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

**DRAFT Meeting Report  
for  
TSG SA WG3  
meeting: 96AH**

**Chongqing, China, 14/10/2019 to 18/10/2019**

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## 1 Opening of the meeting

## 2 Approval of Agenda and Meeting Objectives

**S3-193300 Agenda**

*Type: agenda For: (not specified)  
 Source: WG Chair*

**Decision:** The document was **revised to S3-193681**.

**S3-193681 Agenda**

*Type: agenda For: -  
 Source: WG Chair*

(Replaces S3-193300)

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

## 3 IPR and Anti-Trust Law Reminder

## 4 Incoming LS

**S3-193432 Discussion on Security of Multi-CU-UP connectivity**

*Type: discussion For: Decision  
 Source: CATT*

**Decision:** The document was **withdrawn**.

**S3-193433 LS reply to RAN WG3 LS on security for multi-CU-UP connectivity**

*Type: LS out For: Approval  
 to RAN3  
 Source: CATT*

**Decision:** The document was **withdrawn**.

**S3-193661 LS on 5GS Enhanced support of OTA mechanism for UICC configuration parameter update**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: C4-193790*

**Discussion:**

Nokia: no special security required

DCM: agree

Orange: if OTA keys go into new platform or stay in OTA platform. Put this in reply LS

Thales: keys should stay in OTA platform, only authorized NFs should be able to use this interface.

Nokia: noone wants to move the keys.

Orange: for operators without OTA gateways, where are the keys.

**Decision:** The document was **replied to in S3-193682**.

**S3-193682 Reply to: LS on 5GS Enhanced support of OTA mechanism for UICC configuration parameter update**

*Type: LS out For: approval  
 to CT4, cc CT1, CT6, SA2  
 Source: Nokia*

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

**S3-193670 N9HR Regulatory Obligations**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: S3i190548*

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

**S3-193680 LS on security consideration of performance measurement function protocol**

*Type: LS in For: discussion  
 Original outgoing LS: -, to -, cc -  
 Source: C1-196940*

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

**S3-193683 LS on security consideration of performance measurement function protocol**

*Type: LS out For: Approval  
 to -  
 Source: ZTE Corporation*

**Discussion:**

Apple: UP IP is required, should be included in LS

CMCC: consensus is need integrity protection, does not mention other things, no other security mechanism is needed

DCM: no new mechanism is required but including integrity protection is required.

**Decision:** The document was **revised to S3-193816**.

**S3-193816 LS on security consideration of performance measurement function protocol**

*Type: LS out For: Approval  
 to -  
 Source: ZTE Corporation*

(Replaces S3-193683)

**Discussion:**

No agreement on whether to include that exisiting mecchnaisms are sufficient

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

**S3-193628 Discussion Paper for Security of Performance Measurement Function Protocol**

*Type: discussion For: Agreement  
 Source: Apple Computer Trading Co. Ltd*

**Discussion:**

Nokia: all UP is integrity protected between UE and BS, so do we need more protection

Apple: UP IP protection is good to have, but discussion is about whether, not how

Nokia: protocol needs protection, but no further protectino is required. It is already protected. But no reply is required in this meeting

Noamen: this was flagged as urgent

QC: no additional security required. disagree with Apple discussion paper

Apple: UP IP is optional. CT1 is only asking about problems, not about solution

QC: LS should say we don't need additional security

Huawei: no additional security is required

DCM: respond: UP IP will be sufficitent

E//: agree with QC that IP will not address all problems.

Apple: PMF protocol needs to be protected

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

## 5 Studies and Work Areas (Rel-16)

### 5.1 Security Aspects of the 5G Service Based Architecture

#### 5.1.1 Work Item (SBA\_Sec)

**S3-193386 Update to 5G\_eSBA WID**

*Type: draftCR For: Endorsement  
 33.501 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Update to eSBA WID scope - remove inter-PLMN N9 security

**Discussion:**

There is a related WID in S3-193672 where there is some discussion on splitting of the work items

Needs to be re-submitted to Reno meeting.

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

**S3-193387 Security requirements for SeCoP**

*Type: draftCR For: Endorsement  
 33.501 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Security requirements for SeCoP

**Discussion:**

Huawei: Typo in title of 5.9.2.4 compared to abbreviations

It was agreed to use the same name as SA2 but different abbreviations

Huawei: What internal interface and why is it mentioned

DCM: For service mesh type deployment there will be internal interfaces - could EN be made into normative text.

Eri: Prefer to remove EN or re-word it.

DCM: Leave EN in now and deal with it at the next meeting

Eri: have other comments on the NOTE.

**Decision:** The document was **revised to S3-193719**.

**S3-193719 Security requirements for SeCoP**

*Type: draftCR For: Endorsement  
 33.501 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S3-193387)

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

**S3-193428 Security requirements for UP Gateway Function**

*Type: draftCR For: Endorsement  
 33.501 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Security requirements for UP Gateway Function

**Discussion:**

There were some offline revisions suggested - first line of NOTE moving to the top of the clause

Eri: proxy requirement come from SA2 - does SA3 need to say

DCM: UPGF acts a a transparent function

Huawei: Remove last sentence of NOTE as not security related

**Decision:** The document was **revised to S3-193720**.

**S3-193720 Security requirements for UP Gateway Function**

*Type: draftCR For: Endorsement  
 33.501 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S3-193428)

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

**S3-193388 Authentication and authorization between SeCoP and network functions**

*Type: draftCR For: Endorsement  
 33.501 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Authentication and authorization between SeCoP and network functions

**Discussion:**

Eri: last paragraph could be shortened

DCM: Concerned that it sounds like an option in that case

Huawei: There is no authorisation aspects in clause yet an EN should capture this

**Decision:** The document was **revised to S3-193721**.

**S3-193721 Authentication and authorization between SeCoP and network functions**

*Type: draftCR For: Endorsement  
 33.501 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S3-193388)

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

**S3-193389 Authentication and authorization between SeCoPs**

*Type: draftCR For: Endorsement  
 33.501 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Authentication and authorization between SeCoPs

**Discussion:**

Eri: formating of bullets

Huawei: Authorisation EN is needed

**Decision:** The document was **revised to S3-193722**.

**S3-193722 Authentication and authorization between SeCoPs**

*Type: draftCR For: Endorsement  
 33.501 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S3-193389)

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

**S3-193423 Protection of N9 interface in Inter-PLMN scenario**

*Type: draftCR For: Endorsement  
 33.501 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell, Juniper*

**Abstract:**

Protection of N9 interface

**Discussion:**

Nokia presents

Eri: Concerned that this includes N32 when it does not mean to

Agreed does not include N32 and taken offline for formulation.

**Decision:** The document was **revised to S3-193723**.

**S3-193723 Protection of N9 interface in Inter-PLMN scenario**

*Type: draftCR For: Endorsement  
 33.501 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell, Juniper*

(Replaces S3-193423)

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

**S3-193622 Resource Level Authorization using Access Tokens**

*Type: draftCR For: Approval  
 33.501 v16.0.0  
 Source: Ericsson*

**Discussion:**

Huawei: Concened that there may be SA2 impacts and would like to postpone document.

Eri: How is the UDR impacted.

Huawei: EN on SA2 impact and UDR study may affect this.

Nok: Solution is overloading scope

DCM: Not clear on what is being mandated.

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

**S3-193624 Authorization using Access Tokens based on NF-Subtype**

*Type: draftCR For: Approval  
 33.501 v16.0.0  
 Source: Ericsson*

**Discussion:**

Nok: No key issue so should not have a solution until this is agreed

Huawei: Concerns raised for S3-193622 apply here.

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

**S3-193377 Security for Wireline access to 5G - General**

*Type: draftCR For: Endorsement  
 33.501 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Add General clause for "Security for Wireline access to 5G"

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

**S3-193378 Authentication for 5G-RG**

*Type: draftCR For: Endorsement  
 33.501 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Authentication for 5G-RG

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

#### 5.1.2 Study (FS\_SBA-Sec)

**S3-193614 LS on token-based authorization for indirect communication with delegated discovery (Scenario D)**

*Type: LS out For: Approval  
 to SA2  
 Source: Ericsson*

**Discussion:**

Some comments given in offline e-mail discussion

Nok: Update the question to SA2 and additional questions needed.

**Decision:** The document was **revised to S3-193724**.

**S3-193724 LS on token-based authorization for indirect communication with delegated discovery (Scenario D)**

*Type: LS out For: Approval  
 to SA2  
 Source: Ericsson*

(Replaces S3-193614)

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

**S3-193678 Update to conclusion on Key issue #22: Authorization of NF service access in indirect communication**

*Type: pCR For: Approval  
 33.855 v1.7.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Update to conclusion on Key issue #22: Authorization of NF service access in indirect communication

**Discussion:**

Wait for SA2 response LS to S3-193724 before progress can be made.

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

**S3-193616 Update to conclusion on Key issue #22: Authorization of NF service access in indirect communication**

*Type: pCR For: Approval  
 33.855 v1.7.0  
 Source: Ericsson*

**Discussion:**

Wait for SA2 response LS to S3-193724 before progress can be made.

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

**S3-193617 Update to conclusion on Key issue #23: NF to NF authentication and authorization in Indirect communication**

*Type: pCR For: Approval  
 33.855 v1.7.0  
 Source: Ericsson*

**Discussion:**

Kept open for offline discussions

DCM: authorization may not be so static.

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

**S3-193619 New solution for Key Issue #25 "Indirect communication in roaming scenarios"**

*Type: pCR For: Approval  
 33.855 v1.7.0  
 Source: Ericsson*

**Discussion:**

Nokia: Sentence in intro about 'authentication between NFs in different networks is implicit by ….'

Huawei: Telescopic FQDN use requires an EN.

DCM: Got confused that SECOP is split across PLMNs - make it clear that SECOP does not span multiple PLMNs by adding a sentence.

Huwaei: Clarification needed in roaming scenarion that interface between SECOP and SEPP is a PLMN.

**Decision:** The document was **revised to S3-193725**.

**S3-193725 New solution for Key Issue #25 "Indirect communication in roaming scenarios"**

*Type: pCR For: Approval  
 33.855 v1.7.0  
 Source: Ericsson*

(Replaces S3-193619)

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

**S3-193620 Conclusion for Key Issue #25 "Indirect communication in roaming scenarios"**

*Type: pCR For: Approval  
 33.855 v1.7.0  
 Source: Ericsson*

**Discussion:**

Huawei: Postpone due to EN on telescopic FQDN

Nok: OK to make progress even with that EN

DCM: Agree with Nokia and propose EN is added to conclusion - this was agreeable to meeting.

**Decision:** The document was **revised to S3-193726**.

**S3-193726 Conclusion for Key Issue #25 "Indirect communication in roaming scenarios"**

*Type: pCR For: Approval  
 33.855 v1.7.0  
 Source: Ericsson*

(Replaces S3-193620)

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

**S3-193445 eSBA: add conclusion on KI #24**

*Type: pCR For: Approval  
 33.855 v1.7.0  
 Source: Huawei, Hisilicon*

**Discussion:**

Ericsson: Feel that response from SA2 is needed

Huawei: Feel that it can go forward with EN

Nok: Can go forward with EN

There is a competing conclusion in S3-193618.

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

**S3-193727 eSBA: add conclusion on KI #24**

*Type: pCR For: Approval  
 33.855 v1.7.0  
 Source: Huawei, Hisilicon*

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

**S3-193618 Conclusion of Key Issue #24 Service access authorization within a NF Set or a NF Service Set**

*Type: pCR For: Approval  
 33.855 v1.7.0  
 Source: Ericsson*

**Discussion:**

DCM: support this as a conclusion.

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

**S3-193313 Resolving EN in TR33.855 6.18 N9 NDS/IP**

*Type: pCR For: Approval  
 33.855 v1.7.0  
 Source: Juniper Networks, NTT DoCoMo, Ericsson*

**Discussion:**

Huawei: Mentions that network slice can have different security requirements - this is not clear

Orange: Different security can be applied to different slices

DCM: A better formulation is needed

Juniper: Trying to resolve EN and it needs to be decided if some normative work needed.

**Decision:** The document was **revised to S3-193728**.

**S3-193728 Resolving EN in TR33.855 6.18 N9 NDS/IP**

*Type: pCR For: Approval  
 33.855 v1.7.0  
 Source: Juniper Networks, NTT DoCoMo, Ericsson*

(Replaces S3-193313)

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

**S3-193613 Clarification on delegated subscribe-notify**

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

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

**S3-193447 Update on solution#15 in TR 33.855**

*Type: pCR For: Approval  
 33.855 v1.7.0  
 Source: Huawei, Hisilicon*

**Discussion:**

Eri: evaluation does not contain disadvantages

Hua: Last paragraph contains impact

Taken for offline discussion of evaluation clause.

**Decision:** The document was **revised to S3-193730**.

**S3-193730 Update on solution#15 in TR 33.855**

*Type: pCR For: Approval  
 33.855 v1.7.0  
 Source: Huawei, Hisilicon*

(Replaces S3-193447)

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

**S3-193446 eSBA: add conclusion on KI #28**

*Type: pCR For: Approval  
 33.855 v1.7.0  
 Source: Huawei, Hisilicon*

**Discussion:**

This is a competing concusion in S3-193621

Hua: There is missing verification of the call-back and hence the solution.

Eri: No way that this can be verified.

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

**S3-193621 Conclusion of Key Issue #28: Service access authorization in the delegated "Subscribe-Notify" scenarios**

*Type: pCR For: Approval  
 33.855 v1.7.0  
 Source: Ericsson*

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

**S3-193615 Implementation of agreed change from SA3#96**

*Type: pCR For: Approval  
 33.855 v1.7.0  
 Source: Ericsson*

**Discussion:**

it is missing implementation from the last meeting.

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

**S3-193612 Clarification on identities in TLS and token-based authorization**

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

**Discussion:**

Huawei: Does not agree with proposal - need to know how to allocate instnace Id and certificate first

DCM: How would this work for scenario D? Does SECOP have NF instance IDs that it would use as transport IDs

Eri: Do you mean that SECOP case is not covered?

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

**S3-193626 Evaluation update for Solution #25**

*Type: pCR For: Approval  
 33.855 v1.7.0  
 Source: Ericsson*

**Discussion:**

Huawei: Do not agree with the proposed evaluation

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

**S3-193444 eSBA: add conclusion on KI #5**

*Type: pCR For: Approval  
 33.855 v1.7.0  
 Source: Huawei, Hisilicon*

**Discussion:**

There is a competing conclusion in S3-193444.

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

**S3-193625 Conclusion for Key Issue #5 "NF-NF Authorization"**

*Type: pCR For: Approval  
 33.855 v1.7.0  
 Source: Ericsson*

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

**S3-193729 Draft TR 33.855**

*Type: draft TR For: Approval  
 33.855 v1.8.0  
 Source: Ericsson*

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

### 5.2 Authentication and key management for applications based on 3GPP credential in 5G

#### 5.2.1 Work Item (AKMA)

**S3-193582 skeleton of AKMA TS**

*Type: draft TS For: Approval  
 33.535 v0.0.1  
 Source: China Mobile, Nokia, Nokia Shanghai Bell*

**Discussion:**

Huawei: Prefer CMCC version

QC: OK to merge but think that there are good sections in Ericsson which should be kept.

**Decision:** The document was **revised to S3-193769**.

**S3-193769 skeleton of AKMA TS**

*Type: draft TS For: Approval  
 33.535 v0.0.1  
 Source: China Mobile, Nokia, Nokia Shanghai Bell,Ericsson*

(Replaces S3-193582)

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

**S3-193596 Skeleton of clause 4 and selected content for AKMA normative work**

*Type: pCR For: Approval  
 33.535 v0.0.0  
 Source: Ericsson*

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

**S3-193583 scope of AKMA TS**

*Type: pCR For: Approval  
 33.535 v0.0.1  
 Source: China Mobile, Nokia, Nokia Shanghai Bell*

**Discussion:**

QC: Remove 3GPP and change to subscription credentials.

Orange: Reference the subscription credentials in TS 33.501 - align terminology with study.

QC: Remove the bullet list paragraph

Orange: Remove the 2nd sentence of first paragraph.

**Decision:** The document was **revised to S3-193770**.

**S3-193770 scope of AKMA TS**

*Type: pCR For: Approval  
 33.535 v0.0.1  
 Source: China Mobile, Nokia, Nokia Shanghai Bell*

(Replaces S3-193583)

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

**S3-193468 Propose AKMA architecture**

*Type: pCR For: Approval  
 33.535 v1.0.1  
 Source: Huawei, Hisilicon*

**Discussion:**

There are competing proposals in S3-193584 and S3-193599

BT: Like S3-19599 as it looks more service based

Orange: We are defining a service that provides keys for use in an application

KPN: Why have the UDM in the picture?

Huawei: Need to make the high levl descision, e.g. local of anchor function, so issue with Ericsson's text on where a key is derived - prefer S3-193584 as the baseline for merger

Orange: No point having non-SBA interfaces as the core network is now servive based

Huwaei: Need UDM in picture

Orange: Do not see the point of not using a service based representation as that is now the normal

CMCC: Both representations are equivalent

Orange: Will object to non-service based version

Agreed to use UE and AF boxes - also AAnF will be the name of the AKMA anchor function

Orange: It is more complicated than the pictures shows as an AF outside 3GPP network may need to use an NEF to access AAnF?

Merged into 771.

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

**S3-193584 draft CR of AKMA architecture**

*Type: pCR For: Approval  
 33.535 v0.0.1  
 Source: China Mobile, Nokia, Nokia Shanghai Bell*

**Decision:** The document was **revised to S3-193771**.

**S3-193771 draft CR of AKMA architecture**

*Type: pCR For: Approval  
 33.535 v0.0.1  
 Source: China Mobile, Nokia, Nokia Shanghai Bell*

(Replaces S3-193584)

**Discussion:**

Orange: disagree with ed note, object to collocation of AAnF with NEF

CMCC: was there before

QC: remove in parantheses?

Orange: no.

**Decision:** The document was **revised to S3-193841**.

**S3-193841 draft CR of AKMA architecture**

*Type: pCR For: Approval  
 33.535 v0.0.1  
 Source: China Mobile, Nokia, Nokia Shanghai Bell*

(Replaces S3-193771)

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

**S3-193599 AKMA architecture reference model**

*Type: pCR For: Approval  
 33.535 v0.0.0  
 Source: Ericsson*

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

**S3-193469 Propose AKMA key hierarchy**

*Type: pCR For: Approval  
 33.535 v0.0.1  
 Source: Huawei, Hisilicon*

**Discussion:**

Orange: Name of functions changes to AAnF and other fucntion to AF - key name should also change.

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

**S3-193600 AKMA Key hierarchy**

*Type: pCR For: Approval  
 33.535 v0.0.0  
 Source: Ericsson*

**Discussion:**

There is a competing proposal in S3-193469

Orange: Correct names based on agreements- text in S3-193469 is not correct as it talks about AKMA authentication

QC: Just show the derivation of K\_AUSF and reference TS 33.401 for the rest of the derivations.

**Decision:** The document was **revised to S3-193772**.

**S3-193772 AKMA Key hierarchy**

*Type: pCR For: Approval  
 33.535 v0.0.0  
 Source: Ericsson*

(Replaces S3-193600)

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

**S3-193817 Draft TS 33.535**

*Type: draft TS For: Approval  
 33.535 v0.1.0  
 Source: China Mobile*

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

#### 5.2.2 Study (FS\_AKMA)

**S3-193441 AKMA: Resolving the EN in AKMA push**

*Type: pCR For: Approval  
 33.835 v1.0.1  
 Source: Huawei, Hisilicon*

**Discussion:**

Eri: need to go the UDM and not clear on what is meant by security context

Huawei: Will chck on UDR or UDM and change security context to K\_AUSF.

**Decision:** The document was **revised to S3-193761**.

**S3-193761 AKMA: Resolving the EN in AKMA push**

*Type: pCR For: Approval  
 33.835 v1.0.1  
 Source: Huawei, Hisilicon*

(Replaces S3-193441)

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

**S3-193442 AKMA: adding the evaluation of solution #24**

*Type: pCR For: Approval  
 33.835 v1.0.1  
 Source: Huawei, Hisilicon*

**Discussion:**

Eri: Evaluation not in template

QC: When you have a K\_AUSF then UE can connnect so need evaluation on why need to use PUSH for this case - also why do we need AKMA PUSH when GBA PUSH already exists

Huawei: AKMA is a new feature and needs its own PUSH

CMCC: Do we need an editor's note for the second point?

Huawei: Confirmed that the scope of GBA PUSH enhancements is network interfaces

QC: Important that understand if we need more than PUSH solution

QC: Don't want to have two solutions for PUSH?.

**Decision:** The document was **revised to S3-193763**.

**S3-193763 AKMA: adding the evaluation of solution #24**

*Type: pCR For: Approval  
 33.835 v1.0.1  
 Source: Huawei, Hisilicon*

(Replaces S3-193442)

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

**S3-193443 AKMA: add conclusion on KI #17**

*Type: pCR For: Approval  
 33.835 v1.0.1  
 Source: Huawei, Hisilicon*

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

**S3-193473 Evaluation for solution4**

*Type: pCR For: Approval  
 33.835 v1.0.1  
 Source: Huawei, Hisilicon*

**Discussion:**

This was missed for earlier implementation of the TR.

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

**S3-193475 Implicite AKMA authenticaiton procedure**

*Type: pCR For: Approval  
 33.835 v1.0.1  
 Source: Huawei, Hisilicon*

**Discussion:**

Ericsson: this solution changes primary authentication and not sure if this is acceptable

QC: Do not understand why we are having an new solution.

Huawei: Can it derive the K\_AKMA?

Eri: Changes the Registrations Accept

QC: do not understand why a different solution is needed when we have agreed solution.

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

**S3-193597 Solution #15 evaluation removal of EN**

*Type: pCR For: Approval  
 33.835 v1.0.1  
 Source: Ericsson*

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

**S3-193474 Evaluation for solution22**

*Type: pCR For: Approval  
 33.835 v1.0.1  
 Source: Huawei, Hisilicon*

**Discussion:**

Eri: Does not fit the template for evaluations

QC: Think first sentence should go away.

**Decision:** The document was **revised to S3-193764**.

**S3-193764 Evaluation for solution22**

*Type: pCR For: Approval  
 33.835 v1.0.1  
 Source: Huawei, Hisilicon*

(Replaces S3-193474)

**Discussion:**

Orange: don't agree with last two sentences

QC: conclusions made, doesn't matter

agreed as it is.

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

**S3-193595 Solution Key lifetimes**

*Type: pCR For: Approval  
 33.835 v1.0.1  
 Source: Ericsson*

**Discussion:**

QC: OK with proposal and analysis. Normative text on requirements in evaluation should go away.

**Decision:** The document was **revised to S3-193765**.

**S3-193765 Solution Key lifetimes**

*Type: pCR For: Approval  
 33.835 v1.0.1  
 Source: Ericsson*

(Replaces S3-193595)

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

**S3-193591 Evaluation of solution#1**

*Type: pCR For: Approval  
 33.835 v1.0.1  
 Source: China Mobile*

**Discussion:**

Ericsson: Solution addresses a problem that is not actually for AKMA.

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

**S3-193587 Conclusion on key issue #6**

*Type: pCR For: Approval  
 33.835 v1.0.1  
 Source: China Mobile, KPN*

**Discussion:**

Eri: Do not agree with conclusion as this could be left applications

QC: Agree with ericsson comment

BT: Conclude on this issue now but either need it done properly or not at all

CMMC: This is a customer requirement

QC: This is in the scope of the application

ZTE: Think that this is an important requirement.

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

**S3-193340 Update of key issue #6**

*Type: pCR For: Approval  
 33.835 v1.0.1  
 Source: KPN*

**Abstract:**

This contribution adds a security requirement to the key issue #6, Secure communication between UE and application server

**Discussion:**

Eri: Similar to the previous document - application can derive the keys

QC: Add a EN to capture the issue on whether the requirement can be left to application.

**Decision:** The document was **revised to S3-193766**.

**S3-193766 Update of key issue #6**

*Type: pCR For: Approval  
 33.835 v1.0.1  
 Source: KPN*

(Replaces S3-193340)

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

**S3-193598 Conclusions on Key management**

*Type: pCR For: Approval  
 33.835 v1.0.1  
 Source: Ericsson*

**Discussion:**

BT: This is important that application key outlives the root anchor. Supports the evaluation.

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

**S3-193590 Individual Evaluation of solution #6**

*Type: pCR For: Approval  
 33.835 v1.0.1  
 Source: China Mobile*

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

**S3-193470 Conclusion on 7.3**

*Type: pCR For: Approval  
 33.835 v1.0.1  
 Source: Huawei, Hisilicon*

**Discussion:**

Eri: maybe not possibel to conclude on this

CMCC: No been decided whether anchor function is standalone

KPN: Come a bit of out of the blue and not related to a solution - not ready to conclude.

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

**S3-193585 conclusion on key issue #2**

*Type: pCR For: Approval  
 33.835 v1.0.1  
 Source: China Mobile*

**Discussion:**

Eri: Key issue does not security theats or requirements - which messages are used

CMCC: To use NAS procedures between UE and 5GC

QC: Also struggle to see what the conclusion means.

**Decision:** The document was **revised to S3-193767**.

**S3-193767 conclusion on key issue #2**

*Type: pCR For: Approval  
 33.835 v1.0.1  
 Source: China Mobile*

(Replaces S3-193585)

**Discussion:**

Orange: AKMA application functino will be named to application function

E//: not consistent in the TR?

Orange: Note: AKMA application function is now application function in normative work.

**Decision:** The document was **revised to S3-193842**.

**S3-193842 conclusion on key issue #2**

*Type: pCR For: Approval  
 33.835 v1.0.1  
 Source: China Mobile*

(Replaces S3-193767)

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

**S3-193471 Conclusion on 7.4**

*Type: pCR For: Approval  
 33.835 v1.0.1  
 Source: Huawei, Hisilicon*

**Discussion:**

There is an alternative conclusion in S3-193586

QC: not ready to make this conclusion as there are alternatives - hence need more analysis on how this should be done.

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

**S3-193586 Conclusion on key issue #5**

*Type: pCR For: Approval  
 33.835 v1.0.1  
 Source: China Mobile*

**Discussion:**

Huawei: Two conclusions are not competing

QC: Can make a conclusion on deriving identifier for K\_AUSF

Huawei: In the TR there is a temporary identifier.

**Decision:** The document was **revised to S3-193768**.

**S3-193768 Conclusion on key issue #5**

*Type: pCR For: Approval  
 33.835 v1.0.1  
 Source: China Mobile*

(Replaces S3-193586)

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

**S3-193592 Evaluations of solution #7- #12**

*Type: pCR For: Approval  
 33.835 v1.0.1  
 Source: China Mobile*

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

**S3-193588 Conclusion on key issue #13**

*Type: pCR For: Approval  
 33.835 v1.0.1  
 Source: China Mobile*

**Discussion:**

QC: OK but do you expect changes to UE/UICC or keep it open

CMCC: keep it open.

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

**S3-193472 Propose new conlusion section**

*Type: pCR For: Approval  
 33.835 v1.0.1  
 Source: Huawei, Hisilicon*

**Discussion:**

Eri: there is already a place for this conclusion

CMCC: Agree with ericsson.

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

**S3-193513 User identity privacy for GBA in 5GC**

*Type: pCR For: Approval  
 33.835 v1.0.1  
 Source: ZTE Corporation*

**Discussion:**

CMCC: Don't have the GBA content in the TR

Eri: Maybe in scope of the other SID

Orange: Agree that could be treated in 5G GBA SID.

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

**S3-193589 Editorial Changes to TR 33.835**

*Type: pCR For: Approval  
 33.835 v1.0.1  
 Source: China Mobile*

**Discussion:**

QC: Editorial - think that the Voids can be removed as not under change control.

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

**S3-193762 draft TR 33.835**

*Type: draft TR For: Approval  
 33.835 v1.1.0  
 Source: China Mobile*

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

### 5.3 Evolution of Cellular IoT security for the 5G System

#### 5.3.1 Work Item (CIoT\_sec\_5G)

**S3-193660 LS on short MAC-I and ngKSI for 5G-CIoT**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: C1-195199*

**Decision:** The document was **replied to in S3-193715**.

**S3-193715 Reply to: LS on short MAC-I and ngKSI for 5G-CIoT**

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

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

**S3-193658 Nokia comments on CT1 LS C1-195199**

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

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

**S3-193668 Reply LS on LTE-M identification in 5GC**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: R3-194748*

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

**S3-193435 Discussion on security context handling in fast RRC release**

*Type: discussion For: (not specified)  
 Source: LG Electronics*

**Discussion:**

Intel: SA2 have not agreed to fast release, so should we discuss this here

QC: Not clear what the securiyt issue is

LG: Possible NCC mismatch

Nok: Agree with Intel that fast release is not yet standardiszed

Eri: Not clear that observation 1 is correct so maybe no security issue.

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

**S3-193569 CIOT: Discussion paper on ngKSI for NB-IoT in 5G-CIoT.**

*Type: discussion For: Endorsement  
 Source: Ericsson*

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

**S3-193570 CIOT: Discussion paper on short MAC-I for NB-IoT in 5G-CIoT.**

*Type: discussion For: Endorsement  
 Source: Ericsson*

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

**S3-193571 Draft LS reply on LS on short MAC-I and ngKSI for 5G-CIoT**

*Type: LS out For: Approval  
 to CT1  
 Source: Ericsson*

**Discussion:**

QC: first answer: make it shorter, not a security issue

DCM: if inteintegrity protection fails, then there is possibility of mismatch and of attack

QC: there can't be a mismatch on CPSR message

offline

QC: second question: shorter, simply say no. agree to not reduce reduced size MAC.

**Decision:** The document was **revised to S3-193715**.

**S3-193562 DraftCR - Proposed skeleton for supporting 5G CIoT [Living Document]**

*Type: other For: Approval  
 33.501 v..  
 Source: Ericsson*

**Abstract:**

Resubmission of S3-193052 agreed last meeting. Baseline for the CIoT normative work.

**Decision:** The document was **revised to S3-193716**.

**S3-193716 DraftCR - Proposed skeleton for supporting 5G CIoT [Living Document]**

*Type: other For: Approval  
 33.501 v..  
 Source: Ericsson*

(Replaces S3-193562)

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

**S3-193392 CIoT\_ Modifications to draft CR**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell, Ericsson*

**Abstract:**

Changes to resolve 'Data over NAS' terminology

**Discussion:**

Huawei: will provide definition next time

Nokia: slightly different title in 6.x.1

DCM: give different title to 6.x.1.

**Decision:** The document was **revised to S3-193717**.

**S3-193717 CIoT\_ Modifications to draft CR**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell, Ericsson*

(Replaces S3-193392)

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

**S3-193484 Security handling for RRCConnectionRe-establishment Procedure for Control Plane Optimization for 5GS CIoT**

*Type: draftCR For: Approval  
 33.501 v16.0.0  
 Source: Huawei, Hisilicon*

**Discussion:**

Awaiting SA2 descion on truncating S-TMSI.

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

**S3-193559 DraftCR – RRC Connection Re-Establishment for the control plane for NB-IoT connected to 5GC**

*Type: other For: Approval  
 33.501 v..  
 Source: Ericsson*

**Abstract:**

This draftCR is for the living document.

