WINNF-TS-0122 TEST REPORT

Report No. : FG183131AA



WINNF-TS-0122 TEST REPORT

FCC ID	: 2AG87RM-3625
Equipment	: Smart Radio - CBRS
Model Name	: RM-3625
Applicant	: Doodle Labs (SG) Pte Ltd
	150 Kampong Ampat, KA Center, Suite 05-03, Singapore 368324,
Manufacturer	: Doodle Labs (SG) Pte Ltd 150 Kampong Ampat, KA Center, Suite 05-03, Singapore 368324,
Standard	: WINNF-TS-0122 Version V1.0.2

The product was received on Sep. 09, 2021, and testing was started from May 17, 2022 and completed on Jun. 30, 2022. We, Sporton International Inc. Hsinchu Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in WINNF-TS-0122 Version V1.0.2 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. Hsinchu Laboratory, the test report shall not be reproduced except in full.

Approved by: Sam Chen

Sporton International Inc. Hsinchu Laboratory No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)

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: 1 of 51 Page Number : Jul. 18, 2022 Issued Date Report Version : 01



Table of Contents

1	General Description	8
1.1	Product Feature of Equipment Under Test	8
1.2	Antenna Information	
1.3	Support Equipment	
1.4	Testing Location	
2	Measurement Environment	10
2.1	Conditional Test Case	
2.2	Test Configuration	
3	Protocol Test Results	
3.1	WINNF.FT.C.REG.3 - Single-Step registration for Category A CBSD	
3.2	WINNF.FT.C.REG.5 - Single-Step registration for CBSD-B with CPI signed data	
3.3	WINNF.FT.C.REG.8 - Missing Required parameters (responseCode 102)	
3.4	WINNF.FT.C.REG.10 - Pending registration (responseCode 200)	15
3.5	WINNF.FT.C.REG.12 - Invalid parameter (responseCode 103)	16
3.6	WINNF.FT.C.REG.14 - Blacklisted CBSD (responseCode 101)	17
3.7	WINNF.FT.C.REG.16 - Unsupported SAS protocol version (responseCode 100)	18
3.8	WINNF.FT.C.REG.18 - Group Error (responseCode 201)	19
3.9	WINNF.FT.C.REG.20 - Category A CBSD location update	20
3.10	WINNF.FT.C.GRA.1 - Unsuccessful Grant responseCode=400 (INTERFERENCE)	21
3.11	WINNF.FT.C.GRA.2 - Unsuccessful Grant responseCode=401 (GRANT_CONFLICT)	22
3.12	WINNF.FT.C.HBT.1 - Heartbeat Success Case (first Heartbeat Response)	
3.13	WINNF.FT.C.HBT.3 - Heartbeat responseCode=105 (DEREGISTER)	25
3.14	WINNF.FT.C.HBT.4 - Heartbeat responseCode=500 (TERMINATED_GRANT)	26
3.15	WINNF.FT.C.HBT.5 - Heartbeat responseCode=501 (SUSPENDED_GRANT) in First Heartbeat Response	
3.16	WINNF.FT.C.HBT.6 - Heartbeat responseCode=501 (SUSPENDED_GRANT) in Subsequent Heart	
	Response	
3.17	WINNF.FT.C.HBT.7 - Heartbeat responseCode=502 (UNSYNC_OP_PARAM)	29
3.18	WINNF.FT.C.HBT.9 - Heartbeat Response Absent (First Heartbeat)	
3.19	WINNF.FT.C.HBT.10 - Heartbeat Response Absent (Subsequent Heartbeat)	31
3.20	WINNF.FT.C.HBT.11 - Successful Grant Renewal in Heartbeat Test Case	
3.21	WINNF.FT.C.RLQ.1 - Successful Relinquishment	34
3.22	WINNF.FT.C.RLQ.3 - Unsuccessful Relinquishment, responseCode=102	35
3.23	WINNF.FT.C.RLQ.5 - Unsuccessful Relinquishment, responseCode=103	
3.24	WINNF.FT.C.DRG.1 - Successful Deregistration	37
3.25 3.26	WINNF.FT.C.DRG.3 - Deregistration responseCode=102 WINNF.FT.C.DRG.5 - Deregistration responseCode=103	38
3.20 3.27	WINNF.FT.C.SCS.1 - Successful TLS connection between UUT and SAS Test Harness	39
3.27 3.28	WINNF.FT.C.SCS.1 - Succession FLS connection between oot and SAS Test namess	40
3.20	WINNF.FT.C.SCS.2 - TLS failure due to revoked certificate	
3.30	WINNF.FT.C.SCS.4 - TLS failure when SAS Test Harness certificate is issued by an unknown CA	42
3.30	WINNF.FT.C.SCS.5 - TLS failure when certificate at the SAS Test Harness is corrupted	43
3.32	WINNF.PT.C.HBT.1 - UUT RF Transmit Power Measurement	
4	Test Equipment and Calibration Data	
5	Measurement Uncertainty	
	ndix A. Category A CBSD location update	
	ndix B. RF Measurement Plots	
	ndix C. Wireshark Plots	
	ndix D. CRL and OCSP Verify Plots	
Apper	ndix E. Test Photos	
	graphs of EUT v01	



Version	Description	Issued Date
01	Initial issue of report	Jul. 18, 2022



Report Clause	Ref Std. Clause	CBSD	DP	Required for Cert.	Test Case ID Test Case Title		Result (PASS/FAIL)	Remark
-	6.1.4.1.1	Х	-	C1	WINNF.FT.C.REG.1	Multi-Step registration	N/A	-
-	6.1.4.1.2	-	х	C1	WINNF.FT.D.REG.2 Domain Proxy Multi-Step registration		N/A	-
3.1	6.1.4.1.3	Х	-	C2	WINNF.FT.C.REG.3. waiver	Single-Step registration for Category A CBSD (Waiver)	PASS	Note 3
-	6.1.4.1.4	-	х	C2	WINNF.FT.D.REG.4	Domain Proxy Single-Step registration for Cat A CBSD	N/A	-
3.2	6.1.4.1.5	х	-	C3	WINNF.FT.C.REG.5. waiver	Single-Step registration for CBSD with CPI signed Data (Waiver)	PASS	Note 3
-	6.1.4.1.6	-	х	C3	WINNF.FT.D.REG.6	Domain Proxy Single-Step registration for CBSD with CPI signed data	N/A	-
-	6.1.4.1.7	Х	х	C6	WINNF.FT.C.REG.7	Registration due to change of an installation parameter	N/A	-
3.3	6.1.4.2.1	х	-	М	WINNF.FT.C.REG.8	Missing Required parameters (responseCode 102)	PASS	-
-	6.1.4.2.2	-	х	М	MINNF.FT.D.REG.9 Domain Proxy Missing Required parameters (responseCode 102)		N/A	-
3.4	6.1.4.2.3	х	-	М	WINNF.FT.C.REG.10	WINNF.FT.C.REG.10 Pending registration (responseCode 200)		-
-	6.1.4.2.4	-	х	М	WINNF.FT.D.REG.11	WINNF.FT.D.REG.11 Domain Proxy Pending registration (responseCode 200)		-
3.5	6.1.4.2.5	х	-	М	WINNF.FT.C.REG.12	Invalid parameter (responseCode 103)	PASS	-
-	6.1.4.2.6	-	х	М	WINNF.FT.D.REG.13	Domain Proxy Invalidparameters (responseCode 103)	N/A	-
3.6	6.1.4.2.7	х	-	М	WINNF.FT.C.REG.14	WINNF.FT.C.REG.14 Blacklisted CBSD (responseCode 101)		-
-	6.1.4.2.8	-	х	М	WINNF.FT.D.REG.15 Domain Proxy Blacklisted CBSD (responseCode 101) N		N/A	-
3.7	6.1.4.2.9	х	-	М	WINNF.FT.C.REG.16 UnsupportedSASprotocolversion (responseCode100)		PASS	-
-	6.1.4.2.10	-	х	М	WINNF.FT.D.REG.17 Domain Proxy Unsupported SAS protocol version N/A responseCode 100)		N/A	-
3.8	6.1.4.2.11	х	-	М	WINNF.FT.C.REG.18 Group Error (responseCode 201) PASS		PASS	-
-	6.1.4.2.12	-	х	М	WINNF.FT.D.REG.19	Domain Proxy Group Error (responseCode 201)	N/A	-

Summary of Test Result



3.9	6.1.4.3.1	Х	х	C2	WINNF.FT.C.REG.20	Category A CBSD location Update	PASS	-
3.10	6.3.4.2.1	х	х	М	WINNF.FT.C.GRA.1	Unsuccessful Grant responseCode=400 (INTERFERENCE)	PASS	-
3.11	6.3.4.2.2	х	х	М	WINNF.FT.C.GRA.2	WINNF.FT.C.GRA.2 Unsuccessful Grant responseCode=401 (GRANT_CONFLICT)		-
3.12	6.4.4.1.1	х	-	М	WINNF.FT.C.HBT.1	Heartbeat Success Case (first Heartbeat Response)	PASS	-
-	6.4.4.1.2	-	x	М	WINNF.FT.D.HBT.2	Domain Proxy Heartbeat Success Case (first Heartbeat Response)	N/A	-
3.13	6.4.4.2.1	Х	х	М	WINNF.FT.C.HBT.3	Heartbeat responseCode=105 (DEREGISTER)	PASS	-
3.14	6.4.4.2.2	Х	-	М	WINNF.FT.C.HBT.4	Heartbeat responseCode=500 (TERMINATED_GRANT)	PASS	-
3.15	6.4.4.2.3	х	x	М	WINNF.FT.C.HBT.5	Heartbeat responseCode=501 (SUSPENDED_GRANT) in First Heartbeat Response	PASS	-
3.16	6.4.4.2.4	х	x	М	WINNF.FT.C.HBT.6	WINNF.FT.C.HBT.6 Heartbeat responseCode=501 (SUSPENDED_GRANT) in Subsequent Heartbeat Response		-
3.17	6.4.4.2.5	х	х	М	WINNF.FT.C.HBT.7	WINNF.FT.C.HBT.7 Heartbeat responseCode=502 (UNSYNC_OP_PARAM)		-
-	6.4.4.2.6	-	х	М	WINNF.FT.D.HBT.8	WINNF.FT.D.HBT.8 WINNF.FT.D.HBT.8 (TEMINATED_GRANT)		-
3.18	6.4.4.3.1	х	х	М	WINNF.FT.C.HBT.9	Heartbeat Response Absent (First Heartbeat)	PASS	-
3.19	6.4.4.3.2	х	х	М	WINNF.FT.C.HBT.10	Heartbeat Response Absent (Subsequent Heartbeat)	PASS	-
3.20	6.4.4.4.1	Х	х	0	WINNF.FT.C.HBT.11	SuccessfulGrantRenewalin HeartbeatTestCase	PASS	-
-	6.5.4.2.1	Х	-	C4	WINNF.FT.C.MES.1	Registration Response contains measReportConfig	N/A	-
-	6.5.4.2.2	-	х	C4	WINNF.FT.D.MES.2	WINNF.FT.D.MES.2 Domain Proxy Registration Response contains measReportConfig		-
-	6.5.4.2.3	Х	х	C5	WINNF.FT.C.MES.3	Grant Response contains measReportConfig	N/A	-
-	6.5.4.2.4	Х	-	C5	WINNF.FT.C.MES.4	Heartheat Personse contains		-
-	6.5.4.2.5	-	х	C5	WINNF.FT.D.MES.5	S.5 Domain Proxy Heartbeat Response contains measReportConfig		-
3.21	6.6.4.1.1	Х	-	М	WINNF.FT.C.RLQ.1	Successful Relinquishment	PASS	-
-	6.6.4.1.2	-	х	М	WINNF.FT.D.RLQ.2	Domain Proxy Successful Relinquishment	N/A	-

Page Number : 5 of 51

: Jul. 18, 2022

Issued Date : Jul Report Version : 01



3.22	6.6.4.2.1	х	-	0	WINNF.FT.C.RLQ.3	Unsuccessful Relinquishment, responseCode=102	PASS	-
-	6.6.4.2.2	-	х	Ο	WINNF.FT.D.RLQ.4 Domain Proxy Unsuccessful Relinquishment, responseCode=102		N/A	-
3.23	6.6.4.3.1	Х	-	0	WINNF.FT.C.RLQ.5	Unsuccessful Relinquishment, responseCode=103	PASS	-
-	6.6.4.3.2	-	х	Ο	WINNF.FT.D.RLQ.6	Domain Proxy Unsuccessful Relinquishment, responseCode=103	N/A	-
3.24	6.7.4.1.1	Х	-	М	WINNF.FT.C.DRG.1	Successful Deregistration	PASS	-
-	6.7.4.1.2	-	х	М	WINNF.FT.D.DRG.2	Domain Proxy Successful Deregistration	N/A	-
3.25	6.7.4.2.1	х	-	0	WINNF.FT.C.DRG.3	WINNF.FT.C.DRG.3 Deregistration responseCode=102		-
-	6.7.4.2.2	-	х	0	WINNF.FT.D.DRG.4 Domain Proxy Deregistration responseCode=102		N/A	-
3.26	6.7.4.3.1	Х	х	0	WINNF.FT.C.DRG.5 Deregistration responseCode=103		PASS	-
3.27	6.8.4.1.1	х	х	М	WINNF.FT.C.SCS.1 Successful TLS connection between UUT and SAS Test Harness		PASS	-
3.28	6.8.4.2.1	Х	х	М	WINNF.FT.C.SCS.2	TLS failure due to revoked certificate	PASS	-
3.29	6.8.4.2.2	Х	х	М	WINNF.FT.C.SCS.3	TLS failure due to expired server certificate	PASS	-
3.30	6.8.4.2.3	х	x	М	WINNF.FT.C.SCS.4 TLSfailurewhenSASTestHarn certificateisissue by unknown CA		PASS	-
3.31	6.8.4.2.4	х	x	М	WINNF.FT.C.SCS.5 TLS failure when certificate at the SAS Test Harness is corrupted		PASS	-
3.32	7.1.4.1.1	Х	х	М	WINNF.PT.C.HBT.1	UUT RF Transmit Power Measurement	PASS	-
4								

Note1:

M: Mandatory for certification
O: Optional. Not required for certification.
C: Conditional. Mandatory if CBSD supports relevant functionality.
Note2: The unit under test type is CBSD without Domain Proxy and Conditional Test Case Definitions are C2 and C3. Note3: DUT does not support sensing capabilities.



Declaration of Conformity:

- The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers. It's means measurement values may risk exceeding the limit of regulation standards, if measurement uncertainty is include in test results.
- 2. The measurement uncertainty please refer to report "Measurement Uncertainty".

Comments and Explanations:

- 1. The test configuration, test mode and test software were written in this test report are declared by the manufacturer.
- 2. The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.
- 3. Only 10MHz bandwidth was selected for testing by manufacturer requirement.

Reviewed by: Sam Chen

Report Producer: Wendy Pan



1 General Description

1.1 Product Feature of Equipment Under Test

Proc	Product Feature of Equipment Under Test					
EUT Type	CBSD					
Power Type	From Internal Power Supply					
Category of EUT	Category A					
Category B						
Professional Installation Xes for Category A and Category B						
	No for Category A					
EUT in Test ID	EUT with Domain Proxy					
	EUT without Domain Proxy					
CBSD Firmware Version	Doodle Labs firmware-2022-04.1-cbrs r11306-c4a6851c72 / LuCl					
	2022-04-25_disable_meshmap_when_alfred_not_running branch					
	(git-22.069.40492-e136d65)					
CBSD Software Version	N/A					
CBSD Hardware Version	N/A					

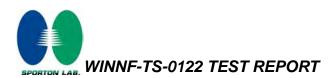
Note: The above information was declared by manufacturer.

1.2 Antenna Information

Ant.	Brand	Model Name		Connector	Gain (dBi)	Cable	Loss	True Gain (dBi)	Remark
			Туре		(UDI)	Short	Long		
1	MARS	MA-WO36-10N	Dipole	N Туре	9.5	0.63	2.08	6.79	CBSD-A
2	Laird	SJS330065-17-001	Dipole	N Туре	18	0.63	2.08	15.29	CBSD-B
3	Doodle	ANT-3625-3-O-RP	Dipole	RP-SMA	3	0.63	-	2.37	EUD

Note: The above information was declared by manufacturer.

The EUT support 2TX, 2RX function.



