



# ELEMENT WASHINGTON DC LLC

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## TEST REPORT CBSD-SAS Interoperability

**Applicant Name:**  
Samsung Electronics Co., Ltd.  
129, Samsung-ro,  
Yeongtong-gu, Suwon-si  
Gyeonggi-do, 16677, Korea

**Date of Testing:**  
3/1/2024 – 3/21/2024  
**Test Report Issue Date:**  
4/5/2024  
**Test Site/Location:**  
Element lab. Columbia, MD, USA  
**Test Report Serial No.:**  
1M2402190010-01.A3L

<b>FCC ID:</b>	<b>A3LMT6402-48A</b>
<b>APPLICANT:</b>	<b>Samsung Electronics Co., Ltd.</b>

<b>Application Type:</b>	Class III Permissive Change
<b>Original Grant Date:</b>	8/14/2019
<b>Model:</b>	MT6402-48A
<b>EUT Type:</b>	MMU (MT6402)
<b>Frequency Range:</b>	3550 – 3700 MHz
<b>FCC Classification:</b>	Citizens Band Category A and B Devices (CBD)
<b>FCC Rule Part(s):</b>	Part 96
<b>Test Procedure(s):</b>	WINNF-TS-0122-V1.0.2, CBRSA-TS-9001 V.1.0.0
<b>Class III Permissive Change:</b>	Adding NR operation and increasing LTE SAS Granted EIRP

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in the test procedures listed above. Test results reported herein relate only to the item(s) tested.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

RJ Ortanez  
Executive Vice President



<b>FCC ID:</b> A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1M2402190010-01.A3L	<b>Test Dates:</b> 3/1/2024-3/21/2024	<b>EUT Type:</b> MMU (MT6402)	Page 1 of 60

## TABLE OF CONTENTS

1.0	INTRODUCTION.....	3
1.1	Scope.....	3
1.2	Element Test Location .....	3
1.3	Test Facility / Accreditations .....	3
2.0	PRODUCT INFORMATION .....	4
2.1	Equipment Description.....	4
2.2	Device Capabilities .....	4
2.3	Test Configuration .....	4
2.4	Modifications .....	4
3.0	TEST EQUIPMENT CALIBRATION DATA.....	5
4.0	ENVIRONMENTAL CONDITIONS .....	6
5.0	EVALUATION PROCEDURE .....	7
6.0	TEST Summary.....	8
6.1	Summary .....	8
7.0	CONCLUSION .....	10
APPENDIX A – TEST RESULT AND DATA .....		11
A1	[WINNF.FT.C.REG.1] MULTI-STEP REGISTRATION.....	11
A3	[WINNF.FT.C.REG.8] MISSING REQUIRED PARAMETERS (RESPONSECODE 102) .....	13
A4	[WINNF.FT.C.REG.10] PENDING REGISTRATION (RESPONSECODE 200).....	14
A5	[WINNF.FT.C.REG.12] INVALID PARAMETER (RESPONSECODE 103).....	15
A6	[WINNF.FT.C.REG.14] BLACKLISTED CBSD (RESPONSECODE 101).....	16
A7	[WINNF.FT.C.REG.16] UNSUPPORTED SAS PROTOCOL VERSION (RESPONSECODE 100).....	17
A8	[WINNF.FT.C.REG.18] GROUP ERROR (RESPONSECODE 201) .....	18
A9	[WINNF.FT.C.GRA.1] UNSUCCESSFUL GRANT RESPONSECODE=400 (INTERFERENCE).....	19
A10	[WINNF.FT.C.GRA.2] UNSUCCESSFUL GRANT RESPONSECODE=401 (GRANT_CONFLICT).....	20
A11	[WINNF.FT.C.HBT.1] HEARTBEAT SUCCESS CASE (FIRST HEARTBEAT RESPONSE).....	21
A12	[WINNF.FT.C.HBT.3] HEARTBEAT RESPONSECODE=105 (DEREGISTER).....	24
A13	[WINNF.FT.C.HBT.4] HEARTBEAT RESPONSECODE=500 (TERMINATED_GRANT) .....	26
A14	[WINNF.FT.C.HBT.5] HEARTBEAT RESPONSECODE=501 (SUSPENDED_GRANT) IN FIRST HEARTBEAT RESPONSE..	28
A15	[WINNF.FT.C.HBT.6] HEARTBEAT RESPONSECODE=501 (SUSPENDED_GRANT) IN SUBSEQUENT HEARTBEAT RESPONSE.....	30
A16	[WINNF.FT.C.HBT.7] HEARTBEAT RESPONSECODE=502 (UNSYNC_OP_PARAM) .....	32
A17	[WINNF.FT.C.HBT.9] HEARTBEAT RESPONSE ABSENT (FIRST HEARTBEAT) .....	34
A18	[WINNF.FT.C.HBT.10] HEARTBEAT RESPONSE ABSENT (SUBSEQUENT HEARTBEAT).....	36
A19	[WINNF.FT.C.RLQ.1] SUCCESSFUL RELINQUISHMENT .....	38
A20	[WINNF.FT.C.MES.1] REGISTRATION RESPONSE CONTAINS MEASREPORTCONFIG .....	40
A21	[WINNF.FT.C.DRG.1] SUCCESSFUL DEREGISTRATION.....	42
A22	[WINNF.FT.C.SCS.1] SUCCESSFUL TLS CONNECTION BETWEEN UUT AND SAS TEST HARNESS.....	44
A23	[WINNF.FT.C.SCS.2] TLS FAILURE DUE TO REVOKED CERTIFICATE .....	46
A24	[WINNF.FT.C.SCS.3] TLS FAILURE DUE TO EXPIRED SERVER CERTIFICATE .....	48
A25	[WINNF.FT.C.SCS.4] TLS FAILURE WHEN SAS TEST HARNESS CERTIFICATE IS ISSUED BY AN UNKNOWN CA.....	50
A26	[WINNF.FT.C.SCS.5] TLS FAILURE WHEN CERTIFICATE AT THE SAS TEST HARNESS IS CORRUPTED .....	52
A27	[WINNF.PT.C.HBT.1] UUT RF TRANSMIT POWER MEASUREMENT .....	54
APPENDIX B – TEST LOGS .....		59
APPENDIX C – TEST SETUP .....		60

<b>FCC ID:</b> A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1M2402190010-01.A3L	<b>Test Dates:</b> 3/1/2024-3/21/2024	<b>EUT Type:</b> MMU (MT6402)	Page 2 of 60

## 1.0 INTRODUCTION

### 1.1 Scope

Measurement and determination of compliance with the technical rules and regulations of the Federal Communications Commission.

### 1.2 Element Test Location

These measurement tests were conducted at the Element laboratory located at 7185 Oakland Mills Road, Columbia, MD 21046.

### 1.3 Test Facility / Accreditations

**Measurements were performed at Element lab located in Columbia, MD 21046, U.S.A.**

- Element is a CBRS Alliance (OnGo) Approved Test Lab
- Element is a WInnForum Approved Test Lab
- Element is an ISO 17025-2017 accredited test facility under the American Association for Laboratory Accreditation (A2LA) with Certificate number 2041.01 for CBRS Alliance Certification Test Plan and WInnForum Conformance and Performance Test Technical Standard.
- Element is an ISO 17025-2017 accredited test facility under the American Association for Laboratory Accreditation (A2LA) with Certificate number 2041.01 for Specific Absorption Rate (SAR), Hearing Aid Compatibility (HAC) testing, where applicable, and Electromagnetic Compatibility (EMC) testing for FCC and Innovation, Science, and Economic Development Canada rules.
- Element TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC 17065-2012 by A2LA (Certificate number 2041.03) in all scopes of FCC Rules and ISED Standards (RSS).
- Element facility is a registered (2451B) test laboratory with the site description on file with ISED.
- Element Washington DC LLC is a Recognized U.S. Certification Assessment Body (CAB # US0110) for ISED Canada as designated by NIST under the U.S. and Canada Mutual Recognition Agreement.

FCC ID: A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 3 of 60

## 2.0 PRODUCT INFORMATION

### 2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung MMU (MT6402) FCC ID: A3LMT6402-48A**. The test data contained in this report pertains only to CBSD-SAS interoperability. The EUT can operate as a Category A or B CBSD depending on the installation and the antenna used. The EUT is not a domain proxy. This is a 64-port device where all outputs are equal.

**Test Device Serial Number(s):** S615501010

**Test Device Hardware Version:**

**Test Device Software Version:**

### 2.2 Device Capabilities

This device contains the following capabilities:

LTE B48, NR n48

This device supports the following conditional features:

	Conditional Test Case Definitions	Supported
C1	Mandatory for UUT which supports multi-step registration message	<input checked="" type="checkbox"/>
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.	<input type="checkbox"/>
C3	Mandatory for UUT which supports single-step registration containing CPI-signed data in the registration message.	<input type="checkbox"/>
C4	Mandatory for UUT which supports RECEIVED_POWER_WITHOUT_GRANT measurement report type.	<input checked="" type="checkbox"/>
C5	Mandatory for UUT which supports RECEIVED_POWER_WITH_GRANT measurement report type.	<input type="checkbox"/>
C6	Mandatory for UUT which supports parameter change being made at the UUT and prior to sending a deregistration	<input type="checkbox"/>

**Table 2-1. Conditional Features**

### 2.3 Test Configuration

The EUT was connected to the SAS Test Harness developed by WINNF WG4-CBSD. The SAS Test Harness (V1.0.0.2) provided by CBRS Alliance was used. The SAS Test Harness is synchronized to UTC time. The full WINNF-TS-0122 test scope was performed on NR. WINNF.PT.C.HBT.1 was performed for LTE.

### 2.4 Modifications

No modifications were made to EUT during testing.

FCC ID: A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 4 of 60

### 3.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST).

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	N9020A	MXA Signal Analyzer	3/15/2023	Annual	3/15/2024	US46470561
Dell	Latitude 5580	Test Harness Laptop	N/A	N/A	N/A	N/A
Keysight	N9030A	PXA Signal Analyzer	8/7/2023	Annul	8/7/2024	MY54490576

**Table 3-1 Annual Test Equipment Calibration Schedule**

**Note:**

Two spectrum analyzers were used for this testing due to the calibration due dates for each analyzer. Only calibrated analyzers were used for all testing.

FCC ID: A3LMT6402-48A	MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 5 of 60

## 4.0 ENVIRONMENTAL CONDITIONS

The temperature is controlled within range of 15°C to 35°C. The relative humidity is controlled within range of 10% to 75%. The atmospheric pressure is monitored within the range 86-106kPa (860-1060mbar).

<b>FCC ID:</b> A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1M2402190010-01.A3L	<b>Test Dates:</b> 3/1/2024-3/21/2024	<b>EUT Type:</b> MMU (MT6402)	Page 6 of 60

## 5.0 EVALUATION PROCEDURE

The measurement procedure described in KDB 940660 D01 v03 and WINNF-TS-0122-V1.0.2 was used in the measurement of the EUT.

**Deviation from measurement procedure.....None**

<b>FCC ID:</b> A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1M2402190010-01.A3L	<b>Test Dates:</b> 3/1/2024-3/21/2024	<b>EUT Type:</b> MMU (MT6402)	Page 7 of 60

## 6.0 TEST SUMMARY

### 6.1 Summary

Company Name: Samsung Electronics

FCC ID: A3LMT6402-48A

FCC Part Section(s)	KDB940660 D01 Section 3.3 a)	Test Case Description	WinnForum Test Case	Test Result
96.39 (c)	1	Confirm that the device will only transmit after it receives authorization from a SAS	WINNF.FT.C.REG.1 WINNF.FT.C.REG.8 WINNF.FT.C.REG.10 WINNF.FT.C.REG.12 WINNF.FT.C.REG.14 WINNF.FT.C.REG.16 WINNF.FT.C.REG.18 WINNF.FT.C.GRA.1 WINNF.FT.C.GRA.2 WINNF.FT.C.HBT.5	Pass
96.39 (c)	2	Check 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.C.REG.1 WINNF.FT.C.REG.8 WINNF.FT.C.REG.10 WINNF.FT.C.REG.12 WINNF.FT.C.REG.14 WINNF.FT.C.REG.16 WINNF.FT.C.REG.18	Pass
96.39(c)(1)	3	Confirm that the device changes its operating power and/or channel in response to a command from the SAS.	WINNF.FT.C.HBT.1	Pass
96.39	4	Confirm that the device correctly configures based on the different license classes	N/A	Pass
96.39(c)(1)	5	Confirm that the device transmits at a power level less than or equal to the maximum power level approved by the SAS.	WINNF.PT.C.HBT.1	Pass
96.39(b)(c)	6	Confirm that the device transmits with a bandwidth less than or equal to the SAS specified bandwidth.	WINNF.FT.C.HBT.1	Pass
96.39(c)(2)	7	Confirm that the device transmits on the SAS specified frequency.	WINNF.FT.C.HBT.1	Pass
96.39(c)(2)	8	Confirm that the device stops transmission in response to a command from the SAS, within a period as required by Part 96.	WINNF.FT.C.HBT.3 WINNF.FT.C.HBT.4 WINNF.FT.C.HBT.6 WINNF.FT.C.HBT.7 WINNF.FT.C.HBT.10 WINNF.FT.C.RLQ.1 WINNF.FT.C.DRG.1	Pass

**Table 6-1. Summary of Test Results**

FCC ID: A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 8 of 60



96.39 (c)	9	Confirm that the device sends measurements data in response to the command from the SAS.	WINNF.FT.C.MES.1	Pass
96.39(a)	10	For devices with geo-location, confirm that it notifies the SAS of a new location when it is beyond the required distance parameter ( $\pm 50$ m) within the required time frame.	N/A	N/A
96.39 (c)	11	Confirm that the device is capable of reporting the signal level (measurement data) and frequency to SAS.	WINNF.FT.C.MES.1	Pass
96 E	12	When CBSDs communicate through a management system, confirm compliance with all requirements.	N/A	Pass
96.39	13	When communication between the CBSD and SAS is lost: i) Describe how the CBSD would react if the communications between the device and the SAS is lost. Confirm that the CBSD stops transmission once it loses the link to the SAS. ii) Describe the process for re-establishment of the communications and confirm that the CBSD acts accordingly. iii) Confirm power-on restart process for registration (re-registration) occurs as expected. iv) Confirm the process for de-registration occurs as expected.	WINNF.FT.C.HBT.9 WINNF.FT.C.HBT.10	Pass
96.39(f)	KDB940660 D01 Section 4	SAS and Device Security Requirements	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	Pass
96.39(e)	N/A	The CBSD must report to the SAS which available channels of frequencies it will use	WINNF.PT.C.HBT.1 WINNF.FT.C.HBT.1 WINNF.FT.C.HBT.3 WINNF.FT.C.HBT.4 WINNF.FT.C.HBT.5 WINNF.FT.C.HBT.7 WINNF.FT.C.HBT.9 WINNF.FT.C.HBT.10 WINNF.FT.C.RLQ.1 WINNF.FT.C.DRG.1	Pass

**Notes:**

- Test cases denoted as “N/A” in the table above are not applicable to the EUT and are either Optional or Conditional per Section 6 of WINNF-TS-0122.
- Please see Appendices for test data.

FCC ID: A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 9 of 60

## 7.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung MMU (MT6402)** **FCC ID: A3LMT6402-48A** has been tested to show compliance with Part 96 and WINNF-TS-0122.

