

# WINNF-TS-0122 Test Report

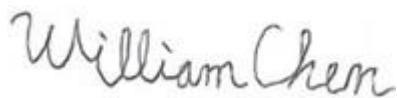
|              |                               |
|--------------|-------------------------------|
| APPLICANT    | Gemtek Technology Co., Ltd.   |
| EQUIPMENT    | LTE ODU Small cell            |
| BRAND NAME   | Gemtek                        |
| MODEL NAME   | WLTGFC-105                    |
| FCC ID       | MXF-WLTGFC105CBRS             |
| REFERENCE    | WINNF-TS-0122 Version V1.0.1  |
| TEST DATE(S) | Oct. 30, 2019 ~ Nov. 06, 2019 |

The product was received on Oct. 28, 2019 and testing was started from Oct. 30, 2019 and completed on Nov. 06, 2019. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures given in WINNF-TS-0122 Version V1.0.1 and has been in 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.

Reviewed by:



William Chen / Deputy Manager

Approved by:



Jones Tsai / Manager

**SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory**

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

## Table of Contents

|                                                                                    |           |
|------------------------------------------------------------------------------------|-----------|
| <b>Revision History</b>                                                            | <b>4</b>  |
| <b>1. Administration Data</b>                                                      | <b>5</b>  |
| 1.1 Testing Laboratory                                                             | 5         |
| 1.2 Applicant                                                                      | 5         |
| <b>2. General Information</b>                                                      | <b>6</b>  |
| 2.1 Description of Equipment Under Test (EUT)                                      | 6         |
| 2.2 Summary of Test Result                                                         | 7         |
| 2.3 Support Equipment                                                              | 8         |
| 2.4 Test Equipment List                                                            | 8         |
| <b>3. Measurement Environment</b>                                                  | <b>9</b>  |
| 3.1 Information                                                                    | 9         |
| 3.2 Conditional Test Case                                                          | 9         |
| 3.3 Test configuration                                                             | 10        |
| <b>4. Test Result</b>                                                              | <b>11</b> |
| 4.1 Multi-Step registration                                                        | 11        |
| 4.2 Single-Step registration for Category A CBSD                                   | 12        |
| 4.3 Missing Required parameters (responseCode 102)                                 | 13        |
| 4.4 Pending registration (responseCode 200)                                        | 14        |
| 4.5 Invalid parameter (responseCode 103)                                           | 15        |
| 4.6 Blacklisted CBSD (responseCode 101)                                            | 16        |
| 4.7 Unsupported SAS protocol version (responseCode 100)                            | 17        |
| 4.8 Group Error (responseCode 201)                                                 | 18        |
| 4.9 Unsuccessful Grant responseCode=400 (INTERFERENCE)                             | 19        |
| 4.10 Unsuccessful Grant responseCode=401 (GRANT_CONFLICT)                          | 20        |
| 4.11 Category A CBSD location update                                               | 21        |
| 4.12 Heartbeat Success Case (first Heartbeat Response)                             | 22        |
| 4.13 Heartbeat responseCode=105 (DEREGISTER)                                       | 24        |
| 4.14 Heartbeat responseCode=500 (TERMINATED_GRANT)                                 | 25        |
| 4.15 Heartbeat responseCode=501 (SUSPENDED_GRANT) in First Heartbeat Response      | 26        |
| 4.16 Heartbeat responseCode=501 (SUSPENDED_GRANT) in Subsequent Heartbeat Response | 27        |
| 4.17 Heartbeat responseCode=502 (UNSYNC_OP_PARAM)                                  | 29        |
| 4.18 Heartbeat Response Absent (First Heartbeat)                                   | 30        |
| 4.19 Heartbeat Response Absent (Subsequent Heartbeat)                              | 31        |
| 4.20 Successful Grant Renewal in Heartbeat Test Case                               | 32        |

|      |                                                                          |    |
|------|--------------------------------------------------------------------------|----|
| 4.21 | Registration Response contains measReportConfig                          | 34 |
| 4.22 | Successful Relinquishment                                                | 35 |
| 4.23 | Unsuccessful Relinquishment, responseCode=102                            | 36 |
| 4.24 | Unsuccessful Relinquishment, responseCode=103                            | 37 |
| 4.25 | Successful Deregistration                                                | 38 |
| 4.26 | Deregistration responseCode=102                                          | 39 |
| 4.27 | Deregistration responseCode=103                                          | 40 |
| 4.28 | Successful TLS connection between UUT and SAS Test Harness               | 41 |
| 4.29 | TLS failure due to revoked certificate                                   | 42 |
| 4.30 | TLS failure due to expired server certificate                            | 43 |
| 4.31 | TLS failure when SAS Test Harness certificate is issued by an unknown CA | 44 |
| 4.32 | TLS failure when certificate at the SAS Test Harness is corrupted        | 45 |
| 4.33 | UUT RF Transmit Power Measurement                                        | 46 |

**Appendix A. Setup Plot**

**Appendix B. Test Log**

**Appendix C. RF measurement plots**

### Revision History

| REPORT NO. | VERSION | DESCRIPTION             | ISSUED DATE   |
|------------|---------|-------------------------|---------------|
| FG9O2809   | 01      | Initial issue of report | Nov. 13, 2019 |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |

## 1. Administration Data

### 1.1 Testing Laboratory

|                           |                                                                                                                        |
|---------------------------|------------------------------------------------------------------------------------------------------------------------|
| <b>Test Site</b>          | SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory                                                    |
| <b>Test Site Location</b> | No. 52, Huaya 1st Rd., Guishan Dist.,<br>Taoyuan City, Taiwan (R.O.C.)<br>TEL: +886-3-327-3456<br>FAX: +886-3-328-4978 |

### 1.2 Applicant

|                     |                                                                                 |
|---------------------|---------------------------------------------------------------------------------|
| <b>Company Name</b> | Gemtek Technology Co., Ltd.                                                     |
| <b>Address</b>      | No. 15-1 Zhonghua Road, Hsinchu Industrial Park, Hukou, Hsinchu, Taiwan, 30352. |

## 2. General Information

### 2.1 Description of Equipment Under Test (EUT)

| Product Feature & Specification |                                                                                                                  |
|---------------------------------|------------------------------------------------------------------------------------------------------------------|
| Equipment Name                  | LTE ODU Small cell                                                                                               |
| Brand Name                      | Gemtek                                                                                                           |
| Model Name                      | WLTGFC-105                                                                                                       |
| FCC ID                          | MXF-WLTGFC105CBRS                                                                                                |
| Professional Installation       | <input checked="" type="checkbox"/> Yes<br><input type="checkbox"/> No                                           |
| CBSD Category                   | <input checked="" type="checkbox"/> Category A<br><input type="checkbox"/> Category B                            |
| Unit Under Test in Test ID      | <input type="checkbox"/> CBSD with Domain Proxy<br><input checked="" type="checkbox"/> CBSD without Domain Proxy |
| HW Version                      | V00                                                                                                              |
| SW Version                      | 2.1.1890.562-wltgfc105-gemtek-tdd-C                                                                              |

## 2.2 Summary of Test Result

| Standard Section | Test Case ID      | Test Case Title                                                               | Test Result |
|------------------|-------------------|-------------------------------------------------------------------------------|-------------|
| 6.1.4.1.1        | WINNF.FT.C.REG.1  | Multi-Step registration                                                       | PASS        |
| 6.1.4.1.3        | WINNF.FT.C.REG.3  | Single-Step registration for Category A CBSD                                  | PASS        |
| 6.1.4.2.1        | WINNF.FT.C.REG.8  | Missing Required parameters (responseCode 102)                                | PASS        |
| 6.1.4.2.3        | WINNF.FT.C.REG.10 | Pending registration (responseCode 200)                                       | PASS        |
| 6.1.4.2.5        | WINNF.FT.C.REG.12 | Invalid parameter (responseCode 103)                                          | PASS        |
| 6.1.4.2.7        | WINNF.FT.C.REG.14 | Blacklisted CBSD (responseCode 101)                                           | PASS        |
| 6.1.4.2.9        | WINNF.FT.C.REG.16 | Unsupported SAS protocol version (responseCode 100)                           | PASS        |
| 6.1.4.2.11       | WINNF.FT.C.REG.18 | Group Error (responseCode 201)                                                | PASS        |
| 6.3.4.2.1        | WINNF.FT.C.GRA.1  | Unsuccessful Grant responseCode=400 (INTERFERENCE)                            | PASS        |
| 6.3.4.2.2        | WINNF.FT.C.GRA.2  | Unsuccessful Grant responseCode=401 (GRANT_CONFLICT)                          | PASS        |
| 6.4.4.1.1        | WINNF.FT.C.HBT.1  | Heartbeat Success Case (first Heartbeat Response)                             | PASS        |
| 6.4.4.2.1        | WINNF.FT.C.HBT.3  | Heartbeat responseCode=105 (DEREGISTER)                                       | PASS        |
| 6.4.4.2.2        | WINNF.FT.C.HBT.4  | Heartbeat responseCode=500 (TERMINATED_GRANT)                                 | PASS        |
| 6.4.4.2.3        | WINNF.FT.C.HBT.5  | Heartbeat responseCode=501 (SUSPENDED_GRANT) in First Heartbeat Response      | PASS        |
| 6.4.4.2.4        | WINNF.FT.C.HBT.6  | Heartbeat responseCode=501 (SUSPENDED_GRANT) in Subsequent Heartbeat Response | PASS        |
| 6.4.4.2.5        | WINNF.FT.C.HBT.7  | Heartbeat responseCode=502 (UNSYNC_OP_PARAM)                                  | PASS        |
| 6.4.4.3.1        | WINNF.FT.C.HBT.9  | Heartbeat Response Absent (First Heartbeat)                                   | PASS        |
| 6.4.4.3.2        | WINNF.FT.C.HBT.10 | Heartbeat Response Absent (Subsequent Heartbeat)                              | PASS        |
| 6.4.4.4.1        | WINNF.FT.C.HBT.11 | Successful Grant Renewal in Heartbeat Test Case                               | PASS        |
| 6.5.4.2.1        | WINNF.FT.C.MES.1  | Registration Response contains measReportConfig                               | PASS        |
| 6.6.4.1.1        | WINNF.FT.C.RLQ.1  | Successful Relinquishment                                                     | PASS        |
| 6.6.4.2.1        | WINNF.FT.C.RLQ.3  | Unsuccessful Relinquishment, responseCode=102                                 | PASS        |
| 6.6.4.3.1        | WINNF.FT.C.RLQ.5  | Unsuccessful Relinquishment, responseCode=103                                 | PASS        |
| 6.7.4.1.1        | WINNF.FT.C.DRG.1  | Successful Deregistration                                                     | PASS        |
| 6.7.4.2.1        | WINNF.FT.C.DRG.3  | Deregistration responseCode=102                                               | PASS        |
| 6.7.4.3.1        | WINNF.FT.C.DRG.5  | Deregistration responseCode=103                                               | PASS        |
| 6.8.4.1.1        | WINNF.FT.C.SCS.1  | Successful TLS connection between UUT and SAS Test Harness                    | PASS        |
| 6.6.4.2.1        | WINNF.FT.C.RLQ.3  | Unsuccessful Relinquishment, responseCode=102                                 | PASS        |
| 6.6.4.3.1        | WINNF.FT.C.RLQ.5  | Unsuccessful Relinquishment, responseCode=103                                 | PASS        |

| Standard Section | Test Case ID     | Test Case Title                                                      | Test Result |
|------------------|------------------|----------------------------------------------------------------------|-------------|
| 6.7.4.1.1        | WINNF.FT.C.DRG.1 | Successful Deregistration                                            | PASS        |
| 6.7.4.2.1        | WINNF.FT.C.DRG.3 | Deregistration responseCode=102                                      | PASS        |
| 6.7.4.3.1        | WINNF.FT.C.DRG.5 | Deregistration responseCode=103                                      | PASS        |
| 6.8.4.1.1        | WINNF.FT.C.SCS.1 | Successful TLS connection between UUT and SAS Test Harness           | PASS        |
| 6.8.4.2.1        | WINNF.FT.C.SCS.2 | TLS failure due to revoked certificate                               | PASS        |
| 6.8.4.2.2        | WINNF.FT.C.SCS.3 | TLS failure due to expired server certificate                        | PASS        |
| 6.8.4.2.3        | WINNF.FT.C.SCS.4 | TLS failure when SAS Test Harness certificate is issue by unknown CA | PASS        |
| 6.8.4.2.4        | WINNF.FT.C.SCS.5 | TLS failure when certificate at the SAS Test Harness is corrupted    | PASS        |
| 7.1.4.1.1        | WINNF.PT.C.HBT   | UUT RF Transmit Power Measurement                                    | PASS        |

## 2.3 Support Equipment

| Name   | Manufacturer | Type/Model       | Serial Number          | FCC ID    |
|--------|--------------|------------------|------------------------|-----------|
| Switch | NETGEAR      | GS305E           | 5W11975100812          | N/A       |
| Router | TOTOLINK     | N300RT           | N300RT160702714        | N/A       |
| NB     | acer         | TravelMate P2510 | NXVGUTA002843022F07200 | PD97265NG |
| EPC    | Gemtek       | WLTGFC-105Xcell  | N/A                    | N/A       |
| UE     | Gemtek       | WLTFSM-136ACN    | 351692072573099        | N/A       |
| POE    | Phihong      | POE29U-1AT       | P171900375A1           | N/A       |

## 2.4 Test Equipment List

| Name              | Manufacturer    | Type/Model | Serial Number | Calibration |            |
|-------------------|-----------------|------------|---------------|-------------|------------|
|                   |                 |            |               | Last Cal.   | Due Date   |
| Spectrum Analyzer | Rohde & Schwarz | FSQ        | 200578/026    | 2019-07-10  | 2020-07-09 |

### 3. Measurement Environment

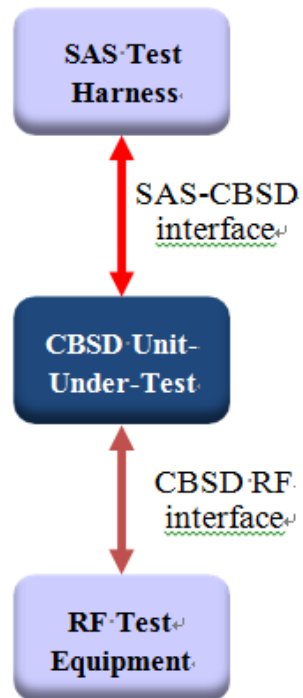
#### 3.1 Information

| Measurement Environment Information |                      |
|-------------------------------------|----------------------|
| SAS Test Harness version            | v1.0.0.3             |
| Operating System                    | Microsoft Windows 10 |
| TLS version                         | 1.2                  |
| Python version                      | 2.7.16               |

#### 3.2 Conditional Test Case

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

### 3.3 Test configuration



## 4. Test Result

### 4.1 Multi-Step registration

| # | 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 <code>userId</code>, <code>fcid</code> and <code>cbsdSerialNumber</code> 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> Note: It is outside the scope of this document to test the Registration information that is supplied via another means. | PASS    | PASS |
| 3 | <ul style="list-style-type: none"> <li>• SAS Test Harness sends a CBSD Registration Response as follows:               <ul style="list-style-type: none"> <li>– <code>cbsdId</code> = C</li> <li>– <code>measReportConfig</code> shall not be included</li> <li>– <code>responseCode</code> = 0</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                       | --      | --   |
| 4 | After completion of step 3, SAS Test Harness will not provide any positive response ( <code>responseCode=0</code> ) to further request messages from the UUT.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | --      | --   |
| 5 | Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: <ul style="list-style-type: none"> <li>• UUT shall not transmit RF</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                            | PASS    | PASS |

## 4.2 Single-Step registration for Category A CBSD

| # | 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 Registration request to SAS Test Harness: all required and REG-Conditional parameter included (userId, fcclId, cbsdSerialNumber, cbsdCategory, airInterface, installationParam, measCapability) for a Category A CBSD. <ul style="list-style-type: none"> <li>• The required userId, fcclId and cbsdSerialNumber and REG-Conditional cbsdCategory, airInterface, installationParam, and measCapability registration parameters shall be sent from the CBSD and conform to proper format and acceptable ranges.</li> <li>• Any optional registration parameters that may be included in the message shall be verified that they conform to proper format and are within acceptable ranges.</li> </ul> | PASS    | PASS |
| 3 | <ul style="list-style-type: none"> <li>• SAS Test Harness sends a CBSD Registration Response as follows:               <ul style="list-style-type: none"> <li>– <i>cbsdId</i> = C</li> <li>– <i>measReportConfig</i> shall not be included.</li> <li>– <i>responseCode</i> = 0</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                           | --      | --   |
| 4 | After completion of step 3, SAS Test Harness will not provide any positive response ( <i>responseCode</i> =0) to further request messages from the UUT.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | --      | --   |
| 5 | Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: <ul style="list-style-type: none"> <li>• UUT shall not transmit RF</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | PASS    | PASS |

#### 4.3 Missing Required parameters (responseCode 102)

| # | 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 <i>cbstdId</i></li> <li>– <i>responseCode</i> = R</li> </ul>                  | --      | --   |
| 4 | After completion of step 3, SAS Test Harness will not provide any positive response ( <i>responseCode</i> =0) to further request messages from the UUT.                                                                                              | --      | --   |
| 5 | <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    | PASS |

#### 4.4 Pending registration (responseCode 200)

| # | 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 <i>cbsdId</i></li> <li>– <i>responseCode</i> = R</li> </ul>                   | --      | --   |
| 4 | After completion of step 3, SAS Test Harness will not provide any positive response ( <i>responseCode</i> =200) to further request messages from the UUT.                                                                                            | --      | --   |
| 5 | <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    | PASS |

#### 4.5 Invalid parameter (responseCode 103)

| # | 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 <i>cbstdId</i></li> <li>– <i>responseCode</i> = R</li> </ul>                  | --      | --   |
| 4 | After completion of step 3, SAS Test Harness will not provide any positive response ( <i>responseCode</i> =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>                             | PASS    | PASS |

#### 4.6 Blacklisted CBSD (responseCode 101)

| # | 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 <i>cbsdId</i></li> <li>– <i>responseCode</i> = R</li> </ul>                   | --      | --   |
| 4 | After completion of step 3, SAS Test Harness will not provide any positive response ( <i>responseCode</i> =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>                             | PASS    | PASS |

#### 4.7 Unsupported SAS protocol version (responseCode 100)

| # | 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 <i>cbstdId</i></li> <li>– <i>responseCode</i> = R</li> </ul>                  | --      | --   |
| 4 | After completion of step 3, SAS Test Harness will not provide any positive response ( <i>responseCode</i> =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>                             | PASS    | PASS |

#### 4.8 Group Error (responseCode 201)

| # | 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 <i>cbstdId</i></li> <li>– <i>responseCode</i> = R</li> </ul>                  | --      | --   |
| 4 | After completion of step 3, SAS Test Harness will not provide any positive response ( <i>responseCode</i> =201) 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>                             | PASS    | PASS |

#### 4.9 Unsuccessful Grant responseCode=400 (INTERFERENCE)

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

#### 4.10 Unsuccessful Grant responseCode=401 (GRANT\_CONFLICT)

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

#### **4.11 Category A CBSD location update**

This section is specific to Category A CBSDs that do not require professional installation. The requirement is for the Category A (non-professionally installed) to report to the SAS any location change exceeding a distance of 50m horizontally or 3m vertically within a 60 second window. It is left to the CBSD vendor and certification lab to generate the required evidence showing the UUT meets the requirement.

#### 4.12 Heartbeat Success Case (first Heartbeat Response)

| # | Test Execution Steps                                                                                                                                                                                                                                                                                 | Results |      |
|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|
| 1 | Ensure the following conditions are met for test entry: <ul style="list-style-type: none"> <li>UUT has registered successfully with SAS Test Harness, with <i>cbsdId</i> = C</li> </ul>                                                                                                              | --      | --   |
| 2 | UUT sends a message: <ul style="list-style-type: none"> <li>If message is type Spectrum Inquiry Request, go to step 3, or</li> <li>If message is type Grant Request, go to step 5</li> </ul>                                                                                                         | --      | --   |
| 3 | UUT sends Spectrum Inquiry Request. Validate: <ul style="list-style-type: none"> <li><i>cbsdId</i> = C</li> <li>List of frequencyRange objects sent by UUT are within the CBRS frequency range</li> </ul>                                                                                            | PASS    | PASS |
| 4 | SAS Test Harness sends a Spectrum Inquiry Response message, including the following parameters: <ul style="list-style-type: none"> <li><i>cbsdId</i> = C</li> <li>availableChannel is an array of availableChannel objects</li> <li><i>responseCode</i> = 0</li> </ul>                               | --      | --   |
| 5 | UUT sends Grant Request message. Validate: <ul style="list-style-type: none"> <li><i>cbsdId</i> = C</li> <li>maxEIRP is at or below the limit appropriate for CBSD category as defined by Part 96</li> <li>operationFrequencyRange, F, sent by UUT is a valid range within the CBRS band</li> </ul>  | PASS    | PASS |
| 6 | SAS Test Harness sends a Grant Response message, including the parameters: <ul style="list-style-type: none"> <li><i>cbsdId</i> = C</li> <li><i>grantId</i> = G = a valid grant ID</li> <li>grantExpireTime = UTC time greater than duration of the test</li> <li><i>responseCode</i> = 0</li> </ul> | --      | --   |
| 7 | UUT sends a first Heartbeat Request message.<br>Verify Heartbeat Request message is formatted correctly, including: <ul style="list-style-type: none"> <li><i>cbsdId</i> = C</li> <li><i>grantId</i> = G</li> <li><i>operationState</i> = "GRANTED"</li> </ul>                                       | PASS    | PASS |

| #  | Test Execution Steps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Results |      |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|
| 8  | <p>SAS Test Harness sends a Heartbeat Response message, with the following parameters:</p> <ul style="list-style-type: none"> <li>• <i>cbsdId</i> = C</li> <li>• <i>grantId</i> = G</li> <li>• <i>transmitExpireTime</i> = current UTC time + 200 seconds</li> <li>• <i>responseCode</i> = 0</li> </ul>                                                                                                                                                                                                                                                                                                                                      | --      | --   |
| 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>• <i>cbsdId</i> = C</li> <li>• <i>grantId</i> = G</li> <li>• <i>operationState</i> = "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>• <i>cbsdId</i> = C</li> <li>• <i>grantId</i> = G</li> <li>• <i>transmitExpireTime</i> = current UTC time + 200 seconds</li> <li>• <i>responseCode</i> = 0</li> </ul> | PASS    | PASS |
| 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>                                                                                                                                                                                                                                                                           | PASS    | PASS |

**4.13 Heartbeat responseCode=105 (DEREGISTER)**

| # | 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 <i>cbsdId</i> = C</li> <li>○ valid <i>grantId</i> = G</li> <li>○ grant is for frequency range F, power P</li> <li>○ <i>grantExpireTime</i> = UTC time greater than duration of the test</li> </ul> </li> <li>• UUT is in AUTHORIZED state and is transmitting within the grant bandwidth F on RF interface</li> </ul> | --      | --   |
| 2 | <p>UUT sends a Heartbeat Request message.<br/>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>• <i>cbsdId</i> = C</li> <li>• <i>grantId</i> = G</li> <li>• <i>operationState</i> = "AUTHORIZED"</li> </ul>                                                                                                                                                                                                                               | PASS    | PASS |
| 3 | <p>SAS Test Harness sends a Heartbeat Response message, including the following parameters:</p> <ul style="list-style-type: none"> <li>• <i>cbsdId</i> = C</li> <li>• <i>grantId</i> = G</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                    | --      | --   |
|   | <ul style="list-style-type: none"> <li>• <i>transmitExpireTime</i> = T = Current UTC time</li> <li>• <i>responseCode</i> = 105 (DEREGISTER)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                 |         |      |
| 4 | After completion of step 3, SAS Test Harness shall not allow any further grants to the UUT.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | --      | --   |
| 5 | <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    | PASS |

