

ICS 27.010
CCS F 01



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB 21521-2014

Replacing GB 21521-2008

**Minimum allowable values of energy efficiency and energy
efficiency grades for copiers, printers and fax machines**

复印机、打印机和传真机能效限定值及能效等级

Issued on: April 28, 2014

Implemented on: January 1, 2015

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine;
Standardization Administration of the PRC**

Table of Contents

1 Application Scope
2 Normative References
3 Terms and Definitions
4 Technical Requirements
4.1 Product energy efficiency grades
5 Method for Test and Calculation
5.1 Test method
5.2 Calculation method
6 Inspection Rules
6.1 Exit-factory inspection
6.2 Type inspection
Annex A

Foreword

4.2 of this Standard is compulsory; the other articles are voluntary. This Standard was drafted in accordance with the rules given in GB/T 1.1-2009. This Standard replaces GB 21521-2008, Minimum Allowable Values of Energy Efficiency and Energy Efficiency Grades for Copy Machines, and GB 25956-2010, Minimum Allowable Values of Energy Efficiency and Energy Grade for Printers and Fax Machines. Compared with GB 21521 and GB 25956-2010, the major changes are as follows: -- it changes the application scope of the standards; -- it improves the indexes and requirements for all energy efficiency grades of products; -- it deletes "target minimum allowable values of energy efficiency" in GB 21521-2008, 3.4; -- it modifies the power factors of additional functions in the former GB 21521-2008, Table 5; -- it lists in Annex C and Annex D the calculation methods of the former GB 21521- 2008,

4.2 and GB 25956-2010, 5.2. This Standard was jointly proposed by the National Development and Reform Commission Resource Conservation and Environmental Protection Department and the Ministry of Industry and Information Technology Energy Saving and Comprehensive Utilization Department. This Standard shall be under the jurisdiction of the National Standardization Technical Committee on Energy Base and Management (SAC/TC 20). The drafting organizations of this Standard. China National Institute of Standardization, China National Office Equipment and Consumable Quality Supervision Testing Center, China National Computer Products Quality Supervising Test

Centre, China CEPREI Laboratory, Sharp Office Equipment (Changshu) Co., Ltd., Canon (China) Co., Ltd., Ricoh (China) Investment Co., Ltd., Jiangsu Institute of Metrology, China HP Co., Ltd., Vkan Certification and Testing Co., Ltd., Samsung Electronics (Shandong) Digital Printers Co., Ltd., Konica Minolta (China) Investment Co., Ltd., Brother (China) Commercial Co., Ltd., Epson (China) Co., Ltd., National Supervision and Testing Centre of Energy Efficiency, Safety and Quality of Electric Appliances, Lexmark Information Technology (China) Co., Ltd., Fuji Xerox (China) Limited. The main drafters of this Standard. Li Pengcheng, Chen Haihong, Kuang Yaming, Jiang Weihong, Zhao Wenting, Zhou Xinghua, Song Danmei, Wu Liang, Lu Junhe, Liu Xin, Zhao Xiaokun, Chen Yan, Chen Yongqiang, Jiang Bingyu, Chen Ting, Mai Hongqi, Xue Lin, Xie Leilei. The previous editions of the standard replaced by this Standard are as follows: -- GB 21521-2008; -- GB 25956-2010. Minimum Allowable Values of Energy Efficiency and Energy Efficiency Grades for Copy Machines, Printers and Fax Machines

1 Application Scope

China's mandatory energy efficiency standard for copiers, printers and fax machines - the imaging equipment that sits in every office, and whose energy is consumed in a pattern quite unlike most appliances. It specifies the minimum allowable values of energy efficiency, the energy conservation evaluation values, the energy efficiency grades, the test methods and the inspection rules for copiers, printers and fax machines. The measurement problem here is peculiar to the product. An office printer prints for a few minutes a day and stands ready for the other twenty-three hours, and the energy that matters is not what it uses per page but what it uses while doing nothing, plus what it spends heating the fuser back up each time it wakes. So the standard is built on the typical electricity consumption over a defined week of operation - a figure that combines the printing, the ready state, the sleep state and the transitions between them according to a pattern representing real office use - rather than on a per-page or a peak figure. Around that it sets the sleep mode power and the default delay time before the machine enters it, which is the single most effective provision in the document: a machine that goes to sleep after one minute and one that goes after thirty use very different amounts of energy in a year, and the difference is entirely in a default the purchaser will never change. The grades are tabulated by machine type, technology and speed. Issued on 28 April 2014 and in force since 1 January 2015, it replaces GB 21521-2008.

