

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Passive RF and microwave devices, intermodulation level measurement –
Part 2: Measurement of passive intermodulation in coaxial cable assemblies**

**Dispositifs RF et à micro-ondes passifs, mesure du niveau d'intermodulation –
Partie 2: Mesure de l'intermodulation passive dans les cordons coaxiaux**

ITeX STANDARD PREVIEW
(standards.iteh.ai)
IEC 62037-2:2012
<https://standards.iteh.ai/catalog/standards/sist/6927/ed10-068c-4ccc-a7ac-fe59d01f5fe5/iec-62037-2-2012>





THIS PUBLICATION IS COPYRIGHT PROTECTED
Copyright © 2012 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

IEC Catalogue - webstore.iec.ch/catalogue

The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

Electropedia - www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing more than 30 000 terms and definitions in English and French, with equivalent terms in 14 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC publications search - www.iec.ch/searchpub

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, replaced and withdrawn publications.

IEC Glossary - std.iec.ch/glossary

More than 55 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and also once a month by email.

IEC Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: csc@iec.ch.

A propos de l'IEC

La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications IEC

Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Catalogue IEC - webstore.iec.ch/catalogue

Application autonome pour consulter tous les renseignements bibliographiques sur les Normes internationales, Spécifications techniques, Rapports techniques et autres documents de l'IEC. Disponible pour PC, Mac OS, tablettes Android et iPad.

Electropedia - www.electropedia.org

Le premier dictionnaire en ligne de termes électroniques et électriques. Il contient plus de 30 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans 14 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

Recherche de publications IEC - www.iec.ch/searchpub

La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études,...). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

Glossaire IEC - std.iec.ch/glossary

Plus de 55 000 entrées terminologiques électrotechniques, en anglais et en français, extraites des articles Termes et Définitions des publications IEC parues depuis 2002. Plus certaines entrées antérieures extraites des publications des CE 37, 77, 86 et CISPR de l'IEC.

IEC Just Published - webstore.iec.ch/justpublished

Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et aussi une fois par mois par email.

Service Clients - webstore.iec.ch/csc

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: csc@iec.ch.



IEC 62037-2

Edition 1.0 2012-11

INTERNATIONAL STANDARD

NORME INTERNATIONALE



Passive RF and microwave devices, intermodulation level measurement –
Part 2: Measurement of passive intermodulation in coaxial cable assemblies
(standards.iteh.ai)

Dispositifs RF et à micro-ondes passifs, mesure du niveau d'intermodulation –
Partie 2: Mesure de l'intermodulation passive dans les cordons coaxiaux

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX



ICS 33.040.20, 33.120.10

ISBN 978-2-8322-1349-0

**Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

CONTENTS

FOREWORD.....	3
1 Scope.....	5
2 Normative references.....	5
3 Abbreviations.....	5
4 Test set-up.....	5
5 Procedure.....	7
6 Report.....	7
Figure 1 – PIM test set-up example.....	6
Figure 2 – Rotation of cable.....	6
Table 1 – Minimum requirement of cable parameters.....	7

iTeh STANDARD PREVIEW **(standards.iteh.ai)**

[IEC 62037-2:2012](https://standards.iteh.ai/catalog/standards/sist/8927ed16-0b8c-4ee6-a7ac-fe59d01f5fe5/iec-62037-2-2012)

<https://standards.iteh.ai/catalog/standards/sist/8927ed16-0b8c-4ee6-a7ac-fe59d01f5fe5/iec-62037-2-2012>

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**PASSIVE RF AND MICROWAVE DEVICES,
INTERMODULATION LEVEL MEASUREMENT –**

**Part 2: Measurement of passive intermodulation
in coaxial cable assemblies**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 62037-2 has been prepared by technical committee 46: Cables, wires, waveguides, r.f. connectors, r.f. and microwave passive components and accessories.

This bilingual version (2014-01) corresponds to the monolingual English version, published in 2012-11. The text of this standard is based on the following documents:

FDIS	Report on voting
46/408/FDIS	46/420/RVD

The French version of this standard has not been voted upon.

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all the parts in the IEC 62037 series, published under the general title *Passive RF and microwave devices, Intermodulation level measurement* can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[IEC 62037-2:2012](https://standards.iteh.ai/catalog/standards/sist/8927ed16-0b8c-4ee6-a7ac-fe59d01f5fe5/iec-62037-2-2012)

<https://standards.iteh.ai/catalog/standards/sist/8927ed16-0b8c-4ee6-a7ac-fe59d01f5fe5/iec-62037-2-2012>

PASSIVE RF AND MICROWAVE DEVICES, INTERMODULATION LEVEL MEASUREMENT –

Part 2: Measurement of passive intermodulation in coaxial cable assemblies

1 Scope

This part of IEC 62037 defines a procedure to measure levels of passive intermodulation generated by a coaxial cable assembly.

