IEEE P802.19  
Wireless Coexistence

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| --- | --- | --- | --- | --- |
| Update on Annex A, B and C for adding profile 3 | | | | |
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Abstract

This document is a submission to IEEE 802.19 TG1 that contains a description for Annex A, B and C.

**Notice:** This document has been prepared to assist IEEE 802.19. 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.

# (normative) Data types

IEEE802191DataType DEFINITIONS AUTOMATIC TAGS ::= BEGIN

**-----------------------------------------------------------**

**--Exported data types**

**-----------------------------------------------------------**

--Exported data types

EXPORTS

--Coexistence protocol entity ID

CxID,

--Status

Status,

--CxMedia status

CxMediaStatus,

--Coexistence service

CoexistenceService,

--Subscribed service

SubscribedService,

--Network technology

NetworkTechnology,

--Network type

NetworkType,

--Discovery information

DiscoveryInformation,

--Geolocation

Geolocation,

--Coverage area

CoverageArea,

--Installation parameters

InstallationParameters,

--Frequency range

FrequencyRange,

--List of available frequencies

ListOfAvailableFrequencies,

--List of operating frequencies

ListOfOperatingFrequencies,

--List of available channel numbers

ListOfAvailableChNumbers,

--List of operating channel numbers

ListOfOperatingChNumbers,

--List of supported frequencies

ListOfSupportedFrequencies,

--Required resource RequiredResource,

--Operation code for registration

OperationCode,

--Measurement capability

MeasurementCapability,

--List of available frequencies of the subject WSO

ListOfSubjectWSOAvailableFrequencies,

--Transmission schedule

TxSchedule,

--CM registration

CMRegistration,

--CE registration

CERegistration,

--Coexistence report

CoexistenceReport,

--Channel priority

ChannelPriority,

--List of subject CEs

ListOfSubjectCEs,

--List of neighbor CMs transport information

ListOfNeighborCMsTransport,

--List of neighbor CM

ListOfNeighborCM,

--List of neighbor CM WSOs

ListOfNeighborCMWSOs,

--List of CEs for reconfiguration

ReconfigListOfCEs,

--Channel classification information

ChClassInfo,

--Channel classification information list

ChClassInfoList,

--Failed parameters

FailedParameters,

--Event parameters

EventParams,

--Required information description

ReqInfoDescr,

-- Requested information value

ReqInfoValue,

-- Negotiation status

NegotiationStatus,

-- Negotiation information

NegotiationInformation

-- Winner CM ID list

ListOfWinnerCMID,

-- Slot time position list

ListOfSlotTimePosition

--Measurement description

MeasurementDescription,

--Measurement result

MeasurementResult,

--Mobility Information

MobilityInformation,

--Entity profile

EntityProfile;

--List of recommended operation Frequency

ListOfRecommendedOperationFrequency,

--List of master CM candidate

ListOfMasterCMCandidate,

--List of neighbor CMs

ListOfNeighborCMs;

**-----------------------------------------------------------**

**--Coexistence protocol entity ID**

**-----------------------------------------------------------**

--Coexistence protocol entity type

CxType ::= ENUMERATED {

--Coexistence enabler

ce,

--Coexistence manager

cm,

--Coexistence discovery and information server

cdis}

--Coexistence protocol entity ID

CxID ::= SEQUENCE {

--Entity type

type CxType,

--Entity ID

id OCTET STRING}

**-----------------------------------------------------------**

**--Status**

**-----------------------------------------------------------**

--Status

Status ::= ENUMERATED {

--Primitive/message is successfully processed

noError,

--Primitive/message is rejected due to security reasons

rejected,

--Primitive/message cannot be successfully processed because according to the current entity status different primitive/message is expected

invalidEntityStatus,

--Primitive/message cannot be successfully processed because of invalid values of parameters

invalidArgument,

--Primitive/message cannot be successfully processed because of the process error in the receiving entity

processFailure,

--Primitive/message cannot be successfully processed because of the connection error

networkFailure}

--CxMedia status

CxMediaStatus ::= ENUMERATED {

noErrorAccepted,

noErrorRejected,

errorInvalidEntityStatus,

errorInvalidArgument,

errorProcessFailure,

errorNetworkFailure,

errorUnknown

}

**-----------------------------------------------------------**

**--Coexistence service**

**-----------------------------------------------------------**

--Coexistence service

CoexistenceService ::= ENUMERATED {

--Information service

information,

--Management service

management,

--No service

noService}

SubscribedService::= ENUMERATED {

information,

management,

interCMCoexistenceSetElementsNeighbors,

allCoexistenceSetElementsNeighbors

}

**-----------------------------------------------------------**

**--Network technology**

**-----------------------------------------------------------**

NetworkTechnology ::= ENUMERATED {

--IEEE 802.11af

ieee802dot11af,

--IEEE 802.22

ieee802dot22,

--Radio microphone

radioMic,

--Area broadcast

areaBroadcast,

--ECMA 392

ecma392}

**-----------------------------------------------------------**

**--Network type**

**-----------------------------------------------------------**

NetworkType ::= ENUMERATED {

fixed,

mode1,

mode2,

…

}

**-----------------------------------------------------------**

**--Discovery information**

**-----------------------------------------------------------**

DiscoveryInformation ::= SEQUENCE {

coordinateX REAL,

coordinateY REAL,

coordinateZ REAL,

maxTxPower REAL,

rxSensitivity REAL,

antennaGain REAL,

minReqSNR REAL,

antennaHeight REAL,

…

}

**-----------------------------------------------------------**

**--Location**

**-----------------------------------------------------------**

--Location

Geolocation ::= CHOICE {

--Place name or ID

placeID OCTET STRING,

--Coordinates of the master station

coordinates SEQUENCE {

--Latitude

latitude REAL,

--Longitude

longitude REAL,

--Altitude

altitude REAL OPTIONAL}}

**-----------------------------------------------------------**

**--Coverage area**

**-----------------------------------------------------------**

--Coverage area

CoverageArea ::= SEQUENCE {

--Coverage radius

radius REAL,

--Reference central frequency

refFrequency REAL,

--Reference height of master station

refMasterHeight REAL,

--Reference height of slave station

refSlaveHeight REAL,

--Reference transmission power

refTxPower REAL}

**-----------------------------------------------------------**

**--Installation parameters**

**-----------------------------------------------------------**

--Installation parameters

InstallationParameters ::= SEQUENCE {

--Operating height of master station

opMasterHeight REAL OPTIONAL,

--Operating height of slave station

opSlaveHeight REAL OPTIONAL,

--Operating transmission power

opTxPower REAL OPTIONAL,

--Adjacent channel selectivity of the WSO

aCS REAL OPTIONAL,

--Adjacent channel leakage ratio of the WSO

aCLR REAL OPTIONAL,

--Guaranteed QoS of backhaul connection of the WSO

guaranteedQoSOfBackhaulConnection GuaranteedQoSOfBackhaulConnection OPTIONAL}

**-----------------------------------------------------------**

**--Guaranteed QoS of backhaul connection related data types**

**----------------------------------------------------------**

GuaranteedQoSOfWiredConnection ::= SEQUENCE{

--Backhaul type ID

backhaulTypeID ENUMERATED{

xDSL,

opticalFibre,

…},

--Guaranteed minimum bit rates of backhaul connection

GuaranteedMinimumBitRates REAL OPTIONAL,

…}

**-----------------------------------------------------------**

**--Frequency range related data types**

**-----------------------------------------------------------**

--Frequency range

FrequencyRange ::= SEQUENCE {

--Start frequency

startFreq REAL,

--Stop frequency

stopFreq REAL}

--List of available frequencies

ListOfAvailableFrequencies ::= SEQUENCE OF SEQUENCE {

--Frequency range

frequencyRange FrequencyRange,

--Transmission power limit

txPowerLimit REAL OPTIONAL,

--Start time when this frequency range is available

availableStartTime GeneralizedTime OPTIONAL,

--Duration during which this frequency range is available

availableDuration REAL OPTIONAL,

--Aggregated interference control parameters

aggInterfCtrolParam   
AggregatedInterferenceControlParameters OPTIONAL}

--Aggregated interference control parameters

AggregatedInterferferenceControlParameters ::= SEQUENCE{

--Reference point ID to be protected in controlling

--aggregated interference from the other WSO(s)

