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Vägtrafikinformatik – eCall kontroll av överensstämmelse vid uppkoppling mellan ändpunkter

Intelligent transport systems – ESafety – ECall end to end conformance testing

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EUROPEAN STANDARD

EN 16454

NORME EUROPÉENNE

EUROPÄISCHE NORM

September 2015

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Supersedes CEN/TS 16454:2013

English Version

Intelligent transport systems - ESafety - ECall end to end conformance testing

Systèmes de transport intelligents - eSécurité - Essais
de conformité du système " eCall " de bout en bout

Intelligente Verkehrssysteme - ESicherheit -
Vollständige Konformitätsprüfungen für eCall

This European Standard was approved by CEN on 17 July 2015.

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CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents		Page
European foreword		9
Introduction		10
1	Scope	11
2	Normative references	11
3	Terms and definitions	12
4	Symbols and abbreviations	17
5	Conformance	19
5.1	General	19
5.2	General conditions	19
6	General overview of the eCall transaction for pan-European eCall	20
7	How to use this Standard	24
7.1	Layout and procedures	24
7.2	System under test	25
7.3	Accelerated test procedures	26
7.4	Accelerated test procedures for IVSs	26
7.4.1	Accelerated test procedures for all types of PE eCall IVS	26
7.4.2	Additional accelerated test procedures for PE eCall only IVS	28
7.5	Accelerated test procedures for MNOs	28
7.6	Accelerated test procedures for PSAPs – PE eCall	29
7.7	Accelerated test procedures for PSAPs – TPS-eCall	30
7.8	Accelerated test procedures for TPSPs	30
8	Requirements	31
8.1	Requirements - General objectives	31
8.1.1	State transitions	31
8.1.2	Classification of testing	41
8.1.3	CTP naming conventions	43
8.1.4	CTP naming convention for IVS conformance tests	44
8.2	CTP structure	44
9	Conformance test requirements for in-vehicle user equipment and systems (IVS)	46
9.1	Conformance test requirements for in-vehicle user equipment and systems for Pan European eCall	46
9.2	Test objectives and purposes	46
9.3	Classification of testing and referenced tests for in-vehicle user equipment for Pan European eCall IVS	46
9.3.1	Taxonomy of testing	46
9.3.2	Referenced tests	46
9.4	State transition conformance tests for in-vehicle equipment and system to comply to Standards for pan European eCall	47
9.4.1	Conformance requirement	47
9.4.2	Use case test objectives by stage	47
9.4.3	CTP 1.1.0.1 Conformance to ETSI TS 102 936-1 and ETSI TS 102 936-2 – PE eCall IVS	50
9.4.4	CTP 1.1.0.2 Test for conformance to valid SIM/USIM – PE eCall	51

