



MEASUREMENT REPORT LTE

Applicant Name:

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

Date of Testing:

08/19 - 08/27/2020

Test Site/Location:

PCTEST Lab. Columbia, MD, USA

Test Report Serial No.:

1M2008190136-01.A3L

FCC ID:

A3LSMN981U

APPLICANT:

Samsung Electronics Co., Ltd.

Application Type:

Class II Permissive Change

Model:

SM-N981U

Additional Model(s):

SM-N981U1

EUT Type:

Portable Handset

FCC Classification:

PCS Licensed Transmitter Held to Ear (PCE)

FCC Rule Part(s):

27

Test Procedure(s):

ANSI C63.26-2015, ANSI/TIA-603-E-2016, KDB 971168 D01 v03r01,
KDB 648474 D03 v01r04

Class II Permissive Change:

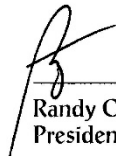
Please see FCC change document

Original Grant Date:

07/22/2020



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.






Randy Ortanez
President



| | | | | |
|--|---|--|---|--|
| FCC ID: A3LSMN981U |  | MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE) |  | Approved by: Quality Manager |
| Test Report S/N: 1M2008190136-01.A3L | Test Dates: 08/19 - 08/27/2020 | EUT Type: Portable Handset | Page 1 of 14 | |

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 | PCTEST 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 | EMI Suppression Device(s)/Modifications..... | 4 |
| 3.0 | DESCRIPTION OF TESTS..... | 5 |
| 3.1 | Measurement Procedure..... | 5 |
| 3.2 | Radiated Power and Radiated Spurious Emissions..... | 5 |
| 4.0 | MEASUREMENT UNCERTAINTY..... | 6 |
| 5.0 | TEST EQUIPMENT CALIBRATION DATA | 7 |
| 6.0 | SAMPLE CALCULATIONS..... | 8 |
| 7.0 | TEST RESULTS..... | 9 |
| 7.1 | Summary..... | 9 |
| 7.2 | Radiated Spurious Emissions Measurements | 10 |
| 8.0 | CONCLUSION | 14 |

| | | | | |
|--|--|--|---|--|
| FCC ID: A3LSMN981U |  PCTEST <small>Proud to be part of  element</small> | MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE) |  | Approved by: Quality Manager |
| Test Report S/N: 1M2008190136-01.A3L | Test Dates: 08/19 - 08/27/2020 | EUT Type: Portable Handset | Page 2 of 14 | |

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 and the Innovation, Science and Economic Development Canada.



1.2 PCTEST Test Location

These measurement tests were conducted at the PCTEST facility located at 18855 Adams Court, Morgan Hill, CA 95037. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014 and KDB 414788 D01 v01.

1.3 Test Facility / Accreditations

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

- PCTEST is an ISO 17025-2005 accredited test facility under the American Association for Laboratory Accreditation (A2LA) with Certificate number 2041.02 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.
- PCTEST 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).
- PCTEST facility is a registered (22831) test laboratory with the site description on file with ISED.

| | | | | |
|--|---|--|---|--|
| FCC ID: A3LSMN981U |  | MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE) |  | Approved by: Quality Manager |
| Test Report S/N: 1M2008190136-01.A3L | Test Dates: 08/19 - 08/27/2020 | EUT Type: Portable Handset | Page 3 of 14 | |

2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID: A3LSMN981U**. The test data contained in this report pertains only to the emissions due to the EUT's LTE function.

Test Device Serial No.: 1166M

2.2 Device Capabilities

This device contains the following capabilities:

800/850/1900 CDMA/EvDO Rev0/A, 1x Advanced (BC0, BC1, BC10), 850/1900 GSM/GPRS/EDGE, 850/1700/1900, WCDMA/HSPA, Multi-band LTE, 5G NR (n5, n12, n71, n41, n66, n2/n25, n260, n261), 802.11b/g/n/ax WLAN, 802.11a/n/ac/ax UNII, Bluetooth (1x, EDR, LE), NFC, Wireless Power Transfer

LTE Band 12 (698 - 716 MHz) overlaps the entire frequency range of LTE Band 17 (704 - 716 MHz).
 LTE Band 26 (814.7 – 849 MHz) overlaps the entire frequency range of LTE Band 5 (824 – 849 MHz).
 LTE Band 66 (1710 - 1780 MHz) overlaps the entire frequency range of LTE Band 4 (1710 - 1755 MHz).
 LTE Band 25 (1850 - 1915 MHz) overlaps the entire frequency range of LTE Band 2 (1850 - 1910 MHz).
 NR Band n25 (1850 - 1915 MHz) overlaps the entire frequency range of NR Band n2 (1850 - 1910 MHz).