**4.14 Heartbeat responseCode=500 (TERMINATED\_GRANT)**

| # | Test Execution Steps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Results |      |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|
| 1 | <p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> <li>• UUT has registered successfully with SAS Test Harness</li> <li>• UUT has a valid single grant as follows: <ul style="list-style-type: none"> <li>○ valid <i>cbsdId</i> = C</li> <li>○ valid <i>grantId</i> = G</li> <li>○ grant is for frequency range F, power P</li> <li>○ <i>grantExpireTime</i> = UTC time greater than duration of the test</li> </ul> </li> <li>• UUT is in AUTHORIZED state and is transmitting within the grant bandwidth F on RF interface</li> </ul> | --      | --   |
| 2 | <p>UUT sends a Heartbeat Request message.<br/>Ensure Heartbeat Request message is sent within latest specified heartbeatInterval, and is formatted correctly, including:</p> <ul style="list-style-type: none"> <li>• <i>cbsdId</i> = C</li> <li>• <i>grantId</i> = G</li> <li>• <i>operationState</i> = "AUTHORIZED"</li> </ul>                                                                                                                                                                                                                                                       | PASS    | PASS |
| 3 | <p>SAS Test Harness sends a Heartbeat Response message, including the following parameters:</p> <ul style="list-style-type: none"> <li>• <i>cbsdId</i> = C</li> <li>• <i>grantId</i> = G</li> <li>• <i>transmitExpireTime</i> = T = current UTC time</li> <li>• <i>responseCode</i> = 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>                                                                                                                                                                                                                                                                                                                                                                                                       | PASS    | PASS |

#### 4.15 Heartbeat responseCode=501 (SUSPENDED\_GRANT) in First Heartbeat Response

| # | 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 <i>cbsdId</i> = C</li> <li>○ valid <i>grantId</i> = G</li> <li>○ grant is for frequency range F, power P</li> <li>○ <i>grantExpireTime</i> = UTC time greater than duration of the test</li> </ul> </li> <li>• UUT is in GRANTED, but not AUTHORIZED state (i.e. has not performed its first Heartbeat Request)</li> </ul>                                                                                                                                                 | --      | --   |
| 2 | <p>UUT sends a Heartbeat Request message.<br/>Verify Heartbeat Request message is formatted correctly, including:</p> <ul style="list-style-type: none"> <li>• <i>cbsdId</i> = C</li> <li>• <i>grantId</i> = G</li> <li>• <i>operationState</i> = "GRANTED"</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | PASS    | PASS |
| 3 | <p>SAS Test Harness sends a Heartbeat Response message, including the following parameters:</p> <ul style="list-style-type: none"> <li>• <i>cbsdId</i> = C</li> <li>• <i>grantId</i> = G</li> <li>• <i>transmitExpireTime</i> = T = current UTC time</li> <li>• <i>responseCode</i> = 501 (SUSPENDED_GRANT)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                      | --      | --   |
| 4 | <p>After completion of step 3, SAS Test Harness shall not allow any further grants to the UUT.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | --      | --   |
| 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>• <i>cbsdId</i> = C</li> <li>• <i>grantId</i> = G</li> <li>• <i>operationState</i> = "GRANTED"</li> </ul> <p>B. UUT sends a Relinquishment request message. Ensure message is correctly formatted with parameters:</p> <ul style="list-style-type: none"> <li>• <i>cbsdId</i> = C</li> <li>• <i>grantId</i> = 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> | PASS    | PASS |

#### 4.16 Heartbeat responseCode=501 (SUSPENDED\_GRANT) in Subsequent Heartbeat Response

| # | 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 <i>cbsdId</i> = C</li> <li>○ valid <i>grantId</i> = G</li> <li>○ grant is for frequency range F, power P</li> <li>○ <i>grantExpireTime</i> = UTC time greater than duration of the test</li> </ul> </li> <li>• UUT is in AUTHORIZED state and is transmitting within the grant bandwidth F on RF interface</li> </ul> | --      | --   |
| 2 | <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>• <i>cbsdId</i> = C</li> <li>• <i>grantId</i> = G</li> <li>• <i>operationState</i> = "AUTHORIZED"</li> </ul>                                                                                                                                                                                                                                                    | PASS    | PASS |
| 3 | <p>SAS Test Harness sends a Heartbeat Response message, including the following parameters:</p> <ul style="list-style-type: none"> <li>• <i>cbsdId</i> = C</li> <li>• <i>grantId</i> = G</li> <li>• <i>transmitExpireTime</i> = T = current UTC time</li> <li>• <i>responseCode</i> = 501 (SUSPENDED_GRANT)</li> </ul>                                                                                                                                                                                                                                                                 | --      | --   |
| 4 | <p>After completion of step 3, SAS Test Harness shall not allow any further grants to the UUT.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | --      | --   |

| # | Test Execution Steps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Results |      |
|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|
| 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>• <i>cbsId</i> = C</li> <li>• <i>grantId</i> = G</li> <li>• <i>operationState</i> = "GRANTED"</li> </ul> <p>B. UUT sends a Relinquishment Request message. Ensure message is correctly formatted with parameters:</p> <ul style="list-style-type: none"> <li>• <i>cbsId</i> = C</li> <li>• <i>grantId</i> = G</li> </ul> <p>Monitor the RF output of the UUT. Verify:</p> | PASS    | PASS |
|   | <ul style="list-style-type: none"> <li>• UUT shall stop transmission within (<i>T</i> + 60 seconds) of completion of step 3</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |         |      |

**4.17 Heartbeat responseCode=502 (UNSYNC\_OP\_PARAM)**

| # | 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 <i>cbsdId</i> = C</li> <li>○ valid <i>grantId</i> = G</li> <li>○ grant is for frequency range F, power P</li> <li>○ <i>grantExpireTime</i> = UTC time greater than duration of the test</li> </ul> </li> <li>• UUT is in AUTHORIZED state and is transmitting within the grant bandwidth F on RF interface</li> </ul> | --      | --   |
| 2 | <p>UUT sends a Heartbeat Request message.</p> <p>Verify Heartbeat Request message is sent within latest specified <i>heartbeatInterval</i>, and is formatted correctly, including:</p> <ul style="list-style-type: none"> <li>• <i>cbsdId</i> = C</li> <li>• <i>grantId</i> = G</li> <li>• <i>operationState</i> = "AUTHORIZED"</li> </ul>                                                                                                                                                                                                                                             | PASS    | PASS |
| 3 | <p>SAS Test Harness sends a Heartbeat Response message, including the following parameters:</p> <ul style="list-style-type: none"> <li>• <i>cbsdId</i> = C</li> <li>• <i>grantId</i> = G</li> <li>• <i>transmitExpireTime</i> = T = Current UTC Time</li> <li>• <i>responseCode</i> = 502 (UNSYNC_OP_PARAM)</li> </ul>                                                                                                                                                                                                                                                                 | --      | --   |
| 4 | <p>After completion of step 3, SAS Test Harness shall not allow any further grants to the UUT.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | --      | --   |
| 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>○ <i>cbdsId</i> = C</li> <li>○ <i>grantId</i> = 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>                                                                                       | PASS    | PASS |

#### 4.18 Heartbeat Response Absent (First Heartbeat)

| # | 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 <i>cbsdId</i> = C</li> <li>○ valid <i>grantId</i> = G</li> <li>○ grant is for frequency range F, power P</li> <li>○ <i>grantExpireTime</i> = UTC time greater than duration of the test</li> </ul> </li> <li>• UUT is in GRANTED, but not AUTHORIZED state (i.e. has not performed its first Heartbeat Request)</li> </ul> | --      | --   |
| 2 | <p>UUT sends a Heartbeat Request message.</p> <p>Ensure Heartbeat Request message is sent within latest specified <i>heartbeatInterval</i>, and is formatted correctly, including:</p> <ul style="list-style-type: none"> <li>• <i>cbsdId</i> = C</li> <li>• <i>grantId</i> = G</li> </ul>                                                                                                                                                                                                                                                                                                  | PASS    | PASS |
|   | <ul style="list-style-type: none"> <li>• <i>operationState</i> = "GRANTED"</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |         |      |
| 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.</p> <p>Verify:</p> <ul style="list-style-type: none"> <li>• At any time during the test, UUT shall not transmit on RF interface</li> </ul>                                                                                                                                                                                                                                                                                                                                                               | PASS    | PASS |

#### 4.19 Heartbeat Response Absent (Subsequent Heartbeat)

| # | 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 <i>cbsdId</i> = C</li> <li>○ valid <i>grantId</i> = G</li> <li>○ grant is for frequency range F, power P</li> <li>○ <i>grantExpireTime</i> = UTC time greater than duration of the test</li> </ul> </li> <li>• UUT is in AUTHORIZED state and is transmitting within the grant bandwidth F on RF interface</li> </ul> | --      | --   |
| 2 | <p>UUT sends a Heartbeat Request message.</p> <p>Verify Heartbeat Request message is sent within the latest specified <i>heartbeatInterval</i>, and is formatted correctly, including:</p> <ul style="list-style-type: none"> <li>• <i>cbsdId</i> = C</li> <li>• <i>grantId</i> = G</li> <li>• <i>operationState</i> = "AUTHORIZED"</li> </ul>                                                                                                                                                                                                                                         | PASS    | PASS |
| 3 | <p>SAS Test Harness sends a Heartbeat Response message, with the following parameters:</p> <ul style="list-style-type: none"> <li>• <i>cbsdId</i> = C</li> <li>• <i>grantId</i> = G</li> <li>• <i>transmitExpireTime</i> = current UTC time + 200 seconds</li> <li>• <i>responseCode</i> = 0</li> </ul>                                                                                                                                                                                                                                                                                | --      | --   |
| 4 | <p>After completion of Step 3, SAS Test Harness does not respond to any further messages from UUT</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | --      | --   |
| 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 (<i>transmitExpireTime</i> + 60 seconds), using the <i>transmitExpireTime</i> sent in Step 3.</li> </ul>                                                                                                                                                                                                                                                                                                                              | PASS    | PASS |

#### 4.20 Successful Grant Renewal in Heartbeat Test Case

| # | 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 <i>cbsdId</i> = C</li> <li>○ valid <i>grantId</i> = 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>○ <i>grantExpireTime</i> = UTC time equal to time at start of test + 300 seconds = Tgrant_expire</li> <li>○ <i>transmitExpireTime</i> = UTC time equal to time at start of test + 200 seconds</li> <li>○ <i>heartbeatInterval</i> = 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 <i>heartbeatInterval</i>, and is formatted correctly, including:</p> <ul style="list-style-type: none"> <li>• <i>cbsdId</i> = C</li> <li>• <i>grantId</i> = G</li> <li>• <i>operationState</i> = "AUTHORIZED"</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | PASS    | PASS |
| 4 | <p>SAS Test Harness sends a Heartbeat Response message, with the following parameters:</p> <ul style="list-style-type: none"> <li>• <i>cbsdId</i> = C</li> <li>• <i>grantId</i> = G</li> <li>• <i>transmitExpireTime</i> = current UTC + 200 seconds</li> <li>• <i>grantExpireTime</i> = same as Step 1</li> <li>• <i>responseCode</i> = 0</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | --      | --   |
| 5 | Go to Step 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | --      | --   |

| # | Test Execution Steps                                                                                                                                                                                                                                                                                                                                      | Results |      |
|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|
| 6 | Verify Heartbeat Request message is sent within the latest specified heartbeatInterval, and is formatted correctly, including: <ul style="list-style-type: none"> <li><i>cbsdId</i> = C</li> <li><i>grantId</i> = G</li> </ul>                                                                                                                            | PASS    | PASS |
|   | <ul style="list-style-type: none"> <li><i>operationState</i> = "AUTHORIZED"</li> <li><i>grantRenew</i> = TRUE</li> </ul>                                                                                                                                                                                                                                  |         |      |
| 7 | SAS Test Harness sends a Heartbeat Response message, with the following parameters: <ul style="list-style-type: none"> <li><i>cbsdId</i> = C</li> <li><i>grantId</i> = G</li> <li><i>grantExpireTime</i> = UTC time set far in the future</li> <li><i>transmitExpireTime</i> = current UTC time + 200 seconds</li> <li><i>responseCode</i> = 0</li> </ul> | --      | --   |
| 8 | Continue to respond to any subsequentHeartbeat Request from CBSD with Heartbeat Response with the following parameters: <ul style="list-style-type: none"> <li><i>cbsdId</i> = C</li> <li><i>grantId</i> = G</li> <li><i>transmitExpireTime</i> = same as Step 7</li> <li><i>responseCode</i> = 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.                                                                                                                                                                                                       | PASS    | PASS |

#### 4.21 Registration Response contains measReportConfig

| # | Test Execution Steps                                                                                                                                                                                                                                                                                                                                                                 | Results |    |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|
| 1 | Ensure the following conditions are met for test entry:<br>UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness                                                                                                                                                                                                                                     | --      | -- |
| 2 | UUT sends a Registration Request message.<br>Validate the Registration Request message is formatted correctly, including: <ul style="list-style-type: none"> <li><i>userId</i> is present and correct</li> <li><i>fcId</i> is present and correct</li> <li><i>cbsdSerialNumber</i> is present and correct</li> <li><i>measCapability</i> = "RECEIVED_POWER_WITHOUT_GRANT"</li> </ul> | PASS    | -- |
| 3 | SAS Test Harness sends a Registration Response message, with the following parameters: <ul style="list-style-type: none"> <li><i>cbsdId</i> = C = valid cbsdId for this UUT</li> <li><i>measReportConfig</i>=<br/>"RECEIVED_POWER_WITHOUT_GRANT"<br/>— <i>responseCode</i> = 0</li> </ul>                                                                                            | --      | -- |
| 4 | UUT sends a message: <ul style="list-style-type: none"> <li>If message is type Spectrum Inquiry Request, go to step 5, or</li> <li>If message is type Grant Request, go to step 7</li> </ul>                                                                                                                                                                                         | --      | -- |
| 5 | UUT sends message type Spectrum Inquiry Request. Verify message contains all required parameters properly formatted, and specifically: <ul style="list-style-type: none"> <li><i>cbsdId</i> = C</li> <li><i>measReport</i> is present, and is a properly formatted</li> <li><i>rcvdPowerMeasReport</i>.</li> </ul>                                                                   | PASS    | -- |
| 6 | SAS Test Harness sends a Spectrum Inquiry Response, with the following parameters: <ul style="list-style-type: none"> <li><i>cbsdId</i> = C</li> <li><i>availableChannel</i> is an array of <i>availableChannel</i> objects</li> <li><i>responseCode</i> = 0</li> </ul>                                                                                                              | --      | -- |
| 7 | UUT sends message type Grant Request message. Verify message contains all required parameters properly formatted, and specifically: <ul style="list-style-type: none"> <li><i>cbsdId</i> = C</li> <li><i>measReport</i> is present, and is a properly formatted</li> <li><i>rcvdPowerMeasReport</i>.</li> </ul>                                                                      | PASS    | -- |

## 4.22 Successful Relinquishment

| # | Test Execution Steps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Results |      |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|
| 1 | <p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> <li>• UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness</li> <li>• UUT has successfully registered with SAS Test Harness, with <i>cbsdId</i>=C</li> <li>• UUT has received a valid grant with <i>grantId</i> = 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>• <i>cbsdId</i> = C</li> <li>• <i>grantId</i> = G</li> </ul>                                                                                                                                                                                                                                                                                                       | PASS    | PASS |
| 3 | <p>SAS Test Harness shall approve the request with a Relinquishment Response message with parameters:</p> <ul style="list-style-type: none"> <li>– <i>cbsdId</i> = C</li> <li>– <i>grantId</i> = G</li> <li>– <i>responseCode</i> = 0</li> </ul>                                                                                                                                                                                                                                                                                                   | --      | --   |
| 4 | <p>After completion of step 3, SAS Test Harness will not provide any additional positive response (<i>responseCode</i>=0) to further request messages from the UUT.</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>                                                                                                                                                                                                                         | PASS    | PASS |

**4.23 Unsuccessful Relinquishment, responseCode=102**

| # | 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 <i>cbsdId</i>=C</li> <li>• UUT has received a valid grant with <i>grantId</i> = G</li> <li>• UUT is in Grant State AUTHORIZED and is actively transmitting within the bounds of its grant.</li> </ul> | --      | --   |
|   | Invoke trigger to Relinquish UUT Grant from the SAS Test Harness                                                                                                                                                                                                                                                                                                                                                                                                           |         |      |
| 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>• <i>cbsdId</i> = C</li> <li>• <i>grantId</i> = G</li> </ul>                                                                                                                                                                                                                               | --      | --   |
| 3 | <p>SAS Test Harness shall send a Relinquishment Response message with parameters:</p> <ul style="list-style-type: none"> <li>• <i>cbsdId</i> = C</li> <li>• No <i>grantId</i></li> <li>• <i>responseCode</i> = R</li> </ul>                                                                                                                                                                                                                                                | --      | --   |
| 4 | After completion of step 3, SAS Test Harness will not provide any positive response ( <i>responseCode</i> =0) to further request messages from the UUT.                                                                                                                                                                                                                                                                                                                    | --      | --   |
| 5 | <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 stopped RF transmission at any time between triggering the relinquishment and UUT sending the relinquishment request</li> </ul>                                                                                                                                                    | PASS    | PASS |

**4.24 Unsuccessful Relinquishment, responseCode=103**

| # | 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 <i>cbsdId</i>=C</li> <li>• UUT has received a valid grant with <i>grantId</i> = G</li> <li>• UUT is in Grant State AUTHORIZED and is actively transmitting within the bounds of its grant.</li> </ul> | --      | --   |
|   | Invoke trigger to Relinquish UUT Grant from the SAS Test Harness                                                                                                                                                                                                                                                                                                                                                                                                           |         |      |
| 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>• <i>cbsdId</i> = C</li> <li>• <i>grantId</i> = G</li> </ul>                                                                                                                                                                                                                               | --      | --   |
| 3 | <p>SAS Test Harness shall send a Relinquishment Response message with parameters:</p> <ul style="list-style-type: none"> <li>• <i>cbsdId</i> = C</li> <li>• No <i>grantId</i></li> <li>• <i>responseCode</i> = R</li> </ul>                                                                                                                                                                                                                                                | --      | --   |
| 4 | After completion of step 3, SAS Test Harness will not provide any positive response ( <i>responseCode</i> =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 stopped RF transmission at any time between triggering the relinquishment and UUT sending the relinquishment request</li> </ul>                                                                                                                                                    | PASS    | PASS |

#### 4.25 Successful Deregistration

| # | Test Execution Steps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Results |      |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|
| 1 | <p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> <li>• UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness</li> <li>• UUT has successfully registered with SAS Test Harness, with <i>cbsdId</i>=C</li> <li>• UUT has received a valid grant with <i>grantId</i> = 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 <i>responseCode</i> =0                                                                                                                                                                                                                                                                                                                                                                                                                                          | --      | --   |
| 3 | UUT sends Deregistration Request to SAS Test Harness with <i>cbsdId</i> = C.                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | PASS    | PASS |
| 4 | <p>SAS Test Harness shall approve the request with a Deregistration Response message with parameters:</p> <ul style="list-style-type: none"> <li>• <i>cbsdId</i> = C</li> <li>• <i>responseCode</i> = 0</li> </ul>                                                                                                                                                                                                                                                                                                                           | --      | --   |
| 5 | After completion of step 3, SAS Test Harness will not provide any additional positive response ( <i>responseCode</i> =0) to further request messages from the UUT.                                                                                                                                                                                                                                                                                                                                                                           | --      | --   |
| 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>A. UUT sending a Registration Request message, as this is not mandatory</li> <li>B. UUT sending a Deregistration Request message</li> </ul> </li> </ul>                                                   | PASS    | PASS |

**4.26 Deregistration responseCode=102**

| # | 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 <i>cbsdId</i>=C</li> <li>• UUT has received a valid grant with <i>grantId</i> = 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 <i>responseCode</i> =0                                                                                                                                                                                                                                                                                                                                                                                                                                          | --      | --   |
| 3 | UUT sends Deregistration Request to SAS Test Harness with <i>cbsdId</i> = C                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | --      | --   |
| 4 | <p>The SAS Test Harness sends the Deregistration Response Message to UUT with:</p> <ul style="list-style-type: none"> <li>• No <i>cbsdId</i></li> <li>• <i>responseCode</i> = 102</li> </ul>                                                                                                                                                                                                                                                                                                                                                 | --      | --   |
| 5 | After completion of step 3, SAS Test Harness will not provide any positive response ( <i>responseCode</i> =0) to further request messages from the UUT.                                                                                                                                                                                                                                                                                                                                                                                      | --      | --   |
| 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>                                                                                                 | PASS    | PASS |

**4.27 Deregistration responseCode=103**

| # | 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 <i>cbsdId</i>=C</li> <li>• UUT has received a valid grant with <i>grantId</i> = 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 <i>responseCode</i> =0                                                                                                                                                                                                                                                                                                                                                                                                                                          | --      | --   |
| 3 | UUT sends Deregistration Request to SAS Test Harness with <i>cbsdId</i> = C                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | --      | --   |
| 4 | <p>The SAS Test Harness sends the Deregistration Response Message to UUT with:</p> <ul style="list-style-type: none"> <li>• No <i>cbsdId</i></li> <li>• <i>responseCode</i> = 103</li> </ul>                                                                                                                                                                                                                                                                                                                                                 | --      | --   |
| 5 | After completion of step 3, SAS Test Harness will not provide any positive response ( <i>responseCode</i> =0) to further request messages from the UUT.                                                                                                                                                                                                                                                                                                                                                                                      | --      | --   |
| 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> <li>• UUT sending a Registration Request message, as this is not mandatory</li> <li>• UUT sending a Deregistration Request message</li> </ul>                                                                                               | PASS    | PASS |

#### 4.28 Successful TLS connection between UUT and SAS Test Harness

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

#### 4.29 TLS failure due to revoked certificate

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

#### 4.30 TLS failure due to expired server certificate

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

**4.31 TLS failure when SAS Test Harness certificate is issued by an unknown CA**

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

**4.32 TLS failure when certificate at the SAS Test Harness is corrupted**

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

#### 4.33 UUT RF Transmit Power Measurement

| # | Test Execution Steps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Results |    |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|
| 1 | <p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> <li>• UUT has successfully completed SAS Discovery and Authentication with the SAS Test Harness</li> <li>• UUT has registered with the SAS, with CBSID ID = C</li> <li>• UUT has a single valid grant G with parameters {lowFrequency = FL, highFrequency = FH, maxEirp = PI}, with grant in AUTHORIZED state, and grantExpireTime set to a value far past the duration of this test case</li> </ul> <p><i>Note: in order for the UUT to request a grant with the parameters {lowFrequency, highFrequency, maxEirp}, the SAS Test Harness may need to provide appropriate guidance in the availableChannel object of the spectrumInquiry response message, and the operationParam object of the grant response message. Alternately, the UUT vendor may provide the ability to set those parameters on the UUT so that the UUT will request a grant with those parameters.</i></p> | --      | -- |
| 2 | <p>UUT and SAS Test Harness perform a series of Heartbeat Request/Response cycles, which continues until the other test steps are complete. Messaging for each cycle is as follows:</p> <ul style="list-style-type: none"> <li>• UUT sends Heartbeat Request, including: <ul style="list-style-type: none"> <li>○ cbsdId = C</li> <li>○ grantId = G</li> </ul> </li> <li>• SAS Test Harness responds with Heartbeat Response, including: <ul style="list-style-type: none"> <li>○ cbsdId = C</li> <li>○ grantId = G</li> <li>○ transmitExpireTime = current UTC time + 200 seconds</li> <li>○ responseCode = 0</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                | --      | -- |

