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Integrated circuits - EMC evaluation of transceivers -
Part 7: CXPI transceivers

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IEC Secretariat
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

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

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Integrated circuits - EMC evaluation of transceivers - Part 7: CXPI transceivers

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IEC 62228-7 has been prepared by subcommittee 47A: Integrated circuits, of IEC technical committee 47: Semiconductor devices. It is an International Standard.

This second edition cancels and replaces the first edition published in 2022. This edition constitutes a technical revision.

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

a) change transceiver terms and definitions from master to commander and slave to responder in 3.1.5 and 3.1.6.
b) change test configuration for embedded transceiver in 5.3.1 and add on Figure A.4 accordingly.
c) change the definition of TX2 test signal for type-B transceiver in 5.4.2.
d) add examples for test limits in Annex C.

The text of this International Standard is based on the following documents:

Draft	Report on voting
47A/1180/CDV	47A/1195/RVC

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts in the IEC 62228 series, published under the general title *Integrated circuits - EMC evaluation of transceivers*, 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 webstore.iec.ch in the data related to the specific document. At this date, the document will be

– reconfirmed,
– withdrawn, or
– revised.

1 Scope

This part of IEC 62228 specifies test and measurement methods for the EMC evaluation of CXPI transceiver ICs under network condition. It defines test configurations, test conditions, test signals, failure criteria, test procedures, test setups and test boards. This specification is applicable for standard CXPI transceiver ICs and ICs with embedded CXPI transceiver and covers

– the emission of RF disturbances;
– the immunity against RF disturbances;
– the immunity against impulses;
– the immunity against electrostatic discharges (ESD).

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 61967-1, *Integrated circuits - Measurement of electromagnetic emissions - Part 1: General conditions and definitions*

IEC 61967-4, *Integrated circuits - Measurement of electromagnetic emissions - Part 4: Measurement of conducted emissions - 1 Ω/150 Ω direct coupling method*

IEC 62132-1, *Integrated circuits - Measurement of electromagnetic immunity - Part 1: General conditions and definitions*

IEC 62132-4~~:2006~~, *Integrated circuits - Measurement of electromagnetic immunity 150 kHz to 1 GHz - Part 4: Direct RF power injection method*

IEC 62215-3, *Integrated circuits - Measurement of impulse immunity - Part 3: Non-synchronous transient injection method*

IEC 62228-1, *Integrated circuits - EMC evaluation of transceivers - Part 1: General conditions and definitions*

ISO 7637-2, *Road vehicles - Electrical disturbances from conduction and coupling - Part 2: Electrical transient conduction along supply lines only*

ISO 10605, *Road vehicles - Test methods for electrical disturbances from electrostatic discharge*

ISO 20794-4, *Road vehicles - Clock extension peripheral interface (CXPI) - Part 4: Data link layer and physical layer*

ISO 20794-7~~:2020~~, *Road vehicles - Clock extension peripheral interface (CXPI) - Part 7: Data link and physical layer conformance test plan*

EIA-198-1, *Ceramic Dielectric Capacitors Classes I, II, III, and IV - Part 1: Characteristics and Requirements*

3 Terms, definitions and abbreviated terms

For the purposes of this document, the terms and definitions given in IEC 62228-1, IEC 61967-1 and IEC 62132-1 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

– IEC Electropedia: available at https://www.electropedia.org/

– ISO Online browsing platform: available at https://www.iso.org/obp

3.1 Terms and definitions

3.1.1
global pin
pin that carries a signal or power which enters or leaves the application board without any active component in between

3.1.2
standard CXPI transceiver IC
standalone CXPI transceiver according to ISO 20794-4 or IC with integrated CXPI transceiver cell with access to CXPI RXD and TXD signal

3.1.3
IC with embedded CXPI transceiver
IC with integrated CXPI transceiver cell and CXPI protocol handler ~~but~~, with or without access to CXPI RXD ~~or~~ and TXD signal

3.1.4
mandatory components
components needed for proper function of IC as specified by the IC manufacturer

3.1.5
commander node
node that provides schedule management (including ReqTypeId transmission), the primary clock and optionally the sleep message transmission management

3.1.6
responder node
node other than commander node connected to the CXPI network

3.1.7
ReqTypeId
request type identifier, parameter that enables the polling method for dedicated measurement data and/or control data

3.2 Abbreviated terms

ASSP	application specific standard product
CRC	cyclic redundancy check
CXPI	clock extension peripheral interface
DLL	data link layer
EN	enable
FI	frame information
IBS	inter byte space
NRZ	non-return to zero