



WINNF-TS-0122 TEST REPORT

FCC ID : Z8H89FT0060

Equipment : 3 GHz cnRanger 201 SM

Brand Name : Cambium Networks

Model Name : 3 GHz cnRanger 201 SM

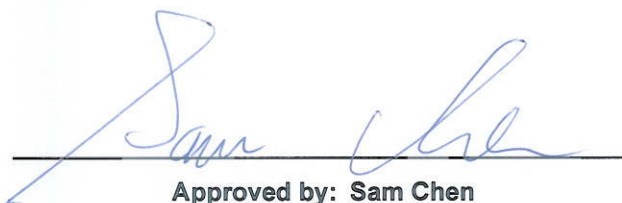
Applicant : Cambium Networks Inc.
3800 Golf Road, Suite 360 Rolling Meadows, IL
60008, USA

Manufacturer : Cambium Networks, Ltd.
Ashburton, TQ13 7UP, UK

Standard : WINNF-TS-0122 Version V1.0.1

The product was received on Jun. 16, 2020, and testing was started from Aug. 24, 2020 and completed on Aug. 25, 2020. 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.



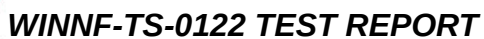
Approved by: Sam Chen

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TEL : 886-3-656-9065
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Report Template No.: CB-A18_4 Ver1.0

Summary of Test Result

Protocol Test Summary

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	-
3.1	6.1.4.1.2	-	X	C1	WINNF.FT.D.REG.2	Domain Proxy Multi-Step registration	PASS	-
-	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	-
3.2	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	-
3.3	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	-
3.4	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	-
3.5	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	-
3.6	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	-
3.7	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	-
3.8	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	-
3.9	6.3.4.2.1	X	X	M	WINNF.FT.C.GRA.1	Unsuccessful Grant responseCode=400 (INTERFERENCE)	PASS	-
3.10	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	-
3.11	6.4.4.1.2	-	X	M	WINNF.FT.D.HBT.2	Domain Proxy Heartbeat Success Case (first Heartbeat Response)	PASS	-
3.12	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	-
3.13	6.4.4.2.3	X	X	M	WINNF.FT.C.HBT.5	Heartbeat responseCode=501 (SUSPENDED_GRANT) in First Heartbeat Response	PASS	-
3.14	6.4.4.2.4	X	X	M	WINNF.FT.C.HBT.6	Heartbeat responseCode=501 (SUSPENDED_GRANT) in Subsequent Heartbeat Response	PASS	-
3.15	6.4.4.2.5	X	X	M	WINNF.FT.C.HBT.7	Heartbeat responseCode=502 (UNSYNC_OP_PARAM)	PASS	-
3.16	6.4.4.2.6	-	X	M	WINNF.FT.D.HBT.8	Domain Proxy Heartbeat responseCode=500 (TERMINATED_GRANT)	PASS	-
3.17	6.4.4.3.1	X	X	M	WINNF.FT.C.HBT.9	Heartbeat Response Absent (First Heartbeat)	PASS	-
3.18	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	-
3.19	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	-
3.20	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	-
3.21	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	-
3.22	6.8.4.1.1	X	X	M	WINNF.FT.C.SCS.1	Successful TLS connection between UUT and SAS Test Harness	PASS	-
3.23	6.8.4.2.1	X	X	M	WINNF.FT.C.SCS.2	TLS failure due to revoked certificate	PASS	-
3.24	6.8.4.2.2	X	X	M	WINNF.FT.C.SCS.3	TLS failure due to expired server certificate	PASS	-
3.25	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	-
3.26	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	-
3.27	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 C1, C3 and C4.

Time Test for Getting Grant Summary

Trail	Time limit	Monitoring time	Measured result	Verdict	Remark
1	1 second	10 seconds	0.075 second	PASS	-



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: Sam Chen

Report Producer: Cindy Peng

1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature of Equipment Under Test	
EUT Type	CPE-CBSD
Power Type	From PoE
Category of EUT	☐ Category A ☒ Category B
Professional Installation	☒ Yes ☐ No
EUT in Test ID	☒ EUT with Domain Proxy ☐ EUT without Domain Proxy
CBSD Hardware Version	N/A
CBSD Software Version	2.0-cbrs-reg-a4
CBSD Firmware Version	N/A
Domain Proxy Hardware Version	N/A
Domain Proxy Software Version	12.6
Domain Proxy Firmware Version	N/A

Note: The above information was declared by manufacturer.



1.2 Accessories

N/A

1.3 Support Equipment

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	WLAN AP	ASUS	RT-AX88U	MSQ-RTAXHP00
B	Switch	Panasonic	Switch-S9GPWR	N/A
C	Notebook (Domain Proxy)	ASUS	B500-P45VA-0391A321 0M	N/A
D	Notebook (BTS SAS)	DELL	E4300	N/A
E	Notebook (CPE SAS)	DELL	E4300	N/A
F	Base Transceiver Station	Ruckus	Q410	S9GQ410US01
G	Desktop PC (EPC)	Shuttle	XH110G	N/A
H	Notebook	DELL	E4300	N/A
I	Notebook	DELL	E4300	N/A

1.4 Testing Location

Testing Location				
☐	HWA YA	ADD : No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL : 886-3-327-3456 FAX : 886-3-327-0973		
☒	JHUBEI	ADD : No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C. TEL : 886-3-656-9065 FAX : 886-3-656-9085		
Test Condition		Test Site No.	Test Engineer	Test Environment
RF Conducted		TH01-CB	Jeff Wu	22~25°C / 60~65%
Test Date				
Aug. 24, 2020~Aug. 25, 2020				

Test site Designation No. TW0006 with FCC.

Test site registered number IC 4086D with Industry Canada.

2 Measurement Environment

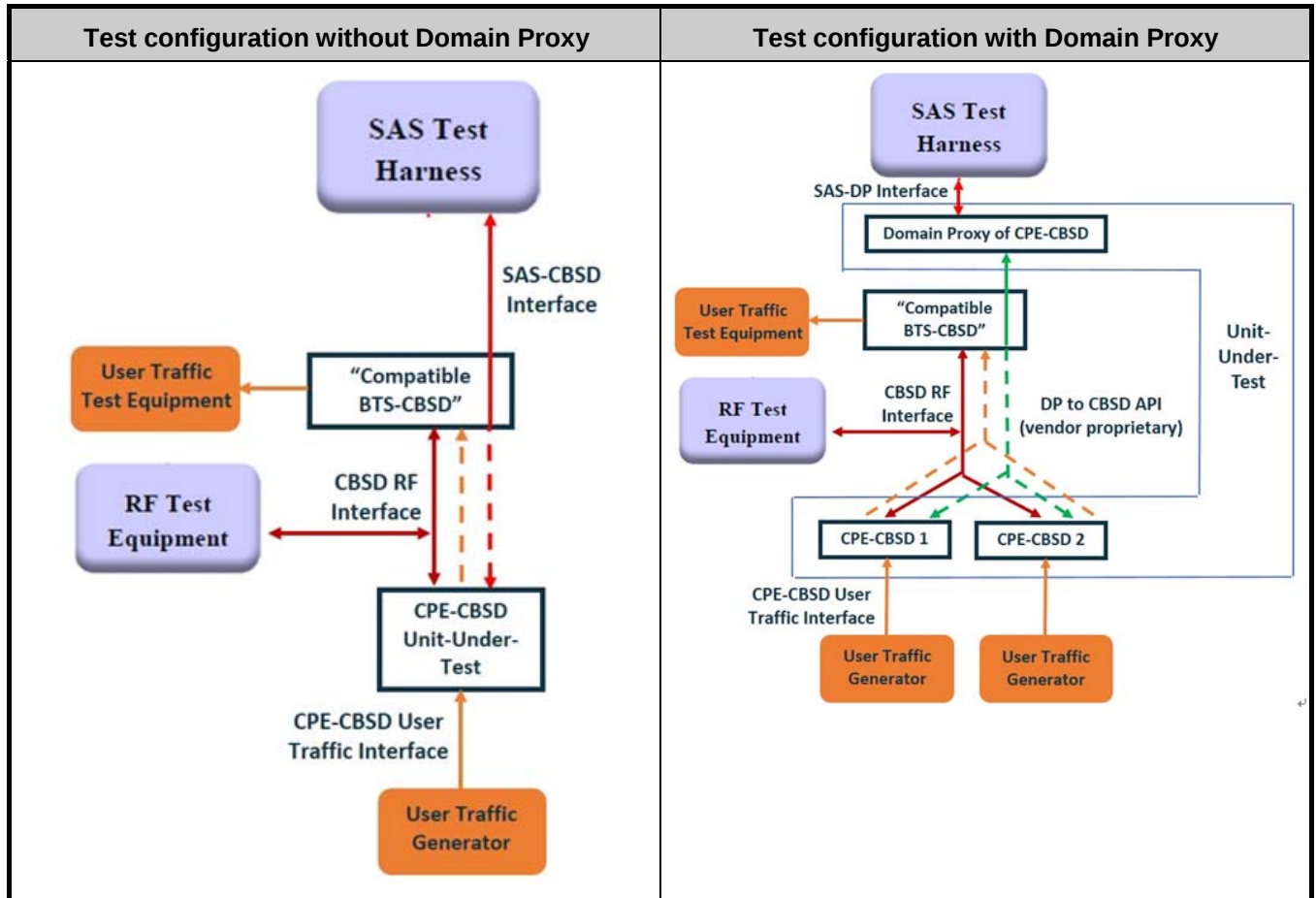
Measurement Environment Information	
Test Harness version	1.0.0.3
Operating System	win7
TLS version	1.2
Python	2.7.16

2.1 Conditional Test Case

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

Note: The above information was declared by manufacturer.

2.2 Test Configuration



2.3 Standards

[n.1]. FCC KDB 940660 D02 CPE-CBSD Handshake Procedures v02

[n.2]. WINNF-TS-0122 Version 1.0.1, "Conformance and Performance Test Technical Specification; CBSD/DP as Unit Under Test (UUT)"

2.4 Protocol test Procedure

The test cases for SAS<->CBSD protocol in [n.2] apply for CPE-CBSD device type. Following the [n.1], when running the test cases in [n.2] for CPE-CBSD device type, verify that

1. CPE-CBSD can begin transmitting its RF only after receiving radio signal from its compatible BTS-CBSD.
2. For all CPE-CBSD RF transmissions, the CPE-CBSD UUT radio frequency range and bandwidth are less or equal to the frequency range and bandwidth of its compatible BTS-CBSD.
3. Judging the last execution step appearing in [n.2] with "User data traffics" instead of "RF transmission."

2.5 Time Test for Getting Grant Procedure

Use the WinnForum SAS Harness run test case WINNF.FT.C.GRA.1. Without answering the last question in WINNF.FT.C.GRA.1 will keep UUT's grant request being rejected, then measure the time.

3 Test Result of Protocol

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.2 - Domain Proxy Multi-Step registration

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

3.2 WINNF.FT.D.REG.6 - Domain Proxy Single-Step registration for CBSD with CPI signed data

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

3.3 WINNF.FT.D.REG.9 - Domain Proxy Missing Required parameters (responseCode 102)

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

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

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

3.5 WINNF.FT.D.REG.13 - Domain Proxy Invalid parameters (responseCode 103)

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: • UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness • UUT is in the Unregistered state	--	--
2	The DP with two CBSDs sends a Registration request in the form of one 2-element Array or as individual messages to SAS Test Harness.	--	--
3	SAS Test Harness sends a CBSD Registration Response in the form of one 2-element Array or as individual messages as follows: – SAS response does not include a <i>cbstdId</i>. – <i>responseCode</i> = R for CBSD1 and CBSD2	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (<i>responseCode</i> R1=0 for CBSD1 and R2=103 for CBSD2) to further request messages from the UUT.	--	--
5	Monitor the RF output of each UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: • CPE-CBSD UUT shall not transmit user traffic	PASS	--

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

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

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

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: • UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness • UUT is in the Unregistered state	--	--
2	The DP with two CBSDs sends a Registration request in the form of one 2-element Array or as individual messages to SAS Test Harness.	--	--
3	SAS Test Harness sends a CBSD Registration Response in the form of one 2-element Array or as individual messages as follows: – SAS response does not include a <i>cbstdId</i>. – <i>responseCode</i> = <i>Ri</i> for CBSD1 and CBSD2	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (<i>responseCode (Ri) = 100</i> 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: • CPE-CBSD UUT shall not transmit user traffic	PASS	--

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

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

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

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

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

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

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

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

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



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

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

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

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

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

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

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

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

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

3.16 WINNF.FT.D.HBT.8 - Domain Proxy Heartbeat responseCode=500 (TERMINATED_GRANT)

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

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

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

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

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

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: • UUT has registered successfully with SAS Test Harness • UUT has a valid single grant as follows: ○ valid <i>cbsdId</i> = C ○ valid <i>grantId</i> = G ○ grant is for frequency range F, power P ○ <i>grantExpireTime</i> = UTC time greater than duration of the test • UUT is in AUTHORIZED state and is transmitting within the grant bandwidth F on RF interface	--	--
2	UUT sends a Heartbeat Request message. Verify Heartbeat Request message is sent within the latest specified <i>heartbeatInterval</i> , and is formatted correctly, including: • <i>cbsdId</i> = C • <i>grantId</i> = G • <i>operationState</i> = "AUTHORIZED"	PASS	--
3	SAS Test Harness sends a Heartbeat Response message, with the following parameters: • <i>cbsdId</i> = C • <i>grantId</i> = G • <i>transmitExpireTime</i> = current UTC time + 200 seconds • <i>responseCode</i> = 0	--	--
4	After completion of Step 3, SAS Test Harness does not respond to any further messages from UUT	--	--
5	Monitor the RF output of the UUT. Verify: • UUT shall stop all transmission on RF interface within (<i>transmitExpireTime</i> + 60 seconds), using the <i>transmitExpireTime</i> sent in Step 3.	PASS	--

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

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

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

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

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

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

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

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

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

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

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

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

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

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

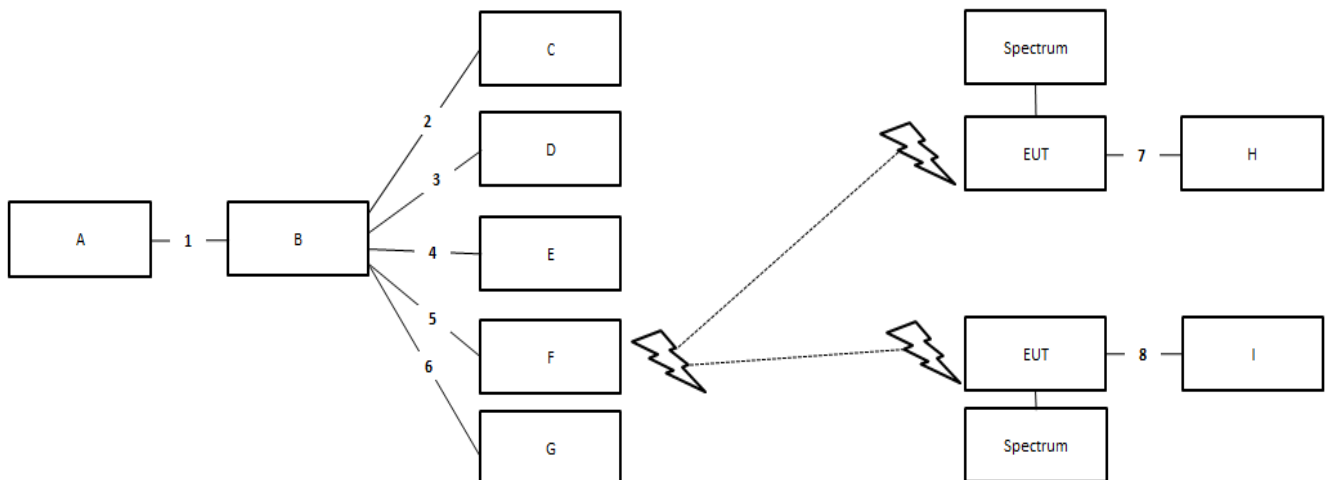
#	Test Execution Steps	Results	
1	UUT shall start CBSD-SAS communication with the security procedures	PASS	--
2	- Make sure that UUT uses TLS v1.2 for security establishment. - Make sure UUT selects the correct cipher suite. - UUT shall use CRL or OCSP to verify the validity of the server certificate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

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

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

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

Items	Parameters
Maximum rated power (EIRP, dBm/MHz)	34 dBm/MHz
Transmit dynamic range (EIRP, dBm/MHz)	1 dB increments from -31 dBm/MHz to 34 dBm/MHz (66 steps)
Occupied bandwidth (OBW)	10 MHz
maxEirp values	34 dBm/MHz



Item	Connection	Shielded	Length
1	RJ-45 cable	No	1.5m
2	RJ-45 cable	No	1.5m
3	RJ-45 cable	No	1.5m
4	RJ-45 cable	No	1.5m
5	RJ-45 cable	No	1.5m
6	RJ-45 cable	No	1.5m
7	RJ-45 cable	No	1.5m
8	RJ-45 cable	No	1.5m

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	3655 MHz
Frequency Span	20 MHz
RBW / VBW	1 MHz / 3 MHz
Channel Power Meas Bandwidth	10 MHz
Sweep Time	1ms

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

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

Frequency	Bandwidth (MHz)	Antenna Gain (dBi)	Conducted PSD (dBm/MHz)	maxEirp (dBm/MHz)	Grant maxEirp (dBm/MHz)	Result
3655 MHz	10	21	7.991	28.99	34	PASS
3655 MHz	10	21	-19.57	1.43	2	PASS
3655 MHz	10	21	-52.38	-31.38	-31	PASS



4 Test Result of Time Test for Getting Grant

Refer as Appendix E



5 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. 24, 2020	Mar. 23, 2021	Conducted (TH01-CB)
Spectrum analyzer	Keysight	N9020A	MY55400138	10 Hz up to 26.5 GHz	Dec. 11, 2019	Dec. 10, 2020	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-06	1 GHz – 26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-07	1 GHz –26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-08	1 GHz –26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-09	1 GHz –26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz –26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-28	1 GHz –26.5 GHz	Nov. 18, 2019	Nov. 17, 2020	Conducted (TH01-CB)
RF Power Divider	MTJ	4 Way	DFS-01-DV-01	1GHz ~ 6GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH01-CB)
RF Power Divider	MTJ	2 Way	DFS-01-DV-02	1GHz ~ 6GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH01-CB)

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



6 Measurement Uncertainty

Test Items	Uncertainty	Remark
Conducted Emission	2.8 dB	Confidence levels of 95%

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

2020-08-24T07:08:39.410Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
 2020-08-24T07:08:39.410Z - INFO - the selected test from the user : WINNF.FT.D.REG.2 is starting now

2020-08-24T07:08:41.548Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "model": "tyndall201",
      "softwareVersion": "2.0-cbrs-reg-a4",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "58c17a2d49e2",
    "cpiSignatureData": {
      "digitalSignature":
        "bA0y6BLSOwf8MJWKybmYtZ5Oji9cwTYRmNh2idpQFDzx6CQp9bcVSIKjT6_mMdbhl24zPQSvfkZ61j
        mIBEEQXYLoLfmE-PQMJJZq728tBMDsGVMUDw5WG9o-dl-SI6laV5kM77p2OILo06B7GUC1ln_gE4iSg
        QNo0h8RIISYIrtznHtN_tqzJ0yfVqL7s3-QEz7MzET-URDvPiJ_3J1Zset69QXiuWT0UdzWLkXWGPn1Io
        Yc6noOjMs2hOjYpXoEPp-96v7_QuDNOi_d5l3yNDfYkfi3h8Tq6hcrSYtLEEh28IERbkhtpwM2WYC4TTq
        ZYdchcve4TfoFzsEcKEeZw",
      "encodedCpiSignedData":
        "eyJmY2NJZCI6Ilo4SDg5RIQwMDYwliwiY2JzZFNlcmIhbE51bWJlci6lU4YzE3YTJkNDIIMiIsImIuc3Rhb
        GxhdGlvblBhcmFtIjp7ImxhdGloZWRIIjo0MS41NDgyOSwibG9uZ2I0dWRlljotOTAuNjU5MTQslmhlaWdo
        dCI6MTAsImhlaWdodFR5cGUiOiJBTVMliwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UslmFudGVub
        mFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlsdCI6LTUsImFudGVubmFHYWluljoyMSwiYW50ZW5
        uYUJlYW13aWR0aCI6MzYwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRlc3
        RfQ1BJX0ZXNDYlLCJjcGlOYW1lIjoIdGVzdCI6ImIuc3RhbGxhZDZXJ0aWZpY2F0aW9uVGVltZSI6IjIwMjAt
        MDYtMDIUMTE6NDY6NDhln19",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fccId": "Z8H89FT0060",
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "testid-1"
  }
]
```

2020-08-24T07:08:41.579Z - INFO - Registration message contains cpiSignatureData
 2020-08-24T07:08:41.581Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
 2020-08-24T07:08:41.581Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
  "antennaAzimuth": 150,
  "heightType": "AMSL",
  "longitude": -90.65914,
  "height": 10,
  "indoorDeployment": false,
  "antennaBeamwidth": 360,
```

```

    "antennaDowntilt": -5,
    "latitude": 41.54829,
    "antennaGain": 21
  },
  "fccId": "Z8H89FT0060",
  "professionalInstallerData": {
    "cpiName": "test",
    "installCertificationTime": "2020-06-09T11:46:48Z",
    "cpild": "test_CPI_FW46"
  },
  "cbsdSerialNumber": "58c17a2d49e2"
}
2020-08-24T07:08:41.582Z - INFO - verified signature on cpiSignatureData
2020-08-24T07:08:41.586Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-08-24T07:08:41.589Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2020-08-24T07:08:41.930Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "E_UTRA"
      },
      "cbsdCategory": "B",
      "cbsdInfo": {
        "model": "tyndall201",
        "softwareVersion": "2.0-cbrs-reg-a4",
        "vendor": "Cambium Networks"
      },
      "cbsdSerialNumber": "58c17a2d4984",
      "cpiSignatureData": {
        "digitalSignature":
"np3xypDLMaZr3jkHk0ZTubI2Y3LvRwK3ZwZzTwjctdFowDnr3NKDSHy-AfspelpnyxAHGTU9QtnCgijqL3
0xUgadEtBYn5d2ok0MZpHHqqik1VtZDcdIj3YPB5BEit5LV3BbBmQPpW-cl6yCpR-RnwAt9sBiWQaFX
mfhuleIbWNhoe1Zc1XNdao5xvZ6cppFOn4bZLVmKf7GpRvgsoNqXlInGxj3PWGwQ8aDyE9OnVFxLMs
u51I6IMVklqX12pvk-9VrACaR-7a32ewaJbTudQtafNqu7OjbVZWwMGuwitE9nimuW3Acpi7S6T7ZE1Kt
5d9K0G1vQzswmwO_ZtpA",
        "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RIQwMDYwliwiY2JzZFNlcmIhbE51bWJlci6IjU4YzE3YTJkNDk4NCIsImhuc3R
hbGxhdGlvbBhcmFtIjtp7ImxhdGlvbWRlljo0MS41NDgyOSwibG9uZ2I0dWRlljotOTAuNjU5MTQsImhlaW
dodCI6MTAsImhlaWdodFR5cGUOiJBTVMlIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFudGV
ubmFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlsdCI6LTUsImFudGVubmFHYWluljoyMSwiYW50Z
W5uYUJlYW13aWR0aCI6MzYwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGljZCI6InRl
c3RfQ1BJX0ZXNDYiLCJjcGLOYW11IjoidGVzdCIsImhuc3RhbGxhZDZXJ0aWZpY2F0aW9uVGltZSI6IjlmMj
AtMDYtMDIUMTE6NDY6NDhaIn19",
      }
    }
  ]
}

```

```

        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fccId": "Z8H89FT0060",
      "measCapability": [
        "RECEIVED_POWER_WITHOUT_GRANT"
      ],
      "userId": "testid-1"
    }
  ]
}
2020-08-24T07:08:41.963Z - INFO - Registration message contains cpiSignatureData
2020-08-24T07:08:41.963Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2020-08-24T07:08:41.963Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
    "antennaAzimuth": 150,
    "heightType": "AMSL",
    "longitude": -90.65914,
    "height": 10,
    "indoorDeployment": false,
    "antennaBeamwidth": 360,
    "antennaDowntilt": -5,
    "latitude": 41.54829,
    "antennaGain": 21
  },
  "fccId": "Z8H89FT0060",
  "professionalInstallerData": {
    "cpiName": "test",
    "installCertificationTime": "2020-06-09T11:46:48Z",
    "cpild": "test_CPI_FW46"
  },
  "cbsdSerialNumber": "58c17a2d4984"
}
2020-08-24T07:08:41.964Z - INFO - verified signature on cpiSignatureData
2020-08-24T07:08:41.970Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-08-24T07:08:41.973Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2020-08-24T07:08:43.411Z - INFO - arrived to nstep starting question answer session with the technician
2020-08-24T07:08:43.411Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :
2020-08-24T07:09:49.164Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n
2020-08-24T07:09:49.164Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

```



2020-08-24T07:09:49.915Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2020-08-24T07:09:54.515Z - INFO - The final result of the test : WINNF.FT.D.REG.2 is - passed and :the additional comments for the current test are : There is RF transmission, but it's not user traffic.

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

2020-08-24T07:06:27.894Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
 2020-08-24T07:06:27.894Z - INFO - the selected test from the user : WINNF.FT.D.REG.6 is starting now

2020-08-24T07:06:29.200Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "model": "tyndall201",
      "softwareVersion": "2.0-cbrs-reg-a4",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "58c17a2d4984",
    "cpiSignatureData": {
      "digitalSignature":
"np3xypDLMaZr3jkHk0ZTubI2Y3LvrwK3ZwZzTwjctdFowDnr3NKDSHy-AfspelpnyxAHGtU9QtnCgiqjL3
0xUgadEtBYn5d2ok0MZpHHqk1VtZDcdIj3YPB5BEit5LZV3BbBmQPpW-cl6yCpR-RnwAt9sIBiWQaFX
mfhulelbWNhoe1Zc1XNdao5xvZ6cppFOn4bZLVMkf7GpRvgsoNqXlInGxj3PWGwQ8aDyE9OnVFxLMs
u51I6IMVklqX12pvk-9VrACaR-7a32ewaJbTudQtafNqu7OjbVZWwMGuwitE9nimuW3Acpi7S6T7ZE1Kt
5d9K0G1vQzswmwo_ZtpA",
      "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RIQwMDYwliwiY2JzZFNlcmIhE51bWJlci6lU4YzE3YTJkNDk4NCIsImIuc3R
hbGxhdGlvbiBhcmFtlj7ImxhdGlo0dWRlljo0MS41NDgyOSwibG9uZ2I0dWRlljotOTAuNjU5MTQsImhlaW
dodCI6MTAsImhlaWdodFR5cGUiOiJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFudGV
ubmFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlsdCI6LTUsImFudGVubmFHYWluljoyMSwiYW50Z
W5uYUJlYW13aWR0aCI6MzYwfSwichJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlZCI6InRI
c3RfQ1BJX0ZXNDYiLCJjcGLOYW1lIjoidGVzdCI6ImIuc3RhbGxhZDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMj
AtMDYtMDIUMTE6NDY6NDhaIn19",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fccId": "Z8H89FT0060",
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "testid-1"
  }
]
```

2020-08-24T07:06:29.216Z - INFO - Registration message contains cpiSignatureData
 2020-08-24T07:06:29.216Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
 2020-08-24T07:06:29.217Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
  "antennaAzimuth": 150,
  "heightType": "AMSL",
  "longitude": -90.65914,
  "height": 10,
  "indoorDeployment": false,
  "antennaBeamwidth": 360,
```

```

        "antennaDowntilt": -5,
        "latitude": 41.54829,
        "antennaGain": 21
    },
    "fccId": "Z8H89FT0060",
    "professionalInstallerData": {
        "cpiName": "test",
        "installCertificationTime": "2020-06-09T11:46:48Z",
        "cpild": "test_CPI_FW46"
    },
    "cbsdSerialNumber": "58c17a2d4984"
}
2020-08-24T07:06:29.263Z - INFO - verified signature on cpiSignatureData
2020-08-24T07:06:29.269Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-08-24T07:06:29.270Z - INFO - engine sent successfully, the response to CBRS : {
    "registrationResponse": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2020-08-24T07:06:29.476Z - INFO - registration request from CBRS : {
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "E_UTRA"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "model": "tyndall201",
                "softwareVersion": "2.0-cbrs-reg-a4",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "58c17a2d49e2",
            "cpiSignatureData": {
                "digitalSignature":
                "bA0y6BLSOwf8MJWKybmYtZ5Oji9cwTYRmNh2idpQFDzx6CQp9bcVSIKjT6_mMdbhl24zPQSVfkZ61j
                mIBEEQXYLoLfmE-PQMjZq728tBMDsGVMUDw5WG9o-dl-Sl6laV5kM77p2OILo06B7GUC1ln_gE4iSg
                QNo0h8RIISYIrtznHtN_tqzJ0yfVqL7s3-QEz7MzET-URDvPiJ_3J1Zset69QXiuWT0UdzWLkXWGPn1lo
                Yc6noOjMs2hOjjYpXoEPp-96v7_QuDN0i_d5l3yNDfYkfi3h8Tq6hcrSYtLEEh28IERbkhtpwM2WYC4TTq
                ZYdchcve4TfoFzsEcKEeZw",
                "encodedCpiSignedData":
                "eyJmY2NJZCI6llo4SDg5RIQwMDYwliwiY2JzZFNlcmIhbE51bWJlcil6ljU4YzE3YTJkNDIiMlslmIuc3Rhb
                GxhdGlhbGlhbmFtIjlp7ImxhdGl0dWRlljo0MS41NDgyOSwibG9uZ2l0dWRlljotOTAuNjU5MTQslmhlaWdo
                dCI6MTAsImhlaWdodFR5cGUoIjBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UslmFudGVub
                mFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlscCI6LTUslmFudGVubmFHYWluljoyMSwiYW50ZW5
                uYUJlYW13aWR0aCI6MzYwfSwicHJvZmVzc2l2bmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRlc3
                RfQ1BjX0ZlNDYlLCJjcGlOYW1lIjoiaGVzdCI6ImIuc3RhbGxhZDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMjA
                MDYtMDIUMTE6NDY6NDhaIn19",
            }
        }
    ]
}

```

```

        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fccId": "Z8H89FT0060",
      "measCapability": [
        "RECEIVED_POWER_WITHOUT_GRANT"
      ],
      "userId": "testid-1"
    }
  ]
}
2020-08-24T07:06:29.492Z - INFO - Registration message contains cpiSignatureData
2020-08-24T07:06:29.492Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2020-08-24T07:06:29.492Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
    "antennaAzimuth": 150,
    "heightType": "AMSL",
    "longitude": -90.65914,
    "height": 10,
    "indoorDeployment": false,
    "antennaBeamwidth": 360,
    "antennaDowntilt": -5,
    "latitude": 41.54829,
    "antennaGain": 21
  },
  "fccId": "Z8H89FT0060",
  "professionalInstallerData": {
    "cpiName": "test",
    "installCertificationTime": "2020-06-09T11:46:48Z",
    "cpild": "test_CPI_FW46"
  },
  "cbsdSerialNumber": "58c17a2d49e2"
}
2020-08-24T07:06:29.493Z - INFO - verified signature on cpiSignatureData
2020-08-24T07:06:29.499Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-08-24T07:06:29.500Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2020-08-24T07:06:30.895Z - INFO - arrived to nstep starting question answer session with the technician
2020-08-24T07:06:30.897Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :
2020-08-24T07:08:02.707Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n
2020-08-24T07:08:02.709Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :

```



2020-08-24T07:08:03.970Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n

2020-08-24T07:08:07.191Z - INFO - The final result of the test : WINNF.FT.D.REG.6 is - passed and :the additional comments for the current test are : There is RF transmission, but it's not user traffic.

