



Motherboard Logo Program (MLP)

**Intel® Desktop Board**

**DG43RK**

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**MLP Report**

3/24/2011

**Purpose:**

This report describes the DG43RK Motherboard Logo Program testing run conducted by Intel Corporation.

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# Introduction

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## Terms and Definitions

| Term                     | Definitions   |
|--------------------------|---|
| WHQL                     | Windows* Hardware Qualification Lab   |
| WLK                      | Windows Logo Kits   |
| MLP                      | Motherboard Logo Program. For further information see:<br><a href="http://www.microsoft.com/whdc/hwtest/default.msp">http://www.microsoft.com/whdc/hwtest/default.msp</a>   |
| AP Machine               | Audio Precision Machine   |
| Winqual                  | Windows Qualification   |
| MSFT Tested Product List | Tested Products List. You can view the Windows Marketplace for tested products list at: <a href="http://winqual.microsoft.com/HCL/ProductList.aspx?m=v&amp;cid=105&amp;q=s">http://winqual.microsoft.com/HCL/ProductList.aspx?m=v&amp;cid=105&amp;q=s</a> |

# Desktop Board Configuration

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## Desktop Board DG43RK Final Configuration Report: Completion of MLP

Data in this section reflects system configuration at time of MLP submission.

### Board Information

| Product Code <sup>1</sup>  | BIOS String/Model                   | Technologies NOT Logo'd (yet)      |
|--|-------------------------------------|------------------------------------|
| DG43RK   | RKG4310H.86A.0068.2010.0209.2150    | N/A - all technologies logo'd      |
| <b>Processor</b>   |                                     |                                    |
| Speed  | 3.33GHz                             |                                    |
| Family   | Intel® Core™2 Quad                  |                                    |
| Bus Speed  | 1333 MHz                            |                                    |
| <b>Motherboard</b>   |                                     |                                    |
| Board AA #   | E78175                              |                                    |
| Board FAB #  | 400                                 |                                    |
| <a href="#">* This report applies to the production FAB revision; Please consult your Intel Corporation representative to clarify the motherboard revision you intend to perform logo testing if not the same.</a> |                                     |                                    |
| <b>System Memory</b>   |                                     |                                    |
| Speed  | Dual Channel, DDR3, 1066MHz         |                                    |
| Memory Type  | DIMM                                |                                    |
| Connector Type   | DDR3, 240 Pin                       |                                    |
| <b>Power Management</b>  |                                     |                                    |
| BIOS Default   | S3                                  |                                    |
| <b>Operating System Tested</b>   |                                     |                                    |
|  | <b>Check Tested</b>                 | <b>Comments</b>                    |
| Windows 7 and 64-bit   | <input checked="" type="checkbox"/> | Windows 7 Ultimate                 |
| Windows 7 and 32-bit   | <input checked="" type="checkbox"/> | Windows 7 Ultimate                 |
| Windows Vista and 64-bit   | <input checked="" type="checkbox"/> | Vista Ultimate with Service Pack 2 |
| Windows Vista and 32-bit   | <input checked="" type="checkbox"/> | Vista Ultimate with Service Pack 2 |

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<sup>1</sup> These are the product names to enter in the "Submission ID of previously logo'd qualified PC system or server" field during your "System Using a Previously Logo'd Motherboard" submission to Microsoft.

## Onboard Integrated Devices and Driver for Vista 32-bit and 64-bit

| Technology  | OS                   | Version      | Package version |
|---|----------------------|--------------|-----------------|
| Chipset Update Utility<br>Intel® Chipset Software Utility | Windows Vista        | 9.1.1.1013   | 9.1.1.1013      |
|   | Windows Vista 64-bit | 9.1.1.1013   | 9.1.1.1013      |
| Graphics<br>Intel® Graphics Media Accelerator             | Windows Vista        | 8.15.10.2021 | 15.16.5.2021    |
|   | Windows Vista 64-bit | 8.15.10.2021 | 15.16.5.64.2021 |
| Audio<br>Realtek  | Windows Vista        | 6.0.1.6015   | 6015            |
|   | Windows Vista 64-bit | 6.0.1.6015   | 6015            |
| LAN<br>Broadcom   | Windows Vista        | 12.4.0.3     | 12.4.0.3        |
|   | Windows Vista 64-bit | 12.4.0.3     | 12.4.0.3        |

