



## Compliance Certification Services (Kunshan) Inc.

Report No.: KSCR221200241501

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# TEST REPORT

**Application No.:** KSCR2212002415AT  
**FCC ID:** WBKCPX80I  
**Applicant:** BTI Wireless  
**Address of Applicant:** 14600 Industry Circle La Mirada, CA 90638  
**Manufacturer:** BTI Wireless  
**Address of Manufacturer:** 14600 Industry Circle La Mirada, CA 90638  
**Factory:** Sunwave Communications Co., Ltd.  
**Address of Factory:** 581 Huoju Avenue, Binjiang District, Hangzhou, China  
**Equipment Under Test (EUT):**  
**EUT Name:** 5G CPE  
**Model No.:** CPX80I  
**Standard(s):** CBRSA-TS-9001-V1.2.1  
WINNF-TS-0122-V1.0.2  
FCC 47 CFR Part 96  
KDB 940660 D01 V03  
**Date of Receipt:** 2022-12-12  
**Date of Test:** 2022-12-13 to 2022-12-17  
**Date of Issue:** 2022-12-19

<b>Test Result:</b>	<b>Pass*</b>
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\* In the configuration tested, the EUT complied with the standards specified above.

Eric Lin  
Laboratory Manager



Compliance Certification Services (Kunshan) Inc.  
EMC Laboratory

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Revision Record			
Version	Description	Date	Remark
00	Original	2022-12-19	/

Authorized for issue by:			
		Cloud Peng/ Project Engineer	
		Eric Lin / Reviewer	

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## 2 Test Summary

Item	Standard	Test Case ID	Result
Multi-Step registration	WINNF-TS-0122-V1.0.2	WINNF.FT.C.REG.1	Pass
Missing Required parameters (responseCode 102)	WINNF-TS-0122-V1.0.2	WINNF.FT.C.REG.8	Pass
Pending registration (responseCode 200)	WINNF-TS-0122-V1.0.2	WINNF.FT.C.REG.10	Pass
Invalid parameter (responseCode 103)	WINNF-TS-0122-V1.0.2	WINNF.FT.C.REG.12	Pass
Blacklisted CBSD (responseCode 101)	WINNF-TS-0122-V1.0.2	WINNF.FT.C.REG.14	Pass
Unsupported SAS protocol version (responseCode 100)	WINNF-TS-0122-V1.0.2	WINNF.FT.C.REG.16	Pass
Group Error (responseCode 201)	WINNF-TS-0122-V1.0.2	WINNF.FT.C.REG.18	Pass
Unsuccessful Grant responseCode=400 (INTERFERENCE)	WINNF-TS-0122-V1.0.2	WINNF.FT.D.GRA.1	Pass
Unsuccessful Grant responseCode=401 (GRANT_CONFLICT)	WINNF-TS-0122-V1.0.2	WINNF.FT.C.GRA.2	Pass
Heartbeat Success Case (first Heartbeat Response)	WINNF-TS-0122-V1.0.2	WINNF.FT.C.HBT.1	Pass
Heartbeat responseCode=105 (DREGISTER)	WINNF-TS-0122-V1.0.2	WINNF.FT.C.HBT.3	Pass
Heartbeat responseCode=500 (TERMINATED_GRANT)	WINNF-TS-0122-V1.0.2	WINNF.FT.C.HBT.4	Pass
Heartbeat responseCode=501 (SUSPENDED_GRANT) in First Heartbeat Response	WINNF-TS-0122-V1.0.2	WINNF.FT.C.HBT.5	Pass
Heartbeat responseCode=501 (SUSPENDED_GRANT) in Subsequent Heartbeat Response	WINNF-TS-0122-V1.0.2	WINNF.FT.C.HBT.6	Pass
Heartbeat responseCode=502 (UNSYNC_OP_PARAM)	WINNF-TS-0122-V1.0.2	WINNF.FT.C.HBT.7	Pass
Heartbeat Response Absent (First Heartbeat)	WINNF-TS-0122-V1.0.2	WINNF.FT.C.HBT.9	Pass
Heartbeat Response Absent (Subsequent Heartbeat)	WINNF-TS-0122-V1.0.2	WINNF.FT.C.HBT.10	Pass
Successful Grant Renewal in Heartbeat Test Case	WINNF-TS-0122-V1.0.2	WINNF.FT.C.HBT.11	Pass

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Item	Standard	Test Case ID	Result
Grant Response contains measReportConfig	WINNF-TS-0122-V1.0.2	WINNF.FT.C.MES.3	Pass
Heartbeat Response contains measReportConfig	WINNF-TS-0122-V1.0.2	WINNF.FT.C.MES.4	Pass
Successful Relinquishment	WINNF-TS-0122-V1.0.2	WINNF.FT.C.RLQ.1	Pass
Deregistration responseCode=102	WINNF-TS-0122-V1.0.2	WINNF.FT.C.RLQ.3	Pass
Deregistration responseCode=103	WINNF-TS-0122-V1.0.2	WINNF.FT.C.RLQ.5	Pass
Successful Deregistration	WINNF-TS-0122-V1.0.2	WINNF.FT.C.DRG.1	Pass
Deregistration responseCode=102	WINNF-TS-0122-V1.0.2	WINNF.FT.C.DRG.3	Pass
Deregistration responseCode=103	WINNF-TS-0122-V1.0.2	WINNF.FT.C.DRG.5	Pass
Successful TLS connection between UUT and SAS Test Harness	WINNF-TS-0122-V1.0.2	WINNF.FT.C.SCS.1	Pass
TLS failure due to revoked certificate	WINNF-TS-0122-V1.0.2	WINNF.FT.C.SCS.2	Pass
TLS failure due to expired server certificate	WINNF-TS-0122-V1.0.2	WINNF.FT.C.SCS.3	Pass
TLS failure when SAS Test Harness certificate is issue by unknown CA	WINNF-TS-0122-V1.0.2	WINNF.FT.C.SCS.4	Pass
TLS failure when certificate at the SAS Test Harness is corrupted	WINNF-TS-0122-V1.0.2	WINNF.FT.C.SCS.5	Pass
UUT RF Transmit Power Measurement	WINNF-TS-0122-V1.0.2	WINNF.PT.C.HBT	Pass
SAS Version: 1.0.0.3			

The UUT is a CPE-CBSD product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**Test standards:**
**CBRSA-TS-9001-V1.0.0**

CBRS Alliance Certification Test Plan

**WINNF-TS-0122-V1.0.2**

Test and Certification for Citizens Broadband Radio Service (CBRS); Conformance and Performance Test Technical Specification; CBSD/DP as Unit Under Test (UUT)

**KDB 940660 D01 Part 96 CBRS Eqpt v03**


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## 4 General Information

### 4.1 Details of E.U.T.

Power supply:	Adaptor Model: ASSA67A-240100 Input: 100-240V~50/60Hz, 0.8A Output: 24.0V-1A
Serial Number of Tested EUT:	PX80IX02224900001
CBSD Class:	Category B CBSD
Transmitter Frequency Band:	n48/n78(3550-3700MHz)
Transmitter Frequency Range:	3550-3700MHz
Hardware Version:	V1.0
Software Version:	CPX60P-V2-PC4P-V2.1.10
Test sample:	PX80IX02224900001
Antenna Gain:	Ant1:1.29dBi



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## 4.2 Description of CBSD/DP Support Features

Condition	Feature Description	Supported
C1	Mandatory for UUT which supports multi-step registration message.	Y
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.	N
C3	Mandatory for UUT which supports single-step registration containing CPI-signed data in the registration message.	N
C4	Mandatory for UUT which supports RECEIVED_POWER_WITHOUT_GRANT measurement report type.	N
C5	Mandatory for UUT which supports RECEIVED_POWER_WITH_GRANT measurement report type.	Y
C6	Mandatory for UUT which supports parameter change being made at the UUT and prior to sending a deregistration.	N

Y: Supported

N: Not supported



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Report No.: KSCR221200241501

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### 4.3 Summary of Test Results

WINNF-TS-0122			
Classes	Test Case Items	Pass Items	Pass Rate (%)
FT (CBSD, DP/CBSD)	31	31	100
PT (CBSD, DP/CBSD)	1	1	100
Total	32	32	100

Note:

1. Functional Test (FT): Test to validate the conformance of the Protocols and functionalities implemented in the CBSD/DP UUT to the requirements developed by WinnForum and supporting FCC/DoD requirements.
2. Field/Performance Test (PT): Test to check the capability of the CBSD/DP UUT to support various traffic models and actual operations in the field.

Duration and Duty Cycle		
Period	Limit	Test Result
10-second	1-second	Pass
300-second	10-second	Pass
3600-second	20-second	Pass

Note: limited in duration and duty cycle to the minimum time necessary to get a grant from the SAS; this time should not exceed 1 second within any 10-second period, 10seconds within any 300-second period, or 20 seconds within any 3600-second period.

### 4.4 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	$\pm 7.25 \times 10^{-8}$
2	RF conducted power	$\pm 0.75\text{dB}$
3	Temperature test	$\pm 1^\circ\text{C}$
4	Humidity test	$\pm 3\%$
5	Supply voltages	$\pm 1.5\%$
6	Time	$\pm 3\%$



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#### 4.5 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
5GC	astir	astir_5GC	A372768X0507398
Router	TP-Link	TL-R860+	1175379002425
Base Band Unit	BTI	sCELL- G52091NAX	L603JESE1I
Remote Radio Unit	BTI	RU4370 (FCC ID: WBKRU4370)	C0214921000004S

#### 4.6 Test Location

All tests were performed at:

Compliance Certification Services (Kunshan) Inc.

No.10 Weiye Rd, Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China.

Tel: +86 512 5735 5888 Fax: +86 512 5737 0818

No tests were sub-contracted.



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## 5 Equipment List

Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (yyyy-mm-dd)	Cal. Due date (yyyy-mm-dd)
Laptop	Lenovo	Y510P	HFL000026	N/A	N/A
Spectrum Analyzer	KEYSIGHT	N9020A	KUS2001M00 1-2	2022/8/22	2023/8/21
Shield Room	研创	N/A	KS301115-2	N/A	N/A
Coaxial Cable	Thermax	N/A	13	2022/9/16	2023/9/15
Attenuator	Mini-Circuits	NAT-6-2W	15542-1	N.C.R.	N.C.R.
Humidity / Temperature Indicator	Renke	RS-WS-N01-6J	1032844	2022/4/1	2023/3/31



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## 6 Test Method and Environment

### 6.1 CBSD/DP Conformance and Performance

Test Requirement: CBRS CBSD Test Specification WINNF-TS-0122-V1.0.2  
Test Method: CBRS CBSD Test Specification WINNF-TS-0122-V1.0.2  
WINNF-IN-0156\_WInnForum\_SAS\_Test\_Harness\_CBSD\_UUT\_Tutorial\_v1\_0\_0\_1

### 6.2 CBSD Test Procedure

- a. Connect the UUT to SAS Test Harness system and RF Test instruments via the CBSD interface and RF components. The highest level is set to test configuration.
- b. UUT shall be UTC time synchronized
- c. The frequency band is granted and set as UUT supported Modulation and Channels, transmitted power of the UUT according to it granted parameters from the SAS Test Harness.
- d. Each test case results were recorded and validated by SAS Test Harness system and RF instruments test cases was recorded test results from SAS Test Harness system.

