



## Hardware and Software Evaluation Form (VVSG 2005 V2, 1.7.1.1 & 1.7.1.2)

### Instructions for Hardware Evaluation

This hardware evaluation section is designed to describe the determinations relevant to Volume 2, section 1.7.1.1 Hardware, which reads:

Specifically, the hardware test requirements shall apply in full to all equipment used in a voting system with the exception of the following:

- a. Commercially available models of general purpose information technology equipment that have been designed to an ANSI or IEEE standard, have a documented history of successful performance for relevant requirements of the standards, and have demonstrated compatibility with the voting system components with which they interface
- b. Production models of special purpose information technology equipment that have a documented history of successful performance under conditions equivalent to election use for relevant requirements of the standards and that have demonstrated compatibility with the voting system components with which they interface
- c. Any ancillary devices that do not perform ballot definition, election database maintenance, ballot reading, ballot data processing, or the production of an official output report; and that do not interact with these system functions (e.g. modems used to broadcast results to the press, printers used to generate unofficial reports, or CRTs used to monitor the vote counting process)

The three applicable requirements were rephrased to ask the following questions:

- a. Is this device a commercially available model of general purpose information technology equipment that have been designed to an ANSI or IEEE standard, have a documented history of successful performance for relevant requirements of the standards, and have demonstrated compatibility with the voting system components with which they interface
- b. Is this device a production model of special purpose information technology equipment that has a documented history of successful performance under conditions equivalent to election use for relevant requirements of the standards and that have demonstrated compatibility with the voting system components with which they interface
- c. Is this device an ancillary device that does **not** perform ballot definition, election database maintenance, ballot reading, ballot data processing, or the production of an official output report; and that do not interact with these system functions (e.g. modems used to broadcast results to the press, printers used to generate unofficial reports, or CRTs used to monitor the vote counting process)



The table below lists the hardware components utilized in the Hart Verity 2.0 voting system and a determination of Hardware testing Applicability according to the criteria outlined in 2005 VVSG Volume 2, Section 1.7.1.1

Manufacturer	Hardware	Model	1.7.1.1.a	1.7.1.1.b	1.7.1.1.c	Hardware Testing
Hart	Verity Scan – custom precinct optical scanner	Rev B	No	No	No	Subject to All (done in Verity 1.0)
Hart	Verity Touch Writer – custom precinct ballot marking device	Rev B	No	No	No	Subject to All (done in Verity 1.0)
Hart	Verity Print – custom central location ballot print device		No	No	No	Subject to All
Hart	Verity Controller – custom precinct DRE management device		No	No	No	Subject to All
Hart	Verity Touch – custom precinct DRE voting device		No	No	No	Subject to All
Hart	Verity Touch with Access – custom precinct accessible DRE voting device		No	No	No	Subject to All
OKIDATA	COTS printer used for <b>Verity Build</b> , <b>Verity Central</b> , <b>Verity Touch Writer</b> and <b>Verity Count</b>	B431d	Yes	No	No	None
OKIDATA	COTS Printer used for <b>Verity Build</b>	C911	Yes	No	No	None
OKIDATA (for <b>Verity Build</b> )	COTS Printer used for <b>Verity Build</b>	C831	Yes	No	No	None
Kodak (for <b>Verity Central</b> )	COTS scanner used for <b>Verity Central</b>	i5600	Yes	No	No	Reliability, Power & Temperature (done in Verity)



Manufacturer	Hardware	Model	1.7.1.1.a	1.7.1.1.b	1.7.1.1.c	Hardware Testing
						1.0)
Canon (for <b>Verity Central</b> )	COTS scanner used for <b>Verity Central</b>	DR-G1100	Yes	No	No	Reliability, Power & Temperature (done in Verity 1.0)
Canon (for <b>Verity Central</b> )	COTS scanner used for <b>Verity Central</b>	DR-G1130	Yes	No	No	Reliability, Power & Temperature (done in Verity 1.0)
Various (for <b>Verity Build</b> , <b>Verity Central</b> and <b>Verity Count</b> )	<b>Intel-Windows Workstation (Recommended Requirements)</b> Processor – x86-compatible, 3.0GHz, Quad Core Memory – 8GB Hard Drive – 2 x 1 TB RAID-Level 1, Removable w/ key lock Ethernet Port – 100Mb/1Gb USB Ports – 4 ports Video Card - Integrated Graphics Keyboard - USB Keyboard Mouse - USB Mouse NO Wireless technologies allowed: WiFi, Bluetooth, Aircard, etc.		Yes	No	No	None
Various (for <b>Verity Build</b> , <b>Verity Central</b> and <b>Verity Count</b> )	<b>Monitor (Recommended Requirements)</b> Panel Size - 50.8 cm Aspect Ratio - Widescreen (16:9) Optimal Resolution - 1600 x 900 at 60 Hz Contrast Ratio - 1000: 1		Yes	No	Yes	None



Manufacturer	Hardware	Model	1.7.1.1.a	1.7.1.1.b	1.7.1.1.c	Hardware Testing
	Brightness - 250 cd/m <sup>2</sup> (typical)					

If any of the requirement columns are answered as a “Yes”, then the equipment is exempt from full hardware testing.

If any equipment has “No” in each of the three requirement columns, then it is subject to full hardware testing.

Following this criteria, all Hart devices, Verity Scan (done in Verity 1.0), Verity Touch Writer (done in Verity 1.0), Verity Print (done in Verity 2.0), Verity Controller (done in Verity 2.0), Verity Touch (done in Verity 2.0), Verity Touch with Access (done in Verity 2.0), are subject to full hardware testing.