## Onboard Integrated Devices and Driver for Windows 7 32-bit and 64-bit

| Technology  | OS               | Version      | Package version |
|---|------------------|--------------|-----------------|
| Chipset Update Utility<br>Intel® Chipset Software Utility | Windows 7        | 9.1.1.1013   | 9.1.1.1013      |
|   | Windows 7 64-bit | 9.1.1.1013   | 9.1.1.1013      |
| Graphics<br>Intel® Graphics Media Accelerator             | Windows 7        | 8.15.10.2021 | 15.16.5.2021    |
|   | Windows 7 64-bit | 8.15.10.2021 | 15.16.5.64.2021 |
| Audio<br>Realtek  | Windows 7        | 6.0.1.6015   | 6015            |
|   | Windows 7 64-bit | 6.0.1.6015   | 6015            |
| LAN<br>Broadcom   | Windows 7        | 12.4.0.3     | 12.4.0.3        |
|   | Windows 7 64-bit | 12.4.0.3     | 12.4.0.3        |

## Windows Logo Kits Used (WLK)

Microsoft website: <http://www.microsoft.com/whdc/DevTools/WDK/DTM.msp>

Please check regularly for test kit updates from Microsoft. Please ensure latest filters updated prior to WHQL run.

| Operating Systems                     | Notes  | WHQL Testkit                                 |
|---------------------------------------|--|--|
| Windows 7<br>Windows 7 64-bit         | <a href="#">WLK1.5 for Windows 7</a>         | <a href="#">WLK1.5 for Windows 7</a>         |
| Windows Vista<br>Windows Vista 64-bit | <a href="#">WLK1.5 for Windows Vista SP2</a> | <a href="#">WLK1.5 for Windows Vista SP2</a> |

## Errata and Contingencies

| Operating System   | Failing Test  | Expiry Date | ID Number | Type    | Error Description   |
|--|---|-------------|-----------|---------|---|
| Windows 7<br>Windows 7 64-bit<br>Windows Vista<br>Windows Vista 64-bit | 1) Class Driver AC3 Test - Win7 (System)<br><br>2) HDAudio Class Driver Test - Vista or Server08 (System)   | 06/01/2010  | 1256      | Erratum | The HD Audio class driver hdaudio.sys exposes AC-3 data ranges on S/PDIF Kernel Streaming pins incorrectly.<br><br>The compressed AC-3 transport is "stereo", "16-bit", and at the same sample rate as the uncompressed format. As such, AC-3 data ranges are expected to have MaximumChannels = 2, and MinimumBitDepth = MaximumBitDepth = 16.<br><br>However, the HD Audio class driver sometimes incorrectly exposes a MaximumBitDepth of 24 or even 32.   |
| Windows Vista<br>Windows Vista 64-bit                                  | HDAudio Class Driver Test - Vista or Server08 (System)  | 01/31/2011  | 142       | Erratum | HDMI is required to support 44.1 kHz on Windows 7 The Windows Vista HD Audio class driver does not support 44.1 kHz sample rates. There is an errata to cover this violation of AUDIO-0023. It was mistakenly applied to third-party drivers. As of Windows 7, the Windows Vista HD Audio class driver supports 44.1 kHz sample rates on hardware that advertises support for it. AUDIO-0023 is applicable. This is a filter to allow vendors to ship with systems that violated AUDIO-0023 but were incorrectly filtered by the Vista filter. Hardware that does not support 44.1 needs to be updated to support 44.1, and advertise that support in a way that the Microsoft HD Audio class driver can pick up on. Third-party drivers need to relay this support to the OS correctly.  |
| Windows 7<br>Windows 7 64-bit<br>Window Vista                          | 1) Class Driver Fidelity Test - Win7 (System, Manual)<br><br>2) HDAudio Class Driver Fidelity Test- Vista (System, Manual)<br><br>3) Fidelity Test (System, Manual) | 12/01/2010  | 1012      | Erratum | Fidelity uses too small of a buffer and wakes up too infrequently during the System Activity test. This causes errors like: Noise level during system activity on (left or right) channel 73.2016 dB: *** FAIL *** (requirement >= 80 dB)   |
| Windows 7<br>Windows 7 64-bit<br>Windows Vista<br>Windows Vista 64-bit | 1) Class Driver Fidelity Test - Win7 (System, Manual)<br><br>2) HDAudio Class Driver Fidelity Test- Vista (System, Manual)  | 07/31/2011  | 598       | Erratum | The European Union requires the headphone output level to be <= 150 mVrms for headphone jacks. There's a note in WLP requirement AUDIO-0006 that states, in the presence of regional regulations, the output level requirement for headphones is dropped from >= 1000 mVrms to >= 120 mVrms. This provides freedom for manufacturers to meet both the EU <= 150 mVrms @ 32 Ohms and the WLP >= 120 mVrms @ 32 Ohms requirements. The Fidelity Test tests headphones at 300 Ohm load, though. Without knowledge of the output impedance at the jack, the test cannot extrapolate what the output level at 32 Ohms would have been from the output level at 300 Ohms. The test assumes that the output level at 32 Ohms will be *less* than the output level at 300 Ohms, though. So any measurement >= 120 mVrms at 300 Ohms "could be" a passing result, depending on the output impedance. |

