QuantaGrid Series

D51B-2U

Full-Featured Energy Efficient 2-Way Server

User's Guide



Version: 2.1

Copyright

Copyright © 2020 Quanta Computer Inc. This publication, including all photographs, illustrations and software, is protected under international copyright laws, with all rights reserved. Neither this technical guide, nor any of the material contained herein, may be reproduced without the express written consent of the manufacturer. All trademarks and logos are copyrights of their respective owners.

Version 2.1 / February 24, 2020

Disclaimer

L

The information in this document is subject to change without notice. The manufacturer makes no representations or warranties with respect to the contents hereof and specifically disclaims any implied warranties of merchantability or fitness for any particular purpose. Furthermore, the manufacturer reserves the right to revise this publication and to make changes from time to time in the content hereof without obligation of the manufacturer to notify any person of such revision or changes.

For the latest information and updates please see www.QuantaQCT.com

All the illustrations in this technical guide are for reference only and are subject to change without prior notice.

Conventions

Several different typographic conventions are used throughout this manual. Refer to the following examples for common usage.

Bold type face denotes menu items, buttons and application names.

Italic type face denotes references to other sections, and the names of the folders, menus, programs, and files.

<Enter> type face denotes keyboard keys.

.Warning information appears before the text it references and should not be ignored as the content may prevent damage to the device.



WARNING!

Warning information appears before the text it references and should not be ignored as the content may prevent damage to the device.



CAUTION!

CAUTIONS APPEAR BEFORE THE TEXT IT REFERENCES, SIMILAR TO NOTES AND WARNINGS. CAUTIONS, HOWEVER, APPEAR IN CAPITAL LETTERS AND CONTAIN VITAL HEALTH AND SAFETY INFORMATION.

Note:

Highlights general or useful information and tips.

Precautionary Measures

Read all caution and safety statements in this document before performing any of the instructions. To reduce the risk of bodily injury, electrical shock, fire, and equipment damage, read and observe all warnings and precautions in this chapter before installing or maintaining your system. To avoid personal injury or property damage, before you begin installing the product, read, observe, and adhere to all of the following instructions and information. The following symbols may be used throughout this guide and may be marked on the product and / or the product packaging.

Safety Instructions about your system

In the event of a conflict between the information in this guide and information provided with the product or on the website for a particular product, the product documentation takes precedence.

Your system should be integrated and serviced only by technically qualified persons.

You must adhere to the guidelines in this guide and the assembly instructions in related chapters to ensure and maintain compliance with existing product certifications and approvals. Use only the described, regulated components specified in this guide. Use of other products / components will void the UL Listing and other regulatory approvals of the product, and may result in noncompliance with product regulations in the region(s) in which the product is sold.

CAUTION Indicates the presence of a hazard that may cause minor personal injury or erty damage if the CAUTION is ignored.				
WARNINGIndicates the presence of a hazard that may result in serious personal i WARNING is ignored.				
	Indicates potential hazard if indicated information is ignored.			
	Indicates shock hazards that result in serious injury or death if safety instructions are not followed.			
	Indicates hot components or surfaces.			
	Indicates do not touch fan blades, may result in injury.			
	Remove the system from the rack to disconnect power system.			

Table 1: Warning and Cautions

Table 1: Warning and	Cautions (Continued)
----------------------	----------------------

	The enclosure is designed to carry only the weight of the system sled. Do not use this equipment as a workspace. Do not place additional load onto any equipment in this system.
A ⁱ	Indicates two people are required to safely handle the system.
	Restricted Access Location: The system is intended for installation only in a Server Room or Computer Room where both these conditions apply:
	• access can only be gained by SERVICE PERSONS or by USERS who have been instructed about the reasons for the restrictions applied to the location and about any precautions that shall be taken; and
	• access is through the use of a TOOL or lock and key, or other means of security, and is controlled by the authority responsible for the location.

Intended Application Uses

This product was evaluated as Information Technology Equipment (ITE), which may be installed in offices, schools, computer rooms, and similar commercial type locations. The suitability of this product for other product categories and environments (such as medical, industrial, residential, alarm systems, and test equipment), other than an ITE application, may require further evaluation.

Site Selection

The system is designed to operate in a typical office environment. Choose a site that is:

- Clean, dry, and free of airborne particles (other than normal room dust).
- Well-ventilated and away from sources of heat including direct sunlight and radiators.
- Away from sources of vibration or physical shock.
- Isolated from strong electromagnetic fields produced by electrical devices.
- In regions that are susceptible to electrical storms, we recommend you plug your system into a surge suppressor and disconnect telecommunication lines to your modem during an electrical storm.
- Provided with a properly grounded wall outlet.
- Provided with sufficient space to access the power system, because they serve as the product's main power disconnect.
- Provided with either two independent DC power system or two independent phases from a single power system.