referencePointID INTEGER,

--Geolocation information of the reference point ID

geolocation Geolocation,

--Adjacent channel selectivity of the WSO

aCS REAL,

--Adjacent channel leakage ratio of the WSO

aCLR REAL,

--Potential antenna height of the reception to be protected

--in the reference point

antennaHeight REAL,

--Potential antenna gain of the reception to be protected

--in the reference point

antennaGain REAL,

--Protection ratio of the reception to be protected

--at the reference point for the frequency

protectionRatio REAL,

…}

--List of supported frequencies

ListOfSupportedFrequencies ::= SEQUENCE OF SEQUENCE {

-- The frequency borders of each possible sub band or channel

supportedFrequency FrequencyRange,

-- Extra channel configuration

-- (subchannelization or channel aggregation) supported or not

extrachannelizationIsSupported BOOLEAN,

-- Extra channel configuration description

extrachannelizationDescription   
ExtraChannelizationDescription OPTIONAL}

extraChannelizationDescription ::= SEQUENCE{

--Maximum number of non-contiguous channels

--supported in channel aggregation

maxNuNonconCH INTEGER,

--Maximum number of contiguous channels

--supported in channel bonding

maxNuConCH INTEGER,

--Min channel raster for fine tuning of frequency

minChRaster REAL OPTIONAL,

--Maximum supported bandwidth per channel

maxCHBW REAL,

--Minimum supported bandwidth per channel

minCHBW REAL,

--Resolution for additional channel bandwidth

--between minCHBW and maxCHBW

resolutionSBW REAL,

--Minimum bandwidth within either maxCHBW or minCHBW.

--Any number or location, which fits within

--either maxCHBW or minCHBW is allowed.

