

IEC 62106 Edition 3 : 2015

Upgrading the RDS-standard

This presentation summarizes the RDS standard maintenance work carried out in the RDS Forum for IEC TC 100

Draft for IEC 62106 Ed 3 was completed in 2012 and formally submitted to IEC TC 100

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- The CDV was voted within the IEC – deadline July 2013
- **The result was a 100% support**
- Editorial review procedure within IEC Central Office is still ongoing
- RDS Forum 2013 and 2014 had reviewed the whole updating process
 - All proposed changes were approved

RDS Forum Technical Specification R14/020_2 is published now for free downloading on the RDS Forum web site for your review and feedback

- **Maintenance Task for Edition 2 was 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

- **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

■ RDS Character sets

- Former 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
- Former EBU Table 1 remains the RDS default character table
 - The reference is Annex E, Tables E.1
 - The € euro sign was included in the updated version
- All character entries got corresponding UCS-2 codes to assist character symbol interpretation
 - See Annex E, Tables E.2
- The RDS character sets are in Annex E, Tables E.1 to E.3

- **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
 - **Music titles** and **Artist names**
 - Can be used to create in the receiver a Play list

- **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

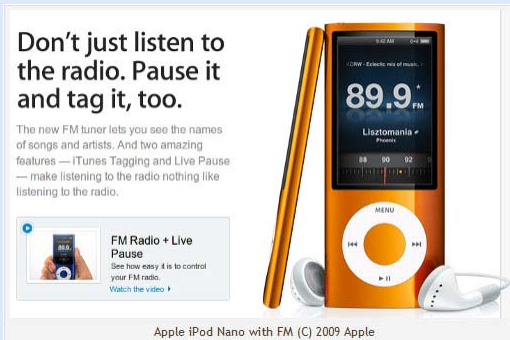
- **ARI was discontinued**
 - All references to ARI were deleted
 - New RDS decoders will no longer have to use a notch filter to suppress ARI....
 - Annex H was re-worded

- **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
 - Many car radios already have RT+:



Screenshot: Kenwood



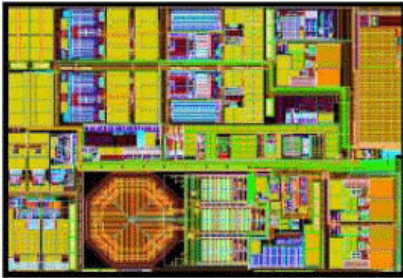
This 91.3 screen was captured in October 2009 on radio BAYERN 1 in Munich:

- 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

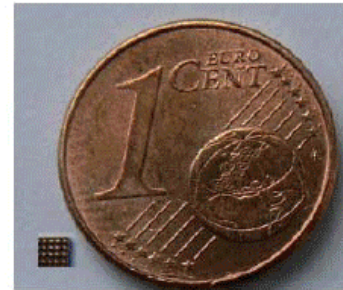
Apple implemented RT+ in the new iPod nano

- 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.

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



size in 65nm



Semiconductor Ideas to the Market
(ItoM) BV

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

Features:

- Works with any iPod/iPhone with a dock connector
- Changeable iPod/iPhone holders for a perfect fit
- ClearSearch technology with 5 memory presets
- Follow Me technology when used with RDS radios
- Powerful signal, full band channels (87.6-107.9)
- RDS technology
- Fully adjustable arm
- Made for iPod
- Works with iPhone
- Made for iPod touch, iPod classic, iPod, iPod nano
- Works with iPhone and iPhone 3G
- No need for batteries, powered from your car's cigarette lighter

Features:

- Powerful signal, full band channels (87.6-107.9)
- 'Follow Me' technology when used with RDS radios
- ClearSearch technology with 5 memory presets
- Mini-USB port
- No need for batteries, powered from your iPod/iPhone
- Works with any iPod with a dock connector
- iPhone 3G 8GB 16GB
- iPhone 4GB 8GB 16GB

- **RT in 2A groups and associated RT+ will remain unaffected**
 - EBU character tables 2 and 3 were withdrawn already from the previous RDS standard 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

- **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 is a new ODA alternative for RadioText**
 - Very interesting for those countries, where the EBU Table 1 character set not insufficient
 - All countries in the European Broadcasting Area are supported
 - eRT with Greek, Cyrillic, Hebrew and Arab characters is possible
 - Also, all countries using Latin-based character sets in Central & Eastern Europe can use eRT
 - European car industry supports this concept and will offer receivers in these markets

- **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 ISO 10646-1, 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 transcoding, must be indicated in the 3A group by a flag**

- **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

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

- **eRT is a significant enhancement for the countries that have a character set problem with RT**
 - Default RDS character set E.1 (former 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 28 EU member states

- 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 adopted by its TC
- ***UECP: Universal Encoder Communication Protocol**
 - The RDS Forum 2009 and 2013 updated this protocol to align it to new RDS standard version

- **In the new RDS standard version**
 - PS remains static – composed of 8 characters at max. (using character table E.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 has to be 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 and recognition of the radio programmes on air
 - RT is the correct RDS feature to be used for text messages
 - Never use PS for text messages

- **The new reference is**
 - IEC 62106 Edition 3.0 : 2015
- **Will be available on the IEC web store later in 2015**
 - <http://webstore.iec.ch>
 - **The updated version was submitted in 2012**
 - **to IEC TC 100 and accepted in 2013**
- **Is now published as**
 - R14/020_2 on the RDS Forum web site for review
 - The RDS Forum invites the RDS receiver industry to provide feedback



- 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
- 30th anniversary of RDS specification was in 2014
- First RDS IEC standard published in 2000, updated in 2009 and **2015**

Total number of FM radio/RDS decoder ICs annual sales:
- Over one billion chips now per year