

Test Report

As per

FCC Part 96 SAS requirements (CBRS Test Plan)



Add value.
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on the

Cradlepoint Cellular access points, Models

A2400 Indoor Unit FCC ID: UXX-S1A227A

A2405 Outdoor Unit FCC ID: UXX-S1A228A

Issued by:

TÜV SÜD Canada Inc.

1280 Teron Rd,
Ottawa, ON K2K 2C1
Canada

Testing produced
for

CradlePoint, Inc.

See Appendix A for
full client & EUT
details.

Steve McFarlane.
Test Personnel

A handwritten signature in black ink, reading "Steve McFarlane", positioned above a horizontal line.

Scott Drysdale
Report Reviewer

A handwritten signature in black ink, reading "Scott Drysdale", positioned above a horizontal line.



Testing Laboratory
Certificate #2955.19



Client	CradlePoint, Inc.	
Product	Cradlepoint Cellular access points, Models A2400 Indoor Unit FCC ID: UXX-S1A227A A2405 Outdoor Unit FCC ID: UXX-S1A228A	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

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Client	CradlePoint, Inc.	
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Report Scope

This report addresses the EMC verification testing and test results of the **models S1A228A/S1A227A 5G Router (3555-3695 MHz)** herein referred to as EUT (Equipment Under Test). The EUT was tested for compliance against the following standards:


FCC Part 96 SAS requirements (CBRS Test Plan)

Test procedures, results, justifications, and engineering considerations, if any, follow later in this report.

For a more detailed list of the standards and the revision used, see the "Applicable Standards, Specifications and Methods" section of this report.

This report does not imply product endorsement by any government, accreditation agency, or TÜV SÜD Canada Inc.

Opinions or interpretations expressed in this report, if any, are outside the scope of TÜV SÜD Canada Inc accreditations. Any opinions expressed do not necessarily reflect the opinions of TÜV SÜD Canada Inc, unless otherwise stated.


Client	CradlePoint, Inc.	
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Summary

The results contained in this report relate only to the item(s) tested.

Equipment Under Test (EUT)	Models S1A228A/S1A227A 5G Router (3555-3695 MHz)
EUT passed all tests performed	Yes
Tests conducted by	Steve McFarlane


For testing dates, see 'Testing Environmental Conditions and Dates'.

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Test Results Summary

Section as per Working Document WINNF-TS-0122


Section	CBS D	D P	Test Case ID	Test Case Title	RF Measurement Requirement	Pass / Fail
6.1.4.1.2	--	X	WINNF.FT.D.R EG.2	Domain Proxy Multi-Step registration	Monitor for 60 seconds after REG message sent. No transmission during test.	P
6.1.4.1.3	X	--	WINNF.FT.C.R EG.3	Single-Step registration for Category A CBSD	Monitor for 60 seconds after REG message sent. No transmission during test.	N/A
6.1.4.1.4	--	X	WINNF.FT.D.R EG.4	Domain Proxy Single-Step registration for Cat A CBSD (Note: Mandatory for without CPI, if EUT will always have signed CPI – asked for email waiver)	Monitor for 60 seconds after REG message sent. No transmission during test.	N/A
6.1.4.1.5	X	--	WINNF.FT.C.R EG.5	Single-Step registration for CBSD with CPI signed data	Monitor for 60 seconds after REG message sent. No transmission during test.	N/A
6.1.4.1.6	--	X	WINNF.FT.D.R EG.6	Domain Proxy Single-Step registration for CBSD with CPI signed data	Monitor for 60 seconds after REG message sent. No transmission during test.	P
6.1.4.1.7	X	X	WINNF.FT.C.R EG.7	Registration due to change of an installation parameter	Test waits until transmission starts, then trigger an installationParam change. <ul style="list-style-type: none"> Record time at which transmission 	N/A

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					stops. Time must be within 60 seconds of the installationParam change taking effect.	
6.1.4.2.1	X	--	WINNF.FT.C.R EG.8	Missing Required parameters (responseCode 102)	Monitor for 60 seconds after REG message sent. No transmission during test.	N/A
6.1.4.2.2	--	X	WINNF.FT.D.R EG.9	Domain Proxy Missing Required parameters (responseCode 102)	Monitor for 60 seconds after REG message sent. No transmission during test.	P
6.1.4.2.3	X	--	WINNF.FT.C.R EG.10	Pending registration (responseCode 200)	Monitor for 60 seconds after REG message sent. No transmission during test.	N/A
6.1.4.2.4	--	X	WINNF.FT.D.R EG.11	Domain Proxy Pending registration (responseCode 200)	Monitor for 60 seconds after REG message sent. No transmission during test.	P
6.1.4.2.5	X	--	WINNF.FT.C.R EG.12	Invalid parameter (responseCode 103)	Monitor for 60 seconds after REG message sent. No transmission during test.	N/A
6.1.4.2.6	--	X	WINNF.FT.D.R EG.13	Domain Proxy Invalid parameters (responseCode 103)	Monitor for 60 seconds after REG message sent. No transmission during test.	P
6.1.4.2.7	X	--	WINNF.FT.C.R EG.14	Blacklisted CBSD (responseCode 101)	Monitor for 60 seconds after REG message sent. No transmission during test.	N/A
6.1.4.2.8	--	X	WINNF.FT.D.R EG.15	Domain Proxy Blacklisted CBSD (responseCode 101)	Monitor for 60 seconds after REG message sent. No	P

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					transmission during test.	
6.1.4.2.9	X	--	WINNF.FT.C.R EG.16	Unsupported SAS protocol version (responseCode 100)	Monitor for 60 seconds after REG message sent. No transmission during test.	N/A
6.1.4.2.10	--	X	WINNF.FT.D.R EG.17	Domain Proxy Unsupported SAS protocol version responseCode 100)	Monitor for 60 seconds after REG message sent. No transmission during test.	P
6.1.4.2.11	X	--	WINNF.FT.C.R EG.18	Group Error (responseCode 201)	Monitor for 60 seconds after REG message sent. No transmission during test.	N/A
6.1.4.2.12	--	X	WINNF.FT.D.R EG.19	Domain Proxy Group Error (responseCode 201)	Monitor for 60 seconds after REG message sent. No transmission during test.	P
6.1.4.3.1	X	X	WINNF.FT.C.R EG.20	Category A CBSD location update		N/A
6.3.4.2.1	X	X	WINNF.FT.C.G RA.1	Unsuccessful Grant responseCode=400	Monitor for 60 seconds after REG message sent. No transmission during test.	P
6.3.4.2.2	X	X	WINNF.FT.C.G RA.2	Unsuccessful Grant responseCode=401 (GRANT_CONFLIC T)	Monitor for 60 seconds after REG message sent. No transmission during test.	P

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6.4.4.1.1	X	--	WINNF.FT.C.H BT.1	Heartbeat Success Case (first Heartbeat Response)	<p>Monitor RF from start of test. Ensure that:</p> <ul style="list-style-type: none"> • Transmission does not start until time of first heartbeat response or after. • After transmission starts, measure that transmission is within the granted channel (frequencyLow, frequencyHigh) 	N/A
6.4.4.1.2	--	X	WINNF.FT.D.H BT.2	Domain Proxy Heartbeat Success Case (first Heartbeat Response)	<p>Monitor RF from start of test. Ensure that:</p> <ul style="list-style-type: none"> • Transmission does not start until time of first heartbeat response or after. • After transmission starts, measure that transmission is within the granted channel (frequencyLow, frequencyHigh) 	P
6.4.4.2.1	X	X	WINNF.FT.C.H BT.3	Heartbeat responseCode=105 (DEREGISTER)	<p>Monitor RF transmission. Ensure that:</p> <ul style="list-style-type: none"> • CBSD stops transmission 	P

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					within 60 seconds of the heartbeatResponse which contains responseCode = 105	
6.4.4.2.2	X	--	WINNF.FT.C.H BT.4	Heartbeat responseCode=500 (TERMINATED_GRANT)		N/A
6.4.4.2.3	X	X	WINNF.FT.C.H BT.5	Heartbeat responseCode=501 (SUSPENDED_GRANT) in First Heartbeat Response	Monitor RF transmission from start of test. Ensure there is no transmission during the test	P
6.4.4.2.4	X	X	WINNF.FT.C.H BT.6	Heartbeat responseCode=501 (SUSPENDED_GRANT) in Subsequent Heartbeat Response	Monitor RF transmission. Ensure: <ul style="list-style-type: none"> • CBSD stops transmission within 60 seconds of heartbeatResponse which contains responseCode=501 	P
6.4.4.2.5	X	X	WINNF.FT.C.H BT.7	Heartbeat responseCode=502 (UNSYNC_OP_PARAMETER)	Monitor RF transmission. Ensure: <ul style="list-style-type: none"> • CBSD stops transmission within 60 seconds of heartbeatResponse which contains responseCode=502 	P

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6.4.4.2.6	--	X	WINNF.FT.D.H BT.8	Domain Proxy Heartbeat responseCode=500 (TEMINATED_GRANT)	Monitor RF transmission. CBSDs will have different behavior: <ul style="list-style-type: none"> • CBSD1: will continue to transmit to end of test (this is not a pass/fail criteria, but check) • CBSD2: must stop transmission within 60 seconds of being sent heartbeatResponse with responseCode = 500 	P
6.4.4.3.1	X	X	WINNF.FT.C.H BT.9	Heartbeat Response Absent (First Heartbeat)	Monitor RF from start of test to 60 seconds after last heartbeatResponse message was sent. CBSD should not transmit at any time during test	P
6.4.4.3.2	X	X	WINNF.FT.C.H BT.10	Heartbeat Response Absent (Subsequent Heartbeat)	Monitor RF transmission. Verify: <ul style="list-style-type: none"> • CBSD must stop transmission within transmitExpirationTime+60 seconds, where transmitExpirationTime is from last successful heartbeatResponse message 	P

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6.5.4.2.1	X	--	WINNF.FT.C.M ES.1	Registration Response contains measReportConfig	No RF monitoring	N/A
6.5.4.2.2	--	X	WINNF.FT.D.M ES.2	Domain Proxy Registration Response contains measReportConfig	No RF monitoring	P
6.5.4.2.3	X	X	WINNF.FT.C.M ES.3	Grant Response contains measReportConfig	No RF monitoring	P
6.5.4.2.4	X	--	WINNF.FT.C.M ES.4	Heartbeat Response contains measReportConfig	No RF monitoring	N/A
6.5.4.2.5	--	X	WINNF.FT.D.M ES.5	Domain Proxy Heartbeat Response contains measReportConfig	No RF monitoring	P
6.6.4.1.1	X	--	WINNF.FT.C.R LQ.1	Successful Relinquishment	Monitor RF transmission. Ensure: <ul style="list-style-type: none"> • CBSD stops transmission at any time prior to sending the relinquishmentRequest message. 	N/A
6.6.4.1.2	--	X	WINNF.FT.D.R LQ.2	Domain Proxy Successful Relinquishment	Monitor RF transmission. Ensure: <ul style="list-style-type: none"> • CBSD stops transmission at any time prior to sending the relinquishmentRequest message. 	P
6.7.4.1.1	X	--	WINNF.FT.C.D RG.1	Successful Deregistration	Monitor RF transmission. Ensure: <ul style="list-style-type: none"> • CBSD stops transmission at any time prior to 	N/A


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					sending the relinquishme ntRequest message or deregistrat ionRequest message (whichever is sent first)	
6.7.4.1.2	--	X	WINNF.FT.D.D RG.2	Domain Proxy Successful Deregistration	Monitor RF transmission. Ensure : • CBSD stops transmission at any time prior to sending the relinquishmentReque st message or deregistrationReques t message (whichever is sent first)	P
6.8.4.1.1	X	X	WINNF.FT.C.SC S.1	Successful TLS connection between UUT and SAS Test Harness	No RF transmission during test Check the tcpdump for the TLS information	P
6.8.4.2.1	X	X	WINNF.FT.C.SC S.2	TLS failure due to revoked certificate	No RF transmission during test Check the tcpdump for the TLS information	P
6.8.4.2.2	X	X	WINNF.FT.C.SC S.3	TLS failure due to expired server certificate	No RF transmission during test Check the tcpdump for the TLS information	P
6.8.4.2.3	X	X	WINNF.FT.C.SC S.4	TLS failure when SAS Test Harness certificate is issue by unknown CA	No RF transmission during test Check the tcpdump for the TLS information	P
6.8.4.2.4	X	X	WINNF.FT.C.SC S.5	TLS failure when certificate at the SAS	No RF transmission during test	P

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				Test Harness is corrupted	Check the tcpdump for the TLS information	
7.1.4.1.1	X	X	WINNF.PT.C.H BT	UUT RF Transmit Power Measurement	Power Spectral Density test case. Assume we use 1 carrier bandwidth (say, 5 or 10 MHz), one frequency (say middle channel in band) for test. Measure at max transmit power, and reduce in steps of 3 dB to minimum declared transmit power.	P

If the product as tested complies with the specification, the EUT is deemed to comply with the standard and is deemed a 'PASS' or 'P' grade. If not 'FAIL' grade is issued. Where 'N/A' is stated this means the test case is not applicable, and see Notes, Justifications or Deviations Section for details.

