WINNF-TS-0122 TEST REPORT

FCC ID	:	Z8H89FT0053
Equipment	:	PMP450B
Brand Name	:	Cambium Networks
Model Name	:	PMP450B
Applicant	:	Cambium Networks Inc.
		3800 Golf Road, Suite 360 Rolling Meadows, IL 60008, USA
Manufacturer	:	Cambium Networks, Ltd.
		Ashburton, TQ13 7UP, UK
Standard	:	WINNF-TS-0122 Version V1.0.1

The product was received on Aug. 01, 2019, and testing was started from Aug. 26, 2019 and completed on Oct. 16, 2019. 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 report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

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

Approved by: Sam Chen

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB Ver1.0

Page Number   : 1 of 46
Issued Date   : Oct. 18, 2019
Report Version   : 01

Table of Contents

History of this test report

Report No.	Version	Description	Issued Date
FG980817AB	01	Initial issue of report	Oct. 18, 2019

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB Ver1.0

Page Number : 3 of 46
Issued Date : Oct. 18, 2019
Report Version : 01

Summary of Test Result

Report Clause	Ref Std. Clause	CBSD	DP	Required for Cert.	Test Case ID	Test Case Title	Result (PASS/FAIL)	Remark
-	6.1.4.1.1	X	-	C1	WINNF.FT.C.REG.1	Multi-Step registration	N/A	-
3.1	6.1.4.1.2	-	X	C1	WINNF.FT.D.REG.2	Domain Proxy Multi-Step registration	PASS	-
-	6.1.4.1.3	X	-	C2	WINNF.FT.C.REG.3	Single-Step registration for Category A CBSD	N/A	-
-	6.1.4.1.4	-	X	C2	WINNF.FT.D.REG.4	Domain Proxy Single-Step registration for Cat A CBSD	N/A	-
-	6.1.4.1.5	X	-	C3	WINNF.FT.C.REG.5	Single-Step registration for CBSD with CPI signed data	N/A	-
3.2	6.1.4.1.6	-	X	C3	WINNF.FT.D.REG.6	Domain Proxy Single-Step registration for CBSD with CPI signed data	PASS	-
-	6.1.4.1.7	X	X	C6	WINNF.FT.C.REG.7	Registration due to change of an installation parameter	N/A	-
-	6.1.4.2.1	X	-	M	WINNF.FT.C.REG.8	Missing Required parameters (responseCode 102)	N/A	-
3.3	6.1.4.2.2	-	X	M	WINNF.FT.D.REG.9	Domain Proxy Missing Required parameters (responseCode 102)	PASS	-
-	6.1.4.2.3	X	-	M	WINNF.FT.C.REG.10	Pending registration (responseCode 200)	N/A	-
3.4	6.1.4.2.4	-	X	M	WINNF.FT.D.REG.11	Domain Proxy Pending registration (responseCode 200)	PASS	-
-	6.1.4.2.5	X	-	M	WINNF.FT.C.REG.12	Invalid parameter (responseCode 103)	N/A	-
3.5	6.1.4.2.6	-	X	M	WINNF.FT.D.REG.13	Domain Proxy Invalid parameters (responseCode 103)	PASS	-
-	6.1.4.2.7	X	-	M	WINNF.FT.C.REG.14	Blacklisted CBSD (responseCode 101)	N/A	-
3.6	6.1.4.2.8	-	X	M	WINNF.FT.D.REG.15	Domain Proxy Blacklisted CBSD (responseCode 101)	PASS	-
-	6.1.4.2.9	X	-	M	WINNF.FT.C.REG.16	Unsupported SAS protocol version (responseCode 100)	N/A	-
3.7	6.1.4.2.10	-	X	M	WINNF.FT.D.REG.17	Domain Proxy Unsupported SAS protocol version responseCode 100)	PASS	-
-	6.1.4.2.11	X	-	M	WINNF.FT.C.REG.18	Group Error (responseCode 201)	N/A	-
3.8	6.1.4.2.12	-	X	M	WINNF.FT.D.REG.19	Domain Proxy Group Error (responseCode 201)	PASS	-

-	6.1.4.3.1	X	X	C2	WINNF.FT.C.REG.20	Category A CBSD location Update	N/A	-
3.9	6.3.4.2.1	X	X	M	WINNF.FT.C.GRA.1	Unsuccessful Grant responseCode=400 (INTERFERENCE)	PASS	-
3.10	6.3.4.2.2	X	X	M	WINNF.FT.C.GRA.2	Unsuccessful Grant responseCode=401 (GRANT_CONFLICT)	PASS	-
-	6.4.4.1.1	X	-	M	WINNF.FT.C.HBT.1	Heartbeat Success Case (first Heartbeat Response)	N/A	-
3.11	6.4.4.1.2	-	X	M	WINNF.FT.D.HBT.2	Domain Proxy Heartbeat Success Case (first Heartbeat Response)	PASS	-
3.12	6.4.4.2.1	X	X	M	WINNF.FT.C.HBT.3	Heartbeat responseCode=105 (DEREGISTER)	PASS	-
-	6.4.4.2.2	X	-	M	WINNF.FT.C.HBT.4	Heartbeat responseCode=500 (TERMINATED_GRANT)	N/A	-
3.13	6.4.4.2.3	X	X	M	WINNF.FT.C.HBT.5	Heartbeat responseCode=501 (SUSPENDED_GRANT) in First Heartbeat Response	PASS	-
3.14	6.4.4.2.4	X	X	M	WINNF.FT.C.HBT.6	Heartbeat responseCode=501 (SUSPENDED_GRANT) in Subsequent Heartbeat Response	PASS	-
3.15	6.4.4.2.5	X	X	M	WINNF.FT.C.HBT.7	Heartbeat responseCode=502 (UNSYNC_OP_PARAM)	PASS	-
3.16	6.4.4.2.6	-	X	M	WINNF.FT.D.HBT.8	Domain Proxy Heartbeat responseCode=500 (TEMINATED_GRANT)	PASS	-
3.17	6.4.4.3.1	X	X	M	WINNF.FT.C.HBT.9	Heartbeat Response Absent (First Heartbeat)	PASS	-
3.18	6.4.4.3.2	X	X	M	WINNF.FT.C.HBT.10	Heartbeat Response Absent (Subsequent Heartbeat)	PASS	-
-	6.4.4.4.1	X	X	O	WINNF.FT.C.HBT.11	SuccessfulGrantRenewalin HeartbeatTestCase	N/A	-
-	6.5.4.2.1	X	-	C4	WINNF.FT.C.MES.1	Registration Response contains measReportConfig	N/A	-
3.19	6.5.4.2.2	-	X	C4	WINNF.FT.D.MES.2	Domain Proxy Registration Response contains measReportConfig	PASS	-
-	6.5.4.2.3	X	X	C5	WINNF.FT.C.MES.3	Grant Response contains measReportConfig	N/A	-
-	6.5.4.2.4	X	-	C5	WINNF.FT.C.MES.4	Heartbeat Response contains measReportConfig	N/A	-
-	6.5.4.2.5	-	X	C5	WINNF.FT.D.MES.5	Domain Proxy Heartbeat Response contains measReportConfig	N/A	-
-	6.6.4.1.1	X	-	M	WINNF.FT.C.RLQ.1	Successful Relinquishment	N/A	-
3.20	6.6.4.1.2	-	X	M	WINNF.FT.D.RLQ.2	Domain Proxy Successful Relinquishment	PASS	-

-	6.6.4.2.1	X	-	O	WINNF.FT.C.RLQ.3	Unsuccessful Relinquishment, responseCode=102	N/A	-
-	6.6.4.2.2	-	X	O	WINNF.FT.D.RLQ.4	Domain Proxy Unsuccessful Relinquishment, responseCode=102	N/A	-
-	6.6.4.3.1	X	-	O	WINNF.FT.C.RLQ.5	Unsuccessful Relinquishment, responseCode=103	N/A	-
-	6.6.4.3.2	-	X	O	WINNF.FT.D.RLQ.6	Domain Proxy Unsuccessful Relinquishment, responseCode=103	N/A	-
-	6.7.4.1.1	X	-	M	WINNF.FT.C.DRG.1	Successful Deregistration	N/A	-
3.21	6.7.4.1.2	-	X	M	WINNF.FT.D.DRG.2	Domain Proxy Successful Deregistration	PASS	-
-	6.7.4.2.1	X	-	O	WINNF.FT.C.DRG.3	Deregistration responseCode=102	N/A	-
-	6.7.4.2.2	-	X	O	WINNF.FT.D.DRG.4	Domain Proxy Deregistration responseCode=102	N/A	-
-	6.7.4.3.1	X	X	O	WINNF.FT.C.DRG.5	Deregistration responseCode=103	N/A	-
3.22	6.8.4.1.1	X	X	M	WINNF.FT.C.SCS.1	Successful TLS connection between UUT and SAS Test Harness	PASS	-
3.23	6.8.4.2.1	X	X	M	WINNF.FT.C.SCS.2	TLS failure due to revoked certificate	PASS	-
3.24	6.8.4.2.2	X	X	M	WINNF.FT.C.SCS.3	TLS failure due to expired server certificate	PASS	-
3.25	6.8.4.2.3	X	X	M	WINNF.FT.C.SCS.4	TLS failure when SAS Test Harness certificate is issue by unknown CA	PASS	-
3.26	6.8.4.2.4	X	X	M	WINNF.FT.C.SCS.5	TLS failure when certificate at the SAS Test Harness is corrupted	PASS	-
3.27	7.1.4.1.1	X	X	M	WINNF.PT.C.HBT	UUT RF Transmit Power Measurement	PASS	-

Note1:
♦ M: Mandatory for certification
♦ O: Optional. Not required for certification.
♦ C: Conditional. Mandatory if CBSD supports relevant functionality.
Note2: The unit under test type is CBSD with Domain Proxy and Conditional Test Case Definitions are C1, C3 and C4.

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB Ver1.0

Page Number : 6 of 46
Issued Date : Oct. 18, 2019
Report Version : 01

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Sam Chen

Report Producer: Wendy Pan

TEL : 886-3-656-9065

FAX : 886-3-656-9085

Report Template No.: CB Ver1.0

Page Number   : 7 of 46

Issued Date   : Oct. 18, 2019

Report Version   : 01

1   General Description

1.1   Product Feature of Equipment Under Test

Product Feature of Equipment Under Test	
FCC ID	Z8H89FT0053
Equipment	PMP450B
Brand Name	Cambium Networks
Model Name	PMP450B
Power Type	From PoE
Category of CBSD	☐ Category A
	☒ Category B
Professional Installation	☒ Yes
	☐ No
Unit Under Test in Test ID	☒ CBSD with Domain Proxy
	☐ CBSD without Domain Proxy
CBSD Hardware Version	N/A
CBSD Software Version	CANOPY 16.0.2 (Build 52+IdlePwr)　BHUL450
CBSD Firmware Version	N/A
Domain Proxy Hardware Version	N/A
Domain Proxy Software Version	1.2
Domain Proxy Firmware Version	N/A

Note1: The above information was declared by manufacturer.

Note2: The EUT can only be used at Z axis position

Note3: It was supplied power by PoE for EUT, and the PoE is for measurement only, would not be marketed.

Equipment	Brand Name	Model Name	FCC ID
PoE	PHIHONG	PSA15M-300	N/A

TEL : 886-3-656-9065   Page Number   : 8 of 46
FAX : 886-3-656-9085   Issued Date   : Oct. 18, 2019
Report Template No.: CB Ver1.0   Report Version   : 01

1.2　Conditional Test Case

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

Note: The above information was declared by manufacturer.

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB Ver1.0

Page Number　: 9 of 46
Issued Date　: Oct. 18, 2019
Report Version　: 01

1.3 Accessories

N/A

1.4 Support Equipment

No.	Equipment	Brand Name	Model Name	FCC ID
	Support Equipment			
A	Notebook	DELL	E4300	N/A
B	WLAN AP	NETGEAR	WNDR3300v2	PY309300116
C	Notebook	ASUS	P2438U	PPD-QCNFA435
D	PoE	PHIHONG	PSA15M-300	N/A

1.5 Testing Location

Testing Location				
☐ HWA YA	ADD : No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)			
	TEL : 886-3-327-3456 FAX : 886-3-327-0973			
☒ JHUBEI	ADD : No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C.			
	TEL : 886-3-656-9065 FAX : 886-3-656-9085			
Test Condition	**Test Site No.**	**Test Engineer**	**Test Environment**	**Test Date**
RF Conducted	TH01-CB	Robert Jiang	23~24°C / 60~62%	Aug. 26, 2019 ~ Oct. 16, 2019

Test site Designation No. TW0006 with FCC.

Test site registered number IC 4086D with Industry Canada.

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB Ver1.0

Page Number : 10 of 46
Issued Date : Oct. 18, 2019
Report Version : 01

2   Measurement Environment

Measurement Environment	
Test Harness version	v1.0.0.3
Operating System	Microsoft Windows 7
TLS version	1.2
Python	2.7.14

2.1   Test configuration

Test configuration without Domain Proxy	Test configuration with Domain Proxy

TEL : 886-3-656-9065

FAX : 886-3-656-9085

Report Template No.: CB Ver1.0

Page Number   : 11 of 46

Issued Date   : Oct. 18, 2019

Report Version   : 01
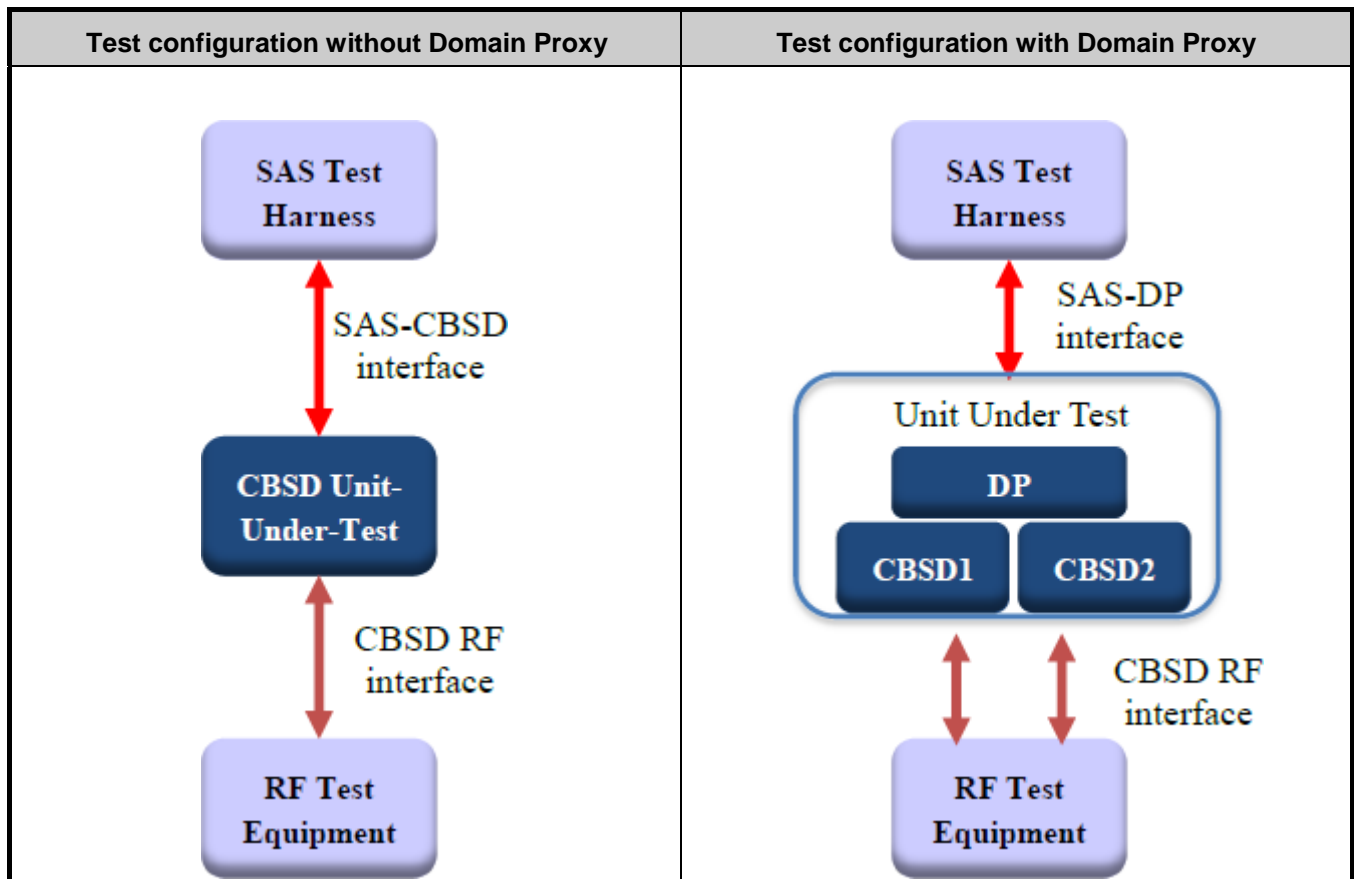
3   Test Results

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

3.1   WINNF.FT.D.REG.2 - Domain Proxy Multi-Step registration

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

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

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

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB Ver1.0

Page Number : 13 of 46
Issued Date : Oct. 18, 2019
Report Version : 01

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

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

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB Ver1.0

Page Number   : 14 of 46
Issued Date   : Oct. 18, 2019
Report Version : 01

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

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

TEL : 886-3-656-9065

FAX : 886-3-656-9085

Report Template No.: CB Ver1.0

Page Number   : 15 of 46

Issued Date   : Oct. 18, 2019

Report Version   : 01

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

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

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB Ver1.0

Page Number   : 16 of 46
Issued Date   : Oct. 18, 2019
Report Version : 01

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

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

TEL : 886-3-656-9065

FAX : 886-3-656-9085

Report Template No.: CB Ver1.0

Page Number   : 17 of 46

Issued Date   : Oct. 18, 2019

Report Version   : 01

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

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: • UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness • UUT is in the Unregistered state	--	--
2	The DP with two CBSDs sends a Registration request in the form of one 2-element Array or as individual messages to SAS Test Harness.	--	--
3	SAS Test Harness sends a CBSD Registration Response in the form of one 2-element Array or as individual messages as follows: − SAS response does not include a *cbsdId*. − *responseCode* = Ri for CBSD1 and CBSD2	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (*responseCode (Ri) = 100 for each CBSD*) to further request messages from the UUT.	--	--
5	Monitor the RF output of each UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: • UUT shall not transmit RF	PASS	--

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB Ver1.0

Page Number   : 18 of 46
Issued Date   : Oct. 18, 2019
Report Version : 01

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

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

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB Ver1.0

Page Number   : 19 of 46
Issued Date   : Oct. 18, 2019
Report Version   : 01

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

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

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB Ver1.0

Page Number   : 20 of 46
Issued Date   : Oct. 18, 2019
Report Version : 01

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

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

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB Ver1.0

Page Number   : 21 of 46
Issued Date   : Oct. 18, 2019
Report Version   : 01

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

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

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB Ver1.0

Page Number   : 22 of 46
Issued Date   : Oct. 18, 2019
Report Version   : 01

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

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB Ver1.0

Page Number   : 23 of 46
Issued Date   : Oct. 18, 2019
Report Version : 01

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

TEL : 886-3-656-9065

FAX : 886-3-656-9085

Report Template No.: CB Ver1.0

Page Number   : 24 of 46

Issued Date   : Oct. 18, 2019

Report Version   : 01

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

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: • UUT has registered successfully with SAS Test Harness • UUT has a valid single grant as follows: o valid *cbsdId* = C o valid *grantId* = G o grant is for frequency range F, power P o *grantExpireTime* = 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: • *cbsdId* = C • *grantId* = G • *operationState* = "AUTHORIZED"	PASS	--
3	SAS Test Harness sends a Heartbeat Response message, including the following parameters: • *cbsdId* = C • *grantId* = G • *transmitExpireTime* = T = Current UTC time • *responseCode* = 105 (DEREGISTER)	--	--
4	After completion of step 3, SAS Test Harness shall not allow any further grants to the UUT.	--	--
5	Monitor the RF output of the UUT. Verify: • UUT shall stop transmission within (T + 60 seconds) of completion of step 3	PASS	--

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB Ver1.0

Page Number   : 25 of 46
Issued Date   : Oct. 18, 2019
Report Version   : 01

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

#	Test Execution Steps	Results	

1	Ensure the following conditions are met for test entry:
	• UUT has registered successfully with SAS Test Harness
	• UUT has a valid single grant as follows:
	   o valid *cbsdId* = C
	   o valid *grantId* = G
	   o grant is for frequency range F, power P
	   o *grantExpireTime* = 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: • *cbsdId* = C • *grantId* = G • *operationState* = "GRANTED"	PASS	--
3	SAS Test Harness sends a Heartbeat Response message, including the following parameters: • *cbsdId* = C • *grantId* = G • *transmitExpireTime* = T = current UTC time • *responseCode* = 501 (SUSPENDED_GRANT)	--	--
4	After completion of step 3, SAS Test Harness shall not allow any further grants to the UUT.	--	--

5	Monitor the SAS-CBSD interface. Verify either A OR B occurs:
	A. UUT sends a Heartbeat Request message. Ensure message is sent within latest specified heartbeatInterval, and is correctly formatted with parameters:
	   • *cbsdId* = C
	   • *grantId* = G
	   • *operationState* = "GRANTED"
	B. UUT sends a Relinquishment request message. Ensure message is correctly formatted with parameters:
	   • *cbdsId* = C
	   • *grantId* = G
	Monitor the RF output of the UUT. Verify:
	• UUT does not transmit at any time
		PASS	--

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB Ver1.0

Page Number : 26 of 46
Issued Date : Oct. 18, 2019
Report Version : 01

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

#	Test Execution Steps	Results	

1	Ensure the following conditions are met for test entry:
	• UUT has registered successfully with SAS Test Harness
	• UUT has a valid single grant as follows:
	   o valid *cbsdId* = C
	   o valid *grantId* = G
	   o grant is for frequency range F, power P
	   o *grantExpireTime* = 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: • *cbsdId* = C • *grantId* = G • *operationState* = "AUTHORIZED"	PASS	--
3	SAS Test Harness sends a Heartbeat Response message, including the following parameters: • *cbsdId* = C • *grantId* = G • *transmitExpireTime* = T = current UTC time • *responseCode* = 501 (SUSPENDED_GRANT)	--	--
4	After completion of step 3, SAS Test Harness shall not allow any further grants to the UUT.	--	--

5	Monitor the SAS-CBSD interface. Verify either A OR B occurs:
	A. UUT sends a Heartbeat Request message. Ensure message is sent within latest specified heartbeatInterval, and is correctly formatted with parameters:
	   • *cbsdId* = C
	   • *grantId* = G
	   • *operationState* = "GRANTED"
	B. UUT sends a Relinquishment Request message. Ensure message is correctly formatted with parameters:
	   • *cbdsId* = C
	   • *grantId* = G
	Monitor the RF output of the UUT. Verify:
	• UUT shall stop transmission within (*T* + 60 seconds) of completion of step 3
		PASS	--

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB Ver1.0

Page Number : 27 of 46
Issued Date : Oct. 18, 2019
Report Version : 01

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

#	Test Execution Steps	Results	

1	Ensure the following conditions are met for test entry:
	• UUT has registered successfully with SAS Test Harness
	• UUT has a valid single grant as follows:
	    ○ valid *cbsdId* = C
	    ○ valid *grantId* = G
	    ○ grant is for frequency range F, power P
	    ○ *grantExpireTime* = 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: • *cbsdId* = C • *grantId* = G • *operationState* = "AUTHORIZED"	PASS	--
3	SAS Test Harness sends a Heartbeat Response message, including the following parameters: • *cbsdId* = C • *grantId* = G • *transmitExpireTime* = T = Current UTC Time • *responseCode* = 502 (UNSYNC_OP_PARAM)	--	--
4	After completion of step 3, SAS Test Harness shall not allow any further grants to the UUT.	--	--

5	Monitor the SAS-CBSD interface. Verify:
	• UUT sends a Grant Relinquishment Request message. Verify message is correctly formatted with parameters:
	    ○ *cbdsId* = C
	    ○ *grantId* = G
	Monitor the RF output of the UUT. Verify:
	• UUT shall stop transmission within (T+60) seconds of completion of step 3.
		PASS	--

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

#	Test Execution Steps	Results	

1	Ensure the following conditions are met for test entry:
	
	• DP has two CBSD registered successfully with SAS Test Harness
	• Each CBSD {1,2} has a valid single grant as follows:
	    o valid *cbsdId* = Ci, i={1,2}
	    o valid *grantId* = Gi, i={1,2}
	    o grant is for frequency range Fi, power Pi
	    o *grantExpireTime* = UTC time greater than duration of the test
	• Both CBSD are in AUTHORIZED state and transmitting within their granted bandwidth on RF interface
		--	--

2	DP sends a Heartbeat Request message for each CBSD. This may occur in a separate message per CBSD, or together in a single message with array of size 2. Verify Heartbeat Request message is sent within latest specified *heartbeatInterval*, and is formatted correctly for each CBSD, including, for CBSDi i={1,2}: • *cbsdId* = Ci, i = {1,2} • *grantId* = Gi, i = {1,2} • *operationState* = "AUTHORIZED"	PASS	--

3	If separate Heartbeat Request message was sent for each CBSD by the DP, the SAS Test Harness shall respond to each Heartbeat Request message with a separate Heartbeat Response message.
	
	If a single Heartbeat Request message was sent by the DP containing a 2-object array (one per CBSD), the SAS Test Harness shall respond with a single Heartbeat Response message containing a 2-object array.
	
	Parameters for each CBSD within the Heartbeat Response message should be as follows, for CBSDi:
	
	• *cbsdId* = Ci
	• *grantId* = Gi
	• For CBSD1:
	    o *transmitExpireTime* = current UTC time + 200 seconds
	    o *responseCode* = 0
	• For CBSD2:
	    o *transmitExpireTime* = T = current UTC time
	    o *responseCode* = 500 (TERMINATED_GRANT)
		--	--

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB Ver1.0

Page Number   : 29 of 46
Issued Date   : Oct. 18, 2019
Report Version   : 01

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

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB Ver1.0

Page Number   : 30 of 46
Issued Date   : Oct. 18, 2019
Report Version : 01

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

#	Test Execution Steps	Results	

1	Ensure the following conditions are met for test entry:
	• UUT has registered successfully with SAS Test Harness
	• UUT has a valid single grant as follows:
	    ○ valid *cbsdId* = C
	    ○ valid *grantId* = G
	    ○ grant is for frequency range F, power P
	    ○ *grantExpireTime* = 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 *heartbeatInterval*, and is formatted correctly, including: • *cbsdId* = C • *grantId* = G • *operationState* = "GRANTED"	PASS	--
3	After completion of Step 2, SAS Test Harness does not respond to any further messages from UUT to simulate loss of network connection	--	--
4	Monitor the RF output of the UUT from start of test to 60 seconds after step 3. Verify: • At any time during the test, UUT shall not transmit on RF interface	PASS	--

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

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

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB Ver1.0

Page Number : 32 of 46
Issued Date : Oct. 18, 2019
Report Version : 01

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

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

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB Ver1.0

Page Number   : 33 of 46
Issued Date   : Oct. 18, 2019
Report Version   : 01

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

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

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

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB Ver1.0

Page Number   : 35 of 46
Issued Date   : Oct. 18, 2019
Report Version : 01

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

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

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB Ver1.0
Page Number : 36 of 46
Issued Date : Oct. 18, 2019
Report Version : 01

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

#	Test Execution Steps	Results	
1	• UUT shall start CBSD-SAS communication with the security procedure • The UUT shall establish a TLS handshake with the SAS Test Harness using configured certificate. • Configure the SAS Test Harness to accept the security procedure and establish the connection	PASS	--

2	• Make sure that Mutual authentication happens between UUT and the SAS Test Harness.
	• Make sure that UUT uses TLS v1.2
	• Make sure that cipher suites from one of the following is selected,
	  • TLS_RSA_WITH_AES_128_GCM_SHA256
	  • TLS_RSA_WITH_AES_256_GCM_SHA384
	  • TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256
	  • TLS_ECDHE_ECDSA_WITH_AES_256_GCM_SHA384
	  • TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256
		PASS	--

3	A successful registration is accomplished using one of the test cases described in section 6.1.4.1, depending on CBSD capability. • UUT sends a registration request to the SAS Test Harness and the SAS Test Harness sends a Registration Response with *responseCode* = 0 and *cbsdId*.	PASS	--
4	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: • UUT shall not transmit RF	PASS	--

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB Ver1.0

Page Number   : 37 of 46
Issued Date   : Oct. 18, 2019
Report Version : 01

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

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

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

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

TEL : 886-3-656-9065

FAX : 886-3-656-9085

Report Template No.: CB Ver1.0

Page Number   : 39 of 46

Issued Date   : Oct. 18, 2019

Report Version   : 01

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

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

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB Ver1.0

Page Number   : 40 of 46
Issued Date   : Oct. 18, 2019
Report Version : 01

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

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

TEL : 886-3-656-9065

FAX : 886-3-656-9085

Report Template No.: CB Ver1.0

Page Number   : 41 of 46

Issued Date   : Oct. 18, 2019

Report Version   : 01

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

Items	Parameters
Maximum rated power (EIRP, dBm/MHz)	35dBm/MHz
Transmit dynamic range (EIRP, dBm/MHz)	-20~35dBm/MHz
Occupied bandwidth (OBW)	10MHz 40MHz
maxEirp values	1 dB increments from -20 dBm/MHz to 35 dBm/MHz (56 steps)
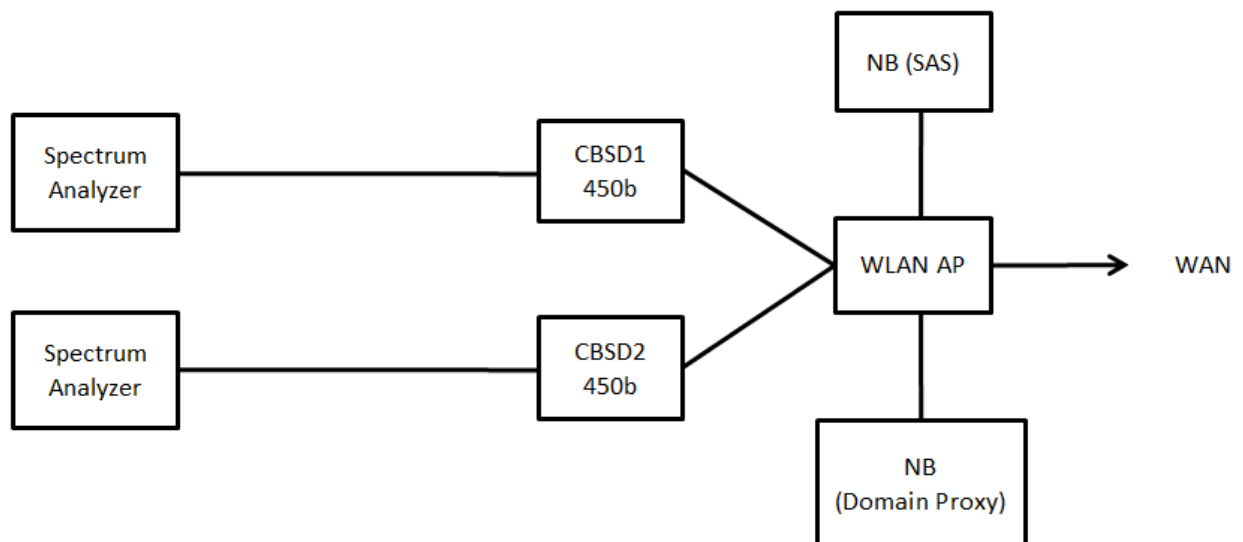
Note: To ensure EUT transmits with full power across the Bandwidth during the on duration of duty cycle, EUT is running maximum traffic during the test.

Spectrum Analyzer Setting	Parameters
Center Frequency	3680MHz
Frequency Span	20MHz
RBW / VBW	1MHz / 3MHz
Channel Power Meas Bandwidth	10MHz
Sweep Time	1ms

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: • UUT has successfully completed SAS Discovery and Authentication with the SAS Test Harness • UUT has registered with the SAS, with CBSD ID = C • UUT has a single valid grant G with parameters {lowFrequency = F_L, highFrequency = F_H, maxEirp = P_i}, with grant in AUTHORIZED state, and grantExpireTime set to a value far past the duration of this test case *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.*	--	--

2	UUT and SAS Test Harness perform a series of Heartbeat Request/Response cycles, which continues until the other test steps are complete. Messaging for each cycle is as follows:
	• UUT sends Heartbeat Request, including:
	   o *cbsdId* = C
	   o *grantId* = G
	• SAS Test Harness responds with Heartbeat Response, including:
	   o *cbsdId* = C
	   o *grantId* = G
	   o *transmitExpireTime* = current UTC time + 200 seconds
	   o *responseCode* = 0
		--	--

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB Ver1.0

Page Number : 43 of 46
Issued Date : Oct. 18, 2019
Report Version : 01

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

3	Tester performs power measurement on RF interface(s) of UUT, and verifies it complies with the maxEirp setting, P_i. The RF measurement method is out of scope of this document, but may include additional configuration of the UUT, as required, to fulfil the requirements of the power measurement method.			PASS	--	

Frequency	Occupied Bandwidth	Antenna Gain	Conducted PSD		Grant maxEirp	maxEirp	Result
			P1	P2			
	(MHz)	(dBi)	(dBm/MHz)	(dBm/MHz)	(dBm/MHz)	(dBm/MHz)	
3680MHz	10	20	10.83	12.34	35	34.66	PASS
3680MHz	10	20	-17.03	-15.57	7	6.77	PASS
3680MHz	10	20	-44.03	-42.49	-20	-20.18	PASS

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB Ver1.0

Page Number   : 44 of 46
Issued Date   : Oct. 18, 2019
Report Version   : 01

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. 11, 2019	Mar. 10, 2020	Conducted (TH01-CB)
Spectrum analyzer	Keysight	N9020A	MY55400138	10 Hz up to 26.5 GHz	Dec. 18, 2018	Dec. 17, 2019	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-06	1 GHz – 26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-06	1 GHz – 26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-07	1 GHz –26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-07	1 GHz –26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-08	1 GHz –26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-08	1 GHz –26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-09	1 GHz –26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-09	1 GHz –26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz –26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz –26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-28	1 GHz –26.5 GHz	Nov. 19, 2018	Nov. 18, 2019	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-28	1 GHz –26.5 GHz	Nov. 19, 2018	Nov. 18, 2019	Conducted (TH01-CB)
RF Power Divider	Woken	4 Way	TH01-DV-01	1GHz ~ 6GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH01-CB)
RF Power Divider	Woken	4 Way	TH01-DV-01	1GHz ~ 6GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH01-CB)
RF Power Divider	Woken	2 Way	TH01-DV-02	1GHz ~ 6GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH01-CB)
RF Power Divider	Woken	2 Way	TH01-DV-02	1GHz ~ 6GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH01-CB)

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

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB Ver1.0

Page Number   : 45 of 46
Issued Date   : Oct. 18, 2019
Report Version   : 01

5   Measurement Uncertainty

Test Items	Uncertainty	Remark
Conducted Emission	2.4 dB	Confidence levels of 95%

TEL : 886-3-656-9065

FAX : 886-3-656-9085

Report Template No.: CB Ver1.0

Page Number   : 46 of 46

Issued Date   : Oct. 18, 2019

Report Version   : 01

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

> **2019-10-16T01:27:23.657Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13**
> **2019-10-16T01:27:23.657Z - INFO - the selected test from the user : WINNF.FT.D.REG.2 is starting now**
> **2019-10-16T01:29:26.382Z - INFO - registration request from CBRS   : {**
>> **"registrationRequest": [**
>>> **{**
>>>> **"airInterface": {**
>>>>> **"radioTechnology": "CAMBIUM_NETWORKS"**
>>>> **},**
>>>> **"cbsdCategory": "B",**
>>>> **"cbsdInfo": {**
>>>>> **"softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)   BHUL450",**
>>>>> **"vendor": "Cambium Networks"**
>>>> **},**
>>>> **"cbsdSerialNumber": "0a003e440019",**
>>>> **"cpiSignatureData": {**
>>>>> **"digitalSignature":**

"Cdm2aCBSLn_dSoDokietXpG0jjAFgfEs701DSv0mSxfWuKAJXKa6sBCQ2_RGXB0UKxko_1zd4r NWhYm2VnlQXv7lUGrZWosxdWVxUC9mEFH0mCyNUcyieRNE7PAv6YNRKN1Au17WZxdpfwJUf aLH4Hmmc1t6QE_UEL7qWm22uehlTjwWQbxokId5tSAjejWOjDyjx1bwhmez7tzkyCdD5EnNQCbT APQZeuqSBL-WDwKuwNsTJrUuv_FkKacUduLdE02xbl38f2exkJVJallPpbGg2DC-7wm0xTPIJUQc 5RF3Z5YKI7gFP8jjCtIdziv0-_YZuMey34LMvsl2IqGvng",

>>>>> **"encodedCpiSignedData":**

"eyJmY2NJZCI6Ilo4SDg5RlQwMDUzIiwiY2JzZFNlcmlhbE51bWJlciI6IjBhMDAzZTQ0MDAxOSIsIm luc3RhbGxhdGlvblBhcmFtIjp7ImxhdGl0dWRlIjo0MS41NzA3MzgsImxvbmdpdHVkZSI6LTkwLjYw MjcxNSwiaGVpZ2h0IjoxNTAsImhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6 ZmFsc2UsImFudGVubmFBemltdXRoIjoxNTAsImFudGVubmFEb3dudGlsdCI6MiwiYW50ZW5uYUU dhaW4iOjlwLCJlaXJwQ2FwYWJpbGl0eSI6NDcsImFudGVubmFCZWFtd2lkdGgiOjEyfSwiY2F0ZWd vcnkiOiJCIiwiY3BpSWQiOiJFeWfSwicHJvZm Vzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRlc3QiLCJjcGlOYW1lIjoidGVzdCIsImluc3R hbGxDZXJ0aWZpY2F0aW9uVGltZSI6IjlwMTktMDktMDZUMTU6NTE6MTJaIn19",