FCC ID: A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1M2402190010-01.A3L	<b>Test Dates:</b> 3/1/2024-3/21/2024	<b>EUT Type:</b> MMU (MT6402)	Page 10 of 60

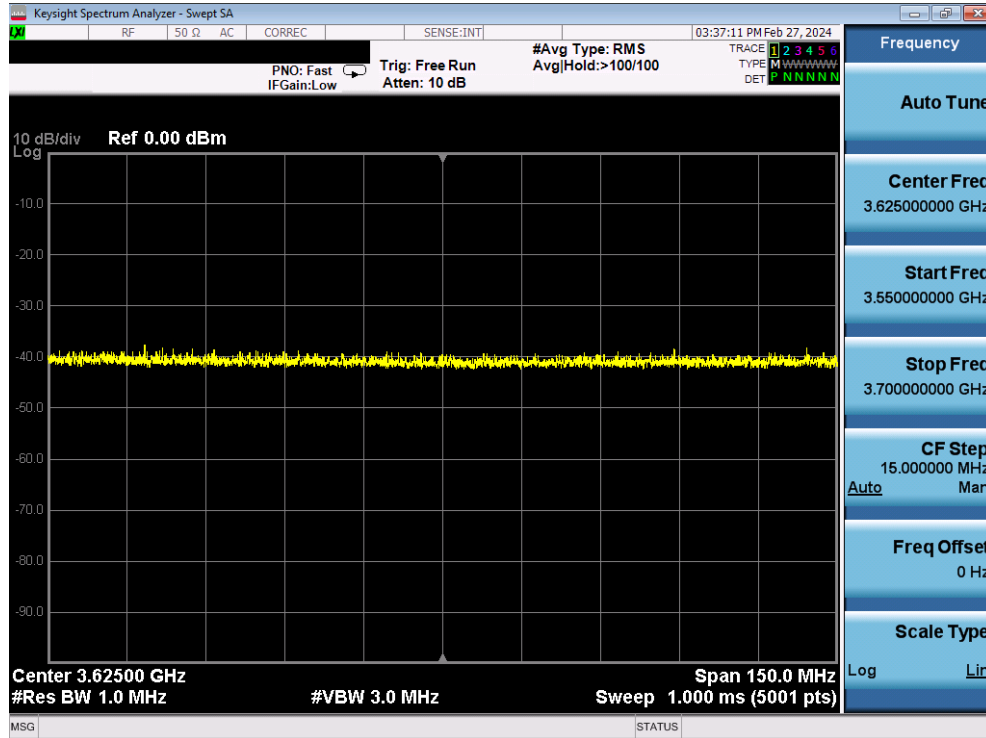
## APPENDIX A – TEST RESULT AND DATA

### A1 [WINNF.FT.C.REG.1] Multi-Step registration

	Test Execution Steps	PASS	FAIL
1	Ensure the following conditions are met for test entry: <ul style="list-style-type: none"> <li>• UUT has successfully completed SAS Discovery and Authentication with the SAS Test Harness</li> <li>• UUT is in the Unregistered state</li> </ul> CBSD sends correct Registration request information, as specified in [n.5], to the SAS Test Harness:	--	--
2	<ul style="list-style-type: none"> <li>• The required userId, fcId and cbsdSerialNumber registration parameters shall be sent from the CBSD and conform to proper format and acceptable ranges.</li> <li>• Any REG-conditional or optional registration parameters that may be included in the message shall be verified that they conform to proper format and are within acceptable ranges.</li> </ul> Note: It is outside the scope of this document to test the Registration information that is supplied via another means.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	<ul style="list-style-type: none"> <li>• SAS Test Harness sends a CBSD Registration Response as follows:               <ul style="list-style-type: none"> <li>- cbsdId = Ci</li> <li>- measReportConfig shall not be included</li> <li>- responseCode = 0</li> </ul> </li> </ul>	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (responseCode=0) to further request messages from the UUT.	--	--
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: <ul style="list-style-type: none"> <li>• UUT shall not transmit RF</li> </ul>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

FCC ID: A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 11 of 60

**Test Plots:**



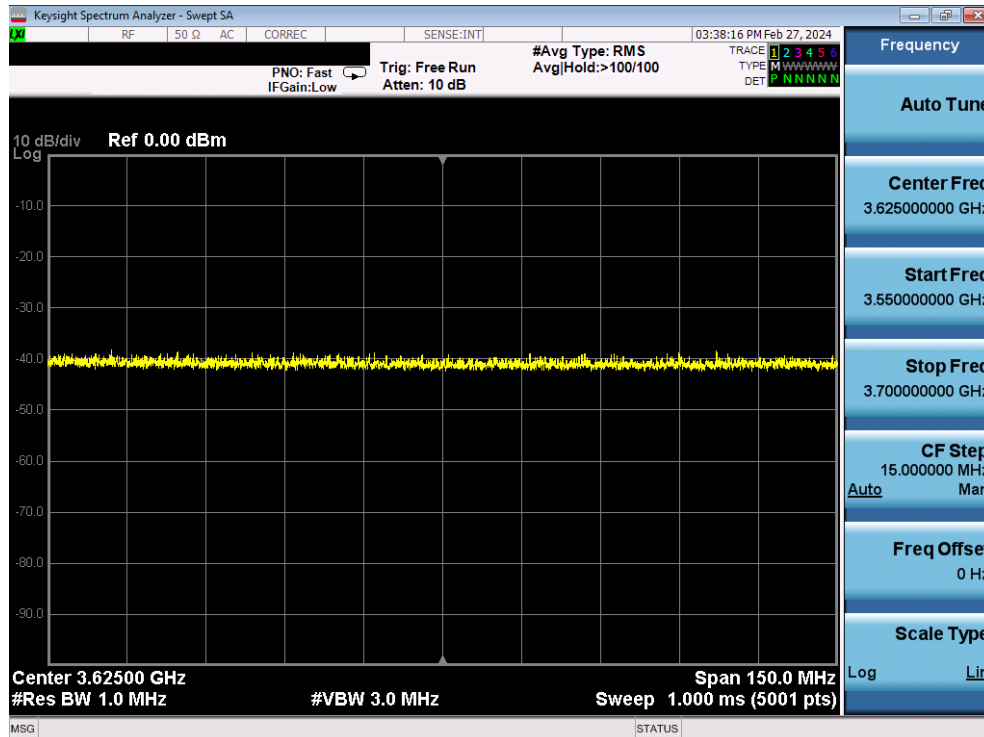
**Plot 1. Conducted Measurement – No RF transmission in entire band for 60s of elapsed time (WINNF.FT.C.REG.1)**

FCC ID: A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 12 of 60

### A3 [WINNF.FT.C.REG.8] Missing Required parameters (responseCode 102)

	Test Execution Steps	PASS	FAIL
1	Ensure the following conditions are met for test entry: <ul style="list-style-type: none"> <li>• UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness</li> <li>• UUT is in the Unregistered state</li> </ul>	--	--
2	CBSD sends a Registration request to SAS Test Harness.	--	--
3	SAS Test Harness rejects the request by sending a CBSD Registration Response as follows: <ul style="list-style-type: none"> <li>- SAS response does not include cbsdId</li> <li>- responseCode = R</li> </ul>	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (responseCode=0) to further request messages from the UUT.	--	--
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: <ul style="list-style-type: none"> <li>• UUT shall not transmit RF</li> </ul>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### Test Plots:



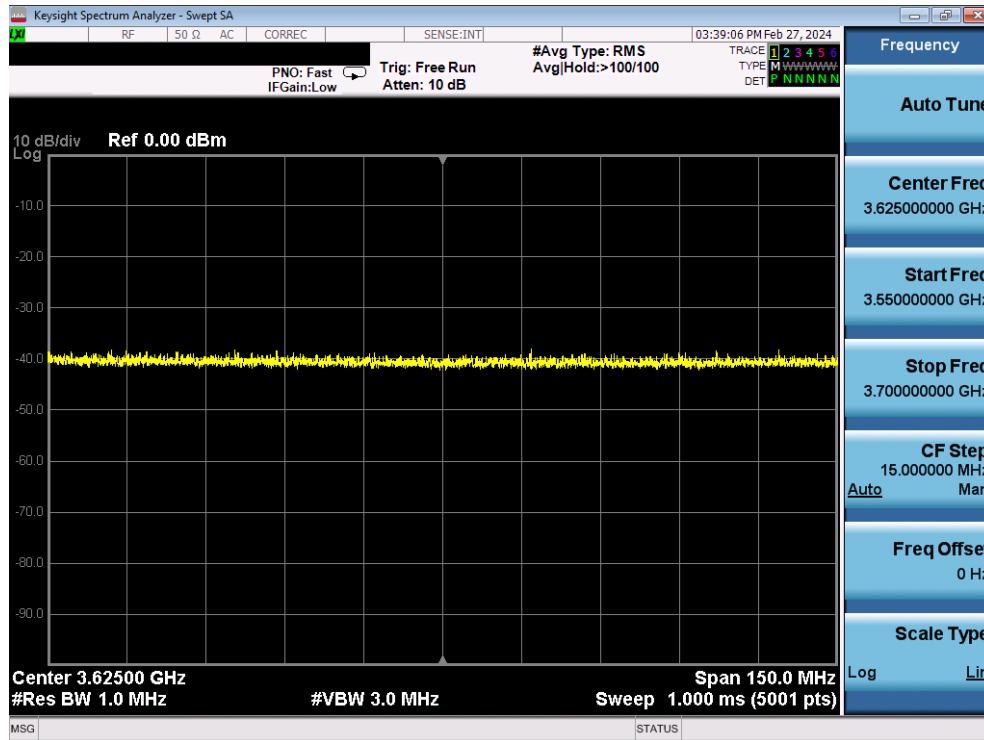
**Plot 2. Conducted Measurement – No RF transmission in entire band for 60s of elapsed time (WINNF.FT.C.REG.8)**

FCC ID: A3LMT6402-48A		MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)		Page 13 of 60

### A4 [WINNF.FT.C.REG.10] Pending registration (responseCode 200)

	Test Execution Steps	PASS	FAIL
1	Ensure the following conditions are met for test entry: <ul style="list-style-type: none"> <li>• UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness</li> <li>• UUT is in the Unregistered state</li> </ul>	--	--
2	CBSD sends a Registration request to SAS Test Harness.	--	--
3	SAS Test Harness rejects the request by sending a CBSD Registration Response as follows: <ul style="list-style-type: none"> <li>- SAS response does not include cbsdId</li> <li>- responseCode = R</li> </ul>	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (responseCode=0) to further request messages from the UUT.	--	--
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: <ul style="list-style-type: none"> <li>• UUT shall not transmit RF</li> </ul>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### Test Plots:



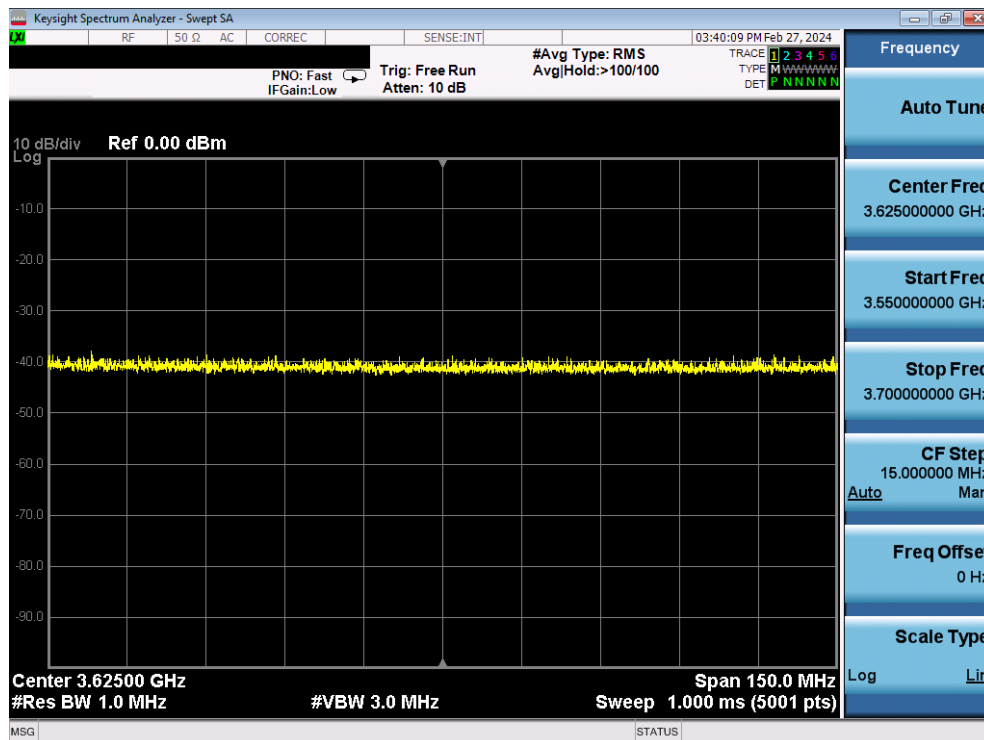
**Plot 3. Conducted Measurement – No RF transmission in entire band for 60s of elapsed time (WINNF.FT.C.REG.10)**

FCC ID: A3LMT6402-48A	MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 14 of 60

### A5 [WINNF.FT.C.REG.12] Invalid parameter (responseCode 103)

	Test Execution Steps	PASS	FAIL
1	Ensure the following conditions are met for test entry: <ul style="list-style-type: none"> <li>• UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness</li> <li>• UUT is in the Unregistered state</li> </ul>	--	--
2	CBSD sends a Registration request to SAS Test Harness.	--	--
3	SAS Test Harness rejects the request by sending a CBSD Registration Response as follows: <ul style="list-style-type: none"> <li>- SAS response does not include cbsdId</li> <li>- responseCode = R</li> </ul>	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (responseCode=0) to further request messages from the UUT.	--	--
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: <ul style="list-style-type: none"> <li>• UUT shall not transmit RF</li> </ul>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### Test Plots:



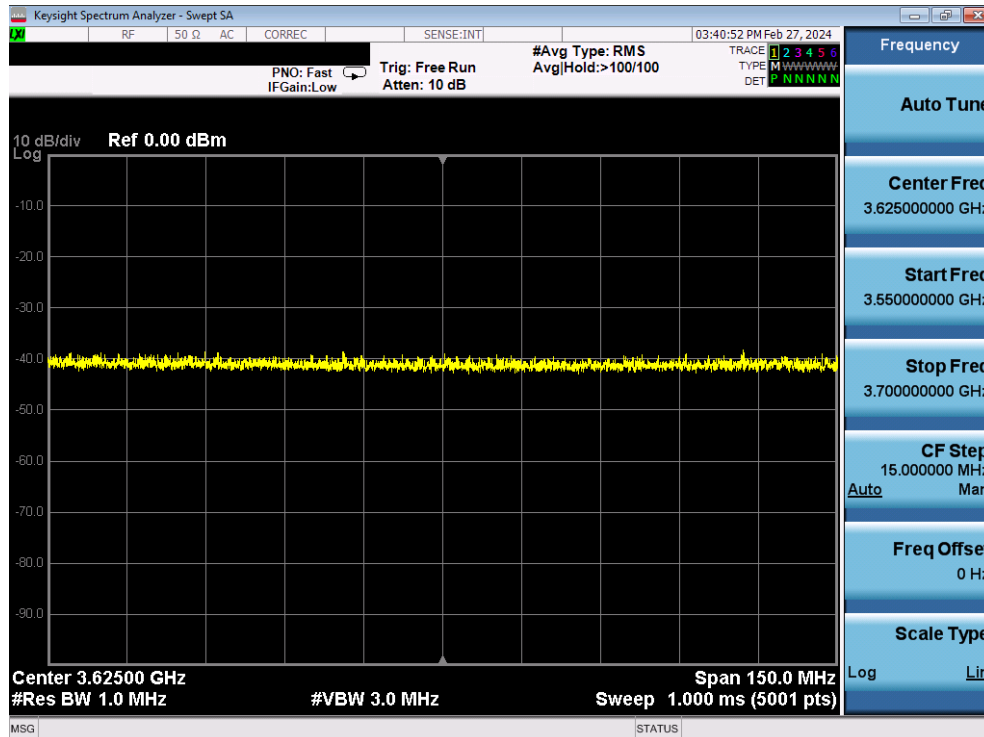
**Plot 4. Conducted Measurement – No RF transmission in entire band for 60s of elapsed time (WINNF.FT.C.REG.12)**

FCC ID: A3LMT6402-48A		MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 15 of 60	

## A6 [WINNF.FT.C.REG.14] Blacklisted CBSD (responseCode 101)

	Test Execution Steps	PASS	FAIL
1	Ensure the following conditions are met for test entry: <ul style="list-style-type: none"> <li>• UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness</li> <li>• UUT is in the Unregistered state</li> </ul>	--	--
2	CBSD sends a Registration request to SAS Test Harness.	--	--
3	SAS Test Harness rejects the request by sending a CBSD Registration Response as follows: <ul style="list-style-type: none"> <li>- SAS response does not include cbsdId</li> <li>- responseCode = R</li> </ul>	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (responseCode=0) to further request messages from the UUT.	--	--
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: <ul style="list-style-type: none"> <li>• UUT shall not transmit RF</li> </ul>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### Test Plots:



**Plot 5. Conducted Measurement – No RF transmission in entire band for 60s of elapsed time (WINNF.FT.C.REG.14)**

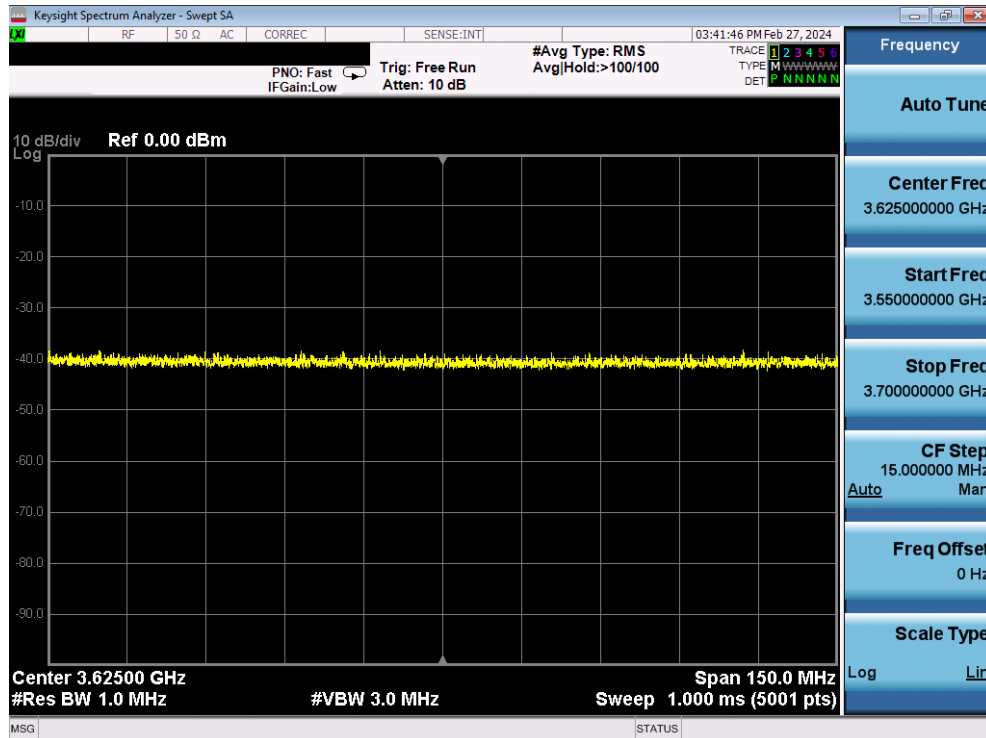
FCC ID: A3LMT6402-48A		MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)		Page 16 of 60