Equipment Handling Practices

Reduce the risk of personal injury or equipment damage:

- Conform to local occupational health and safety requirements when moving and lifting equipment.
- Use mechanical assistance or other suitable assistance when moving and lifting equipment.
- To reduce the weight for easier handling, remove any easily detachable components.
- Never lift or move your system soley by the handle on the component.

Power and Electrical Warnings



CAUTION!

Make sure the system is removed from the rack before servicing any non-hot plug components. The bus bar clips must be disconnected from the power system inorder to fully separate the system from the power source.



CAUTION!

TO AVOID RISK OF ELECTRIC SHOCK, DISCONNECT ALL CABLING FROM THE SYSTEM AND REMOVE THE SYSTEM FROM THE RACK.

System Access Warnings



CAUTION!

TO AVOID PERSONAL INJURY OR PROPERTY DAMAGE, THE FOLLOWING SAFETY INSTRUCTIONS APPLY WHENEVER ACCESSING THE INSIDE OF THE PRODUCT:

- Disconnect from the power source by removing the system from the rack.
- Disconnect all cabling running into the system.
- Retain all screws or other fasteners when servicing. Upon completion servicing, sercure with original screws or fasteners.



CAUTION!

IF THE SERVER HAS BEEN RUNNING, ANY INSTALLED HDD MODULES MAY BE HOT.



CAUTION!

UNLESS YOU ARE ADDING OR REMOVING A HOT-PLUG COMPONENT, ALLOW THE SYSTEM TO COOL BEFORE SER-VICING.



CAUTION!

TO AVOID INJURY DO NOT CONTACT MOVING FAN BLADES. IF YOUR SYSTEM IS SUPPLIED WITH A GUARD OVER THE FAN, DO NOT OPERATE THE SYSTEM WITHOUT THE FAN GUARD IN PLACE.

Rack Mount Warnings

The following installation guidelines are required by UL for maintaining safety compliance when installing your system into a rack.

The equipment rack must be anchored to an unmovable support to prevent it from tipping when your system or piece of equipment is extended from it. The equipment rack must be installed according to the rack manufacturer's instructions.

Install equipment in the rack from the bottom up, with the heaviest equipment at the bottom of the rack.

Extend only one piece of equipment from the rack at a time.

You are responsible for installing a main power disconnect for the entire rack unit. This main disconnect must be readily accessible, and it must be labeled as controlling power to the entire unit, not just to the system(s).

To avoid risk of potential electric shock, a proper safety ground must be implemented for the rack and each piece of equipment installed in it.

Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.

Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on over-current protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained.

Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

Electrostatic Discharge (ESD)



CAUTION!

ESD CAN DAMAGE DRIVES, BOARDS, AND OTHER PARTS. WE RECOMMEND THAT YOU PERFORM ALL PROCEDURES AT AN ESD WORKSTATION. IF ONE IS NOT AVAILABLE, PROVIDE SOME ESD PROTECTION BY WEARING AN ANTI-STATIC WRIST STRAP ATTACHED TO CHASSIS GROUND -- ANY UNPAINTED METAL SURFACE -- ON YOUR SERVER WHEN HANDLING PARTS.

Always handle boards carefully. They can be extremely sensitive to ESD. Hold boards only by their edges without any component and pin touching. After removing a board from its protective wrapper or from the system, place the board component side up on a grounded, static free surface. Use a conductive foam pad if available but not the board wrapper. Do not slide board over any surface.

Cooling and Airflow



CAUTION!

Carefully route cables as directed to minimize airflow blockage and cooling problems. For proper cooling and airflow, operate the system only with the chassis covers* / air duct installed. Operating the system without the covers / air duct in place can damage system parts . To install the covers* / air duct:

- Check first to make sure you have not left loose tools or parts inside the system.
- Check that cables, add-in cards, and other components are properly installed. Attach the covers* / air duct to the chassis according to the product instructions. * May not apply to all systems.

Please be aware that slots and openings on the front and rear side of the chassis are designed for ventilation; to make sure reliable operation of your system and to protect it from overheating, these openings must not be covered or blocked. The openings should never be covered or blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should never be placed near or over a radiator or heat register, or in a built-in installation unless proper ventilation is provided.

Laser Peripherals or Devices



CAUTION!

TO AVOID RISK OF RADIATION EXPOSURE AND / OR PERSONAL INJURY:

- Do not open the enclosure of any laser peripheral or device.
- Laser peripherals or devices are not serviceable.
- Return to manufacturer for servicing.

Use certified and rated Laser Class I for Optical Transceiver product.

Heed safety instructions: Before working with the system, whether using this manual or any other resource as a reference, pay close attention to the safety instructions. Adhere to the assembly instructions in this manual to ensure and maintain compliance with existing product certifications and approvals. Use only the described, regulated components spec-

ified in this manual. Use of other products / components will void the UL listing and other regulatory approvals of the product and will most likely result in non-compliance with product regulations in the region(s) in which the product is sold.