9.4.5	CTP 1.1.0.3	Automatic eCall triggering does not occur when ignition OFF – PE eCall IVS.....	52
9.4.6	CTP 1.1.1.1	Power on and self test – PE eCall IVS	53
9.4.7	CTP 1.1.2.1	eCall automatically activated – PE eCall IVS.....	54
9.4.8	CTP 1.1.2.2	Automatically triggered eCall in progress was not disconnected upon a new eCall trigger – PE eCall IVS.....	55
9.4.9	CTP 1.1.2.3	Post-side-crash performance of automatic trigger - IVS	56
9.4.10	CTP 1.1.2.4	Post-frontal-crash performance of automatic trigger - IVS.....	57
9.4.11	CTP 1.1.2.5	Performance of automatic trigger – different crash types - IVS.....	58
9.4.12	CTP 1.1.3.1	eCall manually activated – PE eCall IVS	59
9.4.13	CTP 1.1.3.2	Manually triggered eCall in progress was not disconnected upon a new eCall trigger – PE eCall IVS.....	60
9.4.14	CTP 1.1.4.1	Test eCall activated – PE eCall IVS	61
9.4.15	CTP 1.1.5.1	Network registration – PE eCall IVS	62
9.4.16	CTP 1.1.5.2	Manual termination of eCall by vehicle occupants not allowed (automatically triggered eCall) – PE eCall IVS.....	63
9.4.17	CTP 1.1.5.3	Manual termination of eCall by vehicle occupants not allowed (manually triggered eCall) – PE eCall IVS.....	64
9.4.18	CTP 1.1.5.4	Automatically triggered eCall in progress was not disconnected when ignition is switched to OFF – PE eCall IVS.....	65
9.4.19	CTP 1.1.5.5	Manually triggered eCall in progress was not disconnected when ignition is switched to OFF – PE eCall IVS.....	66
9.4.20	CTP 1.1.5.6	Priority over conflicting communication – PE eCall IVS.....	67
9.4.21	CTP 1.1.5.7	Network registration is re-tried when network registration attempt was not successful – PE eCall IVS.....	68
9.4.22	CTP 1.1.6.1	Mute IVS and vehicle audio – PE eCall IVS.....	68
9.4.23	CTP 1.1.7.1	Set-up TS12 call with eCall identifier (flag) set to ‘automatic’ – PE eCall IVS.....	69
9.4.24	CTP 1.1.8.1	Set-up TS12 call with eCall identifier (flag) set to ‘manual’ – PE eCall IVS.....	70
9.4.25	CTP 1.1.9.1	Set-up TS11 call to test number – PE eCall IVS.....	71
9.4.26	CTP 1.1.10.1	eCall is attempted when no networks are available (limited service condition) – PE eCall IVS.....	72
9.4.27	CTP 1.1.10.2	Re-dial attempt completed within 2 minutes after eCall is dropped – PE eCall IVS.....	73
9.4.28	CTP 1.1.10.3	Duration of eCall Initiation signal – PE eCall IVS	74
9.4.29	CTP 1.1.11.1	Send MSD with indicator set to ‘Automatically Initiated eCall’ (AleC) – PE eCall IVS.....	75
9.4.30	CTP 1.1.12.1	Send MSD with indicator set to ‘Manually Initiated eCall’ (MleC) – PE eCall IVS.....	76
9.4.31	CTP 1.1.13.1	Send MSD with indicator set to ‘Test Call’ – PE eCall IVS.....	77
9.4.32	CTP 1.1.14.1	Verify MSD transfer – PE eCall IVS	78
9.4.33	CTP 1.1.14.2	Un-mute IVS audio when AL-ACK received – PE eCall IVS	79
9.4.34	CTP 1.1.15.1	Establish voice link to PSAP – PE eCall IVS.....	80
9.4.35	CTP 1.1.15.2	MSD transfer request while eCall conversation in progress – PE eCall IVS.....	81
9.4.36	CTP 1.1.15.3	eCall continuation when SEND MSD request not received (T5 expired) – PE eCall IVS	83
9.4.37	CTP 1.1.15.4	Call continuation when AL-ACK not received (T6 expired) – PE eCall IVS.....	84
9.4.38	CTP 1.1.15.5	MSD is transferred continuously until T7 expires and IVS reconnects loudspeaker and microphone on its expiry – PE eCall IVS	85
9.4.39	CTP 1.1.16.1	Clear down call automatically – PE eCall IVS.....	86
9.4.40	CTP 1.1.16.2	IVS clears down the eCall upon T2 expiry – PE eCall IVS	88
9.4.41	CTP 1.1.16.3	IVS registers recent eCalls – PE eCall IVS.....	89