### A7 [WINNF.FT.C.REG.16] Unsupported SAS protocol version (responseCode 100)

	Test Execution Steps	PASS	FAIL
1	Ensure the following conditions are met for test entry: <ul style="list-style-type: none"> <li>• UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness</li> <li>• UUT is in the Unregistered state</li> </ul>	--	--
2	CBSD sends a Registration request to SAS Test Harness.	--	--
3	SAS Test Harness rejects the request by sending a CBSD Registration Response as follows: <ul style="list-style-type: none"> <li>- SAS response does not include cbsdId</li> <li>- responseCode = R</li> </ul>	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (responseCode=0) to further request messages from the UUT.	--	--
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: <ul style="list-style-type: none"> <li>• UUT shall not transmit RF</li> </ul>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### Test Plots:



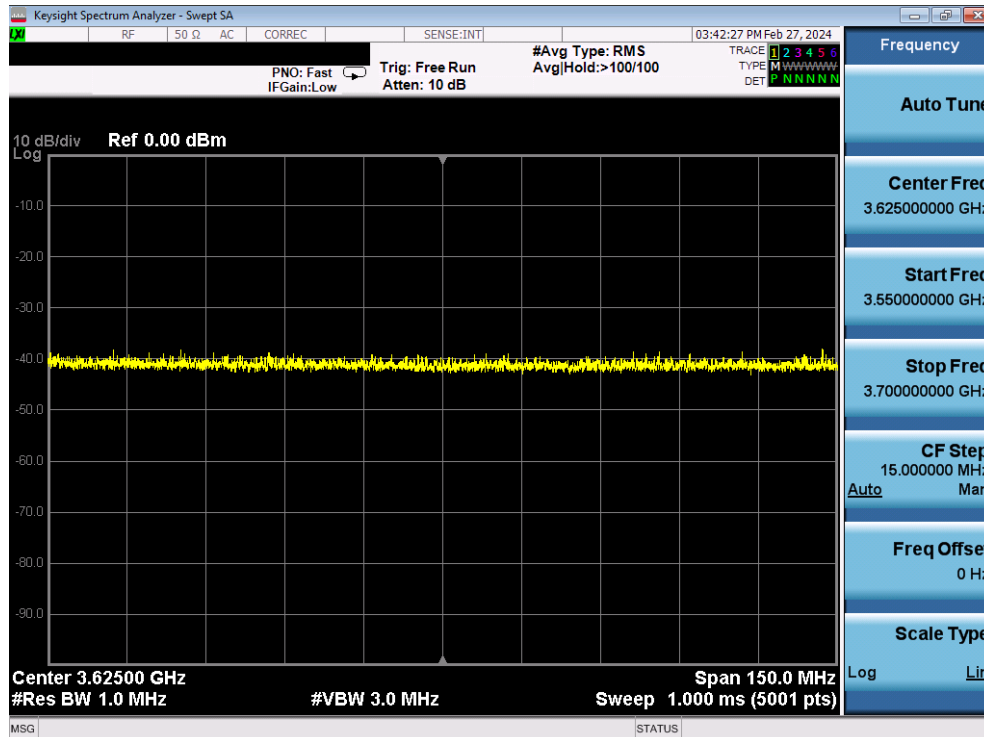
**Plot 6. Conducted Measurement – No RF transmission in entire band for 60s of elapsed time (WINNF.FT.C.REG.16)**

FCC ID: A3LMT6402-48A		MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)		Page 17 of 60

## A8 [WINNF.FT.C.REG.18] Group Error (responseCode 201)

	Test Execution Steps	PASS	FAIL
1	Ensure the following conditions are met for test entry: <ul style="list-style-type: none"> <li>• UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness</li> <li>• UUT is in the Unregistered state</li> </ul>	--	--
2	CBSD sends a Registration request to SAS Test Harness.	--	--
3	SAS Test Harness rejects the request by sending a CBSD Registration Response as follows: <ul style="list-style-type: none"> <li>- SAS response does not include cbsdId</li> <li>- responseCode = R</li> </ul>	--	--
4	After completion of step 3, SAS Test Harness will not provide any positive response (responseCode=0) to further request messages from the UUT.	--	--
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: <ul style="list-style-type: none"> <li>• UUT shall not transmit RF</li> </ul>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### Test Plots:



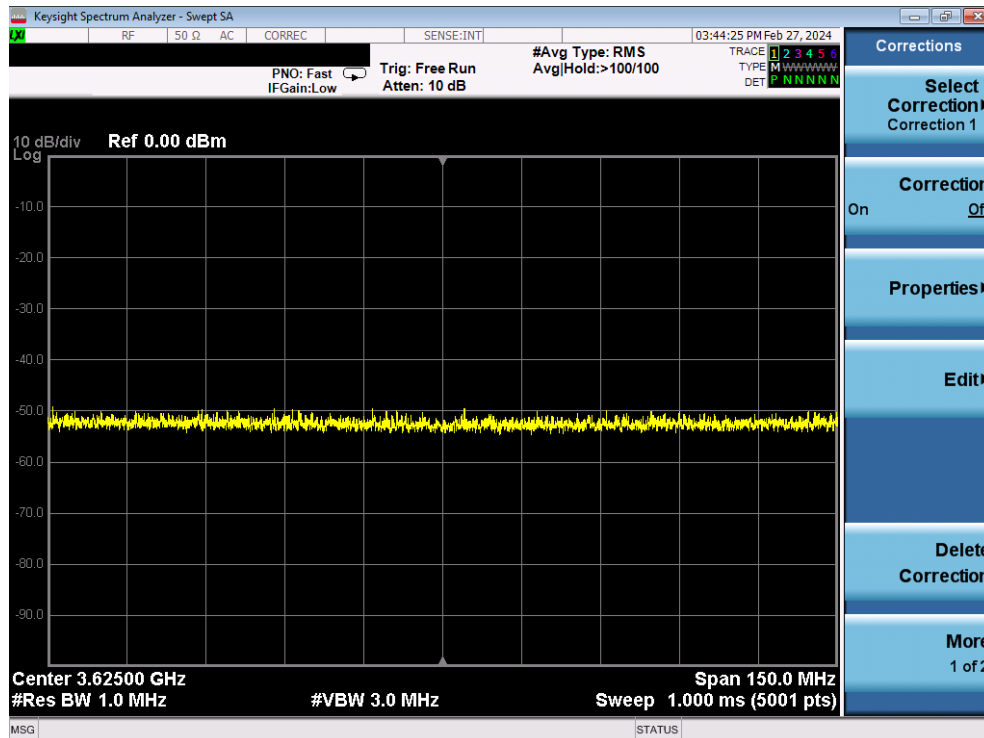
**Plot 7. Conducted Measurement – No RF transmission in entire band for 60s of elapsed time (WINNF.FT.C.REG.18)**

FCC ID: A3LMT6402-48A		MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 18 of 60	

### A9 [WINNF.FT.C.GRA.1] Unsuccessful Grant responseCode=400 (INTERFERENCE)

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

### Test Plots:



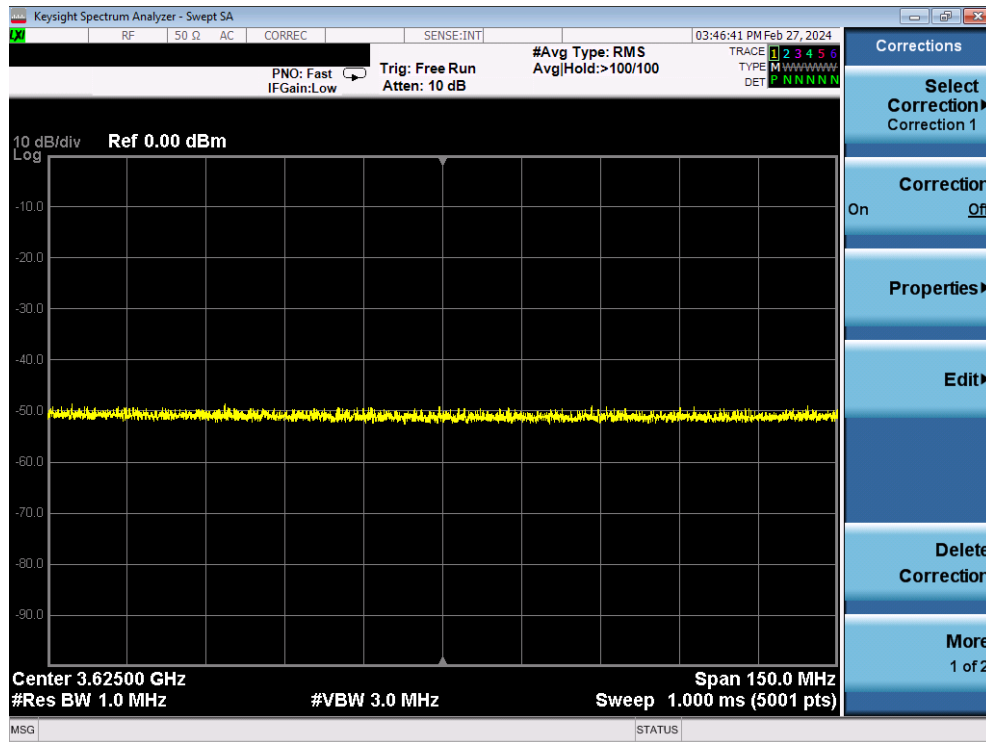
**Plot 8. Conducted Measurement – No RF transmission in entire band for 60s of elapsed time (WINNF.FT.C.GRA.1)**

FCC ID: A3LMT6402-48A		MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 19 of 60	

### A10 [WINNF.FT.C.GRA.2] Unsuccessful Grant responseCode=401 (GRANT\_CONFLICT)

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

### Test Plots:



Plot 9. Conducted Measurement – No RF transmission in entire band for 60s of elapsed time (WINNF.FT.C.GRA.2)

FCC ID: A3LMT6402-48A	MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 20 of 60

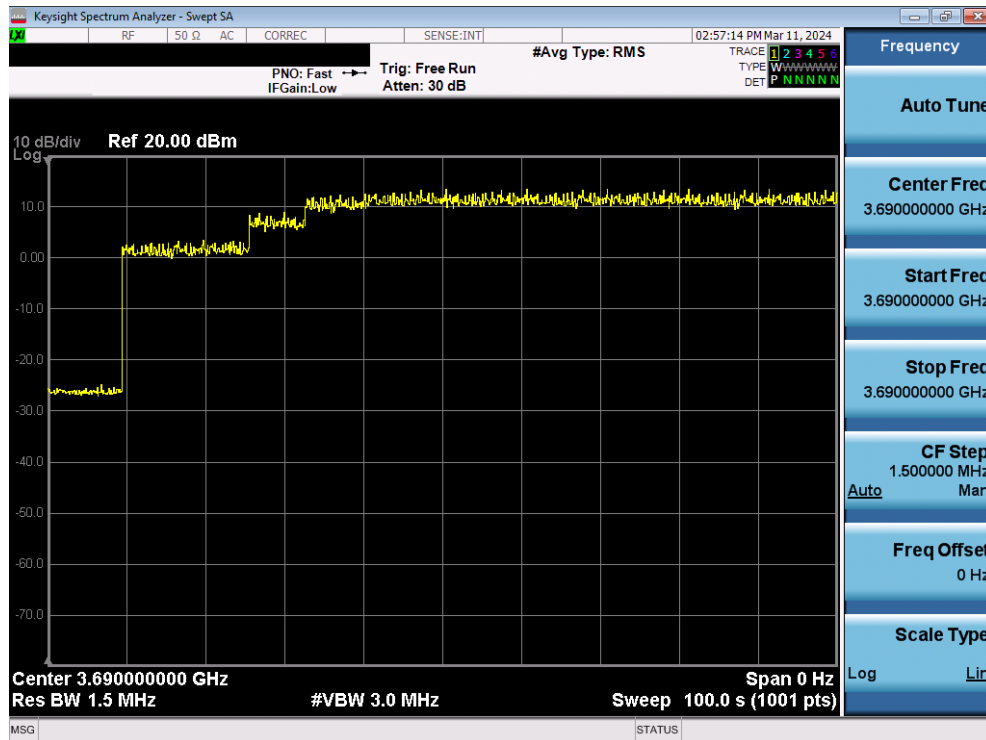
## A11 [WINNF.FT.C.HBT.1] Heartbeat Success Case (first Heartbeat Response)

	Test Execution Steps	PASS	FAIL
1	Ensure the following conditions are met for test entry: • UUT has registered successfully with SAS Test Harness, with cbsdId = C	--	--
2	UUT sends a message: • If message is type Spectrum Inquiry Request, go to step 3, or • If message is type Grant Request, go to step 5	--	--
3	UUT sends Spectrum Inquiry Request. Validate: • cbsdId = C • List of frequencyRange objects sent by UUT are within the CBRS frequency range	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	SAS Test Harness sends a Spectrum Inquiry Response message, including the following parameters: • cbsdId = C • availableChannel is an array of availableChannel objects • responseCode = 0	--	--
5	UUT sends Grant Request message. Validate: • cbsdId = C • maxEIRP is at or below the limit appropriate for CBSD category as defined by Part 96 • operationFrequencyRange, F, sent by UUT is a valid range within the CBRS band	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6	SAS Test Harness sends a Grant Response message, including the parameters: • cbsdId = C • grantId = G = a valid grant ID • grantExpireTime = UTC time greater than duration of the test • responseCode = 0	--	--
7	UUT sends a first Heartbeat Request message. Verify Heartbeat Request message is formatted correctly, including: • cbsdId = C • grantId = G • operationState = "GRANTED"	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8	SAS Test Harness sends a Heartbeat Response message, with the following parameters: • cbsdId = C • grantId = G • transmitExpireTime = current UTC time + 200 seconds • responseCode = 0	--	--
9	For further Heartbeat Request messages sent from UUT after completion of step 8, validate message is sent within latest specified heartbeatInterval, and: • cbsdId = C • grantId = G • operationState = "AUTHORIZED" and SAS Test Harness responds with a Heartbeat Response message including the following parameters: • cbsdId = C	<input checked="" type="checkbox"/>	<input type="checkbox"/>

FCC ID: A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 21 of 60

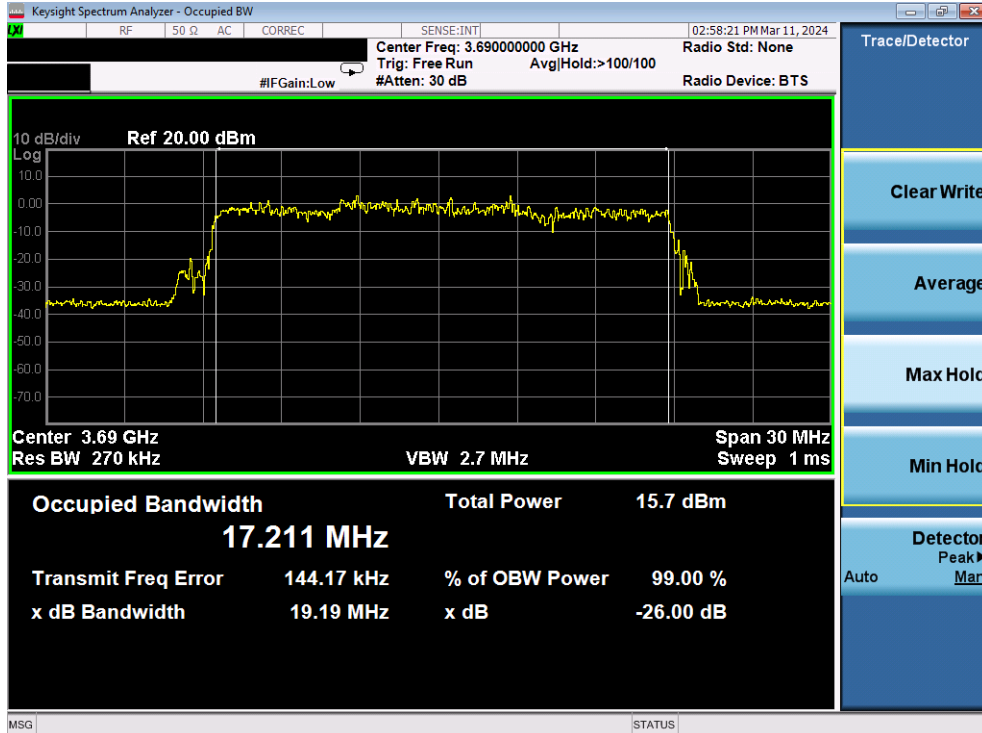
	<ul style="list-style-type: none"> <li>• grantId = G</li> <li>• transmitExpireTime = current UTC time + 200 seconds</li> <li>• responseCode = 0</li> </ul>		
10	<p>Monitor the RF output of the UUT from start of test until UUT transmission commences. Verify:</p> <ul style="list-style-type: none"> <li>• UUT does not transmit at any time prior to completion of the first heartbeat response</li> <li>• UUT transmits after step 8 is complete, and its transmission is limited to within the bandwidth range F</li> </ul>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**Test Plots:**



