

802.16™ Conformance

IEEE Standard for Conformance to IEEE 802.16

Part 2: Test Suite Structure and Test Purpose for 10–66 GHz WirelessMan-SC™ Air Interface

IEEE Computer Society
and the
IEEE Microwave Theory and Techniques Society

Sponsored by the
LAN/MAN Standards Committee



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Abstract: This standard represents the Test Suite Structure and Test Purposes (TSS&TP), per ISO/IEC 9646-1:1994 and 9646-2:1995 and ITU-T X.290 and X.291, for conformance specification of base stations and subscriber stations based upon the WirelessMAN-SC (10–66 GHz) air interface specified in IEEE 802.16.

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Introduction

(This introduction is not part of IEEE Std 802.16/Conformance02-2003, IEEE Standard for Conformance to IEEE 802.16— Part 2: Test Suite Structure and Test Purposes for 10–66 GHz WirelessMAN-SC Air Interface.)

This represents the Test Suite Structure and Test Purposes (TSS&TP), per ISO/IEC Standards 9641-1:1994, and 9646-2:1995 and ITU-T Standards X.290 and X.291, for conformance specification of base stations and subscriber stations based upon the WirelessMAN-SC (10–66 GHz) air interface specified in IEEE Std 802.16-2001.

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Interpretations and errata associated with this amendment may be found at one of the following Internet locations:

- <http://standards.ieee.org/reading/ieee/interp/>
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CONTENTS

1. Overview	1
1.1 Introduction	1
1.2 Scope	1
1.3 Purpose	1
2. References	2
3. Definitions and Abbreviations	2
3.1 Definitions	2
3.2 Abbreviations	3
4. Test Suite Structure (TSS)	3
4.1 Structure	3
4.2 Test groups	7
4.3 Test Suites and Protocol Groups	7
4.3.1 Channel Descriptors and Maps	7
4.3.1.1 Map and Frame Structure	7
4.3.1.2 Channel Descriptors	7
4.3.1.3 Channel Descriptor Change	7
4.3.2 Radio Link Control	8
4.3.2.1 Initial Ranging	8
4.3.2.2 Periodic Ranging	8
4.3.2.3 Downlink Burst Profile Management	8
4.3.2.4 Negotiate Basic Capabilities	8
4.3.3 Registration, IP Connectivity and TFTP	8
4.3.3.1 Registration	8
4.3.3.2 Establish IP Connectivity	8
4.3.4 Privacy Key Management	8
4.3.4.1 Authentication	8
4.3.4.2 TEK	8
4.3.4.3 Security Association Management	8
4.3.4.4 Encryption and TEK Scheduling	8
4.3.5 Dynamic Services	9
4.3.5.1 Dynamic Service Addition (DSA)	9
4.3.5.2 Dynamic Service Change (DSC)	9
4.3.5.3 Dynamic Service Deletion (DSD)	9
4.3.6 Bandwidth Allocation and Polling	9
4.3.6.1 Request/Grant	9
4.3.6.2 Multicast Polling	9
4.3.7 Reset and Registration	9
4.3.8 Clock Comparison	9
4.3.9 MAC PDUs	9
4.3.10 PHY	9
4.3.11 ATM Convergence Sublayer	10
4.3.12 Packet Convergence Sublayer	10
4.3.12.1 Packet CS Usage	10
4.3.12.2 Classification	10
4.3.12.3 Classifier DSx Signaling	10
4.3.12.4 Payload Header Suppression	10
4.4 Main Test Groups	10
4.4.1 Capability (CA) Tests	10
4.4.2 Valid Behavior (BV) Tests	10
4.4.3 Invalid Behavior (BI) Tests	10
4.4.4 Inopportune Behavior (BO) Tests	11

4.4.5	Timer (TI) Tests	11
5.	Test Purposes (TP).....	11
5.1	Introduction.....	11
5.1.1	TP Definition Conventions	11
5.1.2	TP Naming Conventions.....	12
5.2	Test Purposes for Subscriber Station (SS).....	13
5.2.1	Channel Descriptors and Maps – SS.....	13
5.2.1.1	Map and Frame Structure	13
5.2.1.1.1	Capabilities	13
5.2.1.1.2	Valid Behavior.....	13
5.2.1.1.3	Invalid Behavior	14
5.2.1.1.4	Inopportune Behavior	14
5.2.1.1.5	Timer.....	15
5.2.1.1.6	Message Formats	15
5.2.1.2	Channel Descriptors.....	15
5.2.1.2.1	Capabilities	15
5.2.1.2.2	Valid Behavior.....	15
5.2.1.2.3	Invalid Behavior	15
5.2.1.2.4	Inopportune Behavior	15
5.2.1.2.5	Timer.....	16
5.2.1.2.6	Message Formats	16
5.2.1.3	Channel Descriptor Change	16
5.2.1.3.1	Capabilities	16
5.2.1.3.2	Valid Behavior.....	16
5.2.1.3.3	Invalid Behavior	16
5.2.1.3.4	Inopportune Behavior	17
5.2.1.3.5	Timer.....	17
5.2.1.3.6	Message Formats	17
5.2.2	Radio Link Control – SS.....	17
5.2.2.1	Initial Ranging	17
5.2.2.1.1	Capabilities	17
5.2.2.1.2	Valid Behavior.....	17
5.2.2.1.3	Invalid Behavior	18
5.2.2.1.4	Inopportune Behavior	18
5.2.2.1.5	Timer.....	18
5.2.2.1.6	Message Formats	19
5.2.2.2	Periodic Ranging.....	19
5.2.2.2.1	Capabilities	19
5.2.2.2.2	Valid Behavior.....	19
5.2.2.2.3	Invalid Behavior	20
5.2.2.2.4	Inopportune Behavior	20
5.2.2.2.5	Timer.....	20
5.2.2.2.6	Message Formats	20
5.2.2.3	Downlink Burst Profile Management	21
5.2.2.3.1	Capabilities	21
5.2.2.3.2	Valid Behavior.....	21
5.2.2.3.3	Invalid Behavior	21
5.2.2.3.4	Inopportune Behavior	22
5.2.2.3.5	Timer.....	22
5.2.2.3.6	Message Formats	22
5.2.2.4	Negotiate Basic Capabilities – SS	22
5.2.2.4.1	Capabilities	22
5.2.2.4.2	Valid Behavior.....	23
5.2.2.4.3	Invalid Behavior	23

5.2.2.4.4	Inopportune Behavior	23
5.2.2.4.5	Timer.....	23
5.2.2.4.6	Message Formats	23
5.2.3	Registration, IP Connectivity, and TFTP – SS	24
5.2.3.1	Registration.....	24
5.2.3.1.1	Capabilities	24
5.2.3.1.2	Valid Behavior.....	24
5.2.3.1.3	Invalid Behavior	24
5.2.3.1.4	Inopportune Behavior	24
5.2.3.1.5	Timer.....	25
5.2.3.1.6	Message Formats	25
5.2.3.2	IP Connectivity	25
5.2.3.2.1	Capabilities	25
5.2.3.2.2	Valid Behavior.....	25
5.2.3.2.3	Invalid Behavior	25
5.2.3.2.4	Inopportune Behavior	26
5.2.3.2.5	Timer.....	26
5.2.3.2.6	Message Formats	26
5.2.4	Privacy Key Management and Authentication –SS.....	26
5.2.4.1	Authorization	26
5.2.4.1.1	Capabilities	26
5.2.4.1.2	Valid Behavior.....	27
5.2.4.1.3	Invalid Behavior	27
5.2.4.1.4	Inopportune Behavior	28
5.2.4.1.5	Timer.....	28
5.2.4.1.6	Message formats	28
5.2.4.2	TEK.....	28
5.2.4.2.1	Capabilities	29
5.2.4.2.2	Valid Behavior.....	29
5.2.4.2.3	Invalid Behavior	29
5.2.4.2.4	Inopportune Behavior	29
5.2.4.2.5	Timer.....	30
5.2.4.2.6	Message Formats	30
5.2.4.3	Security Association Management	30
5.2.4.3.1	Capabilities	30
5.2.4.3.2	Valid Behavior.....	30
5.2.4.3.3	Invalid Behavior	30
5.2.4.3.4	Inopportune Behavior	30
5.2.4.3.5	Timer.....	31
5.2.4.3.6	Message Format.....	31
5.2.4.4	Encryption and Key Scheduling	31
5.2.4.4.1	Capabilities	31
5.2.4.4.2	Valid Behavior.....	31
5.2.4.4.3	Invalid Behavior	31
5.2.4.4.4	Inopportune Behavior	31
5.2.4.4.5	Timer.....	31
5.2.4.4.6	Message Formats	31
5.2.5	Dynamic Services – SS.....	32
5.2.5.1	Dynamic Service Addition.....	32
5.2.5.1.1	Capabilities	32
5.2.5.1.2	Valid Behavior.....	32
5.2.5.1.3	Invalid Behavior	33
5.2.5.1.4	Inopportune Behavior	34
5.2.5.1.5	Timer.....	34

5.2.5.1.6	Message Formats	34
5.2.5.2	Dynamic Service Change.....	35
5.2.5.2.1	Capabilities	35
5.2.5.2.2	Valid Behavior.....	35
5.2.5.2.3	Invalid Behavior	36
5.2.5.2.4	Inopportune Behavior	36
5.2.5.2.5	Timer.....	37
5.2.5.2.6	Message Formats	37
5.2.5.3	Dynamic Service Deletion	37
5.2.5.3.1	Capabilities	37
5.2.5.3.2	Valid Behavior.....	38
5.2.5.3.3	Invalid Behavior	38
5.2.5.3.4	Inopportune Behavior	38
5.2.5.3.5	Timer.....	38
5.2.5.3.6	Message Formats	39
5.2.6	Bandwidth Allocation and Polling – SS	39
5.2.6.1	Request/Grant	39
5.2.6.1.1	Capabilities	39
5.2.6.1.2	Valid Behavior.....	39
5.2.6.1.3	Invalid Behavior	39
5.2.6.1.4	Inopportune Behavior	39
5.2.6.1.5	Timer.....	40
5.2.6.1.6	Message Formats	40
5.2.6.2	Multicast Polling.....	40
5.2.6.2.1	Capabilities	40
5.2.6.2.2	Valid Behavior.....	40
5.2.6.2.3	Invalid Behavior	41
5.2.6.2.4	Inopportune Behavior	41
5.2.6.2.5	Timer.....	41
5.2.6.2.6	Message Formats	41
5.2.7	Reset and Re-Registration – SS	42
5.2.7.1	Capabilities	42
5.2.7.2	Valid Behavior.....	42
5.2.7.3	Invalid Behavior	42
5.2.7.4	Inopportune Behavior	43
5.2.7.5	Timer.....	43
5.2.7.6	Message Formats	43
5.2.8	Clock Comparison – SS	43
5.2.8.1	Capabilities	43
5.2.8.2	Valid Behavior.....	43
5.2.8.3	Invalid Behavior	43
5.2.8.4	Inopportune Behavior	43
5.2.8.5	Timer.....	44
5.2.8.6	Message Formats	44
5.2.9	MAC PDUs – SS	44
5.2.9.1	Capabilities	44
5.2.9.2	Valid Behavior.....	45
5.2.9.3	Invalid Behavior	45
5.2.9.4	Inopportune Behavior	45
5.2.9.5	Timer.....	45
5.2.9.6	Message Formats	45
5.2.10	Downlink Physical layer – SS	45
5.2.10.1	RS Outer Code $t = 10$ / BCC – Frame Control	46
5.2.10.1.1	Capabilities	46

5.2.10.2	RS Outer Code Other Bursts	46
5.2.10.2.1	Capabilities	46
5.2.10.3	Fixed Codeword Operation.....	47
5.2.10.3.1	Capabilities	47
5.2.10.4	Shortened Last Codeword Operation.....	47
5.2.10.4.1	Capabilities	47
5.2.10.5	Burst Preamble.....	47
5.2.10.5.1	Capabilities	47
5.2.10.6	Modulation.....	48
5.2.10.6.1	Capabilities	48
5.2.10.7	RS Outer Code – Information Block Length.....	48
5.2.10.7.1	Capabilities	48
5.2.11	Uplink Physical Layer – SS	48
5.2.11.1	Randomization With Programmable Seed.....	48
5.2.11.1.1	Capabilities	48
5.2.11.2	RS Outer Code – Initial Ranging	49
5.2.11.2.1	Capabilities	49
5.2.11.3	RS Outer Code Other Bursts.....	49
5.2.11.3.1	Capabilities	49
5.2.11.4	Fixed Codeword Operation.....	49
5.2.11.4.1	Capabilities	49
5.2.11.5	Shortened Last Codeword Operation.....	50
5.2.11.5.1	Capabilities	50
5.2.11.6	BCC Inner Code.....	50
5.2.11.6.1	Capabilities	50
5.2.11.7	Burst Preamble.....	50
5.2.11.7.1	Capabilities	50
5.2.11.8	Modulation.....	51
5.2.11.8.1	Capabilities	51
5.2.11.9	RS Outer Code – Information Block Length.....	51
5.2.11.9.1	Capabilities	51
5.2.11.10	Continuous Wave (CV) Mode	51
5.2.11.10.1	Capabilities	51
5.2.12	Minimum Performance – SS.....	52
5.2.12.1	Tx Dynamic Range	52
5.2.12.1.1	Capabilities	52
5.2.12.2	Rx Dynamic Range.....	52
5.2.12.2.1	Capabilities	52
5.2.12.3	Tx RMS Power Level at Maximum Power Level Setting	52
5.2.12.3.1	Capabilities	52
5.2.12.4	Tx Power Level Adjustment Step Accuracy.....	53
5.2.12.4.1	Capabilities	53
5.2.12.5	Symbol Timing Accuracy.....	54
5.2.12.5.1	Capabilities	54
5.2.12.6	Tx Burst Timing.....	54
5.2.12.6.1	Capabilities	54
5.2.12.7	Carrier Frequency	54
5.2.12.7.1	Capabilities	54
5.2.12.8	Spectral Mask	55
5.2.12.8.1	Capabilities	55
5.2.12.9	Ramp Up / Down Time.....	55
5.2.12.9.1	Capabilities	55
5.2.12.10	Output Noise Power Spectral Density When Tx is not Transmitting.....	55
5.2.12.10.1	Capabilities	55

5.2.12.11	Modulation Accuracy	56
5.2.12.11.1	Capabilities	56
5.2.12.12	BER Performance Threshold	56
5.2.12.12.1	Capabilities	57
5.2.12.13	Transition Time from Tx to Rx and from Rx to Tx.....	58
5.2.12.13.1	Capabilities	59
5.2.12.14	1st Adjacent Channel Interference.....	59
5.2.12.14.1	Capabilities	59
5.2.12.15	2nd Adjacent Channel Interference	61
5.2.12.15.1	Capabilities	61
5.2.12.16	Tx Power Level Absolute Accuracy	63
5.2.12.16.1	Capabilities	63
5.2.13	ATM Convergence Sublayer – SS.....	64
5.2.13.1	Capabilities	64
5.2.13.2	Valid Behavior.....	64
5.2.13.3	Invalid Behavior	66
5.2.13.4	Inopportune Behavior	66
5.2.13.5	Timer.....	66
5.2.13.6	Message Formats	66
5.2.14	Packet Convergence Sublayer – SS	67
5.2.14.1	Packet CS Usage	67
5.2.14.1.1	Capabilities	67
5.2.14.1.2	Valid Behavior.....	67
5.2.14.1.3	Invalid Behavior	68
5.2.14.1.4	Inopportune Behavior	68
5.2.14.1.5	Timer.....	68
5.2.14.1.6	Message Formats	68
5.2.14.2	Classification	68
5.2.14.2.1	Capabilities	68
5.2.14.2.2	Valid behavior.....	71
5.2.14.2.3	Invalid behavior	71
5.2.14.2.4	Inopportune behavior.....	71
5.2.14.2.5	Timer.....	71
5.2.14.2.6	Message Format.....	71
5.2.14.3	Classifier DSx Signaling.....	72
5.2.14.3.1	Capabilities	72
5.2.14.3.2	Valid behavior.....	72
5.2.14.3.3	Invalid behavior	72
5.2.14.3.4	Inopportune behavior.....	73
5.2.14.3.5	Timer.....	73
5.2.14.3.6	Message Formats	73
5.2.14.4	Payload Header Suppression	74
5.2.14.4.1	Capabilities	74
5.2.14.4.2	Valid Behavior.....	74
5.2.14.4.3	Invalid Behavior	75
5.2.14.4.4	Inopportune Behavior	75
5.2.14.4.5	Timer.....	75
5.2.14.4.6	Message Formats	75
5.3	Test purposes for BS.....	75
5.3.1	Channel Descriptors and Maps – BS	75
5.3.1.1	Map and Frame Structure	75
5.3.1.1.1	Capabilities	75
5.3.1.1.2	Valid Behavior.....	76
5.3.1.1.3	Invalid Behavior	77

5.3.1.1.4	Inopportune Behavior	77
5.3.1.1.5	Timer	77
5.3.1.1.6	Message Formats	77
5.3.1.2	Channel Descriptors	77
5.3.1.2.1	Capabilities	77
5.3.1.2.2	Valid Behavior	77
5.3.1.2.3	Invalid Behavior	77
5.3.1.2.4	Inopportune Behavior	78
5.3.1.2.5	Timer	78
5.3.1.2.6	Message Formats	78
5.3.1.3	Channel Descriptor Change	78
5.3.1.3.1	Capabilities	78
5.3.1.3.2	Valid Behavior	78
5.3.1.3.3	Invalid Behavior	79
5.3.1.3.4	Inopportune Behavior	79
5.3.1.3.5	Timer	79
5.3.1.3.6	Message Formats	79
5.3.2	Radio Link Control – BS	79
5.3.2.1	Initial Ranging	79
5.3.2.1.1	Capabilities	79
5.3.2.1.2	Valid Behavior	79
5.3.2.1.3	Invalid Behavior	80
5.3.2.1.4	Inopportune Behavior	81
5.3.2.1.5	Timer	81
5.3.2.1.6	Message Formats	81
5.3.2.2	Periodic Ranging	82
5.3.2.2.1	Capabilities	82
5.3.2.2.2	Valid Behavior	82
5.3.2.2.3	Invalid Behavior	83
5.3.2.2.4	Inopportune Behavior	83
5.3.2.2.5	Timer	83
5.3.2.2.6	Message Formats	83
5.3.2.3	Downlink Burst Profile Management	83
5.3.2.3.1	Capabilities	83
5.3.2.3.2	Valid Behavior	84
5.3.2.3.3	Invalid Behavior	84
5.3.2.3.4	Inopportune Behavior	84
5.3.2.3.5	Timer	84
5.3.2.3.6	Message Formats	84
5.3.2.4	Negotiate Basic	85
5.3.2.4.1	Capabilities	85
5.3.2.4.2	Valid Behavior	85
5.3.2.4.3	Invalid Behavior	85
5.3.2.4.4	Inopportune Behavior	85
5.3.2.4.5	Timer	86
5.3.2.4.6	Message Formats	86
5.3.3	Registration, IP Connectivity, and TFTP – BS	86
5.3.3.1	Registration	86
5.3.3.1.1	Capabilities	86
5.3.3.1.2	Valid Behavior	86
5.3.3.1.3	Invalid Behavior	86
5.3.3.1.4	Inopportune Behavior	87
5.3.3.1.5	Timer	87
5.3.3.1.6	Message Formats	87

5.3.3.2	IP Connectivity	87
5.3.3.2.1	Capabilities	87
5.3.3.2.2	Valid Behavior	88
5.3.3.2.3	Invalid Behavior	88
5.3.3.2.4	Inopportune Behavior	88
5.3.3.2.5	Timer	88
5.3.3.2.6	Message Formats	88
5.3.4	Privacy Key Management and Authentication – BS	88
5.3.4.1	Authorization	89
5.3.4.1.1	Capabilities	89
5.3.4.1.2	Valid Behavior	89
5.3.4.1.3	Invalid Behavior	90
5.3.4.1.4	Inopportune Behavior	90
5.3.4.1.5	Timer	90
5.3.4.1.6	Message Formats	90
5.3.4.2	TEK	91
5.3.4.2.1	Capabilities	91
5.3.4.2.2	Valid Behavior	91
5.3.4.2.3	Invalid Behavior	91
5.3.4.2.4	Inopportune Behavior	91
5.3.4.2.5	Timer	91
5.3.4.2.6	Message Formats	91
5.3.4.3	Security Associations Management	92
5.3.4.3.1	Capabilities	92
5.3.4.3.2	Valid Behavior	92
5.3.4.3.3	Invalid Behavior	92
5.3.4.3.4	Inopportune Behavior	92
5.3.4.3.5	Timer	92
5.3.4.3.6	Message Format	92
5.3.4.4	Encryption and Key Scheduling	92
5.3.4.4.1	Capabilities	93
5.3.4.4.2	Valid Behavior	93
5.3.4.4.3	Invalid Behavior	94
5.3.4.4.4	Inopportune Behavior	94
5.3.4.4.5	Timer	94
5.3.4.4.6	Message Formats	94
5.3.5	Dynamic Services – BS	94
5.3.5.1	Dynamic Service Addition – BS Initiated	94
5.3.5.1.1	Capabilities	94
5.3.5.1.2	Valid Behavior	95
5.3.5.1.3	Invalid Behavior	96
5.3.5.1.4	Inopportune Behavior	96
5.3.5.1.5	Timer	97
5.3.5.1.6	Message Formats	97
5.3.5.2	Dynamic Service Change	97
5.3.5.2.1	Capabilities	97
5.3.5.2.2	Valid Behavior	97
5.3.5.2.3	Invalid Behavior	99
5.3.5.2.4	Inopportune Behavior	99
5.3.5.2.5	Timer	100
5.3.5.2.6	Message Formats	100
5.3.5.3	Dynamic Service Deletion	100
5.3.5.3.1	Capabilities	100
5.3.5.3.2	Valid Behavior	100

5.3.5.3.3	Invalid Behavior	101
5.3.5.3.4	Inopportune Behavior	101
5.3.5.3.5	Timer.....	102
5.3.5.3.6	Message Formats	102
5.3.6	Bandwidth Allocation and Polling – BS.....	102
5.3.6.1	Request/Grant	102
5.3.6.1.1	Capabilities	102
5.3.6.1.2	Valid Behavior.....	104
5.3.6.1.3	Invalid Behavior	104
5.3.6.1.4	Inopportune Behavior	104
5.3.6.1.5	Timer.....	104
5.3.6.1.6	Message Formats	104
5.3.6.2	Multicast Polling.....	105
5.3.6.2.1	Capabilities	105
5.3.6.2.2	Valid Behavior.....	105
5.3.6.2.3	Invalid Behavior	105
5.3.6.2.4	Inopportune Behavior	106
5.3.6.2.5	Timer.....	106
5.3.6.2.6	Message Formats	106
5.3.7	Reset and Re-Registration – BS.....	106
5.3.7.1	Capabilities	106
5.3.7.2	Valid Behavior.....	107
5.3.7.3	Invalid Behavior	107
5.3.7.4	Inopportune Behavior	107
5.3.7.5	Timer.....	107
5.3.7.6	Message Formats	107
5.3.8	Clock Comparison – BS	107
5.3.8.1	Capabilities	107
5.3.8.2	Valid Behavior.....	108
5.3.8.3	Invalid Behavior	108
5.3.8.4	Inopportune Behavior	108
5.3.8.5	Timer.....	108
5.3.8.6	Message Formats	108
5.3.9	MAC PDUs – BS.....	108
5.3.9.1	Capabilities	108
5.3.9.2	Valid Behavior.....	109
5.3.9.3	Invalid Behavior	109
5.3.9.4	Inopportune Behavior	109
5.3.9.5	Timer.....	109
5.3.9.6	Message Formats	110
5.3.10	Downlink Physical layer – BS	110
5.3.10.1	RS Outer Code $t = 10$ / BCC – Frame Control	110
5.3.10.1.1	Capabilities	110
5.3.10.2	RS Outer Code Other Bursts.....	110
5.3.10.2.1	Capabilities	110
5.3.10.3	Fixed Codeword Operation.....	110
5.3.10.3.1	Capabilities	110
5.3.10.4	Shortened Last Codeword Operation.....	111
5.3.10.4.1	Capabilities	111
5.3.10.5	Burst Preamble.....	111
5.3.10.5.1	Capabilities	111
5.3.10.6	Modulation.....	111
5.3.10.6.1	Capabilities	111
5.3.10.7	RS Outer Code – Information Block Length.....	112

5.3.10.7.1	Capabilities	112
5.3.10.8	Continuous Wave (CW) Mode	112
5.3.10.8.1	Capabilities	112
5.3.11	Uplink Physical layer – BS	112
5.3.11.1	Randomization With Programmable Seed	112
5.3.11.1.1	Capabilities	112
5.3.11.2	RS Outer Code – Initial Ranging	113
5.3.11.2.1	Capabilities	113
5.3.11.3	RS Outer Code Other Bursts	113
5.3.11.3.1	Capabilities	113
5.3.11.4	Fixed Codeword Operation	113
5.3.11.4.1	Capabilities	113
5.3.11.5	Shortened Last Codeword Operation	114
5.3.11.5.1	Capabilities	114
5.3.11.6	BCC Inner Code	114
5.3.11.6.1	Capabilities	114
5.3.11.7	Burst Preamble	114
5.3.11.7.1	Capabilities	114
5.3.11.8	Modulation	115
5.3.11.8.1	Capabilities	115
5.3.11.9	RS Outer Code – Information Block Length	115
5.3.11.9.1	Capabilities	115
5.3.12	Minimum Performance – BS	115
5.3.12.1	Channel Allocation	115
5.3.12.1.1	Capabilities	115
5.3.12.2	Symbol Timing Accuracy	116
5.3.12.2.1	Capabilities	116
5.3.12.3	Carrier Frequency	116
5.3.12.3.1	Capabilities	116
5.3.12.4	Spectral Mask	116
5.3.12.4.1	Capabilities	116
5.3.12.5	Spurious	116
5.3.12.5.1	Capabilities	116
5.3.12.6	Tx RMS Power Level	117
5.3.12.6.1	Capabilities	117
5.3.12.7	Ramp Up / Down Time	117
5.3.12.7.1	Capabilities	117
5.3.12.8	Modulation Accuracy	118
5.3.12.8.1	Capabilities	118
5.3.12.9	Rx Dynamic Range	119
5.3.12.9.1	Capabilities	119
5.3.12.10	BER Performance Threshold	119
5.3.12.10.1	Capabilities	119
5.3.12.11	1st Adjacent Channel Interference	120
5.3.12.11.1	Capabilities	120
5.3.12.12	2nd Adjacent Channel Interference	122
5.3.12.12.1	Capabilities	122
5.3.13	ATM Convergence Sublayer – BS	124
5.3.13.1	Capabilities	124
5.3.13.2	Valid Behavior	125
5.3.13.3	Invalid Behavior	126
5.3.13.4	Inopportune Behavior	126
5.3.13.5	Timer	126
5.3.13.6	Message Formats	126

5.3.14	Packet Convergence Sublayer – BS.....	126
5.3.14.1	Packet CS Usage	126
5.3.14.1.1	Capabilities	127
5.3.14.2	Classifier Signaling.....	128
5.3.14.2.1	Capabilities	128
5.3.14.2.2	Valid Behavior	128
5.3.14.2.3	Invalid Behavior	128
5.3.14.2.4	Inopportune Behavior	128
5.3.14.2.5	Timer.....	128
5.3.14.2.6	Message Formats	128
5.3.14.3	Payload Header Suppression	128
5.3.14.3.1	Capabilities	128
5.3.14.3.2	Valid Behavior	129
5.3.14.3.3	Invalid Behavior	129
5.3.14.3.4	Inopportune Behavior	129
5.3.14.3.5	Timer.....	129
5.3.14.3.6	Message format.....	129

LIST OF TABLES

Table 1 —Test Suite Groups	3
Table 2 —Test Purpose Description Structure	11
Table 3 —TP Definition Rules	11
Table 4 — TP Naming Convention	12
Table 5 —Map and Frame Structure – Capabilities	13
Table 6 —Map and Frame Structure – Valid Behavior	13
Table 7 —Map and Frame Structure – Invalid Behavior	14
Table 8 —Map and Frame Structure – Timer	15
Table 9 —Channel Descriptors - Capabilities	15
Table 10 —Channel Descriptors – Timer	16
Table 11 —Channel Descriptor Change – Capabilities	16
Table 12 —Initial Ranging – Capabilities	17
Table 13 —Initial Ranging – Valid Behavior	17
Table 14 —Initial Ranging – Invalid Behavior	18
Table 15 —Initial Ranging – Inopportune Behavior	18
Table 16 —Initial Ranging – Timer	18
Table 17 —Periodic Ranging – Capabilities	19
Table 18 —Periodic Ranging – Valid Behavior	19
Table 19 —Periodic Ranging – Invalid Behavior	20
Table 20 —Periodic Ranging – Timer	20
Table 21 —Downlink Burst Profile Management – Capabilities	21
Table 22 —Downlink Burst Profile Management – Valid Behavior	21
Table 23 —Downlink Burst Profile Management – Invalid Behavior	21
Table 24 —Downlink Burst Profile Management – Inopportune Behavior	22
Table 25 —Downlink Burst Profile Management – Timer	22
Table 26 —Negotiate Basic Capabilities	22
Table 27 —Negotiate Basic Capabilities– Valid Behavior	23
Table 28 —Negotiate Basic Capabilities– Invalid Behavior	23
Table 29 —Negotiate Basic Capabilities – Inopportune Behavior	23
Table 30 —Negotiate Basic Capabilities – Timer	23
Table 31 —Registration	24
Table 32 —Registration – Valid Behavior	24
Table 33 —Registration – Invalid Behavior	24
Table 34 —Registration – Timer	25
Table 35 —IP Connectivity – Capabilities	25
Table 36 —IP Connectivity – Timer	26
Table 37 —Authorization – Capabilities	26
Table 38 —Authorization – Valid Behavior	27
Table 39 —Authorization – Invalid Behavior	27
Table 40 —Authorization – Inopportune Behavior	28
Table 41 —Authorization – Timer	28
Table 42 —TEK	29
Table 43 —TEK – Invalid Behavior	29
Table 44 —TEK – Inopportune behavior	29
Table 45 —TEK – Timer	30
Table 46 —Security Association Management – Capabilities	30
Table 47 —Security Association Management – Timer	30
Table 48 —Encryption and Key Scheduling – Capabilities	31
Table 49 —Dynamic Service Addition – Capabilities	32
Table 50 —Dynamic Service Addition – Valid Behavior	32
Table 51 —Dynamic Service Addition – Invalid Behavior	33

Table 52 —Dynamic Service Addition – Inopportune Behavior	34
Table 53 —Dynamic Service Addition – Timer.....	34
Table 54 —Dynamic Service Change – Capabilities	35
Table 55 —Dynamic Service Change – Valid Behavior.....	35
Table 56 —Dynamic Service Change – Invalid Behavior	36
Table 57 —Dynamic Service Change – Inopportune Behavior	36
Table 58 —Dynamic Service Change – Timer.....	37
Table 59 —Dynamic Service Deletion – Capabilities.....	37
Table 60 —Dynamic Service Deletion – Valid Behavior	38
Table 61 —Dynamic Service Deletion – Invalid Behavior.....	38
Table 62 —Dynamic Service Deletion – Inopportune Behavior.....	38
Table 63 —Request/Grant – Capabilities	39
Table 64 —Request/Grant – Valid Behavior.....	39
Table 65 —Multicast Polling – Capabilities.....	40
Table 66 —Multicast Polling – Valid Behavior	40
Table 67 —Multicast Polling – Invalid Behavior.....	41
Table 68 —Multicast Polling – Inopportune Behavior	41
Table 69 —Reset and Re-Registration	42
Table 70 —Reset and Re-Registration – Invalid Behavior	42
Table 71 —Clock Comparison – Capabilities	43
Table 72 —Clock Comparison – Invalid Behavior	43
Table 73 —Clock Comparison – Inopportune Behavior	43
Table 74 —Clock Comparison – Timer	44
Table 75 —MAC PDUs – Capabilities.....	44
Table 76 —MAC PDUs – Valid Behavior	45
Table 77 —MAC PDUs – Invalid Behavior.....	45
Table 78 —RS Outer Code $t = 10$ / BCC – Frame Control.....	46
Table 79 —RS Outer Code Other Bursts.....	46
Table 80 —Fixed Codeword Operation.....	47
Table 81 —Shortened Last Codeword Operation.....	47
Table 82 —Burst Preamble.....	47
Table 83 —Modulation.....	48
Table 84 —RS Outer Code – Information Block Length.....	48
Table 85 —Randomization With Programmable Seed.....	48
Table 86 —RS Outer Code – Initial Ranging.....	49
Table 87 —RS Outer Code Other Bursts.....	49
Table 88 —Fixed Codeword Operation.....	49
Table 89 —Shortened Last Codeword Operation.....	50
Table 90 —BCC Inner Code	50
Table 91 —Burst Preamble.....	50
Table 92 —Modulation.....	51
Table 93 —RS Outer Code – Information Block Length.....	51
Table 94 —Continuous Wave (CW) Mode	51
Table 95 —Tx Dynamic Range	52
Table 96 —Rx Dynamic Range.....	52
Table 97 —Tx RMS Power Level at Maximum Power Level Setting	52
Table 98 —Tx Power Level Adjustment Step Accuracy	53
Table 99 —Symbol Timing Accuracy	54
Table 100 —Tx Burst Timing	54
Table 101 —Carrier Frequency	54
Table 102 —Spectral Mask	55
Table 103 —Ramp Up / Down Time.....	55
Table 104 —Output Noise Power Spectral Density When Tx is not Transmitting.....	55
Table 105 —Modulation Accuracy	56

Table 106 — BER Performance Threshold	57
Table 107 — Transition Time from Tx to Rx and from Rx to Tx.....	59
Table 108 — 1st Adjacent Channel Interference.....	59
Table 109 — 2nd Adjacent Channel Interference	61
Table 110 — Tx Power Level Absolute Accuracy	63
Table 111 — ATM Convergence Sublayer	64
Table 112 — ATM Convergence Sublayer – Valid Behavior.....	64
Table 113 — ATM Convergence Sublayer – Invalid Behavior	66
Table 114 — Packet CS Usage.....	67
Table 115 — Classification	68
Table 116 — Classification – Valid Behavior.....	71
Table 117 — Classification – Invalid Behavior	71
Table 118 — Classifier DSx Signaling.....	72
Table 119 — Classifier DSx signaling, Inopportune Behavior	73
Table 120 — Payload Header Suppression	74
Table 121 — Payload Header Suppression – Valid Behavior.....	74
Table 122 — Payload Header Suppression – Inopportune Behavior	75
Table 123 — Map and Frame Structure	75
Table 124 — Map and Frame Structure – Valid Behavior.....	76
Table 125 — Map and Frame Structure – Invalid Behavior	77
Table 126 — Channel Descriptors.....	77
Table 127 — Channel Descriptor Change.....	78
Table 128 — Initial Ranging	79
Table 129 — Initial Ranging – Valid Behavior.....	79
Table 130 — Initial Ranging – Invalid Behavior	80
Table 131 — Initial Ranging – Inopportune Behavior	81
Table 132 — Initial Ranging – Timer	81
Table 133 — Periodic Ranging	82
Table 134 — Periodic Ranging – Valid Behavior.....	82
Table 135 — Periodic Ranging – Invalid Behavior	83
Table 136 — Periodic Ranging – Inopportune Behavior	83
Table 137 — Periodic Ranging – Timer.....	83
Table 138 — Downlink Burst Profile Management.....	83
Table 139 — Downlink Burst Profile Management – Valid Behavior	84
Table 140 — Downlink Burst Profile Management – Invalid Behavior.....	84
Table 141 — Negotiate Basic.....	85
Table 142 — Negotiate Basic – Valid Behavior	85
Table 143 — Negotiate Basic – Invalid Behavior.....	85
Table 144 — Negotiate Basic – Inopportune Behavior.....	85
Table 145 — Registration.....	86
Table 146 — Registration – Valid Behavior	86
Table 147 — Registration – Invalid Behavior.....	86
Table 148 — Registration – Inopportune Behavior.....	87
Table 149 — IP Connectivity	87
Table 150 — IP Connectivity – Invalid Behavior	88
Table 151 — IP Connectivity – Inopportune Behavior.....	88
Table 152 — IP Connectivity – Timer	88
Table 153 — Authorization	89
Table 154 — Authorization – Valid Behavior.....	89
Table 155 — Authorization – Invalid Behavior	90
Table 156 — Authorization – Inopportune Behavior	90
Table 157 — TEK – Capabilities	91
Table 158 — TEK – Valid Behavior	91
Table 159 — Security Associations Management.....	92

Table 160 — Security Associations Management – Valid Behavior	92
Table 161 — Encryption and Key Scheduling	93
Table 162 — Encryption and Key Scheduling – Invalid Behavior	94
Table 163 — Dynamic Service Addition	94
Table 164 — Dynamic Service Addition – Valid Behavior	95
Table 165 — Dynamic Service Addition – Invalid Behavior	96
Table 166 — Dynamic Service Addition – Inopportune Behavior	96
Table 167 — Dynamic Service Addition – Timer.....	97
Table 168 — Dynamic Service Change	97
Table 169 — Dynamic Service Change – Valid Behavior	97
Table 170 — Dynamic Service Change – Invalid Behavior	99
Table 171 — Dynamic Service Change – Inopportune Behavior	99
Table 172 — Dynamic Service Change – Timer.....	100
Table 173 — Dynamic Service Deletion.....	100
Table 174 — Dynamic Service Deletion – Valid Behavior	100
Table 175 — Dynamic Service Deletion – Invalid Behavior.....	101
Table 176 — Dynamic Service Deletion – Inopportune Behavior.....	101
Table 177 — Dynamic Service Deletion – Timer	102
Table 178 — Request/Grant	102
Table 179 — Request/Grant - Valid Behavior	104
Table 180 — Multicast Polling.....	105
Table 181 — Multicast Polling – Valid Behavior	105
Table 182 — Multicast Polling – Invalid Behavior.....	105
Table 183 — Multicast Polling – Inopportune Behavior	106
Table 184 — Multicast Polling – Timer	106
Table 185 — Reset and Re-Registration	106
Table 186 — Clock Comparison	107
Table 187 — MAC PDUs.....	108
Table 188 — MAC PDUs – Valid Behavior	109
Table 189 — MAC PDUs – Invalid Behavior.....	109
Table 190 — RS Outer Code $t = 10$ / BCC – Frame Control	110
Table 191 — RS Outer Code Other Bursts.....	110
Table 192 — Fixed Codeword Operation.....	110
Table 193 — Shortened Last Codeword Operation.....	111
Table 194 — Burst Preamble.....	111
Table 195 — Modulation.....	111
Table 196 — RS Outer Code – Information Block Length	112
Table 197 — Continuous Wave (CW) Mode	112
Table 198 — Randomization with Programmable Seed	112
Table 199 — RS Outer Code – Initial Ranging	113
Table 200 — RS Outer Code Other Bursts.....	113
Table 201 — Fixed Codeword Operation.....	113
Table 202 — Shortened Last Codeword Operation.....	114
Table 203 — BCC Inner Code	114
Table 204 — Burst Preamble.....	114
Table 205 — Modulation.....	115
Table 206 — RS Outer Code – Information Block Length	115
Table 207 — Channel Allocation	115
Table 208 — Symbol Timing Accuracy	116
Table 209 — Carrier Frequency	116
Table 210 — Spectral Mask	116
Table 211 — Spurious	117
Table 212 — Tx RMS Power Level	117
Table 213 — Ramp Up / Down time	117

Table 214 — Modulation Accuracy	118
Table 215 — Rx Dynamic Range	119
Table 216 — BER Performance Threshold	119
Table 217 — 1st Adjacent Channel Interference	120
Table 218 — 2nd Adjacent Channel Interference	122
Table 219 — ATM Convergence Sublayer	124
Table 220 — ATM Convergence Sublayer – Valid Behavior	125
Table 221 — Packet CS Usage	127
Table 222 — Classifier DSx Signaling	128
Table 223 — Payload Header Suppression	128
Table 224 — Payload Header Suppression – Inopportune Behavior	129

IEEE Standard for Conformance to IEEE 802.16TM

Part 2: Test Suite Structure and Test Purposes for 10–66 GHz WirelessMAN-SCTM Air Interface

1. Overview

This document is Part 2 of a multi-part deliverable covering the WirelessMan-SC (10–66 GHz) air interface in IEEE 802.16^{1,2} as identified below:

Part 1: Protocol Implementation Conformance Statements (PICS) proforma

Part 2: Test Suite Structure and Test Purposes (TSS&TP) specification

Part 3: Radio Conformance Test (RCT) specification

Future: Abstract Test Suite (ATS) specification

1.1 Introduction

To evaluate conformance of a particular implementation, it is necessary to have a common testing document together with common test procedures. The Test Suite Structure (TSS) and Test Purposes (TP) document serves this purpose.

1.2 Scope

This standard represents the Test Suite Structure and Test Purposes (TSS&TP), per ISO/IEC Standards 9646-1:1994 and 9646-2:1995 and ITU-T Standards X.290 and X.291, for conformance specification of base stations and subscriber stations based upon the WirelessMAN-SC (10–66 GHz) air interface specified in IEEE Std 802.16.

1.3 Purpose

This document describes the structure of the suite of tests and the test purposes for WirelessMAN-SC (10–66 GHz) air interface specified in IEEE Std 802.16. It therefore provides the one of several specifications (per ISO/IEC 9646-1:1994 and 9646-2:1995) required to support conformance and interoperability testing of devices built to the specifications in IEEE 802.16.

¹When IEEE 802.16 is referenced this generally includes the base document and any existing amendments and corrigenda.

²Information on references can be found in Clause 2.

2. References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document. References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific. For a specific reference, subsequent revisions do not apply. For a nonspecific reference, the latest version applies.

IEEE Std 802.16-2001, IEEE Standard for Local and Metropolitan Area Networks—Part 16: Standard Air Interface for Fixed Wireless Access Systems.^{3, 4}

IEEE Std 802.16cTM-2002, IEEE Standard for Local and Metropolitan Area Networks—Part 16: Air Interface for Broadband Fixed Wireless Access Systems—Amendment 1: Detailed System profiles for 10–66 GHz.

