Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**	
Title	**Support material for comments entered during LB#10**	
Date Submitted	**2003-04-30**	
Source(s)	Carl Eklund Nokia P.O. Box 407 FIN-00045 Nokia Group	Voice: +358718036566 Fax: +358718036851 mailto:carl.eklund@nokia.com
Re:	RE: 802.16d-02/01	
Abstract		
Purpose	To aid TGC in the development of a TSS&TP document	
Notice	This document has been prepared to assist IEEE 802.16. It is offered as a basis for discussion and is not binding on the contributing individual(s) or organization(s). The material in this document is subject to change in form and content after further study. The contributor(s) reserve(s) the right to add, amend or withdraw material contained herein.	
Release	The contributor grants a free, irrevocable license to the IEEE to incorporate material contained in this contribution, and any modifications thereof, in the creation of an IEEE Standards publication; to copyright in the IEEE's name any IEEE Standards publication even though it may include portions of this contribution; and at the IEEE's sole discretion to permit others to reproduce in whole or in part the resulting IEEE Standards publication. The contributor also acknowledges and accepts that this contribution may be made public by IEEE 802.16.	
Patent Policy and Procedures	The contributor is familiar with the IEEE 802.16 Patent Policy and Procedures <http://ieee802.org/16/ipr/patents/policy.html>, including the statement "IEEE standards may include the known use of patent(s), including patent applications, provided the IEEE receives assurance from the patent holder or applicant with respect to patents essential for compliance with both mandatory and optional portions of the standard." Early disclosure to the Working Group of patent information that might be relevant to the standard is essential to reduce the possibility for delays in the development process and increase the likelihood that the draft publication will be approved for publication. Please notify the Chair <mailto:chair@wirelessman.org> as early as possible, in written or electronic form, if patented technology (or technology under patent application) might be incorporated into a draft standard being developed within the IEEE 802.16 Working Group. The Chair will disclose this notification via the IEEE 802.16 web site <http://ieee802.org/16/ipr/patents/notices>.	

0.0.0.1 Packet CS rows for Table 1

Packet CS		PCS					
	Packet CS usage	PCU	X				
	Classification	CLS	X	X	X		
	Classifier DSx Signaling	CDS	X			X	X
	Payload header suppression	PHS	X	X		X	

Packet CS TPs for the SS

0.0.0.2 Packet CS usage

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

0.0.0.2.1 Capabilities

Table 1 – Packet CS usage, Capabilities

TP/SS/PCS/PCU/CA-000	Reference. 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. 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. 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.

Table 1 – Packet CS usage, Capabilities (Continued)

TP/SS/PCS/PCU/CA-003	Reference. 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. 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. 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.

0.0.0.2.2 Valid Behavior

No valid behavior test purposes currently defined.

0.0.0.2.3 Invalid Behavior

No invalid behavior test purposes currently defined.

0.0.0.2.4 Inopportune Behavior

No inopportune behavior test purposes currently defined.

0.0.0.2.5 Timer

No timer tests are currently defined.

0.0.0.2.6 Message Formats

There are no MAC management messages involved in these tests.

0.0.0.3 Classification

0.0.0.3.1 Capabilities

Table 2 – Classification, capabilities

TP/SS/PCS/CLS/CA-000	Reference. 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. Stimulus. IUT receives IP packets destined for either connection with CID=i or CID=j on its external interface. 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. Note: Test with different classifiers. Test all supported IPv4 classification parameters.
TP/SS/PCS/CLS/CA-001	Reference. 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. Stimulus. IUT receives IP packets destined for either connection with CID=i or CID=j on its external interface. 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. Note: Test with different classifiers. Test all supported IPv6 classification parameters.
TP/SS/PCS/CLS/CA-002	Reference. 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. Stimulus. IUT receives Ethernet packets destined for either connection with CID=i or CID=j on its external interface. 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. Note: Test with different classifiers. Test all supported Ethernet classification parameters.
TP/SS/PCS/CLS/CA-003	Reference. 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. Stimulus. IUT receives VLAN packets destined for either connection with CID=i or CID=j on its external interface. 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. Note: Test with different classifiers. Test all supported Ethernet and VLAN classification parameters.

Table 2 – Classification, capabilities (Continued)

TP/SS/PCS/CLS/CA-004	Reference. 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. Stimulus. IUT receives Ethernet packets carrying IPv4 destined for either connection with CID=i or CID=j on its external interface. 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. Note: Test with different classifiers. Test all supported Ethernet and IPv4 classification parameters.
TP/SS/PCS/CLS/CA-005	Reference. 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. Stimulus. IUT receives Ethernet packets carrying IPv4 destined for either connection with CID=i or CID=j on its external interface. 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. Note: Test with different classifiers. Test all supported Ethernet and IPv6 classification parameters.
TP/SS/PCS/CLS/CA-006	Reference. 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. Stimulus. IUT receives Ethernet packets carrying IPv4 destined for either connection with CID=i or CID=j on its external interface. 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. Note: Test with different classifiers. Test all supported Ethernet, VLAN and IPv4 classification parameters.
TP/SS/PCS/CLS/CA-007	Reference. 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. Stimulus. IUT receives Ethernet packets carrying IPv4 destined for either connection with CID=i or CID=j on its external interface. 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. Note: Test with different classifiers. Test all supported Ethernet, VLAN and IPv6 classification parameters.
TP/SS/PCS/CLS/CA-008	Reference. 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. 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 differenet priorities. Test all supported IPv4 classification parameters.

