

ISO/IEC 17346:2005-02 (E)

Information technology - Data interchange on 90 mm optical disk cartridges - Capacity: 1,3 Gbytes per cartridge

Contents		Page
Foreword		viii
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	2
3	Normative references	2
4	Terms and definitions	2
5	Conventions and notations	5
5.1	Representation of numbers	5
5.2	Names	5
6	List of acronyms	5
7	General description of the optical disk cartridge	6
8	General requirements	6
8.1	Environments	6
8.1.1	Testing environment	6
8.1.2	Operating environment	6
8.1.3	Storage environment	7
8.1.4	Transportation	7
8.2	Temperature shock	7
8.3	Safety requirements	7
8.4	Flammability	7
9	Reference Drive	8
9.1	Optical system	8
9.2	Optical beam	9
9.3	Read channels	10
9.4	Tracking	10
9.5	Rotation of the disk	10
Section 2 -- Mechanical and physical characteristics		11
10	Dimensional and physical characteristics of the case	11
10.1	General description of the case (see Figure 2)	11
10.2	Reference planes of the case	11
10.3	Dimensions of the case	11
10.3.1	Overall dimensions (see Figure 3)	11
10.3.2	Location hole (see Figure 3)	12
10.3.3	Alignment hole (see Figure 3)	12
10.3.4	Reference surfaces (see Figure 4)	12

10.3.5	Detents (see Figure 5)	13
10.3.6	Functional Areas (see Figure 6)	13
10.3.7	Spindle and head windows (see Figure 7)	14
10.3.8	Shutter (see Figure 8)	15
10.3.9	Path for shutter opener and shutter sensor notch (see Figure 9)	15
10.3.10	Mis-insert protections (see Figure 10)	16
10.3.11	Gripper slots (see Figure 11)	16
10.3.12	Label area (see Figure 12)	17
10.4	Mechanical characteristics	17
10.4.1	Material	17
10.4.2	Mass	17
10.4.3	Edge distortion	17
10.4.4	Compliance	17
10.4.5	Shutter opening force	17
11	Dimensional, mechanical and physical characteristics of the disk	29
11.1	General description of the disk	29
11.2	Reference axis and plane of the disk	29
11.3	Dimensions of the disk (see Figure 13)	29
11.3.1	Hub dimensions (see Figure 13)	29
11.3.2	Clamping zone (see Figure 13)	30
11.4	Mechanical characteristics	30
11.4.1	Material	30
11.4.2	Mass	30
11.4.3	Moment of inertia	30
11.4.4	Imbalance	30
11.4.5	Axial deflection	30
11.4.6	Axial acceleration	31
11.4.7	Radial runout	31
11.4.8	Radial acceleration	32
11.4.9	Tilt	32
11.5	Optical Characteristics	32
11.5.1	Index of refraction	32
11.5.2	Thickness of the substrate	32
11.5.3	Birefringence	32
11.5.4	Vertical Birefringence	33
11.5.5	Reflectance	33
12	Interface between cartridge and drive	33
12.1	Clamping method	33
12.2	Clamping force	33
12.3	Capture cylinder (see Figure 14)	34
12.4	Disk position in operating condition (see Figure 14)	34
Section 3 -- Format of information		36
13	Geometry of physical tracks	36
13.1	Physical track shape	36
13.2	Direction of track spiral	36
13.3	Physical track pitch	36
14	Track format	36
14.1	Logical Track number	36
14.2	Logical Track layout	36
14.3	Clock frequencies and periods	36
14.4	Radial alignment	37
14.5	Sector number	37
15	Sector format	37
15.1	Sector layout	37
15.2	Sector Mark (SM)	38
15.3	VFO fields	39