The other devices listed meet one or more of the exemption criteria, so are not subject to full hardware testing.

Note that the COTS scanners utilized by Verity Central were deemed subject to the 48 hour environmental chamber testing, which is part of “Reliability” and “Power & Temperature” testing (done in Verity 1.0).

### **Instructions for Software Evaluation**

This software evaluation section is designed to describe the determinations relevant to Volume 2, section 1.7.1.2 Software, which reads:

Software certification is applicable to the following:

- a. Application programs that control and carry out ballot processing, commencing with the definition of a ballot, and including processing of the ballot image (either from physical ballots or electronically activated images), and ending with the system's access to memory for the generation of output reports
- b. Specialized compilers and specialized operating systems associated with ballot processing
- c. Standard compilers and operating systems that have been modified for use in the vote counting process Specialized software for ballot preparation, election programming, vote recording, vote tabulation, vote consolidation and reporting, and audit trail production shall be subjected to code inspection. Functional testing of all these programs during software evaluation and system-level testing shall exercise any specially tailored software off-line from the ballot counting process (e.g. software for preparing ballots and broadcasting results).

The three applicable requirements were rephrased to ask the following questions:



- a. Does this Application program control and carry out ballot processing, commencing with the definition of a ballot, and including processing of the ballot image (either from physical ballots or electronically activated images), and ending with the system's access to memory for the generation of output reports
- b. Is this a specialized compilers and/or specialized operating systems associated with ballot processing
- c. Is this a Standard compiler and/or operating systems that has been modified for use in the vote counting process

The table below lists the software components utilized in the Hart Verity 2.0 voting system and a determination of source code review applicability according to the criteria outlined in 2005 VVSG Volume 2, Section 1.7.1.2

Manufacturer	Application(s)	Version	Verity Voting 2.0 Component	1.7.1.2.a	1.7.1.2.b	1.7.1.2.c	Review
Hart	Election data creation software	2.0.2	Verity Data	Yes	No	No	Yes
Hart	EMS software	2.0.2	Verity Build	Yes	No	No	Yes
Hart	High speed digital scanner software	2.0.2	Verity Central	Yes	No	No	Yes
Hart	Central count location accumulation and tallying software	2.0.2	Verity Count	Yes	No	No	Yes
Hart	Digital scanner firmware	2.0.3	Verity Scan	Yes	No	No	Yes
Hart	BMD firmware	2.0.3	Verity Touch Writer	Yes	No	No	Yes
Hart	custom central location ballot print device	2.0.3	Verity Print	Yes	No	No	Yes
Hart	custom precinct DRE management device	2.0.3	Verity Controller	Yes	No	No	Yes
Hart	custom precinct DRE voting device	2.0.3	Verity Touch	Yes	No	No	Yes
Hart	custom precinct accessible DRE voting device	2.0.3	Verity Touch with Access	Yes	No	No	Yes



Manufacturer	Application(s)	Version	Verity Voting 2.0 Component	1.7.1.2.a	1.7.1.2.b	1.7.1.2.c	Review
Hart	Firmware for Verity Devices	V17	Verity Device Microcontroller	Yes	No	No	Yes
Microsoft	<i>Windows Embedded Standard with Service Pack 1, 64-bit</i> Configured for Verity Kiosk Operations	6.1.7601	Build, Central, Count	No	No	No	No
McAfee	Application Control  Configured for Verity Kiosk	6.1.2	Build, Central, Count	No	No	No	No
Microsoft	.NET 4.x Framework  Unmodified	4.0.30319 4.5.50709	Build, Central, Count	No	No	No	No
Microsoft	<i>SQL Server 2012</i> <i>Unmodified</i>	11.0.2100	Build, Central, Count	No	No	No	No
Microsoft	Visual Studio C++ 2005 redistributables  Unmodified	8.0.56336	Build, Central, Count	No	No	No	No
Microsoft	Visual Studio C++ 2010 redistributables/runtime/shell  Unmodified	10.0.40219	Build, Central, Count	No	No	No	No
Microsoft	<i>Windows Embedded Standard 7 with Service Pack 1, 32-bit</i>  Configured for Verity Kiosk Operations	6.1.7601	Scan, Touch Writer	No	No	No	No
McAfee	Application Control	6.1.2	Scan, Touch Writer	No	No	No	No



Manufacturer	Application(s)	Version	Verity Voting 2.0 Component	1.7.1.2.a	1.7.1.2.b	1.7.1.2.c	Review
	Configured for Verity Kiosk						
Microsoft	.NET 4.x Framework Unmodified	4.0.30319 4.5.50709	Scan, Touch Writer	No	No	No	No
Microsoft	SQL Server Compact Unmodified	11.0.2100	Scan, Touch Writer	No	No	No	No
Microsoft	Visual Studio C++ 2005 redistributables Unmodified	8.0.56336	Scan, Touch Writer	No	No	No	No
Microsoft	Visual Studio C++ 2010 redistributables/runtime/shell/tools Unmodified	10.0.40219	Scan, Touch Writer	No	No	No	No

If any of the requirement columns are answered as a “Yes”, then the software is subject to source code review.  
If any equipment has “No” in each of the three requirement columns, then it is exempt from source code review.  
Following this criteria, all Hart custom software are subject to source code review.

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End of Hardware and Software General Applicability Form

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