**Plot 10. Conducted Measurement - RF transmission after SAS heartbeat response (WINNF.FT.C.HBT.1)**

FCC ID: A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 22 of 60



Plot 11. Conducted Measurement Occupied Bandwidth for 20MHz (WINNF.FT.C.HBT.1) – NR

FCC ID: A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 23 of 60

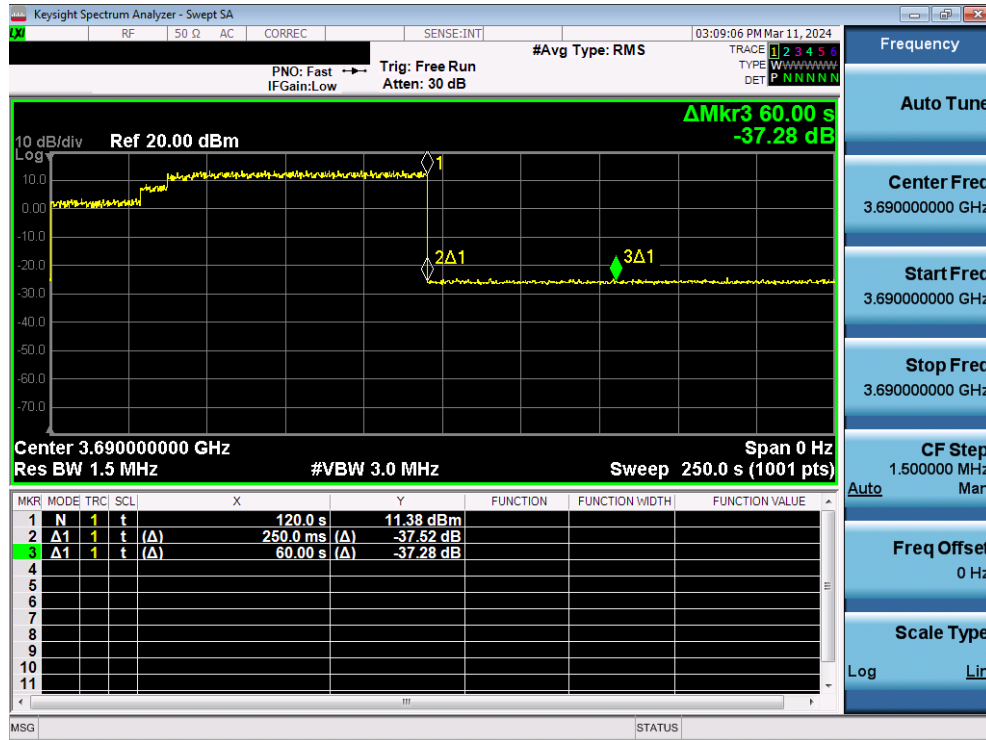
### A12 [WINNF.FT.C.HBT.3] Heartbeat responseCode=105 (DEREGISTER)

	Test Execution Steps	PASS	FAIL
1	Ensure the following conditions are met for test entry: <ul style="list-style-type: none"> <li>• UUT has registered successfully with SAS Test Harness</li> <li>• UUT has a valid single grant as follows:               <ul style="list-style-type: none"> <li>o valid cbsdId = C</li> <li>o valid grantId = G</li> <li>o grant is for frequency range F, power P</li> <li>o grantExpireTime = UTC time greater than duration of the test</li> </ul> </li> <li>• UUT is in AUTHORIZED state and is transmitting within the grant bandwidth F on RF interface</li> </ul>	--	--
2	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: <ul style="list-style-type: none"> <li>• cbsdId = C</li> <li>• grantId = G</li> <li>• operationState = "AUTHORIZED"</li> </ul>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	SAS Test Harness sends a Heartbeat Response message, including the following parameters: <ul style="list-style-type: none"> <li>• cbsdId = C</li> <li>• grantId = G</li> <li>• transmitExpireTime = T = Current UTC time</li> <li>• responseCode = 105 (DEREGISTER)</li> </ul>	--	--
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: <ul style="list-style-type: none"> <li>• UUT shall stop transmission within (T + 60 seconds) of completion of step 3</li> </ul>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

FCC ID: A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 24 of 60



**Test Plots:**



**Plot 11. Conducted Measurement – RF transmission stops within 60s of SAS heartbeat response (Marker 1) (WINNF.FT.C.HBT.3)**

FCC ID: A3LMT6402-48A	MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 25 of 60

### A13 [WINNF.FT.C.HBT.4] Heartbeat responseCode=500 (TERMINATED\_GRANT)

	Test Execution Steps	PASS	FAIL
1	Ensure the following conditions are met for test entry: <ul style="list-style-type: none"> <li>• UUT has registered successfully with SAS Test Harness</li> <li>• UUT has a valid single grant as follows:               <ul style="list-style-type: none"> <li>o valid cbsdId = C</li> <li>o valid grantId = G</li> <li>o grant is for frequency range F, power P</li> <li>o grantExpireTime = UTC time greater than duration of the test</li> </ul> </li> <li>• UUT is in AUTHORIZED state and is transmitting within the grant bandwidth F on RF interface</li> </ul>	--	--
2	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: <ul style="list-style-type: none"> <li>• cbsdId = C</li> <li>• grantId = G</li> <li>• operationState = "AUTHORIZED"</li> </ul>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	SAS Test Harness sends a Heartbeat Response message, including the following parameters: <ul style="list-style-type: none"> <li>• cbsdId = C</li> <li>• grantId = G</li> <li>• transmitExpireTime = T = Current UTC time</li> <li>• responseCode = 500 (TERMINATED_GRANT)</li> </ul>	--	--
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: <ul style="list-style-type: none"> <li>• UUT shall stop transmission within (T + 60 seconds) of completion of step 3</li> </ul>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

FCC ID: A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 26 of 60

**Test Plots:**



**Plot 12. Conducted Measurement – RF transmission stops within 60s of SAS heartbeat response (Marker 1) (WINNF.FT.C.HBT.4)**

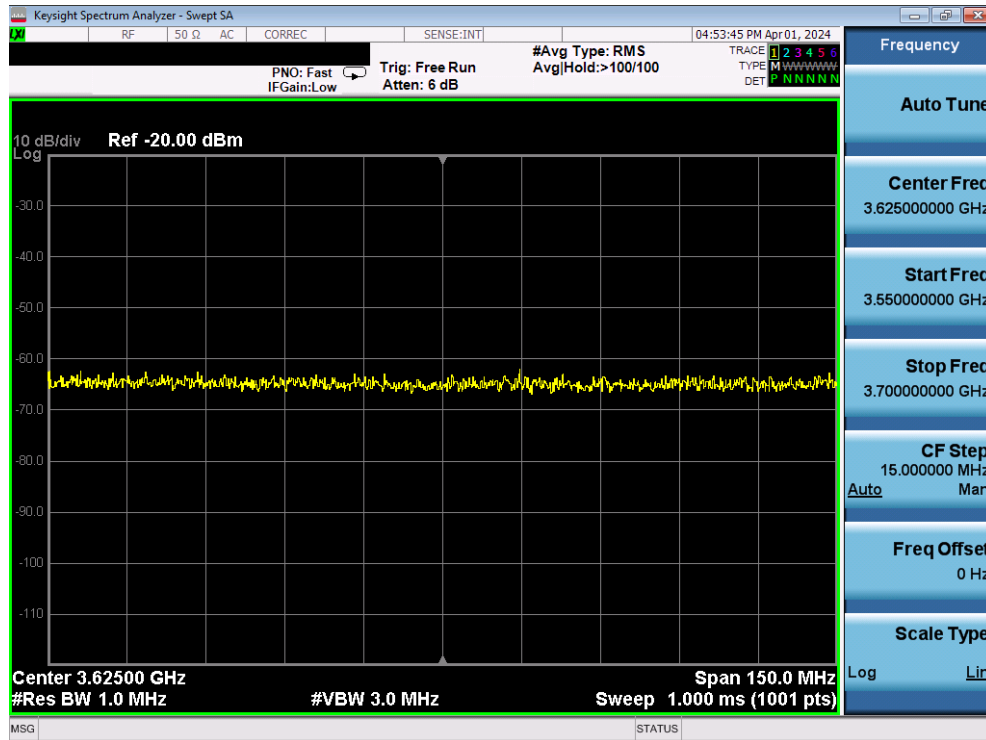
FCC ID: A3LMT6402-48A	MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 27 of 60

## A14 [WINNF.FT.C.HBT.5] Heartbeat responseCode=501 (SUSPENDED\_GRANT) in First Heartbeat Response

	Test Execution Steps	PASS	FAIL
1	<p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> <li>• UUT has registered successfully with SAS Test Harness</li> <li>• UUT has a valid single grant as follows: <ul style="list-style-type: none"> <li>o valid cbsdId = C</li> <li>o valid grantId = G</li> <li>o grant is for frequency range F, power P</li> <li>o grantExpireTime = UTC time greater than duration of the test</li> </ul> </li> <li>• UUT is in AUTHORIZED state and is transmitting within the grant bandwidth F on RF interface</li> </ul>	--	--
2	<p>UUT sends a Heartbeat Request message.</p> <p>Ensure Heartbeat Request message is sent within Heartbeat Interval specified in the latest Heartbeat Response, and formatted correctly, including:</p> <ul style="list-style-type: none"> <li>• cbsdId = C</li> <li>• grantId = G</li> <li>• operationState = "GRANTED"</li> </ul>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	<p>SAS Test Harness sends a Heartbeat Response message, including the following parameters:</p> <ul style="list-style-type: none"> <li>• cbsdId = C</li> <li>• grantId = G</li> <li>• transmitExpireTime = T = Current UTC time</li> <li>• responseCode = 501 (SUSPENDED_GRANT)</li> </ul>	--	--
4	<p>After completion of step 3, SAS Test Harness shall not allow any further grants to the UUT.</p>	--	--
5	<p>Monitor the SAS-CBSD interface. Verify either A OR B occurs:</p> <p>A. UUT sends a Heartbeat Request message. Ensure message is sent within latest specified heartbeatInterval, and is correctly formatted with parameters:</p> <ul style="list-style-type: none"> <li>• cbsdId = C</li> <li>• grantId = G</li> <li>• operationState = "GRANTED"</li> </ul> <p>B. UUT sends a Relinquishment request message. Ensure message is correctly formatted with parameters:</p> <ul style="list-style-type: none"> <li>• cbsdId = C</li> <li>• grantId = G</li> </ul> <p>Monitor the RF output of the UUT. Verify:</p> <ul style="list-style-type: none"> <li>• UUT does not transmit at any time</li> </ul>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

FCC ID: A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 28 of 60

**Test Plots:**



**Plot 13. Conducted Measurement – No RF transmission in entire band at any time (WINNF.FT.C.HBT.5)**

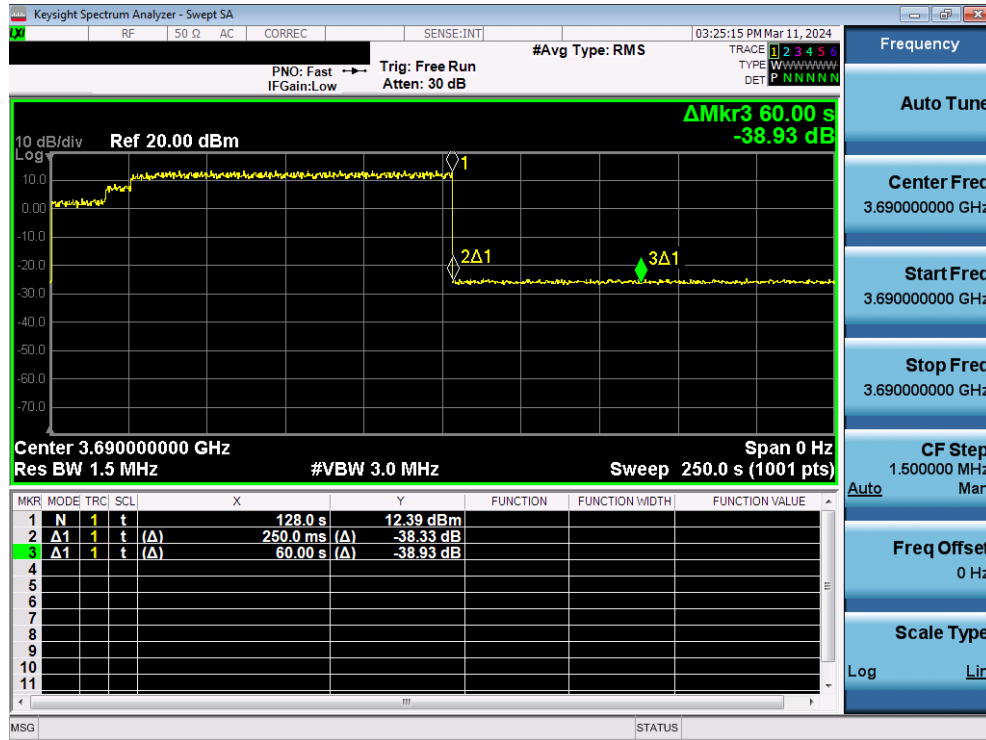
<b>FCC ID:</b> A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1M2402190010-01.A3L	<b>Test Dates:</b> 3/1/2024-3/21/2024	<b>EUT Type:</b> MMU (MT6402)	Page 29 of 60

## A15 [WINNF.FT.C.HBT.6] Heartbeat responseCode=501 (SUSPENDED\_GRANT) in Subsequent Heartbeat Response

	Test Execution Steps	PASS	FAIL
1	<p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> <li>• UUT has registered successfully with SAS Test Harness</li> <li>• UUT has a valid single grant as follows: <ul style="list-style-type: none"> <li>o valid cbsdId = C</li> <li>o valid grantId = G</li> <li>o grant is for frequency range F, power P</li> <li>o grantExpireTime = UTC time greater than duration of the test</li> </ul> </li> <li>• UUT is in AUTHORIZED state and is transmitting within the grant bandwidth F on RF interface</li> </ul>	--	--
2	<p>UUT sends a Heartbeat Request message.</p> <p>Ensure Heartbeat Request message is sent within Heartbeat Interval specified in the latest Heartbeat Response, and formatted correctly, including:</p> <ul style="list-style-type: none"> <li>• cbsdId = C</li> <li>• grantId = G</li> <li>• operationState = "AUTHORIZED"</li> </ul>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	<p>SAS Test Harness sends a Heartbeat Response message, including the following parameters:</p> <ul style="list-style-type: none"> <li>• cbsdId = C</li> <li>• grantId = G</li> <li>• transmitExpireTime = T = Current UTC time</li> <li>• responseCode = 501 (SUSPENDED_GRANT)</li> </ul>	--	--
4	<p>After completion of step 3, SAS Test Harness shall not allow any further grants to the UUT.</p>	--	--
5	<p>Monitor the SAS-CBSD interface. Verify either A OR B occurs:</p> <p>A. UUT sends a Heartbeat Request message. Ensure message is sent within latest specified heartbeatInterval, and is correctly formatted with parameters:</p> <ul style="list-style-type: none"> <li>• cbsdId = C</li> <li>• grantId = G</li> <li>• operationState = "GRANTED"</li> </ul> <p>B. UUT sends a Relinquishment request message. Ensure message is correctly formatted with parameters:</p> <ul style="list-style-type: none"> <li>• cbsdId = C</li> <li>• grantId = G</li> </ul> <p>Monitor the RF output of the UUT. Verify:</p> <ul style="list-style-type: none"> <li>• UUT shall stop transmission within (T + 60 seconds) of completion of step 3</li> </ul>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

FCC ID: A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 30 of 60

### Test Plots:



**Plot 14. Conducted Measurement – RF transmission stops within 60s of SAS heartbeat response (Marker 1) (WINNF.FT.C.HBT.6)**

