

# RDS/RDS2

## - IEC 62106 standard adaptation progress





- First RDS specification published by EBU in **1984**
- First RDS CENELEC standard published in 1990
- CENELEC RDS standard updated in 1992 and 1998
- First RBDS US standard published in 1993, updated in 2005 and 2011
- 30<sup>th</sup> anniversary of RDS specification was in 2014
- First RDS IEC standard published in 2000, updated in 2009 and **2015**

- **RDS is a very mature technology**
  - Widely used worldwide
  - FM radio is over 60 years old
  - RDS is over 30 years old
  - Over one billion FM/RDS receiver chips are now made per year worldwide
  - Price is as low as 1 USD per FM/RDS chip
  - Smart phones have been the largest market
  - Car radio market is next and in Europe almost 100%
  - Most radio receivers sold in Europe and in the USA have RDS
  - In the USA the national variant, RBDS, is widely used
  - RDS has been a kind of “silent revolution”



- The structure of RDS will be completely maintained
  - We simply add three more 'pipes' to deliver the RDS data stream to the RDS device
- In traffic terms it's like
  - widening a single carriageway road to four lanes
- The data throughput is increased quite dramatically
  - not just by a factor of four, but by more, as it's not necessary to carry in the additional sub-carriers 'mandatory' RDS elements that are already in the 'main' sub-carrier

- **New structure of IEC 62106 consisting of 8 parts**
- **Aim to be achieved is also a more flexible maintenance**
- **Enhanced support for application development**
  - Part 1: RDS system: Modulation characteristics and baseband coding
  - Part 2: RDS message format, coding and definition of RDS features
  - Part 3: Coding 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
  - Part 7: RBDS
  - Part 8: Universal Encoder Communication Protocol UECP
    - To be issued at a later date as it needs Parts 1 to 7 to be completed

- **Everything that is obsolete can be deleted from the RDS standard**
- A good alternative to redefining unused bits will be to declare them as “rfu - reserved for future use”
- New attractive features that would be nice to have in RDS2, such as PS (32 bytes long) with UTF-8 coding can be included
- The ODA open data applications concept will become dominant in RDS2
- The main features of RDS will of course be kept
- In April 2015 the IEC TC100 AGS in Milano approved the new concept for re-structuring the RDS standard in IEC TC 100 – TA1
- **In June 2015 the RDS Forum’s annual meeting decided to go ahead with the development of the new structure**

- **During the RDS2 development**
  - RDS has been critically reviewed
  - Unused RDS features have been identified for deletion
    - **This will simplify the RDS standard**
- **However, changes made to the RDS standard**
  - Must remain backwards compatible with respect to existing RDS receivers
  - This is the ultimate aim to be achieved



Screen shot: VW - 2014

In addition to the existing “short” PS there will be a long PS with max. 32 byte  
Character coding in all languages worldwide will then be possible