System power on/off: To remove power from system, you must remove the system from rack. Make sure the system is removed from the rack before opening the chassis, adding, or removing any non hot-plug components.

Hazardous conditions, devices and cables: Hazardous electrical conditions may be present on power, telephone, and communication cables. Turn off the system and disconnect the cables attached to the system before opening it. Otherwise, personal injury or equipment damage can result.

Electrostatic discharge (ESD) and ESD protection: ESD can damage drives, boards, and other parts. We recommend that you perform all procedures in this chapter only at an ESD workstation. If one is not available, provide some ESD protection by wearing an antistatic wrist strap attached to chassis ground any unpainted metal surface on the server when handling parts.

ESD and handling boards: Always handle boards carefully. They can be extremely sensitive to electrostatic discharge (ESD). Hold boards only by their edges. After removing a board from its protective wrapper or from the server, place the board component side up on a grounded, static free surface. Use a conductive foam pad if available but not the board wrapper. Do not slide board over any surface.

Installing or removing jumpers: A jumper is a small plastic encased conductor that slips over two jumper pins. Some jumpers have a small tab on top that can be gripped with fingertips or with a pair of fine needle nosed pliers. If the jumpers do not have such a tab, take care when using needle nosed pliers to remove or install a jumper; grip the narrow sides of the jumper with the pliers, never the wide sides. Gripping the wide sides can damage the contacts inside the jumper, causing intermittent problems with the function controlled by that jumper. Take care to grip with, but not squeeze, the pliers or other tool used to remove a jumper, or the pins on the board may bend or break.

General Information

The information about rack and the wording "rack" in this technical guide supports the organization of Open Compute definition.

The term *Rack* as found in this technical guide referes to the term *Rack* or *Open Rack* as described and used in the Open Compute Project definition.

Before servicing this system, it is recommened to read this technical guide completely to be aware of any safety issues or requirements involved in the servicing of this system.

Assembly Safety Guidelines

The power system in this product contains no user-serviceable parts. Refer servicing only to qualified personnel.
 The system is designed to operate in a typical office environment. Choose a site that is: Clean and free of airborne particles (other than normal room dust). Well ventilated and away from sources of heat including direct sunlight. Away from sources of vibration or physical shock. Isolated from strong electromagnetic fields produced by electrical devices. In regions that are susceptible to electrical storms, we recommend you plug your system into a surge suppressor and disconnect telecommunication lines to your modem during an electrical storm. Provided with a properly grounded wall outlet. Provided with sufficient space to access the power system, because they serve as the product's main power disconnect.
WARNING! The system is safety certified as rack-mounted equipment for use in a server room or computer room, using an approved customer rack. The enclosure is designed to carry only the weight of the system sled. Do not place additional load onto any equipment.
Heavy object. Indicates two people are required to safely handle the system.

About the System

Chapter 1

This section introduces the system, its different configuration(s) and the main features.

1.1 Introduction

QuantaGrid D51B-2U is a general-purpose rackmount server designed for optimal performance and power efficiency. It supports up to 1.5 TB highly scalable memory capacity and up to 12 3.5" or 24 2.5" hot-swappable HDD for complex and demanding workloads, such as mail-server, database, e-commerce and high-performance computing (HPC).

• Greener and More Powerful

Powered by the Intel[®] Xeon[®] processor E5-2600 v3 product family and DDR4 memory technology, the QuantaGrid D51B-2U allows owners to upgrade computing performance without overextending power consumption. With Quanta's enhanced thermal design, the server can operate under ambient temperatures as high as 40°C. This allows owners to save unnecessary costs associated with datacenter cooling needs and achieve higher data center infrastructure efficiency (DCIE) value.

• Full-Featured Design for Demanding Storage and Computing Workload

With 24 dual in-line memory (DIMM) slots, QuantaGrid D51B-2U offers non-latency support to virtualization environments that require the maximum memory capacity. In addition to 12 3.5" or 24 2.5" front-access, hot-swappable HDDs, the D51B-2U also has two optional 2.5" PCIe (NVMe) SSD bays and two optional 2.5" SATA HDD bays on the rear side for extra caching or OS support without sacrificing storage capacity.

• Flexible and Scalable I/O options*

QuantaGrid D51B-2U provides flexible I/O scalability for today's diverse data center application requirements. It features OCP LAN mezzanine card solutions in addition to dual GbE or 10GbE LAN on Motherboard (LoM). With various controller vendors and different speed and technology options, customers can choose from GbE to 56GbE bandwidth, copper to fiber-optic cabling, basic Ethernet function to FCoE and ISCI SAN connectivity. The onboard SAS controller offers multiple Quanta SAS mezzanine card options with different RAID levels and data transfer bandwidth so customers can tailor the SAS controller for specific application needs.

