

## SLOVENSKI STANDARD SIST EN 62037-6:2014

01-februar-2014

Nadomešča: SIST EN 62037:2001

Pasivne radiofrekvenčne (rf) in mikrovalovne naprave, meritve intermodulacijskega nivoja - 6. del: Meritve pasivne intermodulacije v antenah (IEC 62037-6:2013)

Passive r.f. and microwave devices, intermodulation level measurement - Part 6: Measurement of passive intermodulation in antennas

### iTeh STANDARD PREVIEW

Passive HF- und Mikrowellenbauteile, Messung des Intermodulationspegels - Teil 6: Messung der passiven Intermodulation in Antennen

#### SIST EN 62037-6:2014

Dispositifs RF et à micro-ondes passifs, mesure du niveau d'intermodulation - Partie 6: Mesure de l'intermodulation passive dans les antennes<sup>2014</sup>

Ta slovenski standard je istoveten z: EN 62037-6:2013

ICS:

33.120.30 Radiofrekvenčni konektorji R.F. connectors

(RF)

SIST EN 62037-6:2014 en

SIST EN 62037-6:2014

# iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 62037-6:2014

https://standards.iteh.ai/catalog/standards/sist/ee6dd3d2-3c26-4be1-a6df-254d8853a440/sist-en-62037-6-2014

**EUROPEAN STANDARD** 

EN 62037-6

NORME EUROPÉENNE EUROPÄISCHE NORM

**April 2013** 

ICS 33.040.20

Supersedes EN 62037:1999 (partially)

English version

# Passive RF and microwave devices, intermodulation level measurement - Part 6: Measurement of passive intermodulation in antennas (IEC 62037-6:2013)

Dispositifs RF et à micro-ondes passifs, mesure du niveau d'intermodulation - Partie 6: Mesure de l'intermodulation passive dans les antennes (CEI 62037-6:2013)

Passive HF- und Mikrowellenbauteile, Messung des Intermodulationspegels -Teil 6: Messung der passiven Intermodulation in Antennen (IEC 62037-6:2013)

### iTeh STANDARD PREVIEW

This European Standard was approved by CENELEC on 2013-02-20. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration, 62014

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## **CENELEC**

European Committee for Electrotechnical Standardization Comité Européen de Normalisation Electrotechnique Europäisches Komitee für Elektrotechnische Normung

Management Centre: Avenue Marnix 17, B - 1000 Brussels

#### **Foreword**

The text of document 46/410/FDIS, future edition 1 of IEC 62037-6, prepared by IEC TC 46 "Cables, wires, waveguides, R.F. connectors, R.F. and microwave passive components and accessories" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62037-6:2013.

The following dates are fixed:

•	latest date by which the document has to be implemented at national level by publication of an identical national	(dop)	2013-11-20
•	standard or by endorsement latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2016-02-20

This document partially supersedes EN 62037:1999.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

## iTeh ST Endorsement notice VIEW

The text of the International Standard IEC 62037-6:2013 was approved by CENELEC as a European Standard without any modification.

SIST EN 62037-6:2014 https://standards.iteh.ai/catalog/standards/sist/ee6dd3d2-3c26-4be1-a6df-254d8853a440/sist-en-62037-6-2014

# Annex ZA (normative)

## Normative references to international publications with their corresponding European publications

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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	EN/HD	<u>Year</u>
IEC 62037-1	2012	Passive RF and microwave devices, intermodulation level measurement - Part 1: General requirements and measuring methods	EN 62037-1	2012
IEC 62037-3	-	Passive RF and microwave devices, intermodulation level measurement - Part 3: Measurement of passive intermodulation in coaxial connectors	EN 62037-3	-

# iTeh STANDARD PREVIEW (standards.iteh.ai)

<u>SIST EN 62037-6:2014</u> https://standards.iteh.ai/catalog/standards/sist/ee6dd3d2-3c26-4be1-a6df-254d8853a440/sist-en-62037-6-2014 SIST EN 62037-6:2014

# iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 62037-6:2014

https://standards.iteh.ai/catalog/standards/sist/ee6dd3d2-3c26-4be1-a6df-254d8853a440/sist-en-62037-6-2014



IEC 62037-6

Edition 1.0 2013-01

# INTERNATIONAL STANDARD

Passive RF and microwave devices) intermodulation level measurement – Part 6: Measurement of passive intermodulation in antennas

SIST EN 62037-6:2014 https://standards.iteh.ai/catalog/standards/sist/ee6dd3d2-3c26-4be1-a6df-254d8853a440/sist-en-62037-6-2014

INTERNATIONAL ELECTROTECHNICAL COMMISSION

PRICE CODE

M

ICS 33.040.20 ISBN 978-2-83220-581-5

Warning! Make sure that you obtained this publication from an authorized distributor.

