IEEE 802.19.1a  
Wireless Coexistence

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| Comment resolutions | | | | |
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Abstract

This contribution provides resolutions to comment CID 78, 79, 82, 97.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Comment ID | **Page No.** | **Section** | **Line No.** | **Type (General, Editorial, Technical)** | **Comments** | **Proposed changes** | Resolutions |
| 78 | 65 | 6.4.3.6 | 3 | Technical | Parameter necessesity is missing. | In the "spectrumTransitionCapability" and "operationRegion" descriptions, the sentence to indicate the parameter necessity (i.e. required or optional) should be added. | wait for contributions |
| 79 | 66 | 6.4.3.7 | 7 | Technical | Parameter necessesity is missing. | In the "specRequestModification" description, the sentence to indicate the parameter necessity (i.e. required or optional) should be added. | wait for contributions |
| 82 | 72 | 6.5.2.12 | 12 | Technical | Parameter necessesity is missing. | In the "operationRegion" description, the sentence to indicate the parameter necessity (i.e. required or optional) should be added. | wait for contributions |
| 97 | 89 | 7.2.2.11.3 | 21 | Technical | 5.2.10 is reconfiguration procedure. Correct section should be provided. | Need suggestion from proponent | wait for contributions |

Proposed changes

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

After a CE has performed the ~~WSO~~GCO subscription procedure, the CE shall perform the ~~WSO~~GCO registration procedure described in clause 5.2.2.1. The CE shall generate and send the ***cxMediaRegistrationRequest*** message to the CM to which it is subscribed. After receiving ***CxMediaRegistrationResponse*** from GCO, The CE shall generate and send the ***CERegistrationRequest*** message to the CM to which it is subscribed.

Table below shows ***CxMediaRegistrationResponse*** for one ~~WSO~~GCO.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***operationCode*** | ***OperationCode*** | Shall be set to indicate new registration as “new”. |
| ***~~wsoID~~gcoID*** | ***~~INTEGER~~OCTET STRING*** | ~~WSO~~GCO ID |
| ***networkID*** | ***OCTET STRING*** | Identifier of the network to which the ~~WSO~~GCO belongs. |
| ***gcoDescription*** | ***GCODescriptor*** | Shall be set to indicate the GCO parameters as specified in the following table. |
| ***~~networkTechnology~~*** | ***~~NetworkTechnology~~*** | ~~Shall be set to a value that represents the network technology of the WSO.~~ |
| ***~~networkType~~*** | ***~~NetworkType~~*** | ~~Shall be set to a value that represents the network type of the WSO.~~ |
| ***~~geolocation~~*** | ***~~Geolocation~~*** | ~~Geolocation information of the WSO~~ |
| ***~~deviceRegulatoryID~~*** | ***~~OCTET STRING~~*** | ~~Shall be set to a value that equals the regulatory identifier of the WSO.~~ |
| ***installationParameters*** | ***InstallationParameters*** | As specified in table below |
| ***listOfAvailableFrequencies*** | ***ListOfAvailableFrequencies*** | As specified in table below. |
| ***txScheduleSupported*** | ***BOOLEAN*** | Shall be set to a value that represents the ~~WSO~~GCO’s capability to support transmit scheduling. |
| ***listOfOperatingFrequencies*** | ***ListOfOperatingFrequencies*** | As specified in table below. |
| ***listOfSuppFrequencies*** | ***ListOfSupportedFrequencies*** | As specified in table below. |
| ***~~addNetworkTechnology~~*** | ***~~SEQUENCE of NetworkTechnology~~*** | ~~Optionally present. If present, this parameter shall be set to indicate the sequence of its operable network technology type(s)~~ |
| ***requiredResource*** | ***RequiredResource*** | As specified in table below. |
| ***mobilityInformation*** | ***MobilityInformation*** | As specified in table below. |
| ***spectrumTransitionCapability*** | ***BOOLEAN*** | Shall be set to a value that represents whether the spectrum transmission is supported by the GCO or not |
| ***operationRegion*** | ***Range*** | Shall be set to indicate the range of activity in which the available frequencies are valid for. |

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

After a CE has received a ***CxMediaRegistrationIndication*** primitive from the ~~WSO~~GCO/RLSS it serves, the CE shall perform the ~~WSO~~GCO registration update procedure described in clause 5.2.2.2. The CE shall generate and send the ***CERegistrationRequest*** message to the CM to which it is subscribed.

