

ISO/IEC 17342:2004-07 (E)

Information technology - 80 mm (1,46 Gbytes per side) and 120 mm (4,70 Gbytes per side) DVD re-recordable disk (DVD-RW)

Contents		Page
Foreword		vii
Section 1 - General		1
1 Scope		1
2 Conformance		1
2.1 Optical Disk		1
2.2 Generating system		1
2.3 Receiving system		2
3 Normative references		2
4 Terms and definitions		2
5 Conventions and notations		4
5.1 Representation of numbers		4
5.2 Names		5
6 Acronyms		5
7 General description of the disk		6
8 General requirement		7
8.1 Environments		7
8.1.1 Test environment		7
8.1.2 Operating environment		7
8.1.3 Storage environment		7
8.1.4 Transportation		8
8.2 Safety requirements		8
8.3 Flammability		8
9 Reference measurement devices		8
9.1 Pick-Up Head (PUH)		8
9.1.1 PUH for measuring recorded disks		8
9.1.2 PUH for measuring unrecorded disks		9
9.2 Measurement conditions		11
9.2.1 Recorded and unrecorded disk		11
9.2.2 Recorded disk		11
9.2.3 Unrecorded disk		11
9.3 Normalized servo transfer function		11
9.4 Reference servo for axial tracking		11
9.5 Reference servo for radial tracking		12
Section 2 - Dimensional, mechanical and physical characteristics of the disk		13
10 Dimensional characteristics (figures 6, 7 and 8)		13
10.1 Overall dimensions (figure 6)		15
10.2 First transition area (figure 6)		15
10.3 Second transition area (figure 6)		15
10.4 Clamping Zone (figure 6)		16

10.5	Third transition area (figure 6)	16
10.6	R-Information Zone (figure 6)	16
10.6.1	Sub-divisions of the R-Information Zone	16
10.7	Information Zone (figure 6)	16
10.7.1	Sub-divisions of the Information zone	16
10.8	Track geometry	17
10.9	Channel bit length	17
10.10	Rim area (figure 7)	17
10.11	Remark on tolerances	18
10.12	Label	18
11	Mechanical parameters	18
11.1	Mass	18
11.2	Moment of inertia	18
11.3	Dynamic imbalance	18
11.4	Sense of rotation	19
11.5	Runout	19
11.5.1	Axial runout	19
11.5.2	Radial runout	19
12	Optical parameters	19
12.1	Recorded and unrecorded disk parameters	19
12.1.1	Index of refraction	19
12.1.2	Thickness of the transparent substrate	19
12.1.3	Angular deviation	20
12.1.4	Birefringence of the transparent substrate	20
12.2	Recorded disk reflectivity	20
12.3	Unrecorded disk parameters	21
12.3.1	Polarity of reflectivity modulation	21
12.3.2	Recording power sensitivity variation	21
Section 3 - Operational signals	21	
13	Operational signals for recorded disk	21
13.1	Measurement conditions	21
13.2	Read conditions	21
13.3	Recorded disk high frequency (HF) signals	21
13.3.1	Modulated amplitude (figure 10)	21
13.3.2	Signal asymmetry	22
13.3.3	Cross-track signal	22
13.4	Quality of signals	22
13.4.1	Jitter	22
13.4.2	Random errors	22
13.4.3	Defects	22
13.5	Servo signals	23
13.5.1	Differential phase tracking error signal	23
13.5.2	Tangential push-pull signal	23
13.6	Groove wobble signal	25
14	Operational signals for the unrecorded disk	26
14.1	Measurement conditions	26
14.2	Recording conditions	26
14.3	Basic write strategy for media testing	26
14.4	Servo signals	27
14.4.1	Radial push-pull tracking error signal	27
14.4.2	Defects	28
14.5	Addressing signals	28
14.5.1	Land Pre-Pit signal	29
14.5.2	Groove wobble signal	30
14.5.3	Relation in phase between wobble and Land Pre-Pit	31
15	Operational signals for Embossed Zone	32

15.1	Operational signals from the Control data blocks	32
15.1.1	Measurement conditions	32
15.1.2	Read conditions	32
15.1.3	High frequency (HF) signals	32
15.1.4	Quality of signals	32
15.1.5	Servo signals	32
15.1.6	Groove wobble signal	33
15.2	Operational signals from the Servo Blocks	33
15.2.1	Measurement conditions	33
15.2.2	Read conditions	33
15.2.3	Servo signals	34
15.2.4	Addressing signals	34
Section 4 - Data format		35
16	General	35
17	Data Frames (figure 23)	35
17.1	Identification Data (ID)	36
17.2	ID Error Detection Code	36
17.3	RSV	37
17.4	Error Detection Code	37
18	Scrambled Frames	37
19	ECC Block configuration	38
20	Recording Frames	40
21	Modulation	41
22	Physical Sectors	41
23	Suppress control of the d.c. component	43
24	Linking scheme	44
24.1	Structure of linking	44
24.2	2K-Link and 32K-Link	44
24.3	Lossless-Link	45
Section 5 - Format of the Information Zone		47
25	General description of the Information Zone	47
25.1	Layout of the Information Zone	47
25.2	Physical Sector numbering	47
26	Lead-in and Lead-out Zone	48
26.1	Lead-in Zone	48
26.1.1	Initial Zone	49
26.1.2	Buffer Zone 0	49
26.1.3	RW-Physical Format Information Zone	49
26.1.4	Reference Code Zone	52
26.1.5	Buffer Zone 1	52
26.1.6	Control Data Zone	52
26.1.7	Extra Border Zone	56
26.2	Lead-out Zone	57
Section 6 - Format of the Unrecorded Zone		57
27	General description of the Unrecorded Zone	57
27.1	Layout of the Unrecorded Zone	57
27.2	ECC Block address	57

27.3	ECC Block numbering	58
28	Pre-pit Data format	58
28.1	General description	58
28.2	Pre-pit block structure	60
28.3	Pre-pit data block configuration	62
28.3.1	Relative address	63
28.3.2	ECC Block address data configuration	64
28.3.3	Parity A and Parity B	64
28.3.4	Field ID0	65
28.3.5	Field ID1	65
28.3.6	Field ID2 and ID5	67
28.3.7	Field ID3 and Field ID4	74
29	Data structure of R-Information Zone	75
29.1	Layout of Power Calibration Area and Recording Management Area	75
29.2	Structure of the Power Calibration Area	75
29.3	Data configuration of the Recording Management Area (RMA)	76
29.3.1	Sector format of the Recording Management Area (figure 62)	76
29.3.2	The data structure of RMA	78
29.3.3	Recording Management Data (RMD)	79
	Annex A (normative) Measurement of the angular deviation	96
	Annex B (normative) Measurement of birefringence	98
	Annex C (normative) Measurement of the differential phase tracking error	101
	Annex D (normative) Measurement of light reflectance	105
	Annex E (normative) Tapered cone for disk clamping	107
	Annex F (normative) Measurement of jitter	108
	Annex G (normative) 8-to-16 Modulation with RLL (2,10) requirements	111
	Annex H (normative) Optimum Power Control	121
	Annex J (normative) Measurement of the groove wobble amplitude	124
	Annex K (normative) Measurement methods for the operational signals for an unrecorded disk	126
	Annex L (normative) NBCA Code	127
	Annex M (normative) Border Zone	133
	Annex N (normative) Write Strategy Options	143
	Annex P (normative) Measurement method of the Land Pre-Pit signal	145
	Annex Q (informative) Transportation	146
	Annex R (informative) Erase operation and Format operation	147