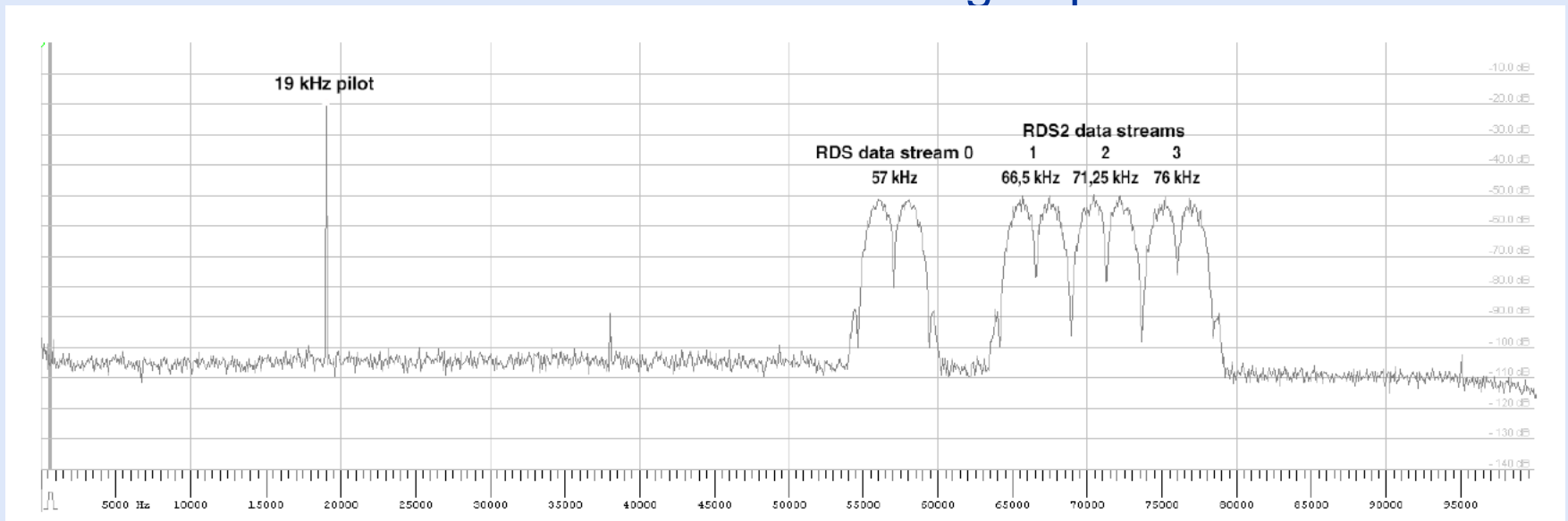
All screen shots: VW - 2014

- **PS name in characters used worldwide**
- **Two kinds of 64 character RadioText will be possible in parallel**
  - RT with group type 2A can be used for English text
  - eRT as ODA with UTF-8 and 128 byte long can be used in addition for Russian, Chinese , Arabic or Indian text
- **Further enhanced and better TMC will be powered up**
  - To provide also more regional & and better local traffic information in urban areas
- **RDS2 will be able to support simple graphical features, logos etc**
  - It will be possible to transmit files of up to 12 kB
- **RDS2 will be able to support Hybrid radio** (device connected to Internet)
  - Service following is an objective to be achieved

- **June 2014** - Decision taken in the RDS Forum
- **November 2014** - Concept worked out in a workshop in Budapest in a small team of specialists
- **January 2015** - Feasibility report written
- **June 2015** - Presentation in the RDS Forum and decision on how to move forward
- **Autumn 2015** - Official release to the outside world (RDS2 Day Berlin)
- **April 2016** – Draft version 2 of Parts 1-6 ready for review
- **May 2016** – Drafting of Part 7 (RBDS) started
- **June 2016** – Annual meeting of RDS Forum agreed to continue the new RDS/RDS2 standard development
- **End of 2016:** Submission of Parts 1 to 7 for standardisation to IEC
- **End of 2017:** Submission of Part 8 for standardisation to IEC