>>>>> **"protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"**
>>>> **},**
>>>> **"fccId": "Z8H89FT0053",**
>>>> **"groupingParam": [**
>>>>> **{**
>>>>>> **"groupId": "0a-00-3e-44-00-19",**
>>>>>> **"groupType": "INTERFERENCE_COORDINATION"**
>>>>> **}**
>>>> **],**
>>>> **"measCapability": [**
>>>>> **"RECEIVED_POWER_WITHOUT_GRANT"**
>>>> **],**
>>>> **"userId": "TEST"**
>>> **}**
>> **]**
> **}**
> **2019-10-16T01:29:26.414Z - INFO - Registration message contains cpiSignatureData**
> **2019-10-16T01:29:26.414Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}**
> **2019-10-16T01:29:26.414Z - INFO - encodedCpiSignedData contents = {**
>> **"installationParam": {**
>>> **"eirpCapability": 47,**

```
            "antennaAzimuth": 150,
            "heightType": "AMSL",
            "longitude": -90.602715,
            "height": 150,
            "indoorDeployment": false,
            "antennaBeamwidth": 12,
            "antennaDowntilt": 2,
            "latitude": 41.570738,
            "antennaGain": 20
        },
        "fccId": "Z8H89FT0053",
        "professionalInstallerData": {
            "cpiName": "test",
            "installCertificationTime": "2019-09-06T15:51:12Z",
            "cpiId": "test"
        },
        "cbsdSerialNumber": "0a003e440019"
}
```
2019-10-16T01:29:26.756Z - INFO - verified signature on cpiSignatureData
2019-10-16T01:29:26.756Z - INFO - cpiSignatureData data successfully validated against jsonschema
2019-10-16T01:29:26.773Z - INFO - engine sent successfully, the response to CBRS   : {
```
    "registrationResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
```
2019-10-16T01:29:30.750Z - INFO - registration request from CBRS   : {
```
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "CAMBIUM_NETWORKS"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)   BHUL450",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "0a003e440017",
            "cpiSignatureData": {
                "digitalSignature":
```
"gHl5SjyBTtYGfRzS8fq7mpj2whlvfu12b-ql2EMpV41hMKDSuyis_QZGY8bYVA85diu4ssiNOd87jg
GiVkmH8GjB6plyzw6TVOaC_RNWhdX2gplUkwNAfevmYuC2QXlngEBac5DD9uZXSaFls27OMnaO
bcutg4otUKQrVdGWM7HGvSxPaG7TgGyDx6y7cWhdxTzZrq93NquM_Kg029Gm5Q8VHQIJ_mcFX
qXe9VlYRy9TlGoddtihmi0JtuOe698hFRgt-6JU7bNMlbmOEX7XDNSQfatdr0HwIGvHPn14rb1QnZ
M8b9b6AKNYM9Byr3jS_nCz3nrOt1w9QykBwkL52Q",
```
                "encodedCpiSignedData":
```
"eyJmY2NJZCl6Ilo4SDg5RlQwMDUzliwiY2JzZFNlcmlhbE51bWJlcil6IjBhMDAzZTQ0MDAxNylsIml

uc3RhbGxhdGlvbIBhcmFtIjp7ImIhxhdGl0dWRlIjo0MS41NzA3MzgsImxvbmdpdHVkZSI6LTkwLjYw
MjcxNSwiaGVpZ2h0IjoxNTAsImhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6
ZmFsc2UsImFudGVubmFBemltdXRoIjoxNTAsImFudGVubmFEb3dudGlsdCI6MiwiYW50ZW5uYVU
dhaW4iOjlwLCJlaXJwQ2FwYWJpbGl0eSI6NDcsImFudGVubmFCZWFtd2lkdGgiOjEyfSwicHJvZm
Vzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRlc3QiLCJjcGlOYW1lIjoidGVzdCIsImluc3R
hbGxDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMTktMDktMDZUMTU6NTE6MTJaIn19",
                    "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
            },
            "fccId": "Z8H89FT0053",
            "groupingParam": [
                {
                    "groupId": "0a-00-3e-44-00-17",
                    "groupType": "INTERFERENCE_COORDINATION"
                }
            ],
            "measCapability": [
                "RECEIVED_POWER_WITHOUT_GRANT"
            ],
            "userId": "TEST"
        }
    ]
}
2019-10-16T01:29:30.798Z - INFO - Registration message contains cpiSignatureData
2019-10-16T01:29:30.798Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2019-10-16T01:29:30.798Z - INFO - encodedCpiSignedData contents = {
    "installationParam": {
        "eirpCapability": 47,
        "antennaAzimuth": 150,
        "heightType": "AMSL",
        "longitude": -90.602715,
        "height": 150,
        "indoorDeployment": false,
        "antennaBeamwidth": 12,
        "antennaDowntilt": 2,
        "latitude": 41.570738,
        "antennaGain": 20
    },
    "fccId": "Z8H89FT0053",
    "professionalInstallerData": {
        "cpiName": "test",
        "installCertificationTime": "2019-09-06T15:51:12Z",
        "cpiId": "test"
    },
    "cbsdSerialNumber": "0a003e440017"
}
2019-10-16T01:29:30.798Z - INFO - verified signature on cpiSignatureData
2019-10-16T01:29:30.798Z - INFO - cpiSignatureData data successfully validated against jsonschema
2019-10-16T01:29:30.798Z - INFO - engine sent successfully, the response to CBRS   : {
    "registrationResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",

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

2019-10-16T01:29:32.436Z - INFO - arrived to nstep starting question answer session with the technician
2019-10-16T01:29:32.436Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :
2019-10-16T01:31:03.081Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n
2019-10-16T01:31:03.081Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :
2019-10-16T01:31:04.842Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n
2019-10-16T01:31:06.792Z - INFO - The final result of the test : WINNF.FT.D.REG.2 is - passed

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

   2019-10-14T05:58:31.391Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
   2019-10-14T05:58:31.391Z - INFO - the selected test from the user : WINNF.FT.D.REG.6 is starting now
   2019-10-14T05:58:35.542Z - INFO - registration request from CBRS   : {

```
"registrationRequest": [
    {
        "airInterface": {
            "radioTechnology": "CAMBIUM_NETWORKS"
        },
        "cbsdCategory": "B",
        "cbsdInfo": {
            "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)   BHUL450",
            "vendor": "Cambium Networks"
        },
        "cbsdSerialNumber": "0a003e440019",
        "cpiSignatureData": {
            "digitalSignature":
"Cdm2aCBSLn_dSoDokietXpG0jjAFgfEs701DSv0mSxfWuKAJXKa6sBCQ2_RGXB0UKxko_1zd4r
NWhYm2VnIQXv7lUGrZWosxdWVxUC9mEFH0mCyNUcyieRNE7PAv6YNRKN1Au17WZxdpfwJUf
aLH4Hmmc1t6QE_UEL7qWm22uehlTjwWQbxokId5tSAjejWOjDyjx1bwhmez7tzkyCdD5EnNQCbT
APQZeuqSBL-WDwKuwNsTJrUuv_FkKacUduLdE02xbl38f2exkJVJallPpbGg2DC-7wm0xTPIJUQc
5RF3Z5YKl7gFP8jjCtIdziv0-_YZuMey34LMvsl2lqGvng",
            "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RlQwMDUzIiwiY2JzZFNlcmlhbE51bWJlciI6IjBhMDAzZTQ0MDAxOSIsIm
luc3RhbGxhdGlvblBhcmFtIjp7ImxhdGl0dWRlIjo0MS41NzA3MzgsImxvbmdpdHVkZSI6LTkwLjYw
MjcxNSwiaGVpZ2h0IjoxNTAsImhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6
ZmFsc2UsImFudGVubmFBemltdXRoIjoxNTAsImFudGVubmFEb3dudGlsdCI6MiwiYW50ZW5uYVU
dhaW4iOjlwLCJlaXJwQ2FwYWJpbGl0eSI6NDcsImFudGVubmFCZWFtd2lkdGgiOjEyfSwiY3BpZGm
Vzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRlc3QiLCJjcGlOYW1lIjoidGVzdCIsImluc3R
hbGxDZXJ0aWZpY2F0aW9uVGltZSI6IjlwMTktMDktMDZUMTU6NTE6MTJaIn19",
            "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
        },
        "fccId": "Z8H89FT0053",
        "groupingParam": [
            {
                "groupId": "0a-00-3e-44-00-19",
                "groupType": "INTERFERENCE_COORDINATION"
            }
        ],
        "measCapability": [
            "RECEIVED_POWER_WITHOUT_GRANT"
        ],
        "userId": "TEST"
    }
]
}
```

   2019-10-14T05:58:35.588Z - INFO - Registration message contains cpiSignatureData
   2019-10-14T05:58:35.588Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
   2019-10-14T05:58:35.588Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
```

```
        "eirpCapability": 47,
        "antennaAzimuth": 150,
        "heightType": "AMSL",
        "longitude": -90.602715,
        "height": 150,
        "indoorDeployment": false,
        "antennaBeamwidth": 12,
        "antennaDowntilt": 2,
        "latitude": 41.570738,
        "antennaGain": 20
    },
    "fccId": "Z8H89FT0053",
    "professionalInstallerData": {
        "cpiName": "test",
        "installCertificationTime": "2019-09-06T15:51:12Z",
        "cpiId": "test"
    },
    "cbsdSerialNumber": "0a003e440019"
}
```

2019-10-14T05:58:35.854Z - INFO - verified signature on cpiSignatureData
2019-10-14T05:58:35.868Z - INFO - cpiSignatureData data successfully validated against jsonschema
2019-10-14T05:58:35.868Z - INFO - engine sent successfully, the response to CBRS   : {

```
    "registrationResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
```

2019-10-14T05:58:42.141Z - INFO - registration request from CBRS   : {

```
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "CAMBIUM_NETWORKS"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)   BHUL450",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "0a003e440017",
            "cpiSignatureData": {
                "digitalSignature":
"gHI5SjyBTtYGfRzS8fq7mpj2whIvfu12b-qI2EMpV41hMKDSuyis_QZGY8bYVA85diu4ssiNOd87jg
GiVkmH8GjB6plyzw6TVOaC_RNWhdX2gplUkwNAfevmYuC2QXIngEBac5DD9uZXSaFls27OMnaO
bcutg4otUKQrVdGWM7HGvSxPaG7TgGyDx6y7cWhdxTzZrq93NquM_Kg029Gm5Q8VHQIJ_mcFX
qXe9VlYRy9TlGoddtihmi0JtuOe698hFRgt-6JU7bNMlbmOEX7XDNSQfatdr0HwlGvHPn14rb1QnZ
M8b9b6AKNYM9Byr3jS_nCz3nrOt1w9QykBwkL52Q",
                "encodedCpiSignedData":
```

"eyJmY2NJZCI6Ilo4SDg5RIQwMDUzIiwiY2JzZFNlcmlhbE51bWJlcil6IjBhMDAzZTQ0MDAxNyIsIml
uc3RhbGxhdGlvblBhcmFtIjp7ImxhdGl0dWRlIjo0MS41NzA3MzgsImxvbmdpdHVkZSI6LTkwLjYw
MjcxNSwiaGVpZ2h0IjoxNTAsImhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6
ZmFsc2UsImFudGVubmFBemltdXRoIjoxNTAsImFudGVubmFEb3dudGlsdCI6MiwiYW50ZW5uYU
dhaW4iOjlwLCJlaXJwQ2FwYWJpbGl0eSI6NDcsImFudGVubmFCZWFtd2lkdGgiOjEyfSwicHJvZm
Vzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRlc3QiLCJjcGlOYW1lIjoidGVzdCIsImluc3R
hbGxDZXJ0aWZpY2F0aW9uVGltZSI6IjlwMTktMDktMDZUMTU6NTE6MTJaIn19",
                "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"

            },
            "fccId": "Z8H89FT0053",
            "groupingParam": [
                {
                    "groupId": "0a-00-3e-44-00-17",
                    "groupType": "INTERFERENCE_COORDINATION"
                }
            ],
            "measCapability": [
                "RECEIVED_POWER_WITHOUT_GRANT"
            ],
            "userId": "TEST"
        }
    ]
}
2019-10-14T05:58:42.171Z - INFO - Registration message contains cpiSignatureData
2019-10-14T05:58:42.171Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2019-10-14T05:58:42.171Z - INFO - encodedCpiSignedData contents = {
    "installationParam": {
        "eirpCapability": 47,
        "antennaAzimuth": 150,
        "heightType": "AMSL",
        "longitude": -90.602715,
        "height": 150,
        "indoorDeployment": false,
        "antennaBeamwidth": 12,
        "antennaDowntilt": 2,
        "latitude": 41.570738,
        "antennaGain": 20
    },
    "fccId": "Z8H89FT0053",
    "professionalInstallerData": {
        "cpiName": "test",
        "installCertificationTime": "2019-09-06T15:51:12Z",
        "cpiId": "test"
    },
    "cbsdSerialNumber": "0a003e440017"
}
2019-10-14T05:58:42.171Z - INFO - verified signature on cpiSignatureData
2019-10-14T05:58:42.171Z - INFO - cpiSignatureData data successfully validated against
jsonschema
2019-10-14T05:58:42.171Z - INFO - engine sent successfully, the response to CBRS   : {
    "registrationResponse": [
        {

```
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
```

2019-10-14T05:58:43.559Z - INFO - arrived to nstep starting question answer session with the technician
2019-10-14T05:58:43.607Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :
2019-10-14T06:00:03.750Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n
2019-10-14T06:00:03.750Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :
2019-10-14T06:00:04.921Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n
2019-10-14T06:00:09.648Z - INFO - The final result of the test : WINNF.FT.D.REG.6 is - passed

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

　　2019-10-14T06:01:12.359Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

　　2019-10-14T06:01:12.359Z - INFO - the selected test from the user : WINNF.FT.D.REG.9 is starting now

　　2019-10-14T06:01:15.012Z - INFO - registration request from CBRS　　: {

```
"registrationRequest": [
    {
        "airInterface": {
            "radioTechnology": "CAMBIUM_NETWORKS"
        },
        "cbsdCategory": "B",
        "cbsdInfo": {
            "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)   BHUL450",
            "vendor": "Cambium Networks"
        },
        "cbsdSerialNumber": "0a003e440019",
        "cpiSignatureData": {
            "digitalSignature":
```

"Cdm2aCBSLn_dSoDokietXpG0jjAFgfEs701DSv0mSxfWuKAJXKa6sBCQ2_RGXB0UKxko_1zd4r NWhYm2VnIQXv7lUGrZWosxdWVxUC9mEFH0mCyNUcyieRNE7PAv6YNRKN1Au17WZxdpfwJUf aLH4Hmmc1t6QE_UEL7qWm22uehlTjwWQbxokId5tSAjejWOjDyjx1bwhmez7tzkyCdD5EnNQCbT APQZeuqSBL-WDwKuwNsTJrUuv_FkKacUduLdE02xbl38f2exkJVJallPpbGg2DC-7wm0xTPIJUQc 5RF3Z5YKI7gFP8jjCtldziv0-_YZuMey34LMvsI2IqGvng",

```
            "encodedCpiSignedData":
```

"eyJmY2NJZCI6Ilo4SDg5RlQwMDUzIiwiY2JzZFNlcmlhbE51bWJlciI6IjBhMDAzZTQ0MDAxOSIslm luc3RhbGxhdGlvblBhcmFtIjp7ImxhdGl0dWRlIjo0MS41NzA3MzgslmxvbmdpdHVkZSI6LTkwLjYw MjcxNSwiaGVpZ2h0IjoxNTAsImhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6 ZmFsc2UsImFudGVubmFBemltdXRoIjoxNTAsImFudGVubmFEb3dudGlsdCI6MiwiYW50ZW5uYVU dhaW4iOjlwLCJlaXJwQ2FwYWJpbGl0eSI6NDcsImFudGVubmFCZWFtd2lkdGgiOjeyfSwicHJvZm Vzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRlc3QiLCJjcGlOYW1lIjoidGVzdCIsImluc3R hbGxDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMTktMDktMDZUMTU6NTE6MTJaIn19",

```
            "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
        },
        "fccId": "Z8H89FT0053",
        "groupingParam": [
            {
                "groupId": "0a-00-3e-44-00-19",
                "groupType": "INTERFERENCE_COORDINATION"
            }
        ],
        "measCapability": [
            "RECEIVED_POWER_WITHOUT_GRANT"
        ],
        "userId": "TEST"
    }
]
}
```

　　2019-10-14T06:01:15.042Z - INFO - Registration message contains cpiSignatureData

　　2019-10-14T06:01:15.042Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

　　2019-10-14T06:01:15.042Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
    "eirpCapability": 47,
```

```
            "antennaAzimuth": 150,
            "heightType": "AMSL",
            "longitude": -90.602715,
            "height": 150,
            "indoorDeployment": false,
            "antennaBeamwidth": 12,
            "antennaDowntilt": 2,
            "latitude": 41.570738,
            "antennaGain": 20
        },
        "fccId": "Z8H89FT0053",
        "professionalInstallerData": {
            "cpiName": "test",
            "installCertificationTime": "2019-09-06T15:51:12Z",
            "cpiId": "test"
        },
        "cbsdSerialNumber": "0a003e440019"
}
```

2019-10-14T06:01:15.042Z - INFO - verified signature on cpiSignatureData
2019-10-14T06:01:15.059Z - INFO - cpiSignatureData data successfully validated against jsonschema
2019-10-14T06:01:15.059Z - INFO - engine sent successfully, the response to CBRS   : {

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

2019-10-14T06:01:15.901Z - INFO - registration request from CBRS   : {

```
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "CAMBIUM_NETWORKS"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)   BHUL450",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "0a003e440017",
            "cpiSignatureData": {
                "digitalSignature":
```
"gHI5SjyBTtYGfRzS8fq7mpj2whIvfu12b-ql2EMpV41hMKDSuyis_QZGY8bYVA85diu4ssiNOd87jg
GiVkmH8GjB6pIyzw6TVOaC_RNWhdX2gplUkwNAfevmYuC2QXIngEBac5DD9uZXSaFls27OMnaO
bcutg4otUKQrVdGWM7HGvSxPaG7TgGyDx6y7cWhdxTzZrq93NquM_Kg029Gm5Q8VHQIJ_mcFX
qXe9VIYRy9TIGoddtihmi0JtuOe698hFRgt-6JU7bNMIbmOEX7XDNSQfatdr0HwIGvHPn14rb1QnZ
M8b9b6AKNYM9Byr3jS_nCz3nrOt1w9QykBwkL52Q",
```
                "encodedCpiSignedData":
```
"eyJmY2NJZCI6IIo4SDg5RIQwMDUzliwiY2JzZFNlcmlhbE51bWJlci6IjBhMDAzZTQ0MDAxNyIsIml
uc3RhbGxhdGlvblBhcmFttIjp7ImxhdGl0dWRlIjo0MS41NzA3MzgsImxvbmdpdHVkZSI6LTkwLjYw

MjcxNSwiaGVpZ2h0IjoxNTAsImhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6
ZmFsc2UsImFudGVubmFBemltdXRoIjoxNTAsImFudGVubmFEb3dudGlsdCI6MiwiYW50ZW5uYVU
dhaW4iOjIwLCJlaXJwQ2FwYWJpbGl0eSI6NDcsImFudGVubmFCZWFtd2lkdGgiOjEyfSwicHJvZm
Vzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRlc3QiLCJjcGlOYW1lIjoidGVzdCIsImluc3R
hbGxDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMTktMDktMDZUMTU6NTE6MTJaIn19",
                    "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
            },
            "fccId": "Z8H89FT0053",
            "groupingParam": [
                {
                    "groupId": "0a-00-3e-44-00-17",
                    "groupType": "INTERFERENCE_COORDINATION"
                }
            ],
            "measCapability": [
                "RECEIVED_POWER_WITHOUT_GRANT"
            ],
            "userId": "TEST"
        }
    ]
}
2019-10-14T06:01:15.933Z - INFO - Registration message contains cpiSignatureData
2019-10-14T06:01:15.933Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2019-10-14T06:01:15.933Z - INFO - encodedCpiSignedData contents = {
    "installationParam": {
        "eirpCapability": 47,
        "antennaAzimuth": 150,
        "heightType": "AMSL",
        "longitude": -90.602715,
        "height": 150,
        "indoorDeployment": false,
        "antennaBeamwidth": 12,
        "antennaDowntilt": 2,
        "latitude": 41.570738,
        "antennaGain": 20
    },
    "fccId": "Z8H89FT0053",
    "professionalInstallerData": {
        "cpiName": "test",
        "installCertificationTime": "2019-09-06T15:51:12Z",
        "cpiId": "test"
    },
    "cbsdSerialNumber": "0a003e440017"
}
2019-10-14T06:01:15.933Z - INFO - verified signature on cpiSignatureData
2019-10-14T06:01:15.947Z - INFO - cpiSignatureData data successfully validated against jsonschema
2019-10-14T06:01:15.947Z - INFO - engine sent successfully, the response to CBRS   : {
    "registrationResponse": [
        {
            "response": {
                "responseCode": 102

```
                }
            }
        ]
    }
```

2019-10-14T06:01:17.430Z - INFO - arrived to nstep starting question answer session with the technician

2019-10-14T06:01:17.430Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2019-10-14T06:03:10.553Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2019-10-14T06:03:10.553Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :

2019-10-14T06:03:11.677Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n

2019-10-14T06:03:12.253Z - INFO - The final result of the test : WINNF.FT.D.REG.9 is - passed

Test Log for WINNF.FT.D.REG.11 Test Case ID
2019-10-14T06:13:27.836Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
2019-10-14T06:13:27.836Z - INFO - the selected test from the user : WINNF.FT.D.REG.11 is starting now
2019-10-14T06:13:53.499Z - INFO - registration request from CBRS   : {
```
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "CAMBIUM_NETWORKS"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)   BHUL450",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "0a003e440019",
            "cpiSignatureData": {
                "digitalSignature":
```
"Cdm2aCBSLn_dSoDokietXpG0jjAFgfEs701DSv0mSxfWuKAJXKa6sBCQ2_RGXB0UKxko_1zd4r NWhYm2VnlQXv7lUGrZWosxdWVxUC9mEFH0mCyNUcyieRNE7PAv6YNRKN1Au17WZxdpfwJUf aLH4Hmmc1t6QE_UEL7qWm22uehlTjwWQbxokId5tSAjejWOjDyjx1bwhmez7tzkyCdD5EnNQCbT APQZeuqSBL-WDwKuwNsTJrUuv_FkKacUduLdE02xbI38f2exkJVJallPpbGg2DC-7wm0xTPIJUQc 5RF3Z5YKI7gFP8jjCtldziv0-_YZuMey34LMvsl2IqGvng",
```
                "encodedCpiSignedData":
```
"eyJmY2NJZCI6Ilo4SDg5RlQwMDUzIiwiY2JzZFNlcmlhbE51bWJlciI6IjBhMDAzZTQ0MDAxOSIslm luc3RhbGxhdGlvblBhcmFtIjp7ImxhdGl0dWRlIjo0MS41NzA3MzgslmxvbmdpdHVkZSI6LTkwLjYw MjcxNSwiaGVpZ2h0IjoxNTAslmhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6 ZmFsc2UslmFudGVubmFBemltdXRoIjoxNTAslmFudGVubmFEb3dudGlsdCI6MiwiYW50ZW5uYU dhaW4iOjlwLCJlaXJwQ2FwYWJpbGl0eSI6NDcslmFudGVubmFCZWFtd2lkdGgiOjEyNSwicHJvZm Vzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRlc3QiLCJjcGlOYW1lIjoidGVzdCIslmluc3R hbGxDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMTktMDktMDZUMTU6NTE6MTJaIn19",
```
                "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
```
```
            },
            "fccId": "Z8H89FT0053",
            "groupingParam": [
                {
                    "groupId": "0a-00-3e-44-00-19",
                    "groupType": "INTERFERENCE_COORDINATION"
                }
            ],
            "measCapability": [
                "RECEIVED_POWER_WITHOUT_GRANT"
            ],
            "userId": "TEST"
        }
    ]
}
```
2019-10-14T06:13:53.546Z - INFO - Registration message contains cpiSignatureData
2019-10-14T06:13:53.546Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2019-10-14T06:13:53.546Z - INFO - encodedCpiSignedData contents = {
```
    "installationParam": {
        "eirpCapability": 47,
```

```
            "antennaAzimuth": 150,
            "heightType": "AMSL",
            "longitude": -90.602715,
            "height": 150,
            "indoorDeployment": false,
            "antennaBeamwidth": 12,
            "antennaDowntilt": 2,
            "latitude": 41.570738,
            "antennaGain": 20
        },
        "fccId": "Z8H89FT0053",
        "professionalInstallerData": {
            "cpiName": "test",
            "installCertificationTime": "2019-09-06T15:51:12Z",
            "cpiId": "test"
        },
        "cbsdSerialNumber": "0a003e440019"
}
```

2019-10-14T06:13:53.546Z - INFO - verified signature on cpiSignatureData
2019-10-14T06:13:53.546Z - INFO - cpiSignatureData data successfully validated against jsonschema
2019-10-14T06:13:53.546Z - INFO - engine sent successfully, the response to CBRS   : {

```
    "registrationResponse": [
        {
            "response": {
                "responseCode": 200
            }
        }
    ]
}
```

2019-10-14T06:13:56.650Z - INFO - registration request from CBRS   : {

```
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "CAMBIUM_NETWORKS"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)   BHUL450",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "0a003e440017",
            "cpiSignatureData": {
                "digitalSignature":
```
"gHI5SjyBTtYGfRzS8fq7mpj2whIvfu12b-qI2EMpV41hMKDSuyis_QZGY8bYVA85diu4ssiNOd87jg
GiVkmH8GjB6pIyzw6TVOaC_RNWhdX2gpIUkwNAfevmYuC2QXIngEBac5DD9uZXSaFIs27OMnaO
bcutg4otUKQrVdGWM7HGvSxPaG7TgGyDx6y7cWhdxTzZrq93NquM_Kg029Gm5Q8VHQIJ_mcFX
qXe9VIYRy9TIGoddtihmi0JtuOe698hFRgt-6JU7bNMIbmOEX7XDNSQfatdr0HwIGvHPn14rb1QnZ
M8b9b6AKNYM9Byr3jS_nCz3nrOt1w9QykBwkL52Q",
                "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RlQwMDUzIiwiY2JzZFNlcmlhbE51bWJlciI6IjBhMDAzZTQ0MDAxNyIsImI
uc3RhbGxhdGlvblBhcmFtdGVyIjp7ImxhdGl0dWRlIjo0MS41NzA3MzgsImxvbmdpdHVkZSI6LTkwLjYw
```

MjcxNSwiaGVpZ2h0IjoxNTAsImhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6
ZmFsc2UsImFudGVubmFBemltdXRoIjoxNTAsImFudGVubmFEb3dudGlsdCI6MiwiYW50ZW5uYVU
dhaW4iOjIwLCJlaXJwQ2FwYWJpbGl0eSI6NDcsImFudGVubmFCZWFtd2lkdGgiOjEyfSwicHJvZm
Vzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRlc3QiLCJjcGlOYW1lIjoidGVzdCIsImluc3R
hbGxDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMTktMDktMDZUMTU6NTE6MTJaIn19",
                          "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
                },
                "fccId": "Z8H89FT0053",
                "groupingParam": [
                    {
                        "groupId": "0a-00-3e-44-00-17",
                        "groupType": "INTERFERENCE_COORDINATION"
                    }
                ],
                "measCapability": [
                    "RECEIVED_POWER_WITHOUT_GRANT"
                ],
                "userId": "TEST"
            }
        ]
    }
2019-10-14T06:13:56.697Z - INFO - Registration message contains cpiSignatureData
2019-10-14T06:13:56.697Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2019-10-14T06:13:56.697Z - INFO - encodedCpiSignedData contents = {
    "installationParam": {
        "eirpCapability": 47,
        "antennaAzimuth": 150,
        "heightType": "AMSL",
        "longitude": -90.602715,
        "height": 150,
        "indoorDeployment": false,
        "antennaBeamwidth": 12,
        "antennaDowntilt": 2,
        "latitude": 41.570738,
        "antennaGain": 20
    },
    "fccId": "Z8H89FT0053",
    "professionalInstallerData": {
        "cpiName": "test",
        "installCertificationTime": "2019-09-06T15:51:12Z",
        "cpiId": "test"
    },
    "cbsdSerialNumber": "0a003e440017"
}
2019-10-14T06:13:56.697Z - INFO - verified signature on cpiSignatureData
2019-10-14T06:13:56.697Z - INFO - cpiSignatureData data successfully validated against jsonschema
2019-10-14T06:13:56.697Z - INFO - engine sent successfully, the response to CBRS   : {
    "registrationResponse": [
        {
            "response": {
                "responseCode": 200

```
            }
        }
    ]
}
```

2019-10-14T06:13:58.256Z - INFO - arrived to nstep starting question answer session with the technician

2019-10-14T06:13:58.256Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2019-10-14T06:15:08.566Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2019-10-14T06:15:08.566Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :

2019-10-14T06:15:09.190Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n

2019-10-14T06:15:09.970Z - INFO - The final result of the test : WINNF.FT.D.REG.11 is - passed

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

2019-10-14T06:15:57.721Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2019-10-14T06:15:57.721Z - INFO - the selected test from the user : WINNF.FT.D.REG.13 is starting now

2019-10-14T06:16:00.092Z - INFO - registration request from CBRS   : {
```
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "CAMBIUM_NETWORKS"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)   BHUL450",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "0a003e440019",
            "cpiSignatureData": {
                "digitalSignature":
```
"Cdm2aCBSLn_dSoDokietXpG0jjAFgfEs701DSv0mSxfWuKAJXKa6sBCQ2_RGXB0UKxko_1zd4r NWhYm2VnlQXv7lUGrZWosxdWVxUC9mEFH0mCyNUcyieRNE7PAv6YNRKN1Au17WZxdpfwJUf aLH4Hmmc1t6QE_UEL7qWm22uehlTjwWQbxokId5tSAjejWOjDyjx1bwhmez7tzkyCdD5EnNQCbT APQZeuqSBL-WDwKuwNsTJrUuv_FkKacUduLdE02xbI38f2exkJVJalIPpbGg2DC-7wm0xTPIJUQc 5RF3Z5YKI7gFP8jjCtldziv0-_YZuMey34LMvsl2IqGvng",
```
                "encodedCpiSignedData":
```
"eyJmY2NJZCI6Ilo4SDg5RIQwMDUzIiwiY2JzZFNlcmlhbE51bWJlciI6IjBhMDAzZTQ0MDAxOSIsIm luc3RhbGxhdGlvblBhcmFtIjp7ImxhdGl0dWRlIjo0MS41NzA3MzgslmxvbmdpdHVkZSI6LTkwLjYw MjcxNSwiaGVpZ2h0IjoxNTAsImhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6 ZmFsc2UsImFudGVubmFBemltdXRoIjoxNTAsImFudGVubmFEb3dudGlsdCI6MiwiYW50ZW5uYVU dhaW4iOjlwLCJlaXJwQ2FwYWJpbGl0eSI6NDcslmFudGVubmFCZWFtd2lkdGgiOjEyfSwiY2F0ZWdv cnkiOiJCIiwiY3BpSWQiOiJ5RXc3QiLCJjcGlOYW1lIjoidGVzdCIsImluc3R hbGxDZXJ0aWZpY2F0aW9uVGltZSI6IjlwMTktMDktMDZUMTU6NTE6MTJaIn19",
```
                "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
            },
            "fccId": "Z8H89FT0053",
            "groupingParam": [
                {
                    "groupId": "0a-00-3e-44-00-19",
                    "groupType": "INTERFERENCE_COORDINATION"
                }
            ],
            "measCapability": [
                "RECEIVED_POWER_WITHOUT_GRANT"
            ],
            "userId": "TEST"
        }
    ]
}
```

2019-10-14T06:16:00.140Z - INFO - Registration message contains cpiSignatureData

2019-10-14T06:16:00.140Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2019-10-14T06:16:00.140Z - INFO - encodedCpiSignedData contents = {
```
    "installationParam": {
        "eirpCapability": 47,
```

```
            "antennaAzimuth": 150,
            "heightType": "AMSL",
            "longitude": -90.602715,
            "height": 150,
            "indoorDeployment": false,
            "antennaBeamwidth": 12,
            "antennaDowntilt": 2,
            "latitude": 41.570738,
            "antennaGain": 20
        },
        "fccId": "Z8H89FT0053",
        "professionalInstallerData": {
            "cpiName": "test",
            "installCertificationTime": "2019-09-06T15:51:12Z",
            "cpiId": "test"
        },
        "cbsdSerialNumber": "0a003e440019"
}
```

2019-10-14T06:16:00.140Z - INFO - verified signature on cpiSignatureData
2019-10-14T06:16:00.140Z - INFO - cpiSignatureData data successfully validated against jsonschema
2019-10-14T06:16:00.140Z - INFO - engine sent successfully, the response to CBRS   : {

```
    "registrationResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
```

2019-10-14T06:16:02.214Z - INFO - registration request from CBRS   : {

```
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "CAMBIUM_NETWORKS"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)   BHUL450",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "0a003e440017",
            "cpiSignatureData": {
                "digitalSignature":
```

"gHl5SjyBTtYGfRzS8fq7mpj2whIvfu12b-ql2EMpV41hMKDSuyis_QZGY8bYVA85diu4ssiNOd87jg
GiVkmH8GjB6plyzw6TVOaC_RNWhdX2gplUkwNAfevmYuC2QXlngEBac5DD9uZXSaFls27OMnaO
bcutg4otUKQrVdGWM7HGvSxPaG7TgGyDx6y7cWhdxTzZrq93NquM_Kg029Gm5Q8VHQIJ_mcFX
qXe9VlYRy9TlGoddtihmi0JtuOe698hFRgt-6JU7bNMIbmOEX7XDNSQfatdr0HwIGvHPn14rb1QnZ
M8b9b6AKNYM9Byr3jS_nCz3nrOt1w9QykBwkL52Q",
                "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RlQwMDUzIiwiY2JzZFNlcmlhbE51bWJlciI6IjBhMDAzZTQ0MDAxNyIsIml

uc3RhbGxhdGlvblBhcmFtIjp7ImxhdGl0dWRlIjo0MS41NzA3MzgsImxvbmdpdHVkZSI6LTkwLjYw
MjcxNSwiaGVpZ2h0IjoxNTAsImhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6
ZmFsc2UsImFudGVubmFBemltdXRoIjoxNTAsImFudGVubmFEb3dudGlsdCI6MiwiYW50ZW5uYUU
dhaW4iOjIwLCJlaXJwQ2FwYWJpbGl0eSI6NDcsImFudGVubmFCZWFtd2lkdGgiOjEyfSwicHJvZm
Vzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRlc3QiLCJjcGlOYW1lIjoidGVzdCIsImluc3R
hbGxDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMTktMDktMDZUMTU6NTE6MTJaIn19",
          "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fccId": "Z8H89FT0053",
      "groupingParam": [
          {
              "groupId": "0a-00-3e-44-00-17",
              "groupType": "INTERFERENCE_COORDINATION"
          }
      ],
      "measCapability": [
          "RECEIVED_POWER_WITHOUT_GRANT"
      ],
      "userId": "TEST"
    }
  ]
}
2019-10-14T06:16:02.262Z - INFO - Registration message contains cpiSignatureData
2019-10-14T06:16:02.262Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2019-10-14T06:16:02.262Z - INFO - encodedCpiSignedData contents = {
    "installationParam": {
        "eirpCapability": 47,
        "antennaAzimuth": 150,
        "heightType": "AMSL",
        "longitude": -90.602715,
        "height": 150,
        "indoorDeployment": false,
        "antennaBeamwidth": 12,
        "antennaDowntilt": 2,
        "latitude": 41.570738,
        "antennaGain": 20
    },
    "fccId": "Z8H89FT0053",
    "professionalInstallerData": {
        "cpiName": "test",
        "installCertificationTime": "2019-09-06T15:51:12Z",
        "cpiId": "test"
    },
    "cbsdSerialNumber": "0a003e440017"
}
2019-10-14T06:16:02.262Z - INFO - verified signature on cpiSignatureData
2019-10-14T06:16:02.262Z - INFO - cpiSignatureData data successfully validated against jsonschema
2019-10-14T06:16:02.262Z - INFO - engine sent successfully, the response to CBRS   : {
    "registrationResponse": [
        {
            "response": {

```
                    "responseCode": 103
                }
            }
        ]
}
```

2019-10-14T06:16:03.805Z - INFO - arrived to nstep starting question answer session with the technician

2019-10-14T06:16:03.805Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2019-10-14T06:17:41.930Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2019-10-14T06:17:41.930Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :

2019-10-14T06:17:48.638Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n

2019-10-14T06:17:49.496Z - 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

2019-10-14T06:18:21.756Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2019-10-14T06:18:21.756Z - INFO - the selected test from the user : WINNF.FT.D.REG.15 is starting now

2019-10-14T06:18:42.926Z - INFO - registration request from CBRS   : {

```
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "CAMBIUM_NETWORKS"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)    BHUL450",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "0a003e440019",
            "cpiSignatureData": {
                "digitalSignature":
```
"Cdm2aCBSLn_dSoDokietXpG0jjAFgfEs701DSv0mSxfWuKAJXKa6sBCQ2_RGXB0UKxko_1zd4r NWhYm2VnlQXv7lUGrZWosxdWVxUC9mEFH0mCyNUcyieRNE7PAv6YNRKN1Au17WZxdpfwJUf aLH4Hmmc1t6QE_UEL7qWm22uehlTjwWQbxokld5tSAjejWOjDyjx1bwhmez7tzkyCdD5EnNQCbT APQZeuqSBL-WDwKuwNsTJrUuv_FkKacUduLdE02xbl38f2exkJVJallPpbGg2DC-7wm0xTPIJUQc 5RF3Z5YKI7gFP8jjCtldziv0-_YZuMey34LMvsl2IqGvng",

```
                "encodedCpiSignedData":
```
"eyJmY2NJZCI6Ilo4SDg5RlQwMDUzIiwiY2JzZFNlcmlhbE51bWJlciI6IjBhMDAzZTQ0MDAxOSIsIm luc3RhbGxhdGlvblBhcmFtIjp7ImxhdGl0dWRlIjo0MS41NzA3MzgslmxvbmdpdHVkZSI6LTkwLjYw MjcxNSwiaGVpZ2h0IjoxNTAsImhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6 ZmFsc2UsImFudGVubmFBemltdXRoIjoxNTAsImFudGVubmFEb3dudGlsdCI6MiwiYW50ZW5uYU dhaW4iOjlwLCJlaXJwQ2FwYWJpbGl0eSI6NDDslmFudGVubmFCZWFtd2lkdGgiOjEyfSwiY2FncHJv Vzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRlc3QiLCJjcGlOYW1lljoidGVzdCIsImluc3R hbGxDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMTktMDktMDZUMTU6NTE6MTJaln19",

```
                "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
            },
            "fccId": "Z8H89FT0053",
            "groupingParam": [
                {
                    "groupId": "0a-00-3e-44-00-19",
                    "groupType": "INTERFERENCE_COORDINATION"
                }
            ],
            "measCapability": [
                "RECEIVED_POWER_WITHOUT_GRANT"
            ],
            "userId": "TEST"
        }
    ]
}
```

2019-10-14T06:18:43.003Z - INFO - Registration message contains cpiSignatureData

2019-10-14T06:18:43.003Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2019-10-14T06:18:43.003Z - INFO - encodedCpiSignedData contents = {