Specifications

Specifications	DESCRIPTION		
Form factor	2U rack mount		
Chassis dimensions	17.6 x 3.44 x 29.33 inches		
(W x H x D) 447 x 87.5 x 745 mm			
	Processor type:		
	Intel [®] Xeon [®] processor E5-2600 v3 product family		
Processor	Max. TDP support: 145W		
10003301	Number of processors: 2		
	Internal Interconnect: 6.4 / 8.0 / 9.6 GT/s		
	Last Level Cache (LLC): Up to 35 MB		

Table 1.1: System Specifications

Table 1.1: System Specifications (Continued)

Specifications	DESCRIPTION			
Chipset	Intel [®] C610			
Memory	Total slots: 24 Capacity: Up to 384GB RDIMM / Up to 768GB LRDIMM Memory type: 2133 MHz DDR4 RDIMM / LRDIMM Memory size: 16 GB, 8 GB RDIMM / 32 GB LRDIMM			
Storage controller	 Onboard (Intel® C610): 10x SATA 6Gb/s ports SATA RAID 0, 1, 10 Optional controller: Quanta LSI® 2308 6Gb/s SAS mezzanine, RAID 0, 1, 10 Quanta LSI® 3008 12Gb/s SAS mezzanine, RAID 0, 1, 10 Quanta LSI® 2108 6Gb/s RAID mezzanine, RAID 0, 1, 5, 10, RAID 6 with additional RAID key Quanta LSI® 2208 6Gb/s RAID mezzanine, RAID 0, 1, 5, 10, RAID 6 with additional RAID key 			
Networking	 LOM: Intel® I350 dual-port 1GbE or Intel® X540 dual-port 10GbE BASE-T Dedicated 1GbE management port Optional NIC: (more options refer to the AVL) Quanta Intel® i350 dual-port OCP mezzanine Quanta Intel® X540 dual-port 10GbE BASE-T OCP mezzanine Quanta Intel® 82599ES dual-port 10G SFP+ OCP mezzanine 			
Expansion slots	Riser 1 • (default): • One x8 PCIe 3.0 SAS mezzanine slot (CPU0) • One x8 PCIe 3.0, Low profile MD-2 (CPU0) • One x8 PCIe 3.0, Low profile MD-2 (CPU1) • (option 2): • One x16 PCIe 3.0, Low profile MD-2 (CPU0) • One x8 PCIe 3.0, Low profile MD-2 (CPU1) Riser 2 • One x16 PCIe 3.0, FHHL (CPU1) • One x8 PCIe 3.0, FHHL (CPU1) • One x8 PCIe 3.0, FHHL (CPU1) • One x8 PCIe 3.0, FHHL (CPU1)			
Storage	 12x 3.5" hot-plug HDD/SSD (3.5" HDD SKU) 24x 2.5" hot-plug HDD/SSD (2.5" HDD SKU) 2x optional rear 2.5" PCIe SSD 2x optional rear 2.5" SATA HDD/SSD 			
Onboard storage	2x SATADOM (optional)			
Video	Integrated Aspeed AST2400 with 8MB DDR3 video memory			
Front I/O	 Power/ID/Reset Buttons LAN/HDD/Status/ID LEDs 2x USB 2.0 ports 			

Specifications	Description			
Rear I/O	 2x USB 3.0 ports 1x VGA port 1x RS232 serial Port 2x 1 GbE or 10G BASE-T RJ45 port 1x GbE RJ45 management port 1x ID LED 1x Port 80 Debug Port (optional) 			
Optical drive	NA			
ТРМ	Yes (optional)			
Power supply	1 High efficiency redundant hot-plug 750W PSU, 80 Plus Gold (2nd PSU optional)			
Fan	4x dual rotor fans (7+1 redundant)			
System management	IPMI v2.0 Compliant, on board "KVM over IP" support			
Weight (Max. configuration)	 26.87 Kg (3.5" HDD SKU) 24.51 Kg (2.5" HDD SKU) 			
Operating environment	 Operating temperature: 5°C to 40°C (41°F to 104°F) Non-operating temperature: -40°C to 65°C (-40°F to 149°F) Operating relative humidity: 20% to 85%RH. Non-operating relative humidity: 10% to 90%RH 			

Table 1.1: System Specifications (Continued)

1.2 Package Contents

- (1) D51B-2U system
- (2) processor heat sinks
- (1) power supply unit
- (1) power cord (optional)
- (1) utility CD (Technical Guide included)
- (1) rail kit

Note:

For exact shipping contents, contact your Quanta sales representative.

1.3 A Tour of the System

System Overview

The server is available as a 2.5" and 3.5" HDD configuration.

