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NATIONAL STANDARD

OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 15279-2002

Replacing GB/T 15279-1994

The specifications of automatic telephone set

自动电话机技术条件

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Issued on: July 18, 2002

Implemented on: December 01, 2002

Issued by: General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China;

Standardization Administration of the People's Republic of China.

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Foreword

GB/T 15279 is the basic standard for automatic telephone sets and also the criterion for the formulation of the standards for analog telephone sets with other functions. The modification of this Standard was made by reference to the relevant suggestions of ITU-T and some typical foreign standards for telephone sets. However, there is no international standard directly corresponding to the entirety of this Standard.

This Standard is the revision of GB/T 15279-1994 "The Specifications of Automatic Telephone Set". It shall replace GB/T 15279-1994 from the implementation date. Compared with the 1994-edition, there are main changes in this Standard as follows:

- The contents relating to granular carbon transmitter telephone set (4.2.4, 4.2.5, 5.1.6 and 5.5.3 of 1994-edition) have been deleted;
- The technical indicators relating to speed pulse dialing (20 pulses/second) in pulse dialing method (Table 4 in 1994-edition) have been deleted;
- The requirements and measuring methods for rotary dial (4.3.3, 4.3.5 and 5.11.10 in 1994-edition) have been deleted;
- The recommended dimensions of telephone handset (4.8 in 1994-edition) have been deleted;
- Chapter 6 Inspection Rules in 1994-edition has been deleted;
- Chapter 8 Reliability Test in 1994-edition has been deleted and changed into a normative annex (Chapter 8 of 1994-edition, Annex A of this Standard) of this Standard;
- The index requirements for sending loudness rating (SLR), receiving loudness rating (RLR) and side tone masking rating (STMR) (Table 1 of 1994-edition, Table 1 of this edition of standard) have been modified;
- The basic requirements for artificial ear and mouth used for testing purposes (5.1.5 and 5.1.6 of this edition of standard) have been supplemented;
- The requirements for amplitude characteristic have been modified. The amplitude characteristic requirements and corresponding test methods for sending and receiving (4.2.4 and 5.4 of 1994-edition; 4.2.4 and 5.4 of this edition of standard) have been proposed respectively;
- The requirements for nonlinear distortion of telephone set have been modified. The distortion index of adding 10dB respectively to the normal test values of sending and receiving drive levels and the corresponding test methods (4.2.5 and 5.5 of

The specifications of automatic telephone set

1 Scope

This Standard specifies the technical requirements, test methods, reliability test, marking and packing for fixed automatic telephone sets.

This Standard applies to the pulse and dual-tone multi-frequency handset telephone sets that have access to analog interfaces of public network. Other multifunctional terminals that have handset function can also use this Standard as a reference. However, other functions not specified in this Standard must be tested according to the requirements and by reference to relevant standards.

2 Normative references

The articles contained in the following documents have become part of this Standard when they are quoted herein. For the dated documents so quoted, all the modifications (excluding corrections) or revisions made thereafter shall not be applicable to this Standard. For the undated documents so quoted, the latest editions shall be applicable to this Standard.

GB/T 2423.1 Environmental testing for electric and electronic products-Part 2: Test methods-Tests A: Cold (idt IEC 60068-2-1: 1990)

GB/T 2423.2 Environmental testing for electric and electronic products-Part 2: Test methods-Tests B: Dry heat (idt IEC 60068-2-2: 1974)

GB/T 2423.3 Basic environmental testing procedures for electric and electronic products-Test Ca: Damp heat, steady state (eqv IEC 60068-2-3: 1984)

GB/T 2423.6 Environmental testing for electric and electronic products-Part 2: Test methods-Test Eb and guidance: Bump (idt IEC 60068-2-29: 1987)

GB/T 2423.8 Environmental testing for electric and electronic products-Parts 2: Test methods-Test Ed: Free fall (idt IEC 60068-2-32: 1990)

GB/T 2423.10 Environmental testing for electric and electronic products-Part 2: Test methods-Test Fc and guidance: Vibration (Sinusoidal) (idt IEC 60068-2-6: 1982)

GB/T 2828 Sampling procedures and tables for lot-by-lot inspection by attributes (Apply to inspection of successive lots or batches)

GB/T 3873-1983 General specifications for products packaging of communication equipment

GB/T 5296.1-1997 Instructions for use of products of consumer interest-General principles

GB/T 11016.1-11016.4 Plastic or rubber insulated telephone cords

GB/T 18031-2000 Information technology-Generic specification for Chinese character input with digital keyboard

YD/T 577-1992 Jack and Plug for Indoor Telephone

YD/T 965-1998 The safety requirement and test method for telecommunication terminal equipment

YD/T 968 Limits and methods of measurement of electromagnetic compatibility for telecommunication terminal equipment

YD/T 993-1998 Technical requirements and test methods of lightning resistibility for telecommunication terminal equipment

