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| **Radiocommunication Study Groups** |  |
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| Received: 30 March 2011 | **Document 5D/930-E** |
| **30 March 2011** |
| **English only**  **VOCABULARY** |
| Institute of Electrical and Electronics Engineers, Inc. | |
| VOCABULARY TERMS and abbreviations RELATED TO IEEE 802.16 | |
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# 1 Background

IEEE has received the liaison statement (Revision 1 to Document 5D/TEMP/423) of 19 October, 2010 from ITU-R Working Party 5D (WP 5D) regarding the Revision of Recommendation ITU‑R M.1224 with an expanded scope to include IMT-Advanced.

Prior to WP 5D Meeting #9, IEEE had submitted 5D/814 (“Vocabulary terms related to IEEE 802.16”) supplying terms and definitions included in IEEE Std 802.16-2009, in its amendment IEEE Std 802.16j, and in IEEE Draft P802.16m/D8.

We recognize that the liaison statement indicates a request for abbreviations as well as definitions. Accordingly, this contribution provides the additional information. Also, it updates the prior contribution by including definitions from IEEE Draft P802.16m/D12 to replace the information submitted earlier from IEEE Draft P802.16m/D8. Note that P802.16m/D12 is a draft amendment of IEEE Std 802.16 specifying the WirelessMAN-Advanced radio interface technology that was approved for IMT-Advanced.

# 2 Content

Annex 1 provides a list of abbreviations included in IEEE Std 802.16-2009, in its amendment IEEE Std 802.16j, and in IEEE draft P802.16m/D12.

Annex 2 provides a list of terms and definitions included in IEEE Draft P802.16m/D12.

# 3 Proposal

We propose that the abbreviations in Annex 1 be considered for inclusion in the draft revision of Recommendation ITU-R M.1224.

We propose that Annex 2 be considered as an update of Annex 3 in 5D/814. We propose that the terms and definitions in Annexes 1 and 2 of 5D/814, and also Annex 2 of the current contribution, be considered for inclusion in the draft revision of Recommendation ITU-R M.1224.

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Annex 1

Abbreviations from IEEE Std 802.16-2009, IEEE Std 802.16j,   
and IEEE draft P802.16m/D12

IEEE Std 802.16-2009:

3-DES triple data encryption standard

AAS adaptive antenna system

ACM account management

AES advanced encryption standard

AGC automatic gain control

AK authorization key

AKID authorization key identifier

AMC adaptive modulation and coding

ARQ automatic repeat request

ASA authentication and service authorization

ASR anchor switch reporting

ATDD adaptive time division duplexing

ATM asynchronous transfer mode

BCC block convolutional code

BE best effort

BER bit error ratio

BPSK binary phase shift keying

BR bandwidth request

BS base station

BSN block sequence number

BTC block turbo code

BW bandwidth

BWA broadband wireless access

BWAA bandwidth allocation/access

C/I carrier-to-interference ratio

C/N carrier-to-noise ratio

CA certification authority

CBC cipher block chaining

CBC-MAC cipher block chaining message authentication code

CC confirmation code

CCH control subchannel

CCI co-channel interference

CCM CTR mode with CBC-MAC

CCS common channel signaling

CCV clock comparison value

CDMA code division multiple access

ChID channel identifier

CID connection identifier

CINR carrier-to-interference-and-noise ratio

CIR channel impulse response

CLP cell loss priority

CMAC cipher-based message authentication code

CP cyclic prefix

CPS common part sublayer

CQI channel quality information

CQICH channel quality information channel

CRC cyclic redundancy check

CS convergence sublayer

CSCF centralized scheduling configuration

CSCH centralized scheduling

CSIT channel state information at the transmitter

CTC convolutional turbo code

CTR counter mode encryption

DAMA demand assigned multiple access

DARS digital audio radio satellite

dBi decibels of gain relative to the 0 dB gain of a free-space isotropic radiator

dBm decibels relative to 1 mW

DCD downlink channel descriptor

DES data encryption standard

DFS dynamic frequency selection

DHCP Dynamic Host Configuration Protocol

DIUC downlink interval usage code

DL downlink

DLFP downlink frame prefix

DSA dynamic service addition

DSC dynamic service change

DSCH distributed scheduling

DSCP differentiated services codepoint

DSD dynamic service deletion

DSx dynamic service addition, change, or deletion

D-TDOA Downlink Time Difference Of Arrival

EAP extensible authentication protocol

EC encryption control

ECB electronic code book

ECRTP a IP-header-compression CS PDU format (IETF RFC 3545)

