MediaCenter PC **Model**

MCP9360i

Service
Service
Service

Service Manual

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PHILIPS

1. About this Manual

1.1. Content of this Manual

Note: The MCP9360i will be serviced on a modular level only. Faulty modules will be identified and replaced. Detailed circuit diagrams and technical information on a component level are therefore not provided in this document.

1.1.1. What is included in this Manual

- Safety Information
- System Overview
- Basic System Block Diagrams
- Parts / Module Identification
- Module Functional Descriptions
- Basic Module Technical Descriptions
- Basic Measuring Point Information
- Basic Fault Finding Strategy
- Module Removal & Replacement Procedures
- Functionality Testing Procedures
- End Test Sequence / Checklist
- Parts List / 12NC Numbers

1.2. Additional Documentation

The following documentation is supplied by Philips and must be kept with this Service Manual.

- MCP9360i Quick Install Guide
- MCP9360i Use Cases
- RC4370 Remote Control User Manual

2. Safety Instructions, Warnings and Notes

2.1. Safety Instructions

2.1.1. Safety components

Replace safety components, indicated by the symbol ⚠ , only by components identical to the original ones. Any other component substitution (other than original type) may increase risk of fire or electrical shock hazard.

2.1.2. After repair

- Safety regulations require that after a repair, the set must be returned in its original condition.
- Before returning the MCP9360i to the customer always do a safety check. Pay attention to the built-in protective devices, leakage current and insulation resistance.

2.2. Warnings

2.2.1. General

Never replace modules or other components while the unit is switched “on”.

2.2.2. ESD Protection

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential.

2.3. Notes

2.3.1. Schematic notes

- All resistor values are in ohms, and the value multiplier is often used to indicate the decimal point location (e.g. 2K2 indicates 2.2 kohm).
- Resistor values with no multiplier may be indicated with either an "E" or an "R" (e.g. 220E or 220R indicates 220 ohm).
- All capacitor values are given in micro-farads ($\mu = x10^{-6}$), nano-farads ($n = x10^{-9}$), or pico-farads ($p = x10^{-12}$).
- Capacitor values may also use the value multiplier as the decimal point indication (e.g. 2p2 indicates 2.2 pF).
- An "asterisk" (*) indicates component usage varies. Refer to the diversity tables for the correct values.
- The correct component values are listed in the Spare Parts List. Therefore, always check this list when there is any doubt.

2.3.2. Led-free solder

Philips CE is producing lead-free sets (PBF) from 1.1.2005 onwards.

Identification: The bottom line of a type plate gives a 14-digit serial number. Digits 5 and 6 refer to the production year, digits 7 and 8 refer to production week (in example below it is 1991 week 18).

Figure 2.1-1

Regardless of the special lead-free logo (which is not always indicated), one must treat all sets from this date onwards according to the rules as described below.

Figure 2.1-2

Due to lead-free technology some rules have to be respected by the workshop during a repair:

- Use only lead-free soldering tin Philips SAC305 with order code 0622 149 00106. If lead-free solder paste is required, please contact the manufacturer of your soldering equipment. In general, use of solder paste within workshops should be avoided because paste is not easy to store and to handle.
- Use only adequate solder tools applicable for lead-free soldering tin. The solder tool must be able:
  - To reach a solder-tip temperature of at least 400 °C.
  - To stabilize the adjusted temperature at the solder-tip.
  - To exchange solder-tips for different applications.
- Adjust your solder tool so that a temperature of around 360 °C – 380 °C is reached and stabilized at the solder joint.
  Heating time of the solder-joint should not exceed ~ 4 sec.
  Avoid temperatures above 400 °C, otherwise wear-out of tips will increase drastically and flux-fluid will be destroyed.
  To avoid wear-out of tips, switch “off” unused equipment or reduce heat.
- Mix of lead-free soldering tin/parts with leaded soldering tin/parts is possible but PHILIPS recommends strongly to avoid mixed regimes. If this cannot be avoided, carefully clean the solder-joint from old tin and re-solder with new tin.
- Use only original spare-parts listed in the Service-Manuals.
  Not listed standard material (commodities) has to be purchased at external companies.
- Special information for lead-free BGA ICs: these ICs will be delivered in so-called "dry-packaging" to protect the IC against moisture. This packaging may only be opened shortly before it is used (soldered). Otherwise the body of the IC gets "wet" inside and during the heating time the structure of the IC will be destroyed due to high (steam-) pressure inside the body. If the packaging was opened before usage, the IC has to be heated up for some hours (around 90 °C) for drying (think of ESD-protection!).
  Do not re-use BGAs at all!
- For sets produced before 1.1.2005, containing leaded soldering tin and components, all needed spare parts will be available till the end of the service period. For the repair of such sets nothing changes.
  In case of doubt whether the board is lead-free or not (or with mixed technologies), you can use the following method:
  - Always use the highest temperature to solder, when using SAC305 (see also instructions below).
  - De-solder thoroughly (clean solder joints to avoid mix of two alloys).

Caution: For BGA-ICs, you **must** use the correct temperature profile, which is coupled to the 12NC. For an overview of these profiles, visit the website *www.atyourservice.ce.philips.com* (needs subscription, but is not available for all regions)
You will find this and more technical information within the "Magazine", chapter "Repair downloads".
For additional questions please contact your local repair help desk.

3. System Overview

3.1. Technical Specification

System - General

CPU:	Intel Pentium D 945 Dual core, 3.4 GHz
Memory:	1024 MB
HDD:	250 GB SATA
Optical disc recording:	
	DVD: +RW, +R, -R, -RW, +R DL
	CD: -R, -RW
Wireless LAN:	IEEE802.11 b/g
Software installed:	
	Windows® XP Media Center Edition
	LikeMusic
	Norton Internet Suite
	Cyberlink: Make DVD, CaptureDV, PowerDVD
	Picture improvement: Trimension MCE
	Philips Media Manager
Picture Improvement algorithms:	
	Digital Natural Motion
	Motion adaptive de-interlacing Film mode detector
Tuner card:	AVerMedia
TV system:	PAL/SECAM
	DVB-T

Connection front

Card reader:	MS/MS pro (Memory Stick)
	CF I/II Microdrive (Compact Flash)
	Smart Media
	MMC/SD (Multi Media Card/Secure Digital)
USB	2 x USB 2.0
IEEE1394	1x 4 pins (i.LINK)
Microphone	6.3 mm jack
Headphone	6.3 mm jack

Connection rear

Video outputs:	DVI-D single link
	VGA
	S-video (Y/C)
	SCART (CVBS + RGB)
Video Inputs:	S-video (Y/C)
	CVBS
Audio outputs:	2 x stereo Cinch L/R
	Optical digital out
	Coax digital out
Audio inputs:	2 x stereo Cinch L/R
Ethernet:	1 x (100 Mb)
USB:	2 x USB 2.0
IEEE1394:	2 x 6 pins
IR blaster:	2 x to support up to 3 IR blaster eyes
Others:	TV in
	FM radio in

Accessories

- DVI to DVI cable
- DVI to HDMI cable
- SCART cable
- Digital audio coax cable
- Power cable
- FM antenna cable
- S-video (Y/C)
- Stereo audio cable
- Ethernet cable
- 2 x IR blaster with 1 IR transmitter
- TV antenna splitter
- Antenna cable 10 cm
- Antenna cable 1 m
- SCART adapter (SCART to CVBS/S-video (Y/C))
- Audio L/R Cinch
- Universal remote control with batteries
- Wireless keyboard with batteries

4. Technical Reference

4.1. System Block Diagram

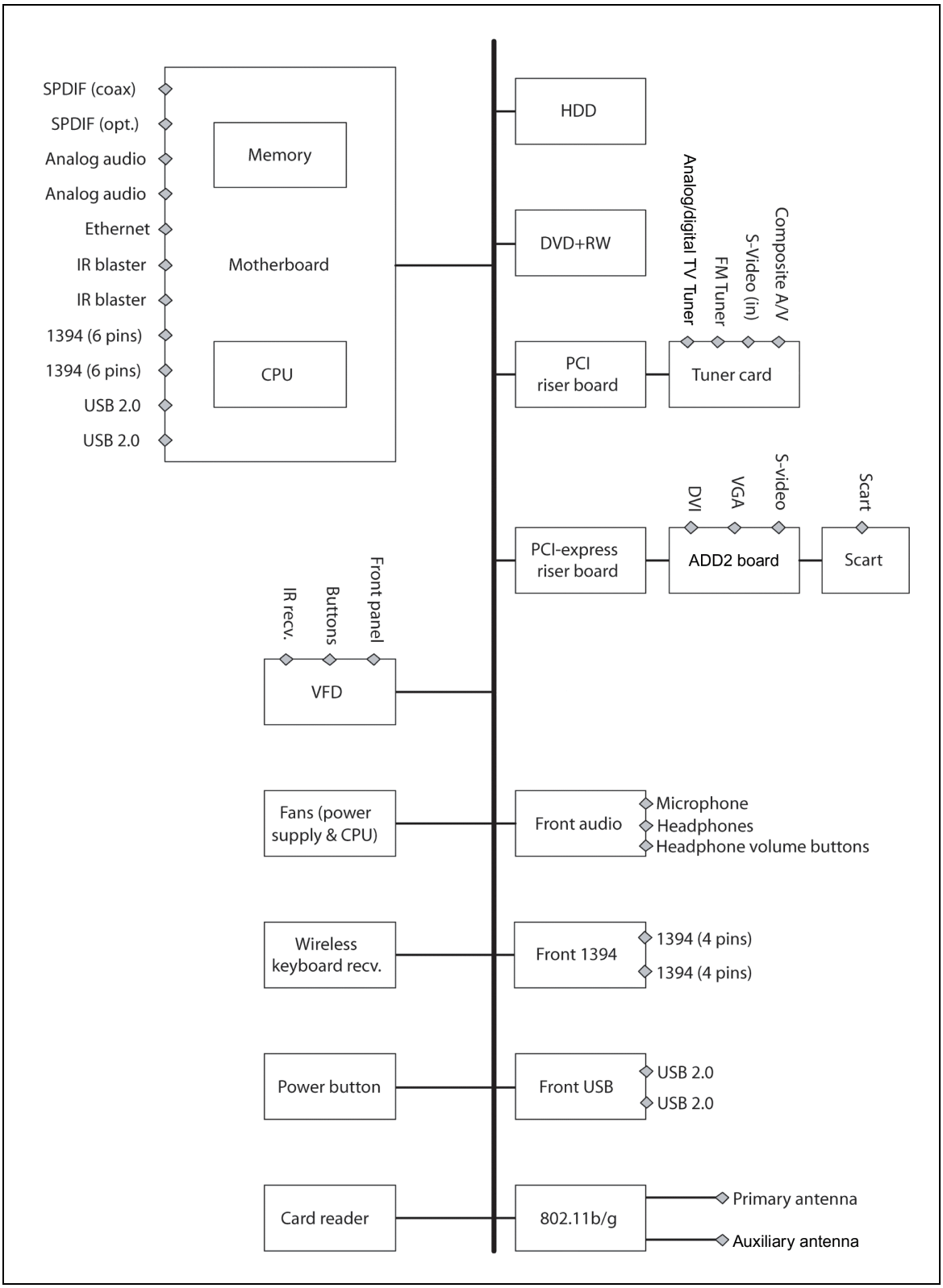


Figure 4.1-1

4.2. System Cable Definition

4.2.1. System Cable Schematic

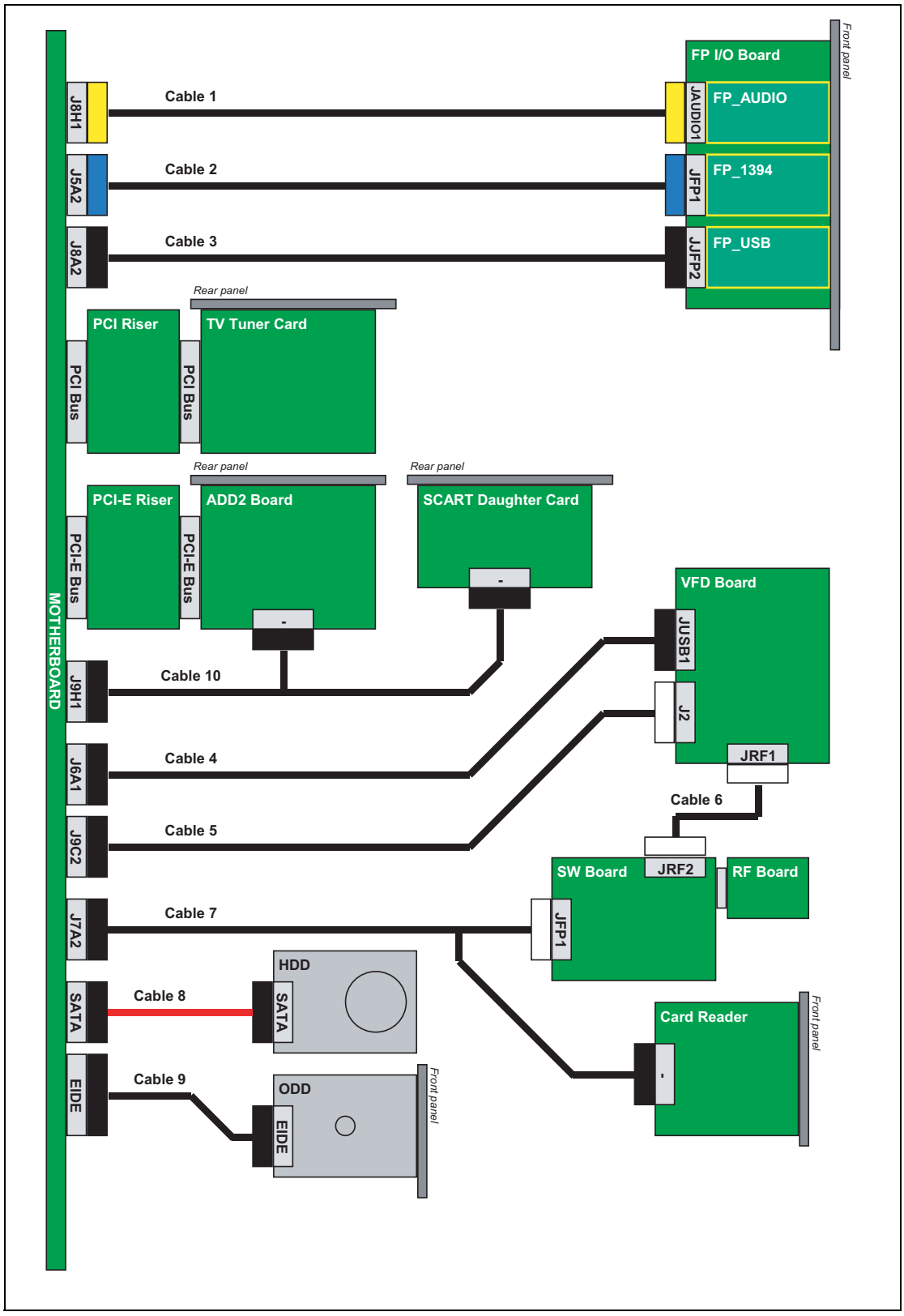


Figure 4.2-1

4.2.2. System Cable Definition Table

Cable Number	Cable Name	Start	End(s)
1	FP_AUDIO_CABLE	MB J8H1	FP BOARD JAUDIO1
2	FP_1394_CABLE	MB J5A2	FP BOARD JFP1
3	FP_USB_CABLE	MB J8A2	FP BOARD JFP2
4	VFD_USB_CABLE	MB J6A1	VFD Board JUSB1
5	IR_BLASTER_INTERNAL_CABLE	MB J9C2	VFD BOARD J2
6	SW_RF_CABLE	VFD Board JRF1	SW BOARD JRF2
7	V-TYPE_CABLE	MB J7A2	(1) SW BOARD JFP1 (2) CARD READER
8	SATA_HDD_CABLE	MB J7F1	HDD
9	ATA33_ODD_CABLE	MB EIDE	ODD
10	ADD2_SCART_CABLE	MB J9H1	(1) ADD2 SCART DAUGHTER CARD (2) GRAPHICS CARD (ADD2 BOARD)

4.3. PSU Cables and Connectors Definition

4.3.1. PSU Cable Schematic

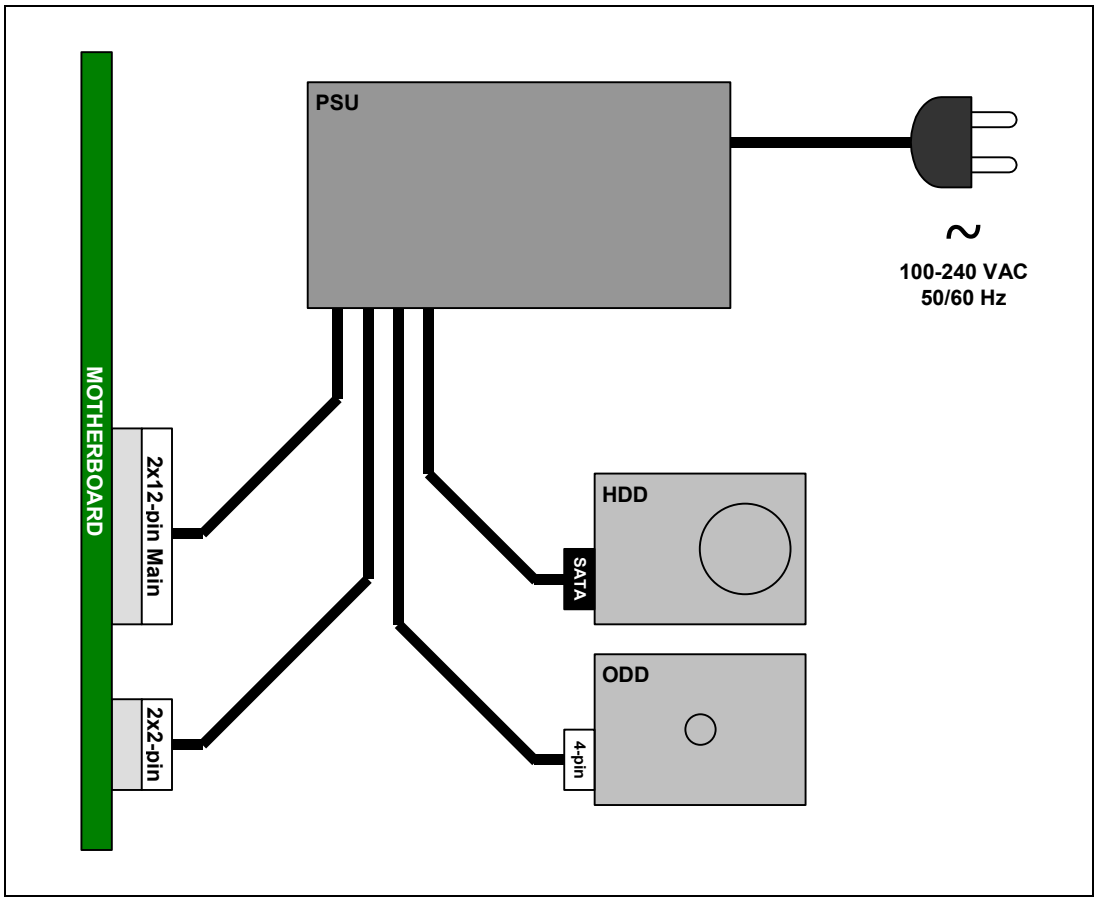
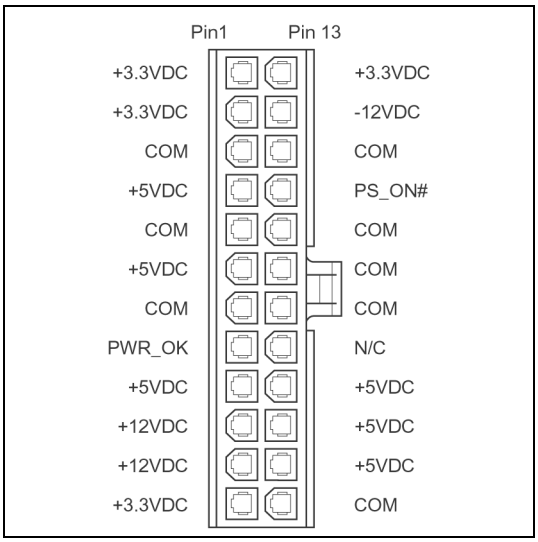


