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| ToR TTF T029 (Ref. Body ISG mWT) |
| Version: 0.5 |
| Author: Leonida Macciotta – Date: 2022-05-23 |
| Last updated by: ETSI Secretariat – Date: 2023-10-18 |
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Terms of Reference –Testing Task Force Proposal

TTF T029 (Ref. Body ISG mWT)

Conformance testing of Wireless Transport Profile for Standard SDN Northbound Interfaces

Summary information

|  |  |  |  |
| --- | --- | --- | --- |
| Approval status | Approved by Ref. Body (doc ref: mWT(22)023015r1) | | **YES** |
| Reference Body | Ref. Body ETSI ISG ‘millimetre Wave Transmission’ (ISG mWT) | | |
| ETSI Funding | **Maximum budget : 60 000 EUR** | | |
| Minimum of 4 ETSI Members Support | **YES** | | |
| Time scale | **From** | 2023-10-30 | |
| **To** | 2024-12-31 | |
| Work Items | * D1: Conformance Test Specification for Wireless Transport Profile for Standard SDN Northbound Interfaces; Part 1 Implementation Conformance Statement (ICS) * D2: Conformance Test Specification for Wireless Transport Profile for Standard SDN Northbound Interfaces; Part 2: Test Suite Structure (TSS) and Test Purposes (TP) * D3: Conformance Test Specification for Wireless Transport Profile for Standard SDN Northbound Interfaces; Part 3: Abstract Test Suite (ATS) and partial Implementation eXtra Information for Testing (IXIT) | | |
| TTF Roadmap reference | TTF Roadmap 2023 | | |

Part I –TTF Technical Proposal

# Rationale & Objectives

Automation is one of the key components of current and future networks, providing the means to effectively exploit all the advantages and innovations stemming from the new generation networks, including the rollout and operation of 5G.

ETSI GS mWT 024 “Definition of a Wireless Transport Profile for Standard SDN Northbound Interfaces” provides the necessary guidelines about how to implement the Northbound Interface (NBI) of an SDN controller managing millimetre wave and microwave networks.

The existence of many related standards from different SDOs (e.g. IETF, IEEE etc.), each of which can be implemented to various degrees of completeness by different equipment Manufacturers, potentially present a very challenging interoperability scenario, hence the high need for such a GS.

A TTF will complement the GS providing both Manufacturers and Operators with an authoritative and very effective tool to test for compliance, and easily identify any residual non-compliance.

## Rationale

The proposed activity encompasses the analysis of the specifications in the GS, creation of the test cases, and creation of the Test Suite providing the compliance test tool for both Manufacturers and Operators.

## Objectives of the work to be executed

1. Analysis of ETSI GS mWT 024 specifications
2. Development of ICS document
3. Identification and writing of the test purposes and Test Suite Structure
4. Creation of the Test Suite covering the identified Test Cases
5. Development of IXIT document

Activity time-frame is estimated in February – June 2023

## Previous funded activities in the same domain

Void.

## 

## Consequences if not agreed

Implementation and deployment of automation solutions has reached a critical level of market pressure and urgency for both Operators and Manufacturers, with each Manufacturer now providing mostly proprietary SDN implementations, and compliance testing being specified and arranged case by case by each Operator with its several suppliers. This is happening right now.

Moreover, there are several SDOs (including IETF, IEEE, ONF, MEF etc.) working in a fundamentally uncoordinated way on automation of the many different aspects of mmW/MW networks right now.

The GS fills a critical need, as testified by the overwhelming participation of the mmW/MW worldwide manufacturers and Tier 1 Global Operators to the creation of ETSI GS mWT 024.

Providing a trustworthy, publicly available, unique Test Suite for the GS is critically needed to ensure that the Industry can effectively remedy the current fragmentation in many 1:1 ad-hoc testing arrangements between Operators and Manufacturers, which vastly complicate the task of achieving true automation in real-world multi-vendor networks.

Such a Test Suite will allow full exploitation of the positive outcomes of publishing ETSI GS mWT 024.