Table 2 – Classification, capabilities (Continued)

TP/SS/PCS/CLS/CA-009	Reference. 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 differenet priorities. Test all supported IPv6 classification parameters.
TP/SS/PCS/CLS/CA-010	Reference. 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 differenet priorities. Test all supported Ethernet classification parameters.
TP/SS/PCS/CLS/CA-011	Reference. 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 differenet priorities. Test all supported Ethernet and VLAN classification parameters.
TP/SS/PCS/CLS/CA-012	Reference. 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 differenet priorities. Test all supported Ethernet and IPv4 classification parameters.

Table 2 – Classification, capabilities (Continued)

TP/SS/PCS/CLS/CA-013	Reference. 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 differenet priorities. Test all supported Ethernet and IPv6 classification parameters.
TP/SS/PCS/CLS/CA-014	Reference. 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 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 differenet priorities. Test all supported Ethernet, VLAN and IPv4 classification parameters.
TP/SS/PCS/CLS/CA-015	Reference. 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 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 differenet priorities. Test all supported Ethernet, VLAN and IPv6 classification parameters.

0.0.0.3.2 Valid behavior

Table 3 – Classification, Valid Behavior

TP/SS/PCS/CLS/BV-000	Reference. 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. Stimulus. IUT receives packets that don't match any existing classifier on its external interface. Expected behavior. Packets are discarded. Note: Test with different classifiers. Test all supported classification parameters and supported CSs.

0.0.0.3.3 Invalid behavior

Table 4 – Classification, Invalid Behavior

TP/SS/PCS/CLS/BI-000	Reference. Initial condition. IUT has completed DSA transaction assigning the at least one connection to use one of the packet CS. Stimulus. IUT receives invalid packets on its external interface. Expected behavior. Packets are discarded. Note: Test for the different flavors of the Packet CS.

0.0.0.3.4 Inopportune behavior

No tests for inopportune behavior have currently been identified.

0.0.0.3.5 Timer

No timer tests are currently defined.

0.0.0.3.6 Message Format

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

0.0.0.4 Classifier DSx signaling

0.0.0.4.1 Capabilities

Table 5 – Classifier DSx signaling, Capabilities

TP/SS/PCS/CDS/CA-000	Reference. Initial condition. IUT has transmitted TFTP-CPLT to BS. The number of classifiers established in IUT ≤ Maximum Number of Classifiers reported in the SBC-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.
TP/SS/PCS/CDS/CA-001	Reference. 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 SBC-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.
TP/SS/PCS/CDS/CA-002	Reference. 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.

Table 5 – Classifier DSx signaling, Capabilities

TP/SS/PCS/CDS/CA-003	Reference. 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.

0.0.0.4.2 Valid behavior

No valid behavior tests currently defined.

0.0.0.4.3 Invalid behavior

No test purposes defined for Invalid Behavior.

0.0.0.4.4 Inopportune behavior

Table 6 – Classifier DSx signaling, Inoppotune Behavior

TP/SS/PCS/CDS/BO-000	Reference. 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. 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. 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 SBC-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. 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 SBC-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.

0.0.0.4.5 Timer

The tests defined in 6.2.5.1.5 and 6.2.5.2.5 apply.

0.0.0.4.6 Message Formats

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

Packet CS TPs for the BS

0.0.0.5 Packet CS usage

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

0.0.0.5.1 Capabilities

Table 7 – Packet CS usagecapabilities

TP/BS/PCS/PCU/CA-000	Reference. 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. Stimulus. BS receives IPv4 packets on its external interface. Expected behavior. SS sends MAC PDU containing the PHSI field (=0) prepended by the CS followed by the IPv4 packet on CID=i.
TP/BS/PCS/PCU/CA-001	Reference. 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. Stimulus. BS receives IPv6 packets on its external interface. Expected behavior. BS sends MAC PDU containing the PHSI field (=0) prepended by the CS followed by the IPv6 packet on CID=i.
TP/BS/PCS/PCU/CA-002	Reference. 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. Stimulus. BS receives Ethernet packets on its external interface. Expected behavior. BS sends MAC PDU containing the PHSI field (=0) prepended by the CS followed by the Ethernet packet on CID=i.
TP/BS/PCS/PCU/CA-003	Reference. 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. Stimulus. BS receives VLAN tagged Ethernet packets on its external interface. 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.
TP/BS/PCS/PCU/CA-004	Reference. 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. Stimulus. BS receives Ethernet packets on its external interface. Expected behavior. BS sends MAC PDU containing the PHSI field (=0) prepended by the CS followed by the Ethernet packet on CID=i.