The 2.5" HDD configuration system overview is displayed in the following image:



Figure 1-1. 2.5" System component overview



The 3.5" HDD configuration system overview is displayed in the following image:

Figure 1-2. 3.5" System component overview

Table 2: Component Overview

No.	Item	DESCRIPTION			
1	Top front cover	Enclosure for hard disk drives bay.			
2	Fan modules	System fan modules (x4). See <i>Fan Module</i> on page 2-13.			
3	DIMM slots	DDR4 DIMM slots, 12 per CPU. See <i>Memory Modules</i> on page 2-39.			
4	Processor	CPU01 and CPU02 processors with heat sinks on top. See <i>Processor Heat Sink</i> on page 2-34.			
5	PSU assembly	Redundant power supply unit assembly.			
6	Expansion slots	SSD optional expansion bay.			
7	Expansion slots	PCIe expansion bay.			
8	USB board	USB ports. See USB Board on page 2-63.			
9	HDD assembly	 3.5" model: 12 x hard disk drive assemblies 2.5" model: 24 x hard disk drive assemblies 			
10	Front control panel	On/Off power button and LED. See <i>Front Panel Board</i> on page 2-60.			
11	Middle top cover (2.5" model only)	See <i>Top Cover</i> on page 2-9.			

System Front View



Figure 1-3. 2.5" System front view



Figure 1-4. 3.5" System front view

Table 3: Front Panel View

No.	ΝΑΜΕ	DESCRIPTION			
1	Front control panel	On/Off power button and LED.			
2	HDD bays	 12 x 3.5" HDDs 24 x 2.5" HDDs 			
3	USB board	USB 2.0 ports x 2.Front panel USB port.			

Front Control Panel





Table 4: Front Control Panel Definition

No.	ICON	ΝΑΜΕ	DESCRIPTION		
1	Ċ	Power button with LED	Power on / off		
2		Reset button	Soft reset system function		
3		ID button	Activates identification event		
4		Fault LED	Provides critical and non-critical failure notification		
5	9	HDD access LED	Hard disk drive access		
6	동	LAN1 LED	LAN access		
7	동	LAN2 LED	LAN access		
8		ID LED	Displays when ID button is pressed		

System Rear View



Figure 1-6. System rear view

Table	5:	Rear	Panel	View
TUDIC	э.	ncui	runci	VIC VV

No.	ΝΑΜΕ	DESCRIPTION
1	Expansion Slot	PCIe SSD optional expansion bay.
2	Expansion Slot	PCIe expansion bay.
3	Expansion Slot	Two PCIe expansion bays.
4	Expansion Slot	SAS/SATA SSD optional expansion bay.
5	Power Sub-system	Primary power supply unit (PSU1).
6	USB ports	USB ports 0 - 1 (2.0 / 3.0)
7	Dedicated NIC	Dedicated RJ45 connector
8	NIC1	RJ45 connector
9	NIC2	RJ45 connector
10	COM port A	DB9 port (Serial_A) for debug or terminal concentrator
11	VGA connector	Maximum display resolution: 1920x1200 32bpp@60Hz (reduced blanking)
12	OCP connector	OCP debug connector (optional)
13	Power Sub-system	Secondary power supply unit (PSU2)

LED Definitions

Front Control Panel LED

Table 6: Front Control Panel LED Behavior

ΝΑΜΕ	COLOR	CONDITION	DESCRIPTION	
PowerLED	Blue	ON	System power on	
	Diue	OFF	System power off	
Identification	Blue	ON	Unit selected for identification	
laentineation	Dide	OFF	No identification request	
			Critical Failure: critical fan, voltage, temperature state.	
Fault LED	Amber	Blinking	Non-Critical Failure: non-critical fan, voltage, temperature state, CPU thermal trip, DC off	
		OFF	SEL cleared	
			Last pending warning or error has been de-asserted	
HDD Activity	Activity Blue Blinking		Hard disk drive access (only on board SATA port)	
HDD Activity	Diac	OFF	No access (non-SAS)	
			Link	
	Dide	Blinking	LAN access (off when there is traffic)	
	Blue	ON	Link	
		Blinking	LAN access (off when there is traffic)	

LAN Port LEDs

The system mainboard includes an optional 82599EN Ethernet controller and two 1 GbE or one 10 GbE (optional) ports. Each RJ45 connector has two built-in LEDs. See the following illustration and table for details.



Figure 1-7. RJ45 LAN port LEDs

Table 7: RJ45 LED Description

Condition	Link	Αςτινιτγ
Unplugged	Off	Off
1G active link	On amber	Blinking green
100M active link	On green	Blinking green
10M active link	Off	Blinking green

HDD LED

Front HDD LED Status Behavior





Figure 1-8. HDD LED Identification

Table 8: HDD Status LED Behavior

Indication	Status LED	FAULT LED	Active LED
	On blue	Off	On blue: HDD access active
Drive on-line		On amber: HDD error	RAID fail, Initial at AC on, RAID rebuild

Rear Storage Device LED Status Behavior



Figure 1-9. Rear Storage Device View

Table 9: Rear Storage Device LED Behavior

Indication	Status LED	ACTIVE LED	
Drive on-line	Off	On blue: present	
	On amber: HDD error	Blinking blue: HDD access active	
Slot empty	Off	Off	

This page left blank intentionally.

