



WINNF-TS-0122 TEST REPORT

FCC ID : Z8H89FT0009
Equipment : 3GHz PMP 450 SM
Brand Name : Cambium Networks
Model Name : 3GHz PMP 450 SM
Applicant : Cambium Networks Inc.
3800 Golf Road, Suite 360 Rolling Meadows, IL 60008, USA
Manufacturer : Cambium Networks Inc.
3800 Golf Road, Suite 360 Rolling Meadows, IL 60008, USA
Standard : WINNF-TS-0122 Version V1.0.1

The product was received on Aug. 30, 2018, and testing was started from Aug. 30, 2018 and completed on Oct. 02, 2018. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in WINNF-TS-0122 Version V1.0.1 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Approved by: Jordan Hsiao

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



Table of Contents

- 1 General Description 7**
- 1.1 Product Feature of Equipment Under Test 7
- 1.2 Conditional Test Case 7
- 1.3 Accessories 8
- 1.4 Support Equipment 8
- 1.5 Testing Location 8
- 2 Measurement Environment 9**
- 2.1 Test configuration 9
- 3 Test Results 10**
- 3.1 WINNF.FT.D.REG.6 - Domain Proxy Single-Step registration for CBSD with CPI signed data 10
- 3.2 WINNF.FT.D.REG.9 - Domain Proxy Missing Required parameters (responseCode 102) 11
- 3.3 WINNF.FT.D.REG.11 - Domain Proxy Pending registration (responseCode 200) 12
- 3.4 WINNF.FT.D.REG.13 - Domain Proxy Invalid parameters (responseCode 103) 13
- 3.5 WINNF.FT.D.REG.15 - Domain Proxy Blacklisted CBSD (responseCode 101) 14
- 3.6 WINNF.FT.D.REG.17 - Domain Proxy Unsupported SAS protocol version (responseCode 100) 15
- 3.7 WINNF.FT.D.REG.19 - Domain Proxy Group Error (responseCode 201) 16
- 3.8 WINNF.FT.C.GRA.1 - Unsuccessful Grant responseCode=400 (INTERFERENCE) 17
- 3.9 WINNF.FT.C.GRA.2 - Unsuccessful Grant responseCode=401 (GRANT_CONFLICT) 18
- 3.10 WINNF.FT.D.HBT.2 - Domain Proxy Heartbeat Success Case (first Heartbeat Response) 19
- 3.11 WINNF.FT.C.HBT.3 - Heartbeat responseCode=105 (DEREGISTER) 22
- 3.12 WINNF.FT.C.HBT.5 - Heartbeat responseCode=501 (SUSPENDED_GRANT) in First Heartbeat Response. 23
- 3.13 WINNF.FT.C.HBT.6 - Heartbeat responseCode=501 (SUSPENDED_GRANT) in Subsequent Heartbeat Response 24
- 3.14 WINNF.FT.C.HBT.7 - Heartbeat responseCode=502 (UNSYNC_OP_PARAM) 25
- 3.15 WINNF.FT.D.HBT.8 - Domain Proxy Heartbeat responseCode=500 (TERMINATED_GRANT) 26
- 3.16 WINNF.FT.C.HBT.9 - Heartbeat Response Absent (First Heartbeat) 28
- 3.17 WINNF.FT.C.HBT.10 - Heartbeat Response Absent (Subsequent Heartbeat) 29
- 3.18 WINNF.FT.D.MES.2 - Domain Proxy Registration Response contains measReportConfig 30
- 3.19 WINNF.FT.D.RLQ.2 - Domain Proxy Successful Relinquishment 32
- 3.20 WINNF.FT.D.DRG.2 - Domain Proxy Successful Deregistration 33
- 3.21 WINNF.FT.C.SCS.1 - Successful TLS connection between UUT and SAS Test Harness 34
- 3.22 WINNF.FT.C.SCS.2 - TLS failure due to revoked certificate 35
- 3.23 WINNF.FT.C.SCS.3 - TLS failure due to expired server certificate 36
- 3.24 WINNF.FT.C.SCS.4 - TLS failure when SAS Test Harness certificate is issued by an unknown CA 37
- 3.25 WINNF.FT.C.SCS.5 - TLS failure when certificate at the SAS Test Harness is corrupted 38
- 3.26 WINNF.PT.C.HBT - UUT RF Transmit Power Measurement 39
- 4 Test Equipment and Calibration Data 42**
- 5 Measurement Uncertainty 43**
- Appendix A. Test Logs**
- Appendix B. RF Measurement Plots**
- Appendix C. Wireshark Plots**
- Appendix D. Test Photos**
- Photographs of EUT v01**



Summary of Test Result

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



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



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

Note1:

- ◆ M: Mandatory for certification
- ◆ O: Optional. Not required for certification.
- ◆ C: Conditional. Mandatory if CBSD supports relevant functionality.

Note2: The unit under test type is CBSD with Domain Proxy and Conditional Test Case Definitions are C3 and C4.

Reviewed by: Jordan Hsiao

Report Producer: Cindy Peng



1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature of Equipment Under Test	
FCC ID	Z8H89FT0009
Equipment	3GHz PMP 450 SM
Brand Name	Cambium Networks
Model Name	3GHz PMP 450 SM
Power Type	From PoE
Category of CBSD	<input type="checkbox"/> Category A <input checked="" type="checkbox"/> Category B
Professional Installation	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Unit Under Test in Test ID	<input checked="" type="checkbox"/> CBSD with Domain Proxy <input type="checkbox"/> CBSD without Domain Proxy
CBSD Hardware Version	P1
CBSD Software Version	CANOPY 16.0 (Build INT-CBRS-51) BHUL450
CBSD Firmware Version	081518
Domain Proxy Software Version	1.1

1.2 Conditional Test Case

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



1.3 Accessories

N/A

1.4 Support Equipment

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	DELL	E4300	N/A
2	WLAN AP	NETGEAR	WNDR3300v2	PY309300116
3	Notebook	ASUS	P2438U	PPD-QCNFA435
4	PoE	Phihong	PSA15M-300(AP)	N/A
5	PoE	Cambium Networks	NET-P15-30IN	N/A

1.5 Testing Location

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

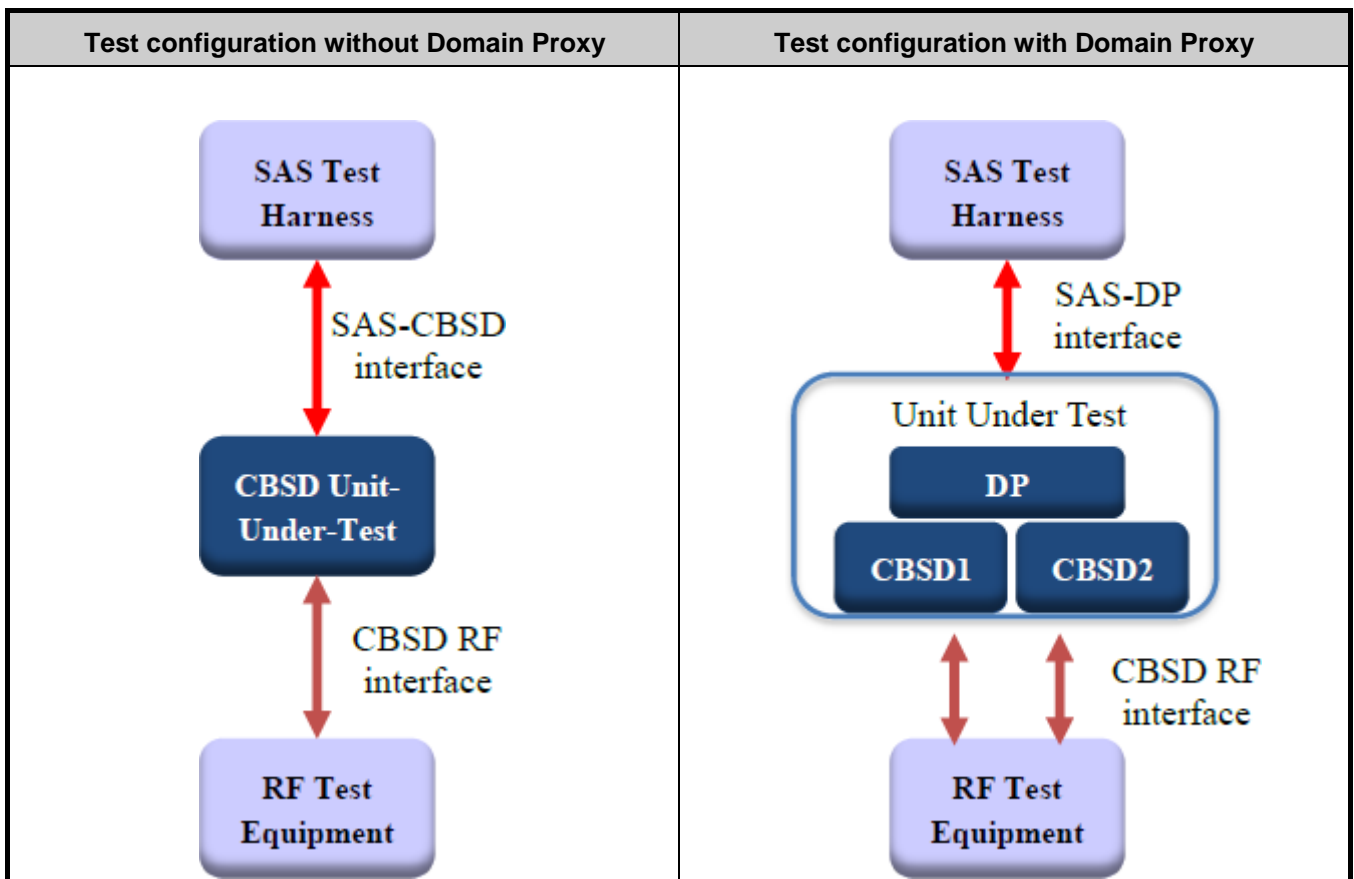
Test site Designation No. TW1190 with FCC.

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

2 Measurement Environment

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

2.1 Test configuration





3 Test Results

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

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

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: <ul style="list-style-type: none">• 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: <ul style="list-style-type: none">• The required <i>userId</i>, <i>fcld</i> and <i>cbsdSerialNumber</i> and REG- Conditional <i>cbsdCategory</i>, <i>airInterface</i>, <i>measCapability</i> and <i>cpiSignatureData</i> registration parameters shall be sent from the CBSD and conform to proper format and acceptable ranges.• 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	<ul style="list-style-type: none">• SAS Test Harness sends a CBSD Registration Response in the form of one 2-element Array or as individual messages as follows:<ul style="list-style-type: none">– <i>cbsdid</i> = Ci– <i>measReportConfig</i> for each CBSD shall not be included.– <i>responseCode</i> = 0 for each CBSD	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (<i>responseCode</i> =0) to further request messages from the UUT.	--	--
5	Monitor the RF output of each UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: <ul style="list-style-type: none">• UUT shall not transmit RF	PASS	--



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

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: <ul style="list-style-type: none">• 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: <ul style="list-style-type: none">– SAS response does not include a <i>cbstd</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: <ul style="list-style-type: none">• UUT shall not transmit RF	PASS	--



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

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: <ul style="list-style-type: none">• 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: <ul style="list-style-type: none">– SAS response does not include a <i>cbstd</i>.– <i>responseCode</i>=Ri for CBSD1 and CBSD2	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (<i>responseCode</i> =200) to further request messages from the UUT.	--	--
5	Monitor the RF output of each UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: <ul style="list-style-type: none">• UUT shall not transmit RF	PASS	--



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

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: <ul style="list-style-type: none">• 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: <ul style="list-style-type: none">– SAS response does not include a <i>cbstd</i>.– <i>responseCode</i>=Ri for CBSD1 and CBSD2	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (<i>responseCode</i> R1=0 for CBSD1 and R2=103 for CBSD2) to further request messages from the UUT.	--	--
5	Monitor the RF output of each UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: <ul style="list-style-type: none">• UUT shall not transmit RF	PASS	--



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

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: <ul style="list-style-type: none">• 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: <ul style="list-style-type: none">– SAS response does not include a <i>cbstdId</i>.– <i>responseCode</i>=Ri for CBSD1 and CBSD2	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (<i>responseCode</i> R1=0 for CBSD1 and R2=101 for CBSD2) to further request messages from the UUT.	--	--
5	Monitor the RF output of each UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: <ul style="list-style-type: none">• UUT shall not transmit RF	PASS	--



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

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: <ul style="list-style-type: none">• 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: <ul style="list-style-type: none">– 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)</i> = 100 for each CBSD) to further request messages from the UUT.	--	--
5	Monitor the RF output of each UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: <ul style="list-style-type: none">• UUT shall not transmit RF	PASS	--



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

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: <ul style="list-style-type: none">• 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: <ul style="list-style-type: none">– 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: <ul style="list-style-type: none">• UUT shall not transmit RF	PASS	--



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

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: <ul style="list-style-type: none">• UUT has registered successfully with SAS Test Harness, with <i>cbsdId = C</i>	--	--
2	UUT sends valid Grant Request.	--	--
3	SAS Test Harness sends a Grant Response message, including <ul style="list-style-type: none">• <i>cbsdId=C</i>• <i>responseCode = R</i>	--	--
4	After completion of step 3, SAS Test Harness does not provide any positive response(<i>responseCode=0</i>) to further request messages from the UUT.	--	--
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: <ul style="list-style-type: none">• UUT shall not transmit RF	PASS	--



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

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: <ul style="list-style-type: none">• UUT has registered successfully with SAS Test Harness, with <i>cbsdId = C</i>	--	--
2	UUT sends valid Grant Request.	--	--
3	SAS Test Harness sends a Grant Response message, including <ul style="list-style-type: none">• <i>cbsdId=C</i>• <i>responseCode =R</i>	--	--
4	After completion of step 3, SAS Test Harness does not provide any positive response (<i>responseCode=401</i>) to further request messages from the UUT.	--	--
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: <ul style="list-style-type: none">• UUT shall not transmit RF	PASS	--



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

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: <ul style="list-style-type: none"> DP has two CBSD registered successfully with SAS Test Harness, with <i>cbstdId</i> = Ci, i={1,2} 	--	--
2	DP sends a message: <ul style="list-style-type: none"> 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}: <ul style="list-style-type: none"> <i>cbstdId</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}: <ul style="list-style-type: none"> <i>cbstdId</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}: <ul style="list-style-type: none"> <i>cbstdId</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	<p>If a separate Grant Request message was sent for each CBSID, the SAS Test Harness shall respond to each Grant Request message with a separate Grant Response message.</p> <p>If a single Grant Request message was sent containing a 2-object array (one per CBSID), the SAS Test Harness shall respond with a single Grant Response message containing a 2-object array.</p> <p>Verify parameters for each CBSID within the Grant Response message are as follows, for CBSID_i, i={1,2}:</p> <ul style="list-style-type: none"> • <i>cbsId</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	<p>Ensure DP sends first Heartbeat Request message for each CBSID. This may occur in a separate message per CBSID, or together in a single message with array of 2.</p> <p>Verify Heartbeat Request message is formatted correctly for each CBSID, including, for CBSID_i i={1,2}:</p> <ul style="list-style-type: none"> • <i>cbsId</i> = C_i, i={1,2} • <i>grantId</i> = G_i, i={1,2} • <i>operationState</i> = "GRANTED" 	PASS	--
8	<p>If a separate Heartbeat Request message was sent for each CBSID by the DP, the SAS Test Harness shall respond to each Heartbeat Request message with a separate Heartbeat Response message.</p> <p>If a single Heartbeat Request message was sent by the DP containing a 2-object array (one per CBSID), the SAS Test Harness shall respond with a single Heartbeat Response message containing a 2-object array.</p> <p>Verify parameters for each CBSID within the Heartbeat Response message are as follows, for CBSID_i:</p> <ul style="list-style-type: none"> • <i>cbsId</i> = C_i • <i>grantId</i> = G_i • <i>transmitExpireTime</i> = current UTC time + 200 seconds • <i>responseCode</i> = 0 	--	--
9	<p>For further Heartbeat Request messages sent from DP after completion of step 8, validate message is sent within latest specified heartbeat interval for CBSID_i:</p> <ul style="list-style-type: none"> • <i>cbsId</i> = C_i • <i>grantId</i> = G_i • <i>operationState</i> = "AUTHORIZED" <p>and SAS Test Harness responds with a Heartbeat Response message including the following parameters, for CBSID_i</p> <ul style="list-style-type: none"> • <i>cbsId</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: <ul style="list-style-type: none">• UUT does not transmit at any time prior to completion of the first heartbeat response• UUT transmits after step 8 is complete, and its transmission is limited to within the bandwidth range F_i.	PASS	--
----	--	------	----



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

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: <ul style="list-style-type: none">• UUT has registered successfully with SAS Test Harness• UUT has a valid single grant as follows:<ul style="list-style-type: none">○ 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: <ul style="list-style-type: none">• <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: <ul style="list-style-type: none">• <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: <ul style="list-style-type: none">• UUT shall stop transmission within (T + 60 seconds) of completion of step 3	PASS	--



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

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: <ul style="list-style-type: none"> • UUT has registered successfully with SAS Test Harness • UUT has a valid single grant as follows: <ul style="list-style-type: none"> ○ 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: <ul style="list-style-type: none"> • <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: <ul style="list-style-type: none"> • <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: <p>A. UUT sends a Heartbeat Request message. Ensure message is sent within latest specified heartbeatInterval, and is correctly formatted with parameters:</p> <ul style="list-style-type: none"> • <i>cbsdId</i> = C • <i>grantId</i> = G • <i>operationState</i> = "GRANTED" <p>B. UUT sends a Relinquishment request message. Ensure message is correctly formatted with parameters:</p> <ul style="list-style-type: none"> • <i>cbdsId</i> = C • <i>grantId</i> = G Monitor the RF output of the UUT. Verify: <ul style="list-style-type: none"> • UUT does not transmit at any time 	PASS	--



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

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: <ul style="list-style-type: none"> • UUT has registered successfully with SAS Test Harness • UUT has a valid single grant as follows: <ul style="list-style-type: none"> ○ 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: <ul style="list-style-type: none"> • <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: <ul style="list-style-type: none"> • <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: <p>A. UUT sends a Heartbeat Request message. Ensure message is sent within latest specified heartbeatInterval, and is correctly formatted with parameters:</p> <ul style="list-style-type: none"> • <i>cbsdId</i> = C • <i>grantId</i> = G • <i>operationState</i> = "GRANTED" <p>B. UUT sends a Relinquishment Request message. Ensure message is correctly formatted with parameters:</p> <ul style="list-style-type: none"> • <i>cbdsId</i> = C • <i>grantId</i> = G Monitor the RF output of the UUT. Verify: <ul style="list-style-type: none"> • UUT shall stop transmission within (T + 60 seconds) of completion of step 3 	PASS	--



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

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: <ul style="list-style-type: none"> • UUT has registered successfully with SAS Test Harness • UUT has a valid single grant as follows: <ul style="list-style-type: none"> ○ 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: <ul style="list-style-type: none"> • <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: <ul style="list-style-type: none"> • <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: <ul style="list-style-type: none"> • UUT sends a Grant Relinquishment Request message. Verify message is correctly formatted with parameters: <ul style="list-style-type: none"> ○ <i>cbsdId</i> = C ○ <i>grantId</i> = G Monitor the RF output of the UUT. Verify: <ul style="list-style-type: none"> • UUT shall stop transmission within (T+60) seconds of completion of step 3. 	PASS	--



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

#	Test Execution Steps	Results	
1	<p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> • DP has two CBSD registered successfully with SAS Test Harness • Each CBSD {1,2} has a valid single grant as follows: <ul style="list-style-type: none"> ○ 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	<p>DP sends a Heartbeat Request message for each CBSD. This may occur in a separate message per CBSD, or together in a single message with array of size 2.</p> <p>Verify Heartbeat Request message is sent within latest specified <i>heartbeatInterval</i>, and is formatted correctly for each CBSD, including, for CBSDi i={1,2}:</p> <ul style="list-style-type: none"> • <i>cbsdId</i> = Ci, i = {1,2} • <i>grantId</i> = Gi, i = {1,2} • <i>operationState</i> = "AUTHORIZED" 	PASS	--
3	<p>If separate Heartbeat Request message was sent for each CBSD by the DP, the SAS Test Harness shall respond to each Heartbeat Request message with a separate Heartbeat Response message.</p> <p>If a single Heartbeat Request message was sent by the DP containing a 2-object array (one per CBSD), the SAS Test Harness shall respond with a single Heartbeat Response message containing a 2-object array.</p> <p>Parameters for each CBSD within the Heartbeat Response message should be as follows, for CBSDi:</p> <ul style="list-style-type: none"> • <i>cbsdId</i> = Ci • <i>grantId</i> = Gi • For CBSD1: <ul style="list-style-type: none"> ○ <i>transmitExpireTime</i> = current UTC time + 200 seconds ○ <i>responseCode</i> = 0 • For CBSD2: <ul style="list-style-type: none"> ○ <i>transmitExpireTime</i> = T = current UTC time ○ <i>responseCode</i> = 500 (TERMINATED_GRANT) 	--	--



4	<p>After completion of step 3, SAS Test Harness shall not allow any further grants to the UUT.</p> <p>If CBSD sends further Heartbeat Request messages for CBSD1, SAS Test Harness shall respond with a Heartbeat Response message with parameters:</p> <ul style="list-style-type: none">• <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	<p>Monitor the RF output of CBSD2. Verify:</p> <ul style="list-style-type: none">• CBSD2 shall stop transmission within bandwidth F2 within (T + 60 seconds) of completion of step 3	PASS	--



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

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: <ul style="list-style-type: none">• UUT has registered successfully with SAS Test Harness• UUT has a valid single grant as follows:<ul style="list-style-type: none">○ 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: <ul style="list-style-type: none">• <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: <ul style="list-style-type: none">• At any time during the test, UUT shall not transmit on RF interface	PASS	--



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

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: <ul style="list-style-type: none"> • UUT has registered successfully with SAS Test Harness • UUT has a valid single grant as follows: <ul style="list-style-type: none"> ○ 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: <ul style="list-style-type: none"> • <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: <ul style="list-style-type: none"> • <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: <ul style="list-style-type: none"> • UUT shall stop all transmission on RF interface within (<i>transmitExpireTime</i> + 60 seconds), using the <i>transmitExpireTime</i> sent in Step 3. 	PASS	--



