

Part 96 MEASUREMENT REPORT

Applicant Name:

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

Date of Testing:

06/15/2022

Test Report Issue Date:

06/15/2022

Test Site/Location:

Element lab., Columbia, MD, USA

Test Report Serial No.:

1M2206130072-01.A3L

FCC ID:

A3LSMA236U

APPLICANT:

Samsung Electronics Co., Ltd.

Application Type:

Certification

Model(s):

SM-A236U

EUT Type:

Portable Handset

FCC Classification:

Citizens Band End User Devices (CBE)

FCC Rule Part(s):

96

Test Procedure(s):

KDB 940660 D01 v03, WINNF-18-IN-00178 v1.0.0.00


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 §2.947. 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




FCC ID: A3LSMA236U	 PART 96 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1M2206130072-01.A3L	Test Dates: 06/15/2022	EUT Type: Portable Handset
		Page 1 of 12

V3.0 1/6/2022

T A B L E O F C O N T E N T S

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	Test Configuration	4
2.3	Software and Firmware	4
2.4	EMI Suppression Device(s)/Modifications	4
3.0	DESCRIPTION OF TESTS	5
3.1	Measurement Procedure.....	5
3.2	Additional Requirements for End User Devices	5
4.0	MEASUREMENT UNCERTAINTY	6
5.0	TEST EQUIPMENT CALIBRATION DATA	7
6.0	TEST RESULTS	8
6.1	Summary.....	8
6.2	End User Device Additional Requirement (CBSD Protocol).....	9
7.0	CONCLUSION.....	12

FCC ID: A3LSMA236U	 PART 96 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1M2206130072-01.A3L	Test Dates: 06/15/2022	EUT Type: Portable Handset
		Page 2 of 12

1.0 INTRODUCTION

1.1 Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for 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 facility located at 7185 Oakland Mills Road, Columbia, MD 21046. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014 and KDB 414788 D01 v01r01.

1.3 Test Facility / Accreditations

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

- Element is a OnGo Alliance Approved Test Lab (ATL)
- 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 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.

FCC ID: A3LSMA236U		PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2206130072-01.A3L	Test Dates: 06/15/2022	EUT Type: Portable Handset		Page 3 of 12

V3.0 1/6/2022

2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID: A3LSMA236U**. The test data contained in this report pertains only to the additional requirements for end user devices specified in 96.47 of the FCC rules for NR n48 operation in the CBRS band. Per FCC Part 96, this device is evaluated as a Citizens Band End User Devices (CBE).

Test Device Serial No.: ETSYV

2.2 Test Configuration


The EUT was tested per the guidance of KDB 940660 D01 v03 and WINNF-18-IN-00178 v1.0.0.00. See Section 6.0 of this test report for a description of the tests.

2.3 Software and Firmware

Testing was performed on device(s) using software/firmware version A236USQU0AVF3 installed on the EUT.

2.4 EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and no modifications were made during testing.

FCC ID: A3LSMA236U	 PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2206130072-01.A3L	Test Dates: 06/15/2022	EUT Type: Portable Handset	Page 4 of 12

3.0 DESCRIPTION OF TESTS


3.1 Measurement Procedure

The measurement procedures described in KDB 940660 D01 v03 and WINNF-18-IN-00178 v1.0.0.00 were used in the measurement of the EUT to address the additional requirements for End User Devices.

Deviation from Measurement Procedure.....None

3.2 Additional Requirements for End User Devices

See Section 6.2 of this report for a description of the specific test(s) run in order to demonstrate compliance to this requirement under Part 96.47 of the FCC Rules.


FCC ID: A3LSMA236U	 PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2206130072-01.A3L	Test Dates: 06/15/2022	EUT Type: Portable Handset	Page 5 of 12

V3.0 1/6/2022

4.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4-2014. All measurement uncertainty values are shown with a coverage factor of $k = 2$ to indicate a 95% level of confidence. The measurement uncertainty shown below meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Contribution	Expanded Uncertainty (\pm dB)
Conducted Bench Top Measurements	1.13
Radiated Disturbance (<1GHz)	4.98
Radiated Disturbance (>1GHz)	5.07
Radiated Disturbance (>18GHz)	5.09

FCC ID: A3LSMA236U	 PART 96 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1M2206130072-01.A3L	Test Dates: 06/15/2022	EUT Type: Portable Handset
		Page 6 of 12

V3.0 1/6/2022

5.0 TEST EQUIPMENT CALIBRATION DATA


Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST). Measurements antennas used during testing were calibrated in accordance to the requirements of ANSI C63.5-2017.