### CONTENTS

4.1 Antenna54.2 Antenna under test64.3 Active antenna64.4 Antenna PIM65 Antenna design and field installation considerations65.1 Environmental effects on PIM performance65.2 Antenna interface connection65.3 Mounting considerations to avoid PIM generation65.4 Neighbouring sources of interference75.5 Standard practices and guidelines for material selection7	FOREWORD	3					
3 Abbreviations       5         4 Antenna definitions as it pertains to PIM       5         4.1 Antenna       5         4.2 Antenna under test       6         4.3 Active antenna       6         4.4 Antenna PIM       6         5 Antenna design and field installation considerations       6         5.1 Environmental effects on PIM performance       6         5.2 Antenna interface connection       6         5.3 Mounting considerations to avoid PIM generation       6         5.4 Neighbouring sources of interference       7         5.5 Standard practices and guidelines for material selection       7         6.1 Quality assurance process and handling procedures       7         6.2 Measurement accuracy ANDARD PREVIEW       7         6.3 Test environment       8         6.4 Safety       8         6.5.1 Coaxial test cable assemblies and substituted as a construction of the process and the process and the process and process	Scope5						
4 Antenna definitions as it pertains to PIM	Normative references5						
4.1 Antenna       5         4.2 Antenna under test       6         4.3 Active antenna       6         4.4 Antenna PIM       6         5 Antenna design and field installation considerations       6         5.1 Environmental effects on PIM performance       6         5.2 Antenna interface connection       6         5.3 Mounting considerations to avoid PIM generation       6         5.4 Neighbouring sources of interference       7         5.5 Standard practices and guidelines for material selection       7         6 PIM measurement considerations       7         6.1 Quality assurance process and handling procedures       7         6.2 Measurement accuracy ANDARD PREVER       7         6.3 Test environment       8         6.4 Safety       (Standards Itela)         6.5 Test set-up       8         6.5.1 Coaxial test cable assemblies       8         6.5.2 Defining a good low PIM reference load 2014       8         6.5.3 Test set-up and test site baseline PIM verification       8         6.6 PIM test configurations       9         6.7 Combined environmental and PIM testing       10         6.7.2 Mechanical considerations       10         6.7.3 Test system cables and connectors       11         6.8 P	Abbreviations5						
4.2 Antenna under test       6         4.3 Active antenna       6         4.4 Antenna PIM       6         5 Antenna design and field installation considerations       6         5.1 Environmental effects on PIM performance       6         5.2 Antenna interface connection       6         5.3 Mounting considerations to avoid PIM generation       6         5.4 Neighbouring sources of interference       7         5.5 Standard practices and guidelines for material selection       7         6 PIM measurement considerations       7         6.1 Quality assurance process and handling procedures       7         6.2 Measurement accuracy I. A.N.D.A.R.D. P.R.E.V.IE.W.       7         6.3 Test environment       8         6.4 Safety       (Standards.itell.al)         8       6.5.1 Consist test cable assemblies in the standards.itell.al)       8         6.5.2 Defining a good low PIM reference load 2014       8         6.5.2 Defining a good low PIM reference load 2014       8         6.5.2 Defining a good low PIM reference load 2014       8         6.5.1 General       10         6.7.2 Mechanical considerations       9         6.7 Combined environmental and PIM testing       10         6.7.1 General       10         6.7.2 Mechanical co	4 Antenna definitions as it pertains to PIM	5					
4.3       Active antenna       6         4.4       Antenna PIM       6         5       Antenna design and field installation considerations       6         5.1       Environmental effects on PIM performance       6         5.2       Antenna interface connection       6         5.3       Mounting considerations to avoid PIM generation       6         5.4       Neighbouring sources of interference       7         5.5       Standard practices and guidelines for material selection       7         6       PIM measurement considerations       7         6.1       Quality assurance process and handling procedures       7         6.2       Measurement accuracy I.A.D.A.R.D.P.R.E.V.IW       7         6.3       Test environment       8         6.4       Safety       (Standards.itch.ai)       8         6.5.1       Coaxial test cable assemblies maximum accuracy I.A.D.A.R.D.P.R.E.V.IW       7         6.3       Test set-up       8         6.5.1       Coaxial test cable assemblies maximum accuracy I.A.D.A.R.D.P.R.E.V.IW       8         6.5.1       Coaxial test cable assemblies maximum accuracy I.A.D.A.R.D.P.R.E.V.IW       8         6.5.1       Coaxial test cable assemblies maximum accuracy I.A.D.A.R.D.P.R.E.V.IW       8 <td>4.1 Antenna5</td> <td>5</td>	4.1 Antenna5	5					