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

2020-08-24T07:13:25.615Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
 2020-08-24T07:13:25.615Z - INFO - the selected test from the user : WINNF.FT.D.REG.9 is starting now

2020-08-24T07:13:27.174Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "model": "tyndall201",
      "softwareVersion": "2.0-cbrs-reg-a4",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "58c17a2d49e2",
    "cpiSignatureData": {
      "digitalSignature":
        "bA0y6BLSOwf8MJWKybmYtZ5Oji9cwTYRmNh2idpQFDzx6CQp9bcVSIKjT6_mMdbhl24zPQSvfkZ61j
        mIBEEQXYLoLfmE-PQMJJZq728tBMDsGVMUDw5WG9o-dl-SI6laV5kM77p2OILo06B7GUC1ln_gE4iSg
        QNo0h8RIISYIrtznHtN_tqzJ0yfVqL7s3-QEz7MzET-URDvPiJ_3J1Zset69QXiuWT0UdzWLkXWGPn1Io
        Yc6noOjMs2hOjYpXoEPp-96v7_QuDNOi_d5l3yNDfYkfi3h8Tq6hcrSYtLEEh28IERbkhtpwM2WYC4TTq
        ZYdchcve4TfoFzsEcKEeZw",
      "encodedCpiSignedData":
        "eyJmY2NJZCI6llo4SDg5RIQwMDYwliwiY2JzZFNlcmIhE51bWJlci6lU4YzE3YTJkNDIIMiIsImIuc3Rhb
        GxhdGlvblBhcmFtIjp7ImxhdGloZWRIljo0MS41NDgyOSwibG9uZ2I0dWRlljotOTAuNjU5MTQslmhlaWdo
        dCI6MTAsImhlaWdodFR5cGUiOiJBTVMliwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UslmFudGVub
        mFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlsdCI6LTUsImFudGVubmFHYWluljoyMSwiYW50ZW5
        uYUJlYW13aWR0aCI6MzYwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlZCI6InRlc3
        RfQ1BJX0ZXNDYiLCJjcGlOYW1lIjoIdGVzdCI6ImIuc3RhbGxhZDZXJ0aWZpY2F0aW9uVGlZSI6IjIwMjAt
        MDYtMDIUMTE6NDY6NDhln19",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fccId": "Z8H89FT0060",
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "testid-1"
  }
]
```

2020-08-24T07:13:27.207Z - INFO - Registration message contains cpiSignatureData
 2020-08-24T07:13:27.207Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
 2020-08-24T07:13:27.207Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
  "antennaAzimuth": 150,
  "heightType": "AMSL",
  "longitude": -90.65914,
  "height": 10,
  "indoorDeployment": false,
  "antennaBeamwidth": 360,
```

```

        "antennaDowntilt": -5,
        "latitude": 41.54829,
        "antennaGain": 21
    },
    "fccId": "Z8H89FT0060",
    "professionalInstallerData": {
        "cpiName": "test",
        "installCertificationTime": "2020-06-09T11:46:48Z",
        "cpild": "test_CPI_FW46"
    },
    "cbsdSerialNumber": "58c17a2d49e2"
}
2020-08-24T07:13:27.255Z - INFO - registration request from CBRS : {
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "E_UTRA"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "model": "tyndall201",
                "softwareVersion": "2.0-cbrs-reg-a4",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "58c17a2d4984",
            "cpiSignatureData": {
                "digitalSignature":
"np3xypDLMaZr3jkHk0ZTubI2Y3LvrvwK3ZwZzTwjctdFowDnr3NKDSHy-AfspelpnyxAHGTU9QtnCgijqjL3
0xUgadEtBYn5d2ok0MZpHHqqik1VtZDcdIj3YPB5BEit5LV3BbBmQPPW-cl6yCpR-RnwAt9sIBiWQaFX
mfhulelbWNhoe1Zc1XNdao5xvZ6cppFOn4bZLVMkf7GpRvgsoNqXlInGxj3PWGwQ8aDyE9OnVFXLMs
u51I6IMVklqX12pvk-9VrACaR-7a32ewaJbTUdQtafNqu7OjbVZWwMGUwitE9nimuW3Acpi7S6T7ZE1Kt
5d9K0G1vQzwsmwO_ZtpA",
                "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RIQwMDYwliwiY2JzZFNlcmIhE51bWJlciI6IjU4YzE3YTJkNDk4NCIsImIuc3R
hbGxhdGlvbiBhcmFtljp7ImxhdGloZWRIjo0MS41NDgyOSwibG9uZ2I0dWRlljotOTAuNjU5MTQsImhlaW
dodCI6MTAsImhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFudGV
ubmFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlsdCI6LTUsImFudGVubmFHYWluljoyMSwiYW50Z
W5uYUJlYW13aWR0aCI6MzYwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGljZCI6InRl
c3RfQ1BJX0Z0XNDYiLCJjcGLOYW11IjoidGVzdCI6ImIuc3RhbGxhZDZXJ0aWZpY2F0aW9uVGltZSI6IjlmMj
AtMDYtMDIUMTE6NDY6NDhaIn19",
                "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
            },
            "fccId": "Z8H89FT0060",
            "measCapability": [
                "RECEIVED_POWER_WITHOUT_GRANT"
            ],
            "userId": "testid-1"
        }
    ]
}
2020-08-24T07:13:27.278Z - INFO - verified signature on cpiSignatureData
2020-08-24T07:13:27.301Z - INFO - cpiSignatureData data successfully validated against jsonschema

```

```
2020-08-24T07:13:27.306Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "response": {
        "responseCode": 102
      }
    }
  ]
}
2020-08-24T07:13:27.331Z - INFO - Registration message contains cpiSignatureData
2020-08-24T07:13:27.331Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2020-08-24T07:13:27.331Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
    "antennaAzimuth": 150,
    "heightType": "AMSL",
    "longitude": -90.65914,
    "height": 10,
    "indoorDeployment": false,
    "antennaBeamwidth": 360,
    "antennaDowntilt": -5,
    "latitude": 41.54829,
    "antennaGain": 21
  },
  "fccId": "Z8H89FT0060",
  "professionalInstallerData": {
    "cpiName": "test",
    "installCertificationTime": "2020-06-09T11:46:48Z",
    "cpild": "test_CPI_FW46"
  },
  "cbsdSerialNumber": "58c17a2d4984"
}
2020-08-24T07:13:27.332Z - INFO - verified signature on cpiSignatureData
2020-08-24T07:13:27.338Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-08-24T07:13:27.339Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "response": {
        "responseCode": 102
      }
    }
  ]
}
2020-08-24T07:13:28.617Z - INFO - arrived to nstep starting question answer session with the technician
2020-08-24T07:13:28.618Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :
2020-08-24T07:14:35.461Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n
2020-08-24T07:14:35.463Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :
2020-08-24T07:14:36.676Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n
```



2020-08-24T07:14:43.240Z - INFO - The final result of the test : WINNF.FT.D.REG.9 is - passed and :the additional comments for the current test are : There is RF transmission, but it's not user traffic.



2020-08-24T07:17:48.259Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
2020-08-24T07:17:48.259Z - INFO - the selected test from the user : WINNF.FT.D.REG.11 is starting
now

```
"registrationRequest": [
    {
        "airInterface": {
            "radioTechnology": "E_UTRA"
        },
        "cbsdCategory": "B",
        "cbsdInfo": {
            "model": "tyndall201",
            "softwareVersion": "2.0-cbrs-reg-a4",
            "vendor": "Cambium Networks"
        }
    }
]
```

```
"digitalSignature":
```

```
"encodedCpiSignedData":
```

"eyJmY2NJZCI6Ilo4SDg5RlQwMDYwIiwY2JzZFNlcmIhbE51bWJlci16IjU4YzE3YTJkNDIlMilsImIuc3RhbGxhdGlvbBhcmFtIjp7ImxhdGloZWRRljo0MS41NDgyOSwibG9uZ2I0dWRlljotOTAuNjU5MTQsImhlaWdoZCI6MTAsImhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFudGVubmFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlsdCI6LTUsImFudGVubmFHYWluljoyMSwiYW50ZW5uYUJlYW13aWR0aCI6MzYwfSwicHJvZmVzc2l0bmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlZCI6InRlc3RfQ1BJX0ZXNDYiLCJjcGLOYW1lIjojdGVzdCI6ImIuc3RhbGxhZDZXJ0aWZpY2F0aW9uVGl0ZSI6IjIwMjAtMDYtMDIUMTE6NDY6NDh1bn19".

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

 $\}$

"fccId": "Z8H89FT0060".

```
"measCapability": [
```

"RECEIVED POWER WITHOUT GRANT"

],

```
"userId": "testid-1"
```

}

1

}

2020-08-24T07:17:49.661Z - INFO - Registration message contains cpiSignatureData

2020-08-24T07:17:49.661Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2020-08-24T07:17:49.661Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
```

```
"antennaAzimuth": 150,
```

"heightType": "AMSL",

```
"longitude": -90.65914,
```

```
"height": 10,
```

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

"antennaBeamwidth": 360,

```

        "antennaDowntilt": -5,
        "latitude": 41.54829,
        "antennaGain": 21
    },
    "fccId": "Z8H89FT0060",
    "professionalInstallerData": {
        "cpiName": "test",
        "installCertificationTime": "2020-06-09T11:46:48Z",
        "cpild": "test_CPI_FW46"
    },
    "cbsdSerialNumber": "58c17a2d49e2"
}
2020-08-24T07:17:49.709Z - INFO - registration request from CBRS : {
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "E_UTRA"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "model": "tyndall201",
                "softwareVersion": "2.0-cbrs-reg-a4",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "58c17a2d4984",
            "cpiSignatureData": {
                "digitalSignature":
                "np3xypDLMaZr3jkHk0ZTubI2Y3LvrvwK3ZwZzTwjctdFowDnr3NKDSHy-AfspelpnyxAHGTU9QtnCgijqjL3
                0xUgadEtBYn5d2ok0MZpHHqqik1VtZDcdIj3YPB5BEit5LVZ3BbBmQPPW-cl6yCpR-RnwAt9sIBiWQaFX
                mfhulelbWNhoe1Zc1XNdao5xvZ6cppFOn4bZLVMkf7GpRvgsoNqXlInGxj3PWGwQ8aDyE9OnVFXLMs
                u51I6IMVklqX12pvk-9VrACaR-7a32ewaJbTUdQtafNqu7OjbVZWwMGUwitE9nimuW3Acpi7S6T7ZE1Kt
                5d9K0G1vQzwsmwO_ZtpA",
                "encodedCpiSignedData":
                "eyJmY2NJZCI6Ilo4SDg5RIQwMDYwliwiY2JzZFNlcmIhE51bWJlci6ljU4YzE3YTJkNDk4NCIsImIuc3R
                hbGxhdGlvbGlBhcmFtljp7ImxhdGl0dWRlljo0MS41NDgyOSwibG9uZ2l0dWRlljotOTAuNjU5MTQsImhlaW
                dodCI6MTAsImhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFudGV
                ubmFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlscCI6LTUsImFudGVubmFHYWluljoyMSwiYW50Z
                W5uYUJlYW13aWR0aCI6MzYwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGljZCI6InRl
                c3RfQ1BJX0Z0XNDYiLCJjcGLOYW1lIjoidGVzdCI6ImIuc3RhbGxhZDZXJ0aWZpY2F0aW9uVGltZSI6IjlmMj
                AtMDYtMDIUMTE6NDY6NDhaIn19",
                "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
            },
            "fccId": "Z8H89FT0060",
            "measCapability": [
                "RECEIVED_POWER_WITHOUT_GRANT"
            ],
            "userId": "testid-1"
        }
    ]
}
2020-08-24T07:17:49.730Z - INFO - verified signature on cpiSignatureData
2020-08-24T07:17:49.747Z - INFO - cpiSignatureData data successfully validated against jsonschema

```

```
2020-08-24T07:17:49.750Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "response": {
        "responseCode": 200
      }
    }
  ]
}
2020-08-24T07:17:49.773Z - INFO - Registration message contains cpiSignatureData
2020-08-24T07:17:49.775Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2020-08-24T07:17:49.775Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
    "antennaAzimuth": 150,
    "heightType": "AMSL",
    "longitude": -90.65914,
    "height": 10,
    "indoorDeployment": false,
    "antennaBeamwidth": 360,
    "antennaDowntilt": -5,
    "latitude": 41.54829,
    "antennaGain": 21
  },
  "fccId": "Z8H89FT0060",
  "professionalInstallerData": {
    "cpiName": "test",
    "installCertificationTime": "2020-06-09T11:46:48Z",
    "cpild": "test_CPI_FW46"
  },
  "cbsdSerialNumber": "58c17a2d4984"
}
2020-08-24T07:17:49.776Z - INFO - verified signature on cpiSignatureData
2020-08-24T07:17:49.780Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-08-24T07:17:49.782Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "response": {
        "responseCode": 200
      }
    }
  ]
}
2020-08-24T07:17:51.260Z - INFO - arrived to nstep starting question answer session with the technician
2020-08-24T07:17:51.262Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :
2020-08-24T07:18:54.351Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n
2020-08-24T07:18:54.351Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :
2020-08-24T07:18:55.068Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n
```



2020-08-24T07:18:58.165Z - INFO - The final result of the test : WINNF.FT.D.REG.11 is - passed and :the additional comments for the current test are : There is RF transmission, but it's not user traffic.



```
2020-08-24T07:21:48.561Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
2020-08-24T07:21:48.562Z - INFO - the selected test from the user : WINNF.FT.D.REG.13 is starting
now
```

```

2020-08-24T07:21:51.392Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "E_UTRA"
      },
      "cbsdCategory": "B",
      "cbsdInfo": {
        "model": "tyndall201",
        "softwareVersion": "2.0-cbrs-reg-a4",
        "vendor": "Cambium Networks"
      },
      "cbsdSerialNumber": "58c17a2d49e2",
      "cpiSignatureData": {
        "digitalSignature":
"bA0y6BLSOwf8MJWKybmYtZ5Oji9cwTYRmNh2idpQFDzx6CQp9bcVSIKjT6_mMdbhl24zPQSvfkZ61j
mIBEeQXYLoLfmE-PQMJJzq728tBMDsGVMUDw5WG9o-dl-Sl6laV5kM77p2OILo06B7GUC1In_gE4iSg
QNo0h8RIISYIrtznHtN_tqzJ0yfVqL7s3-QEz7MzET-URDvPiJ_3J1Zset69QXiuWT0UdzWLkXWGPn1Io
Yc6noOjMs2hOjYpXoEPP-96v7_QuDN0i_d5l3yNDfYkfi3h8Tq6hcrSYtLEEh28IERbkhtpwM2WYC4TTq
ZYdchcve4TfoFzsEcKEeZw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RIQwMDYwliwiY2JzZFNlcmIhbE51bWJlci6ljlU4YzE3YTJkNDIlMilsImIuc3Rhb
GxhdGlvbGlBhcmFtljlp7ImxhdGl0dWRlljo0MS41NDgyOSwibG9uZ2l0dWRlljotOTAuNjU5MTQsImhlaWdo
dCI6MTAsImhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFudGVub
mFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlzdCI6LTUsImFudGVubmFHYWluljoyMSwiYW50ZW5
uYUJlYW13aWR0aCI6MzYwSwichJvZmVzc2l0bmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRlc3
RfQ1BJX0ZXNDYiLCJjcGLOYW1lIjoidGVzdCI6ImIuc3RhbGxhZDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMjAt
MDYtMDIUMTE6NDY6NDhln19",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fccId": "Z8H89FT0060",
      "measCapability": [
        "RECEIVED_POWER_WITHOUT_GRANT"
      ],
      "userId": "testid-1"
    }
  ]
}
2020-08-24T07:21:51.424Z - INFO - Registration message contains cpiSignatureData
2020-08-24T07:21:51.424Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2020-08-24T07:21:51.426Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
    "antennaAzimuth": 150,
    "heightType": "AMSL",
    "longitude": -90.65914,
    "height": 10,
    "indoorDeployment": false,
    "antennaBeamwidth": 360,

```

```

    "antennaDowntilt": -5,
    "latitude": 41.54829,
    "antennaGain": 21
  },
  "fccId": "Z8H89FT0060",
  "professionalInstallerData": {
    "cpiName": "test",
    "installCertificationTime": "2020-06-09T11:46:48Z",
    "cpild": "test_CPI_FW46"
  },
  "cbsdSerialNumber": "58c17a2d49e2"
}
2020-08-24T07:21:51.473Z - INFO - verified signature on cpiSignatureData
2020-08-24T07:21:51.477Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-08-24T07:21:51.480Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "response": {
        "responseCode": 103
      }
    }
  ]
}
2020-08-24T07:21:51.792Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "E_UTRA"
      },
      "cbsdCategory": "B",
      "cbsdInfo": {
        "model": "tyndall201",
        "softwareVersion": "2.0-cbrs-reg-a4",
        "vendor": "Cambium Networks"
      },
      "cbsdSerialNumber": "58c17a2d4984",
      "cpiSignatureData": {
        "digitalSignature":
"np3xypDLMaZr3jkHk0ZTubI2Y3LvRwK3ZwZzTwjctdFowDnr3NKDSHy-AfspelpnyxAHGTU9QtnCgiqjL3
0xUgadEtBYn5d2ok0MZpHHqk1VtZDcdIj3YPB5BEit5LZV3BbBmQPpW-cl6yCpR-RnwAt9slBiWQaFX
mfhulelbWNhoe1Zc1XNdao5xvZ6cppFOn4bZLVMkf7GpRvgsOqXlInGxj3PWGwQ8aDyE9OnVFxLMs
u51I6IMVklqX12pvk-9VrACaR-7a32ewaJbTudQtafNqu7OjbVZWwMGUwitE9nimuW3Acpi7S6T7ZE1Kt
5d9K0G1vQzswmwO_ZtpA",
        "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RIQwMDYwliwiY2JzZFNlcmIhbE51bWJlci6lU4YzE3YTJkNDk4NCIsImIuc3R
hbGxhdGlvbBhcmFtIjlp7ImxhdGI0dWRlljo0MS41NDgyOSwibG9uZ2I0dWRlljotOTAuNjU5MTQsImhlaW
dodCI6MTAsImhlaWdodFR5cGUiOiJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFudGV
ubmFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlsdCI6LTUsImFudGVubmFHYWluljoyMSwiYW50Z
W5uYUJlYW13aWR0aCI6MzYwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGljZCI6InRl
c3RfQ1BJX0Z0XNDYiLCJjcGLOYW1lIjoidGVzdCI6ImIuc3RhbGxhZDZlJ0aWZpY2F0aW9uVGltZSI6IjlmMj
AtMDYtMDIUMTE6NDY6NDhaIn19",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      }
    }
  ]
}

```

```

    },
    "fccId": "Z8H89FT0060",
    "measCapability": [
        "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "testid-1"
  }
]
}
2020-08-24T07:21:51.823Z - INFO - Registration message contains cpiSignatureData
2020-08-24T07:21:51.823Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2020-08-24T07:21:51.823Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
    "antennaAzimuth": 150,
    "heightType": "AMSL",
    "longitude": -90.65914,
    "height": 10,
    "indoorDeployment": false,
    "antennaBeamwidth": 360,
    "antennaDowntilt": -5,
    "latitude": 41.54829,
    "antennaGain": 21
  },
  "fccId": "Z8H89FT0060",
  "professionalInstallerData": {
    "cpiName": "test",
    "installCertificationTime": "2020-06-09T11:46:48Z",
    "cpild": "test_CPI_FW46"
  },
  "cbsdSerialNumber": "58c17a2d4984"
}
2020-08-24T07:21:51.825Z - INFO - verified signature on cpiSignatureData
2020-08-24T07:21:51.831Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-08-24T07:21:51.832Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2020-08-24T07:21:53.562Z - INFO - arrived to nstep starting question answer session with the technician
2020-08-24T07:21:53.563Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :
2020-08-24T07:22:58.943Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n
2020-08-24T07:22:58.944Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :
2020-08-24T07:23:00.934Z - INFO - for the question : Were there RF transmissions from the CBSD1

```



during the test? , the user choose n

2020-08-24T07:23:04.303Z - INFO - The final result of the test : WINNF.FT.D.REG.13 is - passed
and :the additional comments for the current test are : There is RF transmission, but it's not user traffic.



2020-08-24T07:25:40.788Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
2020-08-24T07:25:40.789Z - INFO - the selected test from the user : WINNF.FT.D.REG.15 is starting
now

```

2020-08-24T07:25:43.030Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "E_UTRA"
      },
      "cbsdCategory": "B",
      "cbsdInfo": {
        "model": "tyndall201",
        "softwareVersion": "2.0-cbrs-reg-a4",
        "vendor": "Cambium Networks"
      },
      "cbsdSerialNumber": "58c17a2d49e2",
      "cpiSignatureData": {
        "digitalSignature":
"bA0y6BLSOwf8MJWKybmYtZ5Oji9cwTYRmNh2idpQFDzx6CQp9bcVSIKjT6_mMdbhl24zPQSvfkZ61j
mIBEeQXYLoLfmE-PQMJJzq728tBMDsGVMUDw5WG9o-dl-Sl6laV5kM77p2OILo06B7GUC1In_gE4iSg
QNo0h8RIISYIrtznHtN_tqzJ0yfVqL7s3-QEz7MzET-URDvPiJ_3J1Zset69QXiuWT0UdzWLkXWGPn1Io
Yc6noOjMs2hOjYpXoEPP-96v7_QuDN0i_d5l3yNDfYkfi3h8Tq6hcrSYtLEEh28IERbkhttpwM2WYC4TTq
ZYdchcve4TfoFzsEcKEeZw",
        "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RIQwMDYwliwiY2JzZFNlcmIhbE51bWJlci6lU4YzE3YTJkNDIlMilsImIuc3Rhb
GxhdGlublBhcmFtljpw7lmxhdGl0dWRlljo0MS41NDgyOSwibG9uZ2l0dWRlljotOTAuNjU5MTQsImhlaWdo
dCI6MTAsImhlaWdodFR5cGUiOiJBTvNMIiwiaw5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFudGVubm
mFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlscCI6LTUsImFudGVubmFHYWluljoyMSwiYW50ZW5
uYUJlYW13aWR0aCI6MzYwYwSwichJvZmVzc2l0bmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRlc3
RfQ1BJX0ZXNDYiLCJjcGLOYW1lIjoidGVzdCI6ImIuc3RhbGxhZDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMjAt
MDYtMDIUMTE6NDY6NDhln19",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fccId": "Z8H89FT0060",
      "measCapability": [
        "RECEIVED_POWER_WITHOUT_GRANT"
      ],
      "userId": "testid-1"
    }
  ]
}
2020-08-24T07:25:43.062Z - INFO - Registration message contains cpiSignatureData
2020-08-24T07:25:43.062Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2020-08-24T07:25:43.062Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
    "antennaAzimuth": 150,
    "heightType": "AMSL",
    "longitude": -90.65914,
    "height": 10,
    "indoorDeployment": false,
    "antennaBeamwidth": 360,

```

```

    "antennaDowntilt": -5,
    "latitude": 41.54829,
    "antennaGain": 21
  },
  "fccId": "Z8H89FT0060",
  "professionalInstallerData": {
    "cpiName": "test",
    "installCertificationTime": "2020-06-09T11:46:48Z",
    "cpild": "test_CPI_FW46"
  },
  "cbsdSerialNumber": "58c17a2d49e2"
}
2020-08-24T07:25:43.063Z - INFO - verified signature on cpiSignatureData
2020-08-24T07:25:43.069Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-08-24T07:25:43.072Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "response": {
        "responseCode": 101
      }
    }
  ]
}
2020-08-24T07:26:11.003Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "E_UTRA"
      },
      "cbsdCategory": "B",
      "cbsdInfo": {
        "model": "tyndall201",
        "softwareVersion": "2.0-cbrs-reg-a4",
        "vendor": "Cambium Networks"
      },
      "cbsdSerialNumber": "58c17a2d4984",
      "cpiSignatureData": {
        "digitalSignature":
"np3xypDLMaZr3jkHk0ZTubI2Y3LvRWK3ZwZzTwjctdFowDnr3NKDSHy-AfspelpnyxAHGTU9QtnCgiqjL3
0xUgadEtBYn5d2ok0MZpHHqk1VtZDcdlj3YPB5BEit5LZV3BbBmQPpW-cl6yCpR-RnwAt9slBiWQaFX
mfhulelbWNhoe1Zc1XNdao5xvZ6cppFOn4bZLVMkf7GpRvgsOqXlInGxj3PWGwQ8aDyE9OnVFxLMs
u51I6IMVklqX12pvk-9VrACaR-7a32ewaJbTudQtafNqu7OjbVZWwMGUwitE9nimuW3Acpi7S6T7ZE1Kt
5d9K0G1vQzswmwO_ZtpA",
        "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RIQwMDYwliwiY2JzZFNlcmIhbE51bWJlci6lU4YzE3YTJkNDk4NCIsImIuc3R
hbGxhdGlvbHhcmFtIjlp7ImxhdGI0dWRlljo0MS41NDgyOSwibG9uZ2I0dWRlljotOTAuNjU5MTQslmhlaW
dodCI6MTAsImhlaWdodFR5cGUiOiJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFudGV
ubmFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlscCI6LTUsImFudGVubmFHYWluljoyMSwiYW50Z
W5uYUJlYW13aWR0aCI6MzYwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGljZCI6InRl
c3RfQ1BJX0Z0XNDYiLCJjcGLOYW1lIjoidGVzdCIsImIuc3RhbGxhZDZlJ0aWZpY2F0aW9uVGltZSI6IjlmMj
AtMDYtMDIUMTE6NDY6NDhaIn19",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      }
    }
  ]
}

```

```
    },
    "fccId": "Z8H89FT0060",
    "measCapability": [
        "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "testid-1"
  }
]
}
2020-08-24T07:26:11.035Z - INFO - Registration message contains cpiSignatureData
2020-08-24T07:26:11.035Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2020-08-24T07:26:11.036Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
    "antennaAzimuth": 150,
    "heightType": "AMSL",
    "longitude": -90.65914,
    "height": 10,
    "indoorDeployment": false,
    "antennaBeamwidth": 360,
    "antennaDowntilt": -5,
    "latitude": 41.54829,
    "antennaGain": 21
  },
  "fccId": "Z8H89FT0060",
  "professionalInstallerData": {
    "cpiName": "test",
    "installCertificationTime": "2020-06-09T11:46:48Z",
    "cpild": "test_CPI_FW46"
  },
  "cbsdSerialNumber": "58c17a2d4984"
}
2020-08-24T07:26:11.036Z - INFO - verified signature on cpiSignatureData
2020-08-24T07:26:11.042Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-08-24T07:26:11.045Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2020-08-24T07:26:12.789Z - INFO - arrived to nstep starting question answer session with the technician
2020-08-24T07:26:12.792Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :
2020-08-24T07:27:14.828Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n
2020-08-24T07:27:14.829Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :
2020-08-24T07:27:15.789Z - INFO - for the question : Were there RF transmissions from the CBSD1
```



during the test? , the user choose n

2020-08-24T07:27:21.924Z - INFO - The final result of the test : WINNF.FT.D.REG.15 is - passed
and :the additional comments for the current test are : There is RF transmission, but it's not user traffic.

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

2020-08-24T07:29:41.005Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
 2020-08-24T07:29:41.006Z - INFO - the selected test from the user : WINNF.FT.D.REG.17 is starting now

2020-08-24T07:31:19.572Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "model": "tyndall201",
      "softwareVersion": "2.0-cbrs-reg-a4",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "58c17a2d4984",
    "cpiSignatureData": {
      "digitalSignature":
"np3xypDLMaZr3jkHk0ZTubI2Y3LvrwK3ZwZzTwjctdFowDnr3NKDSHy-AfspelpnyxAHGTU9QtnCgijqL3
0xUgadEtBYn5d2ok0MZpHHqk1VtZDcdIj3YPB5BEit5LZV3BbBmQPpW-cl6yCpR-RnwAt9slBiWQaFX
mfhulelbWNhoe1Zc1XNdao5xvZ6cppFOn4bZLVMkf7GpRvgsoNqXlInGxj3PWGwQ8aDyE9OnVFxLMs
u51I6IMVklqX12pvk-9VrACaR-7a32ewaJbTudQtafNqu7OjbVZWwMGuwitE9nimuW3Acpi7S6T7ZE1Kt
5d9K0G1vQzswmwo_ZtpA",
      "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RIQwMDYwliwiY2JzZFNlcmIhbE51bWJlcil6IjU4YzE3YTJkNDk4NCIsImIuc3R
hbGxhdGlvblBhcmFtlj7ImxhdGloZWRIljo0MS41NDgyOSwibG9uZ2I0dWRlljotOTAuNjU5MTQslmhlW
dodCI6MTAsImIhlaWdodFR5cGUiOiJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFudGV
ubmFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlsdCI6LTUsImFudGVubmFHYWluljoyMSwiYW50Z
W5uYUJlYW13aWR0aCI6MzYwfSwichJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGIJZCI6InRl
c3RfQ1BJX0ZXNDYiLCJjcGLOYW1lIjoidGVzdCI6ImIuc3RhbGxhZDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMj
AtMDYtMDIUMTE6NDY6NDhaIn19",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fccId": "Z8H89FT0060",
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "testid-1"
  }
]
```