FCC ID: A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 31 of 60

## A16 [WINNF.FT.C.HBT.7] Heartbeat responseCode=502 (UNSYNC\_OP\_PARAM)

	Test Execution Steps	PASS	FAIL
1	<p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> <li>• UUT has registered successfully with SAS Test Harness</li> <li>• UUT has a valid single grant as follows: <ul style="list-style-type: none"> <li>o valid cbsdId = C</li> <li>o valid grantId = G</li> <li>o grant is for frequency range F, power P</li> <li>o grantExpireTime = UTC time greater than duration of the test</li> </ul> </li> <li>• UUT is in AUTHORIZED state and is transmitting within the grant bandwidth F on RF interface</li> </ul>	--	--
2	<p>UUT sends a Heartbeat Request message.</p> <p>Ensure Heartbeat Request message is sent within Heartbeat Interval specified in the latest Heartbeat Response, and formatted correctly, including:</p> <ul style="list-style-type: none"> <li>• cbsdId = C</li> <li>• grantId = G</li> <li>• operationState = "AUTHORIZED"</li> </ul>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	<p>SAS Test Harness sends a Heartbeat Response message, including the following parameters:</p> <ul style="list-style-type: none"> <li>• cbsdId = C</li> <li>• grantId = G</li> <li>• transmitExpireTime = T = Current UTC time</li> <li>• responseCode = 502 (UNSYNC_OP_PARAM)</li> </ul>	--	--
4	<p>After completion of step 3, SAS Test Harness shall not allow any further grants to the UUT.</p>	--	--
5	<p>Monitor the SAS-CBSID interface. Verify:</p> <ul style="list-style-type: none"> <li>• UUT sends a Grant Relinquishment Request message. Verify message is correctly formatted with parameters: <ul style="list-style-type: none"> <li>o cbsdId = C</li> <li>o grantId = G</li> </ul> </li> </ul> <p>Monitor the RF output of the UUT. Verify:</p> <ul style="list-style-type: none"> <li>• UUT shall stop transmission within (T+60) seconds of completion of step 3.</li> </ul>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

FCC ID: A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 32 of 60



**Test Plots:**



**Plot 15. Conducted Measurement – RF transmission stops within 60s of SAS heartbeat response (Marker 1) (WINNF.FT.C.HBT.7)**

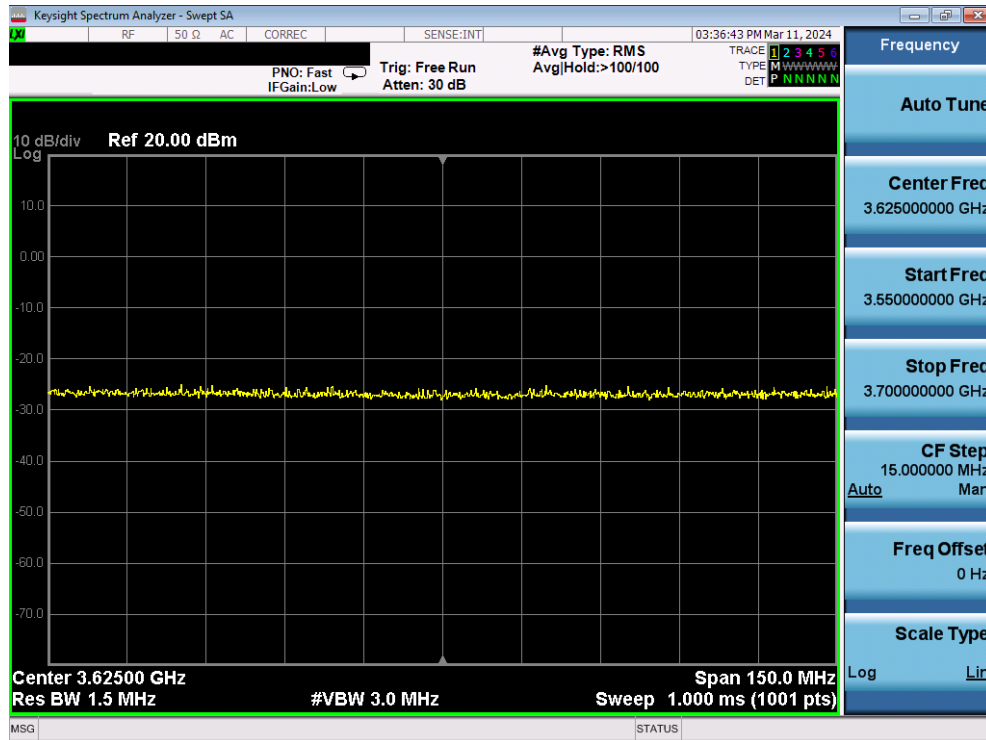
FCC ID: A3LMT6402-48A	MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 33 of 60

### A17 [WINNF.FT.C.HBT.9] Heartbeat Response Absent (First Heartbeat)

	Test Execution Steps	PASS	FAIL
1	Ensure the following conditions are met for test entry: <ul style="list-style-type: none"> <li>• UUT has registered successfully with SAS Test Harness</li> <li>• UUT has a valid single grant as follows:               <ul style="list-style-type: none"> <li>o valid cbsdId = C</li> <li>o valid grantId = G</li> <li>o grant is for frequency range F, power P</li> <li>o grantExpireTime = UTC time greater than duration of the test</li> </ul> </li> <li>• UUT is in GRANTED, but not AUTHORIZED state (i.e. has not performed its first Heartbeat Request)</li> </ul>	--	--
2	UUT sends a Heartbeat Request message. Ensure Heartbeat Request message is sent within latest specified heartbeatInterval, and is formatted correctly, including: <ul style="list-style-type: none"> <li>• cbsdId = C</li> <li>• grantId = G</li> <li>• operationState = "GRANTED"</li> </ul>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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: <ul style="list-style-type: none"> <li>• At any time during the test, UUT shall not transmit on RF interface</li> </ul>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

FCC ID: A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 34 of 60

**Test Plots:**



**Plot 16. Conducted Measurement – No RF transmission in entire band at anytime (WINNF.FT.C.HBT.9)**

FCC ID: A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 35 of 60

## A18 [WINNF.FT.C.HBT.10] Heartbeat Response Absent (Subsequent Heartbeat)

	Test Execution Steps	PASS	FAIL
1	Ensure the following conditions are met for test entry: <ul style="list-style-type: none"> <li>• UUT has registered successfully with SAS Test Harness</li> <li>• UUT has a valid single grant as follows:               <ul style="list-style-type: none"> <li>o valid cbsdId = C</li> <li>o valid grantId = G</li> <li>o grant is for frequency range F, power P</li> <li>o grantExpireTime = UTC time greater than duration of the test</li> </ul> </li> <li>• UUT is in AUTHORIZED state and is transmitting within the grant bandwidth F on RF interface</li> </ul>	--	--
2	UUT sends a Heartbeat Request message. Verify Heartbeat Request message is sent within the latest specified heartbeatInterval, and is formatted correctly, including: <ul style="list-style-type: none"> <li>• cbsdId = C</li> <li>• grantId = G</li> <li>• operationState = "AUTHORIZED"</li> </ul>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	SAS Test Harness sends a Heartbeat Response message, including the following parameters: <ul style="list-style-type: none"> <li>• cbsdId = C</li> <li>• grantId = G</li> <li>• transmitExpireTime = current UTC time + 200 seconds</li> <li>• responseCode = 0</li> </ul>	--	--
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: <ul style="list-style-type: none"> <li>• UUT shall stop all transmission on RF interface within (transmitExpireTime + 60 seconds), using the transmitExpireTime sent in Step 3.</li> </ul>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

FCC ID: A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 36 of 60

**Test Plots:**



**Plot 17. Conducted Measurement - RF transmission stops within 60s of SAS heartbeat response (Marker 1)  
(WINNF.FT.C.HBT.10)**

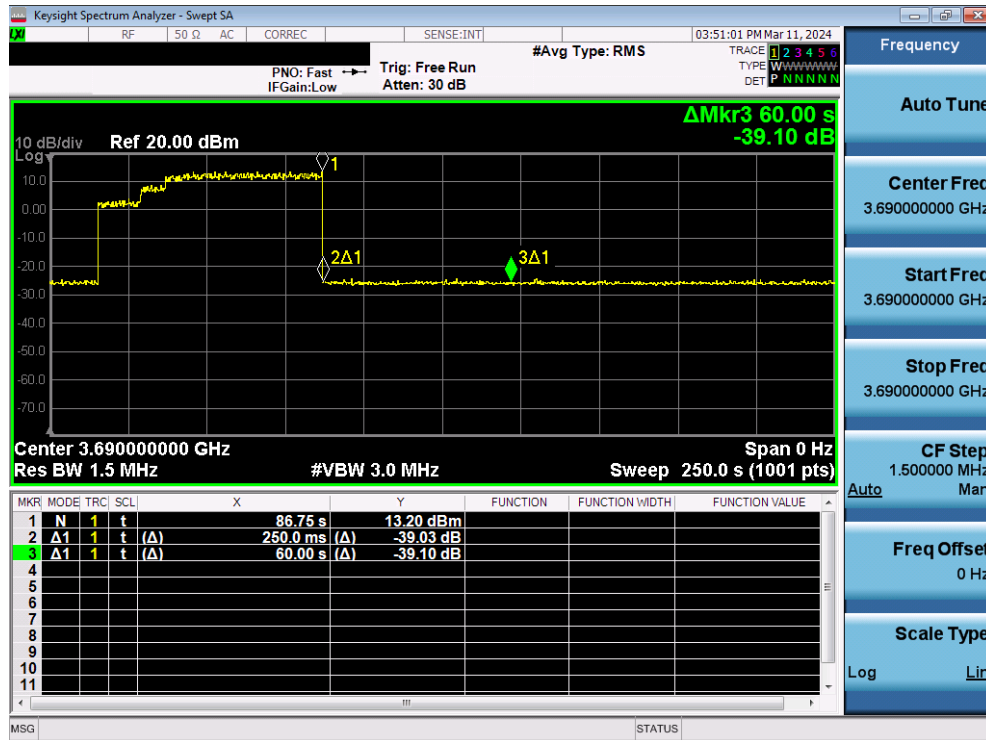
FCC ID: A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 37 of 60

## A19 [WINNF.FT.C.RLQ.1] Successful Relinquishment

	Test Execution Steps	PASS	FAIL
1	<p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> <li>• UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness</li> <li>• UUT has successfully registered with SAS Test Harness, with cbsdId=C</li> <li>• UUT has received a valid grant with grantId = G</li> <li>• UUT is in Grant State AUTHORIZED and is actively transmitting within the bounds of its grant.</li> </ul> <p>Invoke trigger to relinquish UUT Grant from the SAS Test Harness</p>	--	--
2	<p>UUT sends a Relinquishment Request message. Verify message contains all required parameters properly formatted, and specifically:</p> <ul style="list-style-type: none"> <li>• cbsdId = C</li> <li>• grantId = G</li> </ul>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	<p>SAS Test Harness shall approve the request with a Relinquishment Response message with parameters:</p> <ul style="list-style-type: none"> <li>• cbsdId = C</li> <li>• grantId = G</li> <li>• responseCode = 0</li> </ul>	--	--
4	<p>After completion of step 3, SAS Test Harness will not provide any additional positive response (responseCode=0) to further request messages from the UUT.</p>	--	--
5	<p>Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify:</p> <ul style="list-style-type: none"> <li>• UUT shall stop RF transmission at any time between triggering the relinquishment and UUT sending the relinquishment request</li> </ul>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

FCC ID: A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 38 of 60

### Test Plots:



**Plot 18. Conducted Measurement – RF transmission stops within 60s of SAS RLQ response (Marker 1) (WINNF.FT.C.RLQ.1)**

FCC ID: A3LMT6402-48A	MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 39 of 60

## A20 [WINNF.FT.C.MES.1] Registration Response contains measReportConfig

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

FCC ID: A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 40 of 60



```

"measReport": {
  "rcvdPowerMeasReports": [
    {
      "measBandwidth": 10000000,
      "measFrequency": 3500000000,
      "measRcvdPower": -98
    },
    {
      "measBandwidth": 10000000,
      "measFrequency": 3500000000,
      "measRcvdPower": -98.0999984741211
    },
    {
      "measBandwidth": 10000000,
      "measFrequency": 3570000000,
      "measRcvdPower": -98.30000305175781
    },
    {
      "measBandwidth": 10000000,
      "measFrequency": 3580000000,
      "measRcvdPower": -98.4000015258789
    },
    {
      "measBandwidth": 10000000,
      "measFrequency": 3590000000,
      "measRcvdPower": -98.5
    },
    {
      "measBandwidth": 10000000,
      "measFrequency": 3600000000,
      "measRcvdPower": -98.5
    },
    {
      "measBandwidth": 10000000,
      "measFrequency": 3610000000,
      "measRcvdPower": -98.69999694824219
    },
    {
      "measBandwidth": 10000000,
      "measFrequency": 3620000000,
      "measRcvdPower": -98.4000015258789
    },
    {
      "measBandwidth": 10000000,
      "measFrequency": 3630000000,
      "measRcvdPower": -98.80000305175781
    },
    {
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      "measFrequency": 3640000000,
      "measRcvdPower": -98.69999694824219
    },
    {
      "measBandwidth": 10000000,
      "measFrequency": 3650000000,
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    },
    {
      "measBandwidth": 10000000,
      "measFrequency": 3660000000,
      "measRcvdPower": -98.80000305175781
    },
    {
      "measBandwidth": 10000000,
      "measFrequency": 3670000000,
      "measRcvdPower": -98.80000305175781
    },
    {
      "measBandwidth": 10000000,
      "measFrequency": 3680000000,
      "measRcvdPower": -98.80000305175781
    },
    {
      "measBandwidth": 10000000,
      "measFrequency": 3690000000,
      "measRcvdPower": -98.9000015258789
    }
  ]
}

```

**Plot 19. Measurement Report in Registration Response (WINNF.FT.C.MES.1)**

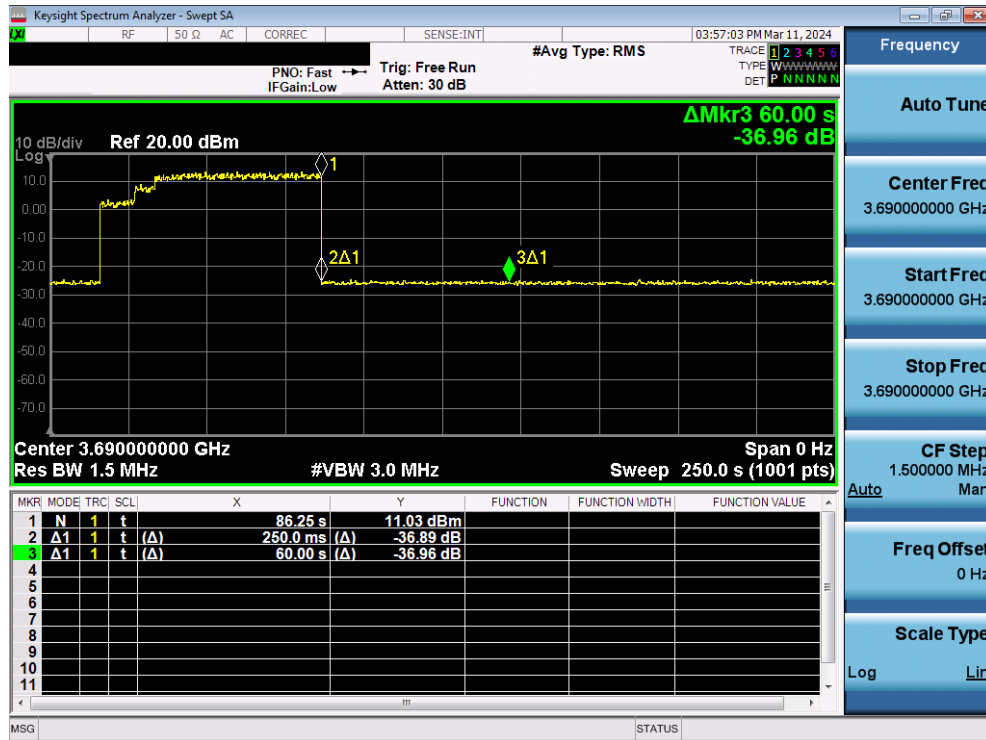
FCC ID: A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 41 of 60

## A21 [WINNF.FT.C.DRG.1] Successful Deregistration

	Test Execution Steps	PASS	FAIL
1	Ensure the following conditions are met for test entry: <ul style="list-style-type: none"> <li>• UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness</li> <li>• UUT has successfully registered with SAS Test Harness, with cbsdId=C</li> <li>• UUT has received a valid grant with grantId = G</li> <li>• UUT is in Grant State AUTHORIZED and is actively transmitting within the bounds of its grant.</li> </ul> Invoke trigger to deregister UUT from the SAS Test Harness	--	--
2	UUT sends a Relinquishment request and receives Relinquishment response with responseCode=0	--	--
3	UUT sends Deregistration Request to SAS Test Harness with cbsdId = C.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	SAS Test Harness shall approve the request with a Deregistration Response message with parameters: <ul style="list-style-type: none"> <li>• cbsdId = C</li> <li>• responseCode = 0</li> </ul>	--	--
5	After completion of step 3, SAS Test Harness will not provide any additional positive response (responseCode=0) to further request messages from the UUT	--	--
6	Monitor the RF output of the UUT from start of test until 60 seconds after Step 4 is complete. This is the end of the test. Verify: <ul style="list-style-type: none"> <li>• UUT stopped RF transmission at any time between triggering the deregistration and either A OR B occurs:               <ul style="list-style-type: none"> <li>A. UUT sending a Registration Request message, as this is not mandatory</li> <li>B. UUT sending a Deregistration Request message</li> </ul> </li> </ul>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

