CTIA Certification Program Working Group
Liaison Statement

To	3GPP RAN4
CC	PTCRB, GCF PAG
Source	CTIA Over-the Air (OTA) Working Group
Subject	Radiated Performance Data for Devices Certified by CTIA for Operation in North America
Date	21 August, 2017

Introduction

The CTIA Over-the-Air (OTA) Working Group would like to ask that 3GPP consider the inclusion of radiated performance data from devices certified for use in North America as input to the establishment of TRP/TRS limits in 3GPP TS 37.114.

Discussion

During RAN #72, a revised WID for LTE_UTRA_TRP_TRS-Core was approved. The intent of the revised WID was, in part, to develop TRP and TRS limits for LTE Bands 1, 2, 3, 4, 5, 7, 8, 11, 12, 13, 18, 19, 20, 21, 25, 26, 28, 39, 40, 41 and 66. The TRP/TRS limits established for these bands would eventually become part of 3GPP TS 37.114. To date, most data provided to this project has come from devices primarily intended for operation outside of North America. Because this data typically represents roaming-band performance, the CTIA OTA Working Group believes it's important to supplement the existing 3GPP data set with radiated performance results obtained from devices certified for use in North America by CTIA. In addition, there are bands used in North America which are under-represented in the current 3GPP dataset.

In most LTE bands, the test conditions for TRP measurement used in CTIA align with those used by 3GPP. The same is not true of TRS measurement. Historically, CTIA has measured TIS (Total Isotropic Sensitivity, an assessment of the radiated performance of each individual receiver in the UE), while 3GPP measures the radiated performance when all receivers in the UE are simultaneously operational (TRS). Through analysis of empirical measurements, CTIA has determined that the delta between TIS and TRS in a device with two receiver branches averages to approximately 2.5 dB. However, CTIA is not relying on an approximation, and has approved a methodology for converting I-TIS (Individual TIS) to C-TIS (Combined TIS). This methodology was used to convert existing I-TIS data into C-TIS data (essentially, TRS) in this contribution.

Other than the TIS/TRS aspect mentioned above, there are two primary differences between the radiated performance data collected by CTIA data and that which would have been collected by a lab testing a device according to 3GPP's methodology:

1) CTIA measures downlink radiated performance in the "narrow" LTE bands (e.g. Band 13, Band 17 and Band 30, all of which are 10 MHz or 12 MHz wide) using a single 10 MHz measurement channel. According to 3GPP TR 37.902, Release 14, Bands 13 and 17 are assessed using three 10 MHz measurement channels.
2) CTIA measures Band 12 and Band 26 radiated performance in three 5 MHz channels while 3GPP TR 37.902 calls for three 10 MHz channels in Band 12 (Band 26 is not included in 3GPP TR 37.902, Release 14). However, CTIA applied scaling factors for Band 12 to convert data based on a 5 MHz channel to a 10 MHz channel. Therefore, the

radiated performance data provided for Band 12 is directly comparable to that of the existing 3GPP dataset.

There are other differences between the 3GPP test plan and the CTIA test plan (such as averaging of results between left/right side of the head and/or hand), but these have been accounted for in the data provided herein.

Actions

The CTIA OTA Working Group kindly requests that 3GPP RAN4 consider the radiated performance data for Bands 2, 4, 5, 7, 12, 13, 17, 25, 26, 30 and 41, provided herein, when establishing LTE BHH radiated performance limits for inclusion in 3GPP TS 37.114.

Also, 3GPP TR 37.902, Release 14, is currently lacking an OTA measurement configuration for Band 26 and Band 30. CTIA kindly requests that 3GPP RAN4 consider utilizing the test configurations for TRP and TIS specified in CTIA OTA Test Plan V 3.6.2, Tables 5-20 and 6-6.

Version 3.6.2 of the CTIA OTA test plan can be downloaded from the following URL: https://ctia.org/docs/default-source/certification/ctia-test-plan-for-wireless-device-over-the-air-performance-ver-3-6-2.pdf?sfvrsn=2

CTIA data r03.xlsx

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Date of Next CTIA OTA WG Meeting:

29 August, 2017, Teleconference