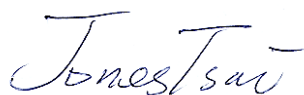


WINNF-TS-0122 Test Report

FCC ID : PKRISGFW2000
Equipment : 5G CPE Wireless Solution
Brand Name : Inseego
Model Name : FW2000
Marketing Name : FW2000,FW2000e
Applicant : Inseego Corp.
9710 Scranton Road Suite 200, San Diego, CA 92121
Manufacturer : Inseego Corp.
9710 Scranton Road Suite 200, San Diego, CA 92121
Standard : WINNF-TS-0122 Version V1.0.2

The product was received on Sep. 03, 2020 and testing was started from Feb. 08, 2021 and completed on Mar. 08, 2021. We, Sporton International Inc. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures given in WINNF-TS-0122 Version V1.0.2 and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.



Approved by: Jones Tsai

Sporton International Inc. EMC & Wireless Communications Laboratory
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)

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Appendix A. Setup Plot

Appendix B. RF measurement plots

Revision History

Report No.	Version	Description	Issued Date
FG082512F	01	Initial issue of report	Mar. 10, 2021

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Louis Wu

Report Producer: Dara Chiu

1. Administration Data

1.1 Testing Laboratory

Test Site	Sporton International Inc. EMC & Wireless Communications Laboratory
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	Sporton Site No. DFS02-HY
Test Engineer	Thomas Chen
Temperature	21 ~ 23 °C
Relative Humidity	51 ~ 58 %

FCC Designation No.: TW1190

2. General Information

2.1 Description of Equipment Under Test (EUT)

Product Feature & Specification	
Professional Installation	☒ Yes ☐ No
Unit Under Test Category	☐ Category A ☒ Category B ☒ CPE-CBSD Product
Domain Proxy support	☐ UUT with Domain Proxy ☒ UUT without Domain Proxy
UUT Antenna Type	Fixed Internal Antenna
UUT Antenna Gain	11.7 dBi
UUT HW Version	3
UUT FW Version	2.11
UUT SW Version	2.284
UUT Serial Number	FL010620D20043
Device Power Class	LTE Band 48: Power Class 3

Remark: The above EUT's information was declared by manufacturer. Please refer to Comments and Explanations in report summary.

2.2 Protocol Test Summary

Section	Test Case ID	Test Case Title	Test Result
6.1.4.1.1	WINNF.FT.C.REG.1	Multi-Step registration	PASS
6.1.4.1.5	WINNF.FT.C.REG.5	Single-Step registration for CBSD with CPI signed data	PASS
6.1.4.2.1	WINNF.FT.C.REG.8	Missing Required parameters (responseCode 102)	PASS
6.1.4.2.3	WINNF.FT.C.REG.10	Pending registration (responseCode 200)	PASS
6.1.4.2.5	WINNF.FT.C.REG.12	Invalid parameter (responseCode 103)	PASS
6.1.4.2.7	WINNF.FT.C.REG.14	Blacklisted CBSD (responseCode 101)	PASS
6.1.4.2.9	WINNF.FT.C.REG.16	Unsupported SAS protocol version (responseCode 100)	PASS
6.1.4.2.11	WINNF.FT.C.REG.18	Group Error (responseCode 201)	PASS
6.3.4.2.1	WINNF.FT.C.GRA.1	Unsuccessful Grant responseCode=400 (INTERFERENCE)	PASS
6.3.4.2.2	WINNF.FT.C.GRA.2	Unsuccessful Grant responseCode=401 (GRANT_CONFLICT)	PASS
6.4.4.1.1	WINNF.FT.C.HBT.1	Heartbeat Success Case (first Heartbeat Response)	PASS
6.4.4.2.1	WINNF.FT.C.HBT.3	Heartbeat responseCode=105 (DEREGISTER)	PASS
6.4.4.2.2	WINNF.FT.C.HBT.4	Heartbeat responseCode=500 (TERMINATED_GRANT)	PASS
6.4.4.2.3	WINNF.FT.C.HBT.5	Heartbeat responseCode=501 (SUSPENDED_GRANT) in First Heartbeat Response	PASS
6.4.4.2.4	WINNF.FT.C.HBT.6	Heartbeat responseCode=501 (SUSPENDED_GRANT) in Subsequent Heartbeat Response	PASS
6.4.4.2.5	WINNF.FT.C.HBT.7	Heartbeat responseCode=502 (UNSYNC_OP_PARAM)	PASS
6.4.4.3.1	WINNF.FT.C.HBT.9	Heartbeat Response Absent (First Heartbeat)	PASS
6.4.4.3.2	WINNF.FT.C.HBT.10	Heartbeat Response Absent (Subsequent Heartbeat)	PASS
6.6.4.1.1	WINNF.FT.C.RLQ.1	Successful Relinquishment	PASS
6.7.4.1.1	WINNF.FT.C.DRG.1	Successful Deregistration	PASS
6.8.4.1.1	WINNF.FT.C.SCS.1	Successful TLS connection between UUT and SAS Test Harness	PASS
6.8.4.2.1	WINNF.FT.C.SCS.2	TLS failure due to revoked certificate	PASS
6.8.4.2.2	WINNF.FT.C.SCS.3	TLS failure due to expired server certificate	PASS
6.8.4.2.3	WINNF.FT.C.SCS.4	TLS failure when SAS Test Harness certificate is issue by unknown CA	PASS
6.8.4.2.4	WINNF.FT.C.SCS.5	TLS failure when certificate at the SAS Test Harness is corrupted	PASS
7.1.4.1.1	WINNF.PT.C.HBT	UUT RF Transmit Power Measurement	PASS

2.3 Time test for getting Grant Summary

Trail	Time limit	Monitoring time	Measured result	Verdict
1	1 second	10 seconds	3.9ms	PASS
2	10 seconds	300 seconds	12ms	PASS
3	20 seconds	3600 seconds	144ms	PASS

2.4 Support Equipment

Name	Manufacturer	Type/Model	Serial Number	FCC ID
Q710	Ruckus	P01-Q710-US02	991929000175	S9GQ710US02

2.5 Test Equipment List

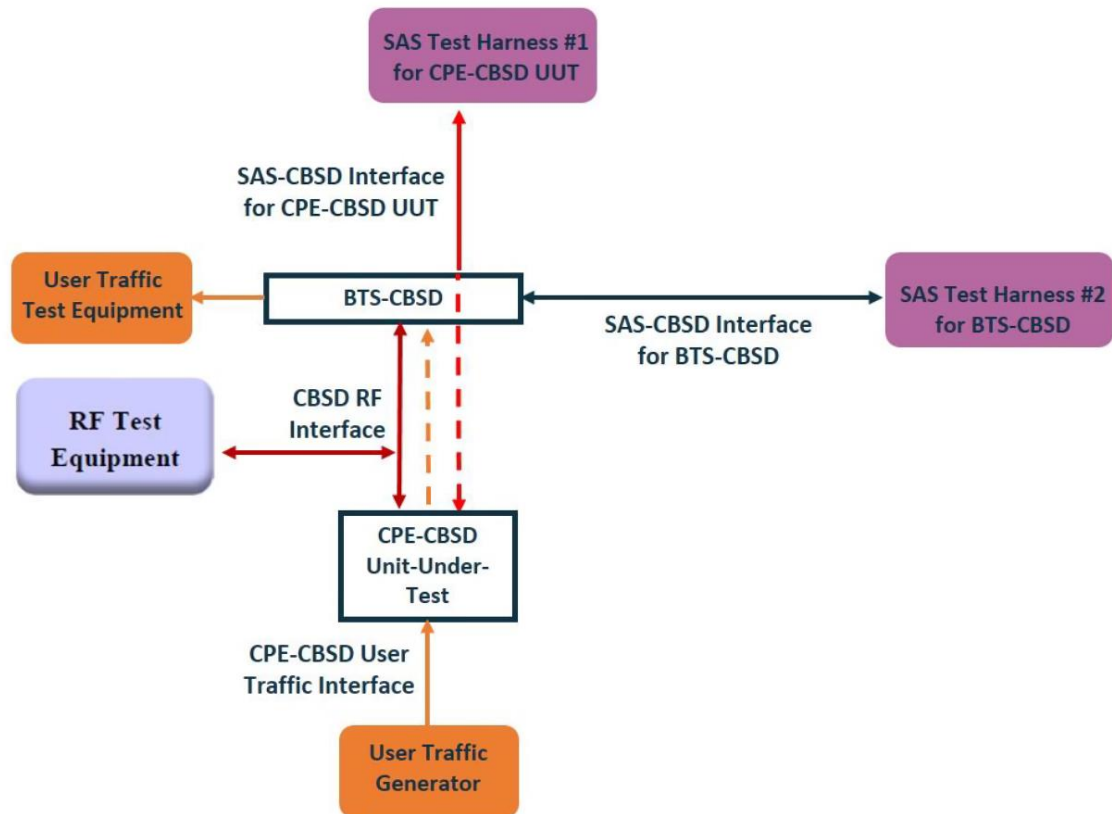
Name	Manufacturer	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
Spectrum Analyzer	Rohde & Schwarz	FSV3044	101048	Apr. 29, 2020	Apr. 28, 2021
Spectrum Analyzer	Keysight	N9010A	MY57120184	Nov. 17, 2020	Nov. 16, 2021

3. Measurement Environment

Measurement Environment Information	
SAS Test Harness version	1.0.0.3
Operating System	Windows 10
TLS version	V 1.2
Python version	V 2.7

Conditional Test Case		
Support (Yes / No)	Condition	Definition
Yes	C1	Mandatory for UUT which supports multi-step registration message
No	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.
Yes	C3	Mandatory for UUT which supports single-step registration containing CPIsigned data in the registration message.
No	C4	Mandatory for UUT which supports RECEIVED_POWER_WITHOUT_GRANT measurement report type
No	C5	Mandatory for UUT which supports RECEIVED_POWER_WITH_GRANT measurement report type.
No	C6	Mandatory for UUT which supports parameter change being made at the UUT and prior to sending a deregistration.

