

# International Standard



# 5654/2

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## Information processing — Data interchange on 200 mm (8 in) flexible disk cartridges using two-frequency recording at 13 262 ftprad, 1,9 tpmm (48 tpi), on one side — Part 2 : Track format

*Traitement de l'information — Échange de données sur cartouches à disquette de 200 mm (8 in) utilisant un enregistrement à deux fréquences à 13 262 ftprad, 1,9 tpmm (48 tpi) sur une face — Partie 2 : Schéma de piste*

Second edition — 1985-12-15

UDC 681.327.63

Ref. No. ISO 5654/2-1985 (E)

**Descriptors :** data processing, information interchange, magnetic storage, magnetic disks, magnetic recording, specifications.

Price based on 9 pages

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ISO 5654/2-1985



## Foreword

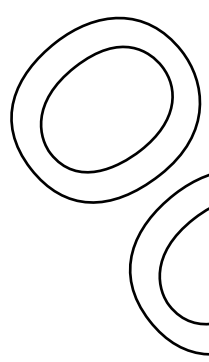
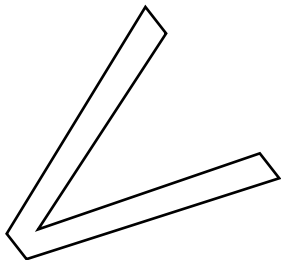
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International Standard ISO 5654/2 was prepared by Technical Committee ISO/TC 97, *Information processing systems*.

ISO 5654/2 was first published in 1982. This second edition cancels and replaces the first edition, of which it constitutes a minor revision.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.



Preview

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# Information processing — Data interchange on 200 mm (8 in) flexible disk cartridges using two-frequency recording at 13 262 ftprad, 1,9 tpmm (48 tpi), on one side —

## Part 2 : Track format

### 0 Introduction

ISO 5654 specifies the characteristics of 200 mm (8 in) flexible disk cartridges recorded at 13 262 ftprad, 1,9 tpmm (48 tpi), on one side using two-frequency recording.

ISO 5654/1 specifies the dimensional, physical and magnetic characteristics of the cartridge, so as to provide physical interchangeability between data processing systems.

Together with the labelling scheme specified in ISO 7665, ISO 5654/1 and ISO 5654/2 provide for full data interchange between data processing systems.

### 1 Scope and field of application

This part of ISO 5654 specifies the quality of recorded signals, track layout and the track format to be used on the above-mentioned flexible disk cartridge which is intended for data interchange between data processing systems.

NOTE — Numeric values in the SI and/or Imperial measurement system in this part of ISO 5654 may have been rounded off and therefore are consistent with, but not exactly equal to, each other. Either system may be used, but the two should be neither intermixed nor re-converted.

The original design was made using the Imperial measurement system.

### 2 References

ISO 646, *Information processing — ISO 7-bit coded character set for information interchange.*

ISO 2022, *Information processing — ISO 7-bit and 8-bit coded character sets — Code extension techniques.*

ISO 4873, *Information processing — ISO 8-bit coded character set for information interchange.*

ISO 5654/1, *Information processing — Data interchange on 200 mm (8 in) flexible disk cartridges using two-frequency recording at 13 262 ftprad, 1,9 tpmm (48 tpi), on one side — Part 1 : Dimensional, physical and magnetic characteristics.*

ISO 7665, *Information processing — File structure and labelling of flexible disk cartridges for information interchange.*

### 3 General recording requirements

#### 3.1 Mode of recording

The mode of recording shall be two-frequency where the start of every bit cell is a clock flux transition. A ONE is represented by a data flux transition between two clock flux transitions.

#### 3.2 Track location tolerance of the recorded flexible disk cartridge

The centrelines of the recorded tracks shall be within  $\pm 0,085$  mm (0.003 3 in) of the nominal positions, when measured in the testing environment specified in ISO 5654/1. This tolerance corresponds to twice the standard deviation.

#### 3.3 Recording offset angle

At the instant of writing or reading a magnetic transition, the transition may have an angle of  $0^\circ \pm 18'$  with the radius. This tolerance corresponds to twice the standard deviation.

#### 3.4 Density of recording

3.4.1 The nominal density of recording shall be 13 262 ftprad, 1,9 tpmm (48 tpi). The resulting nominal spacing between two clock flux transitions, the nominal bit cell length, is 151  $\mu$ rad.