This Standard specifies the energy efficiency grades, minimum allowable values of energy efficiency, energy conservation evaluating values, methods for test and calculation, inspection rules of general-purpose copy machines, printers, fax machines, multifunction devices (hereinafter referred to as products). This Standard applies to products of standard size, which operates under the power supply of the power grid of 220 V,

50 Hz. This Standard does not apply to the following products.

- a) products only powered by data interfaces (such as USB, IEEE 1394 interface);
- b) products having digital front-end (DFE);
- c) products having an output speed greater than or equal to 70 pages/min;
- d) dot matrix printers having printing needles more than 48.

2 Normative References

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

GB/T 16685-2008, Information Technology - Office Equipment - Printing Devices Method for Measuring Throughput - Class 1 and Class

3 Terms and Definitions

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

3.1 multifunction device; MFD a product having two or more functions, including printing, scanning, copying or faxing. NOTE The simple copying function of fax is not one of multiple functions.

3.2 off mode the "turned-off" mode of the power switch when a product is connected to the power grid.

3.3 active mode the mode of a product which is connected to the power supply to output or execute other major functions.

3.4 ready mode the mode in which the energy consumption is lower than the energy consumption in the active mode after a product is connected to the power supply or finishes working. No noticeable delay time exists in a product when it goes from the ready mode to the active mode.

3.5 sleep mode the mode of low energy consumption into which a product gets automatically without turning off the power after stopping working for a certain time.

3.6 auto-off mode the mode of low energy consumption into which a product gets automatically after finishing major working functions.

3.7 standby mode the mode of the lowest power after a product is connected to the power grid.

4.1 Product energy efficiency grades

4.1.1 Product energy efficiency is classified into 3 grades, including grade 1 having the highest energy efficiency.

4.1.2 For the products of thermosensitive, dye sublimation, electronic imaging, solid ink and heat transfer printing technology and high-performance ink jet technology, their energy efficiency is graded in accordance with the typical energy consumption method.

4.1.3 For the products of ink jet or dot matrix impact technology, their energy efficiency shall be graded in accordance with the operation mode power method; the operation mode power and standby power of the products of all grades shall not be greater than those specified in Table 2.

4.2 Maximum allowable values of energy efficiency The maximum allowable values of energy efficiency of products are the energy efficiency specified for energy efficiency grade 3 in Table 1 or the energy efficiency specified for energy efficiency grade 3 in Table 2.

4.3 Energy conservation evaluating values The evaluating values of energy conservation for products are the energy efficiency specified for energy efficiency grade 2.

5.1 Test method

5.1.1 Carry out the test on the typical energy consumption in accordance with the Product type Grade

6.2 Type inspection

6.2.1 In any of the following circumstances, type inspection on the maximum allowable values of energy efficiency of products shall be carried out. 6.2.2 1 sample shall be taken per batch for type inspection.

6.2.3 When it is found through type inspection that the energy efficiency of products is not as specified in 4.2, then the batch of products are not accepted.

Annex A

(Normative) Test Method for Typical Energy Consumption of Products A.1 Test conditions

A.1.1 Environmental conditions Measurements shall be performed under the conditions of temperature, humidity and air pressure within the following range. A.1.2 Power supply The alternating voltage of test power supply is 220 (1 ± 1%) V and the frequency 50 (1 ± 1%) Hz. For the devices to be tested of nominal power greater than

1.5 kW, the alternating voltage of test power supply is 220 (1 ± 4%) V. A.2 Test apparatus When a power meter is used to measure the active power not greater than 10 W, the resolution is

0.01 W; when it is used to measure the active power greater than 10 W and smaller than