```
    "installationParam": {
        "eirpCapability": 47,
```

```
        "antennaAzimuth": 150,
        "heightType": "AMSL",
        "longitude": -90.602715,
        "height": 150,
        "indoorDeployment": false,
        "antennaBeamwidth": 12,
        "antennaDowntilt": 2,
        "latitude": 41.570738,
        "antennaGain": 20
    },
    "fccId": "Z8H89FT0053",
    "professionalInstallerData": {
        "cpiName": "test",
        "installCertificationTime": "2019-09-06T15:51:12Z",
        "cpiId": "test"
    },
    "cbsdSerialNumber": "0a003e440019"
}
2019-10-14T06:18:43.003Z - INFO - verified signature on cpiSignatureData
2019-10-14T06:18:43.003Z - INFO - cpiSignatureData data successfully validated against
jsonschema
2019-10-14T06:18:43.003Z - INFO - engine sent successfully, the response to CBRS   : {
    "registrationResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-14T06:18:44.766Z - INFO - registration request from CBRS   : {
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "CAMBIUM_NETWORKS"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)   BHUL450",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "0a003e440017",
            "cpiSignatureData": {
                "digitalSignature":
```

"gHI5SjyBTtYGfRzS8fq7mpj2whIvfu12b-qI2EMpV41hMKDSuyis_QZGY8bYVA85diu4ssiNOd87jg
GiVkmH8GjB6plyzw6TVOaC_RNWhdX2gpIUkwNAfevmYuC2QXlngEBac5DD9uZXSaFls27OMnaO
bcutg4otUKQrVdGWM7HGvSxPaG7TgGyDx6y7cWhdxTzZrq93NquM_Kg029Gm5Q8VHQIJ_mcFX
qXe9VIYRy9TlGoddtihmi0JtuOe698hFRgt-6JU7bNMIbmOEX7XDNSQfatdr0HwIGvHPn14rb1QnZ
M8b9b6AKNYM9Byr3jS_nCz3nrOt1w9QykBwkL52Q",
            "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RlQwMDUzIiwiY2JzZFNlcmlhbE51bWJlcil6IjBhMDAzZTQ0MDAxNyIsImI

uc3RhbGxhdGlvblBhcmFtIjp7ImxhdGl0dWRlljo0MS41NzA3MzgsImxvbmdpdHVkZSI6LTkwLjYw
MjcxNSwiaGVpZ2h0IjoxNTAsImhlaWdodFR5cGUiOiJBTVNMliwiaW5kb29yRGVwbG95bWVudCI6
ZmFsc2UsImFudGVubmFBemltdXRoIjoxNTAsImFudGVubmFEb3dudGlsdCl6MiwiYW50ZW5uYVU
dhaW4iOjlwLCJlaXJwQ2FwYWJpbGl0eSl6NDcsImFudGVubmFCZWFtd2lkdGgiOjEyfSwicHJvZm
Vzc2lvbmFsSW5zdGFsbGVyRGF0YSl6eyJjcGlJZCl6InRlc3QiLCJjcGlOYW1lljoidGVzdClsImluc3R
hbGxDZXJ0aWZpY2F0aW9uVGltZSl6IjlwMTktMDktMDZUMTU6NTE6MTJaIn19",
                "protectedHeader": "eyJhbGciOiJSUzl1NilsInR5cCl6IkpXVCJ9"
            },
            "fccId": "Z8H89FT0053",
            "groupingParam": [
                {
                    "groupId": "0a-00-3e-44-00-17",
                    "groupType": "INTERFERENCE_COORDINATION"
                }
            ],
            "measCapability": [
                "RECEIVED_POWER_WITHOUT_GRANT"
            ],
            "userId": "TEST"
        }
    ]
}
2019-10-14T06:18:44.813Z - INFO - Registration message contains cpiSignatureData
2019-10-14T06:18:44.813Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2019-10-14T06:18:44.813Z - INFO - encodedCpiSignedData contents = {
    "installationParam": {
        "eirpCapability": 47,
        "antennaAzimuth": 150,
        "heightType": "AMSL",
        "longitude": -90.602715,
        "height": 150,
        "indoorDeployment": false,
        "antennaBeamwidth": 12,
        "antennaDowntilt": 2,
        "latitude": 41.570738,
        "antennaGain": 20
    },
    "fccId": "Z8H89FT0053",
    "professionalInstallerData": {
        "cpiName": "test",
        "installCertificationTime": "2019-09-06T15:51:12Z",
        "cpiId": "test"
    },
    "cbsdSerialNumber": "0a003e440017"
}
2019-10-14T06:18:44.813Z - INFO - verified signature on cpiSignatureData
2019-10-14T06:18:44.813Z - INFO - cpiSignatureData data successfully validated against jsonschema
2019-10-14T06:18:44.813Z - INFO - engine sent successfully, the response to CBRS : {
    "registrationResponse": [
        {
            "response": {

```
                    "responseCode": 101
                }
            }
        ]
    }
}
```

2019-10-14T06:18:46.092Z - INFO - arrived to nstep starting question answer session with the technician

2019-10-14T06:18:46.092Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2019-10-14T06:19:53.328Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2019-10-14T06:19:53.328Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :

2019-10-14T06:19:54.390Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n

2019-10-14T06:19:55.420Z - 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

    2019-10-14T06:20:52.049Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

    2019-10-14T06:20:52.049Z - INFO - the selected test from the user : WINNF.FT.D.REG.17 is starting now

    2019-10-14T06:21:05.887Z - INFO - registration request from CBRS : {

        "registrationRequest": [

            {

                "airInterface": {

                    "radioTechnology": "CAMBIUM_NETWORKS"

                },

                "cbsdCategory": "B",

                "cbsdInfo": {

                    "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr) BHUL450",

                    "vendor": "Cambium Networks"

                },

                "cbsdSerialNumber": "0a003e440019",

                "cpiSignatureData": {

                    "digitalSignature":

"Cdm2aCBSLn_dSoDokietXpG0jjAFgfEs701DSv0mSxfWuKAJXKa6sBCQ2_RGXB0UKxko_1zd4r NWhYm2VnIQXv7IUGrZWosxdWVxUC9mEFH0mCyNUcyieRNE7PAv6YNRKN1Au17WZxdpfwJUf aLH4Hmmc1t6QE_UEL7qWm22uehlTjwWQbxokId5tSAjejWOjDyjx1bwhmez7tzkyCdD5EnNQCbT APQZeuqSBL-WDwKuwNsTJrUuv_FkKacUduLdE02xbI38f2exkJVJaIIPpbGg2DC-7wm0xTPIJUQc 5RF3Z5YKI7gFP8jjCtIdziv0-_YZuMey34LMvsI2IqGvng",

                    "encodedCpiSignedData":

"eyJmY2NJZCI6Ilo4SDg5RlQwMDUzIiwiY2JzZFNlcmlhbE51bWJlciI6IjBhMDAzZTQ0MDAxOSIsIm luc3RhbGxhdGlvblBhcmFtIjp7ImxhdGl0dWRlIjo0MS41NzA3Mzgslmxvbmdpd HVkZSI6LTkwLjYw MjcxNSwiaGVpZ2h0IjoxNTAslmhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6 ZmFsc2UslmFudGVubmFBemltdXRoIjoxNTAslmFudGVubmFEb3dudGlsdCI6MiwiYW50ZW5uYU dhaW4iOjlwLCJlaXJwQ2FwYWJpbGl0eSI6NDcslmFudGVubmFCZWFtd2lkdGgiOjEyfSwicHJvZm Vzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRlc3QiLCJjcGlOYW1lIjoidGVzdCIsImluc3R hbGxDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMTktMDktMDZUMTU6NTE6MTJaIn19",

                    "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"

                },

                "fccId": "Z8H89FT0053",

                "groupingParam": [

                    {

                        "groupId": "0a-00-3e-44-00-19",

                        "groupType": "INTERFERENCE_COORDINATION"

                    }

                ],

                "measCapability": [

                    "RECEIVED_POWER_WITHOUT_GRANT"

                ],

                "userId": "TEST"

            }

        ]

    }

    2019-10-14T06:21:05.917Z - INFO - Registration message contains cpiSignatureData

    2019-10-14T06:21:05.917Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

    2019-10-14T06:21:05.934Z - INFO - encodedCpiSignedData contents = {

        "installationParam": {

            "eirpCapability": 47,

            "antennaAzimuth": 150,
            "heightType": "AMSL",
            "longitude": -90.602715,
            "height": 150,
            "indoorDeployment": false,
            "antennaBeamwidth": 12,
            "antennaDowntilt": 2,
            "latitude": 41.570738,
            "antennaGain": 20
        },
        "fccId": "Z8H89FT0053",
        "professionalInstallerData": {
            "cpiName": "test",
            "installCertificationTime": "2019-09-06T15:51:12Z",
            "cpiId": "test"
        },
        "cbsdSerialNumber": "0a003e440019"
    }

2019-10-14T06:21:05.934Z - INFO - verified signature on cpiSignatureData
2019-10-14T06:21:05.934Z - INFO - cpiSignatureData data successfully validated against jsonschema
2019-10-14T06:21:05.934Z - INFO - engine sent successfully, the response to CBRS   : {

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

2019-10-14T06:21:07.119Z - INFO - registration request from CBRS   : {

    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "CAMBIUM_NETWORKS"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)   BHUL450",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "0a003e440017",
            "cpiSignatureData": {
                "digitalSignature":
"gHI5SjyBTtYGfRzS8fq7mpj2whIvfu12b-ql2EMpV41hMKDSuyis_QZGY8bYVA85diu4ssiNOd87jg
GiVkmH8GjB6pIyzw6TVOaC_RNWhdX2gpIUkwNAfevmYuC2QXlngEBac5DD9uZXSaFls27OMnaO
bcutg4otUKQrVdGWM7HGvSxPaG7TgGyDx6y7cWhdxTzZrq93NquM_Kg029Gm5Q8VHQIJ_mcFX
qXe9VlYRy9TlGoddtihmi0JtuOe698hFRgt-6JU7bNMIbmOEX7XDNSQfatdr0HwIGvHPn14rb1QnZ
M8b9b6AKNYM9Byr3jS_nCz3nrOt1w9QykBwkL52Q",
                "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RlQwMDUzIiwiY2JzZFNlcmlhbE51bWJlciI6IjBhMDAzZTQ0MDAxNyIsImI
uc3RhbGxhdGlvblBhcmFttljp7ImxhdGl0dWRlIjo0MS41NzA3MzgslmxvbmdpdHVkZSI6LTkwLjYw

MjcxNSwiaGVpZ2h0IjoxNTAsImhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6
ZmFsc2UsImFudGVubmFBemltdXRoIjoxNTAsImFudGVubmFEb3dudGlsdCI6MiwiYW50ZW5uYVU
dhaW4iOjIwLCJlaXJwQ2FwYWJpbGl0eSI6NDcsImFudGVubmFCZWFtd2lkdGgiOjEyfSwicHJvZm
Vzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRlc3QiLCJjcGlOYW1lIjoidGVzdCIsImluc3R
hbGxDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMTktMDktMDZUMTU6NTE6MTJaIn19",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fccId": "Z8H89FT0053",
      "groupingParam": [
         {
           "groupId": "0a-00-3e-44-00-17",
           "groupType": "INTERFERENCE_COORDINATION"
         }
      ],
      "measCapability": [
         "RECEIVED_POWER_WITHOUT_GRANT"
      ],
      "userId": "TEST"
    }
  ]
}
2019-10-14T06:21:07.151Z - INFO - Registration message contains cpiSignatureData
2019-10-14T06:21:07.151Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2019-10-14T06:21:07.151Z - INFO - encodedCpiSignedData contents = {
    "installationParam": {
        "eirpCapability": 47,
        "antennaAzimuth": 150,
        "heightType": "AMSL",
        "longitude": -90.602715,
        "height": 150,
        "indoorDeployment": false,
        "antennaBeamwidth": 12,
        "antennaDowntilt": 2,
        "latitude": 41.570738,
        "antennaGain": 20
    },
    "fccId": "Z8H89FT0053",
    "professionalInstallerData": {
        "cpiName": "test",
        "installCertificationTime": "2019-09-06T15:51:12Z",
        "cpiId": "test"
    },
    "cbsdSerialNumber": "0a003e440017"
}
2019-10-14T06:21:07.151Z - INFO - verified signature on cpiSignatureData
2019-10-14T06:21:07.165Z - INFO - cpiSignatureData data successfully validated against jsonschema
2019-10-14T06:21:07.165Z - INFO - engine sent successfully, the response to CBRS   : {
    "registrationResponse": [
      {
        "response": {
          "responseCode": 100

```
                }
            }
        ]
    }
```

2019-10-14T06:21:08.273Z - INFO - arrived to nstep starting question answer session with the technician

2019-10-14T06:21:08.273Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2019-10-14T06:22:20.250Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2019-10-14T06:22:20.250Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :

2019-10-14T06:22:20.997Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n

2019-10-14T06:22:22.059Z - INFO - The final result of the test : WINNF.FT.D.REG.17 is - passed

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

    2019-10-14T06:22:58.375Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

    2019-10-14T06:22:58.391Z - INFO - the selected test from the user : WINNF.FT.D.REG.19 is starting now

    2019-10-14T06:23:13.632Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
    {
        "airInterface": {
            "radioTechnology": "CAMBIUM_NETWORKS"
        },
        "cbsdCategory": "B",
        "cbsdInfo": {
            "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)   BHUL450",
            "vendor": "Cambium Networks"
        },
        "cbsdSerialNumber": "0a003e440019",
        "cpiSignatureData": {
            "digitalSignature":
```
**"Cdm2aCBSLn_dSoDokietXpG0jjAFgfEs701DSv0mSxfWuKAJXKa6sBCQ2_RGXB0UKxko_1zd4r
NWhYm2VnlQXv7lUGrZWosxdWVxUC9mEFH0mCyNUcyieRNE7PAv6YNRKN1Au17WZxdpfwJUf
aLH4Hmmc1t6QE_UEL7qWm22uehlTjwWQbxokId5tSAjejWOjDyjx1bwhmez7tzkyCdD5EnNQCbT
APQZeuqSBL-WDwKuwNsTJrUuv_FkKacUduLdE02xbI38f2exkJVJallPpbGg2DC-7wm0xTPIJUQc
5RF3Z5YKI7gFP8jjCtIdziv0-_YZuMey34LMvsI2IqGvng",**

           "encodedCpiSignedData":

**"eyJmY2NJZCI6Ilo4SDg5RlQwMDUzIiwiY2JzZFNlcmlhbE51bWJlciI6IjBhMDAzZTQ0MDAxOSIsIm
luc3RhbGxhdGlvblBhcmFtIjp7ImxhdGl0dWRlIjo0MS41NzA3MzgsImxvbmdpdHVkZSI6LTkwLjYw
MjcxNSwiaGVpZ2h0IjoxNTAsImhlaWdodFR5cGUiOiJBVk5MIiwiaW5kb29yRGVwbG95bWVudCI6
ZmFsc2UsImFudGVubmFBemltdXRoIjoxNTAsImFudGVubmFEb3dudGlsdCI6MiwiYW50ZW5uYVU
dhaW4iOjlwLCJlaXJwQ2FwYWJpbGl0eSI6NDcsImFudGVubmFCZWFtd2lkdGgiOjEyfSwicHJvZm
Vzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRlc3QiLCJjcGlOYW1lIjoidGVzdCIsImluc3R
hbGxDZXJ0aWZpY2F0aW9uVGltZSI6IjlwMTktMDktMDZUMTU6NTE6MTJaIn19",**

```
            "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
        },
        "fccId": "Z8H89FT0053",
        "groupingParam": [
            {
                "groupId": "0a-00-3e-44-00-19",
                "groupType": "INTERFERENCE_COORDINATION"
            }
        ],
        "measCapability": [
            "RECEIVED_POWER_WITHOUT_GRANT"
        ],
        "userId": "TEST"
    }
]
}
```

    2019-10-14T06:23:13.664Z - INFO - Registration message contains cpiSignatureData

    2019-10-14T06:23:13.664Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

    2019-10-14T06:23:13.664Z - INFO - encodedCpiSignedData contents = {

```
"installationParam": {
    "eirpCapability": 47,
```

```
        "antennaAzimuth": 150,
        "heightType": "AMSL",
        "longitude": -90.602715,
        "height": 150,
        "indoorDeployment": false,
        "antennaBeamwidth": 12,
        "antennaDowntilt": 2,
        "latitude": 41.570738,
        "antennaGain": 20
    },
    "fccId": "Z8H89FT0053",
    "professionalInstallerData": {
        "cpiName": "test",
        "installCertificationTime": "2019-09-06T15:51:12Z",
        "cpiId": "test"
    },
    "cbsdSerialNumber": "0a003e440019"
}
```

2019-10-14T06:23:13.664Z - INFO - verified signature on cpiSignatureData
2019-10-14T06:23:13.680Z - INFO - cpiSignatureData data successfully validated against jsonschema
2019-10-14T06:23:13.680Z - INFO - engine sent successfully, the response to CBRS   : {

```
    "registrationResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
```

2019-10-14T06:23:15.286Z - INFO - registration request from CBRS   : {

```
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "CAMBIUM_NETWORKS"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)   BHUL450",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "0a003e440017",
            "cpiSignatureData": {
                "digitalSignature":
"gHI5SjyBTtYGfRzS8fq7mpj2whIvfu12b-qI2EMpV41hMKDSuyis_QZGY8bYVA85diu4ssiNOd87jg
GiVkmH8GjB6plyzw6TVOaC_RNWhdX2gplUkwNAfevmYuC2QXIngEBac5DD9uZXSaFls27OMnaO
bcutg4otUKQrVdGWM7HGvSxPaG7TgGyDx6y7cWhdxTzZrq93NquM_Kg029Gm5Q8VHQIJ_mcFX
qXe9VlYRy9TlGoddtihmi0JtuOe698hFRgt-6JU7bNMIbmOEX7XDNSQfatdr0HwIGvHPn14rb1QnZ
M8b9b6AKNYM9Byr3jS_nCz3nrOt1w9QykBwkL52Q",
                "encodedCpiSignedData":
"eyJmY2NJZCI6IIo4SDg5RlQwMDUzIiwiY2JzZFNlcmlhbE51bWJlcil6IjBhMDAzZTQ0MDAxNyIsImI
```

uc3RhbGxhdGlvblBhcmFtIjp7ImxhdGl0dWRlIjo0MS41NzA3MzgsImxvbmdpdHVkZSI6LTkwLjYw
MjcxNSwiaGVpZ2h0IjoxNTAsImhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6
ZmFsc2UsImFudGVubmFBemltdXRoIjoxNTAsImFudGVubmFEb3dudGlsdCI6MiwiYW50ZW5uYVU
dhaW4iOjIwLCJlaXJwQ2FwYWJpbG0eSI6NDcsImFudGVubmFCZWFtd2lkdGgiOjEyfSwicHJvZm
Vzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRlc3QiLCJjcGlOYW1lIjoidGVzdCIsImluc3R
hbGxDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMTktMDktMDZUMTU6NTE6MTJaIn19",
            "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
        },
        "fccId": "Z8H89FT0053",
        "groupingParam": [
            {
                "groupId": "0a-00-3e-44-00-17",
                "groupType": "INTERFERENCE_COORDINATION"
            }
        ],
        "measCapability": [
            "RECEIVED_POWER_WITHOUT_GRANT"
        ],
        "userId": "TEST"
    }
  ]
}
2019-10-14T06:23:15.332Z - INFO - Registration message contains cpiSignatureData
2019-10-14T06:23:15.332Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2019-10-14T06:23:15.332Z - INFO - encodedCpiSignedData contents = {
    "installationParam": {
        "eirpCapability": 47,
        "antennaAzimuth": 150,
        "heightType": "AMSL",
        "longitude": -90.602715,
        "height": 150,
        "indoorDeployment": false,
        "antennaBeamwidth": 12,
        "antennaDowntilt": 2,
        "latitude": 41.570738,
        "antennaGain": 20
    },
    "fccId": "Z8H89FT0053",
    "professionalInstallerData": {
        "cpiName": "test",
        "installCertificationTime": "2019-09-06T15:51:12Z",
        "cpiId": "test"
    },
    "cbsdSerialNumber": "0a003e440017"
}
2019-10-14T06:23:15.332Z - INFO - verified signature on cpiSignatureData
2019-10-14T06:23:15.332Z - INFO - cpiSignatureData data successfully validated against jsonschema
2019-10-14T06:23:15.332Z - INFO - engine sent successfully, the response to CBRS : {
    "registrationResponse": [
        {
            "response": {

```
                    "responseCode": 201
                }
            }
        ]
    }
}
```

2019-10-14T06:23:16.644Z - INFO - arrived to nstep starting question answer session with the technician

2019-10-14T06:23:16.644Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2019-10-14T06:25:24.720Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2019-10-14T06:25:24.720Z - INFO - the question is : Were there RF transmissions from the CBSD2 during the test? please choose one of the answers :

2019-10-14T06:25:25.405Z - INFO - for the question : Were there RF transmissions from the CBSD2 during the test? , the user choose n

2019-10-14T06:25:26.326Z - 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
2019-10-14T06:30:39.608Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
2019-10-14T06:30:39.608Z - INFO - the selected test from the user : WINNF.FT.C.GRA.1 is starting now
2019-10-14T06:30:42.276Z - INFO - registration request from CBRS   : {

```
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "CAMBIUM_NETWORKS"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)   BHUL450",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "0a003e440019",
            "cpiSignatureData": {
                "digitalSignature":
```
"Cdm2aCBSLn_dSoDokietXpG0jjAFgfEs701DSv0mSxfWuKAJXKa6sBCQ2_RGXB0UKxko_1zd4r NWhYm2VnlQXv7lUGrZWosxdWVxUC9mEFH0mCyNUcyieRNE7PAv6YNRKN1Au17WZxdpfwJUf aLH4Hmmc1t6QE_UEL7qWm22uehlTjwWQbxokId5tSAjejWOjDyjx1bwhmez7tzkyCdD5EnNQCbT APQZeuqSBL-WDwKuwNsTJrUuv_FkKacUduLdE02xbl38f2exkJVJallPpbGg2DC-7wm0xTPIJUQc 5RF3Z5YKI7gFP8jjCtldziv0-_YZuMey34LMvsI2IqGvng",
                "encodedCpiSignedData":
"eyJmY2NJZCI6IIo4SDg5RlQwMDUzIiwiY2JzZFNlcmlhbE51bWJlcil6IjBhMDAzZTQ0MDAxOSIsIm luc3RhbGxhdGlvblBhcmFtIjp7ImxhdGl0dWRlIjo0MS41NzA3MzgsImxvbmdpdHVkZSI6LTkwLjYw MjcxNSwiaGVpZ2h0IjoxNTAsImhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCl6 ZmFsc2UsImFudGVubmFBemltdXRoIjoxNTAsImFudGVubmFEb3dudGlsdCl6MiwiYW50ZW5uYU dhaW4iOjlwLCJlaXJwQ2FwYWJpbGl0eSl6NDcsImFudGVubmFCZWFtd2lkdGgiOjEyfSwiY2F0ZW dvcnkiOiJCIiwiY3BpWR0YSl6eyJjcGlJZCI6InRlc3QiLCJjcGlOYW1lIjoidGVzdClsImluc3R hbGxDZXJ0aWZpY2F0aW9uVGltZSl6IjlwMTktMDktMDZUMTU6NTE6MTJaIn19",
                "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
```
            },
            "fccId": "Z8H89FT0053",
            "groupingParam": [
                {
                    "groupId": "0a-00-3e-44-00-19",
                    "groupType": "INTERFERENCE_COORDINATION"
                }
            ],
            "measCapability": [
                "RECEIVED_POWER_WITHOUT_GRANT"
            ],
            "userId": "TEST"
        }
    ]
}
```
2019-10-14T06:30:42.322Z - INFO - Registration message contains cpiSignatureData
2019-10-14T06:30:42.322Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2019-10-14T06:30:42.322Z - INFO - encodedCpiSignedData contents = {
```
    "installationParam": {
        "eirpCapability": 47,
```

```
            "antennaAzimuth": 150,
            "heightType": "AMSL",
            "longitude": -90.602715,
            "height": 150,
            "indoorDeployment": false,
            "antennaBeamwidth": 12,
            "antennaDowntilt": 2,
            "latitude": 41.570738,
            "antennaGain": 20
        },
        "fccId": "Z8H89FT0053",
        "professionalInstallerData": {
            "cpiName": "test",
            "installCertificationTime": "2019-09-06T15:51:12Z",
            "cpiId": "test"
        },
        "cbsdSerialNumber": "0a003e440019"
    }
2019-10-14T06:30:42.322Z - INFO - verified signature on cpiSignatureData
2019-10-14T06:30:42.338Z - INFO - cpiSignatureData data successfully validated against
jsonschema
2019-10-14T06:30:42.338Z - INFO - engine sent successfully, the response to CBRS   : {
    "registrationResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-14T06:31:43.053Z - INFO - spectrumInquiry request from CBRS   : {
    "spectrumInquiryRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "inquiredSpectrum": [
                {
                    "highFrequency": 3690000000,
                    "lowFrequency": 3670000000
                },
                {
                    "highFrequency": 3670000000,
                    "lowFrequency": 3650000000
                },
                {
                    "highFrequency": 3580000000,
                    "lowFrequency": 3560000000
                }
            ]
        }
    ]
}
```

2019-10-14T06:31:43.053Z - INFO - engine sent successfully, the response to CBRS   : {
   "spectrumInquiryResponse": [
      {
         "availableChannel": [
            {
               "channelType": "GAA",
               "frequencyRange": {
                  "highFrequency": 3690000000,
                  "lowFrequency": 3670000000
               },
               "ruleApplied": "FCC_PART_96"
            },
            {
               "channelType": "GAA",
               "frequencyRange": {
                  "highFrequency": 3670000000,
                  "lowFrequency": 3650000000
               },
               "ruleApplied": "FCC_PART_96"
            },
            {
               "channelType": "GAA",
               "frequencyRange": {
                  "highFrequency": 3580000000,
                  "lowFrequency": 3560000000
               },
               "ruleApplied": "FCC_PART_96"
            }
         ],
         "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
         "response": {
            "responseCode": 0
         }
      }
   ]
}
2019-10-14T06:31:43.115Z - INFO - grant request from CBRS   : {
   "grantRequest": [
      {
         "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
         "operationParam": {
            "maxEirp": -22,
            "operationFrequencyRange": {
               "highFrequency": 3685000000,
               "lowFrequency": 3675000000
            }
         }
      }
   ]
}
2019-10-14T06:31:43.115Z - INFO - engine sent successfully, the response to CBRS   : {
   "grantResponse": [

```
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "response": {
                    "responseCode": 400
                }
            }
        ]
}
```

2019-10-14T06:31:44.505Z - INFO - arrived to nstep starting question answer session with the technician
2019-10-14T06:31:44.505Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :
2019-10-14T06:33:32.612Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n
2019-10-14T06:33:33.563Z - INFO - The final result of the test : WINNF.FT.C.GRA.1 is - passed

Test Log for WINNF.FT.C.GRA.2 Test Case ID
2019-10-14T06:34:27.525Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
2019-10-14T06:34:27.525Z - INFO - the selected test from the user : WINNF.FT.C.GRA.2 is starting now
2019-10-14T06:34:34.326Z - INFO - registration request from CBRS   : {

```
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "CAMBIUM_NETWORKS"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)    BHUL450",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "0a003e440019",
            "cpiSignatureData": {
                "digitalSignature":
```
"Cdm2aCBSLn_dSoDokietXpG0jjAFgfEs701DSv0mSxfWuKAJXKa6sBCQ2_RGXB0UKxko_1zd4r NWhYm2VnlQXv7lUGrZWosxdWVxUC9mEFH0mCyNUcyieRNE7PAv6YNRKN1Au17WZxdpfwJUf aLH4Hmmc1t6QE_UEL7qWm22uehlTjwWQbxokld5tSAjejWOjDyjx1bwhmez7tzkyCdD5EnNQCbT APQZeuqSBL-WDwKuwNsTJrUuv_FkKacUduLdE02xbI38f2exkJVJallPpbGg2DC-7wm0xTPIJUQc 5RF3Z5YKI7gFP8jjCtldziv0-_YZuMey34LMvsI2lqGvng",
```
                "encodedCpiSignedData":
```
"eyJmY2NJZCl6Ilo4SDg5RlQwMDUzliwiY2JzZFNlcmlhbE51bWJlcil6IjBhMDAzZTQ0MDAxOSIslm luc3RhbGxhdGlvblBhcmFtljp7ImxhdGl0dWRlIjo0MS41NzA3MzgslmxvbmdpdHVkZSl6LTkwLjYw MjcxNSwiaGVpZ2h0IjoxNTAsImhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCl6 ZmFsc2UslmFudGVubmFBemltdXRoIjoxNTAslmFudGVubmFEb3dudGlsdCl6MiwiYW50ZW5uYU dhaW4iOjIwLCJlaXJwQ2FwYWJpbGl0eSl6NDcslmFudGVubmFCZWFtd2lkdGgiOjEyfSwicHJvZm Vzc2lvbmFsSW5zdGFsbGVyRGF0YSl6eyJjcGlJZCl6InRlc3QiLCJjcGlOYW1lljoidGVzdClslmluc3R hbGxDZXJ0aWZpY2F0aW9uVGltZSl6IjIwMTktMDktMDZUMTU6NTE6MTJaIn19",
```
                "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
            },
            "fccId": "Z8H89FT0053",
            "groupingParam": [
                {
                    "groupId": "0a-00-3e-44-00-19",
                    "groupType": "INTERFERENCE_COORDINATION"
                }
            ],
            "measCapability": [
                "RECEIVED_POWER_WITHOUT_GRANT"
            ],
            "userId": "TEST"
        }
    ]
}
```
2019-10-14T06:34:34.372Z - INFO - Registration message contains cpiSignatureData
2019-10-14T06:34:34.372Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2019-10-14T06:34:34.372Z - INFO - encodedCpiSignedData contents = {
```
    "installationParam": {
        "eirpCapability": 47,
```

```
        "antennaAzimuth": 150,
        "heightType": "AMSL",
        "longitude": -90.602715,
        "height": 150,
        "indoorDeployment": false,
        "antennaBeamwidth": 12,
        "antennaDowntilt": 2,
        "latitude": 41.570738,
        "antennaGain": 20
    },
    "fccId": "Z8H89FT0053",
    "professionalInstallerData": {
        "cpiName": "test",
        "installCertificationTime": "2019-09-06T15:51:12Z",
        "cpiId": "test"
    },
    "cbsdSerialNumber": "0a003e440019"
}
2019-10-14T06:34:34.372Z - INFO - verified signature on cpiSignatureData
2019-10-14T06:34:34.372Z - INFO - cpiSignatureData data successfully validated against
jsonschema
2019-10-14T06:34:34.372Z - INFO - engine sent successfully, the response to CBRS   : {
    "registrationResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-14T06:35:35.181Z - INFO - spectrumInquiry request from CBRS   : {
    "spectrumInquiryRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "inquiredSpectrum": [
                {
                    "highFrequency": 3690000000,
                    "lowFrequency": 3670000000
                },
                {
                    "highFrequency": 3670000000,
                    "lowFrequency": 3650000000
                },
                {
                    "highFrequency": 3580000000,
                    "lowFrequency": 3560000000
                }
            ]
        }
    ]
}
```

```
2019-10-14T06:35:35.197Z - INFO - engine sent successfully, the response to CBRS   : {
    "spectrumInquiryResponse": [
        {
            "availableChannel": [
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3690000000,
                        "lowFrequency": 3670000000
                    },
                    "ruleApplied": "FCC_PART_96"
                },
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3670000000,
                        "lowFrequency": 3650000000
                    },
                    "ruleApplied": "FCC_PART_96"
                },
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3580000000,
                        "lowFrequency": 3560000000
                    },
                    "ruleApplied": "FCC_PART_96"
                }
            ],
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-14T06:35:35.244Z - INFO - grant request from CBRS   : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "operationParam": {
                "maxEirp": -22,
                "operationFrequencyRange": {
                    "highFrequency": 3685000000,
                    "lowFrequency": 3675000000
                }
            }
        }
    ]
}
2019-10-14T06:35:35.259Z - INFO - engine sent successfully, the response to CBRS   : {
    "grantResponse": [
```

```
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "response": {
                "responseCode": 401
            }
        }
    ]
}
```

2019-10-14T06:35:36.476Z - INFO - arrived to nstep starting question answer session with the technician

2019-10-14T06:35:36.476Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2019-10-14T06:37:25.490Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2019-10-14T06:37:26.721Z - INFO - The final result of the test : WINNF.FT.C.GRA.2 is - passed

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

2019-10-14T07:04:08.706Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2019-10-14T07:04:08.706Z - INFO - the selected test from the user : WINNF.FT.D.HBT.2 is starting now

2019-10-14T07:04:16.895Z - INFO - registration request from CBRS　: {

```
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "CAMBIUM_NETWORKS"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)    BHUL450",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "0a003e440019",
            "cpiSignatureData": {
                "digitalSignature":
```

"Cdm2aCBSLn_dSoDokietXpG0jjAFgfEs701DSv0mSxfWuKAJXKa6sBCQ2_RGXB0UKxko_1zd4r NWhYm2VnlQXv7lUGrZWosxdWVxUC9mEFH0mCyNUcyieRNE7PAv6YNRKN1Au17WZxdpfwJUf aLH4Hmmc1t6QE_UEL7qWm22uehlTjwWQbxokId5tSAjejWOjDyjx1bwhmez7tzkyCdD5EnNQCbT APQZeuqSBL-WDwKuwNsTJrUuv_FkKacUduLdE02xbl38f2exkJVJallPpbGg2DC-7wm0xTPIJUQc 5RF3Z5YKI7gFP8jjCtIdziv0-_YZuMey34LMvsI2IqGvng",

```
                "encodedCpiSignedData":
```

"eyJmY2NJZCI6Ilo4SDg5RlQwMDUzIiwiY2JzZFNlcmlhbE51bWJlciI6IjBhMDAzZTQ0MDAxOSIslm luc3RhbGxhdGlvblBhcmFtIjp7ImxhdGl0dWRlIjo0MS41NzA3MzgslmxvbmdpdHVkZSI6LTkwLjYw MjcxNSwiaGVpZ2h0IjoxNTAsImhlaWdodFR5cGUiOiJBVlNMIiwiaW5kb29yRGVwbG95bWVudCI6 ZmFsc2UslmFudGVubmFBemltdXRoIjoxNTAslmFudGVubmFEb3dudGlsdCI6MiwiYW50ZW5uYU dhaW4iOjlwLCJlaXJwQ2FwYWJpbGl0eSI6NDcslmFudGVubmFCZWFtd2lkdGgiOjeyfSwicHJvZm Vzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRlc3QiLCJjcGlOYW1lIjoidGVzdClslmluc3R hbGxDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMTktMDktMDZUMTU6NTE6MTJaIn19",

```
                "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
            },
            "fccId": "Z8H89FT0053",
            "groupingParam": [
                {
                    "groupId": "0a-00-3e-44-00-19",
                    "groupType": "INTERFERENCE_COORDINATION"
                }
            ],
            "measCapability": [
                "RECEIVED_POWER_WITHOUT_GRANT"
            ],
            "userId": "TEST"
        }
    ]
}
```

2019-10-14T07:04:16.957Z - INFO - Registration message contains cpiSignatureData

2019-10-14T07:04:16.957Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2019-10-14T07:04:16.957Z - INFO - encodedCpiSignedData contents = {

```
    "installationParam": {
        "eirpCapability": 47,
```

```
            "antennaAzimuth": 150,
            "heightType": "AMSL",
            "longitude": -90.602715,
            "height": 150,
            "indoorDeployment": false,
            "antennaBeamwidth": 12,
            "antennaDowntilt": 2,
            "latitude": 41.570738,
            "antennaGain": 20
    },
    "fccId": "Z8H89FT0053",
    "professionalInstallerData": {
            "cpiName": "test",
            "installCertificationTime": "2019-09-06T15:51:12Z",
            "cpiId": "test"
    },
    "cbsdSerialNumber": "0a003e440019"
}
2019-10-14T07:04:17.005Z - INFO - verified signature on cpiSignatureData
2019-10-14T07:04:17.005Z - INFO - cpiSignatureData data successfully validated against
jsonschema
2019-10-14T07:04:17.005Z - INFO - engine sent successfully, the response to CBRS   : {
    "registrationResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-14T07:04:24.835Z - INFO - registration request from CBRS    : {
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "CAMBIUM_NETWORKS"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)   BHUL450",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "0a003e440017",
            "cpiSignatureData": {
                "digitalSignature":
```

"gHI5SjyBTtYGfRzS8fq7mpj2whIvfu12b-qI2EMpV41hMKDSuyis_QZGY8bYVA85diu4ssiNOd87jg
GiVkmH8GjB6plyzw6TVOaC_RNWhdX2gpIUkwNAfevmYuC2QXlngEBac5DD9uZXSaFls27OMnaO
bcutg4otUKQrVdGWM7HGvSxPaG7TgGyDx6y7cWhdxTzZrq93NquM_Kg029Gm5Q8VHQIJ_mcFX
qXe9VlYRy9TlGoddtihmi0JtuOe698hFRgt-6JU7bNMIbmOEX7XDNSQfatdr0HwIGvHPn14rb1QnZ
M8b9b6AKNYM9Byr3jS_nCz3nrOt1w9QykBwkL52Q",
            "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RlQwMDUzliwiY2JzZFNlcmlhbE51bWJlcil6IjBhMDAzZTQ0MDAxNylsIml

uc3RhbGxhdGlvblBhcmFtIjp7ImxhdGl0dWRlIjo0MS41NzA3MzgsImxvbmdpdHVkZSI6LTkwLjYw
MjcxNSwiaGVpZ2h0IjoxNTAsImhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6
ZmFsc2UsImFudGVubmFBemltdXRoIjoxNTAsImFudGVubmFEb3dudGlsdCI6MiwiYW50ZW5uYVU
dhaW4iOjIwLCJlaXJwQ2FwYWJpbGl0eSI6NDcsImFudGVubmFCZWFtd2lkdGgiOjEyfSwicHJvZm
Vzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRlc3QiLCJjcGlOYW1lIjoidGVzdCIsImluc3R
hbGxDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMTktMDktMDZUMTU6NTE6MTJaIn19",
                "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
            },
            "fccId": "Z8H89FT0053",
            "groupingParam": [
                {
                    "groupId": "0a-00-3e-44-00-17",
                    "groupType": "INTERFERENCE_COORDINATION"
                }
            ],
            "measCapability": [
                "RECEIVED_POWER_WITHOUT_GRANT"
            ],
            "userId": "TEST"
        }
    ]
}

2019-10-14T07:04:24.882Z - INFO - Registration message contains cpiSignatureData
2019-10-14T07:04:24.898Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2019-10-14T07:04:24.898Z - INFO - encodedCpiSignedData contents = {

    "installationParam": {
        "eirpCapability": 47,
        "antennaAzimuth": 150,
        "heightType": "AMSL",
        "longitude": -90.602715,
        "height": 150,
        "indoorDeployment": false,
        "antennaBeamwidth": 12,
        "antennaDowntilt": 2,
        "latitude": 41.570738,
        "antennaGain": 20
    },
    "fccId": "Z8H89FT0053",
    "professionalInstallerData": {
        "cpiName": "test",
        "installCertificationTime": "2019-09-06T15:51:12Z",
        "cpiId": "test"
    },
    "cbsdSerialNumber": "0a003e440017"
}