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

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: <ul style="list-style-type: none"> 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 CBSD _i , i={1,2}, and specifically: <ul style="list-style-type: none"> <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 CBSD _i : <ul style="list-style-type: none"> <i>cbsdId</i> = Ci <i>measReportConfig</i> = "RECEIVED_POWER_WITHOUT_GRANT" <i>responseCode</i> = 0 	--	--
4	UUT sends a message: <ul style="list-style-type: none"> 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 CBSD _i , i = {1,2}, and specifically: <ul style="list-style-type: none"> <i>cbsdId</i> = Ci <i>measReport</i> is present, and is a properly formatted <i>rcvdPowerMeasReport</i>. 	PASS	--



6	<p>If a separate Spectrum Inquiry Request message was sent for each CBSD by the DP, the SAS Test Harness shall respond to each Spectrum Inquiry Request message with a separate Spectrum Inquiry Response message.</p> <p>If a single Spectrum Inquiry Request message was sent by the DP containing a 2-object array (one per CBSD), the SAS Test Harness shall respond with a single Spectrum Inquiry Response message containing a 2-object array.</p> <p>Parameters for each CBSD within the Spectrum Inquiry Response message should be as follows:</p> <ul style="list-style-type: none">• <i>cbsdId</i> = Ci• <i>availableChannel</i> is an array of <i>availableChannel</i> objects• <i>responseCode</i> = 0	--	--
7	<p>UUT sends message type Grant Request message. This may occur in a separate message per CBSD, or together in a single message with array of 2. Verify the Grant Request message contains all required parameters properly formatted for CBSD_i, i = {1,2}, and specifically:</p> <ul style="list-style-type: none">• <i>cbsdId</i> = Ci• <i>measReport</i> is present, and is a properly formatted <i>rcvdPowerMeasReport</i>.	PASS	--



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

#	Test Execution Steps	Results	
1	<p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> DP has successfully completed SAS Discovery and Authentication with SAS Test Harness DP has successfully registered 2 CBSD with SAS TestHarness, each with <i>cbsdId=Ci, i={1,2}</i> DP has received a valid grant with <i>grantId=Gi, i={1,2}</i> for each CBSD Both CBSD are in Grant State AUTHORIZED and actively transmitting within the bounds of their grants. <p>Invoke trigger to relinquish each UUT Grant from the SAS Test Harness</p>	--	--
2	<p>Verify DP sends a Relinquishment Request message for each CBSD. This may occur in a separate message per CBSD, or together in a single message with array of 2. Verify Relinquishment Request message contains all required parameters properly formatted for each CBSD, specifically, for CBSDi:</p> <ul style="list-style-type: none"> <i>cbsdId = Ci</i> <i>grantId = Gi</i> 	PASS	--
3	<p>If a separate Relinquishment Request message was sent for each CBSD by the DP, the SAS Test Harness shall respond to each request message with a separate response message.</p> <p>If a single Relinquishment Request message was sent by the DP containing a 2-object array (one per CBSD), the SAS Test Harness shall respond with a single Response message containing a 2-object array.</p> <p>Parameters for each CBSD within the Relinquishment Response shall be as follows:</p> <ul style="list-style-type: none"> <i>cbsdId = Ci</i> <i>grantId = Gi</i> <ul style="list-style-type: none"> <i>responseCode = 0</i> 	--	--
4	<p>After completion of step 3, SAS Test Harness will not provide any additional positive response (<i>responseCode=0</i>) to further request messages from the UUT.</p>	--	--
5	<p>Monitor the RF output of each UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify:</p> <ul style="list-style-type: none"> UUT shall stop RF transmission at any time between triggering the relinquishments and UUT sending the relinquishment requests for each CBSD. 	PASS	--



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

#	Test Execution Steps	Results	
1	<p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> 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 CBSID with SAS Test Harness, each with <i>cbsdId=Ci, i={1,2}</i> DP has received a valid grant with <i>grantId=Gi, i={1,2}</i> for each CBSID Both CBSID are in Grant State AUTHORIZED and actively transmitting within the bounds of their grants. <p>Invoke trigger to deregister each UUT from the SAS Test Harness</p>	--	--
2	UUT sends a Relinquishment request and receives Relinquishment response with <i>responseCode=0</i>	--	--
3	<p>Verify DP sends a Deregistration Request message for each CBSID. This may occur in a separate message per CBSID, or together in a single message with array of 2. Verify Deregistration Request message contains all required parameters properly formatted for each CBSID, specifically, for CBSIDi:</p> <ul style="list-style-type: none"> <i>cbsdId = Ci</i> 	PASS	--
4	<p>If a separate Deregistration Request message was sent for each CBSID by the DP, the SAS Test Harness shall respond to each request message with a separate response message.</p> <p>If a single Deregistration Request message was sent by the DP containing a 2-object array (one per CBSID), the SAS Test Harness shall respond with a single Response message containing a 2-object array.</p> <p>Parameters for each CBSID within the Deregistration Response shall be as follows:</p> <ul style="list-style-type: none"> <i>cbsdId = Ci</i> <i>responseCode = 0</i> 	--	--
5	After completion of step 4, SAS Test Harness will not provide any positive response (<i>responseCode=0</i>) to further request messages from the UUT.	--	--
6	<p>Monitor the RF output of each UUT from start of test until 60 seconds after Step 4 is complete. This is the end of the test. Verify:</p> <ul style="list-style-type: none"> UUT stopped RF transmission at any time between triggering the deregistration and either A OR B occurs: <ul style="list-style-type: none"> A. UUT sending a Registration Request message, as this is not mandatory B. UUT sending a Deregistration Request message 	PASS	--



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

#	Test Execution Steps	Results	
1	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• Make sure that Mutual authentication happens between UUT and the SAS Test Harness.• Make sure that UUT uses TLS v1.2• Make sure that ciphersuites from one of the following is selected,<ul style="list-style-type: none">• 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	<p>A successful registration is accomplished using one of the test cases described in section 6.1.4.1, depending on CBSD capability.</p> <ul style="list-style-type: none">• UUT sends a registration request to the SAS Test Harness and the SAS Test Harness sends a Registration Response with <i>responseCode = 0</i> and <i>cbsdId</i>.	PASS	--
4	<p>Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify:</p> <ul style="list-style-type: none">• UUT shall not transmit RF	PASS	--



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

#	Test Execution Steps	Results	
1	<ul style="list-style-type: none">• UUT shall start CBS-D-SAS communication with the security procedures	PASS	--
2	<ul style="list-style-type: none">• 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: <ul style="list-style-type: none">• UUT shall not transmit RF	PASS	--



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

#	Test Execution Steps	Results	
1	<ul style="list-style-type: none">• UUT shall start CBS-D-SAS communication with the security procedures	PASS	--
2	<ul style="list-style-type: none">• 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: <ul style="list-style-type: none">• UUT shall not transmit RF	PASS	--



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

#	Test Execution Steps	Results	
1	<ul style="list-style-type: none">UUT shall start CBS-D-SAS communication with the security procedures	PASS	--
2	<ul style="list-style-type: none">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 certificateMake 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: <ul style="list-style-type: none">UUT shall not transmit RF	PASS	--

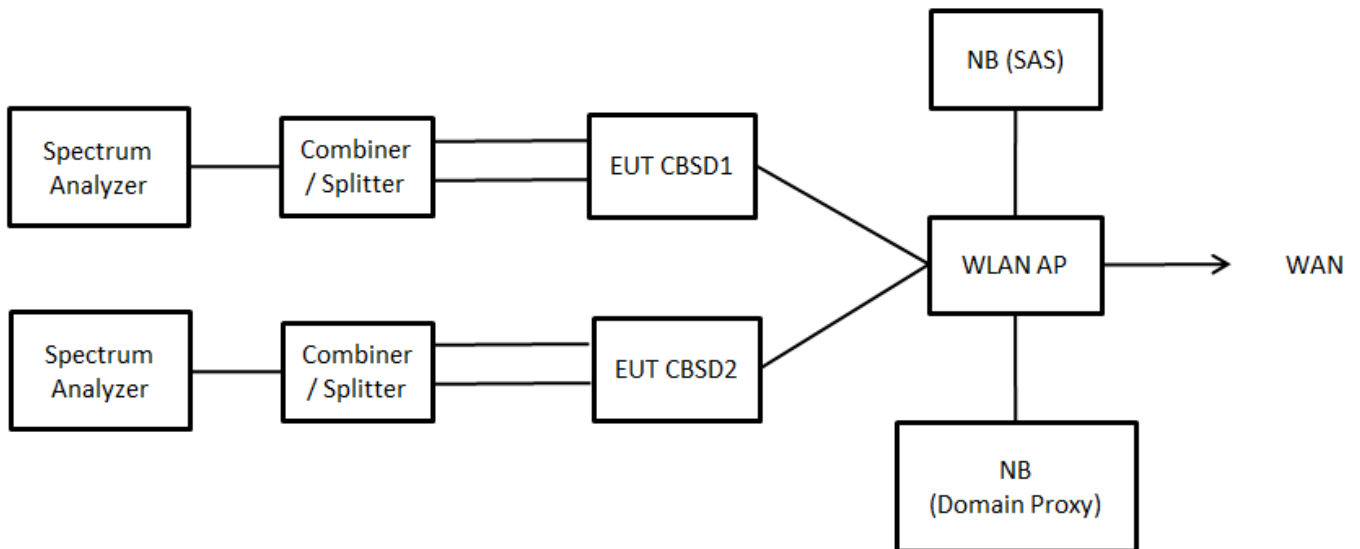


3.25 WINNF.FT.C.SCS.5 - TLS failure when certificate at the SAS Test Harness is corrupted

#	Test Execution Steps	Results	
1	<ul style="list-style-type: none">• UUT shall start CBS-D-SAS communication with the security procedures	PASS	--
2	<ul style="list-style-type: none">• 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: <ul style="list-style-type: none">• UUT shall not transmit RF	PASS	--

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

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



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



Spectrum Analyzer Setting	Parameters
Center Frequency	3620MHz
Frequency Span	40MHz
RBW / VBW	1MHz / 3MHz
Channel Power Meas Bandwidth	20MHz
Sweep Time	1ms

#	Test Execution Steps	Results	
1	<p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> • 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 <p><i>Note: in order for the UUT to request a grant with the parameters {lowFrequency, highFrequency, maxEirp}, the SAS Test Harness may need to provide appropriate guidance in the availableChannel object of the spectrumInquiry response message, and the operationParam object of the grant response message. Alternately, the UUT vendor may provide the ability to set those parameters on the UUT so that the UUT will request a grant with those parameters.</i></p>	--	--
2	<p>UUT and SAS Test Harness perform a series of Heartbeat Request/Response cycles, which continues until the other test steps are complete. Messaging for each cycle is as follows:</p> <ul style="list-style-type: none"> • UUT sends Heartbeat Request, including: <ul style="list-style-type: none"> ○ cbsId = C ○ grantId = G • SAS Test Harness responds with Heartbeat Response, including: <ul style="list-style-type: none"> ○ cbsId = C ○ grantId = G ○ transmitExpireTime = currentUTCtime + 200seconds ○ responseCode = 0 	--	--



3	<p>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 fulfil the requirements of the power measurement method.</p> <p><i>Note: it may be required for the vendor to provide a method or configuration to bring the UUT to a mode which is required by the measurement methodology. Any such mode is vendor-specific and depends upon UUT behavior and the measurement methodology.</i></p>	PASS	--
---	---	------	----

Frequency	Occupied Bandwidth	Antenna Gain	Grant maxEirp	Conducted PSD	maxEirp	Result
	(MHz)	(dBi)	(dBm/MHz)	(dBm/MHz)	(dBm/MHz)	
3620MHz	20	18	30	11.84	29.84	Pass
3620MHz	20	18	3	-15.71	2.29	Pass
3620MHz	20	18	-22	-40.54	-22.54	Pass



4 Test Equipment and Calibration Data

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

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



5 Measurement Uncertainty

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



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

```
2018-10-02T07:23:48.825Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24
2018-10-02T07:23:48.828Z - INFO - the selected test from the user : WINNF.FT.D.REG.6 is starting
now
2018-10-02T07:24:31.855Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbsdCategory": "B",
      "cbsdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) BHUL450",
        "vendor": "Cambium Networks"
      },
      "cbsdSerialNumber": "0a003e4331ca",
      "cpiSignatureData": {
        "digitalSignature":
          "i9CWxM7hBiK3sWAlx9ompgwRVDUGsma0xtFnySb4-5cXoLXUiWI1I2WsJRjwAN8OdvZ5wYPntNSHo
          3nHLOQ09xDzhA_d_8MtK-0LZPNjyCPGAR7cCz2HpumleAOxXxz3WDREHzaw1kjp5_luEBfJNz3Osa6
          E5iKuYFQzXFphwoTNWvDEqqRIC7hkQql3ADTmyi1ns-KH7zAiexha-gBQbiMBhozI23qy0I8kXzUqwysS
          SMxz6IRGuub0C2EUKAcTrw9F6t94-8gWvFgXnyw5knpqchhEHNCoaQLptmcJoOUWGgsOu4KT86gL
          O66-FKO7FUEvXD3TFZ2tyGKoAc7fFw",
        "encodedCpiSignedData":
          "eyJmY2NJZCI6llo4SDg5RIQwMDkiLCJjYnNkU2VyaWFsTnVtYmVyljoiMGEwMDNINDMzMWNhliwia
          W5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGUlOjQyLjI0MiwibG9uZ2I0dWRlljotODguMDgwOCwi
          aGVpZ2h0IjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjow
          5hQXppbXV0aCI6MCwiYW50ZW5uYURvd250aWx0IjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjow
          hYmlsaXR5IjoiY3BpMTIzIiwuY3BpMTIzIiwuY3BpMTIzIiwuY3BpMTIzIiwuY3BpMTIzIiwuY3BpMTIz
          XJEYXRhlj7ImNwaUlkljoiY3BpMTIzIiwuY3BpMTIzIiwuY3BpMTIzIiwuY3BpMTIzIiwuY3BpMTIzIiwu
          aWZpY2F0aW9uVGltZSI6IjwMTgtMDUuMDUuMDUuMDUuMDUuMDUuMDUuMDUuMDUuMDUuMDUuMDUuMDUuMDUu
          "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fcclId": "Z8H89FT0009",
      "groupingParam": [
        {
          "groupId": "0a-00-3e-43-31-ca",
          "groupType": "INTERFERENCE_COORDINATION"
        }
      ],
      "measCapability": [
        "RECEIVED_POWER_WITHOUT_GRANT"
      ],
      "userId": "SF5W5D"
    }
  ]
}
```

```
2018-10-02T07:24:31.980Z - INFO - Registration message contains cpiSignatureData
2018-10-02T07:24:31.980Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2018-10-02T07:24:31.980Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
    "eirpCapability": 40,
```



```
"antennaAzimuth": 0,
"heightType": "AMSL",
"longitude": -88.0808,
"height": 0,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 18
},
"fccId": "Z8H89FT0009",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e4331ca"
}
2018-10-02T07:24:32.142Z - INFO - verified signature on cpiSignatureData
2018-10-02T07:24:32.148Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-10-02T07:24:32.151Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbssdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2018-10-02T07:24:39.763Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbssdCategory": "B",
      "cbssdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) BHUL450",
        "vendor": "Cambium Networks"
      },
      "cbssdSerialNumber": "0a003e431a34",
      "cpiSignatureData": {
        "digitalSignature":
"o7Q5LSOeP3yd04yRquy2vQ81JcM6czQ2wZBmWmZGVQvt91RI61o0MYnojihSqSuroi7Cx9Wxvbim5
QVScn6Qz9p_mesARfppgNuHyR0hFh12CouODCMCZwUUAE0rAKxdV-s5Omn35jn2O_od-ClS6j3TUC
5OXyfmcz8XrCX6UuKvdGpVuB07JCOX6EzWutpN8Byr5DA0_N9IXPPGVABU-XuWnbCJ0o2yg1JeHQ
vpQTpaRRdr2VW6JfYw-R6xLnLwtFRtRatw-yd4K0yxrpGY6vY162X9VyhXDBKwJBI8qmqZH_F4D-xXse
cETke9sN8QF_91URr_xo862Qp4k2BmOQ",
        "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SDg5RIQwMDkiLCJjYnNkU2VyaWFsTnVtYmVyljoiMGEwMDNINDMxYTM0liwiaW
5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGUuOjQyLjI0MiwiibG9uZ2I0dWRlIjotODguMDgwOCwia

```




```
}  
}  
]  
}
```

2018-10-02T07:24:40.835Z - INFO - arrived to nstep starting question answer session with the technician

2018-10-02T07:24:40.836Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2018-10-02T07:25:42.461Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2018-10-02T07:25:42.463Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :

2018-10-02T07:25:43.282Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n

2018-10-02T07:25:43.890Z - INFO - The final result of the test : WINNF.FT.D.REG.6 is - passed



```
"antennaAzimuth": 0,
"heightType": "AMSL",
"longitude": -88.0808,
"height": 0,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 18
},
"fcclId": "Z8H89FT0009",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e431a34"
}
2018-10-02T07:26:09.770Z - INFO - verified signature on cpiSignatureData
2018-10-02T07:26:09.776Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-10-02T07:26:09.778Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "response": {
        "responseCode": 102
      }
    }
  ]
}
}
2018-10-02T07:26:12.684Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbbsdCategory": "B",
      "cbbsdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) BHUL450",
        "vendor": "Cambium Networks"
      },
      "cbbsdSerialNumber": "0a003e4331ca",
      "cpiSignatureData": {
        "digitalSignature":
          "i9CWxM7hBiK3sWAlx9ompgwRVDUGsma0xtFnySb4-5cXoLXUiWI1I2WsJRjwAN8OdvZ5wYPntNSHo
          3nHLOQ09xDzhA_d_8MtK-0LZPNjyCPGAR7cCz2HpumleAOxXxz3WDREH Zaw1kjp5_luEBfJNz3Osa6
          E5iKuYFQzXFphwoTNWvDEqqRIC7hkQq13ADTmyi1ns-KH7zAiexha-gBQbiMBhozl23qy0I8kXzUqwysS
          SMxz6IRGuub0C2EUKAcTrw9F6t94-8gWvFgXnyw5knpqchhEHNCoaQLptmcJoOUWGgsOu4KT86gL
          O66-FKO7FUEvXD3TFZ2tyGKoAc7fFw",
        "encodedCpiSignedData":
          "eyJmY2NJZCI6llo4SDg5RIQwMDkiLCJjYnNkU2VyaWFsTnVtYmVyljoiMGEwMDNINDMzMWNhliwia
          W5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGUiOiJyLjI0MiwiibG9uZ2I0dWRlljotODguMDgwOCwi
          aGVpZ2h0IjowLjI0dWRlljotODguMDgwOCwi"
      }
    }
  ]
}
```



```
5hQXppbXV0aCI6MCwiYW50ZW5uYURvd250aWx0IjowLCJhbnRlbn5hR2Fpbil6MTgsImVpcnBDYXBhYmlsaXR5Ijo0MCwiYW50ZW5uYUJlYW13aWR0aCI6OTB9LCJwcm9mZXNzaW9uYWxJbnN0YWxsZXJJEYXRhIjpw7ImNwaUlkljoiY3BpMTIzIiwuY3BpTmFtZSI6IkNQSSBVc2VyIDEyMyIsImVudCI6ImVudC99",
    "protectedHeader": "eyJhbnRlbnR5cCI6Ikpvcj99"
  },
  "fcid": "Z8H89FT0009",
  "groupingParam": [
    {
      "groupId": "0a-00-3e-43-31-ca",
      "groupType": "INTERFERENCE_COORDINATION"
    }
  ],
  "measCapability": [
    "RECEIVED_POWER_WITHOUT_GRANT"
  ],
  "userId": "SF5W5D"
}
]
```

```
2018-10-02T07:26:12.717Z - INFO - Registration message contains cpiSignatureData
2018-10-02T07:26:12.717Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
```

```
2018-10-02T07:26:12.717Z - INFO - encodedCpiSignedData contents = {
```

```
  "installationParam": {
    "eirpCapability": 40,
    "antennaAzimuth": 0,
    "heightType": "AMSL",
    "longitude": -88.0808,
    "height": 0,
    "indoorDeployment": false,
    "antennaBeamwidth": 90,
    "antennaDowntilt": 0,
    "latitude": 42.242,
    "antennaGain": 18
  },
  "fcid": "Z8H89FT0009",
  "professionalInstallerData": {
    "cpiName": "CPI User 123",
    "installCertificationTime": "2018-05-09T15:51:12.866Z",
    "cpild": "cpi123"
  },
  "cbsdSerialNumber": "0a003e4331ca"
}
```

```
2018-10-02T07:26:12.717Z - INFO - verified signature on cpiSignatureData
2018-10-02T07:26:12.723Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-10-02T07:26:12.724Z - INFO - engine sent successfully, the response to CBRS : {
```

```
  "registrationResponse": [
    {
      "response": {
        "responseCode": 102
      }
    }
  ]
}
```



```
]
}
```

2018-10-02T07:26:14.628Z - INFO - arrived to nstep starting question answer session with the technician

2018-10-02T07:26:14.631Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :

2018-10-02T07:27:24.513Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n

2018-10-02T07:27:24.516Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2018-10-02T07:27:25.127Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2018-10-02T07:27:25.631Z - INFO - The final result of the test : WINNF.FT.D.REG.9 is - passed



```
"antennaAzimuth": 0,
"heightType": "AMSL",
"longitude": -88.0808,
"height": 0,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 18
},
"fccId": "Z8H89FT0009",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbid": "0a003e4331ca"
}
2018-10-02T07:34:59.635Z - INFO - verified signature on cpiSignatureData
2018-10-02T07:34:59.641Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-10-02T07:34:59.642Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "response": {
        "responseCode": 200
      }
    }
  ]
}
2018-10-02T07:35:05.311Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbid": "B",
      "cbidInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) BHUL450",
        "vendor": "Cambium Networks"
      },
      "cbid": "0a003e4331a34",
      "cpiSignatureData": {
        "digitalSignature":
"o7Q5LSOeP3yd04yRquy2vQ81JcM6czQ2wZBmWmZGVQvt91RI61o0MYnojihSqSuroi7Cx9Wxvbm5
QVScn6Qz9p_mesARfppgNuHyR0hFh12CouODCMCZwUUAE0rAKxdV-s5Omn35jn2O_od-ClS6j3TUC
5OXyfmzc8XrCX6UuKvdGpvuB07JCOX6EzWutpN8Byr5DA0_N9IXPPGVABU-XuWnbCJ0o2yg1JeHQ
vpQTpaRRdr2VW6JfYw-R6xLnILwtFRtRatw-yd4K0yxrpGY6vY162X9VyhXDBKwJBI8qmZH_F4D-xXse
cETke9sN8QF_91URr_xo862Qp4k2BmOQ",
        "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SDg5RIQwMDkiLCJYnNkU2VyaWFsTnVtYmVyljoiMGEGwMDNINDMxYTM0liwiaW
5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGUuOjQyLjI0MiwibG9uZ2I0dWRlljotODguMDgwOCwia
GVpZ2h0lJowLCJoZWlnaHRUeXBlljoiQU1TTClslmluZG9vckRlcGxveW1lbnQiOmZhbHNILCJhbnRlbnM5
```




```
]
}
```

