IEEE 802.19.1a
Wireless Coexistence

|  |
| --- |
| Comment resolution on CID91 |
| Date: 2016-09-xx |
| Author(s): |
| Name | Company | Address | Phone | Email |
| Sho Furuichi | Sony |  |  | Sho.Furuichi@sony.com |
|  |  |  |  |  |
|  |  |  |  |  |

Abstract

This document provides comment resolution on CID91.

r1 is modified based on the comment in July F2F meeting.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Comment ID | **Page No.** | **Section** | **Line No.** | **Type (General, Editorial, Technical)** | **Comments** | **Proposed changes** | Resolutions |
| 91 | **87** | **7.2.2.10.3** | **13** | **Technical** | **"TolerableInterferenceLevel " is missing in the protocol in the clause 6.** | **Need proposal** | wait for contributions |

===== (Text starts below)

* + - 1. **Obtaining coexistence set information**

...

The following table shows ***InstallationParameters*** parameter element.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***geolocation*** | ***Geolocation*** | Shall be set to indicate the geolocation of reference point antenna. |
| ***antennaCharacteristics*** | ***AntennaCharacteristics*** | Shall be set to indicate the antenna characteristics |
| ***maxTxPower*** | ***REAL*** | Not used here. |
| ***aclr*** | ***REAL*** | Not used here. |
| ***guaranteedQoSOfBackhaulConnection*** | ***GuaranteedQoSOfBackhaulConnection*** | Not used here. |
| ***receiverInfo*** | ***ReceiverInfo*** | Shall be set to indicate receiver information if available. |
|  |  |  |
|  |  |  |

The following table shows ***ReceiverInfo*** parameter element.

|  |  |  |
| --- | --- | --- |
| ***receiverType*** | ***ReceiverType*** | Shall be set to indicate receiver type if available. |
| ***modulationType*** | ***ModulationType*** | Shall be set to indicate modulation type if available. |
| ***filterCharacteristics*** | ***FilterCharacteristics*** | Shall be set to indicate filter characteristics if available. |
| ***tolerableInterferenceLevel*** | ***REAL*** | Shall be set to indicate tolerable interference level of the receiver if available. |

...

* + - 1. **~~WSO~~GCO registration**

...

Table below shows ***InstallationParameters*** parameter element.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***geolocation*** | ***Geolocation*** | Shall be set to indicate the geolocation of ~~WSO~~GCO antenna. |
| ***~~opMasterHeight~~*** | ***~~REAL~~*** | ~~Shall be set to indicate the height of master station, if available~~ |
| ***~~opSlaveHeight~~*** | ***~~REAL~~*** | ~~Shall be set to indicate the height of slave station, if available~~ |
| ***antennaCharacteristics*** | ***AntennaCharacteristics*** | Shall be set to indicate the antenna characteristics |
| ***~~opTxPower~~maxTxPower*** | ***REAL*** | Shall be set to indicate the maximum transmission power level if applicable. |
| ***aclr ~~aCLR~~*** | ***REAL*** | Shall be set to indicate adjacent channel leakage ratio of GCO ~~Adjacent Channel Leakage Ratio~~ |
| ***~~aCS~~*** | ***~~REAL~~*** | ~~Adjacent Channel Selectivity~~ |
| ***guaranteedQoSOfBackhaulConnection*** | ***GuaranteedQoSOfBackhaulConnection*** | ~~As specified in table below~~ Shall be set to indicate the guaranteed QoS of backhaul connection as specified in following table, if available. |
| ***receiverInfo*** | ***ReceiverInfo*** | Shall be set to indicate receiver information if available. |
|  |  |  |
|  |  |  |

The following table shows ***ReceiverInfo*** parameter element.

|  |  |  |
| --- | --- | --- |
| ***receiverType*** | ***ReceiverType*** | Shall be set to indicate receiver type if available. |
| ***modulationType*** | ***ModulationType*** | Shall be set to indicate modulation type if available. |
| ***filterCharacteristics*** | ***FilterCharacteristics*** | Shall be set to indicate filter characteristics if available. |
| ***tolerableInterferenceLevel*** | ***REAL*** | Shall be set to indicate tolerable interference level of the receiver if available. |

...