2019-10-14T07:04:24.898Z - INFO - verified signature on cpiSignatureData
2019-10-14T07:04:24.898Z - INFO - cpiSignatureData data successfully validated against jsonschema
2019-10-14T07:04:24.898Z - INFO - engine sent successfully, the response to CBRS   : {
    "registrationResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",

```
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-14T07:05:17.440Z - INFO - spectrumInquiry request from CBRS   : {
    "spectrumInquiryRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "inquiredSpectrum": [
                {
                    "highFrequency": 3690000000,
                    "lowFrequency": 3670000000
                },
                {
                    "highFrequency": 3670000000,
                    "lowFrequency": 3650000000
                },
                {
                    "highFrequency": 3580000000,
                    "lowFrequency": 3560000000
                }
            ]
        }
    ]
}
2019-10-14T07:05:17.440Z - INFO - engine sent successfully, the response to CBRS   : {
    "spectrumInquiryResponse": [
        {
            "availableChannel": [
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3690000000,
                        "lowFrequency": 3670000000
                    },
                    "ruleApplied": "FCC_PART_96"
                },
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3670000000,
                        "lowFrequency": 3650000000
                    },
                    "ruleApplied": "FCC_PART_96"
                },
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3580000000,
                        "lowFrequency": 3560000000
```

```
                },
                "ruleApplied": "FCC_PART_96"
            }
        ],
        "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
        "response": {
            "responseCode": 0
        }
    }
    ]
}
2019-10-14T07:05:17.517Z - INFO - grant request from CBRS   : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "operationParam": {
                "maxEirp": 35,
                "operationFrequencyRange": {
                    "highFrequency": 3685000000,
                    "lowFrequency": 3675000000
                }
            }
        }
    ]
}
2019-10-14T07:05:17.517Z - INFO - engine sent successfully, the response to CBRS   : {
    "grantResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "channelType": "GAA",
            "grantExpireTime": "2019-10-21T07:05:17Z",
            "grantId": "524642818",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-14T07:05:17.611Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "524642818",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
2019-10-14T07:05:17.611Z - INFO - engine sent successfully, the response to CBRS   : {
    "heartbeatResponse": [
        {
```

```
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "grantId": "524642818",
                "response": {
                    "responseCode": 0
                },
                "transmitExpireTime": "2019-10-14T07:08:37Z"
            }
        ]
    }
    2019-10-14T07:05:25.006Z - INFO - spectrumInquiry request from CBRS   : {
        "spectrumInquiryRequest": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
                "inquiredSpectrum": [
                    {
                        "highFrequency": 3630000000,
                        "lowFrequency": 3610000000
                    },
                    {
                        "highFrequency": 3570000000,
                        "lowFrequency": 3550000000
                    },
                    {
                        "highFrequency": 3600000000,
                        "lowFrequency": 3580000000
                    }
                ]
            }
        ]
    }
    2019-10-14T07:05:25.006Z - INFO - engine sent successfully, the response to CBRS   : {
        "spectrumInquiryResponse": [
            {
                "availableChannel": [
                    {
                        "channelType": "GAA",
                        "frequencyRange": {
                            "highFrequency": 3630000000,
                            "lowFrequency": 3610000000
                        },
                        "ruleApplied": "FCC_PART_96"
                    },
                    {
                        "channelType": "GAA",
                        "frequencyRange": {
                            "highFrequency": 3570000000,
                            "lowFrequency": 3550000000
                        },
                        "ruleApplied": "FCC_PART_96"
                    },
                    {
                        "channelType": "GAA",
```

```
                    "frequencyRange": {
                        "highFrequency": 3600000000,
                        "lowFrequency": 3580000000
                    },
                    "ruleApplied": "FCC_PART_96"
                }
            ],
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-14T07:05:25.052Z - INFO - grant request from CBRS    : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
            "operationParam": {
                "maxEirp": 35,
                "operationFrequencyRange": {
                    "highFrequency": 3625000000,
                    "lowFrequency": 3615000000
                }
            }
        }
    ]
}
2019-10-14T07:05:25.068Z - INFO - engine sent successfully, the response to CBRS    : {
    "grantResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
            "channelType": "GAA",
            "grantExpireTime": "2019-10-21T07:05:25Z",
            "grantId": "345043141",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-14T07:05:25.115Z - INFO - heartbeat request from CBRS    : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
            "grantId": "345043141",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
```

```
2019-10-14T07:05:25.130Z - INFO - engine sent successfully, the response to CBRS   : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
            "grantId": "345043141",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2019-10-14T07:08:45Z"
        }
    ]
}
2019-10-14T07:06:07.703Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "524642818",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-10-14T07:06:07.703Z - INFO - Time interval between two heartbeat request messages is:
50.092, limit is: 65.0
2019-10-14T07:06:07.717Z - INFO - engine sent successfully, the response to CBRS   : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "524642818",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2019-10-14T07:09:27Z"
        }
    ]
}
2019-10-14T07:06:15.221Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
            "grantId": "345043141",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-10-14T07:06:15.221Z - INFO - Time interval between two heartbeat request messages is:
50.107, limit is: 65.0
2019-10-14T07:06:15.221Z - INFO - engine sent successfully, the response to CBRS   : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
```

```
                "grantId": "345043141",
                "response": {
                    "responseCode": 0
                },
                "transmitExpireTime": "2019-10-14T07:09:35Z"
            }
        ]
    }
    2019-10-14T07:06:57.795Z - INFO - heartbeat request from CBRS   : {
        "heartbeatRequest": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "grantId": "524642818",
                "grantRenew": false,
                "operationState": "AUTHORIZED"
            }
        ]
    }
    2019-10-14T07:06:57.795Z - INFO - Time interval between two heartbeat request messages is:
    50.092, limit is: 65.0
    2019-10-14T07:06:57.809Z - INFO - engine sent successfully, the response to CBRS   : {
        "heartbeatResponse": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "grantId": "524642818",
                "response": {
                    "responseCode": 0
                },
                "transmitExpireTime": "2019-10-14T07:10:17Z"
            }
        ]
    }
    2019-10-14T07:07:05.313Z - INFO - heartbeat request from CBRS   : {
        "heartbeatRequest": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
                "grantId": "345043141",
                "grantRenew": false,
                "operationState": "AUTHORIZED"
            }
        ]
    }
    2019-10-14T07:07:05.313Z - INFO - Time interval between two heartbeat request messages is:
    50.092, limit is: 65.0
    2019-10-14T07:07:05.328Z - INFO - engine sent successfully, the response to CBRS   : {
        "heartbeatResponse": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
                "grantId": "345043141",
                "response": {
                    "responseCode": 0
                },
```

                "transmitExpireTime": "2019-10-14T07:10:25Z"
            }
        ]
    }
    2019-10-14T07:07:47.901Z - INFO - heartbeat request from CBRS   : {
        "heartbeatRequest": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "grantId": "524642818",
                "grantRenew": false,
                "operationState": "AUTHORIZED"
            }
        ]
    }
    2019-10-14T07:07:47.901Z - INFO - Time interval between two heartbeat request messages is:
    50.107, limit is: 65.0
    2019-10-14T07:07:47.917Z - INFO - engine sent successfully, the response to CBRS   : {
        "heartbeatResponse": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "grantId": "524642818",
                "response": {
                    "responseCode": 0
                },
                "transmitExpireTime": "2019-10-14T07:11:07Z"
            }
        ]
    }
    2019-10-14T07:07:55.421Z - INFO - heartbeat request from CBRS   : {
        "heartbeatRequest": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
                "grantId": "345043141",
                "grantRenew": false,
                "operationState": "AUTHORIZED"
            }
        ]
    }
    2019-10-14T07:07:55.437Z - INFO - Time interval between two heartbeat request messages is:
    50.107, limit is: 65.0
    2019-10-14T07:07:55.437Z - INFO - engine sent successfully, the response to CBRS   : {
        "heartbeatResponse": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
                "grantId": "345043141",
                "response": {
                    "responseCode": 0
                },
                "transmitExpireTime": "2019-10-14T07:11:15Z"
            }
        ]
    }

```
2019-10-14T07:08:38.009Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "524642818",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-10-14T07:08:38.009Z - INFO - Time interval between two heartbeat request messages is:
50.107, limit is: 65.0
2019-10-14T07:08:38.009Z - INFO - engine sent successfully, the response to CBRS   : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "524642818",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2019-10-14T07:11:58Z"
        }
    ]
}
2019-10-14T07:08:45.513Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
            "grantId": "345043141",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-10-14T07:08:45.513Z - INFO - Time interval between two heartbeat request messages is:
50.092, limit is: 65.0
2019-10-14T07:08:45.513Z - INFO - engine sent successfully, the response to CBRS   : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
            "grantId": "345043141",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2019-10-14T07:12:05Z"
        }
    ]
}
2019-10-14T07:09:28.096Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
```

```
                "grantId": "524642818",
                "grantRenew": false,
                "operationState": "AUTHORIZED"
            }
        ]
    }
2019-10-14T07:09:28.096Z - INFO - Time interval between two heartbeat request messages is:
50.088, limit is: 65.0
2019-10-14T07:09:28.112Z - INFO - engine sent successfully, the response to CBRS   : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "524642818",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2019-10-14T07:12:48Z"
        }
    ]
}
2019-10-14T07:09:35.588Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
            "grantId": "345043141",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-10-14T07:09:35.604Z - INFO - Time interval between two heartbeat request messages is:
50.076, limit is: 65.0
2019-10-14T07:09:35.604Z - INFO - engine sent successfully, the response to CBRS   : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
            "grantId": "345043141",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2019-10-14T07:12:55Z"
        }
    ]
}
```

2019-10-14T07:09:37.242Z - INFO - arrived to nstep starting question answer session with the technician
2019-10-14T07:09:37.242Z - INFO - the question is : Did CBSD1 transmit power prior to AUTHORIZED state (first successful HBT response)? please choose one of the answers :
2019-10-14T07:09:54.323Z - INFO - for the question : Did CBSD1 transmit power prior to AUTHORIZED state (first successful HBT response)? , the user choose n
2019-10-14T07:09:54.323Z - INFO - the question is : Did CBSD1 transmit only within the frequency range specified in its grantRequest message? please choose one of the answers :

2019-10-14T07:10:00.174Z - INFO - for the question : Did CBSD1 transmit only within the frequency range specified in its grantRequest message? , the user choose y

2019-10-14T07:10:00.174Z - INFO - the question is : Did CBSD2 transmit power prior to AUTHORIZED state (first successful HBT response)? please choose one of the answers :

2019-10-14T07:10:02.326Z - INFO - for the question : Did CBSD2 transmit power prior to AUTHORIZED state (first successful HBT response)? , the user choose n

2019-10-14T07:10:02.326Z - INFO - the question is : Did CBSD2 transmit only within the frequency range specified in its grantRequest message? please choose one of the answers :

2019-10-14T07:10:03.061Z - INFO - for the question : Did CBSD2 transmit only within the frequency range specified in its grantRequest message? , the user choose y

2019-10-14T07:10:18.270Z - INFO - The final result of the test : WINNF.FT.D.HBT.2 is - passed and :the additional comments for the current test are : CBSD1 starts transmission at T07:05:20, CBSD2 starts transmission at T07:05:28

Test Log for WINNF.FT.C.HBT.3 Test Case ID
2019-10-14T07:19:21.262Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
2019-10-14T07:19:21.278Z - INFO - the selected test from the user : WINNF.FT.C.HBT.3 is starting now
2019-10-14T07:19:42.056Z - INFO - registration request from CBRS   : {
**   "registrationRequest": [**
**   {**
**   "airInterface": {**
**   "radioTechnology": "CAMBIUM_NETWORKS"**
**   },**
**   "cbsdCategory": "B",**
**   "cbsdInfo": {**
**   "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)   BHUL450",**
**   "vendor": "Cambium Networks"**
**   },**
**   "cbsdSerialNumber": "0a003e440019",**
**   "cpiSignatureData": {**
**   "digitalSignature":**

"Cdm2aCBSLn_dSoDokietXpG0jjAFgfEs701DSv0mSxfWuKAJXKa6sBCQ2_RGXB0UKxko_1zd4r NWhYm2VnlQXv7lUGrZWosxdWVxUC9mEFH0mCyNUcyieRNE7PAv6YNRKN1Au17WZxdpfwJUf aLH4Hmmc1t6QE_UEL7qWm22uehlTjwWQbxokld5tSAjejWOjDyjx1bwhmez7tzkyCdD5EnNQCbT APQZeuqSBL-WDwKuwNsTJrUuv_FkKacUduLdE02xbl38f2exkJVJallPpbGg2DC-7wm0xTPIJUQc 5RF3Z5YKl7gFP8jjCtldziv0-_YZuMey34LMvsl2IqGvng",
**   "encodedCpiSignedData":**

"eyJmY2NJZCI6Ilo4SDg5RlQwMDUzIiwiY2JzZFNlcmlhbE51bWJlciI6IjBhMDAzZTQ0MDAxOSIslm luc3RhbGxhdGlvblBhcmFtIjp7ImxhdGl0dWRlIjo0MS41NzA3MzgslmxvbmdpdHVkZSI6LTkwLjYw MjcxNSwiaGVpZ2h0IjoxNTAslmhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6 ZmFsc2UslmFudGVubmFBemltdXRoIjoxNTAslmFudGVubmFEb3dudGlsdCI6MiwiYW50ZW5uYU dhaW4iOjlwLCJlaXJwQ2FwYWJpbGl0eSI6NDcslmFudGVubmFCZWFtd2lkdGgiOjEyMCwiYW50ZW 5uYU1vZGVsIjoiIn0slmNwaVNpZ25hdHVyZURhdGEiOnsiamNpGlJZCI6InRlc3QiLCJjcGlOYW1lljoidGVzdClslmluc3R hbGxDZXJ0aWZpY2F0aW9uVGltZSI6IjlwMTktMDktMDZUMTU6NTE6MTJaIn19",
**   "protectedHeader": "eyJhbGciOiJSUzl1NilsInR5cCI6IkpXVCJ9"**
**   },**
**   "fccId": "Z8H89FT0053",**
**   "groupingParam": [**
**   {**
**   "groupId": "0a-00-3e-44-00-19",**
**   "groupType": "INTERFERENCE_COORDINATION"**
**   }**
**   ],**
**   "measCapability": [**
**   "RECEIVED_POWER_WITHOUT_GRANT"**
**   ],**
**   "userId": "TEST"**
**   }**
**   ]**
}
2019-10-14T07:19:42.165Z - INFO - Registration message contains cpiSignatureData
2019-10-14T07:19:42.165Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2019-10-14T07:19:42.165Z - INFO - encodedCpiSignedData contents = {
**   "installationParam": {**
**   "eirpCapability": 47,**

```
            "antennaAzimuth": 150,
            "heightType": "AMSL",
            "longitude": -90.602715,
            "height": 150,
            "indoorDeployment": false,
            "antennaBeamwidth": 12,
            "antennaDowntilt": 2,
            "latitude": 41.570738,
            "antennaGain": 20
        },
        "fccId": "Z8H89FT0053",
        "professionalInstallerData": {
            "cpiName": "test",
            "installCertificationTime": "2019-09-06T15:51:12Z",
            "cpiId": "test"
        },
        "cbsdSerialNumber": "0a003e440019"
    }
2019-10-14T07:19:42.165Z - INFO - verified signature on cpiSignatureData
2019-10-14T07:19:42.165Z - INFO - cpiSignatureData data successfully validated against
jsonschema
2019-10-14T07:19:42.165Z - INFO - engine sent successfully, the response to CBRS   : {
    "registrationResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-14T07:20:42.538Z - INFO - spectrumInquiry request from CBRS   : {
    "spectrumInquiryRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "inquiredSpectrum": [
                {
                    "highFrequency": 3690000000,
                    "lowFrequency": 3670000000
                },
                {
                    "highFrequency": 3670000000,
                    "lowFrequency": 3650000000
                },
                {
                    "highFrequency": 3580000000,
                    "lowFrequency": 3560000000
                }
            ]
        }
    ]
}
```

```
2019-10-14T07:20:42.553Z - INFO - engine sent successfully, the response to CBRS   : {
    "spectrumInquiryResponse": [
        {
            "availableChannel": [
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3690000000,
                        "lowFrequency": 3670000000
                    },
                    "ruleApplied": "FCC_PART_96"
                },
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3670000000,
                        "lowFrequency": 3650000000
                    },
                    "ruleApplied": "FCC_PART_96"
                },
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3580000000,
                        "lowFrequency": 3560000000
                    },
                    "ruleApplied": "FCC_PART_96"
                }
            ],
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-14T07:20:42.615Z - INFO - grant request from CBRS   : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "operationParam": {
                "maxEirp": 35,
                "operationFrequencyRange": {
                    "highFrequency": 3685000000,
                    "lowFrequency": 3675000000
                }
            }
        }
    ]
}
2019-10-14T07:20:42.615Z - INFO - engine sent successfully, the response to CBRS   : {
    "grantResponse": [
```

```
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "channelType": "GAA",
                "grantExpireTime": "2019-10-21T07:20:42Z",
                "grantId": "72680091",
                "heartbeatInterval": 60,
                "response": {
                    "responseCode": 0
                }
            }
        ]
    }
    2019-10-14T07:20:42.678Z - INFO - heartbeat request from CBRS    : {
        "heartbeatRequest": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "grantId": "72680091",
                "grantRenew": false,
                "operationState": "GRANTED"
            }
        ]
    }
    2019-10-14T07:20:42.694Z - INFO - engine sent successfully, the response to CBRS   : {
        "heartbeatResponse": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "grantId": "72680091",
                "response": {
                    "responseCode": 0
                },
                "transmitExpireTime": "2019-10-14T07:24:02Z"
            }
        ]
    }
    2019-10-14T07:21:32.786Z - INFO - heartbeat request from CBRS    : {
        "heartbeatRequest": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "grantId": "72680091",
                "grantRenew": false,
                "operationState": "AUTHORIZED"
            }
        ]
    }
    2019-10-14T07:21:32.786Z - INFO - Time interval between two heartbeat request messages is:
    50.107, limit is: 65.0
    2019-10-14T07:21:32.802Z - INFO - engine sent successfully, the response to CBRS   : {
        "heartbeatResponse": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "grantId": "72680091",
                "response": {
```

```
                "responseCode": 0
            },
            "transmitExpireTime": "2019-10-14T07:24:52Z"
        }
    ]
}
2019-10-14T07:22:22.865Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "72680091",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-10-14T07:22:22.881Z - INFO - Time interval between two heartbeat request messages is:
50.08, limit is: 65.0
2019-10-14T07:22:22.881Z - INFO - engine sent successfully, the response to CBRS   : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "72680091",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2019-10-14T07:25:42Z"
        }
    ]
}
2019-10-14T07:23:12.973Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "72680091",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-10-14T07:23:12.973Z - INFO - Time interval between two heartbeat request messages is:
50.108, limit is: 65.0
2019-10-14T07:23:12.989Z - INFO - engine sent successfully, the response to CBRS   : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "72680091",
            "response": {
                "responseCode": 105
            },
            "transmitExpireTime": "2019-10-14T07:23:12Z"
        }
```

    ]

}

2019-10-14T07:23:14.486Z - INFO - arrived to nstep starting question answer session with the technician

2019-10-14T07:23:14.486Z - 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 :

2019-10-14T07:24:22.752Z - INFO - for the question : Did the CBSD stop RF transmission within 60 seconds of receiving Heartbeat response with responseCode = 105? , the user choose y

2019-10-14T07:24:27.292Z - INFO - The final result of the test : WINNF.FT.C.HBT.3 is - passed and :the additional comments for the current test are : CBSD stops transmission at T07:23:13

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

    2019-10-14T07:25:27.430Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

    2019-10-14T07:25:27.430Z - INFO - the selected test from the user : WINNF.FT.C.HBT.5 is starting now

    2019-10-14T07:25:48.598Z - INFO - registration request from CBRS   : {

```
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "CAMBIUM_NETWORKS"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)   BHUL450",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "0a003e440019",
            "cpiSignatureData": {
                "digitalSignature":
```
"Cdm2aCBSLn_dSoDokietXpG0jjAFgfEs701DSv0mSxfWuKAJXKa6sBCQ2_RGXB0UKxko_1zd4r NWhYm2VnIQXv7lUGrZWosxdWVxUC9mEFH0mCyNUcyieRNE7PAv6YNRKN1Au17WZxdpfwJUf aLH4Hmmc1t6QE_UEL7qWm22uehlTjwWQbxokId5tSAjejWOjDyjx1bwhmez7tzkyCdD5EnNQCbT APQZeuqSBL-WDwKuwNsTJrUuv_FkKacUduLdE02xbI38f2exkJVJallPpbGg2DC-7wm0xTPIJUQc 5RF3Z5YKI7gFP8jjCtIdziv0-_YZuMey34LMvsI2IqGvng",
```
                "encodedCpiSignedData":
```
"eyJmY2NJZCI6IIo4SDg5RlQwMDUzIiwiY2JzZFNlcmlhbE51bWJlciI6IjBhMDAzZTQ0MDAxOSIsIm luc3RhbGxhdGlvblBhcmFtIjp7ImxhdGl0dWRIIjo0MS41NzA3MzgsImxvbmdpdHVkZSI6LTkwLjYw MjcxNSwiaGVpZ2h0IjoxNTAsImhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6 ZmFsc2UsImFudGVubmFBemltdXRoIjoxNTAsImFudGVubmFEb3dudGlsdCI6MiwiYW50ZW5uYU dhaW4iOjlwLCJlaXJwQ2FwYWJpbGl0eSI6NDcsImFudGVubmFCZWFtd2lkdGgiOjEyfSwiY2F0ZWd vcnkiOiJCIiwiY3BpSWQiOiJjb3Rlc3QiLCJjcGlOYW1lIjoidGVzdCIsImluc3R hbGxDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMTktMDktMDUtMTU6NTE6MTJaIn19",
```
                "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
            },
            "fccId": "Z8H89FT0053",
            "groupingParam": [
                {
                    "groupId": "0a-00-3e-44-00-19",
                    "groupType": "INTERFERENCE_COORDINATION"
                }
            ],
            "measCapability": [
                "RECEIVED_POWER_WITHOUT_GRANT"
            ],
            "userId": "TEST"
        }
    ]
}
```

    2019-10-14T07:25:48.677Z - INFO - Registration message contains cpiSignatureData

    2019-10-14T07:25:48.677Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

    2019-10-14T07:25:48.677Z - INFO - encodedCpiSignedData contents = {

```
    "installationParam": {
        "eirpCapability": 47,
```

```
                "antennaAzimuth": 150,
                "heightType": "AMSL",
                "longitude": -90.602715,
                "height": 150,
                "indoorDeployment": false,
                "antennaBeamwidth": 12,
                "antennaDowntilt": 2,
                "latitude": 41.570738,
                "antennaGain": 20
        },
        "fccId": "Z8H89FT0053",
        "professionalInstallerData": {
                "cpiName": "test",
                "installCertificationTime": "2019-09-06T15:51:12Z",
                "cpiId": "test"
        },
        "cbsdSerialNumber": "0a003e440019"
}
2019-10-14T07:25:48.677Z - INFO - verified signature on cpiSignatureData
2019-10-14T07:25:48.693Z - INFO - cpiSignatureData data successfully validated against
jsonschema
2019-10-14T07:25:48.693Z - INFO - engine sent successfully, the response to CBRS   : {
        "registrationResponse": [
                {
                        "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                        "response": {
                                "responseCode": 0
                        }
                }
        ]
}
2019-10-14T07:26:49.081Z - INFO - spectrumInquiry request from CBRS   : {
        "spectrumInquiryRequest": [
                {
                        "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                        "inquiredSpectrum": [
                                {
                                        "highFrequency": 3690000000,
                                        "lowFrequency": 3670000000
                                },
                                {
                                        "highFrequency": 3670000000,
                                        "lowFrequency": 3650000000
                                },
                                {
                                        "highFrequency": 3580000000,
                                        "lowFrequency": 3560000000
                                }
                        ]
                }
        ]
}
```

2019-10-14T07:26:49.095Z - INFO - engine sent successfully, the response to CBRS : {
    "spectrumInquiryResponse": [
        {
            "availableChannel": [
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3690000000,
                        "lowFrequency": 3670000000
                    },
                    "ruleApplied": "FCC_PART_96"
                },
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3670000000,
                        "lowFrequency": 3650000000
                    },
                    "ruleApplied": "FCC_PART_96"
                },
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3580000000,
                        "lowFrequency": 3560000000
                    },
                    "ruleApplied": "FCC_PART_96"
                }
            ],
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-14T07:26:49.142Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "operationParam": {
                "maxEirp": 35,
                "operationFrequencyRange": {
                    "highFrequency": 3685000000,
                    "lowFrequency": 3675000000
                }
            }
        }
    ]
}
2019-10-14T07:26:49.158Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [

```
                    {
                        "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                        "channelType": "GAA",
                        "grantExpireTime": "2019-10-21T07:26:49Z",
                        "grantId": "595456569",
                        "heartbeatInterval": 60,
                        "response": {
                            "responseCode": 0
                        }
                    }
                ]
            }
2019-10-14T07:26:49.220Z - INFO - heartbeat request from CBRS    : {
                "heartbeatRequest": [
                    {
                        "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                        "grantId": "595456569",
                        "grantRenew": false,
                        "operationState": "GRANTED"
                    }
                ]
            }
2019-10-14T07:26:49.220Z - INFO - engine sent successfully, the response to CBRS   : {
                "heartbeatResponse": [
                    {
                        "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                        "grantId": "595456569",
                        "response": {
                            "responseCode": 501
                        },
                        "transmitExpireTime": "2019-10-14T07:26:49Z"
                    }
                ]
            }
2019-10-14T07:27:39.296Z - INFO - heartbeat request from CBRS    : {
                "heartbeatRequest": [
                    {
                        "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                        "grantId": "595456569",
                        "grantRenew": false,
                        "operationState": "GRANTED"
                    }
                ]
            }
2019-10-14T07:27:39.296Z - INFO - Time interval between two heartbeat request messages is:
50.076, limit is: 65.0
2019-10-14T07:27:39.312Z - INFO - engine sent successfully, the response to CBRS   : {
                "heartbeatResponse": [
                    {
                        "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                        "grantId": "595456569",
                        "response": {
```

```
            "responseCode": 501
        },
        "transmitExpireTime": "2019-10-14T07:27:39Z"
    }
  ]
}
```

2019-10-14T07:27:41.278Z - INFO - arrived to nstep starting question answer session with the technician

2019-10-14T07:27:41.278Z - INFO - the question is : Did the CBSD transmit at any time during the test? please choose one of the answers :

2019-10-14T07:29:24.285Z - INFO - for the question : Did the CBSD transmit at any time during the test? , the user choose n

2019-10-14T07:29:25.424Z - INFO - The final result of the test : WINNF.FT.C.HBT.5 is - passed

Test Log for WINNF.FT.C.HBT.6 Test Case ID
2019-10-14T07:32:48.286Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
2019-10-14T07:32:48.286Z - INFO - the selected test from the user : WINNF.FT.C.HBT.6 is starting now
2019-10-14T07:32:51.234Z - INFO - registration request from CBRS   : {
    "registrationRequest": [
        {
           "airInterface": {
               "radioTechnology": "CAMBIUM_NETWORKS"
           },
           "cbsdCategory": "B",
           "cbsdInfo": {
               "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)   BHUL450",
               "vendor": "Cambium Networks"
           },
           "cbsdSerialNumber": "0a003e440019",
           "cpiSignatureData": {
               "digitalSignature":

"Cdm2aCBSLn_dSoDokietXpG0jjAFgfEs701DSv0mSxfWuKAJXKa6sBCQ2_RGXB0UKxko_1zd4r NWhYm2VnlQXv7lUGrZWosxdWVxUC9mEFH0mCyNUcyieRNE7PAv6YNRKN1Au17WZxdpfwJUf aLH4Hmmc1t6QE_UEL7qWm22uehlTjwWQbxokId5tSAjejWOjDyjx1bwhmez7tzkyCdD5EnNQCbT APQZeuqSBL-WDwKuwNsTJrUuv_FkKacUduLdE02xbl38f2exkJVJallPpbGg2DC-7wm0xTPIJUQc 5RF3Z5YKI7gFP8jjCtldziv0-_YZuMey34LMvsl2IqGvng",
               "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RlQwMDUzIiwiY2JzZFNlcmlhbE51bWJlciI6IjBhMDAzZTQ0MDAxOSIslm luc3RhbGxhdGlvblBhcmFtIjp7ImxhdGl0dWRlIjo0MS41NzA3MzgslmxvbmdpdHVkZSI6LTkwLjYw MjcxNSwiaGVpZ2h0IjoxNTAslmhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6 ZmFsc2UslmFudGVubmFBemltdXRoIjoxNTAslmFudGVubmFEb3dudGlsdCI6MiwiYW50ZW5uYU dhaW4iOjllLCJlaXJwQ2FwYWJpbGl0eSI6NDcslmFudGVubmFCZWFtd2lkdGgiOjEyMCwiYW50ZW5uYU dhaW4iOjllLCJlaXJwQ2FwYWJpbGl0eSI6NDcslmFudGVubmFCZWFtd2lkdGgiOjEyMCwiYW50ZW5uYU Vzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRlc3QiLCJjcGlOYW1lIjoidGVzdCIslmluc3R hbGxDZXJ0aWZpY2F0aW9uVGltZSI6IjlwMTktMDktMDZUMTU6NTE6MTJaIn19",
               "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
           },
           "fccId": "Z8H89FT0053",
           "groupingParam": [
              {
                 "groupId": "0a-00-3e-44-00-19",
                 "groupType": "INTERFERENCE_COORDINATION"
              }
           ],
           "measCapability": [
              "RECEIVED_POWER_WITHOUT_GRANT"
           ],
           "userId": "TEST"
        }
    ]
}
2019-10-14T07:32:51.328Z - INFO - Registration message contains cpiSignatureData
2019-10-14T07:32:51.328Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2019-10-14T07:32:51.328Z - INFO - encodedCpiSignedData contents = {
    "installationParam": {
        "eirpCapability": 47,

```
        "antennaAzimuth": 150,
        "heightType": "AMSL",
        "longitude": -90.602715,
        "height": 150,
        "indoorDeployment": false,
        "antennaBeamwidth": 12,
        "antennaDowntilt": 2,
        "latitude": 41.570738,
        "antennaGain": 20
    },
    "fccId": "Z8H89FT0053",
    "professionalInstallerData": {
        "cpiName": "test",
        "installCertificationTime": "2019-09-06T15:51:12Z",
        "cpiId": "test"
    },
    "cbsdSerialNumber": "0a003e440019"
}
2019-10-14T07:32:51.328Z - INFO - verified signature on cpiSignatureData
2019-10-14T07:32:51.345Z - INFO - cpiSignatureData data successfully validated against
jsonschema
2019-10-14T07:32:51.345Z - INFO - engine sent successfully, the response to CBRS   : {
    "registrationResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-14T07:33:51.503Z - INFO - spectrumInquiry request from CBRS   : {
    "spectrumInquiryRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "inquiredSpectrum": [
                {
                    "highFrequency": 3690000000,
                    "lowFrequency": 3670000000
                },
                {
                    "highFrequency": 3670000000,
                    "lowFrequency": 3650000000
                },
                {
                    "highFrequency": 3580000000,
                    "lowFrequency": 3560000000
                }
            ]
        }
    ]
}
```

```
2019-10-14T07:33:51.519Z - INFO - engine sent successfully, the response to CBRS   : {
    "spectrumInquiryResponse": [
        {
            "availableChannel": [
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3690000000,
                        "lowFrequency": 3670000000
                    },
                    "ruleApplied": "FCC_PART_96"
                },
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3670000000,
                        "lowFrequency": 3650000000
                    },
                    "ruleApplied": "FCC_PART_96"
                },
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3580000000,
                        "lowFrequency": 3560000000
                    },
                    "ruleApplied": "FCC_PART_96"
                }
            ],
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-14T07:33:51.582Z - INFO - grant request from CBRS   : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "operationParam": {
                "maxEirp": 35,
                "operationFrequencyRange": {
                    "highFrequency": 3685000000,
                    "lowFrequency": 3675000000
                }
            }
        }
    ]
}
2019-10-14T07:33:51.598Z - INFO - engine sent successfully, the response to CBRS   : {
    "grantResponse": [
```

```
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "channelType": "GAA",
                "grantExpireTime": "2019-10-21T07:33:51Z",
                "grantId": "753577558",
                "heartbeatInterval": 60,
                "response": {
                    "responseCode": 0
                }
            }
        ]
    }
    2019-10-14T07:33:51.644Z - INFO - heartbeat request from CBRS   : {
        "heartbeatRequest": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "grantId": "753577558",
                "grantRenew": false,
                "operationState": "GRANTED"
            }
        ]
    }
    2019-10-14T07:33:51.660Z - INFO - engine sent successfully, the response to CBRS   : {
        "heartbeatResponse": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "grantId": "753577558",
                "response": {
                    "responseCode": 0
                },
                "transmitExpireTime": "2019-10-14T07:37:11Z"
            }
        ]
    }
    2019-10-14T07:34:41.767Z - INFO - heartbeat request from CBRS   : {
        "heartbeatRequest": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "grantId": "753577558",
                "grantRenew": false,
                "operationState": "AUTHORIZED"
            }
        ]
    }
    2019-10-14T07:34:41.767Z - INFO - Time interval between two heartbeat request messages is:
    50.123, limit is: 65.0
    2019-10-14T07:34:41.767Z - INFO - engine sent successfully, the response to CBRS   : {
        "heartbeatResponse": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "grantId": "753577558",
                "response": {
```

```
                "responseCode": 0
            },
            "transmitExpireTime": "2019-10-14T07:38:01Z"
        }
    ]
}
2019-10-14T07:35:26.867Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "753577558",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-10-14T07:35:26.867Z - INFO - Time interval between two heartbeat request messages is:
45.099, limit is: 65.0
2019-10-14T07:35:26.867Z - INFO - engine sent successfully, the response to CBRS   : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "753577558",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2019-10-14T07:38:46Z"
        }
    ]
}
2019-10-14T07:36:16.973Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "753577558",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-10-14T07:36:16.973Z - INFO - Time interval between two heartbeat request messages is:
50.107, limit is: 65.0
2019-10-14T07:36:16.973Z - INFO - engine sent successfully, the response to CBRS   : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "753577558",
            "response": {
                "responseCode": 501
            },
            "transmitExpireTime": "2019-10-14T07:36:16Z"
        }
```

```
        ]
    }
2019-10-14T07:37:07.082Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "753577558",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
```

2019-10-14T07:37:07.082Z - INFO - Time interval between two heartbeat request messages is: 50.108, limit is: 65.0
2019-10-14T07:37:07.096Z - INFO - engine sent successfully, the response to CBRS   : {

```
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "753577558",
            "response": {
                "responseCode": 501
            },
            "transmitExpireTime": "2019-10-14T07:37:07Z"
        }
    ]
}
```

2019-10-14T07:37:08.859Z - INFO - arrived to nstep starting question answer session with the technician
2019-10-14T07:37:08.859Z - 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 :
2019-10-14T07:39:10.759Z - INFO - for the question : Did the CBSD stop RF transmission within 60 seconds of receiving Heartbeat response with responseCode = 501? , the user choose y
2019-10-14T07:40:49.529Z - INFO - The final result of the test : WINNF.FT.C.HBT.6 is - passed and :the additional comments for the current test are : CBSD stops transmission at T07:36:17

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

 2019-10-14T07:41:57.494Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

 2019-10-14T07:41:57.494Z - INFO - the selected test from the user : WINNF.FT.C.HBT.7 is starting now

 2019-10-14T07:42:00.256Z - INFO - registration request from CBRS : {

```
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "CAMBIUM_NETWORKS"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)   BHUL450",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "0a003e440019",
            "cpiSignatureData": {
                "digitalSignature":
```

"Cdm2aCBSLn_dSoDokietXpG0jjAFgfEs701DSv0mSxfWuKAJXKa6sBCQ2_RGXB0UKxko_1zd4r NWhYm2VnIQXv7lUGrZWosxdWVxUC9mEFH0mCyNUcyieRNE7PAv6YNRKN1Au17WZxdpfwJUf aLH4Hmmc1t6QE_UEL7qWm22uehITjwWQbxokId5tSAjejWOjDyjx1bwhmez7tzkyCdD5EnNQCbT APQZeuqSBL-WDwKuwNsTJrUuv_FkKacUduLdE02xbl38f2exkJVJallPpbGg2DC-7wm0xTPIJUQc 5RF3Z5YKI7gFP8jjCtldziv0-_YZuMey34LMvsI2IqGvng",

```
                "encodedCpiSignedData":
```

"eyJmY2NJZCI6Ilo4SDg5RlQwMDUzIiwiY2JzZFNlcmlhbE51bWJlciI6IjBhMDAzZTQ0MDAxOSIsIm luc3RhbGxhdGlvblBhcmFtIjp7ImxhdGl0dWRIIjo0MS41NzA3MzgslmxvbmdpdHVkZSI6LTkwLjYw MjcxNSwiaGVpZ2h0IjoxNTAslmhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6 ZmFsc2UslmFudGVubmFBemltdXRoIjoxNTAslmFudGVubmFEb3dudGlsdCI6MiwiYW50ZW5uYU dhaW4iOjlwLCJlaXJwQ2FwYWJpbGl0eSI6NDcslmFudGVubmFCZWFtd2lkdGgiOjEyfSwicHJvZm Vzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRlc3QiLCJjcGlOYW1lIjoidGVzdClsImluc3R hbGxDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMTktMDktMDZUMTU6NTE6MTJaIn19",

```
                "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
            },
            "fccId": "Z8H89FT0053",
            "groupingParam": [
                {
                    "groupId": "0a-00-3e-44-00-19",
                    "groupType": "INTERFERENCE_COORDINATION"
                }
            ],
            "measCapability": [
                "RECEIVED_POWER_WITHOUT_GRANT"
            ],
            "userId": "TEST"
        }
    ]
}
```

 2019-10-14T07:42:00.334Z - INFO - Registration message contains cpiSignatureData

 2019-10-14T07:42:00.334Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

 2019-10-14T07:42:00.334Z - INFO - encodedCpiSignedData contents = {

```
    "installationParam": {
        "eirpCapability": 47,
```

```
            "antennaAzimuth": 150,
            "heightType": "AMSL",
            "longitude": -90.602715,
            "height": 150,
            "indoorDeployment": false,
            "antennaBeamwidth": 12,
            "antennaDowntilt": 2,
            "latitude": 41.570738,
            "antennaGain": 20
        },
        "fccId": "Z8H89FT0053",
        "professionalInstallerData": {
            "cpiName": "test",
            "installCertificationTime": "2019-09-06T15:51:12Z",
            "cpiId": "test"
        },
        "cbsdSerialNumber": "0a003e440019"
}
2019-10-14T07:42:00.334Z - INFO - verified signature on cpiSignatureData
2019-10-14T07:42:00.349Z - INFO - cpiSignatureData data successfully validated against
jsonschema
2019-10-14T07:42:00.349Z - INFO - engine sent successfully, the response to CBRS   : {
        "registrationResponse": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "response": {
                    "responseCode": 0
                }
            }
        ]
}
2019-10-14T07:43:01.049Z - INFO - spectrumInquiry request from CBRS   : {
        "spectrumInquiryRequest": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "inquiredSpectrum": [
                    {
                        "highFrequency": 3690000000,
                        "lowFrequency": 3670000000
                    },
                    {
                        "highFrequency": 3670000000,
                        "lowFrequency": 3650000000
                    },
                    {
                        "highFrequency": 3580000000,
                        "lowFrequency": 3560000000
                    }
                ]
            }
        ]
}
```

2019-10-14T07:43:01.049Z - INFO - engine sent successfully, the response to CBRS   : {
    "spectrumInquiryResponse": [
        {
            "availableChannel": [
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3690000000,
                        "lowFrequency": 3670000000
                    },
                    "ruleApplied": "FCC_PART_96"
                },
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3670000000,
                        "lowFrequency": 3650000000
                    },
                    "ruleApplied": "FCC_PART_96"
                },
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3580000000,
                        "lowFrequency": 3560000000
                    },
                    "ruleApplied": "FCC_PART_96"
                }
            ],
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-14T07:43:01.111Z - INFO - grant request from CBRS   : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "operationParam": {
                "maxEirp": 35,
                "operationFrequencyRange": {
                    "highFrequency": 3685000000,
                    "lowFrequency": 3675000000
                }
            }
        }
    ]
}
2019-10-14T07:43:01.111Z - INFO - engine sent successfully, the response to CBRS   : {
    "grantResponse": [

```
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "channelType": "GAA",
            "grantExpireTime": "2019-10-21T07:43:01Z",
            "grantId": "383999865",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
```
2019-10-14T07:43:01.174Z - INFO - heartbeat request from CBRS   : {
```
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "383999865",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
```
2019-10-14T07:43:01.190Z - INFO - engine sent successfully, the response to CBRS   : {
```
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "383999865",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2019-10-14T07:46:21Z"
        }
    ]
}
```
2019-10-14T07:43:51.266Z - INFO - heartbeat request from CBRS   : {
```
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "383999865",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
```
2019-10-14T07:43:51.266Z - INFO - Time interval between two heartbeat request messages is: 50.092, limit is: 65.0
2019-10-14T07:43:51.282Z - INFO - engine sent successfully, the response to CBRS   : {
```
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "383999865",
            "response": {
```

```
                    "responseCode": 0
                },
                "transmitExpireTime": "2019-10-14T07:47:11Z"
            }
        ]
    }
2019-10-14T07:44:41.358Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "383999865",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-10-14T07:44:41.372Z - INFO - Time interval between two heartbeat request messages is:
50.092, limit is: 65.0
2019-10-14T07:44:41.372Z - INFO - engine sent successfully, the response to CBRS   : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "383999865",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2019-10-14T07:48:01Z"
        }
    ]
}
2019-10-14T07:45:31.464Z - INFO - heartbeat request from CBRS    : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "383999865",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-10-14T07:45:31.464Z - INFO - Time interval between two heartbeat request messages is:
50.107, limit is: 65.0
2019-10-14T07:45:31.464Z - INFO - engine sent successfully, the response to CBRS   : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "383999865",
            "response": {
                "responseCode": 502
            },
            "transmitExpireTime": "2019-10-14T07:45:31Z"
        }
```

```
        ]
    }
2019-10-14T07:45:31.542Z - INFO - relinquishment request from CBRS    : {
    "relinquishmentRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "383999865"
        }
    ]
}
2019-10-14T07:45:31.573Z - INFO - engine sent successfully, the response to CBRS    : {
    "relinquishmentResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "383999865",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
```

