**ASN.1 Requirements**

**Wireless Environments (WAVE) --**

**Test Control Interface V3 ASN1 Outline**

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Table of Contents

[1. Scope 3](#_Toc41988223)

[2. Abbreviations 3](#_Toc41988224)

[3. Timeline 3](#_Toc41988225)

[4. Goal of the Module 3](#_Toc41988226)

[5. Requirements for TCI update 4](#_Toc41988227)

[5.1. Scope of required tests (P1) 4](#_Toc41988228)

[5.2. Access to the test parameters (P1) 4](#_Toc41988229)

[5.3. Test parameters (P1) 4](#_Toc41988230)

[5.4. Supported mandatory AT commands (P1) 4](#_Toc41988231)

[5.5. Backward compatibility (P1) 5](#_Toc41988232)

[5.6. Support for dual-stack devices (P2) 5](#_Toc41988233)

[5.7. C-V2X TCI module architecture (P?) 5](#_Toc41988234)

# Scope

This memo provides the outline of what is needed to support the scope of OmniAir C-V2X certification for conformance and interoperability testing and, specifically, for the changes in the Test Control Interface (TCI) interface and protocol to be used between a Test System (TS) and a C-V2X System Under Test (SUT) required to the support of C-V2X certification.

The intent of this memo is to provide an overview of the C-V2X ASN.1 module that is needed. It explains the architecture of the module, goal of the module and recommended TCI objects as well as the timeline in which this shall be implemented. Details of the type definitions are not described in this document.

# Abbreviations

For the purposes of the present document, the following abbreviations apply:

BW Bandwidth

CV2X Cellular Vehicle to Everything

PPPP Prose Per Packet Priority

RB Resource Block

RRC Radio Resource Control

SPS Semi Persistent Scheduling

Tx Transmit

XML Extensible Markup Language

# Timeline

OmniAir goal is to launch trial C-V2X certification in Fall 2020. This requires updates to the following certification elements the completion of TCI update can impact:

* Update to the conformance test specifications
* Update to the TCI message generator
* Update to the conformance testing tools

The timeline of TCI update for the C-V2X module implementation shall be **mid-June 2020**.

# Goal of the Module

Goals for the OmniAir C-V2X certification:

* achieve conformance to specifications
* achieve adequate interoperability
* achieve adequate performance
* allow test automation and receive test case feedback
* listing of XML files required to support the test and work in conjunction with TCI commands

TCI requirements will be designated by priorities P1, P2, and P3

* Priority 1 requirements are to be implemented as mandatory in the initial released.
* Priority 2 requirements are optional for the initial release but are required for the 2nd update of the initial release.
* Priority 3 will designate all other requirements which can be implemented after that.

# Requirements for TCI update

# Scope of required tests (P1)

* Test Case Mapping for AT and TCI commands are located in the OmniAir Test Case TCI Mapping Document.

# Access to the test parameters (P1)

TCI shall support update of the XML and RRC configuration of the C-V2X device before sending the 1609.3 messages.

XML files shall be compressed using ??? to reduce file size and avoid fragmentation of the TCI messages

# Test parameters (P1)

TCI messages shall support the following objects

* BW
* Tx Power
* EARFCN
* MCS
* PSCCH/PSSCH contiguous
* RB Size
* RB Count
* SPS
* Event
* PPPP
* Tx and Rx Packet Count
* Packet Size
* RSSI

# Supported mandatory AT commands (P1)

The TCI wrapper will support mandatory AT commands found in the 3GPP TS 27.007 V14 section 15. The commands are as follows:

* AT+CATM
* AT+CCUTLE
* AT+CUSPCREQ
* AT+CUTCR
* AT+CCBRREQ
* AT+CV2XDTS

# Backward compatibility (P1)

V3 will support both DSRC and C-V2X commands. TCI V3 DSRC commands will be within the same scope as TCI V2 except for the version number. Backwards compatibility between TCI V3 and TCI V2 is desired but not required.

# Support for dual-stack devices (P2)

C-V2X and DSRC will be tested separately and Dual-Mode / Dual-Active is not supported.

# C-V2X TCI module architecture (P?)

TCI C-V2X module shall be implemented as a separate module under the “top” class TCI-Dispatch.

TCI