Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	**Mobile MIB**
Date Submitted	**2006-01-12**
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Re:	
Abstract	This contribution proposed the enhancement of wmanIfMib, as defined in IEEE P802.16f, to support IEEE P802.16e standard.
Purpose	Adoption
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1. Introduction

wmanIfMib, as defined in IEEE P802.16f standard, has been architected to support multiple PHYs and MAC enhancements. This contribution proposed the enhancements of wmanIfMib, to support the upcoming IEEE P802.16e standard. This contribution proposes the following text be adopted to the IEEE P802.16g draft.

2. Overview

2.1 Scope

This document provides enhancements to IEEE P802.16f to define a management information base (MIB) for the support of IEEE P802.16e standard.

2.2 Purpose

The purpose of this project is to provide a definition of managed objects to enable standards-based management of IEEE 802.16e device.

2.3 Management Reference Models

Figure 1 shows a management reference model of fixed and mobile Broadband Wireless Access (BWA) networks that comply with IEEE 802.16-2004 and IEEE 802.16e standards, respectively. The BS can be managed by a Network Management System (NMS) directly, while the SS or MS can be managed in two different modes—direct mode or proxy mode. In the direct mode, NMS accesses the managed objects via an IP connection directly to the SNMP agent in SS. In the proxy mode, BS acts as the front-end proxy that routes the SNMP messages to the appropriate SS or MS, or the back-end proxy that can manage SS or MS in a different protocol.

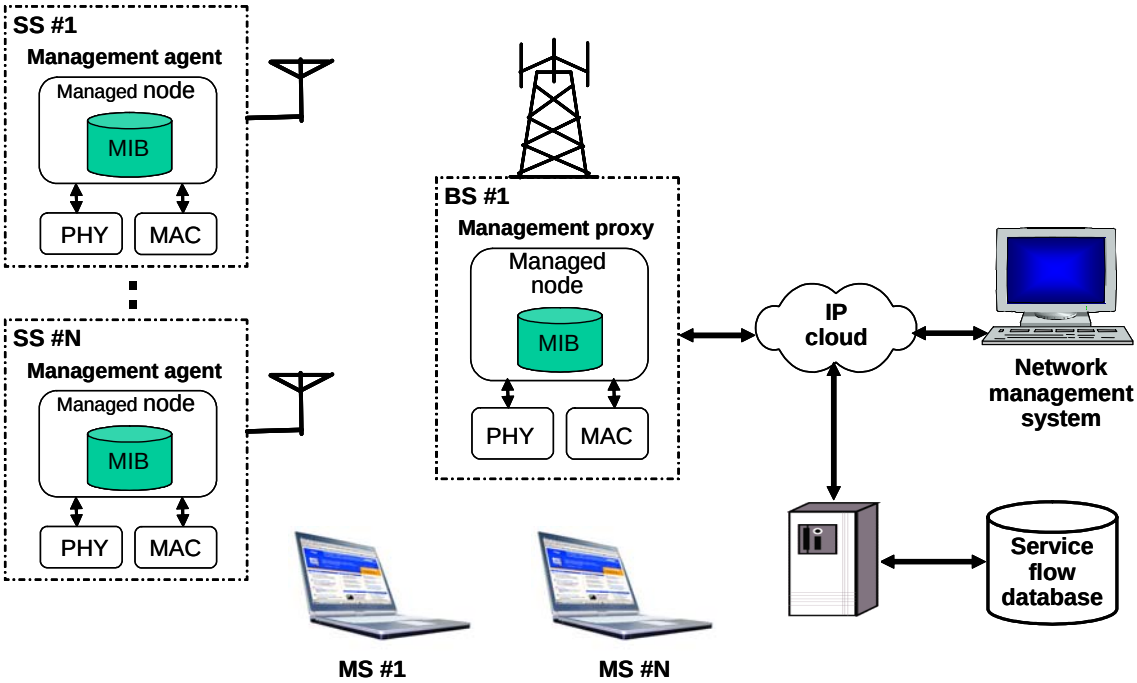

Figure 1—BWA Network Management Reference Models

3 Configuration

The wmanIfMib shall support the configuration described in the section.

