

BRITISH STANDARD INSTITUTION
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CECC 23300 - 002

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Specification available from:

as shown in i) PD9002
ii) CECC 00 200

and

Flexible Technology Ltd.,
Townhead,
Rothesay, Bute, PA20 9JH.

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CAPABILITY DETAIL SPECIFICATION FOR

i) Multilayer Printed Wiring Boards

Base Material : Polyimide, Copper Clad Laminate

See Clause 2.1

Surface Finishes : Bare Copper
Tin, Tin Lead
Gold on Nickel Edge Contacts
Solder Resists
Legends

See Clause 2.2

Refer to Qualified Products list PD9002 and/or CECC 00 200 for details of manufacturers approved to this specification

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1. GENERAL1.1 SCOPE

This Capability D.S. is based on CECC 23 300. It relates to multilayer printed boards made with materials and surface finishes as specified in 2 below.

1.2 OBJECT

To specify the Capability Qualifying Component "CQC", its characteristics to be tested, the test methods and conditions to be applied and the requirements to be fulfilled for testing basic capability.

2. CAPABILITY QUALIFYING COMPONENT - CQC

Test boards to be used as CQC shall

- be made of one of the copper clad base materials and one of the bonding sheet materials specified in 2.1 of the Capability D.S.
- have, as a minimum, the six layer structure specified in 8.3 of CECC 23 300.
- bear the composite test pattern specified in 8.2 of CECC 23 300 or equivalent.
- have one of the surface finishes specified in 2.2 of this Capability D.S.

Material Group Designation	Specification IEC	Base Material Type	Base Material Grade	Base Material Thickness Range	Cu Foil Thickness
A	IEC249	Polyimide	General Purpose Grade	.25mm/.125mm	13um 25um 50um
		Polyimide	Defined Flamability (Vertical)	.025mm/.05mm	13um 25um 50um
		Acrylic Adhesive	General Purpose Grade	.25mm/.075mm	N/A
		Prepreg Epoxy Glass	General Purpose Grade	.05mm/.2mm	N/A
		Prepreg Epoxy Glass	Defined Flamability (Vertical)	.05mm/.2mm	N/A
B	IEC249	Polyimide Glass Re-enforced	General Purpose Grade	.10mm/2.4mm	13um 25um 50um
		Polyimide Glass Re-enforced	Defined Flamability (Vertical)	.10mm/2.4mm	13um 25um 50um
		Acrylic Adhesive	General Purpose Grade	.025mm/.075mm	N/A
		Prepreg Epoxy Glass	General Purpose Grade	.05mm/.2mm	N/A
		Prepreg Epoxy Glass	Defined Flamability (Vertical)	.05mm/.2mm	N/A

2.2 SURFACE FINISHES2.2.1 METALLIC

Finish Group Designation	Surface Finish	Abbreviation For QPL
11	Bare Copper (with or without temporary protective coating)	Cu
12	Tin, Tin-Lead (irrespective of the process used)	Sn, SnPb
13	Tin, Tin-Lead with Solder Mask (coverlay)	Sn, SnPb + sm
14	Specimen K : 5um min. Gold Plated on Copper, remainder finished to Group 11.	5Au/Cu, Cu
15	Specimen K : 5um min. Gold Plated on Copper, remainder finished to Group 12.	5Au/Cu, Sn, SnPb
16	Specimen K : 5um min. Gold Plated on Copper, remainder finished to Group 13.	5Au/Cu, Sn, SnPb + sm
17	Specimen K : 0.7um min. Gold Plated on Nickel, remainder finished to Group 11.	0.7Au/Ni, Cu
18	Specimen K : 0.7um min. Gold Plated on Nickel, remainder finished to Group 12.	0.7Au/Ni, Sn, SnPb
19	Specimen K : 0.7um min. Gold Plated on Nickel, remainder finished to Group 13.	0.7Au/Ni, Sn, SnPb + sm

2.2.2

ORGANIC FINISHES

Solder Masks

- A. Dry Film Solder Mask
- B. Wet 2 Part Epoxy Solder Resist
- C. Liquid Photo-Polymer
- D. Marking Inks

The manufacturer shall select from the group finishes specified in paragraph 2.2.1 on which the organic finish shall be tested.

All types of organic finish shall be tested.

2.3

COMBINATIONS OF MATERIAL AND SURFACE FINISHES & VARIANT DESIGNATIONS

The combination of

- any material of one material group specified in 2.1

and

- any surface finish of one finish group as specified in 2.2

constitutes a variant.

The variant is designated by the combination of the material group designation and the finish group designation

e.g. All, Al2, Alla, Al2ad

3.

CAPABILITY APPROVAL

3.1

RANGE OF CAPABILITY APPROVAL

Capability approval granted on testing one variant is valid within the limits specified in 3.7 of CECC 23 000

- all metal clad base materials
- all base material thicknesses
- all foil thicknesses of the metal clad base materials
- all adhesive materials

All materials shall be in accordance with section 2.1.

- all surface finishes within one surface finish group as quoted in section 2.2.

3.2 QPL INFORMATION

The QPL (Quality Parts List) information shall be given in accordance with 3.4 of CECC 23 000 and shall contain the following details related to this capability D.S.

- reference to the CECC generic specification : 23 000
- reference to the CECC sectional specification : 23 300
- reference to this capability D.S.
- variant for which approval is granted
- abbreviations of the surface finishes as given in section 2.2 which are covered by the capability approval.

4. CAPABILITY TESTING4.1 CAPABILITY TEST PROGRAMME

The basic capability shall be demonstrated by using 9 composite test patterns (CTP's) of one variant from each material group. The number of specimens for each test is specified in Table III.

Additional capability shall be demonstrated using sufficient CTP's to supply specimens to meet the requirement of these tests (3 CTP minimum).

The number of failures permitted is specified for each test but the total number of failures do not exceed that permitted in CECC 23 300 Table III.

4.2 CHARACTERISTICS

The characteristics given in the following table shall be tested, the test methods and conditions given there shall be applied and the requirements given there shall be fulfilled in accordance with 4.1 of this Capability D.S.

Characteristics	Test No.	Specimen CTP	No. Rqd	Failures Permitted	Test Conditions	Material
<u>GENERAL EXAMINATION</u> <u>VISUAL INSPECTION</u> A) CONFORMITY IDENTIFICATION	1	Complete CTP	All	Nil		Pattern marking, identifications, material and finishes shall comply with this Capability D.S.
B) APPEARANCE AND WORKMANSHIP	1a	Complete CTP	All	Nil		The boards shall appear to have been processed in a workmanlike manner, in accordance with good current practice. The base materials, conductors, metallic surface finishes and organic surface coatings shall be of uniform appearance. They shall be free from cracks, burns, pits, nodules and blisters. Conductors shall be free of scratches which penetrate a metallic surface finish which is applied to them.
C) PLATED THROUGH HOLES	1a	Complete CTP	All	Nil		Plating voids are permissible provided their total area does not exceed 10% of the total wall area. The largest dimension shall not exceed 25% of the hole circumference in the horizontal plane and 25% of the thickness of the board in the vertical place. Plated through holes shall have no plating voids at any interface of hole wall and connecting conductor. The interface shall be considered to extend into the holes below the surface of the board, a distance of one and a half times the total copper thickness on the surface. There shall be no circumferential separation of copper from the hole wall in the plated through hole. Holes with plating voids shall not exceed 5% of the total plated through holes.