibration Date	Calibration Interval	Calibration Due
		VSWR					
11	Antenna (Small DRG)	Emco	3115	2281	27-May-15	730	27-May-17
31	Antenna (Log Periodic)	Emco	3146	1284	22-Oct-15	730	22-Oct-17
51	Pre-Amp	Mini-Circuits	zhl-2-8	41185-2			Asset/No Cal
52	Pre-Amp	Mini-Circuits	ZHL-42	122884			Asset/No Cal
57	Clamp	Schwarzbeck	MDS21	NSN			Asset/No Cal
387	Pre-Amp	H/P	10855A	1250-0212	29-Sep-16	730	29-Sep-18
604	Attenuator	Tenuline	8341-200	902	09-Aug-16	365	09-Aug-17
705	Spectrum Analyzer	H/P	8565A	2232A02476			Asset/No Cal
756	Antenna (pwr bicon)	DNB	DNB756	756			Asset/No Cal
844	QP Adapter	H/P	85650A	2811A01240	09-Jul-15	730	09-Jul-17
858	Gun	Haefely	PSD25B	083 427-05			Asset/No Cal
871	Pre-Amp	MCL	ZHL-32A	8442 05			Asset/No Cal
959	Micrometer	General MG	1050C	959	23-Feb-16	730	23-Feb-18
969	Scale	Imada	MF	70403	24-May-16	730	24-May-18
979	LISN (Backup)	Solar	8028-50-TS-24-BNC	956301	10-Nov-15	730	10-Nov-17
984	LISN (Backup)	Solar	8028-50-TS-24-BNC	962133	11-Jan-16	730	11-Jan-18
1034	Generator	Marconi	2024	112231-034	02-Mar-16	730	02-Mar-18
1057	Weather Station	Davis	7400	pc70804a01	14-Apr-16	730	14-Apr-18
1063	Collapsable Antenna	Antenna Research	CB1071	1063	22-Oct-15	730	22-Oct-17
1102	Spectrum Analyzer	H/P	3585A	2718A05908	10-Jun-15	730	10-Jun-17
1103	Signal Generator	H/P	8656B	2629U00598			Asset/No Cal
1109	Spect Analyzer Display	H/P	85662A	2318A05282	09-Jul-15	730	09-Jul-17
1117	Control Center	Keytek	ECAT Series 100	9603276			Asset/No Cal
1152	Current Probe	Solar	6741-1	862003	10-Jun-15	730	10-Jun-17
1196	Attenuator	Pasternack	PE7010-20	1196	09-Aug-16	365	09-Aug-17
1197	Attenuator	Pasternack	PE7010-20	1197	09-Aug-16	365	09-Aug-17
1198	Attenuator	Pasternack	PE7010-20	NSN	09-Aug-16	365	09-Aug-17
1215	Tester	Assoc Research	510L	A130511	10-Jun-15	730	10-Jun-17
1221	Calibration Fixture	Fischer Custom C.	FCC-BCICF-1A	25			Asset/No Cal
1233	Spectrum Analyzer	HP	8568B	2732A03600	02-Nov-16	730	02-Nov-18
1234	Spec Analyzer Display	HP	85662A	2648A15552	02-Nov-16	730	02-Nov-18
1242	Spectrum Analyzer	H/P	85680A	2503A01257	09-Jul-15	730	09-Jul-17
1606	Pre-Amp	Miteq	AFD3-020080-50	102979			Asset/No Cal
1671	Probe	Haefely	093579-1	083071-11			Asset/No Cal
1695	Spectrum Analyzer	H/P	85662A	2112A02234			Asset/No Cal
1722	Amplifier	Kalmus	757LCB/1-60-485-003	7902-1			Asset/No Cal
1723	Control Box	Kalmus	757LCB/1-60-485-003	7902-1			Asset/No Cal
1725	Pre-Amp	Miteq	afs4-08001800-30-uln	834258			Asset/No Cal
1726	Generator (EFT)	Haefely	p90.1	083 315-19	06-Jan-16	730	06-Jan-18
1729	Mag Loop Antenna	FCC	f-55103-2-0.13m	9951	19-Aug-16	730	19-Aug-18
1730	Chassis Bay	Keytek	ECAT Series 100	9603277	05-Jan-16	730	05-Jan-18
1731	Surge Network	Keytek	E501A	9603278	05-Jan-16	730	05-Jan-18
1732	Mains Coupler Decoupler	Keytek	E551	9603279	05-Jan-16	730	05-Jan-18
1734	Antenna	Chase	CBL6140	1048	28-Jun-15	730	28-Jun-17



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Asset No	Item	Manufacturer	Model No	Serial No	Calibration Date	Calibration Interval	Calibration Due
1758	Antenna (Bicon)	AH Systems	SAS-200/540	524	22-Oct-15	730	22-Oct-17
1760	Pre-Amp (called ZFL)	Mini-Circuits	ZFL-2000	8350	04-Mar-16	730	04-Mar-18
1761	Pre-Amp	Miteq	JS2-0200400	664011			Asset/No Cal
1764	Antenna	AH Systems	sas-200/540	138			Asset/No Cal
1769	Probe	FCC	F-120-9B	33			Asset/No Cal
1774	Kit	FCC	FCC-TLISN-T4	20068			Asset/No Cal
1775	Power Source	California Inst	4500iL	51859	08-Dec-15	730	08-Dec-17
1791	CDN	FCC	fcc-801-m3-16	110	20-Oct-15	730	20-Oct-17
1841	Simulator / ESD Gun	Haefely	PESD3000	H002033	05-Jan-16	730	05-Jan-18
1879	Voltage Probe	Emco	3701	9703-1156	17-Dec-16	365	17-Dec-17
1890	Coupler	Narda	3020A	30283	09-Aug-16	365	09-Aug-17
1896	OATS	DNB	OATS	11896	24-Jun-16	365	24-Jun-17
1898	Clamp	DNB	NMN	11898	30-Oct-16	365	30-Oct-17
1899	Antenna	DNB	NMN	11899			Asset/No Cal
1900	Attenuator	Midwest Microwave	388-20	70015			Asset/No Cal
1917	Antenna (MagLoop)	DNB	MLR100	11917	03-Nov-16	720	03-Nov-18
1918	Power Sply (Mag Loop)	DNB	LPS111	11918	03-Nov-16	720	03-Nov-18
1919	Antenna	DNB	TC100	11919			Asset/No Cal
1920	Weather Station	Davis	7400	MC20725A20	14-Apr-16	730	14-Apr-18
1921	Antenna Mast	DNB	AM200	11921	29-Jun-16	365	29-Jun-17
1922	Turn Table	DNB	TP1100	11922	29-Jun-16	365	29-Jun-17
1924	Antenna Mast	Emco	3051	11924			Asset/No Cal
1943	Meter	Boonton	4231A	91501	18-Jul-16	730	18-Jul-18
1944	Sensor	Boonton	51011-EMC	32754	18-Jul-16	730	18-Jul-18
1954	Antenna (Lg DRG)	Tensor	4106	11954			Asset/No Cal
1955	Probe	Credence Tech	Scan EM-C	11955			Asset/No Cal
1963	Emissions Ramp	DNB	HMR100	11963			Asset/No Cal
1965	Quasi-Peak Adapter	HP	85650A	2043A00277	02-Nov-16	365	02-Nov-17
2155	Power Analyzer	Voltech	PM3000A	AL111/9190	12-Aug-15	730	12-Aug-17
2156	Network	Voltech	IEC61000-3	IG112/9226	25-Sep-16	365	25-Sep-17
2180	LISN (main use)	Fischer	FCC-LISN-50-50-4-02	04077	25-Jun-15	730	25-Jun-17
2264	Spectrum Analyzer	Agilent	E4407B	MY45103462	11-Aug-15	730	11-Aug-17
2287	OATS	Industry Canada	Industry Canada	12287	04-Feb-17	1095	04-Feb-20
2363	Meter	AlphaLab Inc.	Tri-Field Meter	12363	04-Nov-16	365	04-Nov-17
2452	OATS	FCC filing	Tst Firm Registration#	#99985	13-Jan-16	1095	09-Nov-19
2749	GPIB Controller	National Instruments	188417D-01	0134648B			Asset/No Cal
2750	GPIB Controller	National Instruments	188417D-01	0134673C			Asset/No Cal
2818	Monopole Antenna	DNB	VladMono	12818	17-Dec-15	730	17-Dec-17
2839	Software	Tile 4	ETS-Lingren	CE & 61000-4-3			Asset/No Cal
3244	Loop Antenna	AH Systems	SAS-562B	267	13-Mar-17	730	13-Mar-19
3260	Giant Loop Antenna	DNB	LLA-GAD	13260			Asset/No Cal
3412	Current Probe	Solar	6741-1	1110229	7-Jan-16	730	7-Jan-18
3414	Pre-Amp	RF Bay	MGA-2500	11120901	29-Sep-16	730	29-Sep-18
3470	Software	DNB Riv Rad Emiss	DNB	HMRES1896			Asset/No Cal
3474	Software	ECAT	Keytech	E500SurgeWare			Asset/No Cal



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Asset No	Item	Manufacturer	Model No	Serial No	Calibration Date	Calibration Interval	Calibration Due
3475	Software	Voltech	Voltech	13475			Asset/No Cal
3480	Software	California Instruments	AC Source	13480			Asset/No Cal
3581	Antenna	ETS	3183	142067	16-Apr-15	730	16-Apr-17
3733	Sig Gen 9KHz-3200MHz	HP	864C	3847A04506	2-Nov-15	730	2-Nov-17



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APPENDIX B

Photographs



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Conducted Emissions

Notes:





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Radiated Emissions-Bicon

Notes: 30MHz – 200 MHz





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Radiated Emissions – Log Periodic

Notes: 200MHz – 1000MHz





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Electro-Static Discharge

Notes:





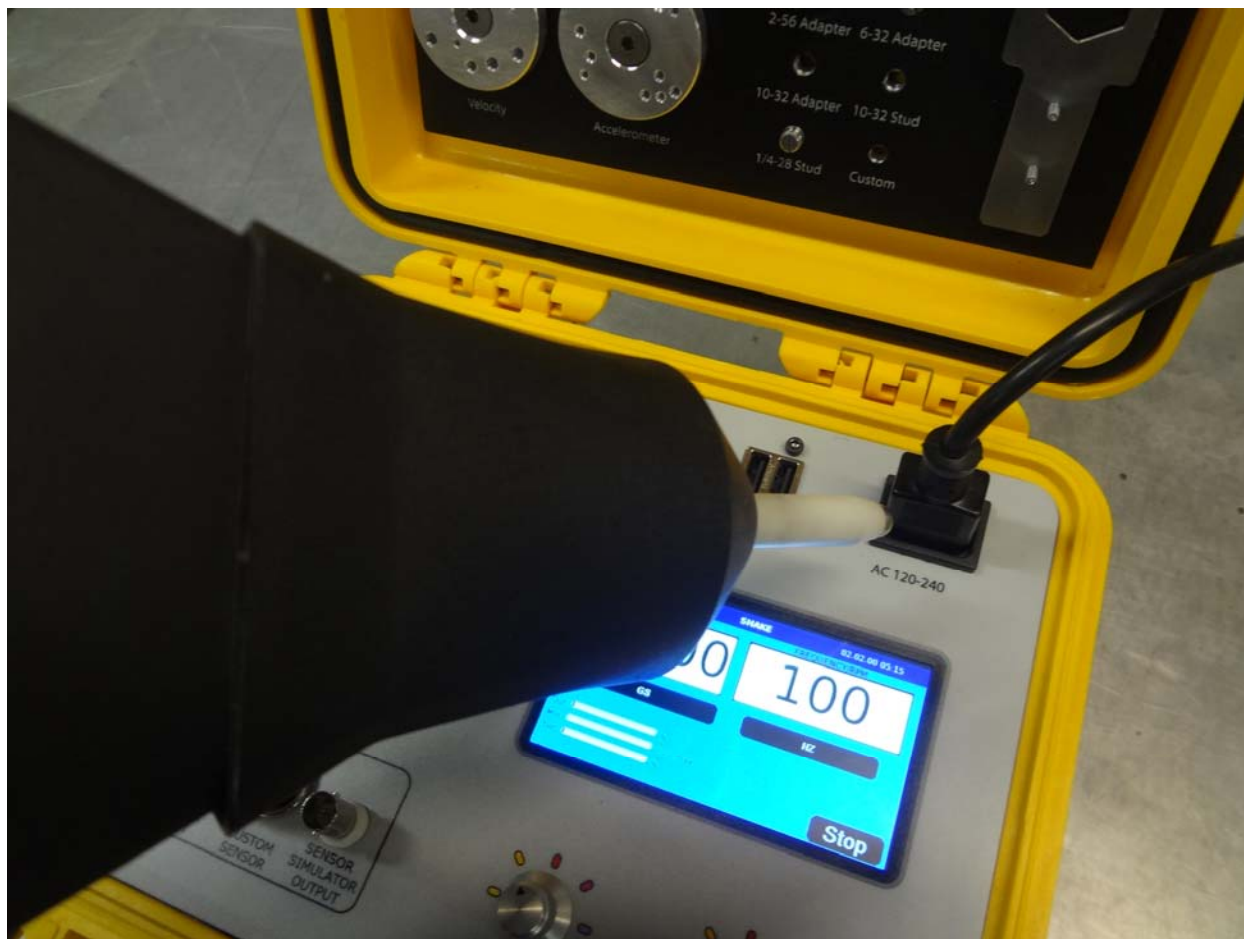
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Electro-Static Discharge

Notes:





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Radiated Susceptibility

Notes: 80MHz – 1000MHz





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Radiated Susceptibility - DRG Horn

Notes: 160MHz – 1GHz





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Radiated Susceptibility – DRG Horn

Notes: 1GHz – 2.7GHz





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Electrical Fast Transient

Notes:





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Surge

Notes:





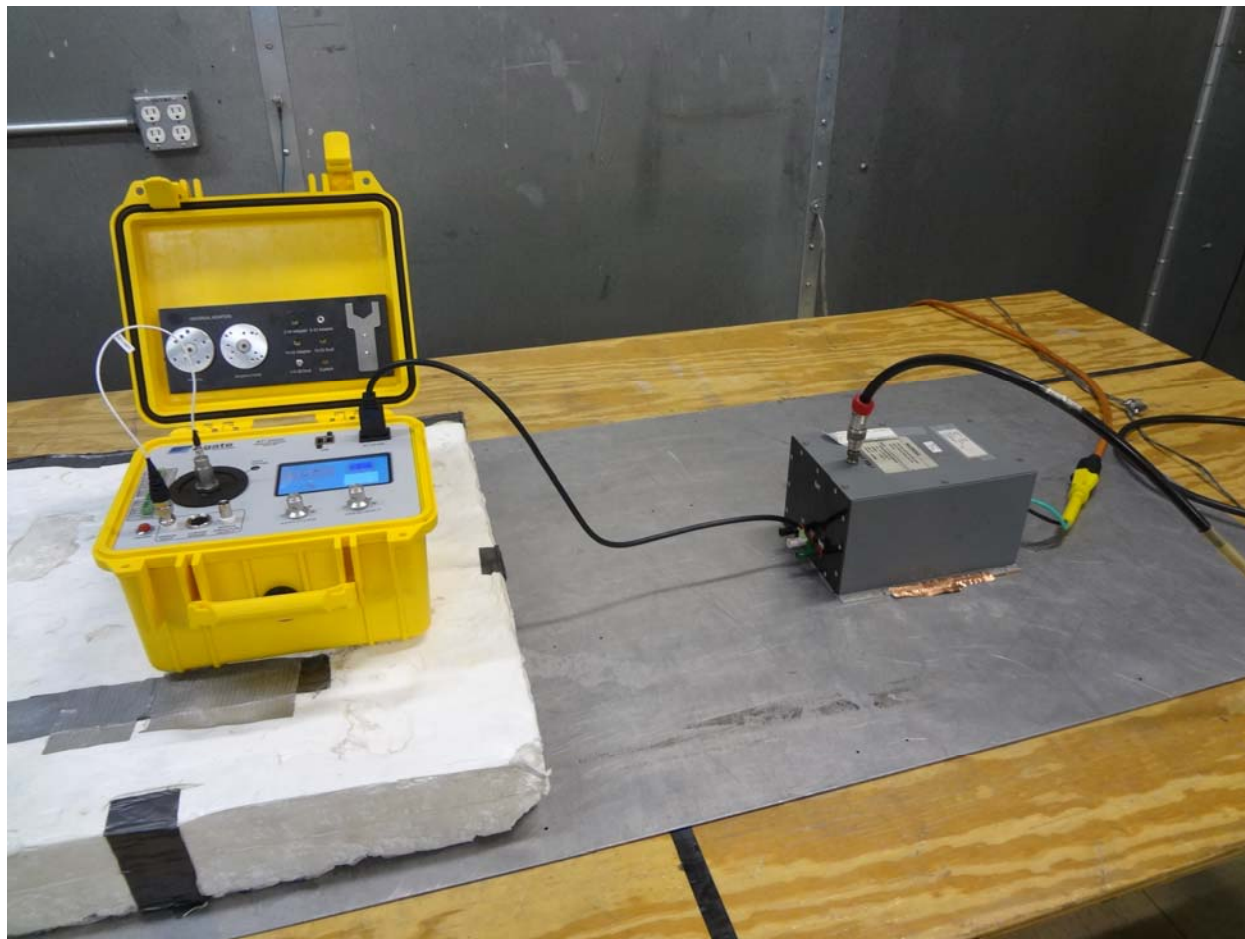
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Conducted Susceptibility

Notes:





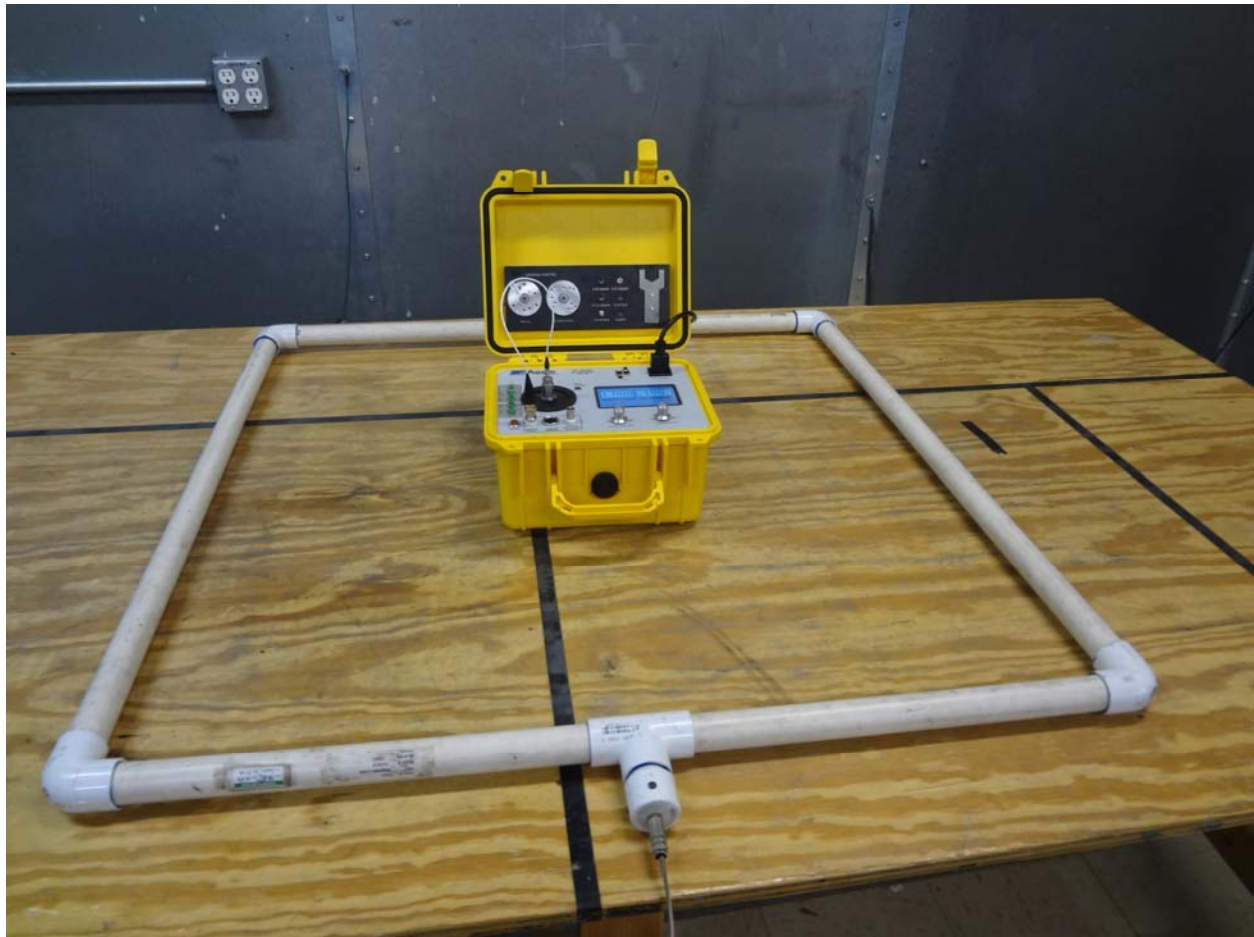
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Magnetic Field Immunity

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Voltage Dips & Variations

Notes:





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APPENDIX C

Test Data

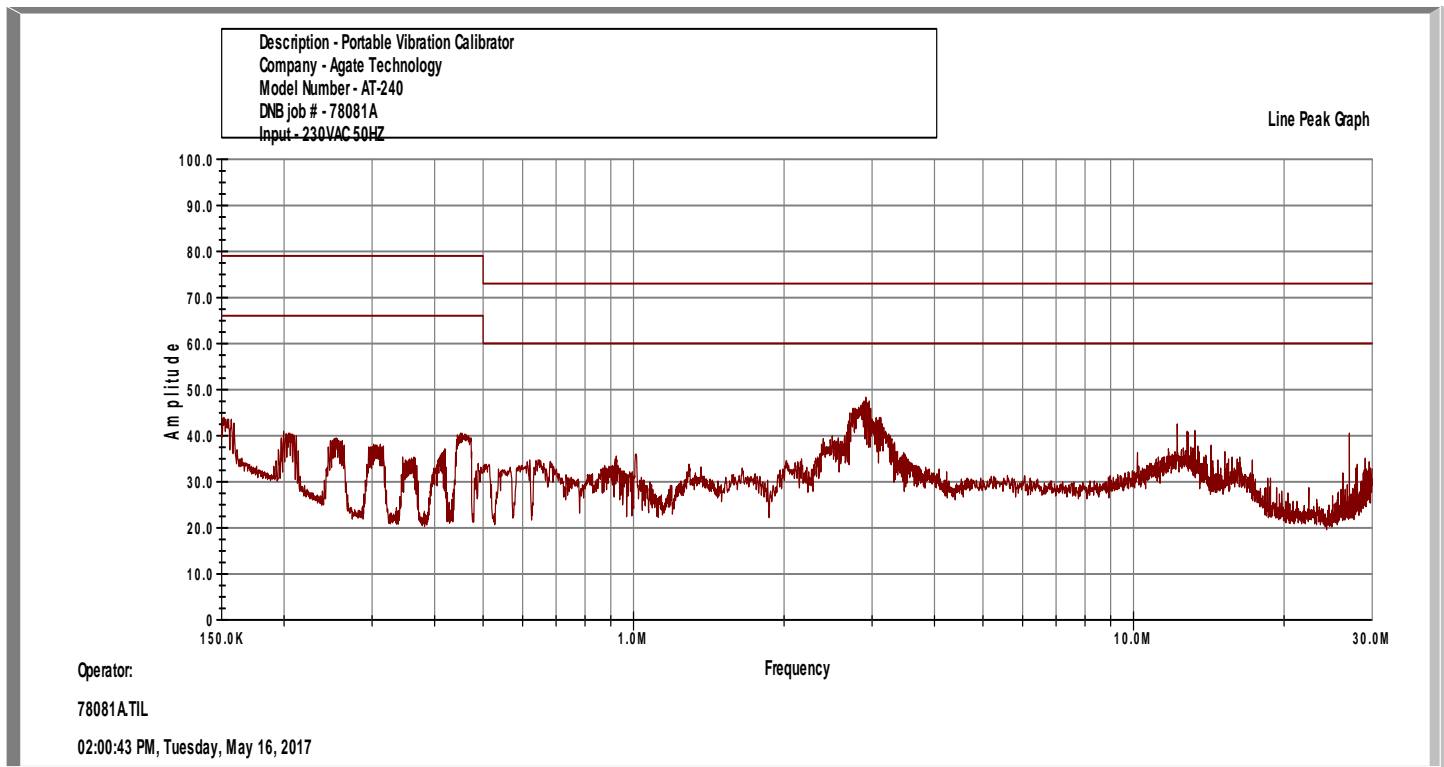


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Conducted Emissions Datasheet

