

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



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(IEC 62228-7:2022)

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Integrierte Schaltungen - Bewertung der elektromagnetischen Verträglichkeit von Sende-Empfangsgeräten - Teil 7: CXPI-Sende-Empfangsgeräte  
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The text of document 47A/1130/FDIS, future edition 1 of IEC 62228-7, prepared by SC 47A "Integrated circuits" of IEC/TC 47 "Semiconductor devices" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62228-7:2022.

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# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



**Integrated circuits – EMC evaluation of transceivers –  
Part 7: CXPI transceivers**

**Circuits intégrés – Évaluation de la CEM des émetteurs-récepteurs –  
Partie 7: Émetteurs-récepteurs CXPI**





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# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



**Integrated circuits – EMC evaluation of transceivers –  
Part 7: CXPI transceivers**

**Circuits intégrés – Évaluation de la CEM des émetteurs-récepteurs –  
Partie 7: Émetteurs-récepteurs CXPI**

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

Draft	Report on voting
47A/1130/FDIS	47A/1133/RVD

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](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/standardsdev/publications](http://www.iec.ch/standardsdev/publications).

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## INTEGRATED CIRCUITS – EMC EVALUATION OF TRANSCEIVERS –

### Part 7: CXPI transceivers

#### 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 and
- 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*

### 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, as well as the following apply.

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

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://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 without access to CXPI RXD or TXD signal

##### 3.1.4

##### mandatory components, pl

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

#### 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
PCB	printed circuit board
PID	protected identifier
PMA	physical media attachment
PS	physical signalling
PWM	pulse width modulation
$\text{RX}_{\text{PWM}}$	output signal for receiver in CXPI bus-line driver
$\text{RXD}_{\text{NRZ}}$	output signal for receiver in CXPI codec circuit