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TECHNICAL SPECIFICATION

Digital Radio Mondiale (DRM);
Regional profiles

ETSI

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Foreword

This Technical Specification (TS) has been produced by Joint Technical Committee (JTC) Broadcast of the European Broadcasting Union (EBU), Comité Européen de Normalisation ELECtrotechnique (CENELEC) and the European Telecommunications Standards Institute (ETSI).

NOTE: The EBU/ETSI JTC Broadcast was established in 1990 to co-ordinate the drafting of standards in the specific field of broadcasting and related fields. Since 1995 the JTC Broadcast became a tripartite body by including in the Memorandum of Understanding also CENELEC, which is responsible for the standardization of radio and television receivers. The EBU is a professional association of broadcasting organizations whose work includes the co-ordination of its members' activities in the technical, legal, programme-making and programme-exchange domains. The EBU has active members in about 60 countries in the European broadcasting area; its headquarters is in Geneva.

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Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the ETSI Drafting Rules (Verbal forms for the expression of provisions).

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1 Scope

The present document defines regional profiles for use by broadcasters and receiver manufacturers to create good text experiences for audiences in different markets.

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at https://docbox.etsi.org/Reference/.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are necessary for the application of the present document.

[1] ETSI ES 201 980: "Digital Radio Mondiale (DRM); System specification".

[2] Unicode bidirectional algorithm, UAX#9.

NOTE: Available at http://www.unicode.org/reports/tr9/.

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.1] ETSI TS 101 756: "Digital Audio Broadcasting (DAB); Registered tables".

3 Definition of terms, symbols and abbreviations

3.1 Terms

Void.

3.2 Symbols

Void.

3.3   Abbreviations

For the purposes of the present document, the following abbreviations apply:

AM   Amplitude Modulation
DAB   Digital Audio Broadcasting
DRM   Digital Radio Mondiale
EBU   European Broadcasting Union
LTR   Left-To-Right
RTL   Right-To-Left
SDC   Service Description Channel

4   Introduction

The DRM Consortium maintains the present document to provide a central point for the definition of regional profiles. An attempt is made to keep these definitions in sync with the respective document maintained by WorldDAB for the DAB family of standards (see annex E, ETSI TS 101 756 [i.1]).

5   Regional profiles

5.1   Introduction

The text labels used in DRM consist of the SDC data entity type 1, providing identification of the service, and the text message feature, which provides additional information to accompany an audio service.

Unicode is a huge standard, covering a vast breadth of situations, not all of which will be relevant in every market. Therefore, some definition of code point usage and restrictions on the use of the flags in the **text control** field (see ETSI ES 201 980 [1], clause 6.7) may assist broadcasters and receiver makers to meet the expectations of listeners with cost-effective products.

When deciding on the scope of the content of service labels and text messages, due consideration should be given to the requirements needed by receivers to correctly present the labels. The text control field is designed to convey information to receivers about the necessary rendering capabilities needed for proper display of the label. Mixing scripts in a single label makes the label more complex: additional character glyphs will be required, bidirectional processing may be needed, etc. It is therefore recommended that service labels do not mix LTR and RTL scripts, although this is not prohibited. With respect to text messages, it is recommended that consideration be given to splitting text into shorter labels with a single script, since this may result in better presentation on a wider number of receivers.

The regional profiles describe the characteristics of the service labels and text messages and are devised to help to harmonise the broadcast and receiver capabilities for different markets. Each regional profile shall provide definitions for:

- the permitted settings of the **text control** field in service labels;

- the permitted settings of the **text control** field in text messages;

- the permitted Unicode code points for transmission (and thus required glyph capability in receivers).

The regional profile that a label belongs to is not signalled, but reference to specific regional profiles may be made, in for example, minimum requirements documents, to define required capabilities for a particular market.

5.2   Broadcaster considerations

Regional profiles are a good way to align the features used by broadcasters and the implementations of receiver manufacturers for specific markets, typically served by local and regional transmissions.

The target areas of DRM transmissions, however, may not be covered by a single profile. This places the challenge to broadcasters to design service labels and text messages in a way that maximizes the chance that a wide variety of receivers will be able to present the content - irrespective of the specific profile implemented.

The following guidelines should be considered by broadcasters:

- avoid mixing scripts in a single label. For text messages, for example, it may be possible to split the different script sections into separate messages;

- avoid mixing LTR and RTL elements in a single label (i.e. each label should only be LTR or RTL, not bidirectional);

- labels with bidirectional content should follow the rules for the simplified bidirectional algorithm (see ETSI ES 201 980 [1], clause 6.7.4.3) to achieve the widest possible receiver support; devices implementing the full Unicode bidirectional algorithm [2] and those implementing the simplified bidirectional algorithm will be able to process the label.

A regional profile specifies the permitted coding options for labels and the code points that are allowed in the labels.

The transmission system shall pre-process all text labels to ensure that they meet the code point restrictions and text control field restrictions of the required regional profile. When the required features include the minimum RTL implementation or the simplified bidirectional algorithm, then each label shall also be checked to ensure compliance with that feature and encoded accordingly or rejected.

5.3 Receiver considerations

DRM receivers - particularly if supporting reception of DRM services in the AM bands - will often be exposed to services originating from other regions, but may only support the functionality of the profile expected in the sales region of the receiver.