3.1 BS ifTable

The implementation of the ifTable for BS must create one row for each BS sector. Table 1 provides an example of the ifTable in a BS that has multiple sectors supporting both IEEE 802.16-2004 and IEEE 802.16e standards. This configuration enables BS to evolove smoothly from fixed BWA to mobile BWA networks, and provides an easy way to support different flavors of OFDM PHYs to meet the market needs

ifTable	*ifIndex*	*ifType (IANA)*	*ifDescr*	*ifPhysAddress*	*ifAdminStatus*	*ifOperStatus*
BS Sector 1	1	propBWAp2Mp	OFDM	MAC address of BS sector	Administration Status	Operational Status
BS Sector 2	2	propBWAp2Mp	OFDMA 2048	MAC address of BS sector	Administration Status	Operational Status
BS Sector 3	3	propBWAp2Mp	OFDMA 1024	MAC address of BS sector	Administration Status	Operational Status
BS Sector 4	4	propBWAp2Mp	OFDMA 512	MAC address of BS sector	Administration Status	Operational Status
BS Sector 5	5	propBWAp2Mp	OFDMA 128	MAC address of BS sector	Administration Status	Operational Status

Table 1—Example of the Usage of ifTable objects for BS

3.2 SS and MS Management

SS and MS management will have the following configuration:

- SS based on IEEE 802.16-2004
- SS based on IEEE 802.16e
- MS based on IEEE 802.16e

4 wmanIfMib MIB structure

Figure 2 shows the high level MIB structure of wmanIfMib for 802.16. The MIB structure is organized based on the reference model as defined in IEEE 802.16-2004 standard

The wmanIfMib is composed of three groups:

- wmanIfBsObjects: contains managed objects to be implemented in the SNMP agent in BS.
- wmanIfSsObjects: contains managed objects to be implemented in the SNMP agent in SS.
- wmanIfCommonObjects: contains common managed objects to be implemented in the SNMP agent in BS and SS.

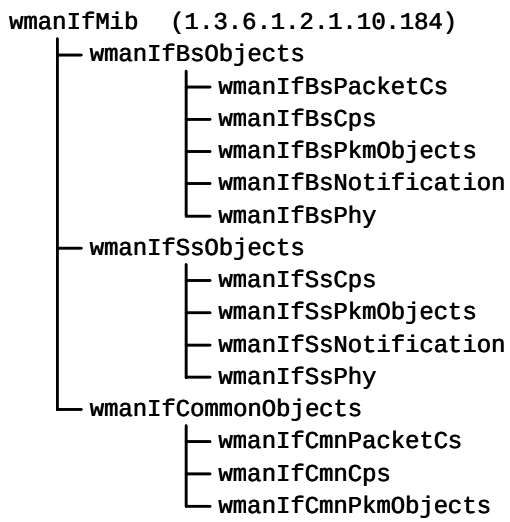

Figure 2— wmanIfMib structure

4.1 wmanIfBsObjects

4.1.1 wmanIfBsPacketCs

4.1.1.1 wmanIfBsClassifierRuleTable

wmanIfBsClassifierRuleTable contains the additional objects as defined in 11.13.19.3.4.

- Large Context ID for ROHC- or ECRTP-compressed packet or ROHC feedback packet
- Classifier Action Rule
- Short-format Context ID for ROHC- or ECRTP-compressed packet or ROHC feedback packet

4.1.2 wmanIfBsCps

Figure 3 shows the structure of wmanIfBsCps subtree. It adds two new tables – wmanIfBsNeighborAdvertiseTable and wmanIfBsPowerSavingClassTable.

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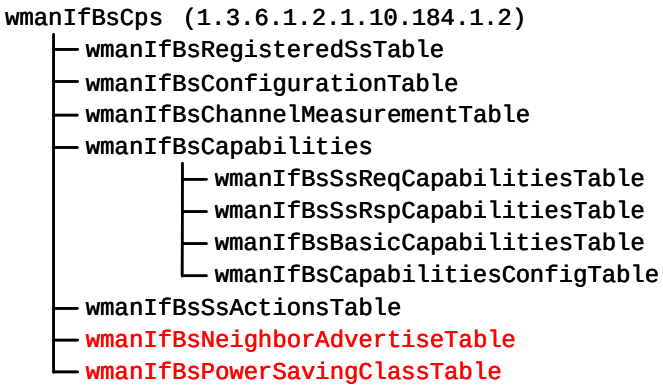