# ETSI Members Support

|  |  |  |
| --- | --- | --- |
| **#** | **ETSI Member** | **Supporting delegate** |
| 1 | Huawei Tech.(UK) Co., Ltd | Leonida Macciotta |
| 2 | NEC Europe Ltd | Nader Zein |
| 3 | Vodafone GmbH | Gabriele Ferrari |
| 4 | Deutsche Telekom AG | Dimitris Siomos |
| 5 | SIAE Microelettronica SpA | Roberto Servadio |
| 6 | Nokia France | Paolo Di Prisco |

# Deliverables

## Base documents

|  |  |  |
| --- | --- | --- |
| **Document** | **Title** | **Status** |
| ETSI GS mWT 024 | millimetre Wave Transmission (mWT); Definition of a Wireless Transport Profile for Standard SDN Northbound Interfaces | Published |
| IETF RFC 8040 | RESTCONF Protocol | Available |
| IETF RFC 7951 | JSON Encoding of Data Modeled with YANG | Available |
| IETF RFC 8527 | RESTCONF Extensions to Support the Network Management Datastore Architecture | Available |
| IETF draft-ietf-ccamp-mw-topo-yang-02 | A YANG Data Model for Microwave Topology | Available |
| IETF draft-ietf-ccamp-eth-client-te-topo-yang-01 | A YANG Data Model for Ethernet TE Topology | Available |
| IETF draft-ietf-ccamp-client-signal-yang-06 | A YANG Data Model for Transport Network Client Signals | Available |

## New deliverables

*Working titles sufficient for part I. Complete with full WI reference when final ToR are submitted*

|  |  |  |  |
| --- | --- | --- | --- |
| **Deliv.** | **Work Item code**  **Standard number** | **Working title** | **Expected date for publication** |
| D1 | DGS/mWT-0029-1 | Working title: Conformance Test Specification for Wireless Transport Profile for Standard SDN Northbound Interfaces; Part 1 Implementation Conformance Statement (ICS) | 31 December 2024 |
| D2 | DGS/mWT-0029-2 | Working title: Conformance Test Specification for Wireless Transport Profile for Standard SDN Northbound Interfaces; Part 2: Test Suite Structure (TSS) and Test Purposes (TP) | 31 December 2024 |
| D3 | DGS/mWT-0029-3 | Working title: Conformance Test Specification for Wireless Transport Profile for Standard SDN Northbound Interfaces; Part 3: Abstract Test Suite (ATS) and partial Implementation eXtra Information for Testing (IXIT) | 31 December 2024 |

# Maximum budget

## Task summary/Manpower Budget

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| --- | --- |
| **Task short description** | Budget (EUR) |
|
| Project Management & reporting | 4 000 |
| Requirements identification and ICS development | 6 000 |
| Test Purposes Development | 18 000 |
| Abstract Test Suite development | 20 000 |
| Validation | 10 000 |
|  |  |
| **TOTAL** | 58 000 |

## Travel budget

Travel of TTF leader to two mWT meetings: 2 000 EUR

## Other budget line

None

Part II – Details on TTF Technical Proposal

# Tasks, Technical Bodies and other stakeholders

## Organization of the work

IST mWT will manage the TTF directly. ISG mWT may choose to establish a steering committee, although it may more likely assign individual experts to oversee the TTF and provide technical expertise to the team.

The TTF will report directly to the ISG mWT.

## Other interested ETSI Technical Bodies

None

## Other stakeholders

IETF Common Control and Measurement Plane (ccamp) Working Group may have an interest in the outcome of the TTF, although they have no direct involvement in the project or its execution. Any liaison with IETF will be handled directly by the ISG mWT.