2020-08-24T07:31:19.605Z - INFO - Registration message contains cpiSignatureData
 2020-08-24T07:31:19.605Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
 2020-08-24T07:31:19.605Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
  "antennaAzimuth": 150,
  "heightType": "AMSL",
  "longitude": -90.65914,
  "height": 10,
  "indoorDeployment": false,
  "antennaBeamwidth": 360,
```

```
"antennaDownTilt": -5,  
    "latitude": 41.54829,  
    "antennaGain": 21  
},  
    "fccId": "Z8H89FT0060",  
    "professionalInstallerData": {  
        "cpiName": "test",  
        "installCertificationTime": "2020-06-09T11:46:48Z",  
        "cpild": "test_CPI_FW46"  
    },  
    "cbstdSerialNumber": "58c17a2d4984"  
}  
  
2020-08-24T07:31:19.605Z - INFO - verified signature on cpiSignatureData  
2020-08-24T07:31:19.611Z - INFO - cpiSignatureData data successfully validated against jsonschema  
2020-08-24T07:31:19.615Z - INFO - engine sent successfully, the response to CBRS : {  
    "registrationResponse": [  
        {  
            "response": {  
                "statusCode": 100  
            }  
        }  
    ]  
}  
  
2020-08-24T07:31:54.946Z - INFO - registration request from CBRS : {  
    "registrationRequest": [  
        {  
            "airInterface": {  
                "radioTechnology": "E_UTRA"  
            },  
            "cbstdCategory": "B",  
            "cbstdInfo": {  
                "model": "tyndall201",  
                "softwareVersion": "2.0-cbrs-reg-a4",  
                "vendor": "Cambium Networks"  
            },  
            "cbstdSerialNumber": "58c17a2d49e2",  
            "cpiSignatureData": {  
                "digitalSignature":  
"bA0y6BLSOwF8MJWkybmYtZ5Oji9cwTYRmNh2idpQFDzx6CQP9bcVSIKjT6_mMdbhl24zPQSvfkZ61jmIBEEqXYLoLfmE-PQMJZq728tBMDsGVMUDw5WG9o-dl-SI6laV5kM77p2OILO06B7GUClIn_gE4iSgQNo0h8RIISYlrtnhhTn_tqzJ0yfVqL7s3-QEZ7MZET-URDVPiJ_3JJset69QXiuWT0UdzWLkXWGPn1loYc6noOjMs2hojjYPxOEPP-96v7_QuDNOi_d5l3YNdfykfi3h8Tq6hcrrSYtleEH28IERbkhtpwM2WYC4TTqZYdchcv4TFofzsEcKEezw",  
                "encodedCpiSignedData":  
"eyJmY2NJZCI6Illo4SDg5RIQwMDYWliWiY2JzZFNIcmllhbE5lbWJlcil6ljU4YZe3YTjkNDIImlslmluc3RhbgxhdGlvbGliBhcmFtljp7ImxhdGI0dwRLljoOMS41NDgyOSwiBg9uZ2lOdWRlljotOTAuNjU5MTQslmhlaWdo dCi6MTAslmhlaWdobFR5cGUioiJBTVNMliwiaW5kb29yRGVwbG95bWVuZCI6ZmFsc2UsImFudGVub mFBemltDXRoLjoxNTAsImFudGVubmFEb3dudGlzdCI6LTUSlmFudGVubmFYHWUluljoyMSwiYW50ZW5 uYUUjYlY13aWR0aCI6MzMzfSwicHJvZmVzc2lvbnFsSW5kdGFsbGVyRGFOYSI6eyJjcGlJCi6lnRic3 RfQ1BJXOXZXDNYiLCJycGlOWY1IlljoidGVvdCI6ImFudGVubmFSc3RhbGxDZXJOaWZpY2F0aW9uVGIt ZSl6ljlwMjAt MDYtMDIUITE6NDY6NDhaIn19",  
                "protectedHeader": "evJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
```

```

    },
    "fccId": "Z8H89FT0060",
    "measCapability": [
        "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "testid-1"
  }
]
}
2020-08-24T07:31:54.977Z - INFO - Registration message contains cpiSignatureData
2020-08-24T07:31:54.977Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2020-08-24T07:31:54.977Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
    "antennaAzimuth": 150,
    "heightType": "AMSL",
    "longitude": -90.65914,
    "height": 10,
    "indoorDeployment": false,
    "antennaBeamwidth": 360,
    "antennaDowntilt": -5,
    "latitude": 41.54829,
    "antennaGain": 21
  },
  "fccId": "Z8H89FT0060",
  "professionalInstallerData": {
    "cpiName": "test",
    "installCertificationTime": "2020-06-09T11:46:48Z",
    "cpild": "test_CPI_FW46"
  },
  "cbsdSerialNumber": "58c17a2d49e2"
}
2020-08-24T07:31:54.980Z - INFO - verified signature on cpiSignatureData
2020-08-24T07:31:54.984Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-08-24T07:31:54.986Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "response": {
        "responseCode": 100
      }
    }
  ]
}
}
2020-08-24T07:31:56.019Z - INFO - arrived to nstep starting question answer session with the technician
2020-08-24T07:31:56.020Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :
2020-08-24T07:33:01.951Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n
2020-08-24T07:33:01.953Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :
2020-08-24T07:33:03.532Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n

```



2020-08-24T07:33:05.936Z - INFO - The final result of the test : WINNF.FT.D.REG.17 is - passed and :the additional comments for the current test are : There is RF transmission, but it's not user traffic.



2020-08-24T07:40:02.223Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
2020-08-24T07:40:02.223Z - INFO - the selected test from the user : WINNF.FT.D.REG.19 is starting
now

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "model": "tyndall201",
      "softwareVersion": "2.0-cbbs-reg-a4",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "58c17a2d49e2",
    "cpiSignatureData": {
```

"bA0y6BLSOwf8MJWKybmYtZ5Oji9cwTYRmNh2idpQFDzx6CQp9bcbVSIkjt6_mMdbhl24zPQSvfKZ61j
mIBEEqXYLoLfme-PQMjZq728tBMDsGVMUDw5WG9o-dl-Sl6laV5kM77p2OILo06B7GUC1In_gE4iSg
QNo0h8RIISYIrtznHtN_tqzJ0yfVqL7s3-QEz7MzET-URDvPiJ_3J1Zset69QXiuWT0UdzWLkXWGPn1Io
Yc6noOjMs2hOjYpXoEPP-96v7_QuDN0i_d5l3yNDfYkfi3h8Tq6hcrSYtLEEh28IERbkhtpwM2WYC4TTq
ZYdchcve4TfoFzsEckEeZw",

"eyJmY2NJZCI6Ilo4SDg5RIQwMDYwIiwY2JzZFNlcmIhbE51bWJlcil6IjU4YzE3YTJkNDIlMilsImIuc3RhbGxhdGlvbBhcmFtIjp7ImxhdGloZWRRljo0MS41NDgyOSwibG9uZ2I0dWRlljotOTAuNjU5MTQsImhlaWdo dCI6MTAsImhlaWdodFR5cGUiOiJBTvNMIiwiaw5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFudGVub mFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlsdCI6LTUsImFudGVubmFHYWluljoyMSwiYW50ZW5 uYUJlYW13aWR0aCI6MzYwfSwicHJvZmVzc2l2bmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlZCI6InRlc3 RfQ1BJX0ZXNDYiLCJjcGLOYW1lIjojdGVzdCI6ImIuc3RhbGxhZDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMjAt MDYtMDIUMTE6NDY6NDh19"

```
},
"fccId": "Z8H89FT0060",
"measCapability": [
    "RECEIVED_POWER_WITHOUT_GRANT"
],
"userId": "testid-1"
```

```

    ]
}
2020-08-24T07:40:04.365Z - INFO - Registration message contains cpiSignatureData
2020-08-24T07:40:04.365Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2020-08-24T07:40:04.365Z - INFO - encodedCpiSignedData contents = {

```

```
"installationParam": {
  "antennaAzimuth": 150,
  "heightType": "AMSL",
  "longitude": -90.65914,
  "height": 10,
  "indoorDeployment": false,
  "antennaBeamwidth": 360.
```

```

    "antennaDowntilt": -5,
    "latitude": 41.54829,
    "antennaGain": 21
  },
  "fccId": "Z8H89FT0060",
  "professionalInstallerData": {
    "cpiName": "test",
    "installCertificationTime": "2020-06-09T11:46:48Z",
    "cpild": "test_CPI_FW46"
  },
  "cbsdSerialNumber": "58c17a2d49e2"
}
2020-08-24T07:40:04.414Z - INFO - verified signature on cpiSignatureData
2020-08-24T07:40:04.421Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-08-24T07:40:04.437Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "response": {
        "responseCode": 201
      }
    }
  ]
}
2020-08-24T07:40:04.440Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "E_UTRA"
      },
      "cbsdCategory": "B",
      "cbsdInfo": {
        "model": "tyndall201",
        "softwareVersion": "2.0-cbrs-reg-a4",
        "vendor": "Cambium Networks"
      },
      "cbsdSerialNumber": "58c17a2d4984",
      "cpiSignatureData": {
        "digitalSignature":
"np3xypDLMaZr3jkHk0ZTubI2Y3LvRwK3ZwZzTwjctdFowDnr3NKDSHy-AfspelpnyxAHGTU9QtnCgiqjL3
0xUgadEtBYn5d2ok0MZpHHqk1VtZDcdlj3YPB5BEit5LZV3BbBmQPpW-cl6yCpR-RnwAt9sBiWQaFX
mfhulelbWNhoe1Zc1XNdao5xvZ6cppFOn4bZLVMkf7GpRvgsOqXlInGxj3PWGwQ8aDyE9OnVFxLMs
u51I6IMVklqX12pvk-9VrACaR-7a32ewaJbTudQtafNqu7OjbVZWwMGUwitE9nimuW3Acpi7S6T7ZE1Kt
5d9K0G1vQzswmwO_ZtpA",
        "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RIQwMDYwliwiY2JzZFNlcmIhbE51bWJlci6lU4YzE3YTJkNDk4NCIsImIuc3R
hbGxhdGlvbBhcmFtljlp7ImxhdGloZWRIljo0MS41NDgyOSwibG9uZ2I0dWRlljotOTAuNjU5MTQsImhlaW
dodCI6MTAsImhlaWdodFR5cGUiOiJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFudGV
ubmFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlsdCI6LTUsImFudGVubmFHYWluljoyMSwiYW50Z
W5uYUJlYW13aWR0aCI6MzYwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlZCI6InRI
c3RfQ1BJX0Z0XNDYiLCJjcGLOYW1lIjoidGVzdCI6ImIuc3RhbGxhZDZlX0aWZpY2F0aW9uVGltZSI6ImJl
AtMDYtMDIUMTE6NDY6NDhaIn19",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      }
    }
  ]
}

```

```

    },
    "fccId": "Z8H89FT0060",
    "measCapability": [
        "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "testid-1"
  }
]
}
2020-08-24T07:40:04.473Z - INFO - Registration message contains cpiSignatureData
2020-08-24T07:40:04.473Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2020-08-24T07:40:04.473Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
    "antennaAzimuth": 150,
    "heightType": "AMSL",
    "longitude": -90.65914,
    "height": 10,
    "indoorDeployment": false,
    "antennaBeamwidth": 360,
    "antennaDowntilt": -5,
    "latitude": 41.54829,
    "antennaGain": 21
  },
  "fccId": "Z8H89FT0060",
  "professionalInstallerData": {
    "cpiName": "test",
    "installCertificationTime": "2020-06-09T11:46:48Z",
    "cpild": "test_CPI_FW46"
  },
  "cbsdSerialNumber": "58c17a2d4984"
}
2020-08-24T07:40:04.474Z - INFO - verified signature on cpiSignatureData
2020-08-24T07:40:04.480Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-08-24T07:40:04.480Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2020-08-24T07:40:06.224Z - INFO - arrived to nstep starting question answer session with the technician
2020-08-24T07:40:06.226Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :
2020-08-24T07:41:08.632Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n
2020-08-24T07:41:08.634Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :
2020-08-24T07:41:09.931Z - INFO - for the question : Were there RF transmissions from the CBSD1

```



during the test? , the user choose n

2020-08-24T07:41:13.825Z - INFO - The final result of the test : WINNF.FT.D.REG.19 is - passed
and :the additional comments for the current test are : There is RF transmission, but it's not user traffic.

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

2020-08-24T07:45:33.676Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
 2020-08-24T07:45:33.677Z - INFO - the selected test from the user : WINNF.FT.C.GRA.1 is starting now

2020-08-24T07:45:35.872Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "model": "tyndall201",
      "softwareVersion": "2.0-cbrs-reg-a4",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "58c17a2d4984",
    "cpiSignatureData": {
      "digitalSignature":
"np3xypDLMaZr3jkHk0ZTubI2Y3LvrwK3ZwZzTwjctdFowDnr3NKDSHy-AfspelpnyxAHGTU9QtnCgiqjL3
0xUgadEtBYn5d2ok0MZpHHqk1VtZDcdIj3YPB5BEit5LZV3BbBmQPpW-cl6yCpR-RnwAt9slBiWQaFX
mfhulelbWNhoe1Zc1XNdao5xvZ6cppFOn4bZLVMkf7GpRvgsoNqXlInGxj3PWGwQ8aDyE9OnVFxLMs
u51I6IMVklqX12pvk-9VrACaR-7a32ewaJbTudQtafNqu7OjbVZWwMGuwitE9nimuW3Acpi7S6T7ZE1Kt
5d9K0G1vQzswmwo_ZtpA",
      "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RIQwMDYwliwiY2JzZFNlcmIhbE51bWJlcil6IjU4YzE3YTJkNDk4NCIsImIuc3R
hbGxhdGlvblBhcmFtlj7ImxhdGI0dWRlljo0MS41NDgyOSwibG9uZ2I0dWRlljotOTAuNjU5MTQslmhlaW
dodCI6MTAsImhlaWdodFR5cGUiOiJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFudGV
ubmFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlsdCI6LTUsImFudGVubmFHYWluljoyMSwiYW50Z
W5uYUJlYW13aWR0aCI6MzYwfSwichJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlZCI6InRI
c3RfQ1BJX0ZXNDYiLCJjcGLOYW1lIjoidGVzdCI6ImIuc3RhbGxhZDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMj
AtMDYtMDIUMTE6NDY6NDhaIn19",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fccId": "Z8H89FT0060",
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "testid-1"
  }
]
```

2020-08-24T07:45:35.917Z - INFO - Registration message contains cpiSignatureData
 2020-08-24T07:45:35.917Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
 2020-08-24T07:45:35.917Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
  "antennaAzimuth": 150,
  "heightType": "AMSL",
  "longitude": -90.65914,
  "height": 10,
  "indoorDeployment": false,
  "antennaBeamwidth": 360,
```

```
"antennaDowntilt": -5,
"latitude": 41.54829,
"antennaGain": 21
},
"fccId": "Z8H89FT0060",
"professionalInstallerData": {
  "cpiName": "test",
  "installCertificationTime": "2020-06-09T11:46:48Z",
  "cpild": "test_CPI_FW46"
},
"cbstdSerialNumber": "58c17a2d4984"
}
2020-08-24T07:45:35.964Z - INFO - verified signature on cpiSignatureData
2020-08-24T07:45:35.973Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-08-24T07:45:35.974Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbstdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2020-08-24T07:45:36.490Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbstdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "operationParam": {
        "maxEirp": 34,
        "operationFrequencyRange": {
          "highFrequency": 3660000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2020-08-24T07:45:36.497Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbstdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "response": {
        "responseCode": 400
      }
    }
  ]
}
2020-08-24T07:45:37.677Z - INFO - arrived to nstep starting question answer session with the technician
2020-08-24T07:45:37.677Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :
```



2020-08-24T07:46:42.960Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2020-08-24T07:46:46.885Z - INFO - The final result of the test : WINNF.FT.C.GRA.1 is - passed and :the additional comments for the current test are : There is RF transmission, but it's not user traffic.

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

2020-08-24T09:07:36.661Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
 2020-08-24T09:07:36.661Z - INFO - the selected test from the user : WINNF.FT.C.GRA.2 is starting now

2020-08-24T09:07:38.056Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "model": "tyndall201",
      "softwareVersion": "2.0-cbrs-reg-a4",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "58c17a2d4984",
    "cpiSignatureData": {
      "digitalSignature":
"np3xypDLMaZr3jkHk0ZTubI2Y3LvrwK3ZwZzTwjctdFowDnr3NKDSHy-AfspelpnyxAHGtU9QtnCgiqjL3
0xUgadEtBYn5d2ok0MZpHHqk1VtZDcdIj3YPB5BEit5LZV3BbBmQPpW-cl6yCpR-RnwAt9slBiWQaFX
mfhulelbWNhoe1Zc1XNdao5xvZ6cppFOn4bZLVMkf7GpRvgsoNqXlInGxj3PWGwQ8aDyE9OnVFxLMs
u51I6IMVklqX12pvk-9VrACaR-7a32ewaJbTudQtafNqu7OjbVZWwMGuwitE9nimuW3Acpi7S6T7ZE1Kt
5d9K0G1vQzswmwo_ZtpA",
      "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RIQwMDYwliwiY2JzZFNlcmIhbE51bWJlcil6IjU4YzE3YTJkNDk4NCIsImIuc3R
hbGxhdGlvbIjBhcmFtlj7ImxhdGloZWRIIjo0MS41NDgyOSwibG9uZ2I0dWRlljotOTAuNjU5MTQsImhlaW
dodCI6MTAsImhlaWdodFR5cGUiOiJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFudGV
ubmFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlsdCI6LTUsImFudGVubmFHYWluljoyMSwiYW50Z
W5uYUJlYW13aWR0aCI6MzYwfSwichJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlZCI6InRI
c3RfQ1BJX0ZXNDYiLCJjcGLOYW1lIjoidGVzdCI6ImIuc3RhbGxhZDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMj
AtMDYtMDIUMTE6NDY6NDhln19",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fccId": "Z8H89FT0060",
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "testid-1"
  }
]
```

2020-08-24T09:07:38.099Z - INFO - Registration message contains cpiSignatureData
 2020-08-24T09:07:38.099Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
 2020-08-24T09:07:38.101Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
  "antennaAzimuth": 150,
  "heightType": "AMSL",
  "longitude": -90.65914,
  "height": 10,
  "indoorDeployment": false,
  "antennaBeamwidth": 360,
```

```

    "antennaDowntilt": -5,
    "latitude": 41.54829,
    "antennaGain": 21
  },
  "fccId": "Z8H89FT0060",
  "professionalInstallerData": {
    "cpiName": "test",
    "installCertificationTime": "2020-06-09T11:46:48Z",
    "cpild": "test_CPI_FW46"
  },
  "cbsdSerialNumber": "58c17a2d4984"
}
2020-08-24T09:07:38.148Z - INFO - verified signature on cpiSignatureData
2020-08-24T09:07:38.154Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-08-24T09:07:38.155Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2020-08-24T09:07:39.009Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "operationParam": {
        "maxEirp": 34,
        "operationFrequencyRange": {
          "highFrequency": 3660000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2020-08-24T09:07:39.016Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "response": {
        "responseCode": 401
      }
    }
  ]
}
2020-08-24T09:07:40.664Z - INFO - arrived to nstep starting question answer session with the technician
2020-08-24T09:07:40.664Z - INFO - the question is : Were there RF transmissions from the CBS1 during the test? please choose one of the answers :

```



2020-08-24T09:08:43.631Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2020-08-24T09:08:47.104Z - INFO - The final result of the test : WINNF.FT.C.GRA.2 is - passed and :the additional comments for the current test are : There is RF transmission, but it's not user traffic.

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

2020-08-25T02:12:51.460Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
 2020-08-25T02:12:51.460Z - INFO - the selected test from the user : WINNF.FT.D.HBT.2 is starting now
 2020-08-25T02:12:53.980Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "model": "tyndall201",
      "softwareVersion": "2.0-cbbs-reg-a4",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "58c17a2d49e2",
    "cpiSignatureData": {
      "digitalSignature":
        "bA0y6BLSOwf8MJWKybmYtZ5Oji9cwTYRmNh2idpQFDzx6CQp9bcVSIKjT6_mMdbhl24zPQSVfkZ61j
        mlBEeQXYLoLfmE-PQMJJZq728tBMDsGVMUDw5WG9o-dl-Sl6laV5kM77p2OILo06B7GUC1ln_gE4iSg
        QNo0h8RIISYIrtznHtN_tqzJ0yfVqL7s3-QEz7MzET-URDvPiJ_3J1Zset69QXiuWT0UdzWLkXWGPn1lo
        Yc6noOjMs2hOjYpXoEPp-96v7_QuDN0i_d5l3yNDfYkfi3h8Tq6hcrSYtLEEh28IERbkhtpwM2WYC4TTq
        ZYdchcve4TfoFzsEcKEeZw",
      "encodedCpiSignedData":
        "eyJmY2NJZCI6Ilo4SDg5RIQwMDYwliwiY2JzZFNlcmIhE51bWJlci6lU4YzE3YTJkNDIIMiIsImIuc3Rhb
        GxhdGlvblBhcmFtIjp7ImxhdGloZWRIljo0MS41NDgyOSwibG9uZ2l0dWRlljotOTAuNjU5MTQslmhlaWdo
        dCI6MTAsImhlaWdodFR5cGUiOiJBTVMliwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFudGVub
        mFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlsdCI6LTUsImFudGVubmFHYWluljoyMSwiYW50ZW5
        uYUJlYW13aWR0aCI6MzYwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRlc3
        RfQ1BjX0ZXNDYiLCJjcGlOYW1lIljoideGVzdCI6ImIuc3RhbGxhZDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMjAt
        MDYtMDIUMTE6NDY6NDhln19",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fccId": "Z8H89FT0060",
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "testid-1"
  }
]
```

2020-08-25T02:12:54.065Z - INFO - Registration message contains cpiSignatureData
 2020-08-25T02:12:54.065Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
 2020-08-25T02:12:54.065Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
  "antennaAzimuth": 150,
  "heightType": "AMSL",
  "longitude": -90.65914,
  "height": 10,
  "indoorDeployment": false,
  "antennaBeamwidth": 360,
  "antennaDowntilt": -5,
```

```

        "latitude": 41.54829,
        "antennaGain": 21
    },
    "fccId": "Z8H89FT0060",
    "professionalInstallerData": {
        "cpiName": "test",
        "installCertificationTime": "2020-06-09T11:46:48Z",
        "cpild": "test_CPI_FW46"
    },
    "cbsdSerialNumber": "58c17a2d49e2"
}
2020-08-25T02:12:54.066Z - INFO - verified signature on cpiSignatureData
2020-08-25T02:12:54.072Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-08-25T02:12:54.073Z - INFO - engine sent successfully, the response to CBRS : {
    "registrationResponse": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2020-08-25T02:12:54.493Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
            "operationParam": {
                "maxEirp": 34,
                "operationFrequencyRange": {
                    "highFrequency": 3660000000,
                    "lowFrequency": 3650000000
                }
            }
        }
    ]
}
2020-08-25T02:12:54.499Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
            "channelType": "GAA",
            "grantExpireTime": "2020-09-01T02:12:54Z",
            "grantId": "387571119",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2020-08-25T02:12:54.584Z - INFO - registration request from CBRS : {

```

```

"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "model": "tyndall201",
      "softwareVersion": "2.0-cbrs-reg-a4",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "58c17a2d4984",
    "cpiSignatureData": {
      "digitalSignature":
"np3xypDLMaZr3jkHk0ZTubI2Y3LvrvK3ZwZzTwjctdFowDnr3NKDSHy-AfspelpnyxAHGTU9QtnCgijqjL3
0xUgadEtBYn5d2ok0MZpHHqqik1VtZDcdlj3YPB5BEit5LZV3BbBmQPpW-cl6yCpR-RnwAt9slBiWQaFX
mfhulelbWNhoe1Zc1XNdao5xvZ6cppFon4bZLVMkf7GpRvgsoNqXlInGxj3PWGwQ8aDyE9OnVFXLMs
u51I6IMVklqX12pvk-9VrACaR-7a32ewaJbTudQtafNqu7OjbVZWwMGuwitE9nimuW3Acpi7S6T7ZE1Kt
5d9K0G1vQzswmwO_ZtpA",
      "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RIQwMDYwliwiY2JzZFNlcmIhbE51bWJlciI6IjU4YzE3YTJkNDk4NCIsImIuc3R
hbGxhdGlvbiBhcmFtlj7ImxhdGloZWRIljo0MS41NDgyOSwibG9uZ2I0dWRlljotOTAuNjU5MTQslmhlaW
dodCI6MTAsImhlaWdodFR5cGUiOiJBTVMlwiawW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFudGV
ubmFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlsdCI6LTUsImFudGVubmFHYWluljoyMSwiYW50Z
W5uYUJlYW13aWR0aCI6MzYwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGljZCI6InRl
c3RfQ1BJX0ZXNDYiLCJjcGLOYW1lIjoidGVzdCIsImIuc3RhbGxhZDZXJ0aWZpY2F0aW9uVGltZSI6IjlmMj
AtMDYtMDIUMTE6NDY6NDhaIn19",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fccId": "Z8H89FT0060",
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "testid-1"
  }
]
}
2020-08-25T02:12:54.631Z - INFO - Registration message contains cpiSignatureData
2020-08-25T02:12:54.631Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2020-08-25T02:12:54.631Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
    "antennaAzimuth": 150,
    "heightType": "AMSL",
    "longitude": -90.65914,
    "height": 10,
    "indoorDeployment": false,
    "antennaBeamwidth": 360,
    "antennaDowntilt": -5,
    "latitude": 41.54829,
    "antennaGain": 21
  },
  "fccId": "Z8H89FT0060",

```



```
"professionalInstallerData": {
  "cpiName": "test",
  "installCertificationTime": "2020-06-09T11:46:48Z",
  "cpild": "test_CPI_FW46"
},
"cbsdSerialNumber": "58c17a2d4984"
}
2020-08-25T02:12:54.632Z - INFO - verified signature on cpiSignatureData
2020-08-25T02:12:54.638Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-08-25T02:12:54.640Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2020-08-25T02:12:55.026Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "operationParam": {
        "maxEirp": 34,
        "operationFrequencyRange": {
          "highFrequency": 3660000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2020-08-25T02:12:55.032Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "channelType": "GAA",
      "grantExpireTime": "2020-09-01T02:12:55Z",
      "grantId": "654433694",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2020-08-25T02:12:59.711Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "grantId": "387571119",
```

```

        "grantRenew": false,
        "operationState": "GRANTED"
    }
]
}
2020-08-25T02:12:59.720Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
            "grantId": "387571119",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2020-08-25T02:16:19Z"
        }
    ]
}
2020-08-25T02:13:00.207Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
            "grantId": "654433694",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
2020-08-25T02:13:00.214Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
            "grantId": "654433694",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2020-08-25T02:16:20Z"
        }
    ]
}
2020-08-25T02:13:49.845Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
            "grantId": "654433694",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2020-08-25T02:13:49.846Z - INFO - Time interval between two heartbeat request messages is: 49.638,
limit is: 65.0
2020-08-25T02:13:49.854Z - INFO - engine sent successfully, the response to CBRS : {

```



```
"heartbeatResponse": [
  {
    "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
    "grantId": "654433694",
    "response": {
      "responseCode": 0
    },
    "transmitExpireTime": "2020-08-25T02:17:09Z"
  }
]
}
2020-08-25T02:13:50.299Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "grantId": "387571119",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2020-08-25T02:13:50.302Z - INFO - Time interval between two heartbeat request messages is: 50.588,
limit is: 65.0
2020-08-25T02:13:50.308Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "grantId": "387571119",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-25T02:17:10Z"
    }
  ]
}
2020-08-25T02:14:39.648Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "grantId": "387571119",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2020-08-25T02:14:39.650Z - INFO - Time interval between two heartbeat request messages is: 49.348,
limit is: 65.0
2020-08-25T02:14:39.657Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "grantId": "387571119",
```



```
"response": {
  "responseCode": 0
},
"transmitExpireTime": "2020-08-25T02:17:59Z"
}
]
}
2020-08-25T02:14:40.260Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "654433694",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2020-08-25T02:14:40.263Z - INFO - Time interval between two heartbeat request messages is: 50.415,
limit is: 65.0
2020-08-25T02:14:40.269Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "654433694",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-25T02:18:00Z"
    }
  ]
}
2020-08-25T02:15:29.668Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "654433694",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2020-08-25T02:15:29.670Z - INFO - Time interval between two heartbeat request messages is: 49.408,
limit is: 65.0
2020-08-25T02:15:29.677Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "654433694",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-25T02:18:49Z"
```



```
    }
  ]
}
2020-08-25T02:15:30.762Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "grantId": "387571119",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2020-08-25T02:15:30.763Z - INFO - Time interval between two heartbeat request messages is: 51.113,
limit is: 65.0
2020-08-25T02:15:30.769Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "grantId": "387571119",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-25T02:18:50Z"
    }
  ]
}
2020-08-25T02:16:20.082Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "654433694",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2020-08-25T02:16:20.085Z - INFO - Time interval between two heartbeat request messages is: 50.414,
limit is: 65.0
2020-08-25T02:16:20.091Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "654433694",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-25T02:19:40Z"
    }
  ]
}
2020-08-25T02:16:21.086Z - INFO - heartbeat request from CBRS : {
```



```
"heartbeatRequest": [
  {
    "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
    "grantId": "387571119",
    "grantRenew": false,
    "operationState": "AUTHORIZED"
  }
]
}
2020-08-25T02:16:21.088Z - INFO - Time interval between two heartbeat request messages is: 50.325,
limit is: 65.0
2020-08-25T02:16:21.094Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "grantId": "387571119",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-25T02:19:41Z"
    }
  ]
}
2020-08-25T02:17:10.536Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "654433694",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2020-08-25T02:17:10.536Z - INFO - Time interval between two heartbeat request messages is: 50.453,
limit is: 65.0
2020-08-25T02:17:10.545Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "654433694",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-25T02:20:30Z"
    }
  ]
}
2020-08-25T02:17:11.726Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "grantId": "387571119",
```

```
        "grantRenew": false,
        "operationState": "AUTHORIZED"
    }
}
]
}
2020-08-25T02:17:11.726Z - INFO - Time interval between two heartbeat request messages is: 50.639,
limit is: 65.0
2020-08-25T02:17:11.733Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
            "grantId": "387571119",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2020-08-25T02:20:31Z"
        }
    ]
}
}
2020-08-25T02:17:13.502Z - INFO - arrived to nstep starting question answer session with the
technician
2020-08-25T02:17:13.502Z - INFO - the question is : Did CBSD2 transmit power prior to AUTHORIZED
state (first successful HBT response)? please choose one of the answers :
2020-08-25T02:19:35.305Z - INFO - for the question : Did CBSD2 transmit power prior to AUTHORIZED
state (first successful HBT response)? , the user choose n
2020-08-25T02:19:35.305Z - INFO - the question is : Did CBSD2 transmit only within the frequency
range specified in its grantRequest message? please choose one of the answers :
2020-08-25T02:19:38.260Z - INFO - for the question : Did CBSD2 transmit only within the frequency
range specified in its grantRequest message? , the user choose y
2020-08-25T02:19:38.262Z - INFO - the question is : Did CBSD1 transmit power prior to AUTHORIZED
state (first successful HBT response)? please choose one of the answers :
2020-08-25T02:19:40.792Z - INFO - for the question : Did CBSD1 transmit power prior to AUTHORIZED
state (first successful HBT response)? , the user choose n
2020-08-25T02:19:40.792Z - INFO - the question is : Did CBSD1 transmit only within the frequency
range specified in its grantRequest message? please choose one of the answers :
2020-08-25T02:19:41.463Z - INFO - for the question : Did CBSD1 transmit only within the frequency
range specified in its grantRequest message? , the user choose y
2020-08-25T02:19:45.184Z - INFO - The final result of the test : WINNF.FT.D.HBT.2 is - passed and :the
additional comments for the current test are : CBSD1 started user traffic at T02:13:02.CBSD2 started
user traffic at T02:13:01.
```

