Recent Developments in DAB+

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Topics

- Digital radio switchover
- Market conditions
- UK
- Europe
- Other regions
World DAB

- Promotes the uptake of digital radio around the world
- A member organisation
- Not-for-profit
- Maintains and develops the DAB standards through its Technical Committee
- Works with a wide range of stakeholders
- Sponsors this event
Digital Radio Switchover

- Norway completed digital switchover to DAB+ end 2017
- Switzerland next, starting 2020
Digital Tick

• Norway’s plans were triggered by the announcements from the UK about switchover
• In 2011, UK announced a possible 5-year timeline for DSO
• For TV switchover, the UK had had a “Tick Mark”
  – A graphic which showed the public which TVs and set-top boxes met the requirements
• For radio switchover, the UK created the Radio “Tick Mark”

  ![Digital Radio Tick Mark](digitalradio.png)

• The “Tick Mark” could only be used on products that met a minimum set of feature and performance standards
Beyond the UK

- Other countries in Europe saw the benefits of the UK’s “Tick Mark” scheme
- But their DAB plans were not exactly the same…
  - Different frequencies used
  - Other languages needed more characters to be properly displayed
- World DAB took on the task of creating the technical basis of Europe-wide minimum requirements for DAB receivers
- The result is ETSI standard TS 103 461
ETSİ TS 103 461

- Sets out the minimum requirements for all the core DAB features and performance
  - R.F. performance, scanning, tuning
  - Audio decoding
  - Display of labels
  - Automotive features
    - Service following, announcements
- Applicable to most of Europe
  - Only specifies Latin characters for display
Other regions

- World DAB TC has been working on how to improve display capabilities for other regions
- Non-Latin text has been a big topic
- New ETSI specification defines the framework for using non-Latin text
  - Additional signalling field to provide key complexity indicators
  - Regional profiles concept to define scope and limits for particular markets
Additional signalling for each label

• Text control field

<table>
<thead>
<tr>
<th>Bit Position</th>
<th>Flag</th>
</tr>
</thead>
<tbody>
<tr>
<td>b_3</td>
<td>Bidi flag</td>
</tr>
<tr>
<td>b_2</td>
<td>Base direction</td>
</tr>
<tr>
<td>b_1</td>
<td>Contextual flag</td>
</tr>
<tr>
<td>b_0</td>
<td>Combining flag</td>
</tr>
</tbody>
</table>

• Provides key information
  – base direction: tells the receiver to display the text LTR or RTL
  – “complexity” flags to indicate the rendering capabilities needed for each label
    • Bidirectional text (i.e. both LTR and RTL in the same label)
    • Contextual characters (i.e. glyph changes with position)
    • Combining characters (i.e. glyph is composed of different parts)
Regional profiles

- Define what will be transmitted – complexity, character ranges
- Define what capabilities receivers require
  - Renderers, glyph sets
  - May be used for market requirements regulations
- Three profiles so far defined
  - Latin
  - Full Europe (Latin, Greek, Cyrillic)
  - ASBU (Arabic, Latin)
- Further profiles for additional markets are easy to add once agreed
Minimum requirements for ASBU

• In the Arab States Broadcasting Union region, the idea of a minimum receiver requirements specification has been considered
  – The frequencies available for DAB are the same as in Europe
  – The performance and feature requirements are almost the same as Europe
    • Only the need for the display of Arabic text is different
    • And the desire for performance standards for analogue AM and FM

• The solution is based on ETSI TS 103 461 – the “Tick Mark” standard
  – extended to include the ASBU profile specified in ETSI TS 103 176
  – with ITU recommendations for AM and FM requirements
Other regions

- World DAB is happy to work with others to find solutions for their regions
- The core DAB technology requirements are specified by ETSI TS 103 461
- Additional regional profiles can be defined in ETSI TS 103 176 to ensure display requirements are met
Thank you

www.worlddab.org