



WINNF-TS-0122 TEST REPORT

FCC ID : Z8H89FT0028
Equipment : 3GHz PMP 450 I
Brand Name : Cambium Networks
Model Name : 3GHz PMP 450 I
Applicant : Cambium Networks Inc.
3800 Golf Road, Suite 360 Rolling Meadows, IL 60008, USA
Manufacturer : Cambium Networks Inc.
3800 Golf Road, Suite 360 Rolling Meadows, IL 60008, USA
Standard : WINNF-TS-0122 Version V1.0.1

The product was received on Aug. 30, 2018, and testing was started from Aug. 30, 2018 and completed on Oct. 02, 2018. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in WINNF-TS-0122 Version V1.0.1 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. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

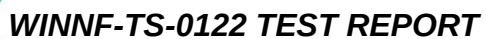
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History of this test report

TEL : 886-3-327-3456
FAX : 886-3-327-0973
Report Template No.: HE1-U2 Ver1.0

Page Number : 3 of 43
Issued Date : Nov. 16, 2018
Report Version : 01

Summary of Test Result

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	X	-	C1	WINNF.FT.C.REG.1	Multi-Step registration	N/A	-
-	6.1.4.1.2	-	X	C1	WINNF.FT.D.REG.2	Domain Proxy Multi-Step registration	N/A	-
-	6.1.4.1.3	X	-	C2	WINNF.FT.C.REG.3	Single-Step registration for Category A CBSD	N/A	-
-	6.1.4.1.4	-	X	C2	WINNF.FT.D.REG.4	Domain Proxy Single-Step registration for Cat A CBSD	N/A	-
-	6.1.4.1.5	X	-	C3	WINNF.FT.C.REG.5	Single-Step registration for CBSD with CPI signed data	N/A	-
3.1	6.1.4.1.6	-	X	C3	WINNF.FT.D.REG.6	Domain Proxy Single-Step registration for CBSD with CPI signed data	PASS	-
-	6.1.4.1.7	X	X	C6	WINNF.FT.C.REG.7	Registration due to change of an installation parameter	N/A	-
-	6.1.4.2.1	X	-	M	WINNF.FT.C.REG.8	Missing Required parameters (responseCode 102)	N/A	-
3.2	6.1.4.2.2	-	X	M	WINNF.FT.D.REG.9	Domain Proxy Missing Required parameters (responseCode 102)	PASS	-
-	6.1.4.2.3	X	-	M	WINNF.FT.C.REG.10	Pending registration (responseCode 200)	N/A	-
3.3	6.1.4.2.4	-	X	M	WINNF.FT.D.REG.11	Domain Proxy Pending registration (responseCode 200)	PASS	-
-	6.1.4.2.5	X	-	M	WINNF.FT.C.REG.12	Invalid parameter (responseCode 103)	N/A	-
3.4	6.1.4.2.6	-	X	M	WINNF.FT.D.REG.13	Domain Proxy Invalid parameters (responseCode 103)	PASS	-
-	6.1.4.2.7	X	-	M	WINNF.FT.C.REG.14	Blacklisted CBSD (responseCode 101)	N/A	-
3.5	6.1.4.2.8	-	X	M	WINNF.FT.D.REG.15	Domain Proxy Blacklisted CBSD (responseCode 101)	PASS	-
-	6.1.4.2.9	X	-	M	WINNF.FT.C.REG.16	Unsupported SAS protocol version (responseCode 100)	N/A	-
3.6	6.1.4.2.10	-	X	M	WINNF.FT.D.REG.17	Domain Proxy Unsupported SAS protocol version (responseCode 100)	PASS	-
-	6.1.4.2.11	X	-	M	WINNF.FT.C.REG.18	Group Error (responseCode 201)	N/A	-
3.7	6.1.4.2.12	-	X	M	WINNF.FT.D.REG.19	Domain Proxy Group Error (responseCode 201)	PASS	-



-	6.1.4.3.1	X	X	C2	WINNF.FT.C.REG.20	Category A CBSD location Update	N/A	-
3.8	6.3.4.2.1	X	X	M	WINNF.FT.C.GRA.1	Unsuccessful Grant responseCode=400 (INTERFERENCE)	PASS	-
3.9	6.3.4.2.2	X	X	M	WINNF.FT.C.GRA.2	Unsuccessful Grant responseCode=401 (GRANT_CONFLICT)	PASS	-
-	6.4.4.1.1	X	-	M	WINNF.FT.C.HBT.1	Heartbeat Success Case (first Heartbeat Response)	N/A	-
3.10	6.4.4.1.2	-	X	M	WINNF.FT.D.HBT.2	Domain Proxy Heartbeat Success Case (first Heartbeat Response)	PASS	-
3.11	6.4.4.2.1	X	X	M	WINNF.FT.C.HBT.3	Heartbeat responseCode=105 (DEREGISTER)	PASS	-
-	6.4.4.2.2	X	-	M	WINNF.FT.C.HBT.4	Heartbeat responseCode=500 (TERMINATED_GRANT)	N/A	-
3.12	6.4.4.2.3	X	X	M	WINNF.FT.C.HBT.5	Heartbeat responseCode=501 (SUSPENDED_GRANT) in First Heartbeat Response	PASS	-
3.13	6.4.4.2.4	X	X	M	WINNF.FT.C.HBT.6	Heartbeat responseCode=501 (SUSPENDED_GRANT) in Subsequent Heartbeat Response	PASS	-
3.14	6.4.4.2.5	X	X	M	WINNF.FT.C.HBT.7	Heartbeat responseCode=502 (UNSYNC_OP_PARAM)	PASS	-
3.15	6.4.4.2.6	-	X	M	WINNF.FT.D.HBT.8	Domain Proxy Heartbeat responseCode=500 (TERMINATED_GRANT)	PASS	-
3.16	6.4.4.3.1	X	X	M	WINNF.FT.C.HBT.9	Heartbeat Response Absent (First Heartbeat)	PASS	-
3.17	6.4.4.3.2	X	X	M	WINNF.FT.C.HBT.10	Heartbeat Response Absent (Subsequent Heartbeat)	PASS	-
-	6.4.4.4.1	X	X	O	WINNF.FT.C.HBT.11	SuccessfulGrantRenewalin HeartbeatTestCase	N/A	-
-	6.5.4.2.1	X	-	C4	WINNF.FT.C.MES.1	Registration Response contains measReportConfig	N/A	-
3.18	6.5.4.2.2	-	X	C4	WINNF.FT.D.MES.2	Domain Proxy Registration Response contains measReportConfig	PASS	-
-	6.5.4.2.3	X	X	C5	WINNF.FT.C.MES.3	Grant Response contains measReportConfig	N/A	-
-	6.5.4.2.4	X	-	C5	WINNF.FT.C.MES.4	Heartbeat Response contains measReportConfig	N/A	-
-	6.5.4.2.5	-	X	C5	WINNF.FT.D.MES.5	Domain Proxy Heartbeat Response contains measReportConfig	N/A	-
-	6.6.4.1.1	X	-	M	WINNF.FT.C.RLQ.1	Successful Relinquishment	N/A	-

3.19	6.6.4.1.2	-	X	M	WINNF.FT.D.RLQ.2	Domain Proxy Successful Relinquishment	PASS	-
-	6.6.4.2.1	X	-	O	WINNF.FT.C.RLQ.3	Unsuccessful Relinquishment, responseCode=102	N/A	-
-	6.6.4.2.2	-	X	O	WINNF.FT.D.RLQ.4	Domain Proxy Unsuccessful Relinquishment, responseCode=102	N/A	-
-	6.6.4.3.1	X	-	O	WINNF.FT.C.RLQ.5	Unsuccessful Relinquishment, responseCode=103	N/A	-
-	6.6.4.3.2	-	X	O	WINNF.FT.D.RLQ.6	Domain Proxy Unsuccessful Relinquishment, responseCode=103	N/A	-
-	6.7.4.1.1	X	-	M	WINNF.FT.C.DRG.1	Successful Deregistration	N/A	-
3.20	6.7.4.1.2	-	X	M	WINNF.FT.D.DRG.2	Domain Proxy Successful Deregistration	PASS	-
-	6.7.4.2.1	X	-	O	WINNF.FT.C.DRG.3	Deregistration responseCode=102	N/A	-
-	6.7.4.2.2	-	X	O	WINNF.FT.D.DRG.4	Domain Proxy Deregistration responseCode=102	N/A	-
-	6.7.4.3.1	X	X	O	WINNF.FT.C.DRG.5	Deregistration responseCode=103	N/A	-
3.21	6.8.4.1.1	X	X	M	WINNF.FT.C.SCS.1	Successful TLS connection between UUT and SAS Test Harness	PASS	-
3.22	6.8.4.2.1	X	X	M	WINNF.FT.C.SCS.2	TLS failure due to revoked certificate	PASS	-
3.23	6.8.4.2.2	X	X	M	WINNF.FT.C.SCS.3	TLS failure due to expired server certificate	PASS	-
3.24	6.8.4.2.3	X	X	M	WINNF.FT.C.SCS.4	TLS failure when SAS Test Harness certificate is issued by unknown CA	PASS	-
3.25	6.8.4.2.4	X	X	M	WINNF.FT.C.SCS.5	TLS failure when certificate at the SAS Test Harness is corrupted	PASS	-
3.26	7.1.4.1.1	X	X	M	WINNF.PT.C.HBT	UUT RF Transmit Power Measurement	PASS	-

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 with Domain Proxy and Conditional Test Case Definitions are C3 and C4.

Reviewed by: Jordan Hsiao

Report Producer: Cindy Peng

1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature of Equipment Under Test	
FCC ID	Z8H89FT0028
Equipment	3GHz PMP 450 I
Brand Name	Cambium Networks
Model Name	3GHz PMP 450 I
Power Type	From PoE
Category of CBSD	☐ Category A ☒ Category B
Professional Installation	☒ Yes ☐ No
Unit Under Test in Test ID	☒ CBSD with Domain Proxy ☐ CBSD without Domain Proxy
CBSD Hardware Version	P3
CBSD Software Version	CANOPY 16.0 (Build INT-CBRS-51) AP
CBSD Firmware Version	081518
Domain Proxy Software Version	1.0

1.2 Conditional Test Case

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



1.3 Accessories

N/A

1.4 Support Equipment

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	DELL	E4300	N/A
2	WLAN AP	NETGEAR	WNDR3300v2	PY309300116
3	Notebook	ASUS	P2438U	PPD-QCNFA435
4	PoE	Leader	NU60A5550111-I3	N/A
5	PoE	Cambium Networks	NET-P30-56IN	N/A

1.5 Testing Location

Testing Location				
☒	HWA YA	ADD : No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL : 886-3-327-3456 FAX : 886-3-327-0973		
☐	JHUBEI	ADD : No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C. TEL : 886-3-656-9065 FAX : 886-3-656-9085		
Test Condition		Test Site No.	Test Engineer	Test Environment
RF Conducted		TH01-CB	Rex Liao	25°C / 60%
				Test Date
				Aug. 30, 2018~Oct. 02, 2018

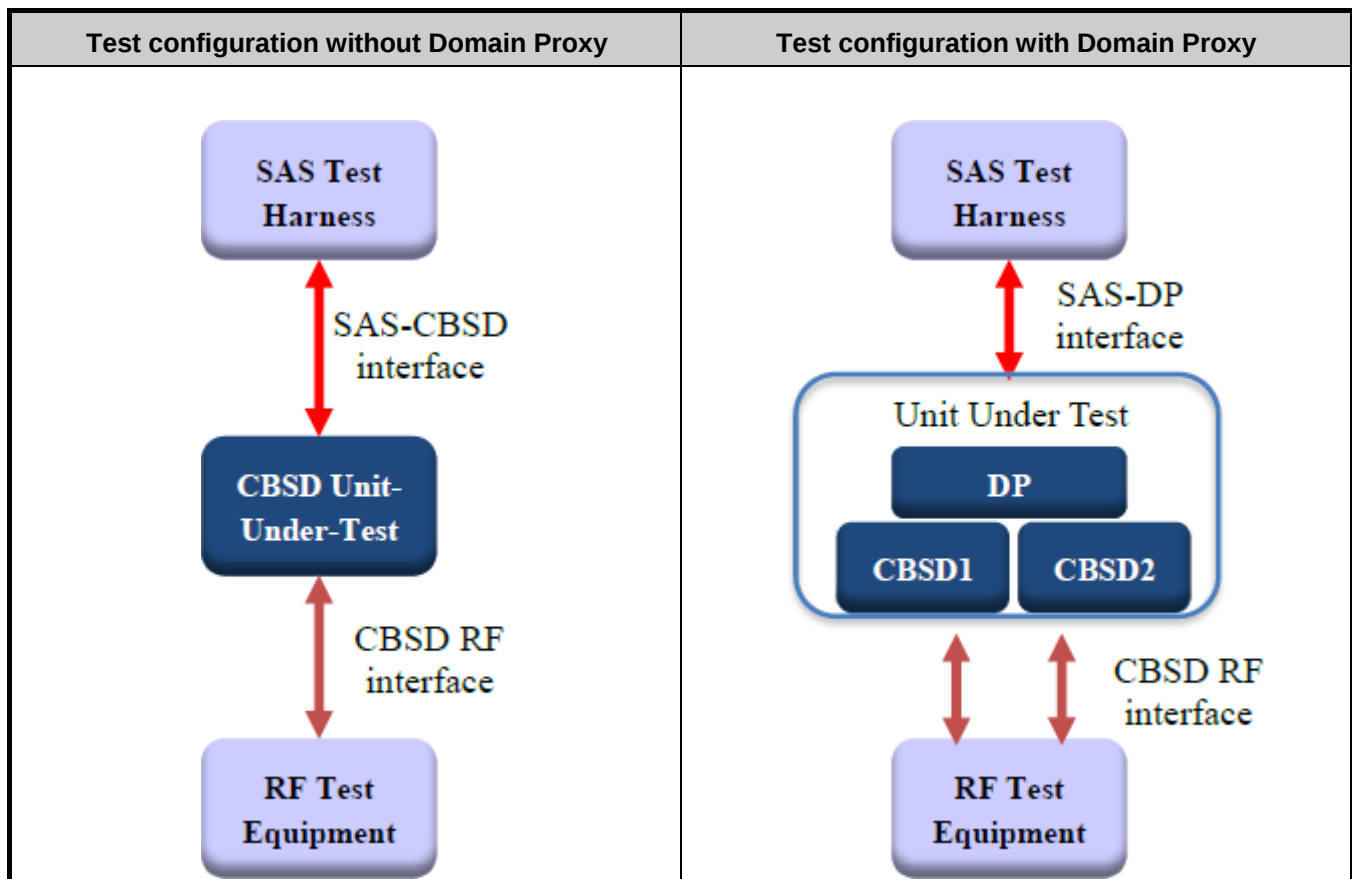
Test site Designation No. TW1190 with FCC.

Test site registered number IC 4086B-1 with Industry Canada.

2 Measurement Environment

Measurement Environment	
Test Harness version	v1.0.0.2
Operating System	WIN7
TLS version	1.2
Python	2.7.15

2.1 Test configuration



3 Test Results

The test parameter (e.g. C for cbsdid) used shall be refer to the test log file in appendix A. Some test case need to monitor RF interface and the measurement plots are in Appendix B. Some test case need to monitor security validation process which are in appendix C.

3.1 WINNF.FT.D.REG.6 - Domain Proxy Single-Step registration for CBSD 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	The DP with two CBSDs sends Registration requests in the form of one 2-element Array or as individual messages to the SAS Test Harness: • The required <code>userId</code>, <code>fcId</code> and <code>cbsdSerialNumber</code> and REG-Conditional <code>cbsdCategory</code>, <code>airInterface</code>, <code>measCapability</code> and <code>cpiSignatureData</code> 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	• SAS Test Harness sends a CBSD Registration Response in the form of one 2-element Array or as individual messages as follows: – <code>cbsdId</code> = Ci – <code>measReportConfig</code> for each CBSD shall not be included. – <code>responseCode</code> = 0 for each CBSD	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (<code>responseCode</code> =0) to further request messages from the UUT.	--	--
5	Monitor the RF output of each UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: • UUT shall not transmit RF	PASS	--

3.2 WINNF.FT.D.REG.9 - Domain Proxy Missing Required parameters (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 is in the Unregistered state	--	--
2	The DP with two CBSDs sends a Registration request in the form of one 2-element Array or as individual messages to SAS Test Harness.	--	--
3	SAS Test Harness sends a CBSD Registration Response in the form of one 2-element Array or as individual messages as follows: – SAS response does not include a <i>cbsdId</i>. – <i>responseCode</i> = Ri for CBSD1 and CBSD2	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (<i>responseCode</i> =0) to further request messages from the UUT.	--	--
5	Monitor the RF output of each UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: • UUT shall not transmit RF	PASS	--

3.3 WINNF.FT.D.REG.11 - Domain Proxy Pending registration (responseCode 200)

#	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	--	--
2	The DP with two CBSDs sends a Registration request in the form of one 2-element Array or as individual messages to SAS Test Harness.	--	--
3	SAS Test Harness sends a CBSD Registration Response in the form of one 2-element Array or as individual messages as follows: – SAS response does not include a <i>cbsdId</i>. – <i>responseCode</i> = Ri for CBSD1 and CBSD2	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (<i>responseCode</i> = 200) to further request messages from the UUT.	--	--
5	Monitor the RF output of each UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: • UUT shall not transmit RF	PASS	--

3.4 WINNF.FT.D.REG.13 - Domain Proxy Invalid parameters (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 is in the Unregistered state	--	--
2	The DP with two CBSDs sends a Registration request in the form of one 2-element Array or as individual messages to SAS Test Harness.	--	--
3	SAS Test Harness sends a CBSD Registration Response in the form of one 2-element Array or as individual messages as follows: – SAS response does not include a <i>cbsdId</i>. – <i>responseCode</i> = Ri for CBSD1 and CBSD2	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (<i>responseCode</i> R1=0 for CBSD1 and R2=103 for CBSD2) to further request messages from the UUT.	--	--
5	Monitor the RF output of each UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: • UUT shall not transmit RF	PASS	--

3.5 WINNF.FT.D.REG.15 - Domain Proxy Blacklisted CBSD (responseCode 101)

#	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	--	--
2	The DP with two CBSDs sends a Registration request in the form of one 2-element Array or as individual messages to SAS Test Harness.	--	--
3	SAS Test Harness sends a CBSD Registration Response in the form of one 2-element Array or as individual messages as follows: – SAS response does not include a <i>cbsdId</i>. – <i>responseCode</i> = Ri for CBSD1 and CBSD2	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (<i>responseCode</i> R1=0 for CBSD1 and R2=101 for CBSD2) to further request messages from the UUT.	--	--
5	Monitor the RF output of each UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: • UUT shall not transmit RF	PASS	--

3.6 WINNF.FT.D.REG.17 - Domain Proxy Unsupported SAS protocol version (responseCode 100)

#	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	--	--
2	The DP with two CBSDs sends a Registration request in the form of one 2-element Array or as individual messages to SAS Test Harness.	--	--
3	SAS Test Harness sends a CBSD Registration Response in the form of one 2-element Array or as individual messages as follows: – SAS response does not include a <i>cbstdId</i>. – <i>responseCode</i> = Ri for CBSD1 and CBSD2	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (<i>responseCode</i> (Ri) = 100 for each CBSD) to further request messages from the UUT.	--	--
5	Monitor the RF output of each UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: • UUT shall not transmit RF	PASS	--

3.7 WINNF.FT.D.REG.19 - Domain Proxy Group Error (responseCode 201)

#	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	--	--
2	The DP with two CBSDs sends a Registration request in the form of one 2-element Array or as individual messages to SAS Test Harness.	--	--
3	SAS Test Harness sends a CBSD Registration Response in the form of one 2-element Array or as individual messages as follows: – SAS response does not include a <i>cbsdId</i>. – <i>responseCode</i>=Ri for CBSD1 and CBSD2	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (<i>responseCode</i> R1=0 for CBSD1 and R2=201 for CBSD2) to further request messages from the UUT.	--	--
5	Monitor the RF output of each UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: • UUT shall not transmit RF	PASS	--

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

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: • UUT has registered successfully with SAS Test Harness, with <i>cbsdId</i> = C	--	--
2	UUT sends valid Grant Request.	--	--
3	SAS Test Harness sends a Grant Response message, including • <i>cbsdId</i>=C • <i>responseCode</i> =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 seconds after Step 3 is complete. This is the end of the test. Verify: • UUT shall not transmit RF	PASS	--

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

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: • UUT has registered successfully with SAS Test Harness, with <i>cbsdId</i> = C	--	--
2	UUT sends valid Grant Request.	--	--
3	SAS Test Harness sends a Grant Response message, including • <i>cbsdId</i>=C • <i>responseCode</i> =R	--	--
4	After completion of step 3, SAS Test Harness does not provide any positive response (<i>responseCode</i> =401) to further request messages from the UUT.	--	--
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: • UUT shall not transmit RF	PASS	--

3.10 WINNF.FT.D.HBT.2 - Domain Proxy Heartbeat Success Case (first Heartbeat Response)

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

6	If a separate Grant Request message was sent for each CBSD, the SAS Test Harness shall respond to each Grant Request message with a separate Grant Response message. If a single Grant Request message was sent containing a 2-object array (one per CBSD), the SAS Test Harness shall respond with a single Grant Response message containing a 2-object array. Verify parameters for each CBSD within the Grant Response message are as follows, for CBSD_i, $i=\{1,2\}$: • <i>cbsdId</i> = C_i • <i>grantId</i> = G_i = a valid grant ID • <i>grantExpireTime</i> = UTC time greater than duration of the test • <i>responseCode</i> = 0	--	--
7	Ensure DP sends first Heartbeat Request message for each CBSD. This may occur in a separate message per CBSD, or together in a single message with array of 2. Verify Heartbeat Request message is formatted correctly for each CBSD, including, for CBSD_i $i=\{1,2\}$: • <i>cbsdId</i> = C_i, $i=\{1,2\}$ • <i>grantId</i> = G_i, $i=\{1,2\}$ • <i>operationState</i> = "GRANTED"	PASS	--
8	If a separate Heartbeat Request message was sent for each CBSD by the DP, the SAS Test Harness shall respond to each Heartbeat Request message with a separate Heartbeat Response message. If a single Heartbeat Request message was sent by the DP containing a 2-object array (one per CBSD), the SAS Test Harness shall respond with a single Heartbeat Response message containing a 2-object array. Verify parameters for each CBSD within the Heartbeat Response message are as follows, for CBSD_i: • <i>cbsdId</i> = C_i • <i>grantId</i> = G_i • <i>transmitExpireTime</i> = current UTC time + 200 seconds • <i>responseCode</i> = 0	--	--
9	For further Heartbeat Request messages sent from DP after completion of step 8, validate message is sent within latest specified heartbeatInterval for CBSD_i: • <i>cbsdId</i> = C_i • <i>grantId</i> = G_i • <i>operationState</i> = "AUTHORIZED" and SAS Test Harness responds with a Heartbeat Response message including the following parameters, for CBSD_i: • <i>cbsdId</i> = C_i • <i>grantId</i> = G_i • <i>transmitExpireTime</i> = current UTC time + 200 seconds • <i>responseCode</i> = 0	PASS	--



10	Monitor the RF output of the UUT from start of test until UUT transmission commences. Monitor the RF output of the UUT from start of test until RF transmission commences. Verify: • UUT does not transmit at any time prior to completion of the first heartbeat response • UUT transmits after step 8 is complete, and its transmission is limited to within the bandwidth range F_i.	PASS	--
----	---	------	----

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

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: • UUT has registered successfully with SAS Test Harness • UUT has a valid single grant as follows: ○ valid <i>cbsdId</i> = C ○ valid <i>grantId</i> = G ○ grant is for frequency range F, power P ○ <i>grantExpireTime</i> = 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: • <i>cbsdId</i> = C • <i>grantId</i> = G • <i>operationState</i> = "AUTHORIZED"	PASS	--
3	SAS Test Harness sends a Heartbeat Response message, including the following parameters: • <i>cbsdId</i> = C • <i>grantId</i> = G • <i>transmitExpireTime</i> = T = Current UTC time • <i>responseCode</i> = 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	--

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

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

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

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: • UUT has registered successfully with SAS Test Harness • UUT has a valid single grant as follows: ○ valid <i>cbsdId</i> = C ○ valid <i>grantId</i> = G ○ grant is for frequency range F, power P ○ <i>grantExpireTime</i> = UTC time greater than duration of the test • UUT is in AUTHORIZED state and is transmitting within the grant bandwidth F on RF interface	--	--
2	UUT sends a Heartbeat Request message. Verify Heartbeat Request message is sent within latest specified heartbeatInterval, and is formatted correctly, including: • <i>cbsdId</i> = C • <i>grantId</i> = G • <i>operationState</i> = "AUTHORIZED"	PASS	--
3	SAS Test Harness sends a Heartbeat Response message, including the following parameters: • <i>cbsdId</i> = C • <i>grantId</i> = G • <i>transmitExpireTime</i> = T = current UTC time • <i>responseCode</i> = 501 (SUSPENDED_GRANT)	--	--
4	After completion of step 3, SAS Test Harness shall not allow any further grants to the UUT.	--	--
5	Monitor the SAS-CBSD interface. Verify either A OR B occurs: A. UUT sends a Heartbeat Request message. Ensure message is sent within latest specified heartbeatInterval, and is correctly formatted with parameters: • <i>cbsdId</i> = C • <i>grantId</i> = G • <i>operationState</i> = "GRANTED" B. UUT sends a Relinquishment Request message. Ensure message is correctly formatted with parameters: • <i>cbsdId</i> = C • <i>grantId</i> = G 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.7 - Heartbeat responseCode=502 (UNSYNC_OP_PARAM)

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: • UUT has registered successfully with SAS Test Harness • UUT has a valid single grant as follows: ○ valid <i>cbsdId</i> = C ○ valid <i>grantId</i> = G ○ grant is for frequency range F, power P ○ <i>grantExpireTime</i> = 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: • <i>cbsdId</i> = C • <i>grantId</i> = G • <i>operationState</i> = "AUTHORIZED"	PASS	--
3	SAS Test Harness sends a Heartbeat Response message, including the following parameters: • <i>cbsdId</i> = C • <i>grantId</i> = G • <i>transmitExpireTime</i> = T = Current UTC Time • <i>responseCode</i> = 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: ○ <i>cbsdId</i> = C ○ <i>grantId</i> = G 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.D.HBT.8 - Domain Proxy Heartbeat responseCode=500 (TERMINATED_GRANT)

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: - DP has two CBSD registered successfully with SAS Test Harness - Each CBSD {1,2} has a valid single grant as follows: - valid <i>cbsdId</i> = Ci, i={1,2} - valid <i>grantId</i> = Gi, i={1,2} - grant is for frequency range Fi, power Pi <i>grantExpireTime</i> = UTC time greater than duration of the test - Both CBSD are in AUTHORIZED state and transmitting within their granted bandwidth on RF interface	--	--
2	DP sends a Heartbeat Request message for each CBSD. This may occur in a separate message per CBSD, or together in a single message with array of size 2. Verify Heartbeat Request message is sent within latest specified <i>heartbeatInterval</i>, and is formatted correctly for each CBSD, including, for CBSDi i={1,2}: <i>cbsdId</i> = Ci, i = {1,2} <i>grantId</i> = Gi, i = {1,2} <i>operationState</i> = "AUTHORIZED"	PASS	--
3	If separate Heartbeat Request message was sent for each CBSD by the DP, the SAS Test Harness shall respond to each Heartbeat Request message with a separate Heartbeat Response message. If a single Heartbeat Request message was sent by the DP containing a 2-object array (one per CBSD), the SAS Test Harness shall respond with a single Heartbeat Response message containing a 2-object array. Parameters for each CBSD within the Heartbeat Response message should be as follows, for CBSDi: <i>cbsdId</i> = Ci <i>grantId</i> = Gi - For CBSD1: <i>transmitExpireTime</i> = current UTC time + 200 seconds <i>responseCode</i> = 0 - For CBSD2: <i>transmitExpireTime</i> = T = current UTC time <i>responseCode</i> = 500 (TERMINATED_GRANT)	--	--

4	After completion of step 3, SAS Test Harness shall not allow any further grants to the UUT. If CBSD sends further Heartbeat Request messages for CBSD1, SAS Test Harness shall respond with a Heartbeat Response message with parameters: • <i>cbsdId</i> = C1 • <i>grantId</i> = G1 • <i>transmitExpireTime</i> = current UTC time + 200 seconds • <i>responseCode</i> = 0 • Heartbeat Request message is within <i>heartbeatInterval</i> of previous Heartbeat Request message	--	--
5	Monitor the RF output of CBSD2. Verify: • CBSD2 shall stop transmission within bandwidth F2 within (T + 60 seconds) of completion of step 3	PASS	--

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

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

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

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: • UUT has registered successfully with SAS Test Harness • UUT has a valid single grant as follows: ○ valid <i>cbsdId</i> = C ○ valid <i>grantId</i> = G ○ grant is for frequency range F, power P ○ <i>grantExpireTime</i> = 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 the latest specified <i>heartbeatInterval</i>, and is formatted correctly, including: • <i>cbsdId</i> = C • <i>grantId</i> = G • <i>operationState</i> = "AUTHORIZED"	PASS	--
3	SAS Test Harness sends a Heartbeat Response message, with the following parameters: • <i>cbsdId</i> = C • <i>grantId</i> = G • <i>transmitExpireTime</i> = current UTC time + 200 seconds • <i>responseCode</i> = 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 <i>transmitExpireTime</i> sent in Step 3.	PASS	--

3.18 WINNF.FT.D.MES.2 - Domain Proxy Registration Response contains measReportConfig

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

6	If a separate Spectrum Inquiry Request message was sent for each CBSD by the DP, the SAS Test Harness shall respond to each Spectrum Inquiry Request message with a separate Spectrum Inquiry Response message. If a single Spectrum Inquiry Request message was sent by the DP containing a 2-object array (one per CBSD), the SAS Test Harness shall respond with a single Spectrum Inquiry Response message containing a 2-object array. Parameters for each CBSD within the Spectrum Inquiry Response message should be as follows: • <i>cbsdId</i> = <i>Ci</i> • <i>availableChannel</i> is an array of <i>availableChannel</i> objects • <i>responseCode</i> = 0	--	--
7	UUT sends message type Grant Request message. This may occur in a separate message per CBSD, or together in a single message with array of 2. Verify the Grant Request message contains all required parameters properly formatted for CBSD_i, <i>i</i> = {1,2}, and specifically: • <i>cbsdId</i> = <i>Ci</i> • <i>measReport</i> is present, and is a properly formatted <i>rcvdPowerMeasReport</i>.	PASS	--