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

2020-08-24T09:09:20.164Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
 2020-08-24T09:09:20.164Z - INFO - the selected test from the user : WINNF.FT.C.HBT.3 is starting now
 2020-08-24T09:09:32.894Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "model": "tyndall201",
      "softwareVersion": "2.0-cbbs-reg-a4",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "58c17a2d4984",
    "cpiSignatureData": {
      "digitalSignature":
"np3xypDLMaZr3jkHk0ZTubI2Y3LvrwK3ZwZzTwjctdFowDnr3NKDSHy-AfspelpnyxAHGTU9QtnCgiqjL3
0xUgadEtBYn5d2ok0MZpHHqqik1VtZDcdIj3YPB5BEit5LZV3BbBmQPpW-cl6yCpR-RnwAt9slBiWQaFX
mfhulelbWNhoe1Zc1XNdao5xvZ6cppFOn4bZLVmKf7GpRvgsoNqXlInGxj3PWGwQ8aDyE9OnVFxLMs
u51I6IMVklqX12pvk-9VrACaR-7a32ewaJbTudQtafNqu7OjbVZWwMGUwitE9nimuW3Acpi7S6T7ZE1Kt
5d9K0G1vQzwsmwO_ZtpA",
      "encodedCpiSignedData":
"eyJmY2NJZC16Ilo4SDg5RIQwMDYwliwiY2JzZFNlcmIhbE51bWJlcil6IjU4YzE3YTJkNDk4NCIsImIuc3R
hbGxhdGlvbIBhcmFtlj7ImxhdGloZWRIljo0MS41NDgyOSwibG9uZ2I0dWRlljotOTAuNjU5MTQ5ImhlaW
dodCI6MTAsImhlaWdodFR5cGUiOiJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFudGV
ubmFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlsdCI6LTUsImFudGVubmFHYWluljoyMSwiYW50Z
W5uYUJlYW13aWR0aCI6MzYwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZC16InRl
c3RfQ1BJX0ZXNDYiLCJjcGLOYW11IjoidGVzdCI6ImIuc3RhbGxhZDZlJ0aWZpY2F0aW9uVGltZSI6IjlmMj
AtMDYtMDIUMTE6NDY6NDhaIn19",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fccId": "Z8H89FT0060",
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "testid-1"
  }
]
```

2020-08-24T09:09:32.954Z - INFO - Registration message contains cpiSignatureData
 2020-08-24T09:09:32.954Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
 2020-08-24T09:09:32.954Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
  "antennaAzimuth": 150,
  "heightType": "AMSL",
  "longitude": -90.65914,
  "height": 10,
  "indoorDeployment": false,
  "antennaBeamwidth": 360,
  "antennaDowntilt": -5,
```



```
"latitude": 41.54829,
"antennaGain": 21
},
"fccId": "Z8H89FT0060",
"professionalInstallerData": {
  "cpiName": "test",
  "installCertificationTime": "2020-06-09T11:46:48Z",
  "cpild": "test_CPI_FW46"
},
"cbstdSerialNumber": "58c17a2d4984"
}
2020-08-24T09:09:32.956Z - INFO - verified signature on cpiSignatureData
2020-08-24T09:09:32.961Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-08-24T09:09:32.963Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbstdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2020-08-24T09:09:33.384Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbstdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "operationParam": {
        "maxEirp": 34,
        "operationFrequencyRange": {
          "highFrequency": 3660000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2020-08-24T09:09:33.392Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbstdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "channelType": "GAA",
      "grantExpireTime": "2020-08-31T09:09:33Z",
      "grantId": "815830917",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2020-08-24T09:09:38.581Z - INFO - heartbeat request from CBRS : {
```

```
"heartbeatRequest": [
  {
    "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
    "grantId": "815830917",
    "grantRenew": false,
    "operationState": "GRANTED"
  }
]
}
2020-08-24T09:09:38.588Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "815830917",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-24T09:12:58Z"
    }
  ]
}
2020-08-24T09:10:29.200Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "815830917",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2020-08-24T09:10:29.201Z - INFO - Time interval between two heartbeat request messages is: 50.62,
limit is: 65.0
2020-08-24T09:10:29.210Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "815830917",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-24T09:13:49Z"
    }
  ]
}
2020-08-24T09:11:19.608Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "815830917",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
```

```

    }
  ]
}
2020-08-24T09:11:19.609Z - INFO - Time interval between two heartbeat request messages is: 50.407,
limit is: 65.0
2020-08-24T09:11:19.617Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "815830917",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-24T09:14:39Z"
    }
  ]
}
}
2020-08-24T09:12:10.342Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "815830917",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
}
2020-08-24T09:12:10.342Z - INFO - Time interval between two heartbeat request messages is: 50.734,
limit is: 65.0
2020-08-24T09:12:10.349Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "815830917",
      "response": {
        "responseCode": 105
      },
      "transmitExpireTime": "2020-08-24T09:12:10Z"
    }
  ]
}
}
2020-08-24T09:12:12.184Z - INFO - arrived to nstep starting question answer session with the
technician
2020-08-24T09:12:12.184Z - 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 :
2020-08-24T09:12:26.871Z - INFO - for the question : Did the CBSD stop RF transmission within 60
seconds of receiving Heartbeat response with responseCode = 105? , the user choose y
2020-08-24T09:12:29.381Z - INFO - The final result of the test : WINNF.FT.C.HBT.3 is - passed and :the
additional comments for the current test are : CBSD stopped user traffic at T09:12:11.

```

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

2020-08-24T09:13:41.322Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
 2020-08-24T09:13:41.322Z - INFO - the selected test from the user : WINNF.FT.C.HBT.5 is starting now
 2020-08-24T09:17:16.619Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "model": "tyndall201",
      "softwareVersion": "2.0-cbrr-reg-a4",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "58c17a2d4984",
    "cpiSignatureData": {
      "digitalSignature":
"np3xypDLMaZr3jkHk0ZTubI2Y3LvrwK3ZwZzTwjctdFowDnr3NKDSHy-AfspelpnyxAHGTU9QtnCgijqjL3
0xUgadEtBYn5d2ok0MZpHHqqik1VtZDcdlj3YPB5BEit5LZV3BbBmQPpW-cl6yCpR-RnwAt9slBiWQaFX
mfhulelbWNhoe1Zc1XNdao5xvZ6cppFOn4bZLVmKf7GpRvgsoNqXllnGxj3PWGwQ8aDyE9OnVFxLMs
u51I6IMVklqX12pvk-9VrACaR-7a32ewaJbTudQtafNqu7OjbVZWwMGUwitE9nimuW3Acpi7S6T7ZE1Kt
5d9K0G1vQzwsmwO_ZtpA",
      "encodedCpiSignedData":
"eyJmY2NJZC16llo4SDg5RIQwMDYwliwiY2JzZFNlcmhE51bWJlcil6ljU4YzE3YTJkNDk4NCIsImIuc3R
hbGxhdGlvbIBhcmFtlj7ImxhdGloZWRIljo0MS41NDgyOSwibG9uZ2l0dWRlljotOTAuNjU5MTQ5ImhlaW
dodCI6MTAsImhlaWdodFR5cGUiOiJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFudGV
ubmFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlsdCI6LTUsImFudGVubmFHYWluljoyMSwiYW50Z
W5uYUJlYW13aWR0aCI6MzYwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZC16InRl
c3RfQ1BJX0ZXNDYiLCJjcGlOYW1lIjo0MDYwZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZC16InRl
AtMDYtMDIUMTE6NDY6NDhaIn19",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fccId": "Z8H89FT0060",
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "testid-1"
  }
]
```

2020-08-24T09:17:17.007Z - INFO - Registration message contains cpiSignatureData
 2020-08-24T09:17:17.007Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
 2020-08-24T09:17:17.009Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
  "antennaAzimuth": 150,
  "heightType": "AMSL",
  "longitude": -90.65914,
  "height": 10,
  "indoorDeployment": false,
  "antennaBeamwidth": 360,
  "antennaDowntilt": -5,
```



```
"latitude": 41.54829,
"antennaGain": 21
},
"fccId": "Z8H89FT0060",
"professionalInstallerData": {
  "cpiName": "test",
  "installCertificationTime": "2020-06-09T11:46:48Z",
  "cpild": "test_CPI_FW46"
},
"cbstdSerialNumber": "58c17a2d4984"
}
2020-08-24T09:17:17.009Z - INFO - verified signature on cpiSignatureData
2020-08-24T09:17:17.015Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-08-24T09:17:17.016Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbstdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2020-08-24T09:17:17.466Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbstdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "operationParam": {
        "maxEirp": 34,
        "operationFrequencyRange": {
          "highFrequency": 3660000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2020-08-24T09:17:17.473Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbstdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "channelType": "GAA",
      "grantExpireTime": "2020-08-31T09:17:17Z",
      "grantId": "51524873",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2020-08-24T09:17:22.632Z - INFO - heartbeat request from CBRS : {
```

```
"heartbeatRequest": [
  {
    "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
    "grantId": "51524873",
    "grantRenew": false,
    "operationState": "GRANTED"
  }
]
}
2020-08-24T09:17:22.641Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "51524873",
      "response": {
        "responseCode": 501
      },
      "transmitExpireTime": "2020-08-24T09:17:22Z"
    }
  ]
}
2020-08-24T09:18:23.203Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "51524873",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2020-08-24T09:18:23.206Z - INFO - Time interval between two heartbeat request messages is: 60.571,
limit is: 65.0
2020-08-24T09:18:23.213Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "51524873",
      "response": {
        "responseCode": 501
      },
      "transmitExpireTime": "2020-08-24T09:18:23Z"
    }
  ]
}
2020-08-24T09:18:24.346Z - INFO - arrived to nstep starting question answer session with the
technician
2020-08-24T09:18:24.348Z - INFO - the question is : Did the CBSD transmit at any time during the test?
please choose one of the answers :
2020-08-24T09:21:02.140Z - INFO - for the question : Did the CBSD transmit at any time during the
test? , the user choose n
2020-08-24T09:21:07.125Z - INFO - The final result of the test : WINNF.FT.C.HBT.5 is - passed and :the
```



additional comments for the current test are : There is RF transmission, but it's not user traffic.

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

2020-08-24T09:22:03.322Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
 2020-08-24T09:22:03.322Z - INFO - the selected test from the user : WINNF.FT.C.HBT.6 is starting now
 2020-08-24T09:22:11.555Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "model": "tyndall201",
      "softwareVersion": "2.0-cbbs-reg-a4",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "58c17a2d4984",
    "cpiSignatureData": {
      "digitalSignature":
"np3xypDLMaZr3jkHk0ZTubI2Y3LvrwK3ZwZzTwjctdFowDnr3NKDSHy-AfspelpnyxAHGTU9QtnCgiqjL3
0xUgadEtBYn5d2ok0MZpHHqqik1VtZDcdlj3YPB5BEit5LZV3BbBmQPpW-cl6yCpR-RnwAt9slBiWQaFX
mfhulelbWNhoe1Zc1XNdao5xvZ6cppFOn4bZLVmKf7GpRvgsoNqXlInGxj3PWGwQ8aDyE9OnVFxLMs
u51I6IMVklqX12pvk-9VrACaR-7a32ewaJbTudQtafNqu7OjbVZWwMGUwitE9nimuW3Acpi7S6T7ZE1Kt
5d9K0G1vQzwsmwO_ZtpA",
      "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RIQwMDYwliwiY2JzZFNlcmIhbE51bWJlcil6IjU4YzE3YTJkNDk4NCIsImIuc3R
hbGxhdGlvbIBhcmFtljp7ImxhdGloZWRIljo0MS41NDgyOSwibG9uZ2I0dWRlljotOTAuNjU5MTQsImhlaW
dodCI6MTAsImhlaWdodFR5cGUiOiJBTVMliwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFudGV
ubmFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlsdCI6LTUsImFudGVubmFHYWluljoyMSwiYW50Z
W5uYUJlYW13aWR0aCI6MzYwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRl
c3RfQ1BJX0ZXNDYiLCJjcGLOYW1lIjoidGVzdCI6ImIuc3RhbGxhZDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMj
AtMDYtMDIUMTE6NDY6NDhln19",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fccId": "Z8H89FT0060",
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "testid-1"
  }
]
```

2020-08-24T09:22:11.664Z - INFO - Registration message contains cpiSignatureData
 2020-08-24T09:22:11.664Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
 2020-08-24T09:22:11.665Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
  "antennaAzimuth": 150,
  "heightType": "AMSL",
  "longitude": -90.65914,
  "height": 10,
  "indoorDeployment": false,
  "antennaBeamwidth": 360,
  "antennaDowntilt": -5,
```



```
"latitude": 41.54829,
"antennaGain": 21
},
"fccId": "Z8H89FT0060",
"professionalInstallerData": {
  "cpiName": "test",
  "installCertificationTime": "2020-06-09T11:46:48Z",
  "cpild": "test_CPI_FW46"
},
"cbstdSerialNumber": "58c17a2d4984"
}
2020-08-24T09:22:11.667Z - INFO - verified signature on cpiSignatureData
2020-08-24T09:22:11.671Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-08-24T09:22:11.674Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbstdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2020-08-24T09:22:12.246Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbstdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "operationParam": {
        "maxEirp": 34,
        "operationFrequencyRange": {
          "highFrequency": 3660000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2020-08-24T09:22:12.253Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbstdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "channelType": "GAA",
      "grantExpireTime": "2020-08-31T09:22:12Z",
      "grantId": "329355595",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2020-08-24T09:22:17.467Z - INFO - heartbeat request from CBRS : {
```

```

    "heartbeatRequest": [
      {
        "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
        "grantId": "329355595",
        "grantRenew": false,
        "operationState": "GRANTED"
      }
    ]
  }
}
2020-08-24T09:22:17.474Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "329355595",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-24T09:25:37Z"
    }
  ]
}
2020-08-24T09:23:08.148Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "329355595",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
}
2020-08-24T09:23:08.150Z - INFO - Time interval between two heartbeat request messages is: 50.681,
limit is: 65.0
2020-08-24T09:23:08.157Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "329355595",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-24T09:26:28Z"
    }
  ]
}
}
2020-08-24T09:23:57.566Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "329355595",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}

```



```
}
]
}
2020-08-24T09:23:57.568Z - INFO - Time interval between two heartbeat request messages is: 49.418,
limit is: 65.0
2020-08-24T09:23:57.575Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "329355595",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-24T09:27:17Z"
    }
  ]
}
}
2020-08-24T09:24:47.980Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "329355595",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
}
2020-08-24T09:24:47.983Z - INFO - Time interval between two heartbeat request messages is: 50.415,
limit is: 65.0
2020-08-24T09:24:47.990Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "329355595",
      "response": {
        "responseCode": 501
      },
      "transmitExpireTime": "2020-08-24T09:24:47Z"
    }
  ]
}
}
2020-08-24T09:25:37.515Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "329355595",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
}
2020-08-24T09:25:37.516Z - INFO - Time interval between two heartbeat request messages is: 49.533,
```

limit is: 65.0

2020-08-24T09:25:37.525Z - INFO - engine sent successfully, the response to CBRS : {

"heartbeatResponse": [

{

"cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",

"grantId": "329355595",

"response": {

"responseCode": 501

},

"transmitExpireTime": "2020-08-24T09:25:37Z"

}

]

}

2020-08-24T09:25:39.339Z - INFO - arrived to nstep starting question answer session with the technician

2020-08-24T09:25:39.341Z - 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 :

2020-08-24T09:26:55.881Z - INFO - for the question : Did the CBSD stop RF transmission within 60 seconds of receiving Heartbeat response with responseCode = 501? , the user choose y

2020-08-24T09:26:58.632Z - INFO - The final result of the test : WINNF.FT.C.HBT.6 is - passed and :the additional comments for the current test are : CBSD stopped user traffic at T09:24:49.

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

2020-08-24T09:27:39.342Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
 2020-08-24T09:27:39.342Z - INFO - the selected test from the user : WINNF.FT.C.HBT.7 is starting now
 2020-08-24T09:27:41.543Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "model": "tyndall201",
      "softwareVersion": "2.0-cbrr-reg-a4",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "58c17a2d4984",
    "cpiSignatureData": {
      "digitalSignature":
"np3xypDLMaZr3jkHk0ZTubI2Y3LvrwK3ZwZzTwjctdFowDnr3NKDSHy-AfspelpnyxAHGTU9QtnCgiqjL3
0xUgadEtBYn5d2ok0MZpHHqqik1VtZDcdlj3YPB5BEit5LZV3BbBmQPpW-cl6yCpR-RnwAt9slBiWQaFX
mfhulelbWNhoe1Zc1XNdao5xvZ6cppFOn4bZLVmKf7GpRvgsoNqXlInGxj3PWGwQ8aDyE9OnVFxLMs
u51I6IMVklqX12pvk-9VrACaR-7a32ewaJbTudQtafNqu7OjbVZWwMGUwitE9nimuW3Acpi7S6T7ZE1Kt
5d9K0G1vQzwsmwO_ZtpA",
      "encodedCpiSignedData":
"eyJmY2NJZC16Ilo4SDg5RIQwMDYwliwiY2JzZFNlcmhE51bWJlcil6ljU4YzE3YTJkNDk4NCIsImhuc3R
hbGxhdGlvbIBhcmFtlj7ImxhdGlo0dWRlljo0MS41NDgyOSwibG9uZ2l0dWRlljotOTAuNjU5MTQslmhlW
dodCI6MTAsImhlaWdodFR5cGUiOiJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFudGV
ubmFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlsdCI6LTUsImFudGVubmFHYWluljoyMSwiYW50Z
W5uYUJlYW13aWR0aCI6MzYwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZC16InRl
c3RfQ1BJX0ZXNDYiLCJjcGLOYW1lIjo0dGVzdCI6Imhuc3RhbGxhZDZlJ0aWZpY2F0aW9uVGltZSI6IjlmMj
AtMDYtMDIUMTE6NDY6NDhaIn19",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fccId": "Z8H89FT0060",
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "testid-1"
  }
]
```

2020-08-24T09:27:41.625Z - INFO - Registration message contains cpiSignatureData
 2020-08-24T09:27:41.625Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
 2020-08-24T09:27:41.627Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
  "antennaAzimuth": 150,
  "heightType": "AMSL",
  "longitude": -90.65914,
  "height": 10,
  "indoorDeployment": false,
  "antennaBeamwidth": 360,
  "antennaDowntilt": -5,
```



```
"latitude": 41.54829,
"antennaGain": 21
},
"fccId": "Z8H89FT0060",
"professionalInstallerData": {
  "cpiName": "test",
  "installCertificationTime": "2020-06-09T11:46:48Z",
  "cpild": "test_CPI_FW46"
},
"cbstdSerialNumber": "58c17a2d4984"
}
2020-08-24T09:27:41.628Z - INFO - verified signature on cpiSignatureData
2020-08-24T09:27:41.632Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-08-24T09:27:41.634Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbstdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2020-08-24T09:27:42.124Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbstdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "operationParam": {
        "maxEirp": 34,
        "operationFrequencyRange": {
          "highFrequency": 3660000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2020-08-24T09:27:42.131Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbstdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "channelType": "GAA",
      "grantExpireTime": "2020-08-31T09:27:42Z",
      "grantId": "135087646",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2020-08-24T09:27:47.323Z - INFO - heartbeat request from CBRS : {
```

```
"heartbeatRequest": [
  {
    "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
    "grantId": "135087646",
    "grantRenew": false,
    "operationState": "GRANTED"
  }
]
}
2020-08-24T09:27:47.332Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "135087646",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-24T09:31:07Z"
    }
  ]
}
2020-08-24T09:28:39.144Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "135087646",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
}
2020-08-24T09:28:39.145Z - INFO - Time interval between two heartbeat request messages is: 51.82,
limit is: 65.0
2020-08-24T09:28:39.154Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "135087646",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-24T09:31:59Z"
    }
  ]
}
}
2020-08-24T09:29:30.157Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "135087646",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
```



```
}
]
}
2020-08-24T09:29:30.158Z - INFO - Time interval between two heartbeat request messages is: 51.013,
limit is: 65.0
2020-08-24T09:29:30.165Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "135087646",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-24T09:32:50Z"
    }
  ]
}
}
2020-08-24T09:30:20.891Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "135087646",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
}
2020-08-24T09:30:20.892Z - INFO - Time interval between two heartbeat request messages is: 50.734,
limit is: 65.0
2020-08-24T09:30:20.901Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "135087646",
      "response": {
        "responseCode": 502
      },
      "transmitExpireTime": "2020-08-24T09:30:20Z"
    }
  ]
}
}
2020-08-24T09:30:21.226Z - INFO - relinquishment request from CBRS : {
  "relinquishmentRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "135087646"
    }
  ]
}
}
2020-08-24T09:30:21.233Z - INFO - engine sent successfully, the response to CBRS : {
  "relinquishmentResponse": [
    {

```



```
"cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
"grantId": "135087646",
"response": {
  "responseCode": 0
}
]
```

2020-08-24T09:30:22.355Z - INFO - arrived to nstep starting question answer session with the technician

2020-08-24T09:30:22.355Z - 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 :

2020-08-24T09:30:31.960Z - INFO - for the question : Did the CBSD stop RF transmission within 60 seconds of receiving Heartbeat response with responseCode = 502? , the user choose y

2020-08-24T09:30:35.362Z - INFO - The final result of the test : WINNF.FT.C.HBT.7 is - passed and :the additional comments for the current test are : CBSD stopped user traffic at T09:30:21.

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

```
2020-08-25T02:21:13.394Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
2020-08-25T02:21:13.394Z - INFO - the selected test from the user : WINNF.FT.D.HBT.8 is starting now
2020-08-25T02:21:18.687Z - INFO - registration request from CBRS  : {
```

```

"registrationRequest": {
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbssCategory": "B",
    "cbssInfo": {
      "model": "tyndall201",
      "softwareVersion": "2.0-cbrs-reg-a4",
      "vendor": "Cambium Networks"
    },
    "cbssSerialNumber": "58c17a2d4984",
    "cpiSignatureData": {
      "digitalSignature":
"np3xypDLMaZr3jkHk0ZTubI2Y3LvrwK3ZwZzTwjctdFowDnr3NKDSHy-AfspelpnyxAHGTU9QtnCgijqL3
0xUgadEtBYn5d2ok0MZpHHqqik1VtZDcdIj3YPB5BEit5LZV3BbBmQPPw-cl6yCpR-RnwAt9sIBiWQaFX
mfhuleIbWNhoe1Zc1XNDao5xvZ6cppFOn4bZLVMkf7GpRvgsoNqXlInGxj3PWGwQ8aDyE9OnVFxLMs
u5I16IMVklqX12pvk-9VrACaR-7a32ewaJbTUDQtafNqu7OjbVZWwMGuwitE9nimuW3Acpi7S6T7ZE1Kt
5d9K0G1vQzswmwO_ZtpA",
      "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RIQwMDYwliwiY2JzZFNlcmIhbE51bWJlcil6IjU4YzE3YTJkNDk4NCIsImIuc3R
hbGxhdGlvbIjBhcmFtIjlp7ImxhdGl0dWRlIjo0MS41NDgyOSwibG9uZ2I0dWRlIjotOTAuNjU5MTQsImhlaW
dodCI6MTAsImhlaWdodFR5cGUiOiJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFudGV
ubmFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlscCI6LTUsImFudGVubmFHYWluljoyMSwiYW50Z
W5uYUJlYW13aWR0aCI6MzYwfSwicHJvZmVzZ2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRl
c3RfQ1BJX0ZXNDYiLCJjcGlOYW1lIjoiaGVzdCI6ImIuc3RhbGxkZXJ0aWZpY2F0aW9uVGlhZSI6IjIwMj
AtMDYtMDIUMTE6NDY6NDhln19",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fccId": "Z8H89FT0060",
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "testid-1"
  }
}
]
}

```

```
2020-08-25T02:21:18.733Z - INFO - Registration message contains cpiSignatureData
2020-08-25T02:21:18.733Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2020-08-25T02:21:18.733Z - INFO - encodedCpiSignedData contents = {
```

```
"installationParam": {
  "antennaAzimuth": 150,
  "heightType": "AMSL",
  "longitude": -90.65914,
  "height": 10,
  "indoorDeployment": false,
  "antennaBeamwidth": 360,
  "antennaDowntilt": -5.
```



```
"latitude": 41.54829,
"antennaGain": 21
},
"fccId": "Z8H89FT0060",
"professionalInstallerData": {
  "cpiName": "test",
  "installCertificationTime": "2020-06-09T11:46:48Z",
  "cpild": "test_CPI_FW46"
},
"cbstdSerialNumber": "58c17a2d4984"
}
2020-08-25T02:21:18.734Z - INFO - verified signature on cpiSignatureData
2020-08-25T02:21:18.740Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-08-25T02:21:18.742Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbstdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2020-08-25T02:21:19.198Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbstdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "operationParam": {
        "maxEirp": 34,
        "operationFrequencyRange": {
          "highFrequency": 3660000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2020-08-25T02:21:19.206Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbstdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "channelType": "GAA",
      "grantExpireTime": "2020-09-01T02:21:19Z",
      "grantId": "892604546",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2020-08-25T02:21:20.160Z - INFO - registration request from CBRS : {
```

```

"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbstdCategory": "B",
    "cbstdInfo": {
      "model": "tyndall201",
      "softwareVersion": "2.0-cbrs-reg-a4",
      "vendor": "Cambium Networks"
    },
    "cbstdSerialNumber": "58c17a2d49e2",
    "cpiSignatureData": {
      "digitalSignature":
"bA0y6BLSOWf8MJWkybmYtZ5Oj9cwTYRmNh2idpQFDzx6CQp9bcVSIKjT6_mMdbhl24zPQSvfKZ61j
mIBEEQXYLoLfmE-PQMJZq728tBMDsGVMUDw5WG9o-dl-Sl6laV5km77p2OILo06B7GUC1ln_gE4iSg
QNo0h8RIISYIrtznHtN_tqzJ0yfVqL7s3-QEz7MzET-URDvPiJ_3J1Zset69QXiuWT0UdzWLkXWGPn1lo
Yc6noOjMs2hOjYpXoEPP-96v7_QuDN0i_d5l3yNdfYkfi3h8Tq6hcrSYtLEEH28IERbkhtpwM2WYC4TTq
ZYdchcve4TfoFzsEcKEeZw",
      "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RIQwMDYwliwiY2JzZFNlcmIhbE51bWJlci6lU4YzE3YTJkNDIlMiIsImIuc3Rhbm
GxhdGlvbIBhcmFtIjpw7ImxhdGlo4dWRlIjo0MS41NDgyOSwibG9uZ2l0dWRlIjotOTAuNjU5MTQsImhlaWdo
dCI6MTAsImhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFudGVub
mFBemltdXROljoXNTAsImFudGVubmFEb3dudGlscCI6LTUsImFudGVubmFHYWluljoyMSwiYW50ZW5
uYUJlYW13aWR0aCI6MzYwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRlc3
RfQ1BjX0ZlNDYiLCJjcGlOYW1lIjoiaGVzZCI6ImIuc3RhbmGxZDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMjAt
MDYtMDIUMTE6NDY6NDhaIn19",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fccId": "Z8H89FT0060",
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "testid-1"
  }
]
}

2020-08-25T02:21:20.250Z - INFO - Registration message contains cpiSignatureData
2020-08-25T02:21:20.250Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2020-08-25T02:21:20.252Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
    "antennaAzimuth": 150,
    "heightType": "AMSL",
    "longitude": -90.65914,
    "height": 10,
    "indoorDeployment": false,
    "antennaBeamwidth": 360,
    "antennaDowntilt": -5,
    "latitude": 41.54829,
    "antennaGain": 21
  },
  "fccId": "Z8H89FT0060",

```

```

    "professionalInstallerData": {
      "cpiName": "test",
      "installCertificationTime": "2020-06-09T11:46:48Z",
      "cpild": "test_CPI_FW46"
    },
    "cbsdSerialNumber": "58c17a2d49e2"
  }
}
2020-08-25T02:21:20.253Z - INFO - verified signature on cpiSignatureData
2020-08-25T02:21:20.257Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-08-25T02:21:20.259Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2020-08-25T02:21:20.640Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "operationParam": {
        "maxEirp": 34,
        "operationFrequencyRange": {
          "highFrequency": 3660000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
}
2020-08-25T02:21:20.648Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "channelType": "GAA",
      "grantExpireTime": "2020-09-01T02:21:20Z",
      "grantId": "715594137",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2020-08-25T02:21:23.772Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "892604546",