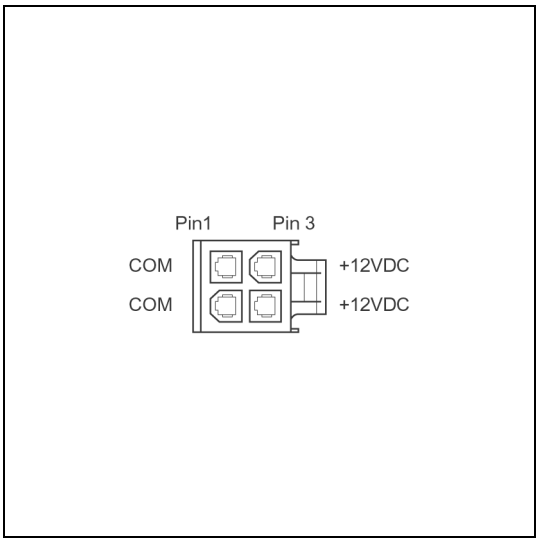
Figure 4.3-1

4.3.2. PSU Connector Pin Definition



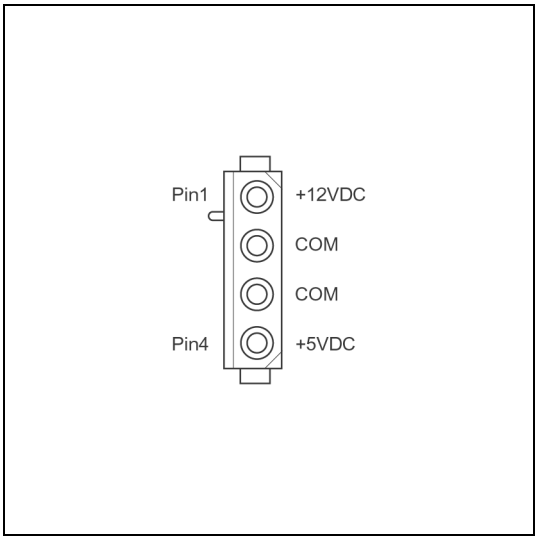
Main Power Connector, 2x12-pin

Figure 4.3-2



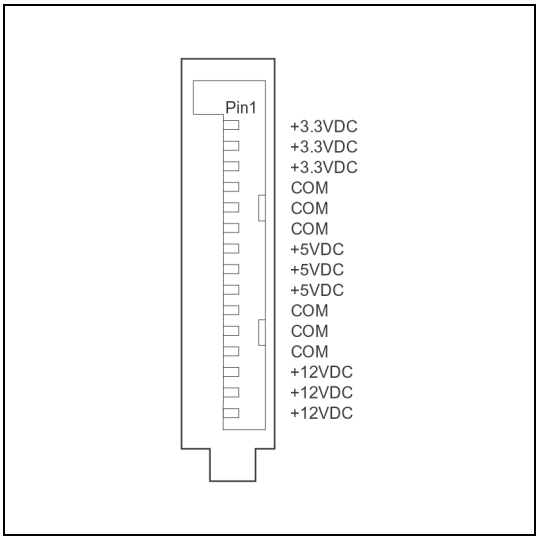
+12V Power Connector, 2x2-pin

Figure 4.3-3



Peripheral Power Connector, 4-pin

Figure 4.3-4



Serial ATA (SATA) Power Connector

Figure 4.3-5

5. Required Equipment List

Equipment & Facilities

- Repair kit
  - Working samples of all modules of the MCP9360i
  - Wireless keyboard with integrated trackball
  - Remote control (MediaCenter version)
- PC Monitor with VGA and DVI input
- TV with SCART and S-Video input
- USB keyboard
- Stereo Headphones (with 6.3 mm Jack Plug)
- Microphone (with 6.3 mm Jack Plug)
- IEEE 1394 4-pin device (example: digital video camcorder)
- IEEE 1394 6-pin device (example: external hard disk)
- USB device (examples: USB memory stick; USB mouse)
- External audio amplifier with the following connections:
  - audio L/R cinch inputs (x2)
  - coaxial SPDIF input
  - optical SPDIF input
- Wireless (IEEE 802.11 b/g) access point and router with Ethernet LAN ports
- S-video signal source (examples: DVD player; video camcorder)
- Composite video signal source (examples: DVD player; video camcorder)
- RF TV signal source (examples: external TV antenna; cable TV connection; VCR)
- RF Radio signal source (examples: external radio antenna; cable connection)
- RF DVB-T signal source

Cables

- VGA cable
- DVI cable
- SCART cable
- S-Video cable
- IEEE 1394 4-pin cable
- IEEE 1394 6-pin cable
- 2x Audio L/R Cinch cables
- Digital audio coax cable
- Digital audio optical cable
- Ethernet cable (RJ45, CAT5)
- TV and Radio RF coax cable

Software Tools

- Recovery DVD
- PC Doctor – Service Edition (CD and USB license)
- Test CD with latest BIOS, drivers, applications and PC Doctor test scripts

Memory Cards / Media

- Compact Flash (CF)
- Smart Media (SM)
- Secure Digital (SD)
- MultiMedia Card (MMC)
- Memory stick (MS)
- Audio CD
- Video DVD
- CD R / RW
- DVD+R / RW

6. Diagnosis and Repair Flowchart

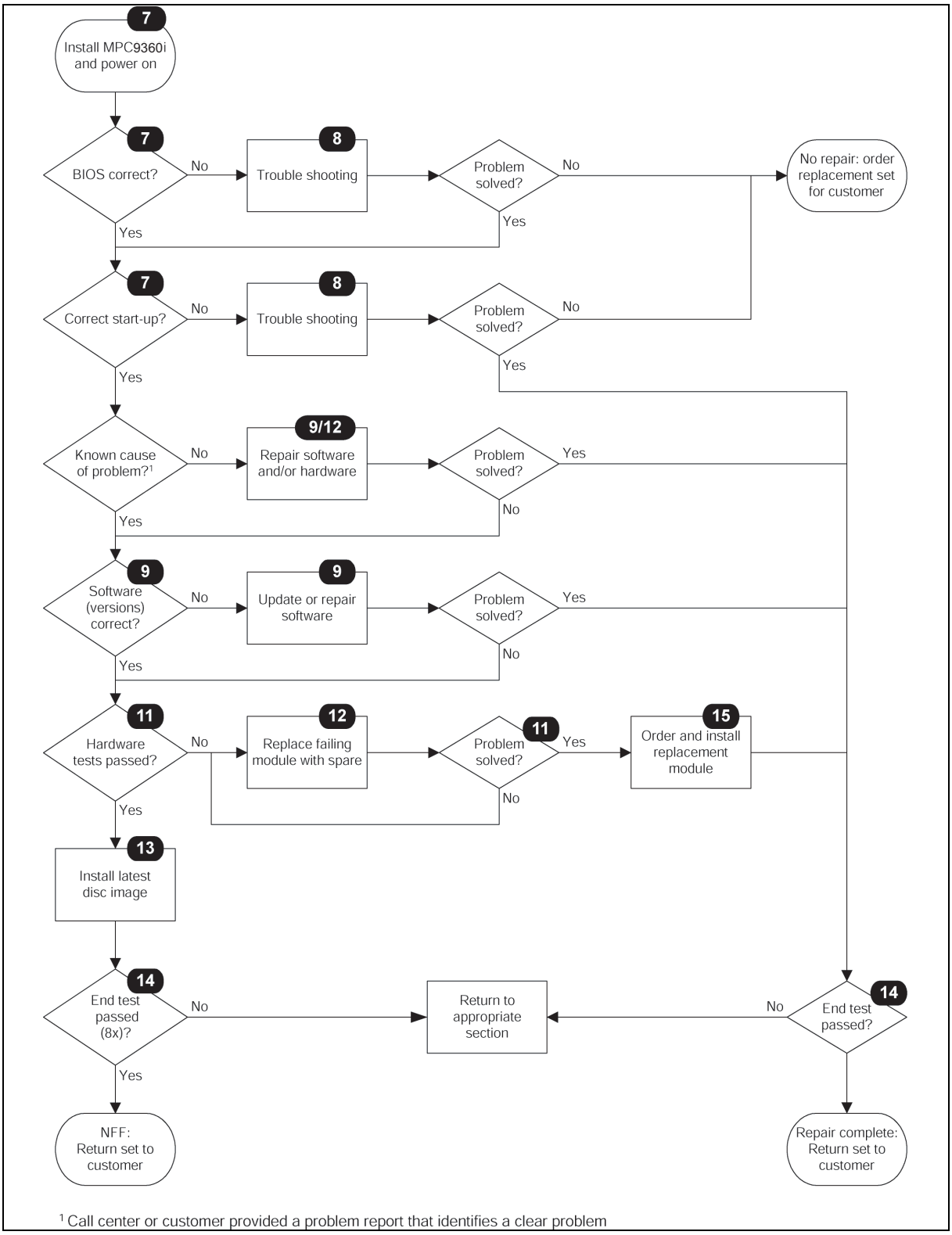


Figure 6-1

7. Installation and Initial Checks

7.1. Installation

1. Connect the MCP9360i to a monitor, using either the DVI or the VGA connector.
2. Insert the power cord (both 110V or 230V are supported). The LED on the Standby-On button should light-up yellow.
3. Connect a USB keyboard to one of the front USB ports.

7.2. BIOS Check

7.2.1. Test Procedure

1. Install the MCP9360i. See paragraph 7.1.
2. Press the Standby-On button. The LED on the Standby-On button will turn-off and the MCP9360i should begin to start up.
3. During the early part of the start-up process press the 'F2' key on the keyboard to enter the BIOS setup.
4. On the BIOS setup main screen check the installed memory size. See table below.

Total memory size	1024 MB

5. Check the system manufacturer information. (BIOS menu select: **Main** > **Additional system information**). See table below.

System information > manufacturer	"Tatung co."
Desktop board information > manufacturer	Intel Corporation
Chassis Information > Manufacturer	Philips MCPC1001

6. Check the BIOS version. (BIOS menu select: **Main** > **BIOS version**). See table below.

Software module	**Release version**
System BIOS	SU94510J.86A.0044.2005.0727.0111

7. Check that the HDD and the optical drive have been detected by the BIOS. (BIOS menu select: **Advanced** > **Drive Configuration**). See table below.

Drive	**Type**
HDD (primary supplier)	Western Digital WD1600JS-55M-250.0GB
Optical Drive	Philips DVDR1628 – ATAPI

8. Check the function of the temperature sensors. Confirm that the temperatures have reasonable values, between 0 °C and 128 °C. (BIOS menu select: **Advanced** > **Hardware Monitoring**). See table below.

Temperature Sensor	**Possible value (allow for a wide variation)**
Processor 1	63 °C
Front internal	31 °C
Rear internal	25 °C
Remote 1	23 °C
Remote 2	21 °C

9. Check the fan speeds. (BIOS menu select: **Advanced** > **Hardware Monitoring**). See table below.

Fan	**Speed (allow for a wide variation)**
Processor 1 fan	900 – 1400 RPM
Rear fan	1000 RPM

10. Check the power values. (BIOS menu select: **Advanced** > **Hardware Monitoring**). See table below.

Power	Center value (allow for a ± 5% variation)
V 12.0	+12.0 V (± 0.6 V)
V 5.0	+5.0 V (± 0.25 V)
V 3.3	+ 3.3 V (± 0.165 V)
V 1.5	+1.5 V (± 0.075 V)
V ccp	+ 1.28 V (± 0.064 V)

11. Exit the BIOS setup screen without saving changes. (BIOS menu select: **Exit** > **Exit discarding changes**).

The MCP9360i will now continue to start-up. Perform the start-up sequence check, see paragraph 7.3.

7.2.2. Fail Procedure

Perform Troubleshooting procedure. See paragraph 8.

7.3. Start-up Sequence Check

7.3.1. Test Procedure

1. Power on the MCP9360i.
2. Watch the boot-up sequence for error messages.
3. After a short time the Windows Media Center main window, or the Windows XP desktop (possibly adapted by the user), will be shown on-screen.

Figure 7.3-1: *Media Center main window (English version)*

Figure 7.3-2: *Windows XP desktop (English version)*

7.3.2. Fail Procedure

Perform Troubleshooting procedure. See paragraph 8.

8. Troubleshooting - Start-up Failure

8.1. Problems in BIOS

This section lists potential BIOS problems together with recommended corrective actions.

- Incorrect BIOS version
  - Update the BIOS. See paragraph 9.2.

- Drive(s) not detected
  - Replace the drive cable(s).
  - Replace the drive(s). See paragraph 12.3 or 12.4.

  Note: Any service to non-standard drives must be treated as an out-of-warranty service call.

- Incorrect temperature
  - Check that the thermistor plugs on the motherboard are correctly inserted. See paragraph 12.15.9.
  - Replace the motherboard. See paragraph 12.15.9.

- Incorrect fan speeds (with correct temperature)
  - Re-insert fan cables.
  - Replace fan. See paragraph 12.14.5.
  - Replace motherboard. See paragraph 12.15.9.

- Incorrect power
  - See paragraph 8.2.

- No or insufficient memory (1024 MB expected)
  - Re-insert the memory modules. See paragraph 12.15.7.
  - Remove the memory modules and insert in the other connector bank (black DIMM connectors on the motherboard).
  - Replace the memory modules. See paragraph 12.15.7.
  - Replace the motherboard. See paragraph 12.15.9.

- Chassis manufacturer is not '**Philips MCPC1001**'
  - Update the BIOS. See paragraph 9.2.

8.2. No or Incorrect Power

1. Re-insert the PSU cables.
2. Disconnect the PSU cables and measure the voltages. See paragraph 4.3.2.
   - If the values are incorrect replace the PSU. See paragraph 12.13.1.
3. Replace the SW Board. See paragraph 12.9.
4. Reinsert CPU or replace the CPU. See paragraph 12.15.5.
5. Replace the motherboard. See paragraph 12.15.9.

8.3. No Video

1. Make sure that a working monitor is connected and in the correct mode (VGA or DVI).
2. Remove the memory from the motherboard, (see paragraph 12.15.7), and reboot. If there is a beeping sound, replace the memory.
3. Re-insert the memory. See paragraph 12.15.7.
4. If there is still no video, replace the graphics card. See paragraph 12.6.
5. Replace the motherboard. See paragraph 12.15.9.

8.4. Operating System Not Found

1. Reboot the MCP9360i and enter the BIOS menu by pressing 'F2'. Confirm that the HDD is detected.
2. Replace the SATA cable.
3. Replace the HDD. See paragraph 12.3.
4. Re-insert the memory modules. See paragraph 12.15.7.
5. Remove the memory modules and insert in the other connector bank (black DIMM connectors on the motherboard).
6. Replace the memory modules. See paragraph 12.15.7.
7. Replace the motherboard. See paragraph 12.15.9.

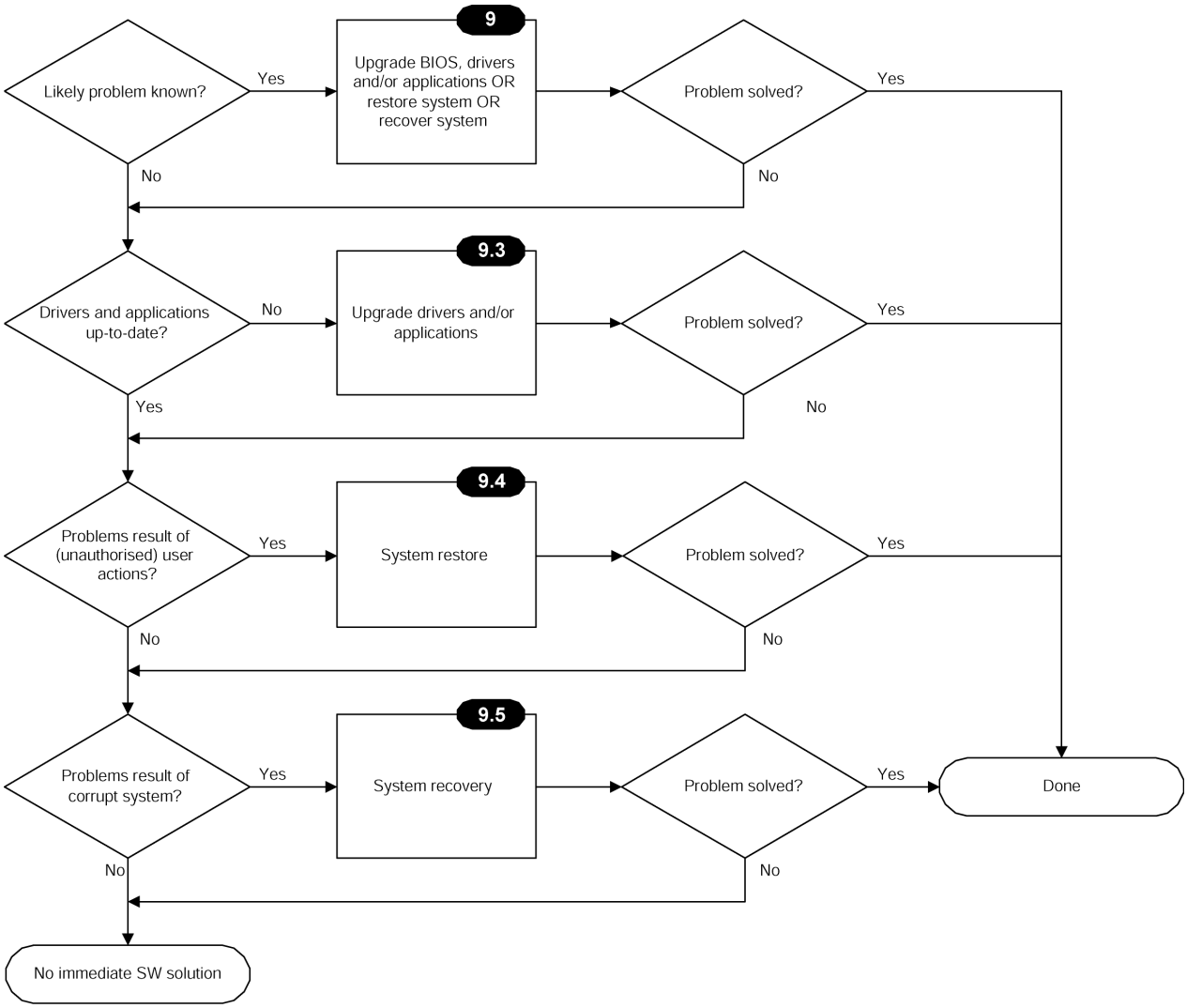
8.5. No Repair

If none of the above recommendations have solved the problem and the set cannot be repaired, it must be sent for further analysis to Philips. If the incident happened within the warranty period, the customer shall be provided with a new set. Please initiate a 'non-policy replacement' procedure with Euroservice.

9. Software Update and Repair

This section describes how to update and 'repair' the software on the MCP9360i without affecting the customer's data.

9.1. Software Update and Repair Flowchart



9.2. Update BIOS

Update the BIOS after installing a new motherboard, or when the MCP9360i is programmed with an older version of the BIOS.

1. Insert the bootable disc with the latest BIOS version.
2. Restart the MCP9360i.
3. Follow the on-screen instructions.

9.3. Update Drivers and Software

The table below lists the drivers and software applications that are installed on the MCP9360i.

Software module	Release version	Source for updates
System BIOS	SU94510J.86A.0044.2005.0727.0111	
Intel chipset software installation utility		
Intel 945G Graphics		
Intel 82562EZ or 82562EX (10/100) LAN controller		
Sigmatel Audio Drivers		
Intel Audio Studio (Sonic Focus)		
Lite-On Atheros WLAN		
Tatung Front Panel Manager VFD w/ button board		
Tatung VFD Firmware		
ODD FW		
AVerMedia (TV Tuner)		
LikeMusic		
CyberLink AP (Power DVD, Make DVD, Capture DV)		
Philips Media Manager Program		

The latest versions of these applications and drivers should be available on a CD or USB stick (this is the responsibility of the workshop). Each piece of software will contain a ‘readme’ file that describes how to check the version and how to install it.

9.4. System Restore

1. In Windows XP select: **Start** > **All programs** > **Accessories** > **System Tools** > **System Restore**.

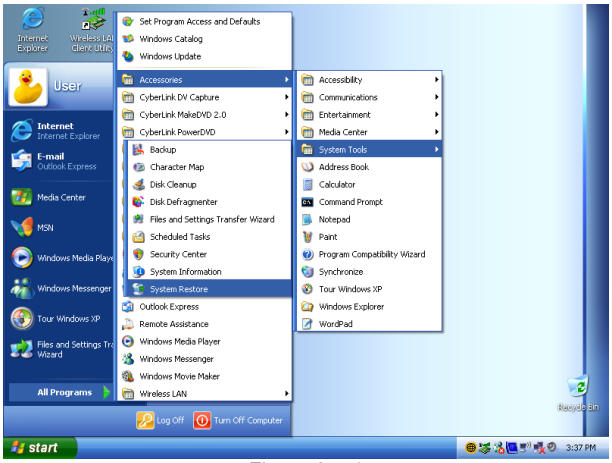


Figure 9.4-1

2. Select the '**restore my system to an earlier time**' option.

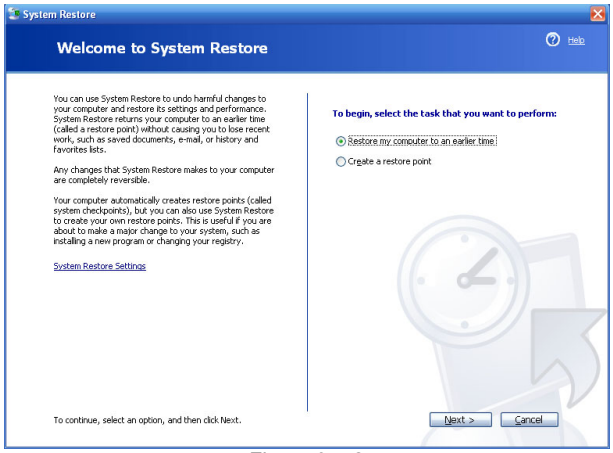


Figure 9.4-2

3. Select a date in time before the problems were first seen.

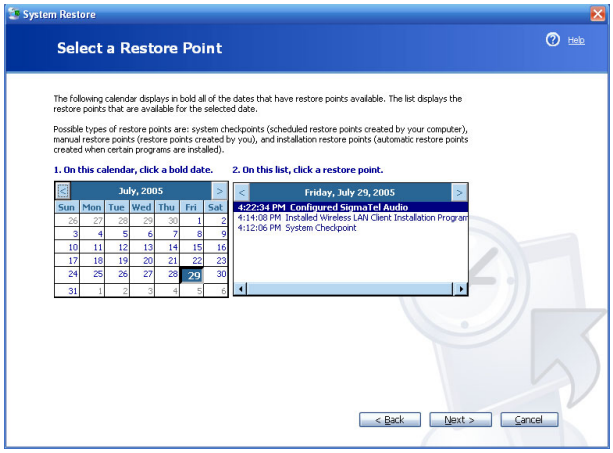


Figure 9.4-3

4. Carefully read the instruction and continue.

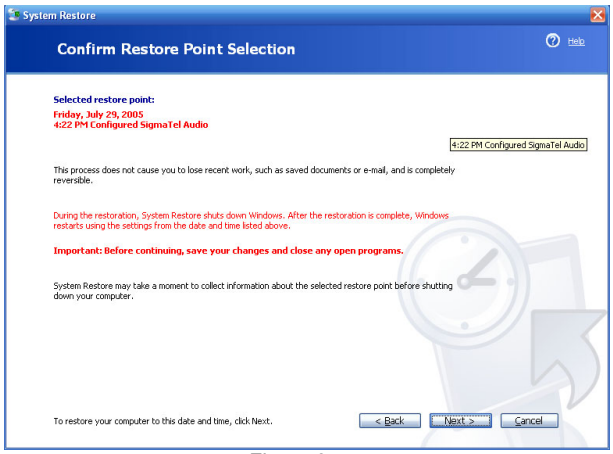


Figure 9.4-4

9.5. System Recovery

1. In Windows XP select: **Start** > **All programs** > **System Recovery** > **System Recovery**. (*Alternatively, press the **F11** key during boot sequence*).