IEEE Std 802.16aTM-2003, IEEE Standard for Local and Metropolitan Area Networks—Part 16: Air Interface for Broadband Fixed Wireless Access Systems—Amendment 2: Medium Access Control Modifications and Additional Physical Layer Specifications for 2–11 GHz.

IEEE P802.16-REVD/D3-2004, Draft Revision of IEEE Standard for Local and Metropolitan Area Networks – Part 16: Air Interface for Broadband Fixed Wireless Access Systems.⁵

IEEE Std 802.16TM/Conformance01-2003, IEEE Standard for Conformance to IEEE 802.16—Part 1: Protocol Implementation Conformance Statement (PICS) Proforma for 10–66 GHz WirelessMAN-SC Air Interface.

ISO/IEC 9646-1:1994, Information technology – Open Systems Interconnection – Conformance testing methodology and framework – Part 1: General concepts.

ISO/IEC 9646-2:1995, Information technology – Open Systems Interconnection – Conformance testing methodology and framework – Part 2: Abstract test suite specification.

ISO/IEC 9646-6:1995, Information technology - Open Systems Interconnection – Conformance testing methodology and framework - Part 6: Protocol profile test specification.

ISO/IEC 9646-7:1995, Information technology – Open Systems Interconnection – Conformance testing methodology and framework – Part 7: Implementation conformance statements.

3. Definitions and Abbreviations

3.1 Definitions

For the purposes of the present document, the definitions in IEEE 802.16, as well as those in ISO/IEC 9646-1:1994, ISO/IEC 9646-2:1995, ISO/IEC 9646-6:1995, and ISO/IEC 9646-7:1995, apply.

³IEEE Publications are available from the Institute of Electrical and Electronics Engineers, 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855-1331, USA (<http://standards.ieee.org>).

⁴The IEEE standards or products referred to in Clause 2 are trademarks belonging to the Institute of Electrical and Electronics Engineers, Inc.

⁵This IEEE standards project was not approved by the IEEE-SA Standards Board at the time this publication went to press. For information about obtaining a draft, contact the IEEE.

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply in conjunction with those defined in IEEE 802.16 as well as those in ISO/IEC 9646-1:1994, ISO/IEC 9646-2:1995, ISO/IEC 9646-6:1995, and ISO/IEC 9646-7:1995.

CA	Capability (test category)
BV	Valid Behavior (test category)
BI	Invalid Behavior (test category)
BO	Inopportune Behavior (test category)
TI	Timer (test category)
TSS	Test Suite Structure
TP	Test Purpose

4. Test Suite Structure (TSS)

4.1 Structure

The following table shows the Test Suite Structure (TSS) including its defined subgroups for conformance testing.

Table 1 — Test Suite Groups

Test Suite Groups	Protocol Groups	Naming Conventions	Test Groups				
			CA	BV	BI	BO	TI
Channel Descriptors and Maps		CDM					
	Map and frame structure	MAP	X	X	X		X
	Channel Descriptors	CD	X				X
	Channel descriptor change	CDC	X				
Radio Link Control		RLC					
	Initial Ranging	IRNG	X	X	X	X	X
	Periodic Ranging	PRNG	X	X	X	X	X
	Downlink Burst Profile Management	DBPC	X	X	X	X	X
	Negotiate Basic Capabilities	SBC	X	X	X	X	X

Table 1 — Test Suite Groups (continued)

Test Suite Groups	Protocol Groups	Naming Conventions	Test Groups				
			CA	BV	BI	BO	TI
Registration, IP connectivity and TFTP		INI					
	Registration	REG	X	X	X	X	X
	Establish IP Connectivity	IPC	X	X	X	X	X
Privacy and Key Management		PKM					
	Authorization	AUTH	X	X	X	X	X
	TEK	TEK	X	X	X	X	X
	Security Associations management	SAM	X	X		X	
	Encryption and TEK scheduling	EKS	X		X		
Dynamic Services		DS	X	X	X	X	X
	Dynamic Service Addition	DSA	X	X	X	X	X
	Dynamic Service Change	DSC	X	X	X	X	X
	Dynamic Service Deletion	DSD	X	X	X	X	X
Bandwidth allocation and polling		BWA					
	Request/Grant	REQ	X	X			
	Multicast Polling	MCP	X	X	X	X	X
Reset and Reregistration		RER	X		X		
	Reset/De-register	RES	X		X		
Clock Comparison		CCC	X		X	X	X
	Clock Comparison	CCC	X		X	X	X

Table 1 — Test Suite Groups (continued)

Test Suite Groups	Protocol Groups	Naming Conventions	Test Groups				
			CA	BV	BI	BO	TI
MAC PDU		MAC					
	MAC PDU	PDU	X	X	X		
Downlink Physical Layer		PHYDL					
	Frame Control	FC	X				
	RS Outer Code	RS	X				
	Fixed Codeword	FCO	X				
	Shortened Codeword	SC	X				
	Burst Preamble	BP	X				
	Modulation	M	X				
	Block Length	IBL	X				
	Continuous Wave	CW	X				
Uplink Physical Layer		PHYUL					
	Randomization and Seed	RPS	X				
	Initial Ranging	IR	X				
	RS Outer Code	RS	X				
	Fixed Codeword	FCO	X				
	Shortened Codeword	SC	X				
	BCC Inner Code	BCC	X				
	Burst Preamble	BP	X				
	Modulation	M	X				
	Block Length	IBL	X				
	Continuous Wave	CW	X				

Table 1 — Test Suite Groups (continued)

Test Suite Groups	Protocol Groups	Naming Conventions	Test Groups				
			CA	BV	BI	BO	TI
PHY Minimum Performance		PHYMP					
	Channel Allocation	CHA	X				
	Tx Dynamic Range	TDR	X				
	Rx Dynamic Range	RDR	X				
	Tx RMS Power	TXP	X				
	Tx Power Adjust	ASA	X				
	Symbol Timing	STA	X				
	Tx Burst Timing	BT	X				
	Carrier Frequency	CF	X				
	Spectral Mask	SM	X				
	Spurious	SP	X				
	Ramp up/down	RUD	X				
	Output Noise	ON	X				
	Modulation Accuracy	MA	X				
	Bit Error Rate	BER	X				
	Transition Time	TT	X				
	1st Adj Channel	1AC	X				
	2nd Adj Channel	2AC	X				
	Tx Absolute Power	PAA	X				
ATM CS		ACS					
	ATM CS	ATM	X	X	X		
Packet CS		PCS					

Table 1 — Test Suite Groups (continued)

Test Suite Groups	Protocol Groups	Naming Conventions	Test Groups				
			CA	BV	BI	BO	TI
	Packet CS usage	PCU	X				
	Classification	CLS	X	X	X		
	Classifier DSx Signaling	CDS	X			X	X
	Payload header suppression	PHS	X	X		X	

4.2 Test groups

The test groups are organized into three levels of groups. The levels include the test suite groups, protocol groups, and test groups. The test suites are the highest level breakdowns. The second level separates the test suite groups into protocol groups within each test suite. The last level in each branch contains one or more of the standard ISO subgroups capability (CA), valid behavior (BV), invalid behavior (BI), inopportune behavior (BO), and time (TI) (defined in Clause 4.4).

4.3 Test Suites and Protocol Groups

The protocol groups identify the each of the subdivisions of the test suites.

The Test Suites define the top level testable areas for conformance testing. The test suites are shown in Table 1.

The protocol groups within each test suite are defined below.

4.3.1 Channel Descriptors and Maps

4.3.1.1 Map and Frame Structure

Tests for verifying the generation and usage of maps.

4.3.1.2 Channel Descriptors

Tests for verifying the generation and usage of channel descriptor messages.

4.3.1.3 Channel Descriptor Change

Tests for verifying the protocol for channel descriptor change.

4.3.2 Radio Link Control

4.3.2.1 Initial Ranging

Tests for verifying initial ranging.

4.3.2.2 Periodic Ranging

Test for verifying periodic ranging.

4.3.2.3 Downlink Burst Profile Management

Tests for verifying downlink burst profile management.

4.3.2.4 Negotiate Basic Capabilities

Tests for verifying the SBC protocol.

4.3.3 Registration, IP Connectivity and TFTP

4.3.3.1 Registration

Tests for verifying the registration protocol.

4.3.3.2 Establish IP Connectivity

Tests for verifying DHCP, Network Time Protocol and TFTP related functions.

4.3.4 Privacy Key Management

The Privacy Key Management function group is divided into three functional modules. These include authentication, traffic encryption keys (TEKs), authorization keys (AKs), and security associations (SAIDs). This function is primarily responsible for validating conformance of the normal operation of the authorization and key exchanges and to validate security associations between the SS and BS.

4.3.4.1 Authentication

Tests for verifying the SS Authentication and authorization procedure.

4.3.4.2 TEK

Tests for verifying the TEK exchange.

4.3.4.3 Security Association Management

Tests for verifying SA management.

4.3.4.4 Encryption and TEK Scheduling

Tests for verifying the encryption methods and key usage.

4.3.5 Dynamic Services

The Dynamic Services test suite is broken down into three protocol groups. These are Dynamic Service Addition (DSA), Dynamic Service Change (DSC), and Dynamic Service Deletion (DSD). Those three protocol groups are further broken down into functional test groups.

4.3.5.1 Dynamic Service Addition (DSA)

This protocol group covers the tests to validate conformance to the Dynamic Service Addition functions. Normal DSA message flows are validated as well as invalid or inopportune DSA message behavior between a BS and SS. Timer tests are also identified to test timeouts during the DSA process, both BS and SS initiated.

4.3.5.2 Dynamic Service Change (DSC)

This protocol group covers the tests to validate conformance to the Dynamic Service Change functions. Normal DSC message flows are validated as well as invalid or inopportune DSC message behavior between a BS and SS. Timer tests are also identified to test timeouts during the DSC process, both BS and SS initiated.

4.3.5.3 Dynamic Service Deletion (DSD)

This protocol group covers the tests to validate conformance to the Dynamic Service Deletion functions. Normal DSD message flows are validated as well as invalid or inopportune DSD message behavior between a BS and SS. Timer tests are also identified to test timeouts during the DSD process, both BS and SS initiated.

4.3.6 Bandwidth Allocation and Polling

Tests for verifying correctness of bandwidth allocation and polling behavior.

4.3.6.1 Request/Grant

Tests to verify the request/grant protocol.

4.3.6.2 Multicast Polling

Tests of the procedures for adding and removing an SS to/from a multicast polling group.

4.3.7 Reset and Registration

Tests verifying correct behavior associated to the RES-CMD and DREG-CMD messages.

4.3.8 Clock Comparison

Tests to verify the transmission of the network clock.

4.3.9 MAC PDUs

Tests to verify MAC PDU related operations.

4.3.10 PHY

Tests to verify the implementation of the physical layer functions.

4.3.11 ATM Convergence Sublayer

Tests to verify ATM CS functionality.

4.3.12 Packet Convergence Sublayer

Tests to verify Packet CS functionality.

4.3.12.1 Packet CS Usage

Tests for verifying that packets are encapsulated correctly by the Packet CS implementation.

4.3.12.2 Classification

Tests to verify correct packet classification.

4.3.12.3 Classifier DSx Signaling

Tests of the DSx signaling associated with classifiers.

4.3.12.4 Payload Header Suppression

Tests to verify PHS operation.

4.4 Main Test Groups

The main test groups are the capability (CA), the valid behavior (BV), the invalid behavior (BI), inopportune behavior (BO) and the timer (TI) tests group.

4.4.1 Capability (CA) Tests

This test sub group shall provide limited testing of the major IUT capabilities aiming to insure that the claimed capabilities are correctly supported, according to the PICS. Note that CA tests are very similar to Valid Behavior (BV) tests. The distinction will be that CA tests will be the normal default case of messages and BV tests will be any legal normal variants (for example, change the cryptographic suite selection from the default).

4.4.2 Valid Behavior (BV) Tests

This test sub group shall verify that the IUT reacts in conformity with the TS, after receipt or exchange of valid Protocol Data Units (PDUs). Valid PDUs means that the exchange of messages and the content of the exchanged messages are considered as valid. Note that CA tests are very similar to Valid Behavior (BV) tests. The distinction will be that CA tests will be the normal default case of messages and BV tests will be any legal normal variants (for example, change the cryptographic suite selection from the default).

NOTE— It is assumed that a method to look at messages at a protocol level is available (this may be a serial port session, a protocol analyzer, etc.)

4.4.3 Invalid Behavior (BI) Tests

This test sub group shall verify that the IUT reacts in conformity with the TS, after receipt of a syntactically invalid PDU.

NOTES

1—It is assumed that a method to look at messages at a protocol level is available (this may be a serial port session, a protocol analyzer, etc.).

2—Care must be taken when defining tests in this group as they should be according to requirements in IEEE 802.16 or in the PICS Proforma.

4.4.4 Inopportune Behavior (BO) Tests

This test sub group shall verify that the IUT reacts in conformity with the TS, after receipt of a syntactically correct PDU not expected in the actual message exchange. (See NOTE 1 and NOTE 2 in 4.4.3.)

4.4.5 Timer (TI) Tests

This test sub group shall verify that the IUT reacts in conformity with the TS, after timer activity (start, stop, expiration, etc.).

5. Test Purposes (TP)

5.1 Introduction

This Clause contains the details pertaining to each TP defined in the TSS. Each test purpose contains a description of a well defined objective of testing, focusing on a single conformance requirement or a set of related conformance requirements.

5.1.1 TP Definition Conventions

The TPs are defined following particular rules as shown in Table 2 and Table 3.

Table 2 — Test Purpose Description Structure

TP ID according to the TP naming conventions	Reference: Initial condition: Stimulus: Expected behavior:
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Table 3 — TP Definition Rules

TP ID	The TP ID is a unique identifier specified according to the TP naming conventions defined in sub clause TP Naming Conventions
Reference	The reference shall contain the references of the subject to be validated by the actual TP (specification reference, clause, and paragraph).
Initial Condition	The condition defines in which initial state the IUT has to be to apply the actual TP.
Stimulus	The stimulus defines the test event to which the TP is related.
Expected behavior	Definition of the events that are expected from the IUT to conform to the base specification.

5.1.2 TP Naming Conventions

The identifier of the TP is built according to Table 4.

Table 4 — TP Naming Convention

Identifier Format: TP/<st>/<tg>/<pg>/<x>-<nnn>	Abbreviation	Abbreviation Meaning
<st> = side type	BS	Base Station
	SS	Subscriber Station
<tg> = protocol group	See Table 1	
<pg> = protocol group	See Table 1	
<x> = test category	CA	Capability Tests
	BV	Valid Behavior Tests
	BI	Invalid Behavior Tests
	BO	Inopportune Behavior Tests
	TI	Timer Tests
<nnn> = sequential number	(000 – 999)	Test Purpose Number
NOTE—TP/SS/DS/DSA/BV-001 is the valid behavior test purpose number 001 of the Dynamic Service Addition protocol group of the Dynamic Services protocol group implemented at the SS side.		

5.2 Test Purposes for Subscriber Station (SS)

5.2.1 Channel Descriptors and Maps – SS

5.2.1.1 Map and Frame Structure

5.2.1.1.1 Capabilities

Table 5 — Map and Frame Structure – Capabilities

TP/SS/CDM/MAP/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.21/Item 1 Initial condition: SS has not acquired DL parameters. Stimulus: Switch on. Expected behavior: Check that the IUT starts scanning for DL channels.
TP/SS/CDM/MAP/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.21/Item 1, IEEE Std 802.16/Conformance01-2003, Table A.123/Item 1. Initial condition: SS scanning for downlink channel. Stimulus: Switch on. Expected behavior: Check that IUT only scans channels contained in its Frequency list.
TP/SS/CDM/MAP/CA-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.21/Item 2, IEEE Std 802.16/Conformance01-2003, Table A.49, IEEE Std 802.16/Conformance01-2003, Table A.123/Item 1. Initial condition: SS scanning for downlink channel. Stimulus: BS sends DL-MAP messages with a period of 1 ms. Expected behavior: Check that DL-MAP message received with a period of 1 ms.

5.2.1.1.2 Valid Behavior

Table 6 — Map and Frame Structure – Valid Behavior

TP/SS/CDM/MAP/BV-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.21/Item 1, IEEE Std 802.16/Conformance01-2003, Table A.123/Item 1. Initial condition: SS scanning for downlink channel. Stimulus: BS sends DL-MAP messages with a period of 1 ms. Expected behavior: Check that the IUT moves on to scanning next channel if BS ID is not found on the list of allowed values.
TP/SS/CDM/MAP/BV-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.22, IEEE Std 802.16/Conformance01-2003, Table A.50. Initial condition: SS operational. BS transmitting UL Maps with minimum relevance. Stimulus: BS sends UL-MAP granting bandwidth to the SS. Expected behavior: Check that the IUT correctly transmits data in the allocated UL grant.
TP/SS/CDM/MAP/BV-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.18. Initial condition: SS operational. BS transmitting UL Maps with maximum relevance. Stimulus: BS sends UL-MAP granting bandwidth to the SS. Expected behavior: Check that the IUT correctly transmits data in the allocated UL grant.
TP/SS/CDM/MAP/BV-003	Reference: IEEE Std 802.16/Conformance01-2003, Table A.123/Item 2. Initial condition: SS operational, service established between SS and test BS. Stimulus: Test BS sends MAC PDUs spread across multiple Transmission CS PDUs. Expected behavior: SS correctly receives data.
TP/SS/CDM/MAP/BV-004	Reference: IEEE Std 802.16/Conformance01-2003, Table A.123/Item 2. Initial condition: SS operational, service established between SS and test BS. Stimulus: Test BS sends some MAC PDUs starting in the middle of Transmission CS PDUs. Expected behavior: SS correctly receives data.

Table 6 — Map and Frame Structure – Valid Behavior (continued)

TP/SS/CDM/MAP/BV-005	Reference: IEEE Std 802.16/Conformance01-2003, Table A.124/Item 1. Initial condition: SS operational, service established between SS and test BS. Packing off. Stimulus: SS receives packets from user ports at a rate sufficient to cause multiple MAC PDUs per UL subframe. Expected behavior: SS correctly transmits data with proper Transmission CS PDU structure.
TP/SS/CDM/MAP/BV-006	Reference: IEEE Std 802.16/Conformance01-2003, Table A.124/Item 1. Initial condition: SS operational, service established between SS and test BS. SS DL PHY mode different than that used by the Frame Control Header. Stimulus: BS sends SS DL data immediately following a minimum length (2 FEC block) Frame Control Header, using the PHY mode different than that used for the Frame Control Header.(i.e., force a PHY mode transition with minimum DL map processing time.) Expected results: SS correctly receives the data.
TP/SS/CDM/MAP/BV-007	Reference: IEEE Std 802.16/Conformance01-2003, Table A.17, IEEE Std 802.16/Conformance01-2003, Table A.122. Initial condition: SS operational in TDD system, service established between SS and test BS. Stimulus: BS transmits DL and UL-MAPs that vary the end of the DL subframe and the start of the UL subframe, varying the placement of DL data to the SS and UL allocations for the SS (without violating the half-duplex nature of the TDD SS). Expected results: SS correctly receives DL data and correctly transmits UL data.
TP/SS/CDM/MAP/BV-008	Reference: IEEE Std 802.16/Conformance01-2003, Table A.47, IEEE Std 802.16/Conformance01-2003, Table A.49. Initial condition: SS operational, service established between SS and test BS. Multiple DL PHY modes, more robust than that currently used by the SS, are defined in the DCD message. Stimulus: BS sends data to SS in a single frame containing MAC PDU(s) at the SS's negotiated DL PHY mode and MAC PDU(s) at each of the more robust PHY modes. Expected results: The SS receives all PDUs at its negotiated DL PHY mode and all more robust DL PHY modes.
TP/SS/CDM/MAP/BV-009	Reference: IEEE Std 802.16/Conformance01-2003, Table A.123. Initial condition: A connection is setup between the test BS and the SS. The test BS requests the SS to receive a single burst immediately after the downlink map in the TDM portion of the downlink frame with burst profile parameters $t = 4$, information block length = 6, no BCC inner code, shortened last codeword, modulation = QPSK. The burst contains a single codeword and there is no uplink transmission nor any uplink map. The attenuator is adjusted for an optimal reception. Stimulus: The BS inserts 10 erroneous bytes in the control portion before applying the BCC and 4 erroneous bytes in the downlink burst. Expected behavior: The SS receives the data correctly.

5.2.1.1.3 Invalid Behavior

Table 7 — Map and Frame Structure – Invalid Behavior

TP/SS/CDM/MAP/BI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.123. Initial condition: SS operational, service established between SS and test BS. Test BS sends the SS bursts containing at least 2 codewords. The PHY mode parameters are $t = 8$, information block length = 239, no BCC inner code. The burst is filled with MAC PDUs with length = 64 bytes. The attenuator is adjusted for optimal reception. Stimulus: Test BS injects at least 9 erroneous bytes in the first codeword. Expected behavior: SS correctly receives the whole MAC PDUs following the erroneous Transmission CS PDU.
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5.2.1.1.4 Inopportune Behavior

Currently no SS BO category tests have been defined for Map and Frame Structure.

5.2.1.1.5 Timer**Table 8 — Map and Frame Structure – Timer**

TP/SS/CDM/MAP/TI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.96/Item 3. Initial condition: SS synchronized. Stimulus: BS sends DL-MAP messages with a period of 1ms. BS omits DL-MAP for 600 ms. Expected behavior: Check that SS starts scanning for next downlink channel.
TP/SS/CDM/MAP/TI-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.96/Item 4. Initial condition: SS synchronized and UL parameters established. Stimulus: BS sends DL-MAP but omits UL-MAP for 600 ms. BS sends a UL-MAP with a grant to the SS. Expected behavior: Check that SS does not transmit.

5.2.1.1.6 Message Formats

For all TP/SS/CDM/MAP tests ensure that messages transmitted by the SS contain the correct parameters in the correct order.

5.2.1.2 Channel Descriptors**5.2.1.2.1 Capabilities****Table 9 — Channel Descriptors - Capabilities**

TP/SS/CDM/CD/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.21/Items 1 and 2, IEEE Std 802.16/Conformance01-2003, Table A.47, IEEE Std 802.16/Conformance01-2003, Table A.48, IEEE Std 802.16/Conformance01-2003, Table A.103, IEEE Std 802.16/Conformance01-2003, Table A.104. Initial condition: SS scanning for downlink channel. Stimulus: BS sends DL-MAP messages with a period of 1 ms. BS sends a DCD message within 10 s. Expected behavior: Check that DCD message is received correctly and that downlink PHY parameters are established correctly.
TP/SS/CDM/CD/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.22/Item 1, IEEE Std 802.16/Conformance01-2003, Table A.45, IEEE Std 802.16/Conformance01-2003, Table A.46, IEEE Std 802.16/Conformance01-2003, Table A.101, IEEE Std 802.16/Conformance01-2003, Table A.102. Initial condition: SS synchronized downlink channel. Stimulus: BS sends DL-MAP and UL-MAP with a period of 1 ms. BS sends a UCD message within 10 s. Expected behavior: Check that UCD message is received correctly and that downlink PHY parameters are established correctly.

5.2.1.2.2 Valid Behavior

Currently no SS BV category tests have been defined for Channel Descriptors.

5.2.1.2.3 Invalid Behavior

Currently no SS BI category tests have been defined for Channel Descriptors.

5.2.1.2.4 Inopportune Behavior

Currently no SS BO category tests have been defined for Channel Descriptors.

5.2.1.2.5 Timer

Table 10 — Channel Descriptors – Timer

TP/SS/CDM/CD/TI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.96/Item 16. Initial condition: SS synchronized. Stimulus: BS sends DL-MAP messages with a period of 1ms. BS does not send any DCD message. Expected behavior: Check that SS starts scanning for next downlink channel after 50 s.
TP/SS/CDM/CD/TI-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.96/Item 25. Initial condition: SS synchronized and UL parameters established Stimulus: BS sends UL-MAP messages containing grants with a period of 1ms. BS does not send any UCD message. Expected behavior: Check that SS ceases to transmit after 50 s.

5.2.1.2.6 Message Formats

For all TP/SS/CDM/CDC tests ensure that messages transmitted by the SS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.2.1.3 Channel Descriptor Change

5.2.1.3.1 Capabilities

Table 11 — Channel Descriptor Change – Capabilities

TP/SS/CDM/CDC/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.31/Item 1. Initial condition: SS operational. Stimulus: SS receives DCD message with increments Configuration Change Count twice. Subsequently the SS receives a DL-MAP with DCD Count equal to the old Configuration Change Count. BS is stimulated to send data using each burst profile. Expected behavior: SS receives data correctly with old profile.
TP/SS/CDM/CDC/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.31/Item 1. Initial condition: SS operational. Stimulus: SS receives UCD message with increments Configuration Change Count twice. Subsequently the SS receives a UL-MAP with UCD Count equal to the old Configuration Change Count. This UL-MAP shall have grants using each burst profile. Expected behavior: SS sends correctly data using the old set of burst profiles.
TP/SS/CDM/CDC/CA-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.31/Items 1, 2, and 4. Initial condition: SS has received UCD with increments Configuration Change Count at least twice. Stimulus: BS sends UL-MAP with UCD Count corresponding to the new Configuration Change Count with grants. This UL-MAP shall have grants using each burst profile. Expected behavior: SS sends correctly data using the new set of burst profiles.
TP/SS/CDM/CDC/CA-003	Reference: IEEE Std 802.16/Conformance01-2003, Table A.31/Items 1, 3, and 5. Initial condition: SS has received DCD with increments Configuration Change Count at least twice. Stimulus: BS sends DL-MAP with DCD Count corresponding to the new Configuration Change Count. BS is stimulated to send data using each burst profile. Expected behavior: SS receives data correctly with new profile.

5.2.1.3.2 Valid Behavior

Currently no SS BV category tests have been defined for Channel Descriptor Change.

5.2.1.3.3 Invalid Behavior

Currently no SS BI category tests have been defined for Channel Descriptor Change.

5.2.1.3.4 Inopportune Behavior

Currently no SS BO category tests have been defined for Channel Descriptor Change.

5.2.1.3.5 Timer

Currently no SS TI category tests have been defined for Channel Descriptor Change.

5.2.1.3.6 Message Formats

For all TP/SS/CDM/CDC tests ensure that messages transmitted by the SS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.2.2 Radio Link Control – SS

5.2.2.1 Initial Ranging

5.2.2.1.1 Capabilities

Table 12 — Initial Ranging – Capabilities

TP/SS/RLC/IRNG/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.23/Items 1–3 Initial condition: SS synchronized with UL and DL parameters established Stimulus: BS sends UL-MAP message containing 2 nd Ranging Backoff Start Initial Maintenance IEs. Expected behavior: SS sends properly formatted RNG-REQ within one of the indicated intervals.
TP/SS/RLC/IRNG/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.23/Items 4, 5, 6, and 9 Initial condition: SS waiting for RNG-RSP Stimulus: BS sends RNG-RSP with status ≠ Abort Expected behavior: SS establishes Basic and Primary Management CID. SS applies timing and power corrections and sends RNG-REQ with corrected timing and power on the Basic connection in invited station maintenance slot.

5.2.2.1.2 Valid Behavior

Table 13 — Initial Ranging – Valid Behavior

TP/SS/RLC/IRNG/BV-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.23/Item 8. Initial condition: SS waiting for RNG-RSP. Stimulus: BS sends RNG-RSP with status = Abort containing DL-Frequency Override Parameter. Expected behavior: SS moves to frequency designated in RNG-RSP and starts Initial Ranging on said channel.
TP/SS/RLC/IRNG/BV-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.23. Initial condition: SS waiting for RNG-RSP. Stimulus: BS sends RNG-RSP with status = Abort not containing a DL-Frequency Override. Expected behavior: SS resets MAC and start scanning for DL-Channel.
TP/SS/RLC/IRNG/BV-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.23/Item 2. Initial condition: SS waiting for RNG-RSP. Stimulus: BS sends RNG-RSP with status ≠ Abort and asks for unreasonable power and timing adjustments. BS sends UL-MAP(s) message containing 2 nd Ranging Backoff End Initial Maintenance IEs. Expected behavior: SS sends properly formatted RNG-REQ within one of the indicated intervals with Ranging Anomalies correctly indicated.

5.2.2.1.3 Invalid Behavior

Table 14 — Initial Ranging – Invalid Behavior

TP/SS/RLC/IRNG/BI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.23. Initial condition: SS waits for RNG-RSP on CID 0 x 0000. Stimulus: SS receives invalid RNG-RSP with correct CID and MAC address. Expected behavior: Check that IUT restarts Initial Ranging.
TP/SS/RLC/IRNG/BI-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.23. Initial condition: SS waits for RNG-RSP on Basic CID. Stimulus: SS receives invalid RNG-RSP with correct CID and MAC address. Expected behavior: Check that IUT awaits another Station Maintenance Interval.

5.2.2.1.4 Inopportune Behavior

Table 15 — Initial Ranging – Inopportune Behavior

TP/SS/RLC/IRNG/BO-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.23. Initial condition: SS waits for RNG-RSP on Basic CID. Stimulus: SS receives a valid RNG-RSP with correct MAC address but on CID 0 x 0000. Expected behavior: Check that IUT ignores the RNG-RSP and awaits a Station Maintenance Interval.
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5.2.2.1.5 Timer

Table 16 — Initial Ranging – Timer

TP/SS/RLC/IRNG/TI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.96/Item 5. Initial condition: SS waiting for RNG-RSP. Retry counter set to Contention Ranging Retries . Stimulus: T3 Expires. Expected behavior: SS resets MAC and start scanning for DL-Channel.
TP/SS/RLC/IRNG/TI-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.23/Item 2, IEEE Std 802.16/Conformance01-2003, Table A.96/Item 5. Initial condition: SS waiting for RNG-RSP. Retry counter set to < Contention Ranging Retries. Ranging Backoff Start < Ranging Backoff End . Stimulus: T3 timed out. BS sends UL-MAP(s) message containing 2 ⁿ Ranging Backoff End Initial Maintenance IEs. Expected behavior: SS sends properly formatted RNG-REQ within one of the indicated intervals with increased power. SS increases back-off window.
TP/SS/RLC/IRNG/TI-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.23/Item 2, IEEE Std 802.16/Conformance01-2003, Table A.96/Item 5. Initial condition: SS waiting for RNG-RSP. Retry counter set to < Contention Ranging Retries . SS at maximum power. Stimulus: T3 timed out. BS sends UL-MAP(s) message containing 2 ⁿ Ranging Backoff End Initial Maintenance IEs. Expected behavior: SS sends properly formatted RNG-REQ within one of the indicated intervals with minimum power.

5.2.2.1.6 Message Formats

For all TP/SS/RLC/IRNG tests ensure that messages transmitted by the SS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.2.2.2 Periodic Ranging**5.2.2.2.1 Capabilities****Table 17 — Periodic Ranging – Capabilities**

TP/SS/RLC/PRNG/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.30/Item 3. Initial condition: SS has completed Initial Ranging successfully. SS Tx power not at max or min limit. RNG-RSP power change request does not exceed limits. Stimulus: SS receives RNG-RSP message to change power level, status = success. Expected behavior: SS raises or lowers power as requested.
TP/SS/RLC/PRNG/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.30/Item 3. Initial condition: SS has completed Initial Ranging successfully. SS Tx power not at max or min limit. RNG-RSP power change request does not exceed limits. Stimulus: SS receives RNG-RSP message to change timing advance, status = success. Expected behavior: SS changes timing as requested. Subsequent transmissions with corrected timing.

5.2.2.2.2 Valid Behavior**Table 18 — Periodic Ranging – Valid Behavior**

TP/SS/RLC/PRNG/BV-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.30/Item 3. Initial condition: SS has completed Initial Ranging successfully. SS Tx power not at max or min limit. RNG-RSP power change request does not exceed limits. Stimulus: SS receives RNG-RSP message to change power level, status = continue. Expected behavior: SS raises or lowers power as requested and sends REG-REQ.
TP/SS/RLC/PRNG/BV-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.30/Item 3. Initial condition: SS has completed Initial Ranging successfully. SS Tx power not at max or min limit. RNG-RSP power change request does not exceed limits. Stimulus: SS receives RNG-RSP message to change timing advance, status = continue. Expected behavior: SS changes timing as requested. Subsequent transmissions with corrected timing and sends REG-REQ.
TP/SS/RLC/PRNG/BV-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.30. Initial condition: SS has completed Initial Ranging successfully. Stimulus: SS receives RNG-RSP message to change timing advance, status = abort. Expected behavior: SS re initializes and looks for another channel.
TP/SS/RLC/PRNG/BV-003	Reference: IEEE Std 802.16/Conformance01-2003, Table A.30/Item 2. Initial condition: SS has completed Initial Ranging successfully. Stimulus: SS receives RNG-RSP message to change timing advance, status = re-range. Expected behavior: SS reverts to initial ranging using Initial Maintenance IEs.
TP/SS/RLC/PRNG/BV-004	Reference: IEEE Std 802.16/Conformance01-2003, Table A.30/Item 4. Initial condition: SS has completed Initial Ranging successfully. SS Tx power at or near max limit. Stimulus: SS receives RNG-RSP message to change power level higher than limit, status = success. Expected behavior: SS raises power to its max limit and sends REG-REQ stating anomalies.
TP/SS/RLC/PRNG/BV-005	Reference: IEEE Std 802.16/Conformance01-2003, Table A.30/Item 4. Initial condition: SS has completed Initial Ranging successfully. SS Tx power at or near min limit. Stimulus: SS receives RNG-RSP message to change power level below limit, status = continue. Expected behavior: SS lowers power to limit and sends REG-REQ stating anomalies.

5.2.2.2.3 Invalid Behavior

Table 19 — Periodic Ranging – Invalid Behavior

TP/SS/RLC/PRNG/BI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.30, IEEE Std 802.16/Conformance01-2003, Table A.52, IEEE Std 802.16/Conformance01-2003, Table A.106. Initial condition: SS has completed Initial Ranging successfully. Stimulus: SS receives an invalid RNG-RSP. Expected behavior: SS ignores the message.
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5.2.2.2.4 Inopportune Behavior

Since the RNG-RSP message may be sent unsolicited, there are no SS Periodic Ranging inopportune behavior tests.

5.2.2.2.5 Timer

Table 20 — Periodic Ranging – Timer

TP/SS/RLC/PRNG/TI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.96/Item 18. Initial condition: SS has completed Initial Ranging successfully. SS waiting for RNG-RSP. Retry counter set to Contention Ranging Retries . Stimulus: T3 Expires. Expected behavior: SS resets MAC and start scanning for DL-Channel.
TP/SS/RLC/PRNG/TI-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.96/Item 18, IEEE Std 802.16/Conformance01-2003, Table A.30/Item 3. Initial condition: SS has completed Initial Ranging successfully. SS waiting for RNG-RSP. Retry counter < Contention Ranging Retries . Stimulus: T3 timed out. BS allocates bandwidth to the SS. Expected behavior: SS resends RNG-REQ message.
TP/SS/RLC/PRNG/TI-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.96/Item 19, IEEE Std 802.16/Conformance01-2003, Table A.30/Item 1. Initial condition: SS has completed Initial Ranging successfully. SS awaiting ranging opportunity (bandwidth allocation). Stimulus: T4 timed out. Expected behavior: SS resets MAC and start scanning for DL-Channel.

5.2.2.2.6 Message Formats

For all TP/SS/RLC/PRNG tests ensure that messages transmitted by the SS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.2.2.3 Downlink Burst Profile Management

5.2.2.3.1 Capabilities

Table 21 — Downlink Burst Profile Management – Capabilities

TP/SS/RLC/DBPC/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.30/Item 4. Initial condition: SS operational at DIUC n. Stimulus: SS received signal S/N goes below threshold for change to more robust DIUC k. Expected behavior: Upon receiving next grant the IUT sends a DBPC-REQ for DIUC k.
TP/SS/RLC/DBPC/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.30/Item 4 Initial condition: SS operational at DIUC n. Operation at less robust DIUC k is allowed. Stimulus: SS received signal S/N goes above threshold for change to less robust DIUC k. Expected behavior: The IUT sends a DBPC-REQ for DIUC k.

5.2.2.3.2 Valid Behavior

Table 22 — Downlink Burst Profile Management – Valid Behavior

TP/SS/RLC/DBPC/BV-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.30/Item 4. Initial condition: SS operational at DIUC n, but has sent request to move to more robust DIUC k. Stimulus: BS sends data/management message to SS using DIUC n before sending the DBPC-RSP message. Expected behavior: SS receives the data/message on DIUC n.
TP/SS/RLC/DBPC/BV-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.30, IEEE Std 802.16/Conformance01-2003, Table A.30. Initial condition: SS operational at DIUC n. Operation at less robust DIUC k is not allowed. Stimulus: SS received signal S/N goes above threshold for change to less robust DIUC k. Expected behavior: IUT refrains from sending a DBPC-REQ for DIUC k.
TP/SS/RLC/DBPC/BV-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.30/Item 6. Initial condition: SS has sent request to move to less robust DIUC k. Stimulus: BS sends data/ messages using DIUC k after sending DBPC-RSP using DIUC n in the same DL- frame. Expected behavior: SS receives the data/message sent at DIUC k correctly.

5.2.2.3.3 Invalid Behavior

Table 23 — Downlink Burst Profile Management – Invalid Behavior

TP/SS/RLC/DBPC/BI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.84/Item 1. Initial Condition: BS has received DBPC-REQ from SS. Stimulus: BS transmits to the SS an erroneous DBPC-RSP message. Expected Behavior: The SS ignores the message.
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5.2.2.3.4 Inopportune Behavior

Table 24 — Downlink Burst Profile Management – Inopportune Behavior

TP/SS/RLC/DBPC/BO-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.30. Initial Condition: SS has completed initial ranging. Stimulus: SS receives an unsolicited DBPC-RSP. (RNG-RSP may come unsolicited, but DBPC-RSP may not). Expected Behavior: SS ignores the message. Reporting the error to the management plane is allowed.
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5.2.2.3.5 Timer

Table 25 — Downlink Burst Profile Management – Timer

TP/SS/RLC/DBPC/TI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.30. Initial Condition: SS has transmitted a DBPC-REQ message to the BS. Stimulus: SS does not receive a DBPC-RSP message from the BS within timeout specified by the SS equipment manufacturer. Expected Behavior: SS resends the DBPC-REQ message.
TP/SS/RLC/DBPC/TI-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.30. Initial Condition: SS has re-transmitted a DBPC-REQ message to the BS. Stimulus: SS continues to not receive a DBPC-RSP message from the BS within timeout specified by the SS equipment manufacturer. Expected Behavior: SS resends the DBPC-REQ message indefinitely.

5.2.2.3.6 Message Formats

For all TP/SS/RLC/DBPC tests ensure that messages transmitted by the SS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.2.2.4 Negotiate Basic Capabilities – SS

5.2.2.4.1 Capabilities

Table 26 — Negotiate Basic Capabilities

TP/SS/RLC/SBC/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.24/Item 1 Initial condition: Initial ranging performed. Stimulus: SS granted bandwidth. Expected behavior: SS sends SBC-REQ listing its capabilities.
TP/BS/RLC/SBC/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.24/Item 2 Initial condition: Waiting for SBC-RSP. Stimulus: SS receives SBC-RSP with no parameter restrictions. Expected behavior: SS continues to Authentication.

5.2.2.4.2 Valid Behavior**Table 27 — Negotiate Basic Capabilities– Valid Behavior**

TP/BS/RLC/SBC/BV-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.24/Item 2. Initial condition: Waiting for SBC-RSP. Stimulus: SS receives SBC-RSP with further parameter restrictions. Expected behavior: SS restricts capabilities as commanded in SBC-RSP.
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5.2.2.4.3 Invalid Behavior**Table 28 — Negotiate Basic Capabilities– Invalid Behavior**

TP/SS/RLC/SBC/BI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.87. Initial condition: SS waiting for SBC-RSP retries not exhausted. Stimulus: SS receives invalid SBC-RSP. Expected behavior: Check that SS retransmits SBC-REQ at earliest possible opportunity.
TP/SS/RLC/SBC/BI-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.87. Initial condition: SS waiting for SBC-RSP, retries exhausted. Stimulus: SS receives invalid SBC-RSP. Expected behavior: Check that IUT resets and starts over.

5.2.2.4.4 Inopportune Behavior**Table 29 — Negotiate Basic Capabilities – Inopportune Behavior**

TP/SS/RLC/SBC/BO-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.24. Initial condition: SS has finished Basic Capability Negotiation. Stimulus: SS receives extra SBC-RSP. Expected behavior: Check that IUT ignores the message.
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5.2.2.4.5 Timer**Table 30 — Negotiate Basic Capabilities – Timer**

TP/SS/RLC/SBC/TI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.24/Item 3. Initial condition: SS waiting for SBC-RSP retries not exhausted. Stimulus: T18 expires. Expected behavior: After timer expires SS retransmits SBC-REQ when receiving UL-grant.
TP/SS/RLC/SBC/TI-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.24/Item 3. Initial condition: SS waiting for SBC-RSP, retries exhausted. Stimulus: T18 expires. Expected behavior: Check that IUT resets and starts over.

5.2.2.4.6 Message Formats

For all TP/SS/RLC/SBC tests ensure that messages transmitted by the SS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.2.3 Registration, IP Connectivity, and TFTP – SS

5.2.3.1 Registration

5.2.3.1.1 Capabilities

Table 31 — Registration

TP/SS/INI/REG/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.26/Item 1. Initial condition: SS authorized. Primary SA established. Stimulus: SS granted bandwidth. Expected behavior: SS sends REG-REQ with capabilities correctly reported.
TP/SS/INI/REG/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.26/Item 2. Initial condition: Waiting for REG-RSP. Stimulus: SS receives REG-RSP. Expected behavior: IUT establishes Secondary Management connection with correct IP version. IUT send DHCPDISCOVER on said connection.