2018-10-02T07:35:07.137Z - INFO - arrived to nstep starting question answer session with the technician

2018-10-02T07:35:07.138Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2018-10-02T07:35:57.529Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2018-10-02T07:35:57.532Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :

2018-10-02T07:36:17.855Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n

2018-10-02T07:36:19.026Z - INFO - The final result of the test : WINNF.FT.D.REG.11 is - passed



```
"antennaAzimuth": 0,
"heightType": "AMSL",
"longitude": -88.0808,
"height": 0,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 18
},
"fcclId": "Z8H89FT0009",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e431a34"
}
2018-10-02T07:36:53.954Z - INFO - verified signature on cpiSignatureData
2018-10-02T07:36:53.960Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-10-02T07:36:53.961Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "response": {
        "responseCode": 103
      }
    }
  ]
}
2018-10-02T07:36:56.664Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbbsdCategory": "B",
      "cbbsdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) BHUL450",
        "vendor": "Cambium Networks"
      },
      "cbbsdSerialNumber": "0a003e4331ca",
      "cpiSignatureData": {
        "digitalSignature":
        "i9CWxM7hBiK3sWAIx9ompgwRVDUGsma0xtFnySb4-5cXoLXUiWI1I2WsJRjwAN8OdvZ5wYPntNSHo
        3nHLOQ09xDzhA_d_8MtK-0LZPNjyCPGAR7cCz2HpumleAOxXxz3WDREHzaw1kjp5_luEBfJNz3Osa6
        E5iKuYFQzXFphwoTNWvDEqqRIC7hkQql3ADTmyi1ns-KH7zAiexha-gBQbiMBhozI23qy0I8kXzUqwysS
        SMxz6IRGuub0C2EUKAcTrw9F6t94-8gWvFgXnyw5knpqchhEHNCoaQLptmcJoOUWGgsOu4KT86gL
        O66-FKO7FUEvXD3TFZ2tyGKoAc7fFw",
        "encodedCpiSignedData":
        "eyJmY2NJZCI6llo4SDg5RIQwMDkiLCJjYnNkU2VyaWFsTnVtYmVyljoiMGEwMDNINDMzMWNhliwia
        W5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGUiOiJyLjI0MiwibG9uZ2I0dWRlljotODguMDgwOCwi
        aGVpZ2h0IjowLCJoZWlnaHRUeXBlljoiQU1TTCIsImluZG9vckRlcGxveW1lbnQiOmZhbHNiLCJhbnRlbnM"
```




```
}  
]  
}  
2018-10-02T07:36:57.835Z - INFO - arrived to nstep starting question answer session with the technician  
2018-10-02T07:36:57.838Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :  
2018-10-02T07:38:00.730Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n  
2018-10-02T07:38:00.733Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :  
2018-10-02T07:38:02.341Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n  
2018-10-02T07:38:03.196Z - INFO - The final result of the test : WINNF.FT.D.REG.13 is - passed
```



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

```
2018-10-02T07:38:29.707Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24
2018-10-02T07:38:29.710Z - INFO - the selected test from the user : WINNF.FT.D.REG.15 is starting
now
2018-10-02T07:38:32.076Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbsdCategory": "B",
      "cbsdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) BHUL450",
        "vendor": "Cambium Networks"
      },
      "cbsdSerialNumber": "0a003e4331ca",
      "cpiSignatureData": {
        "digitalSignature":
          "i9CWxM7hBiK3sWAlx9ompgwRVDUGsma0xtFnySb4-5cXoLXUiWI1I2WsJRjwAN8OdvZ5wYPntNSHo
          3nHLOQ09xDzhA_d_8MtK-0LZPNjyCPGAR7cCz2HpumleAOxXxz3WDREHzaw1kjp5_luEBfJNz3Osa6
          E5iKuYFQzXFphwoTNWvDEqqRIC7hkQql3ADTmyi1ns-KH7zAiexha-gBQbiMBhozI23qy0I8kXzUqwsS
          SMxz6IRGuub0C2EUKAcTrw9F6t94-8gWvFgXnyw5knpqchhEHNCoaQLptmcJoOUWGgsOu4KT86gL
          O66-FKO7FUEvXD3TFZ2tyGKoAc7fFw",
        "encodedCpiSignedData":
          "eyJmY2NJZCI6llo4SDg5RIQwMDkiLCJjYnNkU2VyaWFsTnVtYmVyljoiMGEwMDNINDMzMWNhliwia
          W5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGUiOjQyLjI0MiwibG9uZ2I0dWRlljotODguMDgwOCwi
          aGVpZ2h0IjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjow
          5hQXppbXV0aCI6MCwiYW50ZW5uYURvd250aWx0IjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjow
          hYmlsaXR5IjoiY3BpMTIzIiwuY3BpMTIzIiwuY3BpMTIzIiwuY3BpMTIzIiwuY3BpMTIzIiwuY3BpMTIz
          XJEYXRhlj7ImNwaUlkljoiY3BpMTIzIiwuY3BpMTIzIiwuY3BpMTIzIiwuY3BpMTIzIiwuY3BpMTIz
          aWZpY2F0aW9uVGltZSI6IjwMTgtMDUtMDIUMTU6NTE6MTIuODY2WiJ9fQ",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fcclId": "Z8H89FT0009",
      "groupingParam": [
        {
          "groupId": "0a-00-3e-43-31-ca",
          "groupType": "INTERFERENCE_COORDINATION"
        }
      ],
      "measCapability": [
        "RECEIVED_POWER_WITHOUT_GRANT"
      ],
      "userId": "SF5W5D"
    }
  ]
}
```

```
2018-10-02T07:38:32.115Z - INFO - Registration message contains cpiSignatureData
2018-10-02T07:38:32.115Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2018-10-02T07:38:32.115Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
    "eirpCapability": 40,
```



```
"antennaAzimuth": 0,
"heightType": "AMSL",
"longitude": -88.0808,
"height": 0,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 18
},
"fccId": "Z8H89FT0009",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e4331ca"
}
2018-10-02T07:38:32.117Z - INFO - verified signature on cpiSignatureData
2018-10-02T07:38:32.121Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-10-02T07:38:32.124Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbssdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2018-10-02T07:38:34.352Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbssdCategory": "B",
      "cbssdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) BHUL450",
        "vendor": "Cambium Networks"
      },
      "cbssdSerialNumber": "0a003e431a34",
      "cpiSignatureData": {
        "digitalSignature":
"o7Q5LSOeP3yd04yRquy2vQ81JcM6czQ2wZBmWmZGVQvt91RI61o0MYnojihSqSuroi7Cx9Wxvbm5
QVScn6Qz9p_mesARfppgNuHyR0hFh12CouODCMCZwUUAE0rAKxdV-s5Omn35jn2O_od-ClS6j3TUC
5OXyfmcz8XrCX6UuKvdGpvuB07JCOX6EzWutpN8Byr5DA0_N9IXPPGVABU-XuWnbCJ0o2yg1JeHQ
vpQTpaRRdr2VW6JfYw-R6xLnLwtFRtRatw-yd4K0yxrpGY6vY162X9VyhXDBKwJBI8qmqZH_F4D-xXse
cETke9sN8QF_91URr_xo862Qp4k2BmOQ",
        "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SDg5RIQwMDkiLCJjYnNkU2VyaWFsTnVtYmVyljoiMGEwMDNINDMxYTM0liwiaW
5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGUuOjQyLjI0MiwiG9uZ2I0dWRlIjotODguMDgwOCwia

```




```
}  
]  
}  
2018-10-02T07:38:35.713Z - INFO - arrived to nstep starting question answer session with the technician  
2018-10-02T07:38:35.714Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :  
2018-10-02T07:40:22.549Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n  
2018-10-02T07:40:22.551Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :  
2018-10-02T07:40:24.200Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n  
2018-10-02T07:40:24.848Z - INFO - The final result of the test : WINNF.FT.D.REG.15 is - passed
```



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

2018-10-02T07:40:52.145Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24
2018-10-02T07:40:52.148Z - INFO - the selected test from the user : WINNF.FT.D.REG.17 is starting now
2018-10-02T07:40:54.187Z - INFO - registration request from CBRS : {
 "registrationRequest": [
 {
 "airInterface": {
 "radioTechnology": "CAMBIUM_NETWORKS"
 },
 "cbstdCategory": "B",
 "cbstdInfo": {
 "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) BHUL450",
 "vendor": "Cambium Networks"
 },
 "cbstdSerialNumber": "0a003e4331ca",
 "cpisignatureData": {
 "digitalSignature":
"i9CWxM7hBiK3sWAIx9ompgwRVDUGsma0xtFnySb4-5cXoLXUiWI1I2WsJRjwAN8OdvZ5wYPntNSHo
3nHLOQ09xDzhA_d_8MtK-0LZPNjyCPGAR7cCz2HpumleAOxXxz3WDREHzaw1kjp5_luEBfJNz3Osa6
E5iKuYFQzXFphwoTNWvDEqqRIC7hkQql3ADTmyi1ns-KH7zAiexha-gBQbiMBhozI23qy0I8kXzUqwysS
SMxz6IRGuub0C2EUKAcTrw9F6t94-8gWvFgXnyw5knpqchhEHNCoaQLptmcJoOUWGgsOu4KT86gL
O66-FKO7FUEvXD3TFZ2tyGKoAc7fFw",
 "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SDg5RIQwMDkiLCJjYnNkU2VyaWFsTnVtYmVyljoiMGEwMDNINDMzMWNhliwia
W5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGUiOjQyLjI0MiwibG9uZ2I0dWRlljotODguMDgwOCwi
aGVpZ2h0lJowLjI0MiwibG9uZ2I0dWRlljotODguMDgwOCwiZm9udG9uZ2I0dWRlljotODguMDgwOCwi
5hQXppbXV0aCI6MCwiYW50ZW5uYURvd250aWx0lJowLjI0MiwibG9uZ2I0dWRlljotODguMDgwOCwi
hYmlsaXR5ljo0MCwiYW50ZW5uYUJlYW13aWR0aCI6OTB9LCJwcm9mZm9udG9uZ2I0dWRlljotODguMDgwOCwi
XJEYXRhlj7ImNwaUlkljoiY3BpMTIzliwiY3BpTmFtZSI6IkNQSSBvc2VyIDEyMiwibG9uZ2I0dWRlljotODguMDgwOCwi
aWZpY2F0aW9uVGltZSI6IjI0MiwibG9uZ2I0dWRlljotODguMDgwOCwiZm9udG9uZ2I0dWRlljotODguMDgwOCwi",
 "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
 },
 "fcclId": "Z8H89FT0009",
 "groupingParam": [
 {
 "groupId": "0a-00-3e-43-31-ca",
 "groupType": "INTERFERENCE_COORDINATION"
 }
],
 "measCapability": [
 "RECEIVED_POWER_WITHOUT_GRANT"
],
 "userId": "SF5W5D"
 }
]
}

2018-10-02T07:40:54.224Z - INFO - Registration message contains cpisignatureData
2018-10-02T07:40:54.224Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2018-10-02T07:40:54.224Z - INFO - encodedCpiSignedData contents = {
 "installationParam": {
 "eirpCapability": 40,
 }



```
"antennaAzimuth": 0,
"heightType": "AMSL",
"longitude": -88.0808,
"height": 0,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 18
},
"fcclId": "Z8H89FT0009",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e4331ca"
}
2018-10-02T07:40:54.226Z - INFO - verified signature on cpiSignatureData
2018-10-02T07:40:54.230Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-10-02T07:40:54.233Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "response": {
        "responseCode": 100
      }
    }
  ]
}
2018-10-02T07:40:56.825Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbbsdCategory": "B",
      "cbbsdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) BHUL450",
        "vendor": "Cambium Networks"
      },
      "cbbsdSerialNumber": "0a003e431a34",
      "cpiSignatureData": {
        "digitalSignature":
"o7Q5LSOeP3yd04yRquy2vQ81JcM6czQ2wZBmWmZGVQvt91RI61o0MYnojihSqSuroi7Cx9Wxvbm5
QVScn6Qz9p_mesARfppgNuHyR0hFh12CouODCMCZwUUAE0rAKxdV-s5Omn35jn2O_od-ClS6j3TUC
5OXyfmcz8XrCX6UuKvdGpvuB07JCOX6EzWutpN8Byr5DA0_N9IXPPGVABU-XuWnbCJ0o2yg1JeHQ
vpQTpaRRdr2VW6JfYw-R6xLnILwtFRtRatw-yd4K0yxrpGY6vY162X9VyhXDBKwJBI8qmZH_F4D-xXse
cETke9sN8QF_91URr_xo862Qp4k2BmOQ",
        "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SDG5RIQwMDkiLCJYnNkU2VyaWFsTnVtYmVyljoiMGEGwMDNINDMxYTM0liwiaW
5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGU0OjYyLj0MiwiG9uZ2I0dWRlljotODguMDgwOCwia
GVpZ2h0lJowLCJoZWlnaHRUeXBlljoiQU1TTClslmluZG9vckRlcGxveW1lbnQiOmZhbHNILCJhbnRlbnM5
```




```
]
}
```

2018-10-02T07:40:58.151Z - INFO - arrived to nstep starting question answer session with the technician

2018-10-02T07:40:58.153Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2018-10-02T07:41:59.507Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2018-10-02T07:41:59.509Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :

2018-10-02T07:42:00.976Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n

2018-10-02T07:42:01.608Z - INFO - The final result of the test : WINNF.FT.D.REG.17 is - passed



```
"antennaAzimuth": 0,
"heightType": "AMSL",
"longitude": -88.0808,
"height": 0,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 18
},
"fcclId": "Z8H89FT0009",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e431a34"
}
2018-10-02T07:42:14.950Z - INFO - verified signature on cpiSignatureData
2018-10-02T07:42:14.956Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-10-02T07:42:14.957Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "response": {
        "responseCode": 201
      }
    }
  ]
}
2018-10-02T07:42:17.240Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbbsdCategory": "B",
      "cbbsdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) BHUL450",
        "vendor": "Cambium Networks"
      },
      "cbbsdSerialNumber": "0a003e4331ca",
      "cpiSignatureData": {
        "digitalSignature":
        "i9CWxM7hBiK3sWAIx9ompgwRVDUGsma0xtFnySb4-5cXoLXUiWI1I2WsJRjwAN8OdvZ5wYPntNSHo
        3nHLOQ09xDzhA_d_8MtK-0LZPNjyCPGAR7cCz2HpumleAOxXxz3WDREHzaw1kjp5_luEBfJNz3Osa6
        E5iKuYFQzXFphwoTNWvDEqqRIC7hkQql3ADTmyi1ns-KH7zAiexha-gBQbiMBhozI23qy0I8kXzUqwysS
        SMxz6IRGuub0C2EUKAcTrw9F6t94-8gWvFgXnyw5knpqchhEHNCoaQLptmcJoOUWGgsOu4KT86gL
        O66-FKO7FUEvXD3TFZ2tyGKoAc7fFw",
        "encodedCpiSignedData":
        "eyJmY2NJZCI6llo4SDg5RIQwMDkiLCJjYnNkU2VyaWFsTnVtYmVyljoiMGEwMDNINDMzMWNhliwia
        W5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGUiOjYyLj0MiwiibG9uZ2I0dWRlljotODguMDgwOCwi
        aGVpZ2h0IjowLCJoZWlnaHRUeXBlljoiQU1TTCIsImluZG9vckRlcGxveW1lbnQiOmZhbHNILCJhbnRlbnM"
```




```
}
]
}
```

2018-10-02T07:42:18.980Z - INFO - arrived to nstep starting question answer session with the technician

2018-10-02T07:42:18.983Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :

2018-10-02T07:43:26.654Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n

2018-10-02T07:43:26.655Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2018-10-02T07:43:29.240Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2018-10-02T07:43:31.461Z - INFO - The final result of the test : WINNF.FT.D.REG.19 is - passed



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

```
2018-10-02T07:49:18.864Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24
2018-10-02T07:49:18.867Z - INFO - the selected test from the user : WINNF.FT.C.GRA.1 is starting
now
2018-10-02T07:49:21.323Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbsdCategory": "B",
      "cbsdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) BHUL450",
        "vendor": "Cambium Networks"
      },
      "cbsdSerialNumber": "0a003e4331ca",
      "cpiSignatureData": {
        "digitalSignature":
          "i9CWxM7hBiK3sWAlx9ompgwRVDUGsma0xtFnySb4-5cXoLXUiWI1I2WsJRjwAN8OdvZ5wYPntNSHo
          3nHLOQ09xDzhA_d_8MtK-0LZPNjyCPGAR7cCz2HpumleAOxXxz3WDREHzaw1kjp5_luEBfJNz3Osa6
          E5iKuYFQzXFphwoTNWvDEqqRIC7hkQql3ADTmyi1ns-KH7zAiexha-gBQbiMBhozI23qy0I8kXzUqwysS
          SMxz6IRGuub0C2EUKAcTrw9F6t94-8gWvFgXnyw5knpqchhEHNCoaQLptmcJoOUWGgsOu4KT86gL
          O66-FKO7FUEvXD3TFZ2tyGKoAc7fFw",
        "encodedCpiSignedData":
          "eyJmY2NJZCI6llo4SDg5RIQwMDkiLCJjYnNkU2VyaWFsTnVtYmVyljoiMGEwMDNINDMzMWNhliwia
          W5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGUlOjQyLjI0MiwibG9uZ2I0dWRlljotODguMDgwOCwi
          aGVpZ2h0IjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjow
          5hQXppbXV0aCI6MCwiYW50ZW5uYURvd250aWx0IjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjow
          hYmlsaXR5IjoiY3BpMTIzIiwiaW50ZW5uYURvd250aWx0IjowLjowLjowLjowLjowLjowLjowLjowLjow
          XJEYXRhlj7ImNwaUlkljoiY3BpMTIzIiwiaW50ZW5uYURvd250aWx0IjowLjowLjowLjowLjowLjowLjow
          aWZpY2F0aW9uVGltZSI6IjwMTgtMDUuMDUuMDUuMDUuMDUuMDUuMDUuMDUuMDUuMDUuMDUuMDUuMDUuMDUu
          "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fcclId": "Z8H89FT0009",
      "groupingParam": [
        {
          "groupId": "0a-00-3e-43-31-ca",
          "groupType": "INTERFERENCE_COORDINATION"
        }
      ],
      "measCapability": [
        "RECEIVED_POWER_WITHOUT_GRANT"
      ],
      "userId": "SF5W5D"
    }
  ]
}
```

```
2018-10-02T07:49:21.368Z - INFO - Registration message contains cpiSignatureData
2018-10-02T07:49:21.368Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2018-10-02T07:49:21.368Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
    "eirpCapability": 40,
```




```
"antennaAzimuth": 0,
"heightType": "AMSL",
"longitude": -88.0808,
"height": 0,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 18
},
"fcclId": "Z8H89FT0009",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e4331ca"
}
2018-10-02T07:49:21.369Z - INFO - verified signature on cpiSignatureData
2018-10-02T07:49:21.375Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-10-02T07:49:21.375Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbssdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2018-10-02T07:50:04.298Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbssdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "inquiredSpectrum": [
        {
          "highFrequency": 3630000000,
          "lowFrequency": 3610000000
        }
      ]
    }
  ]
}
}
2018-10-02T07:50:04.309Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3630000000,
            "lowFrequency": 3610000000
          }
        }
      ]
    }
  ]
}
```



```
    },
    "ruleApplied": "FCC_PART_96"
  }
],
"cbstdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
"response": {
  "responseCode": 0
}
}
]
}
2018-10-02T07:50:04.405Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbstdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "operationParam": {
        "maxEirp": -22,
        "operationFrequencyRange": {
          "highFrequency": 3630000000,
          "lowFrequency": 3610000000
        }
      }
    }
  ]
}
}
2018-10-02T07:50:04.413Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbstdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "response": {
        "responseCode": 400
      }
    }
  ]
}
}
2018-10-02T07:50:05.891Z - INFO - arrived to nstep starting question answer session with the technician
2018-10-02T07:50:05.891Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :
2018-10-02T07:51:21.894Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n
2018-10-02T07:51:22.552Z - INFO - The final result of the test : WINNF.FT.C.GRA.1 is - passed
```




```
"antennaAzimuth": 0,
"heightType": "AMSL",
"longitude": -88.0808,
"height": 0,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 18
},
"fccId": "Z8H89FT0009",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e4331ca"
}
2018-10-02T07:51:51.266Z - INFO - verified signature on cpiSignatureData
2018-10-02T07:51:51.272Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-10-02T07:51:51.273Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbssdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-10-02T07:52:04.905Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbssdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "inquiredSpectrum": [
        {
          "highFrequency": 3630000000,
          "lowFrequency": 3610000000
        }
      ]
    }
  ]
}
2018-10-02T07:52:04.914Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3630000000,
            "lowFrequency": 3610000000
          }
        }
      ]
    }
  ]
}
```

```
    },
    "ruleApplied": "FCC_PART_96"
  }
],
"cbstdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
"response": {
  "responseCode": 0
}
}
]
}
2018-10-02T07:52:05.013Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbstdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "operationParam": {
        "maxEirp": -22,
        "operationFrequencyRange": {
          "highFrequency": 3630000000,
          "lowFrequency": 3610000000
        }
      }
    }
  ]
}
}
2018-10-02T07:52:05.023Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbstdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "response": {
        "responseCode": 401
      }
    }
  ]
}
}
2018-10-02T07:52:06.864Z - INFO - arrived to nstep starting question answer session with the technician
2018-10-02T07:52:06.865Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :
2018-10-02T07:53:22.079Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n
2018-10-02T07:53:23.371Z - INFO - The final result of the test : WINNF.FT.C.GRA.2 is - passed
```




```
"heightType": "AMSL",
"longitude": -88.0808,
"height": 0,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 18
},
"fccId": "Z8H89FT0009",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbid": "0a003e4331ca"
}
2018-10-02T08:03:20.515Z - INFO - verified signature on cpiSignatureData
2018-10-02T08:03:20.519Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-10-02T08:03:20.520Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbid": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-10-02T08:03:26.911Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbid": "B",
      "cbidInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) BHUL450",
        "vendor": "Cambium Networks"
      },
      "cbid": "0a003e4331a34",
      "cpiSignatureData": {
        "digitalSignature":
"o7Q5LSOeP3yd04yRquy2vQ81JcM6czQ2wZBmWmZGVQvt91RI61o0MYnojihSqSuroi7Cx9Wxvbim5
QVScn6Qz9p_mesARfppgNuHyR0hFh12CouODCMCZwUUAE0rAKxdV-s5Omn35jn2O_od-ClS6j3TUC
5OXyfmzc8XrCX6UuKvdGpvuB07JCOX6EzWutpN8Byr5DA0_N9IXPPGVABU-XuWnbCJ0o2yg1JeHQ
vpQTpaRRdr2VW6JfYw-R6xLnILwtFRtRatw-yd4K0yxrpGY6vY162X9VyhXDBKwJBI8qmZH_F4D-xXse
cETke9sN8QF_91URr_xo862Qp4k2BmOQ",
        "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SDg5RIQwMDkiLCJjYnNkU2VyaWFsTnVtYmVyljoiMGEwMDNINDMxYTM0liwiaW
5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGUiojQyLjI0MiwibG9uZ2I0dWRlljotODguMDgwOCwia
GVpZ2h0IjowLCJoZWlnaHRUeXBlljoiQU1TTClslmluZG9vckRlcGxveW1lbnQiOmZhbHNILCJhbnRlbnM5
```



```
hQXppbXV0aCI6MCwiYW50ZW5uYURvd250aWx0IjowLCJhbnRlbn5hR2Fpbil6MTgslmVpcnBDYXBh
YmlsaXR5Ijo0MCwiYW50ZW5uYUJlYW13aWR0aCI6OTB9LCJwcm9mZXNzaW9uYWxJbnN0YWxsZX
JEYXRhIjpw7ImNwaUlkljoiY3BpMTlziwiY3BpTmFtZSI6IkNQSSBVc2VyIDEyMyIsImVuc2VudCI6ImVudC99",
    "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
  },
  "fcid": "Z8H89FT0009",
  "groupingParam": [
    {
      "groupId": "0a-00-3e-43-1a-34",
      "groupType": "INTERFERENCE_COORDINATION"
    }
  ],
  "measCapability": [
    "RECEIVED_POWER_WITHOUT_GRANT"
  ],
  "userId": "SF5W5D"
}
]
```

```
2018-10-02T08:03:26.964Z - INFO - Registration message contains cpiSignatureData
2018-10-02T08:03:26.964Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
```

```
2018-10-02T08:03:26.964Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
    "eirpCapability": 40,
    "antennaAzimuth": 0,
    "heightType": "AMSL",
    "longitude": -88.0808,
    "height": 0,
    "indoorDeployment": false,
    "antennaBeamwidth": 90,
    "antennaDowntilt": 0,
    "latitude": 42.242,
    "antennaGain": 18
  },
  "fcid": "Z8H89FT0009",
  "professionalInstallerData": {
    "cpiName": "CPI User 123",
    "installCertificationTime": "2018-05-09T15:51:12.866Z",
    "cpild": "cpi123"
  },
  "cbsdSerialNumber": "0a003e431a34"
}
```

```
2018-10-02T08:03:26.966Z - INFO - verified signature on cpiSignatureData
2018-10-02T08:03:26.970Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-10-02T08:03:26.973Z - INFO - engine sent successfully, the response to CBRS : {
```