|  |   |            |      |             |   |
|--|---|------------|------|-------------|---|
| Windows 7<br>Windows 7 64-bit<br>Windows Vista<br>Windows Vista 64-bit | 1) Class Driver Fidelity Test - Win7 (System, Manual)<br><br>2) HDAudio Class Driver Fidelity Test- Vista (System, Manual)<br><br>3) Fidelity Test (System, Manual) | 08/09/2010 | 1801 | Erratum     | There is a test bug which causes the measurement of system noise during Render Power Transition Test to be about 3 dB worse than it should be. This filter forgives errors up to 6 dB.  |
| Windows 7<br>Windows 7 64-bit  | Graphics HDMI System Test (Manual)  | 03/31/2010 | 2247 | Contingency | Intel HDMI solutions follow the Intel HD Audio HDMI DCNs - 34-A, 39-A, available at <a href="http://www.intel.com/standards/hdaudio/">http://www.intel.com/standards/hdaudio/</a><br><br>This includes a notion of EDID-Like-Data which is programmed by the video driver into hardware, and read from hardware by the audio driver.<br><br>ELD v2, which is required for logo, contains a Port_ID field which is expected to contain the AdapterLUID. This is exposed to third-party apps via the audio driver by means of the Kernel Streaming property KSPROPERTY_JACK_SINK_INFO<br>Intel's graphics driver leaves the Port_ID field of the ELD unset - that is, all zeros. Intel will update their graphics driver to correctly populate the Port_ID. |
| Windows Vista<br>Windows Vista 64-bit<br>Windows 7<br>Windows 7 64-bit | PCI Hardware Compliance Test For Systems  | 03/31/2010 | 753  | Erratum     | Assertion 3EF27DC9-463F-4712-857B-0321832E7383 Bit range 23:0 (Organizationally Unique Identifier) in the Serial Number 1st DW register (offset 4h) in the Device Serial Number Capability table cannot have a value of 0h as it must contain a value assigned by IEEE.   |
| Windows Vista<br>Windows Vista 64-bit<br>Windows 7<br>Windows 7 64-bit | PCI Hardware Compliance Test For Systems  | 12/01/2010 | 401  | Erratum     | The following PCI Compliance test failure is acceptable: Bit 15 (Bridge Configuration Retry Enable) in the Device Control register (offset 8h) in the PCI Express Capability table must be read-only and always return 0 as it is reserved for devices other than PCI Express to PCI/PCI-X Bridges. Assertion 13A41D3E-2576-41DC-A67C-525DA3637CEA This failure is acceptable because this is a PCIe 1.1 feature and the WLP requires compliance with only PCIe 1.0a.   |
| Windows Vista<br>Windows Vista 64-bit<br>Windows 7<br>Windows 7 64-bit | PCI Hardware Compliance Test For Systems  | 06/01/2010 | 1241 | Erratum     | This happens because the PCI Compliance test assumes that if the Data Link Layer Link Active Reporting Capable bit in the Link Capabilities register for a given PCIe port is set then that indicates that the Data Link Layer Link Active bit will also be set. This is an incorrect assumption because the Data Link Layer Link Active bit can be reset when there is no device below the port. This assertion needs to be removed from the PCIHCT. The current architecture of the PCIHCT prevents it from knowing whether devices exist below a bridge/port.  |
| Windows 7<br>Windows 7 64-bit  | UAA Test - Win7 (System)  | 08/09/2010 | 1348 | Erratum     | UAA Test digital converter channel to HDMI slot mapping failures  |
| Windows Vista<br>Windows Vista 64-bit<br>Windows 7<br>Windows 7 64-bit | 1)UAA Test - Win7 (System)<br><br>2)UAA Test - Vista or Server08 (System)   | 08/09/2010 | 1198 | Erratum     | "High Definition Audio Device" devices need to comply with the Intel High Definition Audio spec, as well as revisions (known as Document Change Notifications, or DCNs.) One such DCN - in particular, DCN 34-A2 - clarified the behavior of "pin sense" verbs as applied to digital pins (S/PDIF, HDMI, and DisplayPort.) Prior to the DCN, the language of the spec was unclear and mistakenly implied that the "Impedance" bits could be used by digital pins. The DCN clarified this to say that Impedance bits are reserved for digital pins.  |



