



STANDARD
MICROSYSTEMS
CORPORATION

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USB97C210
USB 2.0 Flash Media Controller
**Software Performance and
Compatibility Test Report**

Firmware Version: 0.0.0.250
Windows 98/2000 Driver Version: 2.5.0.0
Report Date: 12/23/2003

Total Test Time Required: 252 Hours

Table of Contents

Test Environment.....	3
Hardware:	3
Software:	3
Testing Overview	4
Standard for Certifying Firmware and Drivers.....	4
Test Results	5
Test Suite Results Summary.....	5
Testing Observations and Comments	6
Test Completion Dates	7
Test Suite #1- Installation.....	8
Overview	8
Test Suite #1 Results	8
Test Suite #2- USB Command Verifier (USBCV)	15
Overview	15
Test Suite #2 Results	15
Test Suite #3- Compact Flash / IBM MicroDrive	16
Overview	16
Test Suite #3 Results	16
Test Suite #4- Smart Media	19
Overview	19
Test Suite #4 Results	19
Test Suite #5- Secure Digital / Multimedia Card	22
Overview	22
Test Suite #5 Results	22
Test Suite #6- Memory Stick / Memory Stick Pro	25
Overview	25
Test Suite #6 Results	25
Test Suite #7- Multiple Device.....	28
Overview	28
Test Suite #7 Results	28
Test Suite #8- Load / Unload	30
Overview	30
Test Suite #8 Results	30
Test Suite #9- USB 1.1	33
Overview	33
Test Suite #9 Results	33
Test Suite #10- USB WHQL	42
Overview	42
Test Suite #11- Chapter 9 Current Measurement Tests.....	43
Overview	43
Test Suite #12- Bundled Software Application Tests	45
Overview	45
Test Suite #13- Device Firmware Upgrade / Descriptor Update.....	46
Overview	46
Test Suite #14- Macintosh OS Specific Testing	47
Overview	47

Test Environment

Hardware:

Test Machine(s): (Include Host Controller Type, Motherboard Model, BIOS Version and Chipset)	Other Hardware:	3 rd Party Readers Used for Testing:
<p>Machine 1: LAB-SOYOP4 Bios: Phoenix Tech version 6.0 Mother board: SOYO 845PE Chipset: Intel i845PE EHCI: Intel 82801DB/DBM USB 2.0HC</p> <p>Machine 2: LAB-ANTECP4 Bios: Intel PT84520A Mother board: Intel D845EBG2 Chipset : Intel i845E EHCI: Intel 82801DB/DBM USB 2.0 HC</p> <p>Machine 3: MACENCRA Bios: AWARD 6.00P4 Mother board:SiS FS50 Chipset: SiS650 EHCI:SiIG 2.0 HC</p> <p>Machine 4: LAB -GEFORCE3 Bios: PHX Tech:ACPI Rev 1002B006 Mother board: ASUST A7N8X Rev 1002A Chipset:NVIDIA NFORCE 2 Rev A2 EHCI: NVIDIA USB 2.0 EHCI</p> <p>Machine 5: LAB-ATHLONFX Bios: PHX Tech:ACPI Rev 1002B006 Mother board:ASUST A7N8X Rev 1002A Chipset:: NVIDIA NFORCE 2 Rev A2 EHCI:NVIDIA USB 2.0 EHCI</p> <p>Machine 6:</p>	<p>CF: Memorex-64MB,128MB CompUSA 16MB,48MB, 64MB Lexar- 32MB, 48MB, 64MB, 128MB, - 256MB, 512MB,1GB,2GB SanDisk- 32MB Kingmax- 8MB</p> <p>MicroDrive: IBM-340MB,1GB</p> <p>MS: Lexar- 32MB, 64MB, 128MB SanDisk- 64MB Sony- 8MB, 16MB, 32MB, 64MB, 128MB Hagiwara sys-com- 64MB, 128MB</p> <p>High Speed MS: Sony-32MB,64MB,128MB</p> <p>MSPRO: Sony-512MB SanDisk-256MB, 1GB</p> <p>SD/MMC: I-O Data- 64MB SanDisk- 128MB,(64MB MMC) Lexar- 32MB,(16MB,32MB,64MB MMC) Panasonic- 512MB PNY-64MB</p> <p>Mini SD: Toshiba-32MB</p> <p>SM: Lexar- 16MB,32MB,64MB,128MB SanDisk- 128MB Memorex- 64MB, 128MB Kingston- 64MB Viking Components- 64MB PNY- 128MB</p> <p>XD: Olympus-32MB,128MB,256MB Fujifilm-64MB</p>	<p>ZIO SM, MS readers Dazzle reader I/O Interconnect reader Firewire reader Imation FlashGO! 2.0 Lexar USB 2.0 Multi-Card Reader SanDisk ImageMate 8 in 1</p> <p>Chipsets Intel845E VIA KT400 Intel845D REV.4 VIAK8T800 Intel865P/PE/G VIA8235 Intel875 SiS645DX NVIDIA NFORCE 2 REV AZ SiS648FX MSI MS-6547 Ver 2.00 SiS963L</p>

Software:

Drivers and Firmware	Application Software	Operating Systems
<p>Firmware:</p> <p>FMC.0.0.0.234.hex 10/31/03 FMC.0.0.0.234.hex no eeprom 10/31/03 FMC.0.0.0.235.hex 11/7/03 FMC.0.0.0.235.hex no eeprom 11/7/03 FMC.0.0.0.244.hex 11/26/03 FMC.0.0.0.244.hex no eeprom 11/26/03 FMC.0.0.0.245.hex 12/02/03 FMC.0.0.0.245.hex no eeprom 12/02/03 FMC.0.0.0.247.hex 12/07/03 FMC.0.0.0.247.hex no eeprom 12/07/03 FMC.0.0.0.250.hex 12/15/03 FMC.0.0.0.250.hex no eeprom 12/15/03</p> <p>MASS STORAGE CLASS DRIVER</p> <p>WINXP:MS - USBSTOR.SYS 5.1.2600.1106 WIN2K: MS -USBSTOR.SYS 5.00.2195.6655 WINME: MS -USBSTOR.SYS 4.90.3000.1 WIN98SE: SMSC - MASSWDM.SYS 2.5.0.0</p> <p>EHCI DRIVER:</p> <p>MS USBEHCI.SYS 5.1.2600.1106 MS USBEHCI.SYS 5.0.2195.6907 Adaptec AEHCD.SYS 4.0.0.3000 SIIG / OMI OUSBECI.SYS 2.1.4 OWC IUSBECI.SYS 1.0.3.0</p> <p>UHC DRIVER:</p> <p>WINXP: USBUHCI.SYS 5.1.2600.1106 WIN2K: UHCD.SYS 5.0.2195.6675 WINME UHCD.SYS 4.90.3000.1 WIN98SE: UHCD.SYS 4.10.2222</p>	<p>DFUTEST version 2.3.0.2 Format Pro version 1.0.0.4 Eprmpdt.EXE version 1.2.0.0 SFV32W.EXE version 1.0.350 Atributes calculator version .11 Setlcon.exe 1.2.0.8 HD Bench USBView MAC SFV (10x) version 1.3 MacSFV (8x-9x) version 1.2</p> <p>Bundled Software</p> <p>Production Line Descriptor Update Utility version 1.0.0.0 Production Line Device Utility version 1.0.0.5 Quick Test Production Line Utility Using Filter Driver version 1.0.0.3 Utility to Format MSPRO media version 1.0.0.4 SMSC DFU Application version 2.3.0.2</p>	<p>WINXP (SP1) WIN2K (SP4) WINME WIN98SE Macintosh OS 8.x, 9.x, 10.x LINUX 2.4.20</p>

Testing Overview

Standard for Certifying Firmware and Drivers

The USB97C210 Test Suite consists of 14 separate functional testing areas designed to fully exercise the capabilities of the USB97C210 USB 2.0 Flash Media Controller chip. For a firmware and driver combination to be considered certified by the SMSC QA Test Laboratory, it must receive passing test results in each of the following functional test suites:

<u>Functional Test Suite</u>	<u>Operating Systems</u>
1. Installation	Windows 98, Me, 2000, XP
2. USBCV	Windows 2000 and XP Only
3. Compact Flash / IBM MD	Windows 98, Me, 2000, XP
4. Smart Media	Windows 98, Me, 2000, XP
5. Secure Digital/MMC	Windows 98, Me, 2000, XP
6. Memory Stick / Memory Stick Pro	Windows 98, Me, 2000, XP
7. Multiple Device	Windows 98, Me, 2000, XP
8. Load / Unload	Windows 98, Me, 2000, XP
9. USB 1.1	Windows 98, Me, 2000, XP
10. WHQL (USB Removable Storage)	Windows XP Only
11. Chapter 9 Current Measurement	Windows XP Only
12. Bundled Software	Windows 98, Me, 2000, XP
13. DFU / Descriptor Update	Windows 98, Me, 2000, XP
14. Macintosh OS Specific	Mac OS 8.6, 9.2, 10.1, 10.2

A new firmware – driver combination must pass all test suites, including WHQL for every operating system listed, to be considered certified. Note that this standard does not apply to beta software released for evaluation purposes.