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




```
    }
  ]
}
2018-10-02T08:04:21.523Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "inquiredSpectrum": [
        {
          "highFrequency": 3630000000,
          "lowFrequency": 3610000000
        }
      ]
    }
  ]
}
2018-10-02T08:04:21.532Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3630000000,
            "lowFrequency": 3610000000
          },
          "ruleApplied": "FCC_PART_96"
        }
      ],
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-10-02T08:04:21.621Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "operationParam": {
        "maxEirp": 30,
        "operationFrequencyRange": {
          "highFrequency": 3630000000,
          "lowFrequency": 3610000000
        }
      }
    }
  ]
}
2018-10-02T08:04:21.632Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
```



```
{
  "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
  "channelType": "GAA",
  "grantExpireTime": "2018-10-09T08:04:21Z",
  "grantId": "774451599",
  "heartbeatInterval": 60,
  "response": {
    "responseCode": 0
  }
}
]
}
2018-10-02T08:04:21.723Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "774451599",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-10-02T08:04:21.730Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "774451599",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-10-02T08:07:41Z"
    }
  ]
}
2018-10-02T08:04:27.540Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "inquiredSpectrum": [
        {
          "highFrequency": 3630000000,
          "lowFrequency": 3610000000
        }
      ]
    }
  ]
}
2018-10-02T08:04:27.552Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
```



```
        "channelType": "GAA",
        "frequencyRange": {
            "highFrequency": 3630000000,
            "lowFrequency": 3610000000
        },
        "ruleApplied": "FCC_PART_96"
    }
],
"csdId": "Z8H89FT0009Mock-SAS0a003e431a34",
"response": {
    "responseCode": 0
}
}
]
}
2018-10-02T08:04:27.628Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "csdId": "Z8H89FT0009Mock-SAS0a003e431a34",
            "operationParam": {
                "maxEirp": 30,
                "operationFrequencyRange": {
                    "highFrequency": 3630000000,
                    "lowFrequency": 3610000000
                }
            }
        }
    ]
}
2018-10-02T08:04:27.638Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "csdId": "Z8H89FT0009Mock-SAS0a003e431a34",
            "channelType": "GAA",
            "grantExpireTime": "2018-10-09T08:04:27Z",
            "grantId": "699122372",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2018-10-02T08:04:27.740Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "csdId": "Z8H89FT0009Mock-SAS0a003e431a34",
            "grantId": "699122372",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
```



```
}
2018-10-02T08:04:27.747Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "699122372",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-10-02T08:07:47Z"
    }
  ]
}
2018-10-02T08:05:16.990Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "774451599",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-10-02T08:05:16.992Z - INFO - Time interval between two heartbeat request messages is: 55.266,
limit is: 65.0
2018-10-02T08:05:16.997Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "774451599",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-10-02T08:08:36Z"
    }
  ]
}
2018-10-02T08:05:21.977Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "699122372",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-10-02T08:05:21.979Z - INFO - Time interval between two heartbeat request messages is: 54.237,
limit is: 65.0
2018-10-02T08:05:21.984Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
```



```
        "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
        "grantId": "699122372",
        "response": {
            "responseCode": 0
        },
        "transmitExpireTime": "2018-10-02T08:08:41Z"
    }
}
]
}
2018-10-02T08:06:12.282Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "774451599",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2018-10-02T08:06:12.285Z - INFO - Time interval between two heartbeat request messages is: 55.293,
limit is: 65.0
2018-10-02T08:06:12.295Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "774451599",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2018-10-02T08:09:32Z"
        }
    ]
}
2018-10-02T08:06:17.285Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
            "grantId": "699122372",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2018-10-02T08:06:17.286Z - INFO - Time interval between two heartbeat request messages is: 55.307,
limit is: 65.0
2018-10-02T08:06:17.296Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
            "grantId": "699122372",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
```



```
    },
    "transmitExpireTime": "2018-10-02T08:09:37Z"
  }
]
}
2018-10-02T08:07:07.635Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "774451599",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-10-02T08:07:07.638Z - INFO - Time interval between two heartbeat request messages is: 55.354,
limit is: 65.0
2018-10-02T08:07:07.644Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "774451599",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-10-02T08:10:27Z"
    }
  ]
}
2018-10-02T08:07:12.500Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "699122372",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-10-02T08:07:12.502Z - INFO - Time interval between two heartbeat request messages is: 55.216,
limit is: 65.0
2018-10-02T08:07:12.509Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "699122372",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-10-02T08:10:32Z"
    }
  ]
}
```



```
}
2018-10-02T08:08:01.842Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "774451599",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-10-02T08:08:01.844Z - INFO - Time interval between two heartbeat request messages is: 54.206,
limit is: 65.0
2018-10-02T08:08:01.851Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "774451599",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-10-02T08:11:21Z"
    }
  ]
}
2018-10-02T08:08:07.707Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "699122372",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-10-02T08:08:07.709Z - INFO - Time interval between two heartbeat request messages is: 55.206,
limit is: 65.0
2018-10-02T08:08:07.717Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "699122372",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-10-02T08:11:27Z"
    }
  ]
}
2018-10-02T08:08:57.107Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
```



```
        "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
        "grantId": "774451599",
        "grantRenew": false,
        "operationState": "AUTHORIZED"
    }
}
]
}
2018-10-02T08:08:57.108Z - INFO - Time interval between two heartbeat request messages is: 55.264,
limit is: 65.0
2018-10-02T08:08:57.115Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "774451599",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2018-10-02T08:12:17Z"
        }
    ]
}
}
2018-10-02T08:09:01.930Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
            "grantId": "699122372",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
}
2018-10-02T08:09:01.931Z - INFO - Time interval between two heartbeat request messages is: 54.224,
limit is: 65.0
2018-10-02T08:09:01.938Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
            "grantId": "699122372",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2018-10-02T08:12:21Z"
        }
    ]
}
}
2018-10-02T08:09:03.253Z - INFO - arrived to nstep starting question answer session with the
technician
2018-10-02T08:09:03.255Z - INFO - the question is : Did the CBSD1 transmit power prior to
AUTHORIZED state (first successful HBT response)? please choose one of the answers :
2018-10-02T08:11:13.323Z - INFO - for the question : Did the CBSD1 transmit power prior to
AUTHORIZED state (first successful HBT response)? , the user choose n
2018-10-02T08:11:13.325Z - INFO - the question is : Did the CBSD2 transmit power prior to
```




AUTHORIZED state (first successful HBT response)? please choose one of the answers :
2018-10-02T08:11:14.177Z - INFO - for the question : Did the CBSD2 transmit power prior to AUTHORIZED state (first successful HBT response)? , the user choose n
2018-10-02T08:14:20.911Z - INFO - The final result of the test : WINNF.FT.D.HBT.2 is - passed and :the additional comments for the current test are : CBSD1 start transmit at T08:04:32 , CBSD2 start transmit at T08:04:38



```
"heightType": "AMSL",
"longitude": -88.0808,
"height": 0,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 18
},
"fccId": "Z8H89FT0009",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e4331ca"
}
2018-10-02T08:16:01.256Z - INFO - verified signature on cpiSignatureData
2018-10-02T08:16:01.260Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-10-02T08:16:01.262Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbssdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2018-10-02T08:17:01.553Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbssdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "inquiredSpectrum": [
        {
          "highFrequency": 3630000000,
          "lowFrequency": 3610000000
        }
      ]
    }
  ]
}
}
2018-10-02T08:17:01.565Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3630000000,
            "lowFrequency": 3610000000
          }
        }
      ]
    }
  ]
}
```



```
                "ruleApplied": "FCC_PART_96"
            }
        ],
        "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
        "response": {
            "responseCode": 0
        }
    }
}
]
}
2018-10-02T08:17:01.638Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "operationParam": {
                "maxEirp": 30,
                "operationFrequencyRange": {
                    "highFrequency": 3630000000,
                    "lowFrequency": 3610000000
                }
            }
        }
    ]
}
2018-10-02T08:17:01.648Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "channelType": "GAA",
            "grantExpireTime": "2018-10-09T08:17:01Z",
            "grantId": "826637044",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2018-10-02T08:17:01.757Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "826637044",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
2018-10-02T08:17:01.766Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
```



```
        "grantId": "826637044",
        "response": {
            "responseCode": 0
        },
        "transmitExpireTime": "2018-10-02T08:20:21Z"
    }
}
}
2018-10-02T08:17:56.969Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "826637044",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2018-10-02T08:17:56.970Z - INFO - Time interval between two heartbeat request messages is: 55.21,
limit is: 65.0
2018-10-02T08:17:56.976Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "826637044",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2018-10-02T08:21:16Z"
        }
    ]
}
}
2018-10-02T08:18:51.196Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "826637044",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
}
2018-10-02T08:18:51.197Z - INFO - Time interval between two heartbeat request messages is: 54.227,
limit is: 65.0
2018-10-02T08:18:51.203Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "826637044",
            "response": {
                "responseCode": 0
            },
        }
    ]
},
```

```
        "transmitExpireTime": "2018-10-02T08:22:11Z"
    }
]
}
2018-10-02T08:19:46.394Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "826637044",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-10-02T08:19:46.398Z - INFO - Time interval between two heartbeat request messages is: 55.2,
limit is: 65.0
2018-10-02T08:19:46.407Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "826637044",
      "response": {
        "responseCode": 105
      },
      "transmitExpireTime": "2018-10-02T08:19:46Z"
    }
  ]
}
2018-10-02T08:19:47.859Z - INFO - arrived to nstep starting question answer session with the
technician
2018-10-02T08:19:47.861Z - INFO - the question is : Did the CBSD stop RF transmission within 60
seconds of receiving Heartbeat response with responseCode = 105? please choose one of the
answers :
2018-10-02T08:20:12.311Z - INFO - for the question : Did the CBSD stop RF transmission within 60
seconds of receiving Heartbeat response with responseCode = 105? , the user choose y
2018-10-02T08:20:36.049Z - INFO - The final result of the test : WINNF.FT.C.HBT.3 is - passed and :the
additional comments for the current test are : CBSD1 stop transmission at T08:19:47
```




```
"heightType": "AMSL",
"longitude": -88.0808,
"height": 0,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 18
},
"fccId": "Z8H89FT0009",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e4331ca"
}
2018-10-02T08:21:00.747Z - INFO - verified signature on cpiSignatureData
2018-10-02T08:21:00.753Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-10-02T08:21:00.755Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbssdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-10-02T08:22:01.746Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbssdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "inquiredSpectrum": [
        {
          "highFrequency": 3630000000,
          "lowFrequency": 3610000000
        }
      ]
    }
  ]
}
2018-10-02T08:22:01.757Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3630000000,
            "lowFrequency": 3610000000
          }
        }
      ]
    }
  ]
}
```




```
                "ruleApplied": "FCC_PART_96"
            }
        ],
        "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
        "response": {
            "responseCode": 0
        }
    }
}
2018-10-02T08:22:01.869Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "operationParam": {
                "maxEirp": 30,
                "operationFrequencyRange": {
                    "highFrequency": 3630000000,
                    "lowFrequency": 3610000000
                }
            }
        }
    ]
}
2018-10-02T08:22:01.880Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "channelType": "GAA",
            "grantExpireTime": "2018-10-09T08:22:01Z",
            "grantId": "288584154",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2018-10-02T08:22:01.973Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "288584154",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
2018-10-02T08:22:01.982Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
```



```
"grantId": "288584154",
"response": {
  "responseCode": 501
},
"transmitExpireTime": "2018-10-02T08:22:01Z"
}
]
}
2018-10-02T08:22:57.204Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "288584154",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-10-02T08:22:57.207Z - INFO - Time interval between two heartbeat request messages is: 55.231,
limit is: 65.0
2018-10-02T08:22:57.213Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "288584154",
      "response": {
        "responseCode": 501
      },
      "transmitExpireTime": "2018-10-02T08:22:57Z"
    }
  ]
}
2018-10-02T08:22:58.605Z - INFO - arrived to nstep starting question answer session with the
technician
2018-10-02T08:22:58.607Z - INFO - the question is : Did the CBSD transmit at any time during the test?
please choose one of the answers :
2018-10-02T08:23:24.125Z - INFO - for the question : Did the CBSD transmit at any time during the
test? , the user choose n
2018-10-02T08:23:24.907Z - INFO - The final result of the test : WINNF.FT.C.HBT.5 is - passed
```




```
"heightType": "AMSL",
"longitude": -88.0808,
"height": 0,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 18
},
"fccId": "Z8H89FT0009",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e4331ca"
}
2018-10-02T08:23:39.028Z - INFO - verified signature on cpiSignatureData
2018-10-02T08:23:39.032Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-10-02T08:23:39.033Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbssdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2018-10-02T08:24:39.420Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbssdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "inquiredSpectrum": [
        {
          "highFrequency": 3630000000,
          "lowFrequency": 3610000000
        }
      ]
    }
  ]
}
}
2018-10-02T08:24:39.430Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3630000000,
            "lowFrequency": 3610000000
          }
        }
      ]
    }
  ]
}
```



```
                "ruleApplied": "FCC_PART_96"
            }
        ],
        "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
        "response": {
            "responseCode": 0
        }
    }
]
}
2018-10-02T08:24:39.525Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "operationParam": {
                "maxEirp": 30,
                "operationFrequencyRange": {
                    "highFrequency": 3630000000,
                    "lowFrequency": 3610000000
                }
            }
        }
    ]
}
2018-10-02T08:24:39.532Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "channelType": "GAA",
            "grantExpireTime": "2018-10-09T08:24:39Z",
            "grantId": "153759728",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2018-10-02T08:24:39.617Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "153759728",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
2018-10-02T08:24:39.624Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
```



```
        "grantId": "153759728",
        "response": {
            "responseCode": 0
        },
        "transmitExpireTime": "2018-10-02T08:27:59Z"
    }
}
]
}
2018-10-02T08:24:46.890Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "153759728",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2018-10-02T08:24:46.891Z - INFO - Time interval between two heartbeat request messages is: 7.273,
limit is: 65.0
2018-10-02T08:24:46.901Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "153759728",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2018-10-02T08:28:06Z"
        }
    ]
}
2018-10-02T08:25:42.105Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "153759728",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2018-10-02T08:25:42.108Z - INFO - Time interval between two heartbeat request messages is: 55.216,
limit is: 65.0
2018-10-02T08:25:42.117Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "153759728",
            "response": {
                "responseCode": 0
            },
        }
    ]
}
```



```
        "transmitExpireTime": "2018-10-02T08:29:02Z"
    }
]
}
2018-10-02T08:26:37.417Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "153759728",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-10-02T08:26:37.421Z - INFO - Time interval between two heartbeat request messages is: 55.311,
limit is: 65.0
2018-10-02T08:26:37.437Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "153759728",
      "response": {
        "responseCode": 501
      },
      "transmitExpireTime": "2018-10-02T08:26:37Z"
    }
  ]
}
2018-10-02T08:27:32.665Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "153759728",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-10-02T08:27:32.668Z - INFO - Time interval between two heartbeat request messages is: 55.249,
limit is: 65.0
2018-10-02T08:27:32.680Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "153759728",
      "response": {
        "responseCode": 501
      },
      "transmitExpireTime": "2018-10-02T08:27:32Z"
    }
  ]
}
}
```



2018-10-02T08:27:34.674Z - INFO - arrived to nstep starting question answer session with the technician

2018-10-02T08:27:34.677Z - INFO - the question is : Did the CBSD stop RF transmission within 60 seconds of receiving Heartbeat response with responseCode = 501? please choose one of the answers :

2018-10-02T08:27:39.607Z - INFO - for the question : Did the CBSD stop RF transmission within 60 seconds of receiving Heartbeat response with responseCode = 501? , the user choose y

2018-10-02T08:27:58.279Z - INFO - The final result of the test : WINNF.FT.C.HBT.6 is - passed and :the additional comments for the current test are : CBSD1 stop transmission at T08:26:39



```
"heightType": "AMSL",
"longitude": -88.0808,
"height": 0,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 18
},
"fccId": "Z8H89FT0009",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e4331ca"
}
2018-10-02T08:28:16.987Z - INFO - verified signature on cpiSignatureData
2018-10-02T08:28:16.993Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-10-02T08:28:16.994Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbssdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2018-10-02T08:29:17.848Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbssdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "inquiredSpectrum": [
        {
          "highFrequency": 3630000000,
          "lowFrequency": 3610000000
        }
      ]
    }
  ]
}
}
2018-10-02T08:29:17.858Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3630000000,
            "lowFrequency": 3610000000
          }
        }
      ]
    }
  ]
}
```



```
                "ruleApplied": "FCC_PART_96"
            }
        ],
        "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
        "response": {
            "responseCode": 0
        }
    }
]
}
2018-10-02T08:29:17.946Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "operationParam": {
                "maxEirp": 30,
                "operationFrequencyRange": {
                    "highFrequency": 3630000000,
                    "lowFrequency": 3610000000
                }
            }
        }
    ]
}
2018-10-02T08:29:17.957Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "channelType": "GAA",
            "grantExpireTime": "2018-10-09T08:29:17Z",
            "grantId": "410136944",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2018-10-02T08:29:18.049Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "410136944",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
2018-10-02T08:29:18.055Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
```



```
        "grantId": "410136944",
        "response": {
            "responseCode": 0
        },
        "transmitExpireTime": "2018-10-02T08:32:38Z"
    }
}
}
2018-10-02T08:29:22.154Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "410136944",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2018-10-02T08:29:22.154Z - INFO - Time interval between two heartbeat request messages is: 4.105,
limit is: 65.0
2018-10-02T08:29:22.161Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "410136944",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2018-10-02T08:32:42Z"
        }
    ]
}
}
2018-10-02T08:30:17.335Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "410136944",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
}
2018-10-02T08:30:17.336Z - INFO - Time interval between two heartbeat request messages is: 55.182,
limit is: 65.0
2018-10-02T08:30:17.348Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "410136944",
            "response": {
                "responseCode": 0
            },
        }
    ]
}
```



```
        "transmitExpireTime": "2018-10-02T08:33:37Z"
    }
]
}
2018-10-02T08:31:12.510Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "410136944",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2018-10-02T08:31:12.513Z - INFO - Time interval between two heartbeat request messages is: 55.175,
limit is: 65.0
2018-10-02T08:31:12.519Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "410136944",
            "response": {
                "responseCode": 502
            },
            "transmitExpireTime": "2018-10-02T08:31:12Z"
        }
    ]
}
2018-10-02T08:31:12.621Z - INFO - relinquishment request from CBRS : {
    "relinquishmentRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "410136944"
        }
    ]
}
2018-10-02T08:31:12.630Z - INFO - engine sent successfully, the response to CBRS : {
    "relinquishmentResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "410136944",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2018-10-02T08:31:14.201Z - INFO - arrived to nstep starting question answer session with the
technician
2018-10-02T08:31:14.203Z - INFO - the question is : Did the CBSD stop RF transmission within 60
seconds of receiving Heartbeat response with responseCode = 502? please choose one of the
answers :
```



