
**Information technology — 120 mm
(8,54 Gbytes per side) and 80 mm
(2,66 Gbytes per side) DVD re-recordable
disk for dual layer (DVD-RW for DL)**

*Technologies de l'information — Disque DVD réenregistrable de
120 mm (8,54 Go par face) et 80 mm (2,66 Go par face) pour double
couche (DVD-RW pour DL)*

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[ISO/IEC 13170:2009](https://standards.iteh.ai/catalog/standards/sist/cfed58c4-c2db-4888-b320-d2d75274cf47/iso-iec-13170-2009)

[https://standards.iteh.ai/catalog/standards/sist/cfed58c4-c2db-4888-b320-
d2d75274cf47/iso-iec-13170-2009](https://standards.iteh.ai/catalog/standards/sist/cfed58c4-c2db-4888-b320-d2d75274cf47/iso-iec-13170-2009)

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[ISO/IEC 13170:2009](#)

<https://standards.iteh.ai/catalog/standards/sist/cfed58c4-c2db-4888-b320-d2d75274cf47/iso-iec-13170-2009>



COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2009

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword	vii
Introduction.....	viii
1 Scope.....	1
2 Conformance	1
2.1 Optical Disk.....	1
2.2 Generating system	2
2.3 Receiving system	2
3 Normative references.....	2
4 Terms and definitions	2
5 Conventions and notations	5
5.1 Representation of numbers.....	5
5.2 Names.....	6
6 Acronyms	6
7 General description of a disk	7
8 General requirement	8
8.1 Environments.....	8
8.1.1 Test environment.....	8
8.1.2 Operating environment.....	8
8.1.3 Storage environment.....	9
8.1.4 Transportation	9
8.2 Safety requirements	9
8.3 Flammability.....	10
9 Reference measurement devices	10
9.1 Pick-Up Head (PUH)	10
9.1.1 PUH for measuring recorded disks	10
9.1.2 PUH for measuring unrecorded disks.....	12
9.2 Measurement conditions	13
9.2.1 Recorded and unrecorded disk	13
9.2.2 Recorded disk.....	13
9.2.3 Unrecorded disk	13
9.3 Normalized servo transfer function.....	14
9.4 Reference servo for axial tracking.....	14
9.4.1 Recorded disk.....	14
9.4.2 Unrecorded disk	16
9.5 Reference servo for radial tracking.....	17
9.5.1 Recorded disk.....	17
9.5.2 Unrecorded disk	18
10 Dimensional characteristics.....	19
10.1 Overall dimensions	21
10.2 First transition area	21
10.3 Second transition area.....	22
10.4 Clamping Zone.....	22
10.5 Third transition area.....	22
10.6 R-Information Zone	23
10.6.1 Sub-divisions of the R-Information Zone.....	23
10.7 Information Zone	23
10.7.1 Sub-divisions of the Information zone	23

10.8	Track geometry	24
10.8.1	Track Path.....	25
10.9	Channel bit length.....	25
10.10	Rim area.....	25
10.11	Remark on tolerances	26
10.12	Label.....	26
11	Mechanical parameters	26
11.1	Mass	26
11.2	Moment of inertia	26
11.3	Dynamic imbalance	26
11.4	Sense of rotation.....	26
11.5	Runout	27
11.5.1	Axial runout.....	27
11.5.2	Radial runout.....	27
12	Optical parameters	27
12.1	Recorded and unrecorded disk parameters	27
12.1.1	Index of refraction.....	27
12.1.2	Thickness of the transparent substrate	27
12.1.3	Angular deviation.....	28
12.1.4	Birefringence of the transparent substrate.....	28
12.2	Recorded disk reflectivity	29
12.3	Unrecorded disk parameters	29
12.3.1	Polarity of reflectivity modulation.....	29
12.3.2	Recording power sensitivity variation.....	29
13	Operational signals for recorded disk.....	29
13.1	Measurement conditions	29
13.2	Read conditions	29
13.3	Recorded disk high frequency (HF) signals	29
13.3.1	Modulated amplitude.....	29
13.3.2	Signal asymmetry	30
13.3.3	Cross-track signal.....	30
13.4	Quality of signals.....	30
13.4.1	Jitter	30
13.4.2	Random errors	31
13.4.3	Defects	31
13.5	Servo signals.....	31
13.5.1	Differential phase tracking error signal.....	31
13.5.2	Tangential push-pull signal	32
13.6	Groove wobble signal	33
14	Operational signals for the unrecorded disk	34
14.1	Measurement conditions	34
14.2	Recording conditions.....	34
14.3	Write strategy for media testing.....	34
14.3.1	Write strategy for Layer 0	35
14.3.2	Write strategy for Layer 1	35
14.3.3	Definition of the write pulse.....	37
14.4	Servo signals.....	38
14.4.1	Radial push-pull tracking error signal.....	38
14.4.2	Defects	39
14.5	Addressing signals.....	40
14.5.1	Land Pre-Pit signal	40
14.5.2	Groove wobble signal	41
14.5.3	Relation in phase between wobble and Land Pre-Pit	42
15	Operational signals for Embossed Zone.....	43
15.1	Operational signals from the Control data blocks	43
15.1.1	Measurement conditions	43
15.1.2	Read conditions	43