**Discussion:**

Awaiting SA2 descion on truncating S-TMSI.

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

**S3-193558 DraftCR – Control Plane optimized solution**

*Type: other For: Approval  
 33.501 v..  
 Source: Ericsson*

**Abstract:**

This draftCR is for the living document.

**Discussion:**

Editor's note from this document should be merged into S3-193818 (update of S3-193485).

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

**S3-193560 DraftCR – Control Plane optimized solution**

*Type: other For: Approval  
 33.501 v..  
 Source: Ericsson*

**Abstract:**

This draftCR is for the living document.

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

**S3-193485 Security handling in Control Plane User Datafor Control Plane Optimization for 5GS CIoT**

*Type: draftCR For: Approval  
 33.501 v16.0.0  
 Source: Huawei, Hisilicon*

**Discussion:**

Spelling corrections and addition of EN from S3-193558

Nokia: An EN on FFS to clarify the encoding on CP optimisated messages.

**Decision:** The document was **revised to S3-193818**.

**S3-193818 Security handling in Control Plane User Datafor Control Plane Optimization for 5GS CIoT**

*Type: draftCR For: Approval  
 33.501 v16.0.0  
 Source: Huawei, Hisilicon*

(Replaces S3-193485)

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

**S3-193483 CR for DDoS mitigation caused by misbehaving CIoT UEs**

*Type: draftCR For: Approval  
 33.501 v16.0.0  
 Source: Huawei, Hisilicon*

**Discussion:**

Nok: don't need this

QC: agree with Nokia.

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

**S3-193561 DraftCR – NAS based redirection between 5GS and EPC**

*Type: other For: Approval  
 33.501 v..  
 Source: Ericsson*

**Abstract:**

This draftCR is for the living document.

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

#### 5.3.2 Study (FS\_CIoT\_sec\_5G)

**S3-193367 LS on GUTI re-allocation**

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

**Discussion:**

Nokia: Agree an important principle to maintain 5G-GUTI re-allocation

Eri: Agree but want to delay response as incoming LS is out of scope

There was general agreement on the principle that GUTI re-allocation should be supported.

Chair: There will be an LS out of the meeting but will need discussion on the process to follow due to original LS not being part of meeting

Result of discussion: send LS as new LS, not as reply.

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

**S3-193542 CIOT: Title correction solution 13**

*Type: pCR For: Approval  
 33.861 v1.3.0  
 Source: Ericsson*

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

**S3-193366 Key Issue on UE capability protection for CP optimization only CIoT UE**

*Type: pCR For: Approval  
 33.861 v1.3.0  
 Source: Qualcomm Incorporated*

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

**S3-193437 Protection of UE capability transfer for UEs without AS security**

*Type: pCR For: (not specified)  
 33.861 v1.3.0  
 Source: Intel*

**Discussion:**

No comments on the key issue and threats part of the documents.

**Decision:** The document was **revised to S3-193704**.

**S3-193704 Protection of UE capability transfer for UEs without AS security**

*Type: pCR For: -  
 33.861 v1.3.0  
 Source: Intel*

(Replaces S3-193437)

**Discussion:**

E//: disagree with security requirements

QC: what is the proposal

E//: more about persistance of capabilities

QC: then it is a security problem

Nokia: agree with E//, so security is not as strong as other devices.

**Decision:** The document was **revised to S3-193843**.

**S3-193843 Protection of UE capability transfer for UEs without AS security**

*Type: pCR For: -  
 33.861 v1.3.0  
 Source: Intel*

(Replaces S3-193704)

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

**S3-193497 New KI: Preventing mismatch for EDT with fast release**

*Type: discussion For: (not specified)  
 33.861 v..  
 Source: LG Electronics France*

**Discussion:**

Nok: Need to wait for SA2 work

Eri: Agree to wait for SA2 but still a key issue open on this topic

DCM: Concern that we need to wait for SA2 in all cases.

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

**S3-193545 CIOT: Proposed clarifications to KI#6**

*Type: pCR For: Approval  
 33.861 v1.3.0  
 Source: Ericsson*

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

**S3-193536 CIOT: Update of KI#12 description**

*Type: pCR For: Approval  
 33.861 v1.3.0  
 Source: Ericsson*

**Discussion:**

QC: Why key issue needed as initial NAS Security covers them?

BT: Thought we had agreement on protecting IEs by default

Nok: don’t feel they are a privacy threat

QC: don't need a key issue

There was general agreement that initial NAS security should be used to protect these IEs but it was not clear in the meeting that the tex in TS 33.401 covered this.

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

**S3-193548 CIOT: Update of Solution #14**

*Type: pCR For: Approval  
 33.861 v1.3.0  
 Source: Ericsson*

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

**S3-193493 Address EN in solution 23**

*Type: pCR For: Approval  
 33.861 v1.3.0  
 Source: Huawei, Hisilicon*

**Discussion:**

Nok: It seems strange to add the load to the surrounding base stations

Huawei: by sending mis-behaving UE ID to other base stations so the other base stations know about mis-behaving Ues

Eri: Update is OK but concerned about the use of the list in general

Nok: Making the update optional would improve the situation

DCM: RAN should be made to eNB/gNBs probably throughout the whole solution.

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

**S3-193537 CIOT: update to the evaluation of solution #24**

*Type: pCR For: Approval  
 33.861 v1.3.0  
 Source: Ericsson, Qualcomm Incorporated*

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

**S3-193438 Security solution for UE Capability Transfer for UE with no AS security.**

*Type: pCR For: (not specified)  
 33.861 v1.3.0  
 Source: Intel*

**Discussion:**

E//: key issue not approved yet.

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

**S3-193391 AMF verification of the UE radio capabilities for CP optimization only CIoT UE**

*Type: pCR For: Approval  
 33.861 v1.3.0  
 Source: Qualcomm Incorporated*

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

**S3-193390 Hash based UE capability protection for CP optimization only CIoT UE**

*Type: pCR For: Approval  
 33.861 v1.3.0  
 Source: Qualcomm Incorporated*

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

**S3-193541 CIOT: Discussion on DDoS solutions for KI#4 and KI#5**

*Type: pCR For: Approval  
 33.861 v1.3.0  
 Source: Ericsson, Qualcomm Incorporated, Samsung*

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

**S3-193539 CIOT: Conclusion on KI #4**

*Type: pCR For: Approval  
 33.861 v1.3.0  
 Source: Ericsson, Nokia, Nokia Shanghai Bell, Qualcomm Incorporated, Samsung*

**Discussion:**

Support: cosigners

Object: KPN, Huawei

DCM: same as KPN conclusion, except for SA2 part, send LS to SA2 instead.

Approved as LS has been sent

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

**S3-193482 Conclusion for Key Issue #4**

*Type: pCR For: Approval  
 33.861 v1.3.0  
 Source: Huawei, Hisilicon*

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

**S3-193341 Conclusion to Key Issue #4**

*Type: pCR For: Approval  
 33.861 v1.3.0  
 Source: KPN*

**Abstract:**

This contribution proposes a conclusion to Key Issue #4 - Signalling overload due to Malicious Applications on the UE.

**Discussion:**

Support: cosigners

Object: KPN, Huawei

DCM: same as KPN conclusion, except for SA2 part, send LS to SA2 instead.

Approved as LS has been sent.

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

**S3-193494 Conclusion of KI#5**

*Type: pCR For: Approval  
 33.861 v1.3.0  
 Source: Huawei, Hisilicon*

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

**S3-193540 CIOT: Conclusion on KI #5**

*Type: pCR For: Approval  
 33.861 v1.3.0  
 Source: Ericsson Nokia, Nokia Shanghai Bell, Qualcomm Incorporated, Samsung*

**Discussion:**

Nokia: solution 23 spreads load to other base stations

Huawei: NWDAF to gNB interface is missing

Huawei: remove first paragraph

DCM: if NWDAF doesnt provide the information, then this needs to be added to LS

Huawei: delete the sentence,

**Decision:** The document was **revised to S3-193711**.

**S3-193711 CIOT: Conclusion on KI #5**

*Type: pCR For: Approval  
 33.861 v1.3.0  
 Source: Ericsson Nokia, Nokia Shanghai Bell, Qualcomm Incorporated, Samsung*

(Replaces S3-193540)

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

**S3-193547 CIOT: Proposed\_conclusion\_KI\_6**

*Type: pCR For: Approval  
 33.861 v1.3.0  
 Source: Ericsson*

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

**S3-193552 Conclusion on Key Issue#7**

*Type: pCR For: Approval  
 33.861 v1.3.0  
 Source: Lenovo, Motorola Mobility*

**Abstract:**

This document concludes on key issue #7 of TR 33.861

**Discussion:**

Nokia: explain "missing freedom of key derivation"

Lenovo: because there is only NCC in key derivation, the attacker can assume that NCC is incremented each time.

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

**S3-193544 CIOT: Proposed conclusion to KI#7**

*Type: pCR For: Approval  
 33.861 v1.3.0  
 Source: Ericsson*

**Discussion:**

Lenovo: add that stationary UE need more attention

DCM: don't understand that limitation, keep E// contribution

offline what to add for this.

**Decision:** The document was **revised to S3-193712**.

**S3-193712 CIOT: Proposed conclusion to KI#7**

*Type: pCR For: Approval  
 33.861 v1.3.0  
 Source: Ericsson*

(Replaces S3-193544)

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

**S3-193546 CIOT: Proposed\_conclusion\_KI\_8**

*Type: pCR For: Approval  
 33.861 v1.3.0  
 Source: Ericsson*

**Discussion:**

DCM: delete last sentence.

**Decision:** The document was **revised to S3-193713**.

**S3-193713 CIOT: Proposed\_conclusion\_KI\_8**

*Type: pCR For: Approval  
 33.861 v1.3.0  
 Source: Ericsson*

(Replaces S3-193546)

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

**S3-193543 CIOT: Proposed conclusion to KI#10**

*Type: pCR For: Approval  
 33.861 v1.3.0  
 Source: Ericsson*

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

**S3-193538 CIOT: recommendation to support solution #24 to solve KI #11**

*Type: pCR For: Approval  
 33.861 v1.3.0  
 Source: Ericsson, Qualcomm Incorporated*

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

**S3-193549 CIOT: Conclusion for KI#12**

*Type: pCR For: Approval  
 33.861 v1.3.0  
 Source: Ericsson*

**Discussion:**

E// presents, propose to say: no normative work is required.

**Decision:** The document was **revised to S3-193714**.

**S3-193714 CIOT: Conclusion for KI#12**

*Type: pCR For: Approval  
 33.861 v1.3.0  
 Source: Ericsson*

(Replaces S3-193549)

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

**S3-193838 LS on GUTI re-allocation**

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

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

**S3-193710 LS on Signalling overload due to malicious Applications on UE**

*Type: LS out For: Approval  
 to -  
 Source: KPN*

**Discussion:**

BT: include security concerns and tracking

E//: no reference to the solutions in our TR

QC: remove the reference about normative texts

Huawei: it is no normative work \*in SA3\*.

**Decision:** The document was **revised to S3-193844**.

**S3-193844 LS on Signalling overload due to malicious Applications on UE**

*Type: LS out For: Approval  
 to SA2  
 Source: KPN*

(Replaces S3-193710)

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

**S3-193703 draft TR 33.861**

*Type: draft TR For: Approval  
 33.861 v1.4.0  
 Source: Ericsson*

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

### 5.4 Security of the Wireless and Wireline Convergence for the 5G system architecture (5WWC\_SEC)

**S3-193663 PEI for FN-RG Recommendation**

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

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

**S3-193664 General Status of Work**

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

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

**S3-193479 living doc for 5WWC**

*Type: draftCR For: Approval  
 33.501 v16.0.0  
 Source: Huawei, Hisilicon*

**Decision:** The document was **revised to S3-193684**.

**S3-193684 living doc for 5WWC**

*Type: draftCR For: Approval  
 33.501 v16.0.0  
 Source: Huawei, Hisilicon*

(Replaces S3-193479)

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

**S3-193384 Security for trusted non-3GPP access – General**

*Type: draftCR For: Endorsement  
 33.501 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Security for trusted non-3GPP access – General

**Discussion:**

Lenovo: overlaps with 3550, merge general clause

QC: clarify that sentence 2 is about EAP 5G

Orange: nothing on 5G AKA in Lenovo contribution.

E//: last paragraph of Nokia is not needed, it is a comparison. Call flow is copied, so put ed note on step 8 that this needs more work (authentication) ed note: stating details of key hierarchy are FFS.

Huawei: second ed note not needed now.

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

**S3-193385 Security procedure for trusted non-3GPP access**

*Type: draftCR For: Endorsement  
 33.501 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Security procedure for trusted non-3GPP access

**Discussion:**

Orange: remove text from living document, remove stuff from Living document, iti is pCR to living document.

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

**S3-193550 Solution for trusted non-3GPP access**

*Type: draftCR For: Approval  
 33.501 v16.0.0  
 Source: Lenovo, Motorola Mobility*

**Abstract:**

The agreed solution #1 from TR 33.807 on trusted non-3GPP access is incorporated into the skeleton Draft CR of S3-193053.

**Decision:** The document was **revised to S3-193685**.

**S3-193685 Solution for trusted non-3GPP access**

*Type: draftCR For: Approval  
 33.501 v16.0.0  
 Source: Lenovo, Motorola Mobility*

(Replaces S3-193550)

**Discussion:**

EN added for figure to be changed next time

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

**S3-193631 Trusted access key hierarchy**

*Type: draftCR For: Approval  
 33.501 v16.0.0  
 Source: Ericsson*

**Discussion:**

Huawei: this is not the agreement in TR, additional argument is required why is this required.

E//: makes mobility easier

Lenovo: what kind of mobility

E//: between TNAPs.

BT: What are TNAP keys for: different devices, or different versions (updates) of keys in the same ME.

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

**S3-193632 Trusted access key derivation**

*Type: draftCR For: Approval  
 33.501 v16.0.0  
 Source: Ericsson*

**Discussion:**

Huawei: related to 631

offline discussions, to be taken back next time.

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

**S3-193379 Security for Wireline access to 5G - General**

*Type: draftCR For: Endorsement  
 33.501 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Security for Wireline access to 5G - General

**Discussion:**

Orange: no roaming, put in as Note.

BT: GW owner and connected operator are same, for R17 something more practical is required.

Orange: use note from TR, which is useful

Nokia: should be covered in SA2 architecture

Huawei: sentence is needed here.

QC: Last sentence: remove "potential"

Hauwei: remove last paragraph

E//: remove reference to 33.501

E//: clarify FN-RG in third paragraph

QC: reference in first paragraph is xx, add TS 23.whatever.

**Decision:** The document was **revised to S3-193686**.

**S3-193686 Security for Wireline access to 5G - General**

*Type: draftCR For: Endorsement  
 33.501 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S3-193379)

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

**S3-193380 Authentication for 5G-RG**

*Type: draftCR For: Endorsement  
 33.501 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Authentication for 5G-RG

**Discussion:**

Thales: add concealing the SUPI.

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

**S3-193480 Authentication for 5G-RG**

*Type: draftCR For: Approval  
 33.501 v16.0.0  
 Source: Huawei, Hisilicon*

**Discussion:**

BT: equipped with UICC, prevent removal and replacement

Huawei: not part of study, need requirement in study for next meeting

E//: remove Ipsec in step 12.

**Decision:** The document was **revised to S3-193687**.

**S3-193687 Authentication for 5G-RG**

*Type: draftCR For: Approval  
 33.501 v16.0.0  
 Source: Huawei, Hisilicon*

(Replaces S3-193480)

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

**S3-193381 Authentication for FN-RG**

*Type: draftCR For: Endorsement  
 33.501 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Authentication for FN-RG

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

**S3-193481 Authentication for FN-RG**

*Type: draftCR For: Approval  
 33.501 v16.0.0  
 Source: Huawei, Hisilicon*

**Discussion:**

QC: duplicate steps 6 in call flow

E//: AUSF skips authentication - doesn't perform auth

DCM: lack of shalls

E//: clarify that FN-RG is legacy

Huawei: this is already in general clause

QC: title should be about security procedures, because this is more general.

**Decision:** The document was **revised to S3-193688**.

**S3-193688 Authentication for FN-RG**

*Type: draftCR For: Approval  
 33.501 v16.0.0  
 Source: Huawei, Hisilicon*

(Replaces S3-193481)

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

**S3-193382 Authentication for the UE behind the RG**

*Type: draftCR For: Endorsement  
 33.501 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Authentication for the UE behind the RG

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

**S3-193383 Security of the interface between W-5GAN and 5GC**

*Type: draftCR For: Endorsement  
 33.501 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Security of the interface between W-5GAN and 5GC

**Discussion:**

Eri: list formatting

Eri: clarify of the N2 interface.

**Decision:** The document was **revised to S3-193689**.

**S3-193689 Security of the interface between W-5GAN and 5GC**

*Type: draftCR For: Endorsement  
 33.501 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S3-193383)

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

**S3-193633 Subscriber privacy for wireline access**

*Type: draftCR For: Approval  
 33.501 v16.0.0  
 Source: Ericsson*

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

**S3-193551 Solution on 5GC access from WLAN UEs that do not support NAS**

*Type: draftCR For: Approval  
 33.501 v16.0.0  
 Source: Lenovo, Motorola Mobility*

**Abstract:**

The agreed Solution #6 from TR 33.807 on 5GC access from WLAN UEs that do not support NAS, is incorporated into the skeleton Draft CR of S3-193053.

**Discussion:**

Orange: questions whether the text is needed as they don't support authentication

Len: There are some inter-working functions

Orange: would like to see text that shows what is different to general authentication

Len: will work offline to produce that text

Thales: do not understand why use the term 'devices'

Len: usage follows 23.502.

**Decision:** The document was **revised to S3-193690**.

**S3-193690 Solution on 5GC access from WLAN UEs that do not support NAS**

*Type: draftCR For: Approval  
 33.501 v16.0.0  
 Source: Lenovo, Motorola Mobility*

(Replaces S3-193551)

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

### 5.5 5G security enhancement against false base stations (FS\_5GFBS)

**S3-193602 Correction of conclusion for Key Issue #1**

*Type: pCR For: Approval  
 33.809 v0.6.0  
 Source: Ericsson*

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

**S3-193334 Address EN in solution #1**

*Type: pCR For: Approval  
 33.809 v0.4.0  
 Source: Huawei, HiSilicon*

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

**S3-193486 Merged Solution for RRC Reject Protection**

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

**Discussion:**

Eri: Have concerns with the solution

QC: Also have concerns with this solution.

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

**S3-193487 Conclusion for Key Issue #1 for RRC Reject**

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

**Discussion:**

Eri: no normative work needed

QC: Agree with Ericsson.

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

**S3-193488 Update on Protection of RRC Resume Request message**

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

**Discussion:**

Eri: Simpler solution is available as needs to be updated as message content changes

Apple: This could be merged with Ericsson solution.

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

**S3-193574 Solution for Resumecause protection**

*Type: pCR For: (not specified)  
 33.809 v0.6.0  
 Source: Samsung*

**Discussion:**

Eri: Solution is not needed

Sam: In case of conjestion, then short-MAC-I may not be checked

Huawei: Disagree with this solution.

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

**S3-193603 New Solution: Protection of the whole RRCResumeRequest message**

*Type: pCR For: Approval  
 33.809 v0.6.0  
 Source: Ericsson*

**Discussion:**

Apple: support this solution

Huawei: missing disadvantage, like increase in length, or processing

E//: put in a ednote?

Huawei: straight forward: disadvantage: increase of processing timei

DCM: make this an ed note, because it is not clear that copying IEs adn running hash over a shorter message has overhead of copying

QC: mixed deployments between R15 and R16 in network and with UEs. Ed Note: the impact of working with legacy UEs and base stations are ffs

Orange: not have evaluation this time, because of ed notes.

remove evaluation, add ed note in solution details.

**Decision:** The document was **revised to S3-193753**.

**S3-193753 New Solution: Protection of the whole RRCResumeRequest message**

*Type: pCR For: Approval  
 33.809 v0.6.0  
 Source: Ericsson*

(Replaces S3-193603)

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

**S3-193489 Conclusion for Key Issue #1 for RRC Resume Request Protection**

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

**Discussion:**

E//: competing solution

Huawei, then postpone.

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

**S3-193604 Way forward for KI#1 against tampering of RRCResumeRequest messages**

*Type: pCR For: Approval  
 33.809 v0.6.0  
 Source: Ericsson*

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

**S3-193502 Protection of UeapabilityInformation**

*Type: pCR For: Approval  
 33.809 v0.6.0  
 Source: Apple*

**Discussion:**

Orange: this is concluded already?

Huawei: agree with Orange.

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

**S3-193360 Evaluation of the shared key based MIB/SIB protection solution**

*Type: pCR For: Approval  
 33.809 v0.6.0  
 Source: Qualcomm Incorporated*

(Replaces S3-192938)

**Discussion:**

Apple: only agree with first two bullets

Huawei: support QC, ed note: how to protect MIB and SIB if AS security is not active is FFS

E//: not accept first statement, ecause requirement says should detect in all states

QC: first two paragraphs need to be read together

E//: disagree with last para

QC: add that verifiaction of hash by gNB?

Add ed note, remove last two paragraphs.

**Decision:** The document was **revised to S3-193754**.

**S3-193754 Evaluation of the shared key based MIB/SIB protection solution**

*Type: pCR For: Approval  
 33.809 v0.6.0  
 Source: Qualcomm Incorporated*

(Replaces S3-193360)

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

**S3-193500 Evaluation for solution#14**

*Type: pCR For: Approval  
 33.809 v0.6.0  
 Source: Apple*

**Discussion:**

QC: disagree

E//: support apple

Huawei: support QC.

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

**S3-193575 Evaluation of solution#14 in TR 33.809**

*Type: pCR For: (not specified)  
 33.809 v0.6.0  
 Source: Samsung*

**Discussion:**

QC: disagree, first statement is false, because step 1 is only after AS security set up, it is to protect SIB messages, not against fake base stations

Apple: support Samsung

E//: same comment

Huawei: support QC

Orange: support QC.

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

**S3-193361 Shared key based MIB/SIBs integrity information provided by gNB**

*Type: pCR For: Approval  
 33.809 v0.6.0  
 Source: Qualcomm Incorporated*

(Replaces S3-192936)

**Discussion:**

Samsung: what happens if message 8 is not received, what is UE behaviour?

QC: not described, UE knows this.

Samsung how does Ue know that?

QC: UE identifies mismatch, in step 7, then if message 8 does not arrive,

Samsung: without message 8, what does the UE do? incomplete solution

QC add ed note: UE behaviour when message 8 is not received is FFS

E//: disagree, doesn't cover UE in idle mode.

Huawei: support QC

Apple: note, because similar solution exists already

QC: differnt place of verification

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

**S3-193363 Evaluation on UE behavior on detection of false signature**

*Type: pCR For: Approval  
 33.809 v0.6.0  
 Source: Qualcomm Incorporated*

**Discussion:**

E//: not agreeing with bit flip attack. In second paragraph, alter attack is in controlled environment, using different PCI and frequency, with signature that could be avoided.

Apple: first para should be moved into ky issue, second para is DoS, true for all MACs, disagree with third and fourth para as well

QC: not move to key issue description.

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

**S3-193364 Evaluation on signing key management**

*Type: pCR For: Approval  
 33.809 v0.6.0  
 Source: Qualcomm Incorporated*

**Discussion:**

Huawei: stronly support last paragraph, because when moving to new TA, the UE can suffer from MiTM attack.

E//: UE could get new keys before moving to new TA

Samsung: disagree with second evaluation, first also doesn't hold

Apple: also similar to Samsung

QC: agree that all signing solutions will not be pursued further, as no evaluations are going in.

Apple: problems where of technical nature.

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

**S3-193576 Updates to Solution#7 on obtaining accurate clock information**

*Type: pCR For: (not specified)  
 33.809 v0.6.0  
 Source: Samsung*

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

**S3-193577 Deletion of EN on Location update reject in Solution#7**

*Type: pCR For: (not specified)  
 33.809 v0.6.0  
 Source: Samsung*

**Discussion:**

Huawei: whem UE sends reg req message, this is not integrity protected. Add ed note or note this

Samsung: not part of solution,

QC: keep ed note and note this, as it doesn't explain

E//: support, but ok to note to make progress

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

**S3-193499 Update for Solution#7**

*Type: pCR For: Approval  
 33.809 v0.6.0  
 Source: Apple*

**Discussion:**

QC: disagree, should be noted.

Huawei: support QC, when UE moves to new area, it is possible to connect to FBS wthout the UE noticing, that is a technical problem

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

**S3-193501 Update of Solution#11**

*Type: pCR For: Approval  
 33.809 v0.6.0  
 Source: Apple*

**Discussion:**

Orange: major problem is provisioning, therefore it is not viable

orange: not linking the SUCI scheme

DCM: provisioning is essential

BT: not link to SUCI scheme to not make it more difficult to SUCI off the ground

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

**S3-193514 Assessment and evaluation of solution #9**

*Type: pCR For: Approval  
 33.809 v0.6.0  
 Source: ZTE Corporation*

**Discussion:**

E//: SIB/MIB is matter of serving network, so shouldn't involve home network.

Orange: agree.

BT: support that, not using home public key.

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

**S3-193461 A solution to protect MIB/SIBs**

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

**Discussion:**

E//: incomplete, doesn't support UE in Idle mode, disagree

Huawei: if NAS security is available, then use NAS security in IDLE

QC: E// comment is about evaluation

Apple, similar to previous, solution not needed.

Samsung: hash 2 details are missing

Huawei: key issue is not concluded, this is only for TR.

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

**S3-193610 New solution (SERSI – SERving network controlled SI signatures).**

*Type: pCR For: Approval  
 33.809 v0.6.0  
 Source: Ericsson*

**Discussion:**

QC: this is just duplicating existing solution, so note

Apple: support solution

Samsung: key difference is including PCI and freq in signature, therefore merge into exisiting solution

QC: fine in principle, but bring this to next meeting

chaiir: try to avoid in next meeting

QC: ok

make into pCR of solution 7, figure and explanation

Orange: what changes in the evalution

QC: keep evaluation out.

E//. then agree on somtething for next meeting

DCM: make pcr adding PCI and DLfreq are input to signature in solution details of solution 7, add ed note to evaluation that impact of new inputs is ffs.

this is agreed.

**Decision:** The document was **revised to S3-193755**.

**S3-193755 New solution (SERSI – SERving network controlled SI signatures).**

*Type: pCR For: Approval  
 33.809 v0.6.0  
 Source: Ericsson*

(Replaces S3-193610)

**Discussion:**

QC: add ed note that evaluation for soultion is FFS or move evaluation ed note to clause above

Orange: add FFS to evaluation

**Decision:** The document was **revised to S3-193845**.

**S3-193845 New solution (SERSI – SERving network controlled SI signatures).**

*Type: pCR For: Approval  
 33.809 v0.6.0  
 Source: Ericsson*

(Replaces S3-193755)

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

**S3-193490 Conclusion for Key Issue #2**

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

**Discussion:**

Orange: disagree to have different soultions for NPN and for public network.

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

**S3-193498 Conclusin of key issue#2**

*Type: pCR For: Approval  
 33.809 v0.6.0  
 Source: Apple*

**Discussion:**

QC: disagree, provide evaluation for each of the options, first evaluations need to be completed.

Orange: there are still some open security issues, type of paper is like discussion paper.

E// support Apple

DCM: not conclude this before provisioning is defined

Huawei: same comment.

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

**S3-193335 Enabling UE to detect FBS**

*Type: pCR For: Approval  
 33.809 v0.4.0  
 Source: Huawei, HiSilicon*

**Discussion:**

E//: several problems: during handover, measurement is fast, but now SIB information needs to be collected, so introduces delay for handover, no problems are in connected mode, because no handover to FBS.

Huawei: this verification is not before handover, this is after

E//: how do you verify

Huawei: collection is in preparation phase

E//: still disagree.

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

**S3-193439 Security solution for UE to avoid connecting to the false base station during a handover procedure**

*Type: pCR For: (not specified)  
 33.809 v0.6.0  
 Source: Intel*

**Discussion:**

QC: contention free RA is already supported, then why not use that rather than new solution

intel: first time handover still succeeds is step 6.

E//: attacker can play number 5 preambel as well

Intel: This is in evaluation.

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

**S3-193331 Solution#4: resolving EN network verification of hashes of MIB/SIBs**

*Type: pCR For: Approval  
 33.809 v0.4.0  
 Source: Huawei, HiSilicon*

**Discussion:**

QC: is thisi new solution?

Huawei: existing,

QC: sounds like different solution

Huawei: not different, using OAM for sending additional information

QC: not additional information

Huawei: resolves ed notes

E//: support this.

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

**S3-193332 Solution#4: Resolving EN Impact on UE power consumption**

*Type: pCR For: Approval  
 33.809 v0.4.0  
 Source: Huawei, HiSilicon*

**Discussion:**

QC: disagree, not only creating hash, wait for RAN reply

E//: supoprt this contribution

QC: evaluation not true, impact on poser consumption may be larger.

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

**S3-193333 Solution #4: Details on hash algorithm used for MIB/SIB hashes.**

*Type: pCR For: Approval  
 33.809 v0.4.0  
 Source: Huawei, HiSilicon*

**Decision:** The document was **revised to S3-193679**.

**S3-193679 Solution #4: Details on hash algorithm used for MIB/SIB hashes.**

*Type: pCR For: Approval  
 33.809 v0.4.0  
 Source: Huawei, HiSilicon*

(Replaces S3-193333)

**Discussion:**

QC: why use HMAC when not using key

DCM: use SHA 256

E//: ok

rewrite to use SHA256.

**Decision:** The document was **revised to S3-193756**.

**S3-193756 Solution #4: Details on hash algorithm used for MIB/SIB hashes.**

*Type: pCR For: Approval  
 33.809 v0.4.0  
 Source: Huawei, HiSilicon*

(Replaces S3-193679)

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

**S3-193365 Evaluation on Enriched MR**

*Type: pCR For: Approval  
 33.809 v0.6.0  
 Source: Qualcomm Incorporated*

**Discussion:**

Huawei: disagree with evaluation, too subjective, limit to postmortem is not true,

E//: disagree to many paragraphs, some ok with changes

QC: discuss this offline.

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

**S3-193329 Resolve EN on signaling details of how UE hands over to FBS**

*Type: pCR For: Approval  
 33.809 v0.4.0  
 Source: Huawei, HiSilicon*

**Discussion:**

Nokia: if FBS operates in same frequency, will it detect it?

Huawei: this is not about solution, this is only background information

Nokia: ok

E//: disagree with solution, but this is ok.

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

**S3-193330 Resolve second and third EN in Solution #6**

*Type: pCR For: Approval  
 33.809 v0.4.0  
 Source: Huawei, HiSilicon*

**Discussion:**

Nokia: there is ed note on RAN2 feedback,

Huawei: the LS was sent sone time ago

Nokia: keep ed note until response is there.