DNB Job Number:	RV78081A-001	Date:	16 May 2017	Specification EN55011 CLASS A [X] B [] GROUP 1
Customer:	Agate Technology			
Model Number:	AT-2040			
Description:	Vibration Sensor Test Set	S/N:	N/A	
Test Equipment: (See pg. 21)	Asset #'s: 844, 1109, 1242, 2180			
EUT performed within the requirements of the applicable Standard(s) YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> SIGNED Mike Green				



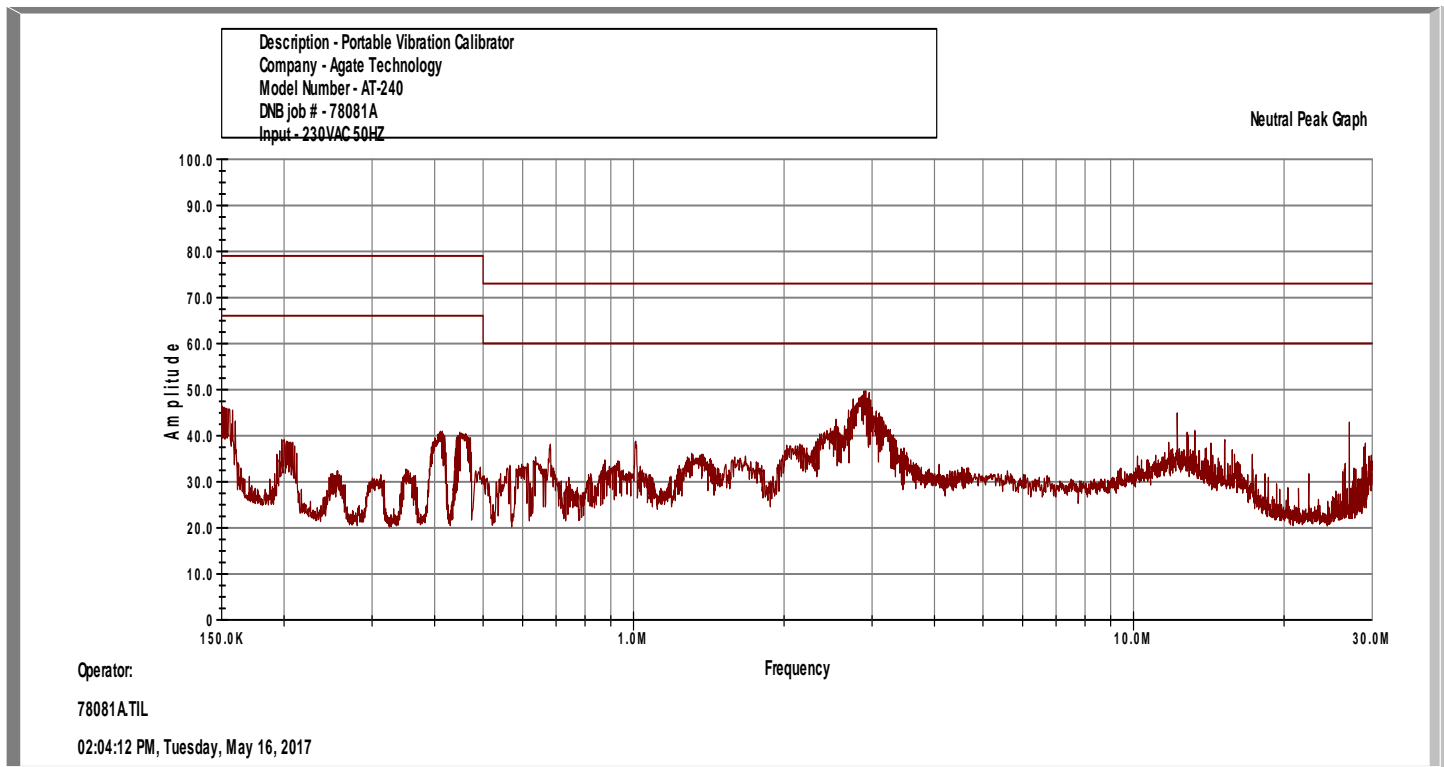


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Conducted Emissions Datasheet

DNB Job Number:	RV78081A-001	Date:	16 May 2017	Specification EN55011 CLASS A [X] B [] GROUP 1
Customer:	Agate Technology			
Model Number:	AT-2040			
Description:	Vibration Sensor Test Set	S/N:	N/A	
Test Equipment: (See pg. 21)	Asset #'s: 844, 1109, 1242, 2180			
EUT performed within the requirements of the applicable Standard(s) YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> SIGNED Mike Green				





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Radiated Emissions Datasheet

DNB Job Number:	RV78081A-001	Date:	16 May 2017	Specification EN55011 CLASS A [X] B [] GROUP 1
Customer:	Agate Technology			
Model Number:	AT-2040	Serial Number:	N/A	
Description:	Vibration Sensor Test Set			
Test Equipment: (See pg. 21)	Asset #'s: 31, 387, 1233, 1234, 1430, 1758, 1760, 1965			
EUT performed within the requirements of the applicable Standard(s) YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> SIGNED Mike Green				