15.1.3	High frequency (HF) signals.....	43
15.1.4	Quality of signals.....	43
15.1.5	Servo signals	43
15.1.6	Groove wobble signal	44
15.2	Operational signals from the Servo Blocks.....	44
15.2.1	Measurement conditions	45
15.2.2	Read conditions.....	45
15.2.3	Servo signals	45
15.2.4	Addressing signals	45
16	General	46
17	Data Frames	46
17.1	Identification Data (ID)	47
17.2	ID Error Detection Code.....	48
17.3	RSV	48
17.4	Error Detection Code	48
18	Scrambled Frames	49
19	ECC Block configuration	50
20	Recording Frames	51
21	Modulation	52
22	Physical Sectors.....	53
23	Suppress control of the d.c. component.....	54
24	Linking scheme	55
24.1	Structure of linking.....	55
24.2	2K-Link and 32K-Link.....	56
24.3	Lossless-Link.....	56
25	General description of the Information Zone.....	58
25.1	Layout of the Information Zone.....	58
25.2	Physical Sector numbering.....	59
26	Lead-in Zone, Middle Zone and Lead-out Zone.....	60
26.1	Lead-in Zone	60
26.1.1	Initial Zone.....	61
26.1.2	Buffer Zone 0	61
26.1.3	RW-Physical Format Information Zone.....	61
26.1.4	Reference Code Zone.....	65
26.1.5	Buffer Zone 1	65
26.1.6	Control Data Zone	65
26.1.7	Extra Border Zone	81
26.2	Middle Zone.....	82
26.3	Lead-out Zone.....	82
27	General description of the Unrecorded Zone.....	83
27.1	Layout of the Unrecorded Zone	83
27.2	ECC Block address	84
27.3	ECC Block numbering.....	84
28	Pre-pit Data format	85
28.1	General description.....	85
28.2	Pre-pit block structure	87
28.3	Pre-pit data block configuration	89
28.3.1	Relative address	90
28.3.2	ECC Block address data configuration.....	91
28.3.3	Parity A and Parity B	91
28.3.4	Field ID0.....	92
28.3.5	Field ID1.....	93
28.3.6	Field ID2.....	95

28.3.7	Field ID3 and Field ID4	95
28.3.8	Field ID5	98
29	Data structure of R-Information Zone and ODTA	98
29.1	Layout of Disk Testing Area and Recording Management Area.....	98
29.2	Structure of the Disk Testing Area.....	99
29.3	Data configuration of the Recording Management Area (RMA)	101
29.3.1	Sector format of the Recording Management Area.....	101
29.3.2	Logical data structure of RMA.....	103
29.3.3	Recording Management Data (Format2 RMD and Format3 RMD)	104
Annex A	(normative) Measurement of the angular deviation α	125
Annex B	(normative) Measurement of birefringence	127
Annex C	(normative) Measurement of the differential phase tracking error	130
Annex D	(normative) Measurement of light reflectance.....	134
Annex E	(normative) Tapered cone for disk clamping.....	136
Annex F	(normative) Measurement of jitter	137
Annex G	(normative) 8-to-16 Modulation with RLL (2,10) requirements	140
Annex H	(normative) Optimum Power Control	150
Annex I	(normative) Measurement of the groove wobble amplitude.....	154
Annex J	(normative) Measurement methods for the operational signals for an unrecorded disk.....	156
Annex K	(normative) NBCA Code.....	157
Annex L	(normative) Format operation.....	163
Annex M	(normative) Measurement method of the Land Pre-Pit signal.....	166
Annex N	(normative) Construction of Information Zone.....	167
Annex O	(normative) Recording order.....	169
Annex P	(normative) Clearance in the number of sectors.....	170
Annex Q	(normative) Layer jump recording.....	172
Annex R	(informative) Measurement method of the Space layer thickness in a disk.....	174
Annex S	(informative) Transportation.....	175

