



**ATSC**

ADVANCED TELEVISION  
SYSTEMS COMMITTEE

# **ATSC Recommended Practice: A/325:2023-03 Corrigendum No. 1**

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Doc. A/325:2023-03 Corr. No. 1  
21 April 2023

**Advanced Television Systems Committee**  
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### Revision History

| Version              | Date          |
|----------------------|---------------|
| Corrigendum approved | 21 April 2023 |

## **ATSC Recommended Practice: A/325:2023-03 Corrigendum No. 1**

### **1. OVERVIEW**

#### 1.1 Definition

A Corrigendum is generated to correct an error or ambiguity in an ATSC document introduced either in drafting or publication of the document that could lead to incorrect or unsafe application of the document. Correction of a technical defect shall in no way cause a change in functionality. Corrigenda shall be published as attachments to the original ATSC document. Distribution by ATSC of existing documents shall include any approved Corrigenda.

#### 1.2 Scope

This document describes the necessary update to the A/325:2023-03.

#### 1.3 Rationale for Changes

In example configuration settings of Annex B (Table B.1.1), the following values should be corrected:

- Annex B, Table B.1, Configuration 5 (p.72): MISO → SISO
- Annex B, Table B.1, Configuration 6 (p.73): # Preamble Symbols 1 → 2

### **2. LIST OF CHANGES**

Inserted text, tables, and drawings are shown in **blue**; deletions of existing text are shown in **red** ~~strikeout~~.

## Annex B: Example Configuration Settings

### B.1 DEVICE UNDER TEST CONFIGURATIONS

**Table B.1.1** Example DUT Configurations

|                            | Parameter                                | Configuration 1  | Configuration 2  | Configuration 3  | Configuration 4  | Configuration 5  | Configuration 6  |
|----------------------------|--|--|--|--|--|--|--|
| <b>Tuner</b>               | RF Out Center Frequency                  | Demodulator IF input   | Demodulator IF input   | Demodulator IF input   | Demodulator IF input   | Demodulator IF input   | 569.0 MHz (Channel 30)   |
| <b>Bootstrap Signaling</b> | Channel Bandwidth                        | 6 MHz  | 6 MHz  | 6 MHz  | 6 MHz  | 6 MHz  | 6 MHz  |
|                            | Sample Rate                              | 6.912 MHz  | 6.912 MHz  | 6.912 MHz  | 6.912 MHz  | 6.912 MHz  | 6.912 MHz  |
| <b>Input Formatting</b>    | ALP Packet Length                        | 1200 byte $2^{23}-1$ PRBS<br>+8byte UDP Header<br>+20byte IPv4 Header<br>+2byte ALP Header | 1200 byte $2^{23}-1$ PRBS<br>+8byte UDP Header<br>+20byte IPv4 Header<br>+2byte ALP Header | 1200 byte $2^{23}-1$ PRBS<br>+8byte UDP Header<br>+20byte IPv4 Header<br>+2byte ALP Header | 1200 byte $2^{23}-1$ PRBS<br>+8byte UDP Header<br>+20byte IPv4 Header<br>+2byte ALP Header | 1200 byte $2^{23}-1$ PRBS<br>+8byte UDP Header<br>+20byte IPv4 Header<br>+2byte ALP Header | 1200 byte $2^{23}-1$ PRBS<br>+8byte UDP Header<br>+20byte IPv4 Header<br>+2byte ALP Header |
|                            | Baseband Packet Length ( $K_{payload}$ ) | 47328 bits   | PLP 0: 21408 bits<br>PLP 1: 47328 bits   | PLP 0: 21408 bits<br>PLP 1: 25728 bits   | 21408 bits   | 43008 bits   | 1992 bits  |
| <b>BICM Parameters</b>     | PLP FEC type                             | BCH + 64800 LDPC   | PLP 0: BCH+64800 LDPC<br>PLP 1: BCH+64800 LDPC   | PLP 0: BCH+64800 LDPC<br>PLP 1: BCH+64800 LDPC   | BCH + 64800 LDPC   | BCH + 64800 LDPC   | BCH + 16200 LDPC   |
|                            | PLP FEC Codelength                       | 64800  | PLP 0: 64800<br>PLP 1: 64800   | PLP 0: 64800<br>PLP 1: 64800   | PLP 0: 64800   | 64800  | 16200  |
|                            | PLP Code Rate                            | 11/15  | PLP 0: 5/15<br>PLP 1: 11/15  | PLP 0: 5/15<br>PLP 1: 6/15   | 5/15   | 10/15  | 2/15   |
|                            | PLP Modulation (QAM NUC)                 | 16   | PLP 0: QPSK<br>PLP 1: 64   | PLP 0: QPSK (core PLP)<br>PLP 1: 16 (Enhanced PLP)   | 16   | 256  | QPSK   |
|                            | PLP Size                                 | 1440472  | PLP 0: 226800<br>PLP 1: 1198800  | PLP 0: 1355209<br>PLP 1: 1355209   | 1133237  | 1440472  | 1133237  |