# What is new in Parts 1 to 6?

- 3 additional upper carriers
  - Same RDS modulation / same RDS group structure

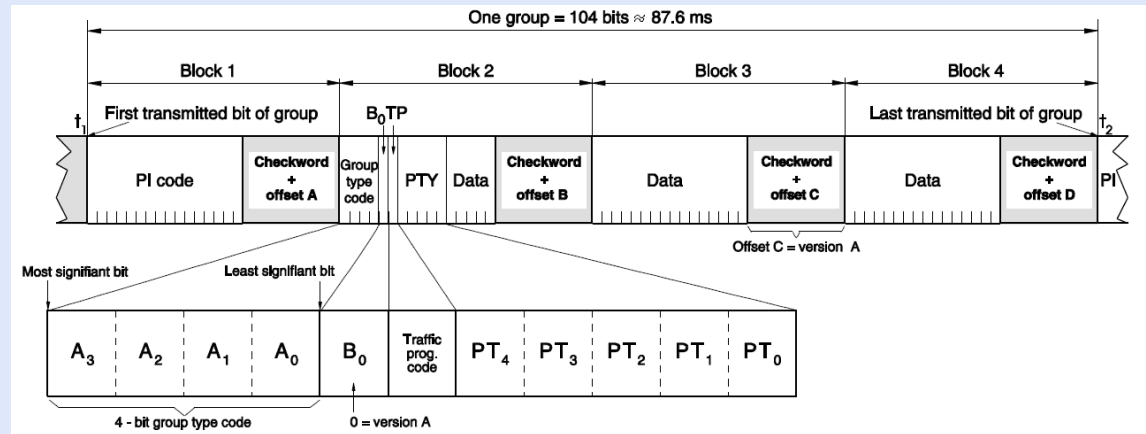


- RDS2 will provide backwards compatibility on stream 0
  - Streams 1 to 3 are optional and can transmit enhanced or new features
- RDS2 will increase the current limited data capacity significantly Remains within the ITU modulation limits of 10% (Rec ITU-R BS.450-3)

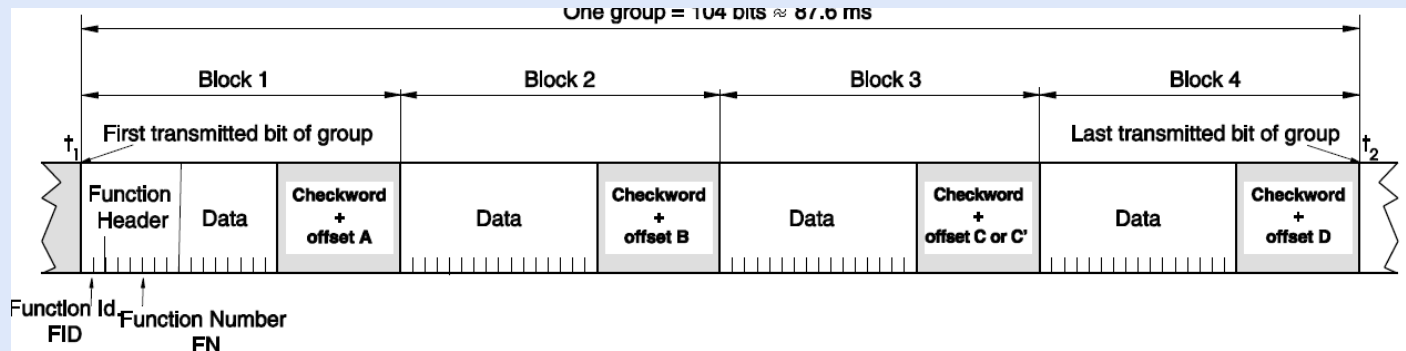
■ Now 3 group types: A, B and **new C**

- Group type C is only for the 3 upper data-streams

- Group type A:

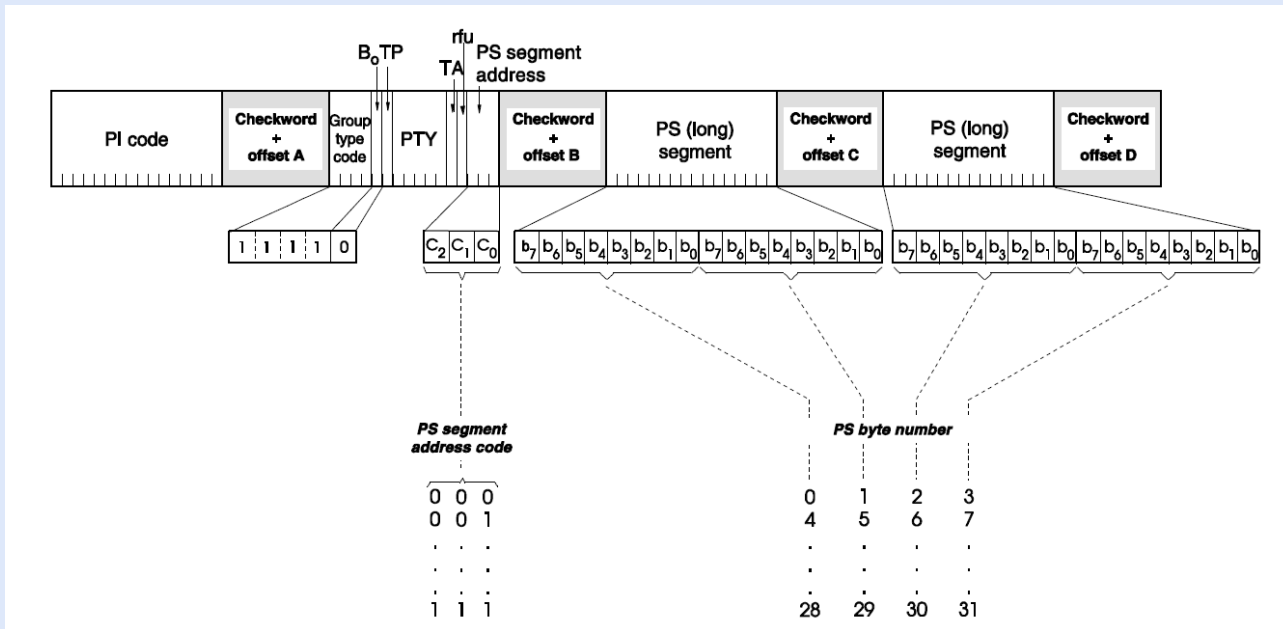


- Group type C:



- **What is special with Group type C?**
  - The Function header (Function id. & Function number) determines its use
  - FI = 00 / FN = 000000 > Tunnelling of group types A or B
  - FI = 01 / FN = 1 .. 64 (dec) > **64 ODA data channels**
  - FI = 10 > ODA-AID mapping to respective ODA channel (out of 64)
  - FI = 11 > reserved for future use
  
- **Upper data-streams use only Group type C structure**
  - All basic RDS features are on RDS data-stream only
    - Thus backwards compatibility is achieved

- Long PS name (32 bytes , UTF-8 coded) / 15A group



- Extended AF coding for the range 64.0 – 88.0 MHz
  - Using a new ODA defined in Part 6



- **Registration options extended to use**
  - Group type C
    - Expectation is that RDS2 will be ODA driven
    - ODA means that applications can be added to RDS
      - Fully backwards compatible
  - Group type A or B ODAs can continue
    - On basic RDS data-stream or
    - “Tunnelled” within C-groups on the upper data-streams

- **A collection of all RDS coding tables used**
  - Country identification with CI and ECC
  - Basic and extended RDS character sets
    - On upper data-streams RDS2 will only use UTF-8 coding
  - Programme type codes
  - Translated PTY display terms for 20 languages

- **Receiver profiles for basic RDS features**
  - Hi-Fi
  - Portable
  - Smart phone / Tablet
  - Car radio
  - TMC device
- **New RDS2 interface (e.g. USB) to update receiver software**
  - RDS2 will be ODA driven and respective software handlers must be able to be added to receiver devices
- **Marking RDS or RDS2**
  - **New logo for RDS2**
- **Certification**
  - Self-certification remains predominant



- **Compilation of the specifications of**
  - RT+ for RT
  - RT+ for eRT
  - eRT
  - (TMC is separately standardised by ISO)
  - AF coding for frequencies below 88 MHz
    - For countries with FM band extensions
- **At this stage only group type coding A**
- **Future RDS2 applications will use C type coding**

# ■ Thank you for your attention

- For feedback contact us at the RDS FORUM
- [rdsforum@bluewin.ch](mailto:rdsforum@bluewin.ch)