5.2.3.1.2 Valid Behavior

Table 32 — Registration – Valid Behavior

TP/BS/INI/REG/BV-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.26/Item 2, IEEE Std 802.16/Conformance01-2003, Table A.54/Items 5–11. Initial condition: Waiting for REG-RSP. Stimulus: SS receives REG-RSP with capabilities reduced from the set reported by the SS. Expected behavior: IUT establishes Secondary Management connection with correct IP version. IUT sets up internal parameters as per REG-RSP. IUT send DHCPDISCOVER on said connection.
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5.2.3.1.3 Invalid Behavior

Table 33 — Registration – Invalid Behavior

TP/SS/INI/REGMF/BI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.54, IEEE Std 802.16/Conformance01-2003, Table A.40/Item 6. Initial condition: SS waiting for REG-RSP, retries not exhausted. Stimulus: SS Receives REG-RSP with invalid HMAC. Expected behavior: SS retransmits RNG-REQ after receiving UL-grant.
TP/SS/INI/REGMF/BI-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.54/Items 6–13, IEEE Std 802.16/Conformance01-2003, Table A.40/Item 6. Initial condition: SS waiting for REG-RSP, retries not exhausted. Stimulus: SS Receives REG-RSP with valid HMAC but with invalid values in any of the following parameters: UL CID Support PKM Flow Control DSx Flow Control MCA Flow Control IP version MAC CRC Support Multicast Polling Group CID Support Vendor ID Encoding Vendor Specific Extensions. Expected behavior: SS retransmits REG-REQ after receiving UL-grant.

5.2.3.1.4 Inopportune Behavior

Currently no SS BO category tests have been defined for Registration.

5.2.3.1.5 Timer**Table 34 — Registration – Timer**

TP/SS/INI/REG/TI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.26/Item 4, IEEE Std 802.16/Conformance01-2003, Table A.96/Item 21. Initial condition: SS waiting for REG-RSP, retries not exhausted. Stimulus: Timer T6 expires. Expected behavior: After timer expires IUT retransmits REG-REQ when receiving UL-grant.
TP/SS/INI/REG/TI-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.92/Items 7 and 21. Initial condition: SS waiting for REG-RSP, retries exhausted. Stimulus: Timer T6 expires. Expected behavior: IUT resets.

5.2.3.1.6 Message Formats

For all TP/SS/INI/REG tests ensure that messages transmitted by the SS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.2.3.2 IP Connectivity**5.2.3.2.1 Capabilities****Table 35 — IP Connectivity – Capabilities**

TP/SS/INI/IPC/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.27/Items 1–5. Initial condition: SS registered. Stimulus: SS granted bandwidth. Expected behavior: SS implements DHCP correctly over Secondary Management Connection.
TP/SS/INI/IPC/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.28/Items 1–3. Initial condition: SS has established IP address. Stimulus: SS granted bandwidth. Expected behavior: SS implements Time Protocol correctly over the Secondary Management Connection.
TP/SS/INI/IPC/CA-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.42/Item 1. Initial condition: SS has established IP address and ToD. Stimulus: SS granted bandwidth. Expected behavior: SS download configuration file via TFTP over the Secondary Management Connection, if applicable (refer to PIXIT). In any case, SS sends TFTP-CPLT when ready for data connection establishment.
TP/SS/INI/IPC/CA-003	Reference: IEEE Std 802.16/Conformance01-2003, Table A.42/Item 2. Initial condition: IUT has sent TFTP-CPLT. Stimulus: IUT receives TFTP-RSP. Expected behavior: IUT does not retransmit TFTP-CPLT. IUT becomes 'operational' by performing vendor specific actions.

5.2.3.2.2 Valid Behavior

No BV category IP connectivity tests purposes at the SS have currently been defined.

5.2.3.2.3 Invalid Behavior

No BI category IP connectivity tests purposes at the SS have currently been defined.

5.2.3.2.4 Inopportune Behavior

No BO category IP connectivity tests purposes at the SS have currently been defined.

5.2.3.2.5 Timer

Table 36 — IP Connectivity – Timer

TP/SS/INI/IPC/TI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.96/Item 13. Initial condition: SS awaiting TFTP-RSP, retries not exhausted. Stimulus: Timer expires. Expected behavior: SS resends TFTP-CPLT.
TP/SS/INI/IPC/TI-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.96/Item 12. Initial condition: SS awaiting TFTP-RSP, retries exhausted. Stimulus: Timer expires. Expected behavior: IUT resets and starts over.

5.2.3.2.6 Message Formats

For all TP/SS/INI/IPC tests ensure that messages transmitted by the SS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.2.4 Privacy Key Management and Authentication –SS

5.2.4.1 Authorization

5.2.4.1.1 Capabilities

Table 37 — Authorization – Capabilities

TP/SS/PKM/AUTH/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.40/Items1 and 2. Initial condition: Basic Capabilities negotiation ongoing. Stimulus: IUT receives SBC-RSP. Expected Behavior: IUT sends Authn Info and Auth Request. The Auth request correctly mirrors the security capabilities supported by the SS.
TP/SS/PKM/AUTH/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.40/Items 1–3. Initial condition: IUT has sent Authn Info and Auth Req. Stimulus: IUT receives Auth Reply. Expected Behavior: IUT sends one Key Request message for each SA in the Auth Reply.
TP/SS/PKM/AUTH/CA-002	Reference: IEEE Std 802.16/Conformance01-2003, IEEE Std 802.16/Conformance01-2003, Table A.40/Item 8. Initial condition: IUT is authorized. Stimulus: A change in the set of Static SAs of the IUT in the BS has been made. SS reauthorization is triggered through means described in PIXIT statement. Expected Behavior: IUT sends an Auth Request that correctly mirrors the current set of Static SAs.

5.2.4.1.2 Valid Behavior**Table 38 — Authorization – Valid Behavior**

TP/SS/PKM/AUTH/BV-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.40/Item 1. Initial condition: IUT is authorized. Stimulus: IUT receives Auth Invalid. Expected Behavior: IUT sends an Auth Request.
TP/SS/PKM/AUTH/BV-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.40/Item 1. Initial condition: IUT has received Auth Invalid and responded with a Auth Request. Stimulus: IUT receives Auth Invalid. Expected Behavior: IUT sends an Auth Request after Reauth Wait Timeout.
TP/SS/PKM/AUTH/BV-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.40/Item 1. Initial condition: IUT has received Auth Invalid and responded with a Auth Request. Stimulus: IUT receives Perm Auth Reject. Expected Behavior: The SS shall refrain from attempting initial system access again on this carrier.
TP/SS/PKM/AUTH/BV-003	Reference: IEEE Std 802.16/Conformance01-2003, Table A.40/Item 1. Initial condition: IUT has received Auth Invalid and responded with a Auth Request. Stimulus: IUT receives Auth Reject other than Perm Auth Reject. Expected Behavior: IUT sends an Authent Info and Auth Request after Auth Reject Wait Timeout.
TP/SS/PKM/AUTH/BV-004	Reference: IEEE Std 802.16/Conformance01-2003, Table A.40/Item 1. Initial condition: IUT has sent Authent Info and Auth Request. Stimulus: IUT receives Perm Auth Reject. Expected Behavior: The SS shall refrain from attempting initial system access again on this carrier.
TP/SS/PKM/AUTH/BV-005	Reference: IEEE Std 802.16/Conformance01-2003, Table A.40/Items 1 and 3. Initial condition: IUT has sent Auth Request. 'PKM flow control' parameter value set to non-zero value. Stimulus: IUT receives Auth Reply with a number of SAs larger than 'PKM flow control'. Expected Behavior: IUT sends a Key Request for each SA. The number of outstanding transactions is less than the number indicated by the PKM flow control parameter.

5.2.4.1.3 Invalid Behavior**Table 39 — Authorization – Invalid Behavior**

TP/SS/PKM/AUTH/BI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.40/Item 1. Initial condition: IUT has sent Authent Info and Auth Req. Stimulus: IUT receives an improperly formatted PKM-RSP message. Expected Behavior: IUT resends Authent Info and Auth Request after Authorize Wait Timeout
TP/SS/PKM/AUTH/BI-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.40/Item 1. Initial condition: IUT has sent Authent Info and Auth Request. Stimulus: IUT receives Auth Reply indicating unsupported version of the security protocol. Expected Behavior: The SS shall refrain from attempting initial system access again on this carrier.

5.2.4.1.4 Inopportune Behavior

Table 40 — Authorization – Inopportune Behavior

TP/SS/PKM/AUTH/B0-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.40/Item 1. Initial condition: IUT has sent Authent Info and Auth Req. Stimulus: IUT receives an properly formatted PKM-RSP with code other than 5 or 6 (Auth Reply/Reject). Expected Behavior: IUT silently discards PKM-RSP message IUT resends Authent Info and Auth Request after Authorize Wait Timeout.
TP/SS/PKM/AUTH/B0-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.40/Item 1. Initial condition: IUT has sent Authent Info and Auth Req Stimulus: IUT receives a MAC Management message other than RNG-RSP. Expected Behavior: IUT silently discards said message IUT resends Authent Info and Auth Request after Authorize Wait Timeout.

5.2.4.1.5 Timer

Table 41 — Authorization – Timer

TP/SS/PKM/AUTH/TI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.98/Item 1. Initial condition: IUT has sent Authent Info and Auth Req. Stimulus: Authorize Wait Timeout. Expected Behavior: IUT resends Authent Info and Auth Request after Authorize Wait Timeout.
TP/SS/PKM/AUTH/TI-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.98/Item 7. Initial condition: IUT has sent Authent Info and Auth Req. Stimulus: IUT receives Auth Reject. Expected Behavior: IUT sends Authent Info and Auth Request after Auth Reject Wait Timeout.
TP/SS/PKM/AUTH/TI-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.98/Item 3. Initial condition: IUT has received Auth Reply with valid AKs. Stimulus: Authorization Grace Timeout. Expected Behavior: IUT sends Auth Request after Authorization Grace Timeout.
TP/SS/PKM/AUTH/TI-003	Reference: IEEE Std 802.16/Conformance01-2003, Table A.40/Item 1, IEEE Std 802.16/Conformance01-2003, Table A.57. Initial condition: IUT has sent Authent Info and Auth Req. PKM timeout values set to default. Stimulus: IUT receives Auth Reply with values overriding the default ones. Expected Behavior: Check that IUT uses the updated values by repeating tests TP/SS/PKM/AUTH/TI-000 to TP/SS/PKM/AUTH/TI-002.

5.2.4.1.6 Message formats

For the TP/SS/PKM/AUTH tests ensure that the messages transmitted by the SS contains the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.2.4.2 TEK

Tests defined for verifying TEK exchange.

5.2.4.2.1 Capabilities**Table 42 — TEK**

TP/SS/PKM/TEK/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.40/Items 3 and 7, IEEE Std 802.16/Conformance01-2003, Table A.57, IEEE Std 802.16/Conformance01-2003, Table A.59. Initial condition: IUT has sent Authent Info and Auth Req. Stimulus: IUT receives Auth Reply specifying the Primary SA Expected Behavior: IUT sends Key Request.
TP/SS/PKM/TEK/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.40/Items 3 and 11. Initial condition: IUT has sent Key Request. Stimulus: IUT receives valid Key Reply with keys for an SA. Subsequently the IUT receives data to be transmitted from the user network to be sent on a connection mapped to this SA. Expected Behavior: IUT transmits the user data encrypted using the correct encryption method and the newer of the two keys.

5.2.4.2.2 Valid Behavior

Currently no BV category tests have been defined for the SS related to TEK.

5.2.4.2.3 Invalid Behavior**Table 43 — TEK – Invalid Behavior**

TP/SS/PKM/TEK/BI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.40/Item 3. Initial condition: IUT has sent Key Request for Primary SA. Stimulus: IUT receives Auth Invalid with error code = 6 (Message Authentication Failure). Expected behavior: IUT resends Key Request.
TP/SS/PKM/TEK/BI-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.40/Items 3 and 5. Initial condition: IUT has sent Key Request for Primary SA. Stimulus: IUT receives Key Reject that fails message authentication. Expected behavior: IUT resends Key Request after timeout. Note: It is assumed that the authentication of the Key Request was successful.

5.2.4.2.4 Inopportune Behavior**Table 44 — TEK – Inopportune behavior**

TP/SS/PKM/TEK/B0-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.40/Item 3. Initial condition: IUT has sent Key Request for Primary SA. Stimulus: IUT receives Key Reject indicating 'Unauthorized SAID'. Expected Behavior: The SS shall retry the Key Request. Note: It is assumed that the authentication of the Key Request was successful.
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5.2.4.2.5 Timer

Table 45 — TEK – Timer

TP/SS/PKM/TEK/TI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.40/Item 3, IEEE Std 802.16/Conformance01-2003, Table A.98/Item 5. Initial condition: IUT has sent Key Request. Stimulus: Passage of time. Expected Behavior: IUT resends Key Request after timeout.
TP/SS/PKM/TEK/TI-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.40/Item 3, IEEE Std 802.16/Conformance01-2003, Table A.97/Items 2 and 4, IEEE Std 802.16/Conformance01-2003, Table A.98/Item 6. Initial condition: IUT has sent Key Request. Stimulus: IUT receives Key Reply. Expected Behavior: IUT sends Key Request after TEK Refresh Timeout.

5.2.4.2.6 Message Formats

For the TP/SS/PKM/TEK tests ensure that the messages transmitted by the SS contains the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.2.4.3 Security Association Management

5.2.4.3.1 Capabilities

Table 46 — Security Association Management – Capabilities

TP/SS/PKM/SAM/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.40/Item 10 Initial condition: IUT is authorized. Stimulus: IUT receives SA add message for a new SA using supported cryptographic methods. Expected Behavior: SS sends Key Request for the added SA.
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5.2.4.3.2 Valid Behavior

Currently no BV category tests have been defined for the SS related to Security Association Management.

5.2.4.3.3 Invalid Behavior

Currently no BI category tests have been defined for the SS related to Security Association Management.

5.2.4.3.4 Inopportune Behavior

Table 47 — Security Association Management – Timer

TP/SS/PKM/SAM/BO-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.40/Item 10 Initial condition: IUT is authorized. Stimulus: IUT receives SA add message for a new SA calling for unsupported cryptographic methods. Expected Behavior: SS ignores the SA add.
TP/SS/PKM/SAM/BO-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.40/Item 10 Initial condition: IUT is authorized. SS has established a number of SAs equal to the maximum number supported as reported in the SBC-REQ. Stimulus: IUT receives SA add message calling for an additional SA. Expected Behavior SS ignores the SA add.

5.2.4.3.5 Timer

Currently no TI category tests have been defined for the SS related to Security Association Management.

5.2.4.3.6 Message Format

For the TP/SS/PKM/SAM tests ensure that the messages transmitted by the SS contains the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.2.4.4 Encryption and Key Scheduling**5.2.4.4.1 Capabilities****Table 48 — Encryption and Key Scheduling – Capabilities**

TP/SS/PKM/TEK/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.40/Item 11. Initial condition: IUT has two valid TEKs for an SA with SAID = i. Stimulus: IUT receives transport PDUs on a connection mapped to SAID = i encrypted with the older TEK. Expected Behavior: IUT correctly decrypts the PDUs and delivers the data to an external interface. Note: This test to be done for all supported encryption algorithms including ‘No encryption’.
TP/SS/PKM/TEK/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.40/Items 4 and 11. Initial condition: IUT has two valid TEKs for an SA with SAID = i. Stimulus: IUT receives transport PDUs on a connection mapped to SAID = i encrypted with the newer TEK. Expected Behavior: IUT correctly decrypts the PDUs and delivers the data to an external interface. Note: This test to be done for all supported encryption algorithms.

5.2.4.4.2 Valid Behavior

Currently no BV category tests have been defined for the SS related to Encryption and key scheduling.

5.2.4.4.3 Invalid Behavior

Currently no BI category tests have been defined for the SS related to Encryption and key scheduling.

5.2.4.4.4 Inopportune Behavior

Currently no BO category tests have been defined for the SS related to Encryption and key scheduling.

5.2.4.4.5 Timer

Currently no TI category tests have been defined for the SS related to Encryption and key scheduling.

5.2.4.4.6 Message Formats

For the TP/SS/PKM/TEK tests ensure that the messages transmitted by the SS contains the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.2.5 Dynamic Services – SS

5.2.5.1 Dynamic Service Addition

5.2.5.1.1 Capabilities

Table 49 — Dynamic Service Addition – Capabilities

TP/SS/DS/DSA/CA-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.35/Items 1 and 2. Initial Condition: SS has transmitted TFTP-CPLT to BS. (SS is authenticated and registered.) Stimulus: BS transmits to the SS a DSA-REQ message instructing the SS to create and activate both the UL and DL portions of a service. Expected Behavior: The SS shall transmit to the BS a DSA-RSP message accepting the creation and activation of both the UL and DL portions of the service.</p> <p>Repeat this test for all service types supported by the SS.</p>
TP/SS/DS/DSA/CA-001	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.35/Item 3. Initial Condition: End of TP/SS/DS/DSA/CA-000 - the SS has transmitted a DSA-RSP to the BS. Stimulus: SS receives valid DSA-ACK from BS. Expected Behavior: SS performs necessary actions (vendor specific) to utilize activated service.</p>

5.2.5.1.2 Valid Behavior

Table 50 — Dynamic Service Addition – Valid Behavior

TP/SS/DS/DSA/BV-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.35/Items 1 and 2. Initial Condition: SS has transmitted TFTP-CPLT to BS. (SS is authenticated and registered.) Stimulus: BS transmits to the SS a DSA-REQ message instructing the SS to initiate and activate a service containing only a downlink portion. Expected Behavior: The SS shall transmit to the BS a DSA-RSP message accepting the creation and activation of the DL service.</p> <p>Repeat this test for all downlink-only service types supported by the SS.</p>
TP/SS/DS/DSA/BV-001	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.35/Items 1 and 2. Initial Condition: SS has transmitted TFTP-CPLT to BS. (SS is authenticated and registered.) Stimulus: BS transmits to the SS a DSA-REQ message instructing the SS to initiate and activate a service containing only an uplink portion. Expected Behavior: The SS shall transmit to the BS a DSA-RSP message accepting the creation and activation of the UL service.</p> <p>Repeat this test for all uplink-only service types supported by the SS.</p>
TP/SS/DS/DSA/BV-002	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.33/Item 2. Initial Condition: SS has transmitted DSA-RSP to BS. Stimulus: SS receives a redundant copy of the DSA-REQ that stimulated the DSA-RSP, within 110% of the maximum value of timer T7. Expected Behavior: SS resends DSA-RSP to BS.</p>
TP/SS/DS/DSA/BV-003	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.33/Items 1 and 2. Initial Condition: BS has received TFTP-CPLT from SS. (SS is authenticated and registered.) Stimulus: BS transmits to the SS a DSA-REQ message instructing the SS to initiate a service to the provisioned state. Expected Behavior: The SS shall transmit to the BS a DSA-RSP message accepting the creation of the service in the provisioned state.</p>
TP/SS/DS/DSA/BV-004	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.033/Item 1 and 2. Initial Condition: BS has received TFTP-CPLT from SS. (SS is authenticated and registered.) Stimulus: BS transmits to the SS a DSA-REQ message instructing the SS to initiate a service to the admitted state. Expected Behavior: The SS shall transmit to the BS a DSA-RSP message accepting the creation of the service in the admitted state.</p>

5.2.5.1.3 Invalid Behavior

Table 51 — Dynamic Service Addition – Invalid Behavior

TP/SS/DS/DSA/BI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.33/Item 2, IEEE Std 802.16/Conformance01-2003, Table A.65. Initial Condition: BS has received TFTP-CPLT from SS. (SS is authenticated and registered.) Stimulus: BS transmits to the SS an erroneous DSA-REQ message. Expected Behavior: The SS transmits a DSA-RSP message indicating the errored parameter.
TP/SS/DS/DSA/BI-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.33/Item 2, IEEE Std 802.16/Conformance01-2003, Table A.65. Initial Condition: SS has transmitted a DSA-RSP message to the BS. Stimulus: SS receives an erroneous DSA-ACK message from the BS. Expected Behavior: The SS resends the DSA-RSP. This test assumes the Transaction ID in the DSA-ACK matched the one in the DSA-RSP. The other case is covered as BO.
TP/SS/DS/DSA/BI-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.26, IEEE Std 802.16/Conformance01-2003, Table A.33. Initial Condition: BS has received TFTP-CPLT from SS. (SS is authenticated and registered.) DSx Flow Control SS Capability was set lower than the capability of the BS. Stimulus: BS sends more DSA-REQ messages than DSx Flow Control SS Capability before sending any DSA-ACK messages. Expected Behavior: SS ignores all DSA-REQ messages while SS DSx Flow Control DSA-ACK messages are outstanding.
TP/SS/DS/DSA/BI-003	Reference: IEEE Std 802.16/Conformance01-2003, Table A.26, IEEE Std 802.16/Conformance01-2003, Table A.33. Initial Condition: End of test TP/SS/DS/DSA/BI-002 - BS sent more DSA-REQ messages than DSx Flow Control SS Capability before sending any DSA-ACK messages. Stimulus: BS sends DSA-ACK messages sufficient to reduce outstanding DSA-REQ transactions to less than DSx Flow Control SS Capability. BS then sends a DSA-REQ message. Expected Behavior: SS responds with a DSA-RSP message.
TP/SS/DS/DSA/BI-004	Reference: IEEE Std 802.16/Conformance01-2003, Table A.26, IEEE Std 802.16/Conformance01-2003, Table A.33. Initial Condition: BS has received TFTP-CPLT from SS. (SS is authenticated and registered.) UL CID Support SS Capability was set lower than the capability of the BS. Stimulus: BS sends more DSA-REQ messages for UL services than allowed by UL CID Support SS Capability without deleting any connections. Expected Behavior: SS responds with a DSA-RSP message declaring the service to be in error.
TP/SS/DS/DSA/BI-005	Reference: IEEE Std 802.16/Conformance01-2003, Table A.26, IEEE Std 802.16/Conformance01-2003, Table A.33. Initial Condition: End of test TP/SS/DS/DSA/BI-004 - BS sent more DSA-REQ messages than allowed by UL CID Support SS Capability without deleting any connections. Stimulus: BS deletes enough uplink connections to reduce the number of UL CIDs being used to less than UL CID Support SS Capability. BS then sends a DSA-REQ message. Expected Behavior: SS responds with a DSA-RSP message accepting the service.

5.2.5.1.4 Inopportune Behavior

Table 52 — Dynamic Service Addition – Inopportune Behavior

TP/SS/DS/DSA/BO-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.33. Initial Condition: BS has received TFTP-CPLT from SS. (SS is authenticated and registered.) Stimulus: SS receives a DSA-ACK for a non-existent service. Expected Behavior: SS ignores the message. Reporting the error to the management plane is allowed.
TP/SS/DS/DSA/BO-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.33. Initial Condition: SS has transmitted DSA-RSP to BS. Stimulus: SS receives a redundant copy of the DSA-REQ that stimulated the DSA-RSP, after the maximum value of timer T7. Expected Behavior: SS ignores the message. Reporting the error to the management plane is allowed.
TP/SS/DS/DSA/BO-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.33. Initial Condition: SS has transmitted DSA-RSP to BS and has received a DSA-ACK for the service. Stimulus: SS receives a redundant copy of the DSA-REQ that stimulated the DSA-RSP, after receiving the DSA-ACK. Expected Behavior: SS ignores the message. Reporting the error to the management plane is allowed.
TP/SS/DS/DSA/BO-003	Reference: IEEE Std 802.16/Conformance01-2003, Table A.33. Initial Condition: SS has transmitted DSA-RSP to BS and has received a DSA-ACK for the service. Stimulus: SS receives a redundant copy of the DSA-ACK. Expected Behavior: SS ignores the message.

5.2.5.1.5 Timer

Table 53 — Dynamic Service Addition – Timer

TP/SS/DS/DSA/TI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.33/Item 1, IEEE Std 802.16/Conformance01-2003, Table A.96/Items 11 and 23. Initial Condition: SS has transmitted a DSA-RSP message to the BS. The SS has retried less than “DSx Response Retries” times. Stimulus: SS does not receive a DSA-ACK message from the BS within T8 timeout. Expected Behavior: SS resends the DSA-RSP message.
TP/SS/DS/DSA/TI-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.33/Item 1, IEEE Std 802.16/Conformance01-2003, Table A.96/Item 11 and 23. Initial Condition: SS has transmitted a DSA-RSP message to the BS. The SS has retried “DSx Response Retries” times. Stimulus: SS does not receive a DSA-ACK message from the BS within T8 timeout. Expected Behavior: SS does not resend the DSA-RSP message.

5.2.5.1.6 Message Formats

For all TP/SS/DS/DSA tests ensure that messages transmitted by the SS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.2.5.2 Dynamic Service Change

5.2.5.2.1 Capabilities

Table 54 — Dynamic Service Change – Capabilities

TP/SS/DS/DSC/CA-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.37/Item 1 and 2. Initial Condition: BS has established an active service, consisting of both an uplink and downlink portion, with the SS. Stimulus: BS transmits to the SS a DSC-REQ message instructing the SS to change the parameters of both the UL and DL portions of the service. Expected Behavior: The SS responds with a DSA-RSP message acknowledging the change.</p> <p>Repeat this test for all service types supported by the SS.</p>
TP/SS/DS/DSC/CA-001	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.37/Item 3. Initial Condition: End of TP/SS/DS/DSA/CA-000 - the SS has transmitted a DSA-RSP to the BS. Stimulus: SS receives valid DSA-ACK from BS. Expected Behavior: SS performs necessary actions (vendor specific) to change service parameters.</p>

5.2.5.2.2 Valid Behavior

Table 55 — Dynamic Service Change – Valid Behavior

TP/SS/DS/DSC/BV-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.37. Initial Condition: BS has established an active service, consisting of at least a downlink portion, with an SS. Stimulus: BS transmits a DSC-REQ message to the SS instructing it to change the parameters of the downlink portion of the service. Expected Behavior: The SS shall transmit to the BS a DSC-RSP message accepting the change in the DL parameters of the service. Repeat this test for all downlink service types supported by the SS.</p>
TP/SS/DS/DSC/BV-001	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.37. Initial Condition: BS has established an active service, consisting of at least an uplink portion, with an SS. Stimulus: BS transmits a DSC-REQ message to the SS instructing it to change the parameters of the uplink portion of the service. Expected Behavior: The SS shall transmit to the BS a DSC-RSP message accepting the change in the UL parameters of the service. Repeat this test for all uplink service types supported by the SS.</p>
TP/SS/DS/DSC/BV-002	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.37. Initial Condition: SS has transmitted DSC-RSP to BS. Stimulus: SS receives a redundant copy of the DSC-REQ that stimulated the DSC-RSP, within 110% of the maximum value of timer T7. Expected Behavior: SS resends DSC-RSP to BS.</p>
TP/SS/DS/DSC/BV-003	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.26, IEEE Std 802.16/Conformance01-2003, Table A.37. Initial Condition: BS has established an active service with an SS. DSx Flow Control SS Capability was set lower than the capability of the BS. Stimulus: BS sends more DSx-REQ messages than DSx Flow Control SS Capability before sending any DSx-ACK messages. SS then receives a DSC-REQ message from the BS. Expected Behavior: SS does not transmit DSC-RSP message.</p>
TP/SS/DS/DSC/BV-004	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.37. Initial Condition: A service exists in the provisioned state between the BS and the SS. Stimulus: BS transmits DSC-REQ message to SS instructing it to change the service to the admitted state. Expected Behavior: The SS shall transmit a DSC-RSP message instructing the BS accepting the request to change the service to the admitted state.</p>

Table 55 — Dynamic Service Change – Valid Behavior (continued)

TP/SS/DS/DSC/BV-005	Reference: IEEE Std 802.16/Conformance01-2003, Table A.37. Initial Condition: A service exists in the provisioned state between the BS and the SS. Stimulus: BS transmits DSC-REQ message to SS instructing it to change the service to the active state. Expected Behavior: The SS shall transmit a DSC-RSP message instructing the BS accepting the request to change the service to the active state.
TP/SS/DS/DSC/BV-006	Reference: IEEE Std 802.16/Conformance01-2003, Table A.37. Initial Condition: A service exists in the active state between the BS and the SS. Stimulus: BS transmits DSC-REQ message to SS instructing it to change the service to the admitted state. Expected Behavior: The SS shall transmit a DSC-RSP message instructing the BS accepting the request to change the service to the admitted state.
TP/SS/DS/DSC/BV-007	Reference: IEEE Std 802.16/Conformance01-2003, Table A.37. Initial Condition: A service exists in the active state between the BS and the SS. Stimulus: BS transmits DSC-REQ message to SS instructing it to change the service to the provisioned state. Expected Behavior: The SS shall transmit a DSC-RSP message instructing the BS accepting the request to change the service to the provisioned state.
TP/SS/DS/DSC/BV-008	Reference: IEEE Std 802.16/Conformance01-2003, Table A.37. Initial Condition: A service exists in the admitted state between the BS and the SS. Stimulus: BS transmits DSC-REQ message to SS instructing it to change the service to the provisioned state. Expected Behavior: The SS shall transmit a DSC-RSP message instructing the BS accepting the request to change the service to the provisioned state.
TP/SS/DS/DSC/BV-009	Reference: IEEE Std 802.16/Conformance01-2003, Table A.37. Initial Condition: A service exists in the admitted state between the BS and the SS. Stimulus: BS transmits DSC-REQ message to SS instructing it to change the service to the active state. Expected Behavior: The SS shall transmit a DSC-RSP message instructing the BS accepting the request to change the service to the active state.

5.2.5.2.3 Invalid Behavior

Table 56 — Dynamic Service Change – Invalid Behavior

TP/SS/DS/DSC/BI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.72. Initial Condition: A service exists between the BS and the SS. Stimulus: SS receives an erroneous DSC-REQ message from the BS. Expected Behavior: SS sends a DSC-RSP message indicating the error.
TP/SS/DS/DSC/BI-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.78. Initial Condition: SS has transmitted a DSC-RSP message to the BS. Stimulus: SS receives an erroneous DSC-ACK message from the BS. Expected Behavior: SS resends the DSC-RSP message.

5.2.5.2.4 Inopportune Behavior

Table 57 — Dynamic Service Change – Inopportune Behavior

TP/SS/DS/DSC/BO-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.37. Initial Condition: BS has received TFTP-CPLT from SS. (SS is authenticated and registered.) Stimulus: SS receives a DSC-ACK for a non-existent service. Expected Behavior: SS ignores the message. Reporting the error to the management plane is allowed.
TP/SS/DS/DSC/BO-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.37. Initial Condition: SS has transmitted DSS-RSP to BS. Stimulus: SS receives a redundant copy of the DSC-REQ that stimulated the DSCRSP, after the maximum value of timer T7. Expected Behavior: SS ignores the message. Reporting the error to the management plane is allowed.

Table 57 — Dynamic Service Change – Inopportune Behavior (continued)

TP/SS/DS/DSC/BO-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.37. Initial Condition: SS has transmitted DSC-RSP to BS and has received a DSC-ACK for the service. Stimulus: SS receives a redundant copy of the DSC-REQ that stimulated the DSC-RSP, after receiving the DSC-ACK. Expected Behavior: SS ignores the message. Reporting the error to the management plane is allowed.
TP/SS/DS/DSC/BO-003	Reference: IEEE Std 802.16/Conformance01-2003, Table A.37. Initial Condition: SS has transmitted DSC-RSP to BS and has received a DSC-ACK for the service. Stimulus: SS receives a redundant copy of the DSC-ACK. Expected Behavior: SS ignores the message.

5.2.5.2.5 Timer**Table 58 — Dynamic Service Change – Timer**

TP/SS/DS/DSC/TI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.96/Items 11 and 23. Initial Condition: SS has transmitted a DSC-RSP message to the BS. The SS has retried less than “DSx Response Retries” times. Stimulus: SS does not receive a DSC-ACK message from the BS within T8 timeout. Expected Behavior: SS resends the DSC-RSP message.
TP/SS/DS/DSC/TI-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A96/Items 11 and 23. Initial Condition: SS has transmitted a DSC-RSP message to the BS. The SS has retried “DSx Response Retries” times. Stimulus: SS does not receive a DSC-ACK message from the BS within T8 timeout. Expected Behavior: SS does not resend the DSC-RSP message

5.2.5.2.6 Message Formats

For all TP/BS/DS/DSC tests ensure that messages transmitted by the SS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.2.5.3 Dynamic Service Deletion**5.2.5.3.1 Capabilities****Table 59 — Dynamic Service Deletion – Capabilities**

TP/SS/DS/DSD/TI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.39/Item 1 and 2 Initial Condition: Service consisting of both an uplink and a downlink portion exists between BS and SS. Stimulus: BS transmits DSD-REQ to SS instructing it to delete the uplink portion and another DSD-REQ instructing it to delete the downlink portion of the service. Expected Behavior: SS sends a DSD-RSP for the UL portion and a separate DSD-RRSP for the DL portion.
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5.2.5.3.2 Valid Behavior

Table 60 — Dynamic Service Deletion – Valid Behavior

TP/SS/DS/DSD/BV-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.39/Items 1 and 2. Initial Condition: Service with at least a downlink portion exists between the BS and SS. Stimulus: BS transmits DSD-REQ to SS instructing it to delete the downlink portion of a service. Expected Behavior: The SS shall transmit to the BS a DSD-RSP message indicating that it has deleted the DL service.</p> <p>Repeat this test for all downlink service types supported by the SS.</p>
TP/SS/DS/DSD/BV-001	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.39/Items 1 and 2. Initial Condition: Service with at least an uplink portion exists between the BS and SS. Stimulus: BS transmits a DSD-REQ message to the SS instructing it to delete the uplink portion of a service. Expected Behavior: The SS shall transmit to the BS a DSD-RSP message indicating that it has deleted the UL service.</p> <p>Repeat this test for all uplink service types supported by the SS.</p>
TP/SS/DS/DSD/BV-002	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.39/Item 1 and 2. Initial Condition: SS has transmitted DSD-RSP to BS. Stimulus: SS receives a redundant copy of the DSD-REQ that stimulated the DSD-RSP, within 110% of the maximum value of timer T7. Expected Behavior: SS resends DSD-RSP to BS.</p>

5.2.5.3.3 Invalid Behavior

Table 61 — Dynamic Service Deletion – Invalid Behavior

TP/SS/DS/DSD/BI-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.79. Initial Condition: Service exists between BS and SS. Stimulus: SS receives an erroneous DSD-REQ message from the BS. Expected Behavior: SS transmits a DSD-RSP message indicating the error.</p>
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5.2.5.3.4 Inopportune Behavior

Table 62 — Dynamic Service Deletion – Inopportune Behavior

TP/SS/DS/DSD/BO-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.39. Initial Condition: Service exists between BS and SS. Stimulus: SS receives a DSD-REQ for a non-existent service. Expected Behavior: SS ignores the message. Reporting the error to the management plane is allowed.</p>
TP/SS/DS/DSD/BO-001	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.39. Initial Condition: Service exists between BS and SS. BS has transmitted DSD-REQ to SS. Stimulus: SS receives a redundant DSD-REQ for the service, substantially later than the maximum value of T7 after sending the DSD-RSP. Expected Behavior: SS ignores the message. Reporting the error to the management plane is allowed.</p>

5.2.5.3.5 Timer

Currently no TI category tests have been defined for the SS related to Dynamic Service Deletion.

5.2.5.3.6 Message Formats

For all TP/SS/DS/DSC tests ensure that messages transmitted by the SS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.2.6 Bandwidth Allocation and Polling – SS

5.2.6.1 Request/Grant

5.2.6.1.1 Capabilities

Table 63 — Request/Grant – Capabilities

TP/SS/BWA/REQ/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.15, IEEE Std 802.16/Conformance01-2003, Table A.16. Initial condition: SS operational. Burst profile for UIUC = x defined (x = 4 – 9). No data on user connections. No outstanding protocol exchanges. Steady state channel conditions. Stimulus: SS receives UL-MAP with UIUC = x addressed to it. Expected behavior: Check that the IUT transmits stuff pattern using burst profile associated with UIUC = x.
TP/SS/BWA/REQ/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.15, IEEE Std 802.16/Conformance01-2003, Table A.16. Initial condition: SS operational. Burst profile for UIUC = x defined (x = 4 – 9). Packets in user connection queues. Stimulus: SS receives UL-MAP with UIUC = x addressed to it. Expected behavior: Check that the IUT transmits MAC PDUs using burst profile associated with UIUC = x.
TP/SS/BWA/REQ/CA-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.11/Item 1, IEEE Std 802.16/Conformance01-2003, Table A.16/Item 7. Initial condition: SS operational. Burst profile for UIUC = x defined (x = 4 – 9). A few small packets in user connection queues. Stimulus: SS receives UL-MAP with a large grant of bandwidth. Expected behavior: Check that the IUT transmits MAC PDUs followed by stuff pattern using burst profile associated with UIUC = x.

5.2.6.1.2 Valid Behavior

Table 64 — Request/Grant – Valid Behavior

TP/SS/BWA/REQ/BV-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A16/Item 10. Initial condition: UGS connection in Active state. Non-UGS connection in Active state. Stimulus: BS allocates exactly enough bandwidth for UGS connection and no more. Expected behavior: Check that the SS sets PM bit correctly depending on occupancy of the non-UGS connection queue.
TP/SS/BWA/REQ/BV-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A16/Item 11. Initial condition: UGS connection in Active state. Stimulus: BS allocates 0.5% less bandwidth than is required by UGS connection. Expected behavior: Check that the SS sets SI bit correctly depending on occupancy of the UGS connection queue.

5.2.6.1.3 Invalid Behavior

Currently no BI category tests have been defined for the SS related to Request/Grant.

5.2.6.1.4 Inopportune Behavior

Currently no BO category tests have been defined for the SS related to Request/Grant.

5.2.6.1.5 Timer

Currently no TI category tests have been defined for the SS related to Request/Grant.

5.2.6.1.6 Message Formats

For all TP/SS/BWA/REQ tests ensure that messages transmitted by the SS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.2.6.2 Multicast Polling

5.2.6.2.1 Capabilities

Table 65 — Multicast Polling – Capabilities

TP/SS/BWA/MCP/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.32/Items 1–3. Initial condition: SS with nRT polling uplink connection in Active state. Number of multicast groups less than negotiated value of MCA Flow Control. Stimulus: BS sends MCA-REQ/Add message. Expected behavior: Check that IUT sends MCA-RSP with Condition Code OK/Success.
TP/SS/BWA/MCP/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.32/Items 1–3. Initial condition: SS with BE polling uplink connection in Active state. Number of multicast groups less than negotiated value of MCA Flow Control. Stimulus: BS sends MCA-REQ/Add message. Expected behavior: Check that IUT sends MCA-RSP with Condition Code OK/Success.
TP/SS/BWA/MCP/CA-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.16/Item 9, IEEE Std 802.16/Conformance01-2003, Table A.32/Item 9. Initial condition: SS with nRT uplink connection in Active state. Stimulus: BS sends MCA-REQ/Add and starts allocating bandwidth request contention intervals to the multicast group. Expected behavior: Check that after received MCA-REQ/Add IUT starts using allocated multicast polling opportunities
TP/SS/BWA/MCP/CA-003	Reference: IEEE Std 802.16/Conformance01-2003, Table A.16/Item 9, IEEE Std 802.16/Conformance01-2003, Table A.32/Item 9. Initial condition: SS with BE uplink connection in Active state. Stimulus: BS sends MCA-REQ/Add and starts allocating bandwidth request contention intervals to the multicast group. Expected behavior: Check that after MCA-REQ/Add IUT starts using allocated multicast polling opportunities.

5.2.6.2.2 Valid Behavior

Table 66 — Multicast Polling – Valid Behavior

TP/SS/BWA/MCP/BV-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.16/Item 8, IEEE Std 802.16/Conformance01-2003, Table A.19/Item 2. Initial condition: SS allocated to multicast polling group. SS has transmitted BW request in contention slot allocated to multicast polling group. Stimulus: Timer T16 expires. BS allocates additional contention slots to multicast polling group. Expected behavior: Check that IUT performs Random Back-off algorithm correctly.
TP/SS/BWA/MCP/BV-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.32/Item 2. Initial condition: SS allocated to multicast polling group. Stimulus: BS sends MCA-REQ/Remove. BS continues to allocate contention slots to multicast polling group. Expected behavior: Check that after received MCA-REQ/Remove IUT refrains from using allocated multicast polling opportunities.
TP/SS/BWA/MCP/BV-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.32/Items 1–3. Initial condition: SS with BE uplink connection in Active state. Number of multicast groups less than negotiated value of MCA Flow Control. SS has previously received a MCA-REQ/Add with Transaction ID = i and has sent MCA-RSP with Condition Code = OK/Success. Stimulus: BS sends MCA-REQ/Add message with Transaction ID = i. Expected behavior: Check that IUT sends MCA-RSP with Condition Code OK/Success.

5.2.6.2.3 Invalid Behavior**Table 67 — Multicast Polling – Invalid Behavior**

TP/SS/BWA/MCP/BI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.81, IEEE Std 802.16/Conformance01-2003, Table A.107. Initial condition: SS operational. Stimulus: SS receives invalid MCA-REQ. Expected behavior: Check that message is discarded and IUT continues operation.
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5.2.6.2.4 Inopportune Behavior**Table 68 — Multicast Polling – Inopportune Behavior**

TP/SS/BWA/MCP/BO-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.15/Item 2, IEEE Std 802.16/Conformance01-2003, Table A.32. Initial condition: SS with RT polling uplink connection in Active state. No other connections active. Number of multicast groups less than negotiated value of MCA Flow Control. Stimulus: BS sends MCA-REQ/Add message. Expected behavior: Check that IUT sends MCA-RSP with Condition Code Reject-add-aborted.
TP/SS/BWA/MCP/BO-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.26, IEEE Std 802.16/Conformance01-2003, Table A.32. Initial condition: SS with nRT polling uplink connection in Active state. No other connections active. Number of multicast groups equal to negotiated value of MCA Flow Control. Stimulus: BS sends MCA-REQ/Add message. Expected behavior: Check that IUT sends MCA-RSP with Condition Code Reject-add-aborted.
TP/SS/BWA/MCP/BO-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.26, IEEE Std 802.16/Conformance01-2003, Table A.32. Initial condition: SS with BE uplink connection in Active state. No other connections active. Number of multicast groups is equal to negotiated value of MCA Flow Control. Stimulus: BS sends MCA-REQ/Add message. Expected behavior: Check that IUT sends MCA-RSP with Condition Code Reject-add-aborted.
TP/SS/BWA/MCP/BO-003	Reference: IEEE Std 802.16/Conformance01-2003, Table A.32. Initial condition: SS not assigned to any multicast group Stimulus: SS receives MCA-REQ/Remove Expected behavior: Check that IUT sends correct MCA-RSP with positive acknowledgement.

5.2.6.2.5 Timer

Currently no TI category tests have been defined for the SS related to Multicast Polling.

