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Inteligentni transportni sistemi - Sporočila prometnih in potovalnih informacij prek kodiranih prometnih sporočil - 2. del: Kode za dogodke in informacije za radijski podatkovni sistem (RDS) - Prometni informacijski kanal (RDS-TMC), ki uporablja sistem ALERT-C (ISO/DIS 14819-2:2019)

Intelligent transport systems - Traffic and travel information messages via traffic message coding - Part 2: Event and information codes for Radio Data System - Traffic Message Channel (RDS-TMC) using ALERT-C (ISO/DIS 14819-2:2019)

Intelligente Transportsysteme - Verkehrs- und Reiseinformationen über Verkehrsmeldungskodierung - Teil 2: Ereignis- und Informationscodes für den digitalen Radiokanal für Verkehrsmeldungen (RDS-TMC) unter Nutzung von ALERT-C (ISO/DIS 14819-2:2019)

Systèmes intelligents de transport - Informations sur le trafic et le tourisme via le codage de messages sur le trafic - Partie 2: Codes d'événements et d'informations pour le système de radiodiffusion de données (RDS) - Canal de messages d'informations sur le trafic (RDS-TMC) avec ALERT-C (ISO/DIS 14819-2:2019)

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Intelligent transport systems — Traffic and travel information messages via traffic message coding —

Part 2:
Event and information codes for Radio Data System — Traffic Message Channel (RDS-TMC) using ALERT-C

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. www.iso.org/directives

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 204, *Intelligent transport systems.*

This fourth edition cancels and replaces all previous editions. In this edition, a small number of additional event phrases have been added, and in others wording has been improved for greater clarity. Several minor typographical errors have been corrected. There are no substantive changes of a technical nature.

ISO 14819 consists of the following parts, under the general title *Intelligent transport systems — Traffic and travel information messages via traffic message coding*:

— *Part 1: Coding protocol for Radio Data System — Traffic Message Channel (RDS-TMC) using ALERT-C*

— *Part 2: Event and information codes for Radio Data System — Traffic Message Channel (RDS-TMC) using ALERT-C*

— *Part 3: Location referencing for Radio Data System — Traffic message Channel (RDS-TMC) using ALERT-C*

— *Part 6 (to become deprecated): Encryption and conditional access for the Radio Data System — Traffic Message Channel ALERT C coding*

Introduction

EN ISO 14819-2 is the second part of the EN ISO 14819 series of standards, covering the so-called 'ALERT-C' protocol which describes how traffic messages are coded for transmission as an 'Open Data Application' over the Radio Data System (RDS), a sub-carrier on FM radio transmissions. A complete understanding of RDS-TMC can only be obtained by reading this part (part 2) together with the other parts of the EN ISO 14819 series of standards which are:

— EN ISO 14819-1 describes the ALERT-C protocol concept and relationship with the RDS standard, IEC 62106;
— EN ISO 14819-3 describes ways in which position and places are coded using ALERT-C;
— EN ISO 14819-6 describes how messages optionally may be encrypted for conditional access.

In this version of EN ISO 14819-2, the content of the 'Events List' have been altered. There are codes added and descriptions modified.

In particular, this part contains the special meta-language, in the so-called 'CEN-English', which the technical experts of CEN TC 278 agreed would be the only and sole source for all coded descriptions used in RDS-TMC. This methodology has allowed agreement in important details for the many hundreds of event phrases, so included, even though subtle linguistic differences were perceived and need to be allowed for in terms of end-user presentation. Thus, the French and German language editions of this standard have the same form as this English language edition. All three language editions have exactly the same sections 3.1.3 Event List, 3.2.2 Supplementary Information List and 3.3.2 Forecast Event List written in 'CEN-English'. Each language edition comprises Informative annexes providing those lists again in three or four columns formats showing the 'CEN-English' description and the 'transformed' language (not necessarily a direct literal translation, but a comprehensible transformation of the specific intent of the 'CEN-English') description in their respective languages. CEN-English uses metric measurements throughout, and the end-to-end chain from Service Provider to end-user device shall also use metric in all processing steps. In some countries (especially USA, UK) and indeed for drivers from these countries visiting 'metric' countries, presentation of messages is preferred in non-metric units – 'miles', 'mph' etc. For this reason, Annex A and Annex B (so-called GB-English) present tables that 'convert' for presentation from metric to non-metric units. Note that conversions are deliberately not designed to be mathematically accurate, as to do so would result in non-integer values, instead the conversions results are rounded to the nearest 'logical' value.

