**3GPP TSG RAN meeting #107 RP-25xxxx**

**Incheon, Korea, March 12-14, 2025**

## Status Report to TSG

**Agenda item:** 9.2.2

|  |  |
| --- | --- |
| **WI / SI Name** |  |
| included in this status report | Study Item: Yes | Core part: No | Performance part:No | Testing part:No |
| **Acronym** | FS\_Sensing\_NR |
| **Unique ID** | 1020086 |
| **TSG Tdoc of latest approved WI/SI description (if any)** | [RP-242348](https://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_105/Docs/RP-242348.zip) |
| **Target Completion Date****(indicate if changed)** | Study Item: 06/2025 | Core part:  | Performance part:  | Testing part:  |
| **Overall Completion level** | Study Item: 70% | Core part:  | Performance Part:  | Testing part:  |

Note: Overall completion level percentage numbers should use one of the colors below:

* xx%: Normal progress, no RAN plenary action needed
* xx%: Progress behind schedule, may need RAN plenary intervention. If so, SR should clearly define requested action
* xx%: Progress critically behind, RAN plenary shall intervene. SR should define requested action

**Source:**

|  |  |
| --- | --- |
| **Leading WG** | RAN1 |
| **Rapporteur** | **Name** | Yingyang Li, Jerome Vogedes |
| **Company** | Xiaomi, AT&T  |
| **Email** | liyingyang@xiaomi.com, jerome.vogedes@att.com |

## 1 Work plan related evaluation

|  |  |
| --- | --- |
| **Do you want to modify the time budget for this WI/SI compared to what was endorsed at the last RAN meeting?** | No |

*If you answered No: Then please remove the Excel file from the zip file of this status report.*

*If you answered Yes: Then please fill out the attached Excel template to request a modification of the time budgets for your WI /SI. The Excel table has to be filled out for all affected RAN WGs and up to the target date of the WI/SI. The basis are the endorsed time budgets of the last RAN meeting. Please highlight all changes of the values.
 One time unit (TU) corresponds to ~ 2 hours in the meeting.
 If this status report covers a WI with Core and Performance part, then please have one line for each in the attached Excel table.
 Note: If no Excel table is attached, then this means no time budget change.*

**Additional explanations/motivations for the time budget changes in the attached Excel table:**

## 2. Detailed progress in RAN WGs since last TSG meeting (for all involved WGs)

 NOTE: Agreements and Open issues impacted cross-TSG aspects shall be explicitly highlighted

## 2.1 RAN1

#### 2.1.1 Agreements

##### RAN1 #120, Athens, Greece, Feb 17-21, 2025

*ISAC deployment scenarios*

Agreement

For ISAC channel modelling calibration, RAN1 considers both large-scale and full-scale calibration to include parameters and values for at least the following:

* + - large scale parameters, where fast fading is not included
		- full-scale calibration parameters, which includes fast fading.
* NOTE0: one part of calibration work does not include additional components and does not include spatial consistency
	+ - FFS: whether spatial consistency is specified as an additional component for ISAC CM
* NOTE1: additional calibrations including spatial consistency can also be considered case by case for different scenarios.
* NOTE2: Inclusion of EO in ISAC CM calibrations can also be considered case by case for different scenarios.

Agreement

Calibration of ISAC CM includes separate calibration of the target channel and of the background channel

* FFS: additional calibration for the combined channel (combination of target and background channel).

Agreement

For the purposes of large scale calibration for UAV sensing targets, the following calibration parameters are proposed below in Table x.

