

Technical Committee Update September 2020

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- Receiver testing – minimum requirements
 - Features
 - Performance
 - Specifications
- Arab fonts (and other scripts)
- The EECC directive and automotive DAB receivers

Receivers

- More than 500 different models of DAB+ radios are available
 - Domestic
 - Automotive
 - Specialist
- But do they meet the requirements for your markets?



Minimum requirements for receivers

- WorldDAB TC built on UK receiver requirements (the “Tick Mark”) to create a broader-based specification for all European markets
- ETSI TS 103 461 provides requirements and test methods
 - RF performance
 - Audio decoding modes
 - Reconfiguration
 - Text display requirements
 - In-vehicle features (service following, announcements)
- An updated version has just been published
 - More later...



- TS 103 461 was developed from the UK only standard to allow a larger market to enjoy the same core level of features and performance
 - So the receiver tuning range was extended from 7 channels to 38 channels – the whole of Band III from 174 to 240 MHz
 - And the display requirements were extended to cover all the Latin based languages in Europe
- For other markets, ETSI TS 103 461 can be the core of the receiver requirements
 - The DAB standard is the same across the globe, so coding and modulation are all completely covered
 - But different markets use different languages, so the display requirements are likely to be different
 - And other markets will have different needs for other radio standards

- There are two types of text label
 - SI labels that allow selection of the radio station by name
 - Dynamic Labels that provide extra information to the audio
- The SI labels consist of 16 characters
- The Dynamic Labels consist of up to 128 characters
 - The message length is up to 128 bytes, so the label length depends on the number of bytes needed for each character
 - Domestic radios usually have small displays and so they scroll the message across the screen, character by character

- DAB is able to deliver all the Unicode characters in the Basic Multilingual Plane – that means all written scripts
 - But given the huge range of characters and scripts possible, it is hard for broadcasters and manufacturers to align their uses
- Additional support is available to make that alignment better:
 - The “Text Control” feature, helping a receiver know if it will be able to handle the label
 - “Regional Profiles”, detailing code point ranges and script features for different markets

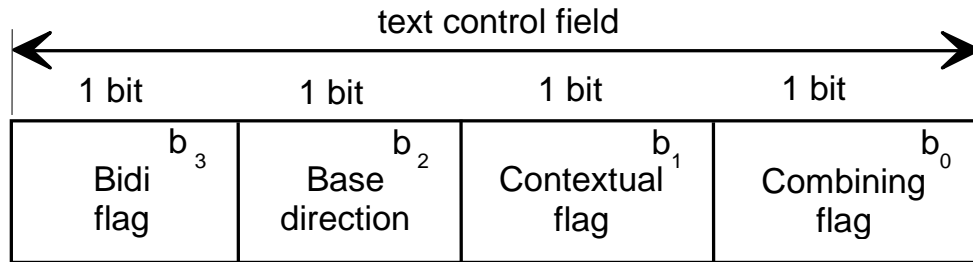
Text direction and other script features

- Analogue radios don't have a text display
- Digital radios do, but until recently receiver manufacturers were only used to dealing with Left-to-Right (LTR) scripts
- But languages written in Right-to-Left (RTL) scripts also exist
 - Arabic, Hebrew, Persian, Urdu...
- And some scripts have characters that change shape according to where the letter is in a word...
- Other scripts have characters that change position depending on the characters around them...
- So dealing with different scripts requires a lot more than simply swapping left with right and right with left...

Contextual character glyphs

Letter	Unicode	Contextual form Unicode			
		Isolated	End	Middle	Start
<u>hā'</u>	U+062D ح	U+FEA1 ح	U+FEA2 ح	U+FEA4 ح	U+FEA3 ح
<u>bā'</u>	U+0628 ب	U+FE8F ب	U+FE90 ب	U+FE92 ب	U+FE91 ب
<u>sīn</u>	U+0633 س	U+FEB1 س	U+FEB2 س	U+FEB4 س	U+FEB3 س

- Text control field



- Provides key information

- base direction: tells the receiver to display the text LTR or RTL
- “complexity” flags inform the receiver of the rendering capabilities needed for each label
 - Bidirectional scripts (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)

- Define what will be transmitted – complexity, character ranges
- Four profiles so far defined
 - EBU Latin (base profile) abcdef...
 - All Europe (Latin, Greek, Cyrillic) abcdef... αβγδεζ... ЖЩЙЯЮ...
 - ASBU (Arabic, Latin) جسدضفنگ abcdef...
 - Thai (Thai, Latin) ãiÖöëþİ ... abcdef...
- Further profiles for additional markets are easy to add once agreed

Update of TS 103 461

- Small updates to reflect changes to the DAB standards base and the EECC:
 - Text display requirements now state that some markets will need additional capabilities to support regional profile(s)
 - For automotive receivers installed in new cars (class “M”) sold in the EU, then the EECC applies and additional support for the “All Europe” regional profile is required (Latin, Greek, Cyrillic)
 - Support for alarm announcements (emergency warnings) is now required



- TS 103 461 covers all the core DAB features and performance requirements
 - Copying and pasting these requirements into a local standard is problematic: manufacturers will need to check if the requirements are the same, updates to standards might be missed...
 - Referencing all the requirements is a clean and simple solution
- Markets outside Europe will need different requirements for text displays to ensure that local languages can be used
 - Extending the requirements of the display by referencing the relevant regional profiles ensures all manufacturers understand the requirement
- Other radio standards also operate in different markets – TS 103 461 only requires an FM decoder (with RDS for automotive receivers)
 - Extend the analogue requirements (e.g. for MW) if needed