### 6.3 Test Environment

Test Harness Version: V1.0.0.3  
Operating System: Microsoft Windows 10  
TLS Version: 1.2  
Python Version: 2.7.13  
Environmental Conditions: 25deg. C, 65%RH



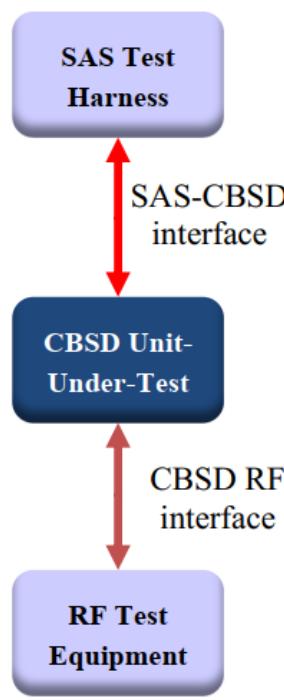
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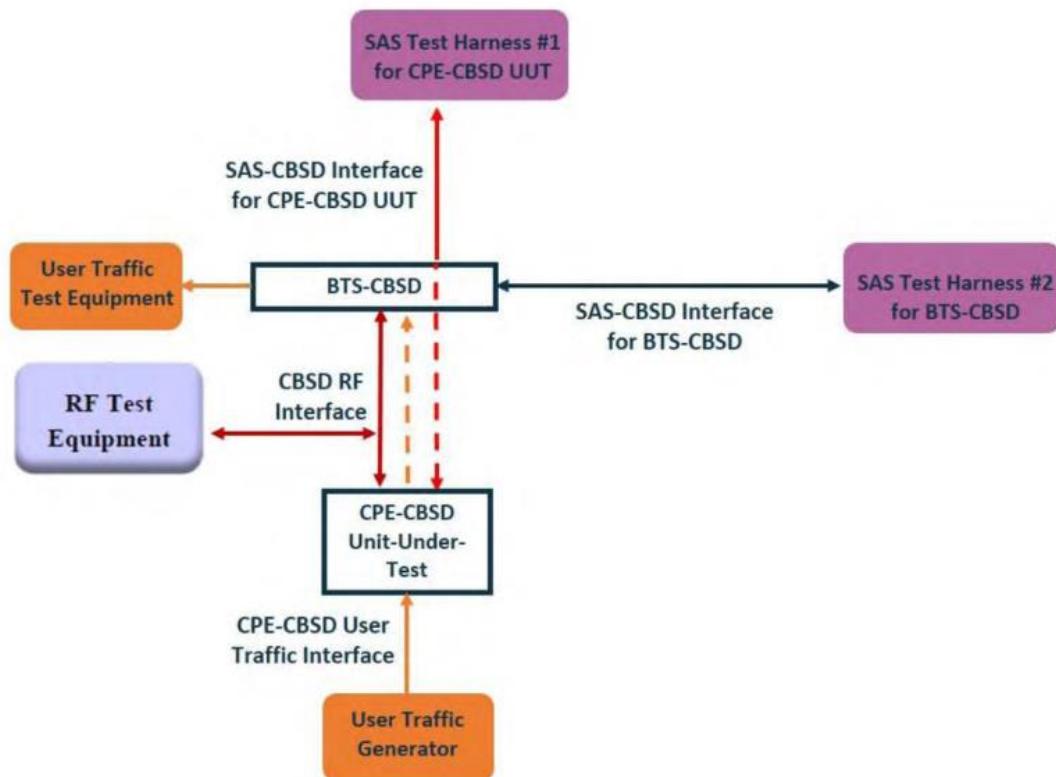
## 6.4 Test Setup



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Test setup diagram for WINNF.PT.C.HBT Test case



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## 7 Test Data

### 7.1 CBSD Registration Process

#### 7.1.1 WINNF.FT.C.REG.1

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: <ul style="list-style-type: none"><li>● UUT has successfully completed SAS Discovery and Authentication with the SAS Test Harness</li><li>● UUT is in the Unregistered state</li></ul>	--	--
2	CBSD sends correct Registration request information, as specified in [n.5], to the SAS Test Harness: <ul style="list-style-type: none"><li>● The required userId, fcId and cbsdSerialNumber registration parameters shall be sent from the CBSD and conform to proper format and acceptable ranges.</li><li>● 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.</li></ul> <p>Note: It is outside the scope of this document to test the Registration information that is supplied via another means.</p>	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail
3	SAS Test Harness sends a CBSD Registration Response as follows: <ul style="list-style-type: none"><li>- cbsId = C</li><li>- measReportConfig shall not be included</li><li>- responseCode = 0</li></ul>	--	--
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 the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: <ul style="list-style-type: none"><li>● UUT shall not transmit RF</li></ul>	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail



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### 7.1.2 WINNF.FT.C.REG.8

#	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	CBSD sends a Registration request to SAS Test Harness.	--	--
3	SAS Test Harness rejects the request by sending a CBSD Registration Response as follows: - SAS response does not include cbsdId - responseCode = 102	--	--
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 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	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail



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### 7.1.3 WINNF.FT.C.REG.10

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: <ul style="list-style-type: none"> <li>● UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness</li> <li>● UUT is in the Unregistered state</li> </ul>	--	--
2	CBSD sends a Registration request to SAS Test Harness.	--	--
3	SAS Test Harness rejects the request by sending a CBSD Registration Response as follows: <ul style="list-style-type: none"> <li>- SAS response does not include cbsId</li> <li>- responseCode = 200</li> </ul>	--	--
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 the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: <ul style="list-style-type: none"> <li>● UUT shall not transmit RF</li> </ul>	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail



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**7.1.4 WINNF.FT.C.REG.12**

#	Test Execution Steps	Results	
1	<p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> <li>● UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness</li> <li>● UUT is in the Unregistered state</li> </ul>	--	--
2	CBSD sends a Registration request to SAS Test Harness.	--	--
3	<p>SAS Test Harness rejects the request by sending a CBSD Registration Response as follows:</p> <ul style="list-style-type: none"> <li>- SAS response does not include cbsdId</li> <li>- responseCode = 103</li> </ul>	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (responseCode=103) to further request messages from the UUT.	--	--
5	<p>Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify:</p> <ul style="list-style-type: none"> <li>● UUT shall not transmit RF</li> </ul>	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail



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**7.1.5 WINNF.FT.C.REG.14**

#	Test Execution Steps	Results	
1	<p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> <li>● UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness</li> <li>● UUT is in the Unregistered state</li> </ul>	--	--
2	CBSD sends a Registration request to SAS Test Harness.	--	--
3	<p>SAS Test Harness rejects the request by sending a CBSD Registration Response as follows:</p> <ul style="list-style-type: none"> <li>- SAS response does not include cbsdId</li> <li>- responseCode = 101</li> </ul>	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (responseCode=101) to further request messages from the UUT.	--	--
5	<p>Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify:</p> <ul style="list-style-type: none"> <li>● UUT shall not transmit RF</li> </ul>	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail



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### 7.1.6 WINNF.FT.C.REG.16

#	Test Execution Steps	Results	
1	<p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> <li>● UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness</li> <li>● UUT is in the Unregistered state</li> </ul>	--	--
2	CBSD sends a Registration request to SAS Test Harness.	--	--
3	<p>SAS Test Harness rejects the request by sending a CBSD Registration Response as follows:</p> <ul style="list-style-type: none"> <li>- SAS response does not include cbsdId</li> <li>- responseCode = 100</li> </ul>	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (responseCode=100) to further request messages from the UUT.	--	--
5	<p>Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify:</p> <ul style="list-style-type: none"> <li>● UUT shall not transmit RF</li> </ul>	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail



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### 7.1.7 WINNF.FT.C.REG.18

#	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	CBSD sends a Registration request to SAS Test Harness.	--	--
3	SAS Test Harness rejects the request by sending a CBSD Registration Response as follows: - SAS response does not include cbsdId - responseCode = 201	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (responseCode=201) 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	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail



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**7.2 CBSD Spectrum Grant Process****7.2.1 WINNF.FT.C.GRA.1**

#	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.	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail
3	SAS Test Harness sends a Grant Response message, including ● cbsdId=C - responseCode = 400	--	--
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 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	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail



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### 7.2.2 WINNF.FT.C.GRA.2

#	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.	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail
3	SAS Test Harness sends a Grant Response message, including - cbsdId=C - responseCode = 401	--	--
4	After completion of step 3, SAS Test Harness will 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	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail



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### 7.3 CBSD HeartBeat Process

#### 7.3.1 WINNF.FT.C.HBT.1

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: ● UUT has registered successfully with SAS Test Harness, with cbsId = C	--	--
2	UUT sends a message: ● If message is type Spectrum Inquiry Request, go to step 3, or ● If message is type Grant Request, go to step 5	--	--
3	UUT sends Spectrum Inquiry Request. Validate: ● cbsId = C ● List of frequencyRange objects sent by UUT are within the CBRS frequency range	■ Pass	□ Fail
4	SAS Test Harness sends a Spectrum Inquiry Response message, including the following parameters: ● cbsId = C ● availableChannel is an array of availableChannel objects ● responseCode = 0	--	--
5	UUT sends Grant Request message. Validate: ● cbsId = C ● maxEIRP is at or below the limit appropriate for CBSD category as defined by Part 96 ● operationFrequencyRange, F, sent by UUT is a valid range within the CBRS band	■ Pass	□ Fail
6	SAS Test Harness sends a Grant Response message, including the parameters: ● cbsId = C ● grantId = G = a valid grant ID ● grantExpireTime = UTC time greater than duration of the test ● responseCode = 0	--	--
7	UUT sends a first Heartbeat Request message. Verify Heartbeat Request message is formatted correctly, including: ● cbsId = C ● grantId = G ● operationState = "GRANTED"	■ Pass	□ Fail
8	SAS Test Harness sends a Heartbeat Response message, with the following parameters: ● cbsId = C ● grantId = G ● transmitExpireTime = current UTC time + 200 seconds ● responseCode = 0	--	--



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9	<p>For further Heartbeat Request messages sent from UUT after completion of step 8, validate message is sent within latest specified heartbeatInterval, and:</p> <ul style="list-style-type: none"> <li>● cbsId = C</li> <li>● grantId = G</li> <li>● operationState = "AUTHORIZED"</li> </ul> <p>and SAS Test Harness responds with a Heartbeat Response message including the following parameters:</p> <ul style="list-style-type: none"> <li>● cbsId = C</li> <li>● grantId = G</li> <li>● transmitExpireTime = current UTC time + 200 seconds</li> <li>● responseCode = 0</li> </ul>	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail
10	<p>Monitor the RF output of the UUT from start of test until UUT transmission commences. Verify:</p> <ul style="list-style-type: none"> <li>● UUT does not transmit at any time prior to completion of the first heartbeat response</li> <li>● UUT transmits after step 8 is complete, and its transmission is limited to within the bandwidth range F.</li> </ul>	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail



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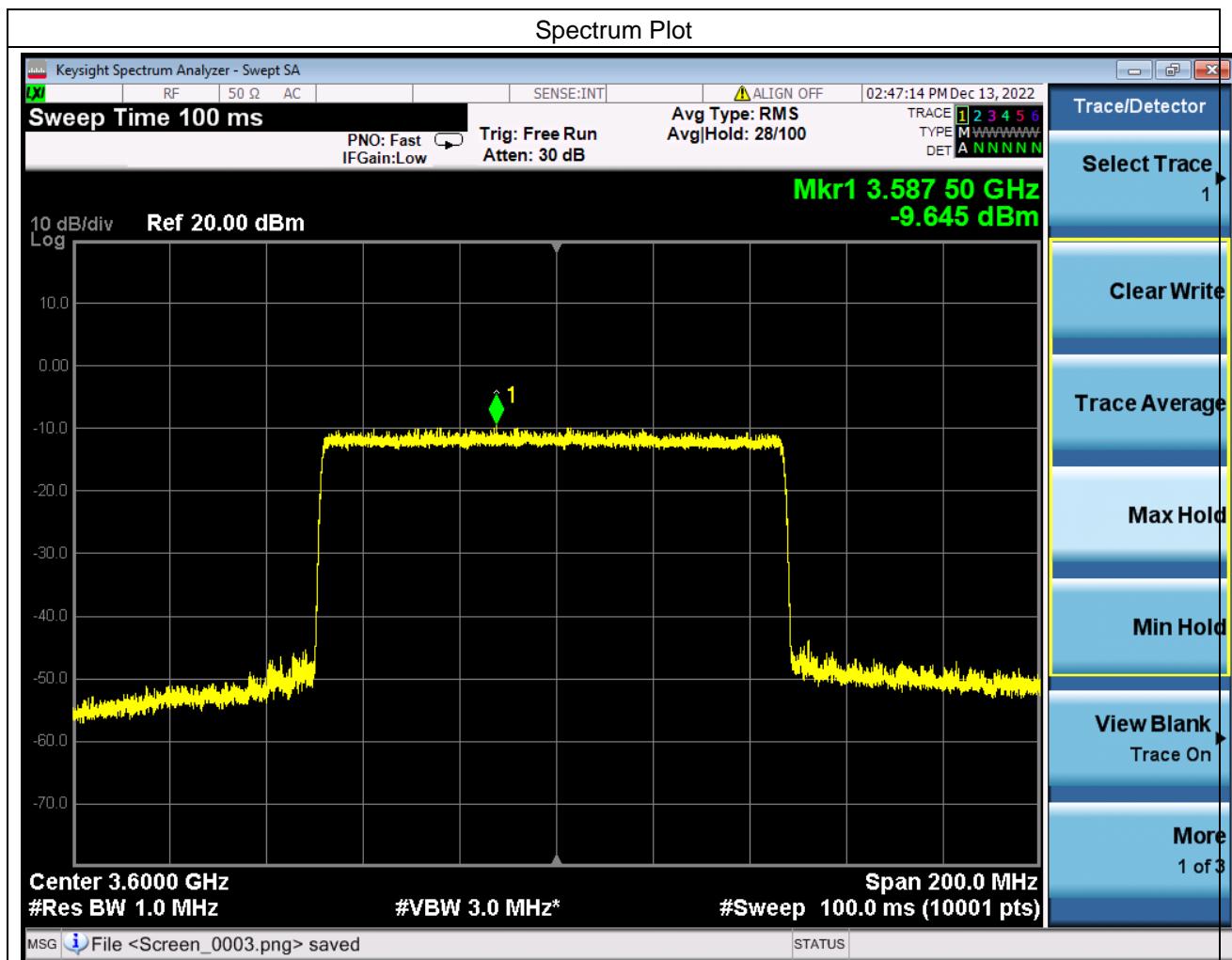
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**7.3.2 WINNF.FT.C.HBT.3**

