



Test report No:
NIE: 2515bRCB.002

Test report

Citizen Broadband Radio Service Test report

Identification of item tested	Citizens Based Category A and B Devices
Trademark	Baicells
Model and /or type reference	EG7010C-M11
Other identification of the product	FCC ID: 2AG32EG7010CM11
Features	----
Manufacturer	Baicells Technologies Co., Ltd. 3F, Hui Yuan Development Building, No.1 Shangdi Information Industry Base, Haidian Dist., Beijing, PR China, 100085.
Final HW version	A
Final SW version	CPE: BaiCE_BG_1.2.1 Domain Proxy: BaiOMC Rev-18822
Summary	IN COMPLIANCE
Approved by (name / position & signature)	Domingo Gálvez Dueñas (Lab Manager)
Date of issue	09-12-2019
Report template No	FDT08_22

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Competences and guarantees

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The results presented in this Test Report apply only to the particular item under test established in this document.

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Uncertainty

Uncertainty (factor k=2) was calculated according to the DEKRA Certification, Inc internal document PODT000.

Data provided by the client

DEKRA declines any responsibility with respect to the information provided by the client and that may affect the validity of results.

Usage of samples

Samples undergoing test have been selected by: Baicells Technologies, Inc.

Sample M/02 is composed of the following elements:

Control N°	Description	Model	Serial N°	Hardware Version	Software Version	Date of reception
2515b.01	CPE	EG7010C_M11	1203000025 181XP0076	A	BaiCE_BG_1.2.1	4/9/2019
NA	Domain Proxy Software	BaiOMC	Not Applicable	BaiOMC	BaiOMC Rev-18822	Not Applicable

1. Sample M/02 has undergone the test(s) specified in subclause "Test method requested".

Identification of the client

Baicells Technologies Co., Ltd. 3F, Hui Yuan Development Building, No.1 Shangdi Information Industry Base, Haidian Dist., Beijing, PR China, 100085.

+86-010-62607100

Testing period and place

Test Location	DEKRA Certification, Inc.
Test Location Address	405 Glenn Dr #12, Sterling, VA 20164
Date (start)	2019-Apr-11
Date (finish)	2019-May-22

Document history

Report number	Date	Description
2515bRCB.002	09-12-2019	First release

Remarks and comments

- 1: The tests have been performed by the technical personnel: Indusha Chitepu

Testing verdicts

Not applicable :	N/A
Pass :	PASS
Fail :	FAIL
Not measured :	N/M

Summary

Standard :	WINNF-TS-0122
Band :	TDD 48
Total	PASS VERDICT
34	34

Appendix A: Test Results

Test Case ID	Test Case Name	Verdict	Date	Sample
WINNF.FT.D.REG.2	Domain Proxy Multi-Step registration	PASS	16-Apr-19	M/02
WINNF.FT.D.REG.6	Domain Proxy Single-Step registration for CBSD with CPI signed data	PASS	16-Apr-19	M/02
WINNF.FT.D.REG.9	Domain Proxy Missing Required parameters (responseCode 102)	PASS	16-Apr-19	M/02
WINNF.FT.D.REG.11	Domain Proxy Pending registration (responseCode 200)	PASS	16-Apr-19	M/02
WINNF.FT.D.REG.13	Domain Proxy Invalid parameters (responseCode 103)	PASS	17-Apr-19	M/02
WINNF.FT.D.REG.15	Domain Proxy Blacklisted CBSD (responseCode 101)	PASS	17-Apr-19	M/02
WINNF.FT.D.REG.17	Domain Proxy Unsupported SAS protocol version responseCode 100)	PASS	17-Apr-19	M/02
WINNF.FT.D.REG.19	Domain Proxy Group Error (responseCode 201)	PASS	17-Apr-19	M/02
WINNF.FT.C.GRA.1	Unsuccessful Grant responseCode=400 (INTERFERENCE)	PASS	17-Apr-19	M/02
WINNF.FT.C.GRA.2	Unsuccessful Grant responseCode=401 (GRANT CONFLICT)	PASS	17-Apr-19	M/02
WINNF.FT.D.HBT.2	Domain Proxy Heartbeat Success Case (first Heartbeat Response)	PASS	17-Apr-19	M/02
WINNF.FT.C.HBT.3	Heartbeat responseCode=105 (DEREGISTER)	PASS	17-Apr-19	M/02
WINNF.FT.C.HBT.5	Heartbeat responseCode=501 (SUSPENDED_GRANT) in First Heartbeat Response	PASS	17-Apr-19	M/02
WINNF.FT.C.HBT.6	Heartbeat responseCode=501 (SUSPENDED_GRANT) in Subsequent Heartbeat Response	PASS	17-Apr-19	M/02
WINNF.FT.C.HBT.7	Heartbeat responseCode=502 (UNSYNC OP PARAM)	PASS	17-Apr-19	M/02
WINNF.FT.D.HBT.8	Domain Proxy Heartbeat responseCode=500 (TERMINATED_GRANT)	PASS	17-Apr-19	M/02
WINNF.FT.C.HBT.9	Heartbeat Response Absent (First Heartbeat)	PASS	17-Apr-19	M/02
WINNF.FT.C.HBT.10	Heartbeat Response Absent (Subsequent Heartbeat)	PASS	17-Apr-19	M/02
WINNF.FT.C.HBT.11	Successful Grant Renewal in Heartbeat Test Case	PASS	17-Apr-19	M/02