Test Results

Test Technician: Jon Cloutier
Test Technician: Munabo Lwali

Test Technician: Dylan Cosgrove
Test Technician: Matt Seitzer

Test Suite Results Summary

Test Suite		Windows 98	Windows Me	Windows 2000	Windows XP
# 1	Installation	Pass	Pass	Pass	Pass
# 2	USBCV	Not Supported	Not Supported	Pass	Pass
# 3	Compact Flash / IBM MicroDrive	Pass	Pass	Pass	Pass
# 4	Smart Media	Pass	Pass	Pass	Pass
# 5	Secure Digital / Multimedia Card	Pass	Pass	Pass	Pass
# 6	Memory Stick / Memory Stick Pro	Pass	Pass	Pass	Pass
# 7	Multiple Device	Pass	Pass	Pass	Pass
# 8	Load / Unload	Pass	Pass	Pass	Pass
# 9	USB 1.1	Pass	Pass	Pass	Pass
# 10	WHQL	N/A	N/A	N/A	- -
#11	Chapter 9 Current Measurements	N/A	N/A	N/A	Omitted
#12	Bundled Software	Pass	Pass	Pass	Pass
#13	DFU and Descriptor Update	Pass	Pass	Pass	Pass
		Mac OS 8.6	Mac OS 9.2	Mac OS 10.1	Mac OS 10.2
#14	Macintosh OS Specific	Omitted	Pass	Omitted	Pass

Testing Observations and Comments

Comments: Explanation of any marginal or failing results from the Test Suite Results Matrix above, along with any other comments concerning the results of testing:

Test Completion Dates

The test suites were completed for each operating system on the dates indicated below:

Test Suite		Win98	Testers Initials	WinMe	Testers Initials	Win2K	Testers Initials	WinXP	Testers Initials
# 1	Installation	12/15/03	DC	12/19/03	NJ	12/15/03	NJ	12/15/03	EH
# 2	USBCV	N/A	N/A	N/A	N/A	12/15/03	NJ	12/16/03	EH
# 3	Compact Flash	12/15/03	DC	12/19/03	NJ	12/16/03	NJ	12/16/03	EH
# 4	Smart Media	12/16/03	DC	12/19/03	NJ	12/17/03	NJ	12/17/03	EH
# 5	Secure Digital	12/16/03	DC	12/19/03	NJ	12/16/03	NJ	12/17/03	EH
# 6	Memory Stick	12/17/03	DC	12/19/03	NJ	12/17/03	NJ	12/16/03	EH
# 7	Multiple Device	12/18/03	DC	12/22/03	NJ	12/18/03	NJ	12/17/03	EH
# 8	Load / Unload	12/18/03	DC	12/22/03	NJ	12/18/03	NJ	12/18/03	EH
# 9	USB 1.1	12/19/03	DC	12/22/03	NJ	12/18/03	NJ	12/19/03	EH
# 10	WHQL (USB)	N/A	N/A	N/A	N/A	N/A	N/A		
#11	Chapter 9 Current Measurement	N/A	N/A	N/A	N/A	N/A	N/A		
#12	Bundled Software	12/19/03	DC	12/19/03	NJ	12/17/03	NJ	12/19/03	EH
#13	DFU and Descriptor Update	12/19/03	DC	12/19/03	NJ	12/17/03	NJ	12/19/03	EH
		MacOS 8.6	Testers Initials	MacOS 9.2	Testers Initials	MacOS 10.1	Testers Initials	MacOS 10.2	Testers Initials
#14	Macintosh OS Specific			12/22/03	MS			12/22/03	MS

Test Suite #1- Installation

Overview

This test suite evaluates the installation procedures for the USB97C210. In order to pass this suite, the following conditions must be met:

1. The operating system correctly identifies all supported flash media devices on attach.
2. Under Windows Me, 2000 (SP 3 or above) and XP, the OS automatically loads the native Windows Mass Storage Class driver. (Windows 98 and 2000 (SP2 and below) require the user to provide the SMSC MSC driver with multiple LUN support.)
3. All drivers load normally with no blue screens or system freezes before, during or after they are loaded.
4. The system does not request or require a restart after the drivers have been loaded.
5. No devices appear in the device manager with yellow exclamation marks next to them (yellow banded.)
6. The device does not blue screen the host before, during or after a system restart. After a system restart, the device is re-enumerated normally.
7. After installation, all device entries appear correctly in the device manager, showing the correct vendor, date and version information.

Test Suite #1 Results

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
1	<p>Make sure there are no previous installations of the USB97C210 on the host system. For Windows 98 and 2000 (SP2 and below), run the driver installation utility and verify that it completes normally.</p> <p>Self Powered Pre Plug: With no media inserted in any of the media slots, attach the USB cable to the host and power up the eval board. Check to see that the device enumerates properly, the correct drivers are loaded, and a drive icon appears for each LUN supported in the firmware.</p>	Pass	Pass	Pass	Pass	
2	<p>Uninstall the USB97C210 hardware entries from the Device Manager. Detach the USB cable from the host and power off the device.</p> <p>Self Powered Post Plug: Again, with no media inserted in any of the media slots, power up the eval board, wait a few seconds and then plug the USB cable into the host. Check to see that the device enumerates properly, the correct drivers are loaded, and a drive icon appears for each LUN supported in the firmware.</p>	Pass	Pass	Pass	Pass	

Test Suite #1 Results (cont.)

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
3	<p>Uninstall the USB97C210 hardware entries from the Device Manager and power off the device.</p> <p>Self Powered Pre Plug: Insert a Smart Media (SM) card into the SM slot, and power up the eval board. Check to see that the device enumerates properly, the correct drivers are loaded, and a drive icon appears for each LUN supported in the firmware.</p> <p>Check to see that the SM card can be read from and written to by transferring a small file from the host to the SM card and back. (To avoid caching of the data, hotplug the device between the read and write.)</p>	Marginal	Pass	Pass	Pass	
4	<p>Uninstall the USB97C210 hardware entries from the Device Manager. Detach the USB cable from the host and power off the device.</p> <p>Self Powered Post Plug: Using the same SM card inserted in the SM slot, power up the eval board, wait a few seconds and then plug the USB cable into the host. Check to see that the device enumerates properly, the correct drivers are loaded, and a drive icon appears for each LUN supported in the firmware.</p> <p>Check to see that the SM card can be read from and written to by transferring a small file from the host to the SM card and back. (To avoid caching of the data, hotplug the device between the read and write.)</p>	Pass	Pass	Pass	Pass	

Test Suite #1 Results (cont.)

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
5	<p>Uninstall the USB97C210 hardware entries from the Device Manager and power off the device.</p> <p>Self Powered Pre Plug: Insert a Compact Flash (CF) card into the CF slot, and power up the eval board. Check to see that the device enumerates properly, the correct drivers are loaded, and a drive icon appears for each LUN supported in the firmware.</p> <p>Check to see that the CF card can be read from and written to by transferring a small file from the host to the CF card and back. (To avoid caching of the data, hotplug the device between the read and write.)</p> <p>Repeat the test with an IBM MicroDrive.</p>	Pass	Pass	Pass	Pass	
6	<p>Uninstall the USB97C210 hardware entries from the Device Manager. Detach the USB cable from the host and power off the device.</p> <p>Self Powered Post Plug: Using the same CF card inserted in the CF slot, power up the eval board, wait a few seconds and then plug the USB cable into the host. Check to see that the device enumerates properly, the correct drivers are loaded, and a drive icon appears for each LUN supported in the firmware.</p> <p>Check to see that the CF card can be read from and written to by transferring a small file from the host to the CF card and back. (To avoid caching of the data, hotplug the device between the read and write.)</p> <p>Repeat the test with an IBM MicroDrive.</p>	Pass	Pass	Pass	Pass	

Test Suite #1 Results (cont.)

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
7	<p>Uninstall the USB97C210 hardware entries from the Device Manager and power off the device.</p> <p>Self Powered Pre Plug: Insert a Secure Digital (SD) card into the SD slot, and power up the eval board. Check to see that the device enumerates properly, the correct drivers are loaded, and a drive icon appears for each LUN supported in the firmware.</p> <p>Check to see that the SD card can be read from and written to by transferring a small file from the host to the SD card and back. (To avoid caching of the data, hotplug the device between the read and write.)</p>	Pass	Pass	Pass	Pass	
8	<p>Uninstall the USB97C210 hardware entries from the Device Manager. Detach the USB cable from the host and power off the device.</p> <p>Self Powered Post Plug: Using the same SD card inserted in the SD slot, power up the eval board, wait a few seconds and then plug the USB cable into the host. Check to see that the device enumerates properly, the correct drivers are loaded, and a drive icon appears for each LUN supported in the firmware.</p> <p>Check to see that the SD card can be read from and written to by transferring a small file from the host to the SD card and back. (To avoid caching of the data, hotplug the device between the read and write.)</p>	Pass	Pass	Pass	Pass	

Test Suite #1 Results (cont.)