#	Test Execution Steps	Results	
1	<p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> <li>● UUT has registered successfully with SAS Test Harness</li> <li>● UUT has a valid single grant as follows: <ul style="list-style-type: none"> <li>○ valid cbsdId = C</li> <li>○ valid grantId = G</li> <li>○ grant is for frequency range F, power P</li> <li>○ grantExpireTime = UTC time greater than duration of the test</li> </ul> </li> <li>● UUT is in AUTHORIZED state and is transmitting within the grant bandwidth F on RF interface</li> </ul>	--	--
2	<p>UUT sends a Heartbeat Request message.</p> <p>Ensure Heartbeat Request message is sent within Heartbeat Interval specified in the latest Heartbeat Response, and formatted correctly, including:</p> <ul style="list-style-type: none"> <li>● cbsdId = C</li> <li>● grantId = G</li> <li>● operationState = "AUTHORIZED"</li> </ul>	--	--
3	<p>SAS Test Harness sends a Heartbeat Response message, including the following parameters:</p> <ul style="list-style-type: none"> <li>● cbsdId = C</li> <li>● grantId = G</li> <li>● transmitExpireTime = T = Current UTC time</li> <li>● responseCode = 105 (DEREGISTER)</li> </ul>	--	--
4	After completion of step 3, SAS Test Harness shall not allow any further grants to the UUT.	--	--
5	<p>Monitor the RF output of the UUT. Verify:</p> <ul style="list-style-type: none"> <li>● UUT shall stop transmission within (T + 60 seconds) of completion of step 3</li> </ul>	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail



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**7.3.3 WINNF.FT.C.HBT.4**

#	Test Execution Steps	Results	
1	<p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> <li>● UUT has registered successfully with SAS Test Harness</li> <li>● UUT has a valid single grant as follows: <ul style="list-style-type: none"> <li>○ valid cbsdId = C</li> <li>○ valid grantId = G</li> <li>○ grant is for frequency range F, power P</li> <li>○ grantExpireTime = UTC time greater than duration of the test</li> </ul> </li> <li>● UUT is in AUTHORIZED state and is transmitting within the grant bandwidth F on RF interface</li> </ul>	--	--
2	<p>UUT sends a Heartbeat Request message.</p> <p>Ensure Heartbeat Request message is sent within latest specified heartbeatInterval, and is formatted correctly, including:</p> <ul style="list-style-type: none"> <li>● cbsdId = C</li> <li>● grantId = G</li> <li>● operationState = "AUTHORIZED"</li> </ul>	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail
3	<p>SAS Test Harness sends a Heartbeat Response message, including the following parameters:</p> <ul style="list-style-type: none"> <li>● cbsdId = C</li> <li>● grantId = G</li> <li>● transmitExpireTime = T = current UTC time</li> <li>● responseCode = 500 (TERMINATED_GRANT)</li> </ul>	--	--
4	After completion of step 3, SAS Test Harness shall not allow any further grants to the UUT.	--	--
5	<p>Monitor the RF output of the UUT. Verify:</p> <ul style="list-style-type: none"> <li>● UUT shall stop transmission within (T + 60 seconds) of completion of step 3</li> </ul>	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail



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**7.3.4 WINNF.FT.C.HBT.5**

#	Test Execution Steps	Results	
1	<p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> <li>● UUT has registered successfully with SAS Test Harness</li> <li>● UUT has a valid single grant as follows: <ul style="list-style-type: none"> <li>○ valid cbsId = C</li> <li>○ valid grantId = G</li> <li>○ grant is for frequency range F, power P</li> <li>○ grantExpireTime = UTC time greater than duration of the test</li> </ul> </li> <li>● UUT is in GRANTED, but not AUTHORIZED state (i.e. has not performed its first Heartbeat Request)</li> </ul>	--	--
2	<p>UUT sends a Heartbeat Request message.</p> <p>Verify Heartbeat Request message is formatted correctly, including:</p> <ul style="list-style-type: none"> <li>● cbsId = C</li> <li>● grantId = G</li> <li>● operationState = "GRANTED"</li> </ul>	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail
3	<p>SAS Test Harness sends a Heartbeat Response message, including the following parameters:</p> <ul style="list-style-type: none"> <li>● cbsId = C</li> <li>● grantId = G</li> <li>● transmitExpireTime = T = current UTC time</li> <li>● ?responseCode = 501 (SUSPENDED_GRANT)</li> </ul>	--	--
4	After completion of step 3, SAS Test Harness shall not allow any further grants to the UUT.	--	--
5	<p>Monitor the SAS-CBSD interface. Verify either A OR B occurs:</p> <p>A. UUT sends a Heartbeat Request message. Ensure message is sent within latest specified heartbeatInterval, and is correctly formatted with parameters:</p> <ul style="list-style-type: none"> <li>● cbsId = C</li> <li>● grantId = G</li> <li>● operationState = "GRANTED"</li> </ul>	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail
	<p>B. UUT sends a Relinquishment request message. Ensure message is correctly formatted with parameters:</p> <ul style="list-style-type: none"> <li>● cbsId = C</li> <li>● grantId = G</li> </ul> <p>Monitor the RF output of the UUT. Verify:</p> <ul style="list-style-type: none"> <li>● UUT does not transmit at any time</li> </ul>		



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**7.3.5 WINNF.FT.C.HBT.6**

#	Test Execution Steps	Results	
1	<p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> <li>● UUT has registered successfully with SAS Test Harness</li> <li>● UUT has a valid single grant as follows: <ul style="list-style-type: none"> <li>○ valid cbsId = C</li> <li>○ valid grantId = G</li> <li>○ grant is for frequency range F, power P</li> <li>○ grantExpireTime = UTC time greater than duration of the test</li> </ul> </li> <li>● UUT is in AUTHORIZED state and is transmitting within the grant bandwidth F on RF interface</li> </ul>	--	--
2	<p>UUT sends a Heartbeat Request message.</p> <p>Ensure Heartbeat Request message is sent within latest specified heartbeatInterval, and is formatted correctly, including:</p> <ul style="list-style-type: none"> <li>● cbsId = C</li> <li>● grantId = G</li> <li>● operationState = "AUTHORIZED"</li> </ul>	■ Pass	<input type="checkbox"/> Fail
3	<p>SAS Test Harness sends a Heartbeat Response message, including the following parameters:</p> <ul style="list-style-type: none"> <li>cbsId = C</li> <li>grantId = G</li> <li>transmitExpireTime = T = current UTC time</li> <li>● responseCode = 501 (SUSPENDED_GRANT)</li> </ul>	--	--
4	After completion of step 3, SAS Test Harness shall not allow any further grants to the UUT.	--	--
5	<p>Monitor the SAS-CBSD interface. Verify either A OR B occurs:</p> <p>A. UUT sends a Heartbeat Request message. Ensure message is sent within latest specified heartbeatInterval, and is correctly formatted with parameters:</p> <ul style="list-style-type: none"> <li>● cbsId = C</li> <li>● grantId = G</li> <li>● operationState = "GRANTED"</li> </ul> <p>B. UUT sends a Relinquishment request message. Ensure message is correctly formatted with parameters:</p> <ul style="list-style-type: none"> <li>● cbsId = C</li> <li>● grantId = G</li> </ul> <p>Monitor the RF output of the UUT. Verify:</p> <ul style="list-style-type: none"> <li>● UUT shall stop transmission within (T+60) seconds of completion of step 3</li> </ul>	■ Pass	<input type="checkbox"/> Fail



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**7.3.6 WINNF.FT.C.HBT.7**

#	Test Execution Steps	Results	
1	<p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> <li>● UUT has registered successfully with SAS Test Harness</li> <li>● UUT has a valid single grant as follows: <ul style="list-style-type: none"> <li>○ valid cbsdId = C</li> <li>○ valid grantId = G</li> <li>○ grant is for frequency range F, power P</li> <li>○ grantExpireTime = UTC time greater than duration of the test</li> </ul> </li> <li>● UUT is in AUTHORIZED state and is transmitting within the grant bandwidth F on RF interface</li> </ul>	--	--
2	<p>UUT sends a Heartbeat Request message.</p> <p>Ensure Heartbeat Request message is sent within latest specified heartbeatInterval, and is formatted correctly, including:</p> <ul style="list-style-type: none"> <li>● cbsdId = C</li> <li>● grantId = G</li> <li>● operationState = "AUTHORIZED"</li> </ul>	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail
3	<p>SAS Test Harness sends a Heartbeat Response message, including the following parameters:</p> <ul style="list-style-type: none"> <li>cbsdId = C</li> <li>grantId = G</li> <li>transmitExpireTime = T = current UTC time</li> <li>● responseCode = 502 (UNSYNC_OP_PARAM)</li> </ul>	--	--
4	After completion of step 3, SAS Test Harness shall not allow any further grants to the UUT.	--	--
5	<p>Monitor the SAS-CBSD interface. Verify:</p> <ul style="list-style-type: none"> <li>● UUT sends a Grant Relinquishment Request message. Verify message is correctly formatted with parameters: <ul style="list-style-type: none"> <li>○ cbsdId = C</li> <li>○ grantId = G</li> </ul> </li> </ul> <p>Monitor the RF output of the UUT. Verify:</p> <ul style="list-style-type: none"> <li>● UUT shall stop transmission within (T+60) seconds of completion of step 3</li> </ul>	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail



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**7.3.7 WINNF.FT.C.HBT.9**

#	Test Execution Steps	Results	
1	<p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> <li>● UUT has registered successfully with SAS Test Harness</li> <li>● UUT has a valid single grant as follows: <ul style="list-style-type: none"> <li>○ valid cbsdId = C</li> <li>○ valid grantId = G</li> <li>○ grant is for frequency range F, power P</li> <li>○ grantExpireTime = UTC time greater than duration of the test</li> </ul> </li> <li>● UUT is in GRANTED, but not AUTHORIZED state(i.e. has not performed its first Heartbeat Request)</li> </ul>	--	--
2	<p>UUT sends a Heartbeat Request message.</p> <p>Ensure Heartbeat Request message is sent within latest specified heartbeatInterval, and is formatted correctly, including:</p> <ul style="list-style-type: none"> <li>● cbsdId = C</li> <li>● grantId = G</li> <li>● operationState = "GRANTED"</li> </ul>	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail
3	<p>After completion of step 2, SAS Test Harness does not respond to any further messages from UUT to simulate loss of network connection</p>	--	--
4	<p>Monitor the RF output of the UUT from start of test to 60 seconds after step 3. Verify:</p> <ul style="list-style-type: none"> <li>● At any time during the test, UUT shall not transmit on RF interface</li> </ul>	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail



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**7.3.8 WINNF.FT.C.HBT.10**

#	Test Execution Steps	Results	
1	<p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> <li>● UUT has registered successfully with SAS Test Harness</li> <li>● UUT has a valid single grant as follows: <ul style="list-style-type: none"> <li>○ valid cbsId = C</li> <li>○ valid grantId = G</li> <li>○ grant is for frequency range F, power P</li> <li>○ grantExpireTime = UTC time greater than duration of the test</li> </ul> </li> <li>● UUT is in AUTHORIZED state and is transmitting within the grant bandwidth F on RF interface</li> </ul>	--	--
2	<p>UUT sends a Heartbeat Request message.</p> <p>Verify Heartbeat Request message is sent within latest specified heartbeatInterval, and is formatted correctly, including:</p> <ul style="list-style-type: none"> <li>● cbsId = C</li> <li>● grantId = G</li> <li>● operationState = "AUTHORIZED"</li> </ul>	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail
3	<p>SAS Test Harness sends a Heartbeat Response message, including the following parameters:</p> <ul style="list-style-type: none"> <li>cbsId = C</li> <li>grantId = G</li> <li>transmitExpireTime = T = current UTC time + 200 seconds</li> <li>● responseCode = 0</li> </ul>	--	--
4	After completion of step 3, SAS Test Harness shall not allow any further grants to the UUT.	--	--
5	<p>Monitor the RF output of the UUT. Verify:</p> <ul style="list-style-type: none"> <li>● UUT shall stop all transmission on RF interface within (transmitExpireTime + 60 seconds), using the transmitExpireTime sent in Step 3.</li> </ul>	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail



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**7.3.9 WINNF.FT.C.HBT.11**

#	Test Execution Steps	Results	
1	<p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> <li>● UUT has registered successfully with SAS Test Harness</li> <li>● UUT has a valid single grant as follows: <ul style="list-style-type: none"> <li>○ valid cbsdId = C</li> <li>○ valid grantId = G</li> <li>○ grant is for frequency range F, power P</li> </ul> </li> <li>● UUT is in AUTHORIZED state and is transmitting within the grant bandwidth F on RF interface.</li> <li>● Grant has the following parameters at the start of the test: <ul style="list-style-type: none"> <li>○ grantExpireTime = UTC time equal to time at start of test + 300 seconds = Tgrant_expire</li> <li>○ transmitExpireTime = UTC time equal to time at start of test + 200 seconds</li> <li>○ heartbeatInterval = 60 seconds</li> </ul> </li> </ul>	--	--
2	<p>UUT sends a Heartbeat Request message.</p> <p>If Heartbeat Request message contains grantRenew = TRUE, go to Step 6, else go to Step 3.</p>	--	--
3	<p>Verify Heartbeat Request message is sent within the latest specified heartbeatInterval, and is formatted correctly, including:</p> <ul style="list-style-type: none"> <li>● cbsdId = C</li> <li>● grantId = G</li> <li>● operationState = "AUTHORIZED"</li> </ul>	■ Pass	□ Fail
4	<p>SAS Test Harness sends a Heartbeat Response message, with the following parameters:</p> <ul style="list-style-type: none"> <li>● cbsdId = C</li> <li>● grantId = G</li> <li>● transmitExpireTime = current UTC + 200 seconds</li> <li>● grantExpireTime = same as Step 1</li> <li>● responseCode = 0</li> </ul>	--	--
5	Go to Step 2	--	--
6	<p>Verify Heartbeat Request message is sent within the latest specified heartbeatInterval, and is formatted correctly, including:</p> <ul style="list-style-type: none"> <li>● cbsdId = C</li> <li>● grantId = G</li> <li>● operationState = "AUTHORIZED"</li> <li>● grantRenew = TRUE</li> </ul>	■ Pass	□ Fail
7	<p>SAS Test Harness sends a Heartbeat Response message, with the following parameters:</p> <ul style="list-style-type: none"> <li>● cbsdId = C</li> <li>● grantId = G</li> <li>● grantExpireTime = UTC time set far in the future</li> <li>● transmitExpireTime = current UTC time + 200 seconds</li> <li>● responseCode = 0</li> </ul>	--	--



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8	Continue to respond to any subsequent Heartbeat Request from CBSD with Heartbeat Response with the following parameters: <ul style="list-style-type: none"> <li>● cbsdId = C</li> <li>● grantId = G</li> <li>● transmitExpireTime = same as Step 7</li> <li>● responseCode = 0</li> </ul>	--	--
9	Monitor RF transmission of UUT from start of test until Tgrant_expire + 60 seconds and ensure UUT continues to transmit throughout the time period.	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail

## 7.4 CBSD Measurement Report

### 7.4.1 WINNF.FT.C.MES.3

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: <ul style="list-style-type: none"> <li>● UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness</li> <li>● UUT has successfully registered with SAS Test Harness, with cbsdId=C and measCapability = "RECEIVED_POWER_WITH_GRANT"</li> </ul>	--	--
2	UUT sends a Grant Request message. Verify Grant Request message contains all required parameters properly formatted, and specifically: <ul style="list-style-type: none"> <li>● cbsdId = C</li> <li>● operationParam is present and format is valid</li> </ul>	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail
3	SAS Test Harness sends a Grant Response message, with the following parameters: <ul style="list-style-type: none"> <li>● cbsdId = C</li> <li>● grantId = G = valid grant ID</li> <li>● grantExpireTime = UTC time in the future</li> <li>● heartbeatInterval = 60 seconds</li> <li>● measReportConfig= "RECEIVED_POWER_WITH_GRANT"</li> <li>● operationParam is set to valid operating parameters</li> <li>● channelType = "GAA"</li> <li>● responseCode = 0</li> </ul>	--	--
4	UUT sends a Heartbeat Request message. Verify message contains all required parameters properly formatted, and specifically: <ul style="list-style-type: none"> <li>● cbsdId = C</li> <li>● grantId = G</li> <li>● operationState = "GRANTED"</li> </ul>	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail
5	If Heartbeat Request message (step 4) contains measReport object, then: <ul style="list-style-type: none"> <li>● verify measReport is properly formatted as object rcvdPowerMeasReport</li> <li>● end test, with PASS result</li> </ul> else, if Heartbeat Request message (step 4) does not contain measReport object, then: <ul style="list-style-type: none"> <li>● If number of Heartbeat Requests sent by UUT after Step 3 is =5, then stop test with result of FAIL</li> </ul>	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail



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6	SAS Test Harness sends a Heartbeat Response message, containing all required parameters properly formatted, and specifically: ● cbsdId = C ● grantId = G ● transmitExpireTime = current UTC time + 200 seconds ● responseCode = 0 Go to Step 4, above	--	--
---	--	----	----



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**7.4.2 WINNF.FT.C.MES.4**

#	Test Execution Steps	Results	
1	<p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> <li>● UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness</li> <li>● UUT has successfully registered with SAS Test Harness, with cbsId=C and measCapability = "RECEIVED_POWER_WITH_GRANT"</li> <li>● UUT has received a valid grant with grantId = G</li> <li>● UUT is in Grant State AUTHORIZED and is actively transmitting within the bounds of its grant.</li> <li>● Grant has heartbeatInterval = 60 seconds</li> </ul>	--	--
2	<p>UUT sends a Heartbeat Request message.</p> <p>Verify Heartbeat Request message contains all required parameters properly formatted, and specifically:</p> <ul style="list-style-type: none"> <li>● cbsId = C</li> <li>● grantId = G</li> <li>● operationState = "AUTHORIZED"</li> </ul>	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail
3	<p>SAS Test Harness sends a Heartbeat Response message, containing all required parameters properly formatted, and specifically:</p> <ul style="list-style-type: none"> <li>● cbsId = C</li> <li>● grantId = G</li> <li>● measReportConfig= "RECEIVED_POWER_WITH_GRANT"</li> <li>● responseCode = 0</li> </ul>	--	--
4	<p>UUT sends a Heartbeat Request message. Verify message contains all required parameters properly formatted, and specifically:</p> <ul style="list-style-type: none"> <li>● cbsId = C</li> <li>● grantId = G</li> <li>● operationState = "AUTHORIZED"</li> </ul>	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail
5	<p>If Heartbeat Request message (step 4) contains measReport object, then:</p> <ul style="list-style-type: none"> <li>● verify measReport is properly formatted as object</li> <li>● rcvPowerMeasReport</li> <li>● end test, with PASS result</li> </ul> <p>else, if Heartbeat Request message (step 4) does not contain measReport object, then:</p> <ul style="list-style-type: none"> <li>● If number of Heartbeat Requests sent by UUT after Step 3 is = 5, then stop test with result of FAIL</li> </ul>	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail
6	<p>SAS Test Harness sends a Heartbeat Response message, containing all required parameters properly formatted, and specifically:</p> <ul style="list-style-type: none"> <li>● cbsId = C</li> <li>● grantId = G</li> <li>● responseCode = 0</li> </ul> <p>Go to Step 4, above</p>	--	--



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## 7.5 CBSD Relinquishment Process

### 7.5.1 WINNF.FT.C.RLQ.1

#	Test Execution Steps	Results	
1	<p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> <li>● UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness</li> <li>● UUT has successfully registered with SAS Test Harness, with cbsdId=C</li> <li>● UUT has received a valid grant with grantId = G</li> <li>● UUT is in Grant State AUTHORIZED and is actively transmitting within the bounds of its grant.</li> </ul> <p>Invoke trigger to relinquish UUT Grant from the SAS Test Harness</p>	--	--
2	<p>UUT sends a Relinquishment Request message. Verify message contains all required parameters properly formatted, and specifically:</p> <ul style="list-style-type: none"> <li>● cbsdId = C</li> <li>● grantId = G</li> </ul>	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail
3	<p>SAS Test Harness shall approve the request with a Relinquishment Response message with parameters:</p> <ul style="list-style-type: none"> <li>- cbsdId = C</li> <li>- grantId = G</li> <li>● responseCode = 0</li> </ul>	--	--
4	<p>After completion of step 3, SAS Test Harness will not provide any additional positive response (responseCode=0) to further request messages from the UUT</p>	--	--
5	<p>Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify:</p> <ul style="list-style-type: none"> <li>● UUT shall stop RF transmission at any time between triggering the relinquishment and UUT sending the relinquishment request</li> </ul>	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail



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**7.5.2 WINNF.FT.C.RLQ.3**

#	Test Execution Steps	Results	
1	<p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> <li>● UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness</li> <li>● UUT has successfully registered with SAS Test Harness, with cbsdId=C</li> <li>● UUT has received a valid grant with grantId = G</li> <li>● UUT is in Grant State AUTHORIZED and is actively transmitting within the bounds of its grant.</li> </ul> <p>Invoke trigger to relinquish UUT Grant from the SAS Test Harness</p>	--	--
2	<p>UUT sends a Relinquishment Request message. Verify message contains all required parameters properly formatted, and specifically:</p> <ul style="list-style-type: none"> <li>● cbsdId = C</li> <li>● grantId = G</li> </ul>	--	--
3	<p>SAS Test Harness shall approve the request with a Relinquishment Response message with parameters:</p> <ul style="list-style-type: none"> <li>- cbsdId = C</li> <li>- grantId = G</li> <li>● responseCode = R</li> </ul>	--	--
4	<p>After completion of step 3, SAS Test Harness will not provide any additional positive response (responseCode=0) to further request messages from the UUT</p>	--	--
5	<p>Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify:</p> <ul style="list-style-type: none"> <li>● UUT shall stop RF transmission at any time between triggering the relinquishment and UUT sending the relinquishment request</li> </ul>	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail



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**7.5.3 WINNF.FT.C.RLQ.5**

#	Test Execution Steps	Results	
1	<p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> <li>● UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness</li> <li>● UUT has successfully registered with SAS Test Harness, with cbsdId=C</li> <li>● UUT has received a valid grant with grantId = G</li> <li>● UUT is in Grant State AUTHORIZED and is actively transmitting within the bounds of its grant.</li> </ul> <p>Invoke trigger to relinquish UUT Grant from the SAS Test Harness</p>	--	--
2	<p>UUT sends a Relinquishment Request message. Verify message contains all required parameters properly formatted, and specifically:</p> <ul style="list-style-type: none"> <li>● cbsdId = C</li> <li>● grantId = G</li> </ul>	--	--
3	<p>SAS Test Harness shall approve the request with a Relinquishment Response message with parameters:</p> <ul style="list-style-type: none"> <li>- cbsdId = C</li> <li>- grantId = G</li> <li>● responseCode = 103</li> </ul>	--	--
4	<p>After completion of step 3, SAS Test Harness will not provide any additional positive response (responseCode=0) to further request messages from the UUT</p>	--	--
5	<p>Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify:</p> <ul style="list-style-type: none"> <li>● UUT shall stop RF transmission at any time between triggering the relinquishment and UUT sending the relinquishment request</li> </ul>	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail



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## 7.6 CBSD Deregistration Process

### 7.6.1 WINNF.FT.C.DRG.1

#	Test Execution Steps	Results	
1	<p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> <li>● UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness</li> <li>● UUT has successfully registered with SAS Test Harness, with cbsId=C</li> <li>● UUT has received a valid grant with grantId = G</li> <li>● UUT is in Grant State AUTHORIZED and is actively transmitting within the bounds of its grant.</li> </ul> <p>Invoke trigger to deregister UUT from the SAS Test Harness</p>	--	--
2	<p>UUT sends a Relinquishment request and receives Relinquishment response with</p> <ul style="list-style-type: none"> <li>● responseCode=0</li> </ul>	--	--
3	<ul style="list-style-type: none"> <li>● UUT sends Deregistration Request to SAS Test Harness with cbsId = C.</li> </ul>	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail
4	<p>SAS Test Harness shall approve the request with a Deregistration Response message with parameters:</p> <ul style="list-style-type: none"> <li>● cbsId = C</li> <li>● responseCode = 0</li> </ul>	--	--
5	<p>After completion of step 3, SAS Test Harness will not provide any additional positive</p> <ul style="list-style-type: none"> <li>● response (responseCode=0) to further request messages from the UUT.</li> </ul>	--	--
6	<p>Monitor the RF output of the UUT from start of test until 60 seconds after Step 4 is complete. This is the end of the test. Verify:</p> <ul style="list-style-type: none"> <li>● UUT stopped RF transmission at any time between triggering the deregistration and either A OR B occurs:</li> </ul> <p>A. UUT sending a Registration Request message, as this is not mandatory</p> <p>B. UUT sending a Deregistration Request message</p>	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail



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**7.6.2 WINNF.FT.C.DRG.3**

#	Test Execution Steps	Results	
1	<p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> <li>● UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness</li> <li>● UUT has successfully registered with SAS Test Harness, with cbsdId=C</li> <li>● UUT has received a valid grant with grantId = G</li> <li>● UUT is in Grant State AUTHORIZED and is actively transmitting within the bounds of its grant.</li> </ul> <p>Invoke trigger to deregister UUT from the SAS Test Harness</p>	--	--
2	UUT sends a Relinquishment request and receives Relinquishment response with responseCode=0	--	--
3	● UUT sends Deregistration Request to SAS Test Harness with cbsdId = C.	--	--
4	The SAS Test Harness sends the Deregistration Response Message to UUT with: <ul style="list-style-type: none"> <li>● No cbsdId</li> <li>● responseCode = 103</li> </ul>	--	--
5	After completion of step 3, SAS Test Harness will not provide any additional positive response (responseCode=0) to further request messages from the UUT.	--	--
6	<p>Monitor the RF output of the UUT from start of test until 60 seconds after Step 4 is complete. This is the end of the test. Verify:</p> <ul style="list-style-type: none"> <li>● UUT stopped RF transmission at any time between triggering the deregistration and either A OR B occurs:               <ol style="list-style-type: none"> <li>UUT sending a Registration Request message, as this is not mandatory</li> <li>UUT sending a Deregistration Request message</li> </ol> </li> </ul>	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail



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**7.6.3 WINNF.FT.C.DRG.5**

#	Test Execution Steps	Results	
1	<p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> <li>● UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness</li> <li>● UUT has successfully registered with SAS Test Harness, with cbsdId=C</li> <li>● UUT has received a valid grant with grantId = G</li> <li>● UUT is in Grant State AUTHORIZED and is actively transmitting within the bounds of its grant.</li> </ul> <p>Invoke trigger to deregister UUT from the SAS Test Harness</p>	--	--
2	UUT sends a Relinquishment request and receives Relinquishment response with responseCode=0	--	--
3	● UUT sends Deregistration Request to SAS Test Harness with cbsdId = C.	--	--
4	The SAS Test Harness sends the Deregistration Response Message to UUT with: <ul style="list-style-type: none"> <li>● cbsdId=C</li> <li>● responseCode = 103</li> </ul>	--	--
5	After completion of step 3, SAS Test Harness will not provide any additional positive response (responseCode=0) to further request messages from the UUT.	--	--
6	<p>Monitor the RF output of the UUT from start of test until 60 seconds after Step 4 is complete. This is the end of the test. Verify:</p> <ul style="list-style-type: none"> <li>● UUT stopped RF transmission at any time between triggering the deregistration and either A OR B occurs:               <ul style="list-style-type: none"> <li>C. UUT sending a Registration Request message, as this is not mandatory</li> <li>D. UUT sending a Deregistration Request message</li> </ul> </li> </ul>	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail

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## 7.7 CBSD Security Validation

### 7.7.1 WINNF.FT.C.SCS.1

#	Test Execution Steps	Results	
1	<ul style="list-style-type: none"> <li>● UUT shall start CBSD-SAS communication with the security procedure</li> <li>● The UUT shall establish a TLS handshake with the SAS Test Harness using configured certificate.</li> <li>● Configure the SAS Test Harness to accept the security procedure and establish the connection</li> </ul>	■ Pass	<input type="checkbox"/> Fail
2	<ul style="list-style-type: none"> <li>● Make sure that Mutual authentication happens between UUT and the SAS Test Harness.</li> <li>● Make sure that UUT uses TLS v1.2</li> <li>● Make sure that cipher suites from one of the following is selected, <ul style="list-style-type: none"> <li>● TLS_RSA_WITH_AES_128_GCM_SHA256</li> <li>● TLS_RSA_WITH_AES_256_GCM_SHA384</li> <li>● TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256</li> <li>● TLS_ECDHE_ECDSA_WITH_AES_256_GCM_SHA384</li> <li>● TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256</li> </ul> </li> </ul>	■ Pass	<input type="checkbox"/> Fail
3	<p>A successful registration is accomplished using one of the test cases described in section 6.1.4.1, depending on CBSD capability.</p> <p>E. UUT sends a registration request to the SAS Test Harness and the SAS Test Harness sends a Registration Response with responseCode = 0 and cbsdId.</p>	■ Pass	<input type="checkbox"/> Fail
4	<p>Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify:</p> <ul style="list-style-type: none"> <li>● UUT shall not transmit RF</li> </ul>	■ Pass	<input type="checkbox"/> Fail

### 7.7.2 WINNF.FT.C.SCS.2

#	Test Execution Steps	Results	
1	<ul style="list-style-type: none"> <li>● UUT shall start CBSD-SAS communication with the security procedures</li> </ul>	■ Pass	<input type="checkbox"/> Fail
2	<ul style="list-style-type: none"> <li>● Make sure that UUT uses TLS v1.2 for security establishment.</li> <li>● Make sure UUT selects the correct cipher suite.</li> <li>● UUT shall use CRL or OCSP to verify the validity of the server certificate.</li> <li>● Make sure that Mutual authentication does not happen between UUT and the SAS Test Harness.</li> </ul>	■ Pass	<input type="checkbox"/> Fail
3	<p>F. UUT may retry for the security procedure which shall fail.</p>	■ Pass	<input type="checkbox"/> Fail
4	<ul style="list-style-type: none"> <li>● SAS Test-Harness shall not receive any Registration request or any application data.</li> </ul>	--	--
5	<p>Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify:</p>	■ Pass	<input type="checkbox"/> Fail



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	● UUT shall not transmit RF	Pass	Fail
--	-----------------------------	------	------

## 7.7.3 WINNF.FT.C.SCS.3

#	Test Execution Steps	Results	
1	● UUT shall start CBSD-SAS communication with the security procedures	■ Pass	□ Fail
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	□ Fail
3	G. UUT may retry for the security procedure which shall fail.	■ Pass	□ Fail
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	□ Fail

## 7.7.4 WINNF.FT.C.SCS.4

#	Test Execution Steps	Results	
1	● UUT shall start CBSD-SAS communication with the security procedures	■ Pass	□ Fail
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	□ Fail
3	H. UUT may retry for the security procedure which shall fail.	■ Pass	□ Fail
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	□ Fail



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### 7.7.5 WINNF.FT.C.SCS.5

#	Test Execution Steps	Results	
1	<ul style="list-style-type: none"> <li>● UUT shall start CBSD-SAS communication with the security procedures</li> </ul>	■ Pass	□ Fail
2	<ul style="list-style-type: none"> <li>● Make sure that UUT uses TLS v1.2 for security establishment.</li> <li>● Make sure UUT selects the correct cipher suite.</li> <li>● UUT shall use CRL or OCSP to verify the validity of the server certificate</li> <li>● Make sure that Mutual authentication does not happen between UUT and the SAS Test Harness.</li> </ul>	■ Pass	□ Fail
3	<ul style="list-style-type: none"> <li>I. UUT may retry for the security procedure which shall fail.</li> </ul>	■ Pass	□ Fail
4	<ul style="list-style-type: none"> <li>● SAS Test-Harness shall not receive any Registration request or any application data.</li> </ul>	--	--
5	<p>Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify:</p> <ul style="list-style-type: none"> <li>● UUT shall not transmit RF</li> </ul>	■ Pass	□ Fail



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## 7.8 CBSD RF Power Measurement

### 7.8.1 WINNF.PT.C.HBT

#	Test Execution Steps	Results	
1	<p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> <li>● UUT has successfully completed SAS Discovery and Authentication with the SAS Test Harness</li> <li>● UUT has registered with the SAS, with CBSD ID = C</li> <li>● UUT has a single valid grant G with parameters {lowFrequency = FL, highFrequency = FH, maxEirp = Pi}, with grant in AUTHORIZED state, and grantExpireTime set to a value far past the duration of this test case</li> <li>● 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</li> </ul>	--	--
2	<p>UUT and SAS Test Harness perform a series of Heartbeat Request/Response cycles, which continues until the other test steps are complete. Messaging for each cycle is as follows:</p> <ul style="list-style-type: none"> <li>● UUT sends Heartbeat Request, including: <ul style="list-style-type: none"> <li>○ cbsdId = C</li> <li>○ grantId = G</li> </ul> </li> <li>● SAS Test Harness responds with Heartbeat Response, including: <ul style="list-style-type: none"> <li>○ cbsdId = C</li> <li>○ grantId = G</li> <li>○ transmitExpireTime = current UTC time + 200 seconds</li> <li>● responseCode = 0</li> </ul> </li> </ul>	--	--
3	<p>Tester performs power measurement on RF interface(s) of UUT, and verifies it complies with the maxEirp setting, Pi. The RF measurement method is out of scope of this document, but may include additional configuration of the UUT, as required, to fulfill the requirements of the power measurement method.</p> <p>J. 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.</p>	■ Pass	□ Fail