Test Case ID	Test Case Name	Verdict	Date	Sample
WINNF.FT.D.MES.2	Domain Proxy Registration Response contains measReportConfig	PASS	16-Apr-19	M/02
WINNF.FT.C.MES.3	Grant Response contains measReportConfig	PASS	16-Apr-19	M/02
WINNF.FT.C.MES.5	Domain Proxy Heartbeat Response contains measReportConfig	PASS	16-Apr-19	M/02
WINNF.FT.D.RLQ.2	Domain Proxy Successful Relinquishment	PASS	17-Apr-19	M/02
WINNF.FT.D.RLQ.4	Domain Proxy Unsuccessful Relinquishment, responseCode=102	PASS	17-Apr-19	M/02
WINNF.FT.D.RLQ.6	Domain Proxy Unsuccessful Relinquishment, responseCode=103	PASS	17-Apr-19	M/02
WINNF.FT.D.DRG.2	Domain Proxy Successful Deregistration	PASS	17-Apr-19	M/02
WINNF.FT.D.DRG.4	Domain Proxy Deregistration responseCode=102	PASS	17-Apr-19	M/02
WINNF.FT.C.DRG.5	Deregistration responseCode=103	PASS	17-Apr-19	M/02
WINNF.FT.C.SCS.1	Successful TLS connection between UUT and SAS Test Harness	PASS	16-Apr-19	M/02
WINNF.FT.C.SCS.2	TLS failure due to revoked certificate	PASS	16-Apr-19	M/02
WINNF.FT.C.SCS.3	TLS failure due to expired server certificate	PASS	16-Apr-19	M/02
WINNF.FT.C.SCS.4	TLS failure when SAS Test Harness certificate is issue by unknown CA	PASS	16-Apr-19	M/02
WINNF.FT.C.SCS.5	TLS failure when certificate at the SAS Test Harness is corrupted	PASS	16-Apr-19	M/02
WINNF.PT.C.HBT	UUT RF Transmit Power Measurement	PASS	19-Apr-19	M/02

CPE Tests

1. Connect a laptop via LAN connection to check whether the CPE provides internet connection before it is Registered to the SAS. According to the customer it should provide internet connection only after it is registered with the SAS.
2. With the help spectrum analyzer verify the power level is at the minimum (as specified by the customer) before the CPE is authorized.
3. The frequency of the CPE before and after the registration should remain the same. It can be checked on domain proxy of the customer.
4. The duty cycle is <1 in 10s before the authorization. Once the CBSD starts heart beating the duty cycle returns to normal.