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

## Appendix B. Test Log

WINNF.FT.C.DRG.1

2019-11-01T05:49:58.490Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2019-11-01T05:49:58.490Z - INFO - the selected test from the user : WINNF.FT.C.DRG.1 is starting now

2019-11-01T05:50:32.354Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "A",
    "cbsdSerialNumber": "gtkCbsdSn01",
    "fccId": "gtkCbsd01",
    "installationParam": {
      "antennaGain": 6,
      "height": 14.9,
      "heightType": "AMSL",
      "indoorDeployment": true,
      "latitude": 25.042362,
      "longitude": 121.373711
    },
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "gtkUser01"
  }
]
```

}

2019-11-01T05:50:32.384Z - INFO - engine sent successfully, the response to CBRS : {

```
"registrationResponse": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "response": {
      "responseCode": 0
    }
  }
]
```

```
    }
  ]
}
2019-11-01T05:50:34.474Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "inquiredSpectrum": [
        {
          "highFrequency": 3690000000,
          "lowFrequency": 3680000000
        },
        {
          "highFrequency": 3700000000,
          "lowFrequency": 3690000000
        }
      ]
    }
  ]
}
2019-11-01T05:50:34.474Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3690000000,
            "lowFrequency": 3680000000
          },
          "ruleApplied": "FCC_PART_96"
        },
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3700000000,
            "lowFrequency": 3690000000
          }
        }
      ]
    }
  ]
}
```

```
        },
        "ruleApplied": "FCC_PART_96"
    }
],
"cbstdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
"response": {
    "responseCode": 0
}
}
]
}
2019-11-01T05:50:36.584Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbstdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
            "operationParam": {
                "maxEirp": 23,
                "operationFrequencyRange": {
                    "highFrequency": 3690000000,
                    "lowFrequency": 3680000000
                }
            }
        }
    ]
}
2019-11-01T05:50:36.584Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbstdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
            "channelType": "GAA",
            "grantExpireTime": "2019-11-08T05:50:36Z",
            "grantId": "714523175",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
```

```
]
}
2019-11-01T05:50:38.674Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "714523175",
      "operationState": "GRANTED"
    }
  ]
}
2019-11-01T05:50:38.674Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "714523175",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T05:53:58Z"
    }
  ]
}
2019-11-01T05:50:40.785Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "714523175",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T05:50:40.785Z - INFO - Time interval between two heartbeat request messages is: 2.11, limit
is: 65.0
2019-11-01T05:50:40.785Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
```

```
"cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
"grantId": "714523175",
"response": {
  "responseCode": 0
},
"transmitExpireTime": "2019-11-01T05:54:00Z"
}
]
}
2019-11-01T05:50:57.903Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "714523175",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T05:50:57.903Z - INFO - Time interval between two heartbeat request messages is: 17.118, limit
is: 65.0
2019-11-01T05:50:57.903Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "714523175",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T05:54:17Z"
    }
  ]
}
2019-11-01T05:51:15.016Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "714523175",
```

```
        "operationState": "AUTHORIZED"
      }
    ]
  }
2019-11-01T05:51:15.016Z - INFO - Time interval between two heartbeat request messages is: 17.114, limit
is: 65.0
2019-11-01T05:51:15.016Z - INFO - engine sent successfully, the response to CBRS  : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "714523175",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T05:54:35Z"
    }
  ]
}
2019-11-01T05:51:32.128Z - INFO - heartbeat request from CBRS  : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "714523175",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T05:51:32.128Z - INFO - Time interval between two heartbeat request messages is: 17.111, limit
is: 65.0
2019-11-01T05:51:32.128Z - INFO - engine sent successfully, the response to CBRS  : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "714523175",
      "response": {
        "responseCode": 0
      },
    },
  ]
}
```

```
"transmitExpireTime": "2019-11-01T05:54:52Z"
    }
  ]
}
2019-11-01T05:51:48.217Z - INFO - relinquishment request from CBRS : {
  "relinquishmentRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "714523175"
    }
  ]
}
2019-11-01T05:51:48.217Z - INFO - engine sent successfully, the response to CBRS : {
  "relinquishmentResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "714523175",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2019-11-01T05:51:49.299Z - INFO - deregistration request from CBRS : {
  "deregistrationRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01"
    }
  ]
}
2019-11-01T05:51:49.319Z - INFO - engine sent successfully, the response to CBRS : {
  "deregistrationResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
```



}

]

}

2019-11-01T05:51:50.977Z - INFO - arrived to nstep starting question answer session with the technician

2019-11-01T05:51:50.977Z - 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 :

2019-11-01T05:52:03.492Z - 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

2019-11-01T05:52:06.433Z - INFO - The final result of the test : WINNF.FT.C.DRG.1 is - passed

WINNF.FT.C.DRG.3

2019-11-01T05:52:36.846Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2019-11-01T05:52:36.846Z - INFO - the selected test from the user : WINNF.FT.C.DRG.3 is starting now

2019-11-01T05:54:11.114Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "A",
    "cbsdSerialNumber": "gtkCbsdSn01",
    "fccId": "gtkCbsd01",
    "installationParam": {
      "antennaGain": 6,
      "height": 14.9,
      "heightType": "AMSL",
      "indoorDeployment": true,
      "latitude": 25.041977,
      "longitude": 121.373856
    },
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "gtkUser01"
  }
]
```

2019-11-01T05:54:11.138Z - INFO - engine sent successfully, the response to CBRS : {

```
"registrationResponse": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "response": {
      "responseCode": 0
    }
  }
]
```

```
}
2019-11-01T05:54:13.221Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "inquiredSpectrum": [
        {
          "highFrequency": 3690000000,
          "lowFrequency": 3680000000
        },
        {
          "highFrequency": 3700000000,
          "lowFrequency": 3690000000
        }
      ]
    }
  ]
}

2019-11-01T05:54:13.221Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3690000000,
            "lowFrequency": 3680000000
          },
          "ruleApplied": "FCC_PART_96"
        },
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3700000000,
            "lowFrequency": 3690000000
          },
          "ruleApplied": "FCC_PART_96"
        }
      ]
    }
  ]
}
```

```
        }
      ],
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "response": {
        "responseCode": 0
      }
    }
  ]
}

2019-11-01T05:54:15.339Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "operationParam": {
        "maxEirp": 23,
        "operationFrequencyRange": {
          "highFrequency": 3690000000,
          "lowFrequency": 3680000000
        }
      }
    }
  ]
}

2019-11-01T05:54:15.349Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "channelType": "GAA",
      "grantExpireTime": "2019-11-08T05:54:15Z",
      "grantId": "444198030",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
```

2019-11-01T05:54:17.428Z - INFO - heartbeat request from CBRS : {

```
"heartbeatRequest": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "grantId": "444198030",
    "operationState": "GRANTED"
  }
]
```

}

2019-11-01T05:54:17.438Z - INFO - engine sent successfully, the response to CBRS : {

```
"heartbeatResponse": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "grantId": "444198030",
    "response": {
      "responseCode": 0
    },
    "transmitExpireTime": "2019-11-01T05:57:37Z"
  }
]
```

}

2019-11-01T05:54:19.540Z - INFO - heartbeat request from CBRS : {

```
"heartbeatRequest": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "grantId": "444198030",
    "operationState": "AUTHORIZED"
  }
]
```

}

2019-11-01T05:54:19.540Z - INFO - Time interval between two heartbeat request messages is: 2.112, limit is: 65.0

2019-11-01T05:54:19.551Z - INFO - engine sent successfully, the response to CBRS : {

```
"heartbeatResponse": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "grantId": "444198030",
```

```
"response": {
  "responseCode": 0
},
"transmitExpireTime": "2019-11-01T05:57:39Z"
}
]
}
2019-11-01T05:54:36.651Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "444198030",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T05:54:36.651Z - INFO - Time interval between two heartbeat request messages is: 17.11, limit
is: 65.0
2019-11-01T05:54:36.661Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "444198030",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T05:57:56Z"
    }
  ]
}
2019-11-01T05:54:53.763Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "444198030",
      "operationState": "AUTHORIZED"
    }
  ]
}
```

```
]
}
2019-11-01T05:54:53.763Z - INFO - Time interval between two heartbeat request messages is: 17.112, limit
is: 65.0
2019-11-01T05:54:53.773Z - INFO - engine sent successfully, the response to CBRS  : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "444198030",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T05:58:13Z"
    }
  ]
}
2019-11-01T05:55:10.878Z - INFO - heartbeat request from CBRS  : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "444198030",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T05:55:10.880Z - INFO - Time interval between two heartbeat request messages is: 17.116, limit
is: 65.0
2019-11-01T05:55:10.882Z - INFO - engine sent successfully, the response to CBRS  : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "444198030",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T05:58:30Z"
    }
  ]
}
```

```
]
}
2019-11-01T05:55:26.970Z - INFO - relinquishment request from CBRS : {
  "relinquishmentRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "444198030"
    }
  ]
}
2019-11-01T05:55:26.970Z - INFO - engine sent successfully, the response to CBRS : {
  "relinquishmentResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "444198030",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2019-11-01T05:55:28.049Z - INFO - deregistration request from CBRS : {
  "deregistrationRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01"
    }
  ]
}
2019-11-01T05:55:28.049Z - INFO - engine sent successfully, the response to CBRS : {
  "deregistrationResponse": [
    {
      "response": {
        "responseCode": 102
      }
    }
  ]
}
```



2019-11-01T05:55:29.605Z - INFO - arrived to nstep starting question answer session with the technician  
2019-11-01T05:55:29.605Z - 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 :

2019-11-01T05:55:42.772Z - 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

2019-11-01T05:55:44.443Z - INFO - The final result of the test : WINNF.FT.C.DRG.3 is - passed

WINNF.FT.C.DRG.5

2019-11-01T05:56:11.240Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2019-11-01T05:56:11.240Z - INFO - the selected test from the user : WINNF.FT.C.DRG.5 is starting now

2019-11-01T05:57:50.467Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "A",
    "cbsdSerialNumber": "gtkCbsdSn01",
    "fccId": "gtkCbsd01",
    "installationParam": {
      "antennaGain": 6,
      "height": 14.9,
      "heightType": "AMSL",
      "indoorDeployment": true,
      "latitude": 25.041965,
      "longitude": 121.373856
    },
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "gtkUser01"
  }
]
```

2019-11-01T05:57:50.506Z - INFO - engine sent successfully, the response to CBRS : {

```
"registrationResponse": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "response": {
      "responseCode": 0
    }
  }
]
```

```
}
2019-11-01T05:57:52.596Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "inquiredSpectrum": [
        {
          "highFrequency": 3690000000,
          "lowFrequency": 3680000000
        },
        {
          "highFrequency": 3700000000,
          "lowFrequency": 3690000000
        }
      ]
    }
  ]
}

2019-11-01T05:57:52.596Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3690000000,
            "lowFrequency": 3680000000
          },
          "ruleApplied": "FCC_PART_96"
        },
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3700000000,
            "lowFrequency": 3690000000
          },
          "ruleApplied": "FCC_PART_96"
        }
      ]
    }
  ]
}
```

```
        }
      ],
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "response": {
        "responseCode": 0
      }
    }
  ]
}

2019-11-01T05:57:54.696Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "operationParam": {
        "maxEirp": 23,
        "operationFrequencyRange": {
          "highFrequency": 3690000000,
          "lowFrequency": 3680000000
        }
      }
    }
  ]
}

2019-11-01T05:57:54.706Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "channelType": "GAA",
      "grantExpireTime": "2019-11-08T05:57:54Z",
      "grantId": "126152504",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
```

2019-11-01T05:57:56.796Z - INFO - heartbeat request from CBRS : {

```
"heartbeatRequest": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "grantId": "126152504",
    "operationState": "GRANTED"
  }
]
```

}

2019-11-01T05:57:56.796Z - INFO - engine sent successfully, the response to CBRS : {

```
"heartbeatResponse": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "grantId": "126152504",
    "response": {
      "responseCode": 0
    },
    "transmitExpireTime": "2019-11-01T06:01:16Z"
  }
]
```

}

2019-11-01T05:57:58.910Z - INFO - heartbeat request from CBRS : {

```
"heartbeatRequest": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "grantId": "126152504",
    "operationState": "AUTHORIZED"
  }
]
```

}

2019-11-01T05:57:58.910Z - INFO - Time interval between two heartbeat request messages is: 2.114, limit is: 65.0

2019-11-01T05:57:58.910Z - INFO - engine sent successfully, the response to CBRS : {

```
"heartbeatResponse": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "grantId": "126152504",
```

```
"response": {
  "responseCode": 0
},
"transmitExpireTime": "2019-11-01T06:01:18Z"
}
]
}
2019-11-01T05:58:16.023Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "126152504",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T05:58:16.023Z - INFO - Time interval between two heartbeat request messages is: 17.113, limit
is: 65.0
2019-11-01T05:58:16.023Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "126152504",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T06:01:36Z"
    }
  ]
}
2019-11-01T05:58:33.144Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "126152504",
      "operationState": "AUTHORIZED"
    }
  ]
}
```

```
]
}
2019-11-01T05:58:33.148Z - INFO - Time interval between two heartbeat request messages is: 17.122, limit
is: 65.0
2019-11-01T05:58:33.154Z - INFO - engine sent successfully, the response to CBRS  : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "126152504",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T06:01:53Z"
    }
  ]
}
2019-11-01T05:58:50.259Z - INFO - heartbeat request from CBRS  : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "126152504",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T05:58:50.259Z - INFO - Time interval between two heartbeat request messages is: 17.114, limit
is: 65.0
2019-11-01T05:58:50.259Z - INFO - engine sent successfully, the response to CBRS  : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "126152504",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T06:02:10Z"
    }
  ]
}
```

```
]
}
2019-11-01T05:59:05.346Z - INFO - relinquishment request from CBRS : {
  "relinquishmentRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "126152504"
    }
  ]
}
2019-11-01T05:59:05.351Z - INFO - engine sent successfully, the response to CBRS : {
  "relinquishmentResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "126152504",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2019-11-01T05:59:06.430Z - INFO - deregistration request from CBRS : {
  "deregistrationRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01"
    }
  ]
}
2019-11-01T05:59:06.430Z - INFO - engine sent successfully, the response to CBRS : {
  "deregistrationResponse": [
    {
      "response": {
        "responseCode": 103,
        "responseData": [
          "cbsdId"
        ]
      }
    }
  ]
}
```



}

]

}

2019-11-01T05:59:07.976Z - INFO - arrived to nstep starting question answer session with the technician

2019-11-01T05:59:07.976Z - 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 :

2019-11-01T05:59:10.486Z - 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

2019-11-01T05:59:11.622Z - INFO - The final result of the test : WINNF.FT.C.DRG.5 is - passed

WINNF.FT.C.GRA.1

2019-10-31T08:43:37.334Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2019-10-31T08:43:37.335Z - INFO - the selected test from the user : WINNF.FT.C.GRA.1 is starting now

2019-10-31T08:43:38.467Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "A",
    "cbsdSerialNumber": "gtkCbsdSn01",
    "fccId": "gtkCbsd01",
    "installationParam": {
      "antennaGain": 6,
      "height": 14.9,
      "heightType": "AMSL",
      "indoorDeployment": true,
      "latitude": 25.04143,
      "longitude": 121.373329
    },
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "gtkUser01"
  }
]
```

2019-10-31T08:43:38.835Z - INFO - engine sent successfully, the response to CBRS : {

```
"registrationResponse": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "response": {
      "responseCode": 0
    }
  }
]
```

```
}
2019-10-31T08:43:40.944Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "inquiredSpectrum": [
        {
          "highFrequency": 3690000000,
          "lowFrequency": 3680000000
        },
        {
          "highFrequency": 3700000000,
          "lowFrequency": 3690000000
        }
      ]
    }
  ]
}

2019-10-31T08:43:40.966Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3690000000,
            "lowFrequency": 3680000000
          },
          "ruleApplied": "FCC_PART_96"
        },
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3700000000,
            "lowFrequency": 3690000000
          },
          "ruleApplied": "FCC_PART_96"
        }
      ]
    }
  ]
}
```

```
    }
    ],
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "response": {
        "responseCode": 0
    }
}
]
```

2019-10-31T08:43:43.091Z - INFO - grant request from CBRS : {

```
  "grantRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "operationParam": {
        "maxEirp": 23,
        "operationFrequencyRange": {
          "highFrequency": 3690000000,
          "lowFrequency": 3680000000
        }
      }
    }
  ]
}
```

2019-10-31T08:43:43.105Z - INFO - engine sent successfully, the response to CBRS : {

```
  "grantResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "response": {
        "responseCode": 400
      }
    }
  ]
}
```

2019-10-31T08:43:44.392Z - INFO - arrived to nstep starting question answer session with the technician

2019-10-31T08:43:44.397Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2019-10-31T08:43:47.970Z - INFO - for the question : Were there RF transmissions from the CBSD1 during



the test? , the user choose n

2019-10-31T08:43:50.055Z - INFO - The final result of the test : WINNF.FT.C.GRA.1 is - passed

WINNF.FT.C.GRA.2

2019-10-31T08:48:45.596Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2019-10-31T08:48:45.601Z - INFO - the selected test from the user : WINNF.FT.C.GRA.2 is starting now

2019-10-31T08:48:46.690Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "A",
    "cbsdSerialNumber": "gtkCbsdSn01",
    "fccId": "gtkCbsd01",
    "installationParam": {
      "antennaGain": 6,
      "height": 14.9,
      "heightType": "AMSL",
      "indoorDeployment": true,
      "latitude": 25.041473,
      "longitude": 121.373482
    },
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "gtkUser01"
  }
]
```

2019-10-31T08:48:47.170Z - INFO - engine sent successfully, the response to CBRS : {

```
"registrationResponse": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "response": {
      "responseCode": 0
    }
  }
]
```

```
}
2019-10-31T08:48:49.270Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "inquiredSpectrum": [
        {
          "highFrequency": 3690000000,
          "lowFrequency": 3680000000
        },
        {
          "highFrequency": 3700000000,
          "lowFrequency": 3690000000
        }
      ]
    }
  ]
}

2019-10-31T08:48:49.286Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3690000000,
            "lowFrequency": 3680000000
          },
          "ruleApplied": "FCC_PART_96"
        },
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3700000000,
            "lowFrequency": 3690000000
          },
          "ruleApplied": "FCC_PART_96"
        }
      ]
    }
  ]
}
```

```
    }
    ],
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "response": {
        "responseCode": 0
    }
}
]
```

2019-10-31T08:48:51.413Z - INFO - grant request from CBRS : {

```
"grantRequest": [
    {
        "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
        "operationParam": {
            "maxEirp": 23,
            "operationFrequencyRange": {
                "highFrequency": 3690000000,
                "lowFrequency": 3680000000
            }
        }
    }
]
```

2019-10-31T08:48:51.430Z - INFO - engine sent successfully, the response to CBRS : {

```
"grantResponse": [
    {
        "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
        "response": {
            "responseCode": 401
        }
    }
]
```

2019-10-31T08:48:52.622Z - INFO - arrived to nstep starting question answer session with the technician

2019-10-31T08:48:52.627Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2019-10-31T08:48:55.661Z - INFO - for the question : Were there RF transmissions from the CBSD1 during



the test? , the user choose n

2019-10-31T08:48:57.036Z - INFO - The final result of the test : WINNF.FT.C.GRA.2 is - passed

WINNF.FT.C.HBT.1

2019-10-31T08:52:31.897Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2019-10-31T08:52:31.898Z - INFO - the selected test from the user : WINNF.FT.C.HBT.1 is starting now

2019-10-31T08:52:32.828Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "A",
    "cbsdSerialNumber": "gtkCbsdSn01",
    "fccId": "gtkCbsd01",
    "installationParam": {
      "antennaGain": 6,
      "height": 14.9,
      "heightType": "AMSL",
      "indoorDeployment": true,
      "latitude": 25.041622,
      "longitude": 121.373985
    },
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "gtkUser01"
  }
]
```

2019-10-31T08:52:32.895Z - INFO - engine sent successfully, the response to CBRS : {

```
"registrationResponse": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "response": {
      "responseCode": 0
    }
  }
]
```

```
}
2019-10-31T08:52:34.989Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "inquiredSpectrum": [
        {
          "highFrequency": 3690000000,
          "lowFrequency": 3680000000
        },
        {
          "highFrequency": 3700000000,
          "lowFrequency": 3690000000
        }
      ]
    }
  ]
}

2019-10-31T08:52:34.996Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3690000000,
            "lowFrequency": 3680000000
          },
          "ruleApplied": "FCC_PART_96"
        },
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3700000000,
            "lowFrequency": 3690000000
          },
          "ruleApplied": "FCC_PART_96"
        }
      ]
    }
  ]
}
```

```

        }
    ],
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "response": {
        "responseCode": 0
    }
}
]
}
2019-10-31T08:52:37.115Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
            "operationParam": {
                "maxEirp": 23,
                "operationFrequencyRange": {
                    "highFrequency": 3690000000,
                    "lowFrequency": 3680000000
                }
            }
        }
    ]
}
2019-10-31T08:52:37.127Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
            "channelType": "GAA",
            "grantExpireTime": "2019-11-07T08:52:37Z",
            "grantId": "578797376",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}

```

2019-10-31T08:52:39.233Z - INFO - heartbeat request from CBRS : {

```
"heartbeatRequest": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "grantId": "578797376",
    "operationState": "GRANTED"
  }
]
```

}

2019-10-31T08:52:39.249Z - INFO - engine sent successfully, the response to CBRS : {

```
"heartbeatResponse": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "grantId": "578797376",
    "response": {
      "responseCode": 0
    },
    "transmitExpireTime": "2019-10-31T08:55:59Z"
  }
]
```

}

2019-10-31T08:52:41.375Z - INFO - heartbeat request from CBRS : {

```
"heartbeatRequest": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "grantId": "578797376",
    "operationState": "AUTHORIZED"
  }
]
```

}

2019-10-31T08:52:41.377Z - INFO - Time interval between two heartbeat request messages is: 2.141, limit is: 65.0