|                        | Parameter                           | Configuration 1        | Configuration 2                | Configuration 3        | Configuration 4                                 | Configuration 5        | Configuration 6        |
|------------------------|-------------------------------------|------------------------|--------------------------------|------------------------|---|------------------------|------------------------|
|                        | PLP Time Interleaver mode           | Convolutional          | Hybrid                         | Convolutional          | Convolutional                                   | Convolutional          | Convolutional          |
|                        | PLP CTI Depth                       | 1024 rows non-extended |                                | 1024 rows non-extended | 1024 rows non-extended                          | 1024 rows non-extended | 1024 rows non-extended |
|                        | PLP CTI Memory <sup>1</sup> [cells] | 523776                 |                                | 523776                 | 523776  | 523776                 | 523776                 |
|                        | PLP HTI inter sub-frame             |                        | PLP 0: 0<br>PLP 1: 0           |                        |   |                        |                        |
|                        | PLP HTI # TI Blocks                 |                        | PLP 0: 1<br>PLP 1: 6           |                        |   |                        |                        |
|                        | PLP HTI # Max FEC Blocks            |                        | PLP 0: 7<br>PLP 1: 111         |                        |   |                        |                        |
|                        | PLP HTI # FEC Blocks                |                        | PLP 0: 7<br>PLP 1: 111         |                        |   |                        |                        |
|                        | PLP HTI Memory <sup>2</sup> [cells] |                        | PLP 0: 291600<br>PLP 1: 226800 |                        |   |                        |                        |
|                        | PLP HTI Cell interleaver            |                        | PLP 0: On<br>PLP 1: On         |                        |   |                        |                        |
| <b>OFDM parameters</b> | Frame Length Mode                   | Symbol-aligned         | Symbol-aligned                 | Symbol-aligned         | Time-aligned                                    | Symbol-aligned         | Symbol-aligned         |
|                        | # Sub Frames                        | 1                      | 1                              | 1                      | 1   | 1                      | 1                      |
|                        | # PLPs                              | 1                      | 2                              | 2                      | 1   | 1                      | 1                      |
|                        | LDM                                 | off                    | off                            | on                     | off   | Off                    | Off                    |
|                        | LDM injection level                 | 0                      | 0                              | -4 dB                  | 0   | 0                      | 0                      |
|                        | Channel Bonding                     | Off                    | Off                            | Off                    | Off   | Off                    | Off                    |
| MIMO/MISO/SISO         | Subframe 1: SISO                    | Subframe 1: SISO       | Subframe 1: SISO               | Subframe 1: SISO       | Subframe 1: <del>MISO</del><br>(N=64, M=2) SISO | Subframe 1: SISO       |                        |

<sup>1</sup> Convolutional Time Interleaver (CTI) memory = # rows \* (# rows – 1)/2[cells]; CTI depth = # rows<sup>2</sup> cells

<sup>2</sup> Hybrid Time Interleaver (HTI) depth = Block interleaver memory + Convolutional interleaver memory

Block Interleaver memory = #rows \* #FEC blocks = (LDPC codelength/log2(modulation)) \* #FEC blocks)

Convolutional Interleaver memory = ((#rows/#TI blocks+1) \* #FEC blocks) \* (#TI blocks \* (# TI blocks -1)/2)

HTI depth = (#rows \* #FEC blocks)+(((#rows/#TI blocks+1) \* #FEC blocks) \* (#TI blocks \* (# TI blocks -1)/2))\*2+1)[cells]

Time Interleaver depth = (#symbols/sub-frame) \* (FFT size / (Baseband Sample Rate(BSR) / #PLPs)) \* (1+GI Ratio)

Time Interleaver depth = (Interleaver depth [cells] / NoC) \* (FFT size/(BSR / #PLPs)) \* (1+GI ratio)

