**RAN1#110bis-e: Email Endorsement 1**

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| **Proposal 1.I**: For the Rel-18 Type-II codebook for CJT mTRP, the switching between mode-1 and mode-2 is gNB-initiated via RRC signalling**FL Note**: Could CATT please compromise and accept? 🡪 resolved* **Support/fine (proposal 1.I)**: Xiaomi, Samsung (RRC only), MediaTek, Qualcomm, Nokia/NSB (RRC only), Intel (RRC only), AT&T, Ericsson, vivo, OPPO, ZTE (RRC only), DOCOMO (RRC only), CMCC (RRC only), Huawei/HiSi, Google, Fraunhofer IIS/HHI, NEC, Spreadtrum, Sharp, CATT (ok)
* **Not support**:
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| **Proposal 2.B**: For the Rel-18 Type-II codebook refinement for high/medium velocities, support RI={1,2,3,4}.**FL Note**: Could Lenovo please compromise and accept? 🡪 resolved * **Support/fine:** Xiaomi, Fraunhofer IIS/HHI, Apple, Samsung, Qualcomm, Nokia/NSB, IDC, vivo, OPPO, Google, ZTE, Ericsson, Huawei/HiSi, CMCC, MediaTek, Spreadtrum, Sharp, Intel (can discuss 1,2, first), Lenovo (ok)
* **Not support:**
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| **Proposal 2.D**: For the Rel-18 Type-II codebook refinement for high/medium velocities, support the following codebook structure where N4 is gNB-configured via higher-layer signaling:* For N4=1, Doppler-domain basis is the identity (no Doppler-domain compression) reusing the legacy$W\_{1}$*,* $\tilde{W}\_{2}$*,* and$W\_{f}$*, e.g.* $W\_{1}\tilde{W}\_{2}(W\_{f})^{H}$
* For N4>1, Doppler-domain orthogonal DFT basis commonly selected for all SD/FD bases reusing the legacy$W\_{1}$and$W\_{f}$*,* e.g.$W\_{1}\tilde{W}\_{2}\left(W\_{f}⨂W\_{d}\right)^{H}$
	+ Only Q (denoting the number of selected DD basis vectors) >1 is allowed
	+ TBD (by RAN1#110bis): whether rotation is used or not
	+ FFS: identical or different rotation factors for different SD components
	+ FFS: Whether *Q* is RRC-configured or reported by the UE

Note: Detailed designs for SD/FD bases including the associated UCI parameters follow the legacy specificationFFS: Whether one CSI reporting instance includes multiple $W\_{2}$ and a single $W\_{1}$ and $W\_{f}$ report.**FL Note**: Could Nokia, Ericsson, and vivo please compromise and accept the above proposal as is (super-majority which is already a compromise)? 🡪 Ericsson, Nokia, and vivo can accept. Lenovo added to concern. * **Support/fine (N4=2 DFT):** Samsung, ZTE, Qualcomm, Apple, Google, OPPO, Huawei/HiSi, Intel, Spreadtrum, CATT, DOCOMO, NEC, Fraunhofer IIS/HHI, Sharp, IDC, Sony, MediaTek, CEWiT, LG, ZTE, CMCC, Ericsson (ok), vivo (ok)
* **Concern (want N4=2 identity):** Lenovo, [Nokia/NSB?]
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| **Proposal 2.E**: On the CSI reporting and measurement for the Rel-18 Type-II codebook refinement for high/medium velocities, when UE-side prediction is assumed, support UE “predicting” channel/CSI after slot *l* where the location of slot *l* is configured (from multiple candidate values) by gNB via higher-layer signalling* Candidates of slot *l* location include the legacy CSI reference resource location (*n* – *nCSI,ref* ) and slot (*n*+*δ*) where *δ* ≥ 0
* FFS: Possible value(s) of *δ* and possible value(s) of WCSI

Note: Per legacy behavior, the legacy CSI reference resource, i.e., (*n* – *nCSI,ref* ), is reused for locating the last CSI-RS occasion used for a CSI reportFor a UE that supports UE-side prediction, the support of *l* = (*n* – *nCSI,ref* ) is UE optional.**FL Note**: Can Apple please provide some tangible proposal to resolve your concern? Please keep in mind that this proposal keeps the legacy reference resource definition. 🡪 resolved by adding red underlined text (no company raised concern)* **Support/fine:** Samsung, vivo, Qualcomm (questionable regarding CQI prediction), DOCOMO, Lenovo, IDC, ZTE, Spreadtrum, vivo, LG (ok), CATT, Intel, NEC, Xiaomi, CMCC, MediaTek, Ericsson, [Nokia/NSB], OPPO, Huawei, HiSi, Fraunhofer IIS/HHI, Google (ok), Sharp, Apple (ok)
* **Not support:**
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| **Proposal 2.I:** For the Type-II codebook refinement for high/medium velocities, down-select from the following alternatives: * Alt1. *Q* different 2-dimensional bitmaps are introduced for indicating the location of the NZCs, where the qth (q=1,…., *Q*) 2-dimensional bitmap corresponds to qth selected DD basis vector
	+ The number of selected DD basis vectors is denoted as *Q*
	+ This implies that for each layer, the location of NZCs in SD-FD can be different for different selected DD basis vectors.
* Alt2. A DD-basis-common per-layer 2-dimensional bitmap for indicating the location of NZCs used in Rel-16/17 Type-II is used
	+ This implies that for each layer, the location of NZCs in SD-FD is common across all the Q selected DD basis vectors

FFS: Further overhead reduction on bitmap(s)FFS: Whether the number of NZCs is upper bounded across all DD basis vectors or per DD basis vectorNo issue raised* **Support/fine:** Qualcomm, Samsung (Alt2), Intel (Alt1), IDC (Alt2), vivo, OPPO, ZTE(Alt1)**,** Xiaomi(Alt1), DOCOMO, CATT, Ericsson (Alt1), CMCC (Alt1), Huawei/HiSi, Sharp
* **Not support:**
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