

CTIA Certification Program Working Group Liaison Statement

To	3GPP RAN4, 3GPP RAN5
CC	PTCRB, GCF SG, GCF CAG, GCF PAG
Source	CTIA Over-the Air (OTA) Working Group
Subject	Over-the-Air Radiated Performance Testing for 5G mm-Wave (FR2) User Equipment
Date	18 May, 2018

Introduction

During the CTIA OTA Face-to-Face Meeting #2018_4 (30 April - 3 May, 2018, San Diego, CA), delegates provided their views concerning CTIA's role in evaluating the radiated performance of User Equipment (UE) supporting NR in the mm-wave frequency bands (FR2).

The purpose of this LS is to provide 3GPP RAN4 and 3GPP RAN5 with information concerning the outcome of CTIA's discussions relevant to this topic and to provide an overview of the rationale behind CTIA's subsequent decision to create a new sub-group specifically to address 5G OTA measurement for UEs operating in the mm-wave bands.

Discussion

Beginning in 2016, the 3GPP RAN Plenary initiated a study item to develop an NR access technology utilizing conventional commercial frequency bands as well as mm-wave frequency bands [1]. Subsequently, RAN4 began the process of investigating UE test platforms for the mm-wave range [2]. The recommendations in [2] resulted in the formation of a RAN4 SI which initiated a focused study on UE test methods for FR1 and FR2. This focused study resulted in 3GPP TR 38.810 [3], which is still in progress.

As the industry approaches the date on which initial mm-wave UEs will become available, it's important for certification bodies to ensure that the requisite radiated test platforms, test methodologies, qualified labs, and, in some cases, hand/body phantoms are available to assess the radiated performance of UEs operating in FR2.

Because of this need, CTIA's role in establishing a radiated performance test ecosystem for UEs capable of operating in FR2 became an important topic of discussion during CTIA's OTA Working Group Meetings on 1 May and 3 May, 2018. Many aspects of FR2 UE radiated performance testing were discussed over these two days, but the eventual outcome was the development of a problem statement calling for the industry to ensure all the components required to execute OTA radiated performance tests for UEs operating in FR2 could be developed without duplicating any work currently ongoing in 3GPP RAN4/RAN5.

After carefully considering the problem statement above, the CTIA OTA Working Group agreed on the following five priorities:

- 1) CTIA's FR2 work shall complement that of 3GPP RAN4/RAN5, specifically related to maximum output power EIRP/TRP test cases, and reference sensitivity EIS test cases.
- 2) CTIA's FR2 work shall be based on test specifications developed by 3GPP RAN5 and utilize the permitted methods defined by 3GPP RAN4.
- 3) Because of CTIA's expertise in developing system validation requirements, executing lab audits and ensuring consistent test processes across labs, CTIA shall focus on system validation as one of its deliverables to this project.

- 4) Likewise, because of CTIA OTA's historical expertise in developing hand and body phantoms, the group agreed that CTIA OTA shall focus on the development of applicable phantoms for the mm-wave frequency range (e.g. 24-52 GHz) as another deliverable to this project.
- 5) CTIA's FR2 work will also complement the measurement uncertainty work in 3GPP RAN4/RAN5

Based on the five priorities above, the CTIA OTA Working Group agreed on the following project scope:

- a) 3GPP shall maintain their core, performance and conformance specification role in the development of an OTA test specification for FR2. CTIA will align its FR2 OTA device certification program test plan with the applicable 3GPP core specifications and test specifications.
- b) CTIA shall leverage its expertise in test system validation, evaluation/maintenance of lab quality, establishment of measurement uncertainty criteria, and background in body phantom development to assist in the completion of an FR2 OTA test and measurement ecosystem.
- c) To ensure the completion of these project goals, CTIA agreed to form a new 5G mm-wave OTA Sub-Working group. At the time this LS was prepared, the co-chairs of this new sub group have not been identified. But this information, along with a future meeting schedule, will be provided to RAN4 no later than RAN4-AH-1807 and to RAN5 no later than RAN5 #80.

Actions

CTIA kindly requests that 3GPP RAN4 and RAN5 review the five priorities along with the project scope definitions described above and consider the establishment of a formal collaborative relationship between 3GPP RAN4/RAN5 and CTIA OTA's 5G mm-wave Sub Group. The establishment of such an agreement should ensure that the industry can realize the timely execution and completion of this important project. Once a cooperative work agreement is put into place, the specific timing of deliverables shall be established through communications between 3GPP and CTIA over the next few months.

References

- [1] RP-160671, *New SID Proposal: Study on Next Generation New Radio Access Technology*, NTT DOCOMO, RAN#71
- [2] RP-170824, *New SID on Study on test methods for New Radio*, Intel Corporation, CATR, Qualcomm Incorporated, MediaTek, RAN#75
- [3] TR 38.810, *Study on test methods for New Radio*

Contact Info

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Date of Next CTIA OTA WG Meetings:

12 June, 2018, Teleconference, 11am-1pm EDT

17 July, 2018, Teleconference, 11am-1pm EDT