3.19 WINNF.FT.D.RLQ.2 - Domain Proxy Successful Relinquishment

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: - DP has successfully completed SAS Discovery and Authentication with SAS Test Harness - DP has successfully registered 2 CBSD with SAS Test Harness, each with <i>cbsdId</i>=Ci, i={1,2} - DP has received a valid grant with <i>grantId</i>=Gi, i={1,2} for each CBSD - Both CBSD are in Grant State AUTHORIZED and actively transmitting within the bounds of their grants. Invoke trigger to relinquish each UUT Grant from the SAS Test Harness	--	--
2	Verify DP sends a Relinquishment Request message for each CBSD. This may occur in a separate message per CBSD, or together in a single message with array of 2. Verify Relinquishment Request message contains all required parameters properly formatted for each CBSD, specifically, for CBSDi: <i>cbsdId</i> = Ci <i>grantId</i> = Gi	PASS	--
3	If a separate Relinquishment Request message was sent for each CBSD by the DP, the SAS Test Harness shall respond to each request message with a separate response message. If a single Relinquishment Request message was sent by the DP containing a 2-object array (one per CBSD), the SAS Test Harness shall respond with a single Response message containing a 2-object array. Parameters for each CBSD within the Relinquishment Response shall be as follows: <i>cbsdId</i> = Ci <i>grantId</i> = Gi <i>responseCode</i> = 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 each UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: UUT shall stop RF transmission at any time between triggering the relinquishments and UUT sending the relinquishment requests for each CBSD.	PASS	--

3.20 WINNF.FT.D.DRG.2 - Domain Proxy Successful Deregistration

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

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

#	Test Execution Steps	Results	
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 - Makesurethatciphersuitesfromoneofthefollowing is selected, - TLS_RSA_WITH_AES_128_GCM_SHA256 - TLS_RSA_WITH_AES_256_GCM_SHA384 - TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256 - TLS_ECDHE_ECDSA_WITH_AES_256_GCM_SHA384 - TLS ECDHE RSA WITH AES 128 GCM SHA256	PASS	--
3	A successful registration is accomplished using one of the test cases described in section 6.1.4.1, depending on CBSD capability. UUT sends a registration request to the SAS Test Harness and the SAS Test Harness sends a Registration Response with <i>responseCode</i> = 0 and <i>cbsdId</i>.	PASS	--
4	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: UUT shall not transmit RF	PASS	--

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

#	Test Execution Steps	Results	
1	UUT shall start CBSD-SAS communication 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.	PASS	--
3	UUT may retry for the security procedure which shall fail	PASS	--
4	SAS Test-Harness shall not receive any Registration request or any application data.	--	--
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: UUT shall not transmit RF	PASS	--

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

#	Test Execution Steps	Results	
1	UUT shall start CBSD-SAS communication 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.	PASS	--
3	UUT may retry for the security procedure which shall fail.	PASS	--
4	SAS Test-Harness shall not receive any Registration request or any application data.	--	--
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: UUT shall not transmit RF	PASS	--

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

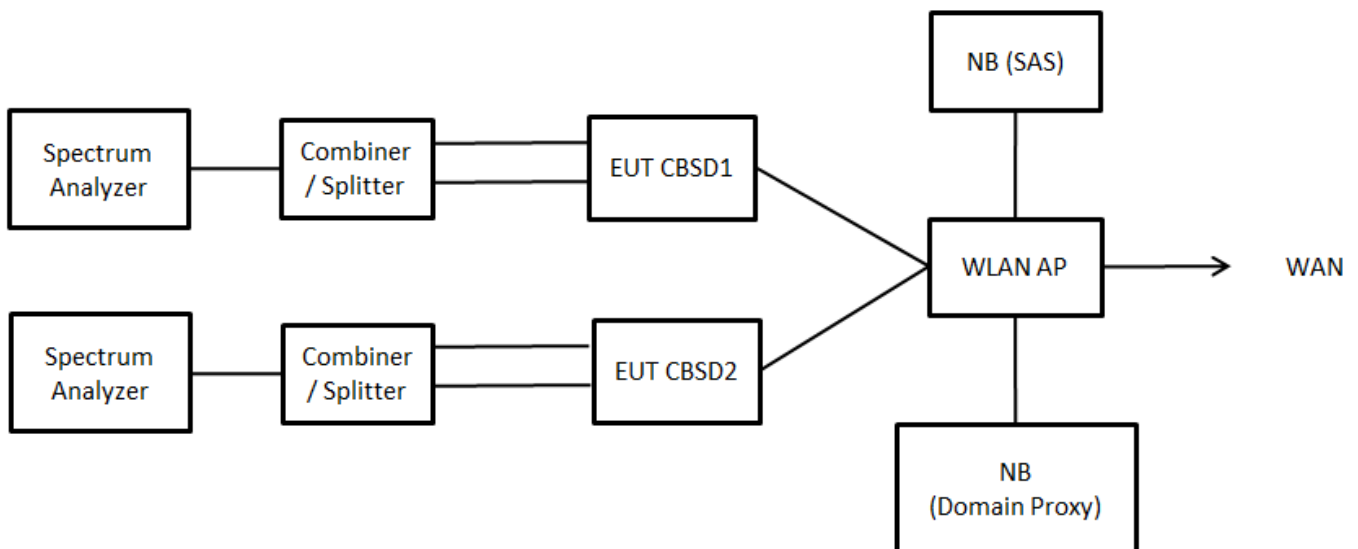
#	Test Execution Steps	Results	
1	UUT shall start CBSD-SAS communication with the security procedures	PASS	--
2	- Make sure that UUT uses TLS v1.2 for security establishment. - Make sure UUT selects the correct cipher suite. - UUT shall use CRL or OCSP to verify the validity of the server certificate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

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

#	Test Execution Steps	Results	
1	UUT shall start CBSD-SAS communication 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.	PASS	--
3	UUT may retry for the security procedure which shall fail.	PASS	--
4	SAS Test-Harness shall not receive any Registration request or any application data.	--	--
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: UUT shall not transmit RF	PASS	--

3.26 WINNF.PT.C.HBT - UUT RF Transmit Power Measurement

Items	Parameters
Maximum rated power (EIRP, dBm/MHz)	30dBm/MHz
Transmit dynamic range (EIRP, dBm/MHz)	-22~30dBm/MHz
Occupied bandwidth (OBW)	20MHz 10MHz
maxEirp values	1 dB increments from -22 dBm/MHz to 30 dBm/MHz (52 steps)



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.



Spectrum Analyzer Setting	Parameters
Center Frequency	3660MHz
Frequency Span	40MHz
RBW / VBW	1MHz / 3MHz
Channel Power Meas Bandwidth	20MHz
Sweep Time	1ms

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: • UUT has successfully completed SAS Discovery and Authentication with the SAS Test Harness • UUT has registered with the SAS, with CBSID ID=C • UUT has a single valid grant G with parameters {lowFrequency = FL, highFrequency = FH, maxEirp = Pi}, with grant in AUTHORIZED state, and grantExpireTime set to a value far past the duration of this test case <i>Note: in order for the UUT to request a grant with the parameters {lowFrequency, highFrequency, maxEirp}, the SAS Test Harness may need to provide appropriate guidance in the availableChannel object of the spectrumInquiry response message, and the operationParam object of the grant response message. Alternately, the UUT vendor may provide the ability to set those parameters on the UUT so that the UUT will request a grant with those parameters.</i>	--	--
2	UUT and SAS Test Harness perform a series of Heartbeat Request/Response cycles, which continues until the other test steps are complete. Messaging for each cycle is as follows: • UUT sends Heartbeat Request, including: - o cbsId = C - o grantId = G • SAS Test Harness responds with Heartbeat Response, including: - o cbsId = C - o grantId = G - o transmitExpireTime = currentUTCtime + 200seconds - o responseCode = 0	--	--

3	Tester performs power measurement on RF interface(s) of UUT, and verifies it complies with the maxEirp setting, P_i. The RF measurement method is out of scope of this document, but may include additional configuration of the UUT, as required, to fulfill the requirements of the power measurement method. <i>Note: it may be required for the vendor to provide a method or configuration to bring the UUT to a mode which is required by the measurement methodology. Any such mode is vendor-specific and depends upon UUT behavior and the measurement methodology.</i>	PASS	--
---	--	------	----

Frequency	Occupied Bandwidth	Antenna Gain	Grant maxEirp	Conducted PSD	maxEirp	Result
	(MHz)	(dBi)	(dBm/MHz)	(dBm/MHz)	(dBm/MHz)	
3660MHz	20	18	30	11.88	29.88	Pass
3660MHz	20	18	3	-15.96	2.04	Pass
3660MHz	20	18	-22	-41.14	-23.14	Pass

4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
Signal analyzer	Agilent	N9010A	MY52220519	10kHz~44GHz	Mar. 20, 2018	Mar. 19, 2019	Conducted (TH01-HY)
Spectrum Analyzer	Keysight	N9010A	MY55150165	9kHz~7GHz	Oct. 28, 2016	Oct. 27, 2017	Conducted (TH01-HY)
RF Cable-high	Woken	RG402	High Cable-05	1 GHz ~26.5 GHz	Oct. 11, 2017	Oct. 10, 2018	Conducted (TH01-HY)
RF Cable-high	Woken	RG402	High Cable-06	1 GHz ~26.5 GHz	Oct. 11, 2017	Oct. 10, 2018	Conducted (TH01-HY)
RF Cable-high	Woken	RG402	High Cable-07	1 GHz ~26.5 GHz	Oct. 11, 2017	Oct. 10, 2018	Conducted (TH01-HY)
RF Cable-high	Woken	RG402	High Cable-08	1 GHz ~26.5 GHz	Oct. 11, 2017	Oct. 10, 2018	Conducted (TH01-HY)
RF Cable-high	Woken	RG402	High Cable-09	1 GHz ~26.5 GHz	Oct. 11, 2017	Oct. 10, 2018	Conducted (TH01-HY)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz ~26.5 GHz	Oct. 11, 2017	Oct. 10, 2018	Conducted (TH01-HY)
RF Power Divider	Woken	4 Way	TH01-DV-01	1GHz ~ 6GHz	Oct. 11, 2017	Oct. 10, 2018	Conducted (TH01-HY)
RF Power Divider	Woken	2 Way	TH01-DV-02	1GHz ~ 6GHz	Oct. 11, 2017	Oct. 10, 2018	Conducted (TH01-HY)

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



5 Measurement Uncertainty

Test Items	Uncertainty	Remark
Conducted Emission	1.3 dB	Confidence levels of 95%

Test Log for WINNF.FT.D.REG.6 Test Case ID

2018-09-12T07:24:19.016Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24

2018-09-12T07:24:19.016Z - INFO - the selected test from the user : WINNF.FT.D.REG.6 is starting now

2018-09-12T07:24:25.584Z - INFO - registration request from CBRS : {

```

    "registrationRequest": [
      {
        "airInterface": {
          "radioTechnology": "CAMBIUM_NETWORKS"
        },
        "cbsdCategory": "B",
        "cbsdInfo": {
          "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
          "vendor": "Cambium Networks"
        },
        "cbsdSerialNumber": "0a003e452b16",
        "cpiSignatureData": {
          "digitalSignature":
            "KOZyADKurrPAas5JN-BghcC7fzhqCFOkr4zcheGLOI_Ilt23QFPAftVFOSfRzuXzfBch6xwPCrOTwcFMZ
            XwuM_4RHFxmbnT6PyPrsy8pivlhdJ_GD9jMjny6HSoOy3nEo3pqJLB7AGv0mt1eodt1YT2yWGepwltVI7
            QRWnWHdyzsP9XSQlkd_Phvc-l_bdjJkXcnFzxr7hCirdKrQX1Wbg2Eft9uOXp6MmB3p_ax-twwzywWWa
            IPYXUlm5jtHVhbbAL5vc37-Djo4jCBnO3m-b3DvJhQ3_d8NXeco-F939cBHumrEUZMSnkQZRRBLHFdh
            LNB7so7tVVTfBnRnvfCHBw",
          "encodedCpiSignedData":
            "eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXIiOiIwYTAwM2U0NTJiMTYiLCJpbm
            N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDIuNDI0MiwibG9uZ2I0dWRlljotODguODg4OCwia
            GVpZ2h0IjowLClJoZWlnaHRUeXBlljoiQU1TTClzImluZG9vckRlcGxveW1lbnQiOmZhbHNILCJhbnRlbn5
            hQXppbXV0aCI6MCwiYW50ZW5uYURvd250aWx0IjowLClJhbnRlbn5hR2Fpbil6MTgsImVpcnBDYXBh
            YmlsaXR5Ijo0MCwiYW50ZW5uYUJlYW13aWR0aCI6OTB9LCJwcm9mZXNzaW9uYVwxBjbnN0YWxsZX
            JEYXRhIjpw7ImNwaUlkljoiY3BpMTIzIiwuY3BpTmFtZSI6IkNQSsBVc2VyIDEyMyIsImVuc2VudCI6Im
            WZpY2F0aW9uVGl0ZSI6IjIwMTg0MDU0MTU0NTE2MTU0ODY2WiJ9fQ",
          "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
        },
        "fccId": "Z8H89FT0028",
        "groupingParam": [
          {
            "groupId": "0a-00-3e-45-2b-16",
            "groupType": "INTERFERENCE_COORDINATION"
          }
        ],
        "measCapability": [
          "RECEIVED_POWER_WITHOUT_GRANT"
        ],
        "userId": "SF5W5D"
      }
    ]
  }

```

2018-09-12T07:24:25.599Z - INFO - Registration message contains cpiSignatureData

2018-09-12T07:24:25.599Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2018-09-12T07:24:25.599Z - INFO - encodedCpiSignedData contents = {

```

    "installationParam": {
      "eirpCapability": 40,

```

```

    "antennaAzimuth": 0,
    "heightType": "AMSL",
    "longitude": -88.8888,
    "height": 0,
    "indoorDeployment": false,
    "antennaBeamwidth": 90,
    "antennaDowntilt": 0,
    "latitude": 42.4242,
    "antennaGain": 18
  },
  "fccId": "Z8H89FT0028",
  "professionalInstallerData": {
    "cpiName": "CPI User 123",
    "installCertificationTime": "2018-05-09T15:51:12.866Z",
    "cpild": "cpi123"
  },
  "cbstdSerialNumber": "0a003e452b16"
}
2018-09-12T07:24:25.693Z - INFO - verified signature on cpiSignatureData
2018-09-12T07:24:25.693Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-09-12T07:24:25.693Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbstdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-12T07:24:32.713Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbstdCategory": "B",
      "cbstdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
        "vendor": "Cambium Networks"
      },
      "cbstdSerialNumber": "0a003e452ad4",
      "cpiSignatureData": {
        "digitalSignature":
"V5NPX0KBXnbcShkv6Bz6aHuEjjmyhF1wJ1sk2o24d8upjyFUJ3y_QNz5fXWzVX2HWQ4PFibA-Baepri
EHsfr9XPZqvFNwzoq0LE4d76D_y0CBRXa7kMQjacvKdmKW9EKWEV1I-Q4kT_QWWPDJb53_ku0gs
EeM-_M_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qIfcDesRu9vaStS9vJrDEN_qbZ_6l
vRVEW_F6-KwY_khviWe2Rgn5u55iymp1aHCevxYlwZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
F7SATjGMLGCOLK-qETRYOPe-cTYYjyaQAA",
        "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXliOilwYTAWM2U0NTJhZDQiLCJpbm
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjYyYXJlcjB25naXR1ZGU0i04OC4wODA4LC

```

```

JoZWlnaHQiOjAsImhlaWdodFR5cGUiOiJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
dGVubmFBemltdXRoljowLjChbnRlbn5hRG93bnRpbHQiOjAsImFudGVubmFHYWluljoxOCwiZWlycEN
hcGFiaWxpdHkiOjQwLjChbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckRh
dGEiOnsiY3BpSWQIoiJjcGkxMjMiLCJjcGlOYW1lIjojQ1BJFVZzZXIzIiwiaW5zdGFsbENlcnRpZmljY
XRpb25UaW1lIjojMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",
    "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
  },
  "fccId": "Z8H89FT0028",
  "groupingParam": [
    {
      "groupId": "0a-00-3e-45-2a-d4",
      "groupType": "INTERFERENCE_COORDINATION"
    }
  ],
  "measCapability": [
    "RECEIVED_POWER_WITHOUT_GRANT"
  ],
  "userId": "SF5W5D"
}
]
}
2018-09-12T07:24:32.729Z - INFO - Registration message contains cpiSignatureData
2018-09-12T07:24:32.729Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2018-09-12T07:24:32.729Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
    "eirpCapability": 40,
    "antennaAzimuth": 0,
    "heightType": "AMSL",
    "longitude": -88.0808,
    "height": 0,
    "indoorDeployment": false,
    "antennaBeamwidth": 90,
    "antennaDowntilt": 0,
    "latitude": 42.242,
    "antennaGain": 18
  },
  "fccId": "Z8H89FT0028",
  "professionalInstallerData": {
    "cpiName": "CPI User 123",
    "installCertificationTime": "2018-05-09T15:51:12.866Z",
    "cpild": "cpi123"
  },
  "cbsdSerialNumber": "0a003e452ad4"
}
2018-09-12T07:24:32.729Z - INFO - verified signature on cpiSignatureData
2018-09-12T07:24:32.729Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-09-12T07:24:32.729Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 0
      }
    }
  ]
}

```



```
}  
}  
]  
}
```

2018-09-12T07:24:34.226Z - INFO - arrived to nstep starting question answer session with the technician

2018-09-12T07:24:34.226Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :

2018-09-12T07:25:44.987Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n

2018-09-12T07:25:45.003Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2018-09-12T07:25:46.548Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2018-09-12T07:25:47.687Z - INFO - The final result of the test : WINNF.FT.D.REG.6 is - passed

Test Log for WINNF.FT.D.REG.9 Test Case ID

2018-09-12T07:28:06.033Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24

2018-09-12T07:28:06.033Z - INFO - the selected test from the user : WINNF.FT.D.REG.9 is starting now

2018-09-12T07:28:08.982Z - INFO - registration request from CBRS : {

```

    "registrationRequest": [
      {
        "airInterface": {
          "radioTechnology": "CAMBIUM_NETWORKS"
        },
        "cbsdCategory": "B",
        "cbsdInfo": {
          "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
          "vendor": "Cambium Networks"
        },
        "cbsdSerialNumber": "0a003e452ad4",
        "cpiSignatureData": {
          "digitalSignature":
            "V5NPX0KBXnbcShkv6Bz6aHuEjjmyhF1wJ1sk2o24d8upjyFUJ3y_QNz5fXWzVX2HWQ4PFibA-Baepri
            EHsfr9XPZqvFNwzoq0LE4d76D_y0CBRXa7kMQjacvKdmKW9EKWEV1I-Q4kT_QWWPDJb53_ku0gs
            EeM-_M_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qlfcDesRu9vaStS9vJrDEN_qbZ_6l
            vRVEW_F6-KwY_khviWe2Rgn5u55iymp1aHCevxYlwzZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
            F7SATjGMLGCOLK-qETRYOPe-cTYYjyaQAA",
          "encodedCpiSignedData":
            "eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXIiOiIwYTAwM2U0NTJhZDQiLCJpbn
            N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjQyLCJsb25naXR1ZGU0I04OC4wODA4LC
            JoZWlnaHQiOiQAsImhlaWdodFR5cGU0IjBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
            dGVubmFBemltdXRoljowLCJhbnRlbn5hRG93bnRpbHQiOiQAsImFudGVubmFHYWluljoxOCwiZWlycEN
            hcGFiaWxpdkhkiOiQwLCJhbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlcckRh
            dGEiOnsiY3BpSWQ0IjIjcGkxMjMiLCJjcGLOYW1lIjo1BjJlFVzZXIlgMTIzIiwiaW5zdGFsbENlcnRpZmljY
            XRpb25UaW1lIjo1MjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",
          "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
        },
        "fccId": "Z8H89FT0028",
        "groupingParam": [
          {
            "groupId": "0a-00-3e-45-2a-d4",
            "groupType": "INTERFERENCE_COORDINATION"
          }
        ],
        "measCapability": [
          "RECEIVED_POWER_WITHOUT_GRANT"
        ],
        "userId": "SF5W5D"
      }
    ]
  }

```

2018-09-12T07:28:09.013Z - INFO - Registration message contains cpiSignatureData

2018-09-12T07:28:09.013Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2018-09-12T07:28:09.013Z - INFO - encodedCpiSignedData contents = {

```

    "installationParam": {
      "eirpCapability": 40,

```



```
"antennaAzimuth": 0,
"heightType": "AMSL",
"longitude": -88.0808,
"height": 0,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 18
},
"fccId": "Z8H89FT0028",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbdsSerialNumber": "0a003e452ad4"
}
2018-09-12T07:28:09.013Z - INFO - verified signature on cpiSignatureData
2018-09-12T07:28:09.013Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-09-12T07:28:09.013Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "response": {
        "responseCode": 102
      }
    }
  ]
}
}
2018-09-12T07:28:12.210Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbdsCategory": "B",
      "cbdsInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
        "vendor": "Cambium Networks"
      },
      "cbdsSerialNumber": "0a003e452b16",
      "cpiSignatureData": {
        "digitalSignature":
"KOZyADKurrPAas5JN-BghcC7fzhqCFOkr4zcheGLOI_Ilt23QFPAftVFOSfRzuXzfBch6xwPCrOTwcFMZ
XwuM_4RHFxmbnT6PyPrsy8pivlhdJ_GD9jMjny6HSoOy3nEo3pqJLB7AGv0mt1eodt1YT2yWGepwltVI7
QRWnWHdyzsP9XSQlkd_Phvc-l_bdjJkXcnFzxr7hCirdKrQX1Wbg2Eft9uOXp6MmB3p_ax-twwzywWWa
IPYXUlm5jtHVhbbAL5vc37-Djo4jCBnO3m-b3DvJhQ3_d8NXeco-F939cBHumrEUZMsnkQZRRBLHFdh
LNB7so7tVVTfBfRNvfCHBw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXIiOiIwYTAwM2U0NTJiMTYiLCJpbm
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDIuNDI0MiwibG9uZ2I0dWRlljotODguODg0OCwia
GVpZ2h0IjowLCJoZWlnaHRUeXBlljoiQU1TTCIsImluZG9vcckRlcGxveW1lbnQiOmZhbHNILCJhbnRlbnM5
```




```
]
}
```

2018-09-12T07:28:14.145Z - INFO - arrived to nstep starting question answer session with the technician

2018-09-12T07:28:14.145Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2018-09-12T07:29:25.328Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2018-09-12T07:29:25.328Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :

2018-09-12T07:29:27.013Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n

2018-09-12T07:29:27.964Z - INFO - The final result of the test : WINNF.FT.D.REG.9 is - passed

Test Log for WINNF.FT.D.REG.11 Test Case ID

2018-09-12T07:29:50.460Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24

2018-09-12T07:29:50.460Z - INFO - the selected test from the user : WINNF.FT.D.REG.11 is starting now

2018-09-12T07:29:55.437Z - INFO - registration request from CBRS : {

[illegible]



```
"antennaAzimuth": 0,
"heightType": "AMSL",
"longitude": -88.8888,
"height": 0,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.4242,
"antennaGain": 18
},
"fccId": "Z8H89FT0028",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbdsSerialNumber": "0a003e452b16"
}
2018-09-12T07:29:55.483Z - INFO - verified signature on cpiSignatureData
2018-09-12T07:29:55.483Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-09-12T07:29:55.483Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "response": {
        "responseCode": 200
      }
    }
  ]
}
2018-09-12T07:29:58.135Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbdsCategory": "B",
      "cbdsInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
        "vendor": "Cambium Networks"
      },
      "cbdsSerialNumber": "0a003e452ad4",
      "cpiSignatureData": {
        "digitalSignature":
"V5NPX0KBXnbcShkv6Bz6aHuEjjmyhF1wJ1sk2o24d8upjyFUJ3y_QNz5fXWzVX2HWQ4PFibA-Baepri
EHsfr9XPZqvFNwzoq0LE4d76D_y0CBRXa7kMQjacvKdmKW9EKWEV1I-Q4kT_QWWPDJb53_ku0gs
EeM-_M_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qlfcDesRu9vaStS9vJrDEN_qbZ_6l
vRVEW_F6-KwY_khviWe2Rgn5u55iymp1aHCevxYlwwZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
F7SATjGMLGCOLK-qETRYOPe-cTYYjyaQAA",
        "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXIiOiIwYTAwM2U0NTJhZDQiLCJpbm
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDIuMjYyLCJsb25naXR1ZGU0OC4wODA4LC
JoZWlnaHQiOiAsImhlaWdodFR5cGU0IjBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
```

```
dGVubmFBemltdXRoljowLCJhbnRlbn5hRG93bnRpbHQiOjAsImFudGVubmFHYWluljoxOCwiZWlycEN
hcGFiaWxpdkHkiOjQwLCJhbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckRh
dGEiOnsiY3BpSWQjOiJjcGkxMjMiLCJjcGLOYW1lIjojQ1BJFVzZXIgaMTIzIiwiaW5zdGFsbENlcnRpZmljY
XRpb25UaW1lIjojMjAxOC0wNS0wOVQxNT01MT0xMi44NjZaln19",
```

```
"protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
```

```
},
```

```
"fccId": "Z8H89FT0028",
```

```
"groupingParam": [
```

```
{
```

```
"groupId": "0a-00-3e-45-2a-d4",
```

```
"groupType": "INTERFERENCE_COORDINATION"
```

```
}
```

```
],
```

```
"measCapability": [
```

```
"RECEIVED_POWER_WITHOUT_GRANT"
```

```
],
```

```
"userId": "SF5W5D"
```

```
}
```

```
]
```

```
}
```

2018-09-12T07:29:58.167Z - INFO - Registration message contains cpiSignatureData

2018-09-12T07:29:58.167Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2018-09-12T07:29:58.167Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
```

```
"eirpCapability": 40,
```

```
"antennaAzimuth": 0,
```

```
"heightType": "AMSL",
```

```
"longitude": -88.0808,
```

```
"height": 0,
```

```
"indoorDeployment": false,
```

```
"antennaBeamwidth": 90,
```

```
"antennaDowntilt": 0,
```

```
"latitude": 42.242,
```

```
"antennaGain": 18
```

```
},
```

```
"fccId": "Z8H89FT0028",
```

```
"professionalInstallerData": {
```

```
"cpiName": "CPI User 123",
```

```
"installCertificationTime": "2018-05-09T15:51:12.866Z",
```

```
"cpild": "cpi123"
```

```
},
```

```
"cbsdSerialNumber": "0a003e452ad4"
```

```
}
```

2018-09-12T07:29:58.167Z - INFO - verified signature on cpiSignatureData

2018-09-12T07:29:58.181Z - INFO - cpiSignatureData data successfully validated against jsonschema

2018-09-12T07:29:58.181Z - INFO - engine sent successfully, the response to CBRS : {

```
"registrationResponse": [
```

```
{
```

```
"response": {
```

```
"responseCode": 200
```

```
}
```

```
}
```

```
}
```



```
]
}
```

2018-09-12T07:29:59.585Z - INFO - arrived to nstep starting question answer session with the technician

2018-09-12T07:29:59.585Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :

2018-09-12T07:31:12.562Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n

2018-09-12T07:31:12.562Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2018-09-12T07:31:13.405Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2018-09-12T07:31:14.497Z - INFO - The final result of the test : WINNF.FT.D.REG.11 is - passed

Test Log for WINNF.FT.D.REG.13 Test Case ID

2018-09-12T07:31:30.051Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24

2018-09-12T07:31:30.051Z - INFO - the selected test from the user : WINNF.FT.D.REG.13 is starting now

2018-09-12T07:31:32.312Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "CAMBIUM_NETWORKS"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "0a003e452ad4",
    "cpiSignatureData": {
      "digitalSignature":
"V5NPX0KBXnbcShkv6Bz6aHuEjjmyhF1wJ1sk2o24d8upjyFUJ3y_QNz5fXWzVX2HWQ4PFibA-Baepri
EHsfr9XPZqvFNwzoq0LE4d76D_y0CBRXa7kMQjacvKdmKW9EKWEV1I-Q4kT_QWWPDJb53_ku0gs
EeM-_M_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qlfcDesRu9vaStS9vJrDEN_qbZ_6l
vRVEW_F6-KwY_khviWe2Rgn5u55iymp1aHCevxYlWzZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
F7SATjGMLGCOLK-qETRYOPe-cTYYjyaQAA",
      "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXIiOiIwYTAwM2U0NTJhZDQiLCJpbn
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjYyLCJsb25naXR1ZGU0OC4wODA4LC
JoZWlnaHQiOiQAsImhlaWdodFR5cGU0iJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
dGVubmFBemltdXRoljowLCJhbnRlbn5hRG93bnRpbHQiOiQAsImFudGVubmFHYWluljoxOCwiZWlycEN
hcGFiaWxpdkhkiOiQwLCJhbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlcckRh
dGEiOnsiY3BpSWQ0iOiJjcGxkMjMjLCJjcGLOYW1lIjo1BjJlFVzZXIlgMTIzIiwiaW5zdGFsbENlcnRpZmljY
XRpb25UaW1lIjo1MjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fccId": "Z8H89FT0028",
    "groupingParam": [
      {
        "groupId": "0a-00-3e-45-2a-d4",
        "groupType": "INTERFERENCE_COORDINATION"
      }
    ],
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "SF5W5D"
  }
]
```

2018-09-12T07:31:32.344Z - INFO - Registration message contains cpiSignatureData

2018-09-12T07:31:32.344Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2018-09-12T07:31:32.344Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
  "eirpCapability": 40,
```



```
"antennaAzimuth": 0,
"heightType": "AMSL",
"longitude": -88.0808,
"height": 0,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 18
},
"fccId": "Z8H89FT0028",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbstdSerialNumber": "0a003e452ad4"
}
2018-09-12T07:31:32.344Z - INFO - verified signature on cpiSignatureData
2018-09-12T07:31:32.359Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-09-12T07:31:32.359Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbstdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2018-09-12T07:31:33.592Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbstdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ]
    }
  ]
}
}
2018-09-12T07:31:33.608Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3555000000,
            "lowFrequency": 3550000000
          }
        }
      ]
    }
  ]
}
```