Requirement	Verified in TC
CPE used transmission only for communicating to the SAS for registration and authorization of the device	WINNF.FT.D.HBT.2 CPE-CBSD UUT did not transmit user traffic until authorized by SAS.
The device registration and authorization with the SAS – determine if the device behaves appropriately for successful and unsuccessful registrations. The device should not be transmitting without authorization from the SAS	WINNF.FT.D.REG.2 WINNF.FT.D.REG.9 WINNF.FT.D.REG.11 WINNF.FT.D.REG.13 WINNF.FT.D.REG.15 WINNF.FT.D.REG.17 WINNF.FT.D.REG.19
CPE used transmission on a channel used by or indicated by the BTS-CBSD after receiving an authorization signal from the BTS-CBSD	WINNF.PT.C.HBT
CPE transmission is 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.	Transmitted for 10s in a period of 784.34s

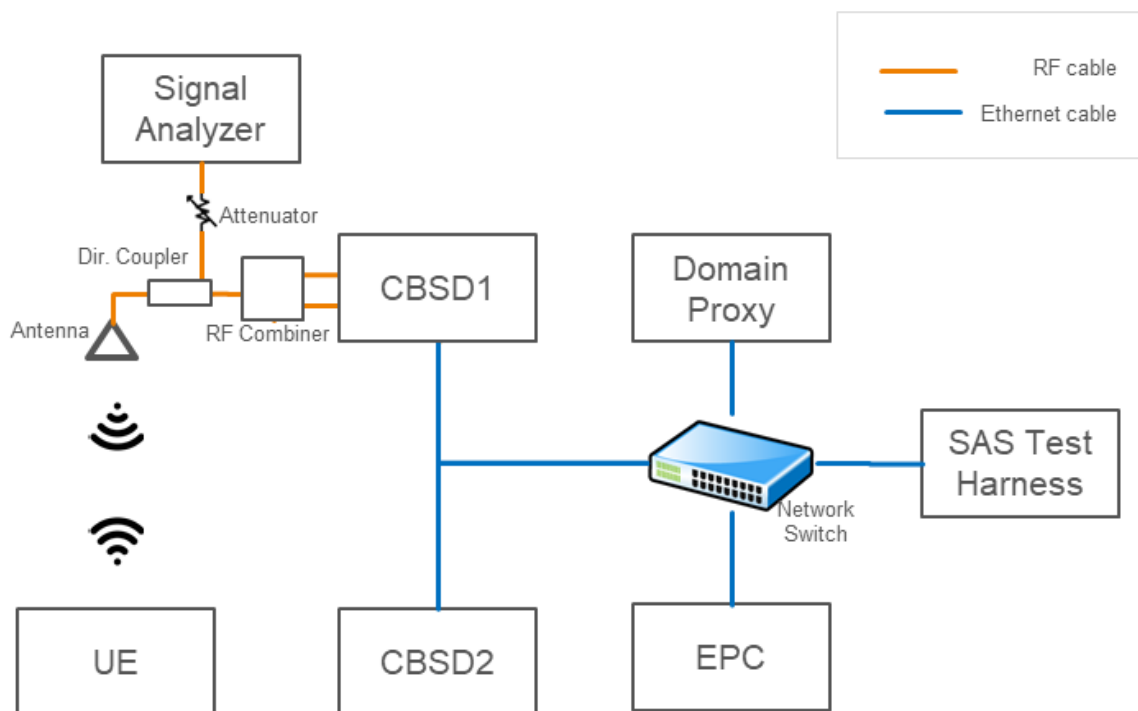
	Before Authorization	After Authorization
Case 1	No Internet connection available. Only can connect to DP	Can access internet
Case 2	Power is -21dbm before authorization	Changes accordingly to the requested power level
Case 3	The frequency before and after Authorization is same	The frequency before and after Authorization is same
Case 4	Duty cycle <1 in 10s	Duty Cycle normal

Appendix B: Test Systems

Description	Model	Control Number	SW Version
Test SAS harness	N/A	Laptop: CTC-5233-K	Test Harness:1.0.0.3 Laptop OS: Windows7
Signal Analyzer	MXA N9020A	2510.57	A.04.26

