IEC 62106 Edition 2 : 2009
Upgrading the RDS-standard

This presentation summarizes the work carried out in the RDS Forum

Draft for IEC 60106 Ed 2 was completed in 2008 and formally submitted to IEC TC 100

- **Official** CDV distribution date was 26 September 2008
- The CDV was voted within the IEC – deadline 27 February 2009
- **The result was a 100% support**
- **Editorial review procedure within IEC Central Office lasted until August 2009**

- **RDS Forum 2008 had reviewed the whole updating process**
  - All proposed changes were approved

RDS Forum Technical Specification R08/008_7 is published now
for free downloading on the RDS Forum web site

RDS standard upgrade history

- **Maintenance Task was already agreed by RDS Forum 2006**
  - Deadline: end of 2007
- **Reason: IEC RDS standard was up for review in 2008**
  - Was last updated more than 10 years ago
    - RDS Forum became aware in recent years of several matters to be refined
- **For this work to be done**
  - Formal liaison was established with the IEC TC 100
  - IEC approved RDS Forum liaison status in 2006
    - RDS Forum obtained the required formal Liaison status D
    - RDS Forum CEO attended IEC TC 100 annual meeting in Oct. 2007
    - This launched the formal IEC updating process

List of items updated 1/5

- **Country codes**
  - Montenegro and Kosovo were added
  - Armenia. Azerbaijan and Georgia were added to European Broadcasting Area
  - Yugoslavia was modified to read Serbia
  - All country codes of Annexes D and N were reviewed and updated
- **Offset word E**
  - Was deleted, as no longer needed for RBDS (MMBS discontinued)
- **Time-offset extension was enlarged**
  - Needed to cover 13 hours offset for Daylight Saving Time, e.g. in New Zealand

List of items updated 2/5

- **New Character sets**
  - EBU Tables 2 and 3 were replaced by a “Super-set” using ISO 10646/Unicode (UCS-2), permitting also UTF-8 coding
  - This is to apply to ‘enhanced RadioText - eRT’ only
  - EBU Table 1 remains the RDS default character table
    - The € euro sign was included in the updated version
  - All character entries got corresponding UCS-2 codes to assist character symbol interpretation

List of items updated 3/5

- **Control codes used in RT**
  - All known codes were included in the new version
- **RT+ was added as a new feature**
  - Was jointly developed by the IRT/Nokia/WDR
    - Was contributed to RDS Forum as an Open Technology
      - Free of IPR
    - IPR issues were clarified during RDS Forum 2007 in June
  - RT+ was also co-ordinated by the RDS Forum with RBDS
  - RT+ permits among other possibilities to display/capture
    - Artist names and Music titles and create a Play list

List of items updated 4/5

- **15A group was added to possible ODA use**
- **TMC is a separate ISO standard, but…**
  - Cross-references needed updating
  - TMC runs now fully under ODA
  - Group 1A/Variant 1 signalling was then no longer needed
- **EWS**
  - Group 1A/Variant 7 wording needed a refinement
    - That kind of signalling is not needed when EWS is using ODA

List of items updated 5/5

- **ARI was discontinued**
  - All references to ARI were deleted
  - New RDS decoders will no longer have to use a notch filter to suppress ARI….
  - Annex H was re-worded
- **ODA – no real changes were required**
  - However, all ODA-AIDs that have become part of the standard, are now listed
    - These are: TMC, RT+, eRT, DAB cross-referencing

- **RadioText Plus was first implemented**
  - In Germany: by some public broadcasters, notably BR radio in Bavaria (Southern Germany)
  - In the US: Nationwide on over 400 ClearChannel stations in September 2008
  - Some Kenwood car radios have already RT+:

RT+ implementations 2/2

Apple iPod Nano with FM (C) 2009 Apple

This 91.3 screen was captured in October 2009 on radio BAYERN 1 in Munich:

- Upper line shows normal RadioText scrolling through the display

- Lower two lines show
-RT+ tagged music info
> Music title on line 1
> Artist name on line 2

Apple implemented RT+ in the new iPod nano

Short-range RDS transmitting devices

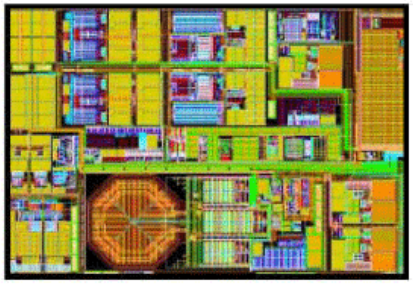
- **RDS Forum 2007 agreed to support such devices with a**

  PI code allocation

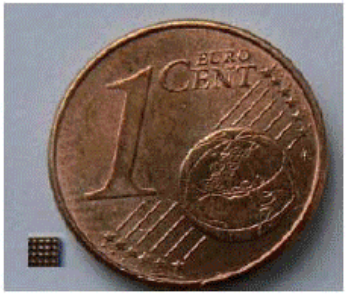
  - The PI code is made up of four nibbles (4 bits each):
    - Nibble 1 Country code
    - Nibble 2 Coverage area
    - Nibbles 3 and 4 Programme reference number
  - The PI codes reserved for these devices are now:
    - The country code will be a fixed value between 1 and F. That is anything other than 0.
    - Nibble 2 will be a fixed value of 0 (no AFs) or 1 (with AFs).
    - Nibbles 3 and 4 will be a fixed value of 00.