1.3 Support Equipment

	Support Equipment								
No.	Equipment	Brand Name	Model Name	FCC ID					
А	WLAN AP	Netgear	R7500	PY314300288					
В	Switch	Panasonic	Switch-S9GPWR	N/A					
С	Notebook	Lenovo	X1 Carbon	N/A					
D	Notebook	DELL	E4300	N/A					
Е	EUD	N/A	RM-3625	2AG87-RM3625					
F	Notebook	DELL	E4300	N/A					

1.4 Testing Location

Testing Location Information							
Test Lab. : Sporte	Test Lab. : Sporton International Inc. Hsinchu Laboratory						
Hsinchu	Hsinchu ADD: No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)						
(TAF: 3787)	TEL: 886-3-656-9065 FAX: 886-3-656-9085						
	Test site Designation No. TW3787 with FCC.						
Conformity Assessment Body Identifier (CABID) TW3787 with ISED.							

Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
RF Conducted	TH01-CB	Jeff Wu	20.6~21.8 / 66~68	May 17, 2022~ Jun. 30, 2022



2 Measurement Environment

Measurement Environment Information		
Test Harness version	1.0.0.3	
Operating System	Microsoft Windows 7 and Windows 10	
TLS version	1.2	
Python	2.7.18	

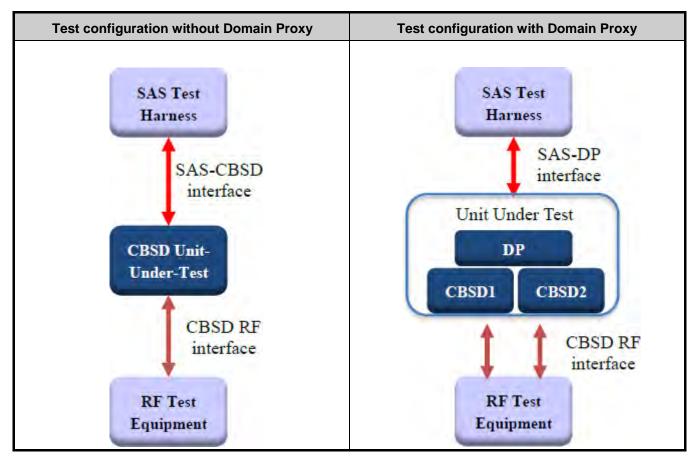
2.1 Conditional Test Case

	C1	Mandatory for UUT which supports multi-step registration message
		Mandatory for UUT which supports single-step registration with no CPI-signed data in the registration
\square	C2	message. By definition, this is a subset of Category A devices which determine all registration
		information, including location, without CPI intervention.
Ma		Mandatory for UUT which supports single-step registration containing CPI-signed data in the
\square	C3	registration message.
	C 4	Mandatory for UUT which supports RECEIVED_POWER_WITHOUT_GRANT measurement report
] C4	type.
	C5	Mandatory for UUT which supports RECEIVED_POWER_WITH_GRANT measurement report type.
	6	Mandatory for UUT which supports parameter change being made at the UUT and prior to sending a
	C6	deregistration.

Note: The above information was declared by manufacturer.



2.2 Test Configuration





3 Protocol Test Results

3.1 WINNF.FT.C.REG.3 - Single-Step registration for Category A CBSD

#	Test Execution Steps	Res	ults
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	 CBSD sends Registration request to SAS Test Harness: all required and REG-Conditional parameter included (userId, fccId, cbsdSerialNumber, cbsdCategory, airInterface, installationParam, measCapability) for a Category A CBSD. The required userId, fccId and cbsdSerialNumber and REG- Conditional cbsdCategory, airInterface, installationParam, and measCapability registration parameters shall be sent from theCBSD andconformtoproperformatandacceptable 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	
3	 SASTestHarnesssendsaCBSDRegistrationResponseas follows: cbsdld = C measReportConfig shall not be included. responseCode = 0 		
4	After completion of step 3, SAS Test Harness does not provide any positive response(<i>responseCode</i> =0)tofurtherrequestmessages from the UUT.		
5	Monitor the RF output of the UUT from start of test until 60 secondsafter Step3iscomplete.Thisistheendofthetest.Verify: • UUT shall not transmit RF	PASS	



3.2 WINNF.FT.C.REG.5 - Single-Step registration for CBSD-B with CPI signed data

#	Test Execution Steps	Results	
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	 CBSD sends Registration request to the SAS Test Harness: The required userId, fccId and cbsdSerialNumberandREG- 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	-
3	 SASTestHarnesssendsaCBSDRegistrationResponseas follows: cbsdld = C measReportConfig shall not be included. responseCode = 0 		
4	After completion of step 3, SAS Test Harness does not provide any positiveresponse(<i>responseCode</i> =0)tofurtherrequestmessages from the UUT.		
5	Monitor the RF output of the UUT from start of test until 60 secondsafter Step3 iscomplete.Thisistheendofthetest.Verify: • UUT shall not transmit RF	PASS	



3.3 WINNF.FT.C.REG.8 - Missing Required parameters (responseCode 102)

#	Test Execution Steps	Res	ults
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	CBSD sends a Registration request to SAS Test Harness.		
3	SAS Test Harness rejects the request by sending a CBSD Registration Response as follows: - SAS response does not include <i>cbsdld</i> - <i>responseCode</i> = R		
4	After completion of step 3, SAS Test Harness does not provide any positive response(<i>responseCode</i> =0)tofurther request messages from the UUT.		
5	Monitor the RF output of the UUT from start of test until 60 secondsafter Step3iscomplete.Thisistheendofthetest.Verify: • UUT shall not transmit RF	PASS	



3.4 WINNF.FT.C.REG.10 - Pending registration (responseCode 200)

#	Test Execution Steps	Res	ults
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	CBSD sends a Registration request to SAS Test Harness.		
3	SAS Test Harness rejects the request by sending a CBSD Registration Response as follows: - SAS response does not include <i>cbsdld</i> - <i>responseCode</i> = R		
4	Aftercompletionofstep3,SASTestHarness does notprovide any positive response(<i>responseCode</i> =200)tofurtherrequestmessages from the UUT.		
5	Monitor the RF output of the UUT from start of test until 60 secondsafter Step3iscomplete.Thisistheendofthetest.Verify: • UUT shall not transmit RF	PASS	



3.5 WINNF.FT.C.REG.12 - Invalid parameter (responseCode 103)

#	Test Execution Steps	Res	ults
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	CBSD sends a Registration request to SAS Test Harness.		
3	SAS Test Harness rejects the request by sending a CBSD Registration Response as follows: SAS response does not include <i>cbsdld</i> <i>responseCode</i> = R 		
4	Aftercompletionofstep3,SASTestHarnessdoesnotprovideany positive response(<i>responseCode</i> =103)tofurtherrequestmessages from the UUT.		
5	Monitor the RF output of the UUT from start of test until 60 secondsafter Step3iscomplete.Thisistheendofthetest.Verify: • UUT shall not transmit RF	PASS	



3.6 WINNF.FT.C.REG.14 - Blacklisted CBSD (responseCode 101)

#	Test Execution Steps	Res	ults
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	CBSD sends a Registration request to SAS Test Harness.		
3	SAS Test Harness rejects the request by sending a CBSD Registration Response as follows: SAS response does not include <i>cbsdld</i> <i>responseCode</i> = R 		
4	Aftercompletionofstep3,SASTestHarnessdoesnotprovideany positive response(<i>responseCode</i> =101)tofurtherrequestmessages from the UUT.		
5	Monitor the RF output of the UUT from start of test until 60 secondsafter Step3iscomplete.Thisistheendofthetest.Verify: • UUT shall not transmit RF	PASS	



3.7 WINNF.FT.C.REG.16 - Unsupported SAS protocol version (responseCode 100)

#	Test Execution Steps	Res	ults
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	CBSD sends a Registration request to SAS Test Harness.		
3	SAS Test Harness rejects the request by sending a CBSD Registration Response as follows: - SAS response does not include <i>cbsdld</i> - <i>responseCode</i> = R		
4	Aftercompletion of step 3, SASTest Harness does not provide any positive response (<i>responseCode</i> =100) to further request messages from the UUT.		
5	Monitor the RF output of the UUT from start of test until 60 secondsafter Step3iscomplete.Thisistheendofthetest.Verify: • UUT shall not transmit RF	PASS	



3.8 WINNF.FT.C.REG.18 - Group Error (responseCode 201)

#	Test Execution Steps	Res	ults
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	CBSD sends a Registration request to SAS Test Harness.		
3	SAS Test Harness rejects the request by sending a CBSD Registration Response as follows: SAS response does not include <i>cbsdld</i> <i>responseCode</i> = R 		
4	Aftercompletion of step 3, SASTest Harness does not provide any positive response (<i>responseCode</i> =201) to further request messages from the UUT.		
5	Monitor the RF output of the UUT from start of test until 60 secondsafter Step3iscomplete.Thisistheendofthetest.Verify: • UUT shall not transmit RF	PASS	



3.9 WINNF.FT.C.REG.20 - Category A CBSD location update

This section is specific to Category A CBSDs that do not require professional installation. The requirement is for the Category A (non-professionally installed) to report to the SAS any location change exceeding a distance of 50m horizontally or 3m vertically within a 60 second window.

#	Test Execution	Results	
1	Report to the SAS any location change exceeding a distance of 50m horizontally within a 60 second window	PASS	
2	Report to the SAS any location change exceeding a distance of 3m vertically within a 60 second window	PASS	



3.10 WINNF.FT.C.GRA.1 - Unsuccessful Grant responseCode=400 (INTERFERENCE)

#	Test Execution Steps	Results	
	Ensure the following conditions are met for test entry:		
1	 UUT has registered successfully with SAS Test Harness, with cbsdld = C 		
2	UUT sends valid Grant Request.		
	SAS Test Harness sends a Grant Response message, including		
3	• cbsdld=C		
	 responseCode = R 		
4	After completion of step 3, SAS Test Harness does not provide any positive response (<i>responseCode</i> =0) to further request messages from the UUT.		
5	Monitor the RF output of the UUT from start of test until 60 secondsafter Step3iscomplete.Thisistheendofthetest.Verify: • UUT shall not transmit RF	PASS	



3.11 WINNF.FT.C.GRA.2 - Unsuccessful Grant responseCode=401 (GRANT_CONFLICT)

#	Test Execution Steps	Results	
	Ensure the following conditions are met for test entry:		
1	 UUT has registered successfully with SAS Test Harness, with cbsdld = C 		
2	UUT sends valid Grant Request.		
	SAS Test Harness sends a Grant Response message, including		
3	• cbsdld=C		
	 responseCode = R 		
4	Aftercompletionofstep3,SASTestHarnessdoesnotprovideany positive response(<i>responseCode</i> =401)tofurtherrequestmessages from the UUT.		
5	Monitor the RF output of the UUT from start of test until 60 secondsafter Step3iscomplete.Thisistheendofthetest.Verify: • UUT shall not transmit RF	PASS	



3.12 WINNF.FT.C.HBT.1 - Heartbeat Success Case (first Heartbeat Response)

#	Test Execution Steps	Res	ults
	Ensure the following conditions are met for test entry:		
1	 UUT has registered successfully with SAS Test Harness, with cbsdld = C 		
	UUT sends a message:		
2	 If message is type Spectrum Inquiry Request, go to step 3, or If message is type Grant Request, go to step 5 		
	UUT sends Spectrum Inquiry Request. Validate:		
	 cbsdld =C 		
3	 List of frequencyRange objects sent by UUT are within the CBRS frequency range 	PASS	
	SAS Test Harness sends a Spectrum Inquiry Response message, including		
	the followingparameters:		
4	• cbsdld=C		
	 availableChannelisanarray of availableChannel objects 		
	 responseCode = 0 		
	UUT sends Grant Request message. Validate:		
	• cbsdld=C		
5	 maxEIRP is at or below the limit appropriate for CBSD category as defined by Part 96 	PASS	
	 operationFrequencyRange, F, sentbyUUT is a valid range within the CBRS band 		
	SAS Test Harness sends a Grant Response message, including the parameters:		
	• cbsdld=C		
6	• $grantId = G = a$ valid grant ID		
	 grantExpireTime=UTC time greater than duration of the test 		
	 responseCode = 0 		
	UUT sends a first Heartbeat Request message. VerifyHeartbeatRequestmessageisformattedcorrectly,including:		
7	• cbsdld =C	PASS	
	• grantId =G		
	 operationState ="GRANTED" 		
	SAS Test Harness sends a Heartbeat Response message, with the		
	following parameters:		
8	• cbsdld =C	-	
8	• grantId = G		
	 transmitExpireTime=currentUTC time+200 seconds 		
	 responseCode = 0 		



9	For further Heartbeat Request messages sent from UUT after completion of step 8, validate message is sent within latest specified heartbeatInterval, and: • cbsdld = C • grantId = G • operationState = "AUTHORIZED" and SAS Test Harness responds with a Heartbeat Response message including the following parameters: • cbsdld = C • grantId = G • transmitExpireTime = current UTC time + 200 seconds • responseCode = 0	PASS	
10	 Monitor the RF output of the UUT from start of test until UUT 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 F. 	PASS	



3.13 WINNF.FT.C.HBT.3 - Heartbeat responseCode=105 (DEREGISTER)

#	Test Execution Steps	Res	ults
1	 Ensure the following conditions are met for test entry: UUT has registered successfully with SASTest 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. Ensure Heartbeat Request message is sent within Heartbeat Interval specified in the latest Heartbeat Response, and formatted correctly, including: • cbsdld = C • grantId = G • operationState = "AUTHORIZED"	PASS	
3	 SAS Test Harness sends a Heartbeat Response message, including the following parameters: cbsdld =C grantld =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	



3.14 WINNF.FT.C.HBT.4 - Heartbeat responseCode=500 (TERMINATED_GRANT)

#	Test Execution Steps	Res	ults
1	 Ensure the following conditions are met for test entry: UUT has registered successfully with SASTestHarness 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 isin AUTHORIZED state and is transmitting within the grant bandwidth F on RF interface 		-
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 = "AUTHORIZED"	PASS	
3	 SAS Test Harness sends a Heartbeat Response message, including the following parameters: cbsdld =C grantId =G transmitExpireTime =T =current UTC time responseCode = 500 (TERMINATED_GRANT) 		
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	



3.15 WINNF.FT.C.HBT.5 - Heartbeat responseCode=501 (SUSPENDED_GRANT) in First Heartbeat Response

#	Test Execution Steps	Res	ults
	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: 		
	\circ valid <i>cbsdld</i> =C		
1	• valid grant/d =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)		
	UUT sends a Heartbeat Request message.		
	VerifyHeartbeatRequestmessageisformattedcorrectly,including:		
2	• cbsdld=C	PASS	
	• grantId =G		
	 operationState = "GRANTED" 		
	SAS Test Harness sends a Heartbeat Response message, including the		
	followingparameters:		
3	• $cbsdld = C$		
Ŭ	• 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.		
	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:		
	• $cbsdld = C$		
	• grantId = G		
5	 operationState ="GRANTED" 	PASS	
	B. UUT sends a Relinquishment request message. Ensure message is correctly formatted with parameters:		
	• $cbdsld = C$		
	• $grant/d = G$		
	Monitor the RF output of the UUT. Verify:		
	UUT does not transmit at any time		



3.16 WINNF.FT.C.HBT.6 - Heartbeat responseCode=501 (SUSPENDED_GRANT) in Subsequent Heartbeat Response

#	Test Execution Steps	Res	ults
	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: 		
4	\circ valid <i>cbsdld</i> =C		
1	 valid grantId =G grant is for frequency range F, power P 		
	o grantExpireTime=UTC time greater than duration of the test		
	UUTisinAUTHORIZED state and is transmitting within the		
	grant bandwidth F on RF interface		
	UUT sends a Heartbeat Request message.		
	Verify Heartbeat Request message is sent within latest specified heartbeatInterval, and is formatted correctly, including:		
2	• $cbsdld = C$	PASS	
	• grant/d = G		
	 operationState ="AUTHORIZED" 		
	SAS Test Harness sends a Heartbeat Response message, including the		
	following parameters:		
3	• cbsdld =C		
5	• 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.		
	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		
	 grantId = G approximation State = "CRANITED" 		
5	 operationState = "GRANTED" B. UUT sends a Relinquishment Request message. Ensure message 	PASS	
	is correctly formatted with parameters:		
	• $cbdsId = C$		
	• grantId = G		
	Monitor the RF output of the UUT. Verify:		
	• UUT shall stop transmission within (T+60 seconds) of		
	completion of step 3		



3.17 WINNF.FT.C.HBT.7 - Heartbeat responseCode=502 (UNSYNC_OP_PARAM)

#	Test Execution Steps	Res	ults
	Ensure the following conditions are met for test entry:		
1	 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 <i>heartbeatInterval</i> ,and is formatted correctly, including: • cbsdld = C • grantId = G • operationState = "AUTHORIZED"	PASS	
3	SAS Test Harness sends a Heartbeat Response message, including the following parameters: • cbsdld =C • grantId = 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: 	PASS	



