TEST REPORT

Application No.:	SZEM2007006000CR
Applicant:	Baicells Technologies Co., Ltd.
Address of Applicant:	9-10F, 1stBldg., No.81BeiqingRoad, Haidian District, Beijing, China
Manufacturer:	Baicells Technologies Co., Ltd.
Address of Manufacturer:	9-10F, 1stBldg., No.81BeiqingRoad, Haidian District, Beijing, China
Equipment Under Test (EUT):	
EUT Name:	LTE Indoor CPE
Model No.:	EG2013B-M11, EG3013B-M11 ♣
♣	Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Trade Mark:	Baicells
FCC ID:	2AG32EG2013BM11
Standard(s) :	CBRSA-TS-9001-V1.0.0 WINNF-19-IN-00033 V1.0 WINNF-TS-0122-V1.0 FCC 47 CFR Part 96 KDB 940660 D01 KDB 940660 D02
Date of Receipt:	2020-07-11
Date of Test:	2020-07-11 to 2020-07-24
Date of Issue:	2020-08-13
Test Result:	**Pass***

* In the configuration tested, the EUT complied with the standards specified above.

This report supersedes our previous report SZEM200700600001, issued on 2020-07-27, which is hereby deemed null and void.

Keny Xu
EMC Laboratory Manager

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Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		2020-07-27		Original
02		2020-08-13		Updated

Authorized for issue by:				
		Jacky Li /Project Engineer		
		Eric Fu /Reviewer		

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2 Test Summary

Item	Standard	Test Case ID	Result
Multi-Step registration	WINNF-TS-0122-V1.0.0	WINNF.FT.C.REG.1	Pass
Single-Step registration for CBSD with CPI signed data	WINNF-TS-0122-V1.0.0	WINNF.FT.C.REG.5	Pass
Missing Required parameters (responseCode 102)	WINNF-TS-0122-V1.0.0	WINNF.FT.C.REG.8	Pass
Pending registration (responseCode 200)	WINNF-TS-0122-V1.0.0	WINNF.FT.C.REG.10	Pass
Invalid parameter (responseCode 103)	WINNF-TS-0122-V1.0.0	WINNF.FT.C.REG.12	Pass
Blacklisted CBSD (responseCode 101)	WINNF-TS-0122-V1.0.0	WINNF.FT.C.REG.14	Pass
Unsupported SAS protocol version (responseCode 100)	WINNF-TS-0122-V1.0.0	WINNF.FT.C.REG.16	Pass
Group Error (responseCode 201)	WINNF-TS-0122-V1.0.0	WINNF.FT.C.REG.18	Pass
Unsuccessful Grant responseCode=400 (INTERFERENCE)	WINNF-TS-0122-V1.0.0	WINNF.FT.D.GRA.1	Pass
Unsuccessful Grant responseCode=401 (GRANT_CONFLICT)	WINNF-TS-0122-V1.0.0	WINNF.FT.C.GRA.2	Pass
Heartbeat Success Case (first Heartbeat Response)	WINNF-TS-0122-V1.0.0	WINNF.FT.C.HBT.1	Pass
Heartbeat responseCode=105 (DEREGISTER)	WINNF-TS-0122-V1.0.0	WINNF.FT.C.HBT.3	Pass
Heartbeat responseCode=500 (TERMINATED_GRANT)	WINNF-TS-0122-V1.0.0	WINNF.FT.C.HBT.4	Pass
Heartbeat responseCode=501 (SUSPENDED_GRANT) in First Heartbeat Response	WINNF-TS-0122-V1.0.0	WINNF.FT.C.HBT.5	Pass
Heartbeat responseCode=501 (SUSPENDED_GRANT) in Subsequent Heartbeat Response	WINNF-TS-0122-V1.0.0	WINNF.FT.C.HBT.6	Pass
Heartbeat responseCode=502 (UNSYNC_OP_PARAM)	WINNF-TS-0122-V1.0.0	WINNF.FT.C.HBT.7	Pass
Heartbeat Response Absent (First Heartbeat)	WINNF-TS-0122-V1.0.0	WINNF.FT.C.HBT.9	Pass
Heartbeat Response Absent (Subsequent Heartbeat)	WINNF-TS-0122-V1.0.0	WINNF.FT.C.HBT.10	Pass
Successful Relinquishment	WINNF-TS-0122-V1.0.0	WINNF.FT.C.RLQ.1	Pass

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Item	Standard	Test Case ID	Result
Successful Deregistration	WINNF-TS-0122-V1.0.0	WINNF.FT.C.DRG.1	Pass
Successful TLS connection between UUT and SAS Test Harness	WINNF-TS-0122-V1.0.0	WINNF.FT.C.SCS.1	Pass
TLS failure due to revoked certificate	WINNF-TS-0122-V1.0.0	WINNF.FT.C.SCS.2	Pass
TLS failure due to expired server certificate	WINNF-TS-0122-V1.0.0	WINNF.FT.C.SCS.3	Pass
TLS failure when SAS Test Harness certificate is issue by unknown CA	WINNF-TS-0122-V1.0.0	WINNF.FT.C.SCS.4	Pass
TLS failure when certificate at the SAS Test Harness is corrupted	WINNF-TS-0122-V1.0.0	WINNF.FT.C.SCS.5	Pass
UUT RF Transmit Power Measurement	WINNF-TS-0122-V1.0.0	WINNF.PT.C.HBT	Pass
SAS Version: 1.0.0.3			

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

Test standards:

CBRSA-TS-9001-V1.0.0

CBRS Alliance Certification Test Plan

WINNF-TS-0122-V1.0.0

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

WINNF-19-IN-00033 V1.0

CBRS CPE-CBSD as UUT Test Guidelines

KDB 940660 D01 Part 96 CBRS Eqpt v02

KDB 940660 D02 CPE-CBSD Handshake Procedures v02

Remark:

Model No.: EG2013B-M11, EG3013B-M11

Only the model EG2013B-M11 was tested, since according to the declaration from the applicant, the electrical circuit design, layout, components used, internal wiring and functions were identical for all the above models, with only difference on model name.

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8.17 WINNF.FT.C.HBT.9 96
8.18 WINNF.FT.C.HBT.10 100
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4 General Information

4.1 Details of E.U.T.

Power supply:	Adapter Model NO.: JT-H050200 Input: 100-240V~50/60Hz Output: 5.0V, 2A
Cable:	DC cable: 100cm unshielded
Sample Type:	Mobile device
CBSD Class:	A (Indoor CPE)
Transmitter Frequency Band:	LTE Band 48
Transmitter Frequency Range:	3550~3700MHz
Hardware Version:	A
Software Version:	0.0.0-DBG
Test sample:	12030000322041P0529(S/N)
Antenna Gain:	6.5 dBi

4.2 Description of CBSD/DP Support Features

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

Y: Supported

N: Not supported

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4.3 Summary of Test Results

WINNF-TS-0122			
Classes	Test Case Items	Pass Items	Pass Rate (%)
FT (CBSD, DP/CBSD)	25	25	100
PT (CBSD, DP/CBSD)	1	1	100
Total	25	25	100

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

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

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

4.4 Modification Record

1. The Pass/Fail criteria “UUT shall not transmit RF” is replaced by “CPE-CBSD UUT shall not transmit user traffic”.
2. The Pass/Fail criteria “UUT shall stop transmission” is replaced by CPE-CBSD UUT shall stop transmitting user traffic”

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4.5 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	± 7.25 x 10^{-8}
2	RF conducted power	± 0.75dB
3	Temperature test	± 1℃
4	Humidity test	± 3%
5	Supply voltages	± 1.5%
6	Time	± 3%

4.6 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
EPC	Lanner Electronics Inc.	LICA-1513A	LR202002004052
Router	TP-LINK	TL-R860+	1175379002425
Base station	Baicells	mBS105 (FCC ID: 2AG32MBS110596)	120200007219BSP0001

4.7 Test Location

All tests were performed at:

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No tests were sub-contracted.

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5 Equipment List

Test Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Laptop (With SAS Test hamess)	Lenovo	Pro-13API 2019	REF. No.SEA1800	/	/
Spectrum Analyzer	R&S	FSP	SEM004-06	2019-09-24	2020-09-23
Spectrum Analyzer	Keysight	N9020A	SEM004-17	2020-05-21	2021-05-20
Shield Room	SAEMC	MSR433	SEM001-11	2018-03-13	2021-03-12
Coaxial Cable	SGS	N/A	SEM031-01	2020-07-11	2021-07-10
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-03	2019-09-27	2020-09-26

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6 Test Method and Environment

6.1 CBSD/DP Conformance and Performance

Test Requirement:	CBRS CBSD Test Specification WINNF-TS-0122-V1.0.0
Test Method:	CBRS CBSD Test Specification WINNF-TS-0122-V1.0.0 WINNF-IN-0156_WInnForum_SAS_Test_Harness_CBSD_UUT_Tutorial_v1_0_0_1

6.2 CPE-CBSD Handshake Procedures

Test Requirement:	KDB 940660 D02 CPE-CBSD Handshake Procedures v02
Test Method:	WINNF-19-IN-00033 V1.0 KDB 940660 D02 CPE-CBSD Handshake Procedures v02

6.3 CBSD Test Procedure

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

6.4 Duration and Duty Cycle Measurement

The CPE-CBSD shall validate and ensure that limited in duration and duty cycle to the minimum time necessary to get a grant from the SAS.

6.5 Duration and Duty Cycle Test Procedure

a. CPE-CBSD as UUT does not receive any RF signal from its “Compatible BTS-CBSD” (FCC ID: 2AG32MBS110596), so CPE-CBSD as UUT does not transmit. UUT shall be UTC time synchronized.
b. Use the WinnForum SAS Harness #1 for CPE-CBSD as UUT and run test case WINNF.FT.C.GRA.1 for CPE-CBSD as UUT.
c. CPE-CBSD as UUT starts to receive the RF signal from its “Compatible BTS-CBSD”, so CPE-CBSD can start communicating with the WinnForum SAS Harness #1. Make note of the time when RF Test equipment logs the first transmission from CPE-CBSD which is above 23dBm/10MHz – this is the start time of the {X time out of Y time}.
d. When the test case WINNF.FT.C.GRA.1 finishes and the questions appear on the WinnForum SAS Harness #1 console, do NOT answer the questions. Wait until Y time has passed from step #3. During this Y time, the RF test equipment is logging the amount of time CPE-CBSD as UUT transmitted EiRP above 23dBm/10MHz. The amount of time logged for transmitting EIRP above 23dBm/10MHz is the X time.
e. Answer the questions on the WinnForum SAS Harness #1 console so the WinnForum SAS Harness #1 is ready for the next test.

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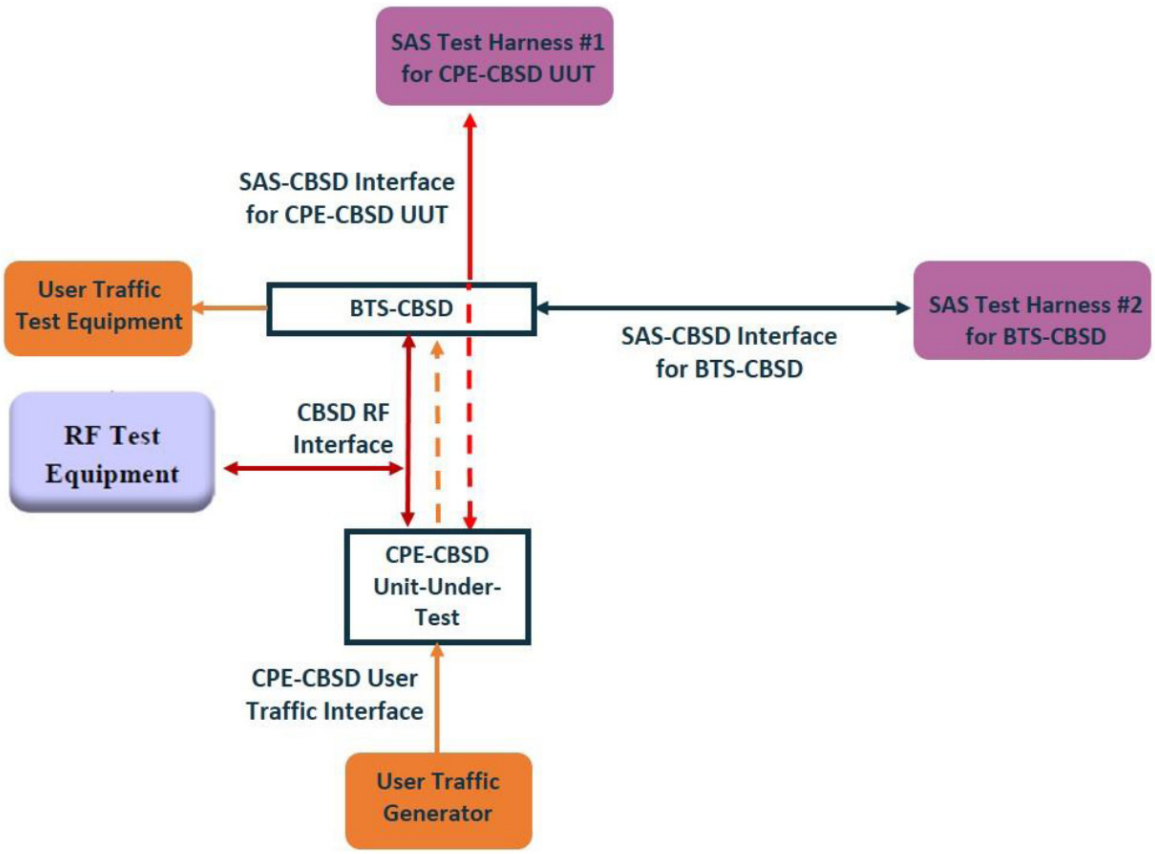
6.6 Test Environment

Test Harness Version:	V1.0.0.3
Operating System:	Microsoft Windows 10
TLS Version:	1.2
Python Version:	2.7.13
Environmental Conditions:	25deg. C, 65%RH
Input Power:	120Vac, 60Hz

6.7 Test Setup



CPE-CBSD as UUT, BTS-CBSD direct communication without Domain Proxy

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7 Test Data

7.1 CBSD Registration Process

7.1.1 WINNF.FT.C.REG.1

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

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7.1.2 WINNF.FT.C.REG.5

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

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7.1.3 WINNF.FT.C.REG.8

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: ● UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness ● UUT is in the Unregistered state	--	--
2	CBSD sends a Registration request to SAS Test Harness.	--	--
3	SAS Test Harness rejects the request by sending a CBSD Registration Response as follows: - SAS response does not include cbsdId - responseCode = R	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (responseCode=0) to further request messages from the UUT.	--	--
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: ● UUT shall not transmit RF	■ Pass	□ Fail

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7.1.4 WINNF.FT.C.REG.10

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: ● UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness ● UUT is in the Unregistered state	--	--
2	CBSD sends a Registration request to SAS Test Harness.	--	--
3	SAS Test Harness rejects the request by sending a CBSD Registration Response as follows: - SAS response does not include cbsdId - responseCode = R	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (responseCode=200) to further request messages from the UUT.	--	--
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: UUT shall not transmit RF	■ Pass	□ Fail

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7.1.5 WINNF.FT.C.REG.12

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: ● UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness ● UUT is in the Unregistered state	--	--
2	CBSD sends a Registration request to SAS Test Harness.	--	--
3	SAS Test Harness rejects the request by sending a CBSD Registration Response as follows: - SAS response does not include cbsdId - responseCode = R	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (responseCode=103) to further request messages from the UUT.	--	--
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: UUT shall not transmit RF	■ Pass	□ Fail

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7.1.6 WINNF.FT.C.REG.14

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: ● UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness ● UUT is in the Unregistered state	--	--
2	CBSD sends a Registration request to SAS Test Harness.	--	--
3	SAS Test Harness rejects the request by sending a CBSD Registration Response as follows: - SAS response does not include cbsdId - responseCode = R	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (responseCode=101) to further request messages from the UUT.	--	--
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: UUT shall not transmit RF	■ Pass	□ Fail

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7.1.7 WINNF.FT.C.REG.16

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: ● UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness ● UUT is in the Unregistered state	--	--
2	CBSD sends a Registration request to SAS Test Harness.	--	--
3	SAS Test Harness rejects the request by sending a CBSD Registration Response as follows: - SAS response does not include cbsdId - responseCode = R	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (responseCode=100) to further request messages from the UUT.	--	--
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: UUT shall not transmit RF	■ Pass	□ Fail

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7.1.8 WINNF.FT.C.REG.18

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: ● UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness ● UUT is in the Unregistered state	--	--
2	CBSD sends a Registration request to SAS Test Harness.	--	--
3	SAS Test Harness rejects the request by sending a CBSD Registration Response as follows: - SAS response does not include cbsdId - responseCode = R	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (responseCode=201) to further request messages from the UUT.	--	--
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: UUT shall not transmit RF	■ Pass	□ Fail

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7.2 CBSD Spectrum Grant Process

7.2.1 WINNF.FT.C.GRA.1

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

7.2.2 WINNF.FT.C.GRA.2

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

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7.3 CBSD HeartBeat Process

7.3.1 WINNF.FT.C.HBT.1

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

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检验检测专用章 Inspection & Testing Services

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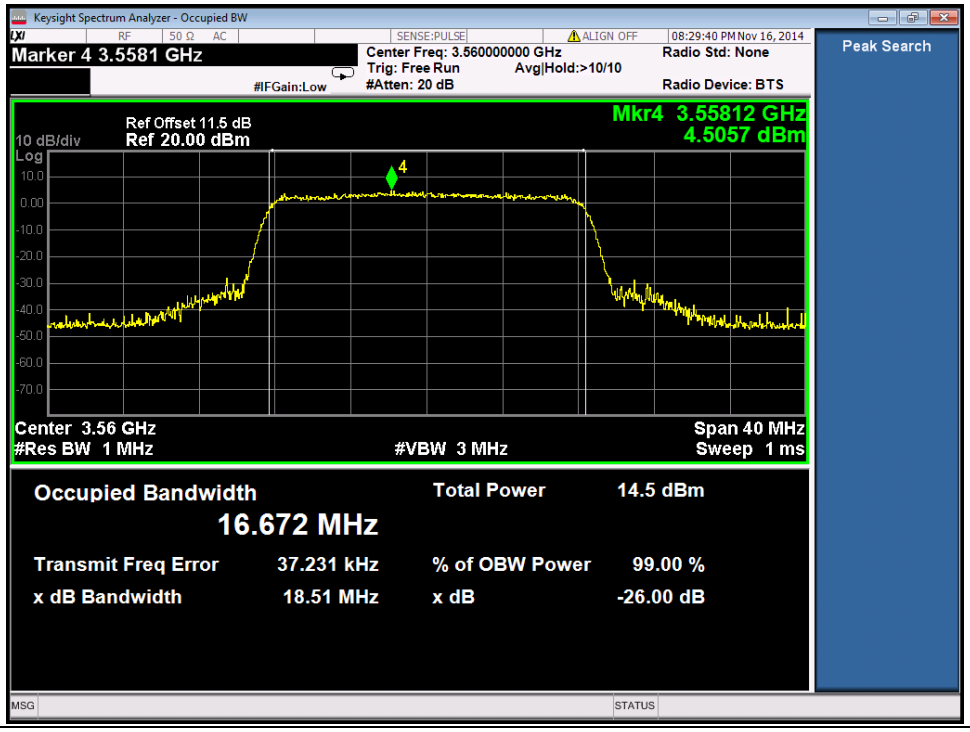
9	For further Heartbeat Request messages sent from UUT after completion of step 8, validate message is sent within latest specified heartbeatInterval, and: ● cbsdId = C ● grantId = G ● operationState = “AUTHORIZED” and SAS Test Harness responds with a Heartbeat Response message including the following parameters: ● cbsdId = C ● grantId = G ● transmitExpireTime = current UTC time + 200 seconds ● responseCode = 0	■ Pass	□ Fail
10	Monitor the RF output of the UUT from start of test until UUT transmission commences. Verify: ● UUT does not transmit at any time prior to completion of the first heartbeat response ● UUT transmits after step 8 is complete, and its transmission is limited to within the bandwidth range F.	■ Pass	□ Fail