```

    },
    "ruleApplied": "FCC_PART_96"
  }
},
"cbstdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
"response": {
  "responseCode": 0
}
}
]
}
2018-09-12T07:31:35.214Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbstdCategory": "B",
      "cbstdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
        "vendor": "Cambium Networks"
      },
      "cbstdSerialNumber": "0a003e452b16",
      "cpiSignatureData": {
        "digitalSignature":
"KOZyADKurrPAas5JN-BghcC7fzhqCFOkr4zcheGLOI_Ilt23QFPAftVFOSfRzuXzfBch6xwPCrOTwcFMZ
XwuM_4RHFxmbnT6PyPrsy8pivlhdJ_GD9jMjny6HSoOy3nEo3pqJLB7AGv0mt1eodt1YT2yWGepwltVI7
QRWnWHdyzSP9XSQlkd_Phvc-l_bdjJkXcnFzxr7hCirdKrQX1Wbg2Eft9uOXp6MmB3p_ax-twwzywWWa
IPYXUlm5jtHVhbbAL5vc37-Djo4jCBnO3m-b3DvJhQ3_d8NXeco-F939cBHumrEUZMsnkQZRRBLHFdh
LNB7so7tVVTFbRNvfCHBw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXIiOiIwYTAwM2U0NTJiMTYiLCJpbm
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDIuNDI0MiwibG9uZ2I0dWRlljotODguODg4OCwia
GVpZ2h0IjowLjZlLCJoZWlnaHRUeXBlljoiQU1TTClSImluZG9vckRlcGxveW1lbnQiOmZhbHNILCJhbnRlbn5
hQXppbXV0aCI6MCwiYW50ZW5uYURvd250aWx0IjowLjZlLCJhbnRlbn5hR2Fpbil6MTgsImVpcnBDYXBh
YmlsaXR5Ijo0MCwiYW50ZW5uYUJlYW13aWR0aCI6OTB9LCJwcm9mZXNzaW9uYUxwJbnN0YWxsZX
JEYXRhljp7ImNwaUlkljoiY3BpMTIzIiwY3BpTmFtZSI6IkNQSSBVc2VyIDYyMjYwYUJlYW13aWR0a
WZpY2F0aW9uVGI6IjowMTgtMDU0MDU0MTU0NTE6MTIuODY2WiJ9fQ",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fcclId": "Z8H89FT0028",
      "groupingParam": [
        {
          "groupId": "0a-00-3e-45-2b-16",
          "groupType": "INTERFERENCE_COORDINATION"
        }
      ],
      "measCapability": [
        "RECEIVED_POWER_WITHOUT_GRANT"
      ],
      "userId": "SF5W5D"
    }
  ]
}

```

```
]
}
2018-09-12T07:31:35.260Z - INFO - Registration message contains cpiSignatureData
2018-09-12T07:31:35.260Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2018-09-12T07:31:35.260Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
    "eirpCapability": 40,
    "antennaAzimuth": 0,
    "heightType": "AMSL",
    "longitude": -88.8888,
    "height": 0,
    "indoorDeployment": false,
    "antennaBeamwidth": 90,
    "antennaDowntilt": 0,
    "latitude": 42.4242,
    "antennaGain": 18
  },
  "fccId": "Z8H89FT0028",
  "professionalInstallerData": {
    "cpiName": "CPI User 123",
    "installCertificationTime": "2018-05-09T15:51:12.866Z",
    "cpild": "cpi123"
  },
  "cbsdSerialNumber": "0a003e452b16"
}
2018-09-12T07:31:35.260Z - INFO - verified signature on cpiSignatureData
2018-09-12T07:31:35.260Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-09-12T07:31:35.260Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "response": {
        "responseCode": 103
      }
    }
  ]
}
}
2018-09-12T07:31:37.148Z - INFO - arrived to nstep starting question answer session with the technician
2018-09-12T07:31:37.148Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :
2018-09-12T07:32:43.059Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n
2018-09-12T07:32:43.059Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :
2018-09-12T07:32:44.463Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n
2018-09-12T07:32:45.289Z - INFO - The final result of the test : WINNF.FT.D.REG.13 is - passed
```

Test Log for WINNF.FT.D.REG.15 Test Case ID

2018-09-12T07:32:55.086Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24

2018-09-12T07:32:55.086Z - INFO - the selected test from the user : WINNF.FT.D.REG.15 is starting now

2018-09-12T07:32:57.552Z - INFO - registration request from CBRS : {

```
"registrationRequest": {
  {
    "airInterface": {
      "radioTechnology": "CAMBIUM_NETWORKS"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "0a003e452b16",
    "cpiSignatureData": {
      "digitalSignature":
"KOZyADKurrPAas5JN-BghcC7fzhqCFOkr4zcheGLOI_Ilt23QFPAftVFOSfRzuXzfBch6xwPCrOTwcFMZ
XwuM_4RHFxmbnT6PyPrsy8pivlhdJ_GD9jMjny6HSoOy3nEo3pqJLB7AGv0mt1eodt1YT2yWGepwltVI7
QRWnWHdyzsP9XSQlkd_Phvc-l_bdjJkXcnFzxr7hCirdKrQX1Wbg2Eft9uOXp6MmB3p_ax-twwzywWWa
IPYXUlm5jtHVhbbAL5vc37-Djo4jCBnO3m-b3DvJhQ3_d8NXeco-F939cBHumrEUZMSnkQZRRBLHFdh
LNB7so7tVVTfBRNvfCHBw",
      "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXIiOiIwYTAwM2U0NTJiMTYiLCJpbm
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDIuNDI0MiwiwibG9uZ2I0dWRlljotODguODg4OCwia
GVpZ2h0IjowLClJoZWlnaHRUeXBlljoiQU1TTClmImluZG9vckRlcGxveW1lbnQiOmZhbHNILCJhbnRlbn5
hQXppbXV0aCI6MCwiYW50ZW5uYURvd250aWx0IjowLClJhbnRlbn5hR2Fpbil6MTgsImVpcnBDYXBh
YmlsaXR5Ijo0MCwiYW50ZW5uYUJiYW13aWR0aCI6OTB9LCJwcm9mZXNzaW9uYWxJbnN0YWxsZX
JEYXRhIjpw7ImNwaUlkljoiY3BpMTIzIiwuY3BpTmFtZSI6IkNQSsBVc2VyIDEyMyIsImVuc2VudCI6ImVudCJ0a
WZpY2F0aW9uVGl0ZSI6IjIwMTg0MDU0MTU0NTE6MTIuODY2WiJ9fQ",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fcclId": "Z8H89FT0028",
    "groupingParam": {
      {
        "groupId": "0a-00-3e-45-2b-16",
        "groupType": "INTERFERENCE_COORDINATION"
      }
    },
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "SF5W5D"
  }
}
]
```

2018-09-12T07:32:57.582Z - INFO - Registration message contains cpiSignatureData

2018-09-12T07:32:57.582Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2018-09-12T07:32:57.582Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
  "eirpCapability": 40,
```



```
"antennaAzimuth": 0,
"heightType": "AMSL",
"longitude": -88.8888,
"height": 0,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.4242,
"antennaGain": 18
},
"fccId": "Z8H89FT0028",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbdsSerialNumber": "0a003e452b16"
}
2018-09-12T07:32:57.598Z - INFO - verified signature on cpiSignatureData
2018-09-12T07:32:57.598Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-09-12T07:32:57.598Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "response": {
        "responseCode": 101
      }
    }
  ]
}
2018-09-12T07:33:00.625Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbdsCategory": "B",
      "cbdsInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
        "vendor": "Cambium Networks"
      },
      "cbdsSerialNumber": "0a003e452ad4",
      "cpiSignatureData": {
        "digitalSignature":
"V5NPX0KBXnbcShkv6Bz6aHuEjjmyhF1wJ1sk2o24d8upjyFUJ3y_QNz5fXWzVX2HWQ4PFibA-Baepri
EHsfr9XPZqvFNwzoq0LE4d76D_y0CBRXa7kMQjacvKdmKW9EKWEV1I-Q4kT_QWWPDJb53_ku0gs
EeM-_M_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qlfcDesRu9vaStS9vJrDEN_qbZ_6l
vRVEW_F6-KwY_khviWe2Rgn5u55iymp1aHCevxYlWzZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
F7SATjGMLGCOLK-qETRYOPe-cTYYjyaQAA",
        "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXIiOiIwYTAwM2U0NTJhZDQiLCJpbm
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDIuMjYyLCJsb25naXR1ZGU0OC4wODA4LC
JoZWlnaHQiOiAsImhlaWdodFR5cGU0iJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
```

```
dGVubmFBemltdXRoljowLCJhbnRlbn5hRG93bnRpbHQiOjAsImFudGVubmFHYWluljoxOCwiZWlycEN
hcGFiaWxp dHkiOjQwLCJhbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckRh
dGEiOnsiY3BpSWQjOiJjcGkxMjMiLCJjcGLOYW1lIjojQ1BJFVzZXIgaMTIzIiwiaW5zdGFsbENlcnRpZmljY
XRpb25UaW1lIjojMjAxOC0wNS0wOVQxNT01MT0xMi44NjZaln19",
    "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
  },
  "fccId": "Z8H89FT0028",
  "groupingParam": [
    {
      "groupId": "0a-00-3e-45-2a-d4",
      "groupType": "INTERFERENCE_COORDINATION"
    }
  ],
  "measCapability": [
    "RECEIVED_POWER_WITHOUT_GRANT"
  ],
  "userId": "SF5W5D"
}
]
}
}
2018-09-12T07:33:00.655Z - INFO - Registration message contains cpiSignatureData
2018-09-12T07:33:00.655Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2018-09-12T07:33:00.671Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
    "eirpCapability": 40,
    "antennaAzimuth": 0,
    "heightType": "AMSL",
    "longitude": -88.0808,
    "height": 0,
    "indoorDeployment": false,
    "antennaBeamwidth": 90,
    "antennaDowntilt": 0,
    "latitude": 42.242,
    "antennaGain": 18
  },
  "fccId": "Z8H89FT0028",
  "professionalInstallerData": {
    "cpiName": "CPI User 123",
    "installCertificationTime": "2018-05-09T15:51:12.866Z",
    "cpild": "cpi123"
  },
  "cbsdSerialNumber": "0a003e452ad4"
}
2018-09-12T07:33:00.671Z - INFO - verified signature on cpiSignatureData
2018-09-12T07:33:00.671Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-09-12T07:33:00.671Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
```



```
}  
]  
}  
2018-09-12T07:33:02.184Z - INFO - arrived to nstep starting question answer session with the technician  
2018-09-12T07:33:02.184Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :  
2018-09-12T07:34:06.315Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n  
2018-09-12T07:34:06.315Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :  
2018-09-12T07:34:07.674Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n  
2018-09-12T07:34:08.812Z - INFO - The final result of the test : WINNF.FT.D.REG.15 is - passed
```

Test Log for WINNF.FT.D.REG.17 Test Case ID

2018-09-12T07:34:50.184Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24

2018-09-12T07:34:50.184Z - INFO - the selected test from the user : WINNF.FT.D.REG.17 is starting now

2018-09-12T07:34:52.992Z - INFO - registration request from CBRS : {

```

    "registrationRequest": [
      {
        "airInterface": {
          "radioTechnology": "CAMBIUM_NETWORKS"
        },
        "cbsdCategory": "B",
        "cbsdInfo": {
          "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
          "vendor": "Cambium Networks"
        },
        "cbsdSerialNumber": "0a003e452b16",
        "cpiSignatureData": {
          "digitalSignature":
            "KOZyADKurrPAas5JN-BghcC7fzhqCFOkr4zcheGLOI_Ilt23QFPAftVFOSfRzuXzfBch6xwPCrOTwcFMZ
            XwuM_4RHFxmbnT6PyPrsy8pivlhdJ_GD9jMjny6HSoOy3nEo3pqJLB7AGv0mt1eodt1YT2yWGepwltVI7
            QRWnWHdyzsP9XSQlkd_Phvc-l_bdjJkXcnFzxr7hCirdKrQX1Wbg2Eft9uOXp6MmB3p_ax-twwzywWWa
            IPYXUlm5jtHVhbbAL5vc37-Djo4jCBnO3m-b3DvJhQ3_d8NXeco-F939cBHumrEUZMSnkQZRRBLHFdh
            LNB7so7tVVTfBnRnvfCHBw",
          "encodedCpiSignedData":
            "eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXIiOiIwYTAwM2U0NTJiMTYiLCJpbm
            N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDIuNDI0MiwibG9uZ2I0dWRlljotODguODg4OCwia
            GVpZ2h0IjowLClJoZWlnaHRUeXBlljoiQU1TTClmImluZG9vckRlcGxveW1lbnQiOmZhbHNILCJhbnRlbn5
            hQXppbXV0aCI6MCwiYW50ZW5uYURvd250aWx0IjowLClJhbnRlbn5hR2Fpbil6MTgsImVpcnBDYXBh
            YmlsaXR5Ijo0MCwiYW50ZW5uYUJlYW13aWR0aCI6OTB9LCJwcm9mZXNzaW9uYWxJbnN0YWxsZX
            JEYXRhIjpw7ImNwaUlkljoiY3BpMTIzIiwY3BpTmFtZSI6IkNQSsBVc2VyIDEyMyIsImVudCkiOiJ0aW
            WZpY2F0aW9uVGl0ZSI6IjIwMTg0MDU0MTU0NTE2MTU0ODY2WiJ9fQ",
          "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
        },
        "fccId": "Z8H89FT0028",
        "groupingParam": [
          {
            "groupId": "0a-00-3e-45-2b-16",
            "groupType": "INTERFERENCE_COORDINATION"
          }
        ],
        "measCapability": [
          "RECEIVED_POWER_WITHOUT_GRANT"
        ],
        "userId": "SF5W5D"
      }
    ]
  }

```

2018-09-12T07:34:53.023Z - INFO - Registration message contains cpiSignatureData

2018-09-12T07:34:53.023Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2018-09-12T07:34:53.023Z - INFO - encodedCpiSignedData contents = {

```

    "installationParam": {
      "eirpCapability": 40,

```



```
"antennaAzimuth": 0,
"heightType": "AMSL",
"longitude": -88.8888,
"height": 0,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.4242,
"antennaGain": 18
},
"fccId": "Z8H89FT0028",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbdsSerialNumber": "0a003e452b16"
}
2018-09-12T07:34:53.117Z - INFO - verified signature on cpiSignatureData
2018-09-12T07:34:53.117Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-09-12T07:34:53.117Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "response": {
        "responseCode": 100
      }
    }
  ]
}
2018-09-12T07:34:57.062Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbdsCategory": "B",
      "cbdsInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
        "vendor": "Cambium Networks"
      },
      "cbdsSerialNumber": "0a003e452ad4",
      "cpiSignatureData": {
        "digitalSignature":
"V5NPX0KBXnbcShkv6Bz6aHuEjjmyhF1wJ1sk2o24d8upjyFUJ3y_QNz5fXWzVX2HWQ4PFibA-Baepri
EHsfr9XPZqvFNwzoq0LE4d76D_y0CBRXa7kMQjacvKdmKW9EKWEV1I-Q4kT_QWWPDJb53_ku0gs
EeM-_M_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qlfcDesRu9vaStS9vJrDEN_qbZ_6l
vRVEW_F6-KwY_khviWe2Rgn5u55iymp1aHCevxYlwwZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
F7SATjGMLGCOLK-qETRYOPe-cTYYjyaQAA",
        "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXIiOiIwYTAwM2U0NTJhZDQiLCJpbm
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDIuMjYyLCJsb25naXR1ZGU0OC4wODA4LC
JoZWlnaHQiOiAsImhlaWdodFR5cGU0iJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
```

```
dGVubmFBemltdXRoljowLCJhbnRlbn5hRG93bnRpbHQiOjAsImFudGVubmFHYWluljoxOCwiZWlycEN
hcGFiaWxpdkHkiOjQwLCJhbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckRh
dGEiOnsiY3BpSWQjOiJjcGkxMjMiLCJjcGLOYW1lIjojQ1BJFVzZXIgaMTIzIiwiaW5zdGFsbENlcnRpZmljY
XRpb25UaW1lIjojMjAxOC0wNS0wOVQxNT01MT0xMi44NjZaln19",
```

```
"protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
```

```
},
```

```
"fccId": "Z8H89FT0028",
```

```
"groupingParam": [
```

```
{
```

```
"groupId": "0a-00-3e-45-2a-d4",
```

```
"groupType": "INTERFERENCE_COORDINATION"
```

```
}
```

```
],
```

```
"measCapability": [
```

```
"RECEIVED_POWER_WITHOUT_GRANT"
```

```
],
```

```
"userId": "SF5W5D"
```

```
}
```

```
]
```

```
}
```

2018-09-12T07:34:57.095Z - INFO - Registration message contains cpiSignatureData

2018-09-12T07:34:57.095Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2018-09-12T07:34:57.095Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
```

```
"eirpCapability": 40,
```

```
"antennaAzimuth": 0,
```

```
"heightType": "AMSL",
```

```
"longitude": -88.0808,
```

```
"height": 0,
```

```
"indoorDeployment": false,
```

```
"antennaBeamwidth": 90,
```

```
"antennaDowntilt": 0,
```

```
"latitude": 42.242,
```

```
"antennaGain": 18
```

```
},
```

```
"fccId": "Z8H89FT0028",
```

```
"professionalInstallerData": {
```

```
"cpiName": "CPI User 123",
```

```
"installCertificationTime": "2018-05-09T15:51:12.866Z",
```

```
"cpild": "cpi123"
```

```
},
```

```
"cbsdSerialNumber": "0a003e452ad4"
```

```
}
```

2018-09-12T07:34:57.095Z - INFO - verified signature on cpiSignatureData

2018-09-12T07:34:57.095Z - INFO - cpiSignatureData data successfully validated against jsonschema

2018-09-12T07:34:57.095Z - INFO - engine sent successfully, the response to CBRS : {

```
"registrationResponse": [
```

```
{
```

```
"response": {
```

```
"responseCode": 100
```

```
}
```

```
}
```

```
}
```



```
]
}
```

2018-09-12T07:34:58.296Z - INFO - arrived to nstep starting question answer session with the technician

2018-09-12T07:34:58.296Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :

2018-09-12T07:36:02.084Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n

2018-09-12T07:36:02.084Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2018-09-12T07:36:02.957Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2018-09-12T07:36:04.720Z - INFO - The final result of the test : WINNF.FT.D.REG.17 is - passed

Test Log for WINNF.FT.D.REG.19 Test Case ID

2018-09-12T07:36:17.216Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24

2018-09-12T07:36:17.216Z - INFO - the selected test from the user : WINNF.FT.D.REG.19 is starting now

2018-09-12T07:36:21.023Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "CAMBIUM_NETWORKS"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "0a003e452ad4",
    "cpiSignatureData": {
      "digitalSignature":
"V5NPX0KBXnbcShkv6Bz6aHuEjjmyhF1wJ1sk2o24d8upjyFUJ3y_QNz5fXWzVX2HWQ4PFibA-Baepri
EHsfr9XPZqvFNwzoq0LE4d76D_y0CBRXa7kMQjacvKdmKW9EKWEV1I-Q4kT_QWWPDJb53_ku0gs
EeM-_M_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qlfcDesRu9vaStS9vJrDEN_qbZ_6l
vRVEW_F6-KwY_khviWe2Rgn5u55iymp1aHCevxYlWzZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
F7SATjGMLGCOLK-qETRYOPe-cTYYjyaQAA",
      "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXIiOiIwYTAwM2U0NTJhZDQiLCJpbn
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjQyLCJsb25naXR1ZGU0I04OC4wODA4LC
JoZWlnaHQiOiQAsImhlaWdodFR5cGU0IjBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UslmFu
dGVubmFBemltdXRoljowLCJhbnRlbn5hRG93bnRpbHQiOiQAsImFudGVubmFHYWluljoxOCwiZWlycEN
hcGFiaWxpdkhkiOiQwLCJhbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckRh
dGEiOnsiY3BpSWQ0IjJcGkxMjMiLCJjcGLOYW1lIjo1BjJlFVzZXIlgMTIzIiwiaW5zdGFsbENlcnRpZmljY
XRpb25UaW1lIjo1MjAxOC0wNS0wOVQxNT01MT0xMi44NjZalN19",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fccId": "Z8H89FT0028",
    "groupingParam": [
      {
        "groupId": "0a-00-3e-45-2a-d4",
        "groupType": "INTERFERENCE_COORDINATION"
      }
    ],
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "SF5W5D"
  }
]
```

2018-09-12T07:36:21.053Z - INFO - Registration message contains cpiSignatureData

2018-09-12T07:36:21.053Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2018-09-12T07:36:21.053Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
  "eirpCapability": 40,
```

```

    "antennaAzimuth": 0,
    "heightType": "AMSL",
    "longitude": -88.0808,
    "height": 0,
    "indoorDeployment": false,
    "antennaBeamwidth": 90,
    "antennaDowntilt": 0,
    "latitude": 42.242,
    "antennaGain": 18
  },
  "fccId": "Z8H89FT0028",
  "professionalInstallerData": {
    "cpiName": "CPI User 123",
    "installCertificationTime": "2018-05-09T15:51:12.866Z",
    "cpild": "cpi123"
  },
  "cbstdSerialNumber": "0a003e452ad4"
}
2018-09-12T07:36:21.069Z - INFO - verified signature on cpiSignatureData
2018-09-12T07:36:21.069Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-09-12T07:36:21.069Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbstdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-12T07:36:23.519Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbstdCategory": "B",
      "cbstdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
        "vendor": "Cambium Networks"
      },
      "cbstdSerialNumber": "0a003e452b16",
      "cpiSignatureData": {
        "digitalSignature":
"KOZyADKurrPAas5JN-BghcC7fzhqCFOKr4zcheGLOI_Ilt23QFPAftVFOSfRzuXzfBch6xwPCrOTwcFMZ
XwuM_4RHFxmbnT6PyPrsy8pivlhdJ_GD9jMjny6HSoOy3nEo3pqJLB7AGv0mt1eodt1YT2yWGepwltVI7
QRWnWHdyzsP9XSQlkd_Phvc-l_bdjJkXcnFzxr7hCirdKrQX1Wbg2Eft9uOXp6MmB3p_ax-twwzywWWa
IPYXUlm5jtHVhbbAL5vc37-Djo4jCBnO3m-b3DvJhQ3_d8NXeco-F939cBHumrEUZMsnkQZRRBLHFdh
LNB7so7tVVTFbRNvfCHBw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXliOilwYTAWM2U0NTJiMTYiLCJpbm
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluNDI0MiwibG9uZ2l0dWRlljotODguODg4OCwia

```




```
}  
]  
}  
2018-09-12T07:36:25.328Z - INFO - arrived to nstep starting question answer session with the technician  
2018-09-12T07:36:25.328Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :  
2018-09-12T07:38:12.173Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n  
2018-09-12T07:38:12.173Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :  
2018-09-12T07:38:13.624Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n  
2018-09-12T07:38:14.466Z - INFO - The final result of the test : WINNF.FT.D.REG.19 is - passed
```

Test Log for WINNF.FT.C.GRA.1 Test Case ID

2018-09-12T08:00:34.992Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24

2018-09-12T08:00:34.992Z - INFO - the selected test from the user : WINNF.FT.C.GRA.1 is starting now

2018-09-12T08:00:56.582Z - INFO - registration request from CBRS : {

```

    "registrationRequest": [
      {
        "airInterface": {
          "radioTechnology": "CAMBIUM_NETWORKS"
        },
        "cbsdCategory": "B",
        "cbsdInfo": {
          "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
          "vendor": "Cambium Networks"
        },
        "cbsdSerialNumber": "0a003e452ad4",
        "cpiSignatureData": {
          "digitalSignature":
            "V5NPX0KBXnbcShkv6Bz6aHuEjjmyhF1wJ1sk2o24d8upjyFUJ3y_QNz5fXWzVX2HWQ4PFibA-Baepri
            EHsfr9XPZqvFNwzoq0LE4d76D_y0CBRXa7kMQjacvKdmKW9EKWEV1I-Q4kT_QWWPDJb53_ku0gs
            EeM-_M_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qlfcDesRu9vaStS9vJrDEN_qbZ_6l
            vRVEW_F6-KwY_khviWe2Rgn5u55iymp1aHCevxYlwwZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
            F7SATjGMLGCOLK-qETRYOPe-cTYYjyaQAA",
          "encodedCpiSignedData":
            "eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXIiOiIwYTAwM2U0NTJhZDQiLCJpbn
            N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjYyLCJsb25naXR1ZGU0I04OC4wODA4LC
            JoZWlnaHQiOiAsImhlaWdodFR5cGU0IjBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
            dGVubmFBemltdXRoljowLCJhbnRlbn5hRG93bnRpbHQiOiAsImFudGVubmFHYWluljoxOCwiZWlycEN
            hcGFiaWxpdkhkiOiQwLCJhbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlcckRh
            dGEiOnsiY3BpSWQ0IjJcGkxMjMiLCJjcGLOYW1lIjo1BjJlFVzZXIlgMTIzIiwiaW5zdGFsbENlcnRpZmljY
            XRpb25UaW1lIjo1MjAxOC0wNS0wOVQxNT01MT0xMi44NjZalN19",
          "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
        },
        "fccId": "Z8H89FT0028",
        "groupingParam": [
          {
            "groupId": "0a-00-3e-45-2a-d4",
            "groupType": "INTERFERENCE_COORDINATION"
          }
        ],
        "measCapability": [
          "RECEIVED_POWER_WITHOUT_GRANT"
        ],
        "userId": "SF5W5D"
      }
    ]
  }

```

2018-09-12T08:00:56.614Z - INFO - Registration message contains cpiSignatureData

2018-09-12T08:00:56.614Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2018-09-12T08:00:56.614Z - INFO - encodedCpiSignedData contents = {

```

    "installationParam": {
      "eirpCapability": 40,

```

```

    "antennaAzimuth": 0,
    "heightType": "AMSL",
    "longitude": -88.0808,
    "height": 0,
    "indoorDeployment": false,
    "antennaBeamwidth": 90,
    "antennaDowntilt": 0,
    "latitude": 42.242,
    "antennaGain": 18
  },
  "fccId": "Z8H89FT0028",
  "professionalInstallerData": {
    "cpiName": "CPI User 123",
    "installCertificationTime": "2018-05-09T15:51:12.866Z",
    "cpild": "cpi123"
  },
  "cbsdSerialNumber": "0a003e452ad4"
}
2018-09-12T08:00:56.707Z - INFO - verified signature on cpiSignatureData
2018-09-12T08:00:56.707Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-09-12T08:00:56.723Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-12T08:01:56.861Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ]
    }
  ]
}
2018-09-12T08:01:56.877Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3670000000,
            "lowFrequency": 3650000000
          }
        }
      ]
    }
  ]
}

```

```

    },
    "ruleApplied": "FCC_PART_96"
  }
],
"cbstdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
"response": {
  "responseCode": 0
}
}
]
}
2018-09-12T08:01:56.938Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbstdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "operationParam": {
        "maxEirp": 30,
        "operationFrequencyRange": {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
}
2018-09-12T08:01:56.954Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbstdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 400
      }
    }
  ]
}
}
2018-09-12T08:01:58.140Z - INFO - arrived to nstep starting question answer session with the technician
2018-09-12T08:01:58.140Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :
2018-09-12T08:03:35.171Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n
2018-09-12T08:03:38.792Z - INFO - The final result of the test : WINNF.FT.C.GRA.1 is - passed

```

Test Log for WINNF.FT.C.GRA.2 Test Case ID

2018-09-12T08:04:36.823Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24

2018-09-12T08:04:36.838Z - INFO - the selected test from the user : WINNF.FT.C.GRA.2 is starting now

2018-09-12T08:04:45.295Z - INFO - registration request from CBRS : {

```

    "registrationRequest": [
      {
        "airInterface": {
          "radioTechnology": "CAMBIUM_NETWORKS"
        },
        "cbsdCategory": "B",
        "cbsdInfo": {
          "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
          "vendor": "Cambium Networks"
        },
        "cbsdSerialNumber": "0a003e452ad4",
        "cpiSignatureData": {
          "digitalSignature":
            "V5NPX0KBXnbcShkv6Bz6aHuEjjmyhF1wJ1sk2o24d8upjyFUJ3y_QNz5fXWzVX2HWQ4PFibA-Baepri
            EHsfr9XPZqvFNwzoq0LE4d76D_y0CBRXa7kMQjacvKdmKW9EKWEV1I-Q4kT_QWWPDJb53_ku0gs
            EeM-_M_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qlfcDesRu9vaStS9vJrDEN_qbZ_6l
            vRVEW_F6-KwY_khviWe2Rgn5u55iymp1aHCevxYlWzZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
            F7SATjGMLGCOLK-qETRYOPe-cTYYjyaQAA",
          "encodedCpiSignedData":
            "eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXIiOiIwYTAwM2U0NTJhZDQiLCJpbn
            NOYWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjQyLCJsb25naXR1ZGU0I04OC4wODA4LC
            JoZWlnaHQiOiQAsImhlaWdodFR5cGU0IjBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UslmFu
            dGVubmFBemltdXRoljowLCJhbnRlbn5hRG93bnRpbHQiOiQAsImFudGVubmFHYWluljoxOCwiZWlycEN
            hcGFiaWxpdkhkiOiQwLCJhbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlcckRh
            dGEiOnsiY3BpSWQ0IjJcGkxMjMiLCJjcGLOYW1lIjo1BjJlFVzZXIlgMTIzIiwiaW5zdGFsbENlcnRpZmljY
            XRpb25UaW1lIjo1MjAxOC0wNS0wOVQxNT01MT0xMi44NjZalN19",
          "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
        },
        "fccId": "Z8H89FT0028",
        "groupingParam": [
          {
            "groupId": "0a-00-3e-45-2a-d4",
            "groupType": "INTERFERENCE_COORDINATION"
          }
        ],
        "measCapability": [
          "RECEIVED_POWER_WITHOUT_GRANT"
        ],
        "userId": "SF5W5D"
      }
    ]
  }

```

2018-09-12T08:04:45.341Z - INFO - Registration message contains cpiSignatureData

2018-09-12T08:04:45.341Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2018-09-12T08:04:45.341Z - INFO - encodedCpiSignedData contents = {

