AS IEC 62040.2:2019
IEC 62040-2:2016 (ED. 3.0)

AS IEC 62040.2:2019

Australian STANDARD

Uninterruptible power systems (UPS)

Part 2: Electromagnetic compatibility (EMC) requirements

STANDARDS Australia

AS IEC 62040.2:2019

This Australian Standard® was prepared by EL-027, Power Electronics. It was approved on behalf of the Council of Standards Australia on 4 April 2019.

This Standard was published on 13 May 2019.

The following are represented on Committee EL-027:

Australian Industry Group
Bureau of Steel Manufacturers of Australia
Energy Networks Australia
Engineers Australia
University of Newcastle

This Standard was issued in draft form for comment as DR AS IEC 62040.2:2019.

Keeping Standards up-to-date

Ensure you have the latest versions of our publications and keep up-to-date about Amendments, Rulings, Withdrawals, and new projects by visiting:
www.standards.org.au

ISBN 978 1 76072 451 1

AS IEC 62040.2:2019
IEC 62040-2:2016 (ED. 3.0)

Australian STANDARD

Uninterruptible power systems (UPS)

Part 2: Electromagnetic compatibility (EMC) requirements

Originated as AS 62040.2—2001.
Previous edition 2008.
Revised and redesignated as AS IEC 62040.2:2019.

Preface

This Standard was prepared by the Standards Australia Committee EL-027, Power Electronics, to supersede AS 62040.2—2008.

The objective of this Standard is to provide electromagnetic compatibility (EMC) type test requirements for uninterruptible power systems (UPS) intended for installation in residential, commercial, light industrial or industrial environments as applicable.

This Standard applies to movable, stationary, fixed or built-in, pluggable and permanently connected UPS that deliver AC output voltage with port voltages not exceeding 1 000 V AC or 1 500 V DC and that include an energy storage device.

The major changes in this edition are as follows:

(a) Inclusion of network port limits in Table 1, Table 2 and Annex C for consistency with other EMC Standards.

NOTE The content of Interpretation sheet 1 (IEC 62040-2:2016/ISH 1:2018) concerning application of network port limits has also been included.

(b) Change in Table 2 of the > 16 A to 100 A category C3 UPS mains terminal 30 MHz quasi-peak limit to 73 dB (uV) for consistency with other EMC Standards.

(c) Clarification in Table 4 about the performance criteria for immunity tests.

(d) Revision of some test configurations in Annex A.

This Standard is identical with, and has been reproduced from, IEC 62040-2:2016 (ED. 3.0), *Uninterruptible power systems (UPS) — Part 2: Electromagnetic compatibility (EMC) requirements*, and its Interpretation sheet 1 (2018), which has been included with the source text.

As this document has been reproduced from an International Standard, the following applies:

(i) In the source text “this part of IEC 62040” should read “this Australian Standard”.

(ii) A full point substitutes for a comma when referring to a decimal marker.

Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably. Refer to the online catalogue for information on specific Standards.

The terms “normative” and “informative” are used in Standards to define the application of the appendices or annexes to which they apply. A “normative” appendix or annex is an integral part of a Standard, whereas an “informative” appendix or annex is only for information and guidance.

INTERNATIONAL ELECTROTECHNICAL COMMISSION

IEC 62040-2
Edition 3.0 2016-11

UNINTERRUPTIBLE POWER SYSTEMS (UPS) –

Part 2: Electromagnetic compatibility (EMC) requirements

INTERPRETATION SHEET 1

This interpretation sheet has been prepared by subcommittee 22H: Uninterruptible power systems (UPS), of IEC technical committee 22: Power electronic systems and equipment.

The text of this interpretation sheet is based on the following documents:

FDIS	Report on voting
22H/232/FDIS	22H/236/RVD

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

Interpretation of 5.3.2.4 Limits at the network ports

Introduction

Sub-clause 5.3.2.4 states that the **network port** limits applicable to **UPS** of **category C1, C2** and **C3** are located in Table 1, Table 2 and Annex C.

It was not clear whether 5.3.2.4 applies to **network ports** that originate and terminate within the **enclosure port** of the **UPS** (i.e. to **network ports** connected exclusively to circuits or devices forming an integral part of the **UPS**).