Regulatory and Compliance Information

Chapter2

This section provides regulatory and compliance information applicable to this system.

2.1 Electromagnetic Compatibility Notices

FCC Verification Statement (USA)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver
- Connect the equipment to an outlet on a circuit other than the one to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment. The customer is responsible for ensuring compliance of the modified product.

Only peripherals (computer input/output devices, terminals, printers, etc.) that comply with FCC Class A or B limits may be attached to this computer product. Operation with noncompliant peripherals is likely to result in interference to radio and TV reception.

All cables used to connect to peripherals must be shielded and grounded. Operation with cables, connected to peripherals, that are not shielded and grounded may result in interference to radio and TV reception.

Europe (CE Declaration of Conformity)

This product has been tested in accordance too, and complies with the Low Voltage Directive (73/23/EEC) and EMC Directive (89/336/EEC). The product has been marked with the CE Mark to illustrate its compliance.

VCCI (Japan)

この装置は、情報処理装置等電波障害白主規制協議会(VCCI)の基準 に基づくクラスA情報技術装置です。この装置を家庭環境で使用すると電波 妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ず るよう要求されることがあります。

English translation of the notice above:

This is a Class A product based on the standard of the Voluntary Control Council for Interference (VCCI) from Information Technology Equipment. If this is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction guide.

BSMI (Taiwan)

The BSMI Certification Marking and EMC warning is located on the outside rear area of the product.

```
警告使用者:
這是甲類的資訊產品,在居住的環境中使用時,
可能會造成射頻干擾,在這種情況下,使用者會
被要求採取某些適當的對策
```

Regulated Specified Components

To maintain the UL listing and compliance to other regulatory certifications and/or declarations, the following regulated components must be used and conditions adhered to. Interchanging or use of other component will void the UL listing and other product certifications and approvals.

Updated product information for configurations can be found on the site at the following URL: http://www.QuantaQCT.com

If you do not have access to the Web address, please contact your local representative.

- Add-in cards: must have a printed wiring board flammability rating of minimum UL94V-1. Add-in cards containing external power connectors and/or lithium batteries must be UL recognized or UL listed. Any add-in card containing modem telecommunication circuitry must be UL listed. In addition, the modem must have the appropriate telecommunications, safety, and EMC approvals for the region in which it is sold.
- Peripheral Storage Devices: must be UL recognized or UL listed accessory and TUV or VDE licensed. Maximum power rating of any one device is 19 watts. Total server configuration is not to exceed the maximum loading conditions of the power supply.

Restriction of Hazardous Substances (RoHS) Compliance

Quanta[®] Computer Inc. has a system in place to restrict the use of banned substances in accordance with the European Directive 2002/95/EC. Compliance is based on declaration that materials banned in the RoHS Directive are either (1) below all applicable threshold limits or (2) an approved / pending RoHS exemption applies.

RoHS implementation details are not fully defined and may change.

Threshold limits and banned substances are noted below:

- Quantity limit of 0.1% by mass (1000 PPM) for:
 - Lead
 - Mercury
 - Hexavalent Chromium
 - Polybrominated Biphenyls Diphenyl Ethers (PBDE)
- Quantity limit of 0.01% by mass (100 PPM) for:
 - Cadmium

End of Life / Product Recycling

Product recycling and end-of-life take-back systems and requirements vary by country. Contact the retailer or distributor of this product for information about product recycling and / or take-back.

2.2 Product Regulatory Compliance Markings

This product is marked with the following product certification markings:

Table 1: Product Regulatory Compliance Markings

Regulatory Compliance	Region	Marking
cULus Listing Marks	USA / Canada	
CE Mark	Europe	Œ
FCC Marking (Class A)	USA	This device complies with Part 15 of the FCC Rules. Operation of this device is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.
VCCI Marking (Class A)	Japan	この装置は、クラス A 情報技術 装置です。この装置を家庭環境で 使用すると電波妨害を引き起こす ことがあります。この場合には使 用者が適切な対策を講ずるよう要 求されることがあります。VCCI-A
BSMI Certification Number & Class A Warning	Taiwan	 ・ ・ ・ ・ ・ ・<
ICES	Canada	This Class A digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Table 1: Product Rec	gulatory Com	pliance Markin	gs (Continued)

REGULATORY COMPLIANCE	Region	Marking
Recycling Package Mark	Other than China	Corrugated Recycles
GOST-R Marking	Russia	PG

Required Information for COMMISSION REGULATION (EU) 2019/424

The following information is in reference to section 3.1, ANNEX II, COMMISSION REGULATION (EU) 2019/424.

