**Third Generation Partnership Project (3GPP™)**

**Meeting Report  
for  
TSG SA WG3  
meeting: 95**

**Reno, US, 06/05/2019 to 10/05/2019**

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## 1 Opening of the meeting

The vice Chair Alf Zugenmaier(NTT-Docomo) welcomed the attendees to Reno.

Adrian Escott (Qualcomm) gave a short speech on behalf of North American Friends of 3GPP (NAF).

The vice Chair announced that the next meeting in Sapporo would become a Bis meeting instead of adhoc (voting rights recorded and so on).

## 2 Approval of Agenda and Meeting Objectives

**S3-191100 Agenda**

*Type: agenda For: (not specified)  
 Source: WG Vice Chairman*

**Decision:** The document was **approved**.

## 3 IPR and Anti-Trust Law Reminder

The attention of the delegates to the meeting of this Technical Specification Group was drawn to the fact that 3GPP Individual Members have the obligation under the IPR Policies of their respective Organizational Partners to inform their respective Organizational Partners of Essential IPRs they become aware of.

The delegates were asked to take note that they were thereby invited:

to investigate whether their organization or any other organization owns IPRs which were, or were likely to become Essential in respect of the work of 3GPP.

to notify their respective Organizational Partners of all potential IPRs, e.g., for ETSI, by means of the IPR Information Statement and the Licensing declaration forms.

The attention of the delegates to the meeting was drawn to the fact that 3GPP activities were subject to all applicable antitrust and competition laws and that compliance with said laws was therefore required by any participant of the meeting, including the Chairman and Vice-Chairmen and were invited to seek any clarification needed with their legal counsel. The leadership would conduct the present meeting with impartiality and in the interests of 3GPP.

Delegates were reminded that timely submission of work items in advance of TSG/WG meetings was important to allow for full and fair consideration of such matters. Delegates were reminded of the fair network use rules established by the PCG:

1. Users shall not use the network to engage in illegal activities. This includes activities such as copyright violation, hacking, espionage or any other activity that may be prohibited by local laws.

2. Users shall not engage in non-work related activities that are consume excessive bandwidth or cause significant degradation of the performance of the network.

## 4 Meeting Reports

### 4.1 Approval of the report from previous SA3 meeting(s)

**S3-191101 Report from SA4#94AH**

*Type: report For: (not specified)  
 Source: MCC*

**Decision:** The document was **approved**.

**S3-191598 Report from SA3#94**

*Type: report For: Approval  
 Source: MCC*

**Decision:** The document was **approved**.

### 4.2 Report from SA Plenary

**S3-191103 Report from last SA meeting**

*Type: report For: (not specified)  
 Source: WG Vice Chairman (Qualcomm)*

**Decision:** The document was **noted**.

### 4.3 Report from SA3-LI

## 5 Items for early consideration

## 6 Reports and Liaisons from other Groups

### 6.1 3GPP Working Groups

**S3-191119 Reply LS on securing warning messages in ePWS**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: C1-191522*

**Decision:** The document was **noted**.

**S3-191120 Reply LS on securing warning messages in ePWS**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: S1-190503*

**Discussion:**

BT: PWS has regulatory requirements identified, but SA1 says that this is not the case.

Vice Chair: maybe this refers to ePWS, not PWS.

Nokia: no specific requirements for IoT devices as opposed to humans.

Vodafone: what does an IoT unit do with this message?

Ericsson: CT1 decides the specific requirements and they said in the other LS that they haven't concluded this.

Vodafone: if the early warning message is a piece of text we would have concerns about this.

Vodafone was to ask their SA1 delegates about this for more clarification and maybe respond to SA1. This was taken offline.

Nokia: IoT devices can be very different.

**Decision:** The document was **noted**.

**S3-191125 Reply LS on EAS-C&U support**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: C3-191167*

**Decision:** The document was **noted**.

**S3-191126 LS on usage of EPLMNs**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: S2-1904825*

**Discussion:**

Related discussion paper in 462.

**Decision:** The document was **replied to in S3-191599**.

**S3-191599 Reply to: LS on usage of EPLMNs**

*Type: LS out For: approval  
 to SA2, cc CT1  
 Source: Vodafone*

**Decision:** The document was **approved**.

**S3-191462 Discussion on security aspects of EPLMN in LS from S2 (S3-191126)**

*Type: discussion For: Discussion  
 Source: Vodafone GmbH*

**Discussion:**

Ericsson wasn't sure about proposal C, although they supported a and b. This was taken offline.

Qualcomm was fine with informing SA2, but not sure about sending an LS to CT1. It's up to SA3 to work on the security, CT1 is not involved in that.

**Decision:** The document was **noted**.

**S3-191127 Reply LS on Interim conclusions for SA2 study on Radio Capabilities Signalling Optimisations (FS\_RACS)**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: C4-190346*

**Decision:** The document was **noted**.

**S3-191129 Reply LS on GTP Recovery Counter & GSN node behaviour**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: C4-190485*

**Decision:** The document was **noted**.

**S3-191135 LS on Handling of non-essential corrections (non-FASMO) CRs and non-backwards compatible CRs**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: CP-190218*

**Decision:** The document was **noted**.

**S3-191148 LS on broadcast assistance data delivery**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: R2-1905462*

**Discussion:**

Qualcomm had a discussion paper in tdoc 520 proposing a reply. CATT also proposed a reply in 350.

**Decision:** The document was **replied to in S3-191600**.

**S3-191600 Reply to: LS on broadcast assistance data delivery**

*Type: LS out For: approval  
 to RAN2, cc SA2,RAN3  
 Source: Intel*

**Decision:** The document was **approved**.

**S3-191520 Broadcast of Location Assistance Data for NR**

*Type: discussion For: Decision  
 Source: Qualcomm Incorporated*

**Discussion:**

Ericsson commented that integrity protection should be included here.

Qualcomm, Intel: no need to reopen this discussion.

This was taken offline.

**Decision:** The document was **noted**.

**S3-191154 Reply LS on authentication of group of IoT devices**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: S1-190501*

**Decision:** The document was **replied to in S3-191601**.

**S3-191601 Reply to: Reply LS on authentication of group of IoT devices**

*Type: LS out For: approval  
 to SA1, cc SA2,RAN2  
 Source: Huawei*

**Decision:** The document was **approved**.

**S3-191244 Discussion paper Security of Bulk IoT operations**

*Type: discussion For: Endorsement  
 Source: Huawei, Hisilicon*

**Abstract:**

This contribution is a discussion paper that is based on the SA1 LS (S3-190601) which address the issue of IoT Group Authentication.

**Discussion:**

Vodafone: it misses the point abut auth based on key sharing.

ORANGE: SA2 and RAN groups should take care of this as well, not standalone SA3 work.

Vodafone: IoT should be more secure, not less secure in our view.

Huawei: SA1 is asking us about the authentication procedure.

ORANGE: this is part of the registration procedure handled by SA2.

IDEMIA agreed that his was to be treated firstly by SA2.

BT: use case is about enabling/disabling large number of devices, so you should make it more secure. The term "operations" is more general.

Huawei didn’t understand why this was necessarily less secure as stated by some companies.

ORANGE: send an LS to SA1. Sony added that SA2 should be added to the recipients as well.

The study item in 245 was postponed given that a response from SA1 was needed.

**Decision:** The document was **noted**.

### 6.2 IETF

### 6.3 ETSI SAGE

NCSC: there has been some discussions on the performance of the algorithms that need to be done by the companies offline.

### 6.4 GSMA

**S3-191137 GSMA DESS - Diameter IPX Network End-to-End Security Solution**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: GSMA*

**Discussion:**

Specific action for SA3, so this LS was postponed for the next meeting.

**Decision:** The document was **postponed**.

### 6.5 OMA

### 6.6 TCG

**S3-191108 TCG progress report**

*Type: other For: Information  
 Source: InterDigital*

**Abstract:**

This contribution provides a brief incremental summary of the progress in TCG Working Groups as of April 2019.

**Discussion:**

• Publication of new or revised deliverables (incremental changes from the status reported at SA3#94):

o TCG TSS 2.0 TAB and Resource Manager – published April 2019

o TCG TSS 2.0 TPM Command Transmission Interface (TCTI) – published April 2019

o TCG TSS 2.0 System Level API (SAPI) – public review April 2019

o TCG TSS 2.0 Enhanced System Level API (ESAPI) – public review April 2019

o TCG PC Client Device Driver Design Principles for TPM 2.0 – public review February 2019

o TCG Platform Certificate Profile – public review February 2019

o TCG Trusted Platform Module 2.0 r1.50 – public review January 2019

o TCG TSS 2.0 Response Code API – public review January 2019

o TCG Trusted Attestation Protocol (TAP) Information Model – public review January 2019

2. Meetings

• TCG Members Meeting in Warsaw, Poland – 10-13 June 2019

• TCG Annual Members Meeting in Toronto, Canada - 15-17 October 2019

• MPWG meets every Thursday at 10-11 ET

• TMS WG meets every Monday and Friday at 12-13 ET

• CyRes WG meets every Wednesday at 11-12:30 ET

**Decision:** The document was **noted**.

### 6.7 oneM2M

Meeting in San Diego the next week. BT is Rapporteur of two new specifications on secure storage and authentication.

### 6.8 TC-CYBER

Alex (BT) gave an update on their work:

TC Cyber continuing to work on a wide range of Cyber Security issues.

Recently published Consumer IoT security standard TS 103.645 due to be developed into an ETSI EN.

Reminder of ETSI Security week starting w/c 17th June.

Airbus: Quantum safe cryptography should take into account SA3's work in order to avoid overlapping and different solutions. BT responded that NCSC had a common delegate so the alignment could be ensured.

### 6.9 ETSI NFV

Alex gave an update on ETSI NFV:

ISG NFV Phase 4 scope being finalised.

Work in NFV SEC progressing (nothing specific to highlight at SA3#95).

### 6.10 CVDs and Research

MCC commented that there was a paper awaiting response from the CVD process.

BT commented that analysis of academic papers should not be analysed in the list, but SA3 should focus on the important ones. How do we decide which papers are important?

It was also commented how to comment confidentially on these papers since all the SA3 work was public.

Qualcomm: we as SA3 comment on papers that have been published.

This was taken offline, since the description of the CVD needed to be clarified. MCC commented that the purpose of the CVD was to work on the responses before these papers were published. Huawei stated that the group working on the CVD should be extended.

This was taken offline.

**S3-191623 Way forward in CVD and research**

*Type: discussion For: discussion  
 Source: CableLabs*

**Discussion:**

Qualcomm: published papers can be discussed publicly in the SA3 mail list.

Vodafone: uncomfortable to discuss these papers in an open meeting.

It was decided to continue the discussions in the next meeting on how to address the academic papers. Qualcomm warned about legal issues if a private discussion group for SA3 was created, so they wanted to check back at home the implications of this.

MCC reminded that there existed a closed group for VCD where papers could be discussed before their publication and a first response could be given before discussions in SA3.

**Decision:** The document was **noted**.

**S3-191743 Handling of UE radio network capabilities in 4G and 5G**

*Type: LS in For: discussion  
 Original outgoing LS: -, to -, cc -  
 Source: GSMA*

**Discussion:**

Vodafone: RAN2 should do something first, and they are meeting next week. Our next meeting is after SA, so we would have to have a conference call to address this to meet the deadline.

Qualcomm: the issue is in RAN. It's a gNodeB configuration.

It's a "should" requirement from the network side to first activate security.

NTT-Docomo: we could have a conference call to address this.

Qualcomm: RAN is meeting next week and then in August.

It was decided to postpone and come up with a conference call between June and August if necessary.

**Decision:** The document was **postponed**.

### 6.11 Other Groups

**S3-191136 LS on the availability of and requesting feedback on the stable draft TR 103 582 from ETSI STF555 - "Study of use cases and communications involving IoT devices in emergency situations"**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: ETSI SC EMTEL*

**Discussion:**

Vodafone: we already missed the deadline given in here, so I propose to postpone this for the next meeting.

**Decision:** The document was **postponed**.

**S3-191158 Approval of Smart Secure Platform requirement specification**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: ETSI TC SCP*

**Decision:** The document was **noted**.

**S3-191159 LS/r on SG17 work item X.5Gsec-q: Security guidelines for applying quantum-safe algorithms in 5G systems**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: ITU-T SG17*

**Decision:** The document was **noted**.

**S3-191160 LS on SG17 new work item X.5Gsec-ecs: Security Framework for 5G Edge Computing Services**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: ITU-T SG17*

**Discussion:**

China Unicom presented the document and commented that they were also participating.

**Decision:** The document was **noted**.

## 7 Work Areas

### 7.1 Security aspects of 5G System - Phase 1 (5GS\_Ph1-SEC) (Rel-15)

#### 7.1.1 Key hierarchy

#### 7.1.2 Key derivation

**S3-191203 KAUSF desynchronization problem and solutions**

*Type: discussion For: Information  
 33.501 v..  
 Source: NEC Europe Ltd*

**Abstract:**

The content in this discussion tdoc was discussed during the conference call on 25th Apr. 2019. This tdoc is 'officially' submitted as a reference and record keeping purpose only.

**Discussion:**

Superseded by tdoc 204.

**Decision:** The document was **noted**.

**S3-191204 KAUSF desynchronization problem and solutions – updated version after conf call on 25 Apr.**

*Type: discussion For: Endorsement  
 33.501 v..  
 Source: NEC Europe Ltd*

**Abstract:**

This discussion tdoc reflects the outcome of conf call on 25th Apr and supersedes S3-191203.

**Discussion:**

Qualcomm: we don’t agree with bullets 3,4 and 5.

More analysis is needed and it should be considered for Rel-16, not Rel-15. Ericsson agreed with Qualcomm.

NEC was fine with having the work in Rel-16 instead of Rel-15, for bullets 3-5. Qualcomm didn’t see a need for bullets 3-5, independently from the release.

Huawei only supported bullet 2.

Samsung didn't agree with 3-5 either.

Nokia needed to look at proposal 2, not agreeing on the rest.

**Decision:** The document was **noted**.

**S3-191208 UDM triggered authentication**

*Type: draftCR For: Discussion  
 33.501 v15.4.0  
 Source: NEC Europe Ltd*

**Discussion:**

More analysis was needed on this proposal.

Ericsson: if this is for Rel-16 we need a new Work Item and it is too early for that.

**Decision:** The document was **noted**.

**S3-191205 Aligning the storage timing of KAUSF in 5G AKA with EAP-AKA'**

*Type: CR For: Agreement  
 33.501 v15.4.0 CR-0564 Cat: F (Rel-15)  
  
 Source: NEC Europe Ltd*

**Abstract:**

Changes in 5G AKA procedure to store the KAUSF after the authentication is completed.

**Discussion:**

Nokia didn’t agree with the changes.

It seemed that companies were OK with the idea, but the wording was not correct.

Qualcomm: no impact on the ME.

**Decision:** The document was **revised to S3-191603**.

**S3-191603 Aligning the storage timing of KAUSF in 5G AKA with EAP-AKA'**

*Type: CR For: Agreement  
 33.501 v15.4.0 CR-0564 rev 1 Cat: F (Rel-15)  
  
 Source: NEC Europe Ltd*

(Replaces S3-191205)

**Decision:** The document was **agreed**.

**S3-191206 Synchronization of KAUSF between AUSF and UE**

*Type: draftCR For: Discussion  
 33.501 v15.4.0  
 Source: NEC Europe Ltd*

**Decision:** The document was **not pursued**.

**S3-191209 KAUSF key setting in EAP AKA’**

*Type: draftCR For: Discussion  
 33.501 v15.4.0  
 Source: NEC Europe Ltd*

**Decision:** The document was **not pursued**.

**S3-191207 Using Key Identifiers between AUSF and UE for UPU and SoR**

*Type: draftCR For: Discussion  
 33.501 v15.4.0  
 Source: NEC Europe Ltd*

**Decision:** The document was **noted**.

**S3-191446 Rectifying incorrect limitation for horiz/vert key derivation**

*Type: CR For: Agreement  
 33.501 v15.4.0 CR-0593 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Decision:** The document was **revised to S3-191604**.

**S3-191604 Rectifying incorrect limitation for horiz/vert key derivation**

*Type: CR For: Agreement  
 33.501 v15.4.0 CR-0593 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces S3-191446)

**Decision:** The document was **agreed**.

**S3-191367 Corrections on the s-Kgnb derivation**

*Type: CR For: Approval  
 33.501 v15.4.0 CR-0577 Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Discussion:**

Ericsson: Wrong key name and second change does not need to be there.

**Decision:** The document was **revised to S3-191605**.

**S3-191605 Corrections on the s-Kgnb derivation**

*Type: CR For: Approval  
 33.501 v15.4.0 CR-0577 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

(Replaces S3-191367)

**Decision:** The document was **agreed**.

#### 7.1.3 Mobility

**S3-191407 Clarification on securing the procedure of idle mobility from 5GS to EPS over N26 interface**

*Type: CR For: Approval  
 33.501 v15.4.0 CR-0583 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Discussion:**

Nokia: add explanation on this in 8.5.1.

Ericsson: why a separate clause? Just add a note.

Vodafone: is this essential? Add the word in the title.

Ericsson: all CRs cat-F are supposed to be essential anyway. No need for this.

**Decision:** The document was **revised to S3-191606**.

**S3-191606 Clarification on securing the procedure of idle mobility from 5GS to EPS over N26 interface**

*Type: CR For: Approval  
 33.501 v15.4.0 CR-0583 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

(Replaces S3-191407)

**Decision:** The document was **agreed**.

**S3-191411 Registration failure in registration procedure with AMF reallocation caused by slicing**

*Type: discussion For: Discussion  
 33.501 v..  
 Source: Huawei, Hisilicon*

**Discussion:**

Vodafone: this is lack of efficiency, not a security hole.

Huawei: you will never be registered successfully, it's a denial of service.

Ericsson: step 7 discarded by UE according to Huawei, but we don’t agree.

The Vice Chair (NTT-Docomo) commented that confusion with the CT1 specification seemed to be the source of the discussion. An LS could be sent to them.

Qualcomm agreed with sending an LS to CT1 ccSA2. It was a CT1 decision according to them. The vice chair asked if this was a Rel-15 issue, and Qualcomm replied that Rel-15 shouldn't be ruled out.

This was taken offline.

**Decision:** The document was **noted**.

**S3-191412 Solving registration failure in initial registration procedure with AMF reallocation**

*Type: CR For: Approval  
 33.501 v15.4.0 CR-0585 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Discussion:**

There was an agreement that this was a problem to be fixed, but Qualcomm preferred to contact SA2 and CT1 as well with an LS before agreeing with this CR.

It was agreed the existence of an issue that needed to be solved; it was asked to be minuted "the issues in tdoc 411 need further investigation."

The Chair declared the CRs as not pursued but pointed out that Huawei could bring back revisions of them to continue discussions in the next meeting.

**Decision:** The document was **not pursued**.

**S3-191413 Solving registration failure in initial registration procedure with AMF reallocation**

*Type: CR For: Approval  
 33.501 v15.4.0 CR-0586 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Decision:** The document was **not pursued**.

**S3-191419 NAS recovery with the source AMF in handover failure**

*Type: CR For: Approval  
 33.501 v15.4.0 CR-0589 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Discussion:**

Related to the LS in 147.

Vodafone: this needs rewording.

**Decision:** The document was **merged**.

**S3-191449 Verification failure of NAS container**

*Type: CR For: Agreement  
 33.501 v15.4.0 CR-0596 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Discussion:**

Intel didn’t see the need of this.

How does the AMF will know to do the same?

**Decision:** The document was **merged**.

**S3-191512 Clarification for the NAS MAC failure case in N2 HO**

*Type: CR For: Agreement  
 33.501 v15.4.0 CR-0604 Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Discussion:**

Vodafone: wording issues.

Huawei: we are not addressing how often this happens. It's a new feature and if this happens often the RAN2 LS is a good place to start, but we need to agree on how often this happens. Ericsson commented that this was out of scope of SA3.

**Decision:** The document was **revised to S3-191607**.

**S3-191607 Clarification for the NAS MAC failure case in N2 HO**

*Type: CR For: Agreement  
 33.501 v15.4.0 CR-0604 rev 1 Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated,Huawei,Ericsson*

(Replaces S3-191512)

**Decision:** The document was **agreed**.

#### 7.1.4 AS security

**S3-191143 Reply LS on Dual Connectivity**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: R2-1902677*

**Discussion:**

450 related to this LS.

**Decision:** The document was **noted**.

**S3-191144 Reply LS on Enforcement of maximum supported data rate for integrity protection**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: R2-1902700*

**Decision:** The document was **noted**.

**S3-191379 Add details on handling UP security in RRC inactive scenario**

*Type: CR For: Approval  
 33.501 v15.4.0 CR-0578 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Discussion:**

Qualcomm needed to take this offline.

**Decision:** The document was **revised to S3-191609**.

**S3-191609 Add details on handling UP security in RRC inactive scenario**

*Type: CR For: Approval  
 33.501 v15.4.0 CR-0578 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

(Replaces S3-191379)

**Decision:** The document was **agreed**.

**S3-191395 Discussion on Key handling on UE for Reestablishment Procedure in case of N2 handover failure**

*Type: discussion For: Endorsement  
 33.501 v..  
 Source: Huawei, Hisilicon*

**Decision:** The document was **noted**.

**S3-191394 CR to TS33501-RRC Reestablishment security handling when N2 Handover fails**

*Type: CR For: Approval  
 33.501 v15.4.0 CR-0582 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Discussion:**

Qualcomm: this is not needed in Rel-15 and it should be discussed separately in Rel-16. Ericsson agreed: RAN groups consider this as a rare case and they don’t want to optimize for this.

Huawei: let's ask RAN2 about their opinion on this. It is not a radio link failure.

Ericsson: this is to be handled by RAN2, no LS needed. Qualcomm agreed. Huawei considered it to be a valid security issue.

There was no agreement to have this for Rel-15, and more offline discussion was needed for Rel-16.

**Decision:** The document was **not pursued**.

**S3-191450 Security algorithm change by SN**

*Type: CR For: Agreement  
 33.501 v15.4.0 CR-0597 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Discussion:**

Huawei: this change is not needed.

**Decision:** The document was **not pursued**.

**S3-191483 CR to 33.501 6.6.4 UP integrity mechanisms - UE to gNB integrity protection check failure reporting**

*Type: CR For: Approval  
 33.501 v15.4.0 CR-0601 Cat: C (Rel-16)  
  
 Source: BT plc*

**Discussion:**

It was commented that TEIx for Rel-16 category-B and C was not recommended anymore by SA. The WI code would have to be taken into account.

Deutsche Telekom: do we want to make this mandatory?

Qualcomm: RAN2 asked SA3 last year about this being necessary and now we are reopening the issue changing our mind.

Nokia: network and UE can verify that the integrity is failing already. We don’t agree with this change either.

Samsung: When the PDCP error happens, it is reported to the RRC layer. RRC layer knows the reason why the packet is dropped. RAN2 implements the behaviour on how to act in case there is such failure.

Qualcomm: this is a RAN level discussion. They discussed this in Rel-15 and there was no agreement.

Lenovo didn’t agree with this either.

This was taken offline.

**Decision:** The document was **not pursued**.

**S3-191705 Security of RRC Reestablishment during N2 HO**

*Type: LS out For: Approval  
 to RAN2  
 Source: Huawei*

**Discussion:**

Qualcomm and Ericsson were against sending this LS. Huawei pointed out that most companies were OK with this.

**Decision:** The document was **noted**.

#### 7.1.5 NAS security

**S3-191147 LS on Security failure of NAS container in HO command**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: R2-1905460*

**Discussion:**

419,449 and 512 handle this issue.

**Decision:** The document was **replied to in S3-191608**.

**S3-191608 Reply to: LS on Security failure of NAS container in HO command**

*Type: LS out For: approval  
 to RAN2,CT1  
 Source: Ericsson*

**Decision:** The document was **approved**.

**S3-191124 LS on Multiple NAS connections and inter-system change from S1 mode to N1 mode in 5GMM-CONNECTED mode**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: C1-192804*

**Discussion:**

Tdocs 452, 501, 502,503 are related documents.

Tentative response from Qualcomm in 505.

**Decision:** The document was **replied to in S3-191610**.

**S3-191346 CR to TS33.501 - NAS SMC figure correction**

*Type: CR For: (not specified)  
 33.501 v15.4.0 CR-0576 Cat: F (Rel-15)  
  
 Source: CATT*

**Decision:** The document was **agreed**.

**S3-191387 Clarification for Initial NAS Message Protection**

*Type: CR For: Approval  
 33.501 v15.4.0 CR-0581 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Discussion:**

Ericsson: valid scenario but the additional changes are already described somewhere else.

This had to be taken offline.

**Decision:** The document was **revised to S3-191611**.

**S3-191611 Clarification for Initial NAS Message Protection**

*Type: CR For: Approval  
 33.501 v15.4.0 CR-0581 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

(Replaces S3-191387)

**Decision:** The document was **agreed**.

**S3-191447 UP policy handling in case of unauthenticated emergency calls**

*Type: CR For: Agreement  
 33.501 v15.4.0 CR-0594 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Discussion:**

CableLabs agreed with the change, it clarified an ambiguity.

Alex (BT): this wording infers that the AMF may not accept unauthentication in emergency calls and this is a requirement for the network. The problem is in "in the case" words. This change was removed.

Qualcomm: ME is not affected.

**Decision:** The document was **revised to S3-191612**.

**S3-191612 UP policy handling in case of unauthenticated emergency calls**

*Type: CR For: Agreement  
 33.501 v15.4.0 CR-0594 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces S3-191447)

**Decision:** The document was **agreed**.

**S3-191448 Remove EN in clause 10.2.2.2**

*Type: CR For: Agreement  
 33.501 v15.4.0 CR-0595 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Discussion:**

Huawei: specification of the messages is a CT1 issue.

There were different concerns about this and Ericsson decided to bring it back during the next meeting.

**Decision:** The document was **not pursued**.

**S3-191501 Correction to the handling of security context in the multi-NAS scenario**

*Type: CR For: Agreement  
 33.501 v15.4.0 CR-0602 Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Decision:** The document was **revised to S3-191783**.

**S3-191783 Correction to the handling of security context in the multi-NAS scenario**

*Type: CR For: Agreement  
 33.501 v15.4.0 CR-0602 rev 1 Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated,Ericsson,Huawei*

(Replaces S3-191501)

**Decision:** The document was **agreed**.

**S3-191502 Description of issue of clashing ngKSIs with multi-NAS security**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

Huawei considered this as a very rare case.

Ericsson:

**Decision:** The document was **noted**.

**S3-191503 Clashing ngKSI for different security contexts in multi-NAS scenarios**

*Type: CR For: Agreement  
 33.501 v15.4.0 CR-0603 Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Discussion:**

Qualcomm will bring a revised version for the next meeting.

**Decision:** The document was **not pursued**.

**S3-191122 LS on handling of non-zero ABBA value in Release 15**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: C1-191686*

**Decision:** The document was **replied to in S3-191613**.

**S3-191504 Response LS on handling of non-zero ABBA value in Release 15**

*Type: LS out For: Approval  
 to CT1  
 Source: Qualcomm Incorporated*

**Decision:** The document was **revised to S3-191613**.

**S3-191613 Response LS on handling of non-zero ABBA value in Release 15**

*Type: LS out For: Approval  
 to CT1  
 Source: Qualcomm Incorporated*

(Replaces S3-191504)

**Decision:** The document was **approved**.

**S3-191505 Response LS on Multiple NAS connections and inter-system change from S1 mode to N1 mode in 5GMM-CONNECTED mode**

*Type: LS out For: Approval  
 to CT1  
 Source: Qualcomm Incorporated*

**Decision:** The document was **revised to S3-191610**.

**S3-191610 Response LS on Multiple NAS connections and inter-system change from S1 mode to N1 mode in 5GMM-CONNECTED mode**

*Type: LS out For: Approval  
 to CT1  
 Source: Qualcomm Incorporated*

(Replaces S3-191505)

**Decision:** The document was **approved**.

**S3-191549 Clarification to Initial NAS message protection**

*Type: CR For: Approval  
 33.501 v15.4.0 CR-0607 Cat: F (Rel-15)  
  
 Source: Samsung*

**Discussion:**

This had to be discussed offline and Samsung will bring a modified version for the next meeting.

**Decision:** The document was **not pursued**.

#### 7.1.6 Security context

#### 7.1.7 Visibility and Configurability

#### 7.1.8 Primary authentication

**S3-191230 Discussion paper on Re-authentication and UE context handling**

*Type: discussion For: Endorsement  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Ericsson: number 6 not to be handled in Rel-16. They didn't agree with the rest of the points.

Qualcomm: this could create more issues than actually solving anything.

Samsung supported point 6 (for Rel-16) but agreed with Qualcomm for the rest, on being careful with how to handle the issue.

BT didn't agree with point 6 on the wording "in any scenario".

This was taken offline

**Decision:** The document was **noted**.

**S3-191589 Discussion on removing the authentication result in the UDM**

*Type: discussion For: Discussion  
 33.501 v..  
 Source: Huawei, Hisilicon*

(Replaces S3-191417)

**Discussion:**

Ericsson: the attack is valid in a very rare case.

There wasn't much support for this and the accompanying CR was not pursued.

**Decision:** The document was **noted**.

**S3-191492 Removing the authentication result in the UDM**

*Type: CR For: Approval  
 33.501 v15.4.0 CR-0588 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

(Replaces S3-191418)

**Decision:** The document was **not pursued**.

**S3-191444 Discussion on missing AMF/SEAF behaviour**

*Type: discussion For: Endorsement  
 33.501 v..  
 Source: Ericsson, CableLabs*

**Discussion:**

Huawei: maybe we don’t need to cope with this until someone comes with a security threat and attack related to this. If not, it would be a protocol error left for stage 3.

ORANGE: this is an error case, agree with Huawei.

Nokia didn't agree either.

Ericsson asked what the right behaviour was. Qualcomm answered that this case scenario would not work, it doesn't matter asking about the behaviour.

**Decision:** The document was **noted**.

**S3-191445 Missing AMF/SEAF behaviour**

*Type: CR For: Agreement  
 33.501 v15.4.0 CR-0592 Cat: F (Rel-15)  
  
 Source: Ericsson, CableLabs*

**Decision:** The document was **not pursued**.

**S3-191417 Discussion on removing the authentication result in the UDM**

*Type: discussion For: Discussion  
 33.501 v..  
 Source: Huawei, Hisilicon*

**Decision:** The document was **revised to S3-191589**.

**S3-191418 Removing the authentication result in the UDM**

*Type: CR For: Approval  
 33.501 v15.4.0 CR-0588 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Decision:** The document was **revised to S3-191492**.

#### 7.1.9 Secondary authentication

#### 7.1.10 Interworking

**S3-191451 Verification failure of NAS MAC in NAS container at 4G to 5G HO**

*Type: CR For: Agreement  
 33.501 v15.4.0 CR-0598 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Decision:** The document was **merged**.

**S3-191452 Handling of 5G security contexts with multiple NAS connections at 4G to 5G HO**

*Type: CR For: Agreement  
 33.501 v15.4.0 CR-0599 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Decision:** The document was **merged**.

**S3-191513 Clarification for the NAS MAC failure case in interworking**

*Type: CR For: Agreement  
 33.501 v15.4.0 CR-0605 Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Decision:** The document was **revised to S3-191614**.

**S3-191614 Clarification for the NAS MAC failure case in interworking**

*Type: CR For: Agreement  
 33.501 v15.4.0 CR-0605 rev 1 Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated,Ericsson*

(Replaces S3-191513)

**Decision:** The document was **agreed**.

#### 7.1.11 non-3GPP access

#### 7.1.12 NDS

#### 7.1.13 Service based architecture

##### 7.1.13.1 Interconnect (SEPP related)

**S3-191128 Reply LS on Verification of PLMN-ID in the SEPP**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: C4-190348*

**Decision:** The document was **replied to in S3-191615**.

**S3-191615 Reply to: Reply LS on Verification of PLMN-ID in the SEPP**

*Type: LS out For: approval  
 to CT4  
 Source: Deutsche Telekom*

**Decision:** The document was **approved**.

**S3-191185 Addition of missing SEPP requirement on JOSE-patch validation**

*Type: CR For: Approval  
 33.501 v15.4.0 CR-0561 Cat: F (Rel-15)  
  
 Source: Deutsche Telekom AG*

**Discussion:**

Nokia: modify the following sentence instead of adding the new sentence.

**Decision:** The document was **revised to S3-191616**.

**S3-191616 Addition of missing SEPP requirement on JOSE-patch validation**

*Type: CR For: Approval  
 33.501 v15.4.0 CR-0561 rev 1 Cat: F (Rel-15)  
  
 Source: Deutsche Telekom AG*

(Replaces S3-191185)

**Decision:** The document was **agreed**.

**S3-191316 Name for N32 application layer security**

*Type: discussion For: Endorsement  
 33.501 v..  
 Source: Ericsson*

**Discussion:**

Vodafone: what happens if other people are using the acronym in their specs? SA has asked for essential corrections in Rel-15.

NTT-Docomo: the current acronym is heavily overloaded.

NCSC: change the acronym, it's unlikely that many specs are using it.

Ericsson:: we would tell CT4 mainly.

**Decision:** The document was **noted**.

**S3-191617 Name clarification for N32 security**

*Type: CR For: Agreement  
 33.501 v15.4.0 CR-0608 Cat: F (Rel-15)  
  
 Source: Ericsson,NCSC*

**Decision:** The document was **agreed**.

**S3-191618 LS on clarification for N32 security**

*Type: LS out For: Approval  
 to CT4,CT,SA  
 Source: Ericsson*

**Discussion:**

The LS will attach the CR in 617 and sent to SA and CT so the Plenary can decide whether to accept it or not.

**Decision:** The document was **approved**.

##### 7.1.13.2 Other

**S3-191314 Token-based authorization for NRF's management and discovery services**

*Type: CR For: Agreement  
 33.501 v15.4.0 CR-0574 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Discussion:**

Ericsson: this is alignment with CT4.

Huawei preferred to keep the note.

BT: the cover sheet does not correspond to the clause that is being changed. It is not the right place to make the change.

Ericsson commented that if this wasn't accepted, CT4 would have to revert their decision.

**Decision:** The document was **revised to S3-191619**.

**S3-191619 Token-based authorization for NRF's management and discovery services**

*Type: CR For: Agreement  
 33.501 v15.4.0 CR-0574 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces S3-191314)

**Discussion:**

Huawei didn’t agree with the changes.

**Decision:** The document was **not pursued**.

**S3-191315 Slice information for token-based authorization**

*Type: CR For: Agreement  
 33.501 v15.4.0 CR-0575 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Discussion:**

Deutsche Telekom: isn’t this a Rel-16 issue? We have a key issue in Rel-16 about this.

Ericsson: we do it for Rel-15 then enhancements in Rel-16.

**Decision:** The document was **revised to S3-191621**.

**S3-191621 Slice information for token-based authorization**

*Type: CR For: Agreement  
 33.501 v15.4.0 CR-0575 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces S3-191315)

**Decision:** The document was **agreed**.

**S3-191522 Discussion of SBA authorization selection**

*Type: discussion For: Endorsement  
 33.501 v..  
 Source: China Mobile*

**Discussion:**

Deutsche Telekom: we should involve CT4 as well and have a discussion on whether we want to do it this way.

Nokia didn’t agree with the proposal: Authentication during discovery and authentication during service access are not mutually exclusive as the paper claims.

**Decision:** The document was **noted**.

**S3-191524 Proposal of SBA authorization revision**

*Type: CR For: Approval  
 33.501 v15.4.0 CR-0606 Cat: F (Rel-16)  
  
 Source: China Mobile*

**Decision:** The document was **not pursued**.

#### 7.1.14 Privacy

**S3-191121 LS on Use of SUCI in NAS signalling**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: C1-191685*

**Decision:** The document was **replied to in S3-191752**.

**S3-191752 Reply to: LS on Use of SUCI in NAS signalling**

*Type: LS out For: approval  
 to CT1  
 Source: Intel*

**Decision:** The document was **approved**.

**S3-191305 Discussion on LS on Use of SUCI in NAS signalling**

*Type: discussion For: Endorsement  
 33.501 v..  
 Source: ZTE Corporation*

**Decision:** The document was **noted**.

**S3-191306 Modification on Use of SUCI in NAS signalling**

*Type: CR For: Agreement  
 33.501 v15.4.0 CR-0572 Cat: F (Rel-15)  
  
 Source: ZTE Corporation*

**Discussion:**

Qualcomm: it correctly reflects what's happening in CT1. It needs to be verified if this is acceptable from security point of view.

This was taken offline.

**Decision:** The document was **revised to S3-191704**.

**S3-191704 Modification on Use of SUCI in NAS signalling**

*Type: CR For: Agreement  
 33.501 v15.4.0 CR-0572 rev 1 Cat: F (Rel-15)  
  
 Source: ZTE Corporation,Intel*

(Replaces S3-191306)

**Decision:** The document was **agreed**.

**S3-191258 Clarification on Subscription Identifier mechanism for De-registration.**

*Type: CR For: (not specified)  
 33.501 v15.4.0 CR-0567 Cat: F (Rel-15)  
  
 Source: Intel Corporation (UK) Ltd*

**Discussion:**

Nokia: the use of SUCI here opens a DoS attack scenario.

Qualcomm: Deregistration with the SUCI would happen as part of the registration procedure.

IDEMIA: in which case the 5G GUTI is not valid? This is what we need to identify.

NTT-Docomo was concerned like Nokia as this could be misused.

CableLabs didn’t agree with the attack scenario.

Anja (Nokia): SUCI is a onetime identifier by design. Qualcomm commented that there is a requirement where the UE will keep sending the same SUCI in a specific situation.

Qualcomm: if you read the CT1 specification, it is up to AMF how to handle this.

Nokia: CT1 inherited this case from LTE. It was allowed in LTE, but changes adopted for SUCI require a correction in CT1.

This had to be taken offline.

**Decision:** The document was **revised to S3-191751**.

**S3-191751 Clarification on Subscription Identifier mechanism for De-registration.**

*Type: CR For: -  
 33.501 v15.4.0 CR-0567 rev 1 Cat: F (Rel-15)  
  
 Source: Intel Corporation (UK) Ltd*

(Replaces S3-191258)

**Discussion:**

Nokia: this opens up a DoS attack scenario but it's too late to change this in Rel-15. Qualcomm agreed.

**Decision:** The document was **agreed**.

**S3-191307 LS on Use of SUCI in NAS signalling**

*Type: LS out For: Approval  
 to CT1, cc SA2  
 Source: ZTE Corporation*

**Decision:** The document was **noted**.

**S3-191257 draft LS response to LS on Use of SUCI in NAS signalling**

*Type: response For: (not specified)  
 Source: Intel Corporation (UK) Ltd*

**Decision:** The document was **noted**.

**S3-191163 Clarification of MSIN coding for the ECIES protection schemes**

*Type: CR For: Approval  
 33.501 v15.4.0 CR-0560 Cat: F (Rel-15)  
  
 Source: IDEMIA,Gemalto, Qualcomm,Ericsson,Huawei,HiSilicon*

**Abstract:**

In case MSIN in the IMSI contains an odd number of digits, it is clarified that 4 MSBs of the last octet are set to "1111".

**Discussion:**

Discussed with 261.

**Decision:** The document was **revised to S3-191624**.

**S3-191624 Essential clarification of MSIN coding for the ECIES protection schemes**

*Type: CR For: Approval  
 33.501 v15.4.0 CR-0560 rev 1 Cat: F (Rel-15)  
  
 Source: IDEMIA,Gemalto, Qualcomm,Ericsson,Huawei,HiSilicon,Intel*

(Replaces S3-191163)

**Decision:** The document was **agreed**.

**S3-191261 Input encoding for ECIES protection schemes**

*Type: CR For: (not specified)  
 33.501 v15.4.0 CR-0568 Cat: F (Rel-15)  
  
 Source: Intel Corporation (UK) Ltd*

**Discussion:**

IDEMIA: we don’t need to add anything else to the CT1 work. The new figure was removed.

**Decision:** The document was **merged**.

**S3-191414 Clarification on the SUCI computation**

*Type: CR For: Approval  
 33.501 v15.4.0 CR-0587 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon, Gemalto, IDEMIA*

**Discussion:**

Vodafone: it needs rewording.

**Decision:** The document was **revised to S3-191625**.

**S3-191625 Clarification on the SUCI computation**

*Type: CR For: Approval  
 33.501 v15.4.0 CR-0587 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon, Gemalto, IDEMIA*

(Replaces S3-191414)

**Discussion:**

Added a reference as proposed by Ericsson.

**Decision:** The document was **agreed**.

**S3-191357 Subscriber privacy: ECIES test data for Profile A**

*Type: discussion For: Discussion  
 33.501 v..  
 Source: Gemalto N.V.*

**Abstract:**

ECIES test data for Profile A to be included in CR to TS 33.501.

**Decision:** The document was **noted**.

**S3-191409 Subscriber privacy: test data for Profile A of SUCI computation**

*Type: CR For: Approval  
 33.501 v15.4.0 CR-0584 Cat: B (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Decision:** The document was **merged**.

