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Rigid circuit board - Routing parameters

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It is based on French AFNOR Spec 2212 and was submitted as a PAS document.

The text of this Publicly Available Specification is based on the following documents:

Draft	Report on voting
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Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this Publicly Available Specification is English.

The structure and editorial rules used in this publication reflect the practice of the organization which submitted it.

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– reconfirmed,

– withdrawn, or

– revised.

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1. Scope

This document defines standardized routing parameter tables applicable to the design of rigid circuit board with mechanically or laser drilled vias.

These parameter tables are based on the concept of "Routing Classes" initially introduced in the French standard NF-93713 (1971-1989, cancelled: 2019). They are linked to the pitch of electronic components (e.g., BGA, QFN, connector, etc.) and thus allow a better coupling with component and circuit board manufacturers.

They can be easily integrated into EDA tools to facilitate the work of designers, while ensuring a common standard of communication between customers and manufacturers.

Routing classes should not be confused with IPC performance classes, which are used in the context of circuit board acceptance (IPC-A-600) as well as qualification and performance (IPC-6012) standards. Additional information on circuit board design is provided by IPC-2221 (Generic Standard on Printed Board Design), IPC-2222 (Sectional Design Standard for Rigid Organic Printed Boards) and IPC-2226 (Sectional Design Standard for High Density Interconnect (HDI) Printed Boards).

2. Definitions and conventions

2.1. Definition of Routing Classes

Routing Classes (RC) are design rules for routing printed boards. This concept is based on the previous NF C93-713 standard.

Each Routing Class, from RC1 to RC10 corresponds to a set of parameters that are compatible with a given type of component package and consistent in terms of PCB manufacturing difficulty. A higher RC allows for a greater level of component density, but implies a higher degree of manufacturing difficulty, which increases costs, it can even makes production impossible. Classes RC1 and RC2 should only be used for designs which contain conductors with high copper thicknesses

Class RC10 is given prospectively. Organic substrates for semiconductors or SiP (system in package) requiring conductor widths/spacings above Class 10 are not covered in this document.

Routing Classes are not inspection criteria or quality requirements for the delivered product and should therefore not be confused with control classes. Each user and manufacturer is responsible for identifying the applicable Routing Classes according to the expected quality and performance requirements for the end product.

2.2. Conventions on parameters and values

2.2.1. Parameter definitions

Routing Class parameters are divided into six main sections and identified by two letters. Uppercase characters indicate a value, while lowercase characters specify a tolerance.