Table 7 – Packet CS usagecapabilities (Continued)

TP/BS/PCS/PCU/CA-005	Reference. 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. Stimulus. BS receives Ethernet packets on its external interface. Expected behavior. BS sends MAC PDU containing the PHSI field (=0) prepended by the CS followed by the Ethernet packet on CID=i.

0.0.0.6 Classifier signaling

0.0.0.6.1 Capabilities

Table 8 – Classifier DSx signaling, Capabilities

TP/BS/PCS/CDS/CA-000	Reference: 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: 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: 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.

0.0.0.6.2 Valid Behavior

No valid behavior test purposes currently defined.

0.0.0.6.3 Invalid Behavior

No invalid behavior test purposes currently defined.

0.0.0.6.4 Inopportune Behavior

No inopportune behavior test purposes currently defined.

0.0.0.6.5 Timer

The tests defined in 6.4.5.1.5 and 6.4.5.2.5 apply.

0.0.0.6.6 Message Formats

For all TP/BS/PCS/CDS tests ensure that messages transmitted by BS contain the correct parameters in the correct order.

0.1 Major SS Capabilities and Functionalities for the PHY

0.1.1 Downlink Physical layer

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.

0.1.1.1 Forward Error Correction – Receiver

0.1.1.1.1 Capabilities

Table 1 – Forward Error Correction – Receiver, Capabilities

TP/SS/PHYDL/ RFEC/CA-000	Reference: IEEE 1802.16.1 Table A121/4,9 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 + 10log(B) dBm, where B is the symbol rate in Mbaud Expected behavior: The SS receives the data correctly
TP/SS/PHYDL/ RFEC/CA-001	Reference: IEEE 1802.16.1 Table A121/5 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: Stimulus: The test BS transmits a burst using each burst profile with 0, 4, 8 or 12 erroneous bytes per codeword in the burst respectively. Expected behavior: The SS receives the data correctly
TP/SS/PHYDL/ RFEC/CA0002	Reference: IEEE 1802.16.1 Table A121/7 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
TP/SS/PHYDL/ RFEC/CA-003	Reference: IEEE 1802.16.1 Table A121/8 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
TP/SS/PHYDL/ RFEC/CA-004	Reference: IEEE 1802.16.1 Table A121/20 Initial condition: A connection is setup between the test BS and the SS. The test BS commands the SS to use burst profiles with RS Information Block length = 6, 128, 239 and t = 8 Stimulus: Data is transmitted in the downlink Expected behavior: The SS receives the data correctly

0.1.1.2 Receiver Modulation

0.1.1.2.1 Capabilities

Table 2 –

TP/SS/PHYDL/RMD/ CA-000	Reference: IEEE 1802.16.1 Table A121/15, 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 with QPSK to the IUT in the TDM portion of the downlink frame. Expected behavior: The SS receives the data correctly
TP/SS/PHYDL/RMD/ CA-001	Reference: IEEE 1802.16.1 Table A121/16 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 with 16-QAM to the IUT in the TDM portion of the downlink frame. Expected behavior: The SS receives the data correctly
TP/SS/PHYDL/RMD/ CA-002	Reference: IEEE 1802.16.1 Table A121/17 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 with 64-QAM to the IUT in the TDM portion of the downlink frame. Expected behavior: The SS receives the data correctly
TP/SS/PHYDL/RMD/ CA-003	Reference: IEEE 1802.16.1 Table A121/15,Table A121/13 Initial condition: A connection is setup between the test BS and the SS. The test BS command the SS to use TDMA burst profiles with QPSK modulation. Stimulus: BS sends UL-MAP in whichIUT is commanded to transmit. Data is transmitted with QPSK to the IUT in the TDMA portion of the downlink frame at a time later than the end of the transmission + turnaround time. Expected behavior: The SS receives the data transmitted in the TDMA portion of the frame correctly

Table 2 –

TP/SS/PHYDL/RMD/ CA-004	Reference: IEEE 1802.16.1 Table A121/16,Table A121/13 Initial condition: A connection is setup between the test BS and the SS. The test BS commands the SS to use TDMA burst profiles with 16-QAM modulation Stimulus: BS sends UL-MAP in which IUT is commanded to transmit. Data is transmitted with QPSK to the IUT in the TDMA portion of the downlink frame at a time later than the end of the transmission + turnaround time. Expected behavior: The SS receives the data correctly
TP/SS/PHYDL/RMD/ CA-005	Reference: IEEE 1802.16.1 Table A121/17,Table A121/13 Initial condition: A connection is setup between the test BS and the SS. The test BS commands the SS to use TDMA burst profiles with 64-QAM modulation Stimulus: BS sends UL-MAP in which IUT is commanded to transmit. Data is transmitted with QPSK to the IUT in the TDMA portion of the downlink frame at a time later than the end of the transmission + Tx/Rx turnaround time. Expected behavior: The SS receives the data correctly

