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**Intelligence grading of artificial intelligence terminal - Part 4:
Microcomputer**

人工智能终端智能化分级 第4部分：微型计算机

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Foreword

This document was drafted in accordance with the rules given in GB/T 1.1-2020, Directives for standardization - Part 1: Rules for the structure and drafting of standardizing documents.

This document is Part 4 of GB/Z 177, Grading of intelligence for artificial intelligence terminals.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. The issuing body of this document is not to be held responsible for identifying any or all such patent rights.

This document was proposed by and is under the jurisdiction of the National Information Technology Standardization Technical Committee (SAC/TC 28).

1 Scope

This document specifies the division into levels of the key intelligence capabilities of artificial intelligence microcomputers, referred to below as the microcomputer, and the determination of the level, and describes the corresponding test methods.

This document applies to guiding the grading of intelligence of microcomputers, and provides a reference for the design, development, application, selection and testing of desktop microcomputers, portable microcomputers and tablet microcomputers.

2 Normative references

The following documents contain provisions which, through normative reference in this text, constitute indispensable provisions 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.

GB/T 9813.1-2016, General specification for computer - Part 1: Desktop microcomputer

GB/T 9813.2-2016, General specification for computer - Part 2: Portable microcomputer

GB/T 45288.2-2025, Artificial intelligence - Large models - Part 2: Evaluation indicators and methods

GB/Z 177.1, Grading of intelligence for artificial intelligence terminals - Part 1: Reference framework

GB/Z 177.2, Grading of intelligence for artificial intelligence terminals - Part 2: General requirements

3 Terms and definitions

For the purposes of this document, the terms and definitions given in GB/T 9813.1-2016, GB/T 9813.2-2016, GB/T 45288.2-2025, GB/Z 177.1 and GB/Z 177.2 and the following apply.

3.1 tablet microcomputer - a microcomputer whose main means of interaction is a touch screen and which normally needs external devices such as a keyboard or a mouse to be used.

3.2 direct instruction - an operating instruction issued by the user in an explicit, structured form, which the system can parse and carry out directly without reasoning.

3.3 simple intent - an operating need expressed by the user to the system that is single, with a clearly defined goal, and does not depend on context.

3.4 complex intent - an operating need expressed by the user to the system that contains

several subgoals, calls for task decomposition and depends on context.

3.5 workflow - a sequence of tasks orchestrated to achieve a particular goal.

4 Abbreviated terms

For the purposes of this document the following abbreviated terms apply. BLEU: Bilingual Evaluation Understudy. MOS: Mean Opinion Score.

5 Key capabilities

5.1 General. According to the level of intelligence with which a microcomputer completes tasks of various kinds within its functional range, and the degree to which the user takes part while the task is carried out, the intelligence level of a microcomputer is divided into levels 1 (L1) to 3 (L3); the higher the level, the higher the level of intelligence. The capabilities of a higher level cover all the capabilities of the lower levels, so that an L3 microcomputer covers at the same time all the key capabilities of L1 and of L2. The capability elements of this document follow GB/Z 177.1 and GB/Z 177.2. The intelligence level of a microcomputer is made up of two parts: a) the device-side capability, meaning the service capability of the microcomputer to complete part of the perception, cognition, execution, memory and learning locally, relying on its own computing, storage and sensor resources; b) the device-cloud collaborative capability, meaning the capability of the microcomputer, on the basis of its device-side capability and together with edge-side or cloud-side computing resources, to complete composite tasks that call for strong cognition and complex decision processing, through collaborative scheduling and exchange of information.

5.2 Device-side capabilities. 5.2.1 L1 response level. 5.2.1.1 Perception. 5.2.1.1.1 Perception of user information shall meet the following: a) text perception, the capability to input text content accurately through an external device such as a keyboard; b) audio perception, inputting audio information through an external device such as a microphone or through an audio file the user supplies; c) image perception, taking a photograph through an external device such as a camera, or inputting image information through an image file the user supplies; d) video perception, recording through an external device such as a camera, or inputting video information through a video file the user supplies.

5.2.1.1.2 Perception of device information shall meet the following: a) hardware perception, the capability to perceive the hardware information and the working state of the machine, including the processor, the memory, the hard disk, the graphics card and the battery; b) software perception, the capability to perceive the software information and the working state of the machine, including the list of installed software, the running state, the operating system information, the driver state, the permission settings and the state of the network connection. 5.2.1.1.3 Perception of environmental information: no requirement.

5.3.3.4 Memory at L3 in device-cloud collaboration. 5.3.3.4.1 Short-term memory: memory of the content of the context of a single session, meaning the capability to remember that content. 5.3.3.4.2 Long-term memory shall meet the following: a) session history memory, the capability to remember the session history and to continue the session task after a restart; b) user preference memory, the capability to remember the preferences of the user; c) personal knowledge base, having a personal knowledge base.

5.3.3.5 Learning. 5.3.3.5.1 Context-adaptive learning: within a single session, the capability to adjust and optimize the content output dynamically according to the context or the examples of the user. 5.3.3.5.2 Continuous evolutionary learning: no requirement.

6 Determination of the level

The intelligence level of a microcomputer is determined by the conformity method of GB/Z 177.2. According to the target intelligence level applied for by the client and the key capabilities this document specifies for that level, at least three second-level application scenarios are selected, until all the capability items are covered; examples of scenario-based testing are given in Annex A, and the capabilities a typical scenario is recommended to cover in Annex B. Each scenario verifies the detailed capability items associated with it - an L1 general scenario, for instance, has to verify text perception, audio perception, image perception, video perception, time perception and direct instructions - and where some capabilities cannot be covered they are tested by the test method for the corresponding capability, the test methods being those of Annex C.

Where the client considers that the scenarios of this document do not match the positioning of the product, test scenarios may be drawn up independently by reference to Annex A; scenarios drawn up in this way shall be reviewed by the testing body and shall at the same time cover all the capabilities of the corresponding level.