**Table x. Simulation assumptions for large scale calibration for UAV sensing targets**

|  |  |
| --- | --- |
| **Parameters** | **Values** |
| Scenario | UMa-AV |
| Sensing mode | TRP monostatic, TRP-TRP bistatic, TRP-UE bistatic, UE-UE bistaticNote: further down-selection of the sensing modes for UAV sensing is not precluded |
| Sectorization | 3 sectors per cell site: 30, 150 and 270 degrees |
| Carrier Frequency | FR1: 6 GHzFR2: 30 GHz |
| BS antenna configurations | Single dual-pol isotropic antenna |
| BS Tx power | FR1: 56dBmFR2: 41dBm |
| Bandwidth | FR1: 100MHzFR2: 400MHz |
| BS noise figure | FR1: 5dBFR2: 7dB |
| UT antenna configurations | (M,N,P,Mg,Ng;Mp,Np) = (1,1,2,1,1;1,1) |
| UT noise figure | FR1: 9dBFR2: 10dB |
| Sensing target distribution | 1target uniformly distributed (across multiple drops) within the center cell. Vertical distribution: Fixed height value of 200 m. |
| Component A of the RCS for each scattering point | a fixed value of A |
| Minimum 3D distances between pairs of Tx/Rx and sensing target | 10 m |
| Wrapping Method | No wrapping method is used if interference is not modelled, otherwise geographical distance based wrapping |
| Metrics | Coupling loss (based on LOS pathloss)* FFS: how to select sensing Tx and Rx

FFS: additional metrics, wideband SIR and SINR based on RSRP if interference is modelled. |

*ISAC channel modelling*

Agreement

For bistatic/monostatic RCS

* RCS values/pattern for a scattering point of a target for bistatic sensing is generated by A\*B1\*B2 (i.e., Option 3 from the agreement in RAN1 #118bis)
* RCS values/pattern obtained by setting the same incident/scattered angle in the RCS model for bistatic sensing should be aligned with RCS for monostatic sensing

Agreement

RCS model and application in ISAC channel generation

* To define the RCS model (RCS=A\*B1\*B2) for a scattering point of a target, when the target type is vehicle, large size UAV, human with RCS model 2, AGV
	+ The values/pattern of the product of component A and B1, i.e., A\*B1 is given per target type, expressed in dBsm scale
	+ Component A is expressed in dBsm scale. B1 is dependent on A\*B1 and value of component A.
	+ A is equal to a single value per target type
		- FFS: this allows different values for the same target type with different size, if needed
		- FFS: this allows different values for monostatic and bistatic sensing, if needed
	+ Component B2 follows log-normal distribution. The mean and variance used to characterize satisfied a fixed relation .
* In the procedure of generating ISAC target channel, B1\*B2 is applied after coupling of rays for a STX-SPST link and the corresponding SPST-SRX link before path dropping
* In the procedure of generating ISAC target channel, the following power scaling factor is applied in the last step in target channel generation (i.e., step 14 in the running CR).

Where,

* is pathloss between Tx and SPST, where is the distance between Tx and SPST
* is pathloss between Rx and SPST, where is the distance between SPST and Rx
* is the value of RCS component A
* are shadow fading respectively generated for the Tx- SPST link and SPST -Rx link referring to step 4 in section 7.5, TR 38.901
* Note: for monostatic sensing,

Agreement

RCS upper bound: k equals to 3 is adopted to derive the upper bound of RCS component B2, kσ, where σ is the standard deviation of B2 in dB

Agreement

For reducing options for reference TRs: for sensing scenario UMi, UMa, RMa, InH, InF, UMi-AV, UMa-AV, and RMa-AV, the reference TR to generate a TRP-TRP channel is:

* TRP-TRP link of scenario UMi, UMa, InH, and InF following the option based on TR 38.901 defined in section A.3 of TR 38.858
	+ For InF, hUE is changed to the same height as the BS
* TRP-UE link of scenario RMa defined in section 7 of TR 38.901 by setting hUE=35m
* FFS: whether to add very low power clusters

**R1-2501000** Summary #2 on ISAC channel modelling Moderator (Xiaomi)

Agreement

For vehicle with single/multiple scattering points:

* For mono-static, the RCS=A\*B=A\*B1\*B2 for a scattering point of a vehicle is generated by
	+ The values/pattern A\*B1, i.e., is deterministic based on incident/scattered angles