STANDARD PREVIEW

(standards.iteh.ai)

ISO 13170:2009
<https://standards.iteh.ai/catalog/standards/sist/cfed58c4-c2db-4888-b320-d2d75274c477/iso-iec-13170-2009>

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC 13170 was prepared by Ecma International (as ECMA-384) and was adopted, under a special “fast-track procedure”, by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, in parallel with its approval by national bodies of ISO and IEC.

(standards.iteh.ai)

[ISO/IEC 13170:2009](https://standards.iteh.ai/catalog/standards/sist/cfed58c4-c2db-4888-b320-d2d75274cf47/iso-iec-13170-2009)

<https://standards.iteh.ai/catalog/standards/sist/cfed58c4-c2db-4888-b320-d2d75274cf47/iso-iec-13170-2009>

Introduction

Ecma Technical Committee TC31 was established in 1984 for the standardization of Optical Disks and Optical Disk Cartridges (ODC). Since its establishment, the Committee has made major contributions to ISO/IEC JTC 1/SC 23 toward the development of International Standards for optical disks. Numerous standards have been developed by TC31 and published by Ecma, almost all of which have also been adopted by ISO/IEC under the fast-track procedure as International Standards. The following Ecma Standards for DVD 120 mm and 80 mm have been published by Ecma and adopted by ISO/IEC JTC 1. Those standards are based on original specifications from The DVD Forum.

ISO/IEC 16448	Information technology — 120 mm DVD — Read-only disk
ISO/IEC 16449	Information technology — 80 mm DVD — Read-only disk
ISO/IEC 16824	Information technology — 120 mm DVD rewritable disk (DVD-RAM)
ISO/IEC 16825	Information technology — Case for 120 mm DVD-RAM disks
ISO/IEC 17342	Information technology — 80 mm (1,46 Gbytes per side) and 120 mm (4,70 Gbytes per side) DVD re-recordable disk (DVD-RW)
ISO/IEC 17592	Information technology — 120 mm (4,7 Gbytes per side) and 80 mm (1,46 Gbytes per side) DVD rewritable disk (DVD-RAM)
ISO/IEC 17594	Information technology — Cases for 120 mm and 80 mm DVD-RAM disks
ISO/IEC 20563	Information technology — 80 mm (1,23 Gbytes per side) and 120 mm (3,95 Gbytes per side) DVD-recordable disk (DVD-R)
ISO/IEC 23912	Information technology — 80 mm (1,46 Gbytes per side) and 120 mm (4,70 Gbytes per side) DVD Recordable Disk (DVD-R)

In April 2007, nine members proposed that TC31 develop a standard for 120 mm and 80 mm dual layer DVD re-recordable optical disks using Phase Change recording technology. TC31 adopted this project, which has resulted in this International Standard.

This International Standard specifies two Types of dual layer re-recordable optical disks: one (Type 1S) making use of recording on only a single side of the disk and yielding a nominal capacity of 8,54 Gbytes for a 120 mm disk and 2,66 Gbytes for an 80 mm disk, the other (Type 2S) making use of recording on both sides of the disk and yielding a nominal capacity of 17,08 Gbytes for a 120 mm disk and 5,32 Gbytes for an 80 mm disk.