Receivers designed for a particular regional profile shall provide all the capabilities required by that regional profile. Receivers may provide the capabilities for more than one regional profile.

Since receivers do not receive explicit signalling of which regional profile the tuned service is using, they need to have a defined response to text labels that exceed their display capabilities. Some general recommendations follow:

- if a label contains glyphs not supported by the receiver (e.g. from multiple scripts), the receiver might still be able to extract meaningful segments of supported displayable characters (e.g. 10 or more consecutive characters in a text message);

- if the receiver is not able to process the service label (or no service label is signalled at all), an internal label identifying the service should be presented instead (such as the DRM Service Id);

- manufacturers should consider support for RTL and bidirectional labels; the minimum RTL implementation and the simplified bidirectional algorithm are designed to provide basic RTL script support and basic bidirectional support for receivers with simpler displays.

5.4 Regional profile definitions

5.4.1 Encoding and decoding requirements

Table 1: Encoding and decoding requirements

Profile	Service label text control field settings	Text message text control field settings	Glyph set
EBU Latin	-	0000b	Complete EBU Latin-based repertoire (see ETSI TS 101 756 [i.1], annex C)
All Europe	-	0000b	Complete EBU Latin-based repertoire (see ETSI TS 101 756 [i.1], annex C) U+0384 to U+03CE (Greek); U+0400 to U+045F (Cyrillic).
Arab States Broadcasting Union	0100b	xx00b	Complete EBU Latin-based repertoire (see ETSI TS 101 756 [i.1], annex C) U+060C (Arabic comma), U+061B (Arabic semi-colon), U+061F (Arabic question mark); U+0660 to U+066C (Arabic-Indic numerals and numerical punctuation); U+06F0 to U+06F9 (Eastern Arabic-Indic numerals); U+FE70 to U+FEFF (Arabic Presentation Forms-B).
Indian Core	000xb	000xb	Complete EBU Latin-based repertoire (see ETSI TS 101 756 [i.1], annex C) U+0900 to U+097F (Devanagari, including combining characters); U+A8E0 to U+A8FF (Extended Devanagari, including combining characters).
Thai	00xxb	00xxb	Complete EBU Latin-based repertoire (see ETSI TS 101 756 [i.1], annex C) U+0E00 to U+0E7F (Thai).
NOTE 1: Service labels omit the text control field when it is 0000b.			
NOTE 2: A label may use all permitted codepoints unless the text control field settings preclude it (e.g. character type L codepoints in an RTL label).			
NOTE 3: An 'x' in the text control field settings indicates that either 0 or 1 may be used.			

5.4.2 Additional information

5.4.2.1 Arab States Broadcasting Union profile

The basis of the profile is language coverage for the members of the ASBU. Arabic is the core requirement, but some countries in this region also provide services in European languages.

Receivers shall provide either the Minimum RTL implementation (see ETSI ES 201 980 [1], clause 6.7.4.2), or the Unicode bidirectional algorithm [2]. It is recommended that receivers that implement the minimum RTL implementation also implement the simplified bidirectional algorithm (see ETSI ES 201 980 [1], clause 6.7.4.3).

Although Arabic script has contextual characters, presentation code points are specified to allow simple receiver types.

No Service label shall contain both Arabic and Latin letters. The base direction flag shall be set according to the content of the Service label: Arabic to 1 (RTL), Latin to 0 (LTR). All other flags shall be set to 0.

Text messages will usually be in either Arabic or Latin script, not both: these labels have the bidi flag set to 0. Any text messages that have both Arabic and Latin scripts will have the bidi flag set to 1.

NOTE: As receivers may support the minimum RTL implementation rather than the Unicode bidirectional algorithm, bidirectional text messages will not be displayed by all receivers.

When converting input text to output labels, particular care is needed to deal with input Arabic contextual characters. Bidirectional Service labels shall not be accepted for transmission. Where possible, input text for text messages should be divided into unidirectional text sequences sent as separate dynamic labels.

5.4.2.2   Indian Core profile

The basis of the profile is language coverage for the major scripts used in India and neighbouring countries. This includes as a minimum the English and Hindi scripts, along with writing support for languages such as Bodo, Dogri, Kashmiri, Konkani, Maithili, Marathi, Santali, Sindhi, Nepali, and Sanskrit (the Devanagari and Extended Devanagari Unicode blocks).

These scripts are LTR and do not comprise contextual characters. If combining code points are used in the label, the **combining flag** of the **text control** field shall be set to 1.

5.4.2.3   Thai profile

The basis of the profile is language coverage needed for Thailand, therefore Thai and Latin scripts are included. These scripts are LTR and so the base direction flag shall be set to 0 and the bidi flag shall be set to 0.

In general, receivers will need to be able to combine glyphs and will have to be capable of reordering glyphs for proper presentation. Labels which include Thai characters shall have the combining flag set to 1 except in the rare cases when the label does not require glyph combination.

Contextual characters are rare in Thai text, but they do exist; the contextual flag shall be set to 1 only for labels that use contextual characters.

When converting input text to output labels, particular care is needed to deal with input Thai characters to ensure that the combining flag and contextual flag are set correctly.

History

Document history		
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