ISO/IEC 22092 :2002-07 (E)

Information technology_- Data interchange on 130_mm magneto-optical disk cartridges_- Capacity: 9,1_Gbytes per cartridge

Contents

Section 1 - General		**1**
1	Scope	**1**
2	Conformance	**1**
2.1	Optical Disk Cartridge (ODC)	**1**
2.2	Generating system	**1**
2.3	Receiving system	**1**
2.4	Compatibility statement	**1**
3	Normative reference	**2**
4	Terms and definitions	**2**
4.1	asymmetry	**2**
4.2	band	**2**
4.3	case	**2**
4.4	clamping zone	**2**
4.5	control track	**2**
4.6	Cyclic Redundancy Check (CRC)	**2**
4.7	defect management	**2**
4.8	disk reference plane	**2**
4.9	emulation	**2**
4.10	entrance surface	**2**
4.11	Error Correction Code (ECC)	**2**
4.12	format	**2**
4.13	hub	**2**
4.14	interleaving	**2**
4.15	Kerr rotation	**3**
4.16	land and groove	**3**
4.17	logical track	**3**
4.18	mark	**3**
4.19	mark edge	**3**
4.20	mark edge recording	**3**
4.21	optical disk	**3**
4.22	optical disk cartridge (ODC)	**3**
4.23	physical track	**3**
4.24	polarization	**3**
4.25	pre-recorded mark	**3**
4.26	read power	**3**
4.27	recording layer	**3**
4.28	recording track	**3**
4.29	Reed-Solomon code	**3**
4.30	space	**3**
4.31	spindle	**4**
4.32	substrate	**4**
4.33	track pitch	**4**
4.34	write-inhibit hole	**4**
4.35	write-once functionality	**4**
4.36	zone	**4**

5 Conventions and notations **4**
5.1 Representation of numbers **4**
5.2 Names **4**

6 List of acronyms **4**

7 General description of the optical disk cartridge **5**

8 General requirements **5**
8.1 Environments **5**
8.1.1 Test environment **5**
8.1.2 Operating environment **5**
8.1.3 Storage environment **6**
8.1.4 Transportation **6**
8.2 Temperature shock **6**
8.3 Safety requirements **6**
8.4 Flammability **6**

9 Reference Drive **6**
9.1 Optical system **7**
9.2 Optical beam **8**
9.3 Read channels **8**
9.4 Tracking **8**
9.5 Rotation of the disk **8**

Section 2 - Mechanical and physical characteristics **9**

10 Dimensional and physical characteristics of the case **9**
10.1 General description of the case **9**
10.2 Relationship of Sides A and B **9**
10.3 Reference axes and case reference planes **9**
10.4 Case drawings **9**
10.5 Dimensions of the case **9**
10.5.1 Overall dimensions **9**
10.5.2 Location hole **10**
10.5.3 Alignment hole **10**
10.5.4 Surfaces on Reference Planes P **11**
10.5.5 Insertion slots and detent features **12**
10.5.6 Gripper slots **12**
10.5.7 Write-inhibit holes **12**
10.5.8 Media sensor holes **13**
10.5.9 Head and motor window **14**
10.5.10 Shutter **14**
10.5.11 Slot for shutter opener **14**
10.5.12 Shutter sensor notch **15**
10.5.13 User label areas **15**
10.6 Mechanical characteristics **16**
10.6.1 Materials **16**
10.6.2 Mass **16**
10.6.3 Edge distortion **16**
10.6.4 Compliance **16**
10.6.5 Shutter opening force **16**
10.7 Drop test **16**

11 Dimensional, mechanical and physical characteristics of the disk **16**
11.1 General description of the disk **16**
11.2 Reference axis and plane of the disk **16**
11.3 Dimensions of the disk **16**
11.3.1 Hub dimension **17**
11.4 Mechanical characteristics **18**

11.4.1 Material **18**
11.4.2 Mass **18**
11.4.3 Moment of inertia **18**
11.4.4 Imbalance **18**
11.4.5 Axial deflection **18**
11.4.6 Axial acceleration **18**
11.4.7 Radial runout **19**
11.4.8 Radial acceleration **19**
11.4.9 Tilt **19**
11.5 Optical characteristics **19**
11.5.1 Index of refraction **19**
11.5.2 Thickness **19**
11.5.3 Birefringence **19**
11.5.4 Vertical Birefringence **19**
11.5.5 Reflectance **20**

12 Interface between cartridge and drive **20**
12.1 Clamping method **20**
12.2 Clamping force **20**
12.3 Capture cylinder **20**
12.4 Disk position in the operating condition **21**

Section 3 - Format of information **35**

13 Track and Header geometry **35**
13.1 Track and Header shape **35**
13.2 Direction of track spiral **36**
13.3 Track pitch **36**
13.4 Logical track number **36**

14 Track format **36**
14.1 Physical track layout **36**
14.2 Logical track layout **39**
14.3 Radial alignment **39**
14.4 Sector number **39**

15 Sector format **39**
15.1 Sector layout **39**
15.2 Sector Mark **40**
15.3 VFO fields **41**
15.4 Address Mark (AM) **41**
15.5 ID fields **41**
15.6 Postamble (PA_1) **42**
15.7 Transition Area (TA_1) **42**
15.8 Gap **42**
15.9 Auto Laser Power Control (ALPC) **42**
15.10 Sync **42**
15.11 Data field **43**
15.11.1 User data bytes **43**
15.11.2 CRC and ECC bytes **43**
15.11.3 Bytes for Sector Written Flag (SWF) **43**
15.11.4 Resync bytes **43**
15.12 Postamble field (PA_2) **43**
15.13 Buffer field **43**
15.14 Transition Area (TA_2) **43**

