Digital TV Chipset
Smart / Convergence Chipset
Mobile TV / DAB / MP3

ARABIC & THAI DISPLAY

GIovane
Forward in advance
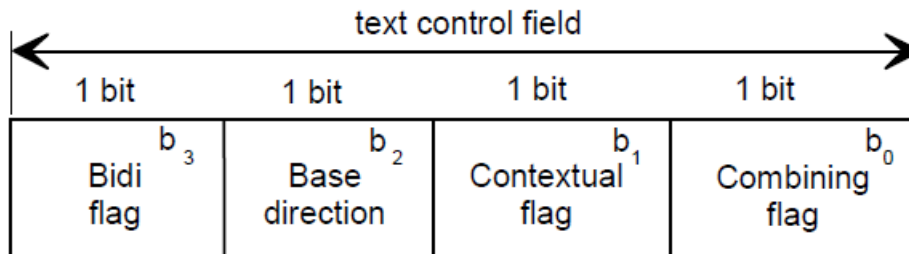
2021. 3. 10
Glovane Co., Ltd.

Contents

1. Specification Changes

- A new version has been published that corresponds to the standard below.

    ✓ **ETSI TS 103 176 V2.4.1 (2020-08) : Rules of implementation;**

    ✓ **ETSI TS 101 756 V2.4.1 (2020-08) : Registered Tables;**

    ✓ ETSI TS 103 461 V1.2.1 (2020-08) : Minimum requirements and test specificaions for technologies and products.

- Summary of changes

    ✓ **Non-latin Text support**

    ✓ Service following, The same ECC is added to the same service ID in the same service condition.

    ✓ ALARM announcement is included as a basic test item for TickMark.

    ✓ SPI(service and programm information) has become mandatory for color LCD-based products

    ✓ TickMark stream has been updated to V1.2

    ✓ Redefine the DAB receiver profile.

1.1. Non-Latin text support

✓ Regional profiles are defined to for non-Latin text.

    ✓ The text control field is designed to convey information to receivers about the necessary rendering capabilities needed for proper display of the label

Bidi flag: this 1-bit flag shall indicate whether the label contains bidirectional text (excluding numerals) as follows:
        0: bidirectional text is not present;
        1: bidirectional text is present.
Base direction: this 1-bit flag shall define the Unicode base direction of the label as follows:
        0: left-to-right (LTR);
        1: right-to-left (RTL).
Contextual flag: this 1-bit flag shall indicate whether contextual characters are used in the label as follows:
        0: contextual characters are not present (presentation characters only);
        1: contextual characters are present.
Combining flag: this 1-bit flag shall indicate whether combining characters are used in the label as follows:
        0: combining characters are not present;
        1: combining characters are present.

1.2. Regional Profile definitions

✓ The definitions of the profiles define which SI labels are allowed as follows.

  ✓ **Base**: service components shall be given a FIG type 1 SI label **only**;

  ✓ **Either**: service components shall be given **either** a FIG type 1 SI label **or** a FIG type 2 SI label but **not both**;

  ✓ **Both:** service components shall be given both a FIG type 1 SI label and a FIG type 2 SI label.

✓ Regional profile definitions.

Profile	SI label options (see clause E.2)	FIG type 2 text control field settings	Dynamic label charset settings	Dynamic label text control field settings	Glyph set
EBU Latin	Base	-	EBU	0000b	Complete EBU Latin-based repertoire (see annex C)
All Europe	Either	0000b	EBU UTF-16 UTF-8	0000b	Complete EBU Latin-based repertoire (see annex C) U+0384 to U+03CE (Greek) U+0400 to U+045F (Cyrillic) (see also annex F)
Arab States Broadcasting Union	Either	0100b	EBU UTF-16 UTF-8	xx00b	Complete EBU Latin-based repertoire (see 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)
Thai	Either	00xxb	EBU UTF-16 UTF-8	00xxb	Complete EBU Latin-based repertoire (see annex C) U+0E00 to U+0E7F (Thai)
NOTE 1: FIG type 1 labels can only use the EBU charset.					
NOTE 2: FIG type 2 labels and dynamic labels with charsets UTF-8 and UTF-16 can 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.					
NOTE 4: Ensemble labels are optional; if provided they may be coded as FIG type 1 and/or FIG type 2.					

1.2.1 EBU-Latin Profile

✓ EBU Latin profile

   ✓ Since EBU latin only uses FIG type1, only DLS is considered for the text control field.