Table below shows ***CxMediaRegistrationIndication*** payload element for one ~~WSO~~GCO when requesting registration update.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***operationCode*** | ***OperationCode*** | Shall be set to indicate registration update as “modify” or “remove”. |
| ***~~wsoID~~gcoID*** | ***~~INTEGER~~***  ***OCTET STRING*** | Shall be set to indicate ~~WSO~~GCO ID |
| ***networkID*** | ***OCTET STRING*** | Shall be set to indicate identifier of the network to which the GCO belongs. |
| ***~~geolocation~~*** | ***~~Geolocation~~*** | ~~Geolocation information if any update~~ |
| ***gcoDescriptor*** | ***GCODescriptor*** | Shall be set to indicate a set of GCO parameters if update is needed. |
| ***~~InstallationParameters~~***  ***installationParameters*** | ***InstallationParameters*** | Shall be set to indicate the installation parameters of GCO as~~As~~ specified in 1.3 if any update is needed. |
| ***listOfAvailableFrequencies*** | ***ListOfAvailableFrequencies*** | Shall be set to indicate the list of available frequency at the GCO’s location as~~As~~ specified in if any update is needed. |
| ***listOfOperatingFrequencies*** | ***ListOfOperatingFrequencies*** | Shall be set to indicate the list of operating frequency and related operational parameters of GCO as~~As~~ specified in 1.3 if any update is needed. |
| ***~~addNetworkTechnology~~*** | ***~~SEQUENCE of NetworkTechnology~~*** | ~~Optionally present. If present, this parameter shall be set to indicate the sequence of its WSO operable network technology type(s)~~ |
| ***requiredResource*** | ***RequiredResource*** | Shall be set to indicate the required resource of GCO as~~As~~ specified in 1.3 if any update |
| ***mobilityInformation*** | ***MobilityInformation*** | Shall be set to indicate the mobility information of GCO as~~As~~ specified in 1.3 if any update. |
| ***listOfDesiredPerformances*** | ***ListOfDesiredPerformances*** | Shall be set to indicate the desired performance of GCO in each frequency band if available. |
| ***spectrumTransitionCapability*** | ***BOOLEAN*** | Shall be set to a value that represents whether the spectrum transmission is supported by the GCO or not |
| ***operationRegion*** | ***Range*** | Shall be set to indicate the range of activity in which the available frequencies are valid for. |

Table below shows ***CxMessage*** fields in ***CERegistrationRequest*** message when requesting registration update.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***header*** | ***CxHeader*** | ***requestID*** |
| ***payload*** | ***CxPayload*** | ***~~registrationRequest~~ ceRegistrationRequest*** |