QC: same comment

bring back 2nd ed note

**Decision:** The document was **revised to S3-193757**.

**S3-193757 Resolve second and third EN in Solution #6**

*Type: pCR For: Approval  
 33.809 v0.4.0  
 Source: Huawei, HiSilicon*

(Replaces S3-193330)

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

**S3-193336 preventing UE from reselecting to FBS**

*Type: pCR For: Approval  
 33.809 v0.4.0  
 Source: Huawei, HiSilicon*

**Discussion:**

E//: no actions should be standarduzed, detection may not be 100% accurate, blacklisting creates new DoS, problems are with idle mode, not connected Ues.

Huawei: remove actions or ed note

E/: remove blacklisting

QC: add several ed notes:

Nokia: blacklisting in central, so nothing is left over

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

**S3-193758 preventing UE from reselecting to FBS**

*Type: pCR For: Approval  
 33.809 v0.4.0  
 Source: Huawei, HiSilicon*

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

**S3-193337 Avoiding UE from Suffering More MitM Attacks by Handover**

*Type: pCR For: Approval  
 33.809 v0.4.0  
 Source: Huawei, HiSilicon*

**Discussion:**

E//: does this use blacklisting?

Huawei: yes, gNB collects and then informs UE

Nokia: how does network know the neighbors

Huawei: is that the assumption

QC: so what is different from normal handover?

Huawei: nothing

Nokia: what to do about man in the middle.

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

**S3-193338 Evaluation of solution #6**

*Type: pCR For: Approval  
 33.809 v0.4.0  
 Source: Huawei, HiSilicon*

**Discussion:**

E//: add that this solution does not mitigate against radio repeater attacks

QC: agree with E//

add sentence

QC add ed note further evaluation is ffs based on RAN2 feedback

DCM: repeater is not only an attack., there are also operator deployed repeaters

Nokia: but there could be a malicious repeater

QC: not may require signalling overhead, make "requires".

**Decision:** The document was **revised to S3-193759**.

**S3-193759 Evaluation of solution #6**

*Type: pCR For: Approval  
 33.809 v0.4.0  
 Source: Huawei, HiSilicon*

(Replaces S3-193338)

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

**S3-193491 Solution for Avoiding UE connecting to False Base Station during Conditional Handover**

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

**Discussion:**

E//: same comments as previous, overhead, malicious radio repeater, sentence in evaluation

DCM: does it make sense to document when we know we are not doing anything about it?

E//: evaluation is there already, so doesn't need to be touched again

QC: same things from previous contribution

DCM: there is sentence about neww signalling overhead

QC: copy sentence from previous contribution

Huawei: change sentence to ivnolves overhead

sentence: about radio repeaters, include ed note, say requires overhead.

**Decision:** The document was **revised to S3-193760**.

**S3-193760 Solution for Avoiding UE connecting to False Base Station during Conditional Handover**

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

(Replaces S3-193491)

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

**S3-193492 LS to RAN1 on Clarification for parameters used to avoid UE connecting to the FBS**

*Type: LS out For: Approval  
 to RAN1, RAN2  
 Source: Huawei, Hisilicon*

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

**S3-193605 Way forward for KI#3 with respect to handover to a False basestation**

*Type: pCR For: Approval  
 33.809 v0.6.0  
 Source: Ericsson*

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

**S3-193339 Conclustion for Key issue #3**

*Type: pCR For: Approval  
 33.809 v0.4.0  
 Source: Huawei, HiSilicon*

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

**S3-193440 Conclusions on Key Issue #3**

*Type: pCR For: (not specified)  
 33.809 v0.6.0  
 Source: Intel*

**Discussion:**

E//: ok with detection, but not for handover

Huawei: ok, decide the rest after RAN2 feedback

QC: wait for RAN2 feedback and further evaluation

ZTE: wait for RAN2 feedback for all

DCM: wait for RAN2 feedback for detection, handover, no normative work

QC: support DCM

Orange: support DCM

Huawei: too early.

DCM: what are waiting for on handover, what would be the best outcome to supprt handover to FBS prevention

E//: LS is only about detection.

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

**S3-193606 Way forward for KI#4 on protection against SON poisoning**

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

**Discussion:**

Apple: support this way forward

E//: could send an LS to SA5 that measurements could be untrustworthy

Orange: not from this meeting, need to discuss internally

QC: we previously discussed about measurements reports, make it generic, not only false base station

Futurewei: what do we expect SA5 to do with this

E//: take this into account

Futurewei: how should they know that the report was falsified

Orange: it may be more generic than false base station, look more closely before deciding on what and whether to send

QC: keep LS generic if sent from next meeting, the 2nd proposal in presentation was to have no normative work

E//: not put in that proposal because of what SA5 could respond

Apple: can there be an agreement to send an LS, so bring LS directly, so we can focus on content.

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

**S3-193362 Evaluation against MitM false base station attacks**

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

(Replaces S3-192937)

**Discussion:**

DCM: is there a clear definition of counts as MitM attack

QC: stupid relay is not a relay, it s described in key issue 7

Apple: no requirements in key issue 7

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

**S3-193448 Resolving the ENs in solution #5**

*Type: pCR For: Approval  
 33.809 v0.6.0  
 Source: Huawei, Hisilicon, Lenovo, Motorola Mobility*

**Discussion:**

E//: not sure this attack works, as it is possible to mimic the environment

DCM: should be part of evaluation

E//: ed note: how the solution is resilient against GPS spoofing and falsifying location related radio environment is FFS

QC: second ed note was not addressed

Orange: prefer not to have last paragraph of evaluation

Apple: in 6.5.2 location granularity whould be as accurate as possible, add ed ntoe what kind of granularity is sufficient.

Huawei: location using here is TAI, no other granularity is required, regarding second ed note: solved in first para, because procedure will fail.

DCM: unclear how consent is solved.

**Decision:** The document was **revised to S3-193835**.

**S3-193835 Resolving the ENs in solution #5**

*Type: pCR For: Approval  
 33.809 v0.6.0  
 Source: Huawei, Hisilicon, Lenovo, Motorola Mobility*

(Replaces S3-193448)

**Discussion:**

DCM bring back privacy ed note

Orange ed note: further evaluation is needed.

**Decision:** The document was **revised to S3-193846**.

**S3-193846 Resolving the ENs in solution #5**

*Type: pCR For: Approval  
 33.809 v0.6.0  
 Source: Huawei, Hisilicon, Lenovo, Motorola Mobility*

(Replaces S3-193835)

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

**S3-193555 Update of Solution #15**

*Type: pCR For: Approval  
 33.809 v0.6.0  
 Source: Lenovo, Motorola Mobility*

**Abstract:**

This paper addresses the Editor’s Notes of solution #15

**Discussion:**

E//: how is this working reagrding NAS keys and serving network name

E//: NAS SMC integrity failure could be because of radio failure

Lenovo: that can't happen on NAS, maybe in PDCP

E//: ed note: whether NAS layer integrity protection could fail due to radio conditions

E//: ed note: are NAS SMC failures only due to causes mentioned in this solution are FFS

QC: similar comment, second ed note has not been addressed

Lenovo: ok

QC:add ed note further evaluation is FFS

1 ed note: NAS failures, bring back ed note on error handling, ednote in evaluation further evaluation is ffs.

**Decision:** The document was **revised to S3-193836**.

**S3-193836 Update of Solution #15**

*Type: pCR For: Approval  
 33.809 v0.6.0  
 Source: Lenovo, Motorola Mobility*

(Replaces S3-193555)

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

**S3-193449 Conclusion on KI#5 of TR 33.809**

*Type: pCR For: Approval  
 33.809 v0.6.0  
 Source: Huawei, Hisilicon, Lenovo, Motorola Mobility*

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

**S3-193607 Way forward for KI#5 mitigation against authentication relay.**

*Type: pCR For: Approval  
 33.809 v0.6.0  
 Source: Ericsson*

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

**S3-193608 Way forward for KI#6 about the resistance to radio jamming**

*Type: pCR For: Approval  
 33.809 v0.6.0  
 Source: Ericsson*

**Discussion:**

QC: add because it can't be addressed by SA3, include reason

no objections to the conclusion, just add the reason.

**Decision:** The document was **revised to S3-193837**.

**S3-193837 Way forward for KI#6 about the resistance to radio jamming**

*Type: pCR For: Approval  
 33.809 v0.6.0  
 Source: Ericsson*

(Replaces S3-193608)

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

**S3-193609 Way forward for KI#7 about the protection against Man-in-the-Middle false basestation attacks**

*Type: pCR For: Approval  
 33.809 v0.6.0  
 Source: Ericsson*

**Discussion:**

QC: need to evaluate solutions for this one

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

**S3-193503 5G paging security issue caused by false base station**

*Type: pCR For: Approval  
 33.809 v0.6.0  
 Source: Apple*

**Discussion:**

Orange: is this DoS or ID request attack? Not required a new threat not clear what is leaked

QC: paging identifiers are realloceted every time, so not needed

Apple: attacker could guess the 5GS TMSI

Nokia: all 5G S-TMSI can be discovered after 45h,

DCM: bigger problem are cross layer attacks, this is too small a problem to solve.

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

**S3-193504 solution for new key issue of 5G paging security issue caused by false base station**

*Type: pCR For: Approval  
 33.809 v0.6.0  
 Source: Apple*

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

**S3-193506 Meeting minutes of 5GFBS July conference call on July 18th**

*Type: discussion For: Information  
 33.809 v..  
 Source: Apple*

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

**S3-193507 Meeting minutes of 5GFBS August conference call on August 8th**

*Type: discussion For: Information  
 33.809 v..  
 Source: Apple*

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

**S3-193752 Draft TR 33.809**

*Type: draft TR For: Approval  
 33.809 v0.7.0  
 Source: Apple*

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

### 5.6 Security aspects of Enhancement of Network Slicing

#### 5.6.1 Work Item (eNS\_SEC)

**S3-193394 draft CR for Security procedures for Network Slices**

*Type: other For: Agreement  
 33.501 v..  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

draft CR with a structure and combined text for the clause for security procedures for network slices.

**Discussion:**

BT: is there going to be confusion if there is slice specific secondary authentication

E//: there is no such thing

Huawei: comments on structure and have own proposal, x.x.1 and x.x.2 are confusing, together with 401

discussion captured under 401

**Decision:** The document was **revised to S3-193738**.

**S3-193738 draft CR for Security procedures for Network Slices**

*Type: other For: Agreement  
 33.501 v..  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S3-193394)

**Discussion:**

IDCC: the steps added in 12 and 13 in 673 are copied from SA2

Nokia: start with the non-conditional cases, there is no disagreement on 673 yet

Huawei: only keep first sentence of ed note.

BT: authorization should be removed from x.x.3

QC: baseline needs a lot of improvement, not agree this as working baseline, not endorse as living CR, agree on the skeleton

Nokia keep baseline up to ed note

QC: make clear that this is just a living document.

**Decision:** The document was **revised to S3-193857**.

**S3-193857 draft CR for Security procedures for Network Slices**

*Type: other For: Agreement  
 33.501 v..  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S3-193738)

**Discussion:**

the group agrees that all text in clause x.x.3 may need to be revised.

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

**S3-193673 Comments to Draft for ‘proposed structure for network slice security procedures’ in S3-193394**

*Type: other For: Approval  
 Source: InterDigital Communications*

**Abstract:**

This contribution proposes comments and corrections to Draft for ‘proposed structure for network slice security procedures’ in S3-193394, Steps 13 and 14 of the call flow description.

**Discussion:**

part of offline discussion

Nokia: is anybody objecting these clarification

E//: prefers to start with normal flow before looking at optimization

for offline discussion

Nokia: only up to step 5 has been discussed, see 738, so no decision on the steps in this doc.

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

**S3-193401 Skeloton for eNS**

*Type: draftCR For: Agreement  
 33.501 v16.0.0  
 Source: Huawei, HiSilicon*

**Discussion:**

Nokia: needs an overall clause before coming to slice specific authenticaiton

E//: prefer Nokia skeleton

IDCC: prefer Nokia

BT: agree to general topic heading.

QC: agree

DCM: are there all three types of authentication possible

Nokia: no

QC: in principle, it is possible, but secondary auth is orthogonal

Nokia: remove authentication from title of x.x.2

TIM: if there is authorization in both, what is the difference?

QC: agree, remove authorization from x.x.3, make it security procedures for...

discussion on general clause captured under 402.

discussion on x.x.2

Huawei: problem with content, very confusing

orange: wording needs to be fixed, because it is on authorization.

QC: need to have prerequisite to access network, information coming down from UDM, some slices are automaticly authorized

Nokia: make this editor's note

QC: try in this meeting to get this done.

Chair: prefer to close

QC: ok, add editor's note: the content of this clause is to be reformulated to capture 3 aspects -> taken offline.

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

**S3-193402 Introduction to slice-specific authentication**

*Type: draftCR For: Agreement  
 33.501 v16.0.0  
 Source: Huawei, HiSilicon*

**Discussion:**

Nokia: merge this, not all is valid

DCM: reproduce text given by QC.

Nokia: this tdoc is for third para of 3394, so unrelated

QC: make this ed note, remove second sentence

Huawei: remove third sentence as well

Nokia: what is problem with second sentence

Thales: it is unclear which authenticatino is meant, so delete for now.

QC: ed note: relationship netween teh different types of authentication procedures need to be provided

comments on text of 402

E//: align terminology, mention AAA proxy, baseline ok, room for improvement

Nokia: specific updates to individual sentences

Nokia: not as separate subclause, but in beginning of x.x.3, remove last two sentences, reformulate last sentence of second paragraph: multiple methods are possible.

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

**S3-193403 EAP based slice-specific authentication procedure**

*Type: draftCR For: Agreement  
 33.501 v16.0.0  
 Source: Huawei, HiSilicon*

**Discussion:**

Nokia: each step descriptiion is different so merge is difficult

E//: even call flow is different

IDCC: missing the multiplie access, which has been added by SA2

Nokia: Nokia contribution is more correct

Huawei: multiple access is in text

Nokia: merge in offlien session

Huawei: in pleanry, how to handle AUSF:

Nokia: that depends on SA reply

-> use call flow of Nokia contribution as baseline, work offline

E//: step 13, and 14 don't work in 394

Huawei: last two paragraphs of 394 should go away

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

**S3-193415 Discussion for EAP method negotiation**

*Type: discussion For: Endorsement  
 33.813 v..  
 Source: Huawei, HiSilicon*

**Discussion:**

QC: why is this needed, identity defines EAP method

Nokia: agree with QC

E//: agree with Nokia

Huawei: reference is required

Nokia: in primary it is known, so similar

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

**S3-193404 EAP method negotiation**

*Type: draftCR For: Agreement  
 33.501 v16.0.0  
 Source: Huawei, HiSilicon*

**Discussion:**

Nokia: disagree, UE says what it can and will do

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

**S3-193407 Security features for NSaaS**

*Type: draftCR For: Agreement  
 33.501 v16.0.0  
 Source: Huawei, HiSilicon*

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

**S3-193648 draft LS to SA2 on the procedure of Secondary authentication**

*Type: LS out For: (not specified)  
 to SA2  
 Source: China Mobile Com. Corporation*

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

#### 5.6.2 Study (FS\_eNS\_SEC)

**S3-193405 Add Evaluation to solution 3**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: Huawei, HiSilicon*

**Discussion:**

Nok: revise the sentence for clarity

**Decision:** The document was **revised to S3-193731**.

**S3-193731 Add Evaluation to solution 3**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: Huawei, HiSilicon*

(Replaces S3-193405)

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

**S3-193406 Conclusion to KI#3**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: Huawei, HiSilicon*

**Discussion:**

Nok: Not clear that this require normative work

Hua: Needs to be started that this data can be configured

Eri: Agree with Nokia that there is no need for normative work

QC: Leaning to agree with Nokia

Huawei: Should write an LS to SA5 to get feedback on the inclusion.

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

**S3-193408 Addressing EN in solution 6**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: Huawei, HiSilicon*

**Discussion:**

QC: replace new text by: "if user ID privacy is required, it is protected by the EAP method"

Huawei: this solution assumes privacy is required

Orange: the requirement is not there, yet.

**Decision:** The document was **revised to S3-193734**.

**S3-193734 Addressing EN in solution 6**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: Huawei, HiSilicon*

(Replaces S3-193408)

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

**S3-193409 Evaluating solution 6**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: Huawei, HiSilicon*

**Discussion:**

Nokia: needs to be reworded to capture what is said in previous tdoc. Reformulate middle sentence: This solution relies on ID privacy protection by EAP framework. Delete third sentence

Huawei: third sentence is correct, just evaluation

QC: should be EAP method, not framework.

**Decision:** The document was **revised to S3-193735**.

**S3-193735 Evaluating solution 6**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: Huawei, HiSilicon*

(Replaces S3-193409)

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

**S3-193416 Overall evaluation of solutions addressing KI#4**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: Huawei, HiSilicon*

**Discussion:**

Orange: good discussion, but not include in TR.

Huawei: what is the problem, to show what the rationale was

QC: adds no value, go straight to conclusion.

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

**S3-193410 Concluding KI#4**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: Huawei, HiSilicon*

**Discussion:**

QC: not ready to accept yet, but say that EAP method should provide privacy

Nokia: none of the solutions requires normative work, so that should be the conclusion

Huawei: because some EAP methods don't provide privacy

Nokia: then it is a deployment issue

Orange: agree, it is a deployment issue, non ormative work is needed.

QC: need to make point that slice owner needs to pick the right EAP method.

Huawei: yes, specify note, activate NAS and AS security

Orange: is this just a Note

Huawei: but where to put note

It was agreed: There will be a Note in 33.501 adressing the user ID privacy for the slice specific authentication procedure.

Orange: change conclusion to "no normative work is needed".

**Decision:** The document was **revised to S3-193736**.

**S3-193736 Concluding KI#4**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: Huawei, HiSilicon*

(Replaces S3-193410)

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

**S3-193411 On service request in solution 8**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: Huawei, HiSilicon*

**Discussion:**

Nokia: four solutions in the next documents, a lot of overhead in all of them , all are complicated, maybe have an offline for those four documents

Huawei: agree

DCM: make the proposed text as real text and not NOTE

Nok: Need to add EN on idle mode mobility

Huawei: This is not ralted to resolution of EN.

**Decision:** The document was **revised to S3-193819**.

**S3-193819 On service request in solution 8**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: Huawei, HiSilicon*

(Replaces S3-193411)

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

**S3-193412 On Ng-RAN node change in solution 8**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: Huawei, HiSilicon*

**Discussion:**

ID: Isn't it a burden to have to give the whole set of UE specific T-S-NSSAIs

Huawei: There are different options

It was agreed to take the first EN from S3-193675 in the revision of this document.

**Decision:** The document was **revised to S3-193820**.

**S3-193820 On Ng-RAN node change in solution 8**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: Huawei, HiSilicon*

(Replaces S3-193412)

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

**S3-193675 Nokia comments on S3-193412**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Huawei does not agree with proposed Ens

Eri: OK with solution update and ENs going forward

Agreed to take only the first EN.

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

**S3-193354 Resolving editor’s note on refreshing the parameter in solution #10**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: Qualcomm Incorporated*

**Discussion:**

Nokia: feels ed note is only partly addressed, but ok

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

**S3-193355 Resolving editor’s note on relationship between S-NSSAI and the S-NSSAI identifiers in solution #10**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: Qualcomm Incorporated*

**Discussion:**

IDCC: this is beoming more confusing, encrypted identifier is pseudonym that is shorter, so more elaboration on what is the pseudonym, ed note relationship between S-NSSAI and S-NSSAI identifier needs elaboration

E//: are S-NSSAI idnetifier encrypted?

QC: yes, that is what is described

add ed note.

**Decision:** The document was **revised to S3-193821**.

**S3-193821 Resolving editor’s note on relationship between S-NSSAI and the S-NSSAI identifiers in solution #10**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: Qualcomm Incorporated*

(Replaces S3-193355)

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

**S3-193395 eNS\_Addition to evaluation of solution 10**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: Nokia, Nokia Shanghai Bell, Ericsson*

**Discussion:**

QC: don't need to maintain the all this context, only maintain NSSAI identifier to NSSAI mapping, disagree

DCM: state that the NSSAI space is then reduced

IDCC: problem to understand the solution

E//: share Nokias concerns.

**Decision:** The document was **revised to S3-193822**.

**S3-193822 eNS\_Addition to evaluation of solution 10**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: Nokia, Nokia Shanghai Bell, Ericsson*

(Replaces S3-193395)

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

**S3-193301 TR 33.813 - update for solution #11**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: InterDigital Communications*

**Abstract:**

This contribution addresses the following Editor Notes:

Editor’s Note: it is FFS how Base Stations under one AMF learn Hash Values and route the NAS messages to a particular AMF. This may an impact on the solution evaluation.

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

**S3-193309 TR 33.813 - update for the evaluation for solution #11**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: InterDigital Communications*

**Abstract:**

This contribution updates the evaluation for the Solution #11.

**Discussion:**

Nokia: 3396 is related

together with 3396

Nokia: remove word fully from evaluation in 309

QC: solution doesn't work well, so discuss this offline.

**Decision:** The document was **revised to S3-193823**.

**S3-193823 TR 33.813 - update for the evaluation for solution #11**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: InterDigital Communications*

(Replaces S3-193309)

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

**S3-193396 eNS\_Addition of evaluation to solution 11**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: Nokia, Nokia Shanghai Bell, Ericsson*

**Discussion:**

IDCC: on ed note: based on existing NGAP procedure, so should be clear enough. No per UE context required in RAN. All other parts of ed note also to be refuted

E//: support Nokia's ed note

Nokia: UE identity in AS layer, how is it learned

IDCC: from S-TMSI

**Decision:** The document was **revised to S3-193824**.

**S3-193824 eNS\_Addition of evaluation to solution 11**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: Nokia, Nokia Shanghai Bell, Ericsson*

(Replaces S3-193396)

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

**S3-193674 Comments to Evaluation for Solution 11 in S3-193396**

*Type: other For: Approval  
 Source: InterDigital Communications*

**Abstract:**

This contribution proposes comments and corrections for Evaluation for Solution 11 in S3-193396.

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

**S3-193517 Resolving ENs of solution #12**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: ZTE Corporation*

**Discussion:**

E//: keep first editor's note

Nokia: 676 is comments

together with 676

ZTE: this solution has similar to Huawei solution, why not only one ed note

Nokia: more ed notes are more helpful, but also ok to say solve idle mode mobillity

bring back first ed note, ed note on idle mode mobility to be added

**Decision:** The document was **revised to S3-193825**.

**S3-193825 Resolving ENs of solution #12**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: ZTE Corporation*

(Replaces S3-193517)

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

**S3-193676 Nokia comments on S3-193517**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: Nokia, Nokia Shanghai Bell*

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

**S3-193518 Evaluation of solution #12**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: ZTE Corporation*

**Discussion:**

Nokia: to early to add evaluation without idle mode mobility.

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

**S3-193317 TR 33.813 – review and comparative evaluation of solution for NSSAI privacy**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: InterDigital Communications*

**Abstract:**

This PCR attempts to aid SA3 in assessing solutions addressing “Key Issue #6 : Confidentiality protection of NSSAI and home control” by producing a solutions comparisons table.

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

**S3-193417 Overall evaluation of solutions addressing KI#6**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: Huawei, HiSilicon*

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

**S3-193677 Nokia comments on S3-193417**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Nokia: prefer 417

Huawei: no time to work on this offline at this meeting, but agree with nokias comments

IDCC: some solutions need more details to be evaluated

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

**S3-193413 Conclusions to KI #6**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: Huawei, HiSilicon*

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

**S3-193496 Conclusion on KI#6**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: Ericsson, Nokia, Nokia Shanghai Bell*

**Discussion:**

Nokia: propose to have call before next meeting on NSSAI privacy.

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

**S3-193553 Clarification on cancellation of rejected S-NSSAIs**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: Lenovo, Motorola Mobility*

**Abstract:**

This document provides additional clarifications on the cancellation of rejected S-NSSAIs.

**Discussion:**

Nokia: next tdoc, on same clauses.

**Decision:** The document was **revised to S3-193737**.

**S3-193737 Clarification on cancellation of rejected S-NSSAIs**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: Lenovo, Motorola Mobility*

(Replaces S3-193553)

**Discussion:**

Nokia disagree with this interpretation of key issue, should be dynamic subscription re-enablement, so beyond the study item.

Lenovo: CT1 already added ed note.

Huawei: Nokia proposal seems agreeable

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

**S3-193397 KI#7 Revocation of rejected NSSAI**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Lenovo: cannot leave it to OAM

Huawei: this would be too restrictive

Nokia: there is no restriction on the mechanism

E//: in overload situation it is marked as pending, not as failed

Nokia: if a fraction of NSSAI attaches failes, then it should be possible to reauthenticate without primary auth

Lenovo: problem is only external AAA knows when to retry.

IDCC: Agree that problem is possible, but not for this group

DCM: how does the UE know the reason, load or OAM?

Nokia: error code

QC: agree with IDCC

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

**S3-193554 Solution on Cancellation of rejected S-NSSAIs**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: Lenovo, Motorola Mobility*

**Abstract:**

This paper provides a solution for rejected S-NSSAI revocation.

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

**S3-193398 Solution for KI#7 revocation of rejected NSSAI**

*Type: pCR For: Approval  
 33.813 v0.6.0  
 Source: Nokia, Nokia Shanghai Bell*

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

**S3-193732 draft TR 33.813**

*Type: draft TR For: Approval  
 33.813 v0.7.0  
 Source: Nokia*

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

**S3-193733 LS on configuaration of security policy for NSaaS**

*Type: LS out For: Approval  
 to SA2  
 Source: Huawei*

**Discussion:**

Orange: no reason to send it.

Nokia: in SA2, there are many policy configuration mechanisms, let's not include yet another mechanism.

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

**S3-193809 Notes from evening session on eNSI**

*Type: report For: Information  
 Source: Qualcomm*

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

### 5.7 Security of the enhancement to the 5GC location services (eLCS\_Sec)

**S3-193434 Draft CR-living doucment for 5G\_eLCS**

*Type: draftCR For: Approval  
 33.501 v16.0.0  
 Source: CATT*

**Discussion:**

Merged into S3-193702

Nok: Is feature optional to use by network or UE

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

**S3-193563 Draft CR as a living baseline for 5GS LCS normative work**

*Type: draftCR For: Approval  
 33.501 v16.0.0  
 Source: Ericsson LM*

**Abstract:**

As a starting point, an initial baseline for normative work is proposed as a new clause in TS 33.501

**Discussion:**

Huawei: Prefer S3-193563 over S3-193434 - add an EN about bluetooth public name and public address is FFS and one about connection to false access point is FFS

BT: EN should be about corrupting data collection

DCM: Need an EN on linking names to network

Interdigital: If the data is collected without vefirication, then it has no value as it could be be faked to provide an attack.

QC: Text should be a new Annex.

**Decision:** The document was **revised to S3-193702**.

**S3-193702 Draft CR as a living baseline for 5GS LCS normative work**

*Type: draftCR For: Approval  
 33.501 v16.0.0  
 Source: Ericsson LM*

(Replaces S3-193563)

**Discussion:**

DCM: copy last two ed notes inito WLAN as well.

**Decision:** The document was **revised to S3-193847**.

**S3-193847 Draft CR as a living baseline for 5GS LCS normative work**

*Type: draftCR For: Approval  
 33.501 v16.0.0  
 Source: Ericsson LM*

(Replaces S3-193702)

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

### 5.8 Security for 5G URLLC (5G\_URLLC\_SEC)

**S3-193476 draftCR for URLLC**

*Type: draftCR For: Approval  
 33.501 v16.0.0  
 Source: Huawei, Hisilicon*

**Discussion:**

Living document from last time

**Decision:** The document was **revised to S3-193699**.

**S3-193699 draftCR for URLLC**

*Type: draftCR For: Approval  
 33.501 v16.0.0  
 Source: Huawei, Hisilicon*

(Replaces S3-193476)

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

**S3-193477 change introduction to align with URLLC architect**

*Type: draftCR For: Approval  
 33.501 v16.0.0  
 Source: Huawei, Hisilicon*

**Discussion:**

Eri: Propose that could move text out of dual connectivity

Huawei: Only one line on redundant bearer in SA2

QC: typo in wording

Nokia: Is two path mandatory?

Huwaei: It is not manadatory

DCM: Language should not be normative where it is SA2 described procedures.

**Decision:** The document was **revised to S3-193700**.

**S3-193700 change introduction to align with URLLC architect**

*Type: draftCR For: Approval  
 33.501 v16.0.0  
 Source: Huawei, Hisilicon*

(Replaces S3-193477)

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

**S3-193478 clarification on security policy handling**

*Type: draftCR For: Approval  
 33.501 v16.0.0  
 Source: Huawei, Hisilicon*

**Discussion:**

QC: Baseline text is wrong - first sentence of third paragraph is not needed

Eri: Have a similar concern

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

**S3-193627 Draft CR: UP security policy for URLLC**

*Type: draftCR For: Approval  
 33.501 v16.0.0  
 Source: Ericsson*

**Discussion:**

Huawei: OK with 2nd modification - 1st modification adds redundant text

Nok: Agree with Huawei

DCM: consider the normative language in the document

**Decision:** The document was **revised to S3-193701**.

**S3-193701 Draft CR: UP security policy for URLLC**

*Type: draftCR For: Approval  
 33.501 v16.0.0  
 Source: Ericsson*

(Replaces S3-193627)

**Discussion:**

Nokia: disagree with preconfiguration, nonode should be preconfigured

Huawei: not agree with first change, this has a new comment by Nokia, prefer to note this time

Nokia: align with SA2, no point in putting some random statement, policy comes from SMF

E//: ed note to check with RAN2 internaly

revert back to plenary agreements

**Decision:** The document was **revised to S3-193848**.

**S3-193848 Draft CR: UP security policy for URLLC**

*Type: draftCR For: Approval  
 33.501 v16.0.0  
 Source: Ericsson*

(Replaces S3-193701)

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

### 5.9 Study on SECAM and SCAS for 3GPP virtualized network products (FS\_VNP\_SECAM\_SCAS)

**S3-193645 Meeting minutes of VNP\_SECAM\_SCAS conference call on 25th September**

*Type: discussion For: Information  
 33.818 v..  
 Source: China Mobile*

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

**S3-193649 Add Clarifications to the Scope of Accreditation for 3GPP VNPs**

*Type: pCR For: Approval  
 33.818 v0.4.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This pCR proposes some clarifications to TR 33.818 clause 4.3 Scope of SECAM Accreditation for 3GPP virtualized network products.

**Discussion:**

CMCC: About EN, do we need to send an LS to the GSMA - maybe from next meeting

Eri: Why accreditation process does not need to be used

Nok: If consenus, then not needed as previously agreed

Huawei: Can remove accreditatio process part

Nok: Sentence the same in current SECAM specifications

Eri: GSMA is saying that ISO accreditation in needed

Taken offline to discuss that part only.

Nokia: ok to delete the added sentence in Scope

Sentence is to be removed "The same applies ... Desires".

**Decision:** The document was **revised to S3-193849**.

**S3-193849 Add Clarifications to the Scope of Accreditation for 3GPP VNPs**

*Type: pCR For: Approval  
 33.818 v0.4.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S3-193649)

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

**S3-193650 Add Clarifications to Ultimate Output of SECAM Evaluation**

*Type: pCR For: Approval  
 33.818 v0.4.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This pCR proposes some clarifications to TR 33.818 clause 4.4 Ultimate Output of SECAM Evaluation.

