**3GPP TSG RAN meeting #90e RP-20xxxx**

**Electronic Meeting, 7-11 December 2020**

**Agenda item:** TBA

**Source:** Email discussion moderator (Intel)

**Title:** Report from Email Discussion [90E][43][60GHz\_OTA]

**Document for:** Discussion and decision

# Introduction

This document provides as summary of the following email discussion during RAN#90-e:

**[90E][43][60GHz\_OTA]**

Goal: Generate an agreeable way forward.

Input contributions covered: 2661

# Discussion

## Background

The following summarizes the key observations and proposals listed in RP-202661:

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| ***Observation #1: OTA test methods are used as a baseline approach for NR mmWave test methodology for RF, RRM, and Demodulation testing.***  ***Observation #2: The existing mmWave OTA UE test methods are applicable to FR2 frequency bands and their extension to carrier frequencies above 52.6 GHz should be further studied***  **Proposal #1: Further study and define NR 52.6-71GHz OTA test methods within the Rel-17 timeframe**   * + **Option 1: Initiate a separate SI in parallel with NR 52.6 – 71 GHz WI**   + **Option 2: Extend the scope of the NR 52.6 – 71 GHz WI to cover the testability aspects**   **Proposal #2: Consider the following SI/WI objectives to enable NR 52.6-71GHz OTA test methods**   * + *Study and define the over the air (OTA) test methods for UE RF, RRM, and demodulation requirements for the 52.6GHz-71GHz frequency range [RAN4]*     - *Extend the applicability of the FR2 OTA test methods in TR 38.810 wherever possible*     - *Identify any changes needed, including general testing and calibration, permitted test methods, multi-path fading propagation conditions, measurement applicability criteria.*     - *Target device types: Handheld UE, laptop, tablet, FWA, vehicular mounted device; other UE types not precluded.* |

## Initial round

### Open issues

The following questions are proposed to be discussed in the initial round:

* Question #1: Whether to further study and define NR 52.6-71GHz OTA test methods within the Rel-17 timeframe
* Question #2: How to organize the NR 52.6-71GHz OTA test methods studies within the Rel-17 timeframe
  + Option 1: Initiate a separate SI to study NR 52.6-71GHz OTA test methods
  + Option 2: Extend the scope of the NR 52.6 – 71 GHz WI to cover the testability aspects
  + Option 3: other options?
* Question #3: Candidate study objectives
  + *Option 1: Study and define the over the air (OTA) test methods for UE RF, RRM, and demodulation requirements for the 52.6GHz-71GHz frequency range [RAN4]*
    - *Extend the applicability of the FR2 OTA test methods in TR 38.810 wherever possible*
    - *Identify any changes needed, including general testing and calibration, permitted test methods, multi-path fading propagation conditions, measurement applicability criteria.*
    - *Target device types: Handheld UE, laptop, tablet, FWA, vehicular mounted device; other UE types not precluded.*
    - *Utilize free space testing configuration for test methods definition.*

### Companies views’ collection

**Question #1: Whether to further study and define NR 52.6-71GHz OTA test methods within the Rel-17 timeframe?**

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| **Company** | **Comments** |
| Qualcomm | Q1: some study is definitely needed as there is a gap in testing for this frequency range. |
| ZTE | It is fine to study in Rel-17 timeframe if TU allowed, however this work should be started until RF core requirements is stable, otherwsie it seems no base are upon for further discussion. |
| Apple | We suggest seeing 1 or 2 quarters of progress in 52.6 - 71 GHz work item before initiating testability work, since test methodology development for this frequency range will have dependencies on the core requirement definition |
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**Question #2: How to organize the NR 52.6-71GHz OTA test methods studies within the Rel-17 timeframe**

* **Option 1: Initiate a separate SI to study NR 52.6-71GHz OTA test methods**
* **Option 2: Extend the scope of the NR 52.6 – 71 GHz WI to cover the testability aspects**
* **Option 3: other options?**

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| **Company** | **Comments** |
| Qualcomm | Q2: Option 3: We believe there are also other OTA testing issues arising from different WIs, there should be a broader discussion on how we handle all of them. Each could be handled in its own WI/SI(basically Option 2 applied independently to each item), however this might not be the most efficient way. Considering that OTA discussions are mainly handled by the same delegates, it should be discussed whether a study item handling all OTA issues in one release should be used. This could be an ongoing SI in which topics are added and concluded one by one. Such handling would offer a wholistic approach which would be very important to achieve a unified testing discussion. Divergence in terms of testing solutions/methodologies would be very harmful for the eco-system. |
| ZTE | Option 2 is more preferred as this 52.6-71GHz OTA test method should be similar as the existing FR2 OTA test.  Given QC’s comments, we are also fine to put all FR2 OTA testing issues in one umbrella SI as OTA delegates should be same for different topics. |
| Apple | We would like to suggest a new option: once sufficient progress is achieved in the 52.6 - 71 GHz work item, specific objectives related to testability in this frequency range can be added to the Rel-17 study on enhanced FR2 test methods (FS\_FR2\_enhTestMethods). The study is already handling the extension of frequency range up to 49 GHz and can further accommodate the expansion of scope following 1 or 2 quarters of progress in the 52.6 – 71 GHz core work item. |
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**Question 3: Candidate study objectives**

* ***Option 1: Study and define the over the air (OTA) test methods for UE RF, RRM, and demodulation requirements for the 52.6GHz-71GHz frequency range [RAN4]***
  + ***Extend the applicability of the FR2 OTA test methods in TR 38.810 wherever possible***
  + ***Identify any changes needed, including general testing and calibration, permitted test methods, multi-path fading propagation conditions, measurement applicability criteria.***
  + ***Target device types: Handheld UE, laptop, tablet, FWA, vehicular mounted device; other UE types not precluded.***
  + ***Utilize free space testing configuration for test methods definition.***

Companies are encouraged to share views on the candidate objectives of the studies and whether proposed Option 1 objectives are acceptable.

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| **Company** | **Comments** |
| Qualcomm | Q3: we mainly agree with the bullets, we believe that FWA and vehicular mounted device can be de-prioritize, at least for now. |
| ZTE | Just wondering in 52.6-71GHz, are we going to define so many device types? If not, we need to consider so many use cases here? |
| Apple | We recommend to have some initial core requirement agreements before properly scoping the study. It is also not clear whether the physical layer design will accommodate a vehicular mounted use case. |
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### Summary and recommendation for further discussion

## Intermediate round

## Fine-tuning round

# Conclusion

Based on the email discussion, the following are proposed:

* TBD