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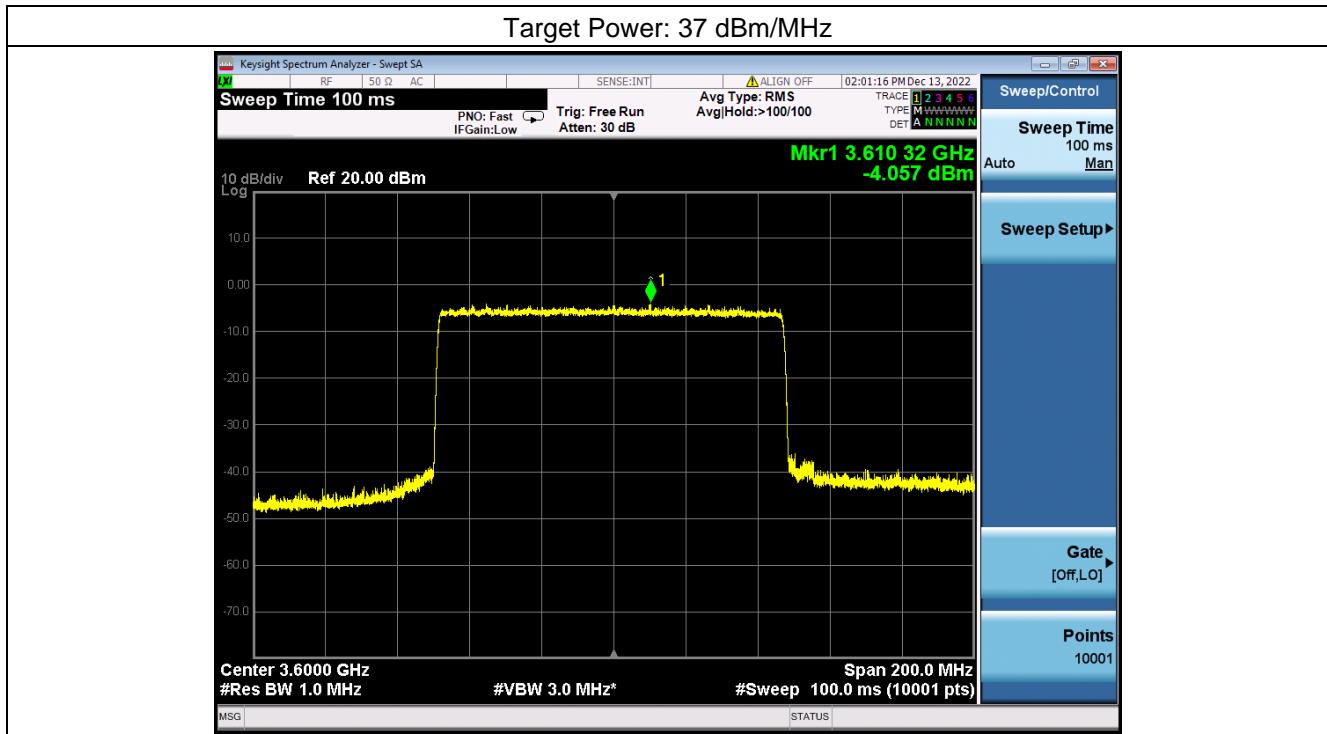
**RF measurement plot for Test Case:**

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

Frequency (MHz)	Channel Bandwidth	Granted maxEIRP	Conducted PSD	Antenna Gain	Cable Loss	maxEIRP
	(MHz)	(dBm/MHz)	(dBm/MHz)	(dBi)	(dB)	(dBm/MHz)
3600	100	37	-4.057	1.290	5.810	3.043
3600	100	25	-7.409	1.290	5.810	-0.309
3600	100	20	-9.637	1.290	5.810	-2.537
3600	100	10	-9.645	1.290	5.810	-2.545

**Note:**

1.maxEIRP= Conducted PSD+ Antenna Gain+ Cable loss

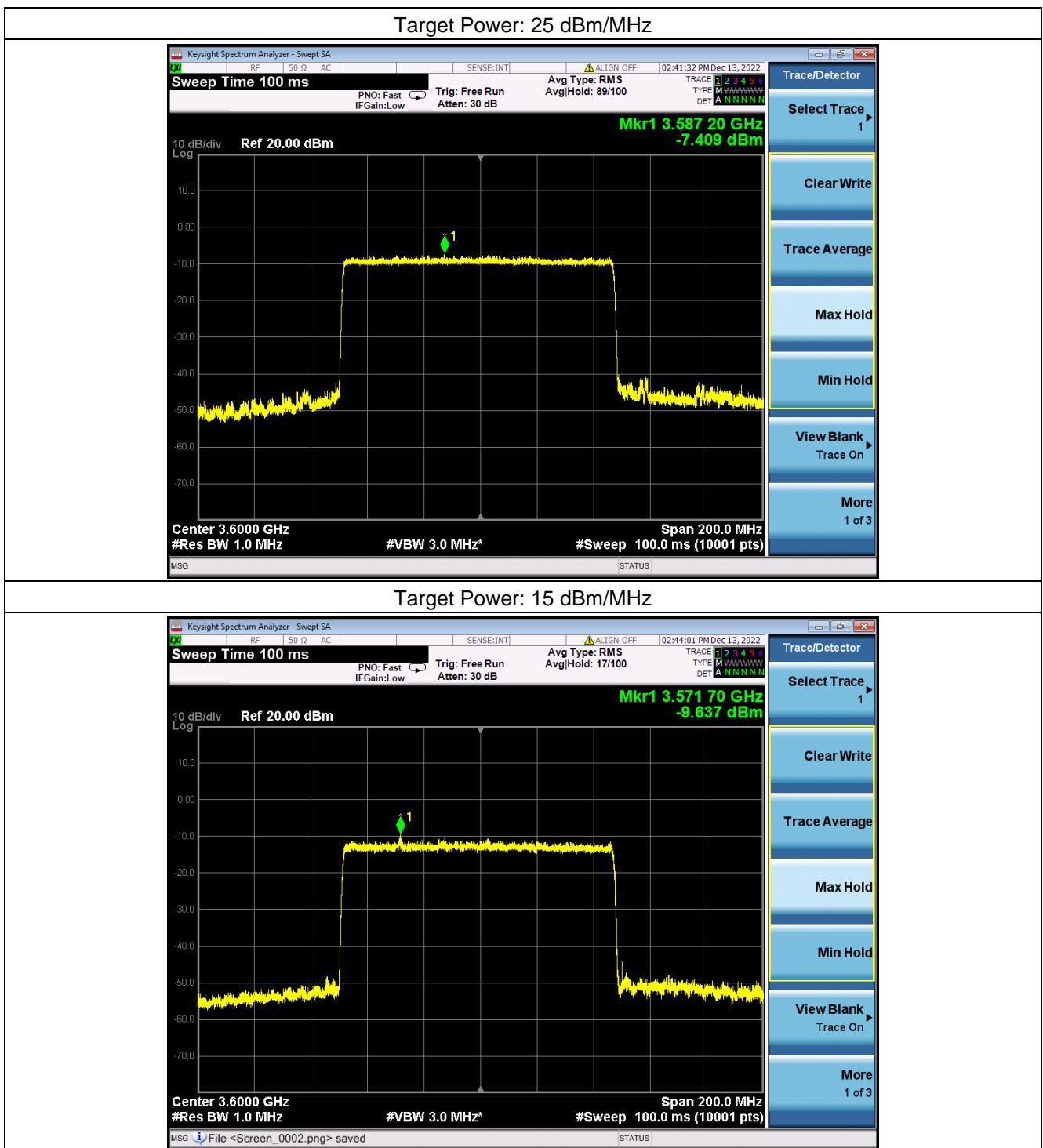


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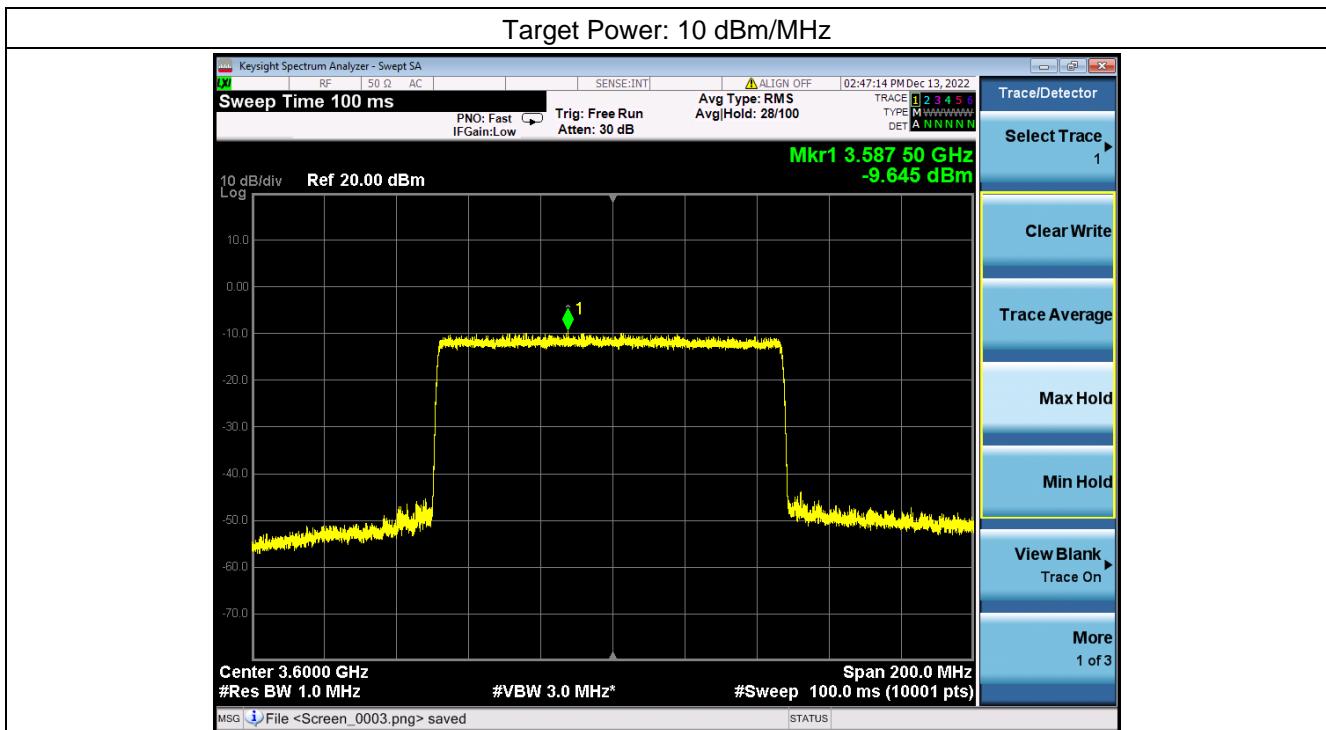




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## 8 Test Data Log

Test data log refer to log files (Log files appendix) except for security test cases which shows below.

## 8.1 WINNF.FT.C.SCS.1

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## 8.2 WINNF.FT.C.SCS.2

SCS.2.pcapng

文件(F) 编辑(E) 视图(V) 跳转(G) 捕获(C) 分析(A) 统计(S) 电话(U) 无线(W) 工具(I) 帮助(H)

tls

No.	Time	Source	Destination	Protocol	Length	Info
19	3.845215	10.5.251.113	10.88.140.53	TLSv1.2	571	Client Hello
20	3.845452	10.88.140.53	10.5.251.113	TLSv1.2	1514	Server Hello
22	3.845452	10.88.140.53	10.5.251.113	TLSv1.2	192	Certificate, Certificate Request, Server Hello Done
26	3.863157	10.5.251.113	10.88.140.53	TLSv1.2	61	Alert (Level: Fatal, Description: Certificate Revoked)
30	4.005515	192.168.1.10	192.168.1.1	TLSv1.2	1379	Application Data
34	4.049787	192.168.1.10	192.168.1.10	TLSv1.2	912	Application Data
39	5.002268	192.168.1.10	192.168.1.1	TLSv1.2	1096	Application Data
45	5.007289	192.168.1.1	192.168.1.10	TLSv1.2	422	Application Data
67	9.551292	10.5.251.113	10.88.140.53	TLSv1.2	571	Client Hello
68	9.552015	10.88.140.53	10.5.251.113	TLSv1.2	192	Certificate, Certificate Request, Server Hello Done
74	9.570722	10.5.251.113	10.88.140.53	TLSv1.2	61	Alert (Level: Fatal, Description: Certificate Revoked)
88	11.003041	192.168.1.10	192.168.1.1	TLSv1.2	1096	Application Data
89	11.008487	192.168.1.10	192.168.1.10	TLSv1.2	422	Application Data
93	13.726468	192.168.1.10	192.168.1.1	TLSv1.2	1379	Application Data
95	13.768929	192.168.1.1	192.168.1.10	TLSv1.2	912	Application Data

> Frame 26: 61 bytes on wire (488 bits), 61 bytes captured (488 bits) on interface \Device\NPF\_{0CE3A0EC-75F3-46DE-BD1E-73C39F15F349}, id 0

> Ethernet II, Src: AdlinkTe\_6b:23:da (00:30:64:6b:23:da), Dst: AsixElec\_b6:72:c7 (00:0e:c6:b6:72:c7)

> Internet Protocol Version 4, Src: 10.5.251.113, Dst: 10.88.140.53

> Transmission Control Protocol, Src Port: 40872, Dst Port: 5007, Seq: 518, Ack: 3059, Len: 7

> Transport Layer Security

> TLSv1.2 Record Layer: Alert (Level: Fatal, Description: Certificate Revoked)

Content Type: Alert (21)

Version: TLS 1.2 (0x0303)

Length: 2

> Alert Message

Level: Fatal (2)

Description: Certificate Revoked (44)

0000 00 0e c6 b6 72 c7 00 30 64 6b 23 da 08 00 45 00 ...r...0 dk...E...