FIG type 2				Dynamic Label			
Text control field				Text control field			
1 bit	1 bit	1 bit	1 bit	1 bit	1 bit	1 bit	1 bit
Bidi flag	Base direction	Contextual flag	Combining flag	Bidi flag	Base direction	Contextual flag	Combining flag
-	-	-	-	0	0	0	0

   ✓ It is based on Complete EBU Latin-based repertoire and is the default profile of DAB.

Character code (hexadecimal)																
	-0	-1	-2	-3	-4	-5	-6	-7	-8	-9	-A	-B	-C	-D	-E	-F
0-		0118 Ę	012E Į	0172 Ų	0102 Ă	0116 Ė	010E Ď	0218 Ș	021A Ț	010A Ċ			0120 Ġ	0139 Ĺ	017B Ż	0143 Ń
1-	0105 ą	0119 ę	012F į	0173 ų	0103 ă	0117 ė	010F ď	0219 ș	021B ț	010B ċ	0147 Ň	011A Ě	0121 ġ	013A ĺ	017C ż	
2-	0020	0021 !	0022 "	0023 #	0142 ł	0025 %	0026 &	0027 '	0028 (	0029)	002A *	002B +	002C ,	002D -	002E .	002F /
3-	0030 0	0031 1	0032 2	0033 3	0034 4	0035 5	0036 6	0037 7	0038 8	0039 9	003A :	003B ;	003C <	003D =	003E >	003F ?
4-	0040 @	0041 A	0042 B	0043 C	0044 D	0045 E	0046 F	0047 G	0048 H	0049 I	004A J	004B K	004C L	004D M	004E N	004F O
5-	0050 P	0051 Q	0052 R	0053 S	0054 T	0055 U	0056 V	0057 W	0058 X	0059 Y	005A Z	005B [	016E Ů	005D]	0141 Ł	005F _
6-	0104 Ą	0061 a	0062 b	0063 c	0064 d	0065 e	0066 f	0067 g	0068 h	0069 i	006A j	006B k	006C l	006D m	006E n	006F o
7-	0070 p	0071 q	0072 r	0073 s	0074 t	0075 u	0076 v	0077 w	0078 x	0079 y	007A z	00AB «	016F ů	00BB »	013D Ľ	0126 Ħ
8-	00E1 á	00E0 à	00E9 é	00E8 è	00ED í	00EC ì	00F3 ó	00F2 ò	00FA ú	00F9 ù	00D1 Ñ	00C7 Ç	015E Ş	00DF ß	00A1 ¡	0178 Ÿ
9-	00E2 â	00E4 ä	00EA ê	00EB ë	00EE î	00EF ï	00F4 ô	00F6 ö	00FB û	00FC ü	00F1 ñ	00E7 ç	015F ş	011F ğ	0131 ı	00FF ÿ
A-	0136 Ķ	0145 Ņ	00A9 ©	0122 Ģ	011E Ğ	011B ě	0148 ň	0151 ő	0150 Ő	20AC €	00A3 £	0024 $	0100 Ā	0112 Ē	012A Ī	016A Ū
B-	0137 ķ	0146 ņ	013B Ļ	0123 ģ	013C ļ	0130 İ	0144 ń	0171 ű	0170 Ű	00BF ¿	013E ľ	00B0 °	0101 ā	0113 ē	012B ī	016B ū
C-	00C1 Á	00C0 À	00C9 É	00C8 È	00CD Í	00CC Ì	00D3 Ó	00D2 Ò	00DA Ú	00D9 Ù	0158 Ř	010C Č	0160 Š	017D Ž	00D0 Đ	013F Ŀ
D-	00C2 Â	00C4 Ä	00CA Ê	00CB Ë	00CE Î	00CF Ï	00D4 Ô	00D6 Ö	00DB Û	00DC Ü	0159 ř	010D č	0161 š	017E ž	0111 đ	0140 ŀ
E-	00C3 Ã	00C5 Å	00C6 Æ	0152 Œ	0177 ŷ	00DD Ý	00D5 Õ	00D8 Ø	00DE Þ	014A Ŋ	0154 Ŕ	0106 Ć	015A Ś	0179 Ź	0164 Ť	00F0 ð
F-	00E3 ã	00E5 å	00E6 æ	0153 œ	0175 ŵ	00FD ý	00F5 õ	00F8 ø	00FE þ	014B ŋ	0155 ŕ	0107 ć	015B ś	017A ź	0165 ť	0127 ħ

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1.2.2 ALL-European Profile

✓ All European Profile

   ✓ Text control field is used, but only Left to Right display is supported.