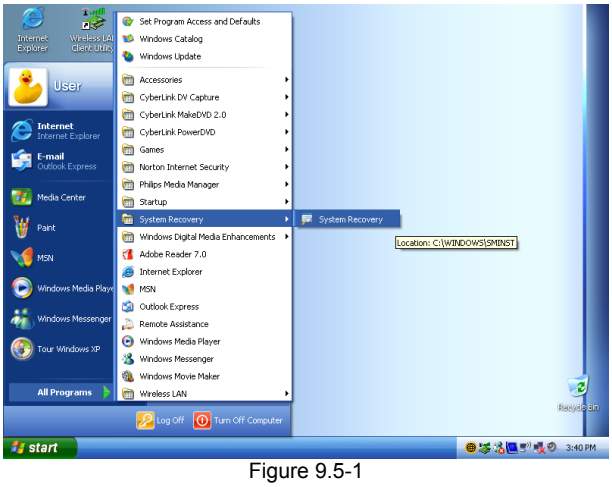


Figure 9.5-1

2. Follow the on-screen instructions to perform a system recovery without performing a format, (operations from this point are carried out in DOS mode).

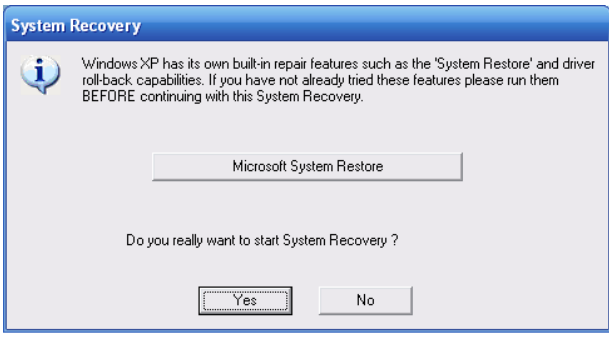


Figure 9.5-2

10. PC Doctor Diagnostic Tool

10.1. PC Doctor Introduction

PC Doctor is a software based test tool that is used to verify the correct functioning of different modules.

10.2. Running PC Doctor

1. Insert the 'PC Doctor' USB dongle in one of the USB slots on the back of the MCP9360i.
2. Insert the PC Doctor disc.
3. If this is the first time that the dongle is used, install the driver for the USB dongle from the PC Doctor disc.
4. Start PC Doctor in the '**Quick Install and Run**' mode (otherwise certain tests will not be enabled). See Figure 10.2-1.

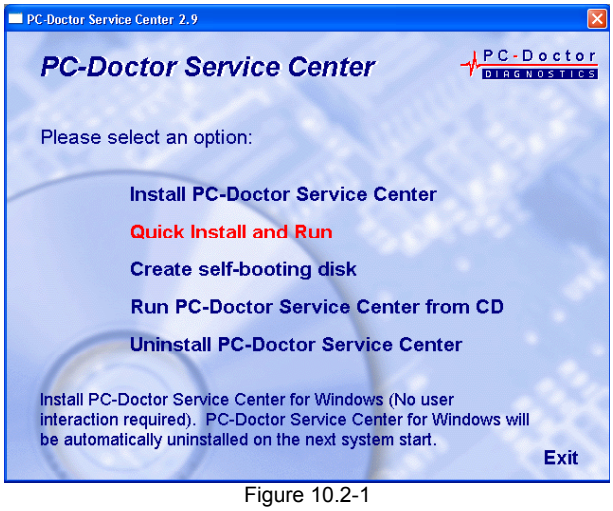


Figure 10.2-1

5. PC Doctor will now run. Select the '**diagnostics**' option. You are now ready to run one of the tests by selecting one of the icons. See Figure 10.2-2.

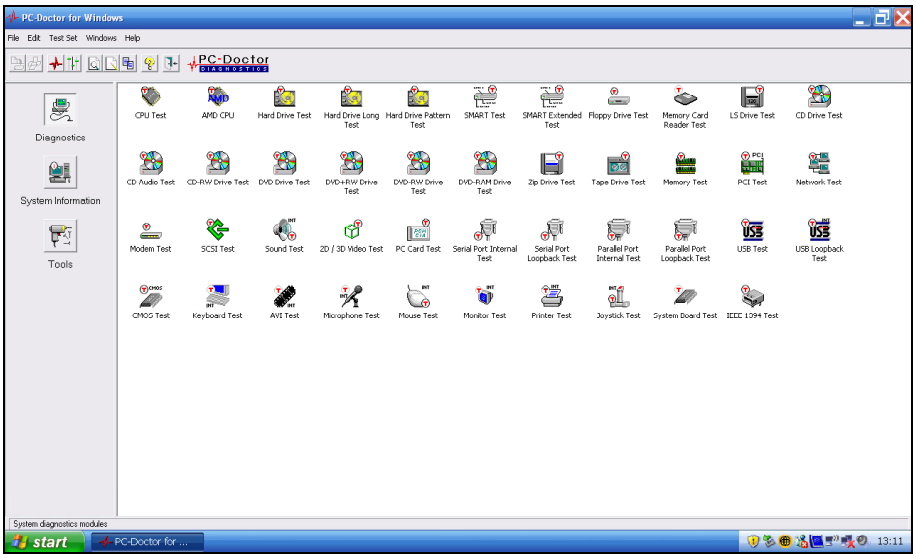


Figure 10.2-2

Note: It is recommended that test sequences be run using the PC Doctor batch files provided by Philips. See paragraph 10.3.

Note: More information on the type and sequence of tests can be found in paragraph 11.2.

10.3. PC Doctor Batch Tests

Sequences of PC Doctor tests can be pre-programmed to run in batches. There are two pre-programmed test batch files provided by Philips on the Test CD. These are identified as 'Automatic' tests and 'Interactive' tests.

Automatic tests
These are tests that run fully automatic, without any user interaction. This test sequence takes approximately 15 minutes to complete.

1. Copy the test script '**Automatic.PCB**' from the test CD to the HDD of the MCP9360i.
2. Insert a DVD+RW disc in the optical drive.
3. Insert memory cards in all four slots of the memory card reader.
4. Connect the set with the network using an Ethernet cable.
5. Insert the USB flash drive containing the batch files.
6. In the PC Doctor menu select: **Test Set** > **Custom Test Settings**.
7. Open the automated test batch file '**Automatic.PCB**' from the HDD and start the test sequence.
8. Remove the test script from the HDD after the test sequence has finished.

Interactive tests
These tests require some action of the user (listening to sound, pushing buttons at the keyboard, etc.). This test sequence takes approximately 5 minutes to complete.

1. Copy the test script '**Interactive.PCB**' from the test CD to the HDD of the MCP9360i.
2. Insert the USB flash drive containing the batch files.
3. In the PC Doctor menu select: **Test Set** > **Custom Test Settings**.
4. Open the interactive test batch file '**Interactive.PCB**' from the HDD and start the test sequence.
5. Follow the on-screen instructions.
6. Remove the test script from the HDD after the test sequence has finished.

11. Hardware Tests

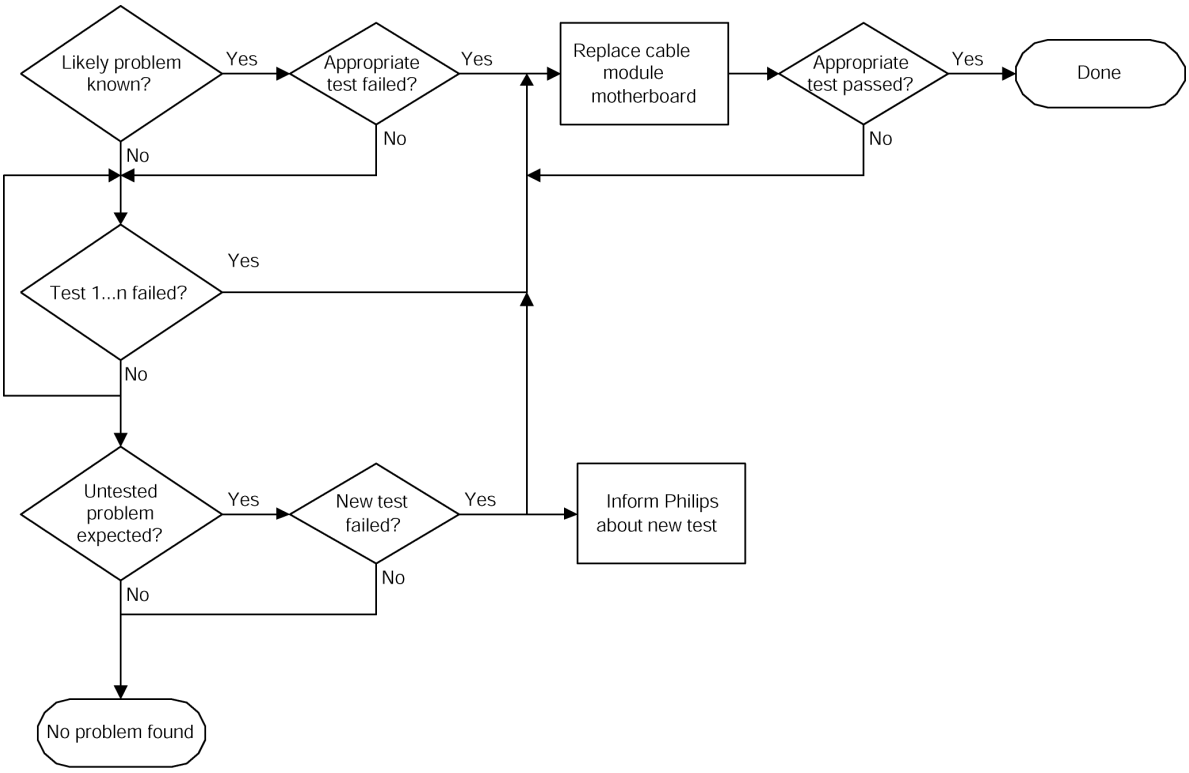
11.1. Introduction

The purpose of the hardware tests is to guarantee the correct functioning of all hardware modules. There are three cases:

1. The cause of the hardware problem is known. Run the appropriate test to confirm that the cause of the problem is correct. Swap the failing module with one from the 'repair kit'. Run the test again. For swapping: swap the cheapest component first (e.g. cables, riser boards), then the modules and finally the motherboard.

2. The cause of the problem is not known. Start with the first test (see below) and continue until one of the tests fails. Then swap the failing module, etc.

3. None of the tests identifies a failing module. If the technician suspects that the problem is not covered by the tests, he can create his own test. Otherwise, the product is marked as 'NFF'. When the new test finds a problem, the technician has to inform Philips about this so it can be used to improve the test process.



11.2. Test Sequence

#	Test Method (paragraph)	Module	Test Type	☑ Checked
1	7.2	BIOS check	Manual	☐
2	7.3	Start-Up sequence	Manual	☐
3	11.3	Fan speed	Manual	☐
4	11.4	CPU	Automatic	☐
5	11.5	HDD (Hard disk drive)	Automatic	☐
6	11.6	Memory card reader	Automatic	☐
7	11.7	ODD (Optical disk drive)	Automatic	☐
8	11.8	Memory	Automatic	☐
9	11.9	PCI cards	Automatic	☐
10	11.10	Ethernet connection	Automatic	☐
12	11.11	Graphics card	Automatic	☐
13	11.12	USB controllers	Automatic	☐
14	11.13	CMOS	Automatic	☐
15	11.14	Motherboard	Automatic	☐
16	11.15	IEEE 1394 controller	Automatic	☐
17	11.16	Rear Panel Audio Output Connectors	Interactive	☐
18	11.17	Wireless keyboard (and receiver)	Interactive	☐
19	11.18	Microphone, headphones and headphones volume control	Interactive	☐
20	11.19	Wireless network connection	Manual	☐
21	11.20	USB connectors	Manual	☐
22	11.21	IEEE 1394 connectors	Manual	☐
23	11.22	Video outputs	Manual	☐
24	11.23	FM Tuner	Manual	☐
25	11.24	TV Tuner Card and Audio / Video Inputs	Manual	☐
26	11.25	Front display and buttons	Manual	☐
27	11.26	Remote control and infrared receiver	Manual	☐
28	0	IR blaster	Manual	☐

11.3. System Fans

11.3.1. Required Equipment

None.

11.3.2. Test Procedure

At first start-up, the PSU and CPU fans will start at the highest speed. After a couple of seconds, the fans must switch to a slower speed.

Note: When the system has already been running, the fans might start at the lower speed.

11.3.3. Fail Procedure

- Replace the PSU fan. See paragraph 12.13.3.
- Replace the CPU fan. See paragraph 12.14.5.
- Replace the motherboard. See paragraph 12.15.9.

11.4. CPU

11.4.1. Required Equipment

PC Doctor CD & USB dongle

11.4.2. Test Procedure

In PC Doctor: Run the CPU test.

11.4.3. Fail Procedure

Replace the CPU. See paragraph 12.15.5.

11.5. HDD (Hard disk drive)

11.5.1. Required Equipment

PC Doctor CD & USB dongle

11.5.2. Test Procedure

In PC Doctor: Run the 'SMART' test.

11.5.3. Fail Procedure

- Replace the SATA cable.
- Replace the HDD. See paragraph 12.3.
  - Make sure that the latest software image is installed on the replacement HDD. See paragraph 13.

11.6. Card Reader

11.6.1. Required Equipment

- PC Doctor CD & USB dongle
- Compact Flash (CF) card
- Smart Media (SM) card
- Secure Digital (SD) card
- Memory Stick (MS)

11.6.2. Test Procedure

1. Insert the memory cards into the appropriate slots of the card reader.
2. In PC Doctor: Run the card reader test.

11.6.3. Fail Procedure

- Replace the V-Type cable.
- Replace the card reader board. See paragraph 12.10.3.
- Replace the motherboard. See paragraph 12.15.9.

11.7. ODD

11.7.1. Required Equipment

- PC Doctor CD & USB dongle
- DVD+RW disc

11.7.2. Test Procedure

1. Insert the DVD+RW disc into the ODD.
2. In PC Doctor: Run the DVD+RW test.

11.7.3. Fail Procedure

- Replace the ATA33 cable.
- Replace the ODD. See paragraph 12.4.

11.8. Memory

11.8.1. Required Equipment

PC Doctor CD & USB dongle

11.8.2. Test Procedure

In PC Doctor: Run the memory test.

11.8.3. Fail Procedure

- Remove the memory modules and insert in the other connector bank (black DIMM connectors on the motherboard).
- Replace the defective DIMM. See paragraph 12.15.7.

11.9. PCI Cards

11.9.1. Required Equipment

PC Doctor CD & USB dongle

11.9.2. Test Procedure

In PC Doctor: Run the PCI test.

11.9.3. Fail Procedure

- Replace the Riser Card associated with the failing PCI card. See paragraph 12.6 or 12.7.
- Replace the failing PCI card. See paragraph 12.6 or 12.7.

11.10. Ethernet

11.10.1. Required Equipment

- PC Doctor CD & USB dongle
- Wireless router/access point with Ethernet ports
- Ethernet cable

11.10.2. Test Procedure

1. Connect the Media Center PC with the router using the Ethernet cable.
2. In PC Doctor: Run the network test.

11.10.3. Fail Procedure

Replace the motherboard. See paragraph 12.15.9.

11.11. ADD2 Graphics Card

11.11.1. Required Equipment

PC Doctor CD & USB dongle

11.11.2. Test Procedure

In PC Doctor: Run the 2d/3d test.

11.11.3. Fail Procedure

- Replace the PCI-express riser board. See paragraph 12.6.
- Replace the ADD2 Graphics card. See paragraph 12.6.

11.12. USB Controllers

11.12.1. Required Equipment

PC Doctor CD & USB dongle

11.12.2. Test Procedure

In PC Doctor: Run the USB test.

11.12.3. Fail Procedure

Replace the motherboard. See paragraph 12.15.9.

11.13. CMOS

11.13.1. Required Equipment

PC Doctor CD & USB dongle

11.13.2. Test Procedure

In PC Doctor: Run the CMOS test.

11.13.3. Fail Procedure

Replace the motherboard. See paragraph 12.15.9.

11.14. Motherboard

11.14.1. Required Equipment

PC Doctor CD & USB dongle

11.14.2. Test Procedure

In PC Doctor: Run the system board test.

11.14.3. Fail Procedure

Replace the motherboard. See paragraph 12.15.9.

11.15. IEEE 1394 Controller

11.15.1. Required Equipment

PC Doctor CD & USB dongle

11.15.2. Test Procedure

In PC Doctor: Run the IEEE 1394 test

11.15.3. Fail Procedure

Replace the motherboard. See paragraph 12.15.9.

11.16. Rear Panel Audio Output Connectors

11.16.1. Required Equipment

- An external amplifier that has:
  - 2 analog audio inputs
  - a coaxial SPDIF input
  - an optical SPDIF input
- Cables for each of these four inputs

11.16.2. Test Procedure

1. Connect the four audio outputs of the Media Center with the amplifier.
2. In PC Doctor: Run the Sound test.
3. Select the first input on the amplifier and push some on-screen test buttons to get sound on the different boxes.
4. Repeat this for the other three inputs on the amplifier.

11.16.3. Fail Procedure

Replace the motherboard. See paragraph 12.15.9.

11.17. Wireless Keyboard and Receiver

11.17.1. Required Equipment

- PC Doctor CD & USB dongle
- The wireless keyboard that was returned with the set.
- If no keyboard was returned, use your own wireless keyboard.

11.17.2. Test Procedure

In PC Doctor: Run the keyboard test and follow the instructions, (if using the keyboard from the customer make sure to push all keys).

11.17.3. Fail Procedure

- Re-connect the keyboard with the set. (Press the ‘connect’ button on the Media Center front panel and then press the connect button on the keyboard).
- Replace the keyboard batteries.
- Replace keyboard.
- Replace the RF board. See paragraph 12.9.
- Replace the motherboard. See paragraph 12.15.9.

11.18. Microphone, Headphones and Headphones Volume Control

11.18.1. Required Equipment

- PC Doctor CD & USB dongle
- Headset (combined headphones/microphone) with two 9mm jack plugs

11.18.2. Test Procedure

1. In PC Doctor: Run the microphone test and follow the instructions.
2. Play the recorded sound a number of times, using the volume buttons to increase and decrease the volume.

11.18.3. Fail Procedure

- Replace the FP Audio cable.
- Replace the FP I/O board. See paragraph 12.11.3.
- Replace the motherboard. See paragraph 12.15.9.

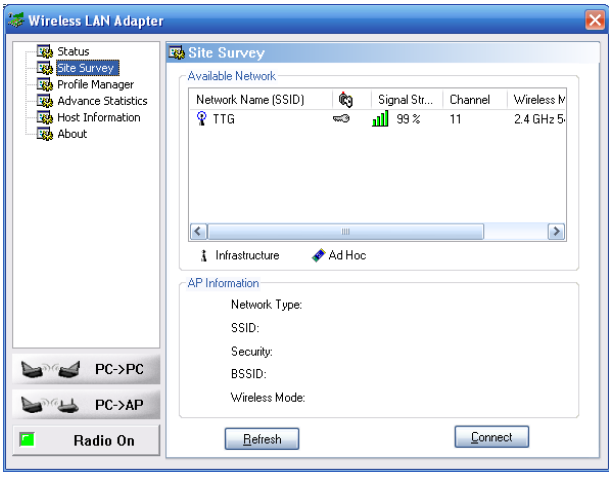
11.19. Wireless Network Connection (802.11b/g)

11.19.1. Required Equipment

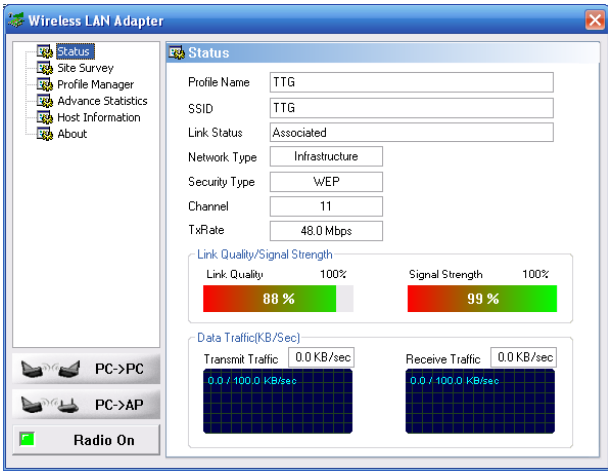
Wireless router/access point within range of the Media Center PC

11.19.2. Test Procedure

1. In Windows XP, open the Wireless LAN client utility. (Select: Start > All Programs > Wireless LAN).
2. Set-up a connection with the wireless access point: in the Site Survey section select Refresh and Connect with the access point. Make sure that you enter the correct protection key if necessary.



3. Select the Status section. Both link quality and signal strength should now be sufficiently high. (Maximum values are 52.0 Mbps and 100%).



11.19.3. Fail Procedure

- Replace both antenna cables and antennas. See paragraphs 12.8.3 and 12.8.5.
- Replace the WLAN card. See paragraph 12.8.1.
- Replace the motherboard. See paragraph 12.15.9.

11.20. USB Connectors

11.20.1. Required Equipment

USB memory stick or USB mouse

11.20.2. Test Procedure

1. Insert the USB device into one of the USB slots.
2. Check that the device is detected and that it functions correctly.
3. Repeat this procedure for each of the four USB slots (2 on the front, 2 at the rear).