minUnderlayBW REAL,

--Offset of the start frequency in the case of maxCHBW

offsetFreqMaxCHBW REAL,

--Offset of the start frequency in the case of minCHBW

offsetFreqMinCHBW REAL,

--Offset always based on the Primary Channelization or not

OffsetPerPrimaryChannelization BOOLEAN}

--List of operating frequencies

ListOfOperatingFrequencies ::= SEQUENCE OF SEQUENCE {

--Frequency range

frequencyRange FrequencyRange,

--Occupancy if known

occupancy REAL OPTIONAL}

**-----------------------------------------------------------**

**--Available channel numbers**

**-----------------------------------------------------------**

ConstOfChUseID :: = ENUMERATED {

regulationMaxTxPower,

regulationMaxAntGain,

regulationMaxAntHeight,

regulationTVDBUpdateTime,

outOfBandEmissionLimit,

…

}

ConstOfChUseValue ::= CHOICE {

regulationMaxTxPower REAL,

regulationMaxAntMaxGain REAL,

regulationAntMaxHeight REAL,

regulationTVDBUpdateTime REAL,

outOfBandEmissionLimit REAL,

…

}

ConstOfChUses ::= SEQUENCE OF SEQUENCE {

constOfChUseID ConstOfChUseID,

constOfChUseValue ConstOfChUseValue

}

ListOfAvailableChNumbers ::= SEQUENCE OF SEQUENCE {

chNumber INTEGER,

availableStartTime GeneralizedTime,

availableDuration REAL,

constOfChUses ConstOfChUses

}

**-----------------------------------------------------------**

**--Operating channel numbers**

**-----------------------------------------------------------**

ListOfOperatingChNumbers ::= SEQUENCE OF SEQUENCE {

chNumber INTEGER,

occupancy REAL

}

**-----------------------------------------------------------**

**--Required resource**

**-----------------------------------------------------------**

--Required resource

RequiredResource ::= SEQUENCE OF SEQUENCE {

--Required bandwidth

requiredBandwidth REAL,

--Expected occupancy if known

occupancy REAL OPTIONAL}

**-----------------------------------------------------------**

**--Operation code for registration**

**-----------------------------------------------------------**

--Operation code for registration

OperationCode ::= ENUMERATED {

--New registration

new,

--Update of registration information

update,

--Deregistration

delete}

**-----------------------------------------------------------**

**--Measurement capability**

**-----------------------------------------------------------**

MeasurementCapability ::= ENUMERATED {

energyDetection,

featureDetection,

…

}

**-----------------------------------------------------------**

**--Reconfiguration related data types**

**-----------------------------------------------------------**

--Transmission schedule

TxSchedule ::= SEQUENCE {

--Schedule start time

scheduleStartTime GeneralizedTime,

--Schedule frame duration

scheduleFrameDuration REAL,

--Number of schedule frames

numberOfFrames INTEGER,

--Transmission start time within a schedule frame

transmissionStartTime REAL,

--Transmission duration within a schedule frame

transmissionDuration REAL}

**-----------------------------------------------------------**

**--CM registration**

**-----------------------------------------------------------**

--CM registration

CMRegistration ::= SEQUENCE {

--CM IP address

ipAddress OCTET STRING,

--CM port number

portNumber INTEGER}

--List of WSO for registration

ListOfWSORegistrations ::= SEQUENCE OF SEQUENCE {

--New registration, registration update or deregistration

operationCode OperationCode,

--WSO ID

wsoID OCTET STRING,

--Network technology

networkTechnology NetworkTechnology OPTIONAL,

--Location

geolocation Geolocation OPTIONAL,

--Coverage area

coverageArea CoverageArea OPTIONAL,

-- Mobility information

mobilityInformation MobilityInformation OPTIONAL,

--Installation parameters

installationParameters InstallationParameters OPTIONAL,

--List of available frequencies

listOfAvailableFrequencies ListOfAvailableFrequencies OPTIONAL,

-- Operating frequency if available

operatingFrequency FrequencyRange OPTIONAL,

-- Upper limit of transmission power level of its operating frequency

txPowerLimit REAL,

--Maximum number of controllable WSO

maximumNumberOfControllableWSO INTEGER OPTIONAL}

--CE registration

CERegistration ::= SEQUENCE OF SEQUENCE{

--CE ID

ceID CxID,

-- List of WSO registration

listOfWSORegistration ListOfWSORegistrations}

**-----------------------------------------------------------**

**--Coexistence report**

**-----------------------------------------------------------**

CoexistenceReport ::= SEQUENCE OF SEQUENCE {

networkID OCTET STRING,

networkTechnology NetworkTechnology,

listOfOperatingChNumbers ListOfOperatingChNumbers

}

ChannelPriority ::= SEQUENCE OF SEQUENCE {

channelNumber INTEGER,

priority INTEGER

}

**-----------------------------------------------------------**

**--Coexistence set information related data types**

**-----------------------------------------------------------**

--Interference direction

InterferenceDirection ::= ENUMERATED {

--Subject WSO creates interference to neighbor WSO

source,

--Neighbor WSO creates interference to subject WSO

victim,

--Both subject WSO and neighbor WSO create interference to each other

mutual}

--Network geometry class

NetworkGeometryClass ::= ENUMERATED {

--Class#1 network geometry

class\_1,

--Class#2 network geometry

class\_2,

--Class#3 network geometry

class\_3,

--Class#4 network geometry

class\_4}

--List of neighbor WSOs

ListOfNeighborWSOs ::= SEQUENCE OF SEQUENCE {

--Neighbor WSO ID

wsoID OCTET STRING,

--Neighbor WSO network technology

networkTechnology NetworkTechnology,

--Interference direction

interferenceDirection InterferenceDirection,

--Network geometry classification

networkGeometryClass NetworkGeometryClass OPTIONAL,

--Distance to subject WSO

distance REAL

--List of operating frequencies

--Not used in CoexistenceSetInformationAnnouncement

--Used in CoexistenceReportAnnouncement and CxMediaCoexistenceReportIndication

listOfOperatingFrequencies ListOfOperatingFrequencies OPTIONAL,

listOfAvailableFrequencies ListOfAvailableFrequencies}

--List of master CM candidate

ListOfMasterCMCandidate ::= SEQUENCE OF SEQUENCE {

cmID cxID,

ipAddress IPAddress,

portNumber PortNumber

}

--List of neighbor CEs

ListOfNeighborCEs ::= SEQUENCE OF SEQUENCE {

--Neihgbor CE ID

ceID CxID,

--List of neighbor WSOs

listOfNeighborWSOs ListOfNeighborWSOs}

--List of neighbor CMs

ListOfNeighborCMs ::= SEQUENCE OF SEQUENCE {

--Neighbor CM ID

cmID CxID,

--List of neighbor CEs

listOfNeighborCEs ListOfNeighborCEs}

--List of available frequencies of the subject WSO

ListOfSubjectWSOAvailableFrequencies ::= SEQUENCE OF SEQUENCE {

--Frequency range

frequencyRange FrequencyRange,

--List of neighbor CMs

listOfNeighborCMs ListOfNeighborCMs}

-- List of recommended operation frequencies

ListOfRecommendedOperationFrequency :: = SEQUENCE OF SEQUENCE {

frequencyRange FrequencyRange,

txPowerLevel REAL,

availableStartTime GeneralizedTime,

availableDuration REAL

}

--List of subject WSOs

ListOfSubjectWSOs ::= SEQUENCE OF SEQUENCE {

--Subject WSO ID

wsoID OCTET STRING,

--List of available frequencies of the subject WSO

listOfSubjectWSOAvailableFrequencies ListOfSubjectWSOAvailableFrequencies}

--List of subject CEs

ListOfSubjectCEs ::= SEQUENCE OF SEQUENCE {

--Subject CE ID

ceID CxID,

--List of subject WSOs

listOfSubjectWSOs ListOfSubjectWSOs}

--List of neighbor CMs transport information

ListOfNeighborCMsTransport ::= SEQUENCE OF SEQUENCE {

--Neighbor CM ID

cmID CxID,

--Neighbor CM profile

cmProfile EntityProfile,

-- Neighbor CM IP address

ipAddress OCTET STRING,

-- Neighbor CM port number

portNumber INTEGER}

**-----------------------------------------------------------**

**--Coexistence set information**

**-----------------------------------------------------------**

ListOfCoexSetElement ::= SEQUENCE OF SEQUENCE {

networkID OCTET STRING,

networkTechnology NetworkTechnology

}

ListOfNeighborCM ::= SEQUENCE OF SEQUENCE {

neighborCMID CxID,

--Neighbor CM profile

cmProfile EntityProfile,

listOfCoexSetElement ListOfCoexSetElement

}

**-----------------------------------------------------------**

**--Coexistence set element information related data types**

**-----------------------------------------------------------**

--List of neighbor CM WSOs

ListOfNeighborCMWSOs ::= SEQUENCE OF SEQUENCE {

--WSO ID

wsoID OCTET STRING,

--List of available frequencies

listOfAvailableFrequencies ListOfAvailableFrequencies OPTIONAL,

--List of operating frequencies

listOfOperatingFrequencies ListOfOperatingFrequencies OPTIONAL,

--Network geometry classification

networkGeometryClass NetworkGeometryClass OPTIONAL

}

**-----------------------------------------------------------**

**--Coexistence set element reconfiguration related data types**

**-----------------------------------------------------------**

--List of WSOs

ReconfigListOfWSOs ::= SEQUENCE OF SEQUENCE {

--WSO ID

wsoID OCTET STRING,

--Potential new operating frequency

newOperatingFrequency FrequencyRange,

--Additionally operable network technology

addNetworkTechnology NetworkTechnology OPTIONAL

}

--List of CEs

ReconfigListOfCEs ::= SEQUENCE OF SEQUENCE {

--CE ID

ceID CxID,

--List of WSOs

reconfigListOfWSOs ReconfigListOfWSOs

}

**-----------------------------------------------------------**

**--Channel classification**

**-----------------------------------------------------------**

OperatingChannelInfo ::= SEQUENCE {

operatingChannelNumber INTEGER,

listOfNetworkID SEQUENCE OF OCTET STRING,

…

}

ChClassInfo ::= SEQUENCE {

availableChannelList SEQUENCE OF INTEGER,

restrictedChannelList SEQUENCE OF INTEGER,

protectedChannelList SEQUENCE OF INTEGER,

unclassifiedChannelList SEQUENCE OF INTEGER,

operatingChannelList SEQUENCE OF OperatingChannelInfo,

coexistenceChannelList SEQUENCE OF OperatingChannelInfo,

…

}

ChClassInfoList ::= SEQUENCE OF SEQUENCE {

networkID OCTET STRING,

chClassInfo ChClassInfo

}

**-----------------------------------------------------------**

**--Failed parameters**

**-----------------------------------------------------------**

FailedParameterID ::= ENUMERATED {

listOfoperatingChNumber,

txPowerLimit,

channelIsShared,

txSchedule

}

FailedParameterValue ::= CHOICE {

listOfoperatingChNumber SEQUENCE OF INTEGER,

txPowerLimit REAL,

channelIsShared BOOLEAN,

txSchedule TxSchedule

}

FailedParameters ::= SEQUENCE OF SEQUENCE {

failedParameterID FailedParameterID,

failedParameterValue FailedParameterValue

}

**-----------------------------------------------------------**

**--Event indication**

**-----------------------------------------------------------**

EventDescr ::= ENUMERATED{

sinrThresholdReached,

qosDegradation,

…

}

EventParams ::= SEQUENCE {

eventDescr EventDescr

}

**-----------------------------------------------------------**

**--Information Acquiring**

**-----------------------------------------------------------**

ReqInfoDescr ::= SEQUENCE OF ENUMERATED {

sinr,

desiredBandwidth,

desiredOccupancy,

desiredQoS,

desiredCoverage,

channelNumber,

subscribedService,

interferenceLevel,

fairness,

threshold,

mobilityInformation,

...

