

# INTERNATIONAL STANDARD



**Radio data system (RDS) – VHF/FM sound broadcasting in the frequency range  
from 64,0 MHz to 108,0 MHz –  
Part 5: Marking of RDS receiver devices**



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INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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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 5: Marking of RDS receiver devices**

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International Standard IEC 62106-5 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 62106-6, 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);
- a logo for RDS2 has been added,
- new are receiver profiles, conformity requirements, certification and compliance test.

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

CDV	Report on voting
100/2909/CDV	100/3059A/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

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- amended.

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## 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.

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

## **Part 5: Marking of RDS receiver devices**

### **1 Scope**

This part of IEC 62106 defines receiver profiles and criteria that can be used for marking RDS receiver devices.

### **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*

### **3 Terms, definitions, abbreviated terms and conventions**

For the purposes of this document, the terms, definitions and abbreviated terms given in IEC 62106-1 and IEC 62106-2 apply. The notation and conventions 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>

### **4 Receiver profiles, marking and certification requirements of RDS devices and compliance testing**

#### **4.1 Receiver profiles**

Table 1 recommends the usage of RDS features applicable to various types of FM/RDS receiver, described by the following generic descriptions:

- Hi-Fi – Typically a mains powered non-portable device used within a home (living room, etc.).
- Portable – Typically a battery/mains option device for use in kitchen, bathroom, etc. which may on occasion be taken outside or, for example, on holiday.
- Smart/Tablet – Smartphone or Tablet device with integrated FM tuner.
- Car Radio – A single- or multiple-tuner receiver mounted within the vehicle dashboard, used for audio reception or one which is an integral part of a multimedia system (i.e. excludes any integrated TMC function).
- TMC – A separate hand-held navigation device with TMC receiver or the TMC function incorporated within a car radio/navigation system.



**Table 1 – Usage of RDS features in various receiver types**

Feature	Hi-Fi	Portable	Smart/Tablet	Car Radio	TMC
PI	M	M	M	M	M
AF	R <sup>a</sup>	R	O	M	R <sup>b</sup>
CT	R	R	O <sup>c</sup>	M	M <sup>d</sup>
ECC <sup>e</sup> and PI-CI <sup>e, f</sup>	R	R	R	R	R
PI-Extended Generic	O	O	O	R	R
PS	M	R	M	M	
EON-PS	O	O	O	R	
Regionalization <sup>g</sup>	R	R	R	M	
LPS <sup>†</sup>	R	R	R	R	
PTYI <sup>h</sup>	O	O	O	O	
PTY SELECTION <sup>i</sup>	R	R	R	R	
PTY STAND-BY/EON	O	O	O	O	
PTY-31 <sup>j</sup> (ALARM) EON	R	R	R	M	R <sup>k</sup>
PTYN <sup>l</sup>	O	O	O	O	
Service Following FM & DAB <sup>m</sup>				M	
RT <sup>n</sup>	R	R	R	R <sup>p</sup>	
RT+ <sup>n</sup>	O	O	R <sup>q</sup>	R	
eRT <sup>o</sup>	O	O	O	O	
TP	R <sup>r</sup>	R <sup>r</sup>	O	M	
EON-TP	R	R	O	M	
TA	R <sup>r</sup>	R <sup>r</sup>	O	M	
EON-TA	O	R	O	M	
TMC <sup>s</sup>					M
TMC-SPN					M
TMC-TI					M <sup>s</sup>

M: Mandatory – All RDS radios shall provide features marked as mandatory to be considered in compliance with the specification. However, if in any country the RDS feature in question is not used, M can be replaced by O.

R: Recommended – While not mandatory, it is recommended that RDS radios provide these features for the best possible user experience. However, if in any country the RDS feature in question is not used, R can be replaced by O.

O: Optional – These are optional features that can be implemented in an RDS radio at the manufacturers' discretion.

<sup>a</sup> AF is useful even for a fixed location device (in a simplified form) as it will ensure the device is using the strongest signal if the same radio programme is available on more than one frequency. The receiver should provide an option to disable AF in case the user wants to connect an FM radio cable network service.

<sup>b</sup> Used in addition to Tuning Information with TMC Group (TI).

<sup>c</sup> Connected devices that are synchronized to the mobile carrier's network will always be at least a few seconds time delayed. The time tolerance in the standard for mobile networks is in the order of minutes, not seconds or milliseconds. Many mobile devices can be manually re-configured to synchronize time via another source, but some devices cannot be re-configured, or the end-user does not care to change it.

<sup>d</sup> In order to synchronize with traffic message expiry times, etc.

<sup>e</sup> Required for RadioDNS; ECC and PI-CI uniquely identify a country world-wide.

<sup>f</sup> PI-CI, the PI country code, is used to uniquely identify a country together with ECC.

<sup>g</sup> Capability to identify Regional networks and programmes. Product reacts up to customer expectation. The radio shall identify the generic PI structure and use the regional AF information.

<sup>h</sup> PTYI has some limited application if PTY Standby feature is implemented.