Part III: Execution of Work

# Work plan, time scale and resources

## Task description

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| --- | --- |
| **Task 0** | **Project Management & Reporting** |
| **Objectives** | Manage the TTF and ensure sufficient reporting to ISG mWT |
| **Input** | None |
| **Output** | Periodic reports as required by the Terms of Reference |
| **Interactions** | Periodic reports as described below |
| **Resources required** | 1 expert to take additional role of TTF Leader.  4 000 EUR |

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| --- | --- |
| **Task 1** | **Requirements identification and ICS development** |
| **Objectives** | Identify requirements to be tested. Develop ICS document (D1). |
| **Input** | All base specifications, in particular GS mWT 024 and documents referenced by it. |
| **Output** | Deliverable D1 |
| **Interactions** | Regular exchange with ISG mWT appointed expects to ensure correct understanding of base specifications. |
| **Resources required** | 6 000 EUR |

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| **Task 2** | **Test Purposes Development** |
| **Objectives** | Develop the deliverable D2, Test Suite Structure and Test Purposes. TDL notation may be used if appropriate |
| **Input** | D1 and identified requirements from Task 1; all base specifications, in particular GS mWT 024 and documents referenced by it. |
| **Output** | Deliverable D2 |
| **Interactions** | Regular exchange with ISG mWT appointed expects to ensure correct understanding of base specifications. |
| **Resources required** | 18 000 EUR |

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| **Task 3** | **Abstract Test Suite development** |
| **Objectives** | Develop the Abstract Test Suite, deliverable D3. |
| **Input** | Deliverable D2: Test Purposes |
| **Output** | Draft Deliverable D3, Abstract Test Suite and partial IXIT |
| **Interactions** | Regular exchange with ISG mWT appointed expects to ensure correct understanding of base specifications.  The ATS technology will need to be chosen, in coordination with ISG mWT. Choices include TTCN-3, Robot Framework or perhaps Postman scripts, already used in the interoperability tests for this interface. |
| **Resources required** | 20 000 EUR |

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| **Task 4** | **Validation** |
| **Objectives** | Validate the Test Suite using a selection of implementations, in cooperation with equipment vendors. |
| **Input** | ICS document, deliverable D1;  Abstract Test Suite, draft deliverable D3 |
| **Output** | Validated and corrected abstract test suite, deliverable D3 |
| **Interactions** | Validation will be done using a selection of implementations, in cooperation with equipment vendors. |
| **Resources required** | 10 000 EUR |

## Milestones

Milestone A – Stable draft D1 accepted, early draft D2 available, Progress Report approved by ISG mWT

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| --- | --- | --- |
| **Milestone** | **Description** | **Cut-Off Date** |
| **A** | Stable draft D1 accepted, early draft D2 available, Progress Report approved by ISG mWT | 2024-02-29 |
| Reference Body Deliverable | Stable draft of deliverable D1 accepted by ISG mWT#24  Early draft of deliverable D2 available |
| ETSI Deliverable | Progress Report approved by ISG mWT#24 |

Milestone B – Stable draft D2 accepted, early draft D3 available, Progress Report approved by ISG mWT

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| --- | --- | --- |
| **Milestone** | **Description** | **Cut-Off Date** |
| **B** | Stable draft D2 accepted, early draft D3 available, Progress Report approved by ISG mWT | 2024-06-30 |
| Reference Body Deliverable | Stable draft of deliverable D2 accepted by ISG mWT#25  Early draft of deliverable D3 available |
| ETSI Deliverable | Progress Report approved by ISG mWT#25 |

Milestone C – Final draft of D1, D2, D3 approved by ISG mWT, Final Report approved by ISG mWT

|  |  |  |
| --- | --- | --- |
| **Milestone** | **Description** | **Cut-Off Date** |
| **C** | Final draft of D1, D2, D3 approved by ISG mWT, Final Report approved by ISG mWT | 2024-11-30 |
| Reference Body Deliverable | Final Drafts of deliverables D1, D2 and D3 approved for publication by ISG mWT#26 |
| ETSI Deliverable | Final Report approved by ISG mWT#26 |

Milestone D – Deliverables published, TTF closed

|  |  |  |
| --- | --- | --- |
| **Milestone** | **Description** | **Cut-Off Date** |
| **C** | Deliverables published, TTF closed | 2024-12-31 |
| Reference Body Deliverable | Deliverables D1, D2 and D3 published by ETSI |
| ETSI Deliverable | None |