}

ReqInfoValue ::= SEQUENCE OF SEQUENCE {

reqInfoDescr ReqInfoDescr,

reqInfoValue CHOICE {

sinrValue REAL,

desiredBandwidthValue REAL,

desiredOccupancyValue REAL,

desiredQoSValue REAL,

desiredCoverageValue REAL,

channelNumberValue REAL,

subscribedServiceValue SubscribedService

interferenceLevelValue REAL,

fairnessValue REAL,

thresholdValue REAL,

mobilityInformation MobilityInformation,

otherValue ANY

}

}

**-----------------------------------------------------------**

**--Negotiation**

**-----------------------------------------------------------**

NegotiationStatus :: = SEQUENCE {

negotiationSuccess BOOLEAN,

negotiationFailure BOOLEAN,

underNegotiation BOOLEAN,

…

}

StartEndTime :: = SEQUENCE {

startTime REAL,

endTime REAL

}

TimeSharingUnitInfo ::= SEQUENCE {

referenceTime REAL,

windowTime StartEndTime,

slotTime StartEndTime,

…

}

NegotiationInformation :: = SEQUENCE {

mode BOOLEAN,

listOfChNumber SEQUENCE OF INTEGER,

timeSharingUnitInfo TimeSharingUnitInfo,

slotTimePosition StartEndTime,

numberOfSlots INTEGER,

disallowedSlotTimePosition StartEndTime,

listOfContentionNumbers SEQUENCE OF REAL,

…

}

ListOfWinnerCMID ::= SEQUENCE OF CxID

ListOfSlotTimePosition ::= SEQUENCE OF REAL

**-----------------------------------------------------------**

**--Measurement**

**-----------------------------------------------------------**

MeasurementSchedule ::= SEQUENCE {

measStartTime REAL,

numberOfMeasurements INTEGER,

timeBetweenMeasurements REAL

}

MeasurementFreq ::= SEQUENCE OF INTEGER

MeasurementType ::= ENUMERATED {

interferenceLevel

}

MeasurementDescription ::= SEQUENCE {

measType MeasurementType,

measSchedule MeasurementSchedule,

measFreq MeasurementFreq

}

MeasurementReport ::= CHOICE {

interferenceLevelValue REAL,

…

}

MeasurementResult ::= SEQUENCE OF SEQUENCE {

measurementDescription MeasurementDescription,

measurementReport MeasurementReport

}

-----------------------------------------------------------

--Mobility Information

-----------------------------------------------------------

MobilityInformation :: = CHOICE {

maxSpeed REAL, /\*unit [km/h] \*/

speedInformation SpeedInformation,

routeInformation RouteInformation

}

SpeedInformation ::= SEQUENCE {

WSOSpeed REAL, /\* unit [km/h] \*/

WSODirection REAL, /\* unit [radian] \*/

}

RouteInformation ::= SEQUENCE {

PlannedRoute SEQUENCE of Geolocation,

PlannedTime SEQUENCE of GeneralizedTime

}

**-----------------------------------------------------------**

**--Entity profile**

**-----------------------------------------------------------**

--Entity profile

EntityProfile ::= ENUMERATED {

--Profile 1

profile1,

--Profile 2

profile2,

--Profile 3

profile3}

END

# (normative) Primitives

## Transport SAP

IEEE80219TRSAPPrimitive DEFINITIONS AUTOMATIC TAGS::= BEGIN

**-----------------------------------------------------------**

**--Imported data types**

**-----------------------------------------------------------**

--Imported data types

IMPORTS

--Coexistence protocol entity ID

CxID,

--Status

Status

FROM IEEE802191DataType;

**-----------------------------------------------------------**

**--Transport service configuration**

**-----------------------------------------------------------**

--Transport service configuration request

TrConfigurationRequest ::= SEQUENCE {

--Source ID

sourceID CxID,

--Destination ID

destinationID CxID,

--Destination IP address

destinationIPAddress OCTET STRING,

--Destination port number

destinationPortNumber INTEGER}

--Transport service configuration response

TrConfigurationResponse ::= SEQUENCE {

--Destination ID

destinationID CxID,

--Configuration status

status Status}

**-----------------------------------------------------------**

**--Connection establishment**

**-----------------------------------------------------------**

--Request for connection

TrConnectionRequest ::= SEQUENCE {

--Source ID

sourceID CxID,

--Destination ID

destinationID CxID}

--Indication of the received connection request

TrConnectionIndication ::= SEQUENCE {

--Source ID

sourceID CxID}

--Response to the received connection request

TrConnectionResponse ::= SEQUENCE {

--Destination ID

destinationID CxID,

--Connection status

status Status}

--Confirmation to the connection request

TrConnectionConfirm ::= SEQUENCE {

--Source ID

sourceID CxID,

--Connection status

status Status}

**-----------------------------------------------------------**

**--Connection termination**

**-----------------------------------------------------------**

--Connection termination request

TrDisconnectionRequest ::= SEQUENCE {

--Destination ID

destinationID CxID}

--Connection termination indication

TrDisconnectionIndication ::= SEQUENCE {

--Source ID

sourceID CxID}

**-----------------------------------------------------------**

**--Sending a coexistence protocol message**

**-----------------------------------------------------------**

--Request to send coexistence protocol message

TrSendRequest ::= SEQUENCE {

--Destination ID

destinationID CxID,

--Encoded coexistence protocol message

cxMessage OCTET STRING}

--Confirmation of sending coexistence protocol message

TrSendConfirm ::= SEQUENCE {

--Destination ID

destinationID CxID,

--Status of sending coexistence protocol message

status Status}

**-----------------------------------------------------------**

**--Receiving a coexistence protocol message**

**-----------------------------------------------------------**

--Indication of received coexistence protocol message

TrReceiveIndication ::= SEQUENCE {

--Source ID

sourceID CxID,

--Encoded coexistence protocol message

cxMessage OCTET STRING}

END

## Coexistence Media SAP

IEEE80219MEDIASAPPrimitive DEFINITIONS AUTOMATIC TAGS::= BEGIN

**-----------------------------------------------------------**

**--Imported data types**

**-----------------------------------------------------------**

--Imported data types

IMPORTS

--Status

Status,

--CxMedia status

CxMediaStatus,

--Coexistence service

CoexistenceService,

--Subscribed service

SubscribedService,

--Network technology

NetworkTechnology,

--Network type

NetworkType,

--Geolocation

Geolocation,

--Discovery information

DiscoveryInformation,

--Coverage area

CoverageArea,

--Installation parameters

InstallationParameters,

--List of available frequencies

ListOfAvailableFrequencies,

--List of operating frequencies

ListOfOperatingFrequencies,

--List of available channel numbers

ListOfAvailableChNumbers,

--List of operating channel numbers

ListOfOperatingChNumbers,

--List of supported frequencies

ListOfSupportedFrequencies,

--Required resource

RequiredResource,

--List of subject WSO available frequencies

ListOfSubjectWSOAvailableFrequencies,

--Transmission schedule

TxSchedule,

--Coexistence protocol entity ID

CxID,

--Frequency range

FrequencyRange,

--Coexistence report

CoexistenceReport,

--Channel priority

ChannelPriority,

--Measurement capability

MeasurementCapability,

-- Operation code

OperationCode,

--Failed parameters

FailedParameters,

--Channel classification information list

ChClassInfoList,

--Event parameters

EventParams,

--Measurement description

MeasurementDescription,

--Measurement result

MeasurementResult,

--Mobility Information

MobilityInformation,

--Entity profile

EntityProfile,

--List of recommended operation Frequency

ListOfRecommendedOperationFrequency

FROM IEEE802191DataType;