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Keysight	N9020A	MXA Signal Analyzer	3/4/2022	Annual	3/4/2023	US46470561
Dell	Latitude 5590	Test Harness Laptop	N/A	N/A	N/A	BHN3QV2

Table 5-1. Test Equipment Table

Notes:

1. For equipment listed above that has a calibration date or calibration due date that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date.
2. Equipment with a calibration date of "N/A" shown in this list was not used to make direct calibrated measurements.

FCC ID: A3LSMA236U		PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2206130072-01.A3L	Test Dates: 06/15/2022	EUT Type: Portable Handset		Page 7 of 12

V3.0 1/6/2022


6.0 TEST RESULTS

6.1 Summary

Company Name: Samsung Electronics Co., Ltd.
 FCC ID: A3LSMA236U
 FCC Classification: Citizens Band End User Devices (CBE)
 Mode(s): NR

Test Condition	Test Description	FCC Part Section(s)	Test Limit	Test Result	Reference
CONDUCTED	End User Device Additional Requirements (CBSD Protocol)	96.47	<p>End User Devices may operate only if they can positively receive and decode an authorization signal transmitted by a CBSD, including the frequencies and power limits for their operation.</p> <p>An End User Device must discontinue operations, change frequencies, or change its operational power level within 10 seconds of receiving instructions from its associated CBSD.</p>	PASS	Section 6.2

Table 6-1. Summary Table

FCC ID: A3LSMA236U	 PART 96 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1M2206130072-01.A3L	Test Dates: 06/15/2022	EUT Type: Portable Handset
		Page 8 of 12

V3.0 1/6/2022



6.2 End User Device Additional Requirement (CBSD Protocol)

Test Overview and Limit

End user device additional requirements (CBSD Protocol) are tested per the test procedures listed below. During testing, the EUT is connected to a certified CBSD as a companion device to show compliance with Part 96.47.

End User Devices may operate only if they can positively receive and decode an authorization signal transmitted by a CBSD, including the frequencies and power limits for their operation.

An End User Device must discontinue operations, change frequencies, or change its operational power level within 10 seconds of receiving instructions from its associated CBSD.

Test Procedure Used

KDB 940660 D01 v03, WINNF-18-IN-00178 v1.0.0.00


Test Setup/Method

The EUT was connected via an RF cable to a certified CBSD and spectrum analyzer. The following procedure is performed by applying WINNF-18-IN-00178 v1.0.0.00 CBRS End User Device as UUT Test Guidelines

1. Run#1:
 - a. Setup WINNF.PT.C.HBT.1 with 3615MHz – 3635MHz.
 - b. Enable 5G AP service from CBSD
 - c. Check EUT Tx frequency.
 - d. Disable AP service and check EUT stop transmission within 10s.
2. Run#2:
 - a. Setup WINNF.PT.C.HBT.1 with 3660MHz – 3680MHz.
 - b. Enable 5G AP service from CBSD
 - c. Check EUT Tx frequency.
 - d. Disable AP service and check EUT stop transmission within 10s.

