Seagate® Nytro® 5910
NVMe Flash Accelerator Carrier Card

Product Manual

XP7680LE80002

100827008 Rev. A
September 2017

Revision History

Version and Date	Description of Changes
Rev A, September 2017	First release of the document.

Contents

Seagate Technology Support Services

For Nytro Support, visit: http://www.seagate.com/support/by-product/ssd-and-pcie-flash/

For information regarding online support and services, visit: http://www.seagate.com/contacts/

Available services include:

- Presales & Technical support
- Global Support Services telephone numbers & business hours
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For information regarding Warranty Support, visit: http://www.seagate.com/support/warranty-and-replacements/

For information regarding data recovery services, visit:
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1. Introduction

The Seagate® Nytro® 5910 NVMExpress® (NVMe) Flash Accelerator Card has scalability that allows you to add cards in a variety of servers.

1.1 Features

The Nytro 5910, with NVMe interface is the highest throughput PCIe add-in card. The Nytro 5910 delivers leading performance, low latency, and world class reliability and endurance. The scalable capacity of this card allows easy qualification and deployment of M.2 modules into a hyper-scale system.

Table 1 Nytro 5910 Card Features

Feature	Description	
Airflow	■ 300 Linear Feet per Minute (LFM). See Section 2.4, Environmental Considerations.	
Usable Capacity	■ 7680 GB at 7% over-provisioning	
Dimension	■ 126.35 mm x 181.05 mm x 21.6 mm (includes bracket)	
Endurance	■ Supports up to 0.3 Drive Writes Per Day	
Form Factor	■ Full Height Half Length (FHHL) carrier card with M.2 modules	
Interface	■ PCIe® Gen 3 x 16 supports four x4 M. 2 modules through NVMe 1.2 a support. ■ Out of Band Management (SMBus) support.	
NAND	■ 3D cMLC NAND Flash Memory	
Performance	■ Actual performance varies depending with use conditions and environment. See Section 2.2, Performance.	
Operating Systems	■ Windows® and Linux®	
Power	■ 12-V Rail, 3.3V_PCI, 3.3V_AUX	
Reliability	■ MTBF: 2 Million hours	
Security	■ Self encryptions available	
Shock and Vibration	Shock ■ Non-operating: 71 G, duration, 2 ms ■ Operating: 31 G, duration, 2.6 ms	See Section 2.4, Environmental Considerations.
	Vibration ■ Operating: 0.5 Grms (5 to 500 Hz) ■ Non-Operating: 1.88 Grms (10 to 500 Hz)	See Section 2.4, Environmental Considerations.
Temperature Range	■ Operating: 0 to 70°C (measured by SMART) ■ Non Operating: -40 to 85°C	See Section 2.4, Environmental Considerations.
Warranty	■ 5 years limited	
Weight	■ Up to 280 g ± 5%	

1.2 UEFi

The Nytro 5910 card is UEFi compatible with UEFi Specification Version 2.3.1.

1.3 Block Size

The Nytro 5910 card supports both 512 B and 4 KB sector sizes. LBA format change may require power cycle before the change takes affect.

CAUTION When you change the sector size, ***all*** data on the drive is destroyed. Make sure there is no I/O activity to the drive before changing sector size.

1.4 National, International, and Industry Standards

- IEEE Std 1149.1-1990, *IEEE® Standard Test Access Port and Boundary-Scan Architecture*
- *PCI Express Local Bus Specification, Revision 3.0*
- *NVM Express Management Interface Specification 1.2a*

2. Specifications

2.1 Model and Capacity

The following models and capacities are available in this product family.