Where,

*,*

*,*

 For example, in case of vehicle with multiple scattering points:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  | *Applicable Range of*  | *Applicable Range of*  |
| *Left* | *[ ]* | *[ ]* | *[ ]* | *[ ]* | *[ ]* | *[ ]* | *[ ]* | *[ ]* |
| *Back* | *[ ]* | *[ ]* | *[ ]* | *[ ]* | *[ ]* | *[ ]* | *[ ]* | *[ ]* |
| *Right* | *[ ]* | *[ ]* | *[ ]* | *[ ]* | *[ ]* | *[ ]* | *[ ]* | *[ ]* |
| *Front* | *[ ]* | *[ ]* | *[ ]* | *[ ]* | *[ ]* | *[ ]* | *[ ]* | *[ ]* |
| *Roof* | *[ ]* | *[ ]* | *[ ]* | *[ ]* | *[ ]* | *[ ]* | *[ ]* | *[ ]* |

* + Note: the applicable angular range is 360 degrees per row in horizontal domain in case of vehicle with multiple scattering points, and the applicable angular range is < 360 degrees per row in horizontal domain in case of vehicle with a single scattering point.
		- FFS: angular continuity

Working assumption

For modelling background channel for monostatic sensing:

Solution A: (previous Option 1)

* drop N reference point(s) following certain distribution, and then the background channel is generated based on the channel generated as in existing TR between the real Tx and the reference point for a scenario.
	+ The distance between Tx and the reference point, and the height of the reference point follow Gamma distribution,

1

* + FFS: value of N (N<4)
* FFS: whether to add additional very low power clusters
* FFS: any update to parameters e.g. angular distribution and delay spread

Agreement

The existing spatial consistency model in TR 38.901 is reused to model correlation of links between one TRP and different STs/UEs.

Agreement

Spatial consistency is not modelled at least for the following links

* Case 1: the links from/to two non-co-located TRPs
	+ Link TRP1-X and link TRP2-X, where node X can be a target, a UE or another TRP
	+ Link TRP1-X and link TRP2-Y, where node X, Y can be a target, a UE or another TRP
* Case 2: the two links with different LOS/NLOS condition
* Case 3: background channel for monostatic vs. any link (Tx-ST, ST-Rx, background channel) for bistatic

**R1-2501001** Summary #3 on ISAC channel modelling Moderator (Xiaomi)

Agreement

For sensing scenario UMi, UMa, RMa, InH, InF, UMi-AV, UMa-AV, and RMa-AV, the reference TR to generate a UE-UE channel is

* UE-UE link of scenario UMi, UMa, InH, and InF following the option based on TR 38.901 defined in section A.3 of TR 38.858
* TRP-UE link of scenario RMa defined in section 7 of TR 38.901 by setting hBS =1.5m
* FFS: whether to add very low power clusters

Agreement

The reference TR to generate a TRP-UE channel is

|  |  |  |
| --- | --- | --- |
| TRP  | normal UE | UMi, UMa, RMa, InH, InF, UMi-AV, UMa-AV, and RMa-AV* Option 1: TRP-UE link of scenario UMi, UMa, RMa, InH, and InF in section 7 of TR 38.901

Highway and Urban grid* Option 1: P2B link of scenario Highway and Urban grid in section 6 of TR 37.885

HST* Option 1: TRP-UE link of scenario RMa in section 7 of TR 38.901 for FR1 and TRP-UE link of scenario UMa in section 7 of TR 38.901 for FR2
 |
| TRP  | vehicle UE | Highway and Urban grid * Option 1: V2B link of scenario Highway and Urban grid in section 6 of TR 37.885

UMi, UMa, and RMa* Option 1: TRP-UE link of scenario UMi, UMa, and RMa in section 7 of TR 38.901
 |
| TRP  | aerial UE | UMa-AV, UMi-AV, and RMa-AV * Option 1:
	+ TRP-aerial UE link of scenario UMa-AV, UMi-AV, and RMa-AV in section Annex A and B of TR 36.777 for FR1
	+ FFS reuse the channel model of scenario UMa-AV, UMi-AV, and RMa-AV of FR1 for FR2
 |