Spectrum Plot Ant.1



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7.3.2 WINNF.FT.C.HBT.3

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

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7.3.3 WINNF.FT.C.HBT.4

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: ● UUT has registered successfully with SAS Test Harness ● UUT has a valid single grant as follows: ○ valid cbsdId = C ○ valid grantId = G ○ grant is for frequency range F, power P ○ grantExpireTime = UTC time greater than duration of the test ● UUT is in AUTHORIZED state and is transmitting within the grant bandwidth F on RF interface	--	--
2	UUT sends a Heartbeat Request message. Ensure Heartbeat Request message is sent within latest specified heartbeatInterval, and is formatted correctly, including: ● cbsdId = C ● grantId = G ● operationState = “AUTHORIZED”	■ Pass	□ Fail
3	SAS Test Harness sends a Heartbeat Response message, including the following parameters: ● cbsdId = C ● grantId = G ● transmitExpireTime = T = current UTC time ● responseCode = 500 (TERMINATED_GRANT)	--	--
4	After completion of step 3, SAS Test Harness shall not allow any further grants to the UUT.	--	--
5	Monitor the RF output of the UUT. Verify: ● UUT shall stop transmission within (T + 60 seconds) of completion of step 3	■ Pass	□ Fail

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7.3.4 WINNF.FT.C.HBT.5

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

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7.3.5 WINNF.FT.C.HBT.6

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

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7.3.6 WINNF.FT.C.HBT.7

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

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7.3.7 WINNF.FT.C.HBT.9

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

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7.3.8 WINNF.FT.C.HBT.10

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

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7.4 CBSD Relinquishment Process

7.4.1 WINNF.FT.C.RLQ.1

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: ● UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness ● UUT has successfully registered with SAS Test Harness, with cbsdId=C ● UUT has received a valid grant with grantId = G ● UUT is in Grant State AUTHORIZED and is actively transmitting within the bounds of its grant. Invoke trigger to relinquish UUT Grant from the SAS Test Harness	--	--
2	UUT sends a Relinquishment Request message. Verify message contains all required parameters properly formatted, and specifically: ● cbsdId = C ● grantId = G	■ Pass	□ Fail
3	SAS Test Harness shall approve the request with a Relinquishment Response message with parameters: - cbsdId = C - grantId = G ● responseCode = 0	--	--
4	After completion of step 3, SAS Test Harness will not provide any additional positive ● response (responseCode=0) to further request messages from the UUT	--	--
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: ● UUT shall stop RF transmission at any time between triggering the relinquishment and UUT sending the relinquishment request	■ Pass	□ Fail

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7.5 CBSD Deregistration Process

7.5.1 WINNF.FT.C.DRG.1

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: ● UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness ● UUT has successfully registered with SAS Test Harness, with cbsdId=C ● UUT has received a valid grant with grantId = G ● UUT is in Grant State AUTHORIZED and is actively transmitting within the bounds of its grant. Invoke trigger to deregister UUT from the SAS Test Harness	--	--
2	UUT sends a Relinquishment request and receives Relinquishment response with ● responseCode=0	--	--
3	● UUT sends Deregistration Request to SAS Test Harness with cbsdId = C.	■ Pass	□ Fail
4	SAS Test Harness shall approve the request with a Deregistration Response message with parameters: ● cbsdId = C ● responseCode = 0	--	--
5	After completion of step 3, SAS Test Harness will not provide any additional positive ● response (responseCode=0) to further request messages from the UUT.	--	--
6	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: ● UUT stopped RF transmission at any time between triggering the deregistration and either A OR B occurs: A. UUT sending a Registration Request message, as this is not mandatory B. UUT sending a Deregistration Request message	■ Pass	□ Fail

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7.6 CBSD Security Validation

7.6.1 WINNF.FT.C.SCS.1

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

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

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

7.6.2 WINNF.FT.C.SCS.2

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

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7.6.3 WINNF.FT.C.SCS.3

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

7.6.4 WINNF.FT.C.SCS.4

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

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7.6.5 WINNF.FT.C.SCS.5

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

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7.7 CBSD RF Power Measurement

7.7.1 WINNF.PT.C.HBT

#	Test Execution Steps	Results	
1	Ensure the following conditions are met for test entry: ● UUT has successfully completed SAS Discovery and Authentication with the SAS Test Harness ● UUT has registered with the SAS, with CBSD ID = C ● UUT has a single valid grant G with parameters {lowFrequency = FL, highFrequency = FH, maxEirp = Pi}, with grant in AUTHORIZED state, and grantExpireTime set to a value far past the duration of this test case ● Note: in order for the UUT to request a grant with the parameters {lowFrequency, highFrequency, maxEirp), the SAS Test Harness may need to provide appropriate guidance in the availableChannel object of the spectrumInquiry response message, and the operationParam object of the grant response message. Alternately, the UUT vendor may provide the ability to set those parameters on the UUT so that the UUT will request a grant with those parameters	--	--
2	UUT and SAS Test Harness perform a series of Heartbeat Request/Response cycles, which continues until the other test steps are complete. Messaging for each cycle is as follows: ● UUT sends Heartbeat Request, including: ○ cbsdId = C ○ grantId = G ● SAS Test Harness responds with Heartbeat Response, including: o cbsdId = C ○ grantId = G ○ transmitExpireTime = current UTC time + 200 seconds ● responseCode = 0	--	--
3	Tester performs power measurement on RF interface(s) of UUT, and verifies it complies with the maxEirp setting, Pi. The RF measurement method is out of scope of this document, but may include additional configuration of the UUT, as required, to fulfill the requirements of the power measurement method. ● 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.	■ Pass	□ Fail

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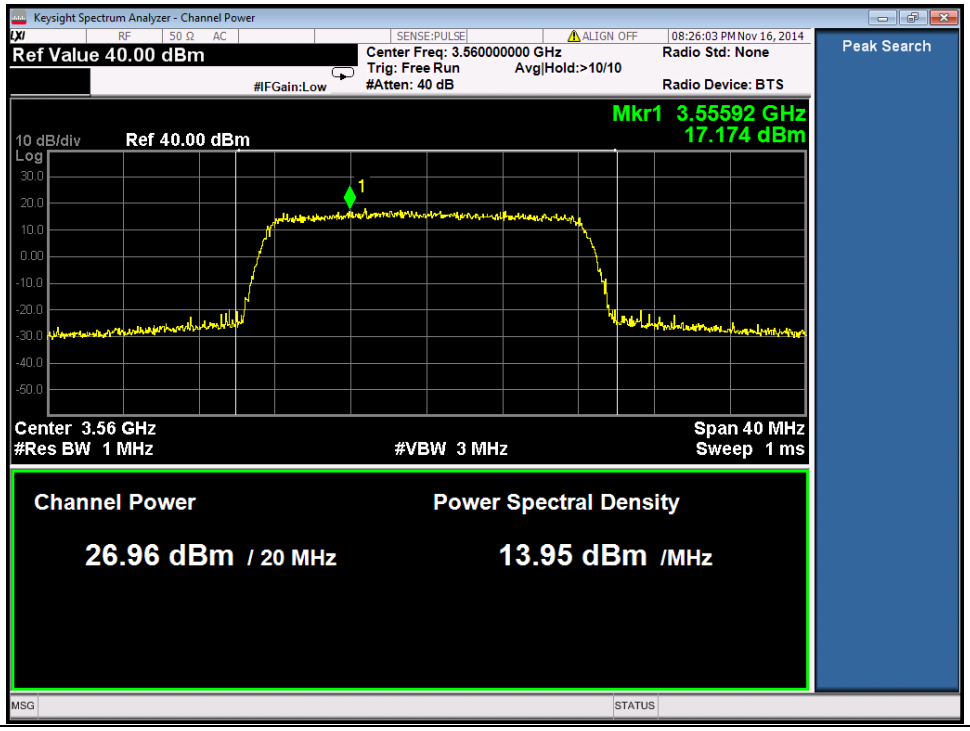
RF measurement plot for Test Case :

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

Channel	Freq. (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
		Ant. 1		
Low	3560	26.96	27.5	Pass

Target Power: 27.5dBm



Note: The Ref offset=Antenna Gain + Path loss

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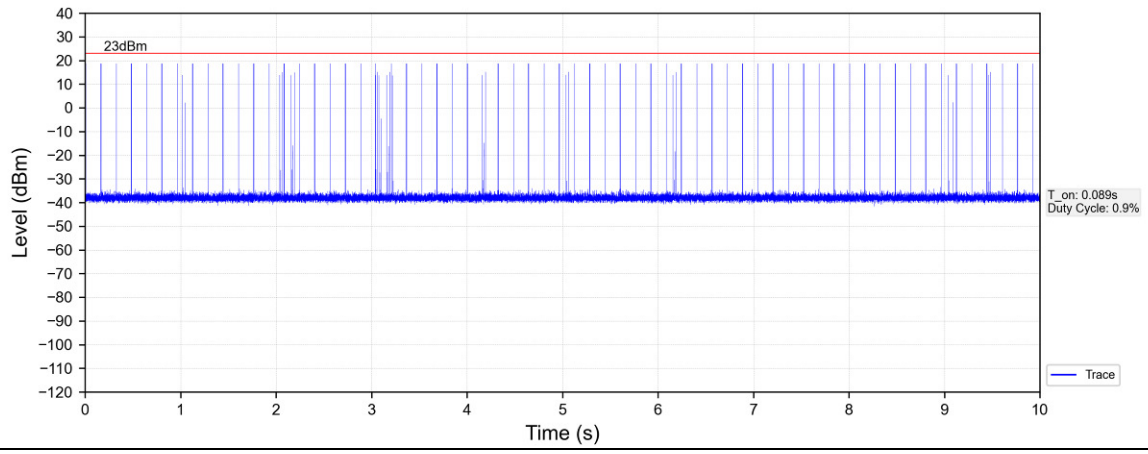
7.8 Duration and Duty Cycle

Duration and Duty Cycle			
Period	Minimum Time (s)	Limit (s)	Pass / Fail
10-second	0.008	1-second	Pass
300-second	0.235	10-second	Pass
3600-second	0.844	20-second	Pass

Note:

1. Limited in duration and duty cycle to the minimum time necessary to get a grant from the SAS. This time should not exceed 1 second within any 10-second period, 10seconds within any 300-second period, or 20 seconds within any 3600-second period.
2. Pass = Minimum Time < Limit

10s Period Test data



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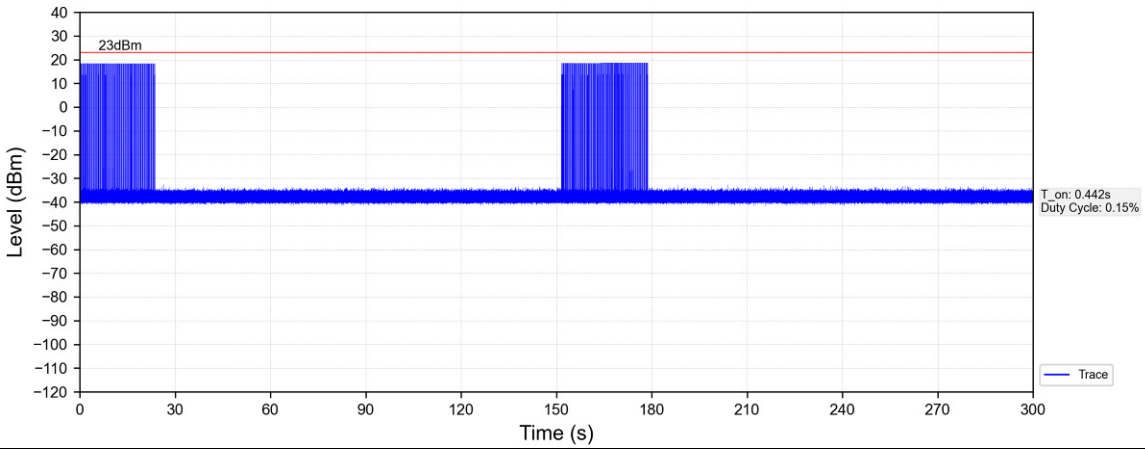
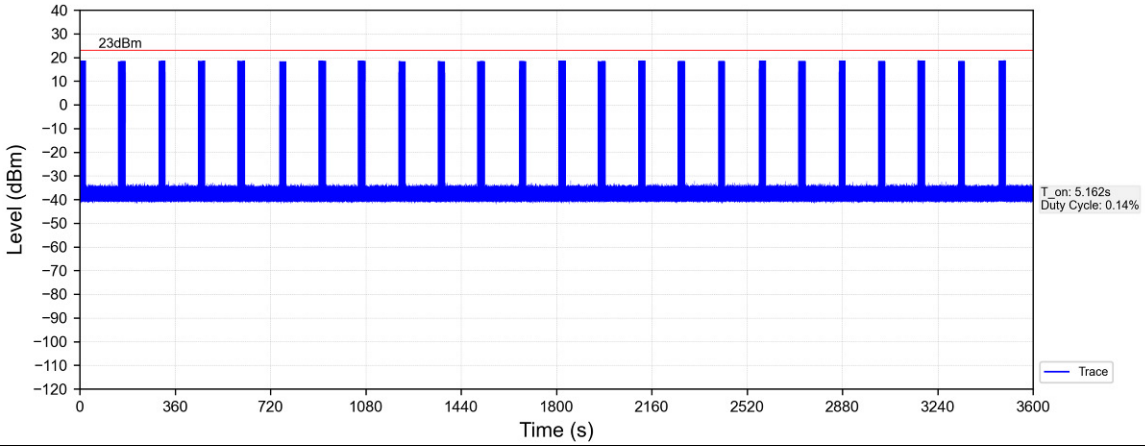
300s Period Test data



3600s Period Test data



Note:

1. Red color line in above plot represents the 23 dBm.

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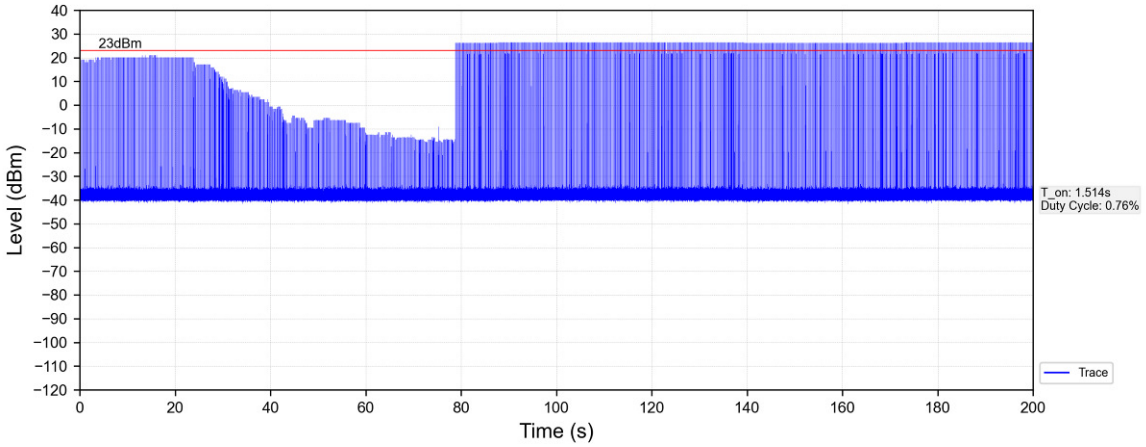
7.9 Verify that the device will register with a SAS when operating below 23 dBm

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



Note:

2. Red color line in above plot represents the 23 dBm.
3. When Granted the product will transmit at power level above 23dBm.
4. Only when the product sends packets the product will work at max EIRP.