16 Recording code **44**

17 Formatted Zone **45**
17.1 General description of the Formatted Zone **45**

17.2 Division of the Formatted Zone **45**
17.2.1 Lead-in Zone **46**
17.2.2 Manufacturer Zones **46**
17.2.3 User Zone **48**
17.2.4 Reflective Zone **48**
17.2.5 Control Track Zones **48**
17.3 Control Track PEP Zone **48**
17.3.1 Recording in the PEP Zone **48**
17.3.2 Format of the tracks of the PEP Zone **49**
17.4 Control Track SFP Zones **52**
17.4.1 Duplicate of the PEP information **53**
17.4.2 Media information **53**
17.4.3 System Information **54**

18 Layout of the User Zone **56**
18.1 General description of the User Zone **56**
18.2 Divisions of the User Zone **56**
18.3 User Area **56**
18.4 Defect Management Areas (DMAs) **63**
18.5 Disk Definition Structure (DDS) **64**
18.6 Rewritable Zone **66**
18.6.1 Location **67**
18.6.2 Partitioning **67**
18.7 Write Once Zone **67**
18.7.1 Location **67**
18.7.2 Partitioning **67**

19 Defect Management in the Rewritable and Write Once Zones **67**
19.1 Initialization of the disk **67**
19.2 Certification **67**
19.2.1 Slipping Algorithm **67**
19.2.2 Linear Replacement Algorithm **68**
19.3 Disks not certified **68**
19.4 Write procedure **68**
19.5 Primary Defect List (PDL) **68**
19.6 Secondary Defect List (SDL) **69**

Section 4 - Characteristics of embossed information **70**

20 Method of testing **70**
20.1 Environment **70**
20.2 Use of the Reference Drive **70**
20.2.1 Optics and mechanics **70**
20.2.2 Read power **70**
20.2.3 Read channels **71**
20.2.4 Tracking **71**
20.3 Definition of signals **71**

21 Signal from grooves **72**
21.1 Ratio of Groove to Land **72**
21.2 Push-pull signal **72**
21.3 Divided push-pull signal **73**
21.4 Track location **73**

22 Signals from Headers **73**
22.1 Sector Mark Signals **73**
22.2 VFO signals **73**
22.3 Address Mark, ID and PA signals **74**
22.4 Timing jitter **74**
22.5 Asymmetry **74**

23 Signals from Control Track PEP marks **74**

Section 5 - Characteristics of the recording layer **75**

24 Method of testing **75**
24.1 Environment **75**
24.2 Reference Drive **75**
24.2.1 Optics and mechanics **75**
24.2.2 Read power **75**
24.2.3 Read Channel **75**
24.2.4 Tracking **76**
24.2.5 Signal detection for testing purposes **76**
24.3 Write conditions **76**
24.3.1 Write pulse and power **76**
24.3.2 Write magnetic field **76**
24.3.3 Pulse power determination **76**
24.3.4 Media power sensitivity **77**
24.4 Erase conditions **77**
24.4.1 Erase power **77**
24.4.2 Erase magnetic field **77**
24.5 Definition of signals **77**

25 Magneto-optical characteristics **77**
25.1 Figure of merit for magneto-optical signal **77**
25.2 Imbalance of magneto-optical signal **78**

26 Write characteristics **78**
26.1 Resolution **78**
26.2 Narrow-band signal-to-noise ratio **78**
26.3 Cross-talk ratio **79**
26.3.1 Rewritable track test method **79**
26.4 Timing Jitter **79**
26.5 Media thermal interaction **79**

27 Erase power determination **80**

Section 6 - Characteristics of user data **80**

28 Method of testing **80**
28.1 Environment **80**
28.2 Reference Drive **80**
28.2.1 Optics and mechanics **80**
28.2.2 Read power **80**
28.2.3 Read Channel **81**
28.2.4 Mark Quality **81**
28.2.5 Channel bit clock **81**
28.2.6 Binary-to-digital converters **81**
28.2.7 Error correction **81**
28.2.8 Tracking **81**

29 Minimum quality of a sector **81**
29.1 Headers **81**
29.1.1 Sector Mark **81**
29.1.2 ID fields **81**
29.2 User-written data **82**
29.2.1 Recording field **82**
29.2.2 Byte errors **82**
29.2.3 Asymmetry **82**
29.2.4 Timing jitter **82**

30 Data interchange requirements **82**

30.1 Tracking **82**
30.2 User-written data **82**
30.3 Quality of disk **82**

Annexes

A - Air cleanliness class 100 000 **83**

B - Edge distortion test **84**

C - Compliance test **86**

D - Test method for measuring the adsorbent force of the hub **88**

E - CRC for ID fields **90**

F - Interleave, CRC, ECC, Resync for the data field **91**

G - Determination of Resync pattern **97**

H - Read Channel for measuring jitter **102**

J - Timing jitter measuring procedure **103**

K - Definition of write pulse shape **104**

L - Measurement of figure of merit **105**

M - Implementation Independent Mark Quality Determination (IIMQD) for the interchange of recorded media **106**

N - Requirements for interchange **108**

P - Measurement implementation for Cross-track signal **110**

Q - Asymmetry measuring definition **111**

R - Office environment **113**

S - Derivation of the operating climatic environment **114**

T - Transportation **119**

U - Sector retirement guidelines **120**

V - Track deviation measurement **121**

W - Values to be implemented in existing and future standards **125**

X - Measurement of the vertical birefringence of the substrate **126**

Y - Guidelines for the use of Type WO ODCs **128**

Z - Laser power calibration for evaluation of media power sensitivity **129**

AA - 512-byte, 1 024-byte Sector Emulation **133**