

CFast

3MG2-P Series

Customer: _____

Customer

Part

Number: _____

Innodisk

Part

Number: _____

Innodisk

Model Name: _____

Date: _____

| Innodisk Approver | Customer Approver |
|--------------------------|--------------------------|
| | |

**Total Solution For
Industrial Flash Storage**

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REVISION HISTORY

| Revision | Description | Date |
|-----------------|----------------|-----------|
| Preliminary 1.0 | First Released | July 2017 |
| Ver 1.0 | MP Released | Aug. 2017 |
| Ver. 1.1 | Update RoHS | Aug. 2017 |

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1. Product Overview

1.1 Introduction of Innodisk CFast 3MG2-P

Innodisk CFast 3MG2-P is SATA III 6Gb/s flash based disk, which delivers excellent performance, especially in random data transfer rate, and which offers reliability making it the ideal solution for a variety of applications, including embedded system, industrial computing, and enterprise field.

Innodisk CFast 3MG2-P supports several standard features, including TRIM, NCQ, and S.M.A.R.T. The CFast have good random Read/Write performance, no latency time and small seek time. It effectively reduces the booting time of operation system. CFast 3MG2-P not only performs unmatched performance, but also designed with Innodisk owned technical knowhow to ensure the data integrity and highest levels of reliability.

Innodisk CFast 3MG2-P supports SATA III standard (6.0GHz) with high data transfer performance.

1.2 Product View and Models

Innodisk CFast 3MG2-P is available in follow capacities within MLC flash ICs.

[CFast 3MG2-P 32GB](#)

[CFast 3MG2-P 64GB](#)

[CFast 3MG2-P 128GB](#)

[CFast 3MG2-P 256GB](#)



Figure 1: Innodisk CFast 3MG2-P

1.3 SATA Interface

Innodisk CFast 3MG2-P supports supports SATA III interface, and compliant with SATA I and SATA II.

1.4 CFast 2.0 Form Factor

CFast 3MG2-P compliant with CFast 2.0 standard, it is designed with 7+17 pin connector and is

SATA compatible. CFast 2.0 leverage the same connector interface as CFast 1.1 and the SATA-3 interface for higher performance. CFast 3MG2-P mechanical dimensions: 42.8mm x 36.4mm x 3.6mm.

2. Product Specifications

2.1 Capacity and Device Parameters

CFast 3MG2-P device parameters are shown in Table 1.

Table 1: Device parameters

| Capacity | LBA | Cylinders | Heads | Sectors | User Capacity |
|----------|-----------|-----------|-------|---------|---------------|
| 32GB | 60579792 | 16383 | 16 | 63 | 29580 |
| 64GB | 121138416 | 16383 | 16 | 63 | 59150 |
| 128GB | 242255664 | 16383 | 16 | 63 | 118289 |
| 256GB | 484490160 | 16383 | 16 | 63 | 236567 |

2.2 Performance

Burst Transfer Rate: 6.0Gbps

Table 2: Performance

| Capacity | 32GB | 64GB | 128GB | 256GB |
|-----------------------------|----------------|----------------|----------------|----------------|
| Sequential* Read (QD32) | 280 MB/s | 550 MB/s | 560 MB/s | 560 MB/s |
| Sequential* Write (QD32) | 45 MB/s | 90 MB/s | 180 MB/s | 350 MB/s |
| 4KB Random** Read(QD32) | 27,000 IOPS | 52,000 IOPS | 73,000 IOPS | 74,000 IOPS |
| 4KB Random** Write(QD32) | 11,000 IOPS | 23,000 IOPS | 46,000 IOPS | 74,000 IOPS |

Note: * Sequential performance base on CrystalDiskMark 5.1.2 with Queue Depth 32 and file size 1000MB

**Random performance base on CrystalDiskMark 5.1.2 with Queue Depth 32

2.3 Electrical Specifications

2.3.1 Power Requirement

Table 3: Innodisk CFast 3MG2-P Power Requirement

| Item | Symbol | Rating | Unit |
|---------------|-----------------|---------------|------|
| Input voltage | V _{IN} | +3.3 DC +- 5% | V |