```

    "installationParam": {
      "eirpCapability": 40,

```

```

    "antennaAzimuth": 0,
    "heightType": "AMSL",
    "longitude": -88.0808,
    "height": 0,
    "indoorDeployment": false,
    "antennaBeamwidth": 90,
    "antennaDowntilt": 0,
    "latitude": 42.242,
    "antennaGain": 18
  },
  "fccId": "Z8H89FT0028",
  "professionalInstallerData": {
    "cpiName": "CPI User 123",
    "installCertificationTime": "2018-05-09T15:51:12.866Z",
    "cpild": "cpi123"
  },
  "cbsdSerialNumber": "0a003e452ad4"
}
2018-09-12T08:04:45.341Z - INFO - verified signature on cpiSignatureData
2018-09-12T08:04:45.341Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-09-12T08:04:45.357Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-12T08:04:57.447Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ]
    }
  ]
}
2018-09-12T08:04:57.463Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3670000000,
            "lowFrequency": 3650000000
          }
        }
      ]
    }
  ]
}

```

```

    },
    "ruleApplied": "FCC_PART_96"
  }
],
"cbstdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
"response": {
  "responseCode": 0
}
}
]
}
2018-09-12T08:04:57.540Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbstdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "operationParam": {
        "maxEirp": 30,
        "operationFrequencyRange": {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
}
2018-09-12T08:04:57.555Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbstdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 401
      }
    }
  ]
}
2018-09-12T08:04:59.147Z - INFO - arrived to nstep starting question answer session with the technician
2018-09-12T08:04:59.147Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :
2018-09-12T08:06:19.253Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n
2018-09-12T08:06:20.127Z - INFO - The final result of the test : WINNF.FT.C.GRA.2 is - passed

```

**Test Log for WINNF.FT.D.HBT.2 Test Case ID**

2018-09-12T08:09:17.094Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24

2018-09-12T08:09:17.094Z - INFO - the selected test from the user : WINNF.FT.D.HBT.2 is starting now

2018-09-12T08:09:21.992Z - INFO - registration request from CBRS : {

```
"registrationRequest": {
  {
    "airInterface": {
      "radioTechnology": "CAMBIUM_NETWORKS"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "0a003e452ad4",
    "cpiSignatureData": {
      "digitalSignature":
"V5NPX0KBXnbcShkv6Bz6aHuEjjmyhF1wJ1sk2o24d8upjyFUJ3y_QNz5fXWzVX2HWQ4PFibA-Baepri
EHsfr9XPZqvFNwzoq0LE4d76D_y0CBRXa7kMQjacvKdmKW9EKWEV1I-Q4kT_QWWPDJb53_ku0gs
EeM-_M_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qlfcDesRu9vaStS9vJrDEN_qbZ_6l
vRVEW_F6-KwY_khviWe2Rgn5u55iymP1aHCevxYlwwZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
F7SATjGMLGCOLK-qETRYOPe-cTYYjyaQAA",
      "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZXJpYWwOdW1iZXliOiIwYTAwM2U0NTJhZDQiLCJpbm
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjYyLCJsb25naXR1ZGU0I04OC4wODA4LC
JoZWlnaHQiOiJAsImhlaWdodFR5cGU0IjBTbVNMliwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
dGVubmFBemltdXRoljowLCJhbnRlbn5hRG93bnRpbHQiOiJAsImFudGVubmFHYWluljoxOCwiZWlycEN
hcGFiaWxpdkhkiOiJwLCJhbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckRh
dGEiOnsiY3BpSWQ0IjIjcGkxMjMiLCJjcGLOYW1lIjo1Q1BJFVZlZlIzIiwiaW5zdGFsbENlcnRpZmljY
XRpb25UaW1lIjo1MjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fccId": "Z8H89FT0028",
    "groupingParam": {
      {
        "groupId": "0a-00-3e-45-2a-d4",
        "groupType": "INTERFERENCE_COORDINATION"
      }
    },
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "SF5W5D"
  }
}
}
```

2018-09-12T08:09:22.039Z - INFO - Registration message contains cpiSignatureData

2018-09-12T08:09:22.039Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2018-09-12T08:09:22.039Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
  "eirpCapability": 40,
  "antennaAzimuth": 0,
```



```
"heightType": "AMSL",
"longitude": -88.0808,
"height": 0,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 18
},
"fccId": "Z8H89FT0028",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e452ad4"
}
2018-09-12T08:09:22.039Z - INFO - verified signature on cpiSignatureData
2018-09-12T08:09:22.055Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-09-12T08:09:22.055Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2018-09-12T08:09:58.153Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ]
    }
  ]
}
}
2018-09-12T08:09:58.168Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3670000000,
            "lowFrequency": 3650000000
          }
        }
      ]
    }
  ]
}
```

```

        "ruleApplied": "FCC_PART_96"
      }
    ],
    "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
    "response": {
      "responseCode": 0
    }
  }
]
}
2018-09-12T08:09:58.214Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "operationParam": {
        "maxEirp": 30,
        "operationFrequencyRange": {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2018-09-12T08:09:58.230Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "channelType": "GAA",
      "grantExpireTime": "2018-09-19T08:09:58Z",
      "grantId": "359632335",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-12T08:09:58.278Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "359632335",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-09-12T08:09:58.292Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",

```

```

        "grantId": "359632335",
        "response": {
            "responseCode": 0
        },
        "transmitExpireTime": "2018-09-12T08:13:18Z"
    }
}
]
}
2018-09-12T08:10:08.885Z - INFO - registration request from CBRS : {
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "CAMBIUM_NETWORKS"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "0a003e452b16",
            "cpiSignatureData": {
                "digitalSignature":
                "KOZyADKurrPAas5JN-BghcC7fzhqCFOKr4zcheGLOI_lIt23QFPAftVFOSfRzuXzfBch6xwPCrOTwcFMZ
                XwuM_4RHFxmbnT6PyPrsy8pivlhdJ_GD9jMjny6HSoOy3nEo3pqJLB7AGv0mt1eodt1YT2yWGepwltVI7
                QRWnWHdyzSP9XSQlkd_Phvc-l_bdjJkXcnFzxr7hCirdKrqX1Wbg2Eft9uOXp6MmB3p_ax-twwzywWWa
                IPYXUIm5jtHVhbbAL5vc37-Djo4jCBnO3m-b3DvJhQ3_d8NXeco-F939cBHumrEUZMsnkQZRRBLHFdh
                LNB7so7tVVTFbRNvfCHBw",
                "encodedCpiSignedData":
                "eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXliOiIwYTAwM2U0NTJiMTYiLCJpbm
                N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDIuNDI0MiwibG9uZ2I0dWRlljotODguODg4OCwia
                GVpZ2h0IjowLjowLCJoZWlnaHRUeXBlljoiQU1TTCIsImluZG9vckRlcGxveW1lbnQiOmZhbHNILCJhbnRlbn5
                hQXppbXV0aCI6MCwiYW50ZW5uYURvd250aWx0IjowLjowLCJhbnRlbn5hR2Fpbil6MTgslmVpcnBDYXBh
                YmlsaXR5Ijo0MCwiYW50ZW5uYUJlYW13aWR0aCI6OTB9LCJwcm9mZXNzaW9uYWxJbnN0YWxsZX
                JEYXRhlj7ImNwaUlkljoiY3BpMTlzlwiY3BpTmFtZSI6IkNQSSBVc2VyIDEyMyIsImVuc3RhbGxDZXJ0a
                WZpY2F0aW9uVGlzI6IjwMTgtMDU0MDIUMTU6NTE6MTIuODY2WiJ9fQ",
                "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
            },
            "fccId": "Z8H89FT0028",
            "groupingParam": [
                {
                    "groupId": "0a-00-3e-45-2b-16",
                    "groupType": "INTERFERENCE_COORDINATION"
                }
            ],
            "measCapability": [
                "RECEIVED_POWER_WITHOUT_GRANT"
            ],
            "userId": "SF5W5D"
        }
    ]
}
2018-09-12T08:10:08.933Z - INFO - Registration message contains cpiSignatureData

```



```
2018-09-12T08:10:08.933Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2018-09-12T08:10:08.933Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
    "eirpCapability": 40,
    "antennaAzimuth": 0,
    "heightType": "AMSL",
    "longitude": -88.8888,
    "height": 0,
    "indoorDeployment": false,
    "antennaBeamwidth": 90,
    "antennaDowntilt": 0,
    "latitude": 42.4242,
    "antennaGain": 18
  },
  "fccId": "Z8H89FT0028",
  "professionalInstallerData": {
    "cpiName": "CPI User 123",
    "installCertificationTime": "2018-05-09T15:51:12.866Z",
    "cpild": "cpi123"
  },
  "cbsdSerialNumber": "0a003e452b16"
}
2018-09-12T08:10:08.933Z - INFO - verified signature on cpiSignatureData
2018-09-12T08:10:08.933Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-09-12T08:10:08.933Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-12T08:10:53.392Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "359632335",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-12T08:10:53.407Z - INFO - Time interval between two heartbeat request messages is: 55.115,
limit is: 65.0
2018-09-12T08:10:53.407Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "359632335",
      "response": {
```

```

        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-12T08:14:13Z"
    }
  ]
}
2018-09-12T08:11:09.101Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ]
    }
  ]
}
2018-09-12T08:11:09.101Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3670000000,
            "lowFrequency": 3650000000
          },
          "ruleApplied": "FCC_PART_96"
        }
      ],
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-12T08:11:09.180Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "operationParam": {
        "maxEirp": 30,
        "operationFrequencyRange": {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}

```

```
}
2018-09-12T08:11:09.180Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "channelType": "GAA",
      "grantExpireTime": "2018-09-19T08:11:09Z",
      "grantId": "362795473",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-12T08:11:09.226Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "362795473",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-09-12T08:11:09.242Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "362795473",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-12T08:14:29Z"
    }
  ]
}
2018-09-12T08:11:48.539Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "359632335",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-12T08:11:48.539Z - INFO - Time interval between two heartbeat request messages is: 55.146,
limit is: 65.0
2018-09-12T08:11:48.539Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
```



```
"cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
"grantId": "359632335",
"response": {
  "responseCode": 0
},
"transmitExpireTime": "2018-09-12T08:15:08Z"
}
]
}
2018-09-12T08:12:04.388Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "362795473",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-12T08:12:04.388Z - INFO - Time interval between two heartbeat request messages is: 55.161,
limit is: 65.0
2018-09-12T08:12:04.404Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "362795473",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-12T08:15:24Z"
    }
  ]
}
2018-09-12T08:12:43.638Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "359632335",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-12T08:12:43.638Z - INFO - Time interval between two heartbeat request messages is: 55.099,
limit is: 65.0
2018-09-12T08:12:43.654Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "359632335",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
```

```
    },
    "transmitExpireTime": "2018-09-12T08:16:03Z"
  }
]
}
2018-09-12T08:12:59.487Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "362795473",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-12T08:12:59.487Z - INFO - Time interval between two heartbeat request messages is: 55.1,
limit is: 65.0
2018-09-12T08:12:59.503Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "362795473",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-12T08:16:19Z"
    }
  ]
}
2018-09-12T08:13:38.783Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "359632335",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-12T08:13:38.783Z - INFO - Time interval between two heartbeat request messages is: 55.146,
limit is: 65.0
2018-09-12T08:13:38.799Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "359632335",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-12T08:16:58Z"
    }
  ]
}
```

```
}
2018-09-12T08:13:54.664Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "362795473",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-12T08:13:54.664Z - INFO - Time interval between two heartbeat request messages is: 55.177,
limit is: 65.0
2018-09-12T08:13:54.664Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "362795473",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-12T08:17:14Z"
    }
  ]
}
2018-09-12T08:14:32.963Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "359632335",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-12T08:14:32.963Z - INFO - Time interval between two heartbeat request messages is: 54.179,
limit is: 65.0
2018-09-12T08:14:32.963Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "359632335",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-12T08:17:52Z"
    }
  ]
}
2018-09-12T08:14:49.779Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
```

```
        "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
        "grantId": "362795473",
        "grantRenew": false,
        "operationState": "AUTHORIZED"
    }
]
}
2018-09-12T08:14:49.779Z - INFO - Time interval between two heartbeat request messages is: 55.115,
limit is: 65.0
2018-09-12T08:14:49.796Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
            "grantId": "362795473",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2018-09-12T08:18:09Z"
        }
    ]
}
2018-09-12T08:15:28.108Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
            "grantId": "359632335",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2018-09-12T08:15:28.108Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
            "grantId": "359632335",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2018-09-12T08:18:48Z"
        }
    ]
}
2018-09-12T08:15:44.973Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
            "grantId": "362795473",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
```

```
}
2018-09-12T08:15:44.987Z - INFO - Time interval between two heartbeat request messages is: 55.193,
limit is: 65.0
2018-09-12T08:15:45.003Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "362795473",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-12T08:19:05Z"
    }
  ]
}
}
2018-09-12T08:15:46.470Z - INFO - arrived to nstep starting question answer session with the
technician
2018-09-12T08:15:46.470Z - INFO - the question is : Did the CBSD1 transmit power prior to
AUTHORIZED state (first successful HBT response)? please choose one of the answers :
2018-09-12T08:23:07.201Z - INFO - for the question : Did the CBSD1 transmit power prior to
AUTHORIZED state (first successful HBT response)? , the user choose n
2018-09-12T08:23:07.201Z - INFO - the question is : Did the CBSD2 transmit power prior to
AUTHORIZED state (first successful HBT response)? please choose one of the answers :
2018-09-12T08:23:11.148Z - INFO - for the question : Did the CBSD2 transmit power prior to
AUTHORIZED state (first successful HBT response)? , the user choose n
2018-09-12T08:26:04.043Z - INFO - The final result of the test : WINNF.FT.D.HBT.2 is - passed and :the
additional comments for the current test are : CBSD1 start transmit at T08:11:19 , CBSD2 start transmit
at T08:13:01
```

**Test Log for WINNF.FT.C.HBT.3 Test Case ID**

2018-09-12T08:27:17.691Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24

2018-09-12T08:27:17.691Z - INFO - the selected test from the user : WINNF.FT.C.HBT.3 is starting now

2018-09-12T08:27:29.236Z - INFO - registration request from CBRS : {

```
"registrationRequest": {
  {
    "airInterface": {
      "radioTechnology": "CAMBIUM_NETWORKS"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "0a003e452ad4",
    "cpiSignatureData": {
      "digitalSignature":
"V5NPX0KBXnbcShkv6Bz6aHuEjjmyhF1wJ1sk2o24d8upjyFUJ3y_QNz5fXWzVX2HWQ4PFibA-Baepri
EHsfr9XPZqvFNwzoq0LE4d76D_y0CBRXa7kMQjacvKdmKW9EKWEV1I-Q4kT_QWWPDJb53_ku0gs
EeM-_M_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qlfcDesRu9vaStS9vJrDEN_qbZ_6l
vRVEW_F6-KwY_khviWe2Rgn5u55iymP1aHCevxYlwZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
F7SATjGMLGCOLK-qETRYOPe-cTYYjyaQAA",
      "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZXJpYWwOdW1iZXIiOiIwYTAwM2U0NTJhZDQiLCJpbm
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjYyLCJsb25naXR1ZGU0I04OC4wODA4LC
JoZWlnaHQiOiJAsImhlaWdodFR5cGU0IjBTbVNMliwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
dGVubmFBemltdXRoljowLCJhbnRlbn5hRG93bnRpbHQiOiJAsImFudGVubmFHYWluljoxOCwiZWlycEN
hcGFiaWxpdkHkiOiJwLCJhbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckRh
dGEiOnsiY3BpSWQ0IjIjcGkxMjMiLCJjcGLOYW1lIjo1Q1BJFVZlZlIzIiwiaW5zdGFsbENlcnRpZmljY
XRpb25UaW1lIjo1MjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fccId": "Z8H89FT0028",
    "groupingParam": {
      {
        "groupId": "0a-00-3e-45-2a-d4",
        "groupType": "INTERFERENCE_COORDINATION"
      }
    },
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "SF5W5D"
  }
}
}
```

2018-09-12T08:27:29.345Z - INFO - Registration message contains cpiSignatureData

2018-09-12T08:27:29.345Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2018-09-12T08:27:29.345Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
  "eirpCapability": 40,
  "antennaAzimuth": 0,
```



```
"heightType": "AMSL",
"longitude": -88.0808,
"height": 0,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 18
},
"fccId": "Z8H89FT0028",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbstdSerialNumber": "0a003e452ad4"
}
2018-09-12T08:27:29.345Z - INFO - verified signature on cpiSignatureData
2018-09-12T08:27:29.361Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-09-12T08:27:29.361Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbstdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2018-09-12T08:28:30.092Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbstdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ]
    }
  ]
}
}
2018-09-12T08:28:30.107Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3670000000,
            "lowFrequency": 3650000000
          }
        }
      ]
    }
  ]
}
```

```
        "ruleApplied": "FCC_PART_96"
      }
    ],
    "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
    "response": {
      "responseCode": 0
    }
  }
]
}
2018-09-12T08:28:30.154Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "operationParam": {
        "maxEirp": 30,
        "operationFrequencyRange": {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2018-09-12T08:28:30.170Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "channelType": "GAA",
      "grantExpireTime": "2018-09-19T08:28:30Z",
      "grantId": "989489038",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-12T08:28:30.200Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "989489038",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-09-12T08:28:30.217Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
```



```
"grantId": "989489038",
"response": {
  "responseCode": 0
},
"transmitExpireTime": "2018-09-12T08:31:50Z"
}
]
}
2018-09-12T08:29:25.471Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "989489038",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-12T08:29:25.471Z - INFO - Time interval between two heartbeat request messages is: 55.271,
limit is: 65.0
2018-09-12T08:29:25.487Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "989489038",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-12T08:32:45Z"
    }
  ]
}
2018-09-12T08:30:20.618Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "989489038",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-12T08:30:20.618Z - INFO - Time interval between two heartbeat request messages is: 55.146,
limit is: 65.0
2018-09-12T08:30:20.618Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "989489038",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-12T08:31:50Z"
    }
  ]
}
```

```
        "transmitExpireTime": "2018-09-12T08:33:40Z"
      }
    ]
  }
2018-09-12T08:31:15.760Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "989489038",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-12T08:31:15.760Z - INFO - Time interval between two heartbeat request messages is: 55.143,
limit is: 65.0
2018-09-12T08:31:15.760Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "989489038",
      "response": {
        "responseCode": 105
      },
      "transmitExpireTime": "2018-09-12T08:31:15Z"
    }
  ]
}
2018-09-12T08:31:16.993Z - INFO - arrived to nstep starting question answer session with the
technician
2018-09-12T08:31:16.993Z - INFO - the question is : Did the CBSD stop RF transmission within 60
seconds of receiving Heartbeat response with responseCode = 105? please choose one of the
answers :
2018-09-12T08:32:34.213Z - INFO - for the question : Did the CBSD stop RF transmission within 60
seconds of receiving Heartbeat response with responseCode = 105? , the user choose y
2018-09-12T08:32:59.328Z - INFO - The final result of the test : WINNF.FT.C.HBT.3 is - passed and :the
additional comments for the current test are : CBSD1 stop transmission at T08:31:20
```

**Test Log for WINNF.FT.C.HBT.5 Test Case ID**

2018-09-12T08:33:39.405Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24

2018-09-12T08:33:39.405Z - INFO - the selected test from the user : WINNF.FT.C.HBT.5 is starting now

2018-09-12T08:33:43.868Z - INFO - registration request from CBRS : {

```
"registrationRequest": {
  {
    "airInterface": {
      "radioTechnology": "CAMBIUM_NETWORKS"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "0a003e452ad4",
    "cpiSignatureData": {
      "digitalSignature":
"V5NPX0KBXnbcShkv6Bz6aHuEjjmyhF1wJ1sk2o24d8upjyFUJ3y_QNz5fXWzVX2HWQ4PFibA-Baepri
EHsfr9XPZqvFNwzoq0LE4d76D_y0CBRXa7kMQjacvKdmKW9EKWEV1I-Q4kT_QWWPDJb53_ku0gs
EeM-_M_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qlfcDesRu9vaStS9vJrDEN_qbZ_6l
vRVEW_F6-KwY_khviWe2Rgn5u55iymP1aHCevxYlwZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
F7SATjGMLGCOLK-qETRYOPe-cTYYjyaQAA",
      "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZXJpYWwOdW1iZXIiOiIwYTAwM2U0NTJhZDQiLCJpbm
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjYyLCJsb25naXR1ZGU0I04OC4wODA4LC
JoZWlnaHQiOiJAsImhlaWdodFR5cGU0IjBTbVNMliwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
dGVubmFBemltdXRoljowLCJhbnRlbn5hRG93bnRpbHQiOiJAsImFudGVubmFHYWluljoxOCwiZWlycEN
hcGFiaWxpdkhkiOiJwLCJhbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckRh
dGEiOnsiY3BpSWQ0IjIjcGkxMjMiLCJjcGLOYW1lIjo1Q1BJFVZlZlIzIiwiaW5zdGFsbENlcnRpZmljY
XRpb25UaW1lIjo1MjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fccId": "Z8H89FT0028",
    "groupingParam": {
      {
        "groupId": "0a-00-3e-45-2a-d4",
        "groupType": "INTERFERENCE_COORDINATION"
      }
    },
    "measCapability": {
      "RECEIVED_POWER_WITHOUT_GRANT"
    },
    "userId": "SF5W5D"
  }
}
}
```

2018-09-12T08:33:43.930Z - INFO - Registration message contains cpiSignatureData

2018-09-12T08:33:43.930Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2018-09-12T08:33:43.930Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
  "eirpCapability": 40,
  "antennaAzimuth": 0,
```

```
"heightType": "AMSL",
"longitude": -88.0808,
"height": 0,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 18
},
"fccId": "Z8H89FT0028",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e452ad4"
}
2018-09-12T08:33:43.946Z - INFO - verified signature on cpiSignatureData
2018-09-12T08:33:43.946Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-09-12T08:33:43.946Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbssdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2018-09-12T08:34:44.084Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbssdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ]
    }
  ]
}
}
2018-09-12T08:34:44.084Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3670000000,
            "lowFrequency": 3650000000
          }
        }
      ]
    }
  ],
```

```

        "ruleApplied": "FCC_PART_96"
      }
    ],
    "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
    "response": {
      "responseCode": 0
    }
  }
]
}
2018-09-12T08:34:44.130Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "operationParam": {
        "maxEirp": 30,
        "operationFrequencyRange": {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2018-09-12T08:34:44.145Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "channelType": "GAA",
      "grantExpireTime": "2018-09-19T08:34:44Z",
      "grantId": "357356855",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-12T08:34:44.177Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "357356855",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-09-12T08:34:44.193Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",

```

```
"grantId": "357356855",
"response": {
  "responseCode": 501
},
"transmitExpireTime": "2018-09-12T08:34:44Z"
}
]
}
2018-09-12T08:35:39.308Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "357356855",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-09-12T08:35:39.308Z - INFO - Time interval between two heartbeat request messages is: 55.131,
limit is: 65.0
2018-09-12T08:35:39.322Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "357356855",
      "response": {
        "responseCode": 501
      },
      "transmitExpireTime": "2018-09-12T08:35:39Z"
    }
  ]
}
2018-09-12T08:35:41.085Z - INFO - arrived to nstep starting question answer session with the
technician
2018-09-12T08:35:41.085Z - INFO - the question is : Did the CBSD transmit at any time during the test?
please choose one of the answers :
2018-09-12T08:36:55.529Z - INFO - for the question : Did the CBSD transmit at any time during the
test? , the user choose n
2018-09-12T08:36:59.164Z - INFO - The final result of the test : WINNF.FT.C.HBT.5 is - passed
```

**Test Log for WINNF.FT.C.HBT.6 Test Case ID**

2018-09-12T08:38:41.266Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24

2018-09-12T08:38:41.266Z - INFO - the selected test from the user : WINNF.FT.C.HBT.6 is starting now

2018-09-12T08:38:51.032Z - INFO - registration request from CBRS : {

```
"registrationRequest": {
  {
    "airInterface": {
      "radioTechnology": "CAMBIUM_NETWORKS"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "0a003e452ad4",
    "cpiSignatureData": {
      "digitalSignature":
"V5NPX0KBXnbcShkv6Bz6aHuEjjmyhF1wJ1sk2o24d8upjyFUJ3y_QNz5fXWzVX2HWQ4PFibA-Baepri
EHsfr9XPZqvFNwzoq0LE4d76D_y0CBRXa7kMQjacvKdmKW9EKWEV1I-Q4kT_QWWPDJb53_ku0gs
EeM-_M_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qlfcDesRu9vaStS9vJrDEN_qbZ_6l
vRVEW_F6-KwY_khviWe2Rgn5u55iymP1aHCevxYlwZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
F7SATjGMLGCOLK-qETRYOPe-cTYYjyaQAA",
      "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXIiOiIwYTAwM2U0NTJhZDQiLCJpbm
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjYyLCJsb25naXR1ZGU0I04OC4wODA4LC
JoZWlnaHQiOiJAsImhlaWdodFR5cGU0IjBTbVNMliwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
dGVubmFBemltdXRoljowLCJhbnRlbn5hRG93bnRpbHQiOiJAsImFudGVubmFHYWluljoxOCwiZWlycEN
hcGFiaWxp dHkiOiJwLCJhbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckRh
dGEiOnsiY3BpSWQ0IjIjcGkxMjMiLCJjcGLOYW1lIjo1Q1BJFVZlZlIzIiwiaW5zdGFsbENlcnRpZmljY
XRpb25UaW1lIjo1MjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fccId": "Z8H89FT0028",
    "groupingParam": {
      {
        "groupId": "0a-00-3e-45-2a-d4",
        "groupType": "INTERFERENCE_COORDINATION"
      }
    },
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "SF5W5D"
  }
}
}
```

2018-09-12T08:38:51.109Z - INFO - Registration message contains cpiSignatureData

2018-09-12T08:38:51.109Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2018-09-12T08:38:51.109Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
  "eirpCapability": 40,
  "antennaAzimuth": 0,
```

```

    "heightType": "AMSL",
    "longitude": -88.0808,
    "height": 0,
    "indoorDeployment": false,
    "antennaBeamwidth": 90,
    "antennaDowntilt": 0,
    "latitude": 42.242,
    "antennaGain": 18
  },
  "fccId": "Z8H89FT0028",
  "professionalInstallerData": {
    "cpiName": "CPI User 123",
    "installCertificationTime": "2018-05-09T15:51:12.866Z",
    "cpild": "cpi123"
  },
  "cbsdSerialNumber": "0a003e452ad4"
}
2018-09-12T08:38:51.109Z - INFO - verified signature on cpiSignatureData
2018-09-12T08:38:51.109Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-09-12T08:38:51.109Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-12T08:39:51.825Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ]
    }
  ]
}
2018-09-12T08:39:51.825Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3670000000,
            "lowFrequency": 3650000000
          }
        }
      ]
    }
  ]
}

```

```

        "ruleApplied": "FCC_PART_96"
      }
    ],
    "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
    "response": {
      "responseCode": 0
    }
  }
]
}
2018-09-12T08:39:51.871Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "operationParam": {
        "maxEirp": 30,
        "operationFrequencyRange": {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2018-09-12T08:39:51.888Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "channelType": "GAA",
      "grantExpireTime": "2018-09-19T08:39:51Z",
      "grantId": "955863989",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-12T08:39:51.934Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "955863989",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-09-12T08:39:51.950Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",

```



```
"grantId": "955863989",
"response": {
  "responseCode": 0
},
"transmitExpireTime": "2018-09-12T08:43:11Z"
}
]
}
2018-09-12T08:40:14.118Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "955863989",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-12T08:40:14.118Z - INFO - Time interval between two heartbeat request messages is: 22.183,
limit is: 65.0
2018-09-12T08:40:14.118Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "955863989",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-12T08:43:34Z"
    }
  ]
}
2018-09-12T08:41:09.233Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "955863989",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-12T08:41:09.247Z - INFO - Time interval between two heartbeat request messages is: 55.115,
limit is: 65.0
2018-09-12T08:41:09.247Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "955863989",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-12T08:43:34Z"
    }
  ]
}
```

```

        "transmitExpireTime": "2018-09-12T08:44:29Z"
    }
}
}
2018-09-12T08:42:04.348Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
            "grantId": "955863989",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2018-09-12T08:42:04.348Z - INFO - Time interval between two heartbeat request messages is: 55.115,
limit is: 65.0
2018-09-12T08:42:04.362Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
            "grantId": "955863989",
            "response": {
                "responseCode": 501
            },
            "transmitExpireTime": "2018-09-12T08:42:04Z"
        }
    ]
}
2018-09-12T08:42:59.493Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
            "grantId": "955863989",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
2018-09-12T08:42:59.493Z - INFO - Time interval between two heartbeat request messages is: 55.146,
limit is: 65.0
2018-09-12T08:42:59.509Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
            "grantId": "955863989",
            "response": {
                "responseCode": 501
            },
            "transmitExpireTime": "2018-09-12T08:42:59Z"
        }
    ]
}
}

```



2018-09-12T08:43:00.851Z - INFO - arrived to nstep starting question answer session with the technician

2018-09-12T08:43:00.851Z - INFO - the question is : Did the CBSD stop RF transmission within 60 seconds of receiving Heartbeat response with responseCode = 501? please choose one of the answers :

2018-09-12T08:46:04.088Z - INFO - for the question : Did the CBSD stop RF transmission within 60 seconds of receiving Heartbeat response with responseCode = 501? , the user choose y

2018-09-12T08:46:43.384Z - INFO - The final result of the test : WINNF.FT.C.HBT.6 is - passed and :the additional comments for the current test are : CBSD1 stop transmission at T08:42:07

**Test Log for WINNF.FT.C.HBT.7 Test Case ID**

2018-09-12T08:48:51.368Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24

2018-09-12T08:48:51.368Z - INFO - the selected test from the user : WINNF.FT.C.HBT.7 is starting now

2018-09-12T08:49:11.773Z - INFO - registration request from CBRS : {