Agreement

For mono-static, the following values of component A, B2 are agreed for UAV of small size

* + Component A: -12.81 dBsm
	+ Component B1: 0 dB (already agreed in RAN1#118bis)
	+ Component B2:
		- standard deviation: 3.74 dB

Agreement

For mono-static, the following values of component A, B2 are agreed for RCS model 1 of human

* + Component A: -1.37 dBsm
	+ Component B1: 0 dB (already agreed in RAN1#118bis)
	+ Component B2:
		- standard deviation: 3.94 dB

Working assumption

Absolute delay model (referring to 7.6.9 in TR 38.901 as starting point) is a mandatory feature for both target channel and background channel for ISAC for UMi, UMa, InH, InF

* Related model referring to values from 7-24GHz study item

Agreement

When absolute delay model is configured, it applies to all NLOS clusters in each of Tx-target and target-Rx links and background channel.

* For bistatic sensing: Different values of are separately generated for the Tx-target link, target-Rx link and the background channel
* For monostatic sensing: the same value of is used for Tx-target link and target-Rx link, and a different value of is separately generated for the background channel

Agreement

To generate the LOS ray and NLOS clusters for the multiple scattering points, each scattering point is separately handled as if a different target with single scattering point.

Agreement

* The LOS condition between Tx/Rx and each of the multiple scattering points of a same target are individually generated
* The pathloss between Tx/Rx and each of the multiple scattering points of a same target are individually generated

Agreement

For a target with single/multiple scattering points, the 3D location of each scattering point is defined in the evaluation assumptions.

Agreement

Spatial consistency is needed to model correlation of the following links from ST-UT links and UT-UT links

* Case 5: links between same UT and two nodes X/Y, subjected to correlation distance, i.e., link UT1-X and link UT1-Y, where nodes X/Y can be target or UT
* Case 6: links between same target and two nodes X/Y, subjected to correlation distance, i.e., link target1-X and link target1-Y, where nodes X, Y are different UTs
* Case 7: link X1-Y1 and link X2-Y2, subjected to correlation distance, where X1, X2, Y1, Y2 are 4 different nodes
* FFS: Spatial consistency between multiple scattering points of the same target



Agreement

Correlation type is introduced for large scale parameter, cluster specific parameter and ray specific parameter of ST-UT links and UT-UT links

* Definition of link Correlated: parameters for any two links between STs/UTs are correlated, subjected to correlation distance.

Table 4: Correlation type for links between STs/UTs

|  |  |
| --- | --- |
| Parameters | Correlation type |
| Delays | link Correlated |
| Cluster powers | link Correlated |
| AOA/ZOA/AOD/ZOD offset | link Correlated |
| AOA/ZOA/AOD/ZOD sign | link Correlated |
| Random coupling | link Correlated |
| XPR | link Correlated |
| Initial random phase | link Correlated |
| LOS/NLOS states | link Correlated |
| Blockage (Model A) | All-correlated |
| O2I penetration loss | All-correlated |
| Indoor distance | All-correlated |
| Indoor states | All-correlated |

* Note: it is not precluded more parameters for spatial consistency can be discussed and added in the table

Agreement

If a target is modelled with multiple scattering points,

* The number of scattering points of the target is generated in the beginning of the simulation and kept unchanged in the whole simulation
* The number and locations of the scattering points of the target (if it is a vehicle) are common to each pair of sensing Tx/Rx
* RAN1 assumes no ray is scattered from one scattering point to another scattering point of the same target
* RCS values of the multiple scattering points are individually determined

Agreement

To model polarization matrix of a direct/indirect path i of a scattering point of a target

* + in Rel-19 study item (e.g., UAV, human, vehicle, AGV), , , i.e.,

 Where,

* + - is XPR ratio is randomly generated by log-normal distribution per target type
		- The initial random phase is uniformly distributed within
	+ FFS: spatial consistency of random phase when a scattering point moves
	+ FFS: whether the base station rotation procedure in 38.901 can be reused to support rotation of the target

