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NATIONAL STANDARD OF THE
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GB/T 2423.34-2012 / IEC 60068-2-38:2009

Replacing GB/T 2423.34-2005

**Environmental Testing - Part 2: Test Methods - Test
Z/AD: Composite Temperature/Humidity Cyclic Test**

环境试验 第2部分：试验方法

试验 Z/AD：温度/湿度组合循环试验

(IEC 60068-2-38:2009, Environmental Testing - Part 2-38: Tests - Test
Z/AD: Composite Temperature/Humidity Cyclic Test, IDT)

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Table of Contents

Foreword.....	3
1 Scope.....	5
2 Normative References	5
3 General Instructions.....	5
3.1 Overview of the test.....	5
3.2 Application of the test	6
4 Description of Test Chamber.....	7
4.1 Chamber for exposure to moisture.....	7
4.2 Chamber for exposure to cold	7
5 Severities	8
6 Testing Procedure	8
6.1 Preconditioning (see Figure 1)	8
6.2 Initial measurements	10
6.3 Conditioning	10
6.4 Test cycle.....	11
6.5 Final measurements.....	14
7 Information to be Given in the Relevant Specification.....	16
8 Information to be Given in the Test Report.....	16
Appendix NA (informative) Constituent Parts of GB/T 2423.....	18

Foreword

This Part is Part 34 of the GB/T 2423 standard. For the parts of the GB/T 2423 series of standards, see the informative appendix NA

This Part was drafted as per the rules specified in GB/T 1.1-2009.

This Part replaced GB/T 2423.34-2005 *Environmental Testing for Electric and Electronic Products - Part 2: Test Methods - Test Z/AD: Composite Temperature/Humidity Cyclic Test*.

Compared with GB/T 2423.34-2005, this Part has the major changes as follows:

- Add Clause 2 "Normative References" and Clause 8 "Information to be Given in Test Report";
- Modify the original Clause 2 "Objective" into the Clause 1 "Scope" of this Part;
- Modify the original Clause 1 "Guidelines" into Clause 3 "General Instructions" of this Part; and the text description is different from the original;
- Change the temperature tolerance unit from "°C" to "K";
- Add the requirements for the temperature tolerance of the test chamber in 6.3;
- Modify the Clause 7 "Information to be Given in Relevant Specifications"; and add content information that shall be given by relevant specifications.

This Part uses translation method to equivalently adopt IEC 60068-2-38:2009 (Version 2) *Environmental Testing – Part 2-38: Tests – Test Z/AD: Composite Temperature/Humidity Cyclic Test*.

The Chinese documents that have a consistent correspondence with the normatively cited international documents in this Part are as follows:

GB/T 2421.1 Environmental Testing for Electric and Electronic products — General and Guidance (GB/T 2421.1-2008, IEC 60068-1:1998, IDT)

GB/T 2423.3 Environmental Testing for Electric and Electronic Products - Part 2: Testing Method Test Cab: Damp Heat Steady State (GB/T 2423.3-2006, IEC 60068-2-78:2001, IDT)

GB/T 2423.4 Environmental Testing for Electric and Electronic Products - Part 2: Test Method - Test Db: Damp Heat, Cyclic (12h+12h Cycle) (GB/T 2423.4-2008, IEC 60068-2-30:2005, IDT)

Compared with IEC 60068-2-38:2009 (Version 2), this Part mainly made the following editorial modifications:

- Delete the foreword of IEC 60068-2-38:2009 (Version 2); and add the foreword of the national standard;
- Add the informative appendix "Parts of GB/T 2423 Standard" (see Appendix NA).

This Part was proposed by and under the jurisdiction of National Technical Committee for Standardization of Environmental Conditions of Electric and Electronic Products and Environmental Test (SAC/TC 8).

Chief drafting organizations of this Part: China National Electric Apparatus Research Institute Co., Ltd.; Shenzhen Metrology and Test Institute; Shanghai Institute of Quality Inspection and Technical Research; Shanghai Institute of Process Automation Instrumentation; Chongqing Sd Experiment Instrument Co., Ltd.; and Beihang University.

Chief drafting staffs of this Part: Xu Xuedong, Zhu Jianhua, Lu Zhaoming, Hu Honghui, Chen Yunsheng, and Wu Sa.

The historical editions replaced by this Standard are as follows:

- GB/T 2423.34-2005;
- GB/T 2324.34-1986.

Environmental Testing - Part 2: Test Methods - Test Z/AD: Composite Temperature/Humidity Cyclic Test

1 Scope

This Part of GB/T 2423 provides a composite test procedure, primarily intended for component type specimens, to determine, in an accelerated manner, the resistance of specimens to the deteriorative effects of high temperature/humidity and cold conditions.

2 Normative References

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) are applicable to this document.