```



```
"grantRenew": false,
"operationState": "GRANTED"
}
]
}
2020-08-25T02:21:23.779Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "892604546",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-25T02:24:43Z"
    }
  ]
}
2020-08-25T02:21:25.826Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "grantId": "715594137",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2020-08-25T02:21:25.835Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "grantId": "715594137",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-25T02:24:45Z"
    }
  ]
}
2020-08-25T02:22:14.388Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "892604546",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2020-08-25T02:22:14.388Z - INFO - Time interval between two heartbeat request messages is: 50.616,
limit is: 65.0
2020-08-25T02:22:14.395Z - INFO - engine sent successfully, the response to CBRS : {
```

```
"heartbeatResponse": [
  {
    "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
    "grantId": "892604546",
    "response": {
      "responseCode": 0
    },
    "transmitExpireTime": "2020-08-25T02:25:34Z"
  }
]
}
2020-08-25T02:22:17.344Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "grantId": "715594137",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2020-08-25T02:22:17.345Z - INFO - Time interval between two heartbeat request messages is: 51.517,
limit is: 65.0
2020-08-25T02:22:17.351Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "grantId": "715594137",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-25T02:25:37Z"
    }
  ]
}
2020-08-25T02:23:04.809Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "892604546",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2020-08-25T02:23:04.812Z - INFO - Time interval between two heartbeat request messages is: 50.422,
limit is: 65.0
2020-08-25T02:23:04.818Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "892604546",
```

```
        "response": {
            "responseCode": 0
        },
        "transmitExpireTime": "2020-08-25T02:26:24Z"
    }
}
2020-08-25T02:23:07.635Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
            "grantId": "715594137",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2020-08-25T02:23:07.637Z - INFO - Time interval between two heartbeat request messages is: 50.292,
limit is: 65.0
2020-08-25T02:23:07.644Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
            "grantId": "715594137",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2020-08-25T02:26:27Z"
        }
    ]
}
2020-08-25T02:23:55.227Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
            "grantId": "892604546",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2020-08-25T02:23:55.229Z - INFO - Time interval between two heartbeat request messages is: 50.418,
limit is: 65.0
2020-08-25T02:23:55.234Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
            "grantId": "892604546",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2020-08-25T02:27:15Z"
```

```
    }
  ]
}
2020-08-25T02:23:57.941Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "grantId": "715594137",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2020-08-25T02:23:57.944Z - INFO - Time interval between two heartbeat request messages is: 50.306,
limit is: 65.0
2020-08-25T02:23:57.950Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "grantId": "715594137",
      "response": {
        "responseCode": 500
      },
      "transmitExpireTime": "2020-08-25T02:23:57Z"
    }
  ]
}
2020-08-25T02:23:59.405Z - INFO - arrived to nstep starting question answer session with the
technician
2020-08-25T02:23:59.407Z - INFO - the question is : Did the CBSD1 transmit power prior to
AUTHORIZED state (first successful HBT response)? please choose one of the answers :
2020-08-25T02:24:49.007Z - INFO - for the question : Did the CBSD1 transmit power prior to
AUTHORIZED state (first successful HBT response)? , the user choose n
2020-08-25T02:24:49.007Z - 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 :
2020-08-25T02:24:53.309Z - INFO - for the question : Did the CBSD2 stop RF transmission within 60
seconds of receiving Heartbeat response with responseCode = 500? , the user choose y
2020-08-25T02:24:56.601Z - INFO - The final result of the test : WINNF.FT.D.HBT.8 is - passed and :the
additional comments for the current test are : CBSD2 stopped user traffic at T02:23:59.
```

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

2020-08-24T09:35:13.470Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
 2020-08-24T09:35:13.470Z - INFO - the selected test from the user : WINNF.FT.C.HBT.9 is starting now
 2020-08-24T09:35:16.355Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "model": "tyndall201",
      "softwareVersion": "2.0-cbrr-reg-a4",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "58c17a2d4984",
    "cpiSignatureData": {
      "digitalSignature":
"np3xypDLMaZr3jkHk0ZTubI2Y3LvrwK3ZwZzTwjctdFowDnr3NKDSHy-AfspelpnyxAHGTU9QtnCgiqjL3
0xUgadEtBYn5d2ok0MZpHHqqik1VtZDcdlj3YPB5BEit5LZV3BbBmQPpW-cl6yCpR-RnwAt9slBiWQaFX
mfhulelbWNhoe1Zc1XNdao5xvZ6cppFOn4bZLVmKf7GpRvgsoNqXlInGxj3PWGwQ8aDyE9OnVFxLMs
u51I6IMVklqX12pvk-9VrACaR-7a32ewaJbTudQtafNqu7OjbVZWwMGUwitE9nimuW3Acpi7S6T7ZE1Kt
5d9K0G1vQzwsmwO_ZtpA",
      "encodedCpiSignedData":
"eyJmY2NJZC16Ilo4SDg5RIQwMDYwliwiY2JzZFNlcmhE51bWJlcil6ljU4YzE3YTJkNDk4NCIsImLuc3R
hbGxhdGlvbIBhcmFtlj7ImxhdGlo0dWRlljo0MS41NDgyOSwibG9uZ2l0dWRlljotOTAuNjU5MTQslmhlW
dodCI6MTAsImhlaWdodFR5cGUiOiJBTVMliwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFudGV
ubmFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlsdCI6LTUsImFudGVubmFHYWluljoyMSwiYW50Z
W5uYUJlYW13aWR0aCI6MzYwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZC16InRl
c3RfQ1BJX0ZXNDYiLCJjcGLOYW1lIjoidGVzdCI6ImhlaWdodFR5cGUiOiJBTVMliwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFudGVubmFEb3dudGlsdCI6LTUsImFudGVubmFHYWluljoyMSwiYW50ZW5uYUJlYW13aWR0aCI6MzYwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZC16InRlAtMDYtMDIUMTE6NDY6NDhln19",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fccId": "Z8H89FT0060",
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "testid-1"
  }
]
```

2020-08-24T09:35:16.400Z - INFO - Registration message contains cpiSignatureData
 2020-08-24T09:35:16.400Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
 2020-08-24T09:35:16.400Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
  "antennaAzimuth": 150,
  "heightType": "AMSL",
  "longitude": -90.65914,
  "height": 10,
  "indoorDeployment": false,
  "antennaBeamwidth": 360,
  "antennaDowntilt": -5,
```



```
"latitude": 41.54829,
"antennaGain": 21
},
"fccId": "Z8H89FT0060",
"professionalInstallerData": {
  "cpiName": "test",
  "installCertificationTime": "2020-06-09T11:46:48Z",
  "cpild": "test_CPI_FW46"
},
"cbstdSerialNumber": "58c17a2d4984"
}
2020-08-24T09:35:16.447Z - INFO - verified signature on cpiSignatureData
2020-08-24T09:35:16.457Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-08-24T09:35:16.457Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbstdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2020-08-24T09:35:16.862Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbstdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "operationParam": {
        "maxEirp": 34,
        "operationFrequencyRange": {
          "highFrequency": 3660000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2020-08-24T09:35:16.869Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbstdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "channelType": "GAA",
      "grantExpireTime": "2020-08-31T09:35:16Z",
      "grantId": "137644039",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2020-08-24T09:35:22.046Z - INFO - heartbeat request from CBRS : {
```

```
"heartbeatRequest": [
  {
    "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
    "grantId": "137644039",
    "grantRenew": false,
    "operationState": "GRANTED"
  }
]
}
2020-08-24T09:36:22.328Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "137644039",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2020-08-24T09:36:22.328Z - INFO - request message received while HBT is absent, sleep 144 sec
before responding
2020-08-24T09:37:21.663Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "137644039",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2020-08-24T09:37:21.663Z - INFO - request message received while HBT is absent, sleep 85 sec
before responding
2020-08-24T09:38:21.953Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "137644039",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2020-08-24T09:38:21.953Z - INFO - request message received while HBT is absent, sleep 25 sec
before responding
2020-08-24T09:38:42.055Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "137644039",
      "response": {
        "responseCode": 501
      }
    }
  ]
}
```

```
    },  
    "transmitExpireTime": "2020-08-24T09:38:42Z"  
  }  
]  
}  
2020-08-24T09:38:43.486Z - INFO - arrived to nstep starting question answer session with the technician  
2020-08-24T09:38:43.486Z - INFO - the question is : Were there RF transmissions from the CBSD during the test? please choose one of the answers :  
2020-08-24T09:38:46.328Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"  
2020-08-24T09:38:46.664Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"  
2020-08-24T09:38:46.956Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"  
2020-08-24T09:39:52.572Z - INFO - for the question : Were there RF transmissions from the CBSD during the test? , the user choose n  
2020-08-24T09:40:02.463Z - INFO - The final result of the test : WINNF.FT.C.HBT.9 is - passed and :the additional comments for the current test are : There is RF transmission, but it's not user traffic.
```

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

2020-08-25T01:48:53.987Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
 2020-08-25T01:48:53.987Z - INFO - the selected test from the user : WINNF.FT.C.HBT.10 is starting now

```
2020-08-25T01:48:57.433Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "E_UTRA"
      },
      "cbsdCategory": "B",
      "cbsdInfo": {
        "model": "tyndall201",
        "softwareVersion": "2.0-cbrs-reg-a4",
        "vendor": "Cambium Networks"
      },
      "cbsdSerialNumber": "58c17a2d4984",
      "cpiSignatureData": {
        "digitalSignature":
"np3xypDLMaZr3jkHk0ZTubI2Y3LvrwK3ZwZzTwjctdFowDnr3NKDSHy-AfspelpnyxAHGTU9QtnCgiqjL3
0xUgadEtBYn5d2ok0MZpHHqk1VtZDcdIj3YPB5BEit5LZV3BbBmQPpW-cl6yCpR-RnwAt9slBiWQaFX
mfhulelbWNhoe1Zc1XNdao5xvZ6cppFOn4bZLVMkf7GpRvgsoNqXlInGxj3PWGwQ8aDyE9OnVFxLMs
u51I6IMVklqX12pvk-9VrACaR-7a32ewaJbTudQtafNqu7OjbVZWwMGuwitE9nimuW3Acpi7S6T7ZE1Kt
5d9K0G1vQzswmwo_ZtpA",
        "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RIQwMDYwliwiY2JzZFNlcmIhbE51bWJlcil6IjU4YzE3YTJkNDk4NCIsImIuc3R
hbGxhdGlvbIjBhcmFtlj7ImxhdGloZWRIjo0MS41NDgyOSwibG9uZ2I0dWRlljotOTAuNjU5MTQslmhlW
dodCI6MTAsImhlaWdodFR5cGUiOiJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFudGV
ubmFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlsdCI6LTUsImFudGVubmFHYWluljoyMSwiYW50Z
W5uYUJlYW13aWR0aCI6MzYwfSwichJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlZCI6InRl
c3RfQ1BJX0ZXNDYiLCJjcGLOYW1lIjoidGVzdCI6ImIuc3RhbGxhZDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMj
AtMDYtMDIUMTE6NDY6NDhaIn19",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fccId": "Z8H89FT0060",
      "measCapability": [
        "RECEIVED_POWER_WITHOUT_GRANT"
      ],
      "userId": "testid-1"
    }
  ]
}
```

2020-08-25T01:48:57.480Z - INFO - Registration message contains cpiSignatureData
 2020-08-25T01:48:57.480Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
 2020-08-25T01:48:57.480Z - INFO - encodedCpiSignedData contents = {
 "installationParam": {
 "antennaAzimuth": 150,
 "heightType": "AMSL",
 "longitude": -90.65914,
 "height": 10,
 "indoorDeployment": false,
 "antennaBeamwidth": 360,

```

        "antennaDowntilt": -5,
        "latitude": 41.54829,
        "antennaGain": 21
    },
    "fccId": "Z8H89FT0060",
    "professionalInstallerData": {
        "cpiName": "test",
        "installCertificationTime": "2020-06-09T11:46:48Z",
        "cpild": "test_CPI_FW46"
    },
    "cbsdSerialNumber": "58c17a2d4984"
}
2020-08-25T01:48:57.482Z - INFO - verified signature on cpiSignatureData
2020-08-25T01:48:57.487Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-08-25T01:48:57.490Z - INFO - engine sent successfully, the response to CBRS : {
    "registrationResponse": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2020-08-25T01:48:58.000Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
            "operationParam": {
                "maxEirp": 34,
                "operationFrequencyRange": {
                    "highFrequency": 3660000000,
                    "lowFrequency": 3650000000
                }
            }
        }
    ]
}
2020-08-25T01:48:58.007Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
            "channelType": "GAA",
            "grantExpireTime": "2020-09-01T01:48:58Z",
            "grantId": "524408804",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}

```



```
2020-08-25T01:49:03.236Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "524408804",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2020-08-25T01:49:03.244Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "524408804",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-25T01:52:23Z"
    }
  ]
}
2020-08-25T01:49:52.875Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "524408804",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2020-08-25T01:49:52.877Z - INFO - Time interval between two heartbeat request messages is: 49.639,
limit is: 65.0
2020-08-25T01:49:52.884Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "524408804",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-25T01:53:12Z"
    }
  ]
}
2020-08-25T01:50:43.592Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "524408804",
      "grantRenew": false,
```



```
        "operationState": "AUTHORIZED"
    }
]
}
2020-08-25T01:50:43.594Z - INFO - Time interval between two heartbeat request messages is: 50.718,
limit is: 65.0
2020-08-25T01:50:43.596Z - INFO - LAST HBT RESPONSE THAT SET TRANSMIT_EXPIRE_TIME
WAS AT: 2020-08-25 01:49:52.875000
2020-08-25T01:51:35.812Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
            "grantId": "524408804",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2020-08-25T01:51:35.812Z - INFO - request message received while HBT is absent, sleep 152 sec
before responding
2020-08-25T01:52:25.387Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
            "grantId": "524408804",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2020-08-25T01:52:25.387Z - INFO - request message received while HBT is absent, sleep 103 sec
before responding
2020-08-25T01:53:16.904Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
            "grantId": "524408804",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
2020-08-25T01:53:16.905Z - INFO - request message received while HBT is absent, sleep 51 sec
before responding
2020-08-25T01:54:03.338Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
            "grantId": "524408804",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
```



```
]
}
2020-08-25T01:54:03.338Z - INFO - request message received while HBT is absent, sleep 5 sec before responding
2020-08-25T01:54:03.602Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "524408804",
      "response": {
        "responseCode": 501
      },
      "transmitExpireTime": "2020-08-25T01:54:03Z"
    }
  ]
}
}
2020-08-25T01:54:05.009Z - INFO - arrived to nstep starting question answer session with the technician
2020-08-25T01:54:05.010Z - INFO - the question is : Did the CBSD stop RF transmissions within (transmitExpireTime + 60seconds) of last valid heartbeat response? please choose one of the answers :
2020-08-25T01:54:07.813Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"
2020-08-25T01:54:07.907Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"
2020-08-25T01:54:08.341Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"
2020-08-25T01:54:08.388Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"
2020-08-25T01:54:10.045Z - INFO - for the question : Did the CBSD stop RF transmissions within (transmitExpireTime + 60seconds) of last valid heartbeat response? , the user choose y
2020-08-25T01:54:13.351Z - INFO - The final result of the test : WINNF.FT.C.HBT.10 is - passed and :the additional comments for the current test are : CBSD stopped user traffic at T01:53:46.
```

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

2020-08-25T02:10:47.756Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
 2020-08-25T02:10:47.756Z - INFO - the selected test from the user : WINNF.FT.D.MES.2 is starting now

2020-08-25T02:11:02.996Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "model": "tyndall201",
      "softwareVersion": "2.0-cbrs-reg-a4",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "58c17a2d49e2",
    "cpiSignatureData": {
      "digitalSignature":
        "bA0y6BLSOwf8MJWKybmYtZ5Oji9cwTYRmNh2idpQFDzx6CQp9bcVSIKjT6_mMdbhl24zPQSvfkZ61j
        mIBEEQXYLoLfmE-PQMJJZq728tBMDsGVMUDw5WG9o-dl-SI6laV5kM77p2OILo06B7GUC1ln_gE4iSg
        QNo0h8RIISYIrtznHtN_tqzJ0yfVqL7s3-QEz7MzET-URDvPiJ_3J1Zset69QXiuWT0UdzWLkXWGPn1lo
        Yc6noOjMs2hOjYpXoEPp-96v7_QuDNOi_d5l3yNDfYkfi3h8Tq6hcrSYtLEEh28IERbkhtpwM2WYC4TTq
        ZYdchcve4TfoFzsEcKEeZw",
      "encodedCpiSignedData":
        "eyJmY2NJZCI6Ilo4SDg5RIQwMDYwliwiY2JzZFNlcmhE51bWJlci6lU4YzE3YTJkNDIIMiIsImIuc3Rhb
        GxhdGlvbIBhcmFtIjp7ImxhdGloZWRIIjo0MS41NDgyOSwibG9uZ2I0dWRlljotOTAuNjU5MTQslmhlaWdo
        dCI6MTAsImhlaWdodFR5cGUiOiJBTVMliwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UslmFudGVub
        mFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlsdCI6LTUsImFudGVubmFHYWluljoyMSwiYW50ZW5
        uYUJlYW13aWR0aCI6MzYwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlZCI6InRlc3
        RfQ1BJX0ZXNDYiLCJjcGlOYW1lIjoIdGVzdCIslmIuc3RhbGxDZXJ0aWZpY2F0aW9uVGVltZSI6IjIwMjAt
        MDYtMDIUMTE6NDY6NDhln19",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fccId": "Z8H89FT0060",
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "testid-1"
  }
]
```

2020-08-25T02:11:03.109Z - INFO - Registration message contains cpiSignatureData
 2020-08-25T02:11:03.109Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
 2020-08-25T02:11:03.109Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
  "antennaAzimuth": 150,
  "heightType": "AMSL",
  "longitude": -90.65914,
  "height": 10,
  "indoorDeployment": false,
  "antennaBeamwidth": 360,
```

```

        "antennaDowntilt": -5,
        "latitude": 41.54829,
        "antennaGain": 21
    },
    "fccId": "Z8H89FT0060",
    "professionalInstallerData": {
        "cpiName": "test",
        "installCertificationTime": "2020-06-09T11:46:48Z",
        "cpild": "test_CPI_FW46"
    },
    "cbsdSerialNumber": "58c17a2d49e2"
}
2020-08-25T02:11:03.111Z - INFO - verified signature on cpiSignatureData
2020-08-25T02:11:03.117Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-08-25T02:11:03.118Z - INFO - Response message contains measReportConfig
2020-08-25T02:11:03.119Z - INFO - engine sent successfully, the response to CBRS : {
    "registrationResponse": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
            "measReportConfig": [
                "RECEIVED_POWER_WITHOUT_GRANT"
            ],
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2020-08-25T02:11:03.430Z - INFO - registration request from CBRS : {
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "E_UTRA"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "model": "tyndall201",
                "softwareVersion": "2.0-cbrs-reg-a4",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "58c17a2d4984",
            "cpiSignatureData": {
                "digitalSignature":
"np3xypDLMaZr3jkHk0ZTubI2Y3LvrvK3ZwZzTwjctdFowDnr3NKDSHy-AfspelpnyxAHGTU9QtnCgijqL3
0xUgadEtBYn5d2ok0MZpHHqqik1VtZDcdlj3YPB5BEit5LZV3BbBmQPpW-cl6yCpR-RnwAt9slBiWQaFX
mfhulelbWNhoe1Zc1XNdao5xvZ6cppFOn4bZLVMkf7GpRvgsoNqXlInGxj3PWGwQ8aDyE9OnVFxLMs
u51I6IMVklqX12pvk-9VrACaR-7a32ewaJbTudQtafNqu7OjbVZWwMGuwitE9nimuW3Acpi7S6T7ZE1Kt
5d9K0G1vQzwsmwO_ZtpA",
                "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RIQwMDYwliwiY2JzZFNlcmIhbE51bWJlcil6ljU4YzE3YTJkNDk4NCIsImIuc3R
hbGxhdGlvblBhcmFtljlp7lmxhdGI0dWRlljo0MS41NDgyOSwibG9uZ2I0dWRlljotOTAuNjU5MTQslmhlaw
dodCI6MTAsImhlaWdodFR5cGUiOiJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFudGV

```

```
ubmFBemltdXRoljoxNTAsImFudGVubmFEB3dudGlsdCI6LTUsImFudGVubmFHYWluljoyMSwiYW50Z
W5uYUJIYW13aWR0aCI6MzYwfSwicHJvZmVzc2lvmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRI
c3RfQ1BJX0ZXNDYiLCJcGJOYW1lIjoidGVzdClslmIuc3RhbGxkDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMj
AtMDYtMDIUMTE6NDY6NDhaIn19",
    "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
  },
  "fcellId": "Z8H89FT0060",
  "measCapability": [
    "RECEIVED_POWER_WITHOUT_GRANT"
  ],
  "userId": "testid-1"
}
]
}
2020-08-25T02:11:03.519Z - INFO - Registration message contains cpiSignatureData
2020-08-25T02:11:03.519Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2020-08-25T02:11:03.519Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
    "antennaAzimuth": 150,
    "heightType": "AMSL",
    "longitude": -90.65914,
    "height": 10,
    "indoorDeployment": false,
    "antennaBeamwidth": 360,
    "antennaDowntilt": -5,
    "latitude": 41.54829,
    "antennaGain": 21
  },
  "fcellId": "Z8H89FT0060",
  "professionalInstallerData": {
    "cpiName": "test",
    "installCertificationTime": "2020-06-09T11:46:48Z",
    "cpild": "test_CPI_FW46"
  },
  "cbsdSerialNumber": "58c17a2d4984"
}
2020-08-25T02:11:03.520Z - INFO - verified signature on cpiSignatureData
2020-08-25T02:11:03.526Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-08-25T02:11:03.526Z - INFO - Response message contains measReportConfig
2020-08-25T02:11:03.528Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "measReportConfig": [
        "RECEIVED_POWER_WITHOUT_GRANT"
      ],
      "response": {
        "responseCode": 0
      }
    }
  ]
}
```

2020-08-25T02:11:03.726Z - INFO - grant request from CBRS : {

```
"grantRequest": [
  {
    "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
    "measReport": {
      "rcvdPowerMeasReports": [
        {
          "measBandwidth": 10000000,
          "measFrequency": 3550000000,
          "measRcvdPower": -25
        },
        {
          "measBandwidth": 10000000,
          "measFrequency": 3560000000,
          "measRcvdPower": -25
        },
        {
          "measBandwidth": 10000000,
          "measFrequency": 3570000000,
          "measRcvdPower": -25
        },
        {
          "measBandwidth": 10000000,
          "measFrequency": 3580000000,
          "measRcvdPower": -25
        },
        {
          "measBandwidth": 10000000,
          "measFrequency": 3590000000,
          "measRcvdPower": -25
        },
        {
          "measBandwidth": 10000000,
          "measFrequency": 3600000000,
          "measRcvdPower": -25
        },
        {
          "measBandwidth": 10000000,
          "measFrequency": 3610000000,
          "measRcvdPower": -25
        },
        {
          "measBandwidth": 10000000,
          "measFrequency": 3620000000,
          "measRcvdPower": -25
        },
        {
          "measBandwidth": 10000000,
          "measFrequency": 3630000000,
          "measRcvdPower": -25
        }
      ]
    }
  }
]
```

```

        "measBandwidth": 10000000,
        "measFrequency": 3640000000,
        "measRcvdPower": -25
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3650000000,
        "measRcvdPower": -32
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3660000000,
        "measRcvdPower": -25
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3670000000,
        "measRcvdPower": -25
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3680000000,
        "measRcvdPower": -25
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3690000000,
        "measRcvdPower": -25
    }
]
},
"operationParam": {
    "maxEirp": 34,
    "operationFrequencyRange": {
        "highFrequency": 3660000000,
        "lowFrequency": 3650000000
    }
}
}
]
}
}
2020-08-25T02:11:03.736Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
            "channelType": "GAA",
            "grantExpireTime": "2020-09-01T02:11:03Z",
            "grantId": "47557345",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}

```

```
    }
  ]
}
2020-08-25T02:11:04.059Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "measReport": {
        "rcvdPowerMeasReports": [
          {
            "measBandwidth": 10000000,
            "measFrequency": 3550000000,
            "measRcvdPower": -25
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3560000000,
            "measRcvdPower": -25
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3570000000,
            "measRcvdPower": -25
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3580000000,
            "measRcvdPower": -25
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3590000000,
            "measRcvdPower": -25
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3600000000,
            "measRcvdPower": -25
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3610000000,
            "measRcvdPower": -25
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3620000000,
            "measRcvdPower": -25
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3630000000,
```

```

        "measRcvdPower": -25
      },
      {
        "measBandwidth": 10000000,
        "measFrequency": 3640000000,
        "measRcvdPower": -25
      },
      {
        "measBandwidth": 10000000,
        "measFrequency": 3650000000,
        "measRcvdPower": -25
      },
      {
        "measBandwidth": 10000000,
        "measFrequency": 3660000000,
        "measRcvdPower": -25
      },
      {
        "measBandwidth": 10000000,
        "measFrequency": 3670000000,
        "measRcvdPower": -25
      },
      {
        "measBandwidth": 10000000,
        "measFrequency": 3680000000,
        "measRcvdPower": -25
      },
      {
        "measBandwidth": 10000000,
        "measFrequency": 3690000000,
        "measRcvdPower": -25
      }
    ]
  },
  "operationParam": {
    "maxEirp": 34,
    "operationFrequencyRange": {
      "highFrequency": 3660000000,
      "lowFrequency": 3650000000
    }
  }
}
]
}
}
2020-08-25T02:11:04.069Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "channelType": "GAA",
      "grantExpireTime": "2020-09-01T02:11:04Z",
      "grantId": "359393198",
      "heartbeatInterval": 60,

```



Test Logs

Appendix A

```
"response": {  
  "responseCode": 0  
}  
}  
]  
}
```

2020-08-25T02:11:05.759Z - INFO - arrived to nstep starting question answer session with the technician

2020-08-25T02:12:10.979Z - INFO - The final result of the test : WINNF.FT.D.MES.2 is - passed



```
2020-08-25T02:00:12.677Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
2020-08-25T02:00:12.678Z - INFO - the selected test from the user : WINNF.FT.D.RLQ.2 is starting now
2020-08-25T02:00:17.059Z - INFO - registration request from CBRS : {
```

```
"registrationRequest": [
    {
        "airInterface": {
            "radioTechnology": "E_UTRA"
        },
        "cbsdCategory": "B",
        "cbsdInfo": {
            "model": "tyndall201",
            "softwareVersion": "2.0-cbrs-reg-a4",
            "vendor": "Cambium Networks"
        },
        "cbsdSerialNumber": "58c17a2d4984",
        "cpiSignatureData": {
            "digitalSignature":
"np3xypDLMaZr3jkHk0ZTubI2Y3LvrwK3ZWzZTwjctdFowDnr3NKDSHy-AfspelpnyxAHGtU9QtncgijlL3
0xUgadEtBYn5d2ok0MZpHHqkik1VtZdcldlj3YPB5BEit5LVZ3BbBmQPpW-cl6yCpR-RnwAt9slBiWQaFX
mfhulelbWNhoe1Zc1XNdao5xvZ6cppFoN4bZLVMkf7GpRvgsoNqXllnGxj3PWGwQ8aDyE9OnVFxLMs
u51I6IMVklqX12pvk-9VrACaR-7a32ewaJbTUdQtafNqu7OjbVZWWMGuwitE9nimuW3Acpi7S6T7ZE1Kt
5d9K0G1vQzwsmwO_ZtpA",
            "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RIQwMDYwliwiY2JzZFNIcmIhbE51bWJlcil6ljU4YzE3YTJkNDk4NCIsImLuc3R
hbGxhdGlvbIBhcmFtljp7ImxhdGI0dWRlljo0MS41NDgyOSwibG9uZ2I0dWRlljotOTAuNjU5MTQsImhlaW
dodCI6MTAsImhlaWdodFR5cGUioiJBTVNMliwiaW5kb29yRGVwbG95bWVudCl6ZmFsc2UsImFudGV
ubmFBemlt dXRlojoxNTAsImFudGVubmFEb3dudGlisdCI6LTUsImFudGVubmFHYWlujoyMSwiYW50Z
W5uYUJIYW13aWR0aCI6MzYwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRl
c3RfQ1BJX0ZXNDYiLCJjcGLOYW1IljojdGVzdCI6ImLuc3RhbmGxDXJ0aWZpY2F0aW9uVGltZSI6IjlmMj
AtMDYtMDIUMTE6NDY6NDhaIn19",
            "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
        },
        "fccId": "Z8H89FT0060",
        "measCapability": [
            "RECEIVED_POWER_WITHOUT_GRANT"
        ],
        "userId": "testid-1"
    }
]
```

```
2020-08-25T02:00:17.142Z - INFO - Registration message contains cpiSignatureData
2020-08-25T02:00:17.142Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2020-08-25T02:00:17.142Z - INFO - encodedCpiSignedData contents = {
```

```
"installationParam": {
  "antennaAzimuth": 150,
  "heightType": "AMSL",
  "longitude": -90.65914,
  "height": 10,
  "indoorDeployment": false,
  "antennaBeamwidth": 360,
  "antennaDowntilt": -5.
```



```
"latitude": 41.54829,
"antennaGain": 21
},
"fccId": "Z8H89FT0060",
"professionalInstallerData": {
  "cpiName": "test",
  "installCertificationTime": "2020-06-09T11:46:48Z",
  "cpild": "test_CPI_FW46"
},
"cbstdSerialNumber": "58c17a2d4984"
}
2020-08-25T02:00:17.144Z - INFO - verified signature on cpiSignatureData
2020-08-25T02:00:17.150Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-08-25T02:00:17.151Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbstdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2020-08-25T02:00:17.707Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbstdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "operationParam": {
        "maxEirp": 34,
        "operationFrequencyRange": {
          "highFrequency": 3660000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2020-08-25T02:00:17.713Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbstdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "channelType": "GAA",
      "grantExpireTime": "2020-09-01T02:00:17Z",
      "grantId": "608760324",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2020-08-25T02:00:22.885Z - INFO - heartbeat request from CBRS : {
```

```

    "heartbeatRequest": [
      {
        "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
        "grantId": "608760324",
        "grantRenew": false,
        "operationState": "GRANTED"
      }
    ]
  }
}
2020-08-25T02:00:22.894Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "608760324",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-25T02:03:42Z"
    }
  ]
}
2020-08-25T02:01:13.792Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "608760324",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
}
2020-08-25T02:01:13.792Z - INFO - Time interval between two heartbeat request messages is: 50.906,
limit is: 65.0
2020-08-25T02:01:13.799Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "608760324",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-25T02:04:33Z"
    }
  ]
}
}
2020-08-25T02:02:04.207Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "608760324",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}

