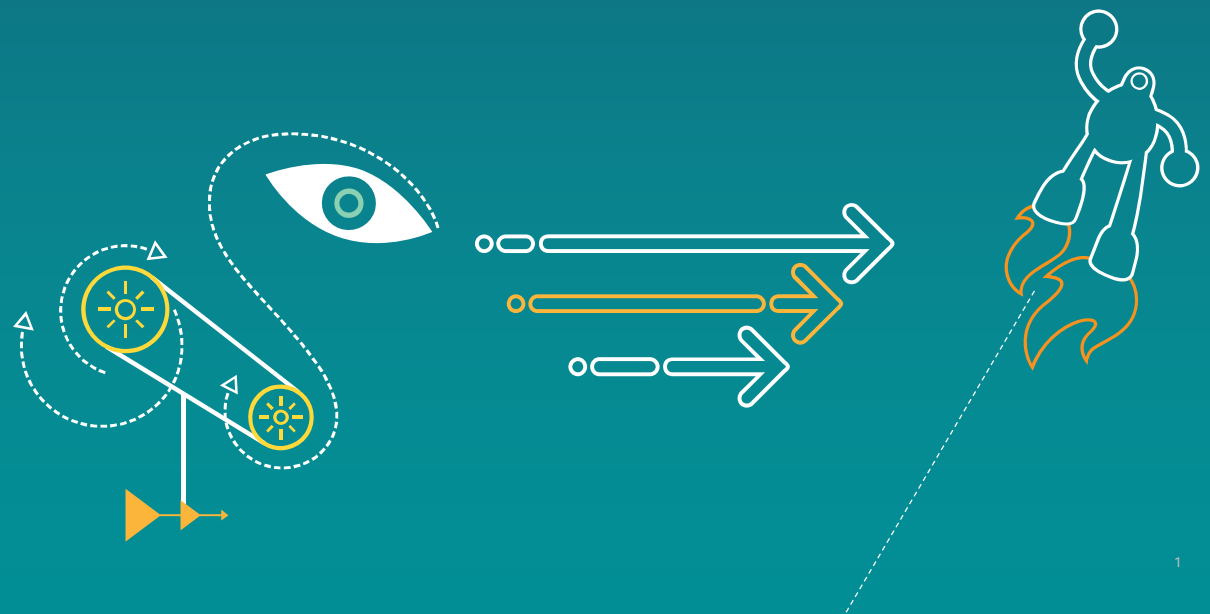
3GPP TSG RAN Meeting #75
Dubrovnik, Croatia, March 6 - 9, 2017

RP-170721

Way Forward on RAN4 Multi-node tests SI

QUALCOMM®



Background information

- The multi-node test Study Item was originally approved in RAN #73 with the following objectives (RP-161672):
  - *The tests shall be designed in a way that cross technology coexistence can be achieved. More specifically, the impact for both LAA to other systems, e.g. Wi-Fi and other systems e.g. Wi-Fi to LAA should be tested.*
  - *The testing complexity should be kept as low as possible so it can be easily performed by the operators who have different systems deployed in the same area.*
  - *The tests shall be easily extended to include future systems such as eLAA in Rel-14.*
- In the SID it is also noted that:
  - *the multi-node tests verify coexistence at system level, while it is understood that any LBT functionality verifications of LAA BS are already guaranteed by LBT tests introduced in Rel-13 LAA*
- The duration of the study was extended in RAN #74 (RP-162144)

Current status

- Major agreements were achieved during the study defining the main test set up and the overall structure of technical report TR 36.789:
  - Multi-node tests are conductive tests
  - The test setup is made of 4 nodes (2 DL nodes and to UL nodes)
  - Two type of tests are identified based on the nature of the traffic to protect:
    - The throughput tests mainly addressing best effort traffic
    - The outage tests mainly addressing latency sensitive traffic

Current status (cont.)

- Although the test procedure for throughput tests is already defined in TR 36.789, some open issues are still to be resolved, e.g.:
  - The SIR characterizing the different links, and related to this, the coupling loss determining the perceived signal levels by the different nodes (both wanted and interfering links)
  - The specific aggressor/victim traffic type combinations in the different test cases
  - The specific pass/fail criteria

Considerations & Proposal

- Considering the industry interest that led to the opening of this Study Item, we believe it is of great importance that 3GPP fully concludes the project & the Technical Report

- We recognize some issues still require technical discussion to reach full consensus; we encourage scheduling extra time to ensure a full completion within the next quarter

- Thus, we propose to organize a 3GPP RAN4 Ad Hoc meeting in Q2-2017 to complete the study and finalize TR 36.789

References

- RP-161672, “Multi-node tests for LAA”, Huawei, HiSilicon, Ericsson, Qualcomm, Nokia
- RP-162144, “Multi-node tests for LAA”, Huawei, HiSilicon, Ericsson, Qualcomm, Nokia – Revision of RP-161672
- R4-1702300, “ Meeting minutes for multi-node testing ad-hoc”, Ericsson
- R4-1701624 , “Updated TR 36.789 v0.0.4: Multi-node tests for LAA”, Ericsson
- R4-1701227, “TP for 36.789: On the need for inclusion of future Wi-Fi system”, Huawei, Ericsson, Qualcomm, Nokia
- R4-1701228, “On pass/fail criterion”, Huawei, Qualcomm, Ericsson, Nokia, Skyworks
- R4-1701625, “Traffic test cases related to multi-node tests for Rel-13 LAA”, Ericsson, Qualcomm, Huawei, Nokia, Alcatel-Lucent Shanghai Bell, Skyworks, AT&T, Verizon
- R4-1701628, “On test complexity and time requirements for multi-node tests in Rel-13 LAA”, Ericsson, Nokia, Alcatel-Lucent Shanghai Bell, Qualcomm, Huawei
- R4-1700841, “Wi-Fi / LTE Coexistence Lab Testing Effort”, Wi-Fi Alliance
- R4-1701607, “SIR operating point for multi-node tests”, Qualcomm Incorporated, Ericsson, Verizon
- R4-1701766, “SIR simulation results”, Nokia, Alcatel-Lucent Shanghai Bell, Skyworks Solutions, Verizon
- R4-1701862, ”SIR proposals for multi-node tests”, BROADCOM
- R4-1701879, “Further Implications of Wi-Fi Field Measurements for Multi-Node Testing”, Hewlett-Packard Enterprise

Use for Qualcomm Technologies, Inc.

Thank you

All data and information contained in or disclosed by this document is confidential and proprietary information of Qualcomm Technologies, Inc. and all rights therein are expressly reserved. By accepting this material the recipient agrees that this material and the information contained therein is to be held in confidence and in trust and will not be used, copied, reproduced in whole or in part, nor its contents revealed in any manner to others without the express written permission of Qualcomm Technologies, Inc.

© 2013 QUALCOMM Incorporated and/or its subsidiaries. All Rights Reserved.
Qualcomm is a trademark of Qualcomm Incorporated, registered in the United States and other countries.
Other products and brand names may be trademarks or registered trademarks of their respective owners

References in this presentation to “Qualcomm” may mean Qualcomm Incorporated, Qualcomm Technologies, Inc., and/or other subsidiaries or business units within the Qualcomm corporate structure, as applicable.

Qualcomm Incorporated includes Qualcomm’s licensing business, QTL, and the vast majority of its patent portfolio. Qualcomm Technologies, Inc., a wholly-owned subsidiary of Qualcomm Incorporated, operates, along with its subsidiaries, substantially all of Qualcomm’s engineering, research and development functions, and substantially all of its product and services businesses,
including its semiconductor business.