Table below shows ***~~CEregistrationRequest~~CERegistrationRequest*** payload element for one ~~WSO~~GCO when requesting registration update.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***operationCode*** | ***OperationCode*** | Shall be set to indicate registration update as “modify” or “remove”. |
| ***~~wsoID~~gcoID*** | ***~~INTEGER~~***  ***OCTET STRING*** | Shall be set to indicate ~~WSO~~GCO ID |
| ***networkID*** | ***OCTET STRING*** | Shall be set to indicate identifier of the network to which the GCO belongs. |
| ***~~geolocation~~*** | ***~~Geolocation~~*** | ~~Geolocation information if any update~~ |
| ***gcoDescriptor*** | ***GCODescriptor*** | Shall be set to indicate a set of GCO parameters if update is needed. |
| ***~~InstallationParameters~~***  ***installationParameters*** | ***InstallationParameters*** | Shall be set to indicate the installation parameters of GCO as~~As~~ specified in 1.3 if any update is needed. |
| ***listOfAvailableFrequencies*** | ***ListOfAvailableFrequencies*** | Shall be set to indicate the list of available frequency at the GCO’s location as~~As~~ specified in if any update is needed. |
| ***listOfOperatingFrequencies*** | ***ListOfOperatingFrequencies*** | Shall be set to indicate the list of operating frequency and related operational parameters of GCO as~~As~~ specified in 1.3 if any update is needed. |
| ***~~addNetworkTechnology~~*** | ***~~SEQUENCE of NetworkTechnology~~*** | ~~Optionally present. If present, this parameter shall be set to indicate the sequence of its WSO operable network technology type(s)~~ |
| ***requiredResource*** | ***RequiredResource*** | Shall be set to indicate the required resource of GCO as~~As~~ specified in 1.3 if any update |
| ***mobilityInformation*** | ***MobilityInformation*** | Shall be set to indicate the mobility information of GCO as~~As~~ specified in 1.3 if any update. |
| ***listOfDesiredPerformances*** | ***ListOfDesiredPerformances*** | Shall be set to indicate the desired performance of GCO in each frequency band if available. |
| ***spectrumTransitionCapability*** | ***BOOLEAN*** | Shall be set to indicate the spectrum transmission supported by the GCO or not |
| ***operationRegion*** | ***Range*** | Shall be set to indicate the range of activity in which the available frequencies are valid for. |

Also, the CE shall send the ***CxMediaRegistrationConfirm*** primitive to the ~~WSO~~GCO/RLSS after it has received the ***RegistrationResponse*** from the CM.

Table below shows ***CxMediaRegistrationConfirm*** primitive.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***cxMediaStatus*** | ***~~cxMediaStatus~~CxMediaStatus*** | ***~~Status~~cxMediaStatus*** |

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

After a CE has received a ***ReconfigurationRequest*** message from the CM to which it is subscribed, the CE shall perform the ~~WSO~~GCO reconfiguration procedure described in clause 5.2.10.1. The CE shall generate and send the ***CxMediaReconfigurationRequest*** primitive to the ~~WSO~~GCO/RLSS it serves.

Table below shows ***CxMediaReconfigurationRequest*** primitive.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***~~wsoID~~***  ***gcoID*** | ***OCTET STRING*** | ~~WSO~~GCO ID. |
| ***listOfOperatingFrequencies*** | ***ListOfOperatingFrequencies*** | Shall be set to indicate the operating frequencies to be reconfigured. |
| ***~~OperatingFrequency~~*** | ***~~FrequencyRange~~*** | ~~Operating frequency range allocated for the WSO.~~ |
| ***~~txPowerLimit~~*** | ***~~REAL~~*** | ~~Transmission power limit~~ |
| ***~~addNetworkTechnology~~***  ***newNetworkTechnology*** | ***NetworkTechnology*** | Optionally present. If present, this parameter shall be set to indicate its ~~WSO~~GCO network technology type(s) to be reconfigured |
| ***specRequestModification*** | ***SpecRequestModification*** | Optionally present. If present, this parameter shall be set to instruct the GCOs to make spectrum request to spectrum management database |

* + 1. Obtaining operating frequency information procedure over COE

After a COE receives ***OperatingFreqInformationRequest*** message from a CM, the COE shall perform the obtaining operating frequency information procedure described in 5.2.19. The COE shall generate and send the ***InterCOEOperatingFreqInformationRequest*** message to the other COE.

