

# ISO 18381:2013-06 (E)

## Space data and information transfer systems - Lossless multispectral and hyperspectral image compression

---

Contents	Page
<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 DOCUMENT STRUCTURE .....	1-2
1.6 CONVENTIONS AND DEFINITIONS .....	1-2
1.7 REFERENCE.....	1-4
<b>2 OVERVIEW.....</b>	<b>2-1</b>
2.1 GENERAL.....	2-1
2.2 DATA TRANSMISSION.....	2-2
<b>3 IMAGE.....</b>	<b>3-1</b>
3.1 OVERVIEW .....	3-1
3.2 DIMENSIONS .....	3-1
3.3 DYNAMIC RANGE.....	3-1
3.4 SAMPLE COORDINATE INDICES .....	3-2
<b>4 PREDICTOR.....</b>	<b>4-1</b>
4.1 OVERVIEW .....	4-1
4.2 NUMBER OF BANDS FOR PREDICTION .....	4-3
4.3 FULL AND REDUCED PREDICTION MODES .....	4-3
4.4 LOCAL SUM.....	4-4
4.5 LOCAL DIFFERENCES.....	4-4
4.6 WEIGHTS .....	4-6
4.7 PREDICTION CALCULATION.....	4-8
4.8 WEIGHT UPDATE.....	4-9
4.9 MAPPED PREDICTION RESIDUAL.....	4-10
<b>5 ENCODER.....</b>	<b>5-1</b>
5.1 OVERVIEW .....	5-1
5.2 GENERAL.....	5-1
5.3 HEADER .....	5-2
5.4 BODY .....	5-8

<u>Section</u>	<u>Page</u>
<b>ANNEX A PROTOCOL IMPLEMENTATION CONFORMANCE STATEMENT PROFORMA (NORMATIVE)</b> .....	<b>A-1</b>
<b>ANNEX B SECURITY, SANA, AND PATENT CONSIDERATIONS (INFORMATIVE)</b> .....	<b>B-1</b>
<b>ANNEX C REFERENCES (INFORMATIVE)</b> .....	<b>C-1</b>
<b>ANNEX D TABLES OF SYMBOLS USED (INFORMATIVE)</b> .....	<b>D-1</b>
<b>ANNEX E ABBREVIATIONS AND ACRONYMS (INFORMATIVE)</b> .....	<b>E-1</b>

Figure

2-1 Compressor Schematic .....	2-1
4-1 Typical Prediction Neighborhood.....	4-1
4-2 Samples Used to Calculate Local Sums.....	4-2
4-3 Computing Local Differences in a Spectral Band .....	4-2
5-1 Compressed Image Structure .....	5-1
5-2 Overview of Header Structure .....	5-2
5-3 Overview of Image Metadata Structure .....	5-2
5-4 Overview of Predictor Metadata Structure .....	5-3
5-5 Overview of Entropy Coder Metadata Structure When Sample-Adaptive Encoder Is Used .....	5-6
5-6 Overview of Entropy Coder Metadata Structure When Block-Adaptive Encoder Is Used.....	5-8

Table

5-1 Image Metadata.....	5-3
5-2 Predictor Metadata.....	5-4
5-3 Entropy Coder Metadata When Sample Adaptive Encoder Is Used.....	5-7
5-4 Entropy Coder Metadata When Block Adaptive Encoder Is Used.....	5-8
A-1 Image Properties .....	A-4
A-2 Predictor Features .....	A-5
A-3 Encoder Features.....	A-6
A-4 Sample-Adaptive Entropy Coder Features .....	A-7
A-5 Block-Adaptive Entropy Coder Features .....	A-7
D-1 Coordinate Indices and Image Quantities .....	D-1
D-2 Predictor Quantities .....	D-1
D-3 Entropy Coder Quantities .....	D-2