2019-10-14T07:45:33.476Z - INFO - arrived to nstep starting question answer session with the technician

2019-10-14T07:45:33.476Z - 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 :

2019-10-14T07:46:26.595Z - INFO - for the question : Did the CBSD stop RF transmission within 60 seconds of receiving Heartbeat response with responseCode = 502? , the user choose y

2019-10-14T07:46:40.012Z - INFO - The final result of the test : WINNF.FT.C.HBT.7 is - passed and :the additional comments for the current test are : CBSD stops transmission at T07:45:32

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

    2019-10-14T07:49:59.457Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

    2019-10-14T07:49:59.457Z - INFO - the selected test from the user : WINNF.FT.D.HBT.8 is starting now

    2019-10-14T07:50:03.732Z - INFO - registration request from CBRS　: {

```
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "CAMBIUM_NETWORKS"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)   BHUL450",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "0a003e440019",
            "cpiSignatureData": {
                "digitalSignature":
"Cdm2aCBSLn_dSoDokietXpG0jjAFgfEs701DSv0mSxfWuKAJXKa6sBCQ2_RGXB0UKxko_1zd4r
NWhYm2VnlQXv7lUGrZWosxdWVxUC9mEFH0mCyNUcyieRNE7PAv6YNRKN1Au17WZxdpfwJUf
aLH4Hmmc1t6QE_UEL7qWm22uehlTjwWQbxokId5tSAjejWOjDyjx1bwhmez7tzkyCdD5EnNQCbT
APQZeuqSBL-WDwKuwNsTJrUuv_FkKacUduLdE02xbl38f2exkJVJallPpbGg2DC-7wm0xTPIJUQc
5RF3Z5YKl7gFP8jjCtldziv0-_YZuMey34LMvsl2IqGvng",
                "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RlQwMDUzliwiY2JzZFNlcmlhbE51bWJlcil6IjBhMDAzZTQ0MDAxOSIsIm
luc3RhbGxhdGlvblBhcmFtljp7ImxhdGl0dWRlIjo0MS41NzA3Mzgslmxvbmdpd
HVkZSI6LTkwLjYwMjcxNSwiaGVpZ2h0IjoxNTAslmhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6
ZmFsc2UslmFudGVubmFBemltdXRoljoxNTAslmFudGVubmFEb3dudGlsdCI6MiwiYW50ZW5uYU
dhaW4iOjlwLCJlaXJwQ2FwYWJpbGl0eSI6NDcslmFudGVubmFCZWFtd2lkdGgiOjEyfSwicHJvZm
Vzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRlc3QiLCJjcGlOYW1lljoidGVzdCIsImluc3R
hbGxDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMTktMDktMDZUMTU6NTE6MTJaIn19",
                "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
            },
            "fccId": "Z8H89FT0053",
            "groupingParam": [
                {
                    "groupId": "0a-00-3e-44-00-19",
                    "groupType": "INTERFERENCE_COORDINATION"
                }
            ],
            "measCapability": [
                "RECEIVED_POWER_WITHOUT_GRANT"
            ],
            "userId": "TEST"
        }
    ]
}
```

    2019-10-14T07:50:03.779Z - INFO - Registration message contains cpiSignatureData

    2019-10-14T07:50:03.779Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

    2019-10-14T07:50:03.779Z - INFO - encodedCpiSignedData contents = {

```
    "installationParam": {
        "eirpCapability": 47,
```

```
            "antennaAzimuth": 150,
            "heightType": "AMSL",
            "longitude": -90.602715,
            "height": 150,
            "indoorDeployment": false,
            "antennaBeamwidth": 12,
            "antennaDowntilt": 2,
            "latitude": 41.570738,
            "antennaGain": 20
        },
        "fccId": "Z8H89FT0053",
        "professionalInstallerData": {
            "cpiName": "test",
            "installCertificationTime": "2019-09-06T15:51:12Z",
            "cpiId": "test"
        },
        "cbsdSerialNumber": "0a003e440019"
}
2019-10-14T07:50:03.779Z - INFO - verified signature on cpiSignatureData
2019-10-14T07:50:03.795Z - INFO - cpiSignatureData data successfully validated against
jsonschema
2019-10-14T07:50:03.795Z - INFO - engine sent successfully, the response to CBRS   : {
        "registrationResponse": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "response": {
                    "responseCode": 0
                }
            }
        ]
}
2019-10-14T07:50:05.729Z - INFO - registration request from CBRS   : {
        "registrationRequest": [
            {
                "airInterface": {
                    "radioTechnology": "CAMBIUM_NETWORKS"
                },
                "cbsdCategory": "B",
                "cbsdInfo": {
                    "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)   BHUL450",
                    "vendor": "Cambium Networks"
                },
                "cbsdSerialNumber": "0a003e440017",
                "cpiSignatureData": {
                    "digitalSignature":
```

"gHI5SjyBTtYGfRzS8fq7mpj2whIvfu12b-qI2EMpV41hMKDSuyis_QZGY8bYVA85diu4ssiNOd87jg
GiVkmH8GjB6plyzw6TVOaC_RNWhdX2gpIUkwNAfevmYuC2QXlngEBac5DD9uZXSaFIs27OMnaO
bcutg4otUKQrVdGWM7HGvSxPaG7TgGyDx6y7cWhdxTzZrq93NquM_Kg029Gm5Q8VHQIJ_mcFX
qXe9VIYRy9TlGoddtihmi0JtuOe698hFRgt-6JU7bNMIbmOEX7XDNSQfatdr0HwIGvHPn14rb1QnZ
M8b9b6AKNYM9Byr3jS_nCz3nrOt1w9QykBwkL52Q",
        "encodedCpiSignedData":
"eyJmY2NJZCI6IIo4SDg5RlQwMDUzIiwiY2JzZFNlcmlhbE51bWJlcil6IjBhMDAzZTQ0MDAxNylsIml

uc3RhbGxhdGlvblBhcmFtIjp7ImxhdGl0dWRlIjo0MS41NzA3MzgsImxvbmdpdHVkZSI6LTkwLjYw
MjcxNSwiaGVpZ2h0IjoxNTAsImhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6
ZmFsc2UsImFudGVubmFBemltdXRoIjoxNTAsImFudGVubmFEb3dudGlsdCI6MiwiYW50ZW5uYUdU
dhaW4iOjIwLCJlaXJwQ2FwYWJpbGl0eSI6NDcsImFudGVubmFCZWFtd2lkdGgiOjEyfSwiY3BpZm
Vzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRlc3QiLCJjcGlOYW1lIjoidGVzdCIsImluc3R
hbGxDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMTktMDktMDZUMTU6NTE6MTJaIn19",
                    "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
                },
                "fccId": "Z8H89FT0053",
                "groupingParam": [
                    {
                        "groupId": "0a-00-3e-44-00-17",
                        "groupType": "INTERFERENCE_COORDINATION"
                    }
                ],
                "measCapability": [
                    "RECEIVED_POWER_WITHOUT_GRANT"
                ],
                "userId": "TEST"
            }
        ]
    }

2019-10-14T07:50:05.792Z - INFO - Registration message contains cpiSignatureData
2019-10-14T07:50:05.792Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2019-10-14T07:50:05.792Z - INFO - encodedCpiSignedData contents = {
    "installationParam": {
        "eirpCapability": 47,
        "antennaAzimuth": 150,
        "heightType": "AMSL",
        "longitude": -90.602715,
        "height": 150,
        "indoorDeployment": false,
        "antennaBeamwidth": 12,
        "antennaDowntilt": 2,
        "latitude": 41.570738,
        "antennaGain": 20
    },
    "fccId": "Z8H89FT0053",
    "professionalInstallerData": {
        "cpiName": "test",
        "installCertificationTime": "2019-09-06T15:51:12Z",
        "cpiId": "test"
    },
    "cbsdSerialNumber": "0a003e440017"
}
2019-10-14T07:50:05.792Z - INFO - verified signature on cpiSignatureData
2019-10-14T07:50:05.806Z - INFO - cpiSignatureData data successfully validated against jsonschema
2019-10-14T07:50:05.806Z - INFO - engine sent successfully, the response to CBRS   : {
    "registrationResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",

```
                    "response": {
                        "responseCode": 0
                    }
                }
            ]
        }
2019-10-14T07:51:04.604Z - INFO - spectrumInquiry request from CBRS   : {
        "spectrumInquiryRequest": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "inquiredSpectrum": [
                    {
                        "highFrequency": 3690000000,
                        "lowFrequency": 3670000000
                    },
                    {
                        "highFrequency": 3670000000,
                        "lowFrequency": 3650000000
                    },
                    {
                        "highFrequency": 3580000000,
                        "lowFrequency": 3560000000
                    }
                ]
            }
        ]
    }
2019-10-14T07:51:04.618Z - INFO - engine sent successfully, the response to CBRS   : {
        "spectrumInquiryResponse": [
            {
                "availableChannel": [
                    {
                        "channelType": "GAA",
                        "frequencyRange": {
                            "highFrequency": 3690000000,
                            "lowFrequency": 3670000000
                        },
                        "ruleApplied": "FCC_PART_96"
                    },
                    {
                        "channelType": "GAA",
                        "frequencyRange": {
                            "highFrequency": 3670000000,
                            "lowFrequency": 3650000000
                        },
                        "ruleApplied": "FCC_PART_96"
                    },
                    {
                        "channelType": "GAA",
                        "frequencyRange": {
                            "highFrequency": 3580000000,
                            "lowFrequency": 3560000000
```

```
                },
                "ruleApplied": "FCC_PART_96"
            }
        ],
        "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
        "response": {
            "responseCode": 0
        }
    }
    ]
}
2019-10-14T07:51:04.665Z - INFO - grant request from CBRS   : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "operationParam": {
                "maxEirp": 35,
                "operationFrequencyRange": {
                    "highFrequency": 3685000000,
                    "lowFrequency": 3675000000
                }
            }
        }
    ]
}
2019-10-14T07:51:04.681Z - INFO - engine sent successfully, the response to CBRS   : {
    "grantResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "channelType": "GAA",
            "grantExpireTime": "2019-10-21T07:51:04Z",
            "grantId": "452375610",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-14T07:51:04.743Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "452375610",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
2019-10-14T07:51:04.743Z - INFO - engine sent successfully, the response to CBRS   : {
    "heartbeatResponse": [
        {
```

```
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "452375610",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2019-10-14T07:54:24Z"
        }
    ]
}
2019-10-14T07:51:06.394Z - INFO - spectrumInquiry request from CBRS   : {
    "spectrumInquiryRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
            "inquiredSpectrum": [
                {
                    "highFrequency": 3630000000,
                    "lowFrequency": 3610000000
                },
                {
                    "highFrequency": 3570000000,
                    "lowFrequency": 3550000000
                },
                {
                    "highFrequency": 3600000000,
                    "lowFrequency": 3580000000
                }
            ]
        }
    ]
}
2019-10-14T07:51:06.410Z - INFO - engine sent successfully, the response to CBRS   : {
    "spectrumInquiryResponse": [
        {
            "availableChannel": [
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3630000000,
                        "lowFrequency": 3610000000
                    },
                    "ruleApplied": "FCC_PART_96"
                },
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3570000000,
                        "lowFrequency": 3550000000
                    },
                    "ruleApplied": "FCC_PART_96"
                },
                {
                    "channelType": "GAA",
```

```
                            "frequencyRange": {
                                "highFrequency": 3600000000,
                                "lowFrequency": 3580000000
                            },
                            "ruleApplied": "FCC_PART_96"
                        }
                    ],
                    "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
                    "response": {
                        "responseCode": 0
                    }
                }
            ]
        }
2019-10-14T07:51:06.487Z - INFO - grant request from CBRS   : {
        "grantRequest": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
                "operationParam": {
                    "maxEirp": 35,
                    "operationFrequencyRange": {
                        "highFrequency": 3625000000,
                        "lowFrequency": 3615000000
                    }
                }
            }
        ]
    }
2019-10-14T07:51:06.503Z - INFO - engine sent successfully, the response to CBRS   : {
        "grantResponse": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
                "channelType": "GAA",
                "grantExpireTime": "2019-10-21T07:51:06Z",
                "grantId": "311748706",
                "heartbeatInterval": 60,
                "response": {
                    "responseCode": 0
                }
            }
        ]
    }
2019-10-14T07:51:06.565Z - INFO - heartbeat request from CBRS   : {
        "heartbeatRequest": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
                "grantId": "311748706",
                "grantRenew": false,
                "operationState": "GRANTED"
            }
        ]
    }
```

2019-10-14T07:51:06.581Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
            "grantId": "311748706",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2019-10-14T07:54:26Z"
        }
    ]
}
2019-10-14T07:51:54.832Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "452375610",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-10-14T07:51:54.832Z - INFO - Time interval between two heartbeat request messages is: 50.088, limit is: 65.0
2019-10-14T07:51:54.832Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "452375610",
            "response": {
                "responseCode": 0
             },
             "transmitExpireTime": "2019-10-14T07:55:14Z"
        }
    ]
}
2019-10-14T07:51:56.657Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
            "grantId": "311748706",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-10-14T07:51:56.657Z - INFO - Time interval between two heartbeat request messages is: 50.091, limit is: 65.0
2019-10-14T07:51:56.657Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",

```
                    "grantId": "311748706",
                    "response": {
                        "responseCode": 0
                    },
                    "transmitExpireTime": "2019-10-14T07:55:16Z"
                }
            ]
        }
        2019-10-14T07:52:44.937Z - INFO - heartbeat request from CBRS   : {
            "heartbeatRequest": [
                {
                    "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                    "grantId": "452375610",
                    "grantRenew": false,
                    "operationState": "AUTHORIZED"
                }
            ]
        }
        2019-10-14T07:52:44.937Z - INFO - Time interval between two heartbeat request messages is:
        50.106, limit is: 65.0
        2019-10-14T07:52:44.937Z - INFO - engine sent successfully, the response to CBRS   : {
            "heartbeatResponse": [
                {
                    "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                    "grantId": "452375610",
                    "response": {
                        "responseCode": 0
                    },
                    "transmitExpireTime": "2019-10-14T07:56:04Z"
                }
            ]
        }
        2019-10-14T07:52:46.746Z - INFO - heartbeat request from CBRS   : {
            "heartbeatRequest": [
                {
                    "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
                    "grantId": "311748706",
                    "grantRenew": false,
                    "operationState": "AUTHORIZED"
                }
            ]
        }
        2019-10-14T07:52:46.763Z - INFO - Time interval between two heartbeat request messages is:
        50.106, limit is: 65.0
        2019-10-14T07:52:46.763Z - INFO - engine sent successfully, the response to CBRS   : {
            "heartbeatResponse": [
                {
                    "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
                    "grantId": "311748706",
                    "response": {
                        "responseCode": 0
                    },
```

```
                    "transmitExpireTime": "2019-10-14T07:56:06Z"
                }
            ]
        }
        2019-10-14T07:53:35.029Z - INFO - heartbeat request from CBRS   : {
            "heartbeatRequest": [
                {
                    "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                    "grantId": "452375610",
                    "grantRenew": false,
                    "operationState": "AUTHORIZED"
                }
            ]
        }
        2019-10-14T07:53:35.029Z - INFO - Time interval between two heartbeat request messages is:
        50.092, limit is: 65.0
        2019-10-14T07:53:35.045Z - INFO - engine sent successfully, the response to CBRS   : {
            "heartbeatResponse": [
                {
                    "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                    "grantId": "452375610",
                    "response": {
                        "responseCode": 0
                    },
                    "transmitExpireTime": "2019-10-14T07:56:55Z"
                }
            ]
        }
        2019-10-14T07:53:36.855Z - INFO - heartbeat request from CBRS   : {
            "heartbeatRequest": [
                {
                    "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
                    "grantId": "311748706",
                    "grantRenew": false,
                    "operationState": "AUTHORIZED"
                }
            ]
        }
        2019-10-14T07:53:36.855Z - INFO - Time interval between two heartbeat request messages is:
        50.092, limit is: 65.0
        2019-10-14T07:53:36.869Z - INFO - engine sent successfully, the response to CBRS   : {
            "heartbeatResponse": [
                {
                    "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
                    "grantId": "311748706",
                    "response": {
                        "responseCode": 500
                    },
                    "transmitExpireTime": "2019-10-14T07:53:36Z"
                }
            ]
        }
```

2019-10-14T07:53:38.476Z - INFO - arrived to nstep starting question answer session with the technician

2019-10-14T07:53:38.476Z - INFO - the question is : Did the CBSD1 transmit power prior to AUTHORIZED state (first successful HBT response)? please choose one of the answers :

2019-10-14T07:55:17.770Z - INFO - for the question : Did the CBSD1 transmit power prior to AUTHORIZED state (first successful HBT response)? , the user choose n

2019-10-14T07:55:17.770Z - 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 :

2019-10-14T07:55:24.049Z - INFO - for the question : Did the CBSD2 stop RF transmission within 60 seconds of receiving Heartbeat response with responseCode = 500? , the user choose y

2019-10-14T07:55:42.914Z - INFO - The final result of the test : WINNF.FT.D.HBT.8 is - passed and :the additional comments for the current test are : CBSD2 stops transmission at T07:53:37

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

> 2019-10-14T08:04:34.720Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
>
> 2019-10-14T08:04:34.720Z - INFO - the selected test from the user : WINNF.FT.C.HBT.9 is starting now
>
> 2019-10-14T08:04:44.663Z - INFO - registration request from CBRS   : {

```
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "CAMBIUM_NETWORKS"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)   BHUL450",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "0a003e440019",
            "cpiSignatureData": {
                "digitalSignature":
"Cdm2aCBSLn_dSoDokietXpG0jjAFgfEs701DSv0mSxfWuKAJXKa6sBCQ2_RGXB0UKxko_1zd4r
NWhYm2VnlQXv7lUGrZWosxdWVxUC9mEFH0mCyNUcyieRNE7PAv6YNRKN1Au17WZxdpfwJUf
aLH4Hmmc1t6QE_UEL7qWm22uehlTjwWQbxokId5tSAjejWOjDyjx1bwhmez7tzkyCdD5EnNQCbT
APQZeuqSBL-WDwKuwNsTJrUuv_FkKacUduLdE02xbI38f2exkJVJallPpbGg2DC-7wm0xTPIJUQc
5RF3Z5YKl7gFP8jjCtldziv0-_YZuMey34LMvsl2lqGvng",
                "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RIQwMDUzliwiY2JzZFNlcmlhbE51bWJlcil6IjBhMDAzZTQ0MDAxOSIslm
luc3RhbGxhdGlvblBhcmFtIjp7lmxhdGl0dWRllio0MS41NzA3MzgslmxvbmdpdHVkZSl6LTkwLjYw
MjcxNSwiaGVpZ2h0IjoxNTAslmhlaWdodFR5cGUiOiJBTVNMliwiaW5kb29yRGVwbG95bWVudCl6
ZmFsc2UslmFudGVubmFFemltdXRoIjoxNTAslmFudGVubmFEb3dudGlsdCl6MiwiYW50ZW5uYU
dhaW4iOjlwLCJlaXJwQ2FwYWJpbGl0eSI6NDcslmFudGVubmFCZWFtd2lkdGgiOjEyMOwiYW50ZW5uYUNCZWFtd2lkdGgiOjEyMHJpd2lkRGF0YSI6eyJjcGlJZCI6InRlc3QiLCJjcGlOYW1lIjoidGVzdCIslmluc3R
hbGxDZXJ0aWZpY2F0aW9uVGltZSI6IjlwMTktMDktMDZUMTU6NTE6MTJaln19",
                "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
            },
            "fccId": "Z8H89FT0053",
            "groupingParam": [
                {
                    "groupId": "0a-00-3e-44-00-19",
                    "groupType": "INTERFERENCE_COORDINATION"
                }
            ],
            "measCapability": [
                "RECEIVED_POWER_WITHOUT_GRANT"
            ],
            "userId": "TEST"
        }
    ]
}
```

> 2019-10-14T08:04:44.713Z - INFO - Registration message contains cpiSignatureData
>
> 2019-10-14T08:04:44.714Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
>
> 2019-10-14T08:04:44.714Z - INFO - encodedCpiSignedData contents = {

```
    "installationParam": {
        "eirpCapability": 47,
```

```
                "antennaAzimuth": 150,
                "heightType": "AMSL",
                "longitude": -90.602715,
                "height": 150,
                "indoorDeployment": false,
                "antennaBeamwidth": 12,
                "antennaDowntilt": 2,
                "latitude": 41.570738,
                "antennaGain": 20
            },
            "fccId": "Z8H89FT0053",
            "professionalInstallerData": {
                "cpiName": "test",
                "installCertificationTime": "2019-09-06T15:51:12Z",
                "cpiId": "test"
            },
            "cbsdSerialNumber": "0a003e440019"
        }
2019-10-14T08:04:44.760Z - INFO - verified signature on cpiSignatureData
2019-10-14T08:04:44.769Z - INFO - cpiSignatureData data successfully validated against
jsonschema
2019-10-14T08:04:44.769Z - INFO - engine sent successfully, the response to CBRS   : {
        "registrationResponse": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "response": {
                    "responseCode": 0
                }
            }
        ]
    }
2019-10-14T08:05:44.913Z - INFO - spectrumInquiry request from CBRS   : {
        "spectrumInquiryRequest": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "inquiredSpectrum": [
                    {
                        "highFrequency": 3690000000,
                        "lowFrequency": 3670000000
                    },
                    {
                        "highFrequency": 3670000000,
                        "lowFrequency": 3650000000
                    },
                    {
                        "highFrequency": 3580000000,
                        "lowFrequency": 3560000000
                    }
                ]
            }
        ]
    }
```

2019-10-14T08:05:44.923Z - INFO - engine sent successfully, the response to CBRS   : {
    "spectrumInquiryResponse": [
        {
            "availableChannel": [
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3690000000,
                        "lowFrequency": 3670000000
                    },
                    "ruleApplied": "FCC_PART_96"
                },
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3670000000,
                        "lowFrequency": 3650000000
                    },
                    "ruleApplied": "FCC_PART_96"
                },
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3580000000,
                        "lowFrequency": 3560000000
                    },
                    "ruleApplied": "FCC_PART_96"
                }
            ],
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-14T08:05:44.966Z - INFO - grant request from CBRS   : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "operationParam": {
                "maxEirp": 35,
                "operationFrequencyRange": {
                    "highFrequency": 3685000000,
                    "lowFrequency": 3675000000
                }
            }
        }
    ]
}
2019-10-14T08:05:44.973Z - INFO - engine sent successfully, the response to CBRS   : {
    "grantResponse": [

```
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "channelType": "GAA",
                "grantExpireTime": "2019-10-21T08:05:44Z",
                "grantId": "245748581",
                "heartbeatInterval": 60,
                "response": {
                    "responseCode": 0
                }
            }
        ]
    }
    2019-10-14T08:05:45.029Z - INFO - heartbeat request from CBRS   : {
        "heartbeatRequest": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "grantId": "245748581",
                "grantRenew": false,
                "operationState": "GRANTED"
            }
        ]
    }
    2019-10-14T08:06:35.318Z - INFO - heartbeat request from CBRS   : {
        "heartbeatRequest": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "grantId": "245748581",
                "grantRenew": false,
                "operationState": "GRANTED"
            }
        ]
    }
    2019-10-14T08:06:35.318Z - INFO - request message received while HBT is absent, sleep 154 sec
    before responding
    2019-10-14T08:07:35.430Z - INFO - heartbeat request from CBRS   : {
        "heartbeatRequest": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "grantId": "245748581",
                "grantRenew": false,
                "operationState": "GRANTED"
            }
        ]
    }
    2019-10-14T08:07:35.430Z - INFO - request message received while HBT is absent, sleep 94 sec
    before responding
    2019-10-14T08:08:35.559Z - INFO - heartbeat request from CBRS   : {
        "heartbeatRequest": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "grantId": "245748581",
                "grantRenew": false,
```

```
                "operationState": "GRANTED"
            }
        ]
    }
```
2019-10-14T08:08:35.559Z - INFO - request message received while HBT is absent, sleep 34 sec before responding
2019-10-14T08:09:05.039Z - INFO - engine sent successfully, the response to CBRS   : {
```
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "245748581",
            "response": {
                "responseCode": 501
            },
            "transmitExpireTime": "2019-10-14T08:09:05Z"
        }
    ]
}
```
2019-10-14T08:09:06.736Z - INFO - arrived to nstep starting question answer session with the technician
2019-10-14T08:09:06.737Z - INFO - the question is : Were there RF transmissions from the CBSD during the test? please choose one of the answers :
2019-10-14T08:09:09.321Z - INFO - engine sent successfully, the response to CBRS   : "list index out of range"
2019-10-14T08:09:09.433Z - INFO - engine sent successfully, the response to CBRS   : "list index out of range"
2019-10-14T08:09:09.562Z - INFO - engine sent successfully, the response to CBRS   : "list index out of range"
2019-10-14T08:09:14.211Z - INFO - for the question : Were there RF transmissions from the CBSD during the test? , the user choose n
2019-10-14T08:09:15.280Z - 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

> **2019-10-14T08:10:12.493Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13**
> **2019-10-14T08:10:12.493Z - INFO - the selected test from the user : WINNF.FT.C.HBT.10 is starting now**
> **2019-10-14T08:10:16.346Z - INFO - registration request from CBRS : {**

>   **"registrationRequest": [**
>   **{**
>   **"airInterface": {**
>   **"radioTechnology": "CAMBIUM_NETWORKS"**
>   **},**
>   **"cbsdCategory": "B",**
>   **"cbsdInfo": {**
>   **"softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)   BHUL450",**
>   **"vendor": "Cambium Networks"**
>   **},**
>   **"cbsdSerialNumber": "0a003e440019",**
>   **"cpiSignatureData": {**
>   **"digitalSignature":**
> **"Cdm2aCBSLn_dSoDokietXpG0jjAFgfEs701DSv0mSxfWuKAJXKa6sBCQ2_RGXB0UKxko_1zd4r NWhYm2VnlQXv7lUGrZWosxdWVxUC9mEFH0mCyNUcyieRNE7PAv6YNRKN1Au17WZxdpfwJUf aLH4Hmmc1t6QE_UEL7qWm22uehlTjwWQbxokId5tSAjejWOjDyjx1bwhmez7tzkyCdD5EnNQCbT APQZeuqSBL-WDwKuwNsTJrUuv_FkKacUduLdE02xbI38f2exkJVJallPpbGg2DC-7wm0xTPIJUQc 5RF3Z5YKI7gFP8jjCtIdziv0-_YZuMey34LMvsI2IqGvng",**
>   **"encodedCpiSignedData":**
> **"eyJmY2NJZCI6Ilo4SDg5RlQwMDUzliwiY2JzZFNlcmlhbE51bWJlcil6IjBhMDAzZTQ0MDAxOSIsIm luc3RhbGxhdGlvblBhcmFtIjp7ImxhdGl0dWRlIjo0MS41NzA3MzgslmxvbmdpdHVkZSI6LTkwLjYw MjcxNSwiaGVpZ2h0IjoxNTAslmhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6 ZmFsc2UslmFudGVubmFBemltdXRoIjoxNTAslmFudGVubmFEb3dudGlsdCI6MiwiYW50ZW5uYU dhaW4iOjlwLCJlaXJwQ2FwYWJpbGl0eSI6NDDcsImFudGVubmFCZWFtd2lkdGgiOjEyfSwicHJvZm Vzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRlc3QiLCJjcGlOYW1lljoidGVzdCIsImluc3R hbGxDZXJ0aWZpY2F0aW9uVGltZSI6IjlwMTktMDktMDZUMTU6NTE6MTJaIn19",**
>   **"protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"**
>   **},**
>   **"fccId": "Z8H89FT0053",**
>   **"groupingParam": [**
>   **{**
>   **"groupId": "0a-00-3e-44-00-19",**
>   **"groupType": "INTERFERENCE_COORDINATION"**
>   **}**
>   **],**
>   **"measCapability": [**
>   **"RECEIVED_POWER_WITHOUT_GRANT"**
>   **],**
>   **"userId": "TEST"**
>   **}**
>   **]**
> **}**

> **2019-10-14T08:10:16.400Z - INFO - Registration message contains cpiSignatureData**
> **2019-10-14T08:10:16.401Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}**
> **2019-10-14T08:10:16.401Z - INFO - encodedCpiSignedData contents = {**
>   **"installationParam": {**
>   **"eirpCapability": 47,**

```
            "antennaAzimuth": 150,
            "heightType": "AMSL",
            "longitude": -90.602715,
            "height": 150,
            "indoorDeployment": false,
            "antennaBeamwidth": 12,
            "antennaDowntilt": 2,
            "latitude": 41.570738,
            "antennaGain": 20
        },
        "fccId": "Z8H89FT0053",
        "professionalInstallerData": {
            "cpiName": "test",
            "installCertificationTime": "2019-09-06T15:51:12Z",
            "cpiId": "test"
        },
        "cbsdSerialNumber": "0a003e440019"
    }
```

2019-10-14T08:10:16.401Z - INFO - verified signature on cpiSignatureData
2019-10-14T08:10:16.408Z - INFO - cpiSignatureData data successfully validated against jsonschema
2019-10-14T08:10:16.410Z - INFO - engine sent successfully, the response to CBRS   : {

```
    "registrationResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
```

2019-10-14T08:11:16.608Z - INFO - spectrumInquiry request from CBRS   : {

```
    "spectrumInquiryRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "inquiredSpectrum": [
                {
                    "highFrequency": 3690000000,
                    "lowFrequency": 3670000000
                },
                {
                    "highFrequency": 3670000000,
                    "lowFrequency": 3650000000
                },
                {
                    "highFrequency": 3580000000,
                    "lowFrequency": 3560000000
                }
            ]
        }
    ]
}
```

```
2019-10-14T08:11:16.618Z - INFO - engine sent successfully, the response to CBRS   : {
    "spectrumInquiryResponse": [
        {
            "availableChannel": [
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3690000000,
                        "lowFrequency": 3670000000
                    },
                    "ruleApplied": "FCC_PART_96"
                },
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3670000000,
                        "lowFrequency": 3650000000
                    },
                    "ruleApplied": "FCC_PART_96"
                },
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3580000000,
                        "lowFrequency": 3560000000
                    },
                    "ruleApplied": "FCC_PART_96"
                }
            ],
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-14T08:11:16.703Z - INFO - grant request from CBRS   : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "operationParam": {
                "maxEirp": 35,
                "operationFrequencyRange": {
                    "highFrequency": 3685000000,
                    "lowFrequency": 3675000000
                }
            }
        }
    ]
}
2019-10-14T08:11:16.711Z - INFO - engine sent successfully, the response to CBRS   : {
    "grantResponse": [
```

```
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "channelType": "GAA",
                "grantExpireTime": "2019-10-21T08:11:16Z",
                "grantId": "531876016",
                "heartbeatInterval": 60,
                "response": {
                    "responseCode": 0
                }
            }
        ]
    }
```

2019-10-14T08:11:16.782Z - INFO - heartbeat request from CBRS   : {

```
        "heartbeatRequest": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "grantId": "531876016",
                "grantRenew": false,
                "operationState": "GRANTED"
            }
        ]
    }
```

2019-10-14T08:11:16.789Z - INFO - engine sent successfully, the response to CBRS   : {

```
        "heartbeatResponse": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "grantId": "531876016",
                "response": {
                    "responseCode": 0
                },
                "transmitExpireTime": "2019-10-14T08:14:36Z"
            }
        ]
    }
```

2019-10-14T08:12:06.882Z - INFO - heartbeat request from CBRS   : {

```
        "heartbeatRequest": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "grantId": "531876016",
                "grantRenew": false,
                "operationState": "AUTHORIZED"
            }
        ]
    }
```

2019-10-14T08:12:06.884Z - INFO - Time interval between two heartbeat request messages is: 50.101, limit is: 65.0

2019-10-14T08:12:06.891Z - INFO - engine sent successfully, the response to CBRS   : {

```
        "heartbeatResponse": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "grantId": "531876016",
                "response": {
```

```
                "responseCode": 0
            },
            "transmitExpireTime": "2019-10-14T08:15:26Z"
        }
    ]
}
2019-10-14T08:12:56.982Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "531876016",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-10-14T08:12:56.983Z - INFO - Time interval between two heartbeat request messages is:
50.1, limit is: 65.0
2019-10-14T08:12:56.986Z - INFO - LAST HBT RESPONSE THAT SET TRANSMIT_EXPIRE_TIME
WAS AT:   2019-10-14 08:12:06.883000
2019-10-14T08:13:47.240Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "531876016",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-10-14T08:13:47.240Z - INFO - request message received while HBT is absent, sleep 154 sec
before responding
2019-10-14T08:14:37.742Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "531876016",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-10-14T08:14:37.742Z - INFO - request message received while HBT is absent, sleep 104 sec
before responding
2019-10-14T08:15:28.243Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "531876016",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
```

```
        ]
    }
```
2019-10-14T08:15:28.243Z - INFO - request message received while HBT is absent, sleep 53 sec before responding

2019-10-14T08:16:16.993Z - INFO - engine sent successfully, the response to CBRS   : {
```
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "531876016",
            "response": {
                "responseCode": 501
            },
            "transmitExpireTime": "2019-10-14T08:16:16Z"
        }
    ]
}
```
2019-10-14T08:16:18.516Z - INFO - arrived to nstep starting question answer session with the technician

2019-10-14T08:16:18.517Z - INFO - the question is : Did the CBSD stop RF transmissions within (transmitExpireTime + 60seconds) of last valid heartbeat response? please choose one of the answers :

2019-10-14T08:16:21.243Z - INFO - engine sent successfully, the response to CBRS   : "list index out of range"

2019-10-14T08:16:21.244Z - INFO - engine sent successfully, the response to CBRS   : "list index out of range"

2019-10-14T08:16:21.744Z - INFO - engine sent successfully, the response to CBRS   : "list index out of range"

2019-10-14T08:17:42.450Z - INFO - for the question : Did the CBSD stop RF transmissions within (transmitExpireTime + 60seconds) of last valid heartbeat response? , the user choose y

2019-10-14T08:17:47.973Z - INFO - The final result of the test : WINNF.FT.C.HBT.10 is - passed and :the additional comments for the current test are : CBSD stops transmission at T08:15:57

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

    2019-10-14T08:19:53.318Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

    2019-10-14T08:19:53.318Z - INFO - the selected test from the user : WINNF.FT.D.MES.2 is starting now

    2019-10-14T08:19:57.815Z - INFO - registration request from CBRS   : {

        "registrationRequest": [

            {

                "airInterface": {

                    "radioTechnology": "CAMBIUM_NETWORKS"

                },

                "cbsdCategory": "B",

                "cbsdInfo": {

                    "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)   BHUL450",

                    "vendor": "Cambium Networks"

                },

                "cbsdSerialNumber": "0a003e440019",

                "cpiSignatureData": {

                    "digitalSignature":

"Cdm2aCBSLn_dSoDokietXpG0jjAFgfEs701DSv0mSxfWuKAJXKa6sBCQ2_RGXB0UKxko_1zd4r NWhYm2VnlQXv7lUGrZWosxdWVxUC9mEFH0mCyNUcyieRNE7PAv6YNRKN1Au17WZxdpfwJUf aLH4Hmmc1t6QE_UEL7qWm22uehlTjwWQbxokId5tSAjejWOjDyjx1bwhmez7tzkyCdD5EnNQCbT APQZeuqSBL-WDwKuwNsTJrUuv_FkKacUduLdE02xbI38f2exkJVJallPpbGg2DC-7wm0xTPIJUQc 5RF3Z5YKI7gFP8jjCtldziv0-_YZuMey34LMvsI2lqGvng",

                    "encodedCpiSignedData":

"eyJmY2NJZCI6Ilo4SDg5RlQwMDUzIiwiY2JzZNlcmlhbE51bWJlciI6IjBhMDAzZTQ0MDAxOSIslm luc3RhbGxhdGlvblBhcmFtIjp7ImxhdGl0dWRlIjo0MS41NzA3MzgsImxvbmdpdHVkZSI6LTkwLjYw MjcxNSwiaGVpZ2h0IjoxNTAsImhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVVdCI6 ZmFsc2UsImFudGVubmFBemltdXRoIjoxNTAsImFudGVubmFEb3dudGlsdCI6MiwiYW50ZW5uYU dhaW4iOjlwLCJlaXJwQ2FwYWJpbGl0eSI6NDcsImFudGVubmFCZWFtd2lkdGgiOjEyfSwicHJvZm Vzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRlc3QiLCJjcGlOYW1lIjoidGVzdCIslmluc3R hbGxDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMTktMDktMDZUMTU6NTE6MTJaIn19",

                    "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"

                },

                "fccId": "Z8H89FT0053",

                "groupingParam": [

                    {

                        "groupId": "0a-00-3e-44-00-19",

                        "groupType": "INTERFERENCE_COORDINATION"

                    }

                ],

                "measCapability": [

                    "RECEIVED_POWER_WITHOUT_GRANT"

                ],

                "userId": "TEST"

            }

        ]

    }

    2019-10-14T08:19:57.913Z - INFO - Registration message contains cpiSignatureData

    2019-10-14T08:19:57.913Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

    2019-10-14T08:19:57.913Z - INFO - encodedCpiSignedData contents = {

        "installationParam": {

            "eirpCapability": 47,

```
            "antennaAzimuth": 150,
            "heightType": "AMSL",
            "longitude": -90.602715,
            "height": 150,
            "indoorDeployment": false,
            "antennaBeamwidth": 12,
            "antennaDowntilt": 2,
            "latitude": 41.570738,
            "antennaGain": 20
        },
        "fccId": "Z8H89FT0053",
        "professionalInstallerData": {
            "cpiName": "test",
            "installCertificationTime": "2019-09-06T15:51:12Z",
            "cpiId": "test"
        },
        "cbsdSerialNumber": "0a003e440019"
    }
```

2019-10-14T08:19:57.914Z - INFO - verified signature on cpiSignatureData
2019-10-14T08:19:57.921Z - INFO - cpiSignatureData data successfully validated against jsonschema
2019-10-14T08:19:57.921Z - INFO - Response message contains measReportConfig
2019-10-14T08:19:57.923Z - INFO - engine sent successfully, the response to CBRS   : {

```
    "registrationResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "measReportConfig": [
                "RECEIVED_POWER_WITHOUT_GRANT"
            ],
            "response": {
                "responseCode": 0
            }
        }
    ]
}
```