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
9	<p>Uninstall the USB97C210 hardware entries from the Device Manager and power off the device.</p> <p>Self Powered Pre Plug: Insert a Multimedia Card (MMC) into the MMC slot, and power up the eval board. Check to see that the device enumerates properly, the correct drivers are loaded, and a drive icon appears for each LUN supported in the firmware.</p> <p>Check to see that the MMC card can be read from and written to by transferring a small file from the host to the MMC card and back. (To avoid caching of the data, hotplug the device between the read and write.)</p>	Pass	Pass	Pass	Pass	
10	<p>Uninstall the USB97C210 hardware entries from the Device Manager. Detach the USB cable from the host and power off the device.</p> <p>Self Powered Post Plug: Using the same MMC card inserted in the MMC slot, power up the eval board, wait a few seconds and then plug the USB cable into the host. Check to see that the device enumerates properly, the correct drivers are loaded, and a drive icon appears for each LUN supported in the firmware.</p> <p>Check to see that the MMC card can be read from and written to by transferring a small file from the host to the MMC card and back. (To avoid caching of the data, hotplug the device between the read and write.)</p>	Pass	Pass	Pass	Pass	

Test Suite #1 Results (cont.)

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
1 1	<p>Uninstall the USB97C210 hardware entries from the Device Manager and power off the device.</p> <p>Self Powered Pre Plug: Insert a Memory Stick (MS) card into the MS slot, and power up the eval board. Check to see that the device enumerates properly, the correct drivers are loaded, and a drive icon appears for each LUN supported in the firmware.</p> <p>Check to see that the MS card can be read from and written to by transferring a small file from the host to the MS card and back. (To avoid caching of the data, hotplug the device between the read and write.)</p> <p>Repeat the test with Memory Stick Pro media.</p>	Pass	Pass	Pass	Pass	
1 2	<p>Uninstall the USB97C210 hardware entries from the Device Manager. Detach the USB cable from the host and power off the device.</p> <p>Self Powered Post Plug: Using the same MS card inserted in the MS slot, power up the eval board, wait a few seconds and then plug the USB cable into the host. Check to see that the device enumerates properly, the correct drivers are loaded, and a drive icon appears for each LUN supported in the firmware.</p> <p>Check to see that the MS card can be read from and written to by transferring a small file from the host to the MS card and back. (To avoid caching of the data, hotplug the device between the read and write.)</p> <p>Repeat the test with Memory Stick Pro media.</p>	Pass	Pass	Pass	Pass	

Test Suite #1 Results (cont.)

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
1 3	<p>Uninstall the USB97C210 hardware entries from the Device Manager and power off the device.</p> <p>Self Powered Pre Plug: Insert IBM MD, SM, SD, MMC and MS Pro cards into their respective slots, and power up the eval board. Check to see that the device enumerates properly, the correct drivers are loaded, and a drive icon appears for each LUN supported in the firmware.</p> <p>Check to see that all of the cards can be read from and written to by transferring a small file from the host to each card and back. (To avoid caching of the data, hotplug the device between the read and write.)</p>	Pass	Pass	Pass	Pass	
1 4	<p>Uninstall the USB97C210 hardware entries from the Device Manager. Detach the USB cable from the host and power off the device.</p> <p>Self Powered Post Plug: Leave the same flash media cards inserted in their slots, power up the eval board, wait a few seconds and then plug the USB cable into the host. Check to see that the device enumerates properly, the correct drivers are loaded, and a drive icon appears for each LUN supported in the firmware.</p> <p>Check to see that all of the cards can be read from and written to by transferring a small file from the host to each card and back. (To avoid caching of the data, hotplug the device between the read and write.)</p>	Pass	Pass	Pass	Pass	
1 5	<p>Eject and Remove- With media inserted in each reader slot, test the Right-Click eject functionality for each device. Check to see that no error message is displayed, and that the host reports no media present when trying to access it after the eject.</p>	Pass	Pass	Pass	Pass	

Test Suite #2- USB Command Verifier (USBCV)

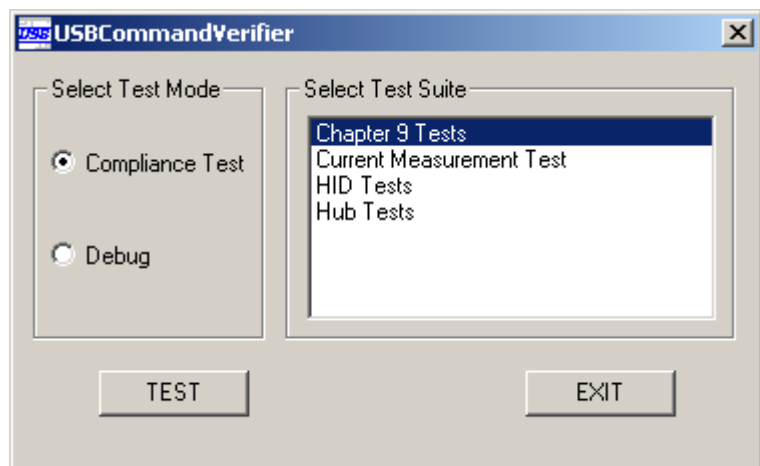
Overview

This test suite utilizes the USB Command Verifier Compliance Tool provided by USB.org, to ensure that the USB97C210 complies with Chapter 9 of the USB 2.0 specification. The latest version of the tool is available at <http://www.usb.org/developers/tools.html>. The USBCV is currently only supported under Windows 2000 and XP, so testing under Windows 98 and Millennium is not performed for this test suite. In order for the device to pass this suite, it must successfully pass all Chapter 9 tests.

Test Suite #2 Results

#	Test Standard	Windows 2000	Windows XP	Comments
1	The device passes all Chapter 9 tests of the Compliance Utility. Passing logs are generated showing no failures. Save the .htm test output for inclusion with this test report.	Pass	Pass	

**USB Command Verifier
Chapter 9 Tests**



Test Suite #3- Compact Flash / IBM MicroDrive

Overview

This test suite evaluates the performance and function of the USB97C210 with various Type I and II Compact Flash devices, including the IBM Microdrive. All tests below are performed using a USB 2.0 host controller. Each device is checked to verify proper operation with the USB97C210 firmware and drivers under normal and abnormal operating conditions. A 690 MB CD test disk is required for these tests. The test disk contains various files ranging in size from 10 bytes to 300 megabytes, with an accompanying SFV file which contains a calculated checksum (CRC) for each file.

Test Suite #3 Results

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
1	<p>CF Writes- Insert a 16 MB CF card into the CF slot on the USB97C210 board. Open the test files disk in Windows Explorer and sort the test files by size in ascending order. Starting with the smallest size file, select enough of the test files to fill the CF card. Transfer the files to the CF card.</p> <p>Once the files have been written, eject the media and place it in a 3rd party flash reader. Use WinSFV to check the CRC of each file to ensure that the data was not corrupted during the transfer.</p>	Pass	Pass	Pass	Pass	
2	<p>CF Insert/Remove- Double click the 210 CF drive icon in Windows Explorer. Verify that the OS reports no media present. Reinsert the CF card and check to see that the OS recognizes that a card was inserted. Verify that the contents of the card can be read by transferring a file to the host.</p> <p>Repeat this procedure three times verifying that the media insert and removal is detected correctly each time.</p>	Pass	Pass	Pass	Pass	
3	<p>CF Reads- Using the same CF card, transfer all of the files that were previously written to the card back to the host. Once the read is complete, CRC check the files on the host to ensure there was no corruption of the data during transfer.</p>	Pass	Pass	Pass	Pass	

Test Suite #3 Results (cont.)