FIG type 2				Dynamic Label			
Text control field				Text control field			
1 bit	1 bit	1 bit	1 bit	1 bit	1 bit	1 bit	1 bit
Bidi flag	Base direction	Contextual flag	Combining flag	Bidi flag	Base direction	Contextual flag	Combining flag
0	0	0	0	0	0	0	0

   ✓ In addition to EBU Lain character set, Creek and Cyrillic characters are additionally defined.

	-0	-1	-2	-3	-4	-5	-6	-7	-8	-9	-A	-B	-C	-D	-E	-F
038-					΄	῁	Ά	·	Έ	Ή	Ί		Ό		Ύ	Ώ
039-	ΐ	Α	Β	Γ	Δ	Ε	Ζ	Η	Θ	Ι	Κ	Λ	Μ	Ν	Ξ	Ο
03A-	Π	Ρ		Σ	Τ	Υ	Φ	Χ	Ψ	Ω	Ϊ	Ϋ	ά	έ	ή	ί
03B-	ΰ	α	β	γ	δ	ε	ζ	η	θ	ι	κ	λ	μ	ν	ξ	ο
03C-	π	ρ	ς	σ	τ	υ	φ	χ	ψ	ω	ϊ	ϋ	ό	ύ	ώ	
040-	Ѐ	Ё	Ђ	Ѓ	Є	Ѕ	І	Ї	Ј	Љ	Њ	Ћ	Ќ	Ѝ	Ў	Џ
041-	А	Б	В	Г	Д	Е	Ж	З	И	Й	К	Л	М	Н	О	П
042-	Р	С	Т	У	Ф	Х	Ц	Ч	Ш	Щ	Ъ	Ы	Ь	Э	Ю	Я
043-	а	б	в	г	д	е	ж	з	и	й	к	л	м	н	о	п
044-	р	с	т	у	ф	х	ц	ч	ш	щ	ъ	ы	ь	э	ю	я
045-	ѐ	ё	ђ	ѓ	є	ѕ	і	ї	ј	љ	њ	ћ	ќ	ѝ	ў	џ

1.2.3. ASBU Profile

✓ Arab States Broadcasting Union profile

 ✓ **Receivers shall provide either the Minimum RTL implementation, or the Unicode bidirectional algorithm.**

 ✓ It is recommended that receivers that implement the minimum RTL implementation also implement the simplified bidirectional algorithm.

 ✓ The FIG type 2 labels will set the base direction flag to 1 (RTL) and all other flags to 0.

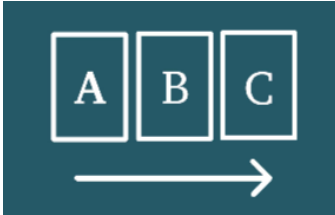| FIG type 2				Dynamic Label			
Text control field				Text control field			
1 bit	1 bit	1 bit	1 bit	1 bit	1 bit	1 bit	1 bit
Bidi flag	Base direction	Contextual flag	Combining flag	Bidi flag	Base direction	Contextual flag	Combining flag
0	**1**	0	0	0/1	0/1	0	0

 ✓ Arabic Presentation Forms-B is used as a code point.

1.2.4. Thai Profile

✓ Thai Profile

- ✓ These scripts are **LTR** and so the base direction flag shall be set to 0 and the bidi flag shall be set to 0.
- ✓ Thai characters shall have the combining flag set to 1
- ✓ Contextual characters are rare in Thai text, but they do exist.

FIG type 2				Dynamic Label			
Text control field				Text control field			
1 bit	1 bit	1 bit	1 bit	1 bit	1 bit	1 bit	1 bit
Bidi flag	Base direction	Contextual flag	Combining flag	Bidi flag	Base direction	Contextual flag	Combining flag
0	0	0/1	0/1	0	0	0/1	0/1

- ✓ Thai code point are lie from U+0E00 to U+0E7F.

	-0	-1	-2	-3	-4	-5	-6	-7	-8	-9	-A	-B	-C	-D	-E	-F
0E0-		ก	ข	ฃ	ค	ฅ	ฆ	ง	จ	ฉ	ช	ซ	ฌ	ญ	ฎ	ฏ
0E1-	ฐ	ฑ	ฒ	ณ	ด	ต	ถ	ท	ธ	น	บ	ป	ผ	ฝ	พ	ฟ
0E2-	ภ	ม	ย	ร	ฤ	ล	ฦ	ว	ศ	ษ	ส	ห	ฬ	อ	ฮ	ฯ
0E3-	ะ	ั	า	ำ	ิ	ี	ึ	ื	ุ	ู	ฺ					฿
0E4-	เ	แ	โ	ใ	ไ	ๅ	ๆ	็	่	้	๊	๋	์	ํ	๎	๏
0E5-	๐	๑	๒	๓	๔	๕	๖	๗	๘	๙	๚	๛				
0E6-																
0E7-																