EDE encrypt-decrypt-encrypt

EESS earth exploratory satellite system

EIK EAP Integrity Key

EIRP effective isotropic radiated power

EKS encryption key sequence

EVM error vector magnitude

FBSS fast base station switching

FC fragmentation control

FCAPS Fault Management, Configuration Management, Account Management, Performance Management, Security Management

FCH frame control header

FDD frequency division duplex or duplexing

FEC forward error correction

FFSH fast-feedback allocation subheader

FFT fast Fourier transform

FHDC frequency hopping diversity coding

FPC fast power control

FSH fragmentation subheader

FSN fragment sequence number

FSS fixed satellite service

FUSC full usage of subchannels

GPCS Generic Packet Convergence Sublayer

GF galois field

GKEK group key encryption key

GMSH grant management subheader

GPS global positioning system

GS guard symbol

GTEK group traffic encryption key

HCS header check sequence

HEC header error check

H-FDD half-duplex frequency division duplex

HMAC hashed message authentication code

HO handover

HT header type

HUMAN high-speed unlicensed metropolitan area network

I inphase

IANA internet assigned numbers authority

IE information element

IFFT inverse fast Fourier transform

IMM idle mode management

IP Internet Protocol

IV initialization vector

IWF interworking function

KEK key encryption key

LAN local area network

LBS location based services

LDPC low-density parity check

LFSR linear feedback shift register

LLC logical link control

LOS line-of-sight

LSB least significant bit

MAC medium access control layer

MAK MBS authorization key

MAN metropolitan area network

MBS multicast and broadcast service

MCID multicast CID

MCS modulation coding scheme

MDHO macro diversity handover

MDS multipoint distribution service

MGTEK MBS group traffic encryption key

MIB management information base

MIC message integrity check

MIH media independent handover

MIHF MIH Function

MIMO multiple input multiple output

MMDS multichannel multipoint distribution service

MPEG moving pictures experts group

MS mobile station

MSB most significant bit

MSK master session key

NAI network access identifier

NAS network access server

NCFG network configuration

NCMS network control and management system

NCMS(BS) network control and management system at the BS side (network side)

NCMS(SS/MS) network control and management system at the SS/MS side

NEM network entry management

NENT network entry

NLOS non-line-of-sight

NNI network-to-network interface (or network node interface)

NRM network reference model

nrtPS non-real-time polling service

NSP network service provider

OFDM orthogonal frequency division multiplexing

OFDMA orthogonal frequency division multiple access

OID object identifier

PAK primary authorization key

PAPR peak to average power ratio

PBR piggyback request

PDU protocol data unit

PER packet error ratio

PHS payload header suppression

PHSF payload header suppression field

PHSI payload header suppression index

PHSM payload header suppression mask

PHSS payload header suppression size

PHSV payload header suppression valid

PHY physical layer

PKM privacy key management

PM poll-me bit

PMD physical medium dependent

PMK pairwise master key

PMP point-to-multipoint

PN packet number

PPP Point-to-Point Protocol

PRBS pseudo-random binary sequence

PS physical slot

PSC power saving class

PSH packing subheader

PTI payload type indicator

PtP point to point

PUSC partial usage of subchannels

PUSC-ASCA partial usage of subchannels – adjacent subcarrier allocation

PVC permanent virtual circuit

Q quadrature

QAM quadrature amplitude modulation

QoS quality of service

QPSK quadrature phase-shift keying

REQ request

RLAN radio local access network

RNG ranging

ROHC an IP-header-compression CS PDU format (IETF RFC 3095)

RRA radio resource agent

RRC radio resource controller

RRM radio resource management

RS Reed–Solomon

RSP response

RSS receive signal strength

RSSI receive signal strength indicator

RTG receive/transmit transition gap

rtPS real-time polling service

Rx receive

RxDS receiver delay spread clearing interval

SA security association

SAID security association identifier

SAP service access point

SAR synthetic aperture radar

SC single carrier

SDMA spatial division multiple access

SDU service data unit

SF service flow

SFM service flow management

SFID service flow identifier

SHA secure hash algorithm

SI slip indicator

SIQ service information query

SM spatial multiplexing

SN sequence number

SNMP Simple Network Management Protocol

SNR signal-to-noise ratio

SS subscriber station

SSID subscriber station identification (MAC address)