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Notes, Justifications, or Deviations

The following notes, justifications for tests not performed or deviations from the above listed specifications apply:

A later revision of the standard may have been substituted in place of the previous dated referenced revision. The year of the specification used is listed under applicable standards. Using the later revision accomplishes the goal of ensuring compliance to the intent of the previous specification, while allowing the laboratory to incorporate the extensions and clarifications made available by a later revision.

Test results were obtained using the models S1A228A/S1A227A the client attests the test results are representative or worst case of all models as listed in appendix A

NOTE

Software installed is identical on each of the 2 EUTs (Indoor/Outdoor Units)


For the N/A test cases, the following justifications apply:

- a. EUT is a CBSD with Domain Proxy
- b. EUT supports the following Conditional functionality from WINNF-TS-0122-V1.0.0, Table 6-2:
 - i. C1 – Multi-step registration (WINNF.FT.D.REG.2)
 - ii. C3 – Single step registration containing CPI-signed data in the registration message (WINNF.FT.D.REG.6)
 - iii. C4 – RECEIVED_POWER_WITHOUT_GRANT measurement report (WINNF.FT.D.MES.2)
 - iv. C5 – RECEIVED_POWER_WITH_GRANT measurement report (WINNF.FT.D.MES.3, WINNF.FT.D.MES.5)
- c. Optional test cases were not performed


The device does not use single-step registration (as defined in condition C2 in WINNF-TS-0122-V1.0.0, Table 6-2), therefore test cases 6.1.4.1.4, and 6.1.4.3.1 are not applicable as per WINNF-TS-0122-V1.0.0, Table 6-3 and therefore not required or performed.

Note, where graph sweeps are incomplete, this was used to set the time stamp of when the events occurred. This can be accomplished by determining the time at which the graph was captured and subtracting the remaining time. For example if there was a 30 second sweep, and 9 out of 10 is complete, that means the end occurred at the 27 second mark. If the time on the graph was 12:03:35, this means the graph started at 12:03:08. This allows us to co-ordinate graph with timing provided in the logs.

Some graphs use a “Delta Marker” approach whereby a first (reference) marker is established In order to mark the start of measurement, i.e. after required response code.


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Logs are kept on file.

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Applicable Standards, Specifications and Methods

ANSI C63.4:2014	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
CFR47 FCC Part 96	Code of Federal Regulations – Citizens Broadband Radio Service
WINNF-TS-0122 Version V1.0.2 25 November 2020	Conformance and Performance Test Technical Specification; CBSD/DP as Unit Under Test (UUT) Working Document
ISO/IEC 17025:2017	General requirements for the competence of testing and calibration laboratories

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Document Revision Status

TR-7169012954-001: June 23, 2023. First Draft, unsigned. Subject to review

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Definitions and Acronyms

The following definitions and acronyms are applicable in this report.
See also ANSI C63.14.

AE – Auxiliary Equipment. A digital accessory that feeds data into or receives data from another device (host) that in turn, controls its operation.

AM – Amplitude Modulation

Class A device – A device that is marketed for use in a commercial, industrial or business environment. A 'Class A' device should not be marketed for use by the general public and the instructions for use accompanying the product shall contain the following text:

Caution: This equipment is not intended for use in residential environments and may not provide adequate protection to radio reception in such environments.

Class B device – A device that is marketed for use in a residential environment and may also be used in a commercial, business or industrial environments.

EMC – Electro-Magnetic Compatibility. The ability of an equipment or system to function satisfactorily in its electromagnetic environment without introducing intolerable electromagnetic disturbances to anything in that environment.

EMI – Electro-Magnetic Immunity. The ability to maintain a specified performance when the equipment is subjected to disturbance (unwanted) signals of specified levels.

Enclosure Port – Physical boundary of equipment through which electromagnetic fields may radiate or impinge.

EUT – Equipment Under Test. A device or system being evaluated for compliance that is representative of a product to be marketed.


LISN – Line Impedance Stabilization Network

NCR – No Calibration Required

NSA – Normalized Site Attenuation

RF – Radio Frequency

EMC Test Plan – An EMC test plan established prior to testing. See 'Appendix A – EUT & Client Provided Details'.


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Testing Facility

Testing for EMC on the EUT was carried out at customer location as described in Appendix A.

Calibrations and Accreditations


TÜV SÜD Canada Inc is accredited to ISO/IEC 17025 by A2LA with Testing Certificate #2955.19. The laboratory's current scope of accreditation listing can be found as listed on the A2LA website. All measuring equipment is calibrated on an annual or bi-annual basis as listed for each respective test.

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Testing Environmental Conditions and Dates

Following environmental conditions were recorded in the facility during time of testing

Date	Test	Initials	Temperature (°C)	Humidity (%)	Pressure (kPa)
June 07-14, 2023	All	SM	20-23	40-55	98.78

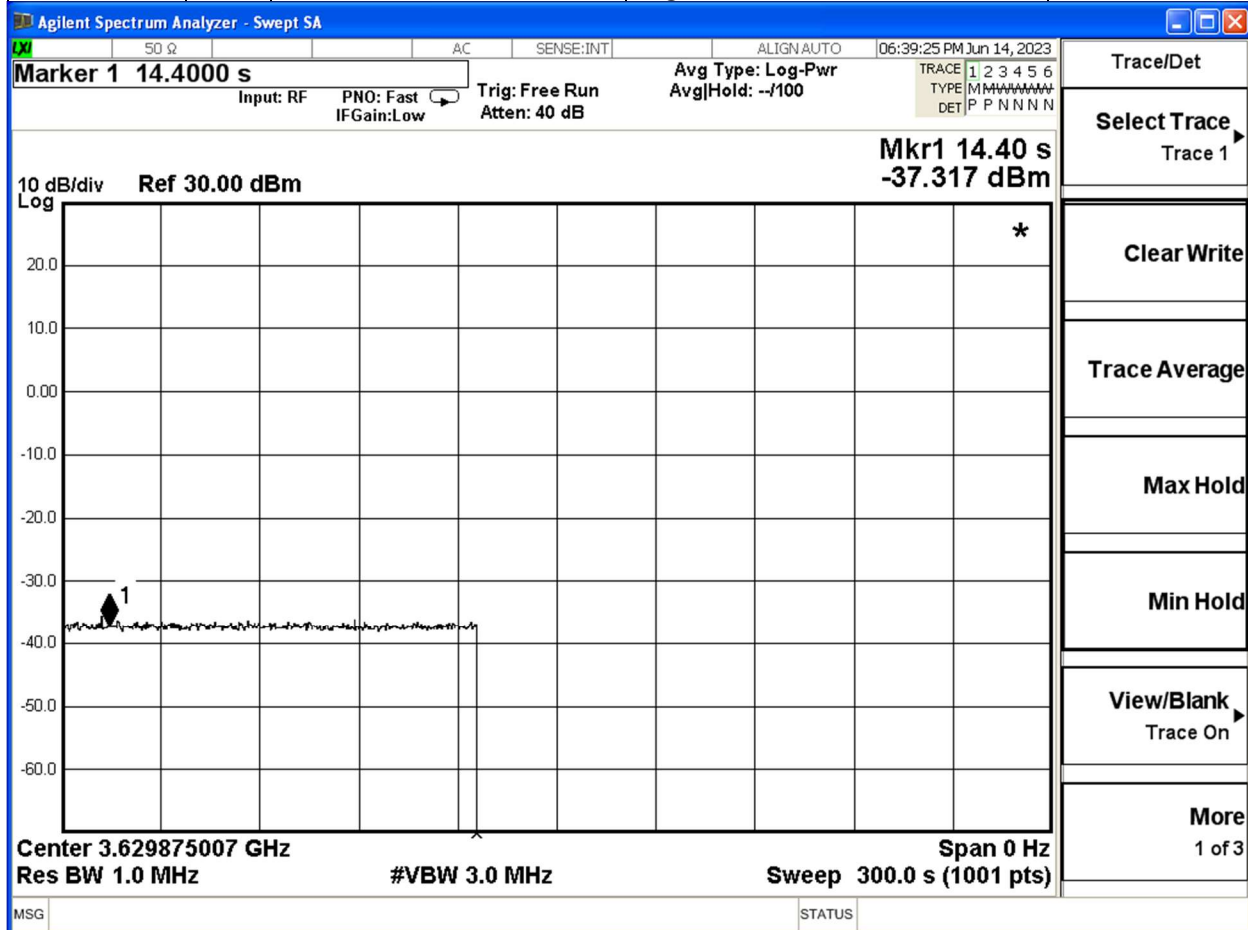
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Detailed Test Results Section