11.20.3. Fail Procedure

For the front USB connectors:
- Replace the FP_USB cable.
- Replace the FP I/O board. See paragraph 12.11.3.
- Replace the motherboard. See paragraph 12.15.9.

For the rear USB connectors:
- Replace the motherboard. See paragraph 12.15.9.

11.21. IEEE 1394 Connectors

11.21.1. Required Equipment

- 1394 device (e.g. external hard disc or a digital camera)
- 4-pin and 6-pin 1394 cables

11.21.2. Test Procedure

1. Insert the 1394 device into one of the 1394 slots.
2. Check that the device is detected and that it functions correctly.
3. Repeat this procedure for each of the three 1394 slots (1 on the front, 2 at the rear).

11.21.3. Fail Procedure

For the front 1394 connector:
- Replace the 1394 cable.
- Replace the FP I/O board. See paragraph 12.11.3.
- Replace the motherboard. See paragraph 12.15.9.

For the rear 1394 connectors:
- Replace the motherboard. See paragraph 12.15.9.

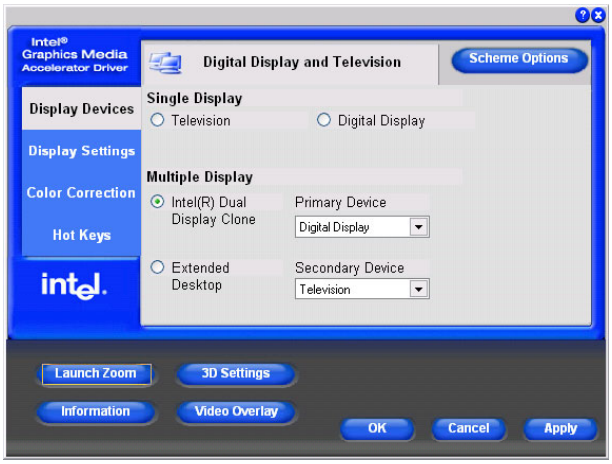
11.22. ADD2 Graphics Card and Video Output Connectors

11.22.1. Required Equipment

- TV and/or Monitor with the following inputs:
  - SCART
  - DVI
  - VGA
  - S-Video
- Cables for each of these inputs

11.22.2. Test Procedure

1. Connect the TV and/or monitor to the four video outputs of the Media Center.
2. On the MediaCenter: select the '**Intel® Graphics Media Accelerator Driver**' icon in the icon bar on the bottom right.
3. Select the graphics properties option.
4. Select the '**Intel® Dual Display Clone**' option and make sure that the primary device is '**digital display**' and the secondary device is '**television**'.



5. Switch you monitor and/or TV between the different inputs to check if the desktop can be seen on all four (Scart, DVI, VGA and S-Video) output modes.
6. Return the set to the original settings.

11.22.3. Fail Procedure

For the SCART output:
- Replace the ADD2_SCART cable.
- Replace the SCART connector board. See paragraph 12.15.3.
- Replace the PCI-express riser board. See paragraph 12.6.
- Replace the ASS2 Graphics card. See paragraph 12.6.
- Replace the motherboard. See paragraph 12.15.9.

For the DVI, VGA or S-Video outputs:
- Replace the PCI-express riser board. See paragraph 12.6.
- Replace the ADD2 Graphics card. See paragraph 12.6.
- Replace the motherboard. See paragraph 12.15.9.

11.23. FM Tuner

11.23.1. Required Equipment

RF FM Radio signal source (examples: external FM antenna, cable)

11.23.2. Test Procedure

In MediaCenter, select the **Radio** option and search for a channel.

11.23.3. Fail Procedure

- Replace the PCI riser card. See paragraph 12.7.1.
- Replace the TV tuner card. See paragraph 12.7.1.
- Replace the motherboard. See paragraph 12.15.9.

11.24. TV Tuner Card and Audio/Video Inputs

11.24.1. Required Equipment

- RF TV signal source (examples: external TV antenna, cable TV, VCR, DVB-T)
- Composite Video signal source (examples: DVD player, camcorder)
- S-Video signal source (examples: DVD player, camcorder)

11.24.2. Test Procedure

1. Connect the Composite Video source to the upper connector on the MCP9360i back panel.
2. Connect the TV signal source to the TV RF-in connector.
3. Go to the TV signal setup section in the Windows Media Center program. (Select: **Settings** > **TV** > **Set Up TV Signal**)

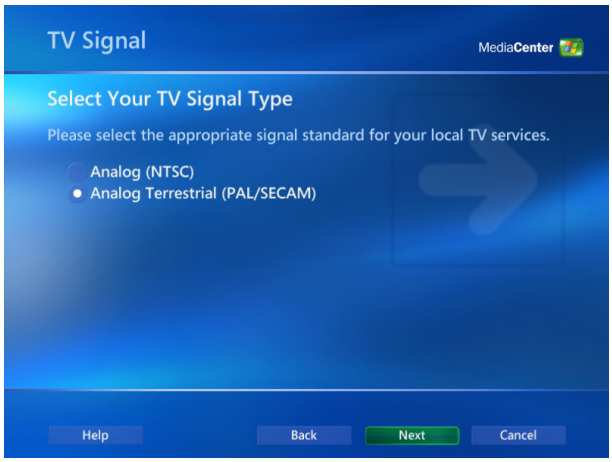
4. Acknowledge that the current settings will be deleted (in actuality, the procedure will be cancelled at the end so the settings will remain).

5. Select the correct region.

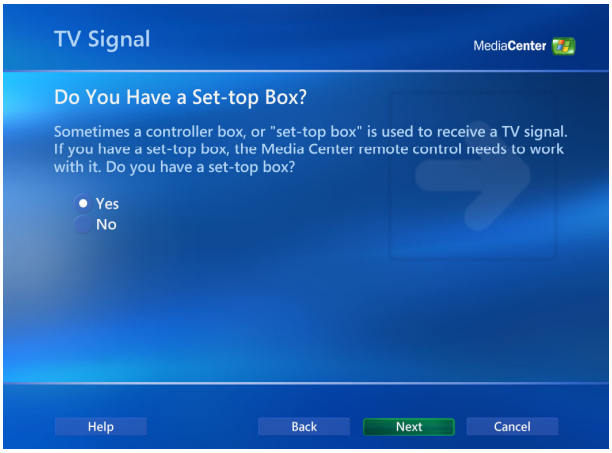
6. Select the manual configuration option (this screen is skipped in some versions).

7. Select **Cable or Digital Cable** as the source of the TV signal.

8. Select the correct signal type (in general: NTSC for America, PAL/SECAM for Europe).



9. Indicate that you want to install a set-top box.



10. The **Which Tuners Do You Want to Configure?** screen will appear. Select **AVerMedia Tuner Card Tuner** 1 (the upper Composite and S-Video connectors).

11. Select **Enter Channel** and enter a channel number that should be available. Check if you can see the expected TV signal in the small video window on the right.

12. Select **Composite Video**. Check for the expected Composite Video signal in the video window.
13. Disconnect the Composite Video cables from the MCP9360i. Connect the S-Video source to the upper connector on the back panel.
14. Select **S-Video**. Check for the expected S-Video signal in the video window, if necessary click **Scan again** to refresh the display.
15. Move the S-Video cable to the lower connector on the MCP9360i back panel.

16. Click on **back** to return to the **Which Tuners Do You Want to Configure?** screen. Select **NVIDIA NVTV Dual Tuner Card Tuner 2**.

17. Repeat the previous S-Video and Composite video checks for Tuner 2.
18. Click on '**Cancel**' to stop this TV signal installation, without saving the new settings.

11.24.3. Fail Procedure

- Replace the PCI riser card. See paragraph 12.7.1.
- Replace the TV tuner card. See paragraph 12.7.1.
- Replace the motherboard. See paragraph 12.15.9.

11.25. VFD Display and Buttons

11.25.1. Required Equipment

Audio CD

11.25.2. Test Procedure

1. Insert an Audio CD into the ODD.
2. Use the transport control buttons located below the VFD display to navigate the CD. Check that each button operates correctly.
3. Check that the VFD display is functioning.

11.25.3. Fail Procedure

- Replace the VFD_USB cable.
- Replace the VFD board. See paragraph 12.12.
- Replace the motherboard. See paragraph 12.15.9.

11.26. Remote Control and Infrared Receiver

11.26.1. Required Equipment

- Use the remote control that was returned with the Media Center.
- If no remote control was returned, use your own.

11.26.2. Test Procedure

Use the volume up and down buttons on the remote control to test correct operation of the infrared receiver and remote.

11.26.3. Fail Procedure

- Replace the remote control batteries.
- Replace the remote control.
- Replace the VFD_USB cable.
- Replace the VFD board. See paragraph 12.12.
- Replace the motherboard. See paragraph 12.15.9.

11.27. IR Blaster

11.27.1. Required Equipment

- Two IR blaster cables
- Test CD

11.27.2. Test Procedure

1. Insert the two IR blaster cables in the rear IR blaster ports.
2. Hold the 'eyes' of the cables in front of the IR receiver in the front of the set (to the left of the VFD display).
3. Open a command window. (Select: **Start** > **Run**. Type '**cmd**' and click **OK**).
4. In the command window: find and run the program '**IR.bat**'.
5. Check if both cables pass the test. If not, move the 'eyes' a bit and try again until absolutely sure that there is a hardware failure.

11.27.3. Fail Procedure

Replace the motherboard. See paragraph 12.15.9.

12. Hardware Repair

This section provides instructions on how to remove and replace modules from the Media-Center.

12.1. Top Cover

12.1.1. Top Cover Removal

WARNING: Disconnect the AC power from the MCP9360i before removing the top cover.

1. At the rear of the chassis remove the 4 torx screws (1). See Figure 12.1-1.
2. Slide the top cover towards the rear, until the locking tabs disengage. See Figure 12.1-2.
3. Lift the top cover straight up and remove it from the chassis.
4. Store the top cover in a safe place.

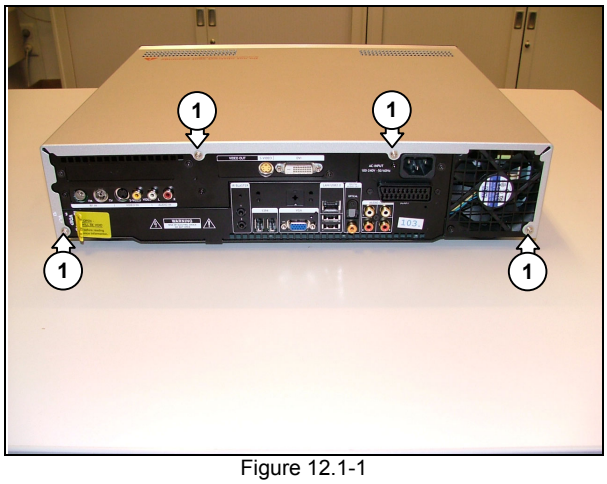


Figure 12.1-1

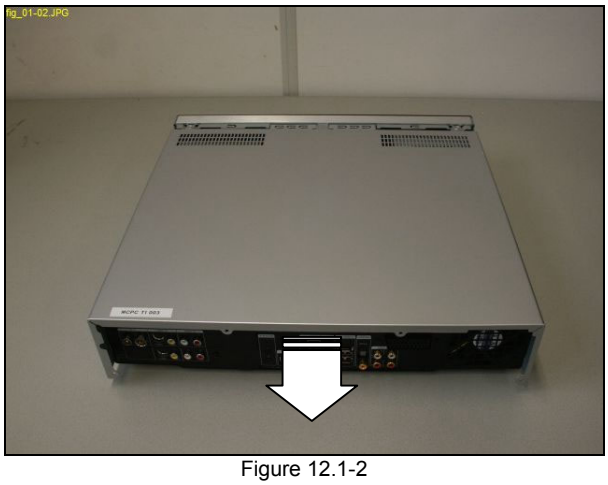


Figure 12.1-2

12.1.2. Top Cover Re-Assembly

To re-assemble the top cover, do all steps described in paragraph 12.1.1 in reverse order.

Note: The torque setting required for the top cover screws (1) is 8 kg-cm.

Note: Check the top cover for damage after re-assembly.

12.2. Main Bezel

12.2.1. Main Bezel Removal

1. Check the front of the MCP9360i for cosmetic damage. Make a note of any existing damage to the main bezel and ODD bezel.
2. Remove the top cover. See paragraph 12.1.1.
3. At the front of the MCP9360i insert a straightened paper clip into the access hole under the ODD tray.
4. Push the paper clip until the ODD tray (1) is unlocked. See Figure 12.2-1.
5. Carefully turn the MCP9360i over, so that the bottom side of the chassis is facing upwards.
6. Carefully pull the ODD tray out to gain access to the underside of the ODD bezel.
7. Release the 2 locking tabs (2), and remove the ODD bezel. See Figure 12.2-2.
8. Store the ODD bezel in a safe place.
9. Push the ODD tray in until it closes.
10. Turn the MCP9360i over, so that the topside of the chassis is facing upwards.
11. Remove the 2 countersunk screws (3). See Figure 12.2-3.
12. Release the main bezel upper locking tab (4). See Figure 12.2-3.
13. Pull the top of the main bezel forwards and downwards until the lower locking tabs disengage. See Figure 12.2-4.
14. Remove the main bezel from the chassis.
15. Store the main bezel in a safe place. Avoid touching the inside of the display window.

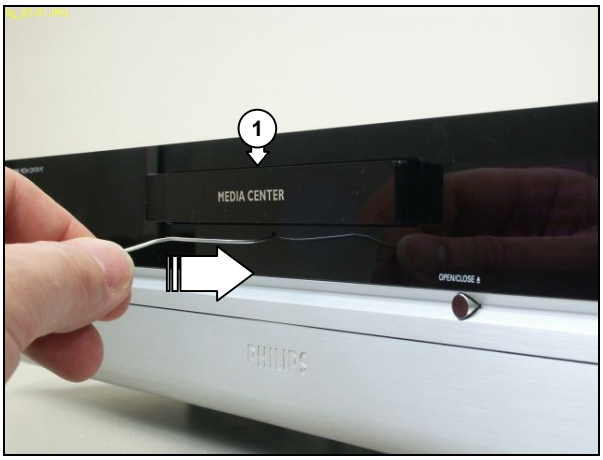


Figure 12.2-1

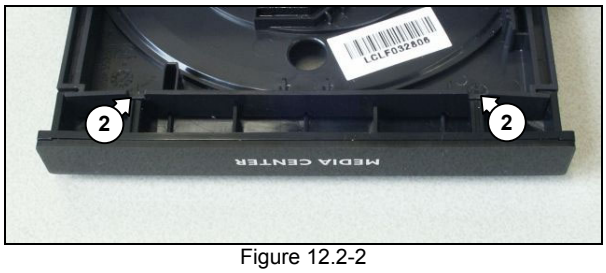


Figure 12.2-2

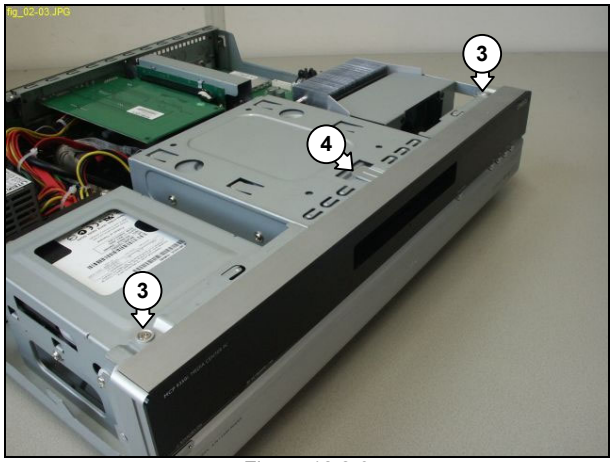


Figure 12.2-3

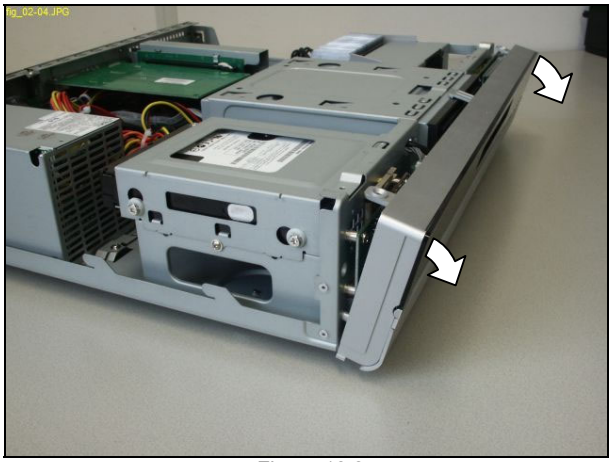


Figure 12.2-4

12.2.2. Main Bezel Re-Assembly

To re-assemble the main bezel, do all steps described in paragraph 12.2.1 in reverse order.

Note: Clean the MCP9360i before re-assembly.

Note: The torque setting required for the main bezel screws (3) is 8 kg-cm.

Note: Check the main bezel and the ODD bezel for cosmetic damage after re-assembly. Replace only when additional damage has been caused during the diagnosis and repair procedure.

12.3. HDD (Hard Disk Drive)

12.3.1. HDD Subassembly Removal

1. Remove the top cover. See paragraph 12.1.1.
2. Disconnect all cables (1) from the HDD. See Figure 12.3-1.
3. Remove the 2 mounting screws (2) from the HDD subassembly. See Figure 12.3-2.
4. Slide the HDD subassembly towards the left, until the locking tabs disengage.
5. Remove the HDD subassembly from the chassis.

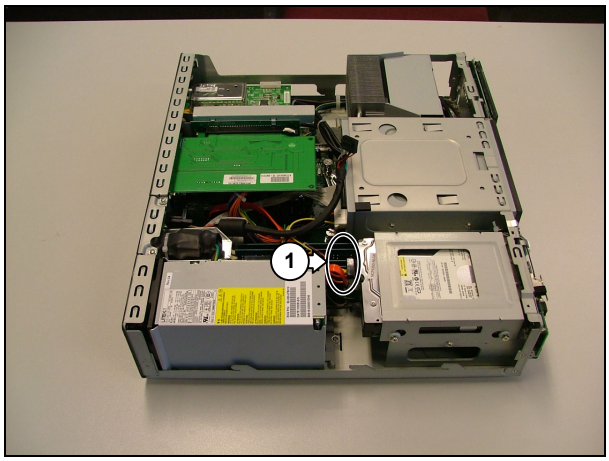


Figure 12.3-1

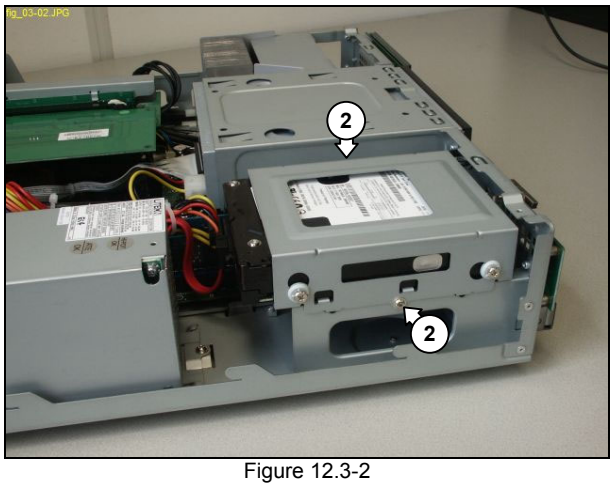


Figure 12.3-2

12.3.2. HDD Subassembly Re-Assembly

To re-assemble the HDD subassembly, do all steps described in 12.3.1 paragraph in reverse order.

Note: The torque setting required for the HDD subassembly mounting screws (2) is 8 kg-cm.

12.3.3. HDD Removal

1. Remove the HDD subassembly. See paragraph 12.3.1.
2. Remove the 4 mounting screws and bushes from the HDD.
3. Slide the HDD out of the HDD cage.

12.3.4. HDD Re-Assembly

To re-assemble the HDD, do all steps described in paragraph 12.3.4 in reverse order.

Note: The torque setting required for the HDD mounting screws is 4 kg-cm.

Note: There are no jumpers on the HDD that require configuration.

Note: When replacing a HDD a disc image must be installed on the new drive. See paragraph 13.

12.4. ODD (Optical Disk Drive)

12.4.1. ODD Removal

1. Remove the top cover. See paragraph 12.1.1.
2. Remove the main bezel. See paragraph 12.2.1.
3. Remove the HDD subassembly. See paragraph 12.3.1.
4. Disconnect all cables (1) from the ODD. See Figure 12.4-1.
5. Remove the 2 mounting screws (2) from the ODD. See Figure 12.4-2.
6. Remove the ODD from the chassis by sliding it out towards the front.

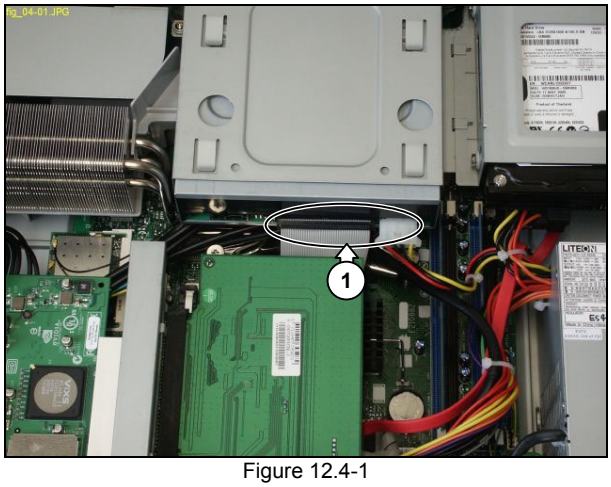


Figure 12.4-1

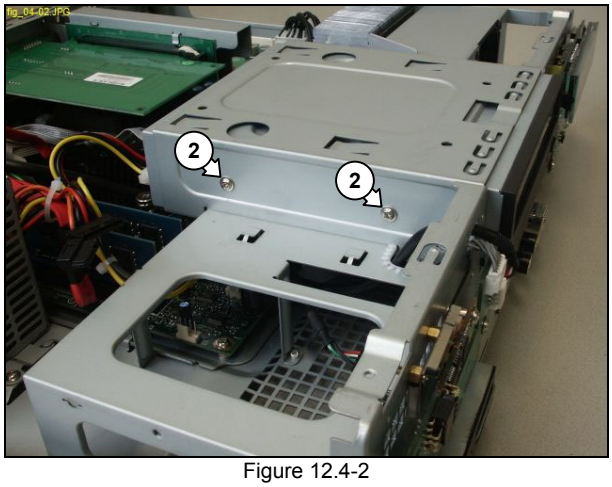


Figure 12.4-2

12.4.2. ODD Re-Assembly

To re-assemble the ODD, do all steps described in paragraph 12.4.1 in reverse order.