Information technology — 120 mm (8,54 Gbytes per side) and 80 mm (2,66 Gbytes per side) DVD re-recordable disk for dual layer (DVD-RW for DL)

1 Scope

This International Standard specifies the mechanical, physical and optical characteristics of a 120 mm and an 80 mm dual layer DVD re-recordable disk to enable the interchange of such disks. It specifies the quality of the embossed, unrecorded and the recorded signals, the format of the data, the format of the information zone, the format of the unrecorded zone, and the recording method, thereby allowing for information interchange by means of such disks. This disk is identified as a DVD re-recordable disk for dual layer (DVD-RW for DL).

This International Standard specifies:

- 120 mm and 80 mm nominal diameter disks that may be either single or double sided;
- the conditions for conformance;
- the environments in which the disk is to be operated and stored;
- the mechanical and physical characteristics of the disk, so as to provide mechanical interchange between data processing systems;
- the format of the embossed information on an unrecorded disk, including the physical disposition of the tracks and sectors, the error correcting codes and the coding method used;
- the format of the data and the recorded information on the disk, including the physical disposition of the tracks and sectors, the error correcting codes and the coding method used;
- the characteristics of the signals from embossed and unrecorded areas on the disk, enabling data processing systems to read the embossed information and to write to the disks;
- the characteristics of the signals recorded on the disk, enabling data processing systems to read the data from the disk.

This International Standard provides for interchange of disks between disk drives. Together with a standard for volume and file structure, it provides for full data interchange between data processing systems.

2 Conformance

2.1 Optical Disk

A claim of conformance shall specify the type of the disk, i.e. its size and whether it is single-sided or double sided. An optical disk shall be in conformance with this International Standard if it meets the mandatory requirements specified for this type.

2.2 Generating system

A generating system shall be in conformance with this International Standard if the optical disk it generates is in accordance with 2.1.

2.3 Receiving system

A receiving system shall be in conformance with this International Standard if it is able to handle an optical disk according to 2.1.

3 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 8859-1, -2, -3 and -4, *Information technology — 8-bit single-byte coded graphic character sets — Part 1: Latin alphabet No. 1*

ECMA-287, *Safety of electronic equipment* — 2nd edition (December 2002)

4 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

4.1 basic recording speed

recording speed at which a disk is under an obligation to be recorded

NOTE A Basic recording speed is mandatory for each Class.

4.2 block SYNC guard area

recorded area in the first ECC block of the contiguous area of which recording is started from the unrecorded area by using 32K-Link

4.3 channel bit

elements by which, after modulation, the binary values ZERO and ONE are represented on the disk by marks

4.4 clamping zone

annular part of the disk within which a clamping force is applied by a clamping device

4.5 class

integer number, including 0, that indicates Basic recording speed supported by a disk

NOTE A group of recording speeds in a disk must contain at least one Basic recording speed which is mandatory for recording device and disk.

4.6 data zone

zone between the Lead-in Zone and the Middle Zone on Layer 0 and zone between the Middle Zone and the Lead-out Zone on Layer 1, in which user data is recorded

4.7**data recordable zone**

zone that is available to record user data

4.8**Digital Sum Value****DSV**

arithmetic sum obtained from a bit stream by allocating the decimal value 1 to bits set to ONE and the decimal value -1 to bits set to Zero

4.9**disk reference plane**

plane defined by the perfectly flat annular surface of an ideal spindle onto which the Clamping Zone of the disk is clamped, and which is normal to the axis of rotation

4.10**Disk Testing Area****DTA**

area used for Optimum Power Control

NOTE 1 There are two kinds of the Disk Testing Area on a disk. Inner Disk Testing Area (IDTA) is located in the R-Information Zone and situated adjacent to the inside of the Recording Management Area. Outer Disk Testing Area (ODTA) is fixed and situated adjacent to the outside of the fixed Middle Zone.

NOTE 2 The optional IDTA can be located on Layer 1 facing the special allocation in the Initial zone on Layer 0 as an option for devices, when NBCA is not applied on a disk.

4.11**ECC Block address**

absolute physical address used to define the recording position on the land of each area

ISO/IEC 13170:2009

NOTE 1 This address is pre-recorded as Land Pre-Pits and equal to the bit-inverted numbers from b23 to b4 of the Physical sector number recorded in the groove. Serially decremented numbers are assigned to blocks from the inner radius to the outer radius on Layer 0 and from the outer radius to the inner radius on Layer 1. The first ECC Block address in the Data Recordable Zone on Layer 0 is (FFCFFF). The bit-inverted number is calculated so that the bit value of one becomes that of zero and vice versa.