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
4	<p>CF Write, Insert/Remove, Read-</p> <p>Repeat tests 1 through 3 for the following devices: 32MB CF, 64MB CF, 128MB CF, 256MB CF, 512MB CF, 1GB CF, 2GB CF, 340MB IBM MicroDrive, and the 1GB IBM MicroDrive.</p>	<p>32MB CF Pass</p> <p>256MB CF Pass</p> <p>512MB CF Pass</p> <p>1GB CF Pass</p> <p>2GB CFPass</p> <p>340MB MD Pass</p> <p>1GB MDPass</p>	<p>64MB CF Pass</p> <p>128MB CF Pass</p> <p>512MB CF Pass</p> <p>1GB CF Pass</p> <p>2GB CF Pass</p> <p>340MB MD Pass</p> <p>1GB MDPass</p>	<p>32MB CF Pass</p> <p>256MB CF Pass</p> <p>512MB CF Pass</p> <p>1GB CF Pass</p> <p>2GB CF Pass</p> <p>340MB MD Pass</p> <p>1GB MDPass</p>	<p>64MB CF Pass</p> <p>128MB CF Pass</p> <p>512MB CF Pass</p> <p>1GB CF Pass</p> <p>2GB CF Pass</p> <p>340MB MD Pass</p> <p>1GB MDPass</p>	
5	<p>CF Surprise Removal (USB)-</p> <p>Write- Insert a 256 MB CF card and copy a large (~50 MB) test file from the host to the CF card. Once the transfer reaches approximately 50% completion, unplug the USB cable. Wait 3-5 seconds and close any open warning dialogs. Reattach the USB cable and check to see that the device reenumerates properly, and the CF can be read from and written to. Complete the transfer of the test file to the CF card.</p> <p>Read- Using the same CF card, copy the test file from the CF card to the host. Once the transfer reaches approximately 50% completion, unplug the USB cable. Wait 3-5 seconds and close any open warning dialogs. Reattach the USB cable and check to see that the device reenumerates properly, and the CF can be read from and written to. Complete the transfer of the test file to the host.</p>	<p>Write Not Applicable</p> <p>Read Not Applicable</p>	<p>Write Not Applicable</p> <p>Read Not Applicable</p>	<p>Write Pass</p> <p>Read Pass</p>	<p>Write Pass</p> <p>Read Pass</p>	

Test Suite #3 Results (cont.)

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
6	<p>CF Surprise Removal (Media)-</p> <p>Write- Using the same 256 MB CF card, copy a large (~50 MB) test file from the host to the CF card. Once the transfer reaches approximately 50% completion, remove the media. Wait 3-5 seconds and close any open warning dialogs. Reinsert the media and check to see that the OS properly recognizes the card, and can read from and write to it. Complete the transfer of the test file to the CF card.</p> <p>Read- Using the same CF card, copy the test file from the CF card to the host. Once the transfer reaches approximately 50% completion, remove the media. Wait 3-5 seconds and close any open warning dialogs. Reinsert the media and check to see that the OS properly recognizes the card, and can read from and write to it. Complete the transfer of the test file to the host.</p>	<p>Write Not Applicable</p> <p>Read Not Applicable</p>	<p>Write Not Applicable</p> <p>Read Not Applicable</p>	<p>Write Pass</p> <p>Read Pass</p>	<p>Write Pass</p> <p>Read Pass</p>	
7	<p>CF Surprise Removal (Format)-</p> <p>Insert a 16 MB CF card into the 210. From Windows Explorer, perform a Full Format of the media. Once the format reaches approximately 20% completion, unplug the USB cable. . Wait 3-5 seconds and close any open warning dialogs. Reattach the USB cable and check to see that the device reenumerates properly. Attempt to format the media again. The format should complete normally.</p> <p>Repeat this procedure using 32MB, 64MB, 128MB, 256MB, 512MB, 1GB, and 2GB CF. Also repeat this procedure with the 340MB and 1GB IBM MicroDrives.</p>	<p>16MB CF Pass</p> <p>32MB CF Pass</p> <p>256MB CF Pass</p> <p>512MB CF Pass</p> <p>1GB CF Pass</p> <p>2GB CF Omitted</p> <p>340MB MD Pass</p> <p>1GB MDPass</p>	<p>16MB CF Pass</p> <p>64MB CF Pass</p> <p>128MB CF Pass</p> <p>512MB CF Pass</p> <p>1GB CF Pass</p> <p>2GB CFPass</p> <p>340MB MD Pass</p> <p>1GB MDPass</p>	<p>16MB CF Pass</p> <p>32MB CF Pass</p> <p>256MB CF Pass</p> <p>512MB CF Pass</p> <p>1GB CF Pass</p> <p>2GB CFPass</p> <p>340MB MD Pass</p> <p>1GB MDPass</p>	<p>16MB CF Pass</p> <p>64MB CF Pass</p> <p>128MB CF Pass</p> <p>512MB CF Pass</p> <p>1GB CF Pass</p> <p>2GB CFPass</p> <p>340MB MD Pass</p> <p>1GB MDPass</p>	

Test Suite #4- Smart Media

Overview

This test suite evaluates the performance and function of the USB97C210 with various density Smart Media flash memory cards. All tests below are performed using a USB 2.0 host controller. A 690 MB CD test disk is required for these tests. The test disk contains various files ranging in size from 10 bytes to 300 megabytes, with an accompanying SFV file which contains a calculated checksum (CRC) for each file.

Test Suite #4 Results

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
1	<p>SM Writes- Insert an 8 MB SM card into the SM slot on the USB97C210 board. Open the test files disk in Windows Explorer and sort the test files by size in ascending order. Starting with the smallest size file, select enough of the test files to fill the SM card. Transfer the files to the SM card.</p> <p>Once the files have been written, eject the media and place it in a 3rd party flash reader. Use WinSFV to check the CRC of each file to ensure that the data was not corrupted during the transfer.</p>	Pass	Pass	Pass	Pass	
2	<p>SM Insert/Remove- Double click the 210 SM drive icon in Windows Explorer. Verify that the OS reports no media present. Reinsert the SM card and check to see that the OS recognizes that a card was inserted. Verify that the contents of the card can be read by transferring a file to the host.</p> <p>Repeat this procedure three times verifying that the media insert and removal is detected correctly each time.</p>	Pass	Pass	Pass	Pass	
3	<p>SM Reads- Using the same SM card, transfer all of the files that were previously written to the card back to the host. Once the read is complete, CRC check the files on the host to ensure there was no corruption of the data during transfer.</p>	Pass	Pass	Pass	Pass	

Test Suite #4 Results (cont.)

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
4	<p>SM Write, Insert/Remove, Read-</p> <p>Repeat tests 1 through 3 for the following media: 16MB SM, 32MB SM, 64MB SM, and 128MB SM.</p>	<p>16MB SM Pass</p> <p>32MB SM Pass</p> <p>64MB SM Pass</p> <p>128MB SM Pass</p>	<p>16MB SM Pass</p> <p>32MB SM Pass</p> <p>64MB SM Pass</p> <p>128MB SM Pass</p>	<p>16MB SM Pass</p> <p>32MB SM Pass</p> <p>64MB SM Pass</p> <p>128MB SM Pass</p>	<p>16MB SM Pass</p> <p>32MB SM Pass</p> <p>64MB SM Pass</p> <p>128MB SM Pass</p>	
5	<p>SM Surprise Removal (USB)-</p> <p>Write- Insert a 64 MB SM card and copy a large (~50 MB) test file from the host to the SM card. Once the transfer reaches approximately 50% completion, unplug the USB cable. Wait 3-5 seconds and close any open warning dialogs. Reattach the USB cable and check to see that the device reenumerates properly, and the SM can be read from and written to. Complete the transfer of the test file to the SM card.</p> <p>Read- Using the same SM card, copy the test file from the SM card to the host. Once the transfer reaches approximately 50% completion, unplug the USB cable. Wait 3-5 seconds and close any open warning dialogs. Reattach the USB cable and check to see that the device reenumerates properly, and the SM can be read from and written to. Complete the transfer of the test file to the host.</p>	<p>Write Not Applicable</p> <p>Read Not Applicable</p>	<p>Write Not Applicable</p> <p>Read Not Applicable</p>	<p>Write Pass</p> <p>Read Pass</p>	<p>Write Pass</p> <p>Read Pass</p>	

Test Suite #4 Results (cont.)

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
6	<p>SM Surprise Removal (Media)-</p> <p>Write- Using the same 64 MB SM card, copy a large (~50 MB) test file from the host to the SM card. Once the transfer reaches approximately 50% completion, remove the media. Wait 3-5 seconds and close any open warning dialogs. Reinsert the media and check to see that the OS properly recognizes the card, and can read from and write to it. Complete the transfer of the test file to the SM card.</p> <p>Read- Using the same SM card, copy the test file from the SM card to the host. Once the transfer reaches approximately 50% completion, remove the media. Wait 3-5 seconds and close any open warning dialogs. Reinsert the media and check to see that the OS properly recognizes the card, and can read from and write to it. Complete the transfer of the test file to the host.</p>	<p>Write Not Applicable</p> <p>Read Not Applicable</p>	<p>Write Not Applicable</p> <p>Read Not Applicable</p>	<p>Write Pass</p> <p>Read Pass</p>	<p>Write Pass</p> <p>Read Pass</p>	
7	<p>SM Surprise Removal (Format)-</p> <p>Insert an 8 MB SM card into the 210. From Windows Explorer, perform a Full Format of the media. Once the format reaches approximately 20% completion, unplug the USB cable. . Wait 3-5 seconds and close any open warning dialogs. Reattach the USB cable and check to see that the device reenumerates properly. Attempt to format the media again. The format should complete normally.</p> <p>Repeat this procedure using 16MB, 32MB, 64MB, and 128MB SM.</p>	<p>8MB SM Pass</p> <p>16MB SM Pass</p> <p>32MB SM Pass</p> <p>64MB SM Pass</p> <p>128MB SM Pass</p>	<p>8MB SM Pass</p> <p>16MB SM Pass</p> <p>32MB SM Pass</p> <p>64MB SM Pass</p> <p>128MB SM Pass</p>	<p>8MB SM Pass</p> <p>16MB SM Pass</p> <p>32MB SM Pass</p> <p>64MB SM Pass</p> <p>128MB SM Pass</p>	<p>8MB SM Pass</p> <p>16MB SM Pass</p> <p>32MB SM Pass</p> <p>64MB SM Pass</p> <p>128MB SM Pass</p>	

Test Suite #5- Secure Digital / Multimedia Card

Overview

This test suite evaluates the performance and function of the USB97C210 with various density Secure Digital and Multimedia Card flash memory. All tests below are performed using a USB 2.0 host controller. A 690 MB CD test disk is required for these tests. The test disk contains various files ranging in size from 10 bytes to 300 megabytes, with an accompanying SFV file which contains a calculated checksum (CRC) for each file.