```
"registrationRequest": {
  {
    "airInterface": {
      "radioTechnology": "CAMBIUM_NETWORKS"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "0a003e452ad4",
    "cpiSignatureData": {
      "digitalSignature":
"V5NPX0KBXnbcShkv6Bz6aHuEjjmyhF1wJ1sk2o24d8upjyFUJ3y_QNz5fXWzVX2HWQ4PFibA-Baepri
EHsfr9XPZqvFNwzoq0LE4d76D_y0CBRXa7kMQjacvKdmKW9EKWEV1I-Q4kT_QWWPDJb53_ku0gs
EeM-_M_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qlfcDesRu9vaStS9vJrDEN_qbZ_6l
vRVEW_F6-KwY_khviWe2Rgn5u55iymP1aHCevxYlwZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
F7SATjGMLGCOLK-qETRYOPe-cTYYjyaQAA",
      "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZXJpYWwOdW1iZXliOiIwYTAwM2U0NTJhZDQiLCJpbm
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjYyLCJsb25naXR1ZGU0I04OC4wODA4LC
JoZWlnaHQiOiJAsImhlaWdodFR5cGU0IjBTbVNMliwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
dGVubmFBemltdXRoljowLCJhbnRlbn5hRG93bnRpbHQiOiJAsImFudGVubmFHYWluljoxOCwiZWlycEN
hcGFiaWxpdkhkiOiJwLCJhbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckRh
dGEiOnsiY3BpSWQ0IjIjcGkxMjMiLCJjcGLOYW1lIjo1Q1BJFVZlZlIzIiwiaW5zdGFsbENlcnRpZmljY
XRpb25UaW1lIjo1MjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fccId": "Z8H89FT0028",
    "groupingParam": {
      {
        "groupId": "0a-00-3e-45-2a-d4",
        "groupType": "INTERFERENCE_COORDINATION"
      }
    },
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "SF5W5D"
  }
}
}
```

2018-09-12T08:49:11.851Z - INFO - Registration message contains cpiSignatureData

2018-09-12T08:49:11.851Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2018-09-12T08:49:11.851Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
  "eirpCapability": 40,
  "antennaAzimuth": 0,
```



```
"heightType": "AMSL",
"longitude": -88.0808,
"height": 0,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 18
},
"fccId": "Z8H89FT0028",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e452ad4"
}
2018-09-12T08:49:11.865Z - INFO - verified signature on cpiSignatureData
2018-09-12T08:49:11.865Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-09-12T08:49:11.865Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2018-09-12T08:50:12.098Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ]
    }
  ]
}
}
2018-09-12T08:50:12.098Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3670000000,
            "lowFrequency": 3650000000
          }
        }
      ]
    }
  ]
}
```

```
        "ruleApplied": "FCC_PART_96"
      }
    ],
    "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
    "response": {
      "responseCode": 0
    }
  }
]
}
2018-09-12T08:50:12.144Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "operationParam": {
        "maxEirp": 30,
        "operationFrequencyRange": {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2018-09-12T08:50:12.161Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "channelType": "GAA",
      "grantExpireTime": "2018-09-19T08:50:12Z",
      "grantId": "611704971",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-12T08:50:12.207Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "611704971",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-09-12T08:50:12.223Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
```

```

        "grantId": "611704971",
        "response": {
            "responseCode": 0
        },
        "transmitExpireTime": "2018-09-12T08:53:32Z"
    }
}
]
}
2018-09-12T08:50:19.351Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
            "grantId": "611704971",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2018-09-12T08:50:19.351Z - INFO - Time interval between two heartbeat request messages is: 7.145,
limit is: 65.0
2018-09-12T08:50:19.368Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
            "grantId": "611704971",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2018-09-12T08:53:39Z"
        }
    ]
}
2018-09-12T08:51:14.529Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
            "grantId": "611704971",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2018-09-12T08:51:14.545Z - INFO - Time interval between two heartbeat request messages is: 55.177,
limit is: 65.0
2018-09-12T08:51:14.545Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
            "grantId": "611704971",
            "response": {
                "responseCode": 0
            },

```

```
        "transmitExpireTime": "2018-09-12T08:54:34Z"
      }
    ]
  }
}
2018-09-12T08:52:09.737Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "611704971",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-12T08:52:09.737Z - INFO - Time interval between two heartbeat request messages is: 55.209,
limit is: 65.0
2018-09-12T08:52:09.753Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "611704971",
      "response": {
        "responseCode": 502
      },
      "transmitExpireTime": "2018-09-12T08:52:09Z"
    }
  ]
}
2018-09-12T08:52:10.861Z - INFO - relinquishment request from CBRS : {
  "relinquishmentRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "611704971"
    }
  ]
}
2018-09-12T08:52:10.861Z - INFO - engine sent successfully, the response to CBRS : {
  "relinquishmentResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "611704971",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-12T08:52:12.140Z - INFO - arrived to nstep starting question answer session with the
technician
2018-09-12T08:52:12.140Z - INFO - the question is : Did the CBSD stop RF transmission within 60
seconds of receiving Heartbeat response with responseCode = 502? please choose one of the
answers :
```



2018-09-12T08:52:39.892Z - INFO - for the question : Did the CBSD stop RF transmission within 60 seconds of receiving Heartbeat response with responseCode = 502? , the user choose y
2018-09-12T08:53:40.217Z - INFO - The final result of the test : WINNF.FT.C.HBT.7 is - passed and :the additional comments for the current test are : CBSD1 stop transmission at T08:52:17

**Test Log for WINNF.FT.D.HBT.8 Test Case ID**

2018-09-12T08:54:55.582Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24

2018-09-12T08:54:55.582Z - INFO - the selected test from the user : WINNF.FT.D.HBT.8 is starting now

2018-09-12T08:55:04.145Z - INFO - registration request from CBRS : {

```
"registrationRequest": {
  {
    "airInterface": {
      "radioTechnology": "CAMBIUM_NETWORKS"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "0a003e452ad4",
    "cpiSignatureData": {
      "digitalSignature":
"V5NPX0KBXnbcShkv6Bz6aHuEjjmyhF1wJ1sk2o24d8upjyFUJ3y_QNz5fXWzVX2HWQ4PFibA-Baepri
EHsfr9XPZqvFNwzoq0LE4d76D_y0CBRXa7kMQjacvKdmKW9EKWEV1I-Q4kT_QWWPDJb53_ku0gs
EeM-_M_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qlfcDesRu9vaStS9vJrDEN_qbZ_6l
vRVEW_F6-KwY_khviWe2Rgn5u55iymp1aHCevxYlwZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
F7SATjGMLGCOLK-qETRYOPe-cTYYjyaQAA",
      "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZXJpYWwOdW1iZXIiOiIwYTAwM2U0NTJhZDQiLCJpbm
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjYyLCJsb25naXR1ZGU0I04OC4wODA4LC
JoZWlnaHQiOiJAsImhlaWdodFR5cGU0IjBTbVNMliwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
dGVubmFBemltdXRoljowLCJhbnRlbn5hRG93bnRpbHQiOiJAsImFudGVubmFHYWluljoxOCwiZWlycEN
hcGFiaWxpdkHkiOiJwLCJhbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckRh
dGEiOnsiY3BpSWQ0IjIjcGkxMjMiLCJjcGLOYW1lIjo1Q1BJFVZlZlIzIiwiaW5zdGFsbENlcnRpZmljY
XRpb25UaW1lIjo1MjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fccId": "Z8H89FT0028",
    "groupingParam": [
      {
        "groupId": "0a-00-3e-45-2a-d4",
        "groupType": "INTERFERENCE_COORDINATION"
      }
    ],
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "SF5W5D"
  }
}
]
```

2018-09-12T08:55:04.193Z - INFO - Registration message contains cpiSignatureData

2018-09-12T08:55:04.193Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2018-09-12T08:55:04.193Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
  "eirpCapability": 40,
  "antennaAzimuth": 0,
```

```
"heightType": "AMSL",
"longitude": -88.0808,
"height": 0,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 18
},
"fccId": "Z8H89FT0028",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbstdSerialNumber": "0a003e452ad4"
}
2018-09-12T08:55:04.193Z - INFO - verified signature on cpiSignatureData
2018-09-12T08:55:04.209Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-09-12T08:55:04.209Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbstdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2018-09-12T08:55:11.322Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbstdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ]
    }
  ]
}
}
2018-09-12T08:55:11.338Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3670000000,
            "lowFrequency": 3650000000
          }
        }
      ]
    }
  ]
}
```

```

        "ruleApplied": "FCC_PART_96"
      }
    ],
    "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
    "response": {
      "responseCode": 0
    }
  }
]
}
2018-09-12T08:55:11.400Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "operationParam": {
        "maxEirp": 30,
        "operationFrequencyRange": {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2018-09-12T08:55:11.400Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "channelType": "GAA",
      "grantExpireTime": "2018-09-19T08:55:11Z",
      "grantId": "767839835",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-12T08:55:11.463Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "767839835",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-09-12T08:55:11.477Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",

```

```

        "grantId": "767839835",
        "response": {
            "responseCode": 0
        },
        "transmitExpireTime": "2018-09-12T08:58:31Z"
    }
}
]
}
2018-09-12T08:55:22.835Z - INFO - registration request from CBRS : {
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "CAMBIUM_NETWORKS"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "0a003e452b16",
            "cpiSignatureData": {
                "digitalSignature":
                "KOZyADKurrPAas5JN-BghcC7fzhqCFOKr4zcheGLOI_lIt23QFPAftVFOSfRzuXzfBch6xwPCrOTwcFMZ
                XwuM_4RHFxmbnT6PyPrsy8pivlhdJ_GD9jMjny6HSoOy3nEo3pqJLB7AGv0mt1eodt1YT2yWGepwltVI7
                QRWnWHdyzSP9XSQlkd_Phvc-l_bdjJkXcnFzxr7hCirdKrqX1Wbg2Eft9uOXp6MmB3p_ax-twwzywWWa
                IPYXUIm5jtHVhbbAL5vc37-Djo4jCBnO3m-b3DvJhQ3_d8NXeco-F939cBHumrEUZMsnkQZRRBLHFdh
                LNB7so7tVVTFbRNvfCHBw",
                "encodedCpiSignedData":
                "eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXliOiIwYTAwM2U0NTJiMTYiLCJpbm
                N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDIuNDI0MiwiG9uZ2I0dWRlIjotODguODg4OCwia
                GVpZ2h0IjowLCJoZWlnaHRUeXBlljoiQU1TTCIsImluZG9vckRlcGxveW1lbnQiOmZhbHNILCJhbnRlbn5
                hQXppbXV0aCI6MCwiYW50ZW5uYURvd250aWx0IjowLCJhbnRlbn5hR2Fpbil6MTgsImVpcnBDYXBh
                YmlsaXR5Ijo0MCwiYW50ZW5uYUJlYW13aWR0aCI6OTB9LCJwcm9mZXNzaW9uYWxJbnN0YWxsZX
                JEYXRhlj7ImNwaUlkljoiY3BpMTlzlwiY3BpTmFtZSI6IkNQSSBVc2VyIDEyMyIsImVuc3RhbGxDZXJ0a
                WZpY2F0aW9uVGlzI6IjwMTgtMDU0MDIUMTU6NTE6MTIuODY2WiJ9fQ",
                "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
            },
            "fccId": "Z8H89FT0028",
            "groupingParam": [
                {
                    "groupId": "0a-00-3e-45-2b-16",
                    "groupType": "INTERFERENCE_COORDINATION"
                }
            ],
            "measCapability": [
                "RECEIVED_POWER_WITHOUT_GRANT"
            ],
            "userId": "SF5W5D"
        }
    ]
}
2018-09-12T08:55:22.897Z - INFO - Registration message contains cpiSignatureData

```



```
2018-09-12T08:55:22.897Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2018-09-12T08:55:22.897Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
    "eirpCapability": 40,
    "antennaAzimuth": 0,
    "heightType": "AMSL",
    "longitude": -88.8888,
    "height": 0,
    "indoorDeployment": false,
    "antennaBeamwidth": 90,
    "antennaDowntilt": 0,
    "latitude": 42.4242,
    "antennaGain": 18
  },
  "fccId": "Z8H89FT0028",
  "professionalInstallerData": {
    "cpiName": "CPI User 123",
    "installCertificationTime": "2018-05-09T15:51:12.866Z",
    "cpild": "cpi123"
  },
  "cbsdSerialNumber": "0a003e452b16"
}
2018-09-12T08:55:22.897Z - INFO - verified signature on cpiSignatureData
2018-09-12T08:55:22.913Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-09-12T08:55:22.913Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-12T08:56:06.858Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "767839835",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-12T08:56:06.874Z - INFO - Time interval between two heartbeat request messages is: 55.411,
limit is: 65.0
2018-09-12T08:56:06.874Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "767839835",
      "response": {
```

```

        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-12T08:59:26Z"
    }
  ]
}
2018-09-12T08:56:23.301Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ]
    }
  ]
}
2018-09-12T08:56:23.315Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3670000000,
            "lowFrequency": 3650000000
          },
          "ruleApplied": "FCC_PART_96"
        }
      ],
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-12T08:56:23.362Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "operationParam": {
        "maxEirp": 30,
        "operationFrequencyRange": {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}

```

```

}
2018-09-12T08:56:23.378Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "channelType": "GAA",
      "grantExpireTime": "2018-09-19T08:56:23Z",
      "grantId": "931257529",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-12T08:56:23.426Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "931257529",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-09-12T08:56:23.426Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "931257529",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-12T08:59:43Z"
    }
  ]
}
2018-09-12T08:57:00.990Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "767839835",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-12T08:57:00.990Z - INFO - Time interval between two heartbeat request messages is: 54.116,
limit is: 65.0
2018-09-12T08:57:00.990Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {

```

```
"cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
"grantId": "767839835",
"response": {
  "responseCode": 0
},
"transmitExpireTime": "2018-09-12T09:00:20Z"
}
]
}
2018-09-12T08:57:18.650Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "931257529",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-12T08:57:18.650Z - INFO - Time interval between two heartbeat request messages is: 55.224,
limit is: 65.0
2018-09-12T08:57:18.664Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "931257529",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-12T09:00:38Z"
    }
  ]
}
2018-09-12T08:57:57.118Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "767839835",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-12T08:57:57.118Z - INFO - Time interval between two heartbeat request messages is: 56.129,
limit is: 65.0
2018-09-12T08:57:57.118Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "767839835",
      "response": {
        "responseCode": 0
```

```

    },
    "transmitExpireTime": "2018-09-12T09:01:17Z"
  }
]
}
2018-09-12T08:58:13.796Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "931257529",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-12T08:58:13.796Z - INFO - Time interval between two heartbeat request messages is: 55.146,
limit is: 65.0
2018-09-12T08:58:13.811Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "931257529",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-12T09:01:33Z"
    }
  ]
}
2018-09-12T08:58:52.141Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "767839835",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-12T08:58:52.141Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "767839835",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-12T09:02:12Z"
    }
  ]
}
2018-09-12T08:59:08.443Z - INFO - heartbeat request from CBRS : {

```

```
"heartbeatRequest": [
  {
    "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
    "grantId": "931257529",
    "grantRenew": false,
    "operationState": "AUTHORIZED"
  }
]
```

2018-09-12T08:59:08.443Z - INFO - Time interval between two heartbeat request messages is: 54.647, limit is: 65.0

2018-09-12T08:59:08.457Z - INFO - engine sent successfully, the response to CBRS : {

```
"heartbeatResponse": [
  {
    "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
    "grantId": "931257529",
    "response": {
      "responseCode": 500
    },
    "transmitExpireTime": "2018-09-12T08:59:08Z"
  }
]
```

2018-09-12T08:59:10.095Z - INFO - arrived to nstep starting question answer session with the technician

2018-09-12T08:59:10.095Z - INFO - the question is : Did the CBSD1 transmit power prior to AUTHORIZED state (first successful HBT response)? please choose one of the answers :

2018-09-12T08:59:40.641Z - INFO - for the question : Did the CBSD1 transmit power prior to AUTHORIZED state (first successful HBT response)? , the user choose n

2018-09-12T08:59:40.641Z - INFO - the question is : Did the CBSD2 stop RF transmission within 60 seconds of receiving Heartbeat response with responseCode = 500? please choose one of the answers :

2018-09-12T08:59:45.789Z - INFO - for the question : Did the CBSD2 stop RF transmission within 60 seconds of receiving Heartbeat response with responseCode = 500? , the user choose y

2018-09-12T09:02:34.066Z - INFO - The final result of the test : WINNF.FT.D.HBT.8 is - passed and :the additional comments for the current test are : CBSD1 start transmit at T08:56:10 , CBSD2 stop transmission at T08:59:12

**Test Log for WINNF.FT.C.HBT.9 Test Case ID**

2018-09-12T09:27:59.720Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24

2018-09-12T09:27:59.720Z - INFO - the selected test from the user : WINNF.FT.C.HBT.9 is starting now

2018-09-12T09:28:02.855Z - INFO - registration request from CBRS : {

```
"registrationRequest": {
  {
    "airInterface": {
      "radioTechnology": "CAMBIUM_NETWORKS"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "0a003e452ad4",
    "cpiSignatureData": {
      "digitalSignature":
"V5NPX0KBXnbcShkv6Bz6aHuEjjmyhF1wJ1sk2o24d8upjyFUJ3y_QNz5fXWzVX2HWQ4PFibA-Baepri
EHsfr9XPZqvFNwzoq0LE4d76D_y0CBRXa7kMQjacvKdmKW9EKWEV1I-Q4kT_QWWPDJb53_ku0gs
EeM-_M_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qlfcDesRu9vaStS9vJrDEN_qbZ_6l
vRVEW_F6-KwY_khviWe2Rgn5u55iymp1aHCevxYlwZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
F7SATjGMLGCOLK-qETRYOPe-cTYYjyaQAA",
      "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXIiOiIwYTAwM2U0NTJhZDQiLCJpbm
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjYyLCJsb25naXR1ZGU0OC4wODAwODAwODAw
JoZWlnaHQiOiJAsImhlaWdodFR5cGU0IjBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
dGVubmFBemltdXRoljowLCJhbnRlbn5hRG93bnRpbHQiOiJAsImFudGVubmFHYWluljoxOCwiZWlycEN
hcGFiaWxpdkhkiOiJwLCJhbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlcR
dGEiOnsiY3BpSWQ0IjIjcGxkMjYyLCJlcG90YXN1Ijo1IjB1IjFVZlZlIiwiaW5kdGFsbENlcnRpZmlj
YXRpb25UaW1lIjo1IjB1IjFVZlZlIiwiaW5kdGFsbENlcnRpZmljYXRpb25UaW1lIjo1IjB1IjFVZlZl
",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fccId": "Z8H89FT0028",
    "groupingParam": [
      {
        "groupId": "0a-00-3e-45-2a-d4",
        "groupType": "INTERFERENCE_COORDINATION"
      }
    ],
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "SF5W5D"
  }
}
]
```

2018-09-12T09:28:02.903Z - INFO - Registration message contains cpiSignatureData

2018-09-12T09:28:02.903Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2018-09-12T09:28:02.903Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
  "eirpCapability": 40,
  "antennaAzimuth": 0,
```



```
"heightType": "AMSL",
"longitude": -88.0808,
"height": 0,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 18
},
"fccId": "Z8H89FT0028",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e452ad4"
}
2018-09-12T09:28:02.903Z - INFO - verified signature on cpiSignatureData
2018-09-12T09:28:02.903Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-09-12T09:28:02.903Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbssid": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2018-09-12T09:29:03.336Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbssid": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ]
    }
  ]
}
}
2018-09-12T09:29:03.352Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3670000000,
            "lowFrequency": 3650000000
          }
        }
      ]
    }
  ]
}
```

```

        "ruleApplied": "FCC_PART_96"
      }
    ],
    "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
    "response": {
      "responseCode": 0
    }
  }
]
}
2018-09-12T09:29:03.400Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "operationParam": {
        "maxEirp": 30,
        "operationFrequencyRange": {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2018-09-12T09:29:03.400Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "channelType": "GAA",
      "grantExpireTime": "2018-09-19T09:29:03Z",
      "grantId": "560421694",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-12T09:29:03.447Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "560421694",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-09-12T09:30:03.849Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",

```

```
"grantId": "560421694",
"grantRenew": false,
"operationState": "GRANTED"
}
]
}
2018-09-12T09:30:03.849Z - INFO - request message received while HBT is absent, sleep 144 sec
before responding
2018-09-12T09:31:03.676Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "560421694",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
}
2018-09-12T09:31:03.676Z - INFO - request message received while HBT is absent, sleep 84 sec
before responding
2018-09-12T09:32:03.158Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "560421694",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
}
2018-09-12T09:32:03.158Z - INFO - request message received while HBT is absent, sleep 25 sec
before responding
2018-09-12T09:32:23.470Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "560421694",
      "response": {
        "responseCode": 501
      },
      "transmitExpireTime": "2018-09-12T09:32:23Z"
    }
  ]
}
}
2018-09-12T09:32:25.404Z - INFO - arrived to nstep starting question answer session with the
technician
2018-09-12T09:32:25.404Z - INFO - the question is : Were there RF transmissions from the CBSD
during the test? please choose one of the answers :
2018-09-12T09:32:27.681Z - INFO - engine sent successfully, the response to CBRS : "list index out of
range"
2018-09-12T09:32:27.854Z - INFO - engine sent successfully, the response to CBRS : "list index out of
range"
```



2018-09-12T09:32:28.165Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2018-09-12T09:39:12.283Z - INFO - for the question : Were there RF transmissions from the CBSD during the test? , the user choose n

2018-09-12T09:39:17.900Z - INFO - The final result of the test : WINNF.FT.C.HBT.9 is - passed

Test Log for WINNF.FT.C.HBT.10 Test Case ID

2018-09-12T10:12:21.365Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24

2018-09-12T10:12:21.365Z - INFO - the selected test from the user : WINNF.FT.C.HBT.10 is starting now

2018-09-12T10:12:26.717Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "CAMBIUM_NETWORKS"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "0a003e452ad4",
    "cpiSignatureData": {
      "digitalSignature":
"V5NPX0KBXnbcShkv6Bz6aHuEjjmyhF1wJ1sk2o24d8upjyFUJ3y_QNz5fXWzVX2HWQ4PFibA-Baepri
EHsfr9XPZqvFNwzoq0LE4d76D_y0CBRXa7kMQjacvKdmKW9EKWEV1I-Q4kT_QWWPDJb53_ku0gs
EeM-_M_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qlfcDesRu9vaStS9vJrDEN_qbZ_6l
vRVEW_F6-KwY_khviWe2Rgn5u55iymp1aHCevxYlWzZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
F7SATjGMLGCOLK-qETRYOPe-cTYYjyaQAA",
      "encodedCpiSignedData":
"eyJmY2NJZCZllo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXliOilwYTAwM2U0NTJhZDQiLCJpbm
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjYyLCJsb25naXR1ZGU0I04OC4wODA4LC
JoZWlnaHQiOiAsImhlaWdodFR5cGU0IjBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
dGVubmFBemltdXRoljowLCJhbnRlbn5hRG93bnRpbHQiOiAsImFudGVubmFHYWluljoxOCwiZWlycEN
hcGFiaWxpdkhkiOiQwLCJhbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckRh
dGEiOnsiY3BpSWQ0IjJcGkxMjMiLCJjcGLOYW1lIjo1BjJlFVzZXIlgMTIzIiwiaW5zdGFsbENlcnRpZmljY
XRpb25UaW1lIjo1MjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fccId": "Z8H89FT0028",
    "groupingParam": [
      {
        "groupId": "0a-00-3e-45-2a-d4",
        "groupType": "INTERFERENCE_COORDINATION"
      }
    ],
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "SF5W5D"
  }
]
```

2018-09-12T10:12:26.763Z - INFO - Registration message contains cpiSignatureData

2018-09-12T10:12:26.763Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2018-09-12T10:12:26.763Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
  "eirpCapability": 40,
```

```

    "antennaAzimuth": 0,
    "heightType": "AMSL",
    "longitude": -88.0808,
    "height": 0,
    "indoorDeployment": false,
    "antennaBeamwidth": 90,
    "antennaDowntilt": 0,
    "latitude": 42.242,
    "antennaGain": 18
  },
  "fccId": "Z8H89FT0028",
  "professionalInstallerData": {
    "cpiName": "CPI User 123",
    "installCertificationTime": "2018-05-09T15:51:12.866Z",
    "cpild": "cpi123"
  },
  "cbsdSerialNumber": "0a003e452ad4"
}
2018-09-12T10:12:26.779Z - INFO - verified signature on cpiSignatureData
2018-09-12T10:12:26.779Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-09-12T10:12:26.779Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-12T10:13:27.540Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ]
    }
  ]
}
2018-09-12T10:13:27.556Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3670000000,
            "lowFrequency": 3650000000
          }
        }
      ]
    }
  ]
}

```

```
    },
    "ruleApplied": "FCC_PART_96"
  }
],
"cbstdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
"response": {
  "responseCode": 0
}
}
]
}
2018-09-12T10:13:27.604Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbstdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "operationParam": {
        "maxEirp": 30,
        "operationFrequencyRange": {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
}
2018-09-12T10:13:27.604Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbstdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "channelType": "GAA",
      "grantExpireTime": "2018-09-19T10:13:27Z",
      "grantId": "345102311",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2018-09-12T10:13:27.713Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbstdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "345102311",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
}
2018-09-12T10:13:27.727Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
```

```
"cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
"grantId": "345102311",
"response": {
  "responseCode": 0
},
"transmitExpireTime": "2018-09-12T10:16:47Z"
}
]
}
2018-09-12T10:14:21.828Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "345102311",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-12T10:14:21.828Z - INFO - Time interval between two heartbeat request messages is: 54.116,
limit is: 65.0
2018-09-12T10:14:21.828Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "345102311",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-12T10:17:41Z"
    }
  ]
}
2018-09-12T10:15:16.990Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "345102311",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-12T10:15:16.990Z - INFO - Time interval between two heartbeat request messages is: 55.162,
limit is: 65.0
2018-09-12T10:15:16.990Z - INFO - LAST HBT RESPONSE THAT SET TRANSMIT_EXPIRE_TIME
WAS AT: 2018-09-12 10:14:21.829000
2018-09-12T10:16:17.051Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "345102311",
```

```
"grantRenew": false,
"operationState": "GRANTED"
}
]
}
2018-09-12T10:16:17.051Z - INFO - request message received while HBT is absent, sleep 144 sec
before responding
2018-09-12T10:17:17.111Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "345102311",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-09-12T10:17:17.111Z - INFO - request message received while HBT is absent, sleep 84 sec
before responding
2018-09-12T10:18:17.125Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "345102311",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-09-12T10:18:17.125Z - INFO - request message received while HBT is absent, sleep 24 sec
before responding
2018-09-12T10:18:27.296Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "345102311",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-09-12T10:18:27.296Z - INFO - request message received while HBT is absent, sleep 14 sec
before responding
2018-09-12T10:18:37.015Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "345102311",
      "response": {
        "responseCode": 501
      },
      "transmitExpireTime": "2018-09-12T10:18:36Z"
    }
  ]
}
```



```
}  
]  
}  
2018-09-12T10:18:38.575Z - INFO - arrived to nstep starting question answer session with the technician  
2018-09-12T10:18:38.575Z - INFO - the question is : Did the CBSD stop RF transmissions within (transmitExpireTime + 60seconds) of last valid heartbeat response? please choose one of the answers :  
2018-09-12T10:18:41.055Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"  
2018-09-12T10:18:41.117Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"  
2018-09-12T10:18:41.132Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"  
2018-09-12T10:18:41.305Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"  
2018-09-12T10:18:47.434Z - INFO - for the question : Did the CBSD stop RF transmissions within (transmitExpireTime + 60seconds) of last valid heartbeat response? , the user choose y  
2018-09-12T10:19:20.756Z - INFO - The final result of the test : WINNF.FT.C.HBT.10 is - passed  
and :the additional comments for the current test are : CBSD1 stop transmission at T10:16:16
```

Test Log for WINNF.FT.D.MES.2 Test Case ID

2018-09-13T05:42:02.924Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24

2018-09-13T05:42:02.924Z - INFO - the selected test from the user : WINNF.FT.D.MES.2 is starting now

2018-09-13T05:42:33.563Z - INFO - registration request from CBRS : {

```

"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "CAMBIUM_NETWORKS"
    },
    "cbssCategory": "B",
    "cbssInfo": {
      "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
      "vendor": "Cambium Networks"
    },
    "cbssSerialNumber": "0a003e452ad4",
    "cpiSignatureData": {
      "digitalSignature":
"V5NPX0KBXnbcShkv6Bz6aHuEjjmyhF1wJ1sk2o24d8upjyFUJ3y_QNz5fXWzVX2HWQ4PFibA-Baeprj
EHsfr9XPZqvFNwzoq0LE4d76D_y0CBRXa7kMQjacvKdmKW9EKWEV1l-Q4kT_QWWPDJb53_ku0gs
EeM-_M_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qlfcDesRu9vaStS9vJrDEN_qbZ_6l
vRVEW_F6-KwY_khviWe2Rgn5u55iymP1aHCevxYlwwZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
F7SATjGMLGCOLK-qETRYOPe-cTYYjyaQAA",
      "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXliOilwYTAwM2U0NTJhZDQiLCJpbm
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjQyLCJsb25naXR1ZGUiOi04OC4wODA4LC
JoZWlnaHQiOiJAsImhlaWdodFR5cGUiOiJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
dGVubmFBemltdXRoljowLJCjhbRlbn5hRG93bnRpbHQiOiJAsImFudGVubmFHYWluljoxOCwiZWlycEN
hcGFiaWxpdkhkiOiJwLJCjhbRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckRh
dGEiOnsiY3BpSWQiOiJcGkxMjMiLCJjcGLOYW1lIjojQ1BJIFVzZXIgaMTlziIiwiaW5zdGFsbENlcnRpZmljY
XRpb25UaW1lIjojMjAxOC0wNS0wOVQxNT01MT0xMi44NjZain19",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fccId": "Z8H89FT0028",
    "groupingParam": [
      {
        "groupId": "0a-00-3e-45-2a-d4",
        "groupType": "INTERFERENCE_COORDINATION"
      }
    ],
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "SF5W5D"
  }
]
}

```

```

2018-09-13T05:42:33.673Z - INFO - Registration message contains cpiSignatureData
2018-09-13T05:42:33.673Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2018-09-13T05:42:33.673Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
    "eirpCapability": 40,

```

```

    "antennaAzimuth": 0,
    "heightType": "AMSL",
    "longitude": -88.0808,
    "height": 0,
    "indoorDeployment": false,
    "antennaBeamwidth": 90,
    "antennaDowntilt": 0,
    "latitude": 42.242,
    "antennaGain": 18
  },
  "fccId": "Z8H89FT0028",
  "professionalInstallerData": {
    "cpiName": "CPI User 123",
    "installCertificationTime": "2018-05-09T15:51:12.866Z",
    "cpild": "cpi123"
  },
  "cbsdSerialNumber": "0a003e452ad4"
}
2018-09-13T05:42:33.766Z - INFO - verified signature on cpiSignatureData
2018-09-13T05:42:33.766Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-09-13T05:42:33.766Z - INFO - Response message contains measReportConfig
2018-09-13T05:42:33.782Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "measReportConfig": [
        "RECEIVED_POWER_WITHOUT_GRANT"
      ],
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-13T05:43:05.013Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ],
      "measReport": {
        "rcvdPowerMeasReports": [
          {
            "measBandwidth": 10000000,
            "measFrequency": 3550000000,
            "measRcvdPower": -98
          }
        ]
      }
    }
  ]
}