2018-10-02T08:31:26.361Z - INFO - for the question : Did the CBSD stop RF transmission within 60 seconds of receiving Heartbeat response with responseCode = 502? , the user choose y
2018-10-02T08:31:39.990Z - INFO - The final result of the test : WINNF.FT.C.HBT.7 is - passed and :the additional comments for the current test are : CBSD1 stop transmission at T08:31:14



```
"heightType": "AMSL",
"longitude": -88.0808,
"height": 0,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 18
},
"fccId": "Z8H89FT0009",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e4331ca"
}
2018-10-02T08:33:07.690Z - INFO - verified signature on cpiSignatureData
2018-10-02T08:33:07.696Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-10-02T08:33:07.697Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbssdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2018-10-02T08:33:13.151Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbssdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "inquiredSpectrum": [
        {
          "highFrequency": 3630000000,
          "lowFrequency": 3610000000
        }
      ]
    }
  ]
}
}
2018-10-02T08:33:13.167Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3630000000,
            "lowFrequency": 3610000000
          }
        }
      ]
    }
  ]
}
```




```
                "ruleApplied": "FCC_PART_96"
            }
        ],
        "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
        "response": {
            "responseCode": 0
        }
    }
}
]
}
2018-10-02T08:33:13.224Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "operationParam": {
                "maxEirp": 30,
                "operationFrequencyRange": {
                    "highFrequency": 3630000000,
                    "lowFrequency": 3610000000
                }
            }
        }
    ]
}
2018-10-02T08:33:13.232Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "channelType": "GAA",
            "grantExpireTime": "2018-10-09T08:33:13Z",
            "grantId": "480923810",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2018-10-02T08:33:13.295Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "480923810",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
2018-10-02T08:33:13.302Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
```




```
2018-10-02T08:33:33.575Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2018-10-02T08:33:33.575Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
    "eirpCapability": 40,
    "antennaAzimuth": 0,
    "heightType": "AMSL",
    "longitude": -88.0808,
    "height": 0,
    "indoorDeployment": false,
    "antennaBeamwidth": 90,
    "antennaDowntilt": 0,
    "latitude": 42.242,
    "antennaGain": 18
  },
  "fccId": "Z8H89FT0009",
  "professionalInstallerData": {
    "cpiName": "CPI User 123",
    "installCertificationTime": "2018-05-09T15:51:12.866Z",
    "cpild": "cpi123"
  },
  "cbsdSerialNumber": "0a003e431a34"
}
2018-10-02T08:33:33.575Z - INFO - verified signature on cpiSignatureData
2018-10-02T08:33:33.581Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-10-02T08:33:33.582Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-10-02T08:34:08.512Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "480923810",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-10-02T08:34:08.513Z - INFO - Time interval between two heartbeat request messages is: 55.217,
limit is: 65.0
2018-10-02T08:34:08.519Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "480923810",
      "response": {
```



```
        "responseCode": 0
      },
      "transmitExpireTime": "2018-10-02T08:37:28Z"
    }
  ]
}
2018-10-02T08:34:34.358Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "inquiredSpectrum": [
        {
          "highFrequency": 3630000000,
          "lowFrequency": 3610000000
        }
      ]
    }
  ]
}
2018-10-02T08:34:34.371Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3630000000,
            "lowFrequency": 3610000000
          },
          "ruleApplied": "FCC_PART_96"
        }
      ],
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-10-02T08:34:34.463Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "operationParam": {
        "maxEirp": 30,
        "operationFrequencyRange": {
          "highFrequency": 3630000000,
          "lowFrequency": 3610000000
        }
      }
    }
  ]
}
```



```
}
2018-10-02T08:34:34.470Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "channelType": "GAA",
      "grantExpireTime": "2018-10-09T08:34:34Z",
      "grantId": "883351214",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-10-02T08:34:34.543Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "883351214",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-10-02T08:34:34.551Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "883351214",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-10-02T08:37:54Z"
    }
  ]
}
2018-10-02T08:35:03.766Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "480923810",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-10-02T08:35:03.767Z - INFO - Time interval between two heartbeat request messages is: 55.255,
limit is: 65.0
2018-10-02T08:35:03.776Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
```



```
        "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
        "grantId": "480923810",
        "response": {
            "responseCode": 0
        },
        "transmitExpireTime": "2018-10-02T08:38:23Z"
    }
}
]
}
2018-10-02T08:35:29.772Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
            "grantId": "883351214",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2018-10-02T08:35:29.773Z - INFO - Time interval between two heartbeat request messages is: 55.228,
limit is: 65.0
2018-10-02T08:35:29.779Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
            "grantId": "883351214",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2018-10-02T08:38:49Z"
        }
    ]
}
2018-10-02T08:35:58.967Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "480923810",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2018-10-02T08:35:58.969Z - INFO - Time interval between two heartbeat request messages is: 55.2,
limit is: 65.0
2018-10-02T08:35:58.976Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "480923810",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
```



```
    },
    "transmitExpireTime": "2018-10-02T08:39:18Z"
  }
]
}
2018-10-02T08:36:25.033Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "883351214",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-10-02T08:36:25.035Z - INFO - Time interval between two heartbeat request messages is: 55.262,
limit is: 65.0
2018-10-02T08:36:25.042Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "883351214",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-10-02T08:39:45Z"
    }
  ]
}
2018-10-02T08:36:54.145Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "480923810",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-10-02T08:36:54.147Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "480923810",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-10-02T08:40:14Z"
    }
  ]
}
2018-10-02T08:37:20.266Z - INFO - heartbeat request from CBRS : {
```



```
"heartbeatRequest": [
  {
    "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
    "grantId": "883351214",
    "grantRenew": false,
    "operationState": "AUTHORIZED"
  }
]
}
2018-10-02T08:37:20.269Z - INFO - Time interval between two heartbeat request messages is: 55.233,
limit is: 65.0
2018-10-02T08:37:20.279Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "883351214",
      "response": {
        "responseCode": 500
      },
      "transmitExpireTime": "2018-10-02T08:37:20Z"
    }
  ]
}
2018-10-02T08:37:21.539Z - INFO - arrived to nstep starting question answer session with the
technician
2018-10-02T08:37:21.542Z - INFO - the question is : Did the CBSD1 transmit power prior to
AUTHORIZED state (first successful HBT response)? please choose one of the answers :
2018-10-02T08:37:35.101Z - INFO - for the question : Did the CBSD1 transmit power prior to
AUTHORIZED state (first successful HBT response)? , the user choose n
2018-10-02T08:37:35.105Z - INFO - the question is : Did the CBSD2 stop RF transmission within 60
seconds of receiving Heartbeat response with responseCode = 500? please choose one of the
answers :
2018-10-02T08:37:38.365Z - INFO - for the question : Did the CBSD2 stop RF transmission within 60
seconds of receiving Heartbeat response with responseCode = 500? , the user choose y
2018-10-02T08:39:04.243Z - INFO - The final result of the test : WINNF.FT.D.HBT.8 is - passed and :the
additional comments for the current test are : CBSD1 start transmit at T08:33:19 , CBSD2 stop
transmission at T08:37:21
```




```
"heightType": "AMSL",
"longitude": -88.0808,
"height": 0,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 18
},
"fccId": "Z8H89FT0009",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e4331ca"
}
2018-10-02T08:41:34.957Z - INFO - verified signature on cpiSignatureData
2018-10-02T08:41:34.963Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-10-02T08:41:34.964Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbssdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2018-10-02T08:42:35.302Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbssdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "inquiredSpectrum": [
        {
          "highFrequency": 3630000000,
          "lowFrequency": 3610000000
        }
      ]
    }
  ]
}
}
2018-10-02T08:42:35.311Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3630000000,
            "lowFrequency": 3610000000
          }
        }
      ]
    }
  ]
}
```



```
                "ruleApplied": "FCC_PART_96"
            }
        ],
        "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
        "response": {
            "responseCode": 0
        }
    }
}
]
}
2018-10-02T08:42:35.421Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "operationParam": {
                "maxEirp": 30,
                "operationFrequencyRange": {
                    "highFrequency": 3630000000,
                    "lowFrequency": 3610000000
                }
            }
        }
    ]
}
2018-10-02T08:42:35.427Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "channelType": "GAA",
            "grantExpireTime": "2018-10-09T08:42:35Z",
            "grantId": "238063254",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2018-10-02T08:42:35.539Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "238063254",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
2018-10-02T08:43:35.753Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
```



```
        "grantId": "238063254",
        "grantRenew": false,
        "operationState": "GRANTED"
    }
]
}
2018-10-02T08:43:35.755Z - INFO - request message received while HBT is absent, sleep 144 sec
before responding
2018-10-02T08:44:35.272Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "238063254",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
2018-10-02T08:44:35.273Z - INFO - request message received while HBT is absent, sleep 85 sec
before responding
2018-10-02T08:44:43.703Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "238063254",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
2018-10-02T08:44:43.703Z - INFO - request message received while HBT is absent, sleep 76 sec
before responding
2018-10-02T08:45:43.831Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "238063254",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
2018-10-02T08:45:43.832Z - INFO - request message received while HBT is absent, sleep 16 sec
before responding
2018-10-02T08:45:55.559Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "238063254",
            "response": {
                "responseCode": 501
            }
        }
    ],
}
```



```
"transmitExpireTime": "2018-10-02T08:45:55Z"
  }
]
}
```

2018-10-02T08:45:56.763Z - INFO - arrived to nstep starting question answer session with the technician

2018-10-02T08:45:56.765Z - INFO - the question is : Were there RF transmissions from the CBSD during the test? please choose one of the answers :

2018-10-02T08:45:59.706Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2018-10-02T08:45:59.756Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2018-10-02T08:45:59.835Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2018-10-02T08:46:00.276Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2018-10-02T08:46:13.880Z - INFO - for the question : Were there RF transmissions from the CBSD during the test? , the user choose n

2018-10-02T08:46:14.848Z - INFO - The final result of the test : WINNF.FT.C.HBT.9 is - passed



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

```

2018-10-02T08:46:26.638Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24
2018-10-02T08:46:26.641Z - INFO - the selected test from the user : WINNF.FT.C.HBT.10 is starting
now
2018-10-02T08:46:28.763Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbsdCategory": "B",
      "cbsdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) BHUL450",
        "vendor": "Cambium Networks"
      },
      "cbsdSerialNumber": "0a003e4331ca",
      "cpiSignatureData": {
        "digitalSignature":
          "i9CWxM7hBiK3sWAIx9ompgwRVDUGsma0xtFnySb4-5cXoLXUiWI1I2WsJRjwAN8OdvZ5wYPntNSHo
          3nHLOQ09xDzhA_d_8MtK-0LZPNjyCPGAR7cCz2HpumleAOxXxz3WDREHzaw1kjp5_luEBfJNz3Osa6
          E5iKuYFQzXFphwoTNWvDEqqRIC7hkQql3ADTmyi1ns-KH7zAiexha-gBQbiMBhozI23qy0I8kXzUqwsS
          SMxz6IRGuub0C2EUKAcTrw9F6t94-8gWvFgXnyw5knpqchhEHNCoaQLptmcJoOUWGgsOu4KT86gL
          O66-FKO7FUEvXD3TFZ2tyGKoAc7fFw",
        "encodedCpiSignedData":
          "eyJmY2NJZCI6llo4SDg5RIQwMDkiLCJjYnNkU2VyaWFsTnVtYmVyljoiMGEwMDNINDMzMWNhliwia
          W5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGUiOjQyLjI0MiwibG9uZ2I0dWRlljotODguMDgwOCwi
          aGVpZ2h0IjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjow
          5hQXppbXV0aCI6MCwiYW50ZW5uYURvd250aWx0IjowLjowLjowLjowLjowLjowLjowLjowLjowLjow
          hYmlsaXR5IjoiY3BpMTIzIiwiaW50YURvd250aWx0IjowLjowLjowLjowLjowLjowLjowLjowLjowLjow
          XJEYXRhljw7ImNwaUlkljoiY3BpMTIzIiwiaW50YURvd250aWx0IjowLjowLjowLjowLjowLjowLjow
          aWZpY2F0aW9uVGltZSI6IjwMTgtMDUuMDUuMDUuMDUuMDUuMDUuMDUuMDUuMDUuMDUuMDUuMDUuMDUu
          "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fcclId": "Z8H89FT0009",
      "groupingParam": [
        {
          "groupId": "0a-00-3e-43-31-ca",
          "groupType": "INTERFERENCE_COORDINATION"
        }
      ],
      "measCapability": [
        "RECEIVED_POWER_WITHOUT_GRANT"
      ],
      "userId": "SF5W5D"
    }
  ]
}
2018-10-02T08:46:28.809Z - INFO - Registration message contains cpiSignatureData
2018-10-02T08:46:28.809Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2018-10-02T08:46:28.809Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
    "eirpCapability": 40,

```



```
"antennaAzimuth": 0,
"heightType": "AMSL",
"longitude": -88.0808,
"height": 0,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 18
},
"fccId": "Z8H89FT0009",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e4331ca"
}
2018-10-02T08:46:28.811Z - INFO - verified signature on cpiSignatureData
2018-10-02T08:46:28.815Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-10-02T08:46:28.816Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbssdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-10-02T08:47:29.042Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbssdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "inquiredSpectrum": [
        {
          "highFrequency": 3630000000,
          "lowFrequency": 3610000000
        }
      ]
    }
  ]
}
2018-10-02T08:47:29.055Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3630000000,
            "lowFrequency": 3610000000
          }
        }
      ]
    }
  ]
}
```



```
    },
    "ruleApplied": "FCC_PART_96"
  }
],
"cbstdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
"response": {
  "responseCode": 0
}
}
]
}
2018-10-02T08:47:29.118Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbstdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "operationParam": {
        "maxEirp": 30,
        "operationFrequencyRange": {
          "highFrequency": 3630000000,
          "lowFrequency": 3610000000
        }
      }
    }
  ]
}
2018-10-02T08:47:29.125Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbstdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "channelType": "GAA",
      "grantExpireTime": "2018-10-09T08:47:29Z",
      "grantId": "632172110",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-10-02T08:47:29.216Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbstdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "632172110",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-10-02T08:47:29.223Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
```




```
        "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
        "grantId": "632172110",
        "response": {
            "responseCode": 0
        },
        "transmitExpireTime": "2018-10-02T08:50:49Z"
    }
}
}
2018-10-02T08:48:24.440Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "632172110",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2018-10-02T08:48:24.441Z - INFO - Time interval between two heartbeat request messages is: 55.225,
limit is: 65.0
2018-10-02T08:48:24.451Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "632172110",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2018-10-02T08:51:44Z"
        }
    ]
}
}
2018-10-02T08:49:18.704Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "632172110",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
}
2018-10-02T08:49:18.709Z - INFO - Time interval between two heartbeat request messages is: 54.265,
limit is: 65.0
2018-10-02T08:49:18.716Z - INFO - LAST HBT RESPONSE THAT SET TRANSMIT_EXPIRE_TIME
WAS AT: 2018-10-02 08:48:24.441000
2018-10-02T08:50:18.799Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "632172110",
```



```
        "grantRenew": false,
        "operationState": "GRANTED"
    }
]
}
2018-10-02T08:50:18.799Z - INFO - request message received while HBT is absent, sleep 144 sec
before responding
2018-10-02T08:51:18.933Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "632172110",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
2018-10-02T08:51:18.934Z - INFO - request message received while HBT is absent, sleep 84 sec
before responding
2018-10-02T08:52:19.058Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "632172110",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
2018-10-02T08:52:19.059Z - INFO - request message received while HBT is absent, sleep 24 sec
before responding
2018-10-02T08:52:34.382Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "632172110",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
2018-10-02T08:52:34.384Z - INFO - request message received while HBT is absent, sleep 9 sec before
responding
2018-10-02T08:52:38.732Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "632172110",
            "response": {
                "responseCode": 501
            },
            "transmitExpireTime": "2018-10-02T08:52:38Z"
        }
    ]
}
```



```
    }  
  ]  
}  
2018-10-02T08:52:40.667Z - INFO - arrived to nstep starting question answer session with the technician  
2018-10-02T08:52:40.668Z - INFO - the question is : Did the CBSD stop RF transmissions within (transmitExpireTime + 60seconds) of last valid heartbeat response? please choose one of the answers :  
2018-10-02T08:52:42.802Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"  
2018-10-02T08:52:42.937Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"  
2018-10-02T08:52:43.061Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"  
2018-10-02T08:52:43.385Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"  
2018-10-02T08:53:18.799Z - INFO - for the question : Did the CBSD stop RF transmissions within (transmitExpireTime + 60seconds) of last valid heartbeat response? , the user choose y  
2018-10-02T08:53:19.835Z - INFO - The final result of the test : WINNF.FT.C.HBT.10 is - passed and :the additional comments for the current test are : CBSD1 stop transmission at T08:50:20
```



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

```
2018-10-02T08:55:51.947Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24
2018-10-02T08:55:51.948Z - INFO - the selected test from the user : WINNF.FT.D.MES.2 is starting
now
2018-10-02T08:55:59.181Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbsdCategory": "B",
      "cbsdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) BHUL450",
        "vendor": "Cambium Networks"
      },
      "cbsdSerialNumber": "0a003e4331ca",
      "cpiSignatureData": {
        "digitalSignature":
          "i9CWxM7hBiK3sWAlx9ompgwRVDUGsma0xtFnySb4-5cXoLXUiWI1I2WsJRjwAN8OdvZ5wYPntNSHo
          3nHLOQ09xDzhA_d_8MtK-0LZPNjyCPGAR7cCz2HpumleAOxXxz3WDREHzaw1kjp5_luEBfJNz3Osa6
          E5iKuYFQzXFphwoTNWvDEqqRIC7hkQql3ADTmyi1ns-KH7zAiexha-gBQbiMBhozI23qy0I8kXzUqwysS
          SMxz6IRGuub0C2EUKAcTrw9F6t94-8gWvFgXnyw5knpqchhEHNCoaQLptmcJoOUWGgsOu4KT86gL
          O66-FKO7FUEvXD3TFZ2tyGKoAc7fFw",
        "encodedCpiSignedData":
          "eyJmY2NJZCI6llo4SDg5RIQwMDkiLCJjYnNkU2VyaWFsTnVtYmVyljoiMGEwMDNINDMzMWNhliwia
          W5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGUlOjQyLjI0MiwiYm9uZ2I0dWRlljotODguMDgwOCwi
          aGVpZ2h0IjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjow
          5hQXppbXV0aCl6MCwiYW50ZW5uYURvd250aWx0IjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjow
          hYmlsaXR5IjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjow
          XJEYXRhlj7ImNwaUlkljoiY3BpMTIzIiwIY3BpTmFtZSI6IkNQSSBVc2VyIDEyMDEyMDEyMDEyMDEyMDEy
          aWZpY2F0aW9uVGltZSI6IjwMTgtMDUuMDUuMDUuMDUuMDUuMDUuMDUuMDUuMDUuMDUuMDUuMDUuMDUuMDUu
          "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fcclId": "Z8H89FT0009",
      "groupingParam": [
        {
          "groupId": "0a-00-3e-43-31-ca",
          "groupType": "INTERFERENCE_COORDINATION"
        }
      ],
      "measCapability": [
        "RECEIVED_POWER_WITHOUT_GRANT"
      ],
      "userId": "SF5W5D"
    }
  ]
}
```

```
2018-10-02T08:55:59.305Z - INFO - Registration message contains cpiSignatureData
2018-10-02T08:55:59.305Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2018-10-02T08:55:59.305Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
    "eirpCapability": 40,
```



```
"antennaAzimuth": 0,
"heightType": "AMSL",
"longitude": -88.0808,
"height": 0,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 18
},
"fccId": "Z8H89FT0009",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbid": "0a003e4331ca"
}
2018-10-02T08:55:59.306Z - INFO - verified signature on cpiSignatureData
2018-10-02T08:55:59.312Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-10-02T08:55:59.312Z - INFO - Response message contains measReportConfig
2018-10-02T08:55:59.313Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbid": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "measReportConfig": [
        "RECEIVED_POWER_WITHOUT_GRANT"
      ],
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-10-02T08:56:12.405Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbidCategory": "B",
      "cbidInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) BHUL450",
        "vendor": "Cambium Networks"
      },
      "cbid": "0a003e4331a34",
      "cpiSignatureData": {
        "digitalSignature":
"o7Q5LSOeP3yd04yRquy2vQ81JcM6czQ2wZBmWmZGVQvt91RI61o0MYnojihSqSuroi7Cx9Wxvbm5
QVScn6Qz9p_mesARfppgNuHyR0hFh12CouODCMCZwUUAE0rAKxdV-s5Omn35jn2O_od-ClS6j3TUC
5OXyfmcz8XrCX6UuKvdGpvuB07JCOX6EzWutpN8Byr5DA0_N9IXPPGVABU-XuWnbCJ0o2yg1JeHQ
vpQTpaRRdr2VW6JfYw-R6xLnLlWtFRtRatw-yd4K0yxrpGY6vY162X9VyhXDBKwJBI8qmZH_F4D-xXse
```




```
"registrationResponse": [
  {
    "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
    "measReportConfig": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "response": {
      "responseCode": 0
    }
  }
]
}
2018-10-02T08:56:25.726Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "inquiredSpectrum": [
        {
          "highFrequency": 3630000000,
          "lowFrequency": 3610000000
        }
      ],
      "measReport": {
        "rcvdPowerMeasReports": [
          {
            "measBandwidth": 10000000,
            "measFrequency": 3550000000,
            "measRcvdPower": -97
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3560000000,
            "measRcvdPower": -97
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3570000000,
            "measRcvdPower": -98
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3580000000,
            "measRcvdPower": -98
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3590000000,
            "measRcvdPower": -98
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3600000000,
```



```
    "measRcvdPower": -98
  },
  {
    "measBandwidth": 10000000,
    "measFrequency": 3610000000,
    "measRcvdPower": -98
  },
  {
    "measBandwidth": 10000000,
    "measFrequency": 3620000000,
    "measRcvdPower": -98
  },
  {
    "measBandwidth": 10000000,
    "measFrequency": 3630000000,
    "measRcvdPower": -98
  },
  {
    "measBandwidth": 10000000,
    "measFrequency": 3640000000,
    "measRcvdPower": -98
  },
  {
    "measBandwidth": 10000000,
    "measFrequency": 3650000000,
    "measRcvdPower": -98
  },
  {
    "measBandwidth": 10000000,
    "measFrequency": 3660000000,
    "measRcvdPower": -98
  },
  {
    "measBandwidth": 10000000,
    "measFrequency": 3670000000,
    "measRcvdPower": -98
  },
  {
    "measBandwidth": 10000000,
    "measFrequency": 3680000000,
    "measRcvdPower": -98
  },
  {
    "measBandwidth": 10000000,
    "measFrequency": 3690000000,
    "measRcvdPower": -98
  }
}
]
}
]
```




```
2018-10-02T08:56:25.736Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3630000000,
            "lowFrequency": 3610000000
          },
          "ruleApplied": "FCC_PART_96"
        }
      ],
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
```

```
2018-10-02T08:56:25.828Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "measReport": {
        "rcvdPowerMeasReports": [
          {
            "measBandwidth": 10000000,
            "measFrequency": 3550000000,
            "measRcvdPower": -97
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3560000000,
            "measRcvdPower": -97
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3570000000,
            "measRcvdPower": -98
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3580000000,
            "measRcvdPower": -98
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3590000000,
            "measRcvdPower": -98
          }
        ]
      }
    }
  ]
}
```



```
        "measBandwidth": 10000000,
        "measFrequency": 3600000000,
        "measRcvdPower": -98
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3610000000,
        "measRcvdPower": -98
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3620000000,
        "measRcvdPower": -98
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3630000000,
        "measRcvdPower": -98
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3640000000,
        "measRcvdPower": -98
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3650000000,
        "measRcvdPower": -98
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3660000000,
        "measRcvdPower": -98
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3670000000,
        "measRcvdPower": -98
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3680000000,
        "measRcvdPower": -98
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3690000000,
        "measRcvdPower": -98
    }
    ]
},
"operationParam": {
```



```
        "maxEirp": 27,
        "operationFrequencyRange": {
            "highFrequency": 3630000000,
            "lowFrequency": 3610000000
        }
    }
}
]
}
2018-10-02T08:56:25.838Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "channelType": "GAA",
            "grantExpireTime": "2018-10-09T08:56:25Z",
            "grantId": "975343764",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2018-10-02T08:56:25.900Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "975343764",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
2018-10-02T08:56:25.901Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "975343764",
            "response": {
                "responseCode": 501
            },
            "transmitExpireTime": "2018-10-02T08:56:25Z"
        }
    ]
}
2018-10-02T08:56:40.816Z - INFO - spectrumInquiry request from CBRS : {
    "spectrumInquiryRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
            "inquiredSpectrum": [
                {
                    "highFrequency": 3630000000,
```



```
        "lowFrequency": 361000000
      }
    ],
    "measReport": {
      "rcvdPowerMeasReports": [
        {
          "measBandwidth": 10000000,
          "measFrequency": 3550000000,
          "measRcvdPower": -97
        },
        {
          "measBandwidth": 10000000,
          "measFrequency": 3560000000,
          "measRcvdPower": -97
        },
        {
          "measBandwidth": 10000000,
          "measFrequency": 3570000000,
          "measRcvdPower": -97
        },
        {
          "measBandwidth": 10000000,
          "measFrequency": 3580000000,
          "measRcvdPower": -97
        },
        {
          "measBandwidth": 10000000,
          "measFrequency": 3590000000,
          "measRcvdPower": -97
        },
        {
          "measBandwidth": 10000000,
          "measFrequency": 3600000000,
          "measRcvdPower": -97
        },
        {
          "measBandwidth": 10000000,
          "measFrequency": 3610000000,
          "measRcvdPower": -97
        },
        {
          "measBandwidth": 10000000,
          "measFrequency": 3620000000,
          "measRcvdPower": -97
        },
        {
          "measBandwidth": 10000000,
          "measFrequency": 3630000000,
          "measRcvdPower": -98
        },
        {
          "measBandwidth": 10000000,
```



```
        "measFrequency": 3640000000,
        "measRcvdPower": -98
      },
      {
        "measBandwidth": 10000000,
        "measFrequency": 3650000000,
        "measRcvdPower": -98
      },
      {
        "measBandwidth": 10000000,
        "measFrequency": 3660000000,
        "measRcvdPower": -98
      },
      {
        "measBandwidth": 10000000,
        "measFrequency": 3670000000,
        "measRcvdPower": -98
      },
      {
        "measBandwidth": 10000000,
        "measFrequency": 3680000000,
        "measRcvdPower": -98
      },
      {
        "measBandwidth": 10000000,
        "measFrequency": 3690000000,
        "measRcvdPower": -98
      }
    ]
  }
}
2018-10-02T08:56:40.825Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3630000000,
            "lowFrequency": 3610000000
          },
          "ruleApplied": "FCC_PART_96"
        }
      ],
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
```



```
}
2018-10-02T08:56:40.941Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdlId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "measReport": {
        "rcvdPowerMeasReports": [
          {
            "measBandwidth": 10000000,
            "measFrequency": 3550000000,
            "measRcvdPower": -97
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3560000000,
            "measRcvdPower": -97
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3570000000,
            "measRcvdPower": -97
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3580000000,
            "measRcvdPower": -97
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3590000000,
            "measRcvdPower": -97
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3600000000,
            "measRcvdPower": -97
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3610000000,
            "measRcvdPower": -97
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3620000000,
            "measRcvdPower": -97
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3630000000,
            "measRcvdPower": -98
          }
        ]
      }
    }
  ]
}
```



```
{
  "measBandwidth": 10000000,
  "measFrequency": 3640000000,
  "measRcvdPower": -98
},
{
  "measBandwidth": 10000000,
  "measFrequency": 3650000000,
  "measRcvdPower": -98
},
{
  "measBandwidth": 10000000,
  "measFrequency": 3660000000,
  "measRcvdPower": -98
},
{
  "measBandwidth": 10000000,
  "measFrequency": 3670000000,
  "measRcvdPower": -98
},
{
  "measBandwidth": 10000000,
  "measFrequency": 3680000000,
  "measRcvdPower": -98
},
{
  "measBandwidth": 10000000,
  "measFrequency": 3690000000,
  "measRcvdPower": -98
}
]
},
"operationParam": {
  "maxEirp": 27,
  "operationFrequencyRange": {
    "highFrequency": 3630000000,
    "lowFrequency": 3610000000
  }
}
}
]
}
}
2018-10-02T08:56:40.951Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "channelType": "GAA",
      "grantExpireTime": "2018-10-09T08:56:40Z",
      "grantId": "551542540",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
```



```
}  
}  
]  
}
```