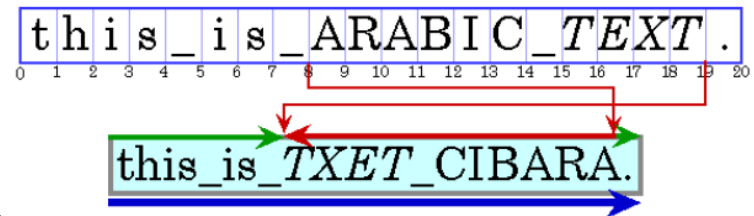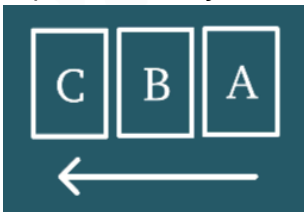# 1.3. Display Direction

- ✓ **LTR(LEFT-TO-RIGHT)**
    - ✓ Common languages except Arabic, Hebrew, and Persian.
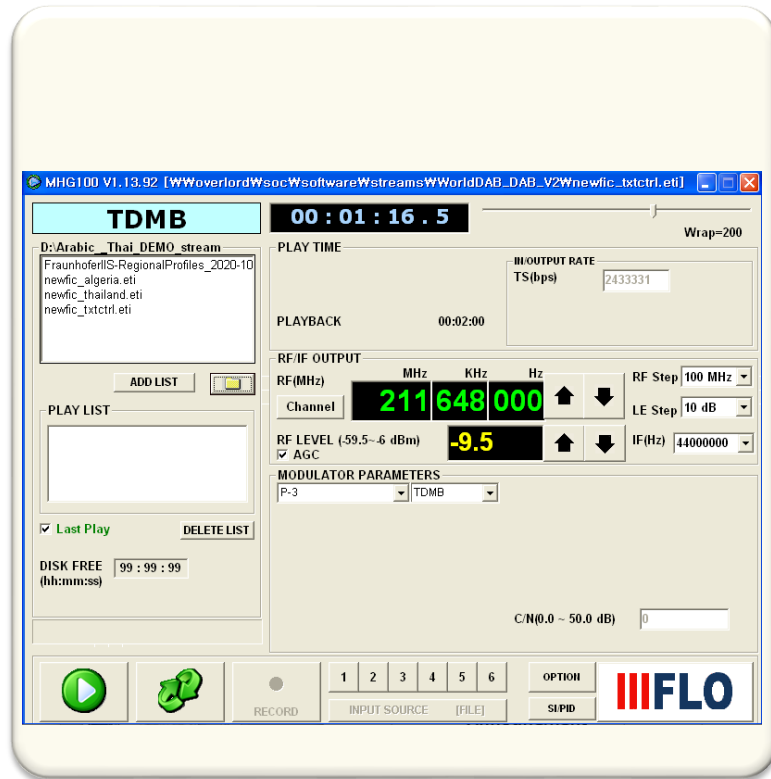

- ✓ **RTL(RIGHT-TO-LEFT)**
    - ✓ Numeric digits, and their associated characters, are always displayed LTR, even in RTL scripts.
    - ✓ Character blocks excluding numeric block must be mirrored by RTL.
    - ✓ "123", "4 567", "$10.99", "66%", "11/03/2018", "15:20", "14€30", "85°F", "٠٬٧٨٩","١٢٣٬٤٥٦" are all numeric blocks.
    - ✓ Arabic, Hebrew, and Persian languages use RTL notation.
    - ✓ In this and subsequent examples, Arabic and Hebrew text is represented by upper case letters and spaces are represented by underscores.

2.1. Demo Environment Description

✓ How to receive broadcasts

  ✓ Play ETI using DAB signal transmission equipment and check if Arabic and Thai are displayed normally on the screen by receiving it with JBL.TUNER2 terminal.
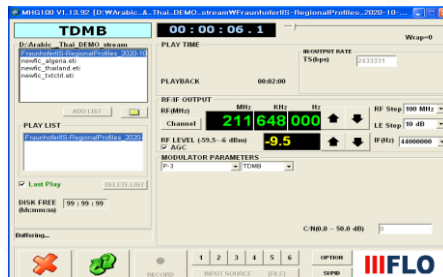
2.2. Restrictions

✓ Display direction

    ✓ The UI of JBL.TUNER2 is processed in the format of [Service Name]-[Programm Type]-[DLS Info] and displayed only in the LEFT-TO-RIGHT direction, and long sentences that are not displayed on one screen are scrolled to the left.