```

```
"measBandwidth": 10000000,  
"measFrequency": 3560000000,  
"measRcvdPower": -97  
,  
{  
  "measBandwidth": 10000000,  
  "measFrequency": 3570000000,  
  "measRcvdPower": -97  
,  
{  
  "measBandwidth": 10000000,  
  "measFrequency": 3580000000,  
  "measRcvdPower": -97  
,  
{  
  "measBandwidth": 10000000,  
  "measFrequency": 3590000000,  
  "measRcvdPower": -98  
,  
{  
  "measBandwidth": 10000000,  
  "measFrequency": 3600000000,  
  "measRcvdPower": -97  
,  
{  
  "measBandwidth": 10000000,  
  "measFrequency": 3610000000,  
  "measRcvdPower": -97  
,  
{  
  "measBandwidth": 10000000,  
  "measFrequency": 3620000000,  
  "measRcvdPower": -98  
,  
{  
  "measBandwidth": 10000000,  
  "measFrequency": 3630000000,  
  "measRcvdPower": -98  
,  
{  
  "measBandwidth": 10000000,  
  "measFrequency": 3640000000,  
  "measRcvdPower": -97  
,  
{  
  "measBandwidth": 10000000,  
  "measFrequency": 3650000000,  
  "measRcvdPower": -97  
,  
{  
  "measBandwidth": 10000000,  
  "measFrequency": 3660000000,
```

```

        "measRcvdPower": -97
      },
      {
        "measBandwidth": 10000000,
        "measFrequency": 3670000000,
        "measRcvdPower": -97
      },
      {
        "measBandwidth": 10000000,
        "measFrequency": 3680000000,
        "measRcvdPower": -97
      },
      {
        "measBandwidth": 10000000,
        "measFrequency": 3690000000,
        "measRcvdPower": -97
      }
    ]
  }
}

2018-09-13T05:43:05.013Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3670000000,
            "lowFrequency": 3650000000
          },
          "ruleApplied": "FCC_PART_96"
        }
      ],
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 0
      }
    }
  ]
}

2018-09-13T05:43:05.107Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "measReport": {
        "rcvdPowerMeasReports": [
          {
            "measBandwidth": 10000000,
            "measFrequency": 3550000000,
            "measRcvdPower": -98
          }
        ]
      }
    }
  ]
}

```

```

},
{
  "measBandwidth": 10000000,
  "measFrequency": 3560000000,
  "measRcvdPower": -97
},
{
  "measBandwidth": 10000000,
  "measFrequency": 3570000000,
  "measRcvdPower": -97
},
{
  "measBandwidth": 10000000,
  "measFrequency": 3580000000,
  "measRcvdPower": -97
},
{
  "measBandwidth": 10000000,
  "measFrequency": 3590000000,
  "measRcvdPower": -98
},
{
  "measBandwidth": 10000000,
  "measFrequency": 3600000000,
  "measRcvdPower": -97
},
{
  "measBandwidth": 10000000,
  "measFrequency": 3610000000,
  "measRcvdPower": -97
},
{
  "measBandwidth": 10000000,
  "measFrequency": 3620000000,
  "measRcvdPower": -98
},
{
  "measBandwidth": 10000000,
  "measFrequency": 3630000000,
  "measRcvdPower": -98
},
{
  "measBandwidth": 10000000,
  "measFrequency": 3640000000,
  "measRcvdPower": -97
},
{
  "measBandwidth": 10000000,
  "measFrequency": 3650000000,
  "measRcvdPower": -97
},
{

```

```

        "measBandwidth": 10000000,
        "measFrequency": 3660000000,
        "measRcvdPower": -97
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3670000000,
        "measRcvdPower": -97
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3680000000,
        "measRcvdPower": -97
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3690000000,
        "measRcvdPower": -97
    }
]
},
"operationParam": {
    "maxEirp": 27,
    "operationFrequencyRange": {
        "highFrequency": 3670000000,
        "lowFrequency": 3650000000
    }
}
}
]
}
}
2018-09-13T05:43:05.122Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdlId": "Z8H89FT0028Mock-SAS0a003e452ad4",
            "channelType": "GAA",
            "grantExpireTime": "2018-09-20T05:43:05Z",
            "grantId": "890781967",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
}
2018-09-13T05:43:05.168Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdlId": "Z8H89FT0028Mock-SAS0a003e452ad4",
            "grantId": "890781967",
            "grantRenew": false,
            "operationState": "GRANTED"
```

```

    }
  ]
}
2018-09-13T05:43:05.168Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "890781967",
      "response": {
        "responseCode": 501
      },
      "transmitExpireTime": "2018-09-13T05:43:05Z"
    }
  ]
}
2018-09-13T05:43:23.562Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbsdCategory": "B",
      "cbsdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
        "vendor": "Cambium Networks"
      },
      "cbsdSerialNumber": "0a003e452b16",
      "cpiSignatureData": {
        "digitalSignature":
"KOZyADKurrPAas5JN-BghcC7fzhqCFOKr4zcheGIOI_Ilt23QFPAftVFOSfRzuXzfBch6xwPCrOTwcFMZ
XwuM_4RHFxmnbT6PyPrsy8pivlhdJ_GD9jMjny6HSOy3nEo3pqJLB7AGv0mt1eodt1YT2yWGepwlTVI7
QRWnWHdyzsP9XSQlkD_Phvc-I_bdjJkXcnFzxr7hCirdKrQX1Wbg2Eft9uOXp6MmB3p_ax-twwzywWWa
IPYXUlm5jtHVhbAL5vc37-Djo4jCBnO3m-b3DvJhQ3_d8NXeco-F939cBHUmEUZMSnkQZRRLHFDh
LNB7so7tVVTfBRNvfCHBw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6Illo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXliOilwYTAwM2U0NTJiMTYiLCJpbm
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluNDI0MiwiibG9uZ2I0dWRlljotODguODg4OCwia
GVpZ2h0IjowLCAJoZWlnaHRUeXBlljoiQU1TTClslmluZG9vcckRlcGxveW1lbniOmZhbnHNILCJhbnRIbm5
hQXppbXV0aCI6MCwiYW50ZW5uYURvd250aWx0IjowLCAJhbnRIbm5hR2Fpbil6MTgsImVpcnBDYXBh
YmlsaXR5Ijo0MCwiYW50ZW5uYUJIYW13aWR0aCI6OTB9LCJwcm9mZXNzaW9uYWxJbnN0YWxsZX
JEYXRhljp7ImNwaUlkljoiY3BpMTIzIiwIY3BpTmFtZSI6IkNQSSBVc2VyIDEyMyIsImVuc2VudCI6Ij
WZpY2F0aW9uVGltZSI6IjIwMTgtMDU0MTU0NTE6MTIuODYyWiJ9fQ",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fccId": "Z8H89FT0028",
      "groupingParam": [
        {
          "groupId": "0a-00-3e-45-2b-16",
          "groupType": "INTERFERENCE_COORDINATION"
        }
      ],
      "measCapability": [

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        "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "SF5W5D"
  }
]
}
2018-09-13T05:43:23.654Z - INFO - Registration message contains cpiSignatureData
2018-09-13T05:43:23.654Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2018-09-13T05:43:23.654Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
    "eirpCapability": 40,
    "antennaAzimuth": 0,
    "heightType": "AMSL",
    "longitude": -88.8888,
    "height": 0,
    "indoorDeployment": false,
    "antennaBeamwidth": 90,
    "antennaDowntilt": 0,
    "latitude": 42.4242,
    "antennaGain": 18
  },
  "fccId": "Z8H89FT0028",
  "professionalInstallerData": {
    "cpiName": "CPI User 123",
    "installCertificationTime": "2018-05-09T15:51:12.866Z",
    "cpild": "cpi123"
  },
  "cbsdSerialNumber": "0a003e452b16"
}
2018-09-13T05:43:23.654Z - INFO - verified signature on cpiSignatureData
2018-09-13T05:43:23.671Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-09-13T05:43:23.671Z - INFO - Response message contains measReportConfig
2018-09-13T05:43:23.671Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "measReportConfig": [
        "RECEIVED_POWER_WITHOUT_GRANT"
      ],
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-13T05:43:54.200Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,

```

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        "lowFrequency": 3650000000
    },
    ],
    "measReport": {
        "rcvdPowerMeasReports": [
            {
                "measBandwidth": 10000000,
                "measFrequency": 3550000000,
                "measRcvdPower": -97
            },
            {
                "measBandwidth": 10000000,
                "measFrequency": 3560000000,
                "measRcvdPower": -98
            },
            {
                "measBandwidth": 10000000,
                "measFrequency": 3570000000,
                "measRcvdPower": -97
            },
            {
                "measBandwidth": 10000000,
                "measFrequency": 3580000000,
                "measRcvdPower": -97
            },
            {
                "measBandwidth": 10000000,
                "measFrequency": 3590000000,
                "measRcvdPower": -98
            },
            {
                "measBandwidth": 10000000,
                "measFrequency": 3600000000,
                "measRcvdPower": -97
            },
            {
                "measBandwidth": 10000000,
                "measFrequency": 3610000000,
                "measRcvdPower": -97
            },
            {
                "measBandwidth": 10000000,
                "measFrequency": 3620000000,
                "measRcvdPower": -98
            },
            {
                "measBandwidth": 10000000,
                "measFrequency": 3630000000,
                "measRcvdPower": -97
            },
            {
                "measBandwidth": 10000000,

```

```

        "measFrequency": 3640000000,
        "measRcvdPower": -97
      },
      {
        "measBandwidth": 10000000,
        "measFrequency": 3650000000,
        "measRcvdPower": -97
      },
      {
        "measBandwidth": 10000000,
        "measFrequency": 3660000000,
        "measRcvdPower": -97
      },
      {
        "measBandwidth": 10000000,
        "measFrequency": 3670000000,
        "measRcvdPower": -97
      },
      {
        "measBandwidth": 10000000,
        "measFrequency": 3680000000,
        "measRcvdPower": -97
      },
      {
        "measBandwidth": 10000000,
        "measFrequency": 3690000000,
        "measRcvdPower": -98
      }
    ]
  }
}

2018-09-13T05:43:54.230Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3670000000,
            "lowFrequency": 3650000000
          },
          "ruleApplied": "FCC_PART_96"
        }
      ],
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
```

```
}
2018-09-13T05:43:54.309Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "measReport": {
        "rcvdPowerMeasReports": [
          {
            "measBandwidth": 10000000,
            "measFrequency": 3550000000,
            "measRcvdPower": -97
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3560000000,
            "measRcvdPower": -98
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3570000000,
            "measRcvdPower": -97
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3580000000,
            "measRcvdPower": -97
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3590000000,
            "measRcvdPower": -98
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3600000000,
            "measRcvdPower": -97
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3610000000,
            "measRcvdPower": -97
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3620000000,
            "measRcvdPower": -98
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3630000000,
            "measRcvdPower": -97
          }
        ]
      }
    }
  ]
}
```

```

        {
            "measBandwidth": 10000000,
            "measFrequency": 3640000000,
            "measRcvdPower": -97
        },
        {
            "measBandwidth": 10000000,
            "measFrequency": 3650000000,
            "measRcvdPower": -97
        },
        {
            "measBandwidth": 10000000,
            "measFrequency": 3660000000,
            "measRcvdPower": -97
        },
        {
            "measBandwidth": 10000000,
            "measFrequency": 3670000000,
            "measRcvdPower": -97
        },
        {
            "measBandwidth": 10000000,
            "measFrequency": 3680000000,
            "measRcvdPower": -97
        },
        {
            "measBandwidth": 10000000,
            "measFrequency": 3690000000,
            "measRcvdPower": -98
        }
    ]
},
"operationParam": {
    "maxEirp": 27,
    "operationFrequencyRange": {
        "highFrequency": 3670000000,
        "lowFrequency": 3650000000
    }
}
}
]
}
}
2018-09-13T05:43:54.325Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
            "channelType": "GAA",
            "grantExpireTime": "2018-09-20T05:43:54Z",
            "grantId": "278838270",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}

```



```
}  
}  
]  
}
```

2018-09-13T05:43:55.479Z - INFO - arrived to nstep starting question answer session with the technician

2018-09-13T05:44:02.467Z - INFO - The final result of the test : WINNF.FT.D.MES.2 is - passed

Test Log for WINNF.FT.D.RLQ.2 Test Case ID

2018-09-13T06:46:09.549Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24

2018-09-13T06:46:09.549Z - INFO - the selected test from the user : WINNF.FT.D.RLQ.2 is starting now

2018-09-13T06:46:14.009Z - INFO - registration request from CBRS : {

"registrationRequest": {

{

"airInterface": {

"radioTechnology": "CAMBIUM_NETWORKS"

},

"cbsdCategory": "B",

"cbsdInfo": {

"softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",

"vendor": "Cambium Networks"

},

"cbsdSerialNumber": "0a003e452ad4",

"cpiSignatureData": {

"digitalSignature":

"V5NPX0KBXnbcShkv6Bz6aHuEjjmyhF1wJ1sk2o24d8upjyFUJ3y_QNz5fXWzVX2HWQ4PFibA-BaepriEHsfr9XPZqvFNwzoq0LE4d76D_y0CBRXa7kMQjacvKdmKW9EKWEV1I-Q4kT_QWWPDJb53_ku0gsEeM-_M_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qlfcDesRu9vaStS9vJrDEN_qbZ_6lvRVEW_F6-KwY_khviWe2Rgn5u55iymP1aHCevxYlwwZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5AF7SATjGMLGCOLK-qETRYOPe-cTYYjyaQAA",

"encodedCpiSignedData":

"eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZXJpYWwOdW1iZXliOiIwYTAwM2U0NTJhZDQiLCJpbNNOYWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjQyLCJsb25naXR1ZGU0I04OC4wODA4LCJoZWlnaHQiOiAsImhlaWdodFR5cGU0IjBTbVNMliwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFudGVubmFBemltdXRoljowLCJhbnRlbn5hRG93bnRpbHQiOiAsImFudGVubmFHYWluljoxOCwiZWlycENhcGFiaWxpdkhkiOiJwLCJhbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckRhGEiOnsiY3BpSWQ0IjJcGkxMjMiLCJjcGLOYW1lIjo1Q1BJFVZlZlIzIiwiaW5zdGFsbENlcnRpZmljYXRpb25UaW1lIjo1MjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",

"protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"

},

"fccId": "Z8H89FT0028",

"groupingParam": {

{

"groupId": "0a-00-3e-45-2a-d4",

"groupType": "INTERFERENCE_COORDINATION"

}

},

"measCapability": {

"RECEIVED_POWER_WITHOUT_GRANT"

},

"userId": "SF5W5D"

}

}

}

2018-09-13T06:46:14.072Z - INFO - Registration message contains cpiSignatureData

2018-09-13T06:46:14.072Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2018-09-13T06:46:14.072Z - INFO - encodedCpiSignedData contents = {

"installationParam": {

"eirpCapability": 40,

"antennaAzimuth": 0,

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    "heightType": "AMSL",
    "longitude": -88.0808,
    "height": 0,
    "indoorDeployment": false,
    "antennaBeamwidth": 90,
    "antennaDowntilt": 0,
    "latitude": 42.242,
    "antennaGain": 18
  },
  "fccId": "Z8H89FT0028",
  "professionalInstallerData": {
    "cpiName": "CPI User 123",
    "installCertificationTime": "2018-05-09T15:51:12.866Z",
    "cpild": "cpi123"
  },
  "cbstdSerialNumber": "0a003e452ad4"
}
2018-09-13T06:46:14.072Z - INFO - verified signature on cpiSignatureData
2018-09-13T06:46:14.072Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-09-13T06:46:14.072Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbstdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-13T06:46:20.421Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbstdCategory": "B",
      "cbstdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
        "vendor": "Cambium Networks"
      },
      "cbstdSerialNumber": "0a003e452b16",
      "cpiSignatureData": {
        "digitalSignature":
"KOZyADKurrPAas5JN-BghcC7fzhqCFOKr4zcheGLOI_Ilt23QFPAftVFOSfRzuXzfBch6xwPCrOTwcFMZ
XwuM_4RHFxmbnT6PyPrsy8pivlhdJ_GD9jMjny6HSoOy3nEo3pqJLB7AGv0mt1eodt1YT2yWGepwltVI7
QRWnWHdyzsP9XSQlkd_Phvc-l_bdjJkXcnFzxr7hCirdKrqX1Wbg2Eft9uOXp6MmB3p_ax-twwzywWWa
IPYXUlm5jtHVhbbAL5vc37-Djo4jCBnO3m-b3DvJhQ3_d8NXeco-F939cBHumrEUZMsnkQZRRBLHFdh
LNB7so7tVVTfBnRnvfCHBw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXIiOiIwYTAwM2U0NTJiMTYiLCJpbm
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDIuNDI0MiwibG9uZ2I0dWRlljotODguODg4OCwia
GVpZ2h0IjowLCJoZWlnaHRUeXBlljoiQU1TTClmImluZG9vckRlcGxveW1lbnQiOmZhbHNILCJhbnRlbnM5

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```

hQXppbXV0aCI6MCwiYW50ZW5uYURvd250aWx0IjowLCJhbG9lbnR2Fpbil6MTgslmVpcnBDYXBh
YmlsaXR5Ijo0MCwiYW50ZW5uYUJIYW13aWR0aCIOTB9LcJwcm9mZXNzaW9uYWxjbN0YWxsZX
JEYXRhljp7ImNwaUlkljoiY3BpMTIzIiwiaY3BpTmFtZSI6IkNQSSBVc2VyIDEyMyIsImIuc3RhbgxDZXJ0a
WZpY2F0aW9uVGltZSI6IjIwMTgtMDUtMDIUMTU6NTE6MTluODY2WiJ9fQ",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fccId": "Z8H89FT0028",
    "groupingParam": [
      {
        "groupId": "0a-00-3e-45-2b-16",
        "groupType": "INTERFERENCE_COORDINATION"
      }
    ],
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "SF5W5D"
  }
]
}

2018-09-13T06:46:20.469Z - INFO - Registration message contains cpiSignatureData
2018-09-13T06:46:20.469Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2018-09-13T06:46:20.469Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
    "eirpCapability": 40,
    "antennaAzimuth": 0,
    "heightType": "AMSL",
    "longitude": -88.8888,
    "height": 0,
    "indoorDeployment": false,
    "antennaBeamwidth": 90,
    "antennaDowntilt": 0,
    "latitude": 42.4242,
    "antennaGain": 18
  },
  "fccId": "Z8H89FT0028",
  "professionalInstallerData": {
    "cpiName": "CPI User 123",
    "installCertificationTime": "2018-05-09T15:51:12.866Z",
    "cpild": "cpi123"
  },
  "cbstdSerialNumber": "0a003e452b16"
}

2018-09-13T06:46:20.469Z - INFO - verified signature on cpiSignatureData
2018-09-13T06:46:20.483Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-09-13T06:46:20.483Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbstdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
```

```

    }
  ]
}
2018-09-13T06:47:14.257Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ]
    }
  ]
}
2018-09-13T06:47:14.273Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3670000000,
            "lowFrequency": 3650000000
          },
          "ruleApplied": "FCC_PART_96"
        }
      ],
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-13T06:47:14.335Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "operationParam": {
        "maxEirp": 27,
        "operationFrequencyRange": {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2018-09-13T06:47:14.335Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [

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    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "channelType": "GAA",
      "grantExpireTime": "2018-09-20T06:47:14Z",
      "grantId": "231993139",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-13T06:47:14.382Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "231993139",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-09-13T06:47:14.382Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "231993139",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-13T06:50:34Z"
    }
  ]
}
2018-09-13T06:47:20.559Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ]
    }
  ]
}
2018-09-13T06:47:20.575Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [

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        "channelType": "GAA",
        "frequencyRange": {
            "highFrequency": 3670000000,
            "lowFrequency": 3650000000
        },
        "ruleApplied": "FCC_PART_96"
    }
],
"cbstdId": "Z8H89FT0028Mock-SAS0a003e452b16",
"response": {
    "responseCode": 0
}
}
]
}
2018-09-13T06:47:20.654Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbstdId": "Z8H89FT0028Mock-SAS0a003e452b16",
            "operationParam": {
                "maxEirp": 27,
                "operationFrequencyRange": {
                    "highFrequency": 3670000000,
                    "lowFrequency": 3650000000
                }
            }
        }
    ]
}
}
2018-09-13T06:47:20.654Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbstdId": "Z8H89FT0028Mock-SAS0a003e452b16",
            "channelType": "GAA",
            "grantExpireTime": "2018-09-20T06:47:20Z",
            "grantId": "327319155",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
}
2018-09-13T06:47:20.716Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbstdId": "Z8H89FT0028Mock-SAS0a003e452b16",
            "grantId": "327319155",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
]

```

```
}
2018-09-13T06:47:20.732Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "327319155",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-13T06:50:40Z"
    }
  ]
}
2018-09-13T06:48:09.496Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "231993139",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-13T06:48:09.496Z - INFO - Time interval between two heartbeat request messages is: 55.114,
limit is: 65.0
2018-09-13T06:48:09.513Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "231993139",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-13T06:51:29Z"
    }
  ]
}
2018-09-13T06:48:15.878Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "327319155",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-13T06:48:15.878Z - INFO - Time interval between two heartbeat request messages is: 55.162,
limit is: 65.0
2018-09-13T06:48:15.892Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
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        "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
        "grantId": "327319155",
        "response": {
            "responseCode": 0
        },
        "transmitExpireTime": "2018-09-13T06:51:35Z"
    }
}
]
}
2018-09-13T06:49:04.628Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
            "grantId": "231993139",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2018-09-13T06:49:04.628Z - INFO - Time interval between two heartbeat request messages is: 55.131,
limit is: 65.0
2018-09-13T06:49:04.658Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
            "grantId": "231993139",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2018-09-13T06:52:24Z"
        }
    ]
}
2018-09-13T06:49:11.007Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
            "grantId": "327319155",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2018-09-13T06:49:11.007Z - INFO - Time interval between two heartbeat request messages is: 55.13,
limit is: 65.0
2018-09-13T06:49:11.023Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
            "grantId": "327319155",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
```

```
    },
    "transmitExpireTime": "2018-09-13T06:52:31Z"
  }
]
}
2018-09-13T06:49:59.851Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "231993139",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-13T06:49:59.851Z - INFO - Time interval between two heartbeat request messages is: 55.224,
limit is: 65.0
2018-09-13T06:49:59.868Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "231993139",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-13T06:53:19Z"
    }
  ]
}
2018-09-13T06:50:06.186Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "327319155",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-13T06:50:06.186Z - INFO - Time interval between two heartbeat request messages is: 55.178,
limit is: 65.0
2018-09-13T06:50:06.200Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "327319155",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-13T06:53:26Z"
    }
  ]
}
```

```
}
2018-09-13T06:50:10.460Z - INFO - relinquishment request from CBRS : {
  "relinquishmentRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "231993139"
    }
  ]
}
2018-09-13T06:50:10.476Z - INFO - engine sent successfully, the response to CBRS : {
  "relinquishmentResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "231993139",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-13T06:50:54.015Z - INFO - relinquishment request from CBRS : {
  "relinquishmentRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "327319155"
    }
  ]
}
2018-09-13T06:50:54.030Z - INFO - engine sent successfully, the response to CBRS : {
  "relinquishmentResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "327319155",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-13T06:50:55.496Z - INFO - arrived to nstep starting question answer session with the technician
2018-09-13T06:50:55.496Z - INFO - the question is : Did the CBSD1 stop RF transmission upon sending Relinquishment request? please choose one of the answers :
2018-09-13T06:51:11.237Z - INFO - for the question : Did the CBSD1 stop RF transmission upon sending Relinquishment request? , the user choose y
2018-09-13T06:51:11.237Z - INFO - the question is : Did the CBSD2 stop RF transmission upon sending Relinquishment request? please choose one of the answers :
2018-09-13T06:51:13.749Z - INFO - for the question : Did the CBSD2 stop RF transmission upon sending Relinquishment request? , the user choose y
2018-09-13T06:52:01.157Z - INFO - The final result of the test : WINNF.FT.D.RLQ.2 is - passed and :the additional comments for the current test are : CBSD1 stop transmission at T06:50:10 , CBSD2 stop transmission at T06:50:54
```

Test Log for WINNF.FT.D.DRG.2 Test Case ID

2018-09-13T06:53:43.789Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24

2018-09-13T06:53:43.789Z - INFO - the selected test from the user : WINNF.FT.D.DRG.2 is starting now

2018-09-13T06:53:48.236Z - INFO - registration request from CBRS : {

```

    "registrationRequest": [
      {
        "airInterface": {
          "radioTechnology": "CAMBIUM_NETWORKS"
        },
        "cbsdCategory": "B",
        "cbsdInfo": {
          "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
          "vendor": "Cambium Networks"
        },
        "cbsdSerialNumber": "0a003e452b16",
        "cpiSignatureData": {
          "digitalSignature":
            "KOZyADKurrPAas5JN-BghcC7fzhqCFOkr4zcheGLOI_Ilt23QFPAftVFOSfRzuXzfBch6xwPCrOTwcFMZ
            XwuM_4RHFxmbnT6PyPrsy8pivlhdJ_GD9jMjny6HSoOy3nEo3pqJLB7AGv0mt1eodt1YT2yWGepwltVI7
            QRWnWHdyzsP9XSQlkd_Phvc-l_bdjJkXcnFzxr7hCirdKrQX1Wbg2Eft9uOXp6MmB3p_ax-twwzywWWa
            IPYXUlm5jtHVhbbAL5vc37-Djo4jCBnO3m-b3DvJhQ3_d8NXeco-F939cBHumrEUZMSnkQZRRBLHFdh
            LNB7so7tVVTfBnRnvfCHBw",
          "encodedCpiSignedData":
            "eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXIiOiIwYTAwM2U0NTJiMTYiLCJpbm
            N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDIuNDI0MiwibG9uZ2I0dWRlljotODguODg4OCwia
            GVpZ2h0IjowLClJoZWlnaHRUeXBlljoiQU1TTClzImluZG9vckRlcGxveW1lbnQiOmZhbHNILCJhbnRlbn5
            hQXppbXV0aCI6MCwiYW50ZW5uYURvd250aWx0IjowLClJhbnRlbn5hR2Fpbil6MTgsImVpcnBDYXBh
            YmlsaXR5Ijo0MCwiYW50ZW5uYUJlYW13aWR0aCI6OTB9LCJwcm9mZXNzaW9uYWxJbnN0YWxsZX
            JEYXRhIjpw7ImNwaUlkljoiY3BpMTIzIiwuY3BpTmFtZSI6IkNQSSBVc2VyIDEyMyIsImVudC9uODY2WiJ9fQ",
          "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
        },
        "fccId": "Z8H89FT0028",
        "groupingParam": [
          {
            "groupId": "0a-00-3e-45-2b-16",
            "groupType": "INTERFERENCE_COORDINATION"
          }
        ],
        "measCapability": [
          "RECEIVED_POWER_WITHOUT_GRANT"
        ],
        "userId": "SF5W5D"
      }
    ]
  }

```

2018-09-13T06:53:48.282Z - INFO - Registration message contains cpiSignatureData

2018-09-13T06:53:48.282Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2018-09-13T06:53:48.282Z - INFO - encodedCpiSignedData contents = {

```

    "installationParam": {
      "eirpCapability": 40,

```

```

    "antennaAzimuth": 0,
    "heightType": "AMSL",
    "longitude": -88.8888,
    "height": 0,
    "indoorDeployment": false,
    "antennaBeamwidth": 90,
    "antennaDowntilt": 0,
    "latitude": 42.4242,
    "antennaGain": 18
  },
  "fccId": "Z8H89FT0028",
  "professionalInstallerData": {
    "cpiName": "CPI User 123",
    "installCertificationTime": "2018-05-09T15:51:12.866Z",
    "cpiId": "cpi123"
  },
  "cbsdSerialNumber": "0a003e452b16"
}
2018-09-13T06:53:48.299Z - INFO - verified signature on cpiSignatureData
2018-09-13T06:53:48.299Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-09-13T06:53:48.299Z - INFO - engine sent successfully, the response to CBRS  : {
  "registrationResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2018-09-13T06:53:53.197Z - INFO - registration request from CBRS  : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbsdCategory": "B",
      "cbsdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51)  AP",
        "vendor": "Cambium Networks"
      },
      "cbsdSerialNumber": "0a003e452ad4",
      "cpiSignatureData": {
        "digitalSignature":
"V5NPX0KBXnbcShkv6Bz6aHuEjjmyhF1wJ1sk2o24d8upjyFUJ3y_QNz5fXWzVX2HWQ4PFibA-Baepri
EHsfr9XPZqvFNwzoq0LE4d76D_y0CBRXa7kMQjacvKdmKW9EKWEV1I-Q4kT_QWWPDJb53_ku0gs
EeM-_M_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qlfcDesRu9vaStS9vJrDEN_qbZ_6l
vRVEW_F6-KwY_khviWe2Rgn5u55iymP1aHCevxYlWzZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
F7SATjGMLGCOLK-qETRYOPe-cTYYjyaQAA",
        "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXIiOiIwYTAWM2U0NTJhZDQiLCJpbm
N0YWxsYXRpb250YXJhbnSi6evJsYXRpdHVkZSI6NDIuMiOvLCJsb25naXR1ZGUiOi00OC4wODA4LC

