

ISO 17810:2014-07 (E)

Space data and information transfer systems - Data transmission and pseudo random noise (PN) ranging for 2 GHz code division multiple access (CDMA) link via data relay satellite

CONTENTS

<u>Section</u>	<u>Page</u>
1 INTRODUCTION.....	1-1
1.1 PURPOSE.....	1-1
1.2 SCOPE.....	1-1
1.3 APPLICABILITY.....	1-2
1.4 RATIONALE.....	1-2
1.5 DOCUMENT STRUCTURE.....	1-3
1.6 NOMENCLATURE AND CONVENTIONS.....	1-3
1.7 REFERENCES.....	1-4
2 OVERVIEW.....	2-1
2.1 ARCHITECTURE.....	2-1
2.2 SUMMARY OF FUNCTIONS.....	2-3
2.3 PN CODE TYPES.....	2-6
3 SERVICE AVAILABILITY OF PN SPREAD LINKS FOR A COMMUNICATION SYSTEM.....	3-1
3.1 CCSDS PN CODE ASSIGNMENT.....	3-1
3.2 FORWARD AND RETURN DATA SERVICES.....	3-1
3.3 COHERENT RETURN.....	3-1
3.4 VEHICLE TRACKING.....	3-1
3.5 INTEROPERABILITY.....	3-1
3.6 FORWARD.....	3-1
3.7 RETURN.....	3-1
3.8 TIME TRANSFER.....	3-2
4 FORWARD SERVICE MODE PN SPREAD SIGNAL FORMAT.....	4-1
4.1 GENERAL.....	4-1
4.2 COMMAND CHANNEL (I).....	4-1
4.3 COMMAND LINK SIGNAL PARAMETERS.....	4-1
4.4 COMMAND LINK PN CODE PROPERTIES.....	4-3
4.5 RANGE CHANNEL (Q).....	4-3
4.6 RANGE LINK SIGNAL PARAMETERS.....	4-4
4.7 RANGE LINK PN CODE PROPERTIES.....	4-4

<u>Section</u>	<u>Page</u>
5 RETURN SERVICE MODE PN SPREAD SIGNAL FORMAT	5-1
5.1 GENERAL.....	5-1
5.2 COHERENT MODES	5-1
5.3 NON-COHERENT MODE	5-4
6 NETWORK ELEMENT REQUIREMENTS	6-1
6.1 OVERVIEW	6-1
6.2 TRANSMIT REQUIREMENTS	6-1
6.3 RECEIVE REQUIREMENTS.....	6-1
6.4 PN RANGING CALIBRATION.....	6-1
6.5 PN TIME TRANSFER	6-2
7 USER ELEMENT REQUIREMENTS FOR PN SPREADING.....	7-1
7.1 OVERVIEW	7-1
7.2 GENERAL.....	7-1
7.3 RECEIVE REQUIREMENTS.....	7-1
7.4 PERFORMANCE REQUIREMENTS	7-2
7.5 TRANSMIT REQUIREMENTS	7-2
7.6 RANGING PERFORMANCE	7-3
7.7 TIME TRANSFER REQUIREMENTS	7-4
7.8 PN CODE PERFORMANCE.....	7-5
ANNEX A SECURITY (INFORMATIVE).....	A-1
ANNEX B GLOSSARY (INFORMATIVE)	B-1
ANNEX C INFORMATIVE REFERENCES (INFORMATIVE)	C-1

Figure

1-1 Shift Register with Corresponding Characteristic Polynomial.....	1-4
2-1 DSSS System Network Element Architecture.....	2-1
2-2 DSSS System User Element Architecture	2-2
4-1 CCSDS Command Link Gold Code Generator	4-3
4-2 CCSDS Range Channel Code Generator.....	4-4
5-1 Coherent Return Modes PN Code Generator	5-3
5-2 Non-coherent Return Mode CCSDS PN Gold Code Generator.....	5-6
7-1 Time Transfer Interface Timing Diagram	7-4

Table

Page

4-1 Forward I Channel Service Signal Parameters 4-2
4-2 Salient Characteristics of PN Codes for Forward Services 4-2
4-3 Forward Q Channel PSK Service Signal Parameters 4-4
5-1 Coherent Return Service Signal Parameters..... 5-2
5-2 Non-coherent Return Service Signal Parameters 5-5