IEEE P802.19
Wireless Coexistence

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|  Frequency range scaling step definition for channel allocation |
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Abstract

This document is a submission to IEEE 802.19 TG1 proposing resolution to comment CID#137 of the Letter Ballot IEEE 802.19-12-0204r0 to clause 6.5 on specifying the minimum frequency range unit for the supported frequencies.

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| **CID** | **Comment** | **Category** | **Page Number** | **Subclasue** | **Line Number** | **Proposed change** |
| 68 | The minimum scaling step for the supported frequencies should be specified. | Technical | 38 | 5.3.2 | 10 | Revise the definition of "ListOfSupportedFrequencies" as follows, ListOfSupportedFrequencies ::= SEQUENCE OF SEQUENCE {frequencyRange FrequencyRange,scalingStep REAL, --kHz} |
| 137 | The minimum scaling step for the supported frequencies should be specified. | Technical | 93 | 6.5 | 32 | Revise the definition of "ListOfSupportedFrequencies" as follows,ListOfSupportedFrequencies ::= SEQUENCE OF SEQUENCE {startFreq REAL,stopFreq REAL,scalingStep REAL, --kHZ} |

# Discussion

The CM may allocate only a slice of its supported frequency to a WSO under its subscription. Alternatively, the WSO may choose a channel slice out of its available channels to operate. The minimum frequency unit supported, (i.e. resolution), should be specified in the draft.

For example, the basic unit of TVWS usage in Japan is a segment with bandwidth 428.6 kHz. A WSO may use one segment or several segments. Some WSOs can adaptively use different numbers of segments. For example, multiple WSOs can share a single TV channel based upon frequency division multiplexing access (FDMA). Therefore, how a WSO can efficiently indicate its supportable frequency range is a problem to be resolved. This problem can be resolved by adopting

* a new “MinimumFreqUnit” parameter which indicates the frequency range resolution.
* an optional “CarrierFreqOffset” parameter which indicates the offset to the center frequency of the band (i.e. (StopFreq – StartFreq)/2).



**Use Case**

In Japan, 13 segments can be used in a TV channel of 6MHz (Fig. (1a) and (1b)). To indicate that a WSO is capable to use from 1segmaent to 13 segments in a frequency range from X to X+6 MHz, the following expression is required under current specification draft.

{

{X+offset, X1+offset},{ X1+offset, X2+offset},,,,{X12+offset, X13+offset},

{X+offset, X2+offset},{X1+offset, X3+offset},,,,{X11+offset, X13+offset},

{X+offset, X3+offset},{X1+offset, X4+offset},,,,{X10+offset, X13+offset},

{X+offset, X4+offset},{X1+offset, X5+offset},,,,{X9+offset, X13+offset},

{X+offset, X5+offset},,,,,,

{X+offset, X6+offset},,,,,,

{X+offset, X7+offset},,,,,,

{X+offset, X8+offset},,,,,,

{X+offset, X9+offset},,,,,,

{X+offset, X10+offset},,,,,,

{X+offset, X11+offset}, {X1+offset, X12+offset},{X2+offset, X13+offset},

{X+offset, X12+offset},{X1+offset, X13+offset},

{X+offset, X13+offset}

}

where X(i+1) = X(i) + 0.4286 for i=1,…, 13.

In order to reduce the overhead, we propose the following:

{X (MHz), X+6 (MHz), 428.6 kHz, offset}

where

X : start frequency

X+6 : stop frequency

428.6 : MinimumFreqUnit

Offset : CarrierFreqOffset

# Proposed resolution

*It is proposed to revise the definition of "ListOfSupportedFrequencies" as follows,*

ListOfSupportedFrequencies ::= SEQUENCE OF SEQUENCE {

StartFreq REAL,

StopFreq REAL,

MinimumFreqUnit REAL, --kHZ

CarrierFreqOffset REAL, --kHz, Optional

}