2019-10-14T08:19:58.548Z - INFO - registration request from CBRS   : {

```
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "CAMBIUM_NETWORKS"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)   BHUL450",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "0a003e440017",
            "cpiSignatureData": {
                "digitalSignature":
```
"gHI5SjyBTtYGfRzS8fq7mpj2whIvfu12b-qI2EMpV41hMKDSuyis_QZGY8bYVA85diu4ssiNOd87jg GiVkmH8GjB6plyzw6TVOaC_RNWhdX2gpIUkwNAfevmYuC2QXIngEBac5DD9uZXSaFIs27OMnaO bcutg4otUKQrVdGWM7HGvSxPaG7TgGyDx6y7cWhdxTzZrq93NquM_Kg029Gm5Q8VHQIJ_mcFX

qXe9VlYRy9TlGoddtihmi0JtuOe698hFRgt-6JU7bNMlbmOEX7XDNSQfatdr0HwlGvHPn14rb1QnZ
M8b9b6AKNYM9Byr3jS_nCz3nrOt1w9QykBwkL52Q",
                    "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RIQwMDUzliwiY2JzZFNlcmlhbE51bWJlciI6IjBhMDAzZTQ0MDAxNylsIml
uc3RhbGxhdGlvblBhcmFtIjp7ImxhdGl0dWRlIjo0MS41NzA3MzgslmxvbmdpdHVkZSl6LTkwLjYw
MjcxNSwiaGVpZ2h0IjoxNTAslmhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCl6
ZmFsc2UslmFudGVubmFBemltdXRoIjoxNTAslmFudGVubmFEb3dudGlsdCl6MiwiYW50ZW5uYU
dhaW4iOjlwLCJlaXJwQ2FwYWJpbGl0eSl6NDcslmFudGVubmFCZWFtd2lkdGgiOjEyfSwicHJvZm
Vzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRlc3QiLCJjcGlOYW1lIjoidGVzdCIslmluc3R
hbGxDZXJ0aWZpY2F0aW9uVGltZSI6IjlwMTktMDktMDZUMTU6NTE6MTJaIn19",
                    "protectedHeader": "eyJhbGciOiJSUzI1NilsInR5cCl6IkpXVCJ9"
                },
                "fccId": "Z8H89FT0053",
                "groupingParam": [
                    {
                        "groupId": "0a-00-3e-44-00-17",
                        "groupType": "INTERFERENCE_COORDINATION"
                    }
                ],
                "measCapability": [
                    "RECEIVED_POWER_WITHOUT_GRANT"
                ],
                "userId": "TEST"
            }
        ]
}

2019-10-14T08:19:58.599Z - INFO - Registration message contains cpiSignatureData
2019-10-14T08:19:58.599Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2019-10-14T08:19:58.601Z - INFO - encodedCpiSignedData contents = {
    "installationParam": {
        "eirpCapability": 47,
        "antennaAzimuth": 150,
        "heightType": "AMSL",
        "longitude": -90.602715,
        "height": 150,
        "indoorDeployment": false,
        "antennaBeamwidth": 12,
        "antennaDowntilt": 2,
        "latitude": 41.570738,
        "antennaGain": 20
    },
    "fccId": "Z8H89FT0053",
    "professionalInstallerData": {
        "cpiName": "test",
        "installCertificationTime": "2019-09-06T15:51:12Z",
        "cpiId": "test"
    },
    "cbsdSerialNumber": "0a003e440017"
}
2019-10-14T08:19:58.601Z - INFO - verified signature on cpiSignatureData
2019-10-14T08:19:58.608Z - INFO - cpiSignatureData data successfully validated against
jsonschema

```
2019-10-14T08:19:58.609Z - INFO - Response message contains measReportConfig
2019-10-14T08:19:58.611Z - INFO - engine sent successfully, the response to CBRS   : {
    "registrationResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
            "measReportConfig": [
                "RECEIVED_POWER_WITHOUT_GRANT"
            ],
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-14T08:20:26.084Z - INFO - spectrumInquiry request from CBRS   : {
    "spectrumInquiryRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
            "inquiredSpectrum": [
                {
                    "highFrequency": 3630000000,
                    "lowFrequency": 3610000000
                },
                {
                    "highFrequency": 3570000000,
                    "lowFrequency": 3550000000
                },
                {
                    "highFrequency": 3600000000,
                    "lowFrequency": 3580000000
                }
            ],
            "measReport": {
                "rcvdPowerMeasReports": [
                    {
                        "measBandwidth": 10000000,
                        "measFrequency": 3550000000,
                        "measRcvdPower": -87
                    },
                    {
                        "measBandwidth": 10000000,
                        "measFrequency": 3560000000,
                        "measRcvdPower": -88
                    },
                    {
                        "measBandwidth": 10000000,
                        "measFrequency": 3570000000,
                        "measRcvdPower": -88
                    },
                    {
                        "measBandwidth": 10000000,
                        "measFrequency": 3580000000,
```

```
            "measRcvdPower": -85
        },
        {

            "measBandwidth": 10000000,
            "measFrequency": 3590000000,
            "measRcvdPower": -86
        },
        {

            "measBandwidth": 10000000,
            "measFrequency": 3600000000,
            "measRcvdPower": -86
        },
        {

            "measBandwidth": 10000000,
            "measFrequency": 3610000000,
            "measRcvdPower": -86
        },
        {

            "measBandwidth": 10000000,
            "measFrequency": 3620000000,
            "measRcvdPower": -87
        },
        {

            "measBandwidth": 10000000,
            "measFrequency": 3630000000,
            "measRcvdPower": -87
        },
        {

            "measBandwidth": 10000000,
            "measFrequency": 3640000000,
            "measRcvdPower": -87
        },
        {

            "measBandwidth": 10000000,
            "measFrequency": 3650000000,
            "measRcvdPower": -87
        },
        {

            "measBandwidth": 10000000,
            "measFrequency": 3660000000,
            "measRcvdPower": -87
        },
        {

            "measBandwidth": 10000000,
            "measFrequency": 3670000000,
            "measRcvdPower": -87
        },
        {

            "measBandwidth": 10000000,
            "measFrequency": 3680000000,
            "measRcvdPower": -86
        },
```

```
                    {
                        "measBandwidth": 10000000,
                        "measFrequency": 3690000000,
                        "measRcvdPower": -86
                    }
                ]
            }
        }
    ]
}
2019-10-14T08:20:26.095Z - INFO - engine sent successfully, the response to CBRS   : {
    "spectrumInquiryResponse": [
        {
            "availableChannel": [
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3630000000,
                        "lowFrequency": 3610000000
                    },
                    "ruleApplied": "FCC_PART_96"
                },
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3570000000,
                        "lowFrequency": 3550000000
                    },
                    "ruleApplied": "FCC_PART_96"
                },
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3600000000,
                        "lowFrequency": 3580000000
                    },
                    "ruleApplied": "FCC_PART_96"
                }
            ],
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-14T08:20:26.145Z - INFO - grant request from CBRS   : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
            "measReport": {
                "rcvdPowerMeasReports": [
```

```
{
    "measBandwidth": 10000000,
    "measFrequency": 3550000000,
    "measRcvdPower": -87
},
{
    "measBandwidth": 10000000,
    "measFrequency": 3560000000,
    "measRcvdPower": -88
},
{
    "measBandwidth": 10000000,
    "measFrequency": 3570000000,
    "measRcvdPower": -88
},
{
    "measBandwidth": 10000000,
    "measFrequency": 3580000000,
    "measRcvdPower": -85
},
{
    "measBandwidth": 10000000,
    "measFrequency": 3590000000,
    "measRcvdPower": -86
},
{
    "measBandwidth": 10000000,
    "measFrequency": 3600000000,
    "measRcvdPower": -86
},
{
    "measBandwidth": 10000000,
    "measFrequency": 3610000000,
    "measRcvdPower": -86
},
{
    "measBandwidth": 10000000,
    "measFrequency": 3620000000,
    "measRcvdPower": -87
},
{
    "measBandwidth": 10000000,
    "measFrequency": 3630000000,
    "measRcvdPower": -87
},
{
    "measBandwidth": 10000000,
    "measFrequency": 3640000000,
    "measRcvdPower": -87
},
{
    "measBandwidth": 10000000,
```

```
                    "measFrequency": 3650000000,
                    "measRcvdPower": -87
                },
                {

                    "measBandwidth": 10000000,
                    "measFrequency": 3660000000,
                    "measRcvdPower": -87
                },
                {

                    "measBandwidth": 10000000,
                    "measFrequency": 3670000000,
                    "measRcvdPower": -87
                },
                {

                    "measBandwidth": 10000000,
                    "measFrequency": 3680000000,
                    "measRcvdPower": -86
                },
                {

                    "measBandwidth": 10000000,
                    "measFrequency": 3690000000,
                    "measRcvdPower": -86
                }
            ]
        },
        "operationParam": {
            "maxEirp": 35,
            "operationFrequencyRange": {
                "highFrequency": 3625000000,
                "lowFrequency": 3615000000
            }
        }
    }
  }
 ]
}
2019-10-14T08:20:26.155Z - INFO - engine sent successfully, the response to CBRS   : {
    "grantResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
            "channelType": "GAA",
            "grantExpireTime": "2019-10-21T08:20:26Z",
            "grantId": "39001255",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-14T08:20:26.213Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
```

```
                    "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
                    "grantId": "39001255",
                    "grantRenew": false,
                    "operationState": "GRANTED"
                }
            ]
        }
2019-10-14T08:20:26.214Z - INFO - engine sent successfully, the response to CBRS   : {
            "heartbeatResponse": [
                {
                    "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
                    "grantId": "39001255",
                    "response": {
                        "responseCode": 501
                    },
                    "transmitExpireTime": "2019-10-14T08:20:26Z"
                }
            ]
        }
2019-10-14T08:20:28.298Z - INFO - spectrumInquiry request from CBRS   : {
            "spectrumInquiryRequest": [
                {
                    "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                    "inquiredSpectrum": [
                        {
                            "highFrequency": 3690000000,
                            "lowFrequency": 3670000000
                        },
                        {
                            "highFrequency": 3670000000,
                            "lowFrequency": 3650000000
                        },
                        {
                            "highFrequency": 3580000000,
                            "lowFrequency": 3560000000
                        }
                    ],
                    "measReport": {
                        "rcvdPowerMeasReports": [
                            {
                                "measBandwidth": 10000000,
                                "measFrequency": 3550000000,
                                "measRcvdPower": -87
                            },
                            {
                                "measBandwidth": 10000000,
                                "measFrequency": 3560000000,
                                "measRcvdPower": -86
                            },
                            {
                                "measBandwidth": 10000000,
                                "measFrequency": 3570000000,
```

```
            "measRcvdPower": -88
        },
        {

            "measBandwidth": 10000000,
            "measFrequency": 3580000000,
            "measRcvdPower": -88
        },
        {

            "measBandwidth": 10000000,
            "measFrequency": 3590000000,
            "measRcvdPower": -87
        },
        {

            "measBandwidth": 10000000,
            "measFrequency": 3600000000,
            "measRcvdPower": -87
        },
        {

            "measBandwidth": 10000000,
            "measFrequency": 3610000000,
            "measRcvdPower": -88
        },
        {

            "measBandwidth": 10000000,
            "measFrequency": 3620000000,
            "measRcvdPower": -88
        },
        {

            "measBandwidth": 10000000,
            "measFrequency": 3630000000,
            "measRcvdPower": -85
        },
        {

            "measBandwidth": 10000000,
            "measFrequency": 3640000000,
            "measRcvdPower": -86
        },
        {

            "measBandwidth": 10000000,
            "measFrequency": 3650000000,
            "measRcvdPower": -86
        },
        {

            "measBandwidth": 10000000,
            "measFrequency": 3660000000,
            "measRcvdPower": -86
        },
        {

            "measBandwidth": 10000000,
            "measFrequency": 3670000000,
            "measRcvdPower": -87
        },
```

```
                    {
                        "measBandwidth": 10000000,
                        "measFrequency": 3680000000,
                        "measRcvdPower": -87
                    },
                    {
                        "measBandwidth": 10000000,
                        "measFrequency": 3690000000,
                        "measRcvdPower": -87
                    }
                ]
            }
        }
    ]
}
2019-10-14T08:20:28.334Z - INFO - engine sent successfully, the response to CBRS   : {
    "spectrumInquiryResponse": [
        {
            "availableChannel": [
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3690000000,
                        "lowFrequency": 3670000000
                    },
                    "ruleApplied": "FCC_PART_96"
                },
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3670000000,
                        "lowFrequency": 3650000000
                    },
                    "ruleApplied": "FCC_PART_96"
                },
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3580000000,
                        "lowFrequency": 3560000000
                    },
                    "ruleApplied": "FCC_PART_96"
                }
            ],
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-14T08:20:28.387Z - INFO - grant request from CBRS   : {
```

```
"grantRequest": [
    {
        "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
        "measReport": {
            "rcvdPowerMeasReports": [
                {
                    "measBandwidth": 10000000,
                    "measFrequency": 3550000000,
                    "measRcvdPower": -87
                },
                {
                    "measBandwidth": 10000000,
                    "measFrequency": 3560000000,
                    "measRcvdPower": -86
                },
                {
                    "measBandwidth": 10000000,
                    "measFrequency": 3570000000,
                    "measRcvdPower": -88
                },
                {
                    "measBandwidth": 10000000,
                    "measFrequency": 3580000000,
                    "measRcvdPower": -88
                },
                {
                    "measBandwidth": 10000000,
                    "measFrequency": 3590000000,
                    "measRcvdPower": -87
                },
                {
                    "measBandwidth": 10000000,
                    "measFrequency": 3600000000,
                    "measRcvdPower": -87
                },
                {
                    "measBandwidth": 10000000,
                    "measFrequency": 3610000000,
                    "measRcvdPower": -88
                },
                {
                    "measBandwidth": 10000000,
                    "measFrequency": 3620000000,
                    "measRcvdPower": -88
                },
                {
                    "measBandwidth": 10000000,
                    "measFrequency": 3630000000,
                    "measRcvdPower": -85
                },
                {
                    "measBandwidth": 10000000,
```

```
                            "measFrequency": 3640000000,
                            "measRcvdPower": -86
                        },
                        {

                            "measBandwidth": 10000000,
                            "measFrequency": 3650000000,
                            "measRcvdPower": -86
                        },
                        {

                            "measBandwidth": 10000000,
                            "measFrequency": 3660000000,
                            "measRcvdPower": -86
                        },
                        {

                            "measBandwidth": 10000000,
                            "measFrequency": 3670000000,
                            "measRcvdPower": -87
                        },
                        {

                            "measBandwidth": 10000000,
                            "measFrequency": 3680000000,
                            "measRcvdPower": -87
                        },
                        {

                            "measBandwidth": 10000000,
                            "measFrequency": 3690000000,
                            "measRcvdPower": -87
                        }
                    ]
                },
                "operationParam": {
                    "maxEirp": 35,
                    "operationFrequencyRange": {
                        "highFrequency": 3685000000,
                        "lowFrequency": 3675000000
                    }
                }
            }
        ]
    }
```
2019-10-14T08:20:28.398Z - INFO - engine sent successfully, the response to CBRS   : {
```
    "grantResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "channelType": "GAA",
            "grantExpireTime": "2019-10-21T08:20:28Z",
            "grantId": "561970744",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
```

]

}

2019-10-14T08:20:30.325Z - INFO - arrived to nstep starting question answer session with the technician

2019-10-14T08:21:55.410Z - INFO - The final result of the test : WINNF.FT.D.MES.2 is - passed

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

    2019-10-14T08:30:26.901Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

    2019-10-14T08:30:26.903Z - INFO - the selected test from the user : WINNF.FT.D.RLQ.2 is starting now

    2019-10-14T08:30:31.012Z - INFO - registration request from CBRS   : {

```
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "CAMBIUM_NETWORKS"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)    BHUL450",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "0a003e440019",
            "cpiSignatureData": {
                "digitalSignature":
```
"Cdm2aCBSLn_dSoDokietXpG0jjAFgfEs701DSv0mSxfWuKAJXKa6sBCQ2_RGXB0UKxko_1zd4r NWhYm2VnlQXv7lUGrZWosxdWVxUC9mEFH0mCyNUcyieRNE7PAv6YNRKN1Au17WZxdpfwJUf aLH4Hmmc1t6QE_UEL7qWm22uehlTjwWQbxokld5tSAjejWOjDyjx1bwhmez7tzkyCdD5EnNQCbT APQZeuqSBL-WDwKuwNsTJrUuv_FkKacUduLdE02xbl38f2exkJVJallPpbGg2DC-7wm0xTPlJUQc 5RF3Z5YKl7gFP8jjCtldziv0-_YZuMey34LMvsl2IqGvng",
```
                "encodedCpiSignedData":
```
"eyJmY2NJZCl6llo4SDg5RlQwMDUzliwiY2JzZFNlcmlhbE51bWJlcil6IjBhMDAzZTQ0MDAxOSlslm luc3RhbGxhdGlvblBhcmFtljp7lmxhdGl0dWRlljo0MS41NzA3MzgslmxvbmdpdHVkZSl6LTkwLjYw MjcxNSwiaGVpZ2h0ljoxNTAslmhlaWdodFR5cGUiOiJBTVNMliwiaW5kb29yRGVwbG95bWVudcl6 ZmFsc2UslmFudGVubmFEemltdXRoljoxNTAslmFudGVubmFEb3dudGlsdCl6MiwiYW50ZW5uYVU dhaW4iOjlwLCJlaXJwQ2FwYWJpbGl0eSl6NDcslmFudGVubmFCZWFtd2lkdGgiOjEyfSwicHJvZm Vzc2lvbmFsSW5zdGFsbGVyRGF0YSl6eyJjcGlJZCl6lnRlc3QiLCJjcGlOYW1lljoidGVzdCIslmluc3R hbGxDZXJ0aWZpY2F0aW9uVGltZSl6ljlwMTktMDktMDZUMTU6NTE6MTJaln19",
```
                "protectedHeader": "eyJhbGciOiJSUzI1NilsInR5cCI6IkpXVCJ9"
            },
            "fccId": "Z8H89FT0053",
            "groupingParam": [
                {
                    "groupId": "0a-00-3e-44-00-19",
                    "groupType": "INTERFERENCE_COORDINATION"
                }
            ],
            "measCapability": [
                "RECEIVED_POWER_WITHOUT_GRANT"
            ],
            "userId": "TEST"
        }
    ]
}
```

    2019-10-14T08:30:31.052Z - INFO - Registration message contains cpiSignatureData

    2019-10-14T08:30:31.052Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

    2019-10-14T08:30:31.053Z - INFO - encodedCpiSignedData contents = {

```
    "installationParam": {
        "eirpCapability": 47,
```

```
            "antennaAzimuth": 150,
            "heightType": "AMSL",
            "longitude": -90.602715,
            "height": 150,
            "indoorDeployment": false,
            "antennaBeamwidth": 12,
            "antennaDowntilt": 2,
            "latitude": 41.570738,
            "antennaGain": 20
        },
        "fccId": "Z8H89FT0053",
        "professionalInstallerData": {
            "cpiName": "test",
            "installCertificationTime": "2019-09-06T15:51:12Z",
            "cpiId": "test"
        },
        "cbsdSerialNumber": "0a003e440019"
}
```
2019-10-14T08:30:31.099Z - INFO - verified signature on cpiSignatureData
2019-10-14T08:30:31.108Z - INFO - cpiSignatureData data successfully validated against jsonschema
2019-10-14T08:30:31.109Z - INFO - engine sent successfully, the response to CBRS   : {
```
    "registrationResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
```
2019-10-14T08:30:32.887Z - INFO - registration request from CBRS   : {
```
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "CAMBIUM_NETWORKS"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)   BHUL450",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "0a003e440017",
            "cpiSignatureData": {
                "digitalSignature":
"gHI5SjyBTtYGfRzS8fq7mpj2whIvfu12b-qI2EMpV41hMKDSuyis_QZGY8bYVA85diu4ssiNOd87jg
GiVkmH8GjB6plyzw6TVOaC_RNWhdX2gplUkwNAfevmYuC2QXIngEBac5DD9uZXSaFls27OMnaO
bcutg4otUKQrVdGWM7HGvSxPaG7TgGyDx6y7cWhdxTzZrq93NquM_Kg029Gm5Q8VHQIJ_mcFX
qXe9VIYRy9TlGoddtihmi0JtuOe698hFRgt-6JU7bNMIbmOEX7XDNSQfatdr0HwIGvHPn14rb1QnZ
M8b9b6AKNYM9Byr3jS_nCz3nrOt1w9QykBwkL52Q",
                "encodedCpiSignedData":
"eyJmY2NJZCI6Ilo4SDg5RlQwMDUzliwiY2JzZFNlcmlhbE51bWJlcil6IjBhMDAzZTQ0MDAxNylsImI
```

uc3RhbGxhdGlvbBhcmFtIjp7ImxhdGl0dWRlIjo0MS41NzA3MzgsImxvbmdpdHVkZSI6LTkwLjYw
MjcxNSwiaGVpZ2h0IjoxNTAsImhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6
ZmFsc2UsImFudGVubmFBemltdXRoIjoxNTAsImFudGVubmFEb3dudGlsdCI6MiwiYW50ZW5uYVU
dhaW4iOjIwLCJlaXJwQ2FwYWJpbGl0eSI6NDcsImFudGVubmFCZWFtd2lkdGgiOjEyfSwicHJvZm
Vzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRlc3QiLCJjcGlOYW1lIjoidGVzdCIsImluc3R
hbGxDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMTktMDktMDZUMTU6NTE6MTJaIn19",
                    "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
                },
                "fccId": "Z8H89FT0053",
                "groupingParam": [
                    {
                        "groupId": "0a-00-3e-44-00-17",
                        "groupType": "INTERFERENCE_COORDINATION"
                    }
                ],
                "measCapability": [
                    "RECEIVED_POWER_WITHOUT_GRANT"
                ],
                "userId": "TEST"
            }
        ]
}
2019-10-14T08:30:32.926Z - INFO - Registration message contains cpiSignatureData
2019-10-14T08:30:32.926Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2019-10-14T08:30:32.927Z - INFO - encodedCpiSignedData contents = {
    "installationParam": {
        "eirpCapability": 47,
        "antennaAzimuth": 150,
        "heightType": "AMSL",
        "longitude": -90.602715,
        "height": 150,
        "indoorDeployment": false,
        "antennaBeamwidth": 12,
        "antennaDowntilt": 2,
        "latitude": 41.570738,
        "antennaGain": 20
    },
    "fccId": "Z8H89FT0053",
    "professionalInstallerData": {
        "cpiName": "test",
        "installCertificationTime": "2019-09-06T15:51:12Z",
        "cpiId": "test"
    },
    "cbsdSerialNumber": "0a003e440017"
}
2019-10-14T08:30:32.927Z - INFO - verified signature on cpiSignatureData
2019-10-14T08:30:32.934Z - INFO - cpiSignatureData data successfully validated against jsonschema
2019-10-14T08:30:32.934Z - INFO - engine sent successfully, the response to CBRS   : {
    "registrationResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",

```
                    "response": {
                        "responseCode": 0
                    }
                }
            ]
        }
        2019-10-14T08:31:31.713Z - INFO - spectrumInquiry request from CBRS   : {
            "spectrumInquiryRequest": [
                {
                    "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                    "inquiredSpectrum": [
                        {
                            "highFrequency": 3690000000,
                            "lowFrequency": 3670000000
                        },
                        {
                            "highFrequency": 3670000000,
                            "lowFrequency": 3650000000
                        },
                        {
                            "highFrequency": 3580000000,
                            "lowFrequency": 3560000000
                        }
                    ]
                }
            ]
        }
        2019-10-14T08:31:31.724Z - INFO - engine sent successfully, the response to CBRS   : {
            "spectrumInquiryResponse": [
                {
                    "availableChannel": [
                        {
                            "channelType": "GAA",
                            "frequencyRange": {
                                "highFrequency": 3690000000,
                                "lowFrequency": 3670000000
                            },
                            "ruleApplied": "FCC_PART_96"
                        },
                        {
                            "channelType": "GAA",
                            "frequencyRange": {
                                "highFrequency": 3670000000,
                                "lowFrequency": 3650000000
                            },
                            "ruleApplied": "FCC_PART_96"
                        },
                        {
                            "channelType": "GAA",
                            "frequencyRange": {
                                "highFrequency": 3580000000,
                                "lowFrequency": 3560000000
```

```
                    },
                    "ruleApplied": "FCC_PART_96"
                }
            ],
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-14T08:31:31.772Z - INFO - grant request from CBRS   : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "operationParam": {
                "maxEirp": 35,
                "operationFrequencyRange": {
                    "highFrequency": 3685000000,
                    "lowFrequency": 3675000000
                }
            }
        }
    ]
}
2019-10-14T08:31:31.779Z - INFO - engine sent successfully, the response to CBRS   : {
    "grantResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "channelType": "GAA",
            "grantExpireTime": "2019-10-21T08:31:31Z",
            "grantId": "462751650",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-14T08:31:31.829Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "462751650",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
2019-10-14T08:31:31.839Z - INFO - engine sent successfully, the response to CBRS   : {
    "heartbeatResponse": [
        {
```

```
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "grantId": "462751650",
                "response": {
                    "responseCode": 0
                },
                "transmitExpireTime": "2019-10-14T08:34:51Z"
            }
        ]
    }
    2019-10-14T08:31:33.645Z - INFO - spectrumInquiry request from CBRS   : {
        "spectrumInquiryRequest": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
                "inquiredSpectrum": [
                    {
                        "highFrequency": 3630000000,
                        "lowFrequency": 3610000000
                    },
                    {
                        "highFrequency": 3570000000,
                        "lowFrequency": 3550000000
                    },
                    {
                        "highFrequency": 3600000000,
                        "lowFrequency": 3580000000
                    }
                ]
            }
        ]
    }
    2019-10-14T08:31:33.654Z - INFO - engine sent successfully, the response to CBRS   : {
        "spectrumInquiryResponse": [
            {
                "availableChannel": [
                    {
                        "channelType": "GAA",
                        "frequencyRange": {
                            "highFrequency": 3630000000,
                            "lowFrequency": 3610000000
                        },
                        "ruleApplied": "FCC_PART_96"
                    },
                    {
                        "channelType": "GAA",
                        "frequencyRange": {
                            "highFrequency": 3570000000,
                            "lowFrequency": 3550000000
                        },
                        "ruleApplied": "FCC_PART_96"
                    },
                    {
                        "channelType": "GAA",
```

```
                    "frequencyRange": {
                        "highFrequency": 3600000000,
                        "lowFrequency": 3580000000
                    },
                    "ruleApplied": "FCC_PART_96"
                }
            ],
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-14T08:31:33.729Z - INFO - grant request from CBRS   : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
            "operationParam": {
                "maxEirp": 35,
                "operationFrequencyRange": {
                    "highFrequency": 3625000000,
                    "lowFrequency": 3615000000
                }
            }
        }
    ]
}
2019-10-14T08:31:33.736Z - INFO - engine sent successfully, the response to CBRS   : {
    "grantResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
            "channelType": "GAA",
            "grantExpireTime": "2019-10-21T08:31:33Z",
            "grantId": "853923610",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-14T08:31:33.792Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
            "grantId": "853923610",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
```

2019-10-14T08:31:33.801Z - INFO - engine sent successfully, the response to CBRS   : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
      "grantId": "853923610",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-10-14T08:34:53Z"
    }
  ]
}
2019-10-14T08:32:21.937Z - INFO - heartbeat request from CBRS   : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
      "grantId": "462751650",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-10-14T08:32:21.938Z - INFO - Time interval between two heartbeat request messages is: 50.108, limit is: 65.0
2019-10-14T08:32:21.946Z - INFO - engine sent successfully, the response to CBRS   : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
      "grantId": "462751650",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-10-14T08:35:41Z"
    }
  ]
}
2019-10-14T08:32:23.898Z - INFO - heartbeat request from CBRS   : {
  "heartbeatRequest": [
    {
      "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
      "grantId": "853923610",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-10-14T08:32:23.898Z - INFO - Time interval between two heartbeat request messages is: 50.105, limit is: 65.0
2019-10-14T08:32:23.905Z - INFO - engine sent successfully, the response to CBRS   : {
  "heartbeatResponse": [
    {
      "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",

```
                "grantId": "853923610",
                "response": {
                    "responseCode": 0
                },
                "transmitExpireTime": "2019-10-14T08:35:43Z"
            }
        ]
    }
    2019-10-14T08:32:50.407Z - INFO - relinquishment request from CBRS   : {
        "relinquishmentRequest": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "grantId": "462751650"
            }
        ]
    }
    2019-10-14T08:32:50.411Z - INFO - engine sent successfully, the response to CBRS   : {
        "relinquishmentResponse": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "grantId": "462751650",
                "response": {
                    "responseCode": 0
                }
            }
        ]
    }
    2019-10-14T08:32:51.359Z - INFO - relinquishment request from CBRS   : {
        "relinquishmentRequest": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
                "grantId": "853923610"
            }
        ]
    }
    2019-10-14T08:32:51.365Z - INFO - engine sent successfully, the response to CBRS   : {
        "relinquishmentResponse": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
                "grantId": "853923610",
                "response": {
                    "responseCode": 0
                }
            }
        ]
    }
```

2019-10-14T08:32:52.943Z - INFO - arrived to nstep starting question answer session with the technician
2019-10-14T08:32:52.944Z - INFO - the question is : Did CBSD1 cease RF transmission before receipt of Relinquishment Request by Test Harness? please choose one of the answers :
2019-10-14T08:34:41.032Z - INFO - for the question : Did CBSD1 cease RF transmission before receipt of Relinquishment Request by Test Harness? , the user choose y

2019-10-14T08:34:41.032Z - INFO - the question is : Did CBSD2 cease RF transmission before receipt of Relinquishment Request by Test Harness? please choose one of the answers :
2019-10-14T08:34:41.973Z - INFO - for the question : Did CBSD2 cease RF transmission before receipt of Relinquishment Request by Test Harness? , the user choose y
2019-10-14T08:34:54.605Z - INFO - The final result of the test : WINNF.FT.D.RLQ.2 is - passed and :the additional comments for the current test are : CBSD1 stops transmission at T08:32:49, CBSD2 stops transmission at T08:32:50

Test Log for WINNF.FT.D.DRG.2 Test Case ID
2019-10-14T08:35:26.911Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
2019-10-14T08:35:26.913Z - INFO - the selected test from the user : WINNF.FT.D.DRG.2 is starting now
2019-10-14T08:35:38.207Z - INFO - registration request from CBRS   : {

```
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "CAMBIUM_NETWORKS"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)   BHUL450",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "0a003e440019",
            "cpiSignatureData": {
                "digitalSignature":
```
**"Cdm2aCBSLn_dSoDokietXpG0jjAFgfEs701DSv0mSxfWuKAJXKa6sBCQ2_RGXB0UKxko_1zd4r
NWhYm2VnlQXv7lUGrZWosxdWVxUC9mEFH0mCyNUcyieRNE7PAv6YNRKN1Au17WZxdpfwJUf
aLH4Hmmc1t6QE_UEL7qWm22uehlTjwWQbxokId5tSAjejWOjDyjx1bwhmez7tzkyCdD5EnNQCbT
APQZeuqSBL-WDwKuwNsTJrUuv_FkKacUduLdE02xbI38f2exkJVJallPpbGg2DC-7wm0xTPIJUQc
5RF3Z5YKI7gFP8jjCtIdziv0-_YZuMey34LMvsI2IqGvng",**
```
                "encodedCpiSignedData":
```
**"eyJmY2NJZCI6Ilo4SDg5RlQwMDUzIiwiY2JzZFNlcmlhbE51bWJlciI6IjBhMDAzZTQ0MDAxOSIsIm
Iuc3RhbGxhdGlvblBhcmFtIjp7ImxhdGl0dWRlIjo0MS41NzA3MzgslmxvbmdpdHVkZSI6LTkwLjYw
MjcxNSwiaGVpZ2h0IjoxNTAslmhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCl6
ZmFsc2UslmFudGVubmFBemltdXRoIjoxNTAslmFudGVubmFEb3dudGlsdCl6MiwiYW50ZW5uYU
dhaW4iOjlwLCJlaXJwQ2FwYWJpbGl0eSl6NDcsImFudGVubmFCZWFtd2lkdGgiOjEyfSwiY3BpSW
Qi0jlwY17waWQ2FuYWJpbGl0eSl6NDcsimFudGVubmFDZWFtd2lkGgiOjEyfSwiY3BpSWR3MGc1R
Vzc2lvbmFsSW5zdGFsbGVyRGF0YSl6eyJjcGlJZCl6InRlc3QiLCJjcGlOYW1lljoidGVzdCIsImluc3R
hbGxDZXJ0aWZpY2F0aW9uVGltZSl6ljlwMTktMDktMDZUMTU6NTE6MTJaIn19",**
```
                "protectedHeader": "eyJhbGciOiJSUzl1NiIsInR5cCl6IkpXVCJ9"
```
```
            },
            "fccId": "Z8H89FT0053",
            "groupingParam": [
                {
                    "groupId": "0a-00-3e-44-00-19",
                    "groupType": "INTERFERENCE_COORDINATION"
                }
            ],
            "measCapability": [
                "RECEIVED_POWER_WITHOUT_GRANT"
            ],
            "userId": "TEST"
        }
    ]
}
```

2019-10-14T08:35:38.246Z - INFO - Registration message contains cpiSignatureData
2019-10-14T08:35:38.247Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2019-10-14T08:35:38.247Z - INFO - encodedCpiSignedData contents = {
```
    "installationParam": {
        "eirpCapability": 47,
```

```
            "antennaAzimuth": 150,
            "heightType": "AMSL",
            "longitude": -90.602715,
            "height": 150,
            "indoorDeployment": false,
            "antennaBeamwidth": 12,
            "antennaDowntilt": 2,
            "latitude": 41.570738,
            "antennaGain": 20
        },
        "fccId": "Z8H89FT0053",
        "professionalInstallerData": {
            "cpiName": "test",
            "installCertificationTime": "2019-09-06T15:51:12Z",
            "cpiId": "test"
        },
        "cbsdSerialNumber": "0a003e440019"
    }
```

2019-10-14T08:35:38.249Z - INFO - verified signature on cpiSignatureData
2019-10-14T08:35:38.255Z - INFO - cpiSignatureData data successfully validated against jsonschema
2019-10-14T08:35:38.257Z - INFO - engine sent successfully, the response to CBRS   : {

```
    "registrationResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
```

2019-10-14T08:35:40.174Z - INFO - registration request from CBRS   : {

```
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "CAMBIUM_NETWORKS"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)   BHUL450",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "0a003e440017",
            "cpiSignatureData": {
                "digitalSignature":
```
"gHI5SjyBTtYGfRzS8fq7mpj2whIvfu12b-qI2EMpV41hMKDSuyis_QZGY8bYVA85diu4ssiNOd87jg
GiVkmH8GjB6plyzw6TVOaC_RNWhdX2gpIUkwNAfevmYuC2QXlngEBac5DD9uZXSaFls27OMnaO
bcutg4otUKQrVdGWM7HGvSxPaG7TgGyDx6y7cWhdxTzZrq93NquM_Kg029Gm5Q8VHQIJ_mcFX
qXe9VlYRy9TlGoddtihmi0JtuOe698hFRgt-6JU7bNMlbmOEX7XDNSQfatdr0HwlGvHPn14rb1QnZ
M8b9b6AKNYM9Byr3jS_nCz3nrOt1w9QykBwkL52Q",
```
                "encodedCpiSignedData":
```
"eyJmY2NJZCI6Ilo4SDg5RlQwMDUzIiwiY2JzZFNlcmlhbE51bWJlcil6IjBhMDAzZTQ0MDAxNyIsIml

uc3RhbGxhdGlvblBhcmFtIjp7ImxhdGl0dWRlIjo0MS41NzA3MzgsImxvbmdpdHVkZSI6LTkwLjYw
MjcxNSwiaGVpZ2h0IjoxNTAsImhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6
ZmFsc2UsImFudGVubmFBemltdXRoIjoxNTAsImFudGVubmFEb3dudGlsdCI6MiwiYW50ZW5uYYU
dhaW4iOjlwLCJlaXJwQ2FwYWJpbGl0eSI6NDcsImFudGVubmFCZWFtd2lkdGgiOjEyfSwicHJvZm
Vzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRlc3QiLCJjcGlOYW1lIjoidGVzdCIsImluc3R
hbGxDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMTktMDktMDZUMTU6NTE6MTJaIn19",
            "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
        },
        "fccId": "Z8H89FT0053",
        "groupingParam": [
            {
                "groupId": "0a-00-3e-44-00-17",
                "groupType": "INTERFERENCE_COORDINATION"
            }
        ],
        "measCapability": [
            "RECEIVED_POWER_WITHOUT_GRANT"
        ],
        "userId": "TEST"
    }
]
}
2019-10-14T08:35:40.214Z - INFO - Registration message contains cpiSignatureData
2019-10-14T08:35:40.214Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2019-10-14T08:35:40.216Z - INFO - encodedCpiSignedData contents = {
    "installationParam": {
        "eirpCapability": 47,
        "antennaAzimuth": 150,
        "heightType": "AMSL",
        "longitude": -90.602715,
        "height": 150,
        "indoorDeployment": false,
        "antennaBeamwidth": 12,
        "antennaDowntilt": 2,
        "latitude": 41.570738,
        "antennaGain": 20
    },
    "fccId": "Z8H89FT0053",
    "professionalInstallerData": {
        "cpiName": "test",
        "installCertificationTime": "2019-09-06T15:51:12Z",
        "cpiId": "test"
    },
    "cbsdSerialNumber": "0a003e440017"
}
2019-10-14T08:35:40.217Z - INFO - verified signature on cpiSignatureData
2019-10-14T08:35:40.223Z - INFO - cpiSignatureData data successfully validated against jsonschema
2019-10-14T08:35:40.224Z - INFO - engine sent successfully, the response to CBRS   : {
    "registrationResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",

```
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-14T08:36:38.635Z - INFO - spectrumInquiry request from CBRS   : {
    "spectrumInquiryRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "inquiredSpectrum": [
                {
                    "highFrequency": 3690000000,
                    "lowFrequency": 3670000000
                },
                {
                    "highFrequency": 3670000000,
                    "lowFrequency": 3650000000
                },
                {
                    "highFrequency": 3580000000,
                    "lowFrequency": 3560000000
                }
            ]
        }
    ]
}
2019-10-14T08:36:38.645Z - INFO - engine sent successfully, the response to CBRS   : {
    "spectrumInquiryResponse": [
        {
            "availableChannel": [
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3690000000,
                        "lowFrequency": 3670000000
                    },
                    "ruleApplied": "FCC_PART_96"
                },
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3670000000,
                        "lowFrequency": 3650000000
                    },
                    "ruleApplied": "FCC_PART_96"
                },
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3580000000,
                        "lowFrequency": 3560000000
```

```
                    },
                    "ruleApplied": "FCC_PART_96"
                }
            ],
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-14T08:36:38.701Z - INFO - grant request from CBRS   : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "operationParam": {
                "maxEirp": 35,
                "operationFrequencyRange": {
                    "highFrequency": 3685000000,
                    "lowFrequency": 3675000000
                }
            }
        }
    ]
}
2019-10-14T08:36:38.709Z - INFO - engine sent successfully, the response to CBRS   : {
    "grantResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "channelType": "GAA",
            "grantExpireTime": "2019-10-21T08:36:38Z",
            "grantId": "183523411",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-14T08:36:38.769Z - INFO - heartbeat request from CBRS    : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "183523411",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
2019-10-14T08:36:38.776Z - INFO - engine sent successfully, the response to CBRS    : {
    "heartbeatResponse": [
        {
```

```
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "183523411",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2019-10-14T08:39:58Z"
        }
    ]
}
2019-10-14T08:36:40.437Z - INFO - spectrumInquiry request from CBRS   : {
    "spectrumInquiryRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
            "inquiredSpectrum": [
                {
                    "highFrequency": 3630000000,
                    "lowFrequency": 3610000000
                },
                {
                    "highFrequency": 3570000000,
                    "lowFrequency": 3550000000
                },
                {
                    "highFrequency": 3600000000,
                    "lowFrequency": 3580000000
                }
            ]
        }
    ]
}
2019-10-14T08:36:40.447Z - INFO - engine sent successfully, the response to CBRS   : {
    "spectrumInquiryResponse": [
        {
            "availableChannel": [
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3630000000,
                        "lowFrequency": 3610000000
                    },
                    "ruleApplied": "FCC_PART_96"
                },
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3570000000,
                        "lowFrequency": 3550000000
                    },
                    "ruleApplied": "FCC_PART_96"
                },
                {
                    "channelType": "GAA",
```

```
                "frequencyRange": {
                    "highFrequency": 3600000000,
                    "lowFrequency": 3580000000
                },
                "ruleApplied": "FCC_PART_96"
            }
        ],
        "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
        "response": {
            "responseCode": 0
        }
    }
    ]
}
2019-10-14T08:36:40.506Z - INFO - grant request from CBRS    : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
            "operationParam": {
                "maxEirp": 35,
                "operationFrequencyRange": {
                    "highFrequency": 3625000000,
                    "lowFrequency": 3615000000
                }
            }
        }
    ]
}
2019-10-14T08:36:40.542Z - INFO - engine sent successfully, the response to CBRS   : {
    "grantResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
            "channelType": "GAA",
            "grantExpireTime": "2019-10-21T08:36:40Z",
            "grantId": "599686834",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-14T08:36:40.624Z - INFO - heartbeat request from CBRS    : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
            "grantId": "599686834",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
```

```
2019-10-14T08:36:40.631Z - INFO - engine sent successfully, the response to CBRS   : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
            "grantId": "599686834",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2019-10-14T08:40:00Z"
        }
    ]
}
2019-10-14T08:37:28.864Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "183523411",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-10-14T08:37:28.865Z - INFO - Time interval between two heartbeat request messages is:
50.095, limit is: 65.0
2019-10-14T08:37:28.872Z - INFO - engine sent successfully, the response to CBRS   : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "183523411",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2019-10-14T08:40:48Z"
        }
    ]
}
2019-10-14T08:37:30.721Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
            "grantId": "599686834",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-10-14T08:37:30.723Z - INFO - Time interval between two heartbeat request messages is:
50.098, limit is: 65.0
2019-10-14T08:37:30.730Z - INFO - engine sent successfully, the response to CBRS   : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
```

```
                "grantId": "599686834",
                "response": {
                    "responseCode": 0
                },
                "transmitExpireTime": "2019-10-14T08:40:50Z"
            }
        ]
    }
```
2019-10-14T08:37:47.247Z - INFO - deregistration request from CBRS   : {
```
    "deregistrationRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019"
        }
    ]
}
```
2019-10-14T08:37:47.256Z - INFO - engine sent successfully, the response to CBRS   : {
```
    "deregistrationResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
```
2019-10-14T08:37:49.911Z - INFO - deregistration request from CBRS   : {
```
    "deregistrationRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017"
        }
    ]
}
```
2019-10-14T08:37:49.918Z - INFO - engine sent successfully, the response to CBRS   : {
```
    "deregistrationResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440017",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
```
2019-10-14T08:37:50.993Z - INFO - arrived to nstep starting question answer session with the technician
2019-10-14T08:37:50.993Z - INFO - the question is : Did CBSD1 cease RF transmission before receipt of Relinquishment request (if sent) or Deregistration request at Test Harness? please choose one of the answers :
2019-10-14T08:38:40.525Z - INFO - for the question : Did CBSD1 cease RF transmission before receipt of Relinquishment request (if sent) or Deregistration request at Test Harness? , the user choose y
2019-10-14T08:38:40.526Z - INFO - the question is : Did CBSD2 cease RF transmission before receipt of Relinquishment request (if sent) or Deregistration request at Test Harness? please

choose one of the answers :
2019-10-14T08:38:41.183Z - INFO - for the question : Did CBSD2 cease RF transmission before receipt of Relinquishment request (if sent) or Deregistration request at Test Harness? , the user choose y
2019-10-14T08:38:47.174Z - INFO - The final result of the test : WINNF.FT.D.DRG.2 is - passed and :the additional comments for the current test are : CBSD1 stops transmission at T08:37:46, CBSD2 stops transmission at T08:37:48

