ATSC Standard:
A/324:2025-01 Corrigendum No. 1

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Revision History

Version	Date
Corrigendum approved	11 April 2025

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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 corrections and updates to the A/324:2025-01 standard.

1.3 Rationale for Changes

The changes described in this document are being proposed because the following tables should be corrected:

- Table 6.6
- Table 9.3

2. LIST OF CHANGES

Change instructions are given below in *italics*. Unless otherwise noted, inserted text, tables, and drawings are shown in blue; deletions of existing text are shown in red strikeout. The text "[ref]" indicates that a cross reference to a cited referenced document should be inserted.

2.1 Change Instructions

In Table 6.6, add one opening curly brace ("{") at the end of the line of pseudo-code containing the only 'for' loop, as shown in the example of the table immediately below.

Table 6.1 Security Data Stream Packet Payload

Syntax	No. of Bits	Format
Security_Data_Stream_Packet (SDS) () {		
Structure_Data () {		
length	16	uimsbf
version_major	4	uimsbf
version_minor	4	uimsbf
num_tokens_minus_1	8	uimsbf
for (i=0; i<length–4; i++) {		
SDPS_Encrypted_Data_payload_byte	8	bslbf
}		
}		
}		

As shown in the example of Table 9.3 immediately below, add one opening curly brace at the end of the 'for' loop line in the **Bootstrap_Timing_Data ()** { section; delete the complete line containing the **tx_time_offset** parameter in the **Per_Transmitter_Data () {** section; under the **xmtr_id** parameter in the **Per_Transmit_Polarization_Data () {** section, insert three new lines, placing an 'If (i==0) {' conditional, ending in an opening curly brace, on the first new line, the **tx_time_offset** parameter, positioned as shown on the second new line along with the number of bits and the format type in their respective table columns; and insert a closing curly brace on the third new line, aligned as shown in the example below., Add another new line just above the "If (mimo_flag == 0) {" conditional ending in an opening curly brace, and place a closing curly brace in that new line, positioned as shown in the example table below. Finally, insert yet another new line, two lines above the **Packet_Release_Time ()** { section beginning marker, and place a closing curly brace in that new line, positioned as shown in the example table below.

Below Table 9.3, in the semantic descriptions of the values included in that table, move the description of the **tx_time_offset** parameter to position it between the descriptions of **xmtr_id** and **txid_injection_lvl**.

Table 9.2 Timing and Management Stream Packet Payload

Syntax	No. of Bits	Format
Timing and Management_Packet (TMP) () {		
Structure_Data () {		
length	16	uimsbf
version_major	4	uimsbf
version_minor	4	uimsbf
maj_log_rep_cnt_pre	4	uimsbf
maj_log_rep_cnt_tim	4	uimsbf
bootstrap_major	4	uimsbf
bootstrap_minor	4	uimsbf
min_time_to_next	5	uimsbf
system_bandwidth	2	uimsbf
bsr_coefficient	7	uimsbf
preamble_structure	8	uimsbf
ea_wakeup	2	bslbf
num_emission_tim	6	uimsbf
num_xmtrs_in_group_minus_1	6	uimsbf
xmtr_group_num	7	uimsbf
maj_log_override	3	bslbf
num_miso_filt_codes	2	bslbf
tx_carrier_offset	2	tcimsbf
mimo_flag	1	uimsbf
reserved	5	for (i=0; i<5; i++) '1'
}		
Bootstrap_Timing_Data () {		
for (i=0; i<=num_emission_tim; i++) {		
seconds	32	uimsbf
nanoseconds	32	uimsbf
}		
}		

