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**Guide of Risk Assessment of EMC Reliability
(English Translation)**

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1 Scope

This technical guidance document gives guidelines on the purpose and role of risk assessment of electromagnetic compatibility (hereinafter referred to as "EMC"), risk assessment tarts, risk criteria, risk assessment processes, risk assessment tools, risk assessment reporting requirements.

This technical guidance document is applicable to guide the selection of appropriate EMC risk assessment techniques; so that assess the EMC risk of at the levels of equipment, system and engineering site.

This technical guidance document does not cover all techniques for EMC and risk assessment; the techniques not described here do not mean it is invalid.

2 Normative References

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) are applicable to this document.

GB/T 4365-2003 Electrotechnical Terminology - Electromagnetic Compatibility

GB/T 23694-2013 Risk Management - Vocabulary

3 Terms and Definitions

For the purpose of this document, the terms and definitions given in GB/T 4365-2003 and GB/T 23694-2013 and the following apply.

3.1 Risk assessment

The whole process of risk identification, risk analysis and risk assessment.

3.2 Risk level

The levels of risk assessment elements when making the risk assessment.

The main roles of EMC risk assessment include:

- Identify the EMC risk and potential impact under specific parts of equipment, system or engineering site;
- Increase understanding of EMC risk to facilitate the correct selection of risk response strategies;
- Identify the major factors that contribute to EMC risk and the weak links of EMC risk in equipment, system or engineering site;
- Analyze the EMC risk and uncertainties;
- Conducive to establish design principles;
- Help to determine whether the EMC risk is acceptable;
- Conducive to prevent EMC problems through additional measures;
- May be used as an input to risk management, and may be effectively linked to other components of the risk management process.

5 EMC Risk Assessment Objects

EMC risk assessment may, according to different objects, be divided into equipment level, system level and engineering site level. The specific technical indicators as the assessment targets include the single, multiple or full EMC indicators of equipment, system and site.

Equipment-level EMC risk assessment applies to the specific equipment (such as laptops, automotive parts, etc.); it shall assess the EMC risks facing the equipment structure and circuit board.

System-level EMC risk assessment applies to the system (for instance, complete vehicle, etc.) consists of the products; it shall assess the EMC risks facing product itself or inter-product in the system.

Engineering-site-level EMC risk assessment applies to the engineering site; it shall assess the EMC risks facing the complicated application environment, installation conditions and inter-system on the site.

6 Risk Criteria

EMC risk criteria are criteria for assessing the importance of the risk. Therefore, the

The method for EMC risk analysis may be qualitative, semi-quantitative, quantitative or a combination of the above. The level of details required for EMC risk analysis depends on the specific application, reliable data available, and needs of the manufacturer/user.

Qualitative risk analysis may determine the risk consequences, likelihood and risk levels by degree of importance; such as "high", "medium", "low" or "Level-I", "Level-II",

"Level-III" for the degree of importance.

Semi-quantitative method may use the digital quantity to measure the consequences of the electromagnetic risk and the possibility of occurrence, and use the formula to combine the two to determine the risk level.

Quantitative analysis may estimate the specific values of the electromagnetic risk consequences and the possibility of occurrence, and convert them into the corresponding risk level values.

7.4.2 Risk level and classification of EMC assessment elements

EMC risk level is the result of risk analysis. It may be classified according to the degree of influence of individual elements. It may also be classified according to the qualitative, semi-quantitative and quantitative analysis methods. It may be divided into "Level-I",

"Level-II", "Level-III" according to the qualitative analysis method. The divided levels shall be typical, with no overlapping parts between the levels. The divided levels are as follows:

- a) Level-I: When the requirements of risk assessment elements are not met under certain conditions, it shall definitely lead to failure (if the test fails);
- b) Level-II: When the requirements of the risk assessment elements are not met, there shall be other clear remedies to avoid failure;
- c) Level-III: When the requirements are not met, it does not necessarily lead to test failure.

Some specific risk elements obtained in the EMC risk analysis may not exist in the assessment object. These risk elements may be divided into the following two types according to their impacts on the consequences:

- a) Type-a: If there is no relevant information (required) about the risk elements in the product, then the risk level of such risk elements is considered to be highest,

Level-I;

- b) Type-b: If there is no relevant information (not required) about the risk elements in the product, then the risk level of such risk elements is considered to be lowest,

Level-III.

--- The obtained results shall be able to deepen the understanding of the nature of the risks and how to deal with them;

--- Shall be used in a traceable, repeatable and verifiable manner.

Explain the reasons for choosing a technique in terms of relevance and applicability.

When using different techniques to obtain the assessment results, the used techniques and results shall be comparable.

The example of risk assessment tools can refer to Appendix B.

9 Risk Assessment Report Requirements

The process and results of the EMC risk assessment shall be recorded. The risk elements shall be expressed in understandable terms; meanwhile, the risk level shall also be clearly stated.

The assessment results shall be recorded in a comprehensive assessment report;

such assessment report shall have sufficient details to provide the correctness of the assessment. The assessment report shall contain at least the following information:

--- The objectives and scope of EMC risk assessment required for equipment, system and engineering site;

--- The relationship BETWEEN assessed equipment, system and engineering site

AND test items;