This device uses a tuner circuit that dynamically updates the antenna impedance parameters to optimize antenna performance for certain bands and modes of operation. The tuner for this device was set to simulate a "free space" condition where the transmit antenna is matched to the medium into which it is transmitting and, thus, the power is at its maximum level.



2.3 Test Configuration

The EUT was tested per the guidance of ANSI/TIA-603-E-2016 and KDB 971168 D01 v03r01. See Section 7.0 of this test report for a description of the radiated tests. The emissions below 1GHz and above 18GHz were tested with the highest transmitting power channel and the worst case configuration. The EUT was manipulated through three orthogonal planes of X-orientation (flatbed), Y-orientation (landscape), and Z-orientation (portrait) during the testing. Only the worst case emissions were reported in this test report. The worst orientation was found to be Y-orientation (landscape).

This device supports wireless charging capability and, thus, is subject to the test requirements of KDB 648474 D03 v01r04. The worst case radiated emissions data is shown in this report.

2.4 EMI Suppression Device(s)/Modifications

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

| | | | | |
|---|---|--|---|---------------------------------|
| FCC ID: A3LSMN981U |  | MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE) |  | Approved by: Quality Manager |
| Test Report S/N: 1M2008190136-01.A3L | Test Dates: 08/19 - 08/27/2020 | EUT Type: Portable Handset | Page 4 of 14 | |

3.0 DESCRIPTION OF TESTS

3.1 Measurement Procedure

The measurement procedures described in the document titled “Land Mobile FM or PM – Communications Equipment – Measurements and Performance Standards” (ANSI/TIA-603-E-2016) and “Procedures for Compliance Measurement of the Fundamental Emission Power of Licensed Wideband (> 1 MHz) Digital Transmission Systems” (KDB 971168 D01 v03r01) were used in the measurement of the EUT.

3.2 Radiated Power and Radiated Spurious Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. The test site inside the chamber is a 6m x 5.2m elliptical, obstruction-free area in accordance with Figure 5.7 of Clause 5 in ANSI C63.4-2014. Absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections for measurements above 1GHz. For measurements below 1GHz, the absorbers are removed. A raised turntable is used for radiated measurement. The turn table is a continuously rotatable, remote-controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. An 80cm tall test table made of Styrodur is placed on top of the turn table. A Styrodur pedestal is placed on top of the test table to bring the total table height to 1.5m.

The equipment under test was transmitting while connected to its integral antenna and is placed on a turntable 3 meters from the receive antenna. The receive antenna height is adjusted between 1 and 4 meter height, the turntable is rotated through 360 degrees, and the EUT is manipulated through all orthogonal planes representative of its typical use to achieve the highest reading on the receive spectrum analyzer. Per the guidelines of KDB 412172 D01 v01r01, radiated power levels are measured using the following formula:

$$ERP \text{ or } EIRP = P_T + G_T - L_C$$



Where P_T is the transmitter output power, expressed in dBm, G_T is the gain of the transmitting antenna, in dB (ERP) or dBi (EIRP), and L_C signal attenuation in the connecting cable between the transmitter and antenna in dB.

Per the guidance of ANSI/TIA-603-E-2016, a half-wave dipole is then substituted in place of the EUT. For emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive spectrum analyzer level previously recorded from the spurious emission from the EUT. The power of the emission is calculated using the following formula:

$$P_d \text{ [dBm]} = P_g \text{ [dBm]} - \text{cable loss [dB]} + \text{antenna gain [dBd/dBi]}$$

Where, P_d is the dipole equivalent power, P_g is the generator output into the substitution antenna, and the antenna gain is the gain of the substitute antenna used relative to either a half-wave dipole (dBd) or an isotropic source (dBi). The substitute level is equal to $P_g \text{ [dBm]} - \text{cable loss [dB]}$.