The following table shows ***CxMessage*** fields in ***InterCOEOperatingFreqInformationRequest*** message.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***header*** | ***CxHeader*** | ***requestID*** |
| ***payload*** | ***CxPayload*** | ***interCOEOperatingFreq InformationRequest*** |

The following table shows ***InterCOEOperatingFreqInformationRequest*** payload element.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***coeID*** | ***CxID*** | COE ID |
| ***operatingFreq InformationRequest*** | ***OperatingFreq InformationRequest*** | ***operatingFreq InformationRequest*** |

After the COE has received a ***InterCOEOperatingFreqInformationRequest*** message from the other COE, the COE shall process this ***InterCOEOperatingFreqInformationRequest*** message. The COE shall generate and send the ***OperatingFreqInformationRequest*** message to the target CM.

The following table shows ***CxMessage*** fields in ***OperatingFreqInformationRequest*** message.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***header*** | ***CxHeader*** | ***requestID*** |
| ***payload*** | ***CxPayload*** | ***operatingFreq InformationRequest*** |

The following table shows ***OperatingFreqInformationRequest*** payload element.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***cmID*** | ***CxID*** | CM ID |
| ***region*** | ***Region*** | Shall be set to indicate the geographical region. |

After the COE has received a ***OperatingFreqInformationResponse*** message from the CM, the COE shall process this ***OperatingFreqInformationResponse*** message. The COE shall generate and send the ***InterCOEOperatingFreqInformationResponse*** message to the target CM.

The following table shows ***CxMessage*** fields in ***InterCOEOperatingFreqInformationResponse*** message.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***header*** | ***CxHeader*** | ***requestID*** |
| ***payload*** | ***CxPayload*** | ***interCOEOperatingFreq InformationResponse*** |

The following table shows ***InterCOEOperatingFreqInformationResponse*** payload element.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***coeID*** | ***CxID*** | COE ID |
| ***operatingFreq InformationResponse*** | ***OperatingFreq InformationResponse*** | ***operatingFreq InformationResponse*** |

The following table shows ***OperatingFreqInformationResponse*** payload element.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***status*** | ***Status*** | status |
| ***listOfCoexistenceReports*** | ***ListOfCoexistenceReports*** | Shall be set to indicate the operating frequency information corresponding to the region information included in the *OperatingFreqInformationRequest*. No need to be included when “status” shows error or rejected. |

The following table shows ***ListOfCoexistenceReports*** information element.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***region*** | ***Region*** | Shall be set to indicate the region that GCOs are operating within. |
| ***operationRegion*** | ***Range*** | Shall be set to indicate the range of activity in which the available frequencies are valid for. |
| ***listOfOperatingFrequencies*** | ***ListOfOperatingFrequencies*** | Shall be set to indicate the operating frequencies of the GCOs as specified in the below table. |

The following table shows ***ListOfOperatingFrequencies*** information element.

|  |  |  |
| --- | --- | --- |
| *Parameter* | *Data type* | *Value* |
| ***frequencyRange*** | ***FrequenyRange*** | Shall be set to indicate the frequency range in which the GCO currently operates. |

7.2.2.11.3 Algorithm description

Figure 94 shows the procedure of the algorithm. The processes are as follows.

* **P#1**  
  P#1 is the procedure operated at the CDIS where the CDIS obtains the receiver information of the GCO through the GCO registration procedure as specified in 6.3.4.5 GCO Registration Procedure.
* **P#2**  
  In this process, the CM obtains the actual operation status of the GCOs based energy detection such as their energy detection successful rate and their cell activation rate.
* **P#3**  
  In the process, the CM compare the actual operation status obtained in P#2 against the desired energy detection successful rate and sell activation rate as obtain through the Providing registration information procedure as specified in 5.2.2.1.
* **P#4**  
  In this procedure, CM can use the Reconfiguration procedure as specified in 5.2.10 to adjust the energy detection threshold of the GCO.
* **P#5**  
  In this procedure, CM can use the Requesting and obtaining measurements procedures as specified in 5.2.10 to adjust the energy detection threshold of the GCO.
* **P#6**  
  In this procedure no reconfiguration is made due to either the desired the operation status is satisfied or any reconfiguration will deteriorate the performance of the coexisting GCOs to an unacceptable level.