ITU-T P.64 Determination of sensitivity of local telephone systems

ITU-T P.79 Calculation of loudness ratings for telephone sets

3 Terms and symbols

3.1 Terms and symbols

LR – loudness rating;

SLR – sending loudness rating;

RLR – receiving loudness rating;

STMR – side tone masking rating;

LRGP – loudness rating guard-ring position;

S_{mJ} – sending sensitivity measured by objective measuring method;

S_{Je} – receiving sensitivity measured by objective measuring method;

S_{JE} – receiving sensitivity measured with actual human ear;

S_{meST} – side tone sensitivity measured by objective measuring method;

L_E – correction value for the sound leakage between ear piece of telephone set and human ear;

W_S , W_R and W_M – respectively the weighting coefficients used for the calculation of

4.6.2 The recommended telephone cord and handset cord use plastic-sheathed multi-strand copper wire. The length of telephone cord shall not be smaller than 2m. If spiral cord is used as the handset cord, the maximum extension at which it can resume the spiral state spontaneously shall not be smaller than 2m.

4.6.3 The tensile strength of telephone cord shall not be less than 6kg.

4.6.4 The rate of length change of spiral cord after 10 000 times of continuous extensions shall not be greater than 80%.

4.6.5 For other requirements for spiral cord, please refer to the relevant regulations specified in GB/T 11016.1-GB/T 11016.4.

4.7 Key “R”

The telephone sets provided with key “R” shall be marked with word “R” clearly. After key “R” has been pressed, the interruption time of talking circuit shall be between 90ms-130ms. The off resistance in case key “R” functions shall not be less than 100kΩ.

4.8 Appearance and structure

4.8.1 The external surface of telephone set shall not have any damages, burrs, unevenness and cracks. The surface of coated piece shall not have any paint removing, bubbling, shedding of coating and corrosion.

4.8.2 The parts and components of telephone set shall be assembled correctly and installed securely according to the specified drawing. They shall be able to be operated reliably and maintained easily.

4.9 Safety requirements

4.9.1 Voltage resistance

Under normal service conditions, no arc-overs, sparks and breakdowns shall occur when the telephone set has been under the sinusoidal AC voltage of which the frequency is 50Hz and the effective value is 500V for 1min.

4.9.2 Insulation resistance

Under normal service conditions, the insulation resistance of telephone set shall not be less than 50MΩ.

4.10 Environmental suitability of telephone set

4.10.1 After the telephone set has gone through -10°C low temperature and 40°C high temperature tests, its sending and receiving loudness ratings are allowed to deviate from the index for 3dB and shall meet the requirements for telephone ring sound level and dial

4.12.4 Decision rules after electrostatic discharge immunity and electrical fast transient burst immunity test

After the test, the telephone set shall be able to meet the requirements for transfer characteristic, dialing, ringing, safety and function specified in this Standard.

4.13 Functional requirements for telephone set

4.13.1 The functions specified in the operation instruction of telephone set shall be normal and meet the requirements of relevant specifications.

4.13.2 The keys shall be agile and reliable, without any bad contact and sticking. Reliable dialing shall be ensured without any repeating.

4.13.3 If call restriction has been set for the telephone due to special needs, the design shall ensure the normal dialing out and using of emergency telephone.

4.13.4 If the use of external AC power supply is required for the telephone set due to special needs, it shall be taken into consideration in the design that the most basic dialing, calling and ringing functions can still be ensured when the external AC power supply has been removed.

4.13.5 The telephone set shall be set to use indicator light (or display) to indicate that it is in non-hang-up state.

4.13.6 When setting DTMF dialing state, the proper dialing of at least 10 numerical keys and keys “*” and “#” can be ensured.

4.13.7 It is suggested to set “redialing” key, “R” key and receiving volume manual adjustment function for the telephone set.

4.13.8 If the telephone set has other additional functions for which no technical indicator requirements have been specified in this Standard, the relevant standards shall be executed.

4.14 Reliability requirements for telephone set

The mean time between failures (MTBF) of telephone set shall not be shorter than 5 000h.

5 Test methods

5.1 Test conditions

5.1.1 Test under normal conditions

Unless otherwise specified, all the tests shall be carried out under the following normal conditions.

- a) Carry out the test between the outside line terminal and the conductive part on the surface of the telephone set.
- b) Adjust the voltage of AC voltage breakdown meter to 500V. The breakdown decision current is 2mA and the test duration is 1min.

5.18.2 Insulation property

Carry out the test after voltage resistance test. The test location is the same as in item a) of 5.18.1. The test voltage is 250V DC.

5.19 Basic environmental suitability test

Carry out the test in the sequence of low temperature test → high temperature test → vibration test → bump test → damp heat test → fall-down test.

5.19.1 Low temperature test

Carry out the test continuously without stop according to storage temperature and working temperature.