5.2.6.2.6 Message Formats

For all TP/SS/BWA/MCP tests ensure that messages transmitted by the SS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.2.7 Reset and Re-Registration – SS

5.2.7.1 Capabilities

Table 69 — Reset and Re-Registration

TP/SS/RER/RES/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A43/1, IEEE Std 802.16/Conformance01-2003, Table A85/Items 1 and 3. Initial condition: Subscriber Station is operational. At least one bi-directional service active. Stimulus: RES-CMD from BS. Expected behavior: SS resets and performs network entry and initialization. Service is disrupted then resumes.
TP/SS/RER/RES/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A43/Item 2, IEEE Std 802.16/Conformance01-2003, Table A89/Items 1 and 3. Initial condition: Subscriber Station is operational. At least one bi-directional service active. SS has at least 2 channels available. Stimulus: DREG-CMD from BS to the SS telling it to go to another channel (action code 0 x 00). Expected behavior: SS attempts to access a different channel in its channel list. Service is terminated.
TP/SS/RER/RES/CA-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A43/Item 2, IEEE Std 802.16/Conformance01-2003, Table A89/Items 1 and 3. Initial condition: Subscriber Station is operational. At least one bi-directional service active. Stimulus: BS sends DREG-CMD to the SS telling it to wait for a RES-CMD (action code 0 x 01). Expected behavior: SS listens but does not transmit. Service is disrupted.
TP/SS/RER/RES/CA-003	Reference: IEEE Std 802.16/Conformance01-2003, Table A43/Item 1, IEEE Std 802.16/Conformance01-2003, Table A85/Item 1 and 3. Initial condition: End of TP/SS/RER/RES/CA-002. Stimulus: RES-CMD from BS. Expected behavior: SS resumes communication with the BS. Service resumes.
TP/BS/RER/RES/CA-004	Reference: IEEE Std 802.16/Conformance01-2003, Table A.43/Item 2, IEEE Std 802.16/Conformance01-2003, Table A.89/Items 1 and 3. Initial condition: Subscriber Station is operational. At least one bi-directional service active. Stimulus: BS sends DREG-CMD to the SS telling it to go to listen only mode (action code 0 x 02). Expected behavior: SS listens, but only transmits on its basic, primary management, or secondary management connections. Service is disrupted.
TP/BS/RER/RES/CA-005	Reference: IEEE Std 802.16/Conformance01-2003, Table A.43/Item 2, IEEE Std 802.16/Conformance01-2003, Table A.89/Items 1 and 3. Initial condition: End of TP/BS/RER/RES/CA-004. Stimulus: BS sends DREG-CMD to the SS telling it to return to normal operation (action code 0 x 03). Expected behavior: Service resumes.

5.2.7.2 Valid Behavior

There are no BV category tests for Reset and Re-registration at the SS.

5.2.7.3 Invalid Behavior

Table 70 — Reset and Re-Registration – Invalid Behavior

TP/SS/RER/RES/BI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A43/Item 1. Initial Condition: SS is operational. Stimulus: BS transmits to the SS an erroneous RES-CMD message. Expected Behavior: The SS ignores the message.
TP/SS/RER/RES/BI-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A43/Item 2. Initial Condition: SS is operational. Stimulus: BS transmits to the SS an erroneous DREG-CMD message. Expected Behavior: The SS ignores the message.

5.2.7.4 Inopportune Behavior

There are no BO category tests for Reset and Re-registration at the SS.

5.2.7.5 Timer

There are no TI category tests for Reset and Re-registration at the SS.

5.2.7.6 Message Formats

There are no responses or other messages for Reset and Re-registration from the SS.

5.2.8 Clock Comparison – SS**5.2.8.1 Capabilities****Table 71 — Clock Comparison – Capabilities**

TP/SS/CCC/CCC/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.88. Initial condition: BS has initiated broadcast connection and is transmitting CLK-CMP messages. BS is using different sources for symbol and network clock. At least one T1/E1 UGS service is established with the SS. Stimulus: Vary the network clock at the BS. Expected behavior: The SS should vary the clocking of the T1/E1 accordingly such that the T1/E1 does not alarm.
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5.2.8.2 Valid Behavior

There are no BV category tests for Clock Comparison at the SS.

5.2.8.3 Invalid Behavior**Table 72 — Clock Comparison – Invalid Behavior**

TP/SS/CCC/CCC/BI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.88. Initial Condition: SS is operational. Stimulus: BS transmits to the SS an erroneous CLK-CMP message. Expected Behavior: The SS ignores the message.
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5.2.8.4 Inopportune Behavior**Table 73 — Clock Comparison – Inopportune Behavior**

TP/SS/CCC/CCC/BO-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.88, IEEE Std 802.16/Conformance01-2003, Table A.96/Item 2. Initial Condition: SS is operational. Stimulus: BS transmits a duplicate CLK-CMP message to the SS, less than 50 ms after the previous CLK-CMP message. Expected Behavior: The SS ignores the message.
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5.2.8.5 Timer

Table 74 — Clock Comparison – Timer

TP/SS/CCC/CCC/TI-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.88, IEEE Std 802.16/Conformance01-2003, Table A.96/Item 2.</p> <p>Initial Condition: SS is operational</p> <p>Stimulus: BS transmits a CLK-CMP message, outside 50 ms \pm 10% after the previous CLK-CMP message.</p> <p>Expected Behavior: The SS ignores the message.</p>
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5.2.8.6 Message Formats

There are no responses or other messages for Clock Comparison from the SS.

5.2.9 MAC PDUs – SS

5.2.9.1 Capabilities

Table 75 — MAC PDUs – Capabilities

TP/SS/MAC/PDU/CA-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.13/Item 1.</p> <p>Initial condition: SS registered and authenticated with BS. One ATM data service established with data rate greater than 2000 ATM cells per second. Packing on for the connection.</p> <p>Stimulus: 2000 cells/s arrive at SS from user network. The BS allocates the bandwidth needed for 2 packed cells.</p> <p>Expected behavior: The SS will pack the cells from the same connection into a single MAC PDU each frame.</p>
TP/SS/MAC/PDU/CA-001	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.13/Item 2.</p> <p>Initial condition: SS registered and authenticated with BS. One data service established with data rate of at least 768 kbps. Packing on for the connection.</p> <p>Stimulus: The test BS sends two or more SDUs from the same connection packed into a single MAC PDU</p> <p>Expected behavior: The SS forwards both SDUs to the user network as individual entities.</p>
TP/SS/MAC/PDU/CA-002	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.12/Items 1 and 7.</p> <p>Initial condition: System running. All SSs at QPSK. Enough ATM connections with enough uplink data rate to cause congestion.</p> <p>Stimulus: Continuous reception of uplink data from user network.</p> <p>Expected behavior: No ATM cells are fragmented. Secondary management connection traffic is fragmented.</p>
TP/SS/MAC/PDU/CA-003	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.12/Item 1.</p> <p>Initial condition: System running. All SSs at QPSK. Enough packet connections with enough uplink data rate to cause congestion.</p> <p>Stimulus: Continuous reception of uplink data from user network, including large (>1500 byte) packets.</p> <p>Expected behavior: Packets are fragmented. Secondary management connection traffic is fragmented.</p>
TP/SS/MAC/PDU/CA-004	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.12/Items 3 and 4.</p> <p>Initial condition: System running. All SSs at QPSK. A packet connection established.</p> <p>Stimulus: The test BS sends fragmented packets.</p> <p>Expected behavior: The SS correctly reconstructs the packets.</p>

5.2.9.2 Valid Behavior**Table 76 — MAC PDUs – Valid Behavior**

TP/SS/MAC/PDU/BV-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.13/Item 5. Initial condition: System running. All SSs at QPSK. A packet connection established. Packing on for the connection. Stimulus: Continuous reception of uplink data from user network, including large (>1500 byte) and small (64 byte) packets on the same connection the same frame. Expected behavior: Packets are fragmented and packed. Secondary management connection traffic is fragmented, and packed if applicable.
TP/SS/MAC/PDU/BV-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.13/Item 6. Initial condition: System running. All SSs at QPSK. A packet connection established. Packing on for the connection. Stimulus: The test BS sends packets simultaneously packed and fragmented on data, primary, and secondary connections. Expected behavior: The SS correctly reconstructs the packets.
TP/SS/MAC/PDU/BV-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.14/Items 1 and 2. Initial condition: SS registered and authenticated with BS. One data service established. Encryption method is 56-bit DES. CRC is on for the connection. Stimulus: SS receives data from user network. SS receives data from BS. Expected behavior: Verify that the CRC is calculated on the encrypted payload and not encrypted itself for data transmitted by SS. Verify the SS properly checks CRC on data received from BS.

5.2.9.3 Invalid Behavior**Table 77 — MAC PDUs – Invalid Behavior**

TP/SS/MAC/PDU/BI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.14/Item 2. Initial condition: SS registered and authenticated with BS. One data service established. CRC is on for the connection. Stimulus: SS receives MAC PDU with incorrect CRC. Expected behavior: IUT discards erroneous MAC PDU
TP/SS/MAC/PDU/BI-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.14/Item 2. Initial condition: SS registered and authenticated with BS. One data service established. Stimulus: SS receives MAC PDU with incorrect HCS. Expected behavior: IUT discards erroneous MAC PDU

5.2.9.4 Inopportune Behavior

Currently no BO category tests have been defined for the SS related to MAC PDU.

5.2.9.5 Timer

Currently no TI category tests have been defined for the SS related to MAC PDU.

5.2.9.6 Message Formats

For all TP/SS/MAC/PDU tests ensure that messages transmitted by the SS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.2.10 Downlink Physical layer – SS

All downlink test are performed using Peak Power mode for the Power Adjustment Rule. For devices that support the optional Average Power mode the downlink test shall be repeated using that mode.

5.2.10.1 RS Outer Code $t = 10$ / BCC – Frame Control

5.2.10.1.1 Capabilities

Table 78 — RS Outer Code $t = 10$ / BCC – Frame Control

TP/SS/PHYDL/FC/CA-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 123/Items 4 and 9. Initial condition: A connection is setup between the test BS and the SS. Data is transmitted in the downlink. The test BS commands the SS to use the most robust burst profile. Stimulus: The attenuator is adjusted until the received power is $-98 + 10\log(B)$ dBm, where B is the symbol rate in Msymbols /s. Expected behavior: The SS receives the data correctly.</p>
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5.2.10.2 RS Outer Code Other Bursts

5.2.10.2.1 Capabilities

Table 79 — RS Outer Code Other Bursts

TP/SS/PHYDL/RS/CA-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.123/Item 5. Initial condition: A connection is setup between the test BS and the SS. Data is transmitted in the downlink. The test BS commands the SS to use burst profiles with RS parameter $t = 0, 4, 8,$ and 12 and no inner code. The attenuator is adjusted for an optimal reception. Stimulus: The test BC transmits $0, 4, 8,$ or 12 erroneous bytes in the codeword. Expected behavior: The SS receives the data correctly</p>
TP/SS/PHYDL/RS/CA-001	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.123/Item 5. Initial condition: A connection is setup between the test BS and the SS. Data is transmitted in the downlink. The test BS commands the SS to use burst profiles with RS parameter $t = 0, 4, 8,$ and 12 and no inner code. The attenuator is adjusted for an optimal reception. Stimulus: The test BC transmits $1, 5, 9,$ or 13 erroneous bytes in the codeword. Expected behavior: The SS detects that it is not able to receive the data without errors.</p>

5.2.10.3 Fixed Codeword Operation**5.2.10.3.1 Capabilities****Table 80 — Fixed Codeword Operation**

TP/SS/PHYDL/FCO/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.123/Item 7. Initial condition: A connection is setup between the test BS and the SS. The test BS commands the SS to use burst profiles with fixed codeword operation. Stimulus: Data is transmitted in the downlink. Expected behavior: The SS receives the data correctly.
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5.2.10.4 Shortened Last Codeword Operation**5.2.10.4.1 Capabilities****Table 81 — Shortened Last Codeword Operation**

TP/SS/PHYDL/SC/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table 123/Item 8. Initial condition: A connection is setup between the test BS and the SS. The test BS commands the SS to use burst profiles with shortened last codeword operation. Stimulus: Data is transmitted in the downlink. Expected behavior: The SS receives the data correctly.
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5.2.10.5 Burst Preamble**5.2.10.5.1 Capabilities****Table 82 — Burst Preamble**

TP/SS/PHYDL/BP/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table 123/Item 13. Initial condition: A connection is setup between the test BS and the SS. Stimulus: Data is transmitted in the TDMA portion of the downlink. Expected behavior: The SS receives the data correctly.
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5.2.10.6 Modulation

5.2.10.6.1 Capabilities

Table 83 — Modulation

TP/SS/PHYDL/M/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table 123/Item 15. Initial condition: A connection is setup between the test BS and the SS. The test BS commands the SS to use burst profiles with QPSK modulation. Stimulus: Data is transmitted in the downlink. Expected behavior: The SS receives the data correctly.
TP/SS/PHYDL/M/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table 123/Item 16. Initial condition: A connection is setup between the test BS and the SS. The test BS commands the SS to use burst profiles with 16-QAM modulation. Stimulus: Data is transmitted in the downlink. Expected behavior: The SS receives the data correctly.
TP/SS/PHYDL/M/CA-002	Reference: IEEE Std 802.16/Conformance01-2003, Table 123/Item 17. Initial condition: A connection is setup between the test BS and the SS. The test BS commands the SS to use burst profiles with 64-QAM modulation. Stimulus: Data is transmitted in the downlink. Expected behavior: The SS receives the data correctly.

5.2.10.7 RS Outer Code – Information Block Length

5.2.10.7.1 Capabilities

Table 84 — RS Outer Code – Information Block Length

TP/SS/PHYDL/IBL/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table 123/Item 20. Initial condition: A connection is setup between the test BS and the SS. The test BS commands the SS to use burst profiles with Information Block length = 6, 128, and 239 and $t = 8$. Stimulus: Data is transmitted in the downlink. Expected behavior: The SS receives the data correctly.
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5.2.11 Uplink Physical Layer – SS

5.2.11.1 Randomization With Programmable Seed

5.2.11.1.1 Capabilities

Table 85 — Randomization With Programmable Seed

TP/SS/PHYUL/RPS/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table 124/Item 2. Initial condition: A connection is setup between the test BS and the SS. The test BS commands the SS to use burst profiles with different seed values for the randomization. Stimulus: Data is transmitted in the uplink. Expected behavior: The test BS receives the data correctly.
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5.2.11.2 RS Outer Code – Initial Ranging**5.2.11.2.1 Capabilities****Table 86 — RS Outer Code – Initial Ranging**

TP/SS/PHYUL/IR/CA-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 124/Item 3. Initial condition: A connection is setup between the test BS and the SS. Stimulus: The test BS commands the SS to use a burst profile with RS parameter $t = 10$ for initial ranging. Expected behavior: The SS sends a RNG-REQ messages in the initial ranging opportunity. The test BS receives the data correctly.</p>
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5.2.11.3 RS Outer Code Other Bursts**5.2.11.3.1 Capabilities****Table 87 — RS Outer Code Other Bursts**

TP/SS/PHYUL/RS/CA-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 124/Item 4. Initial condition: A connection is setup between the test BS and the SS. The test BS commands the SS to use burst profiles with RS parameter $t = 0, 4, 8,$ and 12. The attenuator is adjusted for an optimal received signal. Stimulus: Data is transmitted in the uplink. Expected behavior: The test BS receives the data correctly.</p>
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5.2.11.4 Fixed Codeword Operation**5.2.11.4.1 Capabilities****Table 88 — Fixed Codeword Operation**

TP/SS/PHYUL/FCO/CA-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 124/Item 6. Initial condition: A connection is setup between the test BS and the SS. The test BS commands the SS to use burst profiles with fixed codeword operation. Stimulus: Data is transmitted in the uplink. Expected behavior: The test BS receives the data correctly.</p>
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5.2.11.5 Shortened Last Codeword Operation

5.2.11.5.1 Capabilities

Table 89 — Shortened Last Codeword Operation

TP/SS/PHYUL/SC/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table 124/Item 7. Initial condition: A connection is setup between the test BS and the SS. The test BS commands the SS to use burst profiles with shortened last codeword operation. Stimulus: Data is transmitted in the uplink. Expected behavior: The test BS receives the data correctly.
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5.2.11.6 BCC Inner Code

5.2.11.6.1 Capabilities

Table 90 — BCC Inner Code

TP/SS/PHYUL/BCC/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table 124/Item 8. Initial condition: A connection is setup between the test BS and the SS. The test BS commands the SS to use a burst profile with BCC inner code. Stimulus: Data is transmitted in the uplink. Expected behavior: The test BS receives the data correctly.
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5.2.11.7 Burst Preamble

5.2.11.7.1 Capabilities

Table 91 — Burst Preamble

TP/SS/PHYUL/BP/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table 124/Item 11. Initial condition: A connection is setup between the test BS and the SS. The test BS commands the SS to use burst profiles with different preamble length. Stimulus: Data is transmitted in the uplink. Expected behavior: The test BS receives the data correctly.
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5.2.11.8 Modulation**5.2.11.8.1 Capabilities****Table 92 — Modulation**

TP/SS/PHYUL/M/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table 124/Item 13. Initial condition: A connection is setup between the test BS and the SS. The test BS commands the SS to use burst profiles with QPSK modulation. Stimulus: Data is transmitted in the uplink. Expected behavior: The test BS receives the data correctly.
TP/SS/PHYUL/M/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table 124/Item 14. Initial condition: A connection is setup between the test BS and the SS. The test BS commands the SS to use burst profiles with 16-QAM modulation. Stimulus: Data is transmitted in the uplink. Expected behavior: The test BS receives the data correctly.
TP/SS/PHYUL/M/CA-002	Reference: IEEE Std 802.16/Conformance01-2003, Table 124/Item 15. Initial condition: A connection is setup between the test BS and the SS. The test BS commands the SS to use burst profiles with 64-QAM modulation. Stimulus: Data is transmitted in the uplink. Expected behavior: The test BS receives the data correctly.

5.2.11.9 RS Outer Code – Information Block Length**5.2.11.9.1 Capabilities****Table 93 — RS Outer Code – Information Block Length**

TP/SS/PHYUL/IBL/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table 124/Item 20. Initial condition: A connection is setup between the test BS and the SS. The test BS commands the SS to use burst profiles with Information Block length = 6, 128, and 239 and t = 8. Stimulus: Data is transmitted in the uplink. Expected behavior: The test BS receives the data correctly.
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5.2.11.10 Continuous Wave (CV) Mode**5.2.11.10.1 Capabilities****Table 94 — Continuous Wave (CW) Mode**

TP/SS/PHYUL/CV/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.128/Item 1. Initial condition: A connection is setup between the test BS and the SS. The SS is requested to transmit data in the uplink. Stimulus: The SS is requested to enter the CW test mode. Expected behavior: At all time instances the SS is requested to transmit it transmits a CW signal corresponding to the center frequency of the selected channel.
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5.2.12 Minimum Performance – SS

5.2.12.1 Tx Dynamic Range

5.2.12.1.1 Capabilities

Table 95 — Tx Dynamic Range

TP/SS/PHYMP/TDR/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 1. Initial condition: A connection is setup between the test BS and the SS. Data is transmitted in the uplink. The test BS commands the SS to use the most robust burst profile. Stimulus: The test BS commands the SS to decrease its transmit power until the minimum operable value is reached. The power of the signal is recorded. The test BS commands the SS to increase its power until the maximum operable power is reached. The power of the signal is again recorded. Expected behavior: The difference between the two power values is the Tx dynamic range and shall be ≥ 40 dB
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5.2.12.2 Rx Dynamic Range

5.2.12.2.1 Capabilities

Table 96 — Rx Dynamic Range

TP/SS/PHYMP/RDR/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 2. Initial condition: A connection is setup between the test BS and the SS. Data is transmitted in the downlink. The test BS commands the SS to use the most robust burst profile. Stimulus: The attenuator is adjusted until the minimum operable value is reached. The power of the signal is recorded. The attenuator is adjusted until the maximum operable power is reached. The power of the signal is again recorded. Expected behavior: The difference between the two power values is the Rx dynamic range and shall be ≥ 40 dB
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5.2.12.3 Tx RMS Power Level at Maximum Power Level Setting

5.2.12.3.1 Capabilities

Table 97 — Tx RMS Power Level at Maximum Power Level Setting

TP/SS/PHYMP/TXP/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 3. Initial condition: A connection is setup between the test BS and the SS. Data is transmitted in the uplink. The test BS commands the SS to use the most robust burst profile. Stimulus: The test BS commands the SS to increase its power until the maximum power level is achieved. The power is measured Expected behavior: The power shall be ≥ 15 dBm
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5.2.12.4 Tx Power Level Adjustment Step Accuracy**5.2.12.4.1 Capabilities****Table 98 — Tx Power Level Adjustment Step Accuracy**

TP/SS/PHYMP/ASA/CA-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 5.1. Initial condition: A connection is setup between the test BS and the SS. Data is transmitted in the uplink. The test BS commands the SS to use the most robust burst profile and the bottom, medium and top values of the transmit power range. The transmit power is measured. Stimulus: The test BS commands the SS to adjust its power level with $Stepsize \in [0.5, 2]$ dB. Expected behavior: The power is measured and the change in power shall be monotonically positive.</p>
TP/SS/PHYMP/ASA/CA-001	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 5.1. Initial condition: A connection is setup between the test BS and the SS. Data is transmitted in the uplink. The test BS commands the SS to use the most robust burst profile and the bottom, medium and top values of the transmit power range. The transmit power is measured. Stimulus: The test BS commands the SS to decrease its power level with $Stepsize \in [-2, -0.5]$ dB. Expected behavior: The power is measured and the change in power shall be monotonically negative.</p>
TP/SS/PHYMP/ASA/CA-002	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 5.2. Initial condition: A connection is setup between the test BS and the SS. Data is transmitted in the uplink. The test BS commands the SS to use the most robust burst profile and the bottom, medium and top values of the transmit power range. The transmit power is measured Stimulus: The test BS commands the SS to adjust its power level with $Stepsize \in [2, 5]$ dB Expected behavior: The power is measured and the change in power shall be accurate to within ± 2 dB of the requested change.</p>
TP/SS/PHYMP/ASA/CA-003	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 5.2. Initial condition: A connection is setup between the test BS and the SS. Data is transmitted in the uplink. The test BS commands the SS to use the most robust burst profile and the bottom, medium and top values of the transmit power range. The transmit power is measured. Stimulus: The test BS commands the SS to adjust its power level with $Stepsize \in [-5, -2]$ dB. Expected behavior: The power is measured and the change in power shall be accurate to within ± 2 dB of the requested change.</p>
TP/SS/PHYMP/ASA/CA-004	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 5.3. Initial condition: A connection is setup between the test BS and the SS. Data is transmitted in the uplink. The test BS commands the SS to use the most robust burst profile and the bottom, medium and top values of the transmit power range. The transmit power is measured. Stimulus: The test BS commands the SS to adjust its power level with step size $> \pm 5$ dB. Expected behavior: The power is measured and the change in power shall be accurate to within ± 3 dB of the requested change.</p>

5.2.12.5 Symbol Timing Accuracy

5.2.12.5.1 Capabilities

Table 99 — Symbol Timing Accuracy

TP/SS/PHYMP/STA/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 6. Initial condition: The SS is operational and the jitter of the symbol clock is measured. Stimulus: None. Expected behavior: The peak-to-peak jitter of the symbol clock, measured over a 2 s measurement period shall be less than 2 %.
TP/SS/PHYMP/STA/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 7. Initial condition: The manufacturer declares the supported symbol rate. The SS is operational. Stimulus: None. Expected behavior: The SS symbol clock is locked to the BS symbol clock.

5.2.12.6 Tx Burst Timing

5.2.12.6.1 Capabilities

Table 100 — Tx Burst Timing

TP/SS/PHYMP/BT/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Items 8 and 9. Initial condition: A connection is setup between the test BS and the SS. The test BS provides a gating signal which is active for the time the SS is scheduled to transmit. Time ranging has been performed. Data is transmitted in the uplink and the test BS schedules one uplink burst in each frame. Stimulus: The test BS defines the burst at different positions with 0.25 symbol time resolution by using unsolicited RNG-RSP messages. Expected behavior: The difference between the actual position of the burst and the gating signal is measured and shall be less than 0.125 symbol time.
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5.2.12.7 Carrier Frequency

5.2.12.7.1 Capabilities

Table 101 — Carrier Frequency

TP/SS/PHYMP/CF/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 10. Initial condition: The manufacturer declares the supported frequency bands. The SS is connected to the test BS which is set in the CW test mode. The SS is set in the CW test mode as well. Stimulus: None Expected behavior: The SS shall lock in frequency to the BS for all declared frequency bands and for all frequencies that multiples of 250 kHz.
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5.2.12.8 Spectral Mask**5.2.12.8.1 Capabilities****Table 102 — Spectral Mask**

TP/SS/PHYMP/SM/CA-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 11.</p> <p>Initial condition: The manufacturer declares the supported frequency bands. The test BS provides a gating signal which is active for the time the SS is scheduled to transmit. A connection is setup between the test BS and the SS.</p> <p>Stimulus: Data is transmitted in the uplink at bottom (medium and top) values of the power range and the spectrum is measured</p> <p>Expected behavior: The spectrum of the transmitted signal shall not exceed the limits defined by the spectrum mask defined by the local regulator</p>
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5.2.12.9 Ramp Up / Down Time**5.2.12.9.1 Capabilities****Table 103 — Ramp Up / Down Time**

TP/SS/PHYMP/RUD/CA-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 12.</p> <p>Initial condition: A connection is setup between the test BS and the SS.</p> <p>Stimulus: Data is transmitted in the uplink and the test BS schedules one uplink burst in each frame.</p> <p>Expected behavior: The ramp up and down times are measured. The result shall be ≤ 24 symbols</p>
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5.2.12.10 Output Noise Power Spectral Density When Tx is not Transmitting**5.2.12.10.1 Capabilities****Table 104 — Output Noise Power Spectral Density When Tx is not Transmitting**

TP/SS/PHYMP/ON/CA-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 13.</p> <p>Initial condition: A connection is setup between the test BS and the SS. For TDD the test BS provides a gating signal which indicates the uplink subframe</p> <p>Stimulus: No data is transmitted in the uplink.</p> <p>Expected behavior: The power at the SS output is measured. The measured value shall be ≤ -80 dBm/MHz.</p>
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5.2.12.11 Modulation Accuracy

Modulation accuracy is expressed in error vector magnitude (EVM), as defined in IEEE 802.16 for WirelessMAN-SC. For the modulation accuracy tests it is assumed that the receiver characteristics of the test BS are known and are better than those of an ordinary BS.

5.2.12.11.1 Capabilities

Table 105 — Modulation Accuracy

TP/SS/PHYMP/MA/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 14. Initial condition: A connection is setup between the test BS and the SS. The equalizer in the test BS is disabled. A BS BER test is setup. Stimulus: Data is transmitted in the uplink with QPSK modulation and the attenuator is adjusted until a BER of 10^{-3} is recorded. Expected behavior: The input power is measured and the modulation accuracy is calculated. The modulation accuracy shall be $\leq 12\%$.
TP/SS/PHYMP/MA/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 15. Initial condition: A connection is setup between the test BS and the SS. The equalizer in the test BS is disabled. A BS BER test is setup. Stimulus: Data is transmitted in the uplink with 16-QAM modulation and the attenuator is adjusted until a BER of 10^{-3} is recorded. Expected behavior: The input power is measured and the modulation accuracy is calculated. The modulation accuracy shall be $\leq 6\%$.
TP/SS/PHYMP/MA/CA-002	Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 17. Initial condition: A connection is setup between the test BS and the SS. The equalizer in the test BS is enabled. A BS BER test is setup. Stimulus: Data is transmitted in the uplink with QPSK modulation and the attenuator is adjusted until a BER of 10^{-3} is recorded. Expected behavior: The input power is measured and the modulation accuracy is calculated. The modulation accuracy shall be $\leq 10\%$.
TP/SS/PHYMP/MA/CA-003	Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 18. Initial condition: A connection is setup between the test BS and the SS. The equalizer in the test BS is enabled. A BS BER test is setup. Stimulus: Data is transmitted in the uplink with 16-QAM modulation and the attenuator is adjusted until a BER of 10^{-3} is recorded. Expected behavior: The input power is measured and the modulation accuracy is calculated. The modulation accuracy shall be $\leq 3\%$.
TP/SS/PHYMP/MA/CA-004	Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 19. Initial condition: A connection is setup between the test BS and the SS. The equalizer in the test BS is enabled. A BS BER test is setup. Stimulus: Data is transmitted in the uplink with 64-QAM modulation and the attenuator is adjusted until a BER of 10^{-3} is recorded. Expected behavior: The input power is measured and the modulation accuracy is calculated. The modulation accuracy shall be $\leq 1.5\%$.

5.2.12.12 BER Performance Threshold

It is assumed that the test BS has a modulation accuracy which is known and better than that of an ordinary BS.

5.2.12.12.1 Capabilities

Table 106 — BER Performance Threshold

TP/SS/PHYMP/BER/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 20. Initial condition: A connection is setup between the test BS and the SS. Stimulus: The test BS transmits data with QPSK modulation and known contents to the SS. Neither inner nor outer FEC is used. The BER is computed from the data packets accepted by the SS. The attenuator is adjusted until $BER=10^{-3}$. Expected behavior: The input power is measured and shall be $\leq -94 + 10\log(B)$. B is the symbol rate in Msymbols/s.
TP/SS/PHYMP/BER/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 21. Initial condition: A connection is setup between the test BS and the SS. Stimulus: The test BS transmits data with 16-QAM modulation and known contents to the SS. Neither inner nor outer FEC is used. The BER is computed from the data packets accepted by the SS. The attenuator is adjusted until $BER=10^{-3}$. Expected behavior: The input power is measured and shall be $\leq -87 + 10\log(B)$. B is the symbol rate in Msymbols/s.
TP/SS/PHYMP/BER/CA-002	Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 22. Initial condition: A connection is setup between the test BS and the SS. Stimulus: The test BS transmits data with 64-QAM modulation and known contents to the SS. Neither inner nor outer FEC is used. The BER is computed from the data packets accepted by the SS. The attenuating is adjusted until $BER=10^{-3}$. Expected behavior: The input power is measured and shall be $\leq -79 + 10\log(B)$. B is the symbol rate in Msymbols/s.
TP/SS/PHYMP/BER/CA-003	Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 23. Initial condition: A connection is setup between the test BS and the SS. Stimulus: The test BS transmits data with QPSK modulation and known contents to the SS. Neither inner nor outer FEC is used. The BER is computed from the data packets accepted by the SS. The attenuator is adjusted until $BER=10^{-6}$. Expected behavior: The input power is measured and shall be $\leq -90 + 10\log(B)$. B is the symbol rate in Msymbols/s.
TP/SS/PHYMP/BER/CA-004	Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 24. Initial condition: A connection is setup between the test BS and the SS. Stimulus: The test BS transmits data with 16-QAM modulation and known contents to the SS. Neither inner nor outer FEC is used. The BER is computed from the data packets accepted by the SS. The attenuator is adjusted until $BER=10^{-6}$. Expected behavior: The input power is measured and shall be $\leq -83 + 10\log(B)$. B is the symbol rate in Msymbols/s.
TP/SS/PHYMP/BER/CA-005	Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 25. Initial condition: A connection is setup between the test BS and the SS. Stimulus: The test BS transmits data with 64-QAM modulation and known contents to the SS. Neither inner nor outer FEC is used. The BER is computed from the data packets accepted by the SS. The attenuator is adjusted until $BER=10^{-6}$. Expected behavior: The input power is measured and shall be $\leq -74 + 10\log(B)$. B is the symbol rate in Msymbols/s.

5.2.12.13 Transition Time from Tx to Rx and from Rx to Tx

5.2.12.13.1 Capabilities**Table 107 — Transition Time from Tx to Rx and from Rx to Tx**

TP/SS/PHYMP/TT/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 26. Initial condition: A connection is setup between the test BS and the SS. Stimulus: The BS provides DL and UL Maps providing a transition time between the end of an uplink burst and the start of a downlink burst of 2 μ s for TDD or 20 μ s for H-FDD. Uplink data is generated. Expected behavior: The SS successfully receives downlink data and successfully transmits uplink data.
TP/SS/PHYMP/TT/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 26. Initial condition: A connection is setup between the test BS and the SS. Stimulus: The BS provides DL and UL Maps providing a transition time between the end of a downlink burst and the start of an uplink burst of 2 μ s plus round trip delay for TDD or 20 μ s plus round trip delay for H-FDD. Uplink data is generated Expected behavior: The SS successfully receives downlink data and successfully transmits uplink data.

5.2.12.14 1st Adjacent Channel Interference**5.2.12.14.1 Capabilities****Table 108 — 1st Adjacent Channel Interference**

TP/SS/PHYMP/1AC/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 27. Initial condition: A connection is setup between the test BS and the SS. Downlink QPSK data is generated and the attenuator is adjusted for BER= 10^{-3} . The signal level is increased by 3 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 1 st adjacent channel. The attenuator of the interferer is adjusted until BER= 10^{-3} is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ -9 dB
TP/SS/PHYMP/1AC/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 28. Initial condition: A connection is setup between the test BS and the SS. Downlink 16-QAM data is generated and the attenuator is adjusted for BER= 10^{-3} . The signal level is increased by 3 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 1 st adjacent channel. The attenuator of the interferer is adjusted until BER= 10^{-3} is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ -2 dB
TP/SS/PHYMP/1AC/CA-002	Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 29. Initial condition: A connection is setup between the test BS and the SS. Downlink 64-QAM data is generated and the attenuator is adjusted for BER= 10^{-3} . The signal level is increased by 3 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 1 st adjacent channel. The attenuator of the interferer is adjusted until BER= 10^{-3} is reached. The power of the interferer is measured. Expected behavior: The C/I shall be $\leq +5$ dB

Table 108 — 1st Adjacent Channel Interference (continued)

<p>TP/SS/PHYMP/1AC/CA-003</p>	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 30. Initial condition: A connection is setup between the test BS and the SS. Downlink QPSK data is generated and the attenuator is adjusted for BER=10^{-3}. The signal level is increased by 1 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 1st adjacent channel. The attenuator of the interferer is adjusted until BER=10^{-3} is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ -5 dB</p>
<p>TP/SS/PHYMP/1AC/CA-004</p>	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 31. Initial condition: A connection is setup between the test BS and the SS. Downlink 16-QAM data is generated and the attenuator is adjusted for BER=10^{-3}. The signal level is increased by 1 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 1st adjacent channel. The attenuator of the interferer is adjusted until BER=10^{-3} is reached. The power of the interferer is measured. Expected behavior: The C/I shall be $\leq +2$ dB</p>
<p>TP/SS/PHYMP/1AC/CA-005</p>	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 32. Initial condition: A connection is setup between the test BS and the SS. Downlink 64-QAM data is generated and the attenuator is adjusted for BER=10^{-3}. The signal level is increased by 1 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 1st adjacent channel. The attenuator of the interferer is adjusted until BER=10^{-3} is reached. The power of the interferer is measured. Expected behavior: The C/I shall be $\leq +9$ dB</p>
<p>TP/SS/PHYMP/1AC/CA-006</p>	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 33. Initial condition: A connection is setup between the test BS and the SS. Downlink QPSK data is generated and the attenuator is adjusted for BER=10^{-6}. The signal level is increased by 3 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 1st adjacent channel. The attenuator of the interferer is adjusted until BER=10^{-6} is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ -5 dB</p>
<p>TP/SS/PHYMP/1AC/CA-007</p>	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 34. Initial condition: A connection is setup between the test BS and the SS. Downlink 16-QAM data is generated and the attenuator is adjusted for BER=10^{-6}. The signal level is increased by 3 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 1st adjacent channel. The attenuator of the interferer is adjusted until BER=10^{-6} is reached. The power of the interferer is measured. Expected behavior: The C/I shall be $\leq +2$ dB</p>
<p>TP/SS/PHYMP/1AC/CA-008</p>	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 35. Initial condition: A connection is setup between the test BS and the SS. Downlink 64-QAM data is generated and the attenuator is adjusted for BER=10^{-6}. The signal level is increased by 3 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 1st adjacent channel. The attenuator of the interferer is adjusted until BER=10^{-6} is reached. The power of the interferer is measured. Expected behavior: The C/I shall be $\leq +9$ dB</p>

Table 108 — 1st Adjacent Channel Interference (continued)

TP/SS/PHYMP/1AC/CA-009	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 36. Initial condition: A connection is setup between the test BS and the SS. Downlink QPSK data is generated and the attenuator is adjusted for BER=10⁻⁶. The signal level is increased by 1 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 1st adjacent channel. The attenuator of the interferer is adjusted until BER=10⁻⁶ is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ -1 dB</p>
TP/SS/PHYMP/1AC/CA-010	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 37. Initial condition: A connection is setup between the test BS and the SS. Downlink 16-QAM data is generated and the attenuator is adjusted for BER=10⁻⁶. The signal level is increased by 1 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 1st adjacent channel. The attenuator of the interferer is adjusted until BER=10⁻⁶ is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ +6 dB</p>
TP/SS/PHYMP/1AC/CA-011	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 38. Initial condition: A connection is setup between the test BS and the SS. Downlink 64-QAM data is generated and the attenuator is adjusted for BER=10⁻⁶. The signal level is increased by 1 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 1st adjacent channel. The attenuator of the interferer is adjusted until BER=10⁻⁶ is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ +13 dB</p>

5.2.12.15 2nd Adjacent Channel Interference**5.2.12.15.1 Capabilities****Table 109 — 2nd Adjacent Channel Interference**

TP/SS/PHYMP/2AC/CA-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 39. Initial condition: A connection is setup between the test BS and the SS. Downlink QPSK data is generated and the attenuator is adjusted for BER=10⁻³. The signal level is increased by 3 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 2nd adjacent channel. The attenuator of the interferer is adjusted until BER=10⁻³ is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ -34 dB</p>
TP/SS/PHYMP/2AC/CA-001	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 40. Initial condition: A connection is setup between the test BS and the SS. Downlink 16-QAM data is generated and the attenuator is adjusted for BER=10⁻³. The signal level is increased by 3 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 2nd adjacent channel. The attenuator of the interferer is adjusted until BER=10⁻³ is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ -27 dB</p>

Table 109 — 2nd Adjacent Channel Interference (continued)

<p>TP/SS/PHYMP/2AC/CA-002</p>	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 41. Initial condition: A connection is setup between the test BS and the SS. Downlink 64-QAM data is generated and the attenuator is adjusted for BER = 10^{-3}. The signal level is increased by 3 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 2nd adjacent channel. The attenuator of the interferer is adjusted until BER = 10^{-3} is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ -20 dB</p>
<p>TP/SS/PHYMP/2AC/CA-003</p>	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 42. Initial condition: A connection is setup between the test BS and the SS. Downlink QPSK data is generated and the attenuator is adjusted for BER = 10^{-3}. The signal level is increased by 1 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 2nd adjacent channel. The attenuator of the interferer is adjusted until BER=10^{-3} is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ -30 dB</p>
<p>TP/SS/PHYMP/2AC/CA-004</p>	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 43. Initial condition: A connection is setup between the test BS and the SS. Downlink 16-QAM data is generated and the attenuator is adjusted for BER=10^{-3}. The signal level is increased by 1 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 2nd adjacent channel. The attenuator of the interferer is adjusted until BER= 10^{-3} is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ -22 dB</p>
<p>TP/SS/PHYMP/2AC/CA-005</p>	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 44. Initial condition: A connection is setup between the test BS and the SS. Downlink 64-QAM data is generated and the attenuator is adjusted for BER=10^{-3}. The signal level is increased by 1 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 2nd adjacent channel. The attenuator of the interferer is adjusted until BER=10^{-3} is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ -16 dB</p>
<p>TP/SS/PHYMP/2AC/CA-006</p>	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 45. Initial condition: A connection is setup between the test BS and the SS. Downlink QPSK data is generated and the attenuator is adjusted for BER=10^{-6}. The signal level is increased by 3 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 2nd adjacent channel. The attenuator of the interferer is adjusted until BER=10^{-6} is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ -30 dB</p>
<p>TP/SS/PHYMP/2AC/CA-007</p>	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 46. Initial condition: A connection is setup between the test BS and the SS. Downlink 16-QAM data is generated and the attenuator is adjusted for BER=10^{-6}. The signal level is increased by 3 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 2nd adjacent channel. The attenuator of the interferer is adjusted until BER=10^{-6} is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ -23 dB</p>

Table 109 — 2nd Adjacent Channel Interference (continued)

TP/SS/PHYMP/2AC/CA-008	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 47. Initial condition: A connection is setup between the test BS and the SS. Downlink 64-QAM data is generated and the attenuator is adjusted for BER=10⁻⁶. The signal level is increased by 3 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 2nd adjacent channel. The attenuator of the interferer is adjusted until BER=10⁻⁶ is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ -16 dB</p>
TP/SS/PHYMP/2AC/CA-009	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 48. Initial condition: A connection is setup between the test BS and the SS. Downlink QPSK data is generated and the attenuator is adjusted for BER=10⁻⁶. The signal level is increased by 1 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 2nd adjacent channel. The attenuator of the interferer is adjusted until BER=10⁻⁶ is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ -26 dB</p>
TP/SS/PHYMP/2AC/CA-010	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 49. Initial condition: A connection is setup between the test BS and the SS. Downlink 16-QAM data is generated and the attenuator is adjusted for BER=10⁻⁶. The signal level is increased by 1 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 2nd adjacent channel. The attenuator of the interferer is adjusted until BER=10⁻⁶ is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ -20 dB</p>
TP/SS/PHYMP/2AC/CA-011	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 127/Item 50. Initial condition: A connection is setup between the test BS and the SS. Downlink 64-QAM data is generated and the attenuator is adjusted for BER =10⁻⁶. The signal level is increased by 1 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 2nd adjacent channel. The attenuator of the interferer is adjusted until BER=10⁻⁶ is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ -12 dB</p>

5.2.12.16 Tx Power Level Absolute Accuracy**5.2.12.16.1 Capabilities****Table 110 — Tx Power Level Absolute Accuracy**

TP/SS/PHYMP/PAA/CA-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table 127/51. Initial condition: A connection is setup between the test BS and the SS. Data is transmitted in the uplink. The test BS commands the SS to use the most robust burst profile and the bottom, medium and top values of the transmit power range. The transmit power is measured Stimulus: The test BS commands the SS to adjust its power to an absolute level Expected behavior: The power is measured and the accuracy shall be ±6 dB</p>
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5.2.13 ATM Convergence Sublayer – SS

If the SS accepts other than ATM cells from the user network, and does the appropriate inter-working function internally, the ATM classification tests must be verified either at that inter-working function, or by comparing the SDUs mapped to and from ATM cells at the interface to the user network.