4.4 Antenna PIM       6         5 Antenna design and field installation considerations       6         5.1 Environmental effects on PIM performance       6         5.2 Antenna interface connection       6         5.3 Mounting considerations to avoid PIM generation       6         5.4 Neighbouring sources of interference       7         5.5 Standard practices and guidelines for material selection       7         6 PIM measurement considerations       7         6.1 Quality assurance process and handling procedures       7         6.2 Measurement accuracy A.N.D.A.R.D. P.R.E.V.IE.W.       7         6.3 Test environment       8         6.4 Safety       (Standards.iten.a)         8.5 Test set-up       8         6.5.1 Coaxial test cable assemblies received and contact the configuration and process the conf	4.2 Antenna under test6	3					
5       Antenna design and field installation considerations       6         5.1       Environmental effects on PIM performance       6         5.2       Antenna interface connection       6         5.3       Mounting considerations to avoid PIM generation       6         5.4       Neighbouring sources of interference       7         5.5       Standard practices and guidelines for material selection       7         6       PIM measurement considerations       7         6.1       Quality assurance process and handling procedures       7         6.2       Measurement accuracy LANDARD PREVIEW       7         6.3       Test environment       8         6.4       Safety       (Standards.iten.ai)       8         6.5       Test set-up       8         6.5       Test set-up       8       6.5       1         6.5       Test set-up       8       6.5       2       Defining a good low PIM reference load. 2014       8         6.5       Test set-up and test site baseline PIM verification       8       8         6.6       PIM test configurations       9       9         6.7       Combined environmental and PIM testing       10         6.7.2       Mechanical considerations	4.3 Active antenna6	3					
5.1       Environmental effects on PIM performance       6         5.2       Antenna interface connection       6         5.3       Mounting considerations to avoid PIM generation       6         5.4       Neighbouring sources of interference       7         5.5       Standard practices and guidelines for material selection       7         6       PIM measurement considerations       7         6.1       Quality assurance process and handling procedures       7         6.2       Measurement accuracy LANDARD PREVIEW       7         6.3       Test environment       8         6.4       Safety       (Standards.iteh.at)       8         6.5       Test set-up       8         6.5.1       Coaxial test cable assemblies       8         6.5.2       Defining a good-low PIM reference load.       8         6.5.3       Test set-up and test site baseline PIM verification       8         6.6       PIM test configurations       9         6.7       Combined environmental and PIM testing       10         6.7.2       Mechanical considerations       10         6.7.2       Mechanical considerations       10         6.7.3       Test system cables and connectors       11 <td< td=""><td>4.4 Antenna PIM6</td><td>3</td></td<>	4.4 Antenna PIM6	3					
5.2       Antenna interface connection       6         5.3       Mounting considerations to avoid PIM generation       6         5.4       Neighbouring sources of interference       7         5.5       Standard practices and guidelines for material selection       7         6       PIM measurement considerations       7         6.1       Quality assurance process and handling procedures       7         6.2       Measurement accuracy I.A.N.D.A.R.D.P.R.E.V.IE.W.       7         6.3       Test environment.       8         6.4       Safety       (Standards.iteh.ai)       8         6.5       Test set-up.       SETING 037-62014       8         6.5.1       Coaxial test cable assemblies measurement of cable of	5 Antenna design and field installation considerations	3					