The calculated P_d levels are then compared to the absolute spurious emission limit of -13dBm which is equivalent to the required minimum attenuation of $43 + 10 \log_{10}(\text{Power [Watts]})$. All radiated measurements are performed in a chamber that meets the site requirements per ANSI C63.4-2014. Additionally, radiated emissions below 30MHz are also validated on an Open Area Test Site to assert correlation with the chamber measurements per the requirements of KDB 474788 D01.

| | | | | |
|---|---|--|---|---------------------------------|
| FCC ID: A3LSMN981U |  | MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE) |  | Approved by: Quality Manager |
| Test Report S/N: 1M2008190136-01.A3L | Test Dates: 08/19 - 08/27/2020 | EUT Type: Portable Handset | | Page 5 of 14 |

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) |
|------------------------------|----------------------------------|
| Radiated Disturbance (<1GHz) | 4.98 |
| Radiated Disturbance (>1GHz) | 5.07 |

| | | | | |
|---|--|--|---|---------------------------------|
| FCC ID: A3LSMN981U |  PCTEST Proud to be part of  element | MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE) |  | Approved by: Quality Manager |
| Test Report S/N: 1M2008190136-01.A3L | Test Dates: 08/19 - 08/27/2020 | EUT Type: Portable Handset | | Page 6 of 14 |

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 |
|-----------------|------------|--------------------------------|------------|--------------|------------|---------------|
| - | LTx2 | Licensed Transmitter Cable Set | 4/9/2020 | Annual | 4/9/2021 | LTx2 |
| - | LTx3 | Licensed Transmitter Cable Set | 10/30/2019 | Annual | 10/30/2020 | LTx3 |
| Anritsu | MT8821C | Radio Communication Analyzer | N/A | | | 6200901190 |
| Com-Power | AL-130 | 9kHz - 30MHz Loop Antenna | 10/10/2019 | Biennial | 10/10/2021 | 121034 |
| Emco | 3115 | Horn Antenna (1-18GHz) | 6/18/2020 | Biennial | 6/18/2022 | 9704-5182 |
| ETS Lindgren | 3164-08 | Quad Ridge Horn Antenna | 3/12/2020 | Biennial | 3/12/2022 | 128337 |
| ETS Lindgren | 3164-08 | Quad Ridge Horn Antenna | 2/22/2019 | Biennial | 2/22/2021 | 128338 |
| Mini Circuits | TVA-11-422 | RF Power Amp | N/A | | | QA1317001 |
| Mini-Circuits | SSG-4000HP | Synthesized Signal Generator | N/A | | | 11208010032 |
| Rohde & Schwarz | CMW500 | Radio Communication Tester | N/A | | | 102060 |
| Rohde & Schwarz | TS-PR26 | 18-26.5 GHz Pre-Amplifier | 11/1/2019 | Annual | 11/1/2020 | 100040 |
| Rohde & Schwarz | ESU26 | EMI Test Receiver (26.5GHz) | 7/15/2020 | Annual | 7/15/2021 | 100342 |
| Rohde & Schwarz | ESU40 | EMI Test Receiver (40GHz) | 9/23/2019 | Annual | 9/23/2020 | 100348 |
| Rohde & Schwarz | SFUNIT-Rx | Shielded Filter Unit | 2/10/2020 | Annual | 2/10/2021 | 102134 |
| Rohde & Schwarz | SFUNIT-Rx | Shielded Filter Unit | 2/21/2020 | Annual | 2/21/2021 | 102133 |
| Sunol | DRH-118 | Horn Antenna (1-18GHz) | 10/3/2019 | Biennial | 10/3/2021 | A050307 |
| Sunol | DRH-118 | Horn Antenna (1-18 GHz) | 8/27/2019 | Biennial | 8/27/2021 | A042511 |
| Sunol | JB5 | Bi-Log Antenna (30M - 5GHz) | 7/27/2020 | Biennial | 7/27/2022 | A051107 |