5.2.13.1 Capabilities

Table 111 — ATM Convergence Sublayer

TP/SS/ACS/ATM/CA-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.3, IEEE Std 802.16/Conformance01-2003, Table A.9/Item 6, IEEE Std 802.16/Conformance01-2003, Table A.35.</p> <p>Initial Condition: SS has transmitted TFTP-CPLT to BS. (SS is authenticated and registered.)</p> <p>Stimulus: BS transmits to the SS a DSA-REQ message instructing the SS to create and activate both the UL and DL portions of an ATM service</p> <p>Expected Behavior: The SS shall transmit to the BS a DSA-RSP message accepting the creation and activation of both the UL and DL portions of the service. The SS and BS shall pass user data on the service.</p> <p>Repeat this test for all ATM service types supported by the SS.</p>
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5.2.13.2 Valid Behavior

Table 112 — ATM Convergence Sublayer – Valid Behavior

TP/SS/ACS/ATM/BV-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.3/Items 1 and 2.</p> <p>Initial condition: Subscriber station is operational and has more than one operational user port. At least 2 downlink services are set up, 1 for one port, 1 for the other. At least one service is VC switched and at least one is VP switched.</p> <p>Stimulus: ATM cells received from BS over air link.</p> <p>Expected behavior: SS forwards ATM cells to correct port.</p>
TP/SS/ACS/ATM/BV-001	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.3/Items 1 and 2</p> <p>Initial condition: Subscriber station is operational. At least 2 uplink services are set up, 1 from one port, 1 from another. At least one service is VC switched and at least one is VP switched.</p> <p>Stimulus: ATM cells received from port (ingress).</p> <p>Expected behavior: SS forwards ATM cells on correct CID to BS. ATM cells not mapped to a service are discarded.</p>
TP/SS/ACS/ATM/BV-002	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.3/Items 1 and 2</p> <p>Initial condition: Subscriber station is operational. At least one VC switched bi-directional service and at least one bi-directional VP switched service are set up. No PHS.</p> <p>Stimulus: ATM cells received from port (ingress) and from the airlink.</p> <p>Expected behavior: SS forwards ATM cells from port on correct CID with VPI/VCI preserved in the MAC PDU (53-byte SDU). ATM cells with VPI/VCI not mapped to a service are discarded. SS forwards cells from the airlink to the correct port.</p>
TP/SS/ACS/ATM/BV-003	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.3/Item 2</p> <p>Initial condition: Subscriber station is operational. At least one VC switched uplink service is set up. No PHS. At least 2 classifiers are set up.</p> <p>Stimulus: ATM cells received from port (ingress).</p> <p>Expected behavior: SS forwards ATM cells from port on correct CID with VPI/VCI preserved in the MAC PDU (53-byte SDU). ATM cells with VPI/VCI not mapped to a service are discarded.</p>

Table 112 — ATM Convergence Sublayer – Valid Behavior (continued)

TP/SS/ACS/ATM/BV-004	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.3/Item 1</p> <p>Initial condition: Subscriber station is operational. At least one VP switched uplink service is set up. No PHS. At least 2 classifiers are set up. At least one of the classifiers has at least 2 VCI.</p> <p>Stimulus: ATM cells received from port (ingress).</p> <p>Expected behavior: SS forwards ATM cells from port on correct CID with VPI/VCI preserved in the MAC PDU (53-byte SDU). ATM cells with VPI/VCI not mapped to a service are discarded.</p>
TP/SS/ACS/ATM/BV-005	<p>Reference: IEEE Std. 802.16/Conformance01-2003, Table A.3/Item 4</p> <p>Initial condition: Subscriber station is operational. At least one VC switched bi-directional service is set up. PHS.</p> <p>Stimulus: ATM cells received from port (ingress) and from the airlink.</p> <p>Expected behavior: SS forwards ATM cells from port on correct CID with 49-byte SDU format. ATM cells with VPI/VCI not mapped to a service are discarded. SS forwards ATM cells from airlink to correct port, correctly reconstituting VPI/VCI and remainder of ATM header from CID and 49-byte SDU format</p>
TP/SS/ACS/ATM/BV-006	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table/Item 3</p> <p>Initial condition: Subscriber station is operational. At least one VP switched bi-directional service is set up. PHS. Classifier specifies no VCIs.</p> <p>Stimulus: ATM cells received from port (ingress) and from the airlink.</p> <p>Expected behavior: SS forwards ATM cells from port on correct CID with 51-byte SDU format. ATM cells with VPI/VCI not mapped to a service are discarded. SS forwards ATM cells from airlink to correct port, correctly reconstituting VPI/VCI and remainder of ATM header from CID and 51-byte SDU format</p>
TP/SS/ACS/ATM/BV-007	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.3/Items 1 and 3</p> <p>Initial condition: Subscriber station is operational. At least one VP switched bi-directional service is set up. PHS. Classifier with multiple VCI specified.</p> <p>Stimulus: ATM cells received from port (ingress) and from the airlink.</p> <p>Expected behavior: SS forwards ATM cells from port on correct CID with 51-byte SDU format. ATM cells with VPI/VCI not mapped to a service are discarded. SS forwards ATM cells from airlink to correct port, correctly reconstituting VPI/VCI and remainder of ATM header from CID and 51-byte SDU format</p>
TP/SS/ACS/ATM/BV-008	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.3/Items 1 and 2.</p> <p>Initial condition: Subscriber station is operational. At least one uplink service is set up. At least one classifier specified. Cells entering from port that match the classifier, and other cells that do not match the classifier. Those that do not match are being discarded, those that do match are being forwarded.</p> <p>Stimulus: Replace classifier so that originally discarded cells are now forwarded and originally forwarded cells are now discarded.</p> <p>Expected behavior: Originally discarded cells are now forwarded and originally forwarded cells are now discarded.</p>
TP/SS/ACS/ATM/BV-009	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.3/Items 1 and 2.</p> <p>Initial condition: End of TP/SS/CL/ATM/BV-008.</p> <p>Stimulus: Add original version of classifier that was replaced in TP/SS/ACS/ATM/BV-008 so that originally forwarded cells are now forwarded once more, but newly forwarded cells are still forwarded.</p> <p>Expected behavior: Originally forwarded cells are now forwarded once more, but newly forwarded cells are still forwarded.</p>
TP/SS/ACS/ATM/BV-010	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.3/Items 1 and 2.</p> <p>Initial condition: End of TP/SS/CL/ATM/BV-009.</p> <p>Stimulus: Delete version of classifier that was created by replace in TP/SS/CL/ATM/BV-008 so that originally discarded cells are now discarded once more, but originally forwarded cells are still forwarded.</p> <p>Expected behavior: Originally discarded cells are now discarded once more, but originally forwarded cells are still forwarded.</p>

5.2.13.3 Invalid Behavior

While the DS protocol covers most BI tests for the ATM Convergence Sublayer, there are some specific issues that relate specifically to the convergence sublayer.

Table 113 — ATM Convergence Sublayer – Invalid Behavior

TP/SS/ACS/ATM/BI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.37, IEEE Std 802.16/Conformance01-2003, Table A.72. Initial Condition: An ATM service exists between the BS and the SS. Stimulus: BS transmits to the SS a DSC-REQ message that directs a change in the service flow scheduling type. Expected Behavior: The SS transmits a DSC-RSP message indicating the errored parameter.
TP/SS/ACS/ATM/BI-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.37, IEEE Std 802.16/Conformance01-2003, Table A.72. Initial Condition: An ATM service exists between the BS and the SS. Stimulus: BS transmits to the SS a DSC-REQ message that directs a change in the Request/Transmission Policy. Expected Behavior: The SS transmits a DSC-RSP message indicating the errored parameter.
TP/SS/ACS/ATM/BI-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.37, IEEE Std 802.16/Conformance01-2003, Table A.72. Initial Condition: An ATM service exists between the BS and the SS. Stimulus: BS transmits to the SS a DSC-REQ message that directs a change in the Convergence Sublayer Specification. Expected Behavior: The SS transmits a DSC-RSP message indicating the errored parameter.
TP/SS/ACS/ATM/BI-003	Reference: IEEE Std 802.16/Conformance01-2003, Table A.37, IEEE Std 802.16/Conformance01-2003, Table A.72. Initial Condition: An ATM service exists between the BS and the SS. Stimulus: BS transmits to the SS a DSC-REQ message that directs a change in the Fixed-length versus Variable-length SDI Indicator. Expected Behavior: The SS transmits a DSC-RSP message indicating the errored parameter.
TP/SS/ACS/ATM/BI-004	Reference: IEEE Std 802.16/Conformance01-2003, Table A.37, IEEE Std 802.16/Conformance01-2003, Table A.72. Initial Condition: An ATM service exists between the BS and the SS. Stimulus: BS transmits to the SS a DSC-REQ message that directs a change in the SDU Size. Expected Behavior: The SS transmits a DSC-RSP message indicating the errored parameter.
TP/SS/ACS/ATM/BI-005	Reference: IEEE Std 802.16/Conformance01-2003, Table A.37, IEEE Std 802.16/Conformance01-2003, Table A.74. Initial Condition: An ATM service exists between the BS and the SS. Stimulus: BS transmits to the SS a DSC-REQ message that directs a change in the ATM Switching. Expected Behavior: The SS transmits a DSC-RSP message indicating the errored parameter.

5.2.13.4 Inopportune Behavior

All BO tests for the ACS protocol group are covered by the DS protocol group.

5.2.13.5 Timer

All TI tests for the ACS protocol group are covered by the DS protocol group.

5.2.13.6 Message Formats

For all TP/SS/ACS/ATM tests ensure that messages transmitted by the SS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.2.14 Packet Convergence Sublayer – SS**5.2.14.1 Packet CS Usage**

Tests for verifying that packets are encapsulated correctly by the Packet CS implementation.

5.2.14.1.1 Capabilities**Table 114 — Packet CS Usage**

TP/SS/PCS/PCU/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.4/Item 1. Initial condition: SS has completed DSA transaction assigning the connection with CID = i to use the IPv4 CS. No PHS. All incoming packets classified to CID = i. Stimulus: SS receives IPv4 packets on its external interface. SS is granted enough bandwidth to transmit packet without fragmentation. Expected behavior: SS sends MAC PDU containing the PHSI field (= 0) prepended by the CS followed by the IPv4 packet on CID = i.
TP/SS/PCS/PCU/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.4/Item 2. Initial condition: SS has completed DSA transaction assigning the connection with CID = i to use the IPv6 CS. No PHS. All incoming packets classified to CID = i. Stimulus: SS receives IPv6 packets on its external interface. SS is granted enough bandwidth to transmit packet without fragmentation. Expected behavior: SS sends MAC PDU containing the PHSI field (= 0) prepended by the CS followed by the IPv6 packet on CID = i.
TP/SS/PCS/PCU/CA-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.4/Item 3. Initial condition: SS has completed DSA transaction assigning the connection with CID = i to use the Ethernet CS. No PHS. All incoming packets classified to CID = i. Stimulus: SS receives Ethernet packets on its external interface. SS is granted enough bandwidth to transmit packet without fragmentation. Expected behavior: SS sends MAC PDU containing the PHSI field (= 0) prepended by the CS followed by the Ethernet packet on CID = i.
TP/SS/PCS/PCU/CA-003	Reference: IEEE Std 802.16/Conformance01-2003, Table A.4/Item 4. Initial condition: SS has completed DSA transaction assigning the connection with CID = i to use the Ethernet with VLAN tagging CS. No PHS. All incoming packets classified to CID = i. Stimulus: SS receives VLAN tagged Ethernet packets on its external interface. SS is granted enough bandwidth to transmit packet without fragmentation. Expected behavior: SS sends MAC PDU containing the PHSI field (= 0) prepended by the CS followed by the VLAN tagged Ethernet packet on CID = i.
TP/SS/PCS/PCU/CA-004	Reference: IEEE Std 802.16/Conformance01-2003, Table A.4/Item 5. Initial condition: SS has completed DSA transaction assigning the connection with CID = i to use the IPv4 over Ethernet CS. No PHS. All incoming packets classified to CID = i. Stimulus: SS receives Ethernet packets on its external interface. SS is granted enough bandwidth to transmit packet without fragmentation. Expected behavior: SS sends MAC PDU containing the PHSI field (= 0) prepended by the CS followed by the Ethernet packet on CID = i.
TP/SS/PCS/PCU/CA-005	Reference: IEEE Std 802.16/Conformance01-2003, Table A.4/Item 6. Initial condition: SS has completed DSA transaction assigning the connection with CID = i to use the IPv6 over Ethernet CS. No PHS. All incoming packets classified to CID = i. Stimulus: SS receives Ethernet packets on its external interface. SS is granted enough bandwidth to transmit packet without fragmentation. Expected behavior: SS sends MAC PDU containing the PHSI field (= 0) prepended by the CS followed by the Ethernet packet on CID = i.

5.2.14.1.2 Valid Behavior

Currently no BV category tests have been defined for the SS related to Packet CS Usage.

5.2.14.1.3 Invalid Behavior

Currently no BI category tests have been defined for the SS related to Packet CS Usage.

5.2.14.1.4 Inopportune Behavior

Currently no BO category tests have been defined for the SS related to Packet CS Usage.

5.2.14.1.5 Timer

Currently no TI category tests have been defined for the SS related to Packet CS Usage.

5.2.14.1.6 Message Formats

There are no MAC management messages involved in these tests.

5.2.14.2 Classification

5.2.14.2.1 Capabilities

Table 115 — Classification

TP/SS/PCS/CLS/CA-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.5, IEEE Std 802.16/Conformance01-2003, Table A.6</p> <p>Initial condition: IUT has completed DSA transaction assigning the connections with CID = i and CID = j to use the IPv4 CS. No PHS. Non-overlapping classifiers defined for CID = i and CID = j with equal priority.</p> <p>Stimulus: IUT receives IP packets destined for either connection with CID = i or CID = j on its external interface.</p> <p>Expected behavior: Packets matching classifier for CID = i are transmitted on CID = i and packets matching classifier for CID = j are transmitted on CID = j.</p> <p>Note: Test with different classifiers. Test all supported IPv4 classification parameters.</p>
TP/SS/PCS/CLS/CA-001	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.5, IEEE Std 802.16/Conformance01-2003, Table A.6.</p> <p>Initial condition: IUT has completed DSA transaction assigning the connections with CID = i and CID = j to use the IPv6 CS. No PHS. Non-overlapping classifiers defined for CID = i and CID = j with equal priority.</p> <p>Stimulus: IUT receives IP packets destined for either connection with CID = i or CID = j on its external interface.</p> <p>Expected behavior: Packets matching classifier for CID = i are transmitted on CID = i and packets matching classifier for CID = j are transmitted on CID = j.</p> <p>Note: Test with different classifiers. Test all supported IPv6 classification parameters.</p>
TP/SS/PCS/CLS/CA-002	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.5, IEEE Std 802.16/Conformance01-2003, Table A.7.</p> <p>Initial condition: IUT has completed DSA transaction assigning the connections with CID = i and CID = j to use the Ethernet CS. No PHS. Non-overlapping classifiers defined for CID = i and CID = j with equal priority.</p> <p>Stimulus: IUT receives Ethernet packets destined for either connection with CID = i or CID = j on its external interface.</p> <p>Expected behavior: Packets matching classifier for CID = i are transmitted on CID = i and packets matching classifier for CID = j are transmitted on CID = j.</p> <p>Note: Test with different classifiers. Test all supported Ethernet classification parameters.</p>

Table 115 — Classification (continued)

TP/SS/PCS/CLS/CA-003	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.5, IEEE Std 802.16/Conformance01-2003, Table A.8.</p> <p>Initial condition: IUT has completed DSA transaction assigning the connections with CID = i and CID = j to use the VLAN CS. No PHS. Non- overlapping classifiers defined for CID = i and CID = j with equal priority.</p> <p>Stimulus: IUT receives VLAN packets destined for either connection with CID = i or CID = j on its external interface.</p> <p>Expected behavior: Packets matching classifier for CID = i are transmitted on CID = i and packets matching classifier for CID = j are transmitted on CID = j.</p> <p>Note: Test with different classifiers. Test all supported Ethernet and VLAN classification parameters.</p>
TP/SS/PCS/CLS/CA-004	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.5, IEEE Std 802.16/Conformance01-2003, Table A.6, IEEE Std 802.16/Conformance01-2003, Table A.7.</p> <p>Initial condition: IUT has completed DSA transaction assigning the connections with CID = i and CID = j to use the IPv4 over Ethernet CS. No PHS. Non- overlapping classifiers defined for CID = i and CID = j with equal priority.</p> <p>Stimulus: IUT receives Ethernet packets carrying IPv4 destined for either connection with CID = i or CID = j on its external interface.</p> <p>Expected behavior: Packets matching classifier for CID = i are transmitted on CID = i and packets matching classifier for CID = j are transmitted on CID = j.</p> <p>Note: Test with different classifiers. Test all supported Ethernet and IPv4 classification parameters.</p>
TP/SS/PCS/CLS/CA-005	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.5, IEEE Std 802.16/Conformance01-2003, Table A.6, IEEE Std 802.16/Conformance01-2003, Table A.7.</p> <p>Initial condition: IUT has completed DSA transaction assigning the connections with CID = i and CID = j to use the IPv6 over Ethernet CS. No PHS. Non- overlapping classifiers defined for CID = i and CID = j with equal priority.</p> <p>Stimulus: IUT receives Ethernet packets carrying IPv4 destined for either connection with CID = i or CID = j on its external interface.</p> <p>Expected behavior: Packets matching classifier for CID = i are transmitted on CID = i and packets matching classifier for CID = j are transmitted on CID = j.</p> <p>Note: Test with different classifiers. Test all supported Ethernet and IPv6 classification parameters.</p>
TP/SS/PCS/CLS/CA-006	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.5, IEEE Std 802.16/Conformance01-2003, Table A.6, IEEE Std 802.16/Conformance01-2003, Table A.8.</p> <p>Initial condition: IUT has completed DSA transaction assigning the connections with CID = i and CID = j to use the IPv4 over VLAN CS. No PHS. Non- overlapping classifiers defined for CID = i and CID = j with equal priority.</p> <p>Stimulus: IUT receives Ethernet packets carrying IPv4 destined for either connection with CID = i or CID = j on its external interface.</p> <p>Expected behavior: Packets matching classifier for CID = i are transmitted on CID = i and packets matching classifier for CID = j are transmitted on CID = j.</p> <p>Note: Test with different classifiers. Test all supported Ethernet, VLAN and IPv4 classification parameters.</p>
TP/SS/PCS/CLS/CA-007	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.5, IEEE Std 802.16/Conformance01-2003, Table A.6, IEEE Std 802.16/Conformance01-2003, Table A.8.</p> <p>Initial condition: IUT has completed DSA transaction assigning the connections with CID = i and CID = j to use the IPv6 over VLAN CS. No PHS. Non- overlapping classifiers defined for CID = i and CID = j with equal priority.</p> <p>Stimulus: IUT receives Ethernet packets carrying IPv4 destined for either connection with CID = i or CID = j on its external interface.</p> <p>Expected behavior: Packets matching classifier for CID = i are transmitted on CID = i and packets matching classifier for CID = j are transmitted on CID = j.</p> <p>Note: Test with different classifiers. Test all supported Ethernet, VLAN and IPv6 classification parameters.</p>
TP/SS/PCS/CLS/CA-008	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.5, IEEE Std 802.16/Conformance01-2003, Table A.6.</p> <p>Initial condition: IUT has completed DSA transaction assigning the connections with CID = i and CID = j to use the IPv4 CS. No PHS. Overlapping classifiers, Ci and Cj, defined for CID = i and CID = j with differing priority.</p> <p>Stimulus: IUT receives IP packets matching classifiers Ci, Cj and (Ci AND Cj) on its external interface.</p> <p>Expected behavior: Packets matching classifier Ci but not Cj are transmitted on CID = i. Packets matching classifier Cj but not Ci are transmitted on CID = j. Packets matching both Ci and Cj are transported on the connection associated with the higher priority classifier.</p> <p>Note: Test with different classifiers with different priorities. Test all supported IPv4 classification parameters.</p>

Table 115 — Classification (continued)

TP/SS/PCS/CLS/CA-009	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.5, IEEE Std 802.16/Conformance01-2003, Table A.6. Initial condition: IUT has completed DSA transaction assigning the connections with CID = i and CID = j to use the IPv6 CS. No PHS. Overlapping classifiers, Ci and Cj, defined for CID = i and CID = j with differing priority Stimulus: IUT receives IP packets matching classifiers Ci, Cj and (Ci AND Cj) on its external interface. Expected behavior: Packets matching classifier Ci but not Cj are transmitted on CID = i. Packets matching classifier Cj but not Ci are transmitted on CID = j. Packets matching both Ci and Cj are transported on the connection associated with the higher priority classifier. Note: Test with different classifiers with different priorities. Test all supported IPv6 classification parameters.</p>
TP/SS/PCS/CLS/CA-010	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.5, IEEE Std 802.16/Conformance01-2003, Table A.8. Initial condition: IUT has completed DSA transaction assigning the connections with CID = i and CID = j to use the Ethernet CS. No PHS. Overlapping classifiers, Ci and Cj, defined for CID = i and CID = j with differing priority Stimulus: IUT receives Ethernet packets matching classifiers Ci, Cj and (Ci AND Cj) on its external interface. Expected behavior: Packets matching classifier Ci but not Cj are transmitted on CID = i. Packets matching classifier Cj but not Ci are transmitted on CID = j. Packets matching both Ci and Cj are transported on the connection associated with the higher priority classifier. Note: Test with different classifiers with different priorities. Test all supported Ethernet classification parameters.</p>
TP/SS/PCS/CLS/CA-011	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.5, IEEE Std 802.16/Conformance01-2003, Table A.8. Initial condition: IUT has completed DSA transaction assigning the connections with CID = i and CID = j to use the VLAN CS. No PHS. Overlapping classifiers, Ci and Cj, defined for CID = i and CID = j with differing priority Stimulus: IUT receives VLAN tagged Ethernet packets matching classifiers Ci, Cj and (Ci AND Cj) on its external interface. Expected behavior: Packets matching classifier Ci but not Cj are transmitted on CID = i. Packets matching classifier Cj but not Ci are transmitted on CID = j. Packets matching both Ci and Cj are transported on the connection associated with the higher priority classifier. Note: Test with different classifiers with different priorities. Test all supported Ethernet and VLAN classification parameters.</p>
TP/SS/PCS/CLS/CA-012	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.5, IEEE Std 802.16-2001/Conformance01-2003, Table A.6, IEEE Std 802.16/Conformance01-2003, Table A.7. Initial condition: IUT has completed DSA transaction assigning the connections with CID = i and CID = j to use the IPv4 over Ethernet CS. No PHS. Overlapping classifiers, Ci and Cj, defined for CID = i and CID = j with differing priority Stimulus: IUT receives packets matching classifiers Ci, Cj and (Ci AND Cj) on its external interface. Expected behavior: Packets matching classifier Ci but not Cj are transmitted on CID = i. Packets matching classifier Cj but not Ci are transmitted on CID = j. Packets matching both Ci and Cj are transported on the connection associated with the higher priority classifier. Note: Test with different classifiers with different priorities. Test all supported Ethernet and IPv4 classification parameters.</p>
TP/SS/PCS/CLS/CA-013	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.5, IEEE Std 802.16/Conformance01-2003, Table A.6, IEEE Std 802.16/Conformance01-2003, Table A.7. Initial condition: IUT has completed DSA transaction assigning the connections with CID = i and CID = j to use the IPv6 over Ethernet CS. No PHS. Overlapping classifiers, Ci and Cj, defined for CID = i and CID = j with differing priority Stimulus: IUT receives packets matching classifiers Ci, Cj and (Ci AND Cj) on its external interface. Expected behavior: Packets matching classifier Ci but not Cj are transmitted on CID = i. Packets matching classifier Cj but not Ci are transmitted on CID = j. Packets matching both Ci and Cj are transported on the connection associated with the higher priority classifier. Note: Test with different classifiers with different priorities. Test all supported Ethernet and IPv6 classification parameters.</p>

Table 115 — Classification (continued)

TP/SS/PCS/CLS/CA-014	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.5, IEEE Std 802.16/Conformance01-2003, Table A.6, IEEE Std 802.16/Conformance01-2003, Table A.8.</p> <p>Initial condition: IUT has completed DSA transaction assigning the connections with CID = i and CID = j to use the IPv4 over VLAN CS. No PHS. Overlapping classifiers, Ci and Cj, defined for CID = i and CID = j with differing priority</p> <p>Stimulus: IUT receives packets matching classifiers Ci, Cj and (Ci AND Cj) on its external interface.</p> <p>Expected behavior: Packets matching classifier Ci but not Cj are transmitted on CID = i. Packets matching classifier Cj but not Ci are transmitted on CID = j. Packets matching both Ci and Cj are transported on the connection associated with the higher priority classifier.</p> <p>Note: Test with different classifiers with different priorities. Test all supported Ethernet, VLAN and IPv4 classification parameters.</p>
TP/SS/PCS/CLS/CA-015	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.5, IEEE Std 802.16/Conformance01-2003, Table A.6, IEEE Std 802.16/Conformance01-2003, Table A.8.</p> <p>Initial condition: IUT has completed DSA transaction assigning the connections with CID = i and CID = j to use the IPv6 over VLAN CS. No PHS. Overlapping classifiers, Ci and Cj, defined for CID = i and CID = j with differing priority</p> <p>Stimulus: IUT receives packets matching classifiers Ci, Cj and (Ci AND Cj) on its external interface.</p> <p>Expected behavior: Packets matching classifier Ci but not Cj are transmitted on CID = i. Packets matching classifier Cj but not Ci are transmitted on CID = j. Packets matching both Ci and Cj are transported on the connection associated with the higher priority classifier.</p> <p>Note: Test with different classifiers with different priorities. Test all supported Ethernet, VLAN and IPv6 classification parameters.</p>

5.2.14.2.2 Valid behavior**Table 116 — Classification – Valid Behavior**

TP/SS/PCS/CLS/BV-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.5.</p> <p>Initial condition: IUT has completed DSA transaction assigning the at least one connection to use one of the packet CS. No PHS. At least one non-overlapping classifier defined for this connection. No other user connections or classifiers defined.</p> <p>Stimulus: IUT receives packets that don't match any existing classifier on its external interface.</p> <p>Expected behavior: Packets are discarded.</p> <p>Note: Test with different classifiers. Test all supported classification parameters and supported CSs.</p>
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5.2.14.2.3 Invalid behavior**Table 117 — Classification – Invalid Behavior**

TP/SS/PCS/CLS/BI-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.5.</p> <p>Initial condition: IUT has completed DSA transaction assigning the at least one connection to use one of the packet CS.</p> <p>Stimulus: IUT receives invalid packets on its external interface.</p> <p>Expected behavior: Packets are discarded.</p> <p>Note: Test for the different flavors of the Packet CS.</p>
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5.2.14.2.4 Inopportune behavior

Currently no BO category tests have been defined for the SS related to Classification.

5.2.14.2.5 Timer

Currently no TI category tests have been defined for the SS related to Classification.

5.2.14.2.6 Message Format

There are no MAC management messages involved in the Classification tests.

5.2.14.3 Classifier DSx Signaling

5.2.14.3.1 Capabilities

Table 118 — Classifier DSx Signaling

TP/SS/PCS/CDS/CA-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.35, IEEE Std 802.16/Conformance01-2003, Table A.65, IEEE Std 802.16/Conformance01-2003, Table A.66. Initial condition: IUT has transmitted TFTP-CPLT to BS. The number of classifiers established in IUT < Maximum Number of Classifiers reported in the REG-RSP. Stimulus: IUT receives DSA-REQ establishing a bi-directional connection for a packet service and associating a valid classifier with the connection Expected behavior: IUT sends DSA-RSP and Note: Test for the different flavors of the Packet CS.</p>
TP/SS/PCS/CDS/CA-001	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.26, IEEE Std 802.16/Conformance01-2003, Table A.35, IEEE Std 802.16/Conformance01-2003, Table A.65, IEEE Std 802.16/Conformance01-2003, Table A.66. Initial condition: IUT has transmitted TFTP-CPLT to BS. IUT has an active connection with classifiers. The number of classifiers < Maximum Number of Classifiers reported in the REG-RSP. Stimulus: IUT receives DSC-REQ containing the Classifier-Add parameter requesting a new classifier to be associated with the connection. Expected behavior: IUT completes DSC exchange successfully and packets are classified correctly. Note: Test for the different flavors of the Packet CS.</p>
TP/SS/PCS/CDS/CA-002	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.37, IEEE Std 802.16/Conformance01-2003, Table A.72, IEEE Std 802.16/Conformance01-2003, Table A.73. Initial condition: IUT has transmitted TFTP-CPLT to BS. IUT has an active connection with CID = i and the associated classifier Ci. Stimulus: IUT receives DSC-REQ with the action code Classifier Replace requesting that Ci be replaced with a new classifier Cj. Expected behavior: IUT completes DSC exchange successfully and packets matching Cj are transmitted of the connection with CID = i. Note: Test for the different flavors of the Packet CS.</p>
TP/SS/PCS/CDS/CA-003	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.37, IEEE Std 802.16/Conformance01-2003, Table A.72, IEEE Std 802.16/Conformance01-2003, Table A.73. Initial condition: IUT has transmitted TFTP-CPLT to BS. IUT has an active connection, CID = i, with one non- default classifier, Ci. IUT has another active connection, CID = j, with the default classifier (matching every packet). Stimulus: IUT receives DSC-REQ requesting the deletion of Ci. Expected behavior: IUT completes DSC exchange successfully and packets matching the original Ci are transmitted over connection with CID = j. Note: Test for the different flavors of the Packet CS.</p>

5.2.14.3.2 Valid behavior

Currently no BV category tests have been defined for the SS related to Classifier DSx Signaling.

5.2.14.3.3 Invalid behavior

Currently no BI category tests have been defined for the SS related to Classifier DSx Signaling.

5.2.14.3.4 Inopportune behavior**Table 119 — Classifier DSx signaling, Inopportune Behavior**

TP/SS/PCS/CDS/BO-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.35, IEEE Std 802.16/Conformance01-2003, Table A.65, IEEE Std 802.16/Conformance01-2003, Table A.66. Initial condition: IUT has transmitted TFTP-CPLT to BS. Stimulus: IUT receives DSA-REQ establishing a downlink connection for a packet service and associating a classifier with the connection. Expected behavior: IUT sends DSA-RSP reporting an error. Note: Test for the different flavors of the Packet CS.
TP/SS/PCS/CDS/BO-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.35, IEEE Std 802.16/Conformance01-2003, Table A.65, IEEE Std 802.16/Conformance01-2003, Table A.66. Initial condition: IUT has transmitted TFTP-CPLT to BS. Stimulus: IUT receives DSA-REQ establishing an uplink or bidirectional connection for a packet service and requesting a classifier be associated with the connection. Classifier includes parameters not supported by IUT. Expected behavior: IUT sends DSA-RSP reporting an error. Note: Test for the different flavors of the Packet CS.
TP/SS/PCS/CDS/BO-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.26, IEEE Std 802.16/Conformance01-2003, Table A.35, IEEE Std 802.16/Conformance01-2003, Table A.65, IEEE Std 802.16/Conformance01-2003, Table A.66. Initial condition: IUT has transmitted TFTP-CPLT to BS. IUT has active connection(s) with classifiers. The number of classifiers equals Maximum Number of Classifiers reported in the REG-RSP. Stimulus: IUT receives DSA-REQ establishing an uplink or bidirectional connection for a packet service and requesting a new classifier to be associated with the connection. Expected behavior: IUT sends DSA-RSP reporting an error. Note: Test for the different flavors of the Packet CS.
TP/SS/PCS/CDS/BO-003	Reference: IEEE Std 802.16/Conformance01-2003, Table A.26, IEEE Std 802.16/Conformance01-2003, Table A.37, IEEE Std 802.16/Conformance01-2003, Table A.72, IEEE Std 802.16/Conformance01-2003, Table A.73. Initial condition: IUT has transmitted TFTP-CPLT to BS. IUT has active connection(s) with classifiers. The number of classifiers equals Maximum Number of Classifiers reported in the REG-RSP. Stimulus: IUT receives DSC-REQ requesting a new classifier to be associated (Classifier-Add) with the connection. Expected behavior: IUT sends DSC-RSP reporting an error. Note: Test for the different flavors of the Packet CS.

5.2.14.3.5 Timer

The tests defined in 5.2.5.1.5 and 5.2.5.2.5 apply.

5.2.14.3.6 Message Formats

For all TP/SS/PCS/CDS tests ensure that messages transmitted by SS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.2.14.4 Payload Header Suppression

5.2.14.4.1 Capabilities

Table 120 — Payload Header Suppression

TP/SS/PCS/PHS/CA-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.5/Item 7 Initial condition: The SS has completed a dynamic service exchange setting up payload header suppression with no verification. No other transport connections active. All packets match the classifier. Stimulus: The SS receives from an external port packets. Expected behavior: The SS will transmit over the air the packet with headers suppressed correctly Note: Test for all supported protocols. Test with different PHSF and PHSM and PHSS.</p>
TP/SS/PCS/PHS/CA-001	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.5/Item 7 Initial condition: The SS has completed a dynamic service exchange setting up payload header suppression with verification. No other transport connections active. All packets match the classifier. Stimulus: The SS receives from an external port packets that fulfill $PacketByte[i] \oplus PHSF[i] = 0$ for every byte to be suppressed. Expected behavior: The SS will transmit over the air the packet with headers suppressed correctly Note: Test for all supported protocols. Test with different PHSF and PHSM and PHSS.</p>
TP/SS/PCS/PHS/CA-002	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.5/Item 7 Initial condition: The SS has completed a dynamic service exchange setting up payload header suppression with verification. No other transport connections active. All packets match the classifier. Stimulus: The SS receives from an external port packets some of which don't fulfill for every byte to be suppressed $PacketByte[i] \text{ XOR } PHSF[i] = 0$ Expected behavior: The SS will transmit packets that fulfill above condition with headers suppressed and the ones that don't fulfill above criteria unsuppressed. Note: Test for all supported protocols. Test with different PHSF and PHSM and PHSS.</p>
TP/SS/PCS/PHS/CA-003	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.5/Item 7 Initial condition: The SS has completed a dynamic service exchange setting up payload header suppression with $PHSI = j, j > 0$. Stimulus: The SS receives MAC PDU with $PHSI = j$ on the correct connection. Expected behavior: SS will deliver packet on correct interface with headers correctly restored. Note: Test for all supported protocols. Test with different PHSF and PHSM and PHSS.</p>
TP/SS/PCS/PHS/CA-004	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.5/Item 7. Initial condition: The SS has completed a dynamic service exchange setting up payload header suppression with $PHSI = j, j > 0$. Stimulus: The SS receives MAC PDU with $PHSI = 0$ on that connection. Expected behavior: SS will deliver packet on correct interface without restoring headers. Note: Test for all supported protocols. Test with different PHSF and PHSM and PHSS.</p>

5.2.14.4.2 Valid Behavior

Table 121 — Payload Header Suppression – Valid Behavior

TP/SS/PCS/PHS/BV-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.5/Item 7 Initial condition: The SS has completed a dynamic service exchange setting up payload header suppression with $PHSI = j, j > 0$ on CID = A. The SS has completed a dynamic service exchange setting up payload header suppression with $PHSI = j, j > 0$ on CID = B. Stimulus: The SS receives MAC PDUs with $PHSI = j$ on both connections. Expected behavior: SS will deliver packets on correct interface(s) with headers correctly restored.</p>
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5.2.14.4.3 Invalid Behavior

Currently no BI category tests have been defined for the SS related to Payload Header Suppression.

5.2.14.4.4 Inopportune Behavior

Table 122 — Payload Header Suppression – Inopportune Behavior

TP/SS/PCS/PHS/BO-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.5/Item 7 Initial condition: The SS has completed a dynamic service exchange setting up payload header suppression with PHSI = j, j > 0. The SS has another connection in the active state. Stimulus: The SS receives MAC PDU with PHSI = j on a connection not associated with a PHSI = j. Expected behavior: SS will silently discard the packet.
TP/SS/PCS/PHS/BO-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.5/Item 7: Initial condition: The SS has completed a dynamic service exchange setting up payload header suppression with PHSI = j, j > 0. The SS has another connection in the active state. Stimulus: The SS receives MAC PDU with incorrect (unknown) PHSI. Expected behavior: SS will silently discard the packet.

5.2.14.4.5 Timer

Currently no TI category tests have been defined for the SS related to Payload Header Suppression.

5.2.14.4.6 Message Formats

Check that the DSx messages involved in messages involved in TP/SS/PCS/PHS tests have the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.3 Test purposes for BS

5.3.1 Channel Descriptors and Maps – BS

5.3.1.1 Map and Frame Structure

5.3.1.1.1 Capabilities

Table 123 — Map and Frame Structure

TP/BS/CDM/MAP/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.140/Item 6. Initial condition. BS operational. Stimulus: None. Expected behavior: Check that BS transmits properly formatted DL-MAP message every frame immediately following preamble.
TP/BS/CDM/MAP/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.140/Item 7 Initial condition. BS operational Stimulus: None. Expected behavior: Check that BS transmits properly formatted UL-MAP message every frame immediately following the DL-MAP.

5.3.1.1.2 Valid Behavior

Table 124 — Map and Frame Structure – Valid Behavior

TP/BS/CDM/MAP/BV-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.140/Items 1 and 2. Initial condition: BS operational, SS operational. UL Maps transmitted using minimum relevance achievable (within spec limit) by BS. Stimulus: BS transmitting UL-MAP with grant to SS. Expected behavior: Check that BS properly receives data from the SS.
TP/BS/CDM/MAP/BV-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.140/Item 3 or 4. Initial condition: BS operational, SS operational. UL Maps transmitted using maximum relevance achievable (within spec limit) by BS. Stimulus: BS transmitting UL-MAP with grant to SS. Expected behavior: Check that BS properly receives data from the SS.
TP/BS/CDM/MAP/BV-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.244/Item 1. Initial condition: BS operational, service established between test SS and BS. Stimulus: Test SS sends MAC PDUs spread across multiple Transmission CS PDUs. Expected behavior: BS correctly receives data.
TP/BS/CDM/MAP/BV-003	Reference: IEEE Std 802.16/Conformance01-2003, Table A.244/Item 1. Initial condition: BS operational, service established between test SS and BS. Stimulus: Test SS sends some MAC PDUs starting in the middle of Transmission CS PDUs. Expected behavior: BS correctly receives data.
TP/BS/CDM/MAP/BV-004	Reference: IEEE Std 802.16/Conformance01-2003, Table A.243/Item 2. Initial condition: BS operational, service established between test SS and BS. Packing off. Stimulus: BS receives packets from backhaul ports at a rate sufficient to cause multiple MAC PDUs per DL subframe. Expected behavior: BS correctly transmits data with proper Transmission CS PDU structure.
TP/BS/CDM/MAP/BV-005	Reference: IEEE Std 802.16/Conformance01-2003, Table A.140/Item 8. Initial condition: BS operational. Service established between BS and at least three SSs. Each SS has negotiated a different DL PHY mode. Stimulus: DL data arrives at the BS for the SSs at a rate sufficient to cause data to be available for all three SSs in the same DL subframe. Expected behavior: BS creates correctly structured Frame Control Header and DL subframe containing multiple DL PHY modes.
TP/BS/CDM/MAP/BV-006	Reference: IEEE Std 802.16/Conformance01-2003, Table A.140/Item 5. Initial condition: BS operational in TDD system, service established between test SS and BS. Stimulus: TDD split changed via network management or some other vendor specific mechanism. Expected behavior: BS transmits DL and UL-MAPs that vary the end of the DL subframe and the start of the UL subframe, varying the placement of DL data to the SS and UL allocations for the SS (without violating the half-duplex nature of the TDD SS). BS correctly receives UL data.
TP/BS/CDM/MAP/BV-007	Reference: IEEE Std 802.16/Conformance01-2003, Table A.244/Items 4 and 5. Initial condition: A connection is setup between the BS and three SSs. The test NMS requests the BS to setup an uplink frame with three consecutive bursts, each burst containing information from one SS and each bursts having different burst parameters. Stimulus: The test SSs transmit their data by inserting erroneous bytes in the codewords, where t is the Reed-Solomon error correcting capability chosen for the burst. Expected behavior: The BS is able to receive the data correctly from all SSs.

5.3.1.1.3 Invalid Behavior**Table 125 — Map and Frame Structure – Invalid Behavior**

TP/BS/CDM/MAP/BI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.244/Item 1. Initial condition: BS operational, service established between test SS and BS. Test SS request at least 2 codewords of bandwidth each PHY frame. The PHY mode parameters are $t = 8$, information block length = 239, no BCC inner code. The SS sends MAC PDUs of length 64 bytes. Stimulus: Test SS injects at least 9 bytes of errors into the first codeword of the burst. Expected behavior: BS correctly receives the whole MAC PDUs following the erroneous Transmission CS PDU.
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5.3.1.1.4 Inopportune Behavior

Currently no BO category tests have been defined for the BS related to Map and Frame Structure.

5.3.1.1.5 Timer

Currently no TI category tests have been defined for the BS related to Map and Frame Structure.

5.3.1.1.6 Message Formats

For all TP/BS/CDM/MAP tests ensure that messages transmitted by the BS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.3.1.2 Channel Descriptors**5.3.1.2.1 Capabilities****Table 126 — Channel Descriptors**

TP/BS/CDM/CD/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.143/Item 1, IEEE Std 802.16/Conformance01-2003, Table A.168, IEEE Std 802.16/Conformance01-2003, Table A.169, IEEE Std 802.16/Conformance01-2003, Table A.223, IEEE Std 802.16/Conformance01-2003, Table A.224. Initial condition: BS operational. Stimulus: Passage of time. Expected behavior: Check that BS transmits a properly formatted DCD message with an interval of less than 10 s.
TP/BS/CDM/CD/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.144/Item 1, IEEE Std 802.16/Conformance01-2003, Table A.166, IEEE Std 802.16/Conformance01-2003, Table A.167, IEEE Std 802.16/Conformance01-2003, Table A.221, IEEE Std 802.16/Conformance01-2003, Table A.222. Initial condition: BS operational. Stimulus: Passage of time. Expected behavior: Check that BS transmits a properly formatted UCD message with an interval of less than 10 s.