15.4	Address Mark (AM)	40
15.5	ID fields	40
15.6	Postambles (PA)	41
15.7	Gap	41
15.8	Sync	41
15.9	Data field	41
15.9.1	User data bytes	42
15.9.2	CRC and ECC bytes	42
15.9.3	Resync bytes	42
15.10	Buffer field	42
16	Recording code	42
17	Format of the Information Zone	43
17.1	General description of the Information Zone	43
17.2	Division of the Information Zone	43
17.2.1	Initial Zone	43
17.2.2	Buffer Zones	43
17.2.3	Test Zones	43
17.2.4	Control Zone	44
17.2.5	Data Zone	45
18	Format of the Data Zone	45
18.1	Buffer tracks and Test tracks in the Data Zone	45
18.2	Defect Management Areas (DMAs)	45
18.3	Disk Definition Structure (DDS)	48
18.4	Partitioning	49
19	Defect management	50
19.1	Initialization of the disk	50
19.2	Certification	50
19.2.1	Slipping Algorithm	50
19.2.2	Linear Replacement Algorithm	50
19.3	Disks not certified	51
19.4	Write procedure	51
19.5	Primary Defect List (PDL)	51
19.6	Secondary Defect List (SDL)	51
Section 4 -- Characteristics of embossed information		53
20	Method of testing	53
20.1	Environment	53
20.2	Use of the Reference Drive	53
20.2.1	Optics and mechanics	53
20.2.2	Read power	53
20.2.3	Read channels	53
20.2.4	Tracking	53
20.3	Definition of signals	53
21	Signals from grooves	54
21.1	Divided push-pull signal	54
21.2	Phase depth	55
21.3	Track location	55
22	Signals from Headers	55
22.1	Sector Mark	55
22.2	VFO1 and VFO2	55
22.3	Address Mark, ID field and Postamble	56
22.4	Timing jitter	56
22.5	Asymmetry	56
23	Signals from embossed Recording fields	56

23.1	Signal amplitude	56
23.2	Timing jitter	56
Section 5 -- Characteristics of the recording layer and user data		58
24	Method of testing	58
24.1	Environment	58
24.2	Reference Drive	58
24.2.1	Optics and mechanics	58
24.2.2	Read power	58
24.2.3	Read magnetic field	58
24.2.4	Read channel	58
24.2.5	Tracking	58
24.2.6	Signal detection for testing purposes	59
24.3	Write conditions	59
24.3.1	Write pulse and power	59
24.3.2	Write magnetic field	61
24.3.3	2T and 4T pulse power determination	61
24.3.4	Media power sensitivity	61
24.4	Erase conditions	62
24.4.1	Erase power	62
24.4.2	Erase magnetic field	62
24.5	Definition of signals	62
25	Magneto-optical characteristics	62
25.1	Figure of merit	62
25.2	Imbalance of the magneto-optical signal	62
25.3	Magneto-optical signals obtained from the embossed Headers	63
26	Write characteristics	63
26.1	Resolution	63
26.2	Narrow-band signal-to-noise ratio (NBSNR)	63
26.3	Cross-talk ratio	64
26.3.1	Rewritable track test method	64
26.4	Timing jitter	64
26.5	Media thermal interaction	65
27	Erase power determination	65
Section 6 -- Characteristics of user data		66
28	Method of testing	66
28.1	Environment	66
28.2	Reference Drive	66
28.2.1	Optics and mechanics	66
28.2.2	Read conditions	66
28.2.3	Read amplifiers	66
28.2.4	Mark Quality	66
28.2.5	Channel bit clock	67
28.2.6	Binary-to-digital converters	67
28.2.7	Error correction	67
28.2.8	Tracking	67
29	Minimum quality of a sector	67
29.1	Headers	67
29.1.1	Sector Mark	67
29.1.2	ID fields	67
29.2	User-written data	67
29.2.1	Recording field	67
29.2.2	Byte errors	67
29.2.3	Timing jitter	68

30	Data interchange requirements	68
30.1	Tracking	68
30.2	User-written data	68
30.3	Quality of disk	68
Annex A (normative)	Edge distortion test	69
Annex B (normative)	Compliance test	70
Annex C (normative)	CRC for ID fields	72
Annex D (normative)	Interleave, CRC, ECC, Resync for the data field	73
Annex E (normative)	Contents of the Control Zone	77
Annex F (normative)	Determination of the Resync patterns	83
Annex G (normative)	Measurement of the figure of merit	88
Annex H (normative)	Read Channel for measuring NBSNR and jitter	89
Annex I (normative)	Implementation Independent Mark Quality Determination (IIMQD) for the interchange of recorded media	92
Annex J (normative)	Air cleanliness class 100 000	93
Annex K (normative)	Position of the cartridge relative to the reference planes	94
Annex L (normative)	Relaxation by zones of the requirements for signals	95
Annex M (normative)	Test method for measuring the adsorbent force of the hub	96
Annex N (informative)	Track deviation measurement	98
Annex O (informative)	Derivation of the operating climatic environment	101
Annex P (informative)	Transportation	106
Annex Q (informative)	Office environment	107
Annex R (informative)	Values to be implemented in existing and future standards	108
Annex S (informative)	Measurement of the vertical birefringence of the substrate	109
Annex T (informative)	Sector retirement guidelines	111
Annex U (informative)	Laser power calibration for evaluation of media power sensitivity	112