5.3       Mounting considerations to avoid PIM generation       6         5.4       Neighbouring sources of interference       7         5.5       Standard practices and guidelines for material selection       7         6       PIM measurement considerations       7         6.1       Quality assurance process and handling procedures       7         6.2       Measurement accuracy LANDARD PREVIEW       7         6.3       Test environment       8         6.4       Safety       (Standards.iteh.ai)       8         6.5       Test set-up       8         6.5.1       Coaxial test cable assembles in a system of a syste	5.1 Environmental effects on PIM performance6	3					
5.4       Neighbouring sources of interference       .7         5.5       Standard practices and guidelines for material selection       .7         6       PIM measurement considerations       .7         6.1       Quality assurance process and handling procedures       .7         6.2       Measurement accuracy I.A.N.D.A.R.DP.R.E.V.I.F.W.       .7         6.3       Test environment       .8         6.4       Safety       .8         6.5       Test set-up       .8         6.5.1       Coaxial test cable assemblies       .8         6.5.2       Defining a good low PIM reference load 2014       .8         6.5.3       Test set-up and test site baseline PIM verification       .8         6.6       PIM test configurations       .9         6.7       Combined environmental and PIM testing       .10         6.7.1       General       .10         6.7.2       Mechanical considerations       .10         6.7.3       Test system cables and connectors       .11         6.8       PIM test chamber design       .11         6.8.1       General       .11         6.8.2       RF absorber materials       .11         6.8.4       RF shielding       .12 </td <td>5.2 Antenna interface connection6</td> <td>3</td>	5.2 Antenna interface connection6	3					
5.5       Standard practices and guidelines for material selection       7         6       PIM measurement considerations       7         6.1       Quality assurance process and handling procedures       7         6.2       Measurement accuracy [.A.N.D.A.R.DP.R.L.V.IE.W	5.3 Mounting considerations to avoid PIM generation6	3					
6 PIM measurement considerations       7         6.1 Quality assurance process and handling procedures       7         6.2 Measurement accuracy [.A.N.D.A.R.DP.R.E.V.IE.W	5.4 Neighbouring sources of interference	7					
6.1       Quality assurance process and handling procedures       7         6.2       Measurement accuracy (A.N.D.A.R.DP.R.L.V.IT)       7         6.3       Test environment	5.5 Standard practices and guidelines for material selection	7					
6.2       Measurement accuracy T.A.N.D.A.R.D. P.R.E.V.I.E.W.       7         6.3       Test environment.       8         6.4       Safety	6 PIM measurement considerations	7					
6.3       Test environment.       8         6.4       Safety       (standards.iteh.ai)       8         6.5       Test set-up       8         6.5.1       Coaxial test cable assemblies descended 3d2-3c26-4be1-addf-3c2							
6.5       Test set-up       8         6.5.1       Coaxial test cable assemblies       8         6.5.2       Defining a good low PIM reference load_2014       8         6.5.3       Test set-up and test site baseline PIM verification       8         6.6       PIM test configurations       9         6.7       Combined environmental and PIM testing       10         6.7.1       General       10         6.7.2       Mechanical considerations       10         6.7.3       Test system cables and connectors       11         6.8       PIM test chamber design       11         6.8.1       General       11         6.8.2       RF absorber materials       11         6.8.3       Supporting structures and walls       12         6.8.4       RF shielding       12	6.2 Measurement accuracy T.A.N.D.A.R.DP.R.E.V.I.E.W	7					
6.5       Test set-up       8         6.5.1       Coaxial test cable assemblies of sixty ecodd3d2-3c26-4be1-acdf-acdf-acdf-acdf-acdf-acdf-acdf-acdf	6.3 Test environment	3					
6.5.2       Defining a good-low-PIM reference load.2014       8         6.5.3       Test set-up and test site baseline PIM verification       8         6.6       PIM test configurations       9         6.7       Combined environmental and PIM testing       10         6.7.1       General       10         6.7.2       Mechanical considerations       10         6.7.3       Test system cables and connectors       11         6.8       PIM test chamber design       11         6.8.1       General       11         6.8.2       RF absorber materials       11         6.8.3       Supporting structures and walls       12         6.8.4       RF shielding       12							