2.3.2 Power Consumption

Table 4: Power Consumption

| Mode | Power Consumption (mA) |
|--------------|------------------------|
| Read | 315 (max.) |
| Write | 760 (max.) |
| Idle | 170 (max.) |
| Current Peak | 1080(max) |

2.4 Environmental Specifications

2.4.1 Temperature Ranges

Table 5: Temperature range for CFast 3MG2-P

| Temperature | Range |
|-------------|----------------------------------|
| Operating | Standard Grade: 0°C to +70°C |
| | Industrial Grade: -40°C to +85°C |
| Storage | -55°C to +95°C |

2.4.2 Humidity

Relative Humidity: 10-95%, non-condensing

2.4.3 Shock and Vibration

Table 6: Shock/Vibration Testing for CFast 3MG2-P

| Reliability | Test Conditions | Reference Standards |
|------------------|---------------------------------|---------------------|
| Vibration | 7 Hz to 2K Hz, 20G, 3 axes | IEC 68-2-6 |
| Mechanical Shock | Duration: 0.5ms, 1500 G, 3 axes | IEC 68-2-27 |

2.4.4 Mean Time between Failures (MTBF)

Table 7 summarizes the MTBF prediction results for various CFast 3MG2-P configurations. The analysis was performed using a RAM Commander™ failure rate prediction.

- **Failure Rate:** The total number of failures within an item population, divided by the total number of life units expended by that population, during a particular measurement interval under stated condition.
- **Mean Time between Failures (MTBF):** A basic measure of reliability for repairable items: The mean number of life units during which all parts of the item perform within their specified limits, during a particular measurement interval under stated conditions.

Table 7: CFast 3MG2-P MTBF

| Product | Condition | MTBF (Hours) |
|-----------------------|---------------------------|--------------|
| Innodisk CFast 3MG2-P | Telcordia SR-332 GB, 25°C | >3,000,000 |

2.5 CE and FCC Compatibility

CFast 3MG2-P conforms to CE and FCC requirements.

2.6 RoHS Compliance

CFast 3MG2-P is fully compliant with RoHS directive.

2.7 Reliability

Table 8: CFast 3MG2-P TBW

| Parameter | | Value |
|--|---------------------|-----------------------|
| Read Cycles | | Unlimited Read Cycles |
| Flash endurance | | 3,000 P/E cycles |
| Wear-Leveling Algorithm | | Support |
| Bad Blocks Management | | Support |
| Error Correct Code | | Support |
| TBW* (Total Bytes Written) Unit: TB | | |
| Capacity | Sequential workload | Client workload |
| 32GB | 85. | 37.5 |
| 64GB | 170.5 | 75 |
| 128GB | 340.9 | 150 |
| 256GB | 681.8 | 300 |
| * Note: <ol style="list-style-type: none"> 1. Sequential: Mainly sequential write, tested by Vdbench. 2. Client: Follow JESD218 Test method and JESD219A Workload, tested by ULINK. (The capacity lower than 64GB client workload is not specified in JEDEC219A, the values are estimated.) 3. Based on out-of-box performance. | | |

2.8 Transfer Mode

CFast 3MG2-P support following transfer mode:

Serial ATA III 6.0Gbps

Serial ATA II 3.0Gbps

Serial ATA I 1.5Gbps

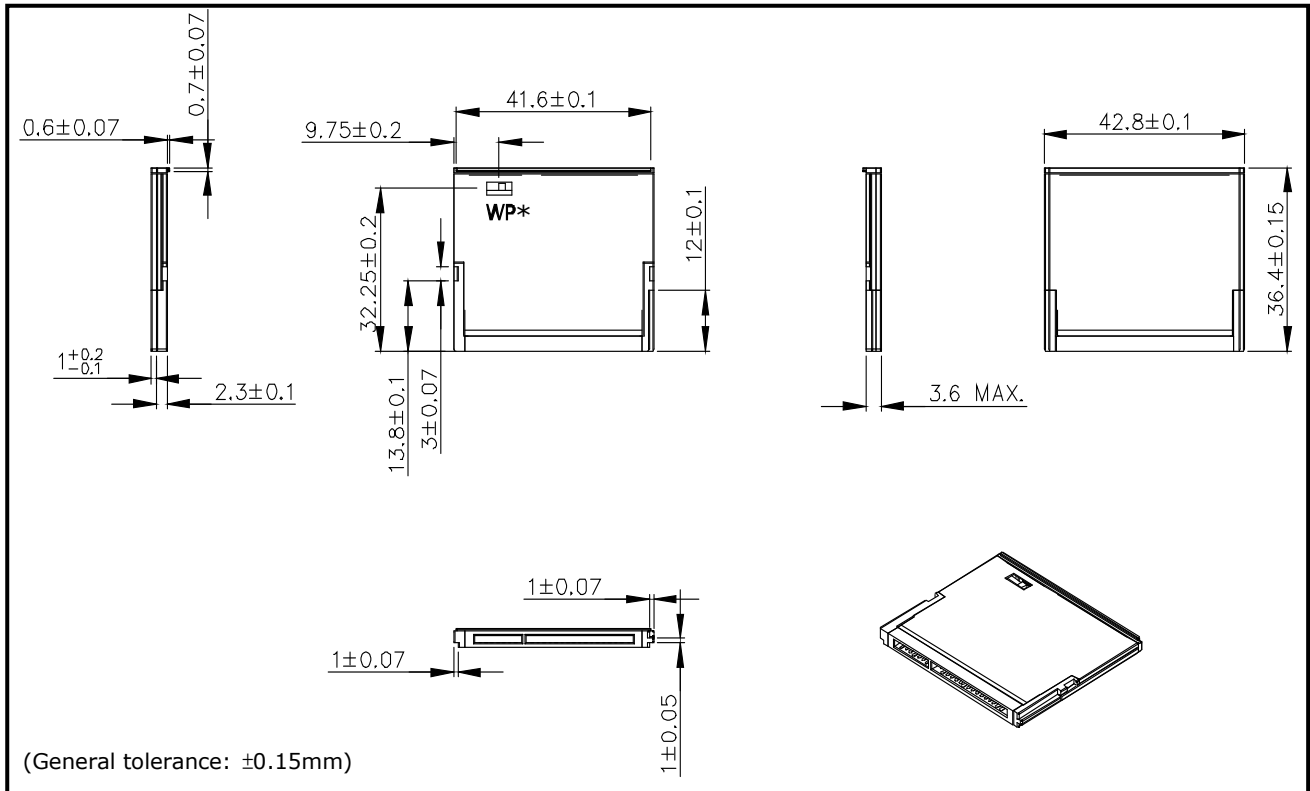
2.9 Pin Assignment

Innodisk CFast 3MG2-P uses a standard SATA pin-out. See Table 9 for CFast 3MG2-P pin assignment.

Table 9: Innodisk CFast 3MG2-P Pin Assignment

| Name | Type | Description |
|---|--------|---|
| S1 | SGND | Ground for signal integrity |
| S2 | A+ | Differential Signal Pair A |
| S3 | A- | |
| S4 | SGND | Ground for signal integrity |
| S5 | B- | Differential Signal Pair B |
| S6 | B+ | |
| S7 | SGND | Ground for signal integrity |
| Key and Spacing separate signal and power segments | | |
| P1 | CDI | Card Detect In |
| P2 | PGND | Device Ground |
| P3 | DEVSLP | Device sleep |
| P4 | TBD | Reserved |
| P5 | TBD | Reserved |
| P6 | TBD | Reserved |
| P7 | PGND | Device Ground |
| P8 | TBD | Reserved |
| P9 | LED2 | HDDA LED (LED are lighted when P9 low active) |
| P10 | TBD | Reserved |
| P11 | TBD | Reserved |
| P12 | IFDet | GND |
| P13 | PWR | Device Power (3.3V) |
| P14 | PWR | Device Power (3.3V) |
| P15 | PGND | Device Ground |
| P16 | PGND | Device Ground |
| P17 | CDO | Card Detect Out |

2.10 Mechanical Dimensions



*Write Protect is optional.

