



SLOVENSKI STANDARD
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Sectional specification: Quartz crystal controlled oscillators (Qualification approval)

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Rahmenspezifikation: Quarzoszillatoren (Bauartanerkennung)

Spécification intermédiaire: Oscillateurs pilotés par Quartz (Homologation)

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

This European Standard was prepared by Working Group CLC/TC CECC/WG 17.

The text of the draft based on document CECC(Secretariat)3325 was submitted to the formal vote; together with the voting report; circulated as document CECC(Secretariat)3455, it was approved as EN 169200 on 1993-11-01.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 1996-01-31
 - latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 1997-01-31
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SECTION 1 - SCOPE

This sectional specification applies to quartz crystal controlled oscillators whose quality is assessed on the basis of qualification approval.

It prescribes the preferred ratings and characteristics, with the appropriate tests and measuring methods contained in the generic specification EN 169 000, and gives the general performance requirements to be used in detail specifications for quartz crystal controlled oscillators.

SECTION 2 - GENERAL, PREFERRED RATINGS AND GUIDANCE ON DETAIL SPECIFICATIONS2.1 Related Documents

IEC 68	Basic environmental testing procedures.
EN 169 000	Generic specification: Quartz crystal controlled oscillators.

Note: The above references apply to the current editions except for IEC 68 for which the referred edition and the applicable test clauses of EN 169 000 shall be used.

2.2 Preferred ratings and characteristics

The values given in detail specifications shall preferably be selected from those stated in 2.4.2 of the generic specification EN 169 000.

2.3 Information to be prescribed in detail specifications

Guidance on the preparation of detail specifications shall be derived from the blank detail specification.

Each detail specification shall state all the tests and measurements required for inspection. This shall, as a minimum, include the relevant tests given in the blank detail specification, with methods and severities.

The following information shall be given in each detail specification.

2.3.1 Outline drawing and dimensions

The detail specification shall include a dimensioned drawing of the crystal controlled oscillator and/or a reference to an appropriate international standard to permit easy recognition and to provide information for dimensioning and gauging procedures.

The dimensions shall include the overall dimensions of the body of the component and the size and spacing of the terminations. All dimensions shall be in mm.

Terminal connections shall be identified for all enclosures.

This information may be given in more detail in an annex.

2.3.2 Mounting of the component

The detail specification shall define any assembly restrictions on the use of the crystal controlled oscillator. Where these restrictions apply special mounting fixtures may be required for the bump, shock, vibration and acceleration tests. Such fixtures shall be described in the detail specification.

Where no special mounting fixtures are indicated then the above tests shall be carried out as specified in section 4 of EN 169 000.

2.3.3 Severities for environmental tests

The detail specification shall state the method of testing and the appropriate severities selected from Section 4 of EN 169 000.

2.3.4 Marking

The detail specification shall state the required marking on the crystal controlled oscillator and on the primary package in accordance with 2.5 of EN 169 000.

2.3.5 Ordering information

The detail specification shall prescribe that the following information is required when ordering a crystal controlled oscillator.

- (1) Quantity
- (2) Detail specification number, issue number and date

and where applicable

- (3) Nominal frequency expressed in kHz or MHz
- (4) Enclosure type
- (5) Frequency tolerance(s) and operating temperature range
- (6) Full description of any additional requirements.

2.3.6 Additional information (not for inspection purposes)

The detail specification may include information which is not normally required to be verified by the inspection procedure, such as circuit diagrams, curves, drawings and notes needed for clarification.

SECTION 3 - QUALITY ASSURANCE PROCEDURES3.1 Eligibility for qualification approval

Prior to making an application for qualification approval a manufacturer shall first obtain manufacturers inspection approval in accordance with CECC 00 114 Part I.

The primary stage of manufacture shall be as defined in 3.1 of the generic specification EN 169 000.

3.2 Structural similarity

Structural similarity exists where a range of quartz crystal controlled oscillators covered by a single detail specification and having similar electrical characteristics, incorporate the same materials and method of sealing the enclosure.

3.3 Certified test records

Certified test records shall comply with 3.11 of EN 169 000. They shall be made available when prescribed in the detail specification and when requested by the customer.

3.4 Qualification approval

The procedures for qualification approval testing are defined in 3.7 of the generic specification EN 169 000. Qualification approval may be obtained either by using a fixed sample drawn from current production (see 3.4.1), or on the basis of lot-by-lot tests on three inspection lots with periodic tests on a sample taken from at least one of these lots (see 3.4.2).

