भारत सरकार
संचार मंत्रालय
दूरसंचार विभाग
राष्ट्री य संचार सुरक्षा केंद्र

सत्यमेव जयते

Government of India
Ministry of Communications
Department of Telecommunications
National Centre for Communication Security

Ltr No. NCCS/SAS/6-1/2024-25/ dated at Bengaluru,2nd January, 2025

OFFICE MEMORANDUM

Sub: Expanding the scope of CSR Testing

The ITSARs are consisting of Common Security Requirements (CSR) and Specific Security Requirements (SSR). The CSR clauses are common across most of the ITSARs. SSR clauses are specific to the Communication device. However, the testing infrastructure requirement, skill set requirement may vary from device to device or from group of devices to Group of devices. Hence, it is felt that it is possible to mandate testing CSR clauses of a group of devices and also designate the TSTL for testing CSR clauses of a group of devices.

2. At present, Telecom Security Testing Laboratories (TSTLs) are designated against each ITSAR/device for testing. The TSTLs have to apply for the designation against each ITSAR/device to NCCS. The applicant TSTL is evaluated by SLR division of NCCS based on various parameters including the availability of infrastructure and other resources and capability to test the ITSAR clauses for designation of which the TSTL has applied. At present, the TSTL designated for testing of one ITSAR will be testing CSR and SSR clauses of that ITSAR.

3. In order to bring various communication devices under security testing of at least CSR clauses and to simplify the TSTL designation process, a committee consisting of members from OEMs, TSTLs, academia and NCCS was constituted to study the 42 published ITSARs and to assess the infrastructure and skill set requirements to test the CSR clauses of a group of ITSARs/devices and suggest the grouping of ITSARs for designating the TSTLs against a group of ITSARs/devices for CSR testing. The committee has recommended the grouping of ITSARs/devices as below:

"A. Group I – ITSARs of 23 No.s of 5G Core NFs

(AMF, AuSF, NWDAF, NEF, NRF, N3IWF, SEPP, SCP, SMF, UDM, UPF, BSF, CHF, LMF/GMLC, SMSF, UDR, UDSF, EIR, NSACF, UCMF, AF, NSSF, PCF)

B. Group II – ITSARs of gnodeB (Option 2) and gnodeB (Option 3,4 and 7)

C. Group III – ITSARs of 5 No.s of 4G Core NEs (HSS, SGW, MME, PGW and PCRF)

D. Group IV – Four ITSARs (Wi-Fi CPE, IP Router, CBC and PABX)

E. Group V – Two ITSARs (OLT and ONT)

For the remaining six ITSARs (Network Function Virtualization (NFV), enodeB, Transmission Terminal Equipment (TTE), UICC, Hybrid Set Top Box and Mobile User Equipment), designate the TSTLs for each ITSAR separately."

4. The recommendations of the committee are put for stakeholder consultation and invited comments from all the stakeholders. The comments of the stakeholders were discussed during the stakeholder consultation meeting held on 19.12.2024. During the stakeholder consultation, some of the stakeholders have suggested to include enodeB under Group II pertaining to ITSARs of gnodeB (Option 2) and gnodeB (Option 3,4 and 7) as the tools and testers and infrastructure required are same for testing almost all the CSR clauses of enodeB and gnodeB ITSARs.

5. Based on the inputs received from the stakeholders, it is decided to group ITSARs/devices for designating the TSTLs against a group of ITSARs/devices for CSR testing as below:

A. ***Group I*** *– ITSARs of 23 No.s of 5G Core NFs*

(AMF, AuSF, NWDAF, NEF, NRF, N3IWF, SEPP, SCP, SMF, UDM, UPF, BSF, CHF, LMF/GMLC, SMSF, UDR, UDSF, EIR, NSACF, UCMF, AF, NSSF, PCF)

TSTLs may be mandated to demonstrate the capabilities to test all the 104 clauses. Out of these 104 clauses, 91 clauses can be tested against any one of 23 5G Core NFs. 13 clauses have to be tested against any of the network functions as mentioned in the testing matrix. The testing matrix is enclosed as Annexure-I.

B. ***Group II*** *– ITSARs of enodeB, gnodeB (Option 2) and gnodeB (Option 3, 4 and 7)*

TSTLs may be mandated to demonstrate the capabilities to test all the 95 clauses. Out of these 95 clauses, 78 clauses can be tested against any one Network Element i.e. enodeB/gnodeB SA/NSA. 17 clauses have to be tested against any of the network elements as mentioned in the testing matrix. The testing matrix is enclosed as Annexure-II.

