INTERNATIONAL TELECOMMUNICATION UNION

CCITT

O.3

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THE INTERNATIONAL
TELEGRAPH AND TELEPHONE
CONSULTATIVE COMMITTEE

SPECIFICATIONS OF MEASURING EQUIPMENT

CLIMATIC CONDITIONS AND RELEVANT TESTS FOR MEASURING EQUIPMENT

Recommendation O.3

FOREWORD

The CCITT (the International Telegraph and Telephone Consultative Committee) is a permanent organ of the International Telecommunication Union (ITU). CCITT is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The Plenary Assembly of CCITT which meets every four years, establishes the topics for study and approves Recommendations prepared by its Study Groups. The approval of Recommendations by the members of CCITT between Plenary Assemblies is covered by the procedure laid down in CCITT Resolution No. 2 (Melbourne, 1988).

Recommendation O.3 was revised by Study Group IV and was approved under the Resolution No. 2 procedure on the 5th of October 1992.

CCITT NOTE

In this Recommendation, the expression “Administration” is used for conciseness to indicate both a telecommunication administration and a recognized private operating agency.

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Recommendation O.3

CLIMATIC CONDITIONS AND RELEVANT TESTS FOR MEASURING EQUIPMENT

(Melbourne 1988; revised 1992)

Abstract

Defines climatic conditions for operating, storage and transportation of measuring equipment specified in O-Series Recommendations, and identifies relevant test conditions.

Keywords

– climatogram;
– environment;
– humidity;
– measurement;
– temperature;
– tester;
– test equipment.

1 General

The O-Series Recommendations specify measuring equipment for a wide range of applications. Reliable test equipment is an important prerequisite when maintaining telecommunication equipment and telecommunication networks. The reliability of measuring equipment can be affected by the environmental conditions to which the equipment is exposed during its use.

This Recommendation gives a range of climatic conditions for the operation of measuring equipment specified in the O-Series Recommendations. In addition, climatic conditions for transportation and storage of measuring equipment are defined.

In order to be able to prove that the requirements of this Recommendation are fulfilled, test conditions simulating the various environmental parameters are specified.

Where possible, this Recommendation is based on standards produced by other bodies such as the International Electrotechnical Commission (IEC) [1] or the European Telecommunications Standards Institute (ETSI) [2].

2 Climatic conditions for the operation of measuring equipment

2.1 *Indoor operation*

Considering that measuring equipment will be used in most of the cases in weather-protected locations, the normal operating conditions specified in Figure 1/O.3 define the range of climatic conditions under which the equipment specifications shall be met. These conditions may be found in normal working areas, offices, telecommunication centres or storage rooms for sensitive products, etc.

The normal operating conditions are maintained by heating, cooling and, where necessary, by forced ventilation. Humidity may normally not be controlled.

Figure 1/O.3 implies that the measuring equipment is usually operated at a temperature of approximately 25 °C at a relative humidity of 45%.

The dotted field in the centre of the climatogram of Figure 1/O.3 specifies the climatic conditions which will be experienced during 90% of the time.

The exceptional operating conditions shown in Figure 1/O.3 may exist, e.g. following failure of the climate controlling system. Under these conditions, the measuring equipment shall still operate without irreversible faults. However, the measurement may be less accurate.

In some instances the measuring equipment may be exposed to solar radiation and to heat radiation from other sources (e.g. from room heating). Direct solar radiation should be avoided and the temperature in the vicinity of the equipment shall not exceed the limits of Figure 1/O.3.

The equipment may also be exposed to movements of the surrounding air due to draughts in buildings (e.g. through open windows). It shall not be subjected to condensation or precipitation.

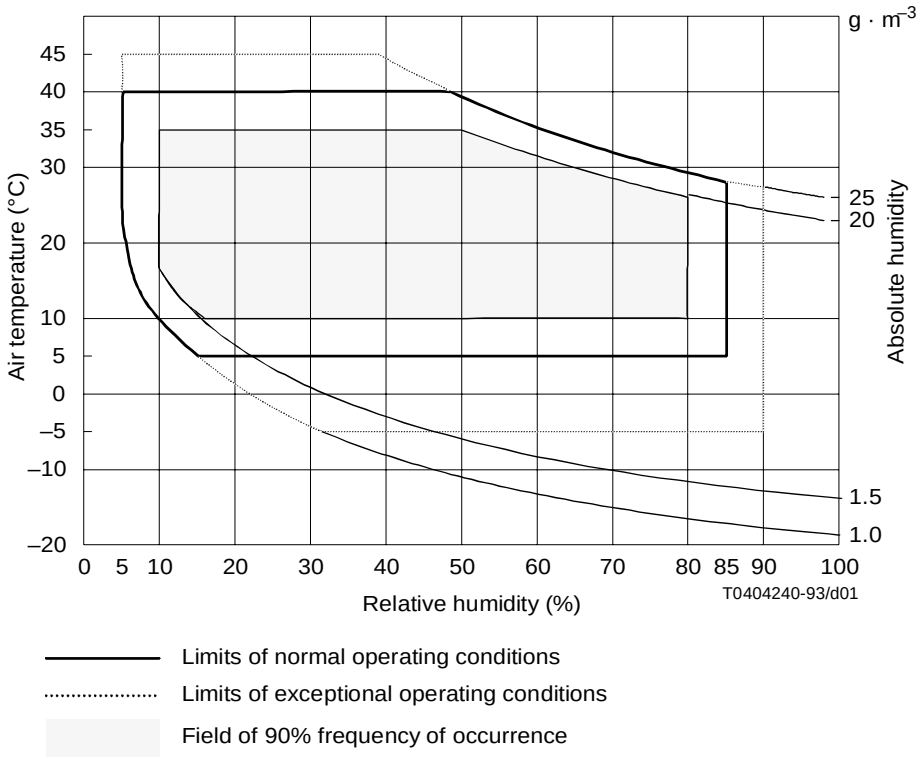

FIGURE 1/O.3
Temperature-humidity-chart for the operation of measuring equipment (weather-protected locations)

2.2 *Operation of measuring equipment in other environments*

Under study.

3 Transportation and storage

During transport and storage, the measuring equipment shall tolerate, without irreversible failure, temperature/humidity combinations as given by the following equations as shown in Figure 2/O.3. The limiting conditions are:

70 °C ≥ Air temperature ≥ –40 °C;

5% ≤ Relative humidity ≤ 95%;

0.1 g · m^{-3} ≤ Absolute humidity ≤ 29 g · m^{-3}.

The (uninterrupted) exposure time is limited to two months.

Note – It is assumed that the measuring equipment is packed in its usual shipping container and that the ambient conditions mentioned above are those outside the package.

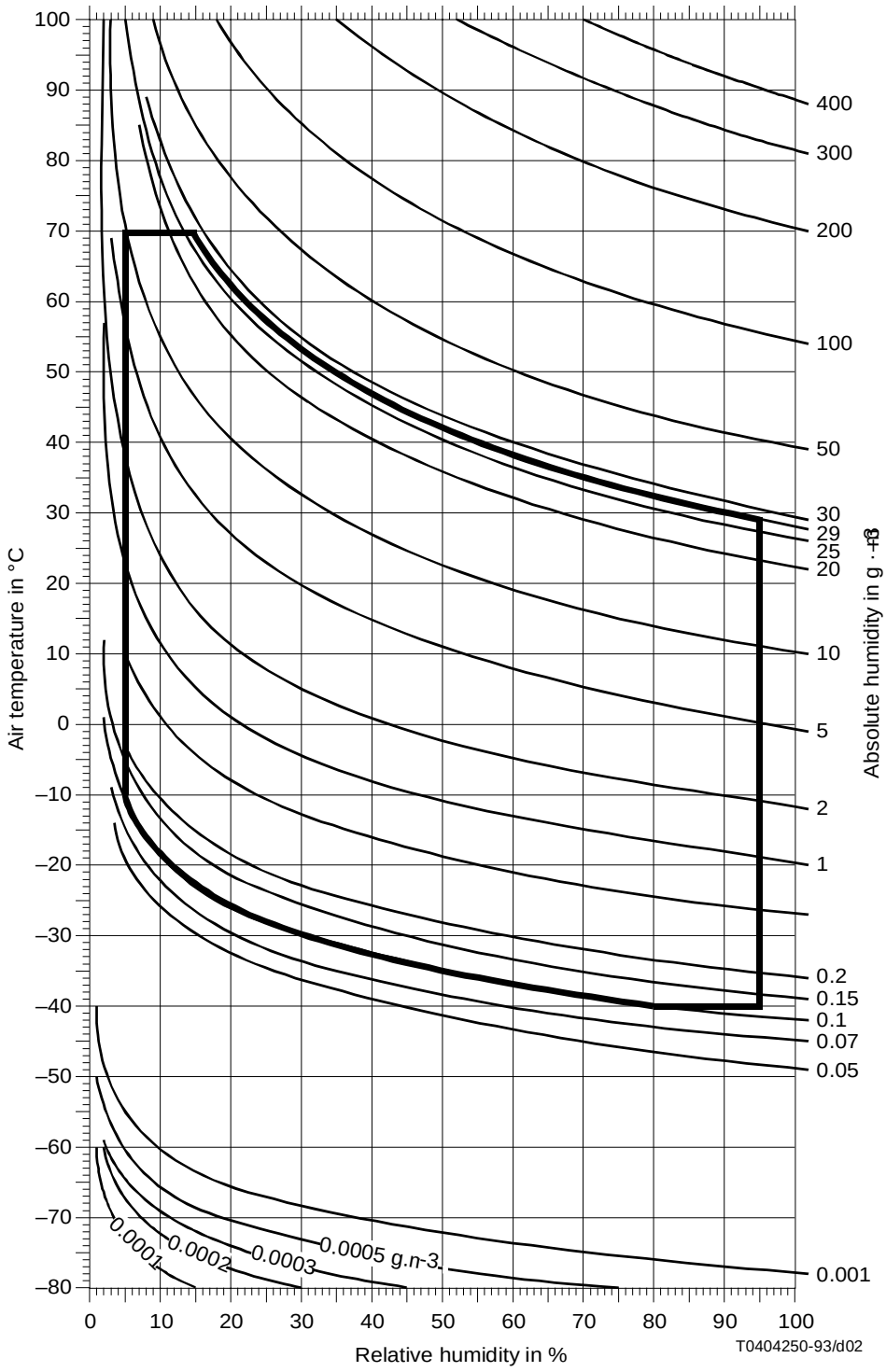

FIGURE 2/O.3

Temperature-humidity-chart for transport and storage of measuring equipment (weather-protected locations)

4 Test conditions

4.1 *Test conditions for indoor climates*

It is assumed that the measuring equipment meets the requirements of § 2.1 if it tolerates the basic environmental testing procedures in accordance with IEC Publication 68-2-3 [3].

During these testing procedures, the measuring equipment shall be placed in the testing chamber for four days. After a recovery time of two hours, the test specimen shall properly function and the specified error limits shall not be exceeded.

Note – This requirement is provisional and requires further study.

4.2 *Test conditions for other environments*

Under study.

References

[1] IEC Publication 721-3-3 *Classification of groups and environmental parameters and their severities – Stationary use at weather-protected locations.*

[2] Final Draft PrETS 300 019-1-3 *Equipment engineering (EE); Environmental conditions and environmental tests for telecommunications equipment – Part 1-3: Classification of environmental conditions – Stationary use at weather-protected locations*.

[3] IEC Publication 68-2-3 *Basic Environmental Testing Procedures. Part 2: Test Ca: Damp heat, steady state*.