2018-10-02T08:56:41.954Z - INFO - arrived to nstep starting question answer session with the technician

2018-10-02T08:57:11.648Z - INFO - The final result of the test : WINNF.FT.D.MES.2 is - passed



```
"heightType": "AMSL",
"longitude": -88.0808,
"height": 0,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 18
},
"fccId": "Z8H89FT0009",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbid": "0a003e4331ca"
}
2018-10-02T09:02:03.510Z - INFO - verified signature on cpiSignatureData
2018-10-02T09:02:03.516Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-10-02T09:02:03.516Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbid": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-10-02T09:02:17.969Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbid": "B",
      "cbidInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) BHUL450",
        "vendor": "Cambium Networks"
      },
      "cbid": "0a003e4331a34",
      "cpiSignatureData": {
        "digitalSignature":
"o7Q5LSOeP3yd04yRquy2vQ81JcM6czQ2wZBmWmZGVQvt91RI61o0MYnojihSqSuroi7Cx9Wxvbim5
QVScn6Qz9p_mesARfppgNuHyR0hFh12CouODCMCZwUUAE0rAKxdV-s5Omn35jn2O_od-Cls6j3TUC
5OXyfmzc8XrCX6UuKvdGpvuB07JCOX6EzWutpN8Byr5DA0_N9IXPPGVABU-XuWnbCJ0o2yg1JeHQ
vpQTpaRRdr2VW6JfYw-R6xLnILwtFRtRatw-yd4K0yxrpGY6vY162X9VyhXDBKwJBI8qmZH_F4D-xXse
cETke9sN8QF_91URr_xo862Qp4k2BmOQ",
        "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SDg5RIQwMDkiLCJjYnNkU2VyaWFsTnVtYmVyljoiMGEwMDNINDMxYTM0liwiaW
5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGUiojQyLjI0MiwibG9uZ2I0dWRlljotODguMDgwOCwia
GVpZ2h0IjowLCJoZWlnaHRUeXBlljoiQU1TTClslmluZG9vckRlcGxveW1lbnQiOmZhbHNILCJhbnRlbnM5
```



```
hQXppbXV0aCI6MCwiYW50ZW5uYURvd250aWx0IjowLCJhbnRlbn5hR2Fpbil6MTgslmVpcnBDYXBh
YmlsaXR5Ijo0MCwiYW50ZW5uYUJlYW13aWR0aCI6OTB9LCJwcm9mZXNzaW9uYWxJbnN0YWxsZX
JEYXRhIjpw7ImNwaUlkljoiY3BpMTlziwiY3BpTmFtZSI6IkNQSSBVc2VyIDEyMyIsImIuc3RhbgGxDZXJ0a
WZpY2F0aW9uVGltZSI6IjI6IjwtdGtMDUuMDUuMTU6NTE6MTIuODY2WiJ9fQ",
    "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
  },
  "fcid": "Z8H89FT0009",
  "groupingParam": [
    {
      "groupId": "0a-00-3e-43-1a-34",
      "groupType": "INTERFERENCE_COORDINATION"
    }
  ],
  "measCapability": [
    "RECEIVED_POWER_WITHOUT_GRANT"
  ],
  "userId": "SF5W5D"
}
]
}
```

2018-10-02T09:02:18.005Z - INFO - Registration message contains cpiSignatureData
2018-10-02T09:02:18.005Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2018-10-02T09:02:18.006Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
  "eirpCapability": 40,
  "antennaAzimuth": 0,
  "heightType": "AMSL",
  "longitude": -88.0808,
  "height": 0,
  "indoorDeployment": false,
  "antennaBeamwidth": 90,
  "antennaDowntilt": 0,
  "latitude": 42.242,
  "antennaGain": 18
},
"fcid": "Z8H89FT0009",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbstdSerialNumber": "0a003e431a34"
```

2018-10-02T09:02:18.006Z - INFO - verified signature on cpiSignatureData
2018-10-02T09:02:18.012Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-10-02T09:02:18.013Z - INFO - engine sent successfully, the response to CBRS : {

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



```
    }
  ]
}
2018-10-02T09:03:03.826Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "inquiredSpectrum": [
        {
          "highFrequency": 3630000000,
          "lowFrequency": 3610000000
        }
      ]
    }
  ]
}
2018-10-02T09:03:03.834Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3630000000,
            "lowFrequency": 3610000000
          },
          "ruleApplied": "FCC_PART_96"
        }
      ],
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-10-02T09:03:03.940Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "operationParam": {
        "maxEirp": 27,
        "operationFrequencyRange": {
          "highFrequency": 3630000000,
          "lowFrequency": 3610000000
        }
      }
    }
  ]
}
2018-10-02T09:03:03.947Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
```



```
{
  "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
  "channelType": "GAA",
  "grantExpireTime": "2018-10-09T09:03:03Z",
  "grantId": "212366398",
  "heartbeatInterval": 60,
  "response": {
    "responseCode": 0
  }
}
]
}
2018-10-02T09:03:04.042Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "212366398",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-10-02T09:03:04.051Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "212366398",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-10-02T09:06:24Z"
    }
  ]
}
2018-10-02T09:03:19.013Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "inquiredSpectrum": [
        {
          "highFrequency": 3630000000,
          "lowFrequency": 3610000000
        }
      ]
    }
  ]
}
2018-10-02T09:03:19.023Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
```



```
        "channelType": "GAA",
        "frequencyRange": {
            "highFrequency": 3630000000,
            "lowFrequency": 3610000000
        },
        "ruleApplied": "FCC_PART_96"
    }
],
"cbstdId": "Z8H89FT0009Mock-SAS0a003e431a34",
"response": {
    "responseCode": 0
}
}
]
}
2018-10-02T09:03:19.102Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbstdId": "Z8H89FT0009Mock-SAS0a003e431a34",
            "operationParam": {
                "maxEirp": 27,
                "operationFrequencyRange": {
                    "highFrequency": 3630000000,
                    "lowFrequency": 3610000000
                }
            }
        }
    ]
}
2018-10-02T09:03:19.114Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbstdId": "Z8H89FT0009Mock-SAS0a003e431a34",
            "channelType": "GAA",
            "grantExpireTime": "2018-10-09T09:03:19Z",
            "grantId": "133819575",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2018-10-02T09:03:19.193Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbstdId": "Z8H89FT0009Mock-SAS0a003e431a34",
            "grantId": "133819575",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
```



```
}
2018-10-02T09:03:19.203Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "133819575",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-10-02T09:06:39Z"
    }
  ]
}
2018-10-02T09:03:59.292Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "212366398",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-10-02T09:03:59.295Z - INFO - Time interval between two heartbeat request messages is: 55.249,
limit is: 65.0
2018-10-02T09:03:59.303Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "212366398",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-10-02T09:07:19Z"
    }
  ]
}
2018-10-02T09:04:14.414Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "133819575",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-10-02T09:04:14.415Z - INFO - Time interval between two heartbeat request messages is: 55.221,
limit is: 65.0
2018-10-02T09:04:14.423Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
```



```
        "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
        "grantId": "133819575",
        "response": {
            "responseCode": 0
        },
        "transmitExpireTime": "2018-10-02T09:07:34Z"
    }
}
]
}
2018-10-02T09:04:54.506Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "212366398",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2018-10-02T09:04:54.507Z - INFO - Time interval between two heartbeat request messages is: 55.213,
limit is: 65.0
2018-10-02T09:04:54.516Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "212366398",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2018-10-02T09:08:14Z"
        }
    ]
}
2018-10-02T09:05:09.595Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
            "grantId": "133819575",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2018-10-02T09:05:09.596Z - INFO - Time interval between two heartbeat request messages is: 55.181,
limit is: 65.0
2018-10-02T09:05:09.602Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
            "grantId": "133819575",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
```




```
    },
    "transmitExpireTime": "2018-10-02T09:08:29Z"
  }
]
}
2018-10-02T09:05:17.769Z - INFO - relinquishment request from CBRS : {
  "relinquishmentRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "212366398"
    }
  ]
}
2018-10-02T09:05:17.776Z - INFO - engine sent successfully, the response to CBRS : {
  "relinquishmentResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "212366398",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-10-02T09:05:29.417Z - INFO - relinquishment request from CBRS : {
  "relinquishmentRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "133819575"
    }
  ]
}
2018-10-02T09:05:29.424Z - INFO - engine sent successfully, the response to CBRS : {
  "relinquishmentResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "133819575",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-10-02T09:05:30.812Z - INFO - arrived to nstep starting question answer session with the technician
2018-10-02T09:05:30.813Z - INFO - the question is : Did the CBSD1 stop RF transmission upon sending Relinquishment request? please choose one of the answers :
2018-10-02T09:05:40.967Z - INFO - for the question : Did the CBSD1 stop RF transmission upon sending Relinquishment request?, the user choose y
2018-10-02T09:05:40.970Z - INFO - the question is : Did the CBSD2 stop RF transmission upon sending Relinquishment request? please choose one of the answers :
2018-10-02T09:05:41.926Z - INFO - for the question : Did the CBSD2 stop RF transmission upon
```



sending Relinquishment request? , the user choose y
2018-10-02T09:06:34.683Z - INFO - The final result of the test : WINNF.FT.D.RLQ.2 is - passed and :the
additional comments for the current test are : CBSD1 stop transmission at T09:05:17 , CBSD2 stop
transmission at T09:05:29



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

```
2018-10-02T09:07:47.309Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24
2018-10-02T09:07:47.311Z - INFO - the selected test from the user : WINNF.FT.D.DRG.2 is starting
now
2018-10-02T09:07:51.230Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbsdCategory": "B",
      "cbsdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) BHUL450",
        "vendor": "Cambium Networks"
      },
      "cbsdSerialNumber": "0a003e4331ca",
      "cpiSignatureData": {
        "digitalSignature":
          "i9CWxM7hBiK3sWAlx9ompgwRVDUGsma0xtFnySb4-5cXoLXUiWI1I2WsJRjwAN8OdvZ5wYPntNSHo
          3nHLOQ09xDzhA_d_8MtK-0LZPNjyCPGAR7cCz2HpumleAOxXxz3WDREHzaw1kjp5_luEBfJNz3Osa6
          E5iKuYFQzXFphwoTNWvDEqqRIC7hkQql3ADTmyi1ns-KH7zAiexha-gBQbiMBhozI23qy0I8kXzUqwysS
          SMxz6IRGuub0C2EUKAcTrw9F6t94-8gWvFgXnyw5knpqchhEHNCoaQLptmcJoOUWGgsOu4KT86gL
          O66-FKO7FUEvXD3TFZ2tyGKoAc7fFw",
        "encodedCpiSignedData":
          "eyJmY2NJZCI6llo4SDg5RIQwMDkiLCJjYnNkU2VyaWFsTnVtYmVyljoiMGEwMDNINDMzMWNhliwia
          W5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGUlOiJyLjI0MiwibG9uZ2I0dWRlljotODguMDgwOCwi
          aGVpZ2h0IjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjow
          5hQXppbXV0aCl6MCwiYW50ZW5uYURvd250aWx0IjowLjowLjowLjowLjowLjowLjowLjowLjowLjowLjow
          hYmlsaXR5IjoiY3BpMTIzIiwuY3BpMTIzIiwuY3BpMTIzIiwuY3BpMTIzIiwuY3BpMTIzIiwuY3BpMTIz
          XJEYXRhljw7ImNwaUlkljoiY3BpMTIzIiwuY3BpMTIzIiwuY3BpMTIzIiwuY3BpMTIzIiwuY3BpMTIz
          aWZpY2F0aW9uVGltZSI6IjwMTgtMDUuMDUuMDUuMDUuMDUuMDUuMDUuMDUuMDUuMDUuMDUuMDUuMDUu
          "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fcclId": "Z8H89FT0009",
      "groupingParam": [
        {
          "groupId": "0a-00-3e-43-31-ca",
          "groupType": "INTERFERENCE_COORDINATION"
        }
      ],
      "measCapability": [
        "RECEIVED_POWER_WITHOUT_GRANT"
      ],
      "userId": "SF5W5D"
    }
  ]
}
```

```
2018-10-02T09:07:51.278Z - INFO - Registration message contains cpiSignatureData
2018-10-02T09:07:51.278Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2018-10-02T09:07:51.279Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
    "eirpCapability": 40,
```



```
"antennaAzimuth": 0,
"heightType": "AMSL",
"longitude": -88.0808,
"height": 0,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 18
},
"fccId": "Z8H89FT0009",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e4331ca"
}
2018-10-02T09:07:51.279Z - INFO - verified signature on cpiSignatureData
2018-10-02T09:07:51.285Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-10-02T09:07:51.286Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbssdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-10-02T09:07:55.111Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbssdCategory": "B",
      "cbssdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) BHUL450",
        "vendor": "Cambium Networks"
      },
      "cbssdSerialNumber": "0a003e431a34",
      "cpiSignatureData": {
        "digitalSignature":
"o7Q5LSOeP3yd04yRquy2vQ81JcM6czQ2wZBmWmZGVQvt91RI61o0MYnojihSqSuroi7Cx9Wxvbim5
QVScn6Qz9p_mesARfppgNuHyR0hFh12CouODCMCZwUUAE0rAKxdV-s5Omn35jn2O_od-ClS6j3TUC
5OXyfmcz8XrCX6UuKvdGpvuB07JCOX6EzWutpN8Byr5DA0_N9IXPPGVABU-XuWnbCJ0o2yg1JeHQ
vpQTpaRRdr2VW6JfYw-R6xLnLwtFRtRatw-yd4K0yxrpGY6vY162X9VyhXDBKwJBI8qmqZH_F4D-xXse
cETke9sN8QF_91URr_xo862Qp4k2BmOQ",
        "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SDg5RIQwMDkiLCJjYnNkU2VyaWFsTnVtYmVyljoiMGEwMDNINDMxYTM0liwiaW
5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGU0iOjYlJ0MiwiBj9uZ2I0dWRlIjotODguMDgwOCwia

```




```
    }
  }
]
}
2018-10-02T09:08:19.118Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "inquiredSpectrum": [
        {
          "highFrequency": 3630000000,
          "lowFrequency": 3610000000
        }
      ]
    }
  ]
}
]
}
2018-10-02T09:08:19.125Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3630000000,
            "lowFrequency": 3610000000
          },
          "ruleApplied": "FCC_PART_96"
        }
      ],
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
]
}
2018-10-02T09:08:19.216Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "operationParam": {
        "maxEirp": 27,
        "operationFrequencyRange": {
          "highFrequency": 3630000000,
          "lowFrequency": 3610000000
        }
      }
    }
  ]
}
]
}
2018-10-02T09:08:19.223Z - INFO - engine sent successfully, the response to CBRS : {
```



```
"grantResponse": [
  {
    "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
    "channelType": "GAA",
    "grantExpireTime": "2018-10-09T09:08:19Z",
    "grantId": "969267652",
    "heartbeatInterval": 60,
    "response": {
      "responseCode": 0
    }
  }
]
}
2018-10-02T09:08:19.308Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "969267652",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-10-02T09:08:19.315Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "969267652",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-10-02T09:11:39Z"
    }
  ]
}
2018-10-02T09:08:55.341Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "inquiredSpectrum": [
        {
          "highFrequency": 3630000000,
          "lowFrequency": 3610000000
        }
      ]
    }
  ]
}
2018-10-02T09:08:55.348Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
```



```
        {
            "channelType": "GAA",
            "frequencyRange": {
                "highFrequency": 3630000000,
                "lowFrequency": 3610000000
            },
            "ruleApplied": "FCC_PART_96"
        }
    ],
    "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
    "response": {
        "responseCode": 0
    }
}
]
}
2018-10-02T09:08:55.421Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
            "operationParam": {
                "maxEirp": 27,
                "operationFrequencyRange": {
                    "highFrequency": 3630000000,
                    "lowFrequency": 3610000000
                }
            }
        }
    ]
}
2018-10-02T09:08:55.428Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
            "channelType": "GAA",
            "grantExpireTime": "2018-10-09T09:08:55Z",
            "grantId": "542874057",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2018-10-02T09:08:55.523Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
            "grantId": "542874057",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
```




```
]
}
2018-10-02T09:08:55.529Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "542874057",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-10-02T09:12:15Z"
    }
  ]
}
2018-10-02T09:09:14.471Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "969267652",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-10-02T09:09:14.473Z - INFO - Time interval between two heartbeat request messages is: 55.164,
limit is: 65.0
2018-10-02T09:09:14.480Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "969267652",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-10-02T09:12:34Z"
    }
  ]
}
2018-10-02T09:09:50.746Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "grantId": "542874057",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-10-02T09:09:50.746Z - INFO - Time interval between two heartbeat request messages is: 55.224,
limit is: 65.0
2018-10-02T09:09:50.746Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
```



```
{
  "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
  "grantId": "542874057",
  "response": {
    "responseCode": 0
  },
  "transmitExpireTime": "2018-10-02T09:13:10Z"
}
]
}
2018-10-02T09:10:08.717Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "969267652",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-10-02T09:10:08.717Z - INFO - Time interval between two heartbeat request messages is: 54.246,
limit is: 65.0
2018-10-02T09:10:08.733Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "969267652",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-10-02T09:13:28Z"
    }
  ]
}
2018-10-02T09:10:22.835Z - INFO - deregistration request from CBRS : {
  "deregistrationRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca"
    }
  ]
}
2018-10-02T09:10:22.835Z - INFO - engine sent successfully, the response to CBRS : {
  "deregistrationResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-10-02T09:10:33.599Z - INFO - deregistration request from CBRS : {
```



```
"deregistrationRequest": [
  {
    "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34"
  }
]
}
2018-10-02T09:10:33.599Z - INFO - engine sent successfully, the response to CBRS : {
  "deregistrationResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e431a34",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-10-02T09:10:35.362Z - INFO - arrived to nstep starting question answer session with the technician
2018-10-02T09:10:35.362Z - INFO - the question is : Did the CBSD stop RF transmissions upon sending the Deregister request? please choose one of the answers :
2018-10-02T09:10:42.539Z - INFO - for the question : Did the CBSD stop RF transmissions upon sending the Deregister request? , the user choose y
2018-10-02T09:10:42.555Z - INFO - the question is : Did the CBSD stop RF transmissions upon sending the Deregister request? please choose one of the answers :
2018-10-02T09:10:43.240Z - INFO - for the question : Did the CBSD stop RF transmissions upon sending the Deregister request? , the user choose y
2018-10-02T09:11:20.430Z - INFO - The final result of the test : WINNF.FT.D.DRG.2 is - passed and :the additional comments for the current test are : CBSD1 stop transmission at T09:10:22 , CBSD2 stop transmission at T09:10:33
```