**-----------------------------------------------------------**

**--WSO subscription**

**-----------------------------------------------------------**

--Request for subscription information

CxMediaSubscriptionRequest ::= SEQUENCE {}

--Subscription information

CxMediaSubscriptionResponse ::= SEQUENCE {

--WSO subscription ID

clientID IA5String OPTIONAL,

--WSO subscription password

clientPassword IA5String OPTIONAL,

--List of serving CMs

listOfCMs SEQUENCE OF SEQUENCE {

--CM ID

cmID CxID,

--CM IP address

cmIPAddress OCTET STRING,

--CM port number

cmPortNumber INTEGER,

--CM subscription ID

serverID IA5String,

--CM subscription password

serverPassword IA5String} OPTIONAL,

--Coexistence service to which WSO is subscribed

coexistenceService CoexistenceService OPTIONAL,

--Coexistence service to which WSO is subscribed

subscribedService SubscribedService OPTIONAL,

--Status

status CxMediaStatus OPTIONAL}

--Request to change subscription

CxMediaSubscriptionIndication ::= SEQUENCE {

--Coexistence service to which WSO is subscribed

coexistenceService CoexistenceService OPTIONAL,

--Coexistence service to which WSO is subscribed

subscribedService SubscribedService OPTIONAL}

--Subscription status

CxMediaSubscriptionConfirm ::= SEQUENCE {

--Subscription status

--noError means subscription is confirmed

--rejected means subscription is not confirmed

status Status OPTIONAL,

--Status

cxMediaStatus CxMediaStatus OPTIONAL}

--Request to change subscription

CxMediaChangeSubscriptionRequest ::= SEQUENCE {

--Coexistence service to which WSO is subscribed

subscribedService SubscribedService,

coexistenceService CoexistenceService }

--Response for subscription change

CxMediaChangeSubscriptionResponse :: = SEQUENCE {

--Status

Status CxMediaStatus}

**-----------------------------------------------------------**

**--WSO registration**

**-----------------------------------------------------------**

--Request for registration information

CxMediaRegistrationRequest ::= SEQUENCE {}

--Registration information

CxMediaRegistrationResponse ::= SEQUENCE OF SEQUENCE {

--WSO ID

wsoID OCTET STRING OPTIONAL,

--Network ID

networkID OCTET STRING,

--Network technology

networkTechnology NetworkTechnology,

--Network type

networkType NetworkType OPTIONAL,

--Geolocation

geolocation Geolocation OPTIONAL,

--Discovery information

discoveryInformation DiscoveryInformation OPTIONAL,

--Coverage area

coverageArea CoverageArea OPTIONAL,

--Installation parameters

installationParameters InstallationParameters OPTIONAL,

--List of available frequencies

listOfAvailableFrequencies ListOfAvailableFrequencies OPTIONAL,

--List of operating frequencies

listOfOperatingFrequencies ListOfOperatingFrequencies OPTIONAL,

--List of available channel number

listOfAvailableChNumbers ListOfAvailableChNumbers OPTIONAL,

--List of supported channel number

listOfSupportedChNumbers SEQUENCE OF INTEGER OPTIONAL,

-- List of supported frequencies

listOfSuppFrequencies ListOfSupportedFrequencies OPTIONAL,

--List of operating channel number

listOfOperatingChNumbers ListOfOperatingChNumbers OPTIONAL,

--Transmission schedule is supported or not

txScheduleSupported BOOLEAN OPTIONAL,

--Measurement capability

measurementCapability MeasurementCapability OPTIONAL,

--Required resource

requiredResource RequiredResource,

--Mobility Information

mobilityInformation MobilityInformation OPTIONAL

}

--Updated registration information

CxMediaRegistrationIndication ::= SEQUENCE OF SEQUENCE {

--WSO ID

wsoID OCTET STRING OPTIONAL,

--Network ID

networkID OCTET STRING OPTIONAL,

--Network technology

networkTechnology NetworkTechnology OPTIONAL,

--Network type

networkType NetworkType OPTIONAL,

--Indication of WSO stop operation

wsoStopOperation BOOLEAN OPTIONAL,

--List of available frequencies

listOfAvailableFrequencies ListOfAvailableFrequencies OPTIONAL,

--List of operating frequencies

listOfOperatingFrequencies ListOfOperatingFrequencies OPTIONAL,

--Required resource

requiredResource RequiredResource OPTIONAL,

--Discovery information

discoveryInformation DiscoveryInformation OPTIONAL,

--Transmission schedule is supported or not

txScheduleSupported BOOLEAN OPTIONAL,

--List of available channel number

listOfAvailableChNumbers ListOfAvailableChNumbers OPTIONAL,

--List of supported channel number

listOfSupportedChNumbers SEQUENCE OF INTEGER OPTIONAL,

-- List of supported frequencies

listOfSuppFrequencies ListOfSupportedFrequencies OPTIONAL,

--List of operating channel number

listOfOperatingChNumbers ListOfOperatingChNumbers OPTIONAL,

--Measurement capability

measurementCapability MeasurementCapability OPTIONAL,

--Mobility information

mobilityInformation MobilityInformation OPTIONAL

}

--Registration confirmation

CxMediaRegistrationConfirm ::= SEQUENCE {

--Registration status

status Status OPTIONAL,

--CxMedis status

cxMediastatus CxMediaStatus OPTIONAL}

**-----------------------------------------------------------**

**--WSO reconfiguration**

**-----------------------------------------------------------**

--Reconfiguration request

CxMediaReconfigurationRequest ::= SEQUENCE OF SEQUENCE {

--WSO ID

wsoID OCTET STRING OPTIONAL,

--Operating frequency

operatingFrequency FrequencyRange OPTIONAL,

--List of operating channel number

listOfOperatingChNumber SEQUENCE OF INTEGER OPTIONAL,

--Transmission power limit

txPowerLimit REAL OPTIONAL,

--Indication whether the channel is shared

channelIsShared BOOLEAN,

--Transmission schedule

txSchedule TxSchedule OPTIONAL,

-- Channel classification information

chClassInfo ChClassInfo OPTIONAL,

--Additionally operable network technology

addNetworkTechnology NetworkTechnology OPTIONAL}

--Reconfiguration response

CxMediaReconfigurationResponse ::= SEQUENCE OF SEQUENCE {

--WSO ID

wsoID OCTET STRING OPTIONAL,

--Reconfiguration status

status Status OPTIONAL,

--CxMedia status

cxMediaStatus CxMediaStatus OPTIONAL,

--Failed parameters

failedParameters FailedParameters OPTIONAL}

**-----------------------------------------------------------**

**--CM stop operation**

**-----------------------------------------------------------**

--Stop operation indication

CxMediaStopOperationIndication ::= SEQUENCE {}

--Stop operation confirm

CxMediaStopOperationConfirm ::= SEQUENCE {

--Stop operation status

status Status}

**-----------------------------------------------------------**

**--Coexistence report**

**-----------------------------------------------------------**

-- Coexistence report indication

CxMediaCoexistenceReportAnnouncement ::= SEQUENCE OF SEQUENCE {

--WSO ID

wsoID OCTET STRING,

--List of subject WSO available frequencies

listOfSubjectWSOAvailableFrequencies ListOfSubjectWSOAvailableFrequencies}

-- Coexistence report confirm

CxMediaCoexistenceReportConfirm ::= SEQUENCE {

--Coexistence report status

status Status}

--Request for coexistence report

CxMediaCoexistenceReportRequest ::= SEQUENCE {}

--Response for coexistence report

CxMediaCoexistenceReportResponse ::= SEQUENCE {

--Coexistence report information

coexistenceReport CoexistenceReport,

--Channel priority information

channelPriority ChannelPriority,

networkID NetworkID,

listOfRecommendedOperatingFrequency ListOfRecommendedOperatingFrequency

}

**-----------------------------------------------------------**

**--Channel classification requested by CE**

**-----------------------------------------------------------**

--Channel classification request

CxMediaChannelClassificationRequest ::= SEQUENCE {

-- List of network ID

listOfNetworkID SEQUENCE OF OCTET STRING}

-- Channel classification response

CxMediaChannelClassificationResponse ::= SEQUENCE {