**S3-191220 subscriber privacy: ECIES test data**

*Type: CR For: Approval  
 33.501 v15.4.0 CR-0565 Cat: F (Rel-15)  
  
 Source: Gemalto, IDEMIA, Huawei, Hisilicon*

**Abstract:**

ECIES test data

**Decision:** The document was **revised to S3-191626**.

**S3-191626 subscriber privacy: ECIES test data**

*Type: CR For: Approval  
 33.501 v15.4.0 CR-0565 rev 1 Cat: F (Rel-15)  
  
 Source: Gemalto, IDEMIA, Huawei, Hisilicon*

(Replaces S3-191220)

**Decision:** The document was **agreed**.

**S3-191453 Missing privacy parameters**

*Type: CR For: Agreement  
 33.501 v15.4.0 CR-0600 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Discussion:**

Gemalto added a clarification on NOTE2: "by OTA".

IDEMIA: we don’t need to indicate how it is updated, it is up to the operator.

Nokia, Qualcomm: all these details are in CT specs; we don’t need this CR.

Gemalto supported Ericsson's CR.

Qualcomm: it is not an essential correction. Huawei agreed.

IDEMIA: not a contentious issue, we can go forward with this change.

Ericsson: in which stage 3 document is this covered?

ORANGE preferred not to refer to a CT6 specification.

ORANGE: Keep 5.2.5 make a new contribution for 5.8.2. Vodafone: no need to standardize what appears in 5.8.2.

**Decision:** The document was **revised to S3-191627**.

**S3-191627 Missing privacy parameters**

*Type: CR For: Agreement  
 33.501 v15.4.0 CR-0600 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson,Gemalto,IDEMIA*

(Replaces S3-191453)

**Discussion:**

5.8.2 was removed and NOTE 2 modified.

**Decision:** The document was **agreed**.

#### 7.1.15 Incoming and outgoing Lses

**S3-191131 LS on Maximum HTTP payload size**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: C4-190609*

**Decision:** The document was **noted**.

**S3-191156 Reply LS on Clarification of UE Trace support**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: S2-1902901*

**Decision:** The document was **noted**.

**S3-191132 LS on Protected LI Parameters in N4**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: S3i190254*

**Discussion:**

BT: LTE solution has security weaknesses to be hardened in 5G.

**Decision:** The document was **noted**.

**S3-191133 Reply LS on Protected LI Parameters in N4**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: C4-191529*

**Decision:** The document was **noted**.

**S3-191134 Reply on LS on Protected LI Parameters in N4**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: S3i190283*

**Decision:** The document was **noted**.

**S3-191150 Response LS on reporting all cell IDs in 5G**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: R3-191111*

**Decision:** The document was **noted**.

**S3-191151 Response LS on reporting all cell IDs in 5G**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: S2-1904819*

**Decision:** The document was **noted**.

**S3-191152 Response LS on reporting all Cell IDs in 5G**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: S3i190265*

**Decision:** The document was **noted**.

**S3-191155 Reply LS on Interception of voice services over new radio in a 5GS environment**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: S2-1902799*

**Decision:** The document was **noted**.

**S3-191628 LS on support of non-3GPP only UE and support for PEI in IMEI format**

*Type: LS in For: discussion  
 Original outgoing LS: -, to -, cc -  
 Source: S2-1904836*

**Decision:** The document was **postponed**.

#### 7.1.16 Others

**S3-191562 Addition of AMF/SMF requirement on security logging**

*Type: CR For: Approval  
 33.501 v15.4.0 CR-0569 rev 1 Cat: F (Rel-15)  
  
 Source: Deutsche Telekom AG, NTT Docomo*

(Replaces S3-191262)

**Decision:** The document was **agreed**.

**S3-191313 Various corrections to security protocols and cryptography**

*Type: CR For: Agreement  
 33.501 v15.4.0 CR-0573 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Decision:** The document was **agreed**.

**S3-191130 Reply LS on Nudr Sensitive Data Protection**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: C4-190534*

**Decision:** The document was **replied to in S3-191629**.

**S3-191629 Reply to: Reply LS on Nudr Sensitive Data Protection**

*Type: LS out For: approval  
 to CT4,SA2, cc SA  
 Source: Hewlett Packard Enterprise*

**Discussion:**

Nokia had a proposal to make a change in TS 33.501 with a new requirement. It was said that she could bring it back in the next meeting as Ericsson requested more time to check it.

**Decision:** The document was **approved**.

**S3-191420 Missing UDR description in alignment with 29.505**

*Type: CR For: Agreement  
 33.501 v15.4.0 CR-0590 Cat: B (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Vodafone: no point in standardising this now.

Telecom Italia pointed out that this was cat-B for Rel-15 and too late to be introduced.

It was commented that this was aligning with CT4 changes.

BT: unless the vendors update security in UDM/UDR we will have security breaches. This introduces an operational problem. Vodafone agreed.

Christine (Ericsson) wanted to take it offline to clarify the concerns on the deployment of this.

NTT-Docomo commented: can UDM be virtualised? If so, security is not possible; it would be a red flag.

Hpe: we thought that ARPF would be a separate module, have hardware for that one.

ORANGE: how do we handle having the right keys in the right hardware when having multiple UDMs?

This had to be taken offline.

**Decision:** The document was **not pursued**.

**S3-191421 Adding Nudr service**

*Type: CR For: Agreement  
 33.501 v15.4.0 CR-0591 Cat: B (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **not pursued**.

**S3-191262 Addition of AMF/SMF requirement on security logging**

*Type: CR For: Approval  
 33.501 v15.4.0 CR-0569 Cat: F (Rel-15)  
  
 Source: Deutsche Telekom AG, NTT Docomo*

**Decision:** The document was **revised to S3-191562**.

### 7.2 Security Assurance Specification for 5G (SCAS\_5G) (Rel-16)

#### 7.2.1 NR Node B (gNB) (TS 33.511)

**S3-191214 New Test Case: Error handling of malformed JSON object between two network products**

*Type: draftCR For: Agreement  
 33.117 v15.3.0  
 Source: NEC Europe Ltd*

**Decision:** The document was **revised to S3-191487**.

**S3-191380 Completing TS 33.511**

*Type: pCR For: Approval  
 33.511 v0.3.0  
 Source: Huawei, Hisilicon*

**Discussion:**

Ericsson queried about the conclusion on gNB-specific additions to 33.117. Huawei replied that they didn’t find new test cases.

**Decision:** The document was **revised to S3-191741**.

**S3-191741 Completing TS 33.511**

*Type: pCR For: Approval  
 33.511 v0.3.0  
 Source: Huawei, Hisilicon*

(Replaces S3-191380)

**Decision:** The document was **approved**.

**S3-191381 Adding gNB critical assets and threats to TR 33.926**

*Type: CR For: Approval  
 33.926 v15.1.0 CR-0007 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Discussion:**

Ericsson commented that a similar work should be done for the other network product classes.

Ericsson: Confidentiality and integrity protection are missing in X.2.1.

The contribution was well received but it needed further discussions.

**Decision:** The document was **revised to S3-191630**.

**S3-191630 Adding gNB critical assets and threats to TR 33.926**

*Type: CR For: Approval  
 33.926 v15.1.0 CR-0007 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

(Replaces S3-191381)

**Decision:** The document was **agreed**.

**S3-191463 Living Document: General SBA/SBI aspects in TS 33.117**

*Type: draftCR For: Approval  
 33.117 v16.1.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This draftCR is the latest version of the living document for TS 33.117 agreed at SA3#94ad-hoc.

**Decision:** The document was **revised to S3-191631**.

**S3-191631 Living Document: General SBA/SBI aspects in TS 33.117**

*Type: draftCR For: Approval  
 33.117 v16.1.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S3-191463)

**Decision:** The document was **approved**.

**S3-191487 New Test Case: Error handling of malformed JSON object between two network products**

*Type: draftCR For: Agreement  
 33.117 v15.3.0  
 Source: NEC Europe Ltd*

(Replaces S3-191214)

**Abstract:**

This draft CR replaces S3-191214.

**Discussion:**

Huawei: what is a malformed JSON object?

NEC: NOTE 1 explains it.

Huawei: the test case needs more work. Ericsson supported this.

Ericsson added that this could mean having malformed JSON objects everywhere.

**Decision:** The document was **revised to S3-191701**.

**S3-191701 New Test Case: Error handling of malformed JSON object between two network products**

*Type: draftCR For: Agreement  
 33.117 v15.3.0  
 Source: NEC Europe Ltd*

(Replaces S3-191487)

**Decision:** The document was **noted**.

**S3-191640 Adapting maximum HTTP payload size to CT4 specification**

*Type: pCR For: Approval  
 33.512 v0.6.0  
 Source: Deutsche Telekom*

**Decision:** The document was **approved**.

**S3-191785 Draft TS 33.511**

*Type: draft TS For: Approval  
 33.511 v0.4.0  
 Source: Huawei*

**Decision:** The document was **approved**.

**S3-191786 Cover sheet TS 33.511**

*Type: TS or TR cover For: Approval  
 33.511 v..  
 Source: Huawei*

**Decision:** The document was **approved**.

#### 7.2.2 Access and Mobility Management Function (TS 33.512)

**S3-191401 Test case on UE security capability invalid or unacceptable**

*Type: pCR For: Approval  
 33.512 v0.6.0  
 Source: Huawei, Hisilicon*

**Discussion:**

Deutsche Telekom: expected result should be reworded.

Nokia had some comments that needed to be taken offline.

Ericsson: there is no threat, not clearly motivated. The test is very unspecific, not clear what the test should do.

Huawei: CT1 has specified what's invalid or unacceptable. We can focus on the clear scenarios if needed.

Nokia: we need to do firstly a threat analysis and afterwards the test case.

Huawei: it's in the rational.

Nokia: it should be documented in the TR 33.926.

**Decision:** The document was **revised to S3-191650**.

**S3-191650 Test case on UE security capability invalid or unacceptable**

*Type: pCR For: Approval  
 33.512 v0.6.0  
 Source: Huawei, Hisilicon*

(Replaces S3-191401)

**Decision:** The document was **approved**.

**S3-191400 Removing the EN on AMF log**

*Type: pCR For: Approval  
 33.512 v0.6.0  
 Source: Huawei, Hisilicon*

**Decision:** The document was **merged**.

**S3-191560 Removing the EN on AMF log**

*Type: pCR For: (not specified)  
 33.512 v0.6.0  
 Source: NTT DOCOMO, Deutsche Telekom*

**Decision:** The document was **revised to S3-191651**.

**S3-191651 Removing the EN on AMF log**

*Type: pCR For: -  
 33.512 v0.6.0  
 Source: NTT DOCOMO, Deutsche Telekom,Huawei*

(Replaces S3-191560)

**Decision:** The document was **approved**.

**S3-191181 Addition of Network Product Class Description for AMF**

*Type: CR For: Approval  
 33.926 v15.1.0 CR-0005 Cat: B (Rel-16)  
  
 Source: Deutsche Telekom AG*

**Discussion:**

MCC was hesitant about referring to Release 16 version of TS 23.501. The reference pointed to Rel-16 by default.

Ericsson commented that in fact the reference should be for the Release 15 version of TS 23.501.

It was decided to work with draftCRs so this was converted into a new document in 653.

**Decision:** The document was **not pursued**.

**S3-191653 Addition of Network Product Class Description for AMF**

*Type: draftCR For: Approval  
 33.926 v15.1.0  
 Source: Deutsche Telekom AG*

**Decision:** The document was **approved**.

**S3-191182 Addition of AMF-related Security Problem Descriptions**

*Type: CR For: Approval  
 33.926 v15.1.0 CR-0006 Cat: B (Rel-16)  
  
 Source: Deutsche Telekom AG*

**Discussion:**

Huawei: add the threat rational.

**Decision:** The document was **revised to S3-191654**.

**S3-191654 Addition of AMF-related Security Problem Descriptions**

*Type: CR For: Approval  
 33.926 v15.1.0 CR-0006 rev 1 Cat: B (Rel-16)  
  
 Source: Deutsche Telekom AG*

(Replaces S3-191182)

**Decision:** The document was **agreed**.

**S3-191652 Draft TS 33.512**

*Type: draft TS For: Approval  
 33.512 v0.7.0  
 Source: Deutsche Telekom*

**Decision:** The document was **approved**.

#### 7.2.3 User Plane Function (UPF) (TS 33.513)

#### 7.2.4 Unified Data Management (UDM) (TS 33.514)

#### 7.2.5 Session Management Function (SMF) (TS 33.515)

**S3-191396 Security Assurance Requirements and Test Case on TEID Uniqueness for SMF**

*Type: pCR For: Approval  
 33.515 v0.2.0  
 Source: Huawei, Hisilicon*

**Decision:** The document was **revised to S3-191655**.

**S3-191655 Security Assurance Requirements and Test Case on TEID Uniqueness for SMF**

*Type: pCR For: Approval  
 33.515 v0.2.0  
 Source: Huawei, Hisilicon,Nokia*

(Replaces S3-191396)

**Decision:** The document was **approved**.

**S3-191465 SMF Test Case: TEID Uniqueness**

*Type: pCR For: Approval  
 33.515 v0.2.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This pCR proposes a new test case of "TEID uniqueness" for SCAS SMF.

**Discussion:**

Ericsson: it needs more work on the threats, it seems to be incomplete.

Docomo had some issues that were taken offline.

**Decision:** The document was **merged**.

**S3-191656 Draft TS 33.515**

*Type: draft TS For: Approval  
 33.515 v0.3.0  
 Source: Huawei*

**Decision:** The document was **approved**.

#### 7.2.6 Authentication Server Function (AUSF) (TS 33.516)

**S3-191320 Using STRIDE methodology for NPCD, SPD, assets and threats**

*Type: discussion For: Endorsement  
 Source: Ericsson*

**Discussion:**

Huawei wasn’t sure about adding anything else to the process that was being performed in LTE and now in 5G.

**Decision:** The document was **noted**.

#### 7.2.7 Security Edge Protection Proxy (SEPP) (TS 33.517)

**S3-191186 Testcase: Replacing confidential IEs with NULL in original N32-f message**

*Type: pCR For: Approval  
 33.517 v0.3.0  
 Source: Deutsche Telekom AG*

**Decision:** The document was **revised to S3-191657**.

**S3-191657 Testcase: Replacing confidential IEs with NULL in original N32-f message**

*Type: pCR For: Approval  
 33.517 v0.3.0  
 Source: Deutsche Telekom AG*

(Replaces S3-191186)

**Decision:** The document was **approved**.

**S3-191466 New Annex for the SEPP in TR 33.926**

*Type: draftCR For: Approval  
 33.926 v15.1.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This draft CR proposes a new Annex for the SEPP network product class into TR 33.926, with the contents of network product class description, critical assets, and threats specific to the network product class SEPP.

**Discussion:**

Huawei: In x.2.3.1 the effect would be a worse problem than a waste of system resources. This was taken offline.

**Decision:** The document was **revised to S3-191659**.

**S3-191659 New Annex for the SEPP in TR 33.926**

*Type: draftCR For: Approval  
 33.926 v15.1.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S3-191466)

**Decision:** The document was **approved**.

**S3-191467 Updates to SEPP Test Cases**

*Type: pCR For: Approval  
 33.517 v0.3.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This pCR proposes some editorial updates to the current test cases in TS 33.517 for SCAS SEPP.

**Discussion:**

Ericsson: remove editor's note on requirement to be added in 33.501.

Huawei didn't agree with the last change, it was not needed according to them.

Related to contribution 469 according to Nokia, but it was clarified that the SCAS work didn’t depend on study work, so the last change was removed.

**Decision:** The document was **revised to S3-191660**.

**S3-191660 Updates to SEPP Test Cases**

*Type: pCR For: Approval  
 33.517 v0.3.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S3-191467)

**Decision:** The document was **approved**.

**S3-191658 Draft TS 33.517**

*Type: draft TS For: Approval  
 33.517 v0.4.0  
 Source: Nokia*

**Decision:** The document was **approved**.

#### 7.2.8 Network Resource Function (NRF) (TS 33.518)

**S3-191397 Discussion on the security test of NRF authorization**

*Type: discussion For: Discussion  
 33.518 v..  
 Source: Huawei, Hisilicon*

**Discussion:**

Ericsson: 33.926 should contain the threat part.

Huawei: we just want to show that the threat exists and we can come back later with a contribution for 33.926.

**Decision:** The document was **noted**.

**S3-191398 Way forward on the security test of NRF authorization**

*Type: discussion For: Endorsement  
 33.518 v..  
 Source: Huawei, Hisilicon*

**Discussion:**

Ericsson: not clear what we are endorsing.

It was generally agreed and the wording was worked out offline.

**Decision:** The document was **revised to S3-191662**.

**S3-191662 Way forward on the security test of NRF authorization**

*Type: discussion For: Endorsement  
 33.518 v..  
 Source: Huawei, Hisilicon*

(Replaces S3-191398)

**Decision:** The document was **endorsed**.

**S3-191399 Security Assurance Requirement and Test for NRF authorization on the NF discovery**

*Type: pCR For: Approval  
 33.518 v0.2.0  
 Source: Huawei, Hisilicon*

**Discussion:**

Nokia preferred to have another name for the test. They had other comments that had to be taken offline.

**Decision:** The document was **revised to S3-191663**.

**S3-191663 Security Assurance Requirement and Test for NRF authorization on the NF discovery**

*Type: pCR For: Approval  
 33.518 v0.2.0  
 Source: Huawei, Hisilicon*

(Replaces S3-191399)

**Decision:** The document was **approved**.

**S3-191468 New Annex for the NRF in TR 33.926**

*Type: draftCR For: Approval  
 33.926 v15.1.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This draftCR proposes a new Annex for the NRF network product class into TR 33.926, with the contents of network product class description, critical assets, and threats specific to the network product class NRF.

**Decision:** The document was **revised to S3-191664**.

**S3-191664 New Annex for the NRF in TR 33.926**

*Type: draftCR For: Approval  
 33.926 v15.1.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S3-191468)

**Decision:** The document was **approved**.

**S3-191665 Draft TS 33.518**

*Type: draft TS For: Approval  
 33.518 v0.3.0  
 Source: Nokia*

**Decision:** The document was **approved**.

#### 7.2.9 Network Exposure Function (NEF) (TS 33.519)

### 7.3 eMCSec R16 security (MCXSec) (Rel-16)

**S3-191157 LS on LI Impacts for LMR-LTE Interworking study**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: S3i190281*

**Decision:** The document was **noted**.

**S3-191171 [33.180] R16 Pre-established PCK**

*Type: CR For: Agreement  
 33.180 v15.4.0 CR-0112 Cat: B (Rel-16)  
  
 Source: Motorola Solutions UK*

**Abstract:**

Enhance the private call setup request message to transport a PCK-ID

**Decision:** The document was **revised to S3-191647**.

**S3-191647 [33.180] R16 Establishment of PCK for MCData**

*Type: CR For: Agreement  
 33.180 v15.4.0 CR-0112 rev 1 Cat: B (Rel-16)  
  
 Source: Samsung*

(Replaces S3-191171)

**Decision:** The document was **agreed**.

### 7.4 Security aspects of single radio voice continuity from 5GS to UTRAN () (Rel-16)

**S3-191384 a skeleton of security aspects of 5G SRVCC to UTRAN**

*Type: CR For: Approval  
 33.501 v15.4.0 CR-0580 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Discussion:**

ORANGE: plenary decision is against X.3 (return from UTRAN to E-UTRAN or NR). We don’t need it.

Huawei clarified that this wasn't a CR but a draftCR.

Qualcomm commented that this was a baseline, with agreed changes from the Kochi meeting; removing X.3 would need another contribution.

It was agreed to remove X.3.

The living document/draft CR will be in 648 and will capture the agreements of this meeting.

**Decision:** The document was **not pursued**.

**S3-191500 Key derivation for SRVCC from 5G to UTRAN CS**

*Type: discussion For: Endorsement  
 Source: Qualcomm Incorporated*

**Decision:** The document was **endorsed**.

**S3-191382 security procedures of 5G SRVCC to UTRAN**

*Type: CR For: Approval  
 33.501 v15.4.0 CR-0579 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Discussion:**

Content will be merged with China Unicom's agreed content in 649.

**Decision:** The document was **not pursued**.

**S3-191293 Key derivation during SRVCC from 5G to UTRAN CS**

*Type: CR For: (not specified)  
 33.501 v15.4.0 CR-0570 Cat: C (Rel-16)  
  
 Source: China Unicom,CATT*

**Discussion:**

X.1.2 will be removed and the content merged with Huawei's contribution.

**Decision:** The document was **not pursued**.

**S3-191294 Emergency call in SRVCC from NR to UTRAN**

*Type: CR For: (not specified)  
 33.501 v15.4.0 CR-0571 Cat: C (Rel-16)  
  
 Source: China Unicom, CATT*

**Discussion:**

ORANGE: the second paragraph doesn't make any sense. What keys are derived in here?

It was clarified that the handing over to 3G should be similar as the procedure in 4G, so the wording should explain this better.

Content will merge into 649.

**Decision:** The document was **not pursued**.

**S3-191648 skeleton of security aspects of 5G SRVCC to UTRAN**

*Type: draftCR For: Approval  
 33.501 v15.4.0  
 Source: China Unicom*

**Discussion:**

New version of the living document.

**Decision:** The document was **approved**.

**S3-191649 Security procedures of 5G SRVCC to UTRAN**

*Type: other For: Approval  
 33.501 v..  
 Source: Huawei,China Unicom,CATT*

**Decision:** The document was **approved**.

### 7.5 Enhancements for Security aspects of Common API Framework for 3GPP Northbound APIs (eCAPIF-Sec) (Rel-16)

**S3-191547 Security Requirements for CAPIF-3e/4e/5e reference points**

*Type: CR For: Approval  
 33.122 v15.3.0 CR-0019 Cat: B (Rel-16)  
  
 Source: Samsung*

**Decision:** The document was **agreed**.

### 7.6 Other work areas

#### 7.6.1 SAE/LTE Security

#### 7.6.2 IP Multimedia Subsystem (IMS) Security

**S3-191590 Secure LI Data Access Living Document**

*Type: other For: Agreement  
 Source: BT plc*

**Abstract:**

First version of Secure LI Data Access Living Document

**Decision:** The document was **withdrawn**.

#### 7.6.3 Network Domain Security (NDS)

#### 7.6.4 UTRAN Network Access Security

#### 7.6.5 GERAN Network Access Security

#### 7.6.6 Generic Authentication Architecture (GAA)

#### 7.6.7 Security Aspects of Home(e)NodeB (H(e)NB)

#### 7.6.8 Mission Critical (MCPTT, MCSec, eMCSec, MONASTERY\_SEC)

**S3-191113 [MCPTT] 33179 R13. Clarification of the references to RFC 3711**

*Type: CR For: Approval  
 33.179 v13.8.0 CR-0100 Cat: F (Rel-13)  
  
 Source: Airbus DS SLC*

**Abstract:**

To avoid incompatible implementations, mention that Erratum ID 3712 of RFC 3711 has status "Held for Document Update" and therefore is not applicable to TS 33.179.

**Discussion:**

Motorola: it should be 40 bits. Airbus: the way it is written it refers to 32 bits.

Motorola: standards says 32 bits, errata says 40 bits. We need to use 40 bits.

**Decision:** The document was **revised to S3-191641**.

**S3-191641 [MCPTT] 33179 R13. Clarification of the references to RFC 3711**

*Type: CR For: Approval  
 33.179 v13.8.0 CR-0100 rev 1 Cat: F (Rel-13)  
  
 Source: Airbus DS SLC*

(Replaces S3-191113)

**Decision:** The document was **agreed**.

**S3-191114 [MCSec] 33180 R14. Clarification of the references to RFC 3711**

*Type: CR For: Approval  
 33.180 v14.6.0 CR-0106 Cat: F (Rel-14)  
  
 Source: Airbus DS SLC*

**Abstract:**

To avoid incompatible implementations, mention that Erratum ID 3712 of RFC 3711 has status "Held for Document Update" and therefore is not applicable to TS 33.180.

**Decision:** The document was **revised to S3-191642**.

**S3-191642 [MCSec] 33180 R14. Clarification of the references to RFC 3711**

*Type: CR For: Approval  
 33.180 v14.6.0 CR-0106 rev 1 Cat: F (Rel-14)  
  
 Source: Airbus DS SLC*

(Replaces S3-191114)

**Decision:** The document was **agreed**.

**S3-191115 [MCSec] 33180 R15. Clarification of the references to RFC 3711**

*Type: CR For: Approval  
 33.180 v15.4.0 CR-0107 Cat: A (Rel-15)  
  
 Source: Airbus DS SLC*

**Abstract:**

To avoid incompatible implementations, mention that Erratum ID 3712 of RFC 3711 has status "Held for Document Update" and therefore is not applicable to TS 33.180.

**Decision:** The document was **revised to S3-191643**.

**S3-191643 [MCSec] 33180 R15. Clarification of the references to RFC 3711**

*Type: CR For: Approval  
 33.180 v15.4.0 CR-0107 rev 1 Cat: A (Rel-15)  
  
 Source: Airbus DS SLC*

(Replaces S3-191115)

**Decision:** The document was **agreed**.

**S3-191165 [33.179] R13 XSD Corrections**

*Type: CR For: Agreement  
 33.179 v13.8.0 CR-0101 Cat: F (Rel-13)  
  
 Source: Motorola Solutions UK*

**Abstract:**

Correct the XSD base schema and security extension schema for R13.

**Decision:** The document was **agreed**.

**S3-191166 [33.180] R14 XSD Corrections**

*Type: CR For: Agreement  
 33.180 v14.6.0 CR-0108 Cat: F (Rel-14)  
  
 Source: Motorola Solutions UK*

**Abstract:**

Correct the XSD base schema and security extension schema for R14.

**Decision:** The document was **agreed**.

**S3-191167 [33.180] R15 XSD Corrections (mirror)**

*Type: CR For: Agreement  
 33.180 v15.4.0 CR-0109 Cat: A (Rel-15)  
  
 Source: Motorola Solutions UK*

**Abstract:**

Correct the XSD base schema and security extension schema for R15.

**Decision:** The document was **agreed**.

**S3-191168 {33.179] R13 Remove IANA editor's notes**

*Type: CR For: Agreement  
 33.179 v13.8.0 CR-0102 Cat: F (Rel-13)  
  
 Source: Motorola Solutions UK*

**Abstract:**

Clarify IANA assigned values and remove editor’s notes for R13.

**Decision:** The document was **revised to S3-191644**.

**S3-191644 {33.179] R13 Remove IANA editor's notes**

*Type: CR For: Agreement  
 33.179 v13.8.0 CR-0102 rev 1 Cat: F (Rel-13)  
  
 Source: Motorola Solutions UK*

(Replaces S3-191168)

**Decision:** The document was **agreed**.

**S3-191169 [33.180] R14 Remove IANA editor’s notes**

*Type: CR For: Agreement  
 33.180 v14.6.0 CR-0110 Cat: F (Rel-14)  
  
 Source: Motorola Solutions UK*

**Abstract:**

Clarify IANA assigned values and remove editor’s notes for R14.

**Decision:** The document was **revised to S3-191645**.

**S3-191645 [33.180] R14 Remove IANA editor’s notes**

*Type: CR For: Agreement  
 33.180 v14.6.0 CR-0110 rev 1 Cat: F (Rel-14)  
  
 Source: Motorola Solutions UK*

(Replaces S3-191169)

**Decision:** The document was **agreed**.

**S3-191170 [33.180] R15 Remove IANA editor’s notes (mirror)**

*Type: CR For: Agreement  
 33.180 v15.4.0 CR-0111 Cat: A (Rel-15)  
  
 Source: Motorola Solutions UK*

**Abstract:**

Clarify IANA assigned values and remove editor’s notes for R15.

**Decision:** The document was **revised to S3-191646**.

**S3-191646 [33.180] R15 Remove IANA editor’s notes (mirror)**

*Type: CR For: Agreement  
 33.180 v15.4.0 CR-0111 rev 1 Cat: A (Rel-15)  
  
 Source: Motorola Solutions UK*

(Replaces S3-191170)

**Decision:** The document was **agreed**.

**S3-191542 Discussion on Action Item 94/1**

*Type: discussion For: Endorsement  
 33.180 v..  
 Source: Samsung*

**Decision:** The document was **noted**.

**S3-191753 IANA assigned values for mission critical**

*Type: LS out For: Approval  
 to CT1  
 Source: Motorola*

**Decision:** The document was **approved**.

#### 7.6.9 Security Assurance Specifications (SCAS-SA3, SCAS\_PGW, SCAS\_eNB)

**S3-191321 Corrections on IP packet forwarding**

*Type: CR For: Agreement  
 33.117 v16.1.0 CR-0031 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Discussion:**

MCC commented that Rel-14 and Rel-15 should be changed as well making this CR a mirror.

Huawei warned about implications in GSMA's work (NISAs), given that they were using 33.117 and that could affect them.

Huawei wanted more time in order to make sure that the Rel-14,Rel-15 didn’t have immediate impacts on the pilot testing.

**Decision:** The document was **revised to S3-191632**.

**S3-191632 Corrections on IP packet forwarding**

*Type: CR For: Agreement  
 33.117 v16.1.0 CR-0031 rev 1 Cat: A (Rel-16)  
  
 Source: Ericsson*

(Replaces S3-191321)

**Discussion:**

The changes of this CR were agreed and Ericsson will bring this CR again in the next meeting; also CRs for Rel-14 and Rel-15 in order to send them to SA as a pack provided that there were no impacts as requested by Huawei.

**Decision:** The document was **not pursued**.

#### 7.6.10 Security Aspects of Narrowband IOT (CIoT)

**S3-191153 Reply LS on UP Integrity Protection for Small Data in Early Data Transfer**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: R3-191116*

**Discussion:**

RAN3 will be included in the response for RAN2 LS.

**Decision:** The document was **noted**.

**S3-191140 Reply LS on EDT integrity protection**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: R2-1902439*

**Decision:** The document was **replied to in S3-191634**.

**S3-191247 CR for removing EDT UP IP solution using PDCP PDU hashes.**

*Type: CR For: Approval  
 33.401 v15.7.0 CR-0678 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

This CR remove the EDT UP IP solution which is based on the calculation of the PDCP PDU hashes by the UE and the target eNB. Reason the target eNB cannot parse the RLC frame to get the PDCP PDU to be able to calculate the hash. In order to avoid this difficulty, one of the solutions is to allow the target gNB to send the UP data to the source eNB. This is create a separation of keys issue between the source and target eNB.

**Decision:** The document was **merged**.

**S3-191259 Solution for integrity protection of UL EDT data**

*Type: discussion For: Decision  
 Source: Intel Corporation (UK) Ltd*

**Decision:** The document was **noted**.

**S3-191440 Correction of ShortResumeMAC-I calculation for EDT**

*Type: CR For: Agreement  
 33.401 v15.7.0 CR-0679 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Decision:** The document was **revised to S3-191633**.

**S3-191633 Correction of ShortResumeMAC-I calculation for EDT**

*Type: CR For: Agreement  
 33.401 v15.7.0 CR-0679 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson,Huawei*

(Replaces S3-191440)

**Decision:** The document was **agreed**.

**S3-191441 LS on integrity protection for EDT**

*Type: LS out For: Approval  
 to RAN2, RAN3  
 Source: Ericsson*

**Decision:** The document was **noted**.

**S3-191246 draft reply LS to RAN2/RAN3 on EDT UP IP**

*Type: LS out For: Approval  
 to RAN2,RAN3  
 Source: Huawei, Hisilicon*

**Abstract:**

This is a draft reply LS to inform RAN2/RAN3 that SA3 has decided to remove the EDT UP IP from TS33.401 due to difficulties of solutions and the very tight time frame for release 15.

**Decision:** The document was **revised to S3-191634**.

**S3-191634 Reply LS to RAN2/RAN3 on EDT UP IP**

*Type: LS out For: Approval  
 to RAN2,RAN3  
 Source: Huawei, Hisilicon*

(Replaces S3-191246)

**Decision:** The document was **approved**.

#### 7.6.11 EPC enhancements to support 5G New Radio via Dual Connectivity (EDCE5)

#### 7.6.12 Northbound APIs Security for SCEF - SCS/AS Interworking (NAPS\_Sec) (Rel-15)

#### 7.6.13 Security Aspects of Common API Framework for 3GPP Northbound APIs (CAPIF\_Sec) (Rel-15)

#### 7.6.14 PLMN RAT selection (Steering of Roaming) (Rel-15)

#### 7.6.15 Battery Efficient Security for very low Throughput Machine Type Communication Devices (BEST\_MTC\_Sec) (Rel-15)

**S3-191172 Interface and protocol stack clarifications and corrections to TS 33.163**

*Type: CR For: Approval  
 33.163 v15.4.0 CR-0009 Cat: F (Rel-15)  
  
 Source: Juniper Networks*

**Abstract:**

Misleading and incorrect architecture diagrams and protocol stacks.

**Discussion:**

Vodafone: it is not 4 scenarios but three in here.

Juniper: four scenarios in Rel-16.

**Decision:** The document was **revised to S3-191635**.

**S3-191635 Interface and protocol stack clarifications and corrections to TS 33.163**

*Type: CR For: Approval  
 33.163 v15.4.0 CR-0009 rev 1 Cat: F (Rel-15)  
  
 Source: Juniper Networks*

(Replaces S3-191172)

**Decision:** The document was **agreed**.

**S3-191173 Interface and protocol stack clarifications and corrections to TS 33.163**

*Type: CR For: Approval  
 33.163 v16.0.0 CR-0010 Cat: A (Rel-16)  
  
 Source: Juniper Networks*

**Abstract:**

Misleading and incorrect architecture diagrams and protocol stacks.

**Decision:** The document was **revised to S3-191636**.

**S3-191636 Interface and protocol stack clarifications and corrections to TS 33.163**

*Type: CR For: Approval  
 33.163 v16.0.0 CR-0010 rev 1 Cat: A (Rel-16)  
  
 Source: Juniper Networks*

(Replaces S3-191173)

**Decision:** The document was **agreed**.

**S3-191174 Making UE initiated key refresh optional in TS33.163**

*Type: CR For: (not specified)  
 33.163 v16.0.0 CR-0011 Cat: C (Rel-16)  
  
 Source: Juniper Networks*

**Abstract:**

Make UE initiated key refresh support optional for the HSE. Upon indicating the lack of support in the Session Start message, the HSE can ignore UE key refresh request.

**Discussion:**

It was queried whether there was work planned for Rel-16. Vodafone commented that a WID was planned for Rel-17. MCC reminded about the SA's statement on the use of TEI16 WID code and eventually the WID code for Rel-15 was also added in the cover page.

**Decision:** The document was **revised to S3-191637**.

**S3-191637 Making UE initiated key refresh optional in TS33.163**

*Type: CR For: -  
 33.163 v16.0.0 CR-0011 rev 1 Cat: C (Rel-16)  
  
 Source: Juniper Networks*

(Replaces S3-191174)

**Decision:** The document was **agreed**.

#### 7.6.16 Other work items

**S3-191308 Deprecation of TLS 1.1**

*Type: CR For: Agreement  
 33.210 v16.1.0 CR-0058 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Discussion:**

ORANGE: why removing reference to RFC4366?

Vodafone: add reference in TLS 1.2 in clause 6.2.3.

Cover page needed to be fixed as well.

**Decision:** The document was **revised to S3-191638**.

**S3-191638 Deprecation of TLS 1.1**

*Type: CR For: Agreement  
 33.210 v16.1.0 CR-0058 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces S3-191308)

**Decision:** The document was **agreed**.

**S3-191309 Using EAP-TLS with TLS 1.3**

*Type: discussion For: Discussion  
 33.501 v..  
 Source: Ericsson*

**Discussion:**

Apple: editor's note to consider current discussions in IETF. Ericsson commented that this was a discussion paper and that the CR would come back in the next meeting.

Huawei received confirmation that this would be only for rel-16.

**Decision:** The document was **noted**.

**S3-191310 References to several obsoleted RFCs**

*Type: CR For: Agreement  
 33.210 v16.1.0 CR-0059 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Decision:** The document was **agreed**.

**S3-191311 TLS OCSP stapling**

*Type: CR For: Agreement  
 33.210 v16.1.0 CR-0060 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Discussion:**

ORANGE: this is a new feature, not a correction.

Ericsson clarified that OSCP stapling referred to certificate signing in a way that the certificate authority didn’t need to be online.

It was commented that Ericsson would come back with the same CR and an accompanying WID for the next meeting.

**Decision:** The document was **not pursued**.

**S3-191312 References to several obsoleted RFCs**

*Type: CR For: Agreement  
 33.310 v16.1.0 CR-0101 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Discussion:**

Relying on 1310 discussions.

**Decision:** The document was **agreed**.

### 7.7 New Work Item proposals

**S3-191288 WID on security of URLLC**

*Type: WID new For: Endorsement  
 Source: Huawei, HiSilicon*

**Decision:** The document was **revised to S3-191725**.

**S3-191725 WID on security of URLLC**

*Type: WID new For: Endorsement  
 Source: Huawei, HiSilicon*

(Replaces S3-191288)

**Decision:** The document was **agreed**.

**S3-191433 Discussion WID 5GS Vertical\_LAN\_SEC**

*Type: discussion For: Discussion  
 33.819 v0.3.0  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **noted**.

**S3-191434 WID proposal for 5GS Vertical\_LAN\_SEC**

*Type: WID new For: Agreement  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **revised to S3-191726**.

**S3-191726 WID proposal for 5GS Vertical\_LAN\_SEC**

*Type: WID new For: Agreement  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S3-191434)

**Decision:** The document was **agreed**.

## 8 Studies

### 8.1 Study on Security Aspects of the 5G Service Based Architecture (FS\_SBA-Sec) (Rel-15)

**S3-191162 Reply LS on User Plane Security for 5GC Roaming**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: SP-190252*

**Decision:** The document was **noted**.

**S3-191588 User Plane Security for 5GC Roaming (re: S3-191016)**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: GSMA*

**Decision:** The document was **noted**.

**S3-191218 Discussion on N9 security**

*Type: discussion For: Endorsement  
 33.855 v..  
 Source: Deutsche Telekom AG, NTT Docomo*

**Discussion:**

Ericsson: why is this a discussion and not a key issue? We have an ongoing study.

**Decision:** The document was **noted**.

**S3-191177 Discussion document on roaming UP gateway**

*Type: discussion For: Endorsement  
 Source: Juniper Networks*

**Discussion:**

Ericsson: we should study this properly with direct contributions to the TR, instead of discussion papers.

Hans (DT) commented that available solutions needed to be discussed and this is what was done in this paper.

Ericsson: postpone this for the next meeting with conclusions and evaluations.

There was support to endorse this paper so a revision number was given to reformulate the proposal.

**Decision:** The document was **revised to S3-191666**.

**S3-191666 Discussion document on roaming UP gateway**

*Type: discussion For: Endorsement  
 Source: Juniper Networks*

(Replaces S3-191177)

**Decision:** The document was **endorsed**.

**S3-191175 Corrections for Key Issue #27 Support of a UP gateway function on the N9 interface**

*Type: pCR For: Approval  
 33.855 v1.4.0  
 Source: Juniper Networks*

**Abstract:**

It is proposed to correct two issues in section 4.1.17.1 in TR 33.855.

**Decision:** The document was **approved**.

**S3-191178 Solution for KI #27: Roaming UP gateway**

*Type: pCR For: Approval  
 33.855 v1.4.0  
 Source: Juniper Networks*

**Abstract:**

It is proposed to add the new a solution of a roaming UP gateway function to TR 33.855.

**Decision:** The document was **merged**.

**S3-191219 Solution to KI #26: NDS/IP on the inter-PLMN N9 interface**

*Type: pCR For: Approval  
 33.855 v1.4.0  
 Source: Juniper Networks, Nokia*

**Abstract:**

It is proposed to add the NDS/IP protection of the inter-PLMN N9 interface to TR 33.855.

**Discussion:**

BT: add an editor's note on how the control plane enforces policy NDS/IP and N9 security.

NTT-Docomo: not the control plane but the SMF who enforces the policy.

**Decision:** The document was **revised to S3-191668**.

**S3-191668 Solution to KI #26: NDS/IP on the inter-PLMN N9 interface**

*Type: pCR For: Approval  
 33.855 v1.4.0  
 Source: Juniper Networks, Nokia*

(Replaces S3-191219)

**Decision:** The document was **approved**.

**S3-191525 eSBA: Solution to KI #27 - UP Gateway function for protection of inter-PLMN N9 interface**

*Type: pCR For: Approval  
 33.855 v1.4.0  
 Source: Nokia, Nokia Shanghai Bell,Juniper*

**Abstract:**

Solution to KI #27 - UP Gateway function for protection of inter-PLMN N9 interface

**Decision:** The document was **revised to S3-191661**.

**S3-191661 eSBA: Solution to KI #27 - UP Gateway function for protection of inter-PLMN N9 interface**

*Type: pCR For: Approval  
 33.855 v1.4.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S3-191525)

**Decision:** The document was **approved**.

**S3-191299 Addition of SEPP requirement on N32 error handling**

*Type: draftCR For: Approval  
 33.501 v15.4.0  
 Source: Deutsche Telekom AG, NTT Docomo*

**Discussion:**

It was clarified that a WID was needed in order to have this eventually as a draftCR converted into a CR.

Deutsche Telekom agreed to create a pCR with the key issue and capture this in TR 33.855 (tdoc 669).

**Decision:** The document was **noted**.

**S3-191469 Error handling for PLMN ID mismatch at SEPP**

*Type: draftCR For: Approval  
 33.501 v15.4.0  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Huawei: we don’t include it in SCAS because it's purely for Rel-16. The SCAS WID is based on Rel-15 specifications.