IEC 60068-1 Environmental Testing – Part 1: General and Guidance

IEC 60068-2-30 Environmental Testing – Part 2-30: Tests – Test Db: Damp Heat, Cyclic (12h+12h Cycle)

IEC 60068-2-78 Environmental Testing – Part 2-78: Tests – Test Cab: Damp Heat, Steady State

3 General Instructions

3.1 Overview of the test

Test Z/AD is a cyclic temperature/humidity test which is designed to reveal defects in test specimens caused by "breathing" as distinct from the absorption of moisture.

This test differs from other cyclic damp heat tests in that it derives its increased severity from:

- a) a greater number of temperature variations or "pumping" actions in a given time;
- b) a greater cyclic temperature range;
- c) a higher cyclic rate of change of temperature;

Appendix NA

(informative)

Constituent Parts of GB/T 2423

Apart from this Part, the constituent parts of GB/T 2423 are as follows:

GB/T 2423.1-2008 Environmental testing for electric and electronic products - Part 2: Test methods - Tests A: Cold (IEC 60068-2-1:2007, IDT)

GB/T 2423.2-2008 Environmental testing for electric and electronic products - Part 2: Test methods - Tests B: Dry heat (IEC 60068-2-2:2007, IDT)

GB/T 2423.3-2006 Environmental testing for electric and electronic products - Part 2: Testing methods - Test Cab: Damp heat, steady state (IEC 60068-2-78:2001, IDT)

GB/T 2423.4-2008 Environmental testing for electric and electronic products - Part 2: Test methods - Test Db: Damp heat, cyclic (12 h + 12 h cycle) (IEC 60068-2-30:2005, IDT)

GB/T 2423.5-1995 Environmental testing for electric and electronic products - Part 2: Test methods - Test Ea and guidance: Shock (IEC 60068-2-27:1987, IDT)

GB/T 2423.6-1995 Environmental testing for electric and electronic products - Part 2: Test methods - Test Eb and guidance: Bump (IEC 60068-2-29:1987, IDT)

GB/T 2423.7-1995 Environmental testing for electric and electronic products - Part 2: Test methods - Test Ec and guidance: Drop and topple - Primarily for equipment-type specimens (IEC 60068-2-31:1982, IDT)

GB/T 2423.8-1995 Environmental testing for electric and electronic products - Part 2: Test methods - Test Ed: Free fall (IEC 60068-2-32:1990, IDT)

GB/T 2423.10-2008 Environmental testing for electric and electronic products - Part 2: Tests methods - Test Fc: Vibration (sinusoidal) (IEC 60068-2-6:1995, IDT)

GB/T 2423.15-2008 Environmental testing for electric and electronic products - Part 2: Test methods - Test Ga and guidance: Acceleration, steady (IEC 60068-2-7:1986, IDT)

GB/T 2423.16-2008 Environmental testing for electric and electronic products - Part 2: Test methods - Test J and guidance: Mold growth (IEC 60068-2-10:2005, IDT)

GB/T 2423.17-2008 Environmental testing for electric and electronic products - Part 2: Test methods - Test Ka: Salt mist (IEC 60068-2-11:1981, IDT)

GB/T 2423.21-2008 Environmental testing for electric and electronic products - Test M: Low air pressure (IEC 60068-2-13:1983, IDT)

GB/T 2423.22-2002 Environmental testing for electric and electronic products - Part 2: Test methods - Test N: Change of temperature (IEC 60068-2-14:2009, IDT)

GB/T 2423.23-1995 Environmental testing for electric and electronic products - Test Q: Sealing

GB/T 2423.24-1995 Environmental testing for electric and electronic products - Part 2: Test methods - Test Sa: Simulated solar radiation at ground level (IEC 60068-2-5:1975, IDT)

GB/T 2423.25-2008 Environmental testing for electric and electronic products - Part 2: Test methods - Test Z/AM: Combined cold/low air pressure tests (IEC 60068-2-40:1976, IDT)

GB/T 2423.26-2008 Environmental testing for electric and electronic products - Part 2: Test methods - Test Z/BM: Combined dry heat/low air pressure tests (IEC 60068-2-41:1976, IDT)

GB/T 2423.27-2005 Environmental testing for electric and electronic products - Part 2: Test methods - Test Z/AMD: Combined sequential cold, low air pressure and damp heat test (IEC 60068-2-39:1976, IDT)

GB/T 2423.28-2005 Environmental testing for electric and electronic products - Part 2: Test methods - Test T: Soldering (IEC 60068-2-20:1979, IDT)

GB/T 2423.30-1999 Environmental testing for electric and electronic products - Part 2: Test methods - Test XA and guidance: Immersion in cleaning solvents (IEC 60068-2-45:1993, IDT)

GB/T 2423.32-2008 Environmental testing for electric and electronic products - Part 2: Test methods - Test Ta: Solderability test by the wetting balance method (IEC 60068-2-54:2006, IDT)

GB/T 2423.33-2005 Environmental testing for electric and electronic products - Part 2: Test methods - Test Kca: High concentration sulfur dioxide

GB/T 2423.34-2005 Environmental testing for electric and electronic products - Part 2: Test methods - Test Z/AD: Temperature/humidity combined cycle test (IEC 60068-2-38:1974, IDT)