C. ***Group III*** *– ITSARs of 5 No.s of 4G Core NEs (HSS, SGW, MME, PGW and PCRF)*

TSTLs may be mandated to demonstrate the capabilities to test all the 89 clauses. Out of these 89 clauses, 76 clauses can be tested against any one of 4G core NEs. 13 clauses have to be tested against any one of the network elements as mentioned in the testing matrix. The testing matrix is enclosed as Annexure-III.

D. ***Group IV*** *– Four ITSARs (Wi-Fi CPE, IP Router, CBC and PABX)*

TSTLs may be mandated to demonstrate the capabilities to test all the 98 clauses. Out of these 98 clauses, 64 clauses can be tested against any one of the four NEs. 34 clauses have to be tested against any one of the network elements as mentioned in the testing matrix. The testing matrix is enclosed as Annexure-IV.

E. ***Group V*** *– Two ITSARs (OLT and ONT)*

TSTLs may be mandated to demonstrate the capabilities to test all the 79 clauses. Out of these 79 clauses, 73 clauses can be tested against any one of the two NEs. Only 6 clauses have to be tested against any one network element as mentioned in the testing matrix. The testing matrix is enclosed as Annexure-V.

F. *For the remaining five ITSARs (Network Function Virtualization (NFV), Transmission Terminal Equipment (TTE), UICC, Hybrid Set Top Box and Mobile User Equipment), designate the TSTLs for each ITSAR separately."*

6. SLR division may take necessary action to designate the TSTLs as per the above grouping for testing of CSR clauses.

7. SC division may take necessary action to test and certify the communication devices as per the above grouping.

8. Once, a TSTL is designated for testing CSR clauses of a group of ITSARs, the OEMs can approach any of the designated TSTLs for testing CSR clauses of a communication device in that group of ITSARs. On the day of application by OEM for ITSAR testing of a communication device, if only TSTLs designated for testing the CSR clauses of ITSAR are available, then the OEM can get the CSR clauses tested from any of the designated TSTLs and obtain the security certificate. Based on this certificate, OEM can deploy its device in telecom network. If on the day of application by OEM for ITSAR testing of a communication device, there is any TSTL/TSTLs designated for testing both CSR and SSR clauses of ITSAR, then the OEM has to mandatorily approach only those TSTLs and get their device tested for both CSR and SSR clauses and accordingly obtain the security certificate.

Digitally signed by
Nampalli Janardhan
Date: 03-01-2025 12:00:40

Dir (SAS-III)
O/o Sr.DDG, NCCS, Bangalore

Encl: Annexure-I, II, III, IV and V

Copy for information and necessary action to:

1. DDG (SLR)
2. DDG (SC & HQ)
3. All OEMs/Dealers/Importers/applicants- through NCCS website

Copy for kind information to:

1. Member (S), DCC
2. Sr. DDG, TEC
3. DDG(SA), DoT HQ

ANNEXURE-I

TESTING MATRIX FOR 5G CORE NFs (23 No.s)

S No	Clause No.	Clause Title	Criterion to be followed for proving capability for TSTL designation for CSR Part of 23 5G core NFs
1	2.2.11	Suspend accounts on non-use	Test against any one NF from BSF, CHF, LMF/GMLC, SMSF, UDR, UDSF, EIR, NSACF, UCMF,AF ,PCF
2	2.6.9	System Robustness against Unexpected Input	Test against any one NF from BSF, CHF, LMF/GMLC, SMSF, UDR, UDSF, EIR, NSACF, UCMF
3	2.6.10	Security of Backup Data	Test against any one NF from BSF, CHF, LMF/GMLC, SMSF, UDR, UDSF, EIR, NSACF, UCMF
4	2.6.11	Secure Deletion of sensitive Data	Test against any one NF from BSF, CHF, LMF/GMLC, SMSF, UDR, UDSF, NSACF, UCMF
5	2.7.4	GTP-C Filtering (when 5GC is interworking with EPC)	Test against any one of NF from AMF, AuSF, NWDAF, NEF, NRF, N3IWF,SEPP, SCP, SMF, UDM, UPF, CHF
6	2.7.5	GTP-U Filtering	Test against UPF
7	2.11.17	Execute rights exclusive for CGI/Scripting directory	Test against any one of NF from AMF, AuSF, NWDAF, NEF, NRF, N3IWF,SEPP, SCP, SMF, UDM, UPF, AF, LMF/GMLC
8	2.11.18	HTTP User Sessions	Test against any one NF from AMF, AuSF, NWDAF, NEF, NRF, N3IWF,SEPP, SCP, SMF, UDM, UPF, BSF, CHF, SMSF, UDR, UDSF, EIR, NSACF,UCMF, AF, NSSF, PCF
9	2.12.5	Authorization Token Verification Failure Handling within one PLMN	Test against any one NF from AMF, AuSF, NWDAF, NEF, NRF,SEPP, SMF, UDM, UPF, BSF, CHF, LMF/GMLC, SMSF, UDR, UDSF, EIR, NSACF,UCMF, AF, NSSF, PCF
10	2.12.6	Authorization Token Verification Failure Handling in Different PLMNs	Test against any one NF from AMF, AuSF, NWDAF, NEF, NRF, SEPP, SMF, UDM, UPF, BSF, CHF, LMF/GMLC, SMSF, NSACF,AF, NSSF, PCF
11	2.12.7	Protection against JSON Injection Attacks:	Test against any one NF from BSF, CHF, LMF/GMLC, SMSF, UDR, UDSF, EIR, NSACF, UCMF, PCF
12	2.13.8	Correct Handling of Client Credentials Assertion Validation Failure	Test against any one NF from BSF, CHF, LMF/GMLC, SMSF, UDR, UDSF, EIR, NSACF, UCMF
13	2.13.9	Isolation of Compromised Element	Test against any one NF from BSF, CHF, LMF/GMLC, SMSF, UDR, UDSF, EIR, NSACF, UCMF