Vodafone: on the sentence about the receiving SEPP, this cannot be a "shall". NTT-Docomo: better say "shall support".

Huawei: check CT4 specs for the error messages.

Vodafone: we are not sending an error message to an attacker.

It was questioned whether this was a draftCR since it was part of the study item. This had to be shaped to be inserted into the TR instead.

It was decided finally to note the document.

**Decision:** The document was **noted**.

**S3-191484 Discussion paper on Service access authorization for Indirect communication with delegated discovery (Model D)**

*Type: discussion For: Discussion  
 33.855 v..  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **noted**.

**S3-191485 eSBA: Solution to KI #22 - Service access authorization for Indirect Communication with delegated discovery (Model D)**

*Type: pCR For: Approval  
 33.855 v1.4.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Solution to KI #22 - Service access authorization for Option D

**Discussion:**

Ericsson: different deployment scenarios should be considered. An editor's note was added about this.

**Decision:** The document was **revised to S3-191671**.

**S3-191671 eSBA: Solution to KI #22 - Service access authorization for Indirect Communication with delegated discovery (Model D)**

*Type: pCR For: Approval  
 33.855 v1.4.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S3-191485)

**Decision:** The document was **approved**.

**S3-191490 eSBA: Solution to KI#22 - Service access authorization for Indirect Communication without delegated discovery (Model C)**

*Type: pCR For: Approval  
 33.855 v1.4.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Solution to KI#22 - Service access authorization for Indirect Communication without delegated discovery (Model C)

**Decision:** The document was **approved**.

**S3-191521 eSBA: Solution to KI #21: Protection of SeCoP interfaces**

*Type: pCR For: Approval  
 33.855 v1.4.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Solution to KI #21: Protection of SeCoP interfaces

**Decision:** The document was **approved**.

**S3-191523 eSBA: Solution to KI #23: NF to NF authentication and authorization in Indirect communications model**

*Type: pCR For: Approval  
 33.855 v1.4.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Solution to KI #23: NF to NF authentication and authorization in Indirect communications model

**Decision:** The document was **revised to S3-191672**.

**S3-191672 eSBA: Solution to KI #23: NF to NF authentication and authorization in Indirect communications model**

*Type: pCR For: Approval  
 33.855 v1.4.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S3-191523)

**Discussion:**

Adding editor's note on the different deployment scenarios.

Added statement on key issue addressed.

**Decision:** The document was **approved**.

**S3-191403 Key issue on authorization for delegated "Subscribe-Notify" interaction scenarios**

*Type: pCR For: Approval  
 33.855 v1.4.0  
 Source: Huawei, Hisilicon*

**Discussion:**

Vodafone: this is not written as a key issue. A key issue is not a study.

**Decision:** The document was **revised to S3-191673**.

**S3-191673 Key issue on authorization for delegated "Subscribe-Notify" interaction scenarios**

*Type: pCR For: Approval  
 33.855 v1.4.0  
 Source: Huawei, Hisilicon*

(Replaces S3-191403)

**Decision:** The document was **approved**.

**S3-191404 New solution for delegated "Subscribe-Notify" interaction authorization**

*Type: pCR For: Approval  
 33.855 v1.4.0  
 Source: Huawei, Hisilicon*

**Decision:** The document was **approved**.

**S3-191415 New KI: Access token sharing between NFs**

*Type: pCR For: Approval  
 33.855 v1.4.0  
 Source: Huawei, Hisilicon*

**Discussion:**

Vodafone didn't agree with the solution.

Deutsche Telekom: the potential requirement is too weak.

**Decision:** The document was **noted**.

**S3-191416 New solution for service access authorization within a NF Set**

*Type: pCR For: Approval  
 33.855 v1.4.0  
 Source: Huawei, Hisilicon*

**Discussion:**

Vodafone: the text of the potential requirement does not have any relation to security.Deutsche Telekom and Nokia didn’t agree with this change either. The change was removed.

**Decision:** The document was **revised to S3-191674**.

**S3-191674 New solution for service access authorization within a NF Set**

*Type: pCR For: Approval  
 33.855 v1.4.0  
 Source: Huawei, Hisilicon*

(Replaces S3-191416)

**Decision:** The document was **approved**.

**S3-191532 eSBA: NF Consumer authentication for based on signed API Request**

*Type: pCR For: Approval  
 33.855 v1.4.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

NF Consumer authentication for based on signed API Request

**Decision:** The document was **noted**.

**S3-191675 eSBA: NF Consumer authentication for based on signed API Request**

*Type: pCR For: Approval  
 33.855 v1.4.0  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **withdrawn**.

**S3-191176 Solution to KI #26: NDS/IP on the inter-PLMN N9 interface**

*Type: pCR For: Approval  
 33.855 v1.4.0  
 Source: Juniper Networks*

**Abstract:**

It is proposed to add the NDS/IP protection of the inter-PLMN N9 interface to TR 33.855.

**Decision:** The document was **withdrawn**.

**S3-191183 On configurational error handling on N32 by the receiving SEPP**

*Type: discussion For: Endorsement  
 33.501 v..  
 Source: Deutsche Telekom AG*

**Decision:** The document was **withdrawn**.

**S3-191184 Addition of SEPP requirement on configurational error handling**

*Type: draftCR For: Approval  
 33.501 v15.4.0  
 Source: Deutsche Telekom AG*

**Decision:** The document was **withdrawn**.

**S3-191667 Draft TR 33.855**

*Type: draft TR For: Approval  
 33.855 v1.5.0  
 Source: Deutsche Telekom*

**Decision:** The document was **approved**.

**S3-191669 Key issue of signalling between SEPP and IPX provider**

*Type: pCR For: Approval  
 33.855 v1.4.0  
 Source: Deutsche telekom*

**Decision:** The document was **approved**.

### 8.2 Study on Long Term Key Update Procedures (FS\_LTKUP) (Rel-16)

### 8.3 Study on Supporting 256-bit Algorithms for 5G (FS\_256-Algorithms) (Rel-16)

### 8.4 Security aspects of single radio voice continuity from 5G to UTRAN (FS\_5G\_UTRAN\_SEC) (Rel-16)

**S3-191295 Overview of TR33.856**

*Type: CR For: (not specified)  
 33.856 v16.0.0 CR-0001 Cat: C (Rel-16)  
  
 Source: China Unicom*

**Decision:** The document was **revised to S3-191788**.

**S3-191788 Overview of TR33.856**

*Type: CR For: -  
 33.856 v16.0.0 CR-0001 rev 1 Cat: F (Rel-16)  
  
 Source: China Unicom*

(Replaces S3-191295)

**Decision:** The document was **agreed**.

**S3-191296 Content of clause 3 for TR33.856**

*Type: CR For: (not specified)  
 33.856 v16.0.0 CR-0002 Cat: D (Rel-16)  
  
 Source: China Unicom, CATT*

**Decision:** The document was **agreed**.

### 8.5 Study on authentication and key management for applications based on 3GPP credential in 5G IoT (FS\_AKMA)(Rel-16)

**S3-191561 Meeting minutes of AKMA conference calls**

*Type: discussion For: Information  
 33.835 v..  
 Source: China Mobile*

**Decision:** The document was **not treated**.

**S3-191537 Work Plan for moving forward AKMA**

*Type: discussion For: Endorsement  
 33.835 v..  
 Source: China Mobile*

**Decision:** The document was **not treated**.

**S3-191554 Editorial Changes to TR 33.835 v0.4.0**

*Type: pCR For: Approval  
 33.835 v0.4.0  
 Source: China Mobile*

**Decision:** The document was **not treated**.

**S3-191213 Restoring lost figures in the latest draft update of AKMA TR at SA3 #94ah**

*Type: pCR For: Approval  
 33.835 v0.4.0  
 Source: NEC Europe Ltd*

**Decision:** The document was **not treated**.

**S3-191479 Restore figures in Solution 3**

*Type: pCR For: Approval  
 33.835 v0.4.0  
 Source: Ericsson*

**Decision:** The document was **not treated**.

**S3-191408 New KI: AKMA push**

*Type: pCR For: Approval  
 33.835 v0.4.0  
 Source: Huawei, Hisilicon*

**Decision:** The document was **not treated**.

**S3-191179 Update of solution #17 – Efficient key derivation for e2e security**

*Type: pCR For: Approval  
 33.835 v0.4.0  
 Source: KPN*

**Abstract:**

Update of solution #17 - Efficient key derivation for e2e security. Solving a number of editor's notes including alignment with terminology.

**Decision:** The document was **not treated**.

**S3-191211 Resolving Editor’s Notes and adding conclusion to solution #18 (Key Separation for AKMA AFs using counters)**

*Type: pCR For: Approval  
 33.835 v0.4.0  
 Source: NEC Europe Ltd*

**Decision:** The document was **not treated**.

**S3-191212 Resolving Editor’s Notes and adding conclusion to solution #20 (Key Identification when Implicit bootstrapping is used)**

*Type: pCR For: Approval  
 33.835 v0.4.0  
 Source: NEC Europe Ltd*

**Decision:** The document was **not treated**.

**S3-191290 Evaluation for solution 4**

*Type: pCR For: Approval  
 33.835 v0.4.0  
 Source: Huawei, HiSilicon*

**Decision:** The document was **not treated**.

**S3-191386 Resolve Editor's notes in Solution for Key freshness in AKMA**

*Type: pCR For: Approval  
 33.835 v0.4.0  
 Source: Huawei, Hisilicon*

**Decision:** The document was **not treated**.

**S3-191471 Solution 2 Evaluation**

*Type: pCR For: Approval  
 33.835 v0.4.0  
 Source: Ericsson*

**Decision:** The document was **not treated**.

**S3-191472 Solution 3 Evaluation**

*Type: pCR For: Approval  
 33.835 v0.4.0  
 Source: Ericsson*

**Decision:** The document was **not treated**.

**S3-191534 AKMA: Implicit bootstrapping using NEF as the AKMA Anchor Function**

*Type: pCR For: Approval  
 33.835 v0.4.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Implicit bootstrapping using NEF as the AKMA Anchor Function

**Decision:** The document was **not treated**.

**S3-191548 Individual Evaluations of solution #7- #12**

*Type: pCR For: (not specified)  
 33.835 v0.4.0  
 Source: China Mobile*

**Decision:** The document was **not treated**.

**S3-191558 Individual Evaluation of solution #6**

*Type: pCR For: Approval  
 33.835 v0.4.0  
 Source: China Mobile*

**Decision:** The document was **not treated**.

**S3-191187 AKMA solution set analysis**

*Type: discussion For: Discussion  
 33.835 v..  
 Source: KPN*

**Abstract:**

Analysis of current AKMA solutions identifying common aspects and differences.

**Decision:** The document was **not treated**.

**S3-191540 Discussion on AKMA overall evaluation methodology**

*Type: discussion For: Endorsement  
 33.835 v..  
 Source: China Mobile, ZTE Corporation*

**Decision:** The document was **not treated**.

**S3-191545 pCR of clause 7- evaluation and conclusion**

*Type: pCR For: Approval  
 33.835 v0.4.0  
 Source: China Mobile*

**Decision:** The document was **not treated**.

**S3-191210 Discussion on AKMA overall conclusions**

*Type: discussion For: Endorsement  
 33.835 v..  
 Source: NEC Europe Ltd*

**Decision:** The document was **not treated**.

**S3-191544 pCR of clause 7- evaluation and conclusion**

*Type: pCR For: Approval  
 33.835 v0.4.0  
 Source: China Mobile*

**Decision:** The document was **withdrawn**.

**S3-191546 pCR of clause 7- evaluation and conclusion**

*Type: pCR For: Approval  
 33.835 v0.4.0  
 Source: China Mobile*

**Decision:** The document was **withdrawn**.

**S3-191557 Individual Evaluation of solution #6**

*Type: pCR For: Approval  
 33.835 v0.4.0  
 Source: China Mobile*

**Decision:** The document was **withdrawn**.

### 8.6 Study on evolution of Cellular IoT security for the 5G System (FS\_CIoT\_sec\_5G) (Rel-16)

**S3-191435 CIoT: Definitions and Abbreviations**

*Type: pCR For: Approval  
 33.861 v0.5.0  
 Source: Ericsson*

**Discussion:**

Vodafone: Some of these are already in 21.905.

NTT-Docomo: there may be other acronyms that can be added here.

**Decision:** The document was **revised to S3-191676**.

**S3-191676 CIoT: Definitions and Abbreviations**

*Type: pCR For: Approval  
 33.861 v0.5.0  
 Source: Ericsson*

(Replaces S3-191435)

**Decision:** The document was **approved**.

**S3-191229 New KI: Separation of CP and UP in NAS CP Optimization**

*Type: pCR For: Approval  
 33.861 v1.0.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

To support massive IoT CP and UP need to be separated over NAS.

**Discussion:**

Nokia admitted that this issue could be late for this Release and asked if it was to be pushed for the next release.

Vodafone: this doesn’t seem to be a security issue.

Qualcomm had the same concern. If CT groups had a problem with this they should contact SA3.

CableLabs: this can cause denial of service. I agree with this key issue.

Vodafone understood the idea but didn’t agree with the writing.

Qualcomm: SA2 decided not to proceed with this one.

ORANGE didn’t agree with this key issue.

This was taken offline.

**Decision:** The document was **noted**.

**S3-191248 EDT UP IP for multiple PDCP PDUs**

*Type: discussion For: Endorsement  
 33.861 v..  
 Source: Huawei, Hisilicon*

**Abstract:**

This proposal examine the different options for allowing UP IP during EDT with RRC Resume procedure. It analyse different options, using XOR, using predetermined sequence of PDCP PDUs, and communicating PDCP PDUs order in the RRC Resume Request message.

**Decision:** The document was **noted**.

**S3-191249 update solution#4 with UP IP during EDT for multiple PDCP PDUs.**

*Type: pCR For: Approval  
 33.861 v1.0.0  
 Source: Huawei, Hisilicon*

**Abstract:**

Implementing SA3 endorsement by updating solution#4.

**Discussion:**

Ericsson: split into two separate solutions. Overlapping with 437.

Huawei: we are not bringing another solution, just details for an existing solution.

**Decision:** The document was **revised to S3-191678**.

**S3-191678 update solution#4 with UP IP during EDT for multiple PDCP PDUs.**

*Type: pCR For: Approval  
 33.861 v1.0.0  
 Source: Huawei, Hisilicon*

(Replaces S3-191249)

**Discussion:**

It was agreed to fix a typo and replace gNodeB.

**Decision:** The document was **approved**.

**S3-191437 CIoT: Update to Solution #4**

*Type: pCR For: Approval  
 33.861 v0.5.0  
 Source: Ericsson*

**Decision:** The document was **revised to S3-191679**.

**S3-191679 CIoT: Update to Solution #4**

*Type: pCR For: Approval  
 33.861 v0.5.0  
 Source: Ericsson*

(Replaces S3-191437)

**Discussion:**

Revised as a completely new solution.

Editor's note from Qualcomm.

Reformulation from Vodafone.

**Decision:** The document was **approved**.

**S3-191436 CIoT: Evaluation to Solution #4**

*Type: pCR For: Approval  
 33.861 v0.5.0  
 Source: Ericsson*

**Decision:** The document was **noted**.

**S3-191180 Update of Solution #6 – Use of UE Configuration Update**

*Type: pCR For: Approval  
 33.861 v1.0.0  
 Source: KPN*

**Abstract:**

Update of solution #6 - Use of UE Configuration Update. Aligns architecture and terminology of the UE and solves editor's notes.

**Discussion:**

Editor's note on maximum amount of minutes as proposed by Vodafone.

Vodafone: more likely that it's an malicious application.

Evaluation part was removed.

**Decision:** The document was **revised to S3-191680**.

**S3-191680 Update of Solution #6 – Use of UE Configuration Update**

*Type: pCR For: Approval  
 33.861 v1.0.0  
 Source: KPN*

(Replaces S3-191180)

**Decision:** The document was **approved**.

**S3-191252 Updating solution#7**

*Type: pCR For: Approval  
 33.861 v1.0.0  
 Source: Huawei, Hisilicon*

**Abstract:**

This contribution update solution#7 by indicating that the same solution can be used to enable gNB to detect DoS caused by RRC messages sent over SRB1 and NAS messages sent over SRB2.

**Discussion:**

Vodafone: this needs rewording.

Ericsson: other Ues can take turns when attacking. Huawei: it's an engineering issue.

Vodafone: there is no way of permanently block a misbehaving UE.

Huawei: the gNodeB informs the core network to do something about it and we don’t specify more than that.

**Decision:** The document was **revised to S3-191681**.

**S3-191681 Updating solution#7**

*Type: pCR For: Approval  
 33.861 v1.0.0  
 Source: Huawei, Hisilicon*

(Replaces S3-191252)

**Decision:** The document was **approved**.

**S3-191510 Resolving EN in Solution 9**

*Type: pCR For: Approval  
 33.861 v1.0.0  
 Source: Qualcomm Incorporated*

**Discussion:**

Vodafone: very confusing. Not an outstanding issue since it will be treated in Rel-16 as written here.

Huawei: this CIoT activity depends on SA2's agreements and here it seems that we deviating from that.

This needed reformulating and Huawei wanted to include a reference to the work in SA2.

**Decision:** The document was **revised to S3-191682**.

**S3-191682 Resolving EN in Solution 9**

*Type: pCR For: Approval  
 33.861 v1.0.0  
 Source: Qualcomm Incorporated*

(Replaces S3-191510)

**Discussion:**

Huawei commented and asked to be minuted: "All solutions which include short UP packets in NAS messages, e.g., Registration Request, Registration Complete, etc. depend on SA2 decision"

**Decision:** The document was **approved**.

**S3-191511 Resolving EN in Solution 10**

*Type: pCR For: Approval  
 33.861 v1.0.0  
 Source: Qualcomm Incorporated*

**Decision:** The document was **revised to S3-191683**.

**S3-191683 Resolving EN in Solution 10**

*Type: pCR For: Approval  
 33.861 v1.0.0  
 Source: Qualcomm Incorporated*

(Replaces S3-191511)

**Decision:** The document was **approved**.

**S3-191365 Delete EN in solution12**

*Type: pCR For: Approval  
 33.861 v1.0.0  
 Source: Huawei, Hisilicon*

**Discussion:**

Vodafone: time limit to the filters? An editor's note was added for this.

Reference to the relevant spec in SA2 in step 4 was added.

**Decision:** The document was **revised to S3-191684**.

**S3-191684 Delete EN in solution12**

*Type: pCR For: Approval  
 33.861 v1.0.0  
 Source: Huawei, Hisilicon*

(Replaces S3-191365)

**Decision:** The document was **approved**.

**S3-191366 Add evaluation in solution12**

*Type: pCR For: Approval  
 33.861 v1.0.0  
 Source: Huawei, Hisilicon*

**Discussion:**

Vodafone: reformulate the last two sentences.

Ericsson: If PDU sessions are not terminated the network will keep the PDU sessions open and this would be a waste of resources. In the end Ericsson conceded and the revision only took care of the rewording.

**Decision:** The document was **revised to S3-191685**.

**S3-191685 Add evaluation in solution12**

*Type: pCR For: Approval  
 33.861 v1.0.0  
 Source: Huawei, Hisilicon*

(Replaces S3-191366)

**Decision:** The document was **approved**.

**S3-191189 Proposal for improvement FS\_CIoT\_sec\_5G solution #15**

*Type: pCR For: Approval  
 33.861 v1.0.0  
 Source: Philips International B.V.*

**Abstract:**

This pCr is a proposal to describe an extra bit in the header that is needed to indicate that the I-MAC is truncated for solution #15 in TS 33.861.

**Decision:** The document was **revised to S3-191686**.

**S3-191686 Proposal for improvement FS\_CIoT\_sec\_5G solution #15**

*Type: pCR For: Approval  
 33.861 v1.0.0  
 Source: Philips International B.V.*

(Replaces S3-191189)

**Decision:** The document was **approved**.

**S3-191188 Proposal for editor's notes in FS\_CIoT\_sec\_5G solution #15**

*Type: pCR For: Approval  
 33.861 v1.0.0  
 Source: Philips International B.V.*

**Abstract:**

In TS 33.861 [1], solution #15 contains several Editor's Notes. This pCr proposes solutions to these.

**Discussion:**

Vodafone: this needs rewriting.

Qualcomm suggested an editor's note. Vodafone wanted a statement in the evaluation on injected first messages.

MCC added that the use of "must" was not allowed in 3GPP and it needed rewording.

**Decision:** The document was **revised to S3-191687**.

**S3-191687 Proposal for editor's notes in FS\_CIoT\_sec\_5G solution #15**

*Type: pCR For: Approval  
 33.861 v1.0.0  
 Source: Philips International B.V.*

(Replaces S3-191188)

**Decision:** The document was **approved**.

**S3-191388 Resolve ENs on Solution to Mitigate DDoS Attack based on RAN**

*Type: pCR For: Approval  
 33.861 v1.0.0  
 Source: Huawei, Hisilicon*

**Discussion:**

Vodafone didn’t agree with the term "massive misbehaving infrequent CIOT Ues".

Huawei replied that this was coming from SA2.

Vodafone: how do you get out of the blacklist?

Huawei: there is a timer.

Vodafone: this timer doesn’t appear in here. The blacklist applies to a collection of Ues and not a single UE. The timer applies to which UE? The first one?

An editor's note was added to address this.

**Decision:** The document was **revised to S3-191688**.

**S3-191688 Resolve ENs on Solution to Mitigate DDoS Attack based on RAN**

*Type: pCR For: Approval  
 33.861 v1.0.0  
 Source: Huawei, Hisilicon*

(Replaces S3-191388)

**Decision:** The document was **approved**.

**S3-191389 Solution to Mitigate DDoS Attack based on RAN Caused by Massive Misbehaving Frequent CIoT Ues**

*Type: pCR For: Approval  
 33.861 v1.0.0  
 Source: Huawei, Hisilicon*

**Discussion:**

Vodafone: now the CIoT Ues are frequent, whereas in other contributions they were infrequent. Huawei replied that this was to be reworded like in the previous contribution and that the term "frequent" was coming from SA2.

**Decision:** The document was **merged**.

**S3-191390 Solution to Mitigate DDoS Attack on AMF caused by Massive Misbehaving Infrequent CIoT Ues**

*Type: pCR For: Approval  
 33.861 v1.0.0  
 Source: Huawei, Hisilicon*

**Decision:** The document was **revised to S3-191689**.

**S3-191689 Solution to Mitigate DDoS Attack on AMF caused by Massive Misbehaving Infrequent CIoT Ues**

*Type: pCR For: Approval  
 33.861 v1.0.0  
 Source: Huawei, Hisilicon*

(Replaces S3-191390)

**Discussion:**

Wording changes as proposed by Vodafone.

**Decision:** The document was **approved**.

**S3-191438 CIoT: Conclusion to KI#2 and KI#3**

*Type: pCR For: Approval  
 33.861 v0.5.0  
 Source: Ericsson*

**Decision:** The document was **noted**.

**S3-191234 conclusion on KI#5**

*Type: pCR For: Approval  
 33.861 v1.0.0  
 Source: Huawei, Hisilicon*

**Abstract:**

This contribution propose a conclusion on KI#5.

**Discussion:**

It was queried whether anyone was going to bring another solution.

Ericsson preferred to postpone this for the next meeting.

**Decision:** The document was **noted**.

**S3-191677 Draft TR 33.861**

*Type: draft TR For: Approval  
 33.861 v1.1.0  
 Source: Ericsson*

**Decision:** The document was **approved**.

### 8.7 Study on the security of the Wireless and Wireline Convergence for the 5G system architecture (FS\_5WWC\_SEC) (Rel-16)

**S3-191123 LS on SUPI formats for 5WWC**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: C1-192776*

**Decision:** The document was **noted**.

**S3-191139 Response to 3GPP SA2 liaison S2-1902902 on ‘LS on updating the status of 5WWC normative work’**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: BBF*

**Decision:** The document was **noted**.

**S3-191586 Residential use case for 5G Core with fixed broadband access**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: CableLabs*

**Decision:** The document was **noted**.

**S3-191193 New KI for TR 33.807: Authentication of UE without NAS support and without 3GPP RAT behind a FN-RG or 5G-CRG with 5GC**

*Type: pCR For: Approval  
 33.807 v0.3.0  
 Source: CableLabs*

(Replaces S3-191192)

**Decision:** The document was **revised to S3-191702**.

**S3-191702 New KI for TR 33.807: Authentication of UE without NAS support and without 3GPP RAT behind a FN-RG or 5G-CRG with 5GC**

*Type: pCR For: Approval  
 33.807 v0.3.0  
 Source: CableLabs*

(Replaces S3-191193)

**Decision:** The document was **noted**.

**S3-191138 Reply LS on Authentication for UEs not Supporting NAS**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: S2-1904829*

**Decision:** The document was **replied to in S3-191713**.

**S3-191713 Reply LS on Authentication for UEs not Supporting NAS**

*Type: LS out For: approval  
 to SA2, cc SA1  
 Source: Nokia*

**Decision:** The document was **approved**.

**S3-191221 Discussion on proposed response to incoming LS (S3-191138) on authentication of UEs not supporting NAS**

*Type: discussion For: Discussion  
 Source: Charter Communications, CableLabs*

**Abstract:**

This paper discusses the LS from SA2 (S3-191138 / S2-1904829) and propose answers to the questions directed to SA3.

**Discussion:**

On question one:

ORANGE: stick to what is written in TS 33.501. There are statements here that don’t adhere to what is in the spec.

Ericsson: it is not sufficient because it is a Rel-15 spec and this is new material for Rel-16. BT didn’t agree, it's the storage what matters.

Telecom Italia: SA2's interest lies in TS 33.501 annex B only. Cablelabs replied that there was a key issue on 5WWC.

Charter communications: consider the Rel-16 context only, not Rel-15.

AT&T: use the EAP framework if you want to use the 3GPP network.

Charter Communications: this is cable access, not 3GPP access.

ORANGE: if the use case is similar for non-public networks it is perfectly fine to use annex B of TS 33.501. In 5WWC the case is different.

Nokia: is it possible for 3GPP to support this in Rel-16?

Vodafone: Non private networks should not be in the scope of this TR, otherwise we will have a whole range of new use cases that will blur the security.

Charter: Non-public networks is another WID that doesn’t cover fixed access.

Telecom Italia: 5WWC should not just use annex B, they need to stick to the TR.

This had to be taken offline.

**Decision:** The document was **revised to S3-191703**.

**S3-191703 Discussion on proposed response to incoming LS (S3-191138) on authentication of UEs not supporting NAS**

*Type: discussion For: Discussion  
 Source: Charter Communications, CableLabs*

(Replaces S3-191221)

**Decision:** The document was **noted**.

**S3-191318 New Key Issue: SUCI-to-SUPI mapping for the FN-RG**

*Type: pCR For: Approval  
 33.807 v0.3.0  
 Source: Ericsson*

**Discussion:**

ORANGE: replace visited network by serving network since are not covering roaming now.

Telecom Italia: How is the SUCI computed in the Home gateway if it doesn’t have an UICC? Ericsson replied that it wasn't computed by the home gateway but somewhere else in the network.

Telecom Italia: potential architecture requirement instead of a security requirement? Ericsson SUCI to SUPI mapping is in our scope and we need to tell SA2 about this. Telecom Italia suggested that this had to be described as a security requirement, with a threat and so on. Vodafone agreed.

Vodafone: the key issue is the mapping of SUCI to SUPI.

The security threat was not related and scrapped from here.

**Decision:** The document was **revised to S3-191690**.

**S3-191690 New Key Issue: SUCI-to-SUPI mapping for the FN-RG**

*Type: pCR For: Approval  
 33.807 v0.3.0  
 Source: Ericsson*

(Replaces S3-191318)

**Decision:** The document was **approved**.

**S3-191319 New Solution: SUCI-to-SUPI mapping for the FN-RG**

*Type: pCR For: Approval  
 33.807 v0.3.0  
 Source: Ericsson*

**Discussion:**

Nokia: the mapping is not explained.

Huawei: a similar figure is available in the TR (solution #4) and there is a bunch of editor's notes in there as well. This solution exists already. Bring this back in the next meeting detailing the mapping. Nokia supported this.

**Decision:** The document was **noted**.

**S3-191371 Add introduction part**

*Type: pCR For: Approval  
 33.807 v0.4.0  
 Source: Huawei, Hisilicon*

**Discussion:**

ORANGE: the introduction is not needed.

MCC: the first two sentences are in fact the scope of the document.

Only the reference part stays.

**Decision:** The document was **revised to S3-191706**.

**S3-191706 Add references**

*Type: pCR For: Approval  
 33.807 v0.4.0  
 Source: Huawei, Hisilicon*

(Replaces S3-191371)

**Decision:** The document was **approved**.

**S3-191372 Add content to clause 4**

*Type: pCR For: Approval  
 33.807 v0.4.0  
 Source: Huawei, Hisilicon*

**Discussion:**

Ericsson: refer to relevant SA2 specs.

Nokia: refer to all possible scenarios.

**Decision:** The document was **revised to S3-191707**.

**S3-191707 Add content to clause 4**

*Type: pCR For: Approval  
 33.807 v0.4.0  
 Source: Huawei, Hisilicon*

(Replaces S3-191372)

**Decision:** The document was **approved**.

**S3-191373 Delete Editor's Note in KI#4**

*Type: pCR For: Approval  
 33.807 v0.4.0  
 Source: Huawei, Hisilicon*

**Decision:** The document was **revised to S3-191708**.

**S3-191708 Delete Editor's Note in KI#4**

*Type: pCR For: Approval  
 33.807 v0.4.0  
 Source: Huawei, Hisilicon*

(Replaces S3-191373)

**Discussion:**

The requirement was removed since the security of the interface was not in the scope of the document.

**Decision:** The document was **approved**.

**S3-191374 Add requirement and delete EN for KI#13**

*Type: pCR For: Approval  
 33.807 v0.4.0  
 Source: Huawei, Hisilicon*

**Decision:** The document was **revised to S3-191709**.

**S3-191709 Add requirement and delete EN for KI#13**

*Type: pCR For: Approval  
 33.807 v0.4.0  
 Source: Huawei, Hisilicon*

(Replaces S3-191374)

**Discussion:**

Removing the e.g. as proposed by Ericsson.

**Decision:** The document was **approved**.

**S3-191375 Delete one Editor’s Note in solution3**

*Type: pCR For: Approval  
 33.807 v0.4.0  
 Source: Huawei, Hisilicon*

**Decision:** The document was **approved**.

**S3-191376 Delete EN for solution 5**

*Type: pCR For: Approval  
 33.807 v0.4.0  
 Source: Huawei, Hisilicon*

**Decision:** The document was **approved**.

**S3-191317 New Solution: Transport security for the interfaces between W-5GAN and 5GC**

*Type: pCR For: Approval  
 33.807 v0.3.0  
 Source: Ericsson*

**Discussion:**

Huawei: simplify the content, no need to list every interface.

**Decision:** The document was **approved**.

**S3-191377 Add conclusion on KI#3**

*Type: pCR For: Approval  
 33.807 v0.4.0  
 Source: Huawei, Hisilicon*

**Discussion:**

Telecom Italia: getting to a solution without an evaluation?

**Decision:** The document was **revised to S3-191711**.

**S3-191711 Add conclusion on KI#3**

*Type: pCR For: Approval  
 33.807 v0.4.0  
 Source: Huawei, Hisilicon*

(Replaces S3-191377)

**Discussion:**

First paragraph: reference to the solution.

Second paragraph is gone as proposed by Nokia.

**Decision:** The document was **approved**.

**S3-191378 Add Conclusion on KI#4**

*Type: pCR For: Approval  
 33.807 v0.4.0  
 Source: Huawei, Hisilicon*

**Decision:** The document was **approved**.

**S3-191486 Evaluation of Solution #1**

*Type: pCR For: Approval  
 33.807 v0.3.0  
 Source: Lenovo, Motorola Mobility*

**Abstract:**

This paper provides an evaluation of solution #1.

**Decision:** The document was **revised to S3-191712**.

**S3-191712 Evaluation of Solution #1**

*Type: pCR For: Approval  
 33.807 v0.3.0  
 Source: Lenovo, Motorola Mobility*

(Replaces S3-191486)

**Decision:** The document was **approved**.

**S3-191192 New KI for TR 33.807: Authentication of UE without NAS support and without 3GPP RAT behind a FN-RG or 5G-CRG with 5GC**

*Type: pCR For: Approval  
 33.807 v0.3.0  
 Source: CableLabs*

**Decision:** The document was **revised to S3-191193**.

**S3-191710 Draft TR 33.807**

*Type: draft TR For: Approval  
 33.807 v0.5.0  
 Source: Huawei*

**Decision:** The document was **approved**.

### 8.8 Study on Security Aspects of PARLOS (FS\_PARLOS\_Sec) (Rel-16)

**S3-191527 Providing some evaluation for solution #2 in TR 33.815**

*Type: pCR For: Approval  
 33.815 v0.4.0  
 Source: Qualcomm Incorporated, Sprint, Nokia, Nokia Shanghai Bell*

**Decision:** The document was **revised to S3-191593**.

**S3-191528 Proposed conclusion for establishing the RLOS call**

*Type: pCR For: Approval  
 33.815 v0.4.0  
 Source: Qualcomm Incorporated*

**Decision:** The document was **revised to S3-191594**.

**S3-191541 pCR to 33.815 on authentication of network**

*Type: pCR For: Approval  
 33.815 v0.4.0  
 Source: NTT DOCOMO*

**Discussion:**

Qualcomm: this assumes that the user has an active USIM, but this is not what's happening in SA1.SA2. They didn’t agree with the key issue. Sony supported Qualcomm.

ORANGE supported the requirement.

Vodafone: how do you identify that you are an US person without credentials? Only US customers would expect this service. Vodafone supported this key issue.

Deutsche Telekom wanted to have this key issue as well. There was a big risk of weakening the security to satisfy a specific issue for US customers.

Ericsson: this key issue is against the PARLOS concept.

IDEMIA supported the key issue.

Nokia: this is written with the assumption that this will be an universal feature, and this is not the way it should be addresses. I don’t agree with the key issue. Samsung supported this.

NTT-Docomo: International (non-US) customers would have to deal with the fact that they will possess an UE vulnerable to man-in-the-middle attacks. BT supported Docomo.

There was no agreement with this document.

**Decision:** The document was **noted**.

**S3-191550 Clarification to Solution#1 of PARLOS**

*Type: pCR For: Approval  
 33.815 v0.4.0  
 Source: Samsung*

**Discussion:**

Vodafone: any authentication in the PARLOS network here? Samsung: it's just an update on an existing procedure.

Vodafone wasn't sure that this would work technically.

ORANGE: evaluation needs to be updated, add it here. Maybe add a note on the technical feasibility of this solution.

**Decision:** The document was **noted**.

**S3-191727 Clarification to Solution#1 of PARLOS**

*Type: pCR For: Approval  
 33.815 v0.4.0  
 Source: Samsung*

**Decision:** The document was **withdrawn**.

**S3-191593 Providing some evaluation for solution #2 in TR 33.815**

*Type: pCR For: Approval  
 33.815 v0.4.0  
 Source: Qualcomm Incorporated, Sprint, Nokia, Nokia Shanghai Bell, Ericsson, Verizon UK Ltd*

(Replaces S3-191527)

**Discussion:**

BT: no need for man in the middle. The attacker can just call asking the user to make a call to PARLOS.

Qualcomm: it doesn’t need to be an RLOS number, it can be a premium number or whatever.

Vodafone: add an editor's note on the ability of the user to identify the trust of the PARLOS network needing to be provided.

NTT-Docomo: paragraph three needs to go away.

**Decision:** The document was **revised to S3-191728**.

**S3-191728 Providing some evaluation for solution #2 in TR 33.815**

*Type: pCR For: Approval  
 33.815 v0.4.0  
 Source: Qualcomm Incorporated, Sprint, Nokia, Nokia Shanghai Bell, Ericsson, Verizon UK Ltd*

(Replaces S3-191593)

**Decision:** The document was **approved**.

**S3-191594 Proposed conclusion for establishing the RLOS call**

*Type: pCR For: Approval  
 33.815 v0.4.0  
 Source: Qualcomm Incorporated, Ericsson, Verizon UK Ltd*

(Replaces S3-191528)

**Decision:** The document was **revised to S3-191595**.

**S3-191595 Proposed conclusion for establishing the RLOS call**

*Type: pCR For: Approval  
 33.815 v0.4.0  
 Source: Qualcomm Incorporated, Nokia, Nokia Shanghai Bell, Ericsson, Verizon UK Ltd*

(Replaces S3-191594)

**Decision:** The document was **noted**.

**S3-191729 Draft TR 33.815**

*Type: draft TR For: Approval  
 33.815 v0.5.0  
 Source: Qualcomm*

**Decision:** The document was **approved**.

### 8.9 Study on 5G security enhancement against false base stations

**S3-191391 Solution for Protection of RRCReject Message**

*Type: pCR For: Approval  
 33.809 v0.3.0  
 Source: Huawei, Hisilicon*

**Decision:** The document was **not treated**.

**S3-191393 Add New Security Threat and Requirement for Key Issue #1 for Protection of NAS Reject Message**

*Type: pCR For: Approval  
 33.809 v0.3.0  
 Source: Huawei, Hisilicon*

**Decision:** The document was **revised to S3-191789**.

**S3-191789 Add New Security Threat and Requirement for Key Issue #1 for Protection of NAS Reject Message**

*Type: pCR For: Approval  
 33.809 v0.3.0  
 Source: Huawei, Hisilicon*

(Replaces S3-191393)

**Discussion:**

Ericsson didn’t agree with the requirement, so an editor's note was added as suggested but NTT-Docomo.

**Decision:** The document was **approved**.

**S3-191392 Solution for Protection of NAS Reject Message**

*Type: pCR For: Approval  
 33.809 v0.3.0  
 Source: Huawei, Hisilicon*

**Decision:** The document was **not treated**.

**S3-191240 Security threat for RRCResumeRequest tampering.**

*Type: pCR For: Approval  
 33.809 v0.3.0  
 Source: Huawei, Hisilicon*

**Abstract:**

This contribution provide the details for the security threats of the tampering of RRCResumeRequest message and how it relates to the security requirement.

**Decision:** The document was **approved**.

**S3-191241 Solution for protecting RRCResumeRequest against tampering**

*Type: pCR For: Approval  
 33.809 v0.3.0  
 Source: Huawei, Hisilicon*

**Abstract:**

This contribution propose a solution to protect ResumeCause in RRCResumeRequest message.

**Decision:** The document was **approved**.

**S3-191242 Address EN in solution #1 “The above text needs to be updated ….”**

*Type: pCR For: Approval  
 33.809 v0.3.0  
 Source: Huawei, Hisilicon*

**Abstract:**

This contribution provide the details whether the network can be configured to allow the UECapabilitiesEnquiry exchange to always happen after AS SMC is completed and AS security is established.

**Decision:** The document was **not treated**.

**S3-191243 Draft LS to RAN2 on UECapabilitiesEnquire after AS SMC**

*Type: LS out For: Approval  
 to RAN2  
 Source: Huawei, Hisilicon*

**Abstract:**

This is a draft LS to be sent to RAN2 to request feedback whether RAN2 has any problem in mandating the network to exchange Uecapabilities Enquiry after AS security context is established.

**Decision:** The document was **not treated**.

**S3-191345 Protection of unicast message**

*Type: pCR For: Approval  
 33.809 v0.3.0  
 Source: Apple Computer Trading Co. Ltd*

**Decision:** The document was **revised to S3-191620**.

**S3-191620 Protection of unicast message**

*Type: pCR For: Approval  
 33.809 v0.3.0  
 Source: Apple Computer Trading Co. Ltd*

(Replaces S3-191345)

**Discussion:**

Qualcomm added three editor's notes related to the key provisioning from 781 and one on camping. ORANGE also added some editor's notes and corrections.

**Decision:** The document was **approved**.

**S3-191454 New solution (SERSI - SERving network controlled SI signatures) - builds on Solution#7**

*Type: pCR For: Approval  
 33.809 v0.3.0  
 Source: Ericsson*

**Discussion:**

Apple: to be merged to solution 7. Add an editor's note on the assessment of this.

Qualcomm, ORANGE: we need to reformat the existing solution.

Samsung,Intel supported the editor's note in order to move forward.

ORANGE wanted to restructure the contribution firstly.

AT&T supported having this in.

Ericsson: merge with solution 7, there are 10 companies supporting this.

AT&T: reformatting is editorial, there is no technical justification against this. CableLabs supported AT&T.

Telecom Italia was against having this in.

The vice chair (Docomo) proposed to minute: This type of solution should go in but it needs to come back with the proper formatting according to Annex A.

There was opposition to the formatting but a general agreement to the solution.

The vice chair encouraged to discuss offline on this document and noted it.

**Decision:** The document was **noted**.

**S3-191195 Using symmetric algorithm with assistance of USIM and home network**

*Type: pCR For: Approval  
 33.809 v0.3.0  
 Source: ZTE Corporation*

**Decision:** The document was **approved**.

**S3-191508 Shared key based MIB/SIB protection**

*Type: pCR For: Approval  
 33.809 v0.3.0  
 Source: Qualcomm Incorporated*

**Decision:** The document was **revised to S3-191780**.

**S3-191780 Shared key based MIB/SIB protection**

*Type: pCR For: Approval  
 33.809 v0.3.0  
 Source: Qualcomm Incorporated*

(Replaces S3-191508)

**Discussion:**

Adding an editor's note as proposed by Huawei.

**Decision:** The document was **approved**.

**S3-191267 Certificate based solution for 5GFBS**

*Type: pCR For: Approval  
 33.809 v0.3.0  
 Source: Apple Computer Trading Co. Ltd*

**Decision:** The document was **revised to S3-191781**.

**S3-191781 Certificate based solution for 5GFBS**

*Type: pCR For: Approval  
 33.809 v0.3.0  
 Source: Apple Computer Trading Co. Ltd*

(Replaces S3-191267)

**Discussion:**

Introducing editor's notes as proposed by ORANGE: roaming aspects, MNO controlling the revocation of CA, other signature algorithms are FFS.

Qualcomm: issue of camping needs to be clarified. Editor's note on this was added. Also editor's notes on the manufacturing time, interworking with UE USIM and gNodeB.

**Decision:** The document was **approved**.

**S3-191268 ID based solution for 5GFBS**

*Type: pCR For: Approval  
 33.809 v0.3.0  
 Source: Apple Computer Trading Co. Ltd*

**Discussion:**

ORANGE: Threats are not mitigated with signed messages, roaming scenarios are FFS.

Qualcomm: PKG deployment is FFS.

MCC: add references to IEEE, RFC, ISO SC27 and other mentioned bodies.

**Decision:** The document was **revised to S3-191782**.

**S3-191782 ID based solution for 5GFBS**

*Type: pCR For: Approval  
 33.809 v0.3.0  
 Source: Apple Computer Trading Co. Ltd*

(Replaces S3-191268)

**Decision:** The document was **approved**.

**S3-191235 Resolve EN "signalling details of how the UE hands over to false base station**

*Type: pCR For: Approval  
 33.809 v0.3.0  
 Source: Huawei, Hisilicon*

**Abstract:**

This contribution address the following EN in solution#6. "signalling details of how the UE hands over to false base station is FFS"

**Decision:** The document was **not treated**.

**S3-191236 Solution #6: Resolve EN Handover Attempt Failure Counter**

*Type: pCR For: Approval  
 33.809 v0.3.0  
 Source: Huawei, Hisilicon*

**Abstract:**

This contribution address the EN about the number of attempt handover failure towards a specific cell and how that counter is being used.

**Decision:** The document was **not treated**.

**S3-191237 Solution#4: resolving EN network verification of the hashes of MIB/SIBs**

*Type: pCR For: Approval  
 33.809 v0.3.0  
 Source: Huawei, Hisilicon*

**Abstract:**

This contribution provides the details of how the network verifies the hashes of the MIB and SIB which is reported by the UE.

**Decision:** The document was **not treated**.

**S3-191238 Solution#4: Resolving EN Impact on UE power consumption**

*Type: pCR For: Approval  
 33.809 v0.3.0  
 Source: Huawei, Hisilicon*

**Abstract:**

This contribution provides the details of the impact on UE power consumption due to the introduction of MIB/SIB hashes.

**Decision:** The document was **not treated**.

**S3-191239 Solution #4: Details on the hash algorithm used for MIB/SIB hashes.**

*Type: pCR For: Approval  
 33.809 v0.3.0  
 Source: Huawei, Hisilicon*

**Abstract:**

This contribution provide the details of the hash algorithm,/function to be used for hashing the SIB and MIB by the UE and the network.

**Decision:** The document was **not treated**.

**S3-191251 Enabling UE to detect FBS**

*Type: pCR For: Approval  
 33.809 v0.3.0  
 Source: Huawei, Hisilicon*

**Abstract:**

This solution enable the UE to detect FBS during Handover by utilizing the MIB/SIB hashes of the target gNB,

**Decision:** The document was **noted**.

**S3-191455 Conclusion on KI#3'S second requirement (reactive action)**

*Type: pCR For: Approval  
 33.824 v0.1.0  
 Source: Ericsson*

**Discussion:**

Huawei: too early.

**Decision:** The document was **noted**.

**S3-191464 Resolving the ENs in solution #5**

*Type: pCR For: Approval  
 33.809 v0.3.0  
 Source: Huawei, Hisilicon*

**Decision:** The document was **not treated**.

**S3-191488 Mitigation against the authentication relay attack with different PLMNs**

*Type: pCR For: Approval  
 33.809 v0.3.0  
 Source: Lenovo, Motorola Mobility*

**Discussion:**

Ericsson: indications in the victim (UE) may or may not be standardised. An editor's note was added for this.

Qualcomm: general error handling on the UE may be affected. Editor's note added on this.

**Decision:** The document was **revised to S3-191790**.

**S3-191790 Mitigation against the authentication relay attack with different PLMNs**

*Type: pCR For: Approval  
 33.809 v0.3.0  
 Source: Lenovo, Motorola Mobility*

(Replaces S3-191488)

**Decision:** The document was **approved**.

**S3-191489 Removal of Editor’s Notes of Solution #5**

*Type: pCR For: Approval  
 33.809 v0.3.0  
 Source: Lenovo, Motorola Mobility*

**Decision:** The document was **not treated**.

**S3-191509 Security requirement for KI #7**

*Type: pCR For: Approval  
 33.809 v0.3.0  
 Source: Qualcomm Incorporated*

**Discussion:**

Ericsson,Huawei: this is not a requirement, but an evaluation.

**Decision:** The document was **noted**.

**S3-191256 Protecting IOT Devices Against False Base Station Attacks**

*Type: discussion For: Discussion  
 Source: Qihoo 360*

**Abstract:**

The 5G application scenario is not limited to a mobile phone. The false base station may also attack various IOT devices. Different types of IOT devices/scenarios have different security considerations and network requirement. Consequently, IOT devices based on different applications should consider different solutions. One solution may not be applicable for mobile phones, but applicable for some IOT scenarios.

**Discussion:**

Deutsche Telekom: what's the proposal to endorse?

Qihoo: just for discussion.

Apple: we can have key issues for these kind of devices.

Huawei: we don’t know if this has any impact on our study.

CableLabs: capture this content somewhere, it's a good input.

The Chair suggested Qihoo360 to bring a pCR for the next meeting or some endorsement proposal. Huawei proposed a key issue for the CIoT study.

**Decision:** The document was **noted**.

**S3-191269 Modification for AnnexA**

*Type: pCR For: Approval  
 33.809 v0.3.0  
 Source: Apple Computer Trading Co. Ltd*

**Decision:** The document was **not treated**.

**S3-191347 Way forward for evaluation for every solution**

*Type: pCR For: Agreement  
 33.809 v0.3.0  
 Source: Apple Computer Trading Co. Ltd*

**Decision:** The document was **not treated**.

**S3-191344 Identity based Signature against false base station on Key Issue #2**

*Type: pCR For: Approval  
 33.809 v0.3.0  
 Source: Huawei, HiSilicon*

**Decision:** The document was **withdrawn**.

**S3-191779 Draft TR 33.809**

*Type: draft TR For: Approval  
 33.809 v0.4.0  
 Source: Apple*

**Decision:** The document was **approved**.

### 8.10 Study of KDF negotiation for 5G System Security

### 8.11 Study on Security aspects of Enhancement of Network Slicing (FS\_eNS\_SEC) (Rel-16)

**S3-191227 eNS Update to solution 1 Slice specific secondary authentication**

*Type: pCR For: Approval  
 33.813 v0.3.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Solution1 aligned with SA2 CR and addresses the ENs

**Discussion:**

Huawei: some issues that were agreed not to have here are coming back: secondary authentication in step 11 for example. We should use the term "slice specific authentication".

Huawei: this doesn’t address key issue 4 (privacy), remove it from the evaluation.

Nokia: NAS messages are protected already, no parameter is exposed. ORANGE and Qualcomm agreed: adding a sentence clarifying this would be sufficient.

Gemalto: the requirement doesn't show explicit end points, only addresses the privacy of the user.

**Decision:** The document was **revised to S3-191730**.

**S3-191730 eNS Update to solution 1 Slice specific secondary authentication**

*Type: pCR For: Approval  
 33.813 v0.3.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S3-191227)

**Decision:** The document was **approved**.

**S3-191328 Removing ENs for solution #2**

*Type: pCR For: Approval  
 33.813 v0.3.0  
 Source: Huawei, HiSilicon*

**Decision:** The document was **revised to S3-191732**.

**S3-191732 Removing ENs for solution #2**

*Type: pCR For: Approval  
 33.813 v0.3.0  
 Source: Huawei, HiSilicon*

(Replaces S3-191328)

**Decision:** The document was **approved**.

**S3-191329 Add Evaluation to Solution #2**

*Type: pCR For: Approval  
 33.813 v0.3.0  
 Source: Huawei, HiSilicon*

**Decision:** The document was **revised to S3-191733**.

**S3-191733 Add Evaluation to Solution #2**

*Type: pCR For: Approval  
 33.813 v0.3.0  
 Source: Huawei, HiSilicon*

(Replaces S3-191329)

**Decision:** The document was **approved**.

**S3-191322 Update to solution #3 on NSaaS security features**

*Type: pCR For: Approval  
 33.813 v0.3.0  
 Source: Huawei, HiSilicon*

**Discussion:**

Nokia: the new text is not clear.

ORANGE: secondary authentication is orthogonal to the slices, why is this here? When you configure the secondary authentication you don’t know to which external network you are connecting to.

Qualcomm agreed with ORANGE. Secondary authentication is a different issue from slice specific authentication.

**Decision:** The document was **noted**.

**S3-191323 Conclusion to KI #3**

*Type: pCR For: Approval  
 33.813 v0.3.0  
 Source: Huawei, HiSilicon*

**Discussion:**

ORANGE: it's too early to conclude, some other companies might come back with other solutions.

**Decision:** The document was **noted**.

**S3-191118 Update to solution #4**

*Type: pCR For: Approval  
 33.813 v0.3.0  
 Source: InterDigital Belgium. LLC*

**Abstract:**

clearing the two ENs from SA3#94AH

**Discussion:**

Nokia: clarify the dependency between the RAT and access type. The document was revised to address this.

**Decision:** The document was **revised to S3-191734**.

**S3-191734 Update to solution #4**

*Type: pCR For: Approval  
 33.813 v0.3.0  
 Source: InterDigital Belgium. LLC*

(Replaces S3-191118)

**Decision:** The document was **approved**.

**S3-191326 Solution to KI #4**

*Type: pCR For: Approval  
 33.813 v0.3.0  
 Source: Huawei, HiSilicon*

**Discussion:**

Nokia: What is this solution about and what is being protected? This is not a new solution.

QUALCOMM: this doesn’t add any value. There is no requirement to protect the user id between the UE and the AAA; we would need to revisit the key issue. Qualcomm proposed to add an editor's note on the above. This was agreed.

The evaluation was removed as well.

**Decision:** The document was **revised to S3-191735**.

**S3-191735 Solution to KI #4**

*Type: pCR For: Approval  
 33.813 v0.3.0  
 Source: Huawei, HiSilicon*

(Replaces S3-191326)

**Decision:** The document was **approved**.

**S3-191327 Conclusion to KI #4**

*Type: pCR For: Approval  
 33.813 v0.3.0  
 Source: Huawei, HiSilicon*

**Decision:** The document was **noted**.

**S3-191331 Discussions on Key Issue AMF key separation**

*Type: discussion For: Agreement  
 33.813 v..  
 Source: Huawei, HiSilicon*

**Discussion:**

Nokia disagreed with the key issue.

The Chair commented that this was discussed in the previous meeting and it had been seen that SA2 pushed this issue to Rel-17.

ORANGE: this issue was out of scope in SA2 and they didn’t agree with any solution. Huawei is making an invalid interpretation.

Nokia: the UE cannot connect to two AMF at the same time. The figure is wrong.

Huawei proposed an LS to SA2 if there was no agreement with this paper. ORANGE agreed to ask SA2 if this had been pushed to Rel-17. Qualcomm replied that they had checked the SA2 report and this had been pushed to Rel-17. Huawei disagreed and commented that they had a different interpretation.

There wasn't support for the LS. This discussion was noted and all the related documents.

**Decision:** The document was **noted**.

**S3-191332 Overview on solutions to AMF key separation**

*Type: discussion For: Agreement  
 33.813 v..  
 Source: Huawei, HiSilicon*

**Decision:** The document was **noted**.

**S3-191333 pCR on AMF key separation solutions**

**solution 1**

*Type: pCR For: Approval  
 33.813 v0.3.0  
 Source: Huawei, HiSilicon*

**Decision:** The document was **noted**.

**S3-191334 pCR on AMF key separation solutions**

**solution 2**

*Type: pCR For: Approval  
 33.813 v0.3.0  
 Source: Huawei, HiSilicon*

**Decision:** The document was **noted**.

**S3-191335 pCR on AMF key separation solutions**

**solution 3**

*Type: pCR For: Approval  
 33.813 v0.3.0  
 Source: Huawei, HiSilicon*

**Decision:** The document was **noted**.

**S3-191325 Discussion paper on KI#6 on NSSAI in RRC**

*Type: discussion For: Discussion  
 33.813 v..  
 Source: Huawei, HiSilicon*

**Decision:** The document was **noted**.

**S3-191324 A solution to NSSAI protection at AS transmission**

*Type: pCR For: Approval  
 33.813 v0.3.0  
 Source: Huawei, HiSilicon*

**Discussion:**

ORANGE: How the authorised NSSAI for the UE is configured in the serving network needs more details. This was added in an editor's note.

**Decision:** The document was **revised to S3-191736**.

**S3-191736 A solution to NSSAI protection at AS transmission**

*Type: pCR For: Approval  
 33.813 v0.3.0  
 Source: Huawei, HiSilicon*

(Replaces S3-191324)

**Decision:** The document was **approved**.

**S3-191439 Solution to protect user ID over the air interface**

*Type: pCR For: Approval  
 33.813 v0.3.0  
 Source: Ericsson*

**Discussion:**

Editor's note added on protection is needed between serving network to AAA server.

Secondary authentication was changed to slice specific authentication.

Lenovo proposed to remove the evaluation part. This was agreed.

**Decision:** The document was **revised to S3-191738**.

**S3-191738 Solution to protect user ID over the air interface**

*Type: pCR For: Approval  
 33.813 v0.3.0  
 Source: Ericsson*

(Replaces S3-191439)

**Decision:** The document was **approved**.

**S3-191499 Proposed solution for protecting the S-NSSAI for transmission at the AS layer**

*Type: pCR For: Approval  
 33.813 v0.3.0  
 Source: Qualcomm Incorporated*

(Replaces S3-190791)

**Discussion:**

It was agreed to include the same editor's note as 736.

**Decision:** The document was **revised to S3-191737**.

**S3-191737 Proposed solution for protecting the S-NSSAI for transmission at the AS layer**

*Type: pCR For: Approval  
 33.813 v0.3.0  
 Source: Qualcomm Incorporated*

(Replaces S3-191499)

**Decision:** The document was **approved**.

**S3-191360 pCR to TR33.813 - Key issue for deeper UP protection termination**

*Type: pCR For: (not specified)  
 33.813 v0.3.0  
 Source: CATT*

**Discussion:**

Nokia: this is not relevant to Rel-16, maybe for Rel-17.

CATT: this is required by the market.

Telecom Italia: SA1 addresses this kind of use cases, not here.

ORANGE: SA1 should not go into security requirements.

ORANGE: we need to control the UPF due to lawful interception requirements. This is material for a new study item.

CATT: we wanted to know if this was feasible work for the future.

**Decision:** The document was **noted**.

**S3-191361 pCR to TR33.813 - Key issue for UP key separation**

*Type: pCR For: (not specified)  
 33.813 v0.3.0  
 Source: CATT*

**Discussion:**

Telecom Italia: this input should start from an SA1 requirement.

ORANGE: we need a discussion paper with more details.

**Decision:** The document was **noted**.

**S3-191362 pCR to TR33.813 - Solution for UP key separation**

*Type: pCR For: (not specified)  
 33.813 v0.3.0  
 Source: CATT*

**Decision:** The document was **noted**.

**S3-191228 Preliminary comparison of solutions**

*Type: pCR For: Approval  
 33.813 v0.3.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Maps Solutions to key issues addressed

**Discussion:**

Nokia clarified that this reflected results before the current meeting.

The Chair asked if conclusions should be postponed to the next meeting.

Telecom Italia: "not applicable" means no solution? Nokia confirmed this.

The table was revised to address the results from the current meeting.

Qualcomm: it shouldn't be a conclusion but in an annex.

Nokia: the conclusion text should follow this.

An overall evaluation clause was added to the conclusion in order to accommodate this table.

**Decision:** The document was **revised to S3-191739**.

**S3-191739 Preliminary comparison of solutions**

*Type: pCR For: Approval  
 33.813 v0.3.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S3-191228)

**Decision:** The document was **approved**.

**S3-191330 Conclusion to KI #1**

*Type: pCR For: Approval  
 33.813 v0.3.0  
 Source: Huawei, HiSilicon*

**Discussion:**

Nokia: the conclusion needs to be expanded.

**Decision:** The document was **noted**.

**S3-191731 Draft TR 33.813**

*Type: draft TR For: Approval  
 33.813 v0.4.0  
 Source: Nokia*

**Decision:** The document was **approved**.

### 8.12 Study on Security of the enhancement to the 5GC location services (FS\_eLCS\_Sec) (Rel-16)

**S3-191141 LS on RAN2 conclusion for NR positioning SI**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: R2-1902479*

**Decision:** The document was **replied to in S3-191750**.

**S3-191142 LS on RAN2 conclusion for NR positioning SI**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: R3-191141*

**Decision:** The document was **noted**.

**S3-191442 Discussion on RAN2 conclusion for NR positioning SI**

*Type: discussion For: Endorsement  
 33.814 v..  
 Source: Ericsson*

**Decision:** The document was **noted**.

**S3-191350 LS reply to RAN WG2 LS on broadcast assistance data delivery**

*Type: LS out For: (not specified)  
 to RAN2, cc SA2, RAN3  
 Source: CATT*

**Decision:** The document was **noted**.

**S3-191443 LS on security and privacy aspects of NR positioning**

*Type: LS out For: Approval  
 to RAN2, cc RAN1, RAN3, SA2  
 Source: Ericsson*

**Decision:** The document was **revised to S3-191750**.

**S3-191750 LS on security and privacy aspects of NR positioning**

*Type: LS out For: Approval  
 to RAN2,RAN3, cc RAN1, SA2,RAN  
 Source: Ericsson*

(Replaces S3-191443)

**Decision:** The document was **approved**.

**S3-191364 Reply LS on RAN2 conclusion for NR positioning**

*Type: pCR For: Approval  
 33.814 v0.3.0  
 Source: Huawei, Hisilicon*

**Discussion:**

Intel supported this response.

CATT wasn't convinced with the physical risk. QUALCOMM agreed with this, they preferred to wait for RAN's progress.

Huawei: we do have requirements for a secure environment and we should tell them about them.

It was agreed that SA3 needed to wait for RAN's progress in this work.

CATT: RAN will finish this work in December, our work item will be really delayed.

**Decision:** The document was **noted**.

**S3-191351 pCR to TR33.814 - Key issue for confidentiality protection of broadcast assistance data**

*Type: pCR For: (not specified)  
 33.814 v0.3.0  
 Source: CATT*

**Discussion:**

Qualcomm: we already agreed in the LS in tdoc 600 for a solution for this.

**Decision:** The document was **noted**.

**S3-191353 pCR to TR33.814 - Key issue for integrity protection of broadcast assistance data**

*Type: pCR For: (not specified)  
 33.814 v0.3.0  
 Source: CATT*

**Decision:** The document was **revised to S3-191602**.

**S3-191602 pCR to TR33.814 - Key issue for integrity protection of broadcast assistance data**

*Type: pCR For: -  
 33.814 v0.3.0  
 Source: CATT*

(Replaces S3-191353)

**Discussion:**

Same as tdoc 351. This was already addressed in tdoc 600.

**Decision:** The document was **noted**.

**S3-191297 Key issue for encryption of broadcast assistance data in eLCS**

*Type: pCR For: (not specified)  
 33.814 v0.3.0  
 Source: CAICT, China Unicom*

**Decision:** The document was **withdrawn**.

**S3-191298 Key issue for encryption of broadcast assistance data in eLCS**

*Type: pCR For: (not specified)  
 33.814 v0.3.0  
 Source: CAICT, China Unicom*

**Decision:** The document was **noted**.

**S3-191352 pCR to TR33.814 - Key issue for distribution of assistance data ciphering key**

*Type: pCR For: (not specified)  
 33.814 v0.3.0  
 Source: CATT*

**Discussion:**

Qualcomm: SA2 has decided to do the same for the 5G system in Rel-16. This is not needed.

**Decision:** The document was **noted**.

**S3-191354 pCR to TR33.814 - Key issue for the security architecture of eLCS**

*Type: pCR For: (not specified)  
 33.814 v0.3.0  
 Source: CATT*

**Decision:** The document was **noted**.

**S3-191349 pCR to TR33.814 - Key issue for security aspect of eLCS architecture enhancement**

*Type: pCR For: (not specified)  
 33.814 v0.3.0  
 Source: CATT*

**Discussion:**

Ericsson commented that it was better to bring this back in a later stage.

**Decision:** The document was **noted**.

**S3-191363 Address EN in key issue 4**

*Type: pCR For: Approval  
 33.814 v0.3.0  
 Source: Huawei, Hisilicon*

**Discussion:**

Nokia didn't know what the role of the AMF was in the enforcement of the privacy.

ORANGE didn’t understand the meaning of privacy control here, but since it was part of existing text of the specification they withdrew their comment.

Qualcomm didn’t agree with the AMF/UE enforcing the privacy control.

**Decision:** The document was **noted**.

**S3-191368 Address EN and update in key issue 5**

*Type: pCR For: Approval  
 33.814 v0.3.0  
 Source: Huawei, Hisilicon*

**Discussion:**

Nokia and Ericsson had concerns on the requirements so the editor's note came back.

**Decision:** The document was **revised to S3-191754**.

**S3-191754 Address EN and update in key issue 5**

*Type: pCR For: Approval  
 33.814 v0.3.0  
 Source: Huawei, Hisilicon*

(Replaces S3-191368)

**Decision:** The document was **approved**.

**S3-191190 New solution to key issue 5 in TR 33.814 (FS\_eLCS\_Sec): UE faking/altering location measurements**

*Type: pCR For: Approval  
 33.814 v0.3.0  
 Source: Philips International B.V.*

**Abstract:**

Certain types of location services require a UE to perform measurements and report these to the network so the location of the UE can be determined by the network. A UE can report forged measurements in order to appear somewhere else to the network than it actually is.

**Discussion:**

ORANGE: there are no requirements.

**Decision:** The document was **noted**.

**S3-191369 A solution to prevent from providing faked/altered location estimate**

*Type: pCR For: Approval  
 33.814 v0.3.0  
 Source: Huawei, Hisilicon*

**Decision:** The document was **noted**.

**S3-191355 pCR to TR33.814 - Solution of ciphering algorithms**

*Type: pCR For: (not specified)  
 33.814 v0.3.0  
 Source: CATT*

**Decision:** The document was **noted**.

**S3-191356 pCR to TR33.814 - Solution of provisioning keys for broadcast assistance data protection**

*Type: pCR For: (not specified)  
 33.814 v0.3.0  
 Source: CATT*

**Decision:** The document was **noted**.

**S3-191358 pCR to TR33.814 - The solution for the distribution of broadcast assistance data deciphering key**

*Type: pCR For: (not specified)  
 33.814 v0.3.0  
 Source: CATT*

**Decision:** The document was **noted**.

**S3-191359 pCR to TR33.814 - The analysis of security architecture of eLCS**

*Type: pCR For: (not specified)  
 33.814 v0.3.0  
 Source: CATT*

**Discussion:**

CATT proposed to move the content to clause 4.

Qualcomm and Ericsson commented on the figure and CATT agreed to bring this back in the next meeting.

**Decision:** The document was **noted**.

**S3-191470 Update to Solution#4 Enhance privacy control in LCS**

*Type: pCR For: Approval  
 33.814 v0.3.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This pCR proposes the update to Solution #4 “Enhance privacy control in LCS” in TR 33.814.

**Decision:** The document was **approved**.

**S3-191755 Draft TR 33.814**

*Type: draft TR For: Approval  
 33.814 v0.4.0  
 Source: CATT*

**Decision:** The document was **approved**.

### 8.13 Study on security for 5G URLLC (FS\_5G URLLC\_SEC) (Rel-16)

**S3-191281 Reference part**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Huawei, HiSilicon*

**Decision:** The document was **approved**.

**S3-191284 Delete the EN of Introduction**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Huawei, HiSilicon*

**Decision:** The document was **approved**.

**S3-191285 Abbreviations**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Huawei, HiSilicon*

**Decision:** The document was **approved**.

**S3-191215 Evaluation and text for resolving editor’s note for solution #5 in TR 33.825**

*Type: pCR For: Approval  
 33.825 v0.3.0  
 Source: NEC Europe Ltd*

**Decision:** The document was **revised to S3-191723**.

**S3-191723 Evaluation and text for resolving editor’s note for solution #5 in TR 33.825**

*Type: pCR For: Approval  
 33.825 v0.3.0  
 Source: NEC Europe Ltd,Huawei*

(Replaces S3-191215)

**Decision:** The document was **noted**.

**S3-191286 Delete the EN of solution 5**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Huawei, HiSilicon*

**Decision:** The document was **revised to S3-191724**.

**S3-191724 Delete the EN of solution 5**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Huawei, HiSilicon*

(Replaces S3-191286)

**Decision:** The document was **approved**.

**S3-191507 Evaluation of solution #5: Security for redundant data transmission**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Qualcomm Incorporated*

**Decision:** The document was **noted**.

**S3-191274 Evaluation for solution 5**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Huawei, HiSilicon*

**Decision:** The document was **merged**.

**S3-191283 Adding the key issue details and threats for KI #1**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Huawei, HiSilicon*

**Decision:** The document was **approved**.

**S3-191279 Deleting EN of solution 4**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Huawei, HiSilicon*

**Discussion:**

MCC commented that the introduction could not have normative requirements and proposed to reformulate the paragraph in present tense removing the shall and "it is required".

**Decision:** The document was **revised to S3-191757**.

**S3-191757 Deleting EN of solution 4**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Huawei, HiSilicon*

(Replaces S3-191279)

**Decision:** The document was **approved**.

**S3-191280 Evaluation for solution 4**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Huawei, HiSilicon*

**Decision:** The document was **revised to S3-191758**.

**S3-191758 Evaluation for solution 4**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Huawei, HiSilicon*

(Replaces S3-191280)

**Decision:** The document was **approved**.

**S3-191277 Deleting the EN of solution 3**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Huawei, HiSilicon*

**Decision:** The document was **revised to S3-191759**.

**S3-191759 Deleting the EN of solution 3**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Huawei, HiSilicon*

(Replaces S3-191277)

**Decision:** The document was **approved**.

**S3-191275 Evaluation for solution 3**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Huawei, HiSilicon*

**Decision:** The document was **approved**.

**S3-191278 Adding more clarification text of solution 7**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Huawei, HiSilicon*

**Decision:** The document was **revised to S3-191760**.

**S3-191760 Adding more clarification text of solution 7**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Huawei, HiSilicon*

(Replaces S3-191278)

**Decision:** The document was **approved**.

**S3-191477 Solution #7 evaluation**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Ericsson*

**Decision:** The document was **approved**.

**S3-191287 Evaluation for solution 6**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Huawei, HiSilicon*

**Discussion:**

Ericsson: solution 6 is out of scope. Delete the evaluation.

**Decision:** The document was **revised to S3-191761**.

**S3-191761 Evaluation for solution 6**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Huawei, HiSilicon*

(Replaces S3-191287)

**Decision:** The document was **approved**.

**S3-191474 URLLC: Resolving EN in solution #8**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Ericsson*

**Decision:** The document was **revised to S3-191742**.

**S3-191742 URLLC: Resolving EN in solution #8**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Ericsson*

(Replaces S3-191474)

**Decision:** The document was **approved**.

**S3-191475 URLLC: Evaluation to solution #8**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Ericsson*

**Decision:** The document was **revised to S3-191762**.

**S3-191762 URLLC: Evaluation to solution #8**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Ericsson*

(Replaces S3-191475)

**Decision:** The document was **approved**.

**S3-191506 Missing implementation of S3-190797: Conclusion on KI #8 for Study on the security for URLLC**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Qualcomm Incorporated*

**Decision:** The document was **approved**.

**S3-191276 Security solutions summary**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Huawei, HiSilicon*

**Discussion:**

Ericsson: where to put this table?

**Decision:** The document was **revised to S3-191763**.

**S3-191763 Security solutions summary**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Huawei, HiSilicon*

(Replaces S3-191276)

**Decision:** The document was **approved**.

**S3-191270 Conclusion for key issue 1**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Huawei, HiSilicon*

**Discussion:**

Ericsson: remove solution 5.

**Decision:** The document was **revised to S3-191764**.

**S3-191764 Conclusion for key issue 1**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Huawei, HiSilicon*

(Replaces S3-191270)

**Decision:** The document was **approved**.

**S3-191271 Conclusion for key issue 2**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Huawei, HiSilicon*

**Decision:** The document was **noted**.

**S3-191478 Conclusion to KI#1 and KI#2**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Ericsson*

**Decision:** The document was **noted**.

**S3-191272 Conclusion for key issue 3**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Huawei, HiSilicon*

**Decision:** The document was **noted**.

**S3-191476 URLLC: Recommendation for KI#3**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Ericsson*

**Decision:** The document was **noted**.

**S3-191273 Conclusion for key issue 4**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Huawei, HiSilicon*

**Discussion:**

BT: we need to check the relation with the SA2 specification. Add an editor's note.

Ericsson: we don’t agree with solution 3 part. This was removed.

**Decision:** The document was **revised to S3-191765**.

**S3-191765 Conclusion for key issue 4**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Huawei, HiSilicon*

(Replaces S3-191273)

**Decision:** The document was **approved**.

**S3-191282 Way forward of FS\_5G\_URLLC security study**

*Type: pCR For: Approval  
 33.825 v0.4.0  
 Source: Huawei, HiSilicon*

**Decision:** The document was **withdrawn**.

**S3-191756 Draft TR 33.825**

*Type: draft TR For: Approval  
 33.825 v0.5.0  
 Source: Huawei*

**Decision:** The document was **approved**.

**S3-191787 Cover sheet TR 33.825**

*Type: TS or TR cover For: Approval  
 33.825 v..  
 Source: Huawei*

**Decision:** The document was **approved**.

### 8.14 Study on SECAM and SCAS for 3GPP virtualized network products (FS\_VNP\_SECAM\_SCAS) (Rel-16)

**S3-191526 Scope of a SECAM SCAS for 3GPP virtualized network products**

*Type: pCR For: (not specified)  
 33.818 v0.2.0  
 Source: China Mobile, CAICT*

**Decision:** The document was **not treated**.

**S3-191530 Scope of SECAM evaluation for 3GPP virtualized network products**

*Type: pCR For: Approval  
 33.818 v0.2.0  
 Source: China Mobile, CAICT*

**Decision:** The document was **not treated**.

**S3-191531 Scope of SECAM Accreditation for 3GPP virtualized network products**

*Type: pCR For: Approval  
 33.818 v0.2.0  
 Source: China Mobile, CAICT*

**Decision:** The document was **not treated**.

**S3-191533 Adding roles in SECAM for 3GPP virtualized network products into clause 4.6**

*Type: pCR For: Approval  
 33.818 v0.2.0  
 Source: China Mobile, CAICT*

**Decision:** The document was **not treated**.

**S3-191535 Adding contents into clause 4**

*Type: pCR For: Approval  
 33.818 v0.2.0  
 Source: China Mobile, CAICT*

**Decision:** The document was **not treated**.

### 8.15 Study on Security for 5GS Enhanced support of Vertical and LAN Services (FS\_Vertical\_LAN\_SEC) (Rel-16)

**S3-191425 Solution and Conclusion on 5GLAN authentication**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

MCC reminded to add the references of the named specifications (e.g. 33.501) in clause 2 of the next draft TR.

**Decision:** The document was **approved**.

**S3-191426 Solution on SMF handling the UP security policy for a 5GLAN Group**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **approved**.

**S3-191427 Solution and conclusion for TSC**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Taken offline to express that the authentication procedure in 33.501 is to be followed.

**Decision:** The document was **revised to S3-191767**.

**S3-191767 Solution and conclusion for TSC**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S3-191427)

**Decision:** The document was **approved**.

**S3-191106 Discussion on possible privacy/confidentiality attacks in PLMN integrated NPN**

*Type: discussion For: Endorsement  
 Source: InterDigital*

**Abstract:**

The purpose of this contribution is to provide a brief security analysis for possible attacks on UE privacy and NPN confidentiality in cases of NPNs with CAG access control. The companion PCR in S3-19XXXX proposes new KI for TR 33.819, “Study on security for 5GS enhanced support of Vertical and LAN Services.”

**Decision:** The document was **noted**.

**S3-191553 Resolution of Editor’s note on privacy impact in Solution #3**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: Samsung*

**Decision:** The document was **revised to S3-191768**.

**S3-191768 Resolution of Editor’s note on privacy impact in Solution #3**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: Samsung*

(Replaces S3-191553)

**Discussion:**

Editor's note was finally kept.

**Decision:** The document was **approved**.

**S3-191592 Comment on contribution S3-191553**

*Type: discussion For: Discussion  
 33.819 v..  
 Source: InterDigital Belgium. LLC*

**Abstract:**

Comment on contribution S3-191553 for the resolution of EN on privacy impact related to sending CAG ID over the air

**Decision:** The document was **noted**.

**S3-191596 New KI for PLMN integrated NPN**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: InterDigital Germany GmbH*

(Replaces S3-191107)

**Abstract:**

This contribution proposes a new KI for TR 33.819. It is an update of the previously submitted S3-191107. The updates are suggested by the rapporteur of the Study and are limited to minor changes in the title of the proposed KI and conversion of the proposed text to "Changes Tracked" text.

**Discussion:**

There was no agreement with the security threats and requirements.

**Decision:** The document was **revised to S3-191769**.

**S3-191769 New KI for PLMN integrated NPN**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: InterDigital Germany GmbH*

(Replaces S3-191596)

**Decision:** The document was **approved**.

**S3-191597 New KI for Public network integrated NPN**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: InterDigital Germany GmbH*

(Replaces S3-191164)

**Abstract:**

This contribution proposes a new KI for TR 33.819. It replaces S3-191164. The changes are suggested by the WI rapporteur and are limited to the conversion of the added text to the text under Track Changes control and to minor change in the proposed KI number.

**Decision:** The document was **revised to S3-191770**.

**S3-191770 New KI for Public network integrated NPN**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: InterDigital Germany GmbH*

(Replaces S3-191597)

**Decision:** The document was **approved**.

**S3-191233 Non-AKA based EAP methods with credentials stored and processed in UDM/ARPF**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: CableLabs*

**Discussion:**

ORANGE didn’t agree with the key issue. The key hierarchy key issue is already covered somewhere else.

Qualcomm argued that the use case was supported by the Rel-15 framework

**Decision:** The document was **noted**.

**S3-191428 Key issue on PNiNPN authentication**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Ericsson didn’t see the threat clearly.

ORANGE: the security requirements don’t match because you can access the NPN networks without authenticating, you cannot mandate authentication.

Qualcomm: we should close the TR without adding more key issues.

Nokia: we want to close on this key issue.

Telecom Italia: the solution should not exist.

No support for this document, hence it was noted.

**Decision:** The document was **noted**.

**S3-191429 Solution and evaluation for PNiNPN authentication**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

ORANGE: not needed. We should not put material from our specifications in the TRs. This is existing already.

**Decision:** The document was **noted**.

**S3-191339 Discussion on Architecture of PLMN integrated NPN**

*Type: discussion For: Agreement  
 33.819 v..  
 Source: Huawei, HiSilicon*

**Decision:** The document was **noted**.

**S3-191348 Amendment to Key Issue# 2.1**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: Huawei, HiSilicon*

**Discussion:**

ORANGE: SA2 already created an architecture that doesn't imply changes in the security architecture. No work for us in this key issue.

Huawei: you mention the standalone case, this is for the integrated case.

**Decision:** The document was **noted**.

**S3-191338 Solution for efficient authentication for access between NPN and PLMN**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: Huawei, HiSilicon*

**Decision:** The document was **noted**.

**S3-191424 Solutions and conclusion for SNPN service access via PLMN and vice versa**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

ORANGE: everything is captured in the SA2 specification. The solution is in their document already. This will not produce eventually CRs into 33.501.

Gemalto: we need a conclusion on this key issue, otherwise this will come back.

The Chair commented that existing solutions can apply. ORANGE didn’t agree since this didn’t have any impact on our specifications.

ORANGE: just say that no normative work is required.

Everything was gone except the conclusion, which was reworded.

**Decision:** The document was **revised to S3-191771**.

**S3-191771 Solutions and conclusion for SNPN service access via PLMN and vice versa**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S3-191424)

**Decision:** The document was **approved**.

**S3-191370 update in solution 4**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: Huawei, Hisilicon*

**Decision:** The document was **revised to S3-191772**.

**S3-191772 update in solution 3**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: Huawei, Hisilicon*

(Replaces S3-191370)

**Decision:** The document was **approved**.

**S3-191495 Proposed evaluation details for solution #4 in TR 33.819**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: Qualcomm Incorporated*

**Decision:** The document was **approved**.

**S3-191552 Editor’s note for KI #1.1**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: Samsung*

**Decision:** The document was **approved**.

**S3-191496 Proposed conclusion details for key issue #1.1 in TR 33.819**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: Qualcomm Incorporated*

**Discussion:**

Ericsson: too early.

**Decision:** The document was **noted**.

**S3-191551 Alignment of the term Non-Standalone NPN**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: Samsung*

**Decision:** The document was **approved**.

**S3-191555 Resolution of Editor’s note on entities protected in Solution #3**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: Samsung*

**Decision:** The document was **approved**.

**S3-191556 Evaluation to Solution #3**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: Samsung*

**Discussion:**

Ericsson: how do you know that the UE is present without authentication and not a reply attack?

Samsung: this is always possible but it is not addressed in this key issue.

Editor's note added: change of CAGid by the network, provisioning of the updated id to the UE is out of scope of this solution.

**Decision:** The document was **revised to S3-191773**.

**S3-191773 Evaluation to Solution #3**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: Samsung*

(Replaces S3-191556)

**Decision:** The document was **approved**.

**S3-191430 Summary of security aspects covered in this study**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **revised to S3-191774**.

**S3-191774 Summary of security aspects covered in this study**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S3-191430)

**Discussion:**

Last part from "the key issues are grouped.." removed as proposed by Qualcomm.

**Decision:** The document was **approved**.

**S3-191422 Unified EAP authentication framework**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

ORANGE: not needed. There is no key issue or requirements. Nokia replied that this was coming from an endorsed document from the last meeting.

ORANGE commented that the agreement was about going directly to CRs in the normative phase instead of introducing content in the TR.

ORANGE added that the usual procedure from SA3 was based on key issues and there was no point in changing this working methodology.

**Decision:** The document was **noted**.

**S3-191493 Proposed evaluation details for solution #5 in TR 33.819**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: Qualcomm Incorporated*

**Decision:** The document was **approved**.

**S3-191423 Conclusion on EAP authentication framework**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **noted**.

**S3-191494 Proposed conclusion details for key issue #5.1 in TR 33.819**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: Qualcomm Incorporated*

**Decision:** The document was **approved**.

**S3-191431 Security for non-public networks**

*Type: draftCR For: Agreement  
 33.819 v0.3.0  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

MCC commented that this could not be input for the study, since CRs are part of normative work.

Qualcomm and Nokia replied that they wanted to collect comments and agree on a way forward for the future.

MCC added that in order to proceed with these CRs a normative WID would be needed.

**Decision:** The document was **noted**.

**S3-191432 NPN references in existing text**

*Type: draftCR For: Agreement  
 33.819 v0.3.0  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Gemalto: the USIM always resides in the UICC, not only for PLMNs.

**Decision:** The document was **noted**.

**S3-191497 Motivation and comments on a draft CR for non-public networks**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Decision:** The document was **noted**.

**S3-191498 Security for non-public networks**

*Type: discussion For: Endorsement  
 Source: Qualcomm Incorporated*

**Decision:** The document was **noted**.

**S3-191107 New KI for PLMN integrated NPN**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: InterDigital*

**Abstract:**

The purpose of this contribution is to propose a new KI reflecting security analysis for possible attacks on UE privacy and NPN confidentiality in cases of NPNs with CAG access control. The companion discussion paper in S3-191106 presents a brief security analysis.

**Decision:** The document was **revised to S3-191596**.

**S3-191164 New KI for Public network integrated NPN**

*Type: pCR For: Approval  
 33.819 v0.3.0  
 Source: InterDigital Germany GmbH*

**Abstract:**

This pCR proposes a new key issue related to potential DoS attacks on the UE in the case of Public network integrated NPN.

**Decision:** The document was **revised to S3-191597**.

**S3-191766 Draft TR 33.819**

*Type: draft TR For: Approval  
 33.819 v0.4.0  
 Source: Nokia*

**Decision:** The document was **approved**.

**S3-191791 Cover sheet TR 33.819**

*Type: TS or TR cover For: Approval  
 33.819 v..  
 Source: Nokia*

**Decision:** The document was **approved**.

### 8.16 Study on LTKUP Detailed solutions (FS\_LTKUP\_Detail) (Rel-16)

**S3-191482 pCR to TR33.935 - Addition of Diffie - Helman Key agreements section**

*Type: pCR For: Approval  
 33.935 v0.1.0  
 Source: Vodafone GmbH*

**Decision:** The document was **withdrawn**.

### 8.17 Study on User Plane Integrity Protection (FS\_UP\_IP\_Sec) (Rel-16)

**S3-191146 Response LS on full data rate support for UP IP**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: R2-1905455*

**Discussion:**

Lenovo: what are the implications of this in our study? Qualcomm replied that SA3 should focus on the LTE part, and for the NR it is fine to meet the requirement.

Huawei: it seems that they didn’t get our requirement.

**Decision:** The document was **noted**.

**S3-191191 Proposal for FS\_UP\_IP\_Sec Key Issue #3 and 5: Zero-overhead user plane integrity protection on the link layer**

*Type: pCR For: Approval  
 33.853 v0.2.0  
 Source: Philips International B.V.*

**Abstract:**

This contribution proposes a new solution for key issue #3: "UE support of UP IP at the full uplink data rate" and key issue #5: "Optionality of integrity protection in UP DRB".

**Decision:** The document was **revised to S3-191691**.

**S3-191691 Proposal for FS\_UP\_IP\_Sec Key Issue #3 and 5: Zero-overhead user plane integrity protection on the link layer**

*Type: pCR For: Approval  
 33.853 v0.2.0  
 Source: Philips International B.V.*

(Replaces S3-191191)

**Discussion:**

Lenovo: for NR or LTE?

Philips: for both.

Huawei: for LTE it is impossible.

Vodafone: this is not a TS, we don’t need approval from RAN2 to introduce a solution in the TR, it is not a conclusion.

Lenovo,Ericsson, Nokia: let's not advance with this given the answer from RAN2 in their LS.

**Decision:** The document was **noted**.

**S3-191263 Modification to key issue#1**

*Type: pCR For: Approval  
 33.853 v0.2.0  
 Source: Apple Computer Trading Co. Ltd*

**Decision:** The document was **approved**.

**S3-191264 Modification to Key issue#4**

*Type: pCR For: Approval  
 33.853 v0.2.0  
 Source: Apple Computer Trading Co. Ltd*

**Decision:** The document was **noted**.

**S3-191265 Integrity protection between SgNB and UE in NGEN-DC**

*Type: pCR For: Approval  
 33.853 v0.2.0  
 Source: Apple Computer Trading Co. Ltd*

**Discussion:**

Huawei, NEC: this is already covered in TS 33.501.

Vodafone: key issue 4 still exists, so this is valid as a solution.

Huawei: just refer to TS 33.501.

Vodafone: we need a contribution evaluating this.

MCC: reword last sentence to say that this is covered by TS 33.501. Huawei: add an editor's note indicating that if TS 33.501 is changed, the solution needs to be aligned.

The solution details were removed.

**Decision:** The document was **revised to S3-191776**.

**S3-191776 Integrity protection between SgNB and UE in NGEN-DC**

*Type: pCR For: Approval  
 33.853 v0.2.0  
 Source: Apple Computer Trading Co. Ltd*

(Replaces S3-191265)

**Decision:** The document was **approved**.

**S3-191266 Solution for Key issue #5**

*Type: pCR For: Approval  
 33.853 v0.2.0  
 Source: Apple Computer Trading Co. Ltd*

**Discussion:**

Qualcomm: not in the scope of the study item based on the RAN2 LS.

NCSC: remove the IV generation part.

Ericsson: we don’t need this.

Qualcomm: we need to revisit the key issues based on RAN2's answer. Lenovo agreed.

**Decision:** The document was **noted**.

**S3-191543 Solution for integrity protection of UP signalling messages**

*Type: pCR For: Approval  
 33.853 v0.2.0  
 Source: Samsung*

**Decision:** The document was **approved**.

**S3-191775 Draft TR 33.853**

*Type: draft TR For: Approval  
 33.853 v0.3.0  
 Source: Vodafone*

**Decision:** The document was **approved**.

### 8.18 Study on Security Impacts of Virtualisation (FS\_SIV) (Rel-16)

**S3-191217 Scope for TR 33 848**

*Type: pCR For: Agreement  
 33.848 v0.0.0  
 Source: BT plc*

**Decision:** The document was **revised to S3-191714**.

**S3-191714 Scope for TR 33 848**

*Type: pCR For: Agreement  
 33.848 v0.0.0  
 Source: BT plc*

(Replaces S3-191217)

**Decision:** The document was **approved**.

**S3-191216 Initial Key Issues for TR 33.848**

*Type: pCR For: Agreement  
 33.848 v0.0.0  
 Source: BT plc*

**Decision:** The document was **revised to S3-191721**.

**S3-191721 Initial Key Issues for TR 33.848**

*Type: pCR For: Agreement  
 33.848 v0.0.0  
 Source: BT plc*

(Replaces S3-191216)

**Decision:** The document was **approved**.

**S3-191222 Virtualisation Background and Concepts**

*Type: pCR For: Approval  
 33.848 v0.0.0  
 Source: NCSC*

**Abstract:**

Proposed introductory text for Section 4 of TR33.848.

**Decision:** The document was **revised to S3-191715**.

**S3-191715 Virtualisation Background and Concepts**

*Type: pCR For: Approval  
 33.848 v0.0.0  
 Source: NCSC*

(Replaces S3-191222)

**Decision:** The document was **approved**.

**S3-191223 Discussion on structure of TR 33.848: Study on Security Impacts of Virtualisation**

*Type: discussion For: Discussion  
 33.848 v..  
 Source: NCSC*

**Decision:** The document was **noted**.

**S3-191224 Key Issue: Establishment of trust domains for Network Functions**

*Type: pCR For: Approval  
 33.848 v0.0.0  
 Source: NCSC*

**Decision:** The document was **revised to S3-191716**.

**S3-191716 Key Issue: Establishment of trust domains for Network Functions**

*Type: pCR For: Approval  
 33.848 v0.0.0  
 Source: NCSC*

(Replaces S3-191224)

**Decision:** The document was **approved**.

**S3-191225 Key Issue: Confidentiality of Sensitive Data**

*Type: pCR For: Approval  
 33.848 v0.0.0  
 Source: NCSC*

**Decision:** The document was **revised to S3-191717**.

**S3-191717 Key Issue: Confidentiality of Sensitive Data**

*Type: pCR For: Approval  
 33.848 v0.0.0  
 Source: NCSC*

(Replaces S3-191225)

**Decision:** The document was **approved**.

**S3-191226 Key Issue: Availability of Network Functions**

*Type: pCR For: Approval  
 33.848 v0.0.0  
 Source: NCSC*

**Decision:** The document was **revised to S3-191718**.

**S3-191718 Key Issue: Availability of Network Functions**

*Type: pCR For: Approval  
 33.848 v0.0.0  
 Source: NCSC*

(Replaces S3-191226)

**Decision:** The document was **approved**.

**S3-191563 Virtualisation Study Key Issue 1**

*Type: pCR For: Agreement  
 33.848 v0.0.0  
 Source: BT Group*

**Decision:** The document was **revised to S3-191719**.

**S3-191719 Virtualisation Study Key Issue 1**

*Type: pCR For: Agreement  
 33.848 v0.0.0  
 Source: BT Group*

(Replaces S3-191563)

**Decision:** The document was **approved**.

**S3-191564 Virtualisation Study Key Issue 2**

*Type: pCR For: Agreement  
 33.848 v0.0.0  
 Source: BT Group*

**Decision:** The document was **revised to S3-191720**.

**S3-191720 Virtualisation Study Key Issue 2**

*Type: pCR For: Agreement  
 33.848 v0.0.0  
 Source: BT Group*

(Replaces S3-191564)

**Discussion:**

Last sentence was removed as challenged by Gemalto.

MCC: remove the "must". We don't have to refer to ETSI ISG NFV phase one as a whole, better refer to specific documents.

**Decision:** The document was **approved**.

**S3-191565 Virtualisation Study Key Issue 3**

*Type: pCR For: Agreement  
 33.848 v0.0.0  
 Source: BT Group*

**Decision:** The document was **approved**.

**S3-191566 Virtualisation Study Key Issue 4**

*Type: pCR For: Agreement  
 33.848 v0.0.0  
 Source: BT Group*

**Decision:** The document was **approved**.

**S3-191567 Virtualisation Study Key Issue 5**

*Type: pCR For: Agreement  
 33.848 v0.0.0  
 Source: BT Group*

**Discussion:**

Huawei: what's the requirement for 3GPP here?

BT: good question, not trivial.

It was commented that most probably there would be no requirements, but it was good to document it. This was asked to be captured in the minutes.

**Decision:** The document was **revised to S3-191778**.

**S3-191778 Virtualisation Study Key Issue 5**

*Type: pCR For: Agreement  
 33.848 v0.0.0  
 Source: BT Group*

(Replaces S3-191567)

**Decision:** The document was **approved**.

**S3-191568 Virtualisation Study Key Issue 6**

*Type: pCR For: Agreement  
 33.848 v0.0.0  
 Source: BT Group*

**Decision:** The document was **not treated**.

**S3-191569 Virtualisation Study Key Issue 7**

*Type: pCR For: Agreement  
 33.848 v0.0.0  
 Source: BT Group*

**Decision:** The document was **not treated**.

**S3-191570 Virtualisation Study Key Issue 8**

*Type: pCR For: Agreement  
 33.848 v0.0.0  
 Source: BT Group*

**Decision:** The document was **not treated**.

**S3-191571 Virtualisation Study Key Issue 9**

*Type: pCR For: Agreement  
 33.848 v0.0.0  
 Source: BT Group*

**Decision:** The document was **not treated**.

**S3-191572 Virtualisation Study Key Issue 10**

*Type: pCR For: Agreement  
 33.848 v0.0.0  
 Source: BT Group*

**Decision:** The document was **not treated**.

**S3-191573 Virtualisation Study Key Issue 11**

*Type: pCR For: Agreement  
 33.848 v0.0.0  
 Source: BT Group*

**Decision:** The document was **not treated**.

**S3-191574 Virtualisation Study Key Issue 12**

*Type: pCR For: Agreement  
 33.848 v0.0.0  
 Source: BT Group*

**Decision:** The document was **not treated**.

**S3-191575 Virtualisation Study Key Issue 13**

*Type: pCR For: Agreement  
 33.848 v0.0.0  
 Source: BT Group*

**Decision:** The document was **not treated**.

**S3-191576 Virtualisation Study Key Issue 14**

*Type: pCR For: Agreement  
 33.848 v0.0.0  
 Source: BT Group*

**Decision:** The document was **not treated**.

**S3-191577 Virtualisation Study Key Issue 15**

*Type: pCR For: Agreement  
 33.848 v0.0.0  
 Source: BT Group*

**Decision:** The document was **not treated**.

**S3-191578 Virtualisation Study Key Issue 16**

*Type: pCR For: Agreement  
 33.848 v0.0.0  
 Source: BT Group*

**Decision:** The document was **not treated**.

**S3-191579 Virtualisation Study Key Issue 17**

*Type: pCR For: Agreement  
 33.848 v0.0.0  
 Source: BT Group*

**Decision:** The document was **not treated**.

**S3-191580 Virtualisation Study Key Issue 18**

*Type: pCR For: Agreement  
 33.848 v0.0.0  
 Source: BT Group*

**Decision:** The document was **not treated**.

**S3-191581 Virtualisation Study Key Issue 19**

*Type: pCR For: Agreement  
 33.848 v0.0.0  
 Source: BT Group*

**Decision:** The document was **not treated**.

**S3-191582 Virtualisation Study Key Issue 20**

*Type: pCR For: Agreement  
 33.848 v0.0.0  
 Source: BT Group*

**Decision:** The document was **not treated**.

**S3-191583 Virtualisation Study Key Issue 21**

*Type: pCR For: Agreement  
 33.848 v0.0.0  
 Source: BT Group*

**Decision:** The document was **not treated**.

**S3-191584 Virtualisation Study Key Issue 22**

*Type: pCR For: Agreement  
 33.848 v0.0.0  
 Source: BT Group*

**Decision:** The document was **not treated**.

**S3-191585 Virtualisation Study Key Issue 23**

*Type: pCR For: Agreement  
 33.848 v0.0.0  
 Source: BT Group*

**Decision:** The document was **not treated**.

**S3-191587 Virtualisation Study Key Issue 24**

*Type: pCR For: Agreement  
 33.848 v0.0.0  
 Source: BT plc*

**Decision:** The document was **not treated**.

**S3-191722 Draft TR 33.848**

*Type: draft TR For: Approval  
 33.848 v0.1.0  
 Source: BT*

**Decision:** The document was **revised to S3-191777**.

**S3-191777 Draft TR 33.848**

*Type: draft TR For: Approval  
 33.848 v0.1.0  
 Source: BT*

(Replaces S3-191722)

**Decision:** The document was **approved**.

### 8.19 Study on authentication enhancements in 5GS (FS\_AUTH\_ENH) (Rel-16)

**S3-191336 A key issue on forward secrecy**

*Type: pCR For: Approval  
 33.846 v0.1.0  
 Source: Huawei, HiSilicon*

**Decision:** The document was **not treated**.

**S3-191473 Co-existence of LTKUP and PFS**

*Type: discussion For: Discussion  
 33.846 v..  
 Source: Ericsson*

**Decision:** The document was **not treated**.

**S3-191196 way forward against attack using authentication**

*Type: discussion For: Endorsement  
 Source: ZTE Corporation*

**Discussion:**

ZTE: this involves both Rel-15 and Rel-16.

Gemalto: how and where to address this topic? Rel-15 or Rel-16?

Ericsson: all contributions changing the core of SA3 cannot be handled in Rel-15 at this stage.

Nokia: we are touching the core of authentication mechanism so this needs to be analysed carefully.

It was commented that this content was related to the study in 8.19.

The CRs in that case would not be considered as such in the study, but as pseudo CRs.

**Decision:** The document was **noted**.

**S3-191480 New KI: Leakage of long-term key**

*Type: pCR For: Approval  
 33.846 v0.1.0  
 Source: Ericsson*

**Decision:** The document was **not treated**.

**S3-191197 Structure RAND for authentication – HE part**

*Type: CR For: Agreement  
 33.102 v15.1.0 CR-0278 Cat: F (Rel-15)  
  
 Source: ZTE Corporation*

**Decision:** The document was **not treated**.

**S3-191198 Structure RAND for authentication – ME part**

*Type: CR For: Agreement  
 33.401 v15.7.0 CR-0677 Cat: F (Rel-15)  
  
 Source: ZTE Corporation*

**Decision:** The document was **not treated**.

**S3-191199 Structure RAND for authentication – ME part**

*Type: CR For: Agreement  
 33.501 v15.4.0 CR-0562 Cat: F (Rel-15)  
  
 Source: ZTE Corporation*

**Decision:** The document was **not treated**.

**S3-191200 Handling of Sync failure for 5G AKA**

*Type: CR For: Agreement  
 33.501 v15.4.0 CR-0563 Cat: F (Rel-15)  
  
 Source: ZTE Corporation*

**Decision:** The document was **not treated**.

**S3-191337 A solution to forward secrecy**

*Type: pCR For: Approval  
 33.846 v0.1.0  
 Source: Huawei, HiSilicon*

**Decision:** The document was **not treated**.

**S3-191481 New solution: EAP-AKA´ PFS**

*Type: pCR For: Approval  
 33.846 v0.1.0  
 Source: Ericsson*

**Decision:** The document was **not treated**.

**S3-191201 Modification on linkability issue1**

*Type: pCR For: Approval  
 33.846 v0.1.0  
 Source: ZTE Corporation*

**Decision:** The document was **not treated**.

**S3-191559 Mitigation against linkability attack**

*Type: pCR For: Approval  
 33.846 v0.1.0  
 Source: Gemalto N.V.*

**Abstract:**

Mitigation against the linkability attack

**Decision:** The document was **not treated**.

**S3-191383 mitigate the linkability attack**

*Type: pCR For: Approval  
 33.846 v0.1.0  
 Source: Huawei, Hisilicon*

**Decision:** The document was **not treated**.

**S3-191402 New solution for linkability attack**

*Type: pCR For: Approval  
 33.846 v0.1.0  
 Source: Huawei, Hisilicon*

**Decision:** The document was **not treated**.

**S3-191231 New KI: Updating UDM with UE deregistration status**

*Type: pCR For: Approval  
 33.846 v0.1.0  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **not treated**.

**S3-191410 New KI: KAUSF storing at UE side**

*Type: pCR For: Approval  
 33.846 v0.1.0  
 Source: Huawei, Hisilicon*

**Decision:** The document was **not treated**.

**S3-191529 Adding MACS as an input parameter to the calculation of AK\* to provide freshness**

*Type: CR For: Agreement  
 33.102 v15.1.0 CR-0277 rev 1 Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

(Replaces S3-190376)

**Decision:** The document was **not treated**.

**S3-191202 Conclusion on linkability issue**

*Type: pCR For: Approval  
 33.846 v0.1.0  
 Source: ZTE Corporation*

**Decision:** The document was **not treated**.

### 8.20 Study on Security for NR Integrated Access and Backhaul (FS\_NR\_IAB\_Sec)

**S3-191149 LS to SA2 and SA5 on IAB impact to CN**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: R2-1905475*

**Decision:** The document was **noted**.

**S3-191194 IAM Security**

*Type: discussion For: (not specified)  
 Source: AT&T,Interdigital*

**Discussion:**

Ericsson: we are aligned with AT&T's view. QUALCOMM also shared their opinion and they had related contributions.

Huawei commented that they had contributions addressing this as well.

Alex(BT): make sure that this will scale out in software.

**Decision:** The document was **noted**.

**S3-191516 Status on RAN WI NR\_IAB**

*Type: discussion For: Information  
 Source: Qualcomm Incorporated*

**Discussion:**

Huawei: RAN3 can inform us by LS about their progress.

**Decision:** The document was **noted**.

**S3-191514 Draft CR to 38300 for IAB**

*Type: discussion For: Information  
 Source: Qualcomm Incorporated*

**Discussion:**

Company of the previous contribution for information.

**Decision:** The document was **noted**.

**S3-191515 Draft CR to 38401 for IAB**

*Type: discussion For: Information  
 Source: Qualcomm Incorporated*

**Discussion:**

Company of the previous contribution for information.

**Decision:** The document was **noted**.

**S3-191456 IAB - terminology**

*Type: pCR For: Approval  
 33.824 v0.1.0  
 Source: Ericsson*

**Discussion:**

Huawei: this is not related to SA3, let's reference the RAN specs because the definitions can change.

Qualcomm suggested to keep them as they were useful with an editor's note explaining that they may be temporary.

**Decision:** The document was **revised to S3-191692**.

**S3-191692 IAB - terminology**

*Type: pCR For: Approval  
 33.824 v0.1.0  
 Source: Ericsson*

(Replaces S3-191456)

**Decision:** The document was **approved**.

**S3-191536 IAB Architecture**

*Type: pCR For: Approval  
 33.824 v0.1.0  
 Source: Samsung*

**Decision:** The document was **revised to S3-191694**.

**S3-191694 IAB Architecture**

*Type: pCR For: Approval  
 33.824 v0.1.0  
 Source: Samsung*

(Replaces S3-191536)

**Discussion:**

Adding an editor's note on alignment with RAN specs.

**Decision:** The document was **approved**.

**S3-191457 IAB - security architecture diagram key issue**

*Type: pCR For: Approval  
 33.824 v0.1.0  
 Source: Ericsson*

**Decision:** The document was **noted**.

**S3-191491 IAB - security architecture diagram solution**

*Type: pCR For: Approval  
 33.824 v0.1.0  
 Source: Ericsson-LG Co., LTD*

**Decision:** The document was **revised to S3-191695**.

**S3-191695 IAB - security architecture diagram solution**

*Type: pCR For: Approval  
 33.824 v0.1.0  
 Source: Ericsson-LG Co., LTD*

(Replaces S3-191491)

**Decision:** The document was **approved**.

**S3-191458 A new KI for the authentication framework for the UE**

*Type: pCR For: Approval  
 33.824 v0.1.0  
 Source: Ericsson*

**Discussion:**

Huawei: we don’t need to mention framework here.

Ericsson: we want to capture that the UE is transparent to this authentication.

ORANGE: we don’t need this key issue. The UE is authenticated to the network according to TS 33.501.

Qualcomm: this TR analyses changes to what's in TS 33.501 already. We don’t want to re-open key issues.

ORANGE: be more precise, not just "transparent".

The Chair proposed to add a statement addressing this somewhere like in clause 4.

**Decision:** The document was **revised to S3-191696**.

**S3-191696 A new KI for the authentication framework for the UE**

*Type: pCR For: Approval  
 33.824 v0.1.0  
 Source: Ericsson,Intel*

(Replaces S3-191458)

**Decision:** The document was **approved**.

**S3-191459 A new KI for the authentication framework for an IAB node acting as a MT**

*Type: pCR For: Approval  
 33.824 v0.1.0  
 Source: Ericsson*

**Decision:** The document was **revised to S3-191697**.

**S3-191697 A new KI for the authentication framework for an IAB node acting as a MT**

*Type: pCR For: Approval  
 33.824 v0.1.0  
 Source: Ericsson,Samsung*

(Replaces S3-191459)

**Decision:** The document was **approved**.

**S3-191460 A new KI for activating communication security in IAB node**

*Type: pCR For: Approval  
 33.824 v0.1.0  
 Source: Ericsson*

**Decision:** The document was **revised to S3-191698**.

**S3-191698 A new KI for activating communication security in IAB node**

*Type: pCR For: Approval  
 33.824 v0.1.0  
 Source: Ericsson,Intel*

(Replaces S3-191460)

**Decision:** The document was **approved**.

**S3-191538 Key Issue on IAB Node authentication and authorization**

*Type: pCR For: Approval  
 33.824 v0.1.0  
 Source: Samsung R&D Institute India*

**Discussion:**

Content related to authentication was merged with the revision of 459.

**Decision:** The document was **merged**.

**S3-191461 A solution for mutual authentication between a UE and a 3GPP network supporting the IAB architecture**

*Type: pCR For: Approval  
 33.824 v0.1.0  
 Source: Ericsson*

**Decision:** The document was **merged**.

**S3-191539 Solution for IAB Node authentication and authorization**

*Type: pCR For: Approval  
 33.824 v0.1.0  
 Source: Samsung*

**Discussion:**

Huawei: this is mixing LTE and 5G details, so it's confusing.

Added an editor's note on the need to separate both authentication details.

ORANGE: remove the evaluation, add an editor's note on the difference between MT and UE (which will be decided in RAN groups).

It was decided to add a statement on the IP node acting as an UE instead of the editor's note.

**Decision:** The document was **revised to S3-191699**.

**S3-191699 Solution for IAB Node authentication and authorization**

*Type: pCR For: Approval  
 33.824 v0.1.0  
 Source: Samsung*

(Replaces S3-191539)

**Decision:** The document was **approved**.

**S3-191250 F1-U security analysis for IAB architecture**

*Type: discussion For: Endorsement  
 33.824 v..  
 Source: Huawei, Hisilicon*

**Abstract:**

Present the background of protecting F1-U using e2e PDCP UPO integrity protection and UP encryption. When UP integrity protection and UP encryption are enabled and used between the UE and the IAB-donor-CU, all F1-U security requirements are met and no further security solution is required for protecting F1-U.

**Discussion:**

ORANGE: this challenges the TS 33.501 5G architecture. This is misplaced.

Juniper, AT&T, Vodafone,BT objected to the document.

ORANGE: f1 security activation is optional for the operator, this was agreed.

Huawei: we didn’t analyse the security threats for f1. If there are no threats we don’t need the security requirement.

Vodafone: we cannot be reactive, do something when we have a security threat. Not having identified the threat doesn't mean that there is no threat.

NTT-Docomo didn’t agree with the way the document was written.

There wasn't any support for this document, hence it was noted.

**Decision:** The document was **noted**.

**S3-191254 Key Issues on F1-U security for IAB architecture**

*Type: pCR For: Approval  
 33.824 v0.1.0  
 Source: Huawei, Hisilicon*

**Abstract:**

Propose a KI to be added to TR33.824. It analyses the F1-U security threats and security requirements.

**Decision:** The document was **noted**.

**S3-191518 Commonalities between IAB and Wireline Fronthaul for CU/DU**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Decision:** The document was **noted**.

**S3-191517 F1 interface security for IAB**

*Type: pCR For: Approval  
 33.824 v0.0.0  
 Source: Qualcomm Incorporated*

**Discussion:**

Huawei only supported the f1 control, but objected to the requirements and threats.

Ericsson,ORANGE, NTT-Docomo, Vodafone, Juniper,BT, AT&T supported these requirements..

BT: the requirement should distinguish between wireless and wireline.

Huawei: no additional requirements to end-to-end PDCP security protection. There are no attacks for this.

NTT-Docomo: clarify the end-to-end between the terminating points.

The security requirements were reworded to say "shall support" instead.

**Decision:** The document was **revised to S3-191700**.

**S3-191700 F1 interface security for IAB**

*Type: pCR For: Approval  
 33.824 v0.0.0  
 Source: Qualcomm Incorporated*

(Replaces S3-191517)

**Decision:** The document was **approved**.

**S3-191519 Solution for F1 interface security for IAB**

*Type: pCR For: Approval  
 33.824 v0.0.0  
 Source: Qualcomm Incorporated*

**Decision:** The document was **approved**.

**S3-191260 key issue for IAB Handover**

*Type: pCR For: (not specified)  
 33.824 v0.1.0  
 Source: Intel Corporation (UK) Ltd*

**Discussion:**

Interdigital: no connection between threats and requirements.

Intel agreed to remove the requirements.

Qualcomm didn’t understand the threats.

IAB node communication security was to be covered in 698 and the UE handovers being transparent aspects in 696.

**Decision:** The document was **merged**.

**S3-191255 F1-U security when UE UP is e2e PDCP protected**

*Type: discussion For: Endorsement  
 33.824 v..  
 Source: Huawei, Hisilicon*

**Decision:** The document was **noted**.

**S3-191253 Clarification for F1-U protection**

*Type: CR For: Approval  
 33.501 v15.4.0 CR-0566 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

This CR document the fact that in the case when UP integrity protection and UP encryption are enabled between the UE and the gNB-CU, all of F1-U security requirements are met and no additional security solutions are required for F1-U.

**Discussion:**

NTT-Docomo,ORANGE, AT&T: the change is not needed.

Huawei: capture it in a note since this is confusing for external readers.

Juniper didn’t agree with this CR either.

Samsung supported the contribution since it was adding some clarification.

Huawei: no security reason against this.

In the end there was no agreement and the document was not pursued.

**Decision:** The document was **not pursued**.

**S3-191693 Draft TR 33.824**

*Type: draft TR For: Approval  
 33.824 v0.2.0  
 Source: Samsung*

**Decision:** The document was **approved**.

### 8.21 Study on Security Aspects of 3GPP support for Advanced V2X Services (FS\_eV2X\_Sec)

**S3-191302 Clause 4 Security Aspects of Advanced V2X services**

*Type: pCR For: Approval  
 33.836 v0.0.0  
 Source: LG Electronics*

**Discussion:**

NEC: references are not included in here.

**Decision:** The document was **revised to S3-191744**.

**S3-191744 Clause 4 Security Aspects of Advanced V2X services**

*Type: pCR For: Approval  
 33.836 v0.0.0  
 Source: LG Electronics*

(Replaces S3-191302)

**Decision:** The document was **approved**.

**S3-191161 LS to request inputs on the Vehicular Multimedia technical report and to invite participation from relevant stakeholders**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: ITU-T Focus Group on Vehicular Multimedia (FG-VM)*

**Decision:** The document was **noted**.

**S3-191145 LS on protection of PC5-RRC messages for side link unicast communication**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: R2-1905332*

**Decision:** The document was **replied to in S3-191622**.

**S3-191300 Discussion about RAN2 LS on protection of PC5-RRC messages for side link unicast communication**

*Type: discussion For: Discussion  
 Source: LG Electronics*

**Decision:** The document was **noted**.

**S3-191301 Reply LS on protection of PC5-RRC messages for side link unicast communication**

*Type: LS out For: Approval  
 to RAN2, cc SA2  
 Source: LG Electronics*

**Decision:** The document was **noted**.

**S3-191591 Comments on S3-191301, Draft Reply LS on protection of PC5-RRC messages for side link unicast communication**

*Type: LS out For: Approval  
 to RAN2, SA2  
 Source: InterDigital Germany GmbH*

**Abstract:**

This contribution provides comments and suggestions aiming to improve S3-191301, Draft Reply LS on protection of PC5-RRC messages for side link unicast communication

**Discussion:**

CATT commented that there was no intervention of the operator through PC5, car-to-car communication/unicast security is established in a different scenario from the operator's network.

LG: there is still information exchange with gNodeB.

Nokia: we need more information on the PC5 protocol layer to answer question 2.

**Decision:** The document was **revised to S3-191622**.

**S3-191622 Reply LS on protection of PC5-RRC messages for side link unicast communication**

*Type: LS out For: Approval  
 to RAN2, SA2  
 Source: InterDigital Germany GmbH,LG*

(Replaces S3-191591)

**Decision:** The document was **approved**.

**S3-191232 Nokia comments on LS R2-1905332 PC5-RRC message protection**

*Type: discussion For: Endorsement  
 Source: Nokia, Nokia Shnghai Bell*

**Decision:** The document was **noted**.

**S3-191109 New Key Issue for TR 33.836 - privacy protection for unicast messages over PC5**

*Type: pCR For: Approval  
 33.836 v0.0.0  
 Source: InterDigital Germany GmbH*

**Abstract:**

This contribution proposes a new KI for TR 33.836.

**Discussion:**

BT: split between short term and long term linkabilities. These are two different scenarios. We have to avoid tracking vehicles in the long term, for example. An editor's note was added to that effect.

**Decision:** The document was **revised to S3-191746**.

**S3-191746 New Key Issue for TR 33.836 - privacy protection for unicast messages over PC5**

*Type: pCR For: Approval  
 33.836 v0.0.0  
 Source: InterDigital Germany GmbH*

(Replaces S3-191109)

**Decision:** The document was **approved**.

**S3-191111 New Key Issue for TR 33.836 - security for eV2X unicast messages over PC5**

*Type: pCR For: Approval  
 33.836 v0.0.0  
 Source: InterDigital Germany GmbH*

**Abstract:**

This contribution proposes a new KI for TR 33.836.

**Discussion:**

LG and Qualcomm had their doubts on the last wo requirements. MCC had doubts on the "shall be used and protected" or "shall be supported and may be used" wordings.

Qualcomm: further requirements are FFS.

MCC: "shall be supported and may be used", the "may be used" is already in the meaning of "supported".

Qualcomm: add reference to the PROSE spec for the NOTE.

**Decision:** The document was **revised to S3-191747**.

**S3-191747 New Key Issue for TR 33.836 - security for eV2X unicast messages over PC5**

*Type: pCR For: Approval  
 33.836 v0.0.0  
 Source: InterDigital Germany GmbH*

(Replaces S3-191111)

**Decision:** The document was **approved**.

**S3-191303 New key issue on AS layer signalling protection for unicast mode over PC5**

*Type: pCR For: Approval  
 33.836 v0.0.0  
 Source: LG Electronics*

**Discussion:**

LG asked to have it noted and commented that they would come back with further details in the next meeting.

**Decision:** The document was **noted**.

**S3-191110 New Key Issue for TR 33.836 - privacy protection for multicast messages over PC5**

*Type: pCR For: Approval  
 33.836 v0.0.0  
 Source: InterDigital Germany GmbH*

**Abstract:**

This contribution proposes a new KI for TR 33.836.

**Decision:** The document was **revised to S3-191670**.

**S3-191670 New Key Issue for TR 33.836 - privacy protection for multicast messages over PC5**

*Type: pCR For: Approval  
 33.836 v0.0.0  
 Source: InterDigital Germany GmbH,LG*

(Replaces S3-191110)

**Decision:** The document was **approved**.

**S3-191340 New Key Issue-Security of identifiers in group communication**

*Type: pCR For: Approval  
 33.836 v0.0.0  
 Source: Huawei, HiSilicon*

**Decision:** The document was **revised to S3-191740**.

**S3-191740 New Key Issue-Security of identifiers in group communication**

*Type: pCR For: Approval  
 33.836 v0.0.0  
 Source: Huawei, HiSilicon*

(Replaces S3-191340)

**Decision:** The document was **approved**.

**S3-191385 KI\_security for setting up multicast**

*Type: pCR For: Approval  
 33.836 v0.0.0  
 Source: Huawei, Hisilicon*

**Discussion:**

Qualcomm: better reword the requirements to include the support.

LG: too early for this key issue, but I can live with it.

The requirement was removed and an editor's note was added.

**Decision:** The document was **revised to S3-191748**.

**S3-191748 KI\_security for setting up multicast**

*Type: pCR For: Approval  
 33.836 v0.0.0  
 Source: Huawei, Hisilicon*

(Replaces S3-191385)

**Decision:** The document was **approved**.

**S3-191304 New key issue on security and privacy of groupcast over PC5 for V2X communication**

*Type: pCR For: Approval  
 33.836 v0.0.0  
 Source: LG Electronics*

**Decision:** The document was **merged**.

**S3-191112 New Key Issue for TR 33.836 - Security of the UE service authorization and revocation**

*Type: pCR For: Approval  
 33.836 v0.0.0  
 Source: InterDigital Germany GmbH*

**Abstract:**

This contribution proposes a new KI for TR 33.836.

**Discussion:**

Gemalto: "shall provide means" is too vague.

Qualcomm: is this key issue going to the normative phase in SA2? Is the revocation in scope? An editor's note was added to check this in the future.

**Decision:** The document was **revised to S3-191749**.

**S3-191749 New Key Issue for TR 33.836 - Security of the UE service authorization and revocation**

*Type: pCR For: Approval  
 33.836 v0.0.0  
 Source: InterDigital Germany GmbH*

(Replaces S3-191112)

**Decision:** The document was **approved**.

**S3-191116 New Key Issue for TR 33.836 - Security of the UE service provisioning**

*Type: pCR For: Approval  
 33.836 v0.0.0  
 Source: InterDigital Germany GmbH*

**Abstract:**

This contribution proposes a new KI for TR 33.836.

**Decision:** The document was **noted**.

**S3-191341 New Key Issue-cross-RAT PC5 control authorization indication**

*Type: pCR For: Approval  
 33.836 v0.0.0  
 Source: Huawei, HiSilicon*

**Decision:** The document was **approved**.

**S3-191342 New Key Issue-Security visibility including human factors**

*Type: pCR For: Approval  
 33.836 v0.0.0  
 Source: Huawei, HiSilicon*

**Discussion:**

ORANGE: what is expected from 3GPP here? This is an application layer issue, out of scope. BT, Gemalto agreed.

**Decision:** The document was **noted**.

**S3-191343 New Key Issue-Driving information privacy protection**

*Type: pCR For: Approval  
 33.836 v0.0.0  
 Source: Huawei, HiSilicon*

**Discussion:**

BT, ORANGE: this is application layer as well, especially speed, brake and acceleration.

Interdigital: two positions in time gives us the speed.

Qualcomm: is SA2 proposing to have specific location information in their V2X work? This belongs to the location work item.

LG didn’t support this.

**Decision:** The document was **noted**.

**S3-191117 References**

*Type: pCR For: Approval  
 33.836 v0.0.0  
 Source: InterDigital Germany GmbH*

**Abstract:**

This contribution proposes References Section for TR 33.836.

**Discussion:**

Qualcomm, MCC: add the references in the contributions where they are mentioned.

**Decision:** The document was **approved**.

**S3-191745 Draft TR 33.836**

*Type: draft TR For: Approval  
 33.836 v0.1.0  
 Source: LG*

**Decision:** The document was **approved**.

### 8.22 Other study areas

### 8.23 New study item proposals

**S3-191245 Study Item: Security of Bulk IoT operations**

*Type: SID new For: Approval  
 Source: Huawei, Hisilicon*

**Abstract:**

This a new Study item which propose a study to the security of Bulk IoT Operations which include mainly two items: 1. GuLK IoT authentication and 2. Bulk IoT secure communication with the objective of enhancement and reducing resources.

**Decision:** The document was **postponed**.

**S3-191289 Discussion on security of 5G eMBMS enhancement**

*Type: discussion For: Endorsement  
 Source: Huawei, HiSilicon*

**Discussion:**

Vodafone: it doesn’t provide a really good reason apart from saying that SA2 is working on 5G MBMS.

Huawei: just a warning on that we will have to work on this in the near future. We don’t intend to start working on this now.

It was commented that this could be part of Rel-17 work. Qualcomm agreed with this and added that it was a bit too early to start any activity on this issue.

**Decision:** The document was **noted**.

**S3-191291 Security aspects on enhancement of support for Edge Computing in 5GC**

*Type: discussion For: (not specified)  
 Source: China Unicom, CAICT, China Telecom*

**Discussion:**

Vodafone: work on URLCC hasn’t finished yet. Wy having a rel-17 SID when we haven’t finished work on URLCC Rel-16?

Huawei: this is a different topic, it's on edge computing.

ORANGE: too many studies in SA3 at this moment. Let's postpone and wait for progress from SA2.

**Decision:** The document was **noted**.

**S3-191292 New SID: Study on security aspects of enhancement of support for Edge Computing in 5GC**

*Type: SID new For: (not specified)  
 Source: China Unicom, CAICT, China Telecom, ZTE*

**Decision:** The document was **revised to S3-191639**.

**S3-191639 New SID: Study on security aspects of enhancement of support for Edge Computing in 5GC**

*Type: SID new For: -  
 Source: China Unicom, CAICT, China Telecom, ZTE,Huawei*

(Replaces S3-191292)

**Discussion:**

ORANGE: very little work done in SA2 since their study item was approved in the last plenary. Qualcomm agreed.

The Chair asked if it was ok to wait for SA2's progress.

China Unicom asked when it was good time to bring back this. Qualcomm replied that it would be a good timing when SA2 had drafted some conclusions in their study. This was agreed,

China Unicom asked for offline feedback for their study paper.

**Decision:** The document was **noted**.

**S3-191405 Discussions on security of mobile edge computing**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision:** The document was **noted**.

**S3-191406 New SID: Study on Security Aspects of enhancement of support for Edge Computing in 5GC**

*Type: SID new For: Approval  
 Source: Huawei, Hisilicon*

**Decision:** The document was **merged**.

## 9 Work Plan and Rapporteur Input

### 9.1 Review of work plan

**S3-191102 SA3 Work Plan**

*Type: Work Plan For: (not specified)  
 Source: MCC*

**Decision:** The document was **noted**.

### 9.2 Rapporteur input on status of WID or SID

**S3-191105 Work Plan input from Rapporteurs**

*Type: other For: (not specified)  
 Source: MCC*

**Decision:** The document was **revised to S3-191792**.

**S3-191792 Work Plan input from Rapporteurs**

*Type: other For: -  
 Source: MCC*

(Replaces S3-191105)

**Decision:** The document was **noted**.

## 10 Future Meeting Dates and Venues

**S3-191104 SA3 meeting calendar**

*Type: other For: (not specified)  
 Source: MCC*

**Decision:** The document was **revised to S3-191793**.

**S3-191793 SA3 meeting calendar**

*Type: other For: -  
 Source: MCC*

(Replaces S3-191104)

**Discussion:**

Possibility of one or two adhocs in 2020, for further consideration.

November 2020, it could be NAF or Huawei (Singapore).

Feb 2020 hosted by CF3.

IF3 has offered to host.

**Decision:** The document was **noted**.

## 11 Any Other Business

Ericsson commented that discussions of academic papers should not be done publicly in the SA3 reflector. This was left for further discussion once the SA3 leadership was decided.

The first round of Chairman elections was held on Monday the 6th of May with following results:

- Total number of companies eligible to vote: 150.

- Total number of issued ballots (including proxies): 121.

- Votes for Suresh: 46.

- Votes for Noamen: 74.

- Abstentions: 1.

This was giving 61.667% for Noamen, and 38.33% for Suresh; so the number of 71% was not reached in order to give him the victory. Companies were given the rest of the day in order to decide whether to proceed for a second round or not.

The next day the candidate from Nokia pointed out that he would withdraw given the significant difference in the number of votes. This meant that Noamen Ben Henda (Ericsson) became the new Chair of SA3.

Email approvals:

Doc available 13th May 16.00 CEST

Comments 15th May same time

Final version 16th May

Approval 17th May

Noamen (Chairman) thanked the host for the meeting organization, to MCC and to those who helped during the elections, and to all delegates for the hard work during the week.

This meeting was the last meeting of Hans (Deutsche Telekom). Delegates thanked him for his work. He was given a card and some presents. Sander (NEC) was also said goodbye although he wasn't present during the meeting. Both were ready to head for new exciting endeavours in Japan.

**S3-191784 Draft agenda SA3\_95-BIS**

*Type: discussion For: Discussion  
 Source: WG Chair*

**Discussion:**

Order of study items will be reverse of what was treated during this meeting.

The Chair recommended to have conference calls in order to save meeting time and progress in the work, and avoid non treated documents.

**Decision:** The document was **noted**.

## Annex A: List of contribution documents

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Document | Title | Source | Decision | Replaces | Replaced by |
| S3-191100 | Agenda | WG Vice Chairman | approved |  |  |
| S3-191101 | Report from SA4#94AH | MCC | approved |  |  |
| S3-191102 | SA3 Work Plan | MCC | noted |  |  |
| S3-191103 | Report from last SA meeting | WG Vice Chairman (Qualcomm) | noted |  |  |
| S3-191104 | SA3 meeting calendar | MCC | revised |  | S3-191793 |
| S3-191105 | Work Plan input from Rapporteurs | MCC | revised |  | S3-191792 |
| S3-191106 | Discussion on possible privacy/confidentiality attacks in PLMN integrated NPN | InterDigital | noted |  |  |
| S3-191107 | New KI for PLMN integrated NPN | InterDigital | revised |  | S3-191596 |
| S3-191108 | TCG progress report | InterDigital | noted |  |  |
| S3-191109 | New Key Issue for TR 33.836 - privacy protection for unicast messages over PC5 | InterDigital Germany GmbH | revised |  | S3-191746 |
| S3-191110 | New Key Issue for TR 33.836 - privacy protection for multicast messages over PC5 | InterDigital Germany GmbH | revised |  | S3-191670 |
| S3-191111 | New Key Issue for TR 33.836 - security for eV2X unicast messages over PC5 | InterDigital Germany GmbH | revised |  | S3-191747 |
| S3-191112 | New Key Issue for TR 33.836 - Security of the UE service authorization and revocation | InterDigital Germany GmbH | revised |  | S3-191749 |
| S3-191113 | [MCPTT] 33179 R13. Clarification of the references to RFC 3711 | Airbus DS SLC | revised |  | S3-191641 |
| S3-191114 | [MCSec] 33180 R14. Clarification of the references to RFC 3711 | Airbus DS SLC | revised |  | S3-191642 |
| S3-191115 | [MCSec] 33180 R15. Clarification of the references to RFC 3711 | Airbus DS SLC | revised |  | S3-191643 |
| S3-191116 | New Key Issue for TR 33.836 - Security of the UE service provisioning | InterDigital Germany GmbH | noted |  |  |
| S3-191117 | References | InterDigital Germany GmbH | approved |  |  |
| S3-191118 | Update to solution #4 | InterDigital Belgium. LLC | revised |  | S3-191734 |
| S3-191119 | Reply LS on securing warning messages in ePWS | C1-191522 | noted |  |  |
| S3-191120 | Reply LS on securing warning messages in ePWS | S1-190503 | noted |  |  |
| S3-191121 | LS on Use of SUCI in NAS signalling | C1-191685 | replied to |  |  |
| S3-191122 | LS on handling of non-zero ABBA value in Release 15 | C1-191686 | replied to |  |  |
| S3-191123 | LS on SUPI formats for 5WWC | C1-192776 | noted |  |  |
| S3-191124 | LS on Multiple NAS connections and inter-system change from S1 mode to N1 mode in 5GMM-CONNECTED mode | C1-192804 | replied to |  | - |
| S3-191125 | Reply LS on EAS-C&U support | C3-191167 | noted |  |  |
| S3-191126 | LS on usage of EPLMNs | S2-1904825 | replied to |  |  |
| S3-191127 | Reply LS on Interim conclusions for SA2 study on Radio Capabilities Signalling Optimisations (FS\_RACS) | C4-190346 | noted |  |  |
| S3-191128 | Reply LS on Verification of PLMN-ID in the SEPP | C4-190348 | replied to |  |  |
| S3-191129 | Reply LS on GTP Recovery Counter & GSN node behaviour | C4-190485 | noted |  |  |
| S3-191130 | Reply LS on Nudr Sensitive Data Protection | C4-190534 | replied to |  |  |
| S3-191131 | LS on Maximum HTTP payload size | C4-190609 | noted |  |  |
| S3-191132 | LS on Protected LI Parameters in N4 | S3i190254 | noted |  |  |
| S3-191133 | Reply LS on Protected LI Parameters in N4 | C4-191529 | noted |  |  |
| S3-191134 | Reply on LS on Protected LI Parameters in N4 | S3i190283 | noted |  |  |
| S3-191135 | LS on Handling of non-essential corrections (non-FASMO) CRs and non-backwards compatible CRs | CP-190218 | noted |  |  |
| S3-191136 | LS on the availability of and requesting feedback on the stable draft TR 103 582 from ETSI STF555 - "Study of use cases and communications involving IoT devices in emergency situations" | ETSI SC EMTEL | postponed |  |  |
| S3-191137 | GSMA DESS - Diameter IPX Network End-to-End Security Solution | GSMA | postponed |  |  |
| S3-191138 | Reply LS on Authentication for UEs not Supporting NAS | S2-1904829 | replied to |  |  |
| S3-191139 | Response to 3GPP SA2 liaison S2-1902902 on ‘LS on updating the status of 5WWC normative work’ | BBF | noted |  |  |
| S3-191140 | Reply LS on EDT integrity protection | R2-1902439 | replied to |  | - |
| S3-191141 | LS on RAN2 conclusion for NR positioning SI | R2-1902479 | replied to |  |  |
| S3-191142 | LS on RAN2 conclusion for NR positioning SI | R3-191141 | noted |  |  |
| S3-191143 | Reply LS on Dual Connectivity | R2-1902677 | noted |  |  |
| S3-191144 | Reply LS on Enforcement of maximum supported data rate for integrity protection | R2-1902700 | noted |  |  |
| S3-191145 | LS on protection of PC5-RRC messages for sidelink unicast communication | R2-1905332 | replied to |  |  |
| S3-191146 | Response LS on full data rate support for UP IP | R2-1905455 | noted |  |  |
| S3-191147 | LS on Security failure of NAS container in HO command | R2-1905460 | replied to |  |  |
| S3-191148 | LS on broadcast assistance data delivery | R2-1905462 | replied to |  |  |
| S3-191149 | LS to SA2 and SA5 on IAB impact to CN | R2-1905475 | noted |  |  |
| S3-191150 | Response LS on reporting all cell IDs in 5G | R3-191111 | noted |  |  |
| S3-191151 | Response LS on reporting all cell IDs in 5G | S2-1904819 | noted |  |  |
| S3-191152 | Response LS on reporting all Cell IDs in 5G | S3i190265 | noted |  |  |
| S3-191153 | Reply LS on UP Integrity Protection for Small Data in Early Data Transfer | R3-191116 | noted |  |  |
| S3-191154 | Reply LS on authentication of group of IoT devices | S1-190501 | replied to |  |  |
| S3-191155 | Reply LS on Interception of voice services over new radio in a 5GS environment | S2-1902799 | noted |  |  |
| S3-191156 | Reply LS on Clarification of UE Trace support | S2-1902901 | noted |  |  |
| S3-191157 | LS on LI Impacts for LMR-LTE Interworking study | S3i190281 | noted |  |  |
| S3-191158 | Approval of Smart Secure Platform requirement specification | ETSI TC SCP | noted |  |  |
| S3-191159 | LS/r on SG17 work item X.5Gsec-q: Security guidelines for applying quantum-safe algorithms in 5G systems | ITU-T SG17 | noted |  |  |
| S3-191160 | LS on SG17 new work item X.5Gsec-ecs: Security Framework for 5G Edge Computing Services | ITU-T SG17 | noted |  |  |
| S3-191161 | LS to request inputs on the Vehicular Multimedia technical report and to invite participation from relevant stakeholders | ITU-T Focus Group on Vehicular Multimedia (FG-VM) | noted |  |  |
| S3-191162 | Reply LS on User Plane Security for 5GC Roaming | SP-190252 | noted |  |  |
| S3-191163 | Clarification of MSIN coding for the ECIES protection shemes | IDEMIA,Gemalto, Qualcomm,Ericsson,Huawei,HiSilicon | revised |  | S3-191624 |
| S3-191164 | New KI for Public network integrated NPN | InterDigital Germany GmbH | revised |  | S3-191597 |
| S3-191165 | [33.179] R13 XSD Corrections | Motorola Solutions UK | agreed |  |  |
| S3-191166 | [33.180] R14 XSD Corrections | Motorola Solutions UK | agreed |  |  |
| S3-191167 | [33.180] R15 XSD Corrections (mirror) | Motorola Solutions UK | agreed |  |  |
| S3-191168 | {33.179] R13 Remove IANA editor's notes | Motorola Solutions UK | revised |  | S3-191644 |
| S3-191169 | [33.180] R14 Remove IANA editor’s notes | Motorola Solutions UK | revised |  | S3-191645 |
| S3-191170 | [33.180] R15 Remove IANA editor’s notes (mirror) | Motorola Solutions UK | revised |  | S3-191646 |
| S3-191171 | [33.180] R16 Pre-established PCK | Motorola Solutions UK | revised |  | S3-191647 |
| S3-191172 | Interface and protocol stack clarifications and corrections to TS 33.163 | Juniper Networks | revised |  | S3-191635 |
| S3-191173 | Interface and protocol stack clarifications and corrections to TS 33.163 | Juniper Networks | revised |  | S3-191636 |
| S3-191174 | Making UE initiated key refresh optional in TS33.163 | Juniper Networks | revised |  | S3-191637 |
| S3-191175 | Corrections for Key Issue #27 Support of a UP gateway function on the N9 interface | Juniper Networks | approved |  |  |
| S3-191176 | Solution to KI #26: NDS/IP on the inter-PLMN N9 interface | Juniper Networks | withdrawn |  |  |
| S3-191177 | Discussion document on roaming UP gateway | Juniper Networks | revised |  | S3-191666 |
| S3-191178 | Solution for KI #27: Roaming UP gateway | Juniper Networks | merged |  | S3-191661 |
| S3-191179 | Update of solution #17 – Efficient key derivation for e2e security | KPN | not treated |  |  |
| S3-191180 | Update of Solution #6 – Use of UE Configuration Update | KPN | revised |  | S3-191680 |
| S3-191181 | Addition of Network Product Class Description for AMF | Deutsche Telekom AG | not pursued |  | - |
| S3-191182 | Addition of AMF-related Security Problem Descriptions | Deutsche Telekom AG | revised |  | S3-191654 |
| S3-191183 | On configurational error handling on N32 by the receiving SEPP | Deutsche Telekom AG | withdrawn |  |  |
| S3-191184 | Addition of SEPP requirement on configurational error handling | Deutsche Telekom AG | withdrawn |  |  |
| S3-191185 | Addition of missing SEPP requirement on JOSE-patch validation | Deutsche Telekom AG | revised |  | S3-191616 |
| S3-191186 | Testcase: Replacing confidential IEs with NULL in original N32-f message | Deutsche Telekom AG | revised |  | S3-191657 |
| S3-191187 | AKMA solution set analysis | KPN | not treated |  |  |
| S3-191188 | Proposal for editor's notes in FS\_CIoT\_sec\_5G solution #15 | Philips International B.V. | revised |  | S3-191687 |
| S3-191189 | Proposal for improvement FS\_CIoT\_sec\_5G solution #15 | Philips International B.V. | revised |  | S3-191686 |
| S3-191190 | New solution to key issue 5 in TR 33.814 (FS\_eLCS\_Sec): UE faking/altering location measurements | Philips International B.V. | noted |  |  |
| S3-191191 | Proposal for FS\_UP\_IP\_Sec Key Issue #3 and 5: Zero-overhead user plane integrity protection on the link layer | Philips International B.V. | revised |  | S3-191691 |
| S3-191192 | New KI for TR 33.807: Authentication of UE without NAS support and without 3GPP RAT behind a FN-RG or 5G-CRG with 5GC | CableLabs | revised |  | S3-191193 |
| S3-191193 | New KI for TR 33.807: Authentication of UE without NAS support and without 3GPP RAT behind a FN-RG or 5G-CRG with 5GC | CableLabs | revised | S3-191192 | S3-191702 |
| S3-191194 | IAM Security | AT&T,Interdigital | noted |  |  |
| S3-191195 | Using symmetric algorithm with assistance of USIM and home network | ZTE Corporation | approved |  |  |
| S3-191196 | way forward against attack using authentication | ZTE Corporation | noted |  |  |
| S3-191197 | Structure RAND for authentication – HE part | ZTE Corporation | not treated |  |  |
| S3-191198 | Structure RAND for authentication – ME part | ZTE Corporation | not treated |  |  |
| S3-191199 | Structure RAND for authentication – ME part | ZTE Corporation | not treated |  |  |
| S3-191200 | Handling of Sync failure for 5G AKA | ZTE Corporation | not treated |  |  |
| S3-191201 | Modification on linkability issue1 | ZTE Corporation | not treated |  |  |
| S3-191202 | Conclusion on linkability issue | ZTE Corporation | not treated |  |  |
| S3-191203 | KAUSF desynchronization problem and solutions | NEC Europe Ltd | noted |  |  |
| S3-191204 | KAUSF desynchronization problem and solutions – updated version after conf call on 25 Apr. | NEC Europe Ltd | noted |  |  |
| S3-191205 | Aligning the storage timing of KAUSF in 5G AKA with EAP-AKA' | NEC Europe Ltd | revised |  | S3-191603 |
| S3-191206 | Synchronization of KAUSF between AUSF and UE | NEC Europe Ltd | not pursued |  |  |
| S3-191207 | Using Key Identifiers between AUSF and UE for UPU and SoR | NEC Europe Ltd | noted |  |  |
| S3-191208 | UDM triggered authentication | NEC Europe Ltd | noted |  |  |
| S3-191209 | KAUSF key setting in EAP AKA’ | NEC Europe Ltd | not pursued |  |  |
| S3-191210 | Discussion on AKMA overall conclusions | NEC Europe Ltd | not treated |  |  |
| S3-191211 | Resolving Editor’s Notes and adding conclusion to solution #18 (Key Separation for AKMA AFs using counters) | NEC Europe Ltd | not treated |  |  |
| S3-191212 | Resolving Editor’s Notes and adding conclusion to solution #20 (Key Identification when Implicit bootstrapping is used) | NEC Europe Ltd | not treated |  |  |
| S3-191213 | Restoring lost figures in the latest draft update of AKMA TR at SA3 #94ah | NEC Europe Ltd | not treated |  |  |
| S3-191214 | New Test Case: Error handling of malformed JSON object between two network products | NEC Europe Ltd | revised |  | S3-191487 |
| S3-191215 | Evaluation and text for resolving editor’s note for solution #5 in TR 33.825 | NEC Europe Ltd | revised |  | S3-191723 |
| S3-191216 | Initial Key Issues for TR 33.848 | BT plc | revised |  | S3-191721 |
| S3-191217 | Scope for TR 33 848 | BT plc | revised |  | S3-191714 |
| S3-191218 | Discussion on N9 security | Deutsche Telekom AG, NTT Docomo | noted |  |  |
| S3-191219 | Solution to KI #26: NDS/IP on the inter-PLMN N9 interface | Juniper Networks, Nokia | revised |  | S3-191668 |
| S3-191220 | subscriber privacy: ECIES test data | Gemalto, IDEMIA, Huawei, Hisilicon | revised |  | S3-191626 |
| S3-191221 | Discussion on proposed response to incoming LS (S3-191138) on authentication of UEs not supporting NAS | Charter Communications, CableLabs | revised |  | S3-191703 |
| S3-191222 | Virtualisation Background and Concepts | NCSC | revised |  | S3-191715 |
| S3-191223 | Discussion on structure of TR 33.848: Study on Security Impacts of Virtualisation | NCSC | noted |  |  |
| S3-191224 | Key Issue: Establishment of trust domains for Network Functions | NCSC | revised |  | S3-191716 |
| S3-191225 | Key Issue: Confidentiality of Sensitive Data | NCSC | revised |  | S3-191717 |
| S3-191226 | Key Issue: Availability of Network Functions | NCSC | revised |  | S3-191718 |
| S3-191227 | eNS Update to solution 1 Slice specific secondary authentication | Nokia, Nokia Shanghai Bell | revised |  | S3-191730 |
| S3-191228 | Preliminary comparison of solutions | Nokia, Nokia Shanghai Bell | revised |  | S3-191739 |
| S3-191229 | New KI: Separation of CP and UP in NAS CP Optimization | Nokia, Nokia Shanghai Bell | noted |  |  |
| S3-191230 | Discussion paper on Re-authentication and UE context handling | Nokia, Nokia Shanghai Bell | noted |  |  |
| S3-191231 | New KI: Updating UDM with UE deregistration status | Nokia, Nokia Shanghai Bell | not treated |  |  |
| S3-191232 | Nokia comments on LS R2-1905332 PC5-RRC message protection | Nokia, Nokia Shnghai Bell | noted |  |  |
| S3-191233 | Non-AKA based EAP methods with credentials stored and processed in UDM/ARPF | CableLabs | noted |  |  |
| S3-191234 | conclusion on KI#5 | Huawei, Hisilicon | noted |  |  |
| S3-191235 | Resolve EN "signaling details of how the UE hands over to false base station | Huawei, Hisilicon | not treated |  |  |
| S3-191236 | Solution #6: Resolve EN Handover Attemp Failure Counter | Huawei, Hisilicon | not treated |  |  |
| S3-191237 | Solution#4: resolving EN network verification of the hashes of MIB/SIBs | Huawei, Hisilicon | not treated |  |  |
| S3-191238 | Solution#4: Resolving EN Impact on UE power consumption | Huawei, Hisilicon | not treated |  |  |
| S3-191239 | Solution #4: Details on the hash algorithm used for MIB/SIB hashes. | Huawei, Hisilicon | not treated |  |  |
| S3-191240 | Secuirty threat for RRCResumeRequest tampering. | Huawei, Hisilicon | approved |  |  |
| S3-191241 | Solution for protecting RRCResumeRequest against tampering | Huawei, Hisilicon | approved |  |  |
| S3-191242 | Address EN in solution #1 “The above text needs to be updated ….” | Huawei, Hisilicon | not treated |  |  |
| S3-191243 | Draft LS to RAN2 on UECapabilitiesEnquire after AS SMC | Huawei, Hisilicon | not treated |  |  |
| S3-191244 | Discussion paper Security of Bulk IoT operations | Huawei, Hisilicon | noted |  |  |
| S3-191245 | Study Item: Security of Bulk IoT operations | Huawei, Hisilicon | postponed |  |  |
| S3-191246 | draft reply LS to RAN2/RAN3 on EDT UP IP | Huawei, Hisilicon | revised |  | S3-191634 |
| S3-191247 | CR for removing EDT UP IP solution using PDCP PDU hashes. | Huawei, Hisilicon | merged |  | S3-191633 |
| S3-191248 | EDT UP IP for multiple PDCP PDUs | Huawei, Hisilicon | noted |  |  |
| S3-191249 | update solution#4 with UP IP during EDT for multiple PDCP PDUs. | Huawei, Hisilicon | revised |  | S3-191678 |
| S3-191250 | F1-U security analysis for IAB architecture | Huawei, Hisilicon | noted |  |  |
| S3-191251 | Enabling UE to detect FBS | Huawei, Hisilicon | noted |  |  |
| S3-191252 | Updating solution#7 | Huawei, Hisilicon | revised |  | S3-191681 |
| S3-191253 | Clarification for F1-U protection | Huawei, Hisilicon | not pursued |  |  |
| S3-191254 | Key Issues on F1-U security for IAB architecture | Huawei, Hisilicon | noted |  |  |
| S3-191255 | F1-U security when UE UP is e2e PDCP protected | Huawei, Hisilicon | noted |  |  |
| S3-191256 | Protecting IOT Devices Against False Base Station Attacks | Qihoo 360 | noted |  |  |
| S3-191257 | draft LS response to LS on Use of SUCI in NAS signalling | Intel Corporation (UK) Ltd | noted |  |  |
| S3-191258 | Clarification on Subscription Identifier mechanism for De-registration. | Intel Corporation (UK) Ltd | revised |  | S3-191751 |
| S3-191259 | Solution for integrity protection of UL EDT data | Intel Corporation (UK) Ltd | noted |  |  |
| S3-191260 | key issue for IAB Handover | Intel Corporation (UK) Ltd | merged |  | S3-191696 |
| S3-191261 | Input encoding for ECIES protection schemes | Intel Corporation (UK) Ltd | merged |  | S3-191624 |
| S3-191262 | Addition of AMF/SMF requirement on security logging | Deutsche Telekom AG, NTT Docomo | revised |  | S3-191562 |
| S3-191263 | Modification to key issue#1 | Apple Computer Trading Co. Ltd | approved |  |  |
| S3-191264 | Modification to Key issue#4 | Apple Computer Trading Co. Ltd | noted |  |  |
| S3-191265 | Integrity protection between SgNB and UE in NGEN-DC | Apple Computer Trading Co. Ltd | revised |  | S3-191776 |
| S3-191266 | Solution for Key issue #5 | Apple Computer Trading Co. Ltd | noted |  |  |
| S3-191267 | Certificate based solution for 5GFBS | Apple Computer Trading Co. Ltd | revised |  | S3-191781 |
| S3-191268 | ID based solution for 5GFBS | Apple Computer Trading Co. Ltd | revised |  | S3-191782 |
| S3-191269 | Modification for AnnexA | Apple Computer Trading Co. Ltd | not treated |  |  |
| S3-191270 | Conclusion for key issue 1 | Huawei, HiSilicon | revised |  | S3-191764 |
| S3-191271 | Conclusion for key issue 2 | Huawei, HiSilicon | noted |  |  |
| S3-191272 | Conclusion for key issue 3 | Huawei, HiSilicon | noted |  |  |
| S3-191273 | Conclusion for key issue 4 | Huawei, HiSilicon | revised |  | S3-191765 |
| S3-191274 | Evaluation for solution 5 | Huawei, HiSilicon | merged |  | S3-191723 |
| S3-191275 | Evaluation for solution 3 | Huawei, HiSilicon | approved |  |  |
| S3-191276 | Security solutions summary | Huawei, HiSilicon | revised |  | S3-191763 |
| S3-191277 | Deleting the EN of solution 3 | Huawei, HiSilicon | revised |  | S3-191759 |
| S3-191278 | Adding more clarification text of solution 7 | Huawei, HiSilicon | revised |  | S3-191760 |
| S3-191279 | Deleting EN of solution 4 | Huawei, HiSilicon | revised |  | S3-191757 |
| S3-191280 | Evaluation for solution 4 | Huawei, HiSilicon | revised |  | S3-191758 |
| S3-191281 | Reference part | Huawei, HiSilicon | approved |  |  |
| S3-191282 | Way forward of FS\_5G\_URLLC security study | Huawei, HiSilicon | withdrawn |  |  |
| S3-191283 | Adding the key issue details and threats for KI #1 | Huawei, HiSilicon | approved |  |  |
| S3-191284 | Delete the EN of Introduction | Huawei, HiSilicon | approved |  |  |
| S3-191285 | Abbreviations | Huawei, HiSilicon | approved |  |  |
| S3-191286 | Delete the EN of solution 5 | Huawei, HiSilicon | revised |  | S3-191724 |
| S3-191287 | Evaluation for solution 6 | Huawei, HiSilicon | revised |  | S3-191761 |
| S3-191288 | WID on security of URLLC | Huawei, HiSilicon | revised |  | S3-191725 |
| S3-191289 | Discussion on security of 5G eMBMS enhancement | Huawei, HiSilicon | noted |  |  |
| S3-191290 | Evaluation for solution 4 | Huawei, HiSilicon | not treated |  |  |
| S3-191291 | Security aspects on enhancement of support for Edge Computing in 5GC | China Unicom, CAICT, China Telecom | noted |  |  |
| S3-191292 | New SID: Study on security aspects of enhancement of support for Edge Computing in 5GC | China Unicom, CAICT, China Telecom, ZTE | revised |  | S3-191639 |
| S3-191293 | Key derivation during SRVCC from 5G to UTRAN CS | China Unicom,CATT | not pursued |  |  |
| S3-191294 | Emergency call in SRVCC from NR to UTRAN | China Unicom, CATT | not pursued |  |  |
| S3-191295 | Overview of TR33.856 | China Unicom | revised |  | S3-191788 |
| S3-191296 | Content of clause 3 for TR33.856 | China Unicom, CATT | agreed |  |  |
| S3-191297 | Key issue for encryption of broadcast assistance data in eLCS | CAICT, China Unicom | withdrawn |  |  |
| S3-191298 | Key issue for encryption of broadcast assistance data in eLCS | CAICT, China Unicom | noted |  |  |
| S3-191299 | Addition of SEPP requirement on N32 error handling | Deutsche Telekom AG, NTT Docomo | noted |  |  |
| S3-191300 | Discussion about RAN2 LS on protection of PC5-RRC messages for sidelink unicast communication | LG Electronics | noted |  |  |
| S3-191301 | Reply LS on protection of PC5-RRC messages for sidelink unicast communication | LG Electronics | noted |  |  |
| S3-191302 | Clause 4 Security Aspects of Advanced V2X services | LG Electronics | revised |  | S3-191744 |
| S3-191303 | New key issue on AS layer signalling protection for unicast mode over PC5 | LG Electronics | noted |  |  |
| S3-191304 | New key issue on security and privacy of groupcast over PC5 for V2X communication | LG Electronics | merged |  | S3-191670 |
| S3-191305 | Discussion on LS on Use of SUCI in NAS signalling | ZTE Corporation | noted |  |  |
| S3-191306 | Modification on Use of SUCI in NAS signalling | ZTE Corporation | revised |  | S3-191704 |
| S3-191307 | LS on Use of SUCI in NAS signalling | ZTE Corporation | noted |  |  |
| S3-191308 | Deprecation of TLS 1.1 | Ericsson | revised |  | S3-191638 |
| S3-191309 | Using EAP-TLS with TLS 1.3 | Ericsson | noted |  |  |
| S3-191310 | References to several obsoleted RFCs | Ericsson | agreed |  |  |
| S3-191311 | TLS OCSP stapling | Ericsson | not pursued |  |  |
| S3-191312 | References to several obsoleted RFCs | Ericsson | agreed |  |  |
| S3-191313 | Various corrections to security protocols and cryptography | Ericsson | agreed |  |  |
| S3-191314 | Token-based authorization for NRF's management and discovery services | Ericsson | revised |  | S3-191619 |
| S3-191315 | Slice information for token-based authorization | Ericsson | revised |  | S3-191621 |
| S3-191316 | Name for N32 application layer security | Ericsson | noted |  |  |
| S3-191317 | New Solution: Transport security for the interfaces between W-5GAN and 5GC | Ericsson | approved |  |  |
| S3-191318 | New Key Issue: SUCI-to-SUPI mapping for the FN-RG | Ericsson | revised |  | S3-191690 |
| S3-191319 | New Solution: SUCI-to-SUPI mapping for the FN-RG | Ericsson | noted |  |  |
| S3-191320 | Using STRIDE methodology for NPCD, SPD, assets and threats | Ericsson | noted |  |  |
| S3-191321 | Corrections on IP packet forwarding | Ericsson | revised |  | S3-191632 |
| S3-191322 | Update to solution #3 on NSaaS security features | Huawei, HiSilicon | noted |  | - |
| S3-191323 | Conclusion to KI #3 | Huawei, HiSilicon | noted |  |  |
| S3-191324 | A solution to NSSAI protection at AS transmission | Huawei, HiSilicon | revised |  | S3-191736 |
| S3-191325 | Discussion paper on KI#6 on NSSAI in RRC | Huawei, HiSilicon | noted |  |  |
| S3-191326 | Solution to KI #4 | Huawei, HiSilicon | revised |  | S3-191735 |
| S3-191327 | Conclusion to KI #4 | Huawei, HiSilicon | noted |  |  |
| S3-191328 | Removing ENs for solution #2 | Huawei, HiSilicon | revised |  | S3-191732 |
| S3-191329 | Add Evaluation to Solution #2 | Huawei, HiSilicon | revised |  | S3-191733 |
| S3-191330 | Conclusion to KI #1 | Huawei, HiSilicon | noted |  |  |
| S3-191331 | Discussions on Key Issue AMF key separation | Huawei, HiSilicon | noted |  |  |
| S3-191332 | Overview on solutions to AMF key separation | Huawei, HiSilicon | noted |  |  |
| S3-191333 | pCR on AMF key separation solutions  solution 1 | Huawei, HiSilicon | noted |  |  |
| S3-191334 | pCR on AMF key separation solutions  solution 2 | Huawei, HiSilicon | noted |  |  |
| S3-191335 | pCR on AMF key separation solutions  solution 3 | Huawei, HiSilicon | noted |  |  |
| S3-191336 | A key issue on forward secracy | Huawei, HiSilicon | not treated |  |  |
| S3-191337 | A solution to forward secracy | Huawei, HiSilicon | not treated |  |  |
| S3-191338 | Solution for efficient authentication for access between NPN and PLMN | Huawei, HiSilicon | noted |  |  |
| S3-191339 | Discussion on Architecture of PLMN integrated NPN | Huawei, HiSilicon | noted |  |  |
| S3-191340 | New Key Issue-Security of identifiers in group communication | Huawei, HiSilicon | revised |  | S3-191740 |
| S3-191341 | New Key Issue-cross-RAT PC5 control authorization indication | Huawei, HiSilicon | approved |  |  |
| S3-191342 | New Key Issue-Security visibility including human factors | Huawei, HiSilicon | noted |  |  |
| S3-191343 | New Key Issue-Driving information privacy protection | Huawei, HiSilicon | noted |  |  |
| S3-191344 | Identity based Signature against false base station on Key Issue #2 | Huawei, HiSilicon | withdrawn |  |  |
| S3-191345 | Protection of unicast message | Apple Computer Trading Co. Ltd | revised |  | S3-191620 |
| S3-191346 | CR to TS33.501 - NAS SMC figure correction | CATT | agreed |  |  |
| S3-191347 | Way forward for evaluation for every solution | Apple Computer Trading Co. Ltd | not treated |  |  |
| S3-191348 | Amendment to Key Issue# 2.1 | Huawei, HiSilicon | noted |  |  |
| S3-191349 | pCR to TR33.814 - Key issue for security aspect of eLCS architecture enhancement | CATT | noted |  |  |
| S3-191350 | LS reply to RAN WG2 LS on broadcast assistance data delivery | CATT | noted |  |  |
| S3-191351 | pCR to TR33.814 - Key issue for confidentiality protection of broadcast assistance data | CATT | noted |  |  |
| S3-191352 | pCR to TR33.814 - Key issue for distribution of assistance data ciphering key | CATT | noted |  |  |
| S3-191353 | pCR to TR33.814 - Key issue for integrity protection of broadcast assistance data | CATT | revised |  | S3-191602 |
| S3-191354 | pCR to TR33.814 - Key issue for the security architecture of eLCS | CATT | noted |  |  |
| S3-191355 | pCR to TR33.814 - Solution of ciphering algorithms | CATT | noted |  |  |
| S3-191356 | pCR to TR33.814 - Solution of provisioning keys for broadcast assistance data protection | CATT | noted |  |  |
| S3-191357 | Subscriber privacy: ECIES test data for Profile A | Gemalto N.V. | noted |  |  |
| S3-191358 | pCR to TR33.814 - The solution for the distribution of broadcast assistance data deciphering key | CATT | noted |  |  |
| S3-191359 | pCR to TR33.814 - The analysis of security architecture of eLCS | CATT | noted |  |  |
| S3-191360 | pCR to TR33.813 - Key issue for deeper UP protection termination | CATT | noted |  |  |
| S3-191361 | pCR to TR33.813 - Key issue for UP key separation | CATT | noted |  |  |
| S3-191362 | pCR to TR33.813 - Solution for UP key separation | CATT | noted |  |  |
| S3-191363 | Address EN in key issue 4 | Huawei, Hisilicon | noted |  |  |
| S3-191364 | Reply LS on RAN2 conclusion for NR positioning | Huawei, Hisilicon | noted |  |  |
| S3-191365 | Delete EN in solution12 | Huawei, Hisilicon | revised |  | S3-191684 |
| S3-191366 | Add evalution in solution12 | Huawei, Hisilicon | revised |  | S3-191685 |
| S3-191367 | Corrections on the s-Kgnb derivation | Huawei, Hisilicon | revised |  | S3-191605 |
| S3-191368 | Address EN and update in key issue 5 | Huawei, Hisilicon | revised |  | S3-191754 |
| S3-191369 | A solution to prevent from providing faked/altered location estimate | Huawei, Hisilicon | noted |  |  |
| S3-191370 | update in solution 4 | Huawei, Hisilicon | revised |  | S3-191772 |
| S3-191371 | Add introduction part | Huawei, Hisilicon | revised |  | S3-191706 |
| S3-191372 | Add content to clause 4 | Huawei, Hisilicon | revised |  | S3-191707 |
| S3-191373 | Delete Editor's Note in KI#4 | Huawei, Hisilicon | revised |  | S3-191708 |
| S3-191374 | Add requirement and delete EN for KI#13 | Huawei, Hisilicon | revised |  | S3-191709 |
| S3-191375 | Delete one Editor’s Note in solution3 | Huawei, Hisilicon | approved |  |  |
| S3-191376 | Delete EN for solution 5 | Huawei, Hisilicon | approved |  |  |
| S3-191377 | Add conclusion on KI#3 | Huawei, Hisilicon | revised |  | S3-191711 |
| S3-191378 | Add Conclusion on KI#4 | Huawei, Hisilicon | approved |  |  |
| S3-191379 | Add detials on handling UP security in RRC inactive scenario | Huawei, Hisilicon | revised |  | S3-191609 |
| S3-191380 | Completing TS 33.511 | Huawei, Hisilicon | revised |  | S3-191741 |
| S3-191381 | Adding gNB critical assets and threats to TR 33.926 | Huawei, Hisilicon | revised |  | S3-191630 |
| S3-191382 | security procedures of 5G SRVCC to UTRAN | Huawei, Hisilicon | not pursued |  |  |
| S3-191383 | mitigate the linkability attack | Huawei, Hisilicon | not treated |  |  |
| S3-191384 | a skeleton of security aspects of 5G SRVCC to UTRAN | Huawei, Hisilicon | not pursued |  |  |
| S3-191385 | KI\_security for setting up multicast | Huawei, Hisilicon | revised |  | S3-191748 |
| S3-191386 | Resovle Editor's notes in Solution for Key freshness in AKMA | Huawei, Hisilicon | not treated |  |  |
| S3-191387 | Clarification for Initial NAS Message Protection | Huawei, Hisilicon | revised |  | S3-191611 |
| S3-191388 | Resolve ENs on Solution to Mitigate DDoS Attack based on RAN | Huawei, Hisilicon | revised |  | S3-191688 |
| S3-191389 | Solution to Mitigate DDoS Attack based on RAN Caused by Massive Misbehaving Frequent CIoT Ues | Huawei, Hisilicon | merged |  | S3-191688 |
| S3-191390 | Solution to Mitigate DDoS Attack on AMF caused by Massive Misbehaving Infrequent CIoT Ues | Huawei, Hisilicon | revised |  | S3-191689 |
| S3-191391 | Solution for Protection of RRCReject Message | Huawei, Hisilicon | not treated |  |  |
| S3-191392 | Solution for Protection of NAS Reject Message | Huawei, Hisilicon | not treated |  |  |
| S3-191393 | Add New Security Threat and Requirement for Key Issue #1 for Protection of NAS Reject Message | Huawei, Hisilicon | revised |  | S3-191789 |
| S3-191394 | CR to TS33501-RRC Reestablishment security handling when N2 Handover fails | Huawei, Hisilicon | not pursued |  |  |
| S3-191395 | Discussion on Key handling on UE for Reestablishment Procedure in case of N2 handover failure | Huawei, Hisilicon | noted |  |  |
| S3-191396 | Security Assurance Requirements and Test Case on TEID Uniqueness for SMF | Huawei, Hisilicon | revised |  | S3-191655 |
| S3-191397 | Discussion on the security test of NRF authorization | Huawei, Hisilicon | noted |  |  |
| S3-191398 | Way forward on the security test of NRF authorization | Huawei, Hisilicon | revised |  | S3-191662 |
| S3-191399 | Security Assurance Requirement and Test for NRF authorization on the NF discovery | Huawei, Hisilicon | revised |  | S3-191663 |
| S3-191400 | Removing the EN on AMF log | Huawei, Hisilicon | merged |  | S3-191651 |
| S3-191401 | Test case on UE security capability invalid or unacceptable | Huawei, Hisilicon | revised |  | S3-191650 |
| S3-191402 | New solution for linkability attack | Huawei, Hisilicon | not treated |  |  |
| S3-191403 | Key issue on authorization for delegated "Subscribe-Notify" interaction scenarios | Huawei, Hisilicon | revised |  | S3-191673 |
| S3-191404 | New solution for delegated "Subscribe-Notify" interaction authorization | Huawei, Hisilicon | approved |  |  |
| S3-191405 | Discussions on security of mobile edge computing | Huawei, Hisilicon | noted |  |  |
| S3-191406 | New SID: Study on Security Aspects of enhancement of support for Edge Computing in 5GC | Huawei, Hisilicon | merged |  | S3-191639 |
| S3-191407 | Clarification on securing the procedure of idle mobility from 5GS to EPS over N26 interface | Huawei, Hisilicon | revised |  | S3-191606 |
| S3-191408 | New KI: AKMA push | Huawei, Hisilicon | not treated |  |  |
| S3-191409 | Subscriber privacy: test data for Profile A of SUCI computation | Huawei, Hisilicon | merged |  | S3-191626 |
| S3-191410 | New KI: KAUSF storing at UE side | Huawei, Hisilicon | not treated |  |  |
| S3-191411 | Registration failure in registration procedure with AMF reallocation caused by slicing | Huawei, Hisilicon | noted |  |  |
| S3-191412 | Solving registration failure in initial registration procedure with AMF reallocation | Huawei, Hisilicon | not pursued |  |  |
| S3-191413 | Solving registration failure in initial registration procedure with AMF reallocation | Huawei, Hisilicon | not pursued |  |  |
| S3-191414 | Clarification on the SUCI compuation | Huawei, Hisilicon, Gemalto, IDEMIA | revised |  | S3-191625 |
| S3-191415 | New KI: Access token sharing between NFs | Huawei, Hisilicon | noted |  |  |
| S3-191416 | New solution for service access authorization within a NF Set | Huawei, Hisilicon | revised |  | S3-191674 |
| S3-191417 | Discussion on removing the authentication result in the UDM | Huawei, Hisilicon | revised |  | S3-191589 |
| S3-191418 | Removing the authentication result in the UDM | Huawei, Hisilicon | revised |  | S3-191492 |
| S3-191419 | NAS recovery with the soure AMF in handover failure | Huawei, Hisilicon | merged |  | S3-191607 |
| S3-191420 | Missing UDR description in alignment with 29.505 | Nokia, Nokia Shanghai Bell | not pursued |  |  |
| S3-191421 | Adding Nudr service | Nokia, Nokia Shanghai Bell | not pursued |  |  |
| S3-191422 | Unified EAP authentication framework | Nokia, Nokia Shanghai Bell | noted |  |  |
| S3-191423 | Conclusion on EAP authentication framework | Nokia, Nokia Shanghai Bell | noted |  |  |
| S3-191424 | Solutions and conclusion for SNPN service access via PLMN and vice versa | Nokia, Nokia Shanghai Bell | revised |  | S3-191771 |
| S3-191425 | Solution and Conclusion on 5GLAN authentication | Nokia, Nokia Shanghai Bell | approved |  |  |
| S3-191426 | Solution on SMF handling the UP security policy for a 5GLAN Group | Nokia, Nokia Shanghai Bell | approved |  |  |
| S3-191427 | Solution and conclusion for TSC | Nokia, Nokia Shanghai Bell | revised |  | S3-191767 |
| S3-191428 | Key issue on PNiNPN authentication | Nokia, Nokia Shanghai Bell | noted |  |  |
| S3-191429 | Solution and evaluation for PNiNPN authentication | Nokia, Nokia Shanghai Bell | noted |  |  |
| S3-191430 | Summary of security aspects covered in this study | Nokia, Nokia Shanghai Bell | revised |  | S3-191774 |
| S3-191431 | Security for non-public networks | Nokia, Nokia Shanghai Bell | noted |  |  |
| S3-191432 | NPN references in existing text | Nokia, Nokia Shanghai Bell | noted |  |  |
| S3-191433 | Discussion WID 5GS Vertical\_LAN\_SEC | Nokia, Nokia Shanghai Bell | noted |  |  |
| S3-191434 | WID proposal for 5GS Vertical\_LAN\_SEC | Nokia, Nokia Shanghai Bell | revised |  | S3-191726 |
| S3-191435 | CIoT: Definitions and Abbreviations | Ericsson | revised |  | S3-191676 |
| S3-191436 | CIoT: Evaluation to Solution #4 | Ericsson | noted |  |  |
| S3-191437 | CIoT: Update to Solution #4 | Ericsson | revised |  | S3-191679 |
| S3-191438 | CIoT: Conclusion to KI#2 and KI#3 | Ericsson | noted |  |  |
| S3-191439 | Solution to protect user ID over the air interface | Ericsson | revised |  | S3-191738 |
| S3-191440 | Correction of ShortResumeMAC-I calculation for EDT | Ericsson | revised |  | S3-191633 |
| S3-191441 | LS on integrity protection for EDT | Ericsson | noted |  |  |
| S3-191442 | Discussion on RAN2 conclusion for NR positioning SI | Ericsson | noted |  |  |
| S3-191443 | LS on security and privacy aspects of NR positioning | Ericsson | revised |  | S3-191750 |
| S3-191444 | Discussion on missing AMF/SEAF behaviour | Ericsson, CableLabs | noted |  |  |
| S3-191445 | Missing AMF/SEAF behaviour | Ericsson, CableLabs | not pursued |  |  |