Table 2 Nytro 5910 Card Models and Capacities

Device Name	Model Name	Usable Capacity	Connector	Card Style
Nytro 5910	XP7680LE80002	7680 GB[1]	PCIe 3.0	Full height, half length

1. At 7% over-provisioning.

2.2 Performance

Table 3 Nytro 5910 Read/Write Performance

Parameters	Nytro 5910
Sequential Read/Write, Peak Sustained 128-KB	8150/4800 MiB/s
Random Read/Write, Peak Sustained 4-KB	975,000/132,000 IOPS
Random 70/30 Read/Write, Peak Sustained 4-KB	369,000 IOPS

NOTE Performance data is based on 7% over provisioning Nytro 5910 M.2 modules.

2.3 Power Consumption

Table 4 Nytro 5910 Card Power Consumption

Model Name	Typical Power with I/O	Maximum Power with I/O
XP7680LE80002	36 W	37.5 W

NOTE Power consumption data is based on 7% over provisioning Nytro 5910 M.2 modules.

2.4 Environmental Considerations

The board is designed to operate in an environment defined by the following parameters:

Table 5 Temperature and Humidity

Specification		Nytro 5910
Temperature (degrees C)	Operating (as measured by SMART) Non-Operating	0 to 70 -40 to 85[1]
Temperature Gradient Maximum (C per hour)	Operating Non-Operating	30°C/hr 30°C/hr
Humidity	Operating Non-Operating	5% to 95% 5% to 95%

NOTE 1. Limited to shelf life while product is still in the shipping package.

2.4.1 Storage

You can store the drive for a maximum of 180 days in the original unopened Seagate shipping package or 60 days, unpackaged, in the defined non-operating limits (See Table 5, Temperature and Humidity). You can extend storage to 1 year packaged or unpackaged under optimal environmental conditions (<40°C, <40% relative humidity non-condensing, and non-corrosive environment).

Table 6 Shock

Specification		Nytro 5910
Shock - Maximum	Non Operating	71 G's at 2 ms
Shock - Maximum	Operating	31 G's at 2.6 ms

NOTE Specification does not cover connection issues that might result from testing at this level.

- **Operating shock:** The drive, as installed for normal operation, operates error free while subjected to intermittent shock not exceeding the specification. Shock may be applied in the X, Y, or Z-axis. Shock is not to be repeated more than once every 2 seconds.
- **Non-Operating shock:** The limits of non-operating shock apply to all conditions of handling and transportation. This includes isolated drive and integrated drives. Shock may be applied in the X, Y, or Z-axis.

Table 7 Vibration

Specification		Nytro 5910
Vibration Profiles	Operating	0.5 G_{RMS} (5-500 Hz)
Vibration Profiles	Non Operating	1.88 G_{RMS} (10-500 Hz)

NOTE Here is more information on Vibration:

- **Operating vibration:** The drive, as installed for normal operation, shall operate error free while subjected to specified vibration not exceeding specification. Vibration may be applied in the X, Y, or Z-axis.
- **Non-Operating vibration:** The limits of non-operating vibration shall apply to all conditions of handling and transportation. This includes both isolated drive and integrated drives. Vibration may be applied in the X, Y, or Z-axis.

Table 8 Airflow Requirements

Airflow Definition	Ambient Temperature	Nytro 5910
Airflow Along Drive	35°C	300 LFM

NOTE Here is more information on Airflow:

- **Thermal throttling** is activated to protect critical components from damage. The host observes a reduction in power and therefore performance until PCB temperature lowers. When the PCB temperature decreases to an acceptable temperature, thermal throttling deactivates, and performance returns to normal.

3. Characteristics

This chapter presents characteristics for the Nytro 5910 card.

3.1 Nytro 5910 Card Characteristics

The Nytro 5910 card uses a full-profile, full-height, and half-length PCIe board.

The Nytro 5910 card can be used for persistent or nonpersistent data, and offers high performance with low latency and a low CPU burden.

Figure 1 Nytro 5910 Card

3.2 LEDs

The Nytro 5910 card has four, two-color, red/blue LEDs.

The LEDs provide key status information to diagnose a problem with the Nytro 5910 card. The following figure shows the LED locations.