Note: The torque setting required for the ODD mounting screws (2) is 4 kg-cm.

Note: Before re-assembly make sure that the jumper (3) at the rear of the ODD is set to the Master position. See Figure 12.4-3

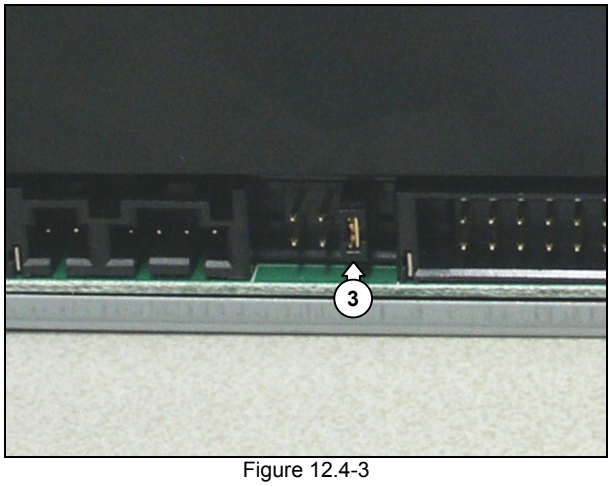


Figure 12.4-3

12.5. Riser Card

12.5.1. Riser Card Subassembly Removal

1. Remove the top cover. See paragraph 12.1.1.
2. Remove the 2 mounting screws (1) from the riser card subassembly. See Figure 12.5-1.
3. Push the locking tab arm (3) on the motherboard PCI-E connector to release the PCI-E riser card. See Figure 12.5-2.
4. Pull upwards on the riser card bracket (4) until the riser cards are free from the motherboard connectors. See Figure 12.5-2.
5. Disconnect the SCART cable (5) from the ADD2 Graphics card. See Figure 12.5-3.

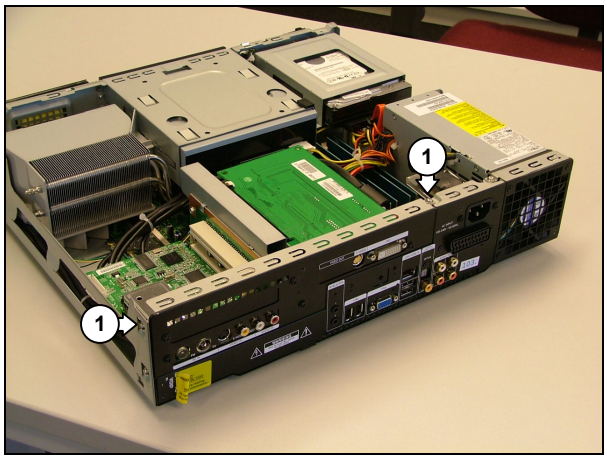


Figure 12.5-1

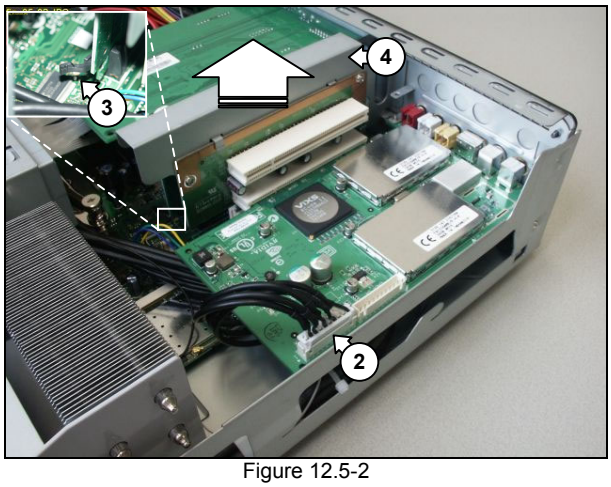


Figure 12.5-2

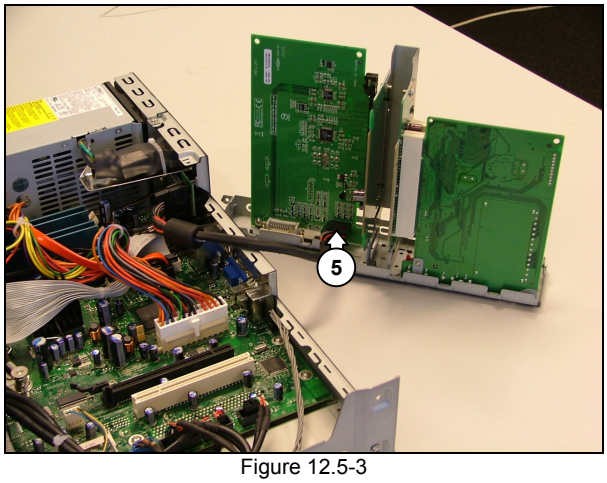


Figure 12.5-3

12.5.2. Riser Card Re-Assembly

To re-assemble the riser card subassembly, do all steps described in paragraph 12.5.1 in reverse order.

Note: The torque setting required for the riser card subassembly mounting screws (1) is 8 kg-cm.

12.6. ADD2 Graphics Card

12.6.1. ADD2 Graphics Card Removal

1. Remove the top cover. See paragraph 12.1.1.
2. Remove the riser card subassembly. See paragraph 12.5.1.
3. Remove the 4 mounting screws (1) from the riser card subassembly backplate. See Figure 12.6-1.
4. Remove the 2 screws (2) from the DVI connector. See Figure 12.6-2.
5. Remove the 2 mounting screws (3) from the PCI-E riser card. See Figure 12.6-3.
6. Remove the mounting screw (4) from the ADD2 Graphics card. See Figure 12.6-3.
7. Remove together the ADD2 Graphics card and the PCI-E riser card from the riser bracket.
8. Push the locking tab arm (5) on the PCI-E connector to release the ADD2 Graphics card. See Figure 12.6-4.
9. Pull the ADD2 Graphics card free from the PCI-E riser card connector.

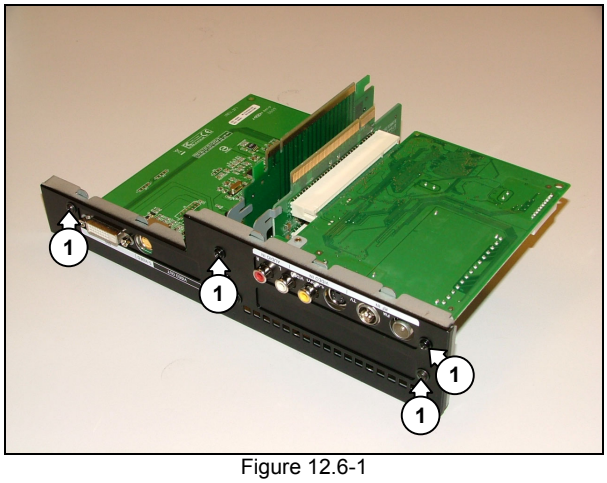


Figure 12.6-1

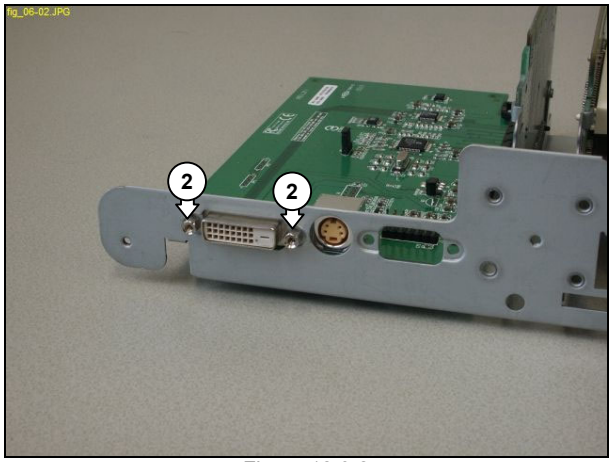


Figure 12.6-2

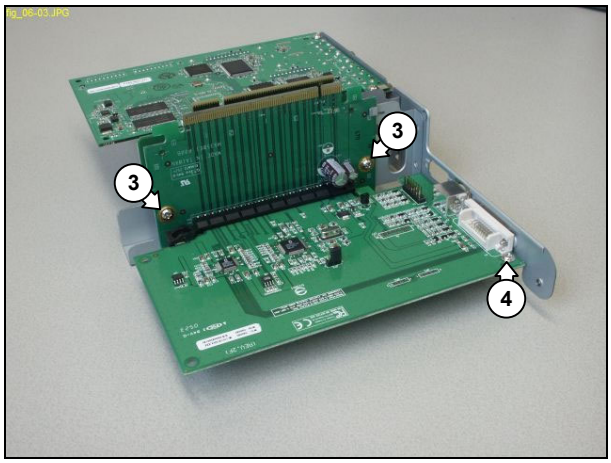


Figure 12.6-3

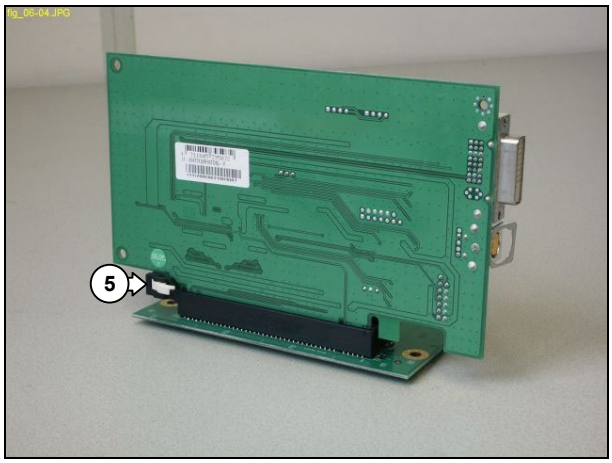


Figure 12.6-4

12.6.2. ADD2 Graphics Card Re-Assembly

To re-assemble the ADD2 Graphics card, do all steps described in paragraph 12.6.1 in reverse order.

Note: The torque setting required for the ADD2 Graphics card mounting screw (4) is 6 kg-cm.
The torque setting required for the PCI-E riser card mounting screws (3) is 6 kg-cm.
The torque setting required for the DVI connector screws (2) is 6 kg-cm.
The torque setting required for the riser card backplate mounting screws (1) is 8 kg-cm.

12.7. TV Tuner Card

12.7.1. TV Tuner Card Removal

1. Remove the top cover. See paragraph 12.1.1.
2. Remove the riser card subassembly. See paragraph 12.5.1.
3. Remove the 4 mounting screws (1) from the riser card subassembly backplate. See Figure 12.7-1.
4. Remove the 2 mounting screws (2) from the PCI riser card. See Figure 12.7-2.
5. Remove the 2 mounting screws (3) from the TV tuner card. See Figure 12.7-3.
6. Remove together the TV tuner card and the PCI riser card from the riser bracket.
7. Pull the TV tuner card free from the PCI riser card connector.

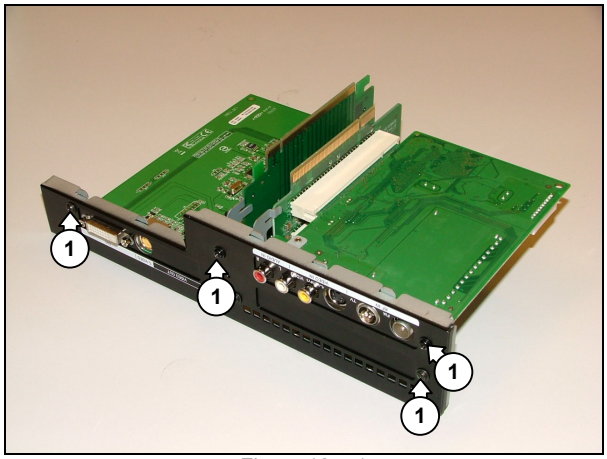


Figure 12.7-1

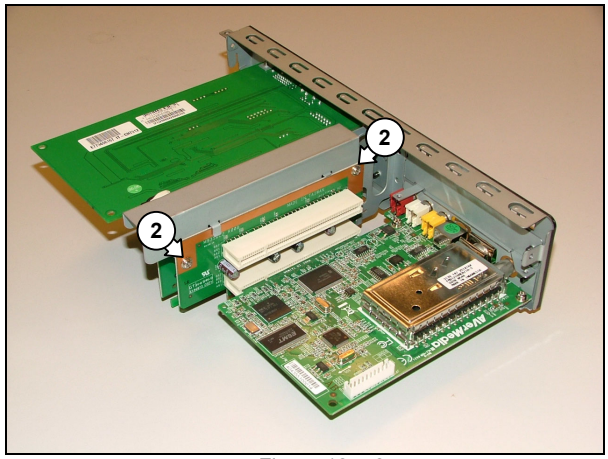


Figure 12.7-2

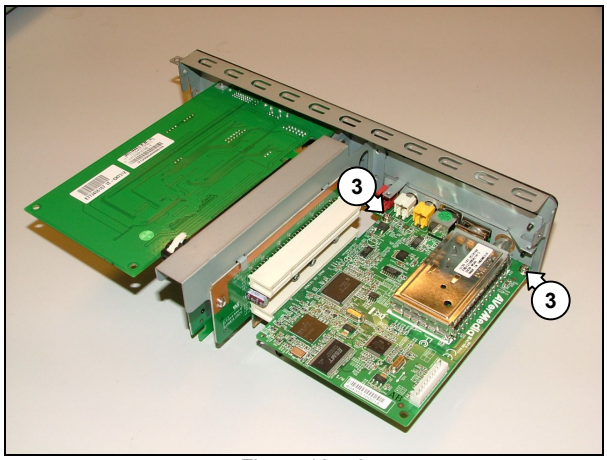


Figure 12.7-3

12.7.2. TV Tuner Card Re-Assembly

To re-assemble the TV tuner card, do all steps described in paragraph 12.7.1 in reverse order.

Note: Make sure that the TV tuner card is inserted into the correct connector on the PCI riser card.

Note: The torque setting required for the TV tuner card mounting screws (3) is 6 kg-cm.
The torque setting required for the PCI riser card mounting screws (2) is 6 kg-cm.
The torque setting required for the riser card backplate mounting screws (1) is 8 kg-cm.

12.8. WLAN Card & Antenna

12.8.1. WLAN Card Removal

1. Remove the top cover. See paragraph 12.1.1.
2. Remove the riser card subassembly. See paragraph 12.5.1.
3. Disconnect the antenna cables (1) from the WLAN card. See Figure 12.8-1.
4. Push the 2 locking tabs (2) outwards to release the WLAN card. See Figure 12.8-1.
5. Remove the WLAN card from the motherboard.

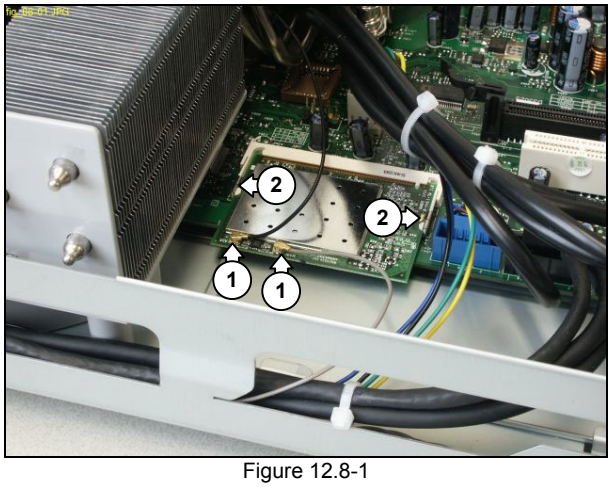


Figure 12.8-1

12.8.2. WLAN Card Re-Assembly

To re-assemble the WLAN card, do all steps described in paragraph 12.8.1 in reverse order.

12.8.3. Right Wireless Antenna Removal

1. Remove the top cover. See paragraph 12.1.1.
2. Remove the main bezel. See paragraph 12.2.1.
3. Remove the riser card subassembly. See paragraph 12.5.1.
4. Remove the ODD. See paragraph 12.4.1.
5. Remove the CPU heat sink. See paragraph 12.14.1.
6. Remove the 2 mounting screws (3) from the CPU fan. See Figure 12.8-2.
7. Remove the 4 mounting screws (4) from the VFD board. See Figure 12.8-2.
8. Move the CPU fan aside to gain access to the antenna cable.
9. Release the right antenna cable from the cable clips (5). See Figure 12.8-3.
10. Move the VFD board aside to gain access to the antenna mounting screws.
11. Remove the 2 mounting screws (6) from the antenna. See Figure 12.8-4.
12. Disconnect the right antenna cable from the WLAN card.
13. Remove the antenna from the chassis.

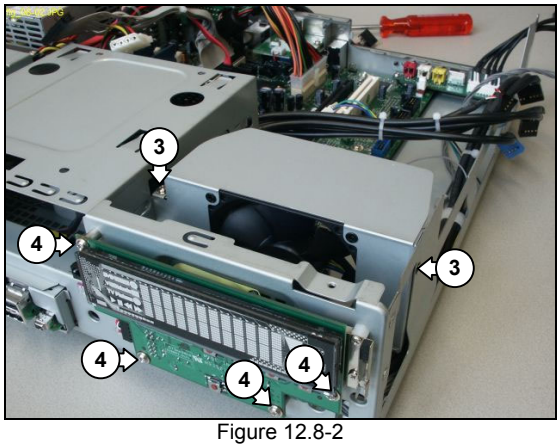


Figure 12.8-2

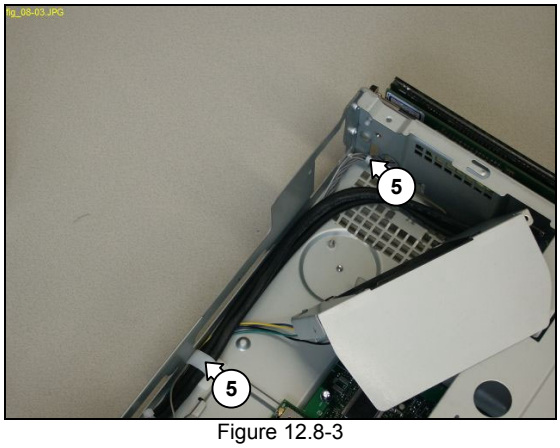


Figure 12.8-3

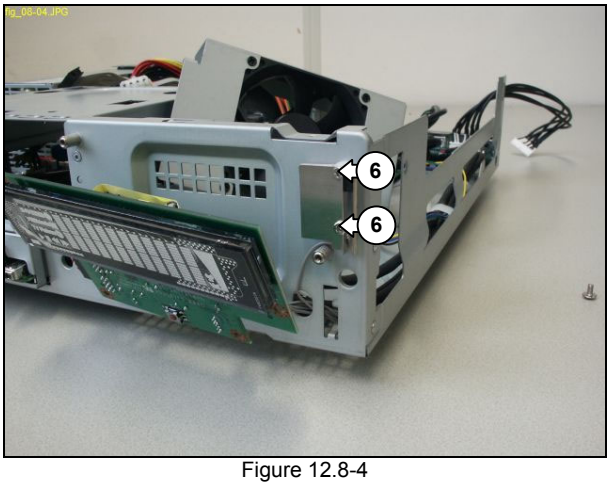


Figure 12.8-4

12.8.4. Right Wireless Antenna Re-Assembly

To re-assemble the right wireless antenna, do all steps described in paragraph 12.8.3 in reverse order.

Note: The torque setting required for the antenna mounting screws (6) is 2 kg-cm.
The torque setting required for the VFD mounting screws (4) is 6 kg-cm.
The torque setting required for the CPU fan mounting screws (3) is 8 kg-cm.

12.8.5. Left Wireless Antenna Removal

1. Remove the top cover. See paragraph 12.1.1.
2. Remove the main bezel. See paragraph 12.2.1.
3. Remove the HDD subassembly. See paragraph 12.3.1.
4. Remove the ODD. See paragraph 12.4.1.
5. Remove the riser card subassembly. See paragraph 12.5.1.
6. Remove the 2 mounting screws (7) from the antenna. See Figure 12.8-5.
7. Disconnect the left antenna cable from the WLAN card.
8. Remove the antenna from the chassis.

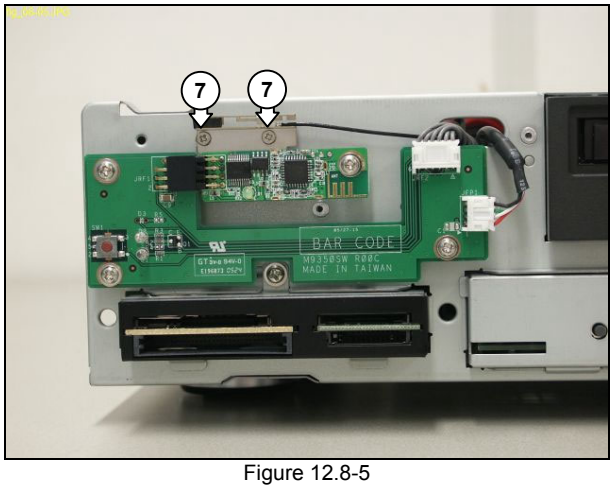


Figure 12.8-5

12.8.6. Left Wireless Antenna Re-Assembly

To re-assemble the left wireless antenna, do all steps described in paragraph 12.8.5 in reverse order.