6.5.2       Defining a good-low-PIM reference load 2014       8         6.5.3       Test set-up and test site baseline PIM verification       8         6.6       PIM test configurations       9         6.7       Combined environmental and PIM testing       10         6.7.1       General       10         6.7.2       Mechanical considerations       10         6.7.3       Test system cables and connectors       11         6.8       PIM test chamber design       11         6.8.1       General       11         6.8.2       RF absorber materials       11         6.8.3       Supporting structures and walls       12         6.8.4       RF shielding       12	6.5 Test set-up	3					
6.5.2       Defining a good-low-PIM reference load.2014       8         6.5.3       Test set-up and test site baseline PIM verification       8         6.6       PIM test configurations       9         6.7       Combined environmental and PIM testing       10         6.7.1       General       10         6.7.2       Mechanical considerations       10         6.7.3       Test system cables and connectors       11         6.8       PIM test chamber design       11         6.8.1       General       11         6.8.2       RF absorber materials       11         6.8.3       Supporting structures and walls       12         6.8.4       RF shielding       12	6.5.1 Coaxial test cable assemblies	3					
6.6       PIM test configurations       9         6.7       Combined environmental and PIM testing       10         6.7.1       General       10         6.7.2       Mechanical considerations       10         6.7.3       Test system cables and connectors       11         6.8       PIM test chamber design       11         6.8.1       General       11         6.8.2       RF absorber materials       11         6.8.3       Supporting structures and walls       12         6.8.4       RF shielding       12	6.5.2 Defining a good low PIM reference load 2014	8					
6.7       Combined environmental and PIM testing       10         6.7.1       General       10         6.7.2       Mechanical considerations       10         6.7.3       Test system cables and connectors       11         6.8       PIM test chamber design       11         6.8.1       General       11         6.8.2       RF absorber materials       11         6.8.3       Supporting structures and walls       12         6.8.4       RF shielding       12	·						
6.7.1 General       10         6.7.2 Mechanical considerations       10         6.7.3 Test system cables and connectors       11         6.8 PIM test chamber design       11         6.8.1 General       11         6.8.2 RF absorber materials       11         6.8.3 Supporting structures and walls       12         6.8.4 RF shielding       12	•						
6.7.2 Mechanical considerations       10         6.7.3 Test system cables and connectors       11         6.8 PIM test chamber design       11         6.8.1 General       11         6.8.2 RF absorber materials       11         6.8.3 Supporting structures and walls       12         6.8.4 RF shielding       12	· · · · · · · · · · · · · · · · · · ·						
6.7.3 Test system cables and connectors       11         6.8 PIM test chamber design       11         6.8.1 General       11         6.8.2 RF absorber materials       11         6.8.3 Supporting structures and walls       12         6.8.4 RF shielding       12							
6.8       PIM test chamber design       11         6.8.1       General       11         6.8.2       RF absorber materials       11         6.8.3       Supporting structures and walls       12         6.8.4       RF shielding       12							
6.8.1 General116.8.2 RF absorber materials116.8.3 Supporting structures and walls126.8.4 RF shielding12							
6.8.2 RF absorber materials116.8.3 Supporting structures and walls126.8.4 RF shielding12	· ·						
6.8.3 Supporting structures and walls							
6.8.4 RF shielding12							
· · · · · · · · · · · · · · · · · · ·							
Figure 1 – Antenna reverse PIM test set-up9	6.8.4 RF shielding12	2					
	Figure 1 – Antenna reverse PIM test set-up	9					
Figure 2 – Antenna forward PIM test set-up10	Figure 2 – Antenna forward PIM test set-up10	C					

### INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

### Part 6: Measurement of passive intermodulation in antennas

#### **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.
- https://standards.iteh.ai/catalog/standards/sist/ee6dd3d2-3c26-4bel-a6df
  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 62037-6 has been prepared by technical committee 46: Cables, wires, waveguides, r.f. connectors, r.f. and microwave passive components and accessories.

The text of this standard is based on the following documents:

FDIS	Report on voting
46/410/FDIS	46/422/RVD

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.