Figure 2 Nytro 5910 Card Bracket Showing the LED Locations

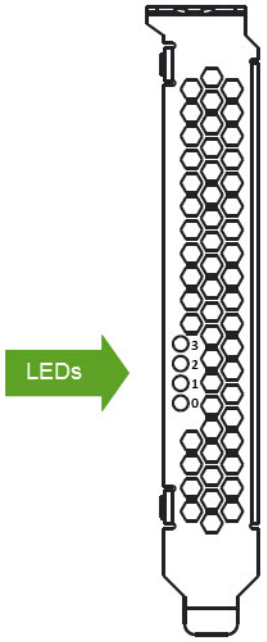


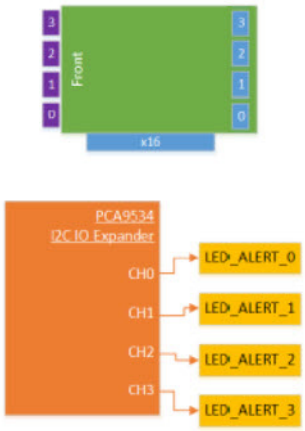
Table 9 LED Status Indicators

Color	LED Description
Blue	The blue LED light connects to each M.2 activity LED (M.2 connector pin 10). **On, steady** – Card is installed and operational. **On, blinking** – Indicates data activity on the M.2 module. This light blinks at a 5 Hz rate.
Red	The red LED light connects to a GPIO bit for each M.2 that the host software controls. **On, steady** – The following conditions applies: ■ The management software detects a failed M.2 module. **NOTE** Users can create other functions, such as over-temperature detection to flash the LED. However, creating other functions is at the discretion of the Open Compute Project (OCP) community to define because the LED is accessible from only the host SMBus.

3.2.1 OCP LED Definition

The LED to connector mapping is shown below.

Figure 3 LED to Connector Mapping.



The blue LEDs indicate activity and are driven by the LED signal (Pin 10) of the M.2 modules. The LED should be on when the SSD is installed and idle, and flashing when there is activity.

The red LEDs indicate module fault, and are driven by the I2C-addressable GPIO expander.

3.2.2 Troubleshooting the Card

If you experience a fatal error in the firmware, such as catastrophic controller failure, your device might or might not be visible in your operating system. For any problems with your Nytro 5910 card that you cannot resolve, contact Seagate Technology Support Services or, contact Customer Technical Support (CTS).

4. Installation

This chapter presents hardware and software installation guidance.

4.1 Hardware Installation Instructions

1. **Unpack the Nytro 5910 card and inspect it for damage.** Unpack the card in a static-free environment and follow good antistatic grounding procedures. Remove the Nytro 5910 card from the antistatic bag, and carefully inspect it for damage. If you notice any damage, contact Seagate, or your reseller support representative.

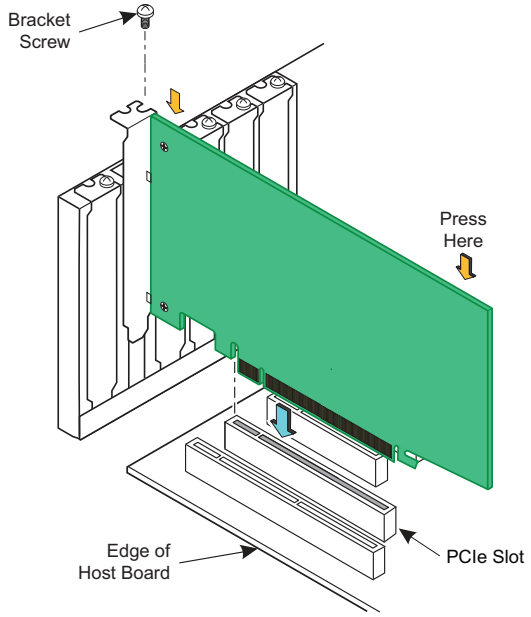
   NOTE Back up your data before changing your system configuration.

