ISO/IEC 23008-10:2015-04 (E)

Information technology - High efficiency coding and media delivery in heterogeneous environments - Par t 10: MPEG Media Transport Forward Error Correction (FEC) codes

Contents

Page

Foreword iv

Introduction v

1 Scope 1

2 Normative references 1

3 Terms, definitions, symbols, and abbreviated terms 1
3.1 Terms and definitions 1
3.2 Symbols and abbreviated terms 2
3.3 Conventions 2

4 Overview 2

5 FEC Code Points 3

6 Specification for Reed-Solomon Codes 3
6.1 Introduction 3
6.2 Generator matrix 4

7 Specification for Structured Low-Density Parity-Check (S-LDPC) Codes 4
7.1 Introduction 4
7.2 Structured LDPC Codes 5
7.3 Creating Parity-Check Matrix 5
7.4 Encoding Algorithm 6
7.5 Decoding Algorithm 7
7.6 Base matrix 7

8 Specification 6330 code and RaptorQ LA code 11
8.1 Introduction 11
8.2 6330 code 12
8.3 RaptorQ LA 12
8.3.1 RaptorQ LA First Encoding Step .....

Intermediate symbol generation 13
8.3.2 Layer-Aware RaptorQ Second Encoding Step 15
8.3.3 Layer-Aware RaptorQ Decoding 15

9 Specification for FireFort Low Density Generate Matrix (FireFort-LDGM) codes 16
9.1 Introduction 16
9.2 FireFort Low Density Generator Matrix (FireFort-LDGM) Codes 16
9.2.1 Definition 16
9.2.2 FF-LDGM-Specific Elements 17
9.2.3 Parity Check Matrix of FF-LDGM Scheme 18
9.2.4 Creating a Sparse Matrix 18
9.2.5 Creating a Punctured Sparse Matrix 22
9.2.6 Source symbol division scheme 24
9.2.7 Structured interleaving and de-interleaving scheme 25

9.2.8 FF-LDGM code Encoding Algorithm 25
9.2.9 FF-LDGM code Decoding Algorithm 26
9.3 Layer-Aware FireFort-LDGM (LA FireFort-LDGM) Codes 26
9.3.1 Specification of the LA FF-LDGM Scheme 26
9.3.2 Encoding Algorithm 27
9.3.3 Decoding Algorithm 27

10 Specification for FEC code algorithms in SMPTE 2022-1 27

Bibliography 28