5.3.1.2.2 Valid Behavior

Currently no BV category tests have been defined for the BS related to Channel Descriptors.

5.3.1.2.3 Invalid Behavior

Currently no BI category tests have been defined for the BS related to Channel Descriptors.

5.3.1.2.4 Inopportune Behavior

Currently no BO category tests have been defined for the BS related to Channel Descriptors.

5.3.1.2.5 Timer

Currently no TI category tests have been defined for the BS related to Channel Descriptors.

5.3.1.2.6 Message Formats

For all TP/BS/CDM/CD tests ensure that messages transmitted by the BS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.3.1.3 Channel Descriptor Change

5.3.1.3.1 Capabilities

Table 127 — Channel Descriptor Change

TP/BS/CDM/CDC/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.152/ Items 1, 4, 5, and 7. Initial condition: BS operational. Stimulus: Via some management operation, the BS is commanded to change the current set of downlink burst profiles. Expected behavior: Check that BS sends DCD with incremental Configuration Change Count at least twice before sending DL-MAP with the corresponding DCD Count.
TP/BS/CDM/CDC/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.152/Items 1, 2, 3, and 6. Initial condition: BS operational. Stimulus: Via some management operation, the BS is commanded to change the current set of uplink burst profiles. Expected behavior: Check that BS sends UCD with incremental Configuration Change Count at least twice before sending UL-MAP with the corresponding UCD Count
TP/BS/CDM/CDC/CA-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.152/Item 6 Initial condition: BS has sent UCD with incremental Configuration Change Count at least twice before. Stimulus: BS sends UL-MAP with UCD Count corresponding to the new Configuration Change Count with grants. This UL-MAP shall have grants using each burst profile. Expected behavior: BS receives correctly data using the new set of burst profiles.
TP/BS/CDM/CDC/CA-003	Reference: IEEE Std 802.16/Conformance01-2003, Table A.152/Item 7. Initial condition: BS has sent DCD with incremental Configuration Change Count at least twice before. Stimulus: BS sends DL-MAP with DCD Count corresponding to the new Configuration Change Count. BS is provoked to send data using each burst profile. Expected behavior: BS uses the new set of burst profiles for its transmissions.
TP/BS/CDM/CDC/CA-004	Reference: IEEE Std 802.16/Conformance01-2003, Table A.152/Items1 and 3. Initial condition: BS has sent UCD with incremental Configuration Change Count at least twice before. Stimulus: BS sends UL-MAP with UCD Count corresponding to the old Configuration Change Count with grants. This UL-MAP shall have grants using each burst profile. Expected behavior: BS receives correctly data using the old set of burst profiles.
TP/BS/CDM/CDC/CA-005	Reference: IEEE Std 802.16/Conformance01-2003, Table A.152/Items1 and 5. Initial condition: BS has sent DCD with incremental Configuration Change Count at least twice before. Stimulus: BS sends DL-MAP with DCD Count corresponding to the old Configuration Change Count. BS is provoked to send data using each burst profile. Expected behavior: BS uses the old set of burst profiles for its transmissions.

5.3.1.3.2 Valid Behavior

Currently no BV category tests have been defined for the BS related to Channel Descriptor Change.

5.3.1.3.3 Invalid Behavior

Currently no BI category tests have been defined for the BS related to Channel Descriptor Change.

5.3.1.3.4 Inopportune Behavior

Currently no BO category tests have been defined for the BS related to Channel Descriptor Change.

5.3.1.3.5 Timer

Currently no TI category tests have been defined for the BS related to Channel Descriptor Change.

5.3.1.3.6 Message Formats

For all TP/BS/CDM/CDC tests ensure that messages transmitted by the BS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.3.2 Radio Link Control – BS**5.3.2.1 Initial Ranging****5.3.2.1.1 Capabilities****Table 128 — Initial Ranging**

TP/BS/RLC/IRNG/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.145/Item 1. Initial condition: BS operational. Stimulus: BS is stimulated to allocate Initial Maintenance IEs. Expected behavior: BS allocates Initial Maintenance IEs.
TP/BS/RLC/IRNG/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.145/Items 2 and 3. Initial condition: BS has allocated Initial Maintenance IEs. Stimulus: IUT receives a RNG-REQ in one of the allocated Initial Maintenance slots. Expected behavior: BS determines correct timing and power adjustments, allocates Basic and Primary CID and transmits a properly formatted RNG-RSP, with status = Continue, and starts issuing Station Maintenance opportunities.
TP/BS/RLC/IRNG/CA-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.145/Item 3. Initial condition: BS has allocated Station Maintenance IEs for a specific SS. Stimulus: IUT receives a RNG-REQ in allocated Station Maintenance slots, with timing and power adjusted within operational tolerances. Expected behavior: BS transmits a properly formatted RNG-RSP, with status = Success, and starts issuing Data Grant opportunities for the SS.

5.3.2.1.2 Valid Behavior**Table 129 — Initial Ranging – Valid Behavior**

TP/BS/RLC/IRNG/BV-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.145/Item 1. Initial condition: BS has sent RNG-RSP in response to initial RNG-REQ. Stimulus: BS receives again initial RNG-REQ from SS to which it already sent a RNG-RSP. Expected behavior: BS retransmits RNG-RSP (with updated power adjust if necessary).
TP/BS/RLC/IRNG/BV-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.145. Initial condition: SS at max Tx power. Stimulus: IUT receives RNG-REQ message indicating power at maximum level. RSL at BS drops further. Expected behavior: BS refrains from requesting SS to increase power until after SS has been asked to reduce power.

Table 129 — Initial Ranging – Valid Behavior (continued)

TP/BS/RLC/IRNG/BV-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.145. Initial condition: SS at min Tx power. Stimulus: IUT receives RNG-REQ message indicating power at minimum level. RSL at BS drops further. Expected behavior: BS refrains from requesting SS to increase power until after SS has been asked to reduce power.
TP/BS/RLC/IRNG/BV-003	Reference: IEEE Std 802.16/Conformance01-2003, Table A.145/ Items 3 and 5. Initial condition: IUT is allocating initial maintenance or station maintenance IEs. Stimulus: BS receives RNG-REQ requesting change of DL PHY Mode to a mode the SS is allowed to operate at (knowledge via network management since no SBC at this point.) Expected behavior: BS sends a RNG-RSP message confirming the change.
TP/BS/RLC/IRNG/BV-004	Reference: IEEE Std 802.16/Conformance01-2003, Table A.145/Items 3 and 5. Initial condition: IUT is allocating initial maintenance or station maintenance IEs. Stimulus: BS receives RNG-REQ requesting change of DL PHY Mode to a mode the SS is not allowed to operate at (knowledge via network management since no SBC at this point.) Expected behavior: BS sends a RNG-RSP message specifying to continue using the original PHY mode.
TP/BS/RLC/IRNG/BV-005	Reference: IEEE Std 802.16/Conformance01-2003, Table A.145/Items 3 and 4. Initial condition: IUT is allocating initial maintenance or station maintenance IEs. Stimulus: BS receives RNG-REQ for an SS that is to operate on another channel (knowledge via network management.) Expected behavior: BS sends a RNG-RSP message specifying status = abort and specifying the new downlink frequency.
TP/BS/RLC/IRNG/BV-006	Reference: IEEE Std 802.16/Conformance01-2003, Table A.145/Item 3. Initial condition: IUT is allocating initial maintenance or station maintenance IEs. Stimulus: BS receives RNG-REQ for an SS that is not allowed (knowledge via network management.) Expected behavior: BS sends a RNG-RSP message specifying status = abort but not specifying a new downlink frequency.
TP/BS/RLC/IRNG/BV-007	Reference: IEEE Std 802.16/Conformance01-2003, Table A.145/Items 3 and 6. Initial condition: BS has allocated Station Maintenance IEs for a specific SS. Stimulus: IUT receives a RNG-REQ in allocated Station Maintenance slots, with timing or power still outside operational tolerances. Expected behavior: BS transmits a properly formatted RNG-RSP, with status = Continue, and the necessary timing and power adjustments, and continues issuing Station Maintenance opportunities.

5.3.2.1.3 Invalid Behavior

Table 130 — Initial Ranging – Invalid Behavior

TP/BS/RLC/IRNGMF/BI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.145, IEEE Std 802.16/Conformance01-2003, Table A.172. Initial condition: BS has allocated Initial Maintenance IEs. Stimulus: BS has received an improperly formatted RNG-REQ in an initial ranging slot with CID = 0 x 0000. Expected behavior: BS ignores message and continues operation.
TP/BS/RLC/IRNGMF/BI-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.145, IEEE Std 802.16/Conformance01-2003, Table A.172. Initial condition: BS has allocated Station Maintenance IEs. Stimulus: BS has received an improperly formatted RNG-REQ in a Station ranging slot with CID = Basic CID. Expected behavior: BS ignores message and continues operation.
TP/BS/RLC/IRNG/BI-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.145, IEEE Std 802.16/Conformance01-2003, Table A.172. Initial condition: BS has allocated invited Initial Maintenance IEs. Stimulus: BS receives RNG-REQ message with incorrect CID in allocated slot. Expected behavior: IUT ignores RNG-REQ.

5.3.2.1.4 Inopportune Behavior**Table 131 — Initial Ranging – Inopportune Behavior**

TP/BS/RLC/IRNG/BO-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.145. Initial condition: BS has allocated Initial Maintenance IEs. Stimulus: BS receives a message other than RNG-REQ message in Initial Maintenance slot. Expected behavior: IUT ignores message.
TP/BS/RLC/IRNG/BO-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.145. Initial condition: BS has allocated Data Grant IEs. Stimulus: BS receives a RNG-REQ message in a Data Grant interval, when the RNG-REQ was not in response to an unsolicited RNG-RSP with a change of DL PHY Mode. Expected behavior: IUT may ignore the message, or may use the requested DL PHY Mode in place of a DBPC-REQ.

5.3.2.1.5 Timer**Table 132 — Initial Ranging – Timer**

TP/BS/RLC/IRNG/TI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.217/Item 21. Initial condition: BS has transmitted a RNG-RSP with status = success to an SS and has allocated Data Grants to the SS. Stimulus: T9 expires without receipt of an SBC-REQ from the SS. Expected behavior: IUT resends the RNG-RSP.
TP/BS/RLC/IRNG/TI-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.217/Item 11. Initial condition: BS has transmitted a RNG-RSP with status = continue to an SS and has allocated Station Maintenance IEs to the SS. Stimulus: “SS ranging response processing time” expires without receipt of a RNG-REQ from the SS. Expected behavior: IUT resends the RNG-RSP.

5.3.2.1.6 Message Formats

For all TP/BS/RLC/IRNG tests ensure that messages transmitted by the BS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.3.2.2 Periodic Ranging

5.3.2.2.1 Capabilities

Table 133 — Periodic Ranging

TP/BS/RLC/PRNG/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.151/Item 2, IEEE Std 802.16/Conformance01-2003, Table A.246/Item 1. Initial condition: SS registered and passing data. Stimulus: SS sends normal UL traffic with wrong timing offset. Expected behavior: BS detects timing adjustment required. BS correctly measures and calculates timing offset requirement. Sends unsolicited RNG-RSP message(s) with status = success or continue to adjust timing offset.
TP/BS/RLC/PRNG/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.151/Item 2, IEEE Std 802.16/Conformance01-2003, Table A.246/Item 3. Initial condition: SS registered and passing data. Stimulus: BS receives signal with a power outside the allowed envelope. Expected behavior: BS sends RNG-RSP message(s) with status = success or continue to SS to change power until desired level met.
TP/BS/RLC/PRNG/CA-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.151/Item 3. Initial condition: SS registered and passing data. Stimulus: BS detects threshold crossing for UL PHY Mode. Expected behavior: BS sends RNG-RSP message with status = continue to SS to change UL PHY mode.

5.3.2.2.2 Valid Behavior

Table 134 — Periodic Ranging – Valid Behavior

TP/SS/RLC/PRNG/BV-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.151/Items 1 and 8, IEEE Std 802.16/Conformance01-2003, Table A.246/Items 1 and 3. Initial condition: SS registered. Stimulus: BS determines (TBD) SS message parameters are out of tolerance. Expected behavior: BS issues RNG-RSP with Ranging Status set to 4 to initiate re-ranging.
TP/BS/RLC/PRNG/BV-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.151/Items 1, 7, and 8, IEEE Std 802.16/Conformance01-2003, Table A.246/Item 3. Initial condition: SS has registered and is passing data. IUT has initiated Periodic Ranging by sending a RNG-RSP (continue) to increase power. Stimulus: BS receives RNG-REQ message indicating SS at max power Expected behavior: BS stops sending RNG-RSP messages with request to increase power until it has asked SS to decrease power.
TP/BS/RLC/PRNG/BV-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.151/Items 1, 7, and 8, IEEE Std 802.16/Conformance01-2003, Table A.246/Item 3. Initial condition: SS has registered and is passing data. IUT has initiated Periodic Ranging by sending a RNG-RSP (continue) to decrease power. Stimulus: BS receives RNG-REQ message indicating SS at min power Expected behavior: BS stops sending RNG-RSP messages with request to decrease power until it has asked SS to increase power.
TP/BS/RLC/PRNG/BV-003	Reference: IEEE Std 802.16/Conformance01-2003, Table A.151. Initial condition: IUT has transmitted a RNG-RSP with status = continue. Stimulus: BS receives RNG-REQ message that does not contain a request to change the DL PHY Mode. Changes requested in RNG-RSP have taken effect. Expected behavior: BS sends a RNG-RSP message with status = success.

5.3.2.2.3 Invalid Behavior**Table 135 — Periodic Ranging – Invalid Behavior**

TP/BS/RLC/PRNG/BI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.151, IEEE Std 802.16/Conformance01-2003, Table A.172. Initial condition: SS registered. Stimulus: BS receives invalid RNG-REQ message. Expected behavior: BS ignores the message.
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5.3.2.2.4 Inopportune Behavior**Table 136 — Periodic Ranging – Inopportune Behavior**

TP/BS/RLC/PRNG/BO-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.151. Initial condition: SS registered. No outstanding RNG-RSP with status = continue. Stimulus: BS receives RNG-REQ message in Data Grant allocation. Expected behavior: BS may ignore the message or may honor the DL PHY mode change as if it were a DBPC message.
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5.3.2.2.5 Timer**Table 137 — Periodic Ranging – Timer**

TP/BS/RLC/PRNG/TI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.217/Item 11. Initial condition: SS registered. Outstanding RNG-RSP with status = continue. Stimulus: “SS ranging response processing time” expires without receipt of a RNG-REQ from the SS. Expected behavior: IUT resends the RNG-RSP.
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5.3.2.2.6 Message Formats

For all TP/BS/RLC/PRNG tests ensure that messages transmitted by the BS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.3.2.3 Downlink Burst Profile Management**5.3.2.3.1 Capabilities****Table 138 — Downlink Burst Profile Management**

TP/BS/RLC/DBPC/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.151/Item 5. Initial condition: BS communicating with SS at DIUC n. Stimulus: BS receives DBPC-REQ for more robust DIUC k. Expected behavior: BS sends DBPC-RSP indicating change to DIUC k using DIUC k.
TP/BS/RLC/DBPC/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.151/Item 5. Initial condition: BS communicating with SS at DIUC n. Stimulus: BS receives DBPC-REQ for less robust DIUC k. Expected behavior: BS sends DBPC-RSP indicating change to DIUC k using DIUC n. Check that subsequent DL transmissions utilize DIUC k.

5.3.2.3.2 Valid Behavior

Table 139 — Downlink Burst Profile Management – Valid Behavior

TP/BS/RLC/DBPC/BV-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.151/Item 5. Initial condition: BS communicating with SS at DIUC n. After SBC, SS no longer authorized for DIUC k (vis network management). Stimulus: BS receives DBPC-REQ for less robust DIUC k. Expected behavior: BS sends DBPC-RSP indicating DIUC n.
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5.3.2.3.3 Invalid Behavior

Table 140 — Downlink Burst Profile Management – Invalid Behavior

TP/BS/RLC/DBPC/BI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.146, IEEE Std 802.16/Conformance01-2003, Table A.204. Initial condition: BS communicating with SS at DIUC n. Stimulus: BS receives DBPC-REQ for DIUC k not enabled in SBC exchange. Expected behavior: BS sends DBPC-RSP indication DIUC n.
TP/BS/RLC/DBPC/BI-001	Reference: 802.16-2001/Conformance01-2003, Table A.204. Initial condition: BS communicating with SS at DIUC n. Stimulus: BS receives DBPC-REQ for DIUC k not enabled in UCD message. Expected behavior: BS sends DBPC-RSP indication DIUC n.
TP/BS/RLC/DBPC/BI-002	Reference: 802.16-2001/Conformance01-2003, Table A.204. Initial condition: BS communicating with SS at DIUC n. Stimulus: BS receives invalid format DBPC-REQ message. Expected behavior: BS ignores message.

5.3.2.3.4 Inopportune Behavior

There are no TP/BS/RLC/DBPC/BO tests for the base station.

5.3.2.3.5 Timer

There are no TP/BS/RLC/DBPC/TI tests for the base station.

5.3.2.3.6 Message Formats

For all TP/BS/RLC/DBPC tests ensure that messages transmitted by the BS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.3.2.4 Negotiate Basic**5.3.2.4.1 Capabilities****Table 141 — Negotiate Basic**

TP/BS/RLC/SBC/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.146/Items 1 and 2. Initial condition: Initial ranging done. Stimulus: BS receives SBC-REQ. Expected behavior: IUT determines which capabilities are usable based on capabilities reported and sends a corresponding SBC-RSP.
TP/BS/RLC/SBC/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.146/Items 1 and 2. Initial condition: Initial ranging done. Policies to restrict the use of supported features in place. Stimulus: BS receives SBC-REQ. Expected behavior: BS disables reported capabilities as prescribed by policy and sends a corresponding SBC-RSP.

5.3.2.4.2 Valid Behavior**Table 142 — Negotiate Basic – Valid Behavior**

TP/BS/RLC/SBC/BV-000	Reference: 802.16/Conformance01-2003, Table A.146. Initial condition: BS operational, has sent SBC-RSP to SS. Stimulus: BS receives another SBC-REQ from SS before receiving a REG-REQ from the SS. Expected behavior: Check that IUT silently discards message and continues operation.
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5.3.2.4.3 Invalid Behavior**Table 143 — Negotiate Basic – Invalid Behavior**

TP/BS/RLC/SBC/BI-000	Reference: 802.16-2001/Conformance01-2003, Table A.207. Initial condition: Initial Ranging of SS completes successfully. Stimulus: BS Receives invalid SBC-REQ. Expected behavior: Check that IUT silently discards message and continues operation.
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5.3.2.4.4 Inopportune Behavior**Table 144 — Negotiate Basic – Inopportune Behavior**

TP/BS/RLC/SBC/BO-000	Reference: 802.16/Conformance01-2003, Table A.146. Initial condition: BS operational, has sent SBC-RSP to SS and received REG-REQ from SS. Stimulus: BS receives another SBC-REQ from SS any time after the initial condition. Expected behavior: Check that IUT silently discards message and continues operation.
TP/BS/RLC/SBC/BO-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.146. Initial condition: BS operational. Stimulus: BS receives SBC-REQ from unknown SS. Expected behavior: Check that IUT silently discards message and continues operation.

5.3.2.4.5 Timer

There are no TP/BS/RLC/SBC/TI tests for the base station.

5.3.2.4.6 Message Formats

For all TP/BS/RLC/SBC tests ensure that messages transmitted by the BS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.3.3 Registration, IP Connectivity, and TFTP – BS

5.3.3.1 Registration

5.3.3.1.1 Capabilities

Table 145 — Registration

TP/BS/INI/REG/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.148/Items 1, 2, and 3. Initial condition: BS has sent PKM-RSP:Auth Reply to SS entering the network. Stimulus: BS receives REG-REQ from said SS. Expected behavior: IUT verifies HMAC digest and generates Secondary Management CID. IUT determines which capabilities are enabled based on implemented options and policy. BS sends REG-RSP.
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5.3.3.1.2 Valid Behavior

Table 146 — Registration – Valid Behavior

TP/BS/INI/REG/BV-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.148/Items 1, 2, and 3. Initial condition: BS has sent REG-RSP to SS entering the network, but has not received TFTP-CPLT. Stimulus: BS receives REG-REQ anew from said SS. Expected behavior: IUT verifies HMAC digest and generates Secondary Management CID. IUT determines which capabilities are enabled based on implemented options and policy. BS sends REG-RSP.
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5.3.3.1.3 Invalid Behavior

Table 147 — Registration – Invalid Behavior

TP/BS/INI/REG/BI-000	Reference: IEEE Std 802.16-2001/Conformance01-2003, Table A.162/Item 6, IEEE Std 802.16/Conformance01-2003, Table A.174/Item 3 Initial condition: SS has completed authentication. Stimulus: BS receives REG-REQ with invalid HMAC. Expected behavior: IUT sends REG-RSP with Response Authentication Failure.
TP/BS/INI/REG/BI-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.174. Initial condition: SS has completed authentication. Stimulus: BS has receives invalid but correctly authenticated REG-REQ. Expected behavior: IUT silently discards message and continues operation.

5.3.3.1.4 Inopportune Behavior**Table 148 — Registration – Inopportune Behavior**

TP/BS/INI/REG/BO-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.148. Initial condition: BS has already received a TFTP-CPLT message from the SS. Stimulus: BS receives REG-REQ from Operational SS. Expected behavior: IUT discards message and continues operation.
TP/BS/INI/REG/BO-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.142/Items 5 and 6, IEEE Std 802.16/Conformance01-2003, Table A.148. Initial condition: SS entering network. Stimulus: BS receives REG-REQ from SS that has not completed Authentication and Authorization. Expected behavior: IUT discards message and continues operation.

5.3.3.1.5 Timer

Currently no TI category tests have been defined for the BS related to Registration.

5.3.3.1.6 Message Formats

For all TP/BS/INI/REG tests ensure that messages transmitted by the BS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.3.3.2 IP Connectivity**5.3.3.2.1 Capabilities****Table 149 — IP Connectivity**

TP/BS/INI/IPC/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.149/Item 2. Initial condition: SS has completed registration. Stimulus: SS sends DHCPDISCOVER on Secondary Management Connection. Expected behavior: BS implements DHCP server functionality correctly.
TP/BS/INI/IPC/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.149/Item 4. Initial condition: SS has completed registration. Stimulus: SS sends ToD request on Secondary Management Connection Expected behavior: BS implements Time Protocol server functionality correctly.
TP/BS/INI/IPC/CA-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.149/Item 6. Initial condition: SS has completed registration. Stimulus: SS Initiates TFTP of configuration file on Secondary Management Connection Expected behavior: BS implements TFTP server functionality correctly.
TP/BS/INI/IPC/CA-003	Reference: IEEE Std 802.16/Conformance01-2003, Table A.149/Items 1, 3, and 5. Initial condition: SS has completed registration. Stimulus: IP traffic received on Secondary Management Connection Expected behavior: IUT routes packets to external interface.
TP/BS/INI/IPC/CA-004	Reference: IEEE Std 802.16/Conformance01-2003, Table A.149, IEEE Std 802.16/Conformance01-2003, Table A.212, IEEE Std 802.16/ Conformance01-2003, Table A.213. Initial condition: SS has established IP connectivity over secondary management connection. Stimulus: BS receives TFTP-CPLT message. Expected results: BS responds with TFTP-RSP message.

5.3.3.2.2 Valid Behavior

No test purposes are currently defined.

5.3.3.2.3 Invalid Behavior

Table 150 — IP Connectivity – Invalid Behavior

TP/BS/INI/IPC/BI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.212. Initial condition: BS operational. Stimulus: BS receives incorrect TFTP-CPLT. Expected behavior: IUT silently discards message.
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5.3.3.2.4 Inopportune Behavior

Table 151 — IP Connectivity – Inopportune Behavior

TP/BS/INI/IPC/BO-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.149. Initial condition: BS in normal operation Stimulus: Operational SS sends TFTP-CPLT Expected behavior: IUT silently discards the message
TP/BS/INI/IPC/BO-001	Reference: IEEE Std 802.16-2001/Conformance01-2003, Table A.149. Initial condition: BS in normal operation Stimulus: TFTP-CPLT received from non-existent SS. Expected behavior: IUT IUT silently discards the message.

5.3.3.2.5 Timer

Table 152 — IP Connectivity – Timer

TP/BS/INI/IPC/TI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.217/Item 13. Initial condition: BS has sent REG-RSP to SS. Stimulus: None. Expected behavior: IUT deregisters SS no sooner than 15 min later.
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5.3.3.2.6 Message Formats

For all TP/BS/INI/IPC tests ensure that messages transmitted by the BS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.3.4 Privacy Key Management and Authentication – BS

Tests of the implementation of the PKM protocol.

5.3.4.1 Authorization**5.3.4.1.1 Capabilities****Table 153 — Authorization**

TP/BS/PKM/AUTH/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.147/Item 1, IEEE Std 802.16/Conformance01-2003, Table A.161/Item 3. Initial condition: Basic Capabilities successfully negotiated with SS Stimulus: IUT receives Auth Request containing a valid certificate for an SS authorized to enter the network. Expected Behavior: IUT authenticates certificate, checks for SS authorization and transmits a Auth Reply containing the encrypted AK, the Primary SA and all static SAs configured for the SS.
TP/BS/PKM/AUTH/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.147/Item 1, IEEE Std 802.16/Conformance01-2003, Table A.161/Item 3. Initial condition: SS Authorized and has valid AK Stimulus: IUT receives valid Auth Request Expected Behavior: IUT authenticates certificate, checks for SS authorization and transmits an Auth Reply with new AK.
TP/BS/PKM/AUTH/CA-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.147/Item 1, IEEE Std 802.16/Conformance01-2003, Table A.161/Item 3. Initial condition: IUT is operating with an SS that has a valid AK. Stimulus: SS authorization is revoked by means specified in PIXIT statement. Expected Behavior: IUT transmits Auth Invalid to said SS.

5.3.4.1.2 Valid Behavior**Table 154 — Authorization – Valid Behavior**

TP/BS/PKM/AUTH/BV-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.147/Item 1, IEEE Std 802.16/Conformance01-2003, Table A.161/Item 3. Initial condition: Basic Capabilities successfully negotiated. Stimulus: IUT receives Auth Request containing a valid certificate for an for an SS unauthorized to enter the network. Expected Behavior: IUT authenticates certificate, checks for SS authorization through method explained in PIXIT and transmits an Auth Reject with Error code = 6 (Permanent Authorization Failure.)
TP/BS/PKM/AUTH/BV-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.147/Item 1, IEEE Std 802.16/Conformance01-2003, Table A.161/Item 3. Initial condition: IUT has been reset. First SS entering network has completed SBC negotiation. Stimulus: IUT receives Auth Info and Auth Request, containing a valid certificate, from said SS. IUT is reset after successful test and it is repeated. Expected Behavior: IUT authenticates certificate, checks for SS authorization and transmits a Auth Reply with different unpredictable AK each time test is repeated.

5.3.4.1.3 Invalid Behavior

Table 155 — Authorization – Invalid Behavior

TP/BS/PKM/AUTH/BI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.161/Items 1 and 3. Initial condition: Basic Capabilities successfully negotiated Stimulus: IUT receives Auth Info and Auth Request containing a syntactically invalid certificate for an SS. Expected Behavior: IUT attempts to validate certificate but fails and transmits an Auth Reject with Error code = 6 (Permanent Authorization Failure.)
TP/BS/PKM/AUTH/BI-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.161/Items 1 and 3 Initial condition: Basic Capabilities successfully negotiated. Stimulus: IUT receives Auth Request containing a syntactically valid certificate containing an invalid signature. Expected Behavior: IUT attempts to validate certificate but fails and transmits an Auth Reject with Error code = 6 (Permanent Authorization Failure.)
TP/BS/PKM/AUTH/BI-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.161/Item 1 and 3. Initial condition: Basic Capabilities successfully negotiated. Stimulus: IUT receives Auth Request with security capabilities showing lack of support for any of the mandatory cryptographic methods. Expected Behavior: IUT attempts to validate certificate but fails and transmits an Auth Reject with Error code = 6 (Permanent Authorization Failure.)
TP/BS/PKM/AUTH/BI-003	Reference: IEEE Std 802.16/Conformance01-2003, Table A.147/Item 1, IEEE Std 802.16/Conformance01-2003, Table A.161/Items 1 and 3. Initial condition: Basic Capabilities successfully negotiated. Stimulus: IUT receives Auth Request with a valid certificate but the SS is listed on the revocation list. Expected Behavior: IUT attempts to validate certificate but fails and transmits an Auth Reject with Error code = 6 (Permanent Authorization Failure.)

5.3.4.1.4 Inopportune Behavior

Table 156 — Authorization – Inopportune Behavior

TP/BS/PKM/AUTH/BO-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.147/Item 1, IEEE Std 802.16/Conformance01-2003, Table A.161/Items 1 and 3. Initial condition: Basic Capabilities successfully negotiated. Stimulus: IUT receives Auth Info and Auth Request containing a syntactically valid certificate for an SS signed by an unknown manufacturer. Expected Behavior: IUT authenticates certificate, checks for SS authorization and transmits an Auth Reject with Error code = 6 (Permanent Authorization Failure)
TP/BS/PKM/AUTH/BO-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.147/Item 1, IEEE Std 802.16/Conformance01-2003, Table A.161/Items 1 and 3. Initial condition: Basic Capabilities successfully negotiated. Stimulus: IUT receives Auth Request containing a valid certificate for an for an SS but is incapable of determining whether it is authorized to enter the network or not. Expected Behavior: IUT authenticates certificate, checks for SS authorization through method explained in PIXIT and transmits an Auth Reject with Error code = 1 (Unauthorized SS.)

5.3.4.1.5 Timer

Currently no TI category tests have been defined for the BS related to Authorization.

5.3.4.1.6 Message Formats

For all TP/BS/PKM/AUTH tests ensure that messages transmitted by the BS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.3.4.2 TEK**5.3.4.2.1 Capabilities****Table 157 — TEK – Capabilities**

TP/BS/PKM/TEK/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.161/Items 4 and 5. Initial condition: IUT has sent Auth Reply to an SS. Stimulus: IUT receives Key Request for an authorized SA. Expected Behavior: IUT sends Key Reply. Check that message format is correct.
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5.3.4.2.2 Valid Behavior**Table 158 — TEK – Valid Behavior**

TP/BS/PKM/TEK/BV-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.161/Item 5. Initial condition: IUT has sent Auth Reply to an SS. Stimulus: IUT receives Key Request for an unauthorized SA. Expected Behavior: IUT sends Key Reject. Check that message format is correct.
TP/BS/PKM/TEK/BV-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.161/Item 5. Initial condition: IUT has sent Auth Reply to an SS. Stimulus: IUT receives Key Request with an invalid HMAC digest. Expected Behavior: IUT sends Key Reject. Check that message format is correct.
TP/BS/PKM/TEK/BV-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.161/Item 4. Initial condition: IUT has been reset. The first SS entering the network has been sent a Auth Reply containing only the parameters for the Primary SA. Stimulus: IUT receives Key Request for the Primary SA of the SS. Expected Behavior: IUT sends the Key Reply containing the key for the Primary SA. Test is repeated several times. Check that the keys generated are unpredictable.

5.3.4.2.3 Invalid Behavior

Currently no BI category tests have been defined for the BS related to TEK.

5.3.4.2.4 Inopportune Behavior

Currently no BO category tests have been defined for the BS related to TEK.

5.3.4.2.5 Timer

Currently no TI category tests have been defined for the BS related to TEK.

5.3.4.2.6 Message Formats

For all TP/BS/PKM/TEK tests ensure that messages transmitted by the BS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.3.4.3 Security Associations Management

5.3.4.3.1 Capabilities

Table 159 — Security Associations Management

TP/BS/PKM/SAM/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.161/Item 8. Initial condition: IUT has been stimulated by means specified in PIXIT to add an additional SA to an operational SS. Stimulus: IUT is stimulated by means specified in PIXIT to add an additional SA to an operational SS. Expected Behavior: IUT sends SA add message to said SS.
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5.3.4.3.2 Valid Behavior

Table 160 — Security Associations Management – Valid Behavior

TP/BS/PKM/SAM/BV-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.161/Item 8. Initial condition: SA has been added to an SS through the use of an SA-Add. SA still to be utilized in the future. Stimulus: IUT receives Auth Request from authorized terminal. Expected Behavior: IUT sends Auth Reply and following that a new SA add renewing the SA.
TP/BS/PKM/SAM/BV-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.161/Item 8. Initial condition: SA has been added to an SS through the use of an SA-Add. SA still to be utilized in the future and has been added by some means to the set of Static SAs. Stimulus: IUT receives Auth Request from authorized terminal. Expected Behavior: IUT sends Auth Reply listing the SA as authorized.

5.3.4.3.3 Invalid Behavior

Currently no BI category tests have been defined for the BS related to Security Association Management.

5.3.4.3.4 Inopportune Behavior

Currently no BO category tests have been defined for the BS related to Security Association Management.

5.3.4.3.5 Timer

Currently no TI category tests have been defined for the BS related to Security Association Management.

5.3.4.3.6 Message Format

For all TP/BS/PKM/TEK tests ensure that messages transmitted by the BS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.3.4.4 Encryption and Key Scheduling

Tests the encryption methods and usage of TEKs.

5.3.4.4.1 Capabilities**Table 161 — Encryption and Key Scheduling**

TP/BS/PKM/SA/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.161/Item 11, IEEE Std 802.16/Conformance01-2003, Table A.162/Item 1. Initial condition: IUT has a uplink connection in active state mapped to the primary SA with an SS. The keying material for the primary SA has been exchanged. Stimulus: IUT receives data encrypted with the older TEK Expected Behavior: IUT receives and decrypts data correctly. Note: Test should be preformed for all supported encryption methods.
TP/BS/PKM/SA/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.161/Item 11, IEEE Std 802.16/Conformance01-2003, Table A.162/Item 1. Initial condition: IUT has an uplink connection in active state mapped to the primary SA with an SS. The keying material for the primary SA has been exchanged. Stimulus: IUT receives data encrypted with the older TEK. Expected Behavior: IUT receives and decrypts data correctly. Note: Test should be preformed for all supported encryption methods.
TP/BS/PKM/SA/CA-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.161/Item 11, IEEE Std 802.16/Conformance01-2003, Table A.162/Item 1. Initial condition: IUT has an downlink connection in active state with an SS. The keying material for the primary SA has been exchanged. The connection is mapped to the primary SA. Stimulus: IUT receives data destined to said SS on its backhaul connection. Expected Behavior: IUT sends the data to the SS encrypted using the older TEK. Note: Test should be preformed for all supported encryption methods.
TP/BS/PKM/SA/CA-003	Reference: IEEE Std 802.16/Conformance01-2003, Table A.161/Item 11, IEEE Std 802.16/Conformance01-2003, Table A.162/Item 1. Initial condition: IUT has an downlink connection in active state with an SS. The keying material for an Static SA has been exchanged. The connection is mapped to the said Static SA. Stimulus: IUT receives data destined to said SS on its backhaul connection. Expected Behavior: IUT sends the data to the SS encrypted using the older TEK. Note: Test should be preformed for all supported encryption methods.
TP/BS/PKM/SA/CA-004	Reference: IEEE Std 802.16/Conformance01-2003, Table A.161/Item 11, IEEE Std 802.16/Conformance01-2003, Table A.162/Item 1. Initial condition: IUT has more than one downlink connection in active state with an SS. The keying material for the Primary SA and an Static SA has been exchanged. One of the connection is mapped to the said Static SA. The remaining connections are mapped to the Primary SA. Stimulus: IUT receives data destined to said SS on its backhaul connection. Expected Behavior: IUT sends the data to the SS encrypted using the older TEK of the respective SAs. Note: Test should be preformed for all supported encryption methods.
TP/BS/PKM/SA/CA-005	Reference: IEEE Std 802.16/Conformance01-2003, Table A.161/Item 11, IEEE Std 802.16/Conformance01-2003, Table A.162/Item 1. Initial condition: More than one SSs registered with IUT. At least one downlink connection in active state established with each SS. Keying material for all Primary SAs valid. Stimulus: IUT receives data destined to saids SSs on its backhaul connection. Expected Behavior: IUT sends the data to the SSs encrypted using the older TEK of the respective Primary SAs. Note: Test should be preformed for all supported encryption methods.
TP/BS/PKM/SA/CA-006	Reference: IEEE Std 802.16-2001/Conformance01-2003, Table A.161/Item 11, IEEE Std 802.16/Conformance01-2003, Table A.162/Item 1. Initial condition: More than one SSs registered with IUT. At least one uplink connection in active state established with each SS. Keying material for all Primary SAs valid. Stimulus: Each SS has data to send on its user connection. IUT grants bandwidth to each SS. Expected Behavior: IUT receives the transmission from each SS and applies the correct SA on the received data. Note: Test should be preformed for all supported encryption methods.

5.3.4.4.2 Valid Behavior

Currently no BV category tests have been defined for the BS related to Encryption and key scheduling.

5.3.4.4.3 Invalid Behavior

Table 162 — Encryption and Key Scheduling – Invalid Behavior

TP/BS/PKM/SA/BI-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.161/Item 11. Initial condition: One SSs registered with IUT. At least one uplink connection in active state established with the SS. Keying material for Primary SA valid. Encryption method other than 'don't encrypt'. Stimulus: SS sends a MAC on said connection. The EC bit in the MAC Header is set to zero. HCS computed correctly. Expected Behavior: IUT discards said MAC PDU and may log event. Note: Test should be preformed for all supported encryption methods.</p>
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5.3.4.4.4 Inopportune Behavior

Currently no BO category tests have been defined for the BS related to Encryption and key scheduling.

5.3.4.4.5 Timer

Currently no TI category tests have been defined for the BS related to Encryption and key scheduling.

5.3.4.4.6 Message Formats

No MAC Management messages are involved.

5.3.5 Dynamic Services – BS

5.3.5.1 Dynamic Service Addition – BS Initiated

5.3.5.1.1 Capabilities

Table 163 — Dynamic Service Addition

TP/BS/DS/DSA/CA-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.156/Item 1. Initial Condition: BS has received TFTP-CPLT from SS. (SS is authenticated and registered.) Stimulus: BS receives stimulus (outside scope of standard) causing it to initiate and activate a service containing uplink and downlink portions. Expected Behavior: Either the BS shall transmit to the SS a DSA-REQ message instructing the SS to create and activate both the UL and DL portions of the service, or the BS shall transmit two DSA-REQ messages to the SS, one to create and activate the UL portion and one to create and activate the DL portion. Repeat this test for all service types supported by the BS.</p>
TP/BS/DS/DSA/CA-001	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.156/Items 2 and 3. Initial Condition: End of TP/BS/DS/DSA/CA-000. Stimulus: BS receives valid DSA-RSP from SS. Expected Behavior: BS transmits DSA-ACK to SS.</p>

5.3.5.1.2 Valid Behavior

Table 164 — Dynamic Service Addition – Valid Behavior

TP/BS/DS/DSA/BV-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.156/Item 1 Initial Condition: BS has received TFTP-CPLT from SS. (SS is authenticated and registered.) Stimulus: BS receives stimulus (outside scope of standard) causing it to initiate and activate a service containing only a downlink portion. Expected Behavior: The BS shall transmit to the SS a DSA-REQ message instructing the SS to create and activate the DL service.</p> <p>Repeat this test for all downlink-only service types supported by the BS.</p>
TP/BS/DS/DSA/BV-001	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.156/Items 2 and 3. Initial Condition: End of TP/BS/DS/DSA/BV-000. Stimulus: BS receives valid DSA-RSP from SS. Expected Behavior: BS transmits DSA-ACK to SS.</p>
TP/BS/DS/DSA/BV-002	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.156/Item 1. Initial Condition: BS has received TFTP-CPLT from SS. (SS is authenticated and registered.) Stimulus: BS receives stimulus (outside scope of standard) causing it to initiate and activate a service containing only an uplink portion. Expected Behavior: The BS shall transmit to the SS a DSA-REQ message instructing the SS to create and activate the UL service.</p> <p>Repeat this test for all uplink-only service types supported by the BS.</p>
TP/BS/DS/DSA/BV-003	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.156/Items 2 and 3. Initial Condition: End of TP/BS/DS/DSA/BV-002. Stimulus: BS receives valid DSA-RSP from SS. Expected Behavior: BS transmits DSA-ACK to SS.</p>
TP/BS/DS/DSA/BV-004	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.156. Initial Condition: BS has transmitted DSA-ACK to SS. Stimulus: BS receives a redundant copy of the DSA-RSP that stimulated the DSA-ACK, within 110% of the maximum value of timer T8. Expected Behavior: BS resends DSA-ACK to SS.</p>
TP/BS/DS/DSA/BV-005	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.148, IEEE Std 802.16/Conformance01-2003, Table A.156, IEEE Std 802.16/Conformance01-2003, Table A.234/Item 4. Initial Condition: BS has received TFTP-CPLT from SS. (SS is authenticated and registered.) DSx Flow Control SS Capability was set lower than the capability of the BS. Stimulus: BS receives stimulus (outside scope of standard) causing it to initiate at least one more service activation than DSx Flow Control SS Capability. Expected Behavior: BS initiates all services by sending DSA-REQ messages, metered such that at most SS DSx Flow Control DSA-REQ or DSA-ACK (timer T8 max value) messages are outstanding.</p>
TP/BS/DS/DSA/BV-006	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.156/Item 1. Initial Condition: BS has received TFTP-CPLT from SS. (SS is authenticated and registered.) Stimulus: BS receives stimulus (outside scope of standard) causing it to initiate a service to the provisioned state. Expected Behavior: The BS shall transmit to the SS a DSA-REQ message instructing the SS to create service in the provisioned state.</p>
TP/BS/DS/DSA/BV-007	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.156/Items 2 and 3. Initial Condition: End of TP/BS/DS/DSA/BV-006. Stimulus: BS receives valid DSA-RSP from SS. Expected Behavior: BS transmits DSA-ACK to SS.</p>

Table 164 — Dynamic Service Addition – Valid Behavior (continued)

TP/BS/DS/DSA/BV-008	Reference: IEEE Std 802.16/Conformance01-2003, Table A.156/Item 1. Initial Condition: BS has received TFTP-CPLT from SS. (SS is authenticated and registered.) Stimulus: BS receives stimulus (outside scope of standard) causing it to initiate a service to the admitted state. Expected Behavior: The BS shall transmit to the SS a DSA-REQ message instructing the SS to create service in the admitted state.
TP/BS/DS/DSA/BV-009	Reference: IEEE Std 802.16/Conformance01-2003, Table A.156/Items 2 and 3. Initial Condition: End of TP/BS/DS/DSA/BV-008. Stimulus: BS receives valid DSA-RSP from SS. Expected Behavior: BS transmits DSA-ACK to SS.
TP/BS/DS/DSA/BV-010	Reference: IEEE Std 802.16/Conformance01-2003, Table A.148, IEEE Std 802.16/Conformance01-2003, Table A.156, IEEE Std 802.16/Conformance01-2003, Table A.234/Item 1. Initial Condition: BS has received TFTP-CPLT from SS. (SS is authenticated and registered.) Uplink CID support SS Capability was set lower than the capability of the BS. Stimulus: BS receives stimulus (outside scope of standard) causing it to initiate at least one more service activation than Uplink CID support SS Capability. Expected Behavior: BS initiates only Uplink CID support services by sending DSA-REQ messages, metered, if necessary, such that at most SS DSx Flow Control DSA-REQ or DSA-ACK (timer T8 at maximum value) messages are outstanding.