2. **Prepare the server.** Turn off the server, and disconnect the power cords from the power supply. Remove the cover from the chassis.

   CAUTION To avoid electrical shock, disconnect the server from the main power and from any networks before you install the card.

3. **Insert the Nytro 5910 card in a 75-W PCIe slot.** Locate an empty **75-W PCIe slot.** Without sufficient power the Nytro 5910 card may be damaged or run at less than optimal performance. Remove the blank bracket panel on the server chassis that aligns with the empty PCIe slot. Save the bracket screw, if applicable. Align the card to the PCIe slot. Press down gently, but firmly, to properly seat the card in the slot. The following figure shows how to insert the card in a PCIe slot.

Figure 4 Nytro 5910 Card Installation



   CAUTION The PCIe slot must be PCIe 3.0 and have an active width of dedicated 16 lanes.

   CAUTION The location must meet the 300 LFM minimum airflow requirement.

4. **Secure the bracket to the system's chassis.** Install the bracket screw, if applicable, or engage the system retention mechanism to secure the card to the system's chassis.

5. **Replace the cover, reconnect the power cords and network cables. Power up the system.** Replace the server's cover, reconnect the power cords, and reconnect any network cables. Turn on the power.

4.2 BIOS Configuration

The Nytro 5910 carrier card splits the x16 interface into four independent x4 interfaces. Each M.2 module appears in the system as an independent device. Unlike other carrier cards, the Nytro 5910 card does not have a PCIe switch. The host server BIOS must configure the PCIe lanes. To configure the PCIe lanes, the BIOS must first recognize the Nytro 5910 card.

4.2.1 How to Recognize the Nytro 5910 Card

The following sections tell you, which BIOS are compatible with the Nytro 5910 card, and how to recognize the Nytro 5910 under various conditions.

4.2.1.1 Compatible BIOS Support

Before the host can recognize the Nytro 5910, the BIOS must support four independent x4 interfaces.

4.2.1.2 Software Configuration Recognition

The host can recognize the Nytro 5910 using software configuration. Server vendors can refer to the *NVM Express Management Interface Specification 1.2a* for VPD content format.

4.3 Troubleshooting the Nytro 5910 Card

For any problems with your Nytro 5910 card that you cannot resolve, contact Seagate Technology Support Services or, contact your field application engineer (FAE) or customer technical support (CTS). Keep these tips in mind when reporting a problem:

- Clearly identify and report the revision level of the Nytro 5910 card.
- Report the part number listed on the label, and clearly identify the board revision.
- Describe the steps leading up to the error.

Report the operating system version and the host driver version.

5. Interface requirements

5.1 PCIe features

The Nytro 5910 supports *NVM Express Management Interface Specification 1.2a*. The following table shows the supported Features, Op-code, and whether vendor specific, mandatory, or optional:

Table 10 PCIe Features

Feature ID	M/O	Description	Supported
01h	M	Arbitration	Yes
02h	M	Power Management	Yes
03h	O	LBA Range Type	No
04h	M	Temperature Threshold	Yes
05h	M	(Time limited) Error Recovery	Yes
06h	O	Volatile Write Cache	No
07h	M	Number of Queues	Yes
08h	M	Interrupt Coalescing	Yes
09h	M	Interrupt Vector Configuration	Yes
0Ah	M	Write Atomicity	No
0Bh	M	Asynchronous Event Configuration	Yes
0Ch	O	Autonomous Power State Transition	No
0Dh	O	Host Memory Buffer	No
80h	O	Software Progress Marker	No
81h	O	Host Identifier	No
82h	O	Reservation Notification Mask	No
83h	O	Reservation Persistence	No
C0h	VS	System Time	Yes
C1h	VS	Test Unit Ready	Yes
C2h	VS	Media Life Left Threshold	Yes

5.2 Interface Commands Supported

The Seagate Nytro SSD supports all the mandatory NVMe Admin and I/O command-sets in *NVMe spec 1.2a*. In addition, several optional commands are also supported. Below are tables showing the Commands, Op-code, whether Admin or IO and mandatory or optional:

Table 11 Supported I/O Commands

Feature ID	M/O	Command	Supported
00h	M	Flush	Yes
01h	M	Write	Yes
02h	M	Read	Yes
04h	O	Write Uncorrectable	Yes
05h	O	Compare	No
08h	O	Write Zones	Yes
09h	O	Dataset Management - Trim	Yes
		Dataset Management - IDW	No
		Dataset Management - IDR	No
0Dh	O	Reservation Register	No
0Eh	O	Reservation Report	No
11h	O	Reservation Acquire	No
12h	O	Reservation Release	No

Table 12 Supported Admin Commands

Op-code	M/O	Command	Supported
00h	M	Delete I/O SQ	Yes
01h	M	Create I/O SQ	Yes
02h	M	Get log Page	Yes
04h	M	Delete I/O CQ	Yes
05h	M	Create I/O CQ	Yes
06h	M	Identify	Yes
08h	M	Abort	Yes
09h	M	Set Features	Yes
0Ah	M	Get Features	Yes
0Ch	M	Async Event Request	Yes
0Dh	O	Namespace Management	No
10h	M	Firmware Commit	Yes
11h	M	Firmware Image Download	Yes
15h	O	Namespace Attachment	No
80h	O	Format NVM	Yes
81h	O	Security Send	Yes

Table 12 Supported Admin Commands *(continued)*

Op-code	M/O	Command	Supported
82h	O	Security Receive	Yes
C0h	VS	Diagnostic Send	Yes
C1h	VS	Diagnostic Receive	Yes

5.3 Log Page Support

The Seagate Nytro SSD supports the following mandatory log pages defined in NVMe 1.2a specification.

Table 13 Log Page Support

Log Page	M/O	Description	Supported
01h	M	Error Information	Yes
02h	M	SMART/Health Information	Yes
03h	M	Firmware Slot Information	Yes
05h	O	Commands Supported and Effects Log	Yes
C4h	VS	Extended SMART Attributes	Yes
C5h	VS	List of Supported Log Pages	Yes
C8h	VS	Recent history Log Page	Yes
CBh	VS	PCIe Error Counter Log	Yes

5.4 SMART Attributes

The following table lists the supported SMART attributes.

Table 14 SMART Attributes (Log Identifier 02h)

Byte	# of Bytes	Attribute	Description
0	1	**Critical Warning:** These bits, if set, flag various warning sources. Bit 0: Available Spare is below Threshold Bit 1: Temperature has exceeded Threshold Bit 2: Reliability is degraded due to excessive media or internal errors Bit 3: Media is placed in Read- Only Mode Bit 4: Volatile Memory Backup System has failed (e.g., enhanced power loss capacitor test failure) Bits 5-7: Reserved	Any of the critical warning can be tied to asynchronous event notification. Drive Health Indicator defined under bytes 3095-3076 of Identify Controller may still indicate "healthy" status when the critical warning flag is set.
1	2	Temperature: Overall Device current temperature in Kelvin	For AIC, this reports the NAND temperature, for M.2 FF, this reports the case temperature.
3	1	Available Spare: Contains a normalized percentage (0 to 100%) of the remaining spare capacity available	Starts from 100 and decrements.
4	1	Available Spare Threshold	Threshold is set to 10%.