This test method is applicable to jumper cables, i.e. cable assemblies intended to provide interface flexibility between rigid devices.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 62037-1:2012, *Passive RF and microwave devices, intermodulation level measurement – Part 1: General requirements and measuring methods*

[IEC 62037-2:2012](https://standards.iteh.ai/catalog/standards/sist/8927ed16-0b8c-4ee6-a7ac-fe59d01f5fe5/iec-62037-2-2012)

<https://standards.iteh.ai/catalog/standards/sist/8927ed16-0b8c-4ee6-a7ac-fe59d01f5fe5/iec-62037-2-2012>

3 Abbreviations

DUT Device under test

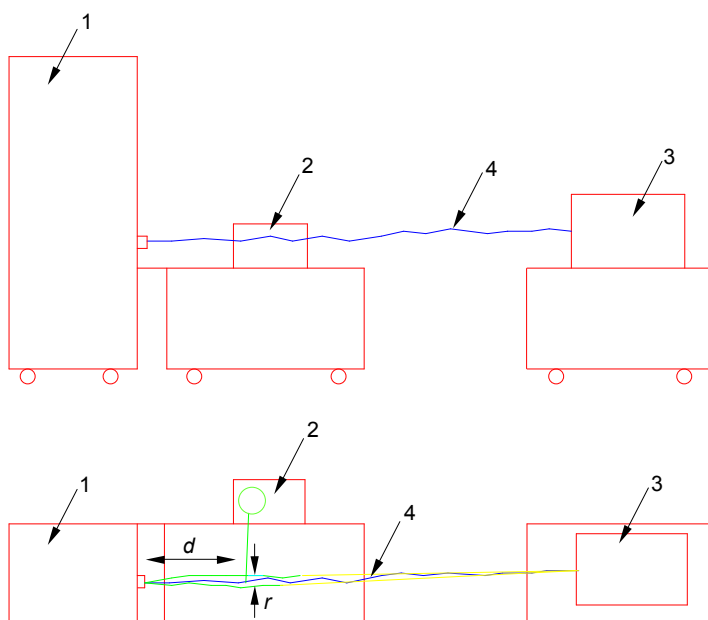
PIM Passive intermodulation

4 Test set-up

Set-up 1 and set-up 2 are applicable in this PIM-test. Either set-up 1 (reverse method, see 6.2.2 of IEC 62037-1:2012), or set-up 2 (forward method, see 6.2.3 of IEC 62037-1:2012), may be used for cable assemblies, provided that the attenuation of the assembly is not greater than 1 dB. For higher attenuation, the reverse method shall be used.

The connector under test should be clamped and mechanically secured to prevent its movement during the test.

A describable and repeatable mechanical stress is applied to the DUT. This mechanical stress is defined by a distance d , between the end of the cable-entry (the last rigid mechanical point of the connector) and the point of the deflection, and circular movement around the cable axis with a radius r . This test shall be performed on each end independently. An example of a test set-up is shown in Figure 1. The cable movement is depicted in Figure 2. The rotational radius (r) and distance (d) is defined in Table 1. The cable attachment to the termination should be supported.



IEC 2121/12

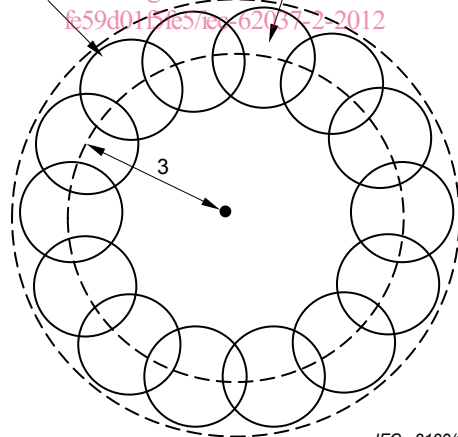
Key

- 1 PIM test set-up
- 2 moving unit
- 3 termination
- 4 DUT

The distance, d and the radius, r are related to the nominal outside diameter, ϕ of the cable.

Figure 1 – PIM test set-up example

IEC 62037-2:2022
<https://standards.iteh.ai/catalog/standards/sist/8927ed16-0b8c-4ee6-a7ac-f59d01151e5/iec-62037-2-2012>



IEC 2122/12

Key

- 1 cable DUT
- 2 circular movement of cable
- 3 radius of deflection, r

Figure 2 – Rotation of cable

Table 1 – Minimum requirement of cable parameters

Cable	<i>d</i> (see Figure 1)	<i>r</i> (radius)
Braided and foil wrapped cables	6 × \varnothing cable	\varnothing +10 mm
Foam dielectric/helical and annular corrugation / $\varnothing \leq 16$ mm	10 × \varnothing cable	\varnothing +10 mm
Foam dielectric/helical and annular corrugation / $\varnothing > 16$ mm	*	\varnothing +10 mm
Air dielectric/helical corrugation	12 × \varnothing cable	\varnothing +10 mm
Other cable constructions	*	*
* to be defined between customer and supplier, or as specified by the manufacturer.		

Other values may be used as specified by the customer and supplier or by the manufacturer.

The movement of the cable shall be carried out with a minimum of 3 cycles and a rate of (5 ± 2) s per revolution.

Torsion shall not be applied to the cable. It is recommended to rotate the cable clockwise.

5 Procedure

The procedure is as follows:

- calibrate the set-up;
- connect the DUT to the set-up;
- read the PIM before applying mechanical stress;
- apply mechanical stress to the DUT according to Table 1;
- read the maximum PIM level while applying mechanical stress to the DUT;

NOTE If using a spectrum analyser, it is helpful to use the “max-hold” function.

- stop the mechanical stress;
- read the PIM level after applying mechanical stress.

6 Report

The report should include the following:

- radius;
- distance from the PIM tester;
- PIM levels during rotation;
- PIM levels after rotation.