FCC ID: A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 42 of 60

**Test Plots:**



**Plot 19. Conducted Measurement – RF transmission stops within 60s of SAS DRG response (Marker 1) (WINNF.FT.C.DRG.1)**

FCC ID: A3LMT6402-48A	MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 43 of 60

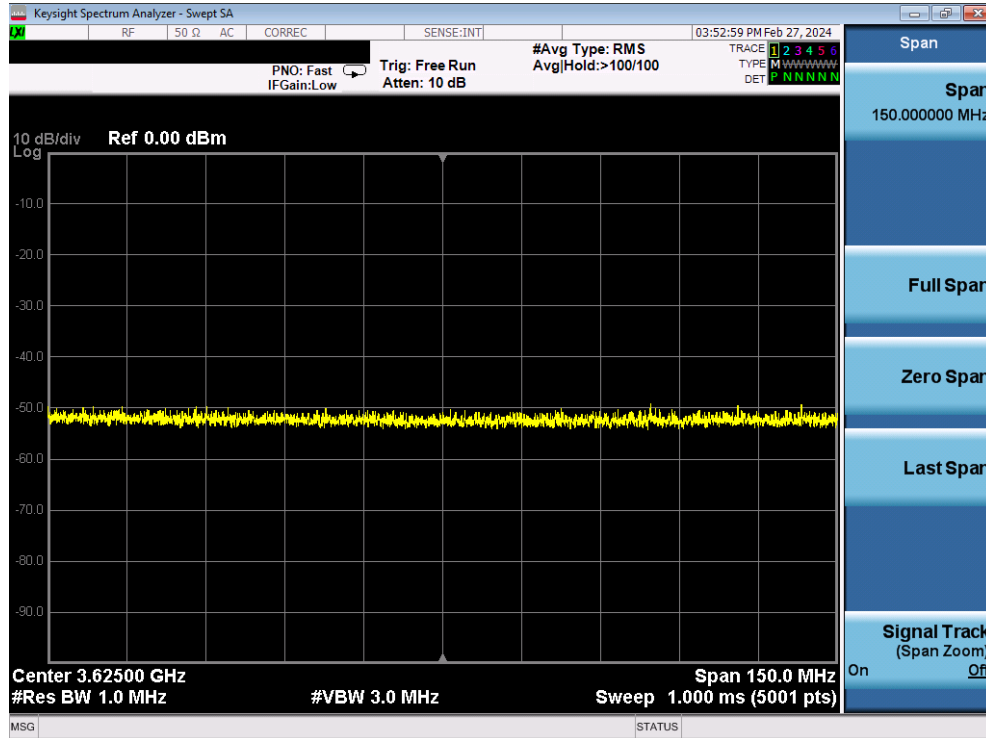
**A22 [WINNF.FT.C.SCS.1] Successful TLS connection between UUT and SAS Test Harness**

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

FCC ID: A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 44 of 60



Test Plots:



Plot 20. Conducted Measurement – UUT RF transmission range and bandwidths are less or equal to frequency range and bandwidth of compatible BTS-CBSD (WINNF.FT.C.SCS.1)

No.	Time	Source	Info	Destination	Protocol	Length
12	2024-02-27 20:45:15.811425	172.108.154.18	Encrypted Alert	173.59.230.213	TLSv1.2	85
13	2024-02-27 20:45:15.811426	172.108.154.18	51741 → 443 [FIN, ACK] Seq=32 Ack=1 Win=152 Len=0	173.59.230.213	TCP	68
14	2024-02-27 20:45:15.811427	172.108.154.18	62622 → 443 [SYN] Seq=0 Win=29200 Len=0 MSS=1460 SACK_PERM=1 TSval=3683107772 TSecr=0 WS=256	173.59.230.213	TCP	74
15	2024-02-27 20:45:15.811531	173.59.230.213	443 → 51741 [ACK] Seq=1 Ack=33 Win=1022 Len=0	172.108.154.18	TCP	54
16	2024-02-27 20:45:15.811726	173.59.230.213	443 → 62622 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM=1	172.108.154.18	TCP	66
17	2024-02-27 20:45:15.812086	173.59.230.213	443 → 51741 [FIN, ACK] Seq=1 Ack=33 Win=1022 Len=0	172.108.154.18	TCP	54
18	2024-02-27 20:45:15.861718	172.108.154.18	62622 → 443 [ACK] Seq=1 Ack=1 Win=29440 Len=0	173.59.230.213	TCP	60
19	2024-02-27 20:45:15.862472	172.108.154.18	51741 → 443 [ACK] Seq=33 Ack=2 Win=152 Len=0	173.59.230.213	TCP	60
20	2024-02-27 20:45:15.862574	172.108.154.18	Client Hello	173.59.230.213	TLSv1.2	399
22	2024-02-27 20:45:15.883542	173.59.230.213	Server Hello, Certificate, Server Key Exchange, Certificate Request, Server Hello Done	172.108.154.18	TLSv1.2	3447
23	2024-02-27 20:45:15.931317	172.108.154.18	62622 → 443 [ACK] Seq=346 Ack=3394 Win=36896 Len=0	173.59.230.213	TCP	60
24	2024-02-27 20:45:15.933513	172.108.154.18	62622 → 443 [ACK] Seq=346 Ack=3394 Win=36896 Len=1460 [TCP segment of a reassembled PDU]	173.59.230.213	TCP	1514
25	2024-02-27 20:45:15.933514	172.108.154.18	Certificate	173.59.230.213	TLSv1.2	1450
26	2024-02-27 20:45:15.933521	172.108.154.18	Client Key Exchange	173.59.230.213	TLSv1.2	129
27	2024-02-27 20:45:15.933616	173.59.230.213	443 → 62622 [ACK] Seq=3394 Ack=3277 Win=262656 Len=0	172.108.154.18	TCP	54
28	2024-02-27 20:45:15.935640	172.108.154.18	Certificate Verify	173.59.230.213	TLSv1.2	323
29	2024-02-27 20:45:15.935696	173.59.230.213	443 → 62622 [ACK] Seq=3394 Ack=3546 Win=262400 Len=0	172.108.154.18	TCP	54
30	2024-02-27 20:45:15.935754	172.108.154.18	Change Cipher Spec	173.59.230.213	TLSv1.2	60
31	2024-02-27 20:45:15.935899	172.108.154.18	Encrypted Handshake Message	173.59.230.213	TLSv1.2	99
32	2024-02-27 20:45:15.935916	173.59.230.213	443 → 62622 [ACK] Seq=3394 Ack=3597 Win=262400 Len=0	172.108.154.18	TCP	54
33	2024-02-27 20:45:15.942551	173.59.230.213	Change Cipher Spec, Encrypted Handshake Message	172.108.154.18	TLSv1.2	105
34	2024-02-27 20:45:15.990715	172.108.154.18	Application Data	173.59.230.213	TLSv1.2	611
35	2024-02-27 20:45:16.033092	173.59.230.213	443 → 62622 [ACK] Seq=3445 Ack=4154 Win=261888 Len=0	172.108.154.18	TCP	54
36	2024-02-27 20:45:16.042773	173.59.230.213	Application Data	172.108.154.18	TLSv1.2	100
37	2024-02-27 20:45:16.128147	172.108.154.18	62622 → 443 [ACK] Seq=4154 Ack=3491 Win=36896 Len=0	173.59.230.213	TCP	60
38	2024-02-27 20:45:16.128212	173.59.230.213	Application Data, Application Data, Application Data, Application Data, Application Data, Application Data	172.108.154.18	TLSv1.2	559
40	2024-02-27 20:45:16.178078	172.108.154.18	62622 → 443 [ACK] Seq=4154 Ack=3996 Win=38912 Len=0	173.59.230.213	TCP	60

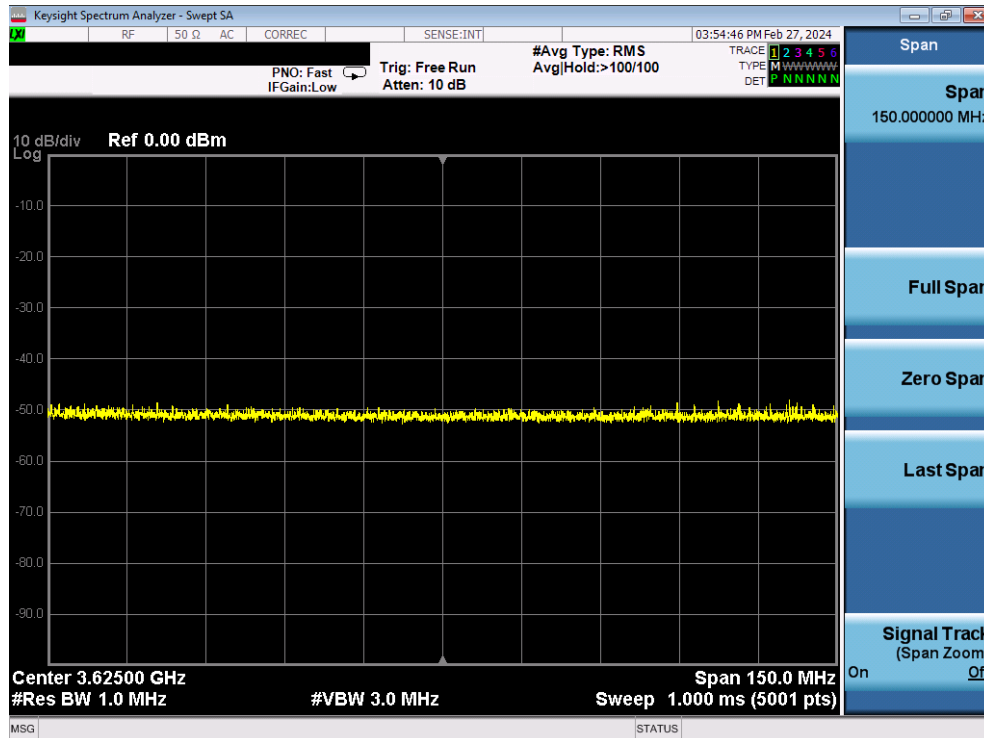
Plot 21. WireShark Screenshot – Successful Handshake (WINNF.FT.C.SCS.1)

FCC ID: A3LMT6402-48A	MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 45 of 60

## A23 [WINNF.FT.C.SCS.2] TLS failure due to revoked certificate

	Test Execution Steps	PASS	FAIL
1	• UUT shall start CBSD-SAS communication with the security procedure	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	UUT may retry for the security procedure which shall fail	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### Test Plots:



Plot 22. Conducted Measurement – UUT RF transmission range and bandwidths are less or equal to frequency range and bandwidth of compatible BTS-CBSD (WINNF.FT.C.SCS.2)

FCC ID: A3LMT6402-48A		MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)		Page 46 of 60



No.	Time	Source	Info	Destination	Protocol	Length
24	2024-02-27 20:48:54.278328	172.108.154.18	50473 → 443 [SYN] Seq=0 Win=29288 Len=0 MSS=1460 SACK_PERM=1 TSval=3683326236 TSecr=0 WS=256	173.59.230.213	TCP	74
25	2024-02-27 20:48:54.278557	173.59.230.213	443 → 50473 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM=1	172.108.154.18	TCP	68
26	2024-02-27 20:48:54.323265	172.108.154.18	50473 → 443 [ACK] Seq=1 Ack=1 Win=29448 Len=0	173.59.230.213	TCP	60
27	2024-02-27 20:48:54.328593	172.108.154.18	Client Hello	173.59.230.213	TLSv1.2	399
28	2024-02-27 20:48:54.352242	173.59.230.213	Server Hello, Certificate, Server Key Exchange, Certificate Request, Server Hello Done	172.108.154.18	TLSv1.2	3575
29	2024-02-27 20:48:54.401992	172.108.154.18	50473 → 443 [ACK] Seq=346 Ack=3522 Win=36352 Len=0	173.59.230.213	TCP	60
30	2024-02-27 20:48:54.411350	172.108.154.18	Alert (Level: Fatal, Description: Certificate Unknown)	173.59.230.213	TLSv1.2	61
31	2024-02-27 20:48:54.411457	172.108.154.18	50473 → 443 [FIN, ACK] Seq=353 Ack=3522 Win=36352 Len=0	173.59.230.213	TCP	60
32	2024-02-27 20:48:54.411496	173.59.230.213	443 → 50473 [ACK] Seq=3522 Ack=354 Win=262400 Len=0	172.108.154.18	TCP	54
33	2024-02-27 20:48:54.411781	173.59.230.213	443 → 50473 [FIN, ACK] Seq=3522 Ack=354 Win=262400 Len=0	172.108.154.18	TCP	58
34	2024-02-27 20:48:54.460776	172.108.154.18	50473 → 443 [ACK] Seq=354 Ack=3523 Win=36352 Len=0	173.59.230.213	TCP	60

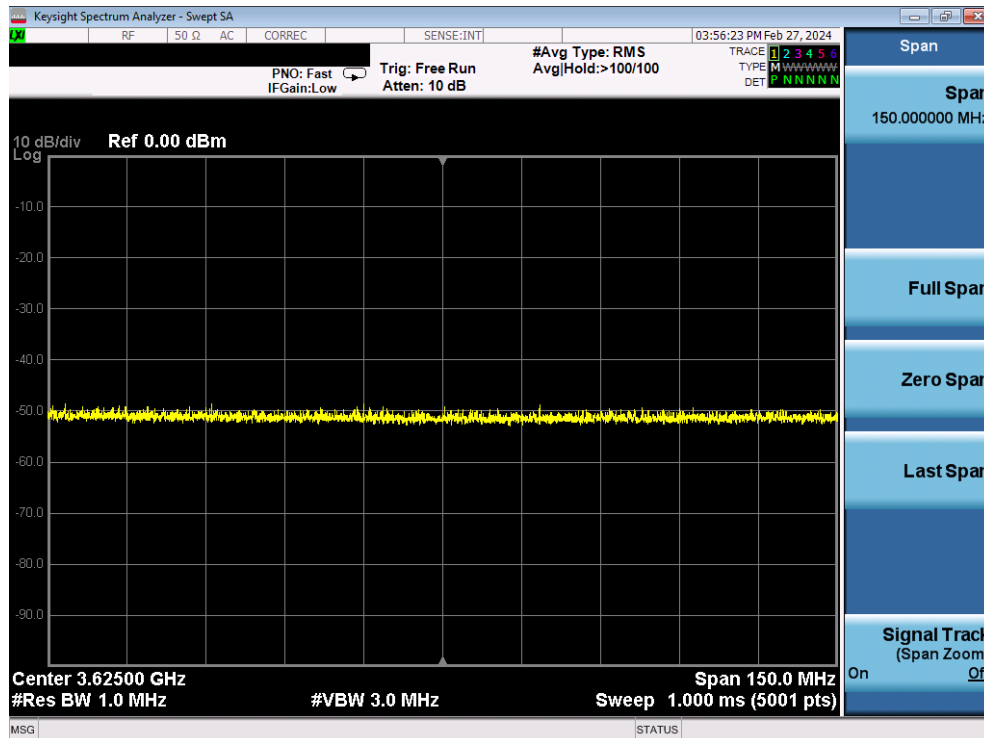
**Plot 23.WireShark Screenshot 1 - Failed Handshake (WINNF.FT.C.SCS.2)**

<b>FCC ID:</b> A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1M2402190010-01.A3L	<b>Test Dates:</b> 3/1/2024-3/21/2024	<b>EUT Type:</b> MMU (MT6402)	Page 47 of 60

## A24 [WINNF.FT.C.SCS.3] TLS failure due to expired server certificate

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

### Test Plots:



Plot 24. Conducted Measurement – UUT RF transmission range and bandwidths are less or equal to frequency range and bandwidth of compatible BTS-CBSD (WINNF.FT.C.SCS.3)

FCC ID: A3LMT6402-48A		MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)		Page 48 of 60



No.	Time	Source	Info	Destination	Protocol	Length
57	2024-02-27 20:50:39.146189	172.108.154.18	12601 → 443 [SYN] Seq=0 Win=29200 Len=0 MSS=1460 SACK_PERM=1 TSval=3683431180 TSecr=0 WS=256	173.59.230.213	TCP	74
58	2024-02-27 20:50:39.146417	173.59.230.213	443 → 12601 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM=1	172.108.154.18	TCP	68
59	2024-02-27 20:50:39.196991	172.108.154.18	12601 → 443 [ACK] Seq=1 Ack=1 Win=29440 Len=0	173.59.230.213	TCP	60
60	2024-02-27 20:50:39.196993	172.108.154.18	Client Hello	173.59.230.213	TLSv1.2	399
61	2024-02-27 20:50:39.220079	173.59.230.213	Server Hello, Certificate, Server Key Exchange, Certificate Request, Server Hello Done	172.108.154.18	TLSv1.2	3465
62	2024-02-27 20:50:39.266733	172.108.154.18	12601 → 443 [ACK] Seq=346 Ack=3412 Win=36896 Len=0	173.59.230.213	TCP	60
63	2024-02-27 20:50:39.268283	172.108.154.18	Alert (Level: Fatal, Description: Certificate Unknown)	173.59.230.213	TLSv1.2	61
64	2024-02-27 20:50:39.268284	172.108.154.18	12601 → 443 [FIN, ACK] Seq=353 Ack=3412 Win=36896 Len=0	173.59.230.213	TCP	60
65	2024-02-27 20:50:39.268362	173.59.230.213	443 → 12601 [ACK] Seq=3412 Ack=354 Win=262400 Len=0	172.108.154.18	TCP	54
66	2024-02-27 20:50:39.288713	173.59.230.213	443 → 12601 [FIN, ACK] Seq=3412 Ack=354 Win=262400 Len=0	172.108.154.18	TCP	54
67	2024-02-27 20:50:39.315609	172.108.154.18	12601 → 443 [ACK] Seq=354 Ack=3413 Win=36896 Len=0	173.59.230.213	TCP	60

