



# WINNF-TS-0122 TEST REPORT

**FCC ID** : QWP-30450M  
**Equipment** : PmP 450m  
**Brand Name** : Cambium Networks  
**Model Name** : PmP 450m  
**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 Nov. 19, 2018, and testing was started from Nov. 19, 2018 and completed on Dec. 21, 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**  
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



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### History of this test report

Report No.	Version	Description	Issued Date
FG8N2114	01	Initial issue of report	Jan. 16, 2019



### 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.



**Declaration of Conformity:**

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

**Comments and Explanations:**

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

**Reviewed by: Jordan Hsiao**

**Report Producer: Emily Chen**



# 1 General Description

## 1.1 Product Feature of Equipment Under Test

Product Feature of Equipment Under Test	
FCC ID	QWP-30450M
Equipment	PmP 450m
Brand Name	Cambium Networks
Model Name	PmP 450m
Power Type	From Power Adapter
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	4.1
CBSD Software Version	CANOPY 16.0 (Build INT-CBRS-69) AP
CBSD Firmware Version	N/A
Domain Proxy Software Version	1.0

Note 1: The above information was declared by manufacturer.

Note 2: Adapter information as below:

The EUT was powered by Adapter, and the Adapter was for measurement only, would not be marked.

Equipment	Brand Name	Model Name
Notebook	MEAN WELL	HLG-240H-54A





### 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.

Note: The above information was declared by manufacturer.

### 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	N/A
3	Notebook	ASUS	P2438U	N/A
4	CBSD2	Cambium Networks	PMP 450SM	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 Radiated / RF Conducted	03CH01-HY	Robert Jiang	25°C / 60%	Nov. 19, 2018~Dec. 21, 2018

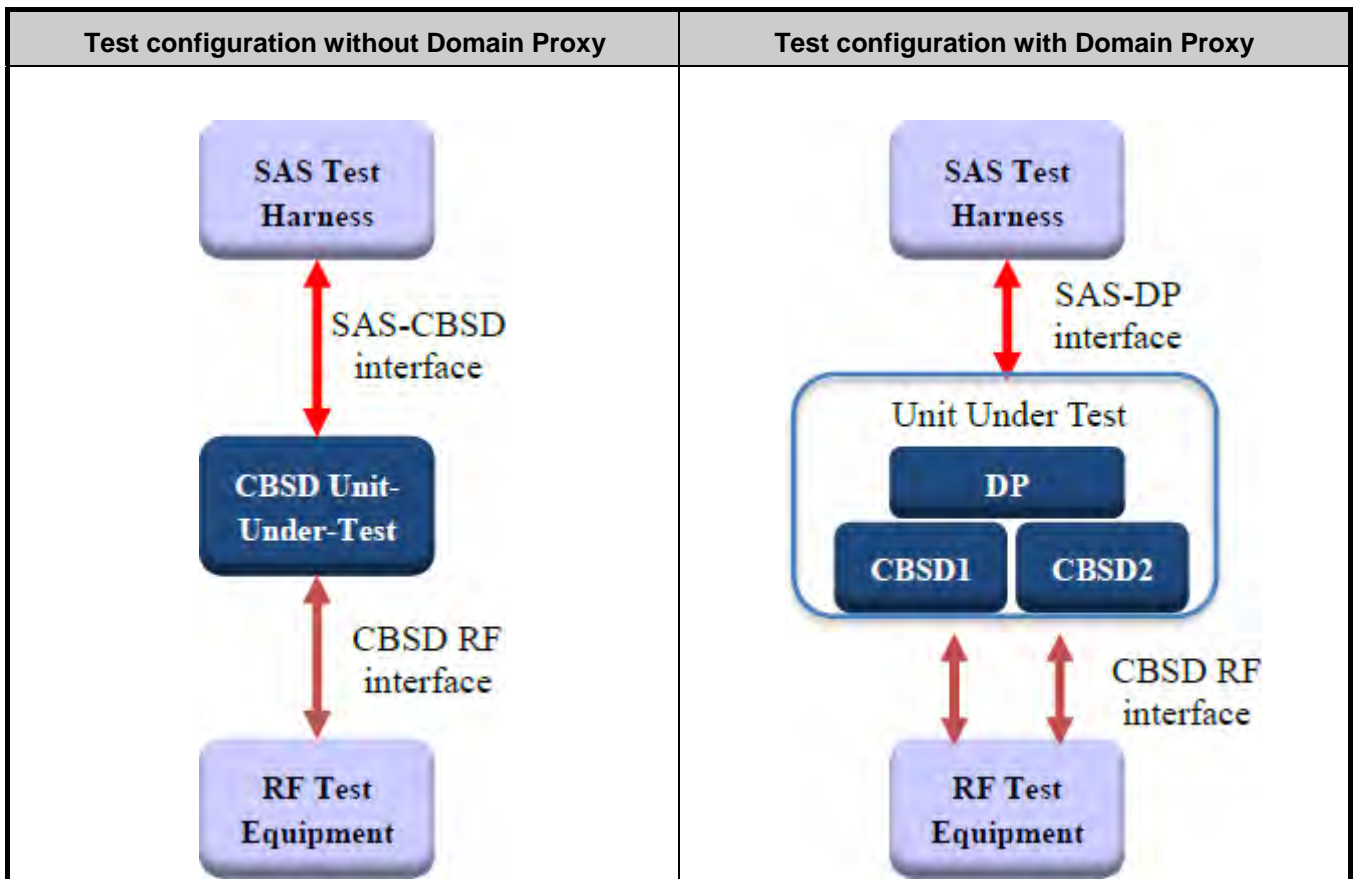
Test site Designation No. TW1190 with FCC.

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

## 2 Measurement Environment

Measurement Environment	
Test Harness version	v1.0.0.3
Operating System	WIN7
TLS version	1.2
Python	2.7.14

### 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 and D.

#### 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>fcId</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>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> =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>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> =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>cbstd</i>.</li><li>– <i>responseCode</i>=R<sub>i</sub> for CBSD1 and CBSD2</li></ul>	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response ( <i>responseCode</i> R <sub>1</sub> =0 for CBSD1 and R <sub>2</sub> =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>=R<sub>i</sub> for CBSD1 and CBSD2</li></ul>	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response ( <i>responseCode</i> R <sub>1</sub> =0 for CBSD1 and R <sub>2</sub> =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 (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	--
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### 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>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. 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>cbsdId</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>fcld 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 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 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 cipher suites 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	--



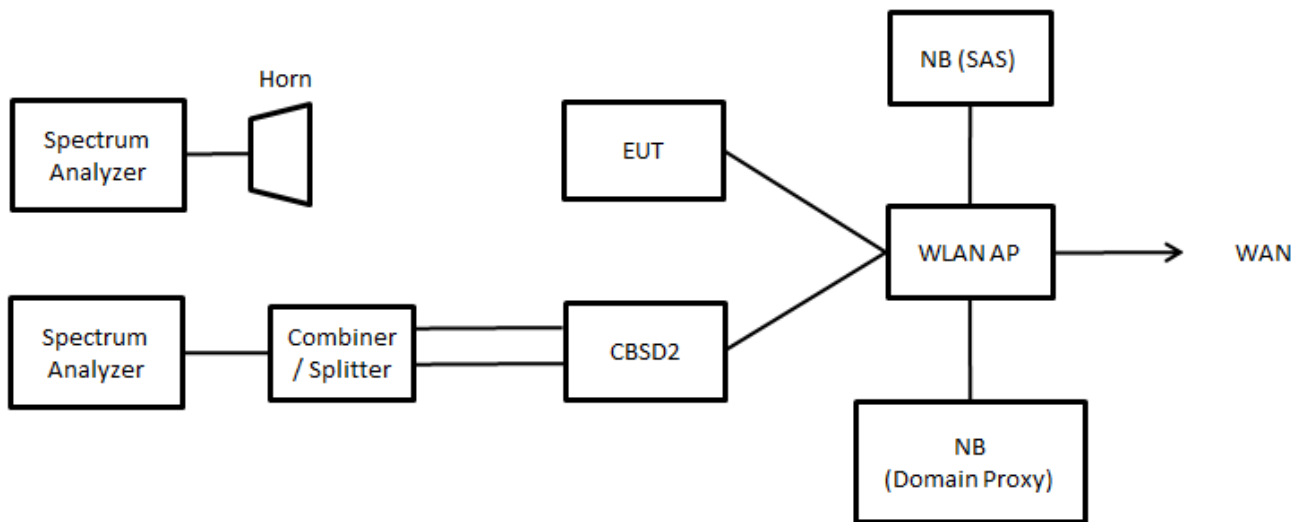
### 3.25 WINNF.FT.C.SCS.5 - TLS failure when certificate at the SAS Test Harness is corrupted

#	Test Execution Steps	Results	
1	<ul style="list-style-type: none"><li>UUT shall start CBSD-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)	37dBm/MHz
Transmit dynamic range (EIRP, dBm/MHz)	-13~37dBm/MHz
Occupied bandwidth (OBW)	20MHz 10MHz
maxEirp values	1 dB increments from -13 dBm/MHz to 37 dBm/MHz (51 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: in order for the UUT to request a grant with the parameters {lowFrequency, highFrequency, maxEirp}, the SAS Test Harness may need to provide appropriate guidance in the availableChannel object of the spectrumInquiry response message, and the operationParam object of the grant response message. Alternately, the UUT vendor may provide the ability to set those parameters on the UUT so that the UUT will request a grant with those parameters.</i></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>○ cbsdId = C</li> <li>○ grantId = G</li> </ul> </li> <li>• SAS Test Harness responds with Heartbeat Response, including: <ul style="list-style-type: none"> <li>○ cbsdId = C</li> <li>○ grantId = G</li> <li>○ transmitExpireTime = current UTC time + 200 seconds</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, Pi. The RF measurement method is out of scope of this document, but may include additional configuration of the UUT, as required, to fulfil the requirements of the power measurement method.</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	Grant maxEirp	maxEirp	Result
	(MHz)	(dBm/MHz)	(dBm/MHz)	
3660MHz	20	37	36.36	Pass
3660MHz	20	27	25.76	Pass
3660MHz	20	7	6.78	Pass
3660MHz	20	-13	-13.73	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 (03CH01-HY)
Spectrum analyzer	Keysight	N9020A	MY55400138	10 Hz up to 26.5 GHz	Jan. 02, 2018	Jan. 01, 2019	Conducted (03CH01-HY)
RF Cable-high	Woken	RG402	High Cable-06	1 GHz – 26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (03CH01-HY)
RF Cable-high	Woken	RG402	High Cable-07	1 GHz –26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (03CH01-HY)
RF Cable-high	Woken	RG402	High Cable-08	1 GHz –26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (03CH01-HY)
RF Cable-high	Woken	RG402	High Cable-09	1 GHz –26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (03CH01-HY)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz –26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (03CH01-HY)
RF Cable-high	Woken	RG402	High Cable-28	1 GHz –26.5 GHz	Nov. 19, 2018	Nov. 18, 2019	Conducted (03CH01-HY)
RF Power Divider	Woken	4 Way	TH01-DV-01	1GHz ~ 6GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (03CH01-HY)
RF Power Divider	Woken	2 Way	TH01-DV-02	1GHz ~ 6GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (03CH01-HY)
Spectrum analyzer	Keysight	N9020A	MY55400138	10 Hz up to 26.5 GHz	Jan. 02, 2018	Jan. 01, 2019	Radiated (03CH01-HY)
RF Cable-high	Woken	RG402	High Cable-06	1 GHz – 26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Radiated (03CH01-HY)
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Nov. 13, 2018	Nov. 12, 2019	Radiated (03CH01-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%
Radiated Emissions below 1GHz	4.3 dB	Confidence levels of 95%
Radiated Emissions above 1GHz	4.9 dB	Confidence levels of 95%

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

2018-12-17T06:22:45.523Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13  
 2018-12-17T06:22:45.526Z - INFO - the selected test from the user : WINNF.FT.D.REG.6 is starting now  
 2018-12-17T06:22:53.332Z - INFO - registration request from CBRS : {

```

"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "CAMBIUM_NETWORKS"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-69) AP",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "0a003e6070a5",
    "cpiSignatureData": {
      "digitalSignature":
"a90CjgQt42K0b5x38cqJPJdtjABPb896gH5h3F0gPWjWQWHUZJuOFDqrW0mPi93qmA9KKzPNxpdN
x_wA6lnRnKVMqmy9RQdn929LZfox2gG_LfJVNpABNtO8hbslj_QvhMlxvifu7yQdz0FJXuqvaj1Mt6FQgR
hmD9O-vpr-IlZrfZFDjcCgAikEe6_SmGY8A0EviAPB2AqcpS4aKWom1CsPM56ZMJ5UcljA8-IXCiGVe6u
iBQZITYyS4PTg-d_Yeo4FNnCTk8aSJST_bl4Wow2zEvOpyhqfloWDzuhbVaS0GJ2gj8oroL2BFHD1DG
M4YEL9c5Q8vCHyHeCvFA4hw",
      "encodedCpiSignedData":
"eyJmY2NJZCI6IIFXUC0zMdQ1ME0iLCJYnNkU2VyaWFsTnVtYmVyljoiMGEGwMDNINjA3MGE1liwiaW
5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGUiOjQyLjI0MiwibG9uZ2I0dWRlljotODguMDgwOCwia
GVpZ2h0ljoXMDAsImhlaWdodFR5cGUiOiJBTVMliwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImF
udGVubmFBemltdXRoljowLjChbnRlbn5hRG93bnRpbHQiOjAsImFudGVubmFHYWluljoxNSwiZWlycE
NhcGFiaWxpdHkiOjQwLjChbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckR
hdGEiOmsiY3BpSWQiOiJjcGkxMjMiLCJjcG9yYyI1IjoiQ1BjFVZzZlIjoiMTIzIiwiaW5zdGFsbENlcnRpZmlj
YXRpb25UaW1lIjoiMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fcclId": "QWP-30450M",
    "groupingParam": [
      {
        "groupId": "0a-00-3e-60-70-a5",
        "groupType": "INTERFERENCE_COORDINATION"
      }
    ],
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "test"
  }
]
}

```

2018-12-17T06:22:53.395Z - INFO - Registration message contains cpiSignatureData  
 2018-12-17T06:22:53.395Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}  
 2018-12-17T06:22:53.395Z - INFO - encodedCpiSignedData contents = {  
 "installationParam": {  
 "eirpCapability": 40,  
 "antennaAzimuth": 0,



```
"heightType": "AMSL",
"longitude": -88.0808,
"height": 100,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 15
},
"fcclId": "QWP-30450M",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e6070a5"
}
2018-12-17T06:22:53.398Z - INFO - verified signature on cpiSignatureData
2018-12-17T06:22:53.403Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-12-17T06:22:53.405Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbssid": "QWP-30450MMock-SAS0a003e6070a5",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-12-17T06:22:59.479Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbbsdCategory": "B",
      "cbbsdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) BHUL450",
        "vendor": "Cambium Networks"
      },
      "cbbsdSerialNumber": "0a003e431a34",
      "cpiSignatureData": {
        "digitalSignature":
"Winc1sicBkQmobkS-ogMWVUsPC4S_9FaKCsJ-6kwc8YuPIYXI26TqczW4DJFgeh9NNOeNAtveL3FK
EmbeLjZ_3NSQC6l3DIFqb-WOMdg55E8KLOP-IFwMj7VgGllr5MYuiHdyhAR8o5dVBIM8r12GeXGxj0Bu
vYI1nVTuh7puq3fVBkGG3m3p1cvfEpdSBCGUFm5HccR80kcADaOBIFzJljM6p-8O0L8nrZP_ec8CV_z
DTIRoY66bdc5C98IA_XBC2eOwiJHF-alk8TJLCfAM51qM0dSE9aQfZVUyHqXFZiOFDvGEUE3eqD_p-
wXYyv9JaXv2uR7p6kYfldzuw51zw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6lo4SDg5RIQwMDA5liwiY2JzZFNlcmIhbE51bWJlciI6IjBhMDAzZTQzMWEzNCIsImluc3
RhbGxhdGlvbIjBhcmFtlj7ImxhdGI0dWRlljo0Mi4yNDIsImxvbmtpdHVkZSI6LTg4LjA4MDgslmhmaWdod
CI6MCwiaGVpZ2h0VHlwZSI6IjFNU0wiLjBpbmRvb3JEZXBsb3ltZW50IjpmYWxzZSwiYW50ZW5uYUUF
```



```
6aW11dGgiOjAsImFudGVubmFEb3dudGlsdCI6MCwiYW50ZW5uYUdhaW4iOjE4LCJlaXJwQ2FwYWJp
bGI0eSI6NDAsImFudGVubmFCZWFtd2lkdGgiOjkwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI
6eyJjcGlJZCI6ImNwaTEyMyIsImNwaU5hbWUiOiJDUEkgVXNlciAxMjMiLCJpbmN0YWxsQ2VydGlmaW
NhdGlvbIRpbWUiOiIyMDE4LTA1LTA5VDE1OjUxOjEYLjg2NloifX0",
    "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
  },
  "fcclId": "Z8H89FT0009",
  "groupingParam": [
    {
      "groupId": "0a-00-3e-43-1a-34",
      "groupType": "INTERFERENCE_COORDINATION"
    }
  ],
  "measCapability": [
    "RECEIVED_POWER_WITHOUT_GRANT"
  ],
  "userId": "SF5W5D"
}
]
}
```

2018-12-17T06:22:59.494Z - INFO - Registration message contains cpiSignatureData  
2018-12-17T06:22:59.496Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

```
2018-12-17T06:22:59.496Z - 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": "Z8H89FT0009",
  "professionalInstallerData": {
    "cpiName": "CPI User 123",
    "installCertificationTime": "2018-05-09T15:51:12.866Z",
    "cpild": "cpi123"
  },
  "cbsdSerialNumber": "0a003e431a34"
}
```

2018-12-17T06:22:59.496Z - INFO - verified signature on cpiSignatureData  
2018-12-17T06:22:59.502Z - INFO - cpiSignatureData data successfully validated against jsonschema  
2018-12-17T06:22:59.503Z - INFO - engine sent successfully, the response to CBRS : {  
 "registrationResponse": [  
 {  
 "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",  
 "response": {  
 "responseCode": 0  
 }  
 }  
 ]  
}





```
}  
]  
}  
2018-12-17T06:23:00.529Z - INFO - arrived to nstep starting question answer session with the technician  
2018-12-17T06:23:00.532Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :  
2018-12-17T06:24:06.747Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n  
2018-12-17T06:24:06.750Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :  
2018-12-17T06:24:07.305Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n  
2018-12-17T06:24:08.631Z - 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

2018-12-17T06:37:15.230Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13  
2018-12-17T06:37:15.233Z - INFO - the selected test from the user : WINNF.FT.D.REG.9 is starting now  
2018-12-17T06:37:25.137Z - INFO - registration request from CBRS : {

```
"registrationRequest": [  
  {  
    "airInterface": {  
      "radioTechnology": "CAMBIUM_NETWORKS"  
    },  
    "cbsdCategory": "B",  
    "cbsdInfo": {  
      "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-69) AP",  
      "vendor": "Cambium Networks"  
    },  
    "cbsdSerialNumber": "0a003e6070a5",  
    "cpiSignatureData": {  
      "digitalSignature":  
"a90CjgQt42K0b5x38cqJPJdtjABPb896gH5h3F0gPWjWQWHUZJuOFDqrW0mPi93qmA9KKzPNxpdN  
x_wA6lnRnKVMqmy9RQdn929LZfox2gG_LfJVNpABNtO8hbslj_QvhMlxvifu7yQdz0FJXuqvaj1Mt6FQgR  
hmD9O-vpr-IlZrfZFDjcCgAikEe6_SmGY8A0EviAPB2AqcpS4aKWom1CsPM56ZMJ5UcljA8-IXCiGVe6u  
iBQZITYyS4PTg-d_Yeo4FNnCntK8aSJsT_bl4Wow2zEvOpyhqfloWDzuhbVaS0GJ2gj8oroL2BFHD1DG  
M4YEL9c5Q8vCHyHeCvFA4hw",  
      "encodedCpiSignedData":  
"eyJmY2NJZCI6lIFXUC0zMDQ1ME0iLCJYnNkU2VyaWFsTnVtYmVyljoiMGEwMDNINjA3MGE1liwiaW  
5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGU0iOjQyLjI0MiwibG9uZ2l0dWRlljotODguMDgwOCwia  
GVpZ2h0ljoXMDAsImhlaWdodFR5cGU0iJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImF  
udGVubmFBemltdXRoljowLjI0MiwibG95bWVudCI6ZmFsc2UsImFudGVubmFHYWluljoxNSwiZWlycE  
NhcGFiaWxpdHkiOjQwLjI0MiwibG95bWVudCI6ZmFsc2UsImFudGVubmFHYWluljoxNSwiZWlycE  
hdGEiOmsiY3BpSWQiOiJjcGkxMjMiLCJjcGLOYW11ljoIQ1BJFVzZXIjMTIzliwiaW5zdGFsbENlcnRpZmlj  
YXRpb25UaW11ljoIMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalN19",  
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"  
    },  
    "fcclId": "QWP-30450M",  
    "groupingParam": [  
      {  
        "groupId": "0a-00-3e-60-70-a5",  
        "groupType": "INTERFERENCE_COORDINATION"  
      }  
    ],  
    "measCapability": [  
      "RECEIVED_POWER_WITHOUT_GRANT"  
    ],  
    "userId": "test"  
  }  
]
```

2018-12-17T06:37:25.177Z - INFO - Registration message contains cpiSignatureData  
2018-12-17T06:37:25.177Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}  
2018-12-17T06:37:25.177Z - INFO - encodedCpiSignedData contents = {  
 "installationParam": {  
 "eirpCapability": 40,



```
"antennaAzimuth": 0,
"heightType": "AMSL",
"longitude": -88.0808,
"height": 100,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 15
},
"fcld": "QWP-30450M",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e6070a5"
}
2018-12-17T06:37:25.178Z - INFO - verified signature on cpiSignatureData
2018-12-17T06:37:25.184Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-12-17T06:37:25.186Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "response": {
        "responseCode": 102
      }
    }
  ]
}
2018-12-17T06:37:29.421Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbbsdCategory": "B",
      "cbbsdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) BHUL450",
        "vendor": "Cambium Networks"
      },
      "cbbsdSerialNumber": "0a003e431a34",
      "cpiSignatureData": {
        "digitalSignature":
"Winc1sicBkQmobkS-ogMWVUsPC4S_9FaKCsj-6kwc8YuPIYXI26TqczW4DJFgeh9NNOeNAtveL3FK
EmbeLjZ_3NSQC6l3DIFqb-WOMdg55E8KLOP-IFwMj7VgGllr5MYuiHdyhAR8o5dVBIM8r12GeXGxj0Bu
vYI1nVTuh7puq3fVBkGG3m3p1cvfEpdSBCGUFm5HccR80kcADaOBIFzJljM6p-8O0L8nrZP_ec8CV_z
DTIRoY66bdc5C98IA_XBC2eOwiJHF-alk8TJLCfAM51qM0dSE9aQfZVUyHqXFZiOFDvGEUE3eqD_p-
wXYyv9JaXv2uR7p6kYfldzuw51zw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SDg5RIQwMDA5liwiY2JzZFNlcmIhbE51bWJlciI6IjBhMDAzZTQzMWEzNCIsImIuc3
RhbGxhdGlvbIjBhcmFtIjE7ImxhdG90dWRlljo0Mi4yNDIsImxvbmtpdHkZSI6LTg4LjA4MDgslmhmaWdod
CI6MCwiaGVpZ2h0VHlwZSI6IjFNU0wiLCJpbmRvb3JEZXBsb3ltZW50IjpmYWxzZSwiYW50ZW5uYUF"
```



```
6aW11dGgiOjAsImFudGVubmFEb3dudGlsdCI6MCwiYW50ZW5uYUdhaW4iOjE4LCJlaXJwQ2FwYWJp
bGI0eSI6NDAsImFudGVubmFCZWFtd2lkdGgiOjkwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI
6eyJjcGlJZCI6ImNwaTEyMyIsImNwaU5hbWUiOiJDUEkgVXNlciAxMjMiLCJpbmN0YWxsQ2VydGlmaW
NhdGlvbIRpbWUiOiIyMDE4LTA1LTA5VDE1OjUxOjEYLjg2NloifX0",
    "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
  },
  "fcclId": "Z8H89FT0009",
  "groupingParam": [
    {
      "groupId": "0a-00-3e-43-1a-34",
      "groupType": "INTERFERENCE_COORDINATION"
    }
  ],
  "measCapability": [
    "RECEIVED_POWER_WITHOUT_GRANT"
  ],
  "userId": "SF5W5D"
}
]
}
```

2018-12-17T06:37:29.483Z - INFO - Registration message contains cpiSignatureData  
2018-12-17T06:37:29.483Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

```
2018-12-17T06:37:29.483Z - 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": "Z8H89FT0009",
  "professionalInstallerData": {
    "cpiName": "CPI User 123",
    "installCertificationTime": "2018-05-09T15:51:12.866Z",
    "cpild": "cpi123"
  },
  "cbsdSerialNumber": "0a003e431a34"
}
```

2018-12-17T06:37:29.483Z - INFO - verified signature on cpiSignatureData  
2018-12-17T06:37:29.489Z - INFO - cpiSignatureData data successfully validated against jsonschema  
2018-12-17T06:37:29.490Z - INFO - engine sent successfully, the response to CBRS : {  
 "registrationResponse": [  
 {  
 "response": {  
 "responseCode": 102  
 }  
 }  
 ]  
}



```
]
}
```

2018-12-17T06:37:31.237Z - INFO - arrived to nstep starting question answer session with the technician

2018-12-17T06:37:31.240Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2018-12-17T06:38:36.585Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2018-12-17T06:38:36.588Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :

2018-12-17T06:38:38.546Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n

2018-12-17T06:38:39.582Z - 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

2018-12-17T06:39:25.486Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
2018-12-17T06:39:25.489Z - INFO - the selected test from the user : WINNF.FT.D.REG.11 is starting now

2018-12-17T06:39:28.944Z - INFO - registration request from CBRS : {
"registrationRequest": [
{
"airInterface": {
"radioTechnology": "CAMBIUM\_NETWORKS"
},
"cbstdCategory": "B",
"cbstdInfo": {
"softwareVersion": "CANOPY 16.0 (Build INT-CBRS-69) AP",
"vendor": "Cambium Networks"
},
"cbstdSerialNumber": "0a003e6070a5",
"cpisignatureData": {
"digitalSignature":
"a90CjgQt42K0b5x38cqJPJdtjABPb896gH5h3F0gPWjWQWHUZJuOFDqrW0mPi93qmA9KKzPNxpdN
x\_wA6lnRnKVMqmy9RQdn929LZfox2gG\_LfJVNpABNtO8hbslj\_QvhMlxvifu7yQdz0FJXuqvaj1Mt6FQgR
hmD9O-vpr-IlZrfZFDjcCgAikEe6\_SmGY8A0EviAPB2AqcpS4aKWom1CsPM56ZMJ5UcljA8-IXCiGve6u
iBQZITYyS4PTg-d\_Yeo4FNnctK8aSJsT\_bl4Wow2zEvOpyhqfloWDzuhbVaS0GJ2gj8oroL2BFHD1DG
M4YEL9c5Q8vCHyHeCvFA4hw",
"encodedCpiSignedData":
"eyJmY2NJZCI6lIFXUC0zMDQ1ME0iLCJYnNkU2VyaWFsTnVtYmVyljoiMGEwMDNINjA3MGE1liwiaW
5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGU0OjQyLjI0MiwibG9uZ2l0dWRlljotODguMDgwOCwia
GVpZ2h0ljoXMDAsImhlaWdodFR5cGU0iJBTvNmliwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImF
udGVubmFBemltdXRoljowLjChbnRlbn5hRG93bnRpbHQiOjAsImFudGVubmFHYWluljoxNSwiZWlycE
NhcGFiaWxpdkHiOjQwLjChbnRlbn5hQmVhbXdpZHRoljow5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckR
hdGEiOnsiY3BpSWQiOiJjcGkxMjMiLCJjcGLOYW11ljoIQ1BJFVZzXlGMTIzliwiaW5zdGFsbENlcnRpZmlj
YXRpb25UaW11ljoIMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",
"protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
},
"fcclId": "QWP-30450M",
"groupingParam": [
{
"groupId": "0a-00-3e-60-70-a5",
"groupType": "INTERFERENCE\_COORDINATION"
}
],
"measCapability": [
"RECEIVED\_POWER\_WITHOUT\_GRANT"
],
"userId": "test"
}
]
}
2018-12-17T06:39:28.977Z - INFO - Registration message contains cpisignatureData
2018-12-17T06:39:28.977Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2018-12-17T06:39:28.979Z - INFO - encodedCpiSignedData contents = {
"installationParam": {
"eirpCapability": 40,