Table 14 SMART Attributes (Log Identifier 02h) *(continued)*

Byte	# of Bytes	Attribute	Description
5	1	Percentage Used Estimate (Value allowed to exceed 100%)	A value of 100 indicates that the estimated endurance of the device has been consumed, but may not indicate a device failure. The value is allowed to exceed 100. Percentages greater than 254 shall be represented as 255. This value shall be updated once per power-on hour (when the controller is not in a sleep state).
32	16	Data Units Read (in LBAs)	Contains the number of 512 byte data units the host has read from the controller; this value does not include metadata. This value is reported in thousands (i.e., a value of 1 corresponds to 1000 units of 512 bytes read) and is rounded up. When the LBA size is a value other than 512 bytes, the controller shall convert the amount of data read to 512-byte units.
48	16	Data Units Write (in LBAs)	Contains the number of 512 byte data units the host has written to the controller; this value does not include metadata. This value is reported in thousands (i.e., a value of 1 corresponds to 1000 units of 512 bytes written) and is rounded up. When the LBA size is a value other than 512 bytes, the controller shall convert the amount of data written to 512-byte units. For the NVM* command set, logical blocks written as part of Write operations shall be included in this value. Write Uncorrectable commands shall not impact this value.
64	16	Host Read Commands	Contains the number of read commands issued to the controller.
80	16	Host Write Commands	Contains the number of write commands issued to the controller.
96	16	Controller Busy Time (in minutes)	Contains the amount of time the controller is busy with I/O commands. The controller is busy when there is a command outstanding to an I/O Queue (specifically, a command was issued by way of an I/O Submission Queue Tail doorbell write and the corresponding completion queue entry has not been posted yet to the associated I/O Completion Queue). This value is reported in minutes.
112	16	Power Cycles	Contains the number of power cycles.
128	16	Power On Hours	Contains the number of power-on hours. This does not include time that the controller was powered and in a low power state condition.

Table 14 SMART Attributes (Log Identifier 02h) *(continued)*

Byte	# of Bytes	Attribute	Description
144	16	Unsafe Shutdowns	Contains the number of unsafe shutdowns. This count is incremented when a shutdown notification (CC.SHN) is not received prior to loss of power.
160	16	Media Errors	Contains the number of occurrences where the controller detected an unrecovered data integrity error. Errors such as uncorrectable ECC, CRC checksum failure, or LBA tag mismatch are included in this field.
176	16	Number of Error Information Log Entries	Contains the number of Error Information log entries over the life of the controller.

6. Safety, Standards, and Compliance

6.1 Regulatory Model Number

The Regulatory Model number for this product is: STA001.

6.2 Safety Characteristics

All Seagate PCIe boards meet or exceed the requirements of UL flammability rating 94V-0. Each bare board is marked with the supplier's name or trademark, type, and UL flammability rating. Because these boards are installed in a PCIe bus slot, all voltages are below the SELV 42.4 V limit.

A CB and UL report has been generated for EN60950.

6.3 Electromagnetic Compliance and Standards

The Nytro 5910 card is designed to minimize electromagnetic emissions, susceptibility to radio frequency energy, and the effects of electrostatic discharge. The card carries the CE mark, RCM, Canadian Compliance Statement, KCC, Taiwan BSMI, Japan VCCI, and FCC Class A, and the card is marked with the FCC Self-Certification logo. The card also meets the requirements of CISPR Class A.

6.4 Standards

The Nytro 5910 card is recognized in accordance with UL 60950-1, CAN/CSA C22.2 No. 60950-1 and IEC/EN60950-1 as tested by UL.

6.5 Electromagnetic Compatibility

Electromagnetic Compatibility Notices

Federal Communications Commission (FCC) statement

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 when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Seagate Technology LLC is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

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 might cause undesired operation.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

6.6 Electromagnetic Compliance

Seagate uses an independent laboratory to confirm compliance with the directives/standards for CE Marking and RCM Marking. The Nytro 5910 card was tested in a representative system for typical applications and complies with the Electromagnetic Interference/Electromagnetic Susceptibility (EMI/EMS) for Class B products. The selected system represents the most popular characteristics for test platforms. The system configurations include:

- Typical current-use microprocessor
- Keyboard
- Monitor display
- Printer
- Mouse

Although the test system with this Seagate model complies with the directives and standards, we cannot guarantee that all systems comply. The computer or server manufacturer or the system integrator must confirm EMC compliance and provide the appropriate marking for their product.