Interpretation

The **network port** limits in Table 1, Table 2 and Annex C apply only to **network ports** for which connection to circuits or devices external to the **enclosure port** of the **UPS** is allowed. This includes, without limitation, connection to PSTN, ISDN, xDSL and Ethernet networks. The limits in Table 1, Table 2 and Annex C do not apply to **network ports** that originate and terminate within the **enclosure port** of the **UPS** (i.e. to **network ports** connected exclusively to circuits or devices forming an integral part of the **UPS**).

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

____

UNINTERRUPTIBLE POWER SYSTEMS (UPS) –

Part 2: Electromagnetic compatibility (EMC) requirements

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 62040-2 has been prepared by subcommittee 22H: Uninterruptible power systems (UPS), of IEC technical committee 22: Power electronic systems and equipment.

This third edition cancels and replaces the second edition published in 2005. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) the inclusion of **network port** limits in Table 1, Table 2 and Annex C for the sake of consistency with other standards;
b) a change of quasi-peak limit for **category C3 UPS** in Table 2 for the sake of consistency with other standards;
c) a clarification in Table 4 about the performance criteria for immunity tests;
d) a revision of some test configurations in Annex A.

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

FDIS	Report on voting
22H/210/FDIS	22H/212/RVD

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

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

In this document, the following print types are used:

– requirements proper and normative annexes: in roman type;
– compliance statements and test specifications: *in italic type*;
– notes and other informative matter: in smaller roman type;
– normative conditions within tables: in smaller roman type;
– terms that are defined in Clause 3: **bold**.

A list of all parts in the IEC 62040 series, published under the general title *Uninterruptible power systems (UPS)*, can be found on the IEC website.

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

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

The contents of the Interpretation sheet of June 2018 have been included in this copy.

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.

UNINTERRUPTIBLE POWER SYSTEMS (UPS) –

Part 2: Electromagnetic compatibility (EMC) requirements

1 Scope

This part of IEC 62040 is a type test product standard for electromagnetic compatibility (EMC) and applies to movable, stationary, fixed or built-in, pluggable and permanently connected UPS for use in low-voltage distribution systems with an environment being either residential, commercial, light industrial or industrial, which deliver output voltage with **port** voltages not exceeding 1 500 V DC or 1 000 V AC and which include an energy storage device.

Subject to installing, operating and maintaining the UPS in the manner prescribed by the manufacturer, this standard defines emission limits, immunity levels, test methods and performance criteria for a complete UPS to comply with the essential EMC requirements necessary to avoid the UPS interfering with other apparatus, e.g. radio receivers, and to avoid the UPS being affected by external phenomena.

This standard does not address EMC phenomena produced by loads connected to the UPS or situations created by any apparatus external to the UPS other than as described in the immunity requirements.

This standard is harmonized with applicable IEC standards for electromagnetic emission limits and immunity levels. It contains additional requirements applicable to UPS.

This standard does not cover:

a) low-voltage DC power supply devices covered by IEC 61204 standards;

b) systems wherein the output voltage is derived from a rotating machine.

NOTE 1 UPS generally connect to their energy storage device through a DC link. A chemical battery is an example of an energy storage device. Alternative devices can be suitable, and as such, where “battery” appears in the text of this standard, this can be understood as “energy storage device”.

NOTE 2 This type test-based product standard allows EMC conformity assessment of UPS included in one of categories C1, C2 and C3 before placing them on the market. It also provides guidance for conformity assessment of UPS included in category C4 (see Clause 4).

NOTE 3 The differing test conditions necessary to encompass the range of physical sizes and power ratings of a complete UPS are taken into account. A complete UPS can consist of one or more interconnected units. For UPS configuration details refer to IEC 62040-3:2011, Annex A.

NOTE 4 The requirements have been selected so as to permit an adequate level of EMC for UPS installed in residential, commercial, light industrial and industrial locations. The requirements are not always sufficient to cover situations with low probability of occurrence including UPS faults.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 61000-2-2:2002, *Electromagnetic compatibility (EMC) – Part 2-2: Environment – Compatibility levels for low-frequency conducted disturbances and signalling in public low-voltage power supply systems*