Note: The torque setting required for the antenna mounting screws (7) is 2 kg-cm.

12.9. SW Board & RF Receiver

12.9.1. SW Board & RF Receiver Removal

1. Remove the top cover. See paragraph 12.1.1.
2. Remove the main bezel. See paragraph 12.2.1.
3. Disconnect all cables (1) from the SW board & RF receiver. See Figure 12.9-1.
4. Remove the 4 mounting screws (2) from the SW board & RF receiver. See Figure 12.9-1.
5. Remove the SW board & RF receiver from the chassis.

Note: The RF receiver may be removed from the SW board by carefully pulling it out of its connector.

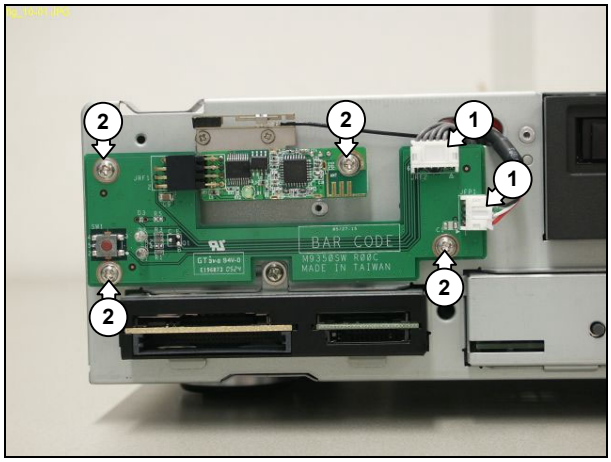


Figure 12.9-1

12.9.2. SW Board & RF Receiver Board Re-Assembly

To re-assemble the SW board & RF receiver, do all steps described in paragraph 12.9.1 in reverse order.

Note: The torque setting required for the SW board & RF receiver mounting screws (2) is 6 kg-cm.

12.10. Card Reader

12.10.1. Card Reader Subassembly Removal

1. Remove the top cover. See paragraph 12.1.1.
2. Remove the main bezel. See paragraph 12.2.1.
3. Remove the HDD subassembly. See paragraph 12.3.1.
4. Disconnect the cable (1) from the rear of the card reader board. See Figure 0-1.
5. Remove the mounting screw (2) from the card reader subassembly. See Figure 0-2.
6. Slide the card reader subassembly out from the chassis and remove it.

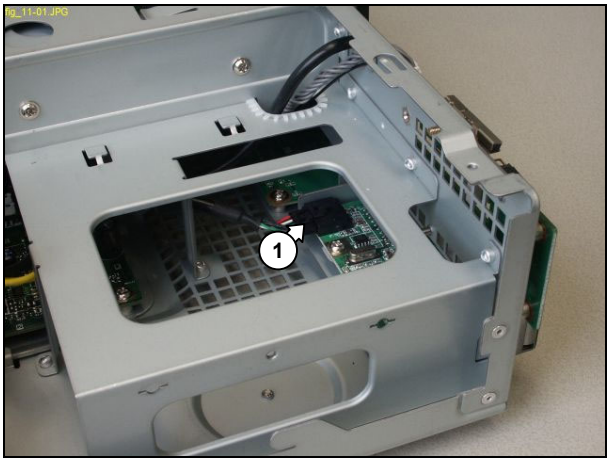


Figure 0-1

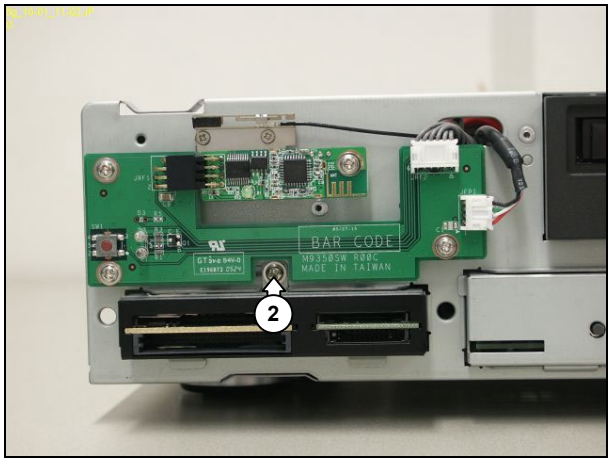


Figure 0-2

12.10.2. Card Reader Subassembly Re-Assembly

To re-assemble the card reader subassembly, do all steps described in paragraph 12.10.1 in reverse order.

Note: The torque setting required for the card reader subassembly mounting screw (2) is 6 kg-cm.

12.10.3. Card Reader Board Removal

1. Remove the card reader subassembly. See paragraph 12.10.1.
2. Remove the 3 mounting screws (3) from the card reader board. See Figure 0-3.
3. Remove the card reader board from the card reader cage.

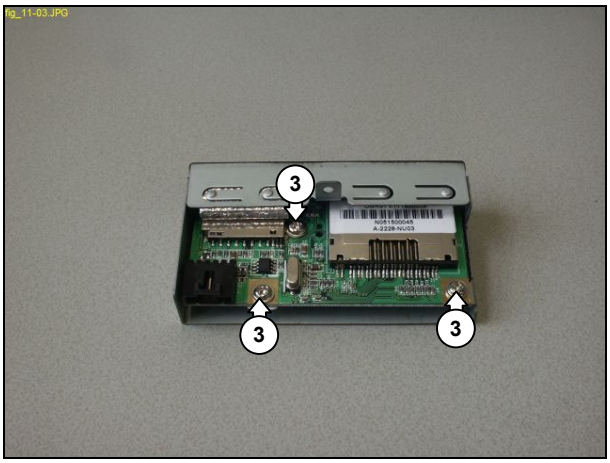


Figure 0-3

12.10.4. Card Reader Board Re-Assembly

To re-assemble the card reader board, do all steps described in paragraph 12.10.3 in reverse order.

Note: The torque setting required for the card reader board mounting screws (3) is 6 kg-cm.

12.11. FP I/O Board

12.11.1. FP I/O Board Subassembly Removal

1. Remove the top cover. See paragraph 12.1.1.
2. Remove the main bezel. See paragraph 12.2.1.
3. Remove the HDD subassembly. See paragraph 12.3.1.
4. Remove the ODD. See paragraph 12.4.1.
5. Remove the riser card subassembly. See paragraph 12.5.1.
6. Remove the 2 cable ties (1) to allow some slack in the cables connected to the FP board. See Figure 12.11-1.
7. Remove the mounting screw (2) from the FP I/O board subassembly. See Figure 12.11-2.
8. Slide the FP I/O board subassembly out from the chassis.
9. Disconnect all cables (3) from the rear of the FP I/O board. See Figure 12.11-3.
10. Remove the FP I/O board.

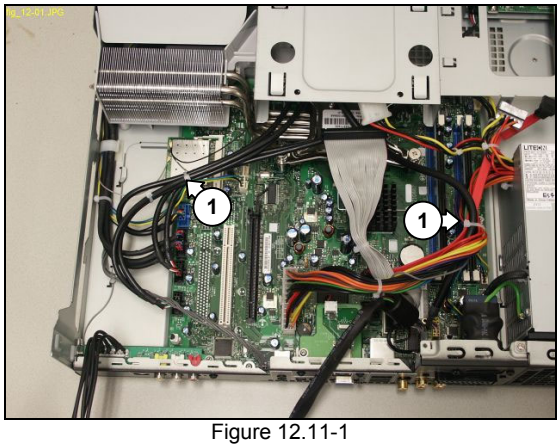


Figure 12.11-1

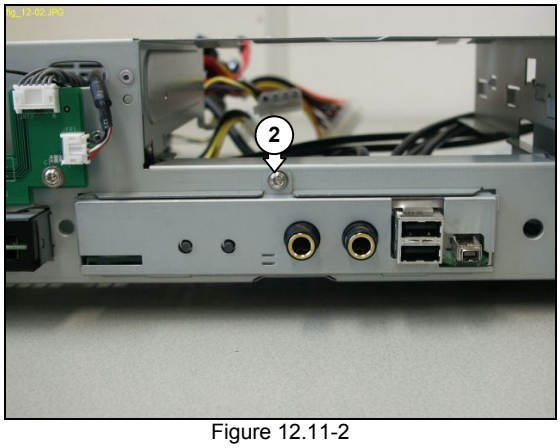


Figure 12.11-2

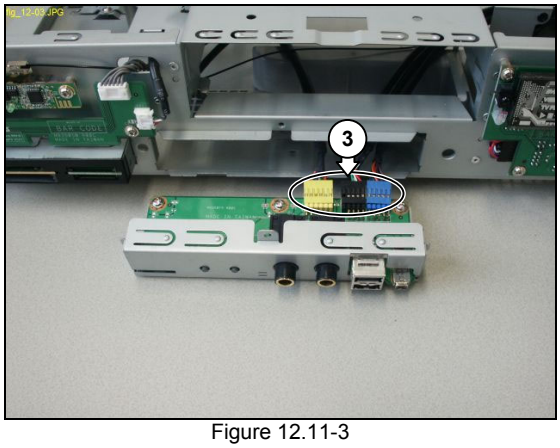


Figure 12.11-3

12.11.2. FP I/O Board Subassembly Re-Assembly

To re-assemble the FP I/O board subassembly, do all steps described in paragraph 12.11.1 in reverse order.

Note: The torque setting required for the FP I/O board subassembly mounting screw (2) is 8 kg-cm.

Note: Fit replacement cable ties after re-assembly.

12.11.3. FP I/O Board Replacement

1. Remove the FP I/O board subassembly. See paragraph 12.11.1.
2. Remove the 3 mounting screws (4) from the FP I/O board. See Figure 12.11-4.
3. Remove the FP I/O board from the FP I/O board cage.

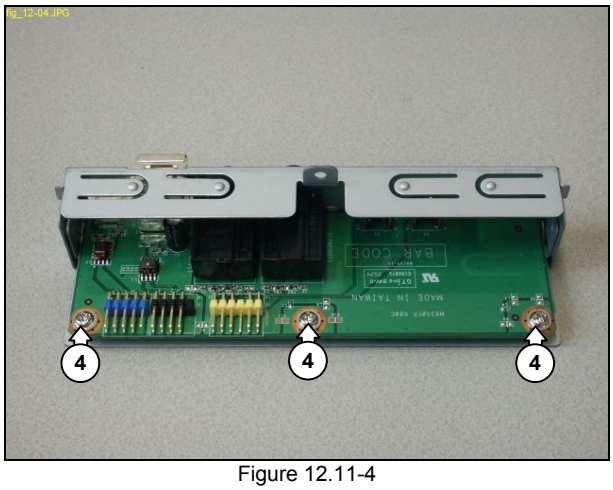


Figure 12.11-4

12.11.4. FP I/O Board Re-Assembly

To re-assemble the FP I/O board, do all steps described in paragraph 12.11.3 in reverse order.

Note: The torque setting required for the FP I/O board mounting screws (4) is 6 kg-cm.

12.12. VFD Board

12.12.1. VFD Board Removal

1. Remove the top cover. See paragraph 12.1.1.
2. Remove the main bezel. See paragraph 12.2.1.
3. Remove the 2 mounting screws (1) from the CPU fan subassembly. See Figure 12.12-1.
4. Move the CPU fan aside to allow some slack in the cables connected to the VFD board. See Figure 12.12-2.
5. Remove the 4 mounting screws (2) from the VFD board. See Figure 12.12-3.
6. Carefully pull the VFD Board away from the chassis to gain access to the cable connectors.
7. Disconnect all cables from the VFD board.
8. Remove the VFD board.

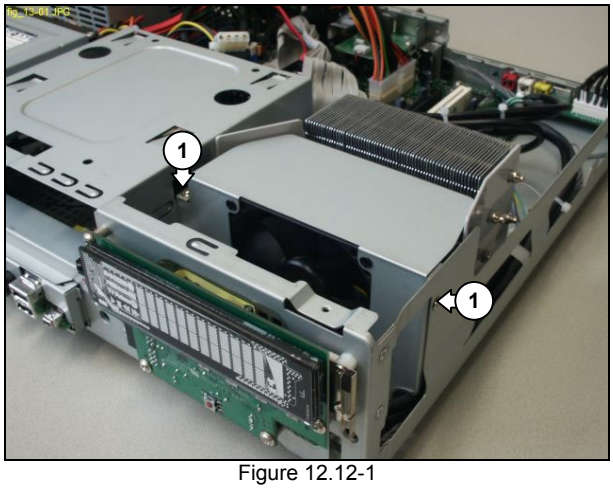


Figure 12.12-1

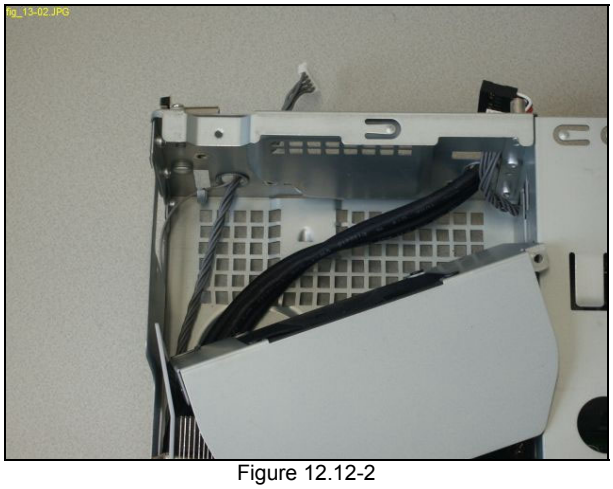


Figure 12.12-2

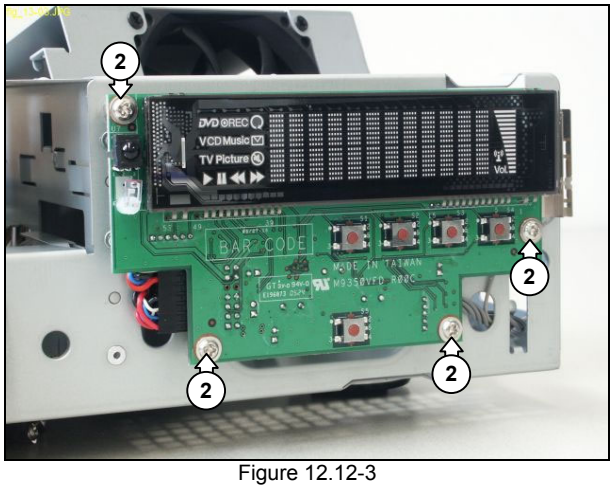


Figure 12.12-3

12.12.2. VFD Board Re-Assembly

To re-assemble the VFD board, do all steps described in paragraph 12.12.1 in reverse order.

Note: The torque setting required for the VFD board mounting screws (2) is 6 kg-cm.
The torque setting required for the CPU fan subassembly mounting screws (1) is 8 kg-cm.

Note: Make sure all cables are correctly routed during re-assembly.

12.13. PSU

12.13.1. PSU Removal

1. Remove the top cover. See paragraph 12.1.1.
2. Remove the main bezel. See paragraph 12.2.1.
3. Remove the HDD subassembly. See paragraph 12.3.1.
4. Remove the ODD. See paragraph 12.4.1.
5. Remove the riser card subassembly. See paragraph 12.5.1.
6. Remove the CPU heat sink. See paragraph 12.14.1.
7. Remove the motherboard subassembly. See paragraph 12.15.1.
8. Remove cable ties (1) from the PSU cables. See Figure 12.13-1.
9. Remove the mounting screw (2) from the PSU. See Figure 12.13-2.
10. Slide the PSU towards the front of the chassis to release it from the locking tabs.
11. Remove the PSU from the chassis.

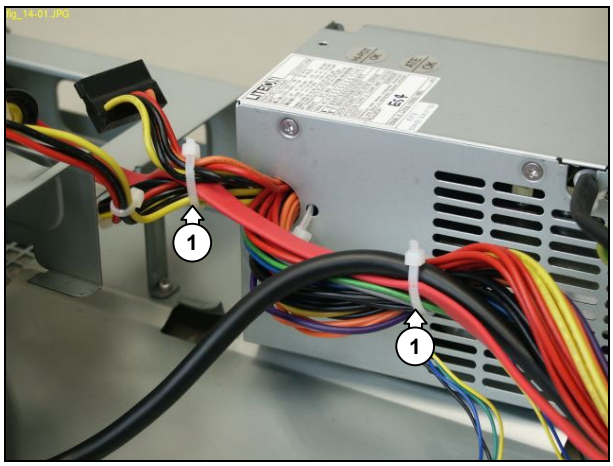


Figure 12.13-1

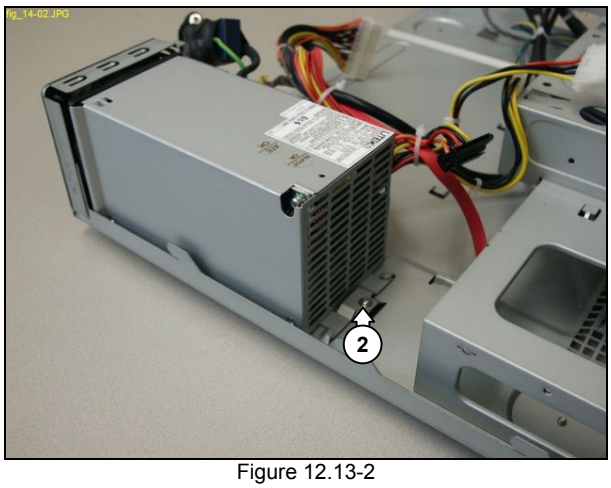


Figure 12.13-2

12.13.2. PSU Re-Assembly

To re-assemble the PSU, do all steps described in paragraph 12.13.1 in reverse order.

Note: The torque setting required for the PSU mounting screw (2) is 8 kg-cm.

Note: Fit replacement cable ties after re-assembly.

12.13.3. PSU Fan Removal

1. Remove the top cover. See paragraph 12.1.1.
2. Remove the HDD subassembly. See paragraph 12.3.1.
3. Remove the riser card subassembly. See paragraph 12.5.1.
4. Remove cable ties (1) from the PSU cables. See Figure 12.13-1.
5. Remove the mounting screw (2) from the PSU. See Figure 12.13-2.
6. Disconnect the PSU fan cable (3) from the motherboard. See Figure 12.13-3.
7. Remove the 2 mounting screws (4) from the AC input. See Figure 12.13-4.
8. Slide the PSU towards the front of the chassis to gain access to the PSU fan. See Figure 12.13-5.
9. Remove the 3 mounting screws (5) from the PSU fan. See Figure 12.13-6.
10. Remove the PSU fan from the chassis.

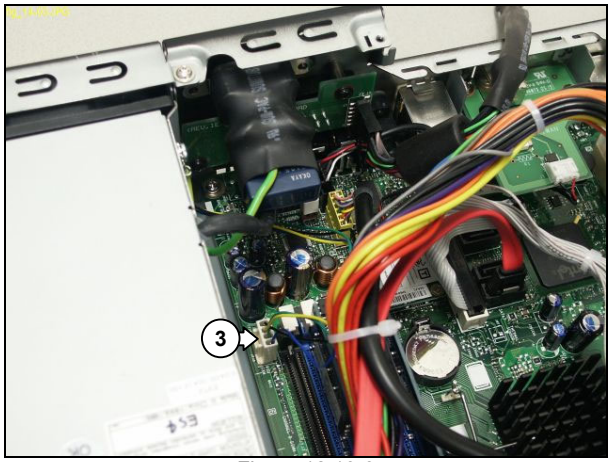


Figure 12.13-3

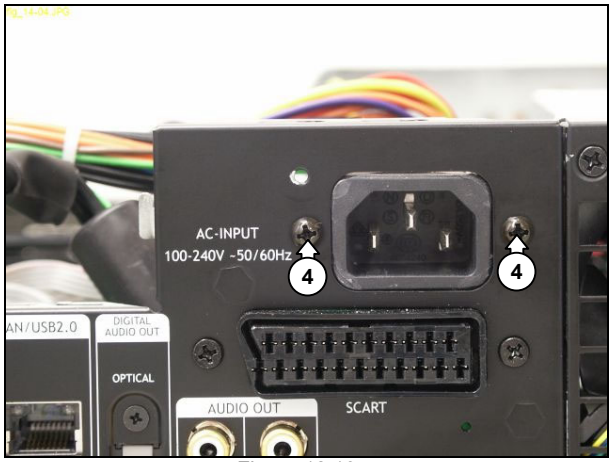


Figure 12.13-4

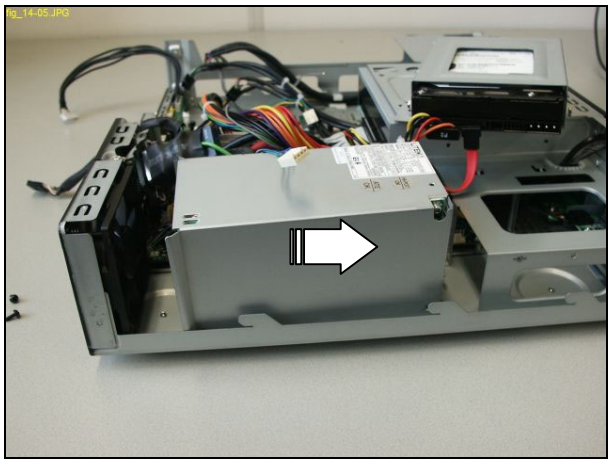


Figure 12.13-5

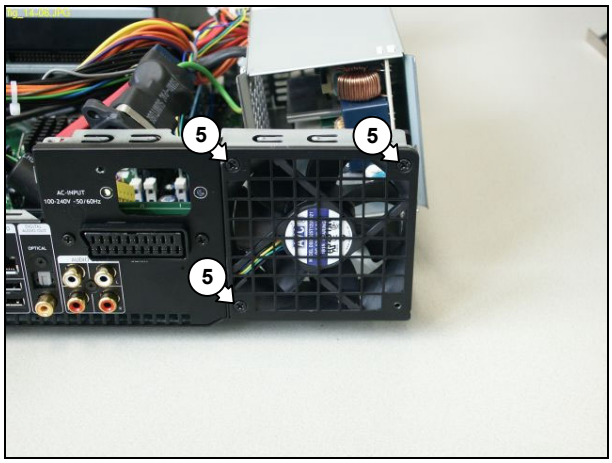


Figure 12.13-6

12.13.4. PSU Fan Re-Assembly

To re-assemble the PSU fan, do all steps described in paragraph 12.13.3 in reverse order.