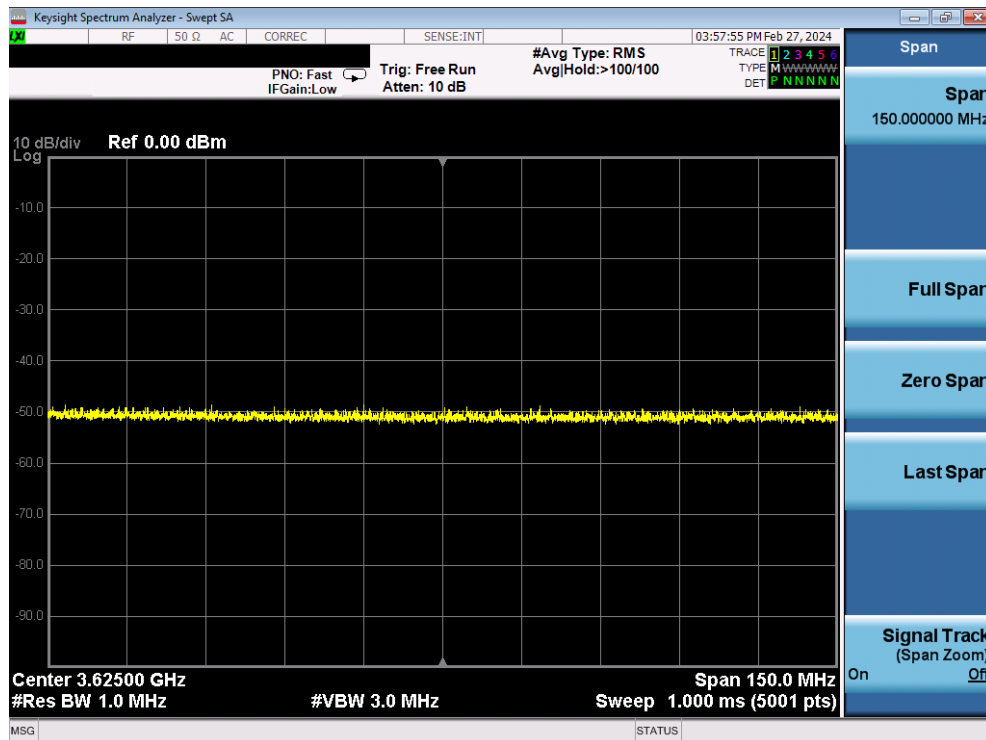
### Plot 25. WireShark Screenshot - Failed Handshake (WINNF.FT.C.SCS.3)

FCC ID: A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 49 of 60

**A25 [WINNF.FT.C.SCS.4] TLS failure when SAS Test Harness certificate is issued by an unknown CA**

	Test Execution Steps	PASS	FAIL
1	• UUT shall start CBSD-SAS communication with the security procedure	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	UUT may retry for the security procedure which shall fail	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**Test Plots:**



**Plot 26. Conducted Measurement – UUT RF transmission range and bandwidths are less or equal to frequency range and bandwidth of compatible BTS-CBSD (WINNF.FT.C.SCS.4)**

FCC ID: A3LMT6402-48A		MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 50 of 60	



No.	Time	Source	Info	Destination	Protocol	Length
41	2024-02-27 20:52:11.481310	172.108.154.18	24617 → 443 [SYN] Seq=0 Win=29200 Len=0 MSS=1460 SACK_PERM=1 TSval=3683523446 TSecr=0 WS=256	173.59.230.213	TCP	74
42	2024-02-27 20:52:11.481576	173.59.230.213	443 → 24617 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM=1	172.108.154.18	TCP	66
43	2024-02-27 20:52:11.525750	172.108.154.18	24617 → 443 [ACK] Seq=1 Ack=1 Win=29440 Len=0	173.59.230.213	TCP	60
44	2024-02-27 20:52:11.525751	172.108.154.18	Client Hello	173.59.230.213	TLSv1.2	399
45	2024-02-27 20:52:11.548628	173.59.230.213	Server Hello, Certificate, Server Key Exchange, Certificate Request, Server Hello Done	172.108.154.18	TLSv1.2	3467
46	2024-02-27 20:52:11.595500	172.108.154.18	24617 → 443 [ACK] Seq=346 Ack=1461 Win=32256 Len=0	173.59.230.213	TCP	60
47	2024-02-27 20:52:11.595501	172.108.154.18	24617 → 443 [ACK] Seq=346 Ack=3414 Win=36096 Len=0	173.59.230.213	TCP	60
48	2024-02-27 20:52:11.595581	172.108.154.18	Alert (Level: Fatal, Description: Certificate Unknown)	173.59.230.213	TLSv1.2	61
49	2024-02-27 20:52:11.595582	172.108.154.18	24617 → 443 [FIN, ACK] Seq=353 Ack=3414 Win=36096 Len=0	173.59.230.213	TCP	68
50	2024-02-27 20:52:11.595642	173.59.230.213	443 → 24617 [ACK] Seq=3414 Ack=354 Win=262400 Len=0	172.108.154.18	TCP	54
51	2024-02-27 20:52:11.596823	173.59.230.213	443 → 24617 [FIN, ACK] Seq=3414 Ack=354 Win=262400 Len=0	172.108.154.18	TCP	54
52	2024-02-27 20:52:11.643284	172.108.154.18	24617 → 443 [ACK] Seq=354 Ack=3415 Win=36096 Len=0	173.59.230.213	TCP	60

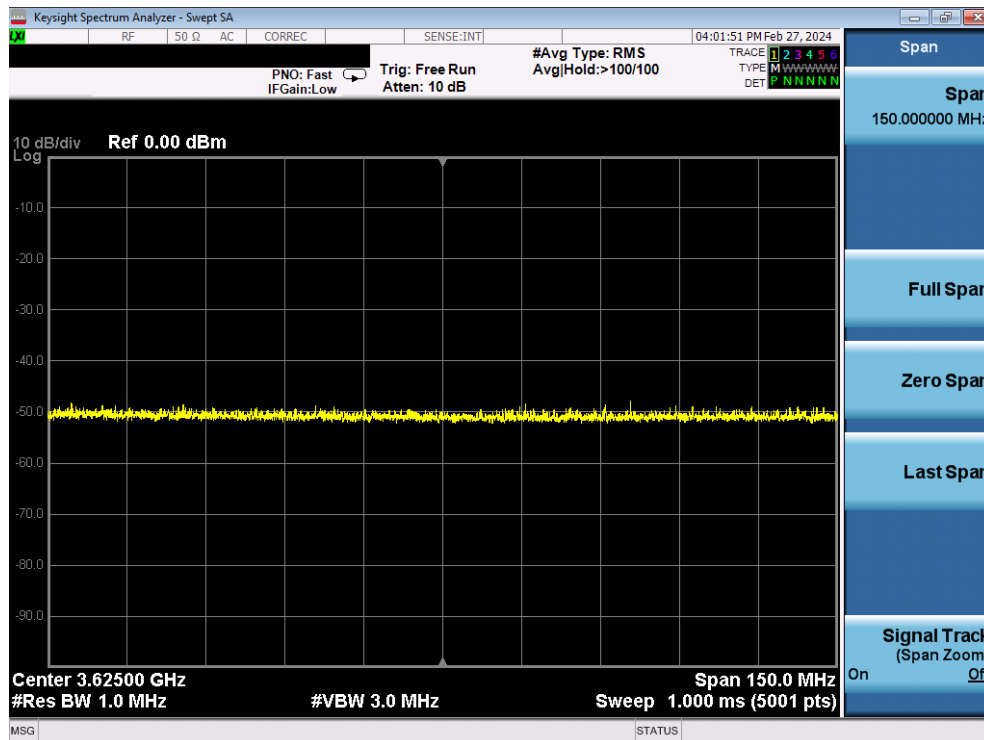
**Plot 27. WireShark Screenshot - Failed Handshake (WINNF.FT.C.SCS.4)**

<b>FCC ID:</b> A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1M2402190010-01.A3L	<b>Test Dates:</b> 3/1/2024-3/21/2024	<b>EUT Type:</b> MMU (MT6402)	Page 51 of 60

## A26 [WINNF.FT.C.SCS.5] TLS failure when certificate at the SAS Test Harness is corrupted

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

### Test Plots:



Plot 28. Conducted Measurement – UUT RF transmission range and bandwidths are less or equal to frequency range and bandwidth of compatible BTS-CBSD (WINNF.FT.C.SCS.5)

FCC ID: A3LMT6402-48A	MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 52 of 60

No.	Time	Source	Info	Destination	Protocol	Length
48	2024-02-27 20:56:15.683561	172.108.154.18	20365 → 443 [SYN] Seq=0 Win=29200 Len=0 MSS=1460 SACK_PERM=1 TSval=3683767451 TSecr=0 WS=256	173.59.230.213	TCP	74
49	2024-02-27 20:56:15.683895	173.59.230.213	443 → 20365 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM=1	172.108.154.18	TCP	68
50	2024-02-27 20:56:15.728312	172.108.154.18	20365 → 443 [ACK] Seq=1 Ack=1 Win=29440 Len=0	173.59.230.213	TCP	60
51	2024-02-27 20:56:15.728313	172.108.154.18	Client Hello	173.59.230.213	TLSv1.2	399
52	2024-02-27 20:56:15.743719	173.59.230.213	Server Hello, Certificate, Server Key Exchange, Certificate Request, Server Hello Done	172.108.154.18	TLSv1.2	3447
53	2024-02-27 20:56:15.787378	172.108.154.18	20365 → 443 [ACK] Seq=346 Ack=3394 Win=36096 Len=0	173.59.230.213	TCP	60
54	2024-02-27 20:56:15.790273	172.108.154.18	Alert (Level: Fatal, Description: Certificate Unknown)	173.59.230.213	TLSv1.2	61
55	2024-02-27 20:56:15.790273	172.108.154.18	20365 → 443 [FIN, ACK] Seq=353 Ack=3394 Win=36096 Len=0	173.59.230.213	TCP	60
56	2024-02-27 20:56:15.790316	173.59.230.213	443 → 20365 [ACK] Seq=3394 Ack=354 Win=262400 Len=0	172.108.154.18	TCP	54
57	2024-02-27 20:56:15.799524	173.59.230.213	443 → 20365 [FIN, ACK] Seq=3394 Ack=354 Win=262400 Len=0	172.108.154.18	TCP	54
58	2024-02-27 20:56:15.836210	172.108.154.18	20365 → 443 [ACK] Seq=354 Ack=3395 Win=36096 Len=0	173.59.230.213	TCP	60

**Plot 29. WireShark Screenshot - Failed Handshake (WINNF.FT.C.SCS.5)**

FCC ID: A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 53 of 60

## A27 [WINNF.PT.C.HBT.1] UUT RF Transmit Power Measurement

	Test Execution Steps	PASS	FAIL
1	<p>Ensure the following conditions are met for test entry:</p> <ul style="list-style-type: none"> <li>• UUT has successfully completed SAS Discovery and Authentication with the SAS Test Harness</li> <li>• UUT has registered with the SAS, with CBSID ID = C</li> <li>• UUT has a single valid grant G with parameters {lowFrequency = FL, highFrequency = FH, maxEirp = Pi}, with grant in AUTHORIZED state, and grantExpireTime set to a value far past the duration of this test case</li> </ul> <p><i>Note: in order for the UUT to request a grant with the parameters {lowFrequency, highFrequency, maxEirp}, the SAS Test Harness may need to provide appropriate guidance in the availableChannel object of the spectrumInquiry response message, and the operationParam object of the grant response message. Alternately, the UUT vendor may provide the ability to set those parameters on the UUT so that the UUT will request a grant with those parameters.</i></p>	--	--
2	<p>UUT and SAS Test Harness perform a series of Heartbeat Request/Response cycles, which continues until the other test steps are complete. Messaging for each cycle is as follows:</p> <ul style="list-style-type: none"> <li>• UUT sends Heartbeat Request, including: <ul style="list-style-type: none"> <li>o cbsdId = C</li> <li>o grantId = G</li> </ul> </li> <li>• SAS Test Harness responds with Heartbeat Response, including: <ul style="list-style-type: none"> <li>o cbsdId = C</li> <li>o grantId = G</li> <li>o transmitExpireTime = current UTC time + 200 seconds</li> <li>o responseCode = 0</li> </ul> </li> </ul>	--	--
3	<p>Tester performs power measurement on RF interface(s) of UUT, and verifies it complies with the maxEirp setting, Pi. The RF measurement method is out of scope of this document, but may include additional configuration of the UUT, as required, to fulfil the requirements of the power measurement method.</p> <p><i>Note: it may be required for the vendor to provide a method or configuration to bring the UUT to a mode which is required by the measurement methodology. Any such mode is vendor-specific and depends upon UUT behavior and the measurement methodology.</i></p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

FCC ID: A3LMT6402-48A	MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 54 of 60



**RF Power Measurements:**

Testing is performed per KDB 971168 D01 and across the transmit dynamic range of 37dBm/MHz to 13dBm/MHz for 20MHz Bandwidth. This was tested in single-beam mode as this mode yields the highest EIRP.

Output power was found to be identical across the UUT's 64 antenna ports. MIMO conducted PSD was found by measuring the output on one port and correcting by a factor of  $10\log(64)$ .

EIRP PSD is found by adding the directional antenna gain (14.45dBi) to the conducted PSD level.

SAS Authorized EIRP [dBm/MHz]	Single Port Conducted PSD [dBm]	64 Port Conducted PSD [dBm]	Antenna Gain [dBi]	EIRP PSD [dBm]	Margin [dB]
37	3.89	21.95	14.45	36.40	-0.60
30	-3.14	14.93	14.45	29.38	-0.62
23	-10.30	7.77	14.45	22.22	-0.78

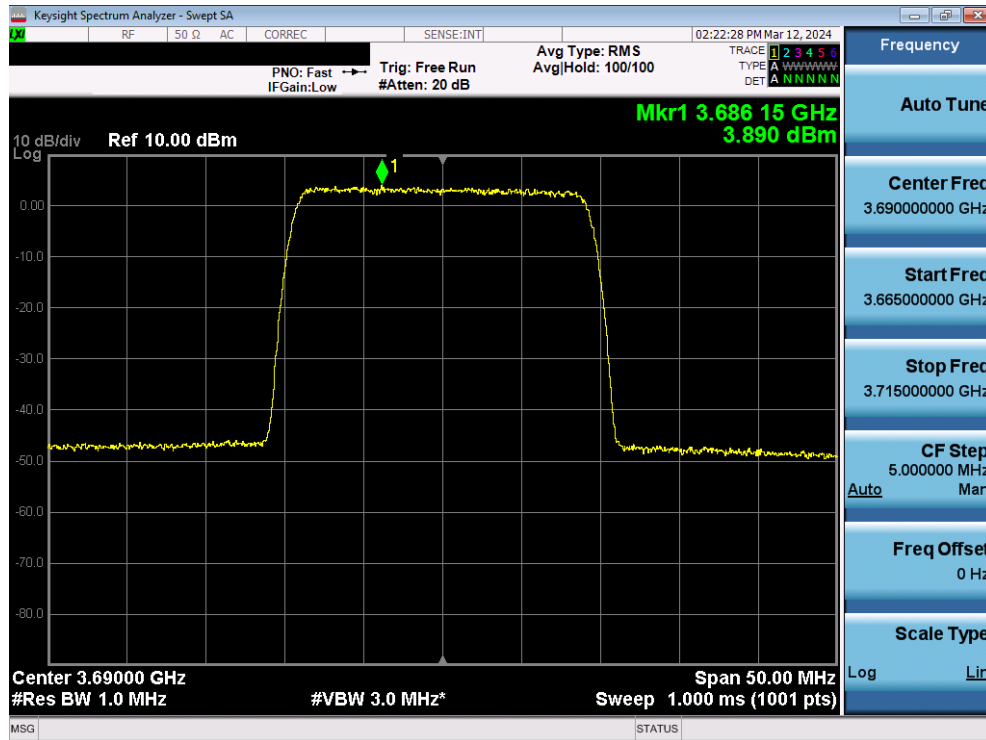
**Table 7-1 RF Output Power Measurements (WINNF.PT.C.HBT.1) – NR**