3.1 Test configuration without Domain Proxy



CPE-CBSD as UUT, BTS-CBSD direct communication.

3.2 Standards

[n.1]. FCC KDB 940660 D02 CPE-CBSD Handshake Procedures v02, 22 October 2019

[n.2]. WINNF-TS-0122 Version 1.0.2, "Conformance and Performance Test Technical Specification; CBSD/DP as Unit Under Test (UUT)", 25 November 2020

[n.3]. WINNF-TS-0016 Version 1.2.6, "SAS to CBSD Technical Specification", 25 November 2020

3.3 Protocol test procedure

The test cases for SAS<->CBSD protocol in [n.2] apply for CPE-CBSD device type. Following the [n.1], when running the test cases in [n.2] for CPE-CBSD device type, verify that:

1. CPE-CBSD can begin transmitting its RF only after receiving radio signal from its compatible BTS-CBSD.
2. For all CPE-CBSD RF transmissions, the CPE-CBSD UUT radio frequency range and bandwidth are less or equal to the frequency range and bandwidth of its compatible BTS-CBSD.
3. Judging the last execution step appearing in [n.2] with "User data traffics" instead of "RF transmission."

3.4 Time test for getting Grant Procedure

Use the WinnForum SAS Harness run test case WINNF.FT.C.GRA.1. Without answering the last question in WINNF.FT.C.GRA.1 will keep UUT's grant request being rejected, then measure the time.

4. Protocol Test Results

4.1 [WINNF.FT.C.REG.1] Multi-Step registration

#	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 <code>userId</code>, <code>fcId</code> and <code>cbsdSerialNumber</code> registration parameters shall be sent from the CBSD and conform to proper format and acceptable ranges. • 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
3	• SAS Test Harness sends a CBSD Registration Response as follows: – <code>cbsdId</code> = C – <code>measReportConfig</code> shall not be included – <code>responseCode</code> = 0	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (<code>responseCode</code>=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

4.2 [WINNF.FT.C.REG.5] Single-Step registration for CBSD with CPI signed data

#	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 <code>userId</code>, <code>fccId</code> and <code>cbsdSerialNumber</code> and REG-Conditional <code>cbsdCategory</code>, <code>airInterface</code>, <code>measCapability</code> and <code>cpiSignatureData</code> registration parameters shall be sent from the CBSD and conform to proper format and acceptable ranges.	PASS
	• 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.	
3	• SAS Test Harness sends a CBSD Registration Response as follows: – <code>cbsdId</code> = C – <code>measReportConfig</code> shall not be included. – <code>responseCode</code> = 0	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (<code>responseCode=0</code>) to further request messages from the UUT.	--
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: • UUT shall not transmit RF	PASS

4.3 [WINNF.FT.C.REG.8] Missing Required parameters (responseCode 102)

#	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 <i>cbstdId</i> – <i>responseCode</i> = R	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (<i>responseCode</i> =0) to further request messages from the UUT.	--
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: • UUT shall not transmit RF	PASS

4.4 [WINNF.FT.C.REG.10] Pending registration (responseCode 200)

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

4.5 [WINNF.FT.C.REG.12] Invalid parameter (responseCode 103)

#	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 <i>cbstdId</i> – <i>responseCode</i> = R	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (<i>responseCode</i> =103) to further request messages from the UUT.	--
5	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

4.6 [WINNF.FT.C.REG.14] Blacklisted CBSD (responseCode 101)

#	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 <i>cbstdId</i> – <i>responseCode</i> = R	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (<i>responseCode</i> =101) to further request messages from the UUT.	--
5	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

4.7 [WINNF.FT.C.REG.16] Unsupported SAS protocol version (responseCode 100)

#	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 <i>cbstdId</i> – <i>responseCode</i> = R	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (<i>responseCode</i> =100) to further request messages from the UUT.	--
5	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

4.8 [WINNF.FT.C.REG.18] Group Error (responseCode 201)

#	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 <i>cbstdId</i> – <i>responseCode</i> = R	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (<i>responseCode</i> =201) to further request messages from the UUT.	--
5	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

4.9 [WINNF.FT.C.GRA.1] Unsuccessful Grant responseCode=400 (INTERFERENCE)

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

4.10 [WINNF.FT.C.GRA.2] Unsuccessful Grant responseCode=401 (GRANT_CONFLICT)

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

4.11 [WINNF.FT.C.HBT.1] Heartbeat Success Case (first Heartbeat Response)

#	Test Execution Steps	Results
1	Ensure the following conditions are met for test entry: UUT has registered successfully with SAS Test Harness, with <i>cbsdId</i> = 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: <i>cbsdId</i> = C - List of frequencyRange objects sent by UUT are within the CBRS frequency range	PASS
4	SAS Test Harness sends a Spectrum Inquiry Response message, including the following parameters: <i>cbsdId</i> = C - availableChannel is an array of availableChannel objects <i>responseCode</i> = 0	--
5	UUT sends Grant Request message. Validate: <i>cbsdId</i> = 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
6	SAS Test Harness sends a Grant Response message, including the parameters: <i>cbsdId</i> = C <i>grantId</i> = G = a valid grant ID <i>grantExpireTime</i> = UTC time greater than duration of the test <i>responseCode</i> = 0	--
7	UUT sends a first Heartbeat Request message. Verify Heartbeat Request message is formatted correctly, including: <i>cbsdId</i> = C <i>grantId</i> = G <i>operationState</i> = "GRANTED"	PASS

8	SAS Test Harness sends a Heartbeat Response message, with the following parameters: • <i>cbsdId</i> = C • <i>grantId</i> = G • <i>transmitExpireTime</i> = current UTC time + 200 seconds • <i>responseCode</i> = 0	--
9	For further Heartbeat Request messages sent from UUT after completion of step 8, validate message is sent within latest specified heartbeatInterval, and: • <i>cbsdId</i> = C • <i>grantId</i> = G • <i>operationState</i> = "AUTHORIZED" and SAS Test Harness responds with a Heartbeat Response message including the following parameters: • <i>cbsdId</i> = C • <i>grantId</i> = G • <i>transmitExpireTime</i> = current UTC time + 200 seconds • <i>responseCode</i> = 0	PASS
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

4.12 [WINNF.FT.C.HBT.3] Heartbeat responseCode=105 (DEREGISTER)

#	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 <i>cbsdId</i> = C ○ valid <i>grantId</i> = G ○ grant is for frequency range F, power P ○ <i>grantExpireTime</i> = 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: • <i>cbsdId</i> = C • <i>grantId</i> = G • <i>operationState</i> = "AUTHORIZED"	PASS
3	SAS Test Harness sends a Heartbeat Response message, including the following parameters: • <i>cbsdId</i> = C • <i>grantId</i> = G • <i>transmitExpireTime</i> = T = Current UTC time • <i>responseCode</i> = 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

4.13 [WINNF.FT.C.HBT.4] Heartbeat responseCode=500 (TERMINATED_GRANT)

#	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 <i>cbsdId</i> = C ○ valid <i>grantId</i> = G ○ grant is for frequency range F, power P ○ <i>grantExpireTime</i> = 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: • <i>cbsdId</i> = C • <i>grantId</i> = G • <i>operationState</i> = "AUTHORIZED"	PASS
3	SAS Test Harness sends a Heartbeat Response message, including the following parameters: • <i>cbsdId</i> = C • <i>grantId</i> = G • <i>transmitExpireTime</i> = T = current UTC time • <i>responseCode</i> = 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

4.14 [WINNF.FT.C.HBT.5] Heartbeat responseCode=501 (SUSPENDED_GRANT) in First Heartbeat Response