Table 5-1. Test Equipment

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: A3LSMN981U |  PCTEST Proud to be part of element | MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE) |  | Approved by: Quality Manager |
| Test Report S/N: 1M2008190136-01.A3L | Test Dates: 08/19 - 08/27/2020 | EUT Type: Portable Handset | Page 7 of 14 | |

6.0 SAMPLE CALCULATIONS

Emission Designator

QPSK Modulation

Emission Designator = 8M62G7D

LTE BW = 8.62 MHz

G = Phase Modulation

7 = Quantized/Digital Info

D = Data transmission, telemetry, telecommand

QAM Modulation

Emission Designator = 8M45W7D

LTE BW = 8.45 MHz

W = Amplitude/Angle Modulated



7 = Quantized/Digital Info

D = Data transmission, telemetry, telecommand

Spurious Radiated Emission – LTE Band

Example: Middle Channel LTE Mode 2nd Harmonic (1564 MHz)

The average spectrum analyzer reading at 3 meters with the EUT on the turntable was -81.0 dBm. The gain of the substituted antenna is 8.1 dBi. The signal generator connected to the substituted antenna terminals is adjusted to produce a reading of -81.0 dBm on the spectrum analyzer. The loss of the cable between the signal generator and the terminals of the substituted antenna is 2.0 dB at 1564 MHz. So 6.1 dB is added to the signal generator reading of -30.9 dBm yielding -24.80 dBm. The fundamental EIRP was 25.501 dBm so this harmonic was 25.501 dBm – (-24.80).

| | | | | |
|---|--|--|---|---------------------------------|
| FCC ID: A3LSMN981U |  PCTEST [®] Proud to be part of element | MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE) |  | Approved by: Quality Manager |
| Test Report S/N: 1M2008190136-01.A3L | Test Dates: 08/19 - 08/27/2020 | EUT Type: Portable Handset | | Page 8 of 14 |

7.0 TEST RESULTS

7.1 Summary




Company Name: Samsung Electronics Co., Ltd.
 FCC ID: A3LSMN981U
 FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)
 Mode(s): LTE

| FCC Part Section(s) | Test Description | Test Limit | Test Condition | Test Result | Reference |
|---------------------|---------------------------------|---|----------------|-------------|-------------|
| 27.53(m) | Undesirable Emissions (Band 41) | Undesirable emissions must meet the limits detailed in 27.53(m) | RADIATED | PASS | Section 7.2 |

Table 7-1. Summary of Radiated Test Results

Notes:

- 1) All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.

| | | | | |
|---|--|--|---|---------------------------------|
| FCC ID: A3LSMN981U |  PCTEST Proud to be part of  element | MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE) |  | Approved by: Quality Manager |
| Test Report S/N: 1M2008190136-01.A3L | Test Dates: 08/19 - 08/27/2020 | EUT Type: Portable Handset | | Page 9 of 14 |

7.2 Radiated Spurious Emissions Measurements

Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas.



Test Procedures Used

KDB 971168 D01 v03r01 – Section 5.8

ANSI/TIA-603-E-2016 – Section 2.2.12

Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW $\geq 3 \times$ RBW
3. Span = 1.5 times the OBW
4. No. of sweep points $\geq 2 \times$ span / RBW
5. Detector = RMS
6. Trace mode = Average (Max Hold for pulsed emissions)
7. The trace was allowed to stabilize

| | | | | |
|--|---|--|---|--|
| FCC ID: A3LSMN981U |  | MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE) |  | Approved by: Quality Manager |
| Test Report S/N: 1M2008190136-01.A3L | Test Dates: 08/19 - 08/27/2020 | EUT Type: Portable Handset | Page 10 of 14 | |