Note: All other clauses of the 23 5G Core NFs ITSARs can be tested against any of 23 5G core NFs

ANNEXURE-II

TESTING MATRIX FOR enodeB/gnodeB (Option 2,3,4,7)

S No	Clause No.	Clause Title	Criterion to be followed for proving capability for TSTL designation for CSR Part of enodeB/gnodeB (SA/NSA)
1	2.2.9	Protecting Session - Logout function	Test against any one NE 5G gNodeB SA, gNodeB NSA
2	2.2.10	Policy regarding consecutive failed login attempts	Test against any one NE 5G gNodeB SA, gNodeB NSA
3	2.3.10	Self Test	Test against any one NE 5G gNodeB SA, gNodeB NSA
4	2.3.11	Disable software based reset options	Test against 4G eNodeB
5	2.3.12	Disable USB stick detection	Test against 4G eNodeB
6	2.3.13	Lock Down Cron Jobs	Test against 4G eNodeB
7	2.3.14	Change of SSH Port	Test against 4G eNodeB
8	2.7.4	GTP-U Filtering	Test against any one NE 5G gNodeB SA, gNodeB NSA
9	2.8.3	Manipulated packets that are sent to an address of the network device shall not lead to an impairment of availability	Test against any one NE 5G gNodeB SA, gNodeB NSA
10	2.10.10	SYN Flood Prevention	Test against any one NE 5G gNodeB SA, gNodeB NSA
11	2.10.11	Handling of IP options and extensions	Test against any one NE 5G gNodeB SA, gNodeB NSA
12	2.10.12	Restrictions on running Scripts / Batch-processes	Test against any one NE 5G gNodeB SA, gNodeB NSA
13	2.10.13	Restrictions on Soft-Restart	Test against any one NE 5G gNodeB SA, gNodeB NSA
14	2.11.18	HTTP User session	Test against any one NE 5G gNodeB SA, gNodeB NSA
15	2.12.1	No System Password Recovery	Test against any one NE 5G gNodeB SA, gNodeB NSA
16	2.12.2	No Password Reset	Test against 4G eNodeB
17	2.12.8	Security Algorithm Modification	Test against 4G eNodeB

Note: All other clauses of the enodeB and gnodeB (option 2,3,4 and 7) ITSARs can be tested against any of NEs.

ANNEXURE-III

TESTING MATRIX FOR 4G CORE NEs (5 NO.s)

S No	Clause No.	Clause Title	Criterion to be followed for proving capability for TSTL designation for CSR Part of 5 4G core NEs
1	3.10	Self Testing	Test against any one NE from HSS, S-GW, PCRF
2	3.10	Avoidance of Unspecified Wireless Access	Test against any one NE from MME, P-GW
3	3.11	Disable Control + Alt +Del option Requirement	Test against P-GW
4	3.12	Disable USB stick detection Requirement	Test against P-GW
5	3.13	Lock Down Cron Jobs Requirement	Test against P-GW
6	4.3	Avoidance of Unspecified Mode of Access	Test against any one NE from HSS, S-GW, PCRF
7	7.1	Traffic Filtering – Network Level	Test against any one NE from HSS, S-GW, PCRF, P-GW
8	7.3	Traffic Protection – Anti-Spoofing	Test against any one NE from HSS, S-GW, PCRF, P-GW
9	8.3	Filtering IP Options	Test against any one NE from HSS, S-GW, PCRF
10	10.10	Restrictions on running Scripts / Batch-processes	Test against any one NE from HSS, S-GW, PCRF
11	10.11	Restrictions on Soft-Restart	Test against any one NE from HSS, S-GW, PCRF
12	12.1	Remote Diagnostic Procedure – Verification	Test against any one NE from HSS, S-GW, PCRF, MME
13	12.9	Control Plane Traffic Protection	Test against MME

Note: All other clauses of the 4G core NE ITSARs can be tested against any of 4G core NEs.

ANNEXURE-IV

TESTING MATRIX FOR ROUTER, CPE, CBC and PABX

S No	Clause No.	Clause Title	Criterion to be followed for proving capability for TSTL designation for CSR Part of Router CPE CBC PABX
1	2.9	Storage of Passwords in encrypted form	Test against WIFi CPE
2	3.7	Restricting System Boot Source	Test against any of 3 NEs router CBC PABX
3	3.9	Feature / Service Activation Policy	Test against WIFi CPE
4	3.11	Avoidance of Unspecified Wireless Access	Test against IP Router and PABX
5	4.3	No Known Vulnerabilities in System on Chip (SOC) solution	Test against WIFi CPE
6	4.3	Avoidance of Unspecified mode of Access	Test against any of 2 NEs CBC PABX
7	5.1	Audit trail storage and protection	Test against any of 3 NEs router CBC PABX
8	5.3	Secure Log Export	Test against any of 3 NEs router CBC PABX
9	6.2	Cryptographic Module Security Assurance	Test against any of 3 NEs router CBC PABX
10	6.2	Cryptographic Based Secure Communication on Wi-Fi Access	Test against WIFi CPE
11	6.3	Cryptographic Algorithms implementation Security Assurance	Test against any of 4 NEs router CPE CBC PABX
12	6.3	Cryptographic Algorithm selection for Wi-Fi Access	Test against WIFi CPE
13	6.4	Protecting data and information – Confidential System Internal Data	Test against any of 4 NEs router CPE CBC PABX
14	6.4	Crypto-Key Protection Mechanism	Test against WIFi CPE
15	6.6	Protection against Copy of Data	Test against any of 3 NEs router CPE CBC
16	6.7	Protection against Data Exfiltration - Overt Channel	Test against any of 3 NEs router CPE CBC
17	6.8	Protection against Data Exfiltration - Covert Channel	Test against any of 2 NEs router CPE CBC
18	6.9	Protecting data and information - Confidential System Internal Data	Test against WiFi CPE
19	7.1	Traffic Filtering – Network Level	Test against any of 2 NEs router CPE
20	7.2	Traffic Separation	Test against any of 3 NEs router CBC PABX
21	7.3	Traffic Protection –Anti-Spoofing	Test against any of 2 NEs router CBC
22	8.1	Network Level and application level DDoS	Test against any of 3 NEs router CBC PABX
23	8.3	Filtering IP Options	Test against any of 3 NEs router CPE CBC
24	9.4	SSID Scanning	Test against WiFi CPE
25	10.1	Growing Content Handling	Test against any of 3 NEs router CBC PABX
26	10.6	No automatic launch of removable media	Test against any of 3 NEs router CBC PABX
27	10.7	Protection from buffer overflows	Test against any of 3 NEs CPE CBC PABX
28	10.9	File-system Authorization privileges	Test against any of 2 NEs CBC PABX

29	10.10	Restrictions on running Scripts / Batch-processes	Test against CBC
30	10.11	Restrictions on Soft-Restart	Test against CBC
31	12.3	Secure System Software Revocation	Test against any of 3 NEs router CBC PABX
32	12.9	Management Interface Isolation	Test against PABX
33	12. 10	External Alert Generation	Test against PABX
34	12.11	Secure VPN connection	Test against PABX

Note: All other clauses of the Router, CPE, CBC and PABX ITSARs can be tested against any one NE.

ANNEXURE-V

TESTING MATRIX FOR OLT and ONT

S No	Clause No.	Clause Title	Criterion to be followed for proving capability for TSTL designation for CSR Part of OLT ONT
1	1.6	Authorization Policy	Test against OLT
2	3.10	Avoidance of Unspecified Wireless Access	Test against ONT
3	5.1	Audit trail storage and protection	Test against OLT
4	10.1	Growing Content Handling	Test against OLT
5	11.4	No system privileges	Test against OLT
6	12.6	Security Algorithm Modification	Test against OLT

Note: All other clauses of OLT and ONT ITSARs can be tested against either OLT or ONT.