3.4.2 The long-term average bit cell length shall be the average bit cell length measured over a sector. It shall be within  $\pm 3$  % of the nominal bit cell length.

NOTE — It is recognized that at extremes of supply frequency encountered on computer sites the deviation may be  $\pm 5$  % in exceptional circumstances. Successful data interchange may still then be possible provided that formatting of the cartridge and subsequent writing of data are not carried out at the opposite limits of this range.

3.4.3 The short-term average bit cell length, referred to a particular bit cell, shall be the average of the lengths of the preceding eight bit cells. It shall be within  $\pm 8$  % of the long term average bit cell length.

**3.5 Flux transition spacing** (see figure 1)

The instantaneous spacing between flux transitions may be influenced by the reading and writing process, the bit sequence recorded (pulse crowding effects), and other factors. The locations of the transitions are defined as the locations of the peaks in the signal when reading. Tests should be carried out using a peak-sensing read amplifier (see annex B).

**3.5.1** The spacing between two clock flux transitions surrounding a data flux transition or between two data flux transitions surrounding a clock flux transition shall be between 90 % and 140 % of the nominal bit cell length.

**3.5.2** The spacing between two clock flux transitions not surrounding a data flux transition or between two data flux transitions surrounding a missing clock flux transition shall be between 60 % and 110 % of the nominal bit cell length.

**3.5.3** The spacing between a data flux transition and the preceding clock flux transition (when not missing) or between a clock flux transition and the preceding data flux transition (when not missing) shall be between 45 % and 70 % of the nominal bit cell length.

**3.6 Average signal amplitude**

The average signal amplitude on any non-defective track of the interchanged flexible disk cartridge shall be less than 160 % of the standard reference amplitude for track 00 and more than 40 % of the standard reference amplitude for track 76.

**4 General format requirements**

**4.1 Byte**

A byte is a group of eight bit-positions, identified B1 to B8, with B8 most significant and recorded first.

The bit in each position is a ZERO or a ONE.

**4.2 Sector**

All tracks are divided into 26 sectors.

**4.3 Data capacity of a track**

The data capacity of a track shall be 3 328 bytes.

**4.4 Hexadecimal notation**

Hexadecimal notation shall be used hereafter to denote the following bytes :

(00) for (B8 to B1) = 00000000

(FF) for (B8 to B1) = 11111111

(FC)\* for (B8 to B1) = 11111100

where the clock transitions of B6 and B4 are missing

(FE)\* for (B8 to B1) = 11111110

where the clock transitions of B6, B5 and B4 are missing

(FB)\* for (B8 to B1) = 11111011

where the clock transitions of B6, B5 and B4 are missing

(F8)\* for (B8 to B1) = 11111000

where the clock transitions of B6, B5 and B4 are missing.

**4.5 Error detection characters (EDC)**

The two EDC-bytes are hardware-generated by shifting serially the relevant bits, specified later for each part of the track, through a 16-bit shift register described by the generator polynomial

$$X^{16} + X^{12} + X^5 + 1$$

(See also annex A.)

**4.6 Representation of characters**

Characters shall be represented by means of the 7-bit coded character set (see ISO 646) and, where required, by its 7-bit or 8-bit extensions (see ISO 2022) or by means of the 8-bit coded character set (see ISO 4873).

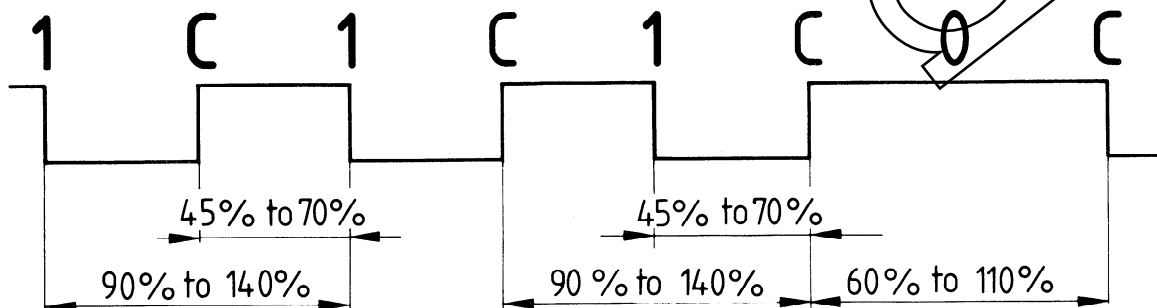


Figure 1

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