

3GPP TSG RAN Rel-18 workshop
Electronic Meeting, June 28 - July 2, 2021
Agenda Item: 4.3

RWS-210029

Qualcomm

New Device Requirements for Rel-18 (RAN4-led topics)

Qualcomm

Requirements for 8Rx in FR1

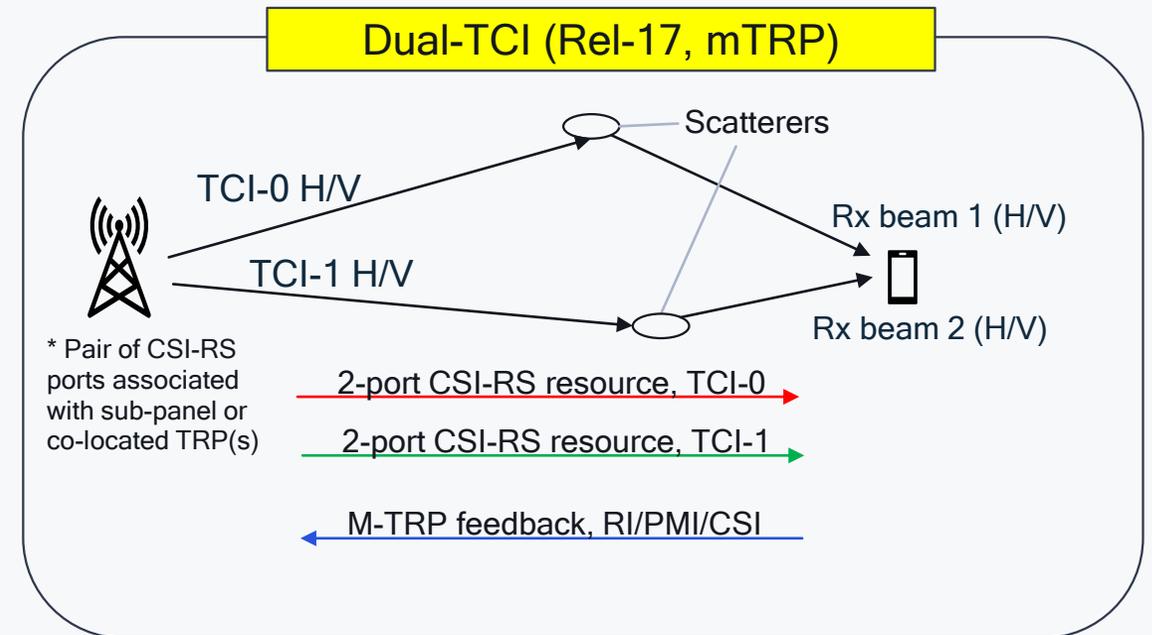
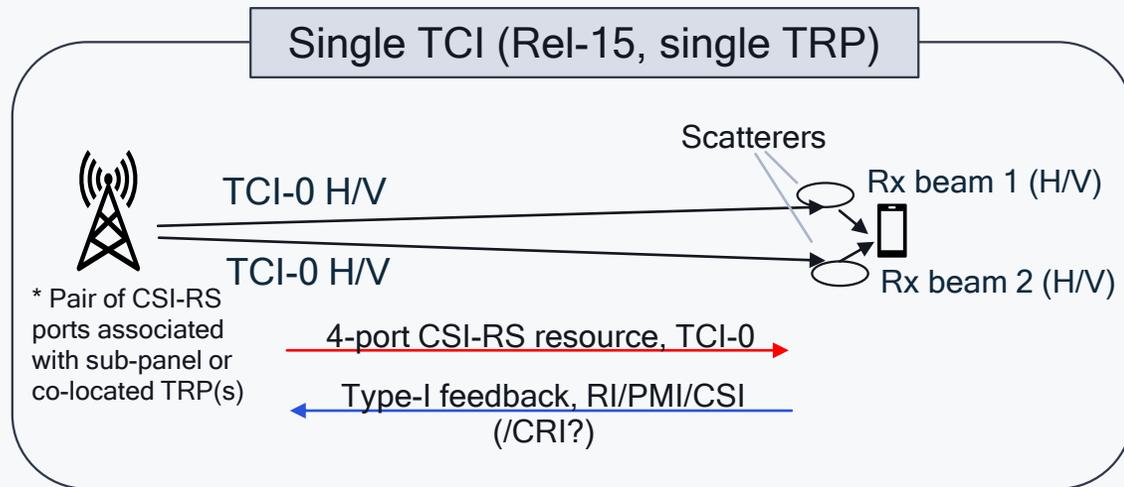
Expanding high-end device capabilities in FR1

- We see **market demand for 8Rx** performance requirements for different form factors (including FWA)
- Proposal is to define support for bands **n41, n77, n78 and n79**
 - Other bands can be added any time based on proposals from operators
- Proposed objectives are in-line with the 8Rx work for LTE (see RP-202630)
 - UE RF requirements – Definition of REFSENS (based on LTE methodology)
 - Demod and CSI requirements
 - Maximum rank, from the set {4, 6, 8}, to be determined in the WID definition phase
 - No impact to RRM requirements