    ✓ In order to support Arabic, the display direction must be considered, and the display direction information is included in the Service Name and DLS Info.

    ✓ Due to screen display restrictions, this DEMO determines the screen display direction based on the display direction included in the Service Name.

        ✓ When the display direction is "LTR": Display in the form of [Service Name]-[Programm type]-[DLS Info].

        ✓ When the display direction is "RTL": [DLS Info]-[Programm Type]-[Service Name]

    ✓ That is, if the DLS display direction is not considered, and the display direction of the DLS and the service name is different, there may be confusion.

    ✓ This must be reviewed when setting product UI specifications in the future.

2.3. Demo Order

- All-European Profile reception test.
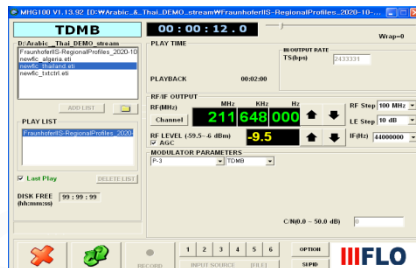- Thai Profile reception test
- ASBU Profile reception test

2.4. All-European Profile Reception

✓ Stream Information

    ✓ The test stream was provided by WorldDAB, and the following two are available.

        ✓ newfic_txtctrl.eti

        ✓ FraunhoferIIS-RegionalProfiles_2020-10-30.eti

✓ Demo Sequence

    ✓ Send newfic_txtctrl.eti to DAB transmitter.

    ✓ Search the service with the SCAN button of JBL.TUNER2.

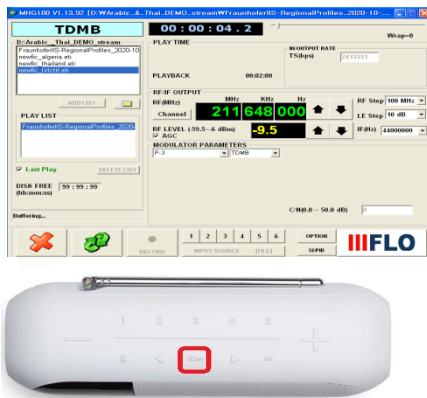   ✓ **Select "Αθήνα FM Москва" service and check the displayed.**

2.5 Thai Profile Reception

✓ Stream Information

    ✓ The test stream was provided by WorldDAB, and the following are available.

        ✓ newfic_thailand.eti

✓ Demo Sequence

    ✓ Send newfic_thailand.eti to DAB transmitter.

    ✓ Search the service with the SCAN button of JBL.TUNER2.

    ✓ Select **"เวลาที่มีความสุข"** service and check the displayed.

2.5 ASBU Profile Reception

- ✓ Stream Information

  - ✓ The test stream was provided by WorldDAB, and the following three are available.

    - ✓ txtctrl_algeria.eti
    - ✓ newfic_txtctrl.eti
    - ✓ FraunhoferIIS-RegionalProfiles_2020-10-30.eti

- ✓ Demo 순서

  - ✓ Send txtctrl_algeria.eti to DAB transmitter.
  - ✓ Search the service with the SCAN button of JBL.TUNER2.
  - ✓ Select "الإذاعة الثقافية" service and check the displayed.

2.5 ASBU Profile Reception

✓ Arabic Only – RTL display

✓ Mixed English and Arabic characters-RTL display

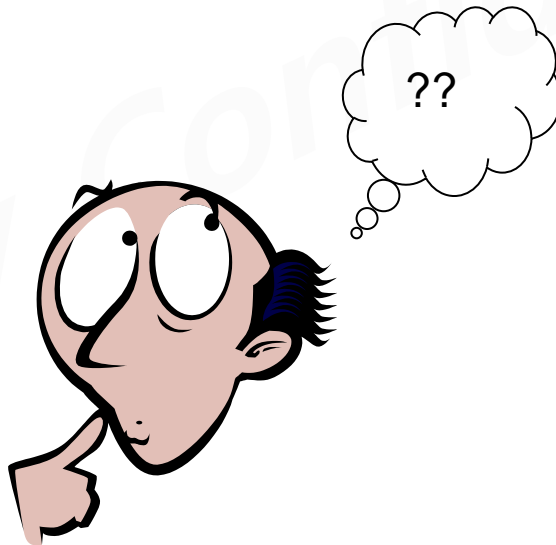# 2.5 ASBU Profile Reception

✓ Mixed English and Arabic characters-LTR display

Questions