**Discussion:**

CMCC: Concerned specifications not known

Hua: Agree with concern

Hua: Believe the evidence is required and sentence on no evidence should not be added

BT: Thought that the idea was for vendor to get their equipment checked

CMCC: There are two ways that SECAM can work two ways

DCM: Agree that sentence should not be added

**Decision:** The document was **revised to S3-193780**.

**S3-193780 Add Clarifications to Ultimate Output of SECAM Evaluation**

*Type: pCR For: Approval  
 33.818 v0.4.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S3-193650)

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

**S3-193651 Add Clarifications to 3GPP virtualized network product evaluation process**

*Type: pCR For: Approval  
 33.818 v0.4.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This pCR proposes some clarifications to TR 33.818 clause 4.5 3GPP virtualized network product evaluation process.

**Discussion:**

BT: May want to consider this as a certification scheme due to Cybersecurity act - propose to change the sentence on 'out of scope of SECAM'.

Hua: first change change to may makes it optional which not sure is correct

**Decision:** The document was **revised to S3-193782**.

**S3-193782 Add Clarifications to 3GPP virtualized network product evaluation process**

*Type: pCR For: Approval  
 33.818 v0.4.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S3-193651)

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

**S3-193652 Add Clarifications to Roles in SECAM for 3GPP virtualized network products**

*Type: pCR For: Approval  
 33.818 v0.4.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This pCR proposes some clarifications to TR 33.818 clause 4.6 Roles in SECAM for 3GPP virtualized network products.

**Discussion:**

Huawei: oshould say other SDO than applicable in diagram

Nokia: discussion with CMCC: leave out other SDO

DCM: why remove other SDOs?

CMCC: other SDOs will provide requirements to 3GPP to integrate into SCAS

agreement: only change diagram.

E//: why is the half sentence added.

Nokia: complete sentence, GSMA is curerntly SECAM accreditation body.

**Decision:** The document was **revised to S3-193783**.

**S3-193783 Add Clarifications to Roles in SECAM for 3GPP virtualized network products**

*Type: pCR For: Approval  
 33.818 v0.4.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S3-193652)

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

**S3-193653 Add Clarifications to SECAM Assurance Level for 3GPP VNPs**

*Type: pCR For: Approval  
 33.818 v0.4.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This pCR proposes some clarifications to TR 33.818 clause 4.8 SECAM Assurance level for 3GPP virtualized network products.

**Discussion:**

Nokia: offline discussion with CMCC: SECAM assutance level completely differnt from ETSI NFV levels. Remove sentence in ed note.

BT: decide on a mapping, rather than on which level.

BT: the editor's note needs to be deleted or braought back. mapping is not possible, because NFV assumes starting from bottom (hardware), but SECAM doesn't do that. so delete references to NFV assurance levels.

second paragraph on clause 4.8.1 removed, delete editor's note in 4.8.2

**Decision:** The document was **revised to S3-193784**.

**S3-193784 Add Clarifications to SECAM Assurance Level for 3GPP VNPs**

*Type: pCR For: Approval  
 33.818 v0.4.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S3-193653)

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

**S3-193655 Add Clarifications to Security Baseline for 3GPP VNPs**

*Type: pCR For: Approval  
 33.818 v0.4.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This pCR proposes some clarifications to TR 33.818 clause 4.9 Security baseline for 3GPP virtualized network products.

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

**S3-193656 Add Clarifications to SCAS documents structure and content**

*Type: pCR For: Approval  
 33.818 v0.4.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This pCR proposes some clarifications to TR 33.818 clause 5.1 Writing process overview and 5.2 SCAS documents structure and content.

**Discussion:**

BT: if the direction is to reduce the testing to teh virtual product, then this decision is too early.

Huawei: currently prefer to work directly in 33.926.

Nokia: the decision is not made

BT: but then they are identical for teh NFs to the self contained products.

DCM: note document?

CMCC: remove the contentious paragraph in 5.1

remove added paragraph in 5.1

**Decision:** The document was **revised to S3-193785**.

**S3-193785 Add Clarifications to SCAS documents structure and content**

*Type: pCR For: Approval  
 33.818 v0.4.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S3-193656)

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

**S3-193638 Clarifying GVNP model of type 2**

*Type: pCR For: Approval  
 33.818 v0.4.0  
 Source: China Mobile*

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

**S3-193639 Adding description for Generic virtualized network product model of type 3**

*Type: pCR For: Approval  
 33.818 v0.4.0  
 Source: China Mobile*

**Discussion:**

BT: in hardware sectino, hardware is not necessarily COTS, maybe in telecoms it is remove that sentence

E//: add the same editors note as on type 1 and 2., add ed note which ETSI specifications are being referred to

Nokia: on hardware change description of picture: "hardware layer in addition to 3GPP", following sentence:VNF -> VNFC, add word "layer" in hardware.

Remove last sentence in clause x.4, ed note under teh diagram, and ed note for reference, + Nokia changes.

Nokia: more comments offline.

**Decision:** The document was **revised to S3-193786**.

**S3-193786 Adding description for Generic virtualized network product model of type 3**

*Type: pCR For: Approval  
 33.818 v0.4.0  
 Source: China Mobile*

(Replaces S3-193639)

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

**S3-193640 Adding Generic assets and threats of GVNP for type 1 into clause 5.2.3.b**

*Type: pCR For: Approval  
 33.818 v0.4.0  
 Source: China Mobile*

**Discussion:**

Nokia: ed ntoe about moving this to 900 series TR

CMCC: need to finalize this first, then move over

Nokia: ok

BT: .b.2.3: say that there are two "relevant" interfaces, because more are defined; b.2.10, list identical to no virtual system, virtualization layer threats need to added, add editor's note

keep open for offline

**Decision:** The document was **revised to S3-193787**.

**S3-193787 Adding Generic assets and threats of GVNP for type 1 into clause 5.2.3.b**

*Type: pCR For: Approval  
 33.818 v0.4.0  
 Source: China Mobile*

(Replaces S3-193640)

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

**S3-193641 Adding Generic assets and threats of GVNP for type 2 into clause 5.2.3.c**

*Type: pCR For: Approval  
 33.818 v0.4.0  
 Source: China Mobile*

**Discussion:**

BT: this needs more work to defferentiate from nomral scas, but ok to put in.

E//: reference etc. as for 640

goes offline

**Decision:** The document was **revised to S3-193831**.

**S3-193831 Adding Generic assets and threats of GVNP for type 2 into clause 5.2.3.c**

*Type: pCR For: Approval  
 33.818 v0.4.0  
 Source: China Mobile*

(Replaces S3-193641)

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

**S3-193642 Adding Generic assets and threats of GVNP for type 3 into clause 5.2.3.d**

*Type: pCR For: Approval  
 33.818 v0.4.0  
 Source: China Mobile*

**Decision:** The document was **revised to S3-193832**.

**S3-193832 Adding Generic assets and threats of GVNP for type 3 into clause 5.2.3.d**

*Type: pCR For: Approval  
 33.818 v0.4.0  
 Source: China Mobile*

(Replaces S3-193642)

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

**S3-193643 Adding security requirements into clause 5.2.4**

*Type: pCR For: Approval  
 33.818 v0.4.0  
 Source: China Mobile*

**Discussion:**

Nokia: in diagram, ETSI defines GR, GS not TR, TS; in 5.2.4.2. not define a new catalogue, but have it as extension

CMCC: can't change figure now, ed ntoe instead

BT: replace specified in 5.2.4.2 for identified, as TR doesn't specify

ed note to revise figure to change TR and TS to GR and GS for; rephrase first para of 5.2.4.2 to make it into extension instead of addition

**Decision:** The document was **revised to S3-193833**.

**S3-193833 Adding security requirements into clause 5.2.4**

*Type: pCR For: Approval  
 33.818 v0.4.0  
 Source: China Mobile*

(Replaces S3-193643)

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

**S3-193657 Add Clarifications to generic virtualized network product model description**

*Type: pCR For: Approval  
 33.818 v0.4.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This pCR proposes some clarifications to TR 33.818 clause 5.2.5 Generic virtualized network product model description. Two editor’s notes on mapping of ETSI NFV interface and 3GPP interface are resolved by adding more specific clarifications for the relevant interfaces.

**Discussion:**

CMCC: what is the reference [x]?

Nokia: will include missing reference

CMCC: name of local logical interface, change to execution interface

Nokia: maybe rename to execution environment interface

DCM: please provide definitino for next time

**Decision:** The document was **revised to S3-193834**.

**S3-193834 Add Clarifications to generic virtualized network product model description**

*Type: pCR For: Approval  
 33.818 v0.4.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S3-193657)

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

**S3-193644 applying TR33.818 with new 3GPP\_TS-TR\_Template**

*Type: pCR For: Approval  
 33.818 v0.4.0  
 Source: China Mobile*

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

**S3-193781 Draft TR 33.818**

*Type: draft TR For: Approval  
 33.818 v0.5.0  
 Source: China Mobile*

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

### 5.10 Security for 5GS Enhanced support of Vertical and LAN Services

#### 5.10.1 Work Item (Vertical\_LAN\_SEC)

**S3-193662 LS on SUCI computation from an NSI**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: CP-192262*

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

**S3-193368 Reply LS on SUCI computation from an NSI**

*Type: LS out For: Approval  
 to CT, SA1, SA2, CT1, CT6, cc CT4, SA  
 Source: Qualcomm Incorporated*

**Discussion:**

DCM doesn't answer the question

QC: there are features that don't work

Thales: disagree with QC, currently nothing prevents the two identities

Orange: agree with LS, but need to add whether there are security concerns, Orange doesn't see any, respond from next meeting, but should be only one key.

Nokia: two identifiers for UE is ok?

Orange: yes, but need more time to study.

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

**S3-193353 Some corrections/clarification for non-public networks annex**

*Type: draftCR For: Endorsement  
 33.501 v16.0.0  
 Source: Qualcomm Incorporated*

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

**S3-193512 CAG ID Privacy for non-public networks**

*Type: draftCR For: Approval  
 33.501 v16.0.0  
 Source: ZTE Corporation*

**Discussion:**

Nokia: depends on study item.

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

**S3-193527 CR CAG ID privacy**

*Type: draftCR For: Agreement  
 33.501 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

it depends on study item.

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

**S3-193528 Removal of ed.note on conformance tests**

*Type: draftCR For: Agreement  
 33.501 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

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

**S3-193529 Editorial correction of format**

*Type: draftCR For: Agreement  
 33.501 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **revised to S3-193705**.

**S3-193705 Editorial correction of format**

*Type: draftCR For: Agreement  
 33.501 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S3-193529)

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

**S3-193531 CR Interworking between NPN and PLMN**

*Type: draftCR For: Agreement  
 33.501 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

E//: depends on result of study

Nokia: document in Annex, in SA2, or subclause somewhere else

QC: document separate fromm NPN

DCM: not in SA2

QC: clarify this is about secondary authentication

tdoc name of revision had to be changed to reflect content

**Decision:** The document was **revised to S3-193706**.

**S3-193706 CR Interworking between NPN and PLMN**

*Type: draftCR For: Agreement  
 33.501 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S3-193531)

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

**S3-193532 CR Annex 5GLAN**

*Type: draftCR For: Agreement  
 33.501 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **revised to S3-193707**.

**S3-193707 CR Annex 5GLAN**

*Type: draftCR For: Agreement  
 33.501 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S3-193532)

**Discussion:**

Huawei: what is the authentication mechanisms

DCM: shall be used, not are

Huawei: formatting, should this be under same Annex

Nokia: no, same study: different topic

Huawei: ed note: which authentication mechanism

QC: not only auth mechanism, but also SMC, etc.ed note about all security procedures.

Nokia: delete second paragraph,

DCM: acronyms need to be added, refernce to IEEE TSN to be added

tdoc name of revision had to be changed to reflect content

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

**S3-193533 CR Annex TSC**

*Type: draftCR For: Agreement  
 33.501 v16.0.0  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Orange: nothing required in our TS.

Huawei: change NPN to SNPN

Thales: prefer not to add anything now.

Orange: also nothing is required for integrated NPNs.

Title should be(to reflect content of contribution): CR Interworking between NPN and PLMN

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

#### 5.10.2 Study (FS\_Vertical\_LAN\_SEC)

**S3-193302 TR 33.819 – update of DH based solution for CAG ID privacy**

*Type: pCR For: Approval  
 33.819 v1.2.0  
 Source: InterDigital Communications*

**Abstract:**

This contribution addresses the following Editor Notes:

• Editor’s Note: the effectiveness of this solution against False Base Station attack is FFS.

• Editor’s Note: how CAG ID is kept secret in case of changes of subscription and/or CAG IDs is FFS.

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

**S3-193303 TR 33.819 – update of Hash based solution for CAG ID privacy**

*Type: pCR For: Approval  
 33.819 v1.2.0  
 Source: InterDigital Communications*

**Abstract:**

This contribution addresses the following Editor Notes:

• Editor’s Note: the effectiveness of this solution against False Base Station attacks is FFS.

• Editor’s Note: how CAG ID is kept secret in case of changes of subscription and/or CAG IDs is FFS.

• Editor’s Note: resistance to offline/online dictionary attacks due to a low length of CAG ID is FFS.

**Discussion:**

Huawei: what is sufficient length ofCAG ID, where is it defined

IDCC: this is a suggested length

Huawei: length of CAG needsd to be defined ed note.

Nokia: fine as part of solution, because it says e.g.

QC: text against FBS is not making claims against active attacks.

IDCC: correct

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

**S3-193308 TR 33.819 – review and comparative evaluation of solution for CAG ID privacy**

*Type: pCR For: Approval  
 33.819 v1.2.0  
 Source: InterDigital Communications*

**Abstract:**

This PCR attempts to aid SA3 in assessing solutions addressing Key Issue #6.2: CAG ID privacy by producing a solutions comparisons table.

**Discussion:**

need to wait for SA2

IDCC: propose to note all of the CAG conclusions.

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

**S3-193310 TR 33.819 – evaluation of DH based solution for CAG ID privacy**

*Type: pCR For: Approval  
 33.819 v1.2.0  
 Source: InterDigital Communications*

**Abstract:**

This contribution adds evaluation to the DH based solution for CAG ID privacy.

**Discussion:**

QC: after a FBS runs DH, it can run passive attacks,

IDCC that was not claimed

E//: mention explicitly that it doesn't address active attacks

QC: move that to first line

IDCC: requirements don't say both

QC: remove fully, add "against passive attacks..." to first sentence, combining last and first sentence

agreed on last QC comment

**Decision:** The document was **revised to S3-193826**.

**S3-193826 TR 33.819 – evaluation of DH based solution for CAG ID privacy**

*Type: pCR For: Approval  
 33.819 v1.2.0  
 Source: InterDigital Communications*

(Replaces S3-193310)

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

**S3-193311 TR 33.819 – evaluation of Hash based solution for CAG ID privacy**

*Type: pCR For: Approval  
 33.819 v1.2.0  
 Source: InterDigital Communications*

**Abstract:**

This contribution adds evaluation to the Hash based solution for CAG ID privacy.

**Discussion:**

QC: does this against a passive attack from a UE in the same CAG

IDCC: insider attack

QC: not insider, include comment from 310

DCM: this solution does not protect against passive attacks by members of the CAG

QC changes and DCM comment agreed

**Decision:** The document was **revised to S3-193827**.

**S3-193827 TR 33.819 – evaluation of Hash based solution for CAG ID privacy**

*Type: pCR For: Approval  
 33.819 v1.2.0  
 Source: InterDigital Communications*

(Replaces S3-193311)

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

**S3-193456 Adding the evaluation of solution #15**

*Type: pCR For: Approval  
 33.819 v1.2.0  
 Source: Huawei, Hisilicon*

**Discussion:**

E//: support this

Nokia: it is modifying the message on the radio interface

Huawei: wait for RAN2 response on that

Nokia: this comment can come back next time

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

**S3-193457 Adding conclusion on KI #6.2**

*Type: pCR For: Approval  
 33.819 v1.2.0  
 Source: Huawei, Hisilicon*

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

**S3-193465 Solution for protection of time synchronization**

*Type: pCR For: Approval  
 33.819 v1.2.0  
 Source: Huawei, Hisilicon*

**Discussion:**

Nokia: need more details, ed note details in line with SA2 specs is FFS

**Decision:** The document was **revised to S3-193709**.

**S3-193709 Solution for protection of time synchronization**

*Type: pCR For: Approval  
 33.819 v1.2.0  
 Source: Huawei, Hisilicon*

(Replaces S3-193465)

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

**S3-193466 Conclusion on protection of time synchronization**

*Type: pCR For: Approval  
 33.819 v1.2.0  
 Source: Huawei, Hisilicon*

**Discussion:**

Nokia: postpone to next meeting.

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

**S3-193467 Remove the EN and add evaluation to solution 6**

*Type: pCR For: Approval  
 33.819 v1.2.0  
 Source: Huawei, Hisilicon*

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

**S3-193511 Conclusion of CAG ID Privacy**

*Type: pCR For: Approval  
 33.819 v1.2.0  
 Source: ZTE Corporation*

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

**S3-193322 Editorial corrections for TR 33.819**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: Huawei, HiSilicon*

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

**S3-193325 Evaluation of solutions addressing Key Issue #6.2**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: Huawei, HiSilicon*

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

**S3-193523 TR 33.819 update**

*Type: pCR For: Approval  
 33.819 v1.2.0  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

IDCC: don't waste time on CAG ID privacy, wait for SA2 progress.

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

**S3-193524 Status of TR**

*Type: discussion For: Discussion  
 33.819 v..  
 Source: Nokia, Nokia Shanghai Bell*

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

**S3-193525 CAG ID privacy solution considering RAN optimization**

*Type: pCR For: Approval  
 33.819 v1.2.0  
 Source: Nokia, Nokia Shanghai Bell*

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

**S3-193526 CAG ID privacy conclusion -v1**

*Type: pCR For: Approval  
 33.819 v1.2.0  
 Source: Nokia, Nokia Shanghai Bell*

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

**S3-193530 Conclusion to key issue 2.3**

*Type: pCR For: Approval  
 33.819 v1.2.0  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Orange: no conclusion for this one, noted

BT is this related to multiple subscriptions

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

**S3-193593 Udpate to Solution #3**

*Type: pCR For: (not specified)  
 33.819 v1.2.0  
 Source: Samsung*

**Discussion:**

Nokia: what are various factors?

Samsung remove "based on various factors", add ed note that factors should be listed

Nokia: better come back next time.

Samsung: give a few factors in this meeting

BT: concerned about dynamic factors in UDM.

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

**S3-193594 Key Issue #6.1 conclusion**

*Type: pCR For: (not specified)  
 33.819 v1.2.0  
 Source: Samsung*

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

**S3-193708 draft TR 33.819**

*Type: draft TR For: Approval  
 33.819 v1.3.0  
 Source: Nokia*

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

### 5.11 Study on LTKUP Detailed solutions (FS\_LTKUP\_Detail)

### 5.12 Study on User Plane Integrity Protection (FS\_UP\_IP\_Sec)

**S3-193666 Reply to LS on Impersonation Attacks in 4G Networks**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: R2-1911819*

**Discussion:**

Nok: should full rate by supported from Rel-16

QC: Full-rate can be supported for Rel-15 UEs

Samsung: Need non-full rate in Rel-16 for some Ues

QC: It is a product and not a standards issue

Orange: Need to specify full rate

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

**S3-193320 Proposal to solve ED notes in solution#4: Zero-overhead user plane integrity protection on the link layer**

*Type: pCR For: Approval  
 33.853 v0.5.0  
 Source: Philips International B.V.*

**Abstract:**

This contribution proposes solutions to the editor's notes in clause 6.4 Solution #4: Zero-overhead user plane integrity protection on the link layer. The proposal made in Wroclaw is extended here to work with multiple PDCP instances.

**Discussion:**

Nok and DCM: Not clear what truncated encryption means - explanation would be good in the text

Nok: First EN needs to be retained

Philips: Explained in new text

DCM: Replace EN1 as there is an impact by replacing hardware CRC with cryptgraphic function

CMCC: Add sentence on the length of MAC compared to 32 bits

QC: Security implications of just protecting the CRC needs to be further study needed

**Decision:** The document was **revised to S3-193691**.

**S3-193691 Proposal to solve ED notes in solution#4: Zero-overhead user plane integrity protection on the link layer**

*Type: pCR For: Approval  
 33.853 v0.5.0  
 Source: Philips International B.V.*

(Replaces S3-193320)

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

**S3-193369 Proposed conclusion for 5G RAN connected to 5GC**

*Type: pCR For: Approval  
 33.853 v0.5.0  
 Source: Qualcomm Incorporated*

**Discussion:**

Huawei: Concern that there is a EN in solution so remove reference

QC: Ok

CMCC: Concern about the performance issues, e.g. some bearers may not require UP IP as performance is more important

QC: Proposal is as for solution 2 that UP IP is optional to use

CMCC: Propose to add a sentence on the performance

QC: Does this mean re-evaulation of existing Rel-15

Apple: Propose to remove the note - this was agreed.

DCM: Concerned about the impact on ng-eNB on this conclusion

**Decision:** The document was **revised to S3-193698**.

**S3-193698 Proposed conclusion for 5G RAN connected to 5GC**

*Type: pCR For: Approval  
 33.853 v0.5.0  
 Source: Qualcomm Incorporated*

(Replaces S3-193369)

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

**S3-193393 Proposed Solution for key issue #6**

*Type: pCR For: Approval  
 33.853 v0.5.0  
 Source: Qualcomm Incorporated*

**Discussion:**

Huawei: Why only affects only ng-eNB

QC: Clarify that this is only for 5G core and not EPC - change the title to make this clear

Apple: 2nd paragraph in solution descirprion is not clear

QC: OK to remove that paragraph

**Decision:** The document was **revised to S3-193692**.

**S3-193692 Proposed Solution for key issue #6**

*Type: pCR For: Approval  
 33.853 v0.5.0  
 Source: Qualcomm Incorporated*

(Replaces S3-193393)

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

**S3-193508 Evaluation for Solution#5 in UP IP**

*Type: pCR For: Approval  
 33.853 v0.5.0  
 Source: Apple*

**Discussion:**

CMMC: Do not agree with the figures given in evaluation

Apple: Point is that this solution cannot protect all the data packets when limited to 64 kbps

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

**S3-193509 Solution to key issue#5 in UP IP**

*Type: pCR For: Approval  
 33.853 v0.5.0  
 Source: Apple*

**Discussion:**

QC: Does not address attack - issue raised at the last meeting not resolved

DCM: Not sure that this works well as padding is at the end

Apple: Padding is not only at the end but also at the start

CMCC: Solution does not work without encryption

DCM: needs to adding padding to both beginning and end

Nok: Agree with the weaknesses of this proposal and the gain is too small

Taken offline for discussion

**Decision:** The document was **revised to S3-193694**.

**S3-193694 Solution to key issue#5 in UP IP**

*Type: pCR For: Approval  
 33.853 v0.5.0  
 Source: Apple*

(Replaces S3-193509)

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

**S3-193578 Delete the Evaluation for Solution 5 in TR 33.853**

*Type: pCR For: Approval  
 33.853 v0.5.0  
 Source: China Mobile*

**Discussion:**

QC: PDCP is not aware whether traffic is IP or not IP but agree the sentence is not correct

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

**S3-193579 Resolving Editor’s Note in Solution #1**

*Type: pCR For: (not specified)  
 33.853 v0.5.0  
 Source: Samsung*

**Discussion:**

QC: Do not agree to delete EN as there are other attacks and also SIP signalling not a good example as this has its own protection

BT: Needs to consider all control plane protections and other sensitive traffic not just the listed ones

DCM: Need to clarify that all the protected data is less than 64Kbits

QC: OK if we note other data not protected

Nok: is this new capability

Samsung: exisiting capability

**Decision:** The document was **revised to S3-193695**.

**S3-193695 Resolving Editor’s Note in Solution #1**

*Type: pCR For: -  
 33.853 v0.5.0  
 Source: Samsung*

(Replaces S3-193579)

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

**S3-193580 Add the Evaluation to Solution 5 in TR 33.853**

*Type: pCR For: (not specified)  
 33.853 v0.5.0  
 Source: China Mobile*

**Discussion:**

QC: All the parts of the evaluation need to be re-written

Nok: Need to detremoine if just header or the whole packets needs to be protected

QC: Agree with this but that there are many other issues as well

**Decision:** The document was **revised to S3-193696**.

**S3-193696 Add the Evaluation to Solution 5 in TR 33.853**

*Type: pCR For: -  
 33.853 v0.5.0  
 Source: China Mobile*

(Replaces S3-193580)

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

**S3-193581 Conclusion to Key Issue #5**

*Type: pCR For: (not specified)  
 33.853 v0.5.0  
 Source: Samsung*

**Discussion:**

QC: does not agree with the conclusion.

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

**S3-193646 UPIP: update of solution #7 and addition of evaluation**

*Type: pCR For: (not specified)  
 33.853 v0.5.0  
 Source: Ericsson*

**Discussion:**

QC: Please the impacted elements to the evaluation and also an EN on consideration of mixed deployments where some elements are upgraded

Nok: Why do we need an indication if this mandatory for Rel-16 Ues

QC: There are multiple ways of indicating this capability of which this is one

**Decision:** The document was **revised to S3-193697**.

**S3-193697 UPIP: update of solution #7 and addition of evaluation**

*Type: pCR For: -  
 33.853 v0.5.0  
 Source: Ericsson*

(Replaces S3-193646)

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

**S3-193659 pCR to TR33.853 on Migration paths for network deployment**

*Type: pCR For: Approval  
 33.853 v0.5.0  
 Source: NTT DOCOMO INC.*

**Abstract:**

It is proposed to add a new key issue that deals with how a network can introduce support for UP IP.

**Discussion:**

Apple: Don't believe the key issue is in scope of the TR

DCM: Ignoring this will mean that we will end up with something that will not be deployed

Nokia: Second point in particular had architectural impacts

DCM: Proposed text is an 'or' as there are multiple ways to do this

Huawei: Requirements are very solution specific - is it possible to reword them

BT: Supportive of this contribution as it covers the network constraints

Orange: Also supportive of this proposal

Apple: Are these really criteria for evaluation of each solution

DCM: The threats are raising security concerns

QC: Don't understand the requirements

Chair asked for who objects to the key issue: Phillips, Ericsson, Nokia & Huawei

Chair asked for who supports the key issue: Orange, BT, DCM & KPN.

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

**S3-193693 Draft TR 33.853**

*Type: draft TR For: Approval  
 33.853 v0.6.0  
 Source: NTT DOCOMO INC.*

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

### 5.13 Study on Security Impacts of Virtualisation (FS\_SIV)

**S3-193318 FS\_SIV TR 33.848 v030c**

*Type: pCR For: Agreement  
 33.848 v0.3.0  
 Source: BT plc*

**Abstract:**

Baseline TR output from conference calls for agreement to become v0.4.0.

**Discussion:**

Thales: Why is there a reference to SCASS

BT: Could be done by reference to specs inside 3GPP, specs outside 3GPP or by restricting the text cases

Thales: But where are the solutions?

BT: It is contribution driven and up to people to bring the solution for issue. Where it says 'inside SCASS' , it means that a text case in 3GPP is proposed outcome.

Thales: Concerned about the terms used - DSE

DCM: Propose reverting DSE chnage in 5.8.1 and adding an EN on generalising TPM/HSM and remove definition of DSE

**Decision:** The document was **revised to S3-193749**.

**S3-193749 FS\_SIV TR 33.848 v030c**

*Type: pCR For: Agreement  
 33.848 v0.3.0  
 Source: BT plc*

(Replaces S3-193318)

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

**S3-193328 TR 33.848 Scope Update**

*Type: pCR For: Agreement  
 33.848 v0.3.0  
 Source: BT plc*

**Discussion:**

DCM: Expand CNI abbreviation

**Decision:** The document was **revised to S3-193751**.

**S3-193751 TR 33.848 Scope Update**

*Type: pCR For: Agreement  
 33.848 v0.3.0  
 Source: BT plc*

(Replaces S3-193328)

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

**S3-193371 TR 33.848 Security Requirements for Key Issue 17 (resubmission of S3-192559)**

*Type: pCR For: Approval  
 33.848 v0.3.0  
 Source: NCSC*

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

**S3-193372 TR 33.848 Security Threats and Requirements for Key Issue 16 (resubmission of S3-192558)**

*Type: pCR For: Approval  
 33.848 v0.3.0  
 Source: NCSC*

**Decision:** The document was **revised to S3-193742**.

**S3-193742 TR 33.848 Security Threats and Requirements for Key Issue 16 (resubmission of S3-192558)**

*Type: pCR For: Approval  
 33.848 v0.3.0  
 Source: NCSC*

(Replaces S3-193372)

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

**S3-193373 TR 33.848: Security Requirements for Key Issue 18 (resubmission of S3-192560)**

*Type: pCR For: Approval  
 33.848 v0.3.0  
 Source: NCSC*

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

**S3-193374 TR 33.848 Security Requirements for Key Issue 19 (resubmission of S3-192561)**

*Type: pCR For: Approval  
 33.848 v0.3.0  
 Source: NCSC*

**Decision:** The document was **revised to S3-193773**.

**S3-193773 TR 33.848 Security Requirements for Key Issue 19 (resubmission of S3-192561)**

*Type: pCR For: Approval  
 33.848 v0.3.0  
 Source: NCSC*

(Replaces S3-193374)

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

**S3-193375 TR 33.848 Security Threats and Requirements for Key Issue 21 (resubmission of S3-192562)**

*Type: pCR For: Approval  
 33.848 v0.3.0  
 Source: NCSC*

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

**S3-193376 TR 33.848 Annex – Virtualisation Security Questions (resubmission of S3-193089)**

*Type: pCR For: Approval  
 33.848 v0.3.0  
 Source: NCSC*

**Discussion:**

Thales. Should not be a guideline that SA3 provides. Should be out of scope

DCM: make this in format of evidence to a requirement

BT: put this into document

Orange: some are SCAS related, others are more NESAS related, prefer not to put this into TC cyber

DCM: prefer to keep this here

Orange: should ask GSMA if they will deal with virtualization, send LS

Thales: ok to have this content, but this informative annex is the wrong way

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

**S3-193399 Threats and Requirements for Key Issue #8**

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

**Abstract:**

This pCR proposes the threats and the requirements for key issue #8.

**Decision:** The document was **revised to S3-193739**.

**S3-193739 Threats and Requirements for Key Issue #8**

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

(Replaces S3-193399)

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

**S3-193400 Threats and Requirements for Key Issue #13**

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

**Abstract:**

This pCR proposes the threats and the requirements for key issue #13.

**Decision:** The document was **revised to S3-193740**.

**S3-193740 Threats and Requirements for Key Issue #13**

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

(Replaces S3-193400)

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

**S3-193418 Threats and Requirements for Key Issue #17**

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

**Abstract:**

This pCR proposes the threats and the requirements for key issue #17.