Agreement

* For target channel
	+ The power threshold for removing clusters in step 6 in section 7.5, TR 38.901, i.e., -25 dB is reused to generate Tx-target link and target-Rx link
	+ The power threshold for path dropping after concatenation is relaxed to [X=-40] dB
* For background channel
	+ The power threshold for removing clusters in step 6 in section 7.5, TR 38.901, i.e., [-25 dB] is reused to generated the background channel
		- FFS: whether to add additional very low power clusters
		- FFS: The reference power for removing cluster is the min (max. Tx-target link cluster power, max. target-Rx link cluster power)

Agreement

If EO type-2 is modelled in an indirect path, only specular reflection is modeled for EO type-2

* polarization of the indirect path is product of polarization matrix of the target-Rx link, the target, and the Tx-target link, i.e., *CPMtx,sp,rx= CPMsp,rx* . *CPMsp* . *CPMtx,sp*
	+ For the specular reflected ray generated by a EO type-2 in the Tx-target link or the target-Rx link (i.e., Tx-EO type-2-target, or target-EO type-2-Rx), *CPMtx,sp* or *CPMsp,rx* is the polarization matrix of EO type-2
	+ To generate polarization matrix of EO type-2, the procedure in [R1-2409394, R1-2410648] is taken as starting point
		- FFS applicability if the surface of EO type-2 is tilted

#### 2.1.2 Remaining Open issues

The following open issues need to be addressed:

* *ISAC deployment scenarios*
	+ Remaining calibration parameters for full calibration, and for calibration of additional features
	+ Calibration results collection/analysis
* *ISAC channel modelling*
	+ Physical object model
		- Framework and values for bistatic RCS
		- Remaining issues on values for monostatic RCS
		- XPR values of polarization matrix of target
	+ Channel model
		- Remaining issues of basic ISAC channel model, e.g.,
			* Polarization matrix normalization
			* Parameter values for monostatic background channel
			* Details on power normalization of target channel and background channel
		- Remaining issues on channel model for target with multiple scattering points
		- Remaining issues on EO type-2
		- Remaining issues on spatial consistency
			* Correlation among the multiple scattering points
			* New model for spatial consistency for ‘link correlated’
	+ Link level channel model
	+ Others
		- Angular correlation of RCS
		- Blockage model A/B
		- Micro-Doppler
		- New low power clusters in background channel

## 2.2 RAN2

#### 2.2.1 Agreements

#### 2.2.2 Remaining Open issues

## 2.3 RAN3

#### 2.3.1 Agreements

#### 2.3.2 Remaining Open issues

## 2.4 RAN4

#### 2.4.1 Agreements

#### 2.4.2 Remaining Open issues

## 2.5 RAN5

#### 2.5.1 Agreements

#### 2.5.2 Remaining Open issues

#### 2.5.3 Remaining Open issues with cross-WG dependencies

## 2.6 RAN6

#### 2.6.1 Agreements

#### 2.6.2 Remaining Open issues

## 3. Detailed progress in SA/CT WGs since last TSG meeting (for all involved WGs)

NOTE: This section only needs to be filled in for WI/SIs where there is a corresponding relevant WI/SI in SA/CT.

## 3.1 SAx/CTs

#### 3.1.1 Agreements with cross-TSG impacts

#### 3.1.2 Remaining Open issues with cross-TSG impacts

NOTE: This section should also flag any critical dependencies that need TSG attention.

## 4. References

NOTE: This can be e.g. a list of all related Tdocs in the affected WGs since last TSG, references to LSs, produced TRs/TSs, the work/study item description or status reports of previous TSGs.