0.1.2 Uplink Physical layer

0.1.2.1 Foward Error Correction-Tx

0.1.2.1.1 Capabilities

Table 3 – Foward Error Correction-Tx, Capabilities

TP/SS/PHYUL/TFEC/ CA-000	Reference: IEEE 1802.16.1 Table A122/3 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
TP/SS/PHYUL/TFEC/ CA-001	Reference: IEEE 1802.16.1 Table A122/4 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
TP/SS/PHYUL/TFEC/ CA-002	Reference: IEEE 1802.16.1 Table A122/6 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
TP/SS/PHYUL/TFEC/ CA-003	Reference: IEEE 1802.16.1 Table A122/7 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

Table 3 – Foward Error Correction-Tx, Capabilities

TP/SS/PHYUL/TFEC/ CA-004	Reference: IEEE 1802.16.1 Table A122/8 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
TP/SS/PHYUL/TFEC/ CA-005	Reference: IEEE 1802.16.1 Table A122/20 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, 239 and t = 8 Stimulus: Data is transmitted in the uplink Expected behavior: The test BS receives the data correctly

0.1.2.2 Uplink transmissions

0.1.2.2.1 Capabilties

Table 4 – Uplink transmissions,capabilities

TP/SS/PHYUL/UTX/ CA-000	Reference: IEEE 1802.16.1 Table A122/13 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/UTX/ CA-001	Reference: IEEE 1802.16.1 Table A122/14 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/UTX/ CA-002	Reference: IEEE 1802.16.1 Table A122/15 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

Table 4 – Uplink transmissions,capabilities

TP/SS/PHYUL/UTX/ CA-003	Reference: IEEE 1802.16.1 Table A122/8 Initial condition: A connection is setup between the test BS and the SS. The test BS commands the SS to use burst profiles with different preamble length Stimulus: Data is transmitted in the uplink Expected behavior: The test BS receives the data correctly
TP/SS/PHYUL/UTX/ CA-004	Reference: IEEE 1802.16.1 Table A122/2 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

0.1.3 Minimum Performance - SS

0.1.3.1 Receiver Characteristics

0.1.3.1.1 Capabilities

Table 5 – Receiver Characteristics, Capabilities

TP/SS/PHYMP/RXC/ CA-000	Reference: IEEE 1802.16.1 Table A97/3 Initial condition: The manufacturer declares the supported frequency bands. The SS is set in a CW test mode. Stimulus: The SS receives a CW signal from the BS through the air interface Expected behavior: The SS is able to lock to the frequencies which are multiples of 250 kHz
TP/SS/PHYMP/RXC/ CA-001	Reference: IEEE 1802.16.1 Table A125/2 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

0.1.3.2 Transmitter Characteristics

0.1.3.2.1 Capabilities

Table 6 – Trasmitter Characteristics, Capabilties

TP/SS/PHYMP/TXC/ CA-000	Reference: IEEE 1802.16.1 Table A125/1 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
TP/SS/PHYMP/TXC/ CA-001	Reference: IEEE 1802.16.1 Table A125/3 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
TP/SS/PHYMP/TXC/ CA-002	Reference: IEEE 1802.16.1 Table A125/5.1 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 step size +(-) [0.5 – 2] dB Expected behavior: The power is measured and the change in power shall be monotonically positive (negative)
TP/SS/PHYMP/TXC/ CA-003	Reference: IEEE 1802.16.1 Table A125/5.2 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 step size +/- [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.

Table 6 – Trasmitter Characteristics, Capabilties

TP/SS/PHYMP/TXC/ CA-004	Reference: IEEE 1802.16.1 Table A125/5.3 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 >+/- 5 dB Expected behavior: The power is measured and the change in power shall be accurate to within +/- 3 dB of the requested change.
TP/SS/PHYMP/TXC/ CA-005	Reference: IEEE 1802.16.1 Table A125/7 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
TP/SS/PHYMP/TXC/ CA-006	Reference: IEEE 1802.16.1 Table A125/51 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

0.1.3.2.2 Valid Behavior

Table 7 – Transmitter Characteristics, Valid Behavior

TP/SS/PHYMP/TXC/ BV-000	Reference: IEEE 1802.16.1 Table A125/12 Initial condition: A connection is setup between the test BS and the SS. Stimulus: Data is transmitted in the uplink and the test BS schedules one uplink burst in each frame. Expected behavior: The ramp up and down times are measured. The result shall be <= 24 symbols