3.4.1 Fixed sample size procedure for initial approval

The manufacturer shall produce test evidence to show conformance to the requirements of the test schedule given in Table 1 of this specification.

Table 1 gives the number of samples to be tested in each group or subgroup together with the permissible number of defectives for qualification approval tests.

If additional groups are introduced into the test schedule the number of specimens required for Group '0' shall be increased by the same number as that required for the additional groups.

The complete series of tests given in Table 1 and Annex A, which together form the fixed sample size test schedule, are required for the qualification approval of quartz crystal controlled oscillators covered by one detail specification. The tests in each group shall be carried out in the order given. The whole sample shall be subjected to the tests of Group '0' and then divided for the other groups.

"One defective" is counted when a quartz crystal controlled oscillator has not satisfied the whole or a part of the tests of a group.

3.4.2 Lot-by-lot procedure for initial approval

The manufacturer shall produce test evidence to show conformance to the requirements of Tables 2 and 3 and the detail specification. Tests in each group shall be carried out in the given order.

A minimum of three inspection lots, taken in the shortest possible period, shall be subjected to the tests given in Table 2 and a sample taken from at least one of these lots shall be subjected to the periodic tests given in Table 3. When additional groups are introduced into the test schedule the number of specimens shall be increased by the same number as that required for the additional groups.

"One defective" is counted when a quartz crystal controlled oscillator has not satisfied the whole or a part of the tests of a group.

3.4.3 Approval

For both procedures 3.4.1 and 3.4.2 approval may be granted when the number of defectives does not exceed the specified number of permitted defectives for each group provided the total number of defectives allowed is not exceeded.

The maintenance of approval shall be in accordance with §1.7. of CECC 00 114 Part II.

3.5 Quality conformance inspection

Quality conformance inspection shall be carried out in accordance with §2.3. of CECC 00 114 Part II.

The blank detail specification shall prescribe the minimum test schedule which shall be included in each detail specification for quality conformance inspection.

3.5.1 Formation of inspection lots

(1) Groups A and B inspection

These tests shall be carried out on a lot-by-lot basis according to Table 2 of this specification.

The inspection lot shall consist of structurally similar quartz crystal controlled oscillators formed from current production.

(2) Group C inspection

These tests shall be carried out periodically according to Table 3 of this specification.

The samples shall be representative of the current production over the specified periods.

TABLE 1

Sampling plan together with numbers of permissible defectives
for Qualification Approval tests.

Group Number	Clause number of EN 169 000 and Test	Sample size	Permissible defectives		
			Per Group	Total for Groups 1 to 8	
0	4.3.1	Visual test A	65	0	
	4.6.2	Sealing			
	4.5.4	Output frequency at reference temperature			
	4.5.5(1)	Frequency at specified temperatures			
	4.5.11	Frequency adjustment (as applicable)			
	4.5.23	Frequency modulation characteristics (as applicable)			
1	4.4.2	Dimensions Test B	8	1	
	4.5.13	Oscillator output or Voltage			
	4.5.14				
	4.5.15	Oscillator output or waveform			
	4.5.16				
	4.5.3(1)	Oscillator input power			
	4.5.3(3)	Oven input power (OCXO only)			
or					
4.5.3(2)	Oven and Oscillator input power (OCXO only)				
2	4.5.6	Frequency load coefficient	8	1	
	4.5.7	Frequency voltage coefficient			
	4.5.10	Stabilization time (OCXO only)			

Group Number	Clause number of EN 169 000 and Test	Sample size	Permissible defectives	
			Per Group	Total for Groups 1 to 8
	4.5.5(2) Total frequency excursion 4.5.13 Oscillator output or 4.5.14 voltage at temperature extremes 4.5.3(3) Oven input power at temperature extremes (OCXO only)			1
3	4.7.1 Ageing	8	1	
4	4.6.5 Rapid change of temperature 4.6.3(1) Solderability 4.6.3(2) Resistance to soldering heat	8	1	
5	4.6.21 Immersion in cleaning solvents 4.6.1 Robustness of terminations	8	1	
6	4.6.6 Bump 4.6.7 Vibration 4.6.8 Shock	8	1	
7	4.6.17 Climatic sequence	8	1	
8	4.6.18 Damp heat steady state	8	1	