Test Suite #5 Results

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
1	<p>SD Writes- Turn off the write protection switch on a 16 MB SD card, and insert the card into the SD slot on the USB97C210 board. Open the test files disk in Windows Explorer and sort the test files by size in ascending order. Starting with the smallest size file, select enough of the test files to fill the SD card. Transfer the files to the SD card.</p> <p>Once the files have been written, eject the media and place it in a 3rd party flash reader. Use WinSFV to check the CRC of each file to ensure that the data was not corrupted during the transfer.</p>	Pass	Pass	Pass	Pass	
2	<p>SD Insert/Remove- Double click the 210 SD drive icon in Windows Explorer. Verify that the OS reports no media present. Reinsert the SD card and check to see that the OS recognizes that a card was inserted. Verify that the contents of the card can be read by transferring a file to the host.</p> <p>Repeat this procedure three times verifying that the media insert and removal is detected correctly each time.</p>	Pass	Pass	Pass	Pass	
3	<p>SD Reads- Using the same SD card, transfer all of the files that were previously written to the card back to the host. Once the read is complete, CRC check the files on the host to ensure there was no corruption of the data during transfer.</p>	Pass	Pass	Pass	Pass	

Test Suite #5 Results (cont.)

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
4	<p>SD/MMC Write, Insert/Remove, Read-</p> <p>Repeat tests 1 through 3 for the following media: 16MB SD, 32MB SD, 64MB SD, 128MB SD, 256MB SD, 512MB SD, 16MB MMC, 32MB MMC and 64MB MMC.</p>	<p>16MB SD Pass</p> <p>64MB SD Pass</p> <p>128MB SD Pass</p> <p>512MB SD Pass</p> <p>16MB MMC Pass</p> <p>32MB MMC Pass</p> <p>64MB MMC Pass</p>	<p>16MB SD Pass</p> <p>32MB SD Pass</p> <p>128MB SD Pass</p> <p>256MB SD Pass</p> <p>16MB MMC Pass</p> <p>32MB MMC Pass</p> <p>64MB MMC Pass</p>	<p>16MB SD Pass</p> <p>64MB SD Pass</p> <p>128MB SD Pass</p> <p>512MB SD Pass</p> <p>16MB MMC Pass</p> <p>32MB MMC Pass</p> <p>64MB MMC Pass</p>	<p>16MB SD Pass</p> <p>32MB SD Pass</p> <p>128MB SD Pass</p> <p>256MB SD Pass</p> <p>16MB MMC Pass</p> <p>32MB MMC Pass</p> <p>64MB MMC Pass</p>	
5	<p>SD Surprise Removal (USB)-</p> <p>Write- Insert a 64 MB SD card and copy a large (~50 MB) test file from the host to the SD card. Once the transfer reaches approximately 50% completion, unplug the USB cable. Wait 3-5 seconds and close any open warning dialogs. Reattach the USB cable and check to see that the device reenumerates properly, and the SD can be read from and written to. Complete the transfer of the test file to the SD card.</p> <p>Read- Using the same SD card, copy the test file from the SD card to the host. Once the transfer reaches approximately 50% completion, unplug the USB cable. Wait 3-5 seconds and close any open warning dialogs. Reattach the USB cable and check to see that the device reenumerates properly, and the SD can be read from and written to. Complete the transfer of the test file to the host.</p>	<p>Write Not Applicable</p> <p>Read Not Applicable</p>	<p>Write Not Applicable</p> <p>Read Not Applicable</p>	<p>Write Pass</p> <p>Read Pass</p>	<p>Write Pass</p> <p>Read Pass</p>	

Test Suite #5 Results (cont.)

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
6	<p>MMC Surprise Removal (USB)-</p> <p>Write- Insert a 32 MB MMC card and copy a large (~25 MB) test file from the host to the MMC card. Once the transfer reaches approximately 50% completion, unplug the USB cable. Wait 3-5 seconds and close any open warning dialogs. Reattach the USB cable and check to see that the device reenumerates properly, and the MMC can be read from and written to. Complete the transfer of the test file to the MMC card.</p> <p>Read- Using the same MMC card, copy the test file from the MMC card to the host. Once the transfer reaches approximately 50% completion, unplug the USB cable. Wait 3-5 seconds and close any open warning dialogs. Reattach the USB cable and check to see that the device reenumerates properly, and the MMC can be read from and written to. Complete the transfer of the test file to the host.</p>	<p>Write Not Applicable</p> <p>Read Not Applicable</p>	<p>Write Not Applicable</p> <p>Read Not Applicable</p>	<p>Write Pass</p> <p>Read Pass</p>	<p>Write Pass</p> <p>Read Pass</p>	
7	<p>SD/MMC Write Protect-</p> <p>Enable the write protect switch on a 32MB SD card, and insert it into the SD slot on the 210. Check to see that the media is detected properly, and then attempt to copy a file from the host to the SD card. The OS should report that the copy could not be performed.</p> <p>Next, enable the write protect switch on a 32MB MMC card, and insert it into the 210. Again, check to see that the media is detected properly, and then attempt to copy a file from the host to the card. The OS should report that the copy could not be performed.</p>	<p>SD Pass</p> <p>MMC Not Applicable</p>	<p>SD Pass</p> <p>MMC Not Applicable</p>	<p>SD Pass</p> <p>MMC Not Applicable</p>	<p>SD Pass</p> <p>MMC Not Applicable</p>	

Test Suite #6- Memory Stick / Memory Stick Pro

Overview

This test suite evaluates the performance and function of the USB97C210 with various capacity Memory Stick and Memory Stick Pro flash memory cards. All tests below are performed using a USB 2.0 host controller. A 690 MB CD test disk is required for these tests. The test disk contains various files ranging in size from 10 bytes to 300 megabytes, with an accompanying SFV file which contains a calculated checksum (CRC) for each file.

Test Suite #6 Results

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
1	<p>MS Writes- Turn off the write protection switch on a 16 MB MS card, and insert the card into the MS slot on the USB97C210 board. Open the test files disk in Windows Explorer and sort the test files by size in ascending order. Starting with the smallest size file, select enough of the test files to fill the MS card. Transfer the files to the MS card.</p> <p>Once the files have been written, eject the media and place it in a 3rd party flash reader. Use WinSFV to check the CRC of each file to ensure that the data was not corrupted during the transfer.</p>	Pass	Pass	Pass	Pass	
2	<p>MS Insert/Remove- Double click the 210 MS drive icon in Windows Explorer. Verify that the OS reports no media present. Reinsert the MS card and check to see that the OS recognizes that a card was inserted. Verify that the contents of the card can be read by transferring a file to the host.</p> <p>Repeat this procedure three times verifying that the media insert and removal is detected correctly each time.</p>	Pass	Pass	Pass	Pass	
3	<p>MS Reads- Using the same MS card, transfer all of the files that were previously written to the card back to the host. Once the read is complete, CRC check the files on the host to ensure there was no corruption of the data during transfer.</p>	Pass	Pass	Pass	Pass	

Test Suite #6 Results (cont.)

