

### CONTENTS

<u>Section</u>	<u>Page</u>
<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.....	1-2
1.5 CONVENTIONS AND DEFINITIONS.....	1-2
1.6 REFERENCES.....	1-6
<b>2 OVERVIEW</b> .....	<b>2-1</b>
2.1 CONCEPT OF PROXIMITY-1.....	2-1
2.2 OVERVIEW OF SERVICES.....	2-6
<b>3 PROTOCOL DATA UNITS</b> .....	<b>3-1</b>
3.1 CONTEXT OF THE VERSION-3 TRANSFER FRAME.....	3-1
3.2 VERSION-3 TRANSFER FRAME.....	3-1
<b>4 DATA LINK LAYER</b> .....	<b>4-1</b>
4.1 FRAME SUBLAYER.....	4-1
4.2 MEDIUM ACCESS CONTROL (MAC) SUBLAYER.....	4-2
4.3 DATA SERVICES SUBLAYER.....	4-5
4.4 I/O INTERFACE SUBLAYER.....	4-8
<b>5 PROXIMITY-1 TIMING SERVICES</b> .....	<b>5-1</b>
5.1 COUPLED NON-COHERENT PROXIMITY TIMING SERVICE.....	5-1
5.2 PROXIMITY TIME CORRELATION.....	5-1
<b>6 DATA SERVICES OPERATIONS</b> .....	<b>6-1</b>
6.1 OVERVIEW.....	6-1
6.2 PROXIMITY-1 STATE TABLES.....	6-1
6.3 ELEMENTS AND EVENTS THAT AFFECT STATE STATUS.....	6-13
6.4 STATE TRANSITION TABLES AND DIAGRAMS.....	6-18
6.5 SIMPLEX OPERATIONS.....	6-28
6.6 INTERFACES WITH THE PHYSICAL LAYER.....	6-29
6.7 SENDING OPERATIONS.....	6-29
6.8 RECEIVING OPERATIONS.....	6-31

## CONTENTS (continued)

<u>Section</u>	<u>Page</u>
<b>7 COMMUNICATION OPERATIONS PROCEDURE FOR PROXIMITY LINKS (COP-P)</b> .....	<b>7-1</b>
7.1 SENDING PROCEDURES (FOP-P) .....	7-1
7.2 RECEIVING PROCEDURES (FARM-P) .....	7-7
<b>8 INPUT/OUTPUT (I/O) SUBLAYER OPERATIONS</b> .....	<b>8-1</b>
8.1 SENDING OPERATIONS .....	8-1
8.2 RECEIVING OPERATIONS .....	8-2
<b>ANNEX A VARIABLE-LENGTH SUPERVISORY PROTOCOL DATA FIELD FORMATS (Normative)</b> .....	<b>A-1</b>
<b>ANNEX B MANAGEMENT INFORMATION BASE (MIB) PARAMETERS (Normative)</b> .....	<b>B-1</b>
<b>ANNEX C NASA MARS SURVEYOR PROJECT 2001 ODYSSEY ORBITER PROXIMITY SPACE LINK CAPABILITIES (Informative)</b> .....	<b>C-1</b>
<b>ANNEX D NOTIFICATIONS TO VEHICLE CONTROLLER (Normative)</b> .....	<b>D-1</b>
<b>ANNEX E ABBREVIATIONS AND ACRONYMS (Informative)</b> .....	<b>E-1</b>
<b>ANNEX F INFORMATIVE REFERENCES (Informative)</b> .....	<b>F-1</b>

### Figure

1-1 Bit Numbering Convention.....	1-6
2-1 Proximity-1 Layered Protocol Model .....	2-4
3-1 Proximity-1 Protocol Data Unit Context Diagram .....	3-1
3-2 Version-3 Transfer Frame.....	3-2
3-3 Transfer Frame Header .....	3-3
3-4 Proximity-1 Transfer Frame Data Field Structure .....	3-7
3-5 Proximity Link Control Word Fields.....	3-12
4-1 COP-P Process.....	4-7
5-1 Proximity Time Tagging and Time Correlation .....	5-3
5-2 Transferring Time to a Remote Asset.....	5-4
6-1 Full Duplex State Transition Diagram.....	6-19
6-2 Half Duplex State Transition Diagram .....	6-23
6-3 Simplex Operations.....	6-28
A-1 Type 1 SPDU Data Field Contents .....	A-2
A-2 SET TRANSMITTER PARAMETERS Directive .....	A-3
A-3 SET CONTROL PARAMETERS Directive .....	A-6
A-4 SET RECEIVER PARAMETERS Directive .....	A-8

## CONTENTS (continued)

<u>Figure</u>	<u>Page</u>
A-5 SET V(R) Directive .....	A-10
A-6 Report Request.....	A-11
A-7 Proximity Link Control Word .....	A-13
A-8 SET PL EXTENSIONS .....	A-15
A-9 Report Source Spacecraft ID .....	A-19
A-10 Type 2 SPDU Data Field Contents .....	A-20
C-1 NASA Mars Surveyor Project 2001 Odyssey SET TRANSMITTER PARAMETERS Directive .....	C-2
C-2 NASA Mars Surveyor Project 2001 Odyssey SET RECEIVER PARAMETERS Directive .....	C-4
C-3 Proximity Link Control Word Fields.....	C-7

### Table

3-1 U-Frame Data Field Construction Rules .....	3-4
3-2 Segment Header Sequence Flags.....	3-8
3-3 Fixed-Length Supervisory Protocol Data Unit.....	3-11
3-4 Variable-Length Supervisory Protocol Data Unit .....	3-14
6-1 Proximity-1 Data Services Operations Roadmap .....	6-1
6-2 States Independent of the DUPLEX Variable .....	6-2
6-3 States When DUPLEX = Full.....	6-3
6-4 States When DUPLEX = Half .....	6-5
6-5 States When DUPLEX = Simplex (receive or transmit) .....	6-6
6-6 Proximity-1 Control Variable Initialization Table.....	6-18
6-7 Full Duplex Session Establishment/Data Services State Transition Table.....	6-20
6-8 Full Duplex Communication Change State Table .....	6-21
6-9 Full Duplex Session Termination State Table .....	6-22
6-10 Half Duplex Session Establishment and Data Services.....	6-23
6-11 Half Duplex Communication Change State Table .....	6-26
6-12 Half Duplex Session Termination State Table .....	6-27
6-13 Simplex State Transition Table.....	6-28
6-14 Data Source Selection for Output Bit Stream with TRANSMIT = <i>on</i> and MODULATION = <i>on</i> .....	6-30