SSM subscriber station management

SSTG subscriber station transition gap

STC space time coding

STTD space time transmit diversity

SVC switched virtual circuit

TCS transmission convergence sublayer

TCM trellis coded modulation

TCP Transmission Control Protocol

TDD time division duplex or duplexing

TDM time division multiplexing

TDMA time division multiple access

TDOA time difference of arrival

TEK traffic encryption key

TFTP Trivial File Transfer Protocol

TLV type/length/value

TTG transmit/receive transition gap

TUSC tile usage of subchannels

Tx transmit (abbreviation not used as verb)

UCD uplink channel descriptor

UDP User Datagram Protocol

UEP unequal error protection

UGS unsolicited grant service

UIUC uplink interval usage code

UL uplink

UNI user-to-network interface (or user-network interface)

U-NII unlicensed national information infrastructure

UTC universal coordinated time

U-TDOA uplink time difference of arrival

UW unique word

VC virtual channel

VCI virtual channel identifier

VLAN virtual local area network

VP virtual path

VPI virtual path identifier

WLAN wireless local area network

XOR exclusive-or

IEEE Std 802.16j:

AC authentication control

FRS fixed relay station

HR handover ranging

IR initial ranging

IS infrastructure station

MRS mobile relay station

MR-BS multihop relay base station

RS relay station

RTD round trip delay

R-ACK relay ACK

R-DL relay downlink

R-FCH relay zone frame control header

R-MAP relay zone MAP

R-RTI relay receive/transmit transition interval

R-TTI relay transmit/receive transition interval

R-UL relay uplink

R-Zone relay zone

TDU tunnel data unit

P802.16m/D12:

AAI advanced air interface

ABS advanced base station

aGPS adaptive grant polling service

A-MAP advanced MAP

AMS advanced mobile station

AOA angle of arrival

A-Preamble advanced preamble

ARS advanced relay station

ASN access service network

ASN.1 abstract syntax notation

CDR conjugate data repetition

CL closed-loop

CLRU contiguous LRU

CMI codebook matrix index

CRID context retention identifier

CRT context retention timer

CRU contiguous resource unit

CRV CoRe version

CoRe constellation re-arrangement

CSG closed subscriber group

CSM collaborative spatial multiplexing

DCAS downlink CRU allocation size

DCR deregistration with context retention

DL downlink

DLRU distributed LRU

DSAC downlink subband allocation count

DRU distributed resource unit

EBB established before break

EH extended header

FFR fractional frequency reuse

FID flow identifier

FMT UL feedback mini-tile

FP frequency partition

FPEH fragmentation and packing extended header

FPC frequency partition configuration

FPCT frequency partition count

FPS frequency partition size

FPSC frequency partition subband count

GRA group resource allocation

GMH generic MAC header

HARQ hybrid ARQ

HE horizontal encoding

HMT UL HARQ mini-tiles

ICV integrity check value

IE information element

IR incremental redundancy

ISL interference sensitivity level

LBS location based services

LDM low duty mode

LRU logical resource unit

MCEH MAC control extended header

MCS modulation and coding scheme

MEF MIMO encoder format

MEH multiplexing extended header

MLRU minimum A-MAP logical resource unit

MU multi-user

N/A not applicable

NIP normalized interference power

NLRU miniband LRU

NS/EP National Security/Emergency Preparedness

NS-RCH non-synchronized ranging channel

OL open-loop

OSG open subscriber group

PA persistent allocation

PA-Preamble primary advanced preamble

PFBCH UL primary fast feedback channel

PGID paging-group identifier

PMI preferred matrix index

PPRU permuted physical resource unit

PRU physical resource unit

P-SFH primary superframe header

PSI pilot stream index

RA-ID random access identifier

RCH ranging channel

RCP ranging cyclic prefix

RD relative delay

RFMT reordered UL feedback mini-tile

RHMT reordered UL HARQ mini-tile

RP ranging preamble

RTD round trip delay

RU resource unit

S-ABS serving ABS

SAC subband allocation count

SA-Preamble secondary advanced preamble

Sc sub-carrier

SFBC space-frequency block code

SFBCH UL secondary fast feedback channel

SFH superframe header

SLRU subband LRU

SOHO small office home office

SON self organizing networks

SP S-SFH sub-packet

SPID subpacket ID

SPMH short-packet MAC header

S-RCH synchronized ranging channel

S-SFH secondary superframe header

STC space-time coding

STID station identifier

SU single-user

T-ABS target ABS

TOA time of arrival

TSTID temporary STID

UCAS uplink CRU allocation size

UFPC uplink frequency partition configuration

UL uplink

USAC uplink subband allocation count

VE vertical encoding

Annex 2

Terms and Definitions from IEEE Draft P802.16m/D12

*Note: Change marks indicate changes with respect to Annex 3 of 5D/814.*

3.97 AAI subframe: A structured data sequence of predefined duration used by the Advanced Air Interface specification.

3.98 advanced base station (ABS): A base station that supports the Advanced Air Interface protocol defined in Clause 16.