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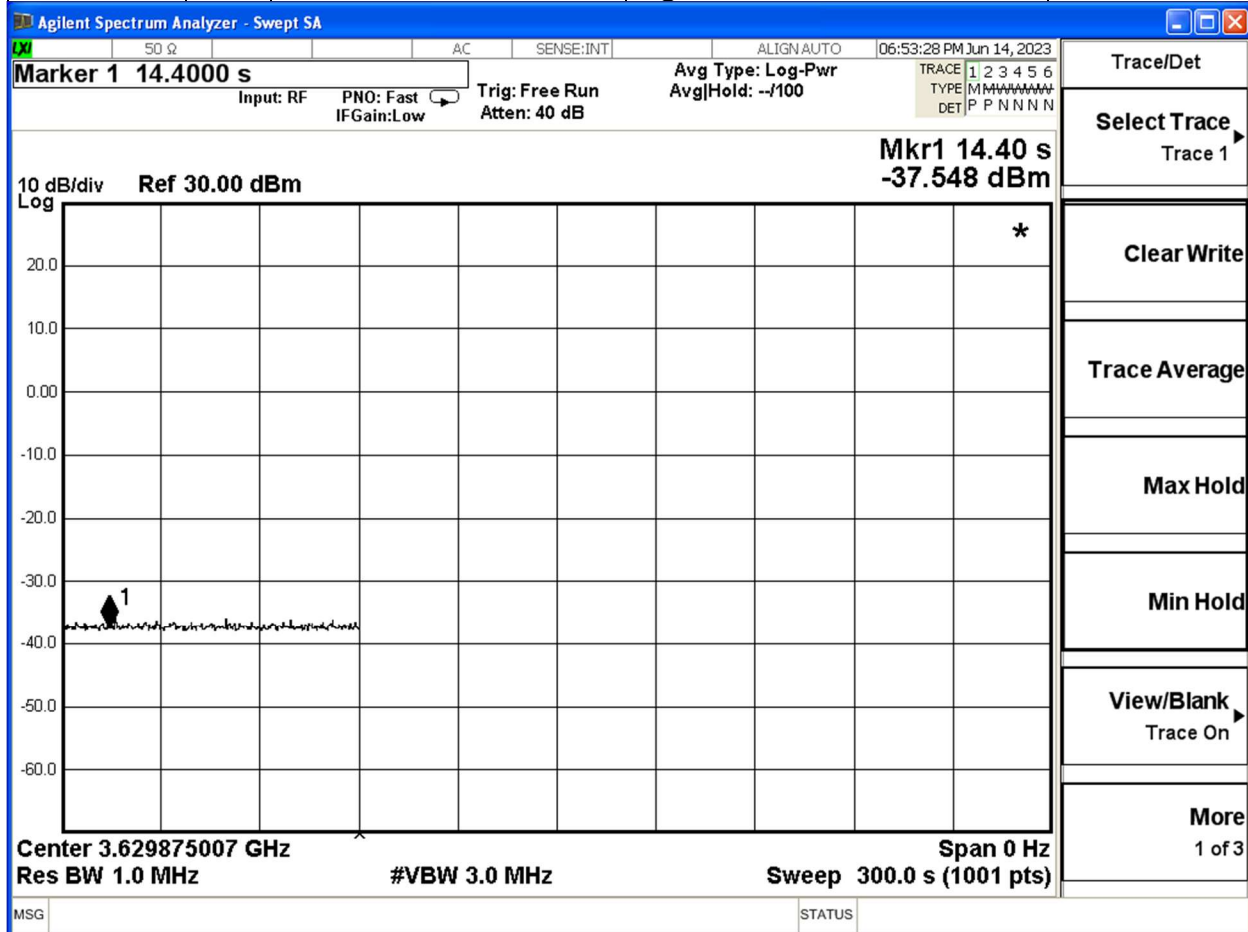
Authorization transmit after it receives authorization from a SAS.


Section	DP	Test Case ID	Test Case Title	Pass / Fail
6.1.4.1.2	X	WINNF.FT.D.REG.2	Domain Proxy Multi-Step registration	P



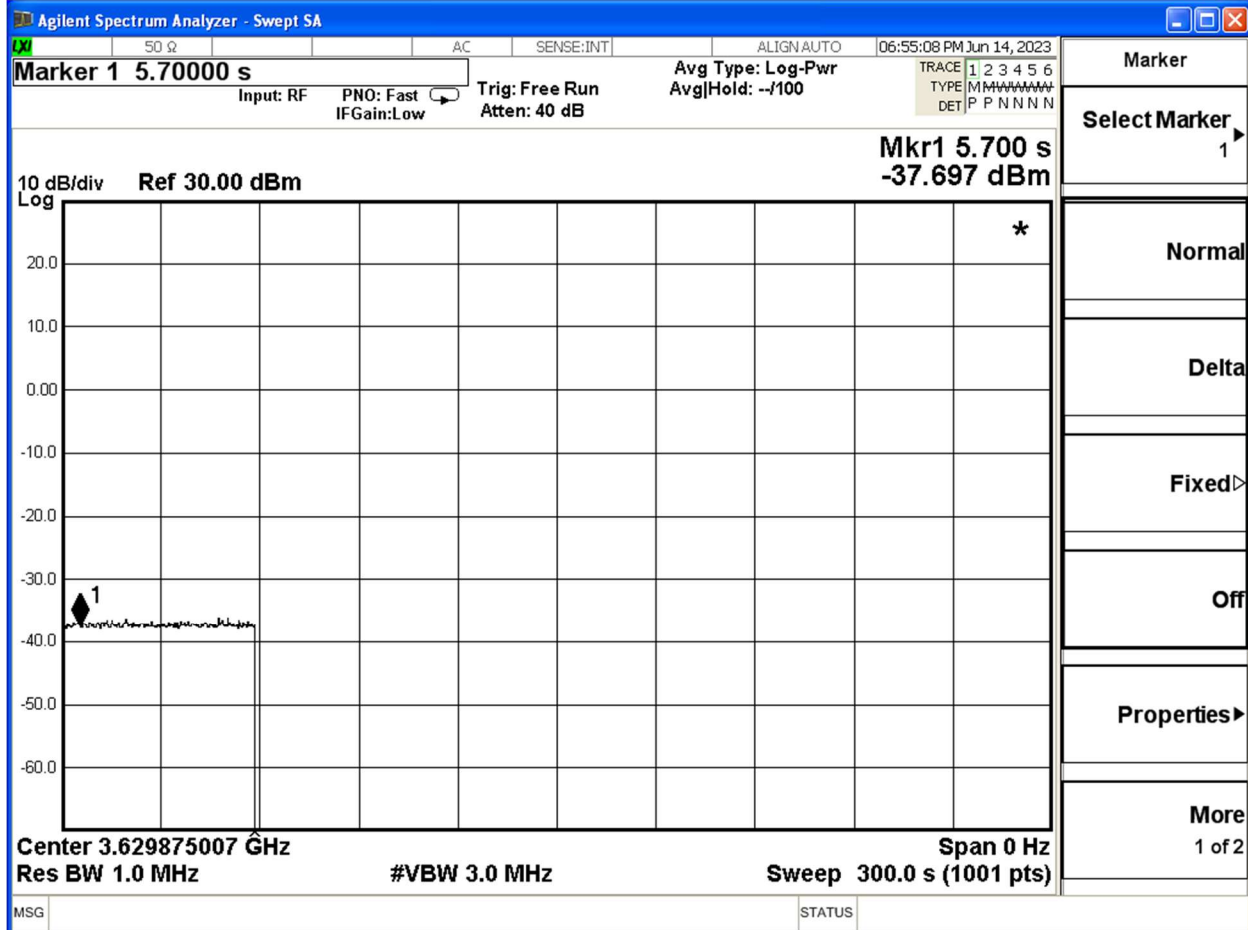
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6.1.4.1.6	X	WINNF.FT.D.REG.6	Domain Proxy Single-Step registration for CBSD with CPI signed data	P
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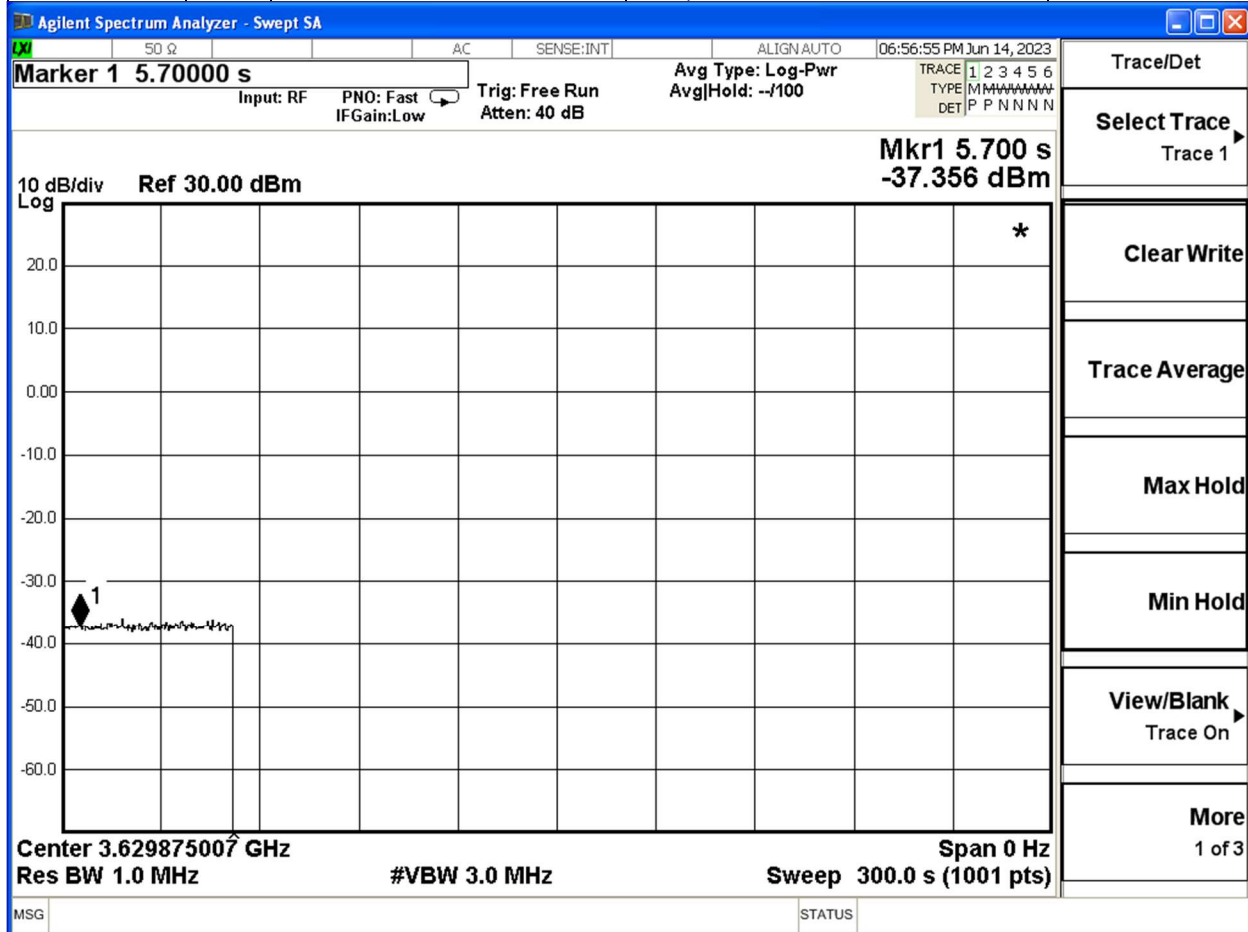
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6.1.4.2.2	X	WINNF.FT.D.REG.9	Domain Proxy Missing Required parameters (responseCode 102)	P
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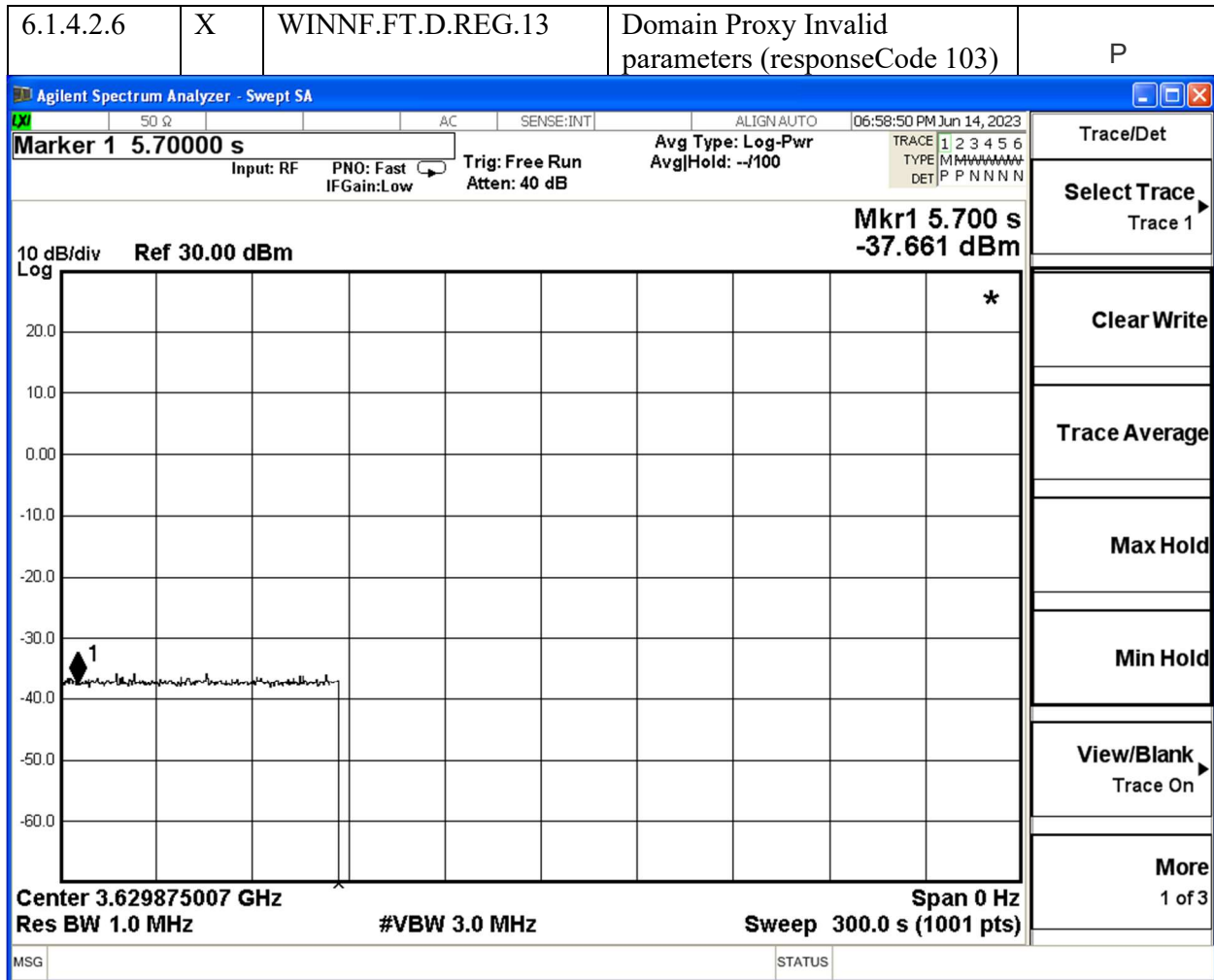