**Decision:** The document was **revised to S3-193741**.

**S3-193741 Threats and Requirements for Key Issue #17**

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

(Replaces S3-193418)

**Discussion:**

Orange: avoid requirements on actor's, requirements on parts of infrastructure

BT: replace by 3GPP network

Orange: ok

DCM: still unclear

BT: then delete first requirement, remove "by the operator" from third requirement

Nokia: add catalogue to third requirement

remove fist req, add catalogue to third, remove by the operator.

**Decision:** The document was **revised to S3-193828**.

**S3-193828 Threats and Requirements for Key Issue #17**

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

(Replaces S3-193741)

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

**S3-193419 Threats and Requirements for Key Issue #18**

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

**Abstract:**

This pCR proposes the threats and the requirements for key issue #18.

**Decision:** The document was **revised to S3-193743**.

**S3-193743 Threats and Requirements for Key Issue #18**

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

(Replaces S3-193419)

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

**S3-193420 Threats and Requirements for Key Issue #20**

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

**Abstract:**

This pCR proposes the threats and the requirements for key issue #20.

**Decision:** The document was **revised to S3-193774**.

**S3-193774 Threats and Requirements for Key Issue #20**

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

(Replaces S3-193420)

**Discussion:**

DCM: protected by operators doesn't work

Orange: remove "by operator's" in requirement, no requirement on actors

update requirement

**Decision:** The document was **revised to S3-193829**.

**S3-193829 Threats and Requirements for Key Issue #20**

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

(Replaces S3-193774)

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

**S3-193421 Threats and Requirements for Key Issue #21**

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

**Abstract:**

This pCR proposes the threats and the requirements for key issue #21.

**Decision:** The document was **revised to S3-193775**.

**S3-193775 Threats and Requirements for Key Issue #21**

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

(Replaces S3-193421)

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

**S3-193422 Threats and Requirements for Key Issue #22**

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

**Abstract:**

This pCR proposes the threats and the requirements for key issue #22.

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

**S3-193424 Threats and Requirements for Key Issue #23**

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

**Abstract:**

This pCR proposes the threats and the requirements for key issue #23.

**Decision:** The document was **revised to S3-193776**.

**S3-193776 Threats and Requirements for Key Issue #23**

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

(Replaces S3-193424)

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

**S3-193425 Threats and Requirements for Key Issue #24**

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

**Abstract:**

This pCR proposes the threats and the requirements for key issue #24.

**Decision:** The document was **revised to S3-193777**.

**S3-193777 Threats and Requirements for Key Issue #24**

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

(Replaces S3-193425)

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

**S3-193427 Discussion on Categorization of the Key Issues**

*Type: pCR For: Endorsement  
 33.848 v0.3.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This is a discussion paper. The proposal is to adopt the categorization of the key issues in TR 33.848, based on the proposed criterion.

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

**S3-193750 Draft TR 33.848**

*Type: draft TR For: Approval  
 33.848 v0.4.0  
 Source: BT*

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

**S3-193830 LS on virtualization security assurance**

*Type: LS out For: Approval  
 to GSMA SECAG  
 Source: Orange*

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

### 5.14 Study on authentication enhancements in 5GS (FS\_AUTH\_ENH)

**S3-193414 New key issue on PFS**

*Type: pCR For: Approval  
 33.819 v1.2.0  
 Source: Huawei, HiSilicon*

**Discussion:**

E//: similar proposal in 601

together with 601

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

**S3-193601 Existing authentication procedure lacking PFS property**

*Type: pCR For: Approval  
 33.846 v0.3.0  
 Source: Ericsson*

**Discussion:**

Orange: what is the problem

E//: PFS is the problem

CMCC: agree with E//, enhance the authentication, solve the issue if long term key is leaked, could revise auth protocol, or do something else to prevent long term key leakage

BT: balance between prevention, detection and response

Huawei: support E// paper, in security requirerment remove "if", or say provide forward security

DCM: need to see whether this is worth it considering the data is only protected over the air

Thales: decision already some meetings ago not to study

BT: need to document whether or not it is worth it.

Show of hands who supports this key issue: CMCC, BT, Aple, E//, Huawei, ZTE, Nokia; objects: Thales, Orange

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

**S3-193451 Resolving the ENs in KI#3.1**

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

**Discussion:**

E//: still not aligned with the study

Huawei: explained in the paper

E//: this is not part of the objectives

Huawei: then keep first ed note

E//: ok

DCM: needs editorial rewrite

Nokia: when UE is deregistered, UE context is not cleaned up, is this the problem.

Huawei: could be a problem

Nokia : clean up on next deregistration, when there is error, there should be clean up in error case

QC: similar to Nokia, are we trying to route NAS traffic through teh home network

E//: more details on attack, bring back ed note

QC: couldn't the AMF not launch the same attack by overbilling

Nokia: add editor's note

TIM: too many additional editor's note being added, bring another proposal

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

**S3-193636 Discussion on the SUPI guessing attack**

*Type: discussion For: Discussion  
 33.846 v..  
 Source: China Mobile*

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

**S3-193637 Key issue to mitigate the SUCI guessing attacks in TR 33.846**

*Type: pCR For: Approval  
 33.846 v0.3.0  
 Source: China Mobile*

**Discussion:**

DCM: how to deal with threats that we decided to be not relevant

Orange: agree, maybe remove threats and requirements

E//: same problem, keep threat, add editor's note

Nokia: can'T determine on individual SUPI

DCM: ed note: impact of threat is FFS

Orange: have threat: the attacker is able to determine whether a SUPI belongs to a given network, + ed note

ed note, Orange's sentence on threat, remove requirements - FFS

**Decision:** The document was **revised to S3-193810**.

**S3-193810 Key issue to mitigate the SUCI guessing attacks in TR 33.846**

*Type: pCR For: Approval  
 33.846 v0.3.0  
 Source: China Mobile*

(Replaces S3-193637)

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

**S3-193319 33:846: mitigation against linkability attack**

*Type: pCR For: Approval  
 33.846 v0.3.0  
 Source: THALES*

**Abstract:**

33.846: mitigation against linkability attack

**Discussion:**

BT: does this need a new USIM, or can this be done with OTA

Thales: not OTA

BT: document that this means change of USIM

Orange: this solution requires change of the USIM

Nokia: step 5, and step 7 are authentication procedures, how is the USIM to know that ti needs to resynch failure

Thales: in case synch error, it will respond with a random, then the network wills start resynch procedure, USIM will know that is required

Nokia: there may be new threats

Thales: ok to add ed note

Nokia: ed note threat analysis for authentication resynch will need to be done.

Huawei: step 3 need a unified failure cause

Thales: UICC will see different causes, but for network and ME it will not be detected

Huawei: ed note: whether unified failure cause is FFS

QC: if SUPI is known, this doesn't work against active attack. now this requires two passes for sync, after 3 failures the UE will block the network

sentence in evaluation, ed note on threat, on unified failure cause, offline for QC attack

**Decision:** The document was **revised to S3-193811**.

**S3-193811 33:846: mitigation against linkability attack**

*Type: pCR For: Approval  
 33.846 v0.3.0  
 Source: THALES*

(Replaces S3-193319)

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

**S3-193356 Using MACS to provide freshness for the protection of SQN during a re-synchronisation procedure in AKA**

*Type: pCR For: Approval  
 33.846 v0.3.0  
 Source: Qualcomm Incorporated*

(Replaces S3-192921)

**Discussion:**

Orange: add to evaluation that USIM needs to be changed, no impact of visited network

Huawei:have to assume that MAC-S is trusted?

QC: just one extra input to AK

Thales: think solution is correct

ZTE: there may be problem of performance

Orange: no issue

Nokia: how feasible is algorithm update over OTA

Orange: added this sentence in eval

eval: this solution requires changing the USIM

**Decision:** The document was **revised to S3-193812**.

**S3-193812 Using MACS to provide freshness for the protection of SQN during a re-synchronisation procedure in AKA**

*Type: pCR For: Approval  
 33.846 v0.3.0  
 Source: Qualcomm Incorporated*

(Replaces S3-193356)

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

**S3-193450 New solution for linkability attack**

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

**Discussion:**

Orange: add two sentences: visited network is impacted, and not R15 compatible to evaluation

E//: needs public key, another UE could impersonate the response, so not clear where failure message is coming from, unclear whether ME or USIM do calculation, impact of MAC failure message size is FFS: add ed note regarding this

BT: if SUCI protection is not there, then there is dependency

Thales: solution relies on availability of key for SUCI, add ed note.

sentence in evaluation, (Orange, Thales), 3 ed notes (E//)

**Decision:** The document was **revised to S3-193813**.

**S3-193813 New solution for linkability attack**

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

(Replaces S3-193450)

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

**S3-193515 Structure RAND for authentication**

*Type: pCR For: Approval  
 33.846 v0.3.0  
 Source: ZTE Corporation*

**Discussion:**

E//: as instances come and go in virtual environment start-up time is FFS

Orange: don't understand what are threats and requirements to be covered, so not include the solution

DCM: how does home network know that ME is capable of this solution

ZTE: doesn't know.

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

**S3-193635 Clarification to the usage of Kausf for solution #2.2 in TR 33.846**

*Type: pCR For: Approval  
 33.846 v0.3.0  
 Source: China Mobile*

**Discussion:**

Nokia: how can KAUSF work on the failed procedure.

Orange: if there is no previous KAUSF, then there is no protection, add ed note: security of using KAUSF=0 is FFS

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

**S3-193460 Address the EN and add evaluation in solution 2.3**

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

**Discussion:**

E//: ed note in evalution: NAS procedure impact is FFS

Orange: statement: this solution impact the visisted network

ed note on NAS preocedure, sentence on visited network impact

**Decision:** The document was **revised to S3-193814**.

**S3-193814 Address the EN and add evaluation in solution 2.3**

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

(Replaces S3-193460)

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

**S3-193452 New solution for removing the authentication result from the UDM**

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

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

**S3-193459 solution on AUTS derivation to protect SQN**

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

**Discussion:**

QC: there is no non-malleable block cipher for 48 bit,

Orange: impact on Milenage and TUAK

TIM: also new UICCs needs to be written

QC: no arrow down form AK in diagram

replace eval text, solution requires a major change of auth algorithms, and the examples defined in 3GPP (Milenage and TUAK), solution requires change of USIM

**Decision:** The document was **revised to S3-193815**.

**S3-193815 solution on AUTS derivation to protect SQN**

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

(Replaces S3-193459)

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

**S3-193516 Conclusion on linkability issues**

*Type: pCR For: Approval  
 33.846 v0.3.0  
 Source: ZTE Corporation*

**Discussion:**

Thales: too early for conclusions

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

**S3-193850 draft TR 33.846**

*Type: draft TR For: Approval  
 33.846 v0.4.0  
 Source: Ericsson*

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

### 5.15 Security for NR Integrated Access and Backhaul

#### 5.15.1 Work Item (NR\_IAB\_Sec)

**S3-193669 LS on the IAB-indication to core network**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: R3-194787*

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

**S3-193564 [Draft CR]Solution for IAB Architecture**

*Type: draftCR For: (not specified)  
 33.501 v16.0.0  
 Source: Samsung*

**Discussion:**

BT: the IAB node needs to be protected like a gNB

Samsung: add in next meeting

together with 611

**Decision:** The document was **revised to S3-193808**.

**S3-193808 [Draft CR]Solution for IAB Architecture**

*Type: draftCR For: -  
 33.501 v16.0.0  
 Source: Samsung*

(Replaces S3-193564)

**Discussion:**

will be living document for next meeting

Orange: needs to remain as skeleton only

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

**S3-193611 DraftCR –Security handling for IAB**

*Type: draftCR For: Approval  
 33.501 v16.0.0  
 Source: Ericsson*

**Discussion:**

QC: prefer Samsung proposal

Nokia: need some merger, start with Samsung proposal

Nokia: there is no IAB network, it is an IAB node

QC: diagram shows IAB architecture, not security architecture

QC: approach is model after SNPN, disagree with that approach, prefer the main clauses of 501 and 401

offline, merge into 808

Todor: no coontent from was taken from 611

Samsung: correct

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

#### 5.15.2 Study (FS\_NR\_IAB\_Sec)

**S3-193565 Updates to Solution #2.1 on MT functionality**

*Type: pCR For: (not specified)  
 33.824 v0.4.0  
 Source: Samsung*

**Discussion:**

E//: is this copy paste from SA2

Samsung: yes

Huawei: Note how the IAB node… within UICC is not used,

Thales: why is the note there at all

Nokia: in 23.501, IoB node has gNB functionality, could be many platforms

QC: comment on paragraph above node, bacuse with EPC, there is no EAP support. should be treated as UE in 33.501. prefer the defined primary authentication methods.

Samsung: may be true for one kind of implementation

DCM: stick to existing authentication mechanisms

Nokia: need to be flexible,

Huawei: maybe treat IAB as NPN UE

Samsung: restrict option for EPC.

**Decision:** The document was **revised to S3-193788**.

**S3-193788 Updates to Solution #2.1 on MT functionality**

*Type: pCR For: -  
 33.824 v0.4.0  
 Source: Samsung*

(Replaces S3-193565)

**Discussion:**

Thales: remove the note, sentence above should be removed, if it is a PLMN, it should AKA

Samsung ok with removing note

E//: but keep EAP TLS above

Orange: against

supporting the note and para above: Nokia, E//, Huawei, Samsung; objecting: BT, Thales, Orange

Orange: removed text also related to teh discussion

**Decision:** The document was **revised to S3-193851**.

**S3-193851 Updates to Solution #2.1 on MT functionality**

*Type: pCR For: -  
 33.824 v0.4.0  
 Source: Samsung*

(Replaces S3-193788)

**Discussion:**

BT: without Note, it is ok

QC: ok with this, but add \*subscription\* credential in yellow marked text.

**Decision:** The document was **revised to S3-193855**.

**S3-193855 Updates to Solution #2.1 on MT functionality**

*Type: pCR For: -  
 33.824 v0.4.0  
 Source: Samsung*

(Replaces S3-193851)

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

**S3-193567 Evaluation of solution #2.1**

*Type: pCR For: (not specified)  
 33.824 v0.4.0  
 Source: Samsung*

**Discussion:**

DCM: ok, problem is only whether we restrict further

**Decision:** The document was **revised to S3-193789**.

**S3-193789 Evaluation of solution #2.1**

*Type: pCR For: -  
 33.824 v0.4.0  
 Source: Samsung*

(Replaces S3-193567)

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

**S3-193464 Evaluation of solution#2.1**

*Type: pCR For: Approval  
 33.824 v0.4.0  
 Source: Huawei, Hisilicon*

**Discussion:**

E//: ast sentence should go, looks like solution.

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

**S3-193568 Conclusion to Key Issue#2.1 on authentication and authorization of the IAB Node (MT)**

*Type: pCR For: (not specified)  
 33.824 v0.4.0  
 Source: Samsung*

**Discussion:**

QC: solution 2.1 is open

DCM: be more specific what will be normative

Nokia: fine with the contribution as is

Chair only Note and para above is open of 2.1

Thales: same problem, keep open

**Decision:** The document was **revised to S3-193790**.

**S3-193790 Conclusion to Key Issue#2.1 on authentication and authorization of the IAB Node (MT)**

*Type: pCR For: -  
 33.824 v0.4.0  
 Source: Samsung*

(Replaces S3-193568)

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

**S3-193357 F1 security establishment**

*Type: pCR For: Approval  
 33.824 v0.4.0  
 Source: Qualcomm Incorporated*

**Discussion:**

Nokia: DU setup is basically is a wireline interface. Defined solution may not scale

DCM: VPN is used in many corporates at scale

QC: this is a solution proposal, so what is the problem

Huawei: ed note what is the difference between wireless and wireline.

Nokia: solution can go in, but need to capture in evaluation

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

**S3-193358 Evaluation on Solution #3.1: F1 security context establishment**

*Type: pCR For: Approval  
 33.824 v0.4.0  
 Source: Qualcomm Incorporated, Ericsson*

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

**S3-193791 Evaluation on Solution #3.1: F1 security context establishment**

*Type: pCR For: Approval  
 33.824 v0.4.0  
 Source: Qualcomm Incorporated, Ericsson*

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

**S3-193572 Evaluation of solution #3.1**

*Type: pCR For: (not specified)  
 33.824 v0.4.0  
 Source: Samsung*

**Discussion:**

QC: unclear where the requirement comes from.

E//: support QC, interface security should look the same for wireless and wireline

Nokia: prefer 572

QC: why one credential, how do you attach to management server.

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

**S3-193359 Conclusion on KI #4.1: F1 interface security**

*Type: pCR For: Approval  
 33.824 v0.4.0  
 Source: Qualcomm Incorporated, Ericsson*

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

**S3-193573 Conclusion to Key Issue#2.1 on authentication and authorization of the IAB Node (gNB-DU)**

*Type: pCR For: (not specified)  
 33.824 v0.4.0  
 Source: Samsung*

**Discussion:**

DCM: think about platform security keys

Samsung: IAB has gNB requirements, so no platform security

**Decision:** The document was **revised to S3-193792**.

**S3-193792 Conclusion to Key Issue#2.1 on authentication and authorization of the IAB Node (gNB-DU)**

*Type: pCR For: -  
 33.824 v0.4.0  
 Source: Samsung*

(Replaces S3-193573)

**Discussion:**

orange: from where to where IPsec is established

QC: delete last three sentences

**Decision:** The document was **revised to S3-193856**.

**S3-193856 Conclusion to Key Issue#2.1 on authentication and authorization of the IAB Node (gNB-DU)**

*Type: pCR For: -  
 33.824 v0.4.0  
 Source: Samsung*

(Replaces S3-193792)

**Discussion:**

E//: not ok

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

**S3-193462 Discussion on binding between USIM/UICC and IAB-node**

*Type: pCR For: Discussion  
 33.824 v0.4.0  
 Source: Huawei, Hisilicon*

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

**S3-193463 Key issue on removal of UICC card in IAB node**

*Type: pCR For: Approval  
 33.824 v0.4.0  
 Source: Huawei, Hisilicon*

**Discussion:**

Nokia: agree with first requirement, but second requirement assumes removable UICC, should go away

BT: support second requirement staying, to remove

Huawei: competing 654

together with 654

**Decision:** The document was **revised to S3-193793**.

**S3-193793 Key issue on removal of UICC card in IAB node**

*Type: pCR For: Approval  
 33.824 v0.4.0  
 Source: Huawei, Hisilicon*

(Replaces S3-193463)

**Discussion:**

BT: agrees

Orange: don't include primary authenticaiton

**Decision:** The document was **revised to S3-193852**.

**S3-193852 Key issue on removal of UICC card in IAB node**

*Type: pCR For: Approval  
 33.824 v0.4.0  
 Source: Huawei, Hisilicon*

(Replaces S3-193793)

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

**S3-193654 UICC removal from IAB-node**

*Type: pCR For: Approval  
 33.824 v0.4.0  
 Source: THALES*

**Abstract:**

New Key Issue related to UICC removal from IAB-node

**Discussion:**

DCM: a bit like a solution, but threats are valid

QC: question whether threats exist in case same key is used

E//: first sentence sounds like IAB always conatins UICC

DCM: if no UICC is used, then key could be stolen in a different way

offline try to merge into 793

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

**S3-193519 New key issue on protection against Man-in-the-Middle false IAB node attacks**

*Type: pCR For: Approval  
 33.824 v0.4.0  
 Source: ZTE Corporation*

**Discussion:**

Huawei: merge with 793

E//: not related, one has to break F1 security

Nokia: disagree with tdoc

QC: disagree with tdoc

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

**S3-193521 Editorial correction to TR 33.824**

*Type: pCR For: Approval  
 33.824 v0.4.0  
 Source: ZTE Corporation*

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

**S3-193807 draft TR 33.824**

*Type: draft TR For: Approval  
 33.824 v0.5.0  
 Source: Samsung*

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

### 5.16 Study on Security Aspects of 3GPP support for Advanced V2X Services (FS\_eV2X\_Sec)

**S3-193667 Reply LS on protection of PC5-RRC messages for sidelink unicast communication**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: R2-1911863*

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

**S3-193665 LS on NR V2X Security for user plane data and PDCP SN size**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to -, cc -  
 Source: R2-1911681*

**Decision:** The document was **replied to in S3-193854**.

**S3-193854 Reply to: LS on NR V2X Security for user plane data and PDCP SN size**

*Type: LS out For: approval  
 to RAN2  
 Source: LG*

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

**S3-193350 Discussion for a response LS on NR V2X Security for user plane data and PDCP SN size**

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

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

**S3-193426 [draft] reply LS on NR V2X Security for user plane data and PDCP SN size**

*Type: LS out For: (not specified)  
 to RAN2  
 Source: LG Electronics France*

**Decision:** The document was **revised to S3-193778**.

**S3-193778 [draft] reply LS on NR V2X Security for user plane data and PDCP SN size**

*Type: LS out For: -  
 to RAN2  
 Source: LG Electronics France*

(Replaces S3-193426)

**Discussion:**

QC: include key ID, confirm LCID are input to keystreams, in Q2, add key ID, 12 bit requires faster rekeying.

**Decision:** The document was **revised to S3-193854**.

**S3-193304 33.836 - solution #1 update**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: InterDigital Communications*

**Abstract:**

This contribution addresses the following Editor Notes:

• Editor’s Note: Further explanation on the protection of exchanged messages is needed.

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

**S3-193312 33.836 – evaluation for the Solution #1**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: InterDigital Communications*

**Abstract:**

This contribution adds evaluation for the Solution #1.

**Discussion:**

QC: SA2 link layer is two roundtrip, this is 3 roundtrips, analysis needs to be done

IDCC: ed note how to address mismatch with SA?2

QC: ed note: securtiy comparison with SA2 solution for link layer update is FFS

DCM: remove and/or

ed note and and/or

**Decision:** The document was **revised to S3-193795**.

**S3-193795 33.836 – evaluation for the Solution #1**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: InterDigital Communications*

(Replaces S3-193312)

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

**S3-193307 TR 33.836 solution #4 update**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: InterDigital Communications*

**Abstract:**

This contribution addresses the following Editor Notes:

• Editor’s Note: Adherence of this solution to 5G ProSe Architecture and Security to be clarified.

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

**S3-193316 TR 33.836 – evaluation of the solution #4**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: InterDigital Communications*

**Abstract:**

This contribution adds evaluation for the solution #4.

**Discussion:**

QC: this requires partial ciphering to direct SMC command, adds complexity: add editors note: compleity of adding partial ciphering to the direct security mode command compared to the benefit of the simultaneous updates is FFS.

Ed note

**Decision:** The document was **revised to S3-193796**.

**S3-193796 TR 33.836 – evaluation of the solution #4**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: InterDigital Communications*

(Replaces S3-193316)

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

**S3-193345 Providing some analysis to solution #9 in TR 33.836**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: Qualcomm Incorporated*

**Discussion:**

Intel: disagree with all of the evaluation: no regulatory requirements, credential provsioning KMS is responsible, there are options available, what has privacy to do with credentials, can be achieved by changing session keys, credentials are never exposed.

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

**S3-193429 Resolution of Editors notes for Key issue 1 and 8**

*Type: pCR For: (not specified)  
 33.836 v0.3.0  
 Source: LG Electronics France*

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

**S3-193305 TR 33.836 - update for solution #2**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: InterDigital Communications*

**Abstract:**

This contribution addresses the following Editor Notes:

• Editor’s Note: Adherence of this solution to 5G ProSe Architecture and Security to be clarified.

**Discussion:**

LG: this doesn't adhere to SA2 TS, There only initiating UE sends TCR, here the responding also sends TCR

QC: agree, but part of the solution, so put this into the evaluation. Add ed note

don't add note

**Decision:** The document was **revised to S3-193797**.

**S3-193797 TR 33.836 - update for solution #2**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: InterDigital Communications*

(Replaces S3-193305)

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

**S3-193314 TR 33.836 - evaluation for the solution #2**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: InterDigital Communications*

**Abstract:**

This contribution adds evaluation for the solution #2.

**Discussion:**

QC: ed note, similar to other IDCC contribition. "Justification for the difference to SA2 call flow is FFS"

QC: remove last sentence

ed note, remove last sentence

**Decision:** The document was **revised to S3-193798**.

**S3-193798 TR 33.836 - evaluation for the solution #2**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: InterDigital Communications*

(Replaces S3-193314)

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

**S3-193306 TR 33.836 - solution #3 update**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: InterDigital Communications*

**Abstract:**

This contribution addresses the following Editor Notes:

• Editor’s Note: Adherence of this solution to 5G ProSe Architecture and Security to be clarified.

• Editor’s Note: Differences between this solution and Solution #2 to be highlighted.

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

**S3-193315 TR 33.836 - evaluation for the solution #3**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: InterDigital Communications*

**Abstract:**

This contribution adds evaluation for the solution #3.

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

**S3-193347 Resolving the editor’s note on RRC security establishment in solution #8**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: Qualcomm Incorporated*

**Discussion:**

IDCC: Why does PC5 use the same algorithms

QC: because it has the same termination point

IDCC: make this clear

DCM: make note to shall

QC: ok

IDCC want reasoning

QC: part of evaluation

IDCC: keep as is.

No changes

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

**S3-193348 Resolving the editor’s note on operator knowledge of keys in solution #8**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: Qualcomm Incorporated*

**Discussion:**

Intel: doesn't resolve teh issue

QC: if no confidentiality is provided, then LI is solved.

No changes

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

**S3-193346 Providing some analysis to solution #8 in TR 33.836**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: Qualcomm Incorporated*

**Discussion:**

Intel: new key issue related to this

DCM: ed note (conditional: on accepting new key issue) evaluation regarding new key issue is FFS

IDCC: simiultaneous changes are needed, so this is against SA2

QC: this can only happen when you change the certificate when trying to change ID, so disagree with this statement

IDCC: editors note:conformance to SA2 TS23.287 clause 5.6.1.1 is FFS

LG: no relationship. QC is correct

IDCC: shouldn't be decoupled

DCM add ed note,

QC: privacy on two levels, application and on link. try to work offline on this as alternative to ed note

conditional ed note, resolution or ed note, clause heading 6.8.3

conditional ed note not necessary based on outcome of 520

**Decision:** The document was **revised to S3-193799**.

**S3-193799 Providing some analysis to solution #8 in TR 33.836**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: Qualcomm Incorporated*

(Replaces S3-193346)

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

**S3-193349 Proposed solution for protecting the V2X PC5 traffic at the PDCP**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: Qualcomm Incorporated*

**Discussion:**

LG: this is unicast, so is key ID required?

QC: in Uu, handover is used, do break then make, here you can whange key in active communication

no changes

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

**S3-193351 Solution for the activation of user plane security in NR PC5 unicast**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: Qualcomm Incorporated*

**Discussion:**

Huawei: reuse activation, why define a different policy for UP ini PC5?

QC: add editor's note: details on the user plane activation policy is FFS

ed note

**Decision:** The document was **revised to S3-193800**.

**S3-193800 Solution for the activation of user plane security in NR PC5 unicast**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: Qualcomm Incorporated*

(Replaces S3-193351)

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

**S3-193454 New solution for PC5 layer key derivation using the 5G network keys**

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

**Discussion:**

QC: how does the application derive the PC5 link key?

Huawei: several assumptions: UE is connected to network, has key to derive, not out of coverage

Intel: agree wirth QC

QC: accept the limitiation, why do this if there is a solution for out of coverage.Ed note: what happens on UE out of coverage?

Huawei: 6.8.2 gives this.limitation, and also the benefit af allowing the operator

QC: ed note: how the UE establishes PC5 security when out of coverage is FFS, what happens when the UEs are on different PLMNs

Huawei: described in step 2

QC, only one ed note is ok, then

QC: step 7, how is senidng the PC5 key securedin case of different PLMNs

ed note on out of coverage

**Decision:** The document was **revised to S3-193801**.

**S3-193801 New solution for PC5 layer key derivation using the 5G network keys**

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

(Replaces S3-193454)

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

**S3-193352 Discussion on protection of messages for V2X PC5 unicast**

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

**Discussion:**

IDCC: support LS

QC one or two LSs.

Send LS based on the discussion paper

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

**S3-193342 Solution for privacy of link layer IDs in broadcast and groupcast**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: Qualcomm Incorporated*

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

**S3-193522 A solution against V2X UE tracking based on PC5 identifiers**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: Ericsson LM*

**Discussion:**

Lenovo: this is about L2 destiantion Ids?

QC: source Ids

QC: ok to approve this, and note 342

IDCC: what about privacy of groupcast? Put ed note, privacy of gorupcast is FFS

QC: that is attempted to solve in Lenovo contribution

IDCC: but that doesn't change the group ID

Lenovo: it does

no changes

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

**S3-193343 Conclusion on privacy for groupcast and broadcast**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: Qualcomm Incorporated*

**Discussion:**

QC update to point to 522 soltuion

Huawei: is privacy only based on source id only, make this specific

add "for source layer 2 id"

**Decision:** The document was **revised to S3-193803**.

**S3-193803 Conclusion on privacy for groupcast and broadcast**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: Qualcomm Incorporated*

(Replaces S3-193343)

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

**S3-193557 Identifier conversion in groupcast communication**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: Lenovo, Motorola Mobility*

**Abstract:**

This document addresses Key Issue #4 of TR 33.836.

**Discussion:**

Huawei: second last sentence first para, why in oder not to signal

Lenovo: so in order not to update

Huawei: so interval dT is fixed.problem with time synchronization

QC: remove evaluation line, basically application layer manages time interval

IDCC: use time for synchronization, use unprotected SIB or unprotected time source. add ed note on how to deal with spoofed time source is ffs

DCM: changing of group id may identify group members

BT: how to deal with impact on availability is ffs

remove evaluation, ednote from IDCC and BT

**Decision:** The document was **revised to S3-193804**.

**S3-193804 Identifier conversion in groupcast communication**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: Lenovo, Motorola Mobility*

(Replaces S3-193557)

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

**S3-193556 Update of solution #6**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: Lenovo, Motorola Mobility*

**Abstract:**

This document provides an update of solution #6 of TR 33.836.

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

**S3-193344 Proposed conclusion of security for groupcast**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: Qualcomm Incorporated*

**Discussion:**

Huawei: if there is a key issue groupcast, then there should also be a key issue for broadcast

Lenovo: agree for broadcast, disagree with groupcast conclusion

QC: who supports work on groupcast.

Supporting no normative work for groupcast: QC, ZTE, LG, Huawei; objecting, Lenovo, IDCC

conclusion only about broadcast, include rationale

**Decision:** The document was **revised to S3-193805**.

**S3-193805 Proposed conclusion of security for groupcast**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: Qualcomm Incorporated*

(Replaces S3-193344)

**Discussion:**

QC: keep both group and broadcast., there is a new split key issue on groupcast and broadcast

Huawei: no normative work for groupcast \*for R16\*

Huawei: change title to include broadcast

**Decision:** The document was **revised to S3-193853**.

**S3-193853 Proposed conclusion of security for groupcast**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: Qualcomm Incorporated*

(Replaces S3-193805)

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

**S3-193430 Resolution of Editors notes for Key issue 6**

*Type: pCR For: (not specified)  
 33.836 v0.3.0  
 Source: LG Electronics France*

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

**S3-193321 Adding evaluation to solution #7**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: Huawei, HiSilicon*

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

**S3-193323 Conclsion to Key Issue #7**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: Huawei, HiSilicon*

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

**S3-193327 New solution to minimize the impact on the application layer communication**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: Huawei, HiSilicon*

**Discussion:**

E//: how does it work while maintaining unicast connections

Huawei: see figure

no changes

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

**S3-193431 Conclusion for Key issue 10**

*Type: pCR For: (not specified)  
 33.836 v0.3.0  
 Source: LG Electronics France*

**Decision:** The document was **revised to S3-193779**.

**S3-193779 Conclusion for Key issue 10**

*Type: pCR For: -  
 33.836 v0.3.0  
 Source: LG Electronics France*

(Replaces S3-193431)

**Discussion:**

Huawei: postpone to next meeting, SA still has some concern, also procedure defined in SA6

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

**S3-193453 New solution for UP security policy handling for PC5 and Uu interface**

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

**Discussion:**

QC: policy for PC5 and Uu should be sufficient, local policy should be enough.