Freq. (MHz)	Meter (dBμV)	Ant. (dB)	Cable (dB)	Distance (dB)	Amp. (dB)	Corrected (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Degrees	Polarity
31.628	41.1	13	1.3	-10	-21.9	23.5	40	-16.5	PK	360	V
44.394	41.3	11	1.4	-10	-21.8	21.9	40	-18.1	PK	360	V
44.443	36.6	11	1.4	-10	-21.8	17.2	40	-22.8	PK	360	V
55.609	39.6	9.8	1.6	-10	-21.8	19.2	40	-20.8	PK	157	V
62.059	49.5	9.5	1.6	-10	-21.8	28.8	40	-11.2	PK	101	V
71.003	41.7	9.4	1.7	-10	-21.8	21	40	-19	PK	162	V
72.128	44	9.4	1.7	-10	-21.8	23.3	40	-16.7	PK	162	V
72.392	45.6	9.4	1.7	-10	-21.8	24.9	40	-15.1	PK	162	V
76.303	43	9.2	1.8	-10	-21.9	22.1	40	-17.9	PK	162	V
81.348	37.4	9.1	1.8	-10	-21.9	16.4	40	-23.6	PK	123	V
111.144	43.9	10.3	2.1	-10	-21.9	24.4	40	-15.6	PK	360	V
112.161	45.8	10.4	2.1	-10	-21.9	26.4	40	-13.6	PK	360	V
114.197	46.7	10.5	2.1	-10	-21.9	27.4	40	-12.6	PK	360	V
124.39	41.8	11.2	2.2	-10	-21.9	23.3	40	-16.7	PK	360	V
127.465	47.2	11.3	2.3	-10	-21.9	28.9	40	-11.1	PK	360	V
134.993	44.4	11.7	2.3	-10	-21.9	26.5	40	-13.5	PK	360	V
195.776	39.4	14.3	3	-10	-21.8	24.9	40	-15.1	PK	261	V
45.004	44.9	10.9	1.4	-10	-21.8	25.4	40	-14.6	PK	287	H
63.004	37.3	9.4	1.6	-10	-21.8	16.5	40	-23.5	PK	287	H
76.288	47.1	9.2	1.8	-10	-21.9	26.2	40	-13.8	PK	360	H
81.045	51.3	9.1	1.8	-10	-21.9	30.3	40	-9.7	PK	85	H
83.626	40	9.2	1.8	-10	-21.9	19.1	40	-20.9	PK	97	H
84.652	43.8	9.2	1.8	-10	-21.9	22.9	40	-17.1	PK	97	H
86.694	43.6	9.2	1.9	-10	-21.9	22.8	40	-17.2	PK	97	H
91.092	41.8	9.3	1.9	-10	-21.9	21.1	40	-18.9	PK	97	H
94.303	44.4	9.5	1.9	-10	-21.9	23.9	40	-16.1	PK	97	H
111.179	44.2	10.3	2.1	-10	-21.9	24.7	40	-15.3	PK	97	H



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117.269	44.3	10.7	2.2	-10	-21.9	25.3	40	-14.7	PK	100	H
123.368	42.6	11.1	2.2	-10	-21.9	24	40	-16	PK	100	H
131.571	38.4	11.6	2.3	-10	-21.9	20.4	40	-19.6	PK	100	H
135.616	43.1	11.7	2.4	-10	-21.9	25.3	40	-14.7	PK	100	H
141.752	41.4	12	2.4	-10	-21.9	23.9	40	-16.1	PK	100	H
139.719	38.7	11.9	2.4	-10	-21.9	21.1	40	-18.9	PK	261	H
141.724	39.6	12	2.4	-10	-21.9	22.1	40	-17.9	PK	261	H
149.987	40.9	12.4	2.5	-10	-21.9	23.9	40	-16.1	PK	261	H
153.157	36.2	12.5	2.5	-10	-21.8	19.4	40	-20.6	PK	261	H
160.143	46.3	12.8	2.6	-10	-21.8	29.9	40	-10.1	PK	348	H
171.408	38	13.3	2.7	-10	-21.8	22.2	40	-17.8	PK	141	H
196.813	40	14.4	3	-10	-21.8	25.6	40	-14.4	PK	124	H
206.853	52.7	10.8	3.1	-10	-21.8	34.8	40	-5.2	PK	330	V
204.737	54.9	10.9	3	-10	-21.8	37	40	-3	PK	360	V
206.774	52.7	10.8	3	-10	-21.8	34.7	40	-5.3	PK	170	V
197.616	46.7	14.4	3	-10	-21.8	32.3	40	-7.7	PK	170	V
185.384	40.2	14.1	2.9	-10	-21.8	25.4	40	-14.6	PK	170	V
220.752	46.6	10.6	3.2	-10	-21.8	28.6	40	-11.4	PK	154	V
264.879	37.1	12.2	3.5	-10	-21.7	21.1	47	-25.9	PK	154	V
264.813	36.4	12.2	3.5	-10	-21.7	20.4	47	-26.6	PK	129	V
421.222	39.2	16.2	4.6	-10	-21.4	28.6	47	-18.4	PK	127	V
399.995	32.9	15	4.5	-10	-21.4	21	47	-26	PK	219	V
450.02	31.2	15.9	4.8	-10	-21.3	20.6	47	-26.4	PK	254	V
650.02	30.8	19	5.8	-10	-21.2	24.4	47	-22.6	PK	254	V
449.992	36.7	15.9	4.8	-10	-21.3	26.1	47	-20.9	PK	319	V
207.856	56.4	10.8	3.1	-10	-21.8	38.5	40	-1.5	PK	232	H
207.879	55.7	10.8	3.1	-10	-21.8	37.8	40	-2.2	QP	232	H
202.802	57	10.9	3	-10	-21.8	39.1	40	-0.9	PK	232	H
202.76	55.9	10.9	3	-10	-21.8	38	40	-2	QP	232	H
217.027	46.5	10.6	3.1	-10	-21.8	28.4	40	-11.6	PK	232	H
263.858	37.2	12.2	3.5	-10	-21.7	21.2	47	-25.8	PK	232	H
325.026	37.1	14.1	3.9	-10	-21.5	23.6	47	-23.4	PK	221	H
450.026	33.8	15.9	4.8	-10	-21.3	23.2	47	-23.8	PK	221	H
550.01	35.2	17.6	5.4	-10	-21.2	27	47	-20	PK	221	H
650.01	33.7	19	5.8	-10	-21.2	27.3	47	-19.7	PK	221	H



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ESD Datasheet (1)

DNB Job Number:	RV78081A-001	Date:	17 May 2017	Conformance Standard EN61326-1 Basic Standard EN61000-4-2	
Customer:	Agate Technology				
Model Number:	AT-2040	Serial Number:	N/A		
Description:	Vibration Sensor Test Set				
Test Equipment: (See pg. 21)	Asset #'s: 858, 1841				
Ambient Temp	25 ° C	Relative Humidity	35 %	Atmospheric Pressure	98.6 kPa

X or A Normal Performance within specification limits.
 B Temporary degradation or loss of function or performance, which is self –recoverable.
 C Temporary degradation or loss of function or performance, which requires operator intervention or system, reset.
 D Degradation or loss of function, which is not recoverable due to damage of the equipment (components) or software, or loss of data.