Translations into further other languages, based upon the normative 'CEN-English' have been produced and are available from the appropriate national bodies. TISA (www.tisa.org) can help with contacting these organisations.

Further work has been undertaken by the FORCE/ECORTIS Projects to define subsets of the Events List covering safety and crisis phrases, which are now embodied in the SACEL and SACEL + Events Lists.

Intelligent transport systems — Traffic and travel information messages via traffic message coding —

Part 2: Event and information codes for Radio Data System — Traffic Message Channel (RDS-TMC) using ALERT-C

1 Scope

ISO 14819-1 describes the ALERT-C protocol concept and message structure used to achieve densely coded messages to be carried in the RDS-TMC feature. This part of ISO 14819 defines the 'Events List' to be used in coding those messages.

2 Normative references

The following referenced documents are indispensable for the application 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.

EN ISO 14819-1:2013 — Intelligent transport systems – Traffic and Travel information messages via traffic message coding - Part 1: Coding Protocol for Radio Data System – Traffic Message Channel (RDS-TMC) using ALERT-C.

EN ISO 14819-3:2013 — Intelligent transport systems – Traffic and Travel information messages via traffic message coding - Part 3: Location Referencing for Radio Data System (RDS-TMC) using ALERT-C.

EN ISO 14819-6:2006 — Intelligent transport systems – Traffic and Travel information messages via traffic message coding - Part 6: Encryption and Conditional Access for Radio Data System (RDS-TMC) using ALERT-C.

IEC 62106:2018, — Specification of the Radio Data System (RDS) for VHF/FM sound broadcasting in the frequency range from 64,0 to 108,0 MHz

3 Event and Information codes for Traffic Message Channel

3.1 Event list

3.1.1 Explanatory notes

1) The event list is divided into update classes, indicated by the various sections. These update classes are used for terminal message management, as indicated in Section 6.1 of ISO 14819-1. The event list is shown in the format of a database.

   NOTE The first column of the Event list in 3.1.3, Table 2 shows line numbers to assist reading and use of the database.

2) The second column gives a ‘technical language’ (so-called CEN-English) description of the event code, of which the code is shown in the third field. Appropriate authorities of each country have been responsible for the exact descriptions in other languages , in conformity with the definitions given in the DATEX Data Dictionary..

   This will ensure precise definitions and use of the event codes in the transmission layer. Individual terminal implementations may handle these (translated) descriptions with some flexibility. To allow a more effective presentation however without altering the meaning.

3) The third column gives the decimal equivalent of the actual binary event code to be transmitted (see Section 5.3.2 of ISO 14819-1). These codes are purely internal to the RDS-TMC system and should not be used for referencing events or composing messages in other operator systems. Undefined codes are reserved for future system additions.

4) The fourth column, headed "N", is the nature of the event. The general meaning of the codes is as follows:

   (blank) - information
   F - forecast
   S - silent: no message shall be presented to the end-user

5) The fifth column, "Q", is the quantifier field, containing the reference numbers of quantifiers listed in the table at the end of the event list. The position of the quantifier in the event, plus in some cases some accompanying words, is shown by (...Q...) within the text. Use of these quantifiers is usually optional, however a few event messages have no meaning without the quantifier. The use of quantifiers is described in Section 5.5.6 of ISO 14819-1.

6) The sixth column "T" is the duration type. ‘D’ indicates "dynamic" events of short duration and ’L’ indicates longer-lasting events (see Section 5.4.7 of ISO 14819-1). If this code is bracketed ( ), or if the time-of-day quantifier (no.7) is actually used in the message, no duration shall be presented to the user. In these cases, the duration indicates persistence, used for message management only.

7) The seventh column "D" is the default directionality of the event. ‘1’ indicates that one direction, and ‘2’ that both directions of traffic are normally affected by the event. TMC terminals can use this field to help determine which and how to present events to the driver.

8) The eighth column "U" is the default terminal urgency, with values ‘X’ for extremely urgent, ‘U’ for urgent, and blank for normal events (see Section 5.4.5 of ISO 14819-1).