```
"antennaAzimuth": 0,
"heightType": "AMSL",
"longitude": -88.0808,
"height": 100,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 15
},
"fcld": "QWP-30450M",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbid": "0a003e6070a5"
}
2018-12-17T06:39:28.980Z - INFO - verified signature on cpiSignatureData
2018-12-17T06:39:28.984Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-12-17T06:39:28.986Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "response": {
        "responseCode": 200
      }
    }
  ]
}
2018-12-17T06:39:32.759Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbid": "0a003e431a34",
      "cbidCategory": "B",
      "cbidInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) BHUL450",
        "vendor": "Cambium Networks"
      },
      "cbid": "0a003e431a34",
      "cpiSignatureData": {
        "digitalSignature":
"Winc1sicBkQmobkS-ogMWVUsPC4S_9FaKCsj-6kwc8YuPIYXI26TqczW4DJFgeh9NNOeNAtveL3FK
EmbeLjZ_3NSQC6l3DIFqb-WOMdg55E8KLOP-IFwMj7VgGllr5MYuiHdyhAR8o5dVBIM8r12GeXGxj0Bu
vYI1nVTuh7puq3fVBkGG3m3p1cvfEpdSBCGUFm5HccR80kcADaOBIFzJljM6p-8O0L8nrZP_ec8CV_z
DTIRoY66bdc5C98IA_XBC2eOwiJHF-alk8TJLCfAM51qM0dSE9aQfZVUyHqXFZiOFDvGEUE3eqD_p-
wXYyv9JaXv2uR7p6kYfldzuw51zw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SDg5RIQwMDA5liwiY2JzZFNlcmIhbE51bWJlciI6IjBhMDAzZTQzMWEzNCIsImluc3
RhbGxhdGlvbIjBhcmFtIjE7ImxhdG90dWRlljo0Mi4yNDIsImxvbmtpdHVkZSI6LTg4LjA4MDgslmhlYWdod
CI6MCwiaGVpZ2h0VHlwZSI6IjFNU0wiLCJpbmRvb3JJEZXBsb3ltZW50IjpmYWxzZSwiYW50ZW5uYUUF
```



```
6aW11dGgiOjAsImFudGVubmFEb3dudGlsdCI6MCwiYW50ZW5uYUdhaW4iOjE4LCJlaXJwQ2FwYWJp
bGI0eSI6NDAsImFudGVubmFCZWFtd2lkdGgiOjkwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI
6eyJjcGlJZC16ImNwaTEyMyIsImNwaU5hbWUiOiJDUEkgVXNlciAxMjMiLCJpbmN0YWxsQ2VydGlmaW
NhdGlvbIRpbWUiOiIyMDE4LTA1LTA5VDE1OjUxOjEYLjg2NlloifX0",
    "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
  },
  "fcclId": "Z8H89FT0009",
  "groupingParam": [
    {
      "groupId": "0a-00-3e-43-1a-34",
      "groupType": "INTERFERENCE_COORDINATION"
    }
  ],
  "measCapability": [
    "RECEIVED_POWER_WITHOUT_GRANT"
  ],
  "userId": "SF5W5D"
}
]
}
```

2018-12-17T06:39:32.825Z - INFO - Registration message contains cpiSignatureData  
2018-12-17T06:39:32.825Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

```
2018-12-17T06:39:32.825Z - 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": "Z8H89FT0009",
  "professionalInstallerData": {
    "cpiName": "CPI User 123",
    "installCertificationTime": "2018-05-09T15:51:12.866Z",
    "cpild": "cpi123"
  },
  "cbsdSerialNumber": "0a003e431a34"
}
```

2018-12-17T06:39:32.826Z - INFO - verified signature on cpiSignatureData  
2018-12-17T06:39:32.832Z - INFO - cpiSignatureData data successfully validated against jsonschema  
2018-12-17T06:39:32.834Z - INFO - engine sent successfully, the response to CBRS : {  
 "registrationResponse": [  
 {  
 "response": {  
 "responseCode": 200  
 }  
 }  
 ]  
}





```
]
}
```

2018-12-17T06:39:34.493Z - INFO - arrived to nstep starting question answer session with the technician

2018-12-17T06:39:34.494Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2018-12-17T06:40:40.009Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2018-12-17T06:40:40.010Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :

2018-12-17T06:40:40.617Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n

2018-12-17T06:40:41.589Z - 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

2018-12-17T06:41:24.276Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13  
2018-12-17T06:41:24.276Z - INFO - the selected test from the user : WINNF.FT.D.REG.13 is starting now

```
2018-12-17T06:41:27.022Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbsdCategory": "B",
      "cbsdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-69) AP",
        "vendor": "Cambium Networks"
      },
      "cbsdSerialNumber": "0a003e6070a5",
      "cpiSignatureData": {
        "digitalSignature":
"a90CjgQt42K0b5x38cqJPJdtjABPb896gH5h3F0gPWjWQWHUZJuOFDqrW0mPi93qmA9KKzPNxpdN
x_wA6lnRnKVMqmy9RQdn929LZfox2gG_LfJVNpABNtO8hbslj_QvhMlxvifu7yQdz0FJXuqvaj1Mt6FQgR
hmD9O-vpr-IlZrfZFDjcCgAikEe6_SmGY8A0EviAPB2AqcpS4aKWom1CsPM56ZMJ5UcljA8-IXCiGve6u
iBQZITYyS4PTg-d_Yeo4FNnCntK8aSJsT_bl4Wow2zEvOpyhqfloWDzuhbVaS0GJ2gj8oroL2BFHD1DG
M4YEL9c5Q8vCHyHeCvFA4hw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6IlFXUC0zMDQ1ME0iLCJYnNkU2VyaWFsTnVtYmVyljoiMGEwMDNINjA3MGE1IiwiaW
5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGU0OjQyLjI0MiwiG9uZ2I0dWRlljotODguMDgwOCwia
GVpZ2h0ljoXMDAsImhlaWdodFR5cGU0iJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImF
udGVubmFBemltdXRoljowLjChbnRlbn5hRG93bnRpbHQiOjAsImFudGVubmFHYWluljoxNSwiZWlycE
NhcGFiaWxpdHkiOjQwLjChbnRlbn5hQmVhbXdpZHRolj05MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckR
hdGEiOmsiY3BpSWQiOiJjcGxMjMiLCJjcGLOYW1lIjoiQ1BJIFVzZXIiMTIzIiwiaW5zdGFsbENlcnRpZmlj
YXRpb25UaW1lIjoiMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fcclId": "QWP-30450M",
      "groupingParam": [
        {
          "groupId": "0a-00-3e-60-70-a5",
          "groupType": "INTERFERENCE_COORDINATION"
        }
      ],
      "measCapability": [
        "RECEIVED_POWER_WITHOUT_GRANT"
      ],
      "userId": "test"
    }
  ]
}
```

2018-12-17T06:41:27.084Z - INFO - Registration message contains cpiSignatureData  
2018-12-17T06:41:27.084Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}  
2018-12-17T06:41:27.084Z - INFO - encodedCpiSignedData contents = {  
"installationParam": {



```
"eirpCapability": 40,
"antennaAzimuth": 0,
"heightType": "AMSL",
"longitude": -88.0808,
"height": 100,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 15
},
"fcclId": "QWP-30450M",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e6070a5"
}
2018-12-17T06:41:27.084Z - INFO - verified signature on cpiSignatureData
2018-12-17T06:41:27.084Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-12-17T06:41:27.084Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-12-17T06:41:30.532Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbbsdCategory": "B",
      "cbbsdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) BHUL450",
        "vendor": "Cambium Networks"
      },
      "cbbsdSerialNumber": "0a003e431a34",
      "cpiSignatureData": {
        "digitalSignature":
"Winc1sicBkQmobkS-ogMWVUsPC4S_9FaKCsJ-6kwc8YuPIYXI26TqczW4DJFgeh9NNOeNAtveL3FK
EmbeLjZ_3NSQC6I3DIFqb-WOMdg55E8KLOP-IFwMj7VgGllr5MYuiHdyhAR8o5dVBIM8r12GeXGxj0Bu
vY1InVTuh7puq3fVbKGG3m3p1cvfEpdSBCGUFm5HccR80kcADaOBIFzJlJm6p-8O0L8nrZP_ec8CV_z
DTIRoY66bdc5C98IA_XBC2eOwiJHF-alk8TJLcFAM51qMOdSE9aQfZVUyHqXFZiOFDvGEUE3eqD_p-
wXYyv9JaXv2uR7p6kYfldzuw51zw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SDg5RIQwMDA5liwiY2JzZFNlcmhE51bWJlciI6IjBhMDAzZTQzMWEzNCIsImImluc3"

```



```
RhbGxhdGlvbIBhcmFtIjlp7ImxhdGI0dWRlljo0Mi4yNDIsImxvbmddpdHVkZSI6LTg4LjA4MDgslmhlaWdod
CI6MCwiaGVpZ2h0VHlwZSI6IkFNU0wiLCJpbmRvb3JEZXBSb3ltZW50IjpmYWxzZSwiYW50ZW5uYUUF
6aW11dGgiOjAsImFudGVubmFEb3dudGlsdCI6MCwiYW50ZW5uYUdhaW4iOjE4LCJlaXJwQ2FwYWJp
bGI0eSI6NDAsImFudGVubmFCZWFTd2lkdGgiOjkwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI
6eyJjcGlZCI6ImNwaTEyMyIsImNwaU5hbWUiOiJDUEkgVXNlciAxMjMiLCJpbmN0YWxsQ2VydGlmaW
NhdGlvbIRpbWUiOiIyMDE4LTA1LTA5VDE1OjUxOjEyLjg2NloifX0",
    "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
  },
  "fcclId": "Z8H89FT0009",
  "groupingParam": [
    {
      "groupId": "0a-00-3e-43-1a-34",
      "groupType": "INTERFERENCE_COORDINATION"
    }
  ],
  "measCapability": [
    "RECEIVED_POWER_WITHOUT_GRANT"
  ],
  "userId": "SF5W5D"
}
]
```

2018-12-17T06:41:30.562Z - INFO - Registration message contains cpiSignatureData  
2018-12-17T06:41:30.562Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}  
2018-12-17T06:41:30.562Z - 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": "Z8H89FT0009",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e431a34"
}
```

2018-12-17T06:41:30.562Z - INFO - verified signature on cpiSignatureData  
2018-12-17T06:41:30.562Z - INFO - cpiSignatureData data successfully validated against jsonschema  
2018-12-17T06:41:30.578Z - INFO - engine sent successfully, the response to CBRS : {

```
"registrationResponse": [
  {
    "response": {
      "responseCode": 103
    }
  ]
}
```



```
    }  
  }  
]
```

2018-12-17T06:41:32.388Z - INFO - arrived to nstep starting question answer session with the technician

2018-12-17T06:41:32.388Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2018-12-17T06:44:01.821Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2018-12-17T06:44:01.835Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :

2018-12-17T06:44:02.303Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n

2018-12-17T06:44:02.897Z - INFO - The final result of the test : WINNF.FT.D.REG.13 is - passed



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

2018-12-17T06:44:17.592Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
2018-12-17T06:44:17.592Z - INFO - the selected test from the user : WINNF.FT.D.REG.15 is starting now

2018-12-17T06:44:20.618Z - INFO - registration request from CBRS : {
"registrationRequest": [
{
"airInterface": {
"radioTechnology": "CAMBIUM\_NETWORKS"
},
"cbstdCategory": "B",
"cbstdInfo": {
"softwareVersion": "CANOPY 16.0 (Build INT-CBRS-69) AP",
"vendor": "Cambium Networks"
},
"cbstdSerialNumber": "0a003e6070a5",
"cpisignatureData": {
"digitalSignature":
"a90CjgQt42K0b5x38cqJPJdtjABPb896gH5Ih3F0gPWjWQWHUZJuOFDqrW0mPi93qmA9KKzPNxpdN
x\_wA6lnRnKVMqmy9RQdn929LZfox2gG\_LfJVNpABNtO8hbslj\_QvhMlxvifu7yQdz0FJXuqvaj1Mt6FQgR
hmD9O-vpr-IlZrfZFDjcCgAikEe6\_SmGY8A0EviAPB2AqcpS4aKWom1CsPM56ZMJ5UcljA8-IXCiGVe6u
iBQZITYyS4PTg-d\_Yeo4FNnctK8aSJsT\_bI4Wow2zEvOpyhqfloWDzuhbVaS0GJ2gj8oroL2BFHD1DG
M4YEL9c5Q8vCHyHeCvFA4hw",
"encodedCpiSignedData":
"eyJmY2NJZCI6IFXUC0zMDQ1ME0iLCJjYnNkU2VyaWFsTnVtYmVyljoiMGewMDNINjA3MGE1liwiaW
5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGU0iOjQyLjI0MiwibG9uZ2l0dWRlljotODguMDgwOCwia
GVpZ2h0IjoxMDAsImhlaWdodFR5cGU0iJBTvNMIiW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImF
udGVubmFBemltdXRoljowLjChbnRlbn5hR93bnRpbHQiOjAsImFudGVubmFHYWluljoxNSwiZWlycE
NhcGFiaWxpdHkiOjQwLjChbnRlbn5hQmVhbXdpZHRoljow5MH0slnByb2Zlc3Npb25hbEluc3RhbGxlckR
hdGEiOnsiY3BpSWQiOiJjcGkxMjMiLCJjcGLOYW11IjoiQ1BJFVZzXlGmTlziW5zdGFsbENlcnRpbmli
YXRpb25UaW11IjoiMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",
"protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
},
"fcclId": "QWP-30450M",
"groupingParam": [
{
"groupId": "0a-00-3e-60-70-a5",
"groupType": "INTERFERENCE\_COORDINATION"
}
],
"measCapability": [
"RECEIVED\_POWER\_WITHOUT\_GRANT"
],
"userId": "test"
}
]
}

2018-12-17T06:44:20.650Z - INFO - Registration message contains cpisignatureData
2018-12-17T06:44:20.650Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2018-12-17T06:44:20.650Z - INFO - encodedCpiSignedData contents = {
"installationParam": {
"eirpCapability": 40,



```
"antennaAzimuth": 0,
"heightType": "AMSL",
"longitude": -88.0808,
"height": 100,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 15
},
"fcld": "QWP-30450M",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e6070a5"
}
2018-12-17T06:44:20.665Z - INFO - verified signature on cpiSignatureData
2018-12-17T06:44:20.665Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-12-17T06:44:20.665Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbssdId": "QWP-30450MMock-SAS0a003e6070a5",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-12-17T06:44:25.891Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbssdCategory": "B",
      "cbssdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) BHUL450",
        "vendor": "Cambium Networks"
      },
      "cbssdSerialNumber": "0a003e431a34",
      "cpiSignatureData": {
        "digitalSignature":
"Winc1sicBkQmobkS-ogMWVUsPC4S_9FaKCsj-6kwc8YuPIYXI26TqczW4DJFgeh9NNOeNAtveL3FK
EmbeLjZ_3NSQC6l3DIFqb-WOMdg55E8KLOP-IFwMj7VgGllr5MYuiHdyhAR8o5dVBIM8r12GeXGxj0Bu
vYI1nVTuh7puq3fVBkGG3m3p1cvfEpdSBCGUFm5HccR80kcADaOBIFzJlJm6p-8O0L8nrZP_ec8CV_z
DTIRoY66bdc5C98IA_XBC2eOwiJHF-alk8TJLcFAM51qM0dSE9aQfZVUyHqXFZiOFDvGEUE3eqD_p-
wXYyv9JaXv2uR7p6kYfldzuw51zw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SDg5RIQwMDA5liwiY2JzZFNlcmIhbE51bWJlcil6ljBhMDAzZTQzMWEzNCIsImhuc3
RhbgxhdGlvbiBhcmFtlj7lmxhdGI0dWRlljo0Mi4yNDIsImxvbmddpdHVkZSI6LTg4LjA4MDgslmhlaWdod
```



```
CI6MCwiaGVpZ2h0VHlwZSI6IkJFU0wiLCJpbmRvb3JEZXBs3ltZW50ljpYXZlZW50ZW5uYUUF
6aW11dGgiOjAsImFudGVubmFEb3dudGlsdCI6MCwiYW50ZW5uYUdhaW4iOjE4LCJlaXJwQ2FwYWJp
bGI0eSI6NDAsImFudGVubmFCZWZFd2lkGgiOjkwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI
6eyJjcGlJZC16ImNwaTEyMyIsImNwaU5hbWUiOiJDUEkgVXNlciAxMjMiLCJpbmN0YWxsQ2VydGlmaW
NhdGlvbRpbWUiOiIyMDE4LTA1LTA5VDE1OjUxOjEyLjg2NloifX0",
    "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
  },
  "fcclId": "Z8H89FT0009",
  "groupingParam": [
    {
      "groupId": "0a-00-3e-43-1a-34",
      "groupType": "INTERFERENCE_COORDINATION"
    }
  ],
  "measCapability": [
    "RECEIVED_POWER_WITHOUT_GRANT"
  ],
  "userId": "SF5W5D"
}
]
```

2018-12-17T06:44:25.937Z - INFO - Registration message contains cpiSignatureData  
2018-12-17T06:44:25.937Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}  
2018-12-17T06:44:25.937Z - 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": "Z8H89FT0009",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e431a34"
}
```

2018-12-17T06:44:25.937Z - INFO - verified signature on cpiSignatureData  
2018-12-17T06:44:25.953Z - INFO - cpiSignatureData data successfully validated against jsonschema  
2018-12-17T06:44:25.953Z - INFO - engine sent successfully, the response to CBRS : {

```
"registrationResponse": [
  {
    "response": {
      "responseCode": 101
    }
  }
]
```





```
}
]
}
```

2018-12-17T06:44:27.732Z - INFO - arrived to nstep starting question answer session with the technician

2018-12-17T06:44:27.732Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2018-12-17T06:45:29.414Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2018-12-17T06:45:29.414Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :

2018-12-17T06:45:33.688Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n

2018-12-17T06:45:34.780Z - 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

2018-12-17T06:45:55.559Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13  
2018-12-17T06:45:55.559Z - INFO - the selected test from the user : WINNF.FT.D.REG.17 is starting now

```
2018-12-17T06:45:59.226Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbsdCategory": "B",
      "cbsdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-69) AP",
        "vendor": "Cambium Networks"
      },
      "cbsdSerialNumber": "0a003e6070a5",
      "cpiSignatureData": {
        "digitalSignature":
"a90CjgQt42K0b5x38cqJPJdtjABPb896gH5h3F0gPWjWQWHUZJuOFDqrW0mPi93qmA9KKzPNxpdN
x_wA6lnRnKVMqmy9RQdn929LZfox2gG_LfJVNpABNtO8hbslj_QvhMlxvifu7yQdz0FJXuqvaj1Mt6FQgR
hmD9O-vpr-IlZrfZFDjcCgAikEe6_SmGY8A0EviAPB2AqcpS4aKWOm1CsPM56ZMJ5UcljA8-IXCiGve6u
iBQZITYyS4PTg-d_Yeo4FNnCntK8aSJsT_bl4Wow2zEvOpyhqfloWDzuhbVaS0GJ2gj8oroL2BFHD1DG
M4YEL9c5Q8vCHyHeCvFA4hw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6IlFXUC0zMDQ1ME0iLCJYnNkU2VyaWFsTnVtYmVyljoiMGEwMDNINjA3MGE1IiwiaW
5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGU0OjQyLjI0MiwiG9uZ2I0dWRlljotODguMDgwOCwia
GVpZ2h0ljoXMDAsImhlaWdodFR5cGU0iJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImF
udGVubmFBemltdXRoljowLjChbnRlbn5hRG93bnRpbHQiOjAsImFudGVubmFHYWluljoxNSwiZWlycE
NhcGFiaWxpdHkiOjQwLjChbnRlbn5hQmVhbXdpZHRoLj05MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckR
hdGEiOmsiY3BpSWQiOiJjcGxMjMiLCJjcGLOYW1lIjoiQ1BJIFVzZXIiMTIzIiwiaW5zdGFsbENlcnRpZmlj
YXRpb25UaW1lIjoiMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fcclId": "QWP-30450M",
      "groupingParam": [
        {
          "groupId": "0a-00-3e-60-70-a5",
          "groupType": "INTERFERENCE_COORDINATION"
        }
      ],
      "measCapability": [
        "RECEIVED_POWER_WITHOUT_GRANT"
      ],
      "userId": "test"
    }
  ]
}
```

2018-12-17T06:45:59.273Z - INFO - Registration message contains cpiSignatureData  
2018-12-17T06:45:59.273Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}  
2018-12-17T06:45:59.273Z - INFO - encodedCpiSignedData contents = {  
"installationParam": {



```
"eirpCapability": 40,
"antennaAzimuth": 0,
"heightType": "AMSL",
"longitude": -88.0808,
"height": 100,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 15
},
"fcclId": "QWP-30450M",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e6070a5"
}
2018-12-17T06:45:59.273Z - INFO - verified signature on cpiSignatureData
2018-12-17T06:45:59.289Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-12-17T06:45:59.289Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "response": {
        "responseCode": 100
      }
    }
  ]
}
2018-12-17T06:46:04.592Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbbsdCategory": "B",
      "cbbsdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) BHUL450",
        "vendor": "Cambium Networks"
      },
      "cbbsdSerialNumber": "0a003e431a34",
      "cpiSignatureData": {
        "digitalSignature":
"Winc1sicBkQmobkS-ogMWVUsPC4S_9FaKCsj-6kwc8YuPIYXI26TqczW4DJFgeh9NNOeNAtveL3FK
EmbeLjZ_3NSQC6l3DIFqb-WOMdg55E8KLOP-IFwMj7VgGllr5MYuiHdyhAR8o5dVBIM8r12GeXGxj0Bu
vYI1nVTuh7puq3fVBkGG3m3p1cvfEpdSBCGUFm5HccR80kcADaOBIFzJlJm6p-8O0L8nrZP_ec8CV_z
DTIRoY66bdc5C98IA_XBC2eOwiJHF-alk8TJLCfAM51qMOdSE9aQfZVUyHqXFZiOFDvGEUE3eqD_p-
wXYyv9JaXv2uR7p6kYfldzuw51zw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SDg5RIQwMDA5liwiY2JzZFNlcmIhbE51bWJlcil6ljBhMDAzZTQzMWEzNCIsImhuc3
RhbGxhdGlvb1BhcmFtIjlp7lmxhdGI0dWRlljo0Mi4yNDIsImxvbmtpdHVkZSI6LTg4LjA4MDgslmhlaWdod
```



```
CI6MCwiaGVpZ2h0VHlwZSI6IkJFU0wiLCJpbmRvb3JEZXBs3ltZW50ljpYXZlZW50ZW5uYUUF
6aW11dGgiOjAsImFudGVubmFEb3dudGlsdCI6MCwiYW50ZW5uYUdhaW4iOjE4LCJlaXJwQ2FwYWJp
bGI0eSI6NDAsImFudGVubmFCZWZFd2lkGgiOjkwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI
6eyJjcGlJZC16ImNwaTEyMyIsImNwaU5hbWUiOiJDUEkgVXNlciAxMjMiLCJpbmN0YWxsQ2VydGlmaW
NhdGlvbRpbWUiOiOilyMDE4LTA1LTA5VDE1OjUxOjEyLjg2NloifX0",
    "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
  },
  "fcclId": "Z8H89FT0009",
  "groupingParam": [
    {
      "groupId": "0a-00-3e-43-1a-34",
      "groupType": "INTERFERENCE_COORDINATION"
    }
  ],
  "measCapability": [
    "RECEIVED_POWER_WITHOUT_GRANT"
  ],
  "userId": "SF5W5D"
}
]
```

2018-12-17T06:46:04.640Z - INFO - Registration message contains cpiSignatureData  
2018-12-17T06:46:04.640Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}  
2018-12-17T06:46:04.640Z - 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": "Z8H89FT0009",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e431a34"
}
```

2018-12-17T06:46:04.640Z - INFO - verified signature on cpiSignatureData  
2018-12-17T06:46:04.654Z - INFO - cpiSignatureData data successfully validated against jsonschema  
2018-12-17T06:46:04.654Z - INFO - engine sent successfully, the response to CBRS : {

```
"registrationResponse": [
  {
    "response": {
      "responseCode": 100
    }
  }
]
```



```
}
]
}
```

2018-12-17T06:46:05.700Z - INFO - arrived to nstep starting question answer session with the technician

2018-12-17T06:46:05.700Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2018-12-17T06:47:07.289Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2018-12-17T06:47:07.289Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :

2018-12-17T06:47:08.506Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n

2018-12-17T06:47:09.302Z - 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

2018-12-17T06:47:23.559Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13  
2018-12-17T06:47:23.559Z - INFO - the selected test from the user : WINNF.FT.D.REG.19 is starting now

```
2018-12-17T06:47:25.775Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbsdCategory": "B",
      "cbsdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-69) AP",
        "vendor": "Cambium Networks"
      },
      "cbsdSerialNumber": "0a003e6070a5",
      "cpiSignatureData": {
        "digitalSignature":
"a90CjgQt42K0b5x38cqJPJdtjABPb896gH5h3F0gPWjWQWHUZJuOFDqrW0mPi93qmA9KKzPNxpdN
x_wA6lnRnKVMqmy9RQdn929LZfox2gG_LfJVNpABNtO8hbslj_QvhMlxvifu7yQdz0FJXuqvaj1Mt6FQgR
hmD9O-vpr-IlZrfZFDjcCgAikEe6_SmGY8A0EviAPB2AqcpS4aKWom1CsPM56ZMJ5UcljA8-IXCiGVe6u
iBQZITYyS4PTg-d_Yeo4FNnCntK8aSJsT_bI4Wow2zEvOpyhqfloWDzuhbVaS0GJ2gj8oroL2BFHD1DG
M4YEL9c5Q8vCHyHeCvFA4hw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6IlFXUC0zMDQ1ME0iLCJjYnNkU2VyaWFsTnVtYmVyljoiMGUwMDNINjA3MGE1liwiaW
5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGU0OjQyLjI0MiwibG9uZ2l0dWRlljotODguMDgwOCwia
GVpZ2h0ljoXMDAsImhlaWdodFR5cGU0iJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImF
udGVubmFBemltdXRoljowLjChbnRlbn5hRG93bnRpbHQiOjAsImFudGVubmFHYWluljoxNSwiZWlycE
NhcGFiaWxpdHkiOjQwLjChbnRlbn5hQmVhbXdpZHRoljow5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckR
hdGEiOnsiY3BpSWQiOiJjcGkxMjMiLCJjcGLOYW11ljoIQ1BJFVZzXlGMTIzliwiaW5zdGFsbENlcnRpZmlj
YXRpb25UaW11ljoIMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fcclId": "QWP-30450M",
      "groupingParam": [
        {
          "groupId": "0a-00-3e-60-70-a5",
          "groupType": "INTERFERENCE_COORDINATION"
        }
      ],
      "measCapability": [
        "RECEIVED_POWER_WITHOUT_GRANT"
      ],
      "userId": "test"
    }
  ]
}
```