|                            | Parameter  | Configuration 1                         | Configuration 2                                  | Configuration 3                         | Configuration 4                        | Configuration 5                         | Configuration 6                        |
|----------------------------|--|---|--|---|--|---|--|
|                            | FFT Size   | Subframe 1: 32K                         | Subframe 1: 32K                                  | Subframe 1: 16K                         | Subframe 1: 8K                         | Subframe 1: 32K                         | Subframe 1: 8K                         |
|                            | Guard Interval                                   | Subframe 1: GI5_1024(148μsec)           | Subframe 1: GI5_1024(148μsec)                    | Subframe 1: GI5_1024(148μsec)           | Subframe 1: GI6_1536(222μsec)          | Subframe 1: GI5_1024(148μsec)           | Subframe 1: GI6_1536(222μsec)          |
|                            | NoC (# of data carriers)                         | Subframe 1: 27649 (reduced carriers =0) | Subframe 1: 27649 (reduced carriers =0)          | Subframe 1: 13825 (reduced carriers =0) | Subframe 1: 6913 (reduced carriers =0) | Subframe 1: 27649 (reduced carriers =0) | Subframe 1: 6913 (reduced carriers =0) |
|                            | Scattered Pilot Pattern                          | Subframe 1: SP24_2                      | Subframe 1: SP24_2                               | Subframe 1: SP6_2                       | Subframe 1: SP4_2                      | Subframe 1: SP24_2                      | Subframe 1: SP4_2                      |
|                            | SP boost   | Subframe 1: 2.43                        | Subframe 1: 2.43                                 | Subframe 1: 1.7                         | Subframe 1: 1.51                       | Subframe 1: 2.43                        | Subframe 1: 1.51                       |
|                            | # Payload Symbols                                | Subframe 1: 53                          | Subframe 1: 53                                   | Subframe 1: 108                         | Subframe 1: 189                        | Subframe 1: 53                          | Subframe 1: 189                        |
|                            | Subframe Length                                  | Subframe 1: 264.0 msec                  | Subframe 1: 264.0 msec                           | Subframe 1: 272.0 msec                  | Subframe 1: 275.0 msec                 | Subframe 1: 264.0 msec                  | Subframe 1: 266.0 msec                 |
|                            | First Subframe Boundary Symbol                   | Subframe 1: Yes                         | Subframe 1: Yes                                  | Subframe 1: Yes                         | Subframe 1: Yes                        | Subframe 1: Yes                         | Subframe 1: Yes                        |
|                            | Last Subframe Boundary Symbol                    | Subframe 1: Yes                         | Subframe 1: Yes                                  | Subframe 1: Yes                         | Subframe 1: Yes                        | Subframe 1: Yes                         | Subframe 1: Yes                        |
|                            | PLP Multiplexing <sup>3</sup>                    | Subframe 1: TDM                         | Subframe 1: TDM                                  | Subframe 1: LDM                         | Subframe 1: TDM                        | Subframe 1: TDM                         | Subframe 1: TDM                        |
|                            | Channel Occupancy (Scheduler regulated)          | Subframe 1: 100%                        | Subframe 1, PLP 0: 18%<br>Subframe 1, PLP 1: 82% | Subframe 1: 100%                        | Subframe 1: 100%                       | Subframe 1: 100%                        | Subframe 1: 100%                       |
|                            | Frequency Interleaver                            | On                                      | On   | On                                      | On                                     | On                                      | On                                     |
|                            | PAPR   | Off                                     | Off  | Off                                     | Off                                    | Off                                     | Off                                    |
| <b>Preamble Parameters</b> | L1 Basic Mode                                    | Mode 3                                  | Mode 1   | Mode 1                                  | Mode 1                                 | Mode 3                                  | Mode 1                                 |
|                            | L1 Detail Mode                                   | Mode 3                                  | Mode 1   | Mode 1                                  | Mode 1                                 | Mode 3                                  | Mode 1                                 |
|                            | FFT  | 32K                                     | 32K  | 16K                                     | 8K                                     | 32K                                     | 8K                                     |
|                            | Reduced Carriers                                 | 0                                       | 0  | 0                                       | 0                                      | 0                                       | 0                                      |
|                            | Guard Interval                                   | GI5_1024                                | GI5_1024   | GI5_1024                                | GI6_1536                               | GI5_1024                                | GI6_1536                               |
|                            | SP_Dx  | 12                                      | 12   | 6                                       | 4                                      | 12                                      | 4                                      |
|                            | # Preamble Symbols                               | 1                                       | 1  | 1                                       | 2                                      | 1                                       | 4 <sup>2</sup>                         |
| <b>Performance</b>         | Data Rate (Mbps)                                 | 15.815                                  | PLP 0: 0.6322<br>PLP 1: 19.3932                  | PLP 0: 3.2384<br>PLP 1: 7.7837          | 5.44                                   | 28.7612                                 | 1.0298                                 |
|                            | Required theoretical SNR under AWGN channel (dB) | 9.8                                     | PLP 0: -1.3<br>PLP 1: 14.7                       | PLP 0: 1.7<br>PLP 1: 10.3               | 3.4                                    | 17.5                                    | -4.9                                   |

<sup>3</sup> PLP\_ID, PLP\_Size, PLP\_Type, PLP\_Start, Num\_subsllices and subslice\_Interval settings may vary.

| <b>Parameter</b>             | <b>Configuration 1</b> | <b>Configuration 2</b> | <b>Configuration 3</b> | <b>Configuration 4</b> | <b>Configuration 5</b> | <b>Configuration 6</b> |
|------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| (considering power boosting) |                        |                        |                        |                        |                        |                        |

Gray shaded rows are calculation results given by respective parameter choices.

– End of Document –