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AMENDMENT 1
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Information technology — High efficiency coding and media delivery in heterogeneous environments —

Part 10: **MPEG media transport forward error correction (FEC) codes**

AMENDMENT 1: Window-based FEC code

Technologies de l'information — Codage à haute efficacité et livraison des medias dans des environnements hétérogènes —

Partie 10: Codes de correction d'erreur anticipée pour le transport des medias MPEG

AMENDEMENT 1

Reference number
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Part 10: MPEG media transport forward error correction (FEC) codes

AMENDMENT 1: Window-based FEC code

Clause 5, Table 1

Replace the first paragraph and Table 1 with the following:

Table 1 specifies the code points for the FEC code algorithms specified in this document. The FEC code algorithms themselves are specified in Clauses 6 through 11.

Table 1 — FEC code algorithms and its code point

Code point	FEC code algorithm
0	Reserved for ISO/IEC use
1	RS code (Clause 6)
2	S_LDPC code (Clause 7)
3	6330 code (subclause 8.2)
4	RaptorQ LA code (subclause 8.3)
5	FireFort-LDGM code (Clause 9)
6	FEC code algorithm in SMPTE 2022-1 (Clause 10)
7	RaptorQ AD code (Clause 11)
8 ~ 255	Reserved for ISO/IEC use

Clause 10

At the end of Clause 10, add a new Clause 11 as follows:

11 Specification for RaptorQ AD code

11.1 General

This clause specifies FEC code point 7, RaptorQ AD code.

The RaptorQ AD code extends the 6330 code to support the adaptive FEC protection in one layer as defined in ISO/IEC 23008-1.

According to the different priorities defined in the DU header, the source symbol can be divided into different classes. All the classified symbols can be protected by one FEC coding matrix and generate source symbols and repair symbols in one stream.

11.2 Encoding method

Step 1: Each block is divided into classes of input symbols according to different priorities defined in the DU header. The numbers of each class are D_1, D_2, $D_3, \ldots,$ such that the first input D_1 symbols form the first class, the next D_2 input symbols form the second class, and it can be assumed that the importance of classes decreases with the class index.

Step 2: According to the source symbols, Matrix A can be designed to generate the intermediate symbols. Figure 10 shows an example Matrix A using source symbols with two classes.

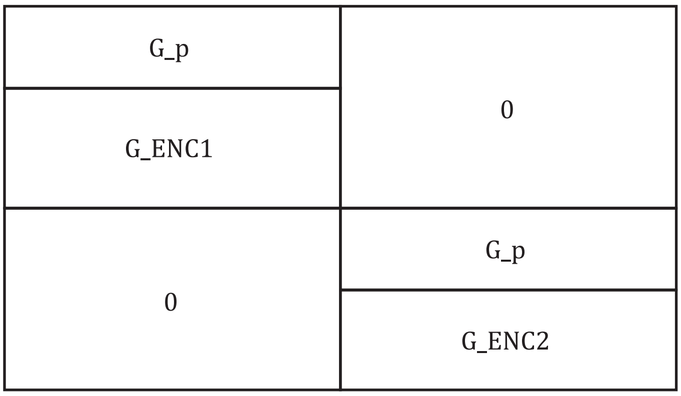

Figure 10 — Structure of Matrix A

The G_p consists of 'G_LDPC,1', 'I_S', 'G_LDPC,2', 'G_HDPC' and 'I_H'. G_ENC_1 and G_ENC_2 are an LT-code matrix. According to Matrix A, the intermediate symbols are as follows:

$$\begin{bmatrix} C_1 \\ C_2 \end{bmatrix} = \begin{bmatrix} A_1^{-1} & 0 \\ 0 & A_2^{-1} \end{bmatrix} \begin{bmatrix} 0 \\ D_1 \\ 0 \\ D_2 \end{bmatrix}$$

For the classification of more than 2 source symbols, Matrix A can be designed to generate the intermediate symbols as follows:

$$A = \begin{bmatrix} G\_p_1 & 0 & \ldots & 0 \\ G\_ENC_1 & 0 & \ldots & 0 \\ 0 & G\_p_2 & \ldots & 0 \\ 0 & G\_ENC_2 & \ldots & 0 \\ \ldots & \ldots & \ldots & \ldots \\ 0 & 0 & \ldots & G\_p_l \\ 0 & 0 & \ldots & G\_ENC_l \end{bmatrix}$$