| S3-191446 | Rectifying incorrect limitation for horiz/vert key derivation | Ericsson | revised |  | S3-191604 |
| S3-191447 | UP policy handling in case of unauthenticated emergency calls | Ericsson | revised |  | S3-191612 |
| S3-191448 | Remove EN in clause 10.2.2.2 | Ericsson | not pursued |  |  |
| S3-191449 | Verification failure of NAS container | Ericsson | merged |  | S3-191607 |
| S3-191450 | Security algorithm change by SN | Ericsson | not pursued |  | - |
| S3-191451 | Verification failure of NAS MAC in NAS container at 4G to 5G HO | Ericsson | merged |  | S3-191614 |
| S3-191452 | Handling of 5G security contexts with multiple NAS connections at 4G to 5G HO | Ericsson | merged |  | S3-191783 |
| S3-191453 | Missing privacy parameters | Ericsson | revised |  | S3-191627 |
| S3-191454 | New solution (SERSI - SERving network controlled SI signatures) - builds on Solution#7 | Ericsson | noted |  |  |
| S3-191455 | Conclusion on KI#3'S second requirement (reactive action) | Ericsson | noted |  |  |
| S3-191456 | IAB - terminology | Ericsson | revised |  | S3-191692 |
| S3-191457 | IAB - security architecture diagram key issue | Ericsson | noted |  |  |
| S3-191458 | A new KI for the authentication framework for the UE | Ericsson | revised |  | S3-191696 |
| S3-191459 | A new KI for the authentication framework for an IAB node acting as a MT | Ericsson | revised |  | S3-191697 |
| S3-191460 | A new KI for activating communication security in IAB node | Ericsson | revised |  | S3-191698 |
| S3-191461 | A solution for mutual authentication between a UE and a 3GPP network supporting the IAB architecture | Ericsson | merged |  | S3-191696 |
| S3-191462 | Discussion on security aspects of EPLMN in LS from S2 (S3-191126) | Vodafone GmbH | noted |  |  |
| S3-191463 | Living Document: General SBA/SBI aspects in TS 33.117 | Nokia, Nokia Shanghai Bell | revised |  | S3-191631 |
| S3-191464 | Resolving the ENs in solution #5 | Huawei, Hisilicon | not treated |  |  |
| S3-191465 | SMF Test Case: TEID Uniqueness | Nokia, Nokia Shanghai Bell | merged |  | S3-191655 |
| S3-191466 | New Annex for the SEPP in TR 33.926 | Nokia, Nokia Shanghai Bell | revised |  | S3-191659 |
| S3-191467 | Updates to SEPP Test Cases | Nokia, Nokia Shanghai Bell | revised |  | S3-191660 |
| S3-191468 | New Annex for the NRF in TR 33.926 | Nokia, Nokia Shanghai Bell | revised |  | S3-191664 |
| S3-191469 | Error handling for PLMN ID mismatch at SEPP | Nokia, Nokia Shanghai Bell | noted |  |  |
| S3-191470 | Update to Solution#4 Enhance privacy control in LCS | Nokia, Nokia Shanghai Bell | approved |  |  |
| S3-191471 | Solution 2 Evaluation | Ericsson | not treated |  |  |
| S3-191472 | Solution 3 Evaluation | Ericsson | not treated |  |  |
| S3-191473 | Co-existence of LTKUP and PFS | Ericsson | not treated |  |  |
| S3-191474 | URLLC: Resolving EN in solution #8 | Ericsson | revised |  | S3-191742 |
| S3-191475 | URLLC: Evaluation to solution #8 | Ericsson | revised |  | S3-191762 |
| S3-191476 | URLLC: Recommendation for KI#3 | Ericsson | noted |  |  |
| S3-191477 | Solution #7 evaluation | Ericsson | approved |  |  |
| S3-191478 | Conclusion to KI#1 and KI#2 | Ericsson | noted |  |  |
| S3-191479 | Restore figures in Solution 3 | Ericsson | not treated |  |  |
| S3-191480 | New KI: Leakage of long-term key | Ericsson | not treated |  |  |
| S3-191481 | New solution: EAP-AKA´ PFS | Ericsson | not treated |  |  |
| S3-191482 | pCR to TR33.935 - Addition of Diffie - Helman Key agreements section | Vodafone GmbH | withdrawn |  |  |
| S3-191483 | CR to 33.501 6.6.4 UP integrity mechanisms - UE to gNB ntegrity protection check failure reporting | BT plc | not pursued |  |  |
| S3-191484 | Discussion paper on Service access authorization for Indirect communication with delegated discovery (Model D) | Nokia, Nokia Shanghai Bell | noted |  |  |
| S3-191485 | eSBA: Solution to KI #22 - Service access authorization for Indirect Communication with delegated discovery (Model D) | Nokia, Nokia Shanghai Bell | revised |  | S3-191671 |
| S3-191486 | Evaluation of Solution #1 | Lenovo, Motorola Mobility | revised |  | S3-191712 |
| S3-191487 | New Test Case: Error handling of malformed JSON object between two network products | NEC Europe Ltd | revised | S3-191214 | S3-191701 |
| S3-191488 | Mitigation against the authentication relay attack with different PLMNs | Lenovo, Motorola Mobility | revised |  | S3-191790 |
| S3-191489 | Removal of Editor’s Notes of Solution #5 | Lenovo, Motorola Mobility | not treated |  |  |
| S3-191490 | eSBA: Solution to KI#22 - Service access authorization for Indirect Communication without delegated discovery (Model C) | Nokia, Nokia Shanghai Bell | approved |  |  |
| S3-191491 | IAB - security architecture diagram solution | Ericsson-LG Co., LTD | revised |  | S3-191695 |
| S3-191492 | Removing the authentication result in the UDM | Huawei, Hisilicon | not pursued | S3-191418 |  |
| S3-191493 | Proposed evaluation details for solution #5 in TR 33.819 | Qualcomm Incorporated | approved |  |  |
| S3-191494 | Proposed conclusion details for key issue #5.1 in TR 33.819 | Qualcomm Incorporated | approved |  |  |
| S3-191495 | Proposed evaluation details for solution #4 in TR 33.819 | Qualcomm Incorporated | approved |  |  |
| S3-191496 | Proposed conclusion details for key issue #1.1 in TR 33.819 | Qualcomm Incorporated | noted |  |  |
| S3-191497 | Motivation and comments on a draft CR for non-public networks | Qualcomm Incorporated | noted |  |  |
| S3-191498 | Security for non-public networks | Qualcomm Incorporated | noted |  |  |
| S3-191499 | Proposed solution for protecting the S-NSSAI for transmission at the AS layer | Qualcomm Incorporated | revised | S3-190791 | S3-191737 |
| S3-191500 | Key derivation for SRVCC from 5G to UTRAN CS | Qualcomm Incorporated | endorsed |  |  |
| S3-191501 | Correction to the handling of security context in the multi-NAS scenario | Qualcomm Incorporated | revised |  | S3-191783 |
| S3-191502 | Description of issue of clashing ngKSIs with multi-NAS security | Qualcomm Incorporated | noted |  |  |
| S3-191503 | Clashing ngKSI for different security contexts in multi-NAS scenarios | Qualcomm Incorporated | not pursued |  |  |
| S3-191504 | Response LS on handling of non-zero ABBA value in Release 15 | Qualcomm Incorporated | revised |  | S3-191613 |
| S3-191505 | Response LS on Multiple NAS connections and inter-system change from S1 mode to N1 mode in 5GMM-CONNECTED mode | Qualcomm Incorporated | revised |  | S3-191610 |
| S3-191506 | Missing implementation of S3-190797: Conclusion on KI #8 for Study on the security for URLLC | Qualcomm Incorporated | approved |  |  |
| S3-191507 | Evaluation of solution #5: Security for redundant data transmission | Qualcomm Incorporated | noted |  |  |
| S3-191508 | Shared key based MIB/SIB protection | Qualcomm Incorporated | revised |  | S3-191780 |
| S3-191509 | Security requirement for KI #7 | Qualcomm Incorporated | noted |  |  |
| S3-191510 | Resolving EN in Solution 9 | Qualcomm Incorporated | revised |  | S3-191682 |
| S3-191511 | Resolving EN in Solution 10 | Qualcomm Incorporated | revised |  | S3-191683 |
| S3-191512 | Clarification for the NAS MAC failure case in N2 HO | Qualcomm Incorporated | revised |  | S3-191607 |
| S3-191513 | Clarification for the NAS MAC failure case in interworking | Qualcomm Incorporated | revised |  | S3-191614 |
| S3-191514 | Draft CR to 38300 for IAB | Qualcomm Incorporated | noted |  |  |
| S3-191515 | Draft CR to 38401 for IAB | Qualcomm Incorporated | noted |  |  |
| S3-191516 | Status on RAN WI NR\_IAB | Qualcomm Incorporated | noted |  |  |
| S3-191517 | F1 interface security for IAB | Qualcomm Incorporated | revised |  | S3-191700 |
| S3-191518 | Commonalities between IAB and Wireline Fronthaul for CU/DU | Qualcomm Incorporated | noted |  |  |
| S3-191519 | Solution for F1 interface security for IAB | Qualcomm Incorporated | approved |  |  |
| S3-191520 | Broadcast of Location Assistance Data for NR | Qualcomm Incorporated | noted |  |  |
| S3-191521 | eSBA: Solution to KI #21: Protection of SeCoP interfaces | Nokia, Nokia Shanghai Bell | approved |  |  |
| S3-191522 | Discussion of SBA authorization selection | China Mobile | noted |  |  |
| S3-191523 | eSBA: Solution to KI #23: NF to NF authentication and authorization in Indirect communications model | Nokia, Nokia Shanghai Bell | revised |  | S3-191672 |
| S3-191524 | Proposal of SBA authorization revision | China Mobile | not pursued |  |  |
| S3-191525 | eSBA: Solution to KI #27 - UP Gateway function for protection of inter-PLMN N9 interface | Nokia, Nokia Shanghai Bell,Juniper | revised |  | S3-191661 |
| S3-191526 | Scope of a SECAM SCAS for 3GPP virtualized network products | China Mobile, CAICT | not treated |  |  |
| S3-191527 | Providing some evaluation for solution #2 in TR 33.815 | Qualcomm Incorporated, Sprint, Nokia, Nokia Shanghai Bell | revised |  | S3-191593 |
| S3-191528 | Proposed conclusion for establishing the RLOS call | Qualcomm Incorporated | revised |  | S3-191594 |
| S3-191529 | Adding MACS as an input parameter to the calculation of AK\* to provide freshness | Qualcomm Incorporated | not treated | S3-190376 |  |
| S3-191530 | Scope of SECAM evaluation for 3GPP virtualized network products | China Mobile, CAICT | not treated |  |  |
| S3-191531 | Scope of SECAM Accreditation for 3GPP virtualized network products | China Mobile, CAICT | not treated |  |  |
| S3-191532 | eSBA: NF Consumer authentication for based on signed API Request | Nokia, Nokia Shanghai Bell | noted |  | - |
| S3-191533 | Adding roles in SECAM for 3GPP virtualized network products into clause 4.6 | China Mobile, CAICT | not treated |  |  |
| S3-191534 | AKMA: Implicit bootstrapping using NEF as the AKMA Anchor Function | Nokia, Nokia Shanghai Bell | not treated |  |  |
| S3-191535 | Adding contents into clause 4 | China Mobile, CAICT | not treated |  |  |
| S3-191536 | IAB Architecture | Samsung | revised |  | S3-191694 |
| S3-191537 | Work Plan for moving forward AKMA | China Mobile | not treated |  |  |
| S3-191538 | Key Issue on IAB Node authentication and authorization | Samsung R&D Institute India | merged |  | S3-191697 |
| S3-191539 | Solution for IAB Node authentication and authorization | Samsung | revised |  | S3-191699 |
| S3-191540 | Discussion on AKMA overall evaluation methodology | China Mobile, ZTE Corporation | not treated |  |  |
| S3-191541 | pCR to 33.815 on authentication of network | NTT DOCOMO | noted |  |  |
| S3-191542 | Discussion on Action Item 94/1 | Samsung | noted |  |  |
| S3-191543 | Solution for integrity protection of UP signalling messages | Samsung | approved |  |  |
| S3-191544 | pCR of clause 7- evaluation and conclusion | China Mobile | withdrawn |  |  |
| S3-191545 | pCR of clause 7- evaluation and conclusion | China Mobile | not treated |  |  |
| S3-191546 | pCR of clause 7- evaluation and conclusion | China Mobile | withdrawn |  |  |
| S3-191547 | Security Requirements for CAPIF-3e/4e/5e reference points | Samsung | agreed |  |  |
| S3-191548 | Individual Evaluations of solution #7- #12 | China Mobile | not treated |  |  |
| S3-191549 | Clarification to Initial NAS message protection | Samsung | not pursued |  |  |
| S3-191550 | Clarification to Solution#1 of PARLOS | Samsung | noted |  | - |
| S3-191551 | Alignment of the term Non-Standalone NPN | Samsung | approved |  |  |
| S3-191552 | Editor’s note for KI #1.1 | Samsung | approved |  |  |
| S3-191553 | Resolution of Editor’s note on privacy impact in Solution #3 | Samsung | revised |  | S3-191768 |
| S3-191554 | Editorial Changes to TR 33.835 v0.4.0 | China Mobile | not treated |  |  |
| S3-191555 | Resolution of Editor’s note on entities protected in Solution #3 | Samsung | approved |  |  |
| S3-191556 | Evaluation to Solution #3 | Samsung | revised |  | S3-191773 |
| S3-191557 | Individual Evaluation of solution #6 | China Mobile | withdrawn |  |  |
| S3-191558 | Individual Evaluation of solution #6 | China Mobile | not treated |  |  |
| S3-191559 | Mitigation against linkability attack | Gemalto N.V. | not treated |  |  |
| S3-191560 | Removing the EN on AMF log | NTT DOCOMO, Deutsche Telekom | revised |  | S3-191651 |
| S3-191561 | Meeting minutes of AKMA conference calls | China Mobile | not treated |  |  |
| S3-191562 | Addition of AMF/SMF requirement on security logging | Deutsche Telekom AG, NTT Docomo | agreed | S3-191262 |  |
| S3-191563 | Virtualisation Study Key Issue 1 | BT Group | revised |  | S3-191719 |
| S3-191564 | Virtualisation Study Key Issue 2 | BT Group | revised |  | S3-191720 |
| S3-191565 | Virtualisation Study Key Issue 3 | BT Group | approved |  |  |
| S3-191566 | Virtualisation Study Key Issue 4 | BT Group | approved |  |  |
| S3-191567 | Virtualisation Study Key Issue 5 | BT Group | revised |  | S3-191778 |
| S3-191568 | Virtualisation Study Key Issue 6 | BT Group | not treated |  |  |
| S3-191569 | Virtualisation Study Key Issue 7 | BT Group | not treated |  |  |
| S3-191570 | Virtualisation Study Key Issue 8 | BT Group | not treated |  |  |
| S3-191571 | Virtualisation Study Key Issue 9 | BT Group | not treated |  |  |
| S3-191572 | Virtualisation Study Key Issue 10 | BT Group | not treated |  |  |
| S3-191573 | Virtualisation Study Key Issue 11 | BT Group | not treated |  |  |
| S3-191574 | Virtualisation Study Key Issue 12 | BT Group | not treated |  |  |
| S3-191575 | Virtualisation Study Key Issue 13 | BT Group | not treated |  |  |
| S3-191576 | Virtualisation Study Key Issue 14 | BT Group | not treated |  |  |
| S3-191577 | Virtualisation Study Key Issue 15 | BT Group | not treated |  |  |
| S3-191578 | Virtualisation Study Key Issue 16 | BT Group | not treated |  |  |
| S3-191579 | Virtualisation Study Key Issue 17 | BT Group | not treated |  |  |
| S3-191580 | Virtualisation Study Key Issue 18 | BT Group | not treated |  |  |
| S3-191581 | Virtualisation Study Key Issue 19 | BT Group | not treated |  |  |
| S3-191582 | Virtualisation Study Key Issue 20 | BT Group | not treated |  |  |
| S3-191583 | Virtualisation Study Key Issue 21 | BT Group | not treated |  |  |
| S3-191584 | Virtualisation Study Key Issue 22 | BT Group | not treated |  |  |
| S3-191585 | Virtualisation Study Key Issue 23 | BT Group | not treated |  |  |
| S3-191586 | Residential use case for 5G Core with fixed broadband access | CableLabs | noted |  |  |
| S3-191587 | Virtualisation Study Key Issue 24 | BT plc | not treated |  |  |
| S3-191588 | User Plane Security for 5GC Roaming (re: S3-191016) | GSMA | noted |  |  |
| S3-191589 | Discussion on removing the authentication result in the UDM | Huawei, Hisilicon | noted | S3-191417 |  |
| S3-191590 | Secure LI Data Access Living Document | BT plc | withdrawn |  |  |
| S3-191591 | Comments on S3-191301, Draft Reply LS on protection of PC5-RRC messages for sidelink unicast communication | InterDigital Germany GmbH | revised |  | S3-191622 |
| S3-191592 | Comment on contribution S3-191553 | InterDigital Belgium. LLC | noted |  |  |
| S3-191593 | Providing some evaluation for solution #2 in TR 33.815 | Qualcomm Incorporated, Sprint, Nokia, Nokia Shanghai Bell, Ericsson, Verizon UK Ltd | revised | S3-191527 | S3-191728 |
| S3-191594 | Proposed conclusion for establishing the RLOS call | Qualcomm Incorporated, Ericsson, Verizon UK Ltd | revised | S3-191528 | S3-191595 |
| S3-191595 | Proposed conclusion for establishing the RLOS call | Qualcomm Incorporated, Nokia, Nokia Shanghai Bell, Ericsson, Verizon UK Ltd | noted | S3-191594 |  |
| S3-191596 | New KI for PLMN integrated NPN | InterDigital Germany GmbH | revised | S3-191107 | S3-191769 |
| S3-191597 | New KI for Public network integrated NPN | InterDigital Germany GmbH | revised | S3-191164 | S3-191770 |
| S3-191598 | Report from SA3#94 | MCC | approved | - | - |
| S3-191599 | Reply to: LS on usage of EPLMNs | Vodafone | approved | - | - |
| S3-191600 | Reply to: LS on broadcast assistance data delivery | Intel | approved | - | - |
| S3-191601 | Reply to: Reply LS on authentication of group of IoT devices | Huawei | approved | - | - |
| S3-191602 | pCR to TR33.814 - Key issue for integrity protection of broadcast assistance data | CATT | noted | S3-191353 | - |
| S3-191603 | Aligning the storage timing of KAUSF in 5G AKA with EAP-AKA' | NEC Europe Ltd | agreed | S3-191205 | - |
| S3-191604 | Rectifying incorrect limitation for horiz/vert key derivation | Ericsson | agreed | S3-191446 | - |
| S3-191605 | Corrections on the s-Kgnb derivation | Huawei, Hisilicon | agreed | S3-191367 | - |
| S3-191606 | Clarification on securing the procedure of idle mobility from 5GS to EPS over N26 interface | Huawei, Hisilicon | agreed | S3-191407 | - |
| S3-191607 | Clarification for the NAS MAC failure case in N2 HO | Qualcomm Incorporated,Huawei,Ericsson | agreed | S3-191512 | - |
| S3-191608 | Reply to: LS on Security failure of NAS container in HO command | Ericsson | approved | - | - |
| S3-191609 | Add detials on handling UP security in RRC inactive scenario | Huawei, Hisilicon | agreed | S3-191379 | - |
| S3-191610 | Response LS on Multiple NAS connections and inter-system change from S1 mode to N1 mode in 5GMM-CONNECTED mode | Qualcomm Incorporated | approved | S3-191505 | - |
| S3-191611 | Clarification for Initial NAS Message Protection | Huawei, Hisilicon | agreed | S3-191387 | - |
| S3-191612 | UP policy handling in case of unauthenticated emergency calls | Ericsson | agreed | S3-191447 | - |
| S3-191613 | Response LS on handling of non-zero ABBA value in Release 15 | Qualcomm Incorporated | approved | S3-191504 | - |
| S3-191614 | Clarification for the NAS MAC failure case in interworking | Qualcomm Incorporated,Ericsson | agreed | S3-191513 | - |
| S3-191615 | Reply to: Reply LS on Verification of PLMN-ID in the SEPP | Deutsche Telekom | approved | - | - |
| S3-191616 | Addition of missing SEPP requirement on JOSE-patch validation | Deutsche Telekom AG | agreed | S3-191185 | - |
| S3-191617 | Name clarification for N32 security | Ericsson,NCSC | agreed | - | - |
| S3-191618 | LS on clarification for N32 security | Ericsson | approved | - | - |
| S3-191619 | Token-based authorization for NRF's management and discovery services | Ericsson | not pursued | S3-191314 | - |
| S3-191620 | Protection of unicast message | Apple Computer Trading Co. Ltd | approved | S3-191345 | - |
| S3-191621 | Slice information for token-based authorization | Ericsson | agreed | S3-191315 | - |
| S3-191622 | Reply LS on protection of PC5-RRC messages for sidelink unicast communication | InterDigital Germany GmbH,LG | approved | S3-191591 | - |
| S3-191623 | Way forward in CVD and research | CableLabs | noted | - | - |
| S3-191624 | Essential clarification of MSIN coding for the ECIES protection shemes | IDEMIA,Gemalto, Qualcomm,Ericsson,Huawei,HiSilicon,Intel | agreed | S3-191163 | - |
| S3-191625 | Clarification on the SUCI compuation | Huawei, Hisilicon, Gemalto, IDEMIA | agreed | S3-191414 | - |
| S3-191626 | subscriber privacy: ECIES test data | Gemalto, IDEMIA, Huawei, Hisilicon | agreed | S3-191220 | - |
| S3-191627 | Missing privacy parameters | Ericsson,Gemalto,IDEMIA | agreed | S3-191453 | - |
| S3-191628 | LS on support of non-3GPP only UE and support for PEI in IMEI format | S2-1904836 | postponed | - | - |
| S3-191629 | Reply to: Reply LS on Nudr Sensitive Data Protection | Hewlett Packard Enterprise | approved | - | - |
| S3-191630 | Adding gNB critical assets and threats to TR 33.926 | Huawei, Hisilicon | agreed | S3-191381 | - |
| S3-191631 | Living Document: General SBA/SBI aspects in TS 33.117 | Nokia, Nokia Shanghai Bell | approved | S3-191463 | - |
| S3-191632 | Corrections on IP packet forwarding | Ericsson | not pursued | S3-191321 | - |
| S3-191633 | Correction of ShortResumeMAC-I calculation for EDT | Ericsson,Huawei | agreed | S3-191440 | - |
| S3-191634 | Reply LS to RAN2/RAN3 on EDT UP IP | Huawei, Hisilicon | approved | S3-191246 | - |
| S3-191635 | Interface and protocol stack clarifications and corrections to TS 33.163 | Juniper Networks | agreed | S3-191172 | - |
| S3-191636 | Interface and protocol stack clarifications and corrections to TS 33.163 | Juniper Networks | agreed | S3-191173 | - |
| S3-191637 | Making UE initiated key refresh optional in TS33.163 | Juniper Networks | agreed | S3-191174 | - |
| S3-191638 | Deprecation of TLS 1.1 | Ericsson | agreed | S3-191308 | - |
| S3-191639 | New SID: Study on security aspects of enhancement of support for Edge Computing in 5GC | China Unicom, CAICT, China Telecom, ZTE,Huawei | noted | S3-191292 | - |
| S3-191640 | Adapting maximum HTTP payload size to CT4 specification | Deutsche Telekom | approved | - | - |
| S3-191641 | [MCPTT] 33179 R13. Clarification of the references to RFC 3711 | Airbus DS SLC | agreed | S3-191113 | - |
| S3-191642 | [MCSec] 33180 R14. Clarification of the references to RFC 3711 | Airbus DS SLC | agreed | S3-191114 | - |
| S3-191643 | [MCSec] 33180 R15. Clarification of the references to RFC 3711 | Airbus DS SLC | agreed | S3-191115 | - |
| S3-191644 | {33.179] R13 Remove IANA editor's notes | Motorola Solutions UK | agreed | S3-191168 | - |
| S3-191645 | [33.180] R14 Remove IANA editor’s notes | Motorola Solutions UK | agreed | S3-191169 | - |
| S3-191646 | [33.180] R15 Remove IANA editor’s notes (mirror) | Motorola Solutions UK | agreed | S3-191170 | - |
| S3-191647 | [33.180] R16 Establishment of PCK for MCData | Samsung | agreed | S3-191171 | - |
| S3-191648 | skeleton of security aspects of 5G SRVCC to UTRAN | China Unicom | approved | - | - |
| S3-191649 | Security procedures of 5G SRVCC to UTRAN | Huawei,China Unicom,CATT | approved | - | - |
| S3-191650 | Test case on UE security capability invalid or unacceptable | Huawei, Hisilicon | approved | S3-191401 | - |
| S3-191651 | Removing the EN on AMF log | NTT DOCOMO, Deutsche Telekom,Huawei | approved | S3-191560 | - |
| S3-191652 | Draft TS 33.512 | Deutsche Telekom | approved | - | - |
| S3-191653 | Addition of Network Product Class Description for AMF | Deutsche Telekom AG | approved | - | - |
| S3-191654 | Addition of AMF-related Security Problem Descriptions | Deutsche Telekom AG | agreed | S3-191182 | - |
| S3-191655 | Security Assurance Requirements and Test Case on TEID Uniqueness for SMF | Huawei, Hisilicon,Nokia | approved | S3-191396 | - |
| S3-191656 | Draft TS 33.515 | Huawei | approved | - | - |
| S3-191657 | Testcase: Replacing confidential IEs with NULL in original N32-f message | Deutsche Telekom AG | approved | S3-191186 | - |
| S3-191658 | Draft TS 33.517 | Nokia | approved | - | - |
| S3-191659 | New Annex for the SEPP in TR 33.926 | Nokia, Nokia Shanghai Bell | approved | S3-191466 | - |
| S3-191660 | Updates to SEPP Test Cases | Nokia, Nokia Shanghai Bell | approved | S3-191467 | - |
| S3-191661 | eSBA: Solution to KI #27 - UP Gateway function for protection of inter-PLMN N9 interface | Nokia, Nokia Shanghai Bell | approved | S3-191525 | - |
| S3-191662 | Way forward on the security test of NRF authorization | Huawei, Hisilicon | endorsed | S3-191398 | - |
| S3-191663 | Security Assurance Requirement and Test for NRF authorization on the NF discovery | Huawei, Hisilicon | approved | S3-191399 | - |
| S3-191664 | New Annex for the NRF in TR 33.926 | Nokia, Nokia Shanghai Bell | approved | S3-191468 | - |
| S3-191665 | Draft TS 33.518 | Nokia | approved | - | - |
| S3-191666 | Discussion document on roaming UP gateway | Juniper Networks | endorsed | S3-191177 | - |
| S3-191667 | Draft TR 33.855 | Deutsche Telekom | approved | - | - |
| S3-191668 | Solution to KI #26: NDS/IP on the inter-PLMN N9 interface | Juniper Networks, Nokia | approved | S3-191219 | - |
| S3-191669 | Key issue of signalling between SEPP and IPX provider | Deutsche telekom | approved | - | - |
| S3-191670 | New Key Issue for TR 33.836 - privacy protection for multicast messages over PC5 | InterDigital Germany GmbH,LG | approved | S3-191110 | - |
| S3-191671 | eSBA: Solution to KI #22 - Service access authorization for Indirect Communication with delegated discovery (Model D) | Nokia, Nokia Shanghai Bell | approved | S3-191485 | - |
| S3-191672 | eSBA: Solution to KI #23: NF to NF authentication and authorization in Indirect communications model | Nokia, Nokia Shanghai Bell | approved | S3-191523 | - |
| S3-191673 | Key issue on authorization for delegated "Subscribe-Notify" interaction scenarios | Huawei, Hisilicon | approved | S3-191403 | - |
| S3-191674 | New solution for service access authorization within a NF Set | Huawei, Hisilicon | approved | S3-191416 | - |
| S3-191675 | eSBA: NF Consumer authentication for based on signed API Request | Nokia, Nokia Shanghai Bell | withdrawn | - | - |
| S3-191676 | CIoT: Definitions and Abbreviations | Ericsson | approved | S3-191435 | - |
| S3-191677 | Draft TR 33.861 | Ericsson | approved | - | - |
| S3-191678 | update solution#4 with UP IP during EDT for multiple PDCP PDUs. | Huawei, Hisilicon | approved | S3-191249 | - |
| S3-191679 | CIoT: Update to Solution #4 | Ericsson | approved | S3-191437 | - |
| S3-191680 | Update of Solution #6 – Use of UE Configuration Update | KPN | approved | S3-191180 | - |
| S3-191681 | Updating solution#7 | Huawei, Hisilicon | approved | S3-191252 | - |
| S3-191682 | Resolving EN in Solution 9 | Qualcomm Incorporated | approved | S3-191510 | - |
| S3-191683 | Resolving EN in Solution 10 | Qualcomm Incorporated | approved | S3-191511 | - |
| S3-191684 | Delete EN in solution12 | Huawei, Hisilicon | approved | S3-191365 | - |
| S3-191685 | Add evalution in solution12 | Huawei, Hisilicon | approved | S3-191366 | - |
| S3-191686 | Proposal for improvement FS\_CIoT\_sec\_5G solution #15 | Philips International B.V. | approved | S3-191189 | - |
| S3-191687 | Proposal for editor's notes in FS\_CIoT\_sec\_5G solution #15 | Philips International B.V. | approved | S3-191188 | - |
| S3-191688 | Resolve ENs on Solution to Mitigate DDoS Attack based on RAN | Huawei, Hisilicon | approved | S3-191388 | - |
| S3-191689 | Solution to Mitigate DDoS Attack on AMF caused by Massive Misbehaving Infrequent CIoT Ues | Huawei, Hisilicon | approved | S3-191390 | - |
| S3-191690 | New Key Issue: SUCI-to-SUPI mapping for the FN-RG | Ericsson | approved | S3-191318 | - |
| S3-191691 | Proposal for FS\_UP\_IP\_Sec Key Issue #3 and 5: Zero-overhead user plane integrity protection on the link layer | Philips International B.V. | noted | S3-191191 | - |
| S3-191692 | IAB - terminology | Ericsson | approved | S3-191456 | - |
| S3-191693 | Draft TR 33.824 | Samsung | approved | - | - |
| S3-191694 | IAB Architecture | Samsung | approved | S3-191536 | - |
| S3-191695 | IAB - security architecture diagram solution | Ericsson-LG Co., LTD | approved | S3-191491 | - |
| S3-191696 | A new KI for the authentication framework for the UE | Ericsson,Intel | approved | S3-191458 | - |
| S3-191697 | A new KI for the authentication framework for an IAB node acting as a MT | Ericsson,Samsung | approved | S3-191459 | - |
| S3-191698 | A new KI for activating communication security in IAB node | Ericsson,Intel | approved | S3-191460 | - |
| S3-191699 | Solution for IAB Node authentication and authorization | Samsung | approved | S3-191539 | - |
| S3-191700 | F1 interface security for IAB | Qualcomm Incorporated | approved | S3-191517 | - |
| S3-191701 | New Test Case: Error handling of malformed JSON object between two network products | NEC Europe Ltd | noted | S3-191487 | - |
| S3-191702 | New KI for TR 33.807: Authentication of UE without NAS support and without 3GPP RAT behind a FN-RG or 5G-CRG with 5GC | CableLabs | noted | S3-191193 | - |
| S3-191703 | Discussion on proposed response to incoming LS (S3-191138) on authentication of UEs not supporting NAS | Charter Communications, CableLabs | noted | S3-191221 | - |
| S3-191704 | Modification on Use of SUCI in NAS signalling | ZTE Corporation,Intel | agreed | S3-191306 | - |
| S3-191705 | Security of RRC Reestablishment during N2 HO | Huawei | noted | - | - |
| S3-191706 | Add references | Huawei, Hisilicon | approved | S3-191371 | - |
| S3-191707 | Add content to clause 4 | Huawei, Hisilicon | approved | S3-191372 | - |
| S3-191708 | Delete Editor's Note in KI#4 | Huawei, Hisilicon | approved | S3-191373 | - |
| S3-191709 | Add requirement and delete EN for KI#13 | Huawei, Hisilicon | approved | S3-191374 | - |
| S3-191710 | Draft TR 33.807 | Huawei | approved | - | - |
| S3-191711 | Add conclusion on KI#3 | Huawei, Hisilicon | approved | S3-191377 | - |
| S3-191712 | Evaluation of Solution #1 | Lenovo, Motorola Mobility | approved | S3-191486 | - |
| S3-191713 | Reply LS on Authentication for UEs not Supporting NAS | Nokia | approved | - | - |
| S3-191714 | Scope for TR 33 848 | BT plc | approved | S3-191217 | - |
| S3-191715 | Virtualisation Background and Concepts | NCSC | approved | S3-191222 | - |
| S3-191716 | Key Issue: Establishment of trust domains for Network Functions | NCSC | approved | S3-191224 | - |
| S3-191717 | Key Issue: Confidentiality of Sensitive Data | NCSC | approved | S3-191225 | - |
| S3-191718 | Key Issue: Availability of Network Functions | NCSC | approved | S3-191226 | - |
| S3-191719 | Virtualisation Study Key Issue 1 | BT Group | approved | S3-191563 | - |
| S3-191720 | Virtualisation Study Key Issue 2 | BT Group | approved | S3-191564 | - |
| S3-191721 | Initial Key Issues for TR 33.848 | BT plc | approved | S3-191216 | - |
| S3-191722 | Draft TR 33.848 | BT | revised | - | S3-191777 |
| S3-191723 | Evaluation and text for resolving editor’s note for solution #5 in TR 33.825 | NEC Europe Ltd,Huawei | noted | S3-191215 | - |
| S3-191724 | Delete the EN of solution 5 | Huawei, HiSilicon | approved | S3-191286 | - |
| S3-191725 | WID on security of URLLC | Huawei, HiSilicon | agreed | S3-191288 | - |
| S3-191726 | WID proposal for 5GS Vertical\_LAN\_SEC | Nokia, Nokia Shanghai Bell | agreed | S3-191434 | - |
| S3-191727 | Clarification to Solution#1 of PARLOS | Samsung | withdrawn | - | - |
| S3-191728 | Providing some evaluation for solution #2 in TR 33.815 | Qualcomm Incorporated, Sprint, Nokia, Nokia Shanghai Bell, Ericsson, Verizon UK Ltd | approved | S3-191593 | - |
| S3-191729 | Draft TR 33.815 | Qualcomm | approved | - | - |
| S3-191730 | eNS Update to solution 1 Slice specific secondary authentication | Nokia, Nokia Shanghai Bell | approved | S3-191227 | - |
| S3-191731 | Draft TR 33.813 | Nokia | approved | - | - |
| S3-191732 | Removing ENs for solution #2 | Huawei, HiSilicon | approved | S3-191328 | - |
| S3-191733 | Add Evaluation to Solution #2 | Huawei, HiSilicon | approved | S3-191329 | - |
| S3-191734 | Update to solution #4 | InterDigital Belgium. LLC | approved | S3-191118 | - |
| S3-191735 | Solution to KI #4 | Huawei, HiSilicon | approved | S3-191326 | - |
| S3-191736 | A solution to NSSAI protection at AS transmission | Huawei, HiSilicon | approved | S3-191324 | - |
| S3-191737 | Proposed solution for protecting the S-NSSAI for transmission at the AS layer | Qualcomm Incorporated | approved | S3-191499 | - |
| S3-191738 | Solution to protect user ID over the air interface | Ericsson | approved | S3-191439 | - |
| S3-191739 | Preliminary comparison of solutions | Nokia, Nokia Shanghai Bell | approved | S3-191228 | - |
| S3-191740 | New Key Issue-Security of identifiers in group communication | Huawei, HiSilicon | approved | S3-191340 | - |
| S3-191741 | Completing TS 33.511 | Huawei, Hisilicon | approved | S3-191380 | - |
| S3-191742 | URLLC: Resolving EN in solution #8 | Ericsson | approved | S3-191474 | - |
| S3-191743 | Handling of UE radio network capabilities in 4G and 5G | GSMA | postponed | - | - |
| S3-191744 | Clause 4 Security Aspects of Advanced V2X services | LG Electronics | approved | S3-191302 | - |
| S3-191745 | Draft TR 33.836 | LG | approved | - | - |
| S3-191746 | New Key Issue for TR 33.836 - privacy protection for unicast messages over PC5 | InterDigital Germany GmbH | approved | S3-191109 | - |
| S3-191747 | New Key Issue for TR 33.836 - security for eV2X unicast messages over PC5 | InterDigital Germany GmbH | approved | S3-191111 | - |
| S3-191748 | KI\_security for setting up multicast | Huawei, Hisilicon | approved | S3-191385 | - |
| S3-191749 | New Key Issue for TR 33.836 - Security of the UE service authorization and revocation | InterDigital Germany GmbH | approved | S3-191112 | - |
| S3-191750 | LS on security and privacy aspects of NR positioning | Ericsson | approved | S3-191443 | - |
| S3-191751 | Clarification on Subscription Identifier mechanism for De-registration. | Intel Corporation (UK) Ltd | agreed | S3-191258 | - |
| S3-191752 | Reply to: LS on Use of SUCI in NAS signalling | Intel | approved | - | - |
| S3-191753 | IANA assigned values for mission critical | Motorola | approved | - | - |
| S3-191754 | Address EN and update in key issue 5 | Huawei, Hisilicon | approved | S3-191368 | - |
| S3-191755 | Draft TR 33.814 | CATT | approved | - | - |
| S3-191756 | Draft TR 33.825 | Huawei | approved | - | - |
| S3-191757 | Deleting EN of solution 4 | Huawei, HiSilicon | approved | S3-191279 | - |
| S3-191758 | Evaluation for solution 4 | Huawei, HiSilicon | approved | S3-191280 | - |
| S3-191759 | Deleting the EN of solution 3 | Huawei, HiSilicon | approved | S3-191277 | - |
| S3-191760 | Adding more clarification text of solution 7 | Huawei, HiSilicon | approved | S3-191278 | - |
| S3-191761 | Evaluation for solution 6 | Huawei, HiSilicon | approved | S3-191287 | - |
| S3-191762 | URLLC: Evaluation to solution #8 | Ericsson | approved | S3-191475 | - |
| S3-191763 | Security solutions summary | Huawei, HiSilicon | approved | S3-191276 | - |
| S3-191764 | Conclusion for key issue 1 | Huawei, HiSilicon | approved | S3-191270 | - |
| S3-191765 | Conclusion for key issue 4 | Huawei, HiSilicon | approved | S3-191273 | - |
| S3-191766 | Draft TR 33.819 | Nokia | approved | - | - |
| S3-191767 | Solution and conclusion for TSC | Nokia, Nokia Shanghai Bell | approved | S3-191427 | - |
| S3-191768 | Resolution of Editor’s note on privacy impact in Solution #3 | Samsung | approved | S3-191553 | - |
| S3-191769 | New KI for PLMN integrated NPN | InterDigital Germany GmbH | approved | S3-191596 | - |
| S3-191770 | New KI for Public network integrated NPN | InterDigital Germany GmbH | approved | S3-191597 | - |
| S3-191771 | Solutions and conclusion for SNPN service access via PLMN and vice versa | Nokia, Nokia Shanghai Bell | approved | S3-191424 | - |
| S3-191772 | update in solution 3 | Huawei, Hisilicon | approved | S3-191370 | - |
| S3-191773 | Evaluation to Solution #3 | Samsung | approved | S3-191556 | - |
| S3-191774 | Summary of security aspects covered in this study | Nokia, Nokia Shanghai Bell | approved | S3-191430 | - |
| S3-191775 | Draft TR 33.853 | Vodafone | approved | - | - |
| S3-191776 | Integrity protection between SgNB and UE in NGEN-DC | Apple Computer Trading Co. Ltd | approved | S3-191265 | - |
| S3-191777 | Draft TR 33.848 | BT | approved | S3-191722 | - |
| S3-191778 | Virtualisation Study Key Issue 5 | BT Group | approved | S3-191567 | - |
| S3-191779 | Draft TR 33.809 | Apple | approved | - | - |
| S3-191780 | Shared key based MIB/SIB protection | Qualcomm Incorporated | approved | S3-191508 | - |
| S3-191781 | Certificate based solution for 5GFBS | Apple Computer Trading Co. Ltd | approved | S3-191267 | - |
| S3-191782 | ID based solution for 5GFBS | Apple Computer Trading Co. Ltd | approved | S3-191268 | - |
| S3-191783 | Correction to the handling of security context in the multi-NAS scenario | Qualcomm Incorporated,Ericsson,Huawei | agreed | S3-191501 | - |
| S3-191784 | Draft agenda SA3\_95-BIS | WG Chair | noted | - | - |
| S3-191785 | Draft TS 33.511 | Huawei | approved | - | - |
| S3-191786 | Cover sheet TS 33.511 | Huawei | approved | - | - |
| S3-191787 | Cover sheet TR 33.825 | Huawei | approved | - | - |
| S3-191788 | Overview of TR33.856 | China Unicom | agreed | S3-191295 | - |
| S3-191789 | Add New Security Threat and Requirement for Key Issue #1 for Protection of NAS Reject Message | Huawei, Hisilicon | approved | S3-191393 | - |
| S3-191790 | Mitigation against the authentication relay attack with different PLMNs | Lenovo, Motorola Mobility | approved | S3-191488 | - |
| S3-191791 | Cover sheet TR 33.819 | Nokia | approved | - | - |
| S3-191792 | Work Plan input from Rapporteurs | MCC | noted | S3-191105 | - |
| S3-191793 | SA3 meeting calendar | MCC | noted | S3-191104 | - |

