Agenda Item: Plenary

Source: AH10 Chairman

Title: Text Proposal for 25.213 on the maximal number of physical channels for one CCTrCH related with spreading factor on DL (Revision of TSGR1#7(99)d77)

Document for: Approval

At AH10 meeting of WG1#7 in Hannover, The maximal number of physical channels for multi-code transmission for one user related with SF on DL was discussed as one of the items and the proposal stated in R1-99C84 was agreed since there were favorable opinions for setting some rules to avoid excessive flexibility and to mitigate the hardware complexity of UEs which can carry out roaming into as many regions as possible.

 At the plenary, it was pointed out that the multi-code transmission for one user stated in R1-99d29(AH10 Report) should be replaced by the multi-code transmission for one CCTrCH and this was agreed.

Further at the plenary, there was a opinion that these type of rules should not be specified to keep the most flexibiility and the actual UE capability for multi-code transmission should be negotiated at the call setup between UE and RNS to allow the various types of UE capability in such as multi-code capability and spreading factor capability.

The related descriptions on this item was found in TS25.331 Section 10.1.7.1 titled UE CAPABILITY INFORMATION and Section 10.2.3.16 titled Code Resource Capability. It is stated in TS25.331 that the WG1 and WG4 discussion should be concluded before the contents of this IE can be finalized.

This R1-99d78 shows the text proposal for the conclusion of AH10 in order to facilitate the discussion on this item.

According to the discussion at WG1 plenary, this text proposal may be abandoned or modified or transferrd to recommendation section from specification description.

Text proposal for 25.213
5   Downlink spreading and modulation
5.1   Spreading
5.2   Code generation and allocation
5.2.1 Channelization codes
The channelization codes of Figure 12 and Figure 13 are the same codes as used in the uplink, namely Orthogonal Variable Spreading Factor (OVSF) codes that preserve the orthogonality between downlink channels of different rates and spreading factors. The OVSF codes are defined in Figure 3 in Section 4.3.1. The same restriction on code allocation applies as for the uplink, but for a cell and not a UE as in the uplink. Hence, in the downlink, a specific combination of channelization code and scrambling code can be used in a cell if and only if no other channelization code on the path from the specific code to the root of the tree or in the sub-tree below the specific code is used in the same cell with the same scrambling code.

The channelization code for the BCH is a predefined code which is the same for all cells within the system.

The channelization code(s) used for the Secondary Common Control Physical Channel is broadcast on the BCH.

<Editor's note: the above sentence may not be within the scope of this document.>

The following restriction is set for the combination of SF and the maximal number of physical channels for multi-code transmission for one CCTrCH from the view point of trade-off between the required number of demodulators for UE and difficulty in rearrangement of codes in OVSF.

The ristriction rules are composed of the following four rules.

Rule 1: For required total symbol rate equal or less than 120ksps, single code transmission shall be kept.

Rule 2: For required total symbol rate equal or less than 480ksps, at most two codes transmission shall be kept.

Rule 3: For required total symbol rate beyond 480ksps, maximal SF shall be 16.

Rule 4: SF is the same for all codes of one CCTrCH in DL multicode transmission.

According to these rules, the concrete design examples for the combination of SF and the multi-code number are shown in tbe next table.

required total carrier symbol rate for one CCTrCH	combination of SF and the multi-code number N (SF,N)
15ksps	(256,1)
30ksps	(128,1)
60ksps	(64,1)
120ksps	(32,1)
240ksps	(16,1) or (32,2)
480ksps	(8,1) or (16,2)
240ksps *3(384kbps user)	(4,1) or (8,2) or (16,3)
240ksps*12 (2Mbps user)	(4,3) or (8,6) or (16,12)