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8 Test Data Log

8.1 WINNF.FT.C.REG.1

"registrationRequest": [
{
"airInterface": {
"radioTechnology": "E_UTRA"
},
"callSign": "baicells",
"cbsdCategory": "A",
"cbsdSerialNumber": "12030000322041P0529",
"fccId": "2AG32EG2013BM11",
"groupingParam": [
{
"groupId": "Baicells_01",
"groupType": "INTERFERENCE_COORDINATION"
}
],
"installationParam": {
"antennaGain": 6,
"antennaModel": "Interal PIFA",
"height": 4.0,
"heightType": "AGL",
"indoorDeployment": false,
"latitude": 68.53534,
"longitude": -158.53972
},
"measCapability": [],
"userId": "Baicells_01"
}
]
}
2020-07-20T02:44:17.266Z - INFO - engine sent successfully, the response to CBRS : {
"registrationResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"response": {
"responseCode": 0
}

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```
    }
  ]
}
```

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8.2 WINNF.FT.C.REG.5

"registrationRequest": [
{
"airInterface": {
"radioTechnology": "E_UTRA"
},
"callSign": "baicells",
"cbsdCategory": "A",
"cbsdSerialNumber": "12030000322041P0529",
"cpiSignatureData": {
"digitalSignature": "PVs4hWOnI8HB43F3lzGXcAeSFa3rcGiBcjSoldVWbPO8vd0bwE-p-JjiNNsDCOtOYS4bT3g3hVB5UwgeEjD8frvDkf2N0DRgYmh4VCprg8xbk3L8QMsX_lB9gT2czrKcVod_g6WmmsNJyEJPcapwTpOa0YelhbaIhDK54AY5A_YYZHjqptbtp2Okx9y-smjQm3sIpvZjEFUaNp4R1KrrjnMOH1huuvC7Dlb9pCSDTDT6S2pB8p7Qf-v-ANfD4g0IT9cUauizpYDhoIZg0ZUl3gcQRL3Yr2IHx65R8dGymhQYdUTC8nxFcq8pMdm_rrGagX3466H89Dxh3XNsQdaC5g",
"encodedCpiSignedData": "eyJjYnNkU2VyaWFsTnVtYmVyIjoiMTIwMzAwMDAzMjIwNDFQMDUyOSIsImZjY0lkIjoiMkFHMzJFRzIwMTNCIiwiaW5zdGFsbGF0aW9uUGFyYW0iOnsiYW50ZW5uYUF6aW11dGgiOjAsImFudGVubmFCZWFtd2lkdGgiOjkwLCJhbnRlbm5hRG93bnRpbHQiOjAsImFudGVubmFHYWluIjo3LCJhbnRlbm5hTW9kZWwiOiJJbnRlcmFsIFBJRkEiLCJoZWlnaHQiOjQuMCwiaGVpZ2h0VHlwZSI6IkFHTCIsImhvcml6b250YWxBY2N1cmFjeSI6MywiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImxhdGl0dWRlIjo2OC41MzUzNCwibG9uZ2l0dWRlIjotMTU4LjUzOTcyLCJ2ZXJ0aWNhbEFjY3VyYWN5IjozfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6ImNwaTEyMyIsImNwaU5hbWUiOiJDUElfVXNlcl8xMjMiLCJpbnN0YWxsQ2VydGlmaWNhdGlvblRpbWUiOiIyMDIwLTA3LTIyVDE4OjM2OjU3WiJ9fQ",
"protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
},
"fccId": "2AG32EG2013BM11",
"groupingParam": [
{
"groupId": "Baicells_01",
"groupType": "INTERFERENCE_COORDINATION"
}
],
"measCapability": [
"RECEIVED_POWER_WITHOUT_GRANT"
],
"userId": "Baicells_01"
}
]
}

2020-07-24T06:20:23.608Z - INFO - Registration message contains cpiSignatureData

2020-07-24T06:20:23.609Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

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2020-07-24T06:20:23.609Z - INFO - encodedCpiSignedData contents = {
"installationParam": {
"antennaAzimuth": 0,
"heightType": "AGL",
"antennaModel": "Interal PIFA",
"longitude": -158.53972,
"height": 4.0,
"indoorDeployment": false,
"latitude": 68.53534,
"horizontalAccuracy": 3,
"antennaDowntilt": 0,
"antennaBeamwidth": 90,
"antennaGain": 7,
"verticalAccuracy": 3
},
"fccId": "2AG32EG2013BM11",
"professionalInstallerData": {
"cpiName": "CPI_User_123",
"installCertificationTime": "2020-07-22T18:36:57Z",
"cpiId": "cpi123"
},
"cbsdSerialNumber": "12030000322041P0529"
}
2020-07-24T06:20:23.647Z - INFO - verified signature on cpiSignatureData
2020-07-24T06:20:23.647Z - INFO - cbsdCategory= 'A', removing optional param from cpi_schema
2020-07-24T06:20:23.651Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-07-24T06:20:23.653Z - INFO - engine sent successfully, the response to CBRS : {
"registrationResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"response": {
"responseCode": 0
}
}
]
}

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8.3 WINNF.FT.C.REG.8


```
"registrationRequest": [
      {
         "airInterface": {
            "radioTechnology": "E_UTRA"
         },
         "callSign": "baicells",
         "cbsdCategory": "A",
         "cbsdSerialNumber": "12030000322041P0529",
         "fccId": "2AG32EG2013BM11",
         "groupingParam": [
            {
               "groupId": "Baicells_01",
               "groupType": "INTERFERENCE_COORDINATION"
            }
         ],
         "installationParam": {
            "antennaGain": 7,
            "antennaModel": "Interal PIFA",
            "height": 4.0,
            "heightType": "AGL",
            "indoorDeployment": false,
            "latitude": 68.53534,
            "longitude": -158.53972
         },
         "measCapability": [],
         "userId": "Baicells_01"
      }
   ]
}
2020-07-14T06:28:47.411Z - INFO - engine sent successfully, the response to CBRS  : {
   "registrationResponse": [
      {
         "response": {
            "responseCode": 102
         }
      }
   ]
}
```


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8.4 WINNF.FT.C.REG.10


```
"registrationRequest": [
      {
         "airInterface": {
            "radioTechnology": "E_UTRA"
         },
         "callSign": "baicells",
         "cbsdCategory": "A",
         "cbsdSerialNumber": "12030000322041P0529",
         "fccId": "2AG32EG2013BM11",
         "groupingParam": [
            {
               "groupId": "Baicells_01",
               "groupType": "INTERFERENCE_COORDINATION"
            }
         ],
         "installationParam": {
            "antennaGain": 7,
            "antennaModel": "Interal PIFA",
            "height": 4.0,
            "heightType": "AGL",
            "indoorDeployment": false,
            "latitude": 68.53534,
            "longitude": -158.53972
         },
         "measCapability": [],
         "userId": "Baicells_01"
      }
   ]
}
2020-07-14T06:32:53.826Z - INFO - engine sent successfully, the response to CBRS  : {
   "registrationResponse": [
      {
         "response": {
            "responseCode": 200
         }
      }
   ]
}
```


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8.5 WINNF.FT.C.REG.12


```
"registrationRequest": [
      {
         "airInterface": {
            "radioTechnology": "E_UTRA"
         },
         "callSign": "baicells",
         "cbsdCategory": "A",
         "cbsdSerialNumber": "12030000322041P0529",
         "fccId": "2AG32EG2013BM11",
         "groupingParam": [
            {
               "groupId": "Baicells_01",
               "groupType": "INTERFERENCE_COORDINATION"
            }
         ],
         "installationParam": {
            "antennaGain": 7,
            "antennaModel": "Interal PIFA",
            "height": 4.0,
            "heightType": "AGL",
            "indoorDeployment": false,
            "latitude": 68.53534,
            "longitude": -158.53972
         },
         "measCapability": [],
         "userId": "Baicells_01"
      }
   ]
}
2020-07-14T06:37:03.357Z - INFO - engine sent successfully, the response to CBRS  : {
   "registrationResponse": [
      {
         "response": {
            "responseCode": 103
         }
      }
   ]
}
```


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8.6 WINNF.FT.C.REG.14


```
"registrationRequest": [
      {
         "airInterface": {
            "radioTechnology": "E_UTRA"
         },
         "callSign": "baicells",
         "cbsdCategory": "A",
         "cbsdSerialNumber": "12030000322041P0529",
         "fccId": "2AG32EG2013BM11",
         "groupingParam": [
            {
               "groupId": "Baicells_01",
               "groupType": "INTERFERENCE_COORDINATION"
            }
         ],
         "installationParam": {
            "antennaGain": 7,
            "antennaModel": "Interal PIFA",
            "height": 4.0,
            "heightType": "AGL",
            "indoorDeployment": false,
            "latitude": 68.53534,
            "longitude": -158.53972
         },
         "measCapability": [],
         "userId": "Baicells_01"
      }
   ]
}
2020-07-14T06:40:41.736Z - INFO - engine sent successfully, the response to CBRS  : {
   "registrationResponse": [
      {
         "response": {
            "responseCode": 101
         }
      }
   ]
}
```


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8.7 WINNF.FT.C.REG.16


```
"registrationRequest": [
      {
         "airInterface": {
            "radioTechnology": "E_UTRA"
         },
         "callSign": "baicells",
         "cbsdCategory": "A",
         "cbsdSerialNumber": "12030000322041P0529",
         "fccId": "2AG32EG2013BM11",
         "groupingParam": [
            {
               "groupId": "Baicells_01",
               "groupType": "INTERFERENCE_COORDINATION"
            }
         ],
         "installationParam": {
            "antennaGain": 7,
            "antennaModel": "Interal PIFA",
            "height": 4.0,
            "heightType": "AGL",
            "indoorDeployment": false,
            "latitude": 68.53534,
            "longitude": -158.53972
         },
         "measCapability": [],
         "userId": "Baicells_01"
      }
   ]
}
2020-07-14T06:45:19.111Z - INFO - engine sent successfully, the response to CBRS  : {
   "registrationResponse": [
      {
         "response": {
            "responseCode": 100
         }
      }
   ]
}
```


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8.8 WINNF.FT.C.REG.18


```
"registrationRequest": [
      {
         "airInterface": {
            "radioTechnology": "E_UTRA"
         },
         "callSign": "baicells",
         "cbsdCategory": "A",
         "cbsdSerialNumber": "12030000322041P0529",
         "fccId": "2AG32EG2013BM11",
         "groupingParam": [
            {
               "groupId": "Baicells_01",
               "groupType": "INTERFERENCE_COORDINATION"
            }
         ],
         "installationParam": {
            "antennaGain": 7,
            "antennaModel": "Interal PIFA",
            "height": 4.0,
            "heightType": "AGL",
            "indoorDeployment": false,
            "latitude": 68.53534,
            "longitude": -158.53972
         },
         "measCapability": [],
         "userId": "Baicells_01"
      }
   ]
}
2020-07-14T06:48:03.413Z - INFO - engine sent successfully, the response to CBRS  : {
   "registrationResponse": [
      {
         "response": {
            "responseCode": 201
         }
      }
   ]
}
```


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8.9 WINNF.FT.C.GRA.1

"registrationRequest": [
{
"airInterface": {
"radioTechnology": "E_UTRA"
},
"callSign": "baicells",
"cbsdCategory": "A",
"cbsdSerialNumber": "12030000322041P0529",
"cpiSignatureData": {
"digitalSignature": "G-b45Dz-xr-uuEZEeMduo9d5RYObFDrNhVhVkw4PX6LdhRxGAEpBqOUKwFyWVynsGc7YuP4D5gg2iWO5C-9A57DqCkjUbaTLZMGQEbEh0wokFghjgZzv_YUH-Xa3gdwZIsnPedA9-Zx2NnmNzbQ5C51cPsW33-a3J6zP-So3x8xGfIa42JK1LRRQkBmkFV-zEJNj-swGBp1AwRNAmAVsTp1bh6v9FBa-ARjg7k8ndaefmxcwLdb57dSulMwl95ssSVgHf3dLaGMWhKJs-n4YfJjblyQetSb2oK3tJE6FSp6seECWVlUPG23zNknhov01z5Vr1WmiCeHa3oh17z5lpw",
"encodedCpiSignedData": "eyJjYnNkU2VyaWFsTnVtYmVyIjoiMTIwMzAwMDAzMjIwNDFQMDUyOSIsImZjY0lkIjoiMkFHMzJFRzIwMTNCIiwiaW5zdGFsbGF0aW9uUGFyYW0iOnsiYW50ZW5uYUF6aW11dGgiOjAsImFudGVubmFCZWFtd2lkdGgiOjkwLCJhbnRlbm5hRG93bnRpbHQiOjAsImFudGVubmFHYWluIjo2LCJhbnRlbm5hTW9kZWwiOiJJbnRlcmFsIFBJRkEiLCJoZWlnaHQiOjQuMCwiaGVpZ2h0VHlwZSI6IkFHTCIsImhvcml6b250YWxBY2N1cmFjeSI6MywiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImxhdGl0dWRlIjo2OC41MzUzNCwibG9uZ2l0dWRlIjotMTU4LjUzOTcyLCJ2ZXJ0aWNhbEFjY3VyYWN5IjozfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6ImNwaTEyMyIsImNwaU5hbWUiOiJDUElfVXNlcl8xMjMiLCJpbnN0YWxsQ2VydGlmaWNhdGlvblRpbWUiOiIyMDIwLTA3LTIwVDExOjIxOjU4WiJ9fQ",
"protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
},
"fccId": "2AG32EG2013BM11",
"groupingParam": [
{
"groupId": "Baicells_01",
"groupType": "INTERFERENCE_COORDINATION"
}
],
"measCapability": [],
"userId": "Baicells_01"
}
]
}

2020-07-20T03:21:12.644Z - INFO - Registration message contains cpiSignatureData

2020-07-20T03:21:12.645Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2020-07-20T03:21:12.645Z - INFO - encodedCpiSignedData contents = {

"installationParam": {

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```
      "antennaAzimuth": 0,
      "heightType": "AGL",
      "antennaModel": "Interal PIFA",
      "longitude": -158.53972,
      "height": 4.0,
      "indoorDeployment": false,
      "latitude": 68.53534,
      "horizontalAccuracy": 3,
      "antennaDowntilt": 0,
      "antennaBeamwidth": 90,
      "antennaGain": 6,
      "verticalAccuracy": 3
   },
   "fccId": "2AG32EG2013BM11",
   "professionalInstallerData": {
      "cpiName": "CPI_User_123",
      "installCertificationTime": "2020-07-20T11:21:58Z",
      "cpiId": "cpi123"
   },
   "cbsdSerialNumber": "12030000322041P0529"
}
2020-07-20T03:21:14.615Z - INFO - verified signature on cpiSignatureData
2020-07-20T03:21:14.617Z - INFO - cbsdCategory= 'A', removing optional param from cpi_schema
2020-07-20T03:21:14.625Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-07-20T03:21:14.628Z - INFO - engine sent successfully, the response to CBRS  : {
   "registrationResponse": [
      {
         "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
         "response": {
            "responseCode": 0
         }
      }
   ]
}
2020-07-20T03:22:58.157Z - INFO - grant request from CBRS  : {
   "grantRequest": [
      {
         "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
         "operationParam": {
            "maxEirp": 27,
            "operationFrequencyRange": {
```


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```
            "highFrequency": 3570000000,
            "lowFrequency": 3550000000
          }
        }
      }
    ]
}
2020-07-20T03:22:58.181Z - INFO - engine sent successfully, the response to CBRS  : {
    "grantResponse": [
      {
        "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
        "response": {
          "responseCode": 400
        }
      }
    ]
}
```


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8.10 WINNF.FT.C.GRA.2

"registrationRequest": [
{
"airInterface": {
"radioTechnology": "E_UTRA"
},
"callSign": "baicells",
"cbsdCategory": "A",
"cbsdSerialNumber": "12030000322041P0529",
"cpiSignatureData": {
"digitalSignature": "G-b45Dz-xr-uuEZEeMduo9d5RYObFDrNhVhVkw4PX6LdhRxGAEpBqOUKwFyWVynsGc7YuP4D5gg2iWO5C-9A57DqCkjUbaTLZMGQEbEh0wokFghjgZzv_YUH-Xa3gdwZIsnPedA9-Zx2NnmNzbQ5C51cPsW33-a3J6zP-So3x8xGfIa42JK1LRRQkBmkFV-zEJNj-swGBp1AwRNAmAVsTp1bh6v9FBa-ARjg7k8ndaefmxcwLdb57dSulMwl95ssSVgHf3dLaGMWhKJs-n4YfJjblyQetSb2oK3tJE6FSp6seECWVlUPG23zNknhov01z5Vr1WmiCeHa3oh17z5Ipw",
"encodedCpiSignedData": "eyJjYnNkU2VyaWFsTnVtYmVyIjoiMTIwMzAwMDAzMjIwNDFQMDUyOSIsImZjY0lkIjoiMkFHMzJFRzIwMTNCIiwiaW5zdGFsbGF0aW9uUGFyYW0iOnsiYW50ZW5uYUF6aW11dGgiOjAsImFudGVubmFCZWFtd2lkdGgiOjkwLCJhbnRlbm5hRG93bnRpbHQiOjAsImFudGVubmFHYWluIjo2LCJhbnRlbm5hTW9kZWwiOiJJbnRlcmFsIFBJRkEiLCJoZWlnaHQiOjQuMCwiaGVpZ2h0VHlwZSI6IkFHTCIsImhvcml6b250YWxBY2N1cmFjeSI6MywiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImxhdGl0dWRlIjo2OC41MzUzNCwibG9uZ2l0dWRlIjotMTU4LjUzOTcyLCJ2ZXJ0aWNhbEFjY3VyYWN5IjozfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6ImNwaTEyMyIsImNwaU5hbWUiOiJDUElfVXNlcl8xMjMiLCJpbnN0YWxsQ2VydGlmaWNhdGlvblRpbWUiOiIyMDIwLTA3LTIwVDExOjIxOjU4WiJ9fQ",
"protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
},
"fccId": "2AG32EG2013BM11",
"groupingParam": [
{
"groupId": "Baicells_01",
"groupType": "INTERFERENCE_COORDINATION"
}
],
"measCapability": [],
"userId": "Baicells_01"
}
]
}

2020-07-20T03:36:12.306Z - INFO - Registration message contains cpiSignatureData

2020-07-20T03:36:12.306Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2020-07-20T03:36:12.308Z - INFO - encodedCpiSignedData contents = {

"installationParam": {

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```
      "antennaAzimuth": 0,
      "heightType": "AGL",
      "antennaModel": "Interal PIFA",
      "longitude": -158.53972,
      "height": 4.0,
      "indoorDeployment": false,
      "latitude": 68.53534,
      "horizontalAccuracy": 3,
      "antennaDowntilt": 0,
      "antennaBeamwidth": 90,
      "antennaGain": 6,
      "verticalAccuracy": 3
   },
   "fccId": "2AG32EG2013BM11",
   "professionalInstallerData": {
      "cpiName": "CPI_User_123",
      "installCertificationTime": "2020-07-20T11:21:58Z",
      "cpiId": "cpi123"
   },
   "cbsdSerialNumber": "120300003220 41P0529"
}
2020-07-20T03:36:12.388Z - INFO - verified signature on cpiSignatureData
2020-07-20T03:36:12.390Z - INFO - cbsdCategory= 'A', removing optional param from cpi_schema
2020-07-20T03:36:12.398Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-07-20T03:36:12.401Z - INFO - engine sent successfully, the response to CBRS  : {
   "registrationResponse": [
      {
         "cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
         "response": {
            "responseCode": 0
         }
      }
   ]
}
2020-07-20T03:36:45.851Z - INFO - grant request from CBRS  : {
   "grantRequest": [
      {
         "cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
         "operationParam": {
            "maxEirp": 27,
            "operationFrequencyRange": {
```