Figure 3— wmanIfBsCps structure

4.1.2.1 wmanIfBsRegisteredSsTable

WmanIfMacVersion includes a new type of ieee802Dot16e to indicate the registered SS is running the 802.16e version of MAC software.

```
WmanIfMacVersion ::= TEXTUAL-CONVENTION
        STATUS      current
        DESCRIPTION
            "Version number of IEEE 802.16."
        SYNTAX      INTEGER {ieee802Dot16Of2001(1),
                             ieee802Dot16cOf2002(2),
                             ieee802Dot16aOf2003(3),
                             ieee802Dot16Of2004(4),
                             ieee802Dot16e(5)}
```

4.1.2.2 wmanIfBsConfigurationTable

wmanIfBsConfigurationTable includes additional BS objects as defined in subclause 10.1. These parameters are associated with power saving mode and handoff.

- MOB-NBR-ADV interval
- ASC-AGING-TIMER
- Paging Retry Count
- Mode Selection Feedback processing time
- Idle Mode System Timer For
- Management Resource Holding Timer
- DREG Command Retry Count
- T46
- T47
- Paging Interval Length
- Max Dir Scan Time
- SAChallengeTimer
- SATEKTimer
- SATEKRequestMaxResends

4.1.2.3 wmanIfBsCapabilities

wmanIfBsSsReqCapabilitiesTable, wmanIfBsSsRspCapabilitiesTable, and wmanIfBsBasicCapabilitiesTable include additional objects, defined in 11.7.7 and 11.7.8.

- Maximum amount of MAC level data per DL frame
- Maximum amount of MAC level data per UL framet
- Packing support
- MAC Extended rtPS support
- Maximum number of bursts transmitted concurrently to the MS
- CID update encodings
- Method for allocating IP address for the secondary management connection
- System Resource_Retain_Time
- HO Process Optimization MS Timer
- MS Handover Retransmission Timer
- Mobility features supported
- Sleep-mode recovery time
- MS-PREV-IP-ADDR
- SKIP-ADDR-ACQUISITION
- SAID update encodings
- Total number of provisioned service flow
- Idle Mode Timeout
- SA TEK Update
- GKEK Parameters
- ARQ-ACK Type
- HO parameters processing time
- MAC header and extended subheader support
- SN Reporting Base
- OFDM private map support
- Uplink control channel support
- Maximum number of burst per frame capability in HARQ
- HARQ buffer capability
- HARQ incremental redundancy buffer capability
- HARQ Chase combining and CC-IR buffer capability
- PKM Version Support
- Authorization policy support
- MAC (Message Authentication Code) Mode
- PN window size
- Power save class types capability
- Extension capability
- HO Trigger metric support
- Association type support

4.1.2.4 wmanIfBsNeighborAdvertiseTable

wmanIfBsNeighborAdvertiseTable includes objects defined in Table 384b.

- Operator ID
- Bandwidth
- FFT Size
- Cycle prefix (CP)
- Frame duration code
- FA Index

4.1.2.5 wmanIfBsPowerSavingClassTable

wmanIfBsPowerSavingClassTable includes objects as defined in Table 364a.

- Power_Saving_Class_ID
- Power_Saving_Class_Type
- Start_frame_number 4
- initial-sleep window 5 1 Initial-sleep window
- listening window
- final-sleep window base
- final-sleep window exponent
- SLPID
- CID
- Direction

4.1.3 wmanIfBsPhy

Figure 3 shows the structure of wmanIfBsPhy subtree. It adds four new tables – wmanIfBsSsOfdmaReqCapabilitiesTable, wmanIfBsSsOfdmaRspCapabilitiesTable, wmanIfBsOfdmaCapabilitiesTable, and wmanIfBsOfdmaCapabilitiesConfigTable.

```
wmanIfBsPhy (1.3.6.1.2.1.10.184.1.6)
   ├─ wmanIfBsOfdmPhy
   │        ├─ wmanIfBsOfdmUplinkChannelTable
   │        ├─ wmanIfBsOfdmDownlinkChannelTable
   │        ├─ wmanIfBsOfdmUcdBurstProfileTable
   │        ├─ wmanIfBsOfdmDcdBurstProfileTable
   │        ├─ wmanIfBsOfdmConfigurationTable
   │        ├─ wmanIfBsSsOfdmReqCapabilitiesTable
   │        ├─ wmanIfBsSsOfdmReqCapabilitiesTable
   │        ├─ wmanIfBsOfdmCapabilitiesTable
   │        └─ wmanIfBsOfdmCapabilitiesConfigTable
   └─ wmanIfBsOfdmaPhy
            ├─ wmanIfBsOfdmaUplinkChannelTable
            ├─ wmanIfBsOfdmaDownlinkChannelTable
            ├─ wmanIfBsOfdmaUcdBurstProfileTable
            ├─ wmanIfBsOfdmaDcdBurstProfileTable
            ├─ wmanIfBsSsOfdmaReqCapabilitiesTable
            ├─ wmanIfBsSsOfdmaRspCapabilitiesTable
            ├─ wmanIfBsOfdmaCapabilitiesTable
            └─ wmanIfBsOfdmaCapabilitiesConfigTable
```