9) The ninth column, "C" gives a numerical representation of the update class to which the event belongs. Update classes 1…31 are listed in Section 3.1. Update classes 32…39 are exclusively for events of the forecast nature ‘F’ with duration type L or (L) - these are in Section 3.2. Other than events of type S, these classes contain no other events.

10) The tenth column “P”, if it contains a code, indicates an event that experience has shown can be misinterpreted, and as such in due course, this event may be deprecated. The code in this cell indicates the code that should be used in preference, as it better represents the event.

11) The final column, "R", gives phrase codes (references) for use by TMC operators. An event may be a single phrase event, or a combination of two or more phrases. Each phrase is allocated a phrase code consisting at least of a single code letter (A - Z) and a code number (1 - 999). Single phrase events are indicated by a single code letter and a one or two digit number (e.g. A1 - A99); expected events are indicated by the normal phrase code followed by ‘E’ (e.g. A1E), and where a risk of danger exists by a following "D" (e.g. G6D); events with quantifiers can have three digits (e.g. A101). Longer lasting forecasts are indicated by the letter ‘F’.

The Event List also contains several predefined combinations of single phrase events to make better use of the available channel capacity. These combined events are indicated by the combined codes of the constituent phrases (e.g. B11.C1).

Note that although the event lists (Main, Forecast and Supplementary) together contain around 1,700 messages, as explained above, most are composed by combining two or more single phrase messages, so in practice there are only a few hundred unique phrases that need to be stored by the terminal, which when combined, form the longer composite messages.

NOTE The phrases used in combined events are not always word for word identical to the corresponding phrases used in the single events. Binding words or small changes to the wording may be necessary.

The code letters are not related to the update classes, but have the following meaning:

A: Level of Service
B: Incidents/Accidents
C: Closures
D: Lane Restrictions
E: Roadworks
F: Obstruction Hazards
G: Road Conditions
H: Weather
J: Winds
L: Environment
M: Temperature
P: Activities
Q: Delays/Cancellations
R: Dangerous Vehicles
S: Exceptional Loads
T: Traffic Equipment Status
U: Traffic Regulations
X: Parking
Y: Information
Z: Indicates phrases from the List of Supplementary Information (see Section 3.2).

The phrase codes are not normative, but are only given as additional information about the contents of a given event and should be helpful when implementing software.

12) The event list is comprehensive and contains many messages that may be rarely or even never used by particular Service Providers. In general each Service Provider will use a sub-set of the complete list, according to their need and the needs of the road network for which they are providing information.

Although individual Service Providers may use only a sub-set of messages, terminal manufacturers are encouraged to support all messages in the event list to ensure messages from any Service Provider can be presented to the end-user.

3.1.2 List of Quantifiers

Table 1 — List of quantifiers

No	Meaning	Range	Examples	
			Value	Binary Code
0	n (small number)	(n = 1, 2,... ,28; 30, 32, ...36);	1 2 36	00001 00010 00000
1	N (number)	(N = 1, 2, 3, 4;	1 2	00001 00010
		10, 20 ,... 100;	10 20	00101 00110
		150, 200,... 1000)	150 200 1000	01111 10000 00000
2	less than V metres	(V = 10, 20,... 300)	10 20 300	00001 00010 11110
3	P percent	(P = 0, 5,... 100)	0 5 100	00001 00010 10101
4	of up to S km/h	(S = 5, 10,... 160)	5 10 160	00001 00010 00000
5	of up to M minutes	(M = 5, 10,... 50;	5 10	00001 00010
	or H hours	H = 1, 2,... 12;	1 2	01011 01100
		18, 24,... 72)	18 24 72	10111 11000 00000
6	T degrees Celsius	(T = -50, -49,... +50)	-50 -49 +50	0000 0001 0000 0010 0110 0101
7	H time-of-day	(H = 00.00, 00.10,... 23.50)	00.00 00.10 23.50	0000 0001 0000 0010 1000 1111
8	W tonnes	(W = 0.1, 0.2,... 10.0;	0.1 0.2	0000 0001 0000 0010
		10.5, 11.0,... 60.0)	10.5 11.0 60.0	0110 0101 0110 0110 1100 1000
9	L metres	(L = 0.1, 0.2,... 10.0;	0.1 0.2	0000 0001 0000 0010
		10.5, 11.0,... 80.0)	10.5 11.0 80.0	0110 0101 0110 0110 1111 0000
10	of up to D millimetres	(D = 1, 2,... 255)	1 2 255	0000 0001 0000 0010 1111 1111
11	M MHz	(as defined in IEC 62106)	87.6 87.7 107.9	0000 0001 0000 0010 1100 1100