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
4	<p>MS Write, Insert/Remove, Read-</p> <p>Repeat tests 1 through 3 for the following media: 8MB MS, 64MB MS, AND 128MB MS, 256MB MS Pro, 512MB MS Pro, 1GB MS Pro.</p>	<p>8MB MSPass</p> <p>64MB MS Pass</p> <p>128MB MS Pass</p> <p>256MB MS Pro Pass</p> <p>512MB MS Pro Pass</p> <p>1GB MS Pro Pass</p>	<p>8MB MSPass</p> <p>64MB MS Pass</p> <p>128MB MS Pass</p> <p>256MB MS Pro Pass</p> <p>512MB MS Pro Pass</p> <p>1GB MS Pro Pass</p>	<p>8MB MSPass</p> <p>64MB MS Pass</p> <p>128MB MS Pass</p> <p>256MB MS Pro Pass</p> <p>512MB MS Pro Pass</p> <p>1GB MS Pro Pass</p>	<p>8MB MSPass</p> <p>64MB MS Pass</p> <p>128MB MS Pass</p> <p>256MB MS Pro Pass</p> <p>512MB MS Pro Pass</p> <p>1GB MS Pro Pass</p>	
5	<p>MS Surprise Removal (USB)-</p> <p>Write- Insert a 64 MB MS card and copy a large (~50 MB) test file from the host to the MS card. Once the transfer reaches approximately 50% completion, unplug the USB cable. Wait 3-5 seconds and close any open warning dialogs. Reattach the USB cable and check to see that the device reenumerates properly, and the MS can be read from and written to. Complete the transfer of the test file to the MS card.</p> <p>Read- Using the same MS card, copy the test file from the MS card to the host. Once the transfer reaches approximately 50% completion, unplug the USB cable. Wait 3-5 seconds and close any open warning dialogs. Reattach the USB cable and check to see that the device reenumerates properly, and the MS can be read from and written to. Complete the transfer of the test file to the host.</p>	<p>Write Not Applicable</p> <p>Read Not Applicable</p>	<p>Write Not Applicable</p> <p>Read Not Applicable</p>	<p>Write Pass</p> <p>Read Pass</p>	<p>Write Pass</p> <p>Read Pass</p>	

Test Suite #6 Results (cont.)

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
6	MS Write Protect- Enable the write protect switch on a 32MB MS card, and insert it into the MS slot on the 210. Check to see that the media is detected properly, and then attempt to copy a file from the host to the card. The OS should report that the copy could not be performed.	Pass	Pass	Pass	Pass	
7	MS Write Pro Protect- Enable the write protect switch on a 512MB MS Pro card, and insert it into the MS slot on the 210. Check to see that the media is detected properly, and then attempt to copy a file from the host to the card. The OS should report that the copy could not be performed.	Pass	Pass	Pass	Pass	

Test Suite #7- Multiple Device

Overview

This test suite evaluates the performance and function of multiple USB97C210 devices attached to a single host. All tests below are performed using a USB 2.0 host controller. The focus of this testing is to ensure interoperability between all devices when more than one USB97C210 device is running on the same host.

Test Suite #7 Results

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
1	<p>B1, B2 to Host- Attach two USB97C210 boards to the host via the same host controller. Verify that both boards enumerate properly.</p> <p>Insert CF cards containing test data files, in the CF slots on both boards. Verify that you can read from and write to both cards individually. Next, simultaneously transfer a large file from each of the cards to the host. Verify that the transfer completes normally.</p> <p>Repeat this procedure using SM, SD, MMC and MS cards. Also test reading from different cards on each board simultaneously (i.e. MS on board 1 and SD on board 2.)</p>	Pass	Pass	Pass	Pass	
2	<p>Host to B1, B2- Using the same boards and test setup as Test #1 above, simultaneously transfer a couple large files from the host to the CF cards on both boards. Verify that the transfer completes normally.</p> <p>Repeat this procedure using SM, SD, MMC and MS cards. Also test writing to different cards on each board simultaneously (i.e. SM on board 1 and CF on board 2.)</p>	Pass	Pass	Pass	Pass	

Test Suite #7 Results (cont.)

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
3	<p>B1 to B2- Again using the same boards and test setup as Test #1, transfer a series of test files (large and small) from the CF card on board 1, to the CF card on board 2.</p> <p>Repeat this procedure using SM, SD, MMC and MS cards. Also test writing to different cards on board 2 (i.e. SM on board 1 to CF on board 2.)</p>	Pass	Pass	Pass	Pass	
4	<p>B1 to Host / Host to B2- Using the same test setup, transfer a test file from the CF card on board 1 to the host, while at the same time transferring a separate file from the host to the CF card on board 2.</p> <p>Repeat this procedure using SM, SD, MMC and MS cards. Also test reading from and writing to different cards on each board (i.e. SM on board 1 to host, host to CF on board 2.)</p>	Pass	Pass	Pass	Pass	
5	<p>B1 to Host / Host to B1- Leave both boards attached to the host, but for this test you will be performing all of the reads/writes on one board only.</p> <p>Insert CF and SM cards into their respective slots on the 210. Copy a large file from the CF to the host, and copy another large file from the host to the SM. Repeat this test using all possible combinations of media, for both reads and writes. Ensure that all transfers complete normally.</p>	Pass	Pass	Pass	Pass	

Test Suite #8- Load / Unload

Overview

This test suite evaluates the function of the USB97C210 under both normal and abnormal conditions which cause the device to suspend, resume, enumerate or detach from the host. All tests below are performed using a self powered USB97C210 attached to a USB 2.0 host controller unless otherwise noted.

Test Suite #8 Results

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
1	After disconnecting the USB cable of a properly enumerated USB97C210 device, all entries in the Device Manager associated with that device disappear. The device does not blue screen, freeze or otherwise adversely affect the host in any way.	Pass	Pass	Pass	Pass	
2	Upon reattaching the USB cable, the entries in the Device Manager reappear, and the device functions normally.	Pass	Pass	Pass	Pass	
3	After turning off power to the USB97C210, all entries in the Device Manager associated with the device disappear. The device does not blue screen, freeze or otherwise adversely affect the host in any way.	Pass	Pass	Pass	Pass	
4	After turning power to the USB97C210 back on, the entries in the Device Manager reappear, and the device functions normally.	Pass	Pass	Pass	Pass	
5	Upon rebooting the host with the USB97C210 enumerated, it does not blue screen, freeze or otherwise adversely affect the host in any way. All entries associated with the USB97C210 device appear in the Device Manager, and are not yellow banded.	Pass	Pass	Pass	Pass	

Test Suite #8 Results (cont.)

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
6	Suspend the host and wait one minute. Resume the host and verify the device is enumerated and operates properly. Attach a 2 nd USB97C210 device to the same host and repeat the test. Verify both boards reenumerate and function properly after being resumed. Remove the 2 nd device.	Pass	Pass	Pass	Pass	
7	<p>Insert flash media containing data into all of the reader slots on the USB97C210. Verify that all cards can be read.</p> <p>Suspend the host and wait one minute. Resume the host and verify the device is enumerated and operates properly. Check to see that all of the flash media cards can be read from and written to.</p>	Pass	Pass	Pass	Pass	
8	<p>Remove all of the flash media cards from the 210 and Suspend the host. While the host is suspended, reinsert all of the flash memory cards and then resume the host.</p> <p>Verify that all cards are recognized, and can be read from and written to.</p>	Pass	Pass	Pass	Pass	
9	<p>Using the same test setup as above, with all cards inserted in the 210 and properly recognized, unplug the USB cable, wait 2-5 seconds and plug the cable back in. Verify that the device enumerates properly.</p> <p>Repeat this test for 20 iterations. Verify the device enumerates correctly each time, and that the media is properly recognized.</p>	Pass	Pass	Pass	Pass	

Test Suite #8 Results (cont.)

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
10	Self-Powered Reboot Endurance- Using the Burn-In Test Pro utility, set a host PC up to continually reboot with a self-powered 210 attached. Allow the test to run overnight. In the morning, check to see that the test is still running. Halt the test and verify that the 210 is enumerated and operating normally.	Pass	Pass	Pass	Pass	
11	Bus-Powered Reboot Endurance- Using the Burn-In Test Pro utility, set a host PC up to continually reboot with a bus-powered 210 attached. Allow the test to run overnight. In the morning, check to see that the test is still running. Halt the test and verify that the 210 is enumerated and operating normally.	Pass	Pass	Pass	Pass	

Test Suite #9- USB 1.1

Overview

This test suite evaluates the performance and function of USB97C210 devices while attached to a USB 1.1 host controller. All tests below are performed using a USB 1.1 host controller, unless specified otherwise.

Test Suite #9 Results

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
1	<p>Make sure there are no previous installations of the USB97C210 on the host system. For Windows 98 and 2000, run the driver installation utility and verify that it completes normally.</p> <p>Self Powered Pre Plug: With no media inserted in any of the media slots, attach the USB cable to the host and power up the eval board. Check to see that the device enumerates properly, the correct drivers are loaded, and a drive icon appears for each LUN supported in the firmware.</p>	Pass	Pass	Pass	Pass	
2	<p>Uninstall the USB97C210 hardware entries from the Device Manager. Detach the USB cable from the host and power off the device.</p> <p>Self Powered Post Plug: Again, with no media inserted in any of the media slots, power up the eval board, wait a few seconds and then plug the USB cable into the host. Check to see that the device enumerates properly, the correct drivers are loaded, and a drive icon appears for each LUN supported in the firmware.</p>	Pass	Pass	Pass	Pass	

Test Suite #9 Results (cont.)

