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GB/T 44073-2024

Site validation method for microwave anechoic chamber

微波暗室场地确认方法

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Table of Contents

1 Scope	1
2 Normative references	1
3 Terms and Definitions	1
4 Measurement methods	1
4.1 Overview	1
4.2 Measuring equipment	2
4.3 Measurement Setup	5
4.4 Measurement Step	6
4.5 Data Processing	7
4.6 Measurement uncertainty	8
5 Test Report	8
12 Reference	14

Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part

1. Structure and drafting rules for standardization documents" Drafting. Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents. This document is proposed and coordinated by the National Radio Interference Standardization Technical Committee (SAC/TC79). This document was drafted by: China Institute of Metrology, China Electronics Standardization Institute, Beijing Radio Metrology and Testing Institute, Henan Institute of Measurement and Testing Science, China Electric Power Research Institute Co., Ltd., Jiangsu Provincial Electronic Information Product Quality Supervision and Inspection Research Institute, Orto RF Technology (Shanghai) Co., Ltd., Beiqi Foton Motor Co., Ltd., China Automotive Engineering Research Institute Co., Ltd., Shenzhen Yanoxun Technology Co., Ltd. The main drafters of this document are: Liu Xiao, Cui Qiang, Han Yufeng, Wang Weilong, Bai Bing, Ban Hao, Zhao Xing, Meng Donglin, Liu Wenfang, Wu Yanli, Li Zhipeng, Fu Jun, Yang Zhichao, Huang Minchang, Zhu Mingxing, Shang Zhugang, Chen Zhengyu, Wang Nan, Gao Qixuan, Wang Zetang, Huang Xuemei, Huang Jiewu. Method for confirming the site of microwave darkroom

1 Scope

GB/T 44073-2024 gives the method for validating a microwave anechoic chamber. A chamber is bought on the promise of a quiet zone of a stated size and reflectivity, and that promise is the only thing standing between a measurement made inside it and a wall echo: every antenna pattern, radar cross section and radiated emission figure produced in the chamber inherits its quiet zone performance. The standard sets the measurement method - the measuring equipment, the setup, the measurement steps, the data processing and the measurement uncertainty - the test report, and the diagnosis of a chamber that fails, with informative annexes deriving the calculation formula for the quiet zone reflectivity level, working an example of the uncertainty evaluation of that measurement, and describing chamber imaging techniques for locating the offending reflection. It took effect on 1 December 2024.

This document describes the site validation method for microwave anechoic chambers in the frequency range of 700MHz to 110GHz. This document is applicable to the performance confirmation of the quiet zone of the microwave anechoic chamber.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document.

GB/T 4365-2003 Electrical terminology - Electromagnetic compatibility

3 Terms and definitions

The terms and definitions defined in GB/T 4365-2003 and the following apply to this document.

3.1 A specially designed enclosed chamber designed to simulate free space.

Note. The indoor wall is paved with absorbing materials, which can fully absorb electromagnetic waves in the microwave frequency band, so that the limited area where the test piece is placed can reflect electromagnetic waves from all directions. The signal level drops to an acceptable level.

3.2 Quiet Zone The device under test is placed in a microwave darkroom, and the level of electromagnetic wave reflection signals from all directions is controlled to a limited area of the designed level.

3.3 The ratio of the equivalent reflected wave signal to the direct wave signal in the quiet zone of a microwave darkroom.

Note. Usually expressed in decibel (dB).

4 Measurement methods

4.1 Overview Microwave darkroom simulates free space and is used in antenna measurement, target characteristic measurement and other fields, with the advantage of working around the clock. Because the absorbing material cannot completely absorb electromagnetic waves, there will still be reflected waves in the dark room. These reflected waves enter from all directions. The quiet zone is superimposed with the direct wave, as shown in Figure 1. A spatial standing wave distribution is formed on a certain travel line in the quiet zone, and this index is characterized by the quiet zone reflectivity. When a microwave anechoic chamber is used to measure parameters such as antenna radiation pattern, the reflectivity level of the quiet zone at different angles in the chamber should be evaluated.