Short range RDS implementations

- Designed to integrate FM RDS receive and transmit functionality with other functions like BT, WiFi, GPS into a System on Chip

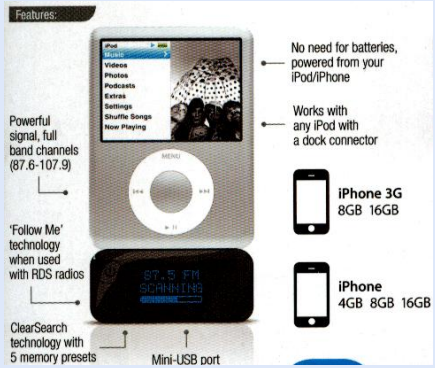


size in 65nm



Enabling FM RDS functionality in many portable devices like Mobile Phones, PDA's and (Personal) Navigation Devices

Semiconductor Ideas to the Market (ItoM) BV



Enhanced Radiotext – eRT objectives 1/5

- **RT in 2A groups and associated RT+ will remain unaffected**
  - But EBU character tables 2 and 3 were withdrawn from the new version, as they have too many imperfections that date back to a time, where neither the ISO 8859 nor the ISO 10646 standards for character coding existed

Enhanced Radiotext – eRT objectives 2/5

- **EBU Table 1 remains the default character set for RDS, and thus also for the RT group 2A/B application**
  - The supported character set suits many countries of course, however mostly West European countries and the Americas. Thus no change for them
  - **eRT will be a new ODA alternative**
    - Very interesting for those countries, where the EBU Table 1 character set is insufficient

Enhanced Radiotext – eRT objectives 3/5

- **A new Super-Character set has been defined for eRT**
  - Largely based on a combination of the characters defined in
    - EBU Tables 1, 2 and 3 - however, the characters are from the ISO 10646-1 BMP, composed of two bytes, UCS-2
    - The ISO 8859 set was used to make the selection
    - UTF-8 coding has become an option for eRT
      - This will for most of the languages supported by this Super-Character set, make the text string significantly shorter
- **Whether the text string will be UCS-2 or UTF-8 coded, must be indicated in the 3A group**

Enhanced Radiotext – eRT objectives 4/5

- **The application group for eRT differs slightly from the group 2A**
  - The bit of the RT flag was added to the segment counter
  - eRT can then accommodate 128 bytes of a text string, i.e. 64 characters at the maximum
  - This is then RT+ compatible

Enhanced Radiotext – eRT objectives 5/5

- **In the new IEC RDS standard version, the Super-Character set is then defined by a new Table E.2**
  - Slightly larger than the former EBU Tables 1,2 and 3 combined into one set

In case new eRT will be used 1/2

- **eRT is a significant enhancement for the countries that have a character set problem with RT**
  - Default RDS character set EBU Table 1 is only good for most West European countries and the Americas
- **eRT significantly enlarges the market for RadioText**
  - Some large countries that could benefit from this are Poland, Russia and the Arab language countries
- **The Super Character set thus defined**
  - Supports national languages used in all 27 EU member states

In case new eRT will be used 2/2

- **Existing RDS receivers do not benefit from this new development,**
  - As eRT will be an ODA, it will not disturb them
- **Under the UECP* is very easy to implement the enhancement on the transmission side**
  - Thus, it creates little extra-cost for the interested broadcasters to implement eRT
- **DAB compatibility is observed**
  - Co-ordination with WorldDMB is ongoing
    - RDS Character set enhancement was input to its TC
- ***UECP: Universal Encoder Communication Protocol**
  - The RDS Forum 2009/2010 updated this protocol to align it to new RDS standard version

PS – Programme Service name

- **In the new RDS standard version**
  - PS remains static – composed of 8 characters at max. (using EBU character table 1)
  - RDS Forum disagrees with dynamic PS usage
  - Reasons:
    - PS name identifies the audio programme service
      - Listeners “see what they hear”
    - For rapid display the PS is stored in RDS receivers
    - Some RDS radios scan the FM band and display all receivable stations
      - Pre-set buttons labelled with received PS characters are then created for easy station selection
  - **RT is the correct RDS feature to be used for text messages**

Official publication of this new RDS standard version

- **The new reference is**
  - IEC 62106 Edition 2.0 : 2009

- **Available on the IEC web store**
  - http://webstore.iec.ch

RDS development status today

25th anniversary

RADIO DATA SYSTEM

- 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
- First RDS IEC standard published in 2000, updated in 2009

- Total number of FM radio/RDS decoder ICs annual sales:
  - Far over 600 million chips now per year
  - RDS Forum member

Silicon Labs reached 100 million ICs sold in 2007 !