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
3	<p>Uninstall the USB97C210 hardware entries from the Device Manager and power off the device.</p> <p>Self Powered Pre Plug: Insert a Smart Media (SM) card into the SM slot, and power up the eval board. Check to see that the device enumerates properly, the correct drivers are loaded, and a drive icon appears for each LUN supported in the firmware.</p> <p>Check to see that the SM card can be read from and written to by transferring a small file from the host to the SM card and back. (To avoid caching of the data, hotplug the device between the read and write.)</p>	Pass	Pass	Pass	Pass	
4	<p>Uninstall the USB97C210 hardware entries from the Device Manager. Detach the USB cable from the host and power off the device.</p> <p>Self Powered Post Plug: Using the same SM card inserted in the SM slot, power up the eval board, wait a few seconds and then plug the USB cable into the host. Check to see that the device enumerates properly, the correct drivers are loaded, and a drive icon appears for each LUN supported in the firmware.</p> <p>Check to see that the SM card can be read from and written to by transferring a small file from the host to the SM card and back. (To avoid caching of the data, hotplug the device between the read and write.)</p>	Pass	Pass	Pass	Pass	

Test Suite #9 Results (cont.)

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
5	<p>Uninstall the USB97C210 hardware entries from the Device Manager and power off the device.</p> <p>Self Powered Pre Plug: Insert a Compact Flash (CF) card into the CF slot, and power up the eval board. Check to see that the device enumerates properly, the correct drivers are loaded, and a drive icon appears for each LUN supported in the firmware.</p> <p>Check to see that the CF card can be read from and written to by transferring a small file from the host to the CF card and back. (To avoid caching of the data, hotplug the device between the read and write.)</p> <p>Repeat this test using an IBM MicroDrive.</p>	Pass	Pass	Pass	Pass	
6	<p>Uninstall the USB97C210 hardware entries from the Device Manager. Detach the USB cable from the host and power off the device.</p> <p>Self Powered Post Plug: Using the same CF card inserted in the CF slot, power up the eval board, wait a few seconds and then plug the USB cable into the host. Check to see that the device enumerates properly, the correct drivers are loaded, and a drive icon appears for each LUN supported in the firmware.</p> <p>Check to see that the CF card can be read from and written to by transferring a small file from the host to the CF card and back. (To avoid caching of the data, hotplug the device between the read and write.)</p> <p>Repeat this test using an IBM MicroDrive.</p>	Pass	Pass	Pass	Pass	

Test Suite #9 Results (cont.)

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
7	<p>Uninstall the USB97C210 hardware entries from the Device Manager and power off the device.</p> <p>Self Powered Pre Plug: Insert a Secure Digital (SD) card into the SD slot, and power up the eval board. Check to see that the device enumerates properly, the correct drivers are loaded, and a drive icon appears for each LUN supported in the firmware.</p> <p>Check to see that the SD card can be read from and written to by transferring a small file from the host to the SD card and back. (To avoid caching of the data, hotplug the device between the read and write.)</p>	Pass	Pass	Pass	Pass	
8	<p>Uninstall the USB97C210 hardware entries from the Device Manager. Detach the USB cable from the host and power off the device.</p> <p>Self Powered Post Plug: Using the same SD card inserted in the SD slot, power up the eval board, wait a few seconds and then plug the USB cable into the host. Check to see that the device enumerates properly, the correct drivers are loaded, and a drive icon appears for each LUN supported in the firmware.</p> <p>Check to see that the SD card can be read from and written to by transferring a small file from the host to the SD card and back. (To avoid caching of the data, hotplug the device between the read and write.)</p>	Pass	Pass	Pass	Pass	

Test Suite #9 Results (cont.)

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
9	<p>Uninstall the USB97C210 hardware entries from the Device Manager and power off the device.</p> <p>Self Powered Pre Plug: Insert a Multimedia Card (MMC) into the MMC slot, and power up the eval board. Check to see that the device enumerates properly, the correct drivers are loaded, and a drive icon appears for each LUN supported in the firmware.</p> <p>Check to see that the MMC card can be read from and written to by transferring a small file from the host to the MMC card and back. (To avoid caching of the data, hotplug the device between the read and write.)</p>	Pass	Pass	Pass	Pass	
10	<p>Uninstall the USB97C210 hardware entries from the Device Manager. Detach the USB cable from the host and power off the device.</p> <p>Self Powered Post Plug: Using the same MMC card inserted in the MMC slot, power up the eval board, wait a few seconds and then plug the USB cable into the host. Check to see that the device enumerates properly, the correct drivers are loaded, and a drive icon appears for each LUN supported in the firmware.</p> <p>Check to see that the MMC card can be read from and written to by transferring a small file from the host to the MMC card and back. (To avoid caching of the data, hotplug the device between the read and write.)</p>	Pass	Pass	Pass	Pass	

Test Suite #9 Results (cont.)

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
1 1	<p>Uninstall the USB97C210 hardware entries from the Device Manager and power off the device.</p> <p>Self Powered Pre Plug: Insert a Memory Stick (MS) card into the MS slot, and power up the eval board. Check to see that the device enumerates properly, the correct drivers are loaded, and a drive icon appears for each LUN supported in the firmware.</p> <p>Check to see that the MS card can be read from and written to by transferring a small file from the host to the MS card and back. (To avoid caching of the data, hotplug the device between the read and write.)</p> <p>Repeat this test using MS Pro media.</p>	Pass	Pass	Pass	Pass	
1 2	<p>Uninstall the USB97C210 hardware entries from the Device Manager. Detach the USB cable from the host and power off the device.</p> <p>Self Powered Post Plug: Using the same MS card inserted in the MS slot, power up the eval board, wait a few seconds and then plug the USB cable into the host. Check to see that the device enumerates properly, the correct drivers are loaded, and a drive icon appears for each LUN supported in the firmware.</p> <p>Check to see that the MS card can be read from and written to by transferring a small file from the host to the MS card and back. (To avoid caching of the data, hotplug the device between the read and write.)</p> <p>Repeat this test using MS Pro media.</p>	Pass	Pass	Pass	Pass	

Test Suite #9 Results (cont.)

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
1 3	<p>Uninstall the USB97C210 hardware entries from the Device Manager and power off the device.</p> <p>Self Powered Pre Plug: Insert CF, SM, SD, MMC and MS cards into their respective slots, and power up the eval board. Check to see that the device enumerates properly, the correct drivers are loaded, and a drive icon appears for each LUN supported in the firmware.</p> <p>Check to see that all of the cards can be read from and written to by transferring a small file from the host to each card and back. (To avoid caching of the data, hotplug the device between the read and write.)</p>	Pass	Pass	Pass	Pass	
1 4	<p>Uninstall the USB97C210 hardware entries from the Device Manager. Detach the USB cable from the host and power off the device.</p> <p>Self Powered Post Plug: Leave the same flash media cards inserted in their slots, power up the eval board, wait a few seconds and then plug the USB cable into the host. Check to see that the device enumerates properly, the correct drivers are loaded, and a drive icon appears for each LUN supported in the firmware.</p> <p>Check to see that all of the cards can be read from and written to by transferring a small file from the host to each card and back. (To avoid caching of the data, hotplug the device between the read and write.)</p>	Pass	Pass	Pass	Pass	

Test Suite #9 Results (cont.)

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
15	<p>Surprise Removal Write (USB): Copy one large file from the host to a CF card. Once the transfer has reached 20% complete, disconnect the USB cable and wait 3 to 5 seconds. Close any warning dialog boxes and reattach the USB cable. Verify that the device reenumerates and the card can be read from and written to.</p> <p>Repeat this procedure using several small files (~1 to 10kb) instead of one large file.</p> <p>Repeat both procedures above using SM, SD, MMC and MS media.</p>	<p>CF Pass</p> <p>SM Pass</p> <p>SD Pass</p> <p>MMC Pass</p> <p>MS Pass</p>	<p>CF Pass</p> <p>SM Pass</p> <p>SD Pass</p> <p>MMC Pass</p> <p>MS Pass</p>	<p>CF Pass</p> <p>SM Pass</p> <p>SD Pass</p> <p>MMC Pass</p> <p>MS Pass</p>	<p>CF Pass</p> <p>SM Pass</p> <p>SD Pass</p> <p>MMC Pass</p> <p>MS Pass</p>	
16	<p>Surprise Removal Read (USB): Copy one large file from a CF card to the host. Once the transfer has reached 20% complete, disconnect the USB cable and wait 3 to 5 seconds. Close any warning dialog boxes and reattach the USB cable. Verify that the device reenumerates and the card can be read from and written to.</p> <p>Repeat this procedure using several small files (~1 to 10kb) instead of one large file.</p> <p>Repeat both procedures above using SM, SD, MMC and MS media.</p>	<p>CF Pass</p> <p>SM Pass</p> <p>SD Pass</p> <p>MMC Pass</p> <p>MS Pass</p>	<p>CF Pass</p> <p>SM Pass</p> <p>SD Pass</p> <p>MMC Pass</p> <p>MS Pass</p>	<p>CF Pass</p> <p>SM Pass</p> <p>SD Pass</p> <p>MMC Pass</p> <p>MS Pass</p>	<p>CF Pass</p> <p>SM Pass</p> <p>SD Pass</p> <p>MMC Pass</p> <p>MS Pass</p>	

Test Suite #9 Results (cont.)

