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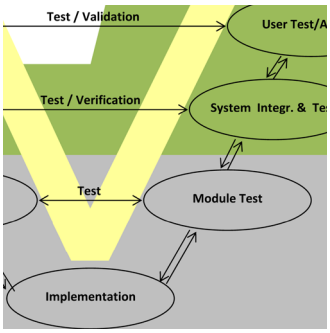

SPM-180 RELIABLE PRODUCTS

Specification and validation of critical product parts

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Reliability Management

SPM Reliability Management is an independent organisation consisting of about 60 company members in Scandinavia.

SPM initiates and finances unprejudiced investigations of common interest for its members - mainly in the field of reliability and testing of electronic components and materials.

Table of contents

1. Abstract 4
2. Preface 6
2.1 Background 6
2.2 Readers 6
3. General 7
3.1 Objective 7
3.2 Scope 7
3.3 Critical parts 8
4. The right product - of the right quality 9
4.1 The importance of the right product - of the right quality 9
4.2 Quality definitions 9
4.3 Characteristics of the right product - of the right quality 10
5. The road to the right product 11
5.1 New Product Introduction Process 11
5.2 Requirements specification 13
5.2.1 Description and application 15
5.2.2 Technical requirements 15
5.2.3 Environmental requirements 16
5.2.4 Reliability requirements 16
5.2.5 Regulatory requirements 17
5.2.6 Safety requirements 20
5.2.7 EMC requirements 20
5.2.8 Type approvals and markings 20
5.3 Risk management and FMEA 22
5.3.1 Design Failure Mode Effects Analysis (DFMEA) 24
5.4 Supplier evaluation and approval 24
5.5 Test and validation 25
5.6 Quality plan 26
6. Compilation of the Requirements specification 28
6.1 General 28
6.2 Intended use and Intended users 30
6.3 International product standards 30
6.4 Product requirements 31
6.5 Performance verification 32
6.6 Environmental verification 34
6.7 Reliability verification 34
7. Design FMEA (DFMEA) 38
7.1 Procedure for Failure Mode and Effects Analysis 39
7.2 Top-down & Bottom-up 47
8. Sourcing 49
8.1 Typical Quality Management System requirements 49
8.2 Supplier evaluation and approval 49
8.3 Supplier agreement 51
9. Test planning & Execution 53
9.1 General 53
9.2 Overall test planning 53
9.2.1 Preliminary prototype testing 53
9.2.2 Weak-point testing 54

9.2.3 Design Verification Testing 56
9.2.4 On-going screening tests 56
9.3 Test protocol 57
9.3.1 International test standards 58
9.4 Detailed test plan 60
9.5 Test execution 60
9.6 Test reporting 61
9.7 Certification 62
10. Practical examples 64
Annex 1 Case 1 - Example Specification - Switching-mode Power Supply 65
Annex 2 Case 2 - Environmental test specification 73
Annex 3 [ ] References - Books and reports (hard copies) 85
Annex 4 { } References - Presentations, Templates (CD) 87

1. Abstract

This guide provides guidance in specifying and validating critical product parts.

The guide describes the complete course of a project from specification to validation and approval of critical product parts / modules going into a final product, or being the final product itself.

The description of the course of the project is a rather “high-level” description, whereas a number of specific topics are detailed further in separate sections of the guide. Priority is given to reliability aspects and requirements including electrical, mechanical and climatic requirements and the validation of these.

A small power supply has been used to exemplify topics and make them concrete. In spite of that the guide is relevant to critical product parts in general.

The guide is primarily concerned with projects where the critical product part is acquired through:

- Purchasing of an off-the-shelf part from an external vendor or
- Outsourcing of the very product development and manufacturing.

However, the guidance provided is also useful in situations where product development and manufacturing is kept in-house.

As the guide is generic, some of the guidance may not be relevant to specific critical product parts. This has to be accommodated for when laying down the specific Project / Quality Plan.

Guidance is provided on:

New Product Introduction Process, such as:

- Stage / Gate Model
- V-Model

Requirements specification (Engineering specification), such as:

- Suggested contents of a Requirements specification
- Qualification of requirements (testability)
- Performance, Environmental and Reliability requirements
- Regulatory requirements and International product standards
- Type approvals and markings

Risk Management and FMEA, such as:

- Risk assessment - identification, analysis and evaluation
- Risk control - mitigation and acceptance
- Design Failure Mode Effects Analysis (DFMEA)
- Template for DFMEA

Sourcing, such as:

- Quality Management System requirements
- Supplier assessment / audit
- Supplier approval
- Supplier Agreement

Test planning and execution, such as:

- Quantitative / qualitative tests
- Preliminary and Weak-point testing (HALT, ..)
- Design Verification / Validation
- Type testing
- Production testing (HASS, ..)
- International test standards

Quality Plan, such as:

- Quality activities
- Methods / procedures and acceptance criteria