2019-10-31T08:52:41.390Z - INFO - engine sent successfully, the response to CBRS : {

```
"heartbeatResponse": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "grantId": "578797376",
```

```
"response": {
  "responseCode": 0
},
"transmitExpireTime": "2019-10-31T08:56:01Z"
}
]
}
2019-10-31T08:52:58.513Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "578797376",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-10-31T08:52:58.516Z - INFO - Time interval between two heartbeat request messages is: 17.139,
limit is: 65.0
2019-10-31T08:52:58.529Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "578797376",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-10-31T08:56:18Z"
    }
  ]
}
2019-10-31T08:53:15.663Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "578797376",
      "operationState": "AUTHORIZED"
    }
  ]
}
```

```
]
}
2019-10-31T08:53:15.663Z - INFO - Time interval between two heartbeat request messages is: 17.149,
limit is: 65.0
2019-10-31T08:53:15.667Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "578797376",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-10-31T08:56:35Z"
    }
  ]
}
2019-10-31T08:53:32.792Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "578797376",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-10-31T08:53:32.795Z - INFO - Time interval between two heartbeat request messages is: 17.13, limit
is: 65.0
2019-10-31T08:53:32.805Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "578797376",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-10-31T08:56:52Z"
    }
  ]
}
```

```
]
}
2019-10-31T08:53:49.934Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "578797376",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-10-31T08:53:49.936Z - INFO - Time interval between two heartbeat request messages is: 17.142,
limit is: 65.0
2019-10-31T08:53:49.950Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "578797376",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-10-31T08:57:09Z"
    }
  ]
}
2019-10-31T08:53:51.329Z - INFO - arrived to nstep starting question answer session with the technician
2019-10-31T08:53:51.334Z - INFO - the question is : Did CBSD1 transmit power prior to AUTHORIZED
state (first successful HBT response)? please choose one of the answers :
2019-10-31T08:53:54.417Z - INFO - for the question : Did CBSD1 transmit power prior to AUTHORIZED
state (first successful HBT response)? , the user choose n
2019-10-31T08:53:54.418Z - INFO - the question is : Did CBSD1 transmit only within the frequency range
specified in its grantRequest message? please choose one of the answers :
2019-10-31T08:53:56.135Z - INFO - for the question : Did CBSD1 transmit only within the frequency range
specified in its grantRequest message? , the user choose y
2019-10-31T08:53:57.476Z - INFO - The final result of the test : WINNF.FT.C.HBT.1 is - passed
```

WINNF.FT.C.HBT.3

2019-10-31T08:57:54.036Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2019-10-31T08:57:54.038Z - INFO - the selected test from the user : WINNF.FT.C.HBT.3 is starting now

2019-10-31T08:57:55.094Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "A",
    "cbsdSerialNumber": "gtkCbsdSn01",
    "fccId": "gtkCbsd01",
    "installationParam": {
      "antennaGain": 6,
      "height": 14.9,
      "heightType": "AMSL",
      "indoorDeployment": true,
      "latitude": 25.041536,
      "longitude": 121.373756
    },
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "gtkUser01"
  }
]
```

2019-10-31T08:57:55.201Z - INFO - engine sent successfully, the response to CBRS : {

```
"registrationResponse": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "response": {
      "responseCode": 0
    }
  }
]
```

```
}
2019-10-31T08:57:57.305Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "inquiredSpectrum": [
        {
          "highFrequency": 3690000000,
          "lowFrequency": 3680000000
        },
        {
          "highFrequency": 3700000000,
          "lowFrequency": 3690000000
        }
      ]
    }
  ]
}

2019-10-31T08:57:57.322Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3690000000,
            "lowFrequency": 3680000000
          },
          "ruleApplied": "FCC_PART_96"
        },
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3700000000,
            "lowFrequency": 3690000000
          },
          "ruleApplied": "FCC_PART_96"
        }
      ]
    }
  ]
}
```

```
        }
      ],
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "response": {
        "responseCode": 0
      }
    }
  ]
}

2019-10-31T08:57:59.453Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "operationParam": {
        "maxEirp": 23,
        "operationFrequencyRange": {
          "highFrequency": 3690000000,
          "lowFrequency": 3680000000
        }
      }
    }
  ]
}

2019-10-31T08:57:59.467Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "channelType": "GAA",
      "grantExpireTime": "2019-11-07T08:57:59Z",
      "grantId": "84268811",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
```

2019-10-31T08:58:01.602Z - INFO - heartbeat request from CBRS : {

```
"heartbeatRequest": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "grantId": "84268811",
    "operationState": "GRANTED"
  }
]
```

}

2019-10-31T08:58:01.618Z - INFO - engine sent successfully, the response to CBRS : {

```
"heartbeatResponse": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "grantId": "84268811",
    "response": {
      "responseCode": 0
    },
    "transmitExpireTime": "2019-10-31T09:01:21Z"
  }
]
```

}

2019-10-31T08:58:03.746Z - INFO - heartbeat request from CBRS : {

```
"heartbeatRequest": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "grantId": "84268811",
    "operationState": "AUTHORIZED"
  }
]
```

}

2019-10-31T08:58:03.750Z - INFO - Time interval between two heartbeat request messages is: 2.145, limit is: 65.0

2019-10-31T08:58:03.757Z - INFO - engine sent successfully, the response to CBRS : {

```
"heartbeatResponse": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "grantId": "84268811",
```

```
"response": {
  "responseCode": 0
},
"transmitExpireTime": "2019-10-31T09:01:23Z"
}
]
}
2019-10-31T08:58:20.888Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "84268811",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-10-31T08:58:20.892Z - INFO - Time interval between two heartbeat request messages is: 17.141,
limit is: 65.0
2019-10-31T08:58:20.904Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "84268811",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-10-31T09:01:40Z"
    }
  ]
}
2019-10-31T08:58:38.035Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "84268811",
      "operationState": "AUTHORIZED"
    }
  ]
}
```



```
]
}
2019-10-31T08:58:38.038Z - INFO - Time interval between two heartbeat request messages is: 17.146,
limit is: 65.0
2019-10-31T08:58:38.046Z - INFO - engine sent successfully, the response to CBRS  : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "84268811",
      "response": {
        "responseCode": 105
      },
      "transmitExpireTime": "2019-10-31T08:58:38Z"
    }
  ]
}
2019-10-31T08:58:39.289Z - INFO - arrived to nstep starting question answer session with the technician
2019-10-31T08:58:39.293Z - 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 :
2019-10-31T08:59:11.716Z - INFO - for the question : Did the CBSD stop RF transmission within 60
seconds of receiving Heartbeat response with responseCode = 105? , the user choose y
2019-10-31T08:59:13.663Z - INFO - The final result of the test : WINNF.FT.C.HBT.3 is - passed
```

WINNF.FT.C.HBT.4

2019-10-31T09:06:48.944Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2019-10-31T09:06:48.946Z - INFO - the selected test from the user : WINNF.FT.C.HBT.4 is starting now

2019-10-31T09:06:49.703Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "A",
    "cbsdSerialNumber": "gtkCbsdSn01",
    "fccId": "gtkCbsd01",
    "installationParam": {
      "antennaGain": 6,
      "height": 14.9,
      "heightType": "AMSL",
      "indoorDeployment": true,
      "latitude": 25.041395,
      "longitude": 121.373383
    },
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "gtkUser01"
  }
]
```

2019-10-31T09:06:49.763Z - INFO - engine sent successfully, the response to CBRS : {

```
"registrationResponse": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "response": {
      "responseCode": 0
    }
  }
]
```

```
}
2019-10-31T09:06:51.871Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "inquiredSpectrum": [
        {
          "highFrequency": 3690000000,
          "lowFrequency": 3680000000
        },
        {
          "highFrequency": 3700000000,
          "lowFrequency": 3690000000
        }
      ]
    }
  ]
}

2019-10-31T09:06:51.888Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3690000000,
            "lowFrequency": 3680000000
          },
          "ruleApplied": "FCC_PART_96"
        },
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3700000000,
            "lowFrequency": 3690000000
          },
          "ruleApplied": "FCC_PART_96"
        }
      ]
    }
  ]
}
```

```
        }
      ],
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "response": {
        "responseCode": 0
      }
    }
  ]
}

2019-10-31T09:06:54.006Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "operationParam": {
        "maxEirp": 23,
        "operationFrequencyRange": {
          "highFrequency": 3690000000,
          "lowFrequency": 3680000000
        }
      }
    }
  ]
}

2019-10-31T09:06:54.022Z - INFO - engine sent successfully, the response to CBRS : {
  "grantResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "channelType": "GAA",
      "grantExpireTime": "2019-11-07T09:06:54Z",
      "grantId": "275932597",
      "heartbeatInterval": 60,
      "response": {
        "responseCode": 0
      }
    }
  ]
}
```

2019-10-31T09:06:56.127Z - INFO - heartbeat request from CBRS : {

```
"heartbeatRequest": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "grantId": "275932597",
    "operationState": "GRANTED"
  }
]
```

}

2019-10-31T09:06:56.135Z - INFO - engine sent successfully, the response to CBRS : {

```
"heartbeatResponse": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "grantId": "275932597",
    "response": {
      "responseCode": 0
    },
    "transmitExpireTime": "2019-10-31T09:10:16Z"
  }
]
```

}

2019-10-31T09:06:58.263Z - INFO - heartbeat request from CBRS : {

```
"heartbeatRequest": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "grantId": "275932597",
    "operationState": "AUTHORIZED"
  }
]
```

}

2019-10-31T09:06:58.266Z - INFO - Time interval between two heartbeat request messages is: 2.136, limit is: 65.0

2019-10-31T09:06:58.280Z - INFO - engine sent successfully, the response to CBRS : {

```
"heartbeatResponse": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "grantId": "275932597",
```

```
"response": {
  "responseCode": 0
},
"transmitExpireTime": "2019-10-31T09:10:18Z"
}
]
}
2019-10-31T09:07:15.411Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "275932597",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-10-31T09:07:15.413Z - INFO - Time interval between two heartbeat request messages is: 17.149,
limit is: 65.0
2019-10-31T09:07:15.417Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "275932597",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-10-31T09:10:35Z"
    }
  ]
}
2019-10-31T09:07:32.545Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "275932597",
      "operationState": "AUTHORIZED"
    }
  ]
}
```

```
]
}
2019-10-31T09:07:32.546Z - INFO - Time interval between two heartbeat request messages is: 17.133,
limit is: 65.0
2019-10-31T09:07:32.555Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "275932597",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-10-31T09:10:52Z"
    }
  ]
}
2019-10-31T09:07:49.678Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "275932597",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-10-31T09:07:49.680Z - INFO - Time interval between two heartbeat request messages is: 17.134,
limit is: 65.0
2019-10-31T09:07:49.690Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "275932597",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-10-31T09:11:09Z"
    }
  ]
}
```

```
]
}
2019-10-31T09:08:06.811Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "275932597",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-10-31T09:08:06.816Z - INFO - Time interval between two heartbeat request messages is: 17.132,
limit is: 65.0
2019-10-31T09:08:06.834Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "275932597",
      "response": {
        "responseCode": 500
      },
      "transmitExpireTime": "2019-10-31T09:08:06Z"
    }
  ]
}
2019-10-31T09:08:08.427Z - INFO - arrived to nstep starting question answer session with the technician
2019-10-31T09:08:08.430Z - INFO - the question is : Did the CBSD1 stop RF transmission within 60
seconds of receiving Heartbeat response with responseCode = 500? please choose one of the answers :
2019-10-31T09:08:31.565Z - INFO - for the question : Did the CBSD1 stop RF transmission within 60
seconds of receiving Heartbeat response with responseCode = 500? , the user choose y
2019-10-31T09:08:33.266Z - INFO - The final result of the test : WINNF.FT.C.HBT.4 is - passed
```

WINNF.FT.C.HBT.5

2019-10-31T09:12:34.788Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2019-10-31T09:12:34.790Z - INFO - the selected test from the user : WINNF.FT.C.HBT.5 is starting now

2019-10-31T09:12:35.364Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "A",
    "cbsdSerialNumber": "gtkCbsdSn01",
    "fccId": "gtkCbsd01",
    "installationParam": {
      "antennaGain": 6,
      "height": 14.9,
      "heightType": "AMSL",
      "indoorDeployment": true,
      "latitude": 25.041372,
      "longitude": 121.373383
    },
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "gtkUser01"
  }
]
```

2019-10-31T09:12:35.424Z - INFO - engine sent successfully, the response to CBRS : {

```
"registrationResponse": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "response": {
      "responseCode": 0
    }
  }
]
```

2019-10-31T09:12:37.532Z - INFO - spectrumInquiry request from CBRS : {

```
"spectrumInquiryRequest": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "inquiredSpectrum": [  
      {  
        "highFrequency": 3690000000,  
        "lowFrequency": 3680000000  
      },  
      {  
        "highFrequency": 3700000000,  
        "lowFrequency": 3690000000  
      }  
    ]  
  }  
]
```

}

2019-10-31T09:12:37.546Z - INFO - engine sent successfully, the response to CBRS : {

```
"spectrumInquiryResponse": [  
  {  
    "availableChannel": [  
      {  
        "channelType": "GAA",  
        "frequencyRange": {  
          "highFrequency": 3690000000,  
          "lowFrequency": 3680000000  
        },  
        "ruleApplied": "FCC_PART_96"  
      },  
      {  
        "channelType": "GAA",  
        "frequencyRange": {  
          "highFrequency": 3700000000,  
          "lowFrequency": 3690000000  
        },  
        "ruleApplied": "FCC_PART_96"  
      }  
    ]  
  }  
]
```

```
    ],
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "response": {
        "responseCode": 0
    }
}
]
}
2019-10-31T09:12:39.664Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
            "operationParam": {
                "maxEirp": 23,
                "operationFrequencyRange": {
                    "highFrequency": 3690000000,
                    "lowFrequency": 3680000000
                }
            }
        }
    ]
}
2019-10-31T09:12:39.680Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
            "channelType": "GAA",
            "grantExpireTime": "2019-11-07T09:12:39Z",
            "grantId": "699213056",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-31T09:12:41.780Z - INFO - heartbeat request from CBRS : {
```

```
"heartbeatRequest": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "grantId": "699213056",
    "operationState": "GRANTED"
  }
]
}
2019-10-31T09:12:41.789Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "699213056",
      "response": {
        "responseCode": 501
      },
      "transmitExpireTime": "2019-10-31T09:12:41Z"
    }
  ]
}
2019-10-31T09:12:58.891Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "699213056",
      "operationState": "GRANTED"
    }
  ]
}
2019-10-31T09:12:58.894Z - INFO - Time interval between two heartbeat request messages is: 17.11, limit
is: 65.0
2019-10-31T09:12:58.907Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "699213056",
      "response": {
```



```
"responseCode": 501
  },
  "transmitExpireTime": "2019-10-31T09:12:58Z"
}
]
```

2019-10-31T09:12:59.960Z - INFO - arrived to nstep starting question answer session with the technician  
2019-10-31T09:12:59.963Z - INFO - the question is : Did the CBSD transmit at any time during the test?  
please choose one of the answers :  
2019-10-31T09:13:15.329Z - INFO - for the question : Did the CBSD transmit at any time during the test? ,  
the user choose n  
2019-10-31T09:13:18.174Z - INFO - The final result of the test : WINNF.FT.C.HBT.5 is - passed

WINNF.FT.C.HBT.6

2019-10-31T09:23:29.453Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2019-10-31T09:23:29.456Z - INFO - the selected test from the user : WINNF.FT.C.HBT.6 is starting now

2019-10-31T09:23:31.128Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "A",
    "cbsdSerialNumber": "gtkCbsdSn01",
    "fccId": "gtkCbsd01",
    "installationParam": {
      "antennaGain": 6,
      "height": 14.9,
      "heightType": "AMSL",
      "indoorDeployment": true,
      "latitude": 25.041378,
      "longitude": 121.37339
    },
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "gtkUser01"
  }
]
```

}

2019-10-31T09:23:31.217Z - INFO - engine sent successfully, the response to CBRS : {

```
"registrationResponse": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "response": {
      "responseCode": 0
    }
  }
]
```

}

2019-10-31T09:23:33.325Z - INFO - spectrumInquiry request from CBRS : {

```
"spectrumInquiryRequest": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "inquiredSpectrum": [
      {
        "highFrequency": 3690000000,
        "lowFrequency": 3680000000
      },
      {
        "highFrequency": 3700000000,
        "lowFrequency": 3690000000
      }
    ]
  }
]
```

}  
2019-10-31T09:23:33.342Z - INFO - engine sent successfully, the response to CBRS : {

```
"spectrumInquiryResponse": [
  {
    "availableChannel": [
      {
        "channelType": "GAA",
        "frequencyRange": {
          "highFrequency": 3690000000,
          "lowFrequency": 3680000000
        },
        "ruleApplied": "FCC_PART_96"
      },
      {
        "channelType": "GAA",
        "frequencyRange": {
          "highFrequency": 3700000000,
          "lowFrequency": 3690000000
        },
        "ruleApplied": "FCC_PART_96"
      }
    ]
  }
]
```

```
    ],
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "response": {
        "responseCode": 0
    }
}
]
}
2019-10-31T09:23:35.496Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
            "operationParam": {
                "maxEirp": 23,
                "operationFrequencyRange": {
                    "highFrequency": 3690000000,
                    "lowFrequency": 3680000000
                }
            }
        }
    ]
}
2019-10-31T09:23:35.513Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
            "channelType": "GAA",
            "grantExpireTime": "2019-11-07T09:23:35Z",
            "grantId": "314692691",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-10-31T09:23:37.619Z - INFO - heartbeat request from CBRS : {
```

```
"heartbeatRequest": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "grantId": "314692691",
    "operationState": "GRANTED"
  }
]
}
2019-10-31T09:23:37.635Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "314692691",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-10-31T09:26:57Z"
    }
  ]
}
2019-10-31T09:23:39.772Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "314692691",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-10-31T09:23:39.776Z - INFO - Time interval between two heartbeat request messages is: 2.152, limit
is: 65.0
2019-10-31T09:23:39.789Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "314692691",
      "response": {
```

```
        "responseCode": 0
      },
      "transmitExpireTime": "2019-10-31T09:26:59Z"
    }
  ]
}
2019-10-31T09:23:56.917Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "314692691",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-10-31T09:23:56.917Z - INFO - Time interval between two heartbeat request messages is: 17.144,
limit is: 65.0
2019-10-31T09:23:56.924Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "314692691",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-10-31T09:27:16Z"
    }
  ]
}
2019-10-31T09:24:14.055Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "314692691",
      "operationState": "AUTHORIZED"
    }
  ]
}
```

```
}
2019-10-31T09:24:14.061Z - INFO - Time interval between two heartbeat request messages is: 17.139,
limit is: 65.0
2019-10-31T09:24:14.078Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "314692691",
      "response": {
        "responseCode": 501
      },
      "transmitExpireTime": "2019-10-31T09:24:14Z"
    }
  ]
}
2019-10-31T09:24:16.180Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "314692691",
      "operationState": "GRANTED"
    }
  ]
}
2019-10-31T09:24:16.184Z - INFO - Time interval between two heartbeat request messages is: 2.125, limit
is: 65.0
2019-10-31T09:24:16.188Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "314692691",
      "response": {
        "responseCode": 501
      },
      "transmitExpireTime": "2019-10-31T09:24:16Z"
    }
  ]
}
```



}

2019-10-31T09:24:17.717Z - INFO - arrived to nstep starting question answer session with the technician

2019-10-31T09:24:17.720Z - 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 :

2019-10-31T09:24:37.167Z - INFO - for the question : Did the CBSD stop RF transmission within 60 seconds of receiving Heartbeat response with responseCode = 501? , the user choose y

2019-10-31T09:24:38.743Z - INFO - The final result of the test : WINNF.FT.C.HBT.6 is - passed

WINNF.FT.C.HBT.7

2019-11-01T02:50:02.015Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2019-11-01T02:50:02.015Z - INFO - the selected test from the user : WINNF.FT.C.HBT.7 is starting now

2019-11-01T02:52:20.823Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "A",
    "cbsdSerialNumber": "gtkCbsdSn01",
    "fccId": "gtkCbsd01",
    "installationParam": {
      "antennaGain": 6,
      "height": 14.9,
      "heightType": "AMSL",
      "indoorDeployment": true,
      "latitude": 25.041437,
      "longitude": 121.372795
    },
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "gtkUser01"
  }
]
```

}

2019-11-01T02:52:21.164Z - INFO - engine sent successfully, the response to CBRS : {

```
"registrationResponse": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "response": {
      "responseCode": 0
    }
  }
]
```

}

2019-11-01T02:52:23.256Z - INFO - spectrumInquiry request from CBRS : {

```
"spectrumInquiryRequest": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "inquiredSpectrum": [  
      {  
        "highFrequency": 3690000000,  
        "lowFrequency": 3680000000  
      },  
      {  
        "highFrequency": 3700000000,  
        "lowFrequency": 3690000000  
      }  
    ]  
  }  
]
```

}

2019-11-01T02:52:23.256Z - INFO - engine sent successfully, the response to CBRS : {

```
"spectrumInquiryResponse": [  
  {  
    "availableChannel": [  
      {  
        "channelType": "GAA",  
        "frequencyRange": {  
          "highFrequency": 3690000000,  
          "lowFrequency": 3680000000  
        },  
        "ruleApplied": "FCC_PART_96"  
      },  
      {  
        "channelType": "GAA",  
        "frequencyRange": {  
          "highFrequency": 3700000000,  
          "lowFrequency": 3690000000  
        },  
        "ruleApplied": "FCC_PART_96"  
      }  
    ]  
  }  
]
```

```
    ],
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "response": {
        "responseCode": 0
    }
}
]
}
2019-11-01T02:52:25.391Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
            "operationParam": {
                "maxEirp": 23,
                "operationFrequencyRange": {
                    "highFrequency": 3690000000,
                    "lowFrequency": 3680000000
                }
            }
        }
    ]
}
2019-11-01T02:52:25.401Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
            "channelType": "GAA",
            "grantExpireTime": "2019-11-08T02:52:25Z",
            "grantId": "585554658",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-11-01T02:52:27.516Z - INFO - heartbeat request from CBRS : {
```

```
"heartbeatRequest": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "585554658",  
    "operationState": "GRANTED"  
  }  
]
```

```
}
```

2019-11-01T02:52:27.526Z - INFO - engine sent successfully, the response to CBRS : {

```
"heartbeatResponse": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "585554658",  
    "response": {  
      "responseCode": 0  
    },  
    "transmitExpireTime": "2019-11-01T02:55:47Z"  
  }  
]
```

```
}
```

2019-11-01T02:52:29.635Z - INFO - heartbeat request from CBRS : {

```
"heartbeatRequest": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "585554658",  
    "operationState": "AUTHORIZED"  
  }  
]
```

```
}
```

2019-11-01T02:52:29.635Z - INFO - Time interval between two heartbeat request messages is: 2.119, limit is: 65.0

2019-11-01T02:52:29.635Z - INFO - engine sent successfully, the response to CBRS : {

```
"heartbeatResponse": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "585554658",  
    "response": {
```

```
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T02:55:49Z"
    }
  ]
}
2019-11-01T02:52:46.746Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "585554658",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T02:52:46.749Z - INFO - Time interval between two heartbeat request messages is: 17.112, limit
is: 65.0
2019-11-01T02:52:46.749Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "585554658",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T02:56:06Z"
    }
  ]
}
2019-11-01T02:53:03.859Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "585554658",
      "operationState": "AUTHORIZED"
    }
  ]
}
```

```
}
```

```
2019-11-01T02:53:03.861Z - INFO - Time interval between two heartbeat request messages is: 17.112, limit is: 65.0
```

```
2019-11-01T02:53:03.861Z - INFO - engine sent successfully, the response to CBRS : {
```

```
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "585554658",
      "response": {
        "responseCode": 502
      },
      "transmitExpireTime": "2019-11-01T02:53:03Z"
    }
  ]
}
```

```
}
```

```
2019-11-01T02:53:04.953Z - INFO - relinquishment request from CBRS : {
```

```
  "relinquishmentRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "585554658"
    }
  ]
}
```

```
}
```

```
2019-11-01T02:53:05.256Z - INFO - engine sent successfully, the response to CBRS : {
```

```
  "relinquishmentResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "585554658",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
```

```
}
```

```
2019-11-01T02:53:06.700Z - INFO - arrived to nstep starting question answer session with the technician
```