Figure 4— wmanIfBsPhystructure

4.1.3.1 wmanIfBsOfdmaPhy

wmanIfBsOfdmaPhy is a group containing objects specific to OFDMA PHY

4.1.3.1.1 wmanIfBsOfdmaUplinkChannelTable

wmanIfBsOfdmaUplinkChannelTable includes additional objects associated UCD channel encodings

Table 349

- Initial_ranging_backoff_start
- Initial_ranging_backoff_end
- Bandwidth_request_backoff_start
- Bandwidth_request_backoff_end
- Uplink_burst_profile for multiple FEC types
- Normalized C/N override

Table 353a

- LowerBoundAAS_PREAMBLE
- UpperBoundAAS_PREAMBLE
- UL allocated subchannel bitmap for optimal AMC permutation
- Allow AAS Beam Select Messages
- Use CQICH indication flag
- MS-specific up power offset adjustment step
- MS-specific down power offset adjustment step
- Minimum level of power offset adjustment
- Maximum level of power offset adjustment
- Handover Ranging Codes
- Initial ranging interval
- Normalized C/N for Channel Sounding

4.1.3.1.2 wmanIfBsOfdmaDownlinkChannelTable

wmanIfBsOfdmaDownlinkChannelTable includes additional objects defined in Table 358.

- DL region definition
- HO type support
- H_Add Threshold
- H_Delete Threshold
- ASR(Anchor Switch Report) Slot Length (M) and Switching Period (L)
- Paging Group ID
- DL allocated subchannel bitmap for optional AMC permutation
- TUSC1 permutation active subchannels bitmap

- TUSC2 permutation active subchannels bitmap
- Hysteresis margin
- Time-to-Trigger duration
- Trigger
- N+I
- MAC version
- Downlink_burst_profile for multiple FEC types
- BS Restart Count

4.1.3.1.3 wmanIfBsOfdmaUcdBurstProfileTable

As per Table 357, the definition of FEC Code type and modulation type object in wmanIfBsOfdmaUcdBurstProfileTable shall be changed as the following.

- 0 = QPSK (CC) 1/2
- 1 = QPSK (CC) 3/4
- 2 = 16-QAM (CC) 1/2
- 3 = 16-QAM (CC) 3/4
- 4 = 64-QAM (CC) 1/2
- 5 = 64-QAM (CC) 2/3
- 6 = 64-QAM (CC) 3/4
- 7 = QPSK (BTC) 1/2
- 8 = QPSK (BTC) 3/4
- 9 = 16-QAM (BTC) 3/5
- 10 = 16-QAM (BTC) 4/5
- 11 = 64-QAM (BTC) 5/8
- 12 = 64-QAM (BTC) 4/5
- 13 = QPSK (CTC) 1/2
- 14 = QPSK (CTC) 3/4
- 15 = 16-QAM (CTC) 1/2
- 16 = 16-QAM (CTC) 3/4
- 17 = 64-QAM (CTC) 1/2
- 18 = 64-QAM (CTC) 2/3
- 19 = 64-QAM (CTC) 3/4
- 20 = 64-QAM (CTC) 5/6
- 21 = QPSK (ZT CC) 1/2
- 22 = QPSK (ZT CC) 3/4
- 23 = 16-QAM (ZT CC) 1/2
- 24 = 16-QAM (ZT CC) 3/4
- 25 = 64-QAM (ZT CC) 1/2
- 26 = 64-QAM (ZT CC) 2/3
- 27 = 64-QAM (ZT CC) 3/4
- 28 = QPSK (LDPC) 1/2