2018-12-17T06:47:25.822Z - INFO - Registration message contains cpiSignatureData  
2018-12-17T06:47:25.822Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}  
2018-12-17T06:47:25.822Z - INFO - encodedCpiSignedData contents = {  
 "installationParam": {  
 "eirpCapability": 40,



```
"antennaAzimuth": 0,
"heightType": "AMSL",
"longitude": -88.0808,
"height": 100,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 15
},
"fcld": "QWP-30450M",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e6070a5"
}
2018-12-17T06:47:25.822Z - INFO - verified signature on cpiSignatureData
2018-12-17T06:47:25.822Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-12-17T06:47:25.838Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbssdId": "QWP-30450MMock-SAS0a003e6070a5",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-12-17T06:47:28.630Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbssdCategory": "B",
      "cbssdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) BHUL450",
        "vendor": "Cambium Networks"
      },
      "cbssdSerialNumber": "0a003e431a34",
      "cpiSignatureData": {
        "digitalSignature":
"Winc1sicBkQmobkS-ogMWVUsPC4S_9FaKCsJ-6kwc8YuPIYXI26TqczW4DJFgeh9NNOeNAtveL3FK
EmbeLjZ_3NSQC6I3DIFqb-WOMdg55E8KLOP-IFwMj7VgGllr5MYuiHdyhAR8o5dVBIM8r12GeXGxj0Bu
vYI1nVTuh7puq3fVBkGG3m3p1cvfEpdSBCGUFm5HccR80kcADaOBIFzJlJm6p-8O0L8nrZP_ec8CV_z
DTIRoY66bdc5C98IA_XBC2eOwiJHF-alk8TJLcFAM51qMOdSE9aQfZVUyHqXFZiOFDvGEUE3eqD_p-
wXYyv9JaXv2uR7p6kYfldzuw51zw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RIQwMDA5IiwY2JzZFNlcmIhbE51bWJlcil6IjBhMDAzZTQzMWEzNCIsImhuc3
RhbgxhdGlvbiBhcmFtlj7lmxhdGI0dWRlljo0Mi4yNDIsImxvbmddpdHVkZSI6LTg4LjA4MDgsImhlaWdod
```



```
CI6MCwiaGVpZ2h0VHlwZSI6IkdFNU0wiLCJpbmRvb3JEZXBs3ltZW50ljpYXZlZW50ZW5uYUFl
6aW11dGgiOjAsImFudGVubmFEb3dudGlsdCI6MCwiYW50ZW5uYUdhaW4iOjE4LCJlaXJwQ2FwYWJp
bGI0eSI6NDAsImFudGVubmFCZWFtd2lkdGgiOjkwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI
6eyJjcGlJZC16ImNwaTEyMyIsImNwaU5hbWUiOiJDUEkgVXNlciAxMjMiLCJpbmN0YWxsQ2VydGlmaW
NhdGlvbRpbWUiOiOilyMDE4LTA1LTA5VDE1OjUxOjEyLjg2NloifX0",
    "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
  },
  "fcclId": "Z8H89FT0009",
  "groupingParam": [
    {
      "groupId": "0a-00-3e-43-1a-34",
      "groupType": "INTERFERENCE_COORDINATION"
    }
  ],
  "measCapability": [
    "RECEIVED_POWER_WITHOUT_GRANT"
  ],
  "userId": "SF5W5D"
}
]
}
}
2018-12-17T06:47:28.661Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ]
    }
  ]
}
}
2018-12-17T06:47:28.677Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3555000000,
            "lowFrequency": 3550000000
          },
          "ruleApplied": "FCC_PART_96"
        }
      ],
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
```



```
]
}
2018-12-17T06:47:28.677Z - INFO - Registration message contains cpiSignatureData
2018-12-17T06:47:28.677Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2018-12-17T06:47:28.677Z - 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
  },
  "fcld": "Z8H89FT0009",
  "professionalInstallerData": {
    "cpiName": "CPI User 123",
    "installCertificationTime": "2018-05-09T15:51:12.866Z",
    "cpild": "cpi123"
  },
  "cbsdSerialNumber": "0a003e431a34"
}
2018-12-17T06:47:28.677Z - INFO - verified signature on cpiSignatureData
2018-12-17T06:47:28.677Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-12-17T06:47:28.677Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "response": {
        "responseCode": 201
      }
    }
  ]
}
2018-12-17T06:47:30.674Z - INFO - arrived to nstep starting question answer session with the technician
2018-12-17T06:47:30.674Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :
2018-12-17T06:48:32.368Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n
2018-12-17T06:48:32.368Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :
2018-12-17T06:48:33.256Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n
2018-12-17T06:48:33.647Z - 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

2018-12-13T09:39:56.825Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2018-12-13T09:39:56.828Z - INFO - the selected test from the user : WINNF.FT.C.GRA.1 is starting now

2018-12-13T09:40:00.548Z - INFO - registration request from CBRS : {

```

"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "CAMBIUM_NETWORKS"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-69) AP",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "0a003e6070a5",
    "cpiSignatureData": {
      "digitalSignature":
"a90CjgQt42K0b5x38cqJPJdtjABPb896gH5h3F0gPWjWQWHUZJuOFDqrW0mPi93qmA9KKzPNxpdN
x_wA6lnRnKVMqmy9RQdn929LZfox2gG_LfJVNpABNtO8hbslj_QvhMlxvifu7yQdz0FJXuqvaj1Mt6FQgR
hmD9O-vpr-IlZrfZFDjcCgAikEe6_SmGY8A0EviAPB2AqcpS4aKWom1CsPM56ZMJ5UcljA8-IXCiGve6u
iBQZITYyS4PTg-d_Yeo4FNnCntK8aSJsT_bl4Wow2zEvOpyhqfloWDzuhbVaS0GJ2gj8oroL2BFHD1DG
M4YEL9c5Q8vCHyHeCvFA4hw",
      "encodedCpiSignedData":
"eyJmY2NJZCI6IlFXUC0zMDQ1ME0iLCJYnNkU2VyaWFsTnVtYmVyljoiMGEwMDNINjA3MGE1liwiaW
5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGU0OjQyLjI0MiwibG9uZ2l0dWRlljotODguMDgwOCwia
GVpZ2h0ljoXMDAsImhlaWdodFR5cGU0iJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImF
udGVubmFBemltdXRoljowLjChbnRlbn5hRG93bnRpbHQiOjAsImFudGVubmFHYWluljoxNSwiZWlycE
NhcGFiaWxpdHkiOjQwLjChbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckR
hdGEiOnsiY3BpSWQiOiJjcGxkMjMiLCJjcGLOYW11ljoIQ1BJFVzZXIjMTIzliwiaW5zdGFsbENlcnRpZmlj
YXRpb25UaW11ljoIMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fcclId": "QWP-30450M",
    "groupingParam": [
      {
        "groupId": "0a-00-3e-60-70-a5",
        "groupType": "INTERFERENCE_COORDINATION"
      }
    ],
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "test"
  }
]

```

2018-12-13T09:40:00.592Z - INFO - Registration message contains cpiSignatureData

2018-12-13T09:40:00.592Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2018-12-13T09:40:00.592Z - INFO - encodedCpiSignedData contents = {

```

"installationParam": {
  "eirpCapability": 40,

```



```
"antennaAzimuth": 0,
"heightType": "AMSL",
"longitude": -88.0808,
"height": 100,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 15
},
"fcld": "QWP-30450M",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e6070a5"
}
2018-12-13T09:40:00.594Z - INFO - verified signature on cpiSignatureData
2018-12-13T09:40:00.598Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-12-13T09:40:00.599Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbssdId": "QWP-30450MMock-SAS0a003e6070a5",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-12-13T09:40:38.430Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbssdId": "QWP-30450MMock-SAS0a003e6070a5",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ]
    }
  ]
}
2018-12-13T09:40:38.441Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3670000000,
            "lowFrequency": 3650000000
          }
        }
      ]
    }
  ]
}
```



```
    },
    "ruleApplied": "FCC_PART_96"
  }
],
"cbssId": "QWP-30450MMock-SAS0a003e6070a5",
"response": {
  "responseCode": 0
}
]
```

```
2018-12-13T09:40:38.500Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbssId": "QWP-30450MMock-SAS0a003e6070a5",
      "operationParam": {
        "maxEirp": -13,
        "operationFrequencyRange": {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
```

```
2018-12-13T09:40:38.512Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbssId": "QWP-30450MMock-SAS0a003e6070a5",
      "response": {
        "responseCode": 400
      }
    }
  ]
}
```

```
2018-12-13T09:40:39.872Z - INFO - arrived to nstep starting question answer session with the technician
2018-12-13T09:40:39.875Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :
2018-12-13T09:41:53.076Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n
2018-12-13T09:41:54.183Z - 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**

2018-12-13T09:42:13.073Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13  
2018-12-13T09:42:13.075Z - INFO - the selected test from the user : WINNF.FT.C.GRA.2 is starting now  
2018-12-13T09:42:17.198Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "CAMBIUM_NETWORKS"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-69) AP",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "0a003e6070a5",
    "cpiSignatureData": {
      "digitalSignature":
"a90CjgQt42K0b5x38cqJPJdtjABPb896gH5h3F0gPWjWQWHUZJuOFDqrW0mPi93qmA9KKzPNxpdN
x_wA6lnRnKVMqmy9RQdn929LZfox2gG_LfJVNpABNtO8hbslj_QvhMlxvifu7yQdz0FJXuqvaj1Mt6FQgR
hmD9O-vpr-llZrfZFDjcCgAikEe6_SmGY8A0EviAPB2AqcpS4aKWom1CsPM56ZMJ5UcljA8-IXCiGVe6u
iBQZITYyS4PTg-d_Yeo4FNnCTk8aSJST_bl4Wow2zEvOpyhqfloodZuhbVaS0GJ2gj8oroL2BFHD1DG
M4YEL9c5Q8vCHyHeCvFA4hw",
      "encodedCpiSignedData":
"eyJmY2NJZCI6IIFXUC0zMDQ1ME0iLCJYnNkU2VyaWFsTnVtYmVyljoiMGEGwMDNINjA3MGE1liwiaW
5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGUiOjQyLjI0MiwibG9uZ2I0dWRlljotODguMDgwOCwia
GVpZ2h0ljoXMDAsImhlaWdodFR5cGUiOiJBTVMliwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImF
udGVubmFBemltdXRoljowLjChbnRlbn5hRG93bnRpbHQiOjAsImFudGVubmFHYWluljoxNSwiZWlycE
NhcGFiaWxpdHkiOjQwLjChbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckR
hdGEiOmsiY3BpSWQiOiJjcGxkMjMiLCJjcG9yYyI1IjoiQ1BjIFVzZXIiMTIzIiwiW5zdGFsbENlcnRpZmlj
YXRpb25UaW1lIjoiMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fcclId": "QWP-30450M",
    "groupingParam": [
      {
        "groupId": "0a-00-3e-60-70-a5",
        "groupType": "INTERFERENCE_COORDINATION"
      }
    ],
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "test"
  }
]
```

2018-12-13T09:42:17.243Z - INFO - Registration message contains cpiSignatureData  
2018-12-13T09:42:17.243Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}  
2018-12-13T09:42:17.244Z - INFO - encodedCpiSignedData contents = {  
"installationParam": {  
"eirpCapability": 40,  
"antennaAzimuth": 0,



```
"heightType": "AMSL",
"longitude": -88.0808,
"height": 100,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 15
},
"fcclId": "QWP-30450M",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e6070a5"
}
2018-12-13T09:42:17.246Z - INFO - verified signature on cpiSignatureData
2018-12-13T09:42:17.250Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-12-13T09:42:17.253Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbssdId": "QWP-30450MMock-SAS0a003e6070a5",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-12-13T09:42:38.851Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbssdId": "QWP-30450MMock-SAS0a003e6070a5",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ]
    }
  ]
}
2018-12-13T09:42:38.861Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3670000000,
            "lowFrequency": 3650000000
          }
        }
      ],

```

```
        "ruleApplied": "FCC_PART_96"
      }
    ],
    "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
    "response": {
      "responseCode": 0
    }
  }
]
}
2018-12-13T09:42:38.907Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "operationParam": {
        "maxEirp": -13,
        "operationFrequencyRange": {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2018-12-13T09:42:38.915Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "response": {
        "responseCode": 401
      }
    }
  ]
}
2018-12-13T09:42:40.092Z - INFO - arrived to nstep starting question answer session with the technician
2018-12-13T09:42:40.095Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :
2018-12-13T09:43:45.630Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n
2018-12-13T09:43:46.019Z - 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

2018-12-17T05:44:06.384Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
2018-12-17T05:44:06.387Z - INFO - the selected test from the user : WINNF.FT.D.HBT.2 is starting now
2018-12-17T05:44:15.788Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "CAMBIUM_NETWORKS"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-69) AP",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "0a003e6070a5",
    "cpiSignatureData": {
      "digitalSignature":
"a90CjgQt42K0b5x38cqJPJdtjABPb896gH5h3F0gPWjWQWHUZJuOFDqrW0mPi93qmA9KKzPNxpdN
x_wA6lnRnKVMqmy9RQdn929LZfox2gG_LfJVNpABNtO8hbslj_QvhMlxvifu7yQdz0FJXuqvaj1Mt6FQgR
hmD9O-vpr-IlZrfZFDjcCgAikEe6_SmGY8A0EviAPB2AqcpS4aKWom1CsPM56ZMJ5UcljA8-IXCiGve6u
iBQZITYyS4PTg-d_Yeo4FNnCntK8aSJsT_bl4Wow2zEvOpyhqfloWDzuhbVaS0GJ2gj8oroL2BFHD1DG
M4YEL9c5Q8vCHyHeCvFA4hw",
      "encodedCpiSignedData":
"eyJmY2NJZCI6IlFXUC0zMDQ1ME0iLCJYnNkU2VyaWFsTnVtYmVyljoiMGEwMDNINjA3MGE1liwiaW
5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGU0iOjQyLjI0MiwibG9uZ2l0dWRlljotODguMDgwOCwia
GVpZ2h0ljoXMDAsImhlaWdodFR5cGU0iJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImF
udGVubmFBemltdXRoljowLjChbnRlbn5hRG93bnRpbHQiOjAsImFudGVubmFHYWluljoxNSwiZWlycE
NhcGFiaWxpdHkiOjQwLjChbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckR
hdGEiOnsiY3BpSWQiOiJjcGxkMjMiLCJjcG9yYy1lIjoiQ1BJFVZzXlIjoiMTIzIiwiaW5zdGFsbENlcnRpbmli
YXRpb25UaW1lIjoiMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fcclId": "QWP-30450M",
    "groupingParam": [
      {
        "groupId": "0a-00-3e-60-70-a5",
        "groupType": "INTERFERENCE_COORDINATION"
      }
    ],
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "test"
  }
]
```

2018-12-17T05:44:15.924Z - INFO - Registration message contains cpiSignatureData
2018-12-17T05:44:15.924Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2018-12-17T05:44:15.924Z - INFO - encodedCpiSignedData contents = {
 "installationParam": {
 "eirpCapability": 40,





```
"antennaAzimuth": 0,
"heightType": "AMSL",
"longitude": -88.0808,
"height": 100,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 15
},
"fcld": "QWP-30450M",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e6070a5"
}
2018-12-17T05:44:16.009Z - INFO - verified signature on cpiSignatureData
2018-12-17T05:44:16.016Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-12-17T05:44:16.016Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbssdId": "QWP-30450MMock-SAS0a003e6070a5",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-12-17T05:44:22.467Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbssdCategory": "B",
      "cbssdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) BHUL450",
        "vendor": "Cambium Networks"
      },
      "cbssdSerialNumber": "0a003e431a34",
      "cpiSignatureData": {
        "digitalSignature":
"Winc1sicBkQmobkS-ogMWVUsPC4S_9FaKCsJ-6kwc8YuPIYXI26TqczW4DJFgeh9NNOeNAtveL3FK
EmbeLjZ_3NSQC6I3DIFqb-WOMdg55E8KLOP-IFwMj7VgGllr5MYuiHdyhAR8o5dVBIM8r12GeXGxj0Bu
vYI1nVTuh7puq3fVBkGG3m3p1cvfEpdSBCGUFm5HccR80kcADaOBIFzJlJm6p-8O0L8nrZP_ec8CV_z
DTIRoY66bdc5C98IA_XBC2eOwiJHF-alk8TJLcFAM51qM0dSE9aQfZVUyHqXFZiOFDvGEUE3eqD_p-
wXYyv9JaXv2uR7p6kYfldzuw51zw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RIQwMDA5IiwY2JzZFNlcmIhbE51bWJlcil6IjBhMDAzZTQzMWEzNCIsImhuc3
RhbGxhdGlvb1BhcmFtlj7lmxhdGI0dWRlljo0Mi4yNDIsImxvbmddpdHVkZSI6LTg4LjA4MDgslmhlaWdod
```



```
CI6MCwiaGVpZ2h0VHlwZSI6IkJFU0wiLCJpbmRvb3JEZXBs3ltZW50ljpYWxZSwiYW50ZW5uYUUF
6aW11dGgiOjAsImFudGVubmFEb3dudGlsdCI6MCwiYW50ZW5uYUdhaW4iOjE4LCJlaXJwQ2FwYWJp
bGI0eSI6NDAsImFudGVubmFCZWZFd2lkdGgiOjkwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI
6eyJjcGlJZC16ImNwaTEyMyIsImNwaU5hbWUiOiJDUEkgVXNlciAxMjMiLCJpbmN0YWxsQ2VydGlmaW
NhdGlvbRpbWUiOiIyMDE4LTA1LTA5VDE1OjUxOjEyLjg2NloifX0",
    "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
  },
  "fcclId": "Z8H89FT0009",
  "groupingParam": [
    {
      "groupId": "0a-00-3e-43-1a-34",
      "groupType": "INTERFERENCE_COORDINATION"
    }
  ],
  "measCapability": [
    "RECEIVED_POWER_WITHOUT_GRANT"
  ],
  "userId": "SF5W5D"
}
]
}
```

2018-12-17T05:44:22.520Z - INFO - Registration message contains cpiSignatureData  
2018-12-17T05:44:22.520Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2018-12-17T05:44:22.522Z - 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": "Z8H89FT0009",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e431a34"
}
```

2018-12-17T05:44:22.523Z - INFO - verified signature on cpiSignatureData  
2018-12-17T05:44:22.528Z - INFO - cpiSignatureData data successfully validated against jsonschema  
2018-12-17T05:44:22.529Z - INFO - engine sent successfully, the response to CBRSS : {

```
"registrationResponse": [
  {
    "cbssid": "Z8H89FT0009Mock-SAS0a003e431a34",
    "response": {
      "responseCode": 0
    }
  }
]
```



```
    }
  }
]
}
2018-12-17T05:45:16.680Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ]
    }
  ]
}
]
}
2018-12-17T05:45:16.701Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3670000000,
            "lowFrequency": 3650000000
          },
          "ruleApplied": "FCC_PART_96"
        }
      ],
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
]
}
2018-12-17T05:45:16.802Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "operationParam": {
        "maxEirp": 27,
        "operationFrequencyRange": {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
]
}
2018-12-17T05:45:16.821Z - INFO - engine sent successfully, the response to CBRS : {
```



```
"grantResponse": [
  {
    "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
    "channelType": "GAA",
    "grantExpireTime": "2018-12-24T05:45:16Z",
    "grantId": "110433646",
    "heartbeatInterval": 60,
    "response": {
      "responseCode": 0
    }
  }
]
}
2018-12-17T05:45:16.910Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "110433646",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-12-17T05:45:16.920Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "110433646",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-17T05:48:36Z"
    }
  ]
}
2018-12-17T05:45:23.361Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "inquiredSpectrum": [
        {
          "highFrequency": 3630000000,
          "lowFrequency": 3610000000
        }
      ]
    }
  ]
}
2018-12-17T05:45:23.369Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
```



```
        {
            "channelType": "GAA",
            "frequencyRange": {
                "highFrequency": 3630000000,
                "lowFrequency": 3610000000
            },
            "ruleApplied": "FCC_PART_96"
        }
    ],
    "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
    "response": {
        "responseCode": 0
    }
}
]
}
2018-12-17T05:45:23.444Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
            "operationParam": {
                "maxEirp": 27,
                "operationFrequencyRange": {
                    "highFrequency": 3630000000,
                    "lowFrequency": 3610000000
                }
            }
        }
    ]
}
2018-12-17T05:45:23.450Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
            "channelType": "GAA",
            "grantExpireTime": "2018-12-24T05:45:23Z",
            "grantId": "325594567",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2018-12-17T05:45:23.552Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
            "grantId": "325594567",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
```



```
]
}
2018-12-17T05:45:23.571Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "325594567",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-17T05:48:43Z"
    }
  ]
}
2018-12-17T05:46:12.007Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "110433646",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-17T05:46:12.012Z - INFO - Time interval between two heartbeat request messages is: 55.098,
limit is: 65.0
2018-12-17T05:46:12.030Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "110433646",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-17T05:49:32Z"
    }
  ]
}
2018-12-17T05:46:18.773Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "325594567",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-17T05:46:18.776Z - INFO - Time interval between two heartbeat request messages is: 55.22,
limit is: 65.0
2018-12-17T05:46:18.796Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
```



```
{
  "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
  "grantId": "325594567",
  "response": {
    "responseCode": 0
  },
  "transmitExpireTime": "2018-12-17T05:49:38Z"
}
]
}
2018-12-17T05:47:07.186Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "110433646",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-17T05:47:07.187Z - INFO - Time interval between two heartbeat request messages is: 55.178,
limit is: 65.0
2018-12-17T05:47:07.197Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "110433646",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-17T05:50:27Z"
    }
  ]
}
2018-12-17T05:47:14.020Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "325594567",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-17T05:47:14.023Z - INFO - Time interval between two heartbeat request messages is: 55.248,
limit is: 65.0
2018-12-17T05:47:14.029Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "325594567",
      "response": {
```



```
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-17T05:50:34Z"
    }
  ]
}
2018-12-17T05:48:02.345Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "110433646",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-17T05:48:02.346Z - INFO - Time interval between two heartbeat request messages is: 55.159,
limit is: 65.0
2018-12-17T05:48:02.355Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "110433646",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-17T05:51:22Z"
    }
  ]
}
2018-12-17T05:48:09.301Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "325594567",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-17T05:48:09.302Z - INFO - Time interval between two heartbeat request messages is: 55.281,
limit is: 65.0
2018-12-17T05:48:09.312Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "325594567",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-17T05:51:29Z"
    }
  ]
}
```





```
]
}
2018-12-17T05:48:57.500Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "110433646",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-17T05:48:57.503Z - INFO - Time interval between two heartbeat request messages is: 55.156,
limit is: 65.0
2018-12-17T05:48:57.512Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "110433646",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-17T05:52:17Z"
    }
  ]
}
2018-12-17T05:49:04.609Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "325594567",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-17T05:49:04.612Z - INFO - Time interval between two heartbeat request messages is: 55.308,
limit is: 65.0
2018-12-17T05:49:04.632Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "325594567",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-17T05:52:24Z"
    }
  ]
}
2018-12-17T05:49:51.663Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
```



```
{
  "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
  "grantId": "110433646",
  "grantRenew": false,
  "operationState": "AUTHORIZED"
}
]
}
2018-12-17T05:49:51.664Z - INFO - Time interval between two heartbeat request messages is: 54.162,
limit is: 65.0
2018-12-17T05:49:51.676Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "110433646",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-17T05:53:11Z"
    }
  ]
}
2018-12-17T05:49:58.846Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "325594567",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-17T05:49:58.848Z - INFO - Time interval between two heartbeat request messages is: 54.238,
limit is: 65.0
2018-12-17T05:49:58.855Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "325594567",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-17T05:53:18Z"
    }
  ]
}
2018-12-17T05:50:00.459Z - INFO - arrived to nstep starting question answer session with the
technician
2018-12-17T05:50:00.461Z - INFO - the question is : Did CBSD1 transmit power prior to AUTHORIZED
state (first successful HBT response)? please choose one of the answers :
2018-12-17T05:50:00.467Z - INFO - for the question : Did CBSD1 transmit power prior to AUTHORIZED
state (first successful HBT response)? , the user choose n
```



2018-12-17T05:50:00.470Z - INFO - the question is : Did CBSD1 transmit only within the frequency range specified in its grantRequest message? please choose one of the answers :  
2018-12-17T05:50:00.471Z - INFO - for the question : Did CBSD1 transmit only within the frequency range specified in its grantRequest message? , the user choose y  
2018-12-17T05:50:00.473Z - INFO - the question is : Did CBSD2 transmit power prior to AUTHORIZED state (first successful HBT response)? please choose one of the answers :  
2018-12-17T05:50:00.476Z - INFO - for the question : Did CBSD2 transmit power prior to AUTHORIZED state (first successful HBT response)? , the user choose n  
2018-12-17T05:50:00.479Z - INFO - the question is : Did CBSD2 transmit only within the frequency range specified in its grantRequest message? please choose one of the answers :  
2018-12-17T05:50:33.986Z - INFO - for the question : Did CBSD2 transmit only within the frequency range specified in its grantRequest message? , the user choose y  
2018-12-17T05:50:38.790Z - INFO - The final result of the test : WINNF.FT.D.HBT.2 is - passed and :the additional comments for the current test are : CBSD1 starts transmission at T05:45:24, CBSD2 starts transmission at T05:45:30



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

2018-12-13T09:52:25.805Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
2018-12-13T09:52:25.808Z - INFO - the selected test from the user : WINNF.FT.C.HBT.3 is starting now
2018-12-13T09:53:19.990Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "CAMBIUM_NETWORKS"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-69) AP",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "0a003e6070a5",
    "cpiSignatureData": {
      "digitalSignature":
"a90CjgQt42K0b5x38cqJPJdtjABPb896gH5h3F0gPWjWQWHUZJuOFDqrW0mPi93qmA9KKzPNxpdN
x_wA6lnRnKVMqmy9RQdn929LZfox2gG_LfJVNpABNtO8hbslj_QvhMlxvifu7yQdz0FJXuqvaj1Mt6FQgR
hmD9O-vpr-IlZrfZFDjcCgAikEe6_SmGY8A0EviAPB2AqcpS4aKWom1CsPM56ZMJ5UcljA8-IXCiGVe6u
iBQZITYyS4PTg-d_Yeo4FNnCTk8aSJST_bl4Wow2zEvOpyhqfloWDzuhbVaS0GJ2gj8oroL2BFHD1DG
M4YEL9c5Q8vCHyHeCvFA4hw",
      "encodedCpiSignedData":
"eyJmY2NJZCI6IIFXUC0zMDQ1ME0iLCJYnNkU2VyaWFsTnVtYmVyljoiMGEGwMDNINjA3MGE1liwiaW
5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGUiojQyLjI0MiwibG9uZ2I0dWRlljotODguMDgwOCwia
GVpZ2h0ljoXMDAsImhlaWdodFR5cGUiOiJBTVMliwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImF
udGVubmFBemltdXRoljowLjChbnRlbn5hRG93bnRpbHQiOjAsImFudGVubmFHYWluljoxNSwiZWlycE
NhcGFiaWxpdHkiOjQwLjChbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckR
hdGEiOnsiY3BpSWQiOiJjcGxMjMiLCJjcG9yYyI1IjoiQ1BjIFVzZXIiMTIzIiwiaW5zdGFsbENlcnRpZmlj
YXRpb25UaW1lIjoiMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fcclId": "QWP-30450M",
    "groupingParam": [
      {
        "groupId": "0a-00-3e-60-70-a5",
        "groupType": "INTERFERENCE_COORDINATION"
      }
    ],
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "test"
  }
]
```

2018-12-13T09:53:20.036Z - INFO - Registration message contains cpiSignatureData
2018-12-13T09:53:20.036Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2018-12-13T09:53:20.036Z - INFO - encodedCpiSignedData contents = {
 "installationParam": {
 "eirpCapability": 40,
 "antennaAzimuth": 0,



```
"heightType": "AMSL",
"longitude": -88.0808,
"height": 100,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 15
},
"fcclId": "QWP-30450M",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e6070a5"
}
2018-12-13T09:53:20.157Z - INFO - verified signature on cpiSignatureData
2018-12-13T09:53:20.163Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-12-13T09:53:20.164Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbssdId": "QWP-30450MMock-SAS0a003e6070a5",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-12-13T09:54:20.359Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbssdId": "QWP-30450MMock-SAS0a003e6070a5",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ]
    }
  ]
}
2018-12-13T09:54:20.371Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3670000000,
            "lowFrequency": 3650000000
          }
        }
      ],

```



```
        "ruleApplied": "FCC_PART_96"
      }
    ],
    "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
    "response": {
      "responseCode": 0
    }
  }
]
}
2018-12-13T09:54:20.427Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "operationParam": {
        "maxEirp": 27,
        "operationFrequencyRange": {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2018-12-13T09:54:20.437Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "channelType": "GAA",
      "grantExpireTime": "2018-12-20T09:54:20Z",
      "grantId": "713693464",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-12-13T09:54:20.496Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "713693464",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-12-13T09:54:20.503Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
```



```
"grantId": "713693464",
"response": {
  "responseCode": 0
},
"transmitExpireTime": "2018-12-13T09:57:40Z"
}
]
}
2018-12-13T09:55:15.944Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "713693464",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-13T09:55:15.944Z - INFO - Time interval between two heartbeat request messages is: 55.449,
limit is: 65.0
2018-12-13T09:55:15.960Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "713693464",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-13T09:58:35Z"
    }
  ]
}
2018-12-13T09:56:11.082Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "713693464",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-13T09:56:11.082Z - INFO - Time interval between two heartbeat request messages is: 55.137,
limit is: 65.0
2018-12-13T09:56:11.082Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "713693464",
      "response": {
        "responseCode": 0
      },
    }
  ]
}
```