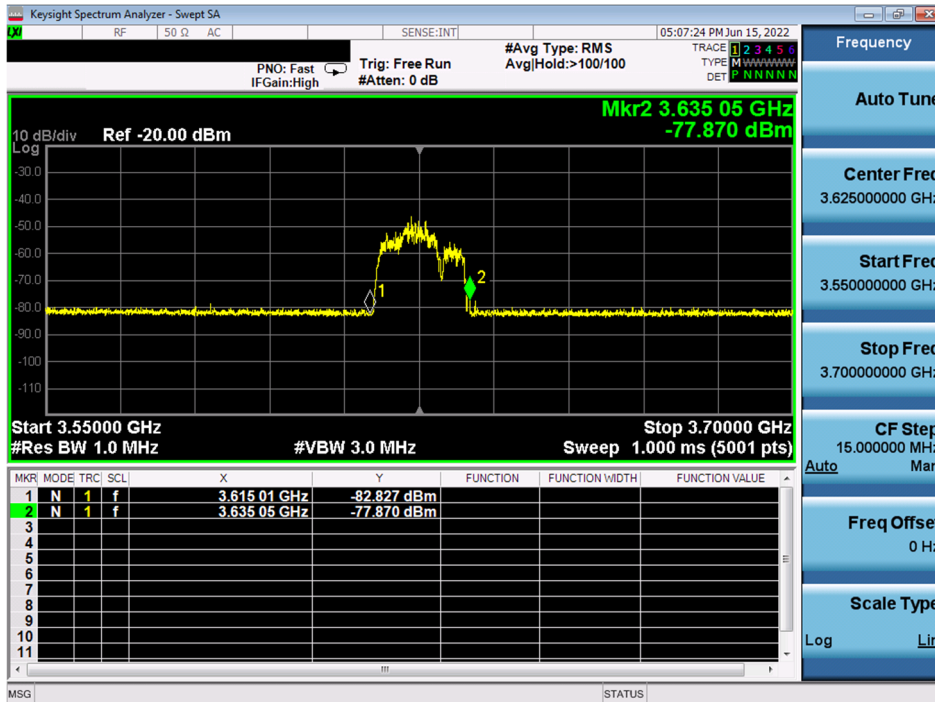
Test Notes

The EUT is an End User Device.

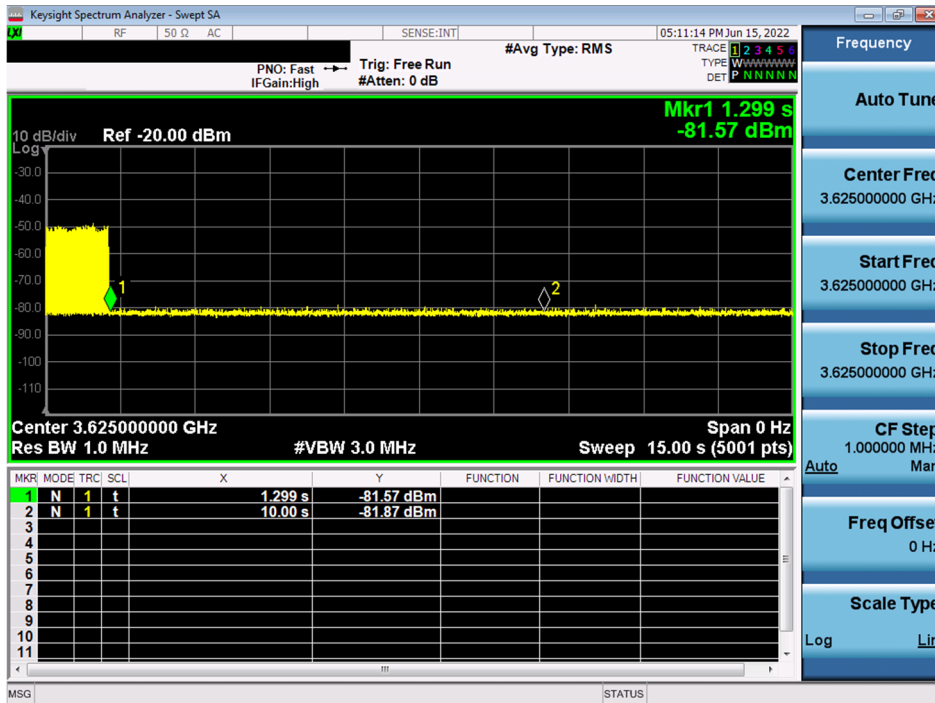
FCC ID: A3LSMA236U	 PART 96 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1M2206130072-01.A3L	Test Dates: 06/15/2022	EUT Type: Portable Handset
		Page 9 of 12

V3.0 1/6/2022

Run#1:



Plot 6-1. Run#1 End User Device Frequency of Operations (3625MHz)



Plot 6-2. Run#1 End User Device Discontinues Operations within 10s

Note:

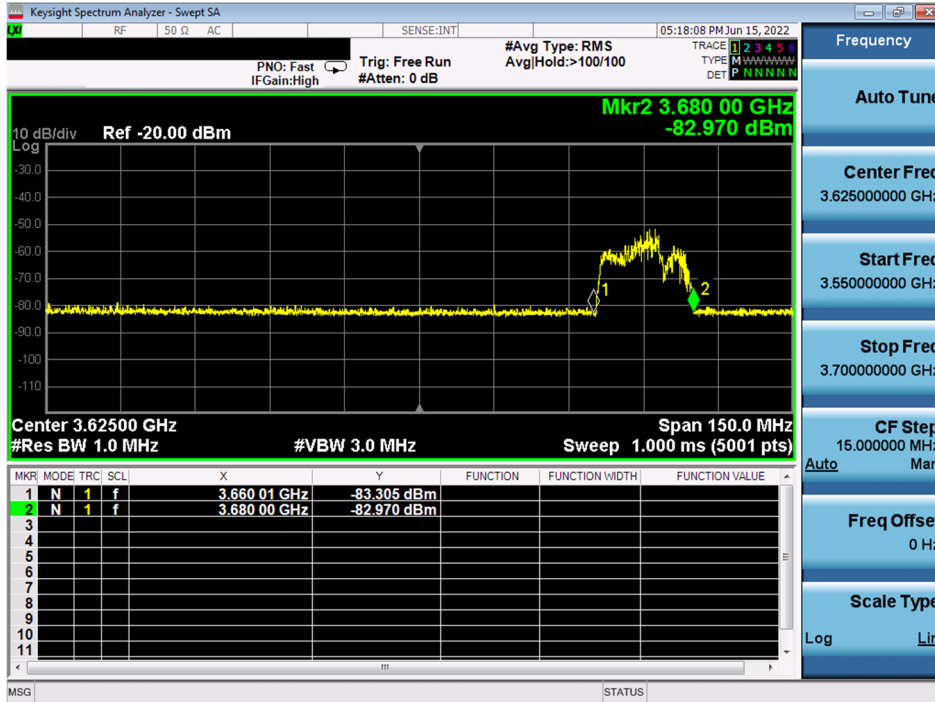
Plot starts when SAS sends deregistration response

Marker 1: EUT discontinues operation.

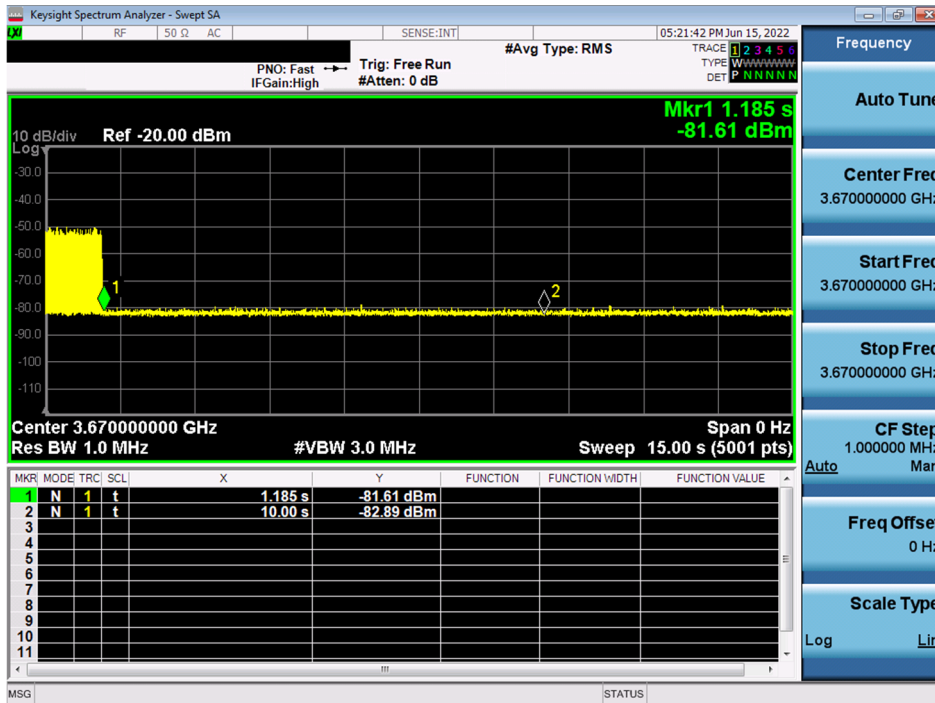
Marker 2: 10 seconds elapsed time from CBSD sending instructions to EUT.

FCC ID: A3LSMA236U	PART 96 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1M2206130072-01.A3L	Test Dates: 06/15/2022	EUT Type: Portable Handset
		Page 10 of 12

Run#2:



Plot 6-3. Run#2 End User Device Frequency of Operations (3670MHz)



Plot 6-4. Run#2 End User Device Discontinues Operations within 10s

Note:

Plot starts when SAS sends deregistration response


Marker 1: EUT discontinues operation.

Marker 2: 10 seconds elapsed time from CBSD sending instructions to EUT.

FCC ID: A3LSMA236U	PART 96 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1M2206130072-01.A3L	Test Dates: 06/15/2022	EUT Type: Portable Handset
		Page 11 of 12

7.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMA236U** complies with the Additional Requirements for End User Devices specified in 96.47 of the FCC Rules for NR operation.

FCC ID: A3LSMA236U	 PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2206130072-01.A3L	Test Dates: 06/15/2022	EUT Type: Portable Handset	Page 12 of 12

V3.0 1/6/2022