Table 7 – Transmitter Characteristics, Valid Behavior

TP/SS/PHYMP/TXC/ BV-001	Reference: IEEE 1802.16.1 Table A125/6 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 sec measurement period shall be less than 2 %
TP/SS/PHYMP/TXC/ BV-002	Reference: IEEE 1802.16.1 Table A125/8,9 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
TP/SS/PHYMP/TXC/ BV-003	Reference: IEEE 1802.16.1 Table A125/10 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
TP/SS/PHYMP/TXC/ BV-004	Reference: IEEE 1802.16.1 Table A125/13 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 Stimulus: No data is transmitted in the uplink Expected behavior: The power at the SS output is measured. The measured value shall be <= -80 dBm/MHz.
TP/SS/PHYMP/TXC/ BV-005	Reference: IEEE 1802.16.1 Table A125/11 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. Stimulus: Data is transmitted in the uplink at bottom (medium and top) values of the power range and the spectrum is measured Expected behavior: The spectrum of the transmitted signal shall not exceed the limits defined by the spectrum mask defined by the local regulator

0.1.3.3 Transition time from Tx to Rx and from Rx to Tx

Table 8 – Transition times from Tx to Rx and from Rx to Tx

TP/SS/PHYMP/TT/ CA-000	Reference: IEEE 1802.16.1 Table A125/26 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 us for TDD or 20 us 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 1802.16.1 Table A125/26 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 us plus round trip delay for TDD or 20 us plus round trip delay for H-FDD. Uplink data is generated Expected behavior: The SS successfully receives downlink data and successfully transmits uplink data.

0.1.3.4 Modulation accuracy

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.

Table 9 –

TP/SS/PHYMP/MA/ BV-000	Reference: IEEE 1802.16.1 Table A125/14 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 <= 12 %
TP/SS/PHYMP/MA/ BV-001	Reference: IEEE 1802.16.1 Table A125/15 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 <= 6 %
TP/SS/PHYMP/MA/ BV-002	Reference: IEEE 1802.16.1 Table A125/17 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 <= 10 %

Table 9 –

TP/SS/PHYMP/MA/ BV-003	Reference: IEEE 1802.16.1 Table A125/18 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 <= 3 %
TP/SS/PHYMP/MA/ BV-004	Reference: IEEE 1802.16.1 Table A125/19 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 <= 1.5 %

0.1.3.5 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. All measured input power values are corrected according to the transmitter characteristics. Only Valid Behavior tests are applicable.

0.1.3.5.1 Valid Behavior.

Table 10 – BER performance threshold, Valid Behavior

TP/SS/PHYMP/BER/BV-000	Reference: IEEE 1802.16.1 Table A125/20 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 <= -94 + 10log(B). B is the symbol rate in MBaud
TP/SS/PHYMP/BER/BV-001	Reference: IEEE 1802.16.1 Table A125/21 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 <= -87 + 10log(B). B is the symbol rate in MBaud
TP/SS/PHYMP/BER/BV-002	Reference: IEEE 1802.16.1 Table A125/22 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 attenuator is adjusted until BER=10^{-3}. Expected behavior: The input power is measured and shall be <= -79 + 10log(B). B is the symbol rate in MBaud
TP/SS/PHYMP/BER/BV-003	Reference: IEEE 1802.16.1 Table A125/23 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 <= -90 + 10log(B). B is the symbol rate in MBaud

Table 10 – BER performance threshold, Valid Behavior

TP/SS/PHYMP/BER/ BV-004	Reference: IEEE 1802.16.1 Table A125/24 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 <= -83 + 10log(B). B is the symbol rate in MBaud
TP/SS/PHYMP/BER/ BV-005	Reference: IEEE 1802.16.1 Table A125/25 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 <= -74 + 10log(B). B is the symbol rate in MBaud

0.1.3.6 1st adjacent channel interference

0.1.3.6.1 Valid Behavior

Table 11 –

TP/SS/PHYMP/1AC/ BV-000	Reference: IEEE 1802.16.1 Table A125/27 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 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
TP/SS/PHYMP/1AC/ BV-001	Reference: IEEE 1802.16.1 Table A125/28 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 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
TP/SS/PHYMP/1AC/ BV-002	Reference: IEEE 1802.16.1 Table A125/29 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 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
TP/SS/PHYMP/1AC/ BV-003	Reference: IEEE 1802.16.1 Table A125/30 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

Table 11 – *(continued)*

TP/SS/PHYMP/1AC/ BV-004	Reference: IEEE 1802.16.1 Table A125/31 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 <= +2 dB
TP/SS/PHYMP/1AC/ BV-005	Reference: IEEE 1802.16.1 Table A125/32 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 <= +9 dB
TP/SS/PHYMP/1AC/ BV-006	Reference: IEEE 1802.16.1 Table A125/33 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
TP/SS/PHYMP/1AC/ BV-007	Reference: IEEE 1802.16.1 Table A125/34 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 <= +2 dB