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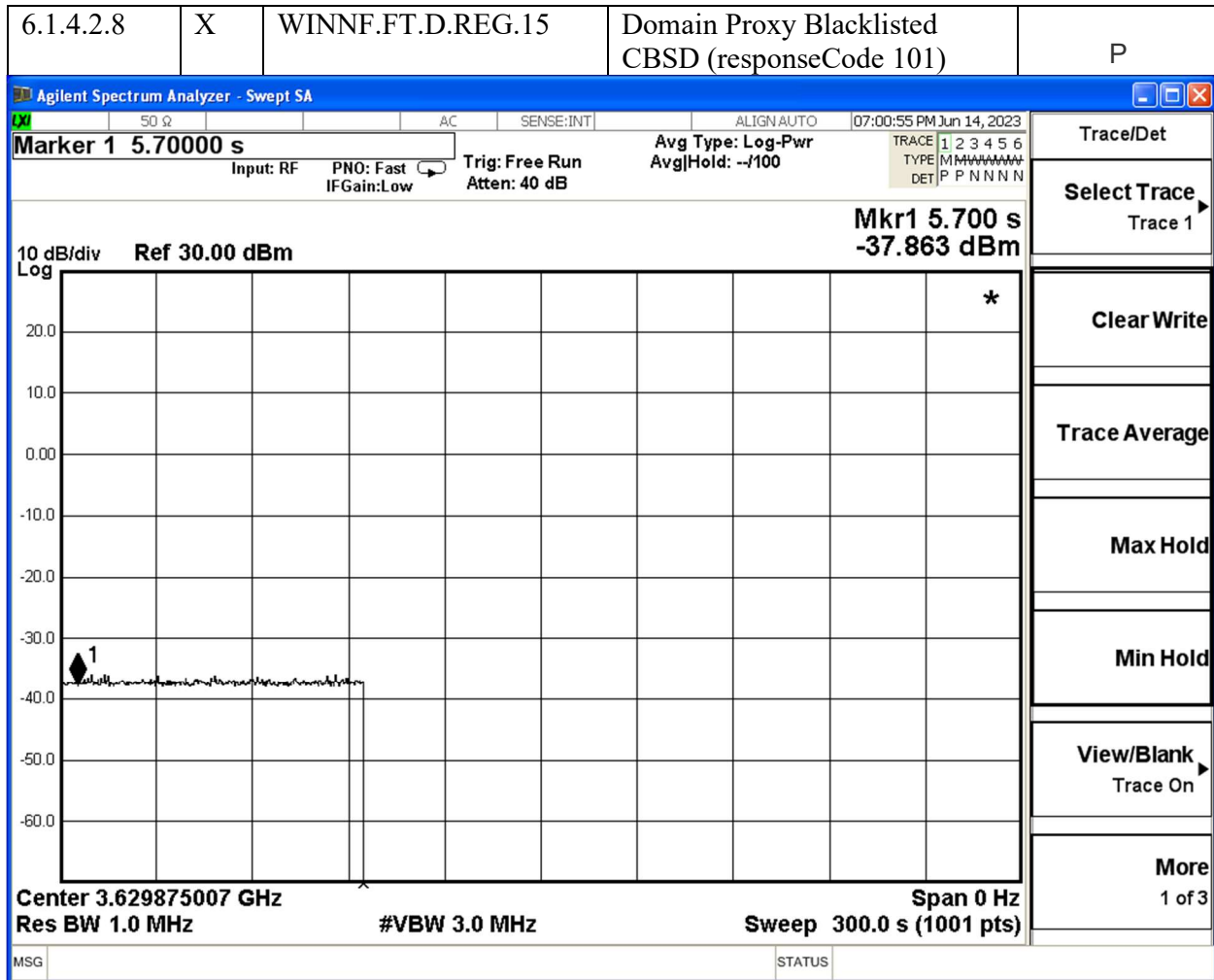
6.1.4.2.4	X	WINNF.FT.D.REG.11	Domain Proxy Pending registration (responseCode 200)	P
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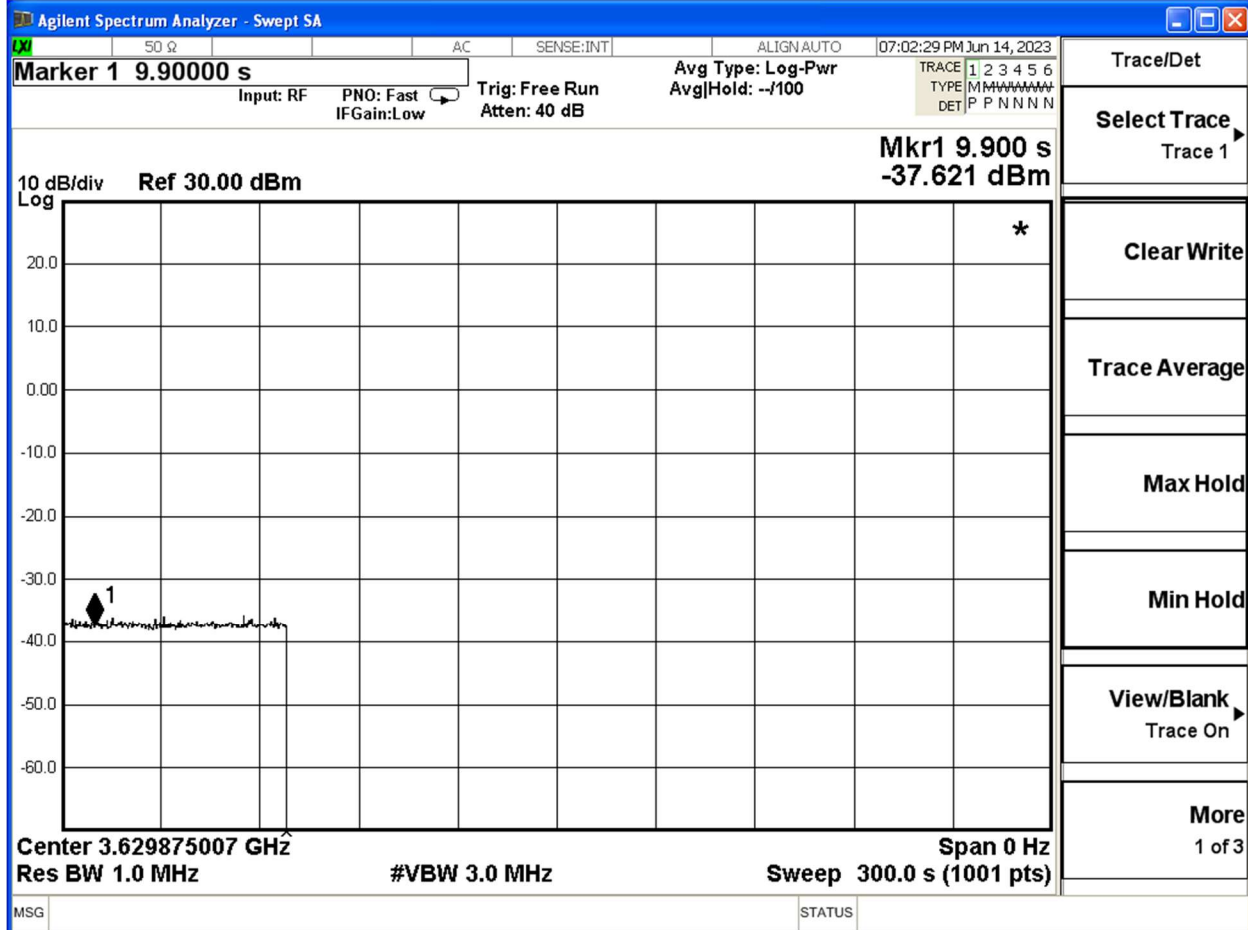



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Product	Cradlepoint Cellular access points, Models A2400 Indoor Unit FCC ID: UXX-S1A227A A2405 Outdoor Unit FCC ID: UXX-S1A228A	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