0010 00 2f 2a 35 40 00 3f 06 75 90 0a 05 fb 71 0a 58 /\*5@? u...q X

0020 8c 35 9f 4e 13 8f 6b 04 e7 3c 64 7a 73 cb 50 18 -5.N...k...<dzs-P...

0030 01 1b ef 3c 00 00 15 03 03 00 02 02 2c ...<.....,

SCS.2.下载OK.pcapng

文件(F) 编辑(E) 视图(V) 跳转(G) 捕获(C) 分析(A) 统计(S) 电话(U) 无线(W) 工具(I) 帮助(H)

http

No.	Time	Source	Destination	Protocol	Length	Info
2	0.000707	192.168.1.10	192.168.1.1	HTTP	908	GET /data.html?method=obj_get&param=%5B%22cbsdCurrentStatus%22%2C%22cbsdPccFreq%22%2C%22cb...
5	0.005678	192.168.1.1	192.168.1.10	HTTP	390	HTTP/1.1 200 OK (text/html)
25	2.985834	192.168.5.120	192.168.5.115	HTTP/J...	905	POST /public/cgi-bin/information.cgi HTTP/1.1 , JavaScript Object Notation (application/json)
34	2.985775	192.168.5.115	192.168.5.120	HTTP	326	HTTP/1.0 200 OK (text/html)
53	4.977619	192.168.1.10	192.168.1.1	HTTP	1191	GET /data.html?method=obj_get&param=%5B%22systemRebootFlag%22%2C%22webGuiRestartFlag%22%2C...
55	5.021172	192.168.1.10	192.168.1.10	HTTP	883	HTTP/1.1 200 OK (text/html)
76	5.978507	192.168.1.10	192.168.1.1	HTTP	908	GET /data.html?method=obj_get&param=%5B%22cbsdCurrentStatus%22%2C%22cbsdPccFreq%22%2C%22cb...
78	5.984492	192.168.1.10	192.168.1.10	HTTP	390	HTTP/1.1 200 OK (text/html)
90	6.288709	10.5.251.17	10.88.140.53	HTTP	138	GET /cbsd.crl HTTP/1.1
93	6.301682	10.88.140.53	10.5.251.17	HTTP	1090	HTTP/1.1 200 OK
109	7.976383	192.168.5.120	192.168.5.115	HTTP/J...	905	POST /public/cgi-bin/information.cgi HTTP/1.1 , JavaScript Object Notation (application/json)
112	8.081310	192.168.5.115	192.168.5.120	HTTP	326	HTTP/1.0 200 OK (text/html)
119	9.841032	192.168.1.10	192.168.1.1	HTTP	600	GET /sessionstatus.html HTTP/1.1
120	9.844243	192.168.1.10	192.168.1.10	HTTP	352	HTTP/1.1 200 OK (text/html)
136	11.980537	192.168.1.10	192.168.1.1	HTTP	908	GET /data.html?method=obj_get&param=%5B%22cbsdCurrentStatus%22%2C%22cbsdPccFreq%22%2C%22cb...
137	11.986450	192.168.1.1	192.168.1.10	HTTP	390	HTTP/1.1 200 OK (text/html)

> Frame 90: 138 bytes on wire (1104 bits), 138 bytes captured (1104 bits) on interface \Device\NPF\_{0CE3A0EC-75F3-46DE-BD1E-73C39F15F349}, id 0

> Ethernet II, Src: AdlinkTe\_6b:23:da (00:30:64:6b:23:da), Dst: AsixElec\_b6:72:c7 (00:0e:c6:b6:72:c7)

> Internet Protocol Version 4, Src: 10.5.251.17, Dst: 10.88.140.53

> Transmission Control Protocol, Src Port: 40366, Dst Port: 80, Seq: 1, Ack: 1, Len: 84

> Hypertext Transfer Protocol

> GET /cbsd.crl HTTP/1.1\r\n

Host: 10.88.140.53\r\n

User-Agent: curl/7.58.0\r\n

Accept: \*/\*\r\n

Content-Type: application/x-www-form-urlencoded

[Full request URI: http://10.88.140.53/cbsd.crl]

[HTTP request 1/1]

[Response in frame: 93]

0000 00 0e c6 b6 72 c7 00 30 64 6b 23 da 08 00 45 00 ...r...0 dk...E...

0010 00 7c f1 b8 40 00 3f 06 a1 f0 0a 05 fb 11 0a 58 ...@?...X

0020 8c 35 9d ae 00 50 32 90 14 70 62 2b 47 50 18 5...P...GP...

0030 00 e5 be db 00 47 45 54 20 2f 63 62 73 64 2e GE T /cbsd...

0040 63 72 6c 20 48 54 54 50 2f 31 2e 0d 0a 48 6f crl HTTP /1.1 -Ho

0050 73 74 3a 20 31 30 2e 38 38 2e 31 34 30 2e 35 33 st: 10.8 8.140.53

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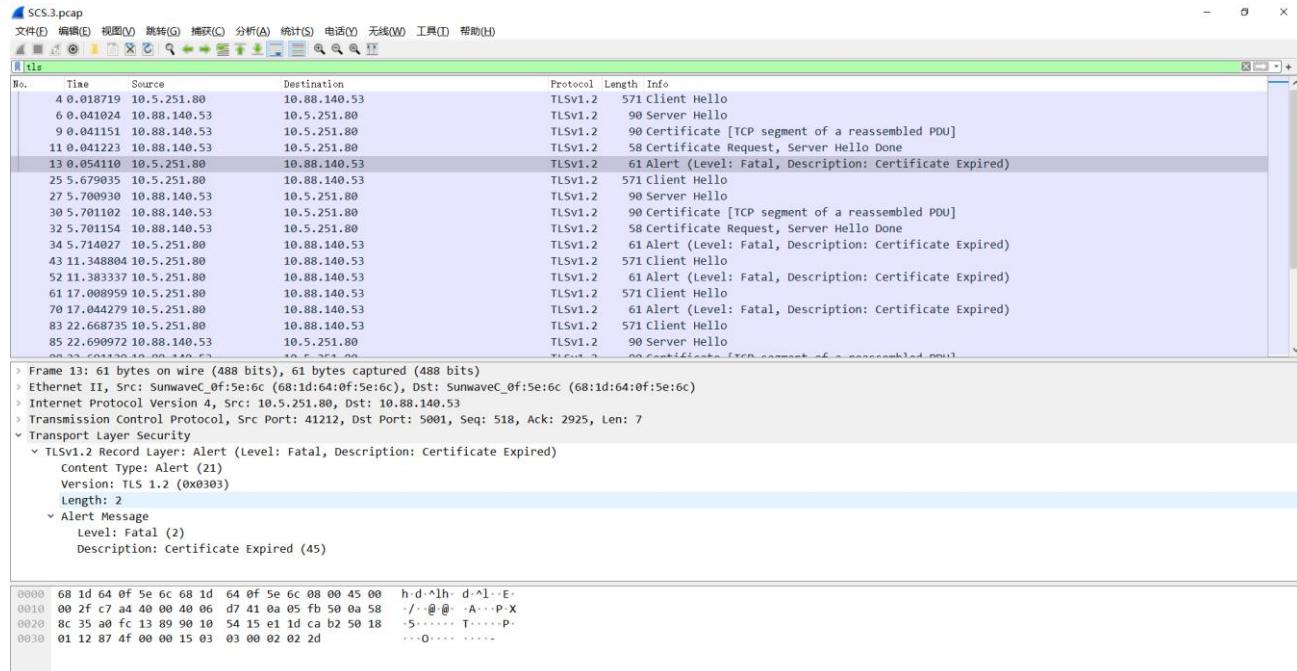


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Report No.: KSCR221200241501

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### 8.3 WINNF.FT.C.SCS.3



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### 8.4 WINNF.FT.C.SCS.4

SCS.4.pcap

文件(F) 编辑(E) 视图(V) 跳转(G) 捕获(C) 分析(A) 统计(S) 电话(U) 无线(W) 工具(I) 帮助(H)

tls

No.	Time	Source	Destination	Protocol	Length	Info
4	0.018984	10.5.251.80	10.88.140.53	TLSv1.2	571	Client Hello
13	0.042240	10.5.251.80	10.88.140.53	TLSv1.2	61	Alert (Level: Fatal, Description: Unknown CA)
30	5.668810	10.5.251.80	10.88.140.53	TLSv1.2	571	Client Hello
32	5.698793	10.88.140.53	10.5.251.80	TLSv1.2	90	Server Hello
35	5.699009	10.88.140.53	10.5.251.80	TLSv1.2	90	Certificate [TCP segment of a reassembled PDU]
37	5.699666	10.88.140.53	10.5.251.80	TLSv1.2	58	Certificate Request, Server Hello Done
39	5.692132	10.5.251.80	10.88.140.53	TLSv1.2	61	Alert (Level: Fatal, Description: Unknown CA)
55	11.319261	10.5.251.80	10.88.140.53	TLSv1.2	571	Client Hello
57	11.341187	10.88.140.53	10.5.251.80	TLSv1.2	90	Server Hello
60	11.341241	10.88.140.53	10.5.251.80	TLSv1.2	90	Certificate [TCP segment of a reassembled PDU]
62	11.341291	10.88.140.53	10.5.251.80	TLSv1.2	58	Certificate Request, Server Hello Done
64	11.342410	10.5.251.80	10.88.140.53	TLSv1.2	61	Alert (Level: Fatal, Description: Unknown CA)
73	16.969619	10.5.251.80	10.88.140.53	TLSv1.2	571	Client Hello
75	16.991026	10.88.140.53	10.5.251.80	TLSv1.2	90	Server Hello
78	16.991162	10.88.140.53	10.5.251.80	TLSv1.2	90	Certificate [TCP segment of a reassembled PDU]
80	16.991214	10.88.140.53	10.5.251.80	TLSv1.2	58	Certificate Request, Server Hello Done
82	16.992364	10.5.251.80	10.88.140.53	TLSv1.2	61	Alert (Level: Fatal, Description: Unknown CA)

> Frame 39: 61 bytes on wire (488 bits), 61 bytes captured (488 bits)  
 > Ethernet II, Src: SunwaveC\_0f:5e:6c (68:1d:64:0f:5e:6c), Dst: SunwaveC\_0f:5e:6c (68:1d:64:0f:5e:6c)  
 > Internet Protocol Version 4, Src: 10.5.251.80, Dst: 10.88.140.53  
 > Transmission Control Protocol, Src Port: 41934, Dst Port: 5001, Seq: 518, Ack: 2925, Len: 7  
 ▾ Transport Layer Security  
 ▾ TLSv1.2 Record Layer: Alert (Level: Fatal, Description: Unknown CA)  
 Content Type: Alert (21)  
 Version: TLS 1.2 (0x0303)  
 Length: 2  
 ▾ Alert Message  
 Level: Fatal (2)  
 Description: Unknown CA (48)

0000 68 1d 64 0f 5e 6c 68 1d 64 0f 5e 6c 08 00 45 00 h-d^1h- d^1- E-  
 0010 00 2f 4e 3f 40 00 40 06 50 a7 0a 05 fb 50 0a 58 /N?@ @ P...P-X  
 0020 8c 35 a3 ce 13 89 0b 54 22 e8 37 e6 24 a9 50 18 5...-T "-7-\$ P-  
 0030 01 09 86 b1 00 00 15 03 03 00 02 02 30 ..... 0