**RAN1 #120**

R1-2500998 Draft CR for TR 38.901 to introduce channel model for ISAC Xiaomi, AT&T

R1-2500059 Email discussion summary on ISAC CM calibration assumptions Moderator (AT&T)

R1-2500071 Deployment scenarios for ISAC channel model Huawei, HiSilicon

R1-2500234 Discussion on ISAC deployment scenarios CATT, CICTCI

R1-2500266 Discussion on ISAC deployment scenarios China Telecom

R1-2500297 Discussion on ISAC deployment scenarios CMCC, China Southern Power Grid

R1-2500312 Discussion on ISAC scenario CALTTA

R1-2500360 Views on Rel-19 ISAC deployment scenarios vivo

R1-2500413 Discussion on ISAC deployment scenarios and requirements EURECOM

R1-2500417 Discussion on ISAC deployment scenarios Tiami Networks

R1-2500462 Discussion on ISAC deployment scenarios and calibration OPPO

R1-2500482 Discussion on ISAC Deployment Scenarios Tejas Network Limited

R1-2500576 Discussion on ISAC deployment scenarios ZTE Corporation, Sanechips

R1-2500659 Discussion on ISAC deployment scenarios Sony

R1-2500679 Discussion on ISAC Deployment Scenarios Nokia, Nokia Shanghai Bell

R1-2500684 Discussion on ISAC deployment scenarios SK Telecom

R1-2500691 Deployment scenarios for integrated sensing and communication with NR NVIDIA

R1-2500742 Deployment scenarios and evaluation assumptions for ISAC channel model Xiaomi

R1-2500747 Discussion on ISAC deployment scenarios InterDigital, Inc.

R1-2500755 Discussion on ISAC Deployment Scenarios Ericsson

R1-2500796 Discussion on ISAC deployment scenarios Apple

R1-2500860 Discussion on ISAC deployment scenarios Samsung

R1-2500891 Considerations on ISCA deployment scenarios CAICT

R1-2501011 Discussion on ISAC deployment scenarios for Automotive Continental Automotive

R1-2501026 Discussion on ISAC deployment scenario MediaTek Inc.

R1-2501045 Discussion on ISAC deployment scenarios LG Electronics

R1-2501059 Discussion on ISAC deployment scenarios Lenovo

R1-2501081 ISAC channel model calibration and scenario parameters AT&T, FirstNet

R1-2501135 Discussion on ISAC channel calibration BUPT, CMCC

R1-2501166 Discussion on ISAC deployment scenarios Qualcomm Incorporated

R1-2501076 FL Summary #1 on ISAC Scenarios and Calibrations Moderator (AT&T)

R1-2501077 FL Summary #2 on ISAC Scenarios and Calibrations Moderator (AT&T)

R1-2501078 FL Summary #3 on ISAC Scenarios and Calibrations Moderator (AT&T)

R1-2501574 FL Summary #4 on ISAC Scenarios and Calibrations Moderator (AT&T)

R1-2500072 Channel modelling for ISAC Huawei, HiSilicon

R1-2500179 Discussion on ISAC channel modeling Spreadtrum, UNISOC

R1-2500235 Discussion on ISAC channel modelling CATT, CICTCI

R1-2500267 Discussion on ISAC channel modelling China Telecom

R1-2500298 Discussion on channel modeling methodology for ISAC CMCC, BUPT, SEU, PML

R1-2500313 Discussion on ISAC channel modelling CALTTA

R1-2500361 Views on Rel-19 ISAC channel modelling vivo, BUPT

R1-2500414 Discussion on ISAC channel modeling EURECOM

R1-2500418 Discussion on ISAC Channel Modeling Tiami Networks

R1-2500463 Study on ISAC channel modelling OPPO

R1-2500483 Discussion on ISAC channel modelling Tejas Network Limited

R1-2500577 Discussion on channel modelling for ISAC ZTE Corporation, Sanechips

R1-2500626 ISAC Channel Modeling and Measurement Validation BUPT, CMCC, VIVO

R1-2500660 Discussion on Channel Modelling for ISAC Sony

R1-2500680 Discussion on ISAC channel modeling Nokia, Nokia Shanghai Bell

R1-2500681 Discussion on ISAC Channel Modeling NIST

R1-2500685 Discussion on ISAC channel modelling SK Telecom

R1-2500692 Channel modeling for integrated sensing and communication with NR NVIDIA

R1-2500743 Discussion on ISAC channel model Xiaomi, BJTU, BUPT

R1-2500748 Discussion on ISAC channel modeling InterDigital, Inc.