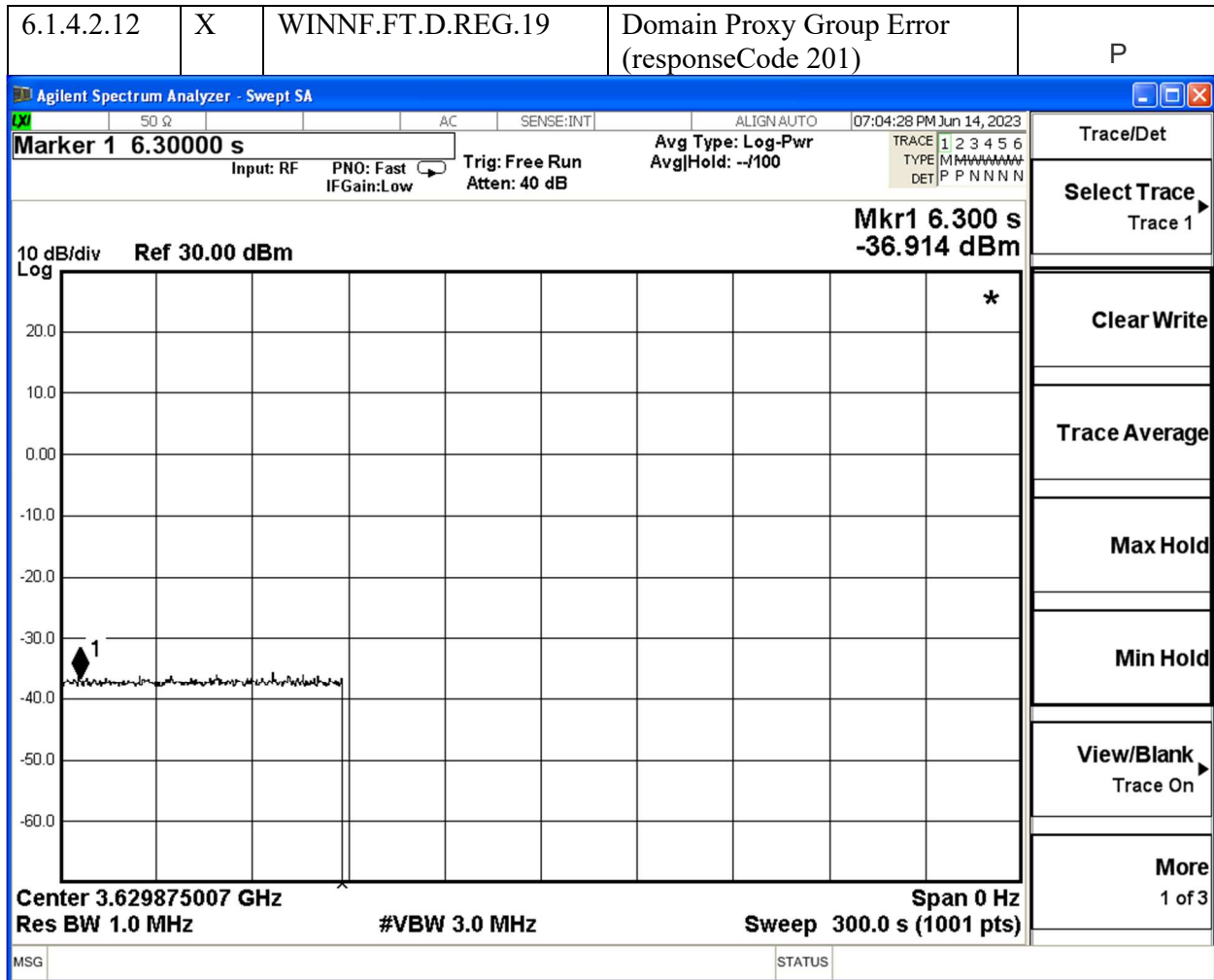



Client	CradlePoint, Inc.	
Product	Cradlepoint Cellular access points, Models A2400 Indoor Unit FCC ID: UXX-S1A227A A2405 Outdoor Unit FCC ID: UXX-S1A228A	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

6.1.4.2.10	X	WINNF.FT.D.REG.17	Domain Proxy Unsupported SAS protocol version responseCode 100)	P
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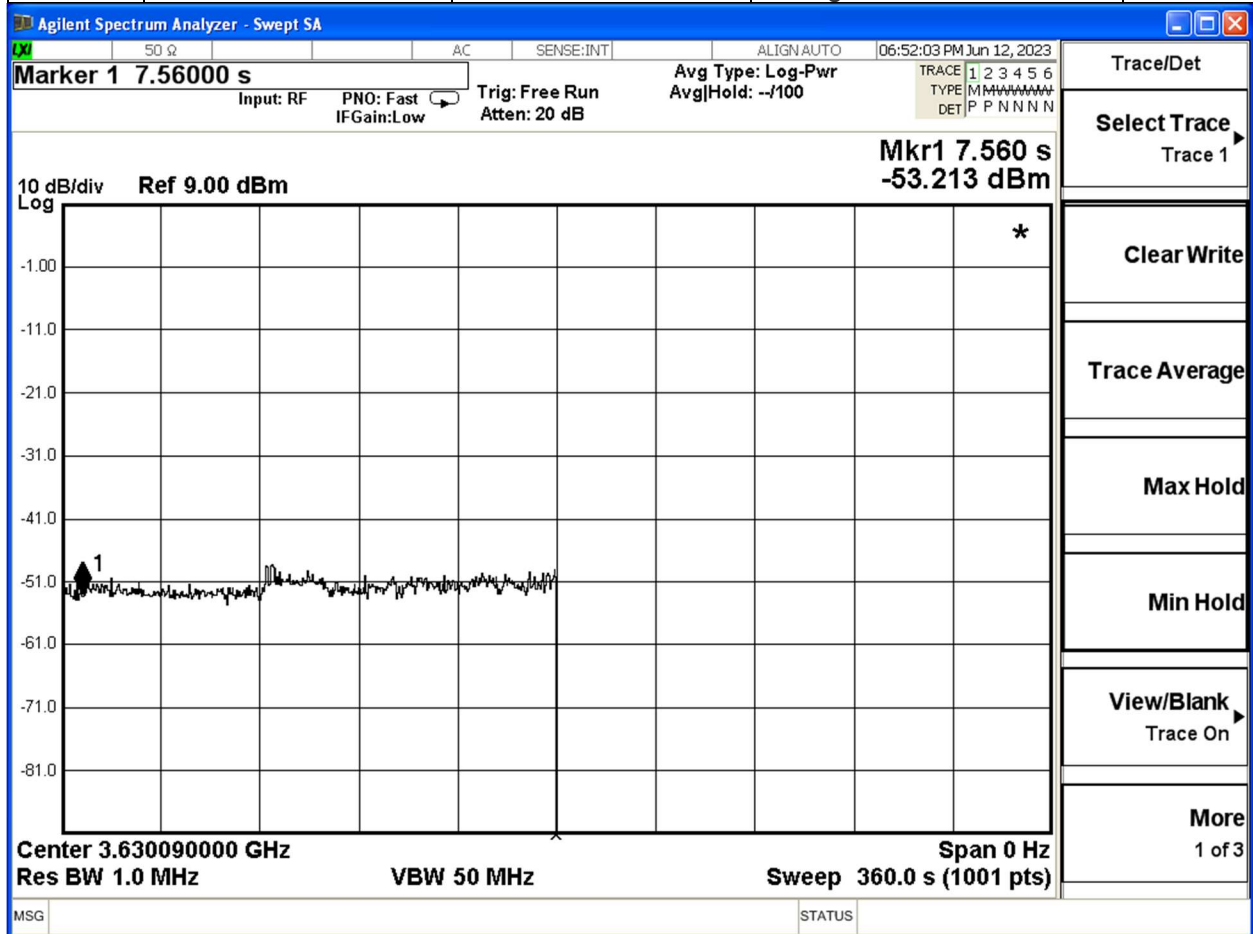
Client	CradlePoint, Inc.	
Product	Cradlepoint Cellular access points, Models A2400 Indoor Unit FCC ID: UXX-S1A227A A2405 Outdoor Unit FCC ID: UXX-S1A228A	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	




Client	CradlePoint, Inc.	
Product	Cradlepoint Cellular access points, Models A2400 Indoor Unit FCC ID: UXX-S1A227A A2405 Outdoor Unit FCC ID: UXX-S1A228A	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

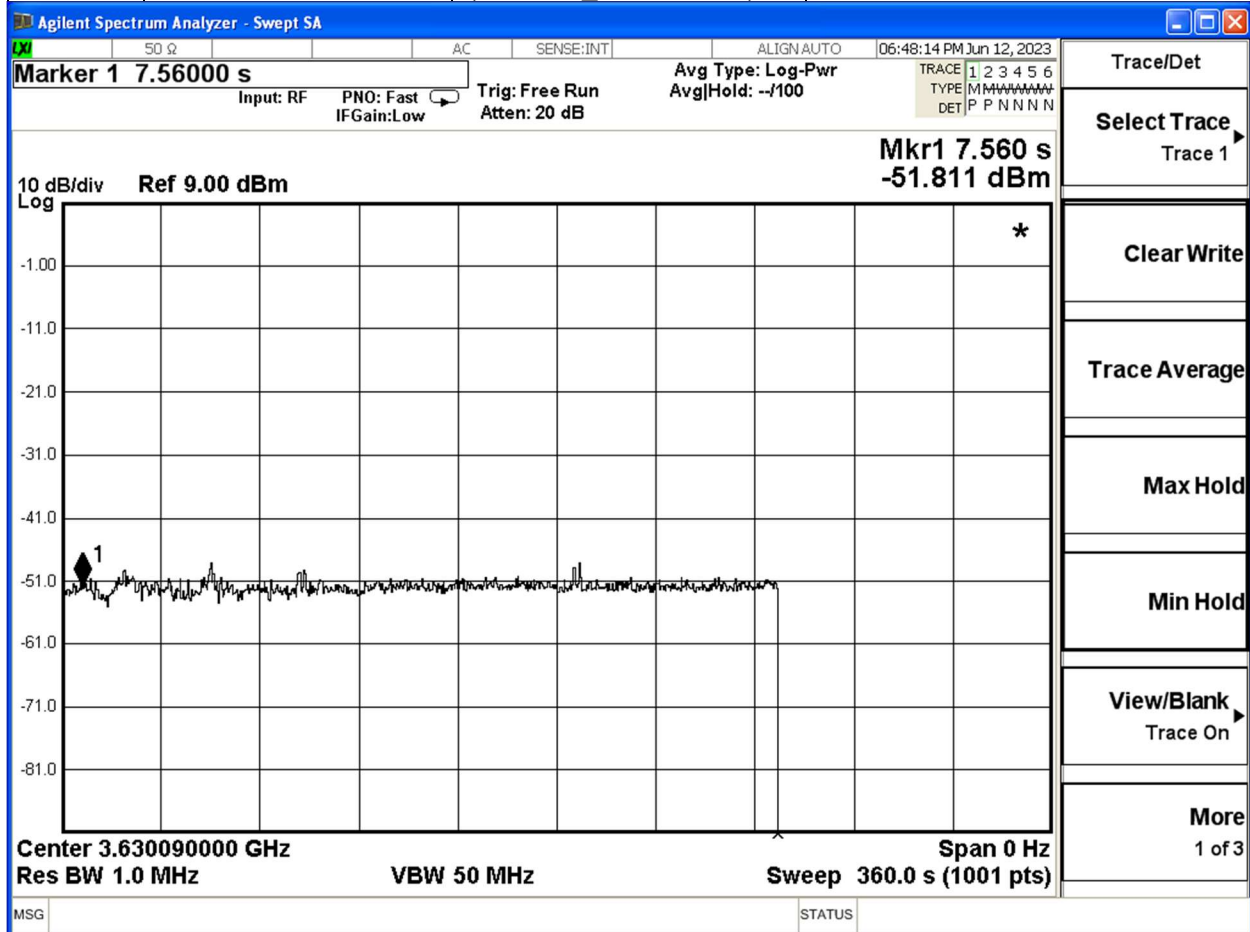
Check the device registration and authorization with the SAS, Confirm that the device changes its operating power and/or channel in response to a command from the SAS and Confirm that the device correctly configures based on the different license classes.


