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Edition 1.0 2018-09

INTERNATIONAL STANDARD

Radio data system (RDS) – VHF/FM sound broadcasting in the frequency range from 64,0 MHz to 108,0 MHz –
Part 6: Compilation of technical specifications for Open Data Applications in the public domain

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**RADIO DATA SYSTEM (RDS) –
VHF/FM SOUND BROADCASTING IN THE FREQUENCY
RANGE FROM 64,0 MHz TO 108,0 MHz –**

**Part 6: Compilation of technical specifications
for Open Data Applications in the public domain**

FOREWORD

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International Standard IEC 62106-6 has been prepared by technical area 1: Terminals for audio, video and data services and contents, of IEC technical committee 100: Audio, video and multimedia systems and equipment.

This first edition, together with IEC 62106-1, IEC 62106-2, IEC 62106-3, IEC 62106-4 and IEC 62106-5, cancels and replaces IEC 62106:2015, and constitutes a technical revision.

This edition includes the following significant technical changes with respect to IEC 62106:2015:

- Provision has been made to carry RDS on multiple data-streams (RDS2);
- New are AF coding below 87,5 MHz (down to 64,0 MHz) using ODA-AID 0x6365;

- RT+ can now be used simultaneously for RT and eRT, each having its own RT+ ODA;
- Data-streams 1, 2 and 3 are exclusively UTF-8 coded. For backwards compatibility, UCS-2 encoded eRT on data-stream 0 is retained.

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

CDV	Report on voting
100/2912/CDV	100/3060/RVC

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 62106 series, published under the general title *Radio data system (RDS) – VHF/FM sound broadcasting in the frequency range from 64,0 MHz to 108,0 MHz*, 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 "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

INTRODUCTION

Since the mid-1980s a fascinating development has taken place. Most of the multimedia applications and standards have been created or redefined significantly. Hardware has become extremely powerful with dedicated software and middleware. In the mid-1980s, Internet as well as its protocols did not exist. Navigation systems became affordable in the late 1990s, and a full range of attractive smartphones now exist. The computing power of all these new products is comparable with that of the mainframe installations in that era.

Listener expectations have grown faster than the technology. Visual experience is now very important, like the Internet look and feel. Scrolling text or delivering just audio is nowadays perceived as insufficient for FM radio, specifically for smartphone users. New types of radio receivers with added value features are therefore required. RDS has so far proven to be very successful.

FM radio with RDS is an analogue-digital hybrid system, which is still a valid data transmission technology and only the applications need adaptation. Now the time has come to solve the only disadvantage, the lack of sufficient data capacity. With RDS2, the need to increase the data capacity can be fulfilled.

RDS was introduced in the early 1980s. During the introductory phase in Europe, the car industry became very involved and that was the start of an extremely successful roll-out. Shortly afterwards, RDS (RBDS) was launched in the USA.

The RDS Forum has investigated a solution to the issue of limited data capacity. For RDS2, both sidebands around the RDS 57 kHz subcarrier can be repeated a few times, up to three, centred on additional subcarriers higher up in the FM multiplex still remaining compatible with the ITU Recommendations.

The core elements of RDS2 are the additional subcarriers, which will enable a significant increase of RDS data capacity to be achieved, and then only new additional data applications will have to be created, using the RDS-ODA feature, which has been part of the RDS standard IEC 62106 for many years.

In order to update IEC 62106:2015 to the specifications of RDS2, IEC 62106 has been restructured as follows:

Part 1: Modulation characteristics and baseband coding

Part 2: RDS message format, coding and definition of RDS features

Part 3: Usage and registration of Open Data Applications ODAs

Part 4: Registered code tables

Part 5: Marking of RDS and RDS2 devices

Part 6: Compilation of technical specifications for Open Data Applications in the public domain

The following future parts are planned:

Part 7: RBDS

Part 8: Universal Encoder Communication Protocol UECP

The original specifications of the RDS system have been maintained and the extra functionalities of RDS2 have been added.

Obsolete or unused functions from the original RDS standard IEC 62106:2015 have been deleted.

RADIO DATA SYSTEM (RDS) – VHF/FM SOUND BROADCASTING IN THE FREQUENCY RANGE FROM 64,0 MHz TO 108,0 MHz –

Part 6: Compilation of technical specifications for Open Data Applications in the public domain

1 Scope

This part of IEC 62106 contains the technical specifications for Open Data Applications in the public domain. This document is maintained by the RDS Forum Office. The RDS Forum Office applies an easy procedure for registering new Open Data Applications, to ensure that they can be used without the need to change the RDS standard. The ODA feature permits defining new applications that can be decoded on a receiver. The receiver needs to the adequate software handler for the specific AID, which identifies the application. Receivers that have not implemented the software handler needed for decoding are not affected by ODA data received for any of the applications already defined and specified.

The procedure for registering a new ODA is described in IEC 62106-3.