```

```

    }
  ]
}
2020-08-25T02:02:04.209Z - INFO - Time interval between two heartbeat request messages is: 50.415,
limit is: 65.0
2020-08-25T02:02:04.214Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "608760324",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-25T02:05:24Z"
    }
  ]
}
}
2020-08-25T02:02:10.293Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "E_UTRA"
      },
      "cbsdCategory": "B",
      "cbsdInfo": {
        "model": "tyndall201",
        "softwareVersion": "2.0-cbrs-reg-a4",
        "vendor": "Cambium Networks"
      },
      "cbsdSerialNumber": "58c17a2d49e2",
      "cpiSignatureData": {
        "digitalSignature":
        "bA0y6BLSOwf8MJWKybmYtZ5Oji9cwTYRmNh2idpQFDzx6CQp9bcVSIKjT6_mMdbhl24zPQSvfkZ61j
        mlBEeQXYLoLfmE-PQMJJZq728tBMDsGVMUDw5WG9o-dl-Sl6laV5kM77p2OILo06B7GUC1ln_gE4iSg
        QNo0h8RIISYIrtznHtN_tqzJ0yfVqL7s3-QEz7MzET-URDvPiJ_3J1Zset69QXiuWT0UdzWLkXWGPn1lo
        Yc6noOjMs2hOjjYpXoEPp-96v7_QuDN0i_d5l3yNDfYkfi3h8Tq6hcrSYtLEEH28IERbkhtpwM2WYC4TTq
        ZYdchcve4TfoFzsEcKEeZw",
        "encodedCpiSignedData":
        "eyJmY2NJZCI6llo4SDg5RIQwMDYwliwiY2JzZFNlcmhE51bWJlcil6ljU4YzE3YTJkNDIiMiSlmImluc3Rhb
        GxhdGlvblBhcmFtIjpw7lmxhdGlo0dWRlljo0MS41NDgyOSwibG9uZ2l0dWRlljotOTAuNjU5MTQsImhlaWdo
        dCI6MTAsImhlaWdodFR5cGUioiJBTVNMIiwiawW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFudGVub
        mFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlsdCI6LTUsImFudGVubmFHYWluljoyMSwiYW50ZW5
        uYUJlYW13aWR0aCI6MzYwfSwicHJvZmVzc2lvcjVzSW5zdGFsbGVyRGF0YSI6eyJjcGlZCI6InRlc3
        RfQ1BJX0ZXNDYiLCJjcGlOYW1lIjoIdGVzdCI6ImImluc3RhbGxhZDZXJ0aWZpY2F0aW9uVGl0ZSI6ImJlMjAt
        MDYtMDIUMTE6NDY6NDhaIn19",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fccId": "Z8H89FT0060",
      "measCapability": [
        "RECEIVED_POWER_WITHOUT_GRANT"
      ],
      "userId": "testid-1"
    }
  ]
}

```



```
}
]
}
2020-08-25T02:02:10.329Z - INFO - Registration message contains cpiSignatureData
2020-08-25T02:02:10.329Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2020-08-25T02:02:10.331Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
    "antennaAzimuth": 150,
    "heightType": "AMSL",
    "longitude": -90.65914,
    "height": 10,
    "indoorDeployment": false,
    "antennaBeamwidth": 360,
    "antennaDowntilt": -5,
    "latitude": 41.54829,
    "antennaGain": 21
  },
  "fccId": "Z8H89FT0060",
  "professionalInstallerData": {
    "cpiName": "test",
    "installCertificationTime": "2020-06-09T11:46:48Z",
    "cpild": "test_CPI_FW46"
  },
  "cbsdSerialNumber": "58c17a2d49e2"
}
2020-08-25T02:02:10.332Z - INFO - verified signature on cpiSignatureData
2020-08-25T02:02:10.338Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-08-25T02:02:10.338Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2020-08-25T02:02:10.732Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "operationParam": {
        "maxEirp": 34,
        "operationFrequencyRange": {
          "highFrequency": 3660000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
}
2020-08-25T02:02:10.739Z - INFO - engine sent successfully, the response to CBRS : {
```

```

    "grantResponse": [
      {
        "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
        "channelType": "GAA",
        "grantExpireTime": "2020-09-01T02:02:10Z",
        "grantId": "79769846",
        "heartbeatInterval": 60,
        "response": {
          "responseCode": 0
        }
      }
    ]
  }
}
2020-08-25T02:02:15.911Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "grantId": "79769846",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2020-08-25T02:02:15.920Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "grantId": "79769846",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-25T02:05:35Z"
    }
  ]
}
2020-08-25T02:02:53.601Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "608760324",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2020-08-25T02:02:53.602Z - INFO - Time interval between two heartbeat request messages is: 49.394,
limit is: 65.0
2020-08-25T02:02:53.609Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "608760324",

```

```

        "response": {
            "responseCode": 0
        },
        "transmitExpireTime": "2020-08-25T02:06:13Z"
    }
}
2020-08-25T02:03:05.572Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
            "grantId": "79769846",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2020-08-25T02:03:05.572Z - INFO - Time interval between two heartbeat request messages is: 49.659,
limit is: 65.0
2020-08-25T02:03:05.579Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
            "grantId": "79769846",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2020-08-25T02:06:25Z"
        }
    ]
}
2020-08-25T02:03:44.053Z - INFO - relinquishment request from CBRS : {
    "relinquishmentRequest": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
            "grantId": "608760324"
        }
    ]
}
2020-08-25T02:03:44.115Z - INFO - engine sent successfully, the response to CBRS : {
    "relinquishmentResponse": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
            "grantId": "608760324",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2020-08-25T02:03:44.859Z - INFO - relinquishment request from CBRS : {
    "relinquishmentRequest": [

```

```
{
  "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
  "grantId": "79769846"
}
]
```

2020-08-25T02:03:44.867Z - INFO - engine sent successfully, the response to CBRS : {
 "relinquishmentResponse": [
 {
 "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
 "grantId": "79769846",
 "response": {
 "responseCode": 0
 }
 }
]
}

2020-08-25T02:03:46.700Z - INFO - arrived to nstep starting question answer session with the technician
2020-08-25T02:03:46.700Z - INFO - the question is : Did CBSD1 cease RF transmission before receipt of Relinquishment Request by Test Harness? please choose one of the answers :
2020-08-25T02:05:19.885Z - INFO - for the question : Did CBSD1 cease RF transmission before receipt of Relinquishment Request by Test Harness? , the user choose y
2020-08-25T02:05:19.887Z - INFO - the question is : Did CBSD2 cease RF transmission before receipt of Relinquishment Request by Test Harness? please choose one of the answers :
2020-08-25T02:05:21.826Z - INFO - for the question : Did CBSD2 cease RF transmission before receipt of Relinquishment Request by Test Harness? , the user choose y
2020-08-25T02:05:24.836Z - INFO - The final result of the test : WINNF.FT.D.RLQ.2 is - passed and :the additional comments for the current test are : CBSD1 stopped user traffic at T02:03:44.CBSD2 stopped user traffic at T02:03:44.

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

2020-08-25T02:06:44.720Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
 2020-08-25T02:06:44.720Z - INFO - the selected test from the user : WINNF.FT.D.DRG.2 is starting now

2020-08-25T02:06:47.105Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "model": "tyndall201",
      "softwareVersion": "2.0-cbrs-reg-a4",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "58c17a2d49e2",
    "cpiSignatureData": {
      "digitalSignature":
        "bA0y6BLSOwf8MJWKybmYtZ5Oji9cwTYRmNh2idpQFDzx6CQp9bcVSIKjT6_mMdbhl24zPQSvfkZ61j
        mIBEEQXYLoLfmE-PQMJJZq728tBMDsGVMUDw5WG9o-dl-SI6laV5kM77p2OILo06B7GUC1ln_gE4iSg
        QNo0h8RIISYIrtznHtN_tqzJ0yfVqL7s3-QEz7MzET-URDvPiJ_3J1Zset69QXiuWT0UdzWLkXWGPn1lo
        Yc6noOjMs2hOjYpXoEPp-96v7_QuDNOi_d5l3yNDfYkfi3h8Tq6hcrSYtLEEh28IERbkhtpwM2WYC4TTq
        ZYdchcve4TfoFzsEcKEeZw",
      "encodedCpiSignedData":
        "eyJmY2NJZCI6Ilo4SDg5RIQwMDYwliwiY2JzZFNlcmIhE51bWJlci6lU4YzE3YTJkNDIIMiIsImIuc3Rhb
        GxhdGlvblBhcmFtIjp7ImxhdGloZWRIljo0MS41NDgyOSwibG9uZ2I0dWRlljotOTAuNjU5MTQslmhlaWdo
        dCI6MTAsImhlaWdodFR5cGUiOiJBTVMliwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UslmFudGVub
        mFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlsdCI6LTUsImFudGVubmFHYWluljoyMSwiYW50ZW5
        uYUJlYW13aWR0aCI6MzYwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlZCI6InRlc3
        RfQ1BJX0ZXNDYlLCJjcGlOYW1lIjoIdGVzdCI6ImIuc3RhbGxhZDZXJ0aWZpY2F0aW9uVGl0ZSI6IjIwMjAt
        MDYtMDIUMTE6NDY6NDhln19",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fccId": "Z8H89FT0060",
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "testid-1"
  }
]
```

2020-08-25T02:06:47.140Z - INFO - Registration message contains cpiSignatureData
 2020-08-25T02:06:47.140Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
 2020-08-25T02:06:47.141Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
  "antennaAzimuth": 150,
  "heightType": "AMSL",
  "longitude": -90.65914,
  "height": 10,
  "indoorDeployment": false,
  "antennaBeamwidth": 360,
```

```

    "antennaDowntilt": -5,
    "latitude": 41.54829,
    "antennaGain": 21
  },
  "fccId": "Z8H89FT0060",
  "professionalInstallerData": {
    "cpiName": "test",
    "installCertificationTime": "2020-06-09T11:46:48Z",
    "cpild": "test_CPI_FW46"
  },
  "cbsdSerialNumber": "58c17a2d49e2"
}
2020-08-25T02:06:47.141Z - INFO - verified signature on cpiSignatureData
2020-08-25T02:06:47.148Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-08-25T02:06:47.150Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2020-08-25T02:06:47.289Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "E_UTRA"
      },
      "cbsdCategory": "B",
      "cbsdInfo": {
        "model": "tyndall201",
        "softwareVersion": "2.0-cbrs-reg-a4",
        "vendor": "Cambium Networks"
      },
      "cbsdSerialNumber": "58c17a2d4984",
      "cpiSignatureData": {
        "digitalSignature":
"np3xypDLMaZr3jkHk0ZTubI2Y3LvRwK3ZwZzTwjctdFowDnr3NKDSHy-AfspelpnyxAHGTU9QtnCgijqjL3
0xUgadEtBYn5d2ok0MZpHHqqik1VtZDcdIj3YPB5BEit5LV3BbBmQPpW-cl6yCpR-RnwAt9sIBiWQaFX
mfhuleIbWNhoe1Zc1XNdao5xvZ6cppFOn4bZLVmKf7GpRvgsoNqXlInGxj3PWGwQ8aDyE9OnVFxLMs
u51I6IMVklqX12pvk-9VrACaR-7a32ewaJbTUdQtafNqu7OjbVZWwMGuwitE9nimuW3Acpi7S6T7ZE1Kt
5d9K0G1vQzswmwO_ZtpA",
        "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RIQwMDYwliwiY2JzZFNlcmIhbE51bWJlciI6IjU4YzE3YTJkNDk4NCIsImIuc3R
hbGxhdGlvbBhcmFtIjIjImxhdGlvbWRlljo0MS41NDgyOSwibG9uZ2I0dWRlljotOTAuNjU5MTQsImhlaW
dodCI6MTAsImhlaWdodFR5cGU0iJBTvNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFudGV
ubmFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlsdCI6LTUsImFudGVubmFHYWluljoyMSwiYW50Z
W5uYUJlYW13aWR0aCI6MzYwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGljZCI6InRl
c3RfQ1BJX0ZXNDYiLCJjcGLOYW11IjoidGVzdCI6ImIuc3RhbGxhZDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMj
AtMDYtMDIUMTE6NDY6NDhaIn19",
      }
    }
  ]
}

```

```

        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fccId": "Z8H89FT0060",
      "measCapability": [
        "RECEIVED_POWER_WITHOUT_GRANT"
      ],
      "userId": "testid-1"
    }
  ]
}
}
2020-08-25T02:06:47.325Z - INFO - Registration message contains cpiSignatureData
2020-08-25T02:06:47.325Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2020-08-25T02:06:47.326Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
    "antennaAzimuth": 150,
    "heightType": "AMSL",
    "longitude": -90.65914,
    "height": 10,
    "indoorDeployment": false,
    "antennaBeamwidth": 360,
    "antennaDowntilt": -5,
    "latitude": 41.54829,
    "antennaGain": 21
  },
  "fccId": "Z8H89FT0060",
  "professionalInstallerData": {
    "cpiName": "test",
    "installCertificationTime": "2020-06-09T11:46:48Z",
    "cpild": "test_CPI_FW46"
  },
  "cbsdSerialNumber": "58c17a2d4984"
}
2020-08-25T02:06:47.328Z - INFO - verified signature on cpiSignatureData
2020-08-25T02:06:47.332Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-08-25T02:06:47.335Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2020-08-25T02:06:47.568Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "operationParam": {
        "maxEirp": 34,
        "operationFrequencyRange": {
          "highFrequency": 3660000000,

```

```
        "lowFrequency": 3650000000
      }
    }
  ]
}
2020-08-25T02:06:47.575Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "channelType": "GAA",
      "grantExpireTime": "2020-09-01T02:06:47Z",
      "grantId": "355449359",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2020-08-25T02:06:47.713Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "operationParam": {
        "maxEirp": 34,
        "operationFrequencyRange": {
          "highFrequency": 3660000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2020-08-25T02:06:47.720Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "channelType": "GAA",
      "grantExpireTime": "2020-09-01T02:06:47Z",
      "grantId": "138493309",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2020-08-25T02:06:52.763Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
```

```

        "grantId": "355449359",
        "grantRenew": false,
        "operationState": "GRANTED"
    }
]
}
2020-08-25T02:06:52.770Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
            "grantId": "355449359",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2020-08-25T02:10:12Z"
        }
    ]
}
2020-08-25T02:06:52.892Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
            "grantId": "138493309",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
2020-08-25T02:06:52.901Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
            "grantId": "138493309",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2020-08-25T02:10:12Z"
        }
    ]
}
2020-08-25T02:07:42.394Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
            "grantId": "355449359",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2020-08-25T02:07:42.395Z - INFO - Time interval between two heartbeat request messages is: 49.632,
limit is: 65.0

```



```
2020-08-25T02:07:42.404Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "grantId": "355449359",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-25T02:11:02Z"
    }
  ]
}
2020-08-25T02:07:42.530Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "138493309",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2020-08-25T02:07:42.532Z - INFO - Time interval between two heartbeat request messages is: 49.637,
limit is: 65.0
2020-08-25T02:07:42.540Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "138493309",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-25T02:11:02Z"
    }
  ]
}
2020-08-25T02:08:32.688Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "grantId": "355449359",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2020-08-25T02:08:32.690Z - INFO - Time interval between two heartbeat request messages is: 50.294,
limit is: 65.0
2020-08-25T02:08:32.696Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
```

```

        "grantId": "355449359",
        "response": {
            "responseCode": 0
        },
        "transmitExpireTime": "2020-08-25T02:11:52Z"
    }
}
]
}
2020-08-25T02:08:32.957Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
            "grantId": "138493309",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2020-08-25T02:08:32.976Z - INFO - Time interval between two heartbeat request messages is: 50.427,
limit is: 65.0
2020-08-25T02:08:32.983Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
            "grantId": "138493309",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2020-08-25T02:11:52Z"
        }
    ]
}
2020-08-25T02:08:49.015Z - INFO - deregistration request from CBRS : {
    "deregistrationRequest": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2"
        }
    ]
}
2020-08-25T02:08:49.020Z - INFO - engine sent successfully, the response to CBRS : {
    "deregistrationResponse": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2020-08-25T02:08:49.426Z - INFO - deregistration request from CBRS : {
    "deregistrationRequest": [
        {

```

```
        "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984"
      }
    ]
  }
}
2020-08-25T02:08:49.430Z - INFO - engine sent successfully, the response to CBRS : {
  "deregistrationResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2020-08-25T02:08:50.763Z - INFO - arrived to nstep starting question answer session with the technician
2020-08-25T02:08:50.765Z - 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 :
2020-08-25T02:09:55.440Z - 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
2020-08-25T02:09:55.440Z - 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 :
2020-08-25T02:09:58.109Z - 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
2020-08-25T02:10:04.611Z - INFO - The final result of the test : WINNF.FT.D.DRG.2 is - passed and :the additional comments for the current test are : CBSD1 stopped user traffic at T02:08:49.CBSD2 stopped user traffic at T02:08:49.
```

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

2020-08-25T02:41:36.943Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
 2020-08-25T02:41:36.944Z - INFO - the selected test from the user : WINNF.FT.D.REG.2 is starting now

2020-08-25T02:41:39.420Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "B",
    "cbsdInfo": {
      "model": "tyndall201",
      "softwareVersion": "2.0-cbrs-reg-a4",
      "vendor": "Cambium Networks"
    },
    "cbsdSerialNumber": "58c17a2d49e2",
    "cpiSignatureData": {
      "digitalSignature":
        "bA0y6BLSOwf8MJWKybmYtZ5Oji9cwTYRmNh2idpQFDzx6CQp9bcVSIKjT6_mMdbhl24zPQSvfkZ61j
        mIBEEQXYLoLfmE-PQMJJZq728tBMDsGVMUDw5WG9o-dl-SI6laV5kM77p2OILo06B7GUC1ln_gE4iSg
        QNo0h8RIISYIrtznHtN_tqzJ0yfVqL7s3-QEz7MzET-URDvPiJ_3J1Zset69QXiuWT0UdzWLkXWGPn1lo
        Yc6noOjMs2hOjYpXoEPp-96v7_QuDN0i_d5l3yNDfYkfi3h8Tq6hcrSYtLEEh28IERbkhtpwM2WYC4TTq
        ZYdchcve4TfoFzsEcKEeZw",
      "encodedCpiSignedData":
        "eyJmY2NJZCI6Ilo4SDg5RIQwMDYwliwiY2JzZFNlcmIhE51bWJlci6lU4YzE3YTJkNDIIMiIsImIuc3Rhb
        GxhdGlvblBhcmFtIjp7ImxhdGloZWRIIjo0MS41NDgyOSwibG9uZ2I0dWRlljotOTAuNjU5MTQslmhlaWdo
        dCI6MTAsImIhlaWdodFR5cGUiOiJBTVMiIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UslmFudGVub
        mFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlsdCI6LTUsImFudGVubmFHYWluljoyMSwiYW50ZW5
        uYUJlYW13aWR0aCI6MzYwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlZCI6InRlc3
        RfQ1BjX0ZXNDYlLCJjcGlOYW1lIjoIdGVzdCI6ImIuc3RhbGxhZDZXJ0aWZpY2F0aW9uVGlZSI6IjIwMjAt
        MDYtMDIUMTE6NDY6NDhln19",
      "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
    },
    "fccId": "Z8H89FT0060",
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "testid-1"
  }
]
```

2020-08-25T02:41:39.450Z - INFO - Registration message contains cpiSignatureData

2020-08-25T02:41:39.450Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2020-08-25T02:41:39.451Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
  "antennaAzimuth": 150,
  "heightType": "AMSL",
  "longitude": -90.65914,
  "height": 10,
  "indoorDeployment": false,
  "antennaBeamwidth": 360,
```

```

        "antennaDowntilt": -5,
        "latitude": 41.54829,
        "antennaGain": 21
    },
    "fccId": "Z8H89FT0060",
    "professionalInstallerData": {
        "cpiName": "test",
        "installCertificationTime": "2020-06-09T11:46:48Z",
        "cpild": "test_CPI_FW46"
    },
    "cbsdSerialNumber": "58c17a2d49e2"
}
2020-08-25T02:41:39.497Z - INFO - verified signature on cpiSignatureData
2020-08-25T02:41:39.503Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-08-25T02:41:39.506Z - INFO - engine sent successfully, the response to CBRS : {
    "registrationResponse": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2020-08-25T02:41:39.895Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
            "operationParam": {
                "maxEirp": 34,
                "operationFrequencyRange": {
                    "highFrequency": 3660000000,
                    "lowFrequency": 3650000000
                }
            }
        }
    ]
}
2020-08-25T02:41:39.897Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
            "response": {
                "responseCode": 400
            }
        }
    ]
}
2020-08-25T02:41:39.996Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",

```

```

        "operationParam": {
            "maxEirp": 34,
            "operationFrequencyRange": {
                "highFrequency": 3660000000,
                "lowFrequency": 3650000000
            }
        }
    }
}
]
}
}
2020-08-25T02:41:39.996Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
            "response": {
                "responseCode": 400
            }
        }
    ]
}
}
2020-08-25T02:41:40.095Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
            "operationParam": {
                "maxEirp": 34,
                "operationFrequencyRange": {
                    "highFrequency": 3660000000,
                    "lowFrequency": 3650000000
                }
            }
        }
    ]
}
}
2020-08-25T02:41:40.095Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
            "response": {
                "responseCode": 400
            }
        }
    ]
}
}
2020-08-25T02:41:40.196Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
            "operationParam": {
                "maxEirp": 34,
                "operationFrequencyRange": {
                    "highFrequency": 3660000000,

```

```
        "lowFrequency": 3650000000
      }
    }
  ]
}
2020-08-25T02:41:40.197Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "response": {
        "responseCode": 400
      }
    }
  ]
}
2020-08-25T02:41:40.296Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "operationParam": {
        "maxEirp": 34,
        "operationFrequencyRange": {
          "highFrequency": 3660000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2020-08-25T02:41:40.296Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "response": {
        "responseCode": 400
      }
    }
  ]
}
2020-08-25T02:41:40.405Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "operationParam": {
        "maxEirp": 34,
        "operationFrequencyRange": {
          "highFrequency": 3660000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
```



```
]
}
2020-08-25T02:41:40.407Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "response": {
        "responseCode": 400
      }
    }
  ]
}
2020-08-25T02:41:40.496Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "operationParam": {
        "maxEirp": 34,
        "operationFrequencyRange": {
          "highFrequency": 3660000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2020-08-25T02:41:40.496Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d49e2",
      "response": {
        "responseCode": 400
      }
    }
  ]
}
2020-08-25T02:41:41.851Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "E_UTRA"
      },
      "cbsdCategory": "B",
      "cbsdInfo": {
        "model": "tyndall201",
        "softwareVersion": "2.0-cbrs-reg-a4",
        "vendor": "Cambium Networks"
      },
      "cbsdSerialNumber": "58c17a2d4984",
      "cpiSignatureData": {
        "digitalSignature":
"np3xypDLMaZr3jkHk0ZTubI2Y3LvRWK3ZwZzTwjctdFowDnr3NKDSHy-AfspelpnyxAHGTU9QtnCgijjL3"
```

```
0xUgadEtBYn5d2ok0MZpHHqqik1VtZDcdlj3YPB5BEit5LV3BbBmQPpW-cl6yCpR-RnwAt9sIBiWQaFX
mfhulelbWNhoe1Zc1XNdao5xvZ6cppFOh4bZLVMkf7GpRvgsoNqXlInGxj3PWGwQ8aDyE9OnVFxLMs
u51I6IMVklqX12pvk-9VrACaR-7a32ewaJbTUDQtafNqu7OjbVZWwMGUwitE9nimuW3Acpi7S6T7ZE1Kt
5d9K0G1vQzswmwO_ZtpA",
```

```
"encodedCpiSignedData":
```

```
"eyJmY2NJZCI6Ilo4SDg5RIQwMDYwliwiY2JzZFNlcmIhE51bWJlci6lU4YzE3YTJkNDk4NCIsImIuc3R
hbGxhdGlvbIBhcmFtljp7ImxhdGloZWVudWRlljo0MS41NDgyOSwibG9uZ2l0dWRlljotOTAuNjU5MTQsImhlaW
dodCI6MTAsImhlaWdodFR5cGUiOiJBTVMliwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFudGV
ubmFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlsdCI6LTUsImFudGVubmFHYWluljoyMSwiYW50Z
W5uYUJlYW13aWR0aCI6MzYwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGljZCI6InRl
c3RfQ1BJX0ZXNDYiLCJjcGLOYW1lIjoideGVzdCI6ImIuc3RhbGxhZDZXJ0aWZpY2F0aW9uVGltZSI6IjlmMj
AtMDYtMDIUMTE6NDY6NDhln19",
```

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

```
},
```

```
"fccId": "Z8H89FT0060",
```

```
"measCapability": [
```

```
"RECEIVED_POWER_WITHOUT_GRANT"
```

```
],
```

```
"userId": "testid-1"
```

```
}
```

```
]
```

```
}
```

2020-08-25T02:41:41.881Z - INFO - Registration message contains cpiSignatureData

2020-08-25T02:41:41.881Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2020-08-25T02:41:41.882Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
```

```
"antennaAzimuth": 150,
```

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

```
"longitude": -90.65914,
```

```
"height": 10,
```

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

```
"antennaBeamwidth": 360,
```

```
"antennaDowntilt": -5,
```

```
"latitude": 41.54829,
```

```
"antennaGain": 21
```

```
},
```

```
"fccId": "Z8H89FT0060",
```

```
"professionalInstallerData": {
```

```
"cpiName": "test",
```

```
"installCertificationTime": "2020-06-09T11:46:48Z",
```

```
"cpild": "test_CPI_FW46"
```

```
},
```

```
"cbstdSerialNumber": "58c17a2d4984"
```

```
}
```

2020-08-25T02:41:41.884Z - INFO - verified signature on cpiSignatureData

2020-08-25T02:41:41.888Z - INFO - cpiSignatureData data successfully validated against jsonschema

2020-08-25T02:41:41.891Z - INFO - engine sent successfully, the response to CBRS : {

```
"registrationResponse": [
```

```
{
```

```
"cbstdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
```

```
"response": {
```

```
"responseCode": 0
```



```
}  
}  
]  
}
```

2020-08-25T02:41:42.944Z - INFO - arrived to nstep starting question answer session with the technician

2020-08-25T02:41:42.947Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :

2020-08-25T02:43:46.663Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n

2020-08-25T02:43:46.664Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2020-08-25T02:43:47.953Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2020-08-25T02:43:55.493Z - INFO - The final result of the test : WINNF.FT.D.REG.2 is - passed and :the additional comments for the current test are : There is RF transmission, but it's not user traffic.



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

2020-08-25T03:01:53.226Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2020-08-25T03:01:53.227Z - INFO - the selected test from the user : WINNF.FT.D.REG.2 is starting now



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

2020-08-25T02:45:59.979Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
2020-08-25T02:45:59.980Z - INFO - the selected test from the user : WINNF.FT.D.REG.2 is starting
now



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

2020-08-25T02:48:51.970Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
2020-08-25T02:48:51.971Z - INFO - the selected test from the user : WINNF.FT.D.REG.2 is starting
now



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

2020-08-25T02:50:48.694Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
2020-08-25T02:50:48.696Z - INFO - the selected test from the user : WINNF.FT.D.REG.2 is starting
now

Test Log for WINNF.PT.C.HBT Test Case ID_ BW10M_Grant maxEirp 34

```

2020-08-24T08:30:33.621Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
2020-08-24T08:30:33.621Z - INFO - Selected spectrum frequency is {'lowFrequency': 3650000000L,
'highFrequency': 3660000000L}
2020-08-24T08:30:33.621Z - INFO - Granted Spectrum Max Eirp = 34dBm/MHz
2020-08-24T08:30:33.622Z - INFO - the selected test from the user : PowerMeasTest is starting now
2020-08-24T08:30:35.585Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "E_UTRA"
      },
      "cbsdCategory": "B",
      "cbsdInfo": {
        "model": "tyndall201",
        "softwareVersion": "2.0-cbrs-reg-a4",
        "vendor": "Cambium Networks"
      },
      "cbsdSerialNumber": "58c17a2d4984",
      "cpiSignatureData": {
        "digitalSignature":
"np3xypDLMaZr3jkHk0ZTubI2Y3LvrwK3ZwZzTwjctdFowDnr3NKDSHy-AfspelpnyxAHGtU9QtnCgijqL3
0xUgadEtBYn5d2ok0MZpHHqqik1VtZDcdlj3YPB5BEit5LV3BbBmQPPW-cl6yCpR-RnwAt9sBiWQaFX
mfhulelbWNhoe1Zc1XNdao5xvZ6cppFO4bZLVMkf7GpRvgsoNqXlInGxj3PWGwQ8aDyE9OnVFxLMs
u51I6IMVklqX12pvk-9VrACaR-7a32ewaJbTUdQtafNqu7OjbVZWwMGUwitE9nimuW3Acpi7S6T7ZE1Kt
5d9K0G1vQzwsmwO_ZtpA",
        "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RIQwMDYwliwiY2JzZFNlcmIhbE51bWJlci6lU4YzE3YTJkNDk4NCIsImIuc3R
hbGxhdGlvbBhcmFtIjpw7lmxhdGlo0dWRlljo0MS41NDgyOSwibG9uZ2l0dWRlljotOTAuNjU5MTQsImhlaW
dodCI6MTAsImhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFudGV
ubmFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlsdCI6LTUsImFudGVubmFHYWluljoyMSwiYW50Z
W5uYUJlYW13aWR0aCI6MzYwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGljZCI6InRl
c3RfQ1BJX0ZXNDYiLCJjcGLOYW1lIjoidGVzdCI6ImIuc3RhbGxhZDZXJ0aWZpY2F0aW9uVGltZSI6IjlmMj
AtMDYtMDIUMTE6NDY6NDhaIn19",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fcclId": "Z8H89FT0060",
      "measCapability": [
        "RECEIVED_POWER_WITHOUT_GRANT"
      ],
      "userId": "testid-1"
    }
  ]
}
2020-08-24T08:30:35.632Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "response": {
        "responseCode": 0
      }
    }
  ]
}

```

```

    ]
  }
  2020-08-24T08:30:36.006Z - INFO - grant request from CBRS : {
    "grantRequest": [
      {
        "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
        "operationParam": {
          "maxEirp": 34,
          "operationFrequencyRange": {
            "highFrequency": 3660000000,
            "lowFrequency": 3650000000
          }
        }
      }
    ]
  }
  2020-08-24T08:30:36.013Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
      {
        "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
        "channelType": "GAA",
        "grantExpireTime": "2020-08-31T08:30:36Z",
        "grantId": "240432582",
        "heartbeatInterval": 60,
        "response": {
          "responseCode": 0
        }
      }
    ]
  }
  2020-08-24T08:30:41.200Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
      {
        "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
        "grantId": "240432582",
        "grantRenew": false,
        "operationState": "GRANTED"
      }
    ]
  }
  2020-08-24T08:30:41.210Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
      {
        "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
        "grantId": "240432582",
        "response": {
          "responseCode": 0
        },
        "transmitExpireTime": "2020-08-24T08:34:01Z"
      }
    ]
  }
}

```

```
2020-08-24T08:31:31.864Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "240432582",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2020-08-24T08:31:31.871Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "240432582",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-24T08:34:51Z"
    }
  ]
}
2020-08-24T08:32:21.276Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "240432582",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2020-08-24T08:32:21.286Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "240432582",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-24T08:35:41Z"
    }
  ]
}
2020-08-24T08:33:10.707Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "240432582",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
```

```
]
}
2020-08-24T08:33:10.717Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "240432582",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-24T08:36:30Z"
    }
  ]
}
2020-08-24T08:34:01.145Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "240432582",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2020-08-24T08:34:01.154Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "240432582",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-24T08:37:21Z"
    }
  ]
}
2020-08-24T08:34:50.905Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "240432582",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2020-08-24T08:34:50.914Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "240432582",
      "response": {
```