6.3.4.2.1	WINNF.FT.C.GRA.1	Unsuccessful Grant responseCode=400 (INTERFERENCE)	Monitor for 60 seconds after REG message sent. No transmission during test.	P
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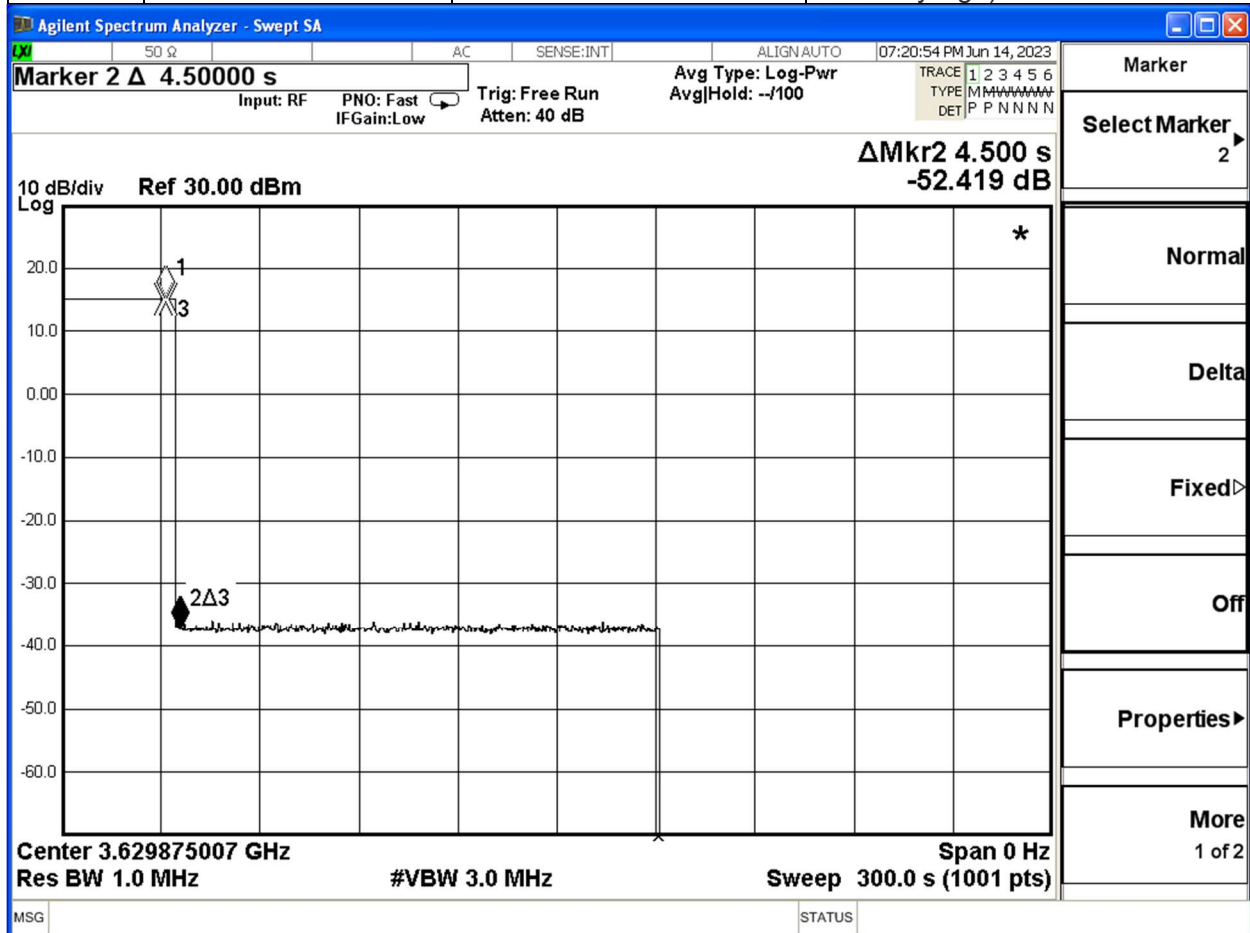
Client	CradlePoint, Inc.	
Product	Cradlepoint Cellular access points, Models A2400 Indoor Unit FCC ID: UXX-S1A227A A2405 Outdoor Unit FCC ID: UXX-S1A228A	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

6.3.4.2.2	WINNF.FT.C.GRA.2	Unsuccessful Grant responseCode=401 (GRANT CONFLICT)	Monitor for 60 seconds after REG message sent. No transmission during test.	P
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Client	CradlePoint, Inc.	
Product	Cradlepoint Cellular access points, Models A2400 Indoor Unit FCC ID: UXX-S1A227A A2405 Outdoor Unit FCC ID: UXX-S1A228A	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

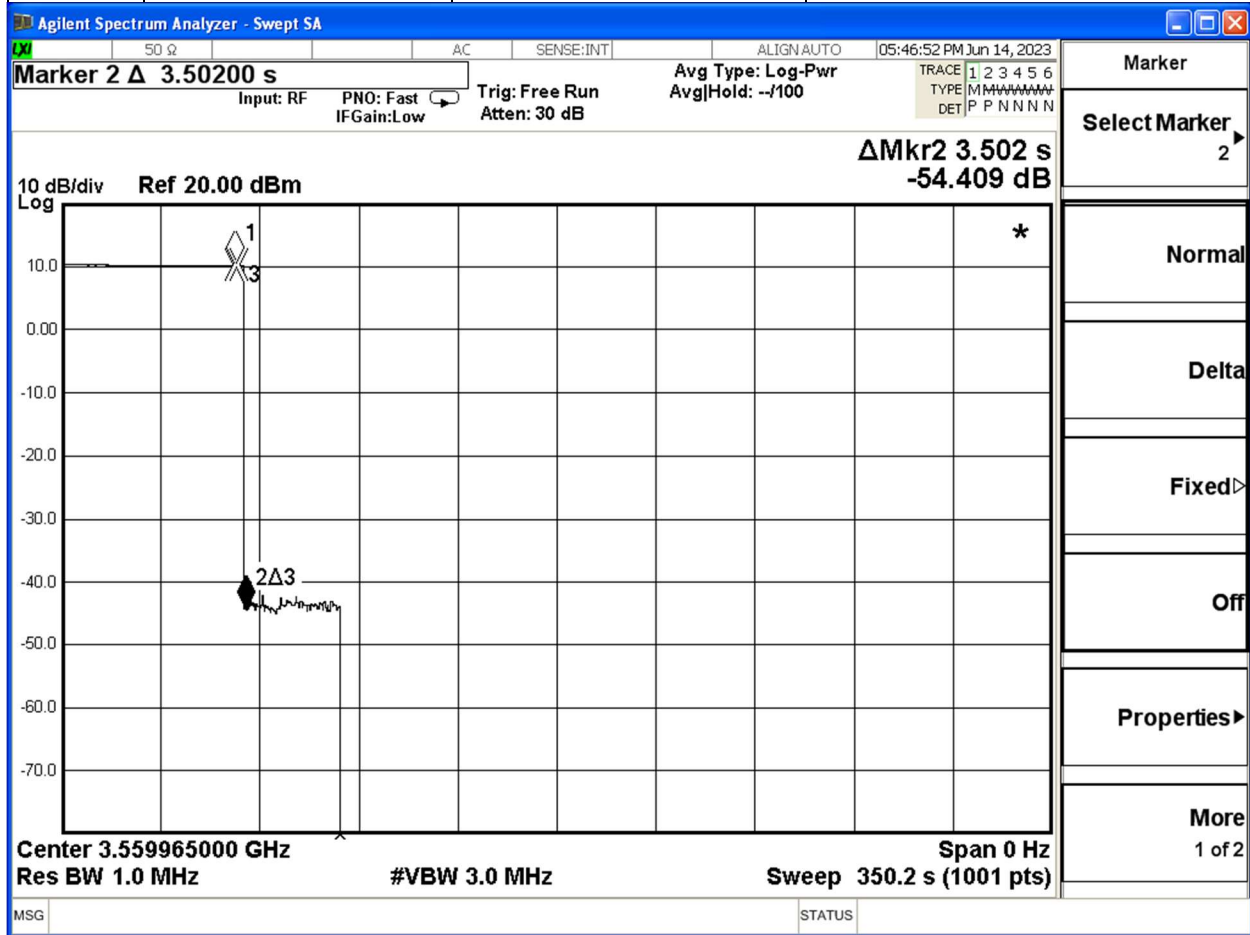
6.4.4.1.2	WINNF.FT.D.HBT.2	Domain Proxy Heartbeat Success Case (first Heartbeat Response)	<p>Monitor RF from start of test. Ensure that:</p> <ul style="list-style-type: none"> Transmission does not start until time of first heartbeat response or after. After transmission starts, measure that transmission is within the granted channel (frequencyLow, frequencyHigh) 	P
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Test Harness logs and timing on graph was verified, the EUT passed the requirement.

Client	CradlePoint, Inc.	
Product	Cradlepoint Cellular access points, Models A2400 Indoor Unit FCC ID: UXX-S1A227A A2405 Outdoor Unit FCC ID: UXX-S1A228A	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

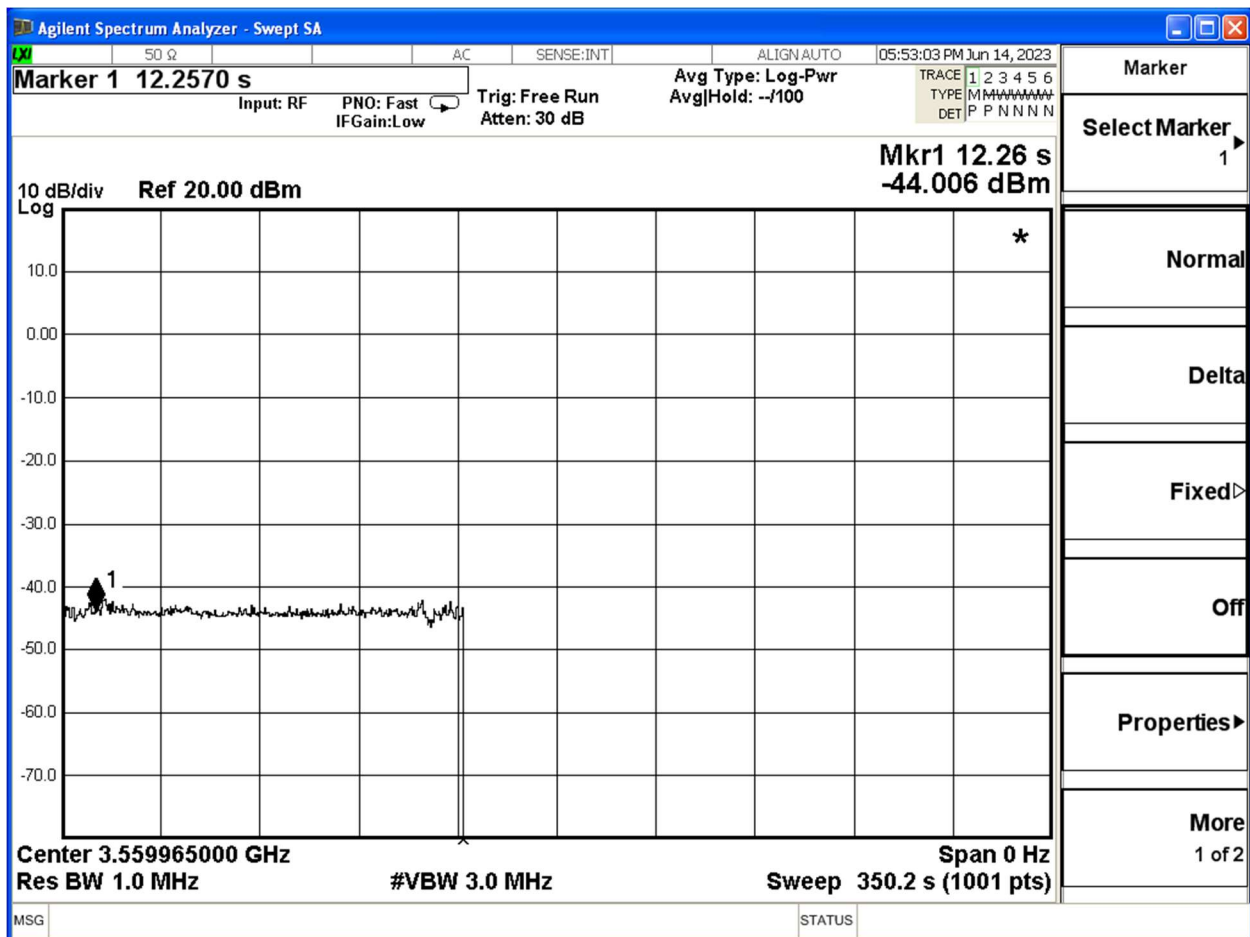
6.4.4.2.1	WINNF.FT.C.HBT.3	Heartbeat responseCode=105 (DEREGISTER)	Monitor RF transmission. Ensure that: <ul style="list-style-type: none"> CBSD stops transmission within 60 seconds of the heartbeatResponse which contains responseCode = 105 	P
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Test Harness logs and timing on graph was verified, the EUT passed the requirement.