2.11 Assembly Weight

An Innodisk CFast 3MG2-P within MLC flash ICs, 256GB's weight is approximately 15 grams.

2.12 Seek Time

Innodisk CFast 3MG2-P is not a magnetic rotating design. There is no seek or rotational latency required.

2.13 Hot Plug

The card support hot plug function and can be removed or plugged-in during operation. User has to avoid hot plugging the card which is configured as boot device and installed operation system. Surprise hot plug:

The insertion of a SATA device into a backplane (combine signal and power) that has power present. The device powers up and initiates an OOB sequence.

Surprise hot removal:

The removal of a SATA device from a powered backplane, without first being placed in a quiescent state.

2.14 NAND Flash Memory

Innodisk CFast 3MG2-P uses Multi Level Cell (MLC) NAND flash memory, which is non-volatility, high reliability and high speed memory storage.

3. Theory of Operation

3.1 Overview

Figure 2 shows the operation of Innodisk CFast 3MG2-P from the system level, including the major hardware blocks.

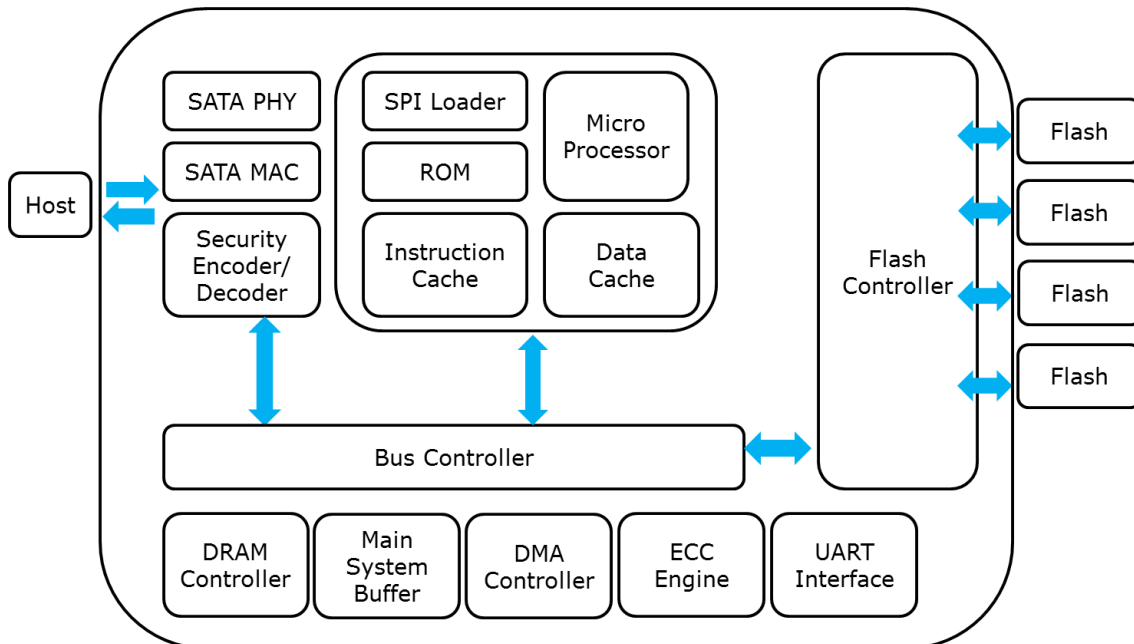


Figure 2: Innodisk CFast 3MG2-P Block Diagram

Innodisk CFast 3MG2-P integrates a SATA III controller and NAND flash memories. Communication with the host occurs through the host interface, using the standard ATA protocol. Communication with the flash device(s) occurs through the flash interface.

3.2 SATA III Controller

Innodisk CFast 3MG2-P is designed with ID201, a SATA III 6.0Gbps (Gen. 3) controller. The Serial ATA physical, link and transport layers are compliant with Serial ATA Gen 1, Gen 2 and Gen 3 specification (Gen 3 supports 1.5Gbps/3.0Gbps/6.0Gbps data rate). The controller has 4 channels for flash interface.