Huawei: SA6 has defined a procedure for switching.

IDCC: path switching is part of 5G ProSe, wait for 5G ProSe

Huawei: TR is just study, so put it here as key issue, and study next meeting

LG: include ed note to say we wait for SA2

Nokia: prefer to postpone this and wait for SA2 to define this.

Huawei: ok with ed note.

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

**S3-193324 New Key Issue on Security of broadcast eV2X messages over PC5**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: Huawei, HiSilicon*

**Discussion:**

E//: don't support this key issue

LG: also doesn'T support this

DCM: give reasoning, ok with no requirement

BT: problem with not including it, integrity is important

QC: on unicast the bearer may also be malicious

QC: inlcude rationale from discussion document in conclusion

offline whether required,

**Decision:** The document was **revised to S3-193806**.

**S3-193806 New Key Issue on Security of broadcast eV2X messages over PC5**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: Huawei, HiSilicon*

(Replaces S3-193324)

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

**S3-193436 Minimizing dependency on application layer security**

*Type: pCR For: (not specified)  
 33.836 v0.3.0  
 Source: Intel*

**Discussion:**

QC: privacy requirements will be driven by application

E//: supporting QC

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

**S3-193520 New key issue on security for multi-USIM communication over UU and PC5**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: ZTE Corporation*

**Discussion:**

IDCC: there is no security component, not SA3 issue, threats missing

Nokia: this is not scope in our group

QC: not in scope here

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

**S3-193326 Editorial corrections for eV2X TR 33.836**

*Type: pCR For: Approval  
 33.836 v0.3.0  
 Source: Huawei, HiSilicon*

**Discussion:**

Nokia: sentence on broadcast is not editorial

QC: agree to this sentence

no changes

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

**S3-193495 New solution on KI #9 minimizing the impact of privacy protection mechanism in the application layer communication**

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

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

**S3-193794 draft TR 33.836**

*Type: draft TR For: Approval  
 33.836 v0.4.0  
 Source: LG*

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

**S3-193802 LS on PC5S and PC5 RRC unicast message protection**

*Type: LS out For: Approval  
 to SA2,RAN2,CT1  
 Source: Qualcomm*

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

### 5.17 Study on storage and transport of the security parameters in a 5GC, that are used by the ARPF for Authentication (FS\_5GC\_sec\_storage\_transport)

**S3-193534 KI on Protection of authentication subscription data stored in UDR**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

KPN: Key issue is above transport and storage - better to split this into two key issues as only last sentence is about transfer

Thales: modifcation of data need to authorised as well

DCM: Needs security threat on confidentiality of data and also a threat on copying data to another subcription plus associated requirement

TI: Need to understand what is the sensitive data and subscription authentication data

KPN: Mention of transfer should also be deleted

Vdf: Support DCM new threat

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

**S3-193535 KI on Separation of authentication subscription data from subscription data**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

CMCC: More of an implementation issue rather than a security issue as too difficult to separate them

KPN: Support this key issue

BT: support this key issue - modify to make it "stored and managed" separately

CMMC: Feel that separtion is a soluiton and not a requirement

BT: Biggest threat is people who are runnung the the network should not get access to the more sensitive data

ID: Separate treatment of data is common

DCM: Reformulate the requirement to compartmentalize the the data rather than store it separately

TI: Propose EN that the used terms need to be defined

Hua: Support CMCC comments

**Decision:** The document was **revised to S3-193747**.

**S3-193747 KI on Separation of authentication subscription data from subscription data**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S3-193535)

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

**S3-193746 KI on Protection of authentication subscription data stored in UDR**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

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

**S3-193566 Draft TR 33.845 Storage of sensitive credentials in 5G systems v0.0.0**

*Type: draft TR For: Approval  
 33.845 v0.0.0  
 Source: VODAFONE Group Plc*

**Abstract:**

base document with content agreed in S3-192125

**Discussion:**

Introduction removed

Duplicate clauses removed

**Decision:** The document was **revised to S3-193744**.

**S3-193744 Draft TR 33.845 Storage of sensitive credentials in 5G systems v0.0.0**

*Type: draft TR For: Approval  
 33.845 v0.0.0  
 Source: VODAFONE Group Plc*

(Replaces S3-193566)

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

**S3-193630 ARPF Deployment models**

*Type: pCR For: Approval  
 33.845 v0.0.0  
 Source: Ericsson*

**Abstract:**

This pCR proposes content for the TR 33.845 to describe the different deployment options for ARPF in relation to UDR, UDM and HSS/AuC

**Discussion:**

Nok: Do not think that the level of detail is needed for this TR

BT: Think it is useful so suggets putting in an Annex

KPN: Agree that is should go there

TI: Some content should go in but does not fit with skeleton

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

**S3-193634 Security Parameter Storage**

*Type: pCR For: Approval  
 33.845 v0.0.0  
 Source: Ericsson*

**Abstract:**

This pCR proposes content for the TR 33.845 to describe the different models for security parameter storage.

**Discussion:**

KPN: Confused about the limiting the storage in this contribution - move text in scenario C to model B and remove text about model A as out of scope

TI: realtionship between the various parameters need to be clarified

Nok: Clause 4.2.1 should not be included as it is the wrong part of TR

DCM: Part of 4.2.1 is wrong

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

**S3-193647 Privacy Aspects of ARPF deployment**

*Type: pCR For: Approval  
 33.845 v0.0.0  
 Source: Ericsson*

**Abstract:**

This pCR proposes content for the TR 33.845 to describe the security assumptions related to the support of the subscription privacy feature in relation to the deployment of ARPF and UDR.

**Discussion:**

Nok: remove last paragraph and shift 3rd paragraph to become 2nd paragraph

**Decision:** The document was **revised to S3-193748**.

**S3-193748 Privacy Aspects of ARPF deployment**

*Type: pCR For: Approval  
 33.845 v0.0.0  
 Source: Ericsson*

(Replaces S3-193647)

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

**S3-193745 draft TR 33.845**

*Type: draft TR For: Approval  
 33.845 v0.1.0  
 Source: Samsung*

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

## 6 Any Other Business

**S3-193370 Security aspects of RLOS**

*Type: draftCR For: Endorsement  
 33.501 v16.0.0  
 Source: Qualcomm Incorporated*

**Discussion:**

QC: should be for information

DCM: out of scope

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

**S3-193455 New SID: Study on Security Aspects of Enhancement of Support for Edge Computing in 5GC**

*Type: SID new For: Approval  
 Source: China Unicom, CAICT, China Telecom, Huawei, Hisilicon, ZTE*

**Discussion:**

Orange: simplify objective by pointing to SA2 work,

Samsung: split this into two

Thales: don't know for UICC

QC: this is release 17, so not really for endorsement

CMCC: are there objections

QC: process needs to be adhered

Nokia: too early to start on this, wait more for SA2 progress

QC: have similar comment

feedback given, to be noted

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

**S3-193458 Discussion on potential solutions to security handling of AMF reallocation**

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

**Discussion:**

DCM: not in scope

Nokia: waitinig for reply LS from SA2

Huawei: decision is to do nothing in SA2

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

**S3-193505 Discussion on 5G UE privacy when connecting to EPC**

*Type: discussion For: Agreement  
 Source: Apple*

**Discussion:**

DCM: if this is proposal for a new study item, the in scope, technically it will be very difficult

Nokia: will be very difficult to do this in all networks

QC: in 5G study, we looked at this in detail, but didn't get a working solution

Huawei: agree

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

**S3-193510 EAP-AKA privacy enhancement in non-3GPP access to EPS**

*Type: SID new For: Approval  
 Source: Apple*

**Decision:** The document was **revised to S3-193629**.

**S3-193623 TLS certificates for SBA: profile and provisioning**

*Type: discussion For: Endorsement  
 Source: Ericsson*

**Discussion:**

CMCC: not to include provisioning in study

Huawei: without provisioning, the solution is already in eSBA

QC: is this also for RAN, or only core?

E//: this is core netowrk only

QC: useful to include gNB in scope for certificate enrolment

Nokia: profile needs to be defined, especially in virtual environment, profile in R16, provisioning in R17

BT: revocation and deprovisioning needs to included

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

**S3-193629 New SID on EPS AKA and EAP-AKA privacy enhancement in EPS**

*Type: SID new For: Approval  
 Source: Apple, Google, AT&T, Verizon UK Ltd, Accuris Networks, Charter Communications, Cablelabs, Article19, Sprint, Comcast, Broadcom*

(Replaces S3-193510)

**Discussion:**

CMCC: does not support this

QC: is for R17, was already studied in R15, so why should be possible now

Nokia: shouldn't be started because it would waste time

BT: explicitly look at migration strategy and bid down prevention

Orange: in places talking about authentication method, talk about the access, from where to where should the IMSI be concealed.

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

**S3-193671 New WID: Security Aspects of PARLOS**

*Type: WID new For: Discussion  
 Source: SPRINT Corporation*

**Discussion:**

orange: normative or informative

Sprint: no decision in the WID, but in TR

agreement: whether this is captured in an informative or normative annex is FFS.

E//: also wants to support, comment acronym

Supporting: E//; Samsung, T-Mobile

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

**S3-193672 New WID for User Plane Gateway Function for the Inter-PLMN Security**

*Type: WID new For: Agreement  
 Source: Juniper Networks*

**Discussion:**

There was discussion on the location of the UPF, i.e whether it is co-located etc.

DCM: had discussion previously and concluded that it was different function as it doe not terminate the interface - coloaction is then a deployment option

Chair: ask if anyone is against the split

BT: would rather keep them together

Chair: explained that it was due to part of the work following SA2 and UP gateway part being standalone

Juniper: It is a clean separation of the work item

It is generally agreed that should be a split

Taken offline for discussion of an objective

**Decision:** The document was **revised to S3-193718**.

**S3-193718 New WID for User Plane Gateway Function for the Inter-PLMN Security**

*Type: WID new For: Agreement  
 Source: Juniper Networks*

(Replaces S3-193672)

**Discussion:**

Needs to be re-submitted fro agreement in Reno meeting

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

**S3-193839 SA3 meeting calendar**

*Type: other For: Information  
 Source: WG Chair*

**Discussion:**

IDCC: SA#100 cadjacent to independence day weekend

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

**S3-193840 draft agenda SA3#97**

*Type: other For: Information  
 Source: WG Chair*

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

## 7 Close

The Chair thanks host, CF3, Huawei for the social event, vice chairmen and everyone for the hard work