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
1 7	<p>Surprise Removal Write (Media): Copy one large file from the host to a CF card. Once the transfer has reached 20% complete, remove the CF media and wait 3 to 5 seconds. Close any warning dialog boxes and then reinsert the CF media. Wait a few seconds for the card to be recognized and then verify it can be read from and written to.</p> <p>Repeat this procedure using several small files (~1 to 10kb) instead of one large file.</p> <p>Repeat both procedures above using SM, SD, MMC and MS media.</p>	<p>CF Not Applicable</p> <p>SM Not Applicable</p> <p>SD Not Applicable</p> <p>MMC Not Applicable</p> <p>MS Not Applicable</p>	<p>CF Not Applicable</p> <p>SM Not Applicable</p> <p>SD Not Applicable</p> <p>MMC Not Applicable</p> <p>MS Not Applicable</p>	<p>CF Pass</p> <p>SM Pass</p> <p>SD Pass</p> <p>MMC Pass</p> <p>MS Pass</p>	<p>CF Pass</p> <p>SM Pass</p> <p>SD Pass</p> <p>MMC Pass</p> <p>MS Pass</p>	
1 8	<p>Surprise Removal Read (Media): Copy one large file from a CF card to the host. Once the transfer has reached 20% complete, remove the CF media and wait 3 to 5 seconds. Close any warning dialog boxes and then reinsert the CF media. Wait a few seconds for the card to be recognized and then verify it can be read from and written to.</p> <p>Repeat this procedure using several small files (~1 to 10kb) instead of one large file.</p> <p>Repeat both procedures above using SM, SD, MMC and MS media.</p>	<p>CF Not Applicable</p> <p>SM Not Applicable</p> <p>SD Not Applicable</p> <p>MMC Not Applicable</p> <p>MS Not Applicable</p>	<p>CF Not Applicable</p> <p>SM Not Applicable</p> <p>SD Not Applicable</p> <p>MMC Not Applicable</p> <p>MS Not Applicable</p>	<p>CF Pass</p> <p>SM Pass</p> <p>SD Pass</p> <p>MMC Pass</p> <p>MS Pass</p>	<p>CF Pass</p> <p>SM Pass</p> <p>SD Pass</p> <p>MMC Pass</p> <p>MS Pass</p>	

Test Suite #10- USB WHQL

Overview

This test suite checks to ensure that the USB97C210 is able to pass the Windows Hardware Quality Lab (WHQL) certification testing. All tests below are performed in a single LUN configuration under Windows XP using the latest HCT available from Microsoft.

Manual Tests:

#	WHQL Test	Windows XP	Comments
1	Enable/Disable- Device I/O (Storage)	Pass	
2	USB Selective Suspend	Pass	
3	USB Serial Number	Pass	

Automated Tests:

#	WHQL Test	Windows XP	Comments
1	ACPI S1 Stress	Pass	
2	ACPI S3 Stress	Pass	
3	Disk Stress	Pass	
4	FAT- File I/O (Removable)	Pass	
5	Storage Device Stress	Pass	
6	Surprise Removal	Pass	
7	Syscache	Pass	
8	Sysparse	Pass	

Test Suite #11- Chapter 9 Current Measurement Tests

Overview

This test suite checks to ensure that the USB97C210 meets all Chapter 9 power requirements for both bus and self powered devices. All tests are run in Windows XP.

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
1	Unconfigured Current (Bus Powered)- Using the USBCV test utility, check the unconfigured current for the USB97C210 bus powered. In order to pass, the device must draw no more than 100mA in an unconfigured state. Once the test is complete, close the USBCV application and verify that the test stack driver is unloaded and that the device is enumerated normally as a mass storage class device.	N/A	N/A	N/A	Omitted	
2	Operating Current- Verify that the device is bus powered and enumerated properly. Initiate large file transfers simultaneously on all four LUNs. During the transfer, measure the current being drawn by the 210. In order to pass, the device can not draw more than 500mA at any time during the operation.	N/A	N/A	N/A	Omitted	
3	Suspend Current- Suspend the host. Once the host has stabilized in a suspended state, wait 5 to 10 seconds and then measure the suspended current draw for the 210. In order to pass the test, the device can draw no more than 500uA while suspended.	N/A	N/A	N/A	Omitted	

Test Suite #11 Results (cont.)

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
4	<p>Unconfigured Current (Self-Powered)-</p> <p>Using the USBCV test utility, check the unconfigured current for the USB97C210 self powered.</p> <p>In order to pass, the device must draw no more than 100mA in an unconfigured state.</p> <p>Once the test is complete, close the USBCV application and verify that the test stack driver is unloaded and that the device is enumerated normally as a mass storage class device.</p>	N/A	N/A	N/A	Omitted	
5	<p>Operating Current-</p> <p>Verify that the device is self powered and enumerated properly. Initiate large file transfers simultaneously on all four LUNs. During the transfer, measure the current being drawn by the 210.</p> <p>In order to pass, the device can not draw more than 100mA from the host at any time during the operation.</p>	N/A	N/A	N/A	Omitted	
6	<p>Suspend Current-</p> <p>Suspend the host. Once the host has stabilized in a suspended state, wait 5 to 10 seconds and then measure the suspended current draw for the 210.</p> <p>In order to pass the test, the device can draw no more than 500uA from the host while suspended.</p>	N/A	N/A	N/A	Omitted	

Test Suite #12- Bundled Software Application Tests

Overview

This test suite checks to ensure that all of the applications bundled with the USB97C210 operate properly in accordance with the user instructions provided in the USB97C210 Software Release Notes.

#	Application	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
1	DFUTEST ver 2.3.0.2	Pass	Pass	Pass	Pass	
2	FORMATPRO version 1.0.0.4	Not Tested	Not Tested	Not Tested	Not Tested	
3	Setlcon ver 1.2.0.6	Pass	Pass	Pass	Pass	
4	98 SAFE REMOVAL ver 1.0.0.4	Pass	Not Tested	Not Tested	Not Tested	

Test Suite #13- Device Firmware Upgrade / Descriptor Update

Overview

This test suite checks to ensure that both the device firmware upgrade (DFU) and descriptor update functionality of the USB97C210 work properly. Please note that DFU functionality is only available for devices that utilize an external flash ROM.

#	Test Standard	Windows 98	Windows Me	Windows 2000	Windows XP	Comments
1	<p>DFU-</p> <p>Load a 210 eval board with a DFU enabled "both.bin" binary created from the last release version of the 210 firmware.</p> <p>Perform a DFU update to the version of firmware under test. Verify that the operation completes normally.</p> <p>Unplug the device and reattach it to the host. Verify that it enumerates properly. Check the version of the firmware using USBView (looking at the bcdDevice string). Make sure that the version displayed is the version that was uploaded to the device.</p>	Pass	Pass	Pass	Pass	
2	<p>Descriptor Update-</p> <p>Modify an eeprom.dat file and upload it to the device. Once the operation completes, hotplug the device and verify that the eeprom contains the new data. Repeat this test using the "NO.EEPROM" version of the firmware.</p> <p>Continue to use descriptor updates to completely verify the LUN configuration and icon sharing functionality of the device.</p> <p>(Refer to the USB97C210 Software Release Notes for information on LUN Configuration and Icon Sharing.)</p>	Pass	Pass	Pass	Pass	

Test Suite #14- Macintosh OS Specific Testing

Overview

This test suite summarizes the testing performed in the Macintosh operating systems.

#	Test Suite	Mac OS 8.6	Mac OS 9.2	Mac OS 10.1	Mac OS 10.2	Comments
1	Installation	Not Tested	Pass	Not Tested	Pass	
2	Compact Flash / IBM MicroDrive	Not Tested	Pass	Not Tested	Pass	
3	Smart Media	Not Tested	Pass	Not Tested	Pass	
4	Secure Digital / Multimedia Card	Not Tested	Pass	Not Tested	Pass	
5	Memory Stick / Memory Stick Pro	Not Tested	Pass	Not Tested	Pass	
6	Multiple Device	Not Tested	Pass	Not Tested	Pass	
7	USB 1.1	Not Required- OS is USB 1.1 Only.	Not Required- OS is USB 1.1 Only.	Not Tested	Pass	