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```
            "highFrequency": 3570000000,
            "lowFrequency": 3550000000
         }
      }
   }
 ]
}
2020-07-20T03:36:45.868Z - INFO - engine sent successfully, the response to CBRS  : {
  "grantResponse": [
    {
      "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
      "response": {
        "responseCode": 401
      }
    }
  ]
}
```


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8.11 WINNF.FT.C.HBT.1

"registrationRequest": [
{
"airInterface": {
"radioTechnology": "E_UTRA"
},
"callSign": "baicells",
"cbsdCategory": "A",
"cbsdSerialNumber": "12030000322041P0529",
"cpiSignatureData": {
"digitalSignature": "G-b45Dz-xr-uuEZEeMduo9d5RYObFDrNhVhVkw4PX6LdhRxGAEpBqOUKwFyWVynsGc7YuP4D5gg2iWO5C-9A57DqCkjUbaTLZMGQEbEh0wokFghjgZzv_YUH-Xa3gdwZIsnPedA9-Zx2NnmNzbQ5C51cPsW33-a3J6zP-So3x8xGfIa42JK1LRRQkBmkFV-zEJNj-swGBp1AwRNAmAVsTp1bh6v9FBa-ARjg7k8ndaefmxcwLdb57dSulMwl95ssSVgHf3dLaGMWhKJs-n4YfJjblyQetSb2oK3tJE6FSp6seECWVlUPG23zNknhov01z5Vr1WmiCeHa3oh17z5Ipw",
"encodedCpiSignedData": "eyJjYnNkU2VyaWFsTnVtYmVyIjoiMTIwMzAwMDAzMjIwNDFQMDUyOSIsImZjY0lkIjoiMkFHMzJFRzIwMTNCIiwiaW5zdGFsbGF0aW9uUGFyYW0iOnsiYW50ZW5uYUF6aW11dGgiOjAsImFudGVubmFCZWFtd2lkdGgiOjkwLCJhbnRlbm5hRG93bnRpbHQiOjAsImFudGVubmFHYWluIjo2LCJhbnRlbm5hTW9kZWwiOiJJbnRlcmFsIFBJRkEiLCJoZWlnaHQiOjQuMCwiaGVpZ2h0VHlwZSI6IkFHTCIsImhvcml6b250YWxBY2N1cmFjeSI6MywiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImxhdGl0dWRlIjo2OC41MzUzNCwibG9uZ2l0dWRlIjotMTU4LjUzOTcyLCJ2ZXJ0aWNhbEFjY3VyYWN5IjozfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6ImNwaTEyMyIsImNwaU5hbWUiOiJDUElfVXNlcl8xMjMiLCJpbnN0YWxsQ2VydGlmaWNhdGlvblRpbWUiOiIyMDIwLTA3LTIwVDExOjIxOjU4WiJ9fQ",
"protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
},
"fccId": "2AG32EG2013BM11",
"groupingParam": [
{
"groupId": "Baicells_01",
"groupType": "INTERFERENCE_COORDINATION"
}
],
"measCapability": [],
"userId": "Baicells_01"
}
]
}

2020-07-20T03:56:29.704Z - INFO - Registration message contains cpiSignatureData

2020-07-20T03:56:29.704Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2020-07-20T03:56:29.706Z - INFO - encodedCpiSignedData contents = {

"installationParam": {

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```
      "antennaAzimuth": 0,
      "heightType": "AGL",
      "antennaModel": "Interal PIFA",
      "longitude": -158.53972,
      "height": 4.0,
      "indoorDeployment": false,
      "latitude": 68.53534,
      "horizontalAccuracy": 3,
      "antennaDowntilt": 0,
      "antennaBeamwidth": 90,
      "antennaGain": 6,
      "verticalAccuracy": 3
   },
   "fccId": "2AG32EG2013BM11",
   "professionalInstallerData": {
      "cpiName": "CPI_User_123",
      "installCertificationTime": "2020-07-20T11:21:58Z",
      "cpiId": "cpi123"
   },
   "cbsdSerialNumber": "120300003220 41P0529"
}
2020-07-20T03:56:29.790Z - INFO - verified signature on cpiSignatureData
2020-07-20T03:56:29.792Z - INFO - cbsdCategory= 'A', removing optional param from cpi_schema
2020-07-20T03:56:29.796Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-07-20T03:56:29.799Z - INFO - engine sent successfully, the response to CBRS  : {
   "registrationResponse": [
      {
         "cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
         "response": {
            "responseCode": 0
         }
      }
   ]
}
2020-07-20T03:56:51.181Z - INFO - spectrumInquiry request from CBRS  : {
   "spectrumInquiryRequest": [
      {
         "cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
         "inquiredSpectrum": [
            {
               "highFrequency": 3570000000,
```


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```
            "lowFrequency": 3550000000
          }
        ]
      }
    ]
}
2020-07-20T03:56:51.197Z - INFO - engine sent successfully, the response to CBRS  : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3570000000,
            "lowFrequency": 3550000000
          },
          "ruleApplied": "FCC_PART_96"
        }
      ],
      "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2020-07-20T03:57:04.601Z - INFO - grant request from CBRS  : {
  "grantRequest": [
    {
      "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
      "operationParam": {
        "maxEirp": 27,
        "operationFrequencyRange": {
          "highFrequency": 3570000000,
          "lowFrequency": 3550000000
        }
      }
    }
  ]
}
2020-07-20T03:57:04.615Z - INFO - engine sent successfully, the response to CBRS  : {
```


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"grantResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220041P0529",
"channelType": "GAA",
"grantExpireTime": "2020-07-27T03:57:04Z",
"grantId": "53540677",
"heartbeatInterval": 60,
"response": {
"responseCode": 0
}
}
]
}
2020-07-20T03:57:24.000Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220041P0529",
"grantId": "53540677",
"grantRenew": false,
"operationState": "GRANTED"
}
]
}
2020-07-20T03:57:24.010Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220041P0529",
"grantId": "53540677",
"response": {
"responseCode": 0
},
"transmitExpireTime": "2020-07-20T04:00:44Z"
}
]
}
2020-07-20T03:58:25.381Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220041P0529",
"grantId": "53540677",
"grantRenew": false,

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"operationState": "AUTHORIZED"
}
]
}
2020-07-20T03:58:25.384Z - INFO - Time interval between two heartbeat request messages is: 61.381, limit is: 65.0
2020-07-20T03:58:25.398Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "53540677",
"response": {
"responseCode": 0
},
"transmitExpireTime": "2020-07-20T04:01:45Z"
}
]
}
2020-07-20T03:59:26.799Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "53540677",
"grantRenew": false,
"operationState": "AUTHORIZED"
}
]
}
2020-07-20T03:59:26.802Z - INFO - Time interval between two heartbeat request messages is: 61.418, limit is: 65.0
2020-07-20T03:59:26.815Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "53540677",
"response": {
"responseCode": 0
},
"transmitExpireTime": "2020-07-20T04:02:46Z"
}
]
}

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2020-07-20T04:00:28.198Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "53540677",
"grantRenew": false,
"operationState": "AUTHORIZED"
}
]
}
2020-07-20T04:00:28.203Z - INFO - Time interval between two heartbeat request messages is: 61.4, limit is: 65.0
2020-07-20T04:00:28.216Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "53540677",
"response": {
"responseCode": 0
},
"transmitExpireTime": "2020-07-20T04:03:48Z"
}
]
}
2020-07-20T04:01:29.678Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "53540677",
"grantRenew": false,
"operationState": "AUTHORIZED"
}
]
}
2020-07-20T04:01:29.681Z - INFO - Time interval between two heartbeat request messages is: 61.479, limit is: 65.0
2020-07-20T04:01:29.696Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "53540677",
"response": {

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```
            "responseCode": 0
         },
         "transmitExpireTime": "2020-07-20T04:04:49Z"
      }
   ]
}
2020-07-20T04:02:31.098Z - INFO - heartbeat request from CBRS  : {
   "heartbeatRequest": [
      {
         "cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
         "grantId": "53540677",
         "grantRenew": false,
         "operationState": "AUTHORIZED"
      }
   ]
}
2020-07-20T04:02:31.101Z - INFO - Time interval between two heartbeat request messages is: 61.419, limit is: 65.0
2020-07-20T04:02:31.114Z - INFO - engine sent successfully, the response to CBRS  : {
   "heartbeatResponse": [
      {
         "cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
         "grantId": "53540677",
         "response": {
            "responseCode": 0
         },
         "transmitExpireTime": "2020-07-20T04:05:51Z"
      }
   ]
}
```


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8.12 WINNF.FT.C.HBT.3

"registrationRequest": [
{
"airInterface": {
"radioTechnology": "E_UTRA"
},
"callSign": "baicells",
"cbsdCategory": "A",
"cbsdSerialNumber": "12030000322041P0529",
"cpiSignatureData": {
"digitalSignature": "G-b45Dz-xr-uuEZEeMduo9d5RYObFDrNhVhVkw4PX6LdhRxGAEpBqOUKwFyWVynsGc7YuP4D5gg2iWO5C-9A57DqCkjUbaTLZMGQEbEh0wokFghjgZzv_YUH-Xa3gdwZIsnPedA9-Zx2NnmNzbQ5C51cPsW33-a3J6zP-So3x8xGfIa42JK1LRRQkBmkFV-zEJNj-swGBp1AwRNAmAVsTp1bh6v9FBa-ARjg7k8ndaefmxcwLdb57dSulMwl95ssSVgHf3dLaGMWhKJs-n4YfJjblyQetSb2oK3tJE6FSp6seECWVlUPG23zNknhov01z5Vr1WmiCeHa3oh17z5lpw",
"encodedCpiSignedData": "eyJjYnNkU2VyaWFsTnVtYmVyIjoiMTIwMzAwMDAzMjIwNDFQMDUyOSIsImZjY0lkIjoiMkFHMzJFRzIwMTNCIiwiaW5zdGFsbGF0aW9uUGFyYW0iOnsiYW50ZW5uYUF6aW11dGgiOjAsImFudGVubmFCZWFtd2lkdGgiOjkwLCJhbnRlbm5hRG93bnRpbHQiOjAsImFudGVubmFHYWluIjo2LCJhbnRlbm5hTW9kZWwiOiJJbnRlcmFsIFBJRkEiLCJoZWlnaHQiOjQuMCwiaGVpZ2h0VHlwZSI6IkFHTCIsImhvcml6b250YWxBY2N1cmFjeSI6MywiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImxhdGl0dWRlIjo2OC41MzUzNCwibG9uZ2l0dWRlIjotMTU4LjUzOTcyLCJ2ZXJ0aWNhbEFjY3VyYWN5IjozfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6ImNwaTEyMyIsImNwaU5hbWUiOiJDUElfVXNlcl8xMjMiLCJpbnN0YWxsQ2VydGlmaWNhdGlvblRpbWUiOiIyMDIwLTA3LTIwVDExOjIxOjU4WiJ9fQ",
"protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
},
"fccId": "2AG32EG2013BM11",
"groupingParam": [
{
"groupId": "Baicells_01",
"groupType": "INTERFERENCE_COORDINATION"
}
],
"measCapability": [],
"userId": "Baicells_01"
}
]
}

2020-07-20T04:07:16.255Z - INFO - Registration message contains cpiSignatureData

2020-07-20T04:07:16.256Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2020-07-20T04:07:16.256Z - INFO - encodedCpiSignedData contents = {

"installationParam": {

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```
      "antennaAzimuth": 0,
      "heightType": "AGL",
      "antennaModel": "Interal PIFA",
      "longitude": -158.53972,
      "height": 4.0,
      "indoorDeployment": false,
      "latitude": 68.53534,
      "horizontalAccuracy": 3,
      "antennaDowntilt": 0,
      "antennaBeamwidth": 90,
      "antennaGain": 6,
      "verticalAccuracy": 3
   },
   "fccId": "2AG32EG2013BM11",
   "professionalInstallerData": {
      "cpiName": "CPI_User_123",
      "installCertificationTime": "2020-07-20T11:21:58Z",
      "cpiId": "cpi123"
   },
   "cbsdSerialNumber": "12030000322041P0529"
}
2020-07-20T04:07:16.348Z - INFO - verified signature on cpiSignatureData
2020-07-20T04:07:16.349Z - INFO - cbsdCategory= 'A', removing optional param from cpi_schema
2020-07-20T04:07:16.357Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-07-20T04:07:16.359Z - INFO - engine sent successfully, the response to CBRS  : {
   "registrationResponse": [
      {
         "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
         "response": {
            "responseCode": 0
         }
      }
   ]
}
2020-07-20T04:07:27.766Z - INFO - spectrumInquiry request from CBRS  : {
   "spectrumInquiryRequest": [
      {
         "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
         "inquiredSpectrum": [
            {
               "highFrequency": 3570000000,
```


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```
            "lowFrequency": 3550000000
          }
        ]
      }
    ]
}
2020-07-20T04:07:27.782Z - INFO - engine sent successfully, the response to CBRS  : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3570000000,
            "lowFrequency": 3550000000
          },
          "ruleApplied": "FCC_PART_96"
        }
      ],
      "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2020-07-20T04:07:39.135Z - INFO - grant request from CBRS  : {
  "grantRequest": [
    {
      "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
      "operationParam": {
        "maxEirp": 27,
        "operationFrequencyRange": {
          "highFrequency": 3570000000,
          "lowFrequency": 3550000000
        }
      }
    }
  ]
}
2020-07-20T04:07:39.148Z - INFO - engine sent successfully, the response to CBRS  : {
```


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"grantResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220041P0529",
"channelType": "GAA",
"grantExpireTime": "2020-07-27T04:07:39Z",
"grantId": "381997033",
"heartbeatInterval": 60,
"response": {
"responseCode": 0
}
}
]
}
2020-07-20T04:07:50.486Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220041P0529",
"grantId": "381997033",
"grantRenew": false,
"operationState": "GRANTED"
}
]
}
2020-07-20T04:07:50.502Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220041P0529",
"grantId": "381997033",
"response": {
"responseCode": 0
},
"transmitExpireTime": "2020-07-20T04:11:10Z"
}
]
}
2020-07-20T04:08:51.894Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220041P0529",
"grantId": "381997033",
"grantRenew": false,

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"operationState": "AUTHORIZED"
}
]
}
2020-07-20T04:08:51.898Z - INFO - Time interval between two heartbeat request messages is: 61.408, limit is: 65.0
2020-07-20T04:08:51.917Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "381997033",
"response": {
"responseCode": 0
},
"transmitExpireTime": "2020-07-20T04:12:11Z"
}
]
}
2020-07-20T04:09:53.344Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "381997033",
"grantRenew": false,
"operationState": "AUTHORIZED"
}
]
}
2020-07-20T04:09:53.348Z - INFO - Time interval between two heartbeat request messages is: 61.449, limit is: 65.0
2020-07-20T04:09:53.359Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "381997033",
"response": {
"responseCode": 0
},
"transmitExpireTime": "2020-07-20T04:13:13Z"
}
]
}

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2020-07-20T04:10:54.813Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "381997033",
"grantRenew": false,
"operationState": "AUTHORIZED"
}
]
}
2020-07-20T04:10:54.818Z - INFO - Time interval between two heartbeat request messages is: 61.47, limit is: 65.0
2020-07-20T04:10:54.834Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "381997033",
"response": {
"responseCode": 105
},
"transmitExpireTime": "2020-07-20T04:10:54Z"
}
]
}

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8.13 WINNF.FT.C.HBT.4

"registrationRequest": [
{
"airInterface": {
"radioTechnology": "E_UTRA"
},
"callSign": "baicells",
"cbsdCategory": "A",
"cbsdSerialNumber": "12030000322041P0529",
"cpiSignatureData": {
"digitalSignature": "PVs4hWOnI8HB43F3lzGXcAeSFa3rcGiBcjSoldVWbPO8vd0bwE-p-JjiNNsDCOtOYS4bT3g3hVB5UwgeEjD8frvDkf2N0DRgYmh4VCprg8xbk3L8QMsX_lB9gT2czrKcVod_g6WmmsNJyEJPcapwTpOa0YelhbaIhDK54AY5A_YYZHjqptbtp2Okx9y-smjQm3sIpvZjEFUaNp4R1KrrjnMOH1huuvC7Dlb9pCSDTDT6S2pB8p7Qf-v-ANfD4g0IT9cUauizpYDhoIZg0ZUl3gcQRL3Yr2IHx65R8dGymhQYdUTC8nxFcq8pMdm_rrGagX3466H89Dxh3XNsQdaC5g",
"encodedCpiSignedData": "eyJjYnNkU2VyaWFsTnVtYmVyIjoiMTIwMzAwMDAzMjIwNDFQMDUyOSIsImZjY0lkIjoiMkFHMzJFRzIwMTNCIiwiaW5zdGFsbGF0aW9uUGFyYW0iOnsiYW50ZW5uYUF6aW11dGgiOjAsImFudGVubmFCZWFtd2lkdGgiOjkwLCJhbnRlbm5hRG93bnRpbHQiOjAsImFudGVubmFHYWluIjo3LCJhbnRlbm5hTW9kZWwiOiJJbnRlcmFsIFBJRkEiLCJoZWlnaHQiOjQuMCwiaGVpZ2h0VHlwZSI6IkFHTCIsImhvcml6b250YWxBY2N1cmFjeSI6MywiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImxhdGl0dWRlIjo2OC41MzUzNCwibG9uZ2l0dWRlIjotMTU4LjUzOTcyLCJ2ZXJ0aWNhbEFjY3VyYWN5IjozfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6ImNwaTEyMyIsImNwaU5hbWUiOiJDUElfVXNlcl8xMjMiLCJpbnN0YWxsQ2VydGlmaWNhdGlvblRpbWUiOiIyMDIwLTA3LTIyVDE4OjM2OjU3WiJ9fQ",
"protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
},
"fccId": "2AG32EG2013BM11",
"groupingParam": [
{
"groupId": "Baicells_01",
"groupType": "INTERFERENCE_COORDINATION"
}
],
"measCapability": [
"RECEIVED_POWER_WITHOUT_GRANT"
],
"userId": "Baicells_01"
}
]
}

2020-07-24T06:36:47.661Z - INFO - Registration message contains cpiSignatureData
2020-07-24T06:36:47.661Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

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2020-07-24T06:36:47.663Z - INFO - encodedCpiSignedData contents = {
"installationParam": {
"antennaAzimuth": 0,
"heightType": "AGL",
"antennaModel": "Interal PIFA",
"longitude": -158.53972,
"height": 4.0,
"indoorDeployment": false,
"latitude": 68.53534,
"horizontalAccuracy": 3,
"antennaDowntilt": 0,
"antennaBeamwidth": 90,
"antennaGain": 7,
"verticalAccuracy": 3
},
"fccId": "2AG32EG2013BM11",
"professionalInstallerData": {
"cpiName": "CPI_User_123",
"installCertificationTime": "2020-07-22T18:36:57Z",
"cpiId": "cpi123"
},
"cbsdSerialNumber": "12030000322041P0529"
}
2020-07-24T06:36:47.701Z - INFO - verified signature on cpiSignatureData
2020-07-24T06:36:47.703Z - INFO - cbsdCategory= 'A', removing optional param from cpi_schema
2020-07-24T06:36:47.707Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-07-24T06:36:47.707Z - INFO - engine sent successfully, the response to CBRS : {
"registrationResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"response": {
"responseCode": 0
}
}
]
}
2020-07-24T06:36:59.062Z - INFO - spectrumInquiry request from CBRS : {
"spectrumInquiryRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"inquiredSpectrum": [