9.4.42	CTP 1.1.17.1	Call-back allowed and able to be answered by IVS – PE eCall IVS.....	90
9.4.43	CTP 1.1.17.2	Call-back answered by IVS in the event of abnormal termination – PE eCall IVS	91
9.4.44	CTP 1.1.17.3	MSD transfer occurs upon PSAP request during call-back – PE eCall IVS.....	92
9.4.45	CTP 1.1.17.4	Remain registered for ≥ 1 hr – PE eCall IVS.....	93
9.5		State transition test scripts for in-vehicle equipment and system to comply to Standards for pan European eCall – additional tests for eCall only systems.....	94
9.5.1		General.....	94
9.5.2	CTP 1.1.1.2	IVS does not perform registration after power-up – PE eCall only IVS.....	95
9.5.3	CTP 1.1.1.3	IVS periodically scans and maintains a list of available PLMNs – PE eCall only.....	95
9.5.4	CTP 1.1.10.4	Verify that PLMN registration procedure is executed upon initiating an eCall – PE eCall only IVS.....	96
9.5.5	CTP 1.1.17.5	Remain registered for ≥ 1 hr ≤ 12 hr – PE eCall only IVS.....	97
9.6		State transition conformance test requirements for in-vehicle user equipment for eCall TPS-IVS via a third party service provider.....	98
9.6.1		General.....	98
9.6.2		Test objectives and purposes	98
9.6.3		Taxonomy of testing and referenced tests	98
9.6.4		Taxonomy of testing.....	98
9.7		Use case conformance tests for in-vehicle equipment and system to comply to Standards for third party service provider eCall.....	98
9.7.1		Conformance requirement	98
9.7.2		Use case test objectives by stage.....	99
9.8		State transition test scripts for TPS in-vehicle equipment and system to comply to Standards for third party services supported eCall	101
9.8.1		General.....	101
9.8.2	CTP 1.2.0	Pre operation - TPS-IVS	102
9.8.3	CTP 1.2.1	Power on self test - TPS-IVS	104
9.8.4	CTP 1.2.2	Automatically activate eCall - TPS-IVS	105
9.8.5	CTP 1.2.3	Manually activate eCall - TPS-IVS.....	113
9.8.6	CTP 1.2.4	Stop conflicting communication – TPS-IVS.....	117
9.8.7	CTP 1.2.5	Establish voice link to TPSP - TPS-IVS.....	118
9.8.8	CTP 1.2.6	Send IVS dataset to TPSP - TPS-IVS.....	123
9.8.9	CTP 1.2.7	Establish voice link between PSAP and occupants - TPS-IVS.....	129
9.8.10	CTP 1.2.8	Cleardown call - TPS-IVS	130
9.8.11	CTP 1.2.9	Allow call-cack into vehicle - TPS-IVS.....	131
10		Conformance tests for mobile network operators.....	136
10.1		Test objectives and purposes	136
10.1.1		General.....	136
10.1.2		Default assumptions	136
10.2		Taxonomy of testing and referenced tests	136
10.3		Use case conformance tests for mobile network operator systems to comply to Standards for pan European eCall.....	136
10.3.1		Conformance requirement	136
10.3.2		Use case test objectives by stage.....	136
10.4		State transition test scripts for mobile network operators to demonstrate compliance with Pan European eCall Standards	138
10.4.1		General.....	138
10.4.2	CTP 2.0.1	Keep SIMs/USIMs alive even though not in regular operation – MNO	139
10.4.3	CTP 2.0.2	MNO supports general eCall relevant requirements.....	140
10.4.4	CTP 2.0.3	Decommission SIM/USIM - MNO	141
10.4.5	CTP 2.0.4	Support eCall Flag – MNO	142

10.4.6	CTP 2.1.1	Accept registration – Home network – MNO	142
10.4.7	CTP 2.1.2	Accept registration – Roaming – MNO	143
10.4.8	CTP 2.2.1.1	Receive TS12 voice call (automatically initiated) – MNO.....	144
10.4.9	CTP 2.2.1.2	Route call to ‘most appropriate’ PSAP – MNO.....	145
10.4.10	CTP 2.2.1.3	Provide TS12 data/caller ID – MNO	146
10.4.11	CTP 2.2.2.1	Receive TS12 voice call (manual initiated) – MNO.....	147
10.4.12	CTP 2.2.3.1	Test for receiving test eCall (TS11).....	147
10.4.13	CTP 2.2.3.2	Route call to non-emergency number – MNO.....	147
10.4.14	CTP 2.2.3.3	Provide TS11 data – MNO	148
10.4.15	CTP 2.3.1	Call in progress–MNO	148
10.4.16	CTP 2.4.1	Call clear-down – MNO.....	149
10.4.17	CTP 2.5.1	Support call-back – MNO	150
10.4.18	CTP 2.6.1	Maintain registration for 1-12 hours – MNO.....	150
10.4.19	CTP 2.7.1	Maintain call records - MNO.....	150
10.5	Use case conformance tests for mobile network operator systems to comply to Standards for TPS-eCall.....		151
10.5.1	Conformance requirement.....		151
10.5.2	Use case test objectives by stage		151
10.6	State transition test scripts for mobile network operators to demonstrate compliance with TPS-eCall Standards.....		151
10.6.1	CTP 2.11.1 MNO supports general TPS-eCall relevant requirements.....		151
10.6.2	CTP 2.11.2 Support call-back – MNO		151
11	Conformance tests for PSAP systems.....		152
11.1	Test objectives and purposes.....		152
11.2	Taxonomy of testing and referenced tests.....		152
11.2.1	Taxonomy of testing.....		152
11.2.2	Referenced tests.....		152
11.3	Use case conformance tests for PSAP systems to comply to Standards for pan European eCall.....		152
11.3.1	Conformance requirement.....		152
11.3.2	Use case test objectives by stage		152
11.4	State transition conformance tests for PSAPs – PE eCall		153
11.4.1	General		153
11.4.2	CTP 3.1.0.1	Provide MNOs with appropriate routing data – Member State/ PSAP PE eCall	155
11.4.3	CTP 3.1.0.2	Maintain map geo-information – PSAP PE eCall	156
11.4.4	CTP 3.1.1.1	Receive automatically initiated eCall – PSAP PE eCall	157
11.4.5	CTP 3.1.1.2	Receive manually initiated eCall – PSAP PE eCall	158
11.4.6	CTP 3.1.2	Receive TS12 data- Caller ID & location – PSAP PE eCall	159
11.4.7	CTP 3.1.3.1	Recognise eCall and route to in-band modem – PSAP PE eCall.....	160
11.4.8	CTP 3.1.3.2	PSAP equipment failure – PSAP PE eCall.....	161
11.4.9	CTP 3.1.3.3	PSAP modem failure before link layer ACK is sent – PSAP PE eCall	162
11.4.10	CTP 3.1.4	eCall received at in-band modem – PSAP PE eCall	163
11.4.11	CTP 3.1.5.1	Validate initiation signal – PSAP PE eCall.....	164
11.4.12	CTP 3.1.5.2	Route to operator after T4 expiration – PSAP PE eCall.....	165
11.4.13	CTP 3.1.6	Request MSD – PSAP PE eCall.....	166
11.4.14	CTP 3.1.7.1	Receive MSD – PSAP PE eCall.....	167
11.4.15	CTP 3.1.7.2	Verify status bit in AL-ACK upon positive ACK– PSAP PE eCall.....	168
11.4.16	CTP 3.1.7.3	Verify MSD transfer upon T8 expiration – PSAP PE eCall	169
11.4.17	CTP 3.1.7.4	Verify transfer of corrupted MSD – PSAP PE eCall.....	170
11.4.18	CTP 3.1.7.5	Verify PSAP behaviour when MSD format check fails– PSAP PE eCall	171
11.4.19	CTP 3.1.8	ACK – PSAP PE eCall.....	171
11.4.20	CTP 3.1.9	Route voice and MSD to operator – PSAP PE eCall	172