Note: The torque setting required for the PSU fan mounting screws (5) is 8 kg-cm.
The torque setting required for the AC input mounting screws (4) is 6 kg-cm.
The torque setting required for the PSU mounting screw (2) is 8 kg-cm.

Note: Make sure that the 3 PSU fan mounting screws (5) are placed in the correct holes. Refer to Figure 12.13-6.

Note: Fit replacement cable ties after re-assembly.

12.14. CPU Heat Sink

12.14.1. CPU Heat Sink Removal

1. Remove the top cover. See paragraph 12.1.1.
2. Remove the main bezel. See paragraph 12.2.1.
3. Remove the HDD subassembly. See paragraph 12.3.1.
4. Remove the ODD. See paragraph 12.4.1.
5. Remove the riser card subassembly. See paragraph 12.5.1.
6. Disconnect the 3 USB cables (1) from the motherboard. See Figure 12.14-1.
7. Disconnect the 1394 cable (2) from the motherboard. See Figure 12.14-1.
8. Disconnect the CPU fan cable (3) from the motherboard. See Figure 12.14-1.
9. Disconnect the left WLAN antenna cable (4) from the WLAN card. See Figure 12.14-2.
10. Move the cables aside to allow access to the CPU heat sink.
11. Undo the 4 mounting screws (5) of the CPU heat sink. See Figure 12.14-3.
12. Remove the CPU heat sink and duct from the motherboard, taking care not to catch any cables.

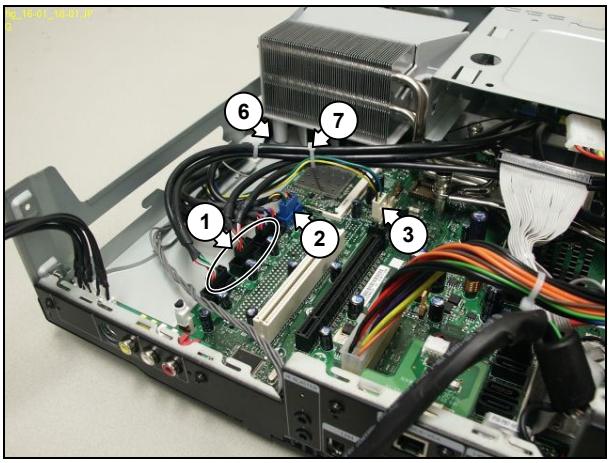


Figure 12.14-1

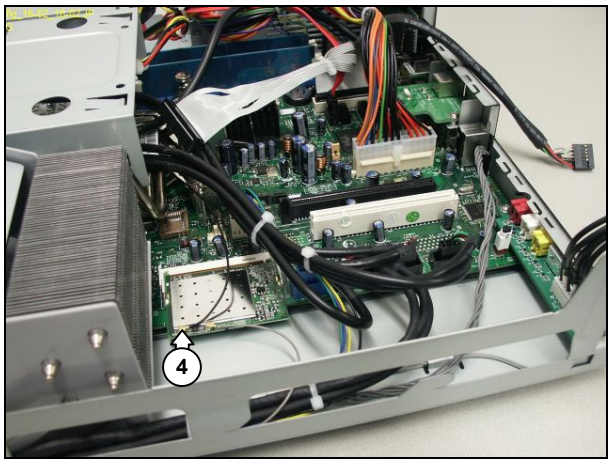


Figure 12.14-2

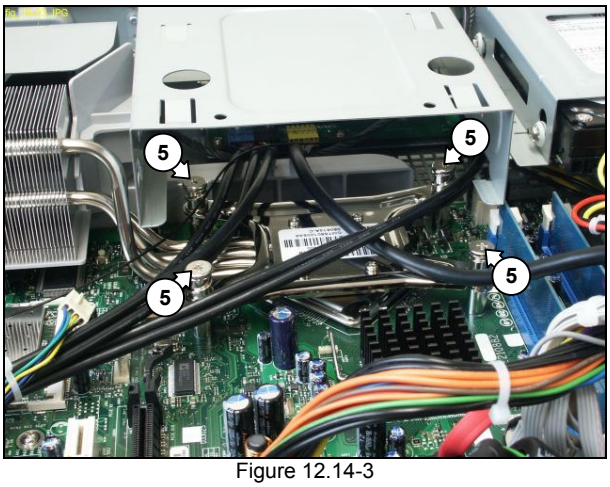


Figure 12.14-3

12.14.2. CPU Heat Sink Re-Assembly

To re-assemble the CPU heat sink, do all steps described in paragraph 12.14.1 in reverse order.

Note: Remove and re-apply fresh thermal compound between the CPU and the heat sink.

Note: Make sure that the CPU heat sink duct is correctly seated on the chassis locating point (6). See Figure 12.14-1.

Note: The torque setting required for the CPU heat sink mounting screws (5) is 6 kg-cm.

12.14.3. CPU Fan Subassembly Removal

1. Remove the CPU heat sink. See paragraph 12.14.1.
2. Remove the cable tie (7) from the CPU fan cable. See Figure 12.14-1.
3. Remove the 2 mounting screws (8) from the CPU fan subassembly. See Figure 12.14-4.
4. Remove the CPU fan cable from the cable clip (9). See Figure 12.14-5.
5. Remove the CPU fan subassembly from the chassis.

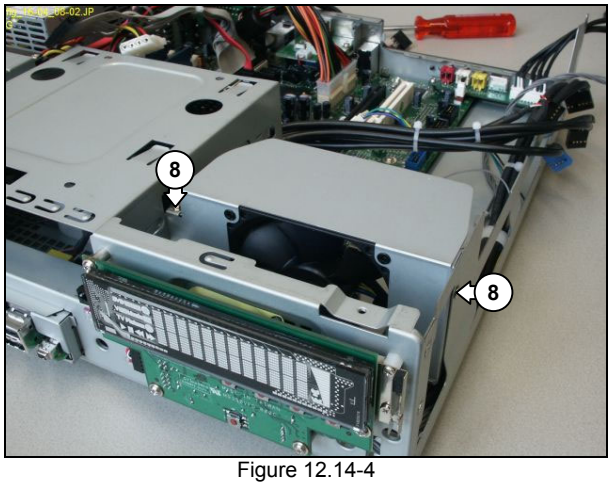


Figure 12.14-4

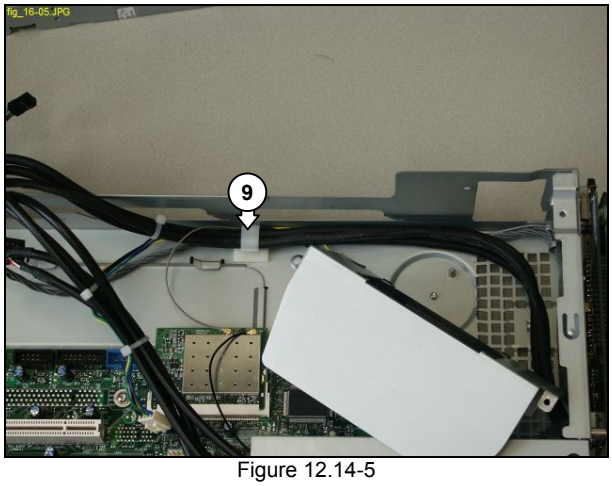


Figure 12.14-5

12.14.4. CPU Fan Subassembly Re-Assembly

To re-assemble the CPU fan subassembly, do all steps described in paragraph 12.14.3 in reverse order.

Note: The torque setting required for the CPU fan subassembly mounting screws (8) is 8 kg-cm.

Note: Cables must be re-assembled into the cable clip in the following order: right WLAN antenna cable, CPU fan cable, IR blaster cable, and VFD USB cable.

Note: Fit replacement cable ties after re-assembly.

12.14.5. CPU Fan Removal

1. Remove the CPU fan subassembly. See paragraph 12.14.1.
2. Remove the 4 mounting screws (10) from the CPU fan. See Figure 12.14-6.
3. Remove the fan from the CPU fan cage.

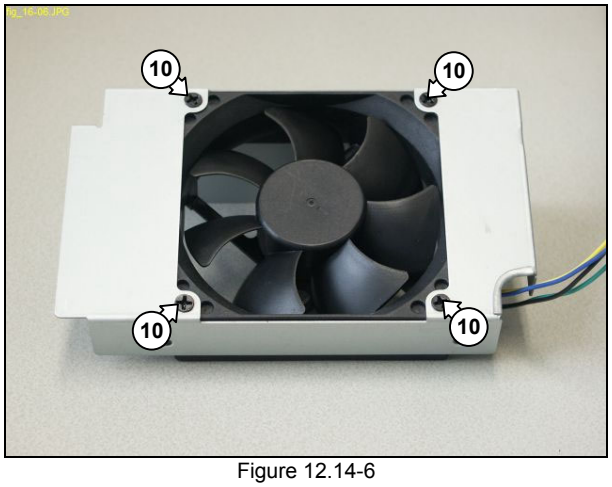


Figure 12.14-6

12.14.6. CPU Fan Re-Assembly

To re-assemble the CPU fan, do all steps described in paragraph 12.14.5 in reverse order.

Note: The torque setting required for the CPU fan mounting screws (10) is 8 kg-cm.

12.15. Motherboard

12.15.1. Motherboard Subassembly Removal

1. Remove the top cover. See paragraph 12.1.1.
2. Remove the main bezel. See paragraph 12.2.1.
3. Remove the HDD subassembly. See paragraph 12.3.1.
4. Remove the ODD. See paragraph 12.4.1.
5. Remove the riser card subassembly. See paragraph 12.5.1.
6. Remove the CPU heat sink. See paragraph 12.14.1.
7. Disconnect the 3 USB cables (1) from the motherboard. See Figure 12.15-1.
8. Disconnect the 1394 cable (2) from the motherboard. See Figure 12.15-1.
9. Disconnect the CPU fan cable (3) from the motherboard. See Figure 12.15-1.
10. Disconnect the WLAN antenna cables (4) from the WLAN card. See Figure 12.15-2.
11. Disconnect the IR blaster cable (5) from the motherboard. See Figure 12.15-2.
12. Disconnect the PSU main power cable (6) from the motherboard. See Figure 12.15-2.
13. Disconnect the FP audio cable (7) from the motherboard. See Figure 12.15-3.
14. Disconnect the PSU fan cable (8) from the motherboard. See Figure 12.15-3.
15. Disconnect the ATA33 cable (9) from the motherboard. See Figure 12.15-3.
16. Disconnect the SATA cable (10) from the motherboard. See Figure 12.15-3.
17. Remove the 2 mounting screws (11) from the AC input. See Figure 12.15-4.
18. Move the cables aside to allow clear access to the motherboard subassembly. See Figure 12.15-5.
19. Remove the 2 mounting screws (12) from the motherboard subassembly. See Figure 12.15-5.
20. Slide the motherboard subassembly towards the rear of the chassis. See Figure 12.15-6.
21. Disconnect the PSU +12V cable (13) from the motherboard. See Figure 12.15-6.
22. Remove the motherboard subassembly from the chassis.

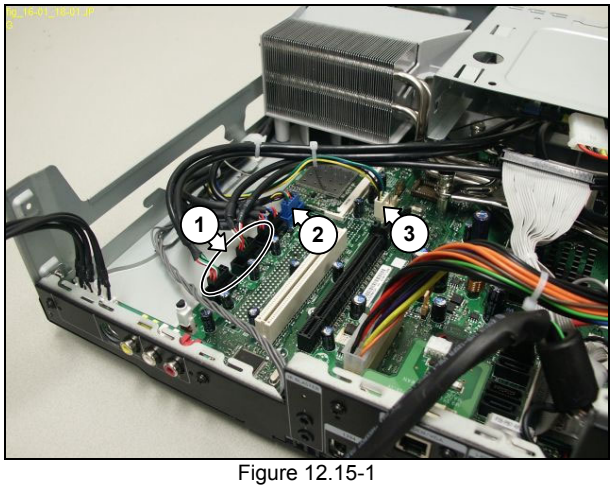


Figure 12.15-1

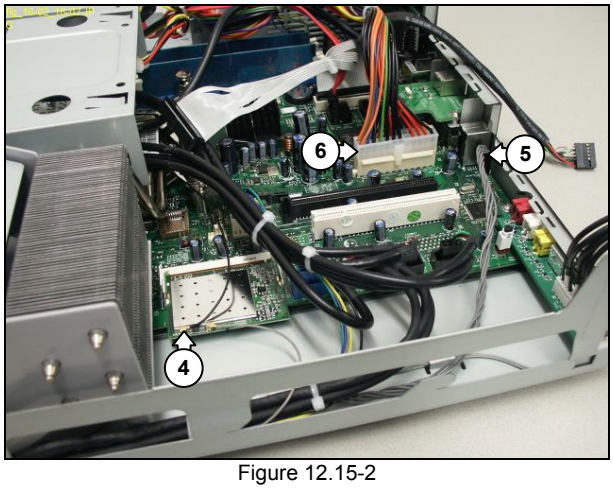


Figure 12.15-2

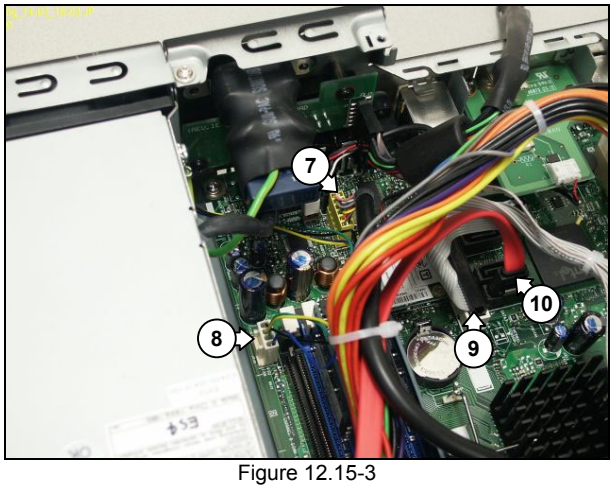


Figure 12.15-3

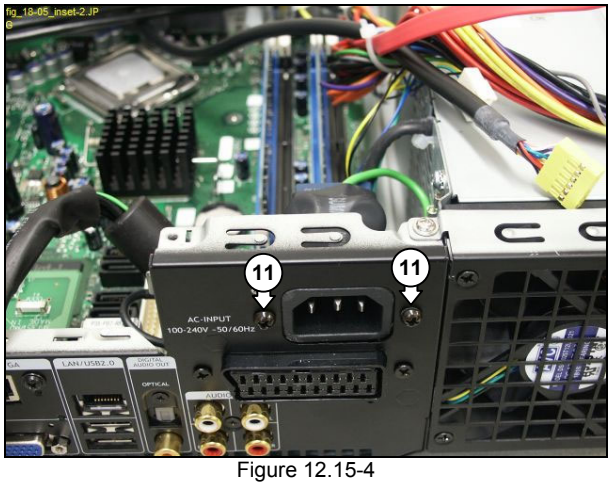


Figure 12.15-4

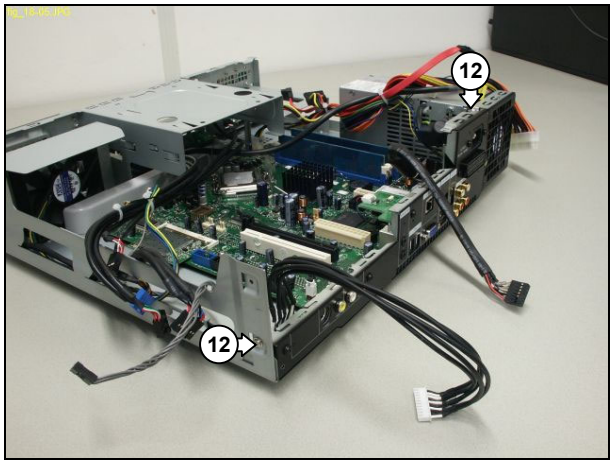


Figure 12.15-5

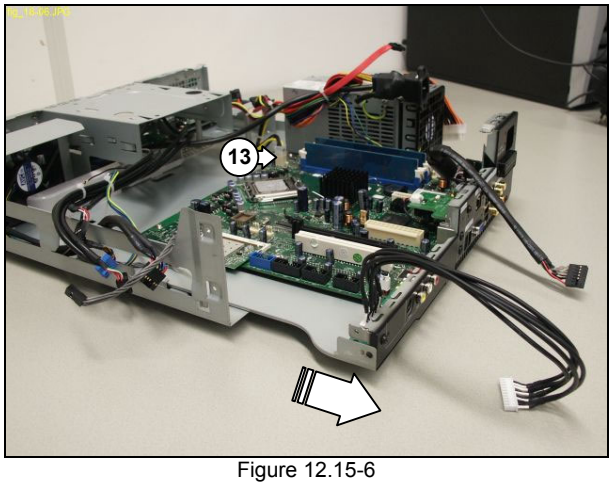


Figure 12.15-6

12.15.2. Motherboard Subassembly Re-Assembly

To re-assemble the motherboard subassembly, do all steps described in paragraph 12.15.1 in reverse order.

Note: The torque setting required for the motherboard subassembly mounting screws (12) is 8 kg-cm.
The torque setting required for the AC input mounting screws (11) is 6 kg-cm.

Note: Remove and re-apply fresh thermal transfer compound between the CPU and the heat sink.

12.15.3. SCART Daughterboard Removal

1. Remove the motherboard subassembly. See paragraph 12.15.1.
2. Disconnect the ADD2 SCART cable (14) from the motherboard. See Figure 12.15-7.
3. Disconnect the ADD2 SCART cable (15) from the SCART daughterboard. See Figure 12.15-7.
4. Remove the 2 mounting screws (16) from the SCART daughterboard. See Figure 12.15-7.
5. Remove the 2 mounting screws (17) from the SCART connector. See Figure 12.15-8.
6. Remove the SCART daughterboard from the chassis.

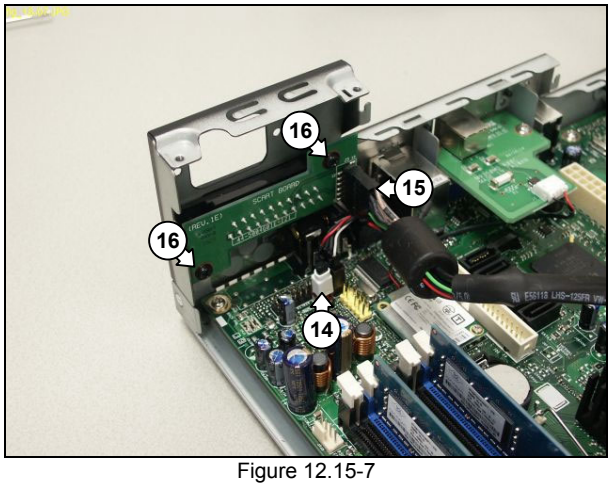


Figure 12.15-7

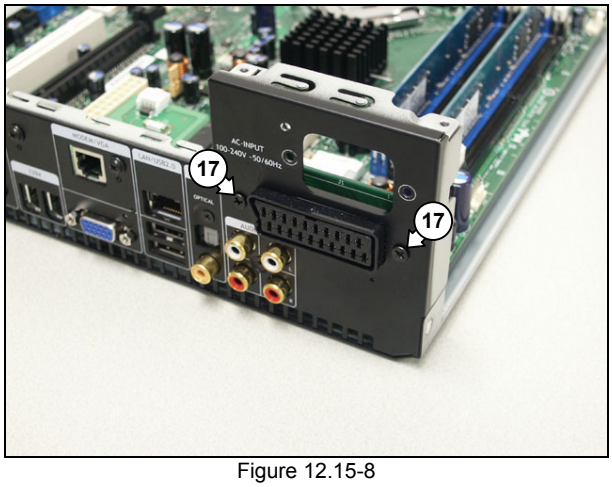


Figure 12.15-8

12.15.4. SCART Daughterboard Re-Assembly

To re-assemble the SCART daughterboard, do all steps described in paragraph 12.15.3 in reverse order.

Note: The torque setting required for the SCART connector mounting screws (17) is 4 kg-cm.
The torque setting required for the SCART daughterboard mounting screws (16) is 6 kg-cm.

12.15.5. CPU Replacement

1. Remove the motherboard subassembly. See paragraph 12.15.1.
2. Release the CPU mounting clamp (18). See Figure 12.15-9.
3. Remove the CPU from the socket.

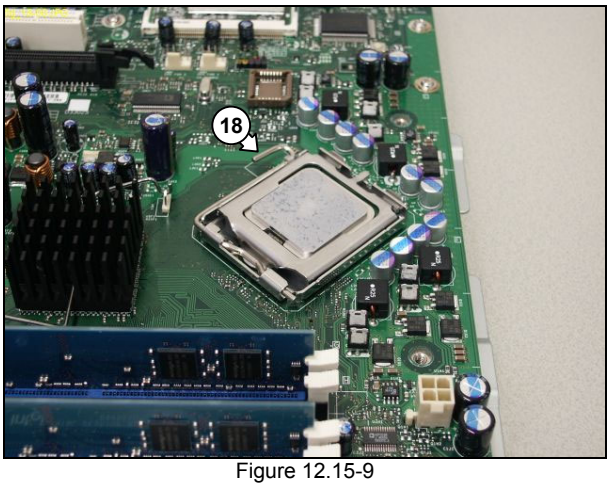


Figure 12.15-9

12.15.6. CPU Re-Assembly

To re-assemble the CPU, do all steps described in paragraph 12.15.5 in reverse order.