3.3 Error Detection and Correction

Highly sophisticated Error Correction Code algorithms are implemented. The ECC unit consists of the Parity Unit (parity-byte generation) and the Syndrome Unit (syndrome-byte computation). This unit implements an algorithm that can correct 66 bits per 1024 bytes in an ECC block. Code-byte generation during write operations, as well as error detection during read operation, is implemented on the fly without any speed penalties.

3.4 Wear-Leveling

Flash memory can be erased within a limited number of times. This number is called the **erase cycle limit** or **write endurance limit** and is defined by the flash array vendor. The erase cycle limit applies to each individual erase block in the flash device.

Innodisk CFast 3MG2-P uses a static wear-leveling algorithm to ensure that consecutive writes of a specific sector are not written physically to the same page/block in the flash. This spreads flash media usage evenly across all pages, thereby extending flash lifetime.

3.5 Bad Blocks Management

Bad Blocks are blocks that contain one or more invalid bits whose reliability are not guaranteed. The Bad Blocks may be presented while the SSD is shipped, or may develop during the life time of the SSD. When the Bad Blocks is detected, it will be flagged, and not be used anymore. The SSD implement Bad Blocks management, Bad Blocks replacement, Error Correct Code to avoid data error occurred. The functions will be enabled automatically to transfer data from Bad Blocks to spare blocks, and correct error bit.

3.6 iData Guard

Innodisk's iData Guard is a comprehensive data protection mechanism that functions before and after a sudden power outage to SSD. Low-power detection terminates data writing before an abnormal power-off, while table-remapping after power-on deletes corrupt data and maintains data integrity. Innodisk's iData Guard provides effective power cycling management, preventing data stored in flash from degrading with use.

3.7 Garbage Collection/TRIM

Garbage collection and TRIM technology is used to maintain data consistency and perform continual data cleansing on SSDs. It runs as a background process, freeing up valuable controller resources while sorting good data into available blocks, and deleting bad blocks. It also significantly reduces write operations to the drive, thereby increasing the SSD's speed and lifespan.

4. Installation Requirements

4.1 CFast 3MG2-P Pin Directions

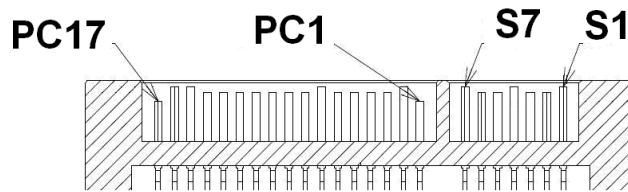


Figure 3: Signal Segment and Power Segment

4.2 Electrical Connections for CFast 3MG2-P

A Serial ATA device may be either directly connected to a host or connected to a host through a cable. For connection via cable, the cable should be no longer than 1 meter. The SATA interface has a separate connector for the power supply. Please refer to the pin description for further details.

4.3 Write Protection (Optional)



Innodisk CFast 3MG2-P within the write-protect function could prevent the device from modification and deletion. Write-protected data could only be read, that is, users could not write to it, edit it, append data to it, or delete it. When users would like to make sure that neither themselves nor others could modify or destroy the file, users could switch on write-protection. Thus, Innodisk CFast 3MG2-P could process write-protect mechanism and disable flash memory to be written-in any data. Only while the system power-off, users could switch on write-protection. Write-protection could not be switched-on, after OS booting.

4.4 Device Drive

No additional device drives are required. Innodisk CFast 3MG2-P can be configured as a boot device.

5. SMART Feature Set

Innodisk 3MG2-P series support the SMART command set and defines some vendor-specific data to report SMART attributes of SSD.

Table 10: SMART command

| Value | Command | Value | Command |
|-------|----------------------------|-------|--------------------------|
| D0h | Read Data | D5h | Read Log |
| D1h | Read Attribute Threshold | D6h | Return Status |
| D2h | Enable/Disable Auto save | D8h | Enable SMART Operations |
| D3h | Save Attribute Values | D9h | Disable SMART Operations |
| D4h | Execute OFF-LINE Immediate | DAh | Return Status |

5.1 SMART Attributes

Innodisk 3MG2-P series SMART data attributes are listed in following table.