I. Summary

Product type	Server
Manufacturer's name	Quanta Computer Inc.
Product Name	QuantaGrid D51B-2U
Year of manufacture	2014
Operating condition classes	A2
Product family configuration	Not family product

II. Power Supply Units

	Power efficiency				
PSU power	(Power Factor)				
	10%	20%	50%	100%	
(MC200P4, 2, 4P, 02)	89,0%	92,4%	94,6%	93,4%	
800W-Platinum(WC800B4-3-4R-02)	(0,900)	(0,970)	(0,990)	(1,000)	
1600\W Platinum(ESE022.020C)	88,5%	92,5%	94,2%	92,4%	
1600W-Platinum(FSE023-930G)	(0,926)	(0,975)	(0,989)	(0,999)	
1600W Platinum (DS 2162 10 LE DEV/01)	88,2%	91,5%	94,1%	91,6%	
1600W-Platinum(PS-2162-1Q-LF REV.01)	(0,971)	(0,991)	(0,995)	(0,997)	
	88,5%	92,5%	94,2%	92,4%	
1000W-Platinum(FSE023-930G REV.03)	(0,926)	(0,975)	(0,989)	(0,999)	
	86,0%	90,7%	94,1%	91,4%	
500W-Platinum(WC500B4-3-4R-02)	(0,870)	(0,960)	(0,990)	(1,000)	
EQOW Platinum (PS 2E01 80)	86,2%	90,8%	94,2%	93,3%	
500W-Flatinum(FS-2501-8Q)	(0,901)	(0,962)	(0,989)	(0,993)	

200W/ Platinum/PC 2201 201	89,6%	93,1%	94,3%	92,4%
800W-Platinum(PS-2801-8Q)	(0,883)	(0,941)	(0,980)	(0,992)
200\// Titonium/MC200DC 2 4D 02)	90,9%	94,4%	96,03%	95,5%
800W-Ittanium(WC800B6-3-4R-02)	(0,880)	(0,960)	(0,990)	(0,990)
	92,4%	94,9%	96,2%	94,9%
80000-11(811(01)(10)(938146)	(0,956)	(0,981)	(0,984)	(0,995)
1200W/ Platinum/PS 2122 70)	88,7%	91,6%	94,2%	92,4%
1200W-Platinum(PS-2122-7Q)	(0,923)	(0,979)	(0,992)	(0,996)

III. Active State Efficiency and Idle State Power

Test results		High-end	Low-end	
No,	Item	Configuration	Configuration	
1	Idle State Power	136,8 W	126,1 W	
2	Maximum power	499,5 W	230,3 W	
3	Idle state power at the higher boundary temperature of the declared operating condition class (35°C of A2 operating condition class)	139,1 W	126,7 W	
4	Idle state power allowance	283,54 W	136,91 W	
5	Active state efficiency from SERT	22,6	17,8	
6	Idle state power ≤ Idle state power allowance	PASS	PASS	
7	Active State Efficiency must be > 9,5	PASS	PASS	

NOTE: All test results are measured at ambient temperature of 25 ± 5 °C, except for "Idle state power at the higher boundary temperature of the declared operating condition class",

IV. List of components for additional power allowance

Characteristic	Calculated Allowance			
Characteristic	High-end Configuration	Low-end Configuration		
Base Power for 2 socket server	38,00 W	38,00 W		
7 x PerfCPU	72,02 W	29,07 W		

PSU ((n-1)x10)	10,00 W	10,00 W
HDD/SSD	10,00 W	10,00 W
Memory (GB - 4 x ,18)	137,52 W	33,84 W
Channels ((# - 8)x4)	16,00 W	16,00 W
I/O	0 W	0 W
Total Idle State power Allowed	283,54 W	136,91 W

V. Operating Condition Class

	Dry bulb temp °C		Humidity range,			
Operating			non-condensing		Max dew	Maximum rate of
condition	Allowable	Recom-	Allowable	Recom-	point	change
class	range	mended	range	mended	(°C)	(°C /hr)
		range		range		
A2	10-35 18-27	– 12 °C DP	– 9 °C DP to 15 °C DP and 60 %	21	5/20	
		and 8 % RH				
		to 21 °C DP				
		and 80 %				
		RH	КП			

VI.Secure Data Deletion Tool

Seagate

1. <u>Statement</u>

The secure data deletion is done using a simple SATA/SAS command, Any application that supports SAS or SATA commands will work, and users can use Seagate utility like SeaTools or SeaChest to do this,

Seagate use AES 256 encryption algorithms, NIST (National Institute of Standards and Technology) Special Publication 800-57 recommends AES key sizes of 128 bits or larger, which they maintain are acceptable for use until at least 2031,

