

# ISO 15887:2013-06 (E)

## Space data and information transfer systems - Lossless data compression

---

<b>Contents</b>	<b>Page</b>
<b>1 INTRODUCTION.....</b>	<b>1-1</b>
1.1 PURPOSE.....	1-1
1.2 SCOPE.....	1-1
1.3 APPLICABILITY .....	1-1
1.4 RATIONALE.....	1-1
1.5 BIT NUMBERING CONVENTION AND NOMENCLATURE .....	1-2
1.6 PATENTED TECHNOLOGIES.....	1-2
1.7 REFERENCES .....	1-3
<b>2 OVERVIEW.....</b>	<b>2-1</b>
2.1 GENERAL.....	2-1
2.2 THE SOURCE CODER .....	2-1
2.3 PACKETIZATION OF CODED DATA.....	2-3
2.4 ERROR CONTROL.....	2-3
<b>3 ADAPTIVE ENTROPY CODER.....</b>	<b>3-1</b>
3.1 CODE SPECIFICATION .....	3-1
3.2 FUNDAMENTAL SEQUENCE .....	3-2
3.3 SAMPLE SPLITTING.....	3-2
3.4 LOW ENTROPY OPTIONS .....	3-3
3.5 NO COMPRESSION.....	3-4
3.6 CODE SELECTION.....	3-4
<b>4 PREPROCESSOR.....</b>	<b>4-1</b>
4.1 PREPROCESSOR FUNCTION.....	4-1
4.2 PREDICTORS .....	4-1
4.3 REFERENCE SAMPLE.....	4-2
4.4 PREDICTION ERROR MAPPER .....	4-2
<b>5 DATA FORMAT .....</b>	<b>5-1</b>
5.1 LOSSLESS DATA STRUCTURES.....	5-1
5.2 PACKET FORMAT .....	5-4
<b>6 COMPRESSION IDENTIFICATION PACKET (OPTIONAL).....</b>	<b>6-1</b>
6.1 COMPRESSION IDENTIFICATION PACKET STRUCTURE.....	6-1
6.2 CIP PRIMARY HEADER.....	6-1
6.3 PACKET DATA FIELD.....	6-2

<u>Section</u>	<u>Page</u>
<b>ANNEX A SECURITY, SANA, AND PATENT CONSIDERATIONS (INFORMATIVE) .....</b>	<b>A-1</b>
<b>ANNEX B GLOSSARY OF ACRONYMS AND TERMS (INFORMATIVE).....</b>	<b>B-1</b>
<b>ANNEX C INFORMATIVE REFERENCES (INFORMATIVE) .....</b>	<b>C-1</b>

Figure

2-1 Schematic of the Source Coder.....	2-1
3-1 The Adaptive Entropy Coder with a Preprocessor.....	3-1
3-2 Split-Sample Format .....	3-3
4-1 A Preprocessor .....	4-1
4-2 Preprocessor Using a Unit-Delay Predictor .....	4-2
5-1 CDS Format When Sample-Splitting Option Is Selected .....	5-2
5-2 CDS Format When No-Compression Option Is Selected.....	5-3
5-3 CDS Format When Zero-Block Option Is Selected.....	5-3
5-4 CDS Format When the Second-Extension Option Is Selected .....	5-4
5-5 Packet Format for <i>l</i> CDSes .....	5-4
6-1 Compression Identification Packet Structure.....	6-1
6-2 Source Configuration Field.....	6-4

Table

3-1 Fundamental Sequence Codewords As a Function of the Preprocessed Samples.....	3-2
3-2 Zero-Block Fundamental Sequence Codewords As a Function of the Number of Consecutive All-Zeros Blocks.....	3-4
5-1 Selected Code Option Identification Key .....	5-1