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### 8.5 WINNF.FT.C.SCS.5

SCS.5.pcap

文件(F) 编辑(E) 视图(V) 切换(G) 捕获(C) 分析(A) 统计(S) 电话(U) 无线(W) 工具(I) 帮助(H)

tls

No.	Time	Source	Destination	Protocol	Length	Info
4	0.027550	10.5.251.80	10.88.140.53	TLSv1.2	571	Client Hello
6	0.049463	10.88.140.53	10.5.251.80	TLSv1.2	90	Server Hello
9	0.049608	10.88.140.53	10.5.251.80	TLSv1.2	90	Certificate [TCP segment of a reassembled PDU]
11	0.049659	10.88.140.53	10.5.251.80	TLSv1.2	58	Certificate Request, Server Hello Done
13	0.062232	10.5.251.80	10.88.140.53	TLSv1.2	61	Alert (Level: Fatal, Description: Decrypt Error)
22	5.687300	10.5.251.80	10.88.140.53	TLSv1.2	571	Client Hello
24	5.709279	10.88.140.53	10.5.251.80	TLSv1.2	90	Server Hello
27	5.709417	10.88.140.53	10.5.251.80	TLSv1.2	90	Certificate [TCP segment of a reassembled PDU]
29	5.709467	10.88.140.53	10.5.251.80	TLSv1.2	58	Certificate Request, Server Hello Done
31	5.722011	10.5.251.80	10.88.140.53	TLSv1.2	61	Alert (Level: Fatal, Description: Decrypt Error)
44	11.347327	10.5.251.80	10.88.140.53	TLSv1.2	571	Client Hello
46	11.369213	10.88.140.53	10.5.251.80	TLSv1.2	90	Server Hello
49	11.369351	10.88.140.53	10.5.251.80	TLSv1.2	90	Certificate [TCP segment of a reassembled PDU]
51	11.369408	10.88.140.53	10.5.251.80	TLSv1.2	58	Certificate Request, Server Hello Done
53	11.381996	10.5.251.80	10.88.140.53	TLSv1.2	61	Alert (Level: Fatal, Description: Decrypt Error)
73	17.007510	10.5.251.80	10.88.140.53	TLSv1.2	571	Client Hello

> Frame 13: 61 bytes on wire (488 bits), 61 bytes captured (488 bits)  
> Ethernet II, Src: SunwaveC\_0f:5e:6c (68:1d:64:0f:5e:6c), Dst: SunwaveC\_0f:5e:6c (68:1d:64:0f:5e:6c)  
> Internet Protocol Version 4, Src: 10.5.251.80, Dst: 10.88.140.53  
> Transmission Control Protocol, Src Port: 41998, Dst Port: 5001, Seq: 518, Ack: 2925, Len: 7  
 ▾ Transport Layer Security  
 ▾ TLSv1.2 Record Layer: Alert (Level: Fatal, Description: Decrypt Error)  
 Content Type: Alert (21)  
 Version: TLS 1.2 (0x0303)  
 Length: 2  
 ▾ Alert Message  
 Level: Fatal (2)  
 Description: Decrypt Error (51)

0000 68 1d 64 0f 5e 6c 68 1d 64 0f 5e 6c 08 00 45 00 h-d^lh- d^l- E-  
 0010 00 2f b9 a0 00 40 06 e5 5b 0a 05 fb 50 0a 58 /-@ @ -[...-P-X  
 0020 8c 35 ad 0e 13 89 fb 65 19 6b c0 54 8f d9 50 18 5-----e -k-T- P-  
 0030 01 09 a9 3d 00 00 15 03 03 00 02 02 33 ..... 3

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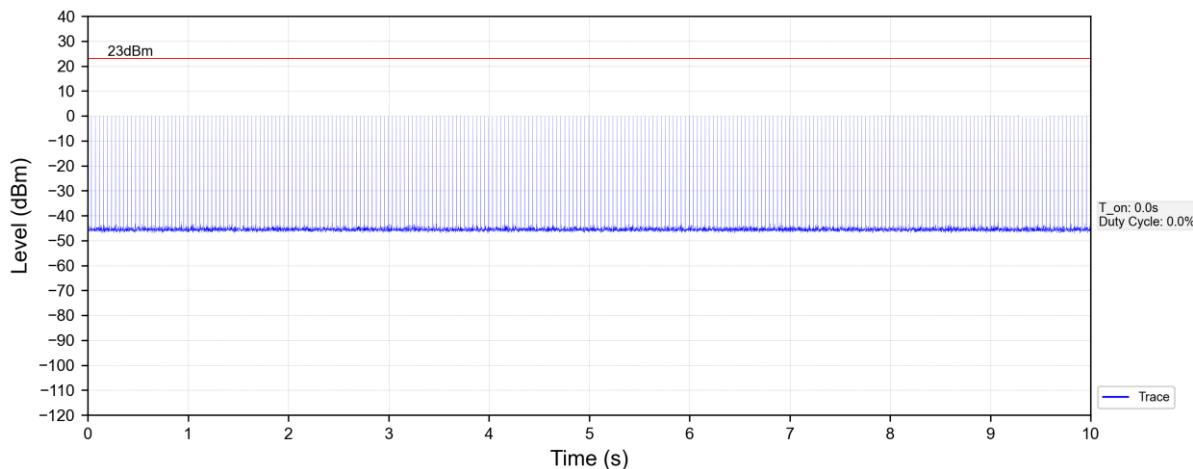
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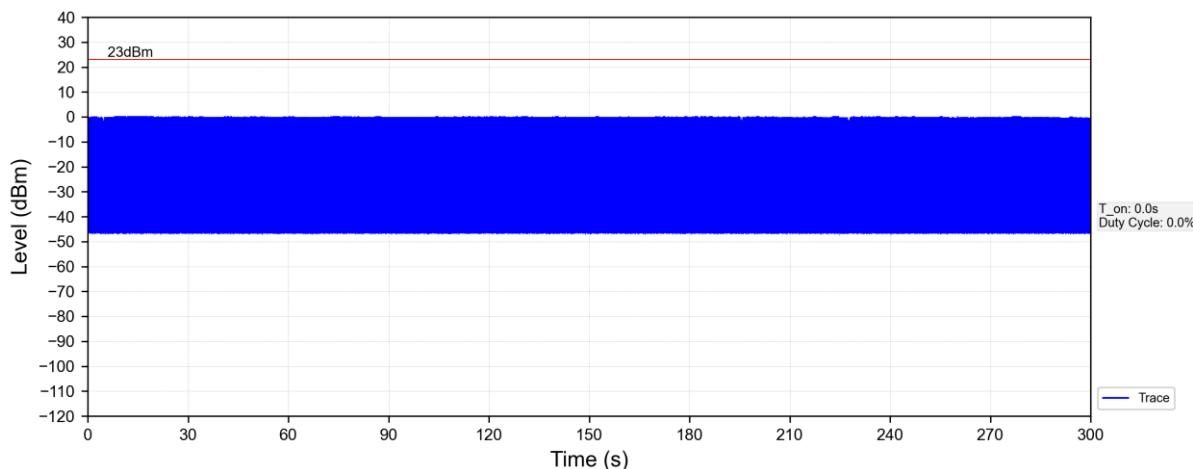
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## 9 Result of Time test for getting Grant

### 9.1 1 second within any 10-second period



### 9.2 10 seconds within any 300-second period



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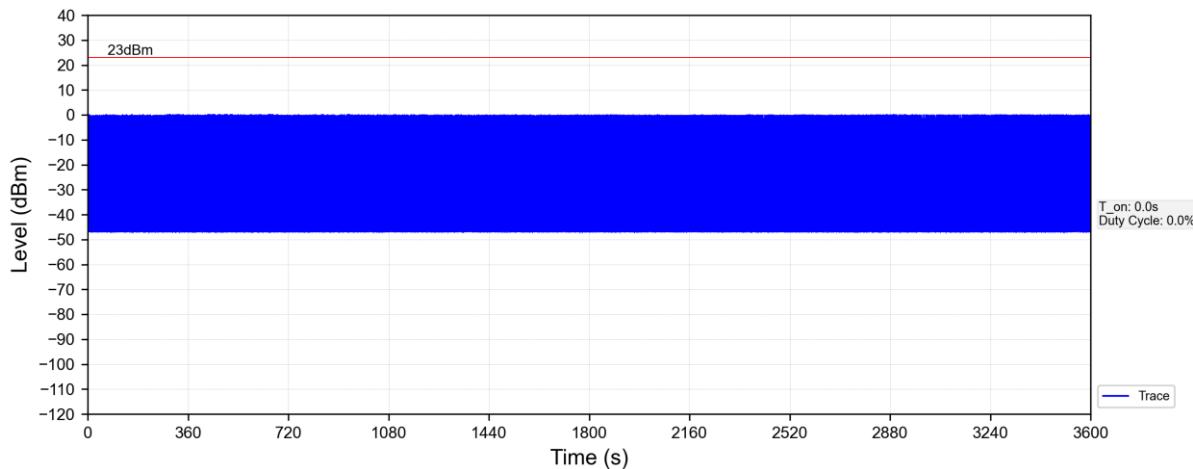


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20 seconds within any 3600-second period



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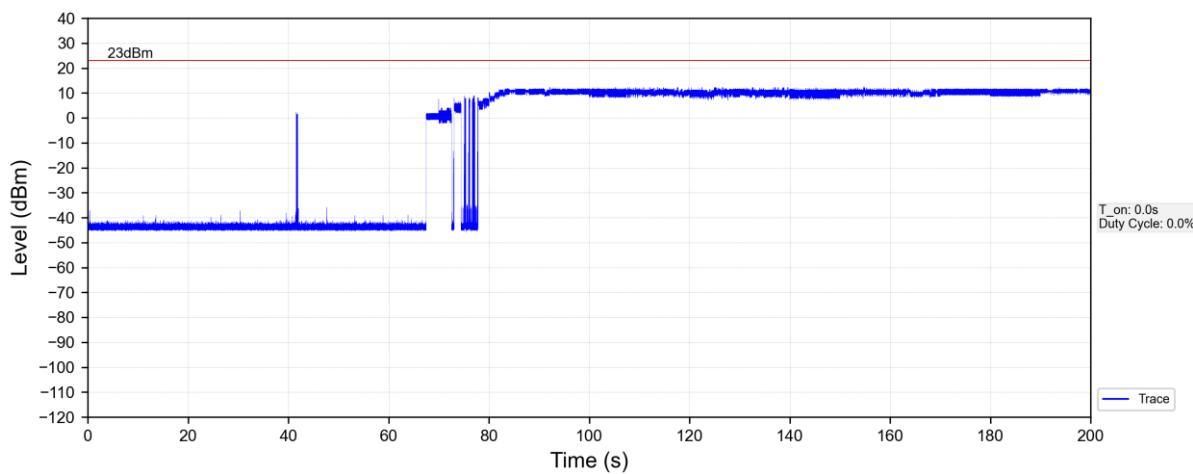
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## 10 Verify that the device will register with a SAS when operating below 23 dBm

Verified in test case WINNF.PT.C.HBT.1, the CPE-CBSD as UUT default EIRP is under 23 dBm and can register success with SAS. After granted, the CPE-CBSD UUT will adjust the EIRP by maxEirp.



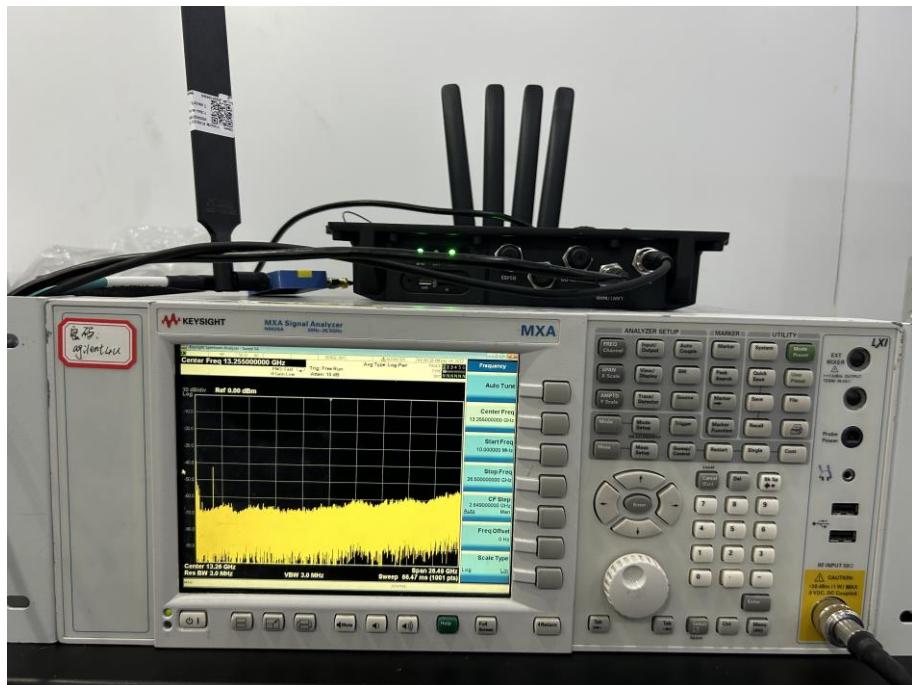
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## 11 Photographs

### 11.1 EUT Constructional Details (EUT Photos)



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