11.4.21	CTP 3.1.10	Display TS12 data and MSD to operator - PSAP PE eCall	173
11.4.22	CTP 3.1.11	Decode VIN - PSAP PE eCall.....	174
11.4.23	CTP 3.1.12	Talk to vehicle occupants - PSAP PE eCall.....	175
11.4.24	CTP 3.1.13	Request new MSD before call clear-down - PSAP PE eCall.....	176
11.4.25	CTP 3.1.14.1	Call clear-down - PSAP PE eCall	177
11.4.26	CTP 3.1.14.2	Verify status bit in AL-ACK upon clear-down - PSAP -PE eCall	178
11.4.27	CTP 3.1.15	Call-back to vehicle - PSAP PE eCall.....	179
11.4.28	CTP 3.1.16	Request new MSD after call clear-down - PSAP PE eCall	180
11.5		State transition conformance tests for PSAPs - TPS-eCall.....	181
11.5.1		General.....	181
11.5.2	CTP 3.2.0.1	TPSP - PSAP agreement - PSAP TPS eCall.....	182
11.5.3	CTP 3.2.0.2	Provide areas of responsibility and contact numbers to approved TPSPs -PSAP TPS-eCall.....	183
11.5.4	CTP 3.2.0.3	Agreement on necessary language support - PSAP TPS eCall	185
11.5.5	CTP 3.2.0.4	Agree electronic data connection and provide details to approved TPSPs - PSAP TPS eCall	186
11.5.6		186	
11.5.7	CTP 3.2.0.5	Provide PSAP data addresses and security access to approved TPSPs - PSAP TPS eCall.....	188
11.5.8	CTP 3.2.1	Receive eCall notification from TPSP (not TS12) -PSAP TPS eCall.....	189
11.5.9	CTP 3.2.2	Route call to operator - PSAP TPS eCall	190
11.5.10	CTP 3.2.3	Connection, TSD transmission, display relevant information to PSAP operator -PSAP TPS-eCall	191
11.5.11	CTP 3.2.4	PSAP Operator: Talk with TPSP operator and receive relevant information - PSAP TPS eCall	193
11.5.12	CTP 3.2.5	Talk to vehicle occupants - PSAP TPS-eCall.....	194
11.5.13	CTP 3.2.6	Request new TSD before call clear-down -PSAP TPS-eCall	195
11.5.14	CTP 3.2.7	Inform TPSP that call can be ended - PSAP TPS eCall	196
11.5.15	CTP 3.2.8	Call clear-down with TPSP -PSAP TPS-eCall	197
11.5.16	CTP 3.2.9	Call-back to TPSP - PSAP TPS-eCall	198
11.5.17	CTP 3.2.10	Call-back to vehicle - PSAP TPS eCall	199
11.5.18	CTP 3.2.11	Call clear-down with vehicle - PSAP TPS eCall	200
12		State transition conformance tests for TPS-eCall.....	201
12.1		Related specifications and conformance requirements	201
12.2		TPSP general tests (applicable to both TPS-eCall responder and TPS-eCall notifier)	201
12.2.1		General.....	201
12.2.2	CTP 4.0.1	Agree service level agreement and/or Standard ways of working with PSAPs - TPSP.....	203
12.2.3	CTP 4.0.2	Receive PSAP areas of responsibility and contact numbers - TPSP.....	204
12.2.4	CTP 4.0.3	Agree necessary language support - TPSP	205
12.2.5	CTP 4.0.4	Agree electronic data connection details with PSAPs - TPSP.....	207
12.2.6	CTP 4.0.5	Evidence quality procedures - TPSP	208
12.2.7	CTP 4.0.6	Verify automatic call distribution (ACD) system - TPSP	210
12.2.8	CTP 4.0.7	Check link from MNO - TPSP	211
12.2.9	CTP 4.0.8	Deal with transmission failures - TPSP	211
12.2.10	CTP 4.0.9	Update GIS - TPSP	212
12.2.11	CTP 4.0.10	Protection of privacy - TPSP.....	213
12.3		TPS-eCall responder tests - TPS-R.....	214
12.3.1		General.....	214
12.3.2	CTP 4.1.1	Receive TPS-eCall from vehicle - TPS-R	215
12.3.3	CTP 4.1.2	Process incoming call - TPS-R.....	218
12.3.4	CTP 4.1.3	Talk with vehicle occupants and receive relevant information - TPS-R.....	220
12.3.5	CTP 4.1.4	Trigger PSAP notification - TPS-R	223
12.3.6	CTP 4.1.5	Make voice connection between vehicle and PSAP if required - TPS-R	223