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

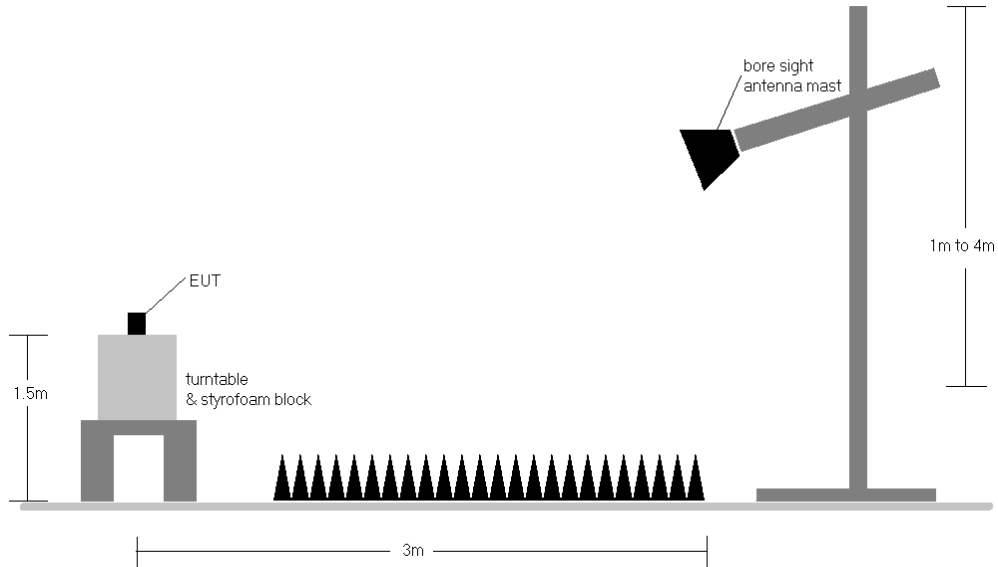




Figure 7-1. Test Instrument & Measurement Setup

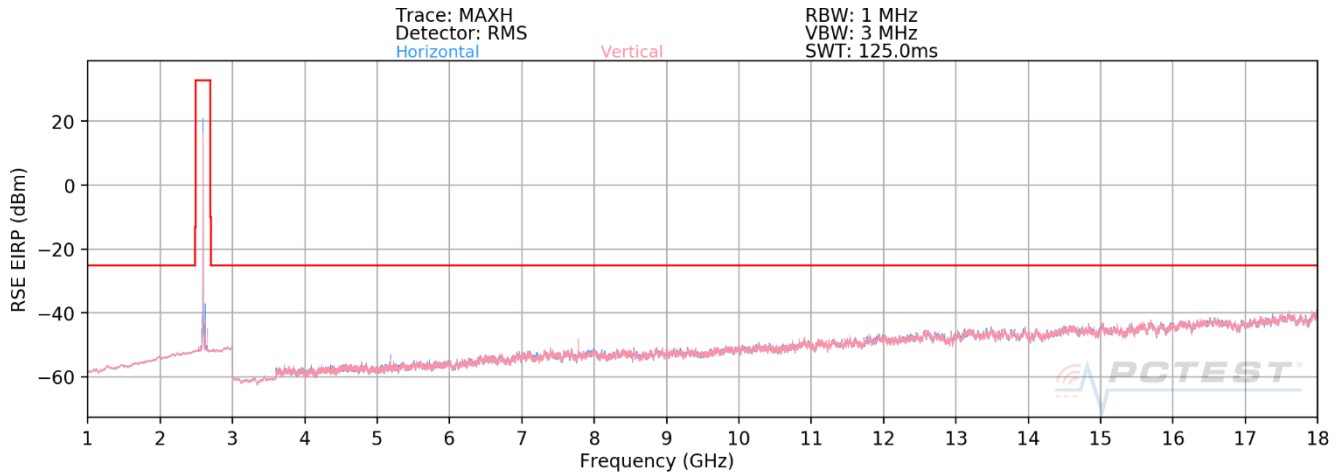
Test Notes

- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 2) N/A
- 3) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 4) Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.
- 5) The "-" shown in the following RSE tables are used to denote a noise floor measurement.
- 6) Test results reported in this section cover the EN-DC operation of LTE B41 and NR n41.