Per_Transmitter_Data () {		
for (i=0; i<=num_xmtrs_in_group_minus_1; i++) {		
~~tx_time_offset~~	~~16~~	~~tcimsbf~~
Per_Transmit_Polarization_Data () {		
for (j=0; j<=**mimo_flag**; j++) {		
xmtr_id	13	uimsbf
If (j==0) {		
tx_time_offset	16	tcimsbf
}		
txid_injection_lvl	4	uimsbf
miso_filt_code_index	2	bslbf
}		
}		
If (**mimo_flag** == 0) {		
reserved	29	for (i=0; i<29; i++) '1'
} else {		
reserved	10	for (i=0; i<10; i++) '1'
}		
}		
}		
Packet_Release_Time () {		
pkt_rls_seconds	4	uimsbf
pkt_rls_a-milliseconds	10	uimsbf
reserved	2	'11'
}		
Error_Check_Data () {		
crc16	16	uimsbf
}		
}		

Per_Transmitter_Data () shall contain information addressed individually to one or a group of Transmitters, with the number of Transmitters for which data is included in the loop equaling the value in **num_xmtrs_in_group_minus_1** plus 1.

~~**tx_time_offset** shall indicate the emission time offset of the Transmitter to which it is addressed relative to the Bootstrap Reference Emission Times of all frames. The Transmitter time offset shall be expressed in units of positive or negative integer steps of 100 ns and shall be a two's complement signed integer binary number having a range from –32,768 through +32,767 decimal, representing time offsets from –3,276.8 through +3,276.7 microseconds. When MIMO Mode is in use for any PLP within a PHY frame, the same **tx_time_offset** value shall be applied to both Polarizations.~~

Per_Transmit_Polarization_Data () contains information describing either a single set of values or two sets of values with respect to the TxID and MISO configurations of each Transmitter, depending upon the MIMO configuration of the Transmitter. When MIMO is not applied, a single set of values shall be created, while when MIMO is applied, two sets of values shall be created, one for each Polarization. Each set of values shall include **xmtr_id**, **txid_injection_lvl**, and **miso_filt_code_index**.

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xmtr_id shall serve to identify either the Polarizations of Transmitter outputs in MIMO Mode or just the Transmitter itself when in SISO Mode. The values within the **Per_Transmit_Polarization_Data** () set shall be applied to the respective transmitter outputs and also shall be used as the seed values for generation of TxID transmitter identification per [3] Annex N, with one value for SISO Mode and two values for MIMO Mode when independent identification of Polarizations is required. The value of the **xmtr_id** address shall be an unsigned integer binary number having a range of possible values from 0 through 8191 decimal. When **mimo_flag** =0, exclusively SISO Mode is indicated within the frame, and only a single **xmtr_id** value is needed; this value shall be used to indicate the transmitter to which the **Per_Transmitter_Data** () set is addressed. When **mimo_flag** =1, indicating MIMO Mode somewhere within the frame, there shall be a single **xmtr_id** value applicable to both SISO Mode and Polarization #1 in MIMO Mode; either the same value or an additional value shall be used for Polarization #2 in MIMO Mode. Note that selection of SISO Mode or MIMO Mode is made on a per-PLP basis so that both modes may be present in a single PHY Frame. When a transmitter is capable of switching between the two modes, it is important that its RF output system be designed to accommodate such operation[1].

tx_time_offset shall indicate the emission time offset of the Transmitter to which it is addressed relative to the Bootstrap Reference Emission Times of all frames. The Transmitter time offset shall be expressed in units of positive or negative integer steps of 100 ns and shall be a two's complement signed integer binary number having a range from –32,768 through +32,767 decimal, representing time offsets from –3,276.8 through +3,276.7 microseconds. When MIMO Mode is in use for any PLP within a PHY frame, the same **tx_time_offset** value shall be applied to both Polarizations.

txid_injection_lvl shall indicate the Injection Level of the TxID signal below the average power of the Preamble symbols emitted by the Transmitter (or by the specific Polarization if **mimo_flag** =1) to which its value is addressed. The Injection Level shall indicate the value in dB listed in A/322 [3] Table N.3.1 for the TxID Injection Level Code included in the **txid_injection_lvl** field (or Off for code value '0000').

– End of Document –

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[1] See "ATSC Recommended Practice: Guidelines for the Physical Layer Protocol," Doc. A/327:2024-03, Section 4.2.22, "SISO Operation of MIMO-Capable Transmitters," for detailed information.