12.3.7	CTP 4.1.6	Confirmation received from PSAP that call with vehicle can be ended – TPS-R.....	224
12.3.8	CTP 4.1.7	Call cleardown with vehicle – TPS-R	225
12.3.9	CTP 4.1.8	Call-back to vehicle – TPS-R.....	226
12.4	TPS-eCall notifier tests – TPS-N		227
12.4.1	General		227
12.4.2	CTP 4.2.1	Emergency situation likely to require assistance – TPS-N	228
12.4.3	CTP 4.2.2	Establish contact with PSAP – TPS-N.....	228
12.4.4	CTP 4.2.3	Talk with PSAP operator and notify relevant information – TPS-N.....	233
12.4.5	CTP 4.2.4	Establish voice link between PSAP and vehicle occupants if required by PSAP – TPS-N	235
12.4.6	CTP 4.2.5	Respond to electronic data update request – TPS-N	237
12.4.7	CTP 4.2.6	PSAP informs that call can be ended – TPS-N.....	237
12.4.8	CTP 4.2.7	Call cleardown to PSAP – TPS-N	237
12.4.9	CTP 4.2.9	Call-back from PSAP – TPS-N.....	238
13	Marking, labelling and packaging.....		238
14	Declaration of patents and intellectual property		238
Annex A (normative) Proforma conformance test report for Pan European eCall in-vehicle system (IVS).....			
A.1	A.1	Conformance test report.....	239
A.2	A.1.1	System under test:	239
A.2.1	A.1.2	System under test identification	239
A.2.2	A.1.3	Testing environment.....	240
A.2.3	A.1.4	Limits and reservation.....	240
A.2.4	A.1.5	Comments.....	240
A.3	A.2	SUT conformance status	241
A.4	A.3	Static conformance summary	241
A.5	A.4	Dynamic conformance summary.....	241
A.6	A.5	Static conformance review report.....	242
A.7	A.6	Test campaign report.....	243
A.7.1	A.7	Observations.....	244
Annex B (normative) ProForma conformance test report for Third Party Service Provider In-Vehicle System (TPS-IVS)			
B.1	B.1	Conformance test report.....	245
B.2	B.1.1	System under test:	245
B.2.1	B.1.2	System under test identification	245
B.2.2	B.1.3	Testing environment.....	246
B.2.3	B.1.4	Limits and reservation.....	246
B.2.4	B.1.5	Comments.....	246
B.3	B.2	SUT conformance status	247
B.4	B.3	Static conformance summary	247
B.5	B.4	Dynamic conformance summary.....	247
B.6	B.5	Static conformance review report.....	248
B.7	B.6	Test campaign report.....	249
B.7.1	B.7	Observations.....	249
Annex C (normative) ProForma conformance test report for mobile network operator (MNO).....			
C.1	C.1	Conformance test report.....	250
C.2	C.1.1	System under test:	250
C.2.1	C.1.2	System under test identification	250
C.2.2	C.1.3	Testing environment	251
C.2.3	C.1.4	Limits and reservation	251