#	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 <i>cbsdId</i> = C ○ valid <i>grantId</i> = G ○ grant is for frequency range F, power P ○ <i>grantExpireTime</i> = 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: • <i>cbsdId</i> = C • <i>grantId</i> = G • <i>operationState</i> = "GRANTED"	PASS
3	SAS Test Harness sends a Heartbeat Response message, including the following parameters: • <i>cbsdId</i> = C • <i>grantId</i> = G • <i>transmitExpireTime</i> = T = current UTC time • <i>responseCode</i> = 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: • <i>cbsdId</i> = C • <i>grantId</i> = G • <i>operationState</i> = "GRANTED" B. UUT sends a Relinquishment request message. Ensure message is correctly formatted with parameters: • <i>cbsdId</i> = C • <i>grantId</i> = G Monitor the RF output of the UUT. Verify: • UUT does not transmit at any time	PASS

4.15 [WINNF.FT.C.HBT.6] Heartbeat responseCode=501 (SUSPENDED_GRANT) in Subsequent Heartbeat Response

#	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 <i>cbsdId</i> = C ○ valid <i>grantId</i> = G ○ grant is for frequency range F, power P ○ <i>grantExpireTime</i> = 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: • <i>cbsdId</i> = C • <i>grantId</i> = G • <i>operationState</i> = "AUTHORIZED"	PASS
3	SAS Test Harness sends a Heartbeat Response message, including the following parameters: • <i>cbsdId</i> = C • <i>grantId</i> = G • <i>transmitExpireTime</i> = T = current UTC time • <i>responseCode</i> = 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: • <i>cbsdId</i> = C • <i>grantId</i> = G • <i>operationState</i> = "GRANTED" B. UUT sends a Relinquishment Request message. Ensure message is correctly formatted with parameters: • <i>cbsdId</i> = C • <i>grantId</i> = G Monitor the RF output of the UUT. Verify: • UUT shall stop transmission within (<i>T</i> + 60 seconds) of completion of step 3	PASS
---	---	------

4.16 [WINNF.FT.C.HBT.7] Heartbeat responseCode=502 (UNSYNC_OP_PARAM)

#	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 <i>cbsdId</i> = C ○ valid <i>grantId</i> = G ○ grant is for frequency range F, power P ○ <i>grantExpireTime</i> = 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 <i>heartbeatInterval</i>, and is formatted correctly, including: • <i>cbsdId</i> = C • <i>grantId</i> = G • <i>operationState</i> = "AUTHORIZED"	PASS
3	SAS Test Harness sends a Heartbeat Response message, including the following parameters: • <i>cbsdId</i> = C • <i>grantId</i> = G • <i>transmitExpireTime</i> = T = Current UTC Time • <i>responseCode</i> = 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: ○ <i>cbsdId</i> = C ○ <i>grantId</i> = G Monitor the RF output of the UUT. Verify: • UUT shall stop transmission within (T+60) seconds of completion of step 3.	PASS

4.17 [WINNF.FT.C.HBT.9] Heartbeat Response Absent (First Heartbeat)

#	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 <i>cbsdId</i> = C ○ valid <i>grantId</i> = G ○ grant is for frequency range F, power P ○ <i>grantExpireTime</i> = 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 <i>heartbeatInterval</i>, and is formatted correctly, including: • <i>cbsdId</i> = C • <i>grantId</i> = G • <i>operationState</i> = "GRANTED"	PASS
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

4.18 [WINNF.FT.C.HBT.10] Heartbeat Response Absent (Subsequent Heartbeat)

#	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 <i>cbsdId</i> = C ○ valid <i>grantId</i> = G ○ grant is for frequency range F, power P ○ <i>grantExpireTime</i> = 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 issent within the latest specified <i>heartbeatInterval</i>, and is formatted correctly, including: • <i>cbsdId</i> = C • <i>grantId</i> = G • <i>operationState</i> = "AUTHORIZED"	PASS
3	SAS Test Harness sends a Heartbeat Response message, with the following parameters: • <i>cbsdId</i> = C • <i>grantId</i> = G • <i>transmitExpireTime</i> = current UTC time + 200 seconds • <i>responseCode</i> = 0	--
4	After completion of Step 3, SAS Test Harness does not respond to any further messages from UUT	--
5	Monitor the RF output of the UUT. Verify: • UUT shall stop all transmission on RF interface within (<i>transmitExpireTime</i> + 60 seconds), using the <i>transmitExpireTime</i> sent in Step 3.	PASS

4.19 [WINNF.FT.C.RLQ.1] Successful Relinquishment

#	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 <i>cbsdId</i>=C • UUT has received a valid grant with <i>grantId</i> = 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: • <i>cbsdId</i> = C • <i>grantId</i> = G	PASS
3	SAS Test Harness shall approve the request with a Relinquishment Response message with parameters: – <i>cbsdId</i> = C – <i>grantId</i> = G – <i>responseCode</i> = 0	--
4	After completion of step 3, SAS Test Harness will not provide any additional positive response (<i>responseCode</i>=0) to further request messages from the UUT.	--
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

4.20 [WINNF.FT.C.DRG.1] Successful Deregistration

#	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 <i>cbsdId</i>=C • UUT has received a valid grant with <i>grantId</i> = 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 <i>responseCode</i> =0	--
3	UUT sends Deregistration Request to SAS Test Harness with <i>cbsdId</i> = C.	PASS
4	SAS Test Harness shall approve the request with a Deregistration Response message with parameters: • <i>cbsdId</i> = C • <i>responseCode</i> = 0	--
5	After completion of step 3, SAS Test Harness will not provide any additional positive response (<i>responseCode</i> =0) to further request messages from the UUT.	--
6	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

4.21 [WINNF.FT.C.SCS.1] Successful TLS connection between UUT and SAS Test Harness

#	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
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
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 <i>responseCode</i> = 0 and <i>cbstdId</i>.	PASS
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

4.22 [WINNF.FT.C.SCS.2] TLS failure due to revoked certificate

#	Test Execution Steps	Results
1	UUT shall start CBSD-SAS communication with the security procedures	PASS
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
3	UUT may retry for the security procedure which shall fail	PASS
4	SAS Test-Harness shall not receive any Registration request or any application data.	--
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: UUT shall not transmit RF	PASS

4.23 [WINNF.FT.C.SCS.3] TLS failure due to expired server certificate

#	Test Execution Steps	Results
1	• UUT shall start CBSD-SAS communication with the security procedures	PASS
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
3	UUT may retry for the security procedure which shall fail.	PASS
4	SAS Test-Harness shall not receive any Registration request or any application data.	--
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: • UUT shall not transmit RF	PASS

4.24 [WINNF.FT.C.SCS.4] TLS failure when SAS Test Harness certificate is issued by an unknown CA

#	Test Execution Steps	Results
1	• UUT shall start CBSD-SAS communication with the security procedures	PASS
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
3	UUT may retry for the security procedure which shall fail.	PASS
4	SAS Test-Harness shall not receive any Registration request or any application data.	--
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: • UUT shall not transmit RF	PASS

4.25 [WINNF.FT.C.SCS.5] TLS failure when certificate at the SAS Test Harness is corrupted

#	Test Execution Steps	Results
1	UUT shall start CBSD-SAS communication with the security procedures	PASS
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
3	UUT may retry for the security procedure which shall fail.	PASS
4	SAS Test-Harness shall not receive any Registration request or any application data.	--
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: UUT shall not transmit RF	PASS