6.7 Electromagnetic Compliance for the European Union

If this model has the CE Marking it complies with the European Union requirements of the Electromagnetic

Compatibility Directive 2004/108/EC as put into place on 20 July 2007.

6.8 Australian RCM

If this model has the RCM Marking it complies with the Australia/New Zealand Standard AS/NZ CISPR22 and meets the Electromagnetic Compatibility (EMC) Framework requirements of Australia's Spectrum Management Agency (SMA).

6.9 Korean KCC

If this model has the Korean Communications Commission (KCC) logo, it complies with KN22, KN 24, and KN61000.

Table 15 Korean Communications Commission Compliance

기종별	사용자안내문
A급 기기 (업무용 방송통신기자재)	이 기기는 업무용(A급) 전자파적합기기로서 판 매자 또는 사용자는 이 점을 주의하시기 바라 며, 가정외의 지역에서 사용하는 것을 목적으 로 합니다.

This equipment is Industrial (Class A) electromagnetic wave suitability equipment. Seller or user should take notice of this. This equipment is certified for use in places except for the home.

6.10 Taiwanese BSMI

If this model has the Taiwanese certification mark then it complies with Chinese National Standard, CNS13438.

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。

6.11 Japan VCCI Class A Statement

This is a Class A product based on the standard of the Voluntary Control Council for Interference (VCCI). If this equipment is used in a domestic environment, radio interference may occur, in which case the user may need to take corrective actions.

6.11.1 European Union Restriction of Hazardous Substances (RoHS)

The European Union Restriction of Hazardous Substances (RoHS) Directive restricts the presence of chemical substances, including Lead (Pb), in electronic products effective July 2006.

A number of parts and materials in Seagate products are procured from external suppliers. We rely on the representations of our suppliers regarding the presence of RoHS substances in these parts and materials. Our supplier contracts require compliance with our chemical substance restrictions, and our suppliers document their compliance with our requirements by providing material content declarations for all parts and materials for the disk drives documented in this publication. Current supplier declarations include disclosure of the inclusion of any RoHS-regulated substance in such parts or materials.

Seagate also has internal systems in place to ensure ongoing compliance with the RoHS Directive and all laws and regulations which restrict chemical content in electronic products. These systems include standard operating procedures that ensure that restricted substances are not utilized in our manufacturing operations, laboratory analytical validation testing, and an internal auditing process to ensure that all standard operating procedures are complied with.

6.11.2 China Requirements — China RoHS 2

China RoHS 2 refers to the Ministry of Industry and Information Technology Order No. 32, effective July 1, 2016, titled Management Methods for the Restriction of the Use of Hazardous Substances in Electrical and Electronic Products. To comply with China RoHS 2, we determined this product's Environmental Protection Use Period (EPUP) to be 10 years in accordance with the *Marking for the Restricted Use of Hazardous Substances in Electronic and Electrical Products,* SJT 11364-2014.

中国电器电子产品有害物质限制使用管理办法

(Management Methods for the Restriction of the Use of Hazardous Substances in Electrical and Electronic Products _ China RoHS)

产品中有害物质的名称及含量

(Name and Content of the Hazardous Substances in Product)

Table 16 Hazardous Substances

部件名称 Part Name	有害物质 Hazardous Substances					
	铅 Lead (Pb)	汞 Mercury (Hg)	镉 Cadmium (Cd)	六价铬 Hexavalent Chromium (Cr (VI))	多溴联苯 Polybrominated biphenyls (PBB)	多溴二苯醚 Polybrominated diphenyl ethers (PBDE)
印刷电路板组装 PCBA	X	O	O	O	O	O

本表格依据 SJ/T 11364 的规定编制。

This table is prepared in accordance with the provisions of SJ/T 11364-2014

O： 表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。

O: Indicates that the hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement of GB/T26572.

X： 表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 规定的限量要求。

X: Indicates that the hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement of GB/T26572.

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