

DIN EN 13309:2010-12 (E)

Construction machinery - Electromagnetic compatibility of machines with internal power supply

Contents		Page
Foreword		4
Introduction		5
1 Scope		6
2 Normative references		6
3 Terms and definitions		7
4 Requirements		10
4.1 General requirements		10
4.2 Specifications concerning broadband electromagnetic emission radiated from construction machinery		10
4.3 Specifications concerning narrowband electromagnetic emission radiated from construction machinery		11
4.4 Specifications concerning the immunity of construction machinery to electromagnetic radiation		11
4.5 Specifications concerning broadband electromagnetic emissions radiated from ESAs		12
4.6 Specifications concerning narrowband electromagnetic emissions radiated from ESAs		12
4.7 Specifications concerning the immunity of ESAs to electromagnetic radiation		13
4.8 Electrostatic discharge (ESD)		13
4.9 Conducted transients		14
5 Exceptions		16
6 Test report		17
Annex A (normative) Reference limits		18
Annex B (normative) Method of measurement of radiated broadband electromagnetic emissions from construction machinery		25
Annex C (normative) Method of measurement of radiated narrowband electromagnetic emissions from construction machinery		30
Annex D (normative) Method of measurement of radiated broadband electromagnetic emissions from electrical/electronic sub-assemblies		33
Annex E (normative) Method of measurement of radiated narrowband electromagnetic emissions from electrical/electronic sub-assemblies		39
Annex F (informative) A Guideline for selecting the test specimen configuration		42
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2004/108/EC		44
Bibliography		45
Figures Figure A.1 -- Construction machinery broadband reference limits for a construction machinery-to- antenna distance of 10 m		18

Figure A.2 -- Construction machinery broadband reference limits for a construction machinery-to- antenna distance of 3 m	19
Figure A.3 -- Construction machinery narrowband reference limits for a construction machinery-to- antenna distance of 10 m	20
Figure A.4 -- Construction machinery narrowband reference limits for a construction machinery-to- antenna distance of 3 m	21
Figure A.5 -- ESAs broadband reference limits	22
Figure A.6 -- ESAs narrowband reference limits	23
Figure A.7 -- Method of determination of conformance of radiated disturbance	24
Figure B.1 -- Construction machinery - Test area	28
Figure B.2 -- Position of antenna relative to construction machinery	29
Figure D.1 -- ESA test area boundary	36
Figure D.2 -- Coupled broadband electromagnetic emissions from ESAs - Test Layout (General plan view)	37
Figure D.3 -- Coupled broadband electromagnetic emissions from ESAs - View on test bench plane of longitudinal symmetry	38
Tables Table 1 -- Check pulse in 12 V and 24 V onboard systems	15
Table 2 -- Application of test pulses	15
Table 3 -- Functional status	16