--List of channel classification information

chClassInfoList ChClassInfoList}

**-----------------------------------------------------------**

**--Channel classification update**

**-----------------------------------------------------------**

--Channel classification update

CxMediaChannelClassificationIndication ::= SEQUENCE {

--List of channel classification information

chClassInfoList ChClassInfoList}

**-----------------------------------------------------------**

**--Available channel list from WSO**

**-----------------------------------------------------------**

-- Available channel List request

CxMediaAvailableChannelListRequest ::= SEQUENCE {}

-- Available channel list response

CxMediaAvailableChannelListResponse ::= SEQUENCE {

--Available channel list information

listOfAvailableChNumbers ListOfAvailableChNumbers}

**-----------------------------------------------------------**

**--Event indication**

**-----------------------------------------------------------**

-- Event indication

CxMediaEventIndication ::= SEQUENCE {

-- Event indication information

eventParams EventParams}

**-----------------------------------------------------------**

**--Measurement Request**

**-----------------------------------------------------------**

-- Measurement request

CxMediaGetMeasurementRequest ::= SEQUENCE {

-- Measurement request information

measurementDescription MeasurementDescription}

**-----------------------------------------------------------**

**-- Measurement results**

**-----------------------------------------------------------**

-- Measurement response

CxMediaGetMeasurementResponse ::= SEQUENCE OF SEQUENCE{

-- Measurement results

measurementResult MeasurementResult}

**-----------------------------------------------------------**

**-- WSO Deregistration**

**-----------------------------------------------------------**

--Deregistration request

CxMediaPerformDeregistrationRequest ::= SEQUENCE {

--List of operating channel number

wsoDeregistration BOOLEAN}

-- Deregistration response

CxMediaPerformReconfigurationResponse ::= SEQUENCE {

--CxMedia status

cxMediaStatus CxMediaStatus}

END

# (normative) Messages

IEEE802191Message DEFINITIONS AUTOMATIC TAGS ::= BEGIN

**-----------------------------------------------------------**

**--Imported data types**

**-----------------------------------------------------------**

--Imported data types

IMPORTS

--Coexistence protocol entity ID

CxID,

--Status

Status,

--CxMedia status

CxMediaStatus,

--Coexistence service

CoexistenceService,

--Subscribed service

SubscribedService,

--Network technology

NetworkTechnology,

--Network type

NetworkType,

--Location

Geolocation,

--Discovery information

DiscoveryInformation,

--Coverage area

CoverageArea,

--Installation parameters

InstallationParameters,

--List of available frequencies

ListOfAvailableFrequencies,

--List of operating frequencies

ListOfOperatingFrequencies,

--List of available channel numbers

ListOfAvailableChNumbers,

--List of operating channel numbers

ListOfOperatingChNumbers,

--List of supported frequencies

ListOfSupportedFrequencies,

--Required resource

RequiredResource,

--Operation code for registration

OperationCode,

--List of available frequencies of the subject WSO

ListOfSubjectWSOAvailableFrequencies,

--Transmission schedule

TxSchedule,

--Frequency range

FrequencyRange,

--CM registration

CMRegistration,

--CE registration

CERegistration,

--List of subject CEs

ListOfSubjectCEs,

--List of neighbor CMs transport information

ListOfNeighborCMsTransport,

--List of neighbor CM WSOs

ListOfNeighborCMWSOs,

--List of CEs for reconfiguration

ReconfigListOfCEs

--Coexistence report

CoexistenceReport,

--Channel priority

ChannelPriority,

--Measurement capability

MeasurementCapability,

--List of neighbor CM

ListOfNeighborCM,

--Failed parameters

FailedParameters,

--Channel classification information

ChClassInfo,

--Required information description

ReqInfoDescr,

--Requested information value

ReqInfoValue,

--Event parameters

EventParams,

--Negotiation status

NegotiationStatus,

--Negotiation information

NegotiationInformation

--Winner CM ID list

ListOfWinnerCMID,

-- Slot time position list

ListOfSlotTimePosition

--Measurement description

MeasurementDescription,

--Measurement result

MeasurementResult,

--Mobility Information

MobilityInformation,

--Entity profile

EntityProfile,

List of master CM candidate

ListOfMasterCMCandidate,

--List of neighbor CMs

ListOfNeighborCMs

FROM IEEE802191DataType;

**-----------------------------------------------------------**

**--Message structure, header structure, and payload types**

**-----------------------------------------------------------**

--Message structure

CxMessage ::= SEQUENCE {

-- Message header

header CxHeader,

-- Message payload

payload CxPayload}

--Header

CxHeader ::= CHOICE {

--For announcement

none NULL,

--For request or single response

requestID INTEGER (0..2147483647),

--For multiple responses

multipleResponse SEQUENCE {

--Original request ID

requestID INTEGER (0..2147483647),

--Response number

sequenceNumber INTEGER (0..2147483647),

--True is the response is last

isLastResponse BOOLEAN}}

--Payload types

CxPayload ::= CHOICE {

--WSO subscription request

subscriptionRequest SubscriptionRequest,

--WSO subscription response

subscriptionResponse SubscriptionResponse,

--WSO subscription change request

subscriptionChangeRequest SubscriptionChangeRequest,

--WSO subscription change response

subscriptionChangeResponse SubscriptionChangeResponse,

--CE registration request

ceRegistrationRequest CERegistrationRequest,

--Registration response

registrationResponse RegistrationResponse,

--Reconfiguration request

reconfigurationRequest ReconfigurationRequest,

--Reconfiguration response

reconfigurationResponse ReconfigurationResponse,

--Stop operation announcement

stopOperationAnnouncement StopOperationAnnouncement,

--Stop operation confirm

stopOperationConfirm StopOperationConfirm,

--Coexistence report announcement

coexistenceReportAnnouncement CoexistenceReportAnnouncement,

--Coexistence report confirm

coexistenceReportConfirm CoexistenceReportConfirm,

--Coexistence report request

coexistenceReportRequest CoexistenceReportRequest,

--Coexistence report response

coexistenceReportResponse CoexistenceReportResponse,

--CM registration request

cmRegistrationRequest CMRegistrationRequest,

--Coexistence set information announcement

coexistenceSetInformationAnnouncement CoexistenceSetInformationAnnouncement,

--Coexistence set information confirm

coexistenceSetInformationConfirm CoexistenceSetInformationAnnouncement,

--Coexistence set information request

coexistenceSetInformationRequest CoexistenceSetInformationRequest,

--Coexistence set information response

coexistenceSetInformationResponse CoexistenceSetInformationResponse,

--Coexistence set element information announcement

coexistenceSetElementInformationAnnouncement CoexistenceSetElementInformationAnnouncement,

--Coexistence set element information confirm

coexistenceSetElementInformationConfirm CoexistenceSetElementInformationConfirm,

--Coexistence set element information request

coexistenceSetElementInformationRequest CoexistenceSetElementInformationRequest,

--Coexistence set element information response

coexistenceSetElementInformationResponse CoexistenceSetElementInformationResponse,

--Coexistence set element reconfiguration request

coexistenceSetElementReconfigurationRequest CoexistenceSetElementReconfigurationRequest,

--Coexistence set element reconfiguration response

coexistenceSetElementReconfigurationResponse CoexistenceSetElementReconfigurationResponse,