3.18 WINNF.FT.C.HBT.9 - Heartbeat Response Absent (First Heartbeat)

#	Test Execution Steps	Res	ults
	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		
1	○ valid grantId =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)		
	UUT sends a Heartbeat Request message.		
	Ensure Heartbeat Request message is sent within latest specified	PASS	
2	heartbeatInterval, and is formatted correctly, including:		
2	• cbsdld =C	FA00	
	• grantId =G		
	 operationState = "GRANTED" 		
3	After completion of Step 2, SAS Test Harness does not respond to any		
5	furthermessagesfromUUT 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:	PASS	
	 At any time during the test, UUT shall not transmit on RF 		
	interface		



3.19 WINNF.FT.C.HBT.10 - Heartbeat Response Absent (Subsequent Heartbeat)

#	Test Execution Steps	Res	ults
1	 Ensure the following conditions are met for test entry: UUT has registered successfully with SASTestHarness 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. VerifyHeartbeatRequestmessageissentwithinthelatestspecified heartbeatInterval, and is formatted correctly, including: • cbsdld = C • grantId = G • operationState = "AUTHORIZED"	PASS	-
3	SAS Test Harness sends a Heartbeat Response message, with the following parameters: • cbsdld =C • grantId =G • transmitExpireTime=currentUTC time+200 seconds • responseCode =0		
4	After completion of Step 3, SAS Test Harness does not respond to any further messages from UUT		
5	 Monitor the RF output of the UUT. Verify: UUT shall stop all transmission on RF interface within (<i>transmitExpireTime</i>+60 seconds), using the transmitExpireTime sent in Step 3. 	PASS	



3.20 WINNF.FT.C.HBT.11 - Successful Grant Renewal in Heartbeat Test Case

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 cbsd/d = C • valid cbsd/d = C • valid grant/d = G • grant is for frequency range F, power P • 1 • UUT isin AUTHORIZED state and istransmitting within the grant bandwidth F on RF interface. • • Grant has the following parameters at the start of the test: • grantExpireTime=UTC time equal to time at start of test + 300 seconds = Tgrant_expire • IUT sends a Heartbeat Request message. • <i>i</i> Heartbeat Request message. If Heartbeat Request message contains grantRenew = TRUE, go to Step 6, else go to Step 3. VerifyHeartbeat Request message contains grantRenew = TRUE, go to Step 6, else grant d = G • Jost State = "AUTHORIZED" SASTest Harness sends a Heartbeat Response message, with the following parameters: • cbsd/d = C grant/d = G • grant/d = G • grant/d = G • grant/d = G • grant/d = G • grant/d = G • grant/d = G • grant	#	Test Execution Steps	Res	ults
• UUT has a valid single grant as follows: • valid cbsdld = C • grant is for frequency range F, power P 1 • UUT isinAUTHORIZED state and is transmitting within the grant bandwidth F on RF interface. • Grant has the following parameters at the start of the test: • Grant has the following parameters at the start of test + 300 seconds = Tgrant_expire • transmitExpireTime=UTC time equal to time at start of test + 200 seconds 2 If Heartbeat Request message. 1 Heartbeat Request message. 2 If Heartbeat Request message. 3 4 5 6 7 6 7 8				
o valid cbsd/d = C o yalid grantld = G o grant is for frequency range F, power P 1 UUT isin AUTHORIZED state and is transmitting within the grant bandwidth F on RF interface. • Grant has the following parameters at the start of the test: • Grant has the following parameters at the start of the test: • Grant has the following parameters at the start of test + 300 seconds = Tgrant_expire • If Heartbeat Request message. 2 If Heartbeat Request message contains grant Renew = TRUE, go to Step 6, else or transmitExpire Time=utor this including: 2 If Heartbeat Request message issent within the latest specified heartbeat therval, and is formatted correctly, including: 3 • cbsd/d = C PASS 9 grant tabate = "AUTHORIZED" SAS Test Hamess sends a Heartbeat Response message, with the following parameters: 4 grant tabate = current UTC + 200 seconds 4 <		 UUT has registered successfully with SAS Test Harness 		
0 valid grant/d =G o grant is for frequency range F, power P 1 UUT is in AUTHORIZED state and is transmitting within the grant bandwidth F on RF interface.		UUT has a valid single grant as follows:		
o grant is for frequency range F, power P 1 UUT isin AUTHORIZED state and is transmitting within the grant bandwidth F on RF interface.				
1 • UUT is in AUTHORIZED state and is transmitting within the grant bandwidth F on RF interface. • Grant has the following parameters at the start of the test: • grantExpireTime=UTC time equal to time at start of test + 300 seconds = T grant_expire • • transmitExpireTime=UTC time equal to time at start of test + 200 seconds • • transmitExpireTime=UTC time equal to time at start of test + 200 seconds • • transmitExpireTime=UTC time equal to time at start of test + 200 seconds • • transmitExpireTime=UTC time equal to time at start of test + 200 seconds • • transmitExpireTime=00 seconds • • </td <td></td> <td></td> <td></td> <td></td>				
bandwidth F on RF interface. • Grant has the following parameters at the start of the test: • grantExpireTime=UTC time equal to time at start of test + 300 seconds = Tgrant_expire • or transmitExpireTime=UTC time equal to time at start of test + 300 seconds = Tgrant_expire • transmitExpireTime=UTC time equal to time at start of test + 200 seconds • UUT sends a Heartbeat Request message. • heartbeatInterval=60 seconds • • UUT sends a Heartbeat Request message contains grantRenew = TRUE, go to Step 6, else • go to Step 3. • cbsdld = C PASS • grantId = G • operationState ="AUTHORIZED" PASS SAS Test Harness sends a Heartbeat Response message, with the following parameters: • cbsdld = C • grantId = G • cbsdld = C • dignarities a filter within the latest specified heartbeat frequest message is sent within the latest specified heartbeat frequest message is sent within the latest specified heartbeat frequest message is sent within the latest specified heartbeat frequest message is sent within the latest specified heartbeat frequest message is sent within the latest specified heartbeat frequest message is sent within the latest specified heartbeat frequest message is sent within the latest specified heartbeat frequest message is sent within the latest specified heartbeat frequest message is sent within the latest specified heartbeat frequest message is sent within the latest specif				
o grantExpireTime=UTC time equal to time at start of test + 300 seconds = Tgrant_expire o transmitExpireTime=UTC time equal to time at start of test + 200 seconds o transmitExpireTime=UTC time equal to time at start of test + 200 seconds 0 transmitExpireTime=UTC time equal to time at start of test + 200 seconds 0 transmitExpireTime=UTC time equal to time at start of test + 200 seconds 1 UUT sends a Heartbeat Request message. 1 If Heartbeat Request message contains grantRenew = TRUE, go to Step 6, else go to Step 3. VerifyHeartbeatRequest message issentwithin thelatestspecified heartbeatInterval, and is formatted correctly, including: PASS 3 • cbsdld = C PASS • grantId = G • operationState ="AUTHORIZED" SAS Test Hamess sends a Heartbeat Response message, with the following parameters: • cbsdld = C 4 grantExpireTime = same as Step 1 • responseCode = 0 5 Go to Step 2 6 is grantId = G is operationState ="AUTHORIZED" PASS	1	bandwidth F on RF interface.		
seconds = Tgrant_expire o transmitExpireTime=UTC time equal to time at start of test + 200 seconds UUT sends a Heartbeat Request message. If Heartbeat Request message contains grantRenew = TRUE, go to Step 6, else go to Step 3. VerifyHeartbeat Request message contains grantRenew = TRUE, go to Step 6, else go to Step 3. VerifyHeartbeat Request message is sent within the latest specified heartbeatInterval, and is formatted correctly, including: 3 • cbsdld = C PASS • grantId = G • operationState = "AUTHORIZED" SAS Test Harness sends a Heartbeat Response message, with the following parameters: • cbsdld = C 4 • grantId = G • transmitExpireTime = same as Step 1 5 Go to Step 2 6 • grantId = G 6 • grantLexpireTime = same as Step 1 6 • cbsdld = C • grantId = G				
o transmitExpireTime=UTC time equal to time at start of test + 200 seconds - 0 heartbeatInterval=60 seconds - 2 If Heartbeat Request message. 1f Heartbeat Request message contains grantRenew = TRUE, go to Step 6, else go to Step 3. VerifyHeartbeatRequestmessage is sentwithin the latest specified heartbeatInterval, and is formatted correctly, including: 3 c cbsdld = C PASS 9 operationState ="AUTHORIZED" SAS Test Harness sends a Heartbeat Response message, with the following parameters: 0 cbsdld = C 4 grantld = G 5 Go to Step 2 5 Go to Step 2 6 grantld = G 6 operationState ="AUTHORIZED"				
seconds - heartbeatInterval= 60 seconds 2 UUT sends a Heartbeat Request message. 1 If Heartbeat Request message contains grantRenew = TRUE, go to Step 6, else go to Step 3. 2 If Heartbeat Request message contains grantRenew = TRUE, go to Step 6, else go to Step 3. 3 VerifyHeartbeatRequestmessageissentwithinthelatestspecified heartbeatInterval, and is formatted correctly, including: 3 • cbsdld = C 9 grantId = G • operationState = "AUTHORIZED" SAS Test Harness sends a Heartbeat Response message, with the following parameters: • cbsdld = C 4 grantId = G • cbsdld = C 4 grantId = G • cbsdld = C • transmitExpireTime = current UTC + 200 seconds • grantId = G • transmitExpireTime = same as Step 1 • responseCode = 0 5 Go to Step 2 6 • cbsdld = C • grantId = G • cbsdld = C • grantId = G • cbsdld = C • cbsdld = C • cbsdld = C <td></td> <td></td> <td></td> <td></td>				
2 UUT sends a Heartbeat Request message. 2 If Heartbeat Request message contains grantRenew = TRUE, go to Step 6, else go to Step 3. VerifyHeartbeatRequest message is sent within the latest specified heartbeatInterval, and is formatted correctly, including: 3 • cbsdld = C PASS 4 • grantId = G 5 Go to Step 2 4 • grantId = G 5 Go to Step 2 6 • cbsdld = C • correctly, including: 5 Go to Step 2 6 • cbsdld = C • correctly, including:				
2 If Heartbeat Request message contains grantRenew = TRUE, go to Step 6, else go to Step 3. VerifyHeartbeatRequestmessageissentwithinthelatestspecified heartbeatInterval, and is formatted correctly, including: PASS 3 • cbsdld = C PASS • grantId = G • operationState = "AUTHORIZED" PASS SAS Test Harness sends a Heartbeat Response message, with the following parameters: • cbsdld = C 4 grantId = G 4 grantExpireTime = current UTC + 200 seconds • grantExpireTime = same as Step 1 5 Go to Step 2 6 • cbsdld = C 6 • cbsdld = C 6 • cbsdld = C PASS 6 • cbsdld = C PASS 6 • cbsdld = C PASS 6 • cbsdld = C • operationState = "AUTHORIZED" PASS<				
go to Step 3. VerifyHeartbeatRequestmessage issent within the latest specified heartbeatInterval, and is formatted correctly, including: PASS 3 • cbsdld = C PASS • grantId = G • operationState = "AUTHORIZED" PASS SAS Test Harness sends a Heartbeat Response message, with the following parameters: • cbsdld = C • cbsdld = C • argantId = G 4 • grantId = G • cbsdld = C • cbsdld = C • cbsdld = G 4 • grantId = G • transmitExpireTime = current UTC + 200 seconds • grantExpireTime = same as Step 1 • responseCode = 0 5 Go to Step 2 6 • cbsdld = C • cbsdld = C • grantId = G 6 • cbsdld = C PASS 6 • operationState = "AUTHORIZED" PASS	0			
VerifyHeartbeatRequestmessageissentwithinthelatestspecified heartbeatInterval, and is formatted correctly, including: PASS 3 cbsdld = C grantld = G operationState = "AUTHORIZED" PASS SAS Test Harness sends a Heartbeat Response message, with the following parameters: cbsdld = C grantld = G 4 grantld = G grantle = G grantle = G 5 Go to Step 2 5 Go to Step 2 6 cbsdld = C grantle = G grantExpireTime = same as Step 1 costode = 0 6 cbsdld = C grantle = G 6 grantExpireTime = same as Step 1 costode = 0 5 Go to Step 2 6 paratll = G operationState = "AUTHORIZED" PASS	2			
heartbeatInterval, and is formatted correctly, including: PASS 3 cbsdld = C PASS 9 grantld = G 9 operationState = "AUTHORIZED" SAS Test Harness sends a Heartbeat Response message, with the following parameters: 4 grantId = G 4 grantId = G 5 Go to Step 2 5 Go to Step 2 6 cbsdld = C 6 grantId = G 6 operationState = "AUTHORIZED" PASS				
• grantId = G				
• operationState = "AUTHORIZED" SAS Test Harness sends a Heartbeat Response message, with the following parameters: • cbsdld = C 4 grantId = G • transmitExpireTime = current UTC + 200 seconds • grantExpireTime = same as Step 1 • responseCode = 0 5 Go to Step 2 • CbsdId = C • grantLartbeat Request message is sent within the latest specified heartbeatInterval, and is formatted correctly, including: • cbsdId = C • grantId = G • operationState = "AUTHORIZED"	3	• $cbsdld = C$	PASS	
SAS Test Harness sends a Heartbeat Response message, with the following parameters:		• grantId =G		
following parameters: • cbsdld = C 4 • grantld = G • transmitExpireTime = current UTC + 200 seconds • responseCode = 0 5 Go to Step 2 6 Verify Heartbeat Request message is sent within the latest specified heartbeatInterval, and is formatted correctly, including: • cbsdld = C 6 • grantld = G • operationState = "AUTHORIZED" PASS				
4•cbsdld = C4•grantld = G•transmitExpireTime = current UTC + 200 seconds••grantExpireTime = same as Step 1•responseCode = 05Go to Step 25Go to Step 26Verify Heartbeat Request message is sent within the latest specified heartbeatInterval, and is formatted correctly, including: • cbsdld = C • grantld = G • operationState = "AUTHORIZED"PASS				
4 • grantId = G • transmitExpireTime = current UTC + 200 seconds • grantExpireTime = same as Step 1 • responseCode = 0 5 Go to Step 2 6 Verify Heartbeat Request message is sent within the latest specified heartbeatInterval, and is formatted correctly, including: 6 • grantId = G • operationState = "AUTHORIZED" PASS				
• transmitExpireTime = current UTC + 200 seconds • grantExpireTime = same as Step 1 • responseCode = 0 5 Go to Step 2 5 Go to Step 2 • Verify Heartbeat Request message is sent within the latest specified heartbeatInterval, and is formatted correctly, including: • cbsdld = C • grantId = G • operationState = "AUTHORIZED"				
• grantExpireTime = same as Step 1 • responseCode = 0 5 Go to Step 2 5 Go to Step 2 6 Verify Heartbeat Request message is sent within the latest specified heartbeatInterval, and is formatted correctly, including: • cbsdld = C • cbsdld = C 6 • grantId = G • operationState = "AUTHORIZED" PASS	4	-		
• responseCode = 0 5 Go to Step 2 Verify Heartbeat Request message is sent within the latest specified heartbeatInterval, and is formatted correctly, including: 6 · cbsdld = C · prantld = G • operationState = "AUTHORIZED"				
5 Go to Step 2 6 Verify Heartbeat Request message is sent within the latest specified heartbeatInterval, and is formatted correctly, including: cbsdld = C grantId = G operationState = "AUTHORIZED" PASS				
6 Verify Heartbeat Request message is sent within the latest specified heartbeatInterval, and is formatted correctly, including: cbsdld = C grantld = G operationState = "AUTHORIZED" PASS	5	· · ·		
 heartbeatInterval, and is formatted correctly, including: <i>cbsdld</i> = C <i>grantId</i> = G <i>operationState</i> = "AUTHORIZED" 	- 5			
6 cbsdld = C • grantld = G • operationState = "AUTHORIZED" PASS	6			
6 grantId = G • operationState = "AUTHORIZED" PASS				
 operationState = "AUTHORIZED" 			PASS	
		5		
		• grantRenew = TRUE		