- 29 = QPSK (LDPC) 2/3 A code
- 30 = QPSK (LDPC) 3/4 A code
- 31 = 16-QAM (LDPC) 1/2
- 32 = 16-QAM (LDPC) 2/3 A code
- 33 = 16-QAM (LDPC) 3/4 A code
- 34 = 64-QAM (LDPC) 1/2
- 35 = 64-QAM (LDPC) 2/3 A code
- 36 = 64-QAM (LDPC) 3/4 A code
- 37 = QPSK (LDPC) 2/3 B code
- 38 = QPSK (LDPC) 3/4 B code
- 39= 16-QAM (LDPC) 2/3 B code
- 40 = 16-QAM (LDPC) 3/4 B code
- 41 = 64-QAM (LDPC) 2/3 B code
- 42 = 64-QAM (LDPC) 3/4 B code
- 43 = QPSK (LDPC) 5/6
- 44 = 16-QAM(LDPC) 5/6
- 45 = 64-QAM(LDPC) 5/6

4.1.3.1.4 wmanIfBsOfdmaDcdBurstProfileTable

As per Table 363, the definition of FEC Code type object in wmanIfBsOfdmaDcdBurstProfileTable shall be changed as the following

- 0 = QPSK (CC) 1/2
- 1 = QPSK (CC) 3/4
- 2 = 16-QAM (CC) 1/2
- 3 = 16-QAM (CC) 3/4
- 4 = 64-QAM (CC) 1/2
- 5 = 64-QAM (CC) 2/3
- 6 = 64-QAM (CC) 3/4
- 7 = QPSK (BTC) 1/2
- 8 = QPSK (BTC) 3/4
- 9 = 16-QAM (BTC) 3/5
- 10 = 16-QAM (BTC) 4/5
- 11 = 64-QAM (BTC) 5/8
- 12 = 64-QAM (BTC) 4/5
- 13 = QPSK (CTC) 1/2
- 14 = QPSK (CTC) 3/4
- 15 = 16-QAM (CTC) 1/2
- 16 = 16-QAM (CTC) 3/4
- 17 = 64-QAM (CTC) 1/2
- 18 = 64-QAM (CTC) 2/3
- 19 = 64-QAM (CTC) 3/4

- 20 = 64-QAM (CTC) 5/6
- 21 = QPSK (ZT CC) 1/2
- 22 = QPSK (ZT CC) 3/4
- 23= 16-QAM (ZT CC) 1/2
- 24= 16-QAM (ZT CC) 3/4
- 25= 64-QAM (ZT CC) 1/2
- 26= 64-QAM (ZT CC) 2/3
- 27= 64-QAM (ZT CC) 3/4
- 28 = QPSK (LDPC) 1/2
- 29= QPSK (LDPC) 2/3 A code
- 30= QPSK (LDPC) 3/4 A code
- 31 = 16-QAM (LDPC) 1/2
- 32 = 16-QAM (LDPC) 2/3 A code
- 33 = 16-QAM (LDPC) 3/4 A code
- 34 = 64-QAM (LDPC) 1/2
- 35 = 64-QAM (LDPC) 2/3 A code
- 36 = 64-QAM (LDPC) 3/4 A code
- 37 = QPSK (LDPC) 2/3 B code
- 38 = QPSK (LDPC) 3/4 B code
- 39 = 16-QAM (LDPC) 2/3 B code
- 40 = 16-QAM (LDPC) 3/4 B code
- 41 = 64-QAM (LDPC) 2/3 B code
- 42 = 64-QAM (LDPC) 3/4 B code
- 43 = QPSK (LDPC) 5/6
- 44 = 16-QAM(LDPC) 5/6
- 45 = 64-QAM(LDPC) 5/6

4.1.3.1.5 wmanIfBsSsOfdmaReqCapabilitiesTable

wmanIfBsSsOfdmaReqCapabilitiesTable includes the following objects: (section 11.8.3.7)

- OFDMA MS FFT sizes
- OFDMA SS demodulator
- OFDMA SS modulator
- OFDMA SS Permutation support
- OFDMA AAS private map support
- OFDMA SS uplink power control support
- OFDMA MAP Capability
- OFDMA MS CSIT capability
- OFDMA SS Demodulator for MIMO Support
- OFDMA SS Modulator for MIMO Support
- SDMA Pilot capability

- OFDMA Multiple Downlink Burst Profile Capability

4.1.3.1.6 wmanIfBsSsOfdmaRspCapabilitiesTable

wmanIfBsSsOfdmaReqCapabilitiesTable includes the following objects:

- OFDMA MS FFT sizes
- OFDMA SS demodulator
- OFDMA SS modulator
- OFDMA SS Permutation support
- OFDMA AAS private map support
- OFDMA SS uplink power control support
- OFDMA MAP Capability
- OFDMA MS CSIT capability
- OFDMA SS Demodulator for MIMO Support
- OFDMA SS Modulator for MIMO Support
- SDMA Pilot capability
- OFDMA Multiple Downlink Burst Profile Capability

4.1.3.1.7 wmanIfBsOfdmaCapabilitiesTable

wmanIfBsSsOfdmaReqCapabilitiesTable includes the following objects:

- OFDMA MS FFT sizes
- OFDMA SS demodulator
- OFDMA SS modulator
- OFDMA SS Permutation support
- OFDMA AAS private map support
- OFDMA SS uplink power control support
- OFDMA MAP Capability
- OFDMA MS CSIT capability
- OFDMA SS Demodulator for MIMO Support
- OFDMA SS Modulator for MIMO Support
- SDMA Pilot capability
- OFDMA Multiple Downlink Burst Profile Capability

4.1.3.1.8 wmanIfBsOfdmaCapabilitiesConfigTable

wmanIfBsSsOfdmaReqCapabilitiesTable includes the following objects:

- OFDMA MS FFT sizes
- OFDMA SS demodulator
- OFDMA SS modulator

- OFDMA SS Permutation support
- OFDMA AAS private map support
- OFDMA SS uplink power control support
- OFDMA MAP Capability
- OFDMA MS CSIT capability
- OFDMA SS Demodulator for MIMO Support
- OFDMA SS Modulator for MIMO Support
- SDMA Pilot capability
- OFDMA Multiple Downlink Burst Profile Capability

4.2 wmanIfSsObjects

4.2.1 wmanIfSsCps

4.2.1.1 wmanIfSsConfigurationTable

wmanIfSsConfigurationTable includes additional MS objects as defined in subclause 10.1. These parameters are associated with power saving mode and handoff.

- Min_Sleep_Interval
- MS Max_Sleep_Interval
- MS Listening_Interval
- ASC-AGING-TIMER
- Serving BS ID AGINGTIMER
- T42
- Fast-Tracking Response Processing Time
- Mode Selection Feedback processing time
- Idle Mode Timer
- T43
- T44
- T45
- DREG Request Retry Count
- HO Process Optimization MS Timer Retries
- Paging Interval Length
- Max Dir Scan Time
- SAChallengeTimer
- SATEKTimer
- SATEKRequestMaxResends

4.2.2 wmanIfSsPhy

4.2.2.1 wmanIfSsOfdmaPhy

wmanIfSsOfdmaPhy is a group containing objects specific to OFDMA PHY.

4.1.2.1.1 wmanIfSsOfdmaUplinkChannelTable

wmanIfBsOfdmaUplinkChannelTable includes additional objects associated UCD channel encodings

Table 349

- HO_ranging_start
- HO_ranging_end
- Initial_ranging_backoff_start
- Initial_ranging_backoff_end
- Bandwidth_request_backoff_start
- Bandwidth_request_backoff_end
- Uplink_burst_profile for multiple FEC types
- Normalized C/N override

Table 353a

- LowerBoundAAS_PREAMBLE
- UpperBoundAAS_PREAMBLE
- UL allocated subchannel bitmap for optimal AMC permutation
- Allow AAS Beam Select Messages
- Use CQICH indication flag
- MS-specific up power offset adjustment step
- MS-specific down power offset adjustment step
- Minimum level of power offset adjustment
- Maximum level of power offset adjustment
- Handover Ranging Codes
- Initial ranging interval
- Normalized C/N for Channel Sounding

4.1.2.1.2 wmanIfSsOfdmaDownlinkChannelTable

wmanIfSsOfdmaDownlinkChannelTable includes additional objects defined in Table 358 and 363.

4.1.2.1.3 wmanIfSsOfdmaUcdBurstProfileTable

As per Table 357, the definition of FEC Code type and modulation type object in wmanIfSsOfdmaUcdBurstProfileTable shall be changed as the following.