Test Setup

Domain Proxy Configuration



Appendix C: DUT Photographs



Appendix D: CBSD/ DP Supported 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.	Y
C5	Mandatory for UUT which supports RECEIVED_POWER_WITH_GRANT measurement report type.	Y
C6	Mandatory for UUT which supports parameter change being made at the UUT and prior to sending a deregistration.	N

Appendix E: Reference Standards and Procedures

Reference Standards

Test and Certification for Citizens Broadband Radio Service (CBRS); Conformance and Performance Test Technical Specification; CBSD/DP as Unit Under Test (UUT) Working Document WINNF-TS-0122	V1.0.0
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Test Procedures

PECB001_00: CBRS Alliance Certification Testing Based On WINN Forum CBRS CBSD Test Specification "WINNF-TS-0122"

Test Requirements and Test Case Mapping

Requirement	Verified in TC
The device will only transmit after it receives authorization from a SAS	WINNF.FT.D.HBT.2
The device registration and authorization with the SAS – determine if the device behaves appropriately for successful and unsuccessful registrations. The device should not be transmitting without authorization from the SAS	WINNF.FT.D.REG.2 WINNF.FT.D.REG.9 WINNF.FT.D.REG.11 WINNF.FT.D.REG.13 WINNF.FT.D.REG.15 WINNF.FT.D.REG.17 WINNF.FT.D.REG.19
The device changes its operating power and/or channel in response to a command from the SAS	WINNF.PT.C.HBT
The device correctly configures based on the different license classes	WINNF.FT.C.SCS.1, WINNF.FT.C.SCS.2, WINNF.FT.C.SCS.3, WINNF.FT.C.SCS.4, WINNF.FT.C.SCS.5
The device transmits at a power level less than or equal to the maximum power level approved by the SAS	WINNF.PT.C.HBT
The device transmits with a bandwidth less than or equal to the SAS specified bandwidth.	WINNF.PT.C.HBT
The device transmits on the SAS specified frequency	WINNF.FT.D.HBT.2, WINNF.FT.C.HBT.3, WINNF.FT.C.HBT.4, WINNF.FT.C.HBT.5, WINNF.FT.C.HBT.6, WINNF.FT.C.HBT.7, WINNF.FT.D.HBT.8, WINNF.FT.C.HBT.9, WINNF.FT.C.HBT.10, WINNF.FT.C.HBT.11, WINNF.PT.C.HBT
The device stops transmission in response to a command from the SAS, within a period as required by Part 96	WINNF.FT.D.RLQ.2, WINNF.FT.D.RLQ.4, WINNF.FT.D.RLQ.6, WINNF.FT.D.DRG.2, WINNF.FT.D.DRG.4, WINNF.FT.C.DRG.5
the device sends measurements data in response to the command from the SAS.	WINNF.FT.C.MES.3, WINNF.FT.D.MES.5

Requirement	Verified in TC
For devices with geo-location, confirm that it notifies the SAS of a new location when it is beyond the required distance parameter (± 50 m) within the required time frame	N/A as Condition C2 is not supported by device
the device is capable of reporting the signal level (measurement data) and frequency to SAS	WINNF.FT.C.MES.3, WINNF.FT.D.MES.5
For a device that operates as a Category A CBSD and then desires to operate as a Category B CBSD (or vice versa), confirm that it re-registers with the SAS for the updated authorization status	N/A as DUT is not category A
Loss of communication with SAS behavior	WINNF.FT.C.HBT.9, WINNF.FT.C.HBT.10, WINNF.FT.D.RLQ.4, WINNF.FT.D.RLQ.6, WINNF.FT.D.DRG.4, WINNF.FT.C.DRG.5
Heartbeat loss behavior	WINNF.FT.C.HBT.10
When CBSDs communicate through a management system, confirm compliance with all requirements	The tested product has a Domain Proxy implementation; hence all relevant test cases mentioned in the above bullets are selected as such

Appendix F: Test case descriptions, parameters and test steps

WINNF.FT.D.REG.2

This test is mandatory for the Domain proxy that is controlling CBSDs which support multistep registration. This test validates that each of the required parameters appear within the registration request message. This test case applies to Domain Proxy supervising two

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