```
        "transmitExpireTime": "2018-12-13T09:59:31Z"
      }
    ]
  }
2018-12-13T09:57:06.183Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "713693464",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-13T09:57:06.184Z - INFO - Time interval between two heartbeat request messages is: 55.101,
limit is: 65.0
2018-12-13T09:57:06.190Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "713693464",
      "response": {
        "responseCode": 105
      },
      "transmitExpireTime": "2018-12-13T09:57:06Z"
    }
  ]
}
2018-12-13T09:57:07.434Z - INFO - arrived to nstep starting question answer session with the
technician
2018-12-13T09:57:07.437Z - 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 :
2018-12-13T09:57:41.450Z - INFO - for the question : Did the CBSD stop RF transmission within 60
seconds of receiving Heartbeat response with responseCode = 105? , the user choose y
2018-12-13T09:58:11.796Z - INFO - The final result of the test : WINNF.FT.C.HBT.3 is - passed and :the
additional comments for the current test are : stop transmission at T09:57:20
```



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

2018-12-14T02:56:01.931Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13  
2018-12-14T02:56:01.931Z - INFO - the selected test from the user : WINNF.FT.C.HBT.5 is starting now  
2018-12-14T02:56:04.960Z - INFO - registration request from CBRS : {

```
"registrationRequest": [  
  {  
    "airInterface": {  
      "radioTechnology": "CAMBIUM_NETWORKS"  
    },  
    "cbsdCategory": "B",  
    "cbsdInfo": {  
      "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-69) AP",  
      "vendor": "Cambium Networks"  
    },  
    "cbsdSerialNumber": "0a003e6070a5",  
    "cpiSignatureData": {  
      "digitalSignature":  
"a90CjgQt42K0b5x38cqJPJdtjABPb896gH5h3F0gPWjWQWHUZJuOFDqrW0mPi93qmA9KKzPNxpdN  
x_wA6lnRnKVMqmy9RQdn929LZfox2gG_LfJVNpABNtO8hbslj_QvhMlxvifu7yQdz0FJXuqvaj1Mt6FQgR  
hmD9O-vpr-IlZrfZFDjcCgAikEe6_SmGY8A0EviAPB2AqcpS4aKW0m1CsPM56ZMJ5UcljA8-IXCiGve6u  
iBQZITYyS4PTg-d_Yeo4FNnCntK8aSJsT_bI4Wow2zEvOpyhqfloWDzuhbVaS0GJ2gj8oroL2BFHD1DG  
M4YEL9c5Q8vCHyHeCvFA4hw",  
      "encodedCpiSignedData":  
"eyJmY2NJZCI6lIFXUC0zMDQ1ME0iLCJYnNkU2VyaWFsTnVtYmVyljoiMGEwMDNINjA3MGE1liwiaW  
5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGU0iOjQyLjI0MiwibG9uZ2l0dWRlljotODguMDgwOCwia  
GVpZ2h0ljojMDAsImhlaWdodFR5cGU0iJBTVMliwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImF  
udGVubmFBemltdXRoljowLzJhbnRlbnM5hRg93bnRpbHQiOjAsImFudGVubmFHYWluljoxNSwiZWlycE  
NhcGFiaWxpdHkiOjQwLzJhbnRlbnM5hRg93bnRpbHQiOjAsImFudGVubmFHYWluljoxNSwiZWlycE  
hdGEiOmsiY3BpSWQiOiJjcGkxMjMiLCJjcGLOYW11lloiQ1BjFVzZXIjMTIzliwiaW5zdGFsbENlcnRpZmlj  
YXRpb25UaW11lloiMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",  
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"  
    },  
    "fcclId": "QWP-30450M",  
    "groupingParam": [  
      {  
        "groupId": "0a-00-3e-60-70-a5",  
        "groupType": "INTERFERENCE_COORDINATION"  
      }  
    ],  
    "measCapability": [  
      "RECEIVED_POWER_WITHOUT_GRANT"  
    ],  
    "userId": "test"  
  }  
]
```

2018-12-14T02:56:05.039Z - INFO - Registration message contains cpiSignatureData  
2018-12-14T02:56:05.039Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}  
2018-12-14T02:56:05.039Z - INFO - encodedCpiSignedData contents = {  
 "installationParam": {  
 "eirpCapability": 40,



```
"antennaAzimuth": 0,
"heightType": "AMSL",
"longitude": -88.0808,
"height": 100,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 15
},
"fcld": "QWP-30450M",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e6070a5"
}
2018-12-14T02:56:05.132Z - INFO - verified signature on cpiSignatureData
2018-12-14T02:56:05.132Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-12-14T02:56:05.132Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbssdId": "QWP-30450MMock-SAS0a003e6070a5",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-12-14T02:57:05.285Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbssdId": "QWP-30450MMock-SAS0a003e6070a5",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ]
    }
  ]
}
2018-12-14T02:57:05.332Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3670000000,
            "lowFrequency": 3650000000
          }
        }
      ]
    }
  ]
}
```



```
    },
    "ruleApplied": "FCC_PART_96"
  }
],
"cbid": "QWP-30450MMock-SAS0a003e6070a5",
"response": {
  "responseCode": 0
}
]
}
2018-12-14T02:57:05.380Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbid": "QWP-30450MMock-SAS0a003e6070a5",
      "operationParam": {
        "maxEirp": 37,
        "operationFrequencyRange": {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2018-12-14T02:57:05.395Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbid": "QWP-30450MMock-SAS0a003e6070a5",
      "channelType": "GAA",
      "grantExpireTime": "2018-12-21T02:57:05Z",
      "grantId": "400720728",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-12-14T02:57:05.443Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbid": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "400720728",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-12-14T02:57:05.457Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
```



```
"cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
"grantId": "400720728",
"response": {
  "responseCode": 501
},
"transmitExpireTime": "2018-12-14T02:57:05Z"
}
]
}
2018-12-14T02:58:00.543Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "400720728",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-12-14T02:58:00.546Z - INFO - Time interval between two heartbeat request messages is: 55.101,
limit is: 65.0
2018-12-14T02:58:00.556Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "400720728",
      "response": {
        "responseCode": 501
      },
      "transmitExpireTime": "2018-12-14T02:58:00Z"
    }
  ]
}
2018-12-14T02:58:01.910Z - INFO - arrived to nstep starting question answer session with the
technician
2018-12-14T02:58:01.944Z - INFO - the question is : Did the CBSD transmit at any time during the test?
please choose one of the answers :
2018-12-14T03:00:41.500Z - INFO - for the question : Did the CBSD transmit at any time during the
test? , the user choose n
2018-12-14T03:00:42.694Z - 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

2018-12-14T03:07:17.391Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13  
2018-12-14T03:07:17.391Z - INFO - the selected test from the user : WINNF.FT.C.HBT.6 is starting now  
2018-12-14T03:07:24.809Z - INFO - registration request from CBRS : {

```
"registrationRequest": [  
  {  
    "airInterface": {  
      "radioTechnology": "CAMBIUM_NETWORKS"  
    },  
    "cbsdCategory": "B",  
    "cbsdInfo": {  
      "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-69) AP",  
      "vendor": "Cambium Networks"  
    },  
    "cbsdSerialNumber": "0a003e6070a5",  
    "cpiSignatureData": {  
      "digitalSignature":  
"a90CjgQt42K0b5x38cqJPJdtjABPb896gH5h3F0gPWjWQWHUZJuOFDqrW0mPi93qmA9KKzPNxpdN  
x_wA6lnRnKVMqmy9RQdn929LZfox2gG_LfJVNpABNtO8hbslj_QvhMlxvifu7yQdz0FJXuqvaj1Mt6FQgR  
hmD9O-vpr-IlZrfZFDjcCgAikEe6_SmGY8A0EviAPB2AqcpS4aKWom1CsPM56ZMJ5UcljA8-IXCiGve6u  
iBQZITYyS4PTg-d_Yeo4FNnCntK8aSJsT_bl4Wow2zEvOpyhqfloWDzuhbVaS0GJ2gj8oroL2BFHD1DG  
M4YEL9c5Q8vCHyHeCvFA4hw",  
      "encodedCpiSignedData":  
"eyJmY2NJZCI6lIFXUC0zMDQ1ME0iLCJYnNkU2VyaWFsTnVtYmVyljoiMGEwMDNINjA3MGE1liwiaW  
5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGU0iOjQyLjI0MiwibG9uZ2l0dWRlljotODguMDgwOCwia  
GVpZ2h0ljoXMDAsImhlaWdodFR5cGU0iJBTvNmliwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImF  
udGVubmFBemltdXRoljowLjE0bWVudCI6ZmFsc2UsImFudGVubmFHYWluljoxNSwiZWlycE  
NhcGFiaWxpdHkiOjQwLjE0bWVudCI6ZmFsc2UsImFudGVubmFHYWluljoxNSwiZWlycE  
hdGEiOmsiY3BpSWQiOiJjcGxkMjMiLCJjcG90YmVudCI6ZmFsc2UsImFudGVubmFHYWluljoxNSwiZWlycE  
YXRpb25UaW1ljoIMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalN19",  
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"  
    },  
    "fcclId": "QWP-30450M",  
    "groupingParam": [  
      {  
        "groupId": "0a-00-3e-60-70-a5",  
        "groupType": "INTERFERENCE_COORDINATION"  
      }  
    ],  
    "measCapability": [  
      "RECEIVED_POWER_WITHOUT_GRANT"  
    ],  
    "userId": "test"  
  }  
]
```

2018-12-14T03:07:24.917Z - INFO - Registration message contains cpiSignatureData  
2018-12-14T03:07:24.917Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}  
2018-12-14T03:07:24.917Z - INFO - encodedCpiSignedData contents = {  
 "installationParam": {  
 "eirpCapability": 40,



```
"antennaAzimuth": 0,
"heightType": "AMSL",
"longitude": -88.0808,
"height": 100,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 15
},
"fcld": "QWP-30450M",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e6070a5"
}
2018-12-14T03:07:24.917Z - INFO - verified signature on cpiSignatureData
2018-12-14T03:07:24.917Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-12-14T03:07:24.917Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbssdId": "QWP-30450MMock-SAS0a003e6070a5",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-12-14T03:08:26.055Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbssdId": "QWP-30450MMock-SAS0a003e6070a5",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ]
    }
  ]
}
2018-12-14T03:08:26.177Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3670000000,
            "lowFrequency": 3650000000
          }
        }
      ]
    }
  ]
}
```



```
    },
    "ruleApplied": "FCC_PART_96"
  }
],
"cbssId": "QWP-30450MMock-SAS0a003e6070a5",
"response": {
  "responseCode": 0
}
]
}
2018-12-14T03:08:26.289Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbssId": "QWP-30450MMock-SAS0a003e6070a5",
      "operationParam": {
        "maxEirp": 37,
        "operationFrequencyRange": {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2018-12-14T03:08:26.312Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbssId": "QWP-30450MMock-SAS0a003e6070a5",
      "channelType": "GAA",
      "grantExpireTime": "2018-12-21T03:08:26Z",
      "grantId": "677517211",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-12-14T03:08:26.489Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbssId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "677517211",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-12-14T03:08:26.530Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
```



```
        "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
        "grantId": "677517211",
        "response": {
            "responseCode": 0
        },
        "transmitExpireTime": "2018-12-14T03:11:46Z"
    }
}
]
}
2018-12-14T03:09:21.020Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
            "grantId": "677517211",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2018-12-14T03:09:21.022Z - INFO - Time interval between two heartbeat request messages is: 54.532,
limit is: 65.0
2018-12-14T03:09:21.029Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
            "grantId": "677517211",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2018-12-14T03:12:41Z"
        }
    ]
}
2018-12-14T03:10:16.137Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
            "grantId": "677517211",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2018-12-14T03:10:16.138Z - INFO - Time interval between two heartbeat request messages is: 55.117,
limit is: 65.0
2018-12-14T03:10:16.144Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
            "grantId": "677517211",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
```





```
    },
    "transmitExpireTime": "2018-12-14T03:13:36Z"
  }
]
}
2018-12-14T03:11:12.232Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "677517211",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-14T03:11:12.233Z - INFO - Time interval between two heartbeat request messages is: 56.094,
limit is: 65.0
2018-12-14T03:11:12.244Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "677517211",
      "response": {
        "responseCode": 501
      },
      "transmitExpireTime": "2018-12-14T03:11:12Z"
    }
  ]
}
2018-12-14T03:12:07.252Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "677517211",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-12-14T03:12:07.269Z - INFO - Time interval between two heartbeat request messages is: 55.02,
limit is: 65.0
2018-12-14T03:12:07.278Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "677517211",
      "response": {
        "responseCode": 501
      },
      "transmitExpireTime": "2018-12-14T03:12:07Z"
    }
  ]
}
```



}

2018-12-14T03:12:08.747Z - INFO - arrived to nstep starting question answer session with the technician

2018-12-14T03:12:08.747Z - 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 :

2018-12-14T03:12:08.747Z - INFO - for the question : Did the CBSD stop RF transmission within 60 seconds of receiving Heartbeat response with responseCode = 501? , the user choose y

2018-12-14T03:12:28.424Z - INFO - The final result of the test : WINNF.FT.C.HBT.6 is - passed and :the additional comments for the current test are : stop transmission at T03:11:14

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

2018-12-14T03:17:26.674Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13  
 2018-12-14T03:17:26.677Z - INFO - the selected test from the user : WINNF.FT.C.HBT.7 is starting now  
 2018-12-14T03:17:50.447Z - INFO - registration request from CBRS : {

```

    "registrationRequest": [
      {
        "airInterface": {
          "radioTechnology": "CAMBIUM_NETWORKS"
        },
        "cbsdCategory": "B",
        "cbsdInfo": {
          "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-69) AP",
          "vendor": "Cambium Networks"
        },
        "cbsdSerialNumber": "0a003e6070a5",
        "cpiSignatureData": {
          "digitalSignature":
            "a90CjgQt42K0b5x38cqJPJdtjABPb896gH5Ih3F0gPWjWQWHUZJuOFDqrW0mPi93qmA9KKzPNxpdN
            x_wA6lnRnKVMqmy9RQdn929LZfox2gG_LfJVNpABNtO8hbslj_QvhMlxvifu7yQdz0FJXuqvaj1Mt6FQgR
            hmD9O-vpr-IlZrfZFDjcCgAikEe6_SmGY8A0EviAPB2AqcpS4aKWom1CsPM56ZMJ5UcljA8-IXCiGVe6u
            iBQZITYyS4PTg-d_Yeo4FNnCTk8aSJST_bl4Wow2zEvOpyhqfloWDzuhbVaS0GJ2gj8oroL2BFHD1DG
            M4YEL9c5Q8vCHyHeCvFA4hw",
          "encodedCpiSignedData":
            "eyJmY2NJZCI6IIFXUC0zMDQ1ME0iLCJYnNkU2VyaWFsTnVtYmVyljoiMGEGwMDNINjA3MGE1liwiaW
            5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGUiOjQyLjI0MiwibG9uZ2I0dWRlljotODguMDgwOCwia
            GVpZ2h0ljoXMDAsImhlaWdodFR5cGUiOiJBTVMliwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImF
            udGVubmFBemltdXRoljowLjChbnRlbn5hRG93bnRpbHQiOjAsImFudGVubmFHYWluljoxNSwiZWlycE
            NhcGFiaWxpdHkiOjQwLjChbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckR
            hdGEiOnsiY3BpSWQiOiJjcGxkMjMiLCJjcG9yYyI1IjoiQ1BjIFVzZXIiMTIzIiwiaW5zdGFsbENlcnRpZmlj
            YXRpb25UaW1lIjoiMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",
          "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
        },
        "fcclId": "QWP-30450M",
        "groupingParam": [
          {
            "groupId": "0a-00-3e-60-70-a5",
            "groupType": "INTERFERENCE_COORDINATION"
          }
        ],
        "measCapability": [
          "RECEIVED_POWER_WITHOUT_GRANT"
        ],
        "userId": "test"
      }
    ]
  }

```

2018-12-14T03:17:50.533Z - INFO - Registration message contains cpiSignatureData  
 2018-12-14T03:17:50.533Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}  
 2018-12-14T03:17:50.535Z - INFO - encodedCpiSignedData contents = {  
 "installationParam": {  
 "eirpCapability": 40,  
 "antennaAzimuth": 0,



```
"heightType": "AMSL",
"longitude": -88.0808,
"height": 100,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 15
},
"fcclId": "QWP-30450M",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e6070a5"
}
2018-12-14T03:17:50.536Z - INFO - verified signature on cpiSignatureData
2018-12-14T03:17:50.540Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-12-14T03:17:50.542Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbssdId": "QWP-30450MMock-SAS0a003e6070a5",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-12-14T03:18:51.928Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbssdId": "QWP-30450MMock-SAS0a003e6070a5",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ]
    }
  ]
}
2018-12-14T03:18:51.944Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3670000000,
            "lowFrequency": 3650000000
          }
        }
      ],

```



```
        "ruleApplied": "FCC_PART_96"
      }
    ],
    "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
    "response": {
      "responseCode": 0
    }
  }
]
}
2018-12-14T03:18:51.990Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "operationParam": {
        "maxEirp": 27,
        "operationFrequencyRange": {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2018-12-14T03:18:51.990Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "channelType": "GAA",
      "grantExpireTime": "2018-12-21T03:18:51Z",
      "grantId": "157354275",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-12-14T03:18:52.038Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "157354275",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-12-14T03:18:52.053Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
```



```
"grantId": "157354275",
"response": {
  "responseCode": 0
},
"transmitExpireTime": "2018-12-14T03:22:12Z"
}
]
}
2018-12-14T03:19:47.497Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "157354275",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-14T03:19:47.497Z - INFO - Time interval between two heartbeat request messages is: 55.46,
limit is: 65.0
2018-12-14T03:19:47.497Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "157354275",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-14T03:23:07Z"
    }
  ]
}
2018-12-14T03:20:42.618Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "157354275",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-14T03:20:42.619Z - INFO - Time interval between two heartbeat request messages is: 55.12,
limit is: 65.0
2018-12-14T03:20:42.625Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "157354275",
      "response": {
        "responseCode": 0
      },
    }
  ],
}
```



```
        "transmitExpireTime": "2018-12-14T03:24:02Z"
    }
]
}
2018-12-14T03:21:37.704Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
            "grantId": "157354275",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2018-12-14T03:21:37.720Z - INFO - Time interval between two heartbeat request messages is: 55.087,
limit is: 65.0
2018-12-14T03:21:37.720Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
            "grantId": "157354275",
            "response": {
                "responseCode": 502
            },
            "transmitExpireTime": "2018-12-14T03:21:37Z"
        }
    ]
}
2018-12-14T03:21:37.782Z - INFO - relinquishment request from CBRS : {
    "relinquishmentRequest": [
        {
            "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
            "grantId": "157354275"
        }
    ]
}
2018-12-14T03:21:37.813Z - INFO - engine sent successfully, the response to CBRS : {
    "relinquishmentResponse": [
        {
            "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
            "grantId": "157354275",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2018-12-14T03:21:39.552Z - INFO - arrived to nstep starting question answer session with the
technician
2018-12-14T03:21:39.553Z - 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 :
2018-12-14T03:21:46.423Z - INFO - for the question : Did the CBSD stop RF transmission within 60
```



seconds of receiving Heartbeat response with responseCode = 502? , the user choose y  
2018-12-14T03:22:10.016Z - INFO - The final result of the test : WINNF.FT.C.HBT.7 is - passed and :the  
additional comments for the current test are : stop transmission at T03:21:39





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

2018-12-17T06:04:44.957Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2018-12-17T06:04:44.959Z - INFO - the selected test from the user : WINNF.FT.D.HBT.8 is starting now

2018-12-17T06:04:47.131Z - INFO - registration request from CBRS : {

```
"registrationRequest": [  
  {  
    "airInterface": {  
      "radioTechnology": "CAMBIUM_NETWORKS"  
    },  
    "cbsdCategory": "B",  
    "cbsdInfo": {  
      "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-69) AP",  
      "vendor": "Cambium Networks"  
    },  
    "cbsdSerialNumber": "0a003e6070a5",  
    "cpiSignatureData": {  
      "digitalSignature":  
"a90CjgQt42K0b5x38cqJPJdtjABPb896gH5h3F0gPWjWQWHUZJuOFDqrW0mPi93qmA9KKzPNxpdN  
x_wA6lnRnKVMqmy9RQdn929LZfox2gG_LfJVNpABNtO8hbslj_QvhMlxvifu7yQdz0FJXuqvaj1Mt6FQgR  
hmD9O-vpr-IlZrfZFDjcCgAikEe6_SmGY8A0EviAPB2AqcpS4aKWom1CsPM56ZMJ5UcljA8-IXCiGve6u  
iBQZITYyS4PTg-d_Yeo4FNnCntK8aSJsT_bl4Wow2zEvOpyhqfloWDzuhbVaS0GJ2gj8oroL2BFHD1DG  
M4YEL9c5Q8vCHyHeCvFA4hw",  
      "encodedCpiSignedData":  
"eyJmY2NJZCI6lIFXUC0zMDQ1ME0iLCJYnNkU2VyaWFsTnVtYmVyljoiMGEwMDNINjA3MGE1liwiaW  
5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGU0OjQyLjI0MiwibG9uZ2l0dWRlljotODguMDgwOCwia  
GVpZ2h0ljoXMDAsImhlaWdodFR5cGU0iJBTvNmliwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImF  
udGVubmFBemltdXRoljowLjChbnRlbn5hRG93bnRpbHQiOjAsImFudGVubmFHYWluljoxNSwiZWlycE  
NhcGFiaWxpdHkiOjQwLjChbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckR  
hdGEiOnsiY3BpSWQiOiJjcGkxMjMiLCJjcGLOYW1lIjoiQ1BJFVzZXIjMTIzliwiaW5zdGFsbENlcnRpZmlj  
YXRpb25UaW1lIjoiMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",  
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"  
    },  
    "fcclId": "QWP-30450M",  
    "groupingParam": [  
      {  
        "groupId": "0a-00-3e-60-70-a5",  
        "groupType": "INTERFERENCE_COORDINATION"  
      }  
    ],  
    "measCapability": [  
      "RECEIVED_POWER_WITHOUT_GRANT"  
    ],  
    "userId": "test"  
  }  
]
```

2018-12-17T06:04:47.194Z - INFO - Registration message contains cpiSignatureData

2018-12-17T06:04:47.194Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2018-12-17T06:04:47.194Z - INFO - encodedCpiSignedData contents = {

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



```
"antennaAzimuth": 0,
"heightType": "AMSL",
"longitude": -88.0808,
"height": 100,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 15
},
"fcld": "QWP-30450M",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e6070a5"
}
2018-12-17T06:04:47.196Z - INFO - verified signature on cpiSignatureData
2018-12-17T06:04:47.200Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-12-17T06:04:47.203Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbssdId": "QWP-30450MMock-SAS0a003e6070a5",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-12-17T06:04:54.578Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbssdCategory": "B",
      "cbssdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) BHUL450",
        "vendor": "Cambium Networks"
      },
      "cbssdSerialNumber": "0a003e431a34",
      "cpiSignatureData": {
        "digitalSignature":
"Winc1sicBkQmobkS-ogMWVUsPC4S_9FaKCsJ-6kwc8YuPIYXI26TqczW4DJFgeh9NNOeNAtveL3FK
EmbeLjZ_3NSQC6I3DIFqb-WOMdg55E8KLOP-IFwMj7VgGllr5MYuiHdyhAR8o5dVBIM8r12GeXGxj0Bu
vYI1nVTuh7puq3fVBkGG3m3p1cvfEpdSBCGUFm5HccR80kcADaOBIFzJlJm6p-8O0L8nrZP_ec8CV_z
DTIRoY66bdc5C98IA_XBC2eOwiJHF-alk8TJLcFAM51qMOdSE9aQfZVUyHqXFZiOFDvGEUE3eqD_p-
wXYyv9JaXv2uR7p6kYfldzuw51zw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RIQwMDA5IiwY2JzZFNlcmIhbE51bWJlcil6IjBhMDAzZTQzMWEzNCIsImhuc3
RhbgxhdGlvbiBhcmFtIjlp7ImxhdGI0dWRlljo0Mi4yNDIsImxvbmddpdHVkZSI6LTg4LjA4MDgsImhlaWdod
```



```
CI6MCwiaGVpZ2h0VHlwZSI6IkJFU0wiLCJpbmRvb3JEZXBs3ltZW50ljpYWxZSwiYW50ZW5uYUUF
6aW11dGgiOjAsImFudGVubmFEb3dudGlscCI6MCwiYW50ZW5uYUdhaW4iOjE4LCJlaXJwQ2FwYWJp
bGI0eSI6NDAsImFudGVubmFCZWZFd2lkdGgiOjkwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI
6eyJjcGlJZC16ImNwaTEyMyIsImNwaU5hbWUiOiJDUEkgVXNlciAxMjMiLCJpbmN0YWxsQ2VydGlmaW
NhdGlvbIRpbWUiOiOilyMDE4LTA1LTA5VDE1OjUxOjEyLjg2NloifX0",
    "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
  },
  "fcclId": "Z8H89FT0009",
  "groupingParam": [
    {
      "groupId": "0a-00-3e-43-1a-34",
      "groupType": "INTERFERENCE_COORDINATION"
    }
  ],
  "measCapability": [
    "RECEIVED_POWER_WITHOUT_GRANT"
  ],
  "userId": "SF5W5D"
}
]
```

2018-12-17T06:04:54.625Z - INFO - Registration message contains cpiSignatureData  
2018-12-17T06:04:54.625Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}  
2018-12-17T06:04:54.625Z - 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": "Z8H89FT0009",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e431a34"
}
```

2018-12-17T06:04:54.627Z - INFO - verified signature on cpiSignatureData  
2018-12-17T06:04:54.631Z - INFO - cpiSignatureData data successfully validated against jsonschema  
2018-12-17T06:04:54.634Z - INFO - engine sent successfully, the response to CBRSS : {

```
"registrationResponse": [
  {
    "cbssid": "Z8H89FT0009Mock-SAS0a003e431a34",
    "response": {
      "responseCode": 0
    }
  }
]
```



```
    }
  }
]
}
2018-12-17T06:05:48.091Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ]
    }
  ]
}
]
}
2018-12-17T06:05:48.109Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3670000000,
            "lowFrequency": 3650000000
          },
          "ruleApplied": "FCC_PART_96"
        }
      ],
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-12-17T06:05:48.177Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "operationParam": {
        "maxEirp": 27,
        "operationFrequencyRange": {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
]
}
2018-12-17T06:05:48.184Z - INFO - engine sent successfully, the response to CBRS : {
```



```
"grantResponse": [
  {
    "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
    "channelType": "GAA",
    "grantExpireTime": "2018-12-24T06:05:48Z",
    "grantId": "498608294",
    "heartbeatInterval": 60,
    "response": {
      "responseCode": 0
    }
  }
]
}
2018-12-17T06:05:48.250Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "498608294",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-12-17T06:05:48.269Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "498608294",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-17T06:09:08Z"
    }
  ]
}
2018-12-17T06:05:55.707Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "inquiredSpectrum": [
        {
          "highFrequency": 3630000000,
          "lowFrequency": 3610000000
        }
      ]
    }
  ]
}
2018-12-17T06:05:55.730Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
```



```
        {
            "channelType": "GAA",
            "frequencyRange": {
                "highFrequency": 3630000000,
                "lowFrequency": 3610000000
            },
            "ruleApplied": "FCC_PART_96"
        }
    ],
    "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
    "response": {
        "responseCode": 0
    }
}
]
}
2018-12-17T06:05:55.851Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
            "operationParam": {
                "maxEirp": 27,
                "operationFrequencyRange": {
                    "highFrequency": 3630000000,
                    "lowFrequency": 3610000000
                }
            }
        }
    ]
}
2018-12-17T06:05:55.874Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
            "channelType": "GAA",
            "grantExpireTime": "2018-12-24T06:05:55Z",
            "grantId": "664993133",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2018-12-17T06:05:55.970Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
            "grantId": "664993133",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
```



```
]
}
2018-12-17T06:05:55.977Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "664993133",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-17T06:09:15Z"
    }
  ]
}
2018-12-17T06:06:43.322Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "498608294",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-17T06:06:43.323Z - INFO - Time interval between two heartbeat request messages is: 55.072,
limit is: 65.0
2018-12-17T06:06:43.329Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "498608294",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-17T06:10:03Z"
    }
  ]
}
2018-12-17T06:06:51.213Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "664993133",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-17T06:06:51.214Z - INFO - Time interval between two heartbeat request messages is: 55.243,
limit is: 65.0
2018-12-17T06:06:51.221Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
```