* + - 1. **~~WSO~~GCO registration**

...

Table below shows ***InstallationParameters*** parameter element.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***geolocation*** | ***Geolocation*** | Shall be set to indicate the geolocation information of GCO if available. |
| ***~~opMasterHeight~~*** | ***~~REAL~~*** | ~~Shall be set to indicate the height of master station, if available~~ |
| ***~~opSlaveHeight~~*** | ***~~REAL~~*** | ~~Shall be set to indicate the height of slave station, if available~~ |
| ***antennaCharacteristics*** | ***AntennaCharacteristics*** | Shall be set to indicate the antenna information of GCO |
| ***~~opTxPower~~maxTxPower*** | ***REAL*** | Shall be set to indicate the maximum transmission power level. |
| ***aclr~~aCLR~~*** | ***REAL*** | Shall be set to indicate the value of Adjacent Channel Leakage Ratio. |
| ***~~aCS~~*** | ***~~REAL~~*** | ~~Adjacent Channel Selectivity~~ |
| ***guaranteedQoSOf******BackhaulConnection*** | ***GuaranteedQoSOf******BackhaulConnection*** | ~~As specified in table below~~ Shall be set to indicate the guaranteed QoS of backhaul connection as specified in following table, if available |
| ***receiverInfo*** | ***ReceiverInfo*** | Shall be set to indicate GCO receiver information. |
|  |  |  |
|  |  |  |

The following table shows ***ReceiverInfo*** parameter element.

|  |  |  |
| --- | --- | --- |
| ***receiverType*** | ***ReceiverType*** | Shall be set to indicate receiver typeused by GCO. |
| ***modulationType*** | ***ModulationType*** | Shall be set to indicate modulation type used by GCO. |
| ***filterCharacteristics*** | ***FilterCharacteristics*** | Shall be set to indicate filter characteristics used by GCO. |
| ***tolerableInterferenceLevel*** | ***REAL*** | Shall be set to indicate tolerable interference level of the GCO receiver. The value can be either RAT-specific value or actual value of GCO’s hardware. |

...

* + - * 1. Algorithm description

Figure 18 shows the channel selection procedure.



1. Co-channel sharing procedure

The final decision statuses are as follows:

* (DS#1): Co-channel sharing by means of synchronized operation via wireless connection with similar ~~WSO~~GCO
* (DS#2): No channel allocation for the target ~~WSO~~GCO
* (DS#3): Co-channel sharing by means of synchronized operation via backhaul connection between/among similar/dissimilar ~~WSO~~GCOs
* (DS#4): Same channel assignment between/among similar/dissimilar ~~WSO~~GCOs

The processes are as follows:

* (P#1): Coexistence discovery

This process shall be conducted using the procedures and the message exchange in Clause 5, and the CM can obtain the coexistence set element geometry class information from CDIS. This information is specifically utilized in the network coexistence protocol check process (P#2).

* (P#2): Network coexistence protocol check process

This process shall check whether or not the network coexistence protocol as indicated with NetworkTechnology and addNetworkTechnology can effectively work in the network geometry class.

The result of this process is utilized in the final decision making process whether or not co-channel sharing by means of synchronized operation via wireless connection with similar ~~WSO~~GCO is possible.

* (P#3): Interference power level check process

This process shall be conducted using the ~~WSO~~GCO tolerable interference power level information (***tolerableInterferenceLevel***), and the result of this process is utilized in the decision making on co-channel sharing with the other ~~WSO~~GCO.

* (P#4): Backhaul connection check process

This process shall be conducted using the guaranteed QoS information of GuranteedQoSOfBackhaulConnection and is necessary for the decision making on co-channel sharing with neighbor ~~WSO~~GCO.

The branch conditions are as follows:

* (BC#1):

This branch condition shall be conducted based on the result of the network geometry classification process. If the network geometry class is class#1/class#2/class#3, go to BC#2. If not, go to P#3.