C.2.4	C.1.5 Comments.....	251
C.3	C.2 SUT conformance status	252
C.4	C.3 Static conformance summary	252
C.5	C.4 Dynamic conformance summary.....	252
C.6	C.5 Static conformance review report	253
C.7	C.6 Test campaign report	254
C.7.1	C.7 Observations.....	254
Annex D (normative) ProForma conformance test report for public service answering point (PSAP)		
		255
D.1	D.1 Conformance test report.....	255
D.2	D.1.1 System under test:	255
D.2.1	D.1.2 System under test identification	255
D.2.2	D.1.3 Testing environment	256
D.2.3	D.1.4 Limits and reservation	256
D.2.4	D.1.5 Comments	256
D.3	D.2 SUT conformance status.....	257
D.4	D.3 Static conformance summary.....	257
D.5	D.4 Dynamic conformance summary	257
D.6	D.5 Static conformance review report.....	258
D.7	D.6 Test campaign report.....	259
D.7.1	D.7 Observations	260
Annex E (normative) ProForma conformance test report for third party service provider (TPS-eCall)		
		261
E.1	E.1 Conformance test report	261
E.2	E.1.1 System under test:	261
E.2.1	E.1.2 System under test identification	261
E.2.2	E.1.3 Testing environment.....	262
E.2.3	E.1.4 Limits and reservation	262
E.2.4	E.1.5 Comments.....	262
E.3	E.2 SUT conformance status	263
E.4	E.3 Static conformance summary	263
E.5	E.4 Dynamic conformance summary.....	263
E.6	E.5 Static conformance review report	264
E.7	E.6 Test campaign report	265
E.7.1	E.7 Observations.....	265
Bibliography		267

European foreword

This document (EN 16454:2015) has been prepared by Technical Committee CEN/TC 278 “Intelligent transport systems”, the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2016, and conflicting national standards shall be withdrawn at the latest by March 2016.

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

This document supersedes CEN/TS 16454:2013.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

An *eCall* is an emergency call generated either automatically via activation of in-vehicle sensors or manually by the *vehicle occupants*; when activated, to provide notification and relevant location information to the most appropriate *Public Safety Answering points* (PSAP), by means of *mobile wireless communications networks* and carries a defined standardized *minimum set of data*, notifying that there has been an incident that requires response from the emergency services and establishes an audio channel between the occupants of the vehicle and the *most appropriate PSAP*.

NOTE 1 EN 15722 specifies a standardized MSD for *eCall*, EN 16062 specifies high level application protocols for *eCall* and EN 16072 specifies pan-European *eCall* operating requirements. For third party systems, EN 16102 specifies third party services supporting *eCall* operating requirements. (See EC Communication on *eCall* Implementation 2009 [COM(2009) 434 final] for more information.)

The operating requirements for pan-European *eCall* are made using Public Land Mobile Networks (PLMN) (such as GSM and 3G), as specified in a number of ETSI Standards and Technical Specifications.

This deliverable provides tests to enable actors in the *eCall* chain to be able to claim conformance to the *eCall* Standards, even though they are unable to control the behaviour of systems of other actors in the *eCall* chain

NOTE 2 Conformance tests in this document allow demonstration that a system complies with the *eCall* Standards. Compliance to Standards is a prerequisite to providing an interoperable compliant system, but do not by themselves demonstrate that a system will function nor guarantee the quality of service.

NOTE 3 The term PSAP (Public Safety Assistance Point), which is most widely used in the *eCall* documentation, European Commission documents etc., is used throughout this document and equates to the term *emergency call response centre* used in the ITS Implementation Directive.

The European Committee for Standardization (CEN) draws attention to the fact that it is claimed that compliance with this European Standard may involve the use of patents concerning *eCall* given in EN 16062 and various ETSI Standards for the network access device and cellular mobile networks.