GB/T 2423.35-2005 Environmental testing for electric and electronic products - Part 2: Test methods - Test Z/AFc: Combined cold/vibration(sinusoidal)tests for both heat-dissipating and non-heat-dissipating specimens (IEC 60068-2-50:1983, IDT)

GB/T 2423.36-2005 Environmental testing for electric and electronic products - Part 2: Test methods - Test Z/BFc: Combined dry heat/vibration(vibration) (sinusoidal) tests for both heat-dissipating and non-heat-dissipating specimens (IEC 60068-2-51:1983, IDT)

GB/T 2423.37-2006 Environmental testing for electric and electronic products - Part 2: Test methods - Test L: Dust and sand (IEC 60068-2-68:1994, IDT)

GB/T 2423.38-2008 Environmental testing for electric and electronic products - Part 2: Test methods - Test R: Water test method and guidance (IEC 60068-2-18:2000, IDT)

GB/T 2423.39-2008 Environmental testing for electric and electronic products - Part 2: Test methods - Test Ee: Bounce (IEC 60068-2-55:1987, IDT)

GB/T 2423.40-1997 Environmental testing for electric and electronic products - Part 2: Test methods - Test Cx: Damp heat, steady state (unsaturated pressurized vapour) (IEC 60068-2-66:1994, IDT)

GB/T 2423.41-1994 Basic environmental testing procedures for electric and electronic products - Wind pressure

GB/T 2423.43-2008 Environmental testing for electric and electronic products - Part 2: Test methods - Mounting of specimens for vibration, impact and similar dynamic tests (IEC 60068-2-47:2005, IDT)

GB/T 2423.45-1997 Environmental testing for electric and electronic products - Part 2: Test methods - Test Z/ABDM: Climatic sequence (IEC 60068-2-61:1991, IDT)

GB/T 2423.47-1997 Environmental testing for electric and electronic products - Part 2: Test methods - Test Fg: Vibration, acoustically induced (IEC 60068-2-65:1993, IDT)

GB/T 2423.48-2008 Environmental testing for electric and electronic products - Part 2: Test methods - Test Ff: Vibration - Time-history method (IEC 60068-2-57:1999, IDT)

GB/T 2423.49-1997 Environmental testing for electric and electronic products - Part 2: Test methods - Test Fe: Vibration - Sine-beat method (IEC 60068-2-59:1990, IDT)

GB/T 2423.50-2012 Environmental testing for electric and electronic products - Part 2: Test methods - Test Cy: Damp heat, steady state, accelerated test primarily intended for components (IEC 60068-2-67:1995, IDT)

GB/T 2423.51-2012 Environmental testing for electric and electronic products - Part 2: Test methods - Test Ke: Flowing mixed gas corrosion test (IEC 60068-2-60:1995, IDT)

GB/T 2423.52-2003 Environmental testing for electric and electronic products - Part 2: Test methods - Test 77: Body strength and impact shock (IEC 60068-2-27:1999, IDT)

GB/T 2423.53-2005 Environmental testing for electric and electronic products - Part 2: Test methods - Test Xb: Abrasion of markings and letterings caused by rubbing of fingers and hands (IEC 60068-2-70:1995, IDT)

GB/T 2423.54-2005 Environmental testing for electric and electronic products - Part 2: Test methods - Test Xc: Fluid contamination (IEC 60068-2-74:1999, IDT)

GB/T 2423.55-2006 Environmental testing for electric and electronic products - Part 2: Test methods - Test Eh: Hammer tests (IEC 60068-2-75:1997, IDT)

GB/T 2423.56-2006 Environmental testing for electric and electronic products - Part 2: Test methods - Test Fh: Vibration, broad-band random (digital control) and guidance (IEC 60068-2-64:2008, IDT)

GB/T 2423.57-2008 Environmental testing for electric and electronic products - Part 2: Test methods - Test Ei: Shock - Shock response spectrum synthesis (IEC 60068-2-81:2003, IDT)

GB/T 2423.58-2008 Environmental testing for electric and electronic products - Part 2: Tests methods - Test Fi: Vibration - Mixed Mode (IEC 60068-2-80:2005, IDT)

GB/T 2423.59-2008 Environmental testing for electric and electronic products - Part 2: Test methods - Test Z/ABMFh: Combined temperature (cold and heat)/low air pressure/vibration (random) (IEC 60068-2-80:2005, IDT)

GB/T 2423.60-2008 Environmental testing for electric and electronic products - Part 2: Test methods - Test U: Robustness of terminations and integral mounting devices (IEC 60068-2-21:2006, IDT)

GB/T 2423.101-2008 Environmental testing for electric and electronic products - Part 2: Test methods - Test: inclinations and swings

GB/T 2423.102-2008 Environmental testing for electric and electronic products - Part 2: Test methods - Test: combined temperature (cold and heat)/low air pressure/vibration (sinusoidal)

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