3.99 advanced mobile station (AMS): A subscriber station capable of performing the 12.5 WirelessMAN-OFDMA TDD Release 1 subset of mobile station (MS) features and functions additionally implementing the Advanced Air Interface protocol defined in Clause 16.

3.100 advanced relay station (ARS): A relay station that supports the Advanced Air Interface protocol defined in Clause 16.

3.101 superframe: A structured data sequence of fixed duration used by the Advanced Air Interface specifications. A superframe is comprised of four frames.

3.102 primary carrier: An OFDMA carrier on which an ABS and an AMS/MS exchange traffic and full PHY/MAC control information defined in the Advanced Air Interface specification. Further, the primary carrier is used for control functions for proper AMS/MS operation, such as network entry. Each AMS shall have only one carrier it considers to be its primary carrier in a cell.

3.103 secondary carrier: An OFDMA carrier that an AMS may use to exchange traffic with an ABS, based on allocation commands and rules received over the primary carrier of that ABS. The secondary carrier may also include control signaling to support multi-carrier operation.

3.104 fully configured carrier: A carrier for which all control channels including synchronization, broadcast, multicast and unicast control signaling are configured. Further, information and parameters regarding multi-carrier operation and the other carriers can also be included in the control channels.

3.105 partially configured carrier: A downlink only carrier configured with control channels to support downlink transmission.

3.106 physical resource unit (PRU): The basic resource allocation unit that consists of 18 adjacent subcarriers in consecutive symbols in the same AAI subframe.

3.107 distributed resource unit (DRU): The resource allocation unit of the same size as the PRU that has undergone the subband partitioning and miniband permutation, assigned to distributed allocation and will be submitted to the subcarrier permutation in DL and tile permutation in UL.

3.108 contiguous resource unit (CRU): The resource allocation unit of the same size as the PRU that has undergone the subband partitioning and miniband permutation, assigned to contiguous allocation and will bypass subcarrier permutation in DL and tile permutation in UL. Also known as a localized resource unit.

3.109 logical resource unit (LRU): the generic name of logical units for distributed and localized resource allocations.

3.110 transmission time interval (TTI): The duration of the transmission of the physical layer encoded packet over the radio air interface and is equal to an integer number of AAI subframes. The default TTI is 1 AAI subframe.

3.111 MIMO layer: An information path fed to the MIMO encoder as an input. A MIMO layer represents one channel coding block.

3.112 MIMO stream: Each information path encoded by the MIMO encoder that is passed to the precoder

3.113 horizontal encoding: Indicates transmitting multiple MIMO layers over multiple antennas. The number of MIMO layers is more than 1. The number of MIMO streams is same as the number of MIMO layers in this case.

3.114 vertical encoding: Indicates transmitting a single MIMO layer over multiple antennas. The number of MIMO layers is always 1.

3.115 multi-layer encoding: The number of MIMO streams is same as the number of MIMO layers in this case.

3.116 resource unit: A granular unit in frequency and time, described by the number of OFDMA subcarriers and OFDMA symbols

3.117 single user MIMO (SU-MIMO): A MIMO transmission scheme in which a single MS is scheduled in one RU

3.118 multi-user MIMO (MU-MIMO): A MIMO transmission scheme in which multiple MSs are scheduled in one RU, by virtue of spatial separation of the transmitted signals

3.119 Time-division transmit and receive (TTR) relaying: a relay mechanism where transmission to subordinate station(s) and reception from the superordinate station, or transmission to the superordinate station and reception from subordinate station(s) is separated in time.

3.120 AAI (DL/UL) Access Zone: An integer multiple of subframes located in the MZone of the ABS frame or ARS frame, where an ABS or ARS transmit to the AMSs or receive from AMSs.

3.121 AAI (DL/UL) Relay Zone: An integer multiple of subframes located in the MZone of the ABS frame, where an ABS transmit to the ARSs and/or AMSs or receive from ARSs and AMSs, or ARS frame, where an ARS transmit to the ABS or receive from ABS.

3.122 ARS transmit/receive transition gap (ARSTTG): The minimum transmit-to-receive turnaround gap required at an ARS. ARS-TTG is measured from the time of the last sample of the transmitted burst to the first sample of the received burst at the antenna port of the ARS.