```
2019-11-01T02:53:06.703Z - 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 :
```



2019-11-01T02:54:13.451Z - INFO - for the question : Did the CBSD stop RF transmission within 60 seconds of receiving Heartbeat response with responseCode = 502? , the user choose y

2019-11-01T02:54:15.022Z - INFO - The final result of the test : WINNF.FT.C.HBT.7 is - passed

WINNF.FT.C.HBT.9

2019-11-01T02:55:55.815Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2019-11-01T02:55:55.815Z - INFO - the selected test from the user : WINNF.FT.C.HBT.9 is starting now

2019-11-01T02:57:08.532Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "A",
    "cbsdSerialNumber": "gtkCbsdSn01",
    "fccId": "gtkCbsd01",
    "installationParam": {
      "antennaGain": 6,
      "height": 14.9,
      "heightType": "AMSL",
      "indoorDeployment": true,
      "latitude": 25.041416,
      "longitude": 121.37278
    },
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "gtkUser01"
  }
]
```

2019-11-01T02:57:08.572Z - INFO - engine sent successfully, the response to CBRS : {

```
"registrationResponse": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "response": {
      "responseCode": 0
    }
  }
]
```

2019-11-01T02:57:10.663Z - INFO - spectrumInquiry request from CBRS : {

```
"spectrumInquiryRequest": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "inquiredSpectrum": [
      {
        "highFrequency": 3690000000,
        "lowFrequency": 3680000000
      },
      {
        "highFrequency": 3700000000,
        "lowFrequency": 3690000000
      }
    ]
  }
]
```

}  
2019-11-01T02:57:10.663Z - INFO - engine sent successfully, the response to CBRS : {

```
"spectrumInquiryResponse": [
  {
    "availableChannel": [
      {
        "channelType": "GAA",
        "frequencyRange": {
          "highFrequency": 3690000000,
          "lowFrequency": 3680000000
        },
        "ruleApplied": "FCC_PART_96"
      },
      {
        "channelType": "GAA",
        "frequencyRange": {
          "highFrequency": 3700000000,
          "lowFrequency": 3690000000
        },
        "ruleApplied": "FCC_PART_96"
      }
    ]
  }
]
```

```
    ],
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "response": {
        "responseCode": 0
    }
}
]
}
2019-11-01T02:57:12.772Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
            "operationParam": {
                "maxEirp": 23,
                "operationFrequencyRange": {
                    "highFrequency": 3690000000,
                    "lowFrequency": 3680000000
                }
            }
        }
    ]
}
2019-11-01T02:57:12.779Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
            "channelType": "GAA",
            "grantExpireTime": "2019-11-08T02:57:12Z",
            "grantId": "822979596",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-11-01T02:57:14.865Z - INFO - heartbeat request from CBRS : {
```

```
"heartbeatRequest": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "822979596",  
    "operationState": "GRANTED"  
  }  
]  
}  
2019-11-01T02:57:20.897Z - INFO - heartbeat request from CBRS : {  
  "heartbeatRequest": [  
    {  
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
      "grantId": "822979596",  
      "operationState": "GRANTED"  
    }  
  ]  
}  
2019-11-01T02:57:20.897Z - INFO - request message received while HBT is absent, sleep 198 sec before  
responding  
2019-11-01T02:57:26.953Z - INFO - heartbeat request from CBRS : {  
  "heartbeatRequest": [  
    {  
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
      "grantId": "822979596",  
      "operationState": "GRANTED"  
    }  
  ]  
}  
2019-11-01T02:57:26.953Z - INFO - request message received while HBT is absent, sleep 192 sec before  
responding  
2019-11-01T02:57:32.994Z - INFO - heartbeat request from CBRS : {  
  "heartbeatRequest": [  
    {  
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
      "grantId": "822979596",  
      "operationState": "GRANTED"  
    }  
  ]  
}
```

```
]
}
2019-11-01T02:57:32.994Z - INFO - request message received while HBT is absent, sleep 186 sec before
responding
2019-11-01T02:57:39.038Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "822979596",
      "operationState": "GRANTED"
    }
  ]
}
2019-11-01T02:57:39.038Z - INFO - request message received while HBT is absent, sleep 180 sec before
responding
2019-11-01T02:57:45.069Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "822979596",
      "operationState": "GRANTED"
    }
  ]
}
2019-11-01T02:57:45.069Z - INFO - request message received while HBT is absent, sleep 174 sec before
responding
2019-11-01T02:57:51.112Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "822979596",
      "operationState": "GRANTED"
    }
  ]
}
2019-11-01T02:57:51.112Z - INFO - request message received while HBT is absent, sleep 168 sec before
responding
```

2019-11-01T02:57:57.153Z - INFO - heartbeat request from CBRS : {

```
"heartbeatRequest": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "822979596",  
    "operationState": "GRANTED"  
  }  
]
```

}

2019-11-01T02:57:57.153Z - INFO - request message received while HBT is absent, sleep 162 sec before responding

2019-11-01T02:58:03.194Z - INFO - heartbeat request from CBRS : {

```
"heartbeatRequest": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "822979596",  
    "operationState": "GRANTED"  
  }  
]
```

}

2019-11-01T02:58:03.194Z - INFO - request message received while HBT is absent, sleep 156 sec before responding

2019-11-01T02:58:09.226Z - INFO - heartbeat request from CBRS : {

```
"heartbeatRequest": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "822979596",  
    "operationState": "GRANTED"  
  }  
]
```

}

2019-11-01T02:58:09.226Z - INFO - request message received while HBT is absent, sleep 150 sec before responding

2019-11-01T02:58:15.279Z - INFO - heartbeat request from CBRS : {

```
"heartbeatRequest": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
```

```
"grantId": "822979596",
"operationState": "GRANTED"
}
]
}
2019-11-01T02:58:15.279Z - INFO - request message received while HBT is absent, sleep 144 sec before
responding
2019-11-01T02:58:21.311Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "822979596",
      "operationState": "GRANTED"
    }
  ]
}
2019-11-01T02:58:21.311Z - INFO - request message received while HBT is absent, sleep 138 sec before
responding
2019-11-01T02:58:27.362Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "822979596",
      "operationState": "GRANTED"
    }
  ]
}
2019-11-01T02:58:27.362Z - INFO - request message received while HBT is absent, sleep 132 sec before
responding
2019-11-01T02:58:33.401Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "822979596",
      "operationState": "GRANTED"
    }
  ]
}
```



```
}
2019-11-01T02:58:33.401Z - INFO - request message received while HBT is absent, sleep 126 sec before
responding
2019-11-01T02:58:39.447Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "822979596",
      "operationState": "GRANTED"
    }
  ]
}
2019-11-01T02:58:39.447Z - INFO - request message received while HBT is absent, sleep 120 sec before
responding
2019-11-01T02:58:45.479Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "822979596",
      "operationState": "GRANTED"
    }
  ]
}
2019-11-01T02:58:45.479Z - INFO - request message received while HBT is absent, sleep 114 sec before
responding
2019-11-01T02:58:51.520Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "822979596",
      "operationState": "GRANTED"
    }
  ]
}
2019-11-01T02:58:51.520Z - INFO - request message received while HBT is absent, sleep 108 sec before
responding
2019-11-01T02:58:57.569Z - INFO - heartbeat request from CBRS : {
```



```
"heartbeatRequest": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "822979596",  
    "operationState": "GRANTED"  
  }  
]
```

```
}
```

2019-11-01T02:58:57.569Z - INFO - request message received while HBT is absent, sleep 102 sec before responding

2019-11-01T02:59:03.612Z - INFO - heartbeat request from CBRS : {

```
"heartbeatRequest": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "822979596",  
    "operationState": "GRANTED"  
  }  
]
```

```
}
```

2019-11-01T02:59:03.612Z - INFO - request message received while HBT is absent, sleep 96 sec before responding

2019-11-01T02:59:09.655Z - INFO - heartbeat request from CBRS : {

```
"heartbeatRequest": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "822979596",  
    "operationState": "GRANTED"  
  }  
]
```

```
}
```

2019-11-01T02:59:09.655Z - INFO - request message received while HBT is absent, sleep 90 sec before responding

2019-11-01T02:59:15.696Z - INFO - heartbeat request from CBRS : {

```
"heartbeatRequest": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "822979596",
```



```
        "operationState": "GRANTED"
      }
    ]
  }
2019-11-01T02:59:15.706Z - INFO - request message received while HBT is absent, sleep 84 sec before
responding
2019-11-01T02:59:21.747Z - INFO - heartbeat request from CBRS  : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "822979596",
      "operationState": "GRANTED"
    }
  ]
}
2019-11-01T02:59:21.747Z - INFO - request message received while HBT is absent, sleep 78 sec before
responding
2019-11-01T02:59:27.789Z - INFO - heartbeat request from CBRS  : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "822979596",
      "operationState": "GRANTED"
    }
  ]
}
2019-11-01T02:59:27.789Z - INFO - request message received while HBT is absent, sleep 72 sec before
responding
2019-11-01T02:59:33.841Z - INFO - relinquishment request from CBRS  : {
  "relinquishmentRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "822979596"
    }
  ]
}
2019-11-01T02:59:33.841Z - INFO - request message received while HBT is absent, sleep 66 sec before
```



responding

2019-11-01T03:00:34.874Z - INFO - engine sent successfully, the response to CBRS : {

```
"heartbeatResponse": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "grantId": "822979596",
    "response": {
      "responseCode": 501
    },
    "transmitExpireTime": "2019-11-01T03:00:34Z"
  }
]
```

}

2019-11-01T03:00:35.984Z - INFO - arrived to nstep starting question answer session with the technician

2019-11-01T03:00:35.984Z - INFO - the question is : Were there RF transmissions from the CBSD during the test? please choose one of the answers :

2019-11-01T03:00:38.905Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:00:38.956Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:00:39.006Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:00:39.046Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:00:39.085Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:00:39.125Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:00:39.165Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:00:39.206Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:00:39.246Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:00:39.286Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:00:39.325Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"



range"

2019-11-01T03:00:39.365Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:00:39.415Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:00:39.456Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:00:39.496Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:00:39.536Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:00:39.585Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:00:39.625Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:00:39.665Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:00:39.716Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:00:39.756Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:00:39.805Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:00:39.845Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:01:00.917Z - INFO - for the question : Were there RF transmissions from the CBSD during the test? , the user choose n

2019-11-01T03:01:01.977Z - INFO - The final result of the test : WINNF.FT.C.HBT.9 is - passed

WINNF.FT.C.HBT.10

2019-11-01T03:28:42.085Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2019-11-01T03:28:42.085Z - INFO - the selected test from the user : WINNF.FT.C.HBT.10 is starting now

2019-11-01T03:28:42.842Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "A",
    "cbsdSerialNumber": "gtkCbsdSn01",
    "fccId": "gtkCbsd01",
    "installationParam": {
      "antennaGain": 6,
      "height": 14.9,
      "heightType": "AMSL",
      "indoorDeployment": true,
      "latitude": 25.041348,
      "longitude": 121.372734
    },
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "gtkUser01"
  }
]
```

}

2019-11-01T03:28:42.861Z - INFO - engine sent successfully, the response to CBRS : {

```
"registrationResponse": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "response": {
      "responseCode": 0
    }
  }
]
```

}

2019-11-01T03:28:44.951Z - INFO - spectrumInquiry request from CBRS : {

```
"spectrumInquiryRequest": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "inquiredSpectrum": [
      {
        "highFrequency": 3690000000,
        "lowFrequency": 3680000000
      },
      {
        "highFrequency": 3700000000,
        "lowFrequency": 3690000000
      }
    ]
  }
]
```

}  
2019-11-01T03:28:44.951Z - INFO - engine sent successfully, the response to CBRS : {

```
"spectrumInquiryResponse": [
  {
    "availableChannel": [
      {
        "channelType": "GAA",
        "frequencyRange": {
          "highFrequency": 3690000000,
          "lowFrequency": 3680000000
        },
        "ruleApplied": "FCC_PART_96"
      },
      {
        "channelType": "GAA",
        "frequencyRange": {
          "highFrequency": 3700000000,
          "lowFrequency": 3690000000
        },
        "ruleApplied": "FCC_PART_96"
      }
    ]
  }
]
```

```
    ],
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "response": {
        "responseCode": 0
    }
}
]
}
2019-11-01T03:28:47.053Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
            "operationParam": {
                "maxEirp": 23,
                "operationFrequencyRange": {
                    "highFrequency": 3690000000,
                    "lowFrequency": 3680000000
                }
            }
        }
    ]
}
2019-11-01T03:28:47.053Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
            "channelType": "GAA",
            "grantExpireTime": "2019-11-08T03:28:47Z",
            "grantId": "573294134",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-11-01T03:28:49.147Z - INFO - heartbeat request from CBRS : {
```

```
"heartbeatRequest": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "573294134",  
    "operationState": "GRANTED"  
  }  
]
```

```
}
```

2019-11-01T03:28:49.147Z - INFO - engine sent successfully, the response to CBRS : {

```
"heartbeatResponse": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "573294134",  
    "response": {  
      "responseCode": 0  
    },  
    "transmitExpireTime": "2019-11-01T03:32:09Z"  
  }  
]
```

```
}
```

2019-11-01T03:28:51.256Z - INFO - heartbeat request from CBRS : {

```
"heartbeatRequest": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "573294134",  
    "operationState": "AUTHORIZED"  
  }  
]
```

```
}
```

2019-11-01T03:28:51.256Z - INFO - Time interval between two heartbeat request messages is: 2.11, limit is: 65.0

2019-11-01T03:28:51.266Z - INFO - engine sent successfully, the response to CBRS : {

```
"heartbeatResponse": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "573294134",  
    "response": {
```

```
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T03:32:11Z"
    }
  ]
}
2019-11-01T03:29:08.372Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "573294134",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T03:29:08.372Z - INFO - Time interval between two heartbeat request messages is: 17.116, limit
is: 65.0
2019-11-01T03:29:08.372Z - INFO - LAST HBT RESPONSE THAT SET TRANSMIT_EXPIRE_TIME WAS
AT: 2019-11-01 03:28:51.257000
2019-11-01T03:29:14.434Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "573294134",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T03:29:14.434Z - INFO - request message received while HBT is absent, sleep 198 sec before
responding
2019-11-01T03:29:20.496Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "573294134",
      "operationState": "AUTHORIZED"
    }
  ]
}
```



```
]
}
2019-11-01T03:29:20.496Z - INFO - request message received while HBT is absent, sleep 192 sec before
responding
2019-11-01T03:29:26.559Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "573294134",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T03:29:26.559Z - INFO - request message received while HBT is absent, sleep 186 sec before
responding
2019-11-01T03:29:32.614Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "573294134",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T03:29:32.614Z - INFO - request message received while HBT is absent, sleep 180 sec before
responding
2019-11-01T03:29:38.676Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "573294134",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T03:29:38.676Z - INFO - request message received while HBT is absent, sleep 174 sec before
responding
```



2019-11-01T03:29:44.737Z - INFO - heartbeat request from CBRS : {

```
"heartbeatRequest": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "573294134",  
    "operationState": "AUTHORIZED"  
  }  
]
```

}

2019-11-01T03:29:44.737Z - INFO - request message received while HBT is absent, sleep 168 sec before responding

2019-11-01T03:29:50.799Z - INFO - heartbeat request from CBRS : {

```
"heartbeatRequest": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "573294134",  
    "operationState": "AUTHORIZED"  
  }  
]
```

}

2019-11-01T03:29:50.799Z - INFO - request message received while HBT is absent, sleep 162 sec before responding

2019-11-01T03:29:56.861Z - INFO - heartbeat request from CBRS : {

```
"heartbeatRequest": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "573294134",  
    "operationState": "AUTHORIZED"  
  }  
]
```

}

2019-11-01T03:29:56.861Z - INFO - request message received while HBT is absent, sleep 156 sec before responding

2019-11-01T03:30:02.924Z - INFO - heartbeat request from CBRS : {

```
"heartbeatRequest": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
```



```
"grantId": "573294134",
"operationState": "AUTHORIZED"
}
]
}
2019-11-01T03:30:02.924Z - INFO - request message received while HBT is absent, sleep 150 sec before
responding
2019-11-01T03:30:08.974Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "573294134",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T03:30:08.974Z - INFO - request message received while HBT is absent, sleep 144 sec before
responding
2019-11-01T03:30:15.036Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "573294134",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T03:30:15.036Z - INFO - request message received while HBT is absent, sleep 138 sec before
responding
2019-11-01T03:30:21.096Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "573294134",
      "operationState": "AUTHORIZED"
    }
  ]
}
```



```
}
2019-11-01T03:30:21.096Z - INFO - request message received while HBT is absent, sleep 132 sec before
responding
2019-11-01T03:30:27.154Z - INFO - heartbeat request from CBRS  : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "573294134",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T03:30:27.154Z - INFO - request message received while HBT is absent, sleep 126 sec before
responding
2019-11-01T03:30:33.217Z - INFO - heartbeat request from CBRS  : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "573294134",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T03:30:33.217Z - INFO - request message received while HBT is absent, sleep 120 sec before
responding
2019-11-01T03:30:39.279Z - INFO - heartbeat request from CBRS  : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "573294134",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T03:30:39.279Z - INFO - request message received while HBT is absent, sleep 114 sec before
responding
2019-11-01T03:30:45.341Z - INFO - heartbeat request from CBRS  : {
```

```
"heartbeatRequest": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "573294134",  
    "operationState": "AUTHORIZED"  
  }  
]
```

```
}
```

2019-11-01T03:30:45.341Z - INFO - request message received while HBT is absent, sleep 108 sec before responding

2019-11-01T03:30:51.413Z - INFO - heartbeat request from CBRS : {

```
"heartbeatRequest": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "573294134",  
    "operationState": "AUTHORIZED"  
  }  
]
```

```
}
```

2019-11-01T03:30:51.413Z - INFO - request message received while HBT is absent, sleep 101 sec before responding

2019-11-01T03:30:57.464Z - INFO - heartbeat request from CBRS : {

```
"heartbeatRequest": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "573294134",  
    "operationState": "AUTHORIZED"  
  }  
]
```

```
}
```

2019-11-01T03:30:57.464Z - INFO - request message received while HBT is absent, sleep 95 sec before responding

2019-11-01T03:31:03.526Z - INFO - heartbeat request from CBRS : {

```
"heartbeatRequest": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "573294134",
```



```
        "operationState": "AUTHORIZED"
    }
]
}
2019-11-01T03:31:03.526Z - INFO - request message received while HBT is absent, sleep 89 sec before
responding
2019-11-01T03:31:09.589Z - INFO - heartbeat request from CBRS  : {
    "heartbeatRequest": [
        {
            "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
            "grantId": "573294134",
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-11-01T03:31:09.589Z - INFO - request message received while HBT is absent, sleep 83 sec before
responding
2019-11-01T03:31:15.651Z - INFO - heartbeat request from CBRS  : {
    "heartbeatRequest": [
        {
            "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
            "grantId": "573294134",
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-11-01T03:31:15.651Z - INFO - request message received while HBT is absent, sleep 77 sec before
responding
2019-11-01T03:31:21.709Z - INFO - heartbeat request from CBRS  : {
    "heartbeatRequest": [
        {
            "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
            "grantId": "573294134",
            "operationState": "AUTHORIZED"
        }
    ]
}
```



2019-11-01T03:31:21.709Z - INFO - request message received while HBT is absent, sleep 71 sec before responding

2019-11-01T03:31:27.770Z - INFO - heartbeat request from CBRS : {

```
"heartbeatRequest": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "573294134",  
    "operationState": "AUTHORIZED"  
  }  
]
```

}

2019-11-01T03:31:27.770Z - INFO - request message received while HBT is absent, sleep 65 sec before responding

2019-11-01T03:31:33.842Z - INFO - heartbeat request from CBRS : {

```
"heartbeatRequest": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "573294134",  
    "operationState": "AUTHORIZED"  
  }  
]
```

}

2019-11-01T03:31:33.842Z - INFO - request message received while HBT is absent, sleep 59 sec before responding

2019-11-01T03:31:39.894Z - INFO - heartbeat request from CBRS : {

```
"heartbeatRequest": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "573294134",  
    "operationState": "AUTHORIZED"  
  }  
]
```

}

2019-11-01T03:31:39.894Z - INFO - request message received while HBT is absent, sleep 53 sec before responding

2019-11-01T03:31:45.964Z - INFO - heartbeat request from CBRS : {

```
"heartbeatRequest": [  
  {
```

```
{
  "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
  "grantId": "573294134",
  "operationState": "AUTHORIZED"
}
]
```

2019-11-01T03:31:45.964Z - INFO - request message received while HBT is absent, sleep 47 sec before responding

2019-11-01T03:31:52.016Z - INFO - heartbeat request from CBRS : {

```
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "573294134",
      "operationState": "AUTHORIZED"
    }
  ]
}
```

2019-11-01T03:31:52.016Z - INFO - request message received while HBT is absent, sleep 41 sec before responding

2019-11-01T03:31:58.078Z - INFO - heartbeat request from CBRS : {

```
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "573294134",
      "operationState": "AUTHORIZED"
    }
  ]
}
```

2019-11-01T03:31:58.078Z - INFO - request message received while HBT is absent, sleep 35 sec before responding

2019-11-01T03:32:04.141Z - INFO - heartbeat request from CBRS : {

```
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "573294134",
      "operationState": "AUTHORIZED"
    }
  ]
}
```



```
    }
  ]
}
2019-11-01T03:32:04.141Z - INFO - request message received while HBT is absent, sleep 29 sec before
responding
2019-11-01T03:32:10.203Z - INFO - heartbeat request from CBRS  : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "573294134",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T03:32:10.203Z - INFO - request message received while HBT is absent, sleep 23 sec before
responding
2019-11-01T03:32:16.244Z - INFO - heartbeat request from CBRS  : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "573294134",
      "operationState": "GRANTED"
    }
  ]
}
2019-11-01T03:32:16.244Z - INFO - request message received while HBT is absent, sleep 17 sec before
responding
2019-11-01T03:32:22.296Z - INFO - heartbeat request from CBRS  : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "573294134",
      "operationState": "GRANTED"
    }
  ]
}
2019-11-01T03:32:22.296Z - INFO - request message received while HBT is absent, sleep 11 sec before
```



responding

2019-11-01T03:32:28.336Z - INFO - heartbeat request from CBRS : {

```
"heartbeatRequest": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "grantId": "573294134",
    "operationState": "GRANTED"
  }
]
```

}

2019-11-01T03:32:28.336Z - INFO - request message received while HBT is absent, sleep 5 sec before responding

2019-11-01T03:32:28.377Z - INFO - engine sent successfully, the response to CBRS : {

```
"heartbeatResponse": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "grantId": "573294134",
    "response": {
      "responseCode": 501
    },
    "transmitExpireTime": "2019-11-01T03:32:28Z"
  }
]
```

}

2019-11-01T03:32:30.203Z - INFO - arrived to nstep starting question answer session with the technician

2019-11-01T03:32:30.203Z - INFO - the question is : Did the CBSD stop RF transmissions within (transmitExpireTime + 60seconds) of last valid heartbeat response? please choose one of the answers :

2019-11-01T03:32:32.415Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:32:32.440Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:32:32.474Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:32:32.503Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:32:32.533Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"



2019-11-01T03:32:32.563Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:32:32.595Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:32:32.624Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:32:32.653Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:32:32.684Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:32:32.716Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:32:32.743Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:32:32.776Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:32:32.803Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:32:32.846Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:32:32.864Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:32:32.901Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:32:32.924Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:32:32.967Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:32:32.983Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:32:33.026Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:32:33.043Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:32:33.085Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:32:33.104Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"



range"

2019-11-01T03:32:33.145Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:32:33.164Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:32:33.206Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:32:33.223Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:32:33.252Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:32:33.283Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:32:33.298Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:32:33.345Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:32:33.348Z - INFO - engine sent successfully, the response to CBRS : "list index out of range"

2019-11-01T03:34:34.786Z - INFO - for the question : Did the CBSD stop RF transmissions within (transmitExpireTime + 60seconds) of last valid heartbeat response? , the user choose y

2019-11-01T03:34:35.996Z - INFO - The final result of the test : WINNF.FT.C.HBT.10 is - passed

WINNF.FT.C.HBT.11

2019-11-01T03:36:29.543Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2019-11-01T03:36:29.543Z - INFO - the selected test from the user : WINNF.FT.C.HBT.11 is starting now

2019-11-01T03:38:45.634Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "A",
    "cbsdSerialNumber": "gtkCbsdSn01",
    "fccId": "gtkCbsd01",
    "installationParam": {
      "antennaGain": 6,
      "height": 14.9,
      "heightType": "AMSL",
      "indoorDeployment": true,
      "latitude": 25.04134,
      "longitude": 121.372742
    },
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "gtkUser01"
  }
]
```