Table 11 – *(continued)*

TP/SS/PHYMP/1AC/ BV-008	Reference: IEEE 1802.16.1 Table A125/35 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 <= +9 dB
TP/SS/PHYMP/1AC/ BV-009	Reference: IEEE 1802.16.1 Table A125/36 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
TP/SS/PHYMP/1AC/ BV-010	Reference: IEEE 1802.16.1 Table A125/37 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
TP/SS/PHYMP/1AC/ BV-011	Reference: IEEE 1802.16.1 Table A125/38 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

0.1.3.7 2nd adjacent channel interference

Table 12 –

TP/SS/PHYMP/2AC/ BV-000	Reference: IEEE 1802.16.1 Table A125/39 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
TP/SS/PHYMP/2AC/ BV-001	Reference: IEEE 1802.16.1 Table A125/40 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
TP/SS/PHYMP/2AC/ BV-002	Reference: IEEE 1802.16.1 Table A125/41 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
TP/SS/PHYMP/2AC/ BV-003	Reference: IEEE 1802.16.1 Table A125/42 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

Table 12 –

TP/SS/PHYMP/2AC/ BV-004	Reference: IEEE 1802.16.1 Table A125/43 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
TP/SS/PHYMP/2AC/ BV-005	Reference: IEEE 1802.16.1 Table A125/44 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
TP/SS/PHYMP/2AC/ BV-006	Reference: IEEE 1802.16.1 Table A125/45 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
TP/SS/PHYMP/2AC/ BV-007	Reference: IEEE 1802.16.1 Table A125/46 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

Table 12 –

TP/SS/PHYMP/2AC/ BV-008	Reference: IEEE 1802.16.1 Table A125/47 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
TP/SS/PHYMP/2AC/ BV-009	Reference: IEEE 1802.16.1 Table A125/48 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
TP/SS/PHYMP/2AC/ BV-010	Reference: IEEE 1802.16.1 Table A125/49 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
TP/SS/PHYMP/2AC/ BV-011	Reference: IEEE 1802.16.1 Table A125/50 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

0.2 Major BS capabilities and Functionalities of the PHY

0.2.1 Downlink Physical layer

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.

0.2.1.1 Forward Error Correction– Receiver

Table 13 – Forward Error Correction– Receiver, Capabilities

TP/BS/PHYDL/TFEC/ CA-000	Reference: IEEE 1802.16.1 Table A240/4,9 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 BS tranmits using correct burst profile parameters.
TP/BS/PHYDL/TFEC/ CA-001	Reference: IEEE 1802.16.1 Table A240/5 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 BS tranmits using correct burst profile parameters.
TP/BS/PHYDL/TFEC/ CA-002	Reference: IEEE 1802.16.1 Table A240/7 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 BS tranmits using correct burst profile parameters.

Table 13 – Forward Error Correction– Receiver, Capabilities *(continued)*

TP/BS/PHYDL/TFEC/ CA-003	Reference: IEEE 1802.16.1 Table A240/8 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 BS tranmits using correct burst profile parameters.
TP/BS/PHYDL/TFEC/ CA-004	Reference: IEEE 1802.16.1 Table A240/21 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, 239 and t = 8 Stimulus: Data is transmitted in the downlink Expected behavior: The BS tranmits using correct burst profile parameters.

0.2.1.2 Transmitter Modulation Support

0.2.1.2.1 Capabilities

Table 14 – Transmitter Modulation Support, Capabilities

TP/BS/PHYDL/TMD/ CA-000	Reference: IEEE 1802.16.1 Table A240/15 Initial condition: The BS is configured to use burst profiles utilizing QPSK modulation for the downlink. The BS has an active connection with an SS. Stimulus: Data is transmitted in the TDM section of the downlink frame Expected behavior: The BS tranmits using correct burst profile parameters.
TP/BS/PHYDL/TMD/ CA-001	Reference: IEEE 1802.16.1 Table A240/16 Initial condition: The BS is configured to use burst profiles utilizing 16-QAM modulation for the downlink. The BS has an active connection with an SS. Stimulus: Data is transmitted in the TDM section of the downlink frame Expected behavior: The BS tranmits using correct burst profile parameters.