## Annex B: List of change requests

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Document | Title | Source | Spec | CR | Rev | Rel | Cat | WI | Decision |
| S3-191529 | Adding MACS as an input parameter to the calculation of AK\* to provide freshness | Qualcomm Incorporated | 33.102 | 0277 | 1 | Rel-15 | F | 5GS\_Ph1-SEC | not treated |
| S3-191197 | Structure RAND for authentication – HE part | ZTE Corporation | 33.102 | 0278 | - | Rel-15 | F | TEI15 | not treated |
| S3-191321 | Corrections on IP packet forwarding | Ericsson | 33.117 | 0031 | - | Rel-16 | F | SCAS-SA3 | revised |
| S3-191632 | Corrections on IP packet forwarding | Ericsson | 33.117 | 0031 | 1 | Rel-16 | A | SCAS-SA3 | not pursued |
| S3-191547 | Security Requirements for CAPIF-3e/4e/5e reference points | Samsung | 33.122 | 0019 | - | Rel-16 | B | eCAPIF | agreed |
| S3-191172 | Interface and protocol stack clarifications and corrections to TS 33.163 | Juniper Networks | 33.163 | 0009 | - | Rel-15 | F | BEST\_MTC\_Sec | revised |
| S3-191635 | Interface and protocol stack clarifications and corrections to TS 33.163 | Juniper Networks | 33.163 | 0009 | 1 | Rel-15 | F | BEST\_MTC\_Sec | agreed |
| S3-191173 | Interface and protocol stack clarifications and corrections to TS 33.163 | Juniper Networks | 33.163 | 0010 | - | Rel-16 | A | BEST\_MTC\_Sec | revised |
| S3-191636 | Interface and protocol stack clarifications and corrections to TS 33.163 | Juniper Networks | 33.163 | 0010 | 1 | Rel-16 | A | BEST\_MTC\_Sec | agreed |
| S3-191174 | Making UE initiated key refresh optional in TS33.163 | Juniper Networks | 33.163 | 0011 | - | Rel-16 | C | BEST\_MTC\_Sec | revised |
| S3-191637 | Making UE initiated key refresh optional in TS33.163 | Juniper Networks | 33.163 | 0011 | 1 | Rel-16 | C | BEST\_MTC\_Sec,TEI16 | agreed |
| S3-191113 | [MCPTT] 33179 R13. Clarification of the references to RFC 3711 | Airbus DS SLC | 33.179 | 0100 | - | Rel-13 | F | MCSec | revised |
| S3-191641 | [MCPTT] 33179 R13. Clarification of the references to RFC 3711 | Airbus DS SLC | 33.179 | 0100 | 1 | Rel-13 | F | MCPTT | agreed |
| S3-191165 | [33.179] R13 XSD Corrections | Motorola Solutions UK | 33.179 | 0101 | - | Rel-13 | F | MCPTT | agreed |
| S3-191168 | {33.179] R13 Remove IANA editor's notes | Motorola Solutions UK | 33.179 | 0102 | - | Rel-13 | F | MCPTT | revised |
| S3-191644 | {33.179] R13 Remove IANA editor's notes | Motorola Solutions UK | 33.179 | 0102 | 1 | Rel-13 | F | MCPTT | agreed |
| S3-191114 | [MCSec] 33180 R14. Clarification of the references to RFC 3711 | Airbus DS SLC | 33.180 | 0106 | - | Rel-14 | F | MCSec | revised |
| S3-191642 | [MCSec] 33180 R14. Clarification of the references to RFC 3711 | Airbus DS SLC | 33.180 | 0106 | 1 | Rel-14 | F | MCSec | agreed |
| S3-191115 | [MCSec] 33180 R15. Clarification of the references to RFC 3711 | Airbus DS SLC | 33.180 | 0107 | - | Rel-15 | A | MCSec | revised |
| S3-191643 | [MCSec] 33180 R15. Clarification of the references to RFC 3711 | Airbus DS SLC | 33.180 | 0107 | 1 | Rel-15 | A | MCSec | agreed |
| S3-191166 | [33.180] R14 XSD Corrections | Motorola Solutions UK | 33.180 | 0108 | - | Rel-14 | F | MCSec | agreed |
| S3-191167 | [33.180] R15 XSD Corrections (mirror) | Motorola Solutions UK | 33.180 | 0109 | - | Rel-15 | A | MCSec | agreed |
| S3-191169 | [33.180] R14 Remove IANA editor’s notes | Motorola Solutions UK | 33.180 | 0110 | - | Rel-14 | F | MCSec | revised |
| S3-191645 | [33.180] R14 Remove IANA editor’s notes | Motorola Solutions UK | 33.180 | 0110 | 1 | Rel-14 | F | MCSec | agreed |
| S3-191170 | [33.180] R15 Remove IANA editor’s notes (mirror) | Motorola Solutions UK | 33.180 | 0111 | - | Rel-15 | A | MCSec | revised |
| S3-191646 | [33.180] R15 Remove IANA editor’s notes (mirror) | Motorola Solutions UK | 33.180 | 0111 | 1 | Rel-15 | A | MCSec | agreed |
| S3-191171 | [33.180] R16 Pre-established PCK | Motorola Solutions UK | 33.180 | 0112 | - | Rel-16 | B | MCXSec | revised |
| S3-191647 | [33.180] R16 Establishment of PCK for MCData | Samsung | 33.180 | 0112 | 1 | Rel-16 | B | MCXSec | agreed |
| S3-191308 | Deprecation of TLS 1.1 | Ericsson | 33.210 | 0058 | - | Rel-16 | F | TEI16 | revised |
| S3-191638 | Deprecation of TLS 1.1 | Ericsson | 33.210 | 0058 | 1 | Rel-16 | F | TEI16 | agreed |
| S3-191310 | References to several obsoleted RFCs | Ericsson | 33.210 | 0059 | - | Rel-16 | F | TEI16 | agreed |
| S3-191311 | TLS OCSP stapling | Ericsson | 33.210 | 0060 | - | Rel-16 | F | TEI16 | not pursued |
| S3-191312 | References to several obsoleted RFCs | Ericsson | 33.310 | 0101 | - | Rel-16 | F | TEI16 | agreed |
| S3-191198 | Structure RAND for authentication – ME part | ZTE Corporation | 33.401 | 0677 | - | Rel-15 | F | TEI15 | not treated |
| S3-191247 | CR for removing EDT UP IP solution using PDCP PDU hashes. | Huawei, Hisilicon | 33.401 | 0678 | - | Rel-15 | F | TEI15 | merged |
| S3-191440 | Correction of ShortResumeMAC-I calculation for EDT | Ericsson | 33.401 | 0679 | - | Rel-15 | F | TEI15 | revised |
| S3-191633 | Correction of ShortResumeMAC-I calculation for EDT | Ericsson,Huawei | 33.401 | 0679 | 1 | Rel-15 | F | TEI15 | agreed |
| S3-191163 | Clarification of MSIN coding for the ECIES protection shemes | IDEMIA,Gemalto, Qualcomm,Ericsson,Huawei,HiSilicon | 33.501 | 0560 | - | Rel-15 | F | 5GS\_Ph1-SEC | revised |
| S3-191624 | Essential clarification of MSIN coding for the ECIES protection shemes | IDEMIA,Gemalto, Qualcomm,Ericsson,Huawei,HiSilicon,Intel | 33.501 | 0560 | 1 | Rel-15 | F | 5GS\_Ph1-SEC | agreed |
| S3-191185 | Addition of missing SEPP requirement on JOSE-patch validation | Deutsche Telekom AG | 33.501 | 0561 | - | Rel-15 | F | 5GS\_Ph1-SEC | revised |
| S3-191616 | Addition of missing SEPP requirement on JOSE-patch validation | Deutsche Telekom AG | 33.501 | 0561 | 1 | Rel-15 | F | 5GS\_Ph1-SEC | agreed |
| S3-191199 | Structure RAND for authentication – ME part | ZTE Corporation | 33.501 | 0562 | - | Rel-15 | F | 5GS\_Ph1-SEC | not treated |
| S3-191200 | Handling of Sync failure for 5G AKA | ZTE Corporation | 33.501 | 0563 | - | Rel-15 | F | 5GS\_Ph1-SEC | not treated |
| S3-191205 | Aligning the storage timing of KAUSF in 5G AKA with EAP-AKA' | NEC Europe Ltd | 33.501 | 0564 | - | Rel-15 | F | 5GS\_Ph1-SEC | revised |
| S3-191603 | Aligning the storage timing of KAUSF in 5G AKA with EAP-AKA' | NEC Europe Ltd | 33.501 | 0564 | 1 | Rel-15 | F | 5GS\_Ph1-SEC | agreed |
| S3-191220 | subscriber privacy: ECIES test data | Gemalto, IDEMIA, Huawei, Hisilicon | 33.501 | 0565 | - | Rel-15 | F | 5GS\_Ph1-SEC | revised |
| S3-191626 | subscriber privacy: ECIES test data | Gemalto, IDEMIA, Huawei, Hisilicon | 33.501 | 0565 | 1 | Rel-15 | F | 5GS\_Ph1-SEC | agreed |
| S3-191253 | Clarification for F1-U protection | Huawei, Hisilicon | 33.501 | 0566 | - | Rel-15 | F | 5GS\_Ph1-SEC | not pursued |
| S3-191258 | Clarification on Subscription Identifier mechanism for De-registration. | Intel Corporation (UK) Ltd | 33.501 | 0567 | - | Rel-15 | F | 5GS\_Ph1-SEC | revised |
| S3-191751 | Clarification on Subscription Identifier mechanism for De-registration. | Intel Corporation (UK) Ltd | 33.501 | 0567 | 1 | Rel-15 | F | 5GS\_Ph1-SEC | agreed |
| S3-191261 | Input encoding for ECIES protection schemes | Intel Corporation (UK) Ltd | 33.501 | 0568 | - | Rel-15 | F | 5GS\_Ph1-SEC | merged |
| S3-191262 | Addition of AMF/SMF requirement on security logging | Deutsche Telekom AG, NTT Docomo | 33.501 | 0569 | - | Rel-15 | F | 5GS\_Ph1-SEC | revised |
| S3-191562 | Addition of AMF/SMF requirement on security logging | Deutsche Telekom AG, NTT Docomo | 33.501 | 0569 | 1 | Rel-15 | F | 5GS\_Ph1-SEC | agreed |
| S3-191293 | Key derivation during SRVCC from 5G to UTRAN CS | China Unicom,CATT | 33.501 | 0570 | - | Rel-16 | C | 5GS\_UTRAN\_SEC | not pursued |
| S3-191294 | Emergency call in SRVCC from NR to UTRAN | China Unicom, CATT | 33.501 | 0571 | - | Rel-16 | C | 5GS\_UTRAN\_SEC | not pursued |
| S3-191306 | Modification on Use of SUCI in NAS signalling | ZTE Corporation | 33.501 | 0572 | - | Rel-15 | F | 5GS\_Ph1-SEC | revised |
| S3-191704 | Modification on Use of SUCI in NAS signalling | ZTE Corporation,Intel | 33.501 | 0572 | 1 | Rel-15 | F | 5GS\_Ph1-SEC | agreed |
| S3-191313 | Various corrections to security protocols and cryptography | Ericsson | 33.501 | 0573 | - | Rel-15 | F | 5GS\_Ph1-SEC | agreed |
| S3-191314 | Token-based authorization for NRF's management and discovery services | Ericsson | 33.501 | 0574 | - | Rel-15 | F | 5GS\_Ph1-SEC | revised |
| S3-191619 | Token-based authorization for NRF's management and discovery services | Ericsson | 33.501 | 0574 | 1 | Rel-15 | F | 5GS\_Ph1-SEC | not pursued |
| S3-191315 | Slice information for token-based authorization | Ericsson | 33.501 | 0575 | - | Rel-15 | F | 5GS\_Ph1-SEC | revised |
| S3-191621 | Slice information for token-based authorization | Ericsson | 33.501 | 0575 | 1 | Rel-15 | F | 5GS\_Ph1-SEC | agreed |
| S3-191346 | CR to TS33.501 - NAS SMC figure correction | CATT | 33.501 | 0576 | - | Rel-15 | F | 5GS\_Ph1-SEC | agreed |
| S3-191367 | Corrections on the s-Kgnb derivation | Huawei, Hisilicon | 33.501 | 0577 | - | Rel-16 | F | 5GS\_Ph1-SEC | revised |
| S3-191605 | Corrections on the s-Kgnb derivation | Huawei, Hisilicon | 33.501 | 0577 | 1 | Rel-15 | F | 5GS\_Ph1-SEC | agreed |
| S3-191379 | Add detials on handling UP security in RRC inactive scenario | Huawei, Hisilicon | 33.501 | 0578 | - | Rel-15 | F | 5GS\_Ph1-SEC | revised |
| S3-191609 | Add detials on handling UP security in RRC inactive scenario | Huawei, Hisilicon | 33.501 | 0578 | 1 | Rel-15 | F | 5GS\_Ph1-SEC | agreed |
| S3-191382 | security procedures of 5G SRVCC to UTRAN | Huawei, Hisilicon | 33.501 | 0579 | - | Rel-16 | B | 5GS\_UTRAN\_SEC | not pursued |
| S3-191384 | a skeleton of security aspects of 5G SRVCC to UTRAN | Huawei, Hisilicon | 33.501 | 0580 | - | Rel-16 | B | 5GS\_UTRAN\_SEC | not pursued |
| S3-191387 | Clarification for Initial NAS Message Protection | Huawei, Hisilicon | 33.501 | 0581 | - | Rel-15 | F | 5GS\_Ph1-SEC | revised |
| S3-191611 | Clarification for Initial NAS Message Protection | Huawei, Hisilicon | 33.501 | 0581 | 1 | Rel-15 | F | 5GS\_Ph1-SEC | agreed |
| S3-191394 | CR to TS33501-RRC Reestablishment security handling when N2 Handover fails | Huawei, Hisilicon | 33.501 | 0582 | - | Rel-15 | F | 5GS\_Ph1-SEC | not pursued |
| S3-191407 | Clarification on securing the procedure of idle mobility from 5GS to EPS over N26 interface | Huawei, Hisilicon | 33.501 | 0583 | - | Rel-15 | F | 5GS\_Ph1-SEC | revised |
| S3-191606 | Clarification on securing the procedure of idle mobility from 5GS to EPS over N26 interface | Huawei, Hisilicon | 33.501 | 0583 | 1 | Rel-15 | F | 5GS\_Ph1-SEC | agreed |
| S3-191409 | Subscriber privacy: test data for Profile A of SUCI computation | Huawei, Hisilicon | 33.501 | 0584 | - | Rel-15 | B | 5GS\_Ph1-SEC | merged |
| S3-191412 | Solving registration failure in initial registration procedure with AMF reallocation | Huawei, Hisilicon | 33.501 | 0585 | - | Rel-15 | F | 5GS\_Ph1-SEC | not pursued |
| S3-191413 | Solving registration failure in initial registration procedure with AMF reallocation | Huawei, Hisilicon | 33.501 | 0586 | - | Rel-15 | F | 5GS\_Ph1-SEC | not pursued |
| S3-191414 | Clarification on the SUCI compuation | Huawei, Hisilicon, Gemalto, IDEMIA | 33.501 | 0587 | - | Rel-15 | F | 5GS\_Ph1-SEC | revised |
| S3-191625 | Clarification on the SUCI compuation | Huawei, Hisilicon, Gemalto, IDEMIA | 33.501 | 0587 | 1 | Rel-15 | F | 5GS\_Ph1-SEC | agreed |
| S3-191418 | Removing the authentication result in the UDM | Huawei, Hisilicon | 33.501 | 0588 | - | Rel-15 | F | 5GS\_Ph1-SEC | revised |
| S3-191492 | Removing the authentication result in the UDM | Huawei, Hisilicon | 33.501 | 0588 | 1 | Rel-15 | F | 5GS\_Ph1-SEC | not pursued |
| S3-191419 | NAS recovery with the soure AMF in handover failure | Huawei, Hisilicon | 33.501 | 0589 | - | Rel-15 | F | 5GS\_Ph1-SEC | merged |
| S3-191420 | Missing UDR description in alignment with 29.505 | Nokia, Nokia Shanghai Bell | 33.501 | 0590 | - | Rel-15 | B | 5GS\_Ph1-SEC | not pursued |
| S3-191421 | Adding Nudr service | Nokia, Nokia Shanghai Bell | 33.501 | 0591 | - | Rel-15 | B | 5GS\_Ph1-SEC | not pursued |
| S3-191445 | Missing AMF/SEAF behaviour | Ericsson, CableLabs | 33.501 | 0592 | - | Rel-15 | F | 5GS\_Ph1-SEC | not pursued |
| S3-191446 | Rectifying incorrect limitation for horiz/vert key derivation | Ericsson | 33.501 | 0593 | - | Rel-15 | F | 5GS\_Ph1-SEC | revised |
| S3-191604 | Rectifying incorrect limitation for horiz/vert key derivation | Ericsson | 33.501 | 0593 | 1 | Rel-15 | F | 5GS\_Ph1-SEC | agreed |
| S3-191447 | UP policy handling in case of unauthenticated emergency calls | Ericsson | 33.501 | 0594 | - | Rel-15 | F | 5GS\_Ph1-SEC | revised |
| S3-191612 | UP policy handling in case of unauthenticated emergency calls | Ericsson | 33.501 | 0594 | 1 | Rel-15 | F | 5GS\_Ph1-SEC | agreed |
| S3-191448 | Remove EN in clause 10.2.2.2 | Ericsson | 33.501 | 0595 | - | Rel-15 | F | 5GS\_Ph1-SEC | not pursued |
| S3-191449 | Verification failure of NAS container | Ericsson | 33.501 | 0596 | - | Rel-15 | F | 5GS\_Ph1-SEC | merged |
| S3-191450 | Security algorithm change by SN | Ericsson | 33.501 | 0597 | - | Rel-15 | F | 5GS\_Ph1-SEC | not pursued |
| S3-191451 | Verification failure of NAS MAC in NAS container at 4G to 5G HO | Ericsson | 33.501 | 0598 | - | Rel-15 | F | 5GS\_Ph1-SEC | merged |
| S3-191452 | Handling of 5G security contexts with multiple NAS connections at 4G to 5G HO | Ericsson | 33.501 | 0599 | - | Rel-15 | F | 5GS\_Ph1-SEC | merged |
| S3-191453 | Missing privacy parameters | Ericsson | 33.501 | 0600 | - | Rel-15 | F | 5GS\_Ph1-SEC | revised |
| S3-191627 | Missing privacy parameters | Ericsson,Gemalto,IDEMIA | 33.501 | 0600 | 1 | Rel-15 | F | 5GS\_Ph1-SEC | agreed |
| S3-191483 | CR to 33.501 6.6.4 UP integrity mechanisms - UE to gNB ntegrity protection check failure reporting | BT plc | 33.501 | 0601 | - | Rel-16 | C | 5GS\_Ph1-SEC | not pursued |
| S3-191501 | Correction to the handling of security context in the multi-NAS scenario | Qualcomm Incorporated | 33.501 | 0602 | - | Rel-15 | F | 5GS\_Ph1-SEC | revised |
| S3-191783 | Correction to the handling of security context in the multi-NAS scenario | Qualcomm Incorporated,Ericsson,Huawei | 33.501 | 0602 | 1 | Rel-15 | F | 5GS\_Ph1-SEC | agreed |
| S3-191503 | Clashing ngKSI for different security contexts in multi-NAS scenarios | Qualcomm Incorporated | 33.501 | 0603 | - | Rel-15 | F | 5GS\_Ph1-SEC | not pursued |
| S3-191512 | Clarification for the NAS MAC failure case in N2 HO | Qualcomm Incorporated | 33.501 | 0604 | - | Rel-15 | F | 5GS\_Ph1-SEC | revised |
| S3-191607 | Clarification for the NAS MAC failure case in N2 HO | Qualcomm Incorporated,Huawei,Ericsson | 33.501 | 0604 | 1 | Rel-15 | F | 5GS\_Ph1-SEC | agreed |
| S3-191513 | Clarification for the NAS MAC failure case in interworking | Qualcomm Incorporated | 33.501 | 0605 | - | Rel-15 | F | 5GS\_Ph1-SEC | revised |
| S3-191614 | Clarification for the NAS MAC failure case in interworking | Qualcomm Incorporated,Ericsson | 33.501 | 0605 | 1 | Rel-15 | F | 5GS\_Ph1-SEC | agreed |
| S3-191524 | Proposal of SBA authorization revision | China Mobile | 33.501 | 0606 | - | Rel-16 | F | 5GS\_Ph1-SEC | not pursued |
| S3-191549 | Clarification to Initial NAS message protection | Samsung | 33.501 | 0607 | - | Rel-15 | F | 5GS\_Ph1-SEC | not pursued |
| S3-191617 | Name clarification for N32 security | Ericsson,NCSC | 33.501 | 0608 | - | Rel-15 | F | 5GS\_Ph1-SEC | agreed |
| S3-191295 | Overview of TR33.856 | China Unicom | 33.856 | 0001 | - | Rel-16 | C | FS\_5G\_UTRAN\_SEC | revised |
| S3-191788 | Overview of TR33.856 | China Unicom | 33.856 | 0001 | 1 | Rel-16 | F | FS\_5G\_UTRAN\_SEC | agreed |
| S3-191296 | Content of clause 3 for TR33.856 | China Unicom, CATT | 33.856 | 0002 | - | Rel-16 | D | FS\_5G\_UTRAN\_SEC | agreed |
| S3-191181 | Addition of Network Product Class Description for AMF | Deutsche Telekom AG | 33.926 | 0005 | - | Rel-16 | B | SCAS\_5G | not pursued |
| S3-191182 | Addition of AMF-related Security Problem Descriptions | Deutsche Telekom AG | 33.926 | 0006 | - | Rel-16 | B | SCAS\_5G | revised |
| S3-191654 | Addition of AMF-related Security Problem Descriptions | Deutsche Telekom AG | 33.926 | 0006 | 1 | Rel-16 | B | SCAS\_5G | agreed |
| S3-191381 | Adding gNB critical assets and threats to TR 33.926 | Huawei, Hisilicon | 33.926 | 0007 | - | Rel-16 | B | SCAS\_5G | revised |
| S3-191630 | Adding gNB critical assets and threats to TR 33.926 | Huawei, Hisilicon | 33.926 | 0007 | 1 | Rel-16 | B | SCAS\_5G | agreed |

## Annex C: Lists of liaisons

### C1: Incoming liaison statements

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Document | Original | Title | From | Decision | Reply TDoc |
| S3-191119 |  | Reply LS on securing warning messages in ePWS | C1-191522 | noted | (none) |
| S3-191120 |  | Reply LS on securing warning messages in ePWS | S1-190503 | noted | S3-191599 |
| S3-191121 |  | LS on Use of SUCI in NAS signalling | C1-191685 | replied to | S3-191752 |
| S3-191122 |  | LS on handling of non-zero ABBA value in Release 15 | C1-191686 | replied to | S3-191613 |
| S3-191123 |  | LS on SUPI formats for 5WWC | C1-192776 | noted | (none) |
| S3-191124 |  | LS on Multiple NAS connections and inter-system change from S1 mode to N1 mode in 5GMM-CONNECTED mode | C1-192804 | replied to | S3-191610 |
| S3-191125 |  | Reply LS on EAS-C&U support | C3-191167 | noted | (none) |
| S3-191126 |  | LS on usage of EPLMNs | S2-1904825 | replied to | S3-191599 |
| S3-191127 |  | Reply LS on Interim conclusions for SA2 study on Radio Capabilities Signalling Optimisations (FS\_RACS) | C4-190346 | noted | (none) |
| S3-191128 |  | Reply LS on Verification of PLMN-ID in the SEPP | C4-190348 | replied to | S3-191615 |
| S3-191129 |  | Reply LS on GTP Recovery Counter & GSN node behaviour | C4-190485 | noted | (none) |
| S3-191130 |  | Reply LS on Nudr Sensitive Data Protection | C4-190534 | replied to | S3-191629 |
| S3-191131 |  | LS on Maximum HTTP payload size | C4-190609 | noted | (none) |
| S3-191132 |  | LS on Protected LI Parameters in N4 | S3i190254 | noted | (none) |
| S3-191133 |  | Reply LS on Protected LI Parameters in N4 | C4-191529 | noted | (none) |
| S3-191134 |  | Reply on LS on Protected LI Parameters in N4 | S3i190283 | noted | (none) |
| S3-191135 |  | LS on Handling of non-essential corrections (non-FASMO) CRs and non-backwards compatible CRs | CP-190218 | noted | (none) |
| S3-191136 |  | LS on the availability of and requesting feedback on the stable draft TR 103 582 from ETSI STF555 - "Study of use cases and communications involving IoT devices in emergency situations" | ETSI SC EMTEL | postponed | (none) |
| S3-191137 |  | GSMA DESS - Diameter IPX Network End-to-End Security Solution | GSMA | postponed | (none) |
| S3-191138 |  | Reply LS on Authentication for UEs not Supporting NAS | S2-1904829 | replied to | S3-191713 |
| S3-191139 |  | Response to 3GPP SA2 liaison S2-1902902 on ‘LS on updating the status of 5WWC normative work’ | BBF | noted | (none) |
| S3-191140 |  | Reply LS on EDT integrity protection | R2-1902439 | replied to | S3-191634 |
| S3-191141 |  | LS on RAN2 conclusion for NR positioning SI | R2-1902479 | replied to | S3-191750 |
| S3-191142 |  | LS on RAN2 conclusion for NR positioning SI | R3-191141 | noted | (none) |
| S3-191143 |  | Reply LS on Dual Connectivity | R2-1902677 | noted | (none) |
| S3-191144 |  | Reply LS on Enforcement of maximum supported data rate for integrity protection | R2-1902700 | noted | (none) |
| S3-191145 |  | LS on protection of PC5-RRC messages for sidelink unicast communication | R2-1905332 | replied to | S3-191622 |
| S3-191146 |  | Response LS on full data rate support for UP IP | R2-1905455 | noted | (none) |
| S3-191147 |  | LS on Security failure of NAS container in HO command | R2-1905460 | replied to | S3-191608 |
| S3-191148 |  | LS on broadcast assistance data delivery | R2-1905462 | replied to | S3-191600 |
| S3-191149 |  | LS to SA2 and SA5 on IAB impact to CN | R2-1905475 | noted | (none) |
| S3-191150 |  | Response LS on reporting all cell IDs in 5G | R3-191111 | noted | (none) |
| S3-191151 |  | Response LS on reporting all cell IDs in 5G | S2-1904819 | noted | (none) |
| S3-191152 |  | Response LS on reporting all Cell IDs in 5G | S3i190265 | noted | (none) |
| S3-191153 |  | Reply LS on UP Integrity Protection for Small Data in Early Data Transfer | R3-191116 | noted | (none) |
| S3-191154 |  | Reply LS on authentication of group of IoT devices | S1-190501 | replied to | S3-191601 |
| S3-191155 |  | Reply LS on Interception of voice services over new radio in a 5GS environment | S2-1902799 | noted | (none) |
| S3-191156 |  | Reply LS on Clarification of UE Trace support | S2-1902901 | noted | (none) |
| S3-191157 |  | LS on LI Impacts for LMR-LTE Interworking study | S3i190281 | noted | (none) |
| S3-191158 |  | Approval of Smart Secure Platform requirement specification | ETSI TC SCP | noted | (none) |
| S3-191159 |  | LS/r on SG17 work item X.5Gsec-q: Security guidelines for applying quantum-safe algorithms in 5G systems | ITU-T SG17 | noted | (none) |
| S3-191160 |  | LS on SG17 new work item X.5Gsec-ecs: Security Framework for 5G Edge Computing Services | ITU-T SG17 | noted | (none) |
| S3-191161 |  | LS to request inputs on the Vehicular Multimedia technical report and to invite participation from relevant stakeholders | ITU-T Focus Group on Vehicular Multimedia (FG-VM) | noted | (none) |
| S3-191162 |  | Reply LS on User Plane Security for 5GC Roaming | SP-190252 | noted | (none) |
| S3-191586 |  | Residential use case for 5G Core with fixed broadband access | CableLabs | noted | (none) |
| S3-191588 |  | User Plane Security for 5GC Roaming (re: S3-191016) | GSMA | noted | (none) |
| S3-191628 |  | LS on support of non-3GPP only UE and support for PEI in IMEI format | S2-1904836 | postponed | (none) |
| S3-191743 |  | Handling of UE radio network capabilities in 4G and 5G | GSMA | postponed | (none) |

### C2: Outgoing liaison statements

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Document | Title | To | Cc | reply to i/c LS |
| S3-191599 | Reply to: LS on usage of EPLMNs | SA2 | CT1 | S3-191126 |
| S3-191600 | Reply to: LS on broadcast assistance data delivery | RAN2 | SA2,RAN3 | S3-191148 |
| S3-191601 | Reply to: Reply LS on authentication of group of IoT devices | SA1 | SA2,RAN2 | S3-191154 |
| S3-191608 | Reply to: LS on Security failure of NAS container in HO command | RAN2,CT1 | - | S3-191147 |
| S3-191610 | Response LS on Multiple NAS connections and inter-system change from S1 mode to N1 mode in 5GMM-CONNECTED mode | CT1 | - | S3-191124 |
| S3-191613 | Response LS on handling of non-zero ABBA value in Release 15 | CT1 | - | S3-191122 |
| S3-191615 | Reply to: Reply LS on Verification of PLMN-ID in the SEPP | CT4 | - | S3-191128 |
| S3-191618 | LS on clarification for N32 security | CT4,CT,SA | - |  |
| S3-191622 | Reply LS on protection of PC5-RRC messages for sidelink unicast communication | RAN2, SA2 | - | S3-191145 |
| S3-191629 | Reply to: Reply LS on Nudr Sensitive Data Protection | CT4,SA2 | SA | S3-191130 |
| S3-191634 | Reply LS to RAN2/RAN3 on EDT UP IP | RAN2,RAN3 | - | S3-191140 |
| S3-191713 | Reply LS on Authentication for UEs not Supporting NAS | SA2 | SA1 | S3-191138 |
| S3-191750 | LS on security and privacy aspects of NR positioning | RAN2,RAN3 | RAN1, SA2,RAN | S3-191141 |
| S3-191752 | Reply to: LS on Use of SUCI in NAS signalling | CT1 | - | S3-191121 |
| S3-191753 | IANA assigned values for mission critical | CT1 | - |  |

## Annex D: List of agreed/approved new and revised Work Items

|  |  |  |  |
| --- | --- | --- | --- |
| Document | Title | Source | new/revised |
| S3-191725 | WID on security of URLLC | Huawei, HiSilicon | WID new |
| S3-191726 | WID proposal for 5GS Vertical\_LAN\_SEC | Nokia, Nokia Shanghai Bell | WID new |

## Annex E: List of draft Technical Specifications and Reports

|  |  |  |  |
| --- | --- | --- | --- |
| Document | Spec | vers | Doc title |
| S3-191652 | 33.512 | 0.7.0 | Draft TS 33.512 |
| S3-191656 | 33.515 | 0.3.0 | Draft TS 33.515 |
| S3-191658 | 33.517 | 0.4.0 | Draft TS 33.517 |
| S3-191665 | 33.518 | 0.3.0 | Draft TS 33.518 |
| S3-191667 | 33.855 | 1.5.0 | Draft TR 33.855 |
| S3-191677 | 33.861 | 1.1.0 | Draft TR 33.861 |
| S3-191693 | 33.824 | 0.2.0 | Draft TR 33.824 |
| S3-191710 | 33.807 | 0.5.0 | Draft TR 33.807 |
| S3-191722 | 33.848 | 0.1.0 | Draft TR 33.848 |
| S3-191729 | 33.815 | 0.5.0 | Draft TR 33.815 |
| S3-191731 | 33.813 | 0.4.0 | Draft TR 33.813 |
| S3-191745 | 33.836 | 0.1.0 | Draft TR 33.836 |
| S3-191755 | 33.814 | 0.4.0 | Draft TR 33.814 |
| S3-191756 | 33.825 | 0.5.0 | Draft TR 33.825 |
| S3-191766 | 33.819 | 0.4.0 | Draft TR 33.819 |
| S3-191775 | 33.853 | 0.3.0 | Draft TR 33.853 |
| S3-191777 | 33.848 | 0.1.0 | Draft TR 33.848 |
| S3-191779 | 33.809 | 0.4.0 | Draft TR 33.809 |
| S3-191785 | 33.511 | 0.4.0 | Draft TS 33.511 |

## Annex F: List of participants

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| TITLE | Family Name | Given Name | Employer Organization | Employer Category Code | Organization Represented | Organization Represented Category Code |
| Ms. | Andersdotter | Amelia | ARTICLE19 | OTHER | ARTICLE19 | OTHER |
| Dr. | Ben Henda | Noamen | Ericsson LM | ETSI | Ericsson Inc. | ATIS |
| Mr. | Bernsen | John | Philips International B.V. | ETSI | Philips International B.V. | ETSI |
| Mr. | Blanchard | Colin | BT plc | ETSI | BT plc | ETSI |
| Mr. | Brusilovsky | Alec | InterDigital, Inc. | ETSI | InterDigital Germany GmbH | ETSI |
| Mr. | Bykampadi | Nagendra | Nokia France | ETSI | Nokia Japan | ARIB |
| Mr. | Cano Soveri | Mirko | ETSI | ETSI | ETSI | ETSI |
| Mr. | Canterbury | Mark | Tencastle Limited |  | National Technical Assistance | ETSI |
| Mr. | Castagno | Mauro | TELECOM ITALIA S.p.A. | ETSI | TELECOM ITALIA S.p.A. | ETSI |
| Mr. | Cichonski | Jeffrey | NIST | ATIS | NIST | ATIS |
| Ms. | Deng | Juan | HuaWei Technologies Co., Ltd | CCSA | HuaWei Technologies Co., Ltd | CCSA |
| Mr. | Doerr | Johannes | BMWi | ETSI | BMWi | ETSI |
| Mr. | Dolly | Martin | AT&T | ATIS | AT&T GNS Belgium SPRL | ETSI |
| Miss | Driscoll | Florence | NCSC | ETSI | NCSC | ETSI |
| Dr. | Escott | Adrian | Qualcomm CDMA Technologies | ETSI | Qualcomm CDMA Technologies | ETSI |
| Mr. | Evans | Tim P. | VODAFONE Group Plc | ETSI | Vodafone GmbH | ETSI |
| Mr. | Ferdi | Samir | InterDigital, Inc. | ETSI | InterDigital Belgium. LLC | ETSI |
| Mr. | Gamishev | Todor | Orange | ETSI | Orange Spain | ETSI |
| Dr. | Gao | Feng | China Unicom | CCSA | China Unicom | CCSA |
| Dr. | Granboulan | Louis | Airbus DS SLC | ETSI | Airbus DS SLC | ETSI |
| Miss | Guo | Ivy | Apple (UK) Limited | ETSI | Apple France | ETSI |
| Mr. | Hanhisalo | Markus | Ericsson LM | ETSI | Ericsson Hungary Ltd | ETSI |
| Ms. | Harrington | Julianne | T-Mobile USA Inc. | ATIS | T-Mobile USA Inc. | ATIS |
| Mr. | Heldenbrand | Rob | Hewlett-Packard Enterprise | ETSI | Hewlett-Packard Enterprise | ETSI |
| Dr. | Huang | Lin | Qihoo 360 | CCSA | Qihoo 360 | CCSA |
| Miss | Jerichow | Anja | Nokia Germany | ETSI | Nokia France | ETSI |
| Dr. | Jost | Christine | Ericsson LM | ETSI | Ericsson Limited | ETSI |
| Dr. | Keesmaat | Iko | TNO | ETSI | KPN N.V. | ETSI |
| Dr. | Kim | Joonwoong | LG Electronics France | ETSI | LG Electronics France | ETSI |
| Mr. | Kiss | Krisztian | Apple (UK) Limited | ETSI | Apple GmbH | ETSI |
| Mr. | Kohalmi | Steve | Juniper Networks | ETSI | Juniper Networks | ETSI |
| Mr. | Kolekar | Abhijeet | Intel Corporation (UK) Ltd | ETSI | Intel Corporation (UK) Ltd | ETSI |
| Dr. | Kunz | Andreas | Motorola Mobility Germany GmbH | ETSI | Motorola Mobility UK Ltd. | ETSI |
| Mr. | Leadbeater | Alex | BT plc | ETSI | BT plc | ETSI |
| Dr. | Lee | Soo Bum | Qualcomm Incorporated | ATIS | QUALCOMM JAPAN LLC. | ARIB |
| Mr. | Lee | Xiaoyang | Office of Emergency Com. | ATIS | Office of Emergency Com. | ATIS |
| Dr. | Lei | Zander (Zhongding) | HuaWei Technologies Co., Ltd | CCSA | HUAWEI TECH. GmbH | ETSI |
| Mr. | Li | He | Huawei Technologies Co. Ltd. | ETSI | Huawei Technologies Co. Ltd. | ETSI |
| Miss | Lu | Wei | Nokia Korea | TTA | Nokia Shanghai Bell | CCSA |
| Mr. | McKee | Alan | NCSC | ETSI | NCSC | ETSI |
| Mr. | Mellqvist | Anders | Sony Europe Limited | ETSI | Sony Europe Limited | ETSI |
| Dr. | Muhanna | Ahmad | Huawei Technologies Sweden AB | ETSI | HiSilicon Technologies Co. Ltd | CCSA |
| Mr. | Nair | Suresh | Nokia Germany | ETSI | Nokia | ATIS |
| Mr. | Nakarmi | Prajwol Kumar | Ericsson Limited | ETSI | Ericsson-LG Co., LTD | TTA |
| Mr. | Normann | Henrik Andreas | Ericsson LM | ETSI | Ericsson France S.A.S | ETSI |
| Mr. | Oishi | Tateo | Sony Europe Limited | ETSI | Sony Corporation | ARIB |
| Mr. | Palanigounder | Anand | Qualcomm UK Ltd | ETSI | Qualcomm India Pvt Ltd | TSDSI |
| Mrs. | Pauliac | Mireille | Gemalto N.V. | ETSI | Gemalto N.V. | ETSI |
| Mr. | Rajadurai | Rajavelsamy | Samsung R&D Institute UK | ETSI | Samsung R&D Institute India | TSDSI |
| Mr. | Rathod | Niraj | BT plc | ETSI | BT plc | ETSI |
| Mrs. | Rong | Wu | Huawei Technologies Co. Ltd. | ETSI | Huawei Device Co., Ltd | CCSA |
| Mr. | Rudolph | Hans Christian | Deutsche Telekom AG | ETSI | Deutsche Telekom AG | ETSI |
| Mr. | Sahin | Yildirim | Charter Communications, Inc | ATIS | Charter Communications, Inc | ATIS |
| Ms. | Shah | Sara | U.S. Department of Defense | ATIS | U.S. Department of Defense | ATIS |
| Mr. | Smith | Brian | Bell Mobility | ETSI | Bell Mobility | ETSI |
| Mr. | Tangudu | Narendranath Durga | Samsung R&D Institute India | TSDSI | SAMSUNG R&D INSTITUTE JAPAN | ARIB |
| Mr. | Trygar | Tobey | Perspecta Labs Inc. | ATIS | Perspecta Labs Inc. | ATIS |
| Dr. | Tsiatsis | Vlasios | Ericsson LM | ETSI | Ericsson LM | ETSI |
| Mr. | Vujcic | Dragan | IDEMIA | ETSI | IDEMIA | ETSI |
| Dr. | Wan | Tao | CableLabs | ETSI | CableLabs | ETSI |
| Mr. | Wong | Marcus | Huawei Tech.(UK) Co., Ltd | ETSI | Futurewei Technologies | ATIS |
| Mr. | Woodward | Tim | Motorola Solutions Danmark A/S | ETSI | Motorola Solutions UK Ltd. | ETSI |
| Mr. | Xie | Zhenhua | ZTE Corporation | ETSI | ZTE Corporation | CCSA |
| Mr. | Yoshizawa | Taka | NEC Europe Ltd | ETSI | NEC Europe Ltd | ETSI |
| Dr. | Zhang | Bo | Huawei Technologies Co. Ltd. | ETSI | HUAWEI Technologies Japan K.K. | ARIB |
| Mr. | Zhou | Wei | CATT | CCSA | GOHIGH DATA NETWORKS TECH. | CCSA |
| Dr. | Zugenmaier | Alf | NTT DOCOMO INC. | TTC | DOCOMO Communications Lab. | ETSI |

## Annex G: List of future meetings

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Title | Start date | End date (OP) | Town | Country | Reference |
| SA3-95Bis | 2019-06-24 | 2019-06-28 | Sapporo | JP | S3-ah-40149 |
| SA3#96 | 2019-08-26 | 2019-08-30 | Wroclaw | PL | S3-96 |
| SA3-Ad-Hoc | 2019-10-14 | 2019-10-18 | TBD | CN | S3-ah-40150 |
| SA3#97 | 2019-11-18 | 2019-11-22 | Reno | US | S3-97 |