}

2019-11-01T03:38:45.674Z - INFO - engine sent successfully, the response to CBRS : {

```
"registrationResponse": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "response": {
      "responseCode": 0
    }
  }
]
```

}

2019-11-01T03:38:47.763Z - INFO - spectrumInquiry request from CBRS : {

```
"spectrumInquiryRequest": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "inquiredSpectrum": [
      {
        "highFrequency": 3690000000,
        "lowFrequency": 3680000000
      },
      {
        "highFrequency": 3700000000,
        "lowFrequency": 3690000000
      }
    ]
  }
]
```

}  
2019-11-01T03:38:47.773Z - INFO - engine sent successfully, the response to CBRS : {

```
"spectrumInquiryResponse": [
  {
    "availableChannel": [
      {
        "channelType": "GAA",
        "frequencyRange": {
          "highFrequency": 3690000000,
          "lowFrequency": 3680000000
        },
        "ruleApplied": "FCC_PART_96"
      },
      {
        "channelType": "GAA",
        "frequencyRange": {
          "highFrequency": 3700000000,
          "lowFrequency": 3690000000
        },
        "ruleApplied": "FCC_PART_96"
      }
    ]
  }
]
```

```
    ],
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "response": {
        "responseCode": 0
    }
}
]
}
2019-11-01T03:38:49.884Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
            "operationParam": {
                "maxEirp": 23,
                "operationFrequencyRange": {
                    "highFrequency": 3690000000,
                    "lowFrequency": 3680000000
                }
            }
        }
    ]
}
2019-11-01T03:38:49.884Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
            "channelType": "GAA",
            "grantExpireTime": "2019-11-01T03:44:49Z",
            "grantId": "675585948",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-11-01T03:38:51.976Z - INFO - heartbeat request from CBRS : {
```

```
"heartbeatRequest": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "675585948",  
    "operationState": "GRANTED"  
  }  
]  
}  
2019-11-01T03:38:51.976Z - INFO - engine sent successfully, the response to CBRS : {  
  "heartbeatResponse": [  
    {  
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
      "grantId": "675585948",  
      "response": {  
        "responseCode": 0  
      },  
      "transmitExpireTime": "2019-11-01T03:42:11Z"  
    }  
  ]  
}  
2019-11-01T03:38:54.085Z - INFO - heartbeat request from CBRS : {  
  "heartbeatRequest": [  
    {  
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
      "grantId": "675585948",  
      "operationState": "AUTHORIZED"  
    }  
  ]  
}  
2019-11-01T03:38:54.085Z - INFO - Time interval between two heartbeat request messages is: 2.11, limit  
is: 65.0  
2019-11-01T03:38:54.085Z - INFO - engine sent successfully, the response to CBRS : {  
  "heartbeatResponse": [  
    {  
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
      "grantId": "675585948",  
      "response": {
```

```
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T03:42:14Z"
    }
  ]
}
2019-11-01T03:39:11.191Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "675585948",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T03:39:11.191Z - INFO - Time interval between two heartbeat request messages is: 17.106, limit
is: 65.0
2019-11-01T03:39:11.201Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "675585948",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T03:42:31Z"
    }
  ]
}
2019-11-01T03:39:28.308Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "675585948",
      "operationState": "AUTHORIZED"
    }
  ]
}
```

```
}
2019-11-01T03:39:28.308Z - INFO - Time interval between two heartbeat request messages is: 17.116, limit
is: 65.0
2019-11-01T03:39:28.308Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "675585948",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T03:42:48Z"
    }
  ]
}
2019-11-01T03:39:45.414Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "675585948",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T03:39:45.424Z - INFO - Time interval between two heartbeat request messages is: 17.106, limit
is: 65.0
2019-11-01T03:39:45.424Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "675585948",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T03:43:05Z"
    }
  ]
}
```



```
}
2019-11-01T03:40:02.539Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "675585948",
      "grantRenew": true,
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T03:40:02.539Z - INFO - Time interval between two heartbeat request messages is: 17.126, limit
is: 65.0
2019-11-01T03:40:02.549Z - INFO - grantRenew received in HBT request message
2019-11-01T03:40:02.549Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantExpireTime": "2019-11-01T03:46:02Z",
      "grantId": "675585948",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T03:43:22Z"
    }
  ]
}
2019-11-01T03:40:19.661Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "675585948",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T03:40:19.664Z - INFO - Time interval between two heartbeat request messages is: 17.122, limit
```



is: 65.0

2019-11-01T03:40:19.668Z - INFO - engine sent successfully, the response to CBRS : {

```
"heartbeatResponse": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "675585948",  
    "response": {  
      "responseCode": 0  
    },  
    "transmitExpireTime": "2019-11-01T03:43:39Z"  
  }  
]
```

}

2019-11-01T03:40:21.642Z - INFO - arrived to nstep starting question answer session with the technician

2019-11-01T03:40:21.642Z - INFO - the question is : Did the CBSD renew its grant successfully? please choose one of the answers :

2019-11-01T03:40:33.861Z - INFO - for the question : Did the CBSD renew its grant successfully? , the user choose y

2019-11-01T03:40:38.572Z - INFO - The final result of the test : WINNF.FT.C.HBT.11 is - passed

WINNF.FT.C.MES.1

2019-11-01T03:41:54.536Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2019-11-01T03:41:54.545Z - INFO - the selected test from the user : WINNF.FT.C.MES.1 is starting now

2019-11-01T03:43:49.371Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "A",
    "cbsdSerialNumber": "gtkCbsdSn01",
    "fccId": "gtkCbsd01",
    "installationParam": {
      "antennaGain": 6,
      "height": 14.9,
      "heightType": "AMSL",
      "indoorDeployment": true,
      "latitude": 25.04134,
      "longitude": 121.372742
    },
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "gtkUser01"
  }
]
```

}

2019-11-01T03:43:49.401Z - INFO - Response message contains measReportConfig

2019-11-01T03:43:49.401Z - INFO - engine sent successfully, the response to CBRS : {

```
"registrationResponse": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "measReportConfig": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "response": {
      "responseCode": 0
    }
  }
]
```

```
    }
  }
]
}
2019-11-01T03:44:31.516Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "inquiredSpectrum": [
        {
          "highFrequency": 3690000000,
          "lowFrequency": 3680000000
        },
        {
          "highFrequency": 3700000000,
          "lowFrequency": 3690000000
        }
      ],
      "measReport": {
        "rcvdPowerMeasReports": [
          {
            "measBandwidth": 10000000,
            "measFrequency": 3550000000,
            "measRcvdPower": -83.230003
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3560000000,
            "measRcvdPower": -83.230003
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3570000000,
            "measRcvdPower": -83.230003
          },
          {
            "measBandwidth": 10000000,
```

```
"measFrequency": 3580000000,
"measRcvdPower": -83.209999
},
{
"measBandwidth": 10000000,
"measFrequency": 3590000000,
"measRcvdPower": -83.18
},
{
"measBandwidth": 10000000,
"measFrequency": 3600000000,
"measRcvdPower": -83.239998
},
{
"measBandwidth": 10000000,
"measFrequency": 3610000000,
"measRcvdPower": -83.370003
},
{
"measBandwidth": 10000000,
"measFrequency": 3620000000,
"measRcvdPower": -83.5
},
{
"measBandwidth": 10000000,
"measFrequency": 3630000000,
"measRcvdPower": -83.449997
},
{
"measBandwidth": 10000000,
"measFrequency": 3640000000,
"measRcvdPower": -83.400002
},
{
"measBandwidth": 10000000,
"measFrequency": 3650000000,
"measRcvdPower": -83.360001
```

```
    },
    {
      "measBandwidth": 10000000,
      "measFrequency": 3660000000,
      "measRcvdPower": -83.330002
    },
    {
      "measBandwidth": 10000000,
      "measFrequency": 3670000000,
      "measRcvdPower": -82.309998
    },
    {
      "measBandwidth": 10000000,
      "measFrequency": 3680000000,
      "measRcvdPower": -82.580002
    },
    {
      "measBandwidth": 10000000,
      "measFrequency": 3690000000,
      "measRcvdPower": -81.849998
    }
  ]
}
]
}
]
}
}
2019-11-01T03:44:31.516Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3690000000,
            "lowFrequency": 3680000000
          },
          "ruleApplied": "FCC_PART_96"
        }
      ]
    }
  ]
}
```

```
    },
    {
      "channelType": "GAA",
      "frequencyRange": {
        "highFrequency": 3700000000,
        "lowFrequency": 3690000000
      },
      "ruleApplied": "FCC_PART_96"
    }
  ],
  "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
  "response": {
    "responseCode": 0
  }
}
]
}

2019-11-01T03:44:33.651Z - INFO - grant request from CBRS : {
  "grantRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "measReport": {
        "rcvdPowerMeasReports": [
          {
            "measBandwidth": 10000000,
            "measFrequency": 3550000000,
            "measRcvdPower": -83.230003
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3560000000,
            "measRcvdPower": -83.230003
          },
          {
            "measBandwidth": 10000000,
            "measFrequency": 3570000000,
            "measRcvdPower": -83.230003
          }
        ]
      }
    }
  ]
}
```

```
    },
    {
      "measBandwidth": 10000000,
      "measFrequency": 3580000000,
      "measRcvdPower": -83.209999
    },
    {
      "measBandwidth": 10000000,
      "measFrequency": 3590000000,
      "measRcvdPower": -83.18
    },
    {
      "measBandwidth": 10000000,
      "measFrequency": 3600000000,
      "measRcvdPower": -83.239998
    },
    {
      "measBandwidth": 10000000,
      "measFrequency": 3610000000,
      "measRcvdPower": -83.370003
    },
    {
      "measBandwidth": 10000000,
      "measFrequency": 3620000000,
      "measRcvdPower": -83.5
    },
    {
      "measBandwidth": 10000000,
      "measFrequency": 3630000000,
      "measRcvdPower": -83.449997
    },
    {
      "measBandwidth": 10000000,
      "measFrequency": 3640000000,
      "measRcvdPower": -83.400002
    },
    {

```

```

        "measBandwidth": 10000000,
        "measFrequency": 3650000000,
        "measRcvdPower": -83.360001
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3660000000,
        "measRcvdPower": -83.330002
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3670000000,
        "measRcvdPower": -82.309998
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3680000000,
        "measRcvdPower": -82.580002
    },
    {
        "measBandwidth": 10000000,
        "measFrequency": 3690000000,
        "measRcvdPower": -81.849998
    }
]
},
"operationParam": {
    "maxEirp": 23,
    "operationFrequencyRange": {
        "highFrequency": 3690000000,
        "lowFrequency": 3680000000
    }
}
}
]
}
2019-11-01T03:44:33.660Z - INFO - engine sent successfully, the response to CBRS : {

```

```
"grantResponse": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "channelType": "GAA",  
    "grantExpireTime": "2019-11-08T03:44:33Z",  
    "grantId": "853624530",  
    "heartbeatInterval": 60,  
    "response": {  
      "responseCode": 0  
    }  
  }  
]  
}
```

2019-11-01T03:44:35.321Z - INFO - arrived to nstep starting question answer session with the technician

2019-11-01T03:44:48.244Z - INFO - The final result of the test : WINNF.FT.C.MES.1 is - passed

WINNF.FT.C.REG.1

2019-10-31T08:11:54.562Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2019-10-31T08:11:54.562Z - INFO - the selected test from the user : WINNF.FT.C.REG.1 is starting now

2019-10-31T08:11:55.273Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "A",
    "cbsdSerialNumber": "gtkCbsdSn01",
    "fccId": "gtkCbsd01",
    "installationParam": {
      "antennaGain": 6,
      "height": 14.9,
      "heightType": "AMSL",
      "indoorDeployment": true,
      "latitude": 25.041412,
      "longitude": 121.373245
    },
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "gtkUser01"
  }
]
```

}

2019-10-31T08:11:55.344Z - INFO - engine sent successfully, the response to CBRS : {

```
"registrationResponse": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "response": {
      "responseCode": 0
    }
  }
]
```

}



2019-10-31T08:11:56.579Z - INFO - arrived to nstep starting question answer session with the technician

2019-10-31T08:11:56.584Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2019-10-31T08:12:09.061Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2019-10-31T08:12:15.802Z - INFO - The final result of the test : WINNF.FT.C.REG.1 is - passed

WINNF.FT.C.REG.3

2019-10-31T08:16:14.431Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2019-10-31T08:16:14.436Z - INFO - the selected test from the user : WINNF.FT.C.REG.3 is starting now

2019-10-31T08:16:15.505Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "A",
    "cbsdSerialNumber": "gtkCbsdSn01",
    "fccId": "gtkCbsd01",
    "installationParam": {
      "antennaGain": 6,
      "height": 14.9,
      "heightType": "AMSL",
      "indoorDeployment": true,
      "latitude": 25.041409,
      "longitude": 121.373245
    },
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "gtkUser01"
  }
]
```

}

2019-10-31T08:16:15.585Z - INFO - engine sent successfully, the response to CBRS : {

```
"registrationResponse": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "response": {
      "responseCode": 0
    }
  }
]
```

}



2019-10-31T08:16:17.467Z - INFO - arrived to nstep starting question answer session with the technician

2019-10-31T08:16:17.470Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2019-10-31T08:16:25.457Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2019-10-31T08:16:26.617Z - INFO - The final result of the test : WINNF.FT.C.REG.3 is - passed



WINNF.FT.C.REG.8

2019-10-31T08:19:53.874Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2019-10-31T08:19:53.875Z - INFO - the selected test from the user : WINNF.FT.C.REG.8 is starting now

2019-10-31T08:19:54.167Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "A",
    "cbsdSerialNumber": "gtkCbsdSn01",
    "fccId": "gtkCbsd01",
    "installationParam": {
      "antennaGain": 6,
      "height": 14.9,
      "heightType": "AMSL",
      "indoorDeployment": true,
      "latitude": 25.041439,
      "longitude": 121.373314
    },
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "gtkUser01"
  }
]
```

}

2019-10-31T08:19:54.232Z - INFO - engine sent successfully, the response to CBRS : {

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

}

2019-10-31T08:19:55.888Z - INFO - arrived to nstep starting question answer session with the technician



2019-10-31T08:19:55.891Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2019-10-31T08:20:00.721Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2019-10-31T08:20:02.986Z - INFO - The final result of the test : WINNF.FT.C.REG.8 is - passed



WINNF.FT.C.REG.10

2019-10-31T08:23:45.174Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2019-10-31T08:23:45.176Z - INFO - the selected test from the user : WINNF.FT.C.REG.10 is starting now

2019-10-31T08:23:46.796Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "A",
    "cbsdSerialNumber": "gtkCbsdSn01",
    "fccId": "gtkCbsd01",
    "installationParam": {
      "antennaGain": 6,
      "height": 14.9,
      "heightType": "AMSL",
      "indoorDeployment": true,
      "latitude": 25.041437,
      "longitude": 121.373314
    },
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "gtkUser01"
  }
]
```

}

2019-10-31T08:23:46.901Z - INFO - engine sent successfully, the response to CBRS : {

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

}

2019-10-31T08:23:48.191Z - INFO - arrived to nstep starting question answer session with the technician



2019-10-31T08:23:48.194Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2019-10-31T08:23:54.007Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2019-10-31T08:23:54.954Z - INFO - The final result of the test : WINNF.FT.C.REG.10 is - passed



WINNF.FT.C.REG.12

2019-10-31T08:27:42.187Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2019-10-31T08:27:42.190Z - INFO - the selected test from the user : WINNF.FT.C.REG.12 is starting now

2019-10-31T08:27:43.032Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "A",
    "cbsdSerialNumber": "gtkCbsdSn01",
    "fccId": "gtkCbsd01",
    "installationParam": {
      "antennaGain": 6,
      "height": 14.9,
      "heightType": "AMSL",
      "indoorDeployment": true,
      "latitude": 25.041388,
      "longitude": 121.373199
    },
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "gtkUser01"
  }
]
```

}

2019-10-31T08:27:43.061Z - INFO - engine sent successfully, the response to CBRS : {

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

}

2019-10-31T08:27:44.210Z - INFO - arrived to nstep starting question answer session with the technician



2019-10-31T08:27:44.223Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2019-10-31T08:27:50.440Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2019-10-31T08:27:51.526Z - INFO - The final result of the test : WINNF.FT.C.REG.12 is - passed



WINNF.FT.C.REG.14

2019-10-31T08:31:13.891Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2019-10-31T08:31:13.894Z - INFO - the selected test from the user : WINNF.FT.C.REG.14 is starting now

2019-10-31T08:31:15.673Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "A",
    "cbsdSerialNumber": "gtkCbsdSn01",
    "fccId": "gtkCbsd01",
    "installationParam": {
      "antennaGain": 6,
      "height": 14.9,
      "heightType": "AMSL",
      "indoorDeployment": true,
      "latitude": 25.041388,
      "longitude": 121.373199
    },
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "gtkUser01"
  }
]
```

}

2019-10-31T08:31:15.739Z - INFO - engine sent successfully, the response to CBRS : {

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

}

2019-10-31T08:31:16.907Z - INFO - arrived to nstep starting question answer session with the technician



2019-10-31T08:31:16.911Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2019-10-31T08:31:20.637Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2019-10-31T08:31:22.128Z - INFO - The final result of the test : WINNF.FT.C.REG.14 is - passed



WINNF.FT.C.REG.16

2019-10-31T08:34:41.305Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2019-10-31T08:34:41.305Z - INFO - the selected test from the user : WINNF.FT.C.REG.16 is starting now

2019-10-31T08:34:43.026Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "A",
    "cbsdSerialNumber": "gtkCbsdSn01",
    "fccId": "gtkCbsd01",
    "installationParam": {
      "antennaGain": 6,
      "height": 14.9,
      "heightType": "AMSL",
      "indoorDeployment": true,
      "latitude": 25.041395,
      "longitude": 121.373222
    },
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "gtkUser01"
  }
]
```

}

2019-10-31T08:34:43.086Z - INFO - engine sent successfully, the response to CBRS : {

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

}

2019-10-31T08:34:44.336Z - INFO - arrived to nstep starting question answer session with the technician



2019-10-31T08:34:44.341Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2019-10-31T08:34:50.446Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2019-10-31T08:34:51.378Z - INFO - The final result of the test : WINNF.FT.C.REG.16 is - passed

WINNF.FT.C.REG.18

2019-10-31T08:38:22.451Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2019-10-31T08:38:22.453Z - INFO - the selected test from the user : WINNF.FT.C.REG.18 is starting now

2019-10-31T08:38:24.437Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "A",
    "cbsdSerialNumber": "gtkCbsdSn01",
    "fccId": "gtkCbsd01",
    "installationParam": {
      "antennaGain": 6,
      "height": 14.9,
      "heightType": "AMSL",
      "indoorDeployment": true,
      "latitude": 25.041397,
      "longitude": 121.37326
    },
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "gtkUser01"
  }
]
```

}

2019-10-31T08:38:24.497Z - INFO - engine sent successfully, the response to CBRS : {

```
"registrationResponse": [
  {
    "response": {
      "responseCode": 201
    }
  }
]
```

}

2019-10-31T08:38:26.476Z - INFO - arrived to nstep starting question answer session with the technician



2019-10-31T08:38:26.480Z - INFO - the question is : Were there RF transmissions from the CBSD1 during the test? please choose one of the answers :

2019-10-31T08:38:29.221Z - INFO - for the question : Were there RF transmissions from the CBSD1 during the test? , the user choose n

2019-10-31T08:38:30.581Z - INFO - The final result of the test : WINNF.FT.C.REG.18 is - passed

WINNF.FT.C.RLQ.1

2019-11-01T03:49:13.618Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2019-11-01T03:49:13.618Z - INFO - the selected test from the user : WINNF.FT.C.RLQ.1 is starting now

2019-11-01T03:50:54.891Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "A",
    "cbsdSerialNumber": "gtkCbsdSn01",
    "fccId": "gtkCbsd01",
    "installationParam": {
      "antennaGain": 6,
      "height": 14.9,
      "heightType": "AMSL",
      "indoorDeployment": true,
      "latitude": 25.04134,
      "longitude": 121.372742
    },
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "gtkUser01"
  }
]
```

2019-11-01T03:50:54.911Z - INFO - engine sent successfully, the response to CBRS : {

```
"registrationResponse": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "response": {
      "responseCode": 0
    }
  }
]
```

2019-11-01T03:50:56.993Z - INFO - spectrumInquiry request from CBRS : {

```
"spectrumInquiryRequest": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "inquiredSpectrum": [  
      {  
        "highFrequency": 3690000000,  
        "lowFrequency": 3680000000  
      },  
      {  
        "highFrequency": 3700000000,  
        "lowFrequency": 3690000000  
      }  
    ]  
  }  
]
```

}

2019-11-01T03:50:57.003Z - INFO - engine sent successfully, the response to CBRS : {

```
"spectrumInquiryResponse": [  
  {  
    "availableChannel": [  
      {  
        "channelType": "GAA",  
        "frequencyRange": {  
          "highFrequency": 3690000000,  
          "lowFrequency": 3680000000  
        },  
        "ruleApplied": "FCC_PART_96"  
      },  
      {  
        "channelType": "GAA",  
        "frequencyRange": {  
          "highFrequency": 3700000000,  
          "lowFrequency": 3690000000  
        },  
        "ruleApplied": "FCC_PART_96"  
      }  
    ]  
  }  
]
```

```
    ],
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "response": {
        "responseCode": 0
    }
}
]
}
2019-11-01T03:50:59.118Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
            "operationParam": {
                "maxEirp": 23,
                "operationFrequencyRange": {
                    "highFrequency": 3690000000,
                    "lowFrequency": 3680000000
                }
            }
        }
    ]
}
2019-11-01T03:50:59.118Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
            "channelType": "GAA",
            "grantExpireTime": "2019-11-08T03:50:59Z",
            "grantId": "262355542",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-11-01T03:51:01.209Z - INFO - heartbeat request from CBRS : {
```

```
"heartbeatRequest": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "grantId": "262355542",
    "operationState": "GRANTED"
  }
]
}
2019-11-01T03:51:01.209Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "262355542",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T03:54:21Z"
    }
  ]
}
2019-11-01T03:51:03.325Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "262355542",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T03:51:03.325Z - INFO - Time interval between two heartbeat request messages is: 2.116, limit
is: 65.0
2019-11-01T03:51:03.329Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "262355542",
      "response": {
```

```
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T03:54:23Z"
    }
  ]
}
2019-11-01T03:51:20.447Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "262355542",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T03:51:20.447Z - INFO - Time interval between two heartbeat request messages is: 17.123, limit
is: 65.0
2019-11-01T03:51:20.447Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "262355542",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T03:54:40Z"
    }
  ]
}
2019-11-01T03:51:37.562Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "262355542",
      "operationState": "AUTHORIZED"
    }
  ]
}
```

```
}
2019-11-01T03:51:37.562Z - INFO - Time interval between two heartbeat request messages is: 17.114, limit
is: 65.0
2019-11-01T03:51:37.562Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "262355542",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T03:54:57Z"
    }
  ]
}
2019-11-01T03:51:54.674Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "262355542",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T03:51:54.684Z - INFO - Time interval between two heartbeat request messages is: 17.112, limit
is: 65.0
2019-11-01T03:51:54.684Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "262355542",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T03:55:14Z"
    }
  ]
}
```

```
}
2019-11-01T03:52:11.792Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "262355542",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T03:52:11.792Z - INFO - Time interval between two heartbeat request messages is: 17.118, limit
is: 65.0
2019-11-01T03:52:11.792Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "262355542",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T03:55:31Z"
    }
  ]
}
2019-11-01T03:52:28.898Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "262355542",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T03:52:28.898Z - INFO - Time interval between two heartbeat request messages is: 17.106, limit
is: 65.0
2019-11-01T03:52:28.907Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
```

```
{
  "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
  "grantId": "262355542",
  "response": {
    "responseCode": 0
  },
  "transmitExpireTime": "2019-11-01T03:55:48Z"
}
]
```