3.123 ARS receive/transmit transition gap (ARSRTG): The minimum receive-to-transmit turnaround gap required at an ARS. ARS-RTG is measured from the time of the last sample of the received burst to the first sample of the transmitted burst at the antenna port of the ARS.

3.124 relative delay (RD): The delay of neighbor DL signals relative to the serving/attached BS.

3.125 round trip delay (RTD): The time required for a signal or packet to transfer from a MS to a BS and back again.

3.126 Macro hotzone ABS: An ABS with smaller transmission power/cell size than that of macro ABS's, typically deployed by service provider and operated on service provider backhaul.

3.127 frame index: The frame order within a Superframe (i.e. the 1st, 2nd, 3rd, or 4th frame of Superframe).

3.128 Femto ABS: an ABS with low transmit power, typically installed by a subscriber in the home, SOHO, or enterprise to provide the access to closed or open group of users as configured by the subscriber and/or the access provider. A Femto ABS is typically connected to the service providers network via a broadband connection.

3.129 OSG Femto ABS: a femto ABS accessible to any AMS.

3.130 closed subscriber group (CSG): a set of subscribers authorized by the Femto ABS owner or the network service provider, for accessing CSG femto ABS.

3.131 CSG Femto ABS: CSG-Closed or CSG-Open Femto ABS.

3.132 CSG-Closed Femto ABS: a femto ABS accessible only to the AMSs, which are in its CSG(s), except for emergency services. AMSs which are not the members of the CSG(s), should not try to access CSG-Closed Femto ABSs.

3.133 CSG-Open Femto ABS: a femto ABS primarily accessible to the AMSs that belong to its CSG(s), while other AMSs, outside CSG(s), may also access such Femto ABS, and will be served at lower priority. CSG-Open Femto ABS will provide service to such AMSs as long as the QoS of AMSs in its CSG(s) is not compromised.

3.134 WirelessMAN-OFDMA R1 Reference System: a network compliant with the WirelessMAN-OFDMA capabilities as specified in subclause 12.5 WirelessMAN-OFDMA TDD Release 1

3.135 WirelessMAN-OFDMA Advanced co-existing System: an ABS and/or AMS that also implements LZone functionality compliant with 12.5 WirelessMAN-OFDMA TDD Release 1

3.136 R1 MS: A mobile station compliant with the WirelessMAN-OFDMA R1 Reference System

3.137 R1 BS: A base station compliant with the WirelessMAN-OFDMA R1 Reference System

3.138 LZone: A positive integer number of consecutive subframes during which an ABS communicates with RSs or R1 MSs, and where an ARS or an RS communicates with one or more R1 MSs.

3.139 MZone: A positive integer number of consecutive subframes during which an ABS communicates with one or more ARSs or AMSs, and where an ARS communicates with one or more ARSs or AMSs.

3.140 Mixed Mode ABS: An ABS with an operating Lzone and operating Mzone.

3.141 default service flow: A service flow which is established automatically without DSA procedure after successful registration procedure. QoS parameters for the default service flow are predefined.

3.142 Simultaneous transmit and receive (STR) relaying: a relay mechanism where transmission to subordinate station(s) and reception from the superordinate station, and transmission to the superordinate station and reception from subordinate station(s) are performed simultaneously.

3.143 Macro ABS: an ABS with high transmit power. A Macro ABS is directly connected to the service providers network.

3.144 Single Radio MS: A multimode MS/AMS that operates with only a single transmitting radio and with one or more receiving radios at any given time.

3.145 Dual Radio MS: A multimode MS/AMS that can have both radios (transmitting and receiving) active at the same time. A Dual Radio MS/AMS can simultaneous transmit and receive on both radios. A Dual Radio MS/AMS may behave as a Single Radio MS by operating in Single Radio Mode

3.146 Multi Radio MS: A multimode MS/AMS that can have multiple radios (transmitting and receiving) active at the same time. A Multi Radio MS/AMS can simultaneous transmit and receive on multiple radios. A Multi Radio MS/AMS may behave as a Single Radio MS by operating in Single Radio Mode

3.147 Frame Number: In WirelessMAN-OFDMA, the frame number is a 24-bit number transmitted in every frame. Frame numbers are not necesseraly synchronized across base stations. In WirelessMAN-Advanced air interface, the frame number is obtained by concatenating the 12-bit superframe number (transmitted in every superframe) and the 2-bit frame index. Superframe numbers are synchronized across base stations.

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