Note: Apply thermal transfer compound between the CPU and the heat sink.

12.15.7. DIMM Replacement

1. Remove the motherboard subassembly. See paragraph 12.15.1.
2. Release the retaining clips (19) on the DIMM connector. See Figure 12.15-10.
3. Remove the DIMM from the motherboard.

Note: When a specific DIMM has been identified as faulty by a software test make sure that you can match the identification to the relevant DIMM connector on the motherboard. See Figure 12.15-11 for information on DIMM connector identification.

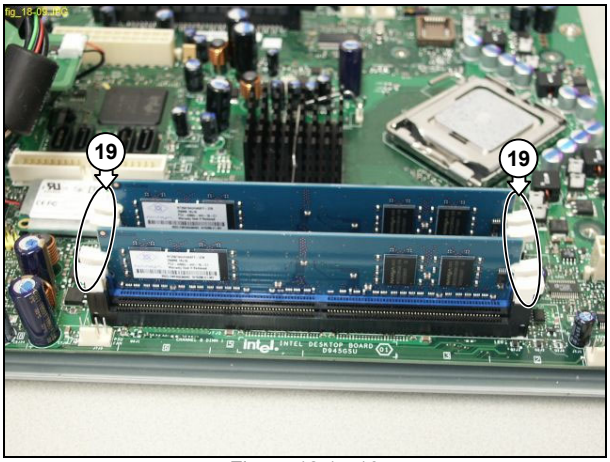


Figure 12.15-10

12.15.8. DIMM Re-Assembly

To re-assemble the DIMM, do all steps described in paragraph 12.15.7 in reverse order.

Note: The DIMM connectors must be populated in the correct sequence. See figure 12.15-11 for connector identification and population sequence.

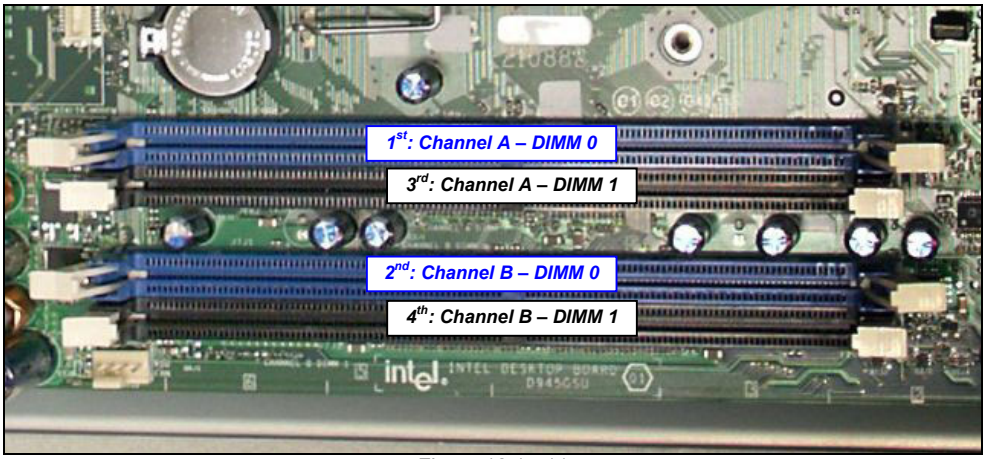


Figure 12.15-11

12.15.9. Motherboard Replacement

1. Remove the motherboard subassembly. See paragraph 12.15.1.
2. Remove the 2 thermistors (20). See Figure 12.15-12.
3. Remove the SCART daughterboard. See paragraph 12.15.3.
4. Remove the CPU. See paragraph 12.15.5.
5. Remove all DIMMs. See paragraph 12.15.7.
6. Remove the WLAN card. See paragraph 12.8.1.
7. Remove the 2 mounting screws (21) from the motherboard tray back plate. See Figure 12.15-13.
8. Remove the 7 mounting screws (22) from the motherboard tray base. See Figure 12.15-14.
9. Remove the motherboard from the motherboard tray.

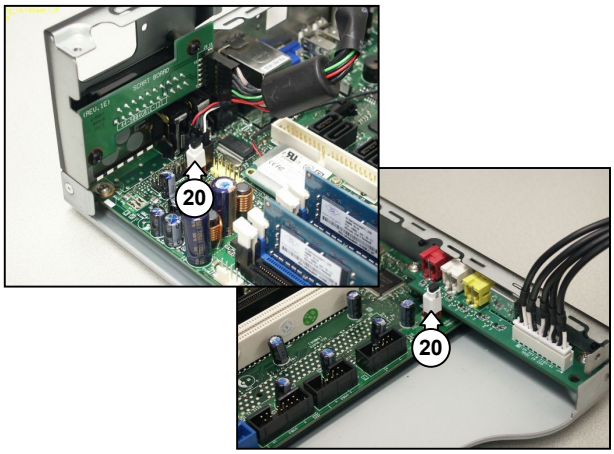


Figure 12.15-12

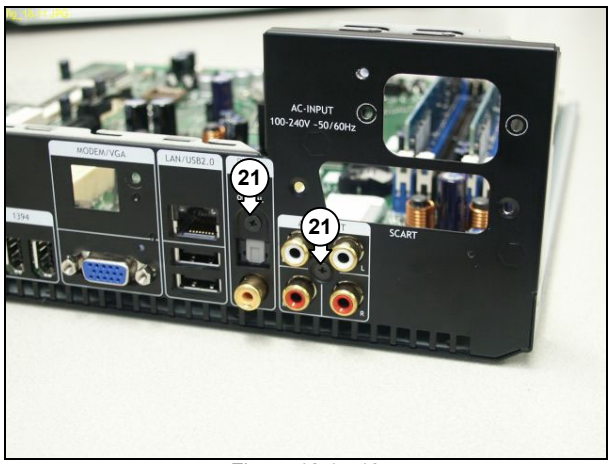


Figure 12.15-13

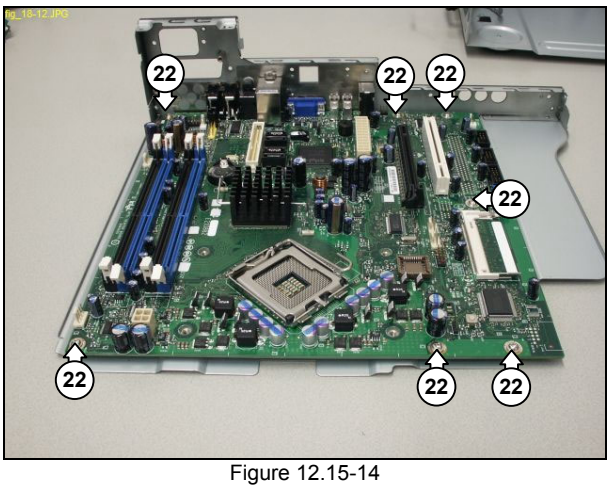


Figure 12.15-14

12.15.10. Motherboard Re-Assembly

To re-assemble the motherboard, do all steps described in paragraph 12.15.9 in reverse order.

Note: The torque setting required for the motherboard tray backplate mounting screws (22) is 6 kg-cm.
The torque setting required for the motherboard tray base mounting screws (21) is 6 kg-cm.

Note: After re-assembling the MCP9360i install the latest BIOS. See paragraph 9.2.

13. Software Re-installation

If the problem is not hardware related and it was also not solved by any of the software repair methods, the only option left is to re-install a software image that is known to work.

Caution: Performing a system re-installation will result in the loss of all user data.

1. Insert the DVD with the latest disc image (provided by Philips).
2. Reboot the MCP9360i.
3. Press ‘F’ for the full recovery option.
4. Press ‘Y’ to continue.
5. After 25 minutes the new image will have been installed.

In some cases it might be possible that the set does not boot from the DVD (although this was the default setting). In that case:

1. Reboot the MCP9360i again.
2. During the boot process, press ‘F2’ to enter the BIOS settings.
3. In the boot order list: add the optical drive to the top of the list.
4. Reboot again and continue with the re-installation.

14. End Test

Before the set can be returned to the customer an end test must be performed. Run the automatic test batch file in PC Doctor. See paragraph 10.3.

- For sets where a software and/or hardware repair has been done run the script once. The test will take approximately 15 minutes.
- For sets where no repair has been done a check must be made for intermittent faults. In PC Doctor, make sure that the script is repeated 8 times. See Figure 14-1. The test will take approximately 2 hours.

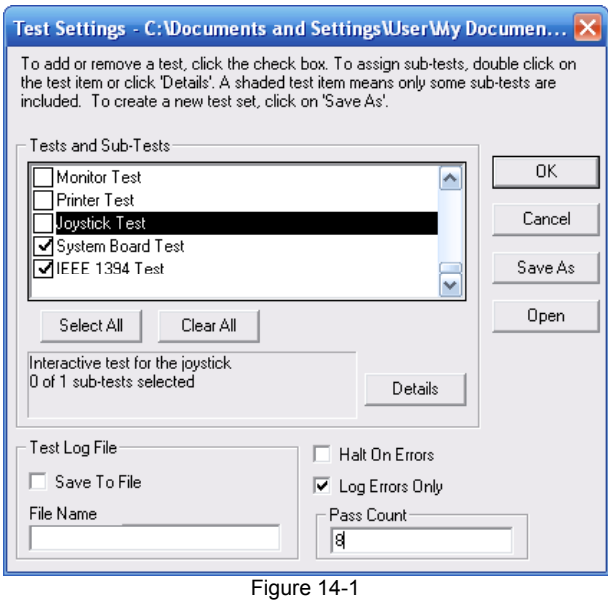


Figure 14-1

15. Parts Information

15.1. Internal Parts & Module Identification

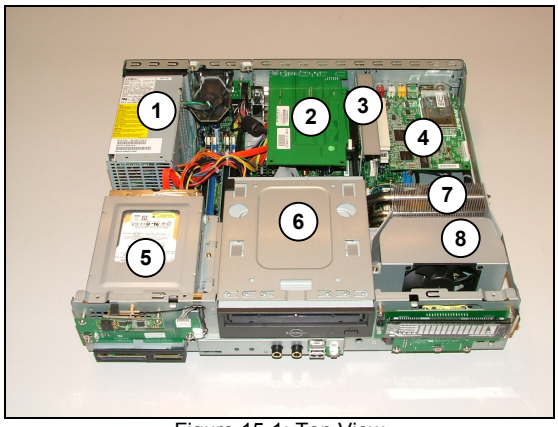


Figure 15-1: Top View

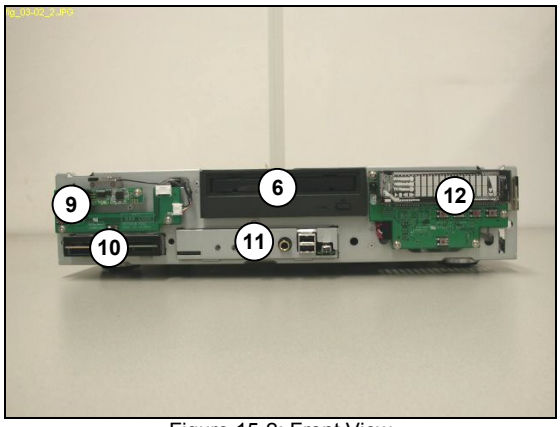


Figure 15-2: Front View

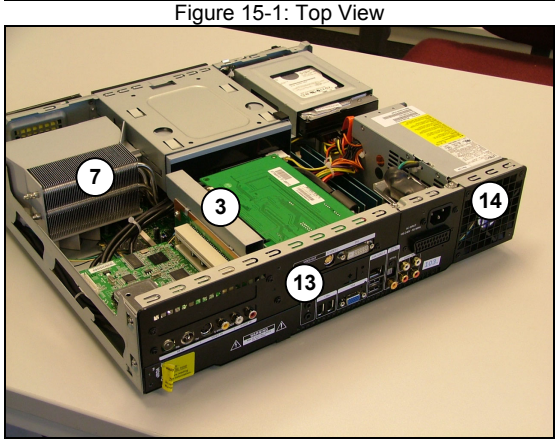


Figure 15-3: Rear-Right View

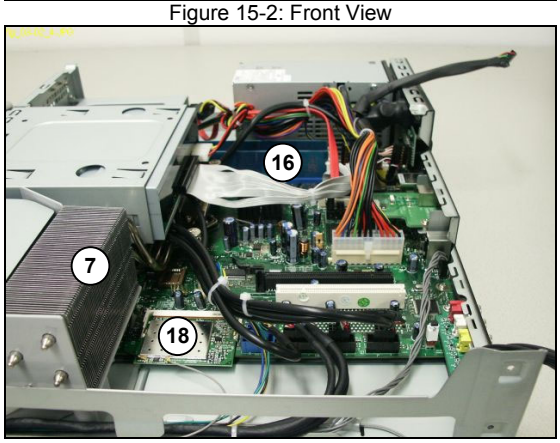


Figure 15-4: Right View

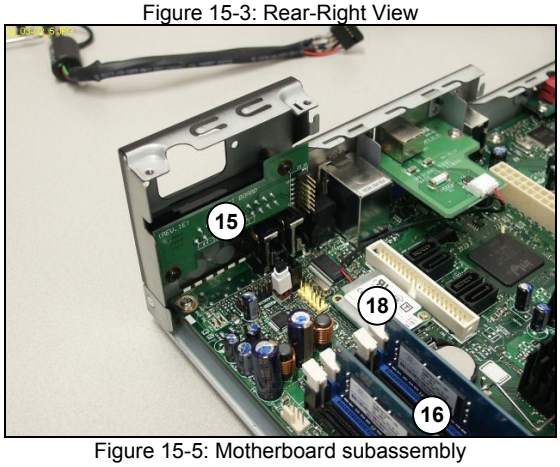


Figure 15-5: Motherboard subassembly

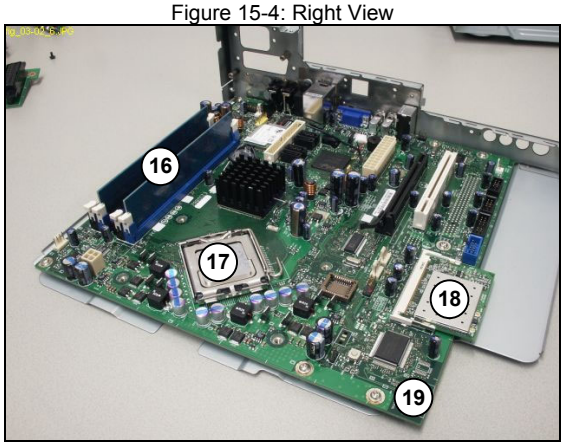


Figure 15-6: Motherboard subassembly

(1) Power Supply Unit (PSU)
(2) ADD2 Graphics Card
(3) Riser Card subassembly
(4) TV Tuner Card
(5) Hard Disk Drive (HDD) subassembly
(6) Optical Disk Drive (ODD)
(7) CPU Heat Sink
(8) CPU Fan subassembly
(9) SW & RF Board
(10) Card Reader subassembly
(11) Front Panel I/O (FP I/O) subassembly
(12) VFD Board
(13) Back panel
(14) PSU Fan
(15) SCART Daughterboard
(16) DIMM(s)
(17) CPU
(18) WLAN Card
(19) Motherboard

15.2. Cables

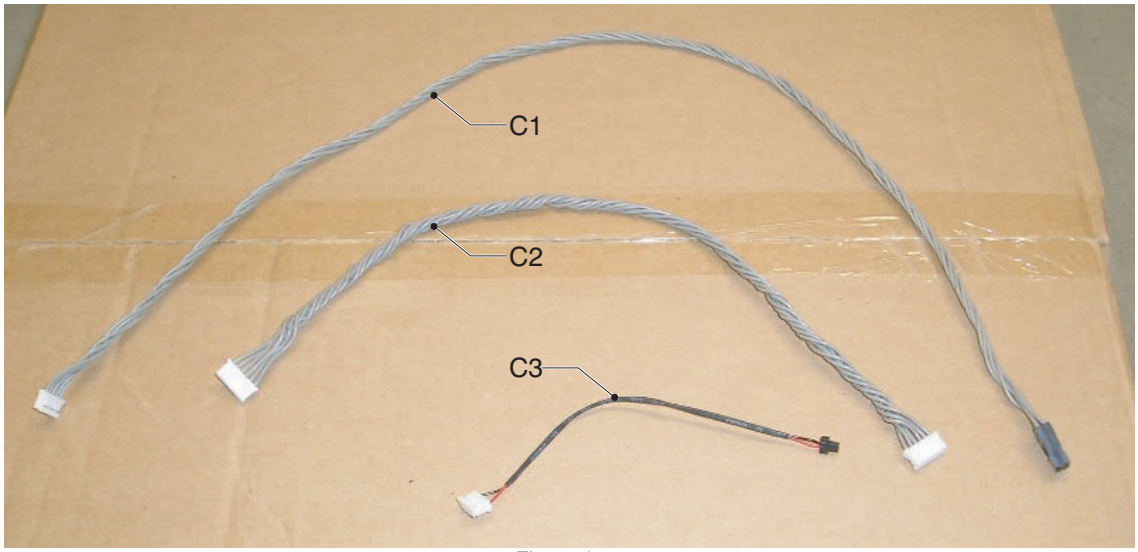


Figure 15-7

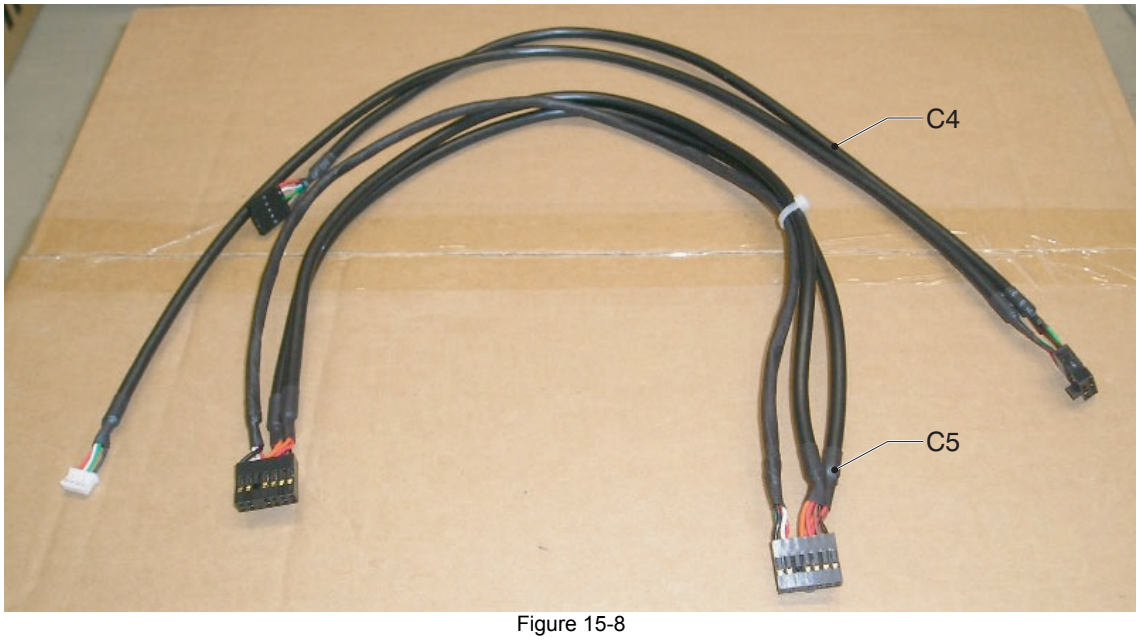


Figure 15-8

(C1) IR blaster internal cable
(C2) SW RF cable
(C3) MD cable (RJ11 cable)
(C4) V-type cable
(C5) VFD USB cable

15.3. Parts List

Pos.	12NC	Sort	Component Type	Description	Tatung P/N
17	996500042150			CPU LGA775 945 3.4GHz	
11	996500042148			ASM-MainBEZEL_COLDEN MCP9360i	
	996500032387			QUICK TIE,PVC 2.5X100MM	
19	996500042149			Mother Board, OEMD945GSUS2 ViiV	
	996500038652			POWER CORD,Nordic (Se,DK)	
	996500032402			Antenna cable	
	996500032403			Digital Audio Coax cable	
	996500032399			Audio L/R cable	
	996500032404			S-Video cable	
	996500032401			Ethernet LAN cable	
	996500032398			SCART cable	
	996500032397			DVI-D 18 1 cable	
	996500032386			ESD SHIEDING	
	996500032393			PCI Riser board	
	996500032392			PCI Express Riser board	
	996500032395			PAL ADAPTER, PAL, SPLIP 2 WAY,	
	996500032394			SCART ADAPTER out, RCA YC TO SCART	
	996500032389			FP_1394_CABLE	
	996500032390			FP_ USB_CABLE	
	996500032388			FP_AUDIO_CABLE	
	996500032385			ATA33 ODD CABLE	
	996500038651			USB WIRELESS KEYBOARD (Ne)	
	996500042151			USB WIRELESS KEYBOARD (UK)	
	996500042152			USB WIRELESS KEYBOARD (SG)	
	996500042153			USB WIRELESS KEYBOARD (Fr)	
C1	996500032429	CH54	Cable, connecting	IR blaster internal cable	E784006002
C2	996500032430	CH55	Cable, connecting	SW RF cable	E784006003
C3	996500032425		Cable, connecting	MD cable (RJ11 cable)	E784004002
C4	996500032432	CH62	Cable, connecting	V-type cable	E784010006
C5	996500032428	CH53	Cable, connecting	VFD USB cable	E784014001

15.4. Exchangeable versus Consumable Modules

All faulty cables and modules must be stored by the service center for a minimum of two months. In that period Philips has the opportunity to ask for shipment to a central location for further analysis. After that period the faulty items may be disposed of in an appropriate manner.

NOTES :