2019-11-01T03:52:46.005Z - INFO - heartbeat request from CBRS : {

```
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "262355542",
      "operationState": "AUTHORIZED"
    }
  ]
}
```

2019-11-01T03:52:46.015Z - INFO - Time interval between two heartbeat request messages is: 17.107, limit is: 65.0

2019-11-01T03:52:46.015Z - INFO - engine sent successfully, the response to CBRS : {

```
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "262355542",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T03:56:06Z"
    }
  ]
}
```

2019-11-01T03:53:03.122Z - INFO - heartbeat request from CBRS : {

```
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
```



```
        "grantId": "262355542",
        "operationState": "AUTHORIZED"
    }
]
}
2019-11-01T03:53:03.122Z - INFO - Time interval between two heartbeat request messages is: 17.118, limit
is: 65.0
2019-11-01T03:53:03.132Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
            "grantId": "262355542",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2019-11-01T03:56:23Z"
        }
    ]
}
2019-11-01T03:53:20.239Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
            "grantId": "262355542",
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-11-01T03:53:20.239Z - INFO - Time interval between two heartbeat request messages is: 17.116, limit
is: 65.0
2019-11-01T03:53:20.249Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
            "grantId": "262355542",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
```

```
    },
    "transmitExpireTime": "2019-11-01T03:56:40Z"
  }
]
}
2019-11-01T03:53:37.357Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "262355542",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T03:53:37.357Z - INFO - Time interval between two heartbeat request messages is: 17.118, limit
is: 65.0
2019-11-01T03:53:37.357Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "262355542",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T03:56:57Z"
    }
  ]
}
2019-11-01T03:53:54.453Z - INFO - relinquishment request from CBRS : {
  "relinquishmentRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "262355542"
    }
  ]
}
2019-11-01T03:53:54.453Z - INFO - engine sent successfully, the response to CBRS : {
```

```
"relinquishmentResponse": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "262355542",  
    "response": {  
      "responseCode": 0  
    }  
  }  
]
```

```
}
```

2019-11-01T03:53:55.941Z - INFO - arrived to nstep starting question answer session with the technician

2019-11-01T03:53:55.941Z - INFO - the question is : Did CBSD1 cease RF transmission before receipt of Relinquishment Request by Test Harness? please choose one of the answers :

2019-11-01T03:54:03.316Z - INFO - for the question : Did CBSD1 cease RF transmission before receipt of Relinquishment Request by Test Harness? , the user choose y

2019-11-01T03:54:04.384Z - INFO - The final result of the test : WINNF.FT.C.RLQ.1 is - passed

WINNF.FT.C.RLQ.3

2019-11-01T05:41:14.999Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2019-11-01T05:41:14.999Z - INFO - the selected test from the user : WINNF.FT.C.RLQ.3 is starting now

2019-11-01T05:43:16.977Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "A",
    "cbsdSerialNumber": "gtkCbsdSn01",
    "fccId": "gtkCbsd01",
    "installationParam": {
      "antennaGain": 6,
      "height": 14.9,
      "heightType": "AMSL",
      "indoorDeployment": true,
      "latitude": 25.042418,
      "longitude": 121.37368
    },
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "gtkUser01"
  }
]
```

2019-11-01T05:43:17.427Z - INFO - engine sent successfully, the response to CBRS : {

```
"registrationResponse": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "response": {
      "responseCode": 0
    }
  }
]
```

2019-11-01T05:43:19.539Z - INFO - spectrumInquiry request from CBRS : {

```
"spectrumInquiryRequest": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "inquiredSpectrum": [
      {
        "highFrequency": 3690000000,
        "lowFrequency": 3680000000
      },
      {
        "highFrequency": 3700000000,
        "lowFrequency": 3690000000
      }
    ]
  }
]
```

}

2019-11-01T05:43:19.549Z - INFO - engine sent successfully, the response to CBRS : {

```
"spectrumInquiryResponse": [
  {
    "availableChannel": [
      {
        "channelType": "GAA",
        "frequencyRange": {
          "highFrequency": 3690000000,
          "lowFrequency": 3680000000
        },
        "ruleApplied": "FCC_PART_96"
      },
      {
        "channelType": "GAA",
        "frequencyRange": {
          "highFrequency": 3700000000,
          "lowFrequency": 3690000000
        },
        "ruleApplied": "FCC_PART_96"
      }
    ]
  }
]
```

```
    ],
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "response": {
        "responseCode": 0
    }
}
]
}
2019-11-01T05:43:21.660Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
            "operationParam": {
                "maxEirp": 23,
                "operationFrequencyRange": {
                    "highFrequency": 3690000000,
                    "lowFrequency": 3680000000
                }
            }
        }
    ]
}
2019-11-01T05:43:21.670Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
            "channelType": "GAA",
            "grantExpireTime": "2019-11-08T05:43:21Z",
            "grantId": "574738570",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-11-01T05:43:23.753Z - INFO - heartbeat request from CBRS : {
```

```
"heartbeatRequest": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "574738570",  
    "operationState": "GRANTED"  
  }  
]
```

```
}
```

2019-11-01T05:43:23.773Z - INFO - engine sent successfully, the response to CBRS : {

```
"heartbeatResponse": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "574738570",  
    "response": {  
      "responseCode": 0  
    },  
    "transmitExpireTime": "2019-11-01T05:46:43Z"  
  }  
]
```

```
}
```

2019-11-01T05:43:25.874Z - INFO - heartbeat request from CBRS : {

```
"heartbeatRequest": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "574738570",  
    "operationState": "AUTHORIZED"  
  }  
]
```

```
}
```

2019-11-01T05:43:25.874Z - INFO - Time interval between two heartbeat request messages is: 2.111, limit is: 65.0

2019-11-01T05:43:25.884Z - INFO - engine sent successfully, the response to CBRS : {

```
"heartbeatResponse": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "574738570",  
    "response": {
```

```
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T05:46:45Z"
    }
  ]
}
2019-11-01T05:43:42.993Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "574738570",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T05:43:42.993Z - INFO - Time interval between two heartbeat request messages is: 17.119, limit
is: 65.0
2019-11-01T05:43:42.993Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "574738570",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T05:47:02Z"
    }
  ]
}
2019-11-01T05:44:00.114Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "574738570",
      "operationState": "AUTHORIZED"
    }
  ]
}
```

```
}
2019-11-01T05:44:00.114Z - INFO - Time interval between two heartbeat request messages is: 17.121, limit
is: 65.0
2019-11-01T05:44:00.114Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "574738570",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T05:47:20Z"
    }
  ]
}
2019-11-01T05:44:17.240Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "574738570",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T05:44:17.243Z - INFO - Time interval between two heartbeat request messages is: 17.127, limit
is: 65.0
2019-11-01T05:44:17.247Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "574738570",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T05:47:37Z"
    }
  ]
}
```

```
}
2019-11-01T05:44:34.365Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "574738570",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T05:44:34.368Z - INFO - Time interval between two heartbeat request messages is: 17.125, limit
is: 65.0
2019-11-01T05:44:34.372Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "574738570",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T05:47:54Z"
    }
  ]
}
2019-11-01T05:44:36.453Z - INFO - relinquishment request from CBRS : {
  "relinquishmentRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "574738570"
    }
  ]
}
2019-11-01T05:44:36.453Z - INFO - engine sent successfully, the response to CBRS : {
  "relinquishmentResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "response": {
```

```
        "responseCode": 102,  
        "responseData": [  
            "grantId"  
        ]  
    }  
}  
]  
}
```

2019-11-01T05:44:37.805Z - INFO - arrived to nstep starting question answer session with the technician

2019-11-01T05:44:37.805Z - INFO - the question is : Did CBSD1 cease RF transmission before receipt of Relinquishment Request by Test Harness? please choose one of the answers :

2019-11-01T05:44:50.367Z - INFO - for the question : Did CBSD1 cease RF transmission before receipt of Relinquishment Request by Test Harness? , the user choose y

2019-11-01T05:44:51.676Z - INFO - The final result of the test : WINNF.FT.C.RLQ.3 is - passed

WINNF.FT.C.RLQ.5

2019-11-01T05:45:19.010Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2019-11-01T05:45:19.010Z - INFO - the selected test from the user : WINNF.FT.C.RLQ.5 is starting now

2019-11-01T05:46:58.730Z - INFO - registration request from CBRS : {

```
"registrationRequest": [
  {
    "airInterface": {
      "radioTechnology": "E_UTRA"
    },
    "cbsdCategory": "A",
    "cbsdSerialNumber": "gtkCbsdSn01",
    "fccId": "gtkCbsd01",
    "installationParam": {
      "antennaGain": 6,
      "height": 14.9,
      "heightType": "AMSL",
      "indoorDeployment": true,
      "latitude": 25.042385,
      "longitude": 121.373695
    },
    "measCapability": [
      "RECEIVED_POWER_WITHOUT_GRANT"
    ],
    "userId": "gtkUser01"
  }
]
```

2019-11-01T05:46:58.750Z - INFO - engine sent successfully, the response to CBRS : {

```
"registrationResponse": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "response": {
      "responseCode": 0
    }
  }
]
```

2019-11-01T05:47:00.848Z - INFO - spectrumInquiry request from CBRS : {

```
"spectrumInquiryRequest": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "inquiredSpectrum": [
      {
        "highFrequency": 3690000000,
        "lowFrequency": 3680000000
      },
      {
        "highFrequency": 3700000000,
        "lowFrequency": 3690000000
      }
    ]
  }
]
```

}  
2019-11-01T05:47:00.858Z - INFO - engine sent successfully, the response to CBRS : {

```
"spectrumInquiryResponse": [
  {
    "availableChannel": [
      {
        "channelType": "GAA",
        "frequencyRange": {
          "highFrequency": 3690000000,
          "lowFrequency": 3680000000
        },
        "ruleApplied": "FCC_PART_96"
      },
      {
        "channelType": "GAA",
        "frequencyRange": {
          "highFrequency": 3700000000,
          "lowFrequency": 3690000000
        },
        "ruleApplied": "FCC_PART_96"
      }
    ]
  }
]
```

```
    ],
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "response": {
        "responseCode": 0
    }
}
]
}
2019-11-01T05:47:02.977Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
            "operationParam": {
                "maxEirp": 23,
                "operationFrequencyRange": {
                    "highFrequency": 3690000000,
                    "lowFrequency": 3680000000
                }
            }
        }
    ]
}
2019-11-01T05:47:02.977Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
            "channelType": "GAA",
            "grantExpireTime": "2019-11-08T05:47:02Z",
            "grantId": "337203746",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2019-11-01T05:47:05.065Z - INFO - heartbeat request from CBRS : {
```

```
"heartbeatRequest": [
  {
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
    "grantId": "337203746",
    "operationState": "GRANTED"
  }
]
}
2019-11-01T05:47:05.075Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "337203746",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T05:50:25Z"
    }
  ]
}
2019-11-01T05:47:07.186Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "337203746",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T05:47:07.186Z - INFO - Time interval between two heartbeat request messages is: 2.12, limit
is: 65.0
2019-11-01T05:47:07.186Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "337203746",
      "response": {
```

```
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T05:50:27Z"
    }
  ]
}
2019-11-01T05:47:24.308Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "337203746",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T05:47:24.308Z - INFO - Time interval between two heartbeat request messages is: 17.122, limit
is: 65.0
2019-11-01T05:47:24.308Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "337203746",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T05:50:44Z"
    }
  ]
}
2019-11-01T05:47:41.414Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "337203746",
      "operationState": "AUTHORIZED"
    }
  ]
}
```

```
}
2019-11-01T05:47:41.414Z - INFO - Time interval between two heartbeat request messages is: 17.106, limit
is: 65.0
2019-11-01T05:47:41.414Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "337203746",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T05:51:01Z"
    }
  ]
}
2019-11-01T05:47:58.539Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "337203746",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-01T05:47:58.540Z - INFO - Time interval between two heartbeat request messages is: 17.126, limit
is: 65.0
2019-11-01T05:47:58.543Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "337203746",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-01T05:51:18Z"
    }
  ]
}
```

```
}
2019-11-01T05:48:09.625Z - INFO - relinquishment request from CBRS  : {
  "relinquishmentRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "337203746"
    }
  ]
}
2019-11-01T05:48:09.631Z - INFO - engine sent successfully, the response to CBRS  : {
  "relinquishmentResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "response": {
        "responseCode": 103,
        "responseData": [
          "grantId"
        ]
      }
    }
  ]
}
2019-11-01T05:48:11.559Z - INFO - arrived to nstep starting question answer session with the technician
2019-11-01T05:48:11.559Z - INFO - the question is : Did CBSD1 cease RF transmission before receipt of
Relinquishment Request by Test Harness? please choose one of the answers :
2019-11-01T05:48:16.426Z - INFO - for the question : Did CBSD1 cease RF transmission before receipt of
Relinquishment Request by Test Harness? , the user choose y
2019-11-01T05:48:17.216Z - INFO - The final result of the test : WINNF.FT.C.RLQ.5 is - passed
```

WINNF.FT.C.SCS.1

2019-11-06T07:39:48.012Z - INFO - WINNF TEST HARNESS RELEASE: 1.0.0.3 - 2018-November-13

2019-11-06T07:39:48.012Z - INFO - Selected spectrum frequency is {'lowFrequency': 3680000000L,  
'highFrequency': 3690000000L}

2019-11-06T07:39:48.012Z - INFO - Granted Spectrum Max Eirp = 10dBm/MHz

2019-11-06T07:39:48.012Z - INFO - the selected test from the user : PowerMeasTest is starting now

2019-11-06T07:41:33.052Z - INFO - registration request from CBRS : {

```
"registrationRequest": [  
  {  
    "airInterface": {  
      "radioTechnology": "E_UTRA"  
    },  
    "cbsdCategory": "A",  
    "cbsdSerialNumber": "gtkCbsdSn01",  
    "fccId": "gtkCbsd01",  
    "installationParam": {  
      "antennaGain": 6,  
      "height": 14.9,  
      "heightType": "AMSL",  
      "indoorDeployment": true,  
      "latitude": 25.041412,  
      "longitude": 121.373085  
    },  
    "measCapability": [  
      "RECEIVED_POWER_WITHOUT_GRANT"  
    ],  
    "userId": "gtkUser01"  
  }  
]
```

}

2019-11-06T07:41:33.101Z - INFO - engine sent successfully, the response to CBRS : {

```
"registrationResponse": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "response": {  
      "responseCode": 0  
    }  
  }  
]
```

```
    }
  ]
}
2019-11-06T07:41:35.203Z - INFO - spectrumInquiry request from CBRS : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "inquiredSpectrum": [
        {
          "highFrequency": 3690000000,
          "lowFrequency": 3680000000
        },
        {
          "highFrequency": 3700000000,
          "lowFrequency": 3690000000
        }
      ]
    }
  ]
}
2019-11-06T07:41:35.233Z - INFO - The requested spectrum is in the range, SpectrumInquiry response code is 0
2019-11-06T07:41:35.233Z - INFO - engine sent successfully, the response to CBRS : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3690000000,
            "lowFrequency": 3680000000
          },
          "maxEirp": 10,
          "ruleApplied": "FCC_PART_96"
        }
      ],
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
```

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

2019-11-06T07:41:37.390Z - INFO - grant request from CBRS : {
    "grantRequest": [
        {
            "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
            "operationParam": {
                "maxEirp": 4,
                "operationFrequencyRange": {
                    "highFrequency": 3690000000,
                    "lowFrequency": 3680000000
                }
            }
        }
    ]
}

2019-11-06T07:41:37.408Z - INFO - engine sent successfully, the response to CBRS : {
    "grantResponse": [
        {
            "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
            "channelType": "GAA",
            "grantExpireTime": "2019-11-13T07:41:37Z",
            "grantId": "960765042",
            "heartbeatInterval": 60,
            "response": {
                "responseCode": 0
            }
        }
    ]
}

2019-11-06T07:41:39.510Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
```

```
        "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
        "grantId": "960765042",
        "operationState": "GRANTED"
    }
]
}
2019-11-06T07:41:39.530Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
            "grantId": "960765042",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2019-11-06T07:44:59Z"
        }
    ]
}
2019-11-06T07:41:41.651Z - INFO - heartbeat request from CBRS : {
    "heartbeatRequest": [
        {
            "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
            "grantId": "960765042",
            "operationState": "AUTHORIZED"
        }
    ]
}
2019-11-06T07:41:41.661Z - INFO - engine sent successfully, the response to CBRS : {
    "heartbeatResponse": [
        {
            "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
            "grantId": "960765042",
            "response": {
                "responseCode": 0
            },
            "transmitExpireTime": "2019-11-06T07:45:01Z"
        }
    ]
}
```

```
]
}
2019-11-06T07:41:58.765Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "960765042",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-06T07:41:58.775Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "960765042",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-06T07:45:18Z"
    }
  ]
}
2019-11-06T07:42:15.891Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "960765042",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-06T07:42:15.901Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "960765042",
```

```
"response": {
  "responseCode": 0
},
"transmitExpireTime": "2019-11-06T07:45:35Z"
}
]
}
2019-11-06T07:42:33.015Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "960765042",
      "operationState": "AUTHORIZED"
    }
  ]
}
2019-11-06T07:42:33.025Z - INFO - engine sent successfully, the response to CBRS : {
  "heartbeatResponse": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "960765042",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2019-11-06T07:45:53Z"
    }
  ]
}
2019-11-06T07:42:50.130Z - INFO - heartbeat request from CBRS : {
  "heartbeatRequest": [
    {
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",
      "grantId": "960765042",
      "operationState": "AUTHORIZED"
    }
  ]
}
```



2019-11-06T07:42:50.140Z - INFO - engine sent successfully, the response to CBRS : {

```
"heartbeatResponse": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "960765042",  
    "response": {  
      "responseCode": 0  
    },  
    "transmitExpireTime": "2019-11-06T07:46:10Z"  
  }  
]
```

}

2019-11-06T07:43:07.234Z - INFO - relinquishment request from CBRS : {

```
"relinquishmentRequest": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "960765042"  
  }  
]
```

}

2019-11-06T07:43:07.263Z - INFO - engine sent successfully, the response to CBRS : {

```
"relinquishmentResponse": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
    "grantId": "960765042",  
    "response": {  
      "responseCode": 0  
    }  
  }  
]
```

}

2019-11-06T07:43:08.361Z - INFO - deregistration request from CBRS : {

```
"deregistrationRequest": [  
  {  
    "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01"  
  }  
]
```



```
}  
2019-11-06T07:43:08.381Z - INFO - engine sent successfully, the response to CBRS : {  
  "deregistrationResponse": [  
    {  
      "cbsdId": "gtkCbsd01Mock-SASgtkCbsdSn01",  
      "response": {  
        "responseCode": 0  
      }  
    }  
  ]  
}
```



WINNF.FT.C.SCS.2

LSM login: root

Password:

BusyBox v1.20.2 (2019-10-09 13:28:24 CST) built-in shell (ash)

Enter 'help' for a list of built-in commands.

Setting affinity to 0x1

Script started, file is audit\_log.txt

BusyBox v1.20.2 (2019-10-09 13:28:24 CST) built-in shell (ash)

Enter 'help' for a list of built-in commands.

~ # cd /mnt/jffs2/

/mnt/jffs2 # ls

CBRS\_FREQ\_LIST\_FOR\_10M.txt pkgs

CBRS\_FREQ\_LIST\_FOR\_5M.txt reboot\_log

CbrsCert reboot\_reason

GTK\_ipsec setCbrsCmsValue.sh

cbrsClient startup.cfg

conf startup.cfg.b3

dac\_value startup.cfg.b7

harnessrevokecert.pem startup.cfg.last

libpcap.so.1.3.0 startup.cfg.tdd

log\_tmp tcpdump

oma xoservo

/mnt/jffs2 # killall cbrsClient

/mnt/jffs2 # ./cbrsClient &

/mnt/jffs2 # [src/main.c(88)] cert\_enable set as true, load cert

1099207382800:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificat

e verify failed:s3\_clnt.c:1169:

[src/httpHandle.c(1787)] Connection failed

[src/main.c(334)] SSL Connection failed

1099207382800:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificat

[illegible]

```
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099207382800:error:14090086:SSL routines:SSL3_GET_SERVER_CERTIFICATE:certificat  
e verify failed:s3_clnt.c:1169:  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099207382800:error:14090086:SSL routines:SSL3_GET_SERVER_CERTIFICATE:certificate verify  
failed:s3_ clnt.c:1169:  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099207382800:error:14090086:SSL routines:SSL3_GET_SERVER_CERTIFICATE:certificate verify  
failed:s3_ clnt.c:1169:  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099207382800:error:14090086:SSL routines:SSL3_GET_SERVER_CERTIFICATE:certificate verify  
failed:s3_ clnt.c:1169:  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099207382800:error:14090086:SSL routines:SSL3_GET_SERVER_CERTIFICATE:certificate verify  
failed:s3_ clnt.c:1169:  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099207382800:error:14090086:SSL routines:SSL3_GET_SERVER_CERTIFICATE:certificate verify  
failed:s3_ clnt.c:1169:  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099207382800:error:14090086:SSL routines:SSL3_GET_SERVER_CERTIFICATE:certificate verify  
failed:s3_ clnt.c:1169:  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099207382800:error:14090086:SSL routines:SSL3_GET_SERVER_CERTIFICATE:certificate verify  
failed:s3_clnt.c:1169:  
[src/httpHandle.c(1787)] Connection failed
```

[illegible]

[illegible]

[illegible]



[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099207382800:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificate verify failed:s3\_clnt.c:1169:  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099207382800:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificate verify failed:s3\_clnt.c:1169:  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099207382800:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificate verify failed:s3\_clnt.c:1169:  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099207382800:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificate verify failed:s3\_clnt.c:1169:  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099207382800:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificate verify failed:s3\_clnt.c:1169:  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099207382800:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificate verify failed:s3\_clnt.c:1169:  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed



WINNF.FT.C.SCS.3

LSM login: root

Password:

BusyBox v1.20.2 (2019-10-09 13:28:24 CST) built-in shell (ash)

Enter 'help' for a list of built-in commands.

Setting affinity to 0x1

Script started, file is audit\_log.txt

BusyBox v1.20.2 (2019-10-09 13:28:24 CST) built-in shell (ash)

Enter 'help' for a list of built-in commands.