	SAS Test Harness sends a Heartbeat Response message, with the following parameters:		
	• cbsdld =C		
7	• grantId =G		
	 grantExpireTime = UTC time set far in the future 		
	 transmitExpireTime=currentUTC time+200 seconds 		
	 responseCode = 0 		
	Continue to respond to any subsquent Heartbeat Request from CBSD with Heartbeat Response with the following parameters:		
	• cbsdld=C		
8	• grantId =G		
	 transmitExpireTime = same as Step 7 		
	 responseCode = 0 		
9	MonitorRFtransmission of UUT from start of test until Tgrant_expire + 60 seconds and ensure UUT continues to transmit throughout the time period.	PASS	



3.21 WINNF.FT.C.RLQ.1 - Successful Relinquishment

#	Test Execution Steps	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. Invoketrigger to relinquish UUT Grant from the SASTest Harness 		
2	UUT sends a Relinquishment Request message. Verify message contains all required parameters properly formatted, and specifically:	PASS	
	• $cbsdld = C$		
	• grantId =G		
	SASTestHarnessshallapprove the request with a Relinquishment Response message with parameters:		
3	- cbsdld =C		
	– grantId =G		
	— responseCode = 0		
4	After completion of step 3, SAS Test Harness will not provide any additional positive response (<i>responseCode</i> =0) to further request messages from the UUT.		
5	Monitor the RF output of the UUT from start of test until 60 secondsafter Step3iscomplete.Thisistheendofthetest.Verify:		
	 UUT shall stop RF transmission at any time between triggering the relinquishment and UUT sending the relinquishment request 	PASS	



3.22 WINNF.FT.C.RLQ.3 - Unsuccessful Relinquishment, responseCode=102

#	Test Execution Steps	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 <i>cbsdld</i>=C UUT has received a valid grant with <i>grantld</i> = G UUT is in Grant State AUTHORIZED and is actively transmitting within the bounds of its grant. Invoke trigger to Relinquish UUT Grant from the SAS Test Harness 		
2	UUT sends a Relinquishment Request message. Verify message contains all required parameters properly formatted, and specifically: cbsdId = C grantId = G 		
3	 SAS Test Harness shall send a Relinquishment Response message with parameters: cbsdld = C No grantld responseCode = R 		
4	After completion of step 3, SAS Test Harness will not provide any positive response(<i>responseCode</i> =0)tofurtherrequestmessages from the UUT.		
5	 Monitor the RF output of the UUT from start of test until 60 secondsafter Step3iscomplete.Thisistheendofthetest.Verify: UUT stopped RF transmission at any time between triggering the relinquishment and UUT sending the relinquishment request 	PASS	



3.23 WINNF.FT.C.RLQ.5 - Unsuccessful Relinquishment, responseCode=103

#	Test Execution Steps	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. Invoketrigger to Relinquish UUT Grantfrom the SASTest Harness 		
2	UUT sends a Relinquishment Request message. Verify message contains all required parameters properly formatted, and specifically: • cbsdld = C • grantld = G		
3	 SAS Test Harness shall send a Relinquishment Response message with parameters: cbsdld = C No grantld responseCode = R 		
4	Aftercompletionofstep3,SASTestHarnesswillnotprovideany positive response(<i>responseCode</i> =103)tofurtherrequestmessages from the UUT.		
5	 Monitor the RF output of the UUT from start of test until 60 secondsafter Step3iscomplete.Thisistheendofthetest. Verify: UUT stopped RF transmission at any time between triggering the relinquishment and UUT sending the relinquishment request 	PASS	



3.24 WINNF.FT.C.DRG.1 - Successful Deregistration

#	Test Execution Steps	Res	ults
	Ensure the following conditions are met for test entry:		
	 UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness 		
1	 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	3 UUT sends Deregistration Request to SAS Test Harness with <i>cbsdld</i> = C.		
	SASTestHarness shall approve the request with a Deregistration Response		
4	message with parameters:		
4	• $cbsdld = C$		
	 responseCode = 0 		
	After completion of step 3, SAS Test Harness will not provide any additional positive		
5	response (responseCode=0) to further request		
	messages from the UUT.		
	Monitor the RF output of the UUT from start of test until 60 secondsafter Step4iscomplete.Thisistheendofthetest.Verify:		
	UUTstoppedRFtransmission at any time between triggering		
6	the deregistration and either A OR B occurs:	PASS	
	A. UUT sending a Registration Request message, as this is not mandatory		
	B. UUT sending a Deregistration Request message		



3.25 WINNF.FT.C.DRG.3 - Deregistration responseCode=102

#	Test Execution Steps	Res	ults
	Ensure the following conditions are met for test entry:		
	 UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness 		
1	 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 <i>responseCode</i> =0		
3	LILIT conde Deregistration Paguastta SASTast Harpose with abad/d		
	The SAS Test Harness sends the Deregistration Response Message to UUT with:		
4	No cbsdld		
	 responseCode = 102 		
5	After completion of step 3, SAS Test Harness will not provide any positive response(<i>responseCode</i> =0)tofurther request messages from the UUT.		
	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:		
6	 UUT stopped RF transmission at any time between triggering the deregistration and either A OR B occurs: 	PASS	
	A. UUT sending a Registration Request message, as this is not mandatory		
	B. UUT sending a Deregistration Request message		



3.26 WINNF.FT.C.DRG.5 - Deregistration responseCode=103

#	Test Execution Steps	Res	ults
	 Ensure the following conditions are met for test entry: UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness 		
1	 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 <i>responseCode</i> =0		
3	LILIT sonds Deregistration Request to SAS Test Harpess with chedid-		
4	 The SAS Test Harness sends the Deregistration Response Message to UUT with: No cbsdld responseCode = 103 		
5	After completion of step 3, SAS Test Harness will not provide any positive response(<i>responseCode</i> =0)tofurtherrequestmessages from the UUT.		
	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:		
6	 UUTstoppedRFtransmissionatanytimebetween triggering the deregistration and either A OR B occurs: A. UUTsendingaRegistrationRequestmessage, asthisisnot mandatory 	PASS	
	B. UUT sending a Deregistration Request message		



3.27 WINNF.FT.C.SCS.1 - Successful TLS connection between UUT and SAS Test Harness

#	Test Execution Steps	Res	ults
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	-
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_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256 TLS_ECDHE_ECDSA_WITH_AES_256_GCM_SHA384 TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256 TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA384 TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256 	PASS	
3	 Asuccessful 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	
4	Monitor the RF output of the UUT from start of test until 60 secondsafter Step3iscomplete.Thisistheendofthetest.Verify: UUT shall not transmit RF	PASS	



3.28 WINNF.FT.C.SCS.2 - TLS failure due to revoked certificate

#	Test Execution Steps	Res	ults
1	 UUTshallstartCBSD-SAScommunication with the security procedures 	PASS	
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. 		
3	UUT may retry for the security procedure which shall fail	PASS	
4	SASTest-HarnessshallnotreceiveanyRegistrationrequestorany		
5	Monitor the RF output of the UUT from start of test until 60 secondsafter Step3iscomplete.Thisistheendofthetest. Verify: • UUT shall not transmit RF		



3.29 WINNF.FT.C.SCS.3 - TLS failure due to expired server certificate

#	Test Execution Steps	Res	ults
1	 UUTshallstartCBSD-SAScommunication with the security procedures 	PASS	
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 theserver certificate. Make sure that Mutual authentication does not happen between UUT and the SAS Test Harness. 		
3	UUT may retry for the security procedure which shall fail.	PASS	
4	SASTest-HarnessshallnotreceiveanyRegistrationrequestorany		
5	Monitor the RF output of the UUT from start of test until 60 secondsafter Step3iscomplete.Thisistheendofthetest.Verify: • UUT shall not transmit RF		



3.30 WINNF.FT.C.SCS.4 - TLS failure when SAS Test Harness certificate is issued by an unknown CA

#	Test Execution Steps	Res	ults
1	 UUTshallstartCBSD-SAScommunication with the security procedures 	PASS	
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. 		
3	UUT may retry for the security procedure which shall fail.	PASS	
4	SASTest-HarnessshallnotreceiveanyRegistrationrequestorany application data.		
5	Monitor the RF output of the UUT from start of test until 60 secondsafter Step3iscomplete. Thisistheendofthetest. Verify: • UUT shall not transmit RF		



3.31 WINNF.FT.C.SCS.5 - TLS failure when certificate at the SAS Test Harness is corrupted

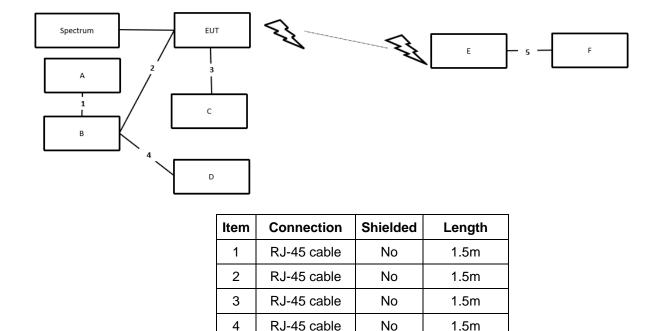
#	Test Execution Steps		ults
1	 UUTshallstartCBSD-SAScommunicationwiththesecurity procedures 		
2	 Make sure that UUT uses TLS v1.2 for security establishment. Make sure UUT selects the correct cipher suite. UUT shall use CRL or OCSP to verify the validity of the server certificate. Make sure that Mutual authentication does not happen between UUT and the SAS Test Harness. 		
3	UUT may retry for the security procedure which shall fail.	PASS	
4	SASTest-HarnessshallnotreceiveanyRegistrationrequestorany application data.		
5	Monitor the RF output of the UUT from start of test until 60 secondsafter Step3iscomplete.Thisistheendofthetest. Verify: • UUT shall not transmit RF		

3.32 WINNF.PT.C.HBT.1 - UUT RF Transmit Power Measurement

For Category A:

Items	Parameters
Maximum rated power (EIRP, dBm/MHz)	15
Transmit dynamic range (EIRP, dBm/MHz)	1dB increments from 12 dBm/MHz to 15 dBm/MHz (4 steps)
Occupied bandwidth (OBW)	10MHz
maxEirp values	15

Items	Parameters	
Maximum rated power (EIRP, dBm/MHz)	23	
Transmit dynamic range (EIRP, dBm/MHz)	1dB increments from 20 dBm/MHz to 23 dBm/MHz (4 steps)	
Occupied bandwidth (OBW)	10MHz	
maxEirp values	23	



RJ-45 cable

5

Note: To ensure EUT transmits with full power across the Bandwidth during the on duration of duty cycle, EUT is running maximum traffic during the test.

No

1.5m



Spectrum Analyzer Setting	Parameters
Center Frequency	3555MHz
Frequency Span	20MHz
RBW / VBW	1 MHz / 3MHz
Channel Power Meas Bandwidth	10MHz
Sweep Time	1ms

Spectrum Analyzer Setting	Parameters
Center Frequency	3555MHz
Frequency Span	20MHz
RBW / VBW	1 MHz / 3MHz
Channel Power Meas Bandwidth	10MHz
Sweep Time	1ms





#	Test Execution Steps	Res	ults
	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 Example 1 and 1 and 2 and		
	= FL, highFrequency = FH, maxEirp = Pi}, with grant in AUTHORIZED state, and grantExpireTime set to a value far past the		
1	duration of this test case		
	Note:inorderfortheUUTtorequestagrantwiththeparameters		
	{lowFrequency, highFrequency, maxEirp), the SAS Test Harness may need to		
	provide appropriate guidance in the availableChannel object of the spectrumInquiry responsemessage, and the operationParam object of the grant responsemessage.		
	Alternately, the UUT vendor may provide the ability to set those parameters on the		
	UUTsothat		
	the UUT will request a grant with those parameters.		
	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:		
	\circ cbsdld = C		
2	\circ grantId = G		
_	 SAS Test Harness responds with Heartbeat 		
	Response, including:		
	\circ cbsdld = C \circ grantld = G		
	 granna = 0 transmitExpireTime=currentUTC time+200 seconds 		
	 responseCode = 0 		
	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 fulfil the requirements of the power measurement method.		
3		PASS	
	Note:itmayberequiredforthevendortoprovideamethodor 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.		



		A	Conduct	ed PSD		Orant	
Frequency (MHz)	Bandwidth	Antenna Gain	PORT ANT 0	PORT ANT 1	maxEirp	Grant maxEirp	Result
. ,	(MHz)	(dBi)	(dBm/MHz)	(dBm/MHz)	(dBm/MHz)	(dBm/MHz)	
3555	10	9.5	-1.493	-2.05	10.75	12	PASS
3555	10	9.5	-0.2618	-0.39	12.18	13	PASS
3555	10	9.5	2.39	1.357	14.41	15	PASS

		Antonno	Conduct	ed PSD		Grant	
Frequency (MHz)	Bandwidth	Antenna Gain	PORT ANT 0	PORT ANT 1	maxEirp	Grant maxEirp	Result
	(MHz)	(dBi)	(dBm/MHz)	(dBm/MHz)	(dBm/MHz)	(dBm/MHz)	
3555	10	18	-3.039	-2.413	18.30	20	PASS
3555	10	18	-1.92	-1.617	19.24	21	PASS
3555	10	18	-0.3743	0.6517	21.18	23	PASS



4 Test Equipment and Calibration Data

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
Signal analyzer	Agilent	N9010A	MY52220519	10kHz~44GHz	Mar. 18, 2022	Mar. 17, 2023	Conducted (TH01-CB)
Signal analyzer	Keysight	N9020A	MY55400138	10 Hz up to 26.5 GHz	Jan. 25, 2022	Jan. 24, 2023	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-06	1 GHz – 26.5 GHz	Oct. 04, 2021	Oct. 03, 2022	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-07	1 GHz –26.5 GHz	Oct. 04, 2021	Oct. 03, 2022	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-08	1 GHz –26.5 GHz	Oct. 04, 2021	Oct. 03, 2022	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-09	1 GHz –26.5 GHz	Oct. 04, 2021	Oct. 03, 2022	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz –26.5 GHz	Oct. 04, 2021	Oct. 03, 2022	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-30	1 GHz –26.5 GHz	Oct. 04, 2021	Oct. 03, 2022	Conducted (TH01-CB)
Cable	Woken	RG402	low Cable-30	9 kHz –1 GHz	Mar. 04, 2022	Mar. 03, 2023	Conducted (TH01-CB)
RF Power Divider	Woken	4 Way	TH01-DV-01	1GHz ~ 6GHz	Oct. 04, 2021	Oct. 03, 2022	Conducted (TH01-CB)
RF Power Divider	STI	2 Way	DV-2way-01	1GHz ~ 8GHz	Oct. 04, 2021	Oct. 03, 2022	Conducted (TH01-CB)

Note: Calibration Interval of instruments listed above is one year.