* (BC#2)

This branch condition shall be conducted based on the capability of the operable radio interface of the target ~~WSO~~GCOs. If the same radio interface can utilize in all the target ~~WSO~~GCOs, go to P#2. If not, go to P#4.

* (BC#3)

This branch condition shall be conducted based on the network coexistence protocol check. If the co-channel sharing via wireless link is possible, go to DS#1. If not, go to P#4.

* (BC#4)

This branch condition shall be conducted based on the result of mutual interference power level check process. If the co-channel sharing does not cause the harmful interference for the other ~~WSO~~GCO operation, go to DS#4. If not, go to P#4. If the value of ***tolerableInterferenceLevel*** is invalid, go to P#4.

* (BC#5)

This branch condition shall be conducted based on the result of backhaul connection check process. If the co-channel sharing is possible, go to DS#3. If not, go to DS#2.

* 1. **Data types for IEEE 802.19.1a**

IEEE802191aDataType DEFINITIONS AUTOMATIC TAGS ::= BEGIN

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

**--Exported data types**

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

--Exported data types

EXPORTS

--Coexistence protocol entity ID

 CxID,

 --Status

 Status,

 --Cx Media status

 CxMediaStatus,

 --Coexistence service

 CoexistenceService,

 --Network technology

 NetworkTechnology,

 --Network type

 NetworkType,

 --Geolocation

 Geolocation,

 --Coverage area

 CoverageArea,

 --Installation parameters

 InstallationParameters,

 --Frequency range

 FrequencyRange,

 --List of available frequencies

 ListOfAvailableFrequencies,

 --List of operating frequencies

 ListOfOperatingFrequencies,

 --List of supported frequencies

ListOfSupportedFrequencies,

 --Required resource

RequiredResource,

 --Operation code for registration

 OperationCode,

 --Measurement capability

 MeasurementCapability,

 --CM registration

 CMRegistration,

 --CE registration

 CERegistration,

 --Coexistence report

 CoexistenceReport,

 --List of coexistence reports

 ListOfCoexistenceReports,

 --Mobility Information

 MobilityInformation,

 --Entity profile

 EntityProfile,

 --List of master CM candidates

 ListOfMasterCMCandidates,

 --List of neighbor CMs

 ListOfNeighborCMs,

--Coordinates

Coordinates,

--Antenna Characteristics

AntennaCharacteristics,

--Type of frequency

TypeOfFrequency,

--GCO Descriptor

GCODescriptor,

--Receiver information

ReceiverInfo,

--Receiver type

ReceiverType,

--Modulation type

ModulationType,

--Filter characteristics

FilterCharacteristics,

--Energy detection information

EnergyDetectionInfo,

SpecRequestModification;

...

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

**--Installation parameters**

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

--Installation parameters

InstallationParameters ::= SEQUENCE {

 --Geolocation of GCO

 geolocation Geolocation OPTIONAL,

 --Antenna characteristics

 antennaCharacteristics AntennaCharacteristics OPTIONAL,

--Maximum transmission power [dBm]

 maxTxPower REAL OPTIONAL,

 --Adjacent channel leakage ratio of the GCO [dB]

 aclr REAL OPTIONAL,

 --Guaranteed QoS of backhaul connection of the GCO

 guaranteedQoSOfBackhaulConnection

GuaranteedQoSOfBackhaulConnection OPTIONAL,

 --Receiver information

 receiverInfo ReceiverInfo OPTIONAL,

 --Management regional range of GCO

 managementRange Range OPTIONAL,

 ...

}

...

--Receiver information

ReceiverInfo :: = SEQUENCE {

 --Receiver type

 receiverType ReceiverType OPTIONAL,

 -- Modulation Type

 modulationType ModulationType OPTIONAL,

 -- Filter Characteristics

 filterCharacteristics FilterCharacteristics OPTIONAL,

 --Tolerable interference level[dBm]

 tolerableInterferenceLevel REAL OPTIONAL

}

--Receiver type

ReceiverType ::= ENUMERATED {

 --Successive interference canceller

 sic,

 --Zero-forcing

 zeroForcing,

 ...

}

...