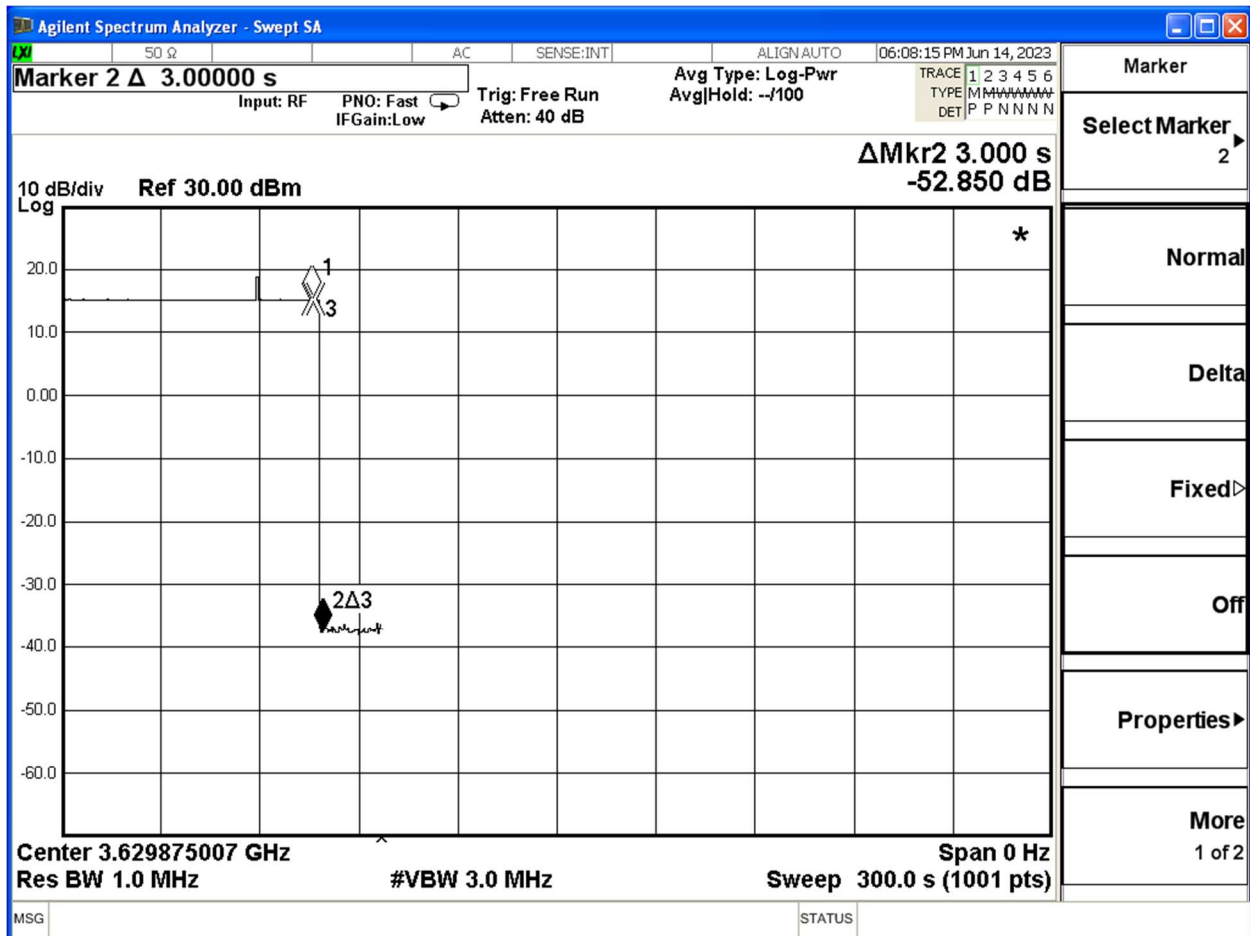
Client	CradlePoint, Inc.	
Product	Cradlepoint Cellular access points, Models A2400 Indoor Unit FCC ID: UXX-S1A227A A2405 Outdoor Unit FCC ID: UXX-S1A228A	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

6.4.4.2.3	WINNF.FT.C.HBT.5	Heartbeat responseCode=501 (SUSPENDED_GRANT) in First Heartbeat Response	Monitor RF transmission from start of test. Ensure there is no transmission during the test	p
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Client	CradlePoint, Inc.	
Product	Cradlepoint Cellular access points, Models A2400 Indoor Unit FCC ID: UXX-S1A227A A2405 Outdoor Unit FCC ID: UXX-S1A228A	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

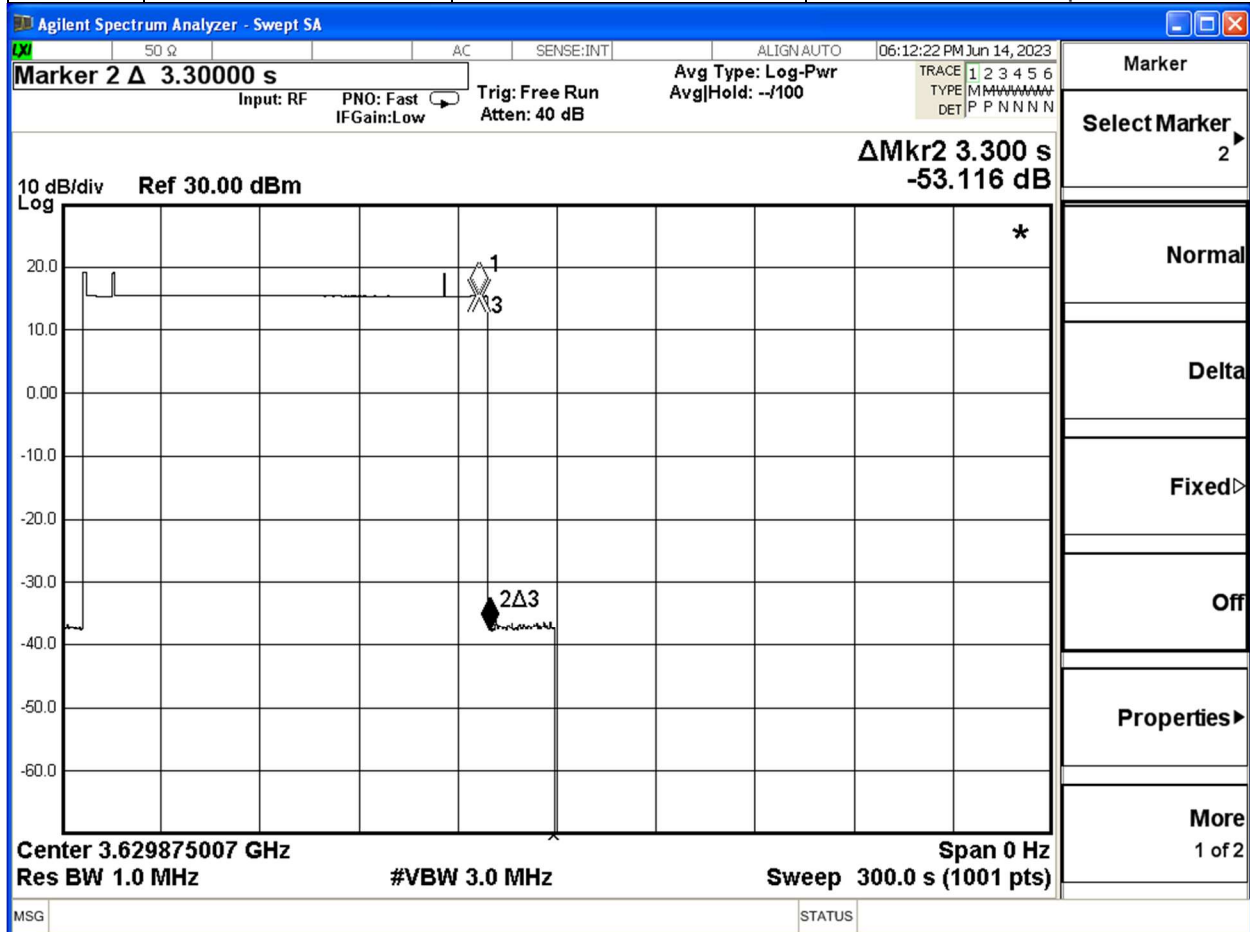
6.4.4.2.4	WINNF.FT.C.HBT.6	Heartbeat responseCode=501 (SUSPENDED_GRANT) in Subsequent Heartbeat Response	Monitor RF transmission. Ensure: <ul style="list-style-type: none"> CBSD stops transmission within 60 seconds of heartbeatResponse which contains responseCode=501 	p
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Test Harness logs and timing on graph was verified, the EUT passed the requirement.

Client	CradlePoint, Inc.	
Product	Cradlepoint Cellular access points, Models A2400 Indoor Unit FCC ID: UXX-S1A227A A2405 Outdoor Unit FCC ID: UXX-S1A228A	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

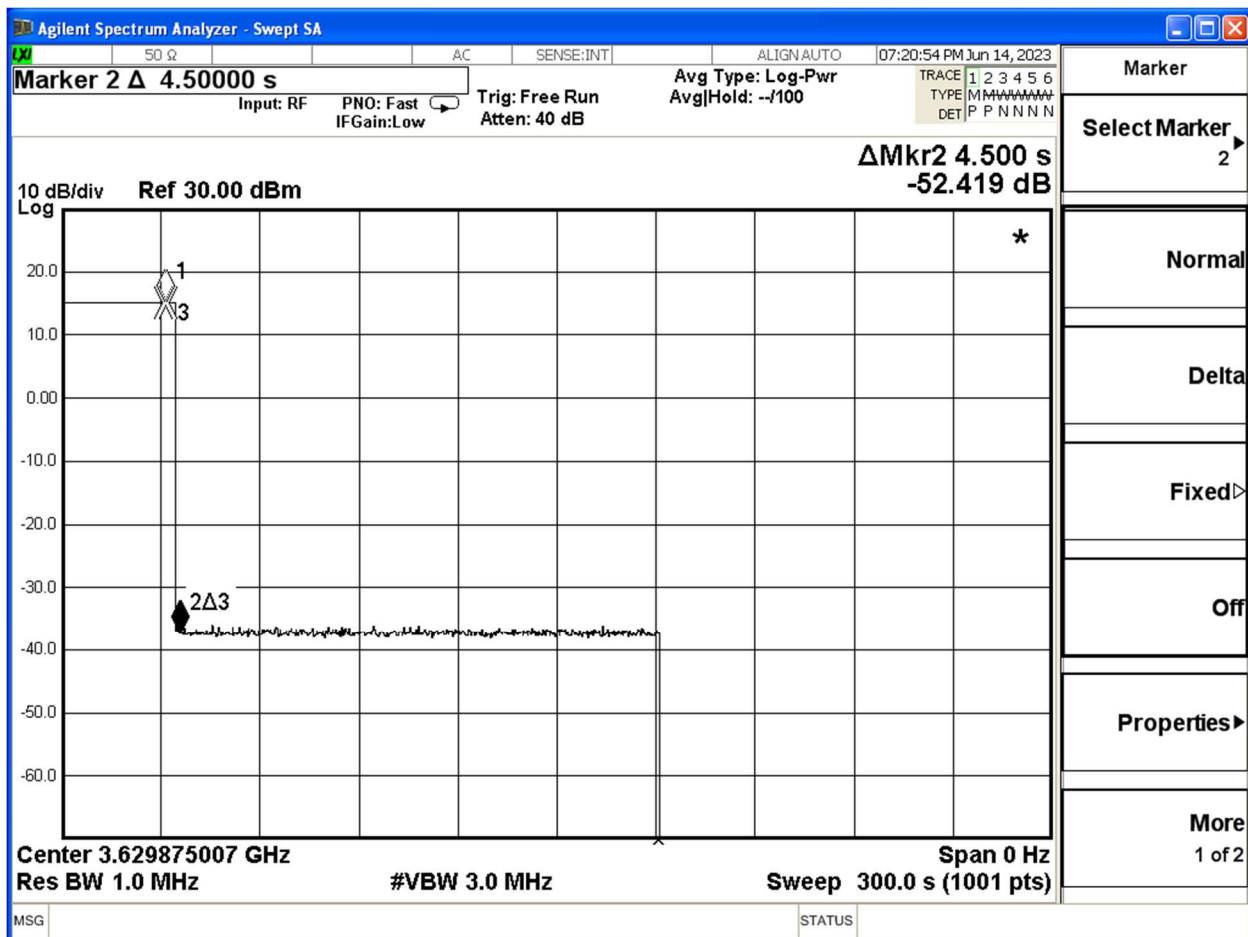
6.4.4.2.5	WINNF.FT.C.HBT.7	Heartbeat responseCode=502 (UNSYNC_OP_PARAM)	Monitor RF transmission. Ensure: <ul style="list-style-type: none"> CBSD stops transmission within 60 seconds of heartbeatResponse which contains responseCode=502 	p
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Test Harness logs and timing on graph was verified, the EUT passed the requirement.