The secure data deletion method follows the NIST 800-88 and ISO 27040 standards,

- 2. <u>User guide/Tool</u>
 - SeaTools for Windows, Download link: <u>https://www,seagate,com/au/en/support/downloads/seatools/seatools-win-master/</u> There is a white paper to show how to use the tool, <u>https://www,seagate,com/staticfiles/support/docs/TP644_1_1211US_How_to_ISE_Your_Drive-FINAL,pdf</u>
 - SeaChest_Erase (Seagate open-source tool)

https://github,com/Seagate/ToolBin/tree/master/SeaChest/Erase/v2,0,1

Sanitize an HDD (both SAS/SATA) # SeaChest_Erase --sanitize overwrite -d /dev/sgx –confirm I-understand-this-command-will-erase-all-data-on-the-drive

WDC

1. <u>Statement</u>

Western Digital's hard disk drives (HDD) are available with a variety of functions, commands, and features designed to delete or sanitize data so the device can be re-purposed or disposed, These include Secure Erase (SE) and Instant Secure Erase (ISE) configurations in both SATA and SAS drives,

Details of these functionalities can be found in this Technical Brief:

https://documents,westerndigital,com/content/dam/doc-

library/en_us/assets/public/western-digital/collateral/tech-brief/tech-brief-instant-secureerase-overview,pdf

When given the proper commands, SE or ISE devices will effectively erase all traces of existing data stored on the device by overwriting or encrypting the data completely in such a way that access to the original data, or parts of that data, become infeasible for a given level of effort,

2. <u>User guide/Tool</u>

Please refer to the link as below to use 3rd utility for this, <u>https://grok,lsu,edu/Article,aspx?articleid=16716</u>

Toshiba

1. <u>Statement</u>

Based on the definition of "Secure data deletion" described in page 10(35),

- Block Erase or Crypto Erase are considered as secure data deletion,
- Our eSSD and dSSD have Block Erase and/or Crypto Erase features,
- Block Erase and Crypto Erase are the features defined in the standard spec such as NVMe, TCG, T13,
- HDD device is the product which design for storing data and deleting data purpose (reuse),

Based on the above reasons, our HDD/eSSD/dSSD conform to EU2019 regulation,

2. <u>User guide/Tool</u>

Toshiba has no public route for end user to obtain the FW update tool, it is based on Toshiba's regulation,

Current procedure for providing FW tool to customer as below:

- Request FW tool from customer to Toshiba contact window
- Toshiba provides document (excel) to customer for filling up related information, and return the document to Toshiba contact window,
- > Toshiba HQ approves the usage and provide FW update tool for the customer,

INTEL

1. <u>Statement</u>

According to Intel NSG SSD product specification, EU2019/424 regulation is supported by Intel NSG SSD products,

2. <u>User guide/Tool</u>

Download isdct from Intel public website <u>https://downloadcenter,intel,com/download/28999?v=t</u>

From user guide, you can find command for secure erase(SATA) and format(NVMe) in page 47,

Micron

1. <u>Statement</u>

Secure data deletion means that data is wiped out from physical NAND, and user cannot recover it back any more,

For NVMe SSD, secure erase is involved in Format NVM command, by which, particular namespace or all namespace would be wiped out,

2. <u>User guide/Tool</u>

Download msecli from Intel public website,

https://www,micron,com/search-

results?searchRequest=%7B%22term%22%3A%22msecli%20Software%20for%20Windows%20 Systems%22%7D

Please refer to page 33 for Performing a Sanitize Drive (Block Erase) Operation and page 45 for Secure Erase Namespace,

Samsung

1. <u>Statement</u>

Samsung SSD drives are support with a variety of functions, command to data deletion function (secure erase) on the device,

Based on different interface SSDs have different command to implement data deletion function, please refer to section "User guide/tool" as below,

When execute the proper command, the devices will erase all traces of existing data on the device,

- 2. <u>User guide/Tool</u>
 - For Samsung SATA SSD product,

- How to implement secure erase command in linux
 hdparm --user-master u --security-set-pass NULL /dev/\$dev hdparm --user-master u
 --security-erase NULL /dev/\$dev
- How to implement sanitize command in linux
 hdparm --yes-i-know-what-i-am-doing --sanitize-block-erase /dev/\$dev
 hdparm --yes-i-know-what-i-am-doing --sanitize-block-erase /dev/\$dev
- For Samsung NVMe SSD product,
 - How to implement nvme format(secure erase) by using nvme-cli tool in linux nvme format [device] -s <ses> ex) Format namespace 1 with user data secure erase settings >>> # nvme format /dev/nvme0n1 -s 1 -s <ses> or --s=<ses>

• Secure Erase Settings

This field specifies whether a secure erase should be performed as part of the format and the type of the secure erase operation, The erase applies to all user data, regardless of location (e,g,, within an exposed LBA, within a cache, within deallocated LBAs, etc), Defaults to 0, Location (e,g,, within an exposed LBA, within a cache, within deallocated LBAs, etc), Defaults to 0,