Test Log for WINNF.FT.C.SCS.1 Test Case ID
2019-10-14T08:42:36.855Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
2019-10-14T08:42:36.855Z - INFO - the selected test from the user : WINNF.FT.D.REG.6 is starting now
2019-10-14T08:42:56.496Z - INFO - registration request from CBRS   : {
```
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "CAMBIUM_NETWORKS"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)   BHUL450",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "0a003e440019",
            "cpiSignatureData": {
                "digitalSignature":
```
"Cdm2aCBSLn_dSoDokietXpG0jjAFgfEs701DSv0mSxfWuKAJXKa6sBCQ2_RGXB0UKxko_1zd4r NWhYm2VnIQXv7IUGrZWosxdWVxUC9mEFH0mCyNUcyieRNE7PAv6YNRKN1Au17WZxdpfwJUf aLH4Hmmc1t6QE_UEL7qWm22uehITjwWQbxokId5tSAjejWOjDyjx1bwhmez7tzkyCdD5EnNQCbT APQZeuqSBL-WDwKuwNsTJrUuv_FkKacUduLdE02xbI38f2exkJVJalIPpbGg2DC-7wm0xTPIJUQc 5RF3Z5YKI7gFP8jjCtIdziv0-_YZuMey34LMvsI2IqGvng",
```
                "encodedCpiSignedData":
```
"eyJmY2NJZCI6Ilo4SDg5RlQwMDUzIiwiY2JzZFNlcmlhbE51bWJlciI6IjBhMDAzZTQ0MDAxOSIsIm luc3RhbGxhdGlvblBhcmFtIjp7ImxhdGl0dWRlIjo0MS41NzA3MzgsImxvbmdpdHVkZSI6LTkwLjYw MjcxNSwiaGVpZ2h0IjoxNTAsImhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6 ZmFsc2UsImFudGVubmFBemltdXRoIjoxNTAsImFudGVubmFEb3dudGlsdCI6MiwiYW50ZW5uYUU dhaW4iOjlwLCJlaXJwQ2FwYWJpbGl0eSI6NNDcsImFudGVubmFCZWFtd2lkdGgiOjEyfSwiY2F0ZWdv cnkiOiJCIiwiY3BpYU1rZGF0YSI6eyJjcGlJZCI6InRlc3QiLCJjcGlOYW1lIjoidGVzdCIsImluc3R hbGxDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMTktMDktMDZUMTU6NTE6MTJaIn19",
```
                "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
            },
            "fccId": "Z8H89FT0053",
            "groupingParam": [
                {
                    "groupId": "0a-00-3e-44-00-19",
                    "groupType": "INTERFERENCE_COORDINATION"
                }
            ],
            "measCapability": [
                "RECEIVED_POWER_WITHOUT_GRANT"
            ],
            "userId": "TEST"
        }
    ]
}
```
2019-10-14T08:42:56.515Z - INFO - Registration message contains cpiSignatureData
2019-10-14T08:42:56.515Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2019-10-14T08:42:56.516Z - INFO - encodedCpiSignedData contents = {
```
    "installationParam": {
        "eirpCapability": 47,
```

```
            "antennaAzimuth": 150,
            "heightType": "AMSL",
            "longitude": -90.602715,
            "height": 150,
            "indoorDeployment": false,
            "antennaBeamwidth": 12,
            "antennaDowntilt": 2,
            "latitude": 41.570738,
            "antennaGain": 20
        },
        "fccId": "Z8H89FT0053",
        "professionalInstallerData": {
            "cpiName": "test",
            "installCertificationTime": "2019-09-06T15:51:12Z",
            "cpiId": "test"
        },
        "cbsdSerialNumber": "0a003e440019"
    }
2019-10-14T08:42:56.561Z - INFO - verified signature on cpiSignatureData
2019-10-14T08:42:56.569Z - INFO - cpiSignatureData data successfully validated against
jsonschema
2019-10-14T08:42:56.571Z - INFO - engine sent successfully, the response to CBRS   : {
    "registrationResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-14T08:43:57.190Z - INFO - spectrumInquiry request from CBRS   : {
    "spectrumInquiryRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "inquiredSpectrum": [
                {
                    "highFrequency": 3690000000,
                    "lowFrequency": 3670000000
                },
                {
                    "highFrequency": 3670000000,
                    "lowFrequency": 3650000000
                },
                {
                    "highFrequency": 3580000000,
                    "lowFrequency": 3560000000
                }
            ]
        }
    ]
}
```

2019-10-14T08:43:57.190Z - INFO - engine sent successfully, the response to CBRS   : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3555000000,
            "lowFrequency": 3550000000
          },
          "ruleApplied": "FCC_PART_96"
        }
      ],
      "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
      "response": {
        "responseCode": 0
      }
    }
  ]
}

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

    2019-10-14T08:46:48.891Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

    2019-10-14T08:46:48.891Z - 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
    2019-10-14T08:55:28.697Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13
    2019-10-14T08:55:28.697Z - 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

    2019-10-14T08:59:30.831Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

    2019-10-14T08:59:30.831Z - 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

2019-10-14T09:04:10.305Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2019-10-14T09:04:10.305Z - INFO - the selected test from the user : WINNF.FT.D.REG.6 is starting now

Test Log for WINNF.PT.C.HBT Test Case ID_ BW10M_Grant maxEirp 35

    2019-10-14T02:57:30.960Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

    2019-10-14T02:57:30.960Z - INFO - Selected spectrum frequency is {'lowFrequency': 3675000000L, 'highFrequency': 3685000000L}

    2019-10-14T02:57:30.960Z - INFO - Granted Spectrum Max Eirp = 35dBm/MHz

    2019-10-14T02:57:30.960Z - INFO - the selected test from the user : PowerMeasTest is starting now

    2019-10-14T02:57:41.881Z - INFO - registration request from CBRS   : {

```
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "CAMBIUM_NETWORKS"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)    BHUL450",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "0a003e440019",
            "cpiSignatureData": {
                "digitalSignature":
```

**"Cdm2aCBSLn_dSoDokietXpG0jjAFgfEs701DSv0mSxfWuKAJXKa6sBCQ2_RGXB0UKxko_1zd4r
NWhYm2VnIQXv7lUGrZWosxdWVxUC9mEFH0mCyNUcyieRNE7PAv6YNRKN1Au17WZxdpfwJUf
aLH4Hmmc1t6QE_UEL7qWm22uehlTjwWQbxokId5tSAjejWOjDyjx1bwhmez7tzkyCdD5EnNQCbT
APQZeuqSBL-WDwKuwNsTJrUuv_FkKacUduLdE02xbl38f2exkJVJallPpbGg2DC-7wm0xTPIJUQc
5RF3Z5YKI7gFP8jjCtldziv0-_YZuMey34LMvsl2lqGvng",**

                "encodedCpiSignedData":

**"eyJmY2NJZCI6Ilo4SDg5RlQwMDUzIiwiY2JzZFNlcmlhbE51bWJlciI6IjBhMDAzZTQ0MDAxOSIsIm
luc3RhbGxhdGlvblBhcmFtIjp7ImxhdGl0dWRlIjo0MS41NzA3MzgsImxvbmdpdHVkZSI6LTkwLjYw
MjcxNSwiaGVpZ2h0IjoxNTAsImhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6
ZmFsc2UsImFudGVubmFBemltdXRoIjoxNTAsImFudGVubmFEb3dudGlsdCI6MiwiYW50ZW5uYU
dhaW4iOjlwLCJlaXJwQ2FwYWJpbGl0eSI6NDcsImFudGVubmFCZWFtd2lkdGgiOjYyfSwiY2F0ZW
dvcnkiOiJCIiwiY2FsbFNpZ24iOiJplZCI6Ilc3cQiiLCJjcGlOYW1lIjoidGVzdCIsImluc3R
hbGxDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMTktMDktMDZUMTU6NTE6MTJaIn19",**

                "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"

```
            },
            "fccId": "Z8H89FT0053",
            "groupingParam": [
                {
                    "groupId": "0a-00-3e-44-00-19",
                    "groupType": "INTERFERENCE_COORDINATION"
                }
            ],
            "measCapability": [
                "RECEIVED_POWER_WITHOUT_GRANT"
            ],
            "userId": "TEST"
        }
    ]
}
```

    2019-10-14T02:57:41.927Z - INFO - engine sent successfully, the response to CBRS   : {

```
    "registrationResponse": [
```

```
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "response": {
                    "responseCode": 0
                }
            }
        ]
    }
    2019-10-14T02:58:42.815Z - INFO - spectrumInquiry request from CBRS   : {
        "spectrumInquiryRequest": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "inquiredSpectrum": [
                    {
                        "highFrequency": 3690000000,
                        "lowFrequency": 3670000000
                    },
                    {
                        "highFrequency": 3670000000,
                        "lowFrequency": 3650000000
                    },
                    {
                        "highFrequency": 3580000000,
                        "lowFrequency": 3560000000
                    }
                ]
            }
        ]
    }
    2019-10-14T02:58:42.831Z - INFO - The requested spectrum is out of the range, availableChannel
    is sent out
    2019-10-14T02:58:42.831Z - INFO - engine sent successfully, the response to CBRS   : {
        "spectrumInquiryResponse": [
            {
                "availableChannel": [
                    {
                        "channelType": "GAA",
                        "frequencyRange": {
                            "highFrequency": 3685000000,
                            "lowFrequency": 3675000000
                        },
                        "maxEirp": 35,
                        "ruleApplied": "FCC_PART_96"
                    }
                ],
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "response": {
                    "responseCode": 0
                }
            }
        ]
    }
```

```
2019-10-14T02:58:42.877Z - INFO - grant request from CBRS   : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "operationParam": {
                "maxEirp": 35,
                "operationFrequencyRange": {
                    "highFrequency": 3685000000,
                    "lowFrequency": 3675000000
                }
            }
        }
    ]
}
2019-10-14T02:58:42.892Z - INFO - engine sent successfully, the response to CBRS   : {
    "grantResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "channelType": "GAA",
            "grantExpireTime": "2019-10-21T02:58:42Z",
            "grantId": "901715040",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-14T02:58:42.954Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "901715040",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
2019-10-14T02:58:42.954Z - INFO - engine sent successfully, the response to CBRS   : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "901715040",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2019-10-14T03:02:02Z"
        }
    ]
}
2019-10-14T02:59:33.046Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
```

```
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "901715040",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-10-14T02:59:33.062Z - INFO - engine sent successfully, the response to CBRS   : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "901715040",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2019-10-14T03:02:53Z"
        }
    ]
}
2019-10-14T03:00:23.138Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "901715040",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-10-14T03:00:23.154Z - INFO - engine sent successfully, the response to CBRS   : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "901715040",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2019-10-14T03:03:43Z"
        }
    ]
}
2019-10-14T03:01:13.230Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "901715040",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
```

2019-10-14T03:01:13.246Z - INFO - engine sent successfully, the response to CBRS   : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "901715040",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2019-10-14T03:04:33Z"
        }
    ]
}
2019-10-14T03:02:03.338Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "901715040",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-10-14T03:02:03.352Z - INFO - engine sent successfully, the response to CBRS   : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "901715040",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2019-10-14T03:05:23Z"
        }
    ]
}
2019-10-14T03:02:53.450Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "901715040",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-10-14T03:02:53.450Z - INFO - engine sent successfully, the response to CBRS   : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "901715040",
            "response": {
                "responseCode": 0
            },

```
            "transmitExpireTime": "2019-10-14T03:06:13Z"
        }
    ]
}
2019-10-14T03:03:43.573Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "901715040",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-10-14T03:03:43.588Z - INFO - engine sent successfully, the response to CBRS   : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "901715040",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2019-10-14T03:07:03Z"
        }
    ]
}
2019-10-14T03:04:33.711Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "901715040",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-10-14T03:04:33.727Z - INFO - engine sent successfully, the response to CBRS   : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "901715040",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2019-10-14T03:07:53Z"
        }
    ]
}
```

Test Log for WINNF.PT.C.HBT Test Case ID_ BW10M_Grant maxEirp 7

2019-10-14T03:22:30.894Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2019-10-14T03:22:30.894Z - INFO - Selected spectrum frequency is {'lowFrequency': 3675000000L, 'highFrequency': 3685000000L}

2019-10-14T03:22:30.894Z - INFO - Granted Spectrum Max Eirp = 7dBm/MHz

2019-10-14T03:22:30.894Z - INFO - the selected test from the user : PowerMeasTest is starting now

2019-10-14T03:22:32.532Z - INFO - registration request from CBRS   : {

```
    "registrationRequest": [
        {
            "airInterface": {
                "radioTechnology": "CAMBIUM_NETWORKS"
            },
            "cbsdCategory": "B",
            "cbsdInfo": {
                "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)   BHUL450",
                "vendor": "Cambium Networks"
            },
            "cbsdSerialNumber": "0a003e440019",
            "cpiSignatureData": {
                "digitalSignature":
```

"Cdm2aCBSLn_dSoDokietXpG0jjAFgfEs701DSv0mSxfWuKAJXKa6sBCQ2_RGXB0UKxko_1zd4r NWhYm2VnIQXv7lUGrZWosxdWVxUC9mEFH0mCyNUcyieRNE7PAv6YNRKN1Au17WZxdpfwJUf aLH4Hmmc1t6QE_UEL7qWm22uehlTjwWQbxokId5tSAjejWOjDyjx1bwhmez7tzkyCdD5EnNQCbT APQZeuqSBL-WDwKuwNsTJrUuv_FkKacUduLdE02xbl38f2exkJVJallPpbGg2DC-7wm0xTPIJUQc 5RF3Z5YKI7gFP8jjCtIdziv0-_YZuMey34LMvsl2IqGvng",

```
                "encodedCpiSignedData":
```

"eyJmY2NJZCI6Ilo4SDg5RlQwMDUzIiwiY2JzZFNlcmlhbE51bWJlciI6IjBhMDAzZTQ0MDAxOSIsIm luc3RhbGxhdGlvblBhcmFtIjp7ImxhdGl0dWRlIjo0MS41NzA3MzgsImxvbmdpdHVkZSI6LTkwLjYw Mjc1SwiaGVpZ2h0IjoxNTAsImhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCI6 ZmFsc2UsImFudGVubmFBemltdXRoIjoxNTAsImFudGVubmFEb3dudGlsdCI6MiwiYW50ZW5uYU dhaW4iOjlwLCJlaXJwQ2FwYWJpbGl0eSI6NDcsImFudGVubmFCZWFtd2lkdGgiOjEyMCwiYW50ZW5uYUZWFtd2lkdGgiOjEyMCwiYW50ZW5uYUZ CZWFtd2lkdGgiOjEyMCwiYW50ZW5uYUZ Vzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6InRIc3QiLCJjcGlOYW1lIjoidGVzdCIsImluc3R hbGxDZXJ0aWZpY2F0aW9uVGltZSI6IjIwMTktMDktMDZUMTU6NTE6MTJaIn19",

```
                "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
            },
            "fccId": "Z8H89FT0053",
```

```
        "groupingParam": [
            {
                "groupId": "0a-00-3e-44-00-19",
                "groupType": "INTERFERENCE_COORDINATION"
            }
        ],
        "measCapability": [
            "RECEIVED_POWER_WITHOUT_GRANT"
        ],
        "userId": "TEST"
    }
  ]
}
```

2019-10-14T03:22:32.578Z - INFO - engine sent successfully, the response to CBRS   : {

```
    "registrationResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
```

2019-10-14T03:23:32.686Z - INFO - spectrumInquiry request from CBRS   : {

```
    "spectrumInquiryRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "inquiredSpectrum": [
                {
                    "highFrequency": 3690000000,
                    "lowFrequency": 3670000000
                },
                {
                    "highFrequency": 3670000000,
                    "lowFrequency": 3650000000
                },
                {
```

```
                    "highFrequency": 3580000000,
                    "lowFrequency": 3560000000
                }
            ]
        }
    ]
}
2019-10-14T03:23:32.686Z - INFO - The requested spectrum is out of the range, availableChannel
is sent out
2019-10-14T03:23:32.686Z - INFO - engine sent successfully, the response to CBRS   : {
    "spectrumInquiryResponse": [
        {
            "availableChannel": [
                {
                    "channelType": "GAA",
                    "frequencyRange": {
                        "highFrequency": 3685000000,
                        "lowFrequency": 3675000000
                    },
                    "maxEirp": 7,
                    "ruleApplied": "FCC_PART_96"
                }
            ],
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-14T03:23:32.763Z - INFO - grant request from CBRS   : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "operationParam": {
                "maxEirp": 35,
                "operationFrequencyRange": {
```

```
                    "highFrequency": 3685000000,
                    "lowFrequency": 3675000000
                }
            }
        }
    ]
}
```
2019-10-14T03:23:32.763Z - INFO - The requested maxEirp value is too high

2019-10-14T03:23:32.763Z - INFO - The Grant response code is not 0, applicable spectrum parameters have been sent out.

2019-10-14T03:23:32.763Z - INFO - engine sent successfully, the response to CBRS   : {
```
    "grantResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "operationParam": {
                "maxEirp": 7,
                "operationFrequencyRange": {
                    "highFrequency": 3685000000,
                    "lowFrequency": 3675000000
                }
            },
            "response": {
                "responseCode": 400
            }
        }
    ]
}
```
2019-10-14T03:23:32.872Z - INFO - grant request from CBRS   : {
```
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "operationParam": {
                "maxEirp": 7,
                "operationFrequencyRange": {
                    "highFrequency": 3685000000,
                    "lowFrequency": 3675000000
                }
```

```
                    }
                }
            ]
        }
2019-10-14T03:23:32.872Z - INFO - engine sent successfully, the response to CBRS   : {
        "grantResponse": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "channelType": "GAA",
                "grantExpireTime": "2019-10-21T03:23:32Z",
                "grantId": "155562583",
                "heartbeatInterval": 60,
                "response": {
                    "responseCode": 0
                }
            }
        ]
    }
2019-10-14T03:23:32.920Z - INFO - heartbeat request from CBRS   : {
        "heartbeatRequest": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "grantId": "155562583",
                "grantRenew": false,
                "operationState": "GRANTED"
            }
        ]
    }
2019-10-14T03:23:32.934Z - INFO - engine sent successfully, the response to CBRS   : {
        "heartbeatResponse": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "grantId": "155562583",
                "response": {
                    "responseCode": 0
                },
                "transmitExpireTime": "2019-10-14T03:26:52Z"
```

```
            }
        ]
    }
    2019-10-14T03:24:23.010Z - INFO - heartbeat request from CBRS   : {
        "heartbeatRequest": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "grantId": "155562583",
                "grantRenew": false,
                "operationState": "AUTHORIZED"
            }
        ]
    }
    2019-10-14T03:24:23.026Z - INFO - engine sent successfully, the response to CBRS   : {
        "heartbeatResponse": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "grantId": "155562583",
                "response": {
                    "responseCode": 0
                },
                "transmitExpireTime": "2019-10-14T03:27:43Z"
            }
        ]
    }
    2019-10-14T03:25:13.118Z - INFO - heartbeat request from CBRS   : {
        "heartbeatRequest": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "grantId": "155562583",
                "grantRenew": false,
                "operationState": "AUTHORIZED"
            }
        ]
    }
    2019-10-14T03:25:13.118Z - INFO - engine sent successfully, the response to CBRS   : {
        "heartbeatResponse": [
```

```
    {
        "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
        "grantId": "155562583",
        "response": {
            "responseCode": 0
        },
        "transmitExpireTime": "2019-10-14T03:28:33Z"
    }
  ]
}
2019-10-14T03:26:03.210Z - INFO - heartbeat request from CBRS    : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "155562583",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-10-14T03:26:03.226Z - INFO - engine sent successfully, the response to CBRS    : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "155562583",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2019-10-14T03:29:23Z"
        }
    ]
}
```

Test Log for WINNF.PT.C.HBT Test Case ID_ BW10M_Grant maxEirp –20

    2019-10-16T01:46:29.263Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

    2019-10-16T01:46:29.263Z - INFO - Selected spectrum frequency is {'lowFrequency': 3675000000L, 'highFrequency': 3685000000L}

    2019-10-16T01:46:29.263Z - INFO - Granted Spectrum Max Eirp = -20dBm/MHz

    2019-10-16T01:46:29.263Z - INFO - the selected test from the user : PowerMeasTest is starting now

    2019-10-16T01:47:01.746Z - INFO - registration request from CBRS   : {

      "registrationRequest": [

        {

          "airInterface": {

            "radioTechnology": "CAMBIUM_NETWORKS"

          },

          "cbsdCategory": "B",

          "cbsdInfo": {

            "softwareVersion": "CANOPY 16.0.2 (Build 52+IdlePwr)   BHUL450",

            "vendor": "Cambium Networks"

          },

          "cbsdSerialNumber": "0a003e440019",

          "cpiSignatureData": {

            "digitalSignature":

"Cdm2aCBSLn_dSoDokietXpG0jjAFgfEs701DSv0mSxfWuKAJXKa6sBCQ2_RGXB0UKxko_1zd4r
NWhYm2VnlQXv7lUGrZWosxdWVxUC9mEFH0mCyNUcyieRNE7PAv6YNRKN1Au17WZxdpfwJUf
aLH4Hmmc1t6QE_UEL7qWm22uehlTjwWQbxokId5tSAjejWOjDyjx1bwhmez7tzkyCdD5EnNQCbT
APQZeuqSBL-WDwKuwNsTJrUuv_FkKacUduLdE02xbl38f2exkJVJallPpbGg2DC-7wm0xTPlJUQc
5RF3Z5YKl7gFP8jjCtldziv0-_YZuMey34LMvsI2lqGvng",

            "encodedCpiSignedData":

"eyJmY2NJZCI6Ilo4SDg5RlQwMDUzliwiY2JzZFNlcmlhbE51bWJlcil6IjBhMDAzZTQ0MDAxOSIsIm
luc3RhbGxhdGlvblBhcmFtljp7lmxhdGl0dWRlljo0MS41NzA3Mzgslmxvbmdpd HVkZSl6LTkwLjYw
MjcxNSwiaGVpZ2h0IjoxNTAsImhlaWdodFR5cGUiOiJBTVNMIiwiaW5kb29yRGVwbG95bWVudCl6
ZmFsc2UslmFudGVubmFBemltdXRoIjoxNTAslmFudGVubmFEb3dudGlsdCl6MiwiYW50ZW5uYU
dhaW4iOjlwLCJlaXJwQ2FwYWJpbGl0eSl6NDcslmFudGVubmFCZWFtd2lkdGgiOjEyfSwicHJvZm
Vzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCl6InRlc3QiLCJjcGlOYW1lljoidGVzdClsImluc3R
hbGxDZXJ0aWZpY2F0aW9uVGltZSl6IjlwMTktMDktMDZUMTU6NTE6MTJaIn19",

            "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"

          },

          "fccId": "Z8H89FT0053",

```
                "groupingParam": [
                    {
                        "groupId": "0a-00-3e-44-00-19",
                        "groupType": "INTERFERENCE_COORDINATION"
                    }
                ],
                "measCapability": [
                    "RECEIVED_POWER_WITHOUT_GRANT"
                ],
                "userId": "TEST"
            }
        ]
    }
2019-10-16T01:47:01.803Z - INFO - engine sent successfully, the response to CBRS   : {
        "registrationResponse": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "response": {
                    "responseCode": 0
                }
            }
        ]
    }
2019-10-16T01:47:56.904Z - INFO - spectrumInquiry request from CBRS   : {
        "spectrumInquiryRequest": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "inquiredSpectrum": [
                    {
                        "highFrequency": 3690000000,
                        "lowFrequency": 3670000000
                    },
                    {
                        "highFrequency": 3670000000,
                        "lowFrequency": 3650000000
                    },
                    {
```

                    "highFrequency": 3580000000,

                    "lowFrequency": 3560000000

                }

            ]

        }

    ]

}

2019-10-16T01:47:56.914Z - INFO - The requested spectrum is out of the range, availableChannel is sent out

2019-10-16T01:47:56.914Z - INFO - engine sent successfully, the response to CBRS   : {

    "spectrumInquiryResponse": [

        {

            "availableChannel": [

                {

                    "channelType": "GAA",

                    "frequencyRange": {

                        "highFrequency": 3685000000,

                        "lowFrequency": 3675000000

                    },

                    "maxEirp": -20,

                    "ruleApplied": "FCC_PART_96"

                }

            ],

            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",

            "response": {

                "responseCode": 0

            }

        }

    ]

}

2019-10-16T01:47:56.960Z - INFO - grant request from CBRS   : {

    "grantRequest": [

        {

            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",

            "operationParam": {

                "maxEirp": 35,

                "operationFrequencyRange": {

```
                    "highFrequency": 3685000000,
                    "lowFrequency": 3675000000
                }
            }
        }
    ]
}
2019-10-16T01:47:56.967Z - INFO - The requested maxEirp value is too high
2019-10-16T01:47:56.969Z - INFO - The Grant response code is not 0, applicable spectrum
parameters have been sent out.
2019-10-16T01:47:56.970Z - INFO - engine sent successfully, the response to CBRS   : {
    "grantResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "operationParam": {
                "maxEirp": -20,
                "operationFrequencyRange": {
                    "highFrequency": 3685000000,
                    "lowFrequency": 3675000000
                }
            },
            "response": {
                "responseCode": 400
            }
        }
    ]
}
2019-10-16T01:47:57.023Z - INFO - grant request from CBRS   : {
    "grantRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "operationParam": {
                "maxEirp": -20,
                "operationFrequencyRange": {
                    "highFrequency": 3685000000,
                    "lowFrequency": 3675000000
                }
```

```
            }
        }
    ]
}
2019-10-16T01:47:57.029Z - INFO - engine sent successfully, the response to CBRS    : {
    "grantResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "channelType": "GAA",
            "grantExpireTime": "2019-10-23T01:47:57Z",
            "grantId": "596294966",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-16T01:47:57.086Z - INFO - heartbeat request from CBRS    : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "596294966",
            "grantRenew": false,
            "operationState": "GRANTED"
        }
    ]
}
2019-10-16T01:47:57.095Z - INFO - engine sent successfully, the response to CBRS    : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "596294966",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2019-10-16T01:51:17Z"
```

```
                }
            ]
        }
2019-10-16T01:48:47.203Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "596294966",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-10-16T01:48:47.210Z - INFO - engine sent successfully, the response to CBRS   : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "596294966",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2019-10-16T01:52:07Z"
        }
    ]
}
2019-10-16T01:49:37.325Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "596294966",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-10-16T01:49:37.334Z - INFO - engine sent successfully, the response to CBRS   : {
    "heartbeatResponse": [
```

```
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "grantId": "596294966",
                "response": {
                    "responseCode": 0
                },
                "transmitExpireTime": "2019-10-16T01:52:57Z"
            }
        ]
    }
2019-10-16T01:50:27.424Z - INFO - heartbeat request from CBRS   : {
        "heartbeatRequest": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "grantId": "596294966",
                "grantRenew": false,
                "operationState": "AUTHORIZED"
            }
        ]
    }
2019-10-16T01:50:27.440Z - INFO - engine sent successfully, the response to CBRS   : {
        "heartbeatResponse": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "grantId": "596294966",
                "response": {
                    "responseCode": 0
                },
                "transmitExpireTime": "2019-10-16T01:53:47Z"
            }
        ]
    }
2019-10-16T01:51:17.538Z - INFO - heartbeat request from CBRS   : {
        "heartbeatRequest": [
            {
                "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                "grantId": "596294966",
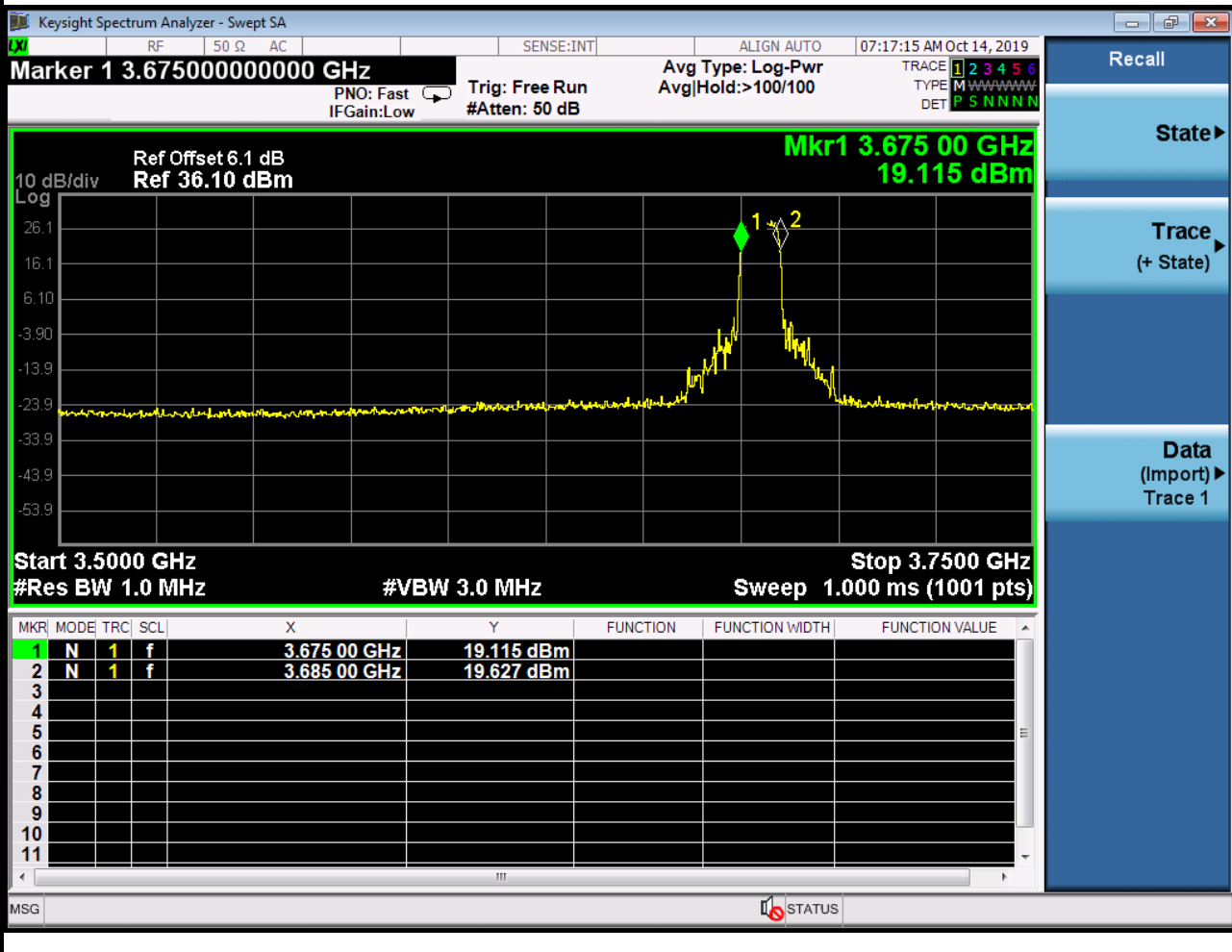```

```
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-10-16T01:51:17.553Z - INFO - engine sent successfully, the response to CBRS   : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "596294966",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2019-10-16T01:54:37Z"
        }
    ]
}
2019-10-16T01:52:07.677Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "596294966",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-10-16T01:52:07.677Z - INFO - engine sent successfully, the response to CBRS   : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "596294966",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2019-10-16T01:55:27Z"
        }
```

```
            ]
        }
        2019-10-16T01:52:57.767Z - INFO - heartbeat request from CBRS    : {
            "heartbeatRequest": [
                {
                    "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                    "grantId": "596294966",
                    "grantRenew": false,
                    "operationState": "AUTHORIZED"
                }
            ]
        }
        2019-10-16T01:52:57.767Z - INFO - engine sent successfully, the response to CBRS   : {
            "heartbeatResponse": [
                {
                    "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                    "grantId": "596294966",
                    "response": {
                        "responseCode": 0
                    },
                    "transmitExpireTime": "2019-10-16T01:56:17Z"
                }
            ]
        }
        2019-10-16T01:53:47.844Z - INFO - heartbeat request from CBRS    : {
            "heartbeatRequest": [
                {
                    "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
                    "grantId": "596294966",
                    "grantRenew": false,
                    "operationState": "AUTHORIZED"
                }
            ]
        }
        2019-10-16T01:53:47.844Z - INFO - engine sent successfully, the response to CBRS   : {
            "heartbeatResponse": [
                {
```