```
{
  "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
  "grantId": "664993133",
  "response": {
    "responseCode": 0
  },
  "transmitExpireTime": "2018-12-17T06:10:11Z"
}
]
}
2018-12-17T06:07:38.457Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "498608294",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-17T06:07:38.461Z - INFO - Time interval between two heartbeat request messages is: 55.136,
limit is: 65.0
2018-12-17T06:07:38.480Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "498608294",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-17T06:10:58Z"
    }
  ]
}
2018-12-17T06:07:46.476Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "664993133",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-17T06:07:46.479Z - INFO - Time interval between two heartbeat request messages is: 55.264,
limit is: 65.0
2018-12-17T06:07:46.487Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "664993133",
      "response": {
```





```
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-17T06:11:06Z"
    }
  ]
}
2018-12-17T06:08:32.634Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "498608294",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-17T06:08:32.638Z - INFO - Time interval between two heartbeat request messages is: 54.176,
limit is: 65.0
2018-12-17T06:08:32.658Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "498608294",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-17T06:11:52Z"
    }
  ]
}
2018-12-17T06:08:40.767Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "664993133",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-17T06:08:40.769Z - INFO - Time interval between two heartbeat request messages is: 54.291,
limit is: 65.0
2018-12-17T06:08:40.776Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "664993133",
      "response": {
        "responseCode": 500
      },
      "transmitExpireTime": "2018-12-17T06:08:40Z"
    }
  ]
}
```



```
]
}
```

2018-12-17T06:08:41.974Z - INFO - arrived to nstep starting question answer session with the technician

2018-12-17T06:08:41.976Z - INFO - the question is : Did the CBSD1 transmit power prior to AUTHORIZED state (first successful HBT response)? please choose one of the answers :

2018-12-17T06:09:09.719Z - INFO - for the question : Did the CBSD1 transmit power prior to AUTHORIZED state (first successful HBT response)? , the user choose n

2018-12-17T06:09:09.720Z - 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 :

2018-12-17T06:09:12.323Z - INFO - for the question : Did the CBSD2 stop RF transmission within 60 seconds of receiving Heartbeat response with responseCode = 500? , the user choose y

2018-12-17T06:09:20.867Z - INFO - The final result of the test : WINNF.FT.D.HBT.8 is - passed and :the additional comments for the current test are : CBSD1 starts transmission at T06:06:10 ,CBSD2 stops transmission at T06:08:42



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

2018-12-14T05:50:28.970Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13  
2018-12-14T05:50:28.970Z - INFO - the selected test from the user : WINNF.FT.C.HBT.9 is starting now  
2018-12-14T05:50:32.180Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "CAMBIUM_NETWORKS"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-69) AP",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "0a003e6070a5",
    "cpiSignatureData": {
      "digitalSignature":
"a90CjgQt42K0b5x38cqJPJdtjABPb896gH5Ih3F0gPWjWQWHUZJuOFDqrW0mPi93qmA9KKzPNxpdN
x_wA6lnRnKVMqmy9RQdn929LZfox2gG_LfJVNpABNtO8hbslj_QvhMlxvifu7yQdz0FJXuqvaj1Mt6FQgR
hmD9O-vpr-IIzrfZFDjcCgAikEe6_SmGY8A0EviAPB2AqcpS4aKWom1CsPM56ZMJ5UcljA8-IXCiGVe6u
iBQZITYyS4PTg-d_Yeo4FNnCTk8aSJST_bl4Wow2zEvOpyhqfloWDzuhbVaS0GJ2gj8oroL2BFHD1DG
M4YEL9c5Q8vCHyHeCvFA4hw",
      "encodedCpiSignedData":
"eyJmY2NJZCI6IIFXUC0zMDQ1ME0iLCJYnNkU2VyaWFsTnVtYmVyljoiMGEGwMDNINjA3MGE1liwiaW
5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGUiOjQyLjI0MiwibG9uZ2I0dWRlljotODguMDgwOCwia
GVpZ2h0IjoxMDAsImhlaWdodFR5cGUiOiJBTVMliwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImF
udGVubmFBemltdXRoljowLjChbnRlbn5hRG93bnRpbHQiOjAsImFudGVubmFHYWluljoxNSwiZWlycE
NhcGFiaWxpdHkiOjQwLjChbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckR
hdGEiOmsiY3BpSWQiOiJjcGxkMjMiLCJjcG9yYyI1IjoiQ1BjIFVzZXIiMTIzIiwiaW5zdGFsbENlcnRpZmlj
YXRpb25UaW1lIjoiMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fcclId": "QWP-30450M",
    "groupingParam": [
      {
        "groupId": "0a-00-3e-60-70-a5",
        "groupType": "INTERFERENCE_COORDINATION"
      }
    ],
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "test"
  }
]
```

2018-12-14T05:50:33.338Z - INFO - Registration message contains cpiSignatureData  
2018-12-14T05:50:33.338Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}  
2018-12-14T05:50:33.802Z - INFO - encodedCpiSignedData contents = {  
"installationParam": {  
"eirpCapability": 40,  
"antennaAzimuth": 0,



```
"heightType": "AMSL",
"longitude": -88.0808,
"height": 100,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 15
},
"fcclId": "QWP-30450M",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e6070a5"
}
2018-12-14T05:50:34.492Z - INFO - verified signature on cpiSignatureData
2018-12-14T05:50:34.539Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-12-14T05:50:34.553Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbssdId": "QWP-30450MMock-SAS0a003e6070a5",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-12-14T05:51:34.717Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbssdId": "QWP-30450MMock-SAS0a003e6070a5",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ]
    }
  ]
}
2018-12-14T05:51:34.747Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3670000000,
            "lowFrequency": 3650000000
          }
        }
      ],

```



```
        "ruleApplied": "FCC_PART_96"
      }
    ],
    "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
    "response": {
      "responseCode": 0
    }
  }
]
}
2018-12-14T05:51:34.841Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "operationParam": {
        "maxEirp": 27,
        "operationFrequencyRange": {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2018-12-14T05:51:34.918Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "channelType": "GAA",
      "grantExpireTime": "2018-12-21T05:51:34Z",
      "grantId": "97089412",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-12-14T05:51:34.994Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "97089412",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-12-14T05:53:25.242Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
```



```
"grantId": "97089412",
"grantRenew": false,
"operationState": "GRANTED"
}
]
}
2018-12-14T05:53:25.242Z - INFO - request message received while HBT is absent, sleep 94 sec
before responding
2018-12-14T05:54:55.131Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "97089412",
      "response": {
        "responseCode": 501
      },
      "transmitExpireTime": "2018-12-14T05:54:55Z"
    }
  ]
}
}
2018-12-14T05:54:56.990Z - INFO - arrived to nstep starting question answer session with the
technician
2018-12-14T05:54:57.213Z - INFO - the question is : Were there RF transmissions from the CBSD
during the test? please choose one of the answers :
2018-12-14T05:54:59.641Z - INFO - engine sent successfully, the response to CBRS : "list index out of
range"
2018-12-14T05:55:43.293Z - INFO - for the question : Were there RF transmissions from the CBSD
during the test? , the user choose n
2018-12-14T05:55:44.707Z - 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

2018-12-14T06:26:20.994Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13  
2018-12-14T06:26:20.994Z - INFO - the selected test from the user : WINNF.FT.C.HBT.10 is starting now

```
2018-12-14T06:26:25.183Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbsdCategory": "B",
      "cbsdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-69) AP",
        "vendor": "Cambium Networks"
      },
      "cbsdSerialNumber": "0a003e6070a5",
      "cpiSignatureData": {
        "digitalSignature":
"a90CjgQt42K0b5x38cqJPJdtjABPb896gH5h3F0gPWjWQWHUZJuOFDqrW0mPi93qmA9KKzPNxpdN
x_wA6lnRnKVMqmy9RQdn929LZfox2gG_LfJVNpABNtO8hbslj_QvhMlxvifu7yQdz0FJXuqvaj1Mt6FQgR
hmD9O-vpr-IIzrfZFDjcCgAikEe6_SmGY8A0EviAPB2AqcpS4aKWom1CsPM56ZMJ5UcljA8-IXCiGve6u
iBQZITYyS4PTg-d_Yeo4FNnCntK8aSJsT_bl4Wow2zEvOpyhqfloWDzuhbVaS0GJ2gj8oroL2BFHD1DG
M4YEL9c5Q8vCHyHeCvFA4hw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6IlFXUC0zMDQ1ME0iLCJYnNkU2VyaWFsTnVtYmVyljoiMGEwMDNINjA3MGE1IiwiaW
5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGU0OjQyLjI0MiwiG9uZ2I0dWRlljotODguMDgwOCwia
GVpZ2h0IjoxMDAsImhlaWdodFR5cGU0iJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImF
udGVubmFBemltdXRoljowLjChbnRlbn5hRG93bnRpbHQiOjAsImFudGVubmFHYWluljoxNSwiZWlycE
NhcGFiaWxpdHkiOjQwLjChbnRlbn5hQmVhbXdpZHRolj05MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckR
hdGEiOmsiY3BpSWQiOiJjcGxMjMiLCJjcGLOYW11IjoiQ1BJIFVzZXIiMTIzIiwiaW5zdGFsbENlcnRpZmlj
YXRpb25UaW11IjoiMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fcclId": "QWP-30450M",
      "groupingParam": [
        {
          "groupId": "0a-00-3e-60-70-a5",
          "groupType": "INTERFERENCE_COORDINATION"
        }
      ],
      "measCapability": [
        "RECEIVED_POWER_WITHOUT_GRANT"
      ],
      "userId": "test"
    }
  ]
}
```

2018-12-14T06:26:25.213Z - INFO - Registration message contains cpiSignatureData  
2018-12-14T06:26:25.213Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}  
2018-12-14T06:26:25.229Z - INFO - encodedCpiSignedData contents = {  
"installationParam": {



```
"eirpCapability": 40,
"antennaAzimuth": 0,
"heightType": "AMSL",
"longitude": -88.0808,
"height": 100,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 15
},
"fcld": "QWP-30450M",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e6070a5"
}
2018-12-14T06:26:25.683Z - INFO - verified signature on cpiSignatureData
2018-12-14T06:26:25.697Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-12-14T06:26:25.713Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbssid": "QWP-30450MMock-SAS0a003e6070a5",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-12-14T06:27:26.135Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbssid": "QWP-30450MMock-SAS0a003e6070a5",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ]
    }
  ]
}
2018-12-14T06:27:26.157Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3670000000,
```





```
                "lowFrequency": 3650000000
            },
            "ruleApplied": "FCC_PART_96"
        }
    ],
    "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
    "response": {
        "responseCode": 0
    }
}
]
}
2018-12-14T06:27:26.230Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
            "operationParam": {
                "maxEirp": 27,
                "operationFrequencyRange": {
                    "highFrequency": 3670000000,
                    "lowFrequency": 3650000000
                }
            }
        }
    ]
}
2018-12-14T06:27:26.240Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
            "channelType": "GAA",
            "grantExpireTime": "2018-12-21T06:27:26Z",
            "grantId": "444316083",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2018-12-14T06:27:26.315Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
            "grantId": "444316083",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
2018-12-14T06:27:26.326Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
```



```
{
  "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
  "grantId": "444316083",
  "response": {
    "responseCode": 0
  },
  "transmitExpireTime": "2018-12-14T06:30:46Z"
}
]
}
2018-12-14T06:28:22.496Z - INFO - heartbeat request from CBRS :{
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "444316083",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-14T06:28:22.497Z - INFO - Time interval between two heartbeat request messages is: 56.18,
limit is: 65.0
2018-12-14T06:28:22.509Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "444316083",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-14T06:31:42Z"
    }
  ]
}
2018-12-14T06:29:17.269Z - INFO - heartbeat request from CBRS :{
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "444316083",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-14T06:29:17.273Z - INFO - Time interval between two heartbeat request messages is: 54.775,
limit is: 65.0
2018-12-14T06:29:17.282Z - INFO - LAST HBT RESPONSE THAT SET TRANSMIT_EXPIRE_TIME
WAS AT: 2018-12-14 06:28:22.496000
2018-12-14T06:31:07.700Z - INFO - heartbeat request from CBRS :{
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
```



```
"grantId": "444316083",
"grantRenew": false,
"operationState": "GRANTED"
}
]
}
2018-12-14T06:31:07.700Z - INFO - request message received while HBT is absent, sleep 94 sec
before responding
2018-12-14T06:32:37.302Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "444316083",
      "response": {
        "responseCode": 501
      },
      "transmitExpireTime": "2018-12-14T06:32:37Z"
    }
  ]
}
}
2018-12-14T06:32:39.084Z - INFO - arrived to nstep starting question answer session with the
technician
2018-12-14T06:32:39.088Z - INFO - the question is : Did the CBSD stop RF transmissions within
(transmitExpireTime + 60seconds) of last valid heartbeat response? please choose one of the answers :
2018-12-14T06:32:41.703Z - INFO - engine sent successfully, the response to CBRS : "list index out of
range"
2018-12-14T06:32:53.848Z - INFO - for the question : Did the CBSD stop RF transmissions within
(transmitExpireTime + 60seconds) of last valid heartbeat response? , the user choose y
2018-12-14T06:33:05.946Z - INFO - The final result of the test : WINNF.FT.C.HBT.10 is - passed
and :the additional comments for the current test are : stop transmission at T06:30:18
```



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

2018-12-17T06:14:28.714Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
2018-12-17T06:14:28.717Z - INFO - the selected test from the user : WINNF.FT.D.MES.2 is starting now
2018-12-17T06:14:38.174Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "CAMBIUM_NETWORKS"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-69) AP",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "0a003e6070a5",
    "cpiSignatureData": {
      "digitalSignature":
"a90CjgQt42K0b5x38cqJPJdtjABPb896gH5h3F0gPWjWQWHUZJuOFDqrW0mPi93qmA9KKzPNxpdN
x_wA6lnRnKVMqmy9RQdn929LZfox2gG_LfJVNpABNtO8hbslj_QvhMlxvifu7yQdz0FJXuqvaj1Mt6FQgR
hmD9O-vpr-IlZrfZFDjcCgAikEe6_SmGY8A0EviAPB2AqcpS4aKWom1CsPM56ZMJ5UcljA8-IXCiGVe6u
iBQZITYyS4PTg-d_Yeo4FNnCTk8aSJST_bl4Wow2zEvOpyhqfloWDzuhbVaS0GJ2gj8oroL2BFHD1DG
M4YEL9c5Q8vCHyHeCvFA4hw",
      "encodedCpiSignedData":
"eyJmY2NJZCI6IIFXUC0zMDQ1ME0iLCJYnNkU2VyaWFsTnVtYmVyljoiMGEGwMDNINjA3MGE1liwiaW
5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGUiojQyLjI0MiwibG9uZ2l0dWRlljotODguMDgwOCwia
GVpZ2h0ljoXMDAsImhlaWdodFR5cGUioiJBTvNmliwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImF
udGVubmFBemltdXRoljowLjChbnRlbn5hRG93bnRpbHQiOjAsImFudGVubmFHYWluljoxNSwiZWlycE
NhcGFiaWxpdHkiOjQwLjChbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckR
hdGEiOnsiY3BpSWQiOiJjcGkxMjMiLCJjcG9yYyI1IjoiQ1BjIFVzZXIiMTIzIiwiaW5zdGFsbENlcnRpZmlj
YXRpb25UaW11joiMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fcclId": "QWP-30450M",
    "groupingParam": [
      {
        "groupId": "0a-00-3e-60-70-a5",
        "groupType": "INTERFERENCE_COORDINATION"
      }
    ],
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "test"
  }
]
```

2018-12-17T06:14:38.217Z - INFO - Registration message contains cpiSignatureData
2018-12-17T06:14:38.219Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2018-12-17T06:14:38.219Z - INFO - encodedCpiSignedData contents = {
 "installationParam": {
 "eirpCapability": 40,
 "antennaAzimuth": 0,



```
"heightType": "AMSL",
"longitude": -88.0808,
"height": 100,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 15
},
"fccId": "QWP-30450M",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbid": "0a003e6070a5"
}
2018-12-17T06:14:38.220Z - INFO - verified signature on cpiSignatureData
2018-12-17T06:14:38.224Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-12-17T06:14:38.226Z - INFO - Response message contains measReportConfig
2018-12-17T06:14:38.226Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbid": "QWP-30450MMock-SAS0a003e6070a5",
      "measReportConfig": [
        "RECEIVED_POWER_WITHOUT_GRANT"
      ],
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-12-17T06:14:45.121Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbidCategory": "B",
      "cbidInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) BHUL450",
        "vendor": "Cambium Networks"
      },
      "cbidSerialNumber": "0a003e431a34",
      "cpiSignatureData": {
        "digitalSignature":
"Winc1sicBkQmobkS-ogMWVUsPC4S_9FaKCsj-6kwc8YuPIYXI26TqczW4DJFgeh9NNOeNAtveL3FK
EmbelLj_3NSQC6l3DIFqb-WOMdg55E8KLOP-IFwMj7VgGllr5MYuiHdyhAR8o5dVBIM8r12GeXGxj0Bu
vY11nVTuh7puq3fVBkGG3m3p1cvfEpdSBCGUFm5HccR80kcADaOBIFzJlJM6p-8O0L8nrZP_ec8CV_z
DTIRoY66bdc5C98IA_XBC2eOwiJHF-alk8TJLCfAM51qM0dSE9aQfZVUyHqXFZiOFDvGEUE3eqD_p-
wXYyv9JaXv2uR7p6kYfldzuw51zw",
```

```

      "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RIQwMDA5IiwY2JzZFNlcmIhbE51bWJlcil6IjBhMDAzZTQzMWEzNCIsImIuc3RhbGxhdGlvblBhcmFtIjlp7ImxhdGI0dWRlljo0Mi4yNDIsImxvbmVudHkZSI6LTg4LjA4MDgsImhlaWdodCI6MCwiaGVpZ2h0VHlwZSI6IjFNU0wiLCJpbmRvb3JEZXBsb3ltZW50IjpmYWxzZSwiYW50ZW5uYUUF6aW11dGgiOjAsImFudGVubmFEb3dudGlsdCI6MCwiYW50ZW5uYUdhaW4iOjE4LCJlaXJwQ2FwYWJpYmGI0eSI6NDAsImFudGVubmFCZWZtd2lkdGgiOjkwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGFOYSI6eyJjcGlJZCI6ImNwaTEyMyIsImNwaU5hbWUiOiJDUEkgVXNlciAxMjMiLCJpbmN0YWxsQ2VydGlmaWVhdGlvblRpbWUiOiIyMDE4LTA1LTA5VDE1OjUxOjEYLjg2NioifX0",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"}
    },
    "fcclId": "Z8H89FT0009",
    "groupingParam": [
      {
        "groupId": "0a-00-3e-43-1a-34",
        "groupType": "INTERFERENCE_COORDINATION"
      }
    ],
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "SF5W5D"
  }
]
}

```

2018-12-17T06:14:45.165Z - INFO - Registration message contains cpiSignatureData  
 2018-12-17T06:14:45.165Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}  
 2018-12-17T06:14:45.167Z - 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": "Z8H89FT0009",
    "professionalInstallerData": {
      "cpiName": "CPI User 123",
      "installCertificationTime": "2018-05-09T15:51:12.866Z",
      "cpild": "cpi123"
    },
    "cbsdSerialNumber": "0a003e431a34"
  }

```

2018-12-17T06:14:45.167Z - INFO - verified signature on cpiSignatureData  
 2018-12-17T06:14:45.173Z - INFO - cpiSignatureData data successfully validated against jsonschema  
 2018-12-17T06:14:45.174Z - INFO - Response message contains measReportConfig  
 2018-12-17T06:14:45.174Z - INFO - engine sent successfully, the response to CBRS : {  
 "registrationResponse": [



```
{
  "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
  "measReportConfig": [
    "RECEIVED_POWER_WITHOUT_GRANT"
  ],
  "response": {
    "responseCode": 0
  }
}
]
}
2018-12-17T06:14:59.759Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ],
      "measReport": {
        "rcvdPowerMeasReports": [
          {
            "measBandwidth": 10000000,
            "measFrequency": 3550000000,
            "measRcvdPower": -71
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3560000000,
            "measRcvdPower": -71
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3570000000,
            "measRcvdPower": -76
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3580000000,
            "measRcvdPower": -90
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3590000000,
            "measRcvdPower": -90
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3600000000,
            "measRcvdPower": -90
          }
        ]
      }
    }
  ]
}
```



```
    },  
    {  
      "measBandwidth": 10000000,  
      "measFrequency": 3610000000,  
      "measRcvdPower": -90  
    },  
    {  
      "measBandwidth": 10000000,  
      "measFrequency": 3620000000,  
      "measRcvdPower": -90  
    },  
    {  
      "measBandwidth": 10000000,  
      "measFrequency": 3630000000,  
      "measRcvdPower": -90  
    },  
    {  
      "measBandwidth": 10000000,  
      "measFrequency": 3640000000,  
      "measRcvdPower": -90  
    },  
    {  
      "measBandwidth": 10000000,  
      "measFrequency": 3650000000,  
      "measRcvdPower": -89  
    },  
    {  
      "measBandwidth": 10000000,  
      "measFrequency": 3660000000,  
      "measRcvdPower": -89  
    },  
    {  
      "measBandwidth": 10000000,  
      "measFrequency": 3670000000,  
      "measRcvdPower": -89  
    },  
    {  
      "measBandwidth": 10000000,  
      "measFrequency": 3680000000,  
      "measRcvdPower": -89  
    },  
    {  
      "measBandwidth": 10000000,  
      "measFrequency": 3690000000,  
      "measRcvdPower": -89  
    }  
  ]  
}  
]  
}
```

2018-12-17T06:14:59.783Z - INFO - engine sent successfully, the response to CBRS : {





```
"spectrumInquiryResponse": [
  {
    "availableChannel": [
      {
        "channelType": "GAA",
        "frequencyRange": {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        },
        "ruleApplied": "FCC_PART_96"
      }
    ],
    "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
    "response": {
      "responseCode": 0
    }
  }
]
}
2018-12-17T06:14:59.862Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "measReport": {
        "rcvdPowerMeasReports": [
          {
            "measBandwidth": 10000000,
            "measFrequency": 3550000000,
            "measRcvdPower": -71
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3560000000,
            "measRcvdPower": -71
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3570000000,
            "measRcvdPower": -76
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3580000000,
            "measRcvdPower": -90
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3590000000,
            "measRcvdPower": -90
          },
          {
            "measBandwidth": 10000000,
```



```
        "measFrequency": 3600000000,
        "measRcvdPower": -90
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3610000000,
        "measRcvdPower": -90
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3620000000,
        "measRcvdPower": -90
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3630000000,
        "measRcvdPower": -90
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3640000000,
        "measRcvdPower": -90
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3650000000,
        "measRcvdPower": -89
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3660000000,
        "measRcvdPower": -89
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3670000000,
        "measRcvdPower": -89
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3680000000,
        "measRcvdPower": -89
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3690000000,
        "measRcvdPower": -89
    }
}
],
"operationParam": {
    "maxEirp": 27,
```



```
        "operationFrequencyRange": {
            "highFrequency": 3670000000,
            "lowFrequency": 3650000000
        }
    }
}
]
}
2018-12-17T06:14:59.877Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
            "channelType": "GAA",
            "grantExpireTime": "2018-12-24T06:14:59Z",
            "grantId": "517399343",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2018-12-17T06:14:59.944Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
            "grantId": "517399343",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
2018-12-17T06:14:59.946Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
            "grantId": "517399343",
            "response": {
                "responseCode": 501
            },
            "transmitExpireTime": "2018-12-17T06:14:59Z"
        }
    ]
}
2018-12-17T06:15:11.424Z - INFO - spectrumInquiry request from CBRS : {
    "spectrumInquiryRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
            "inquiredSpectrum": [
                {
                    "highFrequency": 3630000000,
                    "lowFrequency": 3610000000
                }
            ]
        }
    ]
}
```



```
    }
  ],
  "measReport": {
    "rcvdPowerMeasReports": [
      {
        "measBandwidth": 10000000,
        "measFrequency": 3550000000,
        "measRcvdPower": -92
      },
      {
        "measBandwidth": 10000000,
        "measFrequency": 3560000000,
        "measRcvdPower": -87
      },
      {
        "measBandwidth": 10000000,
        "measFrequency": 3570000000,
        "measRcvdPower": -98
      },
      {
        "measBandwidth": 10000000,
        "measFrequency": 3580000000,
        "measRcvdPower": -98
      },
      {
        "measBandwidth": 10000000,
        "measFrequency": 3590000000,
        "measRcvdPower": -98
      },
      {
        "measBandwidth": 10000000,
        "measFrequency": 3600000000,
        "measRcvdPower": -98
      },
      {
        "measBandwidth": 10000000,
        "measFrequency": 3610000000,
        "measRcvdPower": -98
      },
      {
        "measBandwidth": 10000000,
        "measFrequency": 3620000000,
        "measRcvdPower": -98
      },
      {
        "measBandwidth": 10000000,
        "measFrequency": 3630000000,
        "measRcvdPower": -98
      },
      {
        "measBandwidth": 10000000,
        "measFrequency": 3640000000,
```



```
        "measRcvdPower": -96
      },
      {
        "measBandwidth": 10000000,
        "measFrequency": 3650000000,
        "measRcvdPower": -90
      },
      {
        "measBandwidth": 10000000,
        "measFrequency": 3660000000,
        "measRcvdPower": -91
      },
      {
        "measBandwidth": 10000000,
        "measFrequency": 3670000000,
        "measRcvdPower": -98
      },
      {
        "measBandwidth": 10000000,
        "measFrequency": 3680000000,
        "measRcvdPower": -99
      },
      {
        "measBandwidth": 10000000,
        "measFrequency": 3690000000,
        "measRcvdPower": -99
      }
    ]
  }
}
2018-12-17T06:15:11.437Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3630000000,
            "lowFrequency": 3610000000
          },
          "ruleApplied": "FCC_PART_96"
        }
      ],
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
```



```
2018-12-17T06:15:11.571Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "measReport": {
        "rcvdPowerMeasReports": [
          {
            "measBandwidth": 10000000,
            "measFrequency": 3550000000,
            "measRcvdPower": -92
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3560000000,
            "measRcvdPower": -87
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3570000000,
            "measRcvdPower": -98
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3580000000,
            "measRcvdPower": -98
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3590000000,
            "measRcvdPower": -98
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3600000000,
            "measRcvdPower": -98
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3610000000,
            "measRcvdPower": -98
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3620000000,
            "measRcvdPower": -98
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3630000000,
            "measRcvdPower": -98
          }
        ]
      }
    }
  ]
}
```



```
        "measBandwidth": 10000000,
        "measFrequency": 3640000000,
        "measRcvdPower": -96
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3650000000,
        "measRcvdPower": -90
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3660000000,
        "measRcvdPower": -91
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3670000000,
        "measRcvdPower": -98
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3680000000,
        "measRcvdPower": -99
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3690000000,
        "measRcvdPower": -99
    }
    ]
},
"operationParam": {
    "maxEirp": 27,
    "operationFrequencyRange": {
        "highFrequency": 3630000000,
        "lowFrequency": 3610000000
    }
}
}
]
}
2018-12-17T06:15:11.585Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
            "channelType": "GAA",
            "grantExpireTime": "2018-12-24T06:15:11Z",
            "grantId": "53913782",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
```



```
}  
]  
}
```

2018-12-17T06:15:12.723Z - INFO - arrived to nstep starting question answer session with the technician

2018-12-17T06:15:35.168Z - 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

2018-12-17T06:50:05.424Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2018-12-17T06:50:05.424Z - INFO - the selected test from the user : WINNF.FT.D.RLQ.2 is starting now

2018-12-17T06:50:08.434Z - INFO - registration request from CBRS : {