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```
            {
               "highFrequency": 3696000000,
               "lowFrequency": 3676000000
            }
         ]
      }
   ]
}
2020-07-24T06:36:59.069Z - INFO - engine sent successfully, the response to CBRS  : {
   "spectrumInquiryResponse": [
      {
         "availableChannel": [
            {
               "channelType": "GAA",
               "frequencyRange": {
                  "highFrequency": 3696000000,
                  "lowFrequency": 3676000000
               },
               "ruleApplied": "FCC_PART_96"
            }
         ],
         "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
         "response": {
            "responseCode": 0
         }
      }
   ]
}
2020-07-24T06:37:10.423Z - INFO - grant request from CBRS  : {
   "grantRequest": [
      {
         "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
         "operationParam": {
            "maxEirp": 27,
            "operationFrequencyRange": {
               "highFrequency": 3696000000,
               "lowFrequency": 3676000000
            }
         }
      }
   ]
```


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}
2020-07-24T06:37:10.436Z - INFO - engine sent successfully, the response to CBRS : {
"grantResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"channelType": "GAA",
"grantExpireTime": "2020-07-31T06:37:10Z",
"grantId": "97083869",
"heartbeatInterval": 60,
"response": {
"responseCode": 0
}
}
]
}
2020-07-24T06:37:25.802Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "97083869",
"grantRenew": false,
"operationState": "GRANTED"
}
]
}
2020-07-24T06:37:25.812Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "97083869",
"response": {
"responseCode": 0
},
"transmitExpireTime": "2020-07-24T06:40:45Z"
}
]
}
2020-07-24T06:38:27.221Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",

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"grantId": "97083869",
"grantRenew": false,
"operationState": "AUTHORIZED"
}
]
}
2020-07-24T06:38:27.223Z - INFO - Time interval between two heartbeat request messages is: 61.419, limit is: 65.0
2020-07-24T06:38:27.229Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "97083869",
"response": {
"responseCode": 0
},
"transmitExpireTime": "2020-07-24T06:41:47Z"
}
]
}
2020-07-24T06:39:28.680Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "97083869",
"grantRenew": false,
"operationState": "AUTHORIZED"
}
]
}
2020-07-24T06:39:28.683Z - INFO - Time interval between two heartbeat request messages is: 61.459, limit is: 65.0
2020-07-24T06:39:28.688Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "97083869",
"response": {
"responseCode": 0
},
"transmitExpireTime": "2020-07-24T06:42:48Z"
}

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```
  ]
}
2020-07-24T06:40:30.040Z - INFO - heartbeat request from CBRS  : {
  "heartbeatRequest": [
    {
      "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
      "grantId": "97083869",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2020-07-24T06:40:30.043Z - INFO - Time interval between two heartbeat request messages is: 61.36, limit is: 65.0
2020-07-24T06:40:30.055Z - INFO - engine sent successfully, the response to CBRS  : {
  "heartbeatResponse": [
    {
      "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
      "grantId": "97083869",
      "response": {
        "responseCode": 0
      },
      "transmitExpireTime": "2020-07-24T06:43:50Z"
    }
  ]
}
2020-07-24T06:41:31.420Z - INFO - heartbeat request from CBRS  : {
  "heartbeatRequest": [
    {
      "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
      "grantId": "97083869",
      "grantRenew": false,
      "operationState": "AUTHORIZED"
    }
  ]
}
2020-07-24T06:41:31.421Z - INFO - Time interval between two heartbeat request messages is: 61.379, limit is: 65.0
2020-07-24T06:41:31.427Z - INFO - engine sent successfully, the response to CBRS  : {
  "heartbeatResponse": [
    {
      "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
```


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"grantId": "97083869",
"response": {
"responseCode": 0
},
"transmitExpireTime": "2020-07-24T06:44:51Z"
}
]
}
2020-07-24T06:42:32.779Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "97083869",
"grantRenew": false,
"operationState": "AUTHORIZED"
}
]
}
2020-07-24T06:42:32.783Z - INFO - Time interval between two heartbeat request messages is: 61.36, limit is: 65.0
2020-07-24T06:42:32.789Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "97083869",
"response": {
"responseCode": 500
},
"transmitExpireTime": "2020-07-24T06:42:32Z"
}
]
}

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8.14 WINNF.FT.C.HBT.5


```
"registrationRequest": [
    {
      "airInterface": {
        "radioTechnology": "E_UTRA"
      },
      "callSign": "baicells",
      "cbsdCategory": "A",
      "cbsdSerialNumber": "12030000322041P0529",
      "cpiSignatureData": {
        "digitalSignature": "G-b45Dz-xr-
uuEZEeMduo9d5RYObFDrNhVhVkw4PX6LdhRxGAEpBqOUKwFyWVynsGc7YuP4D5gg2iWO5C-
9A57DqCkjUbaTLZMGQEbEh0wokFghjgZzv_YUH-Xa3gdwZlsnPedA9-Zx2NnmNzbQ5C51cPsW33-a3J6zP-
So3x8xGfIa42JK1LRRQkBmkFV-zEJNj-swGBp1AwRNAmAVsTp1bh6v9FBa-
ARjg7k8ndaefmxcwLdb57dSulMwl95ssSVgHf3dLaGMWhKJs-
n4YfJjblyQetSb2oK3tJE6FSp6seECWVlUPG23zNknhov01z5Vr1WmiCeHa3oh17z5lpw",
        "encodedCpiSignedData":
"eyJjYnNkU2VyaWFsTnVtYmVyIjoiMTIwMzAwMDAzMjIwNDFQMDUyOSIsImZjY0lkIjoiMkFHMzJFRzIwMTN
CIiwiaW5zdGFsbGF0aW9uUGFyYW0iOnsiYW50ZW5uYUF6aW11dGgiOjAsImFudGVubmFCZWFtd2lkdGgi
OjkwLCJhbnRlbm5hRG93bnRpbHQiOjAsImFudGVubmFHYWluIjo2LCJhbnRlbm5hTW9kZWwiOiJJbnRlcmF
sIFBJRkEiLCJoZWlnaHQiOjQuMCwiaGVpZ2h0VHlwZSI6IkFHTCIsImhvcml6b250YWxBY2N1cmFjeSI6Mywi
aW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImxhdGl0dWRlIjo2OC41MzUzNCwibG9uZ2l0dWRlIjotMTU4LjU
zOTcyLCJ2ZXJ0aWNhbEFjY3VyYWN5IjozfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI
6ImNwaTEyMyIsImNwaU5hbWUiOiJDUElfVXNlcl8xMjMiLCJpbnN0YWxsQ2VydGlmaWNhdGlvblRpbWUiOiI
yMDIwLTA3LTIwVDExOjIxOjU4WiJ9fQ",
        "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
      },
      "fccId": "2AG32EG2013BM11",
      "groupingParam": [
        {
          "groupId": "Baicells_01",
          "groupType": "INTERFERENCE_COORDINATION"
        }
      ],
      "measCapability": [],
      "userId": "Baicells_01"
    }
  ]
}
2020-07-20T05:54:04.323Z - INFO - Registration message contains cpiSignatureData
2020-07-20T05:54:04.323Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2020-07-20T05:54:04.325Z - INFO - encodedCpiSignedData contents = {
  "installationParam": {
```


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```
      "antennaAzimuth": 0,
      "heightType": "AGL",
      "antennaModel": "Interal PIFA",
      "longitude": -158.53972,
      "height": 4.0,
      "indoorDeployment": false,
      "latitude": 68.53534,
      "horizontalAccuracy": 3,
      "antennaDowntilt": 0,
      "antennaBeamwidth": 90,
      "antennaGain": 6,
      "verticalAccuracy": 3
   },
   "fccId": "2AG32EG2013BM11",
   "professionalInstallerData": {
      "cpiName": "CPI_User_123",
      "installCertificationTime": "2020-07-20T11:21:58Z",
      "cpiId": "cpi123"
   },
   "cbsdSerialNumber": "12030000322041P0529"
}
2020-07-20T05:54:04.407Z - INFO - verified signature on cpiSignatureData
2020-07-20T05:54:04.408Z - INFO - cbsdCategory= 'A', removing optional param from cpi_schema
2020-07-20T05:54:04.414Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-07-20T05:54:04.415Z - INFO - engine sent successfully, the response to CBRS  : {
   "registrationResponse": [
      {
         "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
         "response": {
            "responseCode": 0
         }
      }
   ]
}
2020-07-20T05:54:13.342Z - INFO - spectrumInquiry request from CBRS  : {
   "spectrumInquiryRequest": [
      {
         "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
         "inquiredSpectrum": [
            {
               "highFrequency": 3570000000,
```


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```
            "lowFrequency": 3550000000
          }
        ]
      }
    ]
}
2020-07-20T05:54:13.358Z - INFO - engine sent successfully, the response to CBRS  : {
   "spectrumInquiryResponse": [
      {
         "availableChannel": [
            {
               "channelType": "GAA",
               "frequencyRange": {
                  "highFrequency": 3570000000,
                  "lowFrequency": 3550000000
               },
               "ruleApplied": "FCC_PART_96"
            }
         ],
         "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
         "response": {
            "responseCode": 0
         }
      }
   ]
}
2020-07-20T05:54:24.180Z - INFO - grant request from CBRS  : {
   "grantRequest": [
      {
         "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
         "operationParam": {
            "maxEirp": 27,
            "operationFrequencyRange": {
               "highFrequency": 3570000000,
               "lowFrequency": 3550000000
            }
         }
      }
   ]
}
2020-07-20T05:54:24.201Z - INFO - engine sent successfully, the response to CBRS  : {
```


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"grantResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"channelType": "GAA",
"grantExpireTime": "2020-07-27T05:54:24Z",
"grantId": "254450451",
"heartbeatInterval": 60,
"response": {
"responseCode": 0
}
}
]
}
2020-07-20T05:54:33.160Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "254450451",
"grantRenew": false,
"operationState": "GRANTED"
}
]
}
2020-07-20T05:54:33.187Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "254450451",
"response": {
"responseCode": 501
},
"transmitExpireTime": "2020-07-20T05:54:33Z"
}
]
}
2020-07-20T05:54:50.019Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "254450451",
"grantRenew": false,

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"operationState": "GRANTED"
}
]
}
2020-07-20T05:54:50.025Z - INFO - Time interval between two heartbeat request messages is: 16.861, limit is: 65.0
2020-07-20T05:54:50.042Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "254450451",
"response": {
"responseCode": 501
},
"transmitExpireTime": "2020-07-20T05:54:50Z"
}
]
}

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8.15 WINNF.FT.C.HBT.6

"registrationRequest": [
{
"airInterface": {
"radioTechnology": "E_UTRA"
},
"callSign": "baicells",
"cbsdCategory": "A",
"cbsdSerialNumber": "12030000322041P0529",
"cpiSignatureData": {
"digitalSignature": "G-b45Dz-xr-uuEZEeMduo9d5RYObFDrNhVhVkw4PX6LdhRxGAEpBqOUKwFyWVynsGc7YuP4D5gg2iWO5C-9A57DqCkjUbaTLZMGQEbEh0wokFghjgZzv_YUH-Xa3gdwZIsnPedA9-Zx2NnmNzbQ5C51cPsW33-a3J6zP-So3x8xGfIa42JK1LRRQkBmkFV-zEJNj-swGBp1AwRNAmAVsTp1bh6v9FBa-ARjg7k8ndaefmxcwLdb57dSulMwl95ssSVgHf3dLaGMWhKJs-n4YfJjblyQetSb2oK3tJE6FSp6seECWVlUPG23zNknhov01z5Vr1WmiCeHa3oh17z5lpw",
"encodedCpiSignedData": "eyJjYnNkU2VyaWFsTnVtYmVyIjoiMTIwMzAwMDAzMjIwNDFQMDUyOSIsImZjY0lkIjoiMkFHMzJFRzIwMTNCIiwiaW5zdGFsbGF0aW9uUGFyYW0iOnsiYW50ZW5uYUF6aW11dGgiOjAsImFudGVubmFCZWFtd2lkdGgiOjkwLCJhbnRlbm5hRG93bnRpbHQiOjAsImFudGVubmFHYWluIjo2LCJhbnRlbm5hTW9kZWwiOiJJbnRlcmFsIFBJRkEiLCJoZWlnaHQiOjQuMCwiaGVpZ2h0VHlwZSI6IkFHTCIsImhvcml6b250YWxBY2N1cmFjeSI6MywiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImxhdGl0dWRlIjo2OC41MzUzNCwibG9uZ2l0dWRlIjotMTU4LjUzOTcyLCJ2ZXJ0aWNhbEFjY3VyYWN5IjozfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6ImNwaTEyMyIsImNwaU5hbWUiOiJDUElfVXNlcl8xMjMiLCJpbnN0YWxsQ2VydGlmaWNhdGlvblRpbWUiOiIyMDIwLTA3LTIwVDExOjIxOjU4WiJ9fQ",
"protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
},
"fccId": "2AG32EG2013BM11",
"groupingParam": [
{
"groupId": "Baicells_01",
"groupType": "INTERFERENCE_COORDINATION"
}
],
"measCapability": [],
"userId": "Baicells_01"
}
]
}

2020-07-20T06:24:47.010Z - INFO - Registration message contains cpiSignatureData

2020-07-20T06:24:47.010Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2020-07-20T06:24:47.012Z - INFO - encodedCpiSignedData contents = {

"installationParam": {

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```
      "antennaAzimuth": 0,
      "heightType": "AGL",
      "antennaModel": "Interal PIFA",
      "longitude": -158.53972,
      "height": 4.0,
      "indoorDeployment": false,
      "latitude": 68.53534,
      "horizontalAccuracy": 3,
      "antennaDowntilt": 0,
      "antennaBeamwidth": 90,
      "antennaGain": 6,
      "verticalAccuracy": 3
   },
   "fccId": "2AG32EG2013BM11",
   "professionalInstallerData": {
      "cpiName": "CPI_User_123",
      "installCertificationTime": "2020-07-20T11:21:58Z",
      "cpiId": "cpi123"
   },
   "cbsdSerialNumber": "12030000322041P0529"
}
2020-07-20T06:24:47.102Z - INFO - verified signature on cpiSignatureData
2020-07-20T06:24:47.105Z - INFO - cbsdCategory= 'A', removing optional param from cpi_schema
2020-07-20T06:24:47.111Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-07-20T06:24:47.115Z - INFO - engine sent successfully, the response to CBRS  : {
   "registrationResponse": [
      {
         "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
         "response": {
            "responseCode": 0
         }
      }
   ]
}
2020-07-20T06:24:58.046Z - INFO - spectrumInquiry request from CBRS  : {
   "spectrumInquiryRequest": [
      {
         "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
         "inquiredSpectrum": [
            {
               "highFrequency": 3570000000,
```


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```
            "lowFrequency": 3550000000
          }
        ]
      }
    ]
}
2020-07-20T06:24:58.061Z - INFO - engine sent successfully, the response to CBRS  : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3570000000,
            "lowFrequency": 3550000000
          },
          "ruleApplied": "FCC_PART_96"
        }
      ],
      "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2020-07-20T06:25:06.905Z - INFO - grant request from CBRS  : {
  "grantRequest": [
    {
      "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
      "operationParam": {
        "maxEirp": 27,
        "operationFrequencyRange": {
          "highFrequency": 3570000000,
          "lowFrequency": 3550000000
        }
      }
    }
  ]
}
2020-07-20T06:25:06.921Z - INFO - engine sent successfully, the response to CBRS  : {
```


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"grantResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220041P0529",
"channelType": "GAA",
"grantExpireTime": "2020-07-27T06:25:06Z",
"grantId": "342146731",
"heartbeatInterval": 60,
"response": {
"responseCode": 0
}
}
]
}
2020-07-20T06:25:15.825Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220041P0529",
"grantId": "342146731",
"grantRenew": false,
"operationState": "GRANTED"
}
]
}
2020-07-20T06:25:15.842Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220041P0529",
"grantId": "342146731",
"response": {
"responseCode": 0
},
"transmitExpireTime": "2020-07-20T06:28:35Z"
}
]
}
2020-07-20T06:26:16.686Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220041P0529",
"grantId": "342146731",
"grantRenew": false,

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"operationState": "AUTHORIZED"
}
]
}
2020-07-20T06:26:16.690Z - INFO - Time interval between two heartbeat request messages is: 60.86, limit is: 65.0
2020-07-20T06:26:16.704Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "342146731",
"response": {
"responseCode": 0
},
"transmitExpireTime": "2020-07-20T06:29:36Z"
}
]
}
2020-07-20T06:27:17.545Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "342146731",
"grantRenew": false,
"operationState": "AUTHORIZED"
}
]
}
2020-07-20T06:27:17.549Z - INFO - Time interval between two heartbeat request messages is: 60.86, limit is: 65.0
2020-07-20T06:27:17.563Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "342146731",
"response": {
"responseCode": 0
},
"transmitExpireTime": "2020-07-20T06:30:37Z"
}
]
}

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2020-07-20T06:28:18.404Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "342146731",
"grantRenew": false,
"operationState": "AUTHORIZED"
}
]
}
2020-07-20T06:28:18.407Z - INFO - Time interval between two heartbeat request messages is: 60.859, limit is: 65.0
2020-07-20T06:28:18.423Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "342146731",
"response": {
"responseCode": 501
},
"transmitExpireTime": "2020-07-20T06:28:18Z"
}
]
}
2020-07-20T06:28:31.000Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "342146731",
"grantRenew": false,
"operationState": "GRANTED"
}
]
}
2020-07-20T06:28:31.003Z - INFO - Time interval between two heartbeat request messages is: 12.595, limit is: 65.0
2020-07-20T06:28:31.019Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "342146731",
"response": {

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```
            "responseCode": 501
          },
          "transmitExpireTime": "2020-07-20T06:28:31Z"
      }
   ]
}
```


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8.16 WINNF.FT.C.HBT.7