--CM Reconfiguration request

cmReconfigurationRequest CMReconfigurationRequest,

--CM Reconfiguration response

cmReconfigurationResponse CMReconfigurationResponse,

--WSO channel classification request

channelClassificationRequest ChannelClassificationRequest,

-- WSO channel classification response

channelClassificationResponse ChannelClassificationResponse,

--CM channel classification request

cmChannelClassificationRequest CMChannelClassificationRequest,

-- CM channel classification response

cmChannelClassificationResponse CMChannelClassificationResponse,

-- WSO channel classification update

channelClassificationAnnouncement ChannelClassificationAnnouncement,

--Available channel list request from WSO

availableChannelsRequest AvailableChannelsRequest,

-- Available channel list response from WSO

availableChannelsResponse AvailableChannelsResponse,

--Information acquiring request

infoAcquiringRequest InforAcquiringRequest,

--Information acquiring response

infoAcquiringResponse InforAcquiringResponse,

-- Event indication

eventIndication EventIndication,

-- Event confirm

eventConfirm EventConfirm,

--WSO measurement request

measurementRequest MeasurementRequest,

--WSO measurement response

measurementResponse MeasurementResponse,

--WSO measurement confirm

measurementConfirm MeasurementConfirm,

--Master/Slave CM request

masterCMRequest MasterCMRequest,

--Master/Slave CM response

masterCMResponse MasterCMResponse,

--Master/Slave CM configuration request

masterSlaveCMconfigurationRequest MasterSlaveCMconfigurationRequest,

--Master/Slave CM configuration response

masterSlaveCMconfigurationResponse MasterSlaveCMconfigurationResponse,

--Negotiation request

negotiationRequest NegotiationRequest,

--Negotiation announcement

negotiationAnnouncement NegotiationAnnouncement,

--Deregistration request

wsoDeregistrationRequest WsoDeregistrationRequest,

-- Deregistration response

wsoDeregistrationResponse WsoDeregistrationResponse,

--Inter-CM information announcement

interCMInformationAnnouncement InterCMInformationAnnouncement,

--Inter-CM information confirm

interCMInformationCOnfirm InterCMInformationConfirm,

--Inter-CM information request

interCMInformationRequest InterCMInformationRequest,

--Inter-CM information response

interCMInformationResponse InterCMInformationResponse

}

**-----------------------------------------------------------**

**--WSO and CM subscription**

**-----------------------------------------------------------**

--WSO subscription request

SubscriptionRequest ::= SEQUENCE {

--WSO subscription ID

clientID IA5String OPTIONAL,

--WSO subscription password

clientPassword IA5String OPTIONAL,

--Coexistence service to which WSO is subscribed

coexistenceService CoexistenceService OPTIONAL,

--Coexistence service to which WSO is subscribed

subscribedService SubscribedService OPTIONAL}

--WSO subscription response

SubscriptionResponse ::= SEQUENCE {

--CM subscription ID

serverID IA5String OPTIONAL,

--CM subscription password

serverPassword IA5String OPTIONAL,

--Subscription status

--noError means subscription is confirmed

--rejected means subscription is not confirmed

status Status OPTIONAL,

--Status

status CxMediaStatus OPTIONAL}

**-----------------------------------------------------------**

**--WSO subscription change**

**-----------------------------------------------------------**

--Request to change subscription

SubscriptionChangeRequest ::= SEQUENCE {

--Coexistence service to which WSO is subscribed

subscribedService SubscribedService}

--Response for subscription change

SubscriptionChangeResponse :: = SEQUENCE {

--Status

status CxMediaStatus}

**-----------------------------------------------------------**

**--WSO registration**

**-----------------------------------------------------------**

CERegistrationRequest ::= SEQUENCE OF SEQUENCE {

--New registration, registration update or deregistration

operationCode OperationCode,

--WSO ID

wsoID OCTET STRING,

--Network ID

networkID OCTET STRING OPTIONAL,

--Network technology

networkTechnology NetworkTechnology OPTIONAL,

--Network type

networkType NetworkType OPTIONAL,

--Location

geolocation Geolocation OPTIONAL,

--Discovery information

discoveryInformation DiscoveryInformation OPTIONAL,

--Coverage area

coverageArea CoverageArea OPTIONAL,

-- Mobility information

mobilityInformation MobilityInformation OPTIONAL,

--Installation parameters

installationParameters InstallationParameters OPTIONAL,

--List of available frequencies

listOfAvailableFrequencies ListOfAvailableFrequencies OPTIONAL,

--Transmission schedule is supported or not

txScheduleSupported BOOLEAN OPTIONAL,

--List of operating frequencies

listOfOperatingFrequencies ListOfOperatingFrequencies OPTIONAL,

--List of available channel number

listOfAvailableChNumbers ListOfAvailableChNumbers OPTIONAL,

--List of supported channel number

listOfSupportedChNumbers SEQUENCE OF INTEGER OPTIONAL,

-- List of supported frequencies

listOfSuppFrequencies ListOfSupportedFrequencies OPTIONAL,

--List of operating channel number

listOfOperatingChNumbers ListOfOperatingChNumbers OPTIONAL,

--Required resource

requiredResource RequiredResource OPTIONAL,

--Measurement capability

measurementCapability MeasurementCapability OPTIONAL,

addNetworkTechnolgoy AddNetowrkTechnology OPTIONAL }

--Registration response

RegistrationResponse ::= SEQUENCE {

--Registration status

status Status OPTIONAL}

**-----------------------------------------------------------**

**--WSO reconfiguration**

**-----------------------------------------------------------**

--Reconfiguration request

ReconfigurationRequest ::= SEQUENCE OF SEQUENCE {

--WSO ID

wsoID OCTET STRING OPTIONAL,

--Operating frequency

operatingFrequency FrequencyRange OPTIONAL,

--List of operating channel number

listOfOperatingChNumber SEQUENCE OF INTEGER OPTIONAL,

--Transmission power limit

txPowerLimit REAL OPTIONAL,

--Indication whether the channel is shared

channelIsShared BOOLEAN OPTIONAL,

--Transmission schedule

txSchedule TxSchedule OPTIONAL,

-- Channel classification information

chClassInfo ChClassInfo OPTIONAL,

-- Mobility information

mobilityInformation MobilityInformation OPTIONAL,

--Additionally operable network technology

addNetworkTechnology NetworkTechnology OPTIONAL}

--Reconfiguration response

ReconfigurationResponse ::= SEQUENCE OF SEQUENCE {

--WSO ID

wsoID OCTET STRING OPTIONAL,

--Reconfiguration status

status Status OPTIONAL,

--Status

status BOOLEAN OPTIONAL,

--Failed parameters

failedParameters FailedParameters OPTIONAL}

**-----------------------------------------------------------**

**--Stop operation**

**-----------------------------------------------------------**

--Stop operation announcement

StopOperationAnnouncement ::= SEQUENCE {}

--Stop operation confirm

StopOperationConfirm ::= SEQUENCE {

--Stop operation status

status Status}

**-----------------------------------------------------------**

**--Coexistence report**

**-----------------------------------------------------------**

--Coexistence report announcement

CoexistenceReportAnnouncement ::= SEQUENCE OF SEQUENCE {

--Subject WSO ID

wsoID OCTET STRING,

--List of subject WSO available frequencies

listOfSubjectWSOAvailableFrequencies ListOfSubjectWSOAvailableFrequencies}

--Coexistence report confirm

CoexistenceReportConfirm ::= SEQUENCE {

--Coexistence report status

status Status}

--Request for coexistence report

CoexistenceReportRequest ::= SEQUENCE {}

--Response for coexistence report

CoexistenceReportResponse ::= SEQUENCE {

--Coexistence report information

coexistenceReport CoexistenceReport,

--Channel priority information

channelPriority ChannelPriority}

**-----------------------------------------------------------**

**--CM registration**

**-----------------------------------------------------------**

--CM registration request

CMRegistrationRequest ::= SEQUENCE {

--CM profile

cmProfile EntityProfile OPTIONAL,

--CM registration

cmRegistration CMRegistration OPTIONAL,

--CE registration

ceRegistration CERegistration OPTIONAL,

--Operationg code

operationCode OperationCode OPTIONAL,

--CE ID

ceID CxID OPTIONAL,

--Network ID

networkID OCTET STRING OPTIONAL,

--Network technology

networkTechnology NetworkTechnology OPTIONAL,

--Network type

networkType NetworkType OPTIONAL,

--Discovery information

discoveryInformation DiscoveryInformation OPTIONAL,

--List of supported channel number

listOfSupportedChNumbers SEQUENCE OF INTEGER OPTIONAL,

-- List of supported frequencies

listOfSuppFrequencies ListOfSupportedFrequencies OPTIONAL,

--Maximum number of controllable WSO

maximumNumberOfControllableWSO INTEGER OPTIONAL

}

**-----------------------------------------------------------**

**--Coexistence set information**

**-----------------------------------------------------------**

--Coexistence set information announcement

CoexistenceSetInformationAnnouncement ::= SEQUENCE {

--List of subject CEs

listOfSubjectCEs ListOfSubjectCEs,

--List of neighbor CMs transport information mentioned inside the list of subject CEs