Client	CradlePoint, Inc.	
Product	Cradlepoint Cellular access points, Models A2400 Indoor Unit FCC ID: UXX-S1A227A A2405 Outdoor Unit FCC ID: UXX-S1A228A	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

6.4.4.2.6	--	X	WINNF.FT.D.H BT.8	Domain Proxy Heartbeat responseCode=500 (TEMINATED_GR ANT)	Monitor RF transmission. CBSDs will have different behavior: <ul style="list-style-type: none"> • CBSD1: will continue to transmit to end of test (this is not a pass/fail criteria, but check) • CBSD2: must stop transmission within 60 seconds of being sent heartbeatResponse with responseCode = 500 	P
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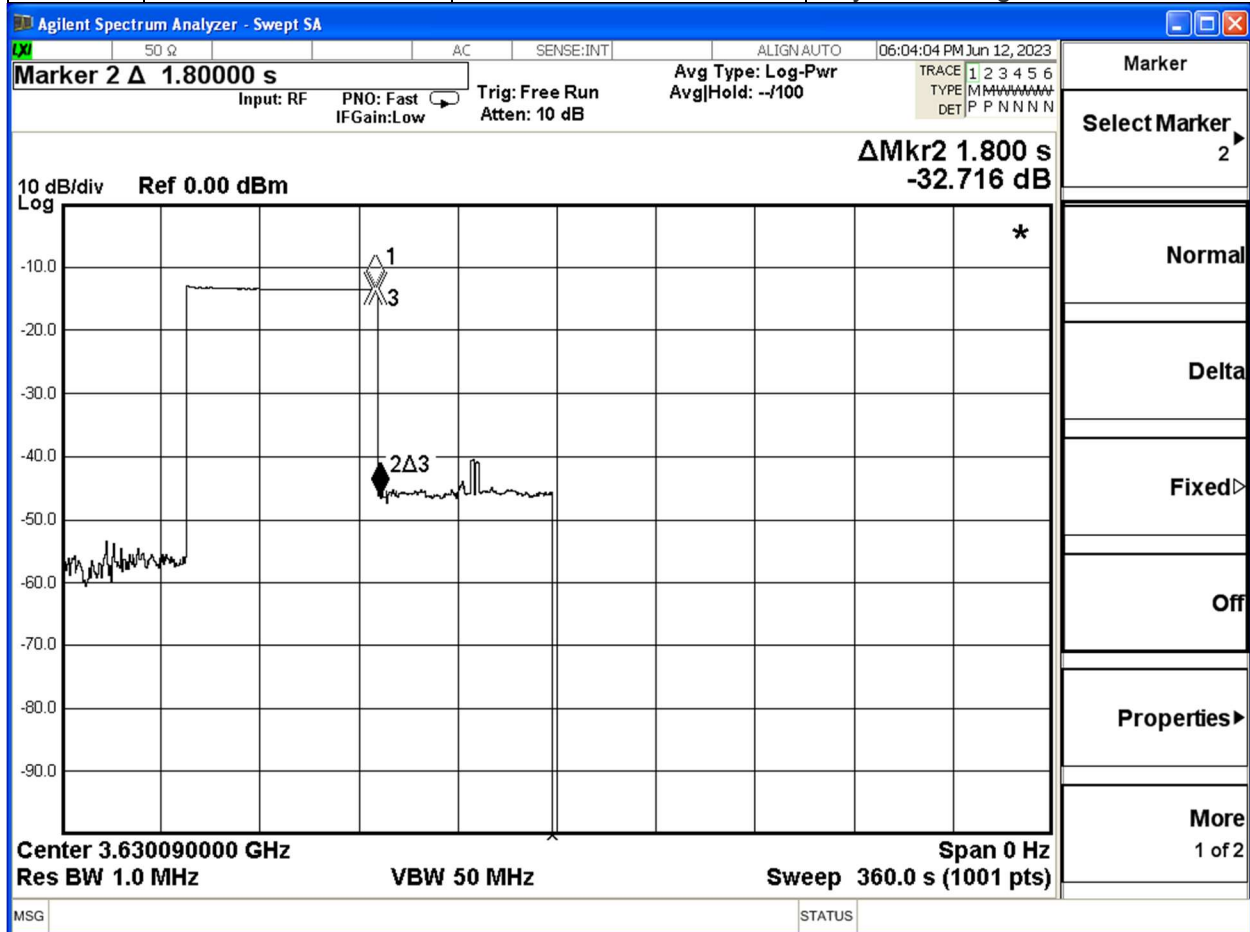



Test Harness logs and timing on graph was verified, the EUT passed the requirement.

Client	CradlePoint, Inc.	
Product	Cradlepoint Cellular access points, Models A2400 Indoor Unit FCC ID: UXX-S1A227A A2405 Outdoor Unit FCC ID: UXX-S1A228A	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

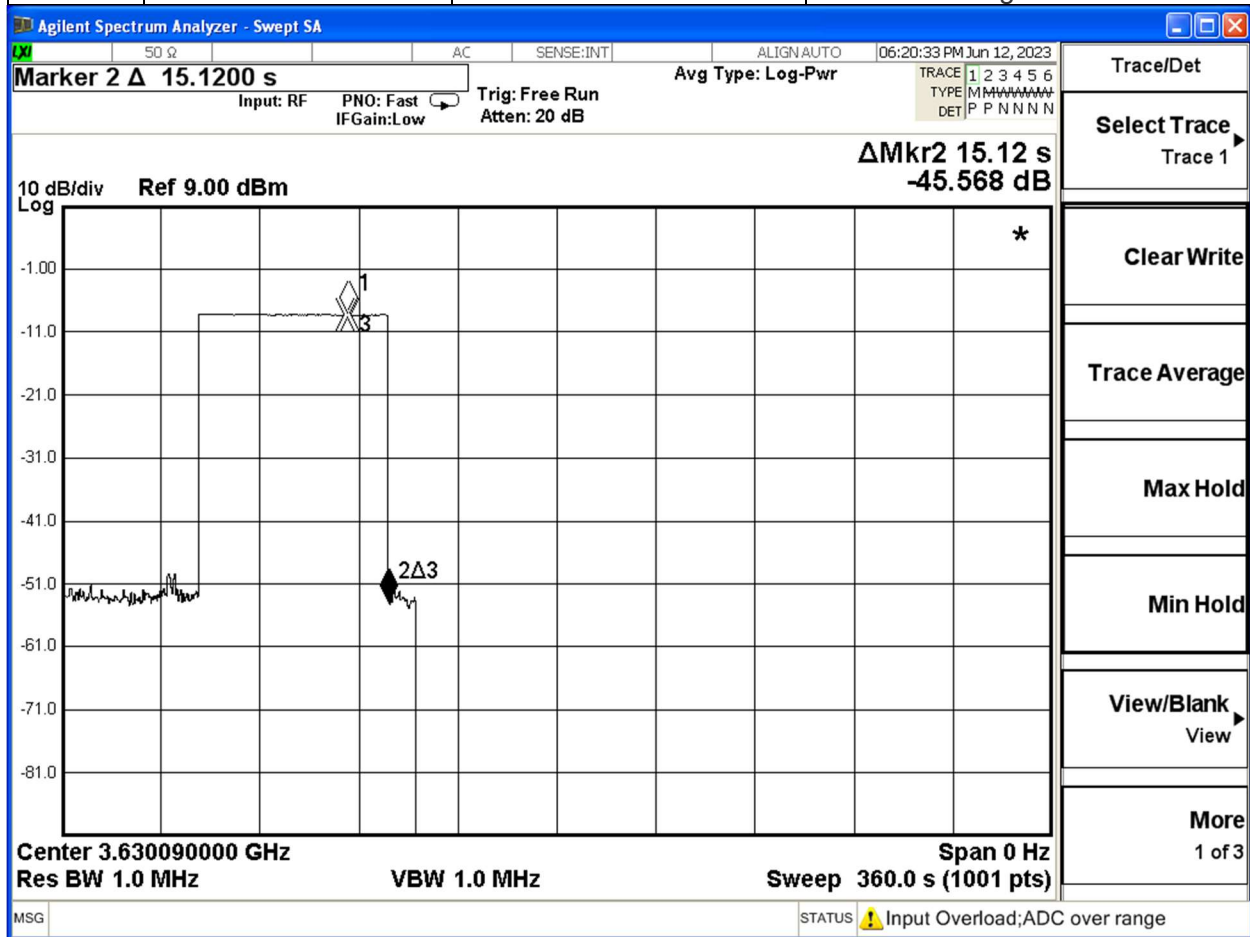
Client	CradlePoint, Inc.	
Product	Cradlepoint Cellular access points, Models A2400 Indoor Unit FCC ID: UXX-S1A227A A2405 Outdoor Unit FCC ID: UXX-S1A228A	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

6.4.4.3.1	WINNF.FT.C.HBT.9	Heartbeat Response Absent (First Heartbeat)	Monitor RF from start of test to 60 seconds after last heartbeatResponse message was sent. CBSD should not transmit at any time during test	P
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Client	CradlePoint, Inc.	
Product	Cradlepoint Cellular access points, Models A2400 Indoor Unit FCC ID: UXX-S1A227A A2405 Outdoor Unit FCC ID: UXX-S1A228A	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

6.4.4.3.2	WINNF.FT.C.HBT.10	Heartbeat Response Absent (Subsequent Heartbeat)	Monitor RF transmission. Verify: <ul style="list-style-type: none"> CBSD must stop transmission within transmitExpireTime+60 seconds, where transmitExpireTime is from last successful heartbeatResponse message 	P
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Test Harness logs and timing on graph was verified, the EUT passed the requirement.

Client	CradlePoint, Inc.	
Product	Cradlepoint Cellular access points, Models A2400 Indoor Unit FCC ID: UXX-S1A227A A2405 Outdoor Unit FCC ID: UXX-S1A228A	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	


6.5.4.2.2	WINNF.FT.D.MES.2	Domain Proxy Registration Response contains measReportConfig	No RF monitoring	P
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Pass. “measreportconfig” in logs. All other requirements verified.

Client	CradlePoint, Inc.	
Product	Cradlepoint Cellular access points, Models A2400 Indoor Unit FCC ID: UXX-S1A227A A2405 Outdoor Unit FCC ID: UXX-S1A228A	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

6.5.4.2.3	WINNF.FT.C.MES.3	Grant Response contains measReportConfig	No RF monitoring	P
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Pass. “measreportconfig” in logs. All other requirements verified.

Client	CradlePoint, Inc.	
Product	Cradlepoint Cellular access points, Models A2400 Indoor Unit FCC ID: UXX-S1A227A A2405 Outdoor Unit FCC ID: UXX-S1A228A	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

6.5.4.2.5	WINNF.FT.D.MES.5	Domain Proxy Heartbeat Response contains measReportConfig	No RF monitoring	P
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Pass. “measreportconfig” in logs. All other requirements verified.