```

```

JoZWlnaHQiOjAsImhlaWdodFR5cGUiOiJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
dGVubmFBemltdXRoljowLjCJhbnRlbn5hRG93bnRpbHQiOjAsImFudGVubmFHYWluljoxOCwiZWlycEN
hcGFiaWxpdHkiOjQwLjCJhbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckRh
dGEiOnsiY3BpSWQIoiJjcGkxMjMiLCJjcGLOYW1lIjoIQ1BJFVZzZXIzIiwiaW5zdGFsbENlcnRpZmljY
XRpb25UaW1lIjoIMjAxOC0wNS0wOVQxNT01MT0xMi44NjZaln19",
    "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
  },
  "fccId": "Z8H89FT0028",
  "groupingParam": [
    {
      "groupId": "0a-00-3e-45-2a-d4",
      "groupType": "INTERFERENCE_COORDINATION"
    }
  ],
  "measCapability": [
    "RECEIVED_POWER_WITHOUT_GRANT"
  ],
  "userId": "SF5W5D"
}
]
}
2018-09-13T06:53:53.227Z - INFO - Registration message contains cpiSignatureData
2018-09-13T06:53:53.227Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2018-09-13T06:53:53.227Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
    "eirpCapability": 40,
    "antennaAzimuth": 0,
    "heightType": "AMSL",
    "longitude": -88.0808,
    "height": 0,
    "indoorDeployment": false,
    "antennaBeamwidth": 90,
    "antennaDowntilt": 0,
    "latitude": 42.242,
    "antennaGain": 18
  },
  "fccId": "Z8H89FT0028",
  "professionalInstallerData": {
    "cpiName": "CPI User 123",
    "installCertificationTime": "2018-05-09T15:51:12.866Z",
    "cpild": "cpi123"
  },
  "cbsdSerialNumber": "0a003e452ad4"
}
2018-09-13T06:53:53.227Z - INFO - verified signature on cpiSignatureData
2018-09-13T06:53:53.227Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-09-13T06:53:53.227Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 0
      }
    }
  ]
}

```

```

    }
  }
]
}
2018-09-13T06:53:54.648Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ]
    }
  ]
}
2018-09-13T06:53:54.664Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3670000000,
            "lowFrequency": 3650000000
          },
          "ruleApplied": "FCC_PART_96"
        }
      ],
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-13T06:53:54.726Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "operationParam": {
        "maxEirp": 27,
        "operationFrequencyRange": {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2018-09-13T06:53:54.742Z - INFO - engine sent successfully, the response to CBRS : {

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    "grantResponse": [
      {
        "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
        "channelType": "GAA",
        "grantExpireTime": "2018-09-20T06:53:54Z",
        "grantId": "908062507",
        "heartbeatInterval": 60,
        "response": {
          "responseCode": 0
        }
      }
    ]
  }
}
2018-09-13T06:53:54.819Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "908062507",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-09-13T06:53:54.819Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "908062507",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-13T06:57:14Z"
    }
  ]
}
2018-09-13T06:54:11.387Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ]
    }
  ]
}
2018-09-13T06:54:11.401Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [

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        {
            "channelType": "GAA",
            "frequencyRange": {
                "highFrequency": 3670000000,
                "lowFrequency": 3650000000
            },
            "ruleApplied": "FCC_PART_96"
        }
    ],
    "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
    "response": {
        "responseCode": 0
    }
}
]
}
2018-09-13T06:54:11.448Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
            "operationParam": {
                "maxEirp": 27,
                "operationFrequencyRange": {
                    "highFrequency": 3670000000,
                    "lowFrequency": 3650000000
                }
            }
        }
    ]
}
2018-09-13T06:54:11.448Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
            "channelType": "GAA",
            "grantExpireTime": "2018-09-20T06:54:11Z",
            "grantId": "820846610",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2018-09-13T06:54:11.512Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
            "grantId": "820846610",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}

```

```
]
}
2018-09-13T06:54:11.512Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "820846610",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-13T06:57:31Z"
    }
  ]
}
2018-09-13T06:54:49.953Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "908062507",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-13T06:54:49.953Z - INFO - Time interval between two heartbeat request messages is: 55.133,
limit is: 65.0
2018-09-13T06:54:49.969Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "908062507",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-13T06:58:09Z"
    }
  ]
}
2018-09-13T06:55:06.598Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "820846610",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-13T06:55:06.598Z - INFO - Time interval between two heartbeat request messages is: 55.086,
limit is: 65.0
2018-09-13T06:55:06.614Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
```

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{
  "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
  "grantId": "820846610",
  "response": {
    "responseCode": 0
  },
  "transmitExpireTime": "2018-09-13T06:58:26Z"
}
]
}
2018-09-13T06:55:45.082Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "908062507",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-13T06:55:45.082Z - INFO - Time interval between two heartbeat request messages is: 55.13,
limit is: 65.0
2018-09-13T06:55:45.082Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "908062507",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-13T06:59:05Z"
    }
  ]
}
2018-09-13T06:56:01.790Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "820846610",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-13T06:56:01.790Z - INFO - Time interval between two heartbeat request messages is: 55.193,
limit is: 65.0
2018-09-13T06:56:01.806Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "grantId": "820846610",
      "response": {
```

```

        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-13T06:59:21Z"
    }
  ]
}
2018-09-13T06:56:20.651Z - INFO - deregistration request from CBRS : {
  "deregistrationRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4"
    }
  ]
}
2018-09-13T06:56:20.667Z - INFO - engine sent successfully, the response to CBRS : {
  "deregistrationResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-13T06:56:36.548Z - INFO - deregistration request from CBRS : {
  "deregistrationRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16"
    }
  ]
}
2018-09-13T06:56:36.548Z - INFO - engine sent successfully, the response to CBRS : {
  "deregistrationResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-13T06:56:38.186Z - INFO - arrived to nstep starting question answer session with the technician
2018-09-13T06:56:38.186Z - INFO - the question is : Did the CBSD stop RF transmissions upon sending the Deregister request? please choose one of the answers :
2018-09-13T06:56:46.220Z - INFO - for the question : Did the CBSD stop RF transmissions upon sending the Deregister request? , the user choose y
2018-09-13T06:56:46.236Z - INFO - the question is : Did the CBSD stop RF transmissions upon sending the Deregister request? please choose one of the answers :
2018-09-13T06:56:47.515Z - INFO - for the question : Did the CBSD stop RF transmissions upon sending the Deregister request? , the user choose y
2018-09-13T06:57:25.095Z - INFO - The final result of the test : WINNF.FT.D.DRG.2 is - passed and :the additional comments for the current test are : CBSD1 stop transmission at T06:56:20 , CBSD2

```



stop transmission at T06:56:36

Test Log for WINNF.FT.C.SCS.1 Test Case ID

2018-09-12T01:57:17.710Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24

2018-09-12T01:57:17.710Z - INFO - the selected test from the user : WINNF.FT.D.REG.6 is starting now

2018-09-12T01:58:00.651Z - INFO - registration request from CBRS : {

```

"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "CAMBIUM_NETWORKS"
    },
    "cbssCategory": "B",
    "cbssInfo": {
      "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
      "vendor": "Cambium Networks"
    },
    "cbssSerialNumber": "0a003e452ad4",
    "cpiSignatureData": {
      "digitalSignature":
"V5NPX0KBXnbcShkv6Bz6aHuEjjmyhF1wJ1sk2o24d8upjyFUJ3y_QNz5fXWzVX2HWQ4PFibA-Baeprij
EHsfr9XPZqvFNwzoq0LE4d76D_y0CBRXa7kMQjacvKdmKW9EKWEV1I-Q4kT_QWWPDJb53_ku0gs
EeM-_M_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qlfcDesRu9vaStS9vJrDEN_qbZ_6I
vRVEW_F6-KwY_khviWe2Rgn5u55iymP1aHCevxYlwzZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
F7SATjGMLGCOLK-qETRYOPe-cTYYjyaQAA",
      "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXliOilwYTAwM2U0NTJhZDQiLCJpbm
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjQyLCJsb25naXR1ZGUiOi04OC4wODA4LC
JoZWlnaHQiOiJAsImhlaWdodFR5cGUiOiJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
dGVubmFBemltdXRoljowLcJhbnRlbn5hRG93bnRpbHQiOiJAsImFudGVubmFHYWluljoxOCwiZWlycEN
hcGFiaWxpdHkiOiJwLcJhbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckRh
dGEiOnsiY3BpSWQiOiJcGkxMjMiLCJjcGLOYW1lIjojQ1BJIFVzZXIgaMTlziIiwiaW5zdGFsbENlcnRpZmljY
XRpb25UaW1lIjojMjAxOC0wNS0wOVQxNT01MT0xMi44NjZain19",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fccId": "Z8H89FT0028",
    "groupingParam": [
      {
        "groupId": "0a-00-3e-45-2a-d4",
        "groupType": "INTERFERENCE_COORDINATION"
      }
    ],
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "SF5W5D"
  }
]
}

```

```

2018-09-12T01:58:00.684Z - INFO - Registration message contains cpiSignatureData
2018-09-12T01:58:00.684Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2018-09-12T01:58:00.684Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
    "eirpCapability": 40,

```

```

    "antennaAzimuth": 0,
    "heightType": "AMSL",
    "longitude": -88.0808,
    "height": 0,
    "indoorDeployment": false,
    "antennaBeamwidth": 90,
    "antennaDowntilt": 0,
    "latitude": 42.242,
    "antennaGain": 18
  },
  "fccId": "Z8H89FT0028",
  "professionalInstallerData": {
    "cpiName": "CPI User 123",
    "installCertificationTime": "2018-05-09T15:51:12.866Z",
    "cpild": "cpi123"
  },
  "cbstdSerialNumber": "0a003e452ad4"
}
2018-09-12T01:58:00.762Z - INFO - verified signature on cpiSignatureData
2018-09-12T01:58:00.776Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-09-12T01:58:00.776Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbstdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-12T01:58:16.253Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbstdCategory": "B",
      "cbstdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
        "vendor": "Cambium Networks"
      },
      "cbstdSerialNumber": "0a003e452b16",
      "cpiSignatureData": {
        "digitalSignature":
"KOZyADKurrPAas5JN-BghcC7fzhqCFOKr4zcheGLOI_Ilt23QFPAftVFOSfRzuXzfBch6xwPCrOTwcFMZ
XwuM_4RHFxmbnT6PyPrsy8pivlhdJ_GD9jMjny6HSoOy3nEo3pqJLB7AGv0mt1eodt1YT2yWGepwltVI7
QRWnWHdyzsP9XSQlkd_Phvc-l_bdjJkXcnFzxr7hCirdKrqX1Wbg2Eft9uOXp6MmB3p_ax-twwzywWWa
IPYXUlm5jtHVhbbAL5vc37-Djo4jCBnO3m-b3DvJhQ3_d8NXeco-F939cBHumrEUZMsnkQZRRBLHFdh
LNB7so7tVVTFbRNvfCHBw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXliOilwYTAWM2U0NTJiMTYiLCJpbm
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluNDI0MiwibG9uZ2I0dWRlljotODguODg4OCwia

```




```
}  
}  
]  
}
```

2018-09-12T01:58:17.516Z - INFO - arrived to nstep starting question answer session with the technician

2018-09-12T01:58:17.516Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2018-09-12T01:58:27.391Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2018-09-12T01:58:27.391Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :

2018-09-12T01:58:28.638Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n

2018-09-12T01:58:29.839Z - INFO - The final result of the test : WINNF.FT.D.REG.6 is - passed



Test Log for WINNF.FT.C.SCS.2 Test Case ID

2018-09-11T10:25:09.328Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24

2018-09-11T10:25:09.328Z - INFO - the selected test from the user : WINNF.FT.D.REG.6 is starting now



Test Log for WINNF.FT.C.SCS.3 Test Case ID

2018-09-12T00:45:22.007Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24

2018-09-12T00:45:22.007Z - INFO - the selected test from the user : WINNF.FT.D.REG.6 is starting now



Test Log for WINNF.FT.C.SCS.4 Test Case ID

2018-09-12T00:49:55.746Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24

2018-09-12T00:49:55.763Z - INFO - the selected test from the user : WINNF.FT.D.REG.6 is starting now



Test Log for WINNF.FT.C.SCS.5 Test Case ID

2018-09-12T00:51:47.128Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24

2018-09-12T00:51:47.128Z - INFO - the selected test from the user : WINNF.FT.D.REG.6 is starting now

Test Log for WINNF.PT.C.HBT Test Case ID BW20M Grant maxEirp 3

```

2018-09-14T02:24:39.723Z - INFO - WINNF TEST HARNNESS RELEASE: 1.0.0.2 - 2018-May-24
2018-09-14T02:24:39.723Z - INFO - Selected spectrum frequency is {'lowFrequency': 3650000000L,
'highFrequency': 3670000000L}
2018-09-14T02:24:39.723Z - INFO - Granted Spectrum Max Eirp = 3dBm/MHz
2018-09-14T02:24:39.723Z - INFO - the selected test from the user : PowerMeasTest is starting now
2018-09-14T02:24:44.403Z - INFO - registration request from CBRS : {
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "CAMBIUM_NETWORKS"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "0a003e452b16",
            "cpiSignatureData": {
                "digitalSignature":
"KOZyADKurrPAas5JN-BghcC7fzhqCFOkr4zcheGIOI_lIt23QFPAftVFOSfRzuXzfBch6xwPCrOTwcFMZ
XwuM_4RHFxmbnT6PyPrsy8pivlhdJ_GD9JmJny6HSoOy3nEo3pqJLB7AGv0mt1eodt1YT2yWGepwltVl7
QRWnWHdyzsP9XSQlkd_Phvc-l_bdjJkXcnFzxr7hCirdKrQX1Wbg2Eft9uOXp6MmB3p_ax-twwzywWWa
IPYXUlm5jtHVhbbAL5vc37-Djo4jCBnO3m-b3DvJhQ3_d8NXeco-F939cBHumrEUZMsnkQZRRBLHFdh
LNB7so7tVVTfBbRNvfCHBw",
                "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXliOilwYTAwM2U0NTJiMTYiLCJpbn
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluNDI0MiwibG9uZ2I0dWRlIjotODguODg4OCwia
GVpZ2h0IjowLCJoZWlnaHRUeXBlioiQU1TTCisImluZG9vckRicGxveW1lbnQiOmZhbnHNILCJhbnRlbn5
hQXppbXV0aCI6MCwiYW50ZW5uYURvd250aWx0IjowLCJhbnRlbn5hR2Fpbil6MTgsImVpcnBDYXBh
YmlsaXR5Ijo0MCwiYW50ZW5uYUJlYW13aWR0aCI6OTB9LCJwcm9mZXNzaW9uYWxJbnN0YWxsZX
JEYXRhljp7ImNwaUlkljoiY3BpMTIzIiwY3BpTmFtZSI6IkNQSSBVc2VyIDEyMyMluc3RhbGxDZXJ0a
WZpY2F0aW9uVGltZSI6IjIwMTg0MDU0MTU0NTE6MTIuODY2WiJ9fQ",
                "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
            },
            "fcclId": "Z8H89FT0028",
            "groupingParam": [
                {
                    "groupId": "0a-00-3e-45-2b-16",
                    "groupType": "INTERFERENCE_COORDINATION"
                }
            ],
            "measCapability": [
                "RECEIVED_POWER_WITHOUT_GRANT"
            ],
            "userId": "SF5W5D"
        }
    ]
}
2018-09-14T02:24:44.450Z - INFO - engine sent successfully, the response to CBRS : {
    "registrationResponse": [
        {

```

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        "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
        "response": {
            "responseCode": 0
        }
    ]
}
2018-09-14T02:25:45.446Z - INFO - spectrumInquiry request from CBRS : {
    "spectrumInquiryRequest": [
        {
            "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
            "inquiredSpectrum": [
                {
                    "highFrequency": 3670000000,
                    "lowFrequency": 3650000000
                }
            ]
        }
    ]
}
2018-09-14T02:25:45.461Z - INFO - The requested spectrum is in the range, SpectrumInquiry response code is 0
2018-09-14T02:25:45.461Z - INFO - engine sent successfully, the response to CBRS : {
    "spectrumInquiryResponse": [
        {
            "availableChannel": [
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3670000000,
                        "lowFrequency": 3650000000
                    },
                    "maxEirp": 3,
                    "ruleApplied": "FCC_PART_96"
                }
            ],
            "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2018-09-14T02:25:45.539Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
            "operationParam": {
                "maxEirp": 30,
                "operationFrequencyRange": {
                    "highFrequency": 3670000000,
                    "lowFrequency": 3650000000
                }
            }
        }
    ]
}

```

```

    }
  }
}
]
}
2018-09-14T02:25:45.539Z - INFO - The requested maxEirp value is too high
2018-09-14T02:25:45.539Z - INFO - The Grant response code is not 0, applicable spectrum parameters
have been sent out.
2018-09-14T02:25:45.539Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "operationParam": {
        "maxEirp": 3,
        "operationFrequencyRange": {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      },
      "response": {
        "responseCode": 400
      }
    }
  ]
}
2018-09-14T02:26:39.234Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "operationParam": {
        "maxEirp": 3,
        "operationFrequencyRange": {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2018-09-14T02:26:39.250Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "channelType": "GAA",
      "grantExpireTime": "2018-09-21T02:26:39Z",
      "grantId": "870393947",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}

```

```
}
2018-09-14T02:26:39.296Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "870393947",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-09-14T02:26:39.312Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "870393947",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-14T02:29:59Z"
    }
  ]
}
2018-09-14T02:27:34.474Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "870393947",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-14T02:27:34.490Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "870393947",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-14T02:30:54Z"
    }
  ]
}
2018-09-14T02:28:29.635Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "870393947",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
```



```
}
]
}
2018-09-14T02:28:29.651Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "870393947",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-14T02:31:49Z"
    }
  ]
}
2018-09-14T02:29:24.766Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "870393947",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-14T02:29:24.782Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "870393947",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-14T02:32:44Z"
    }
  ]
}
2018-09-14T02:30:19.881Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "870393947",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-14T02:30:19.897Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "870393947",
```

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        "response": {
            "responseCode": 0
        },
        "transmitExpireTime": "2018-09-14T02:33:39Z"
    }
}
}
2018-09-14T02:31:15.043Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
            "grantId": "870393947",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2018-09-14T02:31:15.059Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
            "grantId": "870393947",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2018-09-14T02:34:35Z"
        }
    ]
}
2018-09-14T02:32:10.174Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
            "grantId": "870393947",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2018-09-14T02:32:10.174Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
            "grantId": "870393947",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2018-09-14T02:35:30Z"
        }
    ]
}
2018-09-14T02:33:04.336Z - INFO - heartbeat request from CBRS : {

```



```
"heartbeatRequest": [
  {
    "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
    "grantId": "870393947",
    "grantRenew": false,
    "operationState": "AUTHORIZED"
  }
]
}
2018-09-14T02:33:04.368Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "870393947",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-14T02:36:24Z"
    }
  ]
}
2018-09-14T02:33:59.529Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "870393947",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-14T02:33:59.546Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "870393947",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-14T02:37:19Z"
    }
  ]
}
2018-09-14T02:34:54.707Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "870393947",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
```



```
}
2018-09-14T02:34:54.723Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "870393947",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-14T02:38:14Z"
    }
  ]
}
```

Test Log for WINNF.PT.C.HBT Test Case ID_BW20M_Grant maxEirp -22

```

2018-09-17T09:37:42.996Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24
2018-09-17T09:37:42.997Z - INFO - Selected spectrum frequency is {'lowFrequency': 3650000000L,
'highFrequency': 3670000000L}
2018-09-17T09:37:43.000Z - INFO - Granted Spectrum Max Eirp = -22dBm/MHz
2018-09-17T09:37:43.003Z - INFO - the selected test from the user : PowerMeasTest is starting now
2018-09-17T09:38:17.447Z - INFO - deregistration request from CBRS : {
  "deregistrationRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16"
    }
  ]
}
2018-09-17T09:38:17.450Z - INFO - ERROR - there is no cbrs obj registered with the
cbsdSerialNumber : 0a003e452b16
2018-09-17T09:39:17.701Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbsdCategory": "B",
      "cbsdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
        "vendor": "Cambium Networks"
      },
      "cbsdSerialNumber": "0a003e452b16",
      "cpiSignatureData": {
        "digitalSignature":
"KOZyADKurrPAas5JN-BghcC7fzhqCFOKr4zcheGLOI_lIt23QFPAftVFOSfRzuXzfBch6xwPCrOTwcFMZ
XwuM_4RHFxmbnT6PyPrsy8pivlhdJ_GD9jMjny6HSoOy3nEo3pqJLB7AGv0mt1eodt1YT2yWGepwltVI7
QRWnWHdyzSP9XSQlkd_Phvc-l_bdjJkXcnFzxr7hCirdKrqX1Wbg2Eft9uOXp6MmB3p_ax-twwzywWWa
IPYXUlm5jtHVhbbAL5vc37-Djo4jCBnO3m-b3DvJhQ3_d8NXeco-F939cBHumrEUZMsnkQZRRBLHFdh
LNB7so7tVVTfBRNvfCHBw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXliOilwYTAwM2U0NTJiMTYiLCJpbm
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDIuNDI0MiwiG9uZ2I0dWRlljotODguODg4OCwia
GVpZ2h0IjowLJCJoZWlnaHRUeXBlljoiQU1TTCIsImluZG9vcckRlcGxveW1lbnQiOmZhbHNILCJhbnRlbn5
hQXppbXV0aCI6MCwiYW50ZW5uYURvd250aWx0IjowLJCJhbnRlbn5hR2Fpbil6MTgsImVpcnBDYXBh
YmlsaXR5Ijo0MCwiYW50ZW5uYUJiYW13aWR0aCI6OTB9LCJwcm9mZXNzaW9uYWxJbnN0YWxsZX
JEYXRhljp7ImNwaUlkljoiY3BpMTIzliwY3BpTmFtZSI6IkNQSSBVc2VyIDEyMyIsImuc3RhbGxDZXJ0a
WZpY2F0aW9uVGl0ZSI6IjIwMTg0MDU0MTU0NTE2MTU0ODY2WiJ9fQ",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fccId": "Z8H89FT0028",
      "groupingParam": [
        {
          "groupId": "0a-00-3e-45-2b-16",
          "groupType": "INTERFERENCE_COORDINATION"
        }
      ],
      "measCapability": [

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```

        "RECEIVED_POWER_WITHOUT_GRANT"
      ],
      "userId": "SF5W5D"
    }
  ]
}
2018-09-17T09:39:17.756Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-17T09:40:18.161Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ]
    }
  ]
}
2018-09-17T09:40:18.173Z - INFO - The requested spectrum is in the range, SpectrumInquiry response code is 0
2018-09-17T09:40:18.174Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3670000000,
            "lowFrequency": 3650000000
          },
          "maxEirp": -22,
          "ruleApplied": "FCC_PART_96"
        }
      ],
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "response": {
        "responseCode": 0
      }
    }
  ]
}

```

```
2018-09-17T09:40:18.252Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "operationParam": {
        "maxEirp": -22,
        "operationFrequencyRange": {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2018-09-17T09:40:18.256Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "channelType": "GAA",
      "grantExpireTime": "2018-09-24T09:40:18Z",
      "grantId": "86213293",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-17T09:40:18.305Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "86213293",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-09-17T09:40:18.312Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "86213293",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-17T09:43:38Z"
    }
  ]
}
2018-09-17T09:41:13.411Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
```



```
{
  "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
  "grantId": "86213293",
  "grantRenew": false,
  "operationState": "AUTHORIZED"
}
]
}
2018-09-17T09:41:13.423Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "86213293",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-17T09:44:33Z"
    }
  ]
}
2018-09-17T09:42:08.601Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "86213293",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-17T09:42:08.611Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "86213293",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-17T09:45:28Z"
    }
  ]
}
2018-09-17T09:43:03.822Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "86213293",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
}
```



```
2018-09-17T09:43:03.839Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "86213293",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-17T09:46:23Z"
    }
  ]
}
2018-09-17T09:43:57.979Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "86213293",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-17T09:43:58.000Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "86213293",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-17T09:47:17Z"
    }
  ]
}
2018-09-17T09:44:53.154Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "86213293",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-17T09:44:53.164Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "86213293",
      "response": {
        "responseCode": 0
      },
    }
  ]
}
```

```
        "transmitExpireTime": "2018-09-17T09:48:13Z"
      }
    ]
  }
}
2018-09-17T09:45:48.293Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "86213293",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
}
2018-09-17T09:45:48.305Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "86213293",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-17T09:49:08Z"
    }
  ]
}
}
```

Test Log for WINNF.PT.C.HBT Test Case ID BW20M Grant maxEirp 30

```

2018-09-14T02:18:28.630Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24
2018-09-14T02:18:28.630Z - INFO - Selected spectrum frequency is {'lowFrequency': 365000000L,
'highFrequency': 3670000000L}
2018-09-14T02:18:28.644Z - INFO - Granted Spectrum Max Eirp = 30dBm/MHz
2018-09-14T02:18:28.644Z - INFO - the selected test from the user : PowerMeasTest is starting now
2018-09-14T02:19:35.351Z - INFO - registration request from CBRS : {
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "CAMBIUM_NETWORKS"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "0a003e452b16",
            "cpiSignatureData": {
                "digitalSignature":
"KOZyADKurrPAAs5JN-BghcC7fzhqCFOKr4zcheGLOI_lIt23QFPAftVFOSfRzuXzfBch6xwPCrOTwcFMZ
XwuM_4RHFxbmbnT6PyPrsy8pivlhdJ_GD9jMjny6HSoOy3nEo3pqJLB7AGv0mt1eodt1YT2yWGepwlTVI7
QRWnWHdyzsP9XSQlkd_Phvc-l_bdjJkXcnFzxr7hCirdKrQX1Wbg2Eft9uOXp6MmB3p_ax-twwzywWWa
IPYXUlm5jtHVhhbAL5vc37-Djo4jCBnO3m-b3DvJhQ3_d8NXeco-F939cBHumrEUZMsnkQZRRLHFdh
LNB7so7tVVTFbRNvfCHBw",
                "encodedCpiSignedData":
"eyJmY2NJZCI6Illo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXliOilwYTAwM2U0NTJiMTYiLCJpbm
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluNDI0MiwiibG9uZ2I0dWRlljotODguODg4OCwia
GVpZ2h0IjowLCJoZWlnaHRUeXBlljoiQU1TTClslmluZG9vcckRicGxveW1lbniOmZhbnHNILCJhbnRIbm5
hQXppbXV0aCI6MCwiYW50ZW5uYURvd250aWx0IjowLCJhbnRIbm5hR2Fpbil6MTgsImVpcnBDYXBh
YmlsaXR5Ijo0MCwiYW50ZW5uYUJIYW13aWR0aCI6OTB9LCJwcm9mZXNzaW9uYWxJbnN0YWxsZX
JEYXRhljp7ImNwaUlkljoiY3BpMTIzIiwieY3BpTmFtZSI6IkNQSSBVc2VyIDEyMyIsImuc3RhbnRlc3R5bGUyY2F0aW9uVGltZSI6IjIwMTgtMDU0MTU0NTE2MTU0ODYyWiJ9fQ",
                "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
            },
            "fccId": "Z8H89FT0028",
            "groupingParam": [
                {
                    "groupId": "0a-00-3e-45-2b-16",
                    "groupType": "INTERFERENCE_COORDINATION"
                }
            ],
            "measCapability": [
                "RECEIVED_POWER_WITHOUT_GRANT"
            ],
            "userId": "SF5W5D"
        }
    ]
}
2018-09-14T02:19:35.398Z - INFO - engine sent successfully, the response to CBRS : {
    "registrationResponse": [
        {

```

```
"cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
"response": {
  "responseCode": 0
}
]
}
2018-09-14T02:20:35.614Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ]
    }
  ]
}
2018-09-14T02:20:35.614Z - INFO - The requested spectrum is in the range, SpectrumInquiry response code is 0
2018-09-14T02:20:35.614Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3670000000,
            "lowFrequency": 3650000000
          },
          "maxEirp": 30,
          "ruleApplied": "FCC_PART_96"
        }
      ],
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-14T02:20:35.676Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "operationParam": {
        "maxEirp": 30,
        "operationFrequencyRange": {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
```

```

    }
  }
]
}
2018-09-14T02:20:35.676Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "channelType": "GAA",
      "grantExpireTime": "2018-09-21T02:20:35Z",
      "grantId": "644457312",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-14T02:20:35.739Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "644457312",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-09-14T02:20:35.739Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "644457312",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-14T02:23:55Z"
    }
  ]
}
2018-09-14T02:21:30.854Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "644457312",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-14T02:21:30.854Z - INFO - engine sent successfully, the response to CBRS : {

```

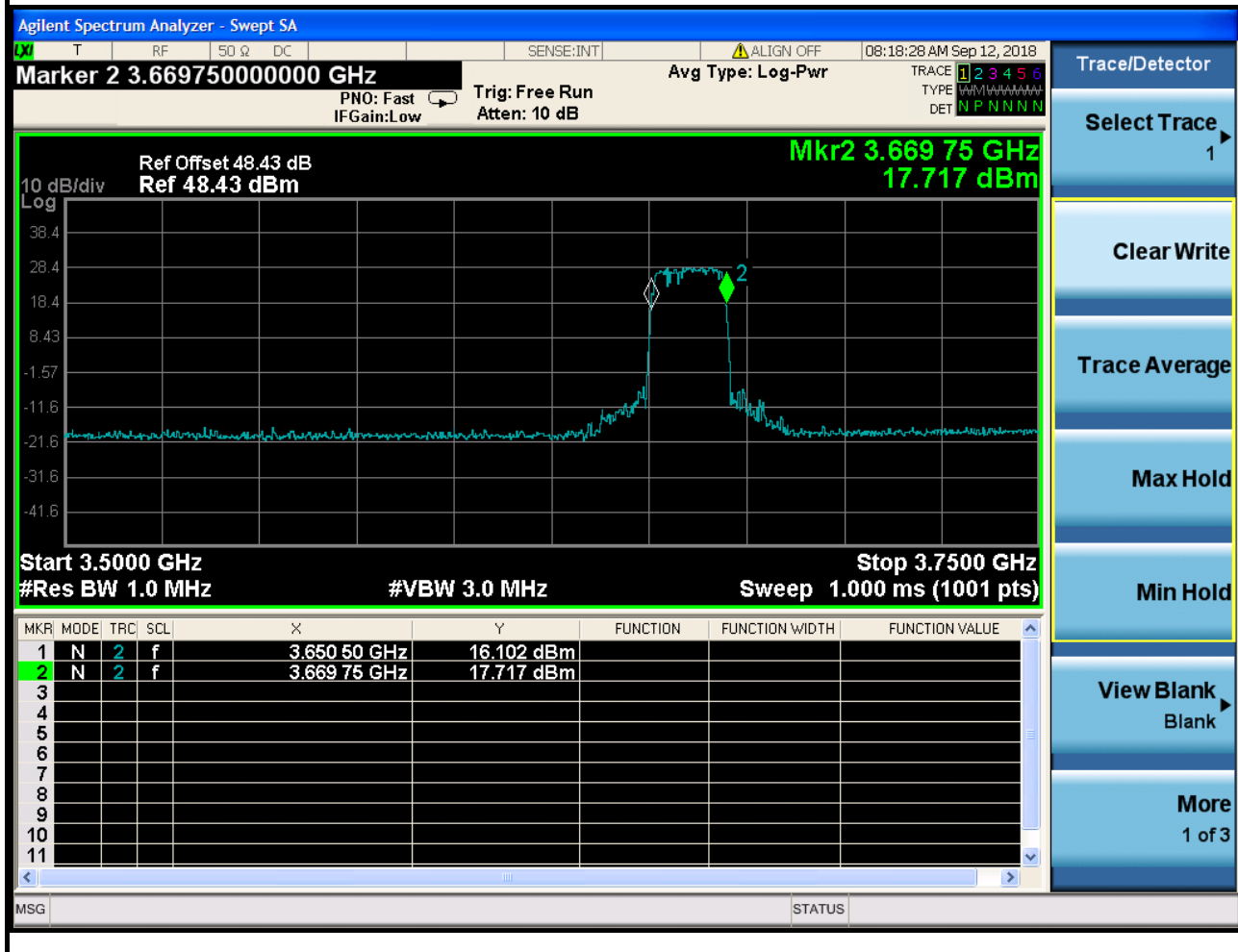
```
"heartbeatResponse": [
  {
    "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
    "grantId": "644457312",
    "response": {
      "responseCode": 0
    },
    "transmitExpireTime": "2018-09-14T02:24:50Z"
  }
]
}
2018-09-14T02:22:26.000Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "644457312",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-14T02:22:26.015Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "644457312",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-14T02:25:46Z"
    }
  ]
}
2018-09-14T02:23:21.161Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "644457312",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-14T02:23:21.177Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "grantId": "644457312",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-14T02:26:41Z"
    }
  ]
}
```



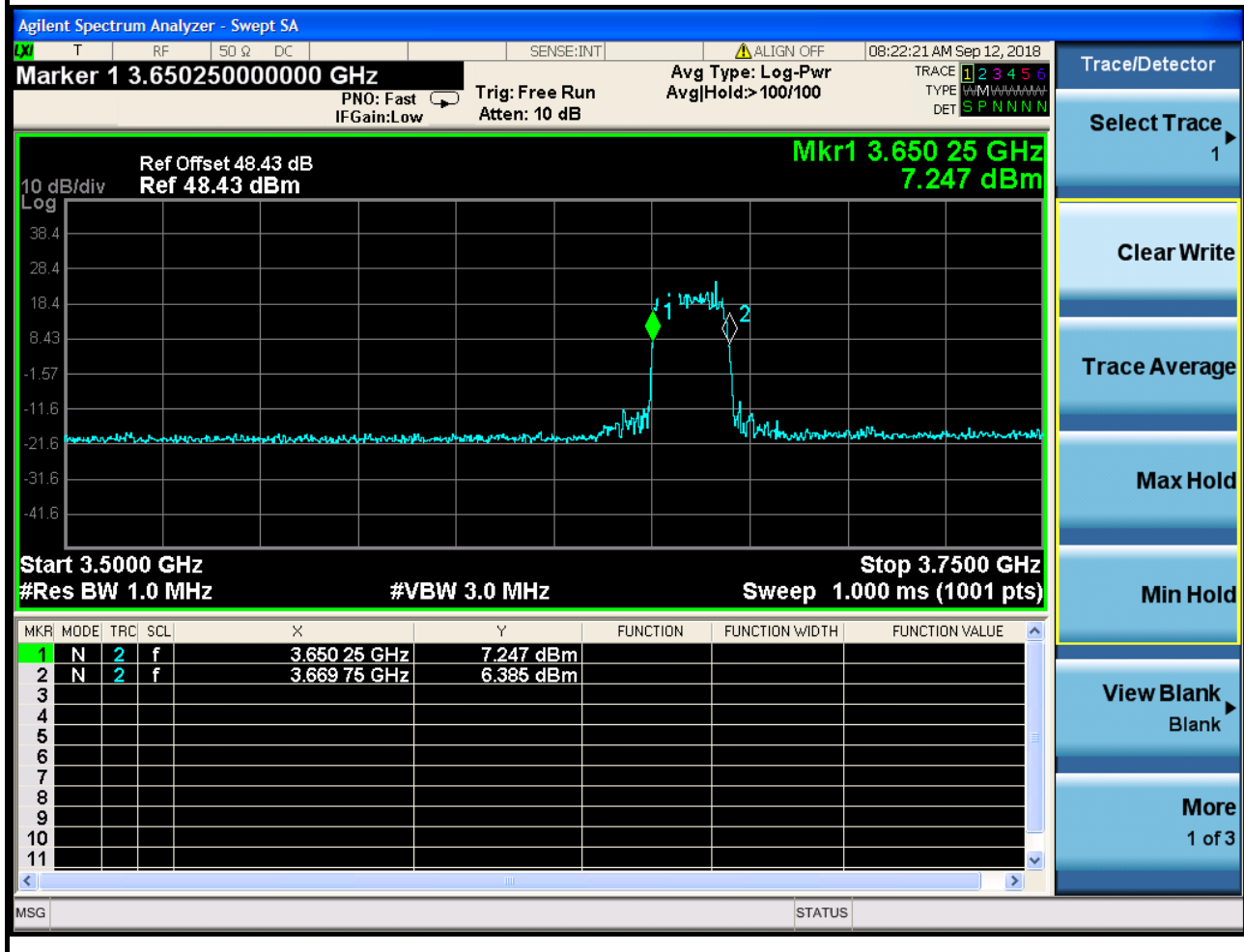
}
]
}



RF measurement plot for WINNF.FT.D.HBT.2 Test Case ID_CBSD1

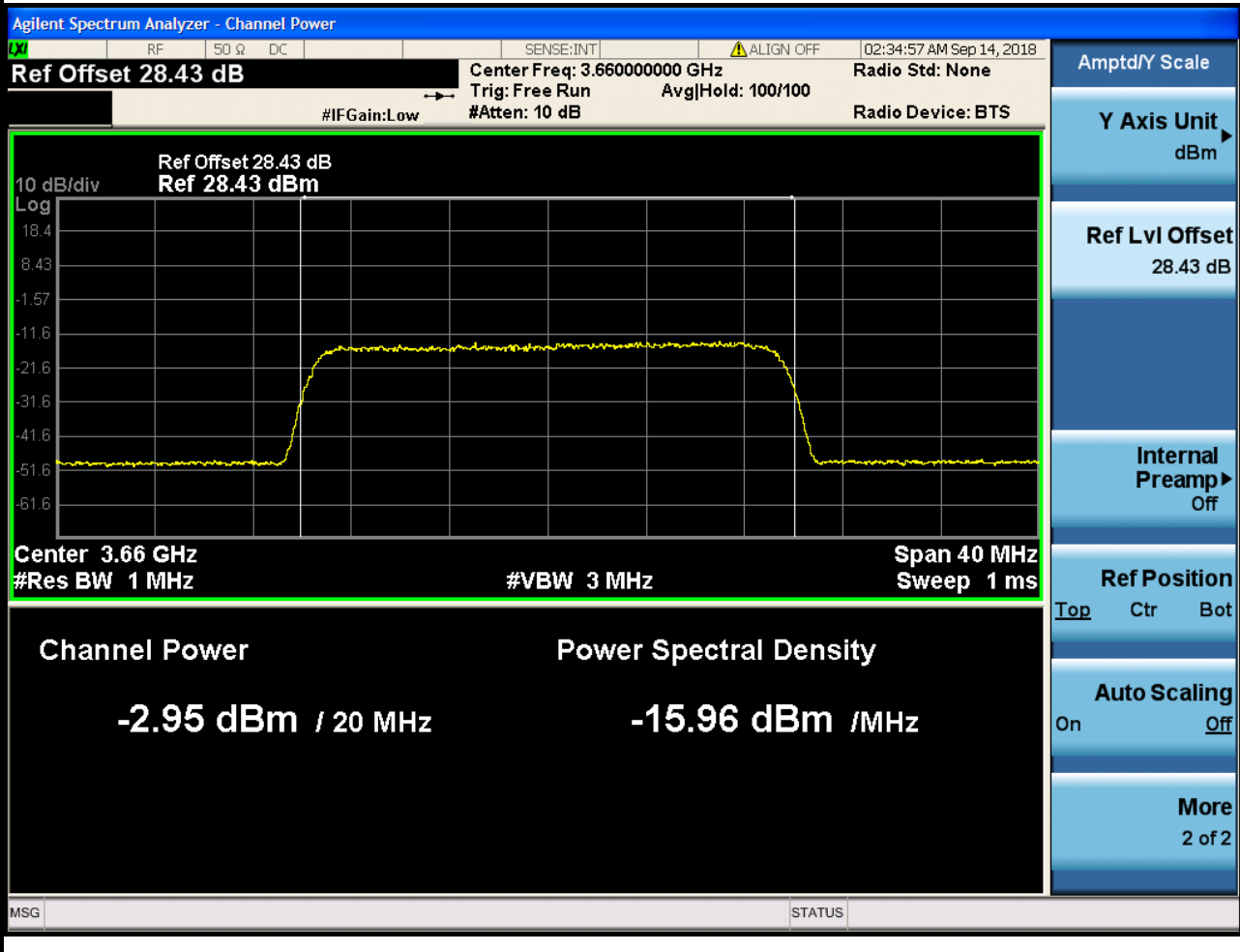


RF measurement plot for WINNF.FT.D.HBT.2 Test Case ID_CBSD2



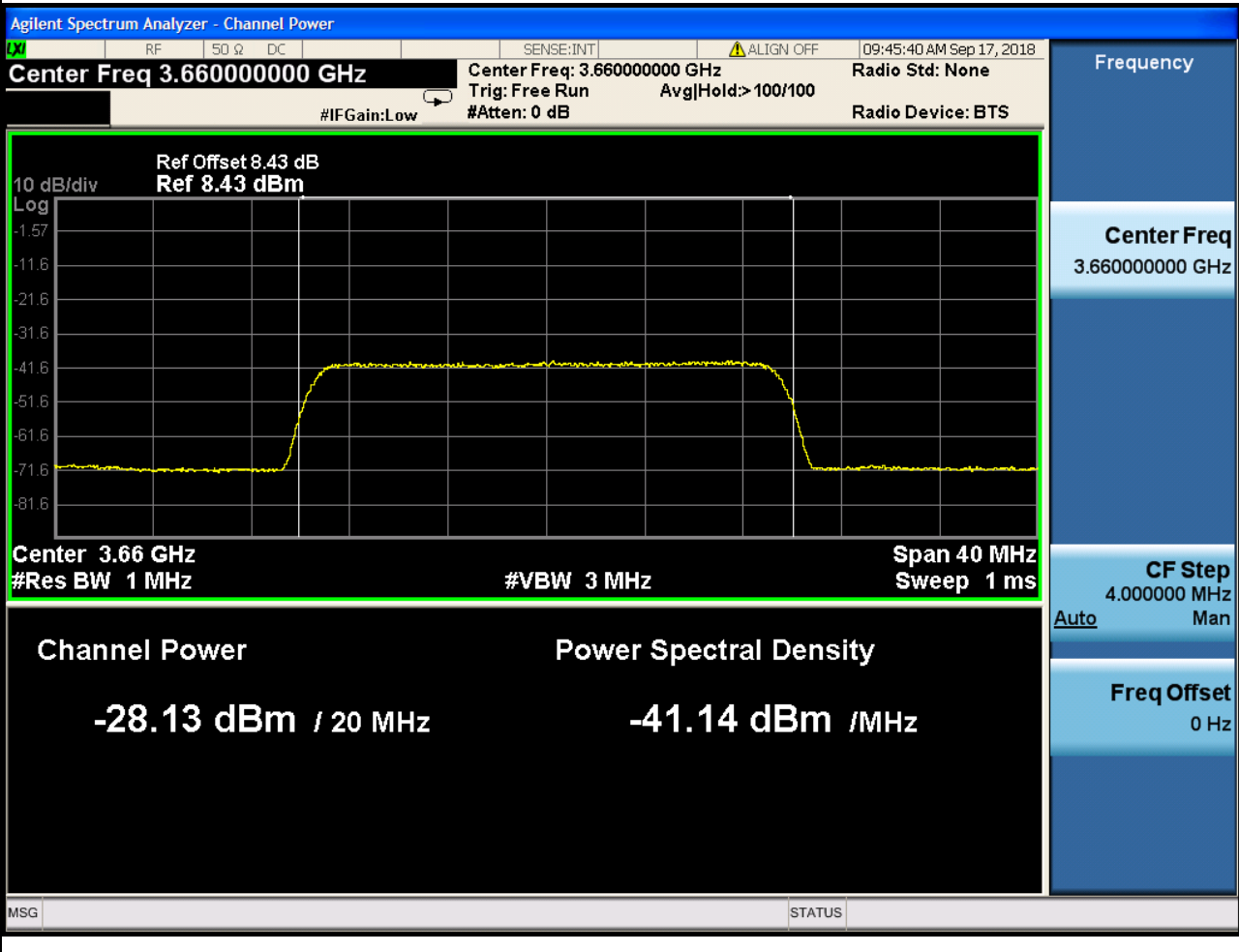


RF measurement plot for WINNF.PT.C.HBT Test Case ID_BW20M_Grant maxEirp 3

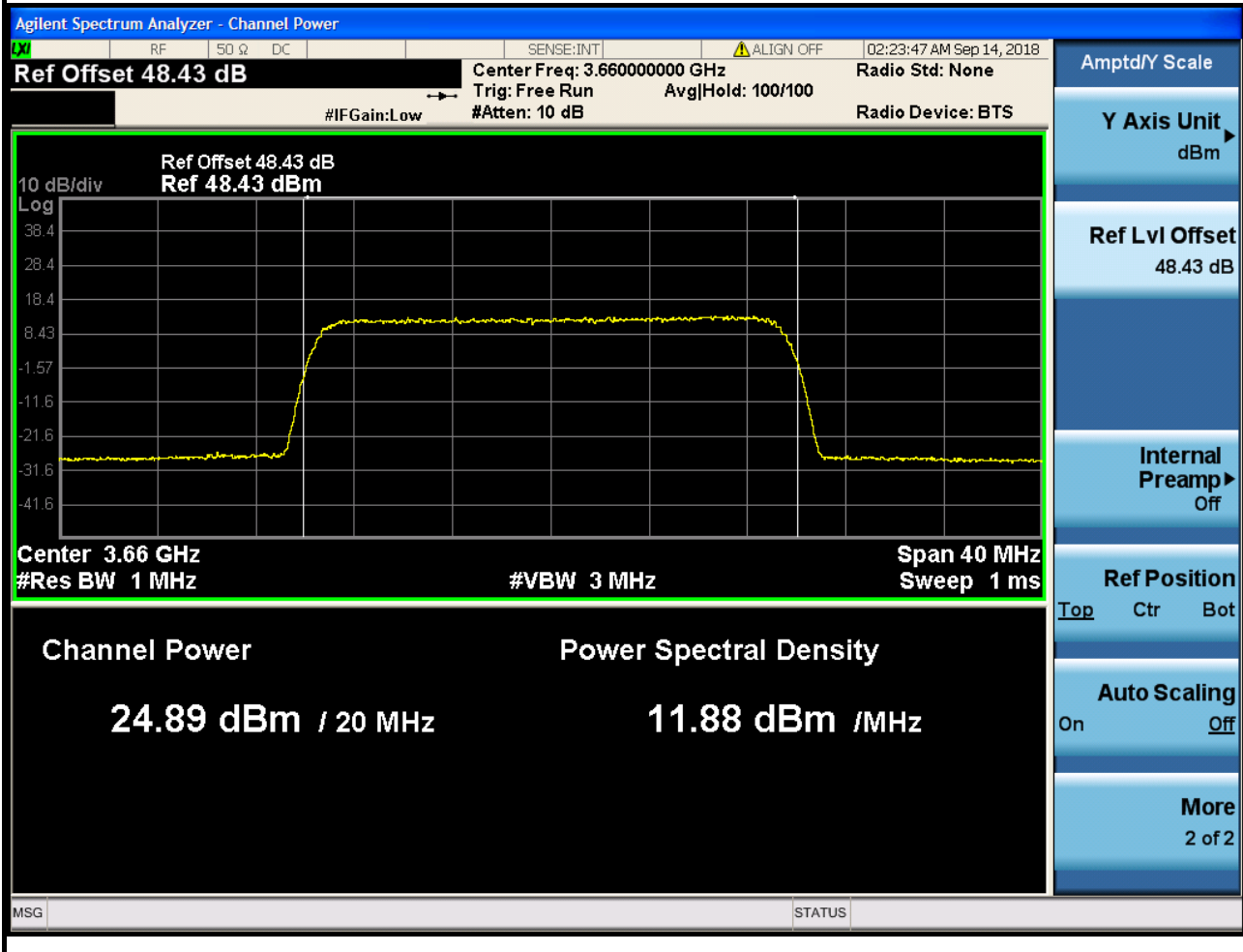




RF measurement plot for WINNF.PT.C.HBT Test Case ID_BW20M_Grant maxEirp -22



RF measurement plot for WINNF.PT.C.HBT Test Case ID_BW20M_Grant maxEirp 30



Wireshark Plots for WINNF.FT.C.SCS.1 Test Case ID

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help						
ssl						
No.	Time	Source	Destination	Protocol	Length	Info
1	2018-09-12 01:58:00	192.168.1.8	192.168.1.3	TLSv1.2	306	Client Hello
2	2018-09-12 01:58:00	192.168.1.3	192.168.1.8	TLSv1.2	2962	Server Hello
3	2018-09-12 01:58:00	192.168.1.3	192.168.1.8	TLSv1.2	564	Certificate, Server Key Exchange, Certificate Re
6	2018-09-12 01:58:00	192.168.1.8	192.168.1.3	TLSv1.2	1514	Certificate [TCP segment of a reassembled PDU]
7	2018-09-12 01:58:00	192.168.1.8	192.168.1.3	TLSv1.2	444	Client Key Exchange, Certificate Verify, Change
8	2018-09-12 01:58:00	192.168.1.3	192.168.1.8	TLSv1.2	1620	New Session Ticket, Change Cipher Spec, Encrypte
10	2018-09-12 01:58:00	192.168.1.8	192.168.1.3	TLSv1.2	186	Application Data
11	2018-09-12 01:58:00	192.168.1.3	192.168.1.8	TLSv1.2	112	Application Data
12	2018-09-12 01:58:00	192.168.1.3	192.168.1.8	TLSv1.2	552	Application Data, Application Data, Application

▶ Frame 2: 2962 bytes on wire (23696 bits), 2962 bytes captured (23696 bits) on interface 0
 ▶ Ethernet II, Src: Dell_cb:86:b8 (00:26:b9:cb:86:b8), Dst: PcsCompu_73:d7:8e (08:00:27:73:d7:8e)
 ▶ Internet Protocol Version 4, Src: 192.168.1.3, Dst: 192.168.1.8
 ▶ Transmission Control Protocol, Src Port: 5000, Dst Port: 50718, Seq: 1, Ack: 241, Len: 2896
 ▲ Secure Sockets Layer

- TLSv1.2 Record Layer: Handshake Protocol: Server Hello
 Content Type: Handshake (22)
 Version: TLS 1.2 (0x0303)
 Length: 61
- Handshake Protocol: Server Hello
 Handshake Type: Server Hello (2)
 Length: 57
 Version: TLS 1.2 (0x0303)
 - Random: eafe8bd279e4e875d03d022334aceba0339735f60ba0978f...
 Session ID Length: 0
 Cipher Suite: TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256 (0xc02f)

Wireshark Plots for WINNF.FT.C.SCS.2 Test Case ID

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help						
ssl						
No.	Time	Source	Destination	Protocol	Length	Info
1	2018-09-11 10:27:51	192.168.1.8	192.168.1.3	TLSv1.2	316	Client Hello
2	2018-09-11 10:27:51	192.168.1.3	192.168.1.8	TLSv1.2	2962	Server Hello
3	2018-09-11 10:27:51	192.168.1.3	192.168.1.8	TLSv1.2	677	Certificate, Server Key Exchange, Certificate
6	2018-09-11 10:27:51	192.168.1.8	192.168.1.3	TLSv1.2	1514	Certificate [TCP segment of a reassembled PDU]
7	2018-09-11 10:27:51	192.168.1.8	192.168.1.3	TLSv1.2	444	Client Key Exchange, Certificate Verify, Change
8	2018-09-11 10:27:51	192.168.1.3	192.168.1.8	TLSv1.2	1620	New Session Ticket, Change Cipher Spec, Encrypt

▶ Frame 2: 2962 bytes on wire (23696 bits), 2962 bytes captured (23696 bits) on interface 0 ▶ Ethernet II, Src: Dell_cb:86:b8 (00:26:b9:cb:86:b8), Dst: PcsCompu_73:d7:8e (08:00:27:73:d7:8e) ▶ Internet Protocol Version 4, Src: 192.168.1.3, Dst: 192.168.1.8 ▶ Transmission Control Protocol, Src Port: 5000, Dst Port: 50490, Seq: 1, Ack: 250, Len: 2896 ▶ Secure Sockets Layer ▶ TLSv1.2 Record Layer: Handshake Protocol: Server Hello - Content Type: Handshake (22) - Version: TLS 1.2 (0x0303) - Length: 61 ▶ Handshake Protocol: Server Hello - Handshake Type: Server Hello (2) - Length: 57 - Version: TLS 1.2 (0x0303) ▶ Random: 4de75f65657075e856f9fcb479207a7a6500532ddfe57130... - Session ID Length: 0 - Cipher Suite: TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256 (0xc02f)

Wireshark Plots for WINNF.FT.C.SCS.2 Test Case ID_OCSP

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help							
oosp							
No.	Time	Source	Destination	Protocol	Length	Info	
255	2018-09-11 10:25:46	192.168.1.8	192.168.1.5	OCSP	296	Request	
264	2018-09-11 10:26:16	192.168.1.8	192.168.1.5	OCSP	296	Request	
274	2018-09-11 10:26:20	192.168.1.8	192.168.1.5	OCSP	296	Request	
314	2018-09-11 10:27:54	192.168.1.8	192.168.1.5	OCSP	296	Request	
341	2018-09-11 10:28:21	192.168.1.8	192.168.1.5	OCSP	296	Request	

- Frame 255: 296 bytes on wire (2368 bits), 296 bytes captured (2368 bits) on interface 0
- Ethernet II, Src: PcsCompu_73:d7:8e (08:00:27:73:d7:8e), Dst: IntelCor_ae:3b:d9 (34:f3:9a:ae:3b:d9)
- Internet Protocol Version 4, Src: 192.168.1.8, Dst: 192.168.1.5
- Transmission Control Protocol, Src Port: 42398, Dst Port: 80, Seq: 1, Ack: 1, Len: 229
- Hypertext Transfer Protocol
- Online Certificate Status Protocol
 - tbsRequest
 - requestList: 1 item
 - Request
 - reqCert
 - hashAlgorithm (SHA-1)
 - issuerNameHash: 2ce839bb435d3f14012148a81f99428ade8f367a
 - issuerKeyHash: 4ffbf55fed1df84cace50bd9d9977ef3758441f5
 - serialNumber: 14961302017428870585

Wireshark Plots for WINNF.FT.C.SCS.3 Test Case ID

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help						
ssl						
No.	Time	Source	Destination	Protocol	Length	Info
1	2018-09-12 00:45:24	192.168.1.8	192.168.1.3	TLSv1.2	316	Client Hello
2	2018-09-12 00:45:24	192.168.1.3	192.168.1.8	TLSv1.2	2962	Server Hello
3	2018-09-12 00:45:24	192.168.1.3	192.168.1.8	TLSv1.2	565	Certificate, Server Key Exchange, Certificate R
6	2018-09-12 00:45:24	192.168.1.8	192.168.1.3	TLSv1.2	1514	Certificate [TCP segment of a reassembled PDU]
7	2018-09-12 00:45:24	192.168.1.8	192.168.1.3	TLSv1.2	444	Client Key Exchange, Certificate Verify, Change
8	2018-09-12 00:45:24	192.168.1.3	192.168.1.8	TLSv1.2	1620	New Session Ticket, Change Cipher Spec, Encrypt
9	2018-09-12 00:45:29	192.168.1.8	192.168.1.3	TLSv1.2	316	Client Hello
10	2018-09-12 00:45:29	192.168.1.3	192.168.1.8	TLSv1.2	2962	Server Hello
11	2018-09-12 00:45:29	192.168.1.3	192.168.1.8	TLSv1.2	565	Certificate, Server Key Exchange, Certificate R

▶ Frame 2: 2962 bytes on wire (23696 bits), 2962 bytes captured (23696 bits) on interface 0
 ▶ Ethernet II, Src: Dell_cb:86:b8 (00:26:b9:cb:86:b8), Dst: PcsCompu_73:d7:8e (08:00:27:73:d7:8e)
 ▶ Internet Protocol Version 4, Src: 192.168.1.3, Dst: 192.168.1.8
 ▶ Transmission Control Protocol, Src Port: 5000, Dst Port: 50558, Seq: 1, Ack: 250, Len: 2896
 ▶ Secure Sockets Layer

- ▶ TLSv1.2 Record Layer: Handshake Protocol: Server Hello
 - Content Type: Handshake (22)
 - Version: TLS 1.2 (0x0303)
 - Length: 61
- ▶ Handshake Protocol: Server Hello
 - Handshake Type: Server Hello (2)
 - Length: 57
 - Version: TLS 1.2 (0x0303)
 - ▶ Random: 8fc74d877745025d28cc6b35882b66402617276ff834f84...
 - Session ID Length: 0
 - Cipher Suite: TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256 (0xc02f)



Wireshark Plots for WINNF.FT.C.SCS.4 Test Case ID

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help						
ssl						
No.	Time	Source	Destination	Protocol	Length	Info
1	2018-09-12 00:50:07	192.168.1.8	192.168.1.3	TLSv1.2	316	Client Hello
2	2018-09-12 00:50:07	192.168.1.3	192.168.1.8	TLSv1.2	2962	Server Hello
3	2018-09-12 00:50:07	192.168.1.3	192.168.1.8	TLSv1.2	567	Certificate, Server Key Exchange, Certificate R
6	2018-09-12 00:50:07	192.168.1.8	192.168.1.3	TLSv1.2	1514	Certificate [TCP segment of a reassembled PDU]
7	2018-09-12 00:50:07	192.168.1.8	192.168.1.3	TLSv1.2	444	Client Key Exchange, Certificate Verify, Change
8	2018-09-12 00:50:07	192.168.1.3	192.168.1.8	TLSv1.2	1620	New Session Ticket, Change Cipher Spec, Encrypt
9	2018-09-12 00:50:09	192.168.1.8	192.168.1.3	TLSv1.2	316	Client Hello
10	2018-09-12 00:50:10	192.168.1.3	192.168.1.8	TLSv1.2	2962	Server Hello
11	2018-09-12 00:50:10	192.168.1.3	192.168.1.8	TLSv1.2	567	Certificate, Server Key Exchange, Certificate R
▶ Frame 2: 2962 bytes on wire (23696 bits), 2962 bytes captured (23696 bits) on interface 0						
▶ Ethernet II, Src: Dell_cb:86:b8 (00:26:b9:cb:86:b8), Dst: PcsCompu_73:d7:8e (08:00:27:73:d7:8e)						
▶ Internet Protocol Version 4, Src: 192.168.1.3, Dst: 192.168.1.8						
▶ Transmission Control Protocol, Src Port: 5000, Dst Port: 50570, Seq: 1, Ack: 250, Len: 2896						
▲ Secure Sockets Layer						
▲ TLSv1.2 Record Layer: Handshake Protocol: Server Hello						
Content Type: Handshake (22)						
Version: TLS 1.2 (0x0303)						
Length: 61						
▲ Handshake Protocol: Server Hello						
Handshake Type: Server Hello (2)						
Length: 57						
Version: TLS 1.2 (0x0303)						
▶ Random: 6c030d57befed533df00396a1c522a7d9142554327021d91...						
Session ID Length: 0						
Cipher Suite: TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256 (0xc02f)						



Wireshark Plots for WINNF.FT.C.SCS.5 Test Case ID

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help						
ssl						
No.	Time	Source	Destination	Protocol	Length	Info
32	2018-09-12 00:51:49	192.168.1.8	192.168.1.3	TLSv1.2	316	Client Hello
33	2018-09-12 00:51:49	192.168.1.3	192.168.1.8	TLSv1.2	2962	Server Hello
35	2018-09-12 00:51:49	192.168.1.3	192.168.1.8	TLSv1.2	564	Certificate, Server Key Exchange, Certificate R
40	2018-09-12 00:51:49	192.168.1.8	192.168.1.3	TLSv1.2	1514	Certificate [TCP segment of a reassembled PDU]
41	2018-09-12 00:51:49	192.168.1.8	192.168.1.3	TLSv1.2	444	Client Key Exchange, Certificate Verify, Change
43	2018-09-12 00:51:49	192.168.1.3	192.168.1.8	TLSv1.2	1620	New Session Ticket, Change Cipher Spec, Encrypt
52	2018-09-12 00:51:52	192.168.1.8	192.168.1.3	TLSv1.2	316	Client Hello
53	2018-09-12 00:51:52	192.168.1.3	192.168.1.8	TLSv1.2	2962	Server Hello
55	2018-09-12 00:51:52	192.168.1.3	192.168.1.8	TLSv1.2	564	Certificate, Server Key Exchange, Certificate R
▶ Frame 33: 2962 bytes on wire (23696 bits), 2962 bytes captured (23696 bits) on interface 0						
▶ Ethernet II, Src: Dell_cb:86:b8 (00:26:b9:cb:86:b8), Dst: PcsCompu_73:d7:8e (08:00:27:73:d7:8e)						
▶ Internet Protocol Version 4, Src: 192.168.1.3, Dst: 192.168.1.8						
▶ Transmission Control Protocol, Src Port: 5000, Dst Port: 50574, Seq: 1, Ack: 250, Len: 2896						
▲ Secure Sockets Layer						
▲ TLSv1.2 Record Layer: Handshake Protocol: Server Hello						
Content Type: Handshake (22)						
Version: TLS 1.2 (0x0303)						
Length: 61						
▲ Handshake Protocol: Server Hello						
Handshake Type: Server Hello (2)						
Length: 57						
Version: TLS 1.2 (0x0303)						
▶ Random: c80673d2823f0d4dd0807d1b700658e0ce71ebae92a5d3c3...						
Session ID Length: 0						
Cipher Suite: TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256 (0xc02f)						