Table 11: SMART attribute

| Attribute ID (hex) | Attribute Name |
|--------------------|--|
| 1 (01h) | Raw Read Error Rate |
| 5 (05h) | Reallocated Sector Count |
| 9 (09h) | Power-on Hours |
| 12 (0Ch) | Power Cycle Count |
| 160 (A0h) | Uncorrectable sector count when read/write |
| 161 (A1h) | Number of valid spare block |
| 163 (A3h) | Number of initial invalid block |
| 164 (A4h) | Total erase count |
| 165 (A5h) | Maximum erase count |
| 166 (A6h) | Minimum erase count |
| 167 (A7h) | Average erase count |
| 168 (A8h) | Max erase count of spec |
| 169 (A9h) | Remain Life (percentage) |
| 175 (AFh) | Program fail count in worst die |
| 176 (B0h) | Erase fail count in worst die |
| 177 (B1h) | Total wear level count |
| 178 (B2h) | Runtime invalid block count |
| 181 (B5h) | Total program fail count |
| 182 (B6h) | Total erase fail count |

| Attribute ID (hex) | Attribute Name |
|---------------------------|---|
| 187 (BBh) | Uncorrectable error count |
| 192 (C0h) | Power-Off Retract Count |
| 194 (C2h) | Controlled temperature |
| 195 (C3h) | Hardware ECC recovered |
| 196 (C4h) | Reallocation event count |
| 198 (C6h) | Uncorrectable error count off-line |
| 199 (C7h) | UltraDMA CRC error count |
| 225 (E1h) | Total LBAs written (each write unit = 32MB) |
| 232 (E8h) | Available reserved space |
| 241 (F1h) | Total LBAs written (each write unit = 32MB) |
| 242 (F2h) | Total LBAs read (each write unit = 32MB) |

6. Part Number Rule

| CODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 |
|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| | D | G | C | F | A | - | 3 | 2 | G | D | 8 | 1 | B | C | A | D | C | X | X | X | X |
| Definition | | | | | | | | | | | | | | | | | | | | | |
| Code 1st (Disk) | | | | | | | | | | | Code 13th (Flash Mode) | | | | | | | | | | |
| D:Disk | | | | | | | | | | | B: Synchronous Flash Toshiba 15nm | | | | | | | | | | |
| Code 2st (Feature set) | | | | | | | | | | | Code 14th (Operation Temperature) | | | | | | | | | | |
| G: EverGreen Series | | | | | | | | | | | C: Standard Grade (0°C ~ +70°C) | | | | | | | | | | |
| | | | | | | | | | | | W: Industrial Grade (-40°C ~ +85°C) | | | | | | | | | | |
| Code 3rd ~ 5th (Form Factor) | | | | | | | | | | | Code 15th (Internal control) | | | | | | | | | | |
| CFA: CFast | | | | | | | | | | | A~Z: BGA PCB version | | | | | | | | | | |
| Code 7th ~9th (Capacity) | | | | | | | | | | | Code 16th (Channel of data transfer) | | | | | | | | | | |
| 32G: 32GB | | | | | | | | | | | D: Dual Channels | | | | | | | | | | |
| 64G: 64GB | | | | | | | | | | | Q: Qual Channels | | | | | | | | | | |
| A28: 128GB | | | | | | | | | | | | | | | | | | | | | |
| B56: 256GB | | | | | | | | | | | Code 17th (Flash Type) | | | | | | | | | | |
| | | | | | | | | | | | C: Toshiba MLC | | | | | | | | | | |
| Code 10th ~12th (Controller) | | | | | | | | | | | Code 18th (Flash Type) | | | | | | | | | | |
| D81:ID201 | | | | | | | | | | | W: H/W Write Protect function(Optional) | | | | | | | | | | |
| | | | | | | | | | | | Code 19th~21th (Customized Code) | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |

7. Appendix

CE/FCC/RoHS/REACH



VERIFICATION OF COMPLIANCE

This Verification of Compliance is hereby issued to the below named company. The test results of this report relate only to the tested sample identified in this report.

