Project	**IEEE 802.16 Broadband Wireless Access Working Group** <http://ieee802.org/16>
Title	**ASN.1 coding for FTN messages in IEEE 802.16.1a**
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Re:	In response to Sponsor Ballot Recirculation #1 on P802.16.1a
Abstract	ASN.1 coding for BS-controlled FTN messages in GRIDMAN Draft Standard
Purpose	To discuss and adopt the proposed text in the draft amendment document on GRIDMAN
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ASN.1 coding for FTN messages in IEEE 802.16.1a

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1. Introduction

This document provides ASN.1 encoding for BS-controlled FTN messages in P802.16.1a, including:

- AAI-FN-CONFIG-CMD

- AAI-FN-RNG-ACK

- AAI-FN-RNG-FLU

- AAI-MSPG-GRP

- AAI-MSPG-PG

2. References

[1] IEEE 802.16-12-0132-00, GRIDMAN System Requirement Document including SARM annex, January 2012.
[2] IEEE P802.16n™/D6, Air Interface for Broadband Wireless Access Systems - Draft Amendment: Higher Reliability Networks, October 2012.
[3] IEEE P802.16.1a™/D6, WirelessMAN-Advanced Air Interface for Broadband Access Systems - Draft Amendment: Higher Reliability Networks, October 2012.
[4] IEEE P802.16™-2012, IEEE Standard for Air Interface for Broadband Wireless Access Systems, August 2012.
[5] IEEE P802.16.1™-2012, IEEE Standard for WirelessMAN-Advanced Air Interface for Broadband Wireless Access Systems, September 2012.

3. Proposed Text on the IEEE 802.16.1a Amendment Draft Standard

[----------Start of Text Proposal----------]

[Remedy1: Add the following text in line#46, page 238, P802.16.1a/D6:]

```
-- BS controlled HR-MS forwarding to network
        aaiFnConfigCmd          AAI-FN-CONFIG-CMD,
        aaiFnRngAck             AAI-FN-RNG-ACK,
        aaiFnRngFlu             AAI-FN-RNG-FLU,
        aaiMspgGrp              AAI-MSPG-GRP,
        aaiMspgPg               AAI-MSPG-PG,
```

[Remedy2: Add the following text in line#30, page 296, P802.16.1a/D6:]

```
-- *-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-
-- BS-Controlled FTN Messages
-- *-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-

-- +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-
-- AAI-FN-CONFIG-CMD Message
-- +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-

FdmUlPuseZone::= SEQUENCE {
        subframeOffsetRch                     INTEGER (0..3),
        startRpCodInfoRch                     INTEGER (0..15),
        numRpCodesForCoverageExtRng           INTEGER (0..3)
}

NoFdmUlPuscZone::= SEQUENCE {
        subframeOffsetRch                     INTEGER (0..3),
        startRpCodInfoRch                     INTEGER (0..15),
        txTimeOffsetSRch                      INTEGER (0..7)
}

PostAccessParamPreAssign ::= SEQUENCE {
        postIdCell                            INTEGER (0..1023),
        numberOfSuperframeNCI                 INTEGER (0..3),
        startRpCodInfoSRch                    INTEGER (0..15),
        numberOfRNGOpportunity                INTEGER (0..3),
        subframeOffsetRch                     INTEGER (0..3)
}

-- BS controlled HR-MS forwarding to network
AAI-FN-CONFIG-CMD ::= SEQUENCE {
        superframeNumActionLSB4               INTEGER (0..15),
        idCell                                INTEGER (0..1023),
        numberOfPreambleOnlySuperframe        INTEGER (0..15),
        numberOfSuperframesWithNCI            INTEGER (0..3),
        subframeIndexNCI                      INTEGER (0..7),
        lruStartingIndexNCI                   INTEGER (0..63),
        frameContainingRngOpportunity         ENUMERATED {
                        second,
                        fourth
        },
        numberOfRngOpportunity                INTEGER (0..3),
        supportFdmUlPUSCZone                  CHOICE {
                supportFdmUlPuscZone                  FdmUlPuseZone,
                noSupportFdmUlPuscZone                NoFdmUlPuscZone
        },
        hrMsPreambleTimingAdvance             INTEGER (0..2047)             OPTIONAL,
        hrMsEirp                              INTEGER (0..31),
        hrMstoHrMsFbRrcIndex                  INTEGER (0..2047)             OPTIONAL,
        hrMrtoHrMsRepRrcIndex                 INTEGER (0..2047)             OPTIONAL,
        threshold2PhaseDiscovery              INTEGER (0..7)                OPTIONAL,
        postAccessParmPreAssign               PostAccessParamPreAssign      OPTIONAL,
        ...
}

-- +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-
-- AAI-FN-RNG-ACK Message
-- +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-
RNGStatusSuccessContinue::= SEQUENCE {
        adjustParamIndication                 BIT STRING {
                offsetAdjustInd                       (0),
                powerLevelAdjustInd                   (1),
                freqOffsetAdjustInd                   (2)
        },
        timingOffsetAdjust                    INTEGER (0..32767)            OPTIONAL,
```

```
        powerLevelAdjust                    INTEGER (0..15)                 OPTIONAL,
        freqOffsetAdjust                    INTEGER (0..511)                OPTIONAL

}



AAI-FN-RNG-ACK ::= SEQUENCE {
        rcvCodes                            SEQUENCE (SIZE(0..15)) OF SEQUENCE {
                rngPreambleCodeIndex                INTEGER (0..3),
                rngStatus                           ENUMERATED {
                        success,
                        continue,
                        abort,
                        secondPhase
                },
                rngStatusSuccessContinue    RNGStatusSuccessContinue        OPTIONAL
        },
        ...
}

-- +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-
-- AAI-FN-RNG-FLU Message
-- +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-
AAI-FN-RNG-FLU ::= SEQUENCE {
        numRngCodes                         SEQUENCE (SIZE(0..15)) OF SEQUENCE {
                rngCodeIndex                        INTEGER (0..3),
                frameIndex                          INTEGER (0..15),
                subframeOffsetOfRcvRngPreamble      INTEGER (0..3)
        },
        ...
}

-- +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-
-- AAI-MSPG-GRP Message
-- +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-
AAI-MSPG-GRP ::= SEQUENCE {
        purpose                             BOOLEAN,-- 0: remove, 1: add
        pagerGroupID                        INTEGER (0..255)
}

-- +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-
-- AAI-MSPG-PG Message
-- +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-
MsPgSupportFdmUlPusc ::= SEQUENCE {
        subframeOffsetRch                   INTEGER (0..3),
        startRpCodInfoRch                   INTEGER (0..15),
        numRpCodAlloc                       INTEGER (0..63)

}

MsPgSupportAAI::= SEQUENCE {
        piPid                               INTEGER (0..4095),
        startRpCodInfoRch                   INTEGER (0..15),
        numRpCodAlloc                       INTEGER (0..63)
}


AAI-MSPG-PG ::= SEQUENCE {
        pagerGroupID            INTEGER (0..255)                                    OPTIONAL,
        mspgPgupportFdmUlPusc   SEQUENCE (SIZE (0..63)) OF MsPgSupportFdmUlPusc     OPTIONAL,
        mspgPgupportAAI         SEQUENCE (SIZE (0..63)) OF MsPgSupportAAI           OPTIONAL

}
```

[----------End of Text Proposal----------]