```
"registrationRequest": [
      {
         "airInterface": {
            "radioTechnology": "E_UTRA"
         },
         "callSign": "baicells",
         "cbsdCategory": "A",
         "cbsdSerialNumber": "12030000322041P0529",
         "cpiSignatureData": {
            "digitalSignature": "G-b45Dz-xr-
uuEZEeMduo9d5RYObFDrNhVhVkw4PX6LdhRxGAEpBqOUKwFyWVynsGc7YuP4D5gg2iWO5C-
9A57DqCkjUbaTLZMGQEbEh0wokFghjgZzv_YUH-Xa3gdwZIsnPedA9-Zx2NnmNzbQ5C51cPsW33-a3J6zP-
So3x8xGfIa42JK1LRRQkBmkFV-zEJNj-swGBp1AwRNAmAVsTp1bh6v9FBa-
ARjg7k8ndaefmxcwLdb57dSulMwl95ssSVgHf3dLaGMWhKJs-
n4YfJjblyQetSb2oK3tJE6FSp6seECWVlUPG23zNknhov01z5Vr1WmiCeHa3oh17z5lpw",
            "encodedCpiSignedData":
"eyJjYnNkU2VyaWFsTnVtYmVyIjoiMTIwMzAwMDAzMjIwNDFQMDUyOSIsImZjY0lkIjoiMkFHMzJFRzIwMTN
CIiwiaW5zdGFsbGF0aW9uUGFyYW0iOnsiYW50ZW5uYUF6aW11dGgiOjAsImFudGVubmFCZWFtd2lkdGgi
OjkwLCJhbnRlbm5hRG93bnRpbHQiOjAsImFudGVubmFHYWluIjo2LCJhbnRlbm5hTW9kZWwiOiJJbnRlcmF
sIFBJRkEiLCJoZWlnaHQiOjQuMCwiaGVpZ2h0VHlwZSI6IkFHTCIsImhvcml6b250YWxBY2N1cmFjeSI6Mywi
aW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImxhdGl0dWRlIjo2OC41MzUzNCwibG9uZ2l0dWRlIjotMTU4LjU
zOTcyLCJ2ZXJ0aWNhbEFjY3VyYWN5IjozfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI
6ImNwaTEyMyIsImNwaU5hbWUiOiJDUElfVXNlcl8xMjMiLCJpbnN0YWxsQ2VydGlmaWNhdGlvblRpbWUiOiI
yMDIwLTA3LTIwVDExOjIxOjU4WiJ9fQ",
            "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
         },
         "fccId": "2AG32EG2013BM11",
         "groupingParam": [
            {
               "groupId": "Baicells_01",
               "groupType": "INTERFERENCE_COORDINATION"
            }
         ],
         "measCapability": [],
         "userId": "Baicells_01"
      }
   ]
}
```


2020-07-20T06:29:48.055Z - INFO - Registration message contains cpiSignatureData

2020-07-20T06:29:48.055Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2020-07-20T06:29:48.055Z - INFO - encodedCpiSignedData contents = {

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```
  "installationParam": {
    "antennaAzimuth": 0,
    "heightType": "AGL",
    "antennaModel": "Interal PIFA",
    "longitude": -158.53972,
    "height": 4.0,
    "indoorDeployment": false,
    "latitude": 68.53534,
    "horizontalAccuracy": 3,
    "antennaDowntilt": 0,
    "antennaBeamwidth": 90,
    "antennaGain": 6,
    "verticalAccuracy": 3
  },
  "fccId": "2AG32EG2013BM11",
  "professionalInstallerData": {
    "cpiName": "CPI_User_123",
    "installCertificationTime": "2020-07-20T11:21:58Z",
    "cpiId": "cpi123"
  },
  "cbsdSerialNumber": "120300003220 41P0529"
}
2020-07-20T06:29:48.132Z - INFO - verified signature on cpiSignatureData
2020-07-20T06:29:48.134Z - INFO - cbsdCategory= 'A', removing optional param from cpi_schema
2020-07-20T06:29:48.141Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-07-20T06:29:48.141Z - INFO - engine sent successfully, the response to CBRS  : {
  "registrationResponse": [
    {
      "cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2020-07-20T06:30:03.013Z - INFO - spectrumInquiry request from CBRS  : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
      "inquiredSpectrum": [
        {
```


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```
            "highFrequency": 3570000000,
            "lowFrequency": 3550000000
          }
        ]
      }
    ]
}
2020-07-20T06:30:03.028Z - INFO - engine sent successfully, the response to CBRS  : {
   "spectrumInquiryResponse": [
      {
         "availableChannel": [
            {
               "channelType": "GAA",
               "frequencyRange": {
                  "highFrequency": 3570000000,
                  "lowFrequency": 3550000000
               },
               "ruleApplied": "FCC_PART_96"
            }
         ],
         "cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
         "response": {
            "responseCode": 0
         }
      }
   ]
}
2020-07-20T06:30:13.888Z - INFO - grant request from CBRS  : {
   "grantRequest": [
      {
         "cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
         "operationParam": {
            "maxEirp": 27,
            "operationFrequencyRange": {
               "highFrequency": 3570000000,
               "lowFrequency": 3550000000
            }
         }
      }
   ]
}
```


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2020-07-20T06:30:13.901Z - INFO - engine sent successfully, the response to CBRS : {
"grantResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"channelType": "GAA",
"grantExpireTime": "2020-07-27T06:30:13Z",
"grantId": "676416777",
"heartbeatInterval": 60,
"response": {
"responseCode": 0
}
}
]
}
2020-07-20T06:30:24.743Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "676416777",
"grantRenew": false,
"operationState": "GRANTED"
}
]
}
2020-07-20T06:30:24.759Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "676416777",
"response": {
"responseCode": 0
},
"transmitExpireTime": "2020-07-20T06:33:44Z"
}
]
}
2020-07-20T06:31:26.023Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "676416777",

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"grantRenew": false,
"operationState": "AUTHORIZED"
}
]
}
2020-07-20T06:31:26.029Z - INFO - Time interval between two heartbeat request messages is: 61.281, limit is: 65.0
2020-07-20T06:31:26.049Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "676416777",
"response": {
"responseCode": 0
},
"transmitExpireTime": "2020-07-20T06:34:46Z"
}
]
}
2020-07-20T06:32:26.903Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "676416777",
"grantRenew": false,
"operationState": "AUTHORIZED"
}
]
}
2020-07-20T06:32:26.905Z - INFO - Time interval between two heartbeat request messages is: 60.878, limit is: 65.0
2020-07-20T06:32:26.917Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "676416777",
"response": {
"responseCode": 0
},
"transmitExpireTime": "2020-07-20T06:35:46Z"
}
]

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}
2020-07-20T06:33:27.802Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "676416777",
"grantRenew": false,
"operationState": "AUTHORIZED"
}
]
}
2020-07-20T06:33:27.806Z - INFO - Time interval between two heartbeat request messages is: 60.9, limit is: 65.0
2020-07-20T06:33:27.825Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "676416777",
"response": {
"responseCode": 502
},
"transmitExpireTime": "2020-07-20T06:33:27Z"
}
]
}
2020-07-20T06:33:40.012Z - INFO - relinquishment request from CBRS : {
"relinquishmentRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "676416777"
}
]
}
2020-07-20T06:33:40.026Z - INFO - engine sent successfully, the response to CBRS : {
"relinquishmentResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "676416777",
"response": {
"responseCode": 0
}
}

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]
}

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8.17 WINNF.FT.C.HBT.9


```
"registrationRequest": [
      {
         "airInterface": {
            "radioTechnology": "E_UTRA"
         },
         "callSign": "baicells",
         "cbsdCategory": "A",
         "cbsdSerialNumber": "12030000322041P0529",
         "cpiSignatureData": {
            "digitalSignature": "G-b45Dz-xr-
uuEZEeMduo9d5RYObFDrNhVhVkw4PX6LdhRxGAEpBqOUKwFyWVynsGc7YuP4D5gg2iWO5C-
9A57DqCkjUbaTLZMGQEbEh0wokFghjgZzv_YUH-Xa3gdwZIsnPedA9-Zx2NnmNzbQ5C51cPsW33-a3J6zP-
So3x8xGfIa42JK1LRRQkBmkFV-zEJNj-swGBp1AwRNAmAVsTp1bh6v9FBa-
ARjg7k8ndaefmxcwLdb57dSulMwl95ssSVgHf3dLaGMWhKJs-
n4YfJjblyQetSb2oK3tJE6FSp6seECWVlUPG23zNknhov01z5Vr1WmiCeHa3oh17z5lpw",
            "encodedCpiSignedData":
"eyJjYnNkU2VyaWFsTnVtYmVyIjoiMTIwMzAwMDAzMjIwNDFQMDUyOSIsImZjY0lkIjoiMkFHMzJFRzIwMTN
CIiwiaW5zdGFsbGF0aW9uUGFyYW0iOnsiYW50ZW5uYUF6aW11dGgiOjAsImFudGVubmFCZWFtd2lkdGgi
OjkwLCJhbnRlbm5hRG93bnRpbHQiOjAsImFudGVubmFHYWluIjo2LCJhbnRlbm5hTW9kZWwiOiJJbnRlcmF
sIFBJRkEiLCJoZWlnaHQiOjQuMCwiaGVpZ2h0VHlwZSI6IkFHTCIsImhvcml6b250YWxBY2N1cmFjeSI6Mywi
aW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImxhdGl0dWRlIjo2OC41MzUzNCwibG9uZ2l0dWRlIjotMTU4LjU
zOTcyLCJ2ZXJ0aWNhbEFjY3VyYWN5IjozfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI
6ImNwaTEyMyIsImNwaU5hbWUiOiJDUElfVXNlcl8xMjMiLCJpbnN0YWxsQ2VydGlmaWNhdGlvblRpbWUiOiI
yMDIwLTA3LTIwVDExOjIxOjU4WiJ9fQ",
            "protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
         },
         "fccId": "2AG32EG2013BM11",
         "groupingParam": [
            {
               "groupId": "Baicells_01",
               "groupType": "INTERFERENCE_COORDINATION"
            }
         ],
         "measCapability": [],
         "userId": "Baicells_01"
      }
   ]
}
2020-07-20T06:35:38.141Z - INFO - Registration message contains cpiSignatureData
2020-07-20T06:35:38.141Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}
2020-07-20T06:35:38.141Z - INFO - encodedCpiSignedData contents = {
```


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```
  "installationParam": {
    "antennaAzimuth": 0,
    "heightType": "AGL",
    "antennaModel": "Interal PIFA",
    "longitude": -158.53972,
    "height": 4.0,
    "indoorDeployment": false,
    "latitude": 68.53534,
    "horizontalAccuracy": 3,
    "antennaDowntilt": 0,
    "antennaBeamwidth": 90,
    "antennaGain": 6,
    "verticalAccuracy": 3
  },
  "fccId": "2AG32EG2013BM11",
  "professionalInstallerData": {
    "cpiName": "CPI_User_123",
    "installCertificationTime": "2020-07-20T11:21:58Z",
    "cpiId": "cpi123"
  },
  "cbsdSerialNumber": "120300003220 41P0529"
}
2020-07-20T06:35:38.230Z - INFO - verified signature on cpiSignatureData
2020-07-20T06:35:38.230Z - INFO - cbsdCategory= 'A', removing optional param from cpi_schema
2020-07-20T06:35:38.234Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-07-20T06:35:38.236Z - INFO - engine sent successfully, the response to CBRS  : {
  "registrationResponse": [
    {
      "cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2020-07-20T06:35:49.101Z - INFO - spectrumInquiry request from CBRS  : {
  "spectrumInquiryRequest": [
    {
      "cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
      "inquiredSpectrum": [
        {
```


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```
            "highFrequency": 3570000000,
            "lowFrequency": 3550000000
          }
        ]
      }
    ]
}
2020-07-20T06:35:49.117Z - INFO - engine sent successfully, the response to CBRS  : {
   "spectrumInquiryResponse": [
      {
         "availableChannel": [
            {
               "channelType": "GAA",
               "frequencyRange": {
                  "highFrequency": 3570000000,
                  "lowFrequency": 3550000000
               },
               "ruleApplied": "FCC_PART_96"
            }
         ],
         "cbsdId": "2AG32EG2013BM11Mock-SAS120300003220041P0529",
         "response": {
            "responseCode": 0
         }
      }
   ]
}
2020-07-20T06:35:57.980Z - INFO - grant request from CBRS  : {
   "grantRequest": [
      {
         "cbsdId": "2AG32EG2013BM11Mock-SAS120300003220041P0529",
         "operationParam": {
            "maxEirp": 27,
            "operationFrequencyRange": {
               "highFrequency": 3570000000,
               "lowFrequency": 3550000000
            }
         }
      }
   ]
}
```


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2020-07-20T06:35:57.996Z - INFO - engine sent successfully, the response to CBRS : {
"grantResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"channelType": "GAA",
"grantExpireTime": "2020-07-27T06:35:57Z",
"grantId": "249097716",
"heartbeatInterval": 60,
"response": {
"responseCode": 0
}
}
]
}
2020-07-20T06:36:14.859Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "249097716",
"grantRenew": false,
"operationState": "GRANTED"
}
]
}
2020-07-20T06:39:34.880Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "249097716",
"response": {
"responseCode": 501
},
"transmitExpireTime": "2020-07-20T06:39:34Z"
}
]
}

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8.18 WINNF.FT.C.HBT.10

"registrationRequest": [
{
"airInterface": {
"radioTechnology": "E_UTRA"
},
"callSign": "baicells",
"cbsdCategory": "A",
"cbsdSerialNumber": "12030000322041P0529",
"cpiSignatureData": {
"digitalSignature": "PVs4hWOnI8HB43F3lzGXcAeSFa3rcGiBcjSoldVWbPO8vd0bwE-p-JjiNNsDCOtOYS4bT3g3hVB5UwgeEjD8frvDkf2N0DRgYmh4VCprg8xbk3L8QMsX_lB9gT2czrKcVod_g6WmmsNJyEJPcapwTpOa0YelhbaIhDK54AY5A_YYZHjqptbtp2Okx9y-smjQm3sIpvZjEFUaNp4R1KrrjnMOH1huuvC7Dlb9pCSDTDT6S2pB8p7Qf-v-ANfD4g0IT9cUauizpYDhoIZg0ZUl3gcQRL3Yr2IHx65R8dGymhQYdUTC8nxFcq8pMdm_rrGagX3466H89Dxh3XNsQdaC5g",
"encodedCpiSignedData": "eyJjYnNkU2VyaWFsTnVtYmVyIjoiMTIwMzAwMDAzMjIwNDFQMDUyOSIsImZjY0lkIjoiMkFHMzJFRzIwMTNCIiwiaW5zdGFsbGF0aW9uUGFyYW0iOnsiYW50ZW5uYUF6aW11dGgiOjAsImFudGVubmFCZWFtd2lkdGgiOjkwLCJhbnRlbm5hRG93bnRpbHQiOjAsImFudGVubmFHYWluIjo3LCJhbnRlbm5hTW9kZWwiOiJJbnRlcmFsIFBJRkEiLCJoZWlnaHQiOjQuMCwiaGVpZ2h0VHlwZSI6IkFHTCIsImhvcml6b250YWxBY2N1cmFjeSI6MywiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImxhdGl0dWRlIjo2OC41MzUzNCwibG9uZ2l0dWRlIjotMTU4LjUzOTcyLCJ2ZXJ0aWNhbEFjY3VyYWN5IjozfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6ImNwaTEyMyIsImNwaU5hbWUiOiJDUElfVXNlcl8xMjMiLCJpbnN0YWxsQ2VydGlmaWNhdGlvblRpbWUiOiIyMDIwLTA3LTIyVDE4OjM2OjU3WiJ9fQ",
"protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
},
"fccId": "2AG32EG2013BM11",
"groupingParam": [
{
"groupId": "Baicells_01",
"groupType": "INTERFERENCE_COORDINATION"
}
],
"measCapability": [
"RECEIVED_POWER_WITHOUT_GRANT"
],
"userId": "Baicells_01"
}
]
}

2020-07-24T06:44:33.944Z - INFO - Registration message contains cpiSignatureData

2020-07-24T06:44:33.946Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

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2020-07-24T06:44:33.946Z - INFO - encodedCpiSignedData contents = {
"installationParam": {
"antennaAzimuth": 0,
"heightType": "AGL",
"antennaModel": "Interal PIFA",
"longitude": -158.53972,
"height": 4.0,
"indoorDeployment": false,
"latitude": 68.53534,
"horizontalAccuracy": 3,
"antennaDowntilt": 0,
"antennaBeamwidth": 90,
"antennaGain": 7,
"verticalAccuracy": 3
},
"fccId": "2AG32EG2013BM11",
"professionalInstallerData": {
"cpiName": "CPI_User_123",
"installCertificationTime": "2020-07-22T18:36:57Z",
"cpiId": "cpi123"
},
"cbsdSerialNumber": "12030000322041P0529"
}
2020-07-24T06:44:33.992Z - INFO - verified signature on cpiSignatureData
2020-07-24T06:44:33.993Z - INFO - cbsdCategory= 'A', removing optional param from cpi_schema
2020-07-24T06:44:33.996Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-07-24T06:44:33.996Z - INFO - engine sent successfully, the response to CBRS : {
"registrationResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"response": {
"responseCode": 0
}
}
]
}
2020-07-24T06:44:45.338Z - INFO - spectrumInquiry request from CBRS : {
"spectrumInquiryRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"inquiredSpectrum": [

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```
            {
               "highFrequency": 3696000000,
               "lowFrequency": 3676000000
            }
         ]
      }
   ]
}
2020-07-24T06:44:45.342Z - INFO - engine sent successfully, the response to CBRS  : {
   "spectrumInquiryResponse": [
      {
         "availableChannel": [
            {
               "channelType": "GAA",
               "frequencyRange": {
                  "highFrequency": 3696000000,
                  "lowFrequency": 3676000000
               },
               "ruleApplied": "FCC_PART_96"
            }
         ],
         "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
         "response": {
            "responseCode": 0
         }
      }
   ]
}
2020-07-24T06:44:54.709Z - INFO - grant request from CBRS  : {
   "grantRequest": [
      {
         "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
         "operationParam": {
            "maxEirp": 27,
            "operationFrequencyRange": {
               "highFrequency": 3696000000,
               "lowFrequency": 3676000000
            }
         }
      }
   ]
```


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}
2020-07-24T06:44:54.717Z - INFO - engine sent successfully, the response to CBRS : {
"grantResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"channelType": "GAA",
"grantExpireTime": "2020-07-31T06:44:54Z",
"grantId": "309457349",
"heartbeatInterval": 60,
"response": {
"responseCode": 0
}
}
]
}
2020-07-24T06:45:04.062Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "309457349",
"grantRenew": false,
"operationState": "GRANTED"
}
]
}
2020-07-24T06:45:04.086Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "309457349",
"response": {
"responseCode": 0
},
"transmitExpireTime": "2020-07-24T06:48:24Z"
}
]
}
2020-07-24T06:46:05.457Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",

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"grantId": "309457349",
"grantRenew": false,
"operationState": "AUTHORIZED"
}
]
}
2020-07-24T06:46:05.460Z - INFO - Time interval between two heartbeat request messages is: 61.394, limit is: 65.0
2020-07-24T06:46:05.470Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "309457349",
"response": {
"responseCode": 0
},
"transmitExpireTime": "2020-07-24T06:49:25Z"
}
]
}
2020-07-24T06:47:07.357Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "309457349",
"grantRenew": false,
"operationState": "AUTHORIZED"
}
]
}
2020-07-24T06:47:07.358Z - INFO - Time interval between two heartbeat request messages is: 61.9, limit is: 65.0
2020-07-24T06:47:07.361Z - INFO - LAST HBT RESPONSE THAT SET TRANSMIT_EXPIRE_TIME WAS AT: 2020-07-24 06:46:05.457000
2020-07-24T06:50:27.368Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "309457349",
"response": {
"responseCode": 501
},

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"transmitExpireTime": "2020-07-24T06:50:27Z"
}
]
}