5 Measurement Uncertainty

Before Jun. 01, 2022

Test Items	Uncertainty	Remark
Conducted Emission	2.5 dB	Confidence levels of 95%

After May 31, 2022

Test Items	Uncertainty	Remark
Conducted Emission	3.2 dB	Confidence levels of 95%



GPS data Latitude 41.570738 Longitude -90.602715 Citizens Broadband Radio Service Device latest log entries Citizens Broadband Radio Service Device latest log entries Med Jun 29 08:19:15 2022 deeon.notice /usr/sbin/cbsd: Altitude changed by more than 3 meters than the one used in register ation, going to register gain. Citizens Broadband Radio Service Device latest log entries Med Jun 29 08:19:13 2022 deeon.notice /usr/sbin/cbsd: Altitude changed by more than 3 meters than the one used in register ation, going to register gain. Wed Jun 29 08:19:13 2022 deeon.notice /usr/sbin/cbsd: Got Got Codd: 240678H- Bit 200519:13 2022 deeon.notice /usr/sbin/cbsd: Got Got Codd: 240678H- Bit m 29 08:19:19 2022 deeon.notice /usr/sbin/cbsd: Got Bit 2015 24028 deeon.notice /usr/sbin/cbsd: Got Bit 2015 Wed Jun 29 08:19:19 2022 deeon.notice /usr/sbin/cbsd: Set max. tx power to 15 Bit m 29 08:19:19 2022 deeon.notice /usr/sbin/cbsd: Set ax. tx power to 15 Bit m 29 08:19:19 2022 deeon.notice /usr/sbin/cbsd: Set max. tx power to 15 Bit m 29 08:19:19 2022 deeon.notice /usr/sbin/cbsd: Bit max.tx power to 15 Bit m 29 08:19:19 2022 deeon.notice /usr/sbin/cbsd: Set max.tx power to 15 Bit m 29 08:19:19 2022 deeon.notice /usr/sbin/cbsd: Set max.tx power to 15 Bit m 29 08:19:19 2022 deeon.notice /usr/sbin/cbsd: Set max.tx power to 15 Bit m 29 08:19:19 2022 deeon.notice /usr/sbin/cbsd: Bit max.tx power to 15 Bit m 20 08:19:19 2022 deeon.notice /usr/sbin/cbsd: Set max.tx power to 15 Bit m 20 08:19:19 2022 deeon.notice /usr/sbin/cbsd: Set max.tx power to 15 Bit m 20 08:19:19 2022 deeon.notice /usr/sbin/cbsd: Bit max.tx power to 15 Bit m 20 08:19:19 2022 deeon.notice /usr/sbin/cbsd: Bit max.tx power to 15 Bit m 20 08:19:19 2022 deeon.notice /usr/sbin/cbsd: Set max.tx power to 15 Bit m 20 08:19:19 2022 deeon.notice /usr/sbin/cbsd: Bit max.tx power to 15 Bit m 20 08:19:19 2022 deeon.notice /usr/sbin/cbsd: Bit max.tx power to 15 Bit m 20 08:19:19 2022 deeon.notice /usr/sbin/cbsd: Bit max.tx power to 15 Bit m 20 08:19:19 2022 deeon.notice /usr/sbin/c			Vertical Change	
GPS data Latitude 41.570738 Longitude -90.602715 Citizens Broadband Radio Service Device Iatest log entries Ved Jun 29 08:19:15 2022 daemon.notice /usr/sbin/cbsd: Altitude changed by more /ved Jun 29 08:19:15 2022 daemon.notice /usr/sbin/cbsd: Altitude changed by more /ved Jun 29 08:19:17 2022 daemon.notice /usr/sbin/cbsd: Got grantid: 524918629 werview Ved Jun 29 08:19:17 2022 daemon.notice /usr/sbin/cbsd: Got grantid: 524918629 werview Ved Jun 29 08:19:17 2022 daemon.notice /usr/sbin/cbsd: Got grantid: 524918629 werview Ved Jun 29 08:19:17 2022 daemon.notice /usr/sbin/cbsd: Got grantid: 524918629 werview Ved Jun 29 08:19:17 2022 daemon.notice /usr/sbin/cbsd: Got grantid: 524918629 werview Ved Jun 29 08:19:19 2022 daemon.notice /usr/sbin/cbsd: Got grantid: 524918629 werview Ved Jun 29 08:19:19 2022 daemon.notice /usr/sbin/cbsd: Got grantid: 524918629 werview Ved Jun 29 08:19:19 2022 daemon.notice /usr/sbin/cbsd: Got grantid: 524918629 werview Ved Jun 29 08:19:19 2022 daemon.notice /usr/sbin/cbsd: Got grantid: 524918629 werview Ved Jun 29 08:19:19 2022 daemon.notice /usr/sbin/cbsd: Set max. tx power to 15 based on configuration parameters Ved Jun 29 08:19:19 2022 daemon.notice /usr/sbin/cbsd: Set max. tx power to 15 Ved Jun 29 08:19:19:19 2022 daemon.notice /usr/sbin/cbsd: Set max. tx powe				
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Mesh Rider				



Appendix A

DOOD\e	GPS data	
labs	Latitude	41.570738
	Longitude	-90.600431
Smart Radio MAC #00301a4f141c		
tatus	Citizens Broadband	Radio Service Device
Overview Firewall Routes Sustam Lon sic Settings	latest log entries	Wed Jun 29 08:21:49 2022 daemon.notice /usr/sbin/cbsd: Current position is more than 50 meters away than the one used in registration, going to register again. Wed Jun 29 08:21:49 2022 daemon.notice /usr/sbin/cbsd: UNREGISTENED Wed Jun 29 08:21:50 2022 daemon.notice /usr/sbin/cbsd: Got cbsdid: 2AG87RM- 3625Nock-SA500301a4f141c Wed Jun 29 08:21:51 2022 daemon.notice /usr/sbin/cbsd: Got grantId: 287769566 Wed Jun 29 08:21:51 2022 daemon.notice /usr/sbin/cbsd: GRANITED Wed Jun 29 08:21:52 2022 daemon.notice /usr/sbin/cbsd: GRANITED Wed Jun 29 08:21:52 2022 daemon.notice /usr/sbin/cbsd: Set max.tx power to 15 based on configuration parameters Wed Jun 29 08:21:52 2022 daemon.notice /usr/sbin/cbsd: Enable transmitter
gout		



```
Test Log for WINNF.FT.C.REG.20 Test Case ID
2022-06-29T08:17:51.039Z - INFO - registration request from CBRS : {
    "registrationRequest": [
         {
              "airInterface": {
                  "radioTechnology": "DOODLE_CBRS"
              },
              "cbsdCategory": "A",
              "cbsdSerialNumber": "00301a4f141c",
              "fccId": "2AG87RM-3625",
              "installationParam": {
                  "antennaGain": 10,
                  "height": 212,
                  "heightType": "AMSL",
                  "indoorDeployment": false,
                  "latitude": 41.570738,
                  "longitude": -90.602715
              },
              "userId": "7U5MDL"
         }
    1
}
2022-06-29T08:17:51.082Z - INFO - engine sent successfully, the response to CBRS : {
    "registrationResponse": [
         {
              "cbsdId": "2AG87RM-3625Mock-SAS00301a4f141c",
              "response": {
                  "responseCode": 0
              }
         }
    ]
}
2022-06-29T08:17:52.148Z - INFO - grant request from CBRS : {
     "grantRequest": [
         {
              "cbsdId": "2AG87RM-3625Mock-SAS00301a4f141c",
              "operationParam": {
                  "maxEirp": 12,
                  "operationFrequencyRange": {
                       "highFrequency": 361000000,
                       "lowFrequency": 360000000
                  }
             }
         }
    1
}
2022-06-29T08:17:52.154Z - INFO - engine sent successfully, the response to CBRS : {
     "grantResponse": [
         {
              "cbsdId": "2AG87RM-3625Mock-SAS00301a4f141c",
              "channelType": "GAA",
```



```
"grantExpireTime": "2022-07-06T08:17:52Z",
              "grantId": "263463150",
              "heartbeatInterval": 60,
              "response": {
                   "responseCode": 0
              }
         }
    ]
}
2022-06-29T08:17:53.167Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
         {
              "cbsdId": "2AG87RM-3625Mock-SAS00301a4f141c",
              "grantId": "263463150",
              "operationState": "GRANTED"
         }
    ]
}
2022-06-29T08:17:53.180Z - INFO - engine sent successfully, the response to CBRS : {
     "heartbeatResponse": [
         {
              "cbsdId": "2AG87RM-3625Mock-SAS00301a4f141c",
              "grantId": "263463150",
              "response": {
                   "responseCode": 0
              },
              "transmitExpireTime": "2022-06-29T08:21:13Z"
         }
    ]
}
2022-06-29T08:18:58.328Z - INFO - heartbeat request from CBRS : {
     "heartbeatRequest": [
         {
              "cbsdId": "2AG87RM-3625Mock-SAS00301a4f141c",
              "grantId": "263463150",
              "operationState": "AUTHORIZED"
         }
    1
}
2022-06-29T08:18:58.335Z - INFO - engine sent successfully, the response to CBRS : {
     "heartbeatResponse": [
         {
              "cbsdId": "2AG87RM-3625Mock-SAS00301a4f141c",
              "grantId": "263463150",
              "response": {
                   "responseCode": 0
              },
              "transmitExpireTime": "2022-06-29T08:22:18Z"
         }
    ]
}
```

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```
2022-06-29T08:19:16.450Z - INFO - relinquishment request from CBRS : {
    "relinguishmentRequest": [
         {
              "cbsdId": "2AG87RM-3625Mock-SAS00301a4f141c",
              "grantId": "263463150"
         }
    ]
}
2022-06-29T08:19:16.456Z - INFO - engine sent successfully, the response to CBRS : {
    "relinguishmentResponse": [
         {
              "cbsdId": "2AG87RM-3625Mock-SAS00301a4f141c",
              "grantId": "263463150",
              "response": {
                   "responseCode": 0
              }
         }
    1
}
2022-06-29T08:19:16.467Z - INFO - deregistration request from CBRS : {
    "deregistrationRequest": [
         {
              "cbsdId": "2AG87RM-3625Mock-SAS00301a4f141c"
         }
    ]
}
2022-06-29T08:19:16.476Z - INFO - engine sent successfully, the response to CBRS :{
    "deregistrationResponse": [
         {
              "cbsdId": "2AG87RM-3625Mock-SAS00301a4f141c",
              "response": {
                   "responseCode": 0
              }
         }
    ]
}
2022-06-29T08:19:17.530Z - INFO - registration request from CBRS : {
    "registrationRequest": [
         {
              "airInterface": {
                   "radioTechnology": "DOODLE_CBRS"
              },
              "cbsdCategory": "A",
              "cbsdSerialNumber": "00301a4f141c",
              "fccId": "2AG87RM-3625",
              "installationParam": {
                   "antennaGain": 10,
                   "height": 216,
                   "heightType": "AMSL",
                   "indoorDeployment": false,
                   "latitude": 41.570738,
```



```
"longitude": -90.602715
             },
              "userId": "7U5MDL"
         }
    ]
}
2022-06-29T08:19:17.569Z - INFO - engine sent successfully, the response to CBRS : {
    "registrationResponse": [
         {
              "cbsdId": "2AG87RM-3625Mock-SAS00301a4f141c",
              "response": {
                  "responseCode": 0
              }
         }
    ]
}
2022-06-29T08:19:18.584Z - INFO - grant request from CBRS : {
    "grantRequest": [
         {
              "cbsdId": "2AG87RM-3625Mock-SAS00301a4f141c",
              "operationParam": {
                  "maxEirp": 12,
                  "operationFrequencyRange": {
                       "highFrequency": 361000000,
                       "lowFrequency": 360000000
                  }
             }
         }
    ]
}
2022-06-29T08:19:18.591Z - INFO - engine sent successfully, the response to CBRS : {
     "grantResponse": [
         {
              "cbsdId": "2AG87RM-3625Mock-SAS00301a4f141c",
              "channelType": "GAA",
              "grantExpireTime": "2022-07-06T08:19:18Z",
              "grantId": "524918629",
              "heartbeatInterval": 60,
              "response": {
                  "responseCode": 0
              }
         }
    ]
}
2022-06-29T08:19:19.602Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
         {
              "cbsdId": "2AG87RM-3625Mock-SAS00301a4f141c",
              "grantId": "524918629",
              "operationState": "GRANTED"
         }
```



```
]
}
2022-06-29T08:19:19.611Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
         {
              "cbsdId": "2AG87RM-3625Mock-SAS00301a4f141c",
              "grantId": "524918629",
              "response": {
                  "responseCode": 0
              },
              "transmitExpireTime": "2022-06-29T08:22:39Z"
         }
    ]
}
2022-06-29T08:20:24.144Z - INFO - heartbeat request from CBRS :{
    "heartbeatRequest": [
         {
              "cbsdId": "2AG87RM-3625Mock-SAS00301a4f141c",
              "grantId": "524918629",
              "operationState": "AUTHORIZED"
         }
    ]
}
2022-06-29T08:20:24.151Z - INFO - engine sent successfully, the response to CBRS :{
    "heartbeatResponse": [
         {
              "cbsdId": "2AG87RM-3625Mock-SAS00301a4f141c",
              "grantId": "524918629",
              "response": {
                  "responseCode": 0
              },
              "transmitExpireTime": "2022-06-29T08:23:44Z"
         }
    ]
}
2022-06-29T08:21:16.237Z - INFO - heartbeat request from CBRS :{
    "heartbeatRequest": [
         {
              "cbsdId": "2AG87RM-3625Mock-SAS00301a4f141c",
              "grantId": "524918629",
              "operationState": "AUTHORIZED"
         }
    ]
}
2022-06-29T08:21:16.246Z - INFO - engine sent successfully, the response to CBRS :{
    "heartbeatResponse": [
         {
              "cbsdId": "2AG87RM-3625Mock-SAS00301a4f141c",
              "grantId": "524918629",
              "response": {
                  "responseCode": 0
```