NOTE 2 The "ECC Block address" definition is specific to this Standard.

4.12**Error Correction Code****ECC**

mathematical computation yielding check bytes used for the detection and correction of errors in data

4.13**Error Detection Code****EDC**

code designed to detect certain kinds of errors in data

NOTE Error Detection Code consists of data and the error detection parity.

4.14**finalization**

action for changing into the state where the Lead-in, the Lead-out and the Middle Zones are recorded

NOTE After Finalization, the information Zone from the Lead-in Zone to the Middle Zone on Layer 0 and from the Middle Zone to the Lead-out Zone on Layer 1 shall be recorded without any unrecorded areas.

4.15**groove**

wobbled guidance track

4.16
information zone

zone comprising the Lead-in Zone, the Data Zone, the Middle Zone and the Lead-out Zone

4.17
initial information zone

zone comprising the Lead-in Zone, the Data Recordable Zone, the fixed Middle Zone and the Lead-out Zone

4.18
land
area between the grooves

4.19
Land Pre-Pit
LPP

pits embossed on the land during the manufacture of the disk substrate, which contain address information

4.20
Layer jump address
address on Layer 0 that causes layer jump to Layer 1

NOTE The end sector number of the Data area on Layer 0 and the address that is located immediately before the shifted Middle area are also Layer jump addresses.

4.21
lead-in zone
zone comprising Physical sectors adjacent to the inside of the Data Zone on Layer 0

4.22
lead-out zone
zone comprising Physical sectors adjacent to the inside of the Data Zone on Layer 1

NOTE When the recording of user data is finished on Layer 0, the Lead-out Zone is located adjacent to the inside of the Middle Zone on Layer 1.

4.23
middle zone
zone comprising physical sectors adjacent to the outside of the Data Zone on Layer 0 and Layer 1 respectively

NOTE 1 The fixed Middle Zone is located outside of Data Recordable Zone of a disk.

NOTE 2 The shifted Middle Zone can be added at the inner radius than the fixed Middle Zone as an option for devices, depending on the size of the Data Zone and located outside of the Data Zone.

4.24
Recording Management Area
RMA
area containing the Recording Management Data (RMD), situated adjacent to the inside of the Lead-in Zone on Layer 0 and the Lead-out Zone on Layer 1 respectively

4.25
Recording Management Data
RMD
information about the recording on the disk, including information for recordings

NOTE Two kinds of RMD format are specified. Format2 RMD contains the information of Pionter to indicate the valid Format3 RMD Set in the RMA segment. Format3 RMD contains the information related to Restricted Overwrite recording mode including Layer jump recording mode.

4.26**restricted overwrite**

recording mode in which recording the ECC block(s) onto any portion of recorded ECC block(s) or concatenating the ECC block(s) to the most outer recorded ECC block(s) with the Linking scheme

4.27**r-information zone**

zone comprising the Inner Disk Testing Area (IDTA) and the Recording Management Area (RMA)

4.28**rzone**

ECC blocks that are continuous on a layer and assigned to user data on Layer 0 and/or Layer 1 during recording

4.29**sector**

smallest addressable part of a track in the information zone of a disk that can be accessed independently of other addressable parts

4.30**substrate**

transparent layer of the disk, provided for mechanical support of the recording or recorded layer, through which the optical beam accesses the recordable / recorded layer

4.31**track**

360° turn of a continuous spiral of recorded marks or groove

4.32**track pitch**

distance between adjacent average physical track centrelines of the wobbled grooves for the unrecorded disk, or between adjacent physical track centrelines of the successive recorded marks for the recorded disk, measured in the radial direction

4.33**zone**

annular area of the disk

5 Conventions and notations

5.1 Representation of numbers

A measured value is rounded off to the least significant digit of the corresponding specified value. For instance, it implies that a specified value of 1,26 with a positive tolerance of + 0,01 and a negative tolerance of - 0,02 allows a range of measured values from 1,235 to 1,275.

Numbers in decimal notations are represented by the digits 0 to 9.