- a) Carry out the test according to the method specified in the relevant regulations of GB/T 2423.1.
- b) Put the telephone set under normal atmospheric condition for 1h-2h. Carry out initial examination and measurement according to 5.2, 5.12.1.1, 5.12.2.1 and 5.13.3.
- c) Conditional test. Put the telephone set without packing and feeding into the test chamber in normal working position. Start the cold source to decrease the temperature to -40°C. Keep the temperature for 8h after it has become stable. Then, increase the chamber temperature to -10°C at the average speed of change of not faster than 1°C/min and keep the temperature for 4h.
- d) After the conditional test has been completed, take out the telephone set and carry out tests immediately according to 5.2.2, 5.2.3, 5.12.1.1, 5.12.2.1 and 5.13.3.
- e) After the telephone set has recovered for 2h under normal atmospheric condition, carry out tests according to 5.2.2, 5.2.3, 5.12.1.1, 5.12.2.1 and 5.13.3.

5.19.2 High temperature test

Carry out the test continuously without stop according to storage temperature and working temperature.

- a) Carry out the test according to the method specified in the relevant regulations of GB/T 2423. 2.

- b) Conditional test. Put the telephone set without packing and feeding into the test chamber in normal working position. Start the heat source to increase the temperature to 50°C. Keep the temperature for 8h after it has become stable. Then, decrease the chamber temperature to 40°C at the average speed of change of not faster than 1°C/min and keep the temperature for 4h.
- c) After the conditional test has been completed, take out the telephone set and carry out tests immediately according to 5.2.2, 5.2.3, 5.12.1.1, 5.12.2.1 and 5.13.3.
- d) After the telephone set has recovered for 2h under normal atmospheric condition, carry out tests according to 5.2.2, 5.2.3, 5.12.1.1, 5.12.2.1 and 5.13.3.

5.19.3 Vibration test

- a) Carry out the test according to the method specified in the relevant regulations of GB/T 2423.10.
- b) Conditional test. Fix the telephone set without packing and feeding to the test desk. The installation method shall meet the requirements of 3.2 of GB/T 2423.10. In the frequency range of 10Hz-55Hz and the amplitude of 0.35mm, carry out sweep vibration for 5 times respectively in three axial directions. The test duration in each axial direction is 25min.
- c) After the conditional test has been completed, carry out tests according to 5.2.2, 5.2.3, 5.12.1.1, 5.12.2.1 and 5.13.3.

5.19.4 Bump test

- a) Carry out the test according to the method specified in the relevant regulations of GB/T 2423.6.
- b) Conditional test. Fix the telephone set without packing and feeding to the test desk. The installation method shall meet the requirements of 3.3 of GB/T 2423.6. The peak acceleration is 100m/s², the pulse duration is 16ms. Bump the telephone set for 1 000±10 times respectively in each axial direction with the impact forces applied in three directions perpendicular to each other.
- c) After the conditional test has been completed, carry out tests according to 5.2.2, 5.2.3, 5.12.1.1, 5.12.2.1 and 5.13.3.

5.19.5 Damp heat test

- a) Carry out the test according to the method specified in the relevant regulations of GB/T 2423.2.
- b) Conditional test. Put the telephone set without packing and feeding into the test chamber in normal working position. Preheat it at 40°C for 4h, adjust the humidity to

A.3 Test requirements

A.3.1 Requirements for test telephones

The test telephones shall be randomly taken from qualified products and measured according to 5.2.2, 5.2.3, 5.12.1.1, 5.12.2.1 and 5.13.3 of this Standard and conform to the requirements for SLR and RLR given in Table 1 and the values specified in Table 3, Table 4 or Table 5.

A.3.2 Test conditions

- a) Temperature: $(40 \pm 2)^{\circ}\text{C}$;
- b) Relative humidity: 45%-75%;
- c) Atmospheric pressure: 86kPa-106kPa.

A.3.3 Test method

A.3.3.1 The feed to the telephone circuit is 35mA. Adjust it with the equivalent circuit resistor connected in series on the outside of the feed bridge.

A.3.3.2 Take 8h as a test cycle. In each cycle, take up the telephone set for 6h, hang it up for 2h and carry out the following tests on the telephone set every other 8h:

- a) Ringing test. Ring the telephone set to see if it is able to receive the ringing properly;
- b) Dialing test. Press keys 0-9 to see if the telephone set is able to dial properly;
- c) Call test. Normal call shall be possible.

After the specified test duration has been reached, carry out tests according to 5.2.2, 5.2.3, 5.11, 5.12 and 5.13.3.

A.4 Failure criteria

If any telephone set has failed to accomplish one of the following functions, it is considered as one failure.

A.4.1 Unable to ring

A.4.2 Abnormal dialing

A.4.2.1 Unable to dial

A.4.2.2 Wrong number

A.4.2.3 The pulse make/break ratio and pulse rate exceed the range specified in Table

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