## Task summary

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Code** | **Task / Milestone** | Target Date | | Estimated Cost (EUR) |
| From | To |
|  | Start of work | 30/10/2023 |  |  |
| T0 | Project Management & reporting | 30/10/2023 | 31/12/2024 | 4000 |
| T1 | Requirements identification and ICS development | 30/10/2023 | 30/11/2023 | 6000 |
| T2 | Test Purposes Development | 01/11/2023 | 29/02/2024 | 18000 |
| Milestone A | Stable draft D1 accepted, early draft D2 available, Progress Report#1 approved by ISG mWT |  | 29/02/2024 | mWT#25 |
| T3 | Abstract Test Suite development | 1/02/2024 | 31/05/2024 | 20000 |
| Milestone B | Stable draft D2 accepted, early draft D3 available, Progress Report#2 approved by ISG mWT |  | 30/06/2024 | mWT#26 |
| T4 | Validation | 01/06/2024 | 30/10/2024 | 10000 |
| Milestone C | Final draft of D1, D2, D3 approved by ISG mWT. Final Report approved by ISG mWT |  | 30/11/2024 | mWT#xx |
| Milestone  D | Deliverables published, TTF closed |  | 31/12/2024 |  |
|  | | | | **58000** |

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| **Year** | **2023** | | |  | **2024** | | | | | | | | | | | | |
| **Task/ Mil.** | **O** | **N** | **D** |  | **J** | **F** | **M** | **A** | **M** | **J** | **J** | **A** | **S** | **O** | **N** | **D** |
| T0 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| T1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| T2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| MA |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| T3 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| MB |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| T4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| MC |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| MD |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

# Expertise required

## Team structure

2, maximum 3 participants to ensure the following mix of competences:

|  |  |
| --- | --- |
| **Priority** | **Qualifications and competences** |
| High | Expertise in REST API testing |
| High | Expertise in test specification development |
| High | Expertise in one of: TTCN-3, Robot Framework, Postman scripting |
| Medium | Expertise in RESTCONF protocol |

Part IV: TTF performance evaluation criteria

# Performance Indicators

|  |  |
| --- | --- |
| **Select relevant Performance indicators applicable for these ToR (X)** | |
| Contribution from ETSI Members to TTF work | |
| Direct financial contribution (co-funding) |  |
| Support to the TTF work (e.g., provision of test–beds, organization of workshops, events) | X |
| Steering Group meetings (number of meetings / participants / duration) |  |
| Number of delegates directly involved in the review of the deliverables | X |
| Contributions/comments received from the Reference Bodies |  |
| Contributions/comments received from other Reference Bodies |  |
|  |  |
| **Contribution from the TTF to ETSI work** | |
| Contributions to Reference Body meetings (number of documents / meetings / participants) | X |
| Contributions to other Reference Bodies |  |
| Presentations in workshops, conferences, stakeholder meetings |  |
|  |  |
| **Liaison with other stakeholders** | |
| Stakeholder participation in the project (category, business area) |  |
| Cooperation with other standardization bodies |  |
| Potential interest of new members to join ETSI |  |
| Liaison to identify requirements and raise awareness on ETSI deliverables |  |
| Comments received on drafts (e.g. on WEB site, mailing lists, etc.) |  |
|  |  |
| **Quality of deliverables** | |
| Approval of deliverables according to schedule | X |
| Respect of time scale, with reference to start/end dates in the approved ToR | X |
| Comments from Quality review by Reference Body | X |
| Comments from Quality review by ETSI Secretariat | X |
|  |  |

# Document history

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Date** | **Author** | **Status** | **Comments** |
| 0.1 | 2022-05-23 | L. Macciotta | Draft | Initial draft |
| 0.2 | 2022-07-22 | UJM | Draft | 1st full draft of TTF ToR |
| 0.3 | 2023-01-03 | ETSI Secretariat | Final Draft | Update before IKOM |
| 0.4 | 2023-01-13 | ETSI Secretariat | Final | Updates before CL publication |
| 0.5 | 2023-10-18 | ETSI Secretariat | Final | Updates after PM |