4.26 [WINNF.PT.C.HBT] UUT RF Transmit Power Measurement

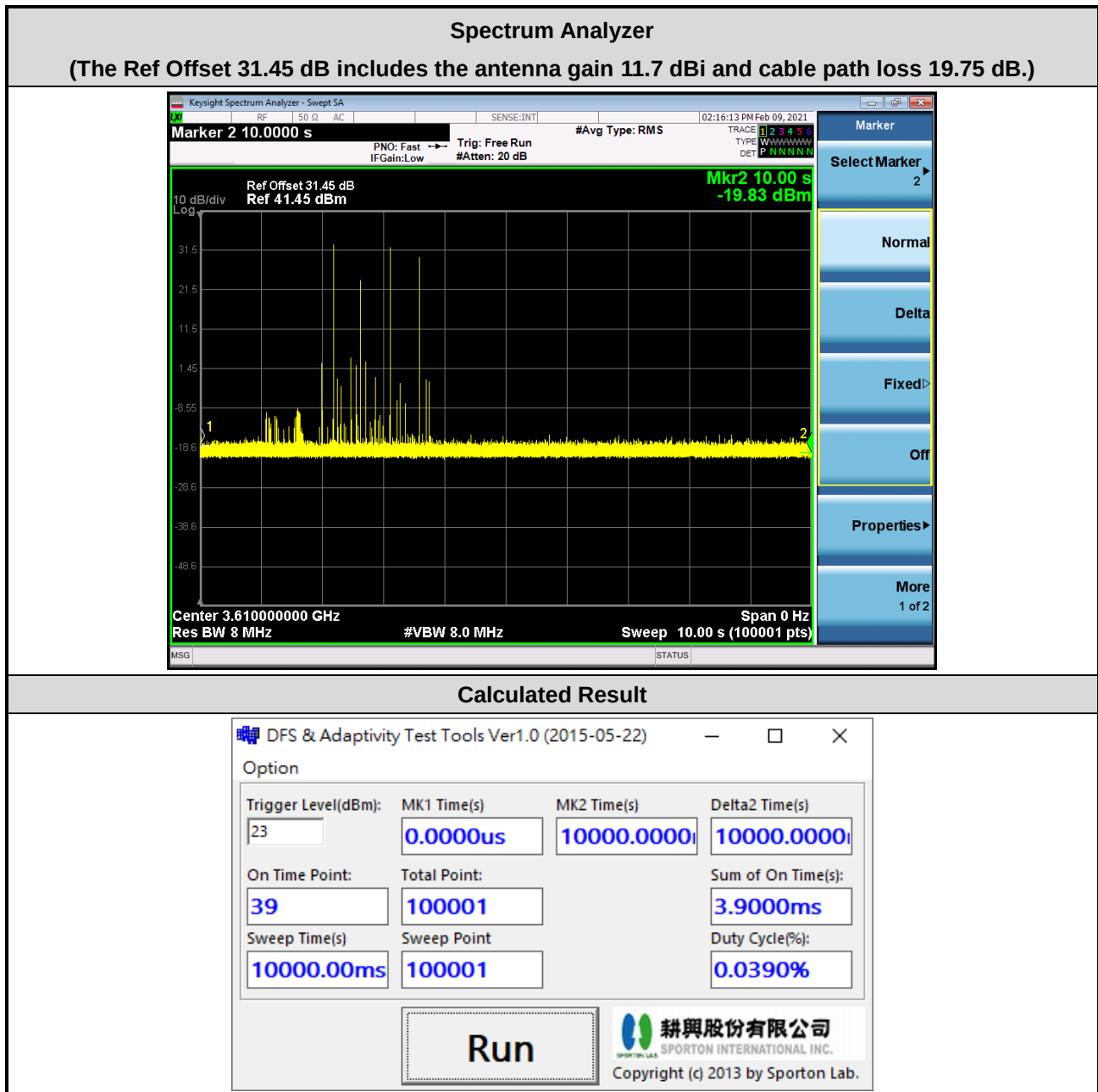
#	Test Execution Steps	Results
1	Ensure the following conditions are met for test entry: • UUT has successfully completed SAS Discovery and Authentication with the SAS Test Harness • UUT has registered with the SAS, with CBSD ID = C • UUT has a single valid grant G with parameters {lowFrequency = FL, highFrequency = FH, maxEirp = Pi}, with grant in AUTHORIZED state, and grantExpireTime set to a value far past the duration of this test case <i>Note: in order for the UUT to request a grant with the parameters {lowFrequency, highFrequency, maxEirp}, the SAS Test Harness may need to provide appropriate guidance in the availableChannel object of the spectrumInquiry response message, and the operationParam object of the grant response message. Alternately, the UUT vendor may provide the ability to set those parameters on the UUT so that the UUT will request a grant with those parameters.</i>	--
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: ○ 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, P_i. The RF measurement method is out of scope of this document, but may include additional configuration of the UUT, as required, to fulfil the requirements of the power measurement method. <i>Note: it may be required for the vendor to provide a method or configuration to bring the UUT to a mode which is required by the measurement methodology. Any such mode is vendor-specific and depends upon UUT behavior and the measurement methodology.</i>	PASS
---	--	------

Note: For test 4.26, please find the Appendix B for RF measurement plots.

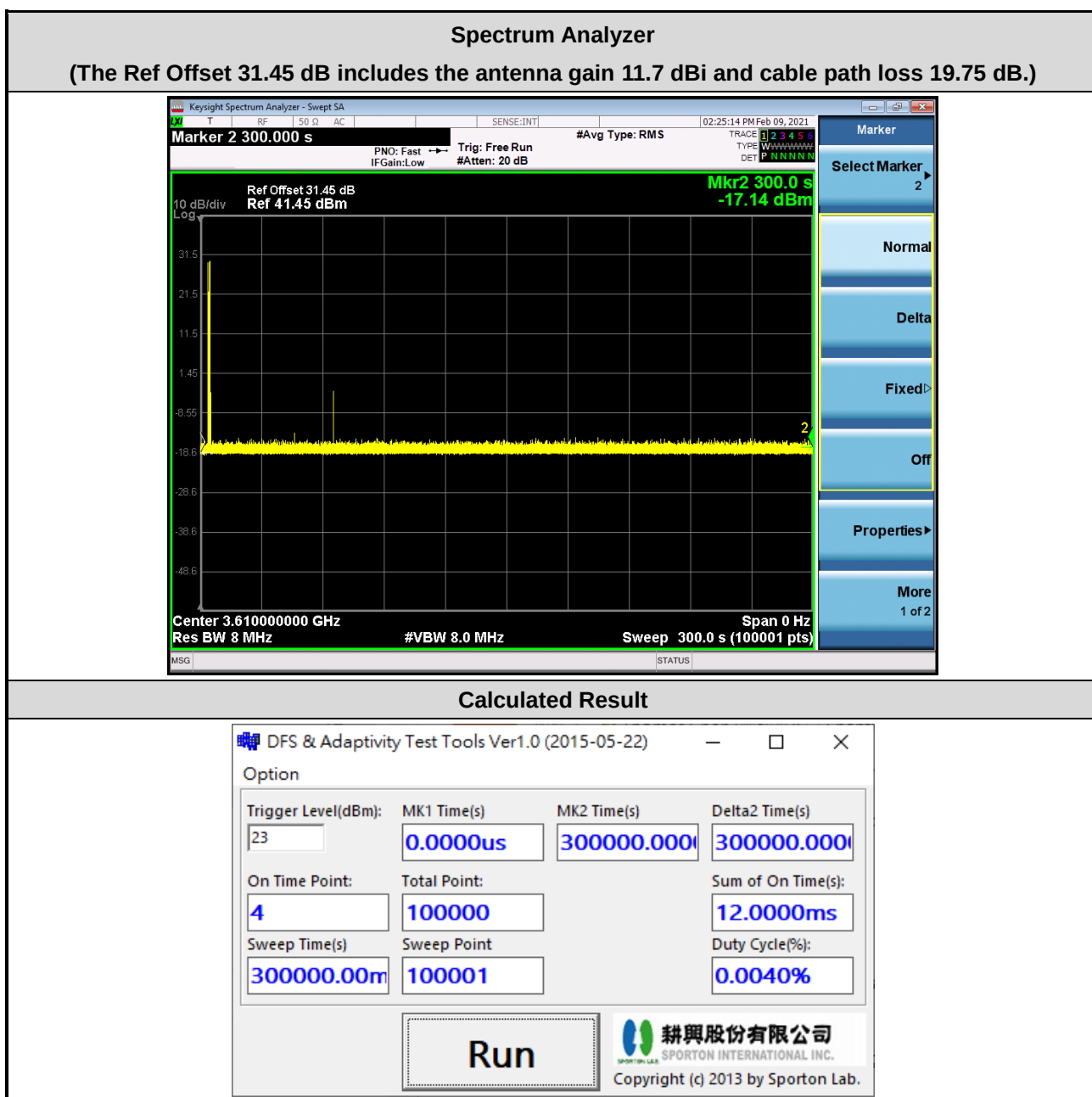
5. Result of Time test for getting Grant

5.1 1 second within any 10-second period



The sum of On Time (aggregated time from marker 1 to 2): 3.9ms < 1s, Pass.

5.2 10 seconds within any 300-second period

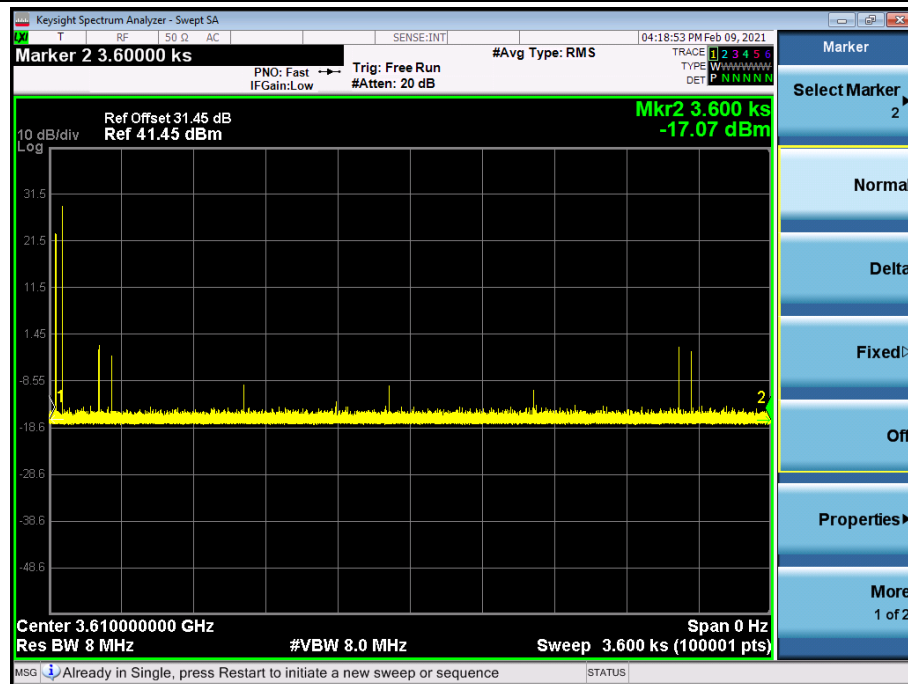


The sum of On Time (aggregated time from marker 1 to 2): 12ms < 10s, Pass.