Table 14 – Transmitter Modulation Support, Capabilities *(continued)*

TP/BS/PHYDL/TMD/ CA-002	Reference: IEEE 1802.16.1 Table A240/17 Initial condition: AThe BS is configured to use burst profiles utilizing 64-QAM modulation for the downlink. The BS has an active connection with an SS. Stimulus: Data is transmitted in the TDM section of the downlink frame Expected behavior: The BS tranmits using correct burst profile parameters.
TP/BS/PHYDL/TMD/ CA-003	Reference: IEEE 1802.16.1 Table A240/15, A240/13 Initial condition: The BS is configured to use burst profiles utilizing QPSK modulation for the downlink. The BS has an active connection with an SS. Stimulus: Data is transmitted in the TDMA section of the downlink frame Expected behavior: The BS tranmits using correct burst profile parameters.
TP/BS/PHYDL/TMD/ CA-004	Reference: IEEE 1802.16.1 Table A240/16, A240/13 Initial condition: The BS is configured to use burst profiles utilizing 16-QAM modulation for the downlink. The BS has an active connection with an SS. Stimulus: Data is transmitted in the TDMA section of the downlink frame Expected behavior: The BS tranmits using correct burst profile parameters.
TP/BS/PHYDL/TMD/ CA-005	Reference: IEEE 1802.16.1 Table A240/17, A240/13 Initial condition: AThe BS is configured to use burst profiles utilizing 64-QAM modulation for the downlink. The BS has an active connection with an SS. Stimulus: Data is transmitted in the TDMA section of the downlink frame Expected behavior: The BS tranmits using correct burst profile parameters.

0.2.2 Uplink Physical layer

0.2.2.1 Uplink transmissions

Tests to verify the reception of SS transmissions.

0.2.2.1.1 Capabilities

Table 15 – Reception of uplink transmissions, Capabilities

TP/BS/PHYUL/UTX/ CA-000	Reference: IEEE 1802.16.1 Table A241/2 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
TP/BS/PHYUL/UTX/ CA-001	Reference: IEEE 1802.16.1 Table A241/3 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: An Initial Ranging burst is transmitted in the uplink. Expected behavior: The BS receives the data correctly
TP/BS/PHYUL/UTX/ CA-002	Reference: IEEE 1802.16.1 Table A241/4 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. Expected behavior: The BS receives the data correctly
TP/BS/PHYUL/UTX/ CA-003	Reference: IEEE 1802.16.1 Table A241/6 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
TP/BS/PHYUL/UTX/ CA-004	Reference: IEEE 1802.16.1 Table A241/7 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
TP/BS/PHYUL/UTX/ CA-005	Reference: IEEE 1802.16.1 Table A241/8 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

Table 15 – Reception of uplink transmissions, Capabilities

TP/BS/PHYUL/UTX/ CA-006	Reference: IEEE 1802.16.1 Table A241/8 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 different preamble length. Stimulus: Data is transmitted in the uplink. Expected behavior: The BS receives the data correctly
TP/BS/PHYUL/UTX/ CA-007	Reference: IEEE 1802.16.1 Table A241/13 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/UTX/ CA-008	Reference: IEEE 1802.16.1 Table A241/14 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/UTX/ CA-009	Reference: IEEE 1802.16.1 Table A241/15 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
TP/BS/PHYUL/UTX/ CA-010	Reference: IEEE 1802.16.1 Table A241/20 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, 239 and t = 8 Stimulus: Data is transmitted in the uplink Expected behavior: The BS receives the data correctly

0.2.3 Minimum Performance - BS

0.2.3.1 Transmitter Characteristics

0.2.3.1.1 Capabilities

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.

Table 16 – Transmitter Characteristics

TP/BS/PHYMP/TXC/ CA-000	Reference: IEEE 1802.16.1 Table 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: The BS is able to generate frequencies which are multiples of 250 kHz
TP/BS/PHYMP/TXC/ CA-001	Reference: IEEE 1802.16.1 Table A244/1 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 sec measurement period shall be less than 2 %
TP/BS/PHYMP/TXC/ CA-002	Reference: IEEE 1802.16.1 Table A244/2,3 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

0.2.3.1.2 Valid behavior

Table 17 – Transmitter Characteristics

TP/BS/PHYMP/TXC/ BV-000	Reference: IEEE 1802.16.1 Table A244/4 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

Table 17 – Transmitter Characteristics

TP/BS/PHYMP/TXC/ BV-001	Reference: IEEE 1802.16.1 Table A244/5 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
TP/BS/PHYMP/TXC/ BV-002	Reference: 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 = the declared value +/- 2 dB
TP/BS/PHYMP/TXC/ BV-003	Reference: IEEE 1802.16.1 Table A244/6 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.
TP/BS/PHYMP/TXC/ BV-004	Reference: IEEE 1802.16.1 Table A244/7 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 <= 12 %
TP/BS/PHYMP/TXC/ BV-005	Reference: IEEE 1802.16.1 Table A244/8 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 <= 6 %

Table 17 – Transmitter Characteristics

TP/BS/PHYMP/TXC/ BV-006	Reference: IEEE 1802.16.1 Table A244/9 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 <= 10 %
TP/BS/PHYMP/TXC/ BV-007	Reference: IEEE 1802.16.1 Table A244/10 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 <= 3 %
TP/BS/PHYMP/TXC/ BV-008	Reference: IEEE 1802.16.1 Table A244/11 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 <= 1.5 %

0.2.3.2 Receiver Characteristics

0.2.3.2.1 Capabilities

Table 18 – Receiver Characteristics, Capabilities

TP/BS/PHYMP/RXC/ CA-01	Reference: IEEE 1802.16.1 Table A245/1 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. 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 >= 27 dB