|  |   |            |      |         |   |
|--|---|------------|------|---------|---|
| Windows Vista<br>Windows Vista 64-bit<br>Windows 7<br>Windows 7 64-bit | 1)UAA Test - Win7 (System)<br><br>2)UAA Test - Vista or Server08 (System) | 08/09/2010 | 1288 | Erratum | Error: attempted to set unsupported EPT 0b10 (Reserved); previous value was 0b01 (Reserved); response was 0b10 (Reserved) For unsupported EPTs, the pin must either retain the previous value or take the value of 0b00 (Native). See HD Audio specification section 7.3.3.13.  |
| Windows Vista<br>Windows Vista 64-bit<br>Windows 7<br>Windows 7 64-bit | 1)UAA Test - Win7 (System)<br><br>2)UAA Test - Vista or Server08 (System) | 08/09/2010 | 1299 | Erratum | The original HD Audio 1.0 specification contains a notion of "presence detect", using electrical impedance which was intended to apply only to analog pins. However, the language of the specification was such that it could be read to apply to digital pins as well - in particular, to S/PDIF pins. A DCN was released to extend the notion of presence detect to digital pins - in particular, to HDMI pins. This repurposed one of the impedance bits, which were thought to be unused in digital pins, to mean "ELD valid." The correct way for a S/PDIF pin to respond to a Pin Sense verb is to set the highest bit (Presence Detect) to 1 or 0 corresponding to whether a S/PDIF connection is active; set the ELD Valid bit to 0 (since there is no such thing as ELD for S/PDIF); and set the rest of the bits, which are reserved for digital pins, to 0. This errata filter is a preview filter to allow hardware manufacturers time to update any hardware that used the impedance bits on digital pins. |
| Windows Vista<br>Windows Vista 64-bit<br>Windows 7<br>Windows 7 64-bit | 1)UAA Test - Win7 (System)<br><br>2)UAA Test - Vista or Server08 (System) | 06/01/2010 | 1300 | Erratum | HD Audio pin configuration document calls out setting Port Connectivity to No Connection as the way to turn a pin off in a particular system. UAA Test incorrectly tests such pins.   |
| Windows Vista<br>Windows Vista 64-bit<br>Windows 7<br>Windows 7 64-bit | 1)UAA Test - Win7 (System)<br><br>2)UAA Test - Vista or Server08 (System) | 07/01/2011 | 1466 | Erratum | Preview Filter: UAA Test - Intel Low Power DCN says "EPSS implies KeepAlive, but only after July 1st 2011"  |
| Windows Vista<br>Windows Vista 64-bit<br>Windows 7<br>Windows 7 64-bit | 1)UAA Test - Win7 (System)<br><br>2)UAA Test - Vista or Server08 (System) | 06/01/2010 | 513  | Erratum | UAA Test requires the Traffic Priority bit to be read/write - however there are two specs that apply, and they conflict. One says the bit must be read/write, the other says it must be read-only. Contact has been made with the author of both specs (Intel) but until this point is clarified we cannot fail submissions containing this test failure.   |

## Test Notes

| Operating System                      | Test          | Description  |
|---------------------------------------|---------------|--|
| Windows 7 and Vista                   | BIOS download | Internal: <a href="http://bios.intel.com/downloads/">http://bios.intel.com/downloads/</a><br>External: <a href="http://www.intel.com/">http://www.intel.com/</a> click on Support and Download   |
| Windows 7 and Vista                   | BIOS setup    | Please make sure the BIOS setting are as below, otherwise use default settings.<br><br>System Date and Time: Current date and time<br>Peripheral Configuration: Enable all onboard component (Except CIR)<br>Drive Configuration: Set to AHCI<br>Chipset Configuration: Enable HPET<br>ACPI Suspend State: Set to <S3 State><br>Boot Device Priority: set <Hard Disk Driver> to first<br><br>Note: Enhanced Consumer IR (CIR) component is not supported under Windows7. |
| Windows 7 and Vista filter update     | WLK WHQL test | <a href="http://winqual.microsoft.com/member/SubmissionWizard/LegalExemptions/filterupdates.cab">http://winqual.microsoft.com/member/SubmissionWizard/LegalExemptions/filterupdates.cab</a>  |
| Special H/W that use to PASS the test | None          | None   |