```

"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "CAMBIUM_NETWORKS"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-69) AP",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "0a003e6070a5",
    "cpiSignatureData": {
      "digitalSignature":
"a90CjgQt42K0b5x38cqJPJdtjABPb896gH5h3F0gPWjWQWHUZJuOFDqrW0mPi93qmA9KKzPNxpdN
x_wA6lnRnKVMqmy9RQdn929LZfox2gG_LfJVNpABNtO8hbslj_QvhMlxvifu7yQdz0FJXuqvaj1Mt6FQgR
hmD9O-vpr-IlZrfZFDjcCgAikEe6_SmGY8A0EviAPB2AqcpS4aKWom1CsPM56ZMJ5UcljA8-IXCiGve6u
iBQZITYyS4PTg-d_Yeo4FNnctK8aSJsT_bl4Wow2zEvOpyhqfloWDzuhbVaS0GJ2gj8oroL2BFHD1DG
M4YEL9c5Q8vCHyHeCvFA4hw",
      "encodedCpiSignedData":
"eyJmY2NJZCI6IFXUC0zMDQ1ME0iLCJjYnNkU2VyaWFsTnVtYmVyljoiMGEwMDNINjA3MGE1liwiaW
5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGU0iOjQyLjI0MiwibG9uZ2l0dWRlljotODguMDgwOCwia
GVpZ2h0ljoXMDAsImhlaWdodFR5cGU0iJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImF
udGVubmFBemltdXRoljowLjJhbnRlbn5hRG93bnRpbHQiOjAsImFudGVubmFHYWluljoxNSwiZWlycE
NhcGFiaWxpdHkiOjQwLjJhbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckR
hdGEiOnsiY3BpSWQiOiJjcGkxMjMiLCJjcGLOYW11ljoIQ1BJFVzZXIjMTIzliwiaW5zdGFsbENlcnRpZmlj
YXRpb25UaW11ljoIMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fccId": "QWP-30450M",
    "groupingParam": [
      {
        "groupId": "0a-00-3e-60-70-a5",
        "groupType": "INTERFERENCE_COORDINATION"
      }
    ],
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "test"
  }
]

```

2018-12-17T06:50:08.466Z - INFO - Registration message contains cpiSignatureData

2018-12-17T06:50:08.466Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2018-12-17T06:50:08.466Z - INFO - encodedCpiSignedData contents = {

```

"installationParam": {
  "eirpCapability": 40,

```



```
"antennaAzimuth": 0,
"heightType": "AMSL",
"longitude": -88.0808,
"height": 100,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 15
},
"fcld": "QWP-30450M",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e6070a5"
}
2018-12-17T06:50:08.466Z - INFO - verified signature on cpiSignatureData
2018-12-17T06:50:08.466Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-12-17T06:50:08.466Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbssdId": "QWP-30450MMock-SAS0a003e6070a5",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-12-17T06:50:12.506Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbssdCategory": "B",
      "cbssdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) BHUL450",
        "vendor": "Cambium Networks"
      },
      "cbssdSerialNumber": "0a003e431a34",
      "cpiSignatureData": {
        "digitalSignature":
"Winc1sicBkQmobkS-ogMWVUsPC4S_9FaKCsj-6kwc8YuPIYXI26TqczW4DJFgeh9NNOeNAtveL3FK
EmbeLjZ_3NSQC6I3DIFqb-WOMdg55E8KLOP-IFwMj7VgGllr5MYuiHdyhAR8o5dVBIM8r12GeXGxj0Bu
vYI1nVTuh7puq3fVBkGG3m3p1cvfEpdSBCGUFm5HccR80kcADaOBIFzJljM6p-8O0L8nrZP_ec8CV_z
DTIRoY66bdc5C98IA_XBC2eOwiJHF-alk8TJLcFAM51qMOdSE9aQfZVUyHqXFZiOFDvGEUE3eqD_p-
wXYyv9JaXv2uR7p6kYfldzuw51zw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RIQwMDA5liwiY2JzZFNlcmIhbE51bWJlcil6IjBhMDAaZTQzMWEzNCIsImhuc3
RhbgxhdGlvbiBhcmFtlj7lmxhdGI0dWRlljo0Mi4yNDIsImxvbmddpdHVkZSI6LTg4LjA4MDgsImhlaWdod
```



```
CI6MCwiaGVpZ2h0VHlwZSI6IkJFU0wiLCJpbmRvb3JEZXBs3ltZW50ljpYWxZSwiYW50ZW5uYUUF
6aW11dGgiOjAsImFudGVubmFEb3dudGlsdCI6MCwiYW50ZW5uYUdhaW4iOjE4LCJlaXJwQ2FwYWJp
bGI0eSI6NDAsImFudGVubmFCZWZFd2lkdGgiOjkwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI
6eyJjcGlJZC16ImNwaTEyMyIsImNwaU5hbWUiOiJDUEkgVXNlciAxMjMiLCJpbmN0YWxsQ2VydGlmaW
NhdGlvbRpbWUiOiOilyMDE4LTA1LTA5VDE1OjUxOjEyLjg2NloifX0",
    "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
  },
  "fcclId": "Z8H89FT0009",
  "groupingParam": [
    {
      "groupId": "0a-00-3e-43-1a-34",
      "groupType": "INTERFERENCE_COORDINATION"
    }
  ],
  "measCapability": [
    "RECEIVED_POWER_WITHOUT_GRANT"
  ],
  "userId": "SF5W5D"
}
]
}
```

2018-12-17T06:50:12.569Z - INFO - Registration message contains cpiSignatureData  
2018-12-17T06:50:12.569Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

```
2018-12-17T06:50:12.569Z - 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": "Z8H89FT0009",
  "professionalInstallerData": {
    "cpiName": "CPI User 123",
    "installCertificationTime": "2018-05-09T15:51:12.866Z",
    "cpild": "cpi123"
  },
  "cbsdSerialNumber": "0a003e431a34"
}
```

2018-12-17T06:50:12.569Z - INFO - verified signature on cpiSignatureData  
2018-12-17T06:50:12.569Z - INFO - cpiSignatureData data successfully validated against jsonschema  
2018-12-17T06:50:12.569Z - INFO - engine sent successfully, the response to CBRS : {  
 "registrationResponse": [  
 {  
 "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",  
 "response": {  
 "responseCode": 0



```
    }
  }
]
}
2018-12-17T06:50:29.180Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ]
    }
  ]
}
]
}
2018-12-17T06:50:29.211Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3670000000,
            "lowFrequency": 3650000000
          },
          "ruleApplied": "FCC_PART_96"
        }
      ],
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-12-17T06:50:29.289Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "operationParam": {
        "maxEirp": 27,
        "operationFrequencyRange": {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
]
}
2018-12-17T06:50:29.289Z - INFO - engine sent successfully, the response to CBRS : {
```



```
"grantResponse": [
  {
    "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
    "channelType": "GAA",
    "grantExpireTime": "2018-12-24T06:50:29Z",
    "grantId": "469705070",
    "heartbeatInterval": 60,
    "response": {
      "responseCode": 0
    }
  }
]
}
2018-12-17T06:50:29.368Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "469705070",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-12-17T06:50:29.382Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "469705070",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-17T06:53:49Z"
    }
  ]
}
2018-12-17T06:50:46.348Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "inquiredSpectrum": [
        {
          "highFrequency": 3630000000,
          "lowFrequency": 3610000000
        }
      ]
    }
  ]
}
2018-12-17T06:50:46.355Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
```



```
        {
            "channelType": "GAA",
            "frequencyRange": {
                "highFrequency": 3630000000,
                "lowFrequency": 3610000000
            },
            "ruleApplied": "FCC_PART_96"
        }
    ],
    "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
    "response": {
        "responseCode": 0
    }
}
]
}
2018-12-17T06:50:46.437Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
            "operationParam": {
                "maxEirp": 27,
                "operationFrequencyRange": {
                    "highFrequency": 3630000000,
                    "lowFrequency": 3610000000
                }
            }
        }
    ]
}
2018-12-17T06:50:46.444Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
            "channelType": "GAA",
            "grantExpireTime": "2018-12-24T06:50:46Z",
            "grantId": "773729964",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2018-12-17T06:50:46.535Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
            "grantId": "773729964",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
```



```
]
}
2018-12-17T06:50:46.542Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "773729964",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-17T06:54:06Z"
    }
  ]
}
2018-12-17T06:51:24.874Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "469705070",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-17T06:51:24.878Z - INFO - Time interval between two heartbeat request messages is: 55.506,
limit is: 65.0
2018-12-17T06:51:24.897Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "469705070",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-17T06:54:44Z"
    }
  ]
}
2018-12-17T06:51:41.812Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "773729964",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-17T06:51:41.815Z - INFO - Time interval between two heartbeat request messages is: 55.279,
limit is: 65.0
2018-12-17T06:51:41.825Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
```



```
{
  "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
  "grantId": "773729964",
  "response": {
    "responseCode": 0
  },
  "transmitExpireTime": "2018-12-17T06:55:01Z"
}
]
}
2018-12-17T06:52:20.025Z - INFO - heartbeat request from CBRS :{
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "469705070",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-17T06:52:20.026Z - INFO - Time interval between two heartbeat request messages is: 55.152,
limit is: 65.0
2018-12-17T06:52:20.042Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "469705070",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-17T06:55:40Z"
    }
  ]
}
2018-12-17T06:52:37.114Z - INFO - heartbeat request from CBRS :{
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "773729964",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-17T06:52:37.115Z - INFO - Time interval between two heartbeat request messages is: 55.3,
limit is: 65.0
2018-12-17T06:52:37.125Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "773729964",
      "response": {
```





```
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-17T06:55:57Z"
    }
  ]
}
2018-12-17T06:52:54.207Z - INFO - relinquishment request from CBRS : {
  "relinquishmentRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "469705070"
    }
  ]
}
2018-12-17T06:52:54.237Z - INFO - engine sent successfully, the response to CBRS : {
  "relinquishmentResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "469705070",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-12-17T06:53:07.210Z - INFO - relinquishment request from CBRS : {
  "relinquishmentRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "773729964"
    }
  ]
}
2018-12-17T06:53:07.219Z - INFO - engine sent successfully, the response to CBRS : {
  "relinquishmentResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "773729964",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-12-17T06:53:08.674Z - INFO - arrived to nstep starting question answer session with the technician
2018-12-17T06:53:08.677Z - INFO - the question is : Did CBSD1 cease RF transmission before receipt of Relinquishment Request by Test Harness? please choose one of the answers :
2018-12-17T06:53:24.678Z - INFO - for the question : Did CBSD1 cease RF transmission before receipt of Relinquishment Request by Test Harness? , the user choose y
2018-12-17T06:53:24.680Z - INFO - the question is : Did CBSD2 cease RF transmission before receipt of Relinquishment Request by Test Harness? please choose one of the answers :
```



2018-12-17T06:53:27.716Z - INFO - for the question : Did CBSD2 cease RF transmission before receipt of Relinquishment Request by Test Harness? , the user choose y

2018-12-17T07:02:54.980Z - INFO - The final result of the test : WINNF.FT.D.RLQ.2 is - passed and :the additional comments for the current test are : CBSD1 stops transmission at T06:52:53, CBSD2 stops transmission at T06:53:07



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

2018-12-17T03:52:44.956Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13  
2018-12-17T03:52:44.956Z - INFO - the selected test from the user : WINNF.FT.D.DRG.2 is starting now  
2018-12-17T03:52:55.142Z - INFO - registration request from CBRS : {

```
"registrationRequest": [  
  {  
    "airInterface": {  
      "radioTechnology": "CAMBIUM_NETWORKS"  
    },  
    "cbsdCategory": "B",  
    "cbsdInfo": {  
      "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-69) AP",  
      "vendor": "Cambium Networks"  
    },  
    "cbsdSerialNumber": "0a003e6070a5",  
    "cpiSignatureData": {  
      "digitalSignature":  
"a90CjgQt42K0b5x38cqJPJdtjABPb896gH5h3F0gPWjWQWHUZJuOFDqrW0mPi93qmA9KKzPNxpdN  
x_wA6lnRnKVMqmy9RQdn929LZfox2gG_LfJVNpABNtO8hbslj_QvhMlxvifu7yQdz0FJXuqvaj1Mt6FQgR  
hmD9O-vpr-IlZrfZFDjcCgAikEe6_SmGY8A0EviAPB2AqcpS4aKWom1CsPM56ZMJ5UcljA8-IXCiGVe6u  
iBQZITYyS4PTg-d_Yeo4FNnCTk8aSJST_bl4Wow2zEvOpyhqfloodZuhbVaS0GJ2gj8oroL2BFHD1DG  
M4YEL9c5Q8vCHyHeCvFA4hw",  
      "encodedCpiSignedData":  
"eyJmY2NJZCI6IIFXUC0zMDQ1ME0iLCJYnNkU2VyaWFsTnVtYmVyljoiMGEGwMDNINjA3MGE1liwiaW  
5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGU0OjYlI0MiwibG9uZ2l0dWRlljotODguMDgwOCwia  
GVpZ2h0IjoxMDAsImhlaWdodFR5cGU0iJBTvNmliwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImF  
udGVubmFBemltdXRoljowLjChbnRlbn5hRG93bnRpbHQiOjAsImFudGVubmFHYWluljoxNSwiZWlycE  
NhcGFiaWxpdHkiOjQwLjChbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckR  
hdGEiOnsiY3BpSWQiOiJjcGkxMjMiLCJjcG90YyW1IjoiQ1BjIFVzZXIiMTIzIiwiaW5zdGFsbENlcnRpZmlj  
YXRpb25UaW1IjoiMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",  
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"  
    },  
    "fcclId": "QWP-30450M",  
    "groupingParam": [  
      {  
        "groupId": "0a-00-3e-60-70-a5",  
        "groupType": "INTERFERENCE_COORDINATION"  
      }  
    ],  
    "measCapability": [  
      "RECEIVED_POWER_WITHOUT_GRANT"  
    ],  
    "userId": "test"  
  }  
]
```

2018-12-17T03:52:55.174Z - INFO - Registration message contains cpiSignatureData  
2018-12-17T03:52:55.174Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}  
2018-12-17T03:52:55.174Z - INFO - encodedCpiSignedData contents = {  
 "installationParam": {  
 "eirpCapability": 40,  
 "antennaAzimuth": 0,



```
"heightType": "AMSL",
"longitude": -88.0808,
"height": 100,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 15
},
"fcclId": "QWP-30450M",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e6070a5"
}
2018-12-17T03:52:55.267Z - INFO - verified signature on cpiSignatureData
2018-12-17T03:52:55.267Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-12-17T03:52:55.267Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbssdId": "QWP-30450MMock-SAS0a003e6070a5",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-12-17T03:53:01.351Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbssdCategory": "B",
      "cbssdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) BHUL450",
        "vendor": "Cambium Networks"
      },
      "cbssdSerialNumber": "0a003e431a34",
      "cpiSignatureData": {
        "digitalSignature":
"Winc1sicBkQmobkS-ogMWVUsPC4S_9FaKCsJ-6kwc8YuPIYXI26TqczW4DJFgeh9NNOeNAtveL3FK
EmbeLjZ_3NSQC6l3DIFqb-WOMdg55E8KLOP-IFwMj7VgGllr5MYuiHdyhAR8o5dVBIM8r12GeXGxj0Bu
vYI1nVTuh7puq3fVBkGG3m3p1cvfEpdSBCGUFm5HccR80kcADaOBIFzJljM6p-8O0L8nrZP_ec8CV_z
DTIRoY66bdc5C98IA_XBC2eOwiJHF-alk8TJLCfAM51qM0dSE9aQfZVUyHqXFZiOFDvGEUE3eqD_p-
wXYyv9JaXv2uR7p6kYfldzuw51zw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SDg5RIQwMDA5liwiY2JzZFNlcmIhbE51bWJlciI6IjBhMDAzZTQzMWEzNCIsImluc3
RhbGxhdGlvb1BhcmFtIjE7ImxhdG90dWRlljo0Mi4yNDIsImxvbmtpdHVkZSI6LTg4LjA4MDgslmhmaWdod
CI6MCwiaGVpZ2h0VHlwZSI6IklFNU0wiLjEpbmRvb3JlZlZlZS0lpmYVxzZSwiYW50ZW5uYUUF
```



```
6aW11dGgiOjAsImFudGVubmFEb3dudGlsdCI6MCwiYW50ZW5uYUdhaW4iOjE4LCJlaXJwQ2FwYWJp
bGI0eSI6NDAsImFudGVubmFCZWFtd2lkdGgiOjkwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI
6eyJjcGlJZCI6ImNwaTEyMyIsImNwaU5hbWUiOiJDUEkgVXNlciAxMjMiLCJpbmN0YWxsQ2VydGlmaW
NhdGlvbIRpbWUiOiIyMDE4LTA1LTA5VDE1OjUxOjEYLjg2NloifX0",
    "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
  },
  "fcclId": "Z8H89FT0009",
  "groupingParam": [
    {
      "groupId": "0a-00-3e-43-1a-34",
      "groupType": "INTERFERENCE_COORDINATION"
    }
  ],
  "measCapability": [
    "RECEIVED_POWER_WITHOUT_GRANT"
  ],
  "userId": "SF5W5D"
}
]
}
2018-12-17T03:53:01.414Z - INFO - Registration message contains cpiSignatureData
2018-12-17T03:53:01.414Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2018-12-17T03:53:01.414Z - 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": "Z8H89FT0009",
  "professionalInstallerData": {
    "cpiName": "CPI User 123",
    "installCertificationTime": "2018-05-09T15:51:12.866Z",
    "cpild": "cpi123"
  },
  "cbsdSerialNumber": "0a003e431a34"
}
2018-12-17T03:53:01.414Z - INFO - verified signature on cpiSignatureData
2018-12-17T03:53:01.414Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-12-17T03:53:01.430Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
```



```
    }
  ]
}
2018-12-17T03:53:55.826Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "inquiredSpectrum": [
        {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      ]
    }
  ]
}
2018-12-17T03:53:55.858Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3670000000,
            "lowFrequency": 3650000000
          },
          "ruleApplied": "FCC_PART_96"
        }
      ],
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-12-17T03:53:55.921Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "operationParam": {
        "maxEirp": 27,
        "operationFrequencyRange": {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2018-12-17T03:53:55.937Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
```



```
{
  "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
  "channelType": "GAA",
  "grantExpireTime": "2018-12-24T03:53:55Z",
  "grantId": "169370378",
  "heartbeatInterval": 60,
  "response": {
    "responseCode": 0
  }
}
]
}
2018-12-17T03:53:56.015Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "169370378",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-12-17T03:53:56.029Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "169370378",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-17T03:57:16Z"
    }
  ]
}
2018-12-17T03:54:01.895Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "inquiredSpectrum": [
        {
          "highFrequency": 3630000000,
          "lowFrequency": 3610000000
        }
      ]
    }
  ]
}
2018-12-17T03:54:01.895Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
```



```
        "channelType": "GAA",
        "frequencyRange": {
            "highFrequency": 3630000000,
            "lowFrequency": 3610000000
        },
        "ruleApplied": "FCC_PART_96"
    }
],
"cbid": "Z8H89FT0009Mock-SAS0a003e431a34",
"response": {
    "responseCode": 0
}
}
]
}
2018-12-17T03:54:02.005Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbid": "Z8H89FT0009Mock-SAS0a003e431a34",
            "operationParam": {
                "maxEirp": 27,
                "operationFrequencyRange": {
                    "highFrequency": 3630000000,
                    "lowFrequency": 3610000000
                }
            }
        }
    ]
}
2018-12-17T03:54:02.005Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbid": "Z8H89FT0009Mock-SAS0a003e431a34",
            "channelType": "GAA",
            "grantExpireTime": "2018-12-24T03:54:02Z",
            "grantId": "771022080",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2018-12-17T03:54:02.082Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbid": "Z8H89FT0009Mock-SAS0a003e431a34",
            "grantId": "771022080",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
```





```
}
2018-12-17T03:54:02.098Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "771022080",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-17T03:57:22Z"
    }
  ]
}
2018-12-17T03:54:51.071Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "169370378",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-17T03:54:51.071Z - INFO - Time interval between two heartbeat request messages is: 55.056,
limit is: 65.0
2018-12-17T03:54:51.086Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "169370378",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-17T03:58:11Z"
    }
  ]
}
2018-12-17T03:54:57.372Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "771022080",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-17T03:54:57.372Z - INFO - Time interval between two heartbeat request messages is: 55.29,
limit is: 65.0
2018-12-17T03:54:57.388Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
```



```
        "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
        "grantId": "771022080",
        "response": {
            "responseCode": 0
        },
        "transmitExpireTime": "2018-12-17T03:58:17Z"
    }
}
]
}
2018-12-17T03:55:45.219Z - INFO - deregistration request from CBRS : {
    "deregistrationRequest": [
        {
            "cbsdId": "QWP-30450MMock-SAS0a003e6070a5"
        }
    ]
}
2018-12-17T03:55:45.233Z - INFO - engine sent successfully, the response to CBRS : {
    "deregistrationResponse": [
        {
            "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
}
2018-12-17T03:55:52.612Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
            "grantId": "771022080",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
}
2018-12-17T03:55:52.612Z - INFO - Time interval between two heartbeat request messages is: 55.24,
limit is: 65.0
2018-12-17T03:55:52.628Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
            "grantId": "771022080",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2018-12-17T03:59:12Z"
        }
    ]
}
}
2018-12-17T03:56:23.844Z - INFO - deregistration request from CBRS : {
    "deregistrationRequest": [
```



```
{
  "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34"
}
]
}
2018-12-17T03:56:23.859Z - INFO - engine sent successfully, the response to CBRS : {
  "deregistrationResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2018-12-17T03:56:25.029Z - INFO - arrived to nstep starting question answer session with the technician
2018-12-17T03:56:25.029Z - INFO - the question is : Did CBSD1 cease RF transmission before receipt of Relinquishment request (if sent) or Deregistration request at Test Harness? please choose one of the answers :
2018-12-17T03:56:37.072Z - INFO - for the question : Did CBSD1 cease RF transmission before receipt of Relinquishment request (if sent) or Deregistration request at Test Harness? , the user choose y
2018-12-17T03:56:37.088Z - INFO - the question is : Did CBSD2 cease RF transmission before receipt of Relinquishment request (if sent) or Deregistration request at Test Harness? please choose one of the answers :
2018-12-17T03:56:38.507Z - INFO - for the question : Did CBSD2 cease RF transmission before receipt of Relinquishment request (if sent) or Deregistration request at Test Harness? , the user choose y
2018-12-17T03:57:36.368Z - INFO - The final result of the test : WINNF.FT.D.DRG.2 is - passed and :the additional comments for the current test are : CBSD1 stops transmission at T03:55:44, CBSD2 stops transmission at T03:56:22
```

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

2018-12-17T08:16:30.838Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2018-12-17T08:16:30.841Z - INFO - the selected test from the user : WINNF.FT.D.REG.6 is starting now

2018-12-17T08:16:38.451Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "CAMBIUM_NETWORKS"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-69) AP",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "0a003e6070a5",
    "cpiSignatureData": {
      "digitalSignature":
"a90CjgQt42K0b5x38cqJPJdtjABPb896gH5h3F0gPWjWQWHUZJuOFDqrW0mPi93qmA9KKzPNxpdN
x_wA6lnRnKVMqmy9RQdn929LZfox2gG_LfJVnPAbnT08hbslj_QvhMlxvifu7yQdz0FJXuqvaj1Mt6FQgR
hmD9O-vpr-IlZrfZFDjcCgAikEe6_SmGY8A0EviAPB2AqcpS4aKWom1CsPM56ZMJ5UcljA8-IXCiGVe6u
iBQZITYyS4PTg-d_Yeo4FNnctK8aSJsT_b14Wow2zEvOpyhqfloWDzuhbVaS0GJ2gj8oroL2BFHD1DG
M4YEL9c5Q8vCHyHeCvFA4hw",
      "encodedCpiSignedData":
"eyJmY2NJZCI6IFXUC0zMDQ1ME0iLCJjYnNkU2VyaWFsTnVtYmVyljoiMGEwMDNINjA3MGE1liwiaW
5zdGFsbGF0aW9uUGFyYW0iOnsibGF0aXR1ZGUiojQyLjI0MiwiYmVudG9uZ210dWRlljotODguMDgwOCwia
GVpZ2h0IjoxMDAsImhlaWdodFR5cGUiOiJBTvNMIiwiiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImF
udGVubmFBemltdXRoljowLlJhbnRlbnM5hRg93bnRpbHQiOiJASlMudGVubmFHYWluljoxNSwiZWlycE
NhcGFiaWxpdHkiOiJwLlJhbnRlbnM5hRg93bnRpbHQiOiJASlMudGVubmFHYWluljoxNSwiZWlycE
hdGEiOnsiY3BpSWQiOiJcGkxMjM5ZDGFsbGF0aW9uUGFyYW0iOnsibGF0aXR1ZGUiojQyLjI0MiwiYmVudG9uZ210dWRlljotODguMDgwOCwia
YXRpb25UaW1lIjoiMjM5ZDGFsbGF0aW9uUGFyYW0iOnsibGF0aXR1ZGUiojQyLjI0MiwiYmVudG9uZ210dWRlljotODguMDgwOCwia
",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fccId": "QWP-30450M",
    "groupingParam": [
      {
        "groupId": "0a-00-3e-60-70-a5",
        "groupType": "INTERFERENCE_COORDINATION"
      }
    ],
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "test"
  }
]
```

2018-12-17T08:16:38.506Z - INFO - Registration message contains cpiSignatureData

2018-12-17T08:16:38.506Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2018-12-17T08:16:38.507Z - INFO - encodedCpiSignedData contents = {

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



```
"antennaAzimuth": 0,
"heightType": "AMSL",
"longitude": -88.0808,
"height": 100,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 15
},
"fcld": "QWP-30450M",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e6070a5"
}
2018-12-17T08:16:38.622Z - INFO - verified signature on cpiSignatureData
2018-12-17T08:16:38.628Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-12-17T08:16:38.631Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbssdId": "QWP-30450MMock-SAS0a003e6070a5",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-12-17T08:17:39.091Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbssdCategory": "B",
      "cbssdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) BHUL450",
        "vendor": "Cambium Networks"
      },
      "cbssdSerialNumber": "0a003e431a34",
      "cpiSignatureData": {
        "digitalSignature":
"Winc1sicBkQmobkS-ogMWVUsPC4S_9FaKCsj-6kwc8YuPIYXI26TqczW4DJFgeh9NNOeNAtveL3FK
EmbeLjZ_3NSQC6I3DIFqb-WOMdg55E8KLOP-IFwMj7VgGllr5MYuiHdyhAR8o5dVBIM8r12GeXGxj0Bu
vYI1nVTuh7puq3fVBkGG3m3p1cvfEpdSBCGUFm5HccR80kcADaOBIFzJlJm6p-8O0L8nrZP_ec8CV_z
DTIRoY66bdc5C98IA_XBC2eOwiJHF-alk8TJLcFAM51qMOdSE9aQfZVUyHqXFZiOFDvGEUE3eqD_p-
wXYyv9JaXv2uR7p6kYfldzuw51zw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RIQwMDA5IiwY2JzZFNlcmIhbE51bWJlcil6IjBhMDAaZTQzMWEzNCIsImhuc3
RhbgxhdGlvbiBhcmFtlj7ImxhdGI0dWRlljo0Mi4yNDIsImxvbmddpdHVkZSI6LTg4LjA4MDgsImhlaWdod
```



```
CI6MCwiaGVpZ2h0VHlwZSI6IkJFU0wiLCJpbmRvb3JEZXBs3ltZW50ljpYWxZSwiYW50ZW5uYUUF
6aW11dGgiOjAsImFudGVubmFEb3dudGlscCI6MCwiYW50ZW5uYUdhaW4iOjE4LCJlaXJwQ2FwYWJp
bGI0eSI6NDAsImFudGVubmFCZWZFd2lkdGgiOjkwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI
6eyJjcGlJZC16ImNwaTEyMyIsImNwaU5hbWUiOiJDUEkgVXNlciAxMjMiLCJpbmN0YWxsQ2VydGlmaW
NhdGlvbIRpbWUiOiOilyMDE4LTA1LTA5VDE1OjUxOjEyLjg2NloifX0",
    "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
  },
  "fcclId": "Z8H89FT0009",
  "groupingParam": [
    {
      "groupId": "0a-00-3e-43-1a-34",
      "groupType": "INTERFERENCE_COORDINATION"
    }
  ],
  "measCapability": [
    "RECEIVED_POWER_WITHOUT_GRANT"
  ],
  "userId": "SF5W5D"
}
]
}
```

2018-12-17T08:17:39.114Z - INFO - Registration message contains cpiSignatureData  
2018-12-17T08:17:39.114Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

```
2018-12-17T08:17:39.115Z - 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": "Z8H89FT0009",
  "professionalInstallerData": {
    "cpiName": "CPI User 123",
    "installCertificationTime": "2018-05-09T15:51:12.866Z",
    "cpild": "cpi123"
  },
  "cbsdSerialNumber": "0a003e431a34"
}
```

2018-12-17T08:17:39.115Z - INFO - verified signature on cpiSignatureData  
2018-12-17T08:17:39.121Z - INFO - cpiSignatureData data successfully validated against jsonschema  
2018-12-17T08:17:39.122Z - INFO - engine sent successfully, the response to CBRIS : {

```
"registrationResponse": [
  {
    "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
    "response": {
      "responseCode": 0
    }
  }
]
```



```
    }  
  }  
]
```