~ # cd /mnt/jffs2/

/mnt/jffs2 # killall cbrsClient

/mnt/jffs2 # ./cbrsClient &

/mnt/jffs2 # [src/main.c(88)] cert\_enable set as true, load cert

1099209942800:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificate verify failed:s3\_clnt.c:1169:

[src/httpHandle.c(1787)] Connection failed

[src/main.c(334)] SSL Connection failed

1099209942800:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificate verify failed:s3\_clnt.c:1169:

[src/httpHandle.c(1787)] Connection failed

[src/main.c(334)] SSL Connection failed

1099209942800:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificate verify failed:s3\_clnt.c:1169:

[src/httpHandle.c(1787)] Connection failed

[src/main.c(334)] SSL Connection failed

1099209942800:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificate verify failed:s3\_clnt.c:1169:

[src/httpHandle.c(1787)] Connection failed

[src/main.c(334)] SSL Connection failed

1099209942800:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificate verify

[illegible]

[illegible]

[illegible]



1099209942800:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificate verify  
failed:s3\_clnt.c:1169:  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed



WINNF.FT.C.SCS.4

LSM login: root

Password:

BusyBox v1.20.2 (2019-10-09 13:28:24 CST) built-in shell (ash)

Enter 'help' for a list of built-in commands.

Setting affinity to 0x1

Script started, file is audit\_log.txt

BusyBox v1.20.2 (2019-10-09 13:28:24 CST) built-in shell (ash)

Enter 'help' for a list of built-in commands.

~ # cd /mnt/jffs2/

/mnt/jffs2 # ls

CBRS\_FREQ\_LIST\_FOR\_10M.txt pkgs

CBRS\_FREQ\_LIST\_FOR\_5M.txt reboot\_log

CbrsCert reboot\_reason

GTK\_ipsec setCbrsCmsValue.sh

cbrsClient startup.cfg

conf startup.cfg.b3

dac\_value startup.cfg.b7

harnessrevokecert.pem startup.cfg.last

libpcap.so.1.3.0 startup.cfg.tdd

log\_tmp tcpdump

oma xoservo

/mnt/jffs2 # killall cbrsClient

/mnt/jffs2 # ./cbrsClient &

/mnt/jffs2 # [src/main.c(88)] cert\_enable set as true, load cert

1099277002512:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificate verify

failed:s3\_clnt.c:1169:

[src/httpHandle.c(1787)] Connection failed

[src/main.c(334)] SSL Connection failed

1099277002512:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificate verify

[illegible]



[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099277002512:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificate verify failed:s3\_clnt.c:1169:

[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099277002512:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificate verify failed:s3\_clnt.c:1169:

[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099277002512:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificate verify failed:s3\_clnt.c:1169:

[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099277002512:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificate verify failed:s3\_clnt.c:1169:

[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099277002512:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificate verify failed:s3\_clnt.c:1169:

[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099277002512:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificate verify failed:s3\_clnt.c:1169:

[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099277002512:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificate verify failed:s3\_clnt.c:1169:

[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099277002512:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificate verify failed:s3\_clnt.c:1169:

[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099277002512:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificate verify failed:s3\_clnt.c:1169:

[src/httpHandle.c(1787)] Connection failed

[illegible]

[illegible]

[illegible]



[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099277002512:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificate verify failed:s3\_clnt.c:1169:  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099277002512:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificate verify failed:s3\_clnt.c:1169:  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099277002512:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificate verify failed:s3\_clnt.c:1169:  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099277002512:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificate verify failed:s3\_clnt.c:1169:  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099277002512:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificate verify failed:s3\_clnt.c:1169:  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
[src/connHandle.c(46)] timeout or select error  
[src/connHandle.c(373)] OpenConnection failed  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(338)] Open Connection failed  
[src/connHandle.c(46)] timeout or select error  
[src/connHandle.c(373)] OpenConnection failed  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(338)] Open Connection failed  
[src/connHandle.c(46)] timeout or select error  
[src/connHandle.c(373)] OpenConnection failed  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(338)] Open Connection failed  
[src/connHandle.c(46)] timeout or select error  
[src/connHandle.c(373)] OpenConnection failed  
[src/httpHandle.c(1787)] Connection failed



|                                          |
|------------------------------------------|
| [src/main.c(338)] Open Connection failed |
|------------------------------------------|



WINNF.FT.C.SCS.5

LSM login: root

Password:

BusyBox v1.20.2 (2019-10-09 13:28:24 CST) built-in shell (ash)

Enter 'help' for a list of built-in commands.

Setting affinity to 0x1

Script started, file is audit\_log.txt

BusyBox v1.20.2 (2019-10-09 13:28:24 CST) built-in shell (ash)

Enter 'help' for a list of built-in commands.

~ # cd /mnt/jffs2/

/mnt/jffs2 # killall cbrsClient

/mnt/jffs2 # ./cbrsClient &

/mnt/jffs2 # [src/main.c(88)] cert\_enable set as true, load cert

1099145516816:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificate verify failed:s3\_clnt.c:1169:

[src/httpHandle.c(1787)] Connection failed

[src/main.c(334)] SSL Connection failed

1099145516816:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificate verify failed:s3\_clnt.c:1169:

[src/httpHandle.c(1787)] Connection failed

[src/main.c(334)] SSL Connection failed

1099145516816:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificate verify failed:s3\_clnt.c:1169:

[src/httpHandle.c(1787)] Connection failed

[src/main.c(334)] SSL Connection failed

1099145516816:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificate verify failed:s3\_clnt.c:1169:

[src/httpHandle.c(1787)] Connection failed

[src/main.c(334)] SSL Connection failed

1099145516816:error:14090086:SSL routines:SSL3\_GET\_SERVER\_CERTIFICATE:certificate verify

```
failed:s3_clnt.c:1169:  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099145516816:error:14090086:SSL routines:SSL3_GET_SERVER_CERTIFICATE:certificate verify  
failed:s3_clnt.c:1169:  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099145516816:error:14090086:SSL routines:SSL3_GET_SERVER_CERTIFICATE:certificate verify  
failed:s3_clnt.c:1169:  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099145516816:error:14090086:SSL routines:SSL3_GET_SERVER_CERTIFICATE:certificate verify  
failed:s3_clnt.c:1169:  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099145516816:error:14090086:SSL routines:SSL3_GET_SERVER_CERTIFICATE:certificate verify  
failed:s3_clnt.c:1169:  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099145516816:error:14090086:SSL routines:SSL3_GET_SERVER_CERTIFICATE:certificate verify  
failed:s3_clnt.c:1169:  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099145516816:error:14090086:SSL routines:SSL3_GET_SERVER_CERTIFICATE:certificate verify  
failed:s3_clnt.c:1169:  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099145516816:error:14090086:SSL routines:SSL3_GET_SERVER_CERTIFICATE:certificate verify  
failed:s3_clnt.c:1169:  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
1099145516816:error:14090086:SSL routines:SSL3_GET_SERVER_CERTIFICATE:certificate verify  
failed:s3_clnt.c:1169:  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(334)] SSL Connection failed  
[src/connHandle.c(46)] timeout or select error  
[src/connHandle.c(373)] OpenConnection failed  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(338)] Open Connection failed  
[src/connHandle.c(46)] timeout or select error  
[src/connHandle.c(373)] OpenConnection failed
```



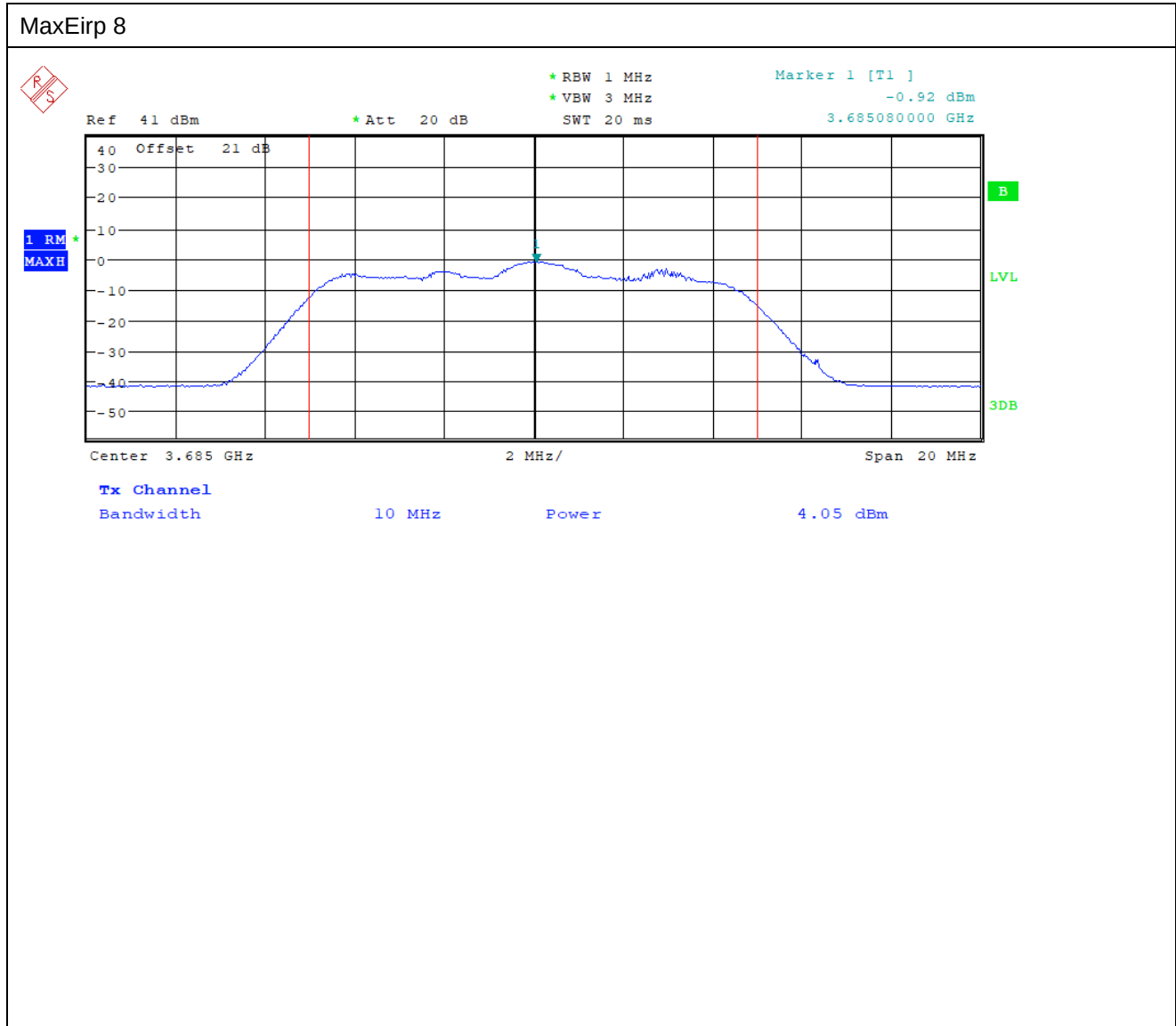
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(338)] Open Connection failed  
[src/connHandle.c(46)] timeout or select error  
[src/connHandle.c(373)] OpenConnection failed  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(338)] Open Connection failed  
[src/connHandle.c(46)] timeout or select error  
[src/connHandle.c(373)] OpenConnection failed  
[src/httpHandle.c(1787)] Connection failed  
[src/main.c(338)] Open Connection failed

## Appendix C RF measurement plots

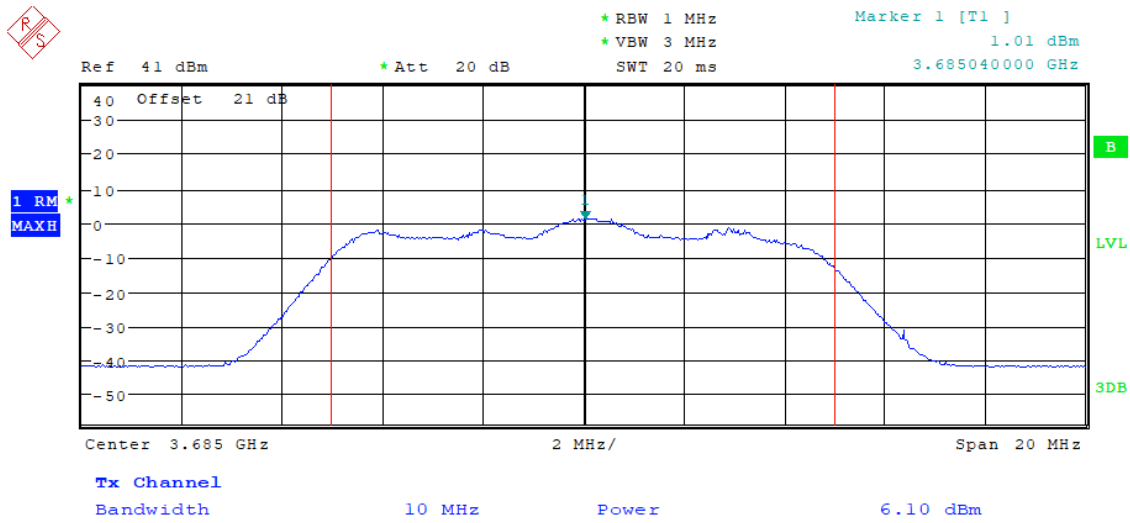
Report Clause 4.32 [WINNF.PT.C.HBT] UUT RF Transmit Power Measurement

| SAS authorizes MaxEirp (dBm/MHz) | Channel Power (dBm/10MHz) |
|----------------------------------|---------------------------|
| 8                                | 4.05                      |
| 10                               | 6.10                      |
| 12                               | 8.01                      |
| 14                               | 10.06                     |
| 16                               | 12.12                     |
| 18                               | 14.17                     |
| 20                               | 16.32                     |
| 22                               | 18.00                     |

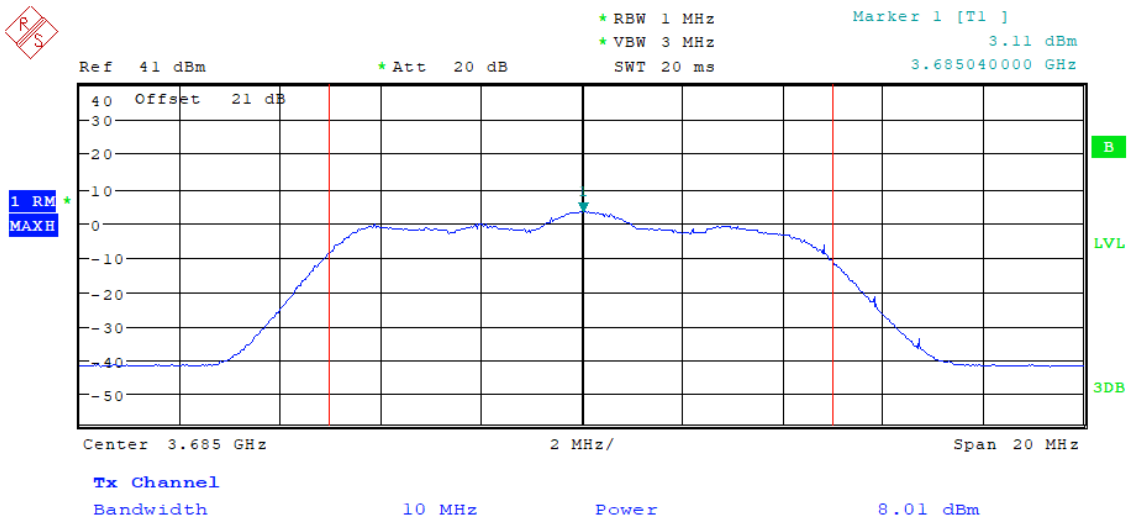
Note : The Ref Offset 21dB includes the antenna gain 6dBi and cable path loss 15dB.



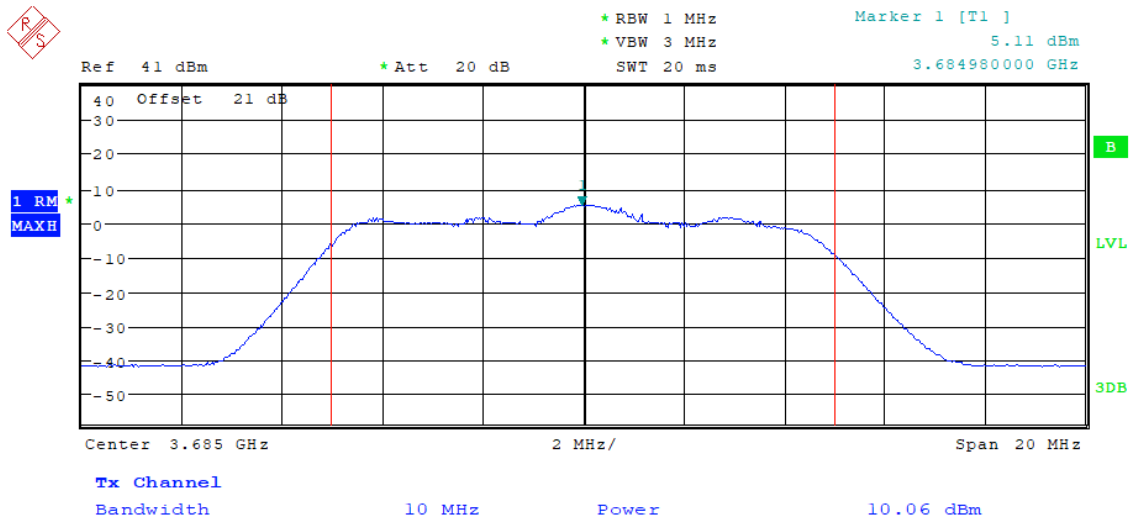
## MaxEirp 10



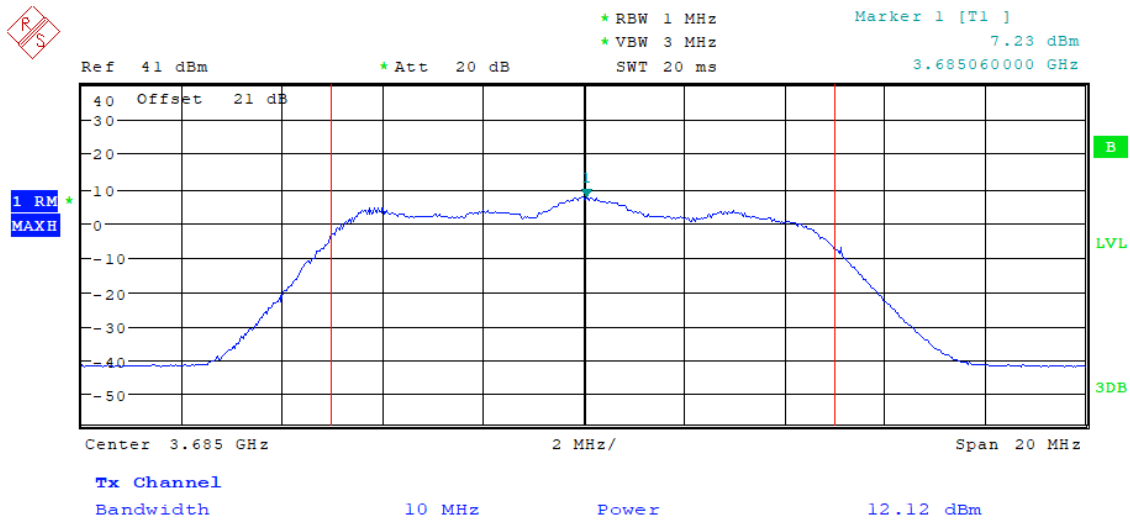
## MaxEirp 12



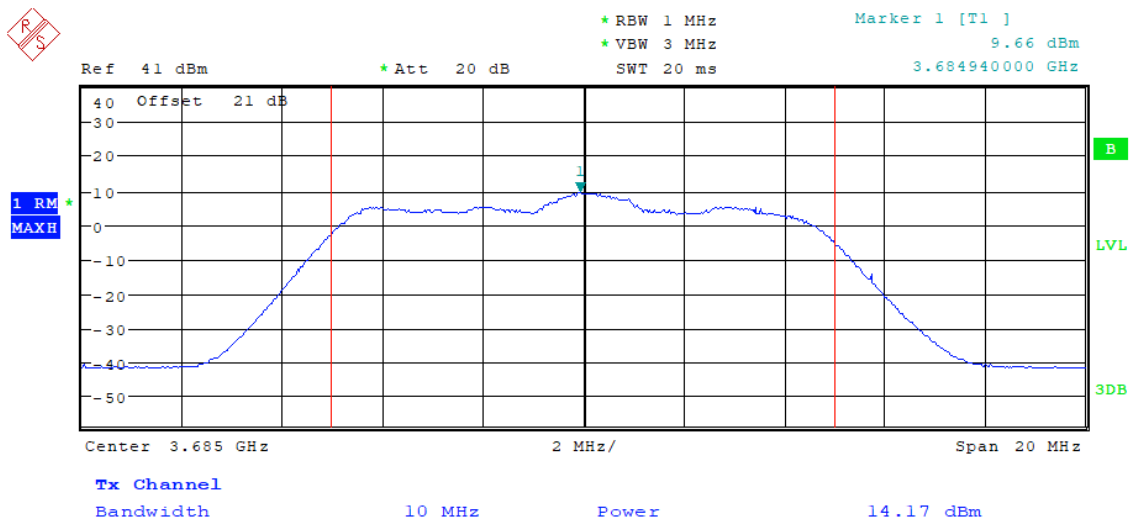
## MaxEirp 14



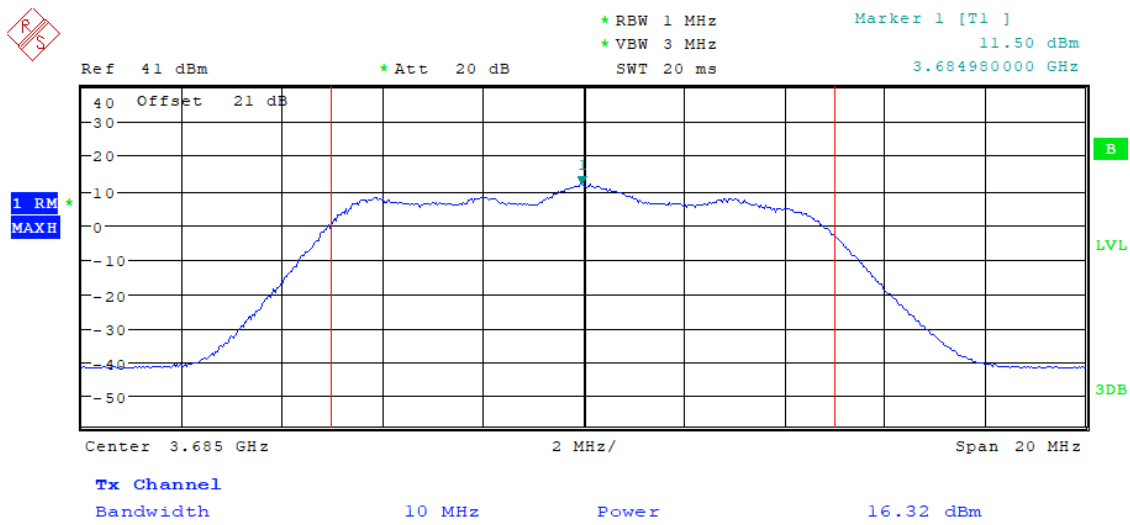
## MaxEirp 16



## MaxEirp 18



## MaxEirp 20



## MaxEirp 22