| | | | | |
|---|---|--|---|---------------------------------|
| FCC ID: A3LSMN981U |  | MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE) |  | Approved by: Quality Manager |
| Test Report S/N: 1M2008190136-01.A3L | Test Dates: 08/19 - 08/27/2020 | EUT Type: Portable Handset | | Page 11 of 14 |

7.2.1 Radiated Spurious Emissions Measurements

NR Band n41





Plot 7-1. Radiated Spurious Plot above 1GHz (n41 + Anchor B41 EN-DC)

OPERATING FREQUENCY: 2506.00 MHz
 CHANNEL: 39750 + 501201
 MODULATION SIGNAL: QPSK (DFT-s-OFDM)
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBi] | Spurious Emission Level [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------------|
| 5012.00 | V | 155 | 354 | -67.59 | 10.80 | -56.80 | -31.8 |
| 7518.00 | V | 258 | 58 | -61.22 | 12.59 | -48.63 | -23.6 |
| 10024.00 | V | 165 | 72 | -64.09 | 9.83 | -54.26 | -29.3 |
| 12530.00 | V | - | - | -60.73 | 8.78 | -51.95 | -27.0 |
| 15036.00 | V | - | - | -56.26 | 8.75 | -47.51 | -22.5 |

Table 7-2. Radiated Spurious Data (Band n41 + Anchor B41 EN-DC – Low Channel)

| | | | | | |
|---|---|--|--|---|---------------------------------|
| FCC ID: A3LSMN981U |  | MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE) | |  | Approved by: Quality Manager |
| Test Report S/N: 1M2008190136-01.A3L | Test Dates: 08/19 - 08/27/2020 | EUT Type: Portable Handset | | Page 12 of 14 | |

OPERATING FREQUENCY: 2593.00 MHz
 CHANNEL: 40620 + 518598
 MODULATION SIGNAL: QPSK (DFT-s-OFDM)
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm



| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBi] | Spurious Emission Level [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------------|
| 5186.00 | V | 167 | 359 | -68.48 | 11.16 | -57.32 | -32.3 |
| 7779.00 | V | 268 | 37 | -59.99 | 12.35 | -47.63 | -22.6 |
| 10372.00 | V | 166 | 29 | -61.52 | 9.31 | -52.21 | -27.2 |
| 12965.00 | V | - | - | -61.94 | 8.98 | -52.96 | -28.0 |
| 15558.00 | V | - | - | -55.54 | 8.56 | -46.98 | -22.0 |

Table 7-3. Radiated Spurious Data (Band n41+ Anchor B41 EN-DC – Mid Channel)

OPERATING FREQUENCY: 2680.00 MHz
 CHANNEL: 41490 + 535998
 MODULATION SIGNAL: QPSK (DFT-s-OFDM)
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm



| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBi] | Spurious Emission Level [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------------|
| 5360.00 | V | 134 | 318 | -67.42 | 11.51 | -55.91 | -30.9 |
| 8040.00 | V | 256 | 44 | -59.94 | 12.05 | -47.89 | -22.9 |
| 10720.00 | V | 147 | 82 | -60.64 | 9.30 | -51.34 | -26.3 |
| 13400.00 | V | - | - | -59.45 | 8.47 | -50.98 | -26.0 |
| 16080.00 | V | - | - | -54.72 | 8.27 | -46.45 | -21.4 |

Table 7-4. Radiated Spurious Data (Band n41+ Anchor B41 EN-DC – High Channel)

| | | | | |
|---|--|--|---|---------------------------------|
| FCC ID: A3LSMN981U |  PCTEST [®] Proud to be part of element | MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE) |  | Approved by: Quality Manager |
| Test Report S/N: 1M2008190136-01.A3L | Test Dates: 08/19 - 08/27/2020 | EUT Type: Portable Handset | | Page 13 of 14 |

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMN981U** complies with all the requirements of Part 27 of the FCC Rules for LTE operation only.

| | | | | |
|--|---|--|---|--|
| FCC ID: A3LSMN981U |  | MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE) |  | Approved by: Quality Manager |
| Test Report S/N: 1M2008190136-01.A3L | Test Dates: 08/19 - 08/27/2020 | EUT Type: Portable Handset | | Page 14 of 14 |