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Title	<b>Proposed changes to clause 15.4.2.3</b>	
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Abstract		
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## Proposed changes to clause 15.4.2.3

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### Comment 102 by Mariana

Comment:

Fix text and figure relative to Radio Signature for consistency with CX Frame; define the suitable MAC support

### Proposed reorganization and text changes

Existing clause	Title	Text	
15.4.2.3	Interference control in sub-frames	Move to 15.4.5 and make the changes proposed below	P131/r8 to 134/r34

### Proposed text for 15.4.5 based on text from 15.4.2.3

(change all the references to 15.4.2.3 to the new clause 15.4.5)

#### ~~15.4.2.3~~ 15.4.5 Interference Control in sub-frames

The interference control has as scope the operation during Slave or Shared sub-frames. The interference control procedures ~~can~~ should use interferer identification obtained from the radio signature.

#### 15.4.5.1 Interferer identification

The interferers will be identified by their radio signature, which may be for example a short preamble for OFDM/OFDMA cases. The radio signature is a priori scheduled at both MAC (6.3.2.3.79 and 6.3.2.3.80) and network levels (15.5) and is defined by the following parameters:

— Peak power

- Relative spectral density
- Direction of transmission.

Every transmitter should send the radio signature during an interference-free slot. The time position of this slot (frame number, sub-frame, time-shift) should be used for identification using the messages in 15.5 and the distributed network approach. No other transmitters in the coexistence community should operate during the time slots scheduled for radio signature transmission.

The interferer may also be identified using the CMI (see 15.3.3) or CSI procedures (see 15.3.4).

In order to identify the interferer, a receiver should

~~—A receiver will~~ listen to the media during the radio signature slot and will find out which are the strongest interferers; by then scanning the BS databases it will be possible to identify, by the frame number, sub-frame number and offset, with which BS is ~~the~~ associated the interferer; based on time-shift information, the Base Station will be able to identify the Subscriber Station ID. During the allocated radio-signature transmit opportunity no other radio transmitters will operate.

Alternatively, the interferer may be identified from the BSID or SSID used with BSD or respectively SSURF messages. BSID is also included in the BS NURBC message sent during CSI or CXCC sub-channel 3.

#### 15.4.5.2 Interference ~~reduction~~control

—A BS has the right to request any interferer to reduce its power by P dB, for transmissions during the time in which this Base Station is the Master; if the requested transmitter cannot execute the request, it has to cease the operation during the Master sub-frame of the requesting Base Station; The system which uses the sub-frame as a Master can use the maximum capable and allowed operating EIRP with no limitation. A newly entering system is allowed to use the same sub-frame at its maximum capable and allowed operating EIRP if the first system allows this, otherwise it has to reduce its power to a level acceptable by the first system using the sub-frame as Master. The first system has the right to not allow the operation of any other system in parallel, if this causes harmful interference to it. ~~A system cannot use more than one sub-frame as a Master.~~

Messages as Stop Operating Request and Reduce Power Request can be used for controlling the interference levels.

An acceptable interference level during a Master sub-frame should be lower than 3dB above the noise or 12dB below the signal.

### 15.4.2.3.1 Controlling interference during master sub-frame

#### 15.4.2.3.1.1 Interferer identification

~~The interferers will be identified by their radio signature, for example a short preamble for OFDM/OFDMA cases. The radio signature is defined by the following parameters:~~

- ~~— Peak power~~
- ~~— Relative spectral density~~
- ~~— Direction of transmission.~~

~~Every transmitter will send the radio signature during an interference-free slot. The time position of this slot (frame\_number, sub-frame, time-shift) will be used for identification.~~

~~In IBS's coexistence neighbor discovery phase, the IBS's contact information and RTK shall be broadcast using the BS\_NURBC frame with pulse energy keying and/or BSD message to the neighbors using the same profile. And this shall be detected by coexistence neighbor's SS in the IBS's coverage and reported to its serving BS.~~

~~The BSID is used to identify the coexistence neighbor BS by the receiver SS. And also be the identifier of the BS for its coexistence neighbor BS.~~

#### 15.4.2.3.1.2 Interference to BS

The procedures for controlling the interference to BS are:

~~BS of the system which experience interference from the SSs in the neighbor systems can control the interference, using the following procedures:~~

- ~~— Identification of the source of interference, using the procedures defined in 15.4.5.1 above;~~
- ~~— Request for transmit power reduction using messages in clause 15.5. If the sources of the interference are identified, the BS should send message to the BSs of the interfering systems, asking them to drop the power of the specified transmitter inside the neighbor systems by P dB.~~
- ~~— Request for stopping the operation. Alternatively, the BS could send message to the BSs of the interference source systems, asking the interference source system to stop operating during this BS's master slot.~~

The interference status information of this BS in the system and the interference status information in the coexistence message from its neighbor systems should be stored and updated regularly into the distributed database of this system.

#### 15.4.2.3.1.3 Interference to SS

The procedures used by a SS/MS and BS in order to reduce the experienced interference by SS/MS are:

- The SS/MS shall Rreport to BS about experienced interference
- Provide BS with all the available information which can help to identify the interferer, for example Llist of frame\_number, sub-frame, offset, IP address of source BS (if detected)
- BS should starts start-the process for interference reduction with feedback from the SS.

#### ~~15.4.2.3.2 Controlling interference during not interfering traffic sub-frames~~

The Base Station data base shall keep the following information regarding the usage of “non-interfering sub-frame” or Master sub-frames belonging to other systems:

- BS power, relative to the radio signature **power**, when using each of the sub-frames;
- List of SSs and their power, relative to the radio signature **power**, when using each of the sub-frames.

The received power during other sub-frames can be obtained by using the radio signature measurement and suitable calculations, according to data-base information on used powers.

~~Messages as Stop\_Operating\_Request and Reduce\_Power\_Request can be used for controlling the interference levels.~~

#### ~~15.4.2.3.3~~15.4.5.3 Radio Signature scheduling

No text changes to the text from p132/r58 to p134/r33