5.3 20 seconds within any 3600-second period

Spectrum Analyzer

(The Ref Offset 31.45 dB includes the antenna gain 11.7 dBi and cable path loss 19.75 dB.)



Calculated Result

DFS & Adaptivity Test Tools Ver1.0 (2015-05-22)

Option

Trigger Level(dBm):	MK1 Time(s)	MK2 Time(s)	Delta2 Time(s)
23	0.0000us	3600000.00	3600000.00
On Time Point:	Total Point:	Sum of On Time(s):	
4	100000	144.0000ms	
Sweep Time(s)	Sweep Point	Duty Cycle(%)	
3600000.00	100001	0.0040%	

Run

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The sum of On Time (aggregated time from marker 1 to 2): 144ms < 20s, Pass.

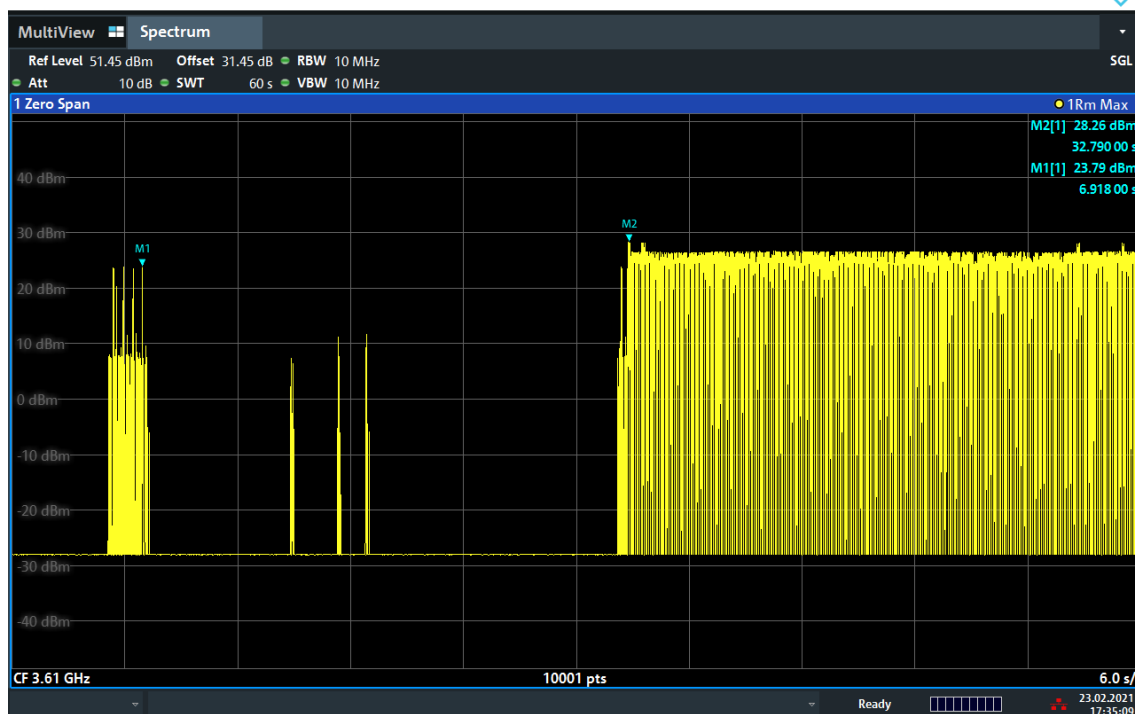
6. UUT registers with the SAS irrespective of power levels

6.1 Test Procedure

1. Set the SAS test harness to grant UUT with the highest EIRP higher than 23dBm.
2. Check if UUT has successfully registered with SAS Test Harness, when operating EIRP higher than 23 dBm.
3. Set the SAS test harness to grant UUT with EIRP less than 23 dBm, repeatedly.
4. Check if UUT has successfully registered with SAS Test Harness, when operating EIRP less than 23 dBm.

6.2 Result

The UUT can register with SAS under above operating conditions to meet the FCC criteria that the UUT will register with the SAS irrespective of power levels at which the device is set to operate – even below 23 dBm.



Marker 1: The UUT successfully registered with SAS Test Harness, when operating 23.79 dBm EIRP.

Marker 2: After the UUT granted/authorized by the SAS, it can transmit with power less than the maxEIRP granted from SAS.

The UUT successfully registered with SAS Test Harness, when operating EIRP higher than 23 dBm

Test Result: PASS

Note: The total offset 31.45 dB includes the antenna gain 11.7 dBi and cable path loss 19.75 dB.



14:07:33 22.02.2021

Marker 1: The UUT successfully registered with SAS Test Harness, when operating 18.63 dBm EIRP.

Appendix B. RF measurement plots

Appendix B.1 [WINNF.PT.C.HBT] UUT RF Transmit Power Measurement

Report Clause 4.26 [WINNF.PT.C.HBT] UUT RF Transmit Power Measurement

Center Frequency [MHz]	Bandwidth [MHz]	Granted MaxEIRP [dBm/MHz]	Conducted PSD [dBm/MHz]	Antenna Gain [dBi]	UUT MaxEIRP [dBm/MHz]
3560	20	32.1	18.47	11.7	30.17 dBm
3610			17.43		29.13 dBm
3690			17.92		29.62 dBm
3555	10		19.83		31.53 dBm
3605			19.89		31.59 dBm
3695			18.71		30.41 dBm

Note 1: The total path loss is offset with 19.75 dB. The antenna gain is 11.7 dBi.

Note 2: The MaxEIRP Pi declared by manufacturer only supports one power level step, i.e. 32.1dBm/MHz as MaxEIRP. If any request from SAS to perform power control level change below 32.1dBm/MHz, the UUT would cease transmission immediately on that channel. Please see the results at Appendix B.2.



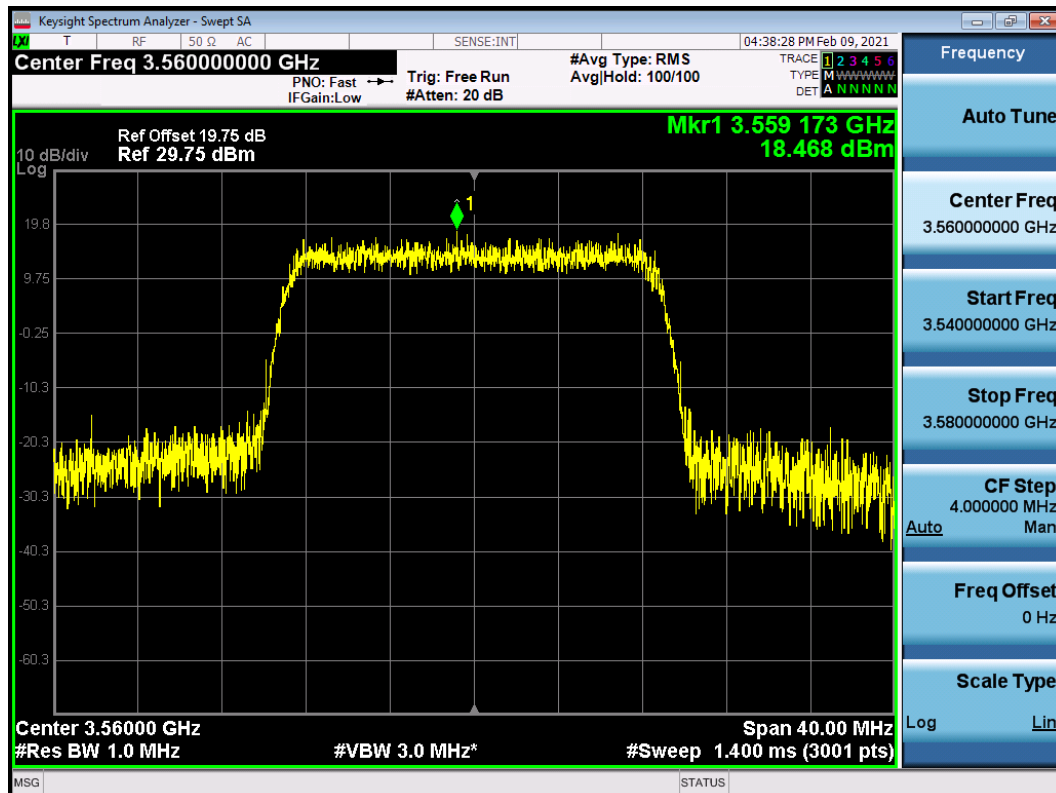
Appendix B.1.1 Test Procedure

[WINNF.PT.C.HBT] UUT RF Transmit Power Measurement defined in clause 4.26 of this test report.