CEN takes no position concerning the evidence, validity and scope of these patent rights.

1 Scope

This European Standard defines the key actors in the eCall chain of service provision as:

- 1) In-Vehicle System (IVS)/vehicle,
- 2) Mobile network Operator (MNO),
- 3) Public safety assistance point [provider](PSAP),

in some circumstances may also involve:

- 4) Third Party Service Provider (TPSP),

and to provide conformance tests for actor groups 1) – 4).

NOTE Conformance tests are not appropriate nor required for vehicle occupants, although they are the recipient of the service.

This European Standard covers conformance testing (and approval) of new engineering developments, products and systems, and does not imply testing associated with individual installations in vehicles or locations.

2 Normative references

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.

EN 15722:2015, *Intelligent transport systems — ESafety — eCall minimum set of data*

EN 16062:2015, *Intelligent transport systems — ESafety — eCall high level application requirements (HLAP) using GSM/UMTS circuit switched networks*

EN 16072:2015, *Intelligent transport systems — ESafety — Pan-European eCall operating requirements*

EN 16102:2011, *Intelligent transport systems — eCall — Operating requirements for third party support*

ETSI TS 102 936-1, *eCall Network Access Device (NAD) conformance specification; Part 1: Protocol test specification*

ETSI TS 102 936-2, *eCall Network Access Device (NAD), conformance specification; Part 2: Test Suites*

ETSI TR 102 937, *eCall communications equipment; Conformance to EU vehicle regulations, R&TTE, EMC & LV Directives, and EU regulations for eCall implementation*

ETSI TS 122 001, *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Principles of circuit telecommunication services supported by a Public Land Mobile Network (PLMN) [Release 8 or later]*

ETSI TS 122 003, *Digital cellular communications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Circuit Teleservices supported by a Public Land Mobile Network (PLMN) (3GPP TS 22.003 version 12.0.0 Release 12) [Teleservice 12/TC12] /E12]*

ETSI TS 122 011, *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Service accessibility (3GPP TS 22.011 version 8.9.0 Release 8)*

ETSI TS 122 101, *Universal Mobile Telecommunications System (UMTS); LTE ;Service aspects; Service principles (Release 8)*

ETSI TS 122 105, *Universal Mobile Telecommunications System (UMTS); Services and service capabilities (3GPP TS 22.105 version 8.4.0 Release 8)*

ETSI TS 123 107, *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Quality of Service (QoS) concept and architecture (3GPP TS 23.107 version 6.4.0 Release 6)*

ETSI TS 123 122, *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Non-Access-Stratum (NAS) functions related to Mobile Station (MS) in idle mode (3GPP TS 23.122 version 8.12.0 Release 8)*

ETSI TS 124 008, *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Mobile radio interface Layer 3 specification; Core network protocols; Stage 3*

ETSI TS 126 267, *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); eCall data transfer; In-band modem solution; General description [Version 8.6.0 or later]*

NOTE The provisions for eCall in Version 8.6.0 of ETSI TS 126 267 correspond to the provisions for eCall in versions 9.3.0, 10.0.0 and 11.0.0.

ETSI TS 126 269, *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); eCall data transfer; In-band modem solution; Conformance testing (Version 8.3.0 or later)*

ETSI TS 127 007, *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; AT command set for User Equipment (UE)*

ETSI TS 131 102, *Universal Mobile Telecommunications System (UMTS); Characteristics of the Universal Subscriber Identity Module (USIM) application (3GPP TS 31.102 version 8.17.0 Release 8)*

ETSI TS 134 123-1, *Universal Mobile Telecommunications System (UMTS); User Equipment (UE) conformance specification; Part 1: Protocol conformance specification (3GPP TS 34.123-1 version 8.6.0)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 112

single European emergency call number supporting ‘Teleservice 12’

[SOURCE: ETSI TS 122 003]

3.2 call clear-down

act of ending a call, following call completion, the event is signalled in accordance with ISUP (ISDN User Part) ‘Release Cause Codes’

Note 1 to entry: Usually achieved by hanging up the receiver or pressing 'end call' or similar on screen.