```
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-24T08:38:10Z"
    }
  ]
}
```

Test Log for WINNF.PT.C.HBT Test Case ID_ BW10M_Grant maxEirp 2

```

2020-08-24T07:49:03.259Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
2020-08-24T07:49:03.259Z - INFO - Selected spectrum frequency is {'lowFrequency': 3650000000L,
'highFrequency': 36600000000L}
2020-08-24T07:49:03.259Z - INFO - Granted Spectrum Max Eirp = 2dBm/MHz
2020-08-24T07:49:03.260Z - INFO - the selected test from the user : PowerMeasTest is starting now
2020-08-24T07:49:33.986Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "E_UTRA"
      },
      "cbsdCategory": "B",
      "cbsdInfo": {
        "model": "tyndall201",
        "softwareVersion": "2.0-cbrs-reg-a4",
        "vendor": "Cambium Networks"
      },
      "cbsdSerialNumber": "58c17a2d4984",
      "cpiSignatureData": {
        "digitalSignature":
"np3xypDLMaZr3jkHk0ZTubI2Y3LvrwK3ZwZzTwjctdFowDnr3NKDSHy-AfspelpnyxAHGTU9QtnCgijqL3
0xUgadEtBYn5d2ok0MZpHHqqik1VtZDcdlj3YPB5BEit5LV3BbBmQPpW-cl6yCpR-RnwAt9slBiWQaFX
mfhulelbWNhoe1Zc1XNdao5xvZ6cppFOh4bZLVMkf7GpRvgsoNqXlInGxj3PWGwQ8aDyE9OnVFxLMs
u51l6IMVklqX12pvk-9VrACaR-7a32ewaJbTUdQtafNqu7OjbVZWwMGUwitE9nimuW3Acpi7S6T7ZE1Kt
5d9K0G1vQzswmwO_ZtpA",
        "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RIQwMDYwliwiY2JzZFNlcmIhbE51bWJlci6lU4YzE3YTJkNDk4NCIsImIuc3R
hbGxhdGlvbBhcmFtljp7ImxhdGloZWRIljo0MS41NDgyOSwibG9uZ2l0dWRlljotOTAuNjU5MTQslmhlW
dodCI6MTAsImIhlaWdodFR5cGUiOiJBTVMlIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFudGV
ubmFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlsdCI6LTUsImFudGVubmFHYWluljoyMSwiYW50Z
W5uYUJlYW13aWR0aCI6MzYwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGljZCI6InRl
c3RfQ1BJX0ZXNDYiLCJjcGLOYW1lIjoidGVzdCI6ImIuc3RhbGxhZDZXJ0aWZpY2F0aW9uVGltZSI6ImJl
AtMDYtMDIUMTE6NDY6NDhaIn19",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fccId": "Z8H89FT0060",
      "measCapability": [
        "RECEIVED_POWER_WITHOUT_GRANT"
      ],
      "userId": "testid-1"
    }
  ]
}
2020-08-24T07:49:34.032Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "response": {
        "responseCode": 0
      }
    }
  ]
}

```

```
]
}
2020-08-24T07:49:34.454Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "operationParam": {
        "maxEirp": 34,
        "operationFrequencyRange": {
          "highFrequency": 3660000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2020-08-24T07:49:34.460Z - INFO - The requested maxEirp value is too high
2020-08-24T07:49:34.461Z - INFO - The Grant response code is not 0, applicable spectrum parameters
have been sent out.
2020-08-24T07:49:34.463Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "operationParam": {
        "maxEirp": 2,
        "operationFrequencyRange": {
          "highFrequency": 3660000000,
          "lowFrequency": 3650000000
        }
      },
      "response": {
        "responseCode": 400
      }
    }
  ]
}
2020-08-24T07:49:34.572Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "operationParam": {
        "maxEirp": 2,
        "operationFrequencyRange": {
          "highFrequency": 3660000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2020-08-24T07:49:34.576Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
```



```
{
  "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
  "channelType": "GAA",
  "grantExpireTime": "2020-08-31T07:49:34Z",
  "grantId": "180049902",
  "heartbeatInterval": 60,
  "response": {
    "responseCode": 0
  }
}
]
}
2020-08-24T07:49:39.750Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "180049902",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2020-08-24T07:49:39.759Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "180049902",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-24T07:52:59Z"
    }
  ]
}
2020-08-24T07:50:29.880Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "180049902",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2020-08-24T07:50:29.888Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "180049902",
      "response": {
        "responseCode": 0
      },
    }
  ]
}
```

```
        "transmitExpireTime": "2020-08-24T07:53:49Z"
    }
}
2020-08-24T07:51:19.184Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
            "grantId": "180049902",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2020-08-24T07:51:19.194Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
            "grantId": "180049902",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2020-08-24T07:54:39Z"
        }
    ]
}
2020-08-24T07:52:08.591Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
            "grantId": "180049902",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2020-08-24T07:52:08.598Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
            "grantId": "180049902",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2020-08-24T07:55:28Z"
        }
    ]
}
2020-08-24T07:52:58.996Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
```



```
"grantId": "180049902",
"grantRenew": false,
"operationState": "AUTHORIZED"
}
]
}
2020-08-24T07:52:59.005Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "180049902",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-24T07:56:19Z"
    }
  ]
}
2020-08-24T07:53:50.010Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "180049902",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2020-08-24T07:53:50.022Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "180049902",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-24T07:57:10Z"
    }
  ]
}
```

Test Log for WINNF.PT.C.HBT Test Case ID_ BW10M_Grant maxEirp -31

```

2020-08-24T08:11:03.855Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
2020-08-24T08:11:03.855Z - INFO - Selected spectrum frequency is {'lowFrequency': 3650000000L,
'highFrequency': 3660000000L}
2020-08-24T08:11:03.857Z - INFO - Granted Spectrum Max Eirp = -31dBm/MHz
2020-08-24T08:11:03.857Z - INFO - the selected test from the user : PowerMeasTest is starting now
2020-08-24T08:11:27.928Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "E_UTRA"
      },
      "cbsdCategory": "B",
      "cbsdInfo": {
        "model": "tyndall201",
        "softwareVersion": "2.0-cbrs-reg-a4",
        "vendor": "Cambium Networks"
      },
      "cbsdSerialNumber": "58c17a2d4984",
      "cpiSignatureData": {
        "digitalSignature":
"np3xypDLMaZr3jkHk0ZTubI2Y3LvrwK3ZwZzTwjctdFowDnr3NKDSHy-AfspelpnyxAHGTU9QtnCgijqL3
0xUgadEtBYn5d2ok0MZpHHqqik1VtZDcdlj3YPB5BEit5LV3BbBmQPPW-cl6yCpR-RnwAt9slBiWQaFX
mfhulelbWNhoe1Zc1XNdao5xvZ6cppFO4bZLVMkf7GpRvgsoNqXlInGxj3PWGwQ8aDyE9OnVFxLMs
u51I6IMVklqX12pvk-9VrACaR-7a32ewaJbTUdQtafNqu7OjbVZWwMGUwitE9nimuW3Acpi7S6T7ZE1Kt
5d9K0G1vQzswmwO_ZtpA",
        "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RIQwMDYwliwiY2JzZFNlcmIhbE51bWJlci6lU4YzE3YTJkNDk4NCIsImIuc3R
hbGxhdGlvbBhcmFtljp7ImxhdGloZWRIljo0MS41NDgyOSwibG9uZ2I0dWRlljotOTAuNjU5MTQslmhlW
dodCI6MTAsImIhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImFudGV
ubmFBemltdXRoljoxNTAsImFudGVubmFEb3dudGlsdCI6LTUsImFudGVubmFHYWluljoyMSwiYW50Z
W5uYUJlYW13aWR0aCI6MzYwfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGljZCI6InRl
c3RfQ1BJX0ZXNDYiLCJjcGLOYW1lIjoidGVzdCI6ImIuc3RhbGxhZDZXJ0aWZpY2F0aW9uVGltZSI6IjlmMj
AtMDYtMDIUMTE6NDY6NDhln19",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fccId": "Z8H89FT0060",
      "measCapability": [
        "RECEIVED_POWER_WITHOUT_GRANT"
      ],
      "userId": "testid-1"
    }
  ]
}
2020-08-24T08:11:27.973Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "response": {
        "responseCode": 0
      }
    }
  ]
}

```