# ↓	Injected Level																			
	Level 1				Level 2				Level 3				Level 4				Special			
	2KV Contact		2KV Air		4KV Contact		4KV Air		6KV Contact		8KV Air		8KV Contact		15KV Air					
	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-
1	X	X			X	X														
2	X	X			X	X														
3	X	X			X	X														
4	X	X			X	X														
5	X	X			X	X														
6	B	B			B	B														
7	X	X			B	B														
8	B	B			B	B														
9	X	X			B	B														
10	B	B			B	B														
11			X	X			X	X			X	X								
12																				
13																				
14																				
15																				
16																				
17																				
18																				

Notes: Added fastener to point #6 to improve grounding.

EUT performed within the requirements of the applicable Standard(s) YES NO SIGNED Mike Green



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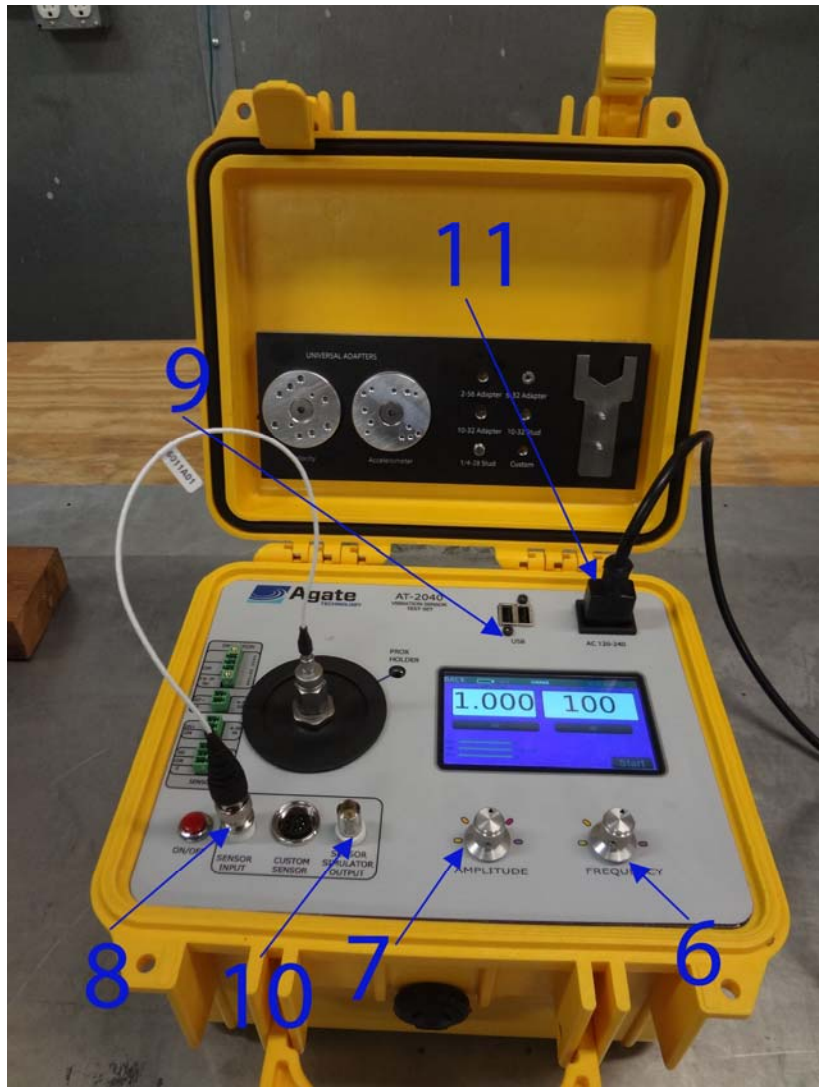
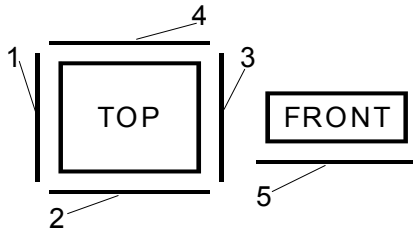
ESD Datasheet (2)

DNB Job Number:	RV78081A-001	Date:	17 May 2017	Conformance Standard EN61326-1 Basic Standard EN61000-4-2
Customer:	Agate Technology			
Model Number:	AT-2040	Serial Number:	N/A	
Description:	Vibration Sensor Test Set			

EUT performed within the requirements of the applicable Standard(s) YES NO SIGNED Mike Green

A minimum of ten discharges
 Per injection point is required.

Location of injection points:





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EFT Datasheet

DNB Job Number:	RV78081A-001	Date:	16 May 2017	Conformance Standard EN61326-1 Basic Standard EN610004-4
Customer:	Agate Technology			
Model Number:	AT-2040	Serial Number:	N/A	
Description:	Vibration Sensor Test Set			
Test Equipment: (See pg. 21)	Asset #'s: 1726, 1898			

Ambient Temp	18 ° C	Relative Humidity	40 %	Atmospheric Pressure	99.1Pa
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X or A Normal Performance within specification limits.
 B Temporary degradation or loss of function or performance, which is self –recoverable.
 C Temporary degradation or loss of function or performance, which requires operator intervention or system reset.
 D Degradation or loss of function, which is not recoverable due to damage of the equipment (components) or software, or loss of data.

