IEEE 802.19.1a
Wireless Coexistence

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| Text proposal on the coexistence management with spectrum request modification  |
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Abstract

This contribution provides text proposals for coexistence management with spectrum request modification based on 802.19.1 standard and approved text.

1. Coexistence mechanisms and algorithms
	1. Coexistence algorithms
		1. Coexistence decision algorithms

***Insert the following text***

7.2.2.x Algorithm for coexistence management with spectrum request modification

7.2.2.x.1 Introduction

GCOs that require coexistence management will subscribe to the IEEE 802.19.1a system and provide information on the available spectrum. The CM by using various algorithm adjust the spectrum utilization such as power and channel within the available channel. The coexistence management in terms of maximizing capacity etc. converts into a constrained optimization problem. The constraints, i.e., the available channels, will influence the outcome of optimization. Therefore, different available channels will bring different coexistence performance.

7.2.2.x.2 Capacity calculation of randomly located GCOs over a region

Figure XX describes the system model where the GCOs request spectrum based on their locations. A number GCOs request available spectrum from the spectrum management database. Different spectrum management database may employ different available spectrum calculation algorithms. For example, the TVWS spectrum management database in Europe might implement the calculation method based on the aggregate interference from multiple GCOs. When different GCOs request available spectrum as different groups, the available spectrum will be different. In such case, if the CM cannot achieve a desired coexistence optimization result, it can suggest the GCO to request available spectrum again by forming a different group.



Figure XX Scenario of multiple GCOs requesting spectrum at different locations

7.2.2.x.3 Algorithm description

The flowchart is shown in Figure YY. 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 WSO through the WSO registration procedure as specified in 5.2.3.1 WSO registration procedure.
* P#2
In this stage the CM optimize the spectrum utilization of GCOs within the limit of the available spectrum.
* P#3
In P#3 CM use the 5.2.10.1 WSO Reconfigure procedure to send specRequestModification parameter to modify the grouping of the GCOs when they request spectrum.
* P#4
In P#4 the GCOs request spectrum from the spectrum management database with the modified grouping in order to obtain a different available spectrum.
* P#5
If P#2 optimization achieves th4e performance requirement of the GCOs, then in in P#5 the CM sends the spectrum utilization management information to the GCOs through the 5.2.10.1 WSO Reconfigure procedure.

The branch condition is as follows.

* BC#1
In this process, the CM checks whether the spectrum utilization after coexistence management will meet the requirements of the GCOs.



Figure YY Flowchart of the coexistence management by spectrum request modification