12	k kHz	(as defined in IEC 62106)	**ITU Regions 1 & 3**	
			153	0000 0001
			162	0000 0010
			279	0000 1111
			531	0001 0000
			540	0001 0001
			1602	1000 0111
			ITU Region 2	
			530	0001 0000
			540	0001 0001
			1610	0111 1100

Quantifiers 0…5 use a 5-bit data field.

The first value uses binary code 00001 and the second value uses 00010. The values increment according to the steps shown. Where binary code 11111 has been reached the final (highest) value uses code 00000.

Quantifiers 6…12 use an 8-bit data field.

The first value uses binary code 0000 0001 and the second value uses 0000 0010. The values increment according to the steps shown.

3.1.3 Event list

NOTE The first column shows line numbers to assist reading of the database.

Table 2 — Event list

Line	Text	Code	N	Q	T	D	U	C	P	R
1	**EVENT LIST**									
2										
3	**1. LEVEL OF SERVICE**									
4										
5	traffic problem	1			D	1	U	1		A50
6	stationary traffic	101			D	1	U	1		A1
7	stationary traffic for 1 km	102			D	1	U	1		A101
8	stationary traffic for 2 km	103			D	1	U	1		A102
9	stationary traffic for 3 km	129			D	1	U	1		A103
10	stationary traffic for 4 km	104			D	1	U	1		A104
11	stationary traffic for 6 km	105			D	1	U	1		A106
12	stationary traffic for 10 km	106			D	1	U	1		A110
13	risk of stationary traffic	130			D	1	U	1		A1D
14	queuing traffic (with average speeds Q)	108		4	D	1	U	1		A2
15	queuing traffic for 1 km (with average speeds Q)	109		4	D	1	U	1		A201

Line	Text	Code	N	Q	T	D	U	C	P	R
16	queuing traffic for 2 km (with average speeds Q)	110		4	D	1	U	1		A202
17	queuing traffic for 3 km (with average speeds Q)	131		4	D	1	U	1		A203
18	queuing traffic for 4 km (with average speeds Q)	111		4	D	1	U	1		A204
19	queuing traffic for 6 km (with average speeds Q)	112		4	D	1	U	1		A206
20	queuing traffic for 10 km (with average speeds Q)	113		4	D	1	U	1		A210
21	risk of queuing traffic (with average speeds Q)	132		4	D	1	U	1		A2D
22	long queues (with average speeds Q)	133		4	D	1	U	1		A7
23	slow traffic (with average speeds Q)	115		4	D	1	U	1		A3
24	slow traffic for 1 km (with average speeds Q)	116		4	D	1	U	1		A301
25	slow traffic for 2 km (with average speeds Q)	117		4	D	1	U	1		A302
26	slow traffic for 3 km (with average speeds Q)	134		4	D	1	U	1		A303
27	slow traffic for 4 km (with average speeds Q)	118		4	D	1	U	1		A304
28	slow traffic for 6 km (with average speeds Q)	119		4	D	1	U	1		A306
29	slow traffic for 10 km (with average speeds Q)	120		4	D	1	U	1		A310
30	heavy traffic (with average speeds Q)	122		4	D	1		1		A4
31	traffic heavier than normal (with average speeds Q)	142		4	D	1		1		A11
32	traffic very much heavier than normal (with average speeds Q)	143		4	D	1		1		A12
33	traffic flowing freely (with average speeds Q)	124		4	(D)	1		1		A5
34	traffic building up (with average speeds Q)	125		4	D	1		1		A6
35	traffic easing	135			(D)	1		1		A8
36	traffic congestion (with average speeds Q)	136		4	D	1		1		A9
37	traffic congestion, average speed of 10 km/h	70			D	1	U	1		A910
38	traffic congestion, average speed of 20 km/h	71			D	1	U	1		A920
39	traffic congestion, average speed of 30 km/h	72			D	1	U	1		A930
40	traffic congestion, average speed of 40 km/h	73			D	1	U	1		A940
41	traffic congestion, average speed of 50 km/h	74			D	1		1		A950
42	traffic congestion, average speed of 60 km/h	75			D	1		1		A960
43	traffic congestion, average speed of 70 km/h	76			D	1		1		A970
44	traffic congestion, average speed of 80 km/h	77			D	1		1		A980
45	traffic congestion, average speed of 90 km/h	78			D	1		1		A990
46	traffic congestion, average speed of 100 km/h	79			D	1		1		A9100
47	traffic lighter than normal (with average speeds Q)	137		4	D	1		1		A10