## Annex A: List of contribution documents

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Document | Title | Source | Decision | Replaces | Replaced by |
| S3-193300 | Agenda | WG Chair | revised |  | S3-193681 |
| S3-193301 | TR 33.813 - update for solution #11 | InterDigital Communications | approved |  |  |
| S3-193302 | TR 33.819 – update of DH based solution for CAG ID privacy | InterDigital Communications | approved |  |  |
| S3-193303 | TR 33.819 – update of Hash based solution for CAG ID privacy | InterDigital Communications | approved |  |  |
| S3-193304 | 33.836 - solution #1 update | InterDigital Communications | approved |  |  |
| S3-193305 | TR 33.836 - update for solution #2 | InterDigital Communications | revised |  | S3-193797 |
| S3-193306 | TR 33.836 - solution #3 update | InterDigital Communications | approved |  |  |
| S3-193307 | TR 33.836 solution #4 update | InterDigital Communications | approved |  |  |
| S3-193308 | TR 33.819 – review and comparative evaluation of solution for CAG ID privacy | InterDigital Communications | noted |  |  |
| S3-193309 | TR 33.813 - update for the evaluation for solution #11 | InterDigital Communications | revised |  | S3-193823 |
| S3-193310 | TR 33.819 – evaluation of DH based solution for CAG ID privacy | InterDigital Communications | revised |  | S3-193826 |
| S3-193311 | TR 33.819 – evaluation of Hash based solution for CAG ID privacy | InterDigital Communications | revised |  | S3-193827 |
| S3-193312 | 33.836 – evaluation for the Solution #1 | InterDigital Communications | revised |  | S3-193795 |
| S3-193313 | Resolving EN in TR33.855 6.18 N9 NDS/IP | Juniper Networks, NTT DoCoMo, Ericsson | revised |  | S3-193728 |
| S3-193314 | TR 33.836 - evaluation for the solution #2 | InterDigital Communications | revised |  | S3-193798 |
| S3-193315 | TR 33.836 - evaluation for the solution #3 | InterDigital Communications | approved |  |  |
| S3-193316 | TR 33.836 – evaluation of the solution #4 | InterDigital Communications | revised |  | S3-193796 |
| S3-193317 | TR 33.813 – review and comparative evaluation of solution for NSSAI privacy | InterDigital Communications | noted |  |  |
| S3-193318 | FS\_SIV TR 33.848 v030c | BT plc | revised |  | S3-193749 |
| S3-193319 | 33:846: mitigation against linkability attack | THALES | revised |  | S3-193811 |
| S3-193320 | Proposal to solve ED notes in solution#4: Zero-overhead user plane integrity protection on the link layer | Philips International B.V. | revised |  | S3-193691 |
| S3-193321 | Adding evaluation to solution #7 | Huawei, HiSilicon | approved |  |  |
| S3-193322 | Editorial corrections for TR 33.819 | Huawei, HiSilicon | approved |  |  |
| S3-193323 | Conclsion to Key Issue #7 | Huawei, HiSilicon | approved |  |  |
| S3-193324 | New Key Issue on Security of broadcast eV2X messages over PC5 | Huawei, HiSilicon | revised |  | S3-193806 |
| S3-193325 | Evaluation of solutions addressing Key Issue #6.2 | Huawei, HiSilicon | noted |  |  |
| S3-193326 | Editorial corrections for eV2X TR 33.836 | Huawei, HiSilicon | approved |  |  |
| S3-193327 | New solution to minimize the impact on the application layer communication | Huawei, HiSilicon | approved |  |  |
| S3-193328 | TR 33.848 Scope Update | BT plc | revised |  | S3-193751 |
| S3-193329 | Resolve EN on signaling details of how UE hands over to FBS | Huawei, HiSilicon | approved |  |  |
| S3-193330 | Resolve second and third EN in Solution #6 | Huawei, HiSilicon | revised |  | S3-193757 |
| S3-193331 | Solution#4: resolving EN network verification of hashes of MIB/SIBs | Huawei, HiSilicon | approved |  |  |
| S3-193332 | Solution#4: Resolving EN Impact on UE power consumption | Huawei, HiSilicon | noted |  |  |
| S3-193333 | Solution #4: Details on hash algorithm used for MIB/SIB hashes. | Huawei, HiSilicon | revised |  | S3-193679 |
| S3-193334 | Address EN in solution #1 | Huawei, HiSilicon | approved |  |  |
| S3-193335 | Enabling UE to detect FBS | Huawei, HiSilicon | noted |  |  |
| S3-193336 | preventing UE from reselecting to FBS | Huawei, HiSilicon | noted |  | - |
| S3-193337 | Avoiding UE from Suffering More MitM Attacks by Handover | Huawei, HiSilicon | noted |  |  |
| S3-193338 | Evaluation of solution #6 | Huawei, HiSilicon | revised |  | S3-193759 |
| S3-193339 | Conclustion for Key issue #3 | Huawei, HiSilicon | noted |  |  |
| S3-193340 | Update of key issue #6 | KPN | revised |  | S3-193766 |
| S3-193341 | Conclusion to Key Issue #4 | KPN | noted |  |  |
| S3-193342 | Solution for privacy of link layer IDs in broadcast and groupcast | Qualcomm Incorporated | noted |  |  |
| S3-193343 | Conclusion on privacy for groupcast and broadcast | Qualcomm Incorporated | revised |  | S3-193803 |
| S3-193344 | Proposed conclusion of security for groupcast | Qualcomm Incorporated | revised |  | S3-193805 |
| S3-193345 | Providing some analysis to solution #9 in TR 33.836 | Qualcomm Incorporated | noted |  |  |
| S3-193346 | Providing some analysis to solution #8 in TR 33.836 | Qualcomm Incorporated | revised |  | S3-193799 |
| S3-193347 | Resolving the editor’s note on RRC security establishment in solution #8 | Qualcomm Incorporated | approved |  |  |
| S3-193348 | Resolving the editor’s note on operator knowledge of keys in solution #8 | Qualcomm Incorporated | approved |  |  |
| S3-193349 | Proposed solution for protecting the V2X PC5 traffic at the PDCP | Qualcomm Incorporated | approved |  |  |
| S3-193350 | Discussion for a response LS on NR V2X Security for user plane data and PDCP SN size | Qualcomm Incorporated | noted |  |  |
| S3-193351 | Solution for the activation of user plane security in NR PC5 unicast | Qualcomm Incorporated | revised |  | S3-193800 |
| S3-193352 | Discussion on protection of messages for V2X PC5 unicast | Qualcomm Incorporated | noted |  |  |
| S3-193353 | Some corrections/clarification for non-public networks annex | Qualcomm Incorporated | merged |  | S3-193705 |
| S3-193354 | Resolving editor’s note on refreshing the parameter in solution #10 | Qualcomm Incorporated | approved |  |  |
| S3-193355 | Resolving editor’s note on relationship between S-NSSAI and the S-NSSAI identifiers in solution #10 | Qualcomm Incorporated | revised |  | S3-193821 |
| S3-193356 | Using MACS to provide freshness for the protection of SQN during a re-synchronisation procedure in AKA | Qualcomm Incorporated | revised | S3-192921 | S3-193812 |
| S3-193357 | F1 security establishment | Qualcomm Incorporated | approved |  |  |
| S3-193358 | Evaluation on Solution #3.1: F1 security context establishment | Qualcomm Incorporated, Ericsson | noted |  | - |
| S3-193359 | Conclusion on KI #4.1: F1 interface security | Qualcomm Incorporated, Ericsson | merged |  | S3-193792 |
| S3-193360 | Evaluation of the shared key based MIB/SIB protection solution | Qualcomm Incorporated | revised | S3-192938 | S3-193754 |
| S3-193361 | Shared key based MIB/SIBs integrity information provided by gNB | Qualcomm Incorporated | noted | S3-192936 |  |
| S3-193362 | Evaluation against MitM false base station attacks | Qualcomm Incorporated | noted | S3-192937 |  |
| S3-193363 | Evaluation on UE behavior on detection of false signature | Qualcomm Incorporated | noted |  |  |
| S3-193364 | Evaluation on signing key management | Qualcomm Incorporated | noted |  |  |
| S3-193365 | Evaluation on Enriched MR | Qualcomm Incorporated | noted |  |  |
| S3-193366 | Key Issue on UE capability protection for CP optimization only CIoT UE | Qualcomm Incorporated | merged |  | S3-193704 |
| S3-193367 | LS on GUTI re-allocation | Qualcomm Incorporated | noted |  |  |
| S3-193368 | Reply LS on SUCI computation from an NSI | Qualcomm Incorporated | noted |  |  |
| S3-193369 | Proposed conclusion for 5G RAN connected to 5GC | Qualcomm Incorporated | revised |  | S3-193698 |
| S3-193370 | Security aspects of RLOS | Qualcomm Incorporated | noted |  |  |
| S3-193371 | TR 33.848 Security Requirements for Key Issue 17 (resubmission of S3-192559) | NCSC | merged |  | S3-193741 |
| S3-193372 | TR 33.848 Security Threats and Requirements for Key Issue 16 (resubmission of S3-192558) | NCSC | revised |  | S3-193742 |
| S3-193373 | TR 33.848: Security Requirements for Key Issue 18 (resubmission of S3-192560) | NCSC | noted |  |  |
| S3-193374 | TR 33.848 Security Requirements for Key Issue 19 (resubmission of S3-192561) | NCSC | revised |  | S3-193773 |
| S3-193375 | TR 33.848 Security Threats and Requirements for Key Issue 21 (resubmission of S3-192562) | NCSC | merged |  | S3-193775 |
| S3-193376 | TR 33.848 Annex – Virtualisation Security Questions (resubmission of S3-193089) | NCSC | noted |  |  |
| S3-193377 | Security for Wireline access to 5G - General | Nokia, Nokia Shanghai Bell | withdrawn |  |  |
| S3-193378 | Authentication for 5G-RG | Nokia, Nokia Shanghai Bell | withdrawn |  |  |
| S3-193379 | Security for Wireline access to 5G - General | Nokia, Nokia Shanghai Bell | revised |  | S3-193686 |
| S3-193380 | Authentication for 5G-RG | Nokia, Nokia Shanghai Bell | merged |  | S3-193687 |
| S3-193381 | Authentication for FN-RG | Nokia, Nokia Shanghai Bell | merged |  | S3-193688 |
| S3-193382 | Authentication for the UE behind the RG | Nokia, Nokia Shanghai Bell | approved |  |  |
| S3-193383 | Security of the interface between W-5GAN and 5GC | Nokia, Nokia Shanghai Bell | revised |  | S3-193689 |
| S3-193384 | Security for trusted non-3GPP access – General | Nokia, Nokia Shanghai Bell | merged |  | S3-193685 |
| S3-193385 | Security procedure for trusted non-3GPP access | Nokia, Nokia Shanghai Bell | merged |  | S3-193685 |
| S3-193386 | Update to 5G\_eSBA WID | Nokia, Nokia Shanghai Bell | approved |  |  |
| S3-193387 | Security requirements for SeCoP | Nokia, Nokia Shanghai Bell | revised |  | S3-193719 |
| S3-193388 | Authentication and authorization between SeCoP and network functions | Nokia, Nokia Shanghai Bell | revised |  | S3-193721 |
| S3-193389 | Authentication and authorization between SeCoPs | Nokia, Nokia Shanghai Bell | revised |  | S3-193722 |
| S3-193390 | Hash based UE capability protection for CP optimization only CIoT UE | Qualcomm Incorporated | noted |  |  |
| S3-193391 | AMF verification of the UE radio capabilities for CP optimization only CIoT UE | Qualcomm Incorporated | noted |  |  |
| S3-193392 | CIoT\_ Modifications to draft CR | Nokia, Nokia Shanghai Bell, Ericsson | revised |  | S3-193717 |
| S3-193393 | Proposed Solution for key issue #6 | Qualcomm Incorporated | revised |  | S3-193692 |
| S3-193394 | draft CR for Security procedures for Network Slices | Nokia, Nokia Shanghai Bell | revised |  | S3-193738 |
| S3-193395 | eNS\_Addition to evaluation of solution 10 | Nokia, Nokia Shanghai Bell, Ericsson | revised |  | S3-193822 |
| S3-193396 | eNS\_Addition of evaluation to solution 11 | Nokia, Nokia Shanghai Bell, Ericsson | revised |  | S3-193824 |
| S3-193397 | KI#7 Revocation of rejected NSSAI | Nokia, Nokia Shanghai Bell | merged |  | S3-193737 |
| S3-193398 | Solution for KI#7 revocation of rejected NSSAI | Nokia, Nokia Shanghai Bell | noted |  |  |
| S3-193399 | Threats and Requirements for Key Issue #8 | Nokia, Nokia Shanghai Bell | revised |  | S3-193739 |
| S3-193400 | Threats and Requirements for Key Issue #13 | Nokia, Nokia Shanghai Bell | revised |  | S3-193740 |
| S3-193401 | Skeloton for eNS | Huawei, HiSilicon | noted |  |  |
| S3-193402 | Introduction to slice-specific authentication | Huawei, HiSilicon | merged |  | S3-193738 |
| S3-193403 | EAP based slice-specific authentication procedure | Huawei, HiSilicon | merged |  | S3-193738 |
| S3-193404 | EAP method negotiation | Huawei, HiSilicon | noted |  |  |
| S3-193405 | Add Evaluation to solution 3 | Huawei, HiSilicon | revised |  | S3-193731 |
| S3-193406 | Conclusion to KI#3 | Huawei, HiSilicon | noted |  |  |
| S3-193407 | Security features for NSaaS | Huawei, HiSilicon | noted |  |  |
| S3-193408 | Addressing EN in solution 6 | Huawei, HiSilicon | revised |  | S3-193734 |
| S3-193409 | Evaluating solution 6 | Huawei, HiSilicon | revised |  | S3-193735 |
| S3-193410 | Concluding KI#4 | Huawei, HiSilicon | revised |  | S3-193736 |
| S3-193411 | On service request in solution 8 | Huawei, HiSilicon | revised |  | S3-193819 |
| S3-193412 | On Ng-RAN node change in solution 8 | Huawei, HiSilicon | revised |  | S3-193820 |
| S3-193413 | Conclusions to KI #6 | Huawei, HiSilicon | noted |  |  |
| S3-193414 | New key issue on PFS | Huawei, HiSilicon | noted |  |  |
| S3-193415 | Discussion for EAP method negotiation | Huawei, HiSilicon | noted |  |  |
| S3-193416 | Overall evaluation of solutions addressing KI#4 | Huawei, HiSilicon | noted |  |  |
| S3-193417 | Overall evaluation of solutions addressing KI#6 | Huawei, HiSilicon | noted |  |  |
| S3-193418 | Threats and Requirements for Key Issue #17 | Nokia, Nokia Shanghai Bell | revised |  | S3-193741 |
| S3-193419 | Threats and Requirements for Key Issue #18 | Nokia, Nokia Shanghai Bell | revised |  | S3-193743 |
| S3-193420 | Threats and Requirements for Key Issue #20 | Nokia, Nokia Shanghai Bell | revised |  | S3-193774 |
| S3-193421 | Threats and Requirements for Key Issue #21 | Nokia, Nokia Shanghai Bell | revised |  | S3-193775 |
| S3-193422 | Threats and Requirements for Key Issue #22 | Nokia, Nokia Shanghai Bell | approved |  |  |
| S3-193423 | Protection of N9 interface in Inter-PLMN scenario | Nokia, Nokia Shanghai Bell, Juniper | revised |  | S3-193723 |
| S3-193424 | Threats and Requirements for Key Issue #23 | Nokia, Nokia Shanghai Bell | revised |  | S3-193776 |
| S3-193425 | Threats and Requirements for Key Issue #24 | Nokia, Nokia Shanghai Bell | revised |  | S3-193777 |
| S3-193426 | [draft] reply LS on NR V2X Security for user plane data and PDCP SN size | LG Electronics France | revised |  | S3-193778 |
| S3-193427 | Discussion on Categorization of the Key Issues | Nokia, Nokia Shanghai Bell | noted |  |  |
| S3-193428 | Security requirements for UP Gateway Function | Nokia, Nokia Shanghai Bell | revised |  | S3-193720 |
| S3-193429 | Resolution of Editors notes for Key issue 1 and 8 | LG Electronics France | approved |  |  |
| S3-193430 | Resolution of Editors notes for Key issue 6 | LG Electronics France | approved |  |  |
| S3-193431 | Conclusion for Key issue 10 | LG Electronics France | revised |  | S3-193779 |
| S3-193432 | Discussion on Security of Multi-CU-UP connectivity | CATT | withdrawn |  |  |
| S3-193433 | LS reply to RAN WG3 LS on security for multi-CU-UP connectivity | CATT | withdrawn |  |  |
| S3-193434 | Draft CR-living doucment for 5G\_eLCS | CATT | merged |  | S3-193702 |
| S3-193435 | Discussion on security context handling in fast RRC release | LG Electronics | noted |  |  |
| S3-193436 | Minimizing dependency on application layer security | Intel | noted |  |  |
| S3-193437 | Protection of UE capability transfer for UEs without AS security | Intel | revised |  | S3-193704 |
| S3-193438 | Security solution for UE Capability Transfer for UE with no AS security. | Intel | noted |  |  |
| S3-193439 | Security solution for UE to avoid connecting to the false base station during a handover procedure | Intel | noted |  |  |
| S3-193440 | Conclusions on Key Issue #3 | Intel | noted |  |  |
| S3-193441 | AKMA: Resolving the EN in AKMA push | Huawei, Hisilicon | revised |  | S3-193761 |
| S3-193442 | AKMA: adding the evaluation of solution #24 | Huawei, Hisilicon | revised |  | S3-193763 |
| S3-193443 | AKMA: add conclusion on KI #17 | Huawei, Hisilicon | noted |  |  |
| S3-193444 | eSBA: add conclusion on KI #5 | Huawei, Hisilicon | noted |  |  |
| S3-193445 | eSBA: add conclusion on KI #24 | Huawei, Hisilicon | noted |  | - |
| S3-193446 | eSBA: add conclusion on KI #28 | Huawei, Hisilicon | noted |  |  |
| S3-193447 | Update on solution#15 in TR 33.855 | Huawei, Hisilicon | revised |  | S3-193730 |
| S3-193448 | Resolving the ENs in solution #5 | Huawei, Hisilicon, Lenovo, Motorola Mobility | revised |  | S3-193835 |
| S3-193449 | Conclusion on KI#5 of TR 33.809 | Huawei, Hisilicon, Lenovo, Motorola Mobility | noted |  |  |
| S3-193450 | New solution for linkability attack | Huawei, Hisilicon | revised |  | S3-193813 |
| S3-193451 | Resolving the ENs in KI#3.1 | Huawei, Hisilicon | noted |  |  |
| S3-193452 | New solution for removing the authentication result from the UDM | Huawei, Hisilicon | noted |  |  |
| S3-193453 | New solution for UP security policy handling for PC5 and Uu interface | Huawei, Hisilicon | noted |  |  |
| S3-193454 | New solution for PC5 layer key derivation using the 5G network keys | Huawei, Hisilicon | revised |  | S3-193801 |
| S3-193455 | New SID: Study on Security Aspects of Enhancement of Support for Edge Computing in 5GC | China Unicom, CAICT, China Telecom, Huawei, Hisilicon, ZTE | noted |  |  |
| S3-193456 | Adding the evaluation of solution #15 | Huawei, Hisilicon | approved |  |  |
| S3-193457 | Adding conclusion on KI #6.2 | Huawei, Hisilicon | noted |  |  |
| S3-193458 | Discussion on potential solutions to security handling of AMF reallocation | Huawei, Hisilicon | noted |  |  |
| S3-193459 | solution on AUTS derivation to protect SQN | Huawei, Hisilicon | revised |  | S3-193815 |
| S3-193460 | Address the EN and add evaluation in solution 2.3 | Huawei, Hisilicon | revised |  | S3-193814 |
| S3-193461 | A solution to protect MIB/SIBs | Huawei, Hisilicon | noted |  |  |
| S3-193462 | Discussion on binding between USIM/UICC and IAB-node | Huawei, Hisilicon | noted |  |  |
| S3-193463 | Key issue on removal of UICC card in IAB node | Huawei, Hisilicon | revised |  | S3-193793 |
| S3-193464 | Evaluation of solution#2.1 | Huawei, Hisilicon | merged |  | S3-193789 |
| S3-193465 | Solution for protection of time synchronization | Huawei, Hisilicon | revised |  | S3-193709 |
| S3-193466 | Conclusion on protection of time synchronization | Huawei, Hisilicon | noted |  |  |
| S3-193467 | Remove the EN and add evaluation to solution 6 | Huawei, Hisilicon | approved |  |  |
| S3-193468 | Propose AKMA architecture | Huawei, Hisilicon | merged |  | S3-193771 |
| S3-193469 | Propose AKMA key hierarchy | Huawei, Hisilicon | merged |  | S3-193772 |
| S3-193470 | Conclusion on 7.3 | Huawei, Hisilicon | noted |  |  |
| S3-193471 | Conclusion on 7.4 | Huawei, Hisilicon | merged |  | S3-193768 |
| S3-193472 | Propose new conlusion section | Huawei, Hisilicon | noted |  |  |
| S3-193473 | Evaluation for solution4 | Huawei, Hisilicon | approved |  |  |
| S3-193474 | Evaluation for solution22 | Huawei, Hisilicon | revised |  | S3-193764 |
| S3-193475 | Implicite AKMA authenticaiton procedure | Huawei, Hisilicon | noted |  |  |
| S3-193476 | draftCR for URLLC | Huawei, Hisilicon | revised |  | S3-193699 |
| S3-193477 | change introduction to align with URLLC architect | Huawei, Hisilicon | revised |  | S3-193700 |
| S3-193478 | clarification on security policy handling | Huawei, Hisilicon | merged |  | S3-193701 |
| S3-193479 | living doc for 5WWC | Huawei, Hisilicon | revised |  | S3-193684 |
| S3-193480 | Authentication for 5G-RG | Huawei, Hisilicon | revised |  | S3-193687 |
| S3-193481 | Authentication for FN-RG | Huawei, Hisilicon | revised |  | S3-193688 |
| S3-193482 | Conclusion for Key Issue #4 | Huawei, Hisilicon | noted |  |  |
| S3-193483 | CR for DDoS mitigation caused by misbehaving CIoT UEs | Huawei, Hisilicon | noted |  |  |
| S3-193484 | Security handling for RRCConnectionRe-establishment Procedure for Control Plane Optimization for 5GS CIoT | Huawei, Hisilicon | noted |  |  |
| S3-193485 | Security handling in Control Plane User Datafor Control Plane Optimization for 5GS CIoT | Huawei, Hisilicon | revised |  | S3-193818 |
| S3-193486 | Merged Solution for RRC Reject Protection | Huawei, Hisilicon, Samsung | noted |  |  |
| S3-193487 | Conclusion for Key Issue #1 for RRC Reject | Huawei, Hisilicon, Samsung | noted |  |  |
| S3-193488 | Update on Protection of RRC Resume Request message | Huawei, Hisilicon | approved |  |  |
| S3-193489 | Conclusion for Key Issue #1 for RRC Resume Request Protection | Huawei, Hisilicon | noted |  |  |
| S3-193490 | Conclusion for Key Issue #2 | Huawei, Hisilicon | noted |  |  |
| S3-193491 | Solution for Avoiding UE connecting to False Base Station during Conditional Handover | Huawei, Hisilicon | revised |  | S3-193760 |
| S3-193492 | LS to RAN1 on Clarification for parameters used to avoid UE connecting to the FBS | Huawei, Hisilicon | withdrawn |  |  |
| S3-193493 | Address EN in solution 23 | Huawei, Hisilicon | noted |  |  |
| S3-193494 | Conclusion of KI#5 | Huawei, Hisilicon | noted |  |  |
| S3-193495 | New solution on KI #9 minimizing the impact of privacy protection mechanism in the application layer communication | Huawei, Hisilicon | withdrawn |  |  |
| S3-193496 | Conclusion on KI#6 | Ericsson, Nokia, Nokia Shanghai Bell | noted |  |  |
| S3-193497 | New KI: Preventing mismatch for EDT with fast release | LG Electronics France | noted |  |  |
| S3-193498 | Conclusin of key issue#2 | Apple | noted |  |  |
| S3-193499 | Update for Solution#7 | Apple | noted |  |  |
| S3-193500 | Evaluation for solution#14 | Apple | noted |  |  |
| S3-193501 | Update of Solution#11 | Apple | noted |  |  |
| S3-193502 | Protection of UeapabilityInformation | Apple | noted |  |  |
| S3-193503 | 5G paging security issue caused by false base station | Apple | noted |  |  |
| S3-193504 | solution for new key issue of 5G paging security issue caused by false base station | Apple | noted |  |  |
| S3-193505 | Discussion on 5G UE privacy when connecting to EPC | Apple | noted |  |  |
| S3-193506 | Meeting minutes of 5GFBS July conference call on July 18th | Apple | noted |  |  |
| S3-193507 | Meeting minutes of 5GFBS August conference call on August 8th | Apple | noted |  |  |
| S3-193508 | Evaluation for Solution#5 in UP IP | Apple | merged |  | S3-193696 |
| S3-193509 | Solution to key issue#5 in UP IP | Apple | revised |  | S3-193694 |
| S3-193510 | EAP-AKA privacy enhancement in non-3GPP access to EPS | Apple | revised |  | S3-193629 |
| S3-193511 | Conclusion of CAG ID Privacy | ZTE Corporation | noted |  |  |
| S3-193512 | CAG ID Privacy for non-public networks | ZTE Corporation | noted |  |  |
| S3-193513 | User identity privacy for GBA in 5GC | ZTE Corporation | noted |  |  |
| S3-193514 | Assessment and evaluation of solution #9 | ZTE Corporation | noted |  |  |
| S3-193515 | Structure RAND for authentication | ZTE Corporation | noted |  |  |
| S3-193516 | Conclusion on linkability issues | ZTE Corporation | noted |  |  |
| S3-193517 | Resolving ENs of solution #12 | ZTE Corporation | revised |  | S3-193825 |
| S3-193518 | Evaluation of solution #12 | ZTE Corporation | noted |  |  |
| S3-193519 | New key issue on protection against Man-in-the-Middle false IAB node attacks | ZTE Corporation | noted |  |  |
| S3-193520 | New key issue on security for multi-USIM communication over UU and PC5 | ZTE Corporation | noted |  |  |
| S3-193521 | Editorial correction to TR 33.824 | ZTE Corporation | approved |  |  |
| S3-193522 | A solution against V2X UE tracking based on PC5 identifiers | Ericsson LM | approved |  |  |
| S3-193523 | TR 33.819 update | Nokia, Nokia Shanghai Bell | approved |  |  |
| S3-193524 | Status of TR | Nokia, Nokia Shanghai Bell | noted |  |  |
| S3-193525 | CAG ID privacy solution considering RAN optimization | Nokia, Nokia Shanghai Bell | approved |  |  |
| S3-193526 | CAG ID privacy conclusion -v1 | Nokia, Nokia Shanghai Bell | noted |  |  |
| S3-193527 | CR CAG ID privacy | Nokia, Nokia Shanghai Bell | noted |  |  |
| S3-193528 | Removal of ed.note on conformance tests | Nokia, Nokia Shanghai Bell | approved |  |  |
| S3-193529 | Editorial correction of format | Nokia, Nokia Shanghai Bell | revised |  | S3-193705 |
| S3-193530 | Conclusion to key issue 2.3 | Nokia, Nokia Shanghai Bell | noted |  |  |
| S3-193531 | CR Interworking between NPN and PLMN | Nokia, Nokia Shanghai Bell | revised |  | S3-193706 |
| S3-193532 | CR Annex 5GLAN | Nokia, Nokia Shanghai Bell | revised |  | S3-193707 |
| S3-193533 | CR Annex TSC | Nokia, Nokia Shanghai Bell | noted |  |  |
| S3-193534 | KI on Protection of authentication subscription data stored in UDR | Nokia, Nokia Shanghai Bell | noted |  |  |
| S3-193535 | KI on Separation of authentication subscription data from subscription data | Nokia, Nokia Shanghai Bell | revised |  | S3-193747 |
| S3-193536 | CIOT: Update of KI#12 description | Ericsson | noted |  |  |
| S3-193537 | CIOT: update to the evaluation of solution #24 | Ericsson, Qualcomm Incorporated | approved |  |  |
| S3-193538 | CIOT: recommendation to support solution #24 to solve KI #11 | Ericsson, Qualcomm Incorporated | approved |  |  |
| S3-193539 | CIOT: Conclusion on KI #4 | Ericsson, Nokia, Nokia Shanghai Bell, Qualcomm Incorporated, Samsung | approved |  |  |
| S3-193540 | CIOT: Conclusion on KI #5 | Ericsson Nokia, Nokia Shanghai Bell, Qualcomm Incorporated, Samsung | revised |  | S3-193711 |
| S3-193541 | CIOT: Discussion on DDoS solutions for KI#4 and KI#5 | Ericsson, Qualcomm Incorporated, Samsung | noted |  |  |
| S3-193542 | CIOT: Title correction solution 13 | Ericsson | approved |  |  |
| S3-193543 | CIOT: Proposed conclusion to KI#10 | Ericsson | approved |  |  |
| S3-193544 | CIOT: Proposed conclusion to KI#7 | Ericsson | revised |  | S3-193712 |
| S3-193545 | CIOT: Proposed clarifications to KI#6 | Ericsson | approved |  |  |
| S3-193546 | CIOT: Proposed\_conclusion\_KI\_8 | Ericsson | revised |  | S3-193713 |
| S3-193547 | CIOT: Proposed\_conclusion\_KI\_6 | Ericsson | approved |  |  |
| S3-193548 | CIOT: Update of Solution #14 | Ericsson | noted |  |  |
| S3-193549 | CIOT: Conclusion for KI#12 | Ericsson | revised |  | S3-193714 |
| S3-193550 | Solution for trusted non-3GPP access | Lenovo, Motorola Mobility | revised |  | S3-193685 |
| S3-193551 | Solution on 5GC access from WLAN UEs that do not support NAS | Lenovo, Motorola Mobility | revised |  | S3-193690 |
| S3-193552 | Conclusion on Key Issue#7 | Lenovo, Motorola Mobility | merged |  | S3-193712 |
| S3-193553 | Clarification on cancellation of rejected S-NSSAIs | Lenovo, Motorola Mobility | revised |  | S3-193737 |
| S3-193554 | Solution on Cancellation of rejected S-NSSAIs | Lenovo, Motorola Mobility | noted |  |  |
| S3-193555 | Update of Solution #15 | Lenovo, Motorola Mobility | revised |  | S3-193836 |
| S3-193556 | Update of solution #6 | Lenovo, Motorola Mobility | noted |  |  |
| S3-193557 | Identifier conversion in groupcast communication | Lenovo, Motorola Mobility | revised |  | S3-193804 |
| S3-193558 | DraftCR – Control Plane optimized solution | Ericsson | merged |  | S3-193818 |
| S3-193559 | DraftCR – RRC Connection Re-Establishment for the control plane for NB-IoT connected to 5GC | Ericsson | noted |  |  |
| S3-193560 | DraftCR – Control Plane optimized solution | Ericsson | withdrawn |  |  |
| S3-193561 | DraftCR – NAS based redirection between 5GS and EPC | Ericsson | approved |  |  |
| S3-193562 | DraftCR - Proposed skeleton for supporting 5G CIoT [Living Document] | Ericsson | revised |  | S3-193716 |
| S3-193563 | Draft CR as a living baseline for 5GS LCS normative work | Ericsson LM | revised |  | S3-193702 |
| S3-193564 | [Draft CR]Solution for IAB Architecture | Samsung | revised |  | S3-193808 |
| S3-193565 | Updates to Solution #2.1 on MT functionality | Samsung | revised |  | S3-193788 |
| S3-193566 | Draft TR 33.845 Storage of sensitive credentials in 5G systems v0.0.0 | VODAFONE Group Plc | revised |  | S3-193744 |
| S3-193567 | Evaluation of solution #2.1 | Samsung | revised |  | S3-193789 |
| S3-193568 | Conclusion to Key Issue#2.1 on authentication and authorization of the IAB Node (MT) | Samsung | revised |  | S3-193790 |
| S3-193569 | CIOT: Discussion paper on ngKSI for NB-IoT in 5G-CIoT. | Ericsson | noted |  |  |
| S3-193570 | CIOT: Discussion paper on short MAC-I for NB-IoT in 5G-CIoT. | Ericsson | noted |  |  |
| S3-193571 | Draft LS reply on LS on short MAC-I and ngKSI for 5G-CIoT | Ericsson | revised |  | S3-193715 |
| S3-193572 | Evaluation of solution #3.1 | Samsung | noted |  |  |
| S3-193573 | Conclusion to Key Issue#2.1 on authentication and authorization of the IAB Node (gNB-DU) | Samsung | revised |  | S3-193792 |
| S3-193574 | Solution for Resumecause protection | Samsung | noted |  |  |
| S3-193575 | Evaluation of solution#14 in TR 33.809 | Samsung | noted |  |  |
| S3-193576 | Updates to Solution#7 on obtaining accurate clock information | Samsung | approved |  |  |
| S3-193577 | Deletion of EN on Location update reject in Solution#7 | Samsung | noted |  |  |
| S3-193578 | Delete the Evaluation for Solution 5 in TR 33.853 | China Mobile | approved |  |  |
| S3-193579 | Resolving Editor’s Note in Solution #1 | Samsung | revised |  | S3-193695 |
| S3-193580 | Add the Evaluation to Solution 5 in TR 33.853 | China Mobile | revised |  | S3-193696 |
| S3-193581 | Conclusion to Key Issue #5 | Samsung | noted |  |  |
| S3-193582 | skeleton of AKMA TS | China Mobile, Nokia, Nokia Shanghai Bell | revised |  | S3-193769 |
| S3-193583 | scope of AKMA TS | China Mobile, Nokia, Nokia Shanghai Bell | revised |  | S3-193770 |
| S3-193584 | draft CR of AKMA architecture | China Mobile, Nokia, Nokia Shanghai Bell | revised |  | S3-193771 |
| S3-193585 | conclusion on key issue #2 | China Mobile | revised |  | S3-193767 |
| S3-193586 | Conclusion on key issue #5 | China Mobile | revised |  | S3-193768 |
| S3-193587 | Conclusion on key issue #6 | China Mobile, KPN | noted |  |  |
| S3-193588 | Conclusion on key issue #13 | China Mobile | approved |  |  |
| S3-193589 | Editorial Changes to TR 33.835 | China Mobile | approved |  |  |
| S3-193590 | Individual Evaluation of solution #6 | China Mobile | approved |  |  |
| S3-193591 | Evaluation of solution#1 | China Mobile | approved |  |  |
| S3-193592 | Evaluations of solution #7- #12 | China Mobile | approved |  |  |
| S3-193593 | Udpate to Solution #3 | Samsung | noted |  |  |
| S3-193594 | Key Issue #6.1 conclusion | Samsung | noted |  |  |
| S3-193595 | Solution Key lifetimes | Ericsson | revised |  | S3-193765 |
| S3-193596 | Skeleton of clause 4 and selected content for AKMA normative work | Ericsson | merged |  | S3-193769 |
| S3-193597 | Solution #15 evaluation removal of EN | Ericsson | approved |  |  |
| S3-193598 | Conclusions on Key management | Ericsson | approved |  |  |
| S3-193599 | AKMA architecture reference model | Ericsson | merged |  | S3-193771 |
| S3-193600 | AKMA Key hierarchy | Ericsson | revised |  | S3-193772 |
| S3-193601 | Existing authentication procedure lacking PFS property | Ericsson | noted |  |  |
| S3-193602 | Correction of conclusion for Key Issue #1 | Ericsson | approved |  |  |
| S3-193603 | New Solution: Protection of the whole RRCResumeRequest message | Ericsson | revised |  | S3-193753 |
| S3-193604 | Way forward for KI#1 against tampering of RRCResumeRequest messages | Ericsson | noted |  |  |
| S3-193605 | Way forward for KI#3 with respect to handover to a False basestation | Ericsson | noted |  |  |
| S3-193606 | Way forward for KI#4 on protection against SON poisoning | Ericsson | noted |  |  |
| S3-193607 | Way forward for KI#5 mitigation against authentication relay. | Ericsson | noted |  |  |
| S3-193608 | Way forward for KI#6 about the resistance to radio jamming | Ericsson | revised |  | S3-193837 |
| S3-193609 | Way forward for KI#7 about the protection against Man-in-the-Middle false basestation attacks | Ericsson | noted |  |  |
| S3-193610 | New solution (SERSI – SERving network controlled SI signatures). | Ericsson | revised |  | S3-193755 |
| S3-193611 | DraftCR –Security handling for IAB | Ericsson | merged |  | S3-193808 |
| S3-193612 | Clarification on identities in TLS and token-based authorization | Ericsson | noted |  |  |
| S3-193613 | Clarification on delegated subscribe-notify | Ericsson | noted |  |  |
| S3-193614 | LS on token-based authorization for indirect communication with delegated discovery (Scenario D) | Ericsson | revised |  | S3-193724 |
| S3-193615 | Implementation of agreed change from SA3#96 | Ericsson | approved |  |  |
| S3-193616 | Update to conclusion on Key issue #22: Authorization of NF service access in indirect communication | Ericsson | noted |  |  |
| S3-193617 | Update to conclusion on Key issue #23: NF to NF authentication and authorization in Indirect communication | Ericsson | noted |  |  |
| S3-193618 | Conclusion of Key Issue #24 Service access authorization within a NF Set or a NF Service Set | Ericsson | noted |  |  |
| S3-193619 | New solution for Key Issue #25 "Indirect communication in roaming scenarios" | Ericsson | revised |  | S3-193725 |
| S3-193620 | Conclusion for Key Issue #25 "Indirect communication in roaming scenarios" | Ericsson | revised |  | S3-193726 |
| S3-193621 | Conclusion of Key Issue #28: Service access authorization in the delegated "Subscribe-Notify" scenarios | Ericsson | noted |  |  |
| S3-193622 | Resource Level Authorization using Access Tokens | Ericsson | noted |  |  |
| S3-193623 | TLS certificates for SBA: profile and provisioning | Ericsson | noted |  |  |
| S3-193624 | Authorization using Access Tokens based on NF-Subtype | Ericsson | noted |  |  |
| S3-193625 | Conclusion for Key Issue #5 "NF-NF Authorization" | Ericsson | noted |  |  |
| S3-193626 | Evaluation update for Solution #25 | Ericsson | noted |  |  |
| S3-193627 | Draft CR: UP security policy for URLLC | Ericsson | revised |  | S3-193701 |
| S3-193628 | Discussion Paper for Security of Performance Measurement Function Protocol | Apple Computer Trading Co. Ltd | noted |  |  |
| S3-193629 | New SID on EPS AKA and EAP-AKA privacy enhancement in EPS | Apple, Google, AT&T, Verizon UK Ltd, Accuris Networks, Charter Communications, Cablelabs, Article19, Sprint, Comcast, Broadcom | noted | S3-193510 |  |
| S3-193630 | ARPF Deployment models | Ericsson | noted |  |  |
| S3-193631 | Trusted access key hierarchy | Ericsson | noted |  |  |
| S3-193632 | Trusted access key derivation | Ericsson | noted |  |  |
| S3-193633 | Subscriber privacy for wireline access | Ericsson | approved |  |  |
| S3-193634 | Security Parameter Storage | Ericsson | noted |  |  |
| S3-193635 | Clarification to the usage of Kausf for solution #2.2 in TR 33.846 | China Mobile | noted |  |  |
| S3-193636 | Discussion on the SUPI guessing attack | China Mobile | noted |  |  |
| S3-193637 | Key issue to mitigate the SUCI guessing attacks in TR 33.846 | China Mobile | revised |  | S3-193810 |
| S3-193638 | Clarifying GVNP model of type 2 | China Mobile | approved |  |  |
| S3-193639 | Adding description for Generic virtualized network product model of type 3 | China Mobile | revised |  | S3-193786 |
| S3-193640 | Adding Generic assets and threats of GVNP for type 1 into clause 5.2.3.b | China Mobile | revised |  | S3-193787 |
| S3-193641 | Adding Generic assets and threats of GVNP for type 2 into clause 5.2.3.c | China Mobile | revised |  | S3-193831 |
| S3-193642 | Adding Generic assets and threats of GVNP for type 3 into clause 5.2.3.d | China Mobile | revised |  | S3-193832 |
| S3-193643 | Adding security requirements into clause 5.2.4 | China Mobile | revised |  | S3-193833 |
| S3-193644 | applying TR33.818 with new 3GPP\_TS-TR\_Template | China Mobile | approved |  |  |
| S3-193645 | Meeting minutes of VNP\_SECAM\_SCAS conference call on 25th September | China Mobile | noted |  |  |
| S3-193646 | UPIP: update of solution #7 and addition of evaluation | Ericsson | revised |  | S3-193697 |
| S3-193647 | Privacy Aspects of ARPF deployment | Ericsson | revised |  | S3-193748 |
| S3-193648 | draft LS to SA2 on the procedure of Secondary authentication | China Mobile Com. Corporation | withdrawn |  |  |
| S3-193649 | Add Clarifications to the Scope of Accreditation for 3GPP VNPs | Nokia, Nokia Shanghai Bell | revised |  | S3-193849 |
| S3-193650 | Add Clarifications to Ultimate Output of SECAM Evaluation | Nokia, Nokia Shanghai Bell | revised |  | S3-193780 |
| S3-193651 | Add Clarifications to 3GPP virtualized network product evaluation process | Nokia, Nokia Shanghai Bell | revised |  | S3-193782 |
| S3-193652 | Add Clarifications to Roles in SECAM for 3GPP virtualized network products | Nokia, Nokia Shanghai Bell | revised |  | S3-193783 |
| S3-193653 | Add Clarifications to SECAM Assurance Level for 3GPP VNPs | Nokia, Nokia Shanghai Bell | revised |  | S3-193784 |
| S3-193654 | UICC removal from IAB-node | THALES | merged |  | S3-193793 |
| S3-193655 | Add Clarifications to Security Baseline for 3GPP VNPs | Nokia, Nokia Shanghai Bell | approved |  |  |
| S3-193656 | Add Clarifications to SCAS documents structure and content | Nokia, Nokia Shanghai Bell | revised |  | S3-193785 |
| S3-193657 | Add Clarifications to generic virtualized network product model description | Nokia, Nokia Shanghai Bell | revised |  | S3-193834 |
| S3-193658 | Nokia comments on CT1 LS C1-195199 | Nokia, Nokia Shanghai Bell | noted |  |  |
| S3-193659 | pCR to TR33.853 on Migration paths for network deployment | NTT DOCOMO INC. | noted |  |  |
| S3-193660 | LS on short MAC-I and ngKSI for 5G-CIoT | C1-195199 | replied to |  |  |
| S3-193661 | LS on 5GS Enhanced support of OTA mechanism for UICC configuration parameter update | C4-193790 | replied to |  |  |
| S3-193662 | LS on SUCI computation from an NSI | CP-192262 | postponed |  |  |
| S3-193663 | PEI for FN-RG Recommendation | BBF | noted |  |  |
| S3-193664 | General Status of Work | BBF | noted |  |  |
| S3-193665 | LS on NR V2X Security for user plane data and PDCP SN size | R2-1911681 | replied to |  |  |
| S3-193666 | Reply to LS on Impersonation Attacks in 4G Networks | R2-1911819 | noted |  |  |
| S3-193667 | Reply LS on protection of PC5-RRC messages for sidelink unicast communication | R2-1911863 | noted |  |  |
| S3-193668 | Reply LS on LTE-M identification in 5GC | R3-194748 | noted |  |  |
| S3-193669 | LS on the IAB-indication to core network | R3-194787 | noted |  |  |
| S3-193670 | N9HR Regulatory Obligations | S3i190548 | postponed |  |  |
| S3-193671 | New WID: Security Aspects of PARLOS | SPRINT Corporation | endorsed |  |  |
| S3-193672 | New WID for User Plane Gateway Function for the Inter-PLMN Security | Juniper Networks | revised |  | S3-193718 |
| S3-193673 | Comments to Draft for ‘proposed structure for network slice security procedures’ in S3-193394 | InterDigital Communications | noted |  |  |
| S3-193674 | Comments to Evaluation for Solution 11 in S3-193396 | InterDigital Communications | noted |  |  |
| S3-193675 | Nokia comments on S3-193412 | Nokia, Nokia Shanghai Bell | noted |  |  |
| S3-193676 | Nokia comments on S3-193517 | Nokia, Nokia Shanghai Bell | noted |  |  |
| S3-193677 | Nokia comments on S3-193417 | Nokia, Nokia Shanghai Bell | noted |  |  |
| S3-193678 | Update to conclusion on Key issue #22: Authorization of NF service access in indirect communication | Nokia, Nokia Shanghai Bell | noted |  |  |
| S3-193679 | Solution #4: Details on hash algorithm used for MIB/SIB hashes. | Huawei, HiSilicon | revised | S3-193333 | S3-193756 |
| S3-193680 | LS on security consideration of performance measurement function protocol | C1-196940 | postponed | - | - |
| S3-193681 | Agenda | WG Chair | approved | S3-193300 | - |
| S3-193682 | Reply to: LS on 5GS Enhanced support of OTA mechanism for UICC configuration parameter update | Nokia | approved | - | - |
| S3-193683 | LS on security consideration of performance measurement function protocol | ZTE Corporation | revised | - | S3-193816 |
| S3-193684 | living doc for 5WWC | Huawei, Hisilicon | approved | S3-193479 | - |
| S3-193685 | Solution for trusted non-3GPP access | Lenovo, Motorola Mobility | approved | S3-193550 | - |
| S3-193686 | Security for Wireline access to 5G - General | Nokia, Nokia Shanghai Bell | approved | S3-193379 | - |
| S3-193687 | Authentication for 5G-RG | Huawei, Hisilicon | approved | S3-193480 | - |
| S3-193688 | Authentication for FN-RG | Huawei, Hisilicon | approved | S3-193481 | - |
| S3-193689 | Security of the interface between W-5GAN and 5GC | Nokia, Nokia Shanghai Bell | approved | S3-193383 | - |
| S3-193690 | Solution on 5GC access from WLAN UEs that do not support NAS | Lenovo, Motorola Mobility | approved | S3-193551 | - |
| S3-193691 | Proposal to solve ED notes in solution#4: Zero-overhead user plane integrity protection on the link layer | Philips International B.V. | approved | S3-193320 | - |
| S3-193692 | Proposed Solution for key issue #6 | Qualcomm Incorporated | approved | S3-193393 | - |
| S3-193693 | Draft TR 33.853 | NTT DOCOMO INC. | approved | - | - |
| S3-193694 | Solution to key issue#5 in UP IP | Apple | approved | S3-193509 | - |
| S3-193695 | Resolving Editor’s Note in Solution #1 | Samsung | approved | S3-193579 | - |
| S3-193696 | Add the Evaluation to Solution 5 in TR 33.853 | China Mobile | approved | S3-193580 | - |
| S3-193697 | UPIP: update of solution #7 and addition of evaluation | Ericsson | approved | S3-193646 | - |
| S3-193698 | Proposed conclusion for 5G RAN connected to 5GC | Qualcomm Incorporated | approved | S3-193369 | - |
| S3-193699 | draftCR for URLLC | Huawei, Hisilicon | approved | S3-193476 | - |
| S3-193700 | change introduction to align with URLLC architect | Huawei, Hisilicon | approved | S3-193477 | - |
| S3-193701 | Draft CR: UP security policy for URLLC | Ericsson | revised | S3-193627 | S3-193848 |
| S3-193702 | Draft CR as a living baseline for 5GS LCS normative work | Ericsson LM | revised | S3-193563 | S3-193847 |
| S3-193703 | draft TR 33.861 | Ericsson | approved | - | - |
| S3-193704 | Protection of UE capability transfer for UEs without AS security | Intel | revised | S3-193437 | S3-193843 |
| S3-193705 | Editorial correction of format | Nokia, Nokia Shanghai Bell | approved | S3-193529 | - |
| S3-193706 | CR Interworking between NPN and PLMN | Nokia, Nokia Shanghai Bell | approved | S3-193531 | - |
| S3-193707 | CR Annex 5GLAN | Nokia, Nokia Shanghai Bell | approved | S3-193532 | - |
| S3-193708 | draft TR 33.819 | Nokia | approved | - | - |
| S3-193709 | Solution for protection of time synchronization | Huawei, Hisilicon | approved | S3-193465 | - |
| S3-193710 | LS on Signalling overload due to malicious Applications on UE | KPN | revised | - | S3-193844 |
| S3-193711 | CIOT: Conclusion on KI #5 | Ericsson Nokia, Nokia Shanghai Bell, Qualcomm Incorporated, Samsung | approved | S3-193540 | - |
| S3-193712 | CIOT: Proposed conclusion to KI#7 | Ericsson | approved | S3-193544 | - |
| S3-193713 | CIOT: Proposed\_conclusion\_KI\_8 | Ericsson | approved | S3-193546 | - |
| S3-193714 | CIOT: Conclusion for KI#12 | Ericsson | approved | S3-193549 | - |
| S3-193715 | Reply to: LS on short MAC-I and ngKSI for 5G-CIoT | Ericsson | approved | - | - |
| S3-193716 | DraftCR - Proposed skeleton for supporting 5G CIoT [Living Document] | Ericsson | approved | S3-193562 | - |
| S3-193717 | CIoT\_ Modifications to draft CR | Nokia, Nokia Shanghai Bell, Ericsson | approved | S3-193392 | - |
| S3-193718 | New WID for User Plane Gateway Function for the Inter-PLMN Security | Juniper Networks | endorsed | S3-193672 | - |
| S3-193719 | Security requirements for SeCoP | Nokia, Nokia Shanghai Bell | approved | S3-193387 | - |
| S3-193720 | Security requirements for UP Gateway Function | Nokia, Nokia Shanghai Bell | approved | S3-193428 | - |
| S3-193721 | Authentication and authorization between SeCoP and network functions | Nokia, Nokia Shanghai Bell | approved | S3-193388 | - |
| S3-193722 | Authentication and authorization between SeCoPs | Nokia, Nokia Shanghai Bell | approved | S3-193389 | - |
| S3-193723 | Protection of N9 interface in Inter-PLMN scenario | Nokia, Nokia Shanghai Bell, Juniper | approved | S3-193423 | - |
| S3-193724 | LS on token-based authorization for indirect communication with delegated discovery (Scenario D) | Ericsson | approved | S3-193614 | - |
| S3-193725 | New solution for Key Issue #25 "Indirect communication in roaming scenarios" | Ericsson | approved | S3-193619 | - |
| S3-193726 | Conclusion for Key Issue #25 "Indirect communication in roaming scenarios" | Ericsson | approved | S3-193620 | - |
| S3-193727 | eSBA: add conclusion on KI #24 | Huawei, Hisilicon | withdrawn | - | - |
| S3-193728 | Resolving EN in TR33.855 6.18 N9 NDS/IP | Juniper Networks, NTT DoCoMo, Ericsson | approved | S3-193313 | - |
| S3-193729 | Draft TR 33.855 | Ericsson | approved | - | - |
| S3-193730 | Update on solution#15 in TR 33.855 | Huawei, Hisilicon | approved | S3-193447 | - |
| S3-193731 | Add Evaluation to solution 3 | Huawei, HiSilicon | approved | S3-193405 | - |
| S3-193732 | draft TR 33.813 | Nokia | approved | - | - |
| S3-193733 | LS on configuaration of security policy for NSaaS | Huawei | noted | - | - |
| S3-193734 | Addressing EN in solution 6 | Huawei, HiSilicon | approved | S3-193408 | - |
| S3-193735 | Evaluating solution 6 | Huawei, HiSilicon | approved | S3-193409 | - |
| S3-193736 | Concluding KI#4 | Huawei, HiSilicon | approved | S3-193410 | - |
| S3-193737 | Clarification on cancellation of rejected S-NSSAIs | Lenovo, Motorola Mobility | noted | S3-193553 | - |
| S3-193738 | draft CR for Security procedures for Network Slices | Nokia, Nokia Shanghai Bell | revised | S3-193394 | S3-193857 |
| S3-193739 | Threats and Requirements for Key Issue #8 | Nokia, Nokia Shanghai Bell | approved | S3-193399 | - |
| S3-193740 | Threats and Requirements for Key Issue #13 | Nokia, Nokia Shanghai Bell | approved | S3-193400 | - |
| S3-193741 | Threats and Requirements for Key Issue #17 | Nokia, Nokia Shanghai Bell | revised | S3-193418 | S3-193828 |
| S3-193742 | TR 33.848 Security Threats and Requirements for Key Issue 16 (resubmission of S3-192558) | NCSC | approved | S3-193372 | - |
| S3-193743 | Threats and Requirements for Key Issue #18 | Nokia, Nokia Shanghai Bell | approved | S3-193419 | - |
| S3-193744 | Draft TR 33.845 Storage of sensitive credentials in 5G systems v0.0.0 | VODAFONE Group Plc | approved | S3-193566 | - |
| S3-193745 | draft TR 33.845 | Samsung | approved | - | - |
| S3-193746 | KI on Protection of authentication subscription data stored in UDR | Nokia, Nokia Shanghai Bell | withdrawn | - | - |
| S3-193747 | KI on Separation of authentication subscription data from subscription data | Nokia, Nokia Shanghai Bell | approved | S3-193535 | - |
| S3-193748 | Privacy Aspects of ARPF deployment | Ericsson | approved | S3-193647 | - |
| S3-193749 | FS\_SIV TR 33.848 v030c | BT plc | approved | S3-193318 | - |
| S3-193750 | Draft TR 33.848 | BT | approved | - | - |
| S3-193751 | TR 33.848 Scope Update | BT plc | approved | S3-193328 | - |
| S3-193752 | Draft TR 33.809 | Apple | approved | - | - |
| S3-193753 | New Solution: Protection of the whole RRCResumeRequest message | Ericsson | approved | S3-193603 | - |
| S3-193754 | Evaluation of the shared key based MIB/SIB protection solution | Qualcomm Incorporated | approved | S3-193360 | - |
| S3-193755 | New solution (SERSI – SERving network controlled SI signatures). | Ericsson | revised | S3-193610 | S3-193845 |
| S3-193756 | Solution #4: Details on hash algorithm used for MIB/SIB hashes. | Huawei, HiSilicon | approved | S3-193679 | - |
| S3-193757 | Resolve second and third EN in Solution #6 | Huawei, HiSilicon | approved | S3-193330 | - |
| S3-193758 | preventing UE from reselecting to FBS | Huawei, HiSilicon | withdrawn | - | - |
| S3-193759 | Evaluation of solution #6 | Huawei, HiSilicon | approved | S3-193338 | - |
| S3-193760 | Solution for Avoiding UE connecting to False Base Station during Conditional Handover | Huawei, Hisilicon | approved | S3-193491 | - |
| S3-193761 | AKMA: Resolving the EN in AKMA push | Huawei, Hisilicon | approved | S3-193441 | - |
| S3-193762 | draft TR 33.835 | China Mobile | approved | - | - |
| S3-193763 | AKMA: adding the evaluation of solution #24 | Huawei, Hisilicon | approved | S3-193442 | - |
| S3-193764 | Evaluation for solution22 | Huawei, Hisilicon | approved | S3-193474 | - |
| S3-193765 | Solution Key lifetimes | Ericsson | approved | S3-193595 | - |
| S3-193766 | Update of key issue #6 | KPN | approved | S3-193340 | - |
| S3-193767 | conclusion on key issue #2 | China Mobile | revised | S3-193585 | S3-193842 |
| S3-193768 | Conclusion on key issue #5 | China Mobile | approved | S3-193586 | - |
| S3-193769 | skeleton of AKMA TS | China Mobile, Nokia, Nokia Shanghai Bell,Ericsson | approved | S3-193582 | - |
| S3-193770 | scope of AKMA TS | China Mobile, Nokia, Nokia Shanghai Bell | approved | S3-193583 | - |
| S3-193771 | draft CR of AKMA architecture | China Mobile, Nokia, Nokia Shanghai Bell | revised | S3-193584 | S3-193841 |
| S3-193772 | AKMA Key hierarchy | Ericsson | approved | S3-193600 | - |
| S3-193773 | TR 33.848 Security Requirements for Key Issue 19 (resubmission of S3-192561) | NCSC | noted | S3-193374 | - |
| S3-193774 | Threats and Requirements for Key Issue #20 | Nokia, Nokia Shanghai Bell | revised | S3-193420 | S3-193829 |
| S3-193775 | Threats and Requirements for Key Issue #21 | Nokia, Nokia Shanghai Bell | approved | S3-193421 | - |
| S3-193776 | Threats and Requirements for Key Issue #23 | Nokia, Nokia Shanghai Bell | approved | S3-193424 | - |
| S3-193777 | Threats and Requirements for Key Issue #24 | Nokia, Nokia Shanghai Bell | approved | S3-193425 | - |
| S3-193778 | [draft] reply LS on NR V2X Security for user plane data and PDCP SN size | LG Electronics France | revised | S3-193426 | S3-193854 |
| S3-193779 | Conclusion for Key issue 10 | LG Electronics France | noted | S3-193431 | - |
| S3-193780 | Add Clarifications to Ultimate Output of SECAM Evaluation | Nokia, Nokia Shanghai Bell | approved | S3-193650 | - |
| S3-193781 | Draft TR 33.818 | China Mobile | approved | - | - |
| S3-193782 | Add Clarifications to 3GPP virtualized network product evaluation process | Nokia, Nokia Shanghai Bell | approved | S3-193651 | - |
| S3-193783 | Add Clarifications to Roles in SECAM for 3GPP virtualized network products | Nokia, Nokia Shanghai Bell | approved | S3-193652 | - |
| S3-193784 | Add Clarifications to SECAM Assurance Level for 3GPP VNPs | Nokia, Nokia Shanghai Bell | approved | S3-193653 | - |
| S3-193785 | Add Clarifications to SCAS documents structure and content | Nokia, Nokia Shanghai Bell | approved | S3-193656 | - |
| S3-193786 | Adding description for Generic virtualized network product model of type 3 | China Mobile | approved | S3-193639 | - |
| S3-193787 | Adding Generic assets and threats of GVNP for type 1 into clause 5.2.3.b | China Mobile | approved | S3-193640 | - |
| S3-193788 | Updates to Solution #2.1 on MT functionality | Samsung | revised | S3-193565 | S3-193851 |
| S3-193789 | Evaluation of solution #2.1 | Samsung | noted | S3-193567 | - |
| S3-193790 | Conclusion to Key Issue#2.1 on authentication and authorization of the IAB Node (MT) | Samsung | noted | S3-193568 | - |
| S3-193791 | Evaluation on Solution #3.1: F1 security context establishment | Qualcomm Incorporated, Ericsson | withdrawn | - | - |
| S3-193792 | Conclusion to Key Issue#2.1 on authentication and authorization of the IAB Node (gNB-DU) | Samsung | revised | S3-193573 | S3-193856 |
| S3-193793 | Key issue on removal of UICC card in IAB node | Huawei, Hisilicon | revised | S3-193463 | S3-193852 |
| S3-193794 | draft TR 33.836 | LG | approved | - | - |
| S3-193795 | 33.836 – evaluation for the Solution #1 | InterDigital Communications | approved | S3-193312 | - |
| S3-193796 | TR 33.836 – evaluation of the solution #4 | InterDigital Communications | approved | S3-193316 | - |
| S3-193797 | TR 33.836 - update for solution #2 | InterDigital Communications | approved | S3-193305 | - |
| S3-193798 | TR 33.836 - evaluation for the solution #2 | InterDigital Communications | approved | S3-193314 | - |
| S3-193799 | Providing some analysis to solution #8 in TR 33.836 | Qualcomm Incorporated | approved | S3-193346 | - |
| S3-193800 | Solution for the activation of user plane security in NR PC5 unicast | Qualcomm Incorporated | approved | S3-193351 | - |
| S3-193801 | New solution for PC5 layer key derivation using the 5G network keys | Huawei, Hisilicon | approved | S3-193454 | - |
| S3-193802 | LS on PC5S and PC5 RRC unicast message protection | Qualcomm | approved | - | - |
| S3-193803 | Conclusion on privacy for groupcast and broadcast | Qualcomm Incorporated | approved | S3-193343 | - |
| S3-193804 | Identifier conversion in groupcast communication | Lenovo, Motorola Mobility | approved | S3-193557 | - |
| S3-193805 | Proposed conclusion of security for groupcast | Qualcomm Incorporated | revised | S3-193344 | S3-193853 |
| S3-193806 | New Key Issue on Security of broadcast eV2X messages over PC5 | Huawei, HiSilicon | approved | S3-193324 | - |
| S3-193807 | draft TR 33.824 | Samsung | approved | - | - |
| S3-193808 | [Draft CR]Solution for IAB Architecture | Samsung | approved | S3-193564 | - |
| S3-193809 | Notes from evening session on eNSI | Qualcomm | noted | - | - |
| S3-193810 | Key issue to mitigate the SUCI guessing attacks in TR 33.846 | China Mobile | approved | S3-193637 | - |
| S3-193811 | 33:846: mitigation against linkability attack | THALES | approved | S3-193319 | - |
| S3-193812 | Using MACS to provide freshness for the protection of SQN during a re-synchronisation procedure in AKA | Qualcomm Incorporated | approved | S3-193356 | - |
| S3-193813 | New solution for linkability attack | Huawei, Hisilicon | approved | S3-193450 | - |
| S3-193814 | Address the EN and add evaluation in solution 2.3 | Huawei, Hisilicon | approved | S3-193460 | - |
| S3-193815 | solution on AUTS derivation to protect SQN | Huawei, Hisilicon | approved | S3-193459 | - |
| S3-193816 | LS on security consideration of performance measurement function protocol | ZTE Corporation | noted | S3-193683 | - |
| S3-193817 | Draft TS 33.535 | China Mobile | approved | - | - |
| S3-193818 | Security handling in Control Plane User Datafor Control Plane Optimization for 5GS CIoT | Huawei, Hisilicon | approved | S3-193485 | - |
| S3-193819 | On service request in solution 8 | Huawei, HiSilicon | approved | S3-193411 | - |
| S3-193820 | On Ng-RAN node change in solution 8 | Huawei, HiSilicon | approved | S3-193412 | - |
| S3-193821 | Resolving editor’s note on relationship between S-NSSAI and the S-NSSAI identifiers in solution #10 | Qualcomm Incorporated | approved | S3-193355 | - |
| S3-193822 | eNS\_Addition to evaluation of solution 10 | Nokia, Nokia Shanghai Bell, Ericsson | approved | S3-193395 | - |
| S3-193823 | TR 33.813 - update for the evaluation for solution #11 | InterDigital Communications | approved | S3-193309 | - |
| S3-193824 | eNS\_Addition of evaluation to solution 11 | Nokia, Nokia Shanghai Bell, Ericsson | approved | S3-193396 | - |
| S3-193825 | Resolving ENs of solution #12 | ZTE Corporation | approved | S3-193517 | - |
| S3-193826 | TR 33.819 – evaluation of DH based solution for CAG ID privacy | InterDigital Communications | approved | S3-193310 | - |
| S3-193827 | TR 33.819 – evaluation of Hash based solution for CAG ID privacy | InterDigital Communications | approved | S3-193311 | - |
| S3-193828 | Threats and Requirements for Key Issue #17 | Nokia, Nokia Shanghai Bell | approved | S3-193741 | - |
| S3-193829 | Threats and Requirements for Key Issue #20 | Nokia, Nokia Shanghai Bell | approved | S3-193774 | - |
| S3-193830 | LS on virtualization security assurance | Orange | approved | - | - |
| S3-193831 | Adding Generic assets and threats of GVNP for type 2 into clause 5.2.3.c | China Mobile | approved | S3-193641 | - |
| S3-193832 | Adding Generic assets and threats of GVNP for type 3 into clause 5.2.3.d | China Mobile | approved | S3-193642 | - |
| S3-193833 | Adding security requirements into clause 5.2.4 | China Mobile | approved | S3-193643 | - |
| S3-193834 | Add Clarifications to generic virtualized network product model description | Nokia, Nokia Shanghai Bell | approved | S3-193657 | - |
| S3-193835 | Resolving the ENs in solution #5 | Huawei, Hisilicon, Lenovo, Motorola Mobility | revised | S3-193448 | S3-193846 |
| S3-193836 | Update of Solution #15 | Lenovo, Motorola Mobility | approved | S3-193555 | - |
| S3-193837 | Way forward for KI#6 about the resistance to radio jamming | Ericsson | approved | S3-193608 | - |
| S3-193838 | LS on GUTI re-allocation | Qualcomm | approved | - | - |
| S3-193839 | SA3 meeting calendar | WG Chair | noted | - | - |
| S3-193840 | draft agenda SA3#97 | WG Chair | noted | - | - |
| S3-193841 | draft CR of AKMA architecture | China Mobile, Nokia, Nokia Shanghai Bell | approved | S3-193771 | - |
| S3-193842 | conclusion on key issue #2 | China Mobile | approved | S3-193767 | - |
| S3-193843 | Protection of UE capability transfer for UEs without AS security | Intel | approved | S3-193704 | - |
| S3-193844 | LS on Signalling overload due to malicious Applications on UE | KPN | approved | S3-193710 | - |
| S3-193845 | New solution (SERSI – SERving network controlled SI signatures). | Ericsson | approved | S3-193755 | - |
| S3-193846 | Resolving the ENs in solution #5 | Huawei, Hisilicon, Lenovo, Motorola Mobility | approved | S3-193835 | - |
| S3-193847 | Draft CR as a living baseline for 5GS LCS normative work | Ericsson LM | approved | S3-193702 | - |
| S3-193848 | Draft CR: UP security policy for URLLC | Ericsson | approved | S3-193701 | - |
| S3-193849 | Add Clarifications to the Scope of Accreditation for 3GPP VNPs | Nokia, Nokia Shanghai Bell | approved | S3-193649 | - |
| S3-193850 | draft TR 33.846 | Ericsson | approved | - | - |
| S3-193851 | Updates to Solution #2.1 on MT functionality | Samsung | revised | S3-193788 | S3-193855 |
| S3-193852 | Key issue on removal of UICC card in IAB node | Huawei, Hisilicon | noted | S3-193793 | - |
| S3-193853 | Proposed conclusion of security for groupcast | Qualcomm Incorporated | approved | S3-193805 | - |
| S3-193854 | Reply to: LS on NR V2X Security for user plane data and PDCP SN size | LG | approved | - | - |
| S3-193855 | Updates to Solution #2.1 on MT functionality | Samsung | noted | S3-193851 | - |
| S3-193856 | Conclusion to Key Issue#2.1 on authentication and authorization of the IAB Node (gNB-DU) | Samsung | noted | S3-193792 | - |
| S3-193857 | draft CR for Security procedures for Network Slices | Nokia, Nokia Shanghai Bell | approved | S3-193738 | - |