```
},
              "transmitExpireTime": "2022-06-29T08:24:36Z"
         }
    ]
}
2022-06-29T08:21:49.996Z - INFO - relinquishment request from CBRS :{
    "relinguishmentRequest": [
         {
              "cbsdId": "2AG87RM-3625Mock-SAS00301a4f141c",
              "grantId": "524918629"
         }
    ]
}
2022-06-29T08:21:50.003Z - INFO - engine sent successfully, the response to CBRS : {
    "relinquishmentResponse": [
         {
              "cbsdId": "2AG87RM-3625Mock-SAS00301a4f141c",
              "grantId": "524918629",
              "response": {
                   "responseCode": 0
              }
         }
    ]
}
2022-06-29T08:21:50.015Z - INFO - deregistration request from CBRS : {
    "deregistrationRequest": [
         {
              "cbsdId": "2AG87RM-3625Mock-SAS00301a4f141c"
         }
    ]
}
2022-06-29T08:21:50.019Z - INFO - engine sent successfully, the response to CBRS :{
    "deregistrationResponse": [
         {
              "cbsdId": "2AG87RM-3625Mock-SAS00301a4f141c",
              "response": {
                   "responseCode": 0
              }
         }
    ]
}
2022-06-29T08:21:51.075Z - INFO - registration request from CBRS :{
    "registrationRequest": [
         {
              "airInterface": {
                   "radioTechnology": "DOODLE_CBRS"
              },
              "cbsdCategory": "A",
              "cbsdSerialNumber": "00301a4f141c",
              "fccId": "2AG87RM-3625",
              "installationParam": {
```



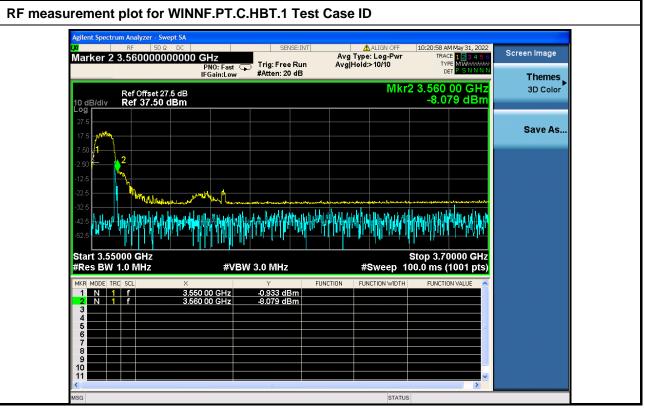
```
"antennaGain": 10,
                   "height": 216,
                   "heightType": "AMSL",
                   "indoorDeployment": false,
                   "latitude": 41.570738,
                   "longitude": -90.600431
              },
              "userId": "7U5MDL"
         }
    ]
}
2022-06-29T08:21:51.115Z - INFO - engine sent successfully, the response to CBRS : {
     "registrationResponse": [
         {
              "cbsdId": "2AG87RM-3625Mock-SAS00301a4f141c",
              "response": {
                   "responseCode": 0
              }
         }
    ]
}
2022-06-29T08:21:52.127Z - INFO - grant request from CBRS : {
     "grantRequest": [
         {
              "cbsdId": "2AG87RM-3625Mock-SAS00301a4f141c",
              "operationParam": {
                   "maxEirp": 12,
                   "operationFrequencyRange": {
                       "highFrequency": 361000000,
                       "lowFrequency": 360000000
                   }
              }
         }
    ]
}
2022-06-29T08:21:52.138Z - INFO - engine sent successfully, the response to CBRS : {
     "grantResponse": [
         {
              "cbsdId": "2AG87RM-3625Mock-SAS00301a4f141c",
              "channelType": "GAA",
              "grantExpireTime": "2022-07-06T08:21:52Z",
              "grantId": "287769566",
              "heartbeatInterval": 60,
              "response": {
                   "responseCode": 0
              }
         }
    1
}
2022-06-29T08:21:53.148Z - INFO - heartbeat request from CBRS : {
     "heartbeatRequest": [
```



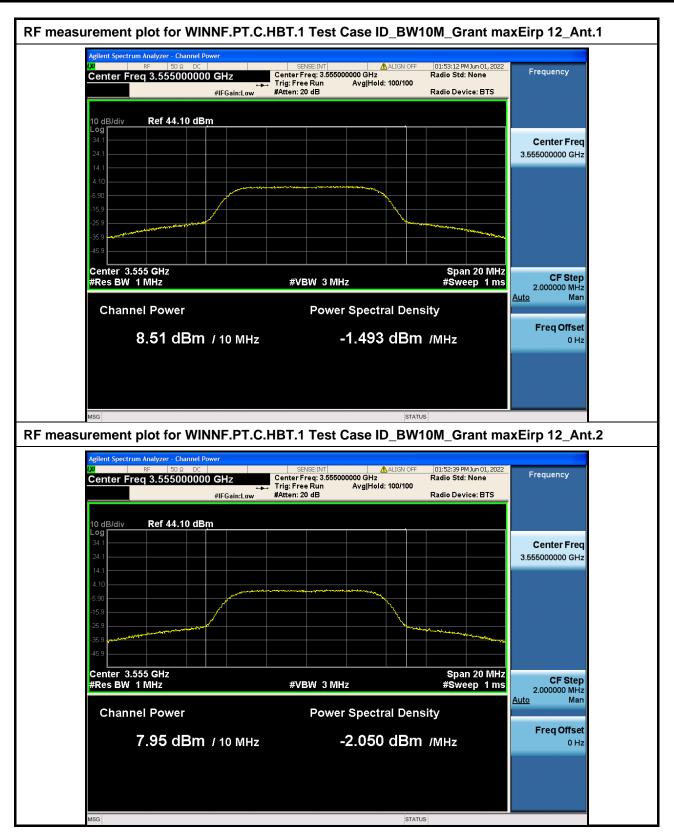
```
{
              "cbsdld": "2AG87RM-3625Mock-SAS00301a4f141c",
              "grantId": "287769566",
              "operationState": "GRANTED"
         }
    ]
}
2022-06-29T08:21:53.154Z - INFO - engine sent successfully, the response to CBRS : {
     "heartbeatResponse": [
         {
              "cbsdId": "2AG87RM-3625Mock-SAS00301a4f141c",
              "grantId": "287769566",
              "response": {
                  "responseCode": 0
              },
              "transmitExpireTime": "2022-06-29T08:25:13Z"
         }
    ]
}
2022-06-29T08:22:56.137Z - INFO - heartbeat request from CBRS :{
     "heartbeatRequest": [
         {
              "cbsdId": "2AG87RM-3625Mock-SAS00301a4f141c",
              "grantId": "287769566",
              "operationState": "AUTHORIZED"
         }
    1
}
2022-06-29T08:22:56.144Z - INFO - engine sent successfully, the response to CBRS :{
     "heartbeatResponse": [
         {
              "cbsdId": "2AG87RM-3625Mock-SAS00301a4f141c",
              "grantId": "287769566",
              "response": {
                  "responseCode": 0
              },
              "transmitExpireTime": "2022-06-29T08:26:16Z"
         }
    ]
}
```



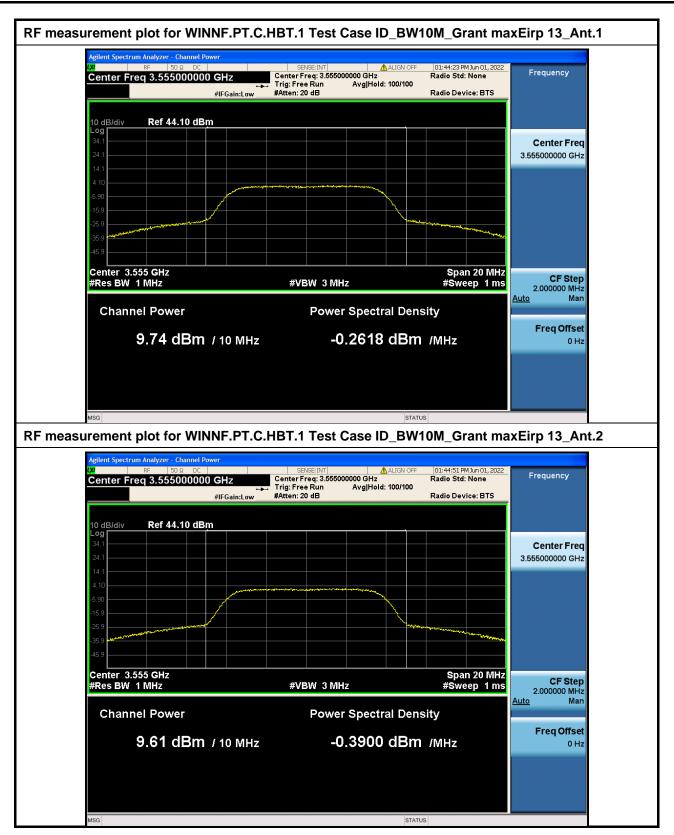
Appendix B



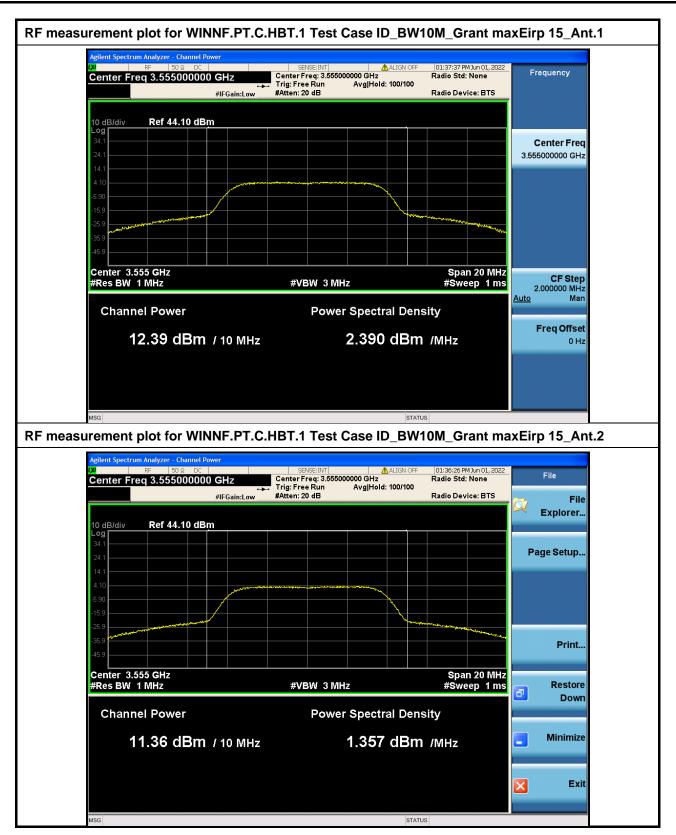






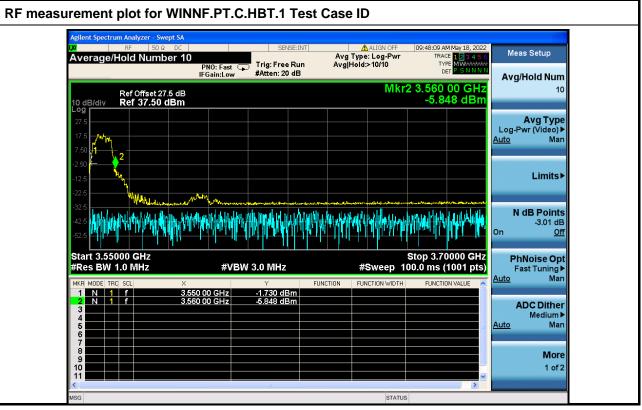




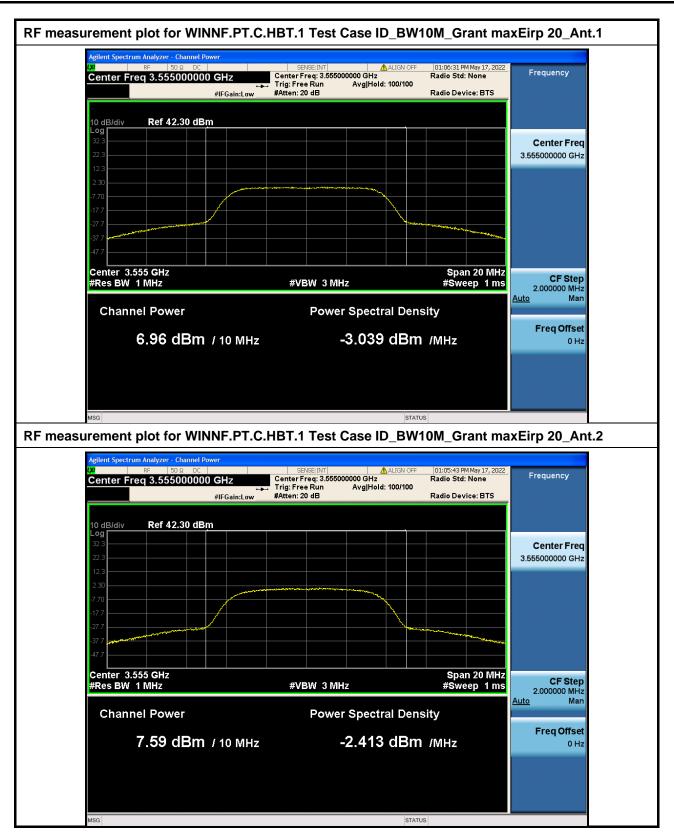




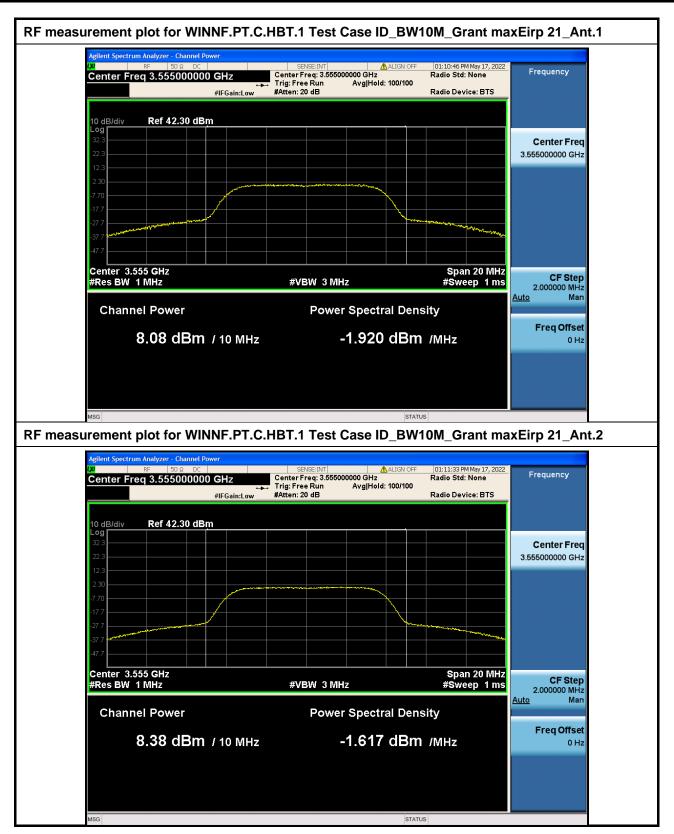
Appendix B



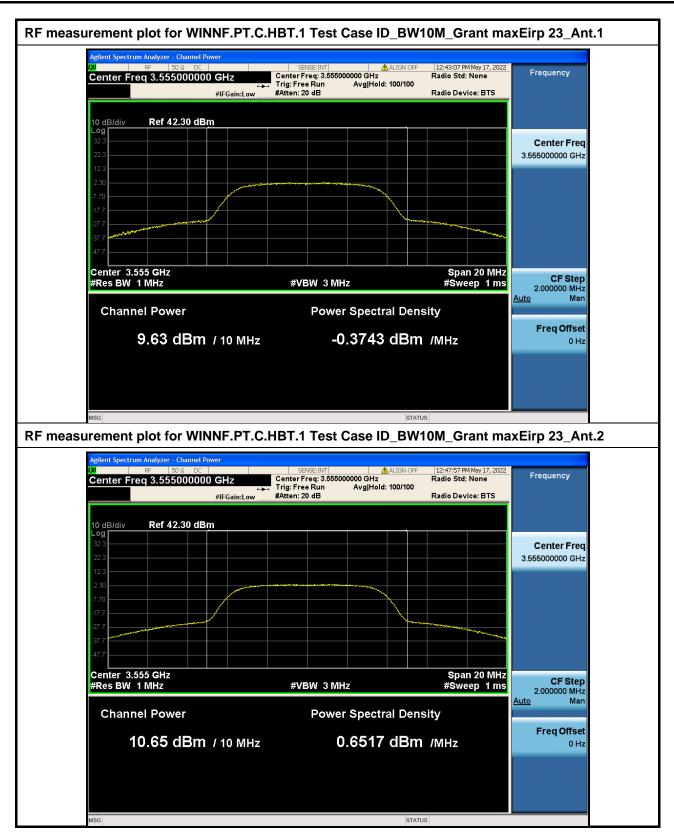














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<u>File Edit Yiew Go Capture A</u>	nalyze Statistics Telephony J	Wireless Iools Help	6-1-1-2
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ip.addr=192.168.1.1 && ip.addr=19	2.168.1.4 && ssl		Expression
'ime Source	Destination	Protocol Info	
7.596003 192.168.1.1	192.168.1.4	TLSv1.2 Client Hello	
7.596124 192.168.1.4	192.168.1.1	TLSv1.2 Server Hello, Certificate, Certificate Request, Server Hello Done	
7.802214 192.168.1.1	192.168.1.4	TLSv1.2 Certificate [TCP segment of a reassembled PDU]	
7.802217 192.168.1.1	192.168.1.4	TLSv1.2 Client Key Exchange, Certificate Verify, Change Cipher Spec, Encrypted Handshake Messa	ge
7.811092 192.168.1.4	192.168.1.1	TLSv1.2 New Session Ticket, Change Cipher Spec, Encrypted Handshake Message	
7.814506 192.168.1.1	192.168.1.4	TLSv1.2 Application Data	
7.827050 192.168.1.4	192.168.1.1	TLSv1.2 Application Data	
7.867470 192.168.1.4	192.168.1.1	TLSv1.2 Application Data, Application Data, Application Data, Application Data, Application Da	ta, Applica
18.875235 192.168.1.1	192.168.1.4	TLSv1.2 Application Data	
8.876829 192.168.1.4	192.168.1.1	TLSv1.2 Application Data	
8.877063 192.168.1.4	192.168.1.1	TLSv1.2 Application Data, Application Data, Application Data, Application Data, Application Da	ta, Applica
18.885002 192.168.1.1	192.168.1.4	TLSv1.2 Application Data	
48.886102 192.168.1.4	192.168.1.1	TLSv1.2 Application Data TLSv1.2 Application Data, Application Data, Application Data, Application Data, Application Da	
Content Type: Hand			-
Version: TLS 1.2 (Length: 53 Handshake Protocol Handshake Type: Length: 49	: Server Hello Server Hello (2)		
Length: 53 Handshake Protocol Handshake Type:	Server Hello (2)		
Length: 53 ▲ Handshake Protocol Handshake Type: Length: 49 Version: TLS 1.	Server Hello (2) 2 (0x0303)	o7d602781f55371a1b46	
Length: 53 Handshake Protocol Handshake Type: Length: 49 Version: TLS 1.	Server Hello (2) 2 (0x0303) 94a6a7b5465bac9ba4c76b	o7d602781f55371a1b46	
Length: 53 Handshake Protocol Handshake Type: Length: 49 Version: TLS 1. Random: acd7c99 Session ID Leng	Server Hello (2) 2 (0x0303) 94a6a7b5465bac9ba4c76b		
Length: 53 Handshake Protocol Handshake Type: Length: 49 Version: TLS 1. Random: acd7c99 Session ID Leng	Server Hello (2) 2 (0x0303) 94a6a7b5465bac9ba4c76b th: 0 LS_RSA_WITH_AES_256_GC		
Length: 53 Handshake Protocol Handshake Protocol Handshake Type: Length: 49 Version: TLS 1. Random: acd7c99 Session ID Leng Cipher Suite: T	Server Hello (2) 2 (0x0303) 94a6a7b5465bac9ba4c76b th: 0 5_ <u>RSA_WITH_AES_256_GC</u> hod: null (0)		
Length: 53 Handshake Protocol Handshake Type: Length: 49 Version: TLS 1 Random: acd7c99 Session ID Leng Cipher Suite: T Compression Met Extensions Leng	Server Hello (2) 2 (0x0303) 94a6a7b5465bac9ba4c76b th: 0 5_ <u>RSA_WITH_AES_256_GC</u> hod: null (0)	M_SHA384 (0x009d)	



Wireshark Plots	tor WINNE F	T.C.SCS.2 Test Case ID	
*區域連線 e <u>E</u> dit <u>V</u> iew <u>G</u> o <u>C</u> apture <u>A</u> r	naluze Statistics Telephony '	Winsleee Track Heln	
ip.addr=192.168.1.1 && ip.addr=192			Expression
ne Source	Destination	Protocol Info	
.115158 192.168.1.1	192.168.1.4	TLSv1.2 Client Hello	
.115329 192.168.1.4	192.168.1.1	TLSv1.2 Server Hello, Certificate, Certificate Request, Server Hello Done	
.160644 192.168.1.1	192.168.1.4	TLSv1.2 Alert (Level: Fatal, Description: Handshake Failure)	
Content Type: Hand			
Version: TLS 1.2 (
Version: TLS 1.2 (Length: 53	0x0303)		
Version: TLS 1.2 (Length: 53 Handshake Protocol	0x0303) : Server Hello		
Version: TLS 1.2 (Length: 53 Handshake Protocol Handshake Type:	0x0303)		
Version: TLS 1.2 (Length: 53 Handshake Protocol Handshake Type: Length: 49	0x0303) : Server Hello Server Hello (2)		
Version: TLS 1.2 (Length: 53 Handshake Protocol Handshake Type: Length: 49 Version: TLS 1.2	0x0303) : Server Hello Server Hello (2) 2 (0x0303)	recf827dae5ef7f94cd2	
Version: TLS 1.2 (Length: 53 Handshake Protocol Handshake Type: Length: 49 Version: TLS 1.2	0x0303) : Server Hello Server Hello (2) 2 (0x0303) :10e0548e17410484b50bc	:ecf027dae5ef7f94cd2	
Version: TLS 1.2 (Length: 53 # Handshake Protocol Handshake Type: Length: 49 Version: TLS 1.2 P Random: a4877666 Session ID Lengt Cipher Suite: TL	0x0303) : Server Hello Server Hello (2) 2 (0x0303) :1000548e17410484b50bc .h: 0 .S_RSA_WITH_AES_256_6C		
Version: TLS 1.2 (Length: 53 # Handshake Protocol Handshake Type: Length: 49 Version: TLS 1.2 Bandom: a487f76e Session ID Lengt Cipher Suite: TL Compression Meth	0x0303) : Server Hello Server Hello (2) 2 (0x0303) :10e0548e17410484b50bc :h: 0 : S_RSA_WITH_AES_256_GC tod: null (0)		
Version: TLS 1.2 (Length: 53 Handshake Protocol Handshake Type: Length: 49 Version: TLS 1.2 Random: a487f76e Session ID Lengt Cipher Suite: TL Compression Meth Extensions Lengt	0x0303) : Server Hello 2 (0x0303) 10e0548e17410484b50bc ch: 0 .S_RSA_WITH_AES_256_60 nod: null (0) ch: 9	IM_SHA384 (0x009d)	
Version: TLS 1.2 (Length: 53 Handshake Protocol Handshake Type: Length: 49 Version: TLS 1.2 Random: a487476e Session ID Lengt (Cipher Suite: TL Compression Meth Extensions Lengt ▷ Extension: reneg	0x0303) : Server Hello Server Hello (2) ! (0x0303) !10e0548e17410484b50bc :h: 0 .5_RSA WITH_AES_256_6C h: 9 gotiation_info (len=1)	IM_SHA384 (0x009d)	
Version: TLS 1.2 (Length: 53 # Handshake Protocol Handshake Type: Length: 49 Version: TLS 1.2 P Random: a487f76e Session ID Lengt Cipher Suite: TL Compression Meth Extensions Lengt	0x0303) : Server Hello Server Hello (2) ! (0x0303) !10e0548e17410484b50bc :h: 0 .5_RSA WITH_AES_256_6C h: 9 gotiation_info (len=1)	IM_SHA384 (0x009d)	J%) ∥ Profile: I
Version: TLS 1.2 (Length: 53 Handshake Protocol Handshake Type: Length: 49 Version: TLS 1.2 Random: a487476e Session ID Lengt (Cipher Suite: TL Compression Meth Extensions Lengt ▷ Extension: reneg	0x0303) : Server Hello Server Hello (2) ! (0x0303) !10e0548e17410484b50bc :h: 0 .5_RSA WITH_AES_256_6C h: 9 gotiation_info (len=1)	IM_SHA384 (0x009d)	D36) Profile: I