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8.19 WINNF.FT.C.RLQ.1

"registrationRequest": [
{
"airInterface": {
"radioTechnology": "E_UTRA"
},
"callSign": "baicells",
"cbsdCategory": "A",
"cbsdSerialNumber": "12030000322041P0529",
"cpiSignatureData": {
"digitalSignature": "G-b45Dz-xr-uuEZEeMduo9d5RYObFDrNhVhVkw4PX6LdhRxGAEpBqOUKwFyWVynsGc7YuP4D5gg2iWO5C-9A57DqCkjUbaTLZMGQEbEh0wokFghjgZzv_YUH-Xa3gdwZIsnPedA9-Zx2NnmNzbQ5C51cPsW33-a3J6zP-So3x8xGfIa42JK1LRRQkBmkFV-zEJNj-swGBp1AwRNAmAVsTp1bh6v9FBa-ARjg7k8ndaefmxcwLdb57dSulMwl95ssSVgHf3dLaGMWhKJs-n4YfJjblyQetSb2oK3tJE6FSp6seECWVlUPG23zNknhov01z5Vr1WmiCeHa3oh17z5lpw",
"encodedCpiSignedData": "eyJjYnNkU2VyaWFsTnVtYmVyIjoiMTIwMzAwMDAzMjIwNDFQMDUyOSIsImZjY0lkIjoiMkFHMzJFRzIwMTNCIiwiaW5zdGFsbGF0aW9uUGFyYW0iOnsiYW50ZW5uYUF6aW11dGgiOjAsImFudGVubmFCZWFtd2lkdGgiOjkwLCJhbnRlbm5hRG93bnRpbHQiOjAsImFudGVubmFHYWluIjo2LCJhbnRlbm5hTW9kZWwiOiJJbnRlcmFsIFBJRkEiLCJoZWlnaHQiOjQuMCwiaGVpZ2h0VHlwZSI6IkFHTCIsImhvcml6b250YWxBY2N1cmFjeSI6MywiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImxhdGl0dWRlIjo2OC41MzUzNCwibG9uZ2l0dWRlIjotMTU4LjUzOTcyLCJ2ZXJ0aWNhbEFjY3VyYWN5IjozfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6ImNwaTEyMyIsImNwaU5hbWUiOiJDUElfVXNlcl8xMjMiLCJpbnN0YWxsQ2VydGlmaWNhdGlvblRpbWUiOiIyMDIwLTA3LTIwVDExOjIxOjU4WiJ9fQ",
"protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
},
"fccId": "2AG32EG2013BM11",
"groupingParam": [
{
"groupId": "Baicells_01",
"groupType": "INTERFERENCE_COORDINATION"
}
],
"measCapability": [],
"userId": "Baicells_01"
}
]
}

2020-07-20T08:12:23.401Z - INFO - Registration message contains cpiSignatureData

2020-07-20T08:12:23.401Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2020-07-20T08:12:23.401Z - INFO - encodedCpiSignedData contents = {

"installationParam": {

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```
      "antennaAzimuth": 0,
      "heightType": "AGL",
      "antennaModel": "Interal PIFA",
      "longitude": -158.53972,
      "height": 4.0,
      "indoorDeployment": false,
      "latitude": 68.53534,
      "horizontalAccuracy": 3,
      "antennaDowntilt": 0,
      "antennaBeamwidth": 90,
      "antennaGain": 6,
      "verticalAccuracy": 3
   },
   "fccId": "2AG32EG2013BM11",
   "professionalInstallerData": {
      "cpiName": "CPI_User_123",
      "installCertificationTime": "2020-07-20T11:21:58Z",
      "cpiId": "cpi123"
   },
   "cbsdSerialNumber": "12030000322041P0529"
}
2020-07-20T08:12:23.438Z - INFO - verified signature on cpiSignatureData
2020-07-20T08:12:23.440Z - INFO - cbsdCategory= 'A', removing optional param from cpi_schema
2020-07-20T08:12:23.443Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-07-20T08:12:23.444Z - INFO - engine sent successfully, the response to CBRS  : {
   "registrationResponse": [
      {
         "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
         "response": {
            "responseCode": 0
         }
      }
   ]
}
2020-07-20T08:12:34.272Z - INFO - spectrumInquiry request from CBRS  : {
   "spectrumInquiryRequest": [
      {
         "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
         "inquiredSpectrum": [
            {
               "highFrequency": 3570000000,
```


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```
            "lowFrequency": 3550000000
          }
        ]
      }
    ]
}
2020-07-20T08:12:34.279Z - INFO - engine sent successfully, the response to CBRS  : {
  "spectrumInquiryResponse": [
    {
      "availableChannel": [
        {
          "channelType": "GAA",
          "frequencyRange": {
            "highFrequency": 3570000000,
            "lowFrequency": 3550000000
          },
          "ruleApplied": "FCC_PART_96"
        }
      ],
      "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
      "response": {
        "responseCode": 0
      }
    }
  ]
}
2020-07-20T08:12:45.190Z - INFO - grant request from CBRS  : {
  "grantRequest": [
    {
      "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
      "operationParam": {
        "maxEirp": 27,
        "operationFrequencyRange": {
          "highFrequency": 3570000000,
          "lowFrequency": 3550000000
        }
      }
    }
  ]
}
2020-07-20T08:12:45.197Z - INFO - engine sent successfully, the response to CBRS  : {
```


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"grantResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220041P0529",
"channelType": "GAA",
"grantExpireTime": "2020-07-27T08:12:45Z",
"grantId": "411279619",
"heartbeatInterval": 60,
"response": {
"responseCode": 0
}
}
]
}
2020-07-20T08:12:56.049Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220041P0529",
"grantId": "411279619",
"grantRenew": false,
"operationState": "GRANTED"
}
]
}
2020-07-20T08:12:56.056Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220041P0529",
"grantId": "411279619",
"response": {
"responseCode": 0
},
"transmitExpireTime": "2020-07-20T08:16:16Z"
}
]
}
2020-07-20T08:13:56.890Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220041P0529",
"grantId": "411279619",
"grantRenew": false,

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"operationState": "AUTHORIZED"
}
]
}
2020-07-20T08:13:56.892Z - INFO - Time interval between two heartbeat request messages is: 60.84, limit is: 65.0
2020-07-20T08:13:56.898Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "411279619",
"response": {
"responseCode": 0
},
"transmitExpireTime": "2020-07-20T08:17:16Z"
}
]
}
2020-07-20T08:14:57.749Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "411279619",
"grantRenew": false,
"operationState": "AUTHORIZED"
}
]
}
2020-07-20T08:14:57.750Z - INFO - Time interval between two heartbeat request messages is: 60.859, limit is: 65.0
2020-07-20T08:14:57.756Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "411279619",
"response": {
"responseCode": 0
},
"transmitExpireTime": "2020-07-20T08:18:17Z"
}
]
}

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2020-07-20T08:15:58.608Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "411279619",
"grantRenew": false,
"operationState": "AUTHORIZED"
}
]
}
2020-07-20T08:15:58.611Z - INFO - Time interval between two heartbeat request messages is: 60.86, limit is: 65.0
2020-07-20T08:15:58.618Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "411279619",
"response": {
"responseCode": 0
},
"transmitExpireTime": "2020-07-20T08:19:18Z"
}
]
}
2020-07-20T08:16:59.427Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "411279619",
"grantRenew": false,
"operationState": "AUTHORIZED"
}
]
}
2020-07-20T08:16:59.431Z - INFO - Time interval between two heartbeat request messages is: 60.82, limit is: 65.0
2020-07-20T08:16:59.443Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "411279619",
"response": {

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"responseCode": 0
},
"transmitExpireTime": "2020-07-20T08:20:19Z"
}
]
}
2020-07-20T08:18:00.286Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "411279619",
"grantRenew": false,
"operationState": "AUTHORIZED"
}
]
}
2020-07-20T08:18:00.289Z - INFO - Time interval between two heartbeat request messages is: 60.858, limit is: 65.0
2020-07-20T08:18:00.293Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "411279619",
"response": {
"responseCode": 0
},
"transmitExpireTime": "2020-07-20T08:21:20Z"
}
]
}
2020-07-20T08:19:01.108Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "411279619",
"grantRenew": false,
"operationState": "AUTHORIZED"
}
]
}
2020-07-20T08:19:01.111Z - INFO - Time interval between two heartbeat request messages is: 60.821, limit is: 65.0

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2020-07-20T08:19:01.117Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "411279619",
"response": {
"responseCode": 0
},
"transmitExpireTime": "2020-07-20T08:22:21Z"
}
]
}
2020-07-20T08:20:01.946Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "411279619",
"grantRenew": false,
"operationState": "AUTHORIZED"
}
]
}
2020-07-20T08:20:01.947Z - INFO - Time interval between two heartbeat request messages is: 60.838, limit is: 65.0
2020-07-20T08:20:01.953Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "411279619",
"response": {
"responseCode": 0
},
"transmitExpireTime": "2020-07-20T08:23:21Z"
}
]
}
2020-07-20T08:21:02.845Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS120300003220 41P0529",
"grantId": "411279619",
"grantRenew": false,

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"operationState": "AUTHORIZED"
}
]
}
2020-07-20T08:21:02.848Z - INFO - Time interval between two heartbeat request messages is: 60.9, limit is: 65.0
2020-07-20T08:21:02.852Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "411279619",
"response": {
"responseCode": 0
},
"transmitExpireTime": "2020-07-20T08:24:22Z"
}
]
}
2020-07-20T08:22:03.665Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "411279619",
"grantRenew": false,
"operationState": "AUTHORIZED"
}
]
}
2020-07-20T08:22:03.667Z - INFO - Time interval between two heartbeat request messages is: 60.82, limit is: 65.0
2020-07-20T08:22:03.673Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "411279619",
"response": {
"responseCode": 0
},
"transmitExpireTime": "2020-07-20T08:25:23Z"
}
]
}

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2020-07-20T08:23:05.144Z - INFO - relinquishment request from CBRS : {
"relinquishmentRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "411279619"
}
]
}
2020-07-20T08:23:05.154Z - INFO - engine sent successfully, the response to CBRS : {
"relinquishmentResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "411279619",
"response": {
"responseCode": 0
}
}
]
}

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8.20 WINNF.FT.C.DRG.1

"registrationRequest": [
{
"airInterface": {
"radioTechnology": "E_UTRA"
},
"callSign": "baicells",
"cbsdCategory": "A",
"cbsdSerialNumber": "12030000322041P0529",
"cpiSignatureData": {
"digitalSignature": "G-b45Dz-xr-uuEZEeMduo9d5RYObFDrNhVhVkw4PX6LdhRxGAEpBqOUKwFyWVynsGc7YuP4D5gg2iWO5C-9A57DqCkjUbaTLZMGQEbEh0wokFghjgZzv_YUH-Xa3gdwZIsnPedA9-Zx2NnmNzbQ5C51cPsW33-a3J6zP-So3x8xGfIa42JK1LRRQkBmkFV-zEJNj-swGBp1AwRNAmAVsTp1bh6v9FBa-ARjg7k8ndaefmxcwLdb57dSulMwl95ssSVgHf3dLaGMWhKJs-n4YfJjblyQetSb2oK3tJE6FSp6seECWVlUPG23zNknhov01z5Vr1WmiCeHa3oh17z5Ipw",
"encodedCpiSignedData": "eyJjYnNkU2VyaWFsTnVtYmVyIjoiMTIwMzAwMDAzMjIwNDFQMDUyOSIsImZjY0lkIjoiMkFHMzJFRzIwMTNCIiwiaW5zdGFsbGF0aW9uUGFyYW0iOnsiYW50ZW5uYUF6aW11dGgiOjAsImFudGVubmFCZWFtd2lkdGgiOjkwLCJhbnRlbm5hRG93bnRpbHQiOjAsImFudGVubmFHYWluIjo2LCJhbnRlbm5hTW9kZWwiOiJJbnRlcmFsIFBJRkEiLCJoZWlnaHQiOjQuMCwiaGVpZ2h0VHlwZSI6IkFHTCIsImhvcml6b250YWxBY2N1cmFjeSI6MywiaW5kb29yRGVwbG95bWVudCI6ZmFsc2UsImxhdGl0dWRlIjo2OC41MzUzNCwibG9uZ2l0dWRlIjotMTU4LjUzOTcyLCJ2ZXJ0aWNhbEFjY3VyYWN5IjozfSwicHJvZmVzc2lvbmFsSW5zdGFsbGVyRGF0YSI6eyJjcGlJZCI6ImNwaTEyMyIsImNwaU5hbWUiOiJDUElfVXNlcl8xMjMiLCJpbnN0YWxsQ2VydGlmaWNhdGlvblRpbWUiOiIyMDIwLTA3LTIwVDExOjIxOjU4WiJ9fQ",
"protectedHeader": "eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9"
},
"fccId": "2AG32EG2013BM11",
"groupingParam": [
{
"groupId": "Baicells_01",
"groupType": "INTERFERENCE_COORDINATION"
}
],
"measCapability": [],
"userId": "Baicells_01"
}
]
}

2020-07-20T08:28:01.572Z - INFO - Registration message contains cpiSignatureData

2020-07-20T08:28:01.572Z - INFO - protectedHeader = {u'alg': u'RS256', u'typ': u'JWT'}

2020-07-20T08:28:01.572Z - INFO - encodedCpiSignedData contents = {

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```
    "installationParam": {
        "antennaAzimuth": 0,
        "heightType": "AGL",
        "antennaModel": "Interal PIFA",
        "longitude": -158.53972,
        "height": 4.0,
        "indoorDeployment": false,
        "latitude": 68.53534,
        "horizontalAccuracy": 3,
        "antennaDowntilt": 0,
        "antennaBeamwidth": 90,
        "antennaGain": 6,
        "verticalAccuracy": 3
    },
    "fccId": "2AG32EG2013BM11",
    "professionalInstallerData": {
        "cpiName": "CPI_User_123",
        "installCertificationTime": "2020-07-20T11:21:58Z",
        "cpiId": "cpi123"
    },
    "cbsdSerialNumber": "12030000322041P0529"
}
2020-07-20T08:28:01.608Z - INFO - verified signature on cpiSignatureData
2020-07-20T08:28:01.608Z - INFO - cbsdCategory= 'A', removing optional param from cpi_schema
2020-07-20T08:28:01.611Z - INFO - cpiSignatureData data successfully validated against jsonschema
2020-07-20T08:28:01.611Z - INFO - engine sent successfully, the response to CBRS  : {
    "registrationResponse": [
        {
            "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
            "response": {
                "responseCode": 0
            }
        }
    ]
}
2020-07-20T08:28:14.460Z - INFO - spectrumInquiry request from CBRS  : {
    "spectrumInquiryRequest": [
        {
            "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
            "inquiredSpectrum": [
                {
```


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```
            "highFrequency": 3570000000,
            "lowFrequency": 3550000000
          }
        ]
      }
    ]
}
2020-07-20T08:28:14.469Z - INFO - engine sent successfully, the response to CBRS  : {
    "spectrumInquiryResponse": [
      {
        "availableChannel": [
          {
            "channelType": "GAA",
            "frequencyRange": {
              "highFrequency": 3570000000,
              "lowFrequency": 3550000000
            },
            "ruleApplied": "FCC_PART_96"
          }
        ],
        "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
        "response": {
          "responseCode": 0
        }
      }
    ]
}
2020-07-20T08:28:25.362Z - INFO - grant request from CBRS  : {
    "grantRequest": [
      {
        "cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
        "operationParam": {
          "maxEirp": 27,
          "operationFrequencyRange": {
            "highFrequency": 3570000000,
            "lowFrequency": 3550000000
          }
        }
      }
    ]
}
```


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2020-07-20T08:28:25.369Z - INFO - engine sent successfully, the response to CBRS : {
"grantResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"channelType": "GAA",
"grantExpireTime": "2020-07-27T08:28:25Z",
"grantId": "706691896",
"heartbeatInterval": 60,
"response": {
"responseCode": 0
}
}
]
}
2020-07-20T08:28:36.200Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "706691896",
"grantRenew": false,
"operationState": "GRANTED"
}
]
}
2020-07-20T08:28:36.210Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "706691896",
"response": {
"responseCode": 0
},
"transmitExpireTime": "2020-07-20T08:31:56Z"
}
]
}
2020-07-20T08:29:37.101Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "706691896",

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"grantRenew": false,
"operationState": "AUTHORIZED"
}
]
}
2020-07-20T08:29:37.104Z - INFO - Time interval between two heartbeat request messages is: 60.901, limit is: 65.0
2020-07-20T08:29:37.111Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "706691896",
"response": {
"responseCode": 0
},
"transmitExpireTime": "2020-07-20T08:32:57Z"
}
]
}
2020-07-20T08:30:38.420Z - INFO - heartbeat request from CBRS : {
"heartbeatRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "706691896",
"grantRenew": false,
"operationState": "AUTHORIZED"
}
]
}
2020-07-20T08:30:38.421Z - INFO - Time interval between two heartbeat request messages is: 61.318, limit is: 65.0
2020-07-20T08:30:38.427Z - INFO - engine sent successfully, the response to CBRS : {
"heartbeatResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "706691896",
"response": {
"responseCode": 0
},
"transmitExpireTime": "2020-07-20T08:33:58Z"
}
]

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}
2020-07-20T08:31:40.220Z - INFO - relinquishment request from CBRS : {
"relinquishmentRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "706691896"
}
]
}
2020-07-20T08:31:40.229Z - INFO - engine sent successfully, the response to CBRS : {
"relinquishmentResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"grantId": "706691896",
"response": {
"responseCode": 0
}
}
]
}
2020-07-20T08:31:57.759Z - INFO - deregistration request from CBRS : {
"deregistrationRequest": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529"
}
]
}
2020-07-20T08:31:57.766Z - INFO - engine sent successfully, the response to CBRS : {
"deregistrationResponse": [
{
"cbsdId": "2AG32EG2013BM11Mock-SAS12030000322041P0529",
"response": {
"responseCode": 0
}
}
]
}

