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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 21021.1-2021

Intermodulation level measurement for passive RF and microwave devices - Part 1: General requirements and measuring methods

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Table of Contents

Foreword

GB/T 21021 "Intermodulation level measurement of passive radio frequency and microwave components" has released the following parts.

---Part 1.General requirements and measurement methods;

---Part 2.Passive intermodulation measurement of coaxial cable assemblies;

---Part 3.Passive intermodulation measurement of coaxial connectors;

---Part 4.Passive intermodulation measurement of coaxial cable.

This part is Part 1 of GB/T 21021.

This section was drafted in accordance with the rules given in GB/T 1.1-2009.

This part replaces GB/T 21021-2007 "Radio frequency connector, connector cable assembly and cable intermodulation level measurement". and

Compared with GB/T 21021-2007, the main technical changes except for editorial changes are as follows.

---Modified the measuring range of the device (see Chapter 6, Chapter 4 of the.2007 edition);

---Added guidelines for minimizing passive intermodulation generation (see Chapter 7);

---Added optional steps for additional mechanical shock tests during the test (see Chapter 8);

--- Modified the display of measurement results (see Chapter 9, Chapter 7 of the.2007 edition);

---Added the composition of low PIM load, the precautions of the test procedure (see Appendix A, Appendix B).

The translation method used in this part is equivalent to IEC 62037-1.2012 "Intermodulation Level Measurement of Passive Radio Frequency and Microwave Components Part 1

Points. General requirements and measurement methods.

1 Scope

This part of GB/T 21021 describes the passive interaction generated by two or more transmission signals in passive radio frequency and microwave components.

General requirements and measurement methods for level adjustment.

The test procedures in this section specify the general requirements and measurement of undesired intermodulation signals generated when transmitting two signals

method.

Each part of GB/T 21021 describes the measurement method of passive intermodulation (PIM), but does not involve the long-term performance of products related to this performance.

Reliability.

This part is used in conjunction with other parts of GB/T 21021.

2 Normative references

There are no normative references in this section.

3 Abbreviations

The following abbreviations apply to this document.

CATV. Cable Television (communityantennatelevision)

DUT. device under test (deviceundertest)

IM. Intermodulation (intermodulation)

PIM. Passive Intermodulation (passive intermodulation)

4 Characteristics of intermodulation products

PIM interference is caused by a variety of unknown characteristics, locations and states of nonlinear sources, such as metal-to-metal contact, material selection, and corrosion

Products, stains, etc. Due to mechanical stress, temperature changes, material properties changes (such as cold flow, etc.), and climate changes, most of these effects follow

Time changes.

Intermodulation products are generated from various point sources inside the DUT and propagate in all directions that can be propagated.

The production of PIM products may not follow the usual quadratic nonlinear equations. Therefore, it is impossible to accurately calculate the resulting intermodulation

Other power levels. The comparison of PIM should be performed at the same power level.

In addition, the generation of PIM may be related to frequency. When the generation of PIM depends on frequency, the performance of PIM should be improved in a specific frequency band.

Line research.

5 Principle of the test procedure

Combine the two signals f1 and f2 with equal power levels and input them into the DUT, and test the harmonic signal or self-intermodulation signal contained in the signal

The signal level should be at least 10dB lower than the expected intermodulation level in the DUT.