2018-12-17T08:17:40.848Z - INFO - arrived to nstep starting question answer session with the technician

2018-12-17T08:17:40.849Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2018-12-17T08:18:12.698Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2018-12-17T08:18:12.703Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :

2018-12-17T08:18:14.730Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n

2018-12-17T08:18:15.599Z - 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**

2018-12-17T08:24:40.460Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13  
2018-12-17T08:24:40.463Z - 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**

2018-12-17T08:42:20.395Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13  
2018-12-17T08:42:20.398Z - 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**

2018-12-17T08:49:55.387Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13  
2018-12-17T08:49:55.388Z - 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**

2018-12-17T08:52:14.984Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13  
2018-12-17T08:52:14.986Z - INFO - the selected test from the user : WINNF.FT.D.REG.6 is starting now

Test Log for WINNF.PT.C.HBT Test Case ID\_ BW20M\_Grant maxEirp 37

```
2018-12-13T08:22:02.701Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
2018-12-13T08:22:02.703Z - INFO - Selected spectrum frequency is {'lowFrequency': 3650000000L,
'highFrequency': 3670000000L}
2018-12-13T08:22:02.703Z - INFO - Granted Spectrum Max Eirp = 37dBm/MHz
2018-12-13T08:22:02.704Z - INFO - the selected test from the user : PowerMeasTest is starting now
2018-12-13T08:22:24.414Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbsdCategory": "B",
      "cbsdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-69) AP",
        "vendor": "Cambium Networks"
      },
      "cbsdSerialNumber": "0a003e6070a5",
      "cpiSignatureData": {
        "digitalSignature":
"a90CjgQt42K0b5x38cqJPJdtjABPb896gH5Ih3F0gPWjWQWHUZJuOFDqrW0mPi93qmA9KKzPNxpdN
x_wA6lnRnKVMqmy9RQdn929LZfox2gG_LfJVNPABNtO8hbslj_QvhMlxvifu7yQdz0FJXuqvaj1Mt6FQgR
hmD9O-vpr-IIzrfZFDjcGgAikEe6_SmGY8A0EviAPB2AqcpS4aKWom1CsPM56ZMJ5UcljA8-IXCiGve6u
iBQZITYyS4PTg-d_Yeo4FNnctK8aSJsT_bl4Wow2zEvOpyhqfloWDzuhbVaS0GJ2gj8oroL2BFHD1DG
M4YEL9c5Q8vCHyHeCvFA4hw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6IiFXUC0zMDQ1ME0iLCJjYnNkU2VyaWFsTnVtYmVyljoiMGEwMDNINjA3MGE1IiwiaW
5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGU0YyYlIjoiQ1B1IiwibG9uZ2I0dWRlIjotODguMDgwOCwia
GVpZ2h0IjoxMDAsImhlaWdodFR5cGU0iJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2U5ImF
udGVubmFBemltdXRoljowLjCjHbnRlbn5hRm93bnRpbHQiOjAsImFudGVubmFHYWluljoxNSwiZWlycE
NhcGFiaWxpdHkiOjQwLjCjHbnRlbn5hRm93bnRpbHQiOjAsImFudGVubmFHYWluljoxNSwiZWlycE
hdGEiOmsiY3BpSWQiOiJjcGxMjMiLCJjcGLOYW1IjoiQ1B1IiwibG9uZ2I0dWRlIjotODguMDgwOCwia
YXRpb25UaW1IjoiMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalN19",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fcclid": "QWP-30450M",
      "groupingParam": [
        {
          "groupId": "0a-00-3e-60-70-a5",
          "groupType": "INTERFERENCE_COORDINATION"
        }
      ],
      "measCapability": [
        "RECEIVED_POWER_WITHOUT_GRANT"
      ],
      "userId": "test"
    }
  ]
}
```

```
2018-12-13T08:22:24.461Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {

```



```
        "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
        "response": {
            "responseCode": 0
        }
    ]
}
2018-12-13T08:23:25.391Z - INFO - spectrumInquiry request from CBRS : {
    "spectrumInquiryRequest": [
        {
            "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
            "inquiredSpectrum": [
                {
                    "highFrequency": 3670000000,
                    "lowFrequency": 3650000000
                }
            ]
        }
    ]
}
2018-12-13T08:23:25.398Z - INFO - The requested spectrum is in the range, SpectrumInquiry response
code is 0
2018-12-13T08:23:25.400Z - INFO - engine sent successfully, the response to CBRS : {
    "spectrumInquiryResponse": [
        {
            "availableChannel": [
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3670000000,
                        "lowFrequency": 3650000000
                    },
                    "maxEirp": 37,
                    "ruleApplied": "FCC_PART_96"
                }
            ],
            "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2018-12-13T08:23:25.447Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
            "operationParam": {
                "maxEirp": 37,
                "operationFrequencyRange": {
                    "highFrequency": 3670000000,
                    "lowFrequency": 3650000000
                }
            }
        }
    ]
}
```



```
    }
  }
}
]
}
2018-12-13T08:23:25.453Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "channelType": "GAA",
      "grantExpireTime": "2018-12-20T08:23:25Z",
      "grantId": "28263943",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-12-13T08:23:25.500Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "28263943",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-12-13T08:23:25.507Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "28263943",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-13T08:26:45Z"
    }
  ]
}
2018-12-13T08:23:49.440Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "28263943",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-13T08:23:49.453Z - INFO - engine sent successfully, the response to CBRS : {
```



```
"heartbeatResponse": [
  {
    "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
    "grantId": "28263943",
    "response": {
      "responseCode": 0
    },
    "transmitExpireTime": "2018-12-13T08:27:09Z"
  }
]
}
2018-12-13T08:24:44.798Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "28263943",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-13T08:24:44.816Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "28263943",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-13T08:28:04Z"
    }
  ]
}
2018-12-13T08:25:38.808Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "28263943",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-13T08:25:38.819Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "28263943",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-13T08:28:58Z"
    }
  ]
}
```



}  
]  
}



**Test Log for WINNF.PT.C.HBT Test Case ID\_ BW20M\_Grant maxEirp 27**

```

2018-12-13T07:29:30.334Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
2018-12-13T07:29:30.334Z - INFO - Selected spectrum frequency is {'lowFrequency': 3650000000L,
'highFrequency': 3670000000L}
2018-12-13T07:29:30.334Z - INFO - Granted Spectrum Max Eirp = 27dBm/MHz
2018-12-13T07:29:30.334Z - INFO - the selected test from the user : PowerMeasTest is starting now
2018-12-13T07:29:50.857Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbsdCategory": "B",
      "cbsdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-69) AP",
        "vendor": "Cambium Networks"
      },
      "cbsdSerialNumber": "0a003e6070a5",
      "cpiSignatureData": {
        "digitalSignature":
"a90CjgQt42K0b5x38cqJPJdtjABPb896gH5Ih3F0gPWjWQWHUZJuOFDqrW0mPi93qmA9KKzPNxpdN
x_wA6lnRnKVMqmy9RQdn929LZfox2gG_LfJVNPABNtO8hbslj_QvhMlxvifu7yQdz0FJXuqvaj1Mt6FQgR
hmD9O-vpr-IIzrfZFDjcCgAikEe6_SmGY8A0EviAPB2AqcpS4aKWom1CsPM56ZMJ5UcljA8-IXCiGVe6u
iBQZITYyS4PTg-d_Yeo4FNnCTk8aSJsT_bl4Wow2zEvOpyhqfloWDzuhbVaS0GJ2gj8oroL2BFHD1DG
M4YEL9c5Q8vCHyHeCvFA4hw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6IiFfXUC0zMDQ1ME0iLCJjYnNkU2VyaWFsTnVtYmVyljoiMGewMDNINjA3MGE1IiwiaW
5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGU0OjQyLjI0MiwiG9uZ2I0dWRlljotODguMDgwOCwia
GVpZ2h0IjoxMDAsImhlaWdodFR5cGU0iJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImF
udGVubmFBemltdXRoljowLjChbnRlbn5hRG93bnRpbHQiOjAsImFudGVubmFHYWluljoxNSwiZWlycE
NhcGFiaWxpdHkiOjQwLjChbnRlbn5hQmVhbXdpZHRolj05MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckR
hdGEiOmsiY3BpSWQiOiJjcGkxMjMiLCJjcGLOYW1lIjoiQ1BJFVzZXIjMTIzIiwiaW5zdGFsbENlcnRpZmlj
YXRpb25UaW1lIjoiMjAxOC0wNS0wOVQxNT01MT0xMi44NjZalnl9",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fcclid": "QWP-30450M",
      "groupingParam": [
        {
          "groupId": "0a-00-3e-60-70-a5",
          "groupType": "INTERFERENCE_COORDINATION"
        }
      ],
      "measCapability": [
        "RECEIVED_POWER_WITHOUT_GRANT"
      ],
      "userId": "test"
    }
  ]
}
2018-12-13T07:29:50.901Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {

```



```
        "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
        "response": {
            "responseCode": 0
        }
    ]
}
2018-12-13T07:30:52.148Z - INFO - spectrumInquiry request from CBRS : {
    "spectrumInquiryRequest": [
        {
            "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
            "inquiredSpectrum": [
                {
                    "highFrequency": 3670000000,
                    "lowFrequency": 3650000000
                }
            ]
        }
    ]
}
2018-12-13T07:30:52.155Z - INFO - The requested spectrum is in the range, SpectrumInquiry response code is 0
2018-12-13T07:30:52.157Z - INFO - engine sent successfully, the response to CBRS : {
    "spectrumInquiryResponse": [
        {
            "availableChannel": [
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3670000000,
                        "lowFrequency": 3650000000
                    },
                    "maxEirp": 27,
                    "ruleApplied": "FCC_PART_96"
                }
            ],
            "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2018-12-13T07:30:52.219Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
            "operationParam": {
                "maxEirp": 27,
                "operationFrequencyRange": {
                    "highFrequency": 3670000000,
                    "lowFrequency": 3650000000
                }
            }
        }
    ]
}
```



```
    }
  }
}
]
}
2018-12-13T07:30:52.223Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "channelType": "GAA",
      "grantExpireTime": "2018-12-07T07:30:52Z",
      "grantId": "69782323",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-12-13T07:30:52.299Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "69782323",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-12-13T07:30:52.309Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "69782323",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-20T07:34:12Z"
    }
  ]
}
2018-12-13T07:31:47.767Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "69782323",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-13T07:31:47.776Z - INFO - engine sent successfully, the response to CBRS : {
```



```
"heartbeatResponse": [
  {
    "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
    "grantId": "69782323",
    "response": {
      "responseCode": 0
    },
    "transmitExpireTime": "2018-12-13T07:35:07Z"
  }
]
}
2018-12-13T07:32:41.917Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "69782323",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-13T07:32:41.924Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "69782323",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-13T07:36:01Z"
    }
  ]
}
2018-12-13T07:33:37.065Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "69782323",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-13T07:33:37.073Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "69782323",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-13T07:36:57Z"
    }
  ]
}
```



```
    }
  ]
}
2018-12-13T07:34:32.332Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "69782323",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-13T07:34:32.341Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "69782323",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-13T07:37:52Z"
    }
  ]
}
2018-12-13T07:35:27.483Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "69782323",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-13T07:35:27.490Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "69782323",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-13T07:38:47Z"
    }
  ]
}
2018-12-13T07:36:23.721Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "69782323",
```



```
        "grantRenew": false,
        "operationState": "AUTHORIZED"
    }
]
}
2018-12-13T07:36:23.729Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "69782323",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-13T07:39:43Z"
    }
  ]
}
2018-12-13T07:37:18.969Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "69782323",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-13T07:37:18.976Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "69782323",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-13T07:40:38Z"
    }
  ]
}
2018-12-13T07:38:12.085Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "69782323",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-13T07:38:12.094Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
```



```
        "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
        "grantId": "69782323",
        "response": {
            "responseCode": 0
        },
        "transmitExpireTime": "2018-12-13T07:41:32Z"
    }
]
}
2018-12-13T07:39:07.214Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
            "grantId": "69782323",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2018-12-13T07:39:07.221Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
            "grantId": "69782323",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2018-12-13T07:42:27Z"
        }
    ]
}
2018-12-13T07:40:02.328Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
            "grantId": "69782323",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2018-12-13T07:40:02.335Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
            "grantId": "69782323",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2018-12-13T07:43:22Z"
        }
    ]
}
```



```
}
2018-12-13T07:40:57.467Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "69782323",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-13T07:40:57.474Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "69782323",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-13T07:44:17Z"
    }
  ]
}
2018-12-13T07:41:52.625Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "69782323",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-13T07:41:52.631Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "69782323",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-13T07:45:12Z"
    }
  ]
}
2018-12-13T07:42:47.813Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "69782323",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
```





```
    }
  ]
}
2018-12-13T07:42:47.822Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "69782323",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-13T07:46:07Z"
    }
  ]
}
2018-12-13T07:43:41.973Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "69782323",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-13T07:43:41.980Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "69782323",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-13T07:47:01Z"
    }
  ]
}
2018-12-13T07:44:37.137Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "69782323",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-13T07:44:37.144Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "69782323",
```



```
        "response": {
            "responseCode": 0
        },
        "transmitExpireTime": "2018-12-13T07:47:57Z"
    }
]
}
2018-12-13T07:45:32.295Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
            "grantId": "69782323",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2018-12-13T07:45:32.302Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
            "grantId": "69782323",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2018-12-13T07:48:52Z"
        }
    ]
}
}
```



Test Log for WINNF.PT.C.HBT Test Case ID\_ BW20M\_Grant maxEirp 7

```
2018-12-13T07:51:17.561Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
2018-12-13T07:51:17.562Z - INFO - Selected spectrum frequency is {'lowFrequency': 3650000000L,
'highFrequency': 3670000000L}
2018-12-13T07:51:17.562Z - INFO - Granted Spectrum Max Eirp = 7dBm/MHz
2018-12-13T07:51:17.563Z - INFO - the selected test from the user : PowerMeasTest is starting now
2018-12-13T07:51:23.437Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbsdCategory": "B",
      "cbsdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-69) AP",
        "vendor": "Cambium Networks"
      },
      "cbsdSerialNumber": "0a003e6070a5",
      "cpiSignatureData": {
        "digitalSignature":
"a90CjgQt42K0b5x38cqJPJdtjABPb896gH5Ih3F0gPWjWQWHUZJuOFDqrW0mPi93qmA9KKzPNxpdN
x_wA6lnRnKVMqmy9RQdn929LZfox2gG_LfJVNPABNtO8hbslj_QvhMlxvifu7yQdz0FJXuqvaj1Mt6FQgR
hmD9O-vpr-IIzrfZFDjcCgAikEe6_SmGY8A0EviAPB2AqcpS4aKWom1CsPM56ZMJ5UcljA8-IXCiGve6u
iBQZITYyS4PTg-d_Yeo4FNnctK8aSJsT_bl4Wow2zEvOpyhqfloWDzuhbVaS0GJ2gj8oroL2BFHD1DG
M4YEL9c5Q8vCHyHeCvFA4hw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6IlFUC0zMDQ1ME0iLCJYnNkU2VyaWFsTnVtYmVyljoiMGEwMDNINjA3MGE1IiwiaW
5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGUlOiJl0MiWibG9uZ2I0dWRlljotODguMDgwOCwia
GVpZ2h0IjoxMDAsImhlaWdodFR5cGUlOiJBTVMlIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImF
udGVubmFBemltdXRoljowLjChbnRlbn5hRG93bnRpbHQiOjAsImFudGVubmFHYWluljoxNSwiZWlycE
NhcGFiaWxpdHkiOjQwLjChbnRlbn5hQmVhbXdpZHRolj05MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckR
hdGEiOmsiY3BpSWQiOiJjcGxMjMiLCJjcGLOYW1lIjoiQ1BJFVzZXIjMTIzIiwiaW5zdGFsbENlcnRpZmlj
YXRpb25UaW1lIjoiMjAxOC0wNS0wOVQxNT01MT0xMi44NjZaIn19",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fcclid": "QWP-30450M",
      "groupingParam": [
        {
          "groupId": "0a-00-3e-60-70-a5",
          "groupType": "INTERFERENCE_COORDINATION"
        }
      ],
      "measCapability": [
        "RECEIVED_POWER_WITHOUT_GRANT"
      ],
      "userId": "test"
    }
  ]
}
```

```
2018-12-13T07:51:23.483Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {

```



```
        "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
        "response": {
            "responseCode": 0
        }
    ]
}
2018-12-13T07:52:23.654Z - INFO - spectrumInquiry request from CBRS : {
    "spectrumInquiryRequest": [
        {
            "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
            "inquiredSpectrum": [
                {
                    "highFrequency": 3670000000,
                    "lowFrequency": 3650000000
                }
            ]
        }
    ]
}
2018-12-13T07:52:23.663Z - INFO - The requested spectrum is in the range, SpectrumInquiry response code is 0
2018-12-13T07:52:23.664Z - INFO - engine sent successfully, the response to CBRS : {
    "spectrumInquiryResponse": [
        {
            "availableChannel": [
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3670000000,
                        "lowFrequency": 3650000000
                    },
                    "maxEirp": 7,
                    "ruleApplied": "FCC_PART_96"
                }
            ],
            "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2018-12-13T07:52:23.737Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
            "operationParam": {
                "maxEirp": 7,
                "operationFrequencyRange": {
                    "highFrequency": 3670000000,
                    "lowFrequency": 3650000000
                }
            }
        }
    ]
}
```



```
    }
  }
}
]
}
2018-12-13T07:52:23.743Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "channelType": "GAA",
      "grantExpireTime": "2018-12-20T07:52:23Z",
      "grantId": "49481308",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-12-13T07:52:23.819Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "49481308",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-12-13T07:52:23.828Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "49481308",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-13T07:55:43Z"
    }
  ]
}
2018-12-13T07:53:20.451Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "49481308",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-13T07:53:20.460Z - INFO - engine sent successfully, the response to CBRS : {
```



```
"heartbeatResponse": [
  {
    "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
    "grantId": "49481308",
    "response": {
      "responseCode": 0
    },
    "transmitExpireTime": "2018-12-13T07:56:40Z"
  }
]
}
2018-12-13T07:54:13.588Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "49481308",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-13T07:54:13.596Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "49481308",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-13T07:57:33Z"
    }
  ]
}
2018-12-13T07:55:08.737Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "49481308",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-13T07:55:08.746Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "49481308",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-13T07:58:28Z"
    }
  ]
}
```



```
    }
  ]
}
2018-12-13T07:56:03.888Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "49481308",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-13T07:56:03.895Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "49481308",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-13T07:59:23Z"
    }
  ]
}
2018-12-13T07:56:59.009Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "49481308",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-13T07:56:59.016Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "49481308",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-13T08:00:19Z"
    }
  ]
}
```



Test Log for WINNF.PT.C.HBT Test Case ID\_ BW20M\_Grant maxEirp -13

2018-12-13T07:58:56.163Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13  
2018-12-13T07:58:56.164Z - INFO - Selected spectrum frequency is {'lowFrequency': 3650000000L, 'highFrequency': 3670000000L}  
2018-12-13T07:58:56.164Z - INFO - Granted Spectrum Max Eirp = -13dBm/MHz  
2018-12-13T07:58:56.165Z - INFO - the selected test from the user : PowerMeasTest is starting now  
2018-12-13T07:59:13.039Z - INFO - registration request from CBRS : {

```
"registrationRequest": [  
  {  
    "airInterface": {  
      "radioTechnology": "CAMBIUM_NETWORKS"  
    },  
    "cbsdCategory": "B",  
    "cbsdInfo": {  
      "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-69) AP",  
      "vendor": "Cambium Networks"  
    },  
    "cbsdSerialNumber": "0a003e6070a5",  
    "cpiSignatureData": {  
      "digitalSignature":  
"a90CjgQt42K0b5x38cqJPJdtjABPb896gH5Ih3F0gPWjWQWHUZJuOFDqrW0mPi93qmA9KKzPNxpdN  
x_wA6lnRnKVMqmy9RQdn929LZfox2gG_LfJVNPABNtO8hbslj_QvhMlxvifu7yQdz0FJXuqvaj1Mt6FQgR  
hmD9O-vpr-IlZrfZFDjcGgAikEe6_SmGY8A0EviAPB2AqcpS4aKWom1CsPM56ZMJ5UcljA8-IXCiGve6u  
iBQZITYyS4PTg-d_Yeo4FNnCntK8aSJST_bl4Wow2zEvOpyhqfloWDzuhbVaS0GJ2gj8oroL2BFHD1DG  
M4YEL9c5Q8vCHyHeCvFA4hw",  
      "encodedCpiSignedData":  
"eyJmY2NJZCI6IIFXUC0zMdQ1ME0iLCJYnNkU2VyaWFsTnVtYmVyljoiMGEwMDNINjA3MGE1IiwiaW  
5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGUiojYlJlM0MiwibG9uZ2I0dWRlljotODguMDgwOCwia  
GVpZ2h0ljoXMDAsImhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImF  
udGVubmFBemltdXRoljowLjChbnRlbn5hRG93bnRpbHQiOjAsImFudGVubmFHYWluljoxNSwiZWlycE  
NhcGFiaWxpdkhkiOjQwLjChbnRlbn5hQmVhbXdpZHRoljo5MH0sInByb2Zlc3Npb25hbEluc3RhbGxlckR  
hdGEiOnsiY3BpSWQiOiJjcGkxMjMiLCJjcGLOYW11IjoiQ1BJFVzZXIjMTIzIiwiaW5zdGFsbENlcnRpZmlj  
YXRpb25UaW11IjoiMjAxOC0wNS0wOVQxNT01MT0xMi44NjZaIn19",  
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"  
    },  
    "fcclId": "QWP-30450M",  
    "groupingParam": [  
      {
```





```
        "groupId": "0a-00-3e-60-70-a5",
        "groupType": "INTERFERENCE_COORDINATION"
    }
],
"measCapability": [
    "RECEIVED_POWER_WITHOUT_GRANT"
],
"userId": "test"
}
]
}
2018-12-13T07:59:13.085Z - INFO - engine sent successfully, the response to CBRS : {
    "registrationResponse": [
        {
            "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2018-12-13T08:00:13.601Z - INFO - spectrumInquiry request from CBRS : {
    "spectrumInquiryRequest": [
        {
            "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
            "inquiredSpectrum": [
                {
                    "highFrequency": 3670000000,
                    "lowFrequency": 3650000000
                }
            ]
        }
    ]
}
2018-12-13T08:00:13.608Z - INFO - The requested spectrum is in the range, SpectrumInquiry response code is 0
2018-12-13T08:00:13.611Z - INFO - engine sent successfully, the response to CBRS : {
```



```
"spectrumInquiryResponse": [
  {
    "availableChannel": [
      {
        "channelType": "GAA",
        "frequencyRange": {
          "highFrequency": 3670000000,
          "lowFrequency": 3650000000
        },
        "maxEirp": -13,
        "ruleApplied": "FCC_PART_96"
      }
    ],
    "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
    "response": {
      "responseCode": 0
    }
  }
]
```

2018-12-13T08:00:13.701Z - INFO - grant request from CBRS : {

```
"grantRequest": [
  {
    "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
    "operationParam": {
      "maxEirp": -13,
      "operationFrequencyRange": {
        "highFrequency": 3670000000,
        "lowFrequency": 3650000000
      }
    }
  }
]
```

2018-12-13T08:00:13.707Z - INFO - engine sent successfully, the response to CBRS : {

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



```
"cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
"channelType": "GAA",
"grantExpireTime": "2018-12-20T08:00:13Z",
"grantId": "231017097",
"heartbeatInterval": 60,
"response": {
  "responseCode": 0
}
}
]
}
2018-12-13T08:00:13.773Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "231017097",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-12-13T08:00:13.782Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "231017097",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-13T08:03:33Z"
    }
  ]
}
2018-12-13T08:01:09.233Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
```



```
        "grantId": "231017097",
        "grantRenew": false,
        "operationState": "AUTHORIZED"
    }
]
}
2018-12-13T08:01:09.242Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "231017097",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-13T08:04:29Z"
    }
  ]
}
2018-12-13T08:02:04.381Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "231017097",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-13T08:02:04.390Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "231017097",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-13T08:05:24Z"
```



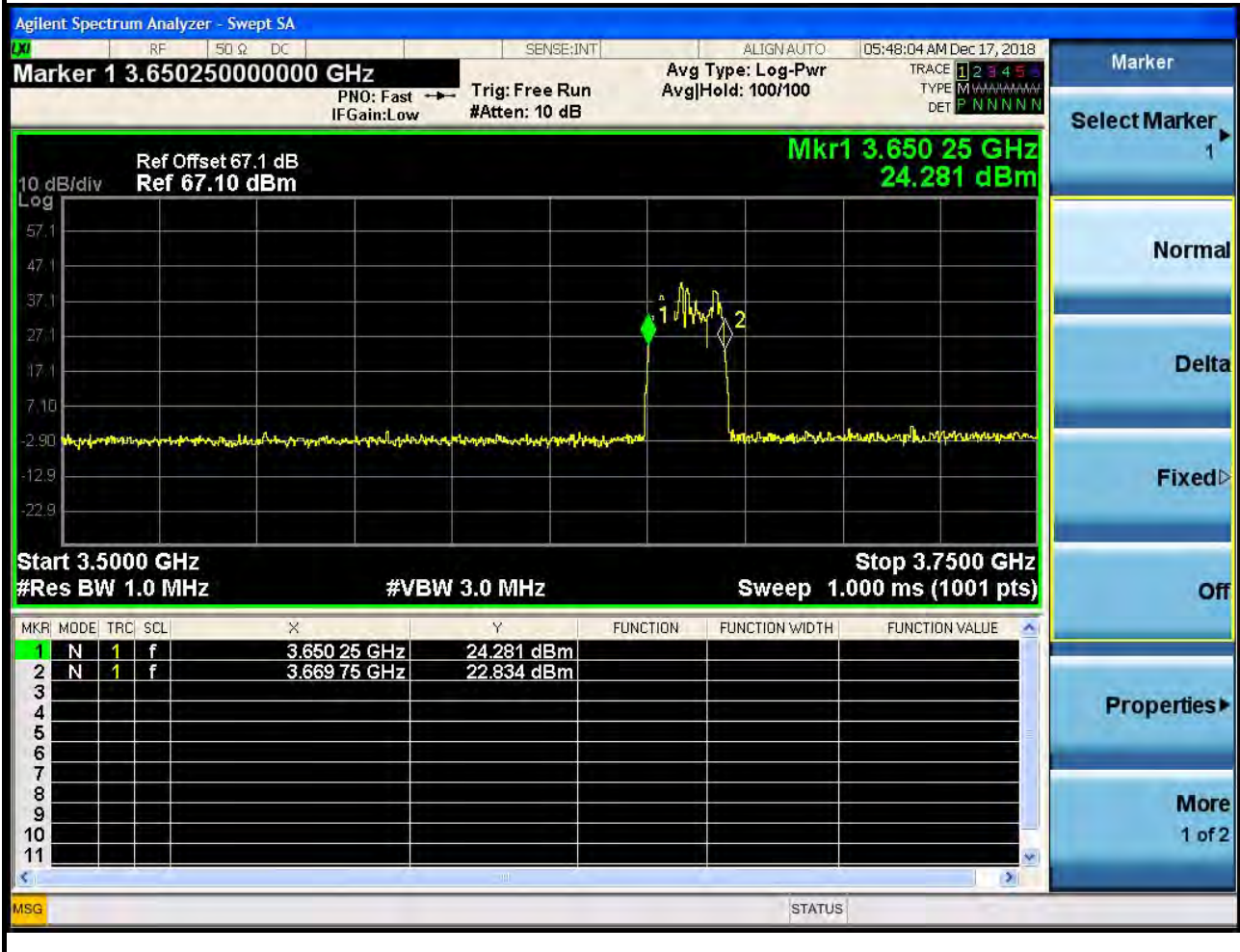
```
    }
  ]
}
2018-12-13T08:02:58.726Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "231017097",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-13T08:02:58.733Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "231017097",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-12-13T08:06:18Z"
    }
  ]
}
2018-12-13T08:03:54.161Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
      "grantId": "231017097",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-12-13T08:03:54.171Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
```



```
{
  "cbsdId": "QWP-30450MMock-SAS0a003e6070a5",
  "grantId": "231017097",
  "response": {
    "responseCode": 0
  },
  "transmitExpireTime": "2018-12-13T08:07:14Z"
}
]
```