## Annex B: Lists of liaisons

### B1: Incoming liaison statements

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Document | Original | Title | From | Decision | Reply TDoc |
| S3-193660 |  | LS on short MAC-I and ngKSI for 5G-CIoT | C1-195199 | replied to | S3-193715 |
| S3-193661 |  | LS on 5GS Enhanced support of OTA mechanism for UICC configuration parameter update | C4-193790 | replied to | S3-193682 |
| S3-193662 |  | LS on SUCI computation from an NSI | CP-192262 | postponed | (none) |
| S3-193663 |  | PEI for FN-RG Recommendation | BBF | noted | (none) |
| S3-193664 |  | General Status of Work | BBF | noted | (none) |
| S3-193665 |  | LS on NR V2X Security for user plane data and PDCP SN size | R2-1911681 | replied to | S3-193854 |
| S3-193666 |  | Reply to LS on Impersonation Attacks in 4G Networks | R2-1911819 | noted | (none) |
| S3-193667 |  | Reply LS on protection of PC5-RRC messages for sidelink unicast communication | R2-1911863 | noted | (none) |
| S3-193668 |  | Reply LS on LTE-M identification in 5GC | R3-194748 | noted | (none) |
| S3-193669 |  | LS on the IAB-indication to core network | R3-194787 | noted | (none) |
| S3-193670 |  | N9HR Regulatory Obligations | S3i190548 | postponed | (none) |
| S3-193680 |  | LS on security consideration of performance measurement function protocol | C1-196940 | postponed | (none) |

### B2: Outgoing liaison statements

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Document | Title | To | Cc | reply to i/c LS |
| S3-193682 | Reply to: LS on 5GS Enhanced support of OTA mechanism for UICC configuration parameter update | CT4 | CT1, CT6, SA2 | S3-193661 |
| S3-193715 | Reply to: LS on short MAC-I and ngKSI for 5G-CIoT | CT1 | - | S3-193660 |
| S3-193724 | LS on token-based authorization for indirect communication with delegated discovery (Scenario D) | SA2 | - | - |
| S3-193802 | LS on PC5S and PC5 RRC unicast message protection | SA2,RAN2,CT1 | - |  |
| S3-193830 | LS on virtualization security assurance | GSMA SECAG | - |  |
| S3-193838 | LS on GUTI re-allocation | CT1 | - |  |
| S3-193844 | LS on Signalling overload due to malicious Applications on UE | SA2 | - | - |
| S3-193854 | Reply to: LS on NR V2X Security for user plane data and PDCP SN size | RAN2 | - | S3-193665 |

## Annex C: List of draft Technical Specifications and Reports

|  |  |  |  |
| --- | --- | --- | --- |
| Document | Spec | vers | Doc title |
| S3-193566 | 33.845 | 0.0.0 | Draft TR 33.845 Storage of sensitive credentials in 5G systems v0.0.0 |
| S3-193582 | 33.535 | 0.0.1 | skeleton of AKMA TS |
| S3-193693 | 33.853 | 0.6.0 | Draft TR 33.853 |
| S3-193703 | 33.861 | 1.4.0 | draft TR 33.861 |
| S3-193708 | 33.819 | 1.3.0 | draft TR 33.819 |
| S3-193729 | 33.855 | 1.8.0 | Draft TR 33.855 |
| S3-193732 | 33.813 | 0.7.0 | draft TR 33.813 |
| S3-193744 | 33.845 | 0.0.0 | Draft TR 33.845 Storage of sensitive credentials in 5G systems v0.0.0 |
| S3-193745 | 33.845 | 0.1.0 | draft TR 33.845 |
| S3-193750 | 33.848 | 0.4.0 | Draft TR 33.848 |
| S3-193752 | 33.809 | 0.7.0 | Draft TR 33.809 |
| S3-193762 | 33.835 | 1.1.0 | draft TR 33.835 |
| S3-193769 | 33.535 | 0.0.1 | skeleton of AKMA TS |
| S3-193781 | 33.818 | 0.5.0 | Draft TR 33.818 |
| S3-193794 | 33.836 | 0.4.0 | draft TR 33.836 |
| S3-193807 | 33.824 | 0.5.0 | draft TR 33.824 |
| S3-193817 | 33.535 | 0.1.0 | Draft TS 33.535 |
| S3-193850 | 33.846 | 0.4.0 | draft TR 33.846 |

## Annex D: List of participants

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| TITLE | Family Name | Given Name | Employer Organization | Employer Category Code | Organization Represented | Organization Represented Category Code |
| Ms. | Andersdotter | Amelia | ARTICLE19 | ETSI | ARTICLE19 | ETSI |
| Mr. | Bakker | John-Luc | BlackBerry UK Limited | ETSI | BlackBerry UK Limited | ETSI |
| Dr. | Ben Henda | Noamen | Ericsson LM | ETSI | Nanjing Ericsson Panda Com Ltd | CCSA |
| 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 Communications | ATIS |
| 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 |
| Dr. | Chen | Chiung-jang | CHTTL | ETSI | CHTTL | ETSI |
| Mr. | Cichonski | Jeffrey | NIST | ATIS | NIST | ATIS |
| Dr. | Corbett | Cherita | Johns Hopkins University APL | ATIS | Johns Hopkins University APL | ATIS |
| Ms. | Deng | Juan | HuaWei Technologies Co., Ltd | CCSA | HUAWEI Technologies Japan K.K. | ARIB |
| 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 |
| Mr. | Ennesser | Fran?ois | Huawei Technologies France | ETSI | Huawei Technologies France | ETSI |
| Dr. | Escott | Adrian | Qualcomm CDMA Technologies | ETSI | Qualcomm CDMA Technologies | ETSI |
| Mr. | Evans | Tim P. | VODAFONE Group Plc | ETSI | Vodafone España SA | ETSI |
| Mr. | Everett | Jared | Johns Hopkins University APL | ATIS | Johns Hopkins University APL | ATIS |
| Mr. | Feng | Cheng | Datang Mobile Com. Equipment | CCSA | Datang Mobile Com. Equipment | CCSA |
| Mr. | Gamishev | Todor | Orange | ETSI | Orange | ETSI |
| Mr. | Gautam | Sheel Priya | Department of Telecom | TSDSI | Department of Telecom | TSDSI |
| Mr. | Goldberg | Martin | U.S. Department of Defense | ATIS | U.S. Department of Defense | ATIS |
| Dr. | Granboulan | Louis | Airbus DS SLC | ETSI | Airbus DS SLC | ETSI |
| Miss | Guo | Ivy | Apple (UK) Limited | ETSI | Apple Poland Sp. z.o.o. | ETSI |
| Mr. | Guo | Longhua | HUAWEI TECH. GmbH | ETSI | HiSilicon Technologies Co. Ltd | CCSA |
| Mr. | Gupta | Varini | Samsung R&D Institute India | TSDSI | Samsung R&D Institute UK | ETSI |
| Mr. | Hanhisalo | Markus | Ericsson LM | ETSI | L.M. Ericsson Limited | ETSI |
| Mr. | Heldenbrand | Rob | Hewlett-Packard Enterprise | ETSI | Hewlett-Packard Enterprise | ETSI |
| Miss | Huang | Xiaoting | China Mobile Com. Corporation | CCSA | China Mobile M2M Company Ltd. | CCSA |
| Miss | Jerichow | Anja | Nokia Germany | ETSI | Nokia Uk | ETSI |
| Dr. | Jost | Christine | Ericsson LM | ETSI | Ericsson-LG Co., LTD | TTA |
| Dr. | Keesmaat | Iko | TNO | ETSI | KPN N.V. | ETSI |
| Dr. | Kim | Joonwoong | LG Electronics France | ETSI | LG Electronics Polska | ETSI |
| Mr. | Kiss | Krisztian | Apple (UK) Limited | ETSI | Apple France | ETSI |
| Mr. | Kohalmi | Steve | Juniper Networks | ETSI | Juniper Networks | ETSI |
| Mr. | Kolekar | Abhijeet | Intel Corporation (UK) Ltd | ETSI | Intel Deutschland GmbH | ETSI |
| Mr. | Kumar | Lalith | Samsung R&D Institute India | TSDSI | Samsung Electronics GmbH | ETSI |
| Dr. | Kunz | Andreas | Motorola Mobility Germany GmbH | ETSI | Lenovo (Beijing) Ltd | CCSA |
| Mr. | Lazara | Dominic | Motorola Solutions UK Ltd. | ETSI | Motorola Solutions Danmark A/S | ETSI |
| Mr. | Leadbeater | Alex | BT plc | ETSI | BT plc | ETSI |
| Dr. | Lee | Soo Bum | Qualcomm Incorporated | ATIS | Qualcomm Wireless GmbH | ETSI |
| Mr. | Lee | Xiaoyang | CISA ECD | ATIS | CISA ECD | ATIS |
| Dr. | Lei | Zander (Zhongding) | HuaWei Technologies Co., Ltd | CCSA | Huawei Technologies Japan K.K. | TTC |
| Mr. | LI | HAIMING | China Mobile Com. Corporation | CCSA | China Mobile E-Commerce Co. | CCSA |
| Mr. | Li | He | Huawei Technologies Co. Ltd. | ETSI | Huawei Telecommunication India | TSDSI |
| Mr. | Li | Weiguang | Qihoo 360 | CCSA | Qihoo 360 | CCSA |
| Mr. | Li | Zhijun | ZTE Corporation | ETSI | ZXNE | CCSA |
| Mr. | Liao | Jun | China Mobile Com. Corporation | CCSA | China Mobile (Hangzhou) Inf. | CCSA |
| Mr. | Liu | Yuze | ZTE Corporation | CCSA | ZTE Wistron Telecom AB | ETSI |
| Mr. | Lu | Fei | ZTE Corporation | ETSI | ZTE Photonics | CCSA |
| Miss | Lu | Wei | Nokia Korea | TTA | Nokia Hungary | ETSI |
| Mr. | Mellqvist | Anders | Sony Europe Limited | ETSI | Sony Europe Limited | ETSI |
| Mr. | Migaldi | Scott | T-Mobile USA Inc. | ATIS | T-Mobile USA Inc. | ATIS |
| Dr. | Muhanna | Ahmad | Futurewei Technologies | ATIS | Futurewei Technologies | ATIS |
| Mr. | Nair | Suresh | Nokia Germany | ETSI | Nokia | ATIS |
| Mr. | Normann | Henrik Andreas | Ericsson LM | ETSI | Ericsson Telecomunicazioni SpA | ETSI |
| Mr. | Oishi | Tateo | Sony Europe B.V. | ETSI | Sony Corporation | ARIB |
| Mr. | Palanigounder | Anand | Qualcomm UK Ltd | ETSI | Qualcomm Finland RFFE Oy | ETSI |
| Mr. | Parambath Sasi | Nivedya | NEC Corporation | ETSI | NEC Telecom MODUS Ltd. | ETSI |
| Mr. | Pätzold | Thomas | Deutsche Telekom AG | ETSI | Deutsche Telekom AG | ETSI |
| Mrs. | Pauliac | Mireille | THALES | ETSI | THALES | ETSI |
| Mr. | PENG | Jin | ZTE Corporation | ETSI | Nubia Technology Co.,Ltd | CCSA |
| Mr. | Qi | Minpeng | China Mobile Com. Corporation | CCSA | China Mobile Group Device Co. | CCSA |
| Mr. | Rajadurai | Rajavelsamy | Samsung R&D Institute UK | ETSI | Samsung R&D Institute India | TSDSI |
| Mr. | RAMASWAMY | BABU SRINIVASA KUMAR | Department of Telecom | TSDSI | Department of Telecom | TSDSI |
| Mr. | Rezaki | Ali | Nokia Germany | ETSI | Nokia Poland | ETSI |
| Mrs. | Rong | Wu | Huawei Technologies Co. Ltd. | ETSI | Huawei Technologies Co. Ltd. | ETSI |
| Mr. | RV | ANIKETHAN | Samsung R&D Institute India | TSDSI | Samsung Electronics Co., Ltd | TTA |
| Mr. | Schroeder | Stefan | Deutsche Telekom AG | ETSI | Deutsche Telekom AG | ETSI |
| Mr. | Schumacher | Greg | SPRINT Corporation | ETSI | Sprint Corporation | ATIS |
| Mr. | Shah | Sapan | Samsung R&D Institute India | TSDSI | Harman GmbH | ETSI |
| Dr. | Shah | Yogendra | Perspecta Labs Inc. | ATIS | Perspecta Labs Inc. | ATIS |
| Mr. | Tangudu | Narendranath Durga | Samsung R&D Institute India | TSDSI | BEIJING SAMSUNG TELECOM R&D | CCSA |
| Mr. | Thewes | Simon | ZITiS | ETSI | ZITiS | ETSI |
| Mr. | Tiwari | Kundan | Samsung R&D Institute India | TSDSI | SAMSUNG R&D INSTITUTE JAPAN | ARIB |
| Ms. | Trakinat | Jean | T-Mobile USA Inc. | ATIS | T-Mobile USA Inc. | ATIS |
| Dr. | Tsiatsis | Vlasios | Ericsson LM | ETSI | Ericsson India Private Limited | TSDSI |
| Mr. | Vujcic | Dragan | IDEMIA | ETSI | IDEMIA | ETSI |
| Dr. | Wan | Tao | CableLabs | ETSI | CableLabs | ETSI |
| Miss | Wang | Haimei | CAICT | CCSA | CAICT | CCSA |
| Mr. | Whorlow | Colin | NCSC | ETSI | HOME OFFICE | ETSI |
| Mr. | Wong | Curt | Charter Communications, Inc | ATIS | Charter Communications, Inc | ATIS |
| Mr. | Wong | Marcus | Futurewei Technologies | ATIS | Futurewei Technologies | ATIS |
| Dr. | Wong | Stan | GSM Association | OTHER | GSM Association | OTHER |
| Mr. | Woodward | Tim | Motorola Solutions Danmark A/S | ETSI | Motorola Solutions Germany | ETSI |
| Miss | Xu | Hui | CATT | ETSI | CICT | CCSA |
| Miss | Yan | Xiaojian | ZTE Corporation | ETSI | ZONSON | CCSA |
| Mrs. | Yang | Hongmei | CAICT | CCSA | CAICT | CCSA |
| Mr. | Yoshizawa | Taka | NEC Europe Ltd | ETSI | NEC Corporation | ETSI |
| Dr. | Zhang | Bo | Huawei Technologies Co. Ltd. | ETSI | HuaWei Technologies Co., Ltd | CCSA |
| Miss | Zhang | Xiaowei | Deutsche Telekom AG | ETSI | Deutsche Telekom AG | ETSI |
| Ms. | ZHAO | BEI | China Mobile Com. Corporation | CCSA | CMDI | CCSA |
| Mr. | Zhou | Wei | CATT | CCSA | CATT | CCSA |
| Miss | Zhou | Xingyue | ZTE Corporation | ETSI | ShenZhen Zhongxing Shitong | CCSA |
| Dr. | Zugenmaier | Alf | NTT DOCOMO INC. | TTC | DOCOMO Communications Lab. | ETSI |

## Annex E: List of future meetings

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Title | Start date | End date (OP) | Town | Country | Reference |
| SA3#97 | 2019-11-18 | 2019-11-22 | Reno | US | S3-97 |
| SA3#98 | 2020-02-10 | 2020-02-14 | Ghuanzhou | CN | S3-98 |