```
]
}
2020-08-24T08:11:28.486Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "operationParam": {
        "maxEirp": 34,
        "operationFrequencyRange": {
          "highFrequency": 3660000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2020-08-24T08:11:28.490Z - INFO - The requested maxEirp value is too high
2020-08-24T08:11:28.492Z - INFO - The Grant response code is not 0, applicable spectrum parameters
have been sent out.
2020-08-24T08:11:28.493Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "operationParam": {
        "maxEirp": -31,
        "operationFrequencyRange": {
          "highFrequency": 3660000000,
          "lowFrequency": 3650000000
        }
      },
      "response": {
        "responseCode": 400
      }
    }
  ]
}
2020-08-24T08:11:28.582Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "operationParam": {
        "maxEirp": -31,
        "operationFrequencyRange": {
          "highFrequency": 3660000000,
          "lowFrequency": 3650000000
        }
      }
    }
  ]
}
2020-08-24T08:11:28.588Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
```

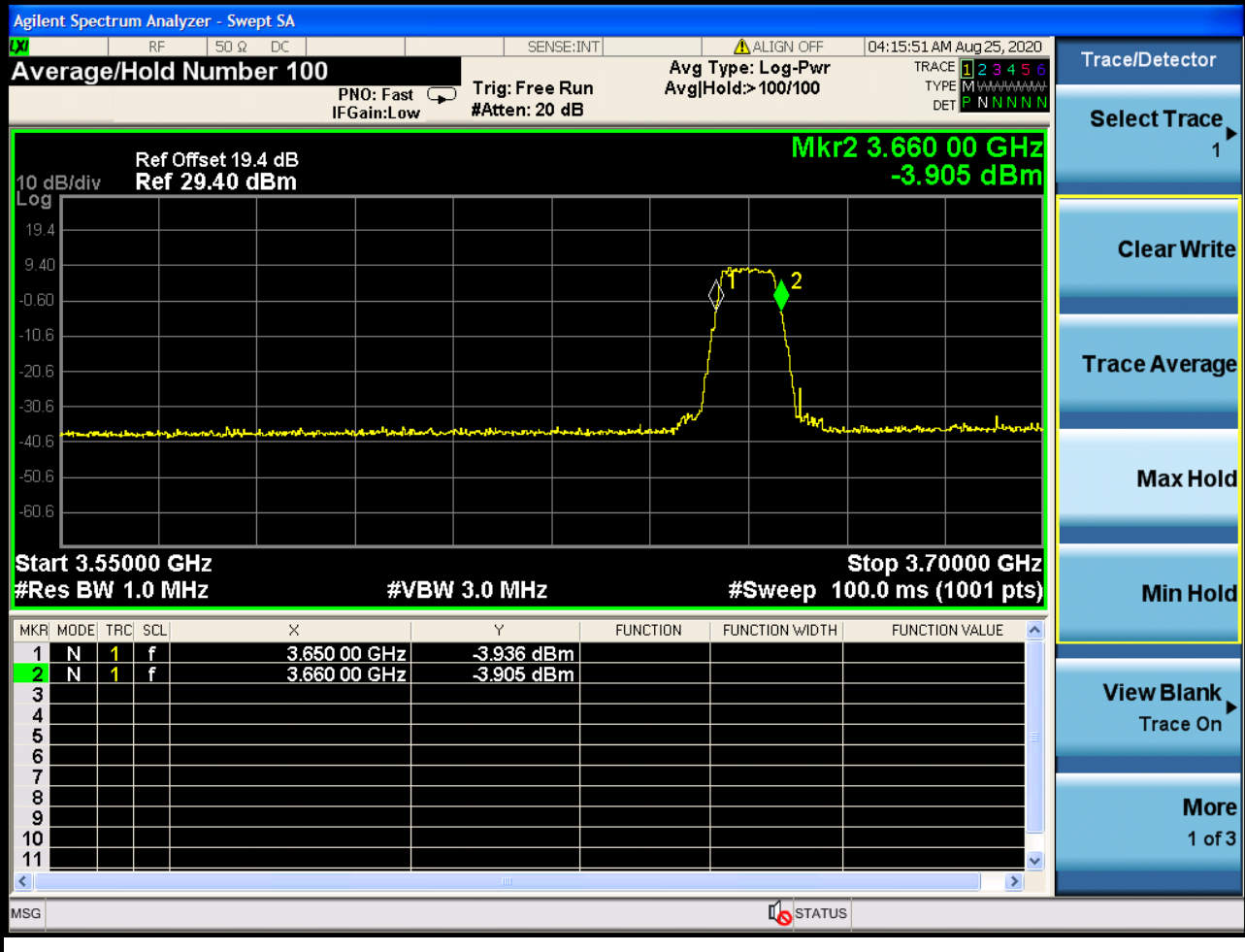


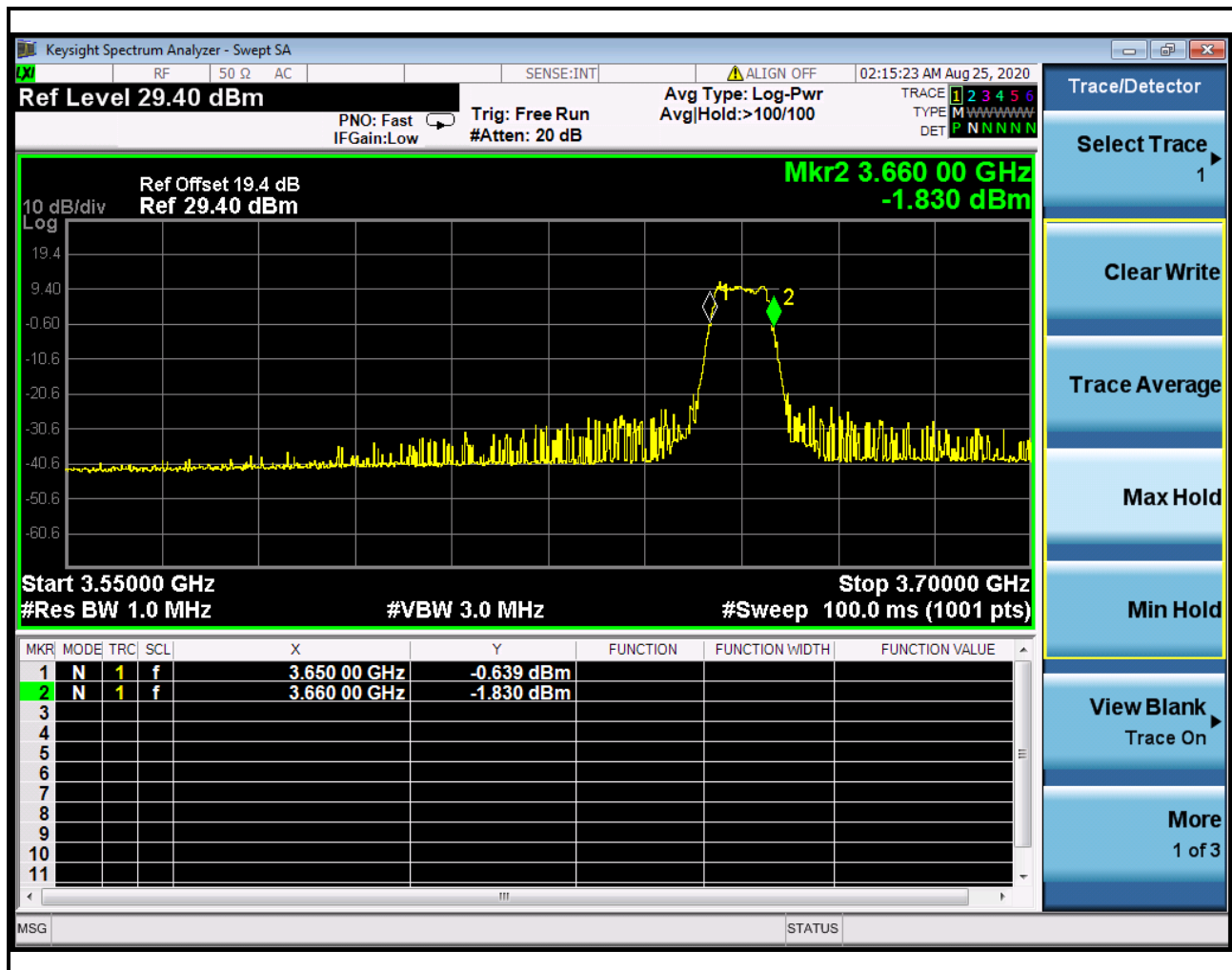
```
{
  "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
  "channelType": "GAA",
  "grantExpireTime": "2020-08-31T08:11:28Z",
  "grantId": "398355631",
  "heartbeatInterval": 60,
  "response": {
    "responseCode": 0
  }
}
]
}
2020-08-24T08:11:33.767Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "398355631",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2020-08-24T08:11:33.776Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "398355631",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-08-24T08:14:53Z"
    }
  ]
}
2020-08-24T08:12:23.414Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "398355631",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2020-08-24T08:12:23.424Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0060Mock-SAS58c17a2d4984",
      "grantId": "398355631",
      "response": {
        "responseCode": 0
      },
    }
  ]
}
```



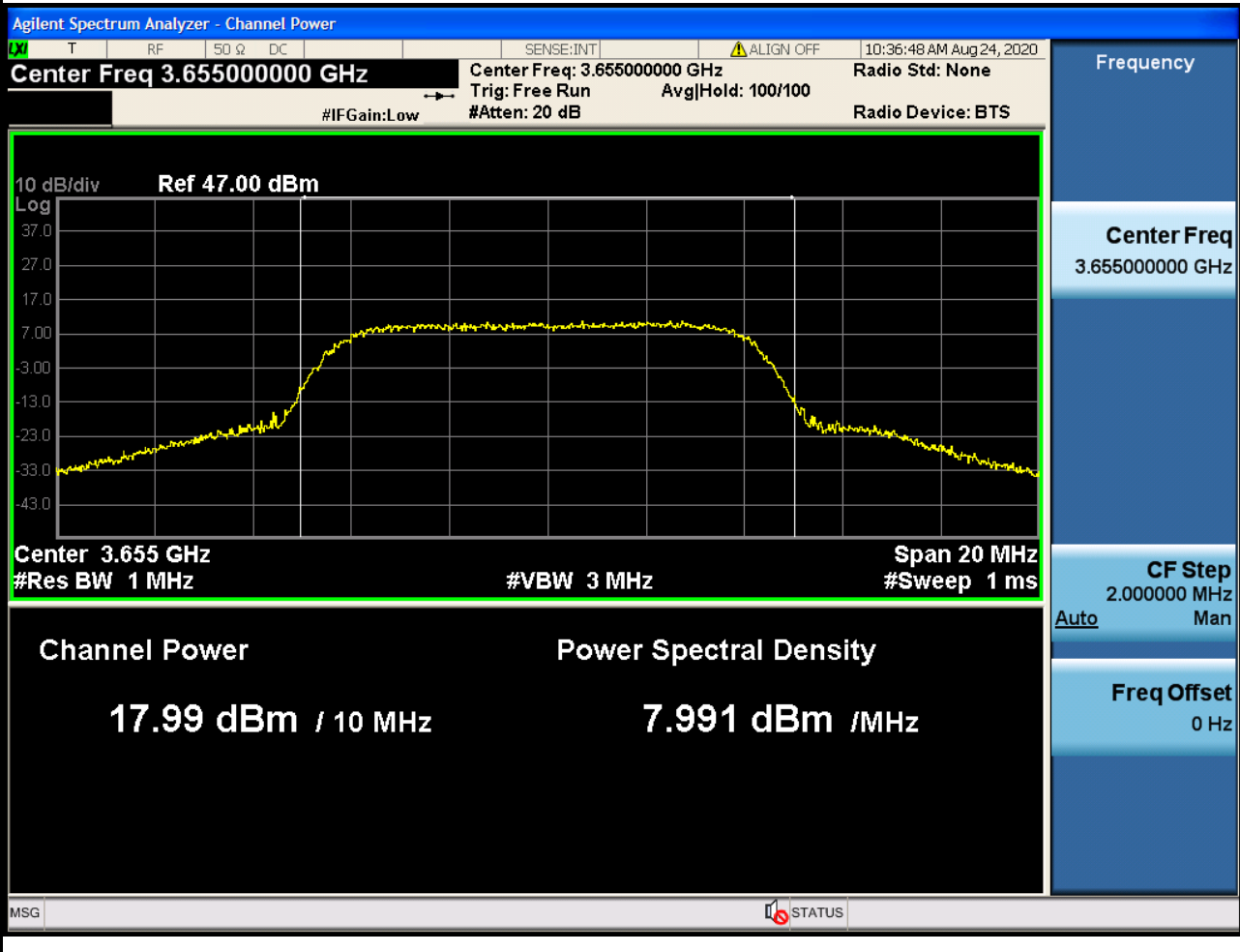
```
    "transmitExpireTime": "2020-08-24T08:15:43Z"  
  }  
}  
}
```

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

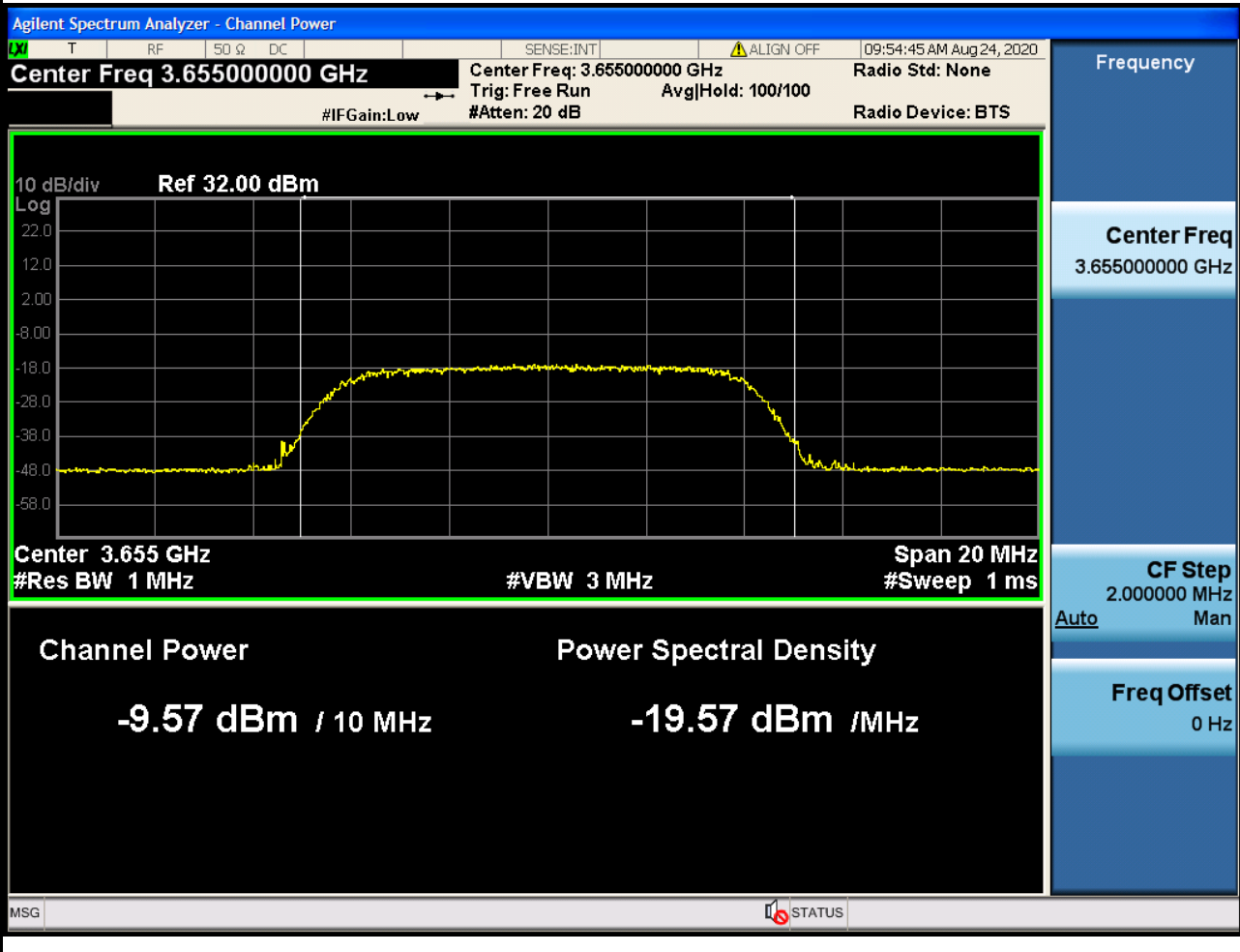




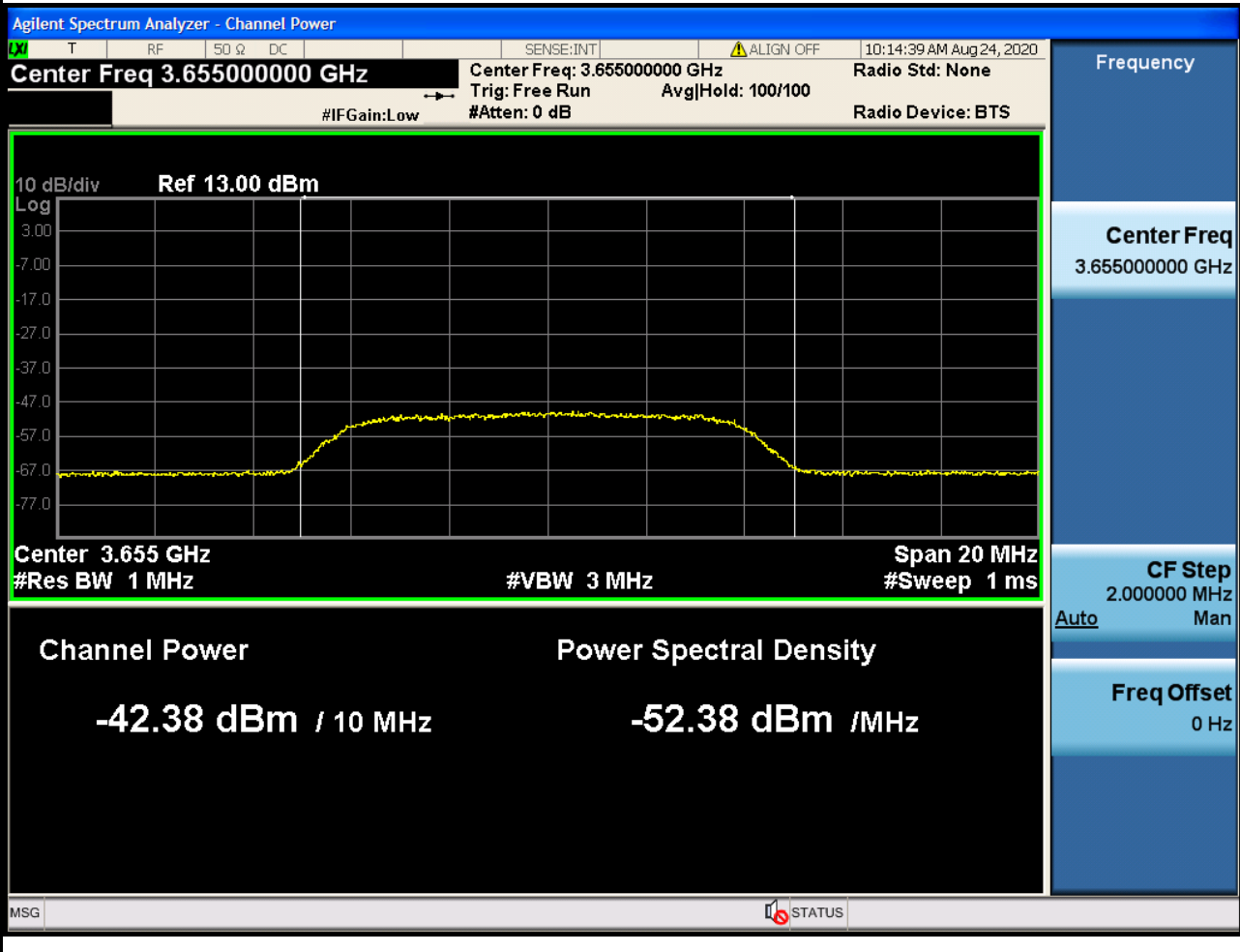
RF measurement plot for WINNF.PT.C.HBT Test Case ID_BW10M_Grant maxEirp 34



RF measurement plot for WINNF.PT.C.HBT Test Case ID_BW10M_Grant maxEirp 2



RF measurement plot for WINNF.PT.C.HBT Test Case ID_BW10M_Grant maxEirp -31



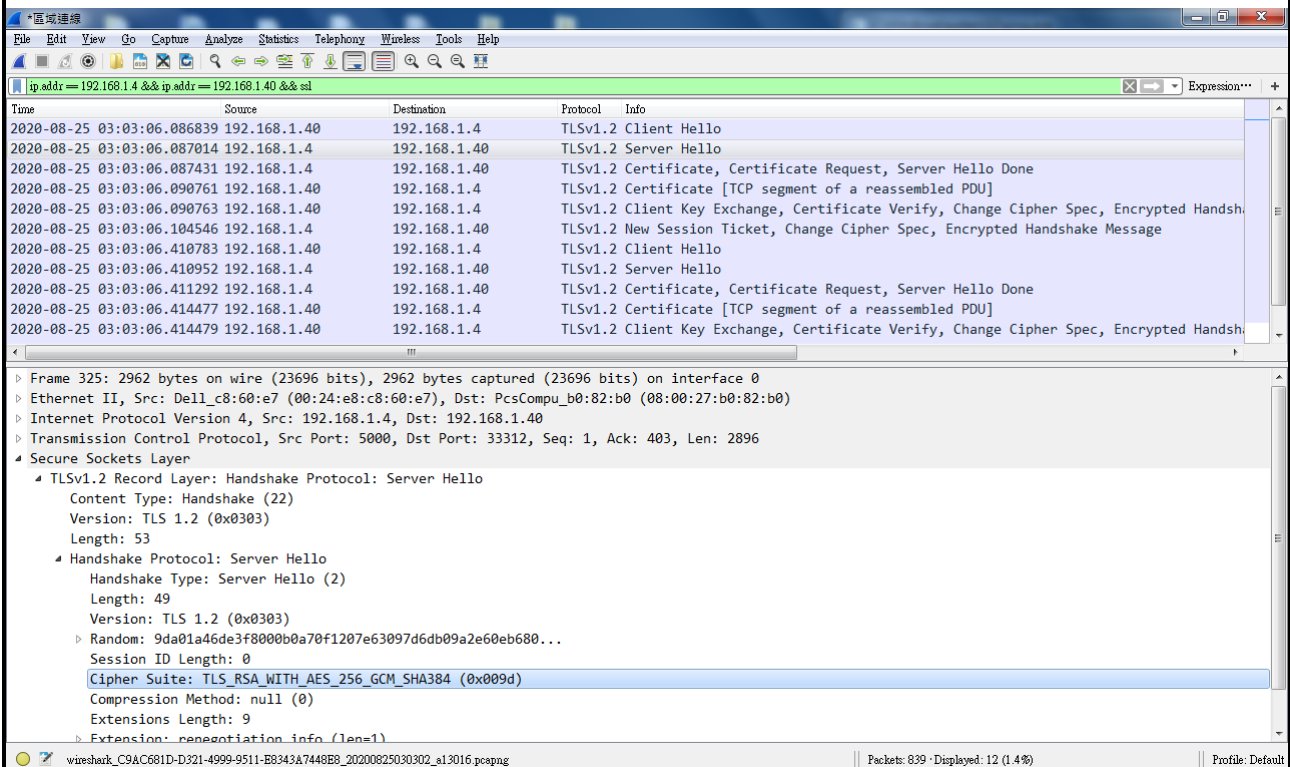
Wireshark Plots for WINNF.FT.C.SCS.1 Test Case ID

Time	Source	Destination	Protocol	Info
2020-08-25 02:41:39.397706	192.168.1.40	192.168.1.4	TLSv1.2	Client Hello
2020-08-25 02:41:39.397814	192.168.1.4	192.168.1.40	TLSv1.2	Server Hello
2020-08-25 02:41:39.398388	192.168.1.4	192.168.1.40	TLSv1.2	Certificate, Certificate Request, Server Hello Done
2020-08-25 02:41:39.402203	192.168.1.40	192.168.1.4	TLSv1.2	Certificate [TCP segment of a reassembled PDU]
2020-08-25 02:41:39.402206	192.168.1.40	192.168.1.4	TLSv1.2	Client Key Exchange, Certificate Verify, Change Cipher Spec, Encrypted Handshake Message
2020-08-25 02:41:39.418589	192.168.1.4	192.168.1.40	TLSv1.2	New Session Ticket, Change Cipher Spec, Encrypted Handshake Message
2020-08-25 02:41:39.419915	192.168.1.40	192.168.1.4	TLSv1.2	Application Data
2020-08-25 02:41:39.508739	192.168.1.4	192.168.1.40	TLSv1.2	Application Data
2020-08-25 02:41:39.509059	192.168.1.4	192.168.1.40	TLSv1.2	Application Data, Application Data, Application Data, Application Data, Appli
2020-08-25 02:41:39.511271	192.168.1.40	192.168.1.4	TLSv1.2	Encrypted Alert
2020-08-25 02:41:39.872710	192.168.1.4	192.168.1.4	TLSv1.2	Client Hello

Frame 5127: 2962 bytes on wire (23696 bits), 2962 bytes captured (23696 bits) on interface 0
 Ethernet II, Src: Dell_c8:60:e7 (00:24:e8:c8:60:e7), Dst: PcsCompu_b0:82:b0 (08:00:27:b0:82:b0)
 Internet Protocol Version 4, Src: 192.168.1.4, Dst: 192.168.1.40
 Transmission Control Protocol, Src Port: 5000, Dst Port: 60742, Seq: 1, Ack: 387, Len: 2896
 Secure Sockets Layer
 TLSv1.2 Record Layer: Handshake Protocol: Server Hello
 Content Type: Handshake (22)
 Version: TLS 1.2 (0x0303)
 Length: 53
 Handshake Protocol: Server Hello
 Handshake Type: Server Hello (2)
 Length: 49
 Version: TLS 1.2 (0x0303)
 Random: ed761533532d135d68c8f1cb44a38ffbdca038cfffcc131a8...
 Session ID Length: 0
 Cipher Suite: TLS_RSA_WITH_AES_256_GCM_SHA384 (0x009d)
 Compression Method: null (0)
 Extensions Length: 9
 Extension: renegotiation info (len=1)
 Cipher Suite (ssl.handshake.ciphersuite), 2 bytes

Packets: 8533 · Displayed: 140 (1.6%) · Dropped: 0 (0.0%) | Profile: Default

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



Time	Source	Destination	Protocol	Info
2020-08-25 03:03:06.086839	192.168.1.40	192.168.1.4	TLSv1.2	Client Hello
2020-08-25 03:03:06.087014	192.168.1.4	192.168.1.40	TLSv1.2	Server Hello
2020-08-25 03:03:06.087431	192.168.1.4	192.168.1.40	TLSv1.2	Certificate, Certificate Request, Server Hello Done
2020-08-25 03:03:06.090761	192.168.1.40	192.168.1.4	TLSv1.2	Certificate [TCP segment of a reassembled PDU]
2020-08-25 03:03:06.090763	192.168.1.40	192.168.1.4	TLSv1.2	Client Key Exchange, Certificate Verify, Change Cipher Spec, Encrypted Handshake Message
2020-08-25 03:03:06.104546	192.168.1.4	192.168.1.40	TLSv1.2	New Session Ticket, Change Cipher Spec, Encrypted Handshake Message
2020-08-25 03:03:06.410783	192.168.1.40	192.168.1.4	TLSv1.2	Client Hello
2020-08-25 03:03:06.410952	192.168.1.4	192.168.1.40	TLSv1.2	Server Hello
2020-08-25 03:03:06.411292	192.168.1.4	192.168.1.40	TLSv1.2	Certificate, Certificate Request, Server Hello Done
2020-08-25 03:03:06.414477	192.168.1.40	192.168.1.4	TLSv1.2	Certificate [TCP segment of a reassembled PDU]
2020-08-25 03:03:06.414479	192.168.1.40	192.168.1.4	TLSv1.2	Client Key Exchange, Certificate Verify, Change Cipher Spec, Encrypted Handshake Message

Frame 325: 2962 bytes on wire (23696 bits), 2962 bytes captured (23696 bits) on interface 0

Ethernet II, Src: Dell_c8:60:e7 (00:24:e8:c8:60:e7), Dst: PcsCompu_b0:82:b0 (08:00:27:b0:82:b0)

Internet Protocol Version 4, Src: 192.168.1.4, Dst: 192.168.1.40

Transmission Control Protocol, Src Port: 5000, Dst Port: 33312, Seq: 1, Ack: 403, Len: 2896

Secure Sockets Layer

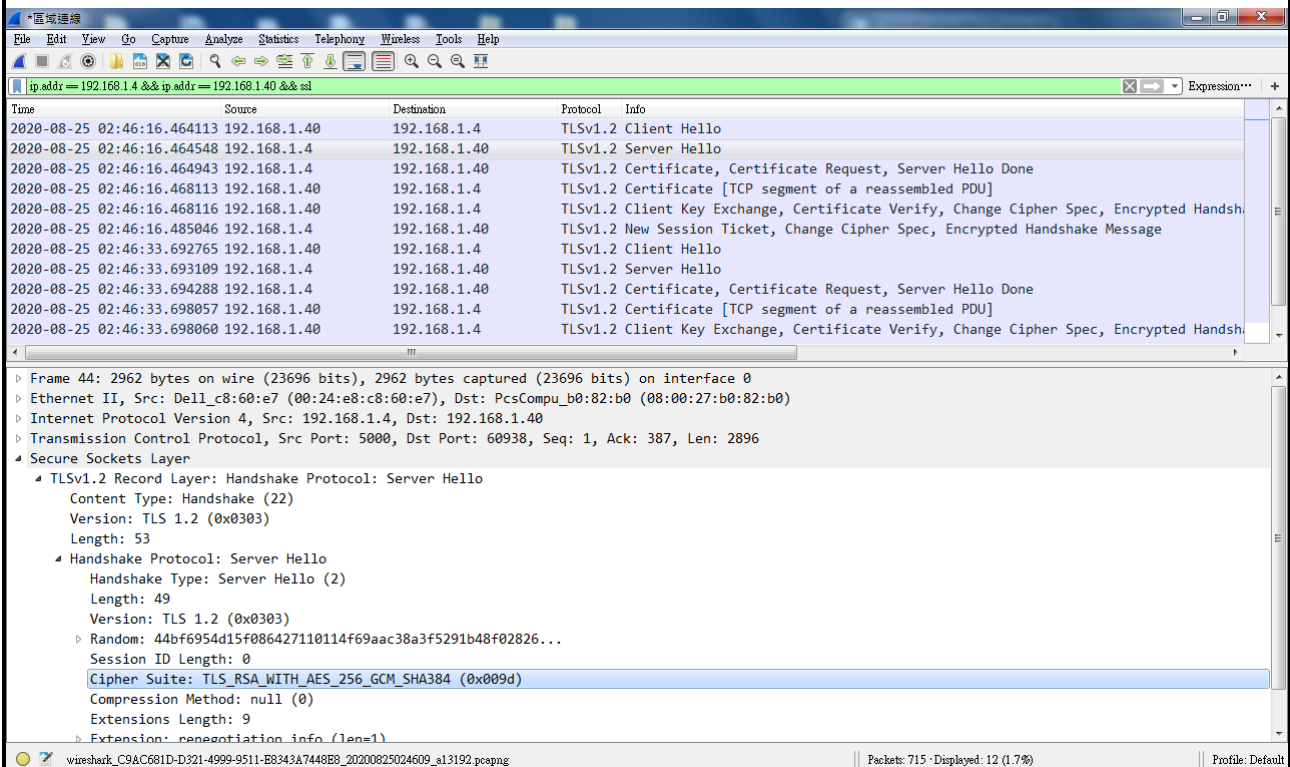
- TLSv1.2 Record Layer: Handshake Protocol: Server Hello
 - Content Type: Handshake (22)
 - Version: TLS 1.2 (0x0303)
 - Length: 53
- Handshake Protocol: Server Hello
 - Handshake Type: Server Hello (2)
 - Length: 49
 - Version: TLS 1.2 (0x0303)
 - Random: 9da01a46de3f8000b0a70f1207e63097d6db09a2e60eb680...
 - Session ID Length: 0
 - Cipher Suite: TLS_RSA_WITH_AES_256_GCM_SHA384 (0x009d)
 - Compression Method: null (0)
 - Extensions Length: 9
 - Extension: renegotiation info (len=1)

wireshark_C9AC681D-D321-4999-9511-E8343A7448E8_20200825030302_a13016.pcapng

Packets: 839 · Displayed: 12 (1.4%)

Profile: Default

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

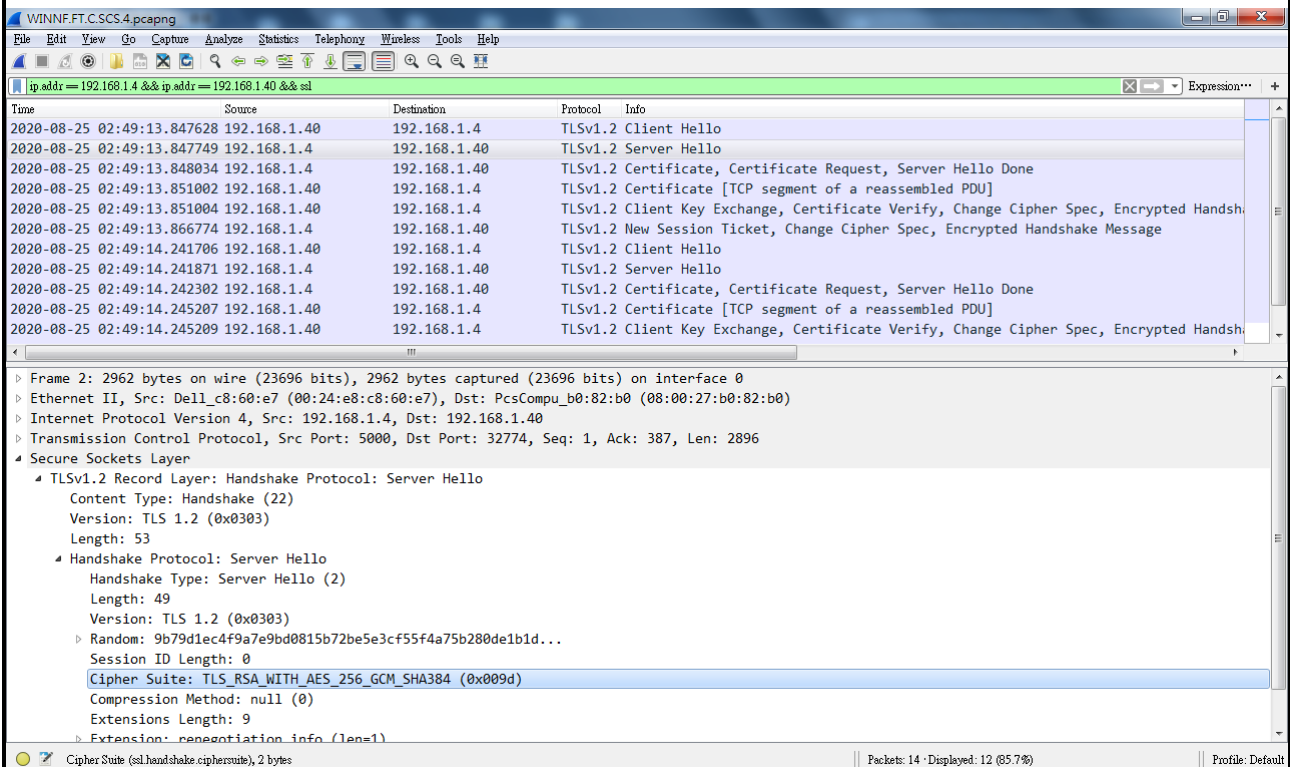


The screenshot displays the Wireshark interface with a packet capture filter set to `ip addr == 192.168.1.4 && ip addr == 192.168.1.40 && ssl`. The packet list shows a series of TLSv1.2 messages between source 192.168.1.4 and destination 192.168.1.40. The selected packet (Frame 44) is a TLSv1.2 Client Key Exchange, Certificate Verify, Change Cipher Spec, and Encrypted Handshake Message. The packet details pane shows the following structure:

- Frame 44: 2962 bytes on wire (23696 bits), 2962 bytes captured (23696 bits) on interface 0
- Ethernet II, Src: Dell_c8:60:e7 (00:24:e8:c8:60:e7), Dst: PcsCompu_b0:82:b0 (08:00:27:b0:82:b0)
- Internet Protocol Version 4, Src: 192.168.1.4, Dst: 192.168.1.40
- Transmission Control Protocol, Src Port: 5000, Dst Port: 60938, Seq: 1, Ack: 387, Len: 2896
- Secure Sockets Layer
 - TLsv1.2 Record Layer: Handshake Protocol: Server Hello
 - Content Type: Handshake (22)
 - Version: TLS 1.2 (0x0303)
 - Length: 53
 - Handshake Protocol: Server Hello
 - Handshake Type: Server Hello (2)
 - Length: 49
 - Version: TLS 1.2 (0x0303)
 - Random: 44bf6954d15f086427110114f69aac38a3f5291b48f02826...
 - Session ID Length: 0
 - Cipher Suite: TLS_RSA_WITH_AES_256_GCM_SHA384 (0x009d)
 - Compression Method: null (0)
 - Extensions Length: 9
 - Extension: renegotiation info (len=1)

The status bar at the bottom indicates 715 packets displayed, with 12 (1.7%) selected. The profile is set to Default.

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



The image shows a Wireshark capture of a TLSv1.2 handshake. The packet list shows several packets, with the first packet being a TLSv1.2 Client Hello. The packet details pane shows the structure of the TLSv1.2 Record Layer, including the Handshake Protocol: Server Hello. The packet bytes pane shows the raw data of the handshake.

Time	Source	Destination	Protocol	Info
2020-08-25 02:49:13.847628	192.168.1.40	192.168.1.4	TLSv1.2	Client Hello
2020-08-25 02:49:13.847749	192.168.1.4	192.168.1.40	TLSv1.2	Server Hello
2020-08-25 02:49:13.848034	192.168.1.4	192.168.1.40	TLSv1.2	Certificate, Certificate Request, Server Hello Done
2020-08-25 02:49:13.851002	192.168.1.40	192.168.1.4	TLSv1.2	Certificate [TCP segment of a reassembled PDU]
2020-08-25 02:49:13.851004	192.168.1.40	192.168.1.4	TLSv1.2	Client Key Exchange, Certificate Verify, Change Cipher Spec, Encrypted Handshake Message
2020-08-25 02:49:13.866774	192.168.1.4	192.168.1.40	TLSv1.2	New Session Ticket, Change Cipher Spec, Encrypted Handshake Message
2020-08-25 02:49:14.241706	192.168.1.40	192.168.1.4	TLSv1.2	Client Hello
2020-08-25 02:49:14.241871	192.168.1.4	192.168.1.40	TLSv1.2	Server Hello
2020-08-25 02:49:14.242302	192.168.1.40	192.168.1.4	TLSv1.2	Certificate, Certificate Request, Server Hello Done
2020-08-25 02:49:14.245207	192.168.1.40	192.168.1.4	TLSv1.2	Certificate [TCP segment of a reassembled PDU]
2020-08-25 02:49:14.245209	192.168.1.40	192.168.1.4	TLSv1.2	Client Key Exchange, Certificate Verify, Change Cipher Spec, Encrypted Handshake Message

Frame 2: 2962 bytes on wire (23696 bits), 2962 bytes captured (23696 bits) on interface 0

Ethernet II, Src: Dell_c8:60:e7 (00:24:e8:c8:60:e7), Dst: PcsCompu_b0:82:b0 (08:00:27:b0:82:b0)

Internet Protocol Version 4, Src: 192.168.1.4, Dst: 192.168.1.40

Transmission Control Protocol, Src Port: 5000, Dst Port: 32774, Seq: 1, Ack: 387, Len: 2896

Secure Sockets Layer

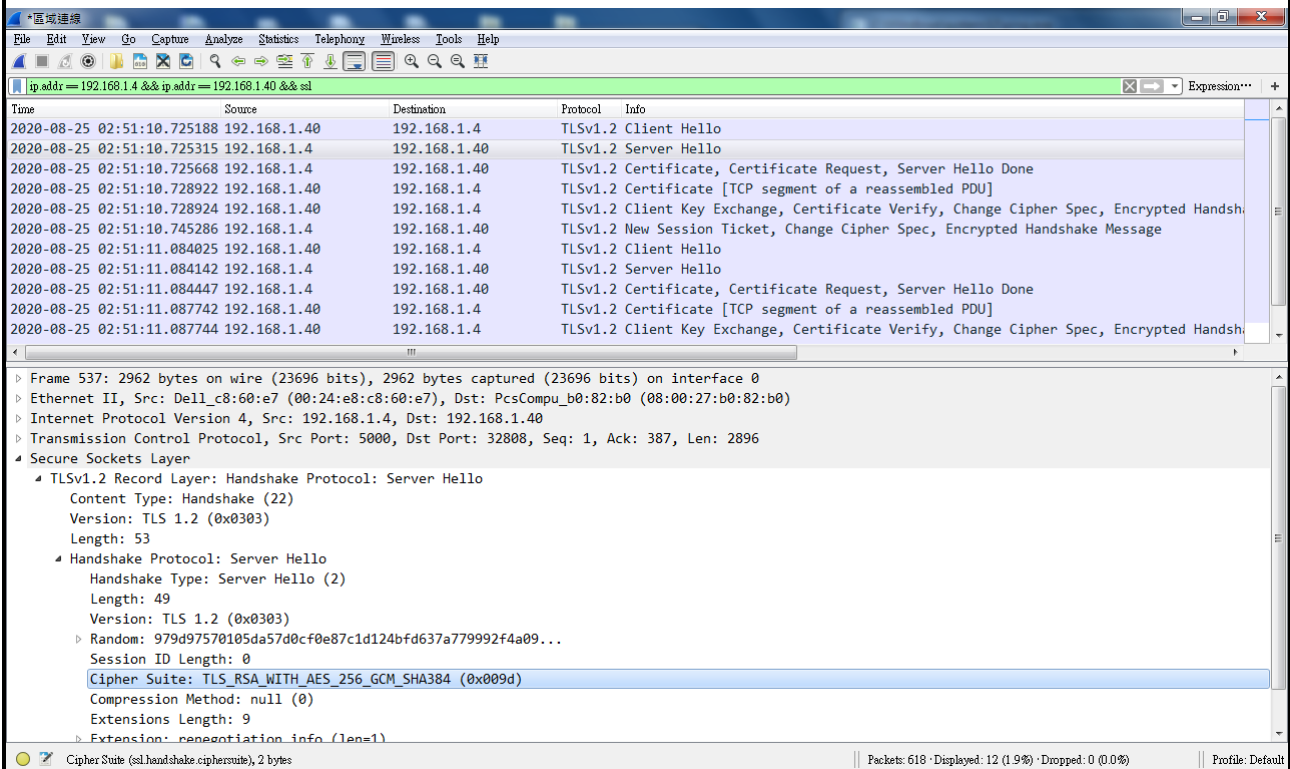
- TLSv1.2 Record Layer: Handshake Protocol: Server Hello
 - Content Type: Handshake (22)
 - Version: TLS 1.2 (0x0303)
 - Length: 53
 - Handshake Protocol: Server Hello
 - Handshake Type: Server Hello (2)
 - Length: 49
 - Version: TLS 1.2 (0x0303)
 - Random: 9b79d1ec4f9a7e9bd0815b72be5e3cf55f4a75b280de1b1d...
 - Session ID Length: 0
 - Cipher Suite: TLS_RSA_WITH_AES_256_GCM_SHA384 (0x009d)
 - Compression Method: null (0)
 - Extensions Length: 9
 - Extension: renegotiation info (len=1)

Cipher Suite (ssl.handshake.ciphersuite), 2 bytes

Packets: 14 · Displayed: 12 (85.7%)

Profile: Default

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



The image shows a Wireshark capture of a TLSv1.2 handshake. The packet list on the left shows several packets between 192.168.1.4 and 192.168.1.40. The selected packet (Frame 537) is a TLSv1.2 Client Key Exchange, Certificate Verify, Change Cipher Spec, Encrypted Handshake Message. The packet details on the right show the following structure:

- Frame 537: 2962 bytes on wire (23696 bits), 2962 bytes captured (23696 bits) on interface 0
- Ethernet II, Src: Dell_c8:60:e7 (00:24:e8:c8:60:e7), Dst: PcsCompu_b0:82:b0 (08:00:27:b0:82:b0)
- Internet Protocol Version 4, Src: 192.168.1.4, Dst: 192.168.1.40
- Transmission Control Protocol, Src Port: 5000, Dst Port: 32808, Seq: 1, Ack: 387, Len: 2896
- Secure Sockets Layer
 - TLSv1.2 Record Layer: Handshake Protocol: Server Hello
 - Content Type: Handshake (22)
 - Version: TLS 1.2 (0x0303)
 - Length: 53
 - Handshake Protocol: Server Hello
 - Handshake Type: Server Hello (2)
 - Length: 49
 - Version: TLS 1.2 (0x0303)
 - Random: 979d97570105da57d0cf0e87c1d124bfd637a779992f4a09...
 - Session ID Length: 0
 - Cipher Suite: TLS_RSA_WITH_AES_256_GCM_SHA384 (0x009d)
 - Compression Method: null (0)
 - Extensions Length: 9
 - Extension: renegotiation info (len=1)

The status bar at the bottom indicates: Packets: 618 · Displayed: 12 (1.9%) · Dropped: 0 (0.0%) · Profile: Default

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

Activities Wireshark Tue 03:05

*any

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

ocsp Expression...

No.	Time	Source	Destination	Protocol	Length	Info
1106	2020-08-25 03:03:14.326937545	192.168.1.40	192.168.1.5	OCSP	324	Request
1108	2020-08-25 03:03:14.328150576	192.168.1.5	192.168.1.40	OCSP	244	Response
1130	2020-08-25 03:03:14.649947682	192.168.1.40	192.168.1.5	OCSP	324	Request
1132	2020-08-25 03:03:14.652111974	192.168.1.5	192.168.1.40	OCSP	244	Response

Frame 1106: 324 bytes on wire (2592 bits), 324 bytes captured (2592 bits) on interface 0

Linux cooked capture

Internet Protocol Version 4, Src: 192.168.1.40, Dst: 192.168.1.5

Transmission Control Protocol, Src Port: 51376, Dst Port: 80, Seq: 1, Ack: 1, Len: 256

Hypertext Transfer Protocol

Online Certificate Status Protocol

tbsRequest

requestList: 1 item

Request

reqCert

hashAlgorithm (SHA-1)

issuerNameHash: f8941f27af1cffd7f3dd8de4f23ef0fec516a004

issuerKeyHash: d5118439465e651d2b4093dfc4577d89925aa029

serialNumber: 14727537143973195986

requestExtensions: 1 item

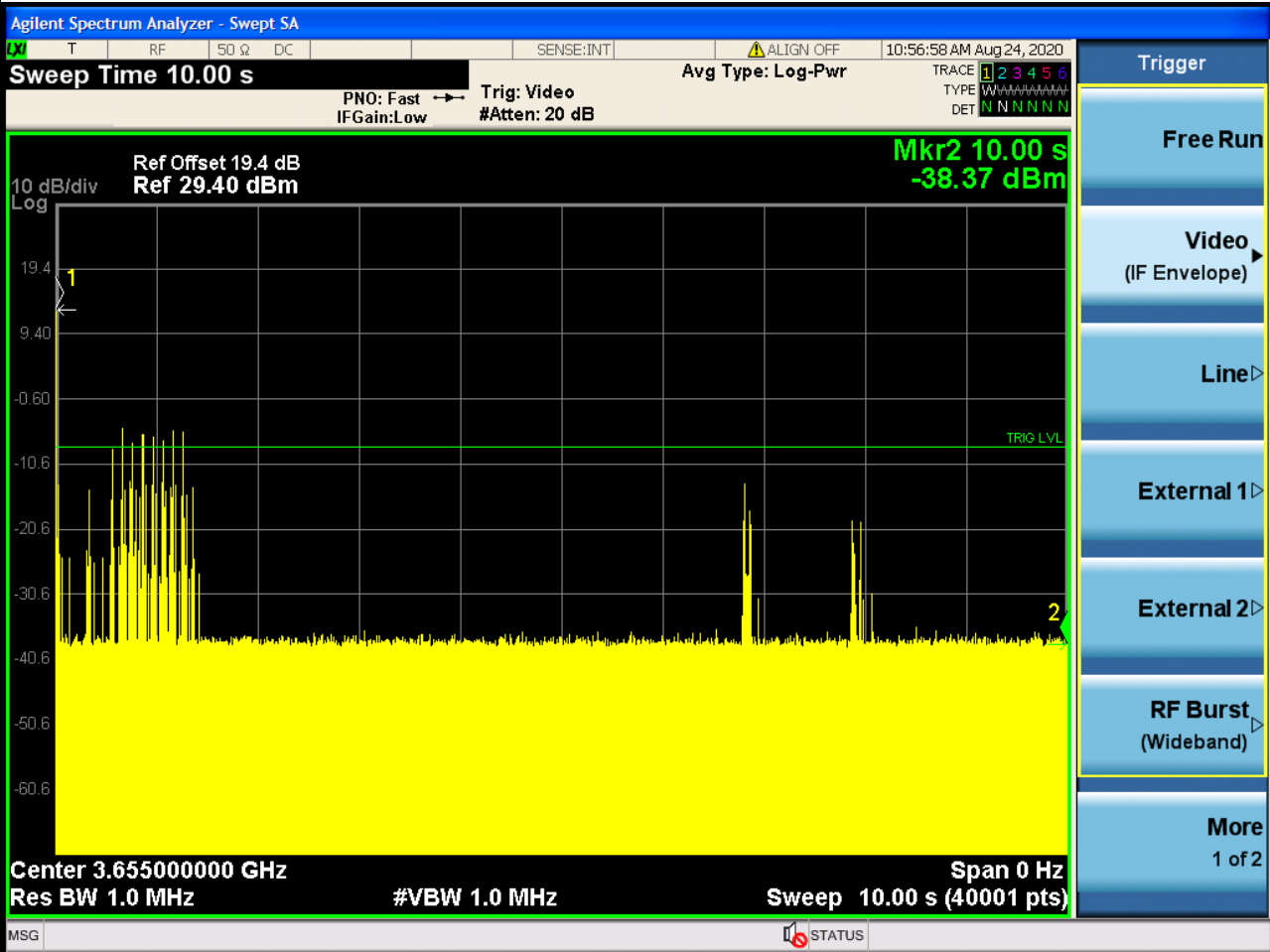
wireshark_any_20200825015031_5TeZrt.pcapng

Packets: 1341 - Displayed: 4 (0.3%)

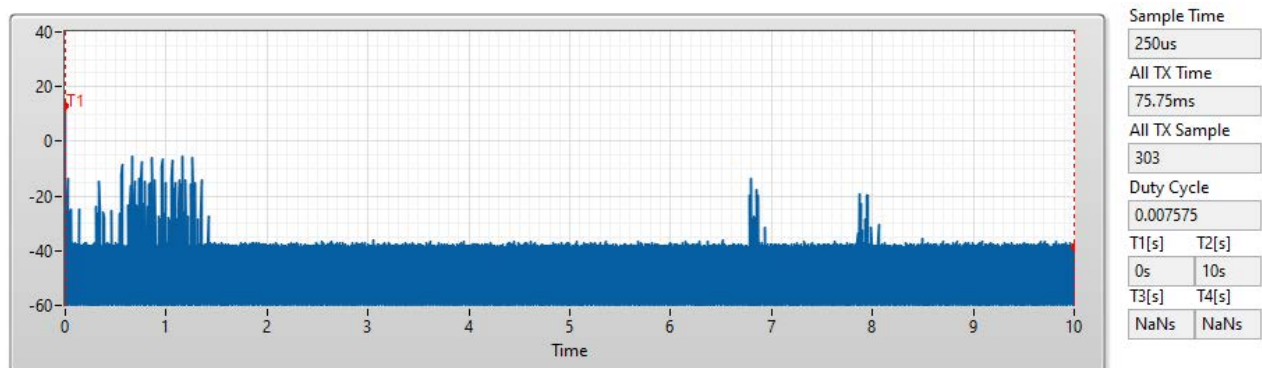
Profile: Default

1 second within any 10-second period

Spectrum Analyzer



Calculated Result



The sum of On Time (aggregated time from marker 1 to 2): **0.075s** < 1s = PASS