```
"antennaAzimuth": 0,
"heightType": "AMSL",
"longitude": -88.0808,
"height": 0,
"indoorDeployment": false,
"antennaBeamwidth": 90,
"antennaDowntilt": 0,
"latitude": 42.242,
"antennaGain": 18
},
"fccId": "Z8H89FT0009",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbbsdSerialNumber": "0a003e4331ca"
}
2018-10-02T07:44:07.984Z - INFO - verified signature on cpiSignatureData
2018-10-02T07:44:07.990Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-10-02T07:44:07.992Z - INFO - engine sent successfully, the response to CBRS : {
  "registrationResponse": [
    {
      "cbssdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
2018-10-02T07:44:10.480Z - INFO - registration request from CBRS : {
  "registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "CAMBIUM_NETWORKS"
      },
      "cbssdCategory": "B",
      "cbssdInfo": {
        "softwareVersion": "CANOPY 16.0 (Build INT-CBRS-51) BHUL450",
        "vendor": "Cambium Networks"
      },
      "cbssdSerialNumber": "0a003e431a34",
      "cpiSignatureData": {
        "digitalSignature":
"o7Q5LSOeP3yd04yRquy2vQ81JcM6czQ2wZBmWmZGVQvt91RI61o0MYnojihSqSuroi7Cx9Wxvbm5
QVScn6Qz9p_mesARfppgNuHyR0hFh12CouODCMCZwUUAE0rAKxdV-s5Omn35jn2O_od-ClS6j3TUC
5OXyfmcz8XrCX6UuKvdGpVuB07JCOX6EzWutpN8Byr5DA0_N9IXPPGVABU-XuWnbCJ0o2yg1JeHQ
vpQTpaRRdr2VW6JfYw-R6xLnLwtFRtRatw-yd4K0yxrpGY6vY162X9VyhXDBKwJBI8qmqmZH_F4D-xXse
cETke9sN8QF_91URr_xo862Qp4k2BmOQ",
        "encodedCpiSignedData":
"eyJmY2NJZCI6llo4SDg5RIQwMDkiLCJjYnNkU2VyaWFsTnVtYmVyljoiMGEwMDNINDMxYTM0liwiaW
5zdGFsbGF0aW9uUGFyYW0iOmsibGF0aXR1ZGUuOjQyLjI0MiwiibG9uZ2I0dWRlIjotODguMDgwOCwia

```



```
GVpZ2h0ljowLCJoZWlnaHRUeXBlljoiQU1TTCIsImluZG9vckRlcGxveW1lbnQiOmZhbHNILCJhbnRlbn5hQXppbXV0aCI6MCwiYW50ZW5uYURvd250aWx0ljowLCJhbnRlbn5hR2Fpbil6MTgslmVpcnBDYXBhYmlsaXR5ljo0MCwiYW50ZW5uYUJlYW13aWR0aCI6OTB9LCJwcm9mZXNzaW9uYWxJbnN0YWxsZXJEYXRhlp7ImNwaUlkljoiY3BpMTlziwiY3BpTmFtZSI6IkNQSSBVc2VyIDEyMyIsImVuc2VudCI6ImVudC9uVGlzSI6lWMTgtMDUtdMDIUMTU6NTE6MTIuODY2WiJ9fQ",
    "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9",
  },
  "fcid": "Z8H89FT0009",
  "groupingParam": [
    {
      "groupId": "0a-00-3e-43-1a-34",
      "groupType": "INTERFERENCE_COORDINATION"
    }
  ],
  "measCapability": [
    "RECEIVED_POWER_WITHOUT_GRANT"
  ],
  "userId": "SF5W5D"
}
]
```

2018-10-02T07:44:10.496Z - INFO - Registration message contains cpiSignatureData
2018-10-02T07:44:10.496Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2018-10-02T07:44:10.496Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
  "eirpCapability": 40,
  "antennaAzimuth": 0,
  "heightType": "AMSL",
  "longitude": -88.0808,
  "height": 0,
  "indoorDeployment": false,
  "antennaBeamwidth": 90,
  "antennaDowntilt": 0,
  "latitude": 42.242,
  "antennaGain": 18
},
"fcid": "Z8H89FT0009",
"professionalInstallerData": {
  "cpiName": "CPI User 123",
  "installCertificationTime": "2018-05-09T15:51:12.866Z",
  "cpild": "cpi123"
},
"cbid": "0a003e431a34"
```

2018-10-02T07:44:10.497Z - INFO - verified signature on cpiSignatureData
2018-10-02T07:44:10.503Z - INFO - cpiSignatureData data successfully validated against jsonschema
2018-10-02T07:44:10.506Z - INFO - engine sent successfully, the response to CBRS : {

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



```
}  
}  
]  
}
```

2018-10-02T07:44:11.822Z - INFO - arrived to nstep starting question answer session with the technician

2018-10-02T07:44:11.825Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2018-10-02T07:44:55.184Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2018-10-02T07:44:55.186Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :

2018-10-02T07:44:57.006Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n

2018-10-02T07:44:57.792Z - INFO - The final result of the test : WINNF.FT.D.REG.6 is - passed



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

2018-09-28T08:45:34.322Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24

2018-09-28T08:45:34.325Z - INFO - the selected test from the user : WINNF.FT.D.REG.6 is starting now



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

2018-09-28T08:54:50.855Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24

2018-09-28T08:54:50.858Z - INFO - the selected test from the user : WINNF.FT.D.REG.6 is starting now



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

2018-09-28T08:59:26.403Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24

2018-09-28T08:59:26.404Z - INFO - the selected test from the user : WINNF.FT.D.REG.6 is starting now



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

2018-09-28T09:02:44.982Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.2 - 2018-May-24

2018-09-28T09:02:44.983Z - INFO - the selected test from the user : WINNF.FT.D.REG.6 is starting now



```
        "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
        "response": {
            "responseCode": 0
        }
    ]
}
2018-09-28T07:25:47.181Z - INFO - spectrumInquiry request from CBRS : {
    "spectrumInquiryRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "inquiredSpectrum": [
                {
                    "highFrequency": 3630000000,
                    "lowFrequency": 3610000000
                }
            ]
        }
    ]
}
2018-09-28T07:25:47.194Z - INFO - The requested spectrum is in the range, SpectrumInquiry response code is 0
2018-09-28T07:25:47.194Z - INFO - engine sent successfully, the response to CBRS : {
    "spectrumInquiryResponse": [
        {
            "availableChannel": [
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3630000000,
                        "lowFrequency": 3610000000
                    },
                    "maxEirp": 3,
                    "ruleApplied": "FCC_PART_96"
                }
            ],
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2018-09-28T07:25:47.273Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "operationParam": {
                "maxEirp": 3,
                "operationFrequencyRange": {
                    "highFrequency": 3630000000,
                    "lowFrequency": 3610000000
                }
            }
        }
    ]
}
```



```
    }
  }
]
}
2018-09-28T07:25:47.280Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "channelType": "GAA",
      "grantExpireTime": "2018-10-05T07:25:47Z",
      "grantId": "382822098",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-28T07:25:47.345Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "382822098",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-09-28T07:25:47.357Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "382822098",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-28T07:29:07Z"
    }
  ]
}
2018-09-28T07:26:42.618Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "382822098",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-28T07:26:42.632Z - INFO - engine sent successfully, the response to CBRS : {
```



```
"heartbeatResponse": [
  {
    "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
    "grantId": "382822098",
    "response": {
      "responseCode": 0
    },
    "transmitExpireTime": "2018-09-28T07:30:02Z"
  }
]
}
2018-09-28T07:27:37.874Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "382822098",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
}
2018-09-28T07:27:37.887Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "382822098",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-28T07:30:57Z"
    }
  ]
}
}
2018-09-28T07:28:33.078Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "382822098",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
}
2018-09-28T07:28:33.088Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "382822098",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-28T07:31:53Z"
    }
  ]
}
}
```



```
    }
  ]
}
2018-09-28T07:29:28.279Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "382822098",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-28T07:29:28.288Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "382822098",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-28T07:32:48Z"
    }
  ]
}
2018-09-28T07:30:22.542Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "382822098",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-28T07:30:22.553Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "382822098",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-28T07:33:42Z"
    }
  ]
}
2018-09-28T07:31:17.733Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "382822098",
```




```
        "grantRenew": false,
        "operationState": "AUTHORIZED"
    }
]
}
2018-09-28T07:31:17.744Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "382822098",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-28T07:34:37Z"
    }
  ]
}
2018-09-28T07:32:12.977Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "382822098",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-28T07:32:13.000Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "382822098",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-28T07:35:32Z"
    }
  ]
}
2018-09-28T07:33:07.204Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "382822098",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-28T07:33:07.216Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
```



```
        "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
        "grantId": "382822098",
        "response": {
            "responseCode": 0
        },
        "transmitExpireTime": "2018-09-28T07:36:27Z"
    }
}
]
}
2018-09-28T07:34:02.467Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "382822098",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2018-09-28T07:34:02.479Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "382822098",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2018-09-28T07:37:22Z"
        }
    ]
}
2018-09-28T07:34:57.640Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "382822098",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2018-09-28T07:34:57.647Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "grantId": "382822098",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2018-09-28T07:38:17Z"
        }
    ]
}
```



```
}
2018-09-28T07:35:19.414Z - INFO - deregistration request from CBRS : {
  "deregistrationRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca"
    }
  ]
}
2018-09-28T07:35:19.417Z - INFO - engine sent successfully, the response to CBRS : {
  "deregistrationResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
```




```
        "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
        "response": {
            "responseCode": 0
        }
    ]
}
2018-09-28T07:41:17.546Z - INFO - spectrumInquiry request from CBRS : {
    "spectrumInquiryRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "inquiredSpectrum": [
                {
                    "highFrequency": 3630000000,
                    "lowFrequency": 3610000000
                }
            ]
        }
    ]
}
2018-09-28T07:41:17.555Z - INFO - The requested spectrum is in the range, SpectrumInquiry response code is 0
2018-09-28T07:41:17.555Z - INFO - engine sent successfully, the response to CBRS : {
    "spectrumInquiryResponse": [
        {
            "availableChannel": [
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3630000000,
                        "lowFrequency": 3610000000
                    },
                    "maxEirp": -22,
                    "ruleApplied": "FCC_PART_96"
                }
            ],
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2018-09-28T07:41:17.627Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "operationParam": {
                "maxEirp": -22,
                "operationFrequencyRange": {
                    "highFrequency": 3630000000,
                    "lowFrequency": 3610000000
                }
            }
        }
    ]
}
```



```
    }
  }
]
}
2018-09-28T07:41:17.631Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "channelType": "GAA",
      "grantExpireTime": "2018-10-05T07:41:17Z",
      "grantId": "904239783",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-28T07:41:17.727Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "904239783",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-09-28T07:41:17.750Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "904239783",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-28T07:44:37Z"
    }
  ]
}
2018-09-28T07:42:12.980Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "904239783",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-28T07:42:12.992Z - INFO - engine sent successfully, the response to CBRS : {
```



```
"heartbeatResponse": [
  {
    "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
    "grantId": "904239783",
    "response": {
      "responseCode": 0
    },
    "transmitExpireTime": "2018-09-28T07:45:32Z"
  }
]
}
2018-09-28T07:43:08.209Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "904239783",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-28T07:43:08.216Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "904239783",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-28T07:46:28Z"
    }
  ]
}
}
```



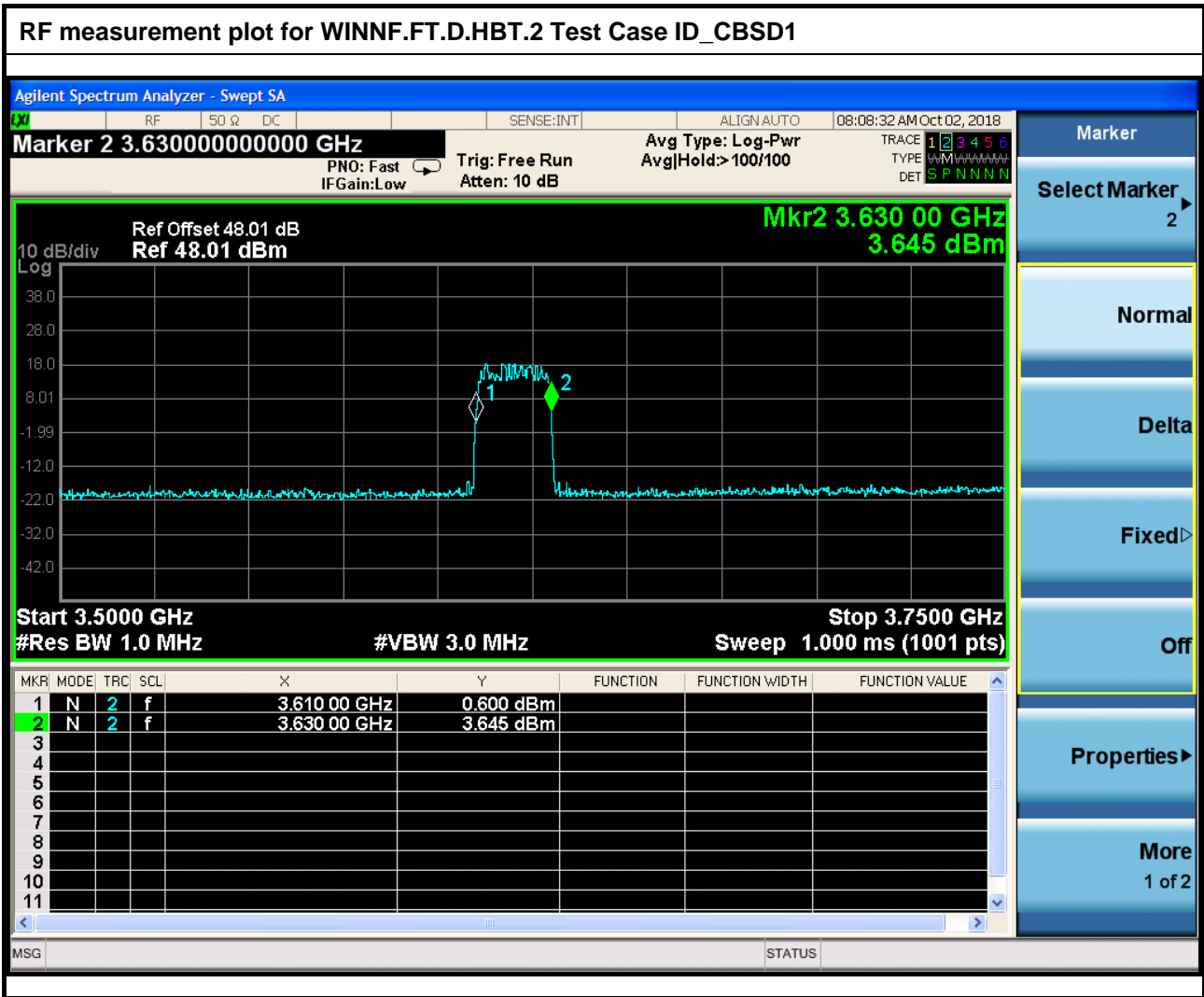

```
        "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
        "response": {
            "responseCode": 0
        }
    ]
}
2018-09-28T07:06:48.382Z - INFO - spectrumInquiry request from CBRS : {
    "spectrumInquiryRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "inquiredSpectrum": [
                {
                    "highFrequency": 3630000000,
                    "lowFrequency": 3610000000
                }
            ]
        }
    ]
}
2018-09-28T07:06:48.394Z - INFO - The requested spectrum is in the range, SpectrumInquiry response code is 0
2018-09-28T07:06:48.395Z - INFO - engine sent successfully, the response to CBRS : {
    "spectrumInquiryResponse": [
        {
            "availableChannel": [
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3630000000,
                        "lowFrequency": 3610000000
                    },
                    "maxEirp": 30,
                    "ruleApplied": "FCC_PART_96"
                }
            ],
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2018-09-28T07:06:48.519Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
            "operationParam": {
                "maxEirp": 30,
                "operationFrequencyRange": {
                    "highFrequency": 3630000000,
                    "lowFrequency": 3610000000
                }
            }
        }
    ]
}
```

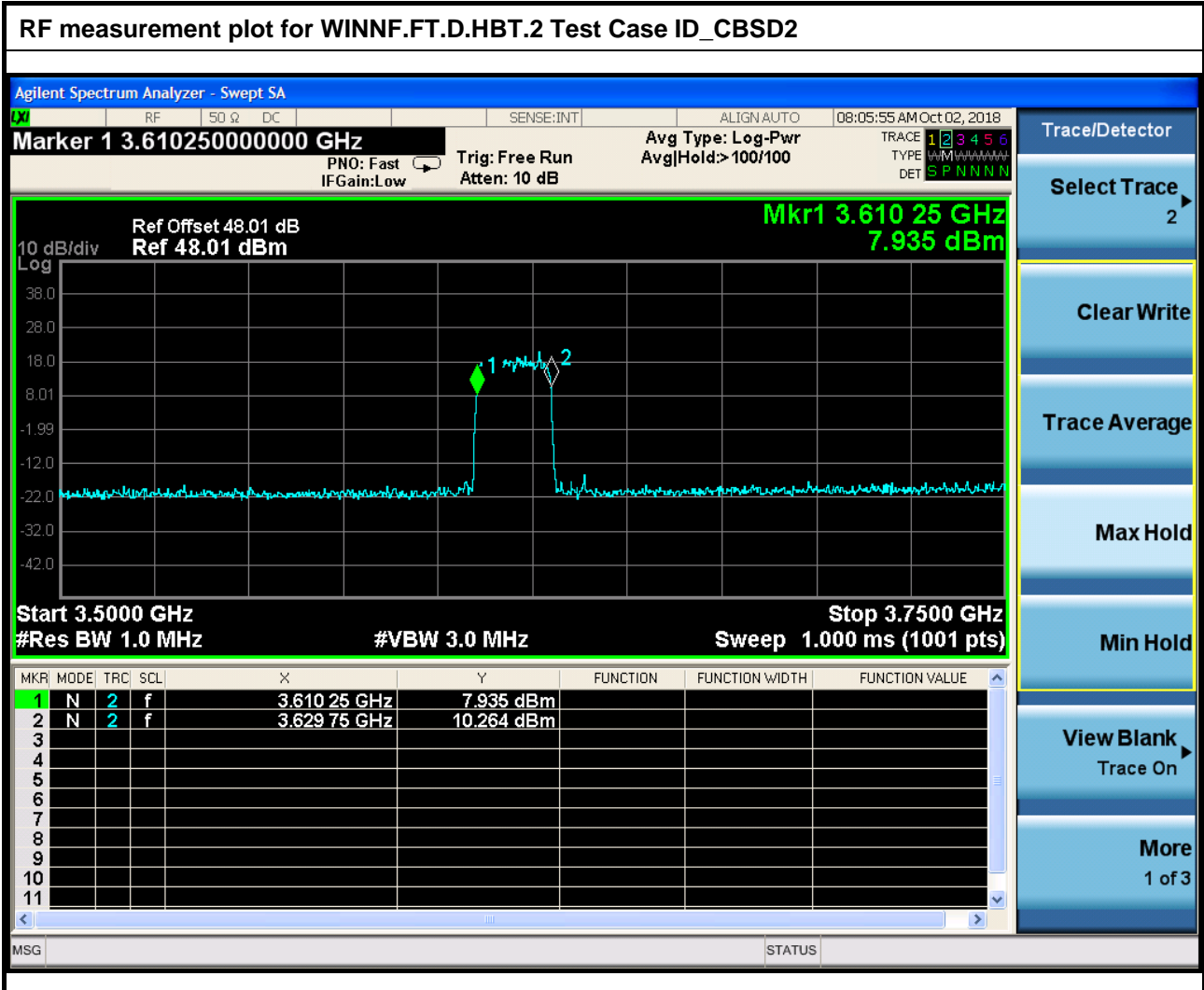


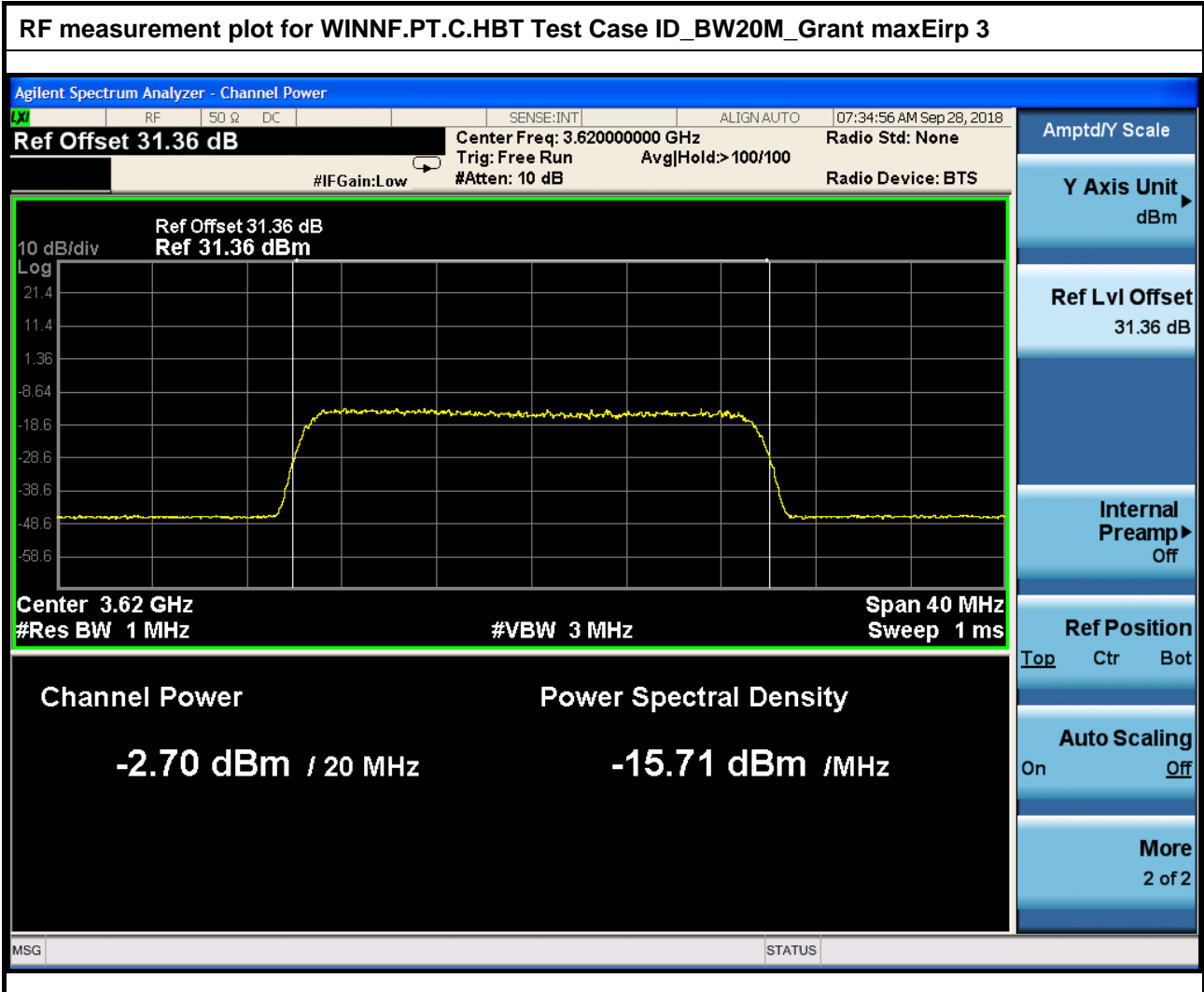
```
    }
  }
]
}
2018-09-28T07:06:48.525Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "channelType": "GAA",
      "grantExpireTime": "2018-10-05T07:06:48Z",
      "grantId": "144844210",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2018-09-28T07:06:48.635Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "144844210",
      "grantRenew": false,
      "operationState": "GRANTED"
    }
  ]
}
2018-09-28T07:06:48.644Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "144844210",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-28T07:10:08Z"
    }
  ]
}
2018-09-28T07:07:43.838Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "144844210",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-28T07:07:43.846Z - INFO - engine sent successfully, the response to CBRS : {
```