**Technical Standard: EMC DIRECTIVE 2014/30/EU
(EN55032)**

General Information
 Applicant: Innodisk Corporation
 5F., No. 237, Sec. 1, Datong Rd., Xizhi Dist.,
 New Taipei City 22161, Taiwan (R.O.C)

Product Description
 EUT Description: CFast
 Brand Name: Innodisk
 Model Number: CFast 35*#-&
 S:Flash type: (S:SLC, E:SLC, M:MLC, T:3D TLC)
 *:Product line: (E:Embedded, G:EverGreen, R:InnoRobust)
 #:Product Generation: (empty, 0-9)
 &:Product line: (empty, P:Plus)

Measurement Standard
 EN 55032: 2012 / AC: 2013
 CISPR 32: 2012

Measurement Facilities
 Xindian Lab.: Compliance Certification Services Inc.
 No.163-1, Zhongsheng Rd., Xindian Dist., New Taipei City, 23151 Taiwan.
 Tel: +886-2-22170894 / Fax: +886-2-22171029

This device has been shown to be in compliance with and was tested in accordance with the measurement procedures specified in the Standards & Specifications listed above and as indicated in the measurement report number: T161011D05 E


 Sam Hu / Assistant Manager
 Date: October 18, 2016



CCSRF
 程颢科技股份有限公司
 Compliance Certification Services Inc.



VERIFICATION OF COMPLIANCE

This Verification of Compliance is hereby issued to the below named company. The test results of this report relate only to the tested sample identified in this report.

**Technical Standard: EMC DIRECTIVE 2014/30/EU
(EN55022 / EN55024)**

General Information

Applicant: Innodisk Corporation
5F., No. 237, Sec. 1, Datong Rd., Xizhi Dist.,
New Taipei City 22161, Taiwan (R.O.C)

Product Description

EUT Description: CFast
Brand Name: Innodisk
Model Number: CFast 3\$*#-&
\$:Flash type: (S:SLC, 1:iSLC, M:MLC, T:3D TLC)
*:Product line: (E:Embedded, G:EverGreen, R:InnoRobust)
#:Product Generation: (empty, 0-9)
&:Product line: (empty, P:Plus)

Measurement Standard

EN 55022: 2010 / AC: 2011
EN 61000-3-2: 2014
EN 61000-3-3: 2013
EN 55024: 2010 + A1: 2015
(IEC 61000-4-2: 2008; IEC 61000-4-3: 2006 + A1: 2007 + A2: 2010; IEC 61000-4-4: 2012;
IEC 61000-4-5: 2014; IEC 61000-4-6: 2013; IEC 61000-4-8: 2009; IEC 61000-4-11: 2004)

Measurement Facilities

Xindian Lab.: Compliance Certification Services Inc.
No.163-1, Zhongsheng Rd., Xindian Dist., New Taipei City, 23151 Taiwan.
Tel: +886-2-22170894 / Fax: +886-2-22171029

This device has been shown to be in compliance with and was tested in accordance with the measurement procedures specified in the Standards & Specifications listed above and as indicated in the measurement report number: T161014D05-E


Sam Hu / Assistant Manager
Date: October 18, 2016





VERIFICATION OF COMPLIANCE

This Verification of Compliance is hereby issued to the below named company. The test results of this report relate only to the tested sample identified in this report.

**Technical Standard: FCC Part 15 Class B
IC ICES-003**

General Information

Applicant: Innodisk Corporation
5F., No. 237, Sec. 1, Datong Rd., Xizhi Dist.,
New Taipei City 22161, Taiwan (R.O.C)

Product Description

EUT Description: CFast
Brand Name: Innodisk
Model Number: CFast 35*8-&
\$:Flash type: (S:SLC, I:SLC, M:MLC, T:3D TLC)
*:Product line: (E:Embedded, G:EverGreen, R:InnoRobust)
#:Product Generation: (empty, 0-9)
&:Product line: (empty, P:Plus)

Measurement Facilities

Xindian Lab.: Compliance Certification Services Inc.
No.163-1, Zhongsheng Rd., Xindian Dist., New Taipei City, 23151 Taiwan.
Tel: +886-2-22170894 / Fax: +886-2-22171029