0.2.3.3 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

Table 19 –

TP/BS/PHYMP/BER/ BV-000	Reference: IEEE 1802.16.1 Table A245/2 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^{-3}. Expected behavior: The input power is measured and shall be <= -94 + 10log(B). B is the symbol rate in MBaud
TP/BS/PHYMP/BER/ BV-001	Reference: IEEE 1802.16.1 Table A245/3 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^{-3}. Expected behavior: The input power is measured and shall be <= -87 + 10log(B). B is the symbol rate in MBaud
TP/BS/PHYMP/BER/ BV-002	Reference: IEEE 1802.16.1 Table A245/4 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^{-3}. Expected behavior: The input power is measured and shall be <= -79 + 10log(B). B is the symbol rate in MBaud
TP/BS/PHYMP/BER/ BV-003	Reference: IEEE 1802.16.1 Table A245/5 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 <= -90 + 10log(B). B is the symbol rate in MBaud

Table 19 –

TP/BS/PHYMP/BER/BV-004	Reference: IEEE 1802.16.1 Table A245/6 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 <= -83 + 10log(B). B is the symbol rate in MBaud
TP/BS/PHYMP/BER/BV-005	Reference: IEEE 1802.16.1 Table A245/7 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 <= -74 + 10log(B). B is the symbol rate in MBaud

0.2.3.4 1st adjacent channel interference

Table 20 – First Adjacent Channel interference, Valid Behavior

TP/BS/PHYMP/1AC/ BV-000	Reference: IEEE 1802.16.1 Table A245/8 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
TP/BS/PHYMP/1AC/ BV-001	Reference: IEEE 1802.16.1 Table A245/9 Initial condition: A connection is setup between the BS and the test 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
TP/BS/PHYMP/1AC/ BV-002	Reference: IEEE 1802.16.1 Table A245/10 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 <= +5 dB
TP/BS/PHYMP/1AC/ BV-003	Reference: IEEE 1802.16.1 Table A245/11 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

Table 20 – First Adjacent Channel interference, Valid Behavior *(continued)*

TP/BS/PHYMP/1AC/ BV-004	Reference: IEEE 1802.16.1 Table A245/12 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
TP/BS/PHYMP/1AC/ BV-005	Reference: IEEE 1802.16.1 Table A245/13 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
TP/BS/PHYMP/1AC/ BV-006	Reference: IEEE 1802.16.1 Table A245/14 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
TP/BS/PHYMP/1AC/ BV-007	Reference: IEEE 1802.16.1 Table A245/15 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

Table 20 – First Adjacent Channel interference, Valid Behavior *(continued)*

TP/BS/PHYMP/1AC/ BV-008	Reference: IEEE 1802.16.1 Table A245/16 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
TP/BS/PHYMP/1AC/ BV-009	Reference: IEEE 1802.16.1 Table A245/17 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
TP/BS/PHYMP/1AC/ BV-010	Reference: IEEE 1802.16.1 Table A245/18 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
TP/BS/PHYMP/1AC/ BV-011	Reference: IEEE 1802.16.1 Table A245/19 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

0.2.3.5 2nd adjacent channel interference

Table 21 – 2nd adjacent channel interference, Valid Behavior

TP/BS/PHYMP/2AC/ BV-000	Reference: IEEE 1802.16.1 Table A245/20 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
TP/BS/PHYMP/2AC/ BV-001	Reference: IEEE 1802.16.1 Table A245/21 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
TP/BS/PHYMP/2AC/ BV-002	Reference: IEEE 1802.16.1 Table A245/22 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. 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
TP/BS/PHYMP/2AC/ BV-003	Reference: IEEE 1802.16.1 Table A245/23 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 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

Table 21 – 2nd adjacent channel interference, Valid Behavior *(continued)*

TP/BS/PHYMP/2AC/ BV-004	Reference: IEEE 1802.16.1 Table A245/24 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. 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
TP/BS/PHYMP/2AC/ BV-005	Reference: IEEE 1802.16.1 Table A245/25 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 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
TP/BS/PHYMP/2AC/ BV-006	Reference: IEEE 1802.16.1 Table A245/26 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. 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
TP/BS/PHYMP/2AC/ BV-007	Reference: IEEE 1802.16.1 Table A245/27 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 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

Table 21 – 2nd adjacent channel interference, Valid Behavior *(continued)*

TP/BS/PHYMP/2AC/ BV-008	Reference: IEEE 1802.16.1 Table A245/28 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
TP/BS/PHYMP/2AC/ BV-009	Reference: IEEE 1802.16.1 Table A245/29 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
TP/BS/PHYMP/2AC/ BV-010	Reference: IEEE 1802.16.1 Table A245/30 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
TP/BS/PHYMP/2AC/ BV-011	Reference: IEEE 1802.16.1 Table A245/31 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