3GPP TSG RAN 95E
March 17th-23rd, 2022

RP-220757
Agenda Item 9.51.7

MediaTek Views on RAN4 package

MediaTek Inc.

Introduction

- During February 7 – 11, Email discussions took place on RAN reflector to consolidate the proposals for Rel-18 RAN4 package.
- The discussions were arranged into 6 Email threads as shown below
- In this paper, we provide our view on the overall arrangement for RAN4 Rel-18 package and on the individual objectives in different topics

Email thread and area	Summary doc
[RAN95e-RAN4-R18Prep-01] FR1 RF Enhancements	RP-220019
[RAN95e-RAN4-R18Prep-02] FR2 RF Enhancements	RP-220020
[RAN95e-RAN4-R18Prep-03] RRM Enhancements	RP-220021
[RAN95e-RAN4-R18Prep-04] Demod enhancement	RP-220022
[RAN95e-RAN4-R18Prep-05] RAN4 Testing Enhancements	RP-220023
[RAN95e-RAN4-R18Prep-06] Other Enhancements	RP-220024

General views

- RAN4 work involves not only RAN4-led items but also the corresponding requirements for items led by other WGs.
- Besides, some RAN4 requirements from Rel-17 WIDs led by other WGs were agreed by TSG RAN to be started after March 2022.
- It is very important to ensure sufficient RAN4 capacity to finalize all work.
- An effective approach is to limit the number of objectives in each WI, e.g., 2 or 3, and keep each objective reasonable
- **Proposal 1**: Limit the number of objectives in each WI, e.g., 2 or 3.

- Demod work can be seen from many of the items, including Demod, FR1, FR2 and other enhancements
- After RAN1 PHY design freeze, RAN4 Demod session needs to define the corresponding performance requirements on RAN1-led items
- It is very important to minimize overlap between RAN1-led items and RAN4-led items to control the overall Demod workload i.e.

  RAN4-led Demod work need to be finalized no later than RAN1 Rel-18 PHY freeze.
- **Proposal 3**: Conclude Demod works for all RAN4-led items no later than RAN1 Rel-18 PHY freeze.

Discussion

Area	Objectives	MediaTek view
FR1 RF Enhancements	4Tx for CPE	• Deprioritize FDD band due to extra work on duty cycle discussion with higher total Tx power, and higher cost due to more and maybe more complex duplex filters
	8Rx for CPE	• Can be a separate WI, because it is Demod heavy
	6Rx for smart phone	• Feasibility unclear.
	3Tx for smart phone	• Neutral to 1Tx to 2Tx (cross CC) switching transmission enhancement. Simultaneous_Tx on 3CC does not seem justified in terms of system gains
	lower MSD	• Feasibility and approach is unclear.
FR2 RF Enhancements	UL 256QAM	• Further enhancement to UL throughputs for FWA/CPE (PC1/PC5)
	Enhancement in FR2-1 for 39GHz	• Up to operators' demand
	Inter/intra-band DL/UL CA/DC in FR2-1	• Up to operators' demand
	ON/ON transient time	• Gain vs pain trade-off does not seem reasonable.
	Beam correspondence for RRC_INACTIVE and initial access	• Redundant, given the tests in CONNECTED mode. Concern on long testing time
	Multi-Rx chain DL reception	• R17 leftover. Suggest to be a separate WI due to big impact to also RRM and Demod.

Discussion

Area	Objectives	MediaTek view
RRM Enhancements	FR2 delay reduction enhancements	• Concern on enhancement in IDLE mode due to UE power consumption
	SCell activation enhancements in FR2	• Important to reduce the long delay in legacy requirements, which affects both the system and UE power consumption.
	FR2 BWP switching time enhancements	• Important to reduce the long delay in legacy requirements, which lead to unnecessary interruptions to data scheduling
	FR1-FR1 NR-DC	• Leftover. Important to real deployment
	HO with PSCell for new scenarios	• Leftover. Important to real deployment
	TCI switching enhancements	• Benefit unclear. Legacy requirements are already sufficient.
Measurement gap enhancement	Joint requirements for Rel-17 objectives	• Increase network configuration flexibility and maximize the use cases.
	NeedForGap	• All functionalities are *already* supported by Rel-17 NCSG
	Gapless inter-RAT NR and [LTE] measurement	• A leftover problem to be resolved ASAP

Discussion

Area	Objectives	MediaTek view
Demod Enhancements	MIMO-IC	• Good consensus and stable scope already
	Soft-IC	• High UE complexity with potential change to UE processing time. Unclear system benefit
	BS MMSE-IRC	• Balancing technology evolution in both UE and network sides.
	ATP	• New Demod testing framework. Study has done in Rel-17 already.
	CRS-IC receiver	• CRS-IC is already allowed in Rel-17 CRS-IM.
RAN4 Testing Enhancements	Dynamic OTA testing	• To ensure UE performance in realistic environment
	Multi-panel reception and 4-DL layer	• Need the testing part corresponding to another Rel-18 core requirement.
	FWA devices (PC1/PC5)	• Leftovers in current spec
	EMC enhancement	• No comments

Discussion

Area	Objectives	MediaTek view
Others	Simplification of band combo specification	• Needed
	700/800/900MHz band combo	• Concern on antenna limitation. The fallback combos are not completed
	BS RF evolution	• No comments
	ATG	• Support, assuming that the scope and scenarios are very clear and contained
	HAPS	• Can be low priority due to lack of regulation
	intra-band non-collocated DC/CA deployment	• To resolve real deployment issue.
	IOT NTN	• Rel-17 leftover, according to previous Plenary commitment.

Summary

- **Proposal 1**: Limit the number of objectives in each WI, e.g., 2 or 3.
- **Proposal 2**: Conclude the Demod works in all RAN4-led items no later than RAN1 Rel-18 PHY freeze
- Other detail views to individual WI/objectives can be found in previous pages.

Thank You!