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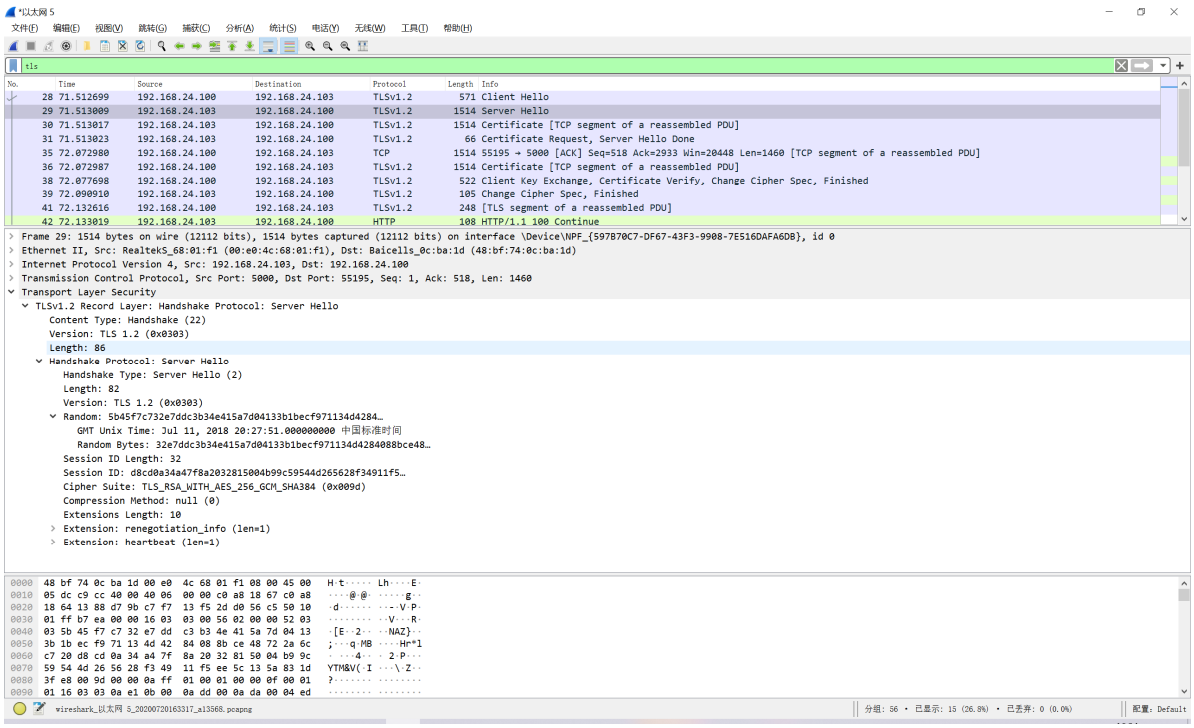
8.21 WINNF.FT.C.SCS.1



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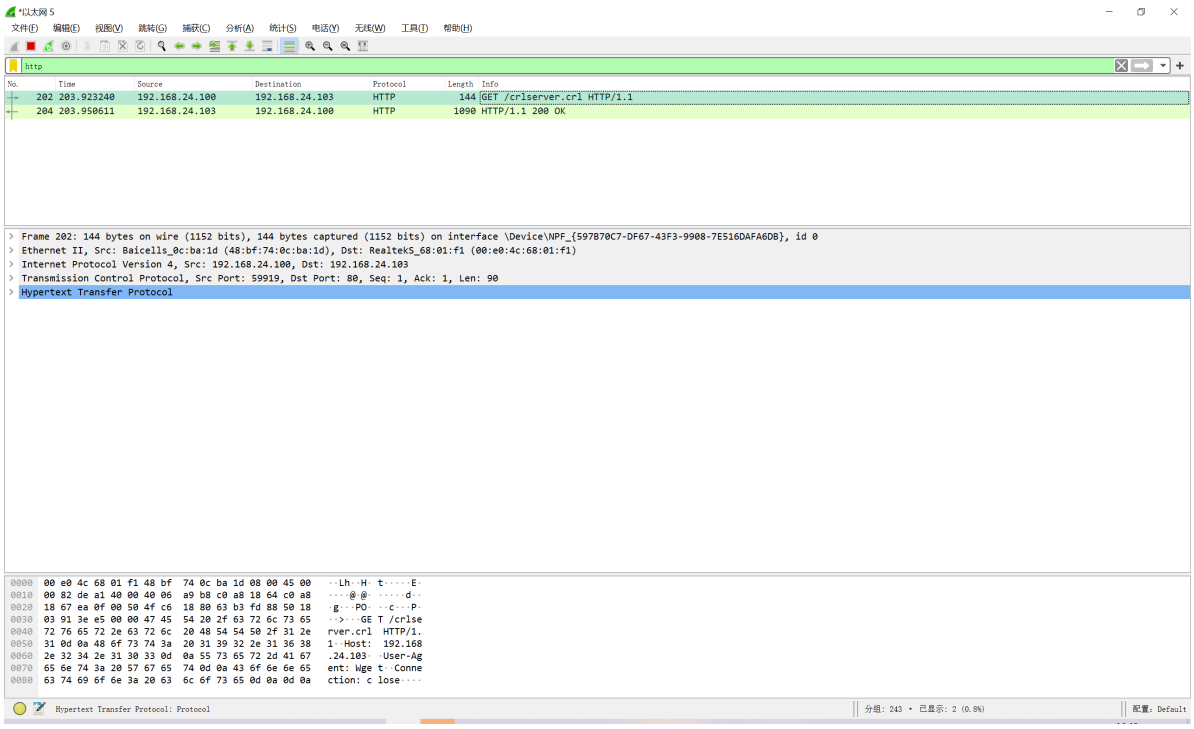
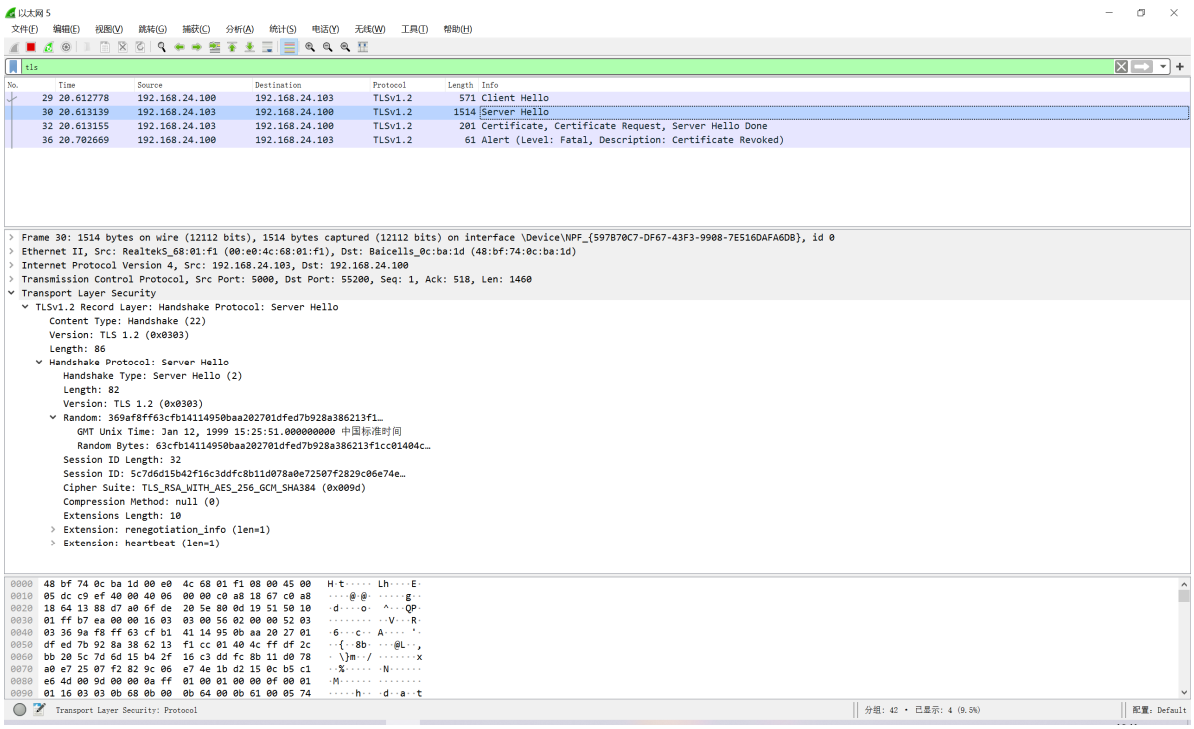
8.22 WINNF.FT.C.SCS.2





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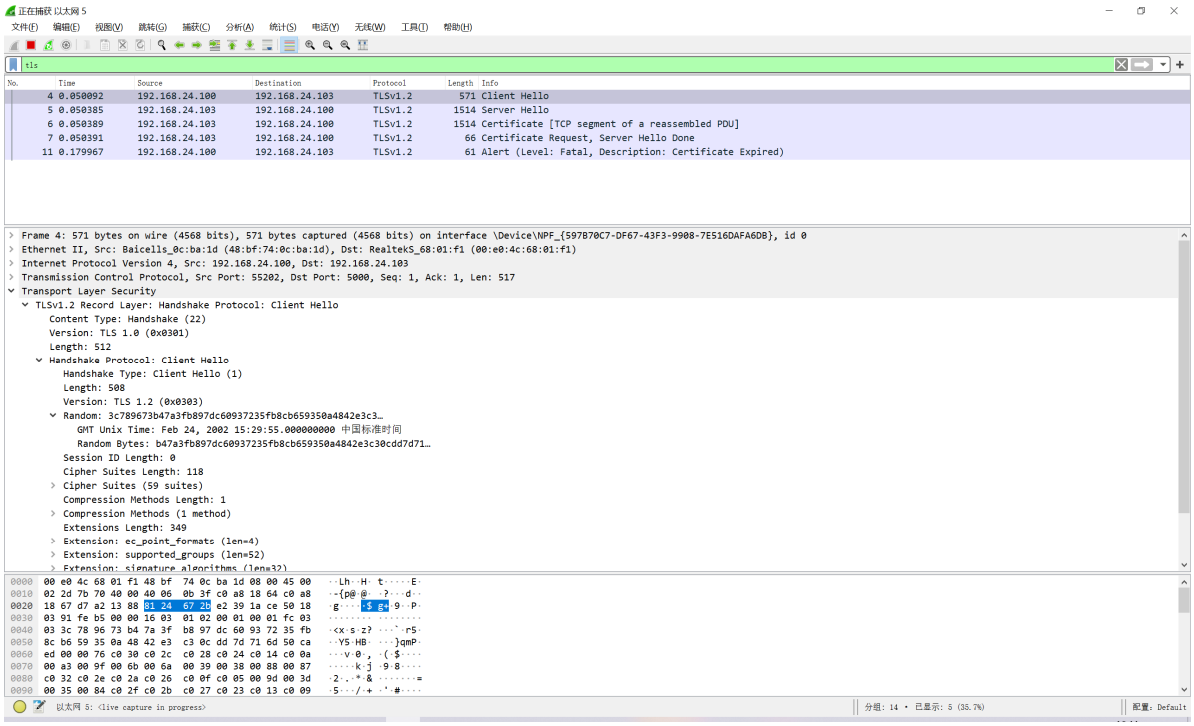
8.23 WINNF.FT.C.SCS.3



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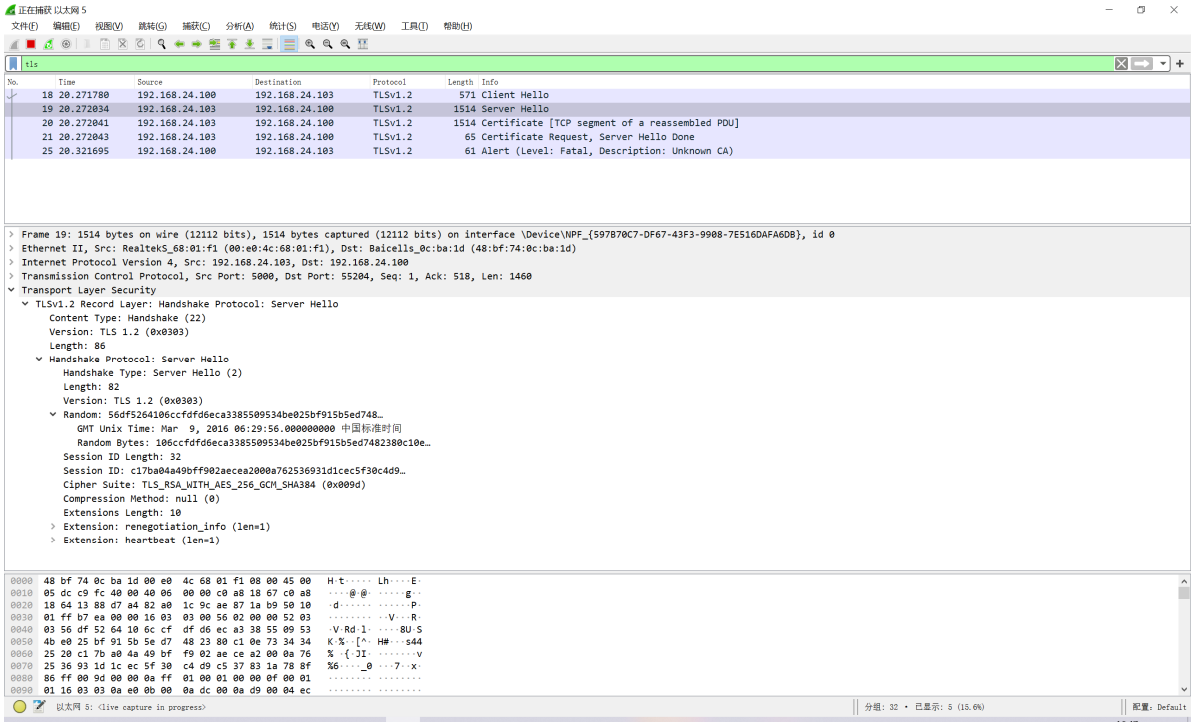
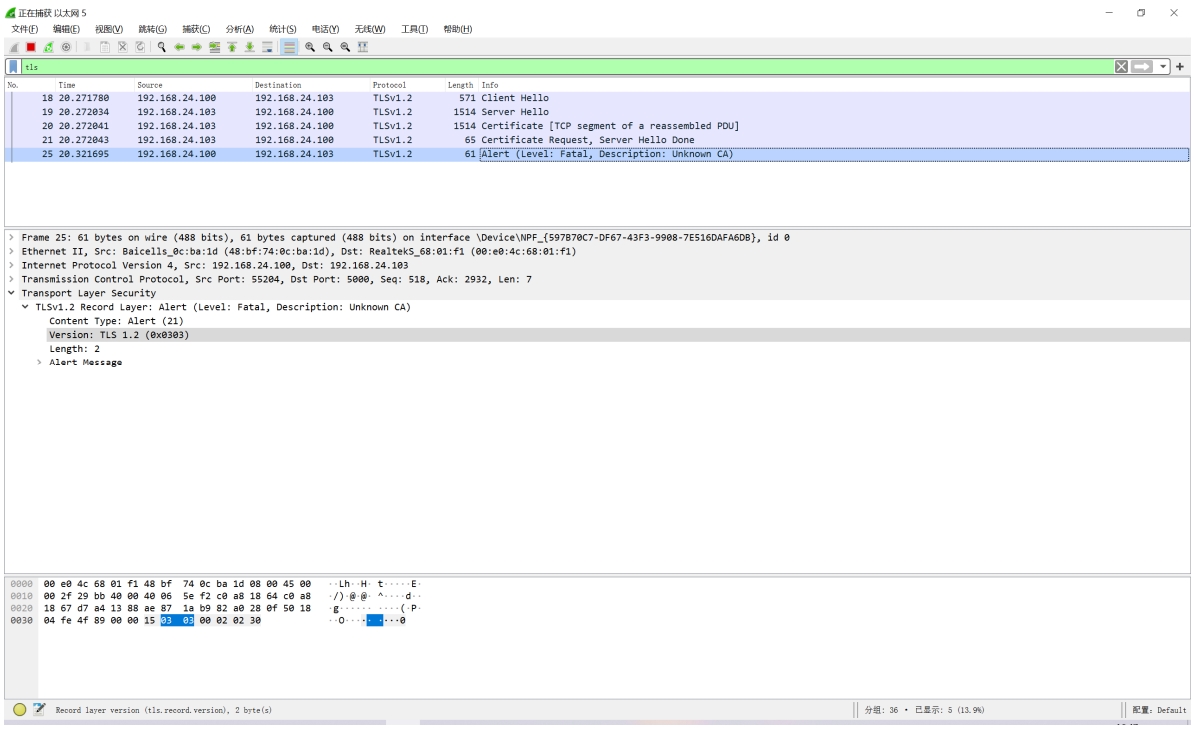
8.24 WINNF.FT.C.SCS.4





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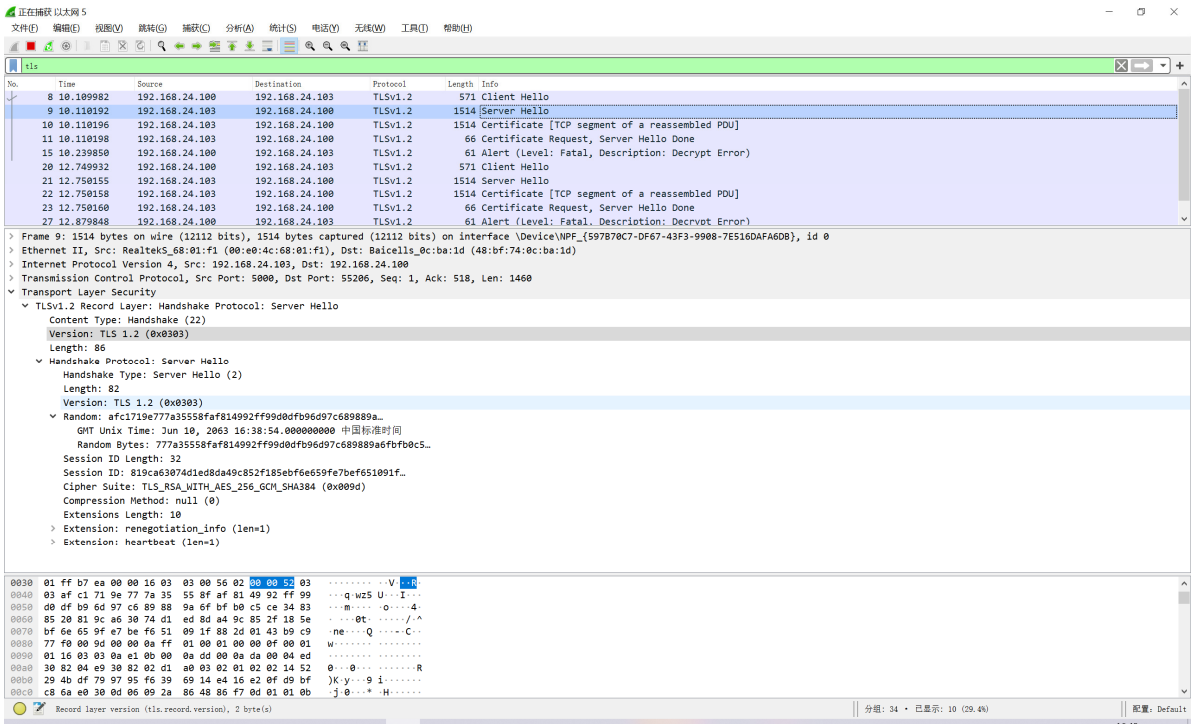
8.25 WINNF.FT.C.SCS.5



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9 Photographs

9.1 EUT Constructional Details (EUT Photos)

Please Refer to external and internal photos for details.

- End of the Report -

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