

European Committee for Electrotechnical Standardization (CENELEC)
Cenelec Electronic Components Committee

CECC



Système Harmonisé d'Assurance de la Qualité
des Composants Electroniques

SPECIFICATION PARTICULIERE CADRE:

TUBES DE PUISSANCE A DISQUES SCELLES

Harmonized System of Quality Assessment for
Electronic Components

BLANK DETAIL SPECIFICATION: DISK SEAL POWER TUBES

Harmonisiertes Gütebestätigungssystem für
Bauelemente der Elektronik

VORDRUCK FÜR BAUARTSPEZIFIKATION: LEISTUNGS- SCHEIBENRÖHREN

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FOREWORD

The CENELEC Electronic Components Committee (CECC) is composed of those member countries of the European Committee for Electrotechnical Standardization (CENELEC) who wish to take part in a harmonized System for electronic components of assessed quality.

The object of the System is to facilitate international trade by the harmonization of the specifications and quality assessment procedures for electronic components, and by the grant of an internationally recognized Mark, or Certificate, of Conformity. The components produced under the System are thereby accepted by all member countries without further testing.

This document has been formally approved by the CECC, and has been prepared for those member countries taking part in the System who wish to issue national harmonized specifications for DISK SEAL POWER TUBES. It should be read in conjunction with document CECC 00 100: Basic Rules (1974).

At the date of printing of this document, the member countries of the CECC are Belgium, Denmark, Germany, France, Ireland, Italy, the Netherlands, Norway, Sweden, Switzerland and the United Kingdom, and copies of it can be obtained from the National Committees of the CENELEC in these countries.

PREFACE

This blank detail specification was prepared by CECC Working Group 14 : "SPACE-CHARGE CONTROLLED TUBES".

It is one of a series of blank detail specifications for space-charge controlled tubes, all relating to the generic specification printed as CECC 45 000.

The text of this specification was circulated to the CECC for voting in document CECC(Secretariat)414 in August 1975 and was formally approved by the CECC for printing as a CECC Specification.

1. General

The basic data detailed in paragraphs 2 to 5 shall appear in the harmonized detail specification. Appendix A shows the basic layout of the front page of such a specification.

2. Identification of the harmonized detail specification

2.1 Name of the National Standards Organization under whose authority the detailed specification is drafted.

2.2 The CECC symbol and the CECC number allotted to the national detail specification.

2.3 The number and issue number of the national generic specification.

2.4 The national number of the detail specification, date of issue and any other information required by the national system.

3. Identification of the tube

3.1 Brief description of the tube, type of cathode, type of heating, method of cooling and tube function.

3.2 Type designation.

3.3 Outline drawing giving principal dimensions.

4. Supplementary information

Detail specification shall include supplementary information, such as :

4.1 Marking

4.2 Ordering information

4.3 Related documents referred to in the detail specification

4.4 Requirements for certified test records (where certified test records are considered inappropriate, this shall be clearly indicated by the statement "not applicable")

4.5 Structural similarity.

5. Data (not for inspection purposes)

5.1 General and Mechanical data

5.1.1 Dimensioned engineering drawing, if possible in accordance with IEC 67.

5.1.2 Mass (Weight).

5.1.3 Mounting position and accessories.

5.1.4 Cooling requirements.

5.1.5 Maximum temperatures of the envelope, the seals and the terminations.

5.1.6 Maximum values for shock and vibration (if application requires).

5.1.7 Maximum altitude of operation without pressurizing or minimum air pressure (if application requires).

5.2 Electrical data - Nominal values

5.2.1 Capacitances .

5.2.2 Amplification factor.

5.2.3 Mutual conductance at prescribed conditions

5.2.4 Output power at one or more operating frequencies.

5.2.5 Characteristic curves.

(1) Anode current, screen grid current and control grid current as a function of anode voltage for prescribed control grid voltages and screen grid voltages.

(2) Constant current diagram (Control grid voltage as a function of anode voltage for prescribed screen grid voltages and anode currents or screen grid currents or control grid currents. In the case of grounded grid connection, anode and screen grid voltages are given with respect to the control grid instead of cathode).

(3) Power dissipation as a function of flow for various coolant inlet conditions (when relevant).

5.2.6 Operating conditions.

(1) Below recommended highest operating frequency.

(2) At recommended highest operating frequency.

(3) Reduction of heater voltage for operation at high frequencies (when relevant).

6. Test schedule and inspection requirements

The harmonized detail specification shall contain the following groups of tests indicated according to the layout shown below :

GROUP A INSPECTION (lot-by-lot)						
Test	D ND	Condition of test (References are to CECC 45 000)	I L	A Q L	Performance Requirement (References are to CECC 45 000)	
<u>Sub-Group A 1</u>						
Visual examination	ND	See 4.3	100 %			
Negative control grid current at stated anode voltage, control grid voltage (or anode current) and screen grid voltage.	ND	See 4.5.2	100 %		max	
<u>Sub-Group A 2</u>						
Dimension for interchangeability	ND	See 4.4	II	1 %		See 4.4
Anode current at stated anode voltage, control grid voltage (or cathode resistor) and screen grid voltage.	ND	See 4.5.4	II	1 %	min/max	
R.F. power output at stated conditions of operation.	ND	See 4.5.15	II	1 %	min	
Heater voltage or current	ND	See 4.5.1	II	1 %	min/max	
Pulse emission	ND	See 4.5.7	II	1 %	min	
Gain at stated conditions of operation (amplifier tubes only when relevant)	ND	See 4.5.12	II	1 %	min	
Insulation of electrodes (Leakage current)	ND	See 4.5.13	II	1 %	max	

GROUP C INSPECTION (periodic)

Test	D ND	Condition of test (References are to CECC 45 000)	I L	A Q L	Performance Requirement (References are to CECC 45 000)
<u>Sub-Group C1</u> (one month intervals)					
Capacitances	ND	See 4.5.14	S-4	6,5%	min/max
Intermodulation at stated conditions of operation (linear amplifier tubes only if required)	ND	See 4.5.11	S-4	6,5%	min
<u>Sub-Group C2</u> (six months intervals)					
Detailed dimensions for control purposes	ND	See 4.4	S-3	6,5%	See 4.4

GROUP D INSPECTION FOR QUALIFICATION APPROVAL (to be specified in the national detail specification)

Test	D ND	Condition of test (References are to CECC 45 000)	Sample size and criterion of acceptance (post conditioning tests shall be specified)	Performance Requirement (References are to CECC 45 000)
Robustness of terminations (If application requires)	D	See 4.6.1		
Shock (If application requires)	D	See 4.6.2		
Vibration (If application requires)	D	See 4.6.4		
Climatic test (If application requires)	D	See 4.6.5		
Endurance	D	See 4.7		

Notes

For the definition of the inspection Groups, see CECC 00 111.

D = destructive test

ND = non-destructive test

IL = inspection level

AQL = acceptable quality level

7. Delayed delivery

Each tube held for a period exceeding twelve months following quality conformance inspection shall be re-examined before delivery by the test on negative control grid current.

Appendix A

Layout for the front page of the harmonized detail specification

(1)	Page of pages	(2) 
(3) Electronic components of assessed quality in accordance with	(7)	
(4)		
(5) Detail specification for		
(6)		
See the relevant Qualified Products List for the availability of components under this detail specification. 		

Note :

References for the above numbers are as follows :

- (1) see 2.1
- (2) see 2.2
- (3) see 2.3
- (4) see 2.4
- (5) see 3.1
- (6) see 3.2
- (7) see 3.3