

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 1 of 53

TEST REPORT

Application No.:	KSCR2312002294AT	
Applicant:	Sercomm Corporation	
Address of Applicant:	8F, No. 3-1, YuanQu St., NanKang, Taipei 115, Taiwan	
Manufacturer:	Sercomm Corporation	
Address of Manufacturer:	8F, No. 3-1, YuanQu St., NanKang, Taipei 115, Taiwan	
Equipment Under Test (EU	T):	
EUT Name:	Bridgestone	
Model No.:	SCE5164-B48	
Trade Mark:	Sercomm	
FCC ID:	P27-SCE5164-B48	
Standard(s) :	CBRSA-TS-9001-V1.2.1	
	WINNF-TS-0122-V1.0.2	
	FCC 47 CFR Part 96	
	KDB 940660 D01 V03	
Date of Receipt:	2023-12-15	
Date of Test:	2023-12-23 to 2024-01-10	
Date of Issue:	2024-01-15	
Test Result:	Pass*	

* In the configuration tested, the EUT complied with the standards specified above.

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at http://www.sgs.com/en/Terms-and-Conditions.aspx and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at http://www.sgs.com/en/Terms-and-Conditions.aspx and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at http://www.sgs.com/en/Terms-and-Conditions.aspx and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.



-CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 2 of 53

Revision Record			
Version	Description	Date	Remark
00	Original	2024-01-15	/

Authorized for issue by:		
Tested By	Damon zhou	
	Damon_Zhou/Project Engineer	
Approved By	Verry Hon	
	Terry Hou /Reviewer	



-CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 3 of 53

2 Test Summary

Item	Standard	Test Case ID	Result
Domain Proxy Multi-Step registration	WINNF-TS-0122- V1.0.2	WINNF.FT.D.REG.2	Pass
Domain Proxy Single-Step registration for Cat A CBSD	WINNF-TS-0122- V1.0.2	WINNF.FT.D.REG.4	Pass
Domain Proxy Single-Step registration for CBSD with CPI signed data	WINNF-TS-0122- V1.0.2	WINNF.FT.D.REG.6	Pass
Registration due to change of an installation parameter	WINNF-TS-0122- V1.0.2	WINNF.FT.C.REG.7	Pass
Domain Proxy Missing Required parameters (responseCode 102)	WINNF-TS-0122- V1.0.2	WINNF.FT.D.REG.9	Pass
Domain Proxy Pending registration (responseCode 200)	WINNF-TS-0122- V1.0.2	WINNF.FT.D.REG.11	Pass
Domain Proxy Invalid parameters (responseCode 103)	WINNF-TS-0122- V1.0.2	WINNF.FT.D.REG.13	Pass
Domain Proxy Blacklisted CBSD (responseCode 101)	WINNF-TS-0122- V1.0.2	WINNF.FT.D.REG.15	Pass
Domain Proxy Unsupported SAS protocol version responseCode 100)	WINNF-TS-0122- V1.0.2	WINNF.FT.D.REG.17	Pass
Domain Proxy Group Error (responseCode 201)	WINNF-TS-0122- V1.0.2	WINNF.FT.D.REG.19	Pass
Category A CBSD location update	WINNF-TS-0122- V1.0.2	WINNF.FT.C.REG.20	Pass
Unsuccessful Grant responseCode=400 (INTERFERENCE)	WINNF-TS-0122- V1.0.2	WINNF.FT.C.GRA.1	Pass
Unsuccessful Grant responseCode=401 (GRANT_CONFLICT)	WINNF-TS-0122- V1.0.2	WINNF.FT.C.GRA.2	Pass
Domain Proxy Heartbeat Success Case (first Heartbeat Response)	WINNF-TS-0122- V1.0.2	WINNF.FT.D.HBT.2	Pass
Heartbeat responseCode=105 (DEREGISTER)	WINNF-TS-0122- V1.0.2	WINNF.FT.C.HBT.3	Pass
Heartbeat responseCode=501 (SUSPENDED_GRANT) in First Heartbeat Response	WINNF-TS-0122- V1.0.2	WINNF.FT.C.HBT.5	Pass
Heartbeat responseCode=501 (SUSPENDED_GRANT) in Subsequent Heartbeat Response	WINNF-TS-0122- V1.0.2	WINNF.FT.C.HBT.6	Pass
Heartbeat responseCode=502 (UNSYNC_OP_PARAM)	WINNF-TS-0122- V1.0.2	WINNF.FT.C.HBT.7	Pass
Domain Proxy Heartbeat responseCode=500 (TEMINATED_GRANT)	WINNF-TS-0122- V1.0.2	WINNF.FT.D.HBT.8	Pass
Heartbeat Response Absent (First Heartbeat)	WINNF-TS-0122- V1.0.2	WINNF.FT.C.HBT.9	Pass
Heartbeat Response Absent (Subsequent Heartbeat)	WINNF-TS-0122- V1.0.2	WINNF.FT.C.HBT.10	Pass



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 4 of 53

Item	Standard	Test Case ID	Result
Domain Proxy Registration Response contains measReportConfig	WINNF-TS-0122- V1.0.2	WINNF.FT.D.MES.2	Pass
Domain Proxy Successful Relinquishment	WINNF-TS-0122- V1.0.2	WINNF.FT.D.RLQ.2	Pass
Domain Proxy Unsuccessful Relinquishment, responseCode=102	WINNF-TS-0122- V1.0.2	WINNF.FT.D.RLQ.4	Pass
Domain Proxy Unsuccessful Relinquishment, responseCode=103	WINNF-TS-0122- V1.0.2	WINNF.FT.D.RLQ.6	Pass
Domain Proxy Successful Deregistration	WINNF-TS-0122- V1.0.2	WINNF.FT.D.DRG.2	Pass
Domain Proxy Deregistration responseCode=102	WINNF-TS-0122- V1.0.2	WINNF.FT.D.DRG.4	Pass
Deregistration responseCode=103	WINNF-TS-0122- V1.0.2	WINNF.FT.C.DRG.5	Pass
Successful TLS connection between UUT and SAS Test Harness	WINNF-TS-0122- V1.0.2	WINNF.FT.C.SCS.1	Pass
TLS failure due to revoked certificate	WINNF-TS-0122- V1.0.2	WINNF.FT.C.SCS.2	Pass
TLS failure due to expired server certificate	WINNF-TS-0122- V1.0.2	WINNF.FT.C.SCS.3	Pass
TLS failure when SAS Test Harness certificate is issue by unknown CA	WINNF-TS-0122- V1.0.2	WINNF.FT.C.SCS.4	Pass
TLS failure when certificate at the SAS Test Harness is corrupted	WINNF-TS-0122- V1.0.2	WINNF.FT.C.SCS.5	Pass
UUT RF Transmit Power Measurement	WINNF-TS-0122- V1.0.2	WINNF.PT.C.HBT.1	Pass
SAS Version: 1.0.0.3			

The UUT is a CBSD with Domain Proxy. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

CBRSA-TS-9001-V1.2.1

CBRS Alliance Certification Test Plan

WINNF-TS-0122-V1.0.2

Test and Certification for Citizens Broadband Radio Service (CBRS); Conformance and Performance Test Technical Specification; CBSD/DP as Unit Under Test (UUT)

KDB 940660 D01 Part 96 CBRS Eqpt v03



-CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 5 of 53

3 Contents

1 Cover Page 2 Test Summary 3 Contents 4 General Information 4.1 Details of E.U.T. 4.2 Description of CBSD/DP Support Features 4.3 Summary of Test Results. 4.4 Measurement Uncertainty 4.5 Description of Support Units 4.6 Test Location. 4.7 Test Facility	Page
3 Contents 4 General Information 4.1 Details of E.U.T. 4.2 Description of CBSD/DP Support Features 4.3 Summary of Test Results 4.4 Measurement Uncertainty 4.5 Description of Support Units 4.6 Test Location 4.7 Test Facility	1
3 Contents 4 General Information 4.1 Details of E.U.T. 4.2 Description of CBSD/DP Support Features 4.3 Summary of Test Results 4.4 Measurement Uncertainty 4.5 Description of Support Units 4.6 Test Location 4.7 Test Facility	2
 General Information	
 4.1 Details of E.U.T. 4.2 Description of CBSD/DP Support Features	5
 4.1 Details of E.U.T. 4.2 Description of CBSD/DP Support Features	7
 4.2 Description of CBSD/DP Support Features	
 4.3 Summary of Test Results	
 4.4 Measurement Uncertainty	
 4.5 Description of Support Units 4.6 Test Location	
 4.6 Test Location 4.7 Test Facility 	
4.7 Test Facility	
5 Equipment List	
	11
6 Test Method and Environment	12
6.1 CBSD/DP Conformance and Performance	
6.2 CBSD Test Procedure	
6.3 Test Environment	
6.4 Test Setup	13
7 Test Data	14
7.1 CBSD Registration Process	14
7.1.1 WINNF.FT.D.REG.2	14
7.1.2 WINNF.FT.D.REG.4	15
7.1.3 WINNF.FT.D.REG.6	16
7.1.4 WINNF.FT.C.REG.7	17
7.1.5 WINNF.FT.D.REG.9	
7.1.6 WINNF.FT.D.REG.11	
7.1.7 WINNF.FT.D.REG.13	
7.1.8 WINNF.FT.D.REG.15	
7.1.9 WINNF.FT.D.REG.17	
7.1.10 WINNF.FT.D.REG.19	
7.2 CBSD Spectrum Grant Process	
7.2.1 WINNF.FT.C.GRA.1	
7.2.2 WINNF.FT.C.GRA.2	
7.3 CBSD HeartBeat Process	
7.3.2 WINNF.FT.C.HBT.3 7.3.3 WINNF.FT.C.HBT.5	
7.3.3 WINNE.FT.C.HBT.6	
7.3.5 WINNF.FT.C.HBT.7	
7.3.6 WINNF.FT.D.HBT.8	
7.3.7 WINNF.FT.C.HBT.9	
7.3.8 WINNF.FT.C.HBT.10	
7.4 CBSD Measurement Report	
7.4.1 WINNF.FT.D.MES.2	



-CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 6 of 53

7.5 CBSD Relinquishment Process	35
7.5.1 WINNF.FT.D.RLQ.2	
7.5.2 WINNF.FT.D.RLQ.4	36
7.5.3 WINNF.FT.D.RLQ.6	37
7.6 CBSD Deregistration Process	
7.6.1 WINNF.FT.D.DRG.2	38
7.6.2 WINNF.FT.D.DRG.4	39
7.6.3 WINNF.FT.C.DRG.5	40
7.7 CBSD Security Validation	
7.7.1 WINNF.FT.C.SCS.1	
7.7.2 WINNF.FT.C.SCS.2	
7.7.3 WINNF.FT.C.SCS.3	
7.7.4 WINNF.FT.C.SCS.4	
7.7.5 WINNF.FT.C.SCS.5	
7.8 CBSD RF Power Measurement	
7.8.1 WINNF.PT.C.HBT.1	44
8 Test Data Log	48
8.1 WINNF.FT.C.SCS.1	48
8.2 WINNF.FT.C.SCS.2	49
8.3 WINNF.FT.C.SCS.3	50
8.4 WINNF.FT.C.SCS.4	51
8.5 WINNF.FT.C.SCS.5	52
9 Photographs	53



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 7 of 53

4 General Information

4.1 Details of E.U.T.

Product Information:	Bridgestone	
Power supply:	19Vdc from adapter	
	56Vdc from POE	
Sample Type:	Fixed device	
CBSD Class:	A	
Transmitter Frequency Band:	5G NR n48	
Transmitter Frequency Range:	3550~3700MHz	
Hardware Version:	DR600NOC-1.6	
Software Version:	DG5605@2209281146	
Test sample:	SN1: 2209DR6000150	
	SN2: 2209DR6000083	
Antenna Gain:	6.0dBi	
MIMO supported	2*2 UL/DL	
Antenna Type:	Dipole Antenna	
Note:		

Note:

This is a BTS-CBSD communication with Domain Proxy. Domain Proxy information show as below:

Name of Domain Proxy: MosoLabs Domain Proxy/UDM Domain Proxy

(Note: The above two DP are just name differences)

Software Version of Domain Proxy: V1.3.7.1222



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 8 of 53

4.2 Description of CBSD/DP Support Features

Condition	Feature Description	Supported
C1	Mandatory for UUT which supports multi-step registration message.	Y
C2	Mandatory for UUT which supports single-step registration with no CPI- signed data in the registration message. By definition, this is a subset of Category A devices which determine all registration information, including location, without CPI intervention.	Y
C3	Mandatory for UUT which supports single-step registration containing CPI- signed data in the registration message.	Y
C4	Mandatory for UUT which supports RECEIVED_POWER_WITHOUT_GRANT measurement report type.	Y
C5	Mandatory for UUT which supports RECEIVED_POWER_WITH_GRANT measurement report type.	N
C6	Mandatory for UUT which supports parameter change being made at the UUT and prior to sending a deregistration.	Y

Y: Supported

N: Not supported



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 9 of 53

4.3 Summary of Test Results

WINNF-TS-0122			
Classes Test Case Items Pass Items Pass Rate (%)			
FT (CBSD, DP/CBSD)	33	33	100
PT (CBSD, DP/CBSD)	1	1	100
Total	34	34	100

Note:

1. Functional Test (FT): Test to validate the conformance of the Protocols and functionalities implemented in the CBSD/DP UUT to the requirements developed by WInnForum and supporting FCC/DoD requirements.

2. Field/Performance Test (PT): Test to check the capability of the CBSD/DP UUT to support various traffic models and actual operations in the field.

4.4 Measurement Uncertainty

No.	ltem	Measurement Uncertainty
1	Radio Frequency	± 7.25 x 10 ⁻⁸
2	RF conducted power	± 0.75dB
3	Temperature test	± 1°C
4	Humidity test	± 3%
5	Supply voltages	± 1.5%
6	Time	± 3%

4.5 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Mobile	OSOM	OV1	/
CPE	SUNWAVE	CPX80I	/
Router	TP-LINK	TL-R860+	1175379002425



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 10 of 53

4.6 Test Location

All tests were performed at:

Compliance Certification Services (Kunshan) Inc.

No.10 Weiye Rd, Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China. Tel: +86 512 5735 5888 Fax: +86 512 5737 0818

No tests were sub-contracted.

Note:

1.SGS is not responsible for wrong test results due to incorrect information (e.g., max. internal working frequency, antenna gain, cable loss, etc) is provided by the applicant. (If applicable).

2.SGS is not responsible for the authenticity, integrity and the validity of the conclusion based on results of the data provided by applicant. (If applicable).

3. Sample source: sent by customer.

4.7 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• A2LA

Compliance Certification Services (Kunshan) Inc. is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 2541.01.

• FCC

Compliance Certification Services (Kunshan) Inc. has been recognized as an accredited testing laboratory. Designation Number: CN1172.

• ISED

Compliance Certification Services (Kunshan) Inc. has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory. Company Number: 2324E

• VCCI

The 3m and 10m Semi-anechoic chamber and Shielded Room of Compliance Certification Services (Kunshan) Inc. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-20134, R-11600, C-11707, T-11499, G-10216 respectively.



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 11 of 53

5 Equipment List

Test Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Laptop	Lenovo	Y510P	HFL000026	N/A	N/A
Spectrum Analyzer	KEYSIGHT	N9020A	KUS2001M00 1-2	2023/08/24	2024/08/23
Shield Room	YanChuang	N/A	KS301115-2	N/A	N/A
Coaxial Cable	Thermax	N/A	13	2023/09/15	2024/09/14
Attenuator	Mini-Circuits	NAT-6-2W	15542-1	N.C.R.	N.C.R.
Humidity / Temperature Indicator	Renke	RS-WS-N01- 6J	1032844	2023/03/22	2024/03/21



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 12 of 53

6 Test Method and Environment

6.1 CBSD/DP Conformance and Performance

Test Requirement:	CBRS CBSD Test Specification WINNF-TS-0122-V1.0.2
Test Method:	CBRS CBSD Test Specification WINNF-TS-0122-V1.0.2
	WINNF-IN-0156_WInnForum_SAS_Test_Harness_CBSD_UUT_Tutorial_
	v1_0_0_1

6.2 CBSD Test Procedure

- a. Connect the UUT to SAS Test Harness system and RF Test instruments via the DP interface and RF components. The highest level is set to test configuration.
- b. UUT shall be UTC time synchronized
- c. The frequency band is granted and set as UUT supported Modulation and Channels, transmitted power of the UUT according to it granted parameters from the SAS Test Harness.
- d. Each test case results were recorded and validated by SAS Test Harness system and RF instruments test cases was recorded test results from SAS Test Harness system.



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 13 of 53

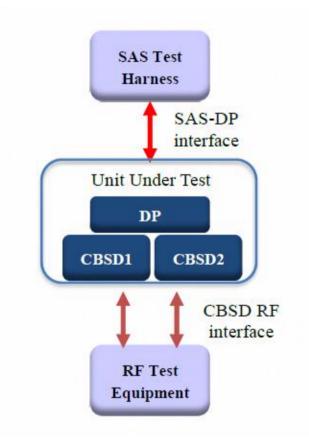
6.3 Test Environment

Test Harness Version:	V1.0.0.3
Operating System:	Microsoft Windows 10
TLS Version:	1.2
Python Version:	2.7.13
Environmental Conditions:	25deg. C, 65%RH
Input Power:	120Vac, 60Hz

6.4 Test Setup

1) DP is deployed on the network management, and the registration of DP to SAS is to register with SAS according to the granularity of CBSD ID;

2) The DP and the network element communicate messages according to the cell granularity, and each CBSDID corresponds to a cell of an RRU which belongs to a base station.



DP/CBSD as UUT, BTS-CBSD communication with Domain Proxy



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 14 of 53

7 Test Data

7.1 CBSD Registration Process

7.1.1 WINNF.FT.D.REG.2

#	Test Execution Steps	Res	sults
1	 Ensure the following conditions are met for test entry: UUT has successfully completed SAS Discovery and Authentication with the SAS Test Harness UUT is in the Unregistered state 		-
2	 DP with two CBSD sends correct Registration request information, as specified in [n.5], in the form of one 2-element Array or as individual messages to the SAS Test Harness: The required userId, fccId and cbsdSerialNumber registration parameters shall be sent for each CBSD and conform to proper format and acceptable ranges. Any REG-conditional or optional registration parameters that may be included in the message shall be verified that they conform to proper format and are within acceptable ranges. Note: It is outside the scope of this document to test the Registration information that is supplied via another means. 	∎ Pass	□ Fail
3	 SAS Test Harness sends a CBSD Registration Response in the form of one 2-element Array or individual messages as follows: cbsdld = Ci measReportConfig shall not be included responseCode = 0 for each CBSD 		
4	After completion of step 3, SAS Test Harness will not provide any positive response (responseCode=0) to further request messages from the UUT.		
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: UUT shall not transmit RF	∎ Pass	□ Fail



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 15 of 53

7.1.2 WINNF.FT.D.REG.4

#	Test Execution Steps	Res	sults
1	 Ensure the following conditions are met for test entry: UUT has successfully completed SAS Discovery and Authentication with the SAS Test Harness UUT is in the Unregistered state 		
2	 The DP with two CBSDs sends Registration requests in the form of one 2-element Array or as individual messages to SAS Test Harness. The required userId, fccld and cbsdSerialNumber and REG-Conditional cbsdCategory, airInterface, installationParam, and measCapability registration parameters shall be sent from the CBSD and conform to proper format and acceptable ranges. Any optional registration parameters that may be included in the message shall be verified that they conform to proper format and are within acceptable ranges. 	∎ Pass	□ Fail
3	 SAS Test Harness sends a CBSD Registration Response in the form of one 2-element Array or individual messages as follows: cbsdld = Ci measReportConfig for each CBSD shall not be included responseCode = 0 for each CBSD 		
4	After completion of step 3, SAS Test Harness will not provide any positive response (responseCode=0) to further request messages from the UUT.		
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: UUT shall not transmit RF	∎ Pass	□ Fail



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 16 of 53

7.1.3 WINNF.FT.D.REG.6

#	Test Execution Steps	Res	sults
1	 Ensure the following conditions are met for test entry: UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness UUT is in the Unregistered state All of the required and REG-Conditional parameters shall be configured and CPI signature provided 		
2	 The DP with two CBSDs sends Registration requests in the form of one 2-element Array or as individual messages to the SAS Test Harness: The required userId, fccId and cbsdSerialNumber and REG-Conditional cbsdCategory, airInterface, measCapability and cpiSignatureData registration parameters shall be sent from the CBSD and conform to proper format and acceptable ranges. Any optional registration parameters that may be included in the message shall be verified that they conform to proper format and are within acceptable ranges. 	∎ Pass	□ Fail
3	 SAS Test Harness sends a CBSD Registration Response in the form of one 2-element Array or individual messages as follows: cbsdld = Ci measReportConfig for each CBSD shall not be included responseCode = 0 for each CBSD 		
4	After completion of step 3, SAS Test Harness will not provide any positive response (responseCode=0) to further request messages from the UUT.		
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: UUT shall not transmit RF	∎ Pass	□ Fail



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 17 of 53

7.1.4 WINNF.FT.C.REG.7

#	Test Execution Steps	Res	sults
1	 Ensure the following conditions are met for test entry: UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness 		
2	UUT has successfully registered with SAS Test Harness		
3	Change an installation parameters at the UUT (time T) Tester needs to record the current time at which the parameter change is executed. 		
4	Monitor the SAS-CBSD interface. UUT sends a deregistrationRequest to the SAS Test Harness The deregistration		
т	request shall be sent within (T + 60 seconds) from step 3.	Pass	Fail



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 18 of 53

7.1.5 WINNF.FT.D.REG.9

#	Test Execution Steps	Res	sults
1	 Ensure the following conditions are met for test entry: UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness UUT is in the Unregistered state 		
2	The DP with two CBSDs sends a Registration request in the form of one 2-element Array or as individual messages to SAS Test Harness.		
3	SAS Test Harness sends a CBSD Registration Response in the form of one 2- element Array or as individual messages as follows: - SAS response does not include a cbsdld. - responseCode = 102 for CBSD1 and CBSD2		
4	After completion of step 3, SAS Test Harness will not provide any positive response (responseCode=0) to further request messages from the UUT.		
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: UUT shall not transmit RF	∎ Pass	□ Fail

7.1.6 WINNF.FT.D.REG.11

#	Test Execution Steps	Res	sults
1	 Ensure the following conditions are met for test entry: UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness UUT is in the Unregistered state 		
2	The DP with two CBSDs sends a Registration request in the form of one 2-element Array or as individual messages to SAS Test Harness.		
3	SAS Test Harness sends a CBSD Registration Response in the form of one 2- element Array or as individual messages as follows: - SAS response does not include a cbsdld. - responseCode = 200 for CBSD1 and CBSD2		
4	After completion of step 3, SAS Test Harness will not provide any positive response (responseCode=0) to further request messages from the UUT.		
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: UUT shall not transmit RF	∎ Pass	□ Fail



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 19 of 53

7.1.7 WINNF.FT.D.REG.13

#	Test Execution Steps	Res	sults
1	 Ensure the following conditions are met for test entry: UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness UUT is in the Unregistered state 		
2	The DP with two CBSDs sends a Registration request in the form of one 2-element Array or as individual messages to SAS Test Harness.		
3	SAS Test Harness sends a CBSD Registration Response in the form of one 2- element Array or as individual messages as follows: - SAS response does not include a cbsdld. - responseCode = 0 for CBSD1 - responseCode = 103 for CBSD2		
4	After completion of step 3, SAS Test Harness will not provide any positive response (responseCode=0) to further request messages from the UUT.		
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: UUT shall not transmit RF	∎ Pass	□ Fail

7.1.8 WINNF.FT.D.REG.15

#	Test Execution Steps	Res	sults
1	 Ensure the following conditions are met for test entry: UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness UUT is in the Unregistered state 		
2	The DP with two CBSDs sends a Registration request in the form of one 2-element Array or as individual messages to SAS Test Harness.		
3	SAS Test Harness sends a CBSD Registration Response in the form of one 2- element Array or as individual messages as follows: - SAS response does not include a cbsdld. - responseCode = 0 for CBSD1 - responseCode = 101 for CBSD2		
4	After completion of step 3, SAS Test Harness will not provide any positive response (responseCode=0) to further request messages from the UUT.		
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: UUT shall not transmit RF	∎ Pass	□ Fail



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 20 of 53

7.1.9 WINNF.FT.D.REG.17

#	Test Execution Steps	Res	sults
1	 Ensure the following conditions are met for test entry: UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness UUT is in the Unregistered state 		
2	The DP with two CBSDs sends a Registration request in the form of one 2-element Array or as individual messages to SAS Test Harness.		
3	SAS Test Harness sends a CBSD Registration Response in the form of one 2- element Array or as individual messages as follows: - SAS response does not include a cbsdld. - responseCode = 100 for CBSD1 and CBSD2		
4	After completion of step 3, SAS Test Harness will not provide any positive response (responseCode=0) to further request messages from the UUT.		
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: UUT shall not transmit RF	∎ Pass	□ Fail

7.1.10 WINNF.FT.D.REG.19

#	Test Execution Steps	Res	sults
1	 Ensure the following conditions are met for test entry: UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness UUT is in the Unregistered state 		
2	The DP with two CBSDs sends a Registration request in the form of one 2-element Array or as individual messages to SAS Test Harness.		
3	SAS Test Harness sends a CBSD Registration Response in the form of one 2- element Array or as individual messages as follows: - SAS response does not include a cbsdld. - responseCode = 0 for CBSD1 - responseCode = 201 for CBSD2		
4	After completion of step 3, SAS Test Harness will not provide any positive response (responseCode=0) to further request messages from the UUT.		
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: UUT shall not transmit RF	∎ Pass	□ Fail



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 21 of 53

7.2 CBSD Spectrum Grant Process

7.2.1 WINNF.FT.C.GRA.1

#	Test Execution Steps	Res	sults
1	 Ensure the following conditions are met for test entry: UUT has registered successfully with SAS Test Harness, with cbsdld = C 		
2	UUT sends valid Grant Request.		
3	SAS Test Harness sends a Grant Response message, including - cbsdld=C - responseCode = 400		
4	After completion of step 3, SAS Test Harness will not provide any positive response (responseCode=0) to further request messages from the UUT.		
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: UUT shall not transmit RF 	∎ Pass	□ Fail

7.2.2 WINNF.FT.C.GRA.2

#	Test Execution Steps	Res	sults
1	 Ensure the following conditions are met for test entry: UUT has registered successfully with SAS Test Harness, with cbsdld = C 		
2	UUT sends valid Grant Request.		
3	SAS Test Harness sends a Grant Response message, including - cbsdld=C - responseCode = 400		
4	After completion of step 3, SAS Test Harness will not provide any positive response (responseCode=0) to further request messages from the UUT.		
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: UUT shall not transmit RF	∎ Pass	□ Fail



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 22 of 53

7.3 CBSD HeartBeat Process

7.3.1 WINNF.FT.D.HBT.2

#	Test Execution Steps	Res	sults
1	 Ensure the following conditions are met for test entry: DP has two CBSD registered successfully with SAS Test Harness, with cbsdld = Ci, i={1,2} 		
2	 DP sends a message: If message is type Spectrum Inquiry Request, go to step 3, or If message is type Grant Request, go to step 5 		
3	 DP sends a Spectrum Inquiry Request message for each CBSD. This may occur in a separate message per CBSD, or together in a single message with array of 2. Verify Spectrum Inquiry Request message is formatted correctly for each CBSD, including for CBSDi, i={1,2}: cbsdld = Ci List of frequencyRange objects sent by DP are within the CBRS frequency range 	∎ Pass	□ Fail
4	If a separate Spectrum Inquiry Request message was sent for each CBSD, the SAS Test Harness shall respond to each Spectrum Inquiry Request message with a separate Spectrum Inquiry Response message. If a single Spectrum Inquiry Request message was sent containing a 2-object array (one per CBSD), the SAS Test Harness shall respond with a single Spectrum Inquiry Response message containing a 2-object array. Verify parameters for each CBSD within the Spectrum Inquiry Response message are as follows, for CBSDi, i={1,2}: cbsdld = Ci availableChannel is an array of availableChannel objects responseCode = 0 		
5	 DP sends a Grant Request message for each CBSD. This may occur in a separate message per CBSD, or together in a single message with array of 2. Verify Grant Request message is formatted correctly for each CBSD, including for CBSDi, i={1,2}: cbsdld = C maxEIRP is at or below the limit appropriate for CBSD category as defined by Part 96 operationFrequencyRange, Fi, sent by UUT is a valid range within the CBRS band 	∎ Pass	□ Fail
6	If a separate Grant Request message was sent for each CBSD, the SAS Test Harness shall respond to each Grant Request message with a separate Grant Response message. If a single Grant Request message was sent containing a 2-object array (one per CBSD), the SAS Test Harness shall respond with a single Grant Response message containing a 2-object array. Verify parameters for each CBSD within the Grant Response message are as follows, for CBSDi, i={1,2}: cbsdld = Ci grantId = Gi = a valid grant ID grantExpireTime = UTC time greater than duration of the test responseCode = 0		



-CCSEM-TRF-001 Rev. 02 Sep 01, 2023

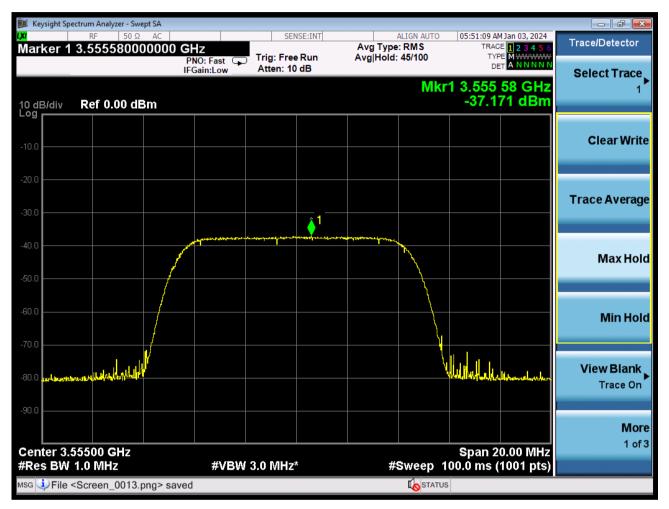
Report No.: KSCR231200229401 Page: 23 of 53

7	Ensure DP sends first Heartbeat Request message for each CBSD. This may occur in a separate message per CBSD, or together in a single message with array of 2. Verify Heartbeat Request message is formatted correctly for each CBSD, including, for CBSDi i={1,2}:	∎ Pass	□ Fail
8	If a separate Heartbeat Request message was sent for each CBSD by the DP, the SAS Test Harness shall respond to each Heartbeat Request message with a separate Heartbeat Response message. If a single Heartbeat Request message was sent by the DP containing a 2-object array (one per CBSD), the SAS Test Harness shall respond with a single Heartbeat Response message containing a 2-object array. Verify parameters for each CBSD within the Heartbeat Response message are as follows, for CBSDi:		
9	 For further Heartbeat Request messages sent from DP after completion of step 8, validate message is sent within latest specified heartbeatInterval for CBSDi: cbsdld = Ci grantld = Gi operationState = "AUTHORIZED" and SAS Test Harness responds with a Heartbeat Response message including the following parameters, for CBSDi cbsdld = Ci grantld = Gi transmitExpireTime = current UTC time + 200 seconds responseCode = 0 	∎ Pass	□ Fail
10	 Monitor the RF output of the UUT from start of test until UUT transmission commences. Monitor the RF output of the UUT from start of test until RF transmission commences. Verify: UUT does not transmit at any time prior to completion of the first heartbeat response UUT transmits after step 8 is complete, and its transmission is limited to within the bandwidth range Fi. 	∎ Pass	□ Fail



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 24 of 53





CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 25 of 53

7.3.2 WINNF.FT.C.HBT.3

#	Test Execution Steps	Res	sults
1	 Ensure the following conditions are met for test entry: UUT has registered successfully with SAS Test Harness UUT has a valid single grant as follows: valid cbsdld = C valid grantld = G grant is for frequency range F, power P grantExpireTime = UTC time greater than duration of the test UUT is in AUTHORIZED state and is transmitting within the grant bandwidth F on RF interface 	-	ł
2	UUT sends a Heartbeat Request message. Ensure Heartbeat Request message is sent within Heartbeat Interval specified in the latest Heartbeat Response, and formatted correctly, including:	∎ Pass	□ Fail
3	 SAS Test Harness sends a Heartbeat Response message, including the following parameters: cbsdld = C grantId = G transmitExpireTime = T = Current UTC time responseCode = 105 (DEREGISTER) 		
4	After completion of step 3, SAS Test Harness shall not allow any further grants to the UUT.		
5	 Monitor the RF output of the UUT. Verify: UUT shall stop transmission within (T + 60 seconds) of completion of step 3 	∎ Pass	□ Fail



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 26 of 53

7.3.3 WINNF.FT.C.HBT.5

#	Test Execution Steps	Res	sults
1	 Ensure the following conditions are met for test entry: UUT has registered successfully with SAS Test Harness UUT has a valid single grant as follows: valid cbsdld = C valid grantld = G grant is for frequency range F, power P grantExpireTime = UTC time greater than duration of the test UUT is in GRANTED, but not AUTHORIZED state (i.e. has not performed its first Heartbeat Request) 		I
2	UUT sends a Heartbeat Request message. Verify Heartbeat Request message is formatted correctly, including: • cbsdld = C • grantId = G • operationState = "GRANTED"	∎ Pass	□ Fail
3	 SAS Test Harness sends a Heartbeat Response message, including the following parameters: cbsdld = C grantId = G transmitExpireTime = T = current UTC time responseCode = 501 (SUSPENDED_GRANT) 		
4	After completion of step 3, SAS Test Harness shall not allow any further grants to the UUT.		
5	 Monitor the SAS-CBSD interface. Verify either A OR B occurs: A. UUT sends a Heartbeat Request message. Ensure message is sent within latest specified heartbeatInterval, and is correctly formatted with parameters: cbsdld = C grantld = G operationState = "GRANTED" B. UUT sends a Relinquishment request message. Ensure message is correctly formatted with parameters: cbdsld = C grantld = G cbdsld = C grantld = G Monitor the RF output of the UUT. Verify: UUT does not transmit at any time 	∎ Pass	□ Fail



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 27 of 53

7.3.4 WINNF.FT.C.HBT.6

#	Test Execution Steps	Res	sults
1	 Ensure the following conditions are met for test entry: UUT has registered successfully with SAS Test Harness UUT has a valid single grant as follows: valid cbsdld = C valid grantld = G grant is for frequency range F, power P grantExpireTime = UTC time greater than duration of the test UUT is in AUTHORIZED state and is transmitting within the grant bandwidth F on RF interface 		H
2	UUT sends a Heartbeat Request message. Ensure Heartbeat Request message is sent within latest specified heartbeatInterval, and is formatted correctly, including:	∎ Pass	□ Fail
3	 SAS Test Harness sends a Heartbeat Response message, including the following parameters: cbsdld = C grantId = G transmitExpireTime = T = current UTC time responseCode = 501 (SUSPENDED_GRANT) 		
4	After completion of step 3, SAS Test Harness shall not allow any further grants to the UUT.		
5	 Monitor the SAS-CBSD interface. Verify either A OR B occurs: A. UUT sends a Heartbeat Request message. Ensure message is sent within latest specified heartbeatInterval, and is correctly formatted with parameters: cbsdld = C grantld = G operationState = "GRANTED" B. UUT sends a Relinquishment request message. Ensure message is correctly formatted with parameters: cbdsld = C grantld = G B. UUT sends a Relinquishment request message. Ensure message is correctly formatted with parameters: cbdsld = C grantld = G Monitor the RF output of the UUT. Verify: UUT shall stop transmission within (T+60) seconds of completion of step 3 	∎ Pass	□ Fail



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 28 of 53

7.3.5 WINNF.FT.C.HBT.7

#	Test Execution Steps	Res	sults
1	 Ensure the following conditions are met for test entry: UUT has registered successfully with SAS Test Harness UUT has a valid single grant as follows: valid cbsdld = C valid grantld = G grant is for frequency range F, power P grantExpireTime = UTC time greater than duration of the test UUT is in AUTHORIZED state and is transmitting within the grant bandwidth 		
2	F on RF interface UUT sends a Heartbeat Request message. Ensure Heartbeat Request message is sent within latest specified heartbeatInterval, and is formatted correctly, including: • cbsdld = C • grantId = G • operationState = "AUTHORIZED"	■ Pass	□ Fail
3	SAS Test Harness sends a Heartbeat Response message, including the following parameters: cbsdld = C grantld = G transmitExpireTime = T = current UTC time responseCode = 502 (UNSYNC_OP_PARAM) 		
4	After completion of step 3, SAS Test Harness shall not allow any further grants to the UUT.		
5	 Monitor the SAS-CBSD interface. Verify: UUT sends a Grant Relinquishment Request message. Verify message is correctly formatted with parameters: Cbsdld = C GrantId = G Monitor the RF output of the UUT. Verify: UUT shall stop transmission within (T+60) seconds of completion of step 3 	∎ Pass	□ Fail



-CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 29 of 53

7.3.6 WINNF.FT.D.HBT.8

#	Test Execution Steps	Re	sults
1	 Ensure the following conditions are met for test entry: DP has two CBSD registered successfully with SAS Test Harness Each CBSD {1,2} has a valid single grant as follows valid cbsdld = Ci, i={1,2} valid grantId = Gi, i={1,2} grant is for frequency range Fi, power Pi grantExpireTime = UTC time greater than duration of the test Both CBSD are in AUTHORIZED state and transmitting within their granted bandwidth on RF interface 		
2	 DP sends a Heartbeat Request message for each CBSD. This may occur in a separate message per CBSD, or together in a single message with array of size 2. Verify Heartbeat Request message is sent within latest specified heartbeatInterval, and is formatted correctly for each CBSD, including, for CBSDi i={1,2}: cbsdld = Ci, i = {1,2} grantId = Gi, i = {1,2} operationState = "AUTHORIZED" 	∎ Pass	□ Fail
3	If separate Heartbeat Request message was sent for each CBSD by the DP, the SAS Test Harness shall respond to each Heartbeat Request message with a separate Heartbeat Response message. If a single Heartbeat Request message was sent by the DP containing a 2-object array (one per CBSD), the SAS Test Harness shall respond with a single Heartbeat Response message containing a 2-object array. Parameters for each CBSD within the Heartbeat Response message should be as follows, for CBSDi: cbsdld = Ci grantId = Gi For CBSD1: o transmitExpireTime = current UTC time + 200 seconds o responseCode = 0 For CBSD2: o transmitExpireTime = T = current UTC time o responseCode = 500 (TERMINATED_GRANT)		
4	After completion of step 3, SAS Test Harness shall not allow any further grants to the UUT. If CBSD sends further Heartbeat Request messages for CBSD1, SAS Test Harness shall respond with a Heartbeat Response message with parameters: • cbsdld = C1 • grantId = G1 • transmitExpireTime = current UTC time + 200 seconds • responseCode = 0 • Heartbeat Request message is within heartbeatInterval of previous Heartbeat Request message		



-CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 30 of 53

5	 Monitor the RF output of CBSD2. Verify: CBSD2 shall stop transmission within bandwidth F2 within (T + 60 seconds) of completion of step 3 	∎ Pass	□ Fail
---	--	-----------	-----------



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 31 of 53

7.3.7 WINNF.FT.C.HBT.9

#	Test Execution Steps	Res	sults
1	 Ensure the following conditions are met for test entry: UUT has registered successfully with SAS Test Harness UUT has a valid single grant as follows: valid cbsdld = C valid grantld = G grant is for frequency range F, power P grantExpireTime = UTC time greater than duration of the test UUT is in GRANTED, but not AUTHORIZED state(i.e. has not performed its first Heartbeat Request) 	-	-
2	 UUT sends a Heartbeat Request message. Ensure Heartbeat Request message is sent within latest specified heartbeatInterval, and is formatted correctly, including: cbsdld = C grantId = G operationState = "GRANTED" 	∎ Pass	□ Fail
3	After completion of step 2, SAS Test Harness does not respond to any further messages from UUT to simulate loss of network connection		
4	Monitor the RF output of the UUT from start of test to 60 seconds after step 3. Verify: • At any time during the test, UUT shall not transmit on RF interface	∎ Pass	□ Fail



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 32 of 53

7.3.8 WINNF.FT.C.HBT.10

#	Test Execution Steps	Res	sults
1	 Ensure the following conditions are met for test entry: UUT has registered successfully with SAS Test Harness UUT has a valid single grant as follows: valid cbsdld = C valid grantld = G grant is for frequency range F, power P grantExpireTime = UTC time greater than duration of the test UUT is in AUTHORIZED state and is transmitting within the grant bandwidth F on RF interface 	-	
2	UUT sends a Heartbeat Request message. Verify Heartbeat Request message is sent within latest specified heartbeatInterval, and is formatted correctly, including:	∎ Pass	□ Fail
3	 SAS Test Harness sends a Heartbeat Response message, including the following parameters: cbsdld = C grantId = G transmitExpireTime = T = current UTC time + 200 seconds responseCode = 0 		
4	After completion of step 3, SAS Test Harness shall not allow any further grants to the UUT.		
5	 Monitor the RF output of the UUT. Verify: UUT shall stop all transmission on RF interface within (transmitExpireTime + 60 seconds), using the transmitExpireTime sent in Step 3. 	∎ Pass	□ Fail



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 33 of 53

7.4 CBSD Measurement Report

7.4.1 WINNF.FT.D.MES.2

#	Test Execution Steps	Res	sults
1	 Ensure the following conditions are met for test entry: DP has successfully completed SAS Discovery and Authentication with SAS Test Harness 		
2	DP sends a Registration Request message for each of two CBSD. This may occur in a separate Request message per CBSD, or together in a single Request message with array of 2. Verify Registration Request message contains all required parameters properly formatted for CBSDi, i={1,2}, and specifically: • userId is present and correct • fccId is present and correct • cbsdSerialNumber is present and correct • measCapability = "RECEIVED_POWER_WITHOUT_GRANT"	■ Pass	□ Fail
3	If a separate Registration Request message was sent for each CBSD by the DP, the SAS Test Harness shall respond to each Registration Request message with a separate Registration Response message. If a single Registration Request message was sent by the DP containing a 2-object array (one per CBSD), the SAS Test Harness shall respond with a single Registration Response message containing a 2-object array. Parameters for each CBSD within the Registration Response message should be as follows, for CBSDi: • cbsdld = Ci • measReportConfig= "RECEIVED_POWER_WITHOUT_GRANT" • responseCode = 0		
4	 UUT sends a message: If message is type Spectrum Inquiry Request, go to step 5, or If message is type Grant Request, go to step 7 	■ Pass	□ Fail
5	 UUT sends message type Spectrum Inquiry Request. This may occur in a separate message per CBSD, or together in a single message with array of 2. Verify Spectrum Inquiry Request message contains all required parameters properly formatted for CBSDi, i= {1,2}, and specifically: cbsdld = Ci measReport is present, and is a properly formatted rcvdPowerMeasReport. 	■ Pass	□ Fail
6	 If a separate Spectrum Inquiry Request message was sent for each CBSD by the DP, the SAS Test Harness shall respond to each Spectrum Inquiry Request message with a separate Spectrum Inquiry Response message. If a single Spectrum Inquiry Request message was sent by the DP containing a 2-object array (one per CBSD), the SAS Test Harness shall respond with a single Spectrum Inquiry Response message containing a 2-object array. Parameters for each CBSD within the Spectrum Inquiry Response message should be as follows: cbsdld = Ci availableChannel is an array of availableChannel objects responseCode = 0 		



-CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 34 of 53

7	 UUT sends message type Grant Request message. This may occur in a separate message per CBSD, or together in a single message with array of 2. Verify the Grant Request message contains all required parameters properly formatted for CBSDi, i= {1,2}, and specifically: cbsdld = Ci measReport is present, and is a properly formatted rcvdPowerMeasReport. 	∎ Pass	□ Fail
---	---	-----------	-----------



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 35 of 53

7.5 CBSD Relinquishment Process

7.5.1 WINNF.FT.D.RLQ.2

#	Test Execution Steps	Res	sults
1	 Ensure the following conditions are met for test entry: DP has successfully completed SAS Discovery and Authentication with SAS Test Harness DP has successfully registered 2 CBSD with SAS Test Harness, each with cbsdld=Ci, i={1,2} DP has received a valid grant with grantId = Gi, i={1,2} for each CBSD Both CBSD are in Grant State AUTHORIZED and actively transmitting within the bounds of their grants. Invoke trigger to relinquish UUT Grant from the SAS Test Harness 		
2	Verify DP sends a Relinquishment Request message for each CBSD. This may occur in a separate message per CBSD, or together in a single message with array of 2. Verify Relinquishment Request message contains all required parameters properly formatted for each CBSD, specifically, for CBSDi:	∎ Pass	□ Fail
3	If a separate Relinquishment Request message was sent for each CBSD by the DP, the SAS Test Harness shall respond to each request message with a separate response message. If a single Relinquishment Request message was sent by the DP containing a 2- object array (one per CBSD), the SAS Test Harness shall respond with a single Response message containing a 2-object array. Parameters for each CBSD within the Relinquishment Response shall be as follows: • cbsdld = Ci • grantId = Gi • responseCode = 0		
4	After completion of step 3, SAS Test Harness will not provide any additional positive response (responseCode=0) to further request messages from the UUT.		
5	 Monitor the RF output of each UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: UUT shall stop RF transmission at any time between triggering the relinquishments and UUT sending the relinquishment requests for each CBSD. 	∎ Pass	□ Fail



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 36 of 53

7.5.2 WINNF.FT.D.RLQ.4

#	Test Execution Steps	Res	sults
1	 Ensure the following conditions are met for test entry: DP has successfully completed SAS Discovery and Authentication with SAS Test Harness DP has successfully registered 2 CBSD with SAS Test Harness, each with cbsdld=Ci, i={1,2} DP has received a valid grant with grantId = Gi, i={1,2} for each CBSD Both CBSD are in Grant State AUTHORIZED and actively transmitting within the bounds of their grants. Invoke trigger to relinquish UUT Grant from the SAS Test Harness 		
2	DP with two CBSDs sends Relinquishment Request with two objects to the SAS Test Harness. This may occur in a separate message per CBSD, or together in a single message with array of 2. Verify DP sends a Relinquishment Request message for each CBSD. This may occur in a separate message per CBSD, or together in a single message with array of 2. Verify Relinquishment Request message contains all required parameters properly formatted for each CBSD, specifically, for CBSDi:	∎ Pass	□ Fail
3	If a separate Relinquishment Request message was sent for each CBSD by the DP, the SAS Test Harness shall respond to each request message with a separate response message. If a single Relinquishment Request message was sent by the DP containing a 2- object array (one per CBSD), the SAS Test Harness shall respond with a single Response message containing a 2-object array. Parameters for each CBSD within the Relinquishment Response shall be as follows: • cbsdld = Ci • grantId = Gi • responseCode = Ri		
4	After completion of step 3, SAS Test Harness will not provide any additional positive response (responseCode=0) to further request messages from the UUT.		
5	Monitor the RF output of each UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: A. UUT stopped RF transmission at any time between triggering the relinquishment and UUT sending the relinquishment request	∎ Pass	□ Fail



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 37 of 53

7.5.3 WINNF.FT.D.RLQ.6

#	Test Execution Steps	Res	sults
1	 Ensure the following conditions are met for test entry: DP has successfully completed SAS Discovery and Authentication with SAS Test Harness DP has successfully registered 2 CBSD with SAS Test Harness, each with cbsdld=Ci, i={1,2} DP has received a valid grant with grantId = Gi, i={1,2} for each CBSD Both CBSD are in Grant State AUTHORIZED and actively transmitting within the bounds of their grants. 		
2	DP with two CBSDs sends Relinquishment Request with two objects to the SAS Test Harness. This may occur in a separate message per CBSD, or together in a single message with array of 2. Verify DP sends a Relinquishment Request message for each CBSD. This may occur in a separate message per CBSD, or together in a single message with array of 2. Verify Relinquishment Request message contains all required parameters properly formatted for each CBSD, specifically, for CBSDi:	∎ Pass	□ Fail
3	If a separate Relinquishment Request message was sent for each CBSD by the DP, the SAS Test Harness shall respond to each request message with a separate response message. If a single Relinquishment Request message was sent by the DP containing a 2- object array (one per CBSD), the SAS Test Harness shall respond with a single Response message containing a 2-object array. Parameters for each CBSD within the Relinquishment Response shall be as follows: • cbsdld = Ci • grantId = Gi • responseCode = 103		
4	After completion of step 3, SAS Test Harness will not provide any additional positive response (responseCode=0) to further request messages from the UUT.		
5	Monitor the RF output of each UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: A. UUT stopped RF transmission at any time between triggering the relinquishment and UUT sending the relinquishment request	∎ Pass	□ Fail



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 38 of 53

7.6 CBSD Deregistration Process

7.6.1 WINNF.FT.D.DRG.2

#	Test Execution Steps	Res	sults
1	 Ensure the following conditions are met for test entry: DP has successfully completed SAS Discovery and Authentication with SAS Test Harness DP has successfully registered 2 CBSD with SAS Test Harness, each with cbsdld=Ci, i={1,2} DP has received a valid grant with grantId = Gi, i={1,2} for each CBSD Both CBSD are in Grant State AUTHORIZED and actively transmitting within the bounds of their grants. 		
2	UUT may send a Relinquishment request and receives Relinquishment response with responseCode=0 for each CBSD		
3	 Verify DP sends a Deregistration Request message for each CBSD. This may occur in a separate message per CBSD, or together in a single message with array of 2. Verify Deregistration Request message contains all required parameters properly formatted for each CBSD, specifically, for CBSDi: cbsdld = Ci 	∎ Pass	□ Fail
4	If a separate Deregistration Request message was sent for each CBSD by the DP, the SAS Test Harness shall respond to each request message with a separate response message. If a single Deregistration Request message was sent by the DP containing a 2-object array (one per CBSD), the SAS Test Harness shall respond with a single Response message containing a 2-object array. Parameters for each CBSD within the Deregistration Response shall be as follows: • No cbsdld in either response • responseCode = Ri		
5	After completion of step 3, SAS Test Harness will not provide any positive response (responseCode=0) to further request messages from the UUT.		
6	 Monitor the RF output of each UUT from start of test until 60 seconds after Step 4 is complete. This is the end of the test. Verify: UUT stopped RF transmission at any time between triggering the deregistration and either A OR B occurs: A. UUT sending a Registration Request message, as this is not mandatory B. UUT sending a Deregistration Request message 	∎ Pass	□ Fail



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 39 of 53

7.6.2 WINNF.FT.D.DRG.4

#	Test Execution Steps	Res	sults
1	 Ensure the following conditions are met for test entry: Each UUT has successfully registered with SAS Test Harness Each UUT is in the authorized state DP has successfully completed SAS Discovery and Authentication with SAS Test Harness DP has successfully registered 2 CBSD with SAS Test Harness, each with cbsdld=Ci, i={1,2} DP has received a valid grant with grantId = Gi, i={1,2} for each CBSD Both CBSD are in Grant State AUTHORIZED and actively transmitting within the bounds of their grants. 		
2	UUT sends a Relinquishment request and receives Relinquishment response with responseCode=0		
3	Verify DP sends a Deregistration Request message for each CBSD. This may occur in a separate message per CBSD, or together in a single message with array of 2. Verify Deregistration Request message contains all required parameters properly formatted for each CBSD, specifically, for CBSDi: cbsdld = Ci 	∎ Pass	□ Fail
4	If a separate Deregistration Request message was sent for each CBSD by the DP, the SAS Test Harness shall respond to each request message with a separate response message. If a single Deregistration Request message was sent by the DP containing a 2-object array (one per CBSD), the SAS Test Harness shall respond with a single Response message containing a 2-object array. Parameters for each CBSD within the Deregistration Response shall be as follows: • cbsdld = Ci • responseCode = 0		
5	After completion of step 4, SAS Test Harness will not provide any positive response (responseCode=0) to further request messages from the UUT.		
6	 Monitor the RF output of each UUT from start of test until 60 seconds after Step 4 is complete. This is the end of the test. Verify: UUT stopped RF transmission at any time between triggering the deregistration and either A OR B occurs: UUT sending a Registration Request message, as this is not mandatory UUT sending a Deregistration Request message 	∎ Pass	□ Fail



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 40 of 53

7.6.3 WINNF.FT.C.DRG.5

#	Test Execution Steps	F	Results
1	 Ensure the following conditions are met for test entry: UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness UUT has successfully registered with SAS Test Harness, with cbsdld=C UUT has received a valid grant with grantId = G UUT is in Grant State AUTHORIZED and is actively transmitting within the bounds of its grant. Invoke trigger to deregister UUT from the SAS Test Harness 		
2	UUT sends a Relinquishment request and receives Relinquishment response with responseCode=0		
3	 UUT sends Deregistration Request to SAS Test Harness with cbsdld = C. 		
4	 The SAS Test Harness sends the Deregistration Response Message to UUT with: cbsdld=C responseCode = 103 		
5	After completion of step 3, SAS Test Harness will not provide any additional positive response (responseCode=0) to further request messages from the UUT.		
6	 Monitor the RF output of the UUT from start of test until 60 seconds after Step 4 is complete. This is the end of the test. Verify: UUT stopped RF transmission at any time between triggering the deregistration and either A OR B occurs: UUT sending a Registration Request message, as this is not mandatory B. UUT sending a Deregistration Request message 	∎ Pass	□ Fail



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 41 of 53

7.7 CBSD Security Validation

7.7.1 WINNF.FT.C.SCS.1

#	Test Execution Steps	Res	sults
1	 UUT shall start CBSD-SAS communication with the security procedure The UUT shall establish a TLS handshake with the SAS Test Harness using configured certificate. Configure the SAS Test Harness to accept the security procedure and establish the connection 	∎ Pass	□ Fail
2	 Make sure that Mutual authentication happens between UUT and the SAS Test Harness. Make sure that UUT uses TLS v1.2 Make sure that cipher suites from one of the following is selected, TLS_RSA_WITH_AES_128_GCM_SHA256 TLS_RSA_WITH_AES_256_GCM_SHA384 TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256 TLS_ECDHE_ECDSA_WITH_AES_256_GCM_SHA384 TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA384 TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256 	■ Pass	□ Fail
3	 A successful registration is accomplished using one of the test cases described in section 6.1.4.1, depending on CBSD capability. UUT sends a registration request to the SAS Test Harness and the SAS Test Harness sends a Registration Response with responseCode = 0 and cbsdld. 	∎ Pass	□ Fail
4	 Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: UUT shall not transmit RF 	∎ Pass	□ Fail

7.7.2 WINNF.FT.C.SCS.2

#	Test Execution Steps	Res	sults
1	 UUT shall start CBSD-SAS communication with the security procedures 		
1		Pass	Fail
2	 Make sure that UUT uses TLS v1.2 for security establishment. Make sure UUT selects the correct cipher suite. UUT shall use CRL or OCSP to verify the validity of the server certificate. Make sure that Mutual authentication does not happen between UUT and the SAS Test Harness. 	∎ Pass	□ Fail
3	• UUT may retry for the security procedure which shall fail.	∎ Pass	□ Fail
4	 SAS Test-Harness shall not receive any Registration request or any application data. 		
5	 Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: UUT shall not transmit RF 	∎ Pass	□ Fail



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 42 of 53

7.7.3 WINNF.FT.C.SCS.3

#	Test Execution Steps	Res	sults
1	 UUT shall start CBSD-SAS communication with the security procedures 		
		Pass	Fail
2	 Make sure that UUT uses TLS v1.2 for security establishment. Make sure UUT selects the correct cipher suite. UUT shall use CRL or OCSP to verify the validity of the server certificate. Make sure that Mutual authentication does not happen between UUT and the SAS Test Harness. 	∎ Pass	□ Fail
3	• UUT may retry for the security procedure which shall fail.	∎ Pass	□ Fail
4	 SAS Test-Harness shall not receive any Registration request or any application data. 		
5	 Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: UUT shall not transmit RF 	∎ Pass	□ Fail

7.7.4 WINNF.FT.C.SCS.4

#	Test Execution Steps	Res	sults
1	 UUT shall start CBSD-SAS communication with the security procedures 		
		Pass	Fail
2	 Make sure that UUT uses TLS v1.2 for security establishment. Make sure UUT selects the correct cipher suite. UUT shall use CRL or OCSP to verify the validity of the server certificate Make sure that Mutual authentication does not happen between UUT and the SAS Test Harness. 	∎ Pass	□ Fail
3	• UUT may retry for the security procedure which shall fail.	∎ Pass	□ Fail
4	 SAS Test-Harness shall not receive any Registration request or any application data. 		
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: • UUT shall not transmit RF	∎ Pass	□ Fail



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 43 of 53

7.7.5 WINNF.FT.C.SCS.5

#	Test Execution Steps	Res	sults
1	 UUT shall start CBSD-SAS communication with the security procedures 		
1		Pass	Fail
2	 Make sure that UUT uses TLS v1.2 for security establishment. Make sure UUT selects the correct cipher suite. UUT shall use CRL or OCSP to verify the validity of the server certificate Make sure that Mutual authentication does not happen between UUT and the SAS Test Harness. 	∎ Pass	□ Fail
3	• UUT may retry for the security procedure which shall fail.	∎ Pass	□ Fail
4	 SAS Test-Harness shall not receive any Registration request or any application data. 		
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: • UUT shall not transmit RF	∎ Pass	□ Fail



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 44 of 53

7.8 CBSD RF Power Measurement

7.8.1 WINNF.PT.C.HBT.1

#	Test Execution Steps	Res	sults
1	 Ensure the following conditions are met for test entry: UUT has successfully completed SAS Discovery and Authentication with the SAS Test Harness UUT has registered with the SAS, with CBSD ID = C UUT has a single valid grant G with parameters {lowFrequency = FL, highFrequency = FH, maxEirp = Pi}, with grant in AUTHORIZED state, and grantExpireTime set to a value far past the duration of this test case Note: in order for the UUT to request a grant with the parameters {lowFrequency, highFrequency, maxEirp), the SAS Test Harness may need to provide appropriate guidance in the availableChannel object of the spectrumInquiry response message, and the operationParam object of the grant response message. Alternately, the UUT vendor may provide the ability to set those parameters on the UUT so that the UUT will request a grant with those parameters 		
2	 UUT and SAS Test Harness perform a series of Heartbeat Request/Response cycles, which continues until the other test steps are complete. Messaging for each cycle is as follows: UUT sends Heartbeat Request, including: cbsdld = C grantld = G SAS Test Harness responds with Heartbeat Response, including: o cbsdld = C grantld = G transmitExpireTime = current UTC time + 200 seconds responseCode = 0 		
3	 Tester performs power measurement on RF interface(s) of UUT, and verifies it complies with the maxEirp setting, Pi. The RF measurement method is out of scope of this document, but may include additional configuration of the UUT, as required, to fulfill the requirements of the power measurement method. Note: it may be required for the vendor to provide a method or configuration to bring the UUT to a mode which is required by the measurement methodology. Any such mode is vendor-specific and depends upon UUT behavior and the measurement methodology. 	■ Pass	□ Fail



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 45 of 53

RF measurement plot for Test Case:

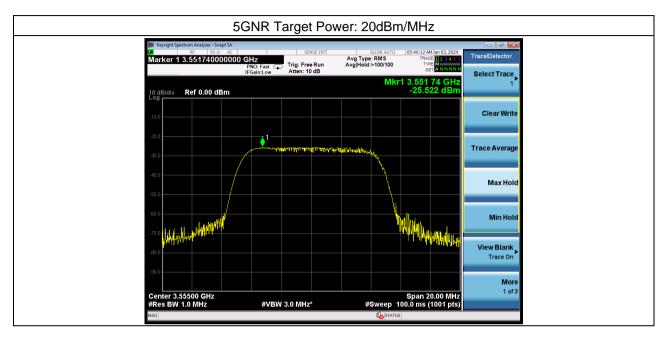
 Tester performs power measurement on RF interface(s) of UUT, and verifies it complies with the maxEirp setting, Pi. The RF measurement method is out of scope of this document, but may include additional configuration of the UUT, as required, to fulfill the requirements of the power measurement method.

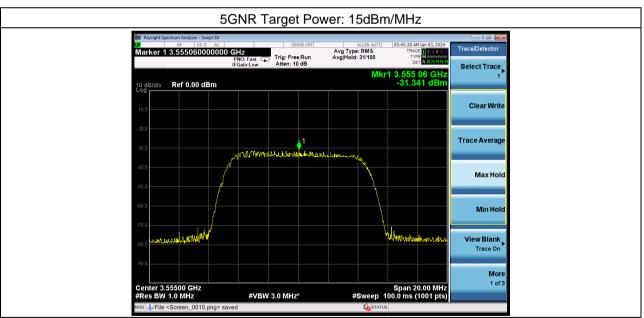
				5G NR			
Freq. (MHz)	Conducted PSD (dBm/MHz)	Path Loss (dB)	Antenna Gain (dBi)	Array Gain (dB)	EIRP PSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
3555	-25.522	36	6	3.01	19.488	20	Pass
3555	-31.341	36	6	3.01	13.669	15	
3555	-37.171	36	6	3.01	7.839	8	Pass
	ray Gain=10log(RP PSD= Condu						



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 46 of 53

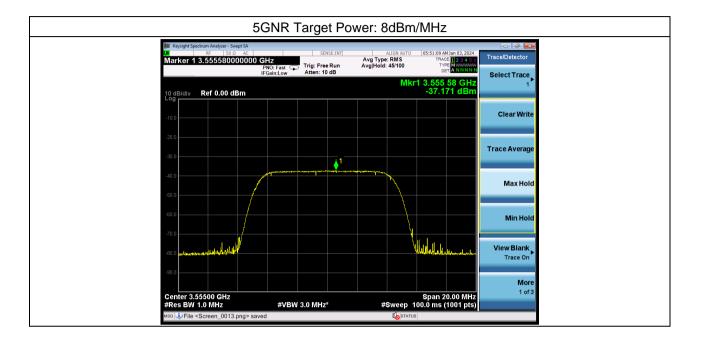






CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 47 of 53





CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 48 of 53

8 Test Data Log

Test data log refer to log files (Log files appendix) except for securitytest cases which shows below.

8.1 WINNF.FT.C.SCS.1

u 🖉 🗢 📕 🛄 🕅 🕅 🖉 🍳 🖛 🗮 🗄 s			2
Time Source	Destination	Protocol	Length Info
1406 13.623150 10.0.0.50	10.0.32	TLSv1.2	
1474 13.698790 10.0.0.32	10.0.50	TLSv1.2	
1491 14.744428 10.0.0.32	10.0.50	TLSv1.2	
1492 14,747828 10,0,0,50	10.0.0.32	TLSv1.2	1464 Server Hello
1494 14.747828 10.0.0.50	10.0.32	TLSv1.2	471 Certificate, Server Key Exchange, Certificate Request, Server Hello Done
1498 14.802932 10.0.0.32	10.0.50	TLSv1.2	1392 Certificate
1500 14.811702 10.0.0.32	10.0.0.50	TLSv1.2	129 Client Key Exchange
1502 14.937598 10.0.0.32	10.0.0.50	TLSv1.2	
1504 14.982715 10.0.0.32	10.0.50	TLSV1.2	
1505 14.983180 10.0.0.50	10.0.32	TLSv1.2	1464 New Session Ticket
1506 14,983180 10,0,0,50	10.0.32	TLSv1.2	
1508 15.011640 10.0.0.32	10.0.50	TLSv1.2	
1509 15.031813 10.0.0.50	10.0.32	TLSv1.2	
1513 15,072678 10,0,0,50	10.0.32	TLSv1.2	
1573 15, 345608 10, 0, 0, 32	10.0.0.50	TLSv1.2	
1575 15.349218 10.0.0.50	10.0.32	TLSv1.2	
Session ID Length: 0 Cipher Suite: TLS_ECDHE Compression Method: null Extensions Length: 17 > Extension: renegotiation	2) Hello (2))) 2/3f2322206341d87072a8e72944e50e; RSA_WITH_AES_128_GCM_SHA256 (&xc (0) 1_info (len-1)		0020 00 20 13 86 7 49 49 42 19 90 70 32 50 10 0030 10 01 00 00 00 10 30
> Extension: ec point for			0110 5a 17 0d 32 34 30 36 32 34 30 37 33 36 30 35 5a Z- 0120 30 42 31 0b 30 09 06 03 55 04 06 13 02 43 4e 31 08
			0120 30 42 31 0b 30 09 06 03 55 04 06 13 02 43 4e 31 0B
> Extension: session_ticke	et (len=0)		0130 0c 30 0a 06 03 55 04 0a 0c 03 53 47 53 31 10 30 -0



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 49 of 53

8.2 WINNF.FT.C.SCS.2

scs.2.pcapng											-	n x
文件(F) 编辑(E) 视图(V)	跳转(G) 捕获(C) :	分析(A) 统计(S) 电	电话(Y) 无线	W) 工具(T) 帮助(H)								
x = 2 • 1 = 1 × 1	🙆 । ९. 🖛 🗯 🗃 ने	F ± 🛄 🗐 🔍	ବ୍ ବ୍ 🎹									
http												* *
No. Time	Source	Destination		Length Info	comments of							
1837 19.813615	10.0.0.32	10.0.0.50	HTTP	215 GET /crlserver.crl	HTTP/1.1							
- 1839 19.822332	10.0.0.50	10.0.0.32	HTTP	1090 HTTP/1.1 200 OK								
Ename 1839: 1090	bytes on wire	(8720 hits), 1	1090 bytes	captured (8720 bits) on	interface \Device\NPF {26A42197-28	0000	44 a8 42	0c 3a a6 00	0e c6 b6 3	72 c7 08 (00 45 00	D-B-
), Dst: Dell 0c:3a:a6 (44				c8 40 00 80				
> Internet Protocol					100142100150100)	0020	00 20 00	50 ff 76 c2	89 aa cf I	03 75 01	34 50 18	• • P
				65398, Seq: 326, Ack: 16	2 Len: 1026	0030	01 ff a7	5b 00 00 2d	2d 2d 2d 3	2d 42 45	47 49 4e	- · · · [
> [2 Reassembled TC					z, Len. 1050	0040	20 58 35	30 39 20 43	52 4c 2d 3	2d 2d 2d	2d 0d 0a	X50
 V Hypertext Transfe 		of Dytes): #10	556(525),	#1839(1836)]		0050	4d 49 49	43 78 7a 43	42 73 41 4	49 42 41	54 41 4e	MIIC
						0060	42 67 6b	71 68 6b 69	47 39 77 3	30 42 41	51 73 46	Bgkq
> HTTP/1.1 200 OK						0070	41 44 42	46 4d 51 73	77 43 51 5	59 44 56	51 51 47	ADBF
Content-Type: a		tet-stream\r\n				0080		44 54 6a 45				
> Content-Length:						0090		67 77 44 55				
Accept-Ranges:								51 51 4c 44				
Server: HFS 2.3								52 59 77 46				
Set-Cookie: HFS				0nly\r\n				31 4d 67 52				
ETag: 3D575772E								0a 46 77 30				
Last-Modified:	Wed, 27 Dec 20	023 07:57:21 G	MT\r\n					33 4d 6a 46				
Content-Disposi	tion: attachme	ent; filename='	"crlserve	.crl";\r\n				77 4e 7a 55				
\r\n								55 63 5a 77				
[HTTP response	1/1]							36 Ød Øa 69				
[Time since red	uest: 0.008717	7000 seconds]						54 49 7a 4d				
[Request in fra						v <	- HR // AQ	AP 11 PL M	ES AT AL	10 A1 6+ 1	17 /11 21	<pre>cume ></pre>
<					>	Frane	(1090 bytes)	Reassembled	TCP (1361 byt	es)		
O Z Hamontout Tuonafo	m Busteesly Buste	1					() 43.4R. 9E		(0.18)		100	. Dofeelt

Source Operiting 10.0.0.5 10.0.0.1 10.0.0.5 10.0.0.1 10.0.0.5 10.0.0.1 10.0.0.5 10.0.0.1 10.0.0.5 10.0.0.1 10.0.0.5 10.0.0.1 10.0.0.5 10.0.0.1 10.0.0.5 10.0.0.1 10.0.0.5 10.0.0.1 10.0.0.5 10.0.0.1 10.0.0.5 10.0.0.1 10.0.0.5 10.0.0.1 10.0.0.5 10.0.0.1 10.0.0.5 10.0.0.1 10.0.0.5 10.0.0.1 10.0.0.5 10.0.0.1 10.0.0.5 10.0.0.1 10.0.0.5 10.0.0.1 10.0.0.5 10.0.0.1 10.0.0.3 10.0.0.1 10.0.0.3 10.0.0.1 10.0.0.3 10.0.0.1 10.0.0.3 10.0.0.1 10.0.0.3 10.0.0.1	a.32 TCP a.32 TLSv1.2 b.50 TCP a.50 TCSV1.2 b.50 TLSv1.2 b.50 TLSv1.2 a.32 TLSv1.2 b.32 TLSv1.2 b.50 TCP b.50 TCP b.50 TCP b.50 TCP	1464 56017 + 8181 [ACK] Seq-3406 Ack=457435 Win=2048 Len=1410 [TCP segment of a reassembled PDU] 768 Application Data 1464 8181 + 56017 [ACK] Seq-457435 Ack=11170 Win=10775 Len=1410 [TCP segment of a reassembled PDU] 731 Application Data 732 Client Hello 1464 Server Hello 601 Certificate, server Key Exchange, Certificate Request, Server Hello Done 61 Alert (Level: Fatal, Description: Certificate Revoked) 1300 Application Data 1464 58017 + 8181 [ACK] Seq-12425 Ack=465162 Win=2048 Len=1410 [TCP segment of a reassembled PDU] 808 Application Data 120 Application Data 1246 4811 + 55856 [ACK] Seq-519004 Ack=75202 Win=10533 Len=1410 [TCP segment of a reassembled PDU] 957 Application Data	
$\begin{array}{ccccccc} 100.0.59 & 100.0.0\\ 100.0.59 & 100.0.0\\ 100.0.52 & 100.0.0\\ 100.0.52 & 100.0.0\\ 100.0.32 & 100.0.0\\ 100.0.50 & 100.0.0\\ 100.0.50 & 100.0.0\\ 100.0.50 & 100.0.0\\ 100.0.50 & 100.0.0\\ 100.0.50 & 100.0.0\\ 100.0.50 & 100.0.0\\ 100.0.50 & 100.0.0\\ 100.0.50 & 100.0.0\\ 100.0.50 & 100.0.0\\ 100.0.50 & 100.0.0\\ 100.0.50 & 100.0.0\\ 100.0.50 & 100.0.0\\ 100.0.50 & 100.0.0\\ 100.0.50 & 100.0.0\\ 100.0.50 & 100.0.0\\ 100.0.50 & 100.0.0\\ 100.0.50 & 100.0.0\\ 100.0.50 & 100.0.0\\ 100.0.50 & 100.0.0\\ 100.0.52 & 100.0.0\\ 100.0.52 & 100.00\\ 100.0.0.52 & 100.00\\ 100.0.0.52 & 100.00\\ 100.0.0.52 & 100.00\\ 100.0.0.52 & 100.00\\ 100.0.0.52 & 100.00\\ 100.0.0.52 & 100.00\\ 100.0.0.52 & 100.00\\ 100.0.0.52 & 100.00\\ 100.0.0.52 & 100.00\\ 100.0.0.52 & 100.00\\ 100.00.00\\ 100.00.00\\ 100.00.00\\ 100.00.00\\ 100.$	a.32 TCP a.32 TLSv1.2 b.50 TCP a.50 TCSV1.2 b.50 TLSv1.2 b.50 TLSv1.2 a.32 TLSv1.2 b.32 TLSv1.2 b.50 TCP b.50 TCP b.50 TCP b.50 TCP	1464 56017 + 8181 [ACK] Seq-3406 Ack=457435 Win=2048 Len=1410 [TCP segment of a reassembled PDU] 768 Application Data 1464 8181 + 56017 [ACK] Seq-457435 Ack=11170 Win=10775 Len=1410 [TCP segment of a reassembled PDU] 731 Application Data 732 Client Hello 1464 Server Hello 601 Certificate, server Key Exchange, Certificate Request, Server Hello Done 61 Alert (Level: Fatal, Description: Certificate Revoked) 1300 Application Data 1464 58017 + 8181 [ACK] Seq-12425 Ack=465162 Win=2048 Len=1410 [TCP segment of a reassembled PDU] 808 Application Data 120 Application Data 1246 4811 + 55856 [ACK] Seq-519004 Ack=75202 Win=10533 Len=1410 [TCP segment of a reassembled PDU] 957 Application Data	
$\begin{array}{ccccccc} 10.0.0.32 & 10.0.0 \\ 10.0.0.32 & 10.0.0 \\ 10.0.0.32 & 10.0.0 \\ 10.0.0.50 & 10.0.0 \\ 10.0.0.50 & 10.0.0 \\ 10.0.0.50 & 10.0.0 \\ 10.0.0.50 & 10.0.0 \\ 10.0.0.50 & 10.0.0 \\ 10.0.0.50 & 10.0.0 \\ 10.0.0.50 & 10.0.0 \\ 10.0.0.50 & 10.0.0 \\ 10.0.0.50 & 10.0.0 \\ 10.0.0.50 & 10.0.0 \\ 10.0.0.50 & 10.0.0 \\ 10.0.0.50 & 10.0.0 \\ 10.0.0.50 & 10.0.0 \\ 10.0.0.52 & 10.0.$	a.50 TCP b.50 TLSV1.2 a.50 TLSV1.2 a.32 TLSV1.2 b.32 TLSV1.2 b.32 TLSV1.2 b.32 TLSV1.2 b.33 TLSV1.2 b.34 TLSV1.2 b.50 TCP b.50 TCP	1464 ±181 → 56017 [ACK] Seq-457435 ACk=11170 Win=10775 Len=1410 [TCP segment of a reassembled PDU] 731 Application Data 473 Client Hello 1464 Server Hello 61 Acert(Level: Fatal, Description: Certificate Request, Server Hello Done 61 Alert (Level: Fatal, Description: Certificate Revoked) 1300 Application Data 1464 S017 + 8181 [ACK] Seq=12425 Ack=465162 Win=2048 Len=1410 [TCP segment of a reassembled PDU] 808 Application Data 1464 8181 → 55856 [ACK] Seq=519004 Ack=75202 Win=10533 Len=1410 [TCP segment of a reassembled PDU] 957 Application Data 1464 8181 → 55856 [ACK] Seq=465162 Ack=20229 Win=10775 Len=1410 [TCP segment of a reassembled PDU]	
$\begin{array}{ccccccc} 10.0, 0, 32 & 10, 0, 0\\ 10.0, 0, 32 & 10, 0, 0\\ 10.0, 0, 50 & 10, 0, 0\\ 10.0, 0, 50 & 10, 0, 0\\ 10.0, 0, 50 & 10, 0, 0\\ 10.0, 0, 50 & 10, 0, 0\\ 10.0, 0, 50 & 10, 0, 0\\ 10.0, 0, 50 & 10, 0, 0\\ 10.0, 0, 50 & 10, 0, 0\\ 10.0, 0, 50 & 10, 0, 0\\ 10.0, 0, 50 & 10, 0, 0\\ 10.0, 0, 50 & 10, 0, 0\\ 10.0, 0, 50 & 10, 0, 0\\ 10.0, 0, 32 & 10, 0, 0\\ 10.0, 0, 32 & 10, 0, 0\\ 10.0, 0, 32 & 10, 0, 0\\ 10.0, 0, 32 & 10, 0, 0\\ 10.0, 0, 0, 32 & 10, 0, 0\\ 10.0, 0, 0, 32 & 10, 0, 0\\ \end{array}$	0.50 TLSV1.2 0.50 TLSV1.2 0.32 TLSV1.2 0.35 TCP 0.50 TCP 0.50 TCP	731 Application Data 473 Client Hello 1646 Server Hello 601 Certificate, Server Key Exchange, Certificate Request, Server Hello Done 61 Alert (Level: Fatal, Description: Certificate Revoked) 1309 Application Data 1464 S6017 - 8181 [ACK] Seq=12425 Ack=465162 Win=2048 Len=1410 [TCP segment of a reassembled PDU] 808 Application Data 1129 Application Data 1129 Application Data 464 B181 - \$5856 [ACK] Seq=519004 Ack=75202 Win=10533 Len=1410 [TCP segment of a reassembled PDU] 957 Application Data 1464 B181 - \$56817 [ACK] Seq=45162 Ack=20229 Win=10775 Len=1410 [TCP segment of a reassembled PDU]	
10.0.0.32 10.0.0 10.0.0.50 10.0.0 10.0.0.50 10.0.0 10.0.0.50 10.0.0 10.0.0.50 10.0.0 10.0.0.50 10.0.0 10.0.0.50 10.0.0 10.0.0.50 10.0.0 10.0.0.50 10.0.0 10.0.0.50 10.0.0 10.0.0.50 10.0.0 10.0.0.52 10.0.0 10.0.0.32 10.0.0 10.0.0.32 10.0.0	0.50 TLSV1.2 0.32 TLSV1.2 0.35 TCP 0.50 TLSV1.2 0.50 TCP 0.50 TCP	473 cilent Hello 1646 Server Hello 601 Certificate, Server Key Exchange, Certificate Request, Server Hello Done 61 Alert (Level: Fatal, Description: Certificate Revoked) 1304 Application Data 1464 50617 + 8181 [ACK] Seq-12425 Ack=465162 Win=2048 Len=1410 [TCP segment of a reassembled PDU] 808 Application Data 1264 BB10 + 35856 [ACK] Seq-519004 Ack=75202 Win=10533 Len=1410 [TCP segment of a reassembled PDU] 957 Application Data 1646 BB10 + 50617 [ACK] Seq-645162 Ack=20229 Win=10775 Len=1410 [TCP segment of a reassembled PDU]	
10.0.0.50 10.0.0 10.0.0.50 10.0.0 10.0.0.50 10.0.0 10.0.0.50 10.0.0 10.0.0.50 10.0.0 10.0.0.50 10.0.0 10.0.0.50 10.0.0 10.0.0.50 10.0.0 10.0.0.50 10.0.0 10.0.0.50 10.0.0 10.0.0.32 10.0.0 10.0.0.32 10.0.0 10.0.0.32 10.0.0	0.32 TLSv1.2 0.32 TLSv1.2 0.50 TLSv1.2 0.32 TLSv1.2 0.32 TCP 0.32 TLSv1.2 0.32 TLSv1.2 0.32 TLSv1.2 0.32 TLSv1.2 0.32 TLSv1.2 0.35 TCP 0.50 TLSv1.2 0.50 TCP	1464 Server Hello 601 Certificate, Server Key Exchange, Certificate Request, Server Hello Done 61 Alert (Level: Fatal, Description: Certificate Revoked) 1300 Application Data 1464 S6017 A S181 [ACK] Seq=12425 Ack=465162 Win=2048 Len=1410 [TCP segment of a reassembled PDU] 808 Application Data 1129 Application Data 1464 B181 + S5856 [ACK] Seq=519004 Ack=75202 Win=10533 Len=1410 [TCP segment of a reassembled PDU] 557 Application Data 1646 B181 + S6017 [ACK] Seq=465162 Ack=20229 Win=10775 Len=1410 [TCP segment of a reassembled PDU]	
10.0.0.50 10.0.0 10.0.0.32 10.0.0 10.0.0.50 10.0.0 10.0.0.50 10.0.0 10.0.0.50 10.0.0 10.0.0.50 10.0.0 10.0.0.50 10.0.0 10.0.0.50 10.0.0 10.0.0.32 10.0.0 10.0.0.32 10.0.0 10.0.0.32 10.0.0 10.0.0.32 10.0.0	a.32 TLSv1.2 a.50 TLSv1.2 a.32 TLSv1.2 a.32 TCP a.32 TLSv1.2 a.32 TLSv1.2 a.32 TLSv1.2 a.32 TLSv1.2 a.35 TCP a.50 TCP a.50 TCP a.50 TCP a.50 TCP	601 certificate, server Key Exchange, Certificate Request, server Hello Done 61 Alert (Level: Fatal, Description: Certificate Revoked) 1300 Application Data 1464 56017 + 8181 [ACK] Seq-12425 Ack=465162 Win=2048 Len=1410 [TCP segment of a reassembled PDU] 808 Application Data 1204 Application Data 1464 8181 - \$3586 [ACK] Seq=519004 Ack=75202 Win=10533 Len=1410 [TCP segment of a reassembled PDU] 957 Application Data 1464 8181 - \$6017 [ACK] Seq=465162 Ack=20229 Win=10775 Len=1410 [TCP segment of a reassembled PDU]	
10.0.0.32 10.0.0 10.0.0.50 10.0.0 10.0.55 10.0.0 10.0.55 10.0.0 10.0.0.55 10.0.0 10.0.0.55 10.0.0 10.0.0.55 10.0.0 10.0.0.55 10.0.0 10.0.0.32 10.0.0 10.0.0.32 10.0.0 10.0.0.32 10.0.0	0.50 TLSv1.2 0.32 TLSv1.2 0.32 TCP 0.32 TLSv1.2 0.32 TLSv1.2 0.32 TLSv1.2 0.50 TCP 0.50 TLSv1.2 0.50 TCP	61 Alert (Level: Fatal, Description: Certificate Revoked) 1309 Application Data 1464 56017 → 8181 [ACK] Seq-12425 Ack=465162 Win=2048 Len=1410 [TCP segment of a reassembled PDU] 808 Application Data 129 Application Data 1464 8181 → 55856 [ACK] Seq=519004 Ack=75202 Win=10533 Len=1410 [TCP segment of a reassembled PDU] 957 Application Data 1464 8181 → 56017 [ACK] Seq=465162 Ack=20229 Win=10775 Len=1410 [TCP segment of a reassembled PDU]	
10.0.0.50 10.0.0 10.0.0.50 10.0.0 10.0.0.50 10.0.0 10.0.0.50 10.0.0 10.0.0.52 10.0.0 10.0.0.32 10.0.0 10.0.0.32 10.0.0 10.0.0.32 10.0.0	0.32 TLSv1.2 0.32 TCP 0.32 TLSv1.2 0.32 TLSv1.2 0.30 TCP 0.50 TLSv1.2 0.50 TCP	1300 Application Data 1464 56017 - 8181 [ACK] Seq-12425 Ack-465162 Win=2048 Len=1410 [TCP segment of a reassembled PDU] 808 Application Data 1220 Application Data 1464 8181 - 93856 [ACK] Seq-519004 Ack<75202 Win=10533 Len=1410 [TCP segment of a reassembled PDU] 957 Application Data 1464 8181 - 96017 [ACK] Seq-465162 Ack<20229 Win=10775 Len=1410 [TCP segment of a reassembled PDU]	
10.0.0.50 10.0.0 10.0.0.50 10.0.0 10.0.0.50 10.0.0 10.0.0.32 10.0.0 10.0.0.32 10.0.0 10.0.0.32 10.0.0 10.0.0.32 10.0.0	0.32 TCP 0.32 TLSv1.2 0.32 TLSv1.2 0.50 TCP 0.50 TLSv1.2 0.50 TCP 0.50 TCP 0.50 TCP	1464 56017 → 8181 [ACK] Seq=12425 Ack=465162 Win=2048 Len=1410 [TCP segment of a reassembled PDU] 808 Application bata 1129 Application bata 1464 8181 → 55856 [ACK] Seq=519004 Ack=75202 Win=10533 Len=1410 [TCP segment of a reassembled PDU] 957 Application Data 1464 8181 → 56017 [ACK] Seq=465162 Ack=20229 Win=10775 Len=1410 [TCP segment of a reassembled PDU]	
10.0.0.50 10.0.0 10.0.0.50 10.0.0 10.0.0.32 10.0.0 10.0.0.32 10.0.0 10.0.0.32 10.0.0 10.0.0.32 10.0.0	0.32 TLSv1.2 0.32 TLSv1.2 0.50 TCP 0.50 TLSv1.2 0.50 TCP 0.50 TLSv1.2	808 Application Data 1129 Application Data 1464 8181 - \$5856 [ACK] Seq=519004 Ack=75202 Win=10533 Len=1410 [TCP segment of a reassembled PDU] 957 Application Data 1664 8181 - \$6017 [ACK] Seq=465162 Ack=20229 Win=10775 Len=1410 [TCP segment of a reassembled PDU]	
10.0.0.50 10.0.0 10.0.0.32 10.0.0 10.0.0.32 10.0.0 10.0.0.32 10.0.0 10.0.0.32 10.0.0 10.0.0.32 10.0.0	0.32 TLSv1.2 0.50 TCP 0.50 TLSv1.2 0.50 TLSv1.2	1129 Application Data 1464 8181 + 55856 [ACK] Seq=519004 Ack=75202 Win=10533 Len=1410 [TCP segment of a reassembled PDU] 957 Application Data 1464 8181 + 56017 [ACK] Seq=465162 Ack=20229 Win=10775 Len=1410 [TCP segment of a reassembled PDU]	
10.0.0.32 10.0.0 10.0.0.32 10.0.0 10.0.0.32 10.0.0 10.0.0.32 10.0.0 10.0.0.32 10.0.0	0.50 TCP 0.50 TLSv1.2 0.50 TCP	1464 E181 → 55856 [ACK] Seq=519004 ACk=75202 Win=10533 Len=1410 [TCP segment of a reassembled PDU] 957 Application Data 1664 B181 → 56017 [ACK] Seq=465162 Ack=20229 Win=10775 Len=1410 [TCP segment of a reassembled PDU]	
10.0.0.32 10.0.0 10.0.0.32 10.0.0 10.0.0.32 10.0.0	0.50 TLSv1.2 0.50 TCP	957 Application Data 1464 8181 → 56017 [ACK] Seq=465162 Ack=20229 Win=10775 Len=1410 [TCP segment of a reassembled PDU]	
10.0.0.32 10.0.0 10.0.0.32 10.0.0	0.50 TCP	1464 8181 → 56017 [ACK] Seq=465162 Ack=20229 Win=10775 Len=1410 [TCP segment of a reassembled PDU]	
10.0.0.32 10.0.0			
	3 50 TISV1 2		
		737 Application Data	
Protocol, Src Port: ity er: Alert (Level: Fa ert (21) 2 (0X0303) (2)	: 4783, Dst Port: atal, Description	5000, Seq: 420, Ack: 3368, Len: 7	
	sion 4, Src: 10.0. Protocol, Src Port ity er: Alert (Level: F ert (21) (0x0303)	<pre>sion 4, Srci 10.0.0.32, Dit i0.0, Protocol, Src Port: 4783, Dit Port: ity r: Alert (Level: Fatal, Descriptio ert (21) (0x0303)</pre>	3101 49, 31C1 10:06:32, 05C1 10:06:36 000 00 15 03 03 00 02 02 2c 1ty 0030 01 ec ad 07 00 00 15 03 03 00 02 02 2c r: Alert (Level: Fatal, Description: Certificate Revoked) 0030 01 ec ad 07 00 00 15 03 03 00 02 02 2c (0x0303) 2)



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 50 of 53

8.3 WINNF.FT.C.SCS.3

scs.3.pcapng				- 0
(F) 编辑(E) 视图(V)				工具(T) 帮助(H)
■ <u>⊿</u> ⊙	🙆 । ९. 🗢 🛎 न	• • <u>•</u> = = • •	a, e, <u>11</u>	
Tine	Source	Destination	Protocol I	ength Info
507 15.105189	10.0.0.32	10.0.0.50	TLSv1.2	957 Application Data
519 15.106845	10.0.0.32	10.0.0.50		1302 Application Data
538 15.702536	10.0.0.32	10.0.0.50	TLSv1.2	473 Client Hello
539 15.705555	10.0.0.50	10.0.0.32	TLSv1.2	1464 Server Hello
541 15.705555	10.0.0.50	10.0.0.32	TLSv1.2	471 Certificate, Server Key Exchange, Certificate Request, Server Hello Done
545 15.710368	10.0.0.32	10.0.0.50	TLSv1.2	61 Alert (Level: Fatal, Description: Certificate Expired)
562 16.029058	10.0.0.50	10.0.0.32	TLSv1.2	1309 Application Data
568 16.029108	10.0.0.50	10.0.0.32	TLSv1.2	662 Application Data
578 16.104399	10.0.0.32	10.0.0.50	TLSv1.2	713 Application Data
686 19.019261	10.0.0.50	10.0.0.32	TLSv1.2	1309 Application Data
692 19.019295	10.0.0.50	10.0.0.32	TLSv1.2	684 Application Data
705 19.092520	10.0.0.32	10.0.0.50	TLSv1.2	737 Application Data
717 20.026374	10.0.0.50	10.0.0.32	TLSv1.2	1129 Application Data
731 20.057492	10.0.0.32	10.0.0.50	TLSv1.2	957 Application Data
744 20.129001	10.0.0.32	10.0.0.50	TLSv1.2	957 Application Data
757 20.130634	10.0.0.32	10.0.0.50	TLSv1.2	957 Application Data
thernet II, Src nternet Protoco ransmission Cour TLSV1.2 Recorc Content Typ Version: TL Length: 2 ~ Alert Messa, Level: Fa	: Dell_0c:3a:a6 l Version 4, Sro trol Protocol, 5 Security Layer: Alert (2: Alert (21) 5 1.2 (0x0303) 39	(44:a8:42:0c: c: 10.0.0.32, Src Port: 9288 Level: Fatal,	3a:a6), Dst Dst: 10.0.0 , Dst Port:	red (488 bits) on interface \Device\NPF_{26A42197-2E27-4220- 000 00 00 6 c5 67 2 c7 44 a8 42 0c 3a a6 08 00 45 00 : AsixElec_b6:72:c7 (00:00:c6:b6:72:c7) 0010 00 2f d3 a9 40 00 3f 06 53 ce 0a 00 02 00 20 00 a0 :50 0000, Seq: 420, Ack: 3238, Len: 7 :: Certificate Expired) 01 ed b9 13 00 00 15 03 03 00 02 02 2d
	Security: Protocol			>) < │ /组: 2017 ・已显示: 106 (5.3%) │ 配置:



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 51 of 53

8.4 WINNF.FT.C.SCS.4

The Protect Destination Protect Length Infe 637 4-002272 10.0.0.50 10.0.0.32 Tisvi.2 737 Application Data 437 4-002272 10.0.0.50 10.0.0.32 Tisvi.2 737 Application Data 437 5.01148 10.0.0.32 115vi.2 737 Application Data 585 5.50092 10.0.0.32 Tisvi.2 737 Application Data 508 5.509355 10.0.0.50 Tisvi.2 737 Application Data 537 5.525479 10.0.0.32 Tisvi.2 63 Alert (Level: Fatal, Description: Certificate Request, Server Hello Done 537 5.525479 10.0.0.32 Tisvi.2 1394 Application Data 642 7.905548 10.0.0.50 15.0.1.2 1394 Application Data 642 7.905548 10.0.0.32 115vi.2 977 Application Data 693 8.01365 10.0.0.32 15vi.2 977 Application Data 693 8.01365 10.0.0.32 15vi.2 977 Application Data 7158 0.1552 10.0.0.32 15vi.2 977 Application Data 718 0.0552 10.0.0.32 15vi.2 977 Application Data <th>🗲 scs.</th> <th>4.pcapng</th> <th></th> <th></th> <th></th> <th></th> <th>- 0</th> <th>×</th>	🗲 scs.	4.pcapng					- 0	×
Ins Source Destination Private largeh infe 47 4,902247 10.0.0.50 10.0.0.32 TiSV1.2 1309 Application Data 463.4,90227 10.0.0.50 10.0.0.32 TiSV1.2 1309 Application Data 463.4,90227 10.0.0.50 10.0.0.32 TiSV1.2 732 Application Data 467.5,01144 10.0.0.50 TiSV1.2 732 Application Data 596.5,50935 10.0.0.50 TiSV1.2 61.41ert (level: Fatal, Description: Certificate Request, Server Hello Done 517.5,55247 10.0.0.50 10.0.0.32 TiSV1.2 61.41ert (level: Fatal, Description: Certificate Unknown) 647.5,99554 10.0.0.50 10.0.0.32 TiSV1.2 732 Application Data 647.5,995740 10.0.0.50 TiSV1.2 737 Application Data 659.5,937831 10.0.0.50 TiSV1.2 737 Application Data 659.5,01365 10.0.0.32 10.0.0.50 TiSV1.2 957 Application Data 799.8.01326 10.0.0.32 10.0.0.50 TiSV1.2 957 Application Data 799.8.01326 10.0.0.32 TiSV1.2 957 Appli	文件(F)	编辑(E) 视图(V)	跳转(G) 捕获(C) 🖇	分析(A) 统计(S) 电	话(Y) 无线(W)	工具(T) 帮助(H)		
Here Outcome Description: Control of the state o	(III)	e 💿 📘 🗎 🗙	8 9 + + m 7	• • = = q	a a 🖬			
457 4.902247 10.0.0.50 10.0.0.32 TLSV1.2 130 Application Data 463 4.90222 10.0.0.50 10.0.0.32 TLSV1.2 723 Application Data 463 4.90222 10.0.0.50 10.0.0.32 TLSV1.2 737 Application Data 585 5.90395 10.0.0.50 TLSV1.2 737 Application Data 586 5.90395 10.0.0.50 TLSV1.2 737 Application Data 587 5.90648 10.0.0.32 TLSV1.2 737 Application Data 637 7.99799 10.0.0.32 TLSV1.2 1304 Application Data 641 7.90546 10.0.0.32 TLSV1.2 132 Application Data 659 7.937831 10.0.0.32 TLSV1.2 957 Application Data 659 7.937831 10.0.0.50 TLSV1.2 957 Application Data 699 8.01386 10.0.0.52 10.0.0.50 TLSV1.2 957 Application Data 699 8.01386 10.0.0.52 10.0.0.50 TLSV1.2 957 Application Data 796 8.01326 10.0.0.50 TLSV1.2 957 Application Data 960 82 <t< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th>×</th><th></th></t<>							×	
463.40222 10.0.0.50 10.0.0.32 10.0.0.32 10.0.0.32 10.0.0.32 10.0.0.32 10.0.0.50 TLSV1.2 737 Application Data 585.5.506092 10.0.0.32 10.0.0.50 TLSV1.2 127 Certificate, Server Key Exchange, Certificate Request, Server Hello Done 585.503055 10.0.0.50 10.0.0.32 TLSV1.2 126 Application Data 585.503055 10.0.0.50 10.0.0.32 TLSV1.2 126 Application Data 587.503113 10.0.0.50 10.0.0.32 TLSV1.2 129 Application Data 641.7,005146 10.0.0.50 10.0.0.32 TLSV1.2 129 Application Data 642.7,005048 10.0.0.32 TLSV1.2 129 Application Data 10.0.0.50 TLSV1.2 129 Application Data 6697.7979797 10.0.0.32 10.0.0.50 TLSV1.2 957 Application Data 10.0.0.50 TLSV1.2 957 Application Data 708.0.0126 10.0.0.32 10.0.0.50 TLSV1.2 957 Application Data 10.0.0.50 TLSV1.2 957 Application Data 719 8.01552 10.0.0.32 10.0.0.50 TLSV1.2 957 Application Data 10.0.0.50 15.57.277 (00.00002 00 00 00 00 00 00 00 00 00 00 00	o.	Time	Source	Destination	Protocol I	ength Info		
447 5.01144 10.0.0.32 10.0.0.50 TISV1.2 737 Application Data 595 5.50095 10.0.0.50 TISV1.2 1244 Server Hello 506 5.50035 10.0.0.50 TISV1.2 1444 Server Hello 507 5.525479 10.0.0.50 TISV1.2 1444 Server Hello 617 .095113 10.0.0.50 TISV1.2 1444 Server Hello 617 .095114 10.0.0.50 10.0.0.32 TISV1.2 149 Application Data 617 .095146 10.0.0.50 10.0.0.32 TISV1.2 139 Application Data 627 .095648 10.0.0.50 TISV1.2 139 Application Data 639 .033751 10.0.0.50 TISV1.2 129 Application Data 667 .7.979797 10.0.0.50 TISV1.2 957 Application Data 668 .001386 10.0.0.50 TISV1.2 957 Application Data 693 8.013056 10.0.0.50 TISV1.2 957 Application Data 693 8.013056 10.0.0.50 TISV1.2 957 Application Data 693 8.013056 10.0.0.50 TISV1.2 957 Application Data 719 8.016230 10.0.0.50 TISV1.2 10.0.0.50 TISV1.	4	57 4.902247	10.0.0.50	10.0.0.32	TLSv1.2	1309 Application Data		
595 5:5:00002 10.0.0.12 10.0.0.50 10.0.0.50 10.0.0.22 TLSV1.2 471 Certificate, Server Key Exchange, Certificate Request, Server Hello Done 507 5:5:5:52479 10.0.0.50 10.0.0.22 TLSV1.2 471 Certificate, Server Key Exchange, Certificate Request, Server Hello Done 517 5:5:5:52479 10.0.0.50 10.0.0.22 TLSV1.2 471 Certificate, Server Key Exchange, Certificate Unknown 641 7:95:52479 10.0.0.50 10.0.0.22 TLSV1.2 139 Application Data 641 7:95:864 10.0.0.50 10.0.0.22 TLSV1.2 737 Application Data 667 7:979979 10.0.0.32 10.0.0.50 TLSV1.2 957 Application Data 6693 0.0.0.32 10.0.0.50 TLSV1.2 957 Application Data 670 7:979979 10.0.0.32 10.0.0.50 TLSV1.2 957 Application Data 7108 0.0.0.32 10.0.0.50 TLSV1.2 957 Application Data 0000 000 000 000 000 000 000 000 000 021 052 100.0.022 100.0.025 100.0.025 100.0.025 100.0.02 1	40	63 4.902272	10.0.0.50	10.0.0.32	TLSv1.2			
5965 5.909305 10.0.0.90 10.0.0.32 TISV1.2 1/4 def Server Hello 596 5.509305 10.0.0.50 10.0.0.32 TISV1.2 41 Alert (Level: Fatal, Description: Certificate Request, server Hello Done 617 5.925479 10.0.0.50 10.0.0.32 TISV1.2 61 Alert (Level: Fatal, Description: Certificate Unknown) 637 5.935113 10.0.0.50 10.0.0.32 TISV1.2 129 Application Data 647 7.935146 10.0.0.50 10.0.0.32 TISV1.2 129 Application Data 667 7.9378371 10.0.0.50 TISV1.2 97 Application Data 93 Application Data 667 7.979979 10.0.0.32 10.0.0.50 TISV1.2 97 Application Data 668 0.01136 10.0.0.32 10.0.0.50 TISV1.2 97 Application Data 693 8.013056 10.0.0.32 10.0.0.50 TISV1.2 97 Application Data 796 8.014797 10.0.0.32 10.0.0.50 TISV1.2 97 Application Data 719 8.01520 10.0.0.32 10.0.0.50 TISV1.2 97 Application Data 719 8.01520 10.0.0.32 10.0.0.50 TISV1.2 97 Application Data 719 8.01520 10.0.0.51 <	41	87 5.011484	10.0.0.32	10.0.0.50	TLSv1.2	737 Application Data		
508 5.00395 10.0.0.50 10.0.0.12 TISV1.2 411 Crtificate, Server Key Exchange, Certificate Request, Server Hello Done 517 5.525479 10.0.0.50 10.0.0.32 TISV1.2 130 Application Data 637 7.095143 10.0.0.50 10.0.0.32 TISV1.2 139 Application Data 641 7.095146 10.0.0.32 TISV1.2 139 Application Data 659 7.09799 10.0.0.32 TISV1.2 139 Application Data 667 7.097991 10.0.0.32 10.0.0.50 TISV1.2 957 Application Data 608 0.0.0.32 10.0.0.50 TISV1.2 957 Application Data 957 Application Data 608 0.0.0.32 10.0.0.50 TISV1.2 957 Application Data 957 Application Data 706 0.0.0.32 10.0.0.50 TISV1.2 957 Application Data 957 Application Data 719 10.0.0.32 10.0.0.50 TISV1.2 957 Application Data 957 Application Data 715 10.0.0.52 TISV1.2 957 Application Data 957 Application Data 957 Application Data 715 10.0.0.50 TISV1.2	56	05 5.506092	10.0.0.32	10.0.0.50	TLSv1.2	473 Client Hello		
517 5.325429 10.0.0.32 10.0.0.32 TLSV1.2 G1 Alert (Level: Fatal, Description: Certificate Unknown) 657 7.09511 10.0.0.50 10.0.0.32 TLSV1.2 139 Application Data 642 7.09546 10.0.0.50 10.0.0.32 TLSV1.2 732 Application Data 642 7.09546 10.0.0.50 10.0.0.32 TLSV1.2 732 Application Data 642 7.09546 10.0.0.50 TLSV1.2 737 Application Data 659 7.037881 10.0.0.50 TLSV1.2 737 Application Data 667 7.097979 10.0.0.32 10.0.0.50 TLSV1.2 957 Application Data 693 8.013056 10.0.0.50 TLSV1.2 957 Application Data 799 708 8.01377 10.0.0.50 TLSV1.2 957 Application Data 797 719 8.016520 10.0.0.50 TLSV1.2 957 Application Data 797 Frame S17: 61bl.06:312:60 10.0.0.50 TLSV1.2 628 A000 400 40 40 40 642 2.54 40 40 00 47 66 42 2.54 40 40 00 42 60 40 40 40 40 40 40 40 40 40 40 40 40 40	56	06 5.509395	10.0.0.50	10.0.0.32	TLSv1.2			
6637.99513 10.0.0.50 10.0.0.32 TLSV1.2 1309 Application Data 6617.995648 10.0.0.50 10.0.0.32 TLSV1.2 1329 Application Data 6627.995648 10.0.0.50 10.0.0.32 TLSV1.2 1329 Application Data 6697.995999 10.0.0.32 10.0.0.50 TLSV1.2 737 Application Data 6693.8.01365 10.0.0.32 10.0.0.50 TLSV1.2 957 Application Data 6693.8.01365 10.0.0.32 10.0.0.50 TLSV1.2 957 Application Data 7068.8.014797 10.0.0.32 10.0.0.50 TLSV1.2 957 Application Data 7068.8.014797 10.0.0.32 10.0.0.50 TLSV1.2 957 Application Data 7068.8.014797 10.0.0.32 10.0.0.50 TLSV1.2 957 Application Data 7079.8.016520 10.0.0.32 10.0.0.50 TLSV1.2 957 Application Data Frame 517: 61 bytes on wire (488 bits), 61 bytes captured (488 bits), 61 bytes captured (488 bits), 01 interface \Device\NPF_{26642197-2E27-4220-5} Ethernet II, 5rc: Dell_0c:3ara6 (44:38:42!0c:3a:a6), Dst: Asixlec_b6:72:c7 (00:0e:c6:165:72:C7) Transport Layer Sacurity ~ TLSV1.2 Record Layer: Alert (Level: Fatal, Description: Certificate Unknown) content Type: Alert (Level: Fatal, Description: Certificate Unknown) content Type: Alert (Level: Fatal, Description: Certificate Unknown) content Type: Alert (12) Description: Certificate Unknown (46)	56	08 5.509395	10.0.0.50	10.0.0.32	TLSv1.2			
641 7.905146 10.0.0.50 10.0.0.32 TISV1.2 732 Application Data 642 7.90568 10.0.0.50 10.0.0.32 TISV1.2 1129 Application Data 659 7.937831 10.0.0.32 10.0.0.50 TISV1.2 957 Application Data 667 7.937937 10.0.0.32 10.0.0.50 TISV1.2 957 Application Data 668 8.01366 10.0.0.32 10.0.0.50 TISV1.2 957 Application Data 779 8.016520 10.0.0.32 10.0.0.50 TISV1.2 957 Application Data 779 7.0000 00 00 00 00 00 00 00 00 00 00 00 0	53	17 5.525479	10.0.0.32	10.0.0.50	TLSv1.2			
642.7.905648 10.0.0.50 10.0.0.32 10.0.0.32 10.0.0.50 TLSV1.2 129 Application Data 659.7.9378979 10.0.0.32 10.0.0.50 TLSV1.2 957 Application Data 660 0.01136 10.0.0.32 10.0.0.50 TLSV1.2 957 Application Data 660 0.01136 10.0.0.32 10.0.0.50 TLSV1.2 957 Application Data 660 0.01130 10.0.0.32 10.0.0.50 TLSV1.2 957 Application Data 706 0.01520 10.0.0.32 10.0.0.50 TLSV1.2 957 Application Data 707 0.0157 Particle 10.0.0.32 10.0.0.50 TLSV1.2 957 Application Data 708 0.01520 10.0.012 Particle 10.0014 957 Application Data 708 0.01520 10.0016 Particle 10.0014 950 TLSV1.2 957 Application Data 708 0.01520 10.0017 Particle 10.0014 950 TLSV1.2 957 Application Data 708 0.01520 10.0017 Particle 10.0018 90 92 02 20 00 00 90 02 fe 5 23 40 00 00 31 60 42 54 00 00 02 00 00 90 21 67 bb 13 88 21 fe 65 80 eb f4 d8 a5 50 18 71 Fransport Layer Security 7 TLSV1.2 Record Layer: Alert (Level: Fatal, Description: Certificate Unknown) Content Type: Alert (L1) Version: L15 1.2 (0x8303) Length: 2 7 Alert Message Level: Fatal (2) Description: Certificate Unknown (46)	6	35 7.905113	10.0.0.50	10.0.0.32	TLSv1.2			
6597,937831 10.0.0.32 10.0.0.50 TISV1.2 957 Application Data 6677,9379979 10.0.0.32 10.0.0.50 TISV1.2 957 Application Data 66808.01386 10.0.0.32 10.0.0.50 TISV1.2 957 Application Data 6938.013956 10.0.0.32 10.0.0.50 TISV1.2 957 Application Data 7708.013797 10.0.0.32 10.0.0.50 TISV1.2 957 Application Data 7708.01370 10.0.0.32 10.0.0.50 TISV1.2 957 Application Data 7708.01379 10.0.0.32 10.0.0.50 TISV1.2 957 Application Data 7708.01370 10.0.0.50 TISV1.2 957 Application Data 77087070 10.0.0.50 TISV1.2 957 Application Data 77787070 10.0.0.51 TISV1.2 10.0.0.56 Transmission Control Protocol, Src Port: 19	64	41 7.905146		10.0.0.32				
667 7.979979 10.0.0.32 10.0.0.50 TISV1.2 737 Application Data 668 0.01365 10.0.0.32 10.0.0.50 TISV1.2 957 Application Data 668 0.013656 10.0.0.32 10.0.0.50 TISV1.2 957 Application Data 708 0.01650 10.0.0.32 10.0.0.50 TISV1.2 957 Application Data 710 0.016500 10.0.0.50 TISV1.2 957 Application Data 708 0.01520 10.0.0.52 TISV1.2 957 Application Data 710 0.01520 10.0.0.52 TISV1.2 957 Application Data 708 0.01520 10.0.0.52 TISV1.2 957 Application Data 708 0.01520 10.0.0.52 TISV1.2 957 Application Data 708 0.0172 10.0172 10.00.032 10.00.032 <td>64</td> <td>42 7.905648</td> <td>10.0.0.50</td> <td>10.0.0.32</td> <td>TLSv1.2</td> <td></td> <td></td> <td></td>	64	42 7.905648	10.0.0.50	10.0.0.32	TLSv1.2			
668 0.01386 10.0.0.32 10.0.0.59 TISV1.2 957 Application Data 670 8.014797 10.0.0.32 10.0.0.50 TISV1.2 957 Application Data 770 8.014520 10.0.0.50 TISV1.2 057 Application Data 770 8.01520 10.0.0.50 TISV1.2 057 Application Data 770 8.01520 10.0.50 TISV1.2 057 Application Data 770 8.01520 Second Laver: Alex (Alex 0.5: Detecond Calescient Cales								
6938.013056 10.0.0.32 10.0.0.50 TLSV1.2 957 Application Data 7068.014797 10.0.0.32 10.0.0.50 TLSV1.2 957 Application Data 7198.016520 10.0.0.32 10.0.0.50 TLSV1.2 957 Application Data Frame S17: 61 bytes on wire (438 bits), 61 bytes captured (438 bits) on interface (Device(NPF_[66Ad2197-2E27-422e-6]) 000 00 ec 65 b6 72 c7 44 a8 42 0c 3a a6 08 00 45 00 Thernet Protocol version 4, Src: 10.0.0.32, bit 10.0.0.59 Ttsv1.2 957 Application Data Transmission Control Protocol, Src Port: 1068, DS: tasizle(ecbi2c:c)(60:20:c7) 0010 00 2f e5 23 40 00 3f 06 42 54 0a 00 00 20 0a 00 Transport Layer Security Transport Layer Security 0010 00 2f e5 23 40 00 3f 06 42 54 0a 00 00 20 20 2e V TLSV1.2 Record Layer: Alert (Level: Fatal, Description: Certificate Unknown) content Type: Alert (21) 0030 00 00 01 50 3 03 00 02 02 2e V Alert Message Level: Fatal (2) Description: Certificate Unknown (46) V V V V								
708.8.014797 10.0.0.32 10.0.0.50 TLSV1.2 957 Application Data 719.8.016520 10.0.0.32 10.0.0.50 TLSV1.2 957 Application Data Frame S17: 61 bytes on wire (488 bits), 61 bytes captured (488 bits) on interface \Device\NPF_{6042197-3E27-42284 0000 00 ec 6 b6 72 c7 44 a8 42 0c 3a a6 08 00 45 60 Ethernet II, 5rc: Dell_ec:3a:a6 (44:a8:42:ec:3a:a6), b5t: Asixlec_b6i72:c7 (00:0e:c6:b6:72:c7) 0010 00 2 fe 5 2 40 00 3f 66 42 54 0a 00 02 0a 60 Transmission Control Protocol, src Port: 1968, Dst Port: 5000, Seq: 420, Ack: 3238, Len: 7 7 7 7 Transport Layer: Sacurity Version: Lis 1.2 (00:000) certificate Unknown) 001 ed 69 3d 00 00 15 03 03 00 02 02 2e 01 ed 69 3d 00 00 15 03 03 00 02 02 2e Valert Message Level: Fatal (2) version: Certificate Unknown (46) Version: Certificate Unknown (46) Version: Certificate Unknown (46)	61	80 8.011386		10.0.0.50	TLSv1.2			
719.8.016520 10.0.0.32 10.0.0.50 TLSV1.2 057 Application Data Frame 517: 61 bytes on wire (488 bits), 61 bytes captured (488 bits) on interface Device\NPF_[26A42197-2E27-422e-5] 0000 00 00 et c5 b5 72 c7 44 a8 42 0c 3a a6 08 00 45 00 Thermer Protocol version 4, src: 10.0.0.32, DSt: 10.0.0.50 Thermer Protocol version 4, src: 10.0.0.32, DSt: 10.0.0.50 000 00 00 et c5 b5 72 c7 44 a8 42 0c 3a a6 08 00 45 00 Transmission Control Protocol, Src Port: 1068, DSt 10.0.0.50 Transport Layer Security 0010 00 2f c5 23 40 00 37 06 42 54 0a 00 00 20 0a 00 Totsnamission Control Protocol, Src Port: 1068, DSt Port: 5000, Seq: 420, Ack: 3238, Len: 7 0010 00 2f c5 23 40 00 30 07 b0 13 88 21 f0 c6 80 cb f4 d8 a5 0s 18 Totsnamission Control Protocol, Src Port: 1068, DSt Port: 5000, Seq: 420, Ack: 3238, Len: 7 0010 00 00 15 03 03 00 02 02 2e TISU:2. Record Layer: Alert (Level: Fatal, Description: Certificate Unknown) 0010 00 01 5 03 03 00 02 02 2e Content Type: Alert Resage Level: Fatal (2) Description: Certificate Unknown (46) Description: Certificate Unknown (46)	69	93 8.013056						
Frame 517: 61 bytes on wire (488 bits), 61 bytes captured (488 bits) on interface \Device\NPF_[26A42197-2E27-4228-3] 0000 00 00 cc 65 b72 c7 44 a8 42 cc 3a a6 08 00 45 00 Ethernet II, 5rc: Dell_0c:3a:a6 (44:a8:42:0c:3a:a6), Dst: Asixlec_D6:72:c7 (00:0e:c6:b6:72:c7) 0010 00 2f e5 23 40 00 3f 06 42 54 0a 00 00 20 0a 00 Transmission Control Protocol, src Fort: 1968, Dst Port: 5000, Seq: 420, Ack: 3238, Len: 7 Transport Layer: Alert (Level: Fatal, Description: Certificate Unknown) 001 ed c6 9 3d 00 00 15 03 03 00 02 02 22 * TLSYL2. Record Layer: Alert (Level: Fatal, Description: Certificate Unknown) Content Type: Alert (1) 000 00 00 15 03 03 00 02 02 02 22 * Alert Ressage Level: Fatal (2) Description: Certificate Unknown (46) 001	76	06 8.014797	10.0.0.32	10.0.0.50				
Ethernet II, 5rć: Dell_0c:3aiā6 (44:a8i4:20c:3aia6), Dst: AsixElec_b6:72:c7 (00:0e:c6:b6:72:c7) Internet Protocol Version A, Src: 10:0.0:32, Dst: 10:0.0:50 Transport Layer Security TISVL2 Record Layer: Alert (Level: Fatal, Description: Certificate Unknown) Content Type: Alert (Level: Fatal, Description: Certificate Unknown) Content Type: Alert (21) Version: TS 1.2 (20030) Length: 2 V Alert Hessage Level: Fatal (2) Description: Certificate Unknown (46)	7	19 8.016520	10.0.0.32	10.0.0.50	TLSv1.2	957 Application Data		
	Inte Tran Tran Y T	ernet Protocol nsmission Cont nsport Layer S LSV1.2 Record Content Type Version: TLS Length: 2 Alert Messag Level: Fa	l Version 4, Sro trol Protocol, 5 Security Layer: Alert (2: Alert (21) 5 1.2 (0x0303) 29 tal (2)	c: 10.0.0.32, Src Port: 1968 Level: Fatal,	Dst: 10.0.0 , Dst Port:	1.50 0020 00 32 07 b0 13 88 21 f0 e6 80 eb f4 d8 a6 5000, Seq: 420, Ack: 3238, Len: 7 0030 01 ed 69 3d 00 00 15 03 03 00 02 02 2e		- / 2
※ Transport Layer Security: Protocol 分指: 3964 · 己最示: 203 (5.1%) 総置: De		Transport Laure	Sacurity: Protocol			> く 分担・3044 - 戸見示・202 (5.1%)	設置・1	ofer



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 52 of 53

8.5 WINNF.FT.C.SCS.5

tls					80	-
	Time	Source	Destination		Length Info	
	26 4.185876	10.0.0.50	10.0.0.32	TLSv1.2	734 Application Data	
	41 4.285108	10.0.0.32	10.0.0.50	TCP	1464 8181 → 58092 [ACK] Seq=228733 Ack=10061 Win=2182 Len=1410 [TCP segment of a reassembled PDU]	
	46 4.285108	10.0.0.32	10.0.0.50	TLSv1.2	707 Application Data 473 Client Hello	
	20 4.930687	10.0.0.32	10.0.0.50	TLSv1.2	4/3 Client Hello 1464 Server Hello	
	21 4.946061	10.0.0.50 10.0.0.50				
	23 4.946061		10.0.0.32	TLSv1.2		
	27 5.043046	10.0.0.32	10.0.0.50	TLSv1.2	61 Alert (Level: Fatal, Description: Decrypt Error)	
	10 7.186742	10.0.0.50	10.0.0.32		1309 Application Data	
	11 7.186792	10.0.0.50	10.0.0.32	TCP	1464 58092 → 8181 [ACK] Seq=11316 Ack=236436 Win=512 Len=1410 [TCP segment of a reassembled PDU]	
	16 7.186792	10.0.0.50	10.0.0.32		740 Application Data	
7.	24 7.266339	10.0.0.32	10.0.0.50	TCP	1464 8181 → 58092 [ACK] Seq=236436 Ack=19052 Win=2336 Len=1410 [TCP segment of a reassembled PDU]	
					0.50	2
Trar Y T	nsmission Cont nsport Layer S 'LSv1.2 Record Content Type Version: TLS Length: 2 Alert Messag Level: Fat	ecurity Layer: Alert (: Alert (21) 1.2 (0x0303) e	irc Port: 1291 Level: Fatal,	6, Dst Por	0.30 01 e8 d5 18 00 00 15 03 03 00 02 02 33 n: Decrypt Error)	2



CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231200229401 Page: 53 of 53

9 Photographs

Refer to Appendix - Test Setup Photo for KSCR2312002294AT

- End of the Report -