Appendix B.1.2 Test Result

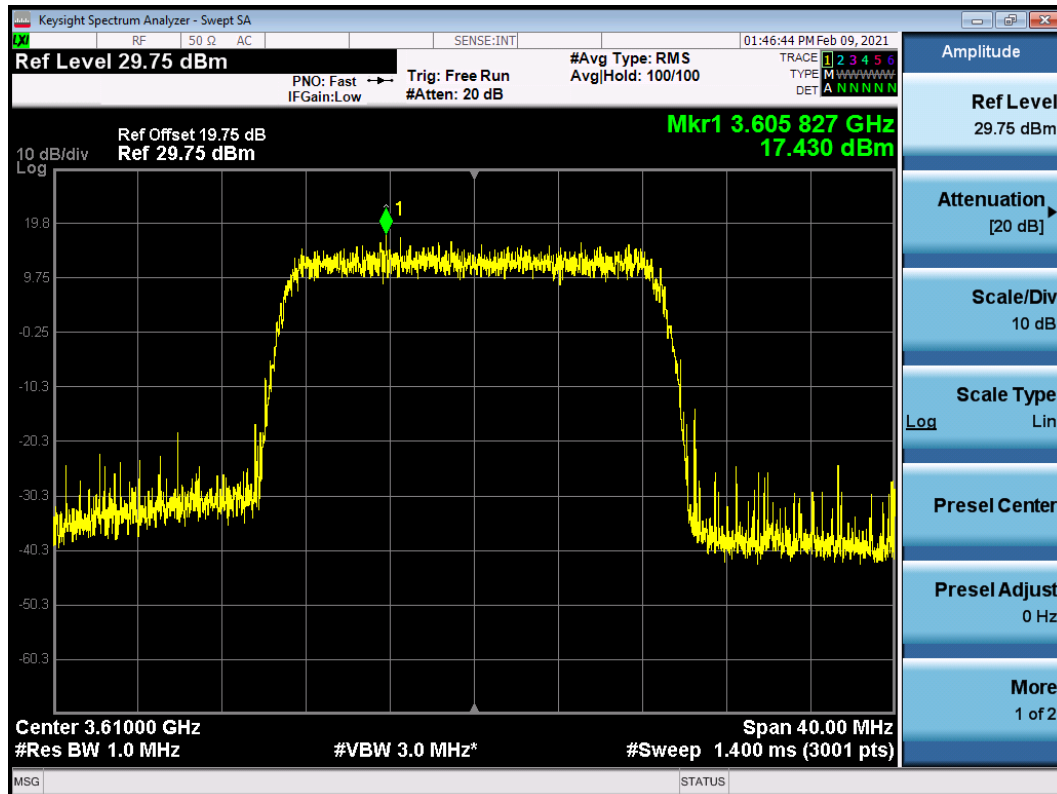
SAS Granted MaxEIRP 32.1 [dBm/MHz]

UUT MaxEIRP 30.17 [dBm/MHz]



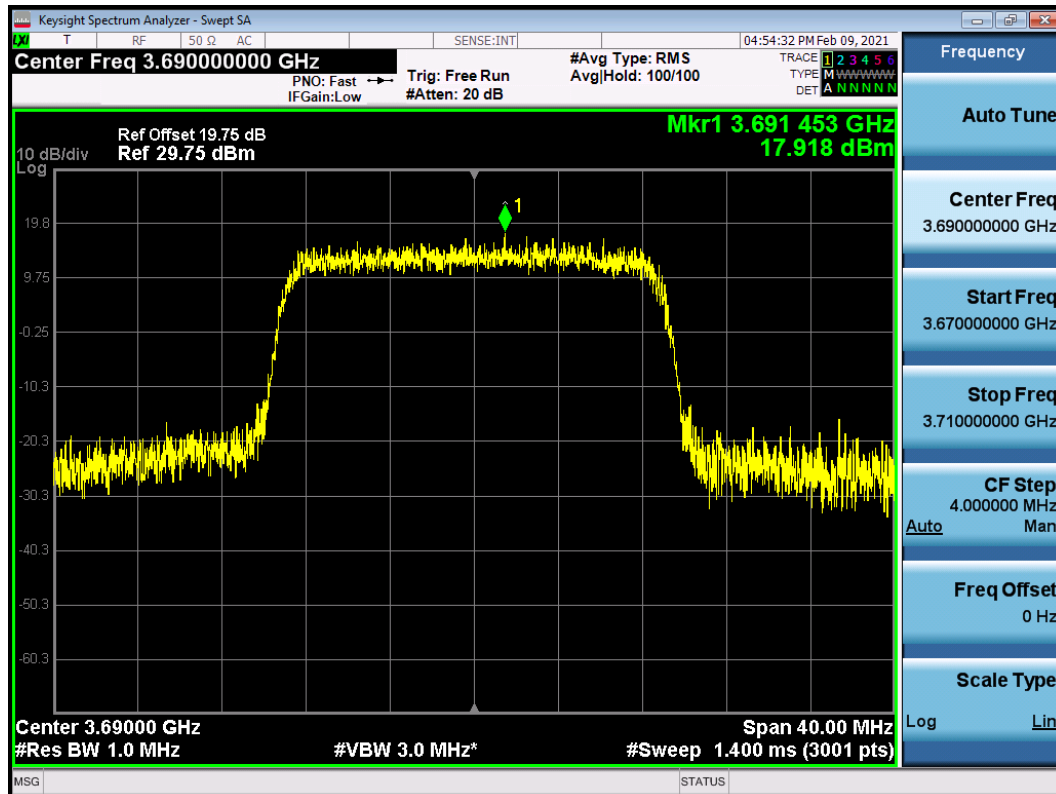
SAS Granted MaxEIRP 32.1 [dBm/MHz]

UUT MaxEIRP 29.13 [dBm/MHz]



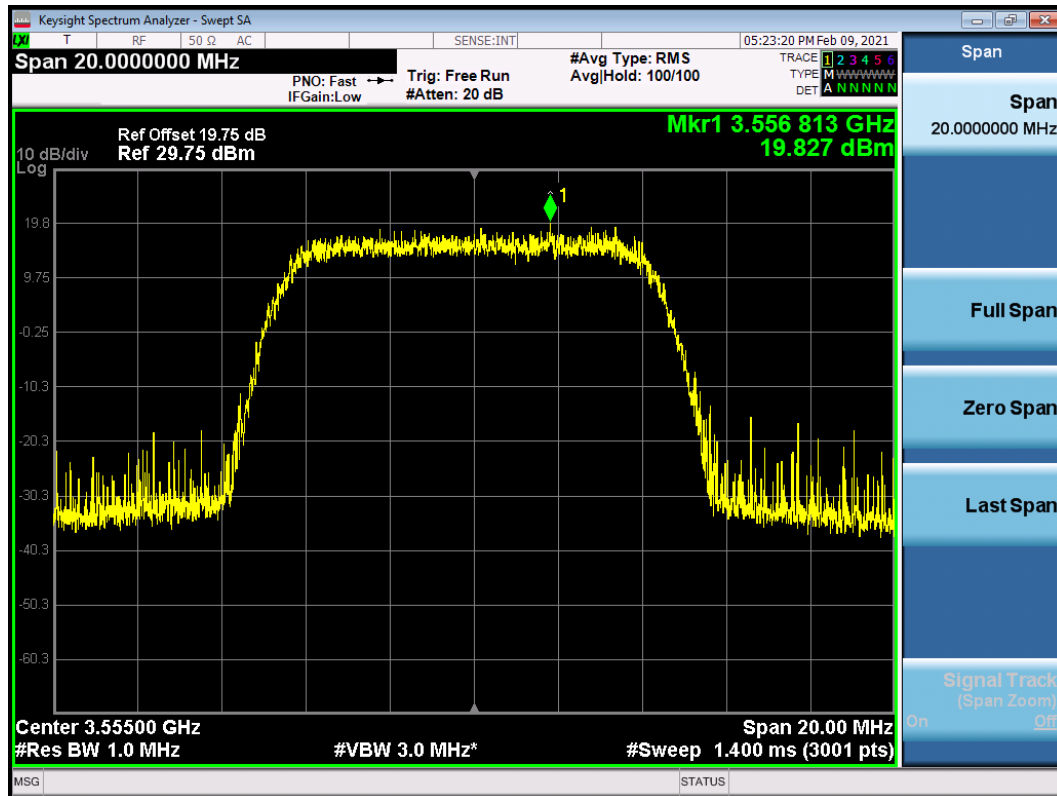
SAS Granted MaxEIRP 32.1 [dBm/MHz]