5.3.5.1.3 Invalid Behavior

Table 165 — Dynamic Service Addition – Invalid Behavior

TP/BS/DS/DSA/BI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.189. Initial Condition: BS has transmitted a DSA-REQ message to the SS. Stimulus: BS receives an erroneous DSA-RSP message from the SS. Expected Behavior: BS resends the DSA-REQ message.
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5.3.5.1.4 Inopportune Behavior

Table 166 — Dynamic Service Addition – Inopportune Behavior

TP/BS/DS/DSA/BO-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.156. Initial Condition: BS has received TFTP-CPLT from SS. (SS is authenticated and registered.) Stimulus: BS receives a DSA-RSP for a non-existent service. Expected Behavior: BS ignores the message. Reporting the error to the management plane is allowed.
TP/BS/DS/DSA/BO-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.156, IEEE Std 802.16/Conformance01-2003, Table A.217/Item 20. Initial Condition: BS has received TFTP-CPLT from SS. (SS is authenticated and registered.) BS has transmitted DSA-ACK to SS. Stimulus: BS receives a DSA-RSP for an existing service, substantially later than the maximum value of T8 after sending the DSA-ACK. Expected Behavior: BS ignores the message. Reporting the error to the management plane is allowed.
TP/BS/DS/DSA/BO-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.156. Initial Condition: BS, not capable of supporting SS initiated dynamic services, has received TFTP-CPLT from SS. (SS is authenticated and registered.) Stimulus: BS receives a DSA-REQ message from the SS. Expected Behavior: BS sends a DSA-RSP to the SS indicating that the service is not allowed.

5.3.5.1.5 Timer**Table 167 — Dynamic Service Addition – Timer**

TP/BS/DS/DSA/TI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.156, IEEE Std 802.16/Conformance01-2003, Table A.217/Items 13 and 19. Initial Condition: BS has transmitted a DSA-REQ message to the SS. The BS has retried less than “DSx Request Retries” times. Stimulus: BS does not receive a DSA-RSP message from the SS within T7 timeout. Expected Behavior: BS resends the DSA-REQ message.
TP/BS/DS/DSA/TI-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.156, IEEE Std 802.16/Conformance01-2003, Table A.217/Items 13,19. Initial Condition: BS has transmitted a DSA-REQ message to the SS. The BS has retried “DSx Request Retries” times. Stimulus: BS does not receive a DSA-RSP message from the SS within T7 timeout. Expected Behavior: BS does not resend the DSA-REQ message

5.3.5.1.6 Message Formats

For all TP/BS/DS/DSA tests ensure that messages transmitted by the BS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.3.5.2 Dynamic Service Change**5.3.5.2.1 Capabilities****Table 168 — Dynamic Service Change**

TP/BS/DS/DSC/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.158/Item 1. Initial Condition: BS has established an active service, consisting of both an uplink and downlink portion, with an SS. Stimulus: BS receives stimulus (outside scope of standard) causing it to change parameters of the active service containing uplink and downlink portions. Expected Behavior: Either the BS shall transmit to the SS a DSC-REQ message instructing the SS to change the parameters of both the UL and DL portions of the service, or the BS shall transmit two DSC-REQ messages to the SS, one to modify the UL portion and one to modify the DL portion. Repeat this test for all service types supported by the BS.
TP/BS/DS/DSC/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.158/Items 2 and 3. Initial Condition: End of TP/BS/DS/DSC/CA-000. Stimulus: BS receives valid DSC-RSP from SS. Expected Behavior: BS transmits DSC-ACK to SS.

5.3.5.2.2 Valid Behavior**Table 169 — Dynamic Service Change – Valid Behavior**

TP/BS/DS/DSC/BV-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.158/Item 1. Initial Condition: BS has established an active service, consisting of at least a downlink portion, with an SS. Stimulus: BS receives stimulus (outside scope of standard) causing it to change the parameters of the downlink portion of the service. Expected Behavior: The BS shall transmit to the SS a DSC-REQ message instructing the SS to change the DL parameters of the service. Repeat this test for all downlink-only service types supported by the BS.
TP/BS/DS/DSC/BV-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.158/Items 2 and 3. Initial Condition: End of TP/BS/DS/DSC/BV-000. Stimulus: BS receives valid DSC-RSP from SS. Expected Behavior: BS transmits DSC-ACK to SS.

Table 169 — Dynamic Service Change – Valid Behavior (continued)

TP/BS/DS/DSC/BV-002	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.158/Item 1. Initial Condition: BS has established an active service, consisting of at least an uplink portion, with an SS. Stimulus: BS receives stimulus (outside scope of standard) causing it to change the parameters of the uplink portion of the service. Expected Behavior: The BS shall transmit to the SS a DSC-REQ message instructing the SS to change the UL parameters of the service.</p> <p>Repeat this test for all uplink-only service types supported by the BS.</p>
TP/BS/DS/DSC/BV-003	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.158/Items 2 and 3. Initial Condition: End of TP/BS/DS/DSC/BV-002. Stimulus: BS receives valid DSC-RSP from SS. Expected Behavior: BS transmits DSC-ACK to SS.</p>
TP/BS/DS/DSC/BV-004	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.158/Item 3, IEEE Std 802.16/Conformance01-2003, Table A.217/Item 20. Initial Condition: BS has transmitted DSC-ACK to SS. Stimulus: BS receives a redundant copy of the DSC-RSP that stimulated the DSC-ACK, within a time no longer than $1.10 \times$ maximum value of timer T8. Expected Behavior: BS resends DSC-ACK to SS.</p>
TP/BS/DS/DSC/BV-005	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.148, IEEE Std 802.16/Conformance01-2003, Table A.158, IEEE Std 802.16/Conformance01-2003, Table A.231/Item 4. Initial Condition: BS has established an active service with an SS. DSx Flow Control SS Capability was set lower than the capability of the BS. Stimulus: BS receives stimuli (outside scope of standard) causing it to initiate at least one more service activation than DSx Flow Control SS Capability then receives a stimulus to change the parameters of the previously established service. Expected Behavior: BS does not transmit DSC-REQ message until the number of outstanding DSx messages drops below DSx Flow Control.</p>
TP/BS/DS/DSC/BV-006	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.158/Item 1. Initial Condition: A service exists in the provisioned state between the BS and the SS. Stimulus: BS receives stimulus (outside scope of standard) causing it to change the service to the admitted state. Expected Behavior: The BS shall transmit a DSC-REQ message instructing the SS to change the service to the admitted state.</p>
TP/BS/DS/DSC/BV-007	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.158/Items 2 and 3. Initial Condition: End of TP/BS/DS/DSC/BV-006. Stimulus: BS receives valid DSC-RSP from SS. Expected Behavior: BS transmits DSC-ACK to SS.</p>
TP/BS/DS/DSC/BV-008	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.158/Item 1. Initial Condition: A service exists in the provisioned state between the BS and the SS. Stimulus: BS receives stimulus (outside scope of standard) causing it to change the service to the active state. Expected Behavior: The BS shall transmit a DSC-REQ message instructing the SS to change the service to the active state.</p>
TP/BS/DS/DSC/BV-009	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.158/Items 2 and 3. Initial Condition: End of TP/BS/DS/DSC/BV-008. Stimulus: BS receives valid DSC-RSP from SS. Expected Behavior: BS transmits DSC-ACK to SS.</p>
TP/BS/DS/DSC/BV-010	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.158/Item 1. Initial Condition: A service exists in the active state between the BS and the SS. Stimulus: BS receives stimulus (outside scope of standard) causing it to change the service to the provisioned state. Expected Behavior: The BS shall transmit a DSC-REQ message instructing the SS to change the service to the provisioned state.</p>
TP/BS/DS/DSC/BV-011	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.158/Items 2 and 3. Initial Condition: End of TP/BS/DS/DSC/BV-010. Stimulus: BS receives valid DSC-RSP from SS. Expected Behavior: BS transmits DSC-ACK to SS.</p>

Table 169 — Dynamic Service Change – Valid Behavior (continued)

TP/BS/DS/DSC/BV-012	Reference: IEEE Std 802.16/Conformance01-2003, Table A.158/Item 1. Initial Condition: A service exists in the active state between the BS and the SS. Stimulus: BS receives stimulus (outside scope of standard) causing it to change the service to the admitted state. Expected Behavior: The BS shall transmit a DSC-REQ message instructing the SS to change the service to the admitted state.
TP/BS/DS/DSC/BV-013	Reference: IEEE Std 802.16/Conformance01-2003, Table A.158/Items 2 and 3. Initial Condition: End of TP/BS/DS/DSC/BV-012 Stimulus: BS receives valid DSC-RSP from SS. Expected Behavior: BS transmits DSC-ACK to SS.
TP/BS/DS/DSC/BV-014	Reference: IEEE Std 802.16/Conformance01-2003, Table A.158/Item 1. Initial Condition: A service exists in the admitted state between the BS and the SS. Stimulus: BS receives stimulus (outside scope of standard) causing it to change the service to the active state. Expected Behavior: The BS shall transmit a DSC-REQ message instructing the SS to change the service to the active state.
TP/BS/DS/DSC/BV-015	Reference: IEEE Std 802.16/Conformance01-2003, Table A.158/Items 2 and 3. Initial Condition: End of TP/BS/DS/DSC/BV-014. Stimulus: BS receives valid DSC-RSP from SS. Expected Behavior: BS transmits DSC-ACK to SS.
TP/BS/DS/DSC/BV-016	Reference: IEEE Std 802.16/Conformance01-2003, Table A.158/Item 1. Initial Condition: A service exists in the admitted state between the BS and the SS. Stimulus: BS receives stimulus (outside scope of standard) causing it to change the service to the provisioned state. Expected Behavior: The BS shall transmit a DSC-REQ message instructing the SS to change the service to the provisioned state.
TP/BS/DS/DSC/BV-017	Reference: IEEE Std 802.16/Conformance01-2003, Table A.158/Items 2 and 3. Initial Condition: End of TP/BS/DS/DSC/BV-016. Stimulus: BS receives valid DSC-RSP from SS. Expected Behavior: BS transmits DSC-ACK to SS.

5.3.5.2.3 Invalid Behavior**Table 170 — Dynamic Service Change – Invalid Behavior**

TP/BS/DS/DSC/BI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.158/Item 2, IEEE Std 802.16/Conformance01-2003, Table A.196. Initial Condition: BS has transmitted a DSC-REQ message to the SS. Stimulus: BS receives an erroneous DSC-RSP message from the SS. Expected Behavior: BS resends the DSC-REQ message.
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5.3.5.2.4 Inopportune Behavior**Table 171 — Dynamic Service Change – Inopportune Behavior**

TP/BS/DS/DSC/BO-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.158. Initial Condition: Service exists between BS and SS. Stimulus: BS receives a DSC-RSP for a non-existent service. Expected Behavior: BS ignores the message. Reporting the error to the management plane is allowed.
TP/BS/DS/DSC/BO-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.158, IEEE Std 802.16/Conformance01-2003, Table A.217/Item 20. Initial Condition: Service exists between BS and SS. BS has transmitted DSC-ACK to SS. Stimulus: BS receives a DSC-RSP for an existing service, substantially later than the maximum value of T8 after sending the DSC-ACK. Expected Behavior: BS ignores the message. Reporting the error to the management plane is allowed.
TP/BS/DS/DSC/BO-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.158. Initial Condition: BS, not capable of supporting SS initiated dynamic services, has service established between BS and SS. Stimulus: BS receives a DSC-REQ message from the SS. Expected Behavior: BS sends a DSC-RSP to the SS indicating that the service is not allowed.

5.3.5.2.5 Timer

Table 172 — Dynamic Service Change – Timer

TP/BS/DS/DSC/TI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.158, IEEE Std 802.16/Conformance01-2003, Table A.217/Items 13 and 19. Initial Condition: BS has transmitted a DSC-REQ message to the SS. The BS has retried less than “DSx Request Retries” times. Stimulus: BS does not receive a DSC-RSP message from the SS within T7 timeout. Expected Behavior: BS resends the DSC-REQ message.
TP/BS/DS/DSC/TI-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.158, IEEE Std 802.16/Conformance01-2003, Table A.217/Items 13 and 19. Initial Condition: BS has transmitted a DSC-REQ message to the SS. The BS has retried “DSx Request Retries” times. Stimulus: BS does not receive a DSC-RSP message from the SS within T7 timeout. Expected Behavior: BS does not resend the DSC-REQ message

5.3.5.2.6 Message Formats

For all TP/BS/DS/DSC tests ensure that messages transmitted by the BS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.3.5.3 Dynamic Service Deletion

5.3.5.3.1 Capabilities

Table 173 — Dynamic Service Deletion

TP/BS/DS/DSD/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.160/Item 1. Initial Condition: Service consisting of both an uplink and a downlink portion exists between BS and SS. Stimulus: BS receives stimulus (outside of scope of standard) to delete the service. Expected Behavior: Sends a DSD-REQ for the UL portion and a separate DSD-REQ for the DL portion.
TP/BS/DS/DSD/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.160/Item 2. Initial Condition: End of TP/BS/DS/DSD/TI-000. Stimulus: BS receives a DSD-RSP from the SS. Expected Behavior: BS does not resend the DSD-REQ.

5.3.5.3.2 Valid Behavior

Table 174 — Dynamic Service Deletion – Valid Behavior

TP/BS/DS/DSD/BV-000	Reference: IEEE Std 802.16-2001/Conformance01-2003, Table A.160/Item 1. Initial Condition: Service with at least a downlink portion exists between the BS and SS. Stimulus: BS receives stimulus (outside scope of standard) causing it to delete the downlink portion of a service. Expected Behavior: The BS shall transmit to the SS a DSD-REQ message instructing the SS to delete the DL service. Repeat this test for all downlink service types supported by the BS.
TP/BS/DS/DSD/BV-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.160/Item 1. Initial Condition: Service with at least an uplink portion exists between the BS and SS. Stimulus: BS receives stimulus (outside scope of standard) causing it to delete the uplink portion of a service. Expected Behavior: The BS shall transmit to the SS a DSD-REQ message instructing the SS to delete the UL service. Repeat this test for all uplink service types supported by the BS.

Table 174 — Dynamic Service Deletion – Valid Behavior (continued)

TP/BS/DS/DSD/BV-002	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.160/Item 1, IEEE Std 802.16/Conformance01-2003, Table A.231/Item 4.</p> <p>Initial Condition: BS has established a service with an SS. DSx Flow Control SS Capability was set lower than the capability of the BS.</p> <p>Stimulus: BS receives stimuli (outside scope of standard) causing it to initiate at least one more service activation than DSx Flow Control SS Capability then receives a stimulus to delete the previously established service.</p> <p>Expected Behavior: BS does not transmit DSD-REQ message until the number of outstanding DSx messages drops below DSx Flow Control.</p>
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5.3.5.3.3 Invalid Behavior**Table 175 — Dynamic Service Deletion – Invalid Behavior**

TP/BS/DS/DSD/BI-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.160/Item 2, IEEE Std 802.16/Conformance01-2003, Table A.201.</p> <p>Initial Condition: BS has transmitted a DSD-REQ message to the SS.</p> <p>Stimulus: BS receives an erroneous DSD-RSP message from the SS.</p> <p>Expected Behavior: BS resends the DSD-REQ message.</p>
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5.3.5.3.4 Inopportune Behavior**Table 176 — Dynamic Service Deletion – Inopportune Behavior**

TP/BS/DS/DSD/BO-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.160.</p> <p>Initial Condition: Service exists between BS and SS.</p> <p>Stimulus: BS receives a DSD-RSP for a non-existent service.</p> <p>Expected Behavior: BS ignores the message. Reporting the error to the management plane is allowed.</p>
TP/BS/DS/DSD/BO-001	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.160.</p> <p>Initial Condition: Service exists between BS and SS. BS has transmitted DSD-ACK to SS.</p> <p>Stimulus: BS receives a redundant DSD-RSP for a newly deleted service.</p> <p>Expected Behavior: BS ignores the message. Reporting the error to the management plane is allowed.</p>
TP/BS/DS/DSD/BO-002	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.160.</p> <p>Initial Condition: Service exists between BS and SS. BS has transmitted DSD-ACK to SS.</p> <p>Stimulus: BS receives a DSD-RSP for an existing service for which no DSD-REQ was transmitted.</p> <p>Expected Behavior: BS ignores the message, but may need to take (vendor specific) action to restore the service. Reporting the error to the management plane is allowed.</p>
TP/BS/DS/DSD/BO-003	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.160.</p> <p>Initial Condition: BS, not capable of supporting SS initiated dynamic services, has service established between BS and SS.</p> <p>Stimulus: BS receives a DSD-REQ message from the SS.</p> <p>Expected Behavior: BS sends a DSD-RSP to the SS indicating that the service is not allowed.</p>

5.3.5.3.5 Timer

Table 177 — Dynamic Service Deletion – Timer

TP/BS/DS/DSD/TI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.160/Items 1 and 2, IEEE Std 802.16/Conformance01-2003, Table A.217/Items 3,19. Initial Condition: BS has transmitted a DSD-REQ message to the SS. The BS has retried less than “DSx Request Retries” times. Stimulus: BS does not receive a DSD-RSP message from the SS within T7 timeout. Expected Behavior: BS resends the DSD-REQ message.
TP/BS/DS/DSD/TI-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.160, IEEE Std 802.16/Conformance01-2003, Table A.217/Items 13 and 19. Initial Condition: BS has transmitted a DSD-REQ message to the SS. The BS has retried “DSx Request Retries” times. Stimulus: BS does not receive a DSD-RSP message from the SS within T7 timeout. Expected Behavior: BS does not resend the DSD-REQ message
TP/BS/DS/DSD/TI-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.156, IEEE Std 802.16/Conformance01-2003, Table A.160, IEEE Std 802.16/Conformance01-2003, Table A.217/Item 22. Initial Condition: BS has successfully deleted a service. Stimulus: Before the expiration of T10, the BS is stimulated to add a new service. Expected Behavior: The BS sends a DSA-REQ, but does not reuse the CID of the recently deleted connection.

5.3.5.3.6 Message Formats

For all TP/BS/DS/DSC tests ensure that messages transmitted by the BS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.3.6 Bandwidth Allocation and Polling – BS

5.3.6.1 Request/Grant

5.3.6.1.1 Capabilities

Table 178 — Request/Grant

TP/BS/BWA/REQ/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.138/Item 1 Initial condition. UGS uplink connection in active state with SS. Stimulus: Passage of time. Expected behavior. Check that the IUT grants sufficient amount of capacity at correct intervals.
TP/BS/BWA/REQ/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.138/Item 2, IEEE Std 802.16/Conformance01-2003, Table A.139/Item 7. Initial condition. RT Polling uplink connection in active state. Stimulus: Passage of time. Expected behavior. Check that the IUT issues poll within sufficient time to meet the connections latency requirement.
TP/BS/BWA/REQ/CA-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.138/Item 3, IEEE Std 802.16/Conformance01-2003, Table A.139/Item 7. Initial condition. nRT Polling uplink connection in active state. Stimulus: Passage of time. Expected behavior. Check that the IUT issues poll within sufficient time to meet the connections latency requirement.

Table 178 — Request/Grant (continued)

TP/BS/BWA/REQ/CA-003	Reference: IEEE Std 802.16/Conformance01-2003, Table A.139/Items 1 and 3, IEEE Std 802.16/Conformance01-2003, Table A.138/Item 4. Initial condition. BE uplink connection in active state with SS. Link not congested. No outstanding BW requests. Stimulus. BS receives a BW request with an aggregate request. Expected behavior. Check that the IUT issues one or more grants to requesting SS.
TP/BS/BWA/REQ/CA-004	Reference: IEEE Std 802.16/Conformance01-2003, Table A.139/Items 1 and 4, IEEE Std 802.16/Conformance01-2003, Table A.138/Item 4. Initial condition. BE uplink connection in active state with SS. Link not congested. No outstanding BW requests. Stimulus. BS receives a BW request with an incremental request. Expected behavior. Check that the IUT issues one or more grants to requesting SS.
TP/BS/BWA/REQ/CA-005	Reference: IEEE Std 802.16/Conformance01-2003, Table A.139/Items 2 and 4, IEEE Std 802.16/Conformance01-2003, Table A.138/Item 4. Initial condition. BE uplink connection in active state with SS. Link not congested. Outstanding BW request. Stimulus. BS receives a MAC PDU with a piggyback request for more BW. Expected behavior. Check that the IUT issues one or more grants to requesting SS allocating capacity in excess of original request.
TP/BS/BWA/REQ/CA-006	Reference: IEEE Std 802.16/Conformance01-2003, Table A.139/Items 1 and 3, IEEE Std 802.16/Conformance01-2003, Table A.138/Item 3. Initial condition. NRT polling uplink connection in active state with SS. Link not congested. No outstanding BW requests. Stimulus. BS receives a BW request with an aggregate request. Expected behavior. Check that the IUT issues one or more grants to requesting SS.
TP/BS/BWA/REQ/CA-007	Reference: IEEE Std 802.16/Conformance01-2003, Table A.139/Items 1 and 4, IEEE Std 802.16/Conformance01-2003, Table A.138/Item 3. Initial condition. NRT-polling uplink connection in active state with SS. Link not congested. No outstanding BW requests. Stimulus. BS receives a BW request with an incremental request. Expected behavior. Check that the IUT issues one or more grants to requesting SS.
TP/BS/BWA/REQ/CA-008	Reference: IEEE Std 802.16/Conformance01-2003, Table A.139/Item 2 and 4, IEEE Std 802.16/Conformance01-2003, Table A.138/Item 3. Initial condition. RT-polling uplink connection in active state with SS. Link not congested. Outstanding BW request. Stimulus. BS receives a MAC PDU with a piggyback request for more BW. Expected behavior. Check that the IUT issues one or more grants to requesting SS allocating capacity in excess of original request.
TP/BS/BWA/REQ/CA-009	Reference: IEEE Std 802.16/Conformance01-2003, Table A.139/Items 1 and 3, IEEE Std 802.16/Conformance01-2003, Table A.138/Item 2. Initial condition. RT polling connection in active state with SS. Link not congested. No outstanding BW requests. Stimulus. BS receives a BW request with an aggregate request. Expected behavior. Check that the IUT issues one or more grants to requesting SS.
TP/BS/BWA/REQ/CA-010	Reference: IEEE Std 802.16/Conformance01-2003, Table A.139/Items 1 and 4, IEEE Std 802.16/Conformance01-2003, Table A.138/Items 2. Initial condition. RT polling uplink connection in active state with SS. Link not congested. No outstanding BW requests. Stimulus. BS receives a BW request with an incremental request. Expected behavior. Check that the IUT issues one or more grants to requesting SS.
TP/BS/BWA/REQ/CA-011	Reference: IEEE Std 802.16/Conformance01-2003, Table A.139/Items 2 and 4, IEEE Std 802.16/Conformance01-2003, Table A.138/Item 2. Initial condition. RT polling uplink connection in active state with SS. Link not congested. Outstanding BW request. Stimulus. BS receives a MAC PDU with a piggyback request for more BW. Expected behavior. Check that the IUT issues one or more grants to requesting SS allocating capacity in excess of original request.

5.3.6.1.2 Valid Behavior

Table 179 — Request/Grant - Valid Behavior

TP/BS/BWA/REQ/BV-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.139/Item 10 Initial condition. UGS uplink connection in active state. RT Polling connection in active state. Stimulus: IUT receives a MAC PDU on the UGS connection with the PM bit set. Expected behavior: Check that upon receiving a MAC PDU on the UGS connection with PM bit set the IUT issues poll within 10 ms
TP/BS/BWA/REQ/BV-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.139/Item 10. Initial condition: UGS uplink connection in active state. nRT Polling connection in active state. Stimulus: IUT receives a MAC PDU on the UGS connection with the PM bit set. Expected behavior: Check that upon receiving a MAC PDU on the UGS connection with PM bit set the IUT issues poll within QoS limits
TP/BS/BWA/REQ/BV-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.139/Item 11. Initial condition. UGS uplink connection in active state with SS Stimulus: IUT receives a MAC PDU on the UGS connection with the SI bit set. Expected behavior: Check that IUT issues additional grant in response to a set SI bit.
TP/BS/BWA/REQ/BV-003	Reference: IEEE Std 802.16/Conformance01-2003, Table A.139/Item 3. Initial condition: BE uplink connection in active state with SS. Link not congested. Outstanding BW request for large quantity of BW. Stimulus. BS receives a BW request with an aggregate request of zero bytes. Expected behavior: Check that the IUT refrains from issuing more grants to requesting SS (grant in next DL-frame excepted).
TP/BS/BWA/REQ/BV-004	Reference: IEEE Std 802.16/Conformance01-2003, Table A.139/Item 3. Initial condition: NRT polling uplink connection in active state with SS. Link not congested. Outstanding BW request for large quantity of BW. Stimulus: BS receives a BW request with an aggregate request of zero bytes. Expected behavior: Check that the IUT refrains from issuing more grants to requesting SS (grant in next DL-frame excepted).
TP/BS/BWA/REQ/BV-005	Reference: IEEE Std 802.16/Conformance01-2003, Table A.139/Item 3. Initial condition: RT polling uplink connection in active state with SS. Link not congested. Outstanding BW request for large quantity of BW. Stimulus: BS receives a BW request with an aggregate request of zero bytes. Expected behavior: Check that the IUT refrains from issuing more grants to requesting SS (grant in next DL-frame excepted).

5.3.6.1.3 Invalid Behavior

No BI category tests for Request/Grant have been defined.

5.3.6.1.4 Inopportune Behavior

No BO category tests for Request/Grant have been defined.

5.3.6.1.5 Timer

No TI category tests for Request/Grant have been defined.

5.3.6.1.6 Message Formats

For all TP/BS/BWA/REQ tests ensure that messages transmitted by the BS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.3.6.2 Multicast Polling**5.3.6.2.1 Capabilities****Table 180 — Multicast Polling**

TP/BS/BWA/MCP/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.153/Item 2. Initial condition: BS has nRT polling uplink connection in Active state with an SS. Stimulus: BS is caused to assign said SS to polling group. Expected behavior: Check that IUT sends MCA-REQ: Add
TP/BS/BWA/MCP/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.153/Item 3, IEEE Std 802.16/Conformance01-2003, Table A.139/Item 9. Initial condition: End of TP/BS/ BWA/MCP/CA-000. Stimulus: IUT receives MCA-RSP indicating success. Expected behavior: IUT issues multicast polls to poll said SS.
TP/BS/BWA/MCP/CA-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.153/Item 2. Initial condition: BS has BE uplink connection in Active state with an SS. Stimulus: BS is caused to assign SS to polling group. Expected behavior: Check that IUT sends MCA-REQ: Add.
TP/BS/BWA/MCP/CA-003	Reference: IEEE Std 802.16/Conformance01-2003, Table A.153/Item 3, IEEE Std 802.16/Conformance01-2003, Table A.139. Initial condition: End of TP/BS/ BWA/MCP/CA-002. Stimulus: IUT receives MCA-RSP indicating success. Expected behavior: IUT issues multicast polls to poll said SS.

5.3.6.2.2 Valid Behavior**Table 181 — Multicast Polling – Valid Behavior**

TP/BS/BWA/MCP/BV-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.139/Item 7. Initial condition: BS in normal operation. Stimulus: Refer to PIXIT for information regarding conditions under which BS may create Multicat Polling groups. Expected behavior: Check that IUT refrains from adding SSS with only UGS or RT polling connections to Multicast Polling groups.
TP/BS/BWA/MCP/BV-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.153/Item 2 and 3. Initial condition: Multicast polling group established with an SS added to it. An active nRT polling connection between the BS and said SS has been set up. Stimulus: BS is caused to remove said SS polling group. Expected behavior: Check that IUT performs MCA signaling correctly and subsequently starts to issue unicast polls to said SS.

5.3.6.2.3 Invalid Behavior**Table 182 — Multicast Polling – Invalid Behavior**

TP/BS/BWA/MCP/BI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.203/Item 1. Initial condition: BS waiting for MCA-RSP. Stimulus: BS receives improperly formatted MCA-RSP. Expected behavior: BS silently discards improperly formatted message. After timeout, BS resends MCA-REQ.
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5.3.6.2.4 Inopportune Behavior

Table 183 — Multicast Polling – Inopportune Behavior

TP/BS/BWA/MCP/BO-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.153. Initial condition: No multicast polling group transactions outstanding. Stimulus: BS receives MCA-RSP. Expected behavior: Check that IUT silently discards message and does not crash.
TP/BS/BWA/MCP/BO-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.153. Initial condition: BS waiting for MCA-RSP on CID = i. No other transactions outstanding. Stimulus: BS receives properly formatted MCA-RSP on CID = j. Expected behavior: Check that IUT does not crash.

5.3.6.2.5 Timer

Table 184 — Multicast Polling – Timer

TP/BS/BWA/MCP/TI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.153, IEEE Std 802.16/Conformance01-2003, Table A.217. Initial condition. BS waiting for MCA-RSP. Stimulus: Timer T15 expires. Expected behavior: BS resends MCA-REQ.
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5.3.6.2.6 Message Formats

For all TP/BS/BWA/MCP tests ensure that messages transmitted by the BS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.3.7 Reset and Re-Registration – BS

5.3.7.1 Capabilities

Table 185 — Reset and Re-Registration

TP/BS/RER/RES/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.164/Item 1. Initial condition: Base Station is operational. At least 1 SS is operational. At least one bi-directional service active. Stimulus: Network management stimulated request to reset the SS. Expected behavior: BS sends the RES-CMD on the SS's basic CID. BS successfully accepts re-entry to the system by the SS. Service is disrupted then resumes.
TP/BS/RER/RES/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.164/Item 2. Initial condition: Base Station is operational. At least 1 SS is operational. At least one bi-directional service active. Stimulus: Network management stimulated request to deregister the SS telling it to go to another channel (action code 0 x 00). Expected behavior: BS sends the DREG-CMD on the SS's basic CID. Service is terminated.
TP/BS/RER/RES/CA-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.164/Item 1. Initial condition: Base Station is operational. At least 1 SS is operational. At least one bi-directional service active. Stimulus: Network management stimulated request to deregister the SS telling it to wait for a RES-CMD (action code 0x01). Expected behavior: BS sends the DREG-CMD on the SS's basic CID. Service is disrupted.

Table 185 — Reset and Re-Registration (continued)

TP/BS/RER/RES/CA-003	Reference: IEEE Std 802.16/Conformance01-2003, Table A.164/Item 1. Initial condition: End of TP/BS/RER/RES/CA-002. Stimulus: Network management stimulated request to reset the SS. Expected behavior: BS sends the RES-CMD on the SS's basic CID. BS successfully accepts re-entry to the system by the SS. Service resumes.
TP/BS/RER/RES/CA-004	Reference: IEEE Std 802.16/Conformance01-2003, Table A.164/Item 2. Initial condition: Base Station is operational. At least 1 SS is operational. At least one bi-directional service active. Stimulus: Network management stimulated request to deregister the SS telling it to go to listen only mode (action code 0x02). Expected behavior: BS sends the DREG-CMD on the SS's basic CID. Service is disrupted.
TP/BS/RER/RES/CA-005	Reference: IEEE Std 802.16/Conformance01-2003, Table A.164/Item 2. Initial condition: End of TP/BS/RER/RES/CA-004. Stimulus: Network management stimulated request to re-register the SS (action code 0 x 03). Expected behavior: BS sends the DREG-CMD on the SS's basic CID. Service resumes.

5.3.7.2 Valid Behavior

There are no BV category tests for Reset and Re-registration at the BS.

5.3.7.3 Invalid Behavior

There are no BI category tests for Reset and Re-registration at the BS.

5.3.7.4 Inopportune Behavior

There are no BO category tests for Reset and Re-registration at the BS.

5.3.7.5 Timer

There are no TI category tests for Reset and Re-registration at the BS.

5.3.7.6 Message Formats

For all TP/BS/RER/RES tests ensure that messages transmitted by the BS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.3.8 Clock Comparison – BS**5.3.8.1 Capabilities****Table 186 — Clock Comparison**

TP/BS/CCC/CCC/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.209/Item 2. Initial condition: Base station is operational. Stimulus: At a minimum, before the first UGS connection is established, but may be performed earlier. Expected behavior: BS transmits, every 50 ms, a CLK-CMP message on the Broadcast connection.
TP/BS/CCC/CCC/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.209/Item 2. Initial condition: BS has initiated UGS connection and is transmitting CLK-CMP messages. BS is using different sources for symbol and network clock. Stimulus: Vary the network clock. Expected behavior: The values in the CLK-CMP message should change accordingly.

5.3.8.2 Valid Behavior

There are no BV category tests for Clock Comparison at the BS.

5.3.8.3 Invalid Behavior

There are no BI category tests for Clock Comparison at the BS.

5.3.8.4 Inopportune Behavior

There are no BO category tests for Clock Comparison at the BS.

5.3.8.5 Timer

There are no TI category tests for Clock Comparison at the BS.

5.3.8.6 Message Formats

For all TP/BS/CCC/CCC tests ensure that messages transmitted by the BS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.3.9 MAC PDUs – BS

5.3.9.1 Capabilities

Table 187 — MAC PDUs

TP/BS/MAC/PDU/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.136/Item 1. Initial condition: One SS registered and authenticated with BS. One ATM data service established with data rate greater than 2000 ATM cells per second. Packing on for the connection. Stimulus: Two or more cells from the same connection arrive at BS from backhaul in a 1 ms frame. Expected behavior: The BS will pack the cells from the same connection into a single MAC PDU each frame.
TP/BS/MAC/PDU/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.136/Item 2. Initial condition: One SS registered and authenticated with BS. One ATM data service established with data rate of at least 768 kbps. Packing on for the connection. Stimulus: The test SS sends two or more MAC SDUs from the same connection packed into a single MAC PDU Expected behavior: The BS forwards the ATM cells to the backhaul as individual entities.
TP/BS/MAC/PDU/CA-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.135/Items 1 and 6. Initial condition: System running. All SSs at QPSK. Enough ATM connections with enough downlink data rate to cause congestion. Stimulus: Continuous reception of downlink data from backhaul. Expected behavior: No ATM cells are fragmented. Secondary management connection traffic may be fragmented.
TP/BS/MAC/PDU/CA-003	Reference: IEEE Std 802.16/Conformance01-2003, Table A.135/Item 1. Initial condition: System running. All SSs at QPSK. Enough packet connections with enough downlink data rate to cause congestion. Stimulus: Continuous reception of downlink data from backhaul, including large (>1500 byte) packets. Expected behavior: Packets are fragmented. Secondary management connection traffic is fragmented.
TP/BS/MAC/PDU/CA-004	Reference: IEEE Std 802.16/Conformance01-2003, Table A.135/Item 4. Initial condition: System running. All SSs at QPSK. Enough packet connections with enough uplink data rate to cause congestion. Stimulus: The test SS sends fragmented packets. Expected behavior: The BS correctly reconstructs the packets.

5.3.9.2 Valid Behavior**Table 188 — MAC PDUs – Valid Behavior**

TP/BS/MAC/PDU/BV-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.136/Item 5. Initial condition: System running. All SSs at QPSK. Enough packet connections with enough downlink data rate to cause congestion. Packing on for the connections. Stimulus: Continuous reception of downlink data from backhaul, including large (>1500 byte) and small (64 byte) packets on the same connection the same frame. Expected behavior: Packets are fragmented and packed. Secondary management connection traffic is fragmented, and packed if applicable.
TP/BS/MAC/PDU/BV-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.136/Item 6. Initial condition: System running. All SSs at QPSK. Enough packet connections with enough uplink data rate to cause congestion. Packing on for the connections. Stimulus: The test SS sends packets simultaneously packed and fragmented on data, primary, and secondary connections. Expected behavior: The BS correctly reconstructs the packets.
TP/BS/MAC/PDU/BV-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.137/Item 2. Initial condition: One SS registered and authenticated with BS. One data service established. CRC is on for the connection. Stimulus: BS receives data for this connection from the backhaul. Expected behavior: BS sends data over said connection in MAC PDUs with correctly computed CRC.

5.3.9.3 Invalid Behavior**Table 189 — MAC PDUs – Invalid Behavior**

TP/BS/MAC/PDU/BI-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.137/Item 2. Initial condition: One SS registered and authenticated with BS. One data service established. CRC is on for the connection. Stimulus: BS receives data from this SS with incorrect CRC. Expected behavior: BS silently discards the PDU.
TP/BS/MAC/PDU/BI-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.134/Item 2. Initial condition: One SS registered and authenticated with BS. One data service established. Stimulus: BS receives data from this SS with incorrect HCS. Expected behavior: BS silently discards the PDU.
TP/BS/MAC/PDU/BI-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.135/Items 3 and 5. Initial condition: One SS registered and authenticated with BS. One data service established. Stimulus: SS sends a MAC SDU fragmented into several MAC PDUs but omits one of the intermediate fragments. Expected behavior: BS attempts to reassemble SDU but fails and discards the entire MAC SDU.

5.3.9.4 Inopportune Behavior

There are no BO category tests for MAC PDUs at the BS.

5.3.9.5 Timer

There are no TI category tests for MAC PDUs at the BS.

5.3.9.6 Message Formats

For all TP/BS/MAC/PDU tests ensure that messages transmitted by the BS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.3.10 Downlink Physical layer – BS

All downlink test are performed using Peak Power mode for the Power Adjustment Rule. For devices that support the optional Average Power mode the downlink test shall be repeated using that mode.

5.3.10.1 RS Outer Code $t = 10$ / BCC – Frame Control

5.3.10.1.1 Capabilities

Table 190 — RS Outer Code $t = 10$ / BCC – Frame Control

TP/BS/PHYDL/FC/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.243/Items 4 and 9. Initial condition: A connection is setup between the BS and the test SS. The test SS requests the BS to use the most robust burst profile. Stimulus: Data is transmitted in the downlink. Expected behavior: The SS receives the data correctly.
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5.3.10.2 RS Outer Code Other Bursts

5.3.10.2.1 Capabilities

Table 191 — RS Outer Code Other Bursts

TP/BS/PHYDL/RS/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.243/Item 5. Initial condition: Burst profiles with $t = 0, 4, 8,$ and 12 are in use in the system. A connection is setup between the BS and the test SS. The test SS requests the BS to use the burst profiles with RS parameter $t = 0, 4, 8$ and 12 . Stimulus: Data is transmitted in the downlink. Expected behavior: The SS receives the data correctly.
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5.3.10.3 Fixed Codeword Operation

5.3.10.3.1 Capabilities

Table 192 — Fixed Codeword Operation

TP/BS/PHYDL/FCO/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.243/Item 7. Initial condition: A connection is setup between the BS and the test SS. The test SS requests the BS to use burst profiles with fixed codeword operation. Stimulus: Data is transmitted in the downlink. Expected behavior: The SS receives the data correctly.
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5.3.10.4 Shortened Last Codeword Operation**5.3.10.4.1 Capabilities****Table 193 — Shortened Last Codeword Operation**

TP/BS/PHYDL/SC/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.243/Item 8 Initial condition: A connection is setup between the BS and the test SS. The test SS requests the BS to use burst profiles with shortened last codeword operation. Stimulus: Data is transmitted in the downlink Expected behavior: The SS receives the data correctly
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5.3.10.5 Burst Preamble**5.3.10.5.1 Capabilities****Table 194 — Burst Preamble**

TP/BS/PHYDL/BP/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.243/Item 13 Initial condition: A connection is setup between the BS and the half-duplex test SS. Stimulus: Data is transmitted in the TDMA portion of the downlink. Expected behavior: The SS receives the data correctly.
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5.3.10.6 Modulation**5.3.10.6.1 Capabilities****Table 195 — Modulation**

TP/BS/PHYDL/M/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.243/Item 15. Initial condition: A connection is setup between the BS and the test SS. The test SS requests the BS to use burst profiles with QPSK modulation. Stimulus: Data is transmitted in the downlink. Expected behavior: The SS receives the data correctly.
TP/BS/PHYDL/M/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.243/Item 16. Initial condition: A connection is setup between the BS and the test SS. The test SS requests the BS to use burst profiles with 16-QAM modulation. Stimulus: Data is transmitted in the downlink. Expected behavior: The SS receives the data correctly.

