**3GPP TSG RAN WG1 Meeting #109-e R1-22xxxxx**

**e-Meeting, May 9 - 20, 2022**

**Agenda Item: 8.9**

**Source: Moderator (Huawei)**

**Title: Text proposal on NB-IoT 16QAM**

**Document for: Discussion and Decision**

# Text proposal on use of DwPTS for NPDSCH with 16QAM

**Reason for change**: In RAN1#108e meeting, the following was agreed, which has not been captured in spec.

**Agreement:**

* FDD/TDD differentiation is needed for FGs 1-1/1-2
	+ DwPTS in special subframe configuration 9 for normal cyclic prefix is not used for NPDSCH transmission with 16QAM, when 16QAM is configured.

**Summary of change**: DwPTS in special subframe configuration 9 for normal cyclic prefix is not used for NPDSCH transmission with 16QAM.

**Consequences if not approved**: DwPTS in special subframe configuration 9 for normal cyclic prefix may be used for NPDSCH transmission with 16QAM, which exceeds the maximum coding rate for NPDSCH.

======================Start of Text proposal to TS 36.211============================

#### 10.0.1.2 Frame structure type 2

Frame structure type 2 is applicable to TDD operation only.

The following restrictions apply:

- Uplink-downlink configuration 0 and 6 are not supported.

- UpPTS is not used for NPUSCH or NPRACH.

- DwPTS and UpPTS in special subframe configuration 10 is not used for transmissions.

- On an NB-IoT carrier for which higher-layer parameter *operationModeInfo* indicates *inband-SamePCI* or *inband-DifferentPCI*, or higher-layer parameter *inbandCarrierInfo* is present, or on an NB-IoT carrier for *SystemInformationBlockType1-NB* for which *sib1-carrierInfo* indicates *non-anchor* and the value of the higher layer parameter *sib-GuardbandInfo* is set to *sib-GuardbandInbandSamePCI* or *sib-GuardbandinbandDiffPCI*, DwPTS in special subframe configuration 0 and 5 for normal cyclic prefix is not used for NPDCCH and NPDSCH transmission, in addition when *npdsch-16QAM-Config-r17* is configured DwPTS in special subframe configuration 9 for normal cyclic prefix is not used for NPDSCH transmission with 16QAM.

- Higher-layer parameter *symbolBitmap* does not apply to special subframes.

======================Start of Text proposal to TS 36.211============================

# Text proposal on the RRC configuration for NPDSCH 16QAM regarding power allocation in PUR procedure

**Reason for change**: The RRC parameter of PUR procedure is missed in power allocation for NPDSCH with 16QAM.

**Summary of change**: The RRC parameter of PUR procedure is added in power allocation for NPDSCH with 16QAM.

**Consequences if not approved**: The NPDSCH EPRE to NRS EPRE cannot be determined for NPDSCH with 16QAM in PUR procedure.

======================Start of Text proposal to TS 36.213============================

### 16.2.2 Downlink power allocation

<unchanged parts are omitted>

If a UE is configured with higher the layer parameter *nrs-PowerRatio* in *npdsch-16QAM-Config* or *pur-DL-16QAM-Config*,

- the ratio of NPDSCH EPRE to NRS EPRE among NPDSCH REs in symbols with NRS is given by $\frac{1}{5}×(6ρ-1)$ for a cell with one NRS antenna port and $\frac{1}{4}×(6ρ-1)$ for a cell with two NRS antenna ports, where $ρ$ is given by the parameter *nrs-PowerRatio*.

- if higher layer parameter *operationModeInfo* indicates '10' or '11',

- the ratio of NPDSCH EPRE to NRS EPRE among NPDSCH REs (not applicable to NPDSCH REs with zero EPRE) is given by the parameter *nrs-PowerRatio* in symbols without NRS

- otherwise,

- the ratio of NPDSCH EPRE to NRS EPRE among NPDSCH REs (not applicable to NPDSCH REs with zero EPRE) is given by the parameter *nrs-PowerRatio* in symbols without NRS and CRS, and

- the ratio of NPDSCH EPRE to NRS EPRE among NPDSCH REs (not applicable to NPDSCH REs with zero EPRE) is given by the parameter *nrs-PowerRatioWithCRS* in symbols with CRS.

======================End of Text proposal to TS 36.213============================