UUT MaxEIRP 29.62 [dBm/MHz]



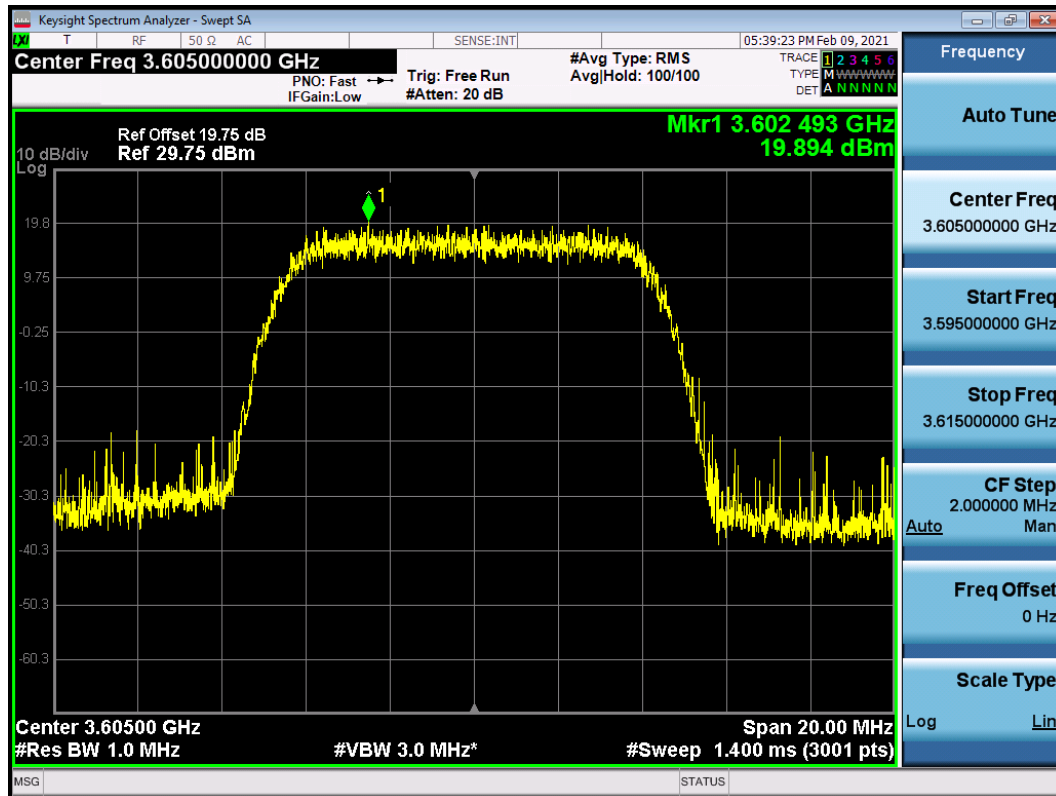
SAS Granted MaxEIRP 32.1 [dBm/MHz]

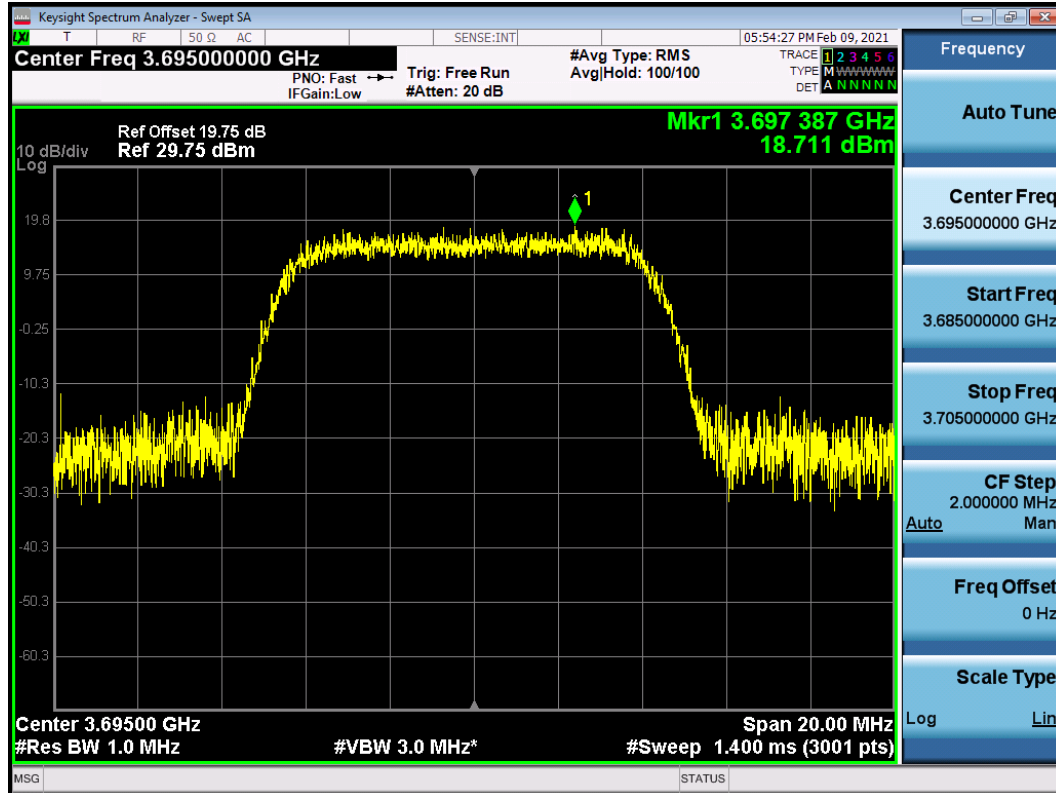
UUT MaxEIRP 31.53 [dBm/MHz]



SAS Granted MaxEIRP 32.1 [dBm/MHz]

UUT MaxEIRP 31.59 [dBm/MHz]



SAS Granted MaxEIRP 32.1 [dBm/MHz]
UUT MaxEIRP 30.41 [dBm/MHz]


Appendix B.2 Unsuccessful responses from the SAS Test Harness

According to the KDB 940660 D02 CPE-CBSD Handshake Procedures v02, "After the CPE-CBSD is registered and authorized by the SAS, the CPE-CBSD can start data transmission in the CBRS band using the channels and power levels authorized by the SAS." The result below is provided as a means to ensure that evidence is provided showing compliance to this requirement.

This test is to verify if any request from SAS to perform power control level change below 32.1dBm/MHz, the UUT would cease transmission immediately on the channel.

Unsuccessful responses from the SAS Test Harness by setting SAS granted MaxEIRP below 32.1 dBm/MHz.

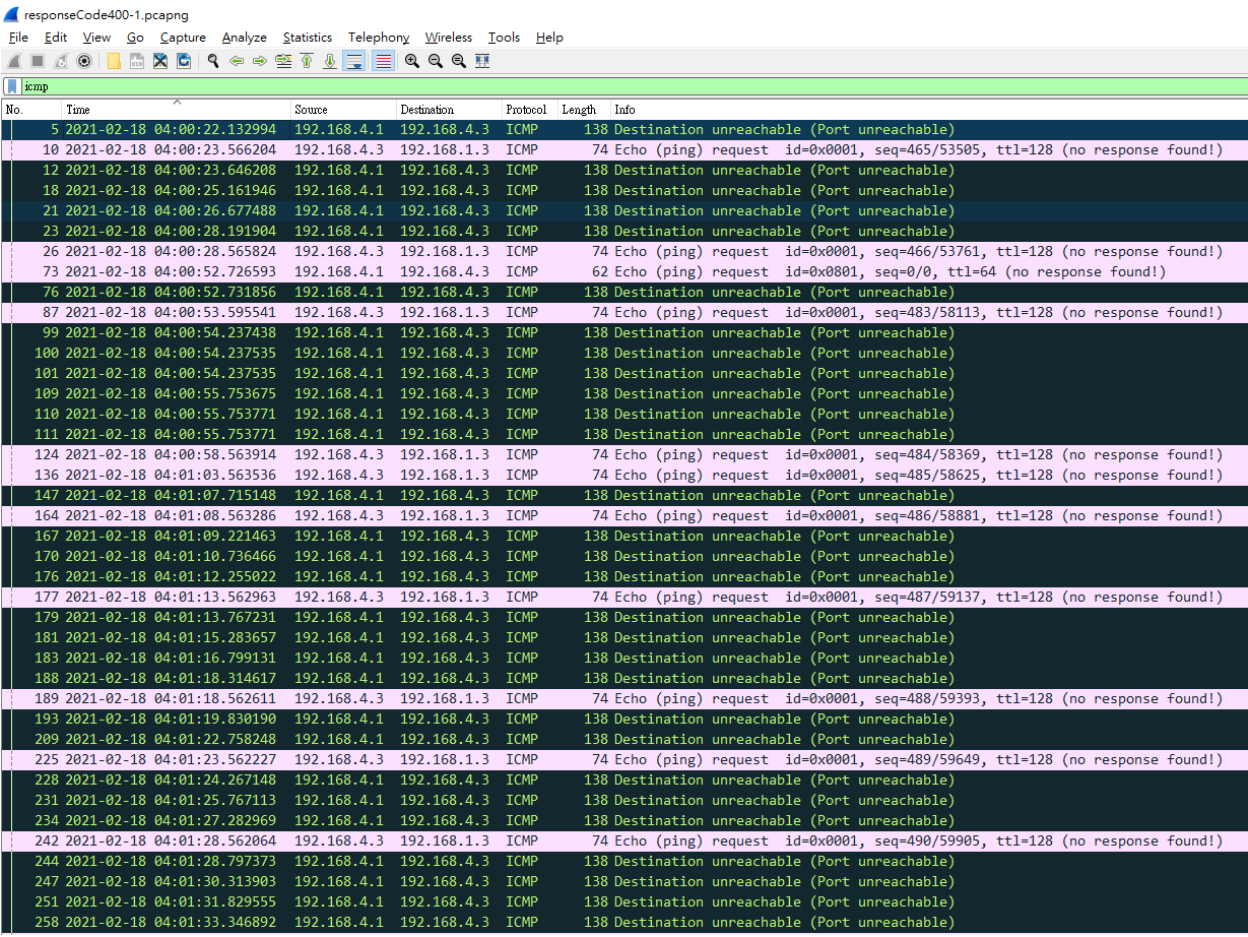
Center Frequency [MHz]	Bandwidth [MHz]	Granted MaxEIRP [dBm/MHz]	Monitor the data transmission of the UUT until 60 seconds after responseCode = 400, received from SAS	Result
3610	20	32	CPE-CBSD UUT shall not transmit user traffic	PASS