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 62106 (all parts), *Radio Data System (RDS) – VHF/FM sound broadcasting in the frequency range from 64,0 MHz to 108,0 MHz*

ISO/IEC 10646, *Information technology – Universal Coded Character Set (UCS)*

ISO 14819 (all parts), *Intelligent transport systems – Traffic and travel information messages via traffic message coding*

3 Terms, definitions, abbreviated terms and conventions

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62106-1 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

3.2 Abbreviated terms

For the purposes of this document, the abbreviated terms given in IEC 62106-1 and IEC 62106-2 apply.

3.3 Notation and conventions

The notation and conventions given in IEC 62106-1 apply.

4 ODAs in the public domain

4.1 ODAs in the 37-bit ODA application group structure

4.1.1 Traffic Message Channel (TMC)

This ODA has been standardized in ISO 14819 (all parts).

4.1.2 Other public ODAs

There exist four other public ODAs:

- Annex A: Coding of RadioText Plus (RT+) tagging information for RadioText in group type 2A/B.
- Annex B: Coding of RadioText Plus (RT+) tagging information for enhanced RadioText (eRT).
- Annex C: Coding of enhanced RadioText (eRT) using UTF-8 coding as standardized in ISO/IEC 10646.
- Annex D: Coding of AF lists in the frequency range 64,1 MHz to 107,9 MHz.

4.2 ODAs in the group type C structure for the upper data-streams 1, 2 and 3

Such applications are still under development.

Annex A
(normative)

Coding of RadioText Plus (RT+) tagging information for RadioText in group type 2A/B

A.1 General

RT+ is designed to let the listener (or user) take additional benefit from the RadioText (RT) service by enabling receivers to offer direct access to specific elements of RadioText messages (e.g. to the title of the broadcast song transmitted at the same time, to news, to telephone numbers such as those used for voting, to web addresses for browsing web content offered by the radio programme provider, etc.).

These RT+ messages carried in the RadioText messages are identified by their location within the message and by the class code of their RT content type (see Table A.2). Thus, a receiver is able to store the different RT+ messages, and the listener may then select and request a specific content type from the storage at any instant in time that fits the user's needs. The advantage of this method is that a user is no longer forced to watch a lot of information passing by. The listener rather gets the opportunity to select specifically any favourite information to be shown on a static display.

Moreover, RT+ gives the possibility to present selected RT message elements to car drivers on a quasi static display without any major risk of distracting the attention of the driver. Furthermore, RT+ is well suited for mobile phones with built-in RDS FM receivers: telephone numbers may be routed directly from the RadioText to the dialer.

RT+ is based on RT messages and is completely backwards compatible. All additional information necessary for implementing the RT+ service is carried as an Open Data Application in group type 3A and in an associated ODA application group (see Table A.1).

The Application Identification (AID) assigned to RT+ for RT in group type 2A/B is 0x4BD7.

Table A.1 – RT+ information elements for RT

RT+ information elements		
RT message	**RT+ identification**	**RT+ tags**
Group type 2A/B (see IEC 62106-2)	AID in group type 3A	ODA application group type A

A.2 Terms used

Category: The 'RT content types' listed in Table A.2 are grouped in categories: Item (information on programme element), Info (general information services), Programme (information on the programme), Interactivity (related information), Descriptors (places and addresses, date, time, etc.) and Private classes (to be defined by individual broadcasters) and reserved codes for future amendments.

Descriptor: a category of 'RT content types used for describing places and addresses, date and time, specific identifiers, etc.

Length marker: part of the RT+ information element which describes the additional length of the tagged RadioText message. Counted are characters (64 maximum), not bytes. The addresses of the RadioText characters range from 0 to 63.

Programme item: time-slice of a programme, for example a piece of music or a documentary report.

RT+: an extension of the RT RadioText feature, which allows storing and filtering of parts of the RadioText messages in the receiver terminal as RT+ objects that then can be displayed, selected and accessed by the listener, also independently from the transmitted RadioText messages sent at the same time.

'RT content type': the content of an RT+ message is characterized by an RT+ class code, listed in Table A.2. Sixty-four different codes exist in this table.

RT+ information elements: these are all RT+ elements for any given RT+ message, i.e. the RT+ element defined for group 3A, the RT+ ODA application group elements and the corresponding tagged RadioText elements (RT).

RT+ message: the basic information entity that is sent by the broadcaster to the listener. The listener can select the RT+ messages by their content type.

RT+ content: the RT+ content consists of one or two tagged RadioText elements (RT in group type 2A/B).

RadioText: feature of RDS for providing a programme with text messages.

RadioText message: Text messages that are associated with a programme. One single RT message is not likely to be sufficient for complete comprehension by the user.

Start marker: Part of the RT+ information element which describes the start position (number found by counting the text character positions within a text string) of the respective tagged RadioText message element (RT).

A.3 RT+ tag

When a RadioText message like "You are listening to 'House of the rising sun' by Eric Burdon" is sent out, the RT+ information elements 'Title' and 'Artist' are marked by two RT+ tags.

An RT+ tag consists of three elements:

a) RT content type;

b) start marker pointing to the position (inside the RT) of the first character of that RT+ message;

c) length marker indicating the additional length (in addition to the character at the start position) of that RT+ message.

The 'RT content type' is taken from a list with 64 entries (see Table A.2).

For the example given below the two tags are as follows: