



# 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.

Approved by: Jordan Hsiao

**SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory**  
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## 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	<input type="checkbox"/> Category A <input checked="" type="checkbox"/> Category B
Professional Installation	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Unit Under Test in Test ID	<input checked="" type="checkbox"/> CBSD with Domain Proxy <input type="checkbox"/> 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

<input type="checkbox"/>	C1	Mandatory for UUT which supports multi-step registration message
<input type="checkbox"/>	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.
<input checked="" type="checkbox"/>	C3	Mandatory for UUT which supports single-step registration containing CPI-signed data in the registration message.
<input checked="" type="checkbox"/>	C4	Mandatory for UUT which supports RECEIVED_POWER_WITHOUT_GRANT measurement report type.
<input type="checkbox"/>	C5	Mandatory for UUT which supports RECEIVED_POWER_WITH_GRANT measurement report type.
<input type="checkbox"/>	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				
<input checked="" type="checkbox"/>	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		
<input type="checkbox"/>	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	Test Date
RF Conducted	TH01-CB	Rex Liao	25°C / 60%	Aug. 30, 2018~Oct. 02, 2018

Test site Designation No. TW1190 with FCC.

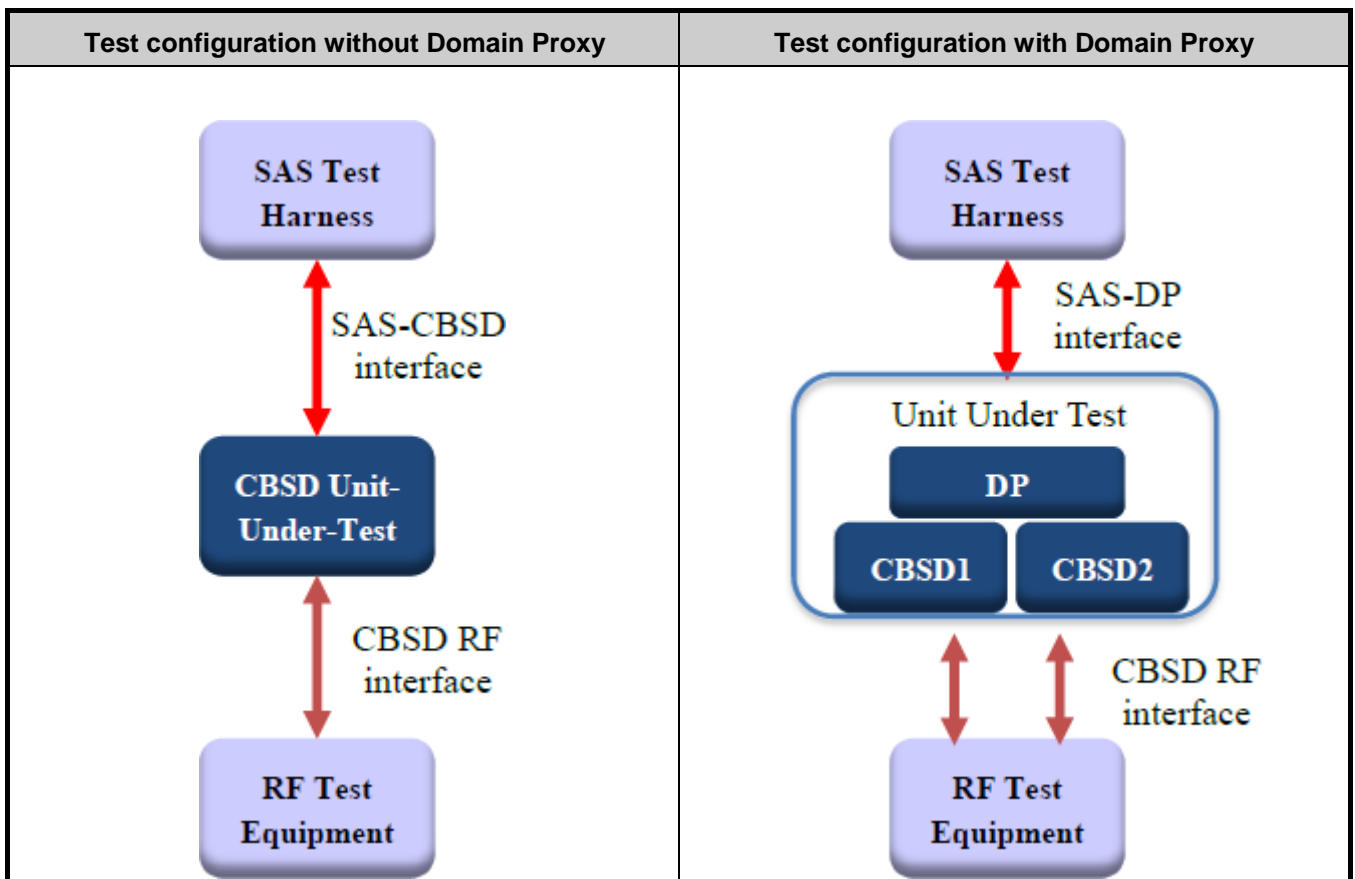
Test site registered number IC 4086B-1 with Industry Canada.



## 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: <ul style="list-style-type: none"><li>• UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness</li><li>• UUT is in the Unregistered state</li><li>• All of the required and REG-Conditional parameters shall be configured and CPI signature provided</li></ul>	--	--
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: <ul style="list-style-type: none"><li>• The required <i>userId</i>, <i>fccl</i> and <i>cbsdSerialNumber</i> and REG- Conditional <i>cbsdCategory</i>, <i>airInterface</i>, <i>measCapability</i> and <i>cpiSignatureData</i> registration parameters shall be sent from the CBSD and conform to proper format and acceptable ranges.</li><li>• 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.</li></ul>	PASS	--
3	<ul style="list-style-type: none"><li>• SAS Test Harness sends a CBSD Registration Response in the form of one 2-element Array or as individual messages as follows:<ul style="list-style-type: none"><li>– <i>cbsdId</i> = Ci</li><li>– <i>measReportConfig</i> for each CBSD shall not be included.</li><li>– <i>responseCode</i> = 0 for each CBSD</li></ul></li></ul>	--	--
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: <ul style="list-style-type: none"><li>• UUT shall not transmit RF</li></ul>	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: <ul style="list-style-type: none"><li>• UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness</li><li>• UUT is in the Unregistered state</li></ul>	--	--
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: <ul style="list-style-type: none"><li>– SAS response does not include a <i>cbstd</i>.</li><li>– <i>responseCode</i>=Ri for CBSD1 and CBSD2</li></ul>	--	--
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: <ul style="list-style-type: none"><li>• UUT shall not transmit RF</li></ul>	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: <ul style="list-style-type: none"><li>• UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness</li><li>• UUT is in the Unregistered state</li></ul>	--	--
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: <ul style="list-style-type: none"><li>– SAS response does not include a <i>cbstd</i>.</li><li>– <i>responseCode</i>=Ri for CBSD1 and CBSD2</li></ul>	--	--
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: <ul style="list-style-type: none"><li>• UUT shall not transmit RF</li></ul>	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: <ul style="list-style-type: none"><li>• UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness</li><li>• UUT is in the Unregistered state</li></ul>	--	--
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: <ul style="list-style-type: none"><li>– SAS response does not include a <i>cbstdId</i>.</li><li>– <i>responseCode</i>=Ri for CBSD1 and CBSD2</li></ul>	--	--
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: <ul style="list-style-type: none"><li>• UUT shall not transmit RF</li></ul>	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: <ul style="list-style-type: none"><li>• UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness</li><li>• UUT is in the Unregistered state</li></ul>	--	--
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: <ul style="list-style-type: none"><li>– SAS response does not include a <i>cbstdId</i>.</li><li>– <i>responseCode</i>=Ri for CBSD1 and CBSD2</li></ul>	--	--
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: <ul style="list-style-type: none"><li>• UUT shall not transmit RF</li></ul>	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: <ul style="list-style-type: none"><li>• UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness</li><li>• UUT is in the Unregistered state</li></ul>	--	--
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: <ul style="list-style-type: none"><li>– SAS response does not include a <i>cbstdId</i>.</li><li>– <i>responseCode</i>=<i>Ri</i> for CBSD1 and CBSD2</li></ul>	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response ( <i>responseCode</i> ( <i>Ri</i> )= 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: <ul style="list-style-type: none"><li>• UUT shall not transmit RF</li></ul>	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: <ul style="list-style-type: none"><li>• UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness</li><li>• UUT is in the Unregistered state</li></ul>	--	--
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: <ul style="list-style-type: none"><li>– SAS response does not include a <i>cbsdId</i>.</li><li>– <i>responseCode</i>=Ri for CBSD1 and CBSD2</li></ul>	--	--
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: <ul style="list-style-type: none"><li>• UUT shall not transmit RF</li></ul>	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: <ul style="list-style-type: none"><li>• UUT has registered successfully with SAS Test Harness, with <i>cbsdId = C</i></li></ul>	--	--
2	UUT sends valid Grant Request.	--	--
3	SAS Test Harness sends a Grant Response message, including <ul style="list-style-type: none"><li>• <i>cbsdId=C</i></li><li>• <i>responseCode = R</i></li></ul>	--	--
4	After completion of step 3, SAS Test Harness does not provide any positive response( <i>responseCode=0</i> ) 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: <ul style="list-style-type: none"><li>• UUT shall not transmit RF</li></ul>	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: <ul style="list-style-type: none"><li>• UUT has registered successfully with SAS Test Harness, with <i>cbsdId = C</i></li></ul>	--	--
2	UUT sends valid Grant Request.	--	--
3	SAS Test Harness sends a Grant Response message, including <ul style="list-style-type: none"><li>• <i>cbsdId=C</i></li><li>• <i>responseCode =R</i></li></ul>	--	--
4	After completion of step 3, SAS Test Harness does not provide any positive response ( <i>responseCode=401</i> ) 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: <ul style="list-style-type: none"><li>• UUT shall not transmit RF</li></ul>	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: <ul style="list-style-type: none"> <li>DP has two CBSD registered successfully with SAS Test Harness, with <i>cbstdId</i> = Ci, i={1,2}</li> </ul>	--	--
2	DP sends a message: <ul style="list-style-type: none"> <li>If message is a Spectrum Inquiry Request, go to step 3</li> <li>If message is a Grant Request, go to step 5</li> </ul>	--	--
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}: <ul style="list-style-type: none"> <li><i>cbstdId</i> = Ci</li> <li>List of frequencyRange objects sent by DP are within the CBRS frequency range</li> </ul>	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}: <ul style="list-style-type: none"> <li><i>cbstdId</i> = Ci</li> <li><i>availableChannel</i> is an array of availableChannel objects</li> <li><i>responseCode</i> = 0</li> </ul>	--	--
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}: <ul style="list-style-type: none"> <li><i>cbstdId</i> = C</li> <li><i>maxEIRP</i> is at or below the limit appropriate for CBSD category as defined by Part 96</li> <li><i>operationFrequencyRange</i>, Fi, sent by UUT is a valid range within the CBRS band</li> </ul>	PASS	--



6	<p>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.</p> <p>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.</p> <p>Verify parameters for each CBSD within the Grant Response message are as follows, for CBSDi, i={1,2}:</p> <ul style="list-style-type: none"> <li>• <i>cbsdId</i> = Ci</li> <li>• <i>grantId</i> = Gi = a valid grant ID</li> <li>• <i>grantExpireTime</i> = UTC time greater than duration of the test</li> <li>• <i>responseCode</i> = 0</li> </ul>	--	--
7	<p>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.</p> <p>Verify Heartbeat Request message is formatted correctly for each CBSD, including, for CBSDi i={1,2}:</p> <ul style="list-style-type: none"> <li>• <i>cbsdId</i> = Ci, i={1,2}</li> <li>• <i>grantId</i> = Gi, i={1,2}</li> <li>• <i>operationState</i> = "GRANTED"</li> </ul>	PASS	--
8	<p>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.</p> <p>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.</p> <p>Verify parameters for each CBSD within the Heartbeat Response message are as follows, for CBSDi:</p> <ul style="list-style-type: none"> <li>• <i>cbsdId</i> = Ci</li> <li>• <i>grantId</i> = Gi</li> <li>• <i>transmitExpireTime</i> = current UTC time + 200 seconds</li> <li>• <i>responseCode</i> = 0</li> </ul>	--	--
9	<p>For further Heartbeat Request messages sent from DP after completion of step 8, validate message is sent within latest specified heartbeatInterval for CBSDi:</p> <ul style="list-style-type: none"> <li>• <i>cbsdId</i> = Ci</li> <li>• <i>grantId</i> = Gi</li> <li>• <i>operationState</i> = "AUTHORIZED"</li> </ul> <p>and SAS Test Harness responds with a Heartbeat Response message including the following parameters, for CBSDi</p> <ul style="list-style-type: none"> <li>• <i>cbsdId</i> = Ci</li> <li>• <i>grantId</i> = Gi</li> <li>• <i>transmitExpireTime</i> = current UTC time + 200 seconds</li> <li>• <i>responseCode</i> = 0</li> </ul>	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: <ul style="list-style-type: none"><li>• UUT does not transmit at any time prior to completion of the first heartbeat response</li><li>• UUT transmits after step 8 is complete, and its transmission is limited to within the bandwidth range <math>F_i</math>.</li></ul>	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: <ul style="list-style-type: none"><li>• UUT has registered successfully with SAS Test Harness</li><li>• UUT has a valid single grant as follows:<ul style="list-style-type: none"><li>○ valid <i>cbsdId</i> =C</li><li>○ valid <i>grantId</i> =G</li><li>○ grant is for frequency range F, power P</li><li>○ <i>grantExpireTime</i>=UTC time greater than duration of the test</li></ul></li><li>• UUT is in AUTHORIZED state and is transmitting within the grant bandwidth F on RF interface</li></ul>	--	--
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: <ul style="list-style-type: none"><li>• <i>cbsdId</i> =C</li><li>• <i>grantId</i> =G</li><li>• <i>operationState</i> ="AUTHORIZED"</li></ul>	PASS	--
3	SAS Test Harness sends a Heartbeat Response message, including the following parameters: <ul style="list-style-type: none"><li>• <i>cbsdId</i> =C</li><li>• <i>grantId</i> =G</li><li>• <i>transmitExpireTime</i> = T = Current UTC time</li><li>• <i>responseCode</i> = 105 (DEREGISTER)</li></ul>	--	--
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: <ul style="list-style-type: none"><li>• UUT shall stop transmission within (T + 60 seconds) of completion of step 3</li></ul>	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: <ul style="list-style-type: none"> <li>• UUT has registered successfully with SAS Test Harness</li> <li>• UUT has a valid single grant as follows:               <ul style="list-style-type: none"> <li>○ valid <i>cbsdId</i> = C</li> <li>○ valid <i>grantId</i> = G</li> <li>○ grant is for frequency range F, power P</li> <li>○ <i>grantExpireTime</i> = UTC time greater than duration of the test</li> </ul> </li> <li>• UUT is in GRANTED, but not AUTHORIZED state (i.e. has not performed its first Heartbeat Request)</li> </ul>	--	--
2	UUT sends a Heartbeat Request message. Verify Heartbeat Request message is formatted correctly, including: <ul style="list-style-type: none"> <li>• <i>cbsdId</i> = C</li> <li>• <i>grantId</i> = G</li> <li>• <i>operationState</i> = "GRANTED"</li> </ul>	PASS	--
3	SAS Test Harness sends a Heartbeat Response message, including the following parameters: <ul style="list-style-type: none"> <li>• <i>cbsdId</i> = C</li> <li>• <i>grantId</i> = G</li> <li>• <i>transmitExpireTime</i> = T = current UTC time</li> <li>• <i>responseCode</i> = 501 (SUSPENDED_GRANT)</li> </ul>	--	--
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: <p>A. UUT sends a Heartbeat Request message. Ensure message is sent within latest specified heartbeatInterval, and is correctly formatted with parameters:</p> <ul style="list-style-type: none"> <li>• <i>cbsdId</i> = C</li> <li>• <i>grantId</i> = G</li> <li>• <i>operationState</i> = "GRANTED"</li> </ul> <p>B. UUT sends a Relinquishment request message. Ensure message is correctly formatted with parameters:</p> <ul style="list-style-type: none"> <li>• <i>cbdsId</i> = C</li> <li>• <i>grantId</i> = G</li> </ul> Monitor the RF output of the UUT. Verify: <ul style="list-style-type: none"> <li>• UUT does not transmit at any time</li> </ul>	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: <ul style="list-style-type: none"> <li>• UUT has registered successfully with SAS Test Harness</li> <li>• UUT has a valid single grant as follows:               <ul style="list-style-type: none"> <li>○ valid <i>cbsdId</i> = C</li> <li>○ valid <i>grantId</i> = G</li> <li>○ grant is for frequency range F, power P</li> <li>○ <i>grantExpireTime</i> = UTC time greater than duration of the test</li> </ul> </li> <li>• UUT is in AUTHORIZED state and is transmitting within the grant bandwidth F on RF interface</li> </ul>	--	--
2	UUT sends a Heartbeat Request message. Verify Heartbeat Request message is sent within latest specified heartbeatInterval, and is formatted correctly, including: <ul style="list-style-type: none"> <li>• <i>cbsdId</i> = C</li> <li>• <i>grantId</i> = G</li> <li>• <i>operationState</i> = "AUTHORIZED"</li> </ul>	PASS	--
3	SAS Test Harness sends a Heartbeat Response message, including the following parameters: <ul style="list-style-type: none"> <li>• <i>cbsdId</i> = C</li> <li>• <i>grantId</i> = G</li> <li>• <i>transmitExpireTime</i> = T = current UTC time</li> <li>• <i>responseCode</i> = 501 (SUSPENDED_GRANT)</li> </ul>	--	--
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: <p>A. UUT sends a Heartbeat Request message. Ensure message is sent within latest specified heartbeatInterval, and is correctly formatted with parameters:</p> <ul style="list-style-type: none"> <li>• <i>cbsdId</i> = C</li> <li>• <i>grantId</i> = G</li> <li>• <i>operationState</i> = "GRANTED"</li> </ul> <p>B. UUT sends a Relinquishment Request message. Ensure message is correctly formatted with parameters:</p> <ul style="list-style-type: none"> <li>• <i>cbdsId</i> = C</li> <li>• <i>grantId</i> = G</li> </ul> Monitor the RF output of the UUT. Verify: <ul style="list-style-type: none"> <li>• UUT shall stop transmission within (T + 60 seconds) of completion of step 3</li> </ul>	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: <ul style="list-style-type: none"> <li>• UUT has registered successfully with SAS Test Harness</li> <li>• UUT has a valid single grant as follows:               <ul style="list-style-type: none"> <li>○ valid <i>cbsdId</i> = C</li> <li>○ valid <i>grantId</i> = G</li> <li>○ grant is for frequency range F, power P</li> <li>○ <i>grantExpireTime</i> = UTC time greater than duration of the test</li> </ul> </li> <li>• UUT is in AUTHORIZED state and is transmitting within the grant bandwidth F on RF interface</li> </ul>	--	--
2	UUT sends a Heartbeat Request message. Verify Heartbeat Request message is sent within latest specified <i>heartbeatInterval</i> , and is formatted correctly, including: <ul style="list-style-type: none"> <li>• <i>cbsdId</i> = C</li> <li>• <i>grantId</i> = G</li> <li>• <i>operationState</i> = "AUTHORIZED"</li> </ul>	PASS	--
3	SAS Test Harness sends a Heartbeat Response message, including the following parameters: <ul style="list-style-type: none"> <li>• <i>cbsdId</i> = C</li> <li>• <i>grantId</i> = G</li> <li>• <i>transmitExpireTime</i> = T = Current UTC Time</li> <li>• <i>responseCode</i> = 502 (UNSYNC_OP_PARAM)</li> </ul>	--	--
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: <ul style="list-style-type: none"> <li>• UUT sends a Grant Relinquishment Request message. Verify message is correctly formatted with parameters:               <ul style="list-style-type: none"> <li>○ <i>cbsdId</i> = C</li> <li>○ <i>grantId</i> = G</li> </ul> </li> </ul> Monitor the RF output of the UUT. Verify: <ul style="list-style-type: none"> <li>• UUT shall stop transmission within (T+60) seconds of completion of step 3.</li> </ul>	PASS	--



### 3.15 WINNF.FT.D.HBT.8 - Domain Proxy Heartbeat responseCode=500 (TERMINATED\_GRANT)

#	Test Execution Steps	Results	
1	<p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> <li>DP has two CBSD registered successfully with SAS Test Harness</li> <li>Each CBSD {1,2} has a valid single grant as follows: <ul style="list-style-type: none"> <li>valid <i>cbsdId</i> = Ci, i={1,2}</li> <li>valid <i>grantId</i> = Gi, i={1,2}</li> <li>grant is for frequency range Fi, power Pi</li> <li><i>grantExpireTime</i> = UTC time greater than duration of the test</li> </ul> </li> <li>Both CBSD are in AUTHORIZED state and transmitting within their granted bandwidth on RF interface</li> </ul>	--	--
2	<p>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.</p> <p>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}:</p> <ul style="list-style-type: none"> <li><i>cbsdId</i> = Ci, i = {1,2}</li> <li><i>grantId</i> = Gi, i = {1,2}</li> <li><i>operationState</i> = "AUTHORIZED"</li> </ul>	PASS	--
3	<p>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.</p> <p>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.</p> <p>Parameters for each CBSD within the Heartbeat Response message should be as follows, for CBSDi:</p> <ul style="list-style-type: none"> <li><i>cbsdId</i> = Ci</li> <li><i>grantId</i> = Gi</li> <li>For CBSD1: <ul style="list-style-type: none"> <li><i>transmitExpireTime</i> = current UTC time + 200 seconds</li> <li><i>responseCode</i> = 0</li> </ul> </li> <li>For CBSD2: <ul style="list-style-type: none"> <li><i>transmitExpireTime</i> = T = current UTC time</li> <li><i>responseCode</i> = 500 (TERMINATED_GRANT)</li> </ul> </li> </ul>	--	--



4	<p>After completion of step 3, SAS Test Harness shall not allow any further grants to the UUT.</p> <p>If CBSD sends further Heartbeat Request messages for CBSD1, SAS Test Harness shall respond with a Heartbeat Response message with parameters:</p> <ul style="list-style-type: none"><li>• <i>cbsdId</i> = C1</li><li>• <i>grantId</i> = G1</li><li>• <i>transmitExpireTime</i> = current UTC time + 200 seconds</li><li>• <i>responseCode</i> = 0</li><li>• Heartbeat Request message is within <i>heartbeatInterval</i> of previous Heartbeat Request message</li></ul>	--	--
5	<p>Monitor the RF output of CBSD2. Verify:</p> <ul style="list-style-type: none"><li>• CBSD2 shall stop transmission within bandwidth F2 within (T + 60 seconds) of completion of step 3</li></ul>	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: <ul style="list-style-type: none"><li>• UUT has registered successfully with SAS Test Harness</li><li>• UUT has a valid single grant as follows:<ul style="list-style-type: none"><li>○ valid <i>cbsdlId</i> = C</li><li>○ valid <i>grantId</i> = G</li><li>○ grant is for frequency range F, power P</li><li>○ <i>grantExpireTime</i> = UTC time greater than duration of the test</li></ul></li><li>• UUT is in GRANTED, but not AUTHORIZED state (i.e. has not performed its first Heartbeat Request)</li></ul>	--	--
2	UUT sends a Heartbeat Request message. Ensure Heartbeat Request message is sent within latest specified <i>heartbeatInterval</i> , and is formatted correctly, including: <ul style="list-style-type: none"><li>• <i>cbsdlId</i> = C</li><li>• <i>grantId</i> = G</li><li>• <i>operationState</i> = "GRANTED"</li></ul>	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: <ul style="list-style-type: none"><li>• At any time during the test, UUT shall not transmit on RF interface</li></ul>	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: <ul style="list-style-type: none"> <li>• UUT has registered successfully with SAS Test Harness</li> <li>• UUT has a valid single grant as follows:               <ul style="list-style-type: none"> <li>○ valid <i>cbsdId</i> = C</li> <li>○ valid <i>grantId</i> = G</li> <li>○ grant is for frequency range F, power P</li> <li>○ <i>grantExpireTime</i> = UTC time greater than duration of the test</li> </ul> </li> <li>• UUT is in AUTHORIZED state and is transmitting within the grant bandwidth F on RF interface</li> </ul>	--	--
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: <ul style="list-style-type: none"> <li>• <i>cbsdId</i> = C</li> <li>• <i>grantId</i> = G</li> <li>• <i>operationState</i> = "AUTHORIZED"</li> </ul>	PASS	--
3	SAS Test Harness sends a Heartbeat Response message, with the following parameters: <ul style="list-style-type: none"> <li>• <i>cbsdId</i> = C</li> <li>• <i>grantId</i> = G</li> <li>• <i>transmitExpireTime</i> = current UTC time + 200 seconds</li> <li>• <i>responseCode</i> = 0</li> </ul>	--	--
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: <ul style="list-style-type: none"> <li>• UUT shall stop all transmission on RF interface within (<i>transmitExpireTime</i> + 60 seconds), using the <i>transmitExpireTime</i> sent in Step 3.</li> </ul>	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: <ul style="list-style-type: none"> <li>DP has successfully completed SAS Discovery and Authentication with SAS Test Harness</li> </ul>	--	--
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: <ul style="list-style-type: none"> <li>userId is present and correct</li> <li>fcclid is present and correct</li> <li>cbsdSerialNumber is present and correct</li> <li>measCapability = "RECEIVED_POWER_WITHOUT_GRANT"</li> </ul>	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: <ul style="list-style-type: none"> <li>cbsdId = Ci</li> <li>measReportConfig = "RECEIVED_POWER_WITHOUT_GRANT"</li> <li>responseCode = 0</li> </ul>	--	--
4	UUT sends a message: <ul style="list-style-type: none"> <li>If message is type Spectrum Inquiry Request, go to step 5, or</li> <li>If message is type Grant Request, go to step 7</li> </ul>	--	--
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: <ul style="list-style-type: none"> <li>cbsdId = Ci</li> <li>measReport is present, and is a properly formatted rcvdPowerMeasReport.</li> </ul>	PASS	--



6	<p>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.</p> <p>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.</p> <p>Parameters for each CBSD within the Spectrum Inquiry Response message should be as follows:</p> <ul style="list-style-type: none"><li>• <i>cbsdId</i> = Ci</li><li>• <i>availableChannel</i> is an array of <i>availableChannel</i> objects</li><li>• <i>responseCode</i> = 0</li></ul>	--	--
7	<p>UUT sends message type Grant Request message. This may occur in a separate message per CBSD, or together in a single message with array of 2. Verify the Grant Request message contains all required parameters properly formatted for CBSDi, i= {1,2}, and specifically:</p> <ul style="list-style-type: none"><li>• <i>cbsdId</i> = Ci</li><li>• <i>measReport</i> is present, and is a properly formatted <i>rcvdPowerMeasReport</i>.</li></ul>	PASS	--



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

#	Test Execution Steps	Results	
1	<p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> <li>DP has successfully completed SAS Discovery and Authentication with SAS Test Harness</li> <li>DP has successfully registered 2 CBSD with SAS TestHarness, each with <i>cbsdId=Ci, i={1,2}</i></li> <li>DP has received a valid grant with <i>grantId=Gi, i={1,2}</i> for each CBSD</li> <li>Both CBSD are in Grant State AUTHORIZED and actively transmitting within the bounds of their grants.</li> </ul> <p>Invoke trigger to relinquish each UUT Grant from the SAS Test Harness</p>	--	--
2	<p>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:</p> <ul style="list-style-type: none"> <li><i>cbsdId = Ci</i></li> <li><i>grantId = Gi</i></li> </ul>	PASS	--
3	<p>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.</p> <p>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.</p> <p>Parameters for each CBSD within the Relinquishment Response shall be as follows:</p> <ul style="list-style-type: none"> <li><i>cbsdId = Ci</i></li> <li><i>grantId = Gi</i> <ul style="list-style-type: none"> <li><i>responseCode = 0</i></li> </ul> </li> </ul>	--	--
4	<p>After completion of step 3, SAS Test Harness will not provide any additional positive response (<i>responseCode=0</i>) to further request messages from the UUT.</p>	--	--
5	<p>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:</p> <ul style="list-style-type: none"> <li>UUT shall stop RF transmission at any time between triggering the relinquishments and UUT sending the relinquishment requests for each CBSD.</li> </ul>	PASS	--





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

#	Test Execution Steps	Results	
1	<p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> <li>Each UUT has successfully registered with SAS Test Harness</li> <li>Each UUT is in the authorized state</li> <li>DP has successfully completed SAS Discovery and Authentication with SAS Test Harness</li> <li>DP has successfully registered 2 CBSD with SAS Test Harness, each with <i>cbsdId=Ci, i={1,2}</i></li> <li>DP has received a valid grant with <i>grantId=Gi, i={1,2}</i> for each CBSD</li> <li>Both CBSD are in Grant State AUTHORIZED and actively transmitting within the bounds of their grants.</li> </ul> <p>Invoke trigger to deregister each UUT from the SAS Test Harness</p>	--	--
2	UUT sends a Relinquishment request and receives Relinquishment response with <i>responseCode=0</i>	--	--
3	<p>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:</p> <ul style="list-style-type: none"> <li><i>cbsdId = Ci</i></li> </ul>	PASS	--
4	<p>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.</p> <p>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.</p> <p>Parameters for each CBSD within the Deregistration Response shall be as follows:</p> <ul style="list-style-type: none"> <li><i>cbsdId = Ci</i></li> <li><i>responseCode = 0</i></li> </ul>	--	--
5	After completion of step 4, SAS Test Harness will not provide any positive response ( <i>responseCode=0</i> ) to further request messages from the UUT.	--	--
6	<p>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:</p> <ul style="list-style-type: none"> <li>UUT stopped RF transmission at any time between triggering the deregistration and either A OR B occurs: <ul style="list-style-type: none"> <li>A. UUT sending a Registration Request message, as this is not mandatory</li> <li>B. UUT sending a Deregistration Request message</li> </ul> </li> </ul>	PASS	--



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

#	Test Execution Steps	Results	
1	<ul style="list-style-type: none"><li>• UUT shall start CBSD-SAS communication with the security procedure</li><li>• The UUT shall establish a TLS handshake with the SAS Test Harness using configured certificate.</li><li>• Configure the SAS Test Harness to accept the security procedure and establish the connection</li></ul>	PASS	--
2	<ul style="list-style-type: none"><li>• Make sure that Mutual authentication happens between UUT and the SAS Test Harness.</li><li>• Make sure that UUT uses TLS v1.2</li><li>• Make sure that ciphersuites from one of the following is selected,<ul style="list-style-type: none"><li>• TLS_RSA_WITH_AES_128_GCM_SHA256</li><li>• TLS_RSA_WITH_AES_256_GCM_SHA384</li><li>• TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256</li><li>• TLS_ECDHE_ECDSA_WITH_AES_256_GCM_SHA384</li><li>• TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256</li></ul></li></ul>	PASS	--
3	<p>A successful registration is accomplished using one of the test cases described in section 6.1.4.1, depending on CBSD capability.</p> <ul style="list-style-type: none"><li>• UUT sends a registration request to the SAS Test Harness and the SAS Test Harness sends a Registration Response with <i>responseCode = 0</i> and <i>cbsdId</i>.</li></ul>	PASS	--
4	<p>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:</p> <ul style="list-style-type: none"><li>• UUT shall not transmit RF</li></ul>	PASS	--



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

#	Test Execution Steps	Results	
1	<ul style="list-style-type: none"><li>UUT shall start CBS-D-SAS communication with the security procedures</li></ul>	PASS	--
2	<ul style="list-style-type: none"><li>Make sure that UUT uses TLS v1.2 for security establishment.</li><li>Make sure UUT selects the correct cipher suite.</li><li>UUT shall use CRL or OCSP to verify the validity of the server certificate.</li><li>Make sure that Mutual authentication does not happen between UUT and the SAS Test Harness.</li></ul>	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: <ul style="list-style-type: none"><li>UUT shall not transmit RF</li></ul>	PASS	--



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

#	Test Execution Steps	Results	
1	<ul style="list-style-type: none"><li>• UUT shall start CBS-D-SAS communication with the security procedures</li></ul>	PASS	--
2	<ul style="list-style-type: none"><li>• Make sure that UUT uses TLS v1.2 for security establishment.</li><li>• Make sure UUT selects the correct cipher suite.</li><li>• UUT shall use CRL or OCSP to verify the validity of the server certificate.</li><li>• Make sure that Mutual authentication does not happen between UUT and the SAS Test Harness.</li></ul>	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: <ul style="list-style-type: none"><li>• UUT shall not transmit RF</li></ul>	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	<ul style="list-style-type: none"><li>UUT shall start CBS-D-SAS communication with the security procedures</li></ul>	PASS	--
2	<ul style="list-style-type: none"><li>Make sure that UUT uses TLS v1.2 for security establishment.</li><li>Make sure UUT selects the correct cipher suite.</li><li>UUT shall use CRL or OCSP to verify the validity of the server certificate</li><li>Make sure that Mutual authentication does not happen between UUT and the SAS Test Harness.</li></ul>	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: <ul style="list-style-type: none"><li>UUT shall not transmit RF</li></ul>	PASS	--

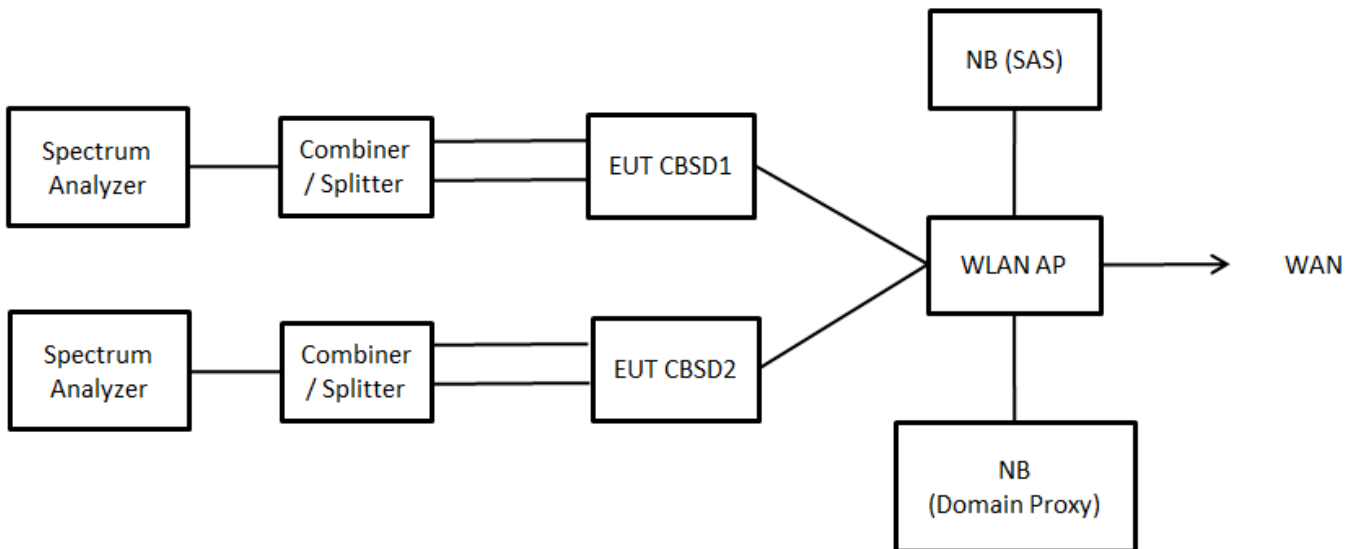


### 3.25 WINNF.FT.C.SCS.5 - TLS failure when certificate at the SAS Test Harness is corrupted

#	Test Execution Steps	Results	
1	<ul style="list-style-type: none"><li>• UUT shall start CBS-D-SAS communication with the security procedures</li></ul>	PASS	--
2	<ul style="list-style-type: none"><li>• Make sure that UUT uses TLS v1.2 for security establishment.</li><li>• Make sure UUT selects the correct cipher suite.</li><li>• UUT shall use CRL or OCSP to verify the validity of the server certificate.</li><li>• Make sure that Mutual authentication does not happen between UUT and the SAS Test Harness.</li></ul>	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: <ul style="list-style-type: none"><li>• UUT shall not transmit RF</li></ul>	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	<p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> <li>• UUT has successfully completed SAS Discovery and Authentication with the SAS Test Harness</li> <li>• UUT has registered with the SAS, with CBSID ID=C</li> <li>• 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</li> </ul> <p><i>Note: inorderfortheUUTtorequestagrantwiththeparameters {lowFrequency, highFrequency, maxEirp}, the SAS Test Harness may need to provide appropriate guidance in the availableChannel object ofthespectrumInquiry responsemessage,andtheoperationParam objectofthegrantresponsemessage. Alternately, theUUTvendor may provide the ability to set those parameters on the UUT so that the UUT will request a grant with those parameters.</i></p>	--	--
2	<p>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:</p> <ul style="list-style-type: none"> <li>• UUT sends Heartbeat Request, including: <ul style="list-style-type: none"> <li>○ cbsId = C</li> <li>○ grantId = G</li> </ul> </li> <li>• SAS Test Harness responds with Heartbeat Response, including: <ul style="list-style-type: none"> <li>○ cbsId = C</li> <li>○ grantId = G</li> <li>○ transmitExpireTime = currentUTCtime + 200seconds</li> <li>○ responseCode = 0</li> </ul> </li> </ul>	--	--





3	<p>Tester performs power measurement on RF interface(s) of UUT, and verifies it complies with the maxEirp setting, P<sub>i</sub>. The RF measurement method is out of scope of this document, but may include additional configuration of the UUT, as required, to fulfil the requirements of the power measurement method.</p> <p><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></p>	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**

<b>Test Items</b>	<b>Uncertainty</b>	<b>Remark</b>
Conducted Emission	1.3 dB	Confidence levels of 95%





```
"antennaAzimuth": 0,
"heightType": "AMSL",
"longitude": -88.8888,
"height": 0,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.4242,
"antennaGain": 18
},
"fcclId": "Z8H89FT0028",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "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": [
    {
      "cbssdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2018-09-12T07:24:32.713Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbssdCategory": "B",
      "cbssdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
        "vendor": "Cambium Networks"
      },
      "cbssdSerialNumber": "0a003e452ad4",
      "cpiSignatureData": {
        "digitalSignature":
"V5NPX0KBXnbcShkv6Bz6aHuEjjmyhF1wJ1sk2o24d8upjyFUJ3y_QNz5fXWzVX2HWQ4PFibA-Baeprij
EHsfr9XPZqvFNwzoq0LE4d76D_y0CBRXa7kMQjacvKdmKW9EKWEV1I-Q4kT_QWWPDJb53_ku0gs
EeM-_M_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qIfcDesRu9vaStS9vJrDEN_qbZ_6l
vRVEW_F6-KwY_khviWe2Rgn5u55iymp1aHCevyYlwwZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
F7SATjGMLGCOLK-qETRYOPe-cTYYjyaQAA",
        "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXliOilwYTAwM2U0NTJhZDQiLCJpbm
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjYyYXJlcjB25naXR1ZGUiOi04OC4wODA4LC
```



```
JoZWlnaHQiOjAslmhlaWdodFR5cGUiOiJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
dGVubmFBemltdXRoljowLcJhbnRlbn5hRG93bnRpbHQiOjAsImFudGVubmFHYWluljoxOCwiZWlycEN
hcGFiaWxpdHkiOjQwLcJhbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckRh
dGEiOnsiY3BpSWQiOiJjcGkxMjMiLcJjcGLOYW11ljoIQ1BJFVzZXIzIzIiwiaW5zdGFsbENlcnRpZmljY
XRpb25UaW11ljoIMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalN19",
    "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
  },
  "fcid": "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
},
"fcid": "Z8H89FT0028",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbid": "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": [
  {
    "cbid": "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_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qIfcDesRu9vaStS9vJrDEN_qbZ_6l
          vRVEW_F6-KwY_khviWe2Rgn5u55iymp1aHCevxYlwZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
          F7SATjGMLGCOLK-qETRYOPe-cTYyjyaQAA",
        "encodedCpiSignedData":
          "eyJmY2NJZCI6llo4SEZUMDAyOCIsImNic2RTZxJpYWxOdW1iZXIiOiIwYTAwM2U0NTJhZDQiLCJpbn
          N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjQyLCJsb25naXR1ZGU0i04OC4wODA4LC
          JoZWlnaHQiOiAsImhlaWdodFR5cGU0iJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
          dGVubmFBemltdXRoljowLCJhbnRlbn5hRG93bnRpbHQiOiAsImFudGVubmFHYWluljoxOCwiZWlycEN
          hcGFiaWxpdkhkiOjQwLCJhbnRlbn5hQmVhXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlcjRh
          dGEiOnsiY3BpSWQ0iJjcGkxMjMiLCJjcG10YW11ljo1Q1BJFVzZXIjMTIzIiwiaW5zdGFsbENicnRpZmljY
          XRpb25UaW11ljo1MjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fcclId": "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
},
"fcclId": "Z8H89FT0028",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "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"
      },
      "cbbsdCategory": "B",
      "cbbsdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
        "vendor": "Cambium Networks"
      },
      "cbbsdSerialNumber": "0a003e452b16",
      "cpiSignatureData": {
        "digitalSignature":
"KOZyADKurrPAas5JN-BghcC7fzhqCFOkr4zcheGIOI_Ilt23QFPAftVFOSfRzuXzfBch6xwPCrOTwcFMZ
XwuM_4RHFxmbnT6PyPrsy8pivlhdJ_GD9jMjny6HSoOy3nEo3pqJLB7AGv0mt1eodt1YT2yWGepwltVI7
QRWnWHdyzsP9XSQlkd_Phvc-l_bdjJkXcnFzxr7hCirdKrqX1Wbg2Eft9uOXp6MmB3p_ax-twwzywWWa
IPYXUlm5jtHVhnbAL5vc37-Djo4jCBnO3m-b3DvJhQ3_d8NXeco-F939cBHumrEUZMsnkQZRRBLHFdh
LNB7so7tVVTFbRNvfCHBw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXliOilwYTAwM2U0NTJiMTYiLjIjbn
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluNDI0MiwibG9uZ2l0dWRlljotODguODg4OCwia
GVpZ2h0ljoWLCJoZWlnaHRUeXBlljoiQU1TTTCIsImlluZG9vckRlcGxveW1lbnQiOmZhbHNILCJhbhRlbnM5
```





```
]
}
```

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 : {

```
"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_GD9jMjny6HSoOy3nEo3pqJLB7AGv0mt1eodt1YT2yWGepwltV7
QRWnWHdyzsP9XSQlkd_Phvc-l_bdjJkXcnFzxr7hCirdKrqX1Wbg2Eft9uOXp6MmB3p_ax-twwzywWWa
IPYXUlm5jtHVhHbAL5vc37-Djo4jCBnO3m-b3DvJhQ3_d8NXeco-F939cBHumrEUZMsnkQZRRBLHFdh
LNB7so7tVVTFbRNvfCHBw",
      "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SEZUMDAyOCIsImNic2RTZxJpYWwOdW1iZXIiOiIwYTAwM2U0NTJiMTYiLCJpbm
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDIuNDI0MiwiwibG9uZ2I0dWRlljotODguODg4OCwia
GVpZ2h0IjowLCJoZWlnaHRUeXBlljoiQU1TTCIsImluZG9vckRlcGxveW1lbnQiOmZhbnHNILCJhbnRlbnM5
hQXppbXV0aCI6MCwiYW50ZW5uYURvd250aWx0IjowLCJhbnRlbnM5hR2Fpbil6MTgslmVpcnBDYXBh
YmlsaXR5Ijo0MCwiYW50ZW5uYUJiYV13aWR0aCI6OTB9LCJwcm9mZmVyc2Vyc2Vyc2Vyc2Vyc2Vyc2Vyc2
JEYXRhIjpwImNwaUlkljoiY3BpMTIzIiwilwY3BpTmFtZSI6IklkNQSSBVc2VyIDEyMyIuODYyWjI0aWpYfQ",
      "protectedHeader": "eyJhbGciOiJIUzU1NiIsInR5cCI6IkpXVCJ9"
    },
    "fcclId": "Z8H89FT0028",
    "groupingParam": [
      {
        "groupId": "0a-00-3e-45-2b-16",
        "groupType": "INTERFERENCE_COORDINATION"
      }
    ],
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "SF5W5D"
  }
]
```

2018-09-12T07:29:55.483Z - INFO - Registration message contains cpiSignatureData

2018-09-12T07:29:55.483Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2018-09-12T07:29:55.483Z - 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"
},
"cbid": "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"
      },
      "cbid": "B",
      "cbidInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
        "vendor": "Cambium Networks"
      },
      "cbid": "0a003e452ad4",
      "cpiSignatureData": {
        "digitalSignature":
"V5NPX0KBXnbcShkv6Bz6aHuEjjmyhF1wJ1sk2o24d8upjyFUJ3y_QNz5fXWzVX2HWQ4PFibA-Baepri
EHsfr9XPZqvFNwzoq0LE4d76D_y0CBRXa7kMQjacvKdmKW9EKWEV1I-Q4kT_QWwPDJb53_ku0gs
EeM-_M_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qIfcDesRu9vaStS9vJrDEN_qbZ_6l
vRVEW_F6-KwY_khviWe2Rgn5u55iymp1aHCevyYlwZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
F7SATjGMLGCOLK-qETRYOPe-cTYYjyaQAA",
        "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXIiOiIwYTAWM2U0NTJhZDQiLCJpbn
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjYyLCJsb25naXR1ZGUiOiI0OC4wODA4LC
JoZWlnaHQiOiJAsImhlaWdodFR5cGUiOiJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
```



```
dGVubmFBemltdXRoljowLCJhbnRlbn5hRG93bnRpbHQiOjAsImFudGVubmFHYWluljoxOCwiZWlycENhcGFiaWxpdHkiOjQwLCJhbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckRh dGEiOnsiY3BpSWQzOiJjcGkxMjMiLCJjcGLOYW11ljoIQ1BJIFVzZXIiMTIzIiwiaW5zdGFsbENlcnRpZmljYXRpb25UaW11ljoIMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalN19",
    "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"}
  },
  "fcclId": "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
  },
  "fcclId": "Z8H89FT0028",
  "professionalInstallerData": {
    "cpiName": "CPI User 123",
    "installCertificationTime": "2018-05-09T15:51:12.866Z",
    "cpild": "cpi123"
  },
  "cbbsdSerialNumber": "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_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qIfcDesRu9vaStS9vJrDEN_qbZ_6l
vRVEW_F6-KwY_khviWe2Rgn5u55iymp1aHCevxYlWzZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
F7SATjGMLGCOLK-qETRYOPe-cTYyjyaQAA",
        "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SEZUMDAyOCIsImNic2RTZxJpYWxOdW1iZXIiOiIwYTAwM2U0NTJhZDQiLCJpbn
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjQyLCJsb25naXR1ZGUiOiI0OC4wODA4LC
JoZWlnaHQiOiJAsImhlaWdodFR5cGUiOiJBTVMliwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
dGVubmFBemltdXRoljowLCJhbnRlbn5hRG93bnRpbHQiOiJAsImFudGVubmFHYWluljoxOCwiZWlycEN
hcGFiaWxpdkhkiOiJwLCJhbnRlbn5hQmVhXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlcckRh
dGEiOnsiY3BpSWQwIjIjcGkxMjMiLCJjcG10YW11Ijo1Q1BJFVzZXIiMTIzIiwiaW5zdGFsbENicnRpZmljY
XRpb25UaW11Ijo1MjAxOC0wNS0wOVQxNT01MT0xMi44NjZalN19",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fcclId": "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"
},
"cbbsdSerialNumber": "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": [
    {
      "cbssdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-12T07:31:33.592Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbssdId": "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-BghcC7fzhqCFOkr4zcheGfOI_lIt23QFPAftVFOSfRzuXzfBch6xwPCrOTwcfMZ
XwuM_4RHFxmbnT6PyPrsy8pivlhdJ_GD9jMjny6HSoOy3nEo3ppqJLB7AGv0mt1eodt1YT2yWGepwlTtVI7
QRWnWHdyzsP9XSQLkd_Phvc-l_bdjJkXcnFzxr7hCirdKrQX1Wbg2Eft9uOXp6MmB3p_ax-twwzywWWa
IPYXUlm5jtHVhbAL5vc37-Djo4jCBnO3m-b3DvJhQ3_d8NXeco-F939cBHumrEUZMsnkQZRRBLHFdh
LNB7so7tVVTfBRNvfCHBw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXliOilwYTAwM2U0NTJiMTYiLCJpbn
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluNDI0MiwibG9uZ2l0dWRlljotODguODg4OCwia
GVpZ2h0IjowLCJoZWlnaHRUeXBlljoiQU1TTClsmIluZG9vckRlcGxveW1lbnQiOmZhbHNILCJhbnRlbn5h
hQXppbXV0aCI6MCwiYW50ZW5uYURvd250aWx0IjowLCJhbnRlbn5hR2Fpbil6MTgsImVpcnBDYXBh
YmlsaXR5Ijo0MCwiYW50ZW5uYUJlYW13aWR0aCI6OTB9LCJwcm9mZXNzaW9uYWxJbnN0YWxsZX
JEYXRhIjpw7ImNwaUlkljoiY3BpMTIzIiwY3BpTmFtZSI6IkNQS5Bvc2VyIDEyMyslImIuc3RhbGxkZSJKOa
WZpY2F0aW9uVGlZSI6ljlwMTgtMDUtMDIUMTU6NTE6MTIuODY2WiJ9fQ",
        "protectedHeader": "eyJhbGciOiJSUz11NiIsInR5cGU6ImN0YXkiLCJ0aWQiOiJ1IiwiaWF0Ijoi"
      }
    },
    "fccId": "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
```





```
"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"
},
"cbid": "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"
      },
      "cbid": "0a003e452ad4",
      "cbidInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
        "vendor": "Cambium Networks"
      },
      "cpiSignatureData": {
        "digitalSignature":
"V5NPX0KBXnbcShkv6Bz6aHuEjjmyhF1wJ1sk2o24d8upjyFUJ3y_QNz5fXWzVX2HWQ4PFibA-Baepri
EHsfr9XPZqvFNwzoq0LE4d76D_y0CBRXa7kMQjacvKdmKW9EKWEV1I-Q4kT_QWwPDJb53_ku0gs
EeM-_M_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qIfcDesRu9vaStS9vJrDEN_qbZ_6l
vRVEW_F6-KwY_khviWe2Rgn5u55iymp1aHCevyYlWzZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
F7SATjGMLGCOLK-qETRYOPe-cTYyjyaQAA",
        "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXIiOiIwYTAwM2U0NTJhZDQilLCJpbn
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjYyLCJsb25naXR1ZGUiOiI0OC4wODA4LC
JoZWlnaHQiOiJAsImhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
```



```
dGVubmFBemltdXRoljowLCJhbnRlbn5hRG93bnRpbHQiOjAsImFudGVubmFHYWluljoxOCwiZWlycENhcGFiaWxpdkHkiOjQwLCJhbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckRh dGEiOnsiY3BpSWQzOiJjcGkxMjMiLCJjcGLOYW11ljoIQ1BJIFVzZXIgaMTIzIiwiaW5zdGFsbENlcnRpZmljYXRpb25UaW11ljoIMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalN19",
    "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"}
  },
  "fcclId": "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
},
"fcclId": "Z8H89FT0028",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "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": [
  {
    "cbssId": "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_4RHFxmbnT6PyPrsy8pivlhJ_GD9jMjny6HSoOy3nEo3pqJLB7AGv0mt1eodt1YT2yWGepwltVI7
QRWnWHdyzsP9XSQlkd_Phvc-l_bdjJkXcnFzxr7hCirdKrQX1Wbg2Eft9uOXp6MmB3p_ax-twwzywWWa
IPYXUlm5jtHVHhbAL5vc37-Djo4jCBnO3m-b3DvJhQ3_d8NXeco-F939cBHumrEUZMSnkQZRRBLHFdh
LNB7so7tVVTFbRNvfCHBw",
      "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SEZUMDAyOCIsImNic2RTZXJpYWwXOdW1iZXIiOiIwYTAwM2U0NTJiMTYiLCJpbn
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluNDI0MiwibG9uZ2l0dWRlljotODguODg4OCwia
GVpZ2h0IjowLCJoZWlnaHRUeXBlljoiQU1TTClslmluZG9vckRlcGxveW1lbnQiOmZhbnHNILCJhbnRlbnM5
hQXppbXV0aCI6MCwiYW50ZW5uYURvd250aWx0IjowLCJhbnRlbnM5hR2Fpbil6MTgsImVpcnBDYXBh
YmlsaXR5Ijo0MCwiYW50ZW5uYUJlY1w1aWR0aCI6OTB9LCJwcm9mZm9uYV9uYXxJbnN0YWxsZX
JEYXRhIjpw7ImNwaUlkljoiY3BpMTlzlwiY3BpTmFtZSI6IkNkQSSBVc2VyIDEyMyRlbnRlbnRlbnM5hR2Fpbil6MTgsImVpcnBDYXBh
WZpY2F0aW9uVGlzSI6ljlwMTgtMDUuMDIUMTU6NTE6MTIuODY2WiJ9fQ",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fcclid": "Z8H89FT0028",
    "groupingParam": [
      {
        "groupId": "0a-00-3e-45-2b-16",
        "groupType": "INTERFERENCE_COORDINATION"
      }
    ],
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "SF5W5D"
  }
]
```

2018-09-12T07:34:53.023Z - 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"
},
"cbid": "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"
      },
      "cbid": "B",
      "cbidInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
        "vendor": "Cambium Networks"
      },
      "cbid": "0a003e452ad4",
      "cpiSignatureData": {
        "digitalSignature":
"V5NPX0KBXnbcShkv6Bz6aHuEjjmyhF1wJ1sk2o24d8upjyFUJ3y_QNz5fXWzVX2HWQ4PFibA-Baepri
EHsfr9XPZqvFNwzoq0LE4d76D_y0CBRXa7kMQjacvKdmKW9EKWEV1I-Q4kT_QWwPDJb53_ku0gs
EeM-_M_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qIfcDesRu9vaStS9vJrDEN_qbZ_6l
vRVEW_F6-KwY_khviWe2Rgn5u55iymp1aHCevyYlWzZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
F7SATjGMLGCOLK-qETRYOPe-cTYYjyaQAA",
        "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXIiOiIwYTAwM2U0NTJhZDQiLCJpbn
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjYyLCJsb25naXR1ZGUiOiI0OC4wODA4LC
JoZWlnaHQiOiJAsImhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
```



```
dGVubmFBemltdXRoljowLCJhbnRlbn5hRG93bnRpbHQiOjAsImFudGVubmFHYWluljoxOCwiZWlycENhcGFiaWxpdHkiOjQwLCJhbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckRh dGEiOnsiY3BpSWQzOjIjGkxMjMiLCJjcGLOYW1lIjoiQ1BJIFVzZXIiMTIzIiwiaW5zdGFsbENlcnRpZmljYXRpb25UaW1lIjoiMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",
    "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"}
  },
  "fcid": "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
  },
  "fcid": "Z8H89FT0028",
  "professionalInstallerData": {
    "cpiName": "CPI User 123",
    "installCertificationTime": "2018-05-09T15:51:12.866Z",
    "cpild": "cpi123"
  },
  "cbbsdSerialNumber": "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-Baerj
EHsfr9XPZqvFNwzoq0LE4d76D_y0CBRXa7kMQjacvKdmKW9EKWEV1I-Q4kT_QWWPDJb53_ku0gs
EeM-_M_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qIfcDesRu9vaStS9vJrDEN_qbZ_6l
vRVEW_F6-KwY_khviWe2Rgn5u55iymp1aHCevxYlWzZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
F7SATjGMLGCOLK-qETRYOPe-cTYyjyaQAA",
        "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SEZUMDAyOCIsImNic2RTZxJpYWxOdW1iZXliOilwYTAwM2U0NTJhZDQiLCJpbn
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjQyLCJsb25naXR1ZGUiOi04OC4wODA4LC
JoZWlnaHQiOiAsImhlaWdodFR5cGUiOiJBTVMlIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
dGVubmFBemltdXRoljowLCJhbnRlbn5hRG93bnRpbHQiOiAsImFudGVubmFHYWluljoxOCwiZWlycEN
hcGFiaWxp dHkiOjQwLCJhbnRlbn5hQmVhXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlc kRh
dGEiOnsiY3BpSWQiOiJjcGxkMjMlLCJjcG9iYW1lIjo1Q1BJIFVzZXIiOiJlIiwiaW5kdGFsbENicnRpZmljY
XRpb25UaW1lIjo1MjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fcclId": "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"
},
"cbbsdSerialNumber": "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": [
    {
      "cbssdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-12T07:36:23.519Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbssdCategory": "B",
      "cbssdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
        "vendor": "Cambium Networks"
      },
      "cbssdSerialNumber": "0a003e452b16",
      "cpiSignatureData": {
        "digitalSignature":
"KOZyADKurrPAAs5JN-BghcC7fzhqCFOKr4zcheGIOI_Ilt23QFPAftVFOSfRzuXzfBch6xwPCrOTwcFMZ
XwuM_4RHFxmbnT6PyPrsy8pivlhdJ_GD9jMjny6HSoOy3nEo3pqJLB7AGv0mt1eodt1YT2yWGepwltVI7
QRWnWHdyzsP9XSQlkd_Phvc-l_bdjJkXcnFzxr7hCirdKrqX1Wbg2Eft9uOXp6MmB3p_ax-twwzywWWa
IPYXUlm5jtHVhbbAL5vc37-Djo4jCBnO3m-b3DvJhQ3_d8NXeco-F939cBHumrEUZMsnkQZRRBLHFdh
LNB7so7tVVTFbRNvfCHBw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXliOilwYTAwM2U0NTJiMTYiLjJpbn
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluNDI0MiwibG9uZ2I0dWRlljotODguODg4OCwia
```



```
GVpZ2h0ljowLCJoZWInaHRUeXBlljoiQU1TTClsImluZG9vckRlcGxveW1lbnQiOmZhbnHNILCJhbnRlbn5  
hQXppbXV0aCI6MCwiYW50ZW5uYURvd250aWx0ljowLCJhbnRlbn5hR2Fpbil6MTgsImVpcnBDYXBh  
YmlsaXR5ljo0MCwiYW50ZW5uYUJlYW13aWR0aCI6OTB9LCJwcm9mZnZlbnZuYVYxJbnN0YWxsZX  
JEYXRhIjpw7ImNwaUlkljoiY3BpMTlziwiY3BpTmFtZSI6IkNQSSBVc2VyIDEyMyIsImVudCI6ImNlc3RhbnRlcGxveW1lbnQ  
WZpY2F0aW9uVGltZSI6IjwMTgtMDU0tMDUUMTU6NTE6MTludODY2WiJ9fQ",  
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"  
    },  
    "fccId": "Z8H89FT0028",  
    "groupingParam": [  
      {  
        "groupId": "0a-00-3e-45-2b-16",  
        "groupType": "INTERFERENCE_COORDINATION"  
      }  
    ],  
    "measCapability": [  
      "RECEIVED_POWER_WITHOUT_GRANT"  
    ],  
    "userId": "SF5W5D"  
  }  
]  
}  
  
2018-09-12T07:36:23.549Z - INFO - Registration message contains cpiSignatureData  
2018-09-12T07:36:23.549Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}  
2018-09-12T07:36:23.549Z - 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"  
}  
  
2018-09-12T07:36:23.549Z - INFO - verified signature on cpiSignatureData  
2018-09-12T07:36:23.565Z - INFO - cpiSignatureData data successfully validated against jsonschema  
2018-09-12T07:36:23.565Z - INFO - engine sent successfully, the response to CBRS : {  
  "registrationResponse": [  
    {  
      "response": {  
        "responseCode": 201  
      }  
    }  
  ]  
}
```



```
}  
]  
}  
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_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qIfcDesRu9vaStS9vJrDEN_qbZ_6l
vRVEW_F6-KwY_khviWe2Rgn5u55iymp1aHCevxYlWzZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
F7SATjGMLGCOLK-qETRYOPe-cTYyjyaQAA",
        "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZxJpYWxOdW1iZXIiOiIwYTAwM2U0NTJhZDQiLCJpbn
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjQyLCJsb25naXR1ZGU0OC4wODA4LC
JoZWlnaHQiOiJAsImhlaWdodFR5cGU0iJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
dGVubmFBemltdXRoljowLCJhbnRlbn5hRG93bnRpbHQiOiJAsImFudGVubmFHYWluljoxOCwiZWlycEN
hcGFiaWxpdkhkiOiJwLCJhbnRlbn5hQmVhXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlcckRh
dGEiOnsiY3BpSWQiOiJjcGxkMjMiLCJjcG9iYW1lIjo1Q1BJIFVzZXIiOiJlZWliW5zdGFsbENicnRpZmljY
XRpb25UaW1lIjo1MjAxOC0wNS0wOVQxNT01MT0xMi44NjZalN19",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fcclId": "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"
},
"cbbsdSerialNumber": "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": [
    {
      "cbssdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-12T08:01:56.861Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbssdId": "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_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qIfcDesRu9vaStS9vJrDEN_qbZ_6l
vRVEW_F6-KwY_khviWe2Rgn5u55iymp1aHCevxYlWzZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
F7SATjGMLGCOLK-qETRYOPe-cTYyjyaQAA",
        "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SEZUMDAyOCIsImNic2RTZxJpYWxOdW1iZXIiOiIwYTAwM2U0NTJhZDQiLCJpbn
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjQyLCJsb25naXR1ZGUiOiI0OC4wODA4LC
JoZWlnaHQiOiJAsImhlaWdodFR5cGUiOiJBTVMlIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
dGVubmFBemltdXRoljowLCJhbnRlbn5hRG93bnRpbHQiOiJAsImFudGVubmFHYWluljoxOCwiZWlycEN
hcGFiaWxpdkhkiOiJwLCJhbnRlbn5hQmVhXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlcckRh
dGEiOnsiY3BpSWQwIjoiJjcGkxMjMiLCJjcG10YVw1IjoiQ1BJIFVzZXIiGmTlZlIiwiaW5zdGFsbENicnRpZmljY
XRpb25UaW1lIjoiMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalN19",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fcclId": "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"
},
"cbstdSerialNumber": "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": [
    {
      "cbstdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-12T08:04:57.447Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbstdId": "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_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qffcDesRu9vaStS9vJrDEN_qbZ_6l
vRVEW_F6-KwY_khviWe2Rgn5u55iymp1aHCevxYlwZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
F7SATjGMLGCOLK-qETRYOPe-cTYYjyaQAA",
        "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZXJpYWwOdW1iZXliOiIwYTAwM2U0NTJhZDQiLCJpbn
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjQyYXJlcjB5b25naXR1ZGUiOiI0OC4wODA4LC
JoZWlnaHQiOiQjAsImhlaWdodFR5cGUiOiJBTVMlIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
dGVubmFBemltdXRoljowLCJhbnRlbn5hRG93bnRpbHQiOiQjAsImFudGVubmFHYWluljoxOCwiZWlycEN
hcGFiaWxpdkhkiOiQjQwLCJhbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckRh
dGEiOnsiY3BpSWQjOiQjGkxMjMiLCJjcG10YVw1IjoiQ1BJIFVzZXIiGmTlZlIiwiaW5zdGFsbENicnRpZmljY
XRpb25UaW1lIjojMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fcclId": "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": [
    {
      "cbssdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-12T08:09:58.153Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbssdId": "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-BghcC7fzhqCFOKr4zcheGIOI_Ilt23QFPAftVFOsfrZuXzfBch6xwPCrOTwcFMZ
XwuM_4RHFxmbnT6PyPrsy8pivlhdJ_GD9jMjny6HSoOy3nEo3pqJLB7AGv0mt1eodt1YT2yWGepwltVI7
QRWnWHdyzSP9XSQlkd_Phvc-l_bdjJkXcnFzxr7hCirdKrqX1Wbg2Eft9uOXp6MmB3p_ax-twwzywWWa
IPYXUIm5jtHVhbbAL5vc37-Djo4jCBnO3m-b3DvJhQ3_d8NXeco-F939cBHumrEUZMsnkQZRRBLHFdh
LNB7so7tVVTFbRNvfCHBw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXIiOiIwYTAwM2U0NTJiMTYiLCJpbm
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDIuNDI0MiwibG9uZ2I0dWRlIjotODguODg4OCwia
GVpZ2h0IjowLCAiYm90aCI6MCwiYW50ZW5uYURvd250aWx0IjowLCAiYm90aCI6OTB9LCJwcm9mZnNzaW9uYWxJbnN0YWxsZX
YmlsaXR5Ijo0MCwiYW50ZW5uYUJiY1I3aWR0aCI6OTB9LCJwcm9mZnNzaW9uYWxJbnN0YWxsZX
JEYXRhIjpw7ImNwaUlkljoiY3BpMTlziwiY3BpTmFtZSI6IkNQSsBVc2VyIDEyMyIsImVudCkiOiJluc3RhbGxkZDZlJ0a
WZpY2F0aW9uVGlzZSI6IjwMTgtMDU0MDU0NTU6NTE6MTIuODY2WiJ9fQ",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fcclId": "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-BaeprijEHsfr9XPZqvFNwzoq0LE4d76D\_y0CBRXa7kMQjacvKdmKW9EKWEV1I-Q4kT\_QWWPDJb53\_ku0gsEeM-\_M\_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qfcdesRu9vaStS9vJrDEN\_qbZ\_6lvRVEW\_F6-KwY\_khviWe2Rgn5u55iymp1aHCevxYlWzZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5AF7SATjGMLGCOLK-qETRYOPe-cTYyjyaQAA",

"encodedCpiSignedData":

"eyJmY2NJZCI6llo4SEZUMDAyOCIsImNic2RTZXJpYWwOdW1iZXliOilwYTAwM2U0NTJhZDQiLCJpbnN0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjYyZGUiOi04OC4wODA4LCoZlWlnaHQiOiAsImhlaWdodFR5cGUiOiJBTvNmliwW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFuZGVubmFBemltdXRoljowLCJhbnRlbnM5hRG93bnRpbHQiOiAsImFudGVubmFHYWluljoxOCwiZWlycENhcGFiaWxpdkhkiOiJwLCJhbnRlbnM5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlcjRhZGEiOnsiY3BpSWQwOiJjcGxkMjIwMTIzIiwiaW5zdGFsbENicnRpb25UaW1ljoijMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalN19",

"protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"

},

"fcid": "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"
},
"cbbsdSerialNumber": "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": [
    {
      "cbssdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2018-09-12T08:28:30.092Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbssdId": "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": "2018-09-12T08:33:40Z"
    }
]
}
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-Baeprij
EHsfr9XPZqvFNwzoq0LE4d76D_y0CBRXa7kMQjacvKdmKW9EKWEV1I-Q4kT_QWWPDJb53_ku0gs
EeM-_M_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qIfcDesRu9vaStS9vJrDEN_qbZ_6l
vRVEW_F6-KwY_khviWe2Rgn5u55iymp1aHCevxYlWZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
F7SATjGMLGCOLK-qETRYOPe-cTYyjyaQAA",
      "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SEZUMDAyOCIsImNic2RTZXJpYWwOdW1iZXliOiIwYTAwM2U0NTJhZDQiLCJpbn
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjYyZGUiOi04OC4wODA4LC
JoZWlnaHQiOiAsImhlaWdodFR5cGUiOiJBTVMlIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
dGVubmFBemltdXRoljowLjZhbG93bnRpbHQiOiAsImFudGVubmFHYWluljoxOCwiZWlycEN
hcGFiaWxpdkhkiOiJwLjZhbG93bnRpbHQiOiAsImFudGVubmFHYWluljoxOCwiZWlycEN
dGEiOnsiY3BpSWQwIjoiJicGkxMjMiLCJjcG10YV11IjojQ1BJIFVzZXIiMTIzIiwiaW5kdGFsbENicnRpZmljY
XRpb25UaW11IjojMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalN19",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsImR5cCI6IkpXVCJ9"
    },
    "fcclId": "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"  
            },  
            "cbstdCategory": "B",  
            "cbstdInfo": {  
                "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",  
                "vendor": "Cambium Networks"  
            },  
            "cbstdSerialNumber": "0a003e452ad4",  
            "cpisignatureData": {  
                "digitalSignature":  
"V5NPX0KBXnbcShkv6Bz6aHuEjjmyhF1wJ1sk2o24d8upjyFUJ3y\_QNz5fXWzVX2HWQ4PFibA-Baeprij  
EHsfr9XPZqvFNwzoq0LE4d76D\_y0CBRXa7kMQjacvKdmKW9EKWEV1I-Q4kT\_QWWPDJb53\_ku0gs  
EeM-\_M\_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qfcdesRu9vaStS9vJrDEN\_qbZ\_6l  
vRVEW\_F6-KwY\_khviWe2Rgn5u55iymp1aHCevxYlWzZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A  
F7SATjGMLGCOLK-qETRYOPe-cTYyjyaQAA",  
                "encodedCpiSignedData":  
"eyJmY2NJZCI6llo4SEZUMDAyOCIsImNic2RTZXJpYWwOdW1iZXliOiIwYTAwM2U0NTJhZDQiLCJpbm  
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjYyLWVudCJsb25naXR1ZGU0OC4wODAwODAw  
JoZWlnaHQiOiAsImhlaWdodFR5cGU0IjBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu  
dGVubmFBemltdXRoljowLCJhbnRlbnM5hRG93bnRpbHQiOiAsImFudGVubmFHYWluljoxOCwiZWlycEN  
hcGFiaWxpdkhkiOiJwLCJhbnRlbnM5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlcKkRh  
dGEiOnsiY3BpSWQ0IjoiJicGkxMjMiLCJjcG10YXW1IjoiQ1BJIFVzZXIiMTIzIiwiaW5kdGFsbENicnRpZmljY  
XRpb25UaW1IjoiMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalN19",  
                "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"  
            },  
            "fcclid": "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"
},
"cbbsdSerialNumber": "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": [
    {
      "cbssdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2018-09-12T08:39:51.825Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbssdId": "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": "2018-09-12T08:44:29Z"
    }
]
}
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_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qfcdesRu9vaStS9vJrDEN_qbZ_6l
vRVEW_F6-KwY_khviWe2Rgn5u55iymp1aHCevxYlwZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
F7SATjGMLGCOLK-qETRYOPe-cTYYjyaQAA",
        "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SEZUMDAyOCIsImNic2RTZXJpYWwOdW1iZXliOiIwYTAwM2U0NTJhZDQiLCJpbm
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjYyLWVudCJsb25naXR1ZGUiOi04OC4wODA4LC
JoZWlnaHQiOiQjAsImhlaWdodFR5cGUiOiJBTVMlIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
dGVubmFBemltdXRoljowLCJhbnRlbnM5hRG93bnRpbHQiOiQjAsImFudGVubmFHYWluljoxOCwiZWlycEN
hcGFiaWxpdkhkiOiQjQwLCJhbnRlbnM5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlcRk
dGEiOnsiY3BpSWQjOiQjGkxMjMiLCJjcG10YV11IjojQ1BJIFVzZXIqMTIzIiwiaW5kdGFsbENicnRpZmljY
XRpb25UaW11IjojMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalN19",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fcclId": "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": [
    {
      "cbssdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2018-09-12T08:50:12.098Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbssdId": "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





```
"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"
}
2018-09-12T08:55:04.193Z - 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": [
    {
      "cbssdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2018-09-12T08:55:11.322Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbssdId": "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-BghcC7fzhqCFOKr4zcheGIOI_Ilt23QFPAftVFOsFrZuXzfBch6xwPCrOTwcFMZ
XwuM_4RHFxmbnT6PyPrsy8pivlhdJ_GD9jMjny6HSoOy3nEo3pqJLB7AGv0mt1eodt1YT2yWGepwltVI7
QRWnWHdyzsP9XSQlkd_Phvc-l_bdjJkXcnFzxr7hCirdKrqX1Wbg2Eft9uOXp6MmB3p_ax-twwzywWWa
IPYXUIm5jtHVhbbAL5vc37-Djo4jCBnO3m-b3DvJhQ3_d8NXeco-F939cBHumrEUZMsnkQZRRBLHFdh
LNB7so7tVVTFbRNvfCHBw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXIiOiIwYTAwM2U0NTJiMTYiLCJpbn
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDIuNDI0MiwiG9uZ2I0dWRlIjotODguODg4OCwia
GVpZ2h0IjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjow
hQXppbXV0aCI6MCwiYW50ZW5uYURvd250aWx0IjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjow
YmlsaXR5Ijo0MCwiYW50ZW5uYUJlYyY1M3aWR0aCI6OTB9LCJwcm9mZnNzaW9uYUx0YUx0YUx0YUx0
JEYXRhIjpw7lMnwaUlkljoiY3BpMTlziwiY3BpTmFtZSI6IkNQSsBVc2VyIDEyMyImluc3RhbGx0ZDZlOa
WZpY2F0aW9uVGlzI6IjwMTgtMDU0MDU0MDU0MDU0MDU0MDU0MDU0MDU0MDU0MDU0MDU0MDU0MDU0MDU0
"protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fcclId": "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":
"V5NPX0KBXnbcShkv6Bz6aHuEjmyhF1wJ1sk2o24d8upjyFUJ3y_QNz5fXWzVX2HWQ4PFibA-Baepri
EHsfr9XPZqvFNwzoq0LE4d76D_y0CBRXa7kMQjacvKdmKW9EKWEV1I-Q4kT_QWWPDJb53_ku0gs
EeM-_M_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qIfcDesRu9vaStS9vJrDEN_qbZ_6l
vRVEW_F6-KwY_khviWe2Rgn5u55iymp1aHCevxYlWZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
F7SATjGMLGCOLK-qETRYOPe-cTYyjyQAA",
      "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXliOiIwYTAwM2U0NTJhZDQiLCJpbn
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjYyLWVudCJsb25naXR1ZGU0OC4wODAwLWVudC
JoZWlnaHQiOiJAsImhlaWdodFR5cGU0IjBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
dGVubmFBemltdXRoljowLWVudCJhbnRlbnM5hRG93bnRpbHQiOiJAsImFudGVubmFHYWluljoxOCwiZWlycEN
hcGFiaWxpdkHkiOiJwLWVudCJhbnRlbnM5hRmVhXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlcRk
dGEiOnsiY3BpSWQ0IjoiJicGkxMjMiLCJjcG10YXN1IjoiQ1BJIFVzZXIiGm10IzIiwiaW5zdGFsbENicnRpZmljY
XRpb25UaW1lIjoiMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fcclId": "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": [
    {
      "cbssdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-12T09:29:03.336Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbssdId": "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_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qIfcDesRu9vaStS9vJrDEN_qbZ_6l
vRVEW_F6-KwY_khviWe2Rgn5u55iymp1aHCevxYlWzZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
F7SATjGMLGCOLK-qETRYOPe-cTYyjyaQAA",
        "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZxJpYWxOdW1iZXIiOiIwYTAwM2U0NTJhZDQiLCJpbn
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjQyLCJsb25naXR1ZGU0I04OC4wODA4LC
JoZWlnaHQiOiQAsImhlaWdodFR5cGU0iJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
dGVubmFBemltdXRoljowLCJhbnRlbn5hRG93bnRpbHQiOiQAsImFudGVubmFHYWluljoxOCwiZWlycEN
hcGFiaWxpdkhkiOiQwLCJhbnRlbn5hQmVhXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlcKRh
dGEiOnsiY3BpSWQ0iJjcGkxMjMiLCJjcG10YVw1IjoiQ1BJFVzZXIiMTIzIiwiaW5zdGFsbENicnRpZmljY
XRpb25UaW1IjoiMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalN19",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fcclId": "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"
},
"cbbsdSerialNumber": "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": [
    {
      "cbssdId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2018-09-12T10:13:27.540Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbssdId": "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"
      },
      "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_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qIfcDesRu9vaStS9vJrDEN_qbZ_6l
vRVEW_F6-KwY_khviWe2Rgn5u55iymp1aHCevxYlWzZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
F7SATjGMLGCOLK-qETRYOPe-cTYyjyaQAA",
        "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZxJpYWxOdW1iZXIiOiIwYTAwM2U0NTJhZDQiLCJpbn
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjQyLCJsb25naXR1ZGU0I04OC4wODA4LC
JoZWlnaHQiOiJAsImhlaWdodFR5cGU0iJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
dGVubmFBemltdXRoljowLCJhbnRlbn5hRG93bnRpbHQiOiJAsImFudGVubmFHYWluljoxOCwiZWlycEN
hcGFiaWxpdkhkiOiJwLCJhbnRlbn5hQmVhXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlcckRh
dGEiOnsiY3BpSWQ0iJjcGkxMjMiLCJjcG10YW11Ijo1Q1BJIFVzZXIiMTIzIiwiaW5zdGFsbENicnRpZmljY
XRpb25UaW11Ijo1MjAxOC0wNS0wOVQxNT01MT0xMi44NjZalN19",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fcclId": "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"
},
"cbbsdSerialNumber": "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": [
    {
      "cbssId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "measReportConfig": [
        "RECEIVED_POWER_WITHOUT_GRANT"
      ],
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-13T05:43:05.013Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbssId": "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": [
        {
            "cbsdId": "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": [
        {
            "cbsdId": "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_4RHFxmbnT6PyPrsy8pivlhdJ_GD9jMjny6HSoOy3nEo3pqJLB7AGv0mt1eodt1YT2yWGepwltVI7
QRWnWHdyzsP9XSQlkd_Phvc-l_bdjJkXcnFzxr7hCirdKrQX1Wbg2Eft9uOXp6MmB3p_ax-twwzywWWa
IPYXUlm5jtHVhbbAL5vc37-Djo4jCBnO3m-b3DvJhQ3_d8NXeco-F939cBHumrEUZMSnkQZRRBLHFdh
LNB7so7tVVTFbRNvfCHBw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXIiOiIwYTAwM2U0NTJiIMTYiLCJpbm
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluNDI0MiwibG9uZ2I0dWRlljotODguODg4OCwia
GVpZ2h0IjowLzJmY2h0IjowLzJmY2h0IjowLzJmY2h0IjowLzJmY2h0IjowLzJmY2h0IjowLzJmY2h0I
hQXppbXV0aCI6MCwiYW50ZW5uYURvd250aWx0IjowLzJmY2h0IjowLzJmY2h0IjowLzJmY2h0IjowL
YmlsaXR5Ijo0MCwiYW50ZW5uYUJiYyY1MzIjowLzJmY2h0IjowLzJmY2h0IjowLzJmY2h0IjowLzJm
JEYXRhIjpwImlnNwaUlkljoiY3BpMTlzlwiY3BpTmFtZSI6IkNQSsBVc2VyIDEyMyImluc3RhbGxkZDZ
WZpY2F0aW9uVGltZSI6IjwMTgtMDU0MDU0MDU0MDU0MDU0MDU0MDU0MDU0MDU0MDU0MDU0MDU0MDU0
"protectedHeader": "eyJhbGciOiJSUzI1NiIsImR5cyI6IkpXVCJ9"
      },
      "fcId": "Z8H89FT0028",
      "groupingParam": [
        {
          "groupId": "0a-00-3e-45-2b-16",
          "groupType": "INTERFERENCE_COORDINATION"
        }
      ],
      "measCapability": [

```



```
        "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,
```



```
        "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": [
    {
      "cbsdlId": "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-Baeprij  
EHsfr9XPZqvFNwzoq0LE4d76D_y0CBRXa7kMQjacvKdmKW9EKWEV1I-Q4kT_QWWPDJb53_ku0gs  
EeM-_M_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qfcdesRu9vaStS9vJrDEN_qbZ_6l  
vRVEW_F6-KwY_khviWe2Rgn5u55iymp1aHCevxYlwZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A  
F7SATjGMLGCOLK-qETRYOPe-cTYYjyaQAA",  
      "encodedCpiSignedData":  
"eyJmY2NJZCI6llo4SEZUMDAyOCIsImNic2RTZXJpYWwOdW1iZXliOiIwYTAwM2U0NTJhZDQiLCJpbm  
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjYyLWVudCJsb25naXR1ZGU0OC4wODAwODAw  
JoZWlnaHQiOiAsImhlaWdodFR5cGU0IjBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu  
dGVubmFBemltdXRoljowLCJhbnRlbnM5hRG93bnRpbHQiOiAsImFudGVubmFHYWluljoxOCwiZWlycEN  
hcGFiaWxpdkhkiOiJwLCJhbnRlbnM5hRmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlcjRh  
dGEiOnsiY3BpSWQ0IjoiJicGkxMjMiLCJjcG10YVw1IjoiQ1BJIFVzZXIiMTIzIiwiaW5zdGFsbENicnRpZmljY  
XRpb25UaW1lIjoiMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",  
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"  
    },  
    "fcclId": "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,



```
"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"
},
"cbid": "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": [
    {
      "cbid": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-13T06:46:20.421Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbid": "B",
      "cbidInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) AP",
        "vendor": "Cambium Networks"
      },
      "cbid": "0a003e452b16",
      "cpiSignatureData": {
        "digitalSignature":
"KOZyADKurrPAas5JN-BghcC7fzhqCFOkr4zcheGfOI_Ilt23QFPAftVFOSfRzuXzfBch6xwPCrOTwcFMZ
XwuM_4RHFxmbnT6PyPrsy8pivlhdJ_GD9jMjny6HSoOy3nEo3ppqJLB7AGv0mt1eodt1YT2yWGepwltVI7
QRWnWHdyzsP9XSQlkd_Phvc-l_bdjJkXcnFzxr7hCirdKrqX1Wbg2Eft9uOXp6MmB3p_ax-twwzywWWa
IPYXUIm5jtHVhnbAL5vc37-Djo4jCBnO3m-b3DvJhQ3_d8NXeco-F939cBHumrEUZMsnkQZRRBLHFdh
LNB7so7tVVTFbRNvfCHBw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXliOilwYTAwM2U0NTJiMTYiLjIjbn
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDIuNDI0MiwibG9uZ2l0dWRlljotODguODg4OCwia
GVpZ2h0ljoWLCJoZWlnaHRUeXBlljoiQU1TTClslmluZG9vckRlcGxveW1lbnQiOmZhbHNILCJhbnRlbnM5
```



```
hQXppbXV0aCI6MCwiYW50ZW5uYURvd250aWx0IjowLCJhbnRlbn5hR2Fpbil6MTgslmVpcnBDYXBh
YmlsaXR5Ijo0MCwiYW50ZW5uYUJlYW13aWR0aCI6OTB9LCJwcm9mZXRzaW9uYWxJbnN0YWxsZX
JEYXRhIjp7ImNwaUlkljoiY3BpMTlZlwiY3BpTmFtZSI6IkNQSSBVc2VyIDEyMyIsImNwaUluc3RhbnGxDZSJ0a
WZpY2F0aW9uVGltZSI6IjwMTgtMDUuMDUuMTU6NTEuODY2WiJ9fQ",
    "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
  },
  "fcclId": "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
  },
  "fcclId": "Z8H89FT0028",
  "professionalInstallerData": {
    "cpiName": "CPI User 123",
    "installCertificationTime": "2018-05-09T15:51:12.866Z",
    "cpild": "cpi123"
  },
  "cbsdSerialNumber": "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": [
    {
      "cbsdId": "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": [
```



```
{
  "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": [
        {
```



```
        "channelType": "GAA",
        "frequencyRange": {
            "highFrequency": 3670000000,
            "lowFrequency": 3650000000
        },
        "ruleApplied": "FCC_PART_96"
    }
],
"csdId": "Z8H89FT0028Mock-SAS0a003e452b16",
"response": {
    "responseCode": 0
}
}
]
}
2018-09-13T06:47:20.654Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "csdId": "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": [
        {
            "csdId": "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": [
        {
            "csdId": "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": [
    {
```



```
        "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-BghcC7fzhqCFOkr4zcheGIOI_Ilt23QFPAftVFOSfRzuXzfBch6xwPCrOTwcFMZ
XwuM_4RHFxmbnT6PyPrsy8pivlhdJ_GD9jMjny6HSoOy3nEo3pqJLB7AGv0mt1eodt1YT2yWGepwltVI7
QRWnWHdyzsP9XSQlkd_Phvc-l_bdjJkXcnFzxr7hCirdKrqX1Wbg2Eft9uOXp6MmB3p_ax-twwzywWWa
IPYXUlm5jtHVhbbAL5vc37-Djo4jCBnO3m-b3DvJhQ3_d8NXeco-F939cBHumrEUZMsnkQZRRBLHFdh
LNB7so7tVVTFbRNvfCHBw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXIiOiIwYTAwM2U0NTJiMTYiLCJpbm
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDIuNDI0MiwibG9uZ2I0dWRlljotODguODg4OCwia
GVpZ2h0IjowLCJoZWlnaHRUeXBlljoiQU1TTClmImluZG9vckRlcGxveW1lbnQiOmZhbHNILCJhbnRlbn5
hQXppbXV0aCI6MCwiYW50ZW5uYURvd250aWx0IjowLCJhbnRlbn5hR2Fpbil6MTgsImVpcnBDYXBh
YmlsaXR5Ijo0MCwiYW50ZW5uYUJlYyY1aWR0aCI6OTB9LCJwcm9mZm9uZm9uYUJlYyY1aWR0aCI6OTB9
JEYXRhIjpw7ImNwaUlkljoiY3BpMTIzIiwuY3BpTmFtZSI6IkNQSsBVc2VyIDEyMyMyMjIuODY2WiJ9fQ",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fcclId": "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,
```





```
JoZWlnaHQiOjAslmhlaWdodFR5cGUiOiJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFu
dGVubmFBemltdXRoljowLcJhbnRlbn5hRG93bnRpbHQiOjAsImFudGVubmFHYWluljoxOCwiZWlycEN
hcGFiaWxpdHkiOjQwLcJhbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckRh
dGEiOnsiY3BpSWQiOiJjcGkxMjMiLcJjcGLOYW1lIjojQ1BJFVzZXIiMTIzIiwiaW5zdGFsbENlcnRpZmljY
XRpb25UaW1lIjojMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalN19",
    "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
  },
  "fcid": "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
  },
  "fcid": "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 : {
```



```
"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": [
```



```
        {
            "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": [
```



```
{
  "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"
      },
      "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_5JePyUAMWSGchZ6M91QuWbqLGzcyDHOBANwfvCU5qIfcDesRu9vaStS9vJrDEN_qbZ_6l
vRVEW_F6-KwY_khviWe2Rgn5u55iymp1aHCevxYlWzZZJp9JRchdkJzboQG4kXqJGDMxt8pB-Udd5A
F7SATjGMLGCOLK-qETRYOPe-cTYyjyaQAA",
        "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SEZUMDAyOCIsImNic2RTZlJpYXVxOjE1ZlZlIiwiaWYwM2U0NTJhZDQlLCJpbn
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluMjYyLWVhZG95bWVudCI6ZmFsc2UsImFu
dGVubmFBemltdXRoljowLCJhbnRlbnM5hRG93bnRpbHQiOiJAsImFudGVubmFHYWluljoxOCwiZWlycEN
hcGFiaWxpdkhkiOiJwLCJhbnRlbnM5hRmVhXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlcckRh
dGEiOnsiY3BpSWQlOiJjcGkxMjMiLCJjcG9iYW1lIjo1Q1BJFVzZXIlgMTIzIiwiaW5zdGFsbENicnRpZmljY
XRpb25UaW1lIjo1MjYyLWVhZG95bWVudC0wNS0wOVQxNT01MT0xMi44NjZalN19",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fcclId": "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
},
"fcclId": "Z8H89FT0028",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "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": [
    {
      "cbssId": "Z8H89FT0028Mock-SAS0a003e452ad4",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2018-09-12T01:58:16.253Z - 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": "0a003e452b16",
      "cpiSignatureData": {
        "digitalSignature":
"KOZyADKurrPAas5JN-BghcC7fzhqCFOKr4zcheGIOI_Ilt23QFPAftVFOSfRzuXzfBch6xwPCrOTwcFMZ
XwuM_4RHFxmbnT6PyPrsy8pivlhdJ_GD9jMjny6HSoOy3nEo3pqJLB7AGv0mt1eodt1YT2yWGepwltVI7
QRWnWHdyzsP9XSQlkd_Phvc-l_bdjJkXcnFzxr7hCirdKrqX1Wbg2Eft9uOXp6MmB3p_ax-twwzywWWa
IPYXUlm5jtHVhbbAL5vc37-Djo4jCBnO3m-b3DvJhQ3_d8NXeco-F939cBHumrEUZMsnkQZRRBLHFdh
LNB7so7tVVTFbRNvfCHBw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXliOilwYTAwM2U0NTJiMTYiLjJpbn
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluNDI0MiwibG9uZ2I0dWRlljotODguODg4OCwia
```



```
GVpZ2h0ljowLcJoZWInaHRUeXBlljoiQU1TTCIsImluZG9vckRlcGxveW1lbnQiOmZhbHNILCJhbnRlbnM5hQXppbXV0aCI6MCwiYW50ZW5uYURvd250aWx0ljowLcJhbnRlbnM5hR2Fpbil6MTgslmVpcnBDYXBhYmlsaXR5ljo0MCwiYW50ZW5uYUJlYW13aWR0aCI6OTB9LCJwcm9mZXNzaW9uYWxJbnN0YWxsZXJEYXRhIjpw7ImNwaUlkljoiY3BpMTlziwiY3BpTmFtZSI6IkNQSSBVc2VyIDEyMyIsImNwaUluc3RhbnGxDZSJ0aWZpY2F0aW9uVGltZSI6IjwMTgtMDUtdMDIUMTU6NTE6MTluODY2WiJ9fQ",
    "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"}
  },
  "fcid": "Z8H89FT0028",
  "groupingParam": [
    {
      "groupId": "0a-00-3e-45-2b-16",
      "groupType": "INTERFERENCE_COORDINATION"
    }
  ],
  "measCapability": [
    "RECEIVED_POWER_WITHOUT_GRANT"
  ],
  "userId": "SF5W5D"
}
]
```

2018-09-12T01:58:16.267Z - INFO - Registration message contains cpiSignatureData  
2018-09-12T01:58:16.267Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}  
2018-09-12T01:58:16.267Z - 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
},
"fcid": "Z8H89FT0028",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbid": "0a003e452b16"
```

2018-09-12T01:58:16.283Z - INFO - verified signature on cpiSignatureData  
2018-09-12T01:58:16.283Z - INFO - cpiSignatureData data successfully validated against jsonschema  
2018-09-12T01:58:16.283Z - INFO - engine sent successfully, the response to CBRS : {

```
"registrationResponse": [
  {
    "cbid": "Z8H89FT0028Mock-SAS0a003e452b16",
    "response": {
      "responseCode": 0
    }
  }
]
```



```
}  
}  
]  
}
```

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





```
        "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",
```



```
        "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-BghcC7fzhqCFOkr4zcheGIOI_Ilt23QFPAftVFOSfRzuXzfBch6xwPCrOTwcFMZ
XwuM_4RHFxmbnT6PyPrsy8pivlhdJ_GD9jMjny6HSoOy3nEo3pqJLB7AGv0mt1eodt1YT2yWGepwltV17
QRWnWHdyzsP9XSQlkd_Phvc-l_bdjJkXcnFzxr7hCirdKrqX1Wbg2Eft9uOXp6MmB3p_ax-twwzywWWa
IPYXUIm5jtHVhbbAL5vc37-Djo4jCBnO3m-b3DvJhQ3_d8NXeco-F939cBHumrEUZMsnkQZRRBLHFdh
LNB7so7tVVTFbRNvfCHBw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SEZUMDAyOCIsImNic2RTZXJpYWxOdW1iZXliOilwYTAwM2U0NTJiIMTYiLCJpbm
N0YWxsYXRpb25QYXJhbSI6eyJsYXRpdHVkZSI6NDluNDI0MiwibG9uZ2I0dWRlljotODguODg4OCwia
GVpZ2h0ljowLcJozWlNaHRUeXBlljoiQU1TTCIsImluZG9vckRlcGxveW1lbnQiOmZhbHNILCJhbnRlbn5
hQXppbXV0aC16MCwiYW50ZW5uYURvd250aWx0ljowLcJhbnRlbn5hR2Fpbil6MTgslmVpcnBDYXBh
YmlsaXR5ljo0MCwiYW50ZW5uYUJiYW13aWR0aCI6OTB9LCJwcm9mZm9uZm9uYUJiYUJiYUJiYUJiYUJi
JEYXRhlp7lMnwaUlkljoiY3BpMTlZliwiY3BpTmFtZSI6IkNQSSBVc2VyIDEyMyIsImVudCI6ImVudC9fQ",
        "protectedHeader": "eyJhbGciOiJSUz11NiIsInR5cCI6IkpXVCJ9"
      }
    },
    {
      "fcId": "Z8H89FT0028",
      "groupingParam": [
        {
          "groupId": "0a-00-3e-45-2b-16",
          "groupType": "INTERFERENCE_COORDINATION"
        }
      ]
    },
    {
      "measCapability": [

```



```
        "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"
      }
    ]
  }
}
```





```
        "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
                }
            }
        }
    ]
}
```



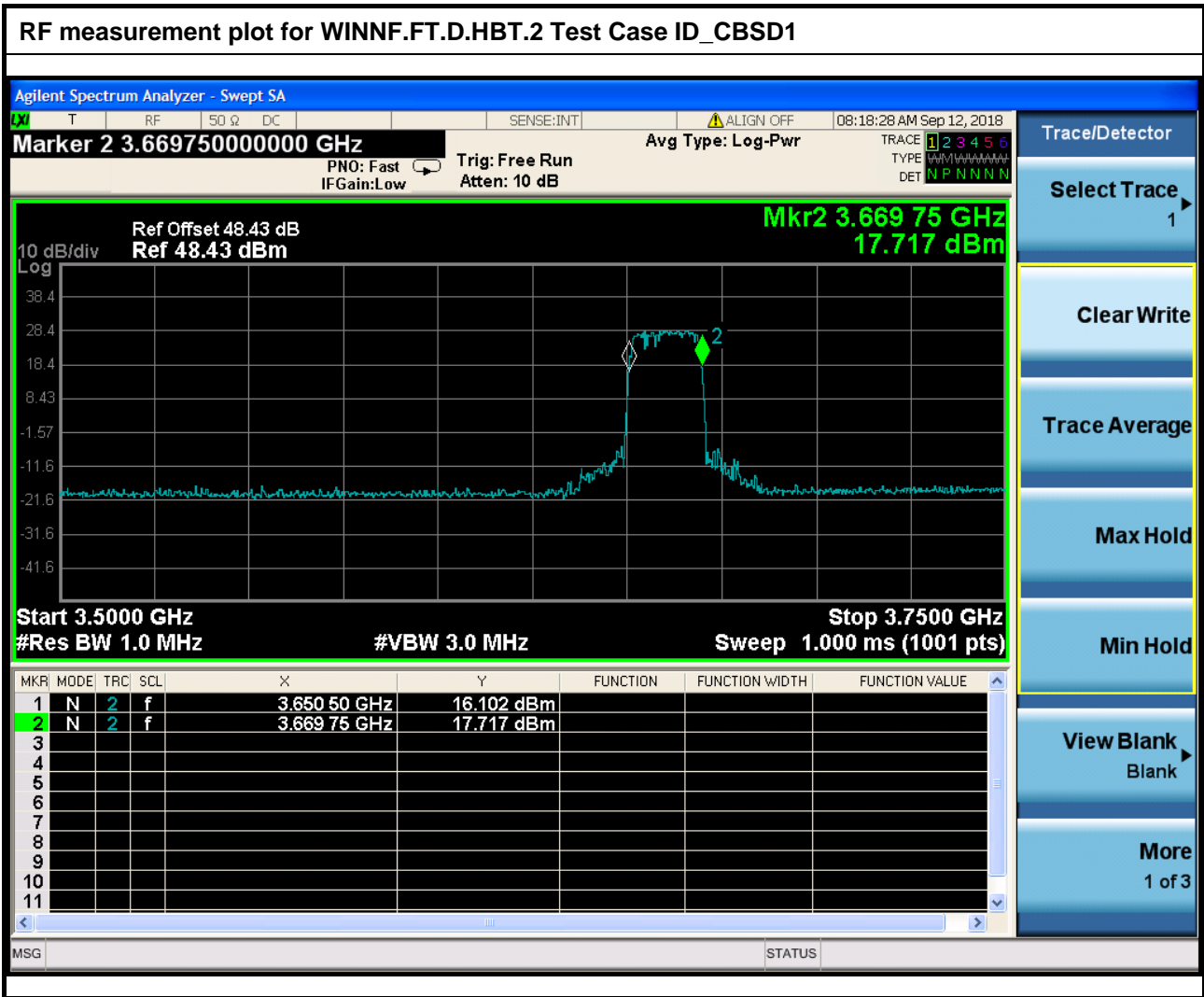
```
    }
  }
]
}
2018-09-14T02:20:35.676Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
      "channelType": "GAA",
      "grantExpireTime": "2018-09-21T02:20:35Z",
      "grantId": "644457312",
      "heartbeatInterval": 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 : {
```



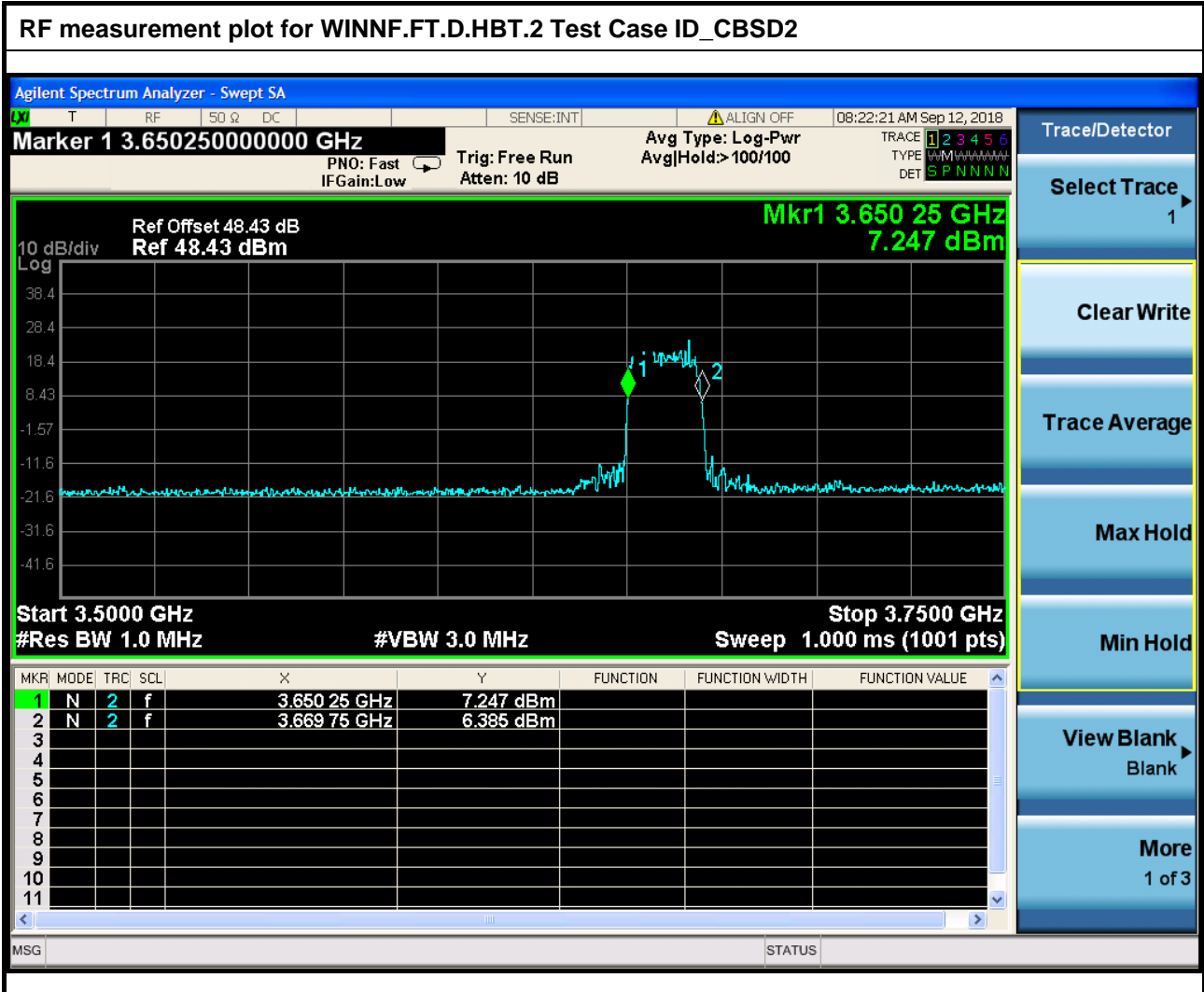
```
"heartbeatResponse": [
  {
    "cbsdId": "Z8H89FT0028Mock-SAS0a003e452b16",
    "grantId": "644457312",
    "response": {
      "responseCode": 0
    },
    "transmitExpireTime": "2018-09-14T02:24:50Z"
  }
]
}
2018-09-14T02:22:26.000Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "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"
    }
  ]
}
```

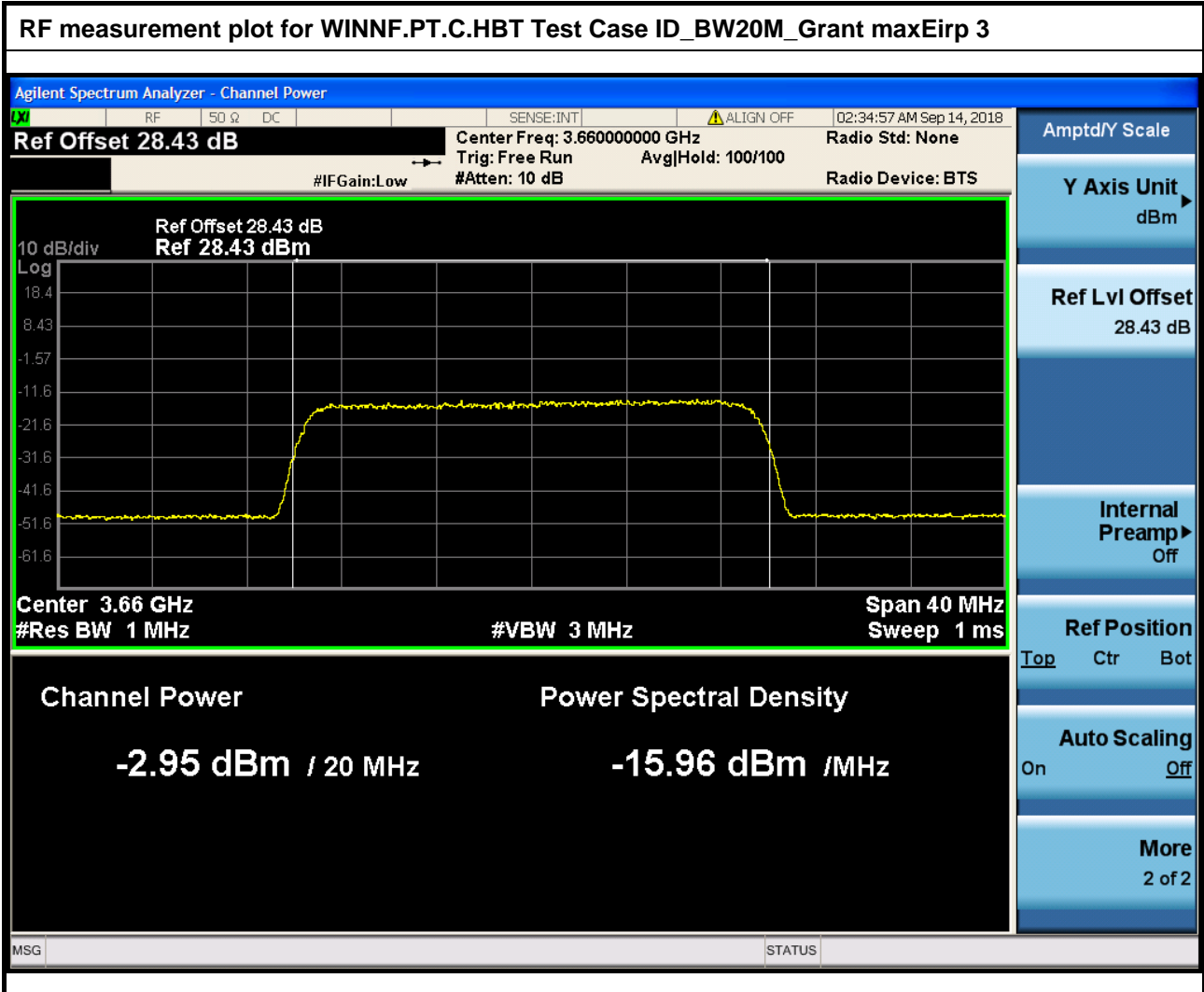


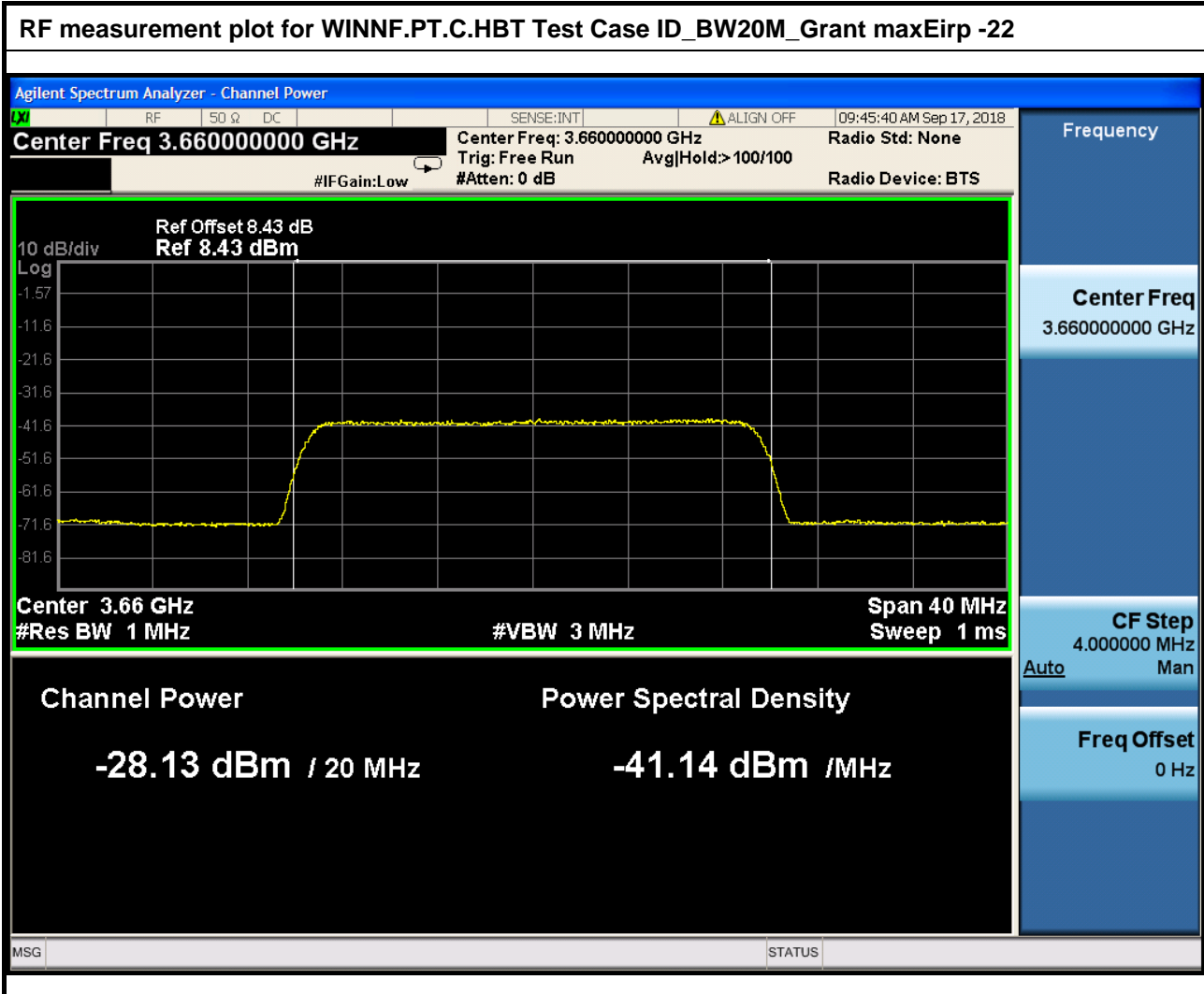
}  
|  
}

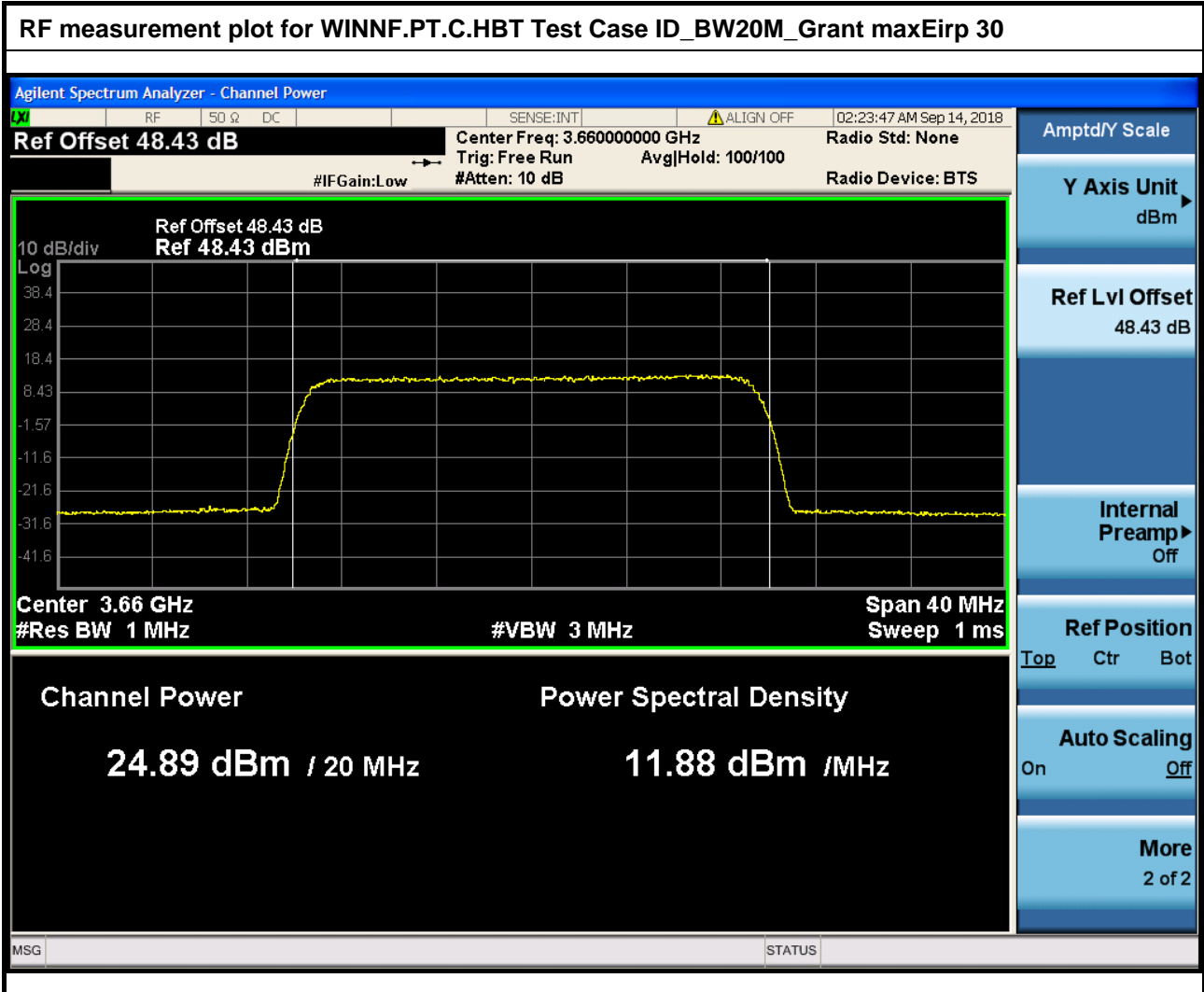














Wireshark Plots for WINNF.FT.C.SCS.1 Test Case ID

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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**

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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 f
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)

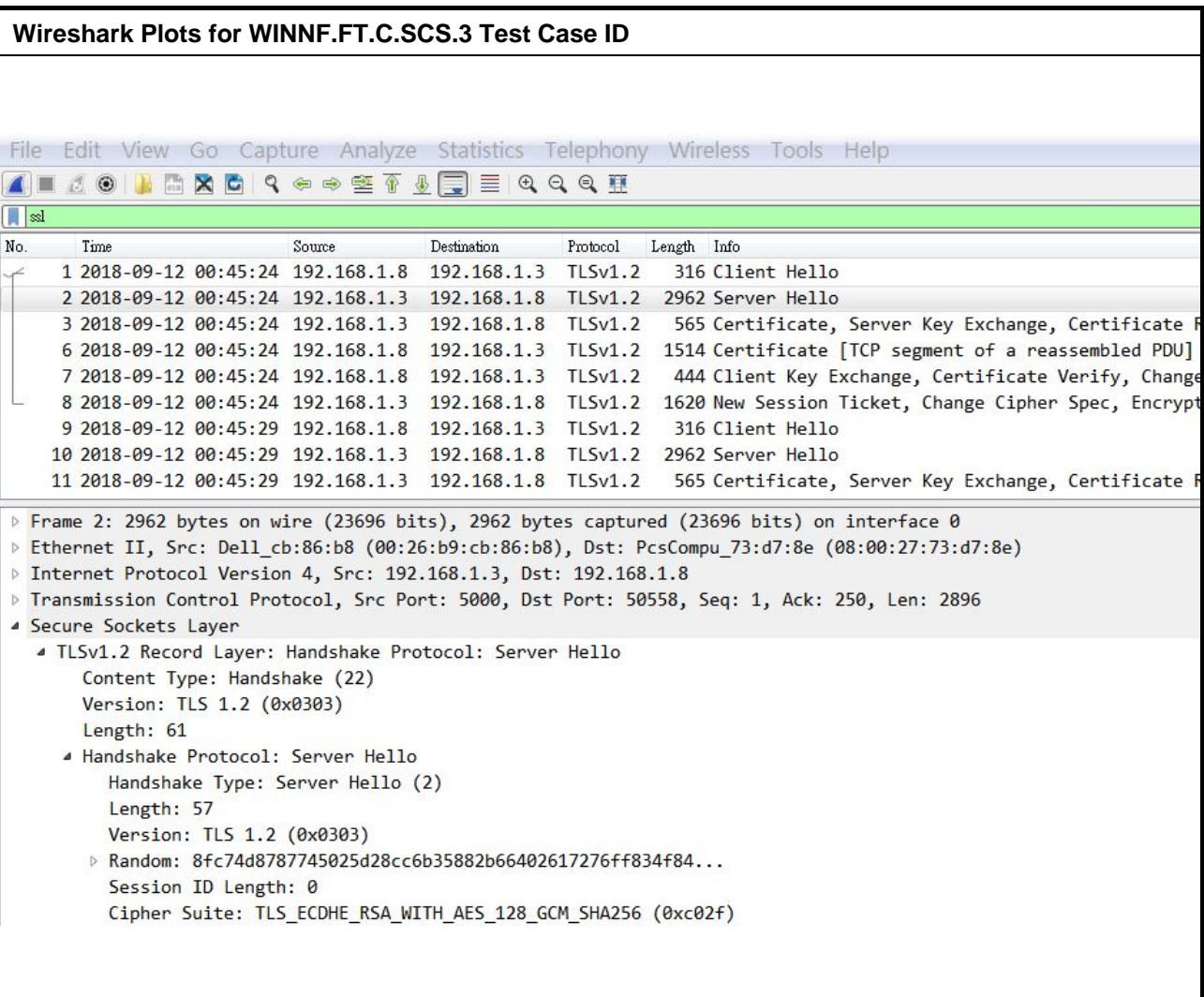


**Wireshark Plots for WINNF.FT.C.SCS.2 Test Case ID\_OCSP**

The screenshot displays the Wireshark interface with a packet capture list and a detailed view of a selected packet. The packet list shows five OCSP requests from 192.168.1.8 to 192.168.1.5. The detailed view for frame 255 shows the following structure:

- 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**



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 F
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 F

▶ 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: 8fc74d8787745025d28ccb35882b66402617276ff834f84...
      - 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

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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)