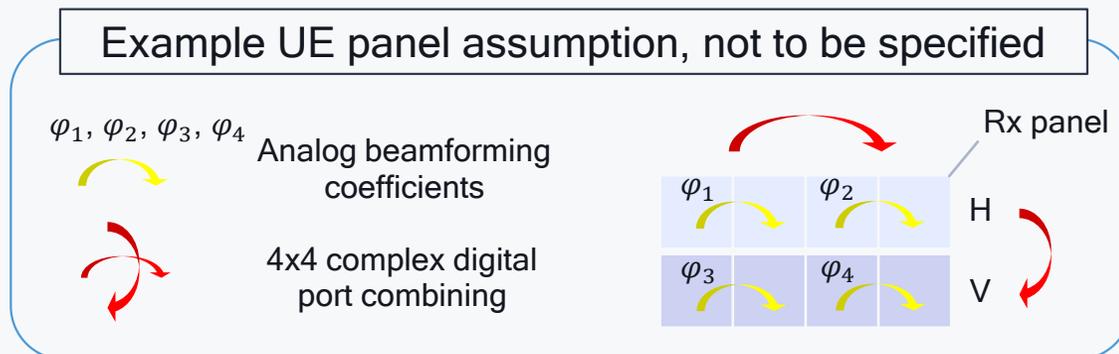
Requirements for 4-Layer DL in FR2

Expanding high-end device capabilities in FR2

- Define requirements at least for the Dual-TCI option shown below



Identify minimum m-TRP feature subset to enable 4L MIMO



Dynamic OTA and 4L OTA testing for FR2/FR2x

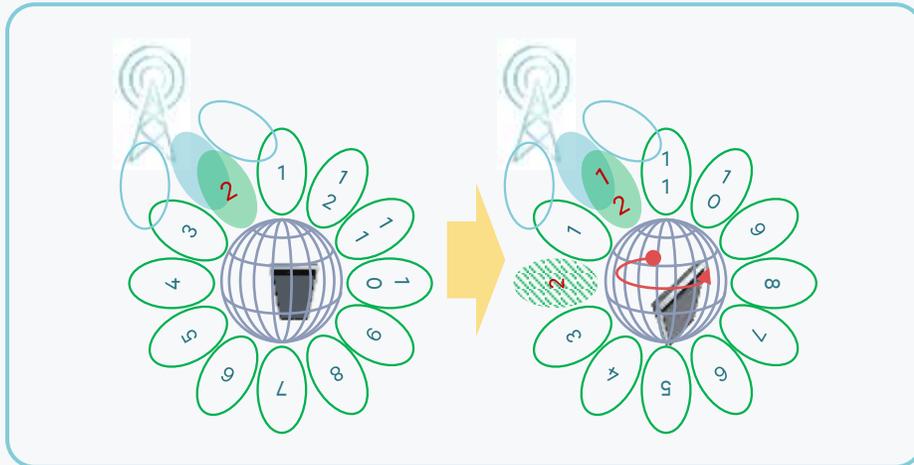
Advanced testing for beam management

- This item is very important to address the industry need for more advanced UE testing in environments that are closer to field operation
 - Fast changes in signal directions and/or fast channel variation
 - Current tests for RRM/beam management are very simplistic, with most 2 signals coming from different directions and long dwell time(time for UE to acquire signals)
 - We believe such tests are needed during device development even if there are no 3GPP conformance tests
- The most important part of this item is to develop a standardized test environment and test methodology that benefits everyone
 - Testing solutions are very expensive without having a standardized test setup that TE vendors can build
 - Only custom test solutions would be available, these are very expensive
- Multi panel UEs should be considered for forward compatibility (see FR2 4-layer proposal)
 - Multi panel enhancements are part of Rel-17 eMIMO work, currently there is no ongoing work test setup
 - Even if RF requirements are defined, these cannot be verified until a test solution is available

Dynamic OTA testing for FR2

Scenarios for Dynamic-geometry based FR2 OTA Test

- UE orientation rotation-based Scenario



The following can be further considered

- Multi-cell
 - Multi-panel gNB/UE
 - Travel-based dynamic environment scenario → The beam(s) from gNB(s) are dynamic on the basis of UE orientation-based scenario
- Examples of potential Figure of Merit
 - Whether UE can maintain the established link without or with very infrequently triggering of “Beam failure detection and Link recovery” procedure
 - Averaged RSRP/RSRP and Throughput
 - Performance deviation in terms of
 - SSB and/or CSI-RS based RSRP/RSRQ
 - PDSCH Throughput



Thank you

Follow us on:    

For more information, visit us at:

www.qualcomm.com & www.qualcomm.com/blog

All data and information contained in or disclosed by this document is confidential and proprietary information of Qualcomm Technologies, Inc. and/or its affiliated companies and all rights therein are expressly reserved. By accepting this material the recipient agrees that this material and the information contained therein 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. Nothing in these materials is an offer to sell any of the components or devices referenced herein.

©2018-2020 Qualcomm Technologies, Inc. and/or its affiliated companies. 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, QCT.