Cable Description	Input and Output AC Power Ports										Cable Description	Input and Output AC Power Ports									
	Level1		Level 2		Level 3		Level 4		Special			Level1		Level 2		Level 3		Level 4		Special	
	0.5KV		1KV		2KV		4KV					0.25KV		0.5KV		1KV		2KV			
	+	-	+	-	+	-	+	-	+	-		+	-	+	-	+	-	+	-	+	-
L					B	B															
N					B	B															
PE					B	B															
L-N					B	B															
L-PE					B	B															
N-PE					B	B															
L-N-PE					B	B															

Cable Description	Process, measurement & control										Cable Description	I/O, signal, & data buss									
	Level1		Level 2		Level 3		Level 4		Special			Level1		Level 2		Level 3		Level 4		Special	
	0.25KV		0.5KV		1KV		2KV					0.25KV		0.5KV		1KV		2KV			
	+	-	+	-	+	-	+	-	+	-		+	-	+	-	+	-	+	-	+	-

Notes:

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Surge Datasheet

DNB Job Number:	RV78081A-001	Date:	17 May 2017	Conformance Standard EN61326-1 Basic Standard EN61000-4-5
Customer:	Agate Technology			
Model Number:	AT-2040	Serial Number:	N/A	
Description:	Vibration Sensor Test Set			
Test Equipment: (See pg. 21):	Asset #'s: 1117, 1730, 1731, 1732			

Ambient Temp	22 °C	Relative Humidity	46 %	Atmospheric Pressure	98.8 kPa
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X or A Normal Performance within specification limits.
 B Temporary degradation or loss of function or performance, which is self –recoverable.
 C Temporary degradation or loss of function or performance, which requires operator intervention or system reset.
 D Degradation or loss of function, which is not recoverable due to damage of the equipment (components) or software, or loss of data.

Cable Description	Common Mode (1.2/50, 8/20 Combination Wave 12Ohm)																	
	Level 1			Level 2			Level 3			Level 4			Special					
	0.5 KV			1.0 KV			2.0KV			4.0KV								
	L1+PE-	L2+PE-	L1+L2+PE-	L1+PE-	L2+PE-	L1+L2+PE-	L1+PE-	L2+PE-	L1+L2+PE-	L1+PE-	L2+PE-	L1+L2+PE-	L1+PE-	L2+PE-	L1+L2+PE-	L1+PE-	L2+PE-	L1+L2+PE-
	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-
AC Mains Phase 0°	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
AC Mains Phase 90°	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
AC Mains Phase 270°	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			

Cable Description	Differential Mode (1.2/50, 8/20 Combination Wave 2 Ohm)									
	Level 1		Level 2		Level 3		Level 4		Special	
	0.5 KV		1.0 KV		2.0KV		4.0KV			
	L1+L2- [PE]		L1+L2- [PE]		L1+L2- [PE]		L1+L2- [PE]		L1+L2- [PE]	
	+	-	+	-	+	-	+	-	+	-
AC Mains Phase 0°	X	X	X	X						
AC Mains Phase 90°	X	X	X	X						
AC Mains Phase 270°	X	X	X	X						

Notes:

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Conducted Susceptibility Datasheet

DNB Job Number:	RV78081A-001	Date:	16 May 2017	Conformance Standard EN61326-1 Basic Standard EN61000-4-6
Customer:	Agate Technology			
Model Number:	AT-2040	Serial Number:	N/A	
Description:	Vibration Sensor Test Set			
Test Equipment: (See pg. 21):	Asset #'s: 1034, 1109, 1221, 1242, 1723, 1769, 3408			

Ambient Temp	23 ° C	Relative Humidity	34 %	Atmospheric Pressure	99.0 kPa
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X or A Normal Performance within specification limits.
 B Temporary degradation or loss of function or performance, which is self –recoverable.
 C Temporary degradation or loss of function or performance, which requires operator intervention or system reset.
 D Degradation or loss of function, which is not recoverable due to damage of the equipment (components) or software, or loss of data.

Cable Description	Input and Output AC Power Ports				Cable Description	Input and Output DC Power Ports			
	Level 1	Level 2	Level 3	Special		Level 1	Level 2	Level 3	Special
	1V	3V	10V			1V	3V	10V	
230VAC		X							

Cable Description	Process, measurement & control				Cable Description	I/O, signal, & data buss			
	Level 1	Level 2	Level 3	Special		Level 1	Level 2	Level 3	Special
	1V	3V	10V			1V	3V	10V	

Notes:

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Voltage Dips/Interruptions Datasheet

DNB Job Number:	RV78081A-001	Date:	17 May 2017	Conformance Standard EN61326-1 Basic Standard EN61000-4-11
Customer:	Agate Technology			
Model Number:	AT-2040	Serial Number:	N/A	
Description:	Vibration Sensor Test Set			
Test Equipment: (See pg. 21):	Asset #'s: 1775, 2155, 2156			

Ambient Temp	20 °C	Relative Humidity	37 %	Atmospheric Pressure	98.5 kPa
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X or A Normal Performance within specification limits.
 B Temporary degradation or loss of function or performance, which is self-recoverable.
 C Temporary degradation or loss of function or performance, which requires operator intervention or system reset.
 D Degradation or loss of function, which is not recoverable due to damage of the equipment (components) or software, or loss of data.

Port Description	Voltage Dips and Short Interruptions															
	Test Voltage				Duration in Cycles											
	U Nom	U Test	U Dev	U Volts	0.01	0.05	0.1	0.5		1	5	10	25	50	250	Spcl
								0°	180°							
AC MAINS	230	70	30	161	X	X	X	X	X	X	X	X	X	X	X	
AC MAINS	230	40	60	92	X	X	X	X	X	X	X	X	X	X	X	
AC MAINS	230	<5	>95	0	X	X	X	X	X	X	X	X	X	X	X	

Port Description	Voltage Variations (Optional)									
	Test Voltage				Time for decreasing voltage	Time at reduced voltage	Time for increasing voltage			
	U Nom	U Test	U Dev	U Volts	2 cycles ± 20%	1 cycle ± 20%	2 cycles ± 20%			

Notes:

EUT performed within the requirements of the applicable Standard(s) YES NO SIGNED Mike Green

End of Report