B.2.1 Test Procedure

1. Make SAS test harness to grant UUT power level below 32.1 dBm EIRP.
Set SAS granted MaxEIRP: 32 dBm/MHz.
2. Ensure the UUT registered successfully with SAS Test Harness, with cbsdId = C.
3. UUT sends valid Grant Request.
4. SAS Test Harness sends a Grant Response message, including:
cbsdId=C, responseCode = 400,
5. Monitor the data transmission of the UUT from start of test until 60 seconds after Step 4 is complete.

B.2.2 Test Result

CPE-CBSD UUT shall not transmit user traffic.

Monitor data transmission via the Wireshark						
						
No.	Time	Source	Destination	Protocol	Length	Info
5	2021-02-18 04:00:22.132994	192.168.4.1	192.168.4.3	ICMP	138	Destination unreachable (Port unreachable)
10	2021-02-18 04:00:23.566204	192.168.4.3	192.168.1.3	ICMP	74	Echo (ping) request id=0x0001, seq=465/53505, ttl=128 (no response found!)
12	2021-02-18 04:00:23.646208	192.168.4.1	192.168.4.3	ICMP	138	Destination unreachable (Port unreachable)
18	2021-02-18 04:00:25.161946	192.168.4.1	192.168.4.3	ICMP	138	Destination unreachable (Port unreachable)
21	2021-02-18 04:00:26.677488	192.168.4.1	192.168.4.3	ICMP	138	Destination unreachable (Port unreachable)
23	2021-02-18 04:00:28.191904	192.168.4.1	192.168.4.3	ICMP	138	Destination unreachable (Port unreachable)
26	2021-02-18 04:00:28.565824	192.168.4.3	192.168.1.3	ICMP	74	Echo (ping) request id=0x0001, seq=466/53761, ttl=128 (no response found!)
73	2021-02-18 04:00:52.726593	192.168.4.1	192.168.4.3	ICMP	62	Echo (ping) request id=0x0801, seq=0/0, ttl=64 (no response found!)
76	2021-02-18 04:00:52.731856	192.168.4.1	192.168.4.3	ICMP	138	Destination unreachable (Port unreachable)
87	2021-02-18 04:00:53.595541	192.168.4.3	192.168.1.3	ICMP	74	Echo (ping) request id=0x0001, seq=483/58113, ttl=128 (no response found!)
99	2021-02-18 04:00:54.237438	192.168.4.1	192.168.4.3	ICMP	138	Destination unreachable (Port unreachable)
100	2021-02-18 04:00:54.237535	192.168.4.1	192.168.4.3	ICMP	138	Destination unreachable (Port unreachable)
101	2021-02-18 04:00:54.237535	192.168.4.1	192.168.4.3	ICMP	138	Destination unreachable (Port unreachable)
109	2021-02-18 04:00:55.753675	192.168.4.1	192.168.4.3	ICMP	138	Destination unreachable (Port unreachable)
110	2021-02-18 04:00:55.753771	192.168.4.1	192.168.4.3	ICMP	138	Destination unreachable (Port unreachable)
111	2021-02-18 04:00:55.753771	192.168.4.1	192.168.4.3	ICMP	138	Destination unreachable (Port unreachable)
124	2021-02-18 04:00:58.563914	192.168.4.3	192.168.1.3	ICMP	74	Echo (ping) request id=0x0001, seq=484/58369, ttl=128 (no response found!)
136	2021-02-18 04:01:03.563536	192.168.4.3	192.168.1.3	ICMP	74	Echo (ping) request id=0x0001, seq=485/58625, ttl=128 (no response found!)
147	2021-02-18 04:01:07.715148	192.168.4.1	192.168.4.3	ICMP	138	Destination unreachable (Port unreachable)
164	2021-02-18 04:01:08.563286	192.168.4.3	192.168.1.3	ICMP	74	Echo (ping) request id=0x0001, seq=486/58881, ttl=128 (no response found!)
167	2021-02-18 04:01:09.221463	192.168.4.1	192.168.4.3	ICMP	138	Destination unreachable (Port unreachable)
170	2021-02-18 04:01:10.736466	192.168.4.1	192.168.4.3	ICMP	138	Destination unreachable (Port unreachable)
176	2021-02-18 04:01:12.255022	192.168.4.1	192.168.4.3	ICMP	138	Destination unreachable (Port unreachable)
177	2021-02-18 04:01:13.562963	192.168.4.3	192.168.1.3	ICMP	74	Echo (ping) request id=0x0001, seq=487/59137, ttl=128 (no response found!)
179	2021-02-18 04:01:13.767231	192.168.4.1	192.168.4.3	ICMP	138	Destination unreachable (Port unreachable)
181	2021-02-18 04:01:15.283657	192.168.4.1	192.168.4.3	ICMP	138	Destination unreachable (Port unreachable)
183	2021-02-18 04:01:16.799131	192.168.4.1	192.168.4.3	ICMP	138	Destination unreachable (Port unreachable)
188	2021-02-18 04:01:18.314617	192.168.4.1	192.168.4.3	ICMP	138	Destination unreachable (Port unreachable)
189	2021-02-18 04:01:18.562611	192.168.4.3	192.168.1.3	ICMP	74	Echo (ping) request id=0x0001, seq=488/59393, ttl=128 (no response found!)
193	2021-02-18 04:01:19.830190	192.168.4.1	192.168.4.3	ICMP	138	Destination unreachable (Port unreachable)
209	2021-02-18 04:01:22.758248	192.168.4.1	192.168.4.3	ICMP	138	Destination unreachable (Port unreachable)
225	2021-02-18 04:01:23.562227	192.168.4.3	192.168.1.3	ICMP	74	Echo (ping) request id=0x0001, seq=489/59649, ttl=128 (no response found!)
228	2021-02-18 04:01:24.267148	192.168.4.1	192.168.4.3	ICMP	138	Destination unreachable (Port unreachable)
231	2021-02-18 04:01:25.767113	192.168.4.1	192.168.4.3	ICMP	138	Destination unreachable (Port unreachable)
234	2021-02-18 04:01:27.282969	192.168.4.1	192.168.4.3	ICMP	138	Destination unreachable (Port unreachable)
242	2021-02-18 04:01:28.562064	192.168.4.3	192.168.1.3	ICMP	74	Echo (ping) request id=0x0001, seq=490/59905, ttl=128 (no response found!)
244	2021-02-18 04:01:28.797373	192.168.4.1	192.168.4.3	ICMP	138	Destination unreachable (Port unreachable)
247	2021-02-18 04:01:30.313903	192.168.4.1	192.168.4.3	ICMP	138	Destination unreachable (Port unreachable)
251	2021-02-18 04:01:31.829555	192.168.4.1	192.168.4.3	ICMP	138	Destination unreachable (Port unreachable)
258	2021-02-18 04:01:33.346892	192.168.4.1	192.168.4.3	ICMP	138	Destination unreachable (Port unreachable)
CPE-CBSD UUT shall not transmit user traffic						
Test result: PASS						

—THE END—