	SICH VVIININE.E	T.C.SCS.3 Test Case ID	
*匪鸿通線			- 0 - x
ile <u>E</u> dit <u>V</u> iew <u>G</u> o <u>C</u> apture <u>A</u> i			
💶 💷 🥭 💿 🎍 🔚 🔀 🖻 🤇 ip.addr—192.168.1.1 && ip.addr—193	}		Expression
ime Source	Destination	Protocol Info	
0.967534 192.168.1.1	192.168.1.4	TLSv1.2 Client Hello	
0.967661 192.168.1.4	192.168.1.1	TLSv1.2 Server Hello, Certificate, Certificate Request, Server Hello Done	
1.006485 192.168.1.1	192.168.1.4	TLSv1.2 Alert (Level: Fatal, Description: Certificate Expired)	
Content Type: Hand Version: TLS 1.2 (
Content Type: Hand Version: TLS 1.2 (Length: 53			
Version: TLS 1.2 (Length: 53 # Handshake Protocol	0x0303) : Server Hello		
Version: TLS 1.2 (Length: 53 • Handshake Protocol Handshake Type:	0x0303)		
Version: TLS 1.2 (Length: 53 Handshake Protocol Handshake Type: Length: 49	0x0303) : Server Hello Server Hello (2)		
Version: TLS 1.2 (Length: 53 # Handshake Protocol Handshake Type: Length: 49 Version: TLS 1.2 # Random: 49ac829a	0x0303) : Server Hello Server Hello (2) 2 (0x0303) 14d6923c634745ad2e9494	13275b056af7acf5da44	
Version: TLS 1.2 (Length: 53 # Handshake Protocol Handshake Type: Length: 49 Version: TLS 1.2 # Random: 49ac829 Session ID Lengt	0x0303) : Server Hello Server Hello (2) 2 (0x0303) 4d6923c634745ad2e9494 ch: 0		
Version: TLS 1.2 (Length: 53 # Handshake Protocol Handshake Type: Length: 49 Version: TLS 1.2 # Random: 49ac829 Session ID Lengt	0x0303) : Server Hello Server Hello (2) 2 (0x0303) u4d6923c634745ad2e9494 it: 0 .5 RSA_WITH_AES_256_60		
Version: TLS 1.2 (Length: 53 Handshake Protocol Handshake Type: Length: 49 Version: TLS 1.2 Random: 49ac829e Session ID Lengt Cipher Suite: TL Compression Mett Extensions Lengt	8x0303) : Server Hello Server Hello (2) 2 (0x0303) 4466923c634745ad2e9494 :h: 0 .S_RSA_WITH_AES_256_60 odd: null (0) :h: 9	M_SHA384 (0x009d)	
Version: TLS 1.2 (Length: 53 Handshake Protocol Handshake Type: Length: 49 Version: TLS 1.2 Random: 49ac829 Session ID Lengt Cipher Suite: TI Compression Mett Extensions Lengt Extension: reneg	0x0303) : Server Hello Server Hello (2) ? (0x0303) 44d6923c634745ad2e9494 th: 0 <u>.5 RSA WITH AES_256_66</u> tod: null (0) th: 9 gotiation_info (len=1)	M_SHA384 (0x009d)	
Version: TLS 1.2 (Length: 53 Handshake Protocol Handshake Type: Length: 49 Version: TLS 1.2 Random: 49ac829 Session ID Lengt Cipher Suite: TI Compression Mett Extensions Lengt Extension: reneg	0x0303) : Server Hello Server Hello (2) ? (0x0303) 44d6923c634745ad2e9494 th: 0 <u>.5 RSA WITH AES_256_66</u> tod: null (0) th: 9 gotiation_info (len=1)	M_SHA384 (0x009d)	⊛ ∥ Profile: Def
Version: TLS 1.2 (Length: 53 Handshake Protocol Handshake Type: Length: 49 Version: TLS 1.2 Random: 49ac829 Session ID Lengt Cipher Suite: TI Compression Mett Extensions Lengt Extension: reneg	0x0303) : Server Hello Server Hello (2) ? (0x0303) 44d6923c634745ad2e9494 th: 0 <u>.5 RSA WITH AES_256_66</u> tod: null (0) th: 9 gotiation_info (len=1)	M_SHA384 (0x009d)	%) Frofile: Def
Version: TLS 1.2 (Length: 53 Handshake Protocol Handshake Type: Length: 49 Version: TLS 1.2 Random: 49ac829e Session ID Lengt Cipher Suite: TL Compression Mett Extensions Lengt	0x0303) : Server Hello Server Hello (2) ? (0x0303) 44d6923c634745ad2e9494 th: 0 <u>.5 RSA WITH AES_256_66</u> tod: null (0) th: 9 gotiation_info (len=1)	M_SHA384 (0x009d)	%) Profile: De



		T.C.SCS.4 Test Case ID	
■ *區域連線			
File Edit <u>V</u> iew <u>G</u> o Capture A	inalyze Statistics Telephony 🔅	Nineless Iools Help El A A A AT	
ip.addr=192.168.1.1 && ip.addr=19			Expression
ime Source	Destination	Protocol Info	
12.543144 192.168.1.1	192.168.1.4	TLSv1.2 Client Hello	
2.543974 192.168.1.4	192.168.1.1	TLSv1.2 Server Hello, Certificate, Certificate Request, Server Hello Done	
12.550742 192.168.1.1	192.168.1.4	TLSv1.2 Alert (Level: Fatal, Description: Unsupported Certificate)	
Length: 49 Version: TLS 1.	Server Hello (2) 2 (0x0303) 84cee927956235298c7ed	f5e5a9054aa8574f03a	
Handshake Type: Length: 49 Version: TLS 1 ▷ Random: a5bb04ci Session ID Leng Cipher Suite: T	Server Hello (2) 2 (0x0303) 84cee927956235298c7ed9 th: 0 LS_RSA_WITH_AES_256_60		
Handshake Type: Length: 49 Version: TLS 1. > Random: a5b04dc: Session ID Leng Cipher Suite: T Compression Met	Server Hello (2) 2 (0x0303) 84cee927956235298c7ed th: 0 LS_RSA_WITH_AES_256_60 hod: null (0)		
Handshake Type: Length: 49 Version: TLS 1. Random: a5bb04c Session ID Leng Cipher Suite: T Compression Met Extensions Leng	Server Hello (2) 2 (0x0303) 84cee927956235298c7eds th: 0 LS_RSA_WITH_AES_256_G0 hod: null (0) th: 9	M_SHA384 (0x009d)	
Handshake Type: Length: 49 Version: TLS 1. Random: a5bb04c Session ID Leng Cipher Suite: T Compression Met Extensions Leng Extension: rene;	Server Hello (2) 2 (0x0303) 84cee927956235298c7ed th: 0 LS_RSA_WITH_AES_256_G0 hod: null (0) th: 9 gotiation_info (len=1)	M_SHA384 (0x009d)	
Handshake Type: Length: 49 Version: TLS 1. Random: a5bb04c Session ID Leng Cipher Suite: T Compression Met Extensions Leng Extension: rene;	Server Hello (2) 2 (0x0303) 84cee927956235298c7ed th: 0 LS_RSA_WITH_AES_256_6d hod: null (0) th: 9 gotiation_info (len=1) ionTicket TLS (len=0) : Handshake Protocol:	M_SHA384 (0x009d)	
Handshake Type: Length: 49 Version: TLS 1 Random: a5bb04c Session ID Leng Cipher Suite: T Compression Met Extensions Leng Extension: Sess Extension: Sess TLSv1.2 Record Layer	Server Hello (2) 2 (0x0303) 84cee927956235298c7ed th: 0 LS_RSA_WITH_AES_256_6d hod: null (0) th: 9 gotiation_info (len=1) ionTicket TLS (len=0) : Handshake Protocol: ishake (22)	M_SHA384 (0x009d)	8) Profile: De



wiresnark Plots		T.C.SCS.5 Test Case ID	
*區域連線 le <u>E</u> dit <u>V</u> iew <u>G</u> o <u>C</u> apture <u>A</u> n	alwa Statistics Telephony I	Index Toole Halm	
ip.addr=192.168.1.1 && ip.addr=192		1 m m m m	Expression
me Source	Destination	Protocol Info	DAPICSON
7.575162 192.168.1.1	192.168.1.4	TLSv1.2 Client Hello	
7.575292 192.168.1.4	192.168.1.1	TLSv1.2 Server Hello, Certificate, Certificate Request, Server Hello Done	
7.625193 192.168.1.1	192.168.1.4	TLSv1.2 Alert (Level: Fatal, Description: Decrypt Error)	
 Handshake Protocol: Handshake Type: Length: 49 Version: TLS 1.2 Random: 833f81f2 Session ID Lengti 	Server Hello (2) (0x0303) 54a381e7911ba6863d9ae	8b685344932b8378a22	
	S_RSA_WITH_AES_256_GC od: null (0)	M_SHA384 (0x009d)	
	otiation info (len=1)		
Extensions Lengt			
Extensions Lengt		Contificate	
Extensions Lengt Extension: reneg Extension: Session TLSv1.2 Record Layer:	Handshake Protocol:	Centritate	
Extensions Lengt Extension: reneg Extension: Session: Se	Handshake Protocol: shake (22)		



Wireshark Plots for WINNF.FT.C.SCS.1 Test Case	e ID
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ip.addr=192.168.1.1 && ip.addr=192	2.168.1.4 && ssl		× = *	Expression	
'ime Source	Destination	Protocol Info			
1.670029 192.168.1.1	192.168.1.4	TLSv1.2 Client Hello			
1.670144 192.168.1.4	192.168.1.1	TLSv1.2 Server Hello, Certificate, Certificate Request, Server Hello Done			
1.884862 192.168.1.1	192.168.1.4	TLSv1.2 Certificate [TCP segment of a reassembled PDU]			
1.884871 192.168.1.1	192.168.1.4	TLSv1.2 Client Key Exchange, Certificate Verify, Change Cipher Spec, Encrypte	d Handshake Messag	e	
1.892283 192.168.1.4	192.168.1.1	TLSv1.2 New Session Ticket, Change Cipher Spec, Encrypted Handshake Message			
1.895770 192.168.1.1	192.168.1.4	TLSv1.2 Application Data			
1.895996 192.168.1.4	192.168.1.1	TLSv1.2 Application Data			
1.898337 192.168.1.1	192.168.1.4	TLSv1.2 Application Data			
1.918859 192.168.1.4	192.168.1.1	TLSv1.2 Application Data			
1.966075 192.168.1.4	192.168.1.1	TLSv1.2 Application Data, Application Data, Application Data, Application Dat	a, Application Dat	a, Appli	cat
2.974299 192.168.1.1	192.168.1.4	TLSv1.2 Application Data			
2.975845 192.168.1.4	192.168.1.1	TLSv1.2 Application Data			
2.976187 192.168.1.4	192.168.1.1	TLSv1.2 Application Data, Application Data, Application Data, Application Dat	a, Application Dat	a, Appli	cat
2.986051 192.168.1.1	192.168.1.4	TLSv1.2 Application Data			
2.987317 192.168.1.4	192.168.1.1	TLSv1.2 Application Data			
3.036068 192.168.1.4	192.168.1.1	TLSv1.2 Application Data, Application Data, Application Data, Application Dat	a. Application Dat	a. Appli	cat.
Length: 49 Version: TLS 1.2 ▷ Random: 590794ef Session ID Lengt (ipher Suite: TL Compression Meth	: Server Hello Server Hello (2) : (0x0303) ddea4cdef9fefb5bbd01c h: 0 S.RSA_WITH_AES_256_G(od: null (0)	7f341355c1bba495795 M_SHA384 (0x009d)			
Extensions Lengt					
Extension: reneg	otiation_info (len=1)				_
		18072627 a02268.pcspng Packets: 125 ' Displayed: 16 (12.8%)		Profile: I	Daf-



Wilconark Floto	for WINNE F	T.C.SCS.2 Test Case ID	
▌*區域連線			- 0 - ×
<u>File E</u> dit <u>V</u> iew <u>G</u> o <u>C</u> apture <u>A</u> ns			
			Fymession
ip.addr=192.168.1.1 && ip.addr=192. Time Source	168.1.4 && ssl Destination	Protocol Info	Expression***
11me source 91.877093 192.168.1.1	192.168.1.4	TLSv1.2 Client Hello	
91.877254 192.168.1.4	192.168.1.1	TLSv1.2 Server Hello, Certificate, Certificate Request, Server Hello Done	
01.921251 192.168.1.1	192.168.1.4	TLSv1.2 Alert (Level: Fatal, Description: Handshake Failure)	
Content Type: Hands Version: TLS 1.2 (0			
Length: 53			
Length: 53 Handshake Protocol:			
Length: 53 Handshake Protocol: Handshake Type: 5	server Hello (2)		
Length: 53 Handshake Protocol:			
Length: 53 Handshake Protocol: Handshake Type: Length: 49 Version: TLS 1.2 Random: ae9575481	(0x0303) faf0ac553768d079d1a7c	ca5c890aa0d7893b7875	
Length: 53 Handshake Protocol: Handshake Type: 5 Length: 49 Version: TLS 1.2 Random: ae957548 Session ID Length	(0x0303) faf0ac553768d079d1a7c 1: 0		
Length: 53 Handshake Protocol: Handshake Prope: 5 Length: 49 Version: TLS 1.2 Random: ae957548 Session ID Length Cipher Suite: TLS	(0x0303) faf0ac553768d079d1a7c 1: 0 5_RSA_WITH_AES_256_GC		
Length: 53 Handshake Protocol: Handshake Type: 5 Length: 49 Version: TLS 1.2 Random: ae9575448 Session ID Length Cipher Suite: TLS Compression Metho	(0x0303) faf0ac553768d079d1a7d 1: 0 5_RSA_WITH_AES_256_GC pd: null (0)		
Length: 53 Handshake Protocol: Handshake Type: 5 Length: 49 Version: TLS 1.2 Random: ae957548 Session ID Length Cipher Suite: TLS Compression Metho Extensions Length	(0x0303) faf0ac553768d079d1a7d 1: 0 5_RSA_WITH_AES_256_GC pd: null (0)	CM_SHA384 (0x009d)	
Length: 53 Handshake Protocol: Handshake Type: 5 Length: 49 Version: TLS 1.2 Random: ae957548 Session ID Length Cipher Suite: TLS Compression Metho Extensions Length	(0x0303) faf0ac553768d079d1a7c h: 0 5.RSA_WITH_AES_256_GC dd: null (0) h: 9 ptiation_info (len=1)	CM_SHA384 (0x009d)) Profile: D