```
        "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
        "grantId": "596294966",
        "response": {
            "responseCode": 0
        },
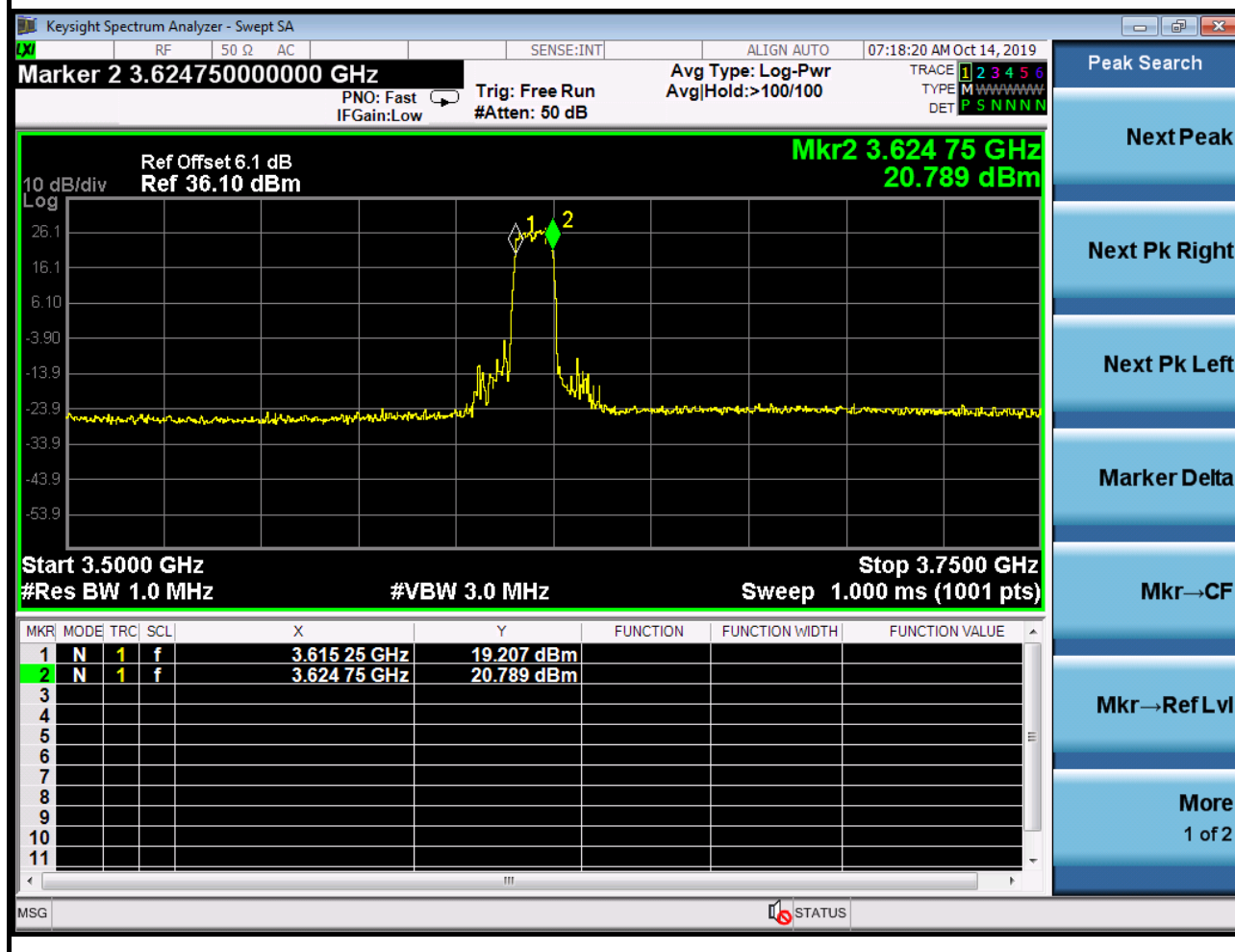        "transmitExpireTime": "2019-10-16T01:57:07Z"
    }
  ]
}
2019-10-16T01:54:37.994Z - INFO - heartbeat request from CBRS   : {
    "heartbeatRequest": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "596294966",
            "grantRenew": false,
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-10-16T01:54:38.026Z - INFO - engine sent successfully, the response to CBRS   : {
    "heartbeatResponse": [
        {
            "cbsdId": "Z8H89FT0053Mock-SAS0a003e440019",
            "grantId": "596294966",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2019-10-16T01:57:58Z"
        }
    ]
}
```

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

Keysight Spectrum Analyzer - Swept SA

| RF | 50 Ω | AC | | SENSE:INT | | ALIGN AUTO | 07:17:15 AM Oct 14, 2019 |

TRACE 1 2 3 4 5 6
TYPE M W W W W W W
DET P S N N N N

Marker 1 3.675000000000 GHz

PNO: Fast
IFGain:Low

Trig: Free Run
#Atten: 50 dB

Avg Type: Log-Pwr
Avg|Hold:>100/100

Recall

State ▶

Trace
(+ State) ▶

Data
(Import) ▶
Trace 1

Ref Offset 6.1 dB
Ref 36.10 dBm

Mkr1 3.675 00 GHz
19.115 dBm

10 dB/div
Log

26.1
16.1
6.10
-3.90
-13.9
-23.9
-33.9
-43.9
-53.9

1 2

Start 3.5000 GHz
#Res BW 1.0 MHz   #VBW 3.0 MHz

Stop 3.7500 GHz
Sweep 1.000 ms (1001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	3.675 00 GHz	19.115 dBm			
2	N	1	f	3.685 00 GHz	19.627 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

MSG   STATUS

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

RF measurement plot for WINNF.PT.C.HBT Test Case ID_BW10M_Grant maxEirp 35_Port 1

RF measurement plot for WINNF.PT.C.HBT Test Case ID_BW10M_Grant maxEirp 35_Port 2

Keysight Spectrum Analyzer - Channel Power

| RF | 50 Ω | AC | | SENSE:INT | | ALIGN AUTO | 03:05:58 AM Oct 14, 2019 |

Ref Value 35.10 dBm

Center Freq: 3.680000000 GHz
Trig: Free Run   Avg|Hold: 100/100
#Atten: 40 dB

IFGain:Low

Radio Std: None

Radio Device: BTS

Recall

State ▶

Ref Offset 6.1 dB
Ref 35.10 dBm
10 dB/div
Log
25.1
15.1
5.10
-4.90
-14.9
-24.9
-34.9
-44.9
-54.9

Trace
(+ State) ▶

Data
(Import) ▶
Trace 1

Center 3.68 GHz   Span 20 MHz
#Res BW 1 MHz   #VBW 3 MHz   Sweep 1 ms

Channel Power   **Power Spectral Density**

22.34 dBm / 10 MHz   **12.34 dBm** /MHz

MSG   STATUS

RF measurement plot for WINNF.PT.C.HBT Test Case ID_BW10M_Grant maxEirp 7_Port 1

RF measurement plot for WINNF.PT.C.HBT Test Case ID_BW10M_Grant maxEirp 7_Port 2

Keysight Spectrum Analyzer - Channel Power

| | RF | 50 Ω | AC | | | SENSE:INT | | ALIGN AUTO | 03:26:49 AM Oct 14, 2019 |

Ref Value 25.10 dBm

Center Freq: 3.680000000 GHz — Radio Std: None

Trig: Free Run — Avg|Hold: 100/100

IFGain:Low — #Atten: 30 dB — Radio Device: BTS

Ref Offset 6.1 dB
Ref 25.10 dBm

10 dB/div
Log
15.1
5.10
-4.90
-14.9
-24.9
-34.9
-44.9
-54.9
-64.9

Center 3.68 GHz — Span 20 MHz
#Res BW 1 MHz — #VBW 3 MHz — Sweep 1 ms

Channel Power — **Power Spectral Density**

-5.57 dBm / 10 MHz — **-15.57 dBm** /MHz

Save

State ▶

Trace (+ State) ▶

Data (Export) ▶ Trace 1

Screen Image ▶

MSG — STATUS

RF measurement plot for WINNF.PT.C.HBT Test Case ID_BW10M_Grant maxEirp -20_Port 1

Keysight Spectrum Analyzer - Channel Power	

RF 50 Ω AC SENSE:INT ALIGN AUTO 01:54:55 AM Oct 16, 2019

Ref Value -3.90 dBm

Center Freq: 3.680000000 GHz Radio Std: None

Trig: Free Run Avg|Hold: 100/100

#IFGain:Low #Atten: 0 dB Radio Device: BTS

10 dB/div Ref -3.90 dBm
Log
-13.9
-23.9
-33.9
-43.9
-53.9
-63.9
-73.9
-83.9
-93.9

Center 3.68 GHz Span 20 MHz
#Res BW 1 MHz #VBW 3 MHz Sweep 1 ms

Channel Power **Power Spectral Density**

-34.03 dBm / 10 MHz **-44.03 dBm /MHz**

Trace/Detector

Clear Write

Average

Max Hold

Min Hold

Detector
Average ▶
Auto Man

MSG STATUS

RF measurement plot for WINNF.PT.C.HBT Test Case ID_BW10M_Grant maxEirp -20_Port 2

Keysight Spectrum Analyzer - Channel Power

| RF | 50 Ω | AC | | SENSE:INT | | ALIGN AUTO | 01:53:00 AM Oct 16, 2019 |

Ref Value -3.90 dBm

Center Freq: 3.680000000 GHz   Radio Std: None
Trig: Free Run   Avg|Hold: 100/100
#IFGain:Low   #Atten: 0 dB   Radio Device: BTS

10 dB/div   Ref -3.90 dBm
Log
-13.9
-23.9
-33.9
-43.9
-53.9
-63.9
-73.9
-83.9
-93.9

Center 3.68 GHz   Span 20 MHz
#Res BW 1 MHz   #VBW 3 MHz   Sweep 1 ms

Channel Power   **Power Spectral Density**

-32.49 dBm / 10 MHz   -42.49 dBm /MHz

Trace/Detector

Clear Write

Average

Max Hold

Min Hold

Detector
Average ►
Auto   Man

MSG   STATUS

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

| File | Edit | View | Go | Capture | Analyze | Statistics | Telephony | Wireless | Tools | Help |

`ip.addr==192.168.1.3 && ip.addr==192.168.1.10 && ssl`   Expression

Time	Source	Destination	Protocol	Info
2019-10-14 08:42:56	192.168.1.10	192.168.1.3	TLSv1.2	Application Data, Application Data, Application Data
2019-10-14 08:42:56	192.168.1.3	192.168.1.10	TLSv1.2	Application Data
2019-10-14 08:42:56	192.168.1.3	192.168.1.10	TLSv1.2	Application Data, Application Data, Application Data, Applicati
2019-10-14 08:42:56	192.168.1.10	192.168.1.3	TLSv1.2	Encrypted Alert
2019-10-14 08:43:57	192.168.1.10	192.168.1.3	TLSv1.2	Client Hello
2019-10-14 08:43:57	192.168.1.3	192.168.1.10	TLSv1.2	Server Hello
2019-10-14 08:43:57	192.168.1.3	192.168.1.10	TLSv1.2	Certificate, Certificate Request, Server Hello Done
2019-10-14 08:43:57	192.168.1.10	192.168.1.3	TCP	51392 → 5000 [ACK] Seq=250 Ack=3020 Win=35072 Len=1448 TSval=58
2019-10-14 08:43:57	192.168.1.10	192.168.1.3	TLSv1.2	Certificate [TCP segment of a reassembled PDU]
2019-10-14 08:43:57	192.168.1.10	192.168.1.3	TLSv1.2	Client Key Exchange, Certificate Verify, Change Cipher Spec, Er
2019-10-14 08:43:57	192.168.1.3	192.168.1.10	TLSv1.2	New Session Ticket, Change Cipher Spec, Encrypted Handshake Mes
2019-10-14 08:43:57	192.168.1.10	192.168.1.3	TLSv1.2	Application Data, Application Data, Application Data, Applicati
2019-10-14 08:43:57	192.168.1.3	192.168.1.10	TLSv1.2	Application Data
2019-10-14 08:43:57	192.168.1.3	192.168.1.10	TLSv1.2	Application Data, Application Data, Application Data, Applicati
2019-10-14 08:43:57	192.168.1.10	192.168.1.3	TLSv1.2	Encrypted Alert

```
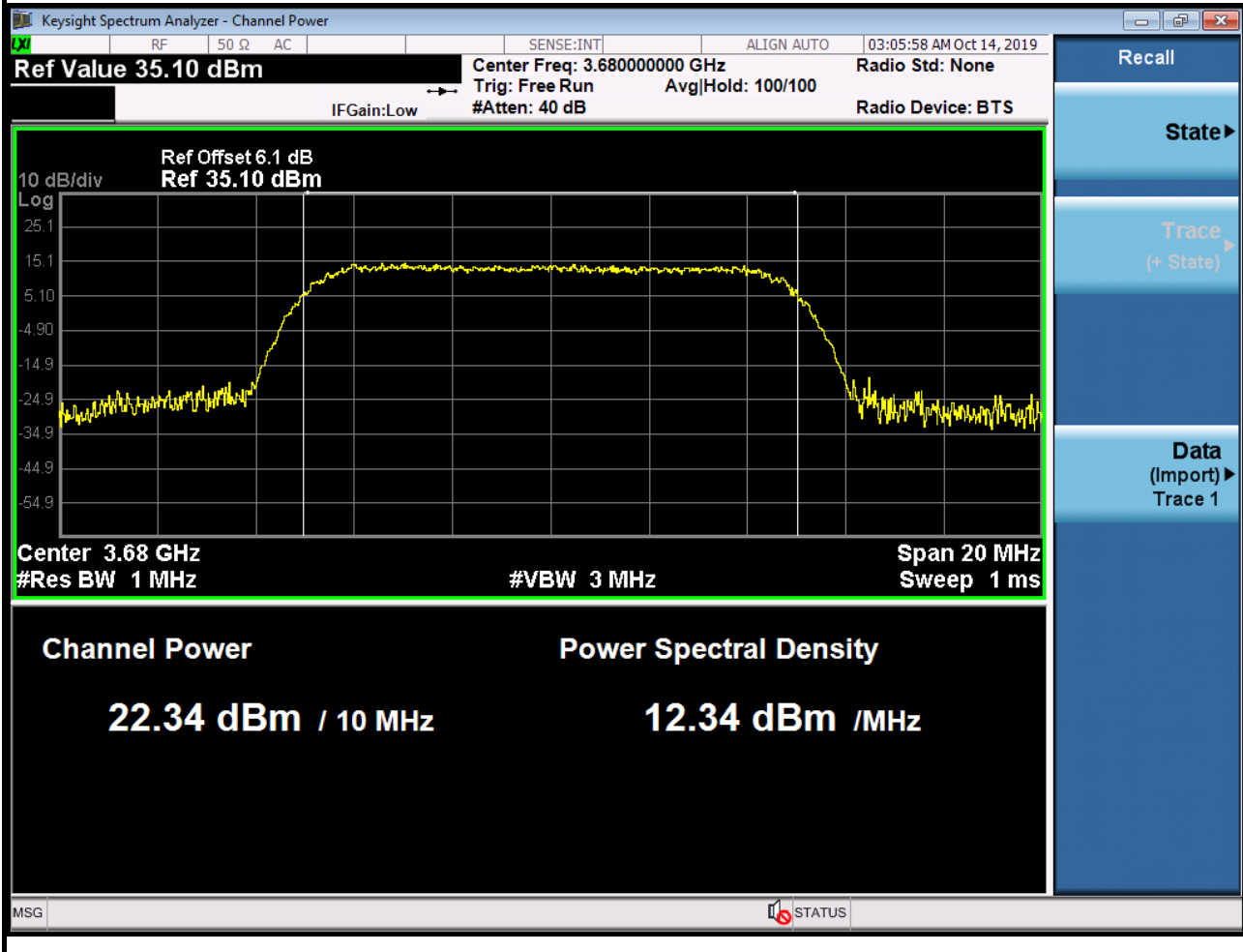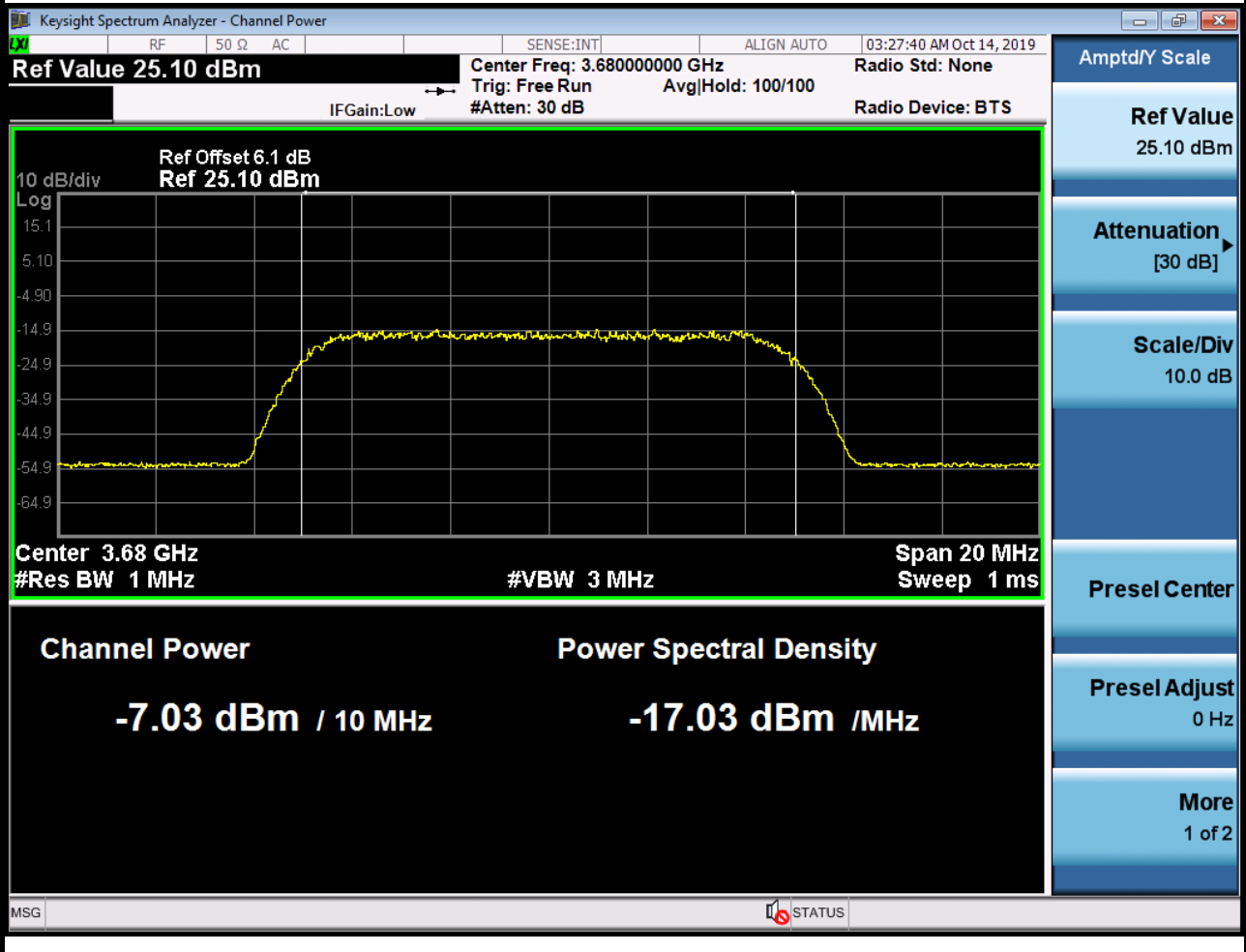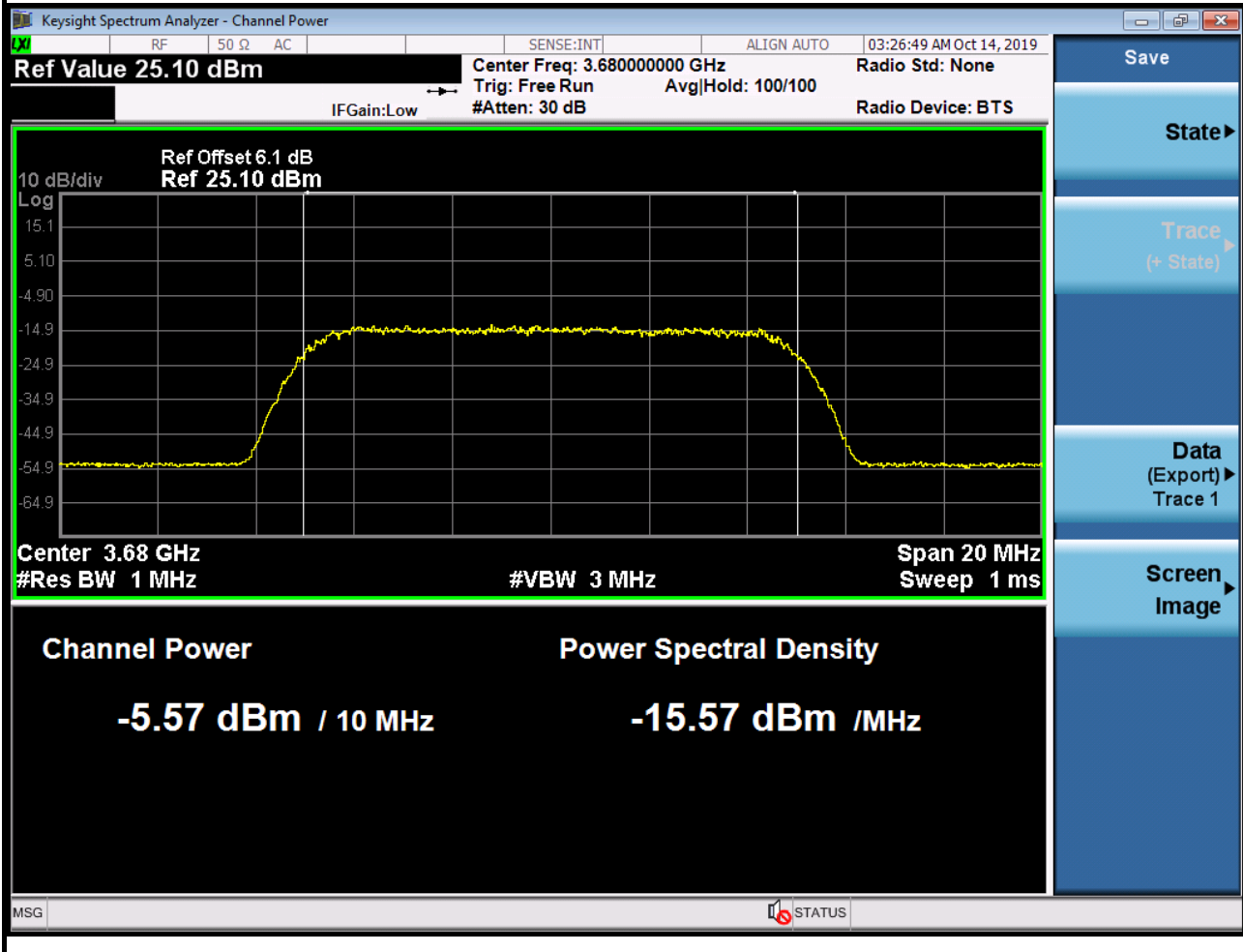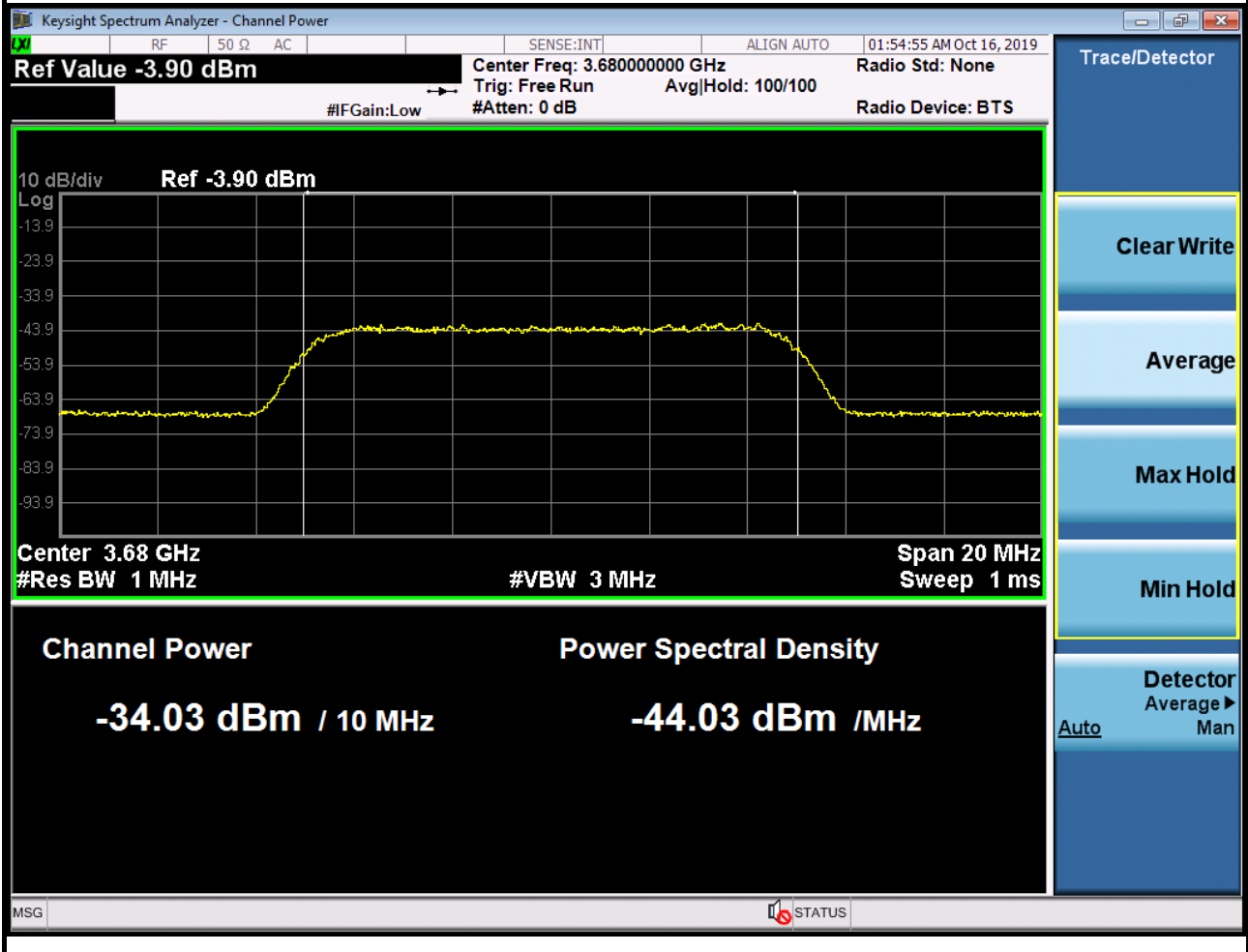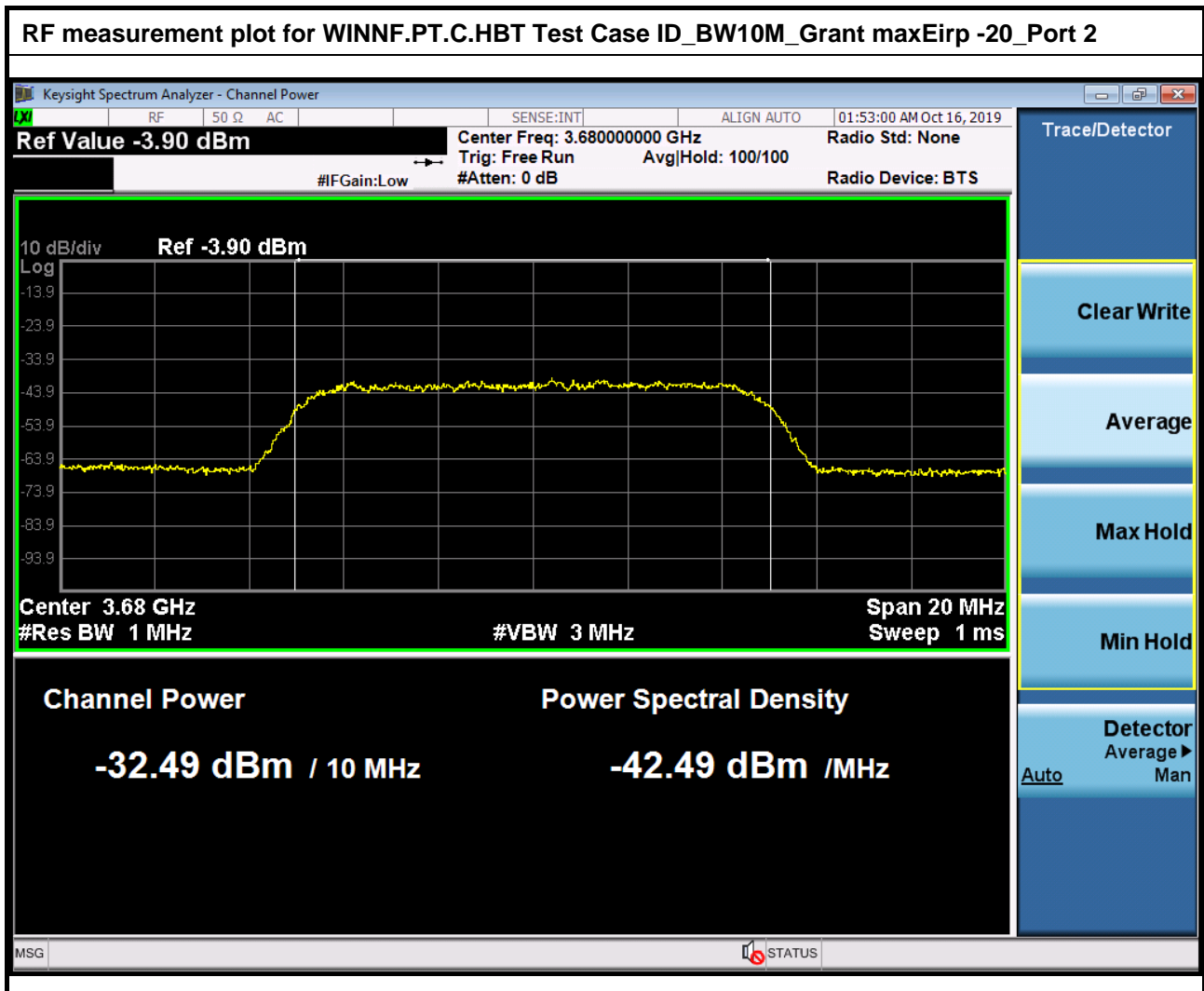▲ Secure Sockets Layer
  ▲ TLSv1.2 Record Layer: Handshake Protocol: Server Hello
      Content Type: Handshake (22)
      Version: TLS 1.2 (0x0303)
      Length: 53
    ▲ Handshake Protocol: Server Hello
        Handshake Type: Server Hello (2)
        Length: 49
        Version: TLS 1.2 (0x0303)
      ▷ Random: e8e8354afb63c7f71f2e7f780deb2bb285e5413a9904a8e1...
        Session ID Length: 0
        Cipher Suite: TLS_RSA_WITH_AES_256_GCM_SHA384 (0x009d)
```

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

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

ip.addr==192.168.1.3 && ip.addr==192.168.1.10 && ssl   Expression…

Time	Source	Destination	Protocol	Info
2019-10-14 08:46:53	192.168.1.10	192.168.1.3	TLSv1.2	Client Hello
2019-10-14 08:46:53	192.168.1.3	192.168.1.10	TLSv1.2	Server Hello
2019-10-14 08:46:53	192.168.1.3	192.168.1.10	TLSv1.2	Certificate, Certificate Request, Server Hello Done
2019-10-14 08:46:53	192.168.1.10	192.168.1.3	TLSv1.2	Certificate [TCP segment of a reassembled PDU]
2019-10-14 08:46:53	192.168.1.10	192.168.1.3	TLSv1.2	Client Key Exchange, Certificate Verify, Change Cipher Spec, Encry
2019-10-14 08:46:53	192.168.1.3	192.168.1.10	TLSv1.2	New Session Ticket, Change Cipher Spec, Encrypted Handshake Messag
2019-10-14 08:48:53	192.168.1.10	192.168.1.3	TLSv1.2	Client Hello
2019-10-14 08:48:53	192.168.1.3	192.168.1.10	TLSv1.2	Server Hello
2019-10-14 08:48:53	192.168.1.3	192.168.1.10	TLSv1.2	Certificate, Certificate Request, Server Hello Done
2019-10-14 08:48:53	192.168.1.10	192.168.1.3	TCP	51402 → 5000 [ACK] Seq=250 Ack=3020 Win=35072 Len=1448 TSval=58166
2019-10-14 08:48:53	192.168.1.10	192.168.1.3	TLSv1.2	Certificate [TCP segment of a reassembled PDU]
2019-10-14 08:48:53	192.168.1.10	192.168.1.3	TLSv1.2	Client Key Exchange, Certificate Verify, Change Cipher Spec, Encry
2019-10-14 08:48:53	192.168.1.3	192.168.1.10	TLSv1.2	New Session Ticket, Change Cipher Spec, Encrypted Handshake Messag

⊿ Secure Sockets Layer
   ⊿ TLSv1.2 Record Layer: Handshake Protocol: Server Hello
      Content Type: Handshake (22)
      Version: TLS 1.2 (0x0303)
      Length: 53
     ⊿ Handshake Protocol: Server Hello
         Handshake Type: Server Hello (2)
         Length: 49
         Version: TLS 1.2 (0x0303)
       ⊳ Random: 96fdebf958fb05f1e82ca0725c4ac383440a64ffe4161249...
         Session ID Length: 0
         Cipher Suite: TLS_RSA_WITH_AES_256_GCM_SHA384 (0x009d)

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

File	Edit	View	Go	Capture	Analyze	Statistics	Telephony	Wireless	Tools	Help

ip.addr==192.168.1.3 && ip.addr==192.168.1.10 && ssl   Expression···

Time	Source	Destination	Protocol	Info
2019-10-14 08:55:31	192.168.1.10	192.168.1.3	TLSv1.2	Client Hello
2019-10-14 08:55:31	192.168.1.3	192.168.1.10	TLSv1.2	Server Hello, Certificate
2019-10-14 08:55:31	192.168.1.3	192.168.1.10	TLSv1.2	Certificate Request, Server Hello Done
2019-10-14 08:55:31	192.168.1.10	192.168.1.3	TLSv1.2	Certificate [TCP segment of a reassembled PDU]
2019-10-14 08:55:31	192.168.1.10	192.168.1.3	TLSv1.2	Client Key Exchange, Certificate Verify, Change Cipher Spec, Encry
2019-10-14 08:55:31	192.168.1.3	192.168.1.10	TLSv1.2	New Session Ticket, Change Cipher Spec, Encrypted Handshake Messag
2019-10-14 08:57:31	192.168.1.10	192.168.1.3	TLSv1.2	Client Hello
2019-10-14 08:57:31	192.168.1.3	192.168.1.10	TLSv1.2	Server Hello, Certificate
2019-10-14 08:57:31	192.168.1.3	192.168.1.10	TLSv1.2	Certificate Request, Server Hello Done
2019-10-14 08:57:31	192.168.1.10	192.168.1.3	TLSv1.2	Certificate [TCP segment of a reassembled PDU]
2019-10-14 08:57:31	192.168.1.10	192.168.1.3	TLSv1.2	Client Key Exchange, Certificate Verify, Change Cipher Spec, Encry
2019-10-14 08:57:31	192.168.1.3	192.168.1.10	TLSv1.2	New Session Ticket, Change Cipher Spec, Encrypted Handshake Messag

```
▲ Secure Sockets Layer
  ▲ TLSv1.2 Record Layer: Handshake Protocol: Server Hello
      Content Type: Handshake (22)
      Version: TLS 1.2 (0x0303)
      Length: 53
    ▲ Handshake Protocol: Server Hello
        Handshake Type: Server Hello (2)
        Length: 49
        Version: TLS 1.2 (0x0303)
      ▷ Random: 828dd1f33dcd01939ad4fa3be4b6fc17d1d39eb5be7dd7ce...
        Session ID Length: 0
        Cipher Suite: TLS_RSA_WITH_AES_256_GCM_SHA384 (0x009d)
```

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

File   Edit   View   Go   Capture   Analyze   Statistics   Telephony   Wireless   Tools   Help

`ip.addr==192.168.1.3 && ip.addr==192.168.1.10 && ssl`   Expression···

Time	Source	Destination	Protocol	Info
2019-10-14 08:59:34	192.168.1.10	192.168.1.3	TLSv1.2	Client Hello
2019-10-14 08:59:34	192.168.1.3	192.168.1.10	TLSv1.2	Server Hello
2019-10-14 08:59:34	192.168.1.3	192.168.1.10	TLSv1.2	Certificate, Certificate Request, Server Hello Done
2019-10-14 08:59:34	192.168.1.10	192.168.1.3	TLSv1.2	Certificate [TCP segment of a reassembled PDU]
2019-10-14 08:59:34	192.168.1.10	192.168.1.3	TLSv1.2	Client Key Exchange, Certificate Verify, Change Cipher Spec, Encry
2019-10-14 08:59:34	192.168.1.3	192.168.1.10	TLSv1.2	New Session Ticket, Change Cipher Spec, Encrypted Handshake Messag
2019-10-14 09:01:24	192.168.1.10	192.168.1.3	TLSv1.2	Client Hello
2019-10-14 09:01:24	192.168.1.3	192.168.1.10	TLSv1.2	Server Hello
2019-10-14 09:01:24	192.168.1.3	192.168.1.10	TLSv1.2	Certificate, Certificate Request, Server Hello Done
2019-10-14 09:01:24	192.168.1.10	192.168.1.3	TLSv1.2	Certificate [TCP segment of a reassembled PDU]
2019-10-14 09:01:24	192.168.1.10	192.168.1.3	TLSv1.2	Client Key Exchange, Certificate Verify, Change Cipher Spec, Encry
2019-10-14 09:01:24	192.168.1.3	192.168.1.10	TLSv1.2	New Session Ticket, Change Cipher Spec, Encrypted Handshake Messag

```
▲ Secure Sockets Layer
  ▲ TLSv1.2 Record Layer: Handshake Protocol: Server Hello
      Content Type: Handshake (22)
      Version: TLS 1.2 (0x0303)
      Length: 53
    ▲ Handshake Protocol: Server Hello
        Handshake Type: Server Hello (2)
        Length: 49
        Version: TLS 1.2 (0x0303)
      ▷ Random: c8a4517de278613cbd708436a443e372eb6e7043bbc554d4...
        Session ID Length: 0
        Cipher Suite: TLS_RSA_WITH_AES_256_GCM_SHA384 (0x009d)
```

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

Time	Source	Destination	Protocol	Info
2019-10-14 09:04:21	192.168.1.10	192.168.1.3	TLSv1.2	Client Hello
2019-10-14 09:04:21	192.168.1.3	192.168.1.10	TLSv1.2	Server Hello
2019-10-14 09:04:21	192.168.1.3	192.168.1.10	TLSv1.2	Certificate, Certificate Request, Server Hello Done
2019-10-14 09:04:21	192.168.1.10	192.168.1.3	TLSv1.2	Certificate [TCP segment of a reassembled PDU]
2019-10-14 09:04:21	192.168.1.10	192.168.1.3	TLSv1.2	Client Key Exchange, Certificate Verify, Change Cipher Spec, Encry
2019-10-14 09:04:21	192.168.1.3	192.168.1.10	TLSv1.2	New Session Ticket, Change Cipher Spec, Encrypted Handshake Messag
2019-10-14 09:06:21	192.168.1.10	192.168.1.3	TLSv1.2	Client Hello
2019-10-14 09:06:21	192.168.1.3	192.168.1.10	TLSv1.2	Server Hello
2019-10-14 09:06:21	192.168.1.3	192.168.1.10	TLSv1.2	Certificate, Certificate Request, Server Hello Done
2019-10-14 09:06:21	192.168.1.10	192.168.1.3	TLSv1.2	Certificate [TCP segment of a reassembled PDU]
2019-10-14 09:06:21	192.168.1.10	192.168.1.3	TLSv1.2	Client Key Exchange, Certificate Verify, Change Cipher Spec, Encry
2019-10-14 09:06:21	192.168.1.3	192.168.1.10	TLSv1.2	New Session Ticket, Change Cipher Spec, Encrypted Handshake Messag

```
▲ Secure Sockets Layer
  ▲ TLSv1.2 Record Layer: Handshake Protocol: Server Hello
      Content Type: Handshake (22)
      Version: TLS 1.2 (0x0303)
      Length: 53
    ▲ Handshake Protocol: Server Hello
        Handshake Type: Server Hello (2)
        Length: 49
        Version: TLS 1.2 (0x0303)
      ▷ Random: 88c1b0bba53fba891dd79bf3151f62a7a24c91455d9c78b2...
        Session ID Length: 0
        Cipher Suite: TLS_RSA_WITH_AES_256_GCM_SHA384 (0x009d)
```

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

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

ocsp ⊠ ⇒ ▾ Expression

No.	Time	Source	Destination	Protocol	Length	Info
126	2019-10-14 08:46:54.567555848	192.168.1.5	192.168.1.10	OCSP	3520	Response
471	2019-10-14 08:48:54.550204546	192.168.1.10	192.168.1.5	OCSP	295	Request
473	2019-10-14 08:48:54.560056096	192.168.1.5	192.168.1.10	OCSP	3520	Response

▶ Frame 124: 295 bytes on wire (2360 bits), 295 bytes captured (2360 bits) on interface 0
▶ Ethernet II, Src: PcsCompu_47:97:05 (08:00:27:47:97:05), Dst: Dell_a8:e5:c1 (00:24:e8:a8:e5:c1)
▶ Internet Protocol Version 4, Src: 192.168.1.10, Dst: 192.168.1.5
▶ Transmission Control Protocol, Src Port: 42800, 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: 43ff88cfe491492890c027aa86e758f6300dedae
          – issuerKeyHash: 5292fdce6fe082df68d2d06fa9747506359a8c52
          – serialNumber: 13376235231036373953