Numbers in hexadecimal notation are represented by the hexadecimal digits 0 to 9 and A to F in parentheses.

The setting of bits is denoted by ZERO and ONE.

Numbers in binary notations and bit patterns are represented by strings of digits 0 and 1, with the most significant bit shown to the left.

Negative values of numbers in binary notation are given as Two's complement.

In each field the data is recorded so that the most significant byte (MSB), identified as Byte 0, is recorded first and the least significant byte (LSB) last. In a field of $8n$ bits, bit $b_{(8n-1)}$ shall be the most significant bit (msb) and bit b_0 the least significant bit (lsb). Bit $b_{(8n-1)}$ is recorded first.

5.2 Names

The names of entities, e.g. specific tracks, fields, areas, zones, etc. are given a capital initial.

6 Acronyms

AP	Amplitude of the land Pre-Pit signal (without wobble amplitude)
AR	Aperture Ratio (of the Land Pre-Pit after recording)
BP	Byte Position
BPF	Band Pass Filter
CLV	Constant Linear Velocity
CNR	Carrier to Noise Ratio
DCC	DC Component suppress control
DSV	Digital Sum Value
ECC	Error Correction Code
EDC	Error Detection Code
HF	High Frequency
ID	Identification Data
LA	Lead-out Attribute
IDTA	Inner Disk Testing Area
IED	ID Error Detection (code)
LPF	Low-Pass Filter
LPP	Land Pre-Pit
LSB	Least Significant Byte
lsb	least significant bit
MSB	Most Significant Byte
msb	most significant bit
NBCA	Narrow Burst Cutting Area
NRZI	Non Return to Zero Inverted
ODTA	Outer Disk Testing Area

ITeH STANDARD PREVIEW
(standards.iteh.ai)

[ISO/IEC 13170:2009](https://standards.iteh.ai/catalog/standards/sist/cfed58c4-c2db-4888-b320-d2d75274cf47/iso-iec-13170-2009)

<https://standards.iteh.ai/catalog/standards/sist/cfed58c4-c2db-4888-b320-d2d75274cf47/iso-iec-13170-2009>

OPC	Optimum Power Control
OTP	Opposite Track Path
PBS	Polarizing Beam Splitter
PI	Parity (of the) Inner (code)
PLL	Phase Locked Loop
PO	Parity (of the) Outer (code)
PSN	Physical Sector Number
PTP	Parallel Track Path
PUH	Pick-Up Head
RBP	Relative Byte Position
RBW	Resolution Bandwidth
RESYNC	Re-Synchronization
RMA	Recording Management Area
RMD	Recording Management Data
RS	Reed-Solomon (code)
SYNC	Synchronization

iteh STANDARD PREVIEW
(standards.iteh.ai)

ISO/IEC 13170:2009

<https://standards.iteh.ai/catalog/standards/sist/cfed58c4-c2db-4888-b320-d2d75274cf47/iso-iec-13170-2009>

7 General description of a disk

The 120 mm and 80 mm optical disks that are the subject of this International Standard consist of two substrates bonded together by an adhesive layer, so that the recording layers are on the inside. The centring of the disk is performed on the edge of the centre hole of the assembled disk on the side currently read. Clamping is performed in the Clamping Zone. The DVD Re-recordable Disk for Dual Layer (DVD-RW for DL) may be either double-sided or single-sided with respect to the number of recording layers. A double-sided disk has the recording layers on the inside of each substrate. A single-sided disk has one substrate with the recording layers on the inside and a dummy substrate without a recording layer. A recorded disk provides for the data to be read many times by an optical beam of a drive. Figure 1 shows schematically a double-sided (Type 2S) and a single-sided (Type 1S) disk.

Type 1S consists of a substrate, two recording layers with a space layer between them, an adhesive layer, and a dummy substrate. Both recording layers can be accessed from one side only. The nominal capacity is 8,54 Gbytes for a 120 mm disk and 2,66 Gbytes for an 80 mm disk.

Type 2S consists of two substrates, each having two recording layers with a space layer between them, and an adhesive layer. From one side of the disk only one pair of recording layers can be accessed. The nominal total capacity is 17,08 Gbytes for a 120 mm disk and 5,32 Gbytes for an 80 mm disk.