

CONTENTS

<u>Section</u>	<u>Page</u>
1 INTRODUCTION	1-1
1.1 PURPOSE.....	1-1
1.2 SCOPE.....	1-1
1.3 APPLICABILITY.....	1-1
1.4 RATIONALE.....	1-2
1.5 DOCUMENT STRUCTURE	1-2
1.6 CONVENTIONS AND DEFINITIONS.....	1-3
1.7 REFERENCES	1-5
2 OVERVIEW	2-1
2.1 ARCHITECTURE.....	2-1
2.2 SUMMARY OF FUNCTIONS	2-1
2.3 INTERNAL ORGANIZATION OF SUBLAYER.....	2-3
3 CONVOLUTIONAL CODING	3-1
3.1 BASIC CONVOLUTIONAL CODE	3-1
3.2 PUNCTURED CONVOLUTIONAL CODES.....	3-3
4 REED-SOLOMON CODING	4-1
4.1 INTRODUCTION	4-1
4.2 SPECIFICATION.....	4-1
5 TURBO CODING	5-1
5.1 INTRODUCTION.....	5-1
5.2 SPECIFICATION.....	5-2
6 FRAME SYNCHRONIZATION	6-1
6.1 INTRODUCTION	6-1
6.2 THE ATTACHED SYNC MARKER (ASM).....	6-1
6.3 ASM BIT PATTERNS	6-2
6.4 LOCATION OF ASM	6-3
6.5 RELATIONSHIP OF ASM TO REED-SOLOMON AND TURBO CODEBLOCKS.....	6-3
6.6 ASM FOR EMBEDDED DATA STREAM.....	6-4

CONTENTS (continued)

<u>Section</u>	<u>Page</u>
7 PSEUDO-RANDOMIZER	7-1
7.1 INTRODUCTION	7-1
7.2 PSEUDO-RANDOMIZER DESCRIPTION	7-1
7.3 SYNCHRONIZATION AND APPLICATION OF PSEUDO-RANDOMIZER...	7-2
7.4 SEQUENCE SPECIFICATION.....	7-2
7.5 LOGIC DIAGRAM	7-3
8 TRANSFER FRAME LENGTHS	8-1
8.1 GENERAL.....	8-1
8.2 CASE 1: UNCODED.....	8-1
8.3 CASE 2: CONVOLUTIONAL ONLY.....	8-1
8.4 CASE 3: REED-SOLOMON ONLY	8-1
8.5 CASE 4: CONCATENATED CODING	8-2
8.6 CASE 5: TURBO CODING	8-2
9 MANAGED PARAMETERS	9-1
9.1 OVERVIEW OF MANAGED PARAMETERS	9-1
9.2 MANAGED PARAMETERS FOR SELECTED OPTIONS	9-1
9.3 MANAGED PARAMETERS FOR CONVOLUTIONAL CODING	9-2
9.4 MANAGED PARAMETERS FOR REED-SOLOMON CODING.....	9-2
9.5 MANAGED PARAMETERS FOR TURBO CODING.....	9-2
9.6 MANAGED PARAMETERS FOR FRAME SYNCHRONIZATION	9-3
ANNEX A ACRONYMS AND TERMS	A-1
ANNEX B INFORMATIVE REFERENCES	B-1
ANNEX C SERVICE DEFINITION	C-1
ANNEX D TRANSFORMATION BETWEEN BERLEKAMP AND CONVENTIONAL REPRESENTATIONS	D-1
ANNEX E EXPANSION OF REED-SOLOMON COEFFICIENTS	E-1
ANNEX F CHANGES FROM REFERENCES [B2] and [B3]	F-1

Figure

1-1 Bit Numbering Convention.....	1-4
2-1 Relationship with OSI Layers.....	2-1
2-2 Internal Organization of the Sublayer at the Sending End	2-4
2-3 Internal Organization of the Sublayer at the Receiving End	2-5

CONTENTS (continued)

<u>Figure</u>	<u>Page</u>
3-1 Basic Convolutional Encoder Block Diagram.....	3-2
3-2 Punctured Encoder Block Diagram	3-3
4-1 Functional Representation of R-S Interleaving	4-2
4-2 Reed-Solomon Codeblock Partitioning	4-4
5-1 Interpretation of Permutation.....	5-4
5-2 Turbo Encoder Block Diagram.....	5-5
5-3 Turbo Codeblocks for Different Code Rates	5-7
5-4 Turbo Codeblock with Attached Sync Marker	5-8
6-1 ASM Bit Pattern for Non-Turbo-Coded Data	6-2
6-2 ASM Bit Pattern for Turbo-Coded Data (for Rate 1/2 Turbo Code).....	6-2
6-3 ASM Bit Pattern for Turbo-Coded Data (for Rate 1/3 Turbo Code).....	6-2
6-4 ASM Bit Pattern for Turbo-Coded Data (for Rate 1/4 Turbo Code).....	6-3
6-5 ASM Bit Pattern for Turbo-Coded Data (for Rate 1/6 Turbo Code).....	6-3
6-6 Embedded ASM Bit Pattern	6-4
7-1 Pseudo-Randomizer Configuration	7-2
7-2 Pseudo-Randomizer Logic Diagram.....	7-3
D-1 Transformational Equivalence.....	D-2

Table

3-1 Puncture Code Patterns for Convolutional Code Rates.....	3-4
5-1 Specified Information Block Lengths.....	5-2
5-2 Codeblock Lengths for Supported Code Rates (Measured in Bits).....	5-3
5-3 Parameters k_1 and k_2 for Specified Information Block Lengths	5-4
9-1 Managed Parameters for Selected Options.....	9-1
9-2 Managed Parameters for Convolutional Coding	9-2
9-3 Managed Parameters for Reed-Solomon Coding	9-2
9-4 Managed Parameters for Turbo Coding	9-2
9-5 Managed Parameters for Frame Synchronization.....	9-3
D-1 Equivalence of Representations.....	D-5
F-1 Terms That Have Been Changed from Reference [B2].....	F-1
F-2 Terms That Have Been Changed from Reference [B3].....	F-2