<sup>l</sup>	PTY descriptions available in multi-languages, preferably selectable by user.
<sup>j</sup>	Receiver should 'awake' from standby mode and break with alarm announcement into audio with pre-set increased volume.
<sup>k</sup>	In a TMC device, although audio will not be presented, a display indication that there is an 'Alarm' will prompt the user to be alert.
<sup>l</sup>	Display functionality only.
<sup>m</sup>	Only for multi-standard receivers; the relevant information is carried in DAB.
<sup>n</sup>	RadioText and RT+ in widespread use. Display shall not scroll the text.
<sup>o</sup>	For RDS and RDS2: eRT not yet widely implemented, but needed for specific markets.
<sup>p</sup>	For in-car use, the ability to disable the RT display should be provided.
<sup>q</sup>	For RT+ there exist a wide range of classes, but among them, apart from item 'title' and 'artist', web address for the radio programme's home page is one that will be very attractive.
<sup>r</sup>	Even in 'home' devices, the ability to identify and receive Traffic information is useful.
<sup>s</sup>	See ISO 14819; TMC Guidelines are separately available.
<sup>t</sup>	The long PS (LPS) is UTF-8 coded, see ISO/IEC 10646 for UTF-8. If LPS is broadcast, PS shall not be displayed – only LPS. Display shall be capable to show full LPS without scrolling.

#### 4.2 Marking on receivers, packaging and documentation

The following marking shall be used on receivers, packaging and documentation:

RDS if only data-stream 0 is decoded;

RDS2 if in addition the upper data-streams 1-3 can be demodulated.

Receivers are in conformity with the marking "RDS" if they implement the RDS group decoding listed in Table 2 by only using decoding of data-stream 0.

**Table 2 – Groups to be decoded by receivers marked "RDS"**

Group	Hi-Fi	Port-able	Smart/ Tablet	Car Radio	TMC
0A/B – basic tuning	M	M	M	M	M
1A – slow labelling	R <sup>a*</sup>	R <sup>a*</sup>	R <sup>a*</sup>	R <sup>a*</sup>	M
2A/B – RadioText	R	R	R	R	
3A – ODA	O <sup>b*</sup>	O <sup>b*</sup>	O <sup>b*</sup>	R <sup>b*</sup>	M
4A – CT	R	R	R	R	M
8A – TMC					M
10A – PTYN	O	O	O	O	
14A/B – EON	R	R	O	M	
15A – LPS	R	R	R	R	
15B – fast switching	O	O	O	M	
<sup>a*</sup> Required for ECC to uniquely identify country together with PI-CI					
<sup>b*</sup> Required for eRT, RT+, eRT+, TMC and the new AF lists format (see IEC 62106-6).					

Receivers are in conformity with the marking "RDS2" if they implement the RDS features and group decoding listed in Table 1 and Table 2 on all four streams and in addition meet the following requirements.

- Tunnelling (see IEC 62106-2) shall be supported to permit enhancements to be achieved for already existing RDS features and also to support all legacy groups also on the upper carriers.

- Decoding of C-type groups and the assignment of ODA-AIDs to the 64 ODA-channels shall be supported.
- As RDS2 on the upper carriers is ODA rather than feature driven, a physical or online data interface (e.g. USB) is required to permit updating or installation, in RDS2 radio receivers, of new application software to be used for decoding new ODAs.

#### **4.3 Certification requirements**

Normally, self-certification is recommended. A compliance test is optional.

#### **4.4 Compliance test**

For the receiver manufacturer a proposed option is that a qualified RDS Forum<sup>1</sup> member or an industry neutral test institute performs a compliance test also, on the basis of IEC 62634, for a fee to be mutually agreed. Particularly for car radios and TMC receivers, a test drive in a defined area may be part of the evaluation.

RDS car radios for the car industry are generally designed according to the car manufacturer's own requirements specification. Performance testing is often jointly done with the radio supplier. In this respect, that kind of cooperation can be of great help in the discussion for future RDS products to be developed.

For the receiver manufacturers who are mainly active on the aftermarket, the RDS Forum can offer support to ensure that the product has the right profile for the respective market.

An important issue is also the capability to select correctly the proper AF with the best audio quality. If applicable, identification of regional programmes and corresponding switching within the relevant radio programme networks can be tested.

The certificate issued may only be used for the specific receiver model tested.

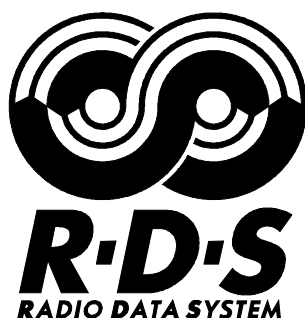
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<sup>1</sup> [www.rds.org.uk/](http://www.rds.org.uk/)

**Annex A**  
(informative)

**RDS and RDS2 logo<sup>2</sup>**

RDS logo:



NOTE The wording "RADIO DATA SYSTEM" may be omitted.

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When RDS2 is implemented, the following logo may be used:



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The word marks "RDS" or "RDS2" may be used instead of the above logos.

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<sup>2</sup> The information given in Annex A is for the convenience of users of this document and does not constitute an endorsement by IEC.

## Bibliography

IEC 62634, *Radio data system (RDS) – Receiver products and characteristics – Methods of measurement*

ISO/IEC 10646:2017, *Information technology – Universal Coded Character Set (UCS)*

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

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