Length: 53 Handshake Protocol: Handshake Type: 2 Length: 49 Version: TLS 1.2 Random: ae957548 Session ID Length Cipher Suite: TLS Compression Metho Extensions Length Extension: renego	(0x0303) faf0ac553768d079d1a7c h: 0 5.RSA_WITH_AES_256_GC dd: null (0) h: 9 ptiation_info (len=1)	[M_SHA384 (0x009d)) Profile: D



Wireshark Plots	s for WINNF.F	T.C.SCS.3 Test Case ID	
*區域連線			
e <u>E</u> dit <u>Yiew Go</u> Capture <u>A</u>	nalyze Statistics Telephony ! २ 🗢 🔿 🕾 🏹 👲 属 🗐		
ip.addr=192.168.1.1 && ip.addr=19			Expression
ne Source	Destination	Protocol Info	
167546 192.168.1.1	192.168.1.4	TLSv1.2 Client Hello	
167729 192.168.1.4	192.168.1.1	TLSv1.2 Server Hello, Certificate, Certificate Request, Server Hello Done	
206624 192.168.1.1	192.168.1.4	TLSv1.2 Alert (Level: Fatal, Description: Certificate Expired)	
Content Type: Hand Version: TLS 1.2 (
Version: TLS 1.2 (Length: 53	0x0303)		
Version: TLS 1.2 (Length: 53 Handshake Protocol	0x0303) : Server Hello		
Version: TLS 1.2 (Length: 53 Handshake Protocol	0x0303)		
Version: TLS 1.2 (Length: 53 Handshake Protocol Handshake Type:	0x0303) : Server Hello Server Hello (2)		
Version: TLS 1.2 (Length: 53 Handshake Protocol Handshake Type: Length: 49 Version: TLS 1. Random: 599c4e7	(0x0303) :: Server Hello Server Hello (2) 2 (0x0303) 1ea3986a9865c284b04652	29af2cc1fe1b542f3fbd	
Version: TLS 1.2 (Length: 53 Handshake Protocol Handshake Type: Length: 49 Version: TLS 1. Random: 599c4e7 Session ID Leng	(0x0303) :: Server Hello Server Hello (2) 2 (0x0303) 1ea3986a9865c284b04652 th: 0		
Version: TLS 1.2 (Length: 53 Handshake Protocol Handshake Type: Length: 49 Version: TLS 1. Random: 599c497 Session ID Leng Cipher Suite: T	(0x0303) Server Hello Server Hello (2) 2 (0x0303) 1ea3986a9865c284b04652 th: 0 LS_RSA_WITH_AES_256_60		
Version: TLS 1.2 (Length: 53 Handshake Protocol Handshake Type: Length: 49 Version: TLS 1. Random: 599c477 Session ID Leng	(0x0303) Server Hello 2 (0x0303) Lea3986a9865c284b04652 th: 0 LS_RSA_WITH_AES_256_GC hod: null (0)		
Version: TLS 1.2 (Length: 53 Handshake Protocol Handshake Type: Length: 49 Version: TLS 1. Random: 599c4e7 Session ID Leng Cipher Suite: T Compression Mett Extensions Leng	(0x0303) Server Hello 2 (0x0303) Lea3986a9865c284b04652 th: 0 LS_RSA_WITH_AES_256_GC hod: null (0)	CM_SHA384 (0x009d)	
<pre>Version: TLS 1.2 (Length: 53 # Handshake Protocol Handshake Type: Length: 49 Version: TLS 1.: # Random: 599c4a7 Session ID Leng [Cipher Suite: TI Compression Met Extensions Leng # Extension: reneg</pre>	(0x0303) :: Server Hello Server Hello (2) 2 (0x0303) 1ea3986a9865c284b04652 th: 0 ts_RSA_WITH_AES_256_60 hod: null (0) th: 9 gotiation_info (len=1)	CM_SHA384 (0x009d)	Profile: D
<pre>Version: TLS 1.2 (Length: 53 # Handshake Protocol Handshake Type: Length: 49 Version: TLS 1.:</pre>	(0x0303) :: Server Hello Server Hello (2) 2 (0x0303) 1ea3986a9865c284b04652 th: 0 ts_RSA_WITH_AES_256_60 hod: null (0) th: 9 gotiation_info (len=1)	IM_SHA384 (0x009d)	Profile: D
Version: TLS 1.2 (Length: 53 Handshake Protocol Handshake Type: Length: 49 Version: TLS 1. Random: 599c4e7 Session ID Leng Cipher Suite: T Compression Mett Extensions Leng	(0x0303) :: Server Hello Server Hello (2) 2 (0x0303) 1ea3986a9865c284b04652 th: 0 ts_RSA_WITH_AES_256_60 hod: null (0) th: 9 gotiation_info (len=1)	IM_SHA384 (0x009d)	Profile:



		T.C.SCS.4 Test Case ID	
▲ * 區域連線			_ 0 ×
「通気達想 File <u>E</u> dit <u>V</u> iew <u>G</u> o <u>C</u> apture 」	analyze Statistics Telephony	Wineless Tools Help	
	९ 🗢 🔿 🕾 🚺 📃 🗐		
ip.addr=192.168.1.1 && ip.addr=1	92.168.1.4 && ssl		Expression ··· +
Time Source	Destination	Protocol Info	
16.958813 192.168.1.1	192.168.1.4	TLSv1.2 Client Hello	
16.959656 192.168.1.4	192.168.1.1	TLSv1.2 Server Hello, Certificate, Certificate Request, Server Hello Done	
16.971899 192.168.1.1	192.168.1.4	TLSv1.2 Alert (Level: Fatal, Description: Unsupported Certificate)	
Content Type: Han Version: TLS 1.2			
Version: TLS 1.2 Length: 53	(0x0303)		
Version: TLS 1.2 Length: 53 J Handshake Protoco	(0x0303) 1: Server Hello		
Version: TLS 1.2 Length: 53 J Handshake Protoco	(0x0303)		
Version: TLS 1.2 Length: 53 # Handshake Protoco. Handshake Type: Length: 49 Version: TLS 1.	(0x0303) 1: Server Hello Server Hello (2) 2 (0x0303)		
Version: TLS 1.2 Length: 53 Handshake Protoco. Handshake Type: Length: 49 Version: TLS 1. Random: 52ecd9a	(0x0303) 1: Server Hello Server Hello (2) 2 (0x0303) 0e465eec9daa3e8a81d8aa	-5ed4e28c8eaf6bdc8cd	
Version: TLS 1.2 Length: 53 # Handshake Protoco. Handshake Type: Length: 49 Version: TLS 1. D Random: 52ecd9a Session ID Leng	(0x0303) 1: Server Hello Server Hello (2) 2 (0x0303) 0e465eec9daa3e8a81d8aa th: 0		
Version: TLS 1.2 Length: 53 # Handshake Protoco Handshake Type: Length: 49 Version: TLS 1. # Random: 52ecd9a Session ID Leng Cipher Suite: T	(0x0303) 1: Server Hello Server Hello (2) 2 (0x0303) 0e465eec9daa3e8a81d8aa th: 0 LS_RSA_WITH_AES_256_GG		
Version: TLS 1.2 Length: 53 Handshake Protoco: Handshake Type: Length: 49 Version: TLS 1. Random: 52ecd9a Session ID Leng Cipher Suite: T Compression Met	(0x0303) 1: Server Hello Server Hello (2) 2 (0x0303) 0e4655eec9daa3e8a81d8ad th: 0 LS_RSA_WITH_AES_256_GG hod: null (0)		
Version: TLS 1.2 Length: 53 # Handshake Protoco. Handshake Type: Length: 49 Version: TLS 1. D Random: 52ecd98 Session ID Leng Cipher Suite: T Compression Met Extensions Leng	(0x0303) 1: Server Hello Server Hello (2) 2 (0x0303) 0e4655eec9daa3e8a81d8ad th: 0 LS_RSA_WITH_AES_256_GG hod: null (0)	CM_SHA384 (0x009d)	
Version: TLS 1.2 Length: 53 Handshake Protoco. Handshake Protoco. Handshake Type: Length: 49 Version: TLS 1. Random: 52ecd9a Session ID Leng Cipher Suite: T Compression Met Extensions Leng	(0x0303) L: Server Hello Server Hello (2) 2 (0x0303) 0e465sec9daa3e8a81d8ad th: 0 LS_RSA_WITH_AES_256_6d hod: null (0) th: 9 gotiation_info (len=1)	CM_SHA384 (0x009d)	*) Profile: Defau
Version: TLS 1.2 Length: 53 Handshake Protoco. Handshake Protoco. Handshake Type: Length: 49 Version: TLS 1. Vandom: 52ecd9a Session ID Leng Cipher Suite: T Compression Met Extensions Leng Extension: rene	(0x0303) L: Server Hello Server Hello (2) 2 (0x0303) 0e465sec9daa3e8a81d8ad th: 0 LS_RSA_WITH_AES_256_6d hod: null (0) th: 9 gotiation_info (len=1)	CM_SHA384 (0x009d)	%) Profile: Defa



Content Type: Handshake (22) Version: TLS 1.2 (0x0303) Length: 49 Version: TLS 1.2 (0x0303) Length: 49 Version: TLS 1.2 (0x0303) Fandom: LS 1.2 (0x0303) Length: 49 Version: TLS 1.2 (0x0303) Easting: 10 Length: 9	y Wireless Tools Help	ase ID		(- 0 -
Be Edit View Go Capture Analyze Statistics Telephon Ipaddr=192.168.1.1 & & paddr=192.168.1.4 & & st ime Source Destination 0.530694 192.168.1.1 0.530694 192.168.1.4 192.168.1.1 192.168.1.1 0.530694 192.168.1.4 192.168.1.1 192.168.1.4 <th>Rotocol Info TLSv1.2 Client Hello TLSv1.2 Server Hello,</th> <th></th> <th></th> <th></th>	Rotocol Info TLSv1.2 Client Hello TLSv1.2 Server Hello,			
Be Edit Yiew Go Capture Analyze Statistics Telephon Imaddren 192.168.1.1 & & paddren 192.168.1.4 & & statistics Source Destination 0.538694 192.168.1.1 192.168.1.4 0.538698 192.168.1.1 192.168.1.1 0.569837 192.168.1.1 192.168.1.4 0.569837 192.168.1.1 192.168.1.4	Rotocol Info TLSv1.2 Client Hello TLSv1.2 Server Hello,			
Le Edit Yiew Go Capture Analyze Statistics Telephon Imaddr=192.168.1.1 192.168.1.1 192.168.1.1 192.168.1.1 192.168.1.4 192.168.1.1 192.168.1.1 192.168.1.1 192.168.1.1 192.168.1.1 192.168.1.4	Rotocol Info TLSv1.2 Client Hello TLSv1.2 Server Hello,			
e Edit Yiew @o Capture Analyze Statistics Telephon ip add=192.168.1.1 & 3& ip addr=192.168.1.4 & & sl ne Source 0.3006 Destination 0.530654 192.168.1.1 0.530654 192.168.1.1 0.530654 192.168.1.1 0.530654 192.168.1.4 0.530654 192.168.1.4 0.530654 192.168.1.4 0.530654 192.168.1.4 0.530654 192.168.1.4 0.530654 192.168.1.4 192.168.1.4 192.168.1.4 192.168.1.4 192.168.1.4 192.168.1.53 Handshake Protocol: Server Hello Handshake Protocol: Server Hello Handshake Type: Server Hello (2) Length: 53 Version: TLS 1.2 (0x0303) © Random: 1e3d2c39bc48b0dff0542390ff Session ID Length: 0 Cipher Suite: TLS_RSA_WITH_AES_256 Compression Method: null (0)	Rotocol Info TLSv1.2 Client Hello TLSv1.2 Server Hello,			D <mark></mark>
Be Edit View Go Capture Analyse Statistics Telephon Imaddr=192.168.1.1 14 & model Imaddr=192.168.1.1 192.168.1.1 1.536064 192.168.1.1 192.168.1.4 0.536064 192.168.1.1 192.168.1.4 0.536064 192.168.1.1 192.168.1.4 0.536054 192.168.1.1 192.168.1.4 0.536054 192.168.1.1 192.168.1.4 0.536054 192.168.1.1 192.168.1.4 0.536054 192.168.1.1 192.168.1.4 0.536054 192.168.1.1 192.168.1.4 0.536054 192.168.1.1 192.168.1.4 192.168.1.4 192.168.1.4 192.168.1.53 Handshake Protocol: Server Hello Handshake Type: Server Hello (2) Length: 53 * Handshake Protocol: Server Hello (2) Length: 49 Version: TLS 1.2 (0x0303) • Random: 1e3d2c39bc48b0dff0542390ff Session ID Length: 4 (Cipher Suite: TLS_RSA_WITH_AES_256 Compression Method: null (0)	Rotocol Info TLSv1.2 Client Hello TLSv1.2 Server Hello,			
ip addr=192.168.1.1 &&& p.addr=192.168.1.4 && si ne Source Destination .5.3694 192.168.1.1 192.168.1.4 .530858 192.168.1.1 192.168.1.4 .530858 192.168.1.1 192.168.1.4 .569837 192.168.1.4 .5	Protocol Info TLSv1.2 Client Hello TLSv1.2 Server Hello,			
ee Source Destination .530654 192.168.1.1 192.168.1.4 .530858 192.168.1.4 192.168.1.1 .509837 192.168.1.1 192.168.1.4 .509837 192.168.1.1 192.168.1.4 .509837 192.168.1.1 192.168.1.4 .509837 192.168.1.1 192.168.1.4 .509837 192.168.1.1 192.168.1.4 .509837 192.168.1.1 192.168.1.4 .509837 192.168.1.1 192.168.1.4 .509837 192.168.1.1 192.168.1.4 .509837 192.168.1.1 192.168.1.4 .509837 192.168.1.1 192.168.1.4 .509837 192.168.1.1 192.168.1.4 .509837 192.168.1.1 192.168.1.4 .509837 192.168.1.1 192.168.1.4 .509837 192.168.1.1 192.168.1.4 .509837 192.168.1.1 192.168.1.4 .509837 192.168.1.1 192.168.1.4 .509837 192.168.1.4 192.168.1.4	TLSv1.2 Client Hello TLSv1.2 Server Hello,			
<pre>Content Type: Handshake (22) Version: TLS 1.2 (0x0303) Length: 53 Handshake Type: Server Hello Handshake Protocol: Server Hello Handshake Protocol: Server Hello Handshake Type: Server Hello (2) Length: 49 Version: TLS 1.2 (0x0303) Random: 1e9d2c39bc48b0dff0542390ff Session ID Length: 0 (Cipher Suite: TLS_RSA_WITH_AES_250 Compression Method: null (0)</pre>	TLSv1.2 Client Hello TLSv1.2 Server Hello,			Expression
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1. Photographs of Test Configuration