Table 195 — Modulation

TP/BS/PHYDL/M/CA-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.243/Item 17. Initial condition: A connection is setup between the BS and the test SS. The test SS requests the BS to use burst profiles with 64-QAM modulation. Stimulus: Data is transmitted in the downlink. Expected behavior: The SS receives the data correctly.
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5.3.10.7 RS Outer Code – Information Block Length

5.3.10.7.1 Capabilities

Table 196 — RS Outer Code – Information Block Length

TP/BS/PHYDL/IBL/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.243/Item 21. Initial condition: A connection is setup between the BS and the test SS. The test SS requests the BS to use burst profiles with Information Block length = 6, 128, and 239 and t = 8. Stimulus: Data is transmitted in the downlink. Expected behavior: The SS receives the data correctly.
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5.3.10.8 Continuous Wave (CW) Mode

5.3.10.8.1 Capabilities

Table 197 — Continuous Wave (CW) Mode

TP/BS/PHYDL/CV/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.249/Item 1. Initial condition: BS is operable. Stimulus: Request to enter CW mode. Expected behavior: The BS transmits a CW signal corresponding to the center frequency of the selected channel.
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5.3.11 Uplink Physical layer – BS

5.3.11.1 Randomization With Programmable Seed

5.3.11.1.1 Capabilities

Table 198 — Randomization with Programmable Seed

TP/BS/PHYUL/RPS/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.244/Item 2. Initial condition: A connection is setup between the BS and the test SS. Various UL Burst Profiles are defined differing only in their seed values. The test NMS requests the BS to use burst profiles with different seed values for the randomization. Stimulus: Data is transmitted in the uplink. Expected behavior: The BS receives the data correctly.
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5.3.11.2 RS Outer Code – Initial Ranging**5.3.11.2.1 Capabilities****Table 199 — RS Outer Code – Initial Ranging**

TP/BS/PHYUL/IR/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.244/Item 3. Initial condition: A connection is setup between the BS and the test SS. The test NMS requests the BS to use a burst profile with RS parameter $t = 10$. Stimulus: Data is transmitted in the uplink. Expected behavior: The BS receives the data correctly.
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5.3.11.3 RS Outer Code Other Bursts**5.3.11.3.1 Capabilities****Table 200 — RS Outer Code Other Bursts**

TP/BS/PHYUL/RS/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.244/Item 4 Initial condition: A connection is setup between the BS and the test SS. The test NMS requests the BS to use burst profiles with RS parameter $t = 0, 4, 8,$ and 12 . Stimulus: Data is transmitted in the uplink with $0, 4, 8,$ or 12 erroneous bytes in the codeword. Expected behavior: The BS receives the data correctly.
TP/BS/PHYUL/RS/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.244/Item 4 Initial condition: A connection is setup between the BS and the test SS. The test NMS requests the BS to use burst profiles with RS parameter $t = 0, 4, 8,$ and 12 . Stimulus: Data is transmitted in the uplink with $1, 5, 9,$ or 13 erroneous bytes in the codeword. Expected behavior: The BS detects that it is unable to receive the data correctly.

5.3.11.4 Fixed Codeword Operation**5.3.11.4.1 Capabilities****Table 201 — Fixed Codeword Operation**

TP/BS/PHYUL/FCO/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.244/Item 6 Initial condition: A connection is setup between the BS and the test SS. The test NMS requests the BS to use burst profiles with fixed codeword operation. Stimulus: Data is transmitted in the uplink. Expected behavior: The BS receives the data correctly.
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5.3.11.5 Shortened Last Codeword Operation

5.3.11.5.1 Capabilities

Table 202 — Shortened Last Codeword Operation

TP/BS/PHYUL/SC/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.244/Item 7 Initial condition: A connection is setup between the BS and the test SS. The test NMS requests the BS to use burst profiles with shortened last codeword operation. Stimulus: Data is transmitted in the uplink. Expected behavior: The BS receives the data correctly.
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5.3.11.6 BCC Inner Code

5.3.11.6.1 Capabilities

Table 203 — BCC Inner Code

TP/BS/PHYUL/BCC/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.244/Item 8 Initial condition: A connection is setup between the BS and the test SS. The test NMS requests the BS to use a burst profile with BCC inner code. Stimulus: Data is transmitted in the uplink. Expected behavior: The BS receives the data correctly.
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5.3.11.7 Burst Preamble

5.3.11.7.1 Capabilities

Table 204 — Burst Preamble

TP/BS/PHYUL/BP/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.244/Item 11. Initial condition: A connection is setup between the BS and the test SS. The test NMS requests the BS to use a burst profile with different preamble length. Stimulus: Data is transmitted in the uplink. Expected behavior: The BS receives the data correctly.
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5.3.11.8 Modulation**5.3.11.8.1 Capabilities****Table 205 — Modulation**

TP/BS/PHYUL/M/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.244/Item 13. Initial condition: A connection is setup between the BS and the test SS. The test NMS requests the BS to use a burst profile with QPSK modulation. Stimulus: Data is transmitted in the uplink. Expected behavior: The BS receives the data correctly.
TP/BS/PHYUL/M/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.244/Item 14. Initial condition: A connection is setup between the BS and the test SS. The test NMS requests the BS to use a burst profile with 16-QAM modulation. Stimulus: Data is transmitted in the uplink. Expected behavior: The BS receives the data correctly.
TP/BS/PHYUL/M/CA-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.244/Item 15. Initial condition: A connection is setup between the BS and the test SS. The test NMS requests the BS to use a burst profile with 64-QAM modulation. Stimulus: Data is transmitted in the uplink. Expected behavior: The BS receives the data correctly.

5.3.11.9 RS Outer Code – Information Block Length**5.3.11.9.1 Capabilities****Table 206 — RS Outer Code – Information Block Length**

TP/BS/PHYUL/IBL/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.244/Item 20. Initial condition: A connection is setup between the BS and the test SS. The test NMS requests the BS to use a burst profile with Information Block length = 6, 128, and 239 and $t = 8$. Stimulus: Data is transmitted in the uplink. Expected behavior: The BS receives the data correctly.
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5.3.12 Minimum Performance – BS**5.3.12.1 Channel Allocation****5.3.12.1.1 Capabilities****Table 207 — Channel Allocation**

TP/BS/PHY/MP/CHA/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.219/Item 3, IEEE Std 802.16/Conformance01-2003, Table A.249/Item 1. Initial condition: The manufacturer declares the supported frequency bands. The BS is set in a CW test mode. Stimulus: The BS is requested to generate different frequencies. Expected behavior: For each supported band, the BS is able to generate all in-band frequencies which are higher than the lower edge of the band by positive integer multiples of 250 kHz.
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5.3.12.2 Symbol Timing Accuracy

5.3.12.2.1 Capabilities

Table 208 — Symbol Timing Accuracy

TP/BS/PHYMP/STA/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.247/Item 1. Initial condition: The BS is operational and the frequency and the jitter of the symbol clock is measured. Stimulus: None. Expected behavior: The symbol clock accuracy shall be within ± 15 ppm of its nominal value. The peak-to-peak jitter of the symbol clock, measured over a 2 s measurement period shall be less than 2%.
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5.3.12.3 Carrier Frequency

5.3.12.3.1 Capabilities

Table 209 — Carrier Frequency

TP/BS/PHYMP/CF/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.247/Items 2 and 3. Initial condition: The manufacturer declares the supported frequency bands. The BS is set in a CW test mode. Stimulus: The frequency is set to the center frequency of the channels in the band. Expected behavior: The accuracy shall be better than ± 10 ppm.
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5.3.12.4 Spectral Mask

5.3.12.4.1 Capabilities

Table 210 — Spectral Mask

TP/BS/PHYMP/SM/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.247/Item 4. Initial condition: The manufacturer declares the supported frequency bands. A connection is setup between the BS and the test SS. Stimulus: The downlink frame is filled with data. Expected behavior: The spectrum of the transmitted signal shall not exceed the limits defined by the spectrum mask defined by the local regulator.
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5.3.12.5 Spurious

5.3.12.5.1 Capabilities

Table 211 — Spurious

TP/BS/PHY/MP/SP/CA-00	Reference: IEEE Std 802.16/Conformance01-2003, Table A.247/Item 5. Initial condition: A connection is setup between the BS and the test SS. Stimulus: The downlink frame is filled with data. Expected behavior: The spectrum of the transmitted signal is measured. The spurious frequencies shall not exceed the values given by the local regulator.
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5.3.12.6 Tx RMS Power Level**5.3.12.6.1 Capabilities****Table 212 — Tx RMS Power Level**

TP/BS/PHYMP/TXP/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.243/Items 22 and 23. Initial condition: The manufacturer declares the Tx power of the BS. A connection is setup between the BS and the test SS. The test SS requests the BS to use the most robust burst profile. Stimulus: The downlink is filled with data. The power is measured. Expected behavior: The power shall be equal to the declared value ± 2 dB.
TP/BS/PHYMP/TXP/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.243/Item 22. Initial condition: A connection is setup between the BS and test SS. The test SS requests the BS to use burst profiles with different modulation schemes. BS operating with equal peak power. Stimulus: The downlink is filled with data. The average power is measured separately for frames with different modulation scheme. Expected behavior: The relative power of the modulation schemes shall be 0, -2.5 , -3.7 ± 0.5 dB for QPSK, 16-QAM and 64-QAM respectively.
TP/BS/PHYMP/TXP/CA-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.243/Item 23. Initial condition: A connection is setup between the BS and test SS. The test SS requests the BS to use burst profiles with different modulation schemes. BS operating with equal average power. Stimulus: The downlink is filled with data. The average power is measured separately for frames with different modulation scheme. Expected behavior: The power for the different modulation schemes shall be equal with an accuracy of ± 0.5 dB.

5.3.12.7 Ramp Up / Down Time**5.3.12.7.1 Capabilities****Table 213 — Ramp Up / Down time**

TP/BS/PHYMP/RUD/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.247/Item 6. Initial condition: A connection is setup between the BS and the test SS. Stimulus: Data is transmitted in the uplink. Expected behavior: The BS always allows ≥ 24 symbols ramp up and down times, including allowances for round trip delay when creating the maps.
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5.3.12.8 Modulation Accuracy

Modulation accuracy is expressed in error vector magnitude (EVM), as defined in IEEE 802.16 for WirelessMAN-SC. For the modulation accuracy tests it is assumed that the receiver characteristics of the test SS are known and are better than those of an ordinary SS.

5.3.12.8.1 Capabilities

Table 214 — Modulation Accuracy

<p>TP/BS/PHYMP/MA/CA-000</p>	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.247/Item 7. Initial condition: A connection is setup between the BS and the test SS. The equalizer in the test SS is disabled. A SS BER test is setup. Stimulus: Data is transmitted in the downlink with QPSK modulation and the attenuator is adjusted until a BER of 10^{-3} is recorded. Expected behavior: The input power is measured and the modulation accuracy is calculated. The modulation accuracy shall be $\leq 12\%$.</p>
<p>TP/BS/PHYMP/MA/CA-001</p>	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.247/Item 8. Initial condition: A connection is setup between the BS and the test SS. The equalizer in the test SS is disabled. A SS BER test is setup. Stimulus: Data is transmitted in the downlink with 16-QAM modulation and the attenuator is adjusted until a BER of 10^{-3} is recorded. Expected behavior: The input power is measured and the modulation accuracy is calculated. The modulation accuracy shall be $\leq 6\%$.</p>
<p>TP/BS/PHYMP/MA/CA-002</p>	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.247/Item 9. Initial condition: A connection is setup between the BS and the test SS. The equalizer in the test SS is enabled. A SS BER test is setup. Stimulus: Data is transmitted in the downlink with QPSK modulation and the attenuator is adjusted until a BER of 10^{-3} is recorded. Expected behavior: The input power is measured and the modulation accuracy is calculated. The modulation accuracy shall be $\leq 10\%$.</p>
<p>TP/BS/PHYMP/MA/CA-003</p>	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.247/Item 10. Initial condition: A connection is setup between the BS and the test SS. The equalizer in the test SS is enabled. A SS BER test is setup. Stimulus: Data is transmitted in the downlink with 16-QAM modulation and the attenuator is adjusted until a BER of 10^{-3} is recorded. Expected behavior: The input power is measured and the modulation accuracy is calculated. The modulation accuracy shall be $\leq 3\%$.</p>
<p>TP/BS/PHYMP/MA/CA-004</p>	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.247/Item 11. Initial condition: A connection is setup between the BS and the test SS. The equalizer in the test SS is enabled. A SS BER test is setup. Stimulus: Data is transmitted in the downlink with 64-QAM modulation and the attenuator is adjusted until a BER of 10^{-3} is recorded. Expected behavior: The input power is measured and the modulation accuracy is calculated. The modulation accuracy shall be $\leq 1.5\%$.</p>

5.3.12.9 Rx Dynamic Range

5.3.12.9.1 Capabilities

Table 215 — Rx Dynamic Range

TP/BS/PHYMP/RDR/CA-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.248/Item 1.</p> <p>Initial condition: A connection is setup between the BS and the test SS. Data is transmitted in the uplink. The test NMS requests the BS to use the most robust burst profile.</p> <p>Stimulus: The attenuator is adjusted until the minimum operable value is reached. The power of the signal is recorded. The attenuator is adjusted until the maximum operable power is reached. The power of the signal is again recorded.</p> <p>Expected behavior: The difference between the two power values is the Rx dynamic range and shall be ≥ 27 dB.</p>
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5.3.12.10 BER Performance Threshold

It is assumed that the test SS has a modulation accuracy which is known and better than that of an ordinary SS. All measured input power values are corrected according to the transmitter characteristics

5.3.12.10.1 Capabilities

Table 216 — BER Performance Threshold

TP/BS/PHYMP/BER/CA-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.248/Item 2.</p> <p>Initial condition: A connection is setup between the BS and the test SS.</p> <p>Stimulus: The test SS transmits data with QPSK modulation and known contents to the BS. Neither inner nor outer FEC is used. The BER is computed from the data packets accepted by the BS. The attenuator is adjusted until $BER=10^{-3}$.</p> <p>Expected behavior: The input power is measured and shall be $\leq -94 + 10\log(B)$. B is the symbol rate in Msymbols/s.</p>
TP/BS/PHYMP/BER/CA-001	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.248/Item 3.</p> <p>Initial condition: A connection is setup between the BS and the test SS.</p> <p>Stimulus: The test SS transmits data with 16-QAM modulation and known contents to the BS. Neither inner nor outer FEC is used. The BER is computed from the data packets accepted by the BS. The attenuator is adjusted until $BER=10^{-3}$.</p> <p>Expected behavior: The input power is measured and shall be $\leq -87 + 10\log(B)$. B is the symbol rate in Msymbols/s.</p>
TP/BS/PHYMP/BER/CA-002	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.248/Item 4.</p> <p>Initial condition: A connection is setup between the BS and the test SS.</p> <p>Stimulus: The test SS transmits data with 64-QAM modulation and known contents to the BS. Neither inner nor outer FEC is used. The BER is computed from the data packets accepted by the BS. The attenuator is adjusted until $BER=10^{-3}$.</p> <p>Expected behavior: The input power is measured and shall be $\leq -79 + 10\log(B)$. B is the symbol rate in Msymbols/s.</p>

Table 216 — BER Performance Threshold (continued)

<p>TP/BS/PHYMP/BER/CA-003</p>	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.248/Item 5. Initial condition: A connection is setup between the BS and the test SS. Stimulus: The test SS transmits data with QPSK modulation and known contents to the BS. Neither inner nor outer FEC is used. The BER is computed from the data packets accepted by the BS. The attenuator is adjusted until $BER=10^{-6}$. Expected behavior: The input power is measured and shall be $\leq -90 + 10\log(B)$. B is the symbol rate in Msymbols/s.</p>
<p>TP/BS/PHYMP/BER/CA-004</p>	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.248/Item 6. Initial condition: A connection is setup between the BS and the test SS. Stimulus: The test SS transmits data with 16-QAM modulation and known contents to the BS. Neither inner nor outer FEC is used. The BER is computed from the data packets accepted by the BS. The attenuator is adjusted until $BER=10^{-6}$. Expected behavior: The input power is measured and shall be $\leq -83 + 10\log(B)$. B is the symbol rate in Msymbols/s.</p>
<p>TP/BS/PHYMP/BER/CA-005</p>	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.248/Item 7. Initial condition: A connection is setup between the BS and the test SS. Stimulus: The test SS transmits data with 64-QAM modulation and known contents to the BS. Neither inner nor outer FEC is used. The BER is computed from the data packets accepted by the BS. The attenuator is adjusted until $BER=10^{-6}$. Expected behavior: The input power is measured and shall be $\leq -74 + 10\log(B)$. B is the symbol rate in Msymbols/s.</p>

5.3.12.11 1st Adjacent Channel Interference

5.3.12.11.1 Capabilities

Table 217 — 1st Adjacent Channel Interference

<p>TP/BS/PHYMP/1AC/CA-000</p>	<p>Reference: IEEE Std 802.16-2001/Conformance01-2003, Table A.248/Item 8. Initial condition: A connection is setup between the BS and the test SS. Uplink QPSK data is generated and the attenuator is adjusted for $BER=10^{-3}$. The signal level is increased by 3 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 1st adjacent channel. The attenuator of the interferer is adjusted until $BER=10^{-3}$ is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ -9 dB</p>
<p>TP/BS/PHYMP/1AC/CA-001</p>	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.248/Item 9. Initial condition: A connection is setup between the BS and the test SS. Uplink 16-QAM data is generated and the attenuator is adjusted for $BER=10^{-3}$. The signal level is increased by 3 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 1st adjacent channel. The attenuator of the interferer is adjusted until $BER=10^{-3}$ is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ -2 dB.</p>
<p>TP/BS/PHYMP/1AC/CA-002</p>	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.248/Item 10. Initial condition: A connection is setup between the BS and the SS. Uplink 64-QAM data is generated and the attenuator is adjusted for $BER=10^{-3}$. The signal level is increased by 3 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 1st adjacent channel. The attenuator of the interferer is adjusted until $BER=10^{-3}$ is reached. The power of the interferer is measured. Expected behavior: The C/I shall be $\leq +5$ dB.</p>

Table 217 — 1st Adjacent Channel Interference (continued)

TP/BS/PHYMP/1AC/CA-003	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.248/Item 11. Initial condition: A connection is setup between the BS and the test SS. Uplink QPSK data is generated and the attenuator is adjusted for BER=10⁻³. The signal level is increased by 1 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 1st adjacent channel. The attenuator of the interferer is adjusted until BER=10⁻³ is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ -5 dB.</p>
TP/BS/PHYMP/1AC/CA-004	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.248/Item 12 Initial condition: A connection is setup between the BS and the SS. Uplink 16-QAM data is generated and the attenuator is adjusted for BER=10⁻³. The signal level is increased by 1 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 1st adjacent channel. The attenuator of the interferer is adjusted until BER=10⁻³ is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ +2 dB.</p>
TP/BS/PHYMP/1AC/CA-005	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.248/Item 13 Initial condition: A connection is setup between the BS and the test SS. Uplink 64-QAM data is generated and the attenuator is adjusted for BER=10⁻³. The signal level is increased by 1 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 1st adjacent channel. The attenuator of the interferer is adjusted until BER=10⁻³ is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ +9 dB.</p>
TP/BS/PHYMP/1AC/CA-006	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.248/Item 14. Initial condition: A connection is setup between the BS and the SS. Uplink QPSK data is generated and the attenuator is adjusted for BER=10⁻⁶. The signal level is increased by 3 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 1st adjacent channel. The attenuator of the interferer is adjusted until BER=10⁻⁶ is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ -5 dB.</p>
TP/BS/PHYMP/1AC/CA-007	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.248/Item 15. Initial condition: A connection is setup between the BS and the test SS. Uplink 16-QAM data is generated and the attenuator is adjusted for BER=10⁻⁶. The signal level is increased by 3 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 1st adjacent channel. The attenuator of the interferer is adjusted until BER=10⁻⁶ is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ +2 dB.</p>
TP/BS/PHYMP/1AC/CA-008	<p>Reference: IEEE Std 802.16/Conformance01-2003IEEE Std 802.16/Conformance01-2003, Table A.248/Item 16. Initial condition: A connection is setup between the BS and the test SS. Uplink 64-QAM data is generated and the attenuator is adjusted for BER=10⁻⁶. The signal level is increased by 3 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 1st adjacent channel. The attenuator of the interferer is adjusted until BER=10⁻⁶ is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ +9 dB.</p>

Table 217 — 1st Adjacent Channel Interference (continued)

<p>TP/BS/PHYMP/1AC/CA-009</p>	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.248/Item 17. Initial condition: A connection is setup between the BS and the test SS. Uplink QPSK data is generated and the attenuator is adjusted for BER=10⁻⁶. The signal level is increased by 1 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 1st adjacent channel. The attenuator of the interferer is adjusted until BER=10⁻⁶ is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ -1 dB.</p>
<p>TP/BS/PHYMP/1AC/CA-010</p>	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.248/Item 18. Initial condition: A connection is setup between the BS and the test SS. Uplink 16-QAM data is generated and the attenuator is adjusted for BER=10⁻⁶. The signal level is increased by 1 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 1st adjacent channel. The attenuator of the interferer is adjusted until BER=10⁻⁶ is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ +6 dB.</p>
<p>TP/BS/PHYMP/1AC/CA-011</p>	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.248/Item 19. Initial condition: A connection is setup between the BS and the test SS. Uplink 64-QAM data is generated and the attenuator is adjusted for BER=10⁻⁶. The signal level is increased by 1 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 1st adjacent channel. The attenuator of the interferer is adjusted until BER=10⁻⁶ is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ +13 dB.</p>

5.3.12.12 2nd Adjacent Channel Interference

5.3.12.12.1 Capabilities

Table 218 — 2nd Adjacent Channel Interference

<p>TP/BS/PHYMP/2AC/CA-000</p>	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.248/Item 20. Initial condition: A connection is setup between the BS and the test SS. Uplink QPSK data is generated and the attenuator is adjusted for BER=10⁻³. The signal level is increased by 3 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 2nd adjacent channel. The attenuator of the interferer is adjusted until BER=10⁻³ is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ -34 dB.</p>
<p>TP/BS/PHYMP/2AC/CA-001</p>	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.248/Item 21. Initial condition: A connection is setup between the BS and the test SS. Uplink 16-QAM data is generated and the attenuator is adjusted for BER=10⁻³. The signal level is increased by 3 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 2nd adjacent channel. The attenuator of the interferer is adjusted until BER=10⁻³ is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ -27 dB.</p>

Table 218 — 2nd Adjacent Channel Interference (continued)

TP/BS/PHYMP/2AC/CA-002	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.248/Item 22</p> <p>Initial condition: A connection is setup between the BS and the test SS. Uplink 64-QAM data is generated and the attenuator is adjusted for BER=10⁻³. The signal level is increased by 3 dB and the signal power is measured.</p> <p>Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 2nd adjacent channel. The attenuator of the interferer is adjusted until BER=10⁻³ is reached. The power of the interferer is measured.</p> <p>Expected behavior: The C/I shall be ≤ -20 dB.</p>
TP/BS/PHYMP/2AC/CA-003	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.248/Item 23.</p> <p>Initial condition: A connection is setup between the BS and the test SS. Uplink QPSK data is generated and the attenuator is adjusted for BER=10⁻³. The signal level is increased by 1 dB and the signal power is measured.</p> <p>Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 2nd adjacent channel. The attenuator of the interferer is adjusted until BER=10⁻³ is reached. The power of the interferer is measured.</p> <p>Expected behavior: The C/I shall be ≤ -30 dB.</p>
TP/BS/PHYMP/2AC/CA-004	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.248/Item 24</p> <p>Initial condition: A connection is setup between the BS and the test SS. Uplink 16-QAM data is generated and the attenuator is adjusted for BER=10⁻³. The signal level is increased by 1 dB and the signal power is measured.</p> <p>Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 2nd adjacent channel. The attenuator of the interferer is adjusted until BER=10⁻³ is reached. The power of the interferer is measured.</p> <p>Expected behavior: The C/I shall be ≤ -22 dB.</p>
TP/BS/PHYMP/2AC/CA-005	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.248/Item 25.</p> <p>Initial condition: A connection is setup between the BS and the test SS. Uplink 64-QAM data is generated and the attenuator is adjusted for BER=10⁻³. The signal level is increased by 1 dB and the signal power is measured.</p> <p>Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 2nd adjacent channel. The attenuator of the interferer is adjusted until BER=10⁻³ is reached. The power of the interferer is measured.</p> <p>Expected behavior: The C/I shall be ≤ -16 dB.</p>
TP/BS/PHYMP/2AC/CA-006	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.248/Item 26.</p> <p>Initial condition: A connection is setup between the BS and the test SS. Uplink QPSK data is generated and the attenuator is adjusted for BER=10⁻⁶. The signal level is increased by 3 dB and the signal power is measured.</p> <p>Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 2nd adjacent channel. The attenuator of the interferer is adjusted until BER=10⁻⁶ is reached. The power of the interferer is measured.</p> <p>Expected behavior: The C/I shall be ≤ -30 dB.</p>
TP/BS/PHYMP/2AC/CA-007	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.248/Item 27.</p> <p>Initial condition: A connection is setup between the BS and the test SS. Uplink 16-QAM data is generated and the attenuator is adjusted for BER=10⁻⁶. The signal level is increased by 3 dB and the signal power is measured.</p> <p>Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 2nd adjacent channel. The attenuator of the interferer is adjusted until BER=10⁻⁶ is reached. The power of the interferer is measured.</p> <p>Expected behavior: The C/I shall be ≤ -23 dB</p>

Table 218 — 2nd Adjacent Channel Interference (continued)

TP/BS/PHYMP/2AC/CA-008	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.248/Item 28. Initial condition: A connection is setup between the BS and the test SS. Uplink 64-QAM data is generated and the attenuator is adjusted for BER=10⁻⁶. The signal level is increased by 3 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 2nd adjacent channel. The attenuator of the interferer is adjusted until BER=10⁻⁶ is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ -16 dB.</p>
TP/BS/PHYMP/2AC/CA-009	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.248/Item 29. Initial condition: A connection is setup between the BS and the test SS. Uplink QPSK data is generated and the attenuator is adjusted for BER=10⁻⁶. The signal level is increased by 1 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 2nd adjacent channel. The attenuator of the interferer is adjusted until BER=10⁻⁶ is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ -26 dB.</p>
TP/BS/PHYMP/2AC/CA-010	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.248/Item 30 Initial condition: A connection is setup between the BS and the test SS. Uplink 16-QAM data is generated and the attenuator is adjusted for BER=10⁻⁶. The signal level is increased by 1 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 2nd adjacent channel. The attenuator of the interferer is adjusted until BER=10⁻⁶ is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ -20 dB.</p>
TP/BS/PHYMP/2AC/CA-011	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.248/Item 31 Initial condition: A connection is setup between the BS and the test SS. Uplink 64-QAM data is generated and the attenuator is adjusted for BER=10⁻⁶. The signal level is increased by 1 dB and the signal power is measured. Stimulus: An interfering signal with the same modulation as the wanted signal is applied on the 2nd adjacent channel. The attenuator of the interferer is adjusted until BER=10⁻⁶ is reached. The power of the interferer is measured. Expected behavior: The C/I shall be ≤ -12 dB.</p>

5.3.13 ATM Convergence Sublayer – BS

5.3.13.1 Capabilities

Table 219 — ATM Convergence Sublayer

TP/BS/ACS/ATM/CA-000	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.214, IEEE Std 802.16/Conformance01-2003, Table A.241. Initial Condition: SS has transmitted TFTP-CPLT to BS. (SS is authenticated and registered.) Stimulus: BS is stimulated to transmit a DSA-REQ message instructing the SS to create and activate both the UL and DL portions of an ATM service. The SS transmits to the BS a DSA-RSP message accepting the creation and activation of both the UL and DL portions of the service. Expected Behavior: The SS and BS shall pass user data on the service. Repeat this test for all ATM service types supported by the BS.</p>
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5.3.13.2 Valid Behavior

Table 220 — ATM Convergence Sublayer – Valid Behavior

TP/BS/ACS/ATM/BV-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.129/Items 1 and 2, IEEE Std 802.16/Conformance01-2003, Table A.214. Initial condition: BS is operational. Four downlink services are set up, 2 for one SS, 2 for another. At least one service is VC switched and at least one is VP switched. Stimulus: ATM cells received from backhaul (ingress). Expected behavior: BS forwards ATM cells on correct CID to correct SS. ATM cells with VPI/VCI not mapped to a service are discarded. Cells are correctly encapsulated.
TP/BS/ACS/ATM/BV-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.129/Item 1 and 2, IEEE Std 802.16/Conformance01-2003, Table A.214/Item 1. Initial condition: Base station is operational. At least one VC switched bi-directional service and at least one bi-directional VP switched service are set up. No PHS. Stimulus: ATM cells received from backhaul (ingress) and from the airlink. Expected behavior: BS forwards ATM cells from backhaul on correct CID with VPI/VCI preserved in the MAC PDU (53 –byte SDU). ATM cells with VPI/VCI not mapped to a service are discarded. BS forwards cells from the airlink to the backhaul, preserving the VPI/VCI from the MAC PDU.
TP/BS/ACS/ATM/BV-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.129/Item 2, IEEE Std 802.16/Conformance01-2003, Table A.214/Item 1, IEEE Std 802.16/Conformance01-2003, Table A.241. Initial condition: Base station is operational. At least one VC switched downlink service is set up. No PHS. At least 2 classifiers are set up. Stimulus: ATM cells received from backhaul (ingress). Expected behavior: BS forwards ATM cells from backhaul on correct CID with VPI/VCI preserved in the MAC PDU (53 –byte SDU). ATM cells with VPI/VCI not mapped to a service are discarded.
TP/BS/ACS/ATM/BV-003	Reference: IEEE Std 802.16/Conformance01-2003, Table A.129/Item 1, IEEE Std 802.16/Conformance01-2003, Table A.214/Item 1, IEEE Std 802.16/Conformance01-2003, Table A.214/Item 1. Initial condition: Base station is operational. At least one VP switched downlink service is set up. No PHS. At least 2 classifiers are set up. At least one of the classifiers has at least 2 VCIs. Stimulus: ATM cells received from backhaul (ingress). Expected behavior: BS forwards ATM cells from backhaul on correct CID with VPI/VCI preserved in the MAC PDU (53 –byte SDU). ATM cells with VPI/VCI not mapped to a service are discarded.
TP/BS/ACS/ATM/BV-004	Reference: IEEE Std 802.16/Conformance01-2003, Table A.129/Item 4, IEEE Std 802.16/Conformance01-2003, Table A.214/Item 3. Initial condition: Base station is operational. At least one VC switched bi-directional service is set up. PHS. Stimulus: ATM cells received from backhaul (ingress) and from the airlink. Expected behavior: BS forwards ATM cells from backhaul on correct CID with 49–byte SDU format. ATM cells with VPI/VCI not mapped to a service are discarded. BS forwards ATM cells from airlink on backhaul, correctly reconstituting VPI/VCI and remainder of ATM header from CID and 49–byte SDU format.
TP/BS/ACS/ATM/BV-005	Reference: IEEE Std 802.16/Conformance01-2003, Table A.129/Item 3, IEEE Std 802.16/Conformance01-2003, Table A.214/Item 2. Initial condition: Base station is operational. At least one VP switched bi-directional service is set up. PHS. Classifier specifies no VCIs. Stimulus: ATM cells received from backhaul (ingress) and from the airlink. Expected behavior: BS forwards ATM cells from backhaul on correct CID with 51–byte SDU format. ATM cells with VPI/VCI not mapped to a service are discarded. BS forwards ATM cells from airlink on backhaul, correctly reconstituting VPI/VCI and remainder of ATM header from CID and 51–byte SDU format.
TP/BS/ACS/ATM/BV-006	Reference: IEEE Std 802.16/Conformance01-2003, Table A.129/Items 2 and 3, IEEE Std 802.16/Conformance01-2003, Table A.214/Item 3, IEEE Std 802.16/Conformance01-2003, Table A.241. Initial condition: Base station is operational. At least one VP switched bi-directional service is set up. PHS. Classifier with multiple VCI specified. Stimulus: ATM cells received from backhaul (ingress) and from the airlink. Expected behavior: BS forwards ATM cells from backhaul on correct CID with 51–byte SDU format. ATM cells with VPI/VCI not mapped to a service are discarded. BS forwards ATM cells from airlink on backhaul, correctly reconstituting VPI/VCI and remainder of ATM header from CID and 51–byte SDU format.

Table 220 — ATM Convergence Sublayer – Valid Behavior (continued)

TP/BS/ACS/ATM/BV-007	Reference: IEEE Std 802.16/Conformance01-2003, Table A.129/Items 1, 2, and 4, IEEE Std 802.16/Conformance01-2003, Table A.241. Initial condition: Base station is operational. At least one downlink service is set up. At least one classifier specified. Cells entering from backhaul that match the classifier, and other cells that do not match the classifier. Those that do not match are being discarded, those that do match are being forwarded. Stimulus: Replace classifier so that originally discarded cells are now forwarded and originally forwarded cells are now discarded. Expected behavior: Originally discarded cells are now forwarded and originally forwarded cells are now discarded.
TP/BS/ACS/ATM/BV-008	Reference: IEEE Std 802.16/Conformance01-2003, Table A.129/Items 1, 2, and 4, IEEE Std 802.16/Conformance01-2003, Table A.241. Initial condition: End of TP/BS/ACS/ATM/BV-007. Stimulus: Add original version of classifier that was replaced in TP/BS/ACS/ATM/BV-007 so that originally forwarded cells are now forwarded once more, but newly forwarded cells are still forwarded. Expected behavior: Originally forwarded cells are now forwarded once more, but newly forwarded cells are still forwarded.
TP/BS/ACS/ATM/BV-009	Reference: IEEE Std 802.16/Conformance01-2003, Table A.129/Items 1, 2, and 4, IEEE Std 802.16/Conformance01-2003, Table A.241. Initial condition: End of TP/BS/ACS/ATM/BV-008. Stimulus: Delete version of classifier that was created by replace in TP/BS/ACS/ATM/BV-007 so that originally discarded cells are now discarded once more, but originally forwarded cells are still forwarded. Expected behavior: Originally discarded cells are now discarded once more, but originally forwarded cells are still forwarded.

5.3.13.3 Invalid Behavior

All BI tests for the ACS protocol group are covered by the DS protocol group.

5.3.13.4 Inopportune Behavior

All BO tests for the ACS protocol group are covered by the DS protocol group.

5.3.13.5 Timer

All TI tests for the ACS protocol group are covered by the DS protocol group.

5.3.13.6 Message Formats

For all TP/BS/ACS/ATM tests ensure that messages transmitted by the BS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.3.14 Packet Convergence Sublayer – BS

5.3.14.1 Packet CS Usage

Tests for verifying that packets are encapsulated correctly by the Packet CS implementation.

5.3.14.1.1 Capabilities

Table 221 — Packet CS Usage

TP/BS/PCS/PCU/CA-000	<p>Reference: IEEE Std. 802.16/Conformance01-2003, Table A.130/Item 1, IEEE Std. 802.16/Conformance01-2003, Table A.215/Item 1.</p> <p>Initial condition: BS has completed DSA transaction with an SS assigning the connection with CID = i to use the IPv4 CS. No PHS. All incoming packets classified to CID = i.</p> <p>Stimulus: BS receives IPv4 packets on its external interface.</p> <p>Expected behavior: SS sends MAC PDU containing the PHSI field (= 0) prepended by the CS followed by the IPv4 packet on CID = i.</p>
TP/BS/PCS/PCU/CA-001	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.130/Item 2, IEEE Std 802.16/Conformance01-2003, Table A.215/Item 1.</p> <p>Initial condition: BS has completed DSA transaction with an SS assigning the connection with CID = i to use the IPv6 CS. No PHS. All incoming packets classified to CID = i.</p> <p>Stimulus: BS receives IPv6 packets on its external interface.</p> <p>Expected behavior: BS sends MAC PDU containing the PHSI field (= 0) prepended by the CS followed by the IPv6 packet on CID = i.</p>
TP/BS/PCS/PCU/CA-002	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.130/Item 3, IEEE Std 802.16/Conformance01-2003, Table A.215/Item 1.</p> <p>Initial condition: BS has completed DSA transaction with an SS assigning the connection with CID = i to use the Ethernet CS. No PHS. All incoming packets classified to CID = i.</p> <p>Stimulus: BS receives Ethernet packets on its external interface.</p> <p>Expected behavior: BS sends MAC PDU containing the PHSI field (= 0) prepended by the CS followed by the Ethernet packet on CID = i.</p>
TP/BS/PCS/PCU/CA-003	<p>Reference: IEEE Std. 802.16/Conformance01-2003, Table A.130/Item 4, IEEE Std. 802.16/Conformance01-2003, Table A.215/Item 1.</p> <p>Initial condition: BS has completed DSA transaction with an SS assigning the connection with CID = i to use the Ethernet with VLAN tagging CS. No PHS. All incoming packets classified to CID = i.</p> <p>Stimulus: BS receives VLAN tagged Ethernet packets on its external interface.</p> <p>Expected behavior: BS sends MAC PDU containing the PHSI field (= 0) prepended by the CS followed by the VLAN tagged Ethernet packet on CID = i.</p>
TP/BS/PCS/PCU/CA-004	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.130/Item 5, IEEE Std 802.16/Conformance01-2003, Table A.215/Item 1.</p> <p>Initial condition: BS has completed DSA transaction with an SS assigning the connection with CID = i to use the IPv4 over Ethernet CS. No PHS. All incoming packets classified to CID = i.</p> <p>Stimulus: BS receives Ethernet packets on its external interface.</p> <p>Expected behavior: BS sends MAC PDU containing the PHSI field (= 0) prepended by the CS followed by the Ethernet packet on CID = i.</p>
TP/BS/PCS/PCU/CA-005	<p>Reference: IEEE Std 802.16/Conformance01-2003, Table A.130/Item 6, IEEE Std 802.16/Conformance01-2003, Table A.215/Item 1.</p> <p>Initial condition: BS has completed DSA transaction with an SS assigning the connection with CID = i to use the IPv6 over Ethernet CS. No PHS. All incoming packets classified to CID = i.</p> <p>Stimulus: BS receives Ethernet packets on its external interface.</p> <p>Expected behavior: BS sends MAC PDU containing the PHSI field (= 0) prepended by the CS followed by the Ethernet packet on CID = i.</p>

5.3.14.2 Classifier Signaling

5.3.14.2.1 Capabilities

Table 222 — Classifier DSx Signaling

TP/BS/PCS/CDS/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.237/Item 1. Initial condition: IUT has established at least one connection with an SS. Stimulus: IUT is induced to add a classifier to an existing connection. Expected behavior: IUT sends DSC-REQ with Classifier Add to said SS.
TP/BS/PCS/CDS/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.237/Item 1. Initial condition: IUT has established at least one connection with an SS. The connection is associated with a classifier Ci. Stimulus: IUT is induced to delete the classifier Ci. Expected behavior: IUT sends DSC-REQ with Classifier Delete to said SS.
TP/BS/PCS/CDS/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.237/Item 1. Initial condition: IUT has established at least one connection with an SS. The connection is associated with a classifier Ci. Stimulus: IUT is induced to change the properties of the classifier Ci. Expected behavior: IUT sends DSC-REQ with Classifier Replace to said SS.

5.3.14.2.2 Valid Behavior

No BV category test purposes defined for Classifier signaling.

5.3.14.2.3 Invalid Behavior

No BI category test purposes defined for Classifier signaling.

5.3.14.2.4 Inopportune Behavior

No BO category test purposes defined for Classifier signaling.

5.3.14.2.5 Timer

The tests defined in 5.3.5.1.5 and 5.3.5.2.5 apply.

5.3.14.2.6 Message Formats

For all TP/BS/PCS/CDS tests ensure that messages transmitted by BS contain the correct parameters in the correct order per Clause 12 of IEEE 802.16.

5.3.14.3 Payload Header Suppression

5.3.14.3.1 Capabilities

Table 223 — Payload Header Suppression

TP/BS/PCS/PHS/CA-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.131/Item 1. Initial condition: The BS has completed a dynamic service exchange setting up a connection with CID = J. A set of classifiers C ₁ , C ₂ , ..., C _i has been established that map packets to the connection and specifies that the payload header suppression rule with a <i>PHSI</i> ≠ 0 shall be applied. At least one classifier C ₀ has been established that map packets to the connection with CID = J and specifies that no header suppression shall be applied. Stimulus: The BS receives from external interface packets destined for CID = J. Some of the packets match the classifier specifying that a payload header suppression rule shall be used. Some of the packets match the classifier specifying no payload header suppression. Expected behavior: Packets matching C ₀ are transmitted without header suppression. Packets matching any of C ₁ , C ₂ , ..., C _i are transmitted with headers suppressed according to the specified rule. The correct PHSI is reported in the MAC PDU. Note: Test for all supported protocols. Test with different number of payload header suppression rules and different values for PHSI, PHSF, PHSM and PHSS.
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Table 223 — Payload Header Suppression (continued)

TP/BS/PCS/PHS/CA-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.131/Item 1. Initial condition: The BS has completed a dynamic service exchange setting up payload header suppression with PHSI = j , $j > 0$. Stimulus: The BS receives MAC PDU with PHSI = j on the correct connection. Expected behavior: BS will deliver packet on external interface with headers correctly restored. Note: Test for all supported protocols. Test with different PHSF and PHSM and PHSS.
TP/BS/PCS/PHS/CA-002	Reference: IEEE Std 802.16/Conformance01-2003, Table A.131/Item 1. Initial condition: The BS has completed a dynamic service exchange setting up payload header suppression with PHSI = j , $j > 0$. Stimulus: The BS receives MAC PDU with PHSI = 0 on that connection. Expected behavior: BS will deliver packet on correct interface without restoring headers.

5.3.14.3.2 Valid Behavior

No BV category test purposes defined for Payload Header Suppression.

5.3.14.3.3 Invalid Behavior

No BI category test purposes defined for Payload Header Suppression.

5.3.14.3.4 Inopportune Behavior**Table 224 — Payload Header Suppression – Inopportune Behavior**

TP/BS/CL/PHS/BO-000	Reference: IEEE Std 802.16/Conformance01-2003, Table A.131/Item 1. Initial condition: The BS has completed a dynamic service exchange setting up payload header suppression with PHSI = j , $j > 0$. The BS has another connection in the active state with the same SS. Stimulus: The BS receives MAC PDU with PHSI = j on a connection that is not associated with PHSI = j . Expected behavior: BS will silently discard the packet.
TP/BS/CL/PHS/BO-001	Reference: IEEE Std 802.16/Conformance01-2003, Table A.131/Item 1. Initial condition: The BS has completed a dynamic service exchange setting up payload header suppression with PHSI = j , $j > 0$. The BS has another connection in the active state with the same SS. Stimulus: The BS receives MAC PDU with a PHSI not used in the BS. Expected behavior: BS will silently discard the packet.

5.3.14.3.5 Timer

No TI category test purposes defined for Payload Header Suppression.

5.3.14.3.6 Message format

No MAC Management messages involved in TP/BS/CL/PHS tests.