Line	Text	Code	N	Q	T	D	U	C	P	R
48	queuing traffic (with average speeds Q). Approach with care	138		4	D	1	U	1		A2.Z112
49	queuing traffic around a bend in the road	139			D	1	U	1		A2.Z165
50	queuing traffic over the crest of a hill	140			D	1	U	1		A2.Z166
51	queuing traffic (with average speeds Q). Risk of stationary traffic	2		4	D	1	U	1		A2.A1D
52	(Q) accident(s). Stationary traffic	215		0	D	1	U	1		B1.A1
53	(Q) accident(s). Stationary traffic for 1 km	216		0	D	1	U	1		B1.A101
54	(Q) accident(s). Stationary traffic for 2 km	217		0	D	1	U	1		B1.A102
55	(Q) accident(s). Stationary traffic for 3 km	348		0	D	1	U	1		B1.A103
56	(Q) accident(s). Stationary traffic for 4 km	218		0	D	1	U	1		B1.A104
57	(Q) accident(s). Stationary traffic for 6 km	219		0	D	1	U	1		B1.A106
58	(Q) accident(s). Stationary traffic for 10 km	220		0	D	1	U	1		B1.A110
59	(Q) accident(s). Risk of stationary traffic	221		0	D	1	U	1		B1.A1D
60	(Q) accident(s). Queuing traffic	222		0	D	1	U	1		B1.A2
61	(Q) accident(s). Queuing traffic for 1 km	223		0	D	1	U	1		B1.A201
62	(Q) accident(s). Queuing traffic for 2 km	224		0	D	1	U	1		B1.A202
63	(Q) accident(s). Queuing traffic for 3 km	349		0	D	1	U	1		B1.A203
64	(Q) accident(s). Queuing traffic for 4 km	225		0	D	1	U	1		B1.A204
65	(Q) accident(s). Queuing traffic for 6 km	226		0	D	1	U	1		B1.A206
66	(Q) accident(s). Queuing traffic for 10 km	227		0	D	1	U	1		B1.A210
67	(Q) accident(s). Risk of queuing traffic	228		0	D	1	U	1		B1.A2D
68	(Q) accident(s). Slow traffic	229		0	D	1	U	1		B1.A3
69	(Q) accident(s). Slow traffic for 1 km	230		0	D	1	U	1		B1.A301
70	(Q) accident(s). Slow traffic for 2 km	231		0	D	1	U	1		B1.A302
71	(Q) accident(s). Slow traffic for 3 km	350		0	D	1	U	1		B1.A303
72	(Q) accident(s). Slow traffic for 4 km	232		0	D	1	U	1		B1.A304
73	(Q) accident(s). Slow traffic for 6 km	233		0	D	1	U	1		B1.A306
74	(Q) accident(s). Slow traffic for 10 km	234		0	D	1	U	1		B1.A310
75	(Q) accident(s). Heavy traffic	236		0	D	1		1		B1.A4
76	(Q) accident(s). Traffic flowing freely	238		0	(D)	1		1		B1.A5
77	(Q) accident(s). Traffic building up	239		0	D	1		1		B1.A6
78	vehicles slowing to look at (Q) accident(s). Stationary traffic	250		0	D	1	U	1		B8.A1
79	vehicles slowing to look at (Q) accident(s). Stationary traffic for 1 km	251		0	D	1	U	1		B8.A101
80	vehicles slowing to look at (Q) accident(s). Stationary traffic for 2 km	252		0	D	1	U	1		B8.A102