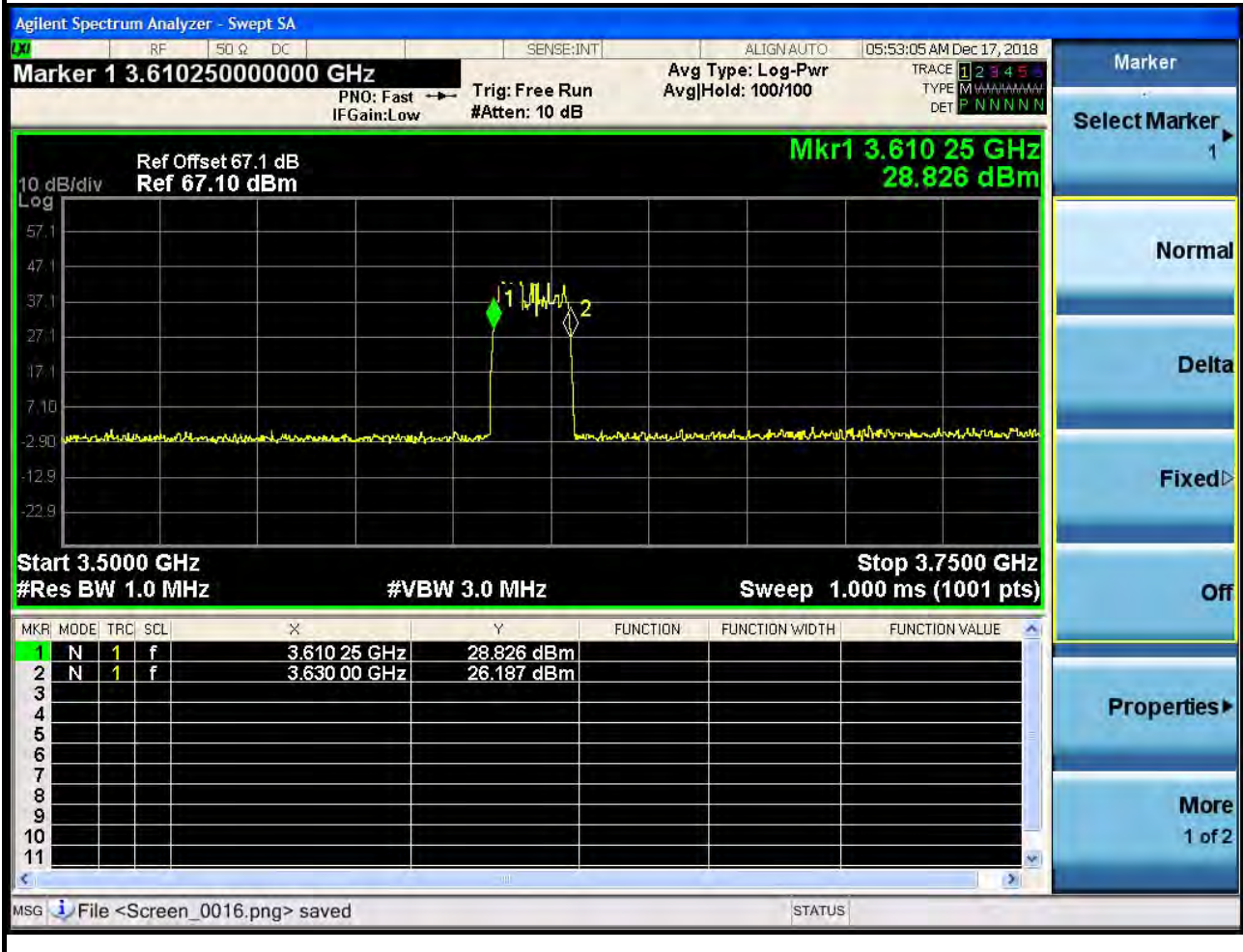


RF measurement plot for WINNF.FT.D.HBT.2 Test Case ID\_CBSD1





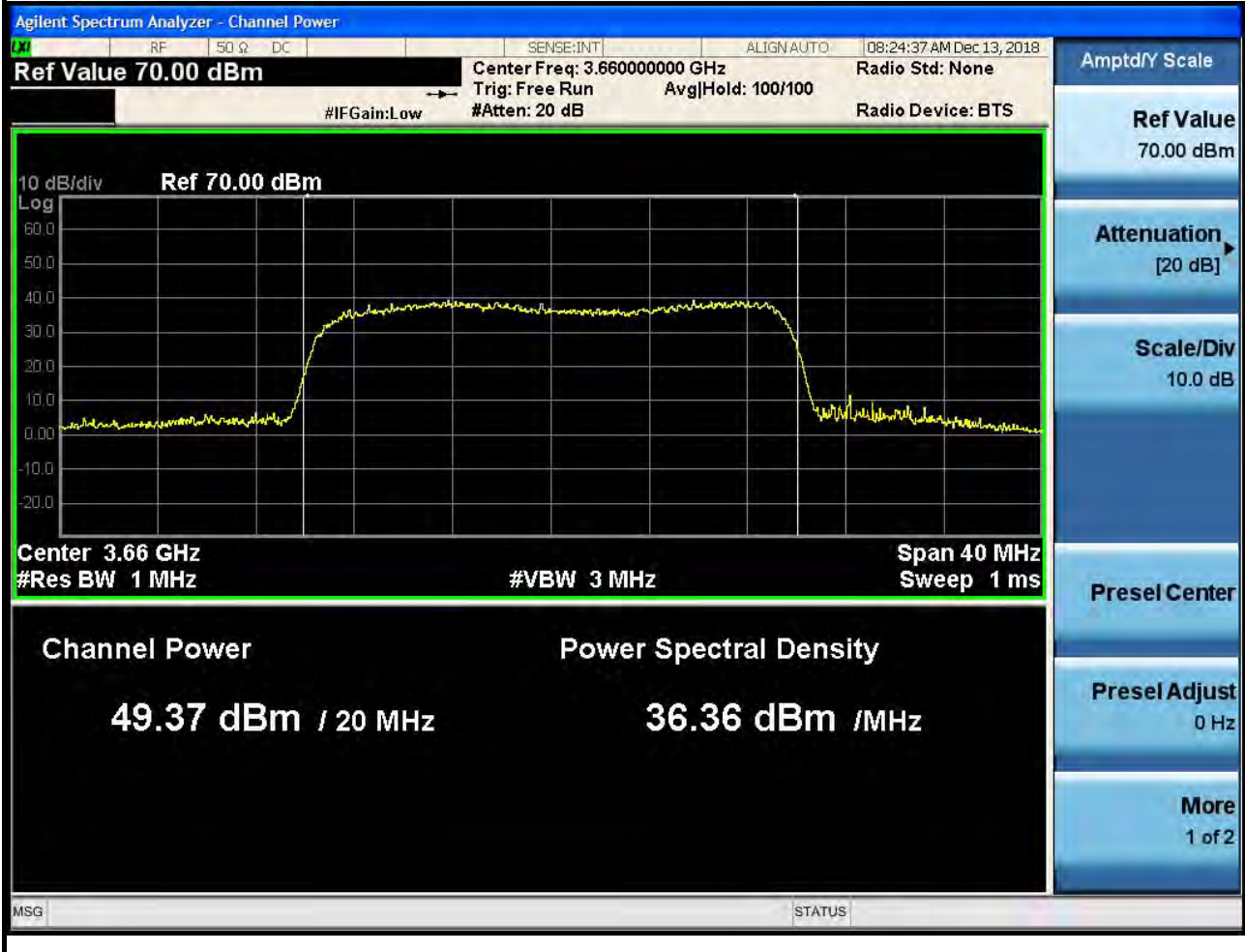
RF measurement plot for WINNF.FT.D.HBT.2 Test Case ID\_CBSD2





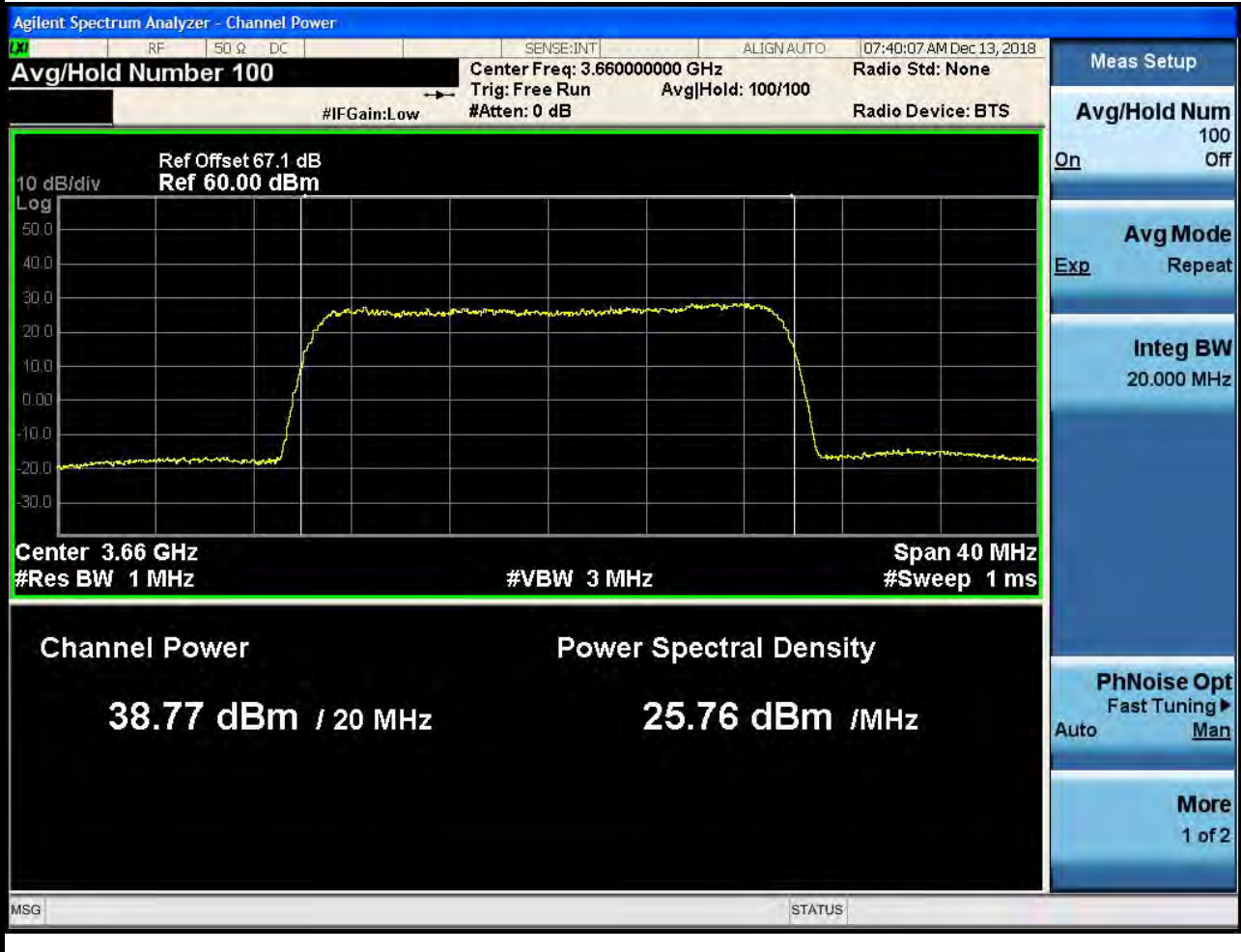


RF measurement plot for WINNF.PT.C.HBT Test Case ID\_BW20M\_Grant maxEirp 37



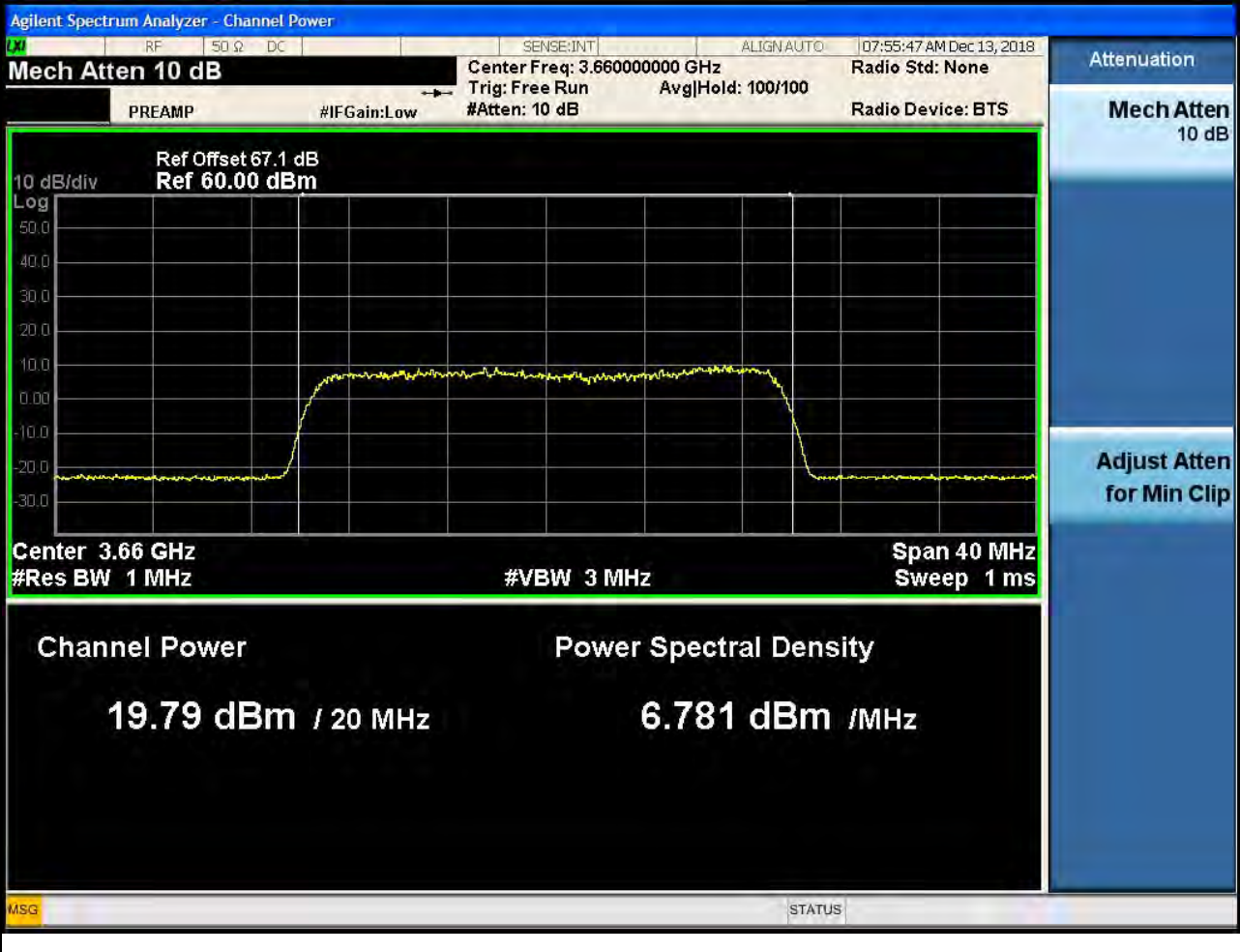


RF measurement plot for WINNF.PT.C.HBT Test Case ID\_BW20M\_Grant maxEirp 27





RF measurement plot for WINNF.PT.C.HBT Test Case ID\_BW20M\_Grant maxEirp 7





RF measurement plot for WINNF.PT.C.HBT Test Case ID\_BW20M\_Grant maxEirp -13





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

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

ip.addr==192.168.1.3 &&ip.addr==192.168.1.9 &&ssl

Time	Source	Destination	Protocol	Info
2018-12-17 08:16:38	192.168.1.9	192.168.1.3	TLSv1.2	Client Hello
2018-12-17 08:16:38	192.168.1.3	192.168.1.9	TLSv1.2	Server Hello
2018-12-17 08:16:38	192.168.1.3	192.168.1.9	TLSv1.2	Certificate, Server Key Exchange, Certificate R
2018-12-17 08:16:38	192.168.1.9	192.168.1.3	TLSv1.2	Certificate [TCP segment of a reassembled PDU]
2018-12-17 08:16:38	192.168.1.9	192.168.1.3	TLSv1.2	Client Key Exchange, Certificate Verify, Change
2018-12-17 08:16:38	192.168.1.3	192.168.1.9	TLSv1.2	New Session Ticket, Change Cipher Spec, Encrypt
2018-12-17 08:16:38	192.168.1.9	192.168.1.3	TLSv1.2	Application Data
2018-12-17 08:16:38	192.168.1.3	192.168.1.9	TLSv1.2	Application Data
2018-12-17 08:16:38	192.168.1.3	192.168.1.9	TLSv1.2	Application Data, Application Data, Application
2018-12-17 08:16:38	192.168.1.9	192.168.1.3	TLSv1.2	Encrypted Alert
2018-12-17 08:17:39	192.168.1.9	192.168.1.3	TLSv1.2	Client Hello
2018-12-17 08:17:39	192.168.1.3	192.168.1.9	TLSv1.2	Server Hello

Frame 162: 2962 bytes on wire (23696 bits), 2962 bytes captured (23696 bits) on interface 0

- Ethernet II, Src: Dell\_9f:bd:03 (00:26:b9:9f:bd:03), Dst: PcsCompu\_73:d7:8e (08:00:27:73:d7:8e)
- Internet Protocol Version 4, Src: 192.168.1.3, Dst: 192.168.1.9
- Transmission Control Protocol, Src Port: 5000, Dst Port: 60564, 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: 30e19c564e24e63153ae28b1795fe4a37633a7bcd220c967...
    - Session ID Length: 0
    - Cipher Suite: TLS\_ECDHE\_RSA\_WITH\_AES\_128\_GCM\_SHA256 (0xc02f)



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

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

ip.addr==192.168.1.3 &&ip.addr==192.168.1.9 &&ssl

Time	Source	Destination	Protocol	Info
2018-12-17 08:25:01	192.168.1.9	192.168.1.3	TLSv1.2	Client Hello
2018-12-17 08:25:01	192.168.1.3	192.168.1.9	TLSv1.2	Server Hello
2018-12-17 08:25:01	192.168.1.3	192.168.1.9	TLSv1.2	Certificate, Server Key Exchange, Certificate R
2018-12-17 08:25:01	192.168.1.9	192.168.1.3	TLSv1.2	Certificate [TCP segment of a reassembled PDU]
2018-12-17 08:25:01	192.168.1.9	192.168.1.3	TLSv1.2	Client Key Exchange, Certificate Verify, Change
2018-12-17 08:25:01	192.168.1.3	192.168.1.9	TLSv1.2	New Session Ticket, Change Cipher Spec, Encrypt
2018-12-17 08:25:06	192.168.1.9	192.168.1.3	TLSv1.2	Client Hello
2018-12-17 08:25:06	192.168.1.3	192.168.1.9	TLSv1.2	Server Hello
2018-12-17 08:25:06	192.168.1.3	192.168.1.9	TLSv1.2	Certificate, Server Key Exchange, Certificate R
2018-12-17 08:25:06	192.168.1.9	192.168.1.3	TLSv1.2	Certificate [TCP segment of a reassembled PDU]
2018-12-17 08:25:06	192.168.1.9	192.168.1.3	TLSv1.2	Client Key Exchange, Certificate Verify, Change
2018-12-17 08:25:06	192.168.1.3	192.168.1.9	TLSv1.2	New Session Ticket, Change Cipher Spec, Encrypt

▶ Frame 142: 2962 bytes on wire (23696 bits), 2962 bytes captured (23696 bits) on interface 0  
 ▶ Ethernet II, Src: Dell\_9f:bd:03 (00:26:b9:9f:bd:03), Dst: PcsCompu\_73:d7:8e (08:00:27:73:d7:8e)  
 ▶ Internet Protocol Version 4, Src: 192.168.1.3, Dst: 192.168.1.9  
 ▶ Transmission Control Protocol, Src Port: 5000, Dst Port: 60638, 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: 2417594699d7a42216e32d1ec1514af4d1948e456de549ad...
  - Session ID Length: 0
  - Cipher Suite: TLS\_ECDHE\_RSA\_WITH\_AES\_128\_GCM\_SHA256 (0xc02f)



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

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

ip.addr==192.168.1.3 &&ip.addr==192.168.1.9 &&ssl

Time	Source	Destination	Protocol	Info
2018-12-17 08:42:28	192.168.1.9	192.168.1.3	TLSv1.2	Client Hello
2018-12-17 08:42:28	192.168.1.3	192.168.1.9	TLSv1.2	Server Hello
2018-12-17 08:42:28	192.168.1.3	192.168.1.9	TLSv1.2	Certificate, Server Key Exchange, Certificate R
2018-12-17 08:42:28	192.168.1.9	192.168.1.3	TLSv1.2	Certificate [TCP segment of a reassembled PDU]
2018-12-17 08:42:28	192.168.1.9	192.168.1.3	TLSv1.2	Client Key Exchange, Certificate Verify, Change
2018-12-17 08:42:28	192.168.1.3	192.168.1.9	TLSv1.2	New Session Ticket, Change Cipher Spec, Encrypt
2018-12-17 08:42:37	192.168.1.9	192.168.1.3	TLSv1.2	Client Hello
2018-12-17 08:42:38	192.168.1.3	192.168.1.9	TLSv1.2	Server Hello
2018-12-17 08:42:38	192.168.1.3	192.168.1.9	TLSv1.2	Certificate, Server Key Exchange, Certificate R
2018-12-17 08:42:38	192.168.1.9	192.168.1.3	TLSv1.2	Certificate [TCP segment of a reassembled PDU]
2018-12-17 08:42:38	192.168.1.9	192.168.1.3	TLSv1.2	Client Key Exchange, Certificate Verify, Change
2018-12-17 08:42:38	192.168.1.3	192.168.1.9	TLSv1.2	New Session Ticket, Change Cipher Spec, Encrypt

▶ Frame 147: 2962 bytes on wire (23696 bits), 2962 bytes captured (23696 bits) on interface 0  
 ▶ Ethernet II, Src: Dell\_9f:bd:03 (00:26:b9:9f:bd:03), Dst: PcsCompu\_73:d7:8e (08:00:27:73:d7:8e)  
 ▶ Internet Protocol Version 4, Src: 192.168.1.3, Dst: 192.168.1.9  
 ▶ Transmission Control Protocol, Src Port: 5000, Dst Port: 60698, 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: 9b2e1687c99208901c10085801b299cc8ba18f104fa47271...
  - 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**

The screenshot shows the Wireshark interface with a packet capture list and a detailed view of a selected packet. The packet list shows several TLSv1.2 messages between 192.168.1.9 and 192.168.1.3. The detailed view shows the structure of the selected packet, including Ethernet II, Internet Protocol Version 4, Transmission Control Protocol, and the Secure Sockets Layer (SSL) handshake protocol.

Time	Source	Destination	Protocol	Info
2018-12-17 08:50:07	192.168.1.9	192.168.1.3	TLSv1.2	Client Hello
2018-12-17 08:50:07	192.168.1.3	192.168.1.9	TLSv1.2	Server Hello
2018-12-17 08:50:07	192.168.1.3	192.168.1.9	TLSv1.2	Certificate, Server Key Exchange, Certificate R
2018-12-17 08:50:07	192.168.1.9	192.168.1.3	TLSv1.2	Certificate [TCP segment of a reassembled PDU]
2018-12-17 08:50:07	192.168.1.9	192.168.1.3	TLSv1.2	Client Key Exchange, Certificate Verify, Change
2018-12-17 08:50:07	192.168.1.3	192.168.1.9	TLSv1.2	New Session Ticket, Change Cipher Spec, Encrypt
2018-12-17 08:50:12	192.168.1.9	192.168.1.3	TLSv1.2	Client Hello
2018-12-17 08:50:12	192.168.1.3	192.168.1.9	TLSv1.2	Server Hello
2018-12-17 08:50:12	192.168.1.3	192.168.1.9	TLSv1.2	Certificate, Server Key Exchange, Certificate R
2018-12-17 08:50:12	192.168.1.9	192.168.1.3	TLSv1.2	Certificate [TCP segment of a reassembled PDU]
2018-12-17 08:50:12	192.168.1.9	192.168.1.3	TLSv1.2	Client Key Exchange, Certificate Verify, Change
2018-12-17 08:50:12	192.168.1.3	192.168.1.9	TLSv1.2	New Session Ticket, Change Cipher Spec, Encrypt

▶ Frame 77: 2962 bytes on wire (23696 bits), 2962 bytes captured (23696 bits) on interface 0  
 ▶ Ethernet II, Src: Dell\_9f:bd:03 (00:26:b9:9f:bd:03), Dst: PcsCompu\_73:d7:8e (08:00:27:73:d7:8e)  
 ▶ Internet Protocol Version 4, Src: 192.168.1.3, Dst: 192.168.1.9  
 ▶ Transmission Control Protocol, Src Port: 5000, Dst Port: 60718, 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: 3e3d54853c8dcb170c024568d8e7ea12949f9fc70652e99a...
  - 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

ip.addr==192.168.1.3 &&ip.addr==192.168.1.9 &&ssl

Time	Source	Destination	Protocol	Info
2018-12-17 08:52:23	192.168.1.9	192.168.1.3	TLSv1.2	Client Hello
2018-12-17 08:52:23	192.168.1.3	192.168.1.9	TLSv1.2	Server Hello
2018-12-17 08:52:23	192.168.1.3	192.168.1.9	TLSv1.2	Certificate, Server Key Exchange, Certificate R
2018-12-17 08:52:23	192.168.1.9	192.168.1.3	TLSv1.2	Certificate [TCP segment of a reassembled PDU]
2018-12-17 08:52:23	192.168.1.9	192.168.1.3	TLSv1.2	Client Key Exchange, Certificate Verify, Change
2018-12-17 08:52:23	192.168.1.3	192.168.1.9	TLSv1.2	New Session Ticket, Change Cipher Spec, Encrypt
2018-12-17 08:52:31	192.168.1.9	192.168.1.3	TLSv1.2	Client Hello
2018-12-17 08:52:31	192.168.1.3	192.168.1.9	TLSv1.2	Server Hello
2018-12-17 08:52:31	192.168.1.3	192.168.1.9	TLSv1.2	Certificate, Server Key Exchange, Certificate R
2018-12-17 08:52:31	192.168.1.9	192.168.1.3	TLSv1.2	Certificate [TCP segment of a reassembled PDU]
2018-12-17 08:52:31	192.168.1.9	192.168.1.3	TLSv1.2	Client Key Exchange, Certificate Verify, Change
2018-12-17 08:52:31	192.168.1.3	192.168.1.9	TLSv1.2	New Session Ticket, Change Cipher Spec, Encrypt

- ▶ Frame 50: 2962 bytes on wire (23696 bits), 2962 bytes captured (23696 bits) on interface 0
- ▶ Ethernet II, Src: Dell\_9f:bd:03 (00:26:b9:9f:bd:03), Dst: PcsCompu\_73:d7:8e (08:00:27:73:d7:8e)
- ▶ Internet Protocol Version 4, Src: 192.168.1.3, Dst: 192.168.1.9
- ▶ Transmission Control Protocol, Src Port: 5000, Dst Port: 60726, 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: 59b4d1f752d5752f6a9d14d80fed6b8b1ed0ea6c74fed177...
      - Session ID Length: 0
      - Cipher Suite: TLS\_ECDHE\_RSA\_WITH\_AES\_128\_GCM\_SHA256 (0xc02f)



CRL and OCSP Verify Plots for WINNF.FT.C.SCS.2 Test Case ID

No.	Time	Source	Destination	Protocol	Length	Info
16	2018-12-17 08:25:02.811466287	192.168.1.9	192.168.1.5	OCSP	296	Request
18	2018-12-17 08:25:02.817579338	192.168.1.5	192.168.1.9	OCSP	3697	Response
37	2018-12-17 08:25:07.895749635	192.168.1.9	192.168.1.5	OCSP	296	Request
39	2018-12-17 08:25:07.901441818	192.168.1.5	192.168.1.9	OCSP	3697	Response

Frame 16: 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: AsustekC\_4e:9e:dc (c8:60:00:4e:9e:dc)
- Internet Protocol Version 4, Src: 192.168.1.9, Dst: 192.168.1.5
- Transmission Control Protocol, Src Port: 40402, 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: ab2b204282381483787e5c2dc186c23a5c179f4b
            - issuerKeyHash: eb4924b18883e70f52e7a8f2f71e7822dbd915f8
            - serialNumber: 17542170816009865400