R1-2500756 Discussion on ISAC Channel Modelling Ericsson

R1-2500797 Discussion on ISAC channel modelling Apple

R1-2500861 Discussion on ISAC channel modelling Samsung

R1-2500892 Considerations on ISAC channel modelling CAICT

R1-2500979 Discussion on ISAC Channel Modelling Panasonic

R1-2501027 Discussion on ISAC channel modelling MediaTek Inc.

R1-2501046 Discussion on ISAC channel modelling LG Electronics

R1-2501060 Discussion on Channel Modelling for ISAC Lenovo

R1-2501082 Discussions on ISAC Channel Modeling AT&T

R1-2501167 Discussion on ISAC channel modelling Qualcomm Incorporated

R1-2501212 Discussion on ISAC channel modeling NTT DOCOMO, INC.

R1-2500999 Summary #1 on ISAC channel modelling Moderator (Xiaomi)

R1-2501000 Summary #2 on ISAC channel modelling Moderator (Xiaomi)

R1-2501001 Summary #3 on ISAC channel modelling Moderator (Xiaomi)

R1-2501002 Summary #4 on ISAC channel modelling Moderator (Xiaomi)

 10.11.2023 minor adaptations for RAN #102

 02.08.2023 minor adaptations for RAN #101

 26.04.2023 minor adaptations for RAN #100

 01.02.2023 minor adaptations for RAN #99

 27.10.2022 minor adaptations for RAN #98e

 01.08.2022 minor adaptations for RAN #97e

 21.05.2022 minor adaptations for RAN #96

 10.01.2022 minor adaptations for RAN #95e

 04.10.2021 minor adaptations for RAN #94e

 08.08.2021 minor adaptations for RAN #93e

 17.05.2021 minor adaptations for RAN #92e

 28.01.2021 minor adaptations for RAN #91e

 09.11.2020 minor adaptations for RAN #90e

 31.08.2020 minor adaptations for RAN #89e

 20.04.2020 minor adaptations for RAN #88e

 18.02.2020 minor adaptations for RAN #87e

 14.11.2019 minor adaptations for RAN #86

 18.08.2019 minor adaptations for RAN #85

 12.05.2019 minor adaptations for RAN #84

 27.02.2019 minor adaptations for RAN #83

 21.11.2018 completion levels with colours added (for RAN #82)

v04.81 31.07.2018 simplification of template and addition of cross-TSG aspects (for RAN #81)

v04.80 21.05.2018 minor adaptations for RAN #80

v04.79 26.02.2018 minor adaptations for RAN #79

v04.78 18.11.2017 minor adaptations for RAN #78

v04.77 06.08.2017 minor adaptations for RAN #77

v04.76 15.05.2017 minor adaptations for RAN #76

v04.75 31.01.2017 minor adaptations for RAN #75

v04.74 28.10.2016 minor adaptations for RAN #74

v04.73 01.09.2016 adaptations for RAN #73 (time units in extra Excel table, RAN6 reporting included)

v04.72 26.05.2016 adaptations for RAN #72 (introduction of NR & GERAN TUs)

v04.71 10.02.2016 minor adaptations for RAN #71

v04.70 30.10.2015 minor adaptations for RAN #70

v04.69 12.08.2015 minor adaptations for RAN #69

v04.68 21.05.2015 minor adaptations for RAN #68

v04.67 01.02.2015 minor adaptations for RAN #67

v04.66 16.11.2014 minor adaptations for RAN #66

v04.65 16.08.2014 minor adaptations for RAN #65

v04.64 22.05.2014 minor adaptations for RAN #64

v04.63 24.01.2014 restructuring for RAN #63 to cover Core & Perf. in one doc file

v03.62 11.11.2013 section 1.2.3 adapted for RAN #62

v03 11.08.2013 section 1.2.3 added on time budget

v02 07.05.2010 history added, some spelling corrections

v01 13.11.2009 First version of the template