- 0 = QPSK (CC) 1/2
- 1 = QPSK (CC) 3/4
- 2 = 16-QAM (CC) 1/2
- 3 = 16-QAM (CC) 3/4
- 4 = 64-QAM (CC) 1/2
- 5 = 64-QAM (CC) 2/3
- 6 = 64-QAM (CC) 3/4
- 7 = QPSK (BTC) 1/2

- 8 = QPSK (BTC) 3/4
- 9 = 16-QAM (BTC) 3/5
- 10 = 16-QAM (BTC) 4/5
- 11 = 64-QAM (BTC) 5/8
- 12 = 64-QAM (BTC) 4/5
- 13 = QPSK (CTC) 1/2
- 14 = QPSK (CTC) 3/4
- 15 = 16-QAM (CTC) 1/2
- 16 = 16-QAM (CTC) 3/4
- 17 = 64-QAM (CTC) 1/2
- 18 = 64-QAM (CTC) 2/3
- 19 = 64-QAM (CTC) 3/4
- 20 = 64-QAM (CTC) 5/6
- 21 = QPSK (ZT CC) 1/2
- 22 = QPSK (ZT CC) 3/4
- 23 = 16-QAM (ZT CC) 1/2
- 24 = 16-QAM (ZT CC) 3/4
- 25 = 64-QAM (ZT CC) 1/2
- 26 = 64-QAM (ZT CC) 2/3
- 27 = 64-QAM (ZT CC) 3/4
- 28 = QPSK (LDPC) 1/2
- 29 = QPSK (LDPC) 2/3 A code
- 30 = QPSK (LDPC) 3/4 A code
- 31 = 16-QAM (LDPC) 1/2
- 32 = 16-QAM (LDPC) 2/3 A code
- 33 = 16-QAM (LDPC) 3/4 A code
- 34 = 64-QAM (LDPC) 1/2
- 35 = 64-QAM (LDPC) 2/3 A code
- 36 = 64-QAM (LDPC) 3/4 A code
- 37 = QPSK (LDPC) 2/3 B code
- 38 = QPSK (LDPC) 3/4 B code
- 39 = 16-QAM (LDPC) 2/3 B code
- 40 = 16-QAM (LDPC) 3/4 B code
- 41 = 64-QAM (LDPC) 2/3 B code
- 42 = 64-QAM (LDPC) 3/4 B code
- 43 = QPSK (LDPC) 5/6
- 44 = 16-QAM(LDPC) 5/6
- 45 = 64-QAM(LDPC) 5/6

4.1.2.1.4 wmanIfSsOfdmaDcdBurstProfileTable

As per Table 363, the definition of FEC Code type object in wmanIfSsOfdmaDcdBurstProfileTable shall be changed as the following.

- 0 = QPSK (CC) 1/2
- 1 = QPSK (CC) 3/4
- 2 = 16-QAM (CC) 1/2
- 3 = 16-QAM (CC) 3/4
- 4 = 64-QAM (CC) 1/2
- 5 = 64-QAM (CC) 2/3
- 6 = 64-QAM (CC) 3/4
- 7 = QPSK (BTC) 1/2
- 8 = QPSK (BTC) 3/4
- 9 = 16-QAM (BTC) 3/5
- 10 = 16-QAM (BTC) 4/5
- 11 = 64-QAM (BTC) 5/8
- 12 = 64-QAM (BTC) 4/5
- 13 = QPSK (CTC) 1/2
- 14 = QPSK (CTC) 3/4
- 15 = 16-QAM (CTC) 1/2
- 16 = 16-QAM (CTC) 3/4
- 17 = 64-QAM (CTC) 1/2
- 18 = 64-QAM (CTC) 2/3
- 19 = 64-QAM (CTC) 3/4
- 20 = 64-QAM (CTC) 5/6
- 21 = QPSK (ZT CC) 1/2
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- 25 = 64-QAM (ZT CC) 1/2
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- 35 = 64-QAM (LDPC) 2/3 A code
- 36 = 64-QAM (LDPC) 3/4 A code
- 37 = QPSK (LDPC) 2/3 B code
- 38 = QPSK (LDPC) 3/4 B code
- 39 = 16-QAM (LDPC) 2/3 B code
- 40 = 16-QAM (LDPC) 3/4 B code
- 41 = 64-QAM (LDPC) 2/3 B code

- 42 = 64-QAM (LDPC) 3/4 B code
- 43 = QPSK (LDPC) 5/6
- 44 = 16-QAM(LDPC) 5/6
- 45 = 64-QAM(LDPC) 5/6