SAS Authorized EIRP [dBm/MHz]	Single Port Conducted PSD [dBm]	64 Port Conducted PSD [dBm]	Antenna Gain [dBi]	EIRP PSD [dBm]	Margin [dB]
37	4.10	22.16	14.45	36.61	-0.39
30	-3.10	14.96	14.45	29.41	-0.59
23	-10.02	8.04	14.45	22.49	-0.51

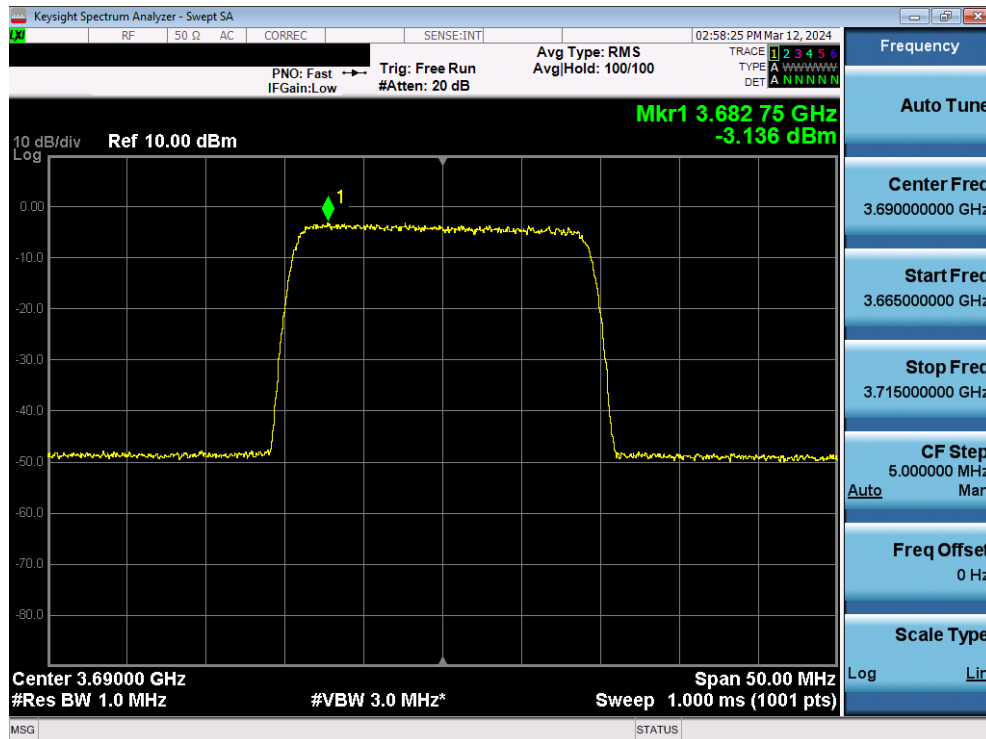
**Table 7-1 RF Output Power Measurements (WINNF.PT.C.HBT.1) – LTE**

<b>FCC ID:</b> A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1M2402190010-01.A3L	<b>Test Dates:</b> 3/1/2024-3/21/2024	<b>EUT Type:</b> MMU (MT6402)	Page 55 of 60

**Test Plots:**



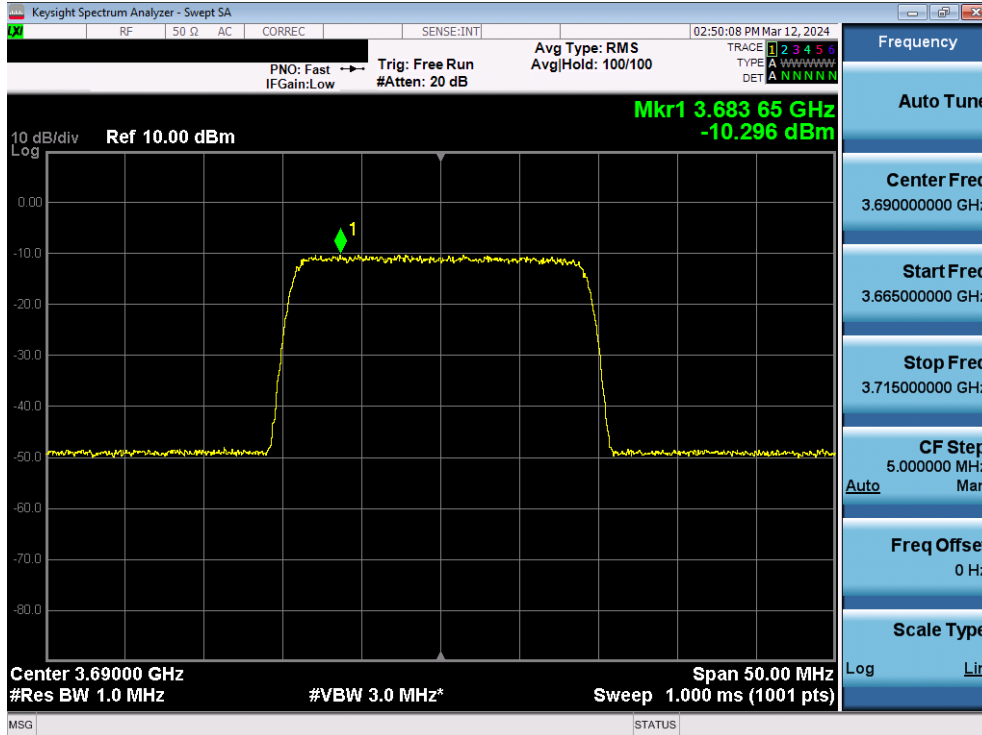
**Plot 30. Conducted PSD, SAS Granted maxEIRP 37 – NR**



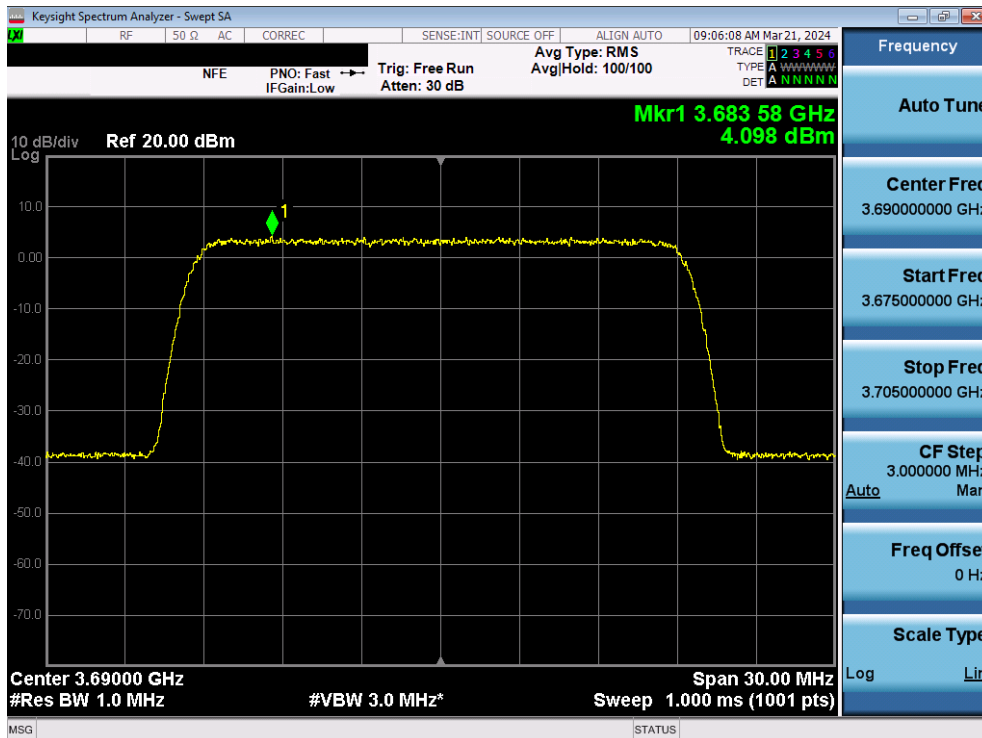
**Plot 31. Conducted PSD, SAS Granted maxEIRP 30 – NR**

FCC ID: A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 56 of 60



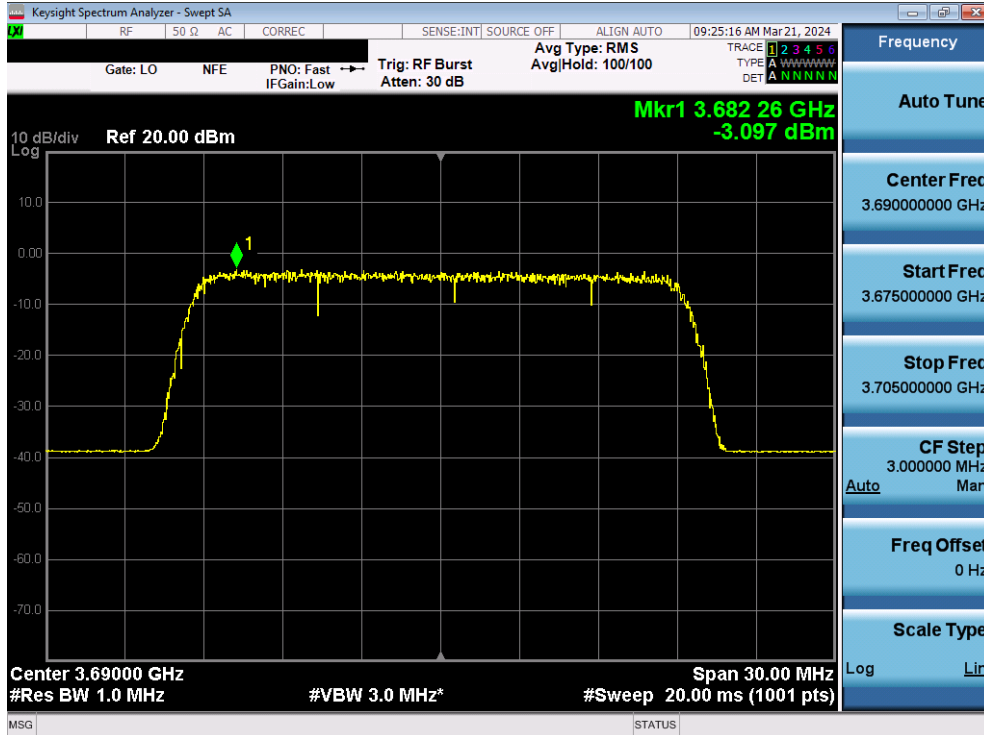


Plot 32. Conducted PSD, SAS Granted maxEIRP 23 – NR

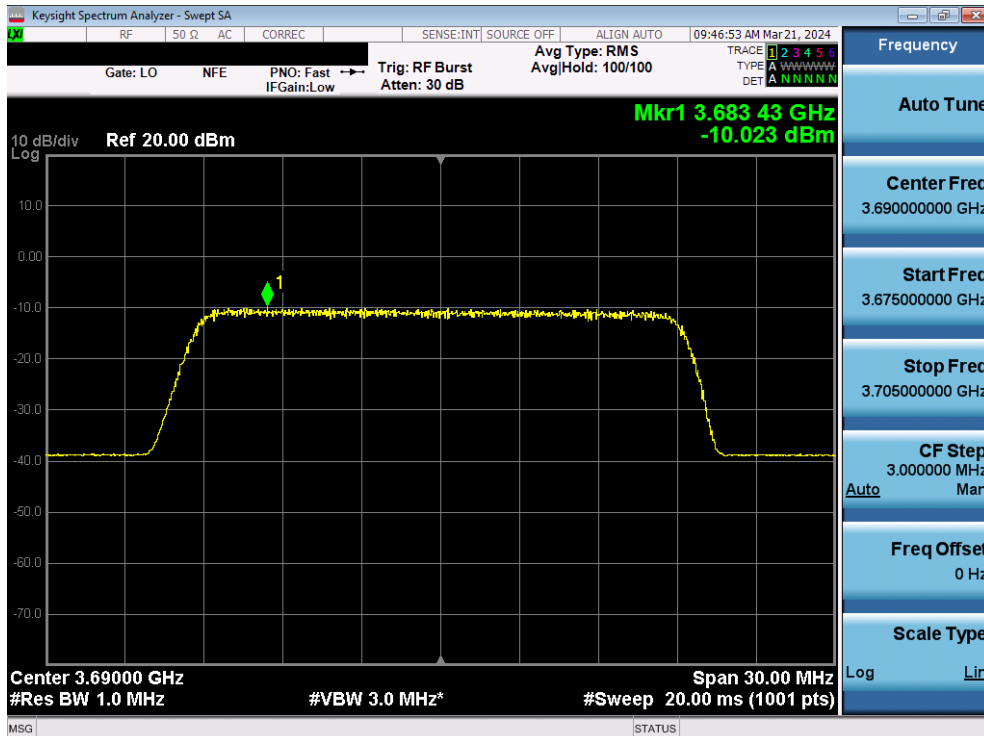


Plot 33. Conducted PSD, SAS Granted maxEIRP 37 – LTE

FCC ID: A3LMT6402-48A	MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 57 of 60



Plot 34. Conducted PSD, SAS Granted maxEIRP 30 – LTE












































Plot 35. Conducted PSD, SAS Granted maxEIRP 23 – LTE

FCC ID: A3LMT6402-48A	MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 58 of 60

## APPENDIX B – TEST LOGS

Logs are available upon request

 PowerMeasTest_2024-03-12T18.03.5 1Z Text Document	 PowerMeasTest_2024-03-12T18.25.5 7Z Text Document	 PowerMeasTest_2024-03-12T18.31.4 8Z Text Document
 PowerMeasTest_2024-03-12T18.36.0 1Z Text Document	 PowerMeasTest_2024-03-12T18.46.1 7Z Text Document	 PowerMeasTest_2024-03-21T18.05.4 5Z Text Document
 PowerMeasTest_2024-03-21T18.45.0 2Z Text Document	 PowerMeasTest_2024-03-21T19.01.4 9Z Text Document	 PowerMeasTest_2024-03-21T19.17.4 1Z Text Document
 WINNF.FT.C.DRG.1_2024-03-11T19. 46.20Z Text Document	 WINNF.FT.C.GRA.1_2024-02-27T20. 38.31Z Text Document	 WINNF.FT.C.GRA.2_2024-02-27T20. 40.00Z Text Document
 WINNF.FT.C.GRA.2_2024-02-27T20. 40.25Z Text Document	 WINNF.FT.C.HBT.1_2024-02-27T20.5 7.45Z Text Document	 WINNF.FT.C.HBT.1_2024-03-11T18.2 5.55Z Text Document
 WINNF.FT.C.HBT.1_2024-03-11T18.3 0.41Z Text Document	 WINNF.FT.C.HBT.1_2024-03-11T18.4 3.29Z Text Document	 WINNF.FT.C.HBT.1_2024-03-11T18.4 9.50Z Text Document
 WINNF.FT.C.HBT.3_2024-03-11T18.5 6.42Z Text Document	 WINNF.FT.C.HBT.3_2024-03-11T18.5 8.50Z Text Document	 WINNF.FT.C.HBT.4_2024-03-11T19.0 4.49Z Text Document
 WINNF.FT.C.HBT.5_2024-03-11T19.1 2.45Z Text Document	 WINNF.FT.C.HBT.6_2024-03-11T19.1 5.05Z Text Document	 WINNF.FT.C.HBT.7_2024-03-11T19.2 0.41Z Text Document
 WINNF.FT.C.HBT.9_2024-03-11T19.2 7.02Z Text Document	 WINNF.FT.C.HBT.10_2024-03-11T19. 32.18Z Text Document	 WINNF.FT.C.MES.1_2024-02-27T20. 43.11Z Text Document
 WINNF.FT.C.REG.1_2024-02-27T20.2 6.43Z Text Document	 WINNF.FT.C.REG.1_2024-02-27T20.4 4.49Z Text Document	 WINNF.FT.C.REG.1_2024-02-27T20.4 8.38Z Text Document
 WINNF.FT.C.REG.1_2024-02-27T20.5 0.26Z Text Document	 WINNF.FT.C.REG.1_2024-02-27T20.5 1.59Z Text Document	 WINNF.FT.C.REG.1_2024-02-27T20.5 4.48Z Text Document
 WINNF.FT.C.REG.1_2024-02-27T20.5 6.03Z Text Document	 WINNF.FT.C.REG.8_2024-02-27T20.3 2.34Z Text Document	 WINNF.FT.C.REG.10_2024-02-27T20. 33.45Z Text Document
 WINNF.FT.C.REG.12_2024-02-27T20. 34.40Z Text Document	 WINNF.FT.C.REG.14_2024-02-27T20. 35.28Z Text Document	 WINNF.FT.C.REG.16_2024-02-27T20. 36.11Z Text Document
 WINNF.FT.C.REG.18_2024-02-27T20. 37.00Z Text Document	 WINNF.FT.C.RLQ.1_2024-03-11T19. 41.09Z Text Document	

FCC ID: A3LMT6402-48A	<b>MEASUREMENT REPORT (CLASS III PERMISSIVE CHANGE)</b>		Approved by: Technical Manager
Test Report S/N: 1M2402190010-01.A3L	Test Dates: 3/1/2024-3/21/2024	EUT Type: MMU (MT6402)	Page 59 of 60