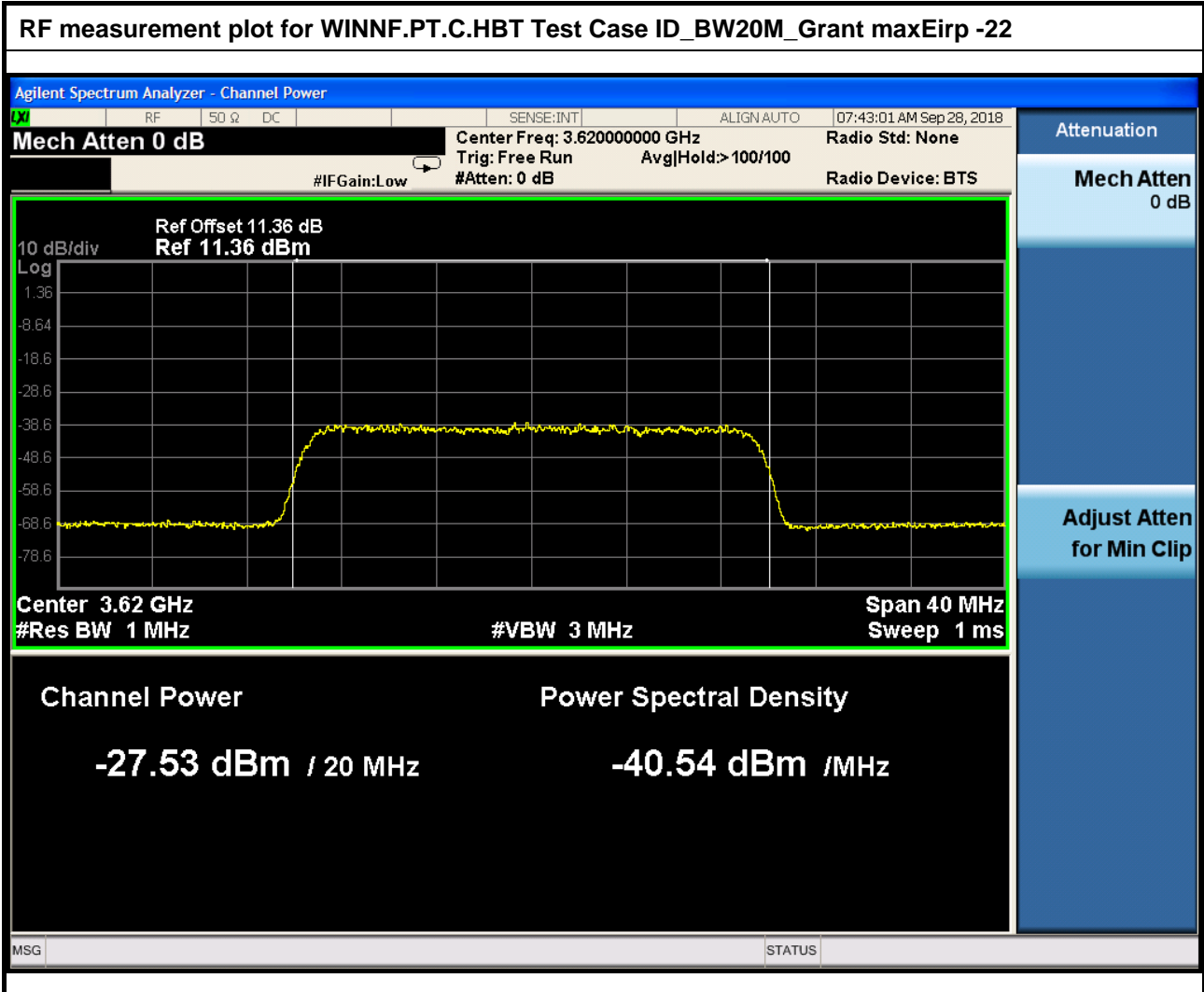


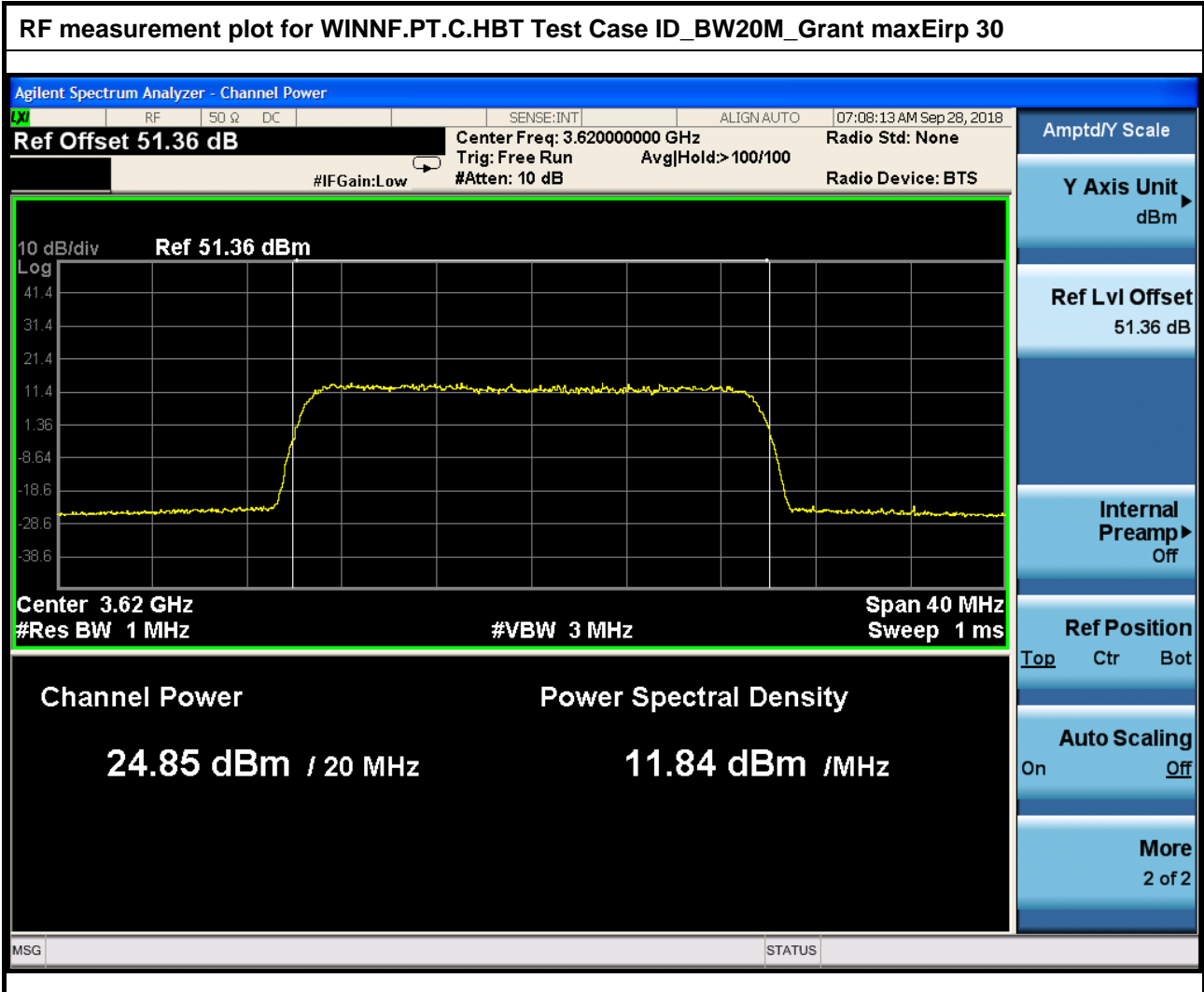
```
"heartbeatResponse": [
  {
    "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
    "grantId": "144844210",
    "response": {
      "responseCode": 0
    },
    "transmitExpireTime": "2018-09-28T07:11:03Z"
  }
]
}
2018-09-28T07:08:39.076Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "144844210",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2018-09-28T07:08:39.084Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "grantId": "144844210",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2018-09-28T07:11:59Z"
    }
  ]
}
2018-09-28T07:09:31.134Z - INFO - deregistration request from CBRS : {
  "deregistrationRequest": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca"
    }
  ]
}
2018-09-28T07:09:31.140Z - INFO - engine sent successfully, the response to CBRS : {
  "deregistrationResponse": [
    {
      "cbsdId": "Z8H89FT0009Mock-SAS0a003e4331ca",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
}
```













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

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

ssl

No.	Time	Source	Destination	Protocol	Length	Info
1	2018-10-02 07:44:07	192.168.1.8	192.168.1.3	TLSv1.2	306	Client Hello
2	2018-10-02 07:44:07	192.168.1.3	192.168.1.8	TLSv1.2	2962	Server Hello
3	2018-10-02 07:44:07	192.168.1.3	192.168.1.8	TLSv1.2	564	Certificate, Server Key Exchange, Certificate R
6	2018-10-02 07:44:07	192.168.1.8	192.168.1.3	TLSv1.2	1514	Certificate [TCP segment of a reassembled PDU]
7	2018-10-02 07:44:07	192.168.1.8	192.168.1.3	TLSv1.2	444	Client Key Exchange, Certificate Verify, Change
8	2018-10-02 07:44:07	192.168.1.3	192.168.1.8	TLSv1.2	1620	New Session Ticket, Change Cipher Spec, Encrypt
10	2018-10-02 07:44:07	192.168.1.8	192.168.1.3	TLSv1.2	194	Application Data
11	2018-10-02 07:44:07	192.168.1.3	192.168.1.8	TLSv1.2	112	Application Data
12	2018-10-02 07:44:07	192.168.1.3	192.168.1.8	TLSv1.2	553	Application Data, Application Data, Application

- ▶ Frame 2: 2962 bytes on wire (23696 bits), 2962 bytes captured (23696 bits) on interface 0
- ▶ Ethernet II, Src: Dell_cb:86:b8 (00:26:b9:cb:86:b8), Dst: PcsCompu_73:d7:8e (08:00:27:73:d7:8e)
- ▶ Internet Protocol Version 4, Src: 192.168.1.3, Dst: 192.168.1.8
- ▶ Transmission Control Protocol, Src Port: 5000, Dst Port: 59714, Seq: 1, Ack: 241, Len: 2896
- ▲ Secure Sockets Layer
 - ▲ TLSv1.2 Record Layer: Handshake Protocol: Server Hello
 - Content Type: Handshake (22)
 - Version: TLS 1.2 (0x0303)
 - Length: 61
 - ▲ Handshake Protocol: Server Hello
 - Handshake Type: Server Hello (2)
 - Length: 57
 - Version: TLS 1.2 (0x0303)
 - ▶ Random: 5a0b00b96b9c1fa92e472a5edcaa072eece832b9a4dd785e...
 - Session ID Length: 0
 - Cipher Suite: TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256 (0xc02f)



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

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

ssl

No.	Time	Source	Destination	Protocol	Length	Info
1	2018-09-28 08:45:59	192.168.1.8	192.168.1.3	TLSv1.2	316	Client Hello
2	2018-09-28 08:45:59	192.168.1.3	192.168.1.8	TLSv1.2	2962	Server Hello
3	2018-09-28 08:45:59	192.168.1.3	192.168.1.8	TLSv1.2	677	Certificate, Server Key Exchange, Certificate R
6	2018-09-28 08:45:59	192.168.1.8	192.168.1.3	TLSv1.2	1514	Certificate [TCP segment of a reassembled PDU]
7	2018-09-28 08:45:59	192.168.1.8	192.168.1.3	TLSv1.2	444	Client Key Exchange, Certificate Verify, Change
8	2018-09-28 08:45:59	192.168.1.3	192.168.1.8	TLSv1.2	1620	New Session Ticket, Change Cipher Spec, Encrypt
9	2018-09-28 08:47:59	192.168.1.8	192.168.1.3	TLSv1.2	316	Client Hello
10	2018-09-28 08:47:59	192.168.1.3	192.168.1.8	TLSv1.2	2962	Server Hello
11	2018-09-28 08:47:59	192.168.1.3	192.168.1.8	TLSv1.2	677	Certificate, Server Key Exchange, Certificate R

▶ Frame 2: 2962 bytes on wire (23696 bits), 2962 bytes captured (23696 bits) on interface 0
 ▶ Ethernet II, Src: Dell_cb:86:b8 (08:26:b9:cb:86:b8), Dst: PcsCompu_73:d7:8e (08:00:27:73:d7:8e)
 ▶ Internet Protocol Version 4, Src: 192.168.1.3, Dst: 192.168.1.8
 ▶ Transmission Control Protocol, Src Port: 5000, Dst Port: 55548, Seq: 1, Ack: 250, Len: 2896
 ▲ Secure Sockets Layer

- ▲ TLSv1.2 Record Layer: Handshake Protocol: Server Hello
 - Content Type: Handshake (22)
 - Version: TLS 1.2 (0x0303)
 - Length: 61
 - ▲ Handshake Protocol: Server Hello
 - Handshake Type: Server Hello (2)
 - Length: 57
 - Version: TLS 1.2 (0x0303)
 - ▶ Random: 3f40ba50d2abc4acf386cf9e22c268579e7fadf6c8e4ecc3...
 - Session ID Length: 0
 - Cipher Suite: TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256 (0xc02f)



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

The image shows a screenshot of the Wireshark network protocol analyzer interface. The top menu bar includes File, Edit, View, Go, Capture, Analyze, Statistics, Telephony, Wireless, Tools, and Help. Below the menu is a toolbar with various icons for file operations, search, and capture control. A display filter bar shows 'Apply a display filter ... <Ctrl-/>'. The main packet list pane contains three entries:

No.	Time	Source	Destination	Protocol	Length	Info
1	2018-09-28 08:46:20	192.168.1.8	192.168.1.5	OCSP	296	Request
2	2018-09-28 08:48:20	192.168.1.8	192.168.1.5	OCSP	296	Request
3	2018-09-28 08:50:19	192.168.1.8	192.168.1.5	OCSP	296	Request

The detailed view pane shows the structure of the selected packet (Frame 1):

- Frame 1: 296 bytes on wire (2368 bits), 296 bytes captured (2368 bits) on interface 0
- Ethernet II, Src: PcsCompu_73:d7:8e (08:00:27:73:d7:8e), Dst: AsustekC_c6:bb:3b (2c:4d:54:c6:bb:3b)
- Internet Protocol Version 4, Src: 192.168.1.8, Dst: 192.168.1.5
- Transmission Control Protocol, Src Port: 47472, Dst Port: 80, Seq: 1, Ack: 1, Len: 229
- Hypertext Transfer Protocol
- Online Certificate Status Protocol
 - tbsRequest
 - requestList: 1 item
 - Request
 - reqCert
 - hashAlgorithm (SHA-1)
 - issuerNameHash: 2ce839bb435d3f14012148a81f99428ade8f367a
 - issuerKeyHash: 4ffbf55fed1df84cace50bd9d9977ef3758441f5
 - serialNumber: 14961302017428870585



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

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

ssl

No.	Time	Source	Destination	Protocol	Length	Info
1	2018-09-28 08:55:56	192.168.1.8	192.168.1.3	TLSv1.2	316	Client Hello
2	2018-09-28 08:55:56	192.168.1.3	192.168.1.8	TLSv1.2	2962	Server Hello
3	2018-09-28 08:55:56	192.168.1.3	192.168.1.8	TLSv1.2	565	Certificate, Server Key Exchange, Certificate R
6	2018-09-28 08:55:56	192.168.1.8	192.168.1.3	TLSv1.2	1514	Certificate [TCP segment of a reassembled PDU]
7	2018-09-28 08:55:56	192.168.1.8	192.168.1.3	TLSv1.2	444	Client Key Exchange, Certificate Verify, Change
8	2018-09-28 08:55:56	192.168.1.3	192.168.1.8	TLSv1.2	1620	New Session Ticket, Change Cipher Spec, Encrypt

▶ Frame 2: 2962 bytes on wire (23696 bits), 2962 bytes captured (23696 bits) on interface 0
 ▶ Ethernet II, Src: Dell_cb:86:b8 (00:26:b9:cb:86:b8), Dst: PcsCompu_73:d7:8e (08:00:27:73:d7:8e)
 ▶ Internet Protocol Version 4, Src: 192.168.1.3, Dst: 192.168.1.8
 ▶ Transmission Control Protocol, Src Port: 5000, Dst Port: 55568, Seq: 1, Ack: 250, Len: 2896
 ▲ Secure Sockets Layer

- ▲ TLSv1.2 Record Layer: Handshake Protocol: Server Hello
 - Content Type: Handshake (22)
 - Version: TLS 1.2 (0x0303)
 - Length: 61
 - ▲ Handshake Protocol: Server Hello
 - Handshake Type: Server Hello (2)
 - Length: 57
 - Version: TLS 1.2 (0x0303)
 - ▶ Random: 9eb07048843600f9e82e798d0d5423aad0210a70c3caa50c...
 - Session ID Length: 0
 - Cipher Suite: TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256 (0xc02f)



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

No.	Time	Source	Destination	Protocol	Length	Info
235	2018-09-28 08:59:30	192.168.1.8	192.168.1.3	TLSv1.2	316	Client Hello
236	2018-09-28 08:59:30	192.168.1.3	192.168.1.8	TLSv1.2	2962	Server Hello
238	2018-09-28 08:59:30	192.168.1.3	192.168.1.8	TLSv1.2	567	Certificate, Server Key Exchange, Certificate R
242	2018-09-28 08:59:30	192.168.1.8	192.168.1.3	TLSv1.2	1514	Certificate [TCP segment of a reassembled PDU]
243	2018-09-28 08:59:30	192.168.1.8	192.168.1.3	TLSv1.2	444	Client Key Exchange, Certificate Verify, Change
245	2018-09-28 08:59:30	192.168.1.3	192.168.1.8	TLSv1.2	1620	New Session Ticket, Change Cipher Spec, Encrypt

▶ Frame 236: 2962 bytes on wire (23696 bits), 2962 bytes captured (23696 bits) on interface 0
 ▶ Ethernet II, Src: Dell_cb:86:b8 (00:26:b9:cb:86:b8), Dst: PcsCompu_73:d7:8e (08:00:27:73:d7:8e)
 ▶ Internet Protocol Version 4, Src: 192.168.1.3, Dst: 192.168.1.8
 ▶ Transmission Control Protocol, Src Port: 5000, Dst Port: 55572, Seq: 1, Ack: 250, Len: 2896
 ▲ Secure Sockets Layer

- ▲ TLSv1.2 Record Layer: Handshake Protocol: Server Hello
 - Content Type: Handshake (22)
 - Version: TLS 1.2 (0x0303)
 - Length: 61
 - ▲ Handshake Protocol: Server Hello
 - Handshake Type: Server Hello (2)
 - Length: 57
 - Version: TLS 1.2 (0x0303)
 - ▶ Random: 8ec9b2ad6f07c3dc49108f3be76a483fb446b359ac5efb11...
 - Session ID Length: 0
 - Cipher Suite: TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256 (0xc02f)



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

No.	Time	Source	Destination	Protocol	Length	Info
1	2018-09-28 09:02:54	192.168.1.8	192.168.1.3	TLSv1.2	316	Client Hello
2	2018-09-28 09:02:54	192.168.1.3	192.168.1.8	TLSv1.2	2962	Server Hello
3	2018-09-28 09:02:54	192.168.1.3	192.168.1.8	TLSv1.2	564	Certificate, Server Key Exchange, Certificate R
6	2018-09-28 09:02:54	192.168.1.8	192.168.1.3	TLSv1.2	1514	Certificate [TCP segment of a reassembled PDU]
7	2018-09-28 09:02:54	192.168.1.8	192.168.1.3	TLSv1.2	444	Client Key Exchange, Certificate Verify, Change
8	2018-09-28 09:02:54	192.168.1.3	192.168.1.8	TLSv1.2	1620	New Session Ticket, Change Cipher Spec, Encrypt

- ▶ Frame 2: 2962 bytes on wire (23696 bits), 2962 bytes captured (23696 bits) on interface 0
- ▶ Ethernet II, Src: Dell_cb:86:b8 (00:26:b9:cb:86:b8), Dst: PcsCompu_73:d7:8e (08:00:27:73:d7:8e)
- ▶ Internet Protocol Version 4, Src: 192.168.1.3, Dst: 192.168.1.8
- ▶ Transmission Control Protocol, Src Port: 5000, Dst Port: 55578, Seq: 1, Ack: 250, Len: 2896
- ▲ Secure Sockets Layer
 - ▲ TLSv1.2 Record Layer: Handshake Protocol: Server Hello
 - Content Type: Handshake (22)
 - Version: TLS 1.2 (0x0303)
 - Length: 61
 - ▲ Handshake Protocol: Server Hello
 - Handshake Type: Server Hello (2)
 - Length: 57
 - Version: TLS 1.2 (0x0303)
 - ▶ Random: bd7d091a4d14f392fa0e41d223a93ad319d117e22936fad1...
 - Session ID Length: 0
 - Cipher Suite: TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256 (0xc02f)