3.3

contracting MNO

mobile network operator which has responsibility for provisioning and managing a specific SIM

3.4

cellular network

wireless communications network consisting of multiple adjacent access points (cells) with the capability of homogeneous transfer of a communications session instance to an adjacent cell without significant interruption to the session

3.5

conformance test point

actual instantiation of equipment performing a conformance test process 'live', using 'live' equipment or equipment/systems that simulate behaviour of equipment at the point being tested in order to stimulate or observe the behaviour resultant from the stimulation and note the result of that stimulation

3.6

data

representations of static or dynamic objects in a formalised manner suitable for communication, interpretation, or processing by humans or by machines

3.7

data concept

group of *data* structures (i.e. object class, property, value domain, *data elements*, message, interface dialogue, *association*) referring to abstractions or things in the natural world that can be identified with explicit boundaries and meaning and whose properties and behaviour all follow the same rules

3.8

data element

single unit of information of interest (such as a fact, proposition, observation, etc.) about some (entity) class of interest (e.g. a person, place, process, property, concept, state, event) considered to be indivisible in a particular context

3.9

E112

emergency communications service using the single European emergency call number, 112, which is enhanced with location information of the calling user TS12

3.10

E164

ITU-T recommendation that defines the international public telecommunication numbering plan used in the PSTN and some other data networks and also defines the format of telephone number

Note 1 to entry: E.164 numbers can have a maximum of fifteen digits and are usually written with a + prefix.

3.11

eCall

emergency call generated either automatically via activation of in-vehicle sensors or manually by the *vehicle occupants*; when activated it provides notification and relevant location information to the most appropriate *Public Safety Answering Point*, by means of *mobile wireless communications networks*, carries a defined standardized *minimum set of data* (MSD) notifying that there has been an incident that

requires response from the emergency services, and establishes an audio channel between the occupants of the vehicle and the most appropriate *Public Safety Answering point*

3.12

eCall+

provision of eCall service plus availability of wireless communication network to undertake other application services

3.13

eCall generator

occupant of a vehicle or equipment within a vehicle that has cause to trigger an *eCall* transaction by automatic or manual means

3.14

eCall flag

alternative term for eCall identifier

3.15

eCall identifier

one of two mandatory information element bits (flags) included in the emergency call set-up message that may be used by the mobile network to filter and route automatically and manually initiated *eCalls* to a designated PSAP

3.16

eCall service

end-to-end emergency service to connect occupants of an affected vehicle to the *most appropriate PSAP* via an audio link across a PLMN together with the transfer of a *minimum set of data* to the PSAP

3.17

eCall transaction

establishment of a *mobile wireless communications session* across a *public wireless communications network* and the transmission of a *minimum set of data* from a vehicle to a *public safety answering point* and the establishment of an audio channel between the vehicle and the PSAP

3.18

emergency call response centre

term used in ITS Implementation Directive to mean *Public Safety Answering point* (PSAP)

3.19

established

created or set up

3.20

Global Certification Forum

GCF

certification scheme for mobile phones and wireless devices that are based on 3GPP Standards; GCF aims to ensure that a mobile device will work effectively on mobile networks anywhere in the world

3.21

identifier

label, symbol or token that names or identifies an entity or a collection of *data* or the means of designating or referring to a specific instance of a *data concept*

3.22

In progress

taking place

3.23

in-vehicle equipment

equipment within the vehicle that provides or has access to in-vehicle *data* required for the *minimum set of data* and any other *data* that is to be sent as part of or complementary to the *minimum set of data* to effect the *eCall transaction* via a *public mobile wireless communications network* providing a link between the vehicle and a means of enacting the *eCall service* via a *public mobile wireless communications network*

3.24

in-vehicle system

in-vehicle equipment together with the means to trigger, manage and effect the *eCall transaction*

3.25

minimum set of data

standardized *data concept* comprising *data elements* of relevant vehicle generated *data* essential for the performance of the *eCall service*

[SOURCE: EN 15722:2015]

3.26

mobile wireless communications network

wireless communications network with homogeneous handover between network access points

3.27

most appropriate PSAP

PSAP defined beforehand by responsible authorities to cover emergency calls from a certain area or for emergency calls of a certain type

Note 1 to entry: See also PSAP.

Note 2 to entry: A number of different instantiations of PSAP service are supported within this European Standard. A PSAP can be a Public Authority or a private service provider operating on behalf of the responsible authorities.

3.28

network access device

NAD

see mobile wireless communications network device

3.29

network access points

beacon, antenna or similar source of signal propagation and receipt together with equipment to manage communication sessions with users operating within the operating reach of the *network access point* and provide connectivity for the users within the operating reach of the single *access point* to a wider communications network

Note 1 to entry: A network access point may, but does not need to provide homogeneous or heterogeneous handover to another network access point.

3.30

public mobile wireless communications network

mobile wireless communications network with access to a public telecommunications network