listOfNeighborCMsTransport ListOfNeighborCMsTransport}

--Coexistence set information confirm

CoexistenceSetInformationConfirm ::= SEQUENCE {

--Coexistence set information status

status Status}

--Request for coexistence set information

CoexistenceSetInformationRequest ::= SEQUENCE {

listOfNetworkID SEQUENCE OF OCTET STRING}

--Response for coexistence set information

CoexistenceSetInformationResponse ::= SEQUENCE {

--Network ID

coexistenceReport CoexistenceReport,

--List of neighbor CM

listOfneighborCM ListOfneighborCM,

networkID OCTET STRING,

listOfneighborCMs listOfneighborCMs,

listOfMasterCMCandidate ListOfMasterCMCandidate

}

**-----------------------------------------------------------**

**--Coexistence set element information**

**-----------------------------------------------------------**

--Coexistence set element information announcement

CoexistenceSetElementInformationAnnouncement ::= SEQUENCE OF SEQUENCE{

--CE ID

ceID CxID,

--Coexistence service

coexistenceService CoexistenceService OPTIONAL,

--List of neighbor CM WSOs

listOfNeighborCMWSOs ListOfNeighborCMWSOs OPTIONAL

}

--Coexistence set element information confirm

CoexistenceSetElementInformationConfirm ::= SEQUENCE {

--Coexistence set element information status

status Status}

--Coexistence set element information request

CoexistenceSetElementInformationRequest ::= SEQUENCE OF SEQUENCE{

--CE ID

ceID CxID,

--List of neighbor CM WSOs

listOfNeighborCMWSOs ListOfNeighborCMWSOs

}

--Coexistence set element information response

CoexistenceSetElementInformationResponse ::= SEQUENCE OF SEQUENCE{

--CE ID

ceID CxID,

--Coexistence service

coexistenceService CoexistenceService,

--List of neighbor CM WSOs

listOfNeighborCMWSOs ListOfNeighborCMWSOs

}

**-----------------------------------------------------------**

**--Coexistence set element reconfiguration**

**-----------------------------------------------------------**

--Coexistence set element reconfiguration request

CoexistenceSetElementReconfigurationRequest ::= SEQUENCE{

--List of subject CEs

reconfigListOfSubjectCEs ReconfigListOfCEs,

--List of neighbor CEs

reconfigListOfNeighborCEs ReconfigListOfCEs

}

--Coexistence set element reconfiguration response

CoexistenceSetElementReconfigurationResponse ::= SEQUENCE{

--Indicates whether the suggested reconfiguration is accepted or not

requestIsAccepted BOOLEAN

}

**-----------------------------------------------------------**

**--WSO reconfiguration for another CM**

**-----------------------------------------------------------**

--Reconfiguration request

CMReconfigurationRequest ::= SEQUENCE {

--Indication for CE to be reconfigured

reconfigTarget CxID,

--List of operating channel number

listOfOperatingChNumber SEQUENCE OF INTEGER,

--Transmission power limitation

txPowerLimit REAL,

--Indication whether the channel is shared

channelIsShared BOOLEAN,

--Transmission schedule

txSchedule TxSchedule ,

-- Channel classification information

chClassInfo ChClassInfo,

--Additionally operable network technology

newNetworkTechnology NetworkTechnology OPTIONAL,

wsoID OCTET STRING,

cmID cxID,

operatingFreqency OperatingFrequency,

txPowerLimit REAL

}

--Reconfiguration response

ReconfigurationResponse ::= SEQUENCE {

--Indication for CE to be reconfigured

reconfigTarget CxID,

--Status

status BOOLEAN

--Failed parameters

failedParameters FailedParameters}

**-----------------------------------------------------------**

**--Channel classification**

**-----------------------------------------------------------**

--Channel classification request

ChannelClassificationRequest ::= SEQUENCE {

-- List of network ID

listOfNetworkID SEQUENCE OF OCTET STRING}

-- Channel classification response

ChannelClassificationResponse ::= SEQUENCE OF SEQUENCE{

-- Network ID

networkID OCTET STRING

--Channel classification information

chClassInfo ChClassInfo}

--CM Channel classification request

CMChannelClassificationRequest ::= SEQUENCE {

-- List of network ID

listOfNetworkID SEQUENCE OF OCTET STRING}

-- CM Channel classification response

CMChannelClassificationResponse ::= SEQUENCE OF SEQUENCE{

-- Network ID

networkID OCTET STRING

--Channel classification information

chClassInfo ChClassInfo}

**-----------------------------------------------------------**

**--Channel classification update**

**-----------------------------------------------------------**

--Channel classification update

ChannelClassificationAnnouncement ::= SEQUENCE OF SEQUENCE {

-- Network ID

networkID OCTET STRING

--Channel classification information

chClassInfo ChClassInfo}

**-----------------------------------------------------------**

**--Information acquiring from another CM**

**-----------------------------------------------------------**

-- Information acquiring request

InfoAcquringRequest ::= SEQUENCE {

ceID CxID,

listOfReqInfoDescr SEQUENCE OF ReqInfoDescr}

-- Information acquiring response

InfoAcquringResponse ::= SEQUENCE {

ceID CxID,

reqInfoValue ReqInfoValue}

**-----------------------------------------------------------**

**--Available channel list from WSO**

**-----------------------------------------------------------**

-- Available channel request

AvailableChannelsRequest ::= SEQUENCE {}

-- Available channel response

AvailableChannelsResponse ::= SEQUENCE {

--Available channel list information

listOfAvailableChNumbers ListOfAvailableChNumbers}

**-----------------------------------------------------------**

**--Event indication**

**-----------------------------------------------------------**

-- Event indication

EventIndication ::= SEQUENCE {

-- Event indication information

eventParams EventParams}

-- Event confirm

EventConfirm ::= SEQUENCE {}

**-----------------------------------------------------------**

**--Measurement Request**

**-----------------------------------------------------------**

-- Measurement request

MeasurementRequest ::= SEQUENCE {

-- Measurement request information

measurementDescription MeasurementDescription}

**-----------------------------------------------------------**

**-- Measurement results**

**-----------------------------------------------------------**

-- Measurement response

MeasurementResponse ::= SEQUENCE OF SEQUENCE{

-- Measurement results

measurementResult MeasurementResult}

**-----------------------------------------------------------**

**-- Negotiation**

**-----------------------------------------------------------**

-- Negotiation request

NegotiationRequest ::= SEQUENCE {

-- Negotiation status

negotiationStatus NegotiationStatus,

-- Negotiation information

negotiationInformation NegotiationInformation}

-- Negotiation announcement

NegotiationAnnouncement ::= SEQUENCE {

-- Winner CM ID list

listOfWinnerCMID ListOfWinnerCMID,

-- Slot time position list

listOfSlotTimePosition ListOfSlotTimePosition}

**-----------------------------------------------------------**

**--Master/Slave CM selection**

**-----------------------------------------------------------**

--Master/Slave CM selection request

MasterCMRequest ::= SEQUENCE {

--List of CEs managed by CM that intends to become slave CM

listOfCEs SEQUENCE OF CxID}

-- Master/Slave CM selection response

MasterCMResponse ::= SEQUENCE {

--Status

status CxMediaStatus}

**-----------------------------------------------------------**

**--Master/Slave CM configuration**

**-----------------------------------------------------------**

--Master/Slave CM configuration request

MasterSlaveCMconfigurationRequest ::= SEQUENCE {

-- List of CEs managed by CM

listOfCEs SEQUENCE OF CxID}

--Master/Slave CM configuration response

MasterSlaveCMconfigurationResponse ::= SEQUENCE {

--Operationg code

operationCode OperationCode,

--Slave CE ID

slaveCeID CxID,

--Network ID

networkID OCTET STRING,

--Network technology

networkTechnology NetworkTechnology,

--Network type

networkType NetworkType

--Discovery information

discoveryInformation DiscoveryInformation,

--Transmission schedule is supported or not

txScheduleSupported BOOLEAN,

--List of available channel number

listOfAvailableChNumbers ListOfAvailableChNumbers,

--List of supported channel number

listOfSupportedChNumbers SEQUENCE OF INTEGER,

--List of operating channel number

listOfOperatingChNumbers ListOfOperatingChNumbers,

--Required resource

requiredResource RequiredResource

--Measurement capability

measurementCapability MeasurementCapability}

**-----------------------------------------------------------**

**--WSO deregistration**

**-----------------------------------------------------------**

--Deregistration request

WsoDeregistrationRequest ::= SEQUENCE {

--Flag of wso deregistration

wsoDeregistration BOOLEAN}

--Deregistration response

WsoDeregistrationResponse ::= SEQUENCE {

--Status

status CxMediaStatus}

**-----------------------------------------------------------**

**--Inter-CM information**

**-----------------------------------------------------------**

--Inter-CM information announcement

InterCMInformationAnnouncement ::= SEQUENCE OF SEQUENCE {

--CE ID

ceID CxID,

--List of neighbor WSOs

listOfNeighborWSOs SEQUENCE OF SEQUENCE {

wsoID OCTET STRING,

operatingFrequency ListOfOperatingFrequencies OPTIONAL,

operatingChannel ListOfOperatingChNumbers OPTIONAL

}

}

--Inter-CM information confirm

InterCMInformationConfirm ::= SEQUENCE {

--Inter-CM information status

status Status

}

--Inter-CM information request

InterCMInformationRequest ::= SEQUENCE OF SEQUENCE{

--CE ID

ceID CxID,

--List of neighbor WSOs

listOfNeighborWSOs SEQUENCE OF SEQUENCE {

wsoID OCTET STRING

}

}

--Inter-CM information response

InterCMInformationResponse ::= SEQUENCE OF SEQUENCE{

--CE ID

ceID CxID,

--List of neighbor WSOs

listOfNeighborWSOs SEQUENCE OF SEQUENCE {

wsoID OCTET STRING,

operatingFrequency ListOfOperatingFrequencies OPTIONAL,

operatingChannel ListOfOperatingChNumbers OPTIONAL

}

}

END