This device has been shown to be in compliance with and was tested in accordance with the measurement procedures specified in the Standards & Specifications listed above and as indicated in the measurement report number: T161014D05-D


Sam Hu / Assistant Manager
Date: October 18, 2016



RoHS 自我宣告書 (RoHS Declaration of Conformity)

Manufacturer Product: All Innodisk EM Flash and Dram products

- 一、 宜鼎國際股份有限公司（以下稱本公司）特此保證售予貴公司之所有產品，皆符合歐盟 2011/65/EU 及 (EU) 2015/863 關於 RoHS 之規範要求。

Innodisk Corporation declares that all products sold to the company, are complied with European Union RoHS Directive (2011/65/EU) and (EU) 2015/863 requirement.

- 二、 本公司同意因本保證書或與本保證書相關事宜有所爭議時，雙方宜友好協商，達成協議。

Innodisk Corporation agrees that both parties shall settle any dispute arising from or in connection with this Declaration of Conformity by friendly negotiations.

| Name of hazardous substance | Limited of RoHS ppm (mg/kg) |
|-----------------------------|-----------------------------|
| 鉛 (Pb) | < 1000 ppm |
| 汞 (Hg) | < 1000 ppm |
| 鎘 (Cd) | < 100 ppm |
| 六價鉻 (Cr 6+) | < 1000 ppm |
| 多溴聯苯 (PBBs) | < 1000 ppm |
| 多溴二苯醚 (PBDEs) | < 1000 ppm |
| 鄰苯二甲酸二(2-乙基己基)酯 (DEHP) | < 1000 ppm |
| 鄰苯二甲酸丁酯苯甲酯 (BBP) | < 1000 ppm |
| 鄰苯二甲酸二丁酯 (DBP) | < 1000 ppm |
| 鄰苯二甲酸二異丁酯 (DIBP) | < 1000 ppm |

立 保 證 書 人 (Guarantor)

Company name 公司名稱： Innodisk Corporation 宜鼎國際股份有限公司

Company Representative 公司代表人： Randy Chien 簡川勝

Company Representative Title 公司代表人職稱： Chairman 董事長

Date 日期： 2017 / 01 / 18



宜鼎國際股份有限公司 Innodisk Corporation

Tel:(02)7703-3000 Fax:(02) 7703-3555 Internet: <http://www.innodisk.com/>

REACH Declaration of Conformity

Manufacturer Product: All Innodisk EM Flash and Dram products

1. 宜鼎國際股份有限公司（以下稱本公司）特此保證此售予貴公司之產品，皆符合歐盟化學品法案(Registration , Evaluation and Authorization of Chemicals ; (EC) No 1907/2006 REACH) 以及附錄 XIV 中的限用物質之規定 (<http://www.echa.europa.eu/de/candidate-list-table> **last updated: 12/01/2017 , SVHC's 173**)。

所提供之產品包含：(1) 產品或產品所使用到的所有原物料；(2)包裝材料；(3)設計、生產及重工過程中所使用到的所有原物料。

We Innodisk Corporation hereby declare that our products are in compliance with the requirements according to the (EC) No 1907/2006 REACH Regulation and restricted substances in Annex XIV (<http://www.echa.europa.eu/de/candidate-list-table> **last updated: 12/01/2017 , SVHC's 173**).

Products include : 1) Product and raw material used by the product ; 2) Packaging material ; 3) Raw material used in the process of design, production and rework.

2. 本公司同意因本保證書或與本保證書相關事宜有所爭議時，雙方宜友好協商，達成協議。InnoDisk Corporation agrees that both parties shall settle any dispute arising from or in connection with this Declaration of Conformity by friendly negotiations.

立 保 證 書 人 (Guarantor)

Company name 公司名稱： InnoDisk Corporation 宜鼎國際股份有限公司